Exhibit A

US008023580B2

(12) **United States Patent**
Bremer

(10) **Patent No.: US 8,023,580 B2**

(45) **Date of Patent: Sep. 20, 2011**

(54) **SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **12/543,910**

(22) Filed: **Aug. 19, 2009**

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US 2010/0183055 A1 Jul. 22, 2010

Related U.S. Application Data

(63) Continuation of application No. 11/774,803, filed on Jul. 9, 2007, now Pat. No. 7,675,965, which is a continuation of application No. 10/412,878, filed on Apr. 14, 2003, now Pat. No. 7,248,626, which is a continuation-in-part of application No. 09/205,205, filed on Dec. 4, 1998, now Pat. No. 6,614,838.

(60) Provisional application No. 60/067,562, filed on Dec. 5, 1997.

(51) **Int. Cl.**
H04L 5/12 (2006.01)

(52) **U.S. Cl.** **375/261**; 455/102; 332/108; 332/119; 332/151

(58) **Field of Classification Search** 375/261, 375/269, 285, 222, 298, 302, 305, 308; 455/102, 455/110; 332/108, 119, 120, 151
See application file for complete search history.

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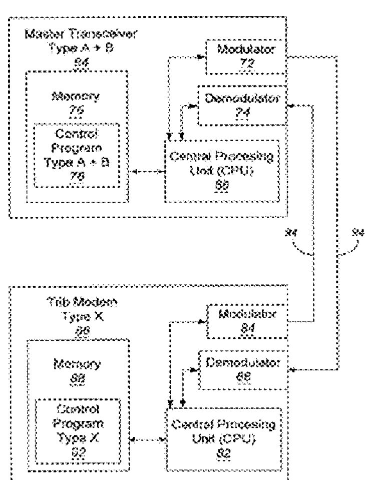
(74) *Attorney, Agent, or Firm* — Condo Roccia LLP

(57) **ABSTRACT**

A device may be capable of communicating using at least two type types of modulation methods. The device may include a transceiver capable of acting as a master according to a master/slave relationship in which communication from a slave to a master occurs in response to communication from the master to the slave. The master transceiver may send transmissions discrete transmissions structured with a first portion and a payload portion. Information in the first portion may be modulated according to a first modulation method and indicate an impending change to a second modulation method, which is used for transmitting the payload portion. The discrete transmissions may be addressed for an intended destination of the payload portion.

79 Claims, 8 Drawing Sheets



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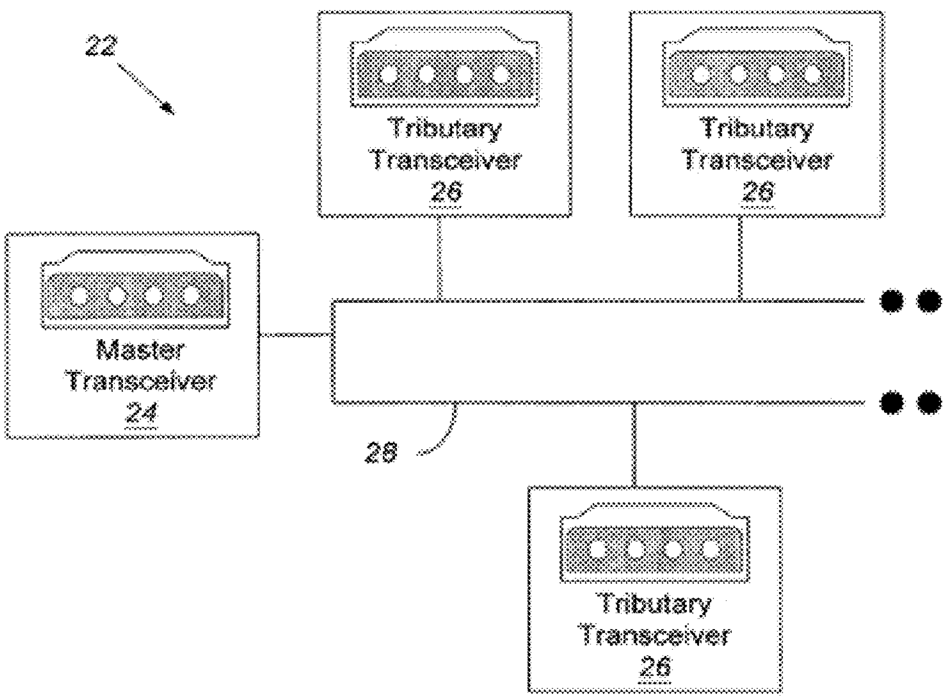

FIG. 1
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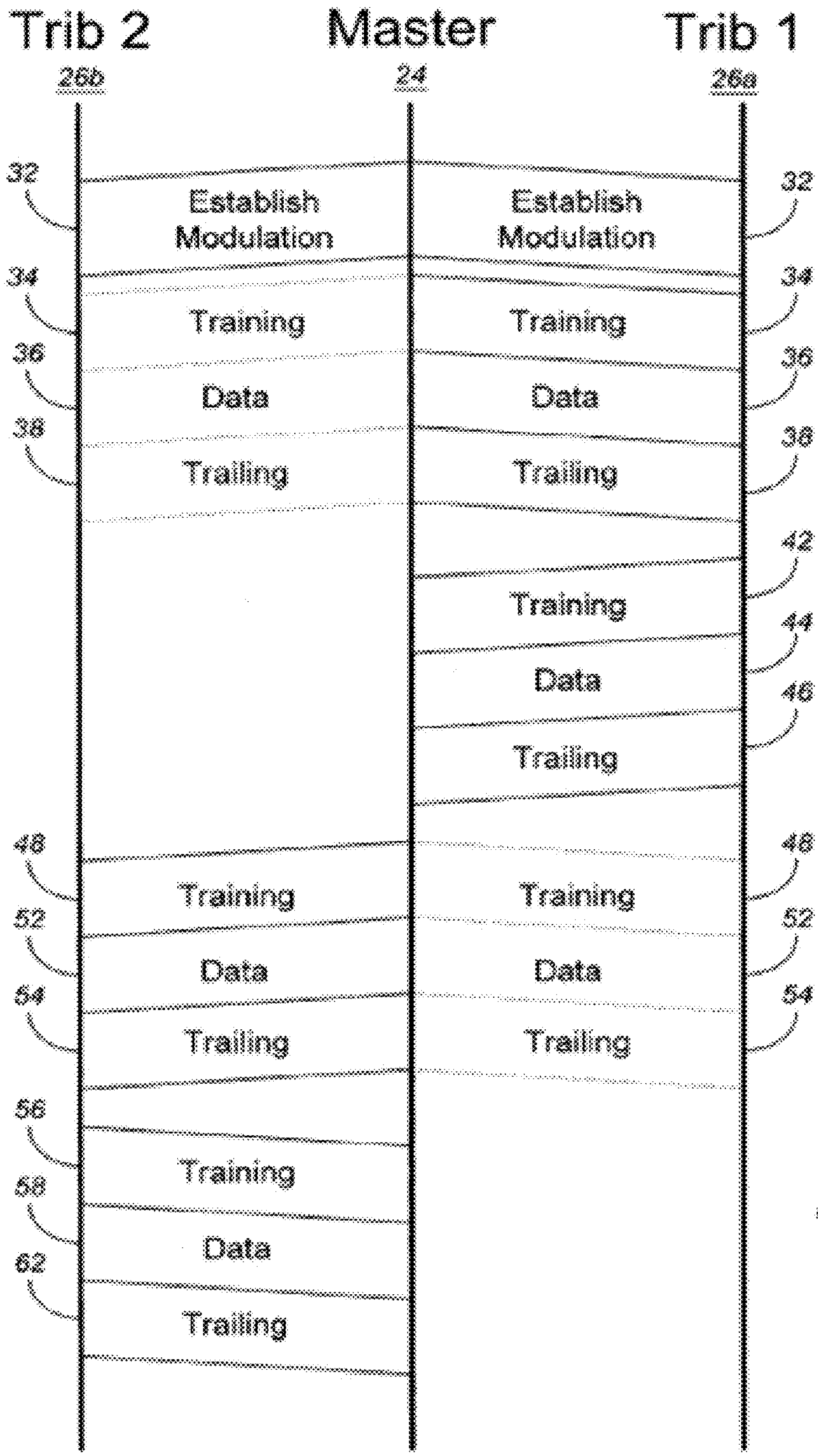

Trib 2
26b
Master
24
Trib 1
26a
32
Establish Modulation
Establish Modulation
32
34
Training
Training
34
36
Data
Data
36
38
Trailing
Trailing
38
42
Training
44
Data
46
Trailing
48
Training
Training
48
52
Data
Data
52
54
Trailing
Trailing
54
56
Training
58
Data
62
Trailing

FIG. 2

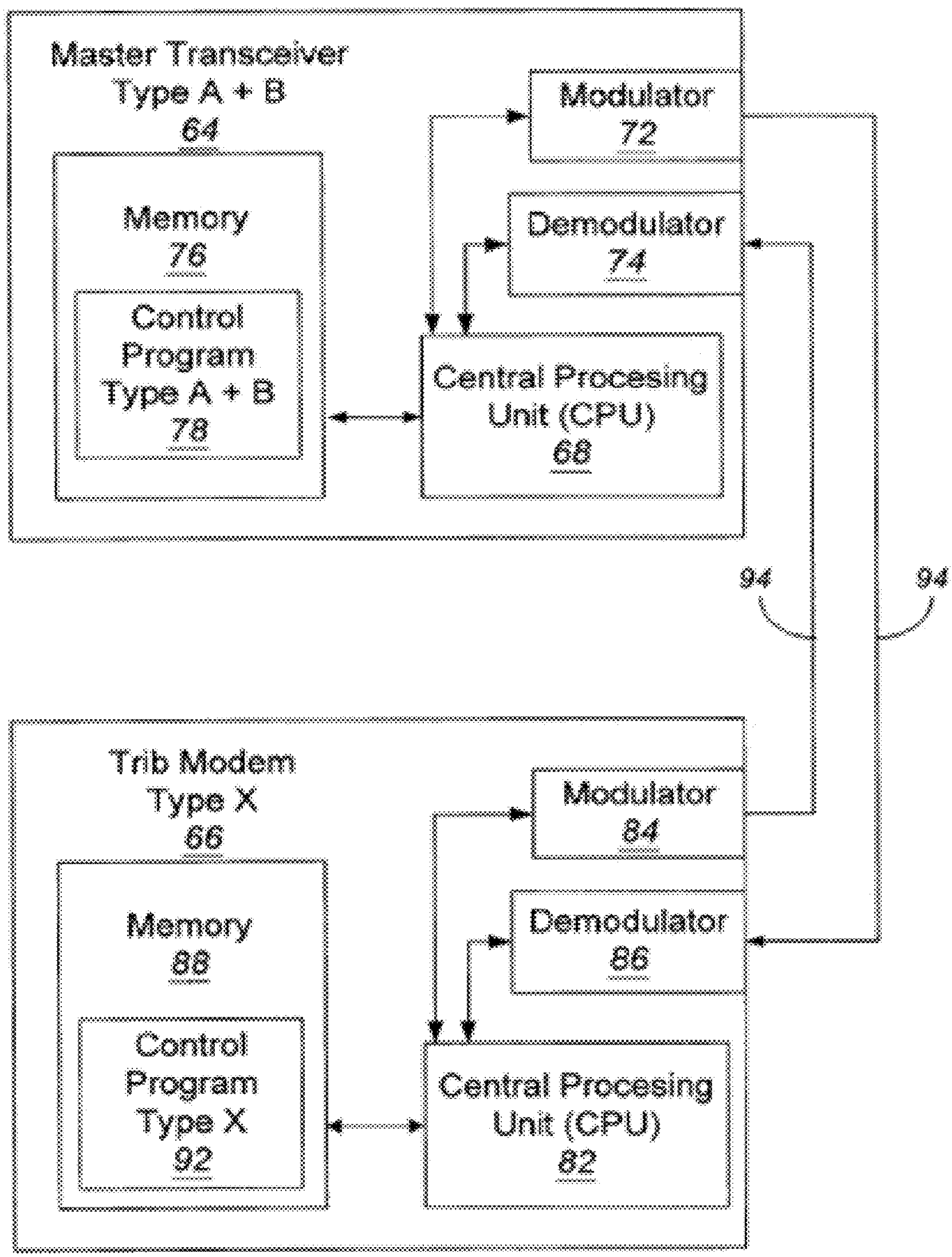

Master Transceiver
Type A + B
64
Memory
76
Control
Program
Type A + B
78
Modulator
72
Demodulator
74
Central Procesing
Unit (CPU)
68
94
94
Trib Modem
Type X
66
Memory
88
Control
Program
Type X
92
Modulator
84
Demodulator
86
Central Procesing
Unit (CPU)
82

FIG. 3

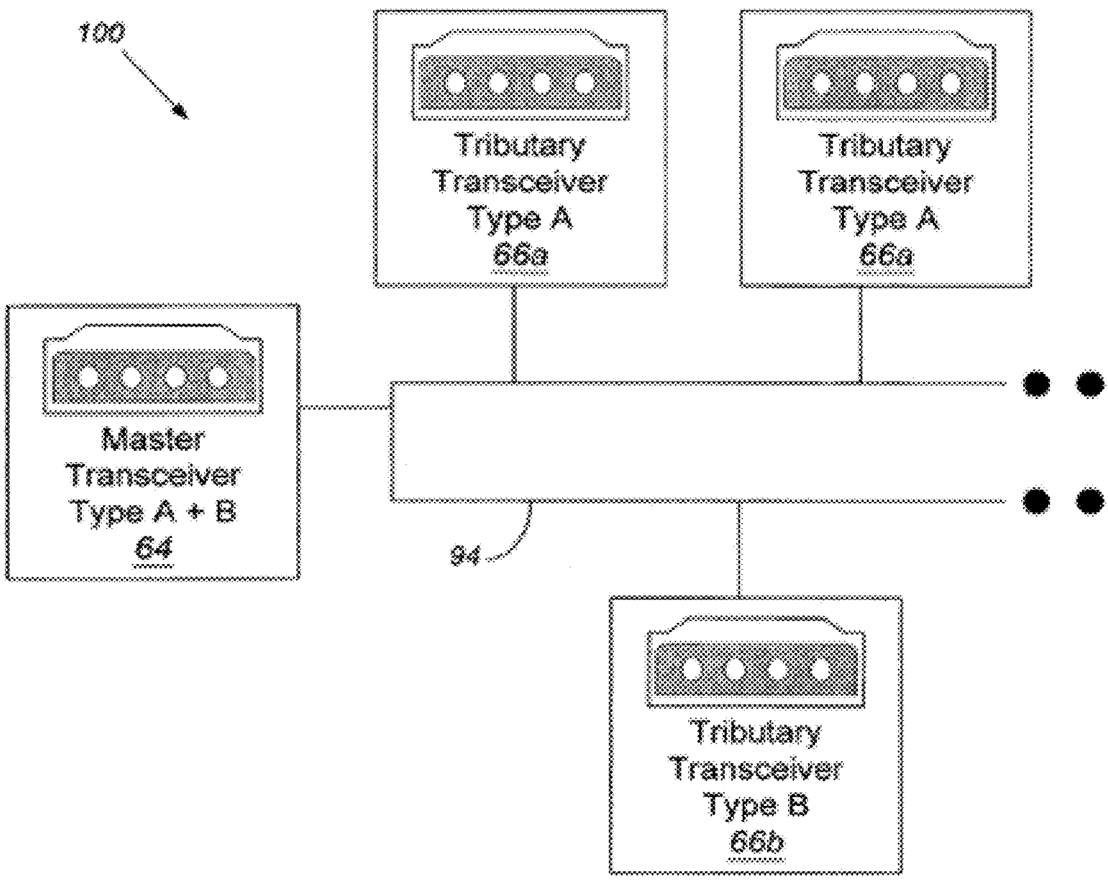
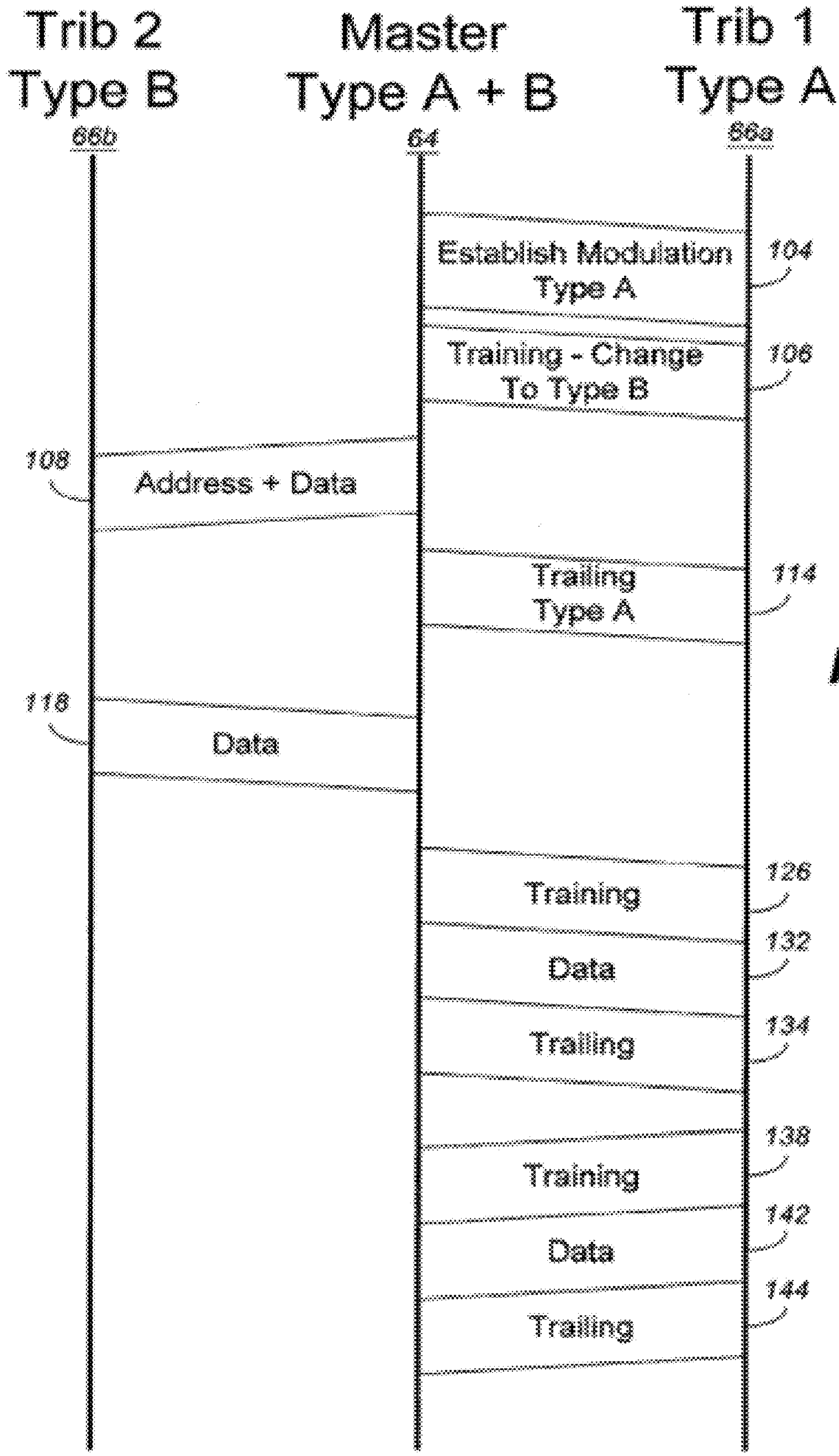

100
Tributary
Transceiver
Type A
66a
Tributary
Transceiver
Type A
66a
Master
Transceiver
Type A + B
64
94
Tributary
Transceiver
Type B
66b

FIG. 4



Trib 2
Type B
66b
Master
Type A + B
64
Trib 1
Type A
66a
Establish Modulation
Type A
104
Training - Change
To Type B
106
108
Address + Data
Trailing
Type A
114
118
Data
Training
126
Data
132
Trailing
134
Training
138
Data
142
Trailing
144

FIG. 5

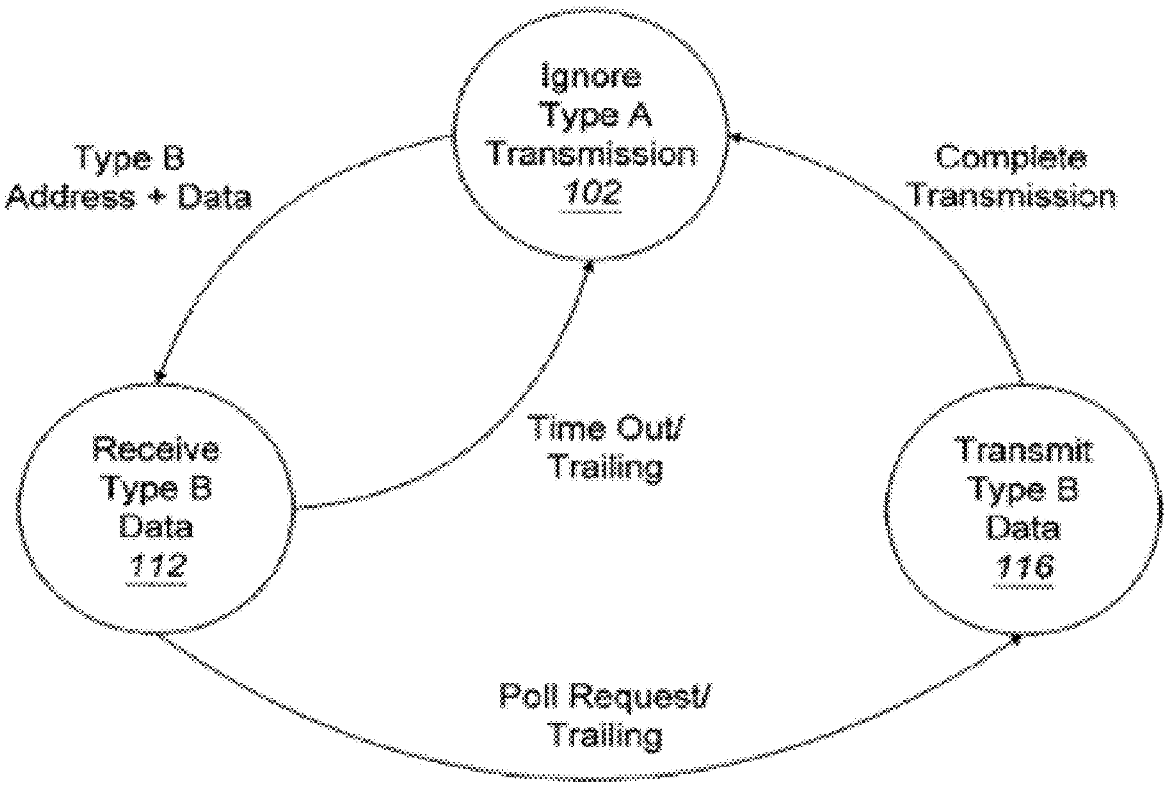

Ignore
Type A
Transmission
102
Type B
Address + Data
Complete
Transmission
Receive
Type B
Data
112
Time Out/
Trailing
Transmit
Type B
Data
116
Poll Request/
Trailing

FIG. 6

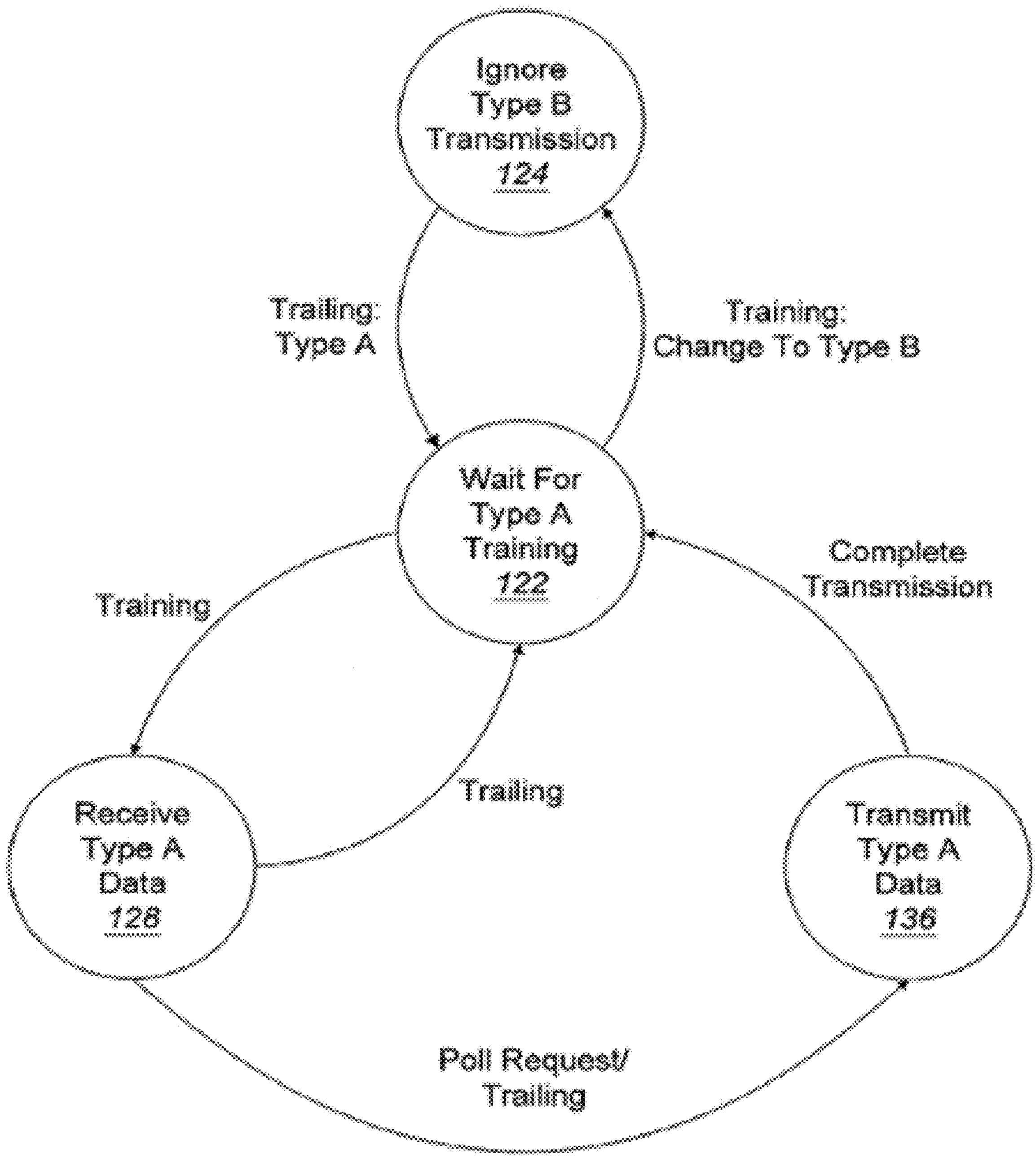

Ignore
Type B
Transmission
124
Trailing:
Type A
Training:
Change To Type B
Wait For
Type A
Training
122
Training
Complete
Transmission
Trailing
Receive
Type A
Data
128
Transmit
Type A
Data
136
Poll Request/
Trailing

FIG. 7

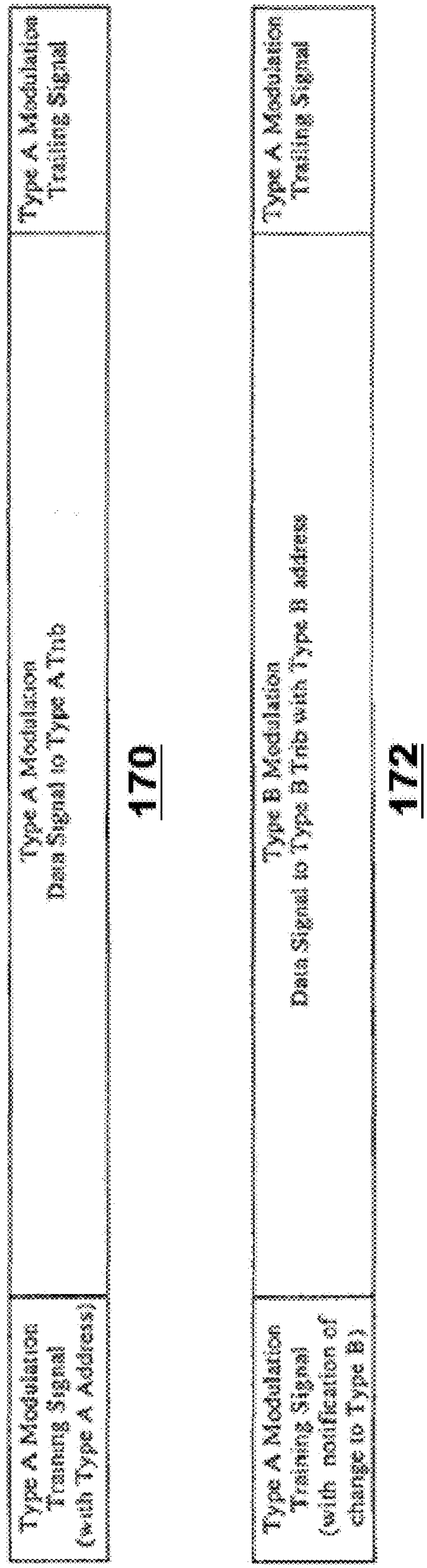

Type A Modulation
Training Signal
(with Type A Address)
Type A Modulation
Data Signal to Type A Trib
170
Type A Modulation
Trailing Signal
Type A Modulation
Training Signal
(with notification of
change to Type B)
Type B Modulation
Data Signal to Type B Trib with Type B address
172
Type A Modulation
Trailing Signal

FIG. 8

SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation of U.S. application Ser. No. 11/774,803, filed on Jul. 9, 2007, which is a continuation of U.S. application Ser. No. 10/412,878, filed Apr. 14, 2003, which is a continuation-in-part of U.S. application Ser. No. 09/205,205, filed Dec. 4, 1998, and which claims priority to and the benefit of the filing date of U.S. Provisional Application No. 60/067,562, filed Dec. 5, 1997, each of which is incorporated by reference herein.

TECHNICAL FIELD

The present invention relates generally to the fields of data communications and modulator/demodulators (modems), and, more particularly, to a data communications system in which a plurality of modulation methods are used to facilitate communication among a plurality of modem types.

BACKGROUND

In existing data communications systems, a transmitter and receiver modem pair can successfully communicate only when the modems are compatible at the physical layer. That is, the modems must use compatible modulation methods. This requirement is generally true regardless of the network topology. For example, point-to-point, dial-up modems operate in either the industry standard V.34 mode or the industry standard V.22 mode. Similarly, in a multipoint architecture, all modems operate, for example, in the industry standard V.27bis mode. While the modems may be capable of using several different modulation methods, a single common modulation is negotiated at the beginning of a data session to be used throughout the duration of the session. Should it become necessary to change modulation methods, the existing data session is torn down, and a new session is negotiated using the new modulation method. Clearly, tearing down an existing data session causes a significant disruption in communication between the two modems.

As discussed in the foregoing, communication between modems is generally unsuccessful unless a common modulation method is used. In a point-to-point network architecture, if a modem attempts to establish a communication session with an incompatible modem, one or both of the modems will make several attempts to establish the communication link until giving up after a timeout period has expired or the maximum number of retry attempts has been reached. Essentially, communication on the link is impossible without replacing one of the modems such that the resulting modem pair uses a common modulation method.

In a multipoint architecture, a single central, or "master," modem communicates with two or more tributary or "trib" modems using a single modulation method. If one or more of the trib modems are not compatible with the modulation method used by the master, those tribs will be unable to receive communications from the master. Moreover, repeated attempts by the master to communicate with the incompatible trib(s) will disturb communications with compatible trib(s) due to time wasted in making the futile communication attempts.

Thus, communication systems comprised of both high performance and low or moderate performance applications can

be very cost inefficient to construct. For example, some applications (e.g., internet access) require high performance modulation, such as quadrature amplitude modulation (QAM), carrier amplitude and phase (CAP) modulation, or discrete multitone (DMT) modulation, while other applications (e.g., power monitoring and control) require only modest data rates and therefore a low performance modulation method. All users in the system will generally have to be equipped with a high performance modem to ensure modulation compatibility. These state of the art modems are then run at their lowest data rates for those applications that require relatively low data throughput performance. The replacement of inexpensive modems with much more expensive state of the art devices due to modulation compatibility imposes a substantial cost that is unnecessary in terms of the service and performance to be delivered to the end user.

Accordingly, what is sought, and what is not believed to be provided by the prior art, is a system and method of communication in which multiple modulation methods are used to facilitate communication among a plurality of modems in a network, which have heretofore been incompatible.

SUMMARY

The present invention disclosed herein includes communication systems, devices, and methods. For example, a device may be capable of communicating according to a master/slave relationship in which a communication from a slave to a master occurs in response to a communication from the master to the slave. The device may include a transceiver in the role of the master for sending transmissions modulated using at least two types of modulation methods, for example a first modulation method and a second modulation method. The first modulation method may be of a different type than the second modulation method. The transmissions may be groups of transmission sequences. A group may be structured with a first portion and a payload portion. First information in the first portion may indicate which of the first modulation method or the second modulation method is used for modulating second information in the payload portion. The transmissions may be addressed for an intended destination of the payload portion. First information in a transmission that includes an address for an intended destination may include a first sequence in the first portion that is modulated according to the first modulation method and that indicates an impending change from the first modulation method to the second modulation method. Second information in a transmission that includes an address for an intended destination may include a second sequence in the payload portion that is modulated according to the second modulation method. The second sequence may be transmitted after the first sequence.

The present invention has many advantages, a few of which are delineated hereafter as merely examples.

One advantage of the present invention is that it provides to the use of a plurality of modem modulation methods on the same communication medium.

Another advantage of the present invention is that a master transceiver can communicate seamlessly with tributary transceivers or modems using incompatible modulation methods.

Other features and advantages of the present invention will become apparent to one with skill in the art upon examination of the following drawings and detailed description. It is intended that all such additional features and advantages be included herein within the scope of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention can be better understood with reference to the following drawings. The components and representations in the drawings are not necessarily to scale, emphasis instead being placed upon clearly illustrating the principles of the present invention. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

FIG. **1** is a block diagram of a prior art multipoint communication system including a master transceiver and a plurality of tributary transceivers;

FIG. **2** is a ladder diagram illustrating the operation of the multipoint communication system of FIG. **1**;

FIG. **3** is a block diagram of a master transceiver and tributary transceiver for use in the multipoint communication system of FIG. **1** in accordance with the principles of the present invention;

FIG. **4** is a block diagram of a multipoint communication system including the master transceiver and a plurality of tributary transceivers of the type illustrated in FIG. **3**;

FIG. **5** is a ladder diagram illustrating the operation of the multipoint communication system of FIG. **4**;

FIG. **6** is a state diagram for a tributary transceiver of FIGS. **3-5** using a secondary modulation method in accordance with the principles of the present invention;

FIG. **7** is a state diagram for a tributary transceiver of FIGS. **3-5** using a primary modulation method in accordance with the principles of the present invention; and

FIG. **8** is a signal diagram for an exemplary transmission according to an embodiment.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

While the invention is susceptible to various modifications and alternative forms, a specific embodiment thereof is shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that there is no intent to limit the invention to the particular form disclosed, but on the contrary, the invention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the claims.

With reference to FIG. **1**, a prior art multipoint communication system **22** is shown to comprise a master modem or transceiver **24**, which communicates with a plurality of tributary modems (tribs) or transceivers **26-26** over communication medium **28**. Note that all tribs **26-26** are identical in that they share a common modulation method with the master transceiver **24**. Thus, before any communication can begin in multipoint system **22**, the master transceiver and the tribs **26-26** must agree on a common modulation method. If a common modulation method is found, the master transceiver **24** and a single trib **26** will then exchange sequences of signals that are particular subsets of all signals that can be communicated via the agreed upon common modulation method. These sequences are commonly referred to as training signals and can be used for the following purposes: 1) to confirm that the common modulation method is available, 2) to establish received signal level compensation, 3) to establish time recovery and/or carrier recovery, 4) to permit channel equalization and/or echo cancellation, 5) to exchange parameters for optimizing performance and/or to select optional features, and 6) to confirm agreement with regard to the foregoing purposes prior to entering into data communication mode between the users. In a multipoint system, the address of the trib with which the master is establishing communication is also transmitted during the training interval. At the end of a data session a communicating pair of modems will typically exchange a sequence of signals known as trailing signals for the purpose of reliably stopping the session and confirming that the session has been stopped. In a multipoint system, failure to detect the end of a session will delay or disrupt a subsequent session.

Referring now to FIG. **2**, an exemplary multipoint communication session is illustrated through use of a ladder diagram. This system uses polled multipoint communication protocol. That is, a master controls the initiation of its own transmission to the tribs and permits transmission from a trib only when that trib has been selected. At the beginning of the session, the master transceiver **24** establishes a common modulation as indicated by sequence **32** that is used by both the master **24** and the tribs **26*a***, **26*b*** for communication. Once the modulation scheme is established among the modems in the multipoint system, The master transceiver **24** transmits a training sequence **34** that includes the address of the trib that the master seeks to communicate with. In this case, the training sequence **34** includes the address of trib **26*a***. As a result, trib **26*b*** ignores training sequence **34**. After completion of the training sequence **34**, master transceiver **24** transmits data **36** to trib **26*a*** followed by trailing sequence **38**, which signifies the end of the communication session. Similarly, with reference to FIG. **8**, the sequence **170** illustrates a Type A modulation training signal, followed by a Type A modulation data signal. Note that trib **26*b*** ignores data **36** and trailing sequence **38** as it was not requested for communication during training sequence **34**.

At the end of trailing sequence **38**, trib **26*a*** transmits training sequence **42** to initiate a communication session with master transceiver **24**. Because master transceiver **24** selected trib **26*a*** for communication as part of training sequence **34**, trib **26*a*** is the only modem that will return a transmission. Thus, trib **26*a*** transmits data **44** destined for master transceiver **24** followed by trailing sequence **46** to terminate the communication session.

The foregoing procedure is repeated except master transceiver identifies trib **26*b*** in training sequence **48**. In this case, trib **26*a*** ignores the training sequence **48** and the subsequent transmission of data **52** and trailing sequence **54** because it does not recognize its address in training sequence **48**. Master transceiver **24** transmits data **52** to trib **26*b*** followed by trailing sequence **54** to terminate the communication session. Similarly, with reference to FIG. **8**, sequence **172** illustrates a Type A modulation signal, with notification of a changes to Type B, followed by a Type B modulation data signal. To send information back to master transceiver **24**, trib **26*b*** transmits training sequence **56** to establish a communication session. Master transceiver **24** is conditioned to expect data only from trib **26*b*** because trib **26*b*** was selected as part of training sequence **48**. Trib **26*b*** transmits data **58** to master transceiver **24** terminated by trailing sequence **62**.

The foregoing discussion is based on a two-wire, half-duplex multipoint system. Nevertheless, it should be understood that the concept is equally applicable to four-wire systems.

Consider the circumstance in which master transceiver **24** and trib **26*b*** share a common modulation type A while trib **26*a*** uses a second modulation type B. When master transceiver attempts to establish A as a common modulation during sequence **32**, trib **26*a*** will not be able to understand that communication. Moreover, trib **26*a*** will not recognize its own address during training interval **34** and will therefore ignore data **36** and trailing sequence **38**. Master transceiver **24** may time out waiting for a response from trib **26*a*** because trib **26*a*** will never transmit training sequence **42**, data **44**, and trailing sequence **46** due to the failure of trib **26*a*** to recognize the communication request (training sequence **34**) from master transceiver **24**. Thus, if the tribs in a multipoint communication system use a plurality of modulation methods, the overall communication efficiency will be disrupted as specific tribs will be unable to decipher certain transmissions from the master transceiver and any unilateral transmission by a trib that has not been addressed by the master transceiver will violate the multipoint protocol.

As discussed hereinbefore, however, it is desirable to design a multipoint communication system comprising tribs that use a plurality of modulation methods. For example, one moderately priced trib may be used to communicate at a relatively high data rate for some applications, such as Internet access, while another, lower priced, trib is used to communicate at a lower data rate for other applications, such as power monitoring and control. The needs of these different applications cannot be efficiently met by a single modulation. While it is possible to use high performance tribs running state of the art modulation methods such as QAM, CAP, or DMT to implement both the high and low data rate applications, significant cost savings can be achieved if lower cost tribs using low performance modulation methods are used to implement the lower data rate applications.

A block diagram of a master transceiver **64** in communication with a trib **66** in accordance with the principles of the present invention is shown in FIG. **3**. Master transceiver **64** comprises a central processing unit (CPU) **68** in communication with modulator **72**, demodulator **74**, and memory **76**. Memory **76** holds software control program **78** and any data necessary for the operation of master transceiver **64**. Control program **78** includes logic for implementing a plurality of modulation methods. For purposes of illustration, control program **78** can implement both a type A and a type B modulation through modulator **72** and demodulator **74**.

Trib **66** comprises CPU **82** in communication with modulator **84**, demodulator **86**, and memory **88**. Memory **88**, likewise holds software control program **92** and any data necessary for the operation of trib **66**. Control programs **78** and **92**, are executed by CPUs **68** and **82** and provide the control logic for the processes to be discussed herein. Control program **92** includes logic for implementing a particular modulation method, which, for purposes of illustration, is called type X Inasmuch as master transceiver **64** is capable of running either a type A or a type B modulation method, type X refers to one of those two modulation methods. The master transceiver **64** communicates with trib **66** over communication medium **94**.

Referring now to FIG. **4**, a multipoint communication system **100** is shown comprising a master transceiver **64** along with a plurality of tribs **66**-**66**. In this example, two tribs **66***a*-**66***a* run a type A modulation method while one trib **66***b* runs a type B modulation method. The present invention permits a secondary or embedded modulation method (e.g., type B) to replace the standard modulation method (e.g., type A) after an initial training sequence. This allows the master transceiver **64** to communicate seamlessly with tribs of varying types.

The operation of multipoint communication system **100** will be described hereafter with reference to the ladder diagram of FIG. **5** and the state diagrams of FIGS. **6** and **7**. A communication session between the master transceiver **64** and a type B trib **66***b* will be discussed first. A state diagram for a type B trib **66***b* is shown in FIG. **6**. Type B trib **66***b* is initialized in state **102** in which type A modulation transmissions are ignored. In the present example, the primary modulation method is type A, thus, as shown in FIG. **5**, master transceiver **64** establishes type A as the primary modulation in sequence **104**. Note that because trib **66***b* responds only to type B modulation transmissions, only the type A tribs **66***a*-**66***a* are receptive to transmission sequence **104**.

To switch from type A modulation to type B modulation, master transceiver **64** transmits a training sequence **106** to type A tribs **66***a* in which these tribs are notified of an impending change to type B modulation. The switch to type B modulation could be limited according to a specific time interval or for the communication of a particular quantity of data. After notifying the type A tribs **66***a* of the change to type B modulation, master transceiver **64**, using type B modulation, transmits data along with an address in sequence **108**, which is destined for a particular type B trib **66***b*. The type B trib **66***b* targeted by the master transceiver **64** will transition to state **112** as shown in FIG. **6** upon detecting its own address where it processes the data transmitted in sequence **108**.

After completing transmission sequence **108**, master transceiver **64** transmits a trailing sequence **114** using type A modulation thus notifying all type A tribs **66***a* that type B modulation transmission is complete. If master transceiver **64** has not transmitted a poll request to the type B trib **66***b* in sequence **108**, then the type B trib **66***b* that was in communication with the master transceiver **64** will return to state **102** after timing out based on the particular time interval defined for the type B modulation transmission or transfer of the particular quantity of data. Note that the trailing sequence **114** is ineffective in establishing the termination of a communication session between master transceiver **64** and a type B trib **66***b* because the trailing sequence is transmitted using type A modulation.

If, however, master transceiver **64** transmitted a poll request in sequence **108**, then the type B trib **66***b* transitions to state **116** where it will transmit data, using type B modulation, to master transceiver **64** in sequence **118**. After completion of this transmission, the type B trib **66***b* returns to state **102** where type A transmissions are ignored.

With reference to FIG. **5** and FIG. **7**, a communication session between the master transceiver **64** and a type A trib **66***a* will now be discussed. A state diagram for a type A trib **66***a* is shown in FIG. **7**. A type A trib **66***a* is initialized in state **122** in which it awaits a type A modulation training sequence. If, however, master transceiver transmits a training sequence in which the type A tribs **66***a*-**66***a* are notified of a change to type B modulation as indicated by sequence **106**, then a transition is made to state **124** where all type B transmissions are ignored until a type A modulation trailing sequence (e.g., sequence **114**) is detected. Upon detecting the type A trailing sequence, a type A trib **66***a* returns to state **122** where it awaits a training sequence.

To initiate a communication session with a type A trib **66***a*, master transceiver **64** transmits a training sequence **126** in which an address of a particular type A trib **66***a* is identified. The identified type A trib **66***a* recognizes its own address and transitions to state **128** to receive data from master transceiver **64** as part of sequence **132**.

After completing transmission sequence **132**, master transceiver **64** transmits a trailing sequence **134** using type A modulation signifying the end of the current communication session. If master transceiver **64** has not transmitted a poll request to the type A trib **66***a* in sequence **132**, then the type A trib **66***a* that was in communication with the master transceiver **64** will return to state **122** after receiving trailing sequence **134**.

If, however, master transceiver **64** transmitted a poll request in sequence **132**, then the type A trib **66***a* transitions to state **136** after receiving trailing sequence **134** where it will transmit training sequence **138**, followed by data sequence **142**, and terminated by trailing sequence **144** all using type A modulation. After completion of these transmissions, the type A trib **66***a* returns to state **122** to await the next type A modulation training sequence by master transceiver **64**.

The control programs **78** and **92** of the present invention can be implemented in hardware, software, firmware, or a combination thereof. In the preferred embodiment(s), the control programs **78** and **92** are implemented in software or firmware that is stored in a memory and that is executed by a suitable instruction execution system.

The control programs **78** and **92**, which comprise an ordered listing of executable instructions for implementing logical functions, can be embodied in any computer-readable medium for use by or in connection with an instruction execution system, apparatus, or device, such as a computer-based system, processor-containing system, or other system that can fetch the instructions from the instruction execution system, apparatus, or device and execute the instructions. In the context of this document, a "computer-readable medium" can be any means that can contain, store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device. The computer readable medium can be, for example but not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, device, or propagation medium. More specific examples (a nonexhaustive list) of the computer-readable medium would include the following: an electrical connection (electronic) having one or more wires, a portable computer diskette (magnetic), a random access memory (RAM) (magnetic), a read-only memory (ROM) (magnetic), an erasable programmable read-only memory (EPROM or Flash memory) (magnetic), an optical fiber (optical), and a portable compact disc read-only memory (CDROM) (optical). Note that the computer-readable medium could even be paper or another suitable medium upon which the program is printed, as the program can be electronically captured, via for instance optical scanning of the paper or other medium, then compiled, interpreted or otherwise processed in a suitable manner if necessary, and then stored in a computer memory.

In concluding the detailed description, it should be noted that it will be obvious to those skilled in the art that many variations and modifications can be made to the preferred embodiment without substantially departing from the principles of the present invention. All such variations and modifications are intended to be included herein within the scope of the present invention, as set forth in the following claims. Further, in the claims hereafter, the corresponding structures, materials, acts, and equivalents of all means or step plus function elements are intended to include any structure, material, or acts for performing the functions with other claimed elements as specifically claimed.

What is claimed:

1. A communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave, the device comprising:

a transceiver, in the role of the master according to the master/slave relationship, for sending at least transmissions modulated using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method, wherein each transmission comprises a group of transmission sequences, wherein each group of transmission sequences is structured with at least a first portion and a payload portion wherein first information in the first portion indicates at least which of the first modulation method and the second modulation method is used for modulating second information in the payload portion, wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion, and wherein for the at least one group of transmission sequences:

the first information for said at least one group of transmission sequences comprises a first sequence, in the first portion and modulated according to the first modulation method, wherein the first sequence indicates an impending change from the first modulation method to the second modulation method, and

the second information for said at least one group of transmission sequences comprises a second sequence that is modulated according to the second modulation method, wherein the second sequence is transmitted after the first sequence.

2. The device of claim **1**, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.

3. The device of claim **1**, wherein the transceiver is configured to transmit the second sequence according to a specific time interval.

4. The device of claim **1**, wherein the transceiver is configured to transmit the second sequence according to a particular quantity of data.

5. The device of claim **1**, further comprising a processor and a memory, wherein the memory has stored therein instructions that when executed by the processor cause the transceiver to transmit the first sequence and the second sequence.

6. The device of claim **5**, wherein the memory comprises an erasable programmable read-only memory.

7. The device of claim **5**, wherein the memory has stored therein program code for the first modulation method and the second modulation method.

8. The device of claim **5**, wherein the memory comprises random access memory.

9. The device of claim **5**, wherein the memory comprises read-only memory.

10. The device of claim **5**, wherein the memory has stored therein program code for operating the transceiver in a multipoint master/slave relationship.

11. The device of claim **1**, wherein the first communication from the master to the slave is a poll in accordance with a multipoint communications relationship, wherein the poll indicates that the master has selected the slave for transmission.

12. The device of claim **1**, wherein the transceiver is configured to be the master.

13. The device of claim **1**, wherein the first information in the first portion indicates the first modulation method when the intended destination is a first type of receiver and indicates the second modulation when the intended destination is a second type of receiver.

14. The device of claim **13**, wherein the second type of receiver differs from the first type of receiver at least by the second type of receiver being designated for transmitting in the second modulation method.

15. The device of claim **13**, wherein the second type of receiver differs from the first type of receiver at least by the second type of receiver being operable to ignore transmissions intended for the first type of receiver.

16. The device of claim **15**, wherein the intended destination ignores transmissions in the second modulation when the intended destination is the first type of receiver.

17. The device of claim **15**, wherein the intended destination ignores transmissions in the first modulation when the intended destination is the second type of receiver.

18. The device of claim **15**, wherein the intended destination is the first type of receiver and unable to demodulate the second modulation method.

19. The device of claim **13**, wherein the transceiver is configured to receive data from the intended destination in the first modulation method when the intended destination is the first type of receiver.

20. The device a claim **13**, wherein the transceiver is configured to receive data from the intended destination in the second modulation method then the intended destination is the second type of receiver.

21. The device of claim **1**, the transceiver is configured to transmit a third sequence, according to the first modulation method, at a time after the second sequence is transmitted.

22. The device of claim **1**, wherein the transceiver transmits data modulated according to either the first modulation method or the second modulation method at any given point in time when the transceiver is transmitting.

23. A communications device, comprising:

a processor; and

a memory having stored therein executable instructions for execution by the processor, wherein the executable instructions direct transmission of a first data with a first modulation method followed by a second data with a second modulation method, wherein the first modulation method is different than the second modulation method, wherein the first data comprises an indication of an impending change from the first modulation method to the second modulation method, wherein the executable instructions direct transmission of a third data with the first modulation method after the second data, and wherein the third data indicates that communication has reverted to the first modulation method.

24. The device of claim **23**, wherein transmission of the second data is according to a specific time interval.

25. The device of claim **23**, further comprising a transmitter configured to transmit the first data and the second data.

26. The device of claim **23**, wherein the memory has stored therein program code for the first modulation method and the second modulation method.

27. The device of claim **23**, wherein the memory comprises random access memory.

28. The device of claim **23**, wherein the memory comprises read-only memory.

29. The device of claim **23**, wherein the memory has stored therein program code for a multipoint communications protocol.

30. The device of claim **23**, wherein transmission of the second data is according to a particular quantity of data.

31. The device of claim **23**, wherein the memory comprises an erasable programmable read-only memory.

32. A communications device, comprising:

a processor; and

a memory having stored therein executable instructions for execution by the processor, wherein the executable instructions direct transmission of a first data with a first modulation method followed by a second data with a second modulation method, wherein the first modulation method is different than the second modulation method, wherein the first data comprises an indication of an impending change from the first modulation method to the second modulation method wherein the executable instructions direct transmission of a third data with the first modulation method after the second data, and wherein transmission of the second data is according to a particular quantity of data.

33. The device of claim **32**, wherein transmission of the second data is according to a specific time interval.

34. The device of claim **32**, further comprising a transmitter configured to transmit the first data and the second data.

35. The device of claim **32**, wherein the memory has stored therein program code for the first modulation method and the second modulation method.

36. The device of claim **32**, wherein the memory comprises random access memory.

37. The device of claim **32**, wherein the memory comprises read-only memory.

38. The device of claim **32**, wherein the memory has stored therein program code for a multipoint communications protocol.

39. The device of claim **32**, wherein the memory comprises an . erasable programmable read-only memory.

40. A device that transmits in accordance with a first modulation method and a second modulation method that is different than the first modulation method, said device comprising;

at least one modulator;

a transceiver that includes the at least one modulator, wherein the transceiver is configured to transmit:

a first sequence, modulated in accordance with the first modulation method, that indicates an impending change from the first modulation method to the second modulation method, and

a second sequence, in accordance with the second modulation method, that is transmitted at a time after the first sequence.

41. The device of claim **40**, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in accordance with the first modulation method and indicates that a subsequent communication has reverted to the first modulation method.

42. The device of claim **40**, wherein the transceiver is configured to transmit the second sequence according to a specific time interval.

43. The device of claim **40**, wherein the transceiver is configured to transmit the second sequence according to a particular quantity of data.

44. The device of claim **40**, further comprising a processor and a memory, wherein the memory has stored therein instructions that when executed by the processor cause the transmitter to transmit this first sequence and the second sequence.

45. The device of claim **44**, wherein the memory comprises random access memory.

46. The device of claim **44**, wherein the memory comprises read-only memory.

47. The device of claim **44**, wherein the memory has stored therein program code for a multipoint communications protocol.

48. The device of claim **44**, wherein the memory comprises an erasable programmable read-only memory.

49. A computer-readable storage medium having computer executable instructions stored therein that when executed by a processor control a master transceiver, said computer executable instructions, comprising:

first logic configured to transmit first information in a first modulation method for communication;

second logic configured to transmit a first sequence to notify of a change from said first modulation method to a second modulation method;

third logic configured to transmit second information in said second modulation method; and

fourth logic configured to transmit a second sequence after the second information is transmitted, wherein the second sequence is transmitted in the first modulation method and indicates that communication has reverted to the first modulation method.

50. The computer-readable storage medium of claim **49**, wherein the first transceiver is configured to transmit the second sequence according to a specific time interval.

51. The computer-readable storage medium of claim **49**, further comprising program code for the first modulation method and the second modulation method.

52. The computer-readable storage medium of claim **49**, further comprising program code for a multipoint communications protocol.

53. The computer-readable storage medium of claim **49**, wherein the first transceiver is configured to transmit the second sequence according to a particular quantity of data.

54. A computer-readable storage medium having computer executable instructions stored therein that when executed by a processor control a master transceiver, said computer executable instructions, comprising:

first logic configured to transmit first information in a first modulation method for communication;

second logic configured to transmit a first sequence to notify of a change from said first modulation method to a second modulation method;

third logic configured to transmit second information in said second modulation method; and

fourth logic configured to transmit a second sequence after the second information is transmitted, wherein the fourth logic is configured to transmit the second sequence according to a particular quantity of data.

55. The computer-readable storage medium of claim **54**, wherein the first transceiver is configured to transmit the second sequence according to a specific time interval.

56. The computer-readable storage medium of claim **54**, further comprising program code for the first modulation method and the second modulation method.

57. The computer-readable storage medium of claim **54**, further comprising program code for a multipoint communications protocol.

58. A communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave, the device comprising:

a transceiver, in the role of the master according to the master/slave relationship, capable of transmitting using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method, and wherein the transceiver is configured to transmit messages with:

a first sequence, in the first modulation method, that indicates at least which of the first modulation method and the second modulation method is used for modulating a second sequence, wherein, in at least one message, the first sequence indicates an impending change from the first modulation method to the second modulation method, and wherein the at least one message is addressed for an intended destination of the second sequence, and

the second sequence, modulated in accordance with the modulation method indicated by the first sequence and, in the at least one message, modulated using the second modulation method, wherein the second sequence is transmitted after the first sequence.

59. The device of claim **58**, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.

60. The device of claim **58**, wherein the transceiver is configured to transmit the second sequence according to a specific time interval.

61. The device of claim **58**, wherein the transceiver is configured to transmit the second sequence according to a particular quantity of data.

62. The device of claim **58**, further comprising a processor and a memory, wherein the memory has stored therein instructions that when executed by the processor cause the transceiver to transmit the first sequence and the second sequence.

63. The device of claim **62**, wherein the memory has stored therein program code for the first modulation method and the second modulation method.

64. The device of claim **62**, wherein the memory comprises random access memory.

65. The device of claim **62**, wherein the memory comprises read-only memory.

66. The device of claim **62**, wherein the memory has stored therein program code for operating the transceiver in a multipoint master/slave relationship.

67. The device of claim **62**, wherein the memory comprises an erasable programmable read-only memory.

68. The device of claim **58**, wherein the first communication from the master to the slave is a poll in accordance with a multipoint communications relationship, wherein the poll indicates that the master has selected the slave for transmission.

69. The device of claim **58**, wherein the transceiver is configured to be the master.

70. The device of claim **58**, wherein the first information in the first portion indicates the first modulation method when the intended destination is a first type of receiver and indicates the second modulation when the intended destination is a second type of receiver.

71. The device of claim **70**, wherein the second type of receiver differs from the first type of receiver at least by the second type of receiver being designated for transmitting in the second modulation method.

72. The device of claim **70**, wherein the second type of receiver differs from the first type of receiver at least by the second type of receiver being operable to ignore transmissions intended for the first type of receiver.

73. The device of claim **72**, wherein the intended destination ignores transmissions in the second modulation when the intended destination is the first of receiver.

74. The device of claim **72**, wherein the intended destination ignores transmissions in the first modulation when the intended destination is the second type of receiver.

75. The device of claim **72**, wherein the intended destination is the first type of receiver and unable to demodulate the second modulation method.

76. The device of claim **70**, wherein the transceiver is configured to receive data from the intended destination in the first modulation method when the intended destination is the first type of receiver.

77. The device of claim **70**, wherein the transceiver is configured to receive data from the intended destination in the second modulation method when the intended destination is the second type of receiver.

78. The device of claim **58**, the transceiver is configured to transmit a third sequence, according to the first modulation method, at a time after the second sequence is transmitted.

79. The device of claim **58**, wherein the transceiver transmits data modulated according to either the first modulation method or the second modulation method at any given point in time when the transceiver is transmitting.

* * * * *

Exhibit D

US005982807A

United States Patent [19]

Snell

[11] **Patent Number: 5,982,807**

[45] **Date of Patent: Nov. 9, 1999**

[54] **HIGH DATA RATE SPREAD SPECTRUM TRANSCEIVER AND ASSOCIATED METHODS**

[75] Inventor: **James Leroy Snell**, Palm Bay, Fla.

[73] Assignee: **Harris Corporation**, Palm Bay, Fla.

[21] Appl. No.: **08/819,846**

[22] Filed: **Mar. 17, 1997**

[51] **Int. Cl.**[6] **H04B 15/00**

[52] **U.S. Cl.** **375/200**; 375/205; 375/206; 375/208; 375/209

[58] **Field of Search** 375/200, 205, 375/206, 208, 209, 210, 279, 280

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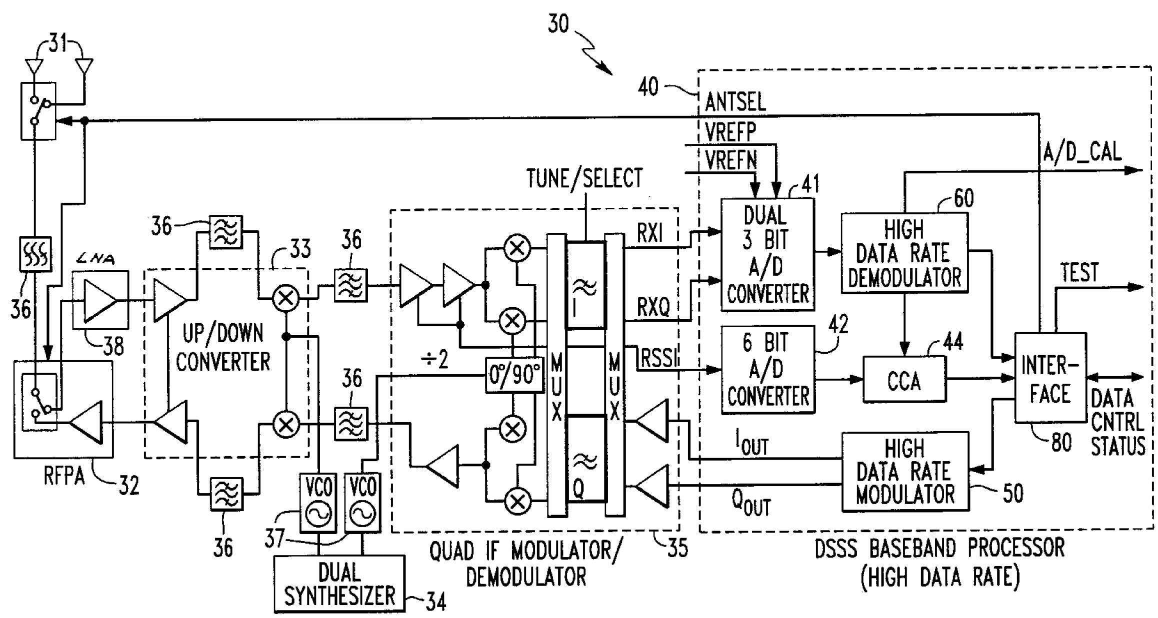
Primary Examiner—Stephen Chin
Assistant Examiner—Mohammad Ghaydur
Attorney, Agent, or Firm—Allen, Dyer, Doppelt, Milbrath & Gilchrist, P.A.

[57] **ABSTRACT**

A spread spectrum radio transceiver includes a high data rate baseband processor and a radio circuit connected thereto. The baseband processor preferably includes a modulator for spread spectrum phase shift keying (PSK) modulating information for transmission via the radio circuit. The modulator may include at least one modified Walsh code function encoder for encoding information according to a modified Walsh code for substantially reducing an average DC signal component to thereby enhance overall system performance when AC-coupling the received signal through at least one analog-to-digital converter to the demodulator. The demodulator is for spread spectrum PSK demodulating information received from the radio circuit. The modulator and demodulator are each preferably operable in one of a bi-phase PSK (BPSK) mode at a first data rate and a quadrature PSK (QPSK) mode at a second data rate. These formats may also be switched on-the-fly in the demodulator. Method aspects are also disclosed.

61 Claims, 8 Drawing Sheets



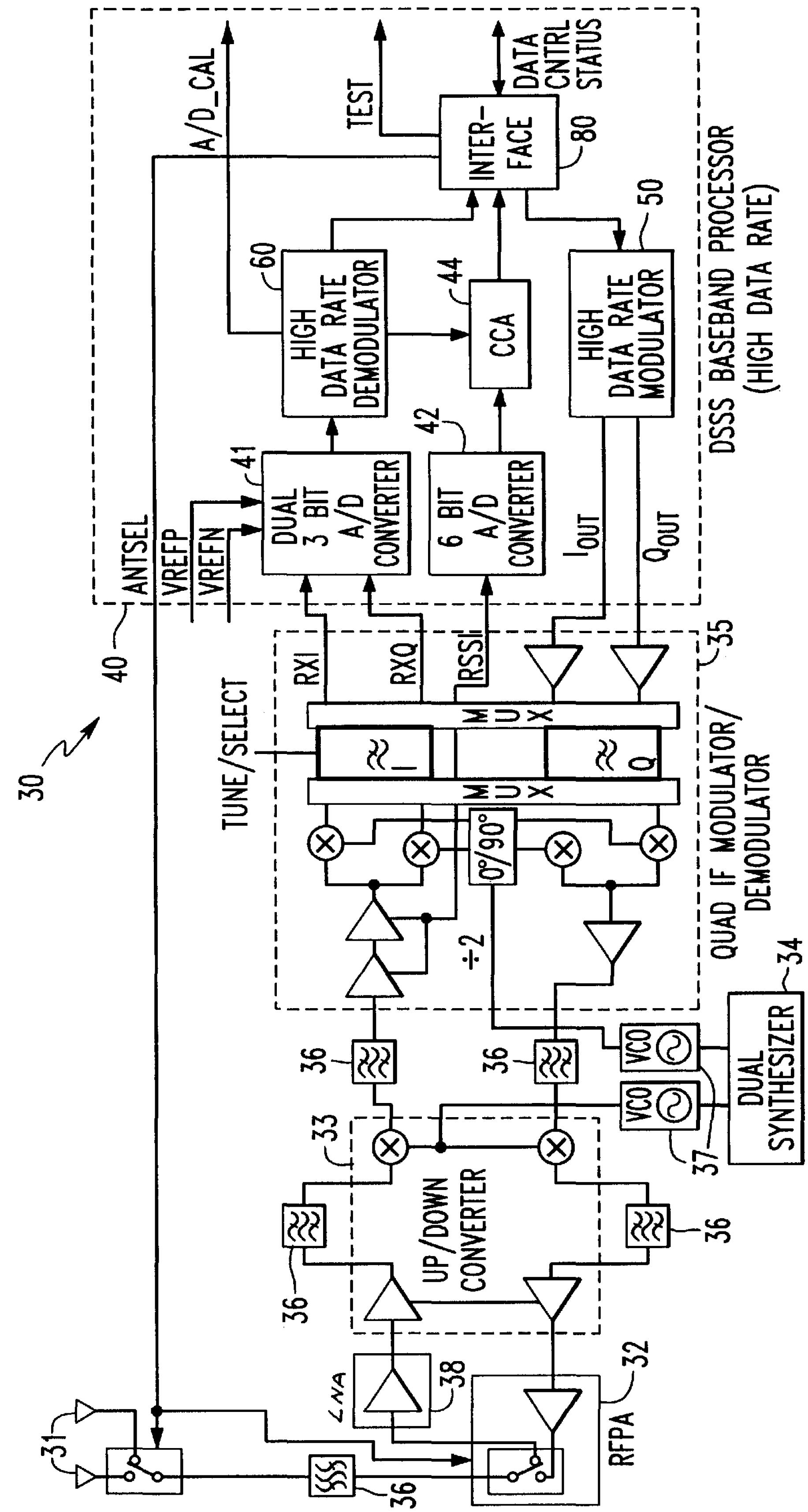

30
40
A/D_CAL
TEST
DATA
CNTRL
STATUS
INTER-FACE
80
HIGH DATA RATE DEMODULATOR
60
CCA
44
HIGH DATA RATE MODULATOR
50
DSSS BASEBAND PROCESSOR (HIGH DATA RATE)
ANTSEL
VREFP
VREFN
DUAL 3 BIT A/D CONVERTER
41
6 BIT A/D CONVERTER
42
I_{OUT}
Q_{OUT}
RXI
RXQ
RSSI
35
TUNE/SELECT
MUX
I
Q
0°/90°
÷2
QUAD IF MODULATOR/ DEMODULATOR
34
DUAL SYNTHESIZER
VCO
VCO
37
36
33
UP/DOWN CONVERTER
LNA
38
RFPA
32
31

FIG. 1

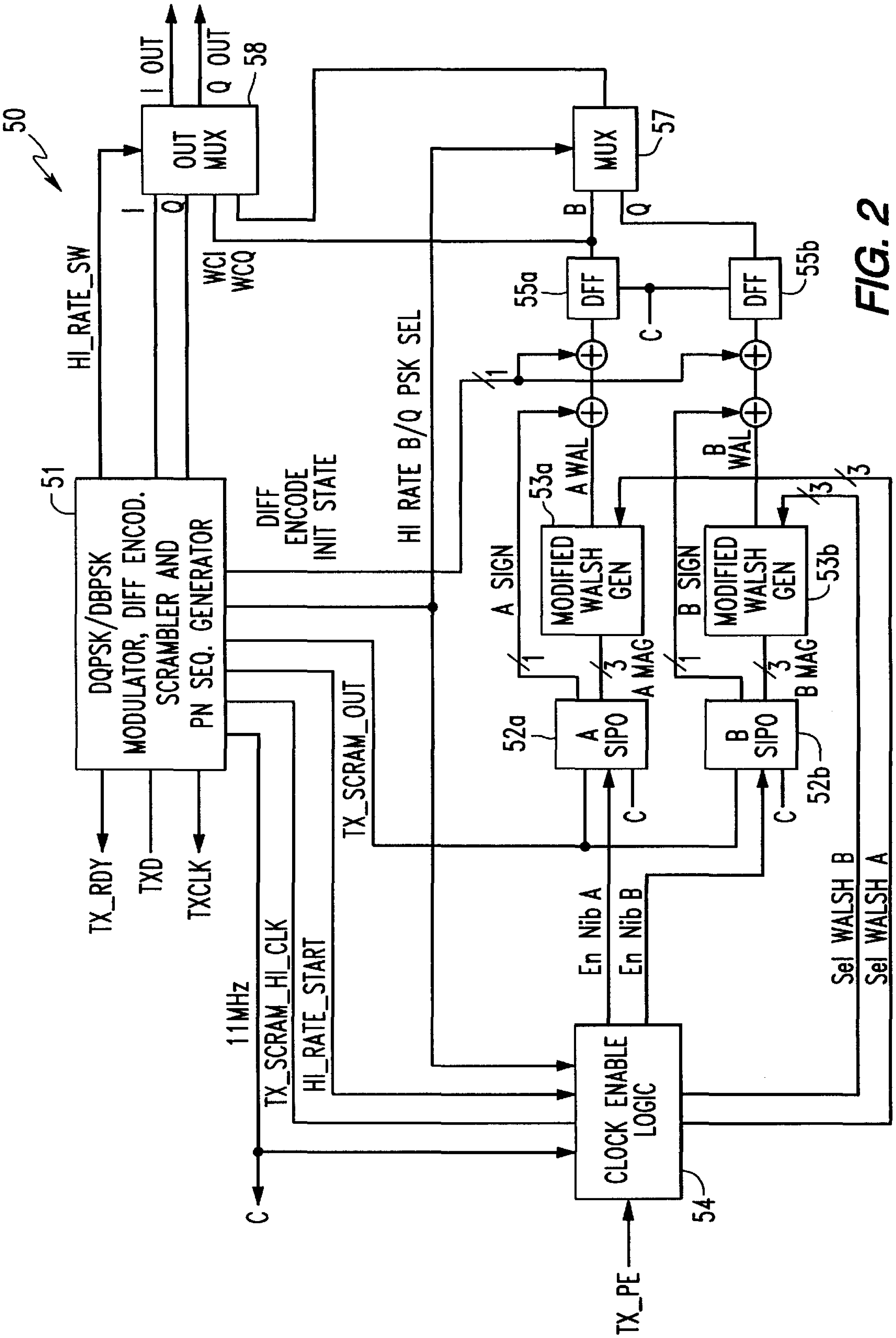

50
51
DQPSK/DBPSK MODULATOR, DIFF ENCOD. SCRAMBLER AND PN SEQ. GENERATOR
TX_RDY
TXD
TXCLK
HI_RATE_SW
I
Q
WCI
WCQ
OUT MUX
58
I OUT
Q OUT
DIFF ENCODE INIT STATE
HI RATE B/Q PSK SEL
TX_SCRAM_OUT
11MHz
TX_SCRAM_HI_CLK
HI_RATE_START
C
52a
A SIPO
52b
B SIPO
A SIGN
A MAG
B SIGN
B MAG
53a
53b
MODIFIED WALSH GEN
A WAL
B WAL
55a
55b
DFF
MUX
57
B
Q
En Nib A
En Nib B
Sel WALSH B
Sel WALSH A
CLOCK ENABLE LOGIC
54
TX_PE

FIG. 2

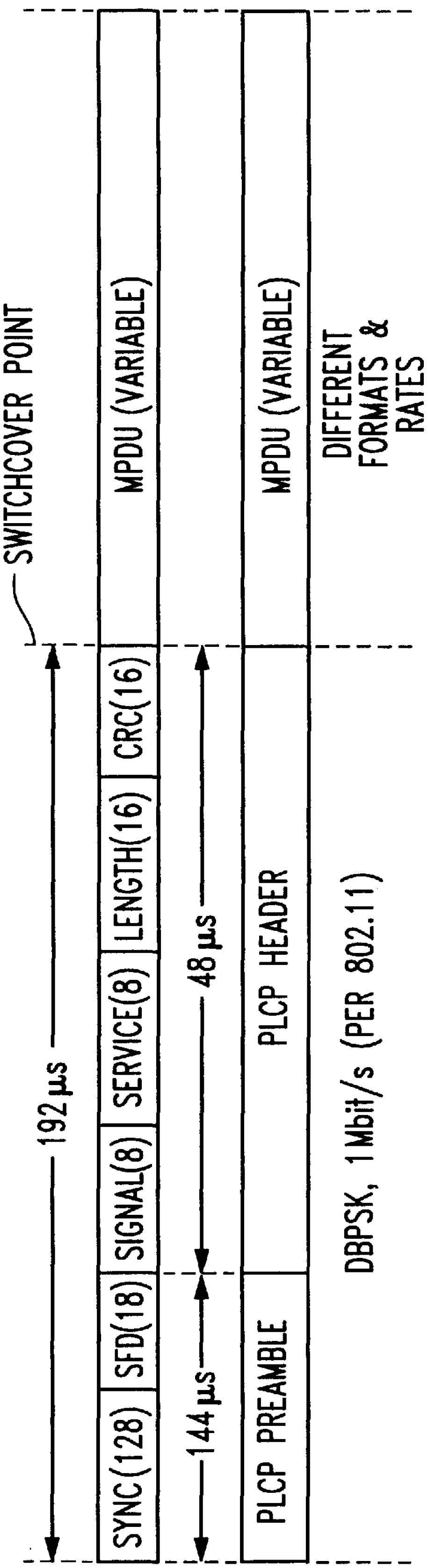

SWITCHCOVER POINT
192 μs
SYNC(128)
SFD(18)
SIGNAL(8)
SERVICE(8)
LENGTH(16)
CRC(16)
MPDU (VARIABLE)
144 μs
48 μs
PLCP PREAMBLE
PLCP HEADER
MPDU (VARIABLE)
DBPSK, 1Mbit/s (PER 802.11)
DIFFERENT FORMATS & RATES

FIG. 3

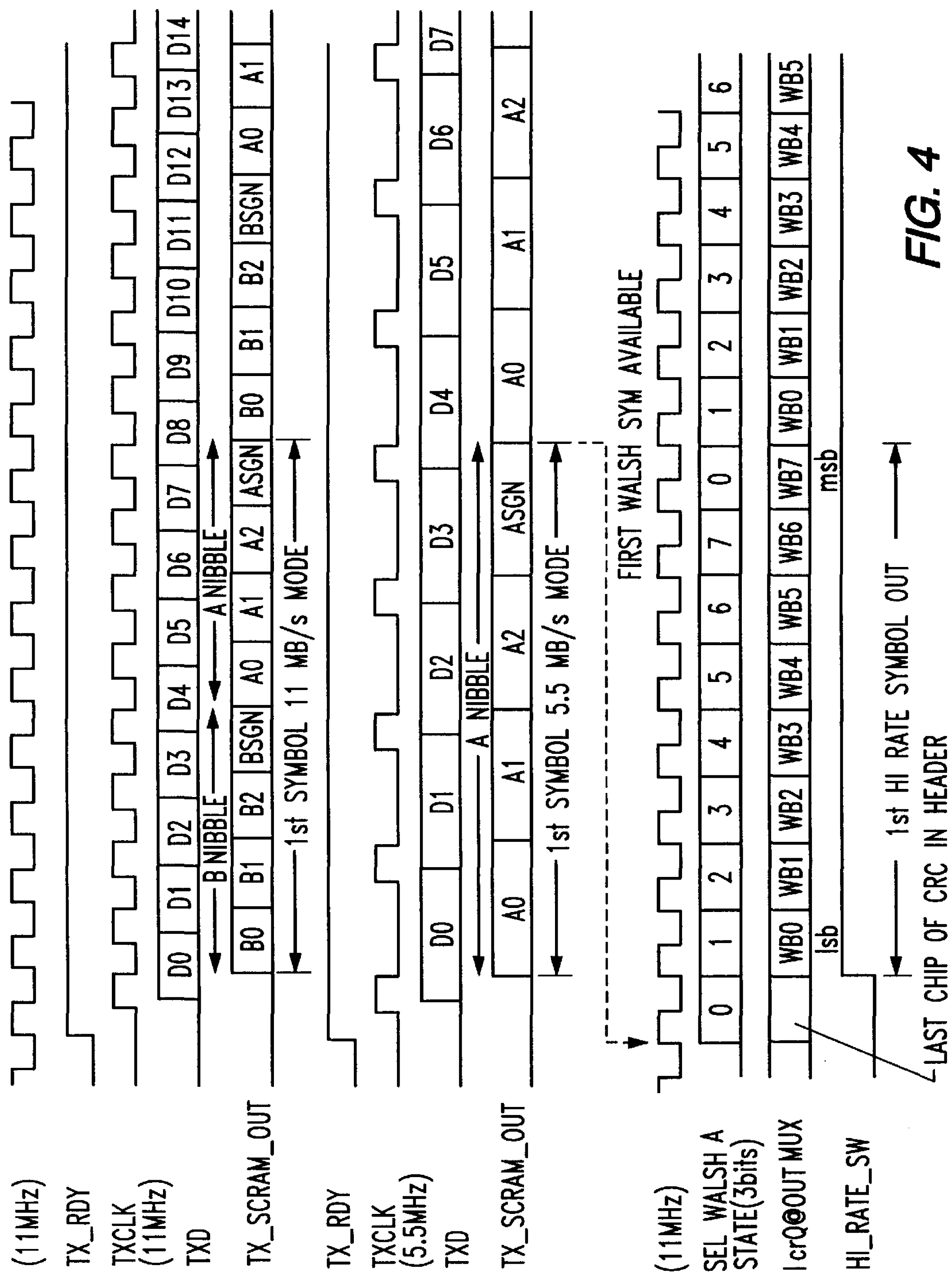

(11MHz)
TX_RDY
TXCLK (11MHz)
TXD
TX_SCRAM_OUT
TX_RDY
TXCLK (5.5MHz)
TXD
TX_SCRAM_OUT
(11MHz)
SEL_WALSH A STATE(3bits)
IcrQ@OUT MUX
HI_RATE_SW
B NIBBLE
A NIBBLE
1st SYMBOL 11 MB/s MODE
1st SYMBOL 5.5 MB/s MODE
FIRST WALSH SYM AVAILABLE
lsb
msb
LAST CHIP OF CRC IN HEADER
1st HI RATE SYMBOL OUT

FIG. 4

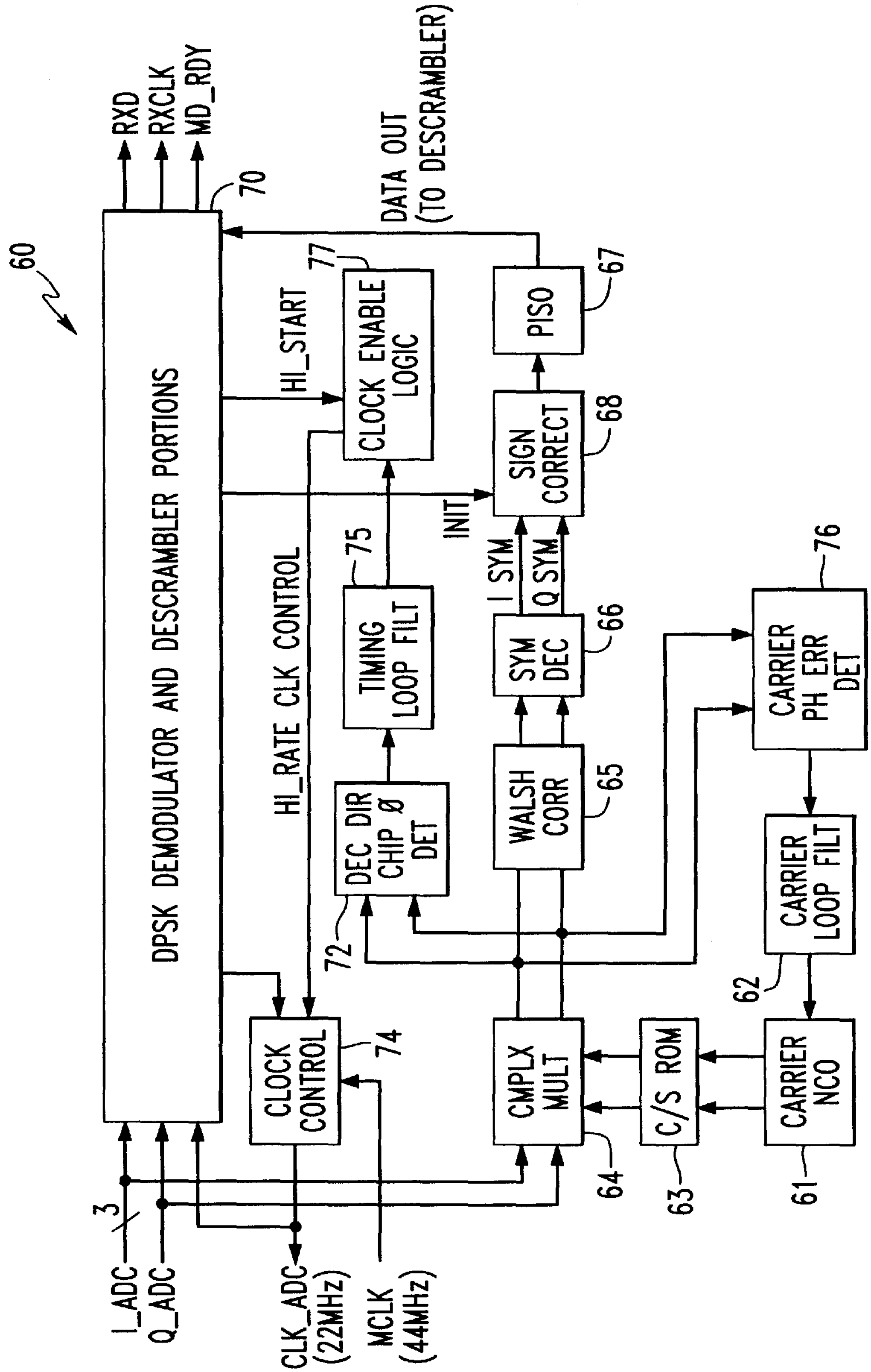

60
DPSK DEMODULATOR AND DESCRAMBLER PORTIONS
70
RXD
RXCLK
MD_RDY
DATA OUT
(TO DESCRAMBLER)
HI_START
CLOCK ENABLE LOGIC
77
PISO
67
SIGN CORRECT
68
INIT
I SYM
Q SYM
HI_RATE CLK CONTROL
TIMING LOOP FILT
75
SYM DEC
66
CARRIER PH ERR DET
76
DEC DIR CHIP Ø DET
72
WALSH CORR
65
CARRIER LOOP FILT
62
CLOCK CONTROL
74
CMPLX MULT
64
C/S ROM
63
CARRIER NCO
61
3
I_ADC
Q_ADC
CLK_ADC
(22MHz)
MCLK
(44MHz)

FIG. 5

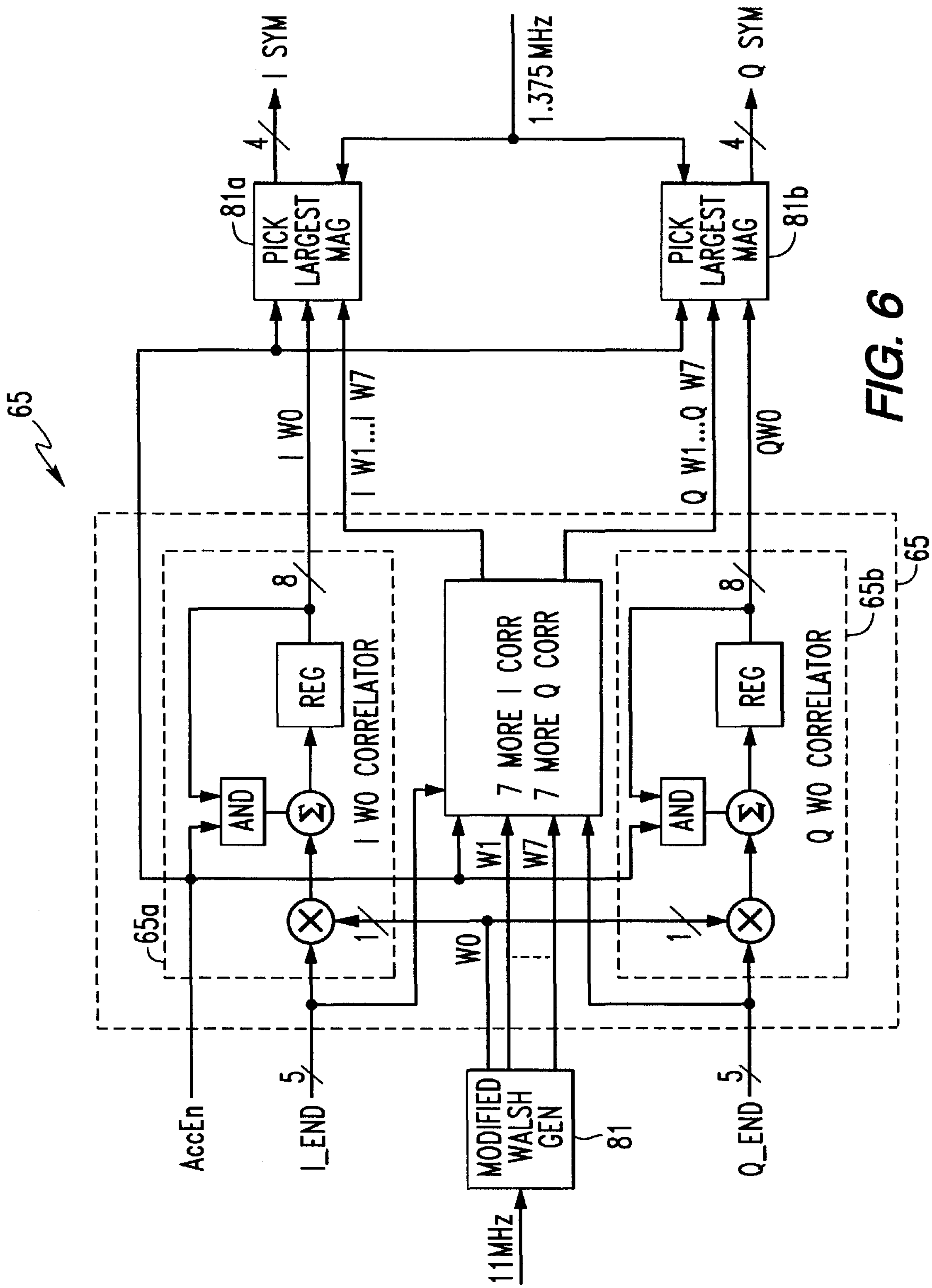

65
I SYM
1.375 MHz
Q SYM
81a
PICK LARGEST MAG
PICK LARGEST MAG
81b
I W0
I W1...I W7
Q W1...Q W7
QW0
REG
I W0 CORRELATOR
AND
7 MORE I CORR
7 MORE Q CORR
W1
W7
W0
REG
Q W0 CORRELATOR
AND
65a
65b
65
AccEn
I_END
MODIFIED WALSH GEN
81
Q_END
11MHz

FIG. 6

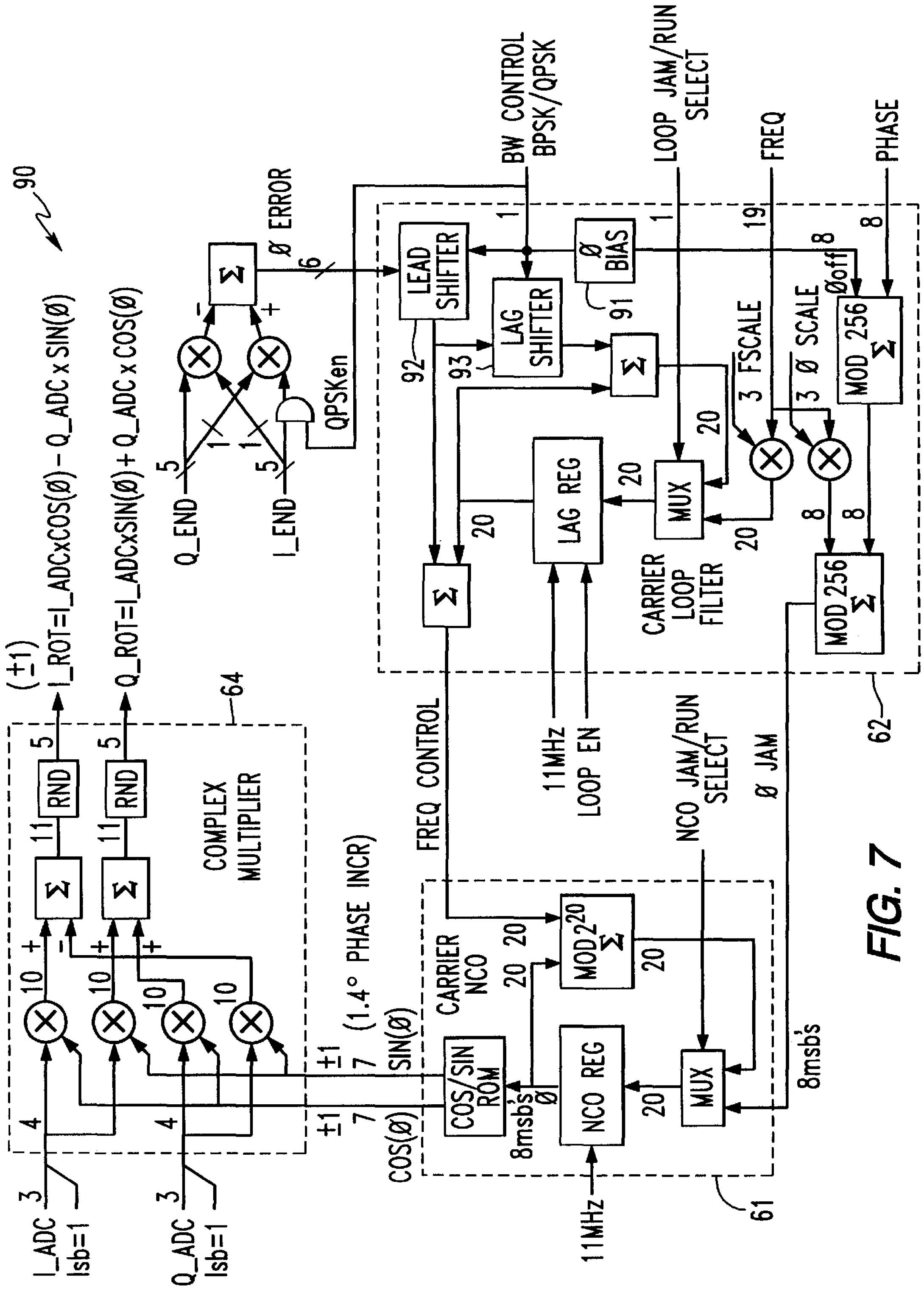

90
I_ROT=I_ADCxCOS(Ø) − Q_ADC x SIN(Ø)
(±1)
Q_ROT=I_ADCxSIN(Ø) + Q_ADC x COS(Ø)
Ø ERROR
BW CONTROL
BPSK/QPSK
LOOP JAM/RUN
SELECT
FREQ
PHASE
LEAD
SHIFTER
LAG
SHIFTER
Ø
BIAS
Øoff
MOD 256
Σ
FSCALE
Ø SCALE
QPSKen
Q_END
I_END
LAG REG
MUX
CARRIER
LOOP
FILTER
92
93
91
62
64
RND
COMPLEX
MULTIPLIER
FREQ CONTROL
11MHz
LOOP EN
NCO JAM/RUN
SELECT
Ø JAM
(1.4° PHASE INCR)
CARRIER
NCO
MOD2^20
Σ
COS/SIN
ROM
NCO REG
SIN(Ø)
COS(Ø)
8msb's
I_ADC
lsb=1
Q_ADC
lsb=1
11MHz
61

FIG. 7

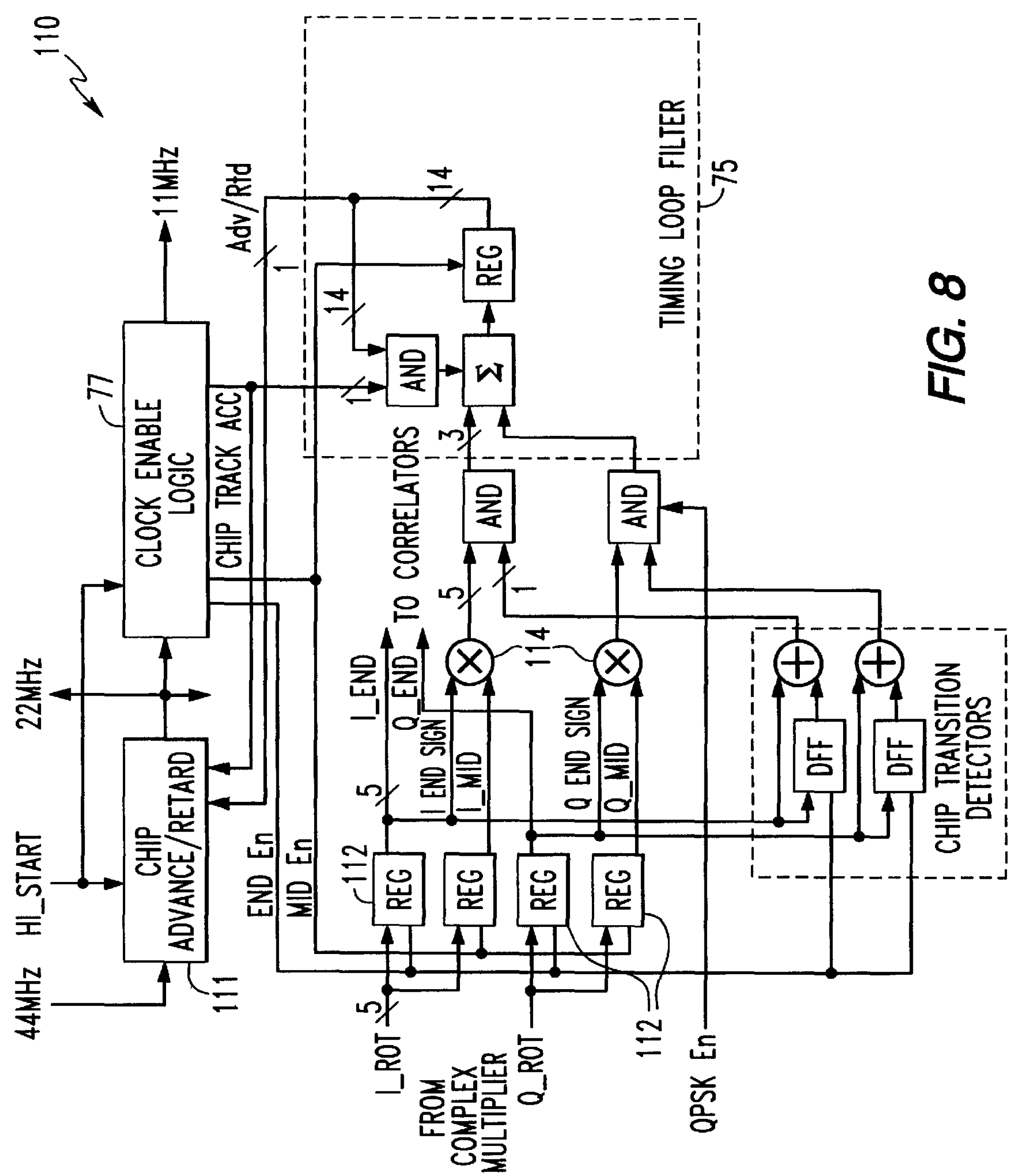

110
CLOCK ENABLE LOGIC
77
11MHz
Adv/Rtd
CHIP TRACK ACC
AND
Σ
REG
TIMING LOOP FILTER
75
14
1
3
5
44MHz
HI_START
22MHz
CHIP ADVANCE/RETARD
111
END En
MID En
REG
112
I_ROT
FROM COMPLEX MULTIPLIER
Q_ROT
I_END
Q_END
TO CORRELATORS
I END SIGN
I_MID
Q END SIGN
Q_MID
114
DFF
CHIP TRANSITION DETECTORS
QPSK En

FIG. 8

HIGH DATA RATE SPREAD SPECTRUM TRANSCEIVER AND ASSOCIATED METHODS

FIELD OF THE INVENTION

The invention relates to the field of communication electronics, and, more particularly, to a spread spectrum transceiver and associated methods.

BACKGROUND OF THE INVENTION

Wireless or radio communication between separated electronic devices is widely used. For example, a wireless local area network (WLAN) is a flexible data communication system that may be an extension to, or an alternative for, a wired LAN within a building or campus. A WLAN uses radio technology to transmit and receive data over the air, thereby reducing or minimizing the need for wired connections. Accordingly, a WLAN combines data connectivity with user mobility, and, through simplified configurations, also permits a movable LAN.

Over the past several years, WLANs have gained acceptance among a number users including, for example, healthcare, retail, manufacturing, warehousing, and academic areas. These groups have benefited from the productivity gains of using hand-held terminals and notebook computers, for example, to transmit real-time information to centralized hosts for processing. Today WLANs are becoming more widely recognized and used as a general purpose connectivity alternative for an even broader range of users. In addition, a WLAN provides installation flexibility and permits a computer network to be used in situations where wireline technology is not practical.

In a typical WLAN, an access point provided by a transceiver, that is, a combination transmitter and receiver, connects to the wired network from a fixed location. Accordingly, the access transceiver receives, buffers, and transmits data between the WLAN and the wired network. A single access transceiver can support a small group of collocated users within a range of less than about one hundred to several hundred feet. The end users connect to the WLAN through transceivers which are typically implemented as PC cards in a notebook computer, or ISA or PCI cards for desktop computers. Of course the transceiver may be integrated with any device, such as a hand-held computer.

The assignee of the present invention has developed and manufactured a set of integrated circuits for a WLAN under the mark PRISM 1 which is compatible with the proposed IEEE 802.11 standard. The PRISM 1 chip set is further described in Harris Corporation Application Note entitled "Harris PRISM Chip Set", No. AN9614, March 1996; and also in a publication entitled "PRISM 2.4 GHz Chip Set", file no. 4063.4, October 1996.

The PRISM 1 chip set provides all the functions necessary for full or half duplex, direct sequence spread spectrum, packet communications at the 2.4 to 2.5 GHz ISM radio band. In particular, the HSP3824 baseband processor manufactured by Harris Corporation employs quadrature or bi-phase phase shift keying (QPSK or BPSK) modulation schemes. While the PRISM 1 chip set is operable at 2 Mbit/s for BPSK and 4 Mbit/s for QPSK, these data rates may not be sufficient for higher data rate applications.

Spread spectrum communications have been used for various applications, such as cellular telephone communications, to provide robustness to jamming, good interference and multi-path rejection, and inherently secure communications from eavesdroppers, as described, for example, in U.S. Pat. No. 5,515,396 to Dalekotzin. The patent discloses a code division multiple access (CDMA) cellular communication system using four Walsh spreading codes to allow transmission of a higher information rate without a substantial duplication of transmitter hardware. U.S. Pat. No. 5,535,239 to Padovani et al., U.S. Pat. No. 5,416,797 to Gilhousen et al., U.S. Pat. No. 5,309,474 to Gilhousen et al., and U.S. Pat. No. 5,103,459 to Gilhousen et al. also disclose a CDMA spread spectrum cellular telephone communications system using Walsh function spreading codes.

Unfortunately, the conventional Walsh function spreading codes may create undesirable signal components for some applications. Moreover, a WLAN application, for example, may require a change between BPSK and QPSK during operation, that is, on-the-fly. Spreading codes may be difficult to use in such an application where an on-the-fly change is required.

SUMMARY OF THE INVENTION

In view of the foregoing background, it is therefore an object of the present invention to provide a spread spectrum transceiver and associated method permitting operation at higher data rates than conventional transceivers.

It is another object of the invention to provide a spread spectrum transceiver and associated method to permit operation at higher data rates and which may switch on-the-fly between different data rates and/or formats.

These and other objects, features and advantages in accordance with the invention are provided by a spread spectrum radio transceiver comprising a high data rate baseband processor and a radio circuit connected thereto. The baseband processor preferably includes a modulator for spread spectrum phase shift keying (PSK) modulating information for transmission via the radio circuit, and wherein the modulator, in one embodiment, comprises at least one modified Walsh code function encoder for encoding information according to a modified Walsh code. The baseband processor also preferably further comprises a demodulator for spread spectrum PSK demodulating information received from the radio circuit. The demodulator is preferably connected to the output of at least one analog-to-digital (A/D) converter, which, in turn, is AC-coupled to the associated receive portions of the radio circuit. Accordingly, the demodulator preferably comprises at least one modified Walsh code function correlator for decoding information according to the modified Walsh code. The modified Walsh code substantially reduces an average DC component which in combination with the AC-coupling to the at least one A/D converter thereby increases overall system performance. Other orthogonal and bi-orthogonal coding schemes may also be used, wherein the average DC component is preferably substantially reduced or avoided.

The modulator preferably comprises means for operating in one of a bi-phase PSK (BPSK) modulation mode at a first data rate defining a first format, and a quadrature PSK (QPSK) mode at a second data rate defining a second format. In addition, the demodulator preferably comprises means for operating in one of the first and second formats. The modulator may also preferably include header modulator means for modulating data packets to include a header at a predetermined modulation and a third data rate defining a third format, and for modulating variable data at one of the first and second formats. Accordingly, the demodulator thus preferably includes header demodulator means for demodulating data packets by demodulating the header at the third format and for switching to either the first and second formats of the variable data after the header. The third format is preferably differential BPSK, and the third data rate is preferably lower than the first and second data rates.

The demodulator may preferably comprise first and second carrier tracking loops—the first carrier tracking loop for the third format, and the second carrier tracking loop for the first and second formats. The second carrier tracking loop, in turn, may comprise a carrier numerically controlled oscillator (NCO), and NCO control means for selectively operating the carrier NCO based upon a carrier phase of the first carrier tracking loop to thereby facilitate switching to the format of the variable data. The second carrier tracking loop may also comprise a carrier loop filter, and carrier loop filter control means for selectively operating the carrier loop filter based upon a frequency of the first carrier tracking loop to facilitate switching to the format of the variable data. The carrier tracking loops permit switching to the desired format after the header and on-the-fly.

The at least one modified Walsh code function correlator of the demodulator preferably comprises a modified Walsh function generator, and a plurality of parallel connected correlators connected to the modified Walsh function generator. The modified Walsh code may be a Walsh code modified by a modulo two addition of a fixed hexadecimal code thereto. In addition, the modulator in one embodiment preferably further comprises means for partitioning data into four bit nibbles of sign (one bit) and magnitude (three bits) to the modified Walsh code function encoder.

The modulator may also include spreading means for spreading each data bit using a pseudorandom (PN) sequence at a predetermined chip rate. Accordingly, the modulator may also comprise preamble modulating means for generating a preamble, and wherein the demodulator includes preamble demodulator means for demodulating the preamble for achieving initial PN sequence synchronization.

The modulator for the spread spectrum transceiver may include a scrambler, and the demodulator accordingly preferably includes a descrambler. The demodulator may also include clear channel assessing means for generating a clear channel assessment signal to facilitate communications only when the channel is clear.

The baseband processor is desirably coupled to a radio circuit for the complete spread spectrum transceiver. Accordingly, the transceiver preferably includes a quadrature intermediate frequency modulator/demodulator connected to the baseband processor, and an up/down frequency converter connected to the quadrature intermediate frequency modulator/demodulator. In addition, the radio circuit preferably further comprises a low noise amplifier having an output connected to an input of the up/down converter, and a radio frequency power amplifier having an input connected to an output of the up/down converter. The spread spectrum radio transceiver preferably also includes an antenna, and an antenna switch for switching the antenna between the output of the radio frequency power amplifier and the input of the low noise amplifier.

A method aspect of the invention is for baseband processing for spread spectrum radio communication. The method preferably comprises the steps of: spread spectrum phase shift keying (PSK) modulating information for transmission by encoding information according to a predetermined bi-orthogonal code for reducing an average DC signal component; and spread spectrum PSK demodulating received information by decoding information according to the predetermined bi-orthogonal code. The predetermined bi-orthogonal code is preferably a modified Walsh function code.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic circuit diagram of a transceiver in accordance with the present invention.

FIG. **2** is a schematic circuit diagram of a modulator portion of the high data rate baseband processor in accordance with the present invention.

FIG. **3** is a timing diagram of signals generated by the present invention.

FIG. **4** is a timing diagram of additional signals generated by the present invention.

FIG. **5** is a schematic circuit diagram of a demodulator portion of the high data rate baseband processor in accordance with the present invention.

FIG. **6** is a schematic circuit diagram of the correlator portion of the demodulator of the high data rate baseband processor in accordance with the present invention.

FIG. **7** is a schematic circuit diagram of additional portions of the demodulator of the high data rate baseband processor in accordance with the present invention.

FIG. **8** is a schematic circuit diagram of further portions of the demodulator of the high data rate baseband processor in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

Referring to FIG. **1**, a wireless transceiver **30** in accordance with the invention is first described. The transceiver **30** may be readily used for WLAN applications in the 2.4 GHz ISM band in accordance with the proposed IEEE 802.11 standard. Those of skill in the art will readily recognize other applications for the transceiver **30** as well. The transceiver **30** includes the selectable antennas **31** coupled to the radio power amplifier and TX/RX switch **32** as may be provided by a Harris part number HFA3925. As would be readily understood by those skilled in the art, multiple antennas may be provided for space diversity reception.

A low noise amplifier **38**, as may be provided by Harris part number HFA3424, is also operatively connected to the antennas. The illustrated up/down converter **33** is connected to both the low noise amplifier **38** and the RF power amplifier and TX/RX switch **32** as would be readily understood by those skilled in the art. The up/down converter **33** may be provided by a Harris part number HFA3624, for example. The up/down converter **33**, in turn, is connected to the illustrated dual frequency synthesizer **34** and the quad IF modulator/demodulator **35**. The dual synthesizer **34** may be a Harris part number HFA3524 and the quad IF modulator **35** may be a Harris part number HFA3724. All the components described so far are included in a 2.4 GHz direct sequence spread spectrum wireless transceiver chip set manufactured by Harris Corporation under the designation PRISM 1. Various filters **36**, and the illustrated voltage controlled oscillators **37** may also be provided as would be readily understood by those skilled in the art and as further described in the Harris PRISM 1 chip set literature, such as the application note No. AN9614, March 1996, the entire disclosure of which is incorporated herein by reference.

Turning now more particularly to the right hand side of FIG. **1**, the high data rate direct sequence spread spectrum (DSS) baseband processor **40** in accordance with the present invention is now described. The conventional Harris PRISM 1 chip set includes a low data rate DSS baseband processor available under the designation HSP3824. This prior baseband processor is described in detail in a publication entitled "Direct Sequence Spread Spectrum Baseband Processor, March 1996, file number 4064.4, and the entire disclosure of which is incorporated herein by reference.

Like the HSP3824 baseband processor, the high data rate baseband processor **40** of the invention contains all of the functions necessary for a full or half duplex packet baseband transceiver. The processor **40** has on-board dual 3-bit A/D converters **41** for receiving the receive I and Q signals from the quad IF modulator **35**. Also like the HSP3824, the high data rate processor **40** includes a receive signal strength indicator (RSSI) monitoring function with the on-board 6-bit A/D converter and CCA circuit block **44** provides a clear channel assessment (CCA) to avoid data collisions and optimize network throughput as would be readily understood by those skilled in the art.

The present invention provides an extension of the PRISM 1 product from 1 Mbit/s BPSK and 2 Mbit/s QPSK to 5.5 Mbit/s BPSK and 11 Mbit/s QPSK. This is accomplished by keeping the chip rate constant at 11 Mchip/s. This allows the same RF circuits to be used for higher data rates. The symbol rate of the high rate mode is 11 MHz/8=1.375 Msymbol/s.

For the 5.5 Mbit/s mode of the present invention, the bits are scrambled and then encoded from 4 bit nibbles to 8 chip modified Walsh functions. This mapping results in bi-orthogonal codes which have a better bit error rate (BER) performance than BPSK alone. The resulting 11 Mchip/s data stream is BPSK modulated. The demodulator comprises a modified Walsh correlator and associated chip tracking, carrier tracking, and reformatting devices as described in greater detail below.

For the 11 Mbit/s mode, the bits are scrambled and then encoded from 4 bit nibbles to 8 chip modified Walsh functions independently on each I and Q rail. There are 8 information bits per symbol mapped to 2 modified Walsh functions. This mapping results in bi-orthogonal codes which have better BER performance than QPSK alone. The resulting two 11 Mchip/s data streams are QPSK modulated.

The theoretical BER performance of this type of modulation is approximately 10^{-5} at an Eb/No of 8 dB versus 9.6 dB for plain BPSK or QPSK. This coding gain is due to the bi-orthogonal coding. There is bandwidth expansion for all of the modulations to help combat multi-path and reduce the effects of interference.

Referring additionally to FIG. **2**, the output of the QPSK/BPSK modulator and scrambler circuit **51** is partitioned into nibbles of Sign-Magnitude of 4 bits, with the least significant bit (LSB) first. For QPSK, 2 nibbles are presented in parallel to the Modified Walsh Generators **53***a*, **53***b*—the first nibble from the B serial-in/parallel-out SIPO circuit block **52***b* and the second from A SIPO **52***a*. The two nibbles form a symbol of data. The bit rate may be 11 Mbit/s as illustrated. Therefore, the symbol rate is 1.375 Mbit/s (11/8=1.375). For BPSK, nibbles are presented from the A SIPO **52***a* only. The B SIPO **52***b* is disabled. A nibble forms a symbol of data. The bit rate in this instance is 5.5 Mbit/s and the symbol rate remains 1.375 Mbit/s (5.5/4=1.375).

The Magnitude part of the SIPO output points to one of the Modified Walsh Sequences shown in the table below, along with the basic Walsh sequences for comparison.

MAG	BASIC WALSH	MODIFIED WALSH
0	00	03
1	0F	0C
2	33	30
3	3C	3F
4	55	56
5	5A	59
6	66	65
7	69	6A.

The Sel Walsh A,, and Sel Walsh B bits from the clock enable logic circuit **54** multiplex the selected Walsh sequence to the output, and wherein the LSBs are output first. The A Sign and B Sign bits bypass the respective Modified Walsh Generators **53***a*, **53***b* and are XOR'd to the sequence.

As would be readily understood by those skilled in the art, there are other possible mappings of bits to Walsh symbols that are contemplated by the present invention. In addition, the Modified Walsh code may be generated by modulo two adding a fixed hexadecimal code to the basic or standard Walsh codes to thereby reduce the average DC signal component and thereby enhance overall performance as will be explained in greater detail below.

The output of the Diff encoders of the last symbol of the header CRC is the reference for the high rate data. The header may always be BPSK. This reference is XOR'd to I and Q signals before the output. This allows the demodulator **60**, as described in greater detail below, to compensate for phase ambiguity without Diff decoding the high rate data. Data flip flops **55***a*, **55***b* are connected to the multiplexer, although in other embodiments the flip flops may be positioned further downstream as would be readily understood by those skilled in the art. The output chip rate is 11 Mchip/s. For BPSK, the same chip sequence is output on each I and Q rail via the multiplexer **57**. The output multiplexer **58** provides the selection of the appropriate data rate and format.

Referring now additionally to FIG. **3**, the timing and signal format for the interface **80** is described in greater detail. Referring to the left hand portion, Sync is all 1's, and SFD is F3AOh for the PLCP preamble **90**. Now relating to the PLCP header **91**, the SIGNAL is:

0Ah	1 Mbit/s BPSK,
14h	2 Mbit/S QPSK,
37h	5.5 Mbit/s BPSK, and
6Eh	11 Mbit/s QPSK.

The SERVICE is OOh, the LENGTH is XXXXh wherein the length is in μs, and the CRC is XXXXh calculated based on SIGNAL, SERVICE and LENGTH. MPDU is variable with a number of octets (bytes).

The PLCP preamble and PLCP header are always at 1 Mbit/s, Diff encoded, scrambled and spread with an 11 chip barker. SYNC and SFD are internally generated. SIGNAL, SERVICE and LENGTH fields are provided by the interface

80 via a control port. SIGNAL is indicated by 2 control bits and then formatted as described. The interface **80** provides the LENGTH in μs. CRC in PLCP header is performed on SIGNAL, SERVICE and LENGTH fields.

MPDU is serially provided by Interface **80** and is the variable data scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler **51** must be followed by the first bit of the MPDU. The variable data may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. **3**, occurs on-the-fly.

Turning now additionally to FIG. **4**, the timing of the high data rate modulator **50** may be further understood. With the illustrated timing, the delay from TX_RDY to the first Hi Rate Output Chip is ten 11 MHz clock periods or 909.1 ns. The other illustrated quantities will be readily appreciated in view of the above description.

Referring now to FIG. **5**, the high data rate demodulator **60** in accordance with the invention is further described. The high rate circuits are activated after the signal field indicates 5.5 or 11 Mbit/s operation. At a certain time, the start phase is jammed into the Carrier NCO **61** and the start frequency offset is jammed into the Carrier Loop Filter **62**. The signal is frequency translated by the C/S ROM **63** and the Complex Multiplier **64** and passed to the Walsh Correlator **65**. The correlator **65** output drives the Symbol Decision circuits **66**, as illustrated. The output of the Symbol Decision circuits **66** are serially shifted by the parallel-in/serial-out SIPO block **67** to the descrambler portion of the PSK Demodulator and Scrambler circuit **70** after passing through the Sign Correction circuit **68** based on the last symbol of the header. The timing of the switch over desirably makes the symbol decisions ready at the correct time.

The signal is phase and frequency tracked via the Complex Multiplier **64**, Carrier NCO **61** and Carrier Loop Filter **62**. The output of the Complex Multiplier **64** also feeds the Carrier Phase Error Detector **76**. A decision directed Chip Phase Error Detector **72** feeds the illustrated Timing Loop Filter **75** which, in turn, is connected to the Clock Enable Logic **77**. A decision from the Chip Phase Error Detector **72** is used instead of early-late correlations for chip tracking since the SNR is high. This greatly reduces the additional circuitry required for high rate operation. The 44 MHz master clock input to the Clock Control **74** will allow tracking high rate mode chips with ±⅛ chip steps. Only the stepper is required to run at 44 MHz, while most of the remaining circuits run at 11 MHz. The circuit is only required to operate with a long header and sync.

Turning now additionally to FIG. **6**, a pair of Walsh Correlators **65***a*, **65***b* is further described. The I_END and Q_END inputs from the chip tracking loop are input at 11 MHz. The Modified Walsh Generator **81** produces the 8 Walsh codes (W0 to W7) serially to sixteen parallel correlators (8 for I_END and 8 for Q_END). The sixteen correlations are available at a 1.375 MHz rate. The Walsh Codes (W0 to W7) are the same as listed in the table above for the high data rate modulator. For the 11 Mbit/s mode, the largest magnitude of I W0 to I W7 is selected by the Pick Largest Magnitude circuit **81***a* to form I sym. I sym is formatted in Sign-Magnitude. The Magnitude is the Modified Walsh Index (0 to 7) of the largest Correlation and Sign is the sign bit of the input of the winning Correlation. The Q channel is processed in parallel in the same manner. For the 5.5 Mbit/s mode, the largest magnitude of I W0 to I W7 is selected to form Isym. In this case, only I sym is output. AccEn controls the correlator timing and is supplied by timing and control circuits.

With additional reference to FIG. **7**, the carrier tracking loop **90** is now described. In the described embodiment, the number of bits are worst case for estimation purposes. While 3 bits are used for the A/D conversion, a higher number may be desired in other embodiments as would be readily appreciated by those skilled in the art. The Phase BIAS circuit **91** compensates for constellation rotation, that is, BPSK or QPSK. FSCALE compensates for the NCO clock frequency. PHASE SCALE compensates for a phase shift due to frequency offset over the time difference of the first and second loops. The Lead and Lag Shifters **92**, **93** form the loop multiplier for the second order carrier tracking loop filter **62**.

Referring now additionally to FIG. **8**, the Chip Tracking Loop **110** is further described. All circuits except Chip Advance/Retard **111** use the 22 MHz clock signal. The Chip Advance/Retard circuit **111** may be made to integrate with the existing clock of the prior art PRISM 1 circuit. PRISM 1 steps in ±¼ chips. The PRISM 1 timing may be changed to switchover this circuit for high data rate operation. The A/D clock switches without a phase shift. I_ROT and Q_ROT are from the Complex Multiplier **64** at 22 MHz. They are sampled by the illustrated Registers **112** to produce I_End and Q_End at 11 MHz, which are routed to the Correlators **65** (FIG. **6**). The alternate samples I_Mid and Q_Mid are used to measure the chip phase error. For QPSK, errors are generated from both rails, and for BPSK, the error is only generated from the I rail. QPSK En disables the Q rail phase error for BPSK operation.

The sign of the accumulator is used to advance or retard the chip timing by ⅛ chip. This circuit must be enabled by the PRISM 1 circuits at the proper time via the HI_START signal. The errors are summed and accumulated for 32 symbols (256 chips). The Chip Track Acc signal them dumps the accumulator for the next measurement. The chip phase error is generated if the End Sign bits bracketing the Mid sample are different. This is accomplished using the transition detectors. The sign of the chip phase error is determined by the sign of the End sample after the Mid sample. A multiplier **114** is shown for multiplying by +1 if the End Sign is 0 or by −1 if the End Sign is 1. If the End sign bits are identical, the chip phase error for that rail is 0. The AND function is only enabled by transitions.

Many modifications and other embodiments of the invention will come to the mind of one skilled in the art having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that the invention is not to be limited to the specific embodiments disclosed, and that modifications and embodiments are intended to be included within the scope of the appended claims.

That which is claimed is:

1. A spread spectrum radio transceiver comprising:

a baseband processor and a radio circuit connected thereto, said baseband processor comprising

a demodulator for spread spectrum phase shift keying (PSK) demodulating information received from said radio circuit,

at least one analog-to-digital (A/D) converter having an output connected to said demodulator and an input AC-coupled to said radio circuit,

said demodulator comprising at least one modified Walsh code function correlator for decoding information according to a modified Walsh code reducing an average DC signal component which in combination with the AC-coupling to said at least one A/D converter enhances overall performance, and

a modulator for spread spectrum PSK modulating information for transmission via the radio circuit, said modulator comprising at least one modified Walsh code function encoder for encoding information according to the modified Walsh code.

2. A spread spectrum radio transceiver according to claim **1** wherein said modulator comprises means for operating in one of first format defined by bi-phase PSK (BPSK) modulation at a first data rate and a second format defined by quadrature PSK (QPSK) modulation at a second data rate; and wherein said demodulator comprises means for operating in one of the first and second formats.

3. A spread spectrum radio transceiver according to claim **2** wherein said modulator comprises header modulator means for modulating data packets to include a header at a third format defined by a predetermined modulation at a third data rate and variable data in one of the first and second formats; and wherein said demodulator comprises header demodulator means for demodulating data packets by demodulating the header at the third format and for switching to the respective one of the first and second formats of the variable data after the header.

4. A spread spectrum radio transceiver according to claim **3** wherein the predetermined modulation of the third format is differential BPSK (DBPSK), and wherein the third data rate is lower than the first and second data rates.

5. A spread spectrum radio transceiver according to claim **3** wherein said demodulator further comprises:

a first carrier tracking loop for the third format; and

a second carrier tracking loop for the first and second formats.

6. A spread spectrum radio transceiver according to claim **5** wherein said second carrier tracking loop comprises:

a carrier numerically controlled oscillator (NCO); and

carrier NCO control means for selectively operating said carrier NCO based upon a carrier phase of said first carrier tracking loop to thereby facilitate switching to the format of the variable data.

7. A spread spectrum radio transceiver according to claim **5** wherein said second carrier tracking loop comprises:

a carrier loop filter; and

carrier loop filter control means for selectively operating said carrier loop filter based upon a frequency of said first carrier tracking loop to thereby facilitate switching to the format of the variable data.

8. A spread spectrum radio transceiver according to claim **1** wherein said modulator further comprises means for partitioning data into four bit nibbles of sign (one bit) and magnitude (three bits) to said at least one modified Walsh code function encoder.

9. A spread spectrum radio transceiver according to claim **1** wherein the modified Walsh code is a Walsh code modified by a modulo two addition of a fixed hexadecimal code thereto.

10. A spread spectrum radio transceiver according to claim **1** wherein said at least one modified Walsh code function correlator comprises:

a modified Walsh function generator; and

a plurality of parallel connected correlators connected to said modified Walsh function generator.

11. A spread spectrum radio transceiver according to claim **1** wherein said modulator comprises spreading means for spreading each data bit using a pseudorandom (PN) sequence at a predetermined chip rate and preamble modulating means for generating a preamble; and wherein said demodulator comprises preamble demodulator means for demodulating the preamble for achieving initial PN sequence synchronization.

12. A spread spectrum radio transceiver according to claim **1** wherein said modulator comprises a scrambler; and wherein said demodulator comprises a descrambler.

13. A spread spectrum radio transceiver according to claim **1** wherein said demodulator comprises clear channel assessing means for generating a clear channel assessment signal.

14. A spread spectrum radio transceiver according to claim **1** wherein said radio circuit comprises:

a quadrature intermediate frequency modulator/demodulator connected to said baseband processor; and

an up/down frequency converter connected to said quadrature intermediate frequency modulator/demodulator.

15. A spread spectrum radio transceiver according to claim **14** wherein said radio circuit further comprises:

a low noise amplifier having an output connected to an input of said up/down converter; and

a radio frequency power amplifier having an input connected to an output of said up/down converter.

16. A spread spectrum radio transceiver according to claim **15** further comprising:

an antenna; and

an antenna switch for switching said antenna between the output of said radio frequency power amplifier and the input of said low noise amplifier.

17. A baseband processor for a spread spectrum radio transceiver, said baseband processor comprising:

a demodulator for spread spectrum phase shift keying (PSK) demodulating;

at least one analog-to-digital (A/D) converter having an output connected to said demodulator and an input AC-coupled to receive information;

said demodulator comprising at least one predetermined orthogonal code function correlator for decoding information according to a predetermined orthogonal code reducing an average DC signal component to thereby increase AC-coupling to said at least one A/D converter; and

a modulator for spread spectrum PSK modulating information for transmission, said modulator comprising at least one predetermined orthogonal code function encoder for encoding information according to the predetermined orthogonal code.

18. A baseband processor according to claim **17** wherein said modulator comprises means for operating in one of first format defined by bi-phase PSK (BPSK) modulation at a first data rate and a second format defined by quadrature PSK (QPSK) modulation at a second data rate; and wherein said demodulator comprises means for operating in one of the first and second formats.

19. A baseband processor according to claim **18** wherein said modulator comprises header modulator means for modulating data packets to include a header at a third format defined by a predetermined modulation at a third data rate and variable data in one of the first and second formats; and wherein said demodulator comprises header demodulator means for demodulating data packets by demodulating the header at the third format and for switching to the respective one of the first and second formats of the variable data after the header.

20. A baseband processor according to claim **19** wherein the predetermined modulation of the third format is differential BPSK (DBPSK), and wherein the third data rate is lower than the first and second data rates.

21. A baseband processor according to claim **19** wherein said demodulator further comprises:

a first carrier tracking loop for the third format; and

a second carrier tracking loop for the first and second formats.

22. A baseband processor according to claim **21** wherein said second carrier tracking loop comprises:

a carrier numerically controlled oscillator (NCO); and

carrier NCO control means for selectively operating said carrier NCO based upon a carrier phase of said first carrier tracking loop to thereby facilitate switching to the format of the variable data.

23. A baseband processor according to claim **21** wherein said second carrier tracking loop comprises:

a carrier loop filter; and

carrier loop filter control means for selectively operating said carrier loop filter based upon a frequency of said first carrier tracking loop to thereby facilitate switching to the format of the variable data.

24. A baseband processor according to claim **17** wherein said modulator further comprises means for partitioning data into four bit nibbles of sign (one bit) and magnitude (three bits) to said at least one predetermined orthogonal code function encoder.

25. A baseband processor according to claim **17** wherein the predetermined orthogonal code is a Walsh code modified by a modulo two addition of a fixed hexadecimal code thereto.

26. A baseband processor according to claim **17** wherein the predetermined orthogonal code is a bi-orthogonal code.

27. A baseband processor according to claim **17** wherein said at least one predetermined orthogonal code function correlator comprises:

a predetermined orthogonal code function generator; and

a plurality of parallel connected correlators connected to said predetermined orthogonal code function generator.

28. A baseband processor according to claim **17** wherein said modulator comprises spreading means for spreading each data bit using a pseudorandom (PN) sequence at a predetermined chip rate and preamble modulating means for generating a preamble; and wherein said demodulator comprises preamble demodulator means for demodulating the preamble for achieving initial PN sequence synchronization.

29. A baseband processor according to claim **17** wherein said modulator comprises a scrambler; and wherein said demodulator comprises a descrambler.

30. A baseband processor for a spread spectrum radio transceiver, said baseband processor comprising:

a modulator for spread spectrum phase shift keying (PSK) modulating information for transmission, said modulator comprising

at least one encoder for encoding information for transmission,

means for operating in one of a first format defined by bi-phase PSK (BPSK) modulation at a first data rate and a second format defined by quadrature PSK (QPSK) modulation at a second data rate,

header modulator means for modulating data packets to include a header at a third format defined by a predetermined modulation at a third data rate and variable data in one of the first and second formats; and

a demodulator for spread spectrum PSK demodulating received information, said demodulator comprising

at least one correlator for decoding received information,

means for operating in one of the first and second formats,

header demodulator means for demodulating data packets by demodulating the header at the third format and for switching to the respective one of the first and second formats of the variable data after the header,

a first carrier tracking loop for the third format, and

a second carrier tracking loop for the first and second formats.

31. A baseband processor according to claim **30** wherein the predetermined modulation of the third format is differential BPSK (DBPSK), and wherein the third data rate is lower than the first and second data rates.

32. A baseband processor according to claim **30** wherein said second carrier tracking loop comprises:

a carrier numerically controlled oscillator (NCO); and

carrier NCO control means for selectively operating said carrier NCO based upon a carrier phase of said first carrier tracking loop to thereby facilitate switching to the format of the variable data.

33. A baseband processor according to claim **30** wherein said second carrier tracking loop comprises:

a carrier loop filter; and

carrier loop filter control means for selectively operating said carrier loop filter based upon a frequency of said first carrier tracking loop to thereby facilitate switching to the format of the variable data.

34. A baseband processor according to claim **30** wherein said modulator comprises spreading means for spreading each data bit using a pseudorandom (PN) sequence at a predetermined chip rate and preamble modulating means for generating a preamble; and wherein said demodulator comprises preamble demodulator means for demodulating the preamble for achieving initial PN sequence synchronization.

35. A baseband processor according to claim **30** wherein said modulator comprises a scrambler; and wherein said demodulator comprises a descrambler.

36. A modulator for a spread spectrum radio transceiver, said modulator comprising:

modulator means for spread spectrum phase shift keying (PSK) modulating information for transmission, said modulator means comprising at least one predetermined orthogonal code function encoder for encoding information according to a predetermined orthogonal code for reducing an average DC signal component.

37. A modulator according to claim **36** wherein said modulator means comprises means for operating in one of first format defined by bi-phase PSK (BPSK) modulation at a first data rate and a second format defined by quadrature PSK (QPSK) modulation at a second data rate.

38. A modulator according to claim **37** wherein said modulator means comprises header modulator means for modulating data packets to include a header at a third format defined by a predetermined modulation at a third data rate and variable data in one of the first and second formats.

39. A modulator according to claim **38** wherein the predetermined modulation of the third format is differential BPSK (DBPSK), and wherein the third data rate is lower than the first and second data rates.

40. A modulator according to claim **36** wherein said modulator means further comprises means for partitioning data into four bit nibbles of sign (one bit) and magnitude (three bits) to said at least one predetermined orthogonal code function encoder, and wherein the predetermined orthogonal code is a Walsh code modified by a modulo two addition of a fixed hexadecimal code thereto.

41. A modulator according to claim **36** wherein said at least one predetermined orthogonal code function correlator comprises:

a predetermined orthogonal code function generator; and

a plurality of parallel connected correlators connected to said predetermined orthogonal code function generator.

42. A modulator according to claim **36** wherein the predetermined orthogonal code is a Walsh code modified by a modulo two addition of a fixed hexadecimal code thereto.

43. A modulator according to claim **36** wherein the predetermined orthogonal code is a bi-orthogonal code.

44. A demodulator for a spread spectrum radio transceiver, said demodulator comprising:

demodulator means for spread spectrum phase shift keying (PSK) demodulating information received from said radio circuit, said demodulator means comprising at least one predetermined orthogonal code function correlator for decoding information according to a predetermined orthogonal code reducing an average DC signal component.

45. A demodulator according to claim **44** wherein said demodulator means comprises means for operating in one of first format defined by bi-phase PSK (BPSK) modulation at a first data rate and a second format defined by quadrature PSK (QPSK) modulation at a second data rate.

46. A demodulator according to claim **45** wherein said demodulator means comprises header demodulator means for demodulating data packets including a header in a third format defined by a predetermined modulation at a third data rate and variable data in one of the first and second formats, and for switching to the respective one of the first and second formats of the variable data after the header.

47. A demodulator according to claim **46** wherein the predetermined modulation of the third format is differential BPSK (DBPSK), and wherein the third data rate is lower than the first and second data rates.

48. A demodulator according to claim **46** wherein said demodulator means further comprises:

a first carrier tracking loop for the third format; and

a second carrier tracking loop for the first and second formats.

49. A demodulator according to claim **48** wherein said second carrier tracking loop comprises:

a carrier numerically controlled oscillator (NCO); and

carrier NCO control means for selectively operating said carrier NCO based upon a carrier phase of said first carrier tracking loop to thereby facilitate switching to the format of the variable data.

50. A demodulator according to claim **48** wherein said second carrier tracking loop comprises:

a carrier loop filter; and

carrier loop filter control means for selectively operating said carrier loop filter based upon a frequency of said first carrier tracking loop to thereby facilitate switching to the format of the variable data.

51. A demodulator according to claim **44** further comprising means for partitioning data into four bit nibbles of sign (one bit) and magnitude (three bits).

52. A demodulator according to claim **44** wherein the predetermined orthogonal code is a Walsh code modified by a modulo two addition of a fixed hexadecimal code thereto.

53. A demodulator according to claim **44** wherein the predetermined orthogonal code is a bi-orthogonal code.

54. A demodulator according to claim **44** wherein said at least one predetermined orthogonal code function correlator comprises:

a predetermined orthogonal code function generator; and

a plurality of parallel connected correlators connected to said predetermined orthogonal code function generator.

55. A method for baseband processor for spread spectrum radio communication, the method comprising the steps of:

spread spectrum phase shift keying (PSK) modulating information for transmission while encoding the information according to the predetermined orthogonal code for reducing an average DC signal component; and

spread spectrum PSK demodulating received information by decoding the received information according to the predetermined orthogonal code.

56. A method according to claim **55** further comprising the step of AC-coupling received information for spread spectrum PSK demodulating so that the reduced average DC signal component in combination with the AC-coupling enhances overall performance.

57. A method according to claim **55** further comprising the steps of modulating and demodulating in one of first format defined by bi-phase PSK (BPSK) modulation at a first data rate and a second format defined by quadrature PSK (QPSK) modulation at a second data rate.

58. A method according to claim **57** further comprising the steps of:

modulating data packets to include a header at a third format defined by a predetermined modulation at a third data rate and variable data in one of the first and second formats; and

demodulating data packets by demodulating the header at the third format and for switching to the respective one of the first and second formats of the variable data after the header.

59. A method according to claim **58** wherein the predetermined modulation of the third format is differential BPSK (DBPSK), and wherein the third data rate is lower than the first and second data rates.

60. A method according to claim **55** wherein the predetermined orthogonal code is a Walsh code modified by a modulo two addition of a fixed hexadecimal code thereto.

61. A method according to claim **55** wherein the predetermined orthogonal code is a bi-orthogonal code.

* * * * *

Exhibit H

US006075814A

United States Patent [19]

Yamano et al.

[11] **Patent Number: 6,075,814**

[45] **Date of Patent: Jun. 13, 2000**

[54] **METHOD AND APPARATUS FOR REDUCING SIGNAL PROCESSING REQUIREMENTS FOR TRANSMITTING PACKET-BASED DATA WITH A MODEM**

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[51] **Int. Cl.**[7] **H04B 1/38**

[52] **U.S. Cl.** **375/222**; 455/574

[58] **Field of Search** 375/222, 223; 370/311, 318; 455/557, 574, 343

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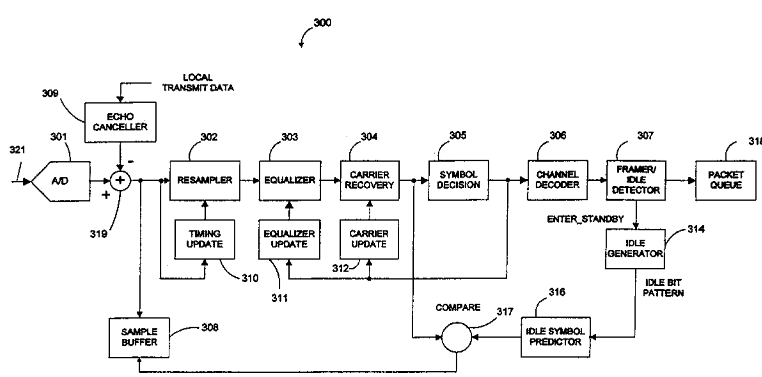
[57] **ABSTRACT**

A modem and method for operating same. A receiver circuit of the modem is coupled to receive a continuous analog signal from a communication channel. This analog signal includes both packet and idle information. The receiver circuit monitors the analog signal to detect the presence of idle information. Upon detecting idle information, the receiver circuit enters a standby mode in which the processing requirements of the receiver circuit are reduced. A burst mode protocol is also provided, in which packets of digital information are modulated by a transmitter circuit of the modem, thereby converting the packets of digital information into analog signal bursts of discrete duration. These analog signal bursts are transmitted from the transmitter circuit to a telephone line. However, the transmitter circuit does not generate any signals between the analog signal bursts. A receiver circuit monitors the telephone line to detect the analog signal bursts. Upon detecting the presence of the analog signal bursts on the telephone line, the receiver circuit demodulates the analog signal bursts using full processing capabilities of the receiver circuit. However, upon detecting the absence of the analog signal bursts on the telephone line, the demodulating function of the receiver circuit is disabled. The burst mode protocol enables multi-drop and multi-cast operation, as well as reducing required DSP resources.

12 Claims, 9 Drawing Sheets



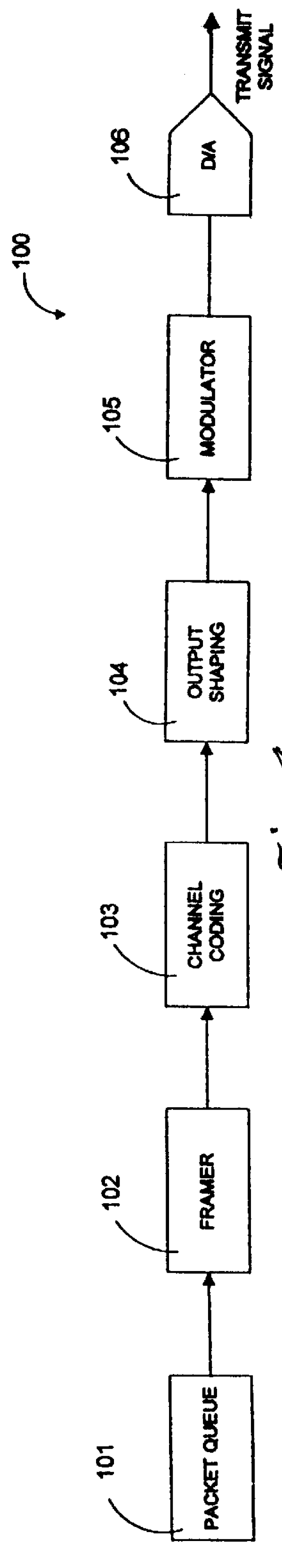


Fig. 1
(PRIOR ART)

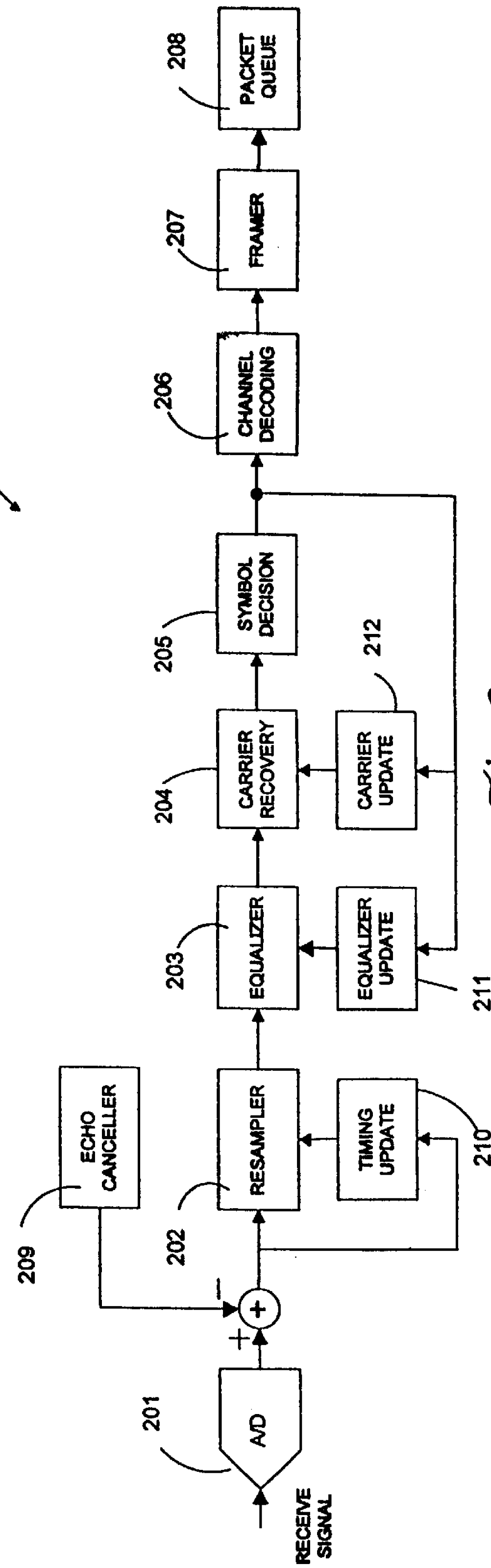


Fig. 2
(PRIOR ART)

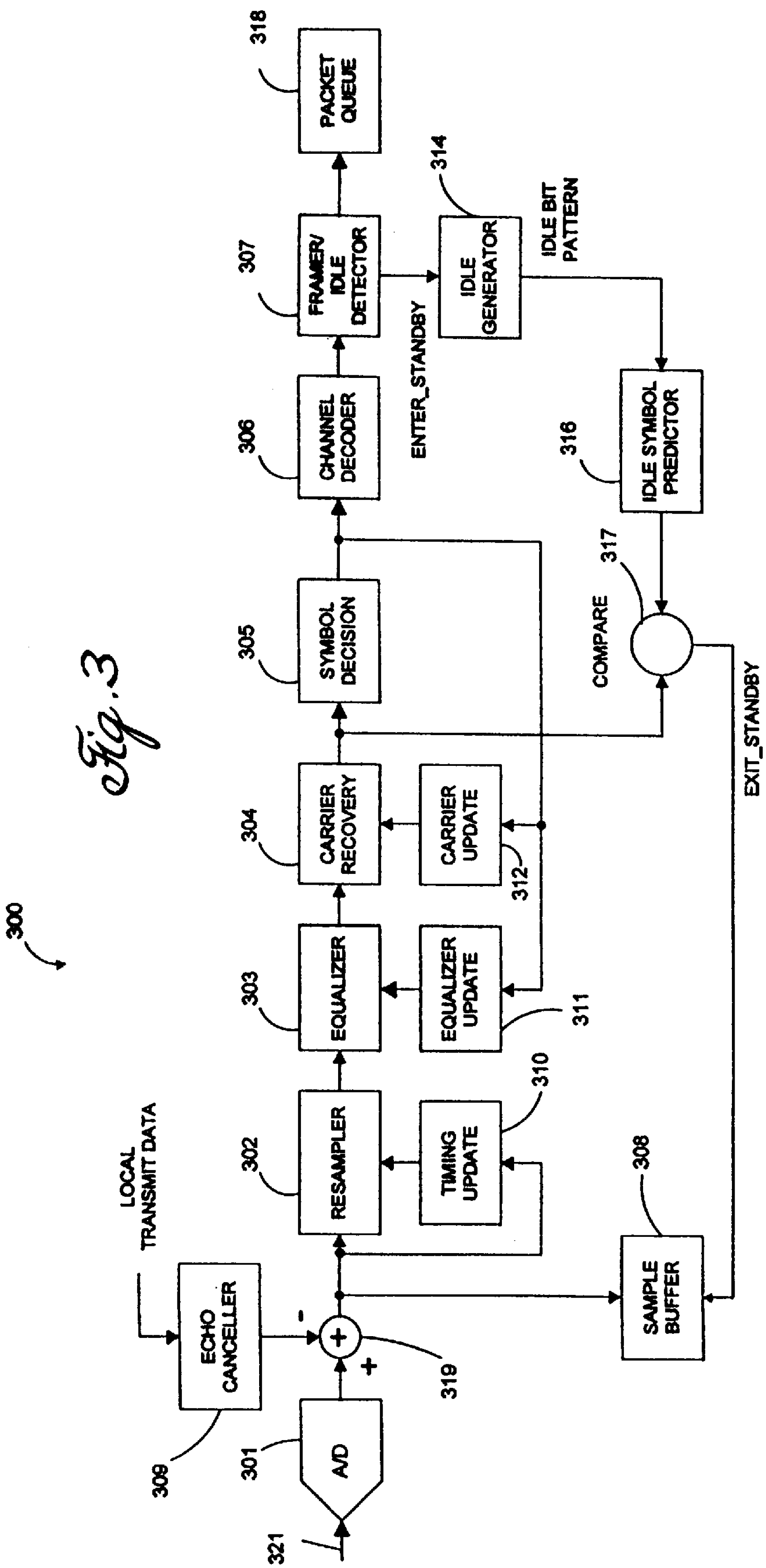
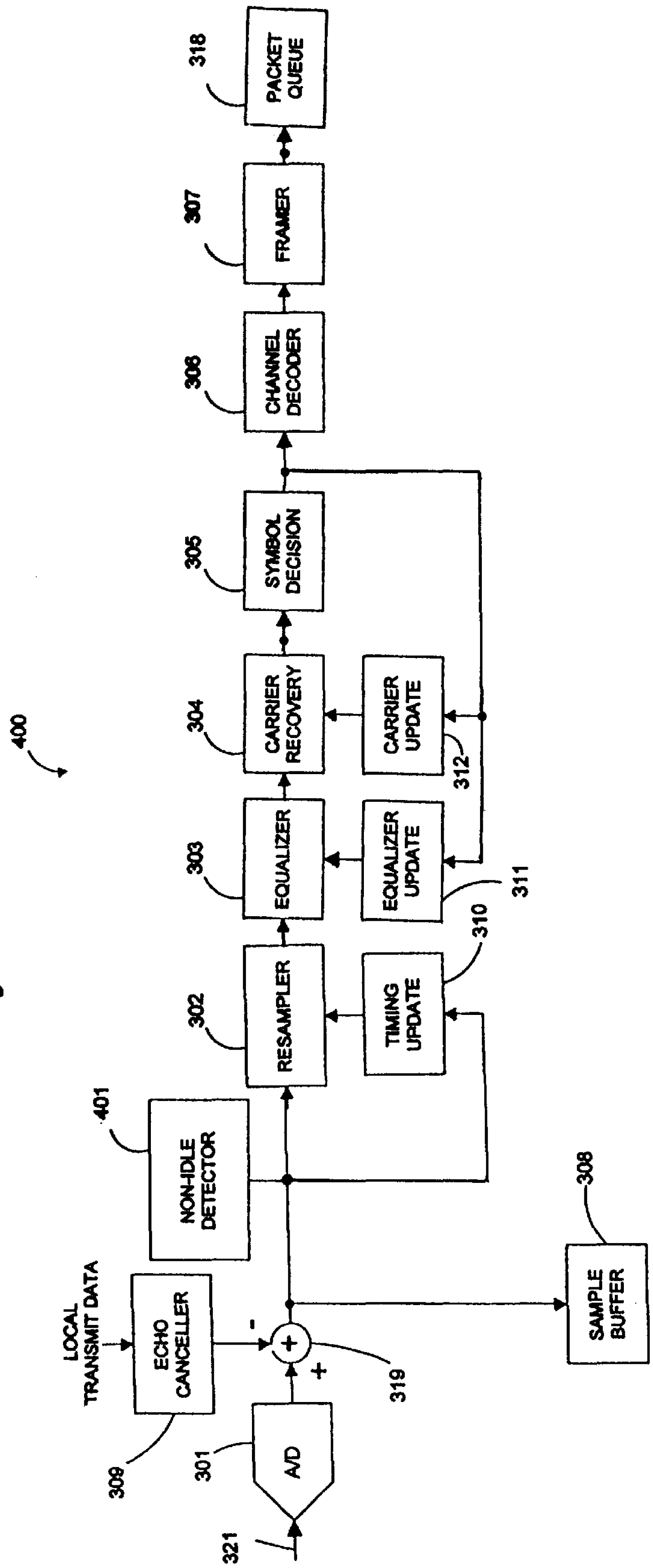

300
321
A/D
301
ECHO CANCELLER
309
LOCAL TRANSMIT DATA
319
RESAMPLER
302
TIMING UPDATE
310
EQUALIZER
303
EQUALIZER UPDATE
311
CARRIER RECOVERY
304
CARRIER UPDATE
312
SYMBOL DECISION
305
CHANNEL DECODER
306
FRAMER/ IDLE DETECTOR
307
PACKET QUEUE
318
ENTER_STANDBY
IDLE GENERATOR
314
IDLE BIT PATTERN
IDLE SYMBOL PREDICTOR
316
COMPARE
317
EXIT_STANDBY
SAMPLE BUFFER
308

Fig. 3

Fig. 4


400
321
A/D
301
309
ECHO CANCELLER
LOCAL TRANSMIT DATA
319
SAMPLE BUFFER
308
NON-IDLE DETECTOR
401
RESAMPLER
302
TIMING UPDATE
310
EQUALIZER
303
EQUALIZER UPDATE
311
CARRIER RECOVERY
304
CARRIER UPDATE
312
SYMBOL DECISION
305
CHANNEL DECODER
306
FRAMER
307
PACKET QUEUE
318

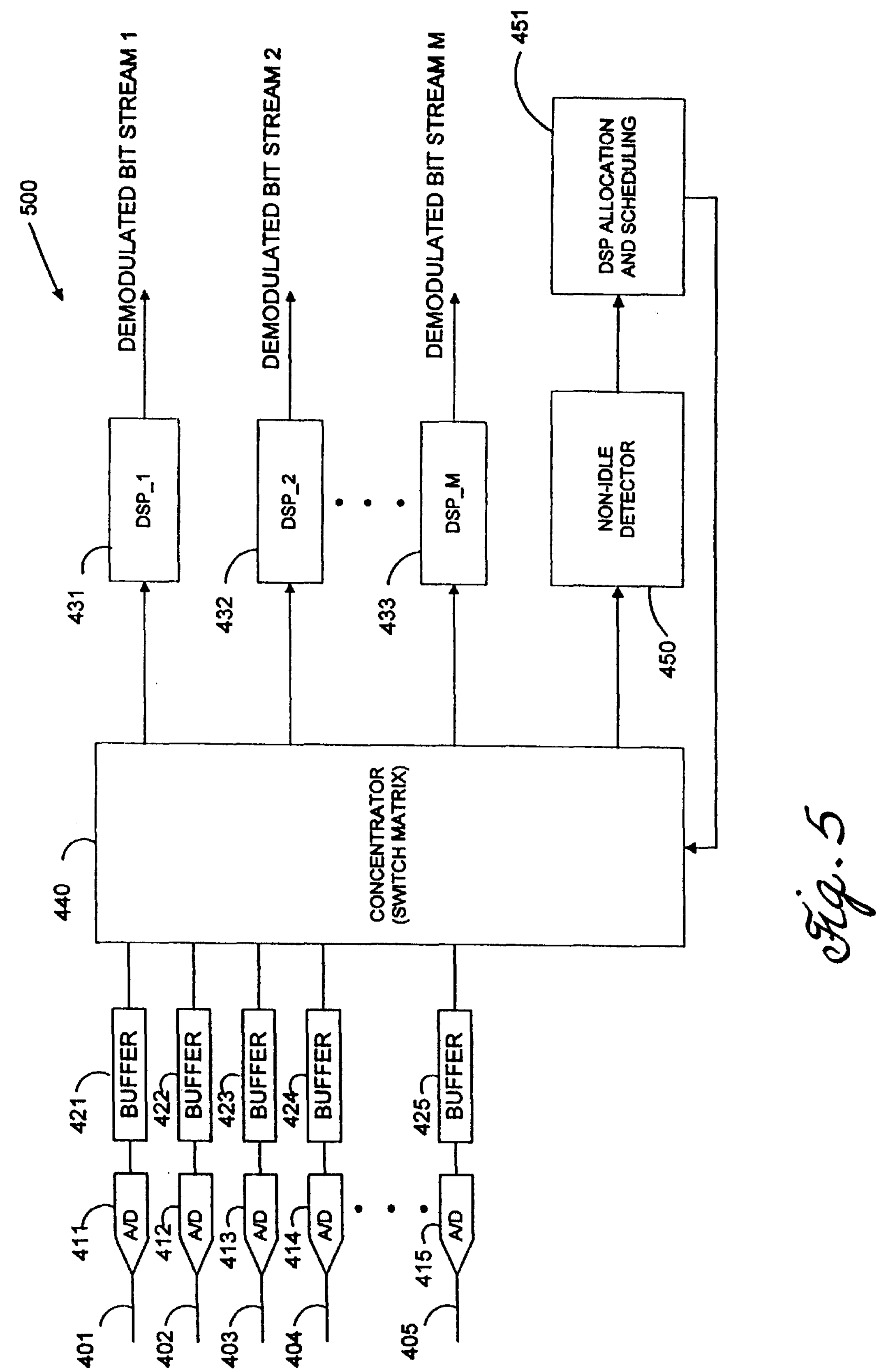

500
DEMODULATED BIT STREAM 1
DEMODULATED BIT STREAM 2
DEMODULATED BIT STREAM M
451
DSP ALLOCATION AND SCHEDULING
NON-IDLE DETECTOR
450
DSP_1
DSP_2
DSP_M
431
432
433
CONCENTRATOR (SWITCH MATRIX)
440
BUFFER
421
422
423
424
425
A/D
411
412
413
414
415
401
402
403
404
405

Fig. 5

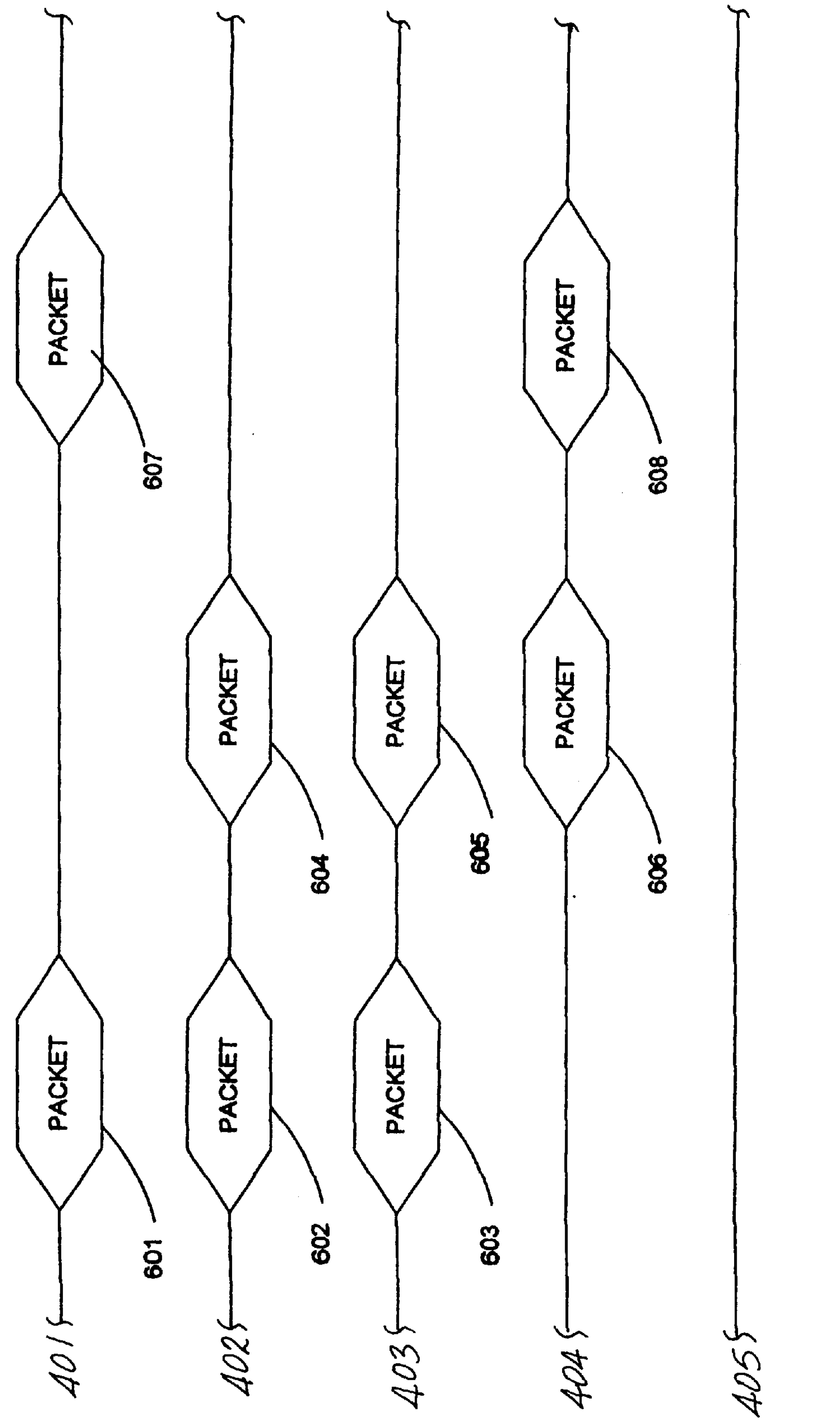

PACKET
PACKET
PACKET
PACKET
PACKET
PACKET
PACKET
PACKET
601
602
603
604
605
606
607
608
401
402
403
404
405

Fig. 6

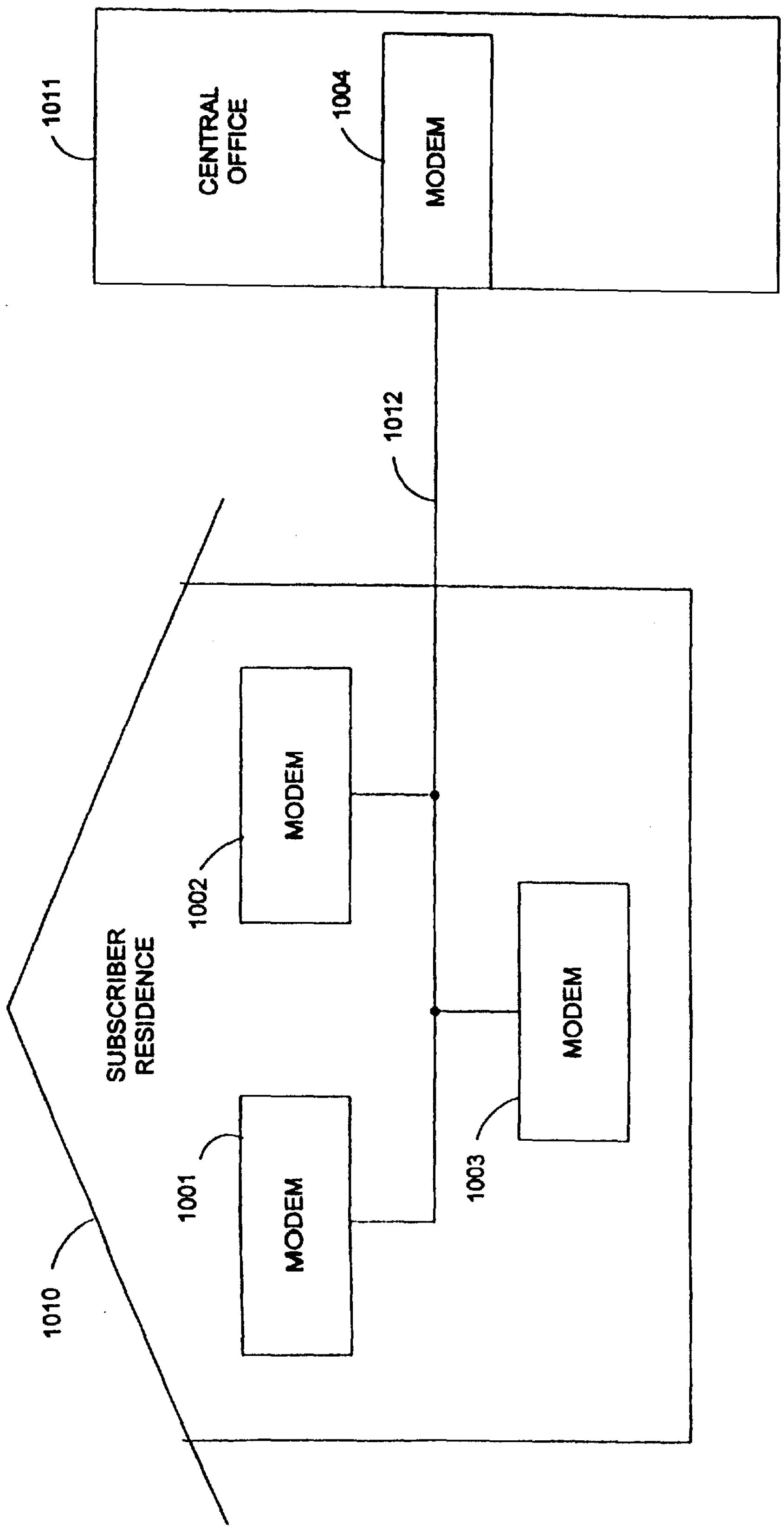

1011
CENTRAL OFFICE
1004
MODEM
1012
1010
SUBSCRIBER RESIDENCE
1001
MODEM
1002
MODEM
1003
MODEM

Fig. 7

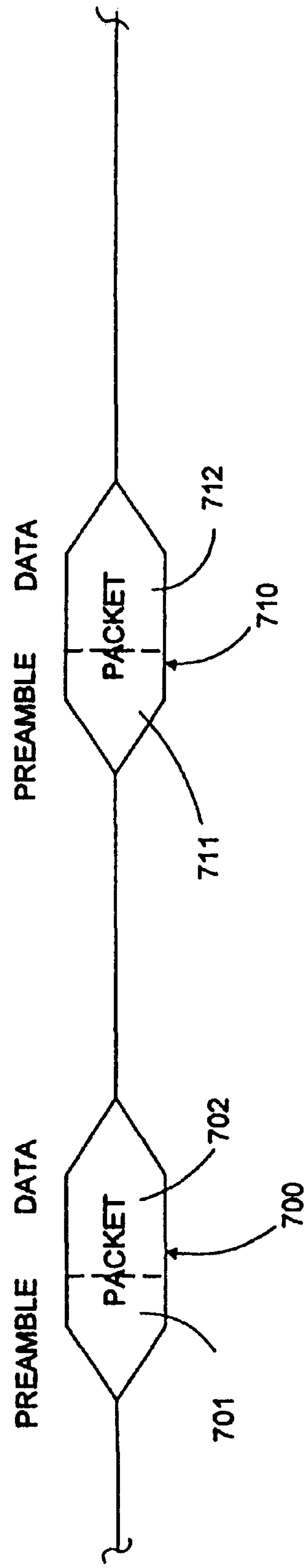

PREAMBLE
DATA
PACKET
712
710
711
PREAMBLE
DATA
PACKET
702
700
701

Fig. 8

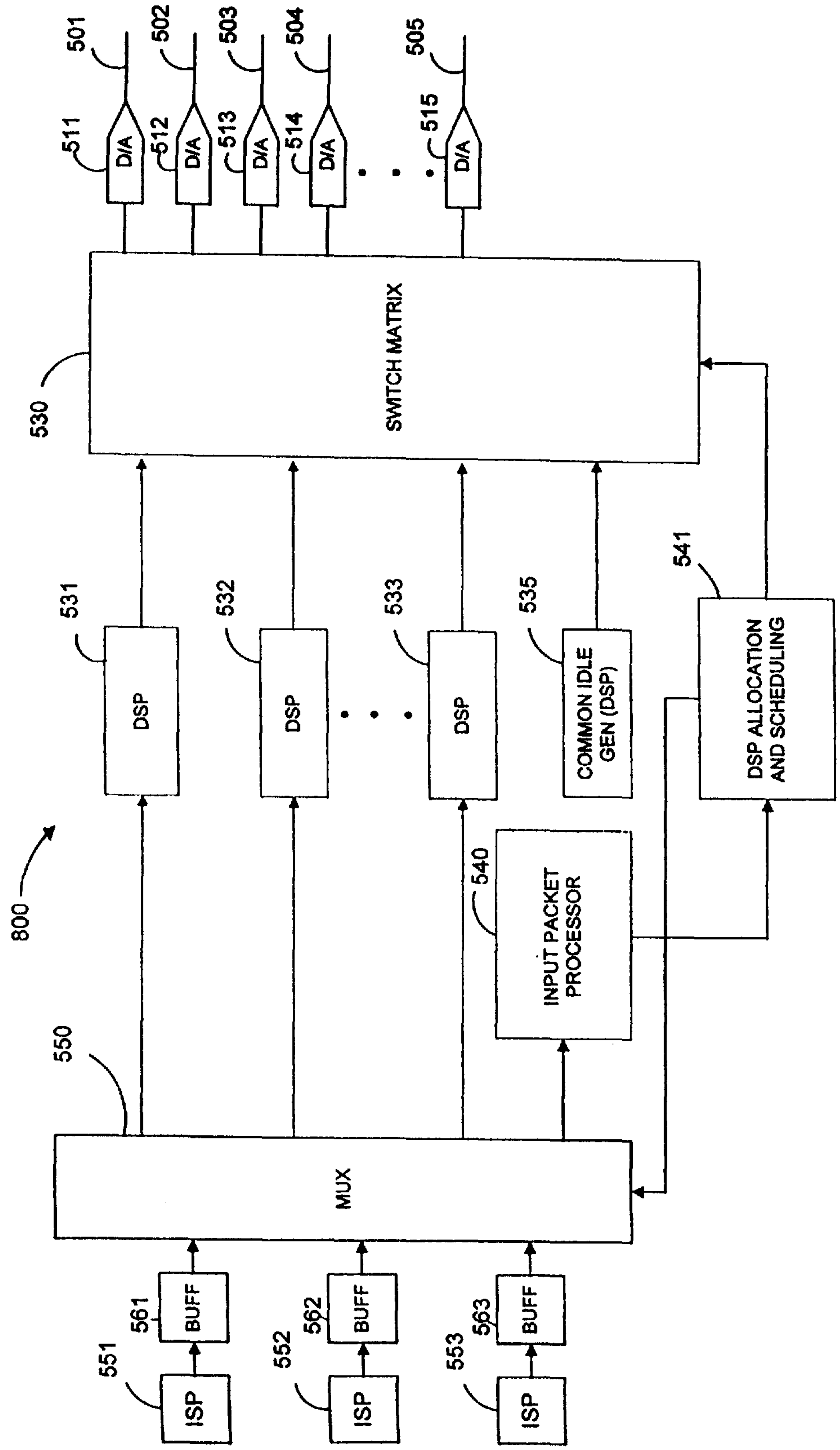

800
501
502
503
504
505
511
512
513
514
515
D/A
D/A
D/A
D/A
D/A
530
SWITCH MATRIX
531
532
533
535
541
DSP
DSP
DSP
COMMON IDLE GEN (DSP)
DSP ALLOCATION AND SCHEDULING
540
INPUT PACKET PROCESSOR
550
MUX
561
562
563
BUFF
BUFF
BUFF
551
552
553
ISP
ISP
ISP

Fig. 9

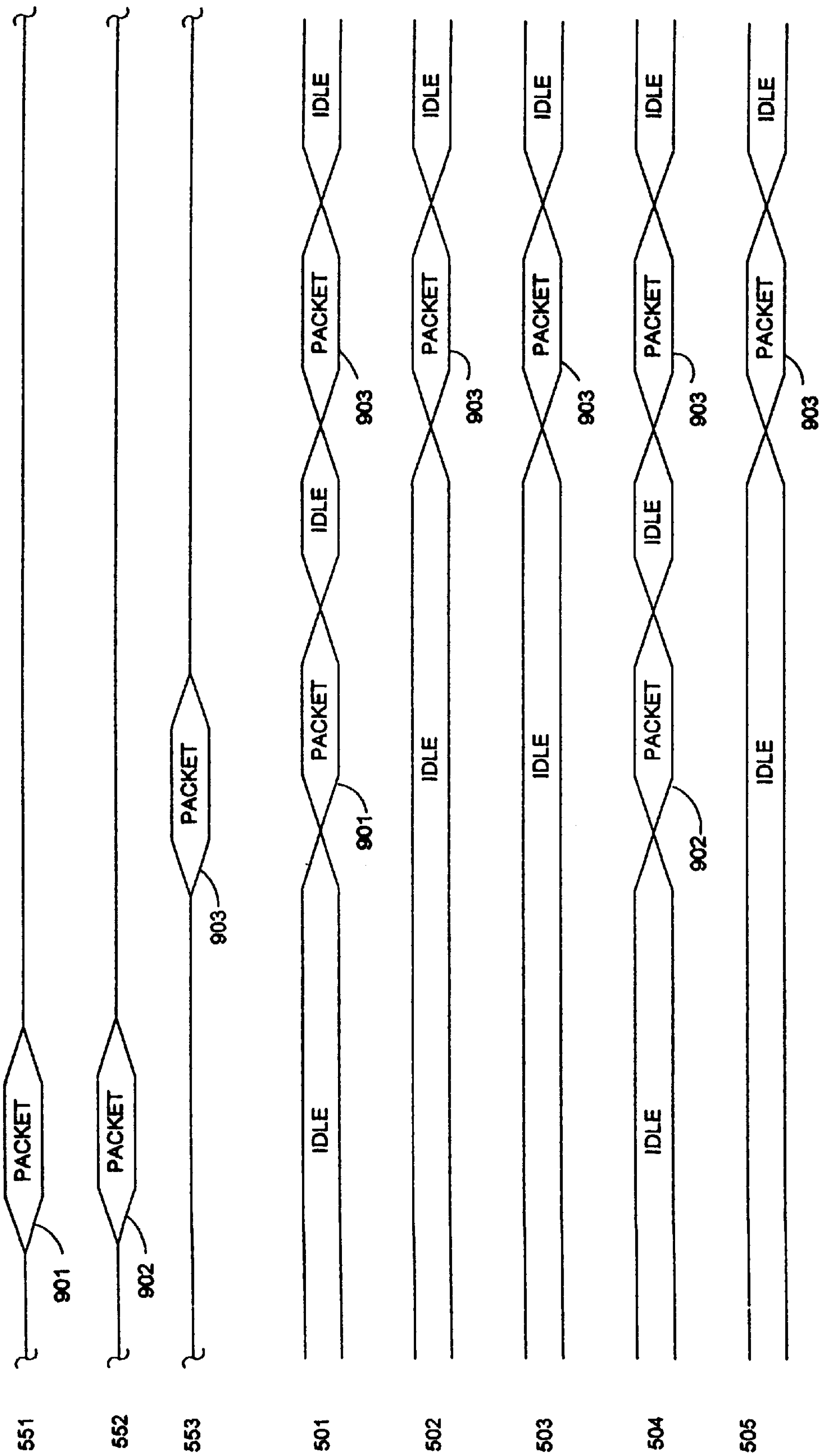


Fig. 10

METHOD AND APPARATUS FOR REDUCING SIGNAL PROCESSING REQUIREMENTS FOR TRANSMITTING PACKET-BASED DATA WITH A MODEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to the reduction of the required amount of signal processing in a modulator/demodulator (modem) which is transferring packet-based data or other information which is intermittent in nature on a communication channel.

2. Related Art

Modern data networks commonly use complex digital signal processing (DSP) devices called modems to transport data over communication channels. Data is typically transported via an analog transmission signal which is representative of a synchronous, constant rate bit stream. This form of communication channel is suitable for the transmission of real-time information such as voice or video. However, it is increasingly common to use modems for the transmission of packet-based information. For example, packet-based information is used to access the Internet and the World Wide Web. However, packet-based information is typically bursty in nature, with an average data rate which is often much less than the available peak data transfer rate of the communication channel.

FIG. **1** is a block diagram of a transmitter circuit **100** of a conventional modem. Transmitter circuit **100** includes packet queue **101**, framer **102**, channel coding circuit **103**, output shaper **104**, modulator **105** and digital-to-analog (D/A) converter **106**. In accordance with conventional modem protocols, transmitter circuit **100** transforms source data received by packet queue **101** into a continuous time analog transmit signal, which is provided at the output terminal of D/A converter **106**.

More specifically, within transmitter circuit **100**, the source data is grouped into packets and stored in packet queue **101**. These packets are not synchronous with respect to the modem bit clock, but arrive at packet queue **101** at random times. Framer **102** receives the packets from packet queue **101**, and in response, composes a continuous bit stream which is synchronous with respect to the modem bit clock. To create such a synchronous bit stream in response to the asynchronous packets, framer **102** generates idle information (i.e., nulls or a marking tone) when no packets are available, and generates packet data when packets are available. The packet data and idle information are delineated in such a way that a receiver circuit of a modem (see, e.g., FIG. **2**) can determine where the packet boundaries lie.

The synchronous bit stream generated by framer **102** is then coded by channel coding circuit **103**. Channel coding circuit **103** is used to compensate for noise and distortion in the communication channel. Channel coding circuit **103** provides redundant information (e.g., convolutional encoding) to allow for error correction. Channel coding circuit **103** further performs a scrambling function, as well as mapping the coded bit stream onto symbol values. The stream of symbol values generated by channel coding circuit **103** is provided to output shaper **104**.

Output shaper **104** digitally filters the stream of symbol values received from channel coding circuit **103**. Output shaper circuit **104** limits the frequency bandwidth of these symbol values within a predetermined range and may also be adjusted to help compensate for channel distortion. The filtered sample stream provided by output shaper **104** is provided to modulator **105**, which modulates a carrier signal by the filtered sample stream. The output of modulator **105** is provided to D/A converter **106**, which generates an analog TRANSMIT signal for transmission on the communication channel (i.e., telephone line).

Transmitter circuit **100** exhibits three distinct disadvantages. First, because transmitter circuit **100** transmits constantly (either packet data or idle information), a modem can be functionally connected to only one telephone line at any given time. Moreover, only a small percentage of the total information carrying capacity of the communication channel is used to transmit data, while a large percentage of this capacity is used to transmit idle information. Additionally, transmitter circuit **100** is unsuited to multi-drop operation on a single communication channel. The first disadvantage mentioned above is particularly deleterious where a number of xDSL modems are collected together in a central office to provide data communications to a number of remote locations. In this case, each remote location requires a dedicated xDSL modem in the central office.

The analog TRANSMIT signal is transmitted over the telephone line to the telephone company central office. Within the central office, an analog to digital converter converts the analog TRANSMIT signal into a digital signal. This digital signal is multiplexed onto a digital backbone circuit and routed to a second central office location. The digital signal is demultiplexed within the second central office location and routed over a digital trunk to a digital server which performs additional processing on the digital signal.

FIG. **2** is a block diagram of a receiver circuit **200** of a conventional modem. Receiver circuit **200** includes analog-to-digital (A/D) converter **201**, resampler **202**, equalizer **203**, carrier recovery circuit **204**, symbol decision circuit **205**, channel decoding circuit **206**, framer **207**, packet queue **208**, echo canceler **209**, timing update circuit **210**, equalizer update circuit **211** and carrier update circuit **212**. Carrier recovery circuit **204** and symbol decision circuit **205** are sometimes referred to as a demodulator circuit. A/D converter **201** is coupled to the telephone line to receive the analog signal from the telephone company central office. A/D converter **201** samples this analog signal, thereby converting the analog signal into a digital signal.

The modem which includes receiver circuit **200** also includes a transmitter circuit (i.e., a near end transmitter circuit, not shown) which is similar to transmitter circuit **100**. During full duplex operation, this near end transmitter circuit may be generating a TRANSMIT signal at the same time that receiver circuit **200** is attempting to receive the analog signal from the remote (or far end) transmitter circuit **100**. Under these conditions, receiver circuit **200** may receive an echo of the TRANSMIT signal. Echo canceler **209** generates a signal which is a replica of this echo. The signal generated by echo canceler **209** is then subtracted from the output signal provided by A/D converter **201**.

Resampler **202** adjusts the raw input samples received from A/D converter **201** to match the symbol rate of the transmitter circuit **100**. Timing update circuit **211** extracts timing information which is used to control resampler **202**. Equalizer **203** compensates for linear distortions introduced by the communication channel (e.g., the telephone line). Carrier recovery circuit **204** extracts the carrier signal from the received signal and provides rough symbols (or a soft symbol decision) to symbol decision circuit **205**. Symbol decision circuit **205** quantizes the rough symbols and makes hard decisions as to the identity of the received symbols. Equalizer update circuit **211** and carrier update circuit **212** receive the symbols provided by symbol decision circuit **205**. In response, equalizer update circuit **211** and carrier update circuit **212** determine quantizer error. In response to this quantizer error, equalizer update circuit **211** and carrier update circuit **212** adjust the coefficients used by equalizer **203** and carrier recovery circuit **204**, respectively, thereby improving the accuracy of subsequent hard symbol decisions.

Channel decoding circuit **206** uses redundant information present in the received analog signal to correct for quantizer errors. Channel decoding circuit **206** typically implements a maximum likelihood sequence estimator (MLSE) circuit (such as a Viterbi decoder or other form of error correction. Channel decoding circuit **206** provides a decoded bit stream to framer **207**. Finally, framer **207** decodes the bit stream into packet data, discarding the idle information, and loading the packets of data into packet queue **208**.

The operation of receiver circuit **200** is significantly more complex than the operation of transmitter circuit **100**. Substantial signal processing is performed by receiver circuit **200**, typically many hundreds or thousands of operations per symbol processed. Much of the signal processing is concentrated in equalizer **203**, echo canceler **209**, and channel decoding circuit **206**. A significant percentage of this signal processing is dedicated to the processing of the idle information generated by transmitter circuit **100**.

It would therefore be desirable to have a modem system which is capable of utilizing a greater percentage of the information carrying capacity of the telephone line to transfer packet based data. It would also be desirable to have a modem system which minimizes the signal processing which must be dedicated to the processing of idle symbols. It would further be desirable to have a modem system which enables a common modem to be functionally connected to a plurality of telephone lines at the same time. It would further be desirable to have a modem system which enables a common telephone line to be used with a plurality of modems in a multi-drop configuration.

SUMMARY

Accordingly, the present invention provides a method for operating a modem on a communication channel which includes the following steps. A receiver circuit of the modem is coupled to receive a continuous analog signal which is transmitted on the communication channel. This continuous analog signal includes both packet information and idle information. The receiver circuit monitors the analog signal to detect the presence of the idle information. Upon detecting the presence of the idle information, the receiver enters a standby mode. In the standby mode, the amount of processing performed by the receiver circuit is reduced.

The reduction of the amount of processing performed by the receiver circuit can be achieved by disabling and/or reducing the processing precision of selected elements within the receiver circuit. For example, a symbol decision circuit, a channel decoder and a framer within the receiver circuit can be disabled during the standby mode in one embodiment of the invention. Moreover, the processing precision of other elements, such as an echo canceler, update circuits and an equalizer can be reduced when the receiver circuit is in the standby mode.

To detect the presence of the idle information, the receiver circuit fully demodulates the analog signal to provide a digital bit stream. This digital bit stream is processed by the receiver circuit to determine when packet data ceases to be transmitted on the communication channel, and the transmission of idle information commences. At some point after the receiver circuit detects the start of the idle information, the receiver circuit enters the standby mode. At this time, various elements within the receiver circuit are disabled and/or operated with reduced precision. In addition, an idle bit pattern, which is synchronous with the idle bit pattern generated by the associated transmitter circuit, is converted to a plurality of expected idle symbols. The expected idle symbols are then compared with a plurality of soft symbols which are generated by the receiver circuit in response to the analog signal using reduced processing within the receiver circuit. The receiver circuit remains in the standby mode as long as the expected idle symbols match the soft symbols.

The receiver circuit can further store a most recent history of the analog signal in a buffer. After the standby mode is exited, this buffer can be accessed, thereby enabling the receiver circuit to reprocess the most recent history of the analog signal. This helps ensure that no packet information is lost due to the inherent delay in detecting the presence of packet information.

In accordance with another aspect of the present invention, the receiver circuit can monitor the quality of the analog signal on the communication channel and reduce the amount of processing performed by the receiver circuit if the channel quality exceeds a predetermined level. This further reduces the processing requirements of the receiver circuit.

In accordance with another embodiment of the invention, a burst mode protocol is provided for operating a modem on a telephone line. The burst mode protocol involves modulating packets of digital information by a transmitter circuit of the modem, wherein the packets of digital information are converted into analog signal bursts of discrete duration. These analog signal bursts are transmitted from the transmitter circuit to the telephone line. However, no signal is provided from the transmitter circuit to the telephone line between the analog signal bursts. In one embodiment, a non-idle state signal is appended to the beginning of the analog signal bursts by the transmitter circuit, thereby signalling the presence of the analog signal bursts.

A receiver circuit of the modem monitors the telephone line to detect the presence and absence of the analog signal bursts. This monitoring step is performed by a non-idle detector within the receiver circuit. When the non-idle detector detects the presence of the analog signal bursts on the telephone line, the non-idle detector causes the receiver circuit to demodulate the analog signal bursts using full processing capabilities of the receiver circuit. However, when the non-idle detector detects the absence of the analog signal bursts on the telephone line, the non-idle detector disables the demodulating function of the receiver circuit. This greatly reduces the processing requirements of the receiver circuit when there are no analog signal bursts present on the telephone line.

In one embodiment, the non-idle detector determines the presence and absence of the analog signal bursts on the telephone line by monitoring the telephone line for the presence and absence of carrier energy. Alternatively, the non-idle detector can monitor the telephone line for the presence and absence of a non-idle state signal provided by the transmitter circuit.

In accordance with the burst mode protocol, there are certain periods during which the transmitter circuit is not transmitting any signals. During these periods, the echo canceler of the associated local receiver circuit can be

disabled, since there will be no echo signal to cancel during these periods. This further reduces the processing requirements of the receiver circuit.

In accordance with another aspect of the present invention, the receiver circuit can monitor the quality of the analog signal bursts on the telephone line and reduce the amount of processing performed by the receiver circuit if the line quality exceeds a predetermined level. This further reduces the processing requirements of the receiver circuit.

In accordance with another embodiment of the present invention, a plurality of remote transmitter circuits, which are coupled to separate telephone lines, generate analog signal bursts in accordance with the burst mode protocol. The separate telephone lines are connected together at a central location where the analog signal bursts are multiplexed to a number of receiver circuits. A non-idle detector is coupled to receive the analog signal bursts from each of the transmitter circuits, and to detect the presence and absence of the analog signal bursts on the telephone lines. Typically, only a small number of the telephone lines will be transmitting analog signal bursts at any given time. The analog signal bursts are therefore multiplexed into a number of receiver circuits which is less than the number of telephone lines. That is, each receiver circuit can process analog signal bursts from a plurality of telephone lines. As a result, the number of receiver circuits required to handle information from a given number of telephone lines is advantageously reduced. In a particular embodiment, different sets of update coefficients are enabled within the receiver circuits, depending upon which telephone line is currently coupled to the receiver circuit.

The present invention also includes a method for operating a plurality of modems on a single telephone line (i.e., multi-drop operation). This method includes the steps of (1) modulating packets of digital information by the modems, wherein the packets of digital information are converted into analog signal bursts of discrete duration, (2) transmitting the analog signal bursts from the modems to the telephone line, (3) providing no signal from the modems to the telephone line between the analog signal bursts, and (4) arbitrating the transmitting of the analog signal bursts from the modems to the telephone line such that only one modem is transmitting analog signal bursts to the telephone line at any given time.

In one variation of the multi-drop method, each of the analog signal bursts includes a preamble and a corresponding main body. Each preamble is transmitted in accordance with a predetermined first modem protocol. However, the main bodies can be transmitted in accordance with different modem protocols which are different than the first modem protocol. For example, the different modem protocols may implement different data rates, modulation formats and/or protocol versions. The modem protocol associated with each of the main bodies is identified by information included in the corresponding preamble. This variation enables devices having different operating capabilities (e.g., personal computers and smart appliances) to be operably coupled to the same telephone line in a multi-drop configuration.

The present invention further includes a method for implementing a multi-line network access circuit. In this embodiment, digital data packets are transmitted from a plurality of sources (e.g., ISPs) to a multi-line network circuit. The digital data packets do not include idle information. The multi-line network access circuit identifies the telephone lines associated with the digital data packets using a destination address monitor. Digital data packets from different sources are multiplexed to a common digital signal processing (DSP) resource. This common DSP resource modulates digital data packets from different sources. The multi-line network access circuit then de-multiplexes the modulated digital data packets onto telephone lines corresponding to the destination addresses. In one variation, a common idle generator within the multi-line network access circuit is used to generate common idle information for each of the telephone lines. In another variation, a non-idle state signal generator within the multi-line network access circuit is used to generate non-idle state signalling for each of the telephone lines.

Yet another embodiment of the present invention provides a method of implementing a multi-cast network access circuit. In accordance with this method, a digital data packet is transmitted from a source to the multi-cast network access circuit. In this embodiment, the digital data packet does not include idle information. The digital data packet identifies a plurality of destination addresses to which the digital data packet is to be transmitted. The digital data packet is routed to a digital processing resource and modulated. The modulated digital data packet is demultiplexed to a plurality of telephone lines which correspond to the destination addresses, thereby completing the multi-cast operation.

The present invention will be more fully understood in view of the following detailed description taken together with the drawings.

BRIEF DESCRIPTION OF DRAWINGS

FIG. **1** is a block diagram of a transmitter circuit of a conventional modem;

FIG. **2** is a block diagram of a receiver circuit of a conventional modem;

FIG. **3** is a block diagram of a receiver circuit of a modem in accordance with one embodiment of the invention;

FIG. **4** is a block diagram of a receiver circuit of a modem in accordance with a burst-mode protocol of the present invention;

FIG. **5** is a block diagram of a multi-line network access circuit which can be located in a central office in accordance with one embodiment of the invention;

FIG. **6** is a schematic diagram of packet data received on the multiple lines of the multi-line network access circuit of FIG. **5** in accordance with one embodiment of the invention;

FIG. **7** is a schematic diagram of a multi-drop configuration which includes modems in a subscriber's residence and a modem in the telephone company central office;

FIG. **8** is a schematic representation of packet information which is transmitted by transmitter circuits in accordance with the burst-mode protocol of the present embodiment;

FIG. **9** is a block diagram of a multi-line network access circuit in accordance with another embodiment of the present invention; and

FIG. **10** is a schematic diagram of packet information received by and transmitted from the multi-line network access circuit of FIG. **9**.

DETAILED DESCRIPTION

FIG. **3** is a block diagram of a receiver circuit **300** of a modem in accordance with one embodiment of the present invention. Receiver circuit **300** includes A/D converter **301**, resampler **302**, equalizer **303**, carrier recovery circuit **304**, symbol decision circuit **305**, channel decoder **306**, framer/idle detector **307**, sample buffer **308**, echo canceler **309**, timing update circuit **310**, equalizer update circuit **311**, carrier update circuit **312**, idle generator **314**, idle symbol predictor **316**, comparator circuit **317**, packet queue **318** and summing node **319**. In combination, carrier recovery circuit **304** and symbol decision circuit **305** form a demodulator. In the described embodiment, A/D converter **301** is implemented by a coder/decoder (codec) chip, while the remaining elements of receiver circuit **300** are implemented by a digital signal processor (DSP). In other embodiments, the elements of receiver circuit **300** can be implemented by other means, such as a general purpose processor. Receiver circuit **300** is coupled to receive an analog RECEIVE signal from communication channel **321**, which in the described embodiment, is a telephone line. It is understood that other communication channels, such as twisted pair other than a telephone line, wireless, coaxial cable, infrared or optical, can be used in other embodiments.

In the described embodiment, the RECEIVE signal received on communication channel **321** is an analog signal in accordance with a conventional modem protocol, such as xDSL or a voice band modem protocol. For example, this analog RECEIVE signal could originate from transmitter circuit **100** (FIG. **1**) in the manner previously described. Thus, the analog RECEIVE signal received on communication channel **321** includes modulated packet data as well as idle information which is interleaved with the packet data.

A/D converter **301** samples the analog RECEIVE signal, thereby converting the analog RECEIVE signal into a digital signal. This digital signal is provided to a positive input terminal of summing node **319**. Echo canceler **309** uses the local transmit signal to adaptively predict the echo signal on communication channel **321**. As previously described, an echo of the local transmit signal may be present if the modem which includes receiver circuit **300** is operating in full duplex mode. Echo canceler **309** applies the predicted echo signal to the negative input terminal of summing node **319**, thereby canceling the echo signal from the digital signal.

The digital signal output by summing node **319** is provided to a conventional resampler **302**. Resampler **302** interpolates this digital signal to generate samples which match the symbol rate of the transmitter circuit. Timing update circuit **310** monitors the digital signal provided by summing node **319**. Timing update circuit **310** is a conventional element which runs a control loop to extract symbol timing information from this digital signal. This symbol timing information is provided to resampler **302**, thereby enabling resampler **302** to control the sampling process as necessary.

The digital signal output by summing node **319** is further provided to sample buffer **308**. Sample buffer **308** is a dual-port first-in, first-out (FIFO) circular buffer which stores a most recent history of the digital signal provided by summing node **319**. In the described embodiment, the information stored in sample buffer **308** is representative of a plurality N of the most recent symbols. In one embodiment, N is equal to eight, although N can be any integer value. In other embodiments N is much larger, having a magnitude on the order of hundreds or even thousands. The operation of sample buffer **308** is described in more detail below.

The raw input samples are routed from resampler **302** to adaptive equalizer **303**. Adaptive equalizer **303** is a conventional element which modifies the raw input samples to compensate for linear distortions introduced by communication channel **321**. To accomplish this, equalizer **303** processes the raw input samples using a plurality of equalization coefficients which are updated periodically within equalizer update circuit **311** based on quantization errors measured at the output of the symbol decision circuit **305**.

Equalizer **303** provides a stream of equalized digital samples to carrier recovery circuit **304**. Carrier recovery circuit **304** is a conventional element which extracts the carrier signal from the equalized digital samples and, for each digital sample, provides a soft decision (i.e., a best estimate) concerning the identity of the corresponding symbol. The symbols achieved by the soft decision are hereinafter referred to as soft symbols. The soft symbols are transmitted to symbol decision circuit **305**.

Symbol decision circuit **305** is a conventional circuit which quantizes the soft symbols provided by carrier recovery circuit **304**, thereby making a hard decision as to the identity of the received symbols. The symbols achieved by the hard decision are hereinafter referred to as hard symbols. The hard symbols are fed back to equalizer update circuit **311** and carrier update circuit **312**. In response, equalizer update circuit **311** and carrier update circuit **312** determine quantizer error. In response to the quantizer error, equalizer update circuit **311** and carrier update circuit **312** adjust the processing coefficients used by equalizer **303** and carrier recovery circuit **304**, respectively, thereby improving the accuracy of the hard decisions made by symbol decision circuit **305**.

The hard symbols generated by symbol decision circuit **305** are also provided to conventional channel decoding circuit **306**. Channel decoding circuit **306** uses redundant information in present in the RECEIVE signal to correct for quantizer errors. Channel decoding circuit **306** typically implements a maximum likelihood sequence estimator (MLSE) circuit such as a Viterbi decoder or some other form of error correction. Channel decoding circuit **306** provides a decoded bit stream to framer/idle detector **307**.

Framer/idle detector **307** monitors the digital bit stream to determine if the digital bit stream is representative of an idle bit pattern. When the digital bit stream is representative of an idle bit pattern, the digital bit stream is said to represent an IDLE state. When the digital bit stream is not representative of an idle bit pattern (i.e., the digital bit stream is representative of packet data), the digital bit stream is said to represent a DATA state. To decrease the chance of falsely detecting the presence of an idle bit pattern, the determination can be postponed until several successive symbols of the idle bit pattern have been detected by framer/idle detector **307**.

If framer/idle detector **307** detects that the digital bit stream is representative of packet data (i.e., a DATA state exists), then framer/idle detector **307** de-asserts a control signal (ENTER_STANDBY) to disable idle generator circuit **314**. Framer/idle detector **307** also generates a digital bit stream which is representative of the received packet data. This digital bit stream is provided to packet queue **318** for further processing. Framer/idle detector **307** is a conventional circuit element well known to those of ordinary skill in the art.

If framer/idle detector **307** determines that the digital bit stream provided by channel decoding circuit **306** is representative of an idle bit pattern (i.e., an IDLE state exists), then receiver circuit **200** enters a standby mode in the following manner. Framer/idle detector **307** does not provide any output bit stream to packet queue **318**. Framer/idle detector **307** asserts the ENTER_STANDBY signal which enables idle generator circuit **314**. In response, idle generator circuit **314** generates an idle bit pattern as defined by the applicable modem protocol. This idle bit pattern is synchronous with the pattern that receiver circuit **300** expects to receive from the corresponding transmitter circuit.

The idle bit pattern generated by idle generator circuit **314** is also provided to idle symbol predictor circuit **316**. In response to the idle bit pattern, idle symbol predictor **316** generates a sequence of expected idle symbols in accordance with the applicable modem protocol. Thus, the idle bit pattern is converted into a stream of expected idle symbols. Alternatively, where the stream of expected idle symbols repeats with a reasonable period, the stream of expected idle symbols can be pre-computed and stored in a table within receiver circuit **300**, and accessed when framer/idle detector **307** detects an idle bit pattern.

The sequence of expected idle symbols is provided to a first input terminal of comparator circuit **317**. The second input terminal of comparator circuit **317** is coupled to carrier recovery circuit **304**, such that the soft symbols generated by carrier recovery circuit **304** are provided to the second input terminal of comparator circuit **317**. Comparator circuit **317** compares the expected idle symbols received from idle symbol predictor circuit **316** with the soft symbols received from carrier recovery circuit **304**. If comparator circuit **317** detects a match, comparator circuit **317** allows processing to continue in standby mode by de-asserting a control signal, EXIT_STANDBY. The de-asserted EXIT_STANDBY signal causes receiver circuit **300** to remain in the standby mode. In this manner, the soft symbols provided by carrier recovery circuit **304** are used make the determination as to whether the RECEIVE signal is representative of an IDLE state.

Because the soft symbols are used to determine whether the RECEIVE signal is representative of an IDLE state, the following elements of receiver circuit **300** can be disabled during the standby mode: symbol decision circuit **305**, channel decoder **306**, framer/idle detector **307**, equalizer update circuit **311** and carrier update circuit **312**. As a result, the processing requirements of receiver circuit **300** are greatly reduced when receiver circuit **300** operates in the standby mode. In the described embodiment, the symbol decision circuit **305**, channel decoder **306**, framer/idle detector **307**, equalizer update circuit **311** and carrier update circuit **312** are disabled in response to the asserted ENTER_STANDBY control signal, and are enabled in response to the asserted EXIT_STANDBY control signal. To further reduce the processing requirements of receiver circuit **300** during the standby mode, equalizer **303**, carrier recovery circuit **304**, timing update circuit **310** and echo canceler **309** can be operated in a reduced precision processing mode while receiver circuit **300** is operating in the standby mode. Even further reductions are possible by applying well understood sequence estimation concepts. That is, the quality of processing required to make the soft decision can be greatly relaxed during standby mode.

More specifically, the length of echo canceler **309** can be significantly reduced during standby mode because the resulting uncompensated error will be compensated for by the vastly increased window of comparison implemented by comparator circuit **317**. In addition, the frequency of updates within echo canceler **309** can also be reduced. The length of echo canceler **309** can also be reduced since distant echos may now be small enough to be ignored. Similarly, the tolerance requirements for timing update circuit **310** can be greatly relaxed and the length of resampler **302** can be shortened. In many cases, equalizer **303** can be disabled during standby mode. In most other cases, equalizer **303** can be implemented with just a few taps of a FIR filter during standby mode. If the carrier signal is locked to the timing, then the carrier tracking performed by carrier recovery circuit **304** may not be necessary if the target C/I ratio is reduced to approximately **12** dB to provide an acceptable level of phase jitter. If carrier recovery circuit **304** includes a phase locked loop (PLL) to track a center frequency of the signal provided by equalizer **303**, then the update rate of the PLL may be reduced.

An example of the reduced processing implemented during the standby mode is described in more detail below. The full and reduced precision processing modes of equalizer **303**, carrier recovery circuit **304** and echo canceler **309** can be entered and exited in response to the ENTER_STANDBY and EXIT_STANDBY control signals.

When comparator **317** determines that a soft symbol provided by carrier recovery circuit **304** does not correspond with an expected idle symbol provided by the idle symbol predictor circuit **316**, comparator **317** asserts the EXIT_STANDBY signal. The asserted EXIT_STANDBY signal is also used to cause receiver circuit **300** to exit the standby mode. Upon exiting the standby mode, symbol decision circuit **305**, channel decoder **306**, framer/idle detector **307**, equalizer update circuit **311** and carrier update circuit **312** are enabled. In addition, equalizer **303**, carrier recovery circuit **304** and echo canceler **309** are returned to their full processing capabilities.

The asserted EXIT_STANDBY signal also causes the most recent history of the digital signal stored in sample buffer **308** to be provided to resampler **302**. In the described example, sample buffer **308** initially provides the symbol which was received N symbols before the soft symbol which failed to match the expected idle symbol. Processing then proceeds forward from this previous sample. By reprocessing the most recent history of the digital signal, the probability that useful data is thrown away because of failure to detect the end of the IDLE state is minimized. Moreover, reprocessing the most recent history of the digital signal enables the timing, carrier and equalization update circuits to be restored to the accuracies necessary to operate at the agreed upon transmission rate.

In the foregoing example, receiver circuit **300** must process N symbols of the most recent history of the digital signal two times, once at reduced processing capability and once at full processing capability. However, this re-processing enables many (typically thousands) of idle symbols to be processed at a reduced processing capability. The overall result is a large reduction in the overall processing requirements.

In the foregoing manner, receiver circuit **300** is only required to operate at full processing capability when the RECEIVE signal transmits symbols which are representative of data. In a packet based data transmission environment, this can greatly reduce the percentage of time during which receive circuit **300** must operate at full processing capability. This reduced processing load on receiver circuit **300** can allow for other processing, such as non-communication processing, to be effected by the same processing resource used by receiver circuit **300**, or can be used to reduce power consumption of the processing element. In another embodiment, the reduced processing load on receiver circuit **300** can enable a single processing resource to perform standby idle prediction and detection for multiple lines. In this embodiment, the single processing resource signals other processing resources to schedule for full demodulation processing when the received signal enters the DATA state.

One example of the reduced processing possible during standby mode will now be described. For example, consider a quadrature amplitude modulation (QAM) modem. Assume that all symbols have the same probability of being transmitted (although this assumption is not necessary to practice the present invention). Each of the symbols can be defined as having a particular location (or signal point) within a signal constellation. The signal points are separated by predetermined distances within the signal constellation. In the present embodiment, the idle symbol predictor **316** determines the location of the next expected idle symbol. Idle symbol predictor **316** then defines a predicted region which laterally surrounds the location of this expected IDLE symbol. The predicted region has a radius, $R_{PREDICTED}$. If the soft symbol identified by carrier recovery circuit **304** lies within the predicted region, then this soft symbol will be deemed to have been the expected IDLE symbol. Note that once the transmission of useful data symbols resumes, there is still a chance that the initial data symbol will lie within the predicted region of the next expected IDLE symbol. However, if the entire signal constellation is considered, the probability of the initial data symbol lying within the predicted region of the expected idle symbols can be made small. As a result, the radius $R_{PREDICTED}$ can be made relatively large, while the chances of incorrectly remaining in the standby mode can be made relatively small.

For example, assume that "Area_predicted" is the area of the predicted region (i.e., the area of the region within $R_{PREDICTED}$ of the expected IDLE symbol), and that "Area_total" is the area of the entire signal constellation. Further assuming that for normal useful data transmission the received symbols would be distributed uniformly over Area_total, then the probability of missing the transition from an IDLE state to a DATA state is approximately:

$$P_1[\text{miss}]=\text{Area\_predicted}/\text{Area\_total}$$

However, the probability of N useful data symbols tracking N expected IDLE symbols (where N is an integer greater than one) is approximately:

$$P_N[\text{miss}]=(\text{Area\_predicted}/\text{Area\_total})^N$$

Using sample buffer **308** to maintain a recent history of N samples minimizes the likelihood of missing transitions from the IDLE state to the DATA state.

A specific example is provided below with hypothetical numbers. If Area_predicted/Area_total=¼ and a sequence of 8 symbols is considered (i.e., N=8), then,

$$P_N[\text{miss}]=(1/4)^8=1.5\times10^{-5}$$

Furthermore, this ratio of Area_predicted/Area_total implies that the quality of processing need only be roughly equivalent to that of quadrature phase shift keying (QPSK).

If receiver circuit **300** fails to detect the transition from an IDLE state to a DATA state within N symbols, the initial data packet would be lost. However, the modem protocol, such as V.42, or a higher level modem protocol would merely request retransmission of the initial data packet. The end result is a brief degradation in data throughput. Most network protocols require that packets have a minimum size, increasing the likelihood of detection of the initial data packet.

The probability of falsely detecting that a DATA state exists (when an IDLE state actually exists) can be calculated as follows. First, assume a carrier to interference ratio (C/I) of 10.5 dB (with interference being defined as noise plus interference plus equalizer mismatch plus other forms of processing degradation, primarily resulting from reduced processing. Therefore, the probability of falsely detecting a DATA state is approximately 1×10^{-3}, based on error probability curves for QPSK modulation. The error probability curves for QPSX modulation can be used because QPSK modulation, like the described example, exhibits an Area_Predicted/Area_Total ratio of ¼. Because there is a relatively low probability of falsely detecting a DATA state, in one variation of the invention, a single detected data symbol causes receiver circuit **300** to transition to the DATA state.

Moreover, if a soft symbol which is actually representative of an expected idle symbol is erroneously determined to be located outside of the predicted region, then receiver circuit **300** merely exits the standby mode resumes more accurate processing of the RECEIVE signal. If the RECEIVE signal is indeed representative of an IDLE state, receiver circuit **300** subsequently detects the IDLE state and re-enters the standby mode. The end result is a brief degradation in computational efficiency.

In the present example, 99.9% (i.e., $1-(1\times10^{-3})$) of the IDLE state should be detectable. Furthermore, sequential estimation techniques across a set of samples can be used to further decrease the error in idle estimation, if necessary. The associated transmitter circuit can enhance detection of the DATA states by prefixing new packet transmissions with a preamble to trigger comparator **317**.

It is estimated that the previously described optimizations provide an order of magnitude reduction in processing within receiver circuit **300** during the standby mode.

In another embodiment of the present invention, receiver circuit **300** is modified such that comparator **317** receives the equalized digital samples provided by equalizer circuit **303**, rather than the soft symbols provided by carrier recovery circuit **304**. In this embodiment, conventional differential processing can be performed on the equalized digital samples provided by equalizer circuit **303**. This differenitial processing determines the actual differences between successive equalized digital samples. In this embodiment, idle symbol predictor **316** is modified to provide predicted differences between successive IDLE symbols (rather than predicted IDLE symbols). Comparator **317** then compares the actual differences provided by equalizer **303** with the predicted differences provided by idle symbol predictor **316** to determine whether the signal received on communication channel **321** is representative of an IDLE state or a DATA state.

The concept of idle detection and idle symbol prediction can be applied to other modulation types in addition to QAM. One example of an alternative modulation type is carrier-less amplitude and phase (CAP) modulation. Another example is pulse amplitude modulation (PAM). PAM can be geometrically viewed as a one dimensional constellation, where the 'areas' described for in QAM example convert to 'line lengths' in PAM.

For multi-carrier techniques such as discrete multi-tone modulation (DMT) (also known as orthogonal frequency division multiplexing, or OFDM), there is, as in the QAM example, a channel decoding stage out of which the IDLE state can be detected. Assuming that the remote transmitter circuit is a single channel and continues to transmit idle information, subsequent idle symbols at the receiver circuit can be predicted.

Once the IDLE state has been detected, a standby mode can be entered during which only one (or a small subset) of the multiple carriers is processed. If the output of this reduced processing matches properly with the expected continuation of the idle sequence, then the standby mode is maintained. Otherwise, the standby mode is exited and full processing is resumed from a point far enough back in the input sample buffer to guarantee correct demodulation of the onset of useful data.

In accordance with another embodiment of the invention, the quality of the communication channel **321** can be determined by monitoring various elements within receiver circuit **300**. For example, error correction circuitry present in channel decoder **306** can be monitored to determine the quality of the established communication channel **321** (i.e., whether a large or small amount of error correction is being performed). Another measure of the signal quality is the mean of the square of the quantizer error (i.e., the difference between the input and the output of the symbol decision circuit **305**). If the communication channel **321** is determined to be a high quality connection, then the processing within receiver circuit **300** can be reduced. For example, equalizer **303**, carrier recovery circuit **304**, timing update circuit **310** and echo canceler **309** can be operated in a reduced precision processing mode when a high quality communication channel **321** exists. The processing performed by receiver circuit **300** in the reduced precision mode in accordance with this variation is approximately 50 to 25 percent of the processing required in the full processing mode.

In a variation of this embodiment, the quality of the communication channel **321** can be determined using higher protocol layers, and the processing precision of receiver circuit **300** can be adjusted accordingly.

Where a given telephone line is intentionally configured to use reduced symbol rates or relaxed number of bits per symbol, as in the case where subscriber data rates are adjusted according to class of service, then processing within receiver circuit **300** can be reduced.

In another variation, echo canceler **309** can monitor the coefficients which used to generate the echo signal. There are typically a predetermined number of coefficients used to generate the echo signal. If certain coefficients are small enough to be ignored, the number of coefficients used to generate the echo signal can be reduced (with the insignificant coefficients being ignored). As a result, the processing requirements of echo canceler **309** are advantageously reduced.

The previously described methods are based on modem formats that continuously signal on a communication channel, using distinguished idle symbol sequences within the modulation to indicate the absence (and presence) of data.

Alternative Embodiments

In accordance with another embodiment of the present invention, the transmitter and receiver circuits provide for direct support of packet traffic, as opposed to continuous bit streams, using low-level modem protocols. The protocol which facilitates this packet traffic will hereinafter be referred to as a burst-mode protocol. In the burst-mode protocol, the transmitter circuit does not transmit idle information as previously described in connection with transmitter circuit **100** (FIG. **1**). Instead, the transmitter circuit transmits a predetermined non-idle state signal to indicate that packet data is about to be transmitted, and then transmits the packet data. If the transmitter circuit is not transmitting the predetermined non-idle state signal or packet data, the transmitter circuit does not transmit any signals on the communication channel. Stated another way, the transmitter circuit does not transmit idle information. The transmitter circuit only sends information when there is meaningful packet data available to be sent.

FIG. **4** is a block diagram of a receiver circuit **400** in accordance with the burst-mode protocol. Many of the elements of receiver circuit **400** are similar to elements previously described in connection with receiver circuit **300** (FIG. **3**). Thus, similar elements in FIGS. **3** and **4** are labeled with similar reference numbers. Thus, receiver circuit **400** includes A/D converter **301**, resampler **302**, equalizer **303**, carrier recovery circuit **304**, symbol decision circuit **305**, channel decoder **306**, framer/idle detector **307**, sample buffer **308**, echo canceler **309**, timing update circuit **310**, equalizer update circuit **311**, carrier update circuit **312** and packet queue **318**. In addition, receiver circuit **400** includes a non-idle detector circuit **401**, which is coupled to receive the output signal provided by summing node **319**.

In the burst-mode protocol, the presence of packet data (i.e., an analog signal burst) is immediately preceded by a predetermined signalling on the communication channel (i.e., a non-idle state signal). This signalling is selected to be detected by non-idle detector **401** without the computational complexity of full demodulation. Three such signalling schemes are discussed below.

First, an easily detected signal, such as a pure tone, can be used to signal the presence of packet data (hereinafter referred to as a DATA state) and the absence of packet data (hereinafter referred to as a NO DATA state). In the described example, the easily detected signal is prefixed to the onset of the transmission of packet data. Upon detecting the easily detected signal, non-idle detector **401** enables the full processing mode of receiver circuit **400**, thereby causing receiver circuit **400** to perform full demodulation on the incoming RECEIVE signal. After the packet data has been received, non-idle detector **401** detects the absence of the easily detected signal (and the packet data) on the communication channel, and in response, enables a reduced processing mode of receiver circuit **400**. To enable the reduced processing mode of receiver circuit **400**, non-idle detector **401** disables resampler **302**, equalizer **303**, carrier recovery circuit **304**, symbol decision circuit **305**, channel decoder **306**, framer/idle detector **307**, echo canceler **309**, timing update circuit **310**, equalizer update circuit **311**, carrier update circuit **312** and packet queue **318** of receiver circuit **400**, thereby simplifying the modem function when there is no packet data being received (i.e., during the NO DATA state).

In a second scheme, non-idle detector **401** monitors the presence and absence of carrier energy within the communication channel to determine whether packet data is being received. Upon detecting carrier energy within the communication channel, non-idle detector **401** enables the full processing mode of receiver circuit **400**. When no carrier energy (or a minimum carrier energy) is detected within the communication channel, non-idle detector **401** enables the reduced processing mode of receiver circuit **400**.

In a third scheme, a sub-carrier signal is used to signal the presence and absence of packet data. In this embodiment, the sub-carrier signal is demodulated with much less computational requirements than the packet data. One example of a signalling protocol which uses a sub-carrier signal is multi-carrier modulation (MCM) signalling. One example of multi-carrier modulation signalling is Discrete Multi-Tone (DMT) signalling. Although the receiver circuit used in connection with an MCM signalling protocol (hereinafter an MCM receiver circuit) is different from receiver circuit **400**, such an MCM receiver circuit is well known in the art and can be adapted for use with a non-idle detector in the manner described below.

In MCM signalling, the received analog signal consists of multiple sub-channels in the frequency domain. In such a format, one of these sub-channels is used by the associated transmitter circuit to signal the presence of the DATA state. A non-idle detector circuit is coupled to receive the selected sub-channel of the incoming MCM signal. Upon detecting the sub-channel signalling, the non-idle detector circuit causes the receiver circuit to enter into a full processing mode, in which the received analog signal is processed using the full processing capabilities of the receiver circuit. After the packet data has been transmitted, the sub-channel signal is de-asserted. Upon detecting the absence of the sub-channel signal, the non-idle detector enables a reduced processing mode within the receiver circuit.

In the foregoing schemes, receiver circuit **400** (or the MCM receiver circuit) operates with a reduced level of processing to monitor the communication channel to detect the presence of a DATA state. After a timeout period has expired, the communication channel can automatically be assigned to a call-inactive status, and the detection processing performed by non-idle detector **401** can be reduced. The associated transmitter circuit can then initiate a session by transmitting a non-idle state signal long enough to ensure that non-idle detector **401** detects the subsequent DATA state. Alternatively, receiver circuit **400** can periodically poll the other end of the communication channel (i.e., the associated transmitter circuit), and only enable non-idle detector **401** during a window following each poll.

Alternatively, receiver circuit **400** can periodically enable the non-idle detector **401** during predetermined time intervals which can be used by the remote transmitter circuit to signal the transmission of a packet. A periodic poll or some other timing signal would be used to maintain synchronization of these time intervals between receiver circuit **400** and the remote transmitter circuit. In the case of a multi-line access network access circuit (described in more detail below in connection with FIG. **5**), the time intervals can be staggered across the multiple lines such that idle detection can be shared across those lines. In this manner, the processing requirements of the receiver circuit **400** are further reduced.

In a particular embodiment, receiver circuit **400** is implemented in software in a subscriber's personal computer (PC). In this embodiment, the processing resources required to implement receiver circuit **400** are greatly reduced during the NO DATA state. For example, when receiver circuit **400** demodulating a standard V.34 signal is in the full processing mode (i.e., during a DATA state), approximately 40 percent of a 100 MHz Pentium™ PC's computing resources may be consumed by the implementation of receiver circuit **400**. However, during the reduced processing mode (i.e., during a NO DATA state), this percentage can be reduced by approximately one order of magnitude.

As previously described, when no packet data is being received, there is a statistically significant reduction in the amount of processing required within receiver circuit **400**. This reduction in processing can be used to reduce power consumption.

In accordance with another aspect of the invention, the quality of communication channel **321** can be determined in the manner previously described in connection with receiver circuit **300** (FIG. **3**). If the quality of communication channel **321** is determined to be relatively high, then the processing within receiver circuit **400** can be reduced in the manner previously described in connection with receiver circuit **300**.

In accordance with another aspect of the invention, when using the burst-mode protocol, the local transmitter circuit associated with receiver circuit **400** will not be continuously transmitting. During the periods when the local transmitter circuit is not transmitting local transmit data, there is no possibility of an echo signal on communication channel **321**. Accordingly, echo canceler **309** can be disabled when the local transmitter circuit is not transmitting packet information, thereby further reducing the processing requirements of receiver circuit **300**.

In another embodiment, receiver circuit **400** is used in a telephone company central office to implement a multi-line network access circuit (i.e., increase the number of lines that can be handled by a single DSP resource). FIG. **5** is a block diagram of a multi-line network access circuit **500** which can be located in a central office. In another embodiment, multi-line network access circuit **500** can be used by an internet service provider (ISP). Multi-line network access circuit **500** includes a first number N of incoming communication channels **401–405** (e.g., telephone lines), a corresponding number of A/D converters **411–415** and buffers **421–425**, a switch matrix **440**, a second number M of digital signal processing resources **431–433**, a non-idle detector circuit **450** and DSP allocation and scheduling circuit **451**. In the described embodiment, N is an integer greater than one, and M is an integer greater than or equal to one. In a particular example, N is equal to 100, while M is equal to 10. The ratio of N:M is referred to as the concentration ratio. The larger the concentration ratio, the fewer the number of DSP resources required to support a large number of incoming signal lines. In the described embodiment, the concentration ratio is greater than 1:1.

Each of the corresponding telephone lines **401–405** is coupled to a corresponding subscriber (rot shown). Each subscriber has one or more transmitter circuits which transmit non-idle state signalling and packet data on the corresponding line in accordance with the burst mode protocol previously described. Each of lines **401–405** is coupled to a dedicated A/D converter **411–415**. Each of A/D converters **411–415** is substantially equivalent to the previously described A/D converter **301** (FIGS. **3** and **4**). Typically, each of A/D converters **411–415** is located within a codec which also includes a corresponding D/A converter (not shown).

Each of the A/D converters **411–415** is coupled to a dedicated buffer circuit **421–425**. Each of buffer circuits **421–425** operates in a first in, first out manner, and stores a plurality of samples of the incoming signals. Buffer circuits **421–425** are coupled to switch matrix **440**. Switch matrix **440** is controlled to provide the output signals from each of buffers **421–425** to non-idle detector **450**. Non-idle detector **450**, which includes N non-idle detector circuits (one for each of lines **401–405**), monitors the signals provided by buffer circuits **421–425**. In response, non-idle detector **450** determines which of the lines **401–405** are in a DATA state and which of the lines **401–405** are in a NO DATA state. At any given time, it is probable that only a few (if any) of the lines **401–405** will be in the DATA state. As a result, it is possible to multiplex the packet data on the plurality of lines **401–405** into a single one of the DSP circuits **431–433**.

In the described embodiment, each of DSP circuits **431–433** includes the following elements which were previously described in connection with receiver circuits **300** and **400** (FIGS. **3** and **4**): resampler **302**, equalizer **303**, carrier recovery circuit **304**, symbol decision circuit **305**, channel decoder **306**, framer/idle detector **307**, sample buffer **308**, echo canceler **309**, timing update circuit **310**, equalizer update circuit **311**, carrier update circuit **312**, and summing node **319**.

Non-idle detector **450** generates a plurality of control signals which are provided to DSP allocation and scheduling circuit **451**. These control signals indicate which of the lines

401–405 are carrying packet data at any given time. In response to the control signals, DSP allocation and scheduling circuit 451 routes the received packet data from buffers 421–425 to DSP circuits 431–433. DSP circuits 431–433 operate in the manner previously described in connection with FIGS. 3 and 4 to provide demodulated bit streams. The demodulated bit streams provided by DSP resources 431–433 are routed over digital switching circuitry to an end destination, such as internet service provider (ISP).

The following example will further illustrate how DSP allocation and scheduling circuit 451 routes the received packet data. FIG. 6 is a schematic diagram of packet data received on lines 401–405. In this example, data packets 601, 602 and 603 are simultaneously transmitted on lines 401, 402 and 403, respectively. At this time, lines 404 and 405 are in a NO DATA state. Non-idle detector 450 detects the presence of data packets 601, 602 and 603 in accordance with one of the previously described non-idle signalling schemes. Non-idle detector 450 transmits control signals to DSP allocation and scheduling circuit 451 indicating the presence of packet data on lines 401, 402 and 403. In response, DSP allocation and scheduling circuit 451 controls switch matrix 440 to route the output signals from lines 401, 402 and 403 to different ones of DSP circuits 431–433. For example, the packet information on line 401 can be routed to DSP circuit 431, the packet information on line 402 can be routed to DSP circuit 432, and the packet information on line 403 can be routed to DSP circuit 433.

Subsequently, data packets 604, 605 and 606 are received on lines 402, 403 and 404, respectively. Again, non-idle detector 450 detects these data packets 604–606, and informs DSP allocation and scheduling circuit 451. In response, DSP allocation and scheduling circuit 451 controls switch matrix 440 to route the data packets 604, 605 and 606 to different DSP circuits 431–433. For example, data packet 604 on line 402 can be routed to DSP 432, data packet 605 on line 403 can be routed to DSP 433, and data packet 606 on line 404 can be routed to DSP 431. In this manner, DSP 431 is used to process packet data from both line 401 and line 404 (i.e., data packets 601 and 606).

Subsequently, data packets 607 and 608 are received on lines 401 and 404, respectively. Again, non-idle detector 450 detects these data packets 607–608, and informs DSP allocation and scheduling circuit 451. DSP allocation and scheduling circuit 451 controls switch matrix 440 to route data packets 607 and 608 to different DSP circuits 431–433. For example, data packet 607 on line 401 can be routed to DSP 431 and data packet 608 on line 404 can be routed to DSP 432. In this manner, DSP 432 is used to process packet data from both line 402 and line 404 (i.e., data packets 602, 604 and 608).

DSP allocation and scheduling circuit 451 establishes and removes the previously described routing connections by a scheduling algorithm that uses information about queue occupancy and link activity detection to identify those lines that have data to process.

In accordance with the foregoing description, each of DSP resources 431–433 is capable of processing packet information from a plurality of lines 401–405. To facilitate such processing, each of DSP resources 431–433 stores several sets of update coefficients. Each set of update coefficients corresponds with a particular communication channel established on one of line 401–405. For example, if DSP resource 431 is processing packet data received on lines 401 and 404, then DSP resource stores two sets of update coefficients. A first set of update coefficients is selected in view of the operating characteristics of the session established on line 401 and a second set of update coefficients is selected in view of the operating characteristics of the session established on line 404. The first set of update coefficients is enabled within DSP resource 431 when receiving packet data on line 401, and the second set of update coefficients is enabled within DSP resource 431 when receiving packet data on line 404. The various sets of update coefficients are enabled by DSP allocation and scheduling circuit 451. Each set of update coefficients include the update coefficients associated with timing update circuit 310, equalizer update circuit 311 and carrier recovery update circuit 312 within the DSP resource (FIGS. 3 and 4).

By storing the update coefficients associated with the various communication channels, DSP resources 431–433 can quickly become operational upon receiving packet information (because the update coefficients do not need to be re-established). This scheme works well because the same communication link, having relatively constant signal transmission characteristics, exists on lines 401–405 for the duration of each session.

One result of the previously described multi-line network access circuit 500 is a reduction in the real-time digital signal processing requirements. In conventional systems, sufficient DSP resources must be dedicated to each line to continuously perform the full modem function. However, within multi-line network access circuit 500, most of the DSP resources 431–433 are freed up for most of the time, and can be applied to other lines that have active packet traffic.

Given a system designed with a certain concentration ratio, such as 10:1, there is some probability that more than 10 percent of the lines 401–405 may be receiving packet information at the same time. By design, this probability is minimized to an acceptable level, by controlling the concentration ratio based on observed or predicted traffic intensities.

In existing systems with session-based concentration mechanisms (such as call-connection used in voice and ISDN networks), when the offered traffic load instantaneously exceeds the available resources, communication is blocked. However, in accordance with the present invention, buffers 421–425 store input samples for subsequent full precision processing. Such buffering allows communication to proceed during periods of instantaneous oversubscription with the introduction of some additional latency. As long as DSP resources 431–433 have sufficient capacity over the buffer time period to process all of the received packet information, no packet information will be blocked.

In the described embodiment, input samples for each of lines 401–405 are stored in corresponding buffer circuits 421–425. DSP allocation and scheduling circuit 451 implements a service queue model to schedule the processing of the input samples within DSP resources 431–433. Buffer circuits 421–425 enable the smoothing of instantaneous packet traffic peaks, where packets arrive on many of the lines 401–405 coincidentally. The scheduling capability can be used with a Quality of Service policy mechanism to allocate DSP resources 431–433 to those lines 401–405 that require lower latency and/or lower retransmission rate.

Additionally, this invention includes a signalling method from the system of DSP resources 431–433 back to each of the modems coupled to communication channels 401–405. This signalling method is used to indicate the buffer fill level and can be used by the remote modems to temporarily reduce the packet transmission rates, thereby controlling the oversubscription of the system.

In accordance with another embodiment of the invention, the burst-mode protocol effectively enables multi-drop operation. In multi-drop operation, multiple modems connected are connected to the same communication channel using time-division multiplexing. For example, in accordance with multi-drop operation, a subscriber can operably couple more than one modem to a single telephone line. FIG. **7** is a schematic diagram of a multi-drop configuration which includes modems **1001–1003** in the subscriber's residence **1010**, and modem **1004** in the telephone company central office **1011**. Modems **1001–1004** are coupled by a twisted pair telephone line **1012**. Each of modems **1001–1004** include a transmitter circuit and a receiver circuit which operate in accordance with the previously described burst-mode protocol. Because the transmitter circuits in modems **1001–1004** do not generate IDLE symbols in accordance with the burst-mode protocol, these transmitter circuits do not introduce any traffic onto telephone line **1012** during the time that the transmitter circuits of modems **1001–1004** are not transmitting packets. As a result, any of the transmitter circuits of modems **1001–1004** can establish a session on telephone line **1012** as follows.

First, the transmitter circuits coupled to the common line **1012** can transmit packets whenever necessary. However, this may introduce collisions between packet information sent by the transmitter circuits. A better solution is to use a carrier sense multiple access (CSMA) scheme, where each transmitter circuit listens to the communication channel prior to sending packet information. A common extension to CSMA is CSMA/CD in which transmissions are immediately terminated if collisions are detected. Such CSMA schemes are commonly used in the ethernet field. These CSMA schemes enable effective communication between all modems connected to a single telephone twisted pair wire (e.g., line **401**), including a plurality of modems in the subscriber's home (or business) and a modem in the telephone company central office (e.g., the modem which includes DSP resource **431**).

An alternative to the contention based protocols described above are a class of schemes commonly referred to as reservation based protocols. Applying these well known techniques, multiple modems would use a separate arbitration channel to decide which modem gains access to the channel.

In an alternative embodiment, multi-drop access is provided by implementing well known time division multiple access (TDMA) techniques in which every transmitter circuit is assigned a fixed time slot during which to transmit packet information. The advantage of this scheme is ease of implementation.

In yet other embodiments, multi-drop access is provided by implementing conventional frequency division multiple access (FDMA) schemes, code division multiple access (CDMA) arbitration schemes, or data sense multiple access (DSMA) schemes.

In accordance with another aspect of the present invention, the burst-mode protocol enables multiple transmitter circuits to transfer data at different rates in a rate adaptive manner. FIG. **8** is a schematic representation of packet information which is transmitted by transmitter circuits in accordance with the burst-mode protocol of the present embodiment. In the described example, it is assumed that packet **700** is transmitted by the transmitter circuit of modem **1001**. This packet **700** can be transmitted to any one or more of the other modems **1002–1004**. Packet **700** includes a preamble **701** and a main body **702**. Packet **700** is transmitted using a gated modulation or gated carrier signal. Preamble **701**, which is approximately 20 to 100 symbols in length, includes information identifying the nature of the packet **700**. For example, preamble **701** can include information which identifies: (1) a version or type field for the preamble, (2) packet source and destination addresses, (3) the line code (i.e., the modem protocol being used), (4) the data rate, (5) error control parameters, (6) packet length and (7) a timing value for the expected reception slot of a subsequent packet.

The receiver circuits of the modems **1002–1004** coupled to the telephone line **1012** detect the information present in the preamble **701** and establish synchronization at the beginning of the packet **700**. In the described embodiment, all preambles are transmitted at a relatively low, common transmission rate. The preamble **701** contains information which identifies the data rate of the main body **702** of the packet. For example, the preamble **701** may indicate that the main body **702** of the packet **700** includes data which is being transmitted at a higher data rate. The transmitter circuit of modem **1001** then transmits the main body **702** of the packet **700** at this higher rate. The receiver circuit identified by the destination address of preamble **701** receives the main body **702** of the packet **700** at the rate identified in the preamble **701**.

Returning to FIG. **8**, packet **710** is representative of a packet sent by a second transmitter circuit. In the described example, packet **710** is transmitted by modem **1004** in the central office **1011** to one or more of the modems **1001–1003** in the subscriber's residence **1010**. Packet **710** includes preamble **711** and main body **712**. Preamble **711** includes information which is transmitted at the same rate as the information of preamble **701**. However, preamble **711** indicates that the main body **712** is transmitted at a second data rate, which is different from the data rate of the main body **702** of packet **700**.

Because the receiver circuits are informed of these different data rates prior to receiving main body **702** and main body **712**, the receiver circuits are able to adjust for these different data rates. More specifically, preamble **711** can be used to select a different set of update coefficients for use within the receiver circuit to process main body **712**.

The previously described rate adaptive protocol allows both simple devices (which communicate at a relatively low speed) and complex devices (which communicate at a relatively high speed) to be operably coupled to a single telephone line at the same time. For example, modem **1001** can be located in a personal computer, while modem **1002** can be located in a "smart toaster" or similar appliance.

The previously described rate adaptive protocol allows a multi-line network access circuit to take advantage of reduced processing required for receiving packets that have a lower data rate in their main body. For example, an operator may offer subscribers lower rates in exchange for limiting packet traffic to lower data rates during certain times or under certain classes of service.

When the preamble in a burst-mode packet includes the destination address of the packet, the receiver circuits can monitor the destination address of the packet, and in response, filter packets which do not need to be demodulated, thereby reducing the processing requirements of the receiver circuits. In addition, when the preamble in a burst-mode packet includes a source address of the packet, the receiver circuit can recall appropriate stored configuration parameters to speed the acquisition/demodulation of the packet.

As previously described, the preamble can also contain error control information that will be used by the main body of the packet. Using this scheme, the same modem can accommodate both "expensive" error control schemes such as might be required for video applications, as well as "inexpensive" error control schemes which might be used for traditional packet traffic. Another portion of the error control information can be used to "request an acknowledgement" from the receiver circuit. If the received packet is acceptable, then the receiver circuit will cause an acknowledge (ack) signal to be transmitted to the modem residing at the source address. If the received packet is not acceptable, then the receiver circuit will cause a no acknowledge (nack) signal to be transmitted to the modem residing at the source address.

FIG. **9** is a block diagram of a multi-line network access circuit **800** in accordance with another embodiment of the present invention. In general, multi-line network access circuit **800** facilitates the transmission of packet information from a source which generates digital packet information (e.g., an internet service provider) to a subscriber's modem which operates in response to a conventional modem protocol (i.e., packet data interleaved with idle information). Multi-line network access circuit **800** includes D/A converters **511–515**, switch matrix **530**, DSP resources **531–533**, common idle generator **535**, input packet processor **540**, DSP allocation and scheduling circuit **541**, multiplexer **550** and buffer circuits **561–563**.

Multiplexer **550** is coupled to a plurality of internet service providers (ISPs) **551–553** through buffer circuits **561–563**. The present invention is not limited to ISPs, but can be extended to any source which transmits digital packet data. Moreover, although three ISPs **551–553** are illustrated, it is understood that many other sources can be coupled to multiplexer **550**.

Packets arriving from ISPs **551–553** are stored in the corresponding input buffers **561–563**. The input packet processor **540** examines the destination addresses associated with the incoming packets stored in buffers **561–563**. In response to these destination addresses, input packet processor **540** determines which subscriber telephone line **501–505** is to receive the packet. This information is transmitted to DSP allocation and scheduling circuit **541**. In response, DSP allocation and scheduling circuit **541** selects one of the DSP resources **531–533** to modulate the packet data, and sends control signals to multiplexer **550**, thereby routing the packets from the input buffers **561–563** to the selected DSP resources **531–533**. DSP allocation and scheduling circuit **541** also controls switch matrix **530** to couple DSP resources **531–533** and common idle generator **535** to D/A converters **511–515**. Each of the D/A converters **511–515** is coupled to a corresponding telephone line **501–505**. Each of telephone lines **501–505** is connected to a subscriber who has a receiver circuit that is capable of receiving packet data and idle information. The following example will clarify the operation of multiplexer **550** and switch matrix **530**.

FIG. **10** is a schematic diagram of packet data received from ISPs **551–553**. In this example, ISPs **551** and **552** simultaneously transmit data packets **901** and **902**, respectively. At this time, ISP **553** is not transmitting a data packet. Packets **901** and **902** are received in input buffers **561** and **562**, respectively. Input packet processor **540** detects the arrival of data packets **901** and **902**, notifies DSP allocation and scheduling circuit **541**. In response, DSP allocation and scheduling circuit **541** selects which DSP resource will process each packet. In the present example, packet **901** is routed to DSP resource **531** and data packet **902** is routed to DSP resource **532**, although any other combination of resource assignment is possible, including the allocation of both packets **901** and **902** to a single DSP resource.

In addition, DSP allocation and scheduling circuit **541** controls switch matrix **530** as follows. Assume that the data packet **901** transmitted by ISP **551** is intended for a subscriber connected to telephone line **504** and that data packet **902** is intended for a subscriber connected to telephone line **501**. In this case, switch matrix **530** is controlled to couple DSP resource **531** to D/A converter **514**. In addition, switch matrix **530** is controlled to couple DSP resource **532** to D/A converter **511**. At the same time, switch matrix **530** is controlled to couple the remaining active D/A converters **512**, **513** and **515** to common idle generator **535**. Common idle generator **535** generates a stream of idle information in accordance with a conventional modem protocol. In one embodiment, common idle generator **535** generates the stream of idle information in the manner previously described in connection with idle generator **314** and idle symbol predictor **316** (FIG. **4**). In another embodiment, where the stream of expected idle information repeats with a reasonable period, the stream of expected idle information can be pre-computed and stored in a buffer memory within common idle generator **535**. This buffer memory is then accessed when common idle generator **535** is to generate the common idle signal.

As a result, data packet **902** is transmitted on telephone line **501**, data packet **901** is transmitted on telephone line **504**, and idle information is transmitted on telephone lines **502**, **503** and **505**. After the transmission of data packets **901** and **902** is complete, DSP allocation and scheduling circuit **541** causes switch matrix **530** to couple D/A converters **511** and **514** to common idle generator **535**, thereby transmitting idle information on lines **501** and **504**.

In the foregoing manner, only one DSP resource (i.e., common idle generator **535**) is required to generate idle information for a relatively large number of telephone lines. This advantageously results in a reduced amount of processing within multi-line network access circuit **800**, when compared with prior art systems which require a dedicated idle generator for each of telephone lines **501–505**.

Multi-line network access circuit **800** also facilitates an efficient multi-cast transmission scheme. Assume that ISP **553** is to transmit the same data packet **903** (FIG. **10**) to each of telephone lines **501–505**. To accomplish this, multiplexer **550** is controlled to route the data packet to one of DSP resources **531–533** (e.g., DSP resource **531**). DSP allocation and scheduling circuit **541** causes switch matrix **530** to route the output signal provided by DSP **531** to each of D/A converters **511–515**. As a result, the data packet is simultaneously multi-cast on telephone lines **501–505** using a single one of DSP resources **531–533** (See, FIG. **10**).

Multi-cast data packets can be interleaved with uni-cast data packets (i.e., data packets which are transmitted to a single subscriber) using synchronous or asynchronous methods. In a synchronous method, the multi-cast data packets are transmitted from a common buffer in a time aligned manner on all of the lines **501–505**. In this method, the common buffer is continuously loaded by the selected DSP resource. This requires that time slots be reserved across the set of channels for multi-cast data, and that DSP allocation and scheduling circuit **541** control the uni-cast data transmissions to not overlap with the time slots reserved for multi-cast data transmission.

In an asynchronous method, the multi-cast and uni-cast data samples for each channel are stored in a buffer associated with the channel. Each of lines **501–505** is driven by data stored in a corresponding buffer. This enables the multi-cast data to be sent at different times on each individual line, removing the time slot reservation restriction of the previously described synchronous method.

In one variation, common idle generator **541** is eliminated from multi-line network access circuit **800**, such that idle information is not inserted between the packet data. In this variation, the receiver circuits coupled to lines **501–505** are replaced with receiver circuits which operate in response to the previously described burst-mode protocol. The non-idle signalling required to indicate the presence of a DATA state in accordance with the burst-mode protocol is performed within multi-line network access circuit **800**. For example, this signalling can be implemented by the individual DSP resources **531–533** or by a common signalling circuit (not shown) which is controlled by DSP allocation and scheduling circuit **541**.

An alternative configuration of multi-line access circuit **800** includes multiple modems that do not include D/A converters **511–515**, but instead provide aggregated digital signals directly to a digital trunk line of the telephone network. The previously described techniques apply to this configuration as well. Similarly, A/D converters **411–415** can be eliminated from multi-line network access circuit **500** (FIG. **5**). In such an embodiment, multi-line network access circuit **500** receives aggregated digital signals directly from a digital trunk line of the telephone network.

Although the invention has been described in connection with several embodiments, it is understood that this invention is not limited to the embodiments disclosed, but is capable of various modifications which would be apparent to one of ordinary skill in the art. For example, although the present modems have been described in terms of codecs and DSP chips, it is understood that the modems in accordance with the present invention can be implemented entirely by software within a conventional X86 or X86 with MMX processor. Moreover, although the present invention has been described in connection with communication channels which are telephone lines, it is understood that other types of communication channels can be used to implement the present invention. In addition, although the present invention has been described in connection with selected modulation techniques (i.e., QAM and MCM) it is understood that other modulation techniques, such as carrier-less amplitude and phase (CAP) modulation, can be used. Moreover, although the receiver circuits **300** and **400** (FIGS. **3** and **4**) have been described as having a resampler **302**, it is understood that in embodiments which process baud synchronous samples, the resampler **302** can be eliminated from these receiver circuits. Thus, the invention is limited only by the following claims.

What is claimed is:

1. A method for operating a modem on a communication channel the method comprising the steps of:

receiving a continuous analog signal transmitted on the communication channel with a receiver circuit of the modem, the analog signal comprising packet information and idle information;

detecting the presence of the idle information with the receiver circuit;

entering a standby mode within the receiver circuit upon detecting the presence of the idle information, wherein an amount of processing performed by the receiver circuit is reduced during the standby mode;

reducing the amount of processing performed by selected circuitry within the receiver circuit when the receiver circuit is in the standby mode;

wherein the receiver circuit comprises an echo canceler, the method further comprising the step of reducing a length of the echo canceler when the receiver circuit is in the standby mode.

2. The method of claim **1**, wherein the receiver circuit comprises an equalizer, the method further comprising the step of reducing the processing requirements of the equalizer when the receiver circuit is in the standby mode.

3. A method for operating a modem on a communication channel, the method comprising the steps of:

receiving a continuous analog signal transmitted on the communication channel with a receiver circuit of the modem, the analog signal comprising packet information and idle information;

detecting the presence of the idle information with the receiver circuit; and

entering a standby mode within the receiver circuit upon detecting the presence of the idle information, wherein an amount of processing performed by the receiver circuit is reduced during the standby mode;

wherein the step of detecting further comprises the steps of:

fully demodulating the analog signal with the receiver circuit to provide a digital bit stream;

determining whether the digital bit stream corresponds with a predetermined idle bit stream;

wherein the step of entering the standby mode further comprises the step of entering the standby mode if the digital bit stream corresponds with the predetermined idle bit stream; and

generating an idle bit pattern if the digital bit stream corresponds with the predetermined idle bit stream;

converting the idle bit pattern to a plurality of expected idle symbols;

comparing the expected idle symbols with a plurality of soft symbols which are generated by the receiver circuit at a reduced processing power in response to the analog signal; and

remaining in the standby mode as long as the expected idle symbols match the soft symbols.

4. The method of claim **3**, further comprising the step of exiting the standby mode when an expected idle symbol does not match a corresponding soft symbol.

5. The method of claim **4**, further comprising the steps of:

storing a most recent history of the analog signal in a buffer; and

accessing the buffer after the step of exiting the standby mode, thereby enabling the receiver circuit to process the most recent history of the analog signal.

6. A method for operating a modem on a communication channel, the method comprising the steps of:

receiving a continuous analog signal transmitted on the communication channel with a receiver circuit of the modem, the analog signal comprising packet information and idle information;

detecting the presence of the idle information with the receiver circuit; and

entering a standby mode within the receiver circuit upon detecting the presence of the idle information, wherein an amount of processing performed by the receiver circuit is reduced during the standby mode;

wherein the step of detecting further comprises the steps of:

fully demodulating the analog signal with the receiver circuit to provide a digital bit stream; and

determining whether the digital bit stream corresponds with a predetermined idle bit stream;

wherein the step of entering the standby mode further comprises the step of entering the standby mode if the digital bit stream corresponds with the predetermined idle bit stream; and

generating an idle bit pattern if the digital bit stream corresponds with the predetermined idle bit stream;

converting the idle bit pattern to a plurality of expected differences between successive idle symbols;

comparing the expected differences with a plurality of actual differences between successive idle symbols which are generated by the receiver circuit at a reduced processing power in response to the analog signal; and

remaining in the standby mode as long as the expected differences correspond with the actual differences.

7. A method for operating a modem on a communication channel, the method comprising the steps of:

receiving a continuous analog signal transmitted on the communication channel with a receiver circuit of the modem, the analog signal comprising packet information and idle information;

detecting the presence of the idle information with the receiver circuit; and

entering a standby mode within the receiver circuit upon detecting the presence of the idle information, wherein an amount of processing performed by the receiver circuit is reduced during the standby mode;

wherein the step of detecting further comprises the steps of:

fully demodulating the analog signal with the receiver circuit to provide a digital bit stream;

determining whether the digital bit stream corresponds with a predetermined idle bit stream;

wherein the step of entering the standby mode further comprises the step of entering the standby mode if the digital bit stream corresponds with the predetermined idle bit stream; and

accessing a memory which stores a repetitive pattern of expected idle symbols if the digital bit stream corresponds with the predetermined idle bit stream;

comparing the expected idle symbols with a plurality of soft symbols which are generated by the receiver circuit at a reduced processing power in response to the analog signal; and

remaining in the standby mode as long as the expected idle symbols match the soft symbols.

8. A receiver circuit for use in a modem, the receiver circuit comprising:

an analog to digital (A/D) converter for receiving an analog signal which comprises packet information and idle information;

a carrier recovery circuit coupled to the A/D converter, wherein the carrier recovery circuit provides soft symbol decisions regarding the identity of the packet information and idle information;

a symbol decision circuit coupled to the carrier recovery circuit, wherein the symbol decision circuit provides hard symbol decisions regarding the identity of the packet information and idle information;

an idle detector circuit coupled to the symbol decision circuit, wherein the idle detector circuit detects the presence of idle information in response to the hard symbol decisions provided by the symbol decision circuit, and wherein the idle detector circuit instructs the receiver circuit to enter a reduced processing mode upon detecting the presence of idle information;

an idle generator circuit coupled to the idle detector circuit, wherein the idle generator circuit generates an idle bit pattern when the idle detector detects the presence of the idle information;

an idle symbol predictor coupled to the idle generator circuit, wherein the idle symbol predictor provides a plurality of expected idle symbols in response to the idle bit pattern; and

a comparator coupled to the idle symbol predictor and the carrier recovery circuit, wherein the comparator compares the expected idle symbols with the soft symbol decisions, wherein the comparator causes the receiver circuit to remain in the standby mode as long as the expected idle symbols match the soft symbol decisions and wherein the comparator causes the receiver circuit to exit the standby mode when an expected idle symbol does not match the soft symbol decision.

9. A receiver circuit for use in a modem, the receiver circuit comprising:

an analog to digital (A/D) converter for receiving an analog signal which comprises packet information and idle information;

an equalizer circuit coupled to the A/D converter, wherein the equalizer circuit provides actual equalized digital samples which correspond to the identity of the packet information and idle information;

a symbol decision circuit coupled to the equalizer circuit, wherein the symbol decision circuit provides hard symbol decisions regarding the identity of the packet information and idle information;

an idle detector circuit coupled to the symbol decision circuit, wherein the idle detector circuit detects the presence of the idle information in response to the hard symbol decisions provided by the symbol decision circuit, and wherein the idle detector circuit instructs the receiver circuit to enter a reduced processing mode upon detecting the presence of idle information;

an idle generator circuit coupled to the idle detector circuit, wherein the idle generator circuit generates an idle bit pattern when the idle detector detects the presence of idle information;

an idle symbol predictor coupled to the idle generator circuit, wherein the idle symbol predictor provides a plurality of expected equalized digital samples associated with expected idle symbols in response to the idle bit pattern; and

a comparator coupled to the idle symbol predictor and the equalizer circuit, wherein the comparator compares the expected equalized digital samples with the actual equalized digital samples, wherein the comparator causes the receiver circuit to remain in the standby mode as long as the expected equalized digital samples match the actual equalized digital samples, and wherein the comparator causes the receiver circuit to exit the standby mode when an expected equalized digital sample does not match an actual equalized digital sample.

10. A method for transferring information on a telephone line, the method comprising the steps of:

modulating packets of digital information by a first transmitter circuit, wherein the packets of digital information are converted into first analog signal bursts of discrete duration, and wherein the first transmitter circuit is coupled to a first telephone line;

providing no signal from the first transmitter circuit to the first telephone line between the first analog signal bursts;

modulating packets of digital information by a second transmitter circuit, wherein the packets of digital information are converted into second analog signal bursts of discrete duration, and wherein the second transmitter circuit is coupled to a second telephone line;

providing no signal from the second transmitter circuit to the second telephone line between the second analog signal bursts;

monitoring the first and second telephone lines with a multi-line network access circuit;

detecting the presence and absence of the first and second analog signal bursts on the telephone line by a non-idle detector of multi-line network access circuit;

demodulating the first and second analog signal bursts with a single receiver circuit of the multi-line network access circuit when the non-idle detector detects the presence of the first and second analog signal bursts on the telephone line; and

disabling the demodulating within the receiver circuit when the non-idle detector detects the absence of the first and second analog signal bursts on the telephone line.

11. The method of claim **10**, further comprising the step of buffering the first and second analog signal bursts within the multi-line network access circuit.

12. The method of claim **10**, further comprising the steps of:

selecting a first set of operating coefficients within the receiver circuit to process the first set of analog signal bursts; and

selecting a second set of operating coefficients within the receiver circuit to process the second set of analog signal bursts.

* * * * *

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	1	of	2

Complete if Known	
Application Number	RE of Patent No. 8,023,580
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First Named Inventor	Gordon F. Bremer
Art Unit	2611
Examiner Name	Dac V. Ha
Attorney Docket Number	110797-0019-501

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Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08b (07-09)
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Substitute for form 1449/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	RE of Patent No. 8,023,580
	Issue Date	September 20, 2011
	First Named Inventor	Gordon F. Bremer
(Use as many sheets as necessary)	Art Unit	2611
	Examiner Name	Dac V. Ha
Sheet 2 of 2	Attorney Docket Number	110797-0019-501

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
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[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

(12) **United States Patent**
Bremer

(10) **Patent No.:** **US 8,023,580 B2**
(45) **Date of Patent:** **Sep. 20, 2011**

(54) **SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS**

(76) Inventor: **Gordon F. Bremer**, Clearwater, FL (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(63) Continuation of application No. 11/774,803, filed on Jul. 9, 2007, now Pat. No. 7,675,965, which is a continuation of application No. 10/412,878, filed on Apr. 14, 2003, now Pat. No. 7,248,626, which is a continuation-in-part of application No. 09/205,205, filed on Dec. 4, 1998, now Pat. No. 6,614,838.

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(58) **Field of Classification Search** 375/261, 375/269, 285, 222, 298, 302, 305, 308; 455/102, 455/110; 332/108, 119, 120, 151
See application file for complete search history.

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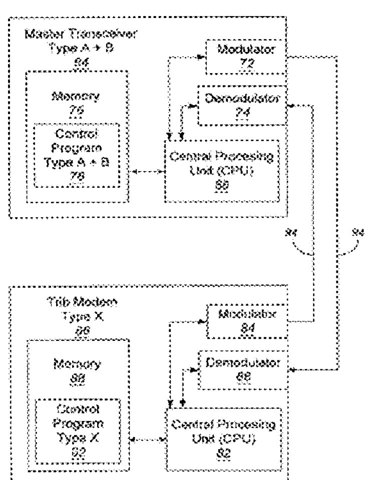
Primary Examiner — Dac Ha
(74) *Attorney, Agent, or Firm* — Condo Roccia LLP

(57) **ABSTRACT**

A device may be capable of communicating using at least two type types of modulation methods. The device may include a transceiver capable of acting as a master according to a master/slave relationship in which communication from a slave to a master occurs in response to communication from the master to the slave. The master transceiver may send transmissions discrete transmissions structured with a first portion and a payload portion. Information in the first portion may be modulated according to a first modulation method and indicate an impending change to a second modulation method, which is used for transmitting the payload portion. The discrete transmissions may be addressed for an intended destination of the payload portion.

79 Claims, 8 Drawing Sheets



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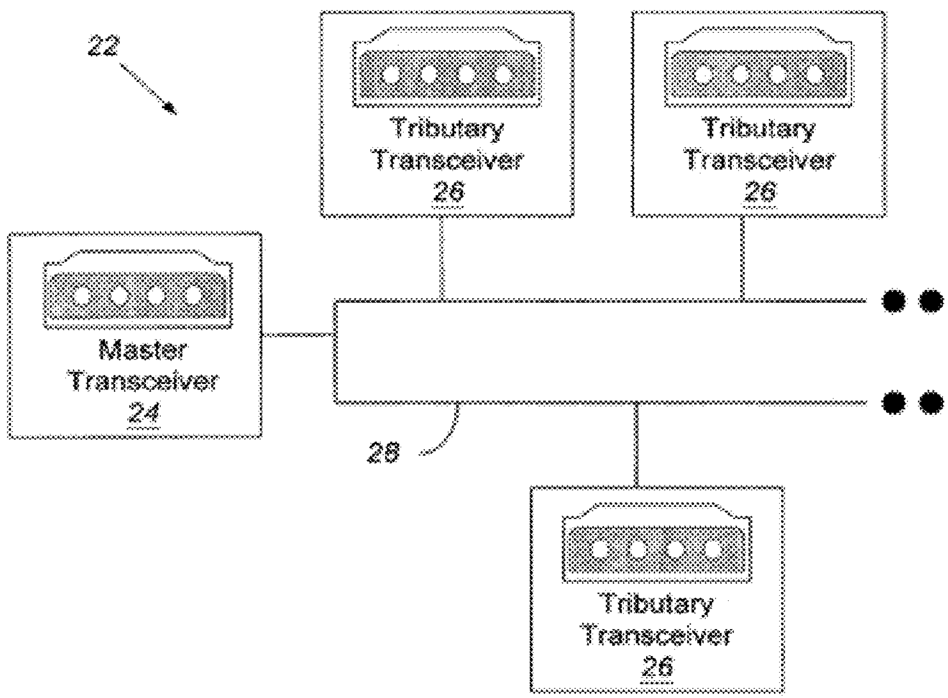


FIG. 1
Prior Art

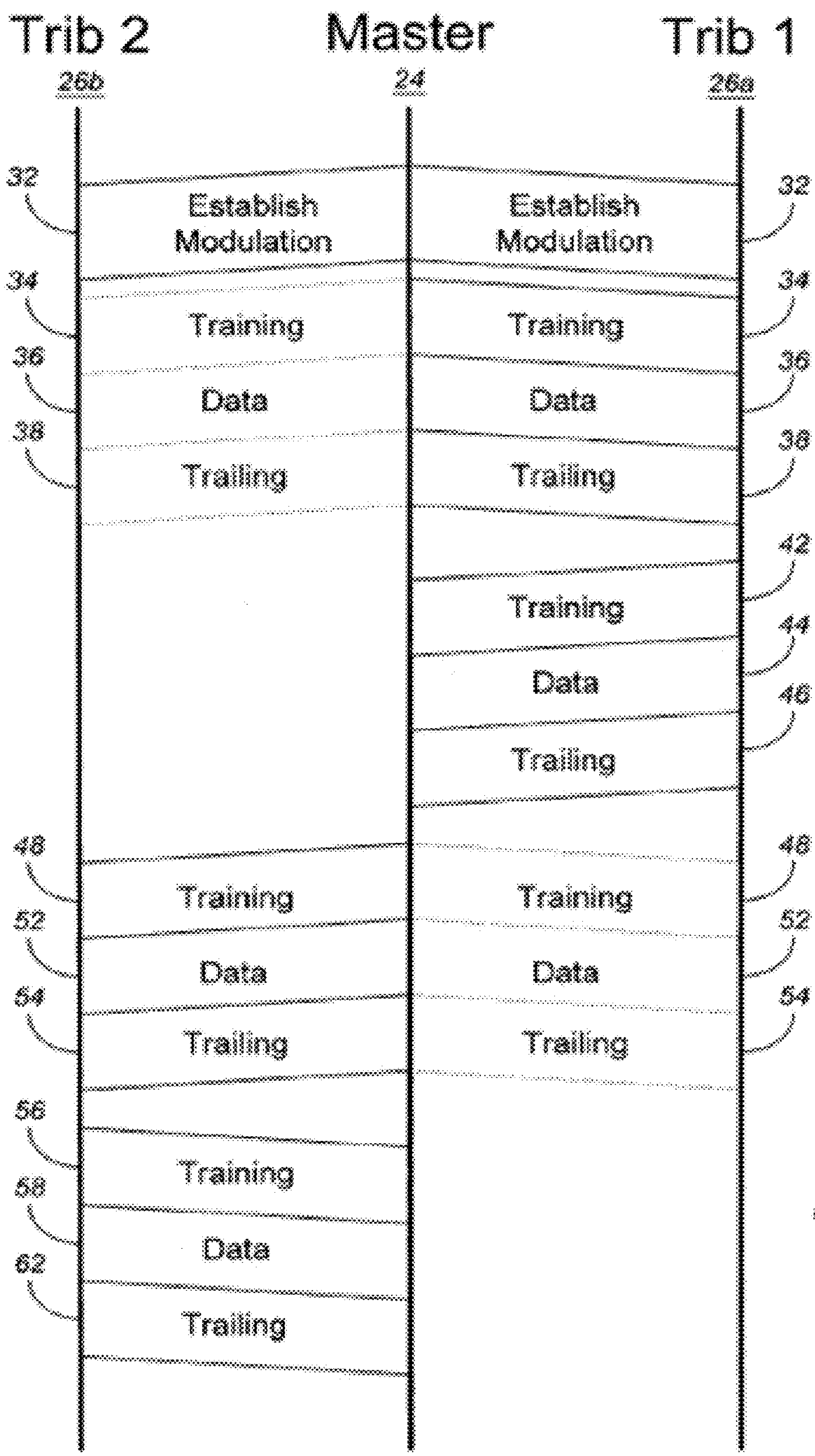
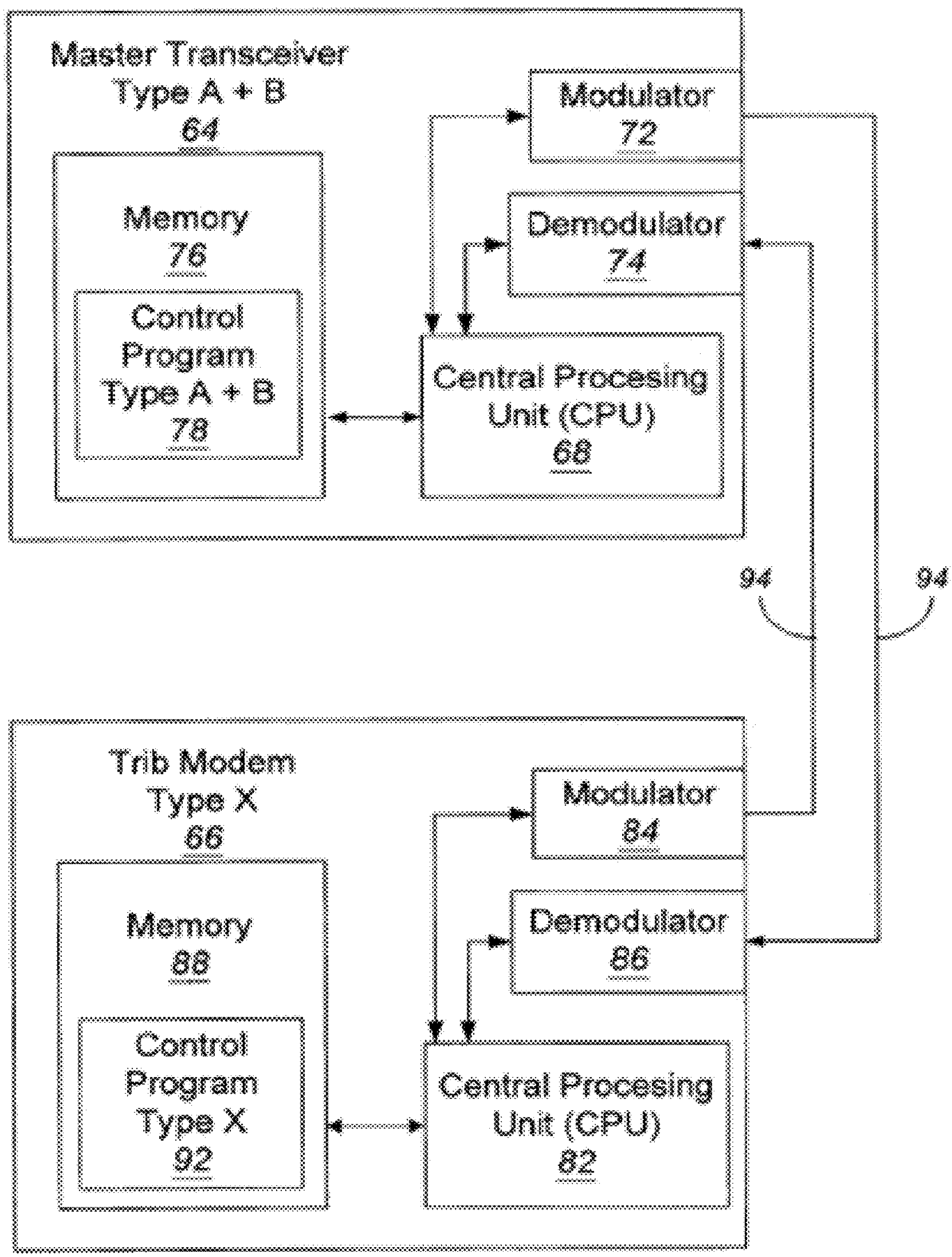

Trib 2
26b
Master
24
Trib 1
26a
32
Establish Modulation
Establish Modulation
32
34
Training
Training
34
36
Data
Data
36
38
Trailing
Trailing
38
42
Training
44
Data
46
Trailing
48
Training
Training
48
52
Data
Data
52
54
Trailing
Trailing
54
56
Training
58
Data
62
Trailing

FIG. 2



Master Transceiver
Type A + B
64
Memory
76
Control
Program
Type A + B
78
Modulator
72
Demodulator
74
Central Procesing
Unit (CPU)
68
94
94
Trib Modem
Type X
66
Memory
88
Control
Program
Type X
92
Modulator
84
Demodulator
86
Central Procesing
Unit (CPU)
82

FIG. 3

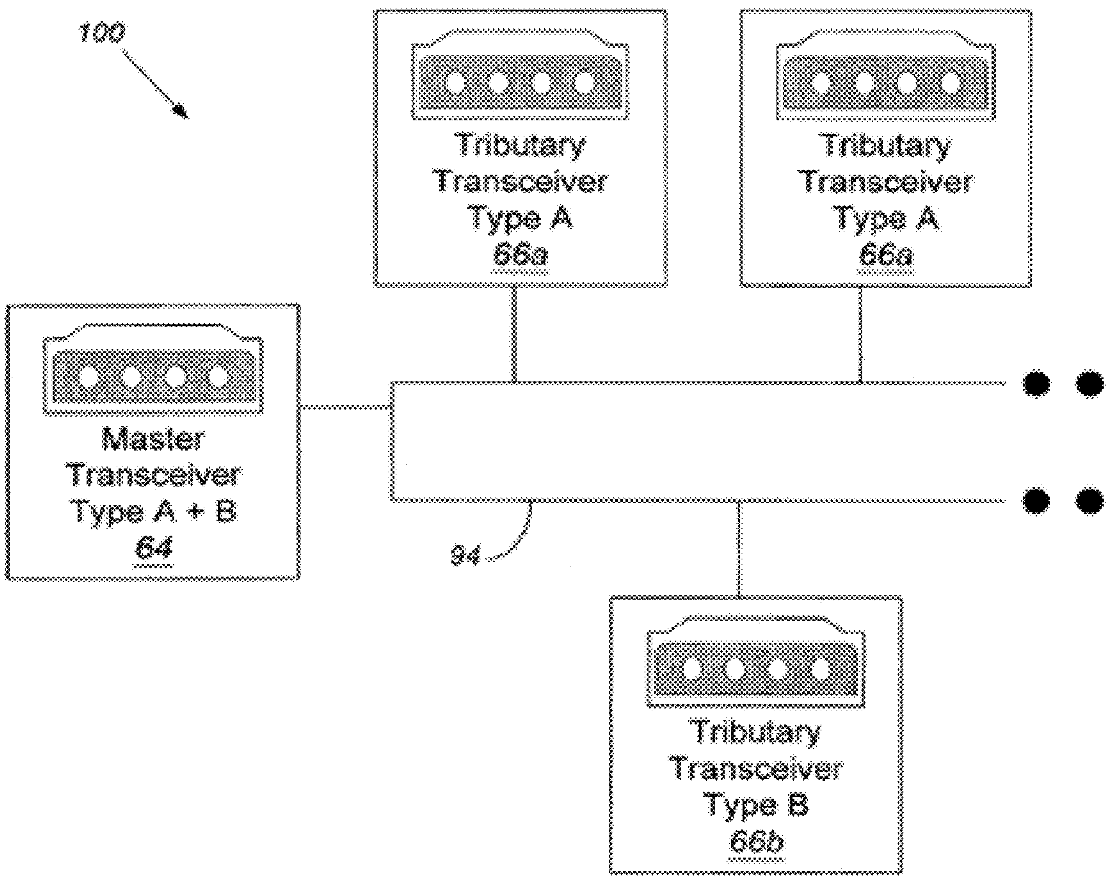

100
Tributary
Transceiver
Type A
66a
Tributary
Transceiver
Type A
66a
Master
Transceiver
Type A + B
64
94
Tributary
Transceiver
Type B
66b

FIG. 4

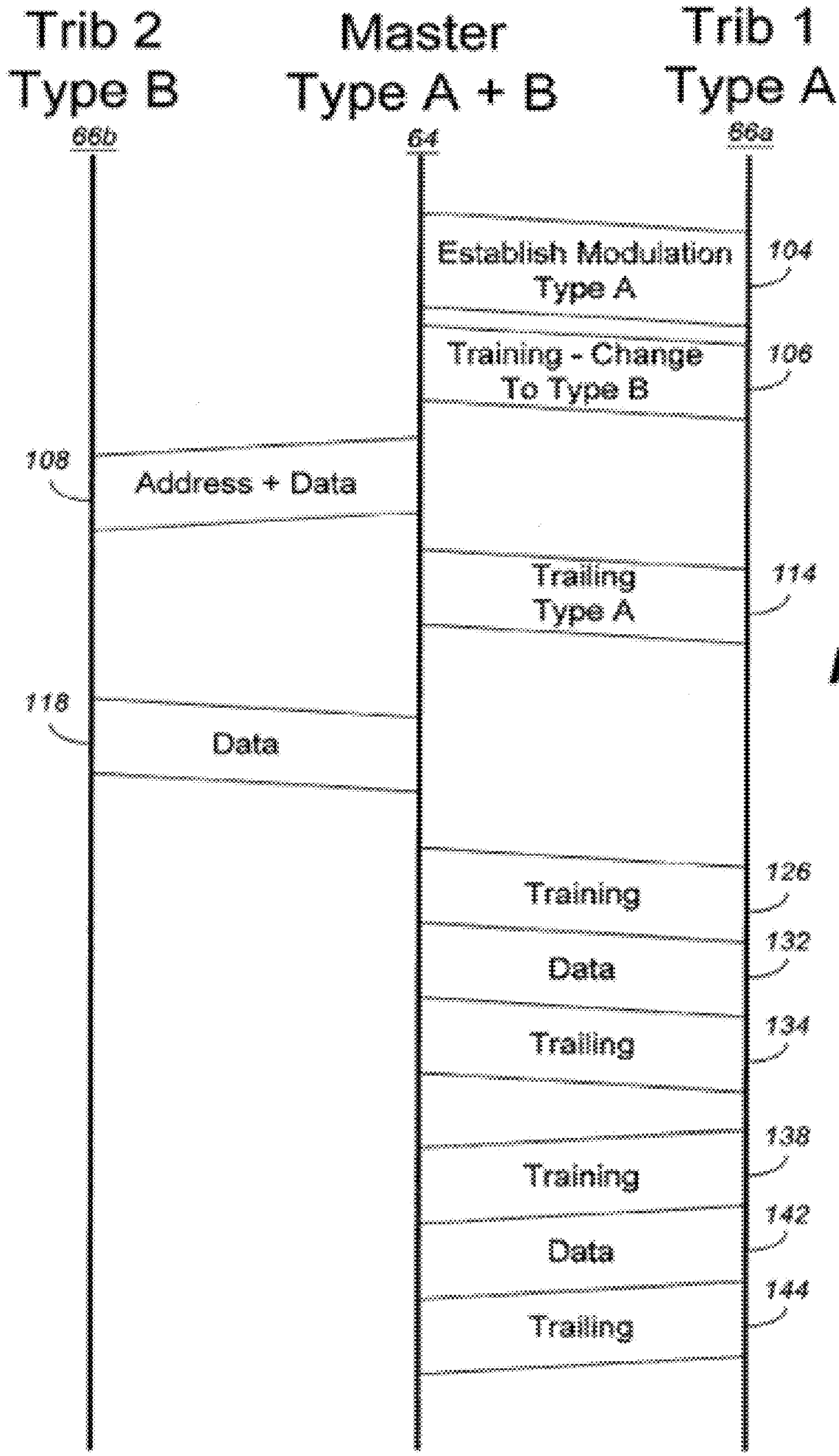

Trib 2
Type B
66b
Master
Type A + B
64
Trib 1
Type A
66a
Establish Modulation
Type A
104
Training - Change
To Type B
106
108
Address + Data
Trailing
Type A
114
118
Data
Training
126
Data
132
Trailing
134
Training
138
Data
142
Trailing
144

FIG. 5

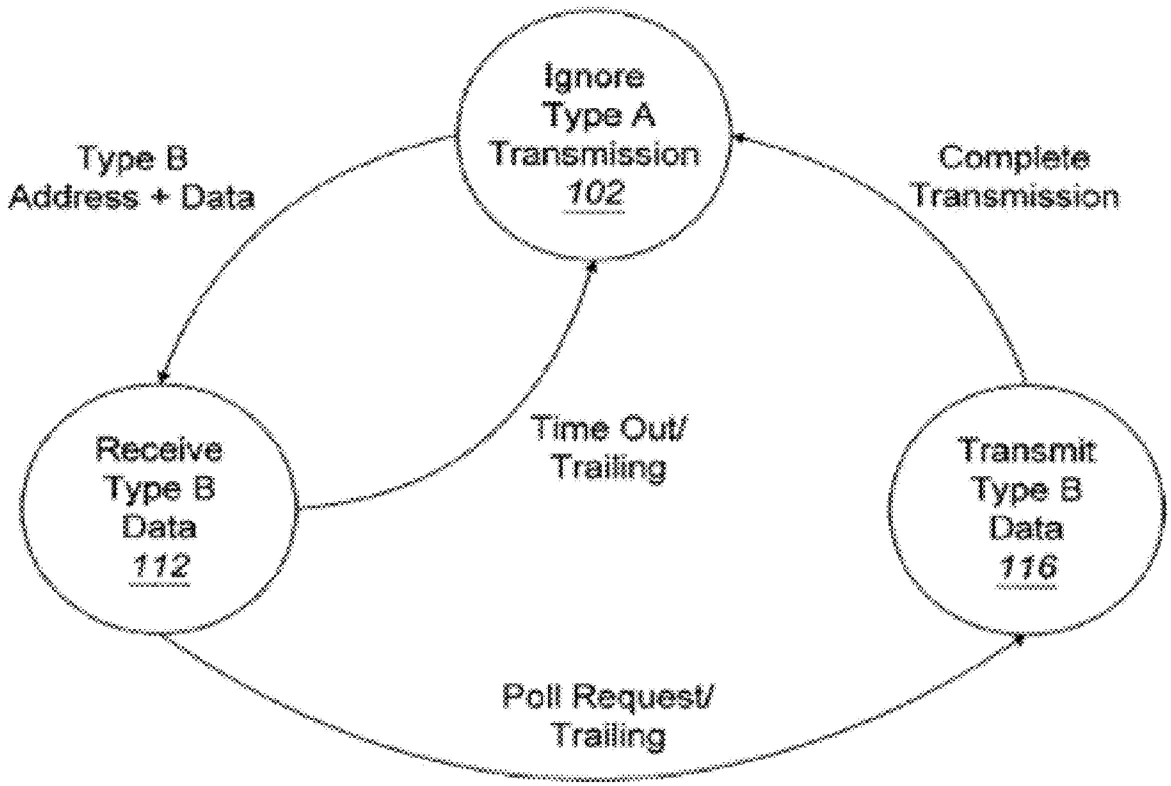

Ignore
Type A
Transmission
102
Type B
Address + Data
Complete
Transmission
Receive
Type B
Data
112
Time Out/
Trailing
Transmit
Type B
Data
116
Poll Request/
Trailing

FIG. 6

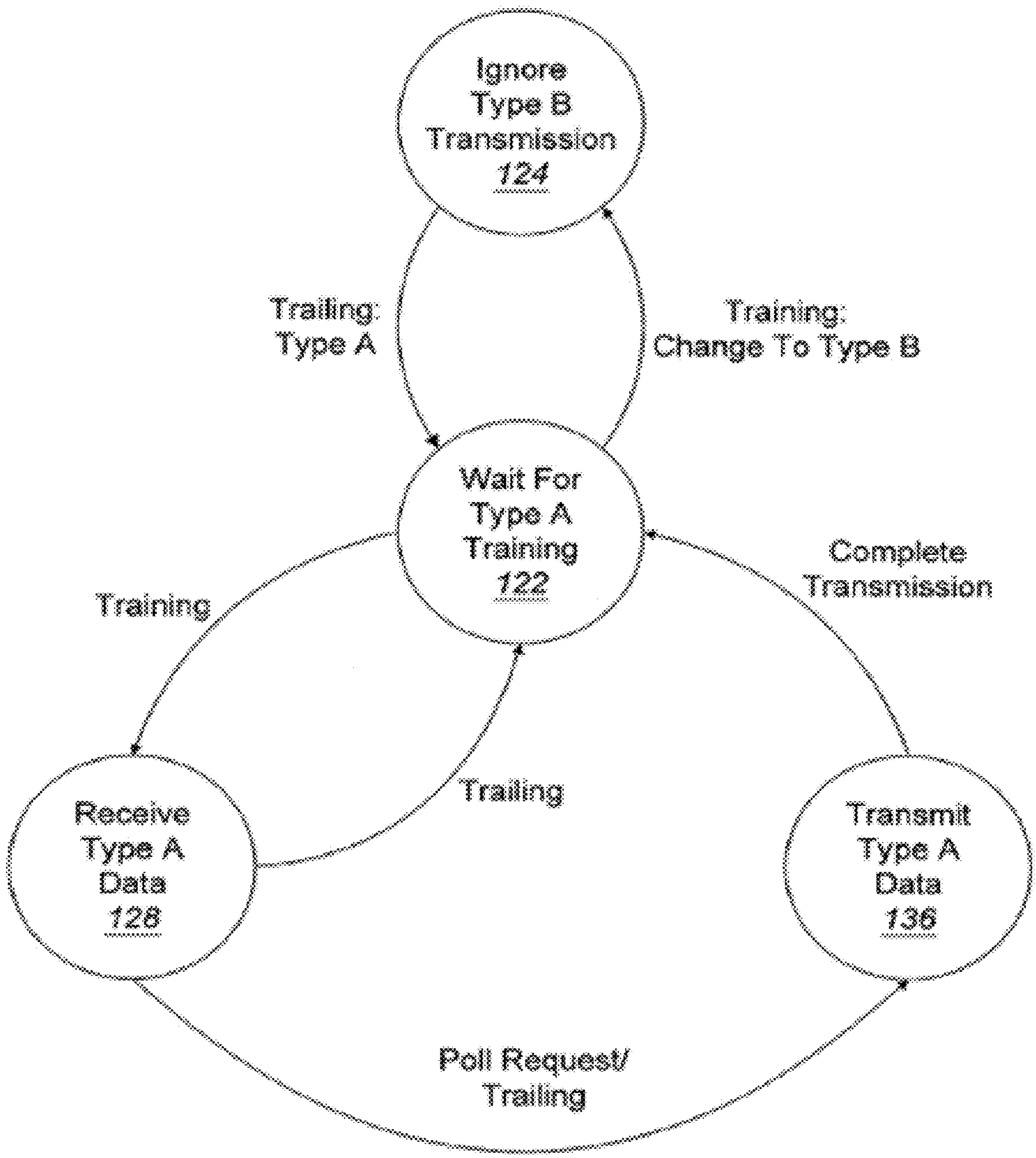

Ignore
Type B
Transmission
124
Trailing:
Type A
Training:
Change To Type B
Wait For
Type A
Training
122
Training
Complete
Transmission
Trailing
Receive
Type A
Data
128
Transmit
Type A
Data
136
Poll Request/
Trailing

FIG. 7

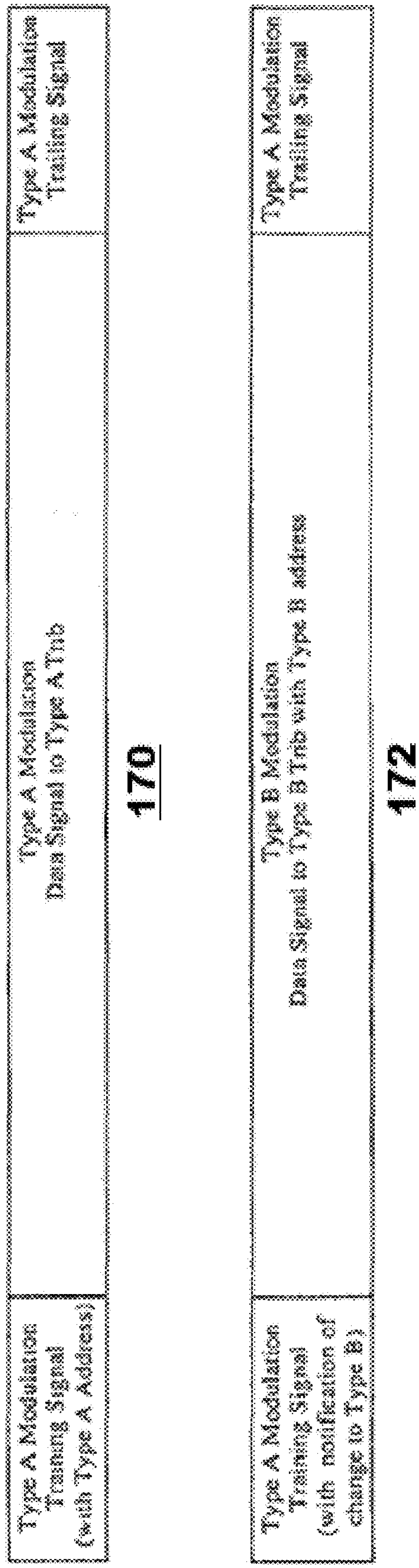

Type A Modulation
Training Signal
(with Type A Address)
Type A Modulation
Data Signal to Type A Trib
Type A Modulation
Trailing Signal
170
Type A Modulation
Training Signal
(with notification of
change to Type B)
Type B Modulation
Data Signal to Type B Trib with Type B address
Type A Modulation
Trailing Signal
172

FIG. 8

SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation of U.S. application Ser. No. 11/774,803, filed on Jul. 9, 2007, which is a continuation of U.S. application Ser. No. 10/412,878, filed Apr. 14, 2003, which is a continuation-in-part of U.S. application Ser. No. 09/205,205, filed Dec. 4, 1998, and which claims priority to and the benefit of the filing date of U.S. Provisional Application No. 60/067,562, filed Dec. 5, 1997, each of which is incorporated by reference herein.

TECHNICAL FIELD

The present invention relates generally to the fields of data communications and modulator/demodulators (modems), and, more particularly, to a data communications system in which a plurality of modulation methods are used to facilitate communication among a plurality of modem types.

BACKGROUND

In existing data communications systems, a transmitter and receiver modem pair can successfully communicate only when the modems are compatible at the physical layer. That is, the modems must use compatible modulation methods. This requirement is generally true regardless of the network topology. For example, point-to-point, dial-up modems operate in either the industry standard V.34 mode or the industry standard V.22 mode. Similarly, in a multipoint architecture, all modems operate, for example, in the industry standard V.27bis mode. While the modems may be capable of using several different modulation methods, a single common modulation is negotiated at the beginning of a data session to be used throughout the duration of the session. Should it become necessary to change modulation methods, the existing data session is torn down, and a new session is negotiated using the new modulation method. Clearly, tearing down an existing data session causes a significant disruption in communication between the two modems.

As discussed in the foregoing, communication between modems is generally unsuccessful unless a common modulation method is used. In a point-to-point network architecture, if a modem attempts to establish a communication session with an incompatible modem, one or both of the modems will make several attempts to establish the communication link until giving up after a timeout period has expired or the maximum number of retry attempts has been reached. Essentially, communication on the link is impossible without replacing one of the modems such that the resulting modem pair uses a common modulation method.

In a multipoint architecture, a single central, or "master," modem communicates with two or more tributary or "trib" modems using a single modulation method. If one or more of the trib modems are not compatible with the modulation method used by the master, those tribs will be unable to receive communications from the master. Moreover, repeated attempts by the master to communicate with the incompatible trib(s) will disturb communications with compatible trib(s) due to time wasted in making the futile communication attempts.

Thus, communication systems comprised of both high performance and low or moderate performance applications can

be very cost inefficient to construct. For example, some applications (e.g., internet access) require high performance modulation, such as quadrature amplitude modulation (QAM), carrier amplitude and phase (CAP) modulation, or discrete multitone (DMT) modulation, while other applications (e.g., power monitoring and control) require only modest data rates and therefore a low performance modulation method. All users in the system will generally have to be equipped with a high performance modem to ensure modulation compatibility. These state of the art modems are then run at their lowest data rates for those applications that require relatively low data throughput performance. The replacement of inexpensive modems with much more expensive state of the art devices due to modulation compatibility imposes a substantial cost that is unnecessary in terms of the service and performance to be delivered to the end user.

Accordingly, what is sought, and what is not believed to be provided by the prior art, is a system and method of communication in which multiple modulation methods are used to facilitate communication among a plurality of modems in a network, which have heretofore been incompatible.

SUMMARY

The present invention disclosed herein includes communication systems, devices, and methods. For example, a device may be capable of communicating according to a master/slave relationship in which a communication from a slave to a master occurs in response to a communication from the master to the slave. The device may include a transceiver in the role of the master for sending transmissions modulated using at least two types of modulation methods, for example a first modulation method and a second modulation method. The first modulation method may be of a different type than the second modulation method. The transmissions may be groups of transmission sequences. A group may be structured with a first portion and a payload portion. First information in the first portion may indicate which of the first modulation method or the second modulation method is used for modulating second information in the payload portion. The transmissions may be addressed for an intended destination of the payload portion. First information in a transmission that includes an address for an intended destination may include a first sequence in the first portion that is modulated according to the first modulation method and that indicates an impending change from the first modulation method to the second modulation method. Second information in a transmission that includes an address for an intended destination may include a second sequence in the payload portion that is modulated according to the second modulation method. The second sequence may be transmitted after the first sequence.

The present invention has many advantages, a few of which are delineated hereafter as merely examples.

One advantage of the present invention is that it provides to the use of a plurality of modem modulation methods on the same communication medium.

Another advantage of the present invention is that a master transceiver can communicate seamlessly with tributary transceivers or modems using incompatible modulation methods.

Other features and advantages of the present invention will become apparent to one with skill in the art upon examination of the following drawings and detailed description. It is intended that all such additional features and advantages be included herein within the scope of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention can be better understood with reference to the following drawings. The components and representations in the drawings are not necessarily to scale, emphasis instead being placed upon clearly illustrating the principles of the present invention. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

FIG. **1** is a block diagram of a prior art multipoint communication system including a master transceiver and a plurality of tributary transceivers;

FIG. **2** is a ladder diagram illustrating the operation of the multipoint communication system of FIG. **1**;

FIG. **3** is a block diagram of a master transceiver and tributary transceiver for use in the multipoint communication system of FIG. **1** in accordance with the principles of the present invention;

FIG. **4** is a block diagram of a multipoint communication system including the master transceiver and a plurality of tributary transceivers of the type illustrated in FIG. **3**;

FIG. **5** is a ladder diagram illustrating the operation of the multipoint communication system of FIG. **4**;

FIG. **6** is a state diagram for a tributary transceiver of FIGS. **3-5** using a secondary modulation method in accordance with the principles of the present invention;

FIG. **7** is a state diagram for a tributary transceiver of FIGS. **3-5** using a primary modulation method in accordance with the principles of the present invention; and

FIG. **8** is a signal diagram for an exemplary transmission according to an embodiment.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

While the invention is susceptible to various modifications and alternative forms, a specific embodiment thereof is shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that there is no intent to limit the invention to the particular form disclosed, but on the contrary, the invention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the claims.

With reference to FIG. **1**, a prior art multipoint communication system **22** is shown to comprise a master modem or transceiver **24**, which communicates with a plurality of tributary modems (tribs) or transceivers **26-26** over communication medium **28**. Note that all tribs **26-26** are identical in that they share a common modulation method with the master transceiver **24**. Thus, before any communication can begin in multipoint system **22**, the master transceiver and the tribs **26-26** must agree on a common modulation method. If a common modulation method is found, the master transceiver **24** and a single trib **26** will then exchange sequences of signals that are particular subsets of all signals that can be communicated via the agreed upon common modulation method. These sequences are commonly referred to as training signals and can be used for the following purposes: 1) to confirm that the common modulation method is available, 2) to establish received signal level compensation, 3) to establish time recovery and/or carrier recovery, 4) to permit channel equalization and/or echo cancellation, 5) to exchange parameters for optimizing performance and/or to select optional features, and 6) to confirm agreement with regard to the foregoing purposes prior to entering into data communication mode between the users. In a multipoint system, the address of the trib with which the master is establishing communication is also transmitted during the training interval. At the end of a data session a communicating pair of modems will typically exchange a sequence of signals known as trailing signals for the purpose of reliably stopping the session and confirming that the session has been stopped. In a multipoint system, failure to detect the end of a session will delay or disrupt a subsequent session.

Referring now to FIG. **2**, an exemplary multipoint communication session is illustrated through use of a ladder diagram. This system uses polled multipoint communication protocol. That is, a master controls the initiation of its own transmission to the tribs and permits transmission from a trib only when that trib has been selected. At the beginning of the session, the master transceiver **24** establishes a common modulation as indicated by sequence **32** that is used by both the master **24** and the tribs **26***a*, **26***b* for communication. Once the modulation scheme is established among the modems in the multipoint system, The master transceiver **24** transmits a training sequence **34** that includes the address of the trib that the master seeks to communicate with. In this case, the training sequence **34** includes the address of trib **26***a*. As a result, trib **26***b* ignores training sequence **34**. After completion of the training sequence **34**, master transceiver **24** transmits data **36** to trib **26***a* followed by trailing sequence **38**, which signifies the end of the communication session. Similarly, with reference to FIG. **8**, the sequence **170** illustrates a Type A modulation training signal, followed by a Type A modulation data signal. Note that trib **26***b* ignores data **36** and trailing sequence **38** as it was not requested for communication during training sequence **34**.

At the end of trailing sequence **38**, trib **26***a* transmits training sequence **42** to initiate a communication session with master transceiver **24**. Because master transceiver **24** selected trib **26***a* for communication as part of training sequence **34**, trib **26***a* is the only modem that will return a transmission. Thus, trib **26***a* transmits data **44** destined for master transceiver **24** followed by trailing sequence **46** to terminate the communication session.

The foregoing procedure is repeated except master transceiver identifies trib **26***b* in training sequence **48**. In this case, trib **26***a* ignores the training sequence **48** and the subsequent transmission of data **52** and trailing sequence **54** because it does not recognize its address in training sequence **48**. Master transceiver **24** transmits data **52** to trib **26***b* followed by trailing sequence **54** to terminate the communication session. Similarly, with reference to FIG. **8**, sequence **172** illustrates a Type A modulation signal, with notification of a changes to Type B, followed by a Type B modulation data signal. To send information back to master transceiver **24**, trib **26***b* transmits training sequence **56** to establish a communication session. Master transceiver **24** is conditioned to expect data only from trib **26***b* because trib **26***b* was selected as part of training sequence **48**. Trib **26***b* transmits data **58** to master transceiver **24** terminated by trailing sequence **62**.

The foregoing discussion is based on a two-wire, half-duplex multipoint system. Nevertheless, it should be understood that the concept is equally applicable to four-wire systems.

Consider the circumstance in which master transceiver **24** and trib **26***b* share a common modulation type A while trib **26***a* uses a second modulation type B. When master transceiver attempts to establish A as a common modulation during sequence **32**, trib **26***a* will not be able to understand that communication. Moreover, trib **26***a* will not recognize its own address during training interval **34** and will therefore ignore data **36** and trailing sequence **38**. Master transceiver **24** may time out waiting for a response from trib **26***a* because trib **26***a* will never transmit training sequence **42**, data **44**, and trailing sequence **46** due to the failure of trib **26***a* to recognize the communication request (training sequence **34**) from master transceiver **24**. Thus, if the tribs in a multipoint communication system use a plurality of modulation methods, the overall communication efficiency will be disrupted as specific tribs will be unable to decipher certain transmissions from the master transceiver and any unilateral transmission by a trib that has not been addressed by the master transceiver will violate the multipoint protocol.

As discussed hereinbefore, however, it is desirable to design a multipoint communication system comprising tribs that use a plurality of modulation methods. For example, one moderately priced trib may be used to communicate at a relatively high data rate for some applications, such as Internet access, while another, lower priced, trib is used to communicate at a lower data rate for other applications, such as power monitoring and control. The needs of these different applications cannot be efficiently met by a single modulation. While it is possible to use high performance tribs running state of the art modulation methods such as QAM, CAP, or DMT to implement both the high and low data rate applications, significant cost savings can be achieved if lower cost tribs using low performance modulation methods are used to implement the lower data rate applications.

A block diagram of a master transceiver **64** in communication with a trib **66** in accordance with the principles of the present invention is shown in FIG. **3**. Master transceiver **64** comprises a central processing unit (CPU) **68** in communication with modulator **72**, demodulator **74**, and memory **76**. Memory **76** holds software control program **78** and any data necessary for the operation of master transceiver **64**. Control program **78** includes logic for implementing a plurality of modulation methods. For purposes of illustration, control program **78** can implement both a type A and a type B modulation through modulator **72** and demodulator **74**.

Trib **66** comprises CPU **82** in communication with modulator **84**, demodulator **86**, and memory **88**. Memory **88**, likewise holds software control program **92** and any data necessary for the operation of trib **66**. Control programs **78** and **92**, are executed by CPUs **68** and **82** and provide the control logic for the processes to be discussed herein. Control program **92** includes logic for implementing a particular modulation method, which, for purposes of illustration, is called type X Inasmuch as master transceiver **64** is capable of running either a type A or a type B modulation method, type X refers to one of those two modulation methods. The master transceiver **64** communicates with trib **66** over communication medium **94**.

Referring now to FIG. **4**, a multipoint communication system **100** is shown comprising a master transceiver **64** along with a plurality of tribs **66**-**66**. In this example, two tribs **66***a*-**66***a* run a type A modulation method while one trib **66***b* runs a type B modulation method. The present invention permits a secondary or embedded modulation method (e.g., type B) to replace the standard modulation method (e.g., type A) after an initial training sequence. This allows the master transceiver **64** to communicate seamlessly with tribs of varying types.

The operation of multipoint communication system **100** will be described hereafter with reference to the ladder diagram of FIG. **5** and the state diagrams of FIGS. **6** and **7**. A communication session between the master transceiver **64** and a type B trib **66***b* will be discussed first. A state diagram for a type B trib **66***b* is shown in FIG. **6**. Type B trib **66***b* is initialized in state **102** in which type A modulation transmissions are ignored. In the present example, the primary modulation method is type A, thus, as shown in FIG. **5**, master transceiver **64** establishes type A as the primary modulation in sequence **104**. Note that because trib **66***b* responds only to type B modulation transmissions, only the type A tribs **66***a*-**66***a* are receptive to transmission sequence **104**.

To switch from type A modulation to type B modulation, master transceiver **64** transmits a training sequence **106** to type A tribs **66***a* in which these tribs are notified of an impending change to type B modulation. The switch to type B modulation could be limited according to a specific time interval or for the communication of a particular quantity of data. After notifying the type A tribs **66***a* of the change to type B modulation, master transceiver **64**, using type B modulation, transmits data along with an address in sequence **108**, which is destined for a particular type B trib **66***b*. The type B trib **66***b* targeted by the master transceiver **64** will transition to state **112** as shown in FIG. **6** upon detecting its own address where it processes the data transmitted in sequence **108**.

After completing transmission sequence **108**, master transceiver **64** transmits a trailing sequence **114** using type A modulation thus notifying all type A tribs **66***a* that type B modulation transmission is complete. If master transceiver **64** has not transmitted a poll request to the type B trib **66***b* in sequence **108**, then the type B trib **66***b* that was in communication with the master transceiver **64** will return to state **102** after timing out based on the particular time interval defined for the type B modulation transmission or transfer of the particular quantity of data. Note that the trailing sequence **114** is ineffective in establishing the termination of a communication session between master transceiver **64** and a type B trib **66***b* because the trailing sequence is transmitted using type A modulation.

If, however, master transceiver **64** transmitted a poll request in sequence **108**, then the type B trib **66***b* transitions to state **116** where it will transmit data, using type B modulation, to master transceiver **64** in sequence **118**. After completion of this transmission, the type B trib **66***b* returns to state **102** where type A transmissions are ignored.

With reference to FIG. **5** and FIG. **7**, a communication session between the master transceiver **64** and a type A trib **66***a* will now be discussed. A state diagram for a type A trib **66***a* is shown in FIG. **7**. A type A trib **66***a* is initialized in state **122** in which it awaits a type A modulation training sequence. If, however, master transceiver transmits a training sequence in which the type A tribs **66***a*-**66***a* are notified of a change to type B modulation as indicated by sequence **106**, then a transition is made to state **124** where all type B transmissions are ignored until a type A modulation trailing sequence (e.g., sequence **114**) is detected. Upon detecting the type A trailing sequence, a type A trib **66***a* returns to state **122** where it awaits a training sequence.

To initiate a communication session with a type A trib **66***a*, master transceiver **64** transmits a training sequence **126** in which an address of a particular type A trib **66***a* is identified. The identified type A trib **66***a* recognizes its own address and transitions to state **128** to receive data from master transceiver **64** as part of sequence **132**.

After completing transmission sequence **132**, master transceiver **64** transmits a trailing sequence **134** using type A modulation signifying the end of the current communication session. If master transceiver **64** has not transmitted a poll request to the type A trib **66***a* in sequence **132**, then the type A trib **66***a* that was in communication with the master transceiver **64** will return to state **122** after receiving trailing sequence **134**.

If, however, master transceiver **64** transmitted a poll request in sequence **132**, then the type A trib **66***a* transitions to state **136** after receiving trailing sequence **134** where it will transmit training sequence **138**, followed by data sequence **142**, and terminated by trailing sequence **144** all using type A modulation. After completion of these transmissions, the type A trib **66***a* returns to state **122** to await the next type A modulation training sequence by master transceiver **64**.

The control programs **78** and **92** of the present invention can be implemented in hardware, software, firmware, or a combination thereof. In the preferred embodiment(s), the control programs **78** and **92** are implemented in software or firmware that is stored in a memory and that is executed by a suitable instruction execution system.

The control programs **78** and **92**, which comprise an ordered listing of executable instructions for implementing logical functions, can be embodied in any computer-readable medium for use by or in connection with an instruction execution system, apparatus, or device, such as a computer-based system, processor-containing system, or other system that can fetch the instructions from the instruction execution system, apparatus, or device and execute the instructions. In the context of this document, a "computer-readable medium" can be any means that can contain, store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device. The computer readable medium can be, for example but not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, device, or propagation medium. More specific examples (a nonexhaustive list) of the computer-readable medium would include the following: an electrical connection (electronic) having one or more wires, a portable computer diskette (magnetic), a random access memory (RAM) (magnetic), a read-only memory (ROM) (magnetic), an erasable programmable read-only memory (EPROM or Flash memory) (magnetic), an optical fiber (optical), and a portable compact disc read-only memory (CDROM) (optical). Note that the computer-readable medium could even be paper or another suitable medium upon which the program is printed, as the program can be electronically captured, via for instance optical scanning of the paper or other medium, then compiled, interpreted or otherwise processed in a suitable manner if necessary, and then stored in a computer memory.

In concluding the detailed description, it should be noted that it will be obvious to those skilled in the art that many variations and modifications can be made to the preferred embodiment without substantially departing from the principles of the present invention. All such variations and modifications are intended to be included herein within the scope of the present invention, as set forth in the following claims. Further, in the claims hereafter, the corresponding structures, materials, acts, and equivalents of all means or step plus function elements are intended to include any structure, material, or acts for performing the functions with other claimed elements as specifically claimed.

What is claimed:

1. A communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave, the device comprising:

a transceiver, in the role of the master according to the master/slave relationship, for sending at least transmissions modulated using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method, wherein each transmission comprises a group of transmission sequences, wherein each group of transmission sequences is structured with at least a first portion and a payload portion wherein first information in the first portion indicates at least which of the first modulation method and the second modulation method is used for modulating second information in the payload portion, wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion, and wherein for the at least one group of transmission sequences:

the first information for said at least one group of transmission sequences comprises a first sequence, in the first portion and modulated according to the first modulation method, wherein the first sequence indicates an impending change from the first modulation method to the second modulation method, and

the second information for said at least one group of transmission sequences comprises a second sequence that is modulated according to the second modulation method, wherein the second sequence is transmitted after the first sequence.

2. The device of claim **1**, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.

3. The device of claim **1**, wherein the transceiver is configured to transmit the second sequence according to a specific time interval.

4. The device of claim **1**, wherein the transceiver is configured to transmit the second sequence according to a particular quantity of data.

5. The device of claim **1**, further comprising a processor and a memory, wherein the memory has stored therein instructions that when executed by the processor cause the transceiver to transmit the first sequence and the second sequence.

6. The device of claim **5**, wherein the memory comprises an erasable programmable read-only memory.

7. The device of claim **5**, wherein the memory has stored therein program code for the first modulation method and the second modulation method.

8. The device of claim **5**, wherein the memory comprises random access memory.

9. The device of claim **5**, wherein the memory comprises read-only memory.

10. The device of claim **5**, wherein the memory has stored therein program code for operating the transceiver in a multipoint master/slave relationship.

11. The device of claim **1**, wherein the first communication from the master to the slave is a poll in accordance with a multipoint communications relationship, wherein the poll indicates that the master has selected the slave for transmission.

12. The device of claim **1**, wherein the transceiver is configured to be the master.

13. The device of claim **1**, wherein the first information in the first portion indicates the first modulation method when the intended destination is a first type of receiver and indicates the second modulation when the intended destination is a second type of receiver.

14. The device of claim **13**, wherein the second type of receiver differs from the first type of receiver at least by the second type of receiver being designated for transmitting in the second modulation method.

15. The device of claim **13**, wherein the second type of receiver differs from the first type of receiver at least by the second type of receiver being operable to ignore transmissions intended for the first type of receiver.

16. The device of claim **15**, wherein the intended destination ignores transmissions in the second modulation when the intended destination is the first type of receiver.

17. The device of claim **15**, wherein the intended destination ignores transmissions in the first modulation when the intended destination is the second type of receiver.

18. The device of claim **15**, wherein the intended destination is the first type of receiver and unable to demodulate the second modulation method.

19. The device of claim **13**, wherein the transceiver is configured to receive data from the intended destination in the first modulation method when the intended destination is the first type of receiver.

20. The device a claim **13**, wherein the transceiver is configured to receive data from the intended destination in the second modulation method then the intended destination is the second type of receiver.

21. The device of claim **1**, the transceiver is configured to transmit a third sequence, according to the first modulation method, at a time after the second sequence is transmitted.

22. The device of claim **1**, wherein the transceiver transmits data modulated according to either the first modulation method or the second modulation method at any given point in time when the transceiver is transmitting.

23. A communications device, comprising:

a processor; and

a memory having stored therein executable instructions for execution by the processor, wherein the executable instructions direct transmission of a first data with a first modulation method followed by a second data with a second modulation method, wherein the first modulation method is different than the second modulation method, wherein the first data comprises an indication of an impending change from the first modulation method to the second modulation method, wherein the executable instructions direct transmission of a third data with the first modulation method after the second data, and wherein the third data indicates that communication has reverted to the first modulation method.

24. The device of claim **23**, wherein transmission of the second data is according to a specific time interval.

25. The device of claim **23**, further comprising a transmitter configured to transmit the first data and the second data.

26. The device of claim **23**, wherein the memory has stored therein program code for the first modulation method and the second modulation method.

27. The device of claim **23**, wherein the memory comprises random access memory.

28. The device of claim **23**, wherein the memory comprises read-only memory.

29. The device of claim **23**, wherein the memory has stored therein program code for a multipoint communications protocol.

30. The device of claim **23**, wherein transmission of the second data is according to a particular quantity of data.

31. The device of claim **23**, wherein the memory comprises an erasable programmable read-only memory.

32. A communications device, comprising:

a processor; and

a memory having stored therein executable instructions for execution by the processor, wherein the executable instructions direct transmission of a first data with a first modulation method followed by a second data with a second modulation method, wherein the first modulation method is different than the second modulation method, wherein the first data comprises an indication of an impending change from the first modulation method to the second modulation method wherein the executable instructions direct transmission of a third data with the first modulation method after the second data, and wherein transmission of the second data is according to a particular quantity of data.

33. The device of claim **32**, wherein transmission of the second data is according to a specific time interval.

34. The device of claim **32**, further comprising a transmitter configured to transmit the first data and the second data.

35. The device of claim **32**, wherein the memory has stored therein program code for the first modulation method and the second modulation method.

36. The device of claim **32**, wherein the memory comprises random access memory.

37. The device of claim **32**, wherein the memory comprises read-only memory.

38. The device of claim **32**, wherein the memory has stored therein program code for a multipoint communications protocol.

39. The device of claim **32**, wherein the memory comprises an . erasable programmable read-only memory.

40. A device that transmits in accordance with a first modulation method and a second modulation method that is different than the first modulation method, said device comprising;

at least one modulator;

a transceiver that includes the at least one modulator, wherein the transceiver is configured to transmit:

a first sequence, modulated in accordance with the first modulation method, that indicates an impending change from the first modulation method to the second modulation method, and

a second sequence, in accordance with the second modulation method, that is transmitted at a time after the first sequence.

41. The device of claim **40**, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in accordance with the first modulation method and indicates that a subsequent communication has reverted to the first modulation method.

42. The device of claim **40**, wherein the transceiver is configured to transmit the second sequence according to a specific time interval.

43. The device of claim **40**, wherein the transceiver is configured to transmit the second sequence according to a particular quantity of data.

44. The device of claim **40**, further comprising a processor and a memory, wherein the memory has stored therein instructions that when executed by the processor cause the transmitter to transmit this first sequence and the second sequence.

45. The device of claim **44**, wherein the memory comprises random access memory.

46. The device of claim **44**, wherein the memory comprises read-only memory.

47. The device of claim **44**, wherein the memory has stored therein program code for a multipoint communications protocol.

48. The device of claim **44**, wherein the memory comprises an erasable programmable read-only memory.

49. A computer-readable storage medium having computer executable instructions stored therein that when executed by a processor control a master transceiver, said computer executable instructions, comprising:

first logic configured to transmit first information in a first modulation method for communication;

second logic configured to transmit a first sequence to notify of a change from said first modulation method to a second modulation method;

third logic configured to transmit second information in said second modulation method; and

fourth logic configured to transmit a second sequence after the second information is transmitted, wherein the second sequence is transmitted in the first modulation method and indicates that communication has reverted to the first modulation method.

50. The computer-readable storage medium of claim **49**, wherein the first transceiver is configured to transmit the second sequence according to a specific time interval.

51. The computer-readable storage medium of claim **49**, further comprising program code for the first modulation method and the second modulation method.

52. The computer-readable storage medium of claim **49**, further comprising program code for a multipoint communications protocol.

53. The computer-readable storage medium of claim **49**, wherein the first transceiver is configured to transmit the second sequence according to a particular quantity of data.

54. A computer-readable storage medium having computer executable instructions stored therein that when executed by a processor control a master transceiver, said computer executable instructions, comprising:

first logic configured to transmit first information in a first modulation method for communication;

second logic configured to transmit a first sequence to notify of a change from said first modulation method to a second modulation method;

third logic configured to transmit second information in said second modulation method; and

fourth logic configured to transmit a second sequence after the second information is transmitted, wherein the fourth logic is configured to transmit the second sequence according to a particular quantity of data.

55. The computer-readable storage medium of claim **54**, wherein the first transceiver is configured to transmit the second sequence according to a specific time interval.

56. The computer-readable storage medium of claim **54**, further comprising program code for the first modulation method and the second modulation method.

57. The computer-readable storage medium of claim **54**, further comprising program code for a multipoint communications protocol.

58. A communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave, the device comprising:

a transceiver, in the role of the master according to the master/slave relationship, capable of transmitting using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method, and wherein the transceiver is configured to transmit messages with:

a first sequence, in the first modulation method, that indicates at least which of the first modulation method and the second modulation method is used for modulating a second sequence, wherein, in at least one message, the first sequence indicates an impending change from the first modulation method to the second modulation method, and wherein the at least one message is addressed for an intended destination of the second sequence, and

the second sequence, modulated in accordance with the modulation method indicated by the first sequence and, in the at least one message, modulated using the second modulation method, wherein the second sequence is transmitted after the first sequence.

59. The device of claim **58**, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.

60. The device of claim **58**, wherein the transceiver is configured to transmit the second sequence according to a specific time interval.

61. The device of claim **58**, wherein the transceiver is configured to transmit the second sequence according to a particular quantity of data.

62. The device of claim **58**, further comprising a processor and a memory, wherein the memory has stored therein instructions that when executed by the processor cause the transceiver to transmit the first sequence and the second sequence.

63. The device of claim **62**, wherein the memory has stored therein program code for the first modulation method and the second modulation method.

64. The device of claim **62**, wherein the memory comprises random access memory.

65. The device of claim **62**, wherein the memory comprises read-only memory.

66. The device of claim **62**, wherein the memory has stored therein program code for operating the transceiver in a multipoint master/slave relationship.

67. The device of claim **62**, wherein the memory comprises an erasable programmable read-only memory.

68. The device of claim **58**, wherein the first communication from the master to the slave is a poll in accordance with a multipoint communications relationship, wherein the poll indicates that the master has selected the slave for transmission.

69. The device of claim **58**, wherein the transceiver is configured to be the master.

70. The device of claim **58**, wherein the first information in the first portion indicates the first modulation method when the intended destination is a first type of receiver and indicates the second modulation when the intended destination is a second type of receiver.

71. The device of claim **70**, wherein the second type of receiver differs from the first type of receiver at least by the second type of receiver being designated for transmitting in the second modulation method.

72. The device of claim **70**, wherein the second type of receiver differs from the first type of receiver at least by the second type of receiver being operable to ignore transmissions intended for the first type of receiver.

73. The device of claim **72**, wherein the intended destination ignores transmissions in the second modulation when the intended destination is the first of receiver.

74. The device of claim 72, wherein the intended destination ignores transmissions in the first modulation when the intended destination is the second type of receiver.

75. The device of claim 72, wherein the intended destination is the first type of receiver and unable to demodulate the second modulation method.

76. The device of claim 70, wherein the transceiver is configured to receive data from the intended destination in the first modulation method when the intended destination is the first type of receiver.

77. The device of claim 70, wherein the transceiver is configured to receive data from the intended destination in the second modulation method when the intended destination is the second type of receiver.

78. The device of claim 58, the transceiver is configured to transmit a third sequence, according to the first modulation method, at a time after the second sequence is transmitted.

79. The device of claim 58, wherein the transceiver transmits data modulated according to either the first modulation method or the second modulation method at any given point in time when the transceiver is transmitting.

* * * * *

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Gordon F. Bremer	§	Attorney Docket No.: 110797-0019-501
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Formerly Application No. 12/543,910	§	
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Former Group Art Unit: 2611	§	
Former Examiner: Dac Ha	§	

For: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

MAIL STOP *EX PARTE* REEXAM
Central Reexamination Unit
Office of Patent Legal Administration
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REQUEST FOR *EX PARTE* REEXAMINATION OF U.S. PATENT NO. 8,023,580 PURSUANT TO 35 U.S.C. § 302, 37 C.F.R. § 1.510

Pursuant to 35 U.S.C. § 302 and 37 C.F.R. § 1.510, Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (the "Requesters") hereby request *ex parte* reexamination of claims 2 and 59 (the "Challenged Claims") of U.S. Patent No. 8,023,580 ("the '580 patent"), which issued from U.S. Patent Application Serial No. 12/543,910, filed August 19, 2009 ("the '910 Application"). (A complete copy of the '580 patent is attached as Exhibit A, a copy of the '910 application as filed is attached as Exhibit B, and a copy of the prosecution history for the '580 patent (other than the prior art of record) is attached as Exhibit C ("the '580 Prosecution History")). Pursuant to 37 C.F.R. § 1.510(b)(6), Requesters certify that the statutory estoppel provisions of 35 U.S.C. §§ 315(e)(1) or 325(e)(1) do not prohibit Requesters from filing this Request.[1]

Requesters assert herein that substantial new questions of patentability exist as to claims 2 and 59 of the '580 patent based on a prior art reference, Snell, filed on March 17, 1997 and issued on November 9, 1999, that was not considered during original prosecution, along with various additional references: four references that were and two references that were not before the United States Patent and Trademark Office ("Patent Office" or "USPTO") during the original prosecution or *inter partes* review of the '580 patent. As detailed below, claims 2 and 59 of the '580 patent are rendered obvious by the references cited herein by the Requesters.[2]

Because the challenged patent is involved in pending litigation, Requesters respectfully request that, consistent with 35 U.S.C. § 305 and MPEP § 2261, all proceedings associated with this reexamination be conducted not only with the "special dispatch" accorded all

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[1] Pursuant to 37 C.F.R. § 1.565, the Requesters provide notice that the Patent Owner Rembrandt Wireless Technologies, LP ("Rembrandt" or "Patent Owner") has asserted the '580 patent in *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co.*, C.A. No. 2:13-cv-00213-JRG (E.D. Tex.) (the "Rembrandt Litigation"). On February 13, 2015, a jury found that claims 2 and 59 of the '580 patent were infringed and, on the record then before it, not invalid. *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co.*, C.A. No. 2:13-cv-00213-JRG, Dkt. 288 (E.D. Tex.). The issue of post-trial relief was severed and assigned a separate case number, styled as *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co.*, C.A. No. 2:16-cv-00170-JRG, Dkt. 2 (E.D. Tex.). The defendants in the above litigation have appealed the decision to the U.S. Court of Appeals for the Federal Circuit in *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co.*, No. 2016-1729 (Fed. Cir.). In addition, the '580 patent has been involved in multiple *inter partes* reviews (IPRs) ("the Rembrandt IPRs"). Two petitions for IPR were instituted and have resulted in final written decisions (*Samsung Elecs. Co. v. Rembrandt Wireless Techs., LP*, IPR2014-00518, Pap. 47 (Final Written Decision) (Sept. 17, 2015); *Samsung Elecs. Co. v. Rembrandt Wireless Techs., LP*, IPR2014-00519, Pap. 49 (Final Written Decision) (Sept. 17, 2015)). Four petitions for IPR were denied (*Samsung Elecs. Co. v. Rembrandt Wireless Techs., LP*, IPR2014-00514, Pap. 18 (Decision on Institution) (Sept. 9, 2014); *Samsung Elecs. Co. v. Rembrandt Wireless Techs., LP*, IPR2014-00515, Pap. 18 (Decision on Institution) (Sept. 9, 2014); *Samsung Elecs. Co. v. Rembrandt Wireless Techs., LP*, IPR2015-00114, Pap. 14 (Decision on Institution) (Jan. 28, 2015); *Samsung Elecs. Co. v. Rembrandt Wireless Techs., LP*, IPR2015-00118, Pap. 14 (Decision on Institution) (Jan. 28, 2015)).

[2] In the context of the present Request, the standard for claim interpretation during patent examination as provided in MPEP § 2111 (Claim Interpretation; Broadest Reasonable Interpretation) is applied.

reexaminations, but also with the "priority over all other cases" accorded reexaminations of patents involved in litigation. MPEP § 2261. In the Rembrandt Litigation, a jury imposed a verdict of $15.7 million based in part on the jury's verdict concerning infringement of challenged claims 2 and 59 of the '580 patent. As shown in this Request – based on combinations of prior art that were never previously considered by the Office – claims 2 and 59 should have never issued. In light of the Patent Owner's demonstrated intent to assert these invalid claims, timely conduct of the requested reexamination is of particular importance to the public. [3]

[3] Requesters are also seeking reexamination of U.S. Patent No. 8,457,228 ("the '228 patent"), which is a continuation of the '580 patent.

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TABLE OF EXHIBITS

Exhibit	Description
Exhibit A	U.S. Patent No. 8,023,580 ("the '580 patent")
Exhibit B	U.S. Application No. 12/543,910 ("the '910 Application") (consecutive page numbers added for ease of citation)
Exhibit C	File History of U.S. Patent No. 8,023,580 ("the '580 Prosecution History") (other than the prior art of record) (consecutive page numbers added for ease of citation)
Exhibit D	U.S. Patent No. 5,982,807 ("Snell")
Exhibit E	Andren, C. *et al.*, *Using the PRISM™ Chip Set for Low Data Rate Applications*, Harris Semiconductor Application Note No. AN9614, March 1996 ("Harris AN9614")
Exhibit F	*HSP3824 Direct Sequence Spread Spectrum Baseband Processor*, Harris Semiconductor File No. 4064.4, Oct. 1996 ("Harris 4064.4") (consecutive page numbers added for ease of citation)
Exhibit G	Declaration of Jon Mears; Exhibit A thereto (Upender *et al.*, "Communication Protocols for Embedded Systems," *Embedded Systems Programming*, Vol. 7, Issue 11, November 1994. – ("Upender"))
Exhibit H	U.S. Patent No. 6,075,814 ("Yamano")
Exhibit I	Kamerman, A., *Throughput Density Constraints for Wireless LANs Based on DSSS*, IEEE 4th International Symposium on Spread Spectrum Techniques and Applications Proceedings, Mainz, Germany, Sept. 22-25, 1996, pp. 1344-1350 vol.3 ("Kamerman") (consecutive page numbers added for ease of citation)
Exhibit J	Office Action in File History of U.S. Application No. 09/205,205 (issued as U.S. Patent No. 6,614,838), mailed June 28, 2001 (consecutive page numbers added for ease of citation)
Exhibit K	Applicant Response in File History of U.S. Application No. 09/205,205 (issued as U.S. Patent No. 6,614,838), dated Oct. 1, 2001 (consecutive page numbers added for ease of citation)
Exhibit L	File History of U.S. Patent No. 5,982,807 (other than the prior art of record) (consecutive page numbers added for ease of citation)
Exhibit M	Terminal Disclaimer in File History of U.S. Patent No. 8,023,580, dated Dec. 4, 2014
Exhibit N	Terminal Disclaimer in File History of U.S. Patent No. 8,023,580, dated Dec. 15, 2014

Exhibit	**Description**
Exhibit O	*Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., Ltd. et al.*, No. 2:13-cv-00213, Excerpted pages from Plaintiff Rembrandt Wireless Technologies, LP's Disclosure of Asserted Claims and Infringement Contentions dated July 25, 2013, Exhibit C at 14, 48 (E.D. Tex.)

I. BACKGROUND OF THE REQUEST

The '580 patent relates generally to "a data communications system in which a plurality of modulation methods are used to facilitate communication among a plurality of modem types." '580 patent at 1:19-23. According to the '580 patent, messages – such as those shown in the '580 patent's Figure 8 – can be sent on the same network using different modulation methods (*e.g.*, type A and type B) by providing an indication in the first sequence of the message of the modulation method used for the second sequence of the message.

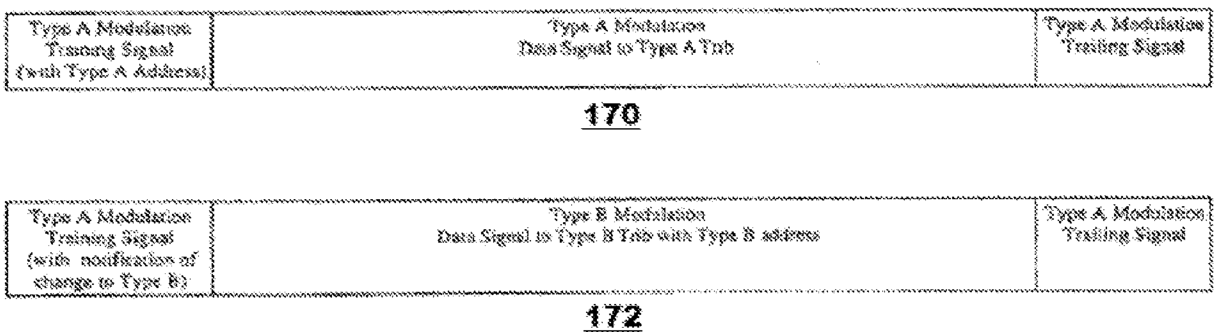


FIG. 8

The supposed "invention" in each of the Challenged Claims was already well known and obvious to those of ordinary skill in the art at the time of the earliest claimed priority date for the '580 patent—December 5, 1997. Indeed, in IPR2014-000518, the Board correctly found that independent claims 1 and 58 (from which claims 2 and 59 depend) are invalid as obvious in view of the prior art. Specifically, the Board correctly found that U.S. Patent No. 5,706,428 ("Boer") disclosed all of the limitations of claims 1 and 58, other than the use of a master/slave relationship. The Board also correctly found that the Applicant's admitted prior art, as reflected in the '580 patent specification ("APA"), demonstrated that the use of a master/slave protocol was well-known in the art, and that an article by Upender *et al.* ("Upender," a copy of which is attached as Exhibit G) provided a motivation to use a master/slave protocol when implementing Boer's system.

As discussed herein, claims 2 and 59 are rendered obvious by the combinations of cited references presented in this Request, which demonstrate that all of the elements of claims 2 and 59 were well known in the art before the earliest claimed priority date of the '580 patent. The Snell reference cited here by Requesters discloses a transceiver capable of transmitting data packets with preamble, header, and data portions, where the preamble and header are transmitted using BPSK modulation, and the data portion is transmitted using either BPSK or QPSK modulation. Snell alternatively discloses that the preamble and header are transmitted using DBPSK modulation, and the data portion is transmitted using either DBPSK or DQPSK modulation. *See, e.g.*, Snell at Fig. 3, 6:35-36, 6:52-63. As the PTAB correctly found in IPR2014-00518, DBPSK and DQPSK are "different types of modulation methods" in the context of '580 independent claims 1 and 58, and thus also of dependent claims 2 and 59. IPR2014-00518, Pap. 47 at 19; '580 Prosecution History at 408. Snell discloses the use of sequences in the header portion that indicate which type of modulation is being used for transmitting the data portion. *See, e.g.*, Snell at 6:52-63. Snell also discloses (through its incorporation of Harris AN9614) the ability to use its teachings with a polled (master/slave) protocol. Harris AN9614 at 3. Alternatively, it would have been obvious to a person of ordinary skill in the art ("POSITA") to use a master/slave protocol when implementing Snell's system based on the same Admitted Prior Art and Upender disclosures that were relied on by the PTAB in IPR2014-00518.

In IPR2014-000518, the PTAB declined to institute review of dependent '580 claims 2 and 59 based on the Board's view that the cited prior art failed to disclose the additional limitation of those claims requiring transmission of a "third sequence . . . transmitted in the first modulation method [that] indicates that communication from the master to the slave has reverted to the first modulation method." Requesters cite herein the Kamerman reference, which demonstrates reversion to the first modulation method, required by dependent claims 2 and 59, was obvious and well-known in the art. Specifically, Kamerman discloses an automatic rate adaptation scheme for transmitting a first data packet where the data is modulated using a second modulation method, such as QPSK (corresponding to a higher data transfer rate), and next transmitting a second data packet where the data is modulated using a first modulation method, such as BPSK (corresponding to a lower data transfer rate) (*i.e.*, to revert to the first modulation method). Kamerman at 6, 11-12. It would have been obvious to a POSITA to use Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method in implementing Snell's system for communicating data packets modulated according to different modulation methods to advantageously maximize the data transfer rate and adapt to changing channel conditions (as also taught by Kamerman).

Finally, it was well-known in the art, as demonstrated by Yamano, that packets can be advantageously addressed for an intended destination. It would have been obvious to a POSITA to use Yamano's teaching of including a destination address in the data packet in implementing Snell's teachings of a communication system for transmitting data packets to advantageously specify which receiver the data is intended for and to reduce processing requirements of receiving devices by allowing the receiving device to filter out packets which it does not need to demodulate.

Under any proper understanding of the scope of the Challenged Claims, and certainly under the broadest reasonable construction required here, claims 2 and 59 are obvious over Snell in view of Yamano and Kamerman; Snell in view of Harris 4064.4, Harris AN9614, Yamano, and Kamerman; and Snell in view of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman. Moreover, as detailed herein, if Patent Owner were to argue for a construction of the term "type" that is wholly unsupported by the intrinsic record, as it did in the cited Rembrandt Litigation and Rembrandt IPRs, these arguments should be rejected as the PTAB did in the Rembrandt IPRs. *E.g.*, IPR2014-00518, Pap. 47 at 7-12; '580 Prosecution History at 396-401. Requesters respectfully submit that reexamination of both Challenged Claims should be granted, and that the Challenged Claims should be found unpatentable and cancelled for the reasons set forth herein.

II. SUBSTANTIAL NEW QUESTIONS OF PATENTABILITY

Reexamination is respectfully requested for dependent claims 2 and 59 of the '580 patent under 35 U.S.C. § 302 and 37 C.F.R. § 1.510.

A. Listing of Prior Art Patents and Printed Publications

Pursuant to 37 C.F.R. § 1.510(b)(3), reexamination of the Challenged Claims is requested in view of the references below and Applicant's admitted prior art of a master/slave communication system depicted in Figures 1 and 2 and described in column 3, line 40 through column 4, line 50 of the '580 patent ("Admitted Prior Art"). The Snell, Harris 4064.4, Harris AN9614, Yamano, and Kamerman references were not previously cited or considered in any rejection by the Examiner during prosecution or by the Board during *inter partes* review of the '580 patent and present new technological teachings that were not previously considered in connection with the '580 patent. Accordingly, the combinations presented in this request were never previously considered by the Office with respect to the '580 patent.

Exhibit D: U.S. Patent No. 5,982,807, filed on Mar. 17, 1997 and issued on Nov. 9, 1999, to Snell, J. ("Snell").

Exhibit E: Andren, C. *et al.*, *Using the PRISM™ Chip Set for Low Data Rate Applications*, Harris Semiconductor Application Note No. AN9614, March 1996 ("Harris AN9614").

Exhibit F: *HSP3824 Direct Sequence Spread Spectrum Baseband Processor*, Harris Semiconductor File No. 4064.4, Oct. 1996 ("Harris 4064.4").

Exhibit G: Declaration of Jon Mears; Exhibit A thereto (Upender *et al.*, "Communication Protocols for Embedded Systems," *Embedded Systems Programming*, Vol. 7, Issue 11, November 1994. – ("Upender")).

Exhibit H: U.S. Patent No. 6,075,814, filed on May 9, 1997 and issued on Jun. 13, 2000, to Yamano, L., *et al.* ("Yamano").

Exhibit I: Kamerman, A., *Throughput Density Constraints for Wireless LANs Based on DSSS*, IEEE 4th International Symposium on Spread Spectrum Techniques and Applications Proceedings, Mainz, Germany, Sept. 22-25, 1996, pp. 1344-1350 vol.3 ("Kamerman").

A Form SB-08 and copies of the cited references are submitted herewith.

B. Statement Setting Forth Each Substantial New Question of Patentability

This Request presents new issues of patentability that were not considered during prosecution or prior *inter partes* review of the '580 patent. As described in more detail in this section, the Snell, Harris 4064.4, Harris AN9614, Yamano, and Kamerman references provide new technological teachings and were not cited by the Applicant or the Examiner or otherwise considered during prosecution of the '580 patent or during *inter partes* review of the '580 patent. Notably, Snell, which is included in every combination of references proposed herein by the Requesters, clearly discloses transmitting data packets where the preamble and header are always modulated using a first modulation method and indicate whether the data portion of the data packet is modulated using a first modulation method or a second modulation method, a limitation that is fundamental to each of the Challenged Claims. In addition, Harris 4064.4 (incorporated by Snell) discloses transmitting data packets where the preamble and header are always modulated using a first modulation method and indicate whether the data portion of the data packet is modulated using a first modulation method or a second modulation method. Harris

AN9614 (incorporated by Snell) discloses that the system described in Snell may operate according to a polled (master/slave) protocol. Yamano, also included in each proposed combination of references, clearly discloses including a destination address in the preamble portion of a data packet. And Kamerman, also included in each proposed combination of references, clearly discloses transmitting a first data packet where the data is modulated using a second modulation method, such as QPSK (corresponding to a higher data transfer rate), and next transmitting a second data packet where the data is modulated using a first modulation method, such as BPSK (corresponding to a lower data transfer rate) (*i.e.*, to revert to the first modulation method), which is required by dependent claims 2 and 59 and is the only limitation of the Challenged Claims that the Board previously found was not disclosed by the prior art that was then before the Board.

Although the Board previously considered Applicant's admission that master/slave communication systems were known in the prior art to the '580 patent and Upender's disclosure of motivation to use a master/slave communication system, these teachings were never before considered in connection with the Snell, Harris 4064.4, Harris AN9614, Yamano, or Kamerman references. Thus, the questions of patentability raised in this Request were not raised during the prosecution of the application that led to the '580 patent or during *inter partes* review of the '580 patent. As described below, in combination these new references disclose that all the limitations of the Challenged Claims were well-known and obvious at the time the application for the '580 patent was filed.

Accordingly, the references raise the following substantial new questions of patentability that were not considered during the original prosecution or prior *inter partes* review of the '580 patent:

1. SNQ-1: A substantial new question of patentability as to claims 2 and 59 is raised by Snell in view of Yamano and Kamerman.
2. SNQ-2: A substantial new question of patentability as to claims 2 and 59 is raised by Snell in view of Harris 4064.4, Harris AN9614, Yamano, and Kamerman.
3. SNQ-3: A substantial new question of patentability as to claims 2 and 59 is raised by Snell in view of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman.

In light of the new grounds raised, the combinations of the above references render the Challenged Claims invalid.

C. Background and Prosecution of the '580 Patent

1. The '580 Patent

The '580 patent is directed to the "fields of data communications and modulator/demodulators (modems), and, more particularly, to a data communications system in which a plurality of modulation methods are used to facilitate communication among a plurality of modem types." '580 patent at 1:19-23. The '580 patent describes a problem with communications systems where "communication between modems is generally unsuccessful unless a common modulation method is used." *Id.* at 1:45-47. In the context of a "multipoint architecture" for a network, which utilizes a "master" modem and at least two "tributary" (or "trib") modems, *id.* at 1:56-58, the '580 patent notes that where "one or more of the trib modems are not compatible with the modulation method used by the master, those tribs will be unable to receive communications from the master," *id.* at 1:58-61.

Because of these issues, the '580 patent asserts that "communication systems comprised of both high performance and low or moderate performance applications can be very cost inefficient to construct." *Id.* at 1:66-2:1. The '580 patent asserts that the solution used at the time to overcome *incompatible* modulation methods was the use of high performance modems for all users, which resulted in higher costs. *Id.* at 2:8-16. Thus, the '580 patent asserts that "*what is sought, and what is not believed to be provided by the prior art, is a system and method of communication in which multiple modulation methods* are used to facilitate communication among a plurality of modems in a network, which have heretofore been *incompatible*." *Id.* at 2:17-20 (emphasis added).

The purported invention of the '580 patent is a system like that shown in Figure 3, in which a master transceiver 64 is capable of transmitting and receiving data using different modulation methods (*e.g.*, what the patent identifies as "type A" modulation and "type B" modulation). *Id.* at 5:23-33. Master transceiver 64 can communicate with tribs, *e.g.*, trib 66, each of which communicates using either a type A or type B modulation method (shown as "type X" in Figure 3), but not both. *Id.* at 5:34-46. Figure 4 shows an exemplary network in which master transceiver 64 can communicate using either a type A or type B modulation method. *Id.* at 5:47-51. Trib 66a communicates using a type A modulation method, while trib 66b communicates using a type B modulation method. *Id.*

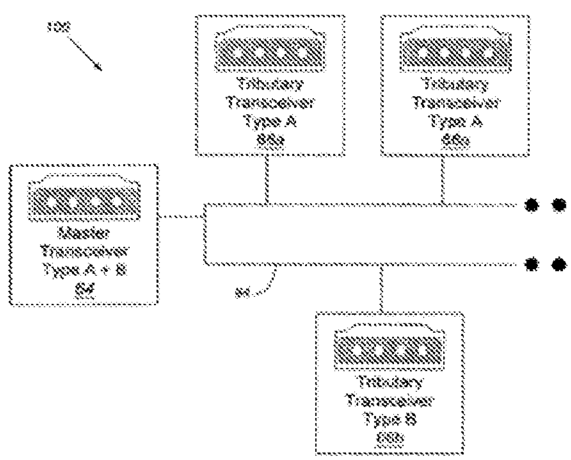


FIG. 4

'580 patent, Figure 4.

According to the '580 patent, the master transceiver can communicate with both type A and type B tribs by providing in the first sequence (*i.e.*, header) of a message an indication of the modulation method that is used for the second sequence (*i.e.*, data portion) of the message. *Id.* at 5:51-6:12. For example, a master can communicate with a type A trib by transmitting a training sequence using type A modulation followed by a second sequence also in type A modulation. *Id.* at 6:49-54. To send a message to a type B trib (that uses type B modulation), the master transmits a training sequence, again using type A modulation, that provides notification of an impending change to type B modulation. *Id.* at 6:3-6. The second sequence is then transmitted using type B modulation. *Id.* at 6:8-15.

2. Prosecution History of the '580 Patent

The '580 patent issued from U.S. Application No. 12/543,910. The '910 Application was a continuation of U.S. Application No. 11/774,803, which issued as U.S. Patent No. 7,675,965. The '803 Application was a continuation of U.S. Application No. 10/412,878, which issued as U.S. Patent No. 7,248,626. The '878 Application was a continuation-in-part of U.S. Application No. 09/205,205, which became U.S. Patent 6,614,838. The '580, '965, '626, and '838 patents all claim the benefit of the filing date of U.S. Provisional App. No. 60/067,562, filed Dec. 5, 1997.

The '910 Application that eventually matured into the '580 patent was filed on August 19, 2008 with 100 claims. '910 Application at 32-41. In an September 1, 2010 Office Action, a number of claims were objected to due to an antecedent basis issue but were otherwise deemed allowable, while other claims were rejected under 35 U.S.C. §§ 102(b) & 103(a). '580 Prosecution History at 72-77. Application claim 1, which would issue as claim 1, was one such claim that was deemed allowable but for the antecedent basis issue. *Id.* at 72, 77. In a March 1, 2011 response ("3/1/2011 Reply"), Patent Owner amended many pending claims, including application claims 1 and 2 (which would issue as claims 1 and 2, respectively), cancelled other claims, and added forty-eight new claims. *Id.* at 127-38. Included within the added claims were claims 123 and 124, which would issue as claims 58 and 59, respectively. *Id.* at 135-36. On March 10, 2011, Patent Owner refiled the claims in response to a Notice Of Non-Compliant Amendment. *Id.* at 167-81. In its 3/1/2011 Reply, Patent Owner amended claim 1, even though it had been allowed. Patent Owner offered the following explanation:

> Applicant thanks Examiner Ha for the indication that claims 1-18, and 37-57 are allowed (office action, p. 7). Applicant has further amended claims 1-2, 9-15, 18, 37-38, and 45-46 with additional recitations to more precisely claim the subject-matter. For example, the language of independent claim 1 has been clarified to refer to two types of modulation methods, i.e., different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods. Support for the clarifying amendments can be found throughout the specification, for example [0024], [0025] and [0031] - [0036].

Id. at 140. Patent Owner later relied on this post-allowance statement—made 14 years after the provisional application to which the '228 patent claims priority was filed—to assert during litigation that the meaning of "different types" of modulation methods referred to "different families" of modulation methods that did not have any overlapping characteristics. The court in the Rembrandt Litigation construed this claim term. *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., Ltd.*, No. 2:13-cv-00213-JRG-RSP, Dkt. 114, Claim Construction Order (E.D. Tex. July 10, 2014). After the court issued its claim construction order, the PTAB also construed this term, correctly rejecting Rembrandt's argument, explaining that "'[i]t is inappropriate to limit a broad definition of a claim term based on prosecution history that is itself ambiguous.'" IPR2014-00518, Pap. 47 at 9 (quoting *Inverness Med. Switz. GmbH v. Warner Lambert Co.*, 309 F.3d 1373, 1382 (Fed. Cir. 2002)); '580 Prosecution History at 398.

On May 11, 2011, Patent Owner filed a paper making further amendments to pending claims 1 and 95. *Id.* at 187-200. The application was allowed on July 22, 2011, although no Statement of Reasons for Allowance was provided. *Id.* at 249-74. On July 26, 2011, Patent Owner filed an Amendment After Allowance further amending claims that, after entry, issued as claims 40, 49, and 54. *Id.* at 275-90. The '580 patent issued on September 20, 2011. *Id.* at 306.

In December 2014, Rembrandt Wireless, LP, the assignee of record, disclaimed claims 24, 26-28, 31-37, 39-40, 42-46, and 48. Exs. M and N; '580 Prosecution History at 363, 366.

3. *Inter Partes* Review of the '580 Patent (IPR2014-00518)

On March 20, 2014, Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC filed a petition for *inter partes* review of claims 1-2, 4-5, 10, 13, 19-22, 49, 52-54, 57-59, 61-62, 66, 70, and 76-79 based on U.S. Patent No. 5,706,428 ("Boer") in view of Applicant's admitted prior art of a master/slave communication system, as reflected in the '580 patent specification. IPR2014-00518, Pap. 1 (Mar. 20, 2014). On September 23, 2014, the PTAB instituted *inter partes* review of claims 1, 4, 5, 10, 13, 20-22, 54, 57, 58, 61, 62, 66, 70, and 76-79 but declined to institute review of claims 2, 19, 49, 52, 53, and 59. IPR2014-00518, Pap. 16 at 2 (Sept. 23, 2014); '580 Prosecution History at 319.[4] The PTAB did not institute review of claims 2 and 59 (Boer in view of Applicant's admitted prior art as reflected in the '580 patent specification), finding that the petitioner did not show that the prior art taught the dependent limitation of these claims, which requires "'indicat[ing]' that communication from the master to the slave has reverted to

[4] Some documents from the Rembrandt IPRs appear in the file wrapper of the '580 patent, including institution decisions and final written decisions. IPR documents appearing in the file wrapper (attached here as Exhibit C, "'580 Prosecution History") are cited herein both to their original source documents and to their locations within Exhibit C.

the first modulation method." IPR2014-00518, Pap. 16 at 14-15; '580 Prosecution History at 331-32.

On September 17, 2015, in a Final Written Decision, the PTAB correctly found all reviewed claims (claims 1, 4, 5, 10, 13, 20-22, 54, 57, 58, 61, 62, 66, 70, and 76-79), including the independent claims from which the Challenged Claims depend, were unpatentable over Boer in view of Applicant's admitted prior art of a master/slave communication system, as reflected in the '580 patent specification. IPR2014-00518, Pap. 47 at 21 (Sept. 17, 2015); '580 Prosecution History at 391.

In the Final Written Decision, the PTAB correctly construed the claim terms using their broadest reasonable construction in light of the '580 patent specification. IPR2014-00518, Pap. 47 at 5; '580 Prosecution History at 394. The PTAB correctly construed the claim term "modulation" as having "its customary and ordinary meaning as the process by which some characteristic of a carrier is varied in accordance with a modulating wave." IPR2014-00518, Pap. 47 at 7; '580 Prosecution History at 396.

The PTAB also construed different "type[s]" of modulation methods as "modulation methods that are incompatible with one another," specifically finding that the "DQPSK…modulation method[] [is] incompatible with DBPSK modulation" and thus DQPSK modulation is "a different type" of modulation than DBPSK. IPR2015-00518, Pap. 47 at 12, 18-19; '580 Prosecution History at 401, 407-408. The specification also supports the PTAB's interpretation of different types of modulation methods as those which are incompatible. The specification addresses the asserted problem of lack of compatibility between modems, stating "what is sought, and what is not believed to be provided by the prior art, is a system and method of communication in which multiple modulation methods are used to facilitate communication among a plurality of modems in a network, which have heretofore been *incompatible*." '580 patent at 2:16-20 (emphasis added); *see also* '580 patent at 1:58-65, 1:27-30, 1:47-52, 2:8-10, 2:12-16, 2:55-57. The provisional application to which the '580 patent claims priority, also explains that if a master uses a modulation method that is not compatible with the modulation method used by a trib, the master cannot communicate with that trib. U.S. Provisional Application No. 60/067,562 at 2 ("…the master communicates to all tribs with a single modulation method. If one or more of the tribs is not compatible, the master cannot communicate with that trib."). In construing the meaning of different "type[s]" of modulation methods, the PTAB correctly rejected Patent Owner's proffered construction after thorough consideration of the prosecution history of the '580 patent, including the Response dated March 1, 2011. IPR2015-00518, Pap. 47 at 7-12; IPR2015-00518, Pap. 47 at 12, 18-19.

The PTAB further found that the '580 patent disclosed admitted prior art of master/slave communication systems, agreeing that "the '580 patent's [disclosure of] multipoint communication systems (or master/slave systems), depicted in Figures 1 and 2 and described in column 3, line 40 through column 4, line 50, contains material that may be used as prior art against the patent under 35 U.S.C. § 103(a)." IPR2014-00518, Pap. 47 at 13; '580 Prosecution History at 402. The PTAB further found that Upender provided a motivation to combine the master/slave relationship of the admitted prior art with Boer. IPR2014-00518, Pap. 47 at 16-18; '580 Prosecution History at 405-407. The PTAB noted that Upender states that polling is one of the more popular protocols for embedded systems "because of its simplicity and determinacy" and "teaches that master/slave protocols were widely used and a good choice for simple systems." IPR2014-00518, Pap. 47 at 15-16; '580 Prosecution History at 404-405. The PTAB agreed that Upender provided appropriate motivation to use the simpler master/slave protocol in conjunction with Boer. IPR2014-00518, Pap. 47 at 17 ("one of ordinary skill in the art would have found it obvious to use a different prior art communication protocol (*e.g.*, a simpler protocol) when using multiple data rates as described by Boer."); '580 Prosecution History at 406.

Rembrandt did not appeal the PTAB's finding of unpatentability.

4. *Inter Partes* Review of the '580 Patent (IPR2014-00519)

On March 20, 2014, Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC filed a petition for *inter partes* review of claims 23, 25, 29-30, 32, 34, 38, 40-41, 43-44 and 47 of the '580 patent. IPR2014-00519, Pap. 1 (Mar. 20, 2014). On September 23, 2014, the PTAB instituted *inter partes* review of claims 32, 34, 38, 40, 43, 44, and 47 of the '580 patent but declined to institute review of claims 23, 25, 29, 30, and 41. IPR2014-00519, Pap. 16 at 15 (Sept. 23, 2014). Rembrandt thereafter disclaimed claims 32, 34, 40, 43, and 44. IPR2014-00519, Pap. 49 at 2 (Sept. 17, 2015). On September 17, 2015, the PTAB correctly found the remaining claims 38 and 47 unpatentable over Boer in view of Applicant's admitted prior art of a master/slave communication system, as reflected in the '580 patent specification. *Id.*

5. *Inter Partes* Reviews of the '580 Patent (IPR2014-00514 and IPR2014-00515)

On March 20, 2014, Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC filed a petition for *inter partes* review of claims 1, 2, 4, 5, 10, 13, 19–22, 49, 52–54, 57–59, 61, 62, 66, 70, and 76–79 of the '580 patent (IPR2014-00514, Pap. 1 (Mar. 20, 2014)) and a petition for *inter partes* review of claims 23, 25, 29-30, 32, 34, 38, 40-41, 43-44 and 47 of the '580 patent. IPR2014-00515, Pap. 1 (Mar. 20, 2014). On September 9, 2014, the PTAB declined to institute *inter partes* review of the '580 patent based on either petition, finding that the petitioner did not make a sufficient showing that the reference relied upon in the petitions (IEEE P802.11, Draft Standard for Wireless LAN, Medium Access Control (MAC) and Physical Layer (PHY) Specification, P802.11D4.0, May 20, 1996) was publicly available before the claimed priority date. IPR2014-00514, Pap. 18 at 9-10 (Sept. 9, 2014); IPR2014-00515, Pap. 18 at 10 (Sept. 9, 2014).

6. *Inter Partes* Reviews of the '580 Patent (IPR2015-00114 and IPR2015-00118)

On October 21, 2014, Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC filed a petition for *inter partes* review of claims 2, 19, 49, 52, 53, and 59 of the '580 patent (IPR2015-00114, Pap. 1 (Oct. 21, 2014)) and a petition for *inter partes* review of claims 23, 25, 29, 30, and 41 of the '580 patent (IPR2015-00118, Pap. 1 (Oct. 21, 2014)). The asserted ground of unpatentability was Boer in view of Applicant's admitted prior art of a master/slave communication system as reflected in the '580 patent specification—a combination of references that is different from the combinations submitted in this Request giving rise to substantial new questions of patentability. On January 28, 2015, the PTAB declined to institute *inter partes* review of the '580 patent based on either petition under 35 U.S.C. § 325(d), finding that "the same or substantially the same prior art or arguments" had been presented in IPR2014-00518 and IPR2014-00519 and that, barring joinder, the petitions were time-barred. IPR2015-00114, Pap. 14 at 7-8 (Jan. 28, 2015); IPR2015-00118, Pap. 14 at 7 (Jan. 28, 2015). In the decisions not to institute, the PTAB specifically declined to reach the merits of the grounds presented. IPR2015-00114, Pap. 14 at 6 (Jan. 28, 2015); IPR2015-00118, Pap. 14 at 5 (Jan. 28, 2015).

D. Secondary Considerations

This Request demonstrates that claims 2 and 59 of the '580 patent are obvious under 35 U.S.C. § 103 based on the references presented here. As discussed below, these clear teachings in the prior art cannot be overcome by any supposed "secondary considerations."

The "ultimate determination of whether an invention is obvious is a legal question based on the totality of the evidence." *See Brown & Williamson Tobacco Corp. v. Philip Morris, Inc.*, 229 F.3d 1120, 1131 (Fed. Cir. 2000) (*citing Richardson-Vicks Inc. v. Upjohn Co.*, 122 F.3d 1476, 1483 (Fed. Cir. 1997)). As set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966), those fact determinations involve (1) the scope and content of the prior art, (2) the differences between the prior art and the claimed invention, (3) the level of ordinary skill in the pertinent art, and (4) additional evidence, which may serve as indicia of non-obviousness. This "additional evidence" with respect to obviousness may include "secondary considerations [such] as commercial success, long felt but unsolved needs, [and] failure of others." *Graham*, 383 U.S. at 17. ***However, a lack of invention cannot be outweighed by secondary factors***. *Dow Chem. Co. v. Halliburton Oil Well Cementing Co.*, 324 U.S. 320 (1945). *See also Great Atl. & Pac. Tea Co. v. Supermarket Equip. Corp.*, 340 U.S. 147, 153 (1950) ("[C]ommercial success without invention will not make patentability."); *Brown & Williamson,* 229 F.3d at 1131 ("indicators of nonobviousness cannot overcome the strong evidence of obviousness") (*citing Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 769 (Fed. Cir. 1988) ("finding obviousness despite strong evidence of commercial success")).

Any supposed evidence of commercial success is unavailing without a concrete correlation between the merits of the invention and the alleged success. *Richardson-Vicks Inc.*, 122 F.3d at 1483 ("evidence of commercial success proffered by plaintiff is limited to sales data, and does not include evidence of market share, of growth in market share, of replacing earlier units sold by others or of dollar amounts, and no evidence of a nexus between the sales and the merits of the invention") (internal quotation omitted). In order to show the required nexus to the claimed invention for an argument of commercial success, the patent owner would need to show not only the sale of a covered product, but also that customers are choosing the product ***because of*** features that are purportedly within the exclusive boundaries of the '580 patent's claims. In other words, such sales could be pertinent to a "commercial success" argument for obviousness purposes *only* if the patent owner could prove it was these features, and not others, that were driving demand.

The patent owner cannot demonstrate the required nexus. As detailed in this Request, each of the limitations of claims 2 and 59, properly construed for reexamination purposes, was actually known and present in the art long before the '580 patent's earliest possible priority date, undercutting any suggestion that any limitation played the required role in generating any supposed "success."

The Applicants also clearly did *not* satisfy any long-felt need, nor was there a failure of others to satisfy any long-felt need. To the contrary, as reflected in the prior art submitted herewith, this is a long-standing art with disclosures addressing, well before the '580 patent's earliest possible priority date, the same claimed features in claims 2 and 59. The clear teachings of prior art preceding the '580 patent's earliest possible priority date belie any claim of a long-felt need or failure by others.

Finally, the Patent Owner's only apparent license (as argued during litigation) resulted from a settlement of litigation. *Rembrandt Wireless Techs., LP v. Samsung Electronics Co.*, Case No. 16-1729, D.I. 34 (Brief for Plaintiff-Appellee Rembrandt Wireless Technologies, LP) at 24, filed Jul. 21, 2016 (Fed. Cir.). Thus, there is nothing to show that the license was attributable to the merits of the claimed invention rather than other considerations, such as a desire to avoid litigation.

The '580 patent claims are based on an idea that was well-known when the Applicants filed for a patent. They are rendered obvious by the prior art, and the overwhelming invalidity of the claims under 35 U.S.C. § 103 cannot be rebutted with secondary considerations.

III. DETAILED EXPLANATION OF THE PERTINENCE AND MANNER OF APPLYING THE PRIOR ART REFERENCES TO EVERY CLAIM FOR WHICH REEXAMINATION IS REQUESTED[5]

As required under 37 C.F.R. § 1.510(b)(2), a detailed explanation of the pertinence and manner of applying the prior art references to the claims is provided here with Requesters' proposed rejections.

As noted above, for purposes of this request, the Requesters construe claim language according to MPEP § 2111, such that claim terms are given their broadest reasonable interpretation. *See In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d at 1364. When the claims are construed in this manner, or even in a narrower manner, all the claims are unpatentable in view of the prior art references presented herein. In construing the claim language in this manner or as otherwise set forth explicitly or implicitly herein, the Requesters expressly reserve the right to argue a different claim construction in litigation as appropriate to such proceeding.

A. The PTAB's Constructions of the Terms "Modulation" and Different "Type[s]" of Modulation Methods

As an initial matter, Requesters note that the PTAB has already construed the terms "modulation" and different "type[s]" of modulation methods, applying the broadest reasonable interpretation, in an *inter partes* review of claims 1 and 58, independent claims from which claims 2 and 59 depend, respectively. IPR2014-00518, Pap. 47 at 5-12; '580 Prosecution

[5] All emphases and annotations are added unless otherwise noted.

History at 394-401. The PTAB has also construed these same terms in three *inter partes* reviews of U.S. Patent No. 8,457,228, a continuation of the '580 patent. *Samsung Elecs. Co. v. Rembrandt Wireless Techs., LP*, IPR2014-00892, Pap. 46 at 6-13 (Final Written Decision) (Sept. 24, 2015); *Samsung Elecs. Co. v. Rembrandt Wireless Techs., LP*, IPR2014-00893, Pap. 44 at 6-13 (Final Written Decision) (Sept. 24, 2015); *Samsung Elecs. Co. v. Rembrandt Wireless Techs., LP*, IPR2014-00895, Pap. 44 at 6-13 (Final Written Decision) (Sept. 24, 2015).

1. The PTAB's Construction of "Modulation"

In all four IPR decisions, the PTAB properly construed "'modulation' in accordance with its customary and ordinary meaning as the process by which some characteristic of a carrier is varied in accordance with a modulating wave." IPR2014-00518, Pap. 47 at 7; '580 Prosecution History at 396. *See also* IPR2014-00892, Pap. 46 at 7; IPR2014-00893, Pap. 44 at 7; IPR2014-00895, Pap. 44 at 7.

2. The PTAB's Construction of "Different 'Type[s]' of Modulation Methods"

Also in all four IPR decisions, the PTAB properly construed "different 'types' of modulation methods as "modulation methods that are incompatible with one another," IPR2014-00518, Pap. 47 at 12; '580 Prosecution History at 401, and held that "DQPSK and PPM/DQPSK modulation methods are incompatible with DBPSK modulation," IPR2014-00518, Pap. 47 at 18; '580 Prosecution History at 407. *See also* IPR2014-00892, Pap. 46 at 13, 19; IPR2014-00893, Pap. 44 at 13, 19; IPR2014-00895, Pap. 44 at 13, 18-19.

The specification supports the PTAB's interpretation of different types of modulation methods as those which are incompatible. The specification addresses the asserted problem of lack of compatibility between modems, stating "what is sought, and what is not believed to be provided by the prior art, is a system and method of communication in which multiple modulation methods are used to facilitate communication among a plurality of modems in a network, which have heretofore been *incompatible*." '580 patent at 2:16-20 (emphasis added). The specification further describes the asserted problem as follows:

> If one or more of the trib modems are not compatible with the modulation method used by the master, those tribs will be unable to receive communications from the master. Moreover, repeated attempts by the master to communicate with the incompatible trib(s) will disturb communications with compatible trib(s) due to time wasted in making the futile communication attempts.

'580 patent at 1:58-65.

Indeed, the specification continues to focus on compatibility, or the lack thereof, as the issue which the purported invention addresses. *See also* '580 patent at 1:27-30, 1:47-52, 2:8-10, 2:12-16. The summary section concludes by stating: "[a]nother advantage of the present invention is that a master transceiver can communicate seamlessly with tributary transceivers or modems using incompatible modulation methods." '580 patent at 2:55-57.

Contrary to the plain language of the specification, Patent Owner argued in the Rembrandt IPRs that different "types" of modulation methods should be interpreted to mean "different 'families' of modulation techniques," IPR2014-00518, Pap. 47 at 7; '580 Prosecution History at 396, and that different "families" of modulation methods should be further understood to mean modulation methods that do not vary overlapping characteristics, IPR2014-00518, Pap. 47 at 11; '580 Prosecution History at 400. Patent Owner relied solely on a single remark made in the prosecution history after allowance. In an office action reply dated March 1, 2011 (3/1/2011 Reply), Patent Owner amended claim 1 to introduce the term "type," even though claim 1 had been allowed,[6] stating:

> Applicant thanks Examiner Ha for the indication that claims 1-18, and 37-57 are allowed (office action, p. 7). Applicant has further amended claims 1-2, 9-15, 18, 37-38, and 45-46 with additional recitations to more precisely claim the subject-

[6] Claim 59 (application claim 124) was added in the 3/1/2011 Reply after claim 1 was allowed.

> matter. For example, the language of independent claim 1 has been clarified to refer to *two types of modulation methods, i.e., different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods.* Support for the clarifying amendments can be found throughout the specification, for example [0024], [0025] and [0031] - [0036].

'580 Prosecution History at 140 (emphasis added). Based on the foregoing statement during prosecution, Patent Owner argued to the PTAB that "different families" of modulation methods cannot be based on varying any overlapping characteristics. The PTAB correctly rejected Patent Owner's argument, stating:

> Thus, according to counsel for Patent Owner, two modulation methods that are different in one characteristic but the same in another, e.g., one varying phase and amplitude and the other varying frequency and amplitude, would be regarded as belonging in the same family. Such an understanding of the classification or categorization of "family" in case of partial overlap was not a part of any representation during prosecution history, but presented for the first time by counsel for Patent Owner during oral argument. It reflects ambiguity in the construction proposed by Patent Owner.

IPR2014-00518, Pap. 47 at 11; '580 Prosecution History at 400.

The PTAB further found that:

> the claim amendments with respect to two "types" of modulation methods were not made in response to a rejection, as the relevant claims had been allowed. Nor do the above remarks explain what a "family" might be, or why FSK is considered to be a member of one "family" and QAM a member of another "family." . . . *Patent Owner's purported "definition" is anything but clear or precise.*

IPR2014-00518, Pap. 47 at 8 (citation omitted); '580 Prosecution History at 397.

Ultimately, the PTAB concluded that "[t]he prosecution history is, at best, ambiguous. 'It is inappropriate to limit a broad definition of a claim term based on prosecution history that is itself ambiguous.'" IPR2014-00518, Pap. 47 at 9 (quoting *Inverness Med. Switz. GmbH v. Warner Lambert Co.*, 309 F.3d 1373, 1382 (Fed. Cir. 2002)); '580 Prosecution History at 398.

After rejecting Patent Owner's unsupported and ambiguous construction, the PTAB correctly construed different "types" of modulation methods under the broadest reasonable interpretation in light of the specification to mean modulation methods that are incompatible. The PTAB expressly found that:

> In view of the foregoing, we do not interpret a "type" of modulation method as referring to some vague or undefined "family" of modulation methods. We interpret different "types" of modulation methods as modulation methods that are incompatible with one another. Thus, contrary to Patent Owner's construction, two modulation methods that are based on varying the same one of the frequency, amplitude, or phase of the carrier wave may be different "types" of modulation methods.

IPR2014-00518, Pap. 47 at 18; '580 Prosecution History at 407.

Applying this construction to the Boer reference before it, the PTAB correctly found "that DQPSK and PPM/DQPSK modulation methods are incompatible with DBPSK modulation." IPR2014-00518, Pap. 47 at 18; '580 Prosecution History at 407. The PTAB rejected Patent Owner's argument that Boer's disclosure of the same mobile station transmitting and receiving using DBPSK and DQPSK meant that the two methods are compatible:

> whether one "type" of modulation is incompatible with another "type" concerns the method of modulation, not necessarily the modem for carrying out that method. That is, a modem might be designed (as in Boer) to transmit and receive using, separately, two incompatible modulation methods, but that does not mean the two modulation methods are compatible with each other.

IPR2014-00518, Pap. 47 at 19; '580 Prosecution History at 408.

Accordingly, the PTAB correctly found that DQPSK modulation and DBPSK modulation are different "types" of modulation, stating:

> Patent Owner argues that DBPSK and DQPSK are not different "'types" of modulation methods because the methods are within the same "family," because both vary the same fundamental characteristic of a carrier wave – its phase. We do not find Patent Owner's argument to be persuasive because we are not convinced that the broadest reasonable interpretation of "types" of modulation is so limited.

IPR2014-00518, Pap. 47 at 19 (citations omitted); '580 Prosecution History at 408. *See also* IPR2014-00892, Pap. 46 at 19-20; IPR2014-00893, Pap. 44 at 19; IPR2014-00895, Pap. 46 at 19.

Should Patent Owner attempt here to argue that DBPSK and DQPSK are not different types of modulation methods, as it appears to have done in the cited Rembrandt Litigation and Rembrandt IPRs, this interpretation of the term "'types' of modulation methods" would not only be wholly unsupported by the claims and the specification of the '580 patent, but it would also directly conflict with the PTAB's interpretation of claims 1 and 58 (from which claims 2 and 59 depend), which was never appealed by Patent Owner.

B. Overview of Prior Art

1. Overview of Snell

Snell is prior art under at least § 102(e) because it is a U.S. Patent filed by another in the United States on March 17, 1997, which is prior to December 5, 1997, the earliest claimed priority date of the '580 patent. Snell has not been previously cited to or considered by the Patent Office in connection with the '580 patent.

Snell discloses a transceiver that serves as an access point for communicating data with other transceivers connected to a wireless local area network (WLAN). Snell at 1:34-46; *see id.* at 1:47-50, 4:42-47, 5:18-21. Snell's transceiver transmits data packets intended for another transceiver, where the communication may switch on-the-fly between a "first modulation method" (*e.g.*, BPSK) and a "second modulation method" (*e.g.*, QPSK) that is "of a different type than the first modulation method."[7] *Id.* at 2:61-63 ("The modulator may also preferably include header

[7] As explained in §III.A.2, *supra*, in IPR2014-00518, the Board construed different "type[s]" of modulation methods as "modulation methods that are incompatible with one another," specifically finding that the "DQPSK…modulation method[] [is] incompatible with DBPSK modulation" and thus DQPSK modulation is "a different type" of modulation than DBPSK. IPR2015-00518, Pap. 47 at 12, 18-19; '580 Prosecution History at 401, 407-408. Accordingly, Snell, which provides examples of switching between BPSK and QPSK modulation, and alternatively switching between DBPSK and DQPSK modulation, discloses the claimed feature of changing between different modulation types, even if Snell's "first modulation method" and "second modulation method" each use phase shift keying. In addition, Snell further discloses a SIGNAL field in the header to indicate the modulation method used to modulate the MPDU data,

modulator means for modulating *data packets*."), 1:55-57 ("The PRISM 1 chip set provides all the functions necessary for full or half duplex, direct sequence spread spectrum, *packet communications* at the 2.4 to 2.5 GHz ISM radio band."), 2:27-30 ("It is another object of the invention to provide a spread spectrum transceiver and associated method to permit operation at higher data rates and *which may switch on-the-fly between different data rates and/or formats.*"), 7:10-14 ("The variable data may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and *while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly*."), 1:58-61 ("In particular, the HSP3824 baseband processor manufactured by Harris Corporation employs quadrature or bi-phase phase shift keying (QPSK or BPSK) modulation schemes."), 2:15-17 ("Moreover, a WLAN application, for example, may require a change between BPSK and QPSK during operation, that is, on-the-fly."). *See id.* at Abstract, 1:55-61, 2:56-59, Fig. 2, Fig. 3, Fig. 5.

Snell discloses that each data packet transmission comprises a "group of transmission sequences" structured with a "first portion" (*e.g.*, a PLCP preamble and PLCP header) and a "payload portion" (*e.g.*, MPDU data). *Id.* at 6:35-36, 6:64-66, 7:5-14, Fig. 3. The PLCP preamble contains SYNC and SFD fields, and the PLCP header contains SIGNAL, SERVICE, LENGTH, and CRC fields. *Id.* at Fig. 3, 6:48-7:14. The MPDU data is the data to be transmitted to the receiving transceiver. *Id.* at 7:5-6 ("*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation."); *see also id.* at 7:6-14, Fig. 3.

thereby disclosing an indication of an impending change from the first modulation method to the second modulation method or vice-versa.

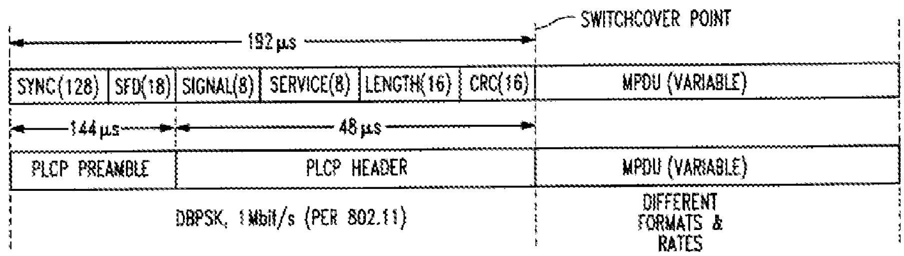


FIG. 3

Id. at Fig. 3.

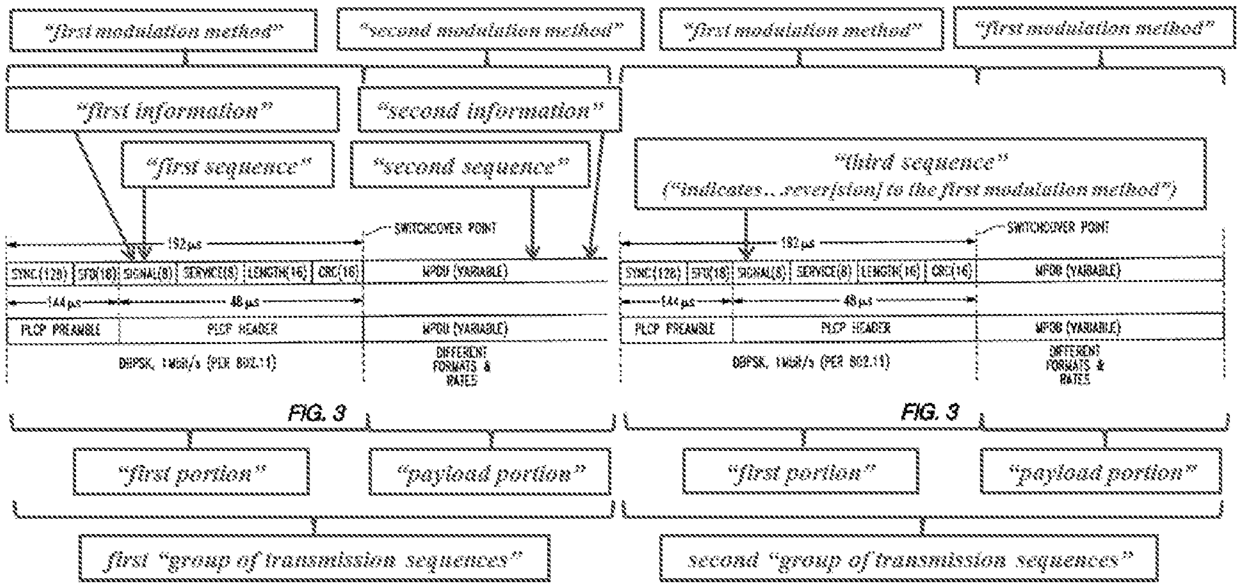
Snell teaches that the PLCP preamble and PLCP header are always modulated using the "first modulation method" (*e.g.*, BPSK). Snell at 6:35-36 ("The header may always be BPSK"), Fig. 3. Snell further discloses that "first information in the first portion" (*e.g.*, the SIGNAL field in the PLCP header) "indicates" which of the "first modulation method" (*e.g.*, BPSK) and "second modulation method" (*e.g.*, QPSK) is used for modulating "second information" in the "payload portion" (*e.g.*, MPDU data).

For example, Snell discloses "[n]ow relating to the *PLCP header* 91, *the SIGNAL* is:

0Ah	1 Mbit/s BPSK,
14h	2 Mbit/S QPSK,
37h	5.5 Mbit/s BPSK, and
6Eh	11 Mbit/s QPSK.

"

Snell at 6:52-59. Thus, Snell teaches that the SIGNAL field in the PLCP header includes the symbol "0Ah" to indicate when the MPDU data is modulated using the "first modulation method" (*e.g.*, BPSK at 1 Mbit/s). *Id.* at 6:52-59, 7:1-2, 7:5-14, Fig. 3. Snell also teaches that the SIGNAL field in the PLCP header includes the symbol "14h" to indicate when the MPDU data is modulated using the "second modulation method" (*e.g.*, QPSK at 2 Mbit/s). *Id.* Snell thus teaches that "[t]he variable data may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." *Id.* at 7:10-14; *see also, e.g.*, *id.* at Fig. 3, 2:27-30.



Id. at Fig. 3 (annotated).

Snell teaches communicating multiple data packets with the ability to "switch on-the-fly between different data rates and/or formats." *Id.* at 2:29-30. Based on this disclosure, a person of ordinary skill in the art would have understood that Snell teaches that a series of packets may be sent that switch from using a second modulation method to using a first modulation method for the payload portion of the data packet, as shown in the annotated Figure 3 above. For example, Snell's transceiver transmits a first group of transmission sequences comprising a "first sequence" (*e.g.*, PLCP preamble and PLCP header) that is "modulated according to the first modulation method" (*e.g.*, BPSK) where the "first sequence" (*e.g.*, "SIGNAL" field in PLCP header) "indicates" (*e.g.*, using "14h") the modulation type (*e.g.*, QPSK) used for modulating the "second sequence" (*e.g.*, MPDU data). For the first packet, the "SIGNAL" field in the PLCP header uses a code (*e.g.*, "14h") that "indicates" when the MPDU data is modulated "according to the second modulation method" (*e.g.*, QPSK). The "second modulation method" (*e.g.*, QPSK) "is of a different type than the first modulation method" (*e.g.*, BPSK).

Snell's transceiver then transmits a second packet comprising a "third sequence" (*e.g.*, PLCP preamble and PLCP header) "transmitted in the first modulation method" (*e.g.*, BPSK) where the "third sequence" (*e.g.*, "SIGNAL" field in PLCP header) "indicates" (*e.g.*, using "0Ah") the modulation type (*e.g.*, BPSK) used for modulating the MPDU data of the second packet. Dependent claims 2 and 59 require "transmit[ting] a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method." During the Rembrandt Litigation, Rembrandt asserted that "the access code and header of a subsequent basic rate packet constitute a 'third sequence,'…" *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., Ltd. et al.*, No. 2:13-cv-00213, Excerpted pages from Plaintiff Rembrandt Wireless Technologies, LP's Disclosure of Asserted Claims and Infringement Contentions dated July 25, 2013, Exhibit C at 14, 48 (E.D. Tex.) (attached as Exhibit O). For the second packet, the "SIGNAL" field in the PLCP header uses a code (*e.g.*, "0Ah") that "indicates" when the MPDU data is modulated using the BPSK modulation method at 1 Mbit/s. This "SIGNAL" thus "indicates that communication" from the transceiver "has reverted to the first modulation method" (*e.g.*, reverted to BPSK modulation). In addition, transmitting the data using the "first modulation method" (*e.g.*, BPSK) results in a data rate of 1 Mbit/s which is lower than transmitting the data using the "second modulation method," which results in a data rate of 2 Mbit/s.

While Snell describes that the "first modulation method" may be BPSK and the "second modulation method" may be QPSK (which are two different types of modulation methods, *see* *supra* §III.A.2), Snell alternatively discloses that the "first modulation method" may be differential BPSK ("DBPSK") and the "second modulation method" may be differential QPSK ("DQPSK") (which, again, are two different types of modulation methods, *see id.*). For example, Snell teaches that the PLCP preamble and PLCP header may be modulated using differential BPSK. Snell at 2:56-3:5 ("[t]he modulator may also preferably include header modulator means for modulating data packets to include *a header at a predetermined modulation and a third data rate defining a third format…. The third format is preferably differential BPSK.*"), 6:64-66 ("*[t]he PLCP preamble and PLCP header are always at 1 Mbit/s, Diff encoded*, scrambled and spread with an 11 chip barker."), Fig. 3. Snell also teaches that the MPDU data may be modulated using either differential BPSK or differential QPSK. *See, e.g.*, Snell at 7:6-8 ("The reference phase for the first symbol of the *MPDU* is the output phase of the last symbol of the header for *Diff Encoding*."), Figs. 2, 5; *see also, e.g.*, Harris 4064.4 (incorporated by reference into Snell at 5:13-17) at 14 ("The preamble and header are always transmitted as *DBPSK* waveforms while the data packets can be configured to be *either DBPSK or DQPSK*."), 14 ("The HSP3824 transmitter is designed as a Direct Sequence Spread Spectrum *DBPSK/DQPSK modulator*."), 14 ("The modulator is capable of switching rate automatically in the case *where the preamble and header information are DBPSK modulated*, and the *data is DQPSK modulated*."), 15 ("The preamble is always transmitted as a *DBPSK* waveform with a programmable length of up to 256 symbols long."), 15 ("Signal Field (8 Bits) - This field indicates whether the data packet that follows the header is modulated as *DBPSK or DQPSK*. In mode 3 the HSP3824 receiver *looks at the signal field to determine whether it needs to switch from DBPSK demodulation into DQPSK demodulation* at the end of the always DBPSK preamble and header fields."), 16 ("Mode 3 - In this mode the preamble is programmable up to

256 bits (all 1's). The header in this mode is using all available fields. *In mode 3 the signal field defines the modulation type of the data packet (DBPSK or DQPSK)* so the receiver does not need to be preprogrammed to anticipate one or the other. *In this mode the device checks the Signal field for the data packet modulation and it switches to DQPSK if it is defined as such in the signal field. Note that the preamble and header are always DBPSK [thus] the modulation definition applies only for the data packet*.").

2. Overview of Harris 4064.4 (Incorporated by Reference into Snell)

Harris 4064.4 is prior art under at least § 102(e) together with Snell because it is incorporated by reference in its entirety into Snell (Snell at 5:13-17)[8], a U.S. Patent filed by another in the United States on March 17, 1997, which is prior to the earliest '580 patent priority date of December 5, 1997. A copy of Harris 4064.4 was submitted to the Patent Office in an Information Disclosure Statement dated March 17, 1997, in the original filing of U.S. Patent Application No. 08/819,846, from which Snell issued ("the '846 Snell Application"). The file wrapper of the '846 Snell Application (attached as Exhibit L) includes a copy of Harris 4064.4, Exhibit L at 158-97, and a Form PTO-1449 dated March 17, 1997 cites Harris 4064.4, *id.* at 78. Harris 4064.4 is a publication by Harris Corporation dated October 1996 with a 1996 copyright notice by Harris Corporation. Harris 4064.4 at 1; Snell at cover (listing Harris 4064.4 under "Other Publications"), 5:13-17. Harris 4064.4 describes the HSP3824 Direct Sequence (DSSS) baseband processor that was a part of the PRISM chipset developed, manufactured, and sold by

[8] Snell expressly incorporates by reference "the entire disclosure" of Harris 4064.4 (Snell at 5:13-17). *See Harari v. Lee*, 656 F.3d 1331, 1335-36 (Fed. Cir. 2011) ("the entire '579 application disclosure was incorporated by the broad and unequivocal language: 'The disclosures of the two applications are hereby incorporate[d] by reference.'"); *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed.Cir.2000) ("Incorporation by reference provides a method for integrating material from various documents into a host document—a patent or printed publication in an anticipation determination—by citing such material in a manner that makes clear that the material is effectively part of the host document as if it were explicitly contained therein.").

Harris Corporation. Harris 4064.4 at 1 ("The Harris HSP3824 Direct Sequence (DSSS) baseband processor is part of the PRISM™ 2.4 GHz radio chipset…"; "Ordering Information… Part No. HSP 3824VI"); Snell at 1:47-63, 5:8-17, 5:31-33. Harris 4064.4 is also prior art under at least §§ 102(a) and (b) because it is a printed publication that was publicly available at least as early as October 1996. Harris 4064.4 has not been previously cited to or considered by the Patent Office in connection with the '580 patent.

Harris 4064.4, the entirety of which is incorporated by reference into Snell, is a publication from Harris Corporation that describes features and operation of the HSP3824 baseband processor, part of the PRISM chipset disclosed in Snell. Harris Corporation was the assignee of Snell at issuance and developed and manufactured the PRISM chipset. Snell at 1:47-50. Harris 4064.4 discloses that the HSP3824 baseband processor can transmit using either DPBSK or DQPSK modulation. Harris 4064.4 at 14 ("The preamble and header are always transmitted as *DBPSK* waveforms while the data packets can be configured to be *either DBPSK or DQPSK*."); *id.* ("The HSP3824 transmitter is designed as a Direct Sequence Spread Spectrum *DBPSK/DQPSK modulator*"); *id.* ("The modulator is capable of switching rate automatically in the case where the preamble and header information are DBPSK modulated, and the data is DQPSK modulated.").

Harris 4064.4 also discloses that the "Signal" field of the header indicates the type of modulation used for the data portion of the packet, and that the switching can be done on-the-fly. *Id. at* 15 ("Signal Field (8 Bits) - This field indicates whether the data packet that follows the header is modulated as DBPSK or DQPSK. In mode 3 the HSP3824 receiver looks at the signal field to determine whether it needs to switch from DBPSK demodulation into DQPSK demodulation at the end of the always DBPSK preamble and header fields."); *id.* at 16 ("In mode

3 *the signal field defines the modulation type of the data packet (DBPSK or DQPSK)* so the receiver does not need to be preprogrammed to anticipate one or the other. In this mode the device checks the Signal field for the data packet modulation and it switches to DQPSK if it is defined as such in the signal field. Note that the preamble and header are always DBPSK [thus] the modulation definition applies only for the data packet."); *id.* at Fig. 10.

Accordingly, Harris 4064.4 teaches that the "Signal" sequence, which is modulated using DBPSK and occurs prior to the data portion of the packet, indicates whether the modulation type for the data portion will remain as DBPSK or will switch to DQPSK.

3. Overview of Harris AN9614 (Incorporated by Reference into Snell)

Harris AN9614 is prior art under at least § 102(e) together with Snell because it is incorporated by reference in its entirety into Snell (Snell at 5:2-7)[9], a U.S. Patent filed by another in the United States on March 17, 1997, which is prior to December 5, 1997, the earliest claimed priority date of the '580 patent. A copy of Harris AN9614 was submitted to the Patent Office in an Information Disclosure Statement dated March 17, 1997, in the original filing of U.S. Patent Application No. 08/819,846, from which Snell issued ("the '846 Snell Application"). The file wrapper of the '846 Snell Application includes a copy of Harris AN9614, Exhibit L at 80, 83-84, and a Form PTO-1449 dated March 17, 1997 cites Harris AN9614, *Id.* at 78. Harris AN9614 is a publication by Harris Corporation dated March 1996 with a 1996 copyright notice by Harris Corporation. Harris AN9614 at 1; Snell at cover (listing Harris AN9614 under "Other

[9] Snell expressly incorporates by reference "the entire disclosure" of Harris AN9614 (Snell at 5:2-7). *See Harari v. Lee*, 656 F.3d 1331, 1335-36 (Fed. Cir. 2011) ("the entire '579 application disclosure was incorporated by the broad and unequivocal language: 'The disclosures of the two applications are hereby incorporate[d] by reference.'"); *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed.Cir.2000) ("Incorporation by reference provides a method for integrating material from various documents into a host document—a patent or printed publication in an anticipation determination—by citing such material in a manner that makes clear that the material is effectively part of the host document as if it were explicitly contained therein.").

Publications"), 1:47-54, 4:65-5:7. Harris AN9614 describes the HSP3824 Direct Sequence (DSSS) baseband processor that was a part of the PRISM chipset developed, manufactured, and sold by Harris Corporation. Harris AN9614 at 1, 2; Snell at 1:47-63, 5:8-17, 5:31-33; Harris 4064.4 ("The Harris HSP3824 Direct Sequence (DSSS) baseband processor is part of the PRISM™ 2.4 GHz radio chipset…"; "Ordering Information… Part No. HSP 3824VI"). Harris AN9614 is also prior art under at least §§ 102(a) and (b) because it is a printed publication that was publicly available at least as early as March 1996. Harris AN9614 has not been previously cited to or considered by the Patent Office in connection with the '580 patent.

Harris AN9614, the entirety of which is incorporated by reference into Snell, is a publication from Harris Corporation that describes features and operation of the PRISM chipset disclosed in Snell. Harris Corporation was the assignee of Snell at issuance and developed and manufactured the PRISM chipset. Snell at 1:47-50. Harris AN9614 discloses that the PRISM chipset described in Snell can operate in a polled (master/slave) protocol: [10]

> [T]he controller can keep adequate time to operate either a polled or a time allocated scheme. In these modes, the radio is powered off most of the time and only awakens when communications is expected. This station would be awakened periodically to listen for a beacon transmission. The beacon serves to reset the timing and to alert the radio to traffic. If traffic is waiting, the radio is instructed when to listen and for how long. In a polled scheme, the remote radio can respond to the poll with its traffic if it has any. With these techniques, the average power consumption of the radio can be reduced by more than an order of magnitude while meeting all data transfer objectives.

Harris AN9614 at 3. This discloses that when the PRISM chipset described in Snell is configured to operate in a polled (master/slave) protocol, power consumption can beneficially be reduced by more than an order of magnitude.

[10] A polled protocol is a master/slave protocol, as confirmed by the '580 patent. '580 patent at 4:6-9. *See also* IPR2014-00518, Pap. 47 at 15 ("In [a polling] protocol, a centrally assigned master periodically sends a polling message to the slave nodes, giving them explicit permission to transmit on the network."); '580 Prosecution History at 404; IPR2014-00518, Exhibit 1220 (Goodman Declaration) ¶103.

4. Overview of Admitted Prior Art

The '580 patent describes a prior art multipoint network architecture using a master modem and at least two tribs, with the specification making clear that "tribs" are the same thing as "slaves." '580 patent at 3:40-4:50, Figs. 1, 2. For example, in the "Description of the Illustrative Embodiments," the '580 patent discusses an "exemplary" multipoint communication protocol, asserting that in such a protocol the "master … permits transmission from a trib only when that trib has been selected." '580 patent at 4:4:9. In its "Summary," the '580 patent describes a "master/slave" relationship as being one where "communication from a slave to a master occurs in response to a communication from the master to the slave." '580 patent at 2:24-29. Thus, the '580 patent teaches that "tribs" and "slaves" are both controlled by a master, which demonstrates that in the '580 patent, tribs and slaves are the same thing, and the terms are used interchangeably.

Both the figures and the specification of the '580 patent admit that communications systems using master/slave relationships were known in the prior art. In particular, Figure 1, which shows a master transceiver 24 in communication with three tributary transceivers, *i.e.*, slaves, is labeled as "Prior Art." *See In re Nomiya*, 509 F.2d 566, 571 (CCPA 1975) (holding applicant's labeling of two figures in the application drawings as "prior art" to be an admission that what was pictured was prior art relative to applicant's improvement); MPEP § 2129. In addition, the specification of the '580 patent admits that multipoint communication systems utilizing a master and multiple slaves were known in the prior art. *Id.* at 3:40-44 ("With reference to FIG. 1, *a prior art multipoint communication system 22 is shown to comprise a master modem or transceiver 24, which communicates with a plurality of tributary modems (tribs) or transceivers* 26-26 over communication medium 28.") (emphasis added); *see Pharmastem Therapeutics, Inc. v. Viacell, Inc.*, 491 F.3d 1342, 1362 (Fed. Cir. 2007)

("Admissions in the specification regarding the prior art are binding on the patentee for purposes of a later inquiry into obviousness."); *Constant v. Advanced Micro–Devices, Inc.*, 848 F.2d 1560, 1570 (Fed.Cir.1988); § 2129.

Patentee made further admissions during prosecution of one of the parent applications to the '580 patent. As will be discussed in more detail below, one of the parent applications to the '580 patent is Serial No. 09/205,205, which issued as U.S. Patent No. 6,614,838 ("the '838 Patent"). During prosecution of the '838 patent, an Office Action, mailed on June 28, 2001, required the Applicant to designate Figure 2 as prior art. Ex. J at 3. ("Figure 2 should be designated by a legend such as - prior art - because only that which is old is illustrated."). In a "First Amendment And Response" filed October 1, 2001, the Applicant made the amendment, thus admitting that the subject matter shown in Figure 2 was known in the prior art. Ex. K at 5, 9. The specification of the '580 patent describes the prior art shown in Figure 2 as follows:

> Referring now to FIG. 2, an exemplary multipoint communication session is illustrated through use of a ladder diagram. This system uses polled multipoint communication protocol. That is, *a master controls the initiation of its own transmission to the tribs and permits transmission from a trib only when that trib has been selected.*

'580 patent at 4:4-9 (emphasis added). Lest there be any doubt that polled multiport communications using masters and slaves are admitted prior art, the specification says that the operation of the prior art system of Fig. 1 is illustrated in Fig. 2. *Id.* at 3:9-10 ("FIG. 2 is a ladder diagram illustrating the operation of the multipoint communication system of FIG. 1.").

Patentee's admissions in the '580 patent and the prosecution history of its ancestor '205 application regarding the fact that master/slave communication systems are prior art are binding, and can be used when determining whether a claim is obvious. *Pharmastem Therapeutics, Inc. v. Viacell, Inc.*, 491 F.3d 1342, 1362 (Fed. Cir. 2007) ("Admissions in the specification regarding the prior art are binding on the patentee for purposes of a later inquiry into obviousness.");

Constant v. Advanced Micro–Devices, Inc., 848 F.2d 1560, 1570 (Fed.Cir.1988) (''A statement in the patent that something is in the prior art is binding on the applicant and patentee for determinations of anticipation and obviousness.'').

The PTAB correctly found that "the '580 patent's disclosed multipoint communication systems (or master/slave systems), depicted in Figures 1 and 2 and described in column 3, line 40 through column 4, line 50, contains material that may be used as prior art against the patent under 35 U.S.C. § 103(a)." IPR2014-00518, Pap. 47 at 13; '580 Prosecution History at 402. *See also* IPR2014-00519, Pap. 49 at 5; IPR2014-00892, Pap. 46 at 13, 19; IPR2014-00893, Pap. 44 at 13, 19; IPR2014-00895, Pap. 44 at 13.

The prior art master/slave system depicted in Figures 1 and 2 and described in column 3, line 40 through column 4, line 50 ("Admitted Prior Art") includes "a master modem or transceiver 24, which communicates with a plurality of tributary modems (tribs) or transceivers 26-26 [(slave transceivers)] over communication medium 28." '580 patent at 3:41-44.

The master/slave system described in the Admitted Prior Art operates using a polled multipoint communication protocol. *Id.* at 4:6. In this protocol, "a master [transceiver] controls the initiation of its own transmission to the tribs and permits transmission from a trib [(*i.e.*, slave transceiver)] only when that trib has been selected." *Id.* at 4:7-9. The master transceiver selects a trib by "transmit[ting] a training sequence 34 that includes the address of the trib that the master seeks to communicate with. In this case, the training sequence 34 includes the address of trib 26a." *Id.* at 4:14-17. Further, "[b]ecause master transceiver 24 selected trib 26a for communication as part of training sequence 34, trib 26a is the only modem that will return a transmission. Thus, trib 26a transmits data 44 destined for master transceiver 24." *Id.* at 4:29-33.

The Admitted Prior Art describes that the master can poll another trib (*i.e.*, slave transceiver) for data as well:

> The foregoing procedure is repeated except master transceiver identifies trib 26b in training sequence 48. In this case, trib 26a ignores the training sequence 48 and the subsequent transmission of data 52 and trailing sequence 54 because it does not recognize its address in training sequence 48. Master transceiver 24 transmits data 52 to trib 26b followed by trailing sequence 54 . . . To send information back to master transceiver 24, trib 26b transmits training sequence 56 to establish a communication session. Master transceiver 24 is conditioned to expect data only from trib 26b because trib 26b was selected as part of training sequence 48. Trib 26b transmits data 58 to master transceiver 24 terminated by trailing sequence 62.

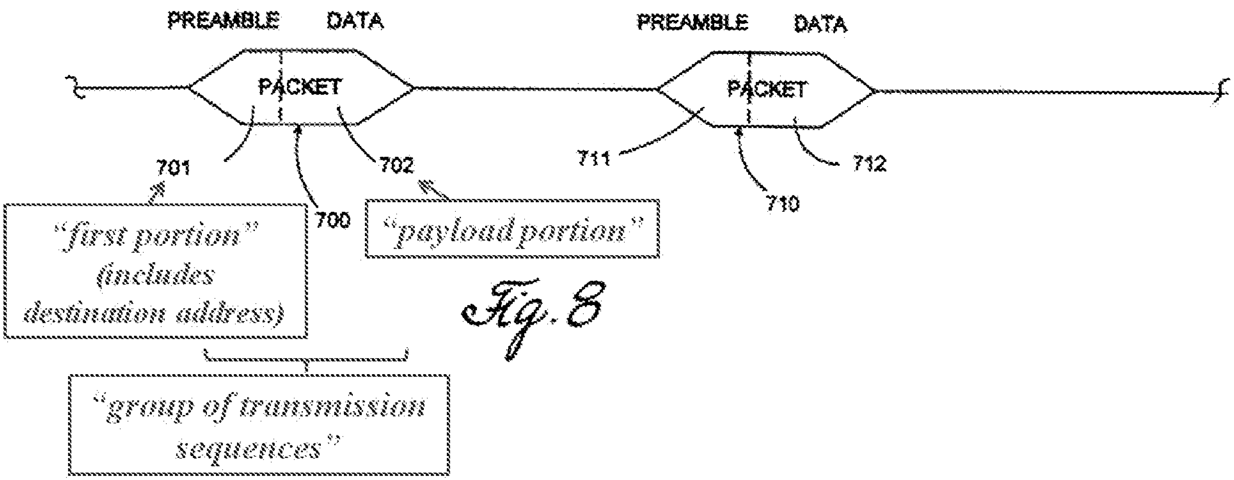
Id. at 4:35-50.

Accordingly, the Admitted Prior Art describes a prior art master/slave relationship in which a slave communication (*e.g.*, 44, 58) from a slave (*e.g.*, 26a, 26b) to a master (*e.g.*, 24) occurs in response to a master communication (*e.g.*, 34, 48) from the master (*e.g.*, 24) to the slave (*e.g.*, 26a, 26b).

5. Overview of Yamano

Yamano is prior art under at least § 102(e) because it is a U.S. Patent filed by another in the United States on May 9, 1997, which is prior to December 5, 1997, the earliest claimed priority date of the '580 patent. Yamano has not been previously cited to or considered by the Patent Office in connection with the '580 patent.

Yamano discloses transmitting a group of transmission sequences, including a preamble and main body, and that the preamble includes a destination address for an intended destination of the payload portion. Yamano at 19:63-64 ("Packet 700 includes a preamble 701 and a main body 702."); Yamano at 20:1-7 ("For example, preamble 701 can include information which identifies: . . . (2) packet source and destination addresses."). Yamano also discloses that the preamble precedes the main body (containing data), as shown in Figure 8:



Yamano at Fig. 8 (annotated).

Further, Yamano discloses that including the destination address in the preamble is advantageous because the receiver can demodulate only those packets that are addressed to it, thereby reducing its processing requirements. *Id.* at 20:54-59.

6. Overview of Kamerman

Kamerman is prior art under at least § 102(a) because it is a printed publication that was publicly available at least as early as September 22-25, 1996, which is prior to December 5, 1997, the earliest claimed priority date of the '580 patent. Kamerman (attached as Exhibit I) is an article titled "Throughput Density Constraints for Wireless LANs Based on DSSS," authored by Ad Kamerman, published by IEEE at the 1996 IEEE 4th International Symposium on Spread Spectrum Techniques and Applications Proceedings held from September 22-25, 1996 in Mainz, Germany. Kamerman at 3. Kamerman also bears a copyright date of 1996 by the Institute of Electrical and Electronics Engineers, Inc. (Kamerman at 4) and was available to the public in the Library of Congress as early as January 16, 1997, as indicated by the Library of Congress date stamp of January 16, 1997 (Kamerman at 2). Kamerman has not been previously cited to or considered by the Patent Office in connection with the '580 patent.

Kamerman, like Snell, relates to DSSS transceivers designed according to the then-draft IEEE 802.11 standard, and discloses an automatic rate selection scheme for transmitting a first data packet where the data is modulated using a second modulation method (*e.g.*, QPSK at 2 mbps) and next transmitting a second data packet where the data is modulated using a first modulation method (*e.g.*, BPSK at 1 mbps) to adjust the data transfer rate based on channel conditions. *Id.* at 11 ("IEEE 802.11 DS specifies BPSK and QPSK, in addition there could be applied proprietary modes with M-PSK and QAM schemes that provide higher bit rates by encoding more bits per symbol. . . . An automatic rate selection scheme based on the reliability of the individual uplink and downlink could be applied. The basic rate adaptation scheme could be: *after unacknowledged packet transmissions the rate falls back*, and after a number (*e.g.* 10) of successive correctly acknowledged packet transmissions the bit rate goes up."). Kamerman discloses that the data transfer rates can fall forward (*i.e.*, increase) with reliable connections and fall back (*i.e.*, revert) when there is strong cochannel interference. *Id.* at 12 ("The application of proprietary bit rates of 3 and 4 Mbps in addition to the basic 1 and 2 Mbps, can be combined with an automatic rate selection. This automatic rate selection gives fall forward at reliable connections and *fall back at strong cochannel interference*.").

Kamerman discloses adjusting the data transfer rates by switching between modulation types, including between a second modulation method, such as QPSK (which corresponds to a higher data transfer rate) and a first modulation method of a different type, such as BPSK (which corresponds to a lower data transfer rate). *Id.* at 11. Kamerman teaches that the automatic rate selection scheme can maximize the data transfer rate by transmitting the data using the second modulation method (which corresponds to the higher data transfer rate) when there is a reliable connection and reverting to transmitting the data using the first modulation method (which corresponds to a lower data transfer rate) during higher load conditions when a more robust signal is needed due to "mutilation of transmissions by interference."

> At lower load in the neighbor cells the highest bit rate can be used more often. At higher load the transmissions from the accesspoint to stations at the outer part of the cells, will be done often at fallback rates due to mutilation of transmissions by interference. In practice the network load for LANs at nowadays client-server applications is very bursty, with sometimes transmission bursts over an individual links and low activity during the major part of the time. Therefore the higher bit rate can be used during the most of the time, and at high load in the neighbor cells (as will evoked by test applications) there will be switched to fall back rates in the outer part of the cell.

Id. at 11.

Accordingly, Kamerman discloses an automatic rate selection scheme for transmitting a first data packet where the data is modulated using a second modulation method (*e.g.*, QPSK at 2 mbps) when there is a reliable connection to maximize the data transfer rate, and, after unacknowledged packet transmissions (for instance, when there is a high load in neighbor cells causing cochannel interference which requires a more robust signal) next transmitting a second data packet where the data is modulated using a first modulation method (*e.g.*, BPSK at 1 mbps) (*i.e.*, "falling back" or "reverting"). This automatic rate selection scheme is advantageous because it maximizes the data transfer rate when possible while preserving reliability during periods of strong cochannel interference.

C. SNQ-1: Unpatentability of Claims 2 and 59 Under 35 U.S.C. § 103 Over Snell, Yamano, and Kamerman

Requesters submit that the combined teachings of Snell (submitted herewith as Exhibit D), Yamano (submitted herewith as Exhibit H) and Kamerman (submitted herewith as Exhibit I) raise a substantial new question of patentability with respect to claims 2 and 59 of the '580 patent, and that claims 2 and 59 of the '580 patent are unpatentable under 35 U.S.C. 103 as obvious over Snell in view of Yamano and Kamerman.

It was well-known in the art, as demonstrated by Yamano, that packets can be advantageously addressed for an intended destination. A POSITA would have been motivated and found it obvious and straightforward to use Yamano's teaching of including a destination address in the data packet in implementing Snell's teachings of a communication system for transmitting data packets to advantageously specify which receiver the data is intended for and to beneficially reduce processing requirements of receiving devices by allowing the receiving device to filter out packets which it does not need to demodulate. Snell and Yamano are in the same field of art, with both relating to transmitting data packets over a network (*see, e.g.*, Snell at 1:55-58, 2:61-63, 2:66-3:3, 5:18-21, 6:48-63, Fig. 3; Yamano at 1:1-29, 19:54-20:33, Fig. 8), at varying rates (*see, e.g.*, Snell at 2:15-17, 6:52-59; Yamano at 19:54-56). Yamano expressly teaches that including a destination address in the preamble portion of the data packet, which precedes the data portion, will advantageously reduce processing requirements of receiving devices because the receiving device can filter out packets which it does not need to demodulate. Yamano at 20:54-59 ("When the preamble in a burst-mode packet *includes the destination address of the packet*, the receiver circuits can monitor the destination address of the packet, and in response, filter packets which do not need to be demodulated, thereby reducing the processing requirements of the receiver circuits."). In addition, Snell teaches structuring its data packet to include a preamble, header, and MPDU data portion (*see, e.g.*, Snell at 6:35-36, 6:64-66, 7:5-14, Fig. 3), and Yamano teaches structuring its data packet to also include a preamble and data portion, and to place the destination address in the preamble portion (Yamano at 19:63-20:7, Fig. 8). It would have been routine and straightforward for a POSITA to include a destination address in the data packet, as taught by Yamano, in implementing Snell's system for transmitting data packets between transceivers, as Snell teaches that its data packet already includes a preamble portion—and in combination, each element (Yamano's teaching of placing a destination address in the preamble and Snell's teaching of a system for communicating data packets modulated according to different modulation methods between transceivers) performs the same function as it would separately, yielding nothing more than predictable results. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). A POSITA would have thus recognized that this combination (yielding the claimed limitation) would have worked as expected. For these reasons, a POSITA would have been motivated and found it obvious and straightforward to use Yamano's advantageous teachings of including a destination address in the data packet in implementing Snell's communication system.

It was also well-known in the art, as demonstrated by Kamerman, to transmit a first data packet where the data is modulated using a second modulation method, such as QPSK (corresponding to a higher data transfer rate), and to next transmit a second data packet where the data is modulated using a first modulation method, such as BPSK (corresponding to a lower data transfer rate) (*i.e.*, to revert to the first modulation method). A POSITA would have been motivated and found it obvious and straightforward to use Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method in implementing Snell's system for communicating data packets modulated according to different modulation methods (implemented using the teachings of Yamano, as discussed above) to advantageously maximize the data transfer rate and adapt to changing channel conditions (as also taught by Kamerman). In particular, Kamerman expressly teaches that it is beneficial to transmit the data of a first data packet using a second modulation method corresponding to a higher data transfer rate (*e.g.*, QPSK modulation at 2 mbps) during lower load conditions to maximize the data transfer rate during lower load conditions when the connection is more reliable and to next transmit the data of a second data packet using a first modulation method corresponding to a lower data transfer rate (*e.g.*, BPSK modulation at 1 mbps) (*i.e.*, falling back) during higher load conditions when a more robust signal is needed due to "mutilation of transmissions by interference." *See* Kamerman at 6 ("Then there is looked to *automatic rate control* to keep the cochannel interference at a tolerable level."), 11 ("The basic rate adaptation scheme could be: *after unacknowledged packet transmissions the rate falls back*, and after a number (*e.g.* 10) of successive correctly acknowledged packet transmissions the bit rate goes up."), 11 ("At lower load in the neighbor cells the highest bit rate can be used more often. At higher load the transmissions from the accesspoint to stations at the outer part of the cells, *will be done at fallback rates due to mutilation of transmissions by interference.* In practice the network load for LANs at nowadays client-server applications is very bursty, with sometimes transmission bursts over an individual links and low activity during the major part of the time. *Therefore the higher bit rate can be used during the most of the time, and at high load in the neighbor cells ... there will be switched to fall back rates in the outer part of the cell.*"), 12 ("This automatic rate selection gives fall forward at reliable connections and fall back at strong cochannel interference. Therefore it gives adaptation of the bit rate to the interference as it occurs in time depending on positions as load.").

Moreover, Snell and Kamerman are in the same field of art, with both relating to communications between transceivers that use BPSK and QPSK modulation methods to transfer data at different rates according to the draft IEEE 802.11 standard available at that time. *See, e.g.*, Snell at 1:47-63 ("The assignee of the present invention has developed and manufactured a set of integrated circuits for a WLAN under the mark PRISM 1 *which is compatible with the* *proposed IEEE 802.11 standard….*"), 5:31-33 ("The present invention provides an extension of the PRISM 1 product from *1 Mbit/s BPSK and 2 Mbit/s QPSK…*"); Kamerman at 6 ("This paper considers the critical parameters for *wireless LANs that operate conform to the IEEE 802.11 DSSS (direct sequence spread spectrum) standard…*"), 11 ("IEEE 802.11 DS specifies bit rates of 1 and 2 Mbps.", 11 ("IEEE 802.11 DS specifies BPSK and QPSK…"). It would have been routine and straightforward for a POSITA to use Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method (*i.e.*, reverting to the first modulation method) in implementing Snell's system (implemented in light of Yamano) for communicating data packets modulated according to different modulation methods, as both Snell and Kamerman are directed to IEEE 802.11 systems utilizing QPSK and BPSK modulation methods corresponding, respectively, to higher and lower data transfer rates—and in combination, each element (Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method and Snell's system for communicating data packets modulated according to different modulation methods) performs the same function as it would separately, yielding nothing more than predictable results. *KSR*, 550 U.S. at 417. A POSITA would have thus recognized that this combination (yielding the claimed limitation) would have worked as expected. For these reasons, a POSITA would have been motivated and found it obvious and straightforward to implement Kamerman's advantageous teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method (*i.e.*, reverting to the first modulation method) in implementing Snell's system (implemented in light of Yamano) for communicating data packets modulated according to different modulation methods.

The combination of Snell, Yamano, and Kamerman shows or renders obvious each and every element of the inventions of claims 2 and 59. The relevant teachings of the combination of Snell, Yamano, and Kamerman were not considered during the prior examination of the '580 patent and a reasonable Examiner would consider these disclosures important in determining whether or not the claims are patentable.

Therefore, the combination of Snell, Yamano, and Kamerman raises a substantial new question of patentability with respect to claims 2 and 59 of the '580 patent (SNQ-1) and presents new technological teachings not previously considered in connection with prosecution of the '580 patent. MPEP § 2216. Accordingly, Requesters propose that claims 2 and 59 should be rejected under § 103 as rendered obvious by Snell in view of Yamano and Kamerman.

The following claim chart demonstrates, in further detail, how each limitation is, at a minimum, obvious in light of Snell, Yamano, and Kamerman.

'580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
1.[preamble] A communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave, the device comprising:	**To the extent this preamble is considered a limitation of the claim, Snell discloses a communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave.** ***See, e.g.*****, Snell at 1:34-46, 1:47-50, 1:55-57, 2:27-30, 4:42-47, 5:18-21; Harris AN9614 at 3.** For example, Snell discloses a transceiver that serves as an access point for communicating data with other transceivers connected to a wireless local area network (WLAN). "In a typical WLAN, *an access point provided by a transceiver*, that is, a combination transmitter and receiver, connects to the wired network from a fixed location. Accordingly, the access transceiver receives, buffers, and transmits data between the WLAN and the wired network. *A single access transceiver can support a small group of collocated users within a range*

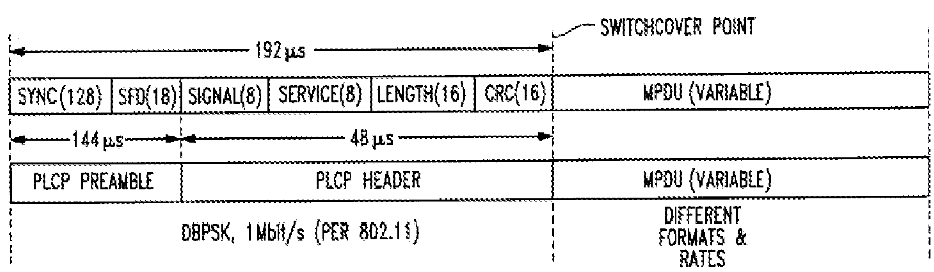
’580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
	of less than about one hundred to several hundred feet. The end users connect to the WLAN through transceivers which are typically implemented as PC cards in a notebook computer, or ISA or PCI cards for desktop computers. Of course the transceiver may be integrated with any device, such as a hand-held computer." Snell at 1:34-46. "Like the HSP3824 baseband processor, the high data rate baseband processor 40 of the invention contains all of the functions necessary for a full or half duplex packet baseband *transceiver*." Snell at 5:18-21. "The PRISM 1 chip set provides all the functions necessary for full or half duplex, direct sequence spread spectrum, *packet communications* at the 2.4 to 2.5 GHz ISM radio band." Snell at 1:55-57. *See also, e.g.,* Snell at 2:27-30 ("It is another object of the invention to provide *a spread spectrum transceiver* and associated method to permit operation at higher data rates and which may switch on-the-fly between different data rates and/or formats."); Snell at 1:47-50 ("The assignee of the present invention has developed and manufactured a set of integrated circuits for a WLAN under the mark PRISM 1 which is compatible with the proposed IEEE 802.11 standard."); Snell at 4:42-47 ("Referring to FIG. 1, a *wireless transceiver 30* in accordance with the invention is first described. The *transceiver 30 may be readily used for WLAN applications* in the 2.4 GHZ ISM band in accordance with the proposed IEEE 802.11 standard. Those of skill in the art will readily recognize other applications for the transceiver 30 as well."). Snell incorporates by reference Harris AN9614,[11] which discloses that the communications between transceivers can operate according to a polled (i.e., master/slave) protocol.[12] *See, e.g.*, Harris AN9614 at 3. "[T]he controller can keep adequate time to operate either a polled or a

[11] Snell expressly incorporates by reference "the entire disclosure" of Harris AN9614 (Snell at 5:2-7). *See Harari v. Lee*, 656 F.3d 1331, 1335-36 (Fed. Cir. 2011) ("the entire ‘579 application disclosure was incorporated by the broad and unequivocal language: ‘The disclosures of the two applications are hereby incorporate[d] by reference.’"); *see also Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed.Cir.2000) ("material not explicitly contained in the single, prior art document may still be considered for purposes of anticipation if that material is incorporated by reference into the document.").

[12] A polled protocol is a master/slave protocol, as confirmed by the ‘580 patent. ‘580 patent at 4:6-9. *See also* IPR2014-00518, Pap. 47 at 15 ("In [a polling] protocol, a centrally assigned master periodically sends a polling message to the slave nodes, giving them explicit permission to transmit on the network."); ‘580 Prosecution History at 404; IPR2014-00518, Exhibit 1220 (Goodman Declaration) ¶103.

'580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
	time allocated scheme. In these modes, the radio is powered off most of the time and only awakens when communications is expected. This station would be awakened periodically to listen for a beacon transmission. The beacon serves to reset the timing and to alert the radio to traffic. If traffic is waiting, the radio is instructed when to listen and for how long. In a polled scheme, the remote radio can respond to the poll with its traffic if it has any. With these techniques, the average power consumption of the radio can be reduced by more than an order of magnitude while meeting all data transfer objectives." Harris AN9614 at 3.
[1.A] a transceiver, in the role of the master according to the master/ slave relationship,	**Snell discloses a transceiver, in the role of the master according to the master/ slave relationship.** *See* Element 1.preamble.
[1.B] for sending at least transmissions modulated using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method,	**Snell discloses a transceiver for sending at least transmissions modulated using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method.[13]** ***See, e.g.*****, Snell at Abstract, 1:58-61, 2:56-59, 2:61-3:5, 6:64-66, 7:6-8, Figs. 2, 3, 5; Harris 4064.4 at 14-16.** For example, Snell discloses that transmissions are modulated using a "first modulation method" (*e.g.*, BPSK) and a "second modulation method" (*e.g.*, QPSK) that is of a different "type" than the "first modulation method." "The modulator preferably comprises means for operating *in one of a bi-phase PSK (BPSK) modulation mode* at a first data rate defining a first format, and *a quadrature PSK (QPSK) mode* at a second data rate defining a second format." Snell at 2:56-59. "In particular, the HSP3824 baseband processor manufactured by Harris Corporation *employs quadrature or bi-phase phase shift keying (QPSK or*

[13] In IPR2014-00518, the Board construed the limitation "different 'types' of modulation methods" in '580 claims 1 and 58 to mean "modulation methods that are incompatible with each other" and found that "two modulation methods that are based on varying the same one of the frequency, amplitude, or phase of the carrier wave may be different 'types' of modulation methods." IPR2014-00518, Pap. 47 (Final Written Decision) at 12. The Board also found that the "DQPSK … modulation method[] [is] incompatible with DBPSK modulation." *Id.* at 18.

'580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
	BPSK) modulation schemes." Snell at 1:58-61. *See also, e.g.*, Snell at Abstract ("The modulator and demodulator are each preferably operable *in one of a bi-phase PSK (BPSK) mode* at a first data rate and *a quadrature PSK (QPSK) mode* at a second data rate. These formats may also be switched on-the-fly in the demodulator."), 2:15-17 ("Moreover, a WLAN application, for example, may require a change between *BPSK and QPSK* during operation, that is, on-the-fly."). Snell describes that the "first modulation method" may be BPSK and the "second modulation method" may be QPSK, which is "of a different type than the first modulation method," and alternatively describes that the "first modulation method" may be differential BPSK ("DBPSK") and that the "second modulation method" may be differential QPSK ("DQPSK"), which is also "of a different type than the first modulation method." Thus, Snell alternatively discloses modulating the PLCP preamble and PLCP header using DBPSK modulation, and modulating the MPDU data using DBPSK or DQPSK modulation. "*The PLCP preamble and PLCP header are* always at 1 Mbit/s, *Diff encoded*, scrambled and spread with an 11 chip barker." Snell at 6:64-66. "The modulator may also preferably include header modulator means for modulating data packets to include *a header at a predetermined modulation and a third data rate defining a third format…. The third format is preferably differential BPSK*." Snell at 2:61-3:5. "The reference phase for the first symbol of the *MPDU* is the output phase of the last symbol of the header *for Diff Encoding*." Snell at 7:6-8.  *FIG. 3* Snell at Fig. 3.

’580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman

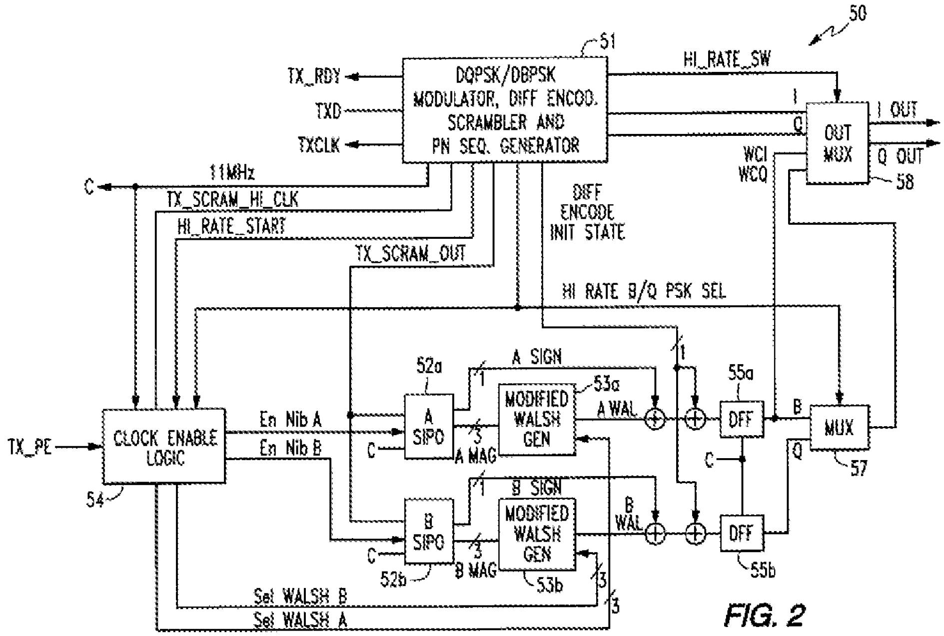


FIG. 2

Snell at Fig. 2.

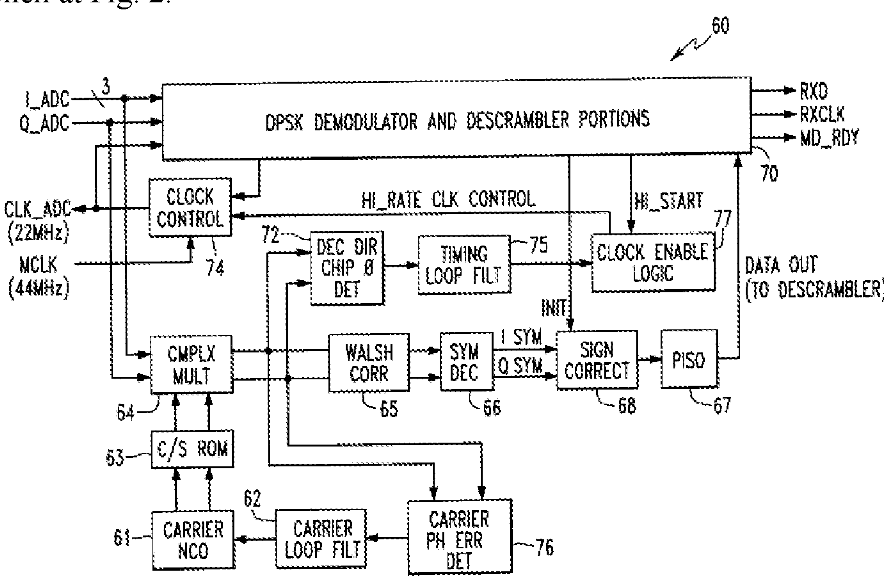


FIG. 5

Snell at Fig. 5.

Snell incorporates by reference Harris 4064.4,[14] which discloses:

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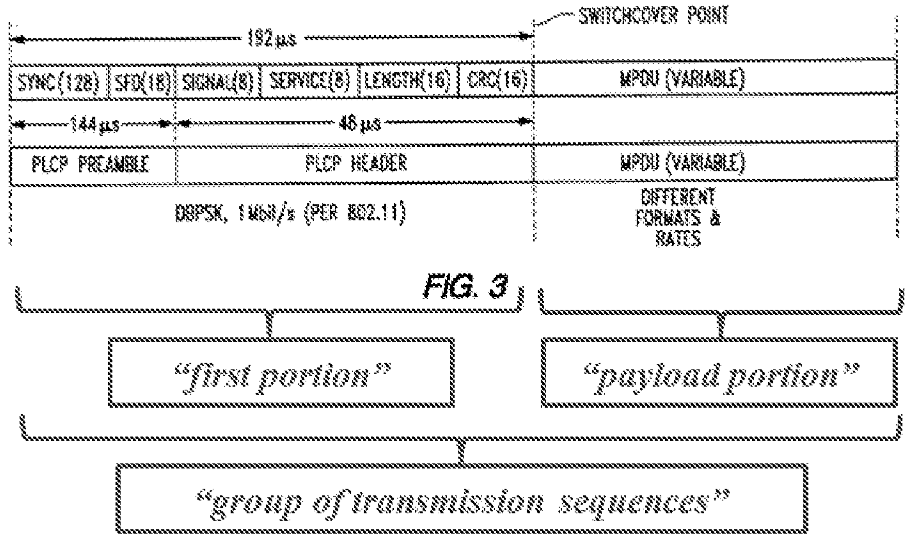
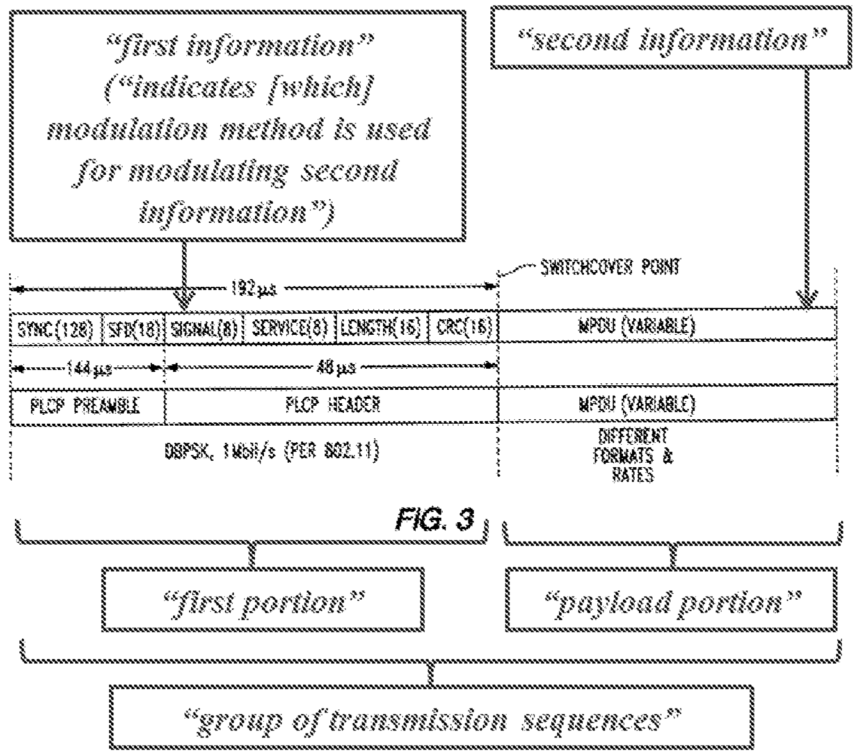
[14] Snell expressly incorporates by reference “the entire disclosure” of Harris 4064.4 (Snell at 5:8-17, 5:31-33). *See Harari v. Lee*, 656 F.3d 1331, 1335-36 (Fed. Cir. 2011) (“the entire ‘579

'580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
	"The preamble and header are always transmitted as *DBPSK* waveforms while the data packets can be configured to be *either DBPSK or DQPSK*." Harris 4064.4 at 14. "The HSP3824 transmitter is designed as a Direct Sequence Spread Spectrum *DBPSK/DQPSK modulator*." Harris 4064.4 at 14. "The modulator is capable of switching rate automatically in the case where the preamble and header information are DBPSK modulated, and the data is DQPSK modulated." Harris 4064.4 at 14. *See also, e.g.*, Harris 4064.4 at 15 ("The preamble is always transmitted as a *DBPSK* waveform with a programmable length of up to 256 symbols long."); Harris 4064.4 at 15 ("Signal Field (8 Bits) - This field indicates whether the data packet that follows the header is modulated as *DBPSK or DQPSK*. In mode 3 the HSP3824 receiver *looks at the signal field to determine whether it needs to switch from DBPSK demodulation into DQPSK demodulation* at the end of the always DBPSK preamble and header fields."); Harris 4064.4 at 16 ("Mode 3 - In this mode the preamble is programmable up to 256 bits (all 1's). The header in this mode is using all available fields. In mode 3 the signal field defines the modulation type of the data packet (DBPSK or DQPSK) so the receiver does not need to be preprogrammed to anticipate one or the other. In this mode the device checks the Signal field for the data packet modulation and it switches to DQPSK if it is defined as such in the signal field. Note that the preamble and header are always DBPSK the modulation definition applies only for the data packet.").
[1.C] wherein each transmission comprises a group of transmission sequences, wherein each group of transmission sequences is structured with at least a first portion	**Snell discloses each transmission comprises a group of transmission sequences, wherein each group of transmission sequences is structured with at least a first portion and a payload portion.** ***See, e.g.*****, Snell at 6:35-36, 6:64-66, 7:5-14, Fig. 3.** For example, Snell discloses transmitting a group of transmission sequences structured with a "first portion" including the PLCP preamble and PLCP header and a "payload portion" including the MPDU data (as depicted in Figure 3 below)

application disclosure was incorporated by the broad and unequivocal language: 'The disclosures of the two applications are hereby incorporate[d] by reference.'"); *see also Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed.Cir.2000) ("material not explicitly contained in the single, prior art document may still be considered for purposes of anticipation if that material is incorporated by reference into the document.").

’580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
and a payload portion	 Snell at Fig. 3 (annotated). “The *header* may always be BPSK.” Snell at 6:35-36. “*The PLCP preamble and PLCP header* are always at 1 Mbit/s, Diff encoded, scrambled and spread with an 11 chip barker.” Snell at 6:64-66. “*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. *The variable data* may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly.” Snell at 7:5-14.
[1.D] wherein first information in the first portion indicates at least which of the first modulation method and the second modulation method is used for modulating second information in the payload portion,	**Snell discloses that first information in the first portion indicates at least which of the first modulation method and the second modulation method is used for modulating second information in the payload portion.** ***See, e.g.,*** **6:35-36, 6:52-59, 6:64-66, 7:1-2, 7:5-14; Harris 4064.4 at 15-16, Fig. 10.** For example, Snell discloses that the “SIGNAL” in the PLCP Header indicates (*e.g.*, using “OAh,” “14h,”…) the modulation type (*e.g.*, BPSK or QPSK, or alternatively, DBPSK or DQPSK) used for modulating the MPDU data portion.

’580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman



Snell at Fig. 3 (annotated).

“The *header* may always be BPSK.” Snell at 6:35-36.

“*The PLCP preamble and PLCP header* are always at 1 Mbit/s, Diff encoded, scrambled and spread with an 11 chip barker.” Snell at 6:64-66.

“Now relating to the *PLCP header* 91, *the SIGNAL* is:

0Ah	1 Mbit/s BPSK,
14h	2 Mbit/S QPSK,
37h	5.5 Mbit/s BPSK, and
6Eh	11 Mbit/s QPSK.

”

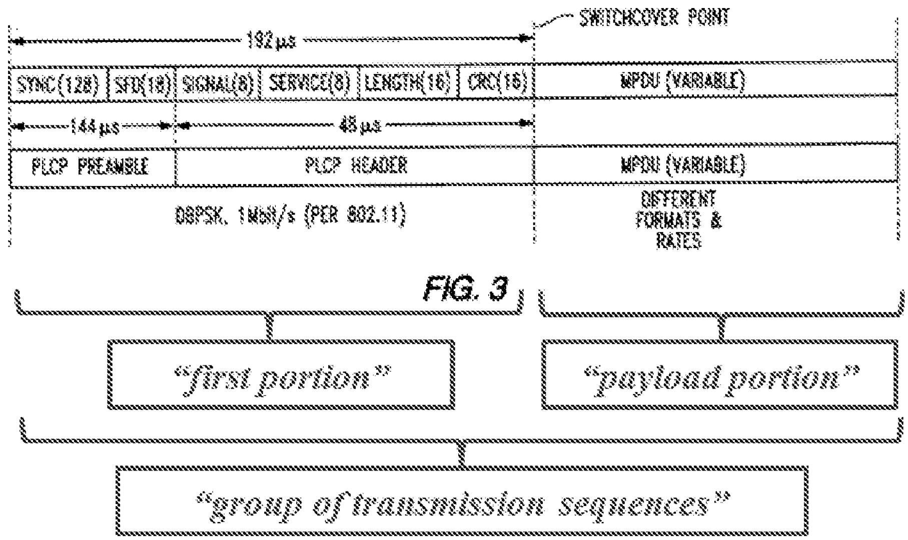
Snell at 6:52-59.

“SIGNAL is indicated by 2 control bits and then formatted as described.” Snell at 7:1-2.

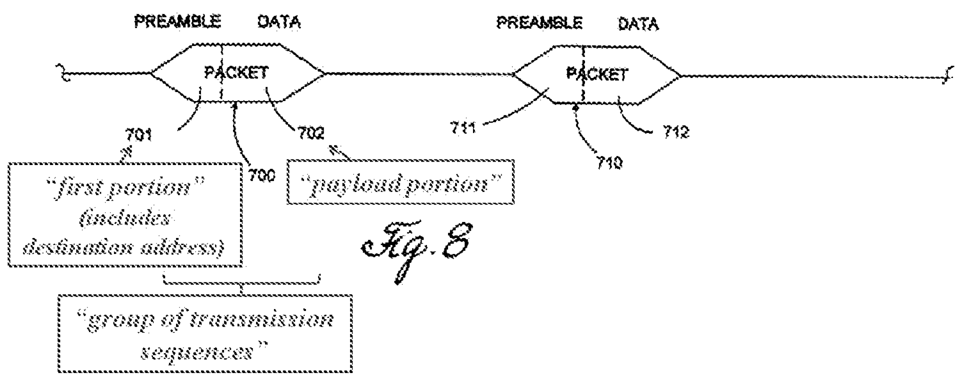
“*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be

’580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
	followed by the first bit of the MPDU. *The variable data may be modulated and demodulated in different formats* than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly.” Snell at 7:5-14. Snell incorporates by reference Harris 4064.4,[15] which discloses: “*Signal Field (8 Bits) - This field indicates whether the data packet that follows the header is modulated as DBPSK or DQPSK*. In mode 3 the HSP3824 receiver looks at the signal field to determine whether it needs to switch from DBPSK demodulation into DQPSK demodulation at the end of the always DBPSK preamble and header fields.” Harris 4064.4 at 15. “In mode 3 *the signal field defines the modulation type of the data packet (DBPSK or DQPSK)* so the receiver does not need to be preprogrammed to anticipate one or the other. In this mode the device checks the Signal field for the data packet modulation and it switches to DQPSK if it is defined as such in the signal field. Note that the preamble and header are always DBPSK the modulation definition applies only for the data packet.” Harris 4064.4 at 16. *See also, e.g.*, Harris 4064.4 at FIGURE 10.
[1.E] wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion, and	**Snell in view of Yamano discloses that at least one group of transmission sequences is addressed for an intended destination of the payload portion. *See, e.g.*, 6:35-36, 6:64-66, 7:5-14, Fig. 3; Harris 4064.4 at 14.** For example, Snell discloses that the transceiver transmits a group of transmission sequences (including a PLCP Preamble and PLCP header, and MPDU data) to another transceiver.

[15] *See supra* n.14.

’580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
	 Snell at Fig. 3 (annotated). “The *header* may always be BPSK.” Snell at 6:35-36. “The *PLCP preamble and PLCP header* are always at 1 Mbit/s, Diff encoded, scrambled and spread with an 11 chip barker.” Snell at 6:64-66. “*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. *The variable data* may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly.” Snell at 7:5-14. Snell incorporates by reference Harris 4064.4,[16] which discloses: “The *preamble and header* are always transmitted as DBPSK waveforms while the *data packets* can be configured to be either DBPSK or DQPSK.” Harris 4064.4 at 14. **Yamano[17] discloses at least one group of transmission sequences is addressed for an intended destination of the payload portion.** ***See, e.g.*****, Yamano at 19:63-64, 20:1-7, 20:54-59, Fig. 8.**

[16] *See supra* n.8.

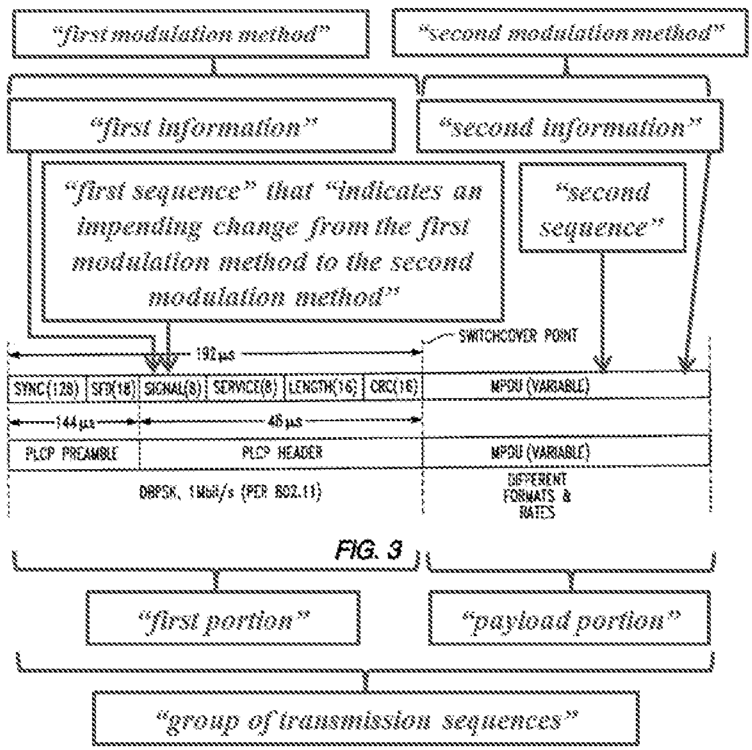
’580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
	For example, Yamano discloses transmitting a group of transmission sequences, including a preamble and main body, and that the preamble includes a destination address “for an intended destination of the payload portion.” “*Packet 700* includes a *preamble 701* and a *main body 702*.” Yamano at 19:63-64. “For example, *preamble 701* can include information which identifies: (1) a version or type field for the preamble, (2) *packet source and destination addresses*, (3) the line code (i.e., the modem protocol being used), (4) the data rate, (5) error control parameters, (6) packet length and (7) a timing value for the expected reception slot of a subsequent packet.” Yamano at 20:1-7 (emphasis added).  Yamano at Figure 8 (annotated). “When the preamble in a burst-mode packet *includes the destination address of the packet*, the receiver circuits can monitor the destination address of the packet, and in response, filter packets which do not need to be demodulated, thereby reducing the processing requirements of the receiver circuits.” Yamano at 20:54-59.
[1.F] wherein for the at least one group of transmission sequences: the first information for said at least one group of	**Snell discloses for the at least one group of transmission sequences, the first information for said at least one group of transmission sequences comprises a first sequence, in the first portion and modulated according to the first modulation method, wherein the first sequence indicates an impending change from the first modulation method to the second modulation method.** ***See, e.g.*****, Snell**

[17] As explained in Section III.C, a POSITA would have been motivated and found it obvious and straightforward to use Yamano’s teaching of including a destination address in the data packet in implementing Snell’s teachings of a communication system for transmitting data packets.

<table>
<tr><th>’580 Patent Claim 2</th><th>SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman</th></tr>
<tr><td>transmission sequences comprises a first sequence, in the first portion and modulated according to the first modulation method, wherein the first sequence indicates an impending change from the first modulation method to the second modulation method, and</td><td>

at 2:61-3:5, 6:35-36, 6:52-59, 6:64-66, 7:1-2, 7:5-14, Figs. 2, 3, 5; Harris 4064.4 at 15-16, Fig. 10.

For example, Snell discloses that the “first information” (*e.g.*, PLCP preamble and PLCP header) comprises a “first sequence (*e.g.*, “SIGNAL” field in PLCP header) “modulated according to a first modulation method” (*e.g.*, BPSK). The “SIGNAL” field “indicates” (*e.g.*, using “14h”) “an impending change from the first modulation method” (*e.g.*, BPSK) “to the second modulation method” (*e.g.*, QPSK).



Snell at Fig. 3 (annotated).

“The *header may always be BPSK*.” Snell at 6:35-36.

“Now relating to the *PLCP header* 91, *the SIGNAL* is:

0Ah	1 Mbit/s BPSK,
14h	2 Mbit/S QPSK,
37h	5.5 Mbit/s BPSK, and
6Eh	11 Mbit/s QPSK.

”

Snell at 6:52-59.

</td></tr>
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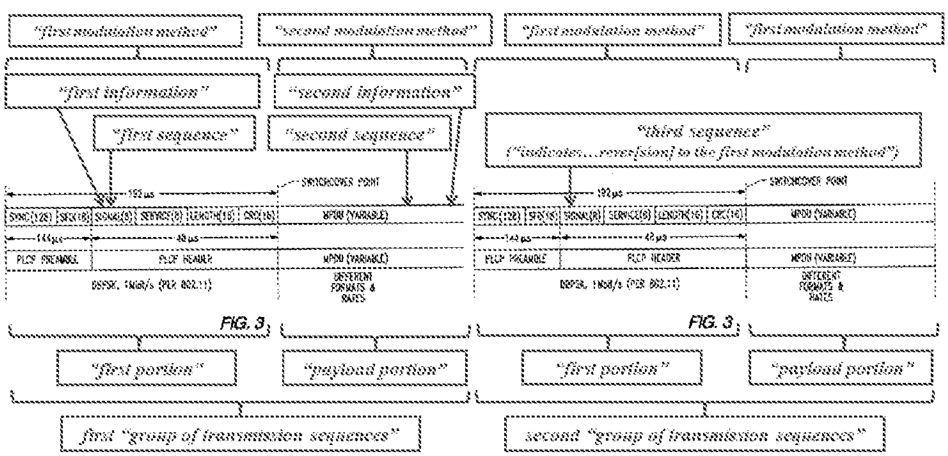
'580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
	"SIGNAL is indicated by 2 control bits and then formatted as described." Snell at 7:1-2. "*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. *The variable data may be modulated and demodulated in different formats* than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at 7:5-14. Snell describes that the "first modulation method" may be BPSK and the "second modulation method" may be QPSK, which is of a different "type" than the first modulation method, and alternatively describes that the "first modulation method" may be differential BPSK ("DBPSK") and that the "second modulation method" may be differential QPSK ("DQPSK"), which is also of a different "type" than the first modulation method. Thus, Snell alternatively discloses that the PLCP preamble and PLCP header includes a "SIGNAL" field that may be modulated according to a "first modulation method" (*e.g.*, <u>DBPSK</u>) and "indicates an impending change from the first modulation method" (*e.g.*, <u>DBPSK</u>) "to the second modulation method" (*e.g.*, <u>DQPSK</u>). "*The PLCP preamble and PLCP header* are always at 1 Mbit/s, *Diff encoded*, scrambled and spread with an 11 chip barker." Snell at 6:64-66. "The modulator may also preferably include header modulator means for modulating data packets to include *a header at a predetermined modulation and a third data rate defining a third format…. The third format is preferably differential BPSK.*" Snell at 2:61-3:5. "MPDU is serially provided by Interface 80 and is the variable data scrambled for normal operation. *The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding.*" Snell at 7:5-8. *See also, e.g.*, Snell at Figs. 2, 3, 5. Snell incorporates by reference Harris 4064.4,[18] which discloses: "*Signal Field (8 Bits) - This field indicates whether the data packet that follows the header is modulated as DBPSK or DQPSK*. In mode 3 the HSP3824 receiver *looks at the signal field to determine whether it needs*

[18] *See supra* n.14.

'580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
	to switch from DBPSK demodulation into DQPSK demodulation at the end of the always DBPSK preamble and header fields." Harris 4064.4 at 15. "In mode 3 *the signal field defines the modulation type of the data packet (DBPSK or DQPSK)* so the receiver does not need to be preprogrammed to anticipate one or the other. In this mode the device *checks the Signal field for the data packet modulation and it switches to DQPSK if it is defined as such in the signal field.* Note that *the preamble and header are always DBPSK the modulation definition applies only for the data packet.*" Harris 4064.4 at 16. *See also, e.g.*, Harris 4064.4 at FIGURE 10.
[1.G] the second information for said at least one group of transmission sequences comprises a second sequence that is modulated according to the second modulation method, wherein the second sequence is transmitted after the first sequence.	**Snell discloses that the second information for said at least one group of transmission sequences comprises a second sequence that is modulated according to the second modulation method, wherein the second sequence is transmitted after the first sequence.** *See* Element 1.F.
2. The device of claim 1, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.	*See* claim 1. **Snell in view of Kamerman discloses that the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method. *See, e.g.*, Snell at 1:55-57, 2:27-30, 2:61-63, 6:35-36, 6:52-59, 6:64-66, 7:1-2, 7:5-14, Fig. 3; Harris 4064.4 at 15-16, Fig. 10.; Kamerman at 6, 11, 12.** For example, Snell discloses a transceiver for transmitting data packets to another transceiver, where the communication may switch on-the-fly between different types of modulation methods. "The modulator may also preferably include header modulator means for modulating *data packets*." Snell at 2:61-63. "The PRISM 1 chip set provides all the functions necessary for full or half duplex, direct sequence spread spectrum, *packet communications* at the

'580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
	2.4 to 2.5 GHz ISM radio band." Snell at 1:55-57. "It is another object of the invention to provide a spread spectrum transceiver and associated method to permit operation at higher data rates and *which may switch on-the-fly between different data rates and/or formats.*" Snell at 2:27-30. "The variable data may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and *while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly*." Snell at 7:10-14. Snell also discloses that the "SIGNAL" field in the header of the packet is modulated in a first modulation method and indicates the modulation type (*e.g.*, BPSK or QPSK, or alternatively, DBPSK or DQPSK) used for modulating the MPDU data portion. *See* Element 1.D.  Snell at Fig. 3 (annotated).[19]

[19] Snell teaches communicating multiple data packets with the ability to "switch on-the-fly between different data rates and/or formats." Based on this disclosure, a person of ordinary skill in the art would have understood that Snell teaches that a series of packets may be sent that switch from using a second modulation method to using a first modulation method for the payload portion of the data packet. For example, as shown in Figure 3 (annotated), a first packet in Snell comprises a "first sequence" (*e.g.*, PLCP preamble and PLCP header) that is "modulated according to the first modulation method" (*e.g.*, BPSK) where the "first sequence" (*e.g.*, "SIGNAL" field in PLCP header) "indicates" (*e.g.*, using "14h") the modulation type (*e.g.*, QPSK) used for modulating the "second sequence" (*e.g.*, MPDU data). For the first packet, the "SIGNAL" field in the PLCP header uses a code (*e.g.*, "14h") that "indicates" that the MPDU data is modulated "according to the second modulation method" (*e.g.*, QPSK). The "second

'580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
	Kamerman[20] discloses reverting from a second modulation method to a first modulation method. ***See, e.g.*****, Kamerman at 6, 11, 12.** Kamerman discloses an automatic rate selection scheme for reverting (*e.g.*, falling back) from a "second modulation method" (*e.g.*, QPSK) corresponding to a higher data rate (*e.g.*, 2 Mbit/s) to a "first modulation method" (*e.g.*, BPSK) corresponding to a lower data rate (*e.g.*, 1 Mbit/s) after unacknowledged packet transmissions, for instance, where there is a high load in neighbor cells causing cochannel interference. "Then there is looked to *automatic rate control* to keep the cochannel interference at a tolerable level." Kamerman at 6. "IEEE 802.11 DS specifies bit rates of 1 and 2 Mbps. The allowable SNR and CSIR values for reliable transmission of data packets are dependent on the bit rate." Kamerman at 11. "IEEE 802.11 DS specifies BPSK and QPSK, in addition there could be applied proprietary modes with M-PSK and QAM schemes that provide higher bit rates by encoding more bits per symbol. . . . An automatic rate selection scheme based on the reliability of the individual uplink and downlink could be applied. The basic rate adaptation scheme could be: *after unacknowledged packet transmissions the rate falls back,* and after a

modulation method" (*e.g.*, QPSK) "is of a different type than the first modulation method" (*e.g.*, BPSK).

Snell's transceiver then transmits a second packet comprising a "third sequence" (*e.g.*, PLCP preamble and PLCP header) "transmitted in the first modulation method" (*e.g.*, BPSK) where the "third sequence" (*e.g.*, "SIGNAL" field in PLCP header) "indicates" (*e.g.*, using "0Ah") the modulation type (*e.g.*, BPSK) used for modulating the MPDU data of the second packet. For the second packet, the "SIGNAL" field in the PLCP header uses a code (*e.g.*, "0Ah") that "indicates" that the MPDU data is modulated using the BPSK modulation method at 1 Mbit/s. This "SIGNAL" thus "indicates that communication" from the transceiver "has reverted to the first modulation method" (*e.g.*, reverted to BPSK modulation). In addition, transmitting the data using the "first modulation method" (*e.g.*, BPSK) results in a data rate of 1 Mbit/s which is lower than transmitting the data using the "second modulation method," which results in a data rate of 2 Mbit/s.

[20] As explained in Section III.C, a POSITA would have been motivated and found it obvious and straightforward to use Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method (*i.e.*, reverting to the first modulation method) in implementing Snell's system for communicating data packets modulated according to different modulation methods (as implemented using the teachings of Yamano).

'580 Patent Claim 2	SNQ-1: Combined Disclosure of Snell, Yamano, and Kamerman
	number (e.g. 10) of successive correctly acknowledged packet transmissions the bit rate goes up." Kamerman at 11. "*At lower load in the neighbor cells the highest bit rate can be used more often. At higher load the transmissions from the accesspoint to stations at the outer part of the cells, will be done often at fallback rates due to mutilation of transmissions by interference.* In practice the network load for LANs at nowadays client-server applications is very bursty, with sometimes transmission bursts over an individual links and low activity during the major part of the time. *Therefore the higher bit rate can be used during the most of the time, and at high load in the neighbor cells (as will evoked by test applications) there will be switched to fall back rates in the outer part of the cell.*" Kamerman at 11. "The application of proprietary bit rates of 3 and 4 Mbps in addition to the basic 1 and 2 Mbps, can be combined with an automatic rate selection. This automatic rate selection gives fall forward at reliable connections and *fall back at strong cochannel interference*." Kamerman at 12.

'580 Patent Claim 59	SNQ-1: Combined Disclosure of Snell in View of Yamano and Kamerman
58.[preamble] A communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave, the device comprising:	**To the extent this preamble is considered a limitation of the claim, Snell discloses a communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave.** *See* Element 1.preamble.
[58.A] a transceiver, in the role of the master according to the master/ slave	**Snell discloses a transceiver, in the role of the master according to the master/ slave relationship.** *See* Element 1.A

’580 Patent Claim 59	SNQ-1: Combined Disclosure of Snell in View of Yamano and Kamerman
relationship,	
[58.B] capable of transmitting using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method,	**Snell discloses transmitting using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method.** *See* Element 1.B.
[58.C] and wherein the transceiver is configured to transmit messages with: a first sequence, in the first modulation method, that indicates at least which of the first modulation method and the second modulation method is used for modulating a second sequence, wherein, in at least one message, the first sequence indicates an impending change from the first modulation method to the second modulation method, and	**Snell discloses that the transceiver is configured to transmit messages with: a first sequence, in the first modulation method, that indicates at least which of the first modulation method and the second modulation method is used for modulating a second sequence, wherein, in at least one message, the first sequence indicates an impending change from the first modulation method to the second modulation method.** *See* Elements 1.C, 1.D, 1.F.
[58.D] wherein the at least one message is	**Snell in view of Yamano discloses that at least one message is**

’580 Patent Claim 59	SNQ-1: Combined Disclosure of Snell in View of Yamano and Kamerman
addressed for an intended destination of the second sequence, and	**addressed for an intended destination of the second sequence.** *See* Element 1.E.
[58.E] the second sequence, modulated in accordance with the modulation method indicated by the first sequence and, in the at least one message, modulated using the second modulation method, wherein the second sequence is transmitted after the first sequence.	**Snell discloses that the second sequence [is] modulated in accordance with the modulation method indicated by the first sequence and, in the at least one message, modulated using the second modulation method, wherein the second sequence is transmitted after the first sequence.** *See* Element 1.G.
59. The device of claim 58, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.	**Snell in view of Kamerman discloses that the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.** *See* claims 1, 2.

D. SNQ-2: Unpatentability of Claims 2 and 59 Under 35 U.S.C. § 103 Over Snell, Harris 4064.4, Harris AN9614, Yamano and Kamerman

Requesters submit that the combined teachings of Snell (submitted herewith as Exhibit D), Harris 4064.4 (submitted herewith as Exhibit E), Harris AN9614 (submitted herewith as

Exhibit F), Yamano (submitted herewith as Exhibit H), and Kamerman (submitted herewith as Exhibit I) raise a substantial new question of patentability with respect to claims 2 and 59 of the '580 patent, and that claims 2 and 59 of the '580 patent are unpatentable under 35 U.S.C. 103 as obvious over Snell in view of Harris 4064.4, Harris AN9614, Yamano and Kamerman.[21]

A POSITA would have been motivated and found it obvious and straightforward to use Harris 4064.4's teachings of modulating the preamble and header portions of a data packet using DBPSK modulation and modulating the payload portion of the data packet using DBPSK or DQPSK modulation (as indicated by the SIGNAL field in the header portion) to advantageously provide for switching between DBPSK and DQPSK modulation types in implementing an IEEE 802.11 system (*see* Harris 4064.4 at 1, 3) such as disclosed in Snell. Harris 4064.4 is incorporated by reference into Snell (Snell at 5:13-17), both references are directed to the PRISM chipset and HSP 3824 baseband processor (Harris 4064.4 at 1; Snell at 1:47-63, 5:8-17, 5:31-33), and Harris 4064.4 is a publication of Harris Corporation, the same original assignee of Snell. It would have been routine and straightforward for a POSITA to use the teachings of Harris 4064.4 with the teachings of Snell, in light of the foregoing including Snell's express direction to apply the teachings of Harris 4064.4, and further because, in combination, each element (Harris 4064.4's teaching of modulating the preamble and header portions of a data packet using DBPSK modulation and modulating the payload portion of the data packet using DBPSK or DQPSK modulation and Snell's communication system for transmitting data packets modulated using different modulation methods) performs the same function as it would

[21] Requesters submit that, as set forth in SNQ-1, the Harris 4064.4 and Harris AN9614 references are incorporated by reference into Snell and, therefore, are part of the express disclosure of Snell. To the extent, however, that it is deemed that Harris 4064.4 and Harris AN9614 should be treated as independent references from Snell, Requesters have set forth in SNQ-2 a detailed explanation as to why the Challenged Claims are invalid as obvious based on a combination of Snell, Harris 4064.4, Harris AN9614, Yamano and Kamerman.

separately, yielding nothing more than predictable results. *KSR*, 550 U.S. at 417. A POSITA would have thus recognized that this combination (yielding the claimed limitation) would have worked as expected. For these reasons, a POSITA would have been motivated and found it obvious and straightforward to use Harris 4064.4's teachings in implementing Snell's communication system.

A POSITA would have additionally been motivated and found it obvious and straightforward to use Harris AN9614's teaching of a polled (master/slave) protocol in implementing the communication system taught by Snell (in light of Harris 4064.4). Harris AN9614 is incorporated by reference into Snell (Snell at 5:2-7), both references are directed to the PRISM chipset and HSP3824 baseband processor (Harris AN9614 at 1, 2; Snell at 1:47-63, 5:8-17, 5:31-33), and Harris AN9614 is a publication of Harris Corporation, the same original assignee of Snell. Moreover, AN9614 expressly teaches that it is beneficial to use a polled (master/slave) protocol because "the average power consumption of the radio can be reduced by more than an order of magnitude while meeting all data transfer objectives." Harris AN9614 at 3. Polling (master/slave) enables this reduction in power consumption because "the system can be set at its sleep mode most of the time to achieve low power consumption. It only needs to operate at full power consumption during the transmission of a packet or during the expected window for received packets." Harris AN9614 at 3. In addition to Snell's express suggestion to apply Harris AN9614's disclosures, a POSITA would have been motivated to use Harris AN9614's teaching of a polled (master/slave) protocol in implementing Snell's communication system (implemented in light of Harris 4064.4 *see supra*) because a polled (master/slave) communication system advantageously provides a simple protocol that has good determinacy (*e.g.*, a reduction in collisions). It would have been routine for a POSITA to use a polled (master/slave) protocol in implementing Snell's communication system (as implemented in light of Harris 4064.4), as master/slave communication systems were common and well-known in the art (*see* '580 patent at 3:40-4:50), and thus implementing a polled (master/slave) protocol in Snell's transceiver (which serves as an access point to support communications with multiple other transceivers – Snell at 1:34-46) would involve nothing more than using common and known techniques to improve a similar system in the same way to yield predictable results. *KSR*, 550 U.S. at 416. A POSITA would have thus recognized that this combination (yielding the claimed limitation) would have worked as expected. For these reasons, a POSITA would have been motivated and found it obvious and straightforward to implement a polled (master/slave) protocol in implementing Snell's system (as implemented in light of Harris 4064.4).

It was well-known in the art, as demonstrated by Yamano, that packets can be advantageously addressed for an intended destination. A POSITA would have been motivated and found it obvious and straightforward to use Yamano's teaching of including a destination address in the data packet in implementing Snell's teachings of a communication system for transmitting data packets (as implemented in light of Harris 4064.4 and Harris AN9614) to advantageously specify which receiver the data is intended for and to beneficially reduce processing requirements of receiving devices by allowing the receiving device to filter out packets which it does not need to demodulate. Snell and Yamano are in the same field of art, with both relating to transmitting data packets over a network (*see, e.g.*, Snell at 1:55-58, 2:61-63, 2:66-3:3, 5:18-21, 6:48-63, Fig. 3; Yamano at 1:1-29, 19:54-20:33, Fig. 8), at varying rates (*see, e.g.*, Snell at 2:15-17, 6:52-59; Yamano at 19:54-56). Yamano expressly teaches that including a destination address in the preamble portion of the data packet, which precedes the data portion, will advantageously reduce processing requirements of receiving devices because the receiving device can filter out packets which it does not need to demodulate. Yamano at 20:54-59 ("When the preamble in a burst-mode packet *includes the destination address of the packet*, the receiver circuits can monitor the destination address of the packet, and in response, filter packets which do not need to be demodulated, thereby reducing the processing requirements of the receiver circuits."). In addition, Snell teaches structuring its data packet to include a preamble, header, and MPDU data portion (*see, e.g.*, Snell at 6:35-36, 6:64-66, 7:5-14, Fig. 3), and Yamano teaches structuring its data packet to also include a preamble and data portion, and to place the destination address in the preamble portion (Yamano at 19:63-20:7, Fig. 8). It would have been routine and straightforward for a POSITA to include a destination address in the data packet, as taught by Yamano, in implementing Snell's system for transmitting data packets between transceivers (as implemented in light of Harris 4064.4 and Harris AN9614), as Snell teaches that its data packet already includes a preamble portion—and in combination, each element (Yamano's teaching of placing a destination address in the preamble and Snell's teaching of a system for communicating data packets modulated according to different modulation methods between transceivers) performs the same function as it would separately, yielding nothing more than predictable results. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). A POSITA would have thus recognized that this combination (yielding the claimed limitation) would have worked as expected. For these reasons, a POSITA would have been motivated and found it obvious and straightforward to use Yamano's advantageous teachings of including a destination address in the data packet in implementing Snell's communication system (as implemented in light of Harris 4064.4 and Harris AN9614).

It was also well-known in the art, as demonstrated by Kamerman, to transmit a first data packet where the data is modulated using a second modulation method, such as QPSK (corresponding to a higher data transfer rate), and to next transmit a second data packet where the data is modulated using a first modulation method, such as BPSK (corresponding to a lower data transfer rate) (*i.e.*, to revert to the first modulation method). A POSITA would have been motivated and found it obvious and straightforward to use Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method in implementing Snell's system for communicating data packets modulated according to different modulation methods (implemented using the teachings of Harris 4064.4, Harris AN9614, and Yamano, as discussed above) to advantageously maximize the data transfer rate and adapt to changing channel conditions (as also taught by Kamerman). In particular, Kamerman expressly teaches that it is beneficial to transmit the data of a first data packet using a second modulation method corresponding to a higher data transfer rate (*e.g.*, QPSK modulation at 2 mbps) during lower load conditions to maximize the data transfer rate during lower load conditions when the connection is more reliable and to next transmit the data of a second data packet using a first modulation method corresponding to a lower data transfer rate (*e.g.*, BPSK modulation at 1 mbps) (*i.e.*, falling back) during higher load conditions when a more robust signal is needed due to "mutilation of transmissions by interference." *See* Kamerman at 6 ("Then there is looked to *automatic rate control* to keep the cochannel interference at a tolerable level."), 11 ("The basic rate adaptation scheme could be: *after unacknowledged packet transmissions the rate falls back*, and after a number (*e.g.* 10) of successive correctly acknowledged packet transmissions the bit rate goes up."), 11 ("At lower load in the neighbor cells the highest bit rate can be used more often. At higher load the transmissions from the accesspoint to stations at the outer part of the cells, *will be done at fallback rates due to mutilation of transmissions by interference.* In practice the network load for LANs at nowadays client-server applications is very bursty, with sometimes transmission bursts over an individual links and low activity during the major part of the time. *Therefore the higher bit rate can be used during the most of the time, and at high load in the neighbor cells ... there will be switched to fall back rates in the outer part of the cell.*"), 12 ("This automatic rate selection gives fall forward at reliable connections and fall back at strong cochannel interference. Therefore it gives adaptation of the bit rate to the interference as it occurs in time depending on positions as load.").

Moreover, Snell and Kamerman are in the same field of art, with both relating to communications between transceivers that use BPSK and QPSK modulation methods to transfer data at different rates according to the draft IEEE 802.11 standard available at that time. *See, e.g.*, Snell at 1:47-63 ("The assignee of the present invention has developed and manufactured a set of integrated circuits for a WLAN under the mark PRISM 1 *which is compatible with the proposed IEEE 802.11 standard*…."), 5:31-33 ("The present invention provides an extension of the PRISM 1 product from *1 Mbit/s BPSK and 2 Mbit/s QPSK*…"); Kamerman at 6 ("This paper considers the critical parameters for *wireless LANs that operate conform to the IEEE 802.11 DSSS (direct sequence spread spectrum) standard*…"), 11 ("IEEE 802.11 DS specifies bit rates of 1 and 2 Mbps.", 11 ("IEEE 802.11 DS specifies BPSK and QPSK…"). It would have been routine and straightforward for a POSITA to use Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method (*i.e.*, reverting to the first modulation method) in implementing Snell's system (implemented in light of Harris 4064.4, Harris AN9614, and Yamano) for communicating data packets modulated according to different modulation methods, as both Snell and Kamerman are directed to IEEE 802.11 systems utilizing QPSK and BPSK modulation methods corresponding, respectively, to higher and lower data transfer rates—and in combination, each element (Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method and Snell's system for communicating data packets modulated according to different modulation methods) performs the same function as it would separately, yielding nothing more than predictable results. *KSR*, 550 U.S. at 417. A POSITA would have thus recognized that this combination (yielding the claimed limitation) would have worked as expected. For these reasons, a POSITA would have been motivated and found it obvious and straightforward to implement Kamerman's advantageous teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method (*i.e.*, reverting to the first modulation method) in implementing Snell's system (implemented in light of Harris 4064.4, Harris AN9614, and Yamano) for communicating data packets modulated according to different modulation methods.

The combination of Snell, Harris 4064.4, Harris AN9614, Yamano, and Kamerman shows or renders obvious each and every element of the inventions of claims 2 and 59. The relevant teachings of the combination of Snell, Harris 4064.4, Harris AN9614, Yamano, and Kamerman were not considered during the prior examination of the '580 patent and a reasonable Examiner would consider these disclosures important in determining whether or not the claims are patentable.

Therefore, the combination of Snell, Harris 4064.4, Harris AN9614, Yamano, and Kamerman raises a substantial new question of patentability with respect to claims 2 and 59 of the '580 patent (SNQ-2) and presents new technological teachings not previously considered in connection with prosecution of the '580 patent. MPEP § 2216. Accordingly, Requesters propose that claims 2 and 59 should be rejected under § 103 as rendered obvious by Snell in view of Harris 4064.4, Harris AN9614, Yamano, and Kamerman.

The following claim chart demonstrates, in further detail, how each limitation is, at a minimum, obvious in light of Snell, Harris 4064.4, Harris AN9614, Yamano, and Kamerman.

'580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
1.[preamble] A communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave, the device comprising:	**To the extent this preamble is considered a limitation of the claim, Snell in view of Harris AN9614 discloses a communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave.** ***See, e.g.*****, Snell at 1:34-46, 1:47-50, 1:55-57, 2:27-30, 4:42-47, 5:18-21; Harris AN9614 at 3.** For example, Snell discloses a transceiver that serves as an access point for communicating data with other transceivers connected to a wireless local area network (WLAN). "In a typical WLAN, *an access point provided by a transceiver*, that is, a combination transmitter and receiver, connects to the wired network from a fixed location. Accordingly, the access transceiver receives, buffers, and transmits data between the WLAN and the wired network. *A single access transceiver can support a small group of collocated users within a range of less than about one hundred to several hundred feet. The end users connect to the WLAN through transceivers* which are typically implemented as PC cards in a notebook computer, or ISA or PCI cards for desktop computers. Of course the transceiver may be integrated with any device, such as a hand-held computer." Snell at 1:34-46. "Like the HSP3824 baseband processor, the high data rate baseband processor 40 of the invention contains all of the functions necessary for a full or half duplex packet baseband *transceiver*." Snell at 5:18-21. "The PRISM 1 chip set provides all the functions necessary for full or half duplex, direct sequence spread spectrum, *packet communications* at the 2.4 to 2.5 GHz ISM radio band." Snell at 1:55-57.

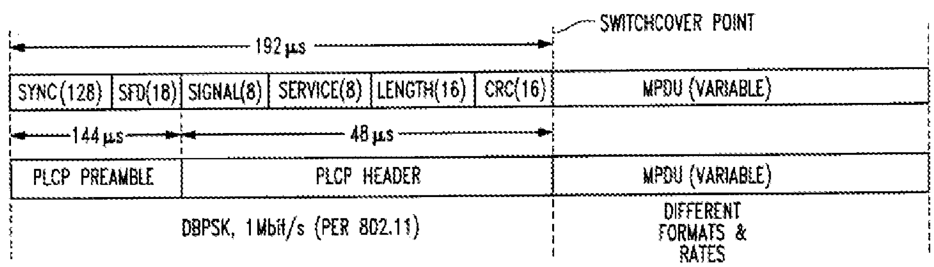
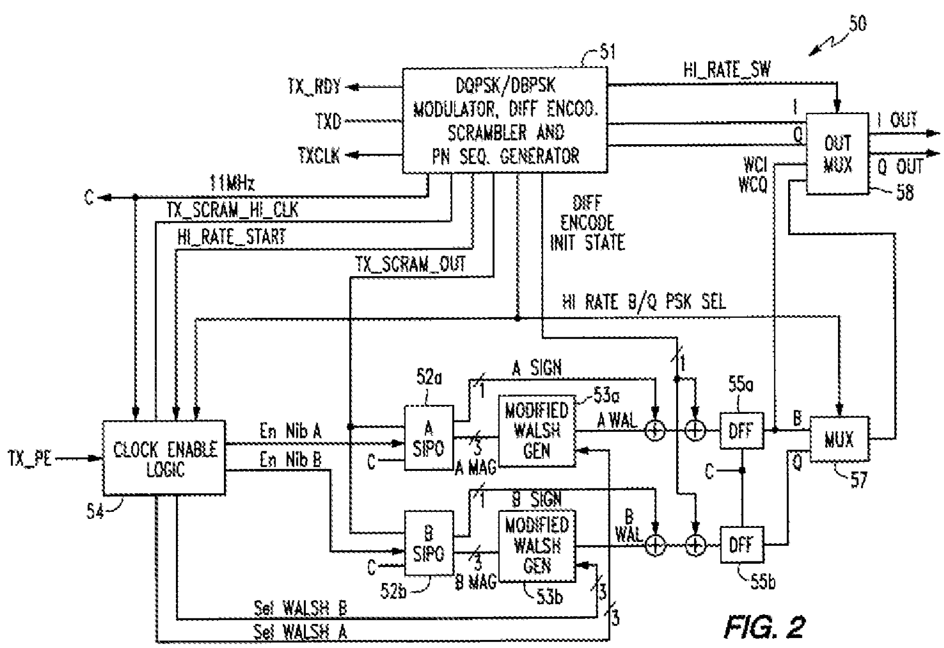
'580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
	See also, e.g., Snell at 2:27-30 ("It is another object of the invention to provide *a spread spectrum transceiver* and associated method to permit operation at higher data rates and which may switch on-the-fly between different data rates and/or formats."); Snell at 1:47-50 ("The assignee of the present invention has developed and manufactured a set of integrated circuits for a WLAN under the mark PRISM 1 which is compatible with the proposed IEEE 802.11 standard."); Snell at 4:42-47 ("Referring to FIG. 1, a *wireless transceiver 30* in accordance with the invention is first described. The *transceiver 30 may be readily used for WLAN applications* in the 2.4 GHZ ISM band in accordance with the proposed IEEE 802.11 standard. Those of skill in the art will readily recognize other applications for the transceiver 30 as well."). Snell incorporates by reference Harris AN9614,[22] which discloses that the communications between transceivers can operate according to a polled (i.e., master/slave) protocol.[23] "[T]he controller can keep adequate time to operate either a polled or a time allocated scheme. In these modes, the radio is powered off most of the time and only awakens when communications is expected. This station would be awakened periodically to listen for a beacon transmission. The beacon serves to reset the timing and to alert the radio to traffic. If traffic is waiting, the radio is instructed when to listen and for how long. In a polled scheme, the remote radio can respond to the poll with its traffic if it has any. With these techniques, the average power consumption of the radio can be reduced by more than an order of magnitude while meeting all data transfer objectives." Harris AN9614 at 3.
[1.A] a transceiver, in the role of the master according to the master/ slave relationship,	**Snell in view of Harris AN9614 discloses a transceiver, in the role of the master according to the master/ slave relationship.** *See* Element 1.preamble.

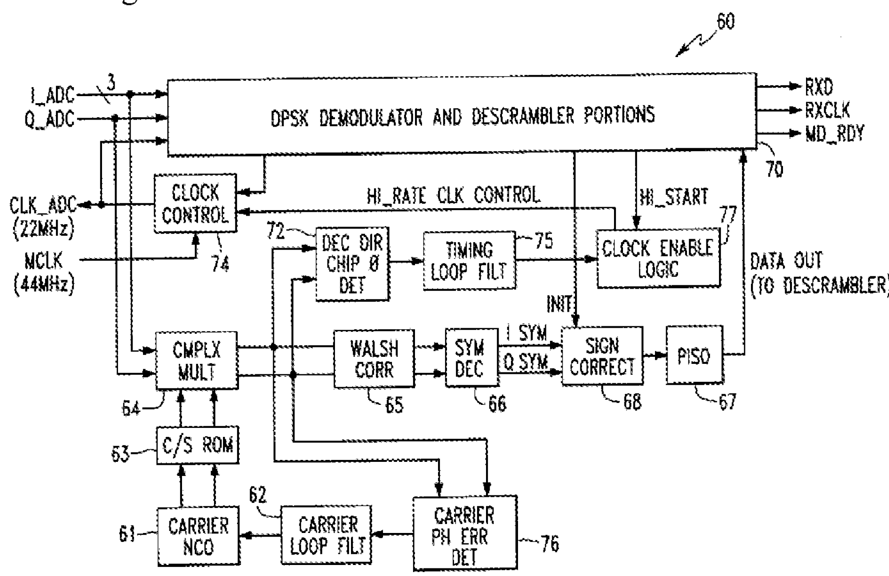
[22] *See supra* n.21; As explained in Section III.D, a POSITA would have been motivated and found it obvious and straightforward use Harris AN9614's teaching of a polled (master/slave) protocol in implementing the communication system taught by Snell (in light of Harris 4064.4).

[23] A polled protocol is a master/slave protocol, as confirmed by the '580 patent. '580 patent at 4:6-9. *See also* IPR2014-00518, Pap. 47 at 15 ("In [a polling] protocol, a centrally assigned master periodically sends a polling message to the slave nodes, giving them explicit permission to transmit on the network."); '580 Prosecution History at 404; IPR2014-00518, Exhibit 1220 (Goodman Declaration) ¶103.

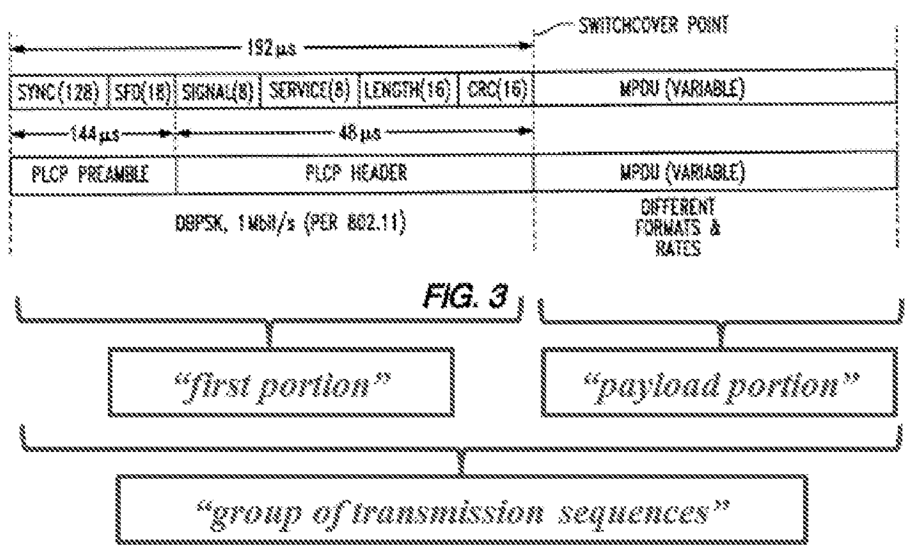
'580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
[1.B] for sending at least transmissions modulated using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method,	**Snell discloses a transceiver for sending at least transmissions modulated using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method.**[24] ***See, e.g.*****, Snell at Abstract, 1:58-61, 2:56-59, 2:61-3:5, 6:64-66, 7:6-8, Figs. 2, 3, 5; Harris 4064.4 at 14-16.** For example, Snell discloses that transmissions are modulated using a "first modulation method" (*e.g.*, BPSK) and a "second modulation method" (*e.g.*, QPSK) that is of a different "type" than the "first modulation method." "The modulator preferably comprises means for operating *in one of a bi-phase PSK (BPSK) modulation mode* at a first data rate defining a first format, and *a quadrature PSK (QPSK) mode* at a second data rate defining a second format." Snell at 2:56-59. "In particular, the HSP3824 baseband processor manufactured by Harris Corporation *employs quadrature or bi-phase phase shift keying (QPSK or BPSK) modulation schemes*." Snell at 1:58-61. *See also, e.g.*, Snell at Abstract ("The modulator and demodulator are each preferably operable *in one of a bi-phase PSK (BPSK) mode* at a first data rate and *a quadrature PSK (QPSK) mode* at a second data rate. These formats may also be switched on-the-fly in the demodulator."), 2:15-17 ("Moreover, a WLAN application, for example, may require a change between *BPSK and QPSK* during operation, that is, on-the-fly."). Snell describes that the "first modulation method" may be BPSK and the "second modulation method" may be QPSK, which is "of a different type than the first modulation method," and alternatively describes that the "first modulation method" may be differential BPSK ("DBPSK") and that the "second modulation method" may be differential QPSK ("DQPSK"), which is also "of a different type than the first modulation method." Thus, Snell alternatively discloses modulating the PLCP preamble and

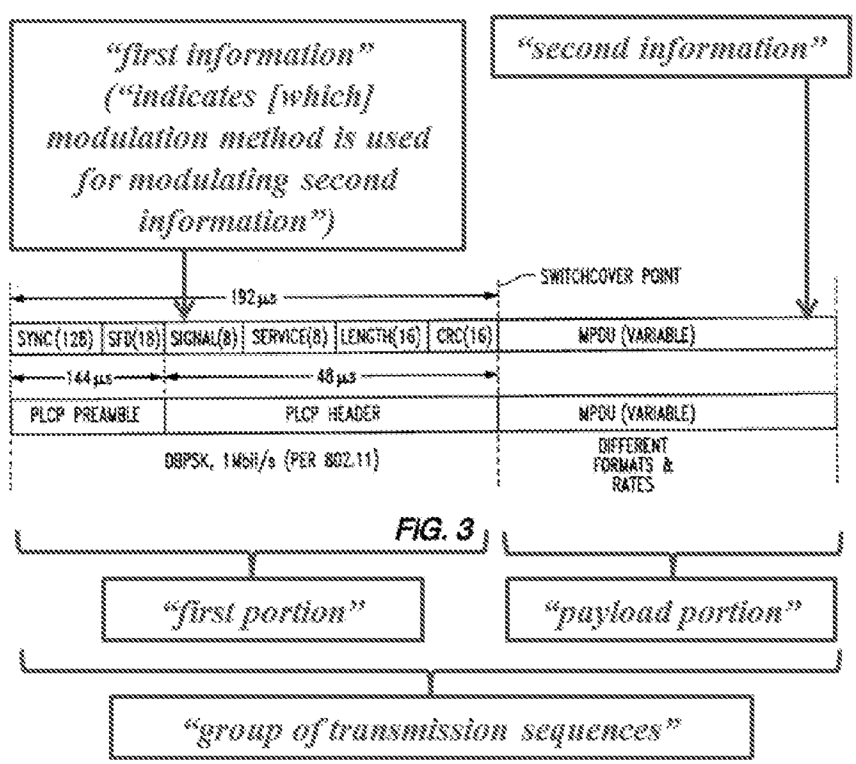
[24] In IPR2014-00518, the Board construed the limitation "different 'types' of modulation methods" in '580 claims 1 and 58 to mean "modulation methods that are incompatible with each other" and found that "two modulation methods that are based on varying the same one of the frequency, amplitude, or phase of the carrier wave may be different 'types' of modulation methods." IPR2014-00518, Pap. 47 (Final Written Decision) at 12. The Board also found that the "DQPSK … modulation method[] [is] incompatible with DBPSK modulation." *Id.* at 18.

'580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
	PLCP header using DBPSK modulation, and modulating the MPDU data using DBPSK or DQPSK modulation. "*The PLCP preamble and PLCP header are* always at 1 Mbit/s, *Diff encoded*, scrambled and spread with an 11 chip barker." Snell at 6:64-66. "The modulator may also preferably include header modulator means for modulating data packets to include *a header at a predetermined modulation and a third data rate defining a third format*…. *The third format is preferably differential BPSK*." Snell at 2:61-3:5. "The reference phase for the first symbol of the *MPDU* is the output phase of the last symbol of the header *for Diff Encoding*." Snell at 7:6-8.  *FIG. 3* Snell at Fig. 3.  *FIG. 2*

'580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
	Snell at Fig. 2.  *FIG. 5* Snell at Fig. 5. Snell incorporates by reference Harris 4064.4,[25] which discloses: "The preamble and header are always transmitted as *DBPSK* waveforms while the data packets can be configured to be *either DBPSK or DQPSK*." Harris 4064.4 at 14. "The HSP3824 transmitter is designed as a Direct Sequence Spread Spectrum *DBPSK/DQPSK modulator*." Harris 4064.4 at 14. "The modulator is capable of switching rate automatically in the case where the preamble and header information are DBPSK modulated, and the data is DQPSK modulated." Harris 4064.4 at 14. *See also, e.g.*, Harris 4064.4 at 15 ("The preamble is always transmitted as a *DBPSK* waveform with a programmable length of up to 256 symbols long."); Harris 4064.4 at 15 ("Signal Field (8 Bits) - This field indicates whether the data packet that follows the header is modulated as *DBPSK or*

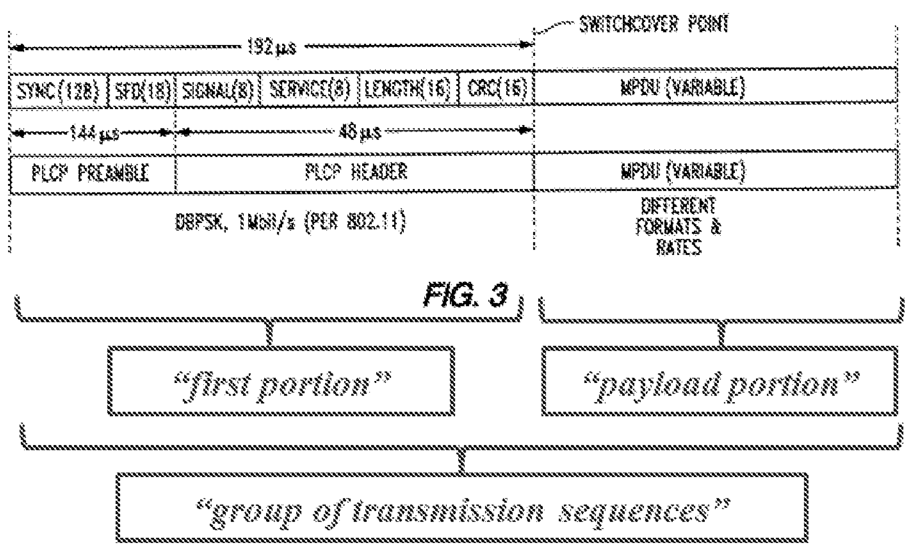
[25] *See supra* n.21. As explained in Section III.D, a POSITA would have been motivated and found it obvious and straightforward to use Harris 4064.4's teachings of modulating the preamble and header portions of a data packet using DBPSK modulation and modulating the payload portion of the data packet using DBPSK or DQPSK modulation in implementing an IEEE 802.11 system such as disclosed in Snell.

’580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
	DQPSK. In mode 3 the HSP3824 receiver *looks at the signal field to determine whether it needs to switch from DBPSK demodulation into DQPSK demodulation* at the end of the always DBPSK preamble and header fields.”); Harris 4064.4 at 16 (“Mode 3 - In this mode the preamble is programmable up to 256 bits (all 1’s). The header in this mode is using all available fields. In mode 3 the signal field defines the modulation type of the data packet (DBPSK or DQPSK) so the receiver does not need to be preprogrammed to anticipate one or the other. In this mode the device checks the Signal field for the data packet modulation and it switches to DQPSK if it is defined as such in the signal field. Note that the preamble and header are always DBPSK the modulation definition applies only for the data packet.”).
[1.C] wherein each transmission comprises a group of transmission sequences, wherein each group of transmission sequences is structured with at least a first portion and a payload portion	**Snell discloses each transmission comprises a group of transmission sequences, wherein each group of transmission sequences is structured with at least a first portion and a payload portion.** ***See, e.g.*****, Snell at 6:35-36, 6:64-66, 7:5-14, Fig. 3.** For example, Snell discloses transmitting a group of transmission sequences structured with a “first portion” including the PLCP preamble and PLCP header and a “payload portion” including the MPDU data (as depicted in Figure 3 below)  FIG. 3 Snell at Fig. 3 (annotated). “The *header* may always be BPSK.” Snell at 6:35-36. “*The PLCP preamble and PLCP header* are always at 1 Mbit/s, Diff

'580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
	encoded, scrambled and spread with an 11 chip barker." Snell at 6:64-66. "*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. *The variable data* may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at 7:5-14.
[1.D] wherein first information in the first portion indicates at least which of the first modulation method and the second modulation method is used for modulating second information in the payload portion,	**Snell discloses that first information in the first portion indicates at least which of the first modulation method and the second modulation method is used for modulating second information in the payload portion.** ***See, e.g.,*** **6:35-36, 6:52-59, 6:64-66, 7:1-2, 7:5-14; Harris 4064.4 at 15-16, Fig. 10.** For example, Snell discloses that the "SIGNAL" in the PLCP Header indicates (*e.g.*, using "OAh," "14h,"…) the modulation type (*e.g.*, BPSK or QPSK, or alternatively, DBPSK or DQPSK) used for modulating the MPDU data portion. 

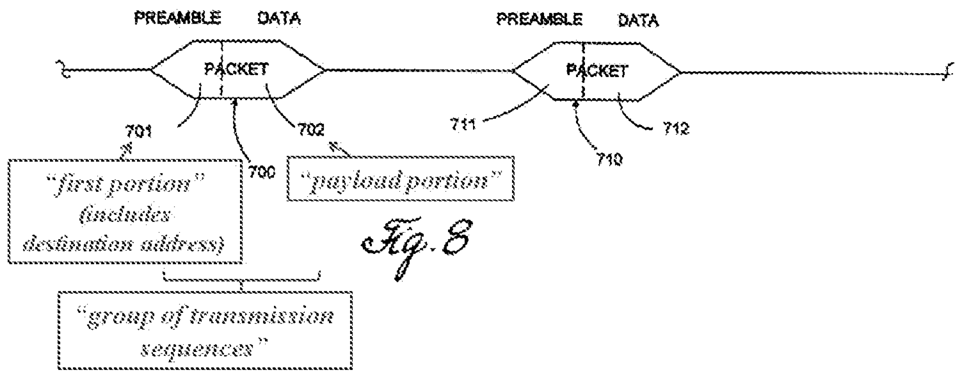
'580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
	Snell at Fig. 3 (annotated). "The *header* may always be BPSK." Snell at 6:35-36. "*The PLCP preamble and PLCP header* are always at 1 Mbit/s, Diff encoded, scrambled and spread with an 11 chip barker." Snell at 6:64-66. "Now relating to the *PLCP header* 91, *the SIGNAL* is: 0Ah 1 Mbit/s BPSK, 14h 2 Mbit/S QPSK, 37h 5.5 Mbit/s BPSK, and 6Eh 11 Mbit/s QPSK. " Snell at 6:52-59. "SIGNAL is indicated by 2 control bits and then formatted as described." Snell at 7:1-2. "*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. *The variable data may be modulated and demodulated in different formats* than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at 7:5-14. Snell incorporates by reference Harris 4064.4,[26] which discloses: "*Signal Field (8 Bits) - This field indicates whether the data packet that follows the header is modulated as DBPSK or DQPSK*. In mode 3 the HSP3824 receiver looks at the signal field to determine whether it needs to switch from DBPSK demodulation into DQPSK demodulation at the end of the always DBPSK preamble and header fields." Harris 4064.4 at 15. "In mode 3 *the signal field defines the modulation type of the data packet (DBPSK or DQPSK)* so the receiver does not need to be preprogrammed to anticipate one or the other. In this mode the device checks the Signal field for the data packet modulation and it switches to DQPSK if it is defined as such in the signal field. Note that the preamble and header are

[26] *See supra* n.25.

'580 Patent Claim 2	**SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman**
	always DBPSK the modulation definition applies only for the data packet." Harris 4064.4 at 16. *See also, e.g.*, Harris 4064.4 at FIGURE 10.
[1.E] wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion, and	**Snell in view of Yamano discloses that at least one group of transmission sequences is addressed for an intended destination of the payload portion.** ***See, e.g.*, 6:35-36, 6:64-66, 7:5-14, Fig. 3; Harris 4064.4 at 14.** For example, Snell discloses that the transceiver transmits a group of transmission sequences (including a PLCP Preamble and PLCP header, and MPDU data) to another transceiver.  Snell at Fig. 3 (annotated). "The *header* may always be BPSK." Snell at 6:35-36. "The *PLCP preamble and PLCP header* are always at 1 Mbit/s, Diff encoded, scrambled and spread with an 11 chip barker." Snell at 6:64-66. "*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. *The variable data* may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by

'580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
	the switchover point in FIG. 3, occurs on-the-fly." Snell at 7:5-14. Snell incorporates by reference Harris 4064.4,[27] which discloses: "The *preamble and header* are always transmitted as DBPSK waveforms while the *data packets* can be configured to be either DBPSK or DQPSK." Harris 4064.4 at 14. **Yamano[28] discloses at least one group of transmission sequences is addressed for an intended destination of the payload portion.** ***See, e.g.*****, Yamano at 19:63-64, 20:1-7, 20:54-59, Fig. 8.** For example, Yamano discloses transmitting a group of transmission sequences, including a preamble and main body, and that the preamble includes a destination address "for an intended destination of the payload portion." "*Packet 700* includes a *preamble 701* and a *main body 702*." Yamano at 19:63-64. "For example, *preamble 701* can include information which identifies: (1) a version or type field for the preamble, (2) *packet source and destination addresses*, (3) the line code (i.e., the modem protocol being used), (4) the data rate, (5) error control parameters, (6) packet length and (7) a timing value for the expected reception slot of a subsequent packet." Yamano at 20:1-7 (emphasis added).

[27] *See supra* n.21.
[28] As explained in Section III.D, a POSITA would have been motivated and found it obvious and straightforward to use Yamano's teaching of including a destination address in the data packet in implementing Snell's teachings of a communication system for transmitting data packets (as implemented in light of Harris 4064.4 and Harris AN9614).

'580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
	 Yamano at Figure 8 (annotated). "When the preamble in a burst-mode packet *includes the destination address of the packet*, the receiver circuits can monitor the destination address of the packet, and in response, filter packets which do not need to be demodulated, thereby reducing the processing requirements of the receiver circuits." Yamano at 20:54-59.
[1.F] wherein for the at least one group of transmission sequences: the first information for said at least one group of transmission sequences comprises a first sequence, in the first portion and modulated according to the first modulation method, wherein the first sequence indicates an impending change from the first modulation method to the second modulation method, and	**Snell in view of Harris 4064.4 discloses for the at least one group of transmission sequences, the first information for said at least one group of transmission sequences comprises a first sequence, in the first portion and modulated according to the first modulation method, wherein the first sequence indicates an impending change from the first modulation method to the second modulation method.** ***See, e.g.*****, Snell at 2:61-3:5, 6:35-36, 6:52-59, 6:64-66, 7:1-2, 7:5-14, Figs. 2, 3, 5; Harris 4064.4 at 15-16, Fig. 10.** For example, Snell discloses that the "first information" (*e.g.*, PLCP preamble and PLCP header) comprises a "first sequence (*e.g.*, "SIGNAL" field in PLCP header) "modulated according to a first modulation method" (*e.g.*, BPSK). The "SIGNAL" field "indicates" (*e.g.*, using "14h") "an impending change from the first modulation method" (*e.g.*, BPSK) "to the second modulation method" (*e.g.*, QPSK).

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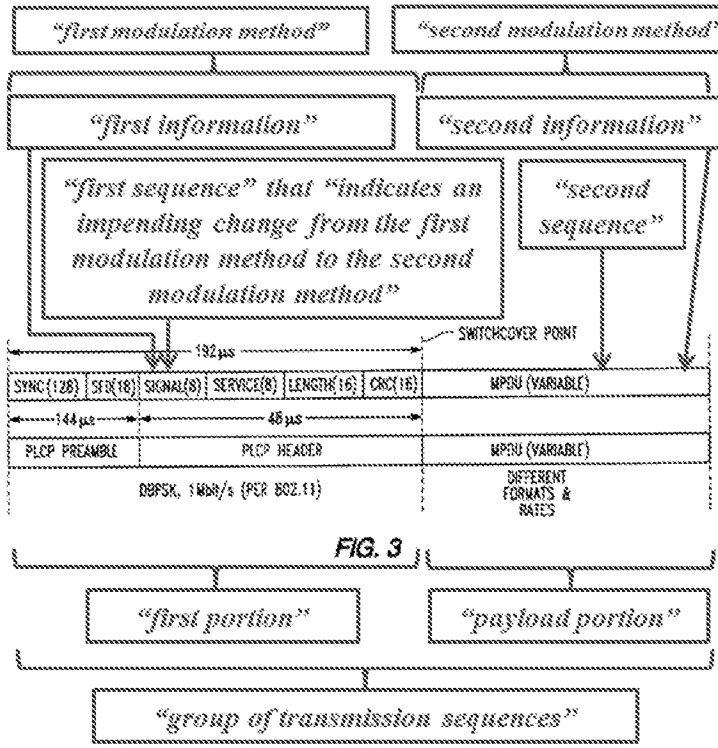
<tr><th>'580 Patent Claim 2</th><th>SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman</th></tr>
<tr><td></td><td>


Snell at Fig. 3 (annotated).

"The *header may always be BPSK*." Snell at 6:35-36.

"Now relating to the *PLCP header* 91, *the SIGNAL* is:

0Ah	1 Mbit/s BPSK,
14h	2 Mbit/S QPSK,
37h	5.5 Mbit/s BPSK, and
6Eh	11 Mbit/s QPSK.

"

Snell at 6:52-59.

"SIGNAL is indicated by 2 control bits and then formatted as described." Snell at 7:1-2.

"*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. *The variable data may be modulated and demodulated in different formats* than the header portion
</td></tr>
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'580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
	to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at 7:5-14. Snell describes that the "first modulation method" may be BPSK and the "second modulation method" may be QPSK, which is of a different "type" than the first modulation method, and alternatively describes that the "first modulation method" may be differential BPSK ("DBPSK") and that the "second modulation method" may be differential QPSK ("DQPSK"), which is also of a different "type" than the first modulation method. Thus, Snell alternatively discloses that the PLCP preamble and PLCP header includes a "SIGNAL" field that may be modulated according to a "first modulation method" (*e.g.*, <u>DBPSK</u>) and "indicates an impending change from the first modulation method" (*e.g.*, <u>DBPSK</u>) "to the second modulation method" (*e.g.*, <u>DQPSK</u>). "*The PLCP preamble and PLCP header* are always at 1 Mbit/s, *Diff encoded*, scrambled and spread with an 11 chip barker." Snell at 6:64-66. "The modulator may also preferably include header modulator means for modulating data packets to include *a header at a predetermined modulation and a third data rate defining a third format…. The third format is preferably differential BPSK*." Snell at 2:61-3:5. "MPDU is serially provided by Interface 80 and is the variable data scrambled for normal operation. *The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding*." Snell at 7:5-8. *See also, e.g.*, Snell at Figs. 2, 3, 5. Snell incorporates by reference Harris 4064.4,[29] which discloses: "*Signal Field (8 Bits) - This field indicates whether the data packet that follows the header is modulated as DBPSK or DQPSK*. In mode 3 the HSP3824 receiver *looks at the signal field to determine whether it needs to switch from DBPSK demodulation into DQPSK demodulation at the end of the always DBPSK preamble and header fields*." Harris 4064.4 at 15. "In mode 3 *the signal field defines the modulation type of the data packet (DBPSK or DQPSK)* so the receiver does not need to be preprogrammed to anticipate one or the other. In this mode the device *checks the Signal field for the data packet modulation and it switches to DQPSK if it is*

[29] *See supra* n.25.

'580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
	defined as such in the signal field. Note that *the preamble and header are always DBPSK the modulation definition applies only for the data packet.*" Harris 4064.4 at 16. *See also, e.g.*, Harris 4064.4 at FIGURE 10.
[1.G] the second information for said at least one group of transmission sequences comprises a second sequence that is modulated according to the second modulation method, wherein the second sequence is transmitted after the first sequence.	**Snell discloses that the second information for said at least one group of transmission sequences comprises a second sequence that is modulated according to the second modulation method, wherein the second sequence is transmitted after the first sequence.** *See* Element 1.F.
2. The device of claim 1, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.	*See* claim 1. **Snell in view of Kamerman discloses that the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.** ***See, e.g.*, Snell at 1:55-57, 2:27-30, 2:61-63, 6:35-36, 6:52-59, 6:64-66, 7:1-2, 7:5-14, Fig. 3; Harris 4064.4 at 15-16, Fig. 10.; Kamerman at 6, 11, 12.** For example, Snell discloses a transceiver for transmitting data packets to another transceiver, where the communication may switch on-the-fly between different types of modulation methods. "The modulator may also preferably include header modulator means for modulating *data packets*." Snell at 2:61-63. "The PRISM 1 chip set provides all the functions necessary for full or half duplex, direct sequence spread spectrum, *packet communications* at the 2.4 to 2.5 GHz ISM radio band." Snell at 1:55-57. "It is another object of the invention to provide a spread spectrum transceiver and associated method to permit operation at higher data rates and *which may switch on-the-fly between different data rates and/or formats.*" Snell at 2:27-30.

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<tr><th>’580 Patent Claim 2</th><th>SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman</th></tr>
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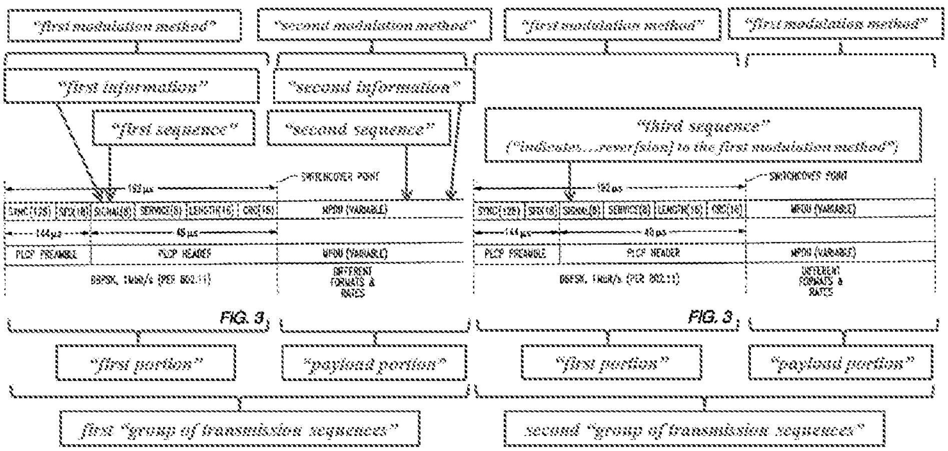
“The variable data may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and *while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly*.” Snell at 7:10-14.

Snell also discloses that the “SIGNAL” field in the header of the packet is modulated in a first modulation method and indicates the modulation type (*e.g.*, BPSK or QPSK, or alternatively, DBPSK or DQPSK) used for modulating the MPDU data portion. *See* Element 1.D.



Snell at Fig. 3 (annotated).[30]

</td></tr>
</table>

[30] Snell teaches communicating multiple data packets with the ability to “switch on-the-fly between different data rates and/or formats.” Based on this disclosure, a person of ordinary skill in the art would have understood that Snell teaches that a series of packets may be sent that switch from using a second modulation method to using a first modulation method for the payload portion of the data packet. For example, as shown in Figure 3 (annotated), a first packet in Snell comprises a “first sequence” (*e.g.*, PLCP preamble and PLCP header) that is “modulated according to the first modulation method” (*e.g.*, BPSK) where the “first sequence” (*e.g.*, “SIGNAL” field in PLCP header) “indicates” (*e.g.*, using “14h”) the modulation type (*e.g.*, QPSK) used for modulating the “second sequence” (*e.g.*, MPDU data). For the first packet, the “SIGNAL” field in the PLCP header uses a code (*e.g.*, “14h”) that “indicates” that the MPDU data is modulated “according to the second modulation method” (*e.g.*, QPSK). The “second modulation method” (*e.g.*, QPSK) “is of a different type than the first modulation method” (*e.g.*, BPSK).

Snell’s transceiver then transmits a second packet comprising a “third sequence” (*e.g.*, PLCP preamble and PLCP header) “transmitted in the first modulation method” (*e.g.*, BPSK) where the “third sequence” (*e.g.*, “SIGNAL” field in PLCP header) “indicates” (*e.g.*, using “0Ah”) the modulation type (*e.g.*, BPSK) used for modulating the MPDU data of the second packet. For the

'580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
	Kamerman[31] discloses reverting from a second modulation method to a first modulation method. ***See, e.g.*****, Kamerman at 6, 11, 12.** Kamerman discloses an automatic rate selection scheme for reverting (*e.g.*, falling back) from a "second modulation method" (*e.g.*, QPSK) corresponding to a higher data rate (*e.g.*, 2 Mbit/s) to a "first modulation method" (*e.g.*, BPSK) corresponding to a lower data rate (*e.g.*, 1 Mbit/s) after unacknowledged packet transmissions, for instance, where there is a high load in neighbor cells causing cochannel interference. "Then there is looked to *automatic rate control* to keep the cochannel interference at a tolerable level." Kamerman at 6. "IEEE 802.11 DS specifies bit rates of 1 and 2 Mbps. The allowable SNR and CSIR values for reliable transmission of data packets are dependent on the bit rate." Kamerman at 11. "IEEE 802.11 DS specifies BPSK and QPSK, in addition there could be applied proprietary modes with M-PSK and QAM schemes that provide higher bit rates by encoding more bits per symbol. . . . An automatic rate selection scheme based on the reliability of the individual uplink and downlink could be applied. The basic rate adaptation scheme could be: *after unacknowledged packet transmissions the rate falls back,* and after a number (e.g. 10) of successive correctly acknowledged packet transmissions the bit rate goes up." Kamerman at 11. "*At lower load in the neighbor cells the highest bit rate can be used more often. At higher load the transmissions from the accesspoint to stations at*

second packet, the "SIGNAL" field in the PLCP header uses a code (*e.g.*, "0Ah") that "indicates" that the MPDU data is modulated using the BPSK modulation method at 1 Mbit/s. This "SIGNAL" thus "indicates that communication" from the transceiver "has reverted to the first modulation method" (*e.g.*, reverted to BPSK modulation). In addition, transmitting the data using the "first modulation method" (*e.g.*, BPSK) results in a data rate of 1 Mbit/s which is lower than transmitting the data using the "second modulation method," which results in a data rate of 2 Mbit/s.

[31] As explained in Section III.D, a POSITA would have been motivated and found it obvious and straightforward to use Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method (*i.e.*, reverting to the first modulation method) in implementing Snell's system for communicating data packets modulated according to different modulation methods (as implemented using the teachings of Harris 4064.4, Harris AN9614, and Yamano).

’580 Patent Claim 2	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
	the outer part of the cells, will be done often at fallback rates due to mutilation of transmissions by interference. In practice the network load for LANs at nowadays client-server applications is very bursty, with sometimes transmission bursts over an individual links and low activity during the major part of the time. *Therefore the higher bit rate can be used during the most of the time, and at high load in the neighbor cells (as will evoked by test applications) there will be switched to fall back rates in the outer part of the cell.*” Kamerman at 11. “The application of proprietary bit rates of 3 and 4 Mbps in addition to the basic 1 and 2 Mbps, can be combined with an automatic rate selection. This automatic rate selection gives fall forward at reliable connections and *fall back at strong cochannel interference*.” Kamerman at 12.

’580 Patent Claim 59	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
58.[preamble] A communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave, the device comprising:	**To the extent this preamble is considered a limitation of the claim, Snell in view of Harris AN9614 discloses a communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave.** *See* Element 1.preamble.
[58.A] a transceiver, in the role of the master according to the master/ slave relationship,	**Snell in view of Harris AN9614 discloses a transceiver, in the role of the master according to the master/ slave relationship.** *See* Element 1.A
[58.B] capable of transmitting using at	**Snell discloses transmitting using at least two types of modulation methods, wherein the at least two types of modulation methods**

'580 Patent Claim 59	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method,	**comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method.** *See* Element 1.B.
[58.C] and wherein the transceiver is configured to transmit messages with: a first sequence, in the first modulation method, that indicates at least which of the first modulation method and the second modulation method is used for modulating a second sequence, wherein, in at least one message, the first sequence indicates an impending change from the first modulation method to the second modulation method, and	**Snell in view of Harris 4064.4 discloses that the transceiver is configured to transmit messages with: a first sequence, in the first modulation method, that indicates at least which of the first modulation method and the second modulation method is used for modulating a second sequence, wherein, in at least one message, the first sequence indicates an impending change from the first modulation method to the second modulation method.** *See* Elements 1.C, 1.D, 1.F.
[58.D] wherein the at least one message is addressed for an intended destination of the second	**Snell in view of Yamano discloses that at least one message is addressed for an intended destination of the second sequence.** *See* Element 1.E.

'580 Patent Claim 59	SNQ-2: Combined Disclosure of Snell in View of Harris 4064.4, Harris AN9614, Yamano, and Kamerman
sequence, and	
[58.E] the second sequence, modulated in accordance with the modulation method indicated by the first sequence and, in the at least one message, modulated using the second modulation method, wherein the second sequence is transmitted after the first sequence.	**Snell discloses that the second sequence [is] modulated in accordance with the modulation method indicated by the first sequence and, in the at least one message, modulated using the second modulation method, wherein the second sequence is transmitted after the first sequence.** *See* Element 1.G.
59. The device of claim 58, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.	**Snell in view of Kamerman discloses that the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.** *See* claims 1, 2.

E. SNQ-3: Unpatentability of Claims 2 and 59 Under 35 U.S.C. § 103 Over Snell, Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman

Requesters submit that the combined teachings of Snell (submitted herewith as Exhibit D), Harris 4064.4 (submitted herewith as Exhibit E), the Admitted Prior Art ('580 patent at 3:40-4:50, Figs. 1, 2), Upender (submitted herewith as Exhibit G), Yamano (submitted herewith as

Exhibit H), and Kamerman (submitted herewith as Exhibit I) raise a substantial new question of patentability with respect to claims 2 and 59 of the '580 patent, and that claims 2 and 59 of the '580 patent are unpatentable under 35 U.S.C. 103 as obvious over Snell in view of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman.[32]

A POSITA would have been motivated and found it obvious and straightforward to use Harris 4064.4's teachings of modulating the preamble and header portions of a data packet using DBPSK modulation and modulating the payload portion of the data packet using DBPSK or DQPSK modulation (as indicated by the SIGNAL field in the header portion) to advantageously provide for switching between DBPSK and DQPSK modulation types in implementing an IEEE 802.11 system (*see* Harris 4064.4 at 1, 3) such as disclosed in Snell. Harris 4064.4 is incorporated by reference into Snell (Snell at 5:13-17), both references are directed to the PRISM chipset and HSP 3824 baseband processor (Harris 4064.4 at 1; Snell at 1:47-63, 5:8-17, 5:31-33), and Harris 4064.4 is a publication of Harris Corporation, the same original assignee of Snell. It would have been routine and straightforward for a POSITA to use the teachings of Harris 4064.4 with the teachings of Snell, in light of the foregoing including Snell's express direction to apply the teachings of Harris 4064.4, and further because, in combination, each element (Harris 4064.4's teaching of modulating the preamble and header portions of a data packet using DBPSK modulation and modulating the payload portion of the data packet using DBPSK or DQPSK modulation and Snell's communication system for transmitting data packets modulated using different modulation methods) performs the same function as it would

[32] Requesters submit that, as set forth in SNQ-1, the Harris 4064.4 reference is incorporated by reference into Snell and, therefore, is part of the express disclosure of Snell. To the extent, however, that it is deemed that Harris 4064.4 should be treated as independent references from Snell, Requesters have set forth in SNQ-3 a detailed explanation as to why the Challenged Claims are invalid as obvious based on a combination of Snell, Harris 4064.4, the Admitted Prior Art, Upender, Yamano and Kamerman.

separately, yielding nothing more than predictable results. *KSR*, 550 U.S. at 417. A POSITA would have thus recognized that this combination (yielding the claimed limitation) would have worked as expected. For these reasons, a POSITA would have been motivated and found it obvious and straightforward to use Harris 4064.4's teachings in implementing Snell's communication system.

A POSITA would have been motivated and found it obvious and straightforward to use the Applicant's Admitted Prior Art of a master/slave communication system (*see* '580 patent at 3:40-4:50, Figs. 1, 2) in implementing Snell's communication system (as implemented in light of Harris 4064.4), because a polled (master/slave) communication system was a popular communication protocol with recognized benefits prior to the earliest claimed priority date. Snell is in the same field of art as the Admitted Prior Art, with both relating to a communication system among transceivers. *See, e.g.*, Snell at 1:34-46; Harris AN9614 at 3 (*see also* Snell at 5:2-7); '580 patent at 3:40-44. Snell further incorporates by reference Harris AN9614 (Snell at 5:2-7), which is an application note for the Harris PRISM chipset and HSP3824 baseband processor described in Snell. Harris AN9614 at 1 ("Using the *PRISM™ Chip Set*…"), 2 ("*The HSP3824* performs the baseband demodulation function."); Snell at 5:30-32 ("*The present invention provides an extension of the PRISM 1 product* …"), 5:11-13 ("*The conventional Harris PRISM 1 chip set includes* a low data rate DSS baseband processor available under the designation *HSP3824*). Harris AN9614 expressly teaches that the communications between Snell's transceivers may operate according to a "polled" (master/slave) protocol. *See, e.g.*, Harris AN9614 ("the controller can keep adequate time to operate either a *polled* or time allocated *scheme*."). Similarly, the admitted prior art in the '580 patent also describes using a "*polled* multipoint communication protocol," which is a master/tributary (*i.e.*, master/slave) system. ‘580 patent at 4:6-9. As shown in Fig. 1 below, the admitted prior art of the ‘580 patent discloses a master transceiver 24 that communicates with a plurality of tributary transceivers 26. ‘580 patent at 3:40-46, Fig. 1.

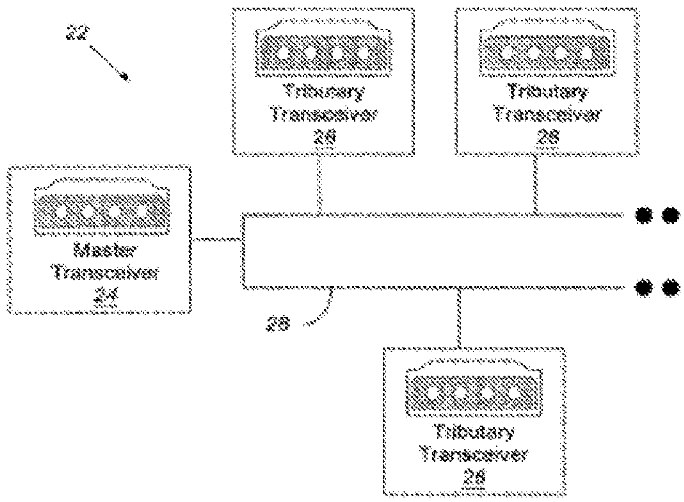


FIG. 1
Prior Art

‘580 patent, Fig. 1.

Upender is in the same field of art as Snell, with both relating to protocols for communications over a network. *See, e.g.*, Upender at 7 (“let’s examine various *commonly available media access protocols*”), 7 (“*In this protocol,* a centrally assigned master sends a polling message to the slave nodes, giving them explicit permission *to transmit on the network.*”). Upender further confirms that a person of ordinary skill in the art would be motivated to use a master/slave protocol with the teachings of Snell (as implemented in light of Harris 4064.4). Upender discusses a finite list of well-known communications protocols applicable for use in a network setting, including a polled (master/slave) protocol, and expressly teaches benefits of using a polled (master/slave) protocol. For example, Upender teaches that “*[p]olling is one of the more popular protocols* for embedded systems *because of its simplicity* *and determinacy*. In this protocol, a centrally assigned master periodically polls the slave nodes for information." Upender at 7; *see also* IPR2014-00518, Pap. 47 at 15-16 (citing Upender at 7 and finding that "Upender teaches that master/slave protocols were widely used and a good choice for simple systems"); '580 Prosecution History at 404-405; IPR2014-00518, Ex. 1220 (Declaration of David Goodman) ¶¶92-104. While Upender discloses tradeoffs of using a master/slave protocol as compared with other communication protocols (*see* Upender at 11, Table 1), to the extent Patent Owner incorrectly argues that discussion of these tradeoffs is a teaching away, this should be rejected as Upender expressly teaches that a protocol for a particular application should be selected in light of the respective costs and benefits of available protocols, nothing that the discussion of the strengths and weaknesses of the different protocols "should allow you to select the best protocol to match your needs"; thus, it does not teach away from using the master/slave protocol. Upender at 10-11; *see also* IPR2014-00518, Pap. 47 at 16 (citing Upender at 10-11 and finding that Upender does not "teach away" from using the master/slave protocol); '580 Prosecution History at 405. Upender's express teaching that a polled (master/slave) protocol is advantageous for its "simplicity and determinacy," would have motivated a POSITA to use such a protocol in implementing Snell's communication system, particularly in any system in which simplicity and determinacy are important considerations. Upender at 7; *see also* IPR2014-00518, Pap. 47 at 15-17; '580 Prosecution History at 404-406. Upender further teaches that a polled (master/slave) protocol is "*ideal for a centralized data-acquisition system* where peer-to-peer communication and global prioritization are not required," such as Snell's centralized data-acquisition system comprising an access point transceiver supporting a group of transceivers which does not require communicating using peer-to-peer communication or global prioritization. *See* Snell at 1:34-46.

In addition, the Admitted Prior Art demonstrates that polled (master/slave) protocols were well-known (*see* '580 patent at 3:40-44), as also further confirmed by Upender (*see* Upender at 7 ("let's examine various *commonly available media access protocols*"), 7 ("*polling [(master/slave)] is one of the more popular protocols*"), and thus implementing a polled (master/slave) protocol in Snell's transceiver (as implemented in light of Harris 4064.4), which serves as an access point to support communications with multiple other transceivers and is also operable according to a polled (master/slave) protocol, would involve nothing more than using common and known techniques to improve a similar system in the same way to yield predictable results. *KSR*, 550 U.S. at 416. A POSITA would have thus recognized that this combination (yielding the claimed limitation) would have worked as expected. For these reasons, a POSITA would have been motivated and found it obvious and straightforward to implement the admitted prior art of a master/slave communication system in implementing Snell's system (as implemented in light of Harris 4064.4).

It was well-known in the art, as demonstrated by Yamano, that packets can be advantageously addressed for an intended destination. A POSITA would have been motivated and found it obvious and straightforward to use Yamano's teaching of including a destination address in the data packet in implementing Snell's teachings of a communication system for transmitting data packets (as implemented in light of Harris 4064.4 and the Admitted Prior Art) to advantageously specify which receiver the data is intended for and to beneficially reduce processing requirements of receiving devices by allowing the receiving device to filter out packets which it does not need to demodulate. Snell and Yamano are in the same field of art, with both relating to transmitting data packets over a network (*see, e.g.*, Snell at 1:55-58, 2:61-63, 2:66-3:3, 5:18-21, 6:48-63, Fig. 3; Yamano at 1:1-29, 19:54-20:33, Fig. 8), at varying rates (*see, e.g.*, Snell at 2:15-17, 6:52-59; Yamano at 19:54-56). Yamano expressly teaches that including a destination address in the preamble portion of the data packet, which precedes the data portion, will advantageously reduce processing requirements of receiving devices because the receiving device can filter out packets which it does not need to demodulate. Yamano at 20:54-59 ("When the preamble in a burst-mode packet *includes the destination address of the packet*, the receiver circuits can monitor the destination address of the packet, and in response, filter packets which do not need to be demodulated, thereby reducing the processing requirements of the receiver circuits."). In addition, Snell teaches structuring its data packet to include a preamble, header, and MPDU data portion (*see, e.g.*, Snell at 6:35-36, 6:64-66, 7:5-14, Fig. 3), and Yamano teaches structuring its data packet to also include a preamble and data portion, and to place the destination address in the preamble portion (Yamano at 19:63-20:7, Fig. 8). It would have been routine and straightforward for a POSITA to include a destination address in the data packet, as taught by Yamano, in implementing Snell's system for transmitting data packets between transceivers (as implemented in light of Harris 4064.4 and the Admitted Prior Art), as Snell teaches that its data packet already includes a preamble portion—and in combination, each element (Yamano's teaching of placing a destination address in the preamble and Snell's teaching of a system for communicating data packets modulated according to different modulation methods between transceivers) performs the same function as it would separately, yielding nothing more than predictable results. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). A POSITA would have thus recognized that this combination (yielding the claimed limitation) would have worked as expected. For these reasons, a POSITA would have been motivated and found it obvious and straightforward to use Yamano's advantageous teachings of including a destination address in the data packet in implementing Snell's communication system (as implemented in light of Harris 4064.4 and the Admitted Prior Art).

It was also well-known in the art, as demonstrated by Kamerman, to transmit a first data packet where the data is modulated using a second modulation method, such as QPSK (corresponding to a higher data transfer rate), and to next transmit a second data packet where the data is modulated using a first modulation method, such as BPSK (corresponding to a lower data transfer rate) (*i.e.*, to revert to the first modulation method). A POSITA would have been motivated and found it obvious and straightforward to use Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method in implementing Snell's system for communicating data packets modulated according to different modulation methods (implemented using the teachings of Harris 4064.4, the Admitted Prior Art, and Yamano, as discussed above) to advantageously maximize the data transfer rate and adapt to changing channel conditions (as also taught by Kamerman). In particular, Kamerman expressly teaches that it is beneficial to transmit the data of a first data packet using a second modulation method corresponding to a higher data transfer rate (*e.g.*, QPSK modulation at 2 mbps) during lower load conditions to maximize the data transfer rate during lower load conditions when the connection is more reliable and to next transmit the data of a second data packet using a first modulation method corresponding to a lower data transfer rate (*e.g.*, BPSK modulation at 1 mbps) (*i.e.*, falling back) during higher load conditions when a more robust signal is needed due to "mutilation of transmissions by interference." *See* Kamerman at 6 ("Then there is looked to *automatic rate control* to keep the cochannel interference at a tolerable level."), 11 ("The basic rate adaptation scheme could be: *after unacknowledged packet transmissions the rate falls back*, and after a number (*e.g.* 10) of successive correctly acknowledged packet transmissions the bit rate goes up."), 11 ("At lower load in the neighbor cells the highest bit rate can be used more often. At higher load the transmissions from the accesspoint to stations at the outer part of the cells, *will be done at fallback rates due to mutilation of transmissions by interference.* In practice the network load for LANs at nowadays client-server applications is very bursty, with sometimes transmission bursts over an individual links and low activity during the major part of the time. *Therefore the higher bit rate can be used during the most of the time, and at high load in the neighbor cells ... there will be switched to fall back rates in the outer part of the cell.*"), 12 ("This automatic rate selection gives fall forward at reliable connections and fall back at strong cochannel interference. Therefore it gives adaptation of the bit rate to the interference as it occurs in time depending on positions as load.").

Moreover, Snell and Kamerman are in the same field of art, with both relating to communications between transceivers that use BPSK and QPSK modulation methods to transfer data at different rates according to the draft IEEE 802.11 standard available at that time. *See, e.g.*, Snell at 1:47-63 ("The assignee of the present invention has developed and manufactured a set of integrated circuits for a WLAN under the mark PRISM 1 *which is compatible with the proposed IEEE 802.11 standard*…."), 5:31-33 ("The present invention provides an extension of the PRISM 1 product from *1 Mbit/s BPSK and 2 Mbit/s QPSK*…"); Kamerman at 6 ("This paper considers the critical parameters for *wireless LANs that operate conform to the IEEE 802.11 DSSS (direct sequence spread spectrum) standard*…"), 11 ("IEEE 802.11 DS specifies bit rates of 1 and 2 Mbps.", 11 ("IEEE 802.11 DS specifies BPSK and QPSK…"). It would have been routine and straightforward for a POSITA to use Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method (*i.e.*, reverting to the first modulation method) in implementing Snell's system (implemented in light of Harris 4064.4, the Admitted Prior Art, and Yamano) for communicating data packets modulated according to different modulation methods, as both Snell and Kamerman are directed to IEEE 802.11 systems utilizing QPSK and BPSK modulation methods corresponding, respectively, to higher and lower data transfer rates—and in combination, each element (Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method and Snell's system for communicating data packets modulated according to different modulation methods) performs the same function as it would separately, yielding nothing more than predictable results. *KSR*, 550 U.S. at 417. A POSITA would have thus recognized that this combination (yielding the claimed limitation) would have worked as expected. For these reasons, a POSITA would have been motivated and found it obvious and straightforward to implement Kamerman's advantageous teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method (*i.e.*, reverting to the first modulation method) in implementing Snell's system (implemented in light of Harris 4064.4, the Admitted Prior Art, and Yamano) for communicating data packets modulated according to different modulation methods.

The combination of Snell, Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman shows or renders obvious each and every element of the inventions of claims 2 and 59. The relevant teachings of the combination of Snell, Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman were not considered during the prior examination of the '580 patent and a reasonable Examiner would consider these disclosures important in determining whether or not the claims are patentable.

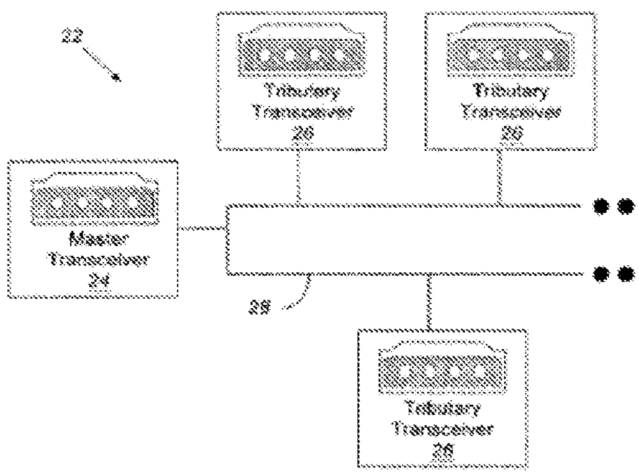
Therefore, the combination of Snell, Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman raises a substantial new question of patentability with respect to claims 2 and 59 of the '580 patent (SNQ-3) and presents new technological teachings not previously considered in connection with prosecution of the '580 patent. MPEP § 2216. Accordingly, Requesters propose that claims 2 and 59 should be rejected under § 103 as rendered obvious by Snell in view of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman.

The following claim chart demonstrates, in further detail, how each limitation is, at a minimum, obvious in light of Snell, Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman.

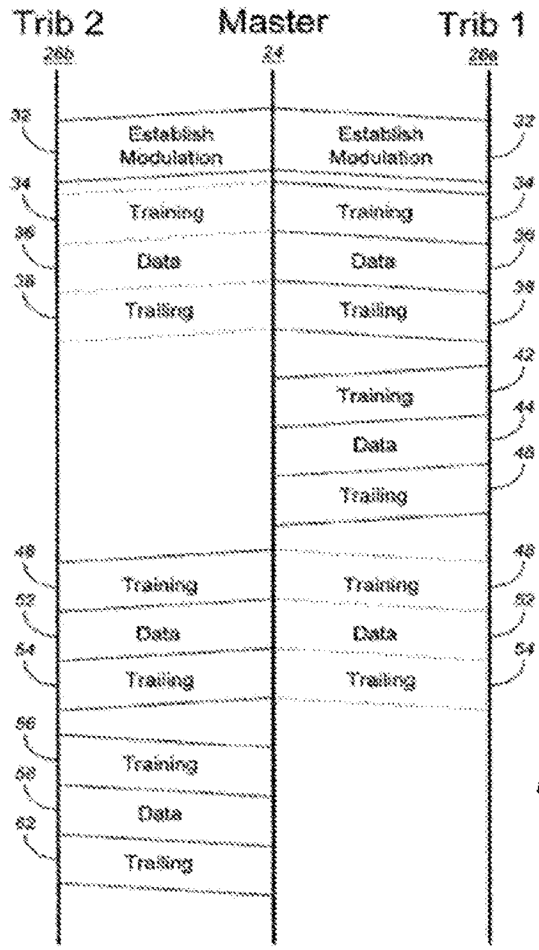
'580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
1.[preamble] A communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave, the device comprising:	**To the extent this preamble is considered a limitation of the claim, Snell in view of the Admitted Prior Art discloses a communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave. *See, e.g.*, Snell at 1:34-46, 1:47-50, 1:55-57, 2:27-30, 4:42-47, 5:18-21; Harris AN9614 at 3.** For example, Snell discloses a transceiver that serves as an access point for communicating data with other transceivers connected to a wireless local area network (WLAN). "In a typical WLAN, *an access point provided by a transceiver*, that is, a combination transmitter and receiver, connects to the wired network from a fixed location. Accordingly, the access transceiver receives, buffers, and transmits data between the WLAN and the wired network. *A single access transceiver can support a small group of collocated users within a range of less than about one hundred to several hundred feet. The end users connect to the WLAN through transceivers* which are typically implemented as PC cards in a notebook computer, or ISA or PCI cards for desktop computers. Of course the transceiver may be integrated with any

'580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
	device, such as a hand-held computer." Snell at 1:34-46. "Like the HSP3824 baseband processor, the high data rate baseband processor 40 of the invention contains all of the functions necessary for a full or half duplex packet baseband *transceiver*." Snell at 5:18-21. "The PRISM 1 chip set provides all the functions necessary for full or half duplex, direct sequence spread spectrum, *packet communications* at the 2.4 to 2.5 GHz ISM radio band." Snell at 1:55-57. *See also, e.g.,* Snell at 2:27-30 ("It is another object of the invention to provide *a spread spectrum transceiver* and associated method to permit operation at higher data rates and which may switch on-the-fly between different data rates and/or formats."); Snell at 1:47-50 ("The assignee of the present invention has developed and manufactured a set of integrated circuits for a WLAN under the mark PRISM 1 which is compatible with the proposed IEEE 802.11 standard."); Snell at 4:42-47 ("Referring to FIG. 1, a *wireless transceiver 30* in accordance with the invention is first described. The *transceiver 30 may be readily used for WLAN applications* in the 2.4 GHZ ISM band in accordance with the proposed IEEE 802.11 standard. Those of skill in the art will readily recognize other applications for the transceiver 30 as well."). Snell incorporates by reference Harris AN9614,[33] which discloses: "[T]he controller can keep adequate time to operate either a polled or a time allocated scheme. In these modes, the radio is powered off most of the time and only awakens when communications is expected. This station would be awakened periodically to listen for a beacon transmission. The beacon serves to reset the timing and to alert the radio to traffic. If traffic is waiting, the radio is instructed when to listen and for how long. In a polled scheme, the remote radio can respond to the poll with its traffic if it has any. With these techniques, the average power consumption of the radio can be reduced by more than an order of magnitude while meeting all data transfer objectives." Harris AN9614 at

[33] Snell expressly incorporates by reference "the entire disclosure" of Harris AN9614 (Snell at 5:2-7). *See Harari v. Lee*, 656 F.3d 1331, 1335-36 (Fed. Cir. 2011) ("the entire '579 application disclosure was incorporated by the broad and unequivocal language: 'The disclosures of the two applications are hereby incorporate[d] by reference.'"); *see also Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed.Cir.2000) ("material not explicitly contained in the single, prior art document may still be considered for purposes of anticipation if that material is incorporated by reference into the document.").

'580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
	3. **Applicants' Admitted Prior Art[34] discloses a communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave. *See, e.g.*, '580 at 3:40-4:50, Fig. 1, Fig. 2.** For example, the '580 Patent discloses a prior art system with master and tributary (slave) transceivers, as shown in Figures 1 and 2 (depicted below).  **FIG. 1** **Prior Art** '580 at Fig. 1.

[34] In IPR2014-00518, the Board found that the '580's disclosed multipoint communication systems or master/slave systems, depicted in '580 patent, Figures 1 and 2 and 3:40-4:50 is material that may be used as prior art against the patent under §103. IPR2014-00518, Pap. 47 (Final Written Decision) at 13; As explained in Section III.E, a POSITA would have been motivated and found it obvious and straightforward to use the Applicant's Admitted Prior Art of a master/slave communication system (*see* '580 patent at 3:40-4:50, Figs. 1, 2) in implementing Snell's communication system (as implemented in light of Harris 4064.4).

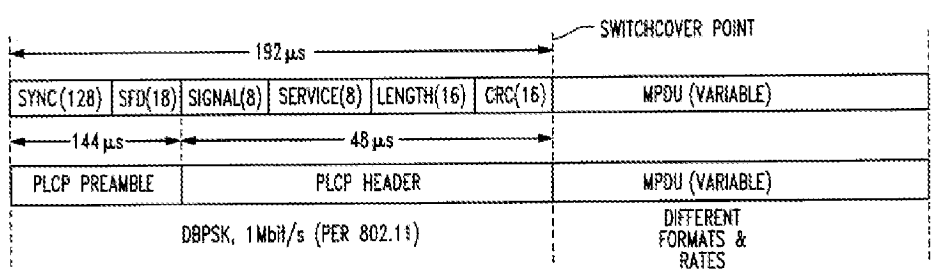
<table>
<tr><th>'580 Patent Claim 2</th><th>SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman</th></tr>
<tr><td></td><td>

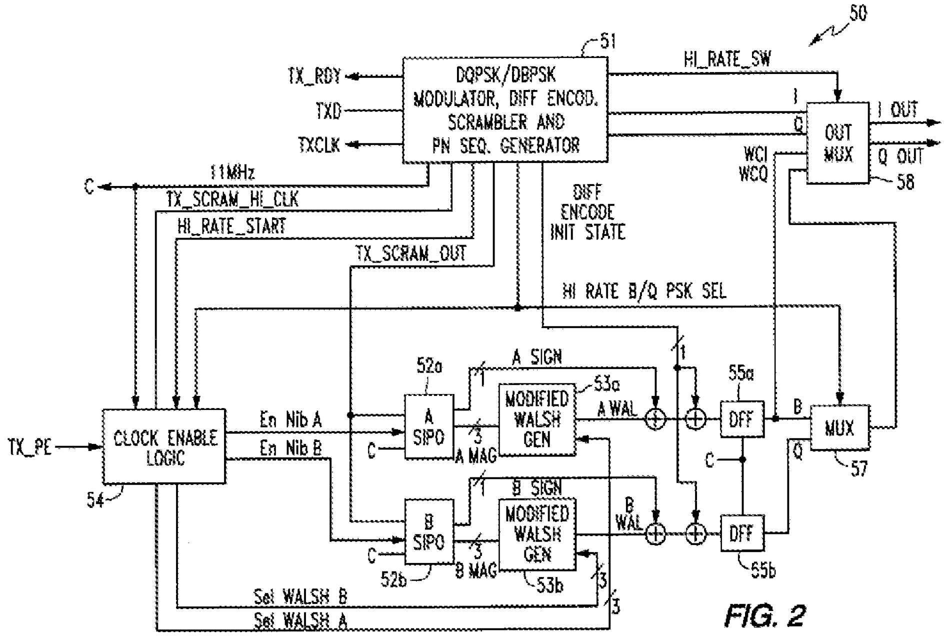
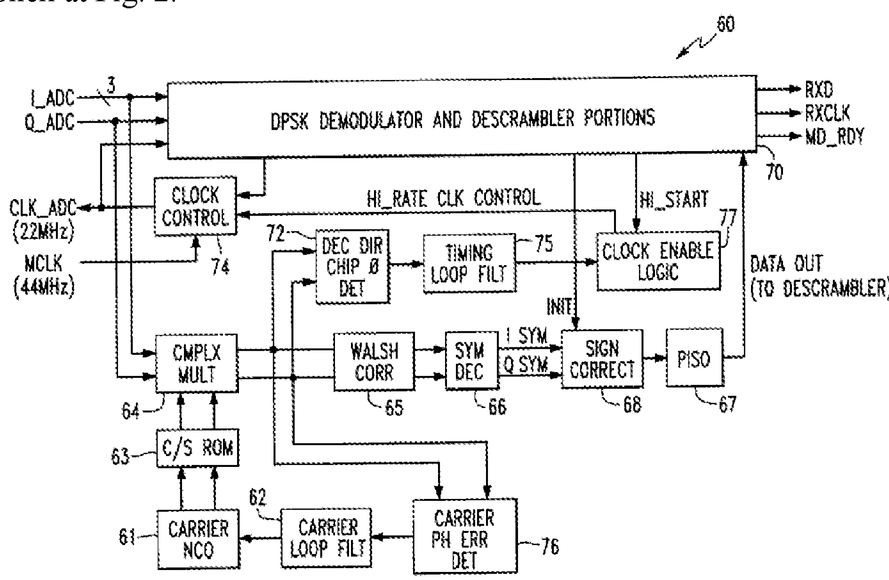
'580 at Fig. 2.
"With reference to FIG. 1, a prior art multipoint communication system 22 is shown to comprise a master modem or transceiver 24, which communicates with a plurality of tributary modems (tribs) or transceivers 26-26 over communication medium 28. Note that all tribs 26-26 are identical in that they share a common modulation method with the master transceiver 24. Thus, before any communication can begin in multipoint system 22, the master transceiver and the tribs 26-26 must agree on a common modulation method. If a common modulation method is found, the master transceiver 24 and a single trib 26 will then exchange sequences of signals that are particular subsets of all signals that can be communicated via the agreed upon common modulation method. These sequences are commonly referred to as training signals and can be used for the following purposes: 1) to confirm that the common modulation method is available, 2) to establish received signal level compensation, 3) </td></tr>
</table>

'580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
	to establish time recovery and/or carrier recovery, 4) to permit channel equalization and/or echo cancellation, 5) to exchange parameters for optimizing performance and/or to select optional features, and 6) to confirm agreement with regard to the foregoing purposes prior to entering into data communication mode between the users. In a multipoint system, the address of the trib with which the master is establishing communication is also transmitted during the training interval. At the end of a data session a communicating pair of modems will typically exchange a sequence of signals known as trailing signals for the purpose of reliably stopping the session and confirming that the session has been stopped. In a multipoint system, failure to detect the end of a session will delay or disrupt a subsequent session. Referring now to FIG. 2, an exemplary multipoint communication session is illustrated through use of a ladder diagram. *This system uses polled multipoint communication protocol. That is, a master controls the initiation of its own transmission to the tribs and permits transmission from a trib only when that trib has been selected.* At the beginning of the session, the master transceiver 24 establishes a common modulation as indicated by sequence 32 that is used by both the master 24 and the tribs 26a, 26b for communication. Once the modulation scheme is established among the modems in the multipoint system, The master transceiver 24 transmits a training sequence 34 that includes the address of the trib that the master seeks to communicate with. In this case, the training sequence 34 includes the address of trib 26a. As a result, trib 26b ignores training sequence 34. After completion of the training sequence 34, master transceiver 24 transmits data 36 to trib 26a followed by trailing sequence 38, which signifies the end of the communication session. Similarly, with reference to FIG. 8, the sequence 170 illustrates a Type A modulation training signal, followed by a Type A modulation data signal. Note that trib 26b ignores data 36 and trailing sequence 38 as it was not requested for communication during training sequence 34. At the end of trailing sequence 38, trib 26a transmits training sequence 42 to initiate a communication session with master transceiver 24. *Because master transceiver 24 selected trib 26a for communication as part of training sequence 34, trib 26a is the only modem that will return a transmission.* Thus, trib 26a transmits data 44 destined for master transceiver 24 followed by trailing sequence 46 to terminate the communication session. *The foregoing procedure is repeated except master transceiver identifies trib 26b in training sequence 48. In this case, trib 26a ignores the training sequence 48 and the subsequent transmission of data 52 and trailing*

'580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
	sequence 54 because it does not recognize its address in training sequence 48. Master transceiver 24 transmits data 52 to trib 26b followed by trailing sequence 54 to terminate the communication session. Similarly, with reference to FIG. 8, sequence 172 illustrates a Type A modulation signal, with notification of a changes to Type B, followed by a Type B modulation data signal. To send information back to master transceiver 24, trib 26b transmits training sequence 56 to establish a communication session. *Master transceiver 24 is conditioned to expect data only from trib 26b because trib 26b was selected as part of training sequence 48.* Trib 26b transmits data 58 to master transceiver 24 terminated by trailing sequence 62." '580 at 3:40-4:50.
[1.A] a transceiver, in the role of the master according to the master/ slave relationship,	**Snell in view of the Admitted Prior Art discloses a transceiver, in the role of the master according to the master/ slave relationship.** *See* Element 1.preamble.
[1.B] for sending at least transmissions modulated using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method,	**Snell discloses a transceiver for sending at least transmissions modulated using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method.[35] *See, e.g.*, Snell at Abstract, 1:58-61, 2:56-59, 2:61-3:5, 6:64-66, 7:6-8, Figs. 2, 3, 5; Harris 4064.4 at 14-16.** For example, Snell discloses that transmissions are modulated using a "first modulation method" (*e.g.*, BPSK) and a "second modulation method" (*e.g.*, QPSK) that is of a different "type" than the "first modulation method." "The modulator preferably comprises means for operating *in one of a bi-phase PSK (BPSK) modulation mode* at a first data rate defining a first format, and *a quadrature PSK (QPSK) mode* at a second data rate defining a second format." Snell at 2:56-59. "In particular, the HSP3824 baseband processor manufactured by Harris

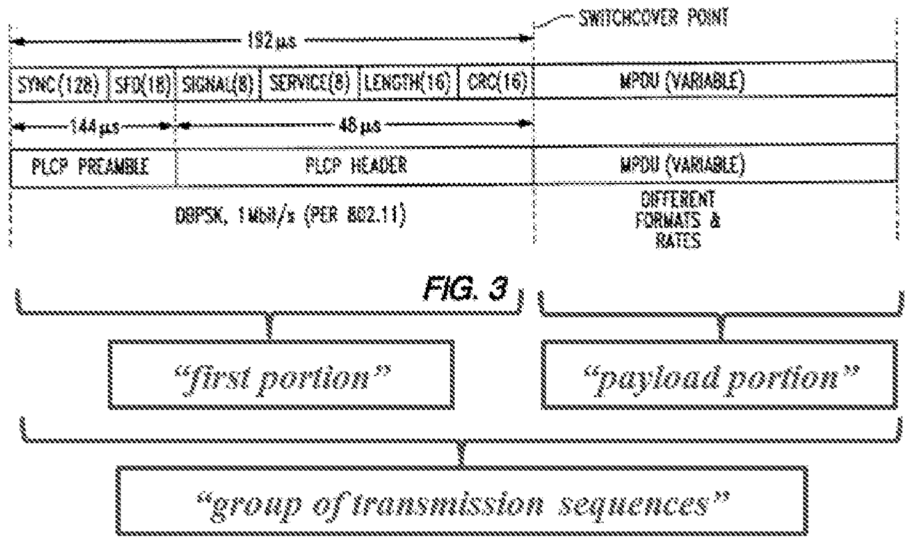
[35] In IPR2014-00518, the Board construed the limitation "different 'types' of modulation methods" in '580 claims 1 and 58 to mean "modulation methods that are incompatible with each other" and found that "two modulation methods that are based on varying the same one of the frequency, amplitude, or phase of the carrier wave may be different 'types' of modulation methods." IPR2014-00518, Pap. 47 (Final Written Decision) at 12. The Board also found that the "DQPSK … modulation method[] [is] incompatible with DBPSK modulation." *Id.* at 18.

’580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
	Corporation *employs quadrature or bi-phase phase shift keying (QPSK or BPSK) modulation schemes*.” Snell at 1:58-61. *See also, e.g.*, Snell at Abstract (“The modulator and demodulator are each preferably operable *in one of a bi-phase PSK (BPSK) mode* at a first data rate and *a quadrature PSK (QPSK) mode* at a second data rate. These formats may also be switched on-the-fly in the demodulator.”), 2:15-17 (“Moreover, a WLAN application, for example, may require a change between *BPSK and QPSK* during operation, that is, on-the-fly.”). Snell describes that the “first modulation method” may be BPSK and the “second modulation method” may be QPSK, which is “of a different type than the first modulation method,” and alternatively describes that the “first modulation method” may be differential BPSK (“DBPSK”) and that the “second modulation method” may be differential QPSK (“DQPSK”), which is also “of a different type than the first modulation method.” Thus, Snell alternatively discloses modulating the PLCP preamble and PLCP header using DBPSK modulation, and modulating the MPDU data using DBPSK or DQPSK modulation. “*The PLCP preamble and PLCP header are* always at 1 Mbit/s, *Diff encoded*, scrambled and spread with an 11 chip barker.” Snell at 6:64-66. “The modulator may also preferably include header modulator means for modulating data packets to include *a header at a predetermined modulation and a third data rate defining a third format*.... *The third format is preferably differential BPSK*.” Snell at 2:61-3:5. “The reference phase for the first symbol of the *MPDU* is the output phase of the last symbol of the header *for Diff Encoding*.” Snell at 7:6-8.  *FIG. 3* Snell at Fig. 3.

’580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
	FIG. 2 Snell at Fig. 2. FIG. 5

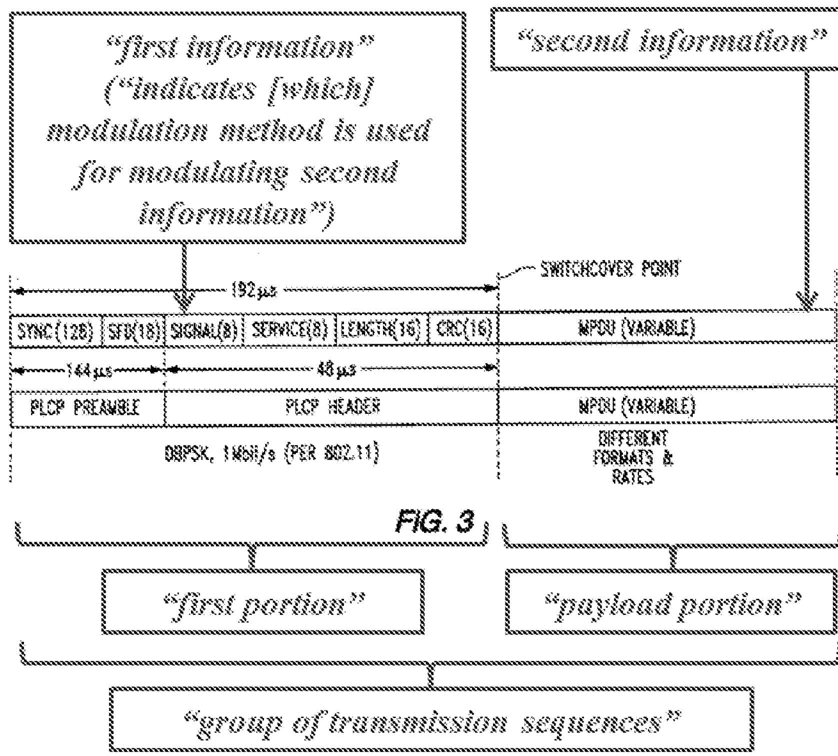
'580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
	Snell at Fig. 5. Snell incorporates by reference Harris 4064.4,[36] which discloses: "The preamble and header are always transmitted as *DBPSK* waveforms while the data packets can be configured to be *either DBPSK or DQPSK*." Harris 4064.4 at 14. "The HSP3824 transmitter is designed as a Direct Sequence Spread Spectrum *DBPSK/DQPSK modulator*." Harris 4064.4 at 14. "The modulator is capable of switching rate automatically in the case where the preamble and header information are DBPSK modulated, and the data is DQPSK modulated." Harris 4064.4 at 14. *See also, e.g.*, Harris 4064.4 at 15 ("The preamble is always transmitted as a *DBPSK* waveform with a programmable length of up to 256 symbols long."); Harris 4064.4 at 15 ("Signal Field (8 Bits) - This field indicates whether the data packet that follows the header is modulated as *DBPSK or DQPSK*. In mode 3 the HSP3824 receiver *looks at the signal field to determine whether it needs to switch from DBPSK demodulation into DQPSK demodulation* at the end of the always DBPSK preamble and header fields."); Harris 4064.4 at 16 ("Mode 3 - In this mode the preamble is programmable up to 256 bits (all 1's). The header in this mode is using all available fields. In mode 3 the signal field defines the modulation type of the data packet (DBPSK or DQPSK) so the receiver does not need to be preprogrammed to anticipate one or the other. In this mode the device checks the Signal field for the data packet modulation and it switches to DQPSK if it is defined as such in the signal field. Note that the preamble and header are always DBPSK the modulation definition applies only for the data packet.").
[1.C] wherein each transmission comprises a group of transmission sequences, wherein each group of	**Snell discloses each transmission comprises a group of transmission sequences, wherein each group of transmission sequences is structured with at least a first portion and a payload portion. *See, e.g.*, Snell at 6:35-36, 6:64-66, 7:5-14, Fig. 3.** For example, Snell discloses transmitting a group of transmission

[36] *See supra* n.32. As explained in Section III.E, a POSITA would have been motivated and found it obvious and straightforward to use Harris 4064.4's teachings of modulating the preamble and header portions of a data packet using DBPSK modulation and modulating the payload portion of the data packet using DBPSK or DQPSK modulation in implementing an IEEE 802.11 system such as disclosed in Snell.

'580 Patent Claim 2	**SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman**
transmission sequences is structured with at least a first portion and a payload portion	sequences structured with a "first portion" including the PLCP preamble and PLCP header and a "payload portion" including the MPDU data (as depicted in Figure 3 below)  Snell at Fig. 3 (annotated). "The *header* may always be BPSK." Snell at 6:35-36. "*The PLCP preamble and PLCP header* are always at 1 Mbit/s, Diff encoded, scrambled and spread with an 11 chip barker." Snell at 6:64-66. "*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. *The variable data* may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at 7:5-14.
[1.D] wherein first information in the first portion indicates at least which of the first modulation method and the second modulation method is used for	**Snell discloses that first information in the first portion indicates at least which of the first modulation method and the second modulation method is used for modulating second information in the payload portion.** ***See, e.g.,*** **6:35-36, 6:52-59, 6:64-66, 7:1-2, 7:5-14; Harris 4064.4 at 15-16, Fig. 10.** For example, Snell discloses that the "SIGNAL" in the PLCP Header indicates (*e.g.*, using "OAh," "14h,"…) the modulation type (*e.g.*, BPSK

<table>
<tr><th>’580 Patent Claim 2</th><th>SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman</th></tr>
<tr><td>modulating second information in the payload portion,</td><td>

or QPSK, or alternatively, DBPSK or DQPSK) used for modulating the MPDU data portion.



Snell at Fig. 3 (annotated).

“The *header* may always be BPSK.” Snell at 6:35-36.

“*The PLCP preamble and PLCP header* are always at 1 Mbit/s, Diff encoded, scrambled and spread with an 11 chip barker.” Snell at 6:64-66.

“Now relating to the *PLCP header* 91, *the SIGNAL* is:

0Ah	1 Mbit/s BPSK,
14h	2 Mbit/S QPSK,
37h	5.5 Mbit/s BPSK, and
6Eh	11 Mbit/s QPSK.

”

Snell at 6:52-59.

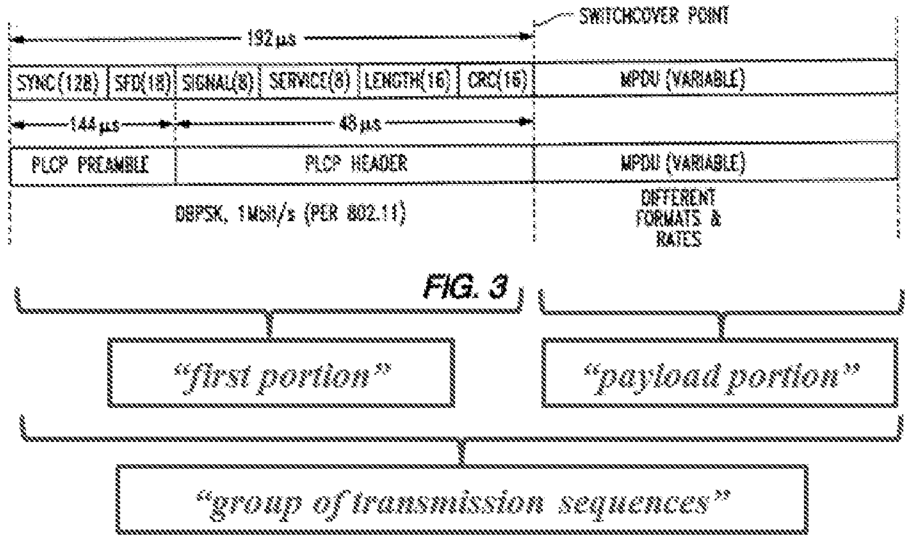
“SIGNAL is indicated by 2 control bits and then formatted as described.” Snell at 7:1-2.

</td></tr>
</table>

'580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
	"*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. *The variable data may be modulated and demodulated in different formats* than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at 7:5-14. Snell incorporates by reference Harris 4064.4,[37] which discloses: "*Signal Field (8 Bits) - This field indicates whether the data packet that follows the header is modulated as DBPSK or DQPSK*. In mode 3 the HSP3824 receiver looks at the signal field to determine whether it needs to switch from DBPSK demodulation into DQPSK demodulation at the end of the always DBPSK preamble and header fields." Harris 4064.4 at 15. "In mode 3 *the signal field defines the modulation type of the data packet (DBPSK or DQPSK)* so the receiver does not need to be preprogrammed to anticipate one or the other. In this mode the device checks the Signal field for the data packet modulation and it switches to DQPSK if it is defined as such in the signal field. Note that the preamble and header are always DBPSK the modulation definition applies only for the data packet." Harris 4064.4 at 16. *See also, e.g.*, Harris 4064.4 at FIGURE 10.
[1.E] wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion, and	**Snell in view of Yamano discloses that at least one group of transmission sequences is addressed for an intended destination of the payload portion. *See, e.g.*, 6:35-36, 6:64-66, 7:5-14, Fig. 3; Harris 4064.4 at 14.** For example, Snell discloses that the transceiver transmits a group of transmission sequences (including a PLCP Preamble and PLCP header, and MPDU data) to another transceiver.

[37] *See supra* n.36.

<table>
<tr><th>’580 Patent Claim 2</th><th>SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman</th></tr>
<tr><td></td><td>



Snell at Fig. 3 (annotated).

“The *header* may always be BPSK.” Snell at 6:35-36.

“The *PLCP preamble and PLCP header* are always at 1 Mbit/s, Diff encoded, scrambled and spread with an 11 chip barker.” Snell at 6:64-66.

“*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. *The variable data* may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly.” Snell at 7:5-14.

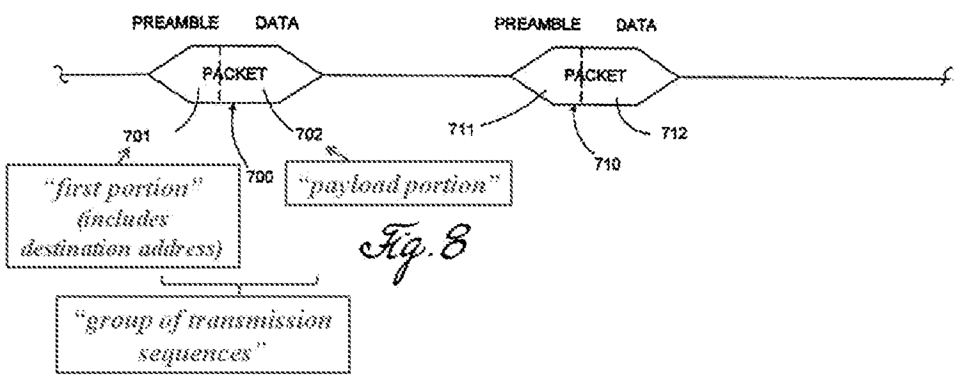
Snell incorporates by reference Harris 4064.4,[38] which discloses:

“The *preamble and header* are always transmitted as DBPSK waveforms while the *data packets* can be configured to be either DBPSK or DQPSK.” Harris 4064.4 at 14.

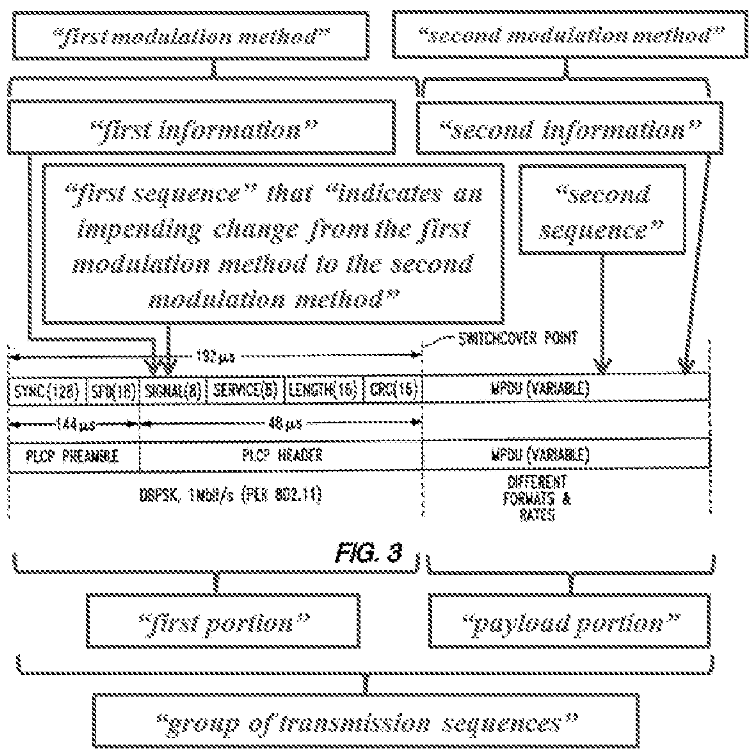
Yamano[39] discloses at least one group of transmission sequences is addressed for an intended destination of the payload portion. *See, e.g.*, Yamano at 19:63-64, 20:1-7, 20:54-59, Fig. 8.

</td></tr>
</table>

[38] *See supra* n.32.

'580 Patent Claim 2	**SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman**
	For example, Yamano discloses transmitting a group of transmission sequences, including a preamble and main body, and that the preamble includes a destination address "for an intended destination of the payload portion." "*Packet 700* includes a *preamble 701* and a *main body 702*." Yamano at 19:63-64. "For example, *preamble 701* can include information which identifies: (1) a version or type field for the preamble, (2) *packet source and destination addresses*, (3) the line code (i.e., the modem protocol being used), (4) the data rate, (5) error control parameters, (6) packet length and (7) a timing value for the expected reception slot of a subsequent packet." Yamano at 20:1-7 (emphasis added).  Yamano at Figure 8 (annotated). "When the preamble in a burst-mode packet *includes the destination address of the packet*, the receiver circuits can monitor the destination address of the packet, and in response, filter packets which do not need to be demodulated, thereby reducing the processing requirements of the receiver circuits." Yamano at 20:54-59.
[1.F] wherein for the at least one group of transmission sequences: the first	**Snell in view of Harris 4064.4 discloses for the at least one group of transmission sequences, the first information for said at least one group of transmission sequences comprises a first sequence, in the first portion and modulated according to the first modulation**

[39] As explained in Section III.E, a POSITA would have been motivated and found it obvious and straightforward to use Yamano's teaching of including a destination address in the data packet in implementing Snell's teachings of a communication system for transmitting data packets (as implemented in light of Harris 4064.4 and the Admitted Prior Art).

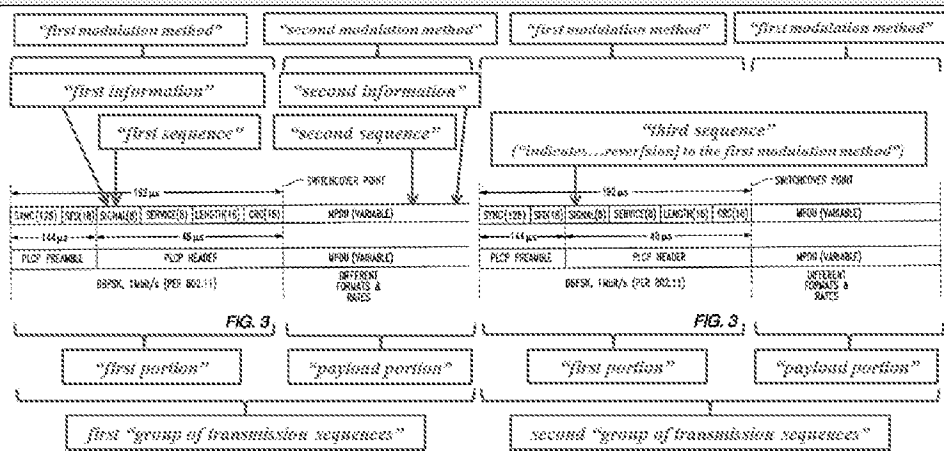
'580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
information for said at least one group of transmission sequences comprises a first sequence, in the first portion and modulated according to the first modulation method, wherein the first sequence indicates an impending change from the first modulation method to the second modulation method, and	**method, wherein the first sequence indicates an impending change from the first modulation method to the second modulation method.** ***See, e.g.*****, Snell at 2:61-3:5, 6:35-36, 6:52-59, 6:64-66, 7:1-2, 7:5-14, Figs. 2, 3, 5; Harris 4064.4 at 15-16, Fig. 10.** For example, Snell discloses that the "first information" (*e.g.*, PLCP preamble and PLCP header) comprises a "first sequence (*e.g.*, "SIGNAL" field in PLCP header) "modulated according to a first modulation method" (*e.g.*, BPSK). The "SIGNAL" field "indicates" (*e.g.*, using "14h") "an impending change from the first modulation method" (*e.g.*, BPSK) "to the second modulation method" (*e.g.*, QPSK).  Snell at Fig. 3 (annotated). "The *header may always be BPSK*." Snell at 6:35-36. "Now relating to the *PLCP header* 91, *the SIGNAL* is:

'580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
	0Ah 1 Mbit/s BPSK, 14h 2 Mbit/S QPSK, 37h 5.5 Mbit/s BPSK, and 6Eh 11 Mbit/s QPSK. " Snell at 6:52-59. "SIGNAL is indicated by 2 control bits and then formatted as described." Snell at 7:1-2. "*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. *The variable data may be modulated and demodulated in different formats* than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at 7:5-14. Snell describes that the "first modulation method" may be BPSK and the "second modulation method" may be QPSK, which is of a different "type" than the first modulation method, and alternatively describes that the "first modulation method" may be differential BPSK ("DBPSK") and that the "second modulation method" may be differential QPSK ("DQPSK"), which is also of a different "type" than the first modulation method. Thus, Snell alternatively discloses that the PLCP preamble and PLCP header includes a "SIGNAL" field that may be modulated according to a "first modulation method" (*e.g.*, <u>DBPSK</u>) and "indicates an impending change from the first modulation method" (*e.g.*, <u>DBPSK</u>) "to the second modulation method" (*e.g.*, <u>DQPSK</u>). "*The PLCP preamble and PLCP header* are always at 1 Mbit/s, *Diff encoded*, scrambled and spread with an 11 chip barker." Snell at 6:64-66. "The modulator may also preferably include header modulator means for modulating data packets to include *a header at a predetermined modulation and a third data rate defining a third format…. The third format is preferably differential BPSK*." Snell at 2:61-3:5. "MPDU is serially provided by Interface 80 and is the variable data scrambled for normal operation. *The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff*

'580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
	Encoding." Snell at 7:5-8. *See also, e.g.*, Snell at Figs. 2, 3, 5. Snell incorporates by reference Harris 4064.4,[40] which discloses: "*Signal Field (8 Bits) - This field indicates whether the data packet that follows the header is modulated as DBPSK or DQPSK*. In mode 3 the HSP3824 receiver *looks at the signal field to determine whether it needs to switch from DBPSK demodulation into DQPSK demodulation at the end of the always DBPSK preamble and header fields.*" Harris 4064.4 at 15. "In mode 3 *the signal field defines the modulation type of the data packet (DBPSK or DQPSK)* so the receiver does not need to be preprogrammed to anticipate one or the other. In this mode the device *checks the Signal field for the data packet modulation and it switches to DQPSK if it is defined as such in the signal field.* Note that *the preamble and header are always DBPSK the modulation definition applies only for the data packet.*" Harris 4064.4 at 16. *See also, e.g.*, Harris 4064.4 at FIGURE 10.
[1.G] the second information for said at least one group of transmission sequences comprises a second sequence that is modulated according to the second modulation method, wherein the second sequence is transmitted after the first sequence.	**Snell discloses that the second information for said at least one group of transmission sequences comprises a second sequence that is modulated according to the second modulation method, wherein the second sequence is transmitted after the first sequence.** *See* Element 1.F.
2. The device of claim 1, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third	*See* claim 1. **Snell in view of Kamerman discloses that the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.** ***See, e.g.*, Snell at 1:55-57, 2:27-30, 2:61-63, 6:35-36, 6:52-59, 6:64-66, 7:1-2, 7:5-14, Fig.**

[40] *See supra* n.36.

'580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.	**3; Harris 4064.4 at 15-16, Fig. 10.; Kamerman at 6, 11, 12.** For example, Snell discloses a transceiver for transmitting data packets to another transceiver, where the communication may switch on-the-fly between different types of modulation methods. "The modulator may also preferably include header modulator means for modulating *data packets*." Snell at 2:61-63. "The PRISM 1 chip set provides all the functions necessary for full or half duplex, direct sequence spread spectrum, *packet communications* at the 2.4 to 2.5 GHz ISM radio band." Snell at 1:55-57. "It is another object of the invention to provide a spread spectrum transceiver and associated method to permit operation at higher data rates and *which may switch on-the-fly between different data rates and/or formats*." Snell at 2:27-30. "The variable data may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and *while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly*." Snell at 7:10-14. Snell also discloses that the "SIGNAL" field in the header of the packet is modulated in a first modulation method and indicates the modulation type (*e.g.*, BPSK or QPSK, or alternatively, DBPSK or DQPSK) used for modulating the MPDU data portion. *See* Element 1.D.

'580 Patent Claim 2	**SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman**
	 Snell at Fig. 3 (annotated).[41] **Kamerman[42] discloses reverting from a second modulation method to**

[41] Snell teaches communicating multiple data packets with the ability to "switch on-the-fly between different data rates and/or formats." Based on this disclosure, a person of ordinary skill in the art would have understood that Snell teaches that a series of packets may be sent that switch from using a second modulation method to using a first modulation method for the payload portion of the data packet. For example, as shown in Figure 3 (annotated), a first packet in Snell comprises a "first sequence" (*e.g.*, PLCP preamble and PLCP header) that is "modulated according to the first modulation method" (*e.g.*, BPSK) where the "first sequence" (*e.g.*, "SIGNAL" field in PLCP header) "indicates" (*e.g.*, using "14h") the modulation type (*e.g.*, QPSK) used for modulating the "second sequence" (*e.g.*, MPDU data). For the first packet, the "SIGNAL" field in the PLCP header uses a code (*e.g.*, "14h") that "indicates" that the MPDU data is modulated "according to the second modulation method" (*e.g.*, QPSK). The "second modulation method" (*e.g.*, QPSK) "is of a different type than the first modulation method" (*e.g.*, BPSK).

Snell's transceiver may then transmit a second packet comprising a "third sequence" (*e.g.*, PLCP preamble and PLCP header) "transmitted in the first modulation method" (*e.g.*, BPSK) where the "third sequence" (*e.g.*, "SIGNAL" field in PLCP header) "indicates" (*e.g.*, using "0Ah") the modulation type (*e.g.*, BPSK) used for modulating the MPDU data of the second packet. For the second packet, the "SIGNAL" field in the PLCP header uses a code (*e.g.*, "0Ah") that "indicates" that the MPDU data is modulated using the BPSK modulation method at 1 Mbit/s. This "SIGNAL" thus "indicates that communication" from the transceiver "has reverted to the first modulation method" (*e.g.*, reverted to BPSK modulation). In addition, transmitting the data using the "first modulation method" (*e.g.*, BPSK) results in a data rate of 1 Mbit/s which is lower than transmitting the data using the "second modulation method," which results in a data rate of 2 Mbit/s.

'580 Patent Claim 2	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman
	a first modulation method. ***See, e.g.*, Kamerman at 6, 11, 12.** Kamerman discloses an automatic rate selection scheme for reverting (*e.g.*, falling back) from a "second modulation method" (*e.g.*, QPSK) corresponding to a higher data rate (*e.g.*, 2 Mbit/s) to a "first modulation method" (*e.g.*, BPSK) corresponding to a lower data rate (*e.g.*, 1 Mbit/s) after unacknowledged packet transmissions, for instance, where there is a high load in neighbor cells causing cochannel interference. "Then there is looked to *automatic rate control* to keep the cochannel interference at a tolerable level." Kamerman at 6. "IEEE 802.11 DS specifies bit rates of 1 and 2 Mbps. The allowable SNR and CSIR values for reliable transmission of data packets are dependent on the bit rate." Kamerman at 11. "IEEE 802.11 DS specifies BPSK and QPSK, in addition there could be applied proprietary modes with M-PSK and QAM schemes that provide higher bit rates by encoding more bits per symbol. . . . An automatic rate selection scheme based on the reliability of the individual uplink and downlink could be applied. The basic rate adaptation scheme could be: *after unacknowledged packet transmissions the rate falls back,* and after a number (e.g. 10) of successive correctly acknowledged packet transmissions the bit rate goes up." Kamerman at 11. "*At lower load in the neighbor cells the highest bit rate can be used more often. At higher load the transmissions from the accesspoint to stations at the outer part of the cells, will be done often at fallback rates due to mutilation of transmissions by interference.* In practice the network load for LANs at nowadays client-server applications is very bursty, with sometimes transmission bursts over an individual links and low activity during the major part of the time. *Therefore the higher bit rate can be used during the most of the time, and at high load in the neighbor cells (as will evoked by test applications) there will be switched to fall back rates in the outer part of the cell.*" Kamerman at 11.

[42] As explained in Section III.E, a POSITA would have been motivated and found it obvious and straightforward to use Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method (*i.e.*, reverting to the first modulation method) in implementing Snell's system for communicating data packets modulated according to different modulation methods (as implemented using the teachings of Harris 4064.4, the Admitted Prior Art, and Yamano).

'580 Patent Claim 2	**SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman**
	"The application of proprietary bit rates of 3 and 4 Mbps in addition to the basic 1 and 2 Mbps, can be combined with an automatic rate selection. This automatic rate selection gives fall forward at reliable connections and *fall back at strong cochannel interference*." Kamerman at 12.

'580 Patent Claim 59	**SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, Admitted Prior Art, Upender, Yamano, and Kamerman**
58.[preamble] A communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave, the device comprising:	**To the extent this preamble is considered a limitation of the claim, Snell in view of the Admitted Prior Art discloses a communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave.** *See* Element 1.preamble.
[58.A] a transceiver, in the role of the master according to the master/ slave relationship,	**Snell in view of the Admitted Prior Art discloses a transceiver, in the role of the master according to the master/ slave relationship.** *See* Element 1.A
[58.B] capable of transmitting using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method,	**Snell discloses transmitting using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method.** *See* Element 1.B.

'580 Patent Claim 59	**SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, Admitted Prior Art, Upender, Yamano, and Kamerman**
wherein the second modulation method is of a different type than the first modulation method,	
[58.C] and wherein the transceiver is configured to transmit messages with: a first sequence, in the first modulation method, that indicates at least which of the first modulation method and the second modulation method is used for modulating a second sequence, wherein, in at least one message, the first sequence indicates an impending change from the first modulation method to the second modulation method, and	**Snell in view of Harris 4064.4 discloses that the transceiver is configured to transmit messages with: a first sequence, in the first modulation method, that indicates at least which of the first modulation method and the second modulation method is used for modulating a second sequence, wherein, in at least one message, the first sequence indicates an impending change from the first modulation method to the second modulation method.** *See* Elements 1.C, 1.D, 1.F.
[58.D] wherein the at least one message is addressed for an intended destination of the second sequence, and	**Snell in view of Yamano discloses that at least one message is addressed for an intended destination of the second sequence.** *See* Element 1.E.
[58.E] the second sequence, modulated in accordance with the modulation method indicated by the first sequence and, in the at least one message, modulated	**Snell discloses that the second sequence [is] modulated in accordance with the modulation method indicated by the first sequence and, in the at least one message, modulated using the second modulation method, wherein the second sequence is transmitted after the first sequence.** *See* Element 1.G.

’580 Patent Claim 59	SNQ-3: Combined Disclosure of Snell in View of Harris 4064.4, Admitted Prior Art, Upender, Yamano, and Kamerman
using the second modulation method, wherein the second sequence is transmitted after the first sequence.	
59. The device of claim 58, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.	**Snell in view of Kamerman discloses that the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.** *See* claims 1, 2.

IV. CONCLUSION

For at least the reasons set forth above, substantial new questions of patentability are raised concerning claims 2 and 59 of the ‘580 patent. Indeed, in view of the references discussed in this Request, the claims at issue are invalid as obvious. It is therefore respectfully submitted that this Request for reexamination of the ‘580 patent be granted and claims 2 and 59 be found invalid. If there are any questions, Requesters may be contacted at the below-listed telephone number.

As identified in the attached Certificate of Service and in accordance with 37 C.F.R. §§ 1.33(c) and 1.510(b)(5), a copy of the present Request, in its entirety, is being served to the address of the attorney or agent of record reflected in the publicly available records of the United States Patent and Trademark Office as designated in the Office's Patent Application Information Retrieval system.

The Commissioner is hereby authorized to charge Deposit Account 18-1945 under Order No. 110797-0019-501 the *Ex Parte* Reexamination fee of $12,000 under 37 C.F.R. § 1.20(c)(1). Requesters believe no other fee is due with this submission, however the Commissioner is hereby authorized to charge any fee deficiency or credit any over-payment to Deposit Account 18-1945.

Please direct all correspondence in this matter to the undersigned.

Dated: September 12, 2016

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Gordon F. Bremer	§	Attorney Docket No.: 110797-0019-501
U.S. Patent No. 8,023,580	§	Customer No.: 28120
Formerly Application No. 12/543,910	§	
Issue Date: September 20, 2011	§	Requesters: Samsung Electronics Co., Ltd.,
Filing Date: August 19, 2009	§	Samsung Electronics America, Inc.
Former Group Art Unit: 2611	§	
Former Examiner: Dac V. Ha	§	

For: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

MAIL STOP *EX PARTE* REEXAM
Central Reexamination Unit
Office of Patent Legal Administration
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF SERVICE

It is certified that, pursuant to 37 C.F.R. §1.510(b)(5), copies of the following documents have been served in their entireties on the patent owner at the correspondence address of record as provided for in 37 C.F.R. §1.33(c):

1. Request for Ex Parte Reexamination of U.S. Patent No. 8,023,580 Transmittal Form, PTO/SB/57.

2. Request for Ex Parte Reexamination of U.S. Patent No. 8,023,580 Pursuant to 35 U.S.C. § 302 and 37 C.F.R. § 1.510 and accompanying exhibits:

Exhibit A: U.S. Patent No. 8,023,580

Exhibit B: U.S. Application No. 12/543,910

Exhibit C: File History of U.S. Patent No. 8,023,580

Exhibit D: U.S. Patent No. 5,982,807

Exhibit E: Andren, C. et al., *Using the PRISM™ Chip Set for Low Data Rate Applications*, Harris Semiconductor Application Note No. AN9614, March 1996

Exhibit F: *HSP3824 Direct Sequence Spread Spectrum Baseband Processor*, Harris Semiconductor File No. 4064.4, Oct. 1996

Exhibit G: Declaration of Jon Mears; Exhibit A thereto (Upender et al., "Communication Protocols for Embedded Systems," *Embedded Systems Programming*, Vol. 7, Issue 11, November 1994.

Exhibit H: U.S. Patent No. 6,075,814

Exhibit I: Kamerman, A., *Throughput Density Constraints for Wireless LANs Based on DSSS*, IEEE 4th International Symposium on Spread Spectrum Techniques and Applications Proceedings, Mainz, Germany, Sept. 22-25, 1996, pp. 1344-1350 vol.3

Exhibit J: Office Action in File History of U.S. Application No. 09/205,205 (issued as U.S. Patent No. 6,614,838), mailed June 28, 2001

Exhibit K: Applicant Response in File History of U.S. Application No. 09/205,205 (issued as U.S. Patent No. 6,614,838), dated Oct. 1, 2001

Exhibit L: File History of U.S. Patent No. 5,982,807 (other than the prior art of record)

Exhibit M: Terminal Disclaimer in File History of U.S. Patent No. 8,023,580, dated Dec. 4, 2014

Exhibit N: Terminal Disclaimer in File History of U.S. Patent No. 8,023,580, dated Dec. 15, 2014

Exhibit O: Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., Ltd. et al., No. 2:13-cv-00213, Excerpted pages from Plaintiff Rembrandt Wireless Technologies, LP's Disclosure of Asserted Claims and Infringement Contentions dated July 25, 2013, Exhibit C at 14, 48 (E.D. Tex.)

3. Information Disclosure Statement, PTO/SB/08, listing references cited in the Request for Ex Parte Reexamination of U.S. Patent No. 8,023,580 pursuant to 35 U.S.C. § 302 and 37 C.F.R. § 1.510.

The copy has been served on September 12, 2016 by causing the aforementioned documents to be deposited in the United States Postal Service as first class mail postage pre-paid in an envelope address to:

Condo Roccia Koptiw LLP
1800 JFK Boulevard, Suite 1700
Philadelphia, PA 19103

/Ginny Blundell/____________________
Ginny Blundell

ROPES & GRAY LLP

(Also referred to as FORM PTO-1465)

REQUEST FOR *EX PARTE* REEXAMINATION TRANSMITTAL FORM

Address to:
Mail Stop *Ex Parte* Reexam
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attorney Docket No.: 110797-0019-501

Date: September 12, 2016

1. [x] This is a request for *ex parte* reexamination pursuant to 37 CFR 1.510 of patent number 8,023,580 issued 09-20-2011. The request is made by:
   [ ] patent owner. [x] third party requester.

2. [x] The name and address of the person requesting reexamination is:

   Samsung Electronics Co., Ltd.
   416 Maetan-3 Dong, Yeongtong-Gu, Suwon-City
   Gyeonggi-Do, Korea 443-742, South Korea

   Samsung Electronics America, Inc.
   85 Challenger Road
   Ridgefield Park, NJ 07660

3. Requester asserts [ ] small entity status (37 CFR 1.27) or [ ] certifies micro entity status (37 CFR 1.29).
   Only a patent owner requester can certify micro entity status. Form PTO/SB/15A or B must be attached to certify micro entity status.

4. [ ] a. A check in the amount of $ ________ is enclosed to cover the reexamination fee, 37 CFR 1.20(c)(1);
   [x] b. The Director is hereby authorized to charge the fee as set forth in 37 CFR 1.20(c)(1) to Deposit Account No. 18-1945;
   [ ] c. Payment by credit card. Form PTO-2038 is attached; **or**
   [x] d. Payment made via EFS-Web.

5. [x] Any refund should be made by [ ] check or [x] credit to Deposit Account No. 18-1945.
   37 CFR 1.26(c). If payment is made by credit card, refund must be to credit card account.

6. [x] A copy of the patent to be reexamined having a double column format on one side of a separate paper is enclosed. 37 CFR 1.510(b)(4).

7. [ ] CD-ROM or CD-R in duplicate, Computer Program (Appendix) or large table
   [ ] Landscape Table on CD

8. [ ] Nucleotide and/or Amino Acid Sequence Submission
   If applicable, items a. – c. are required.
   a. [ ] Computer Readable Form (CRF)
   b. Specification Sequence Listing on:
      i. [ ] CD-ROM (2 copies) or CD-R (2 copies); **or**
      ii. [ ] paper
   c. [ ] Statements verifying identity of above copies

9. [ ] A copy of any disclaimer, certificate of correction or reexamination certificate issued in the patent is included.

10. [x] Reexamination of claim(s) 2 and 59 is requested.

11. [x] A copy of every patent or printed publication relied upon is submitted herewith including a listing thereof on Form PTO/SB/08, PTO-1449, or equivalent.

12. [ ] An English language translation of all necessary and pertinent non-English language patents and/or printed publications is included.

13. [x] The attached detailed request includes at least the following items:
   a. A statement identifying each substantial new question of patentability based on prior patents and printed publications. 37 CFR 1.510(b)(1).
   b. An identification of every claim for which reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited art to every claim for which reexamination is requested. 37 CFR 1.510(b)(2).

14. [ ] A proposed amendment is included (only where the patent owner is the requester). 37 CFR 1.510(e).

15. [x] It is certified that the statutory estoppel provisions of 35 U.S.C. 315(e)(1) or 35 U.S.C. 325(e)(1) do not prohibit requester from filing this *ex parte* reexamination request. 37 CFR 1.510(b)(6).

16. [x] a. It is certified that a copy of this request (if filed by other than the patent owner) has been served in its entirety on the patent owner as provided in 37 CFR 1.33(c).
   The name and address of the party served and the date of service are:

   Condo Roccia Koptiw LLP
   1800 JFK Boulevard, Suite 1700
   Philadelphia, PA 19103

   Date of Service: September 12, 2016 ; **or**

   [ ] b. A duplicate copy is enclosed since service on patent owner was not possible. An explanation of the efforts made to serve patent owner **is attached**. <u>See</u> MPEP 2220.

17. Correspondence Address: Direct all communication about the reexamination to:

[x] The address associated with Customer Number: 28120

OR

[ ] Firm or Individual Name

Address

City	State	Zip
Country		
Telephone	Email	

18. [x] The patent is currently the subject of the following concurrent proceeding(s):
   [ ] a. Copending reissue Application No.
   [ ] b. Copending reexamination Control No.
   [ ] c. Copending Interference No.
   [x] d. Copending litigation styled:
   See attached sheet

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

/J. Steven Baughman/ — Authorized Signature
September 12, 2016 — Date

J. Steven Baughman — Typed/Printed Name
47,414 — Registration No.

[ ] For Patent Owner Requester
[x] For Third Party Requester

1. *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co.*, C.A. No. 2:13-cv-00213-JRG (E.D. Tex.)

2. *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co.*, C.A. No. 2:16-cv-00170-JRG (E.D. Tex.)

3. *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co.*, No. 2016-1729 (Fed. Cir.)

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	Gordon F. Bremer
Filer:	Jon Steven Baughman/ginny blundell
Attorney Docket Number:	110797-0019-501

Filed as Large Entity

Filing Fees for **ex parte reexam**

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
REQUEST FOR EX PARTE REEXAMINATION	1812	1	12000	12000
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		12000

Electronic Acknowledgement Receipt

EFS ID:	26902391
Application Number:	90013808
International Application Number:	
Confirmation Number:	2211
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	Gordon F. Bremer
Customer Number:	28120
Filer:	Jon Steven Baughman/ginny blundell
Filer Authorized By:	Jon Steven Baughman
Attorney Docket Number:	110797-0019-501
Receipt Date:	12-SEP-2016
Filing Date:	
Time Stamp:	23:41:22
Application Type:	Reexam (Third Party)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$12000
RAM confirmation Number	7670
Deposit Account	181945
Authorized User	BAUGHMAN, STEVEN

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_A_US8023580_Bremer.pdf	1374505 0434b4d0a698d81ebac96112adb417668c72c557	no	19
Warnings:					
Information:					
2	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_C_US8023580_Prosecution_History.pdf	16533518 a23f53a4097e5ae6b1a412767af073a51896d169	no	424
Warnings:					
Information:					
3	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_D_US5982807_Snell.pdf	1052194 fbfe0015e0bfabfcc8e63dc3a8e8aaab12e54099	no	16
Warnings:					
Information:					
4	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_H_US6075814_Yamano.pdf	1809503 14a396002760612fae7e9933ed896c5554f5ad3b	no	24
Warnings:					
Information:					
5	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_G_Mears_Decl_and_Upender.pdf	5397882 c00bf38d68856317ac68c153091e76edce67896f	no	12
Warnings:					
Information:					
6	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_I_Kamerman.pdf	1084692 6b8e686c52b581a67b7cf9682d8561be954f50e7	no	12
Warnings:					
Information:					

7	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_B_US12543910.pdf	2059816 7b6ca68f972c14874f145a9e18b9e2ff74d646b0	no	55
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Information:					
8	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_E_Harris_AN9614.pdf	3907873 80048f185afcd4837c5d0d1b9c1172b1a288b724	no	3
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Information:					
9	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_J_US6614838_June_28_2001_OA.pdf	794930 01dd5a7591959c1a7212b6eb44cd6337472d11e6	no	6
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Information:					
10	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_K_US6614838_Oct_1_2001_Response.pdf	952745 955d26fe9607f728c8cee8ac5b6170b1e5c162be	no	9
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Information:					
11	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_F_Harris_4064_4.pdf	9185991 7ac92eb00b688fd1846cee7e296781c35abfe2b8	no	40
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Information:					
12	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_O_2013-07-05-Rembrandts_Infringement_Contentions_Excerpted.pdf	946043 61d89d202dcaf9cdf40a8fef9f3cafff651a2ea6	no	27
Warnings:					
Information:					
13	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_L_US5982807_Snell_File_History_Part1.pdf	16516996 27cf2e50fa96f62545bf98e9067567fc6a487b0f	no	125
Warnings:					
Information:					

14	Reexam - Info Disclosure Statement Filed by 3rd Party	SB08.pdf	131552 85d9097dd16acd3da78893ee625766b8ade482f1	no	2
Warnings:					
Information:					
15	Copy of patent for which reexamination is requested	Copy_Patent_US8023580_Bremer.pdf	1379445 baf75241258e55c1ad7119ed5f451899eaee1fe7	no	19
Warnings:					
Information:					
16	Receipt of Original Ex Parte Reexam Request	Request.pdf	1260052 3f928cfb61af22ef76a00c8d37c6511ead1ec51e	no	127
Warnings:					
Information:					
17	Reexam Certificate of Service	COS_2.pdf	96271 9147272bc0b96e91130d05dd3e16efed3df3cbca	no	3
Warnings:					
Information:					
18	Receipt of Orig. Ex Parte Request by Third Party	Transmittal_2.pdf	207230 9303b9b15d3dd21b34c47081133538d1ff3f7dbb	no	3
Warnings:					
Information:					
19	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_M_US8023580_TD_filed_12_4_14.pdf	175155 be3fd4bbc94bac20ed01e9a6a280be46f69f2355	no	2
Warnings:					
Information:					
20	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_N_US8023580_TD_Filed_12_15_14.pdf	125690 c9bcab87efabab58dda825af7f5b3238ec7237d3	no	2
Warnings:					
Information:					

21	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	Ex_L_US5982807_Snell_File_History_Part2_labeled.pdf	22920296 02daa0507fc3cac9240219a3c0713c948f5be77e	no	125
Warnings:					
Information:					
22	Fee Worksheet (SB06)	fee-info.pdf	30239 af00e68807947eccd7c5d97b7ed4e8ae5df9e444	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	87942618		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 2211

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
90/013,808	09/12/2016 RULE	375	3992	110797-0019-501

APPLICANTS

INVENTORS

8023580, Residence Not Provided;
REMBRANDT WIRELESS TECHNOLOGIES, LP, ARLINGTON, VA;
SAMSUNG ELECTRONICS CO., LTD. (3RD PTY REQ.), GYEONGGI-DO, KOREA, REPUBLIC OF;
SAMSUNG ELECTRONICS AMERICA, INC. (3RD PTY REQ.), RIDGEFIELD PARK, NJ;
ROPES & GRAY LLP PRUDENTIAL TOWER, BOSTON, MA

** **CONTINUING DATA** *************************

This application is a REX of 12/543,910 08/19/2009 PAT 8023580
which is a CON of 11/774,803 07/09/2007 PAT 7675965
which is a CON of 10/412,878 04/14/2003 PAT 7248626
which is a CIP of 09/205,205 12/04/1998 PAT 6614838
which claims benefit of 60/067,562 12/05/1997

** **FOREIGN APPLICATIONS** *************************

** **IF REQUIRED, FOREIGN FILING LICENSE GRANTED** **

Foreign Priority claimed ☐ Yes ☐ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and Acknowledged ____ Examiner's Signature	☐ Met after Allowance ____ Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
				79	7

ADDRESS

Condo Roccia Koptiw LLP
1800 JFK Boulevard
Suite 1700
Philadelphia, PA 19103
UNITED STATES

TITLE

SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

FILING FEE RECEIVED		
12000	FEES: Authority has been given in Paper No.__________ to charge/credit DEPOSIT ACCOUNT No.__________ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other ____________ ☐ Credit

BIB (Rev. 05/07).

Patent Assignment Abstract of Title

Total Assignments: 1

Application #: 12543910 **Filing Dt:** 08/19/2009 **Patent #:** 8023580 **Issue Dt:** 09/20/2011

PCT #: NONE **Intl Reg #:** **Publication #:** US20100183055 **Pub Dt:** 07/22/2010

Inventor: Gordon F. Bremer

Title: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

Assignment: 1

Reel/Frame: 027085 / 0636 **Received:** 10/19/2011 **Recorded:** 10/19/2011 **Mailed:** 10/19/2011 **Pages:** 4

Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).

Assignor: SUMMIT TECHNOLOGY SYSTEMS, LP **Exec Dt:** 10/03/2011

Assignee: REMBRANDT WIRELESS TECHNOLOGIES, LP
1655 NORTH FORT MEYERS DRIVE
SUITE 700
ARLINGTON, VIRGINIA 22209

Correspondent: THOMAS, KAYDEN, HORSTEMEYER & RISLEY LLP
400 INTERSTATE NORTH PARKWAY SE
SUITE 1500
ATLANTA, GA 30339

Search Results as of: 09/13/2016 08:40 AM

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/013,808	09/12/2016	8023580

CONFIRMATION NO. 2211

REEXAMINATION REQUEST NOTICE

ROPES & GRAY LLP PRUDENTIAL TOWER
IPRM DOCKETING - FLOOR 43
800 BOYLSTON STREET
BOSTON, MA 02199-3600

OC000000085887012

Date Mailed: 09/19/2016

NOTICE OF REEXAMINATION REQUEST FILING DATE

(Third Party Requester)

Requester is hereby notified that the filing date of the request for reexamination is 09/12/2016, the date that the filing requirements of 37 CFR § 1.510 were received.

A decision on the request for reexamination will be mailed within three months from the filing date of the request for reexamination. (See 37 CFR 1.515(a)).

A copy of the Notice is being sent to the person identified by the requester as the patent owner. Further patent owner correspondence will be the latest attorney or agent of record in the patent file. (See 37 CFR 1.33). Any paper filed should include a reference to the present request for reexamination (by Reexamination Control Number).

cc: Patent Owner
15027
Condo Roccia Koptiw LLP
1800 JFK Boulevard
Suite 1700
Philadelphia, PA 19103

/rbell/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/013,808	09/12/2016	8023580

CONFIRMATION NO. 2211

REEXAM ASSIGNMENT NOTICE

OC000000085887014

15027
Condo Roccia Koptiw LLP
1800 JFK Boulevard
Suite 1700
Philadelphia, PA 19103

Date Mailed: 09/19/2016

NOTICE OF ASSIGNMENT OF REEXAMINATION REQUEST

The above-identified request for reexamination has been assigned to Art Unit 3992. All future correspondence to the proceeding should be identified by the control number listed above and directed to the assigned Art Unit.

A copy of this Notice is being sent to the latest attorney or agent of record in the patent file or to all owners of record. (See 37 CFR 1.33(c)). If the addressee is not, or does not represent, the current owner, he or she is required to forward all communications regarding this proceeding to the current owner(s). An attorney or agent receiving this communication who does not represent the current owner(s) may wish to seek to withdraw pursuant to 37 CFR 1.36 in order to avoid receiving future communications. If the address of the current owner(s) is unknown, this communication should be returned within the request to withdraw pursuant to Section 1.36.

NOTICE OF USPTO EX PARTE REEXAMINATION PATENT OWNER STATEMENT WAIVER PROGRAM

The USPTO has implemented a pilot program where, after a reexamination proceeding has been granted a filing date and before the examiner begins his or her review, the patent owner may orally waive the right to file a patent owner's statement. See *"Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings,"* 75 FR 47269 (August 5, 2010). One goal of the pilot program is to reduce the pendency of reexamination proceedings and improve the efficiency of the reexamination process.

Ordinarily when ex parte reexamination is ordered, the USPTO must wait until after the receipt of the patent owner's statement and the third party requester's reply, or after the expiration of the time period for filing the statement and reply (a period that can be as long as 5 to 6 months), before mailing a first determination of patentability. The USPTO's first determination of patentability is usually a first Office action on the merits or a Notice of Intent to Issue Reexamination Certificate (NIRC).

Under the pilot program, the patent owner's oral waiver allows the USPTO to act on the first determination of patentability immediately after determining that reexamination will be ordered, and in a suitable case issue the reexamination order and the first determination of patentability (which could be a NIRC if the claims under reexamination are confirmed) at the same time.

Benefits to the Patent Owner for participating in this pilot program include reduction in pendency.

To participate in this pilot program, Patent Owners may contact the USPTO's Central Reexamination Unit (CRU) at 571-272-7705. The USPTO will make the oral waiver of record in the reexamination file in an interview summary and a copy will be mailed to the patent owner and any third party requester.

cc: Third Party Requester(if any)
ROPES & GRAY LLP PRUDENTIAL TOWER
IPRM DOCKETING - FLOOR 43
800 BOYLSTON STREET
BOSTON, MA 02199-3600

/rbell/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

Litigation Search Report CRU 3999

Reexam Control No. 90/013,808

TO:
Location: CRU
Art Unit: 3999
Date: September 19, 2016

U.S. Patent Number: 8,023,580

From: Patricia Martin
Paralegal Specialist
Location: CRU 3999
Phone: (571) 272-7705

Search Notes

1) I performed a search on the patent in Lexis Court Link for any open dockets or closed cases.

2) I performed a Key Cite Search in Westlaw, which retrieves all history on the patent including any litigation.

3) I performed a search in Lexis in the Federal Courts and Administrative Materials databases for any cases found.

4) I performed a search in Lexis in the IP Journal and Periodicals database for any articles on the patent.

5) I performed a search in Lexis in the news databases for any articles about the patent or any articles about litigation on this patent.

Litigation was found involving:

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Welcome, Patricia Martin

Single Search - with Terms and Connectors

Enter keywords - Search multiple dockets & documents | Search | Info

My CourtLink | Search | Dockets & Documents | Track | Alert | Strategic Profiles | Breaking Complaints | My Account | Court Info

Search > Patent Search > Litigation involving patent 8,023,580

Click a docket number below to view a docket.

Patent Search Results

Edit Search

Re-run Search

This search was run on 9/19/2016

Results: 7 cases and their patents, totaling 7 items.

Update Docket(s) | Email Docket(s)

Printer Friendly List
Email List
Customize List

Items 1 to 7 of 7

	Patent	Class	Subclass	Description	Court	Docket Number	Filed	Date Retrieved
	8,023,580	-	-	Samsung Electronics Co. Ltd. Vs. Rembrandt Wireless Technologies, LP	US-PTO-ALE	IPR2015-00114	10/21/2014	10/21/2014
	8,023,580	-	-	Samsung Electronics Co., Ltd. Vs. Rembrandt Wireless Technologies, LP	US-PTO-ALE	IPR2015-00118	10/21/2014	10/21/2014
	8,023,580	-	-	Samsung Electronics Co. Ltd. Vs. Rembrandt Wireless Technologies, LP	US-PTO-ALE	IPR2014-00514	3/20/2014	7/31/2014
	8,023,580	-	-	Samsung Electronics Co., Ltd. Vs. Rembrandt Wireless Technologies, LP	US-PTO-ALE	IPR2014-00515	3/20/2014	7/31/2014
	8,023,580	-	-	Samsung Electronics Co., Ltd. Vs. Rembrandt Wireless Technologies, LP	US-PTO-ALE	IPR2014-00518	3/20/2014	7/31/2014
	8,023,580	-	-	Samsung Electronics Co., Ltd. Vs. Rembrandt Wireless Technologies, LP	US-PTO-ALE	IPR2014-00519	3/20/2014	7/31/2014
	8,023,580	375	261	Rembrandt Wireless Technologies, Lp V. Samsung Electronics Co. Ltd., Et Al	US-DIS-TXED	2:13cv213	3/15/2013	8/31/2016

Items 1 to 7 of 7

Update Docket(s) | Email Docket(s)

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United States Patent Trial and Appeals Board

US Patent Trial and Appeals Board - Alexandria
(Alexandria)

IPR2015-00114

Samsung Electronics Co. Ltd. Vs. Rembrandt Wireless Technologies, LP

This case was retrieved from the court on Tuesday, October 20, 2015

Header

Case Number: IPR2015-00114
Date Filed: 10/21/2014
Date Full Case Retrieved: 10/20/2015
Status: Open
Misc: Civil

[Summary][Participants][Proceedings]

Summary

Court Case Status: Not Instituted
Case Type: IPR: Inter partes review
Date of Decision to Institute Case: 1/28/2015
Technical Center Number: 2600
Patent Application Number: 12543910
Patent Number: 8023580

Participants

Litigants

Samsung Electronics Co. Ltd.
Petitioner

Rembrandt Wireless Technologies, LP
PatentOwner

Proceedings

File Date	Details	Document Type	Paper/ Exhibit No.	Filed By	Public?
10/21/2014	Petition for InterPartes Review of US Patent 8,023,580	Petition	1	Petitioner	Yes
10/21/2014	Power of Attorney	Power of Attorney	2	Petitioner	Yes
10/21/2014	Motion for Joinder to IPR2014-00518	Motion	3	Petitioner	Yes
10/21/2014	US Patent 8,023,580	Exhibit	1201	Petitioner	Yes
10/21/2014	Rembrandt Complaint for Patent Infringement	Exhibit	1202	Petitioner	Yes
10/21/2014	Summons in a Civil Action	Exhibit	1203	Petitioner	Yes
10/21/2014	Boer US Patent 5,706,428	Exhibit	1204	Petitioner	Yes

10/21/2014	Rembrandt's Infringement Contentions	Exhibit	1205	Petitioner	Yes
10/21/2014	IEEE Dictonary exerpt	Exhibit	1206	Petitioner	Yes
10/21/2014	Patent Application	Exhibit	1207	Petitioner	Yes
10/21/2014	Office Action 09-01-2010	Exhibit	1208	Petitioner	Yes
10/21/2014	Reply 03-01-2011	Exhibit	1209	Petitioner	Yes
10/21/2014	Response 03-10-2011	Exhibit	1210	Petitioner	Yes
10/21/2014	Supplemental Amendment 05-11-2011	Exhibit	1211	Petitioner	Yes
10/21/2014	Notice of Allowance 07-22-2011	Exhibit	1212	Petitioner	Yes
10/21/2014	Amendment After Allowance 07-26-2011	Exhibit	1213	Petitioner	Yes
10/21/2014	US Patent 6,614,838	Exhibit	1214	Petitioner	Yes
10/21/2014	Office Action 06-28-2001	Exhibit	1215	Petitioner	Yes
10/21/2014	Response 10-01-2001	Exhibit	1216	Petitioner	Yes
10/21/2014	Joint Claim Construction Statement	Exhibit	1217	Petitioner	Yes
10/21/2014	Mears Declaration	Exhibit	1218	Petitioner	Yes
10/21/2014	Dictionary of Communications Tech excerpt	Exhibit	1219	Petitioner	Yes
10/21/2014	Goodman Declaration 03-19-2014	Exhibit	1220	Petitioner	Yes
10/21/2014	Goodman 2nd Declaration 10-17-2014	Exhibit	1221	Petitioner	Yes
10/29/2014	Notice of Filing Date Accorded	Notice of Filing Date Accorded to Petition	4	Board	Yes
10/30/2014	Order - Conduct of the Proceedings	Order	5	Board	Yes
10/31/2014	Power of Attorney	Power of Attorney	6	Potential Patent Owner	Yes
10/31/2014	Related Matters	Notice	7	Potential Patent Owner	Yes
11/08/2014	PO Opposition to Motion for Joinder	Opposition	8	Patent Owner	Yes
11/18/2014	Petitioner Reply to PO Opposition To Motion For Joinder	Reply	9	Petitioner	Yes
12/01/2014	Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. 42.107	Preliminary Response	10	Patent Owner	Yes
12/01/2014	Exhibit 2001	Exhibit	2001	Patent Owner	Yes
12/01/2014	Exhibit 2002	Exhibit	2002	Patent Owner	Yes
12/01/2014	Exhibit 2003	Exhibit	2003	Patent Owner	Yes
12/01/2014	Exhibit 2004	Exhibit	2004	Patent Owner	Yes
12/01/2014	Exhibit 2005	Exhibit	2005	Patent Owner	Yes
12/10/2014	Patent Owner's Supplemental Mandatory Notice Information Under 37 C.F.R. 42.8	Notice	11	Patent Owner	Yes
01/06/2015	Supplemental Mandatory Notice	Notice	12	Petitioner	Yes
01/09/2015	Supplemental Mandatory Notice	Notice	13	Petitioner	Yes
01/28/2015	Institution Decision	Institution Decision	14	Board	Yes
01/30/2015	PO Supplemental Mandatory Notice	Notice	15	Patent Owner	Yes
03/10/2015	IPR2015-00114 - Refund request	Refund Request	16	Petitioner	Yes
03/19/2015	Noticeo fo Refund	Notice	17	Board	Yes

United States Patent Trial and Appeals Board

US Patent Trial and Appeals Board - Alexandria
(Alexandria)

IPR2015-00118

Samsung Electronics Co., Ltd. Vs. Rembrandt Wireless Technologies, LP

This case was retrieved from the court on Tuesday, October 20, 2015

Header

Case Number: IPR2015-00118
Date Filed: 10/21/2014
Date Full Case Retrieved: 10/20/2015
Status: Open
Misc: Civil

[Summary][Participants][Proceedings]

Summary

Court Case Status: Not Instituted
Case Type: IPR: Inter partes review
Date of Decision to Institute Case: 1/28/2015
Technical Center Number: 2600
Patent Application Number: 12543910
Patent Number: 8023580

Participants

Litigants

Samsung Electronics Co., Ltd.
Petitioner

Rembrandt Wireless Technologies, LP
PatentOwner

Proceedings

File Date	Details	Document Type	Paper/ Exhibit No.	Filed By	Public?
10/21/2014	Petition for Inter Partes Review of U.S. Patent No. 8,023,580	Petition	1	Petitioner	Yes
10/21/2014	Power of Attorney	Power of Attorney	2	Petitioner	Yes
10/21/2014	Motion for Joinder to IPR2014-00519	Motion	3	Petitioner	Yes
10/21/2014	US Patent 8,023,580	Exhibit	1301	Petitioner	Yes
10/21/2014	Rembrandt Complaint	Exhibit	1302	Petitioner	Yes
10/21/2014	Summons in a Civil Action	Exhibit	1303	Petitioner	Yes
10/21/2014	Boer US Patent 5,706,428	Exhibit	1304	Petitioner	Yes

10/21/2014	Rembrandt Infringement Contention	Exhibit	1305	Petitioner	Yes
10/21/2014	IEEE Dictionary excerpt	Exhibit	1306	Petitioner	Yes
10/21/2014	Patent Application	Exhibit	1307	Petitioner	Yes
10/21/2014	Office Action	Exhibit	1308	Petitioner	Yes
10/21/2014	Reply	Exhibit	1309	Petitioner	Yes
10/21/2014	Response	Exhibit	1310	Petitioner	Yes
10/21/2014	Supplemental Amendment	Exhibit	1311	Petitioner	Yes
10/21/2014	Notice of Allowance	Exhibit	1312	Petitioner	Yes
10/21/2014	Amendment After Allowance	Exhibit	1313	Petitioner	Yes
10/21/2014	US Patent 6,614,838	Exhibit	1314	Petitioner	Yes
10/21/2014	Office Action 06-28-2001	Exhibit	1315	Petitioner	Yes
10/21/2014	Response 10-01-2001	Exhibit	1316	Petitioner	Yes
10/21/2014	Mears Declaration	Exhibit	1317	Petitioner	Yes
10/21/2014	Goodman Declaration 03-19-2014	Exhibit	1318	Petitioner	Yes
10/21/2014	Goodman 2nd Declaration 10-15-2014	Exhibit	1319	Petitioner	Yes
10/29/2014	Notice of Filing Date Accorded	Notice of Filing Date Accorded to Petition	4	Board	Yes
10/30/2014	Order - Conduct of the Proceedings	Order	5	Board	Yes
10/31/2014	Power of Attorney	Power of Attorney	6	Potential Patent Owner	Yes
10/31/2014	Related Matters	Notice	7	Potential Patent Owner	Yes
11/08/2014	PO Opposition to Motion for Joinder	Opposition	8	Patent Owner	Yes
11/18/2014	Petitioner Reply to PO Opposition To Motion For Joinder	Reply	9	Petitioner	Yes
12/01/2014	Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. 42.107	Preliminary Response	10	Patent Owner	Yes
12/01/2014	Exhibit 2001	Exhibit	2001	Patent Owner	Yes
12/01/2014	Exhibit 2002	Exhibit	2002	Patent Owner	Yes
12/01/2014	Exhibit 2003	Exhibit	2003	Patent Owner	Yes
12/01/2014	Exhibit 2004	Exhibit	2004	Patent Owner	Yes
12/10/2014	Patent Owner's Supplemental Mandatory Notice Information Under 37 C.F.R. 42.8	Notice	11	Patent Owner	Yes
01/06/2015	Supplemental Mandatory Notice	Notice	12	Petitioner	Yes
01/09/2015	Supplemental Mandatory Notice	Notice	13	Petitioner	Yes
01/28/2015	Institution Decision	Institution Decision	14	Board	Yes
01/30/2015	PO Supplemental Mandatory Notice	Notice	15	Patent Owner	Yes
03/10/2015	IPR2015-00118 - Refund request	Refund Request	16	Petitioner	Yes
04/07/2015	Notice of Refund	Notice	17	Board	Yes

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US Patent Trial and Appeals Board - Alexandria
(Alexandria)

IPR2014-00514

Samsung Electronics Co. Ltd. Vs. Rembrandt Wireless Technologies, LP

This case was retrieved from the court on Thursday, March 24, 2016

Header

Case Number:	IPR2014-00514
Date Filed:	03/20/2014
Date Full Case Retrieved:	03/24/2016
Status:	Open
Misc:	Civil

[Summary][Participants][Proceedings]

Summary

Court Case Status:	Not Instituted
Case Type:	IPR: Inter partes review
Date of Decision to Institute Case:	9/9/2014
Technical Center Number:	2600
Patent Application Number:	12543910
Patent Number:	8023580

Participants

Litigants

Samsung Electronics Co. Ltd.
Petitioner

Rembrandt Wireless Technologies, LP
PatentOwner

Proceedings

File Date	Details	Document Type	Paper/ Exhibit No.	Filed By	Public?
03/20/2014	Petition for Inter Partes Review of U.S. Patent No. 8,023,580	Petition	1	Petitioner	Yes
03/20/2014	Power of Attorney	Power of Attorney	2	Petitioner	Yes
03/20/2014	Patent No. US 8,023,580	Exhibit	1001	Petitioner	Yes
03/20/2014	Complaint	Exhibit	1002	Petitioner	Yes
03/20/2014	Proof of Service	Exhibit	1003	Petitioner	Yes
03/20/2014	O'Hara Declaration	Exhibit	1004	Petitioner	Yes
03/20/2014	Draft 802.11 Std.	Exhibit	1005	Petitioner	Yes

03/20/2014	802.11 Std.	Exhibit	1006	Petitioner	Yes
03/20/2014	Infringement Contentions	Exhibit	1007	Petitioner	Yes
03/20/2014	IEEE Dictionary	Exhibit	1008	Petitioner	Yes
03/20/2014	App. as filed	Exhibit	1009	Petitioner	Yes
03/20/2014	Oa	Exhibit	1010	Petitioner	Yes
03/20/2014	3.1.2011 Reply	Exhibit	1011	Petitioner	Yes
03/20/2014	3.10.2011 Response	Exhibit	1012	Petitioner	Yes
03/20/2014	5.11.2011 Supplemental Amendment	Exhibit	1013	Petitioner	Yes
03/20/2014	Notice of Allowances and Fees Due	Exhibit	1014	Petitioner	Yes
03/20/2014	Amendment After Allowance	Exhibit	1015	Petitioner	Yes
03/20/2014	Boer US5706428	Exhibit	1016	Petitioner	Yes
03/20/2014	Draft Joint Claim Construction Statement	Exhibit	1017	Petitioner	Yes
03/20/2014	Commuications dictionary master slave	Exhibit	1018	Petitioner	Yes
03/20/2014	Goodman Declaration	Exhibit	1019	Petitioner	Yes
04/03/2014	Notice of Filing Date Accorded to Petition	Notice of Filing Date Accorded to Petition	3	Board	Yes
04/03/2014	Amended Petition for Inter Partes Review	Notice	4	Petitioner	Yes
04/08/2014	Notice of Accepting Corrected Petition	Notice	5	Board	Yes
04/18/2014	Power of Attorney	Power of Attorney	6	Potential Patent Owner	Yes
04/18/2014	Related Matters	Notice	7	Potential Patent Owner	Yes
05/13/2014	Order - Authorizing Counsel for Patent Owner to file Motion to Withdraw	Order	8	Board	Yes
05/13/2014	Power of Attorney	Power of Attorney	9	Potential Patent Owner	Yes
05/13/2014	Related Matters	Notice	10	Potential Patent Owner	Yes
05/19/2014	Motion_For_Withdrawal	Motion	11	Patent Owner	Yes
05/20/2014	Order - Conduct of the Proceedings - 37 CFR 42.5	Order	12	Board	Yes
06/20/2014	PO Supplemental Mandatory Notice	Notice	13	Patent Owner	Yes
07/03/2014	Preliminary Response	Preliminary Response	14	Patent Owner	Yes
07/03/2014	Exhibit 2001	Exhibit	2001	Patent Owner	Yes
07/03/2014	Exhibit 2002	Exhibit	2002	Patent Owner	Yes
07/03/2014	Exhibit 2003	Exhibit	2003	Patent Owner	Yes
07/03/2014	Exhibit 2004	Exhibit	2004	Patent Owner	Yes
07/03/2014	Exhibit 2005	Exhibit	2005	Patent Owner	Yes
07/03/2014	Exhibit 2006	Exhibit	2006	Patent Owner	Yes
07/03/2014	Exhibit 2007	Exhibit	2007	Patent Owner	Yes
07/03/2014	Exhibit 2008	Exhibit	2008	Patent Owner	Yes
07/03/2014	Exhibit 2009	Exhibit	2009	Patent	Yes

				Owner	
07/03/2014	Exhibit 2010	Exhibit	2010	Patent Owner	Yes
07/03/2014	Exhibit 2011	Exhibit	2011	Patent Owner	Yes
07/03/2014	Exhibit 2012	Exhibit	2012	Patent Owner	Yes
07/03/2014	Exhibit 2013	Exhibit	2013	Patent Owner	Yes
07/22/2014	Order - Conduct of the Proceedings - 37 CFR 42.5	Order	15	Board	Yes
07/29/2014	Samsung Supplemental Exhibit List	Notice	16	Petitioner	Yes
07/29/2014	Transcript of 2014.07.21 Telephonic Conference Call	Exhibit	1020	Petitioner	Yes
07/31/2014	District Court Claim Construction	Notice	17	Patent Owner	Yes
09/09/2014	Decision - Denying Institution of Inter Partes Review	Institution Decision	18	Board	Yes
10/08/2014	Petitioners Request For Rehearing	Rehearing Request	19	Petitioner	Yes
10/24/2014	Decision - Request for Rehearing	Rehearing Decision	20	Board	Yes
12/02/2014	Petitioners Request for Refund	Notice	21	Petitioner	Yes
12/03/2014	Notice of Refund	Refund Approval	22	Board	Yes

United States Patent Trial and Appeals Board

US Patent Trial and Appeals Board - Alexandria
(Alexandria)

IPR2014-00515

Samsung Electronics Co., Ltd. Vs. Rembrandt Wireless Technologies, LP

This case was retrieved from the court on Thursday, March 24, 2016

Header

Case Number: IPR2014-00515
Date Filed: 03/20/2014
Date Full Case Retrieved: 03/24/2016
Status: Open
Misc: Civil

[Summary][Participants][Proceedings]

Summary

Court Case Status: Not Instituted
Case Type: IPR: Inter partes review
Date of Decision to Institute Case: 9/9/2014
Technical Center Number: 2600
Patent Application Number: 12543910
Patent Number: 8023580

Participants

Litigants

Samsung Electronics Co., Ltd.
Petitioner

Rembrandt Wireless Technologies, LP
PatentOwner

Proceedings

File Date	Details	Document Type	Paper/ Exhibit No.	Filed By	Public?
03/20/2014	Petition for Inter Partes Review of U.S. Patent No. 8,023,580	Petition	1	Petitioner	Yes
03/20/2014	Power of Attorney	Power of Attorney	2	Petitioner	Yes
03/20/2014	U.S. Patent No. 8,023,580	Exhibit	1101	Petitioner	Yes
03/20/2014	Complaint	Exhibit	1102	Petitioner	Yes
03/20/2014	Proof of Service	Exhibit	1103	Petitioner	Yes
03/20/2014	O'Hara Declaration	Exhibit	1104	Petitioner	Yes
03/20/2014	Draft 802.11 Std.	Exhibit	1105	Petitioner	Yes

03/20/2014	802.11 Std.	Exhibit	1106	Petitioner	Yes
03/20/2014	Infringement Contentions	Exhibit	1107	Petitioner	Yes
03/20/2014	IEEE Dictionary	Exhibit	1108	Petitioner	Yes
03/20/2014	App as filed	Exhibit	1109	Petitioner	Yes
03/20/2014	Oa	Exhibit	1110	Petitioner	Yes
03/20/2014	3.1.2011 Reply	Exhibit	1111	Petitioner	Yes
03/20/2014	3.10.2011 Response	Exhibit	1112	Petitioner	Yes
03/20/2014	Supplemental Amendment	Exhibit	1113	Petitioner	Yes
03/20/2014	Notice of Allowance and Fees Due	Exhibit	1114	Petitioner	Yes
03/20/2014	Amendment after Allowance	Exhibit	1115	Petitioner	Yes
03/20/2014	Goodman Declaration	Exhibit	1116	Petitioner	Yes
04/03/2014	Notice of Filing Date Accorded to Petition	Notice of Filing Date Accorded to Petition	3	Board	Yes
04/03/2014	Amended Petition for Inter Partes Review	Notice	4	Petitioner	Yes
04/08/2014	Notice of Accepting Corrected Petition	Notice	5	Board	Yes
04/18/2014	Power of Attorney	Power of Attorney	6	Potential Patent Owner	Yes
04/18/2014	Related Matters	Notice	7	Potential Patent Owner	Yes
05/13/2014	Order - Authorizing Counsel for Patent Owner to file Motion to Withdraw	Order	8	Board	Yes
05/13/2014	Power of Attorney	Power of Attorney	9	Potential Patent Owner	Yes
05/13/2014	Related Matters	Notice	10	Potential Patent Owner	Yes
05/19/2014	Motion_for_Withdrawal	Motion	11	Patent Owner	Yes
05/20/2014	Order - Conduct of the Proceedings - 37 CFR 42.5	Order	12	Board	Yes
06/20/2014	PO Supplemental Mandatory Notice	Notice	13	Patent Owner	Yes
07/03/2014	Preliminary Response	Preliminary Response	14	Patent Owner	Yes
07/03/2014	Exhibit 2101	Exhibit	2101	Patent Owner	Yes
07/03/2014	Exhibit 2102	Exhibit	2102	Patent Owner	Yes
07/03/2014	Exhibit 2103	Exhibit	2103	Patent Owner	Yes
07/03/2014	Exhibit 2104	Exhibit	2104	Patent Owner	Yes
07/03/2014	Exhibit 2105	Exhibit	2105	Patent Owner	Yes
07/03/2014	Exhibit 2106	Exhibit	2106	Patent Owner	Yes
07/03/2014	Exhibit 2107	Exhibit	2107	Patent Owner	Yes
07/03/2014	Exhibit 2108	Exhibit	2108	Patent Owner	Yes
07/22/2014	Order - Conduct of the Proceedings - 37 CFR 42.5	Order	15	Board	Yes
07/29/2014	Samsung Supplemental Exhibit List	Notice	16	Petitioner	Yes
07/29/2014	Transcript of 2014.07.21 Telephonic	Exhibit	1117	Petitioner	Yes

	Conference Call				
07/31/2014	District Court Claim Construction	Notice	17	Patent Owner	Yes
09/09/2014	Decision - Denying Institution of Inter Partes Review	Institution Decision	18	Board	Yes
10/08/2014	Petitioners Request For Rehearing	Rehearing Request	19	Petitioner	Yes
10/24/2014	Decision on Request for Rehearing	Rehearing Decision	20	Board	Yes
12/02/2014	Petitioners Request for Refund	Refund Request	21	Petitioner	Yes
12/03/2014	Notice of Refund	Refund Approval	22	Board	Yes

United States Patent Trial and Appeals Board

US Patent Trial and Appeals Board - Alexandria
(Alexandria)

IPR2014-00518

Samsung Electronics Co., Ltd. Vs. Rembrandt Wireless Technologies, LP

This case was retrieved from the court on Thursday, March 24, 2016

Header

Case Number: IPR2014-00518
Date Filed: 03/20/2014
Date Full Case Retrieved: 03/24/2016
Status: Closed
Misc: Civil

[Summary][Participants][Proceedings]

Summary

Court Case Status: Final Decision
Case Type: IPR: Inter partes review
Date of Decision to Institute Case: 9/23/2014
Technical Center Number: 2600
Patent Application Number: 12543910
Patent Number: 8023580

Participants

Litigants

Samsung Electronics Co., Ltd.
Petitioner

Rembrandt Wireless Technologies, LP
PatentOwner

Proceedings

File Date	Details	Document Type	Paper/ Exhibit No.	Filed By	Public?
03/20/2014	Petition for Inter Partes Review of U.S. Patent No. 8,023,580	Petition	1	Petitioner	Yes
03/20/2014	Power of Attorney	Power of Attorney	2	Petitioner	Yes
03/20/2014	U.S. Patent No. 8,023,580	Exhibit	1201	Petitioner	Yes
03/20/2014	Complaint	Exhibit	1202	Petitioner	Yes
03/20/2014	Proof of Service	Exhibit	1203	Petitioner	Yes
03/20/2014	Boer US5706428	Exhibit	1204	Petitioner	Yes
03/20/2014	Infringement Contentions	Exhibit	1205	Petitioner	Yes

03/20/2014	IEEE Dictionary	Exhibit	1206	Petitioner	Yes
03/20/2014	App as filed	Exhibit	1207	Petitioner	Yes
03/20/2014	Oa	Exhibit	1208	Petitioner	Yes
03/20/2014	3.1.2011 Reply	Exhibit	1209	Petitioner	Yes
03/20/2014	3.10.2011 Response	Exhibit	1210	Petitioner	Yes
03/20/2014	5.11.2011 Supplemental Amendment	Exhibit	1211	Petitioner	Yes
03/20/2014	Notice of Allowance and Fees Due	Exhibit	1212	Petitioner	Yes
03/20/2014	Amendment after Allowance	Exhibit	1213	Petitioner	Yes
03/20/2014	U.S. Patent 6,614,838	Exhibit	1214	Petitioner	Yes
03/20/2014	838 June 28 2001 OA	Exhibit	1215	Petitioner	Yes
03/20/2014	Octobet 1, 2001 Response	Exhibit	1216	Petitioner	Yes
03/20/2014	Proposed Constructions	Exhibit	1217	Petitioner	Yes
03/20/2014	Mears Declaration and Upender	Exhibit	1218	Petitioner	Yes
03/20/2014	Communications Dictionary Master Slave	Exhibit	1219	Petitioner	Yes
03/20/2014	Goodman Declaration	Exhibit	1220	Petitioner	Yes
04/03/2014	Notice of Filing Date Accorded to Petition	Notice of Filing Date Accorded to Petition	3	Board	Yes
04/03/2014	Amended Petition for Inter Partes Review	Notice	4	Petitioner	Yes
04/08/2014	Notice of Accepting Corrected Petition	Notice	5	Board	Yes
04/18/2014	Power of Attorney	Power of Attorney	6	Potential Patent Owner	Yes
04/18/2014	Related Matters	Notice	7	Potential Patent Owner	Yes
05/13/2014	Order - Authorizing Counsel for Patent Owner to file Motion to Withdraw	Order	8	Board	Yes
05/13/2014	Power of Attorney	Power of Attorney	9	Potential Patent Owner	Yes
05/13/2014	Related Matters	Notice	10	Potential Patent Owner	Yes
05/19/2014	Motion_For_Withdrawal	Motion	11	Patent Owner	Yes
05/20/2014	Order - Conduct of the Proceedings - 37 CFR 42.5	Order	12	Board	Yes
06/20/2014	PO Supplemental Mandatory Notice	Notice	13	Patent Owner	Yes
07/03/2014	Preliminary Response	Preliminary Response	14	Patent Owner	Yes
07/03/2014	Exhibit 2201	Exhibit	2201	Patent Owner	Yes
07/03/2014	Exhibit 2202	Exhibit	2202	Patent Owner	Yes
07/03/2014	Exhibit 2203	Exhibit	2203	Patent Owner	Yes
07/03/2014	Exhibit 2204	Exhibit	2204	Patent Owner	Yes
07/03/2014	Exhibit 2205	Exhibit	2205	Patent Owner	Yes
07/03/2014	Exhibit 2206	Exhibit	2206	Patent Owner	Yes
07/03/2014	Exhibit 2207	Exhibit	2207	Patent Owner	Yes
07/31/2014	District Court Claim Construction	Notice	15	Patent Owner	Yes

09/23/2014	Decision - Institution of Inter Partes Review	Institution Decision	16	Board	Yes
09/23/2014	Scheduling Order	Order	17	Board	Yes
10/10/2014	PO Proposed Motions	Notice	18	Patent Owner	Yes
10/10/2014	Petitioner Proposed Motions	Notice	19	Petitioner	Yes
10/20/2014	ORDER Conduct of the Proceeding	Notice	20	Board	Yes
10/27/2014	Notice of Goodman Deposition	Notice	21	Patent Owner	Yes
10/31/2014	Supplemental Mandatory Notice	Notice	22	Patent Owner	Yes
11/05/2014	Power of Attorney	Power of Attorney	23	Patent Owner	Yes
11/05/2014	Supplemental Mandatory Notice	Notice	24	Patent Owner	Yes
12/01/2014	Patent Owner's Response Pursuant to 37 C.F.R. 42.120	Opposition	25	Patent Owner	Yes
12/01/2014	Exhibit 2208	Exhibit	2208	Patent Owner	Yes
12/01/2014	Exhibit 2209	Exhibit	2209	Patent Owner	Yes
12/01/2014	Exhibit 2210	Exhibit	2210	Patent Owner	Yes
12/01/2014	Exhibit 2211	Exhibit	2211	Patent Owner	Yes
12/01/2014	Exhibit 2212	Exhibit	2212	Patent Owner	Yes
12/01/2014	Exhibit 2213	Exhibit	2213	Patent Owner	Yes
12/01/2014	Exhibit 2214	Exhibit	2214	Patent Owner	Yes
12/01/2014	Exhibit 2215	Exhibit	2215	Patent Owner	Yes
12/01/2014	Exhibit 2216	Exhibit	2216	Patent Owner	Yes
12/01/2014	Exhibit 2217	Exhibit	2217	Patent Owner	Yes
12/10/2014	Patent Owner's Supplemental Mandatory Notice Information Under 37 C.F.R. 42.8	Notice	26	Patent Owner	Yes
12/29/2014	Notice of Deposition of Dr. Christopher Jones	Notice	27	Petitioner	Yes
12/29/2014	Notice of Deposition of Dr. Philip Koopman	Notice	28	Petitioner	Yes
01/06/2015	Supplemental Mandatory Notice	Notice	29	Petitioner	Yes
01/09/2015	Supplemental Mandatory Notice	Notice	30	Petitioner	Yes
01/30/2015	PO Supplemental Mandatory Notice	Notice	31	Patent Owner	Yes
02/06/2015	Petitioner Reply	Reply	32	Petitioner	Yes
02/06/2015	Jones Deposition Transcript	Exhibit	1221	Petitioner	Yes
02/06/2015	Notice of Deposition	Exhibit	1222	Petitioner	Yes
02/06/2015	U.S. Patent No. 8,457,228	Exhibit	1223	Petitioner	Yes
02/06/2015	Illustration Drawn by Dr. Jones	Exhibit	1224	Petitioner	Yes
02/06/2015	Illustration Drawn by Dr. Jones	Exhibit	1225	Petitioner	Yes
02/06/2015	Illustration Drawn by Dr. Jones	Exhibit	1226	Petitioner	Yes
02/06/2015	Illustration Drawn by Dr. Jones	Exhibit	1227	Petitioner	Yes
02/06/2015	Illustration Drawn by Dr. Jones	Exhibit	1228	Petitioner	Yes
02/06/2015	Illustration Drawn by Dr. Jones	Exhibit	1229	Petitioner	Yes
02/06/2015	Illustration Drawn by Dr. Jones	Exhibit	1230	Petitioner	Yes
02/06/2015	Illustration Drawn by Dr. Jones	Exhibit	1231	Petitioner	Yes

02/06/2015	Data Network Evaluation Criteria	Exhibit	1232	Petitioner	Yes
02/06/2015	U.S. Patent No. 5,450,404	Exhibit	1233	Petitioner	Yes
02/06/2015	U.S. Patent No. 5,436,901	Exhibit	1234	Petitioner	Yes
02/06/2015	U.S. Patent No. 5,535,212	Exhibit	1235	Petitioner	Yes
02/06/2015	Order, Innovative Biometric Tech., LLC v Toshiba Am. Info. Sys.	Exhibit	1236	Petitioner	Yes
02/06/2015	Order, Innovative Biometric Tech., LLC v Lenovo (U.S.), Inc.	Exhibit	1237	Petitioner	Yes
02/06/2015	Koopman Deposition Transcript	Exhibit	1238	Petitioner	Yes
03/02/2015	Power of Attorney	Power of Attorney	33	Petitioner	Yes
03/20/2015	Petitioners Request for Oral Hearing	Notice	34	Petitioner	Yes
03/20/2015	Patent Owner's Request for Oral Argument	Notice	35	Patent Owner	Yes
03/20/2015	Power of Attorney	Power of Attorney	36	Petitioner	Yes
03/20/2015	Petitioners_ Motion to Withdraw As Counsel (IPR2014-00518)	Motion	37	Petitioner	Yes
03/20/2015	Petitioners_ Motion to Change Designation of Lead Counsel (IPR2014-00518)	Motion	38	Petitioner	Yes
03/25/2015	Petitioner's Unopposed Motion for Pro Hac Vice Admission of Brian P. Biddinger	Motion	39	Petitioner	Yes
03/26/2015	Order Conduct of Proceedings	Order	40	Board	Yes
03/27/2015	DECISION Petitioner's Motion for Pro Hac Vice Admission of Mr. Biddinger	Notice	41	Board	Yes
04/07/2015	Petitioners' Supplemental Mandatory Notice	Notice	42	Petitioner	Yes
04/16/2015	ORDER Trial Hearing Notice	Notice	43	Board	Yes
04/22/2015	Petitioners' Updated Exhibit List - 4-22-2015	Notice	44	Petitioner	Yes
04/22/2015	Patent Owner's Demonstratives and Updated Exhibit List	Notice	45	Patent Owner	Yes
04/22/2015	Petitioners' Demonstratives	Exhibit	1239	Petitioner	Yes
04/22/2015	Exhibit 2218 - Patent Owner's Demonstratives	Exhibit	2218	Patent Owner	Yes
07/20/2015	Record of Oral Hearing	Notice	46	Board	Yes
09/17/2015	Final Written Decision - 35 U.S.C. 318(a) and 37 C.F.R. 42.73	Final Decision	47	Board	Yes

United States Patent Trial and Appeals Board

US Patent Trial and Appeals Board - Alexandria
(Alexandria)

IPR2014-00519

Samsung Electronics Co., Ltd. Vs. Rembrandt Wireless Technologies, LP

This case was retrieved from the court on Thursday, March 24, 2016

Header

Case Number:	IPR2014-00519
Date Filed:	03/20/2014
Date Full Case Retrieved:	03/24/2016
Status:	Closed
Misc:	Civil

[Summary][Participants][Proceedings]

Summary

Court Case Status:	Final Decision
Case Type:	IPR: Inter partes review
Date of Decision to Institute Case:	9/23/2014
Technical Center Number:	2600
Patent Application Number:	12543910
Patent Number:	8023580

Participants

Litigants

Samsung Electronics Co., Ltd.
Petitioner

Rembrandt Wireless Technologies, LP
PatentOwner

Proceedings

File Date	Details	Document Type	Paper/ Exhibit No.	Filed By	Public?
03/20/2014	Petition for Inter Partes Review of U.S. Patent No. 8,023,580	Petition	1	Petitioner	Yes
03/20/2014	Power of Attorney	Power of Attorney	2	Petitioner	Yes
03/20/2014	U.S. Patent No. 8,023,580	Exhibit	1301	Petitioner	Yes
03/20/2014	Complaint	Exhibit	1302	Petitioner	Yes
03/20/2014	Proof of Service	Exhibit	1303	Petitioner	Yes
03/20/2014	Boer US5706428	Exhibit	1304	Petitioner	Yes
03/20/2014	Infringement Contentions	Exhibit	1305	Petitioner	Yes

03/20/2014	IEEE Dictionary	Exhibit	1306	Petitioner	Yes
03/20/2014	App as filed	Exhibit	1307	Petitioner	Yes
03/20/2014	Oa	Exhibit	1308	Petitioner	Yes
03/20/2014	3.1.2011 Reply	Exhibit	1309	Petitioner	Yes
03/20/2014	3.10.2011 Response	Exhibit	1310	Petitioner	Yes
03/20/2014	5.11.2011 Supplemental Amendment	Exhibit	1311	Petitioner	Yes
03/20/2014	Notice of Allowance and Fees Due	Exhibit	1312	Petitioner	Yes
03/20/2014	Amendment after Allowance	Exhibit	1313	Petitioner	Yes
03/20/2014	U.S. Patent No. 6,614,838	Exhibit	1314	Petitioner	Yes
03/20/2014	June 28, 2001 OA	Exhibit	1315	Petitioner	Yes
03/20/2014	October 2, 2001 Response	Exhibit	1316	Petitioner	Yes
03/20/2014	Mears Declaration and Upender	Exhibit	1317	Petitioner	Yes
03/20/2014	Goodman Declaration	Exhibit	1318	Petitioner	Yes
04/03/2014	Notice of Filing Date Accorded to Petition	Notice of Filing Date Accorded to Petition	3	Board	Yes
04/03/2014	Amended Petition for Inter Partes Review	Notice	4	Petitioner	Yes
04/08/2014	Notice of Accepting Corrected Petition	Notice	5	Board	Yes
04/18/2014	Power of Attorney	Power of Attorney	6	Potential Patent Owner	Yes
04/18/2014	Related Matters	Notice	7	Potential Patent Owner	Yes
05/13/2014	Order - Authorizing Counsel for Patent Owner to file Motion to Withdraw	Order	8	Board	Yes
05/13/2014	Power of Attorney	Power of Attorney	9	Potential Patent Owner	Yes
05/13/2014	Related Matters	Notice	10	Potential Patent Owner	Yes
05/19/2014	Motion_For_Withdrawal	Motion	11	Patent Owner	Yes
05/20/2014	Order - Conduct of the Proceedings - 37 CFR 42.5	Order	12	Board	Yes
06/20/2014	PO Supplemental Mandatory Notice	Notice	13	Patent Owner	Yes
07/03/2014	Preliminary Response	Preliminary Response	14	Patent Owner	Yes
07/03/2014	Exhibit 2301	Exhibit	2301	Patent Owner	Yes
07/31/2014	District Court Claim Construction	Notice	15	Patent Owner	Yes
09/23/2014	Decision - Institution of Inter Partes Review 37 C.F.R. 42.108	Institution Decision	16	Board	Yes
09/23/2014	Scheduling Order	Notice	17	Board	Yes
10/10/2014	PO Proposed Motions	Notice	18	Patent Owner	Yes
10/10/2014	Petitioner Notice of Proposed Motions	Notice	19	Petitioner	Yes
10/20/2014	ORDER Conduct of the Proceeding	Notice	20	Board	Yes
10/27/2014	Notice of Goodman Declaration	Notice	21	Patent Owner	Yes
10/31/2014	Supplemental Mandatory Notice	Notice	22	Patent Owner	Yes
11/05/2014	Power of Attorney	Power of Attorney	23	Patent Owner	Yes
11/05/2014	Supplemental Mandatory Notice	Notice	24	Patent	Yes

				Owner	
12/01/2014	Patent Owner's Response Pursuant to 37 C.F.R. 42.120	Opposition	25	Patent Owner	Yes
12/01/2014	Exhibit 2302	Exhibit	2302	Patent Owner	Yes
12/01/2014	Exhibit 2303	Exhibit	2303	Patent Owner	Yes
12/01/2014	Exhibit 2304	Exhibit	2304	Patent Owner	Yes
12/01/2014	Exhibit 2305	Exhibit	2305	Patent Owner	Yes
12/01/2014	Exhibit 2306	Exhibit	2306	Patent Owner	Yes
12/01/2014	Exhibit 2307	Exhibit	2307	Patent Owner	Yes
12/01/2014	Exhibit 2308	Exhibit	2308	Patent Owner	Yes
12/01/2014	Exhibit 2309	Exhibit	2309	Patent Owner	Yes
12/01/2014	Exhibit 2310	Exhibit	2310	Patent Owner	Yes
12/04/2014	Patent Owner's Notice of Filing of Disclaimer Under 37 C.F.R. 1.321(a)	Notice	26	Patent Owner	Yes
12/10/2014	Patent Owner's Supplemental Mandatory Notice Information Under 37 C.F.R. 42.8	Notice	27	Patent Owner	Yes
12/29/2014	Notice of Deposition of Dr. Christopher Jones	Notice	28	Petitioner	Yes
12/29/2014	Notice of Deposition of Dr. Philip Koopman	Notice	29	Petitioner	Yes
01/06/2015	Notice of Withdrawal of Notice of Deposition of Dr. Christopher Jones	Notice	30	Petitioner	Yes
01/06/2015	Supplemental Mandatory Notice	Notice	31	Petitioner	Yes
01/09/2015	Supplemental Mandatory Notice	Notice	32	Petitioner	Yes
01/30/2015	PO Supplemental Mandatory Notice	Notice	33	Patent Owner	Yes
02/06/2015	Petitioner Reply	Reply	34	Petitioner	Yes
02/06/2015	Koopman Deposition Transcript	Exhibit	1319	Petitioner	Yes
02/06/2015	Data Network Evaluation Criteria	Exhibit	1320	Petitioner	Yes
02/06/2015	U.S. Patent No. 5,450,404	Exhibit	1321	Petitioner	Yes
02/06/2015	U.S. Patent No. 5,436,901	Exhibit	1322	Petitioner	Yes
02/06/2015	U.S. Patent No. 5,535,212	Exhibit	1323	Petitioner	Yes
02/06/2015	Order, Innovative Biometric Tech., LLC v Toshiba Am. Info. Sys.	Exhibit	1324	Petitioner	Yes
02/06/2015	Order, Innovative Biometric Tech., LLC v Lenovo (U.S.), Inc.	Exhibit	1325	Petitioner	Yes
03/02/2015	Power of Attorney	Power of Attorney	35	Petitioner	Yes
03/20/2015	Petitioners Request for Oral Hearing	Notice	36	Petitioner	Yes
03/20/2015	Patent Owner's Request for Oral Argument	Notice	37	Patent Owner	Yes
03/20/2015	Petitioners_ Motion to Withdraw As Counsel (IPR2014-00519)	Motion	38	Petitioner	Yes
03/20/2015	Petitioners_ Motion to Change Designation of Lead Counsel (IPR2014-00519)	Motion	39	Petitioner	Yes
03/20/2015	Power of Attorney	Power of Attorney	40	Petitioner	Yes
03/25/2015	Petitioner's Unopposed Motion for Pro Hac Vice Admission of Brian P. Biddinger	Motion	41	Petitioner	Yes
03/26/2015	Order Conduct of Proceedings	Order	42	Board	Yes
03/27/2015	DECISION - Petitioner's Motion for Pro Hac Vice Admission of Mr. Biddinger	Notice	43	Board	Yes

04/07/2015	Petitioners' Supplemental Mandatory Notice	Notice	44	Petitioner	Yes
04/16/2015	ORDER Trial Hearing Notice	Notice	45	Board	Yes
04/22/2015	Petitioners' Updated Exhibit List - 4-22-2015	Notice	46	Petitioner	Yes
04/22/2015	Patent Owner's Demonstratives and Updated Exhibit List	Notice	47	Patent Owner	Yes
04/22/2015	Petitioners' Demonstratives	Exhibit	1326	Petitioner	Yes
04/22/2015	Exhibit 21311 - Patent Owner's Demonstratives	Exhibit	2311	Patent Owner	Yes
07/20/2015	Record of Oral Hearing	Notice	48	Board	Yes
09/17/2015	Final Written Decision - 35 USC 318(a) and 37 CFR 42.73	Final Decision	49	Board	Yes

US District Court Civil Docket

U.S. District - Texas Eastern
(Marshall)

2:13cv213

Rembrandt Wireless Technologies, LP v. Samsung Electronics Co. Ltd., et al

This case was retrieved from the court on Monday, September 19, 2016

Date Filed:	**03/15/2013**		
Assigned To:	**Judge Rodney Gilstrap**	Class Code:	**OPEN**
Referred To:		Closed:	
Nature of suit:	**Patent (830)**	Statute:	**35:271**
Cause:	**Patent Infringement**	Jury Demand:	**Both**
Lead Docket:	**None**	Demand Amount:	**$0**
Other Docket:	**USCA-FEDERAL CIRCUIT, 16-01729**	NOS Description:	**Patent**
Jurisdiction:	**Federal Question**		

Litigants	Attorneys
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Rembrandt Wireless Technologies LP Plaintiff	Demetrios Anaipakos LEAD ATTORNEY;ATTORNEY TO BE NOTICED Ahmad, Zavitsanos, Anaipakos, Alavi & Mensing P.C. 1221 Mckinney Street Suite 2500 Houston , TX 77002 USA 713/655-1101

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Date	#	Proceeding Text	Source
03/15/2013	1	COMPLAINT FOR PATENT INFRINGEMENT against All Defendants (Filing fee $ 350 receipt number 0540-4047368.), filed by Rembrandt Wireless Technologies, LP. (Attachments: # 1 Exhibit Exhibit A - '580 Patent)(Jones, Miranda) (Additional attachment(s) added on 3/18/2013: # 2 Civil Cover Sheet) (ch,). (Entered: 03/15/2013)	
03/18/2013		Case assigned to Judge Rodney Gilstrap. (ch,) (Entered: 03/18/2013)	
03/18/2013	2	ORDER REFERRING CASE to Magistrate Judge Roy S. Payne for pretrial purposes. Signed by Judge Rodney Gilstrap on 3/18/2013. (ch,) (Entered: 03/18/2013)	
03/18/2013		In accordance with the provisions of 28 USC Section 636(c), you are hereby notified that a U.S. Magistrate Judge of this district court is available to conduct any or all proceedings in this case including a jury or non-jury trial and to order the entry of a final judgment. The form Consent to Proceed Before Magistrate Judge is available on our website. All signed consent forms, excluding pro se parties, should be filed electronically using the event Notice of Consent to Proceed Before Magistrate Judge. (ch,) (Entered: 03/18/2013)	
03/18/2013	3	NOTICE of Attorney Appearance by Eric James Enger on behalf of Rembrandt Wireless Technologies LP (Enger, Eric) (Entered: 03/18/2013)	
03/18/2013	4	NOTICE of Attorney Appearance by Robert Allan Bullwinkel on behalf of Rembrandt Wireless Technologies LP (Bullwinkel, Robert) (Entered: 03/18/2013)	
03/18/2013	5	NOTICE of Attorney Appearance by Michael F Heim on behalf of Rembrandt Wireless Technologies LP (Heim, Michael) (Entered: 03/18/2013)	
03/19/2013	6	SUMMONS Issued as to Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America LLC, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Samsung Telecommunication Am LLC, # 2 Samsung Electronics Co Ltd, # 3 Samsung Electronics Am LLC, # 4 Samsung Austin Semiconductor LLC, # 5 Research in Motion ltd) (ehs,) (Entered: 03/19/2013)	
03/19/2013	7	NOTICE of Attorney Appearance by Amir H. Alavi on behalf of Rembrandt Wireless Technologies LP (Alavi, Amir) (Entered: 03/19/2013)	
03/19/2013	8	NOTICE of Attorney Appearance by Demetrios Anaipakos on behalf of Rembrandt	

		Wireless Technologies LP (Anaipakos, Demetrios) (Entered: 03/19/2013)
03/19/2013	9	NOTICE of Attorney Appearance by Brian Ervin Simmons on behalf of Rembrandt Wireless Technologies LP (Simmons, Brian) (Entered: 03/19/2013)
03/19/2013	10	Notice of Filing of Patent/Trademark Form (AO 120). AO 120 mailed to the Director of the U.S. Patent and Trademark Office. (Enger, Eric) (Entered: 03/19/2013)
04/10/2013	11	NOTICE by Research in Motion Ltd WAIVER OF THE SERVICE OF SUMMONS TO MIRANDA JONES (Hung, Richard) (Entered: 04/10/2013)
04/10/2013	12	Unopposed MOTION for Extension of Time to File Answer by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order)(Jones, Miranda) (Entered: 04/10/2013)
04/10/2013	13	Unopposed MOTION for Extension of Time to File Answer by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order)(Jones, Miranda) (Entered: 04/10/2013)
04/11/2013	14	NOTICE of Attorney Appearance by Thomas John Ward, Jr on behalf of Rembrandt Wireless Technologies LP (Ward, Thomas) (Entered: 04/11/2013)
04/11/2013	15	NOTICE of Attorney Appearance by Jack Wesley Hill on behalf of Rembrandt Wireless Technologies LP (Hill, Jack) (Entered: 04/11/2013)
04/11/2013	16	NOTICE of Attorney Appearance by Claire Abernathy Henry on behalf of Rembrandt Wireless Technologies LP (Henry, Claire) (Entered: 04/11/2013)
04/12/2013	17	AMENDED COMPLAINT against Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC, filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit A)(Jones, Miranda) (Entered: 04/12/2013)
04/15/2013	18	WAIVER OF SERVICE Returned Executed by Rembrandt Wireless Technologies LP. Samsung Electronics Co LTD waiver sent on 4/10/2013, answer due 6/10/2013. (ehs,) (Entered: 04/15/2013)
04/15/2013	19	ORDER granting 12 Motion for Extension of Time to Answer. The deadline for Research in Motion Corp. and Research in Motion Ltd. to answer is extended up to July 3, 2013. Signed by Magistrate Judge Roy S. Payne on 4/15/13. (ehs,) (Entered: 04/15/2013)
04/15/2013		Answer Due Deadline Updated for Research In Motion Corporation to 7/3/2013; Research in Motion Ltd to 7/3/2013. (ehs,) (Entered: 04/15/2013)
04/15/2013	20	ORDER granting 13 Motion for Extension of Time to Answer. Deadline for Samsung Electronics Co. Ltd. and the Domestic Samsung Defendants (i.e., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC) to answer the Complaint is extended to July 3, 2013. Signed by Magistrate Judge Roy S. Payne on 4/15/13. (ehs,) (Entered: 04/15/2013)
04/15/2013		Answer Due Deadline Updated for Samsung Austin Semiconductor LLC to 7/3/2013; Samsung Electronics America Inc to 7/3/2013; Samsung Electronics Co LTD to 7/3/2013; Sansung Telecommunications America LLC to 7/3/2013. (ehs,) (Entered: 04/15/2013)
04/25/2013	21	SUMMONS Returned Executed by Rembrandt Wireless Technologies LP. Research In Motion Corporation served on 3/25/2013, answer due 7/3/2013; Research in Motion Ltd served on 3/21/2013, answer due 7/3/2013; Samsung Austin Semiconductor LLC served on 3/20/2013, answer due 7/3/2013; Samsung Electronics America Inc served on 3/27/2013, answer due 7/3/2013; Sansung Telecommunications America LLC served on 3/25/2013, answer due 7/3/2013. (Attachments: # 1 Research In Motion Corp, # 2 Samsung Austin Semiconductor LLC, # 3 Samsung Electronics Am LLC, # 4 Samsung Telecommunications America)(ehs,) (Entered: 04/25/2013)
05/01/2013	22	***DEFICIENT DOCUMENT. PLEASE IGNORE.***NOTICE of Attorney Appearance by Jeffrey Kirk Sherwood on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Sherwood, Jeffrey) Modified on 5/2/2013 (ch,). (Entered: 05/01/2013)
05/02/2013		NOTICE of Deficiency regarding the 22 submitted NO CERTIFICATE OF SERVICE. Correction should be made by one business day (ch,) (Entered: 05/02/2013)
05/03/2013	23	NOTICE of Attorney Appearance by Jeffrey Kirk Sherwood on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Sherwood, Jeffrey) (Entered: 05/03/2013)
06/05/2013	24	AMENDED COMPLAINT Second against All Defendants, filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit A - 580 Patent, # 2 Exhibit B - 228 Patent) (Enger, Eric) (Entered: 06/05/2013)

06/10/2013	25	Notice of Filing of Patent/Trademark Form (AO 120). AO 120 mailed to the Director of the U.S. Patent and Trademark Office. (Enger, Eric) (Entered: 06/10/2013)
06/25/2013	26	Unopposed MOTION for Extension of Time to File Answer re 24 Amended Complaint by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Text of Proposed Order)(Sherwood, Jeffrey) (Entered: 06/25/2013)
06/25/2013	27	NOTICE of Attorney Appearance by Michael Charles Smith on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Smith, Michael) (Entered: 06/25/2013)
06/26/2013	28	ORDER granting 26 Motion for Extension of Time to Answer. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC. Deadline is 7/10/2013. Signed by Magistrate Judge Roy S. Payne on 6/26/2013. (ch,) (Entered: 06/26/2013)
06/26/2013		Answer Due Deadline Updated for Samsung Austin Semiconductor LLC to 7/10/2013; Samsung Electronics America Inc to 7/10/2013; Samsung Electronics Co LTD to 7/10/2013; Sansung Telecommunications America LLC to 7/10/2013. (ch,) (Entered: 06/26/2013)
06/27/2013	29	NOTICE of Attorney Appearance by Richard S J Hung on behalf of Research In Motion Corporation, Research in Motion Ltd (Hung, Richard) (Entered: 06/27/2013)
06/27/2013	30	Unopposed MOTION for Extension of Time to File Answer to Plaintiff's Second Amended Complaint by Research In Motion Corporation, Research in Motion Ltd. (Attachments: # 1 Text of Proposed Order)(Hung, Richard) (Entered: 06/27/2013)
07/01/2013	31	NOTICE of Attorney Appearance - Pro Hac Vice by Daniel G Cardy on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. Filing fee $ 100, receipt number 0540-4204231. (Cardy, Daniel) (Entered: 07/01/2013)
07/01/2013	32	NOTICE of Attorney Appearance - Pro Hac Vice by Gerard Haddad on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. Filing fee $ 100, receipt number 0540-4204241. (Haddad, Gerard) Modified on 7/2/2013 (pkb,). (Entered: 07/01/2013)
07/01/2013	33	NOTICE of Attorney Appearance by Frank C Cimino, Jr on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Cimino, Frank) (Entered: 07/01/2013)
07/01/2013	34	ORDER granting 30 Motion for Extension of Time to Answer. Dft Research In Motion Corp and Research In Motion Ltd is 7/10/2013. Signed by Magistrate Judge Roy S. Payne on 7/1/2013. (ch,) (Entered: 07/01/2013)
07/01/2013		Answer Due Deadline Updated for Research In Motion Corporation to 7/10/2013; Research in Motion Ltd to 7/10/2013. (ch,) (Entered: 07/01/2013)
07/08/2013	35	NOTICE of Attorney Appearance - Pro Hac Vice by Jared W Miller on behalf of Research In Motion Corporation, Research in Motion Ltd. Filing fee $ 100, receipt number 0540-4213323. (Miller, Jared) (Entered: 07/08/2013)
07/09/2013	36	NOTICE of Attorney Appearance - Pro Hac Vice by Francis C Ho on behalf of Research In Motion Corporation, Research in Motion Ltd. Filing fee $ 100, receipt number 0540-4214040. (Ho, Francis) (Entered: 07/09/2013)
07/10/2013	37	NOTICE of Attorney Appearance by Vincent J Belusko on behalf of Research In Motion Corporation, Research in Motion Ltd (Belusko, Vincent) (Entered: 07/10/2013)
07/10/2013	38	Defendants Research In Motion Corp.'s and Research in Motion Ltd.'s ANSWER to 24 Amended Complaint (Second) and, COUNTERCLAIM against Rembrandt Wireless Technologies LP by Research in Motion Ltd, Research In Motion Corporation.(Hung, Richard) (Entered: 07/10/2013)
07/10/2013	39	CORPORATE DISCLOSURE STATEMENT filed by Research In Motion Corporation, Research in Motion Ltd identifying Corporate Parent Research In Motion Limited for Research In Motion Corporation. (Hung, Richard) (Entered: 07/10/2013)
07/10/2013	40	ANSWER to 24 Amended Complaint, COUNTERCLAIM against Rembrandt Wireless Technologies LP by Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC, Samsung Austin Semiconductor LLC.(Smith, Michael) (Entered: 07/10/2013)
07/10/2013	41	CORPORATE DISCLOSURE STATEMENT filed by Samsung Electronics Co LTD identifying Corporate Parent None, Other Affiliate Samsung Electronics America Inc, Other Affiliate Samsung TeleCommunications America, LLC, Other Affiliate Samsung Austin

		Semiconductor LLC for Samsung Electronics Co LTD. (Smith, Michael) (Entered: 07/10/2013)
07/15/2013	42	NOTICE by Rembrandt Wireless Technologies LP of Readiness for Scheduling Conference (Enger, Eric) (Entered: 07/15/2013)
07/22/2013	43	ORDER setting Scheduling Conference for 8/8/2013 04:15 PM in Ctrm 106 (Marshall) before Judge Rodney Gilstrap and Judge Roy Payne. Signed by Judge Rodney Gilstrap on 7/22/13. (bas,) (Entered: 07/22/2013)
07/24/2013	44	NOTICE of Attorney Appearance - Pro Hac Vice by Alden Harris on behalf of Rembrandt Wireless Technologies LP. Filing fee $ 100, receipt number 0540-4234929. (Harris, Alden) (Entered: 07/24/2013)
07/25/2013	45	NOTICE by Rembrandt Wireless Technologies LP of Disclosures (Enger, Eric) (Entered: 07/25/2013)
07/31/2013	46	ANSWER to 40 Answer to Amended Complaint, Counterclaim to Samsung Defendants' Counterclaims by Rembrandt Wireless Technologies LP.(Enger, Eric) (Entered: 07/31/2013)
07/31/2013	47	ANSWER to 38 Answer to Amended Complaint, Counterclaim,, to Research In Motion Defendants' Counterclaims by Rembrandt Wireless Technologies LP.(Enger, Eric) (Entered: 07/31/2013)
07/31/2013	48	NOTICE of Attorney Appearance by John Steven Torkelson on behalf of Research In Motion Corporation, Research in Motion Ltd (Torkelson, John) (Entered: 07/31/2013)
08/01/2013	49	NOTICE of Attorney Appearance by Edgar Leon Carter on behalf of Research In Motion Corporation, Research in Motion Ltd (Carter, Edgar) (Entered: 08/01/2013)
08/08/2013		Minute Entry for proceedings held before Judge Rodney Gilstrap and Judge Roy Payne: Scheduling Conference held on 8/8/13. Counsel for the parties appeared and were asked if they consented to a trial before Judge Payne. The parties were then given Markman and jury selection dates. The parties were directed to meet and confer regarding any changes to the Courts scheduling order and discovery order, and the parties are to submit the proposed orders within 14 days of the conference. (Court Reporter Shelly Holmes.) (bga,) (Entered: 08/13/2013)
08/08/2013		Minute Entry for proceedings held before Judge Rodney Gilstrap and Judge Roy Payne: Scheduling Conference held on 8/8/13. Counsel for the parties appeared and were asked if they consented to a trial before Judge Payne. The parties were then given Markman and jury selection dates. The parties were directed to meet and confer regarding any changes to the Court's scheduling order and discovery order, and the parties are to submit the proposed orders within 14 days of the conference. (Court Reporter Shelly Holmes.) (jml) (Entered: 09/10/2013)
08/15/2013	50	NOTICE of Designation of Mediator, Judge Paul Michel, filed by Rembrandt Wireless Technologies LP, Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Enger, Eric) (Entered: 08/15/2013)
08/21/2013	51	ORDER REFERRING CASE to Mediator Paul R. Michel, 6307 Broad Branch Road, Chevy Chase, Maryland 20815, telephone number (301) 229-3045 and email prmichel@mindspring.com, is hereby appointed as mediator. Signed by Magistrate Judge Roy S. Payne on 8/20/2013. (ch,) (Entered: 08/21/2013)
08/22/2013	52	Joint MOTION Seeking Entry of Docket Control Order, Discovery Order and E-Discovery Order re 43 Order, Set Hearings by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3)(Enger, Eric) (Entered: 08/22/2013)
08/29/2013	53	DOCKET CONTROL ORDER - Amended Pleadings due by 3/13/2014., Joinder of Parties due by 8/29/2013., Markman Hearing set for 5/29/2014 09:00 AM before Magistrate Judge Roy S. Payne., Motions due by 12/31/2014., Proposed Pretrial Order due by 1/12/2015., Jury Selection set for 2/2/2015 09:00AM before Judge Rodney Gilstrap., Pretrial Conference set for 1/20/2015 09:00 AM before Magistrate Judge Roy S. Payne. Mediation deadline is 7/14/2014. Signed by Magistrate Judge Roy S. Payne on 8/29/2013. (ch,) (Entered: 08/29/2013)
08/29/2013	54	DISCOVERY ORDER. Signed by Magistrate Judge Roy S. Payne on 8/29/2013. (ch,) (Entered: 08/29/2013)
08/29/2013	55	ORDER REGARDING E-DISCOVERY. Signed by Magistrate Judge Roy S. Payne on 8/29/2013. (ch,) (Entered: 08/29/2013)
08/29/2013	56	Joint MOTION for Protective Order Entry by Rembrandt Wireless Technologies LP, Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung

		Telecommunications America LLC. (Attachments: # 1 Exhibit 1 - Samsung's Version of Protective Order, # 2 Exhibit 2 - Rembrandt's Version of Protective Order)(Alavi, Amir) (Entered: 08/29/2013)
08/30/2013	57	NOTICE of Change of Address by Eric James Enger (Enger, Eric) (Entered: 08/30/2013)
09/06/2013	58	NOTICE of Discovery Disclosure by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Initial Disclosures) (Smith, Michael) (Entered: 09/06/2013)
09/06/2013	59	NOTICE of Discovery Disclosure by Rembrandt Wireless Technologies LP Initial Disclosures (Enger, Eric) (Entered: 09/06/2013)
09/06/2013	60	NOTICE of Discovery Disclosure by Research In Motion Corporation, Research in Motion Ltd Initial Disclosures (Torkelson, John) (Entered: 09/06/2013)
09/12/2013	61	Unopposed MOTION to Modify Caption and Notice of Change of Name of Parties by Research In Motion Corporation, Research in Motion Ltd. (Attachments: # 1 Text of Proposed Order)(Hung, Richard) (Entered: 09/12/2013)
09/17/2013	62	ORDER denying 61 Unopposed Motion to Modify Caption. Signed by Magistrate Judge Roy S. Payne on 9/16/2013. (ch,) (Entered: 09/17/2013)
09/20/2013	63	NOTICE of Discovery Disclosure by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Additional Disclosures) (Smith, Michael) (Entered: 09/20/2013)
09/20/2013	64	NOTICE of Discovery Disclosure by Rembrandt Wireless Technologies LP (Enger, Eric) (Entered: 09/20/2013)
09/20/2013	65	NOTICE of Discovery Disclosure by Research In Motion Corporation, Research in Motion Ltd Additional Disclosures (Torkelson, John) (Entered: 09/20/2013)
10/31/2013	66	NOTICE of Discovery Disclosure by Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (PR 3-3 and 3-4 Disclosures) (Smith, Michael) (Entered: 10/31/2013)
11/22/2013	67	Unopposed MOTION for Protective Order Temporary by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Text of Proposed Order Proposed Order)(Enger, Eric) (Entered: 11/22/2013)
11/27/2013	68	PROTECTIVE ORDER. Signed by Magistrate Judge Roy S. Payne on 11/27/2013. (ch,) (Entered: 11/27/2013)
12/02/2013	69	Unopposed MOTION to Withdraw as Attorney Francis C. Ho by Research In Motion Corporation, Research in Motion Ltd. (Attachments: # 1 Text of Proposed Order) (Torkelson, John) (Entered: 12/02/2013)
12/04/2013	70	ORDER granting 69 Motion to Withdraw as Attorney. Attorney Francis C Ho terminated. Signed by Magistrate Judge Roy S. Payne on 12/4/2013. (ch,) (Entered: 12/04/2013)
01/13/2014	71	NOTICE of Attorney Appearance - Pro Hac Vice by James Ryan Gilfoil on behalf of Research In Motion Corporation, Research in Motion Ltd. Filing fee $ 100, receipt number 0540-4476910. (Gilfoil, James) (Entered: 01/13/2014)
01/14/2014	72	NOTICE of Attorney Appearance by Blaine Andrew Larson on behalf of All Plaintiffs (Larson, Blaine) (Entered: 01/14/2014)
01/23/2014	73	NOTICE of Attorney Appearance by Kyril Vladimir Talanov on behalf of Rembrandt Wireless Technologies LP (Talanov, Kyril) (Entered: 01/23/2014)
01/24/2014	74	NOTICE by Rembrandt Wireless Technologies LP of Compliance with Patent Rule 4-1 (Enger, Eric) (Entered: 01/24/2014)
01/24/2014	75	Unopposed MOTION to Amend/Correct its Infringement Contentions to Research In Motion by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit Declaration of Eric Enger, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Text of Proposed Order)(Enger, Eric) (Entered: 01/24/2014)
01/27/2014	76	NOTICE of Discovery Disclosure by Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (PR 4-1 Disclosures) (Smith, Michael) (Entered: 01/27/2014)
01/28/2014	77	MOTION to Amend/Correct Infringement Contentions to Samsung by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Text of Proposed Order)(Enger, Eric) (Entered: 01/28/2014)

01/29/2014	78	ORDER finding as moot 67 Motion for Temporary Protective Order. Signed by Magistrate Judge Roy S. Payne on 01/29/2014. (rsp3) (Entered: 01/29/2014)
01/29/2014	79	ORDER granting 75 Motion to Amend/Correct Infringement Contentions. Signed by Magistrate Judge Roy S. Payne on 1/29/2014. (ch,) (Entered: 01/29/2014)
02/14/2014	80	RESPONSE to Motion re 77 MOTION to Amend/Correct Infringement Contentions to Samsung filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Text of Proposed Order Granting Rembrandt Leave to Amend its Infringement Contentions)(Haddad, Gerard) (Entered: 02/14/2014)
03/06/2014	81	Claim Construction and Prehearing Statement by Rembrandt Wireless Technologies LP. (Enger, Eric) (Entered: 03/06/2014)
03/07/2014	82	Unopposed MOTION for Protective Order Supplemental for Non-Parties by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order)(Enger, Eric) (Entered: 03/07/2014)
03/12/2014		NOTICE of Hearing: Jury Selection RESET for 2/9/2015 09:00 AM in Ctrm 106 (Marshall) before Judge Rodney Gilstrap. (jml) (Entered: 03/12/2014)
03/13/2014	83	Unopposed MOTION to Amend/Correct Defendants' Invalidity Contentions by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Text of Proposed Order Proposed Order Granting Motion to Amend Invalidity Contentions)(Haddad, Gerard) (Entered: 03/13/2014)
03/13/2014	84	AMENDED COMPLAINT Rembrandt Wireless Technologies LP's Third Amended Complaint for Patent Infringement against All Defendants, filed by Rembrandt Wireless Technologies LP.(Enger, Eric) (Entered: 03/13/2014)
03/17/2014	85	ORDER granting 77 Motion to Supplement Its Infringement Contentions. Signed by Magistrate Judge Roy S. Payne on 3/14/2014. (ch,) (Entered: 03/17/2014)
03/17/2014	86	SUPPLEMENTAL PROTECTIVE ORDER FOR NON-PARTIES. Signed by Magistrate Judge Roy S. Payne on 3/14/2014. (ch,) (Entered: 03/17/2014)
03/17/2014	87	ORDER granting 83 Motion to Amend Their Invalidity Contentions. Signed by Magistrate Judge Roy S. Payne on 3/14/2014. (ch,) (Entered: 03/17/2014)
03/18/2014	88	MOTION to Compel and Motion to Enforce and/or Modify the Discovery Order by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11)(Enger, Eric) (Entered: 03/18/2014)
03/27/2014	89	DEFENDANTS BLACKBERRY CORP.S AND BLACKBERRY LTD.S ANSWER AND COUNTERCLAIMS TO PLAINTIFFS THIRD AMENDED COMPLAINT ANSWER to 84 Amended Complaint , COUNTERCLAIM against All Plaintiffs by Research in Motion Ltd, Research In Motion Corporation.(Hung, Richard) (Entered: 03/27/2014)
03/27/2014	90	Samsung Defendants' ANSWER to 84 Amended Complaint (Third) of Rembrandt Wireless Technologies LP, COUNTERCLAIM against Rembrandt Wireless Technologies LP by Samsung Austin Semiconductor LLC, Samsung Electronics Co LTD, Samsung Electronics America Inc, Sansung Telecommunications America LLC.(Haddad, Gerard) (Entered: 03/27/2014)
04/03/2014	91	NOTICE of Attorney Appearance - Pro Hac Vice by Jennifer BianRosa on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. Filing fee $ 100, receipt number 0540-4595407. (BianRosa, Jennifer) (Entered: 04/03/2014)
04/04/2014	92	RESPONSE in Opposition re 88 MOTION to Compel and Motion to Enforce and/or Modify the Discovery Order filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Exhibit 1 - Declaration of Daniel Cardy, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15, # 16 Exhibit 16, # 17 Exhibit 17, # 18 Exhibit 18, # 19 Exhibit 19, # 20 Exhibit 20, # 21 Text of Proposed Order)(Haddad, Gerard) (Entered: 04/04/2014)
04/11/2014	93	ANSWER to 89 Answer to Amended Complaint, Counterclaim,, by Rembrandt Wireless Technologies LP.(Enger, Eric) (Entered: 04/11/2014)
04/11/2014	94	ANSWER to 90 Answer to Amended Complaint, Counterclaim,, by Rembrandt Wireless Technologies LP.(Enger, Eric) (Entered: 04/11/2014)

04/14/2014	95	SEALED REPLY to Response to Motion re 88 MOTION to Compel and Motion to Enforce and/or Modify the Discovery Order filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 15)(Enger, Eric) (Entered: 04/14/2014)
04/14/2014	96	Additional Attachments to Main Document: 95 Sealed Reply to Response to Motion.. (Attachments: # 1 Exhibit 13, # 2 Exhibit 14)(Enger, Eric) (Entered: 04/14/2014)
04/17/2014	97	OPENING CLAIM CONSTRUCTION BRIEF filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15, # 16 Exhibit 16, # 17 Exhibit 17, # 18 Exhibit 18, # 19 Exhibit 19, # 20 Exhibit 20, # 21 Exhibit 21, # 22 Exhibit 22, # 23 Exhibit 23, # 24 Exhibit 24, # 25 Exhibit 25, # 26 Exhibit 26, # 27 Exhibit 27)(Enger, Eric) (Entered: 04/17/2014)
04/17/2014	98	NOTICE by Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC Of Compliance Regarding Technical Tutorial (Smith, Michael) (Entered: 04/17/2014)
04/17/2014	99	NOTICE by Rembrandt Wireless Technologies LP of Compliance Regarding Technology Tutorial (Enger, Eric) (Entered: 04/17/2014)
04/24/2014	100	SUR-REPLY to Reply to Response to Motion re 88 MOTION to Compel and Motion to Enforce and/or Modify the Discovery Order filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8)(Haddad, Gerard) (Entered: 04/24/2014)
04/28/2014		NOTICE of Hearing on Motion 88 MOTION to Compel and Motion to Enforce and/or Modify the Discovery Order : Motion Hearing set for 5/16/2014 10:00 AM in Mag Ctrm (Marshall) before Magistrate Judge Roy S. Payne. (bga,) (Entered: 04/28/2014)
04/30/2014		NOTICE of Hearing:Markman Hearing RESET for 5/30/2014 09:00 AM in Mag Ctrm (Marshall) before Magistrate Judge Roy S. Payne. (bga,) (Entered: 04/30/2014)
04/30/2014	101	ORDER - Court hereby appoints David Keyzer as the Courts technical advisor. Signed by Magistrate Judge Roy S. Payne on 4/30/2014. (ch,) (Entered: 04/30/2014)
05/01/2014	102	Defendants' Joint Claims Construction Brief in RESPONSE to 97 Claim Construction Brief,, filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC, Blackberry Corp, Blackberry LTD. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15, # 16 Exhibit 16, # 17 Exhibit 17)(Sherwood, Jeffrey) (Entered: 05/01/2014)
05/08/2014	103	REPLY to 97 Claim Construction Brief,, filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 28, # 2 Exhibit 29, # 3 Exhibit 30, # 4 Exhibit 31, # 5 Exhibit 32, # 6 Exhibit 33, # 7 Exhibit 34, # 8 Exhibit 35, # 9 Exhibit 36, # 10 Exhibit 37, # 11 Exhibit 38, # 12 Exhibit 39, # 13 Exhibit 40)(Enger, Eric) (Entered: 05/08/2014)
05/15/2014	104	LPR 4-5(d) Joint Claim Construction Chart by Rembrandt Wireless Technologies LP. (Enger, Eric) (Entered: 05/15/2014)
05/16/2014	105	Minute Entry for proceedings held before Magistrate Judge Roy S. Payne: Motion Hearing held on 5/16/2014 re 88 MOTION to Compel and Motion to Enforce and/or Modify the Discovery Order filed by Rembrandt Wireless Technologies LP. (Court Reporter Becky Andrews - ECRO.) (bga,) (Entered: 05/16/2014)
05/23/2014	106	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 5/16/14 (ECRO - Motion Hearing) before Judge Roy Payne. Court Reporter/Transcriber: Shelly Holmes, CSR, TCRR,Telephone number: (903) 923-7464. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 6/16/2014. Redacted Transcript Deadline set for 6/26/2014. Release of Transcript Restriction set for 8/25/2014. (sholmes,) (Entered: 05/23/2014)
05/23/2014	107	PAPER TRANSCRIPT REQUEST by Rembrandt Wireless Technologies LP for proceedings held on May 16, 2014 Motion Hearing before Judge Roy Payne. (Enger, Eric) (Entered:

		05/23/2014)
05/30/2014	108	Minute Entry for proceedings held before Magistrate Judge Roy S. Payne: Markman Hearing held on 5/30/2014. (Court Reporter Tonya Jackson.) (Attachments: # 1 Attorney Sign-In Sheet) (bga,) (Entered: 05/30/2014)
06/06/2014	109	PAPER TRANSCRIPT REQUEST by Research In Motion Corporation, Research in Motion Ltd for proceedings held on 05/30/14 Markman Hearing before Judge Payne. (Carter, Edgar) (Entered: 06/06/2014)
06/10/2014	110	PAPER TRANSCRIPT REQUEST by Rembrandt Wireless Technologies LP for proceedings held on 5/30/2014 - Markman Hearing before Judge Payne. (Enger, Eric) (Entered: 06/10/2014)
06/13/2014	111	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Claim Construction Hearing held on 5/30/2014 before Judge Roy S. Payne. Court Reporter: Tonya Jackson, Telephone number: 409.654.2833. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 7/10/2014. Redacted Transcript Deadline set for 7/17/2014. Release of Transcript Restriction set for 9/15/2014. (tj,) (Entered: 06/13/2014)
06/18/2014	112	Opposed MOTION to Stay Pending Inter Partes Review by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Sansung Telecommunications America LLC. (Attachments: # 1 DECLARATION OF JENNIFER BIANROSA IN SUPPORT OF SAMSUNGS OPPOSED MOTION TO STAY PENDING INTER PARTES REVIEW, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Text of Proposed Order)(Sherwood, Jeffrey) (Entered: 06/18/2014)
07/07/2014	113	RESPONSE to Motion re 112 Opposed MOTION to Stay Pending Inter Partes Review filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Declaration of Eric Enger, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Text of Proposed Order)(Enger, Eric) (Entered: 07/07/2014)
07/10/2014	114	CLAIM CONSTRUCTION MEMORANDUM AND ORDER - Signed by Magistrate Judge Roy S. Payne on 7/10/2014. (ch,) (Entered: 07/10/2014)
07/11/2014	115	ORDER - the court has received Mr. Keyzer's invoice for services through 6/4/2014, the court orders payment to be promptly made as follows herein. Signed by Magistrate Judge Roy S. Payne on 7/11/2014. (ch,) (Entered: 07/11/2014)
07/14/2014	116	REPORT of Mediation by Rembrandt Wireless Technologies LP. Mediation result: impasse(Enger, Eric) (Entered: 07/14/2014)
07/14/2014	117	REPORT of Mediation by Rembrandt Wireless Technologies LP. Mediation result: impasse(Enger, Eric) (Entered: 07/14/2014)
07/17/2014	118	REPLY to Response to Motion re 112 Opposed MOTION to Stay Pending Inter Partes Review filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Sherwood, Jeffrey) (Entered: 07/17/2014)
07/28/2014	119	SUR-REPLY to Reply to Response to Motion re 112 Opposed MOTION to Stay Pending Inter Partes Review filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 4, # 2 Exhibit 5, # 3 Exhibit 6)(Enger, Eric) (Entered: 07/28/2014)
07/28/2014	120	RESPONSE to 114 Memorandum & Opinion objecting to the Claim Construction Order by Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Sherwood, Jeffrey) (Entered: 07/28/2014)
08/14/2014	121	RESPONSE to Defendants' Objections to the Claim Construction Order filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 1)(Enger, Eric) (Entered: 08/14/2014)
08/18/2014	122	Opposed MOTION to Sever /Separate Trial by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Affidavit /Declaration of Jennifer BianRosa in Support of Samsung's Motion for Separate Trial, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Text of Proposed Order Granting Samsung's Motion for Separate Trial)(Sherwood, Jeffrey) (Entered: 08/18/2014)
08/22/2014	123	NOTICE of Attorney Appearance - Pro Hac Vice by Lucia Elena Ballard on behalf of

		Research In Motion Corporation, Research in Motion Ltd. Filing fee $ 100, receipt number 0540-4803154. (Ballard, Lucia) (Entered: 08/22/2014)
08/25/2014	124	RESPONSE to 114 Memorandum & Opinion, 121 Response to Non-Motion, 120 Response to Non-Motion, /Reply in Support of Defendants' Objection to the Claim Construction Order by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Sherwood, Jeffrey) (Entered: 08/25/2014)
08/25/2014	125	NOTICE of Attorney Appearance - Pro Hac Vice by Eric C Pai on behalf of Research In Motion Corporation, Research in Motion Ltd. Filing fee $ 100, receipt number 0540-4805120. (Pai, Eric) (Entered: 08/25/2014)
08/26/2014	126	NOTICE of Attorney Appearance - Pro Hac Vice by Ji Young Park on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. Filing fee $ 100, receipt number 0540-4806256. (Park, Ji) (Entered: 08/26/2014)
09/04/2014	127	NOTICE by Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC Notice of Compliance (Haddad, Gerard) (Entered: 09/04/2014)
09/04/2014	128	RESPONSE to Motion re 122 Opposed MOTION to Sever /Separate Trial filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2)(Enger, Eric) (Entered: 09/04/2014)
09/04/2014	129	RESPONSE to 114 Memorandum & Opinion, 124 Response to Non-Motion, 121 Response to Non-Motion, 120 Response to Non-Motion, Sur-Reply in Opposition to Defendants' Objections to the Claim Construction Order filed by Rembrandt Wireless Technologies LP. (Enger, Eric) (Entered: 09/04/2014)
09/05/2014	130	RESPONSE to Motion re 122 Opposed MOTION to Sever /Separate Trial Defendants BlackBerry Corp. and BlackBerry Ltd.s Statement of Non-Opposition to Defendant Samsung's Motion for Separate Trial (ECF No. 122) filed by Research In Motion Corporation, Research in Motion Ltd. (Hung, Richard) (Entered: 09/05/2014)
09/15/2014	131	Letter Brief filed by Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Attachments: # 1 Exhibit)(Smith, Michael) (Entered: 09/15/2014)
09/15/2014	132	Letter Brief filed by Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Attachments: # 1 Exhibit)(Smith, Michael) (Entered: 09/15/2014)
09/15/2014	133	***FILED IN ERROR. PLEASE IGNORE.*** MOTION for Leave to File Defendants Motion for Leave to File Under Seal Defendants Letter Brief Requesting Leave to File Summary Judgment Motion on Marking by Research In Motion Corporation, Research in Motion Ltd. (Hung, Richard) Modified on 9/16/2014 (ch,). (Entered: 09/15/2014)
09/15/2014	134	SEALED Letter Brief filed by Research In Motion Corporation, Research in Motion Ltd (Attachments: # 1 Exhibit 1)(Hung, Richard) Modified on 9/16/2014 (ch,). (Entered: 09/15/2014)
09/15/2014	135	MOTION for Leave to File Defendants Motion for Leave to File Under Seal Defendants Letter Brief Requesting Leave to File Summary Judgment Motion on Marking by Research In Motion Corporation, Research in Motion Ltd. (Attachments: # 1 Text of Proposed Order Proposed Order)(Hung, Richard) (Entered: 09/15/2014)
09/16/2014		NOTICE re 134 Notice of Compliance - Letter Brief was sealed per request from attorney (ch,) (Entered: 09/16/2014)
09/16/2014		***FILED IN ERROR. PER ATTORNEY Document # 133, Motion for Leave to file. PLEASE IGNORE.*** (REFILED AT # 135)(ch,) (Entered: 09/16/2014)
09/16/2014	136	NOTICE of Attorney Appearance - Pro Hac Vice by Jeffrey A Miller on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. Filing fee $ 100, receipt number 0540-4837079. (Miller, Jeffrey) (Entered: 09/16/2014)
09/18/2014	137	NOTICE of Attorney Appearance by Sean R D Gorman on behalf of Rembrandt Wireless Technologies LP (Gorman, Sean) (Entered: 09/18/2014)
09/22/2014	138	ORDER granting 135 Motion for Leave to File Under Seal Letter Brief Requesting Leave to File Summary Judgment Motion on Marking. Signed by Magistrate Judge Roy S. Payne on 9/22/2014. (ch,) (Entered: 09/22/2014)

09/22/2014	139	Joint MOTION to Amend/Correct 53 Order, Set Deadlines/Hearings, Terminate Motions,,,,,, to Extend the Fact Discovery Deadline by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order)(Jones, Miranda) (Entered: 09/22/2014)
09/25/2014	140	ORDER granting 139 Motion to Amend/Correct Fact Discovery Deadline. Signed by Magistrate Judge Roy S. Payne on 9/25/2014. (ch,) (Entered: 09/25/2014)
09/29/2014	141	Joint MOTION Joint Motion for Leave to Extend the Deadlines for Disclosure of Expert Witnesses and Rebuttal Expert Witnesses, to Complete Expert Discovery, and to File Dispositive and Daubert Motions re 140 Order on Motion to Amend/Correct by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order)(Talanov, Kyril) (Entered: 09/29/2014)
10/02/2014	142	NOTICE by Rembrandt Wireless Technologies LP re 134 Notice of Compliance - Letter Brief Response to Letter Brief (Attachments: # 1 Exhibit 1)(Talanov, Kyril) (Entered: 10/02/2014)
10/02/2014	143	Letter Brief filed by Rembrandt Wireless Technologies LP (Attachments: # 1 Exhibit 1) (Enger, Eric) (Entered: 10/02/2014)
10/02/2014	144	Letter Brief filed by Rembrandt Wireless Technologies LP (Attachments: # 1 Exhibit 1) (Enger, Eric) (Entered: 10/02/2014)
10/03/2014	145	ORDER granting 141 Joint Motion for Leave to Extend the Deadlines for Disclosure of Expert Witnesses and Rebuttal Expert Witnesses, to Complete Expert Discovery, and to File Dispositive and Daubert Motions. Jury Selection set for 2/9/2015 09:00AM before Judge Rodney Gilstrap Signed by Magistrate Judge Roy S. Payne on 10/3/2014. (ch,) (Entered: 10/03/2014)
10/06/2014	146	NOTICE of Discovery Disclosure by Rembrandt Wireless Technologies LP Regarding Disclosures for Expert Witnesses (Talanov, Kyril) (Entered: 10/06/2014)
10/07/2014	147	NOTICE of Discovery Disclosure by Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC Disclosures for Expert Witnesses (Haddad, Gerard) (Entered: 10/07/2014)
10/10/2014	148	Letter Brief filed by Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Attachments: # 1 Reply Letter Brief) (Smith, Michael) (Entered: 10/10/2014)
10/10/2014	149	Letter Brief filed by Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Attachments: # 1 Reply Letter Brief) (Smith, Michael) (Entered: 10/10/2014)
10/10/2014	150	Letter Brief filed by Research In Motion Corporation, Research in Motion Ltd, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Attachments: # 1 Exhibit Reply Letter Brief)(Gilfoil, James) (Entered: 10/10/2014)
10/16/2014	151	***DEFICIENT DOCUMENT. PLEASE IGNORE.*** MOTION for Leave to File Under Seal Defendants' Motion for Leave to Supplement Invalidity Contentions and Supporting Declaration by Research In Motion Corporation, Research in Motion Ltd. (Attachments: # 1 Text of Proposed Order)(Gilfoil, James) Modified on 10/16/2014 (ch,). (Entered: 10/16/2014)
10/16/2014	152	SEALED MOTION Defendants' Motion for Leave to Supplement Invalidity Contentions by Research In Motion Corporation, Research in Motion Ltd. (Attachments: # 1 Affidavit J. Gilfoil Decl. in Support of Motion, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H)(Gilfoil, James) (Additional attachment(s) added on 10/16/2014: # 10 Text of Proposed Order) (ch,). (Additional attachment(s) added on 10/16/2014: # 11 Text of Proposed Order) (ch,). (Entered: 10/16/2014)
10/16/2014		NOTICE of Deficiency regarding the 151 submitted NO CERTIFICATE OF CONFERENCE. Correction should be made by one business day (ch,) (Entered: 10/16/2014)
10/16/2014	153	***FILED IN ERROR. PLEASE IGNORE.***Additional Attachments to Main Document: 152 SEALED MOTION Defendants' Motion for Leave to Supplement Invalidity Contentions.. (Gilfoil, James) Modified on 10/16/2014 (ch,). (Entered: 10/16/2014)
10/16/2014	154	MOTION for Leave to File Under Seal Defendants' Motion for Leave to Supplement Invalidity Contentions and Supporting Declaration by Research in Motion Ltd. (Attachments: # 1 Text of Proposed Order Granting Motion for Leave to File Under Seal Defendants' Motion for Leave to Supplement Invalidity Contentions and Supporting

		Declaration)(Gilfoil, James) (Entered: 10/16/2014)
10/20/2014	155	NOTICE of Attorney Appearance by Jamie Alan Aycock on behalf of Rembrandt Wireless Technologies LP (Aycock, Jamie) (Entered: 10/20/2014)
10/21/2014	156	ORDER granting 154 Motion for Leave to File Under Seal. Signed by Magistrate Judge Roy S. Payne on 10/20/2014. (ch,) (Entered: 10/21/2014)
10/21/2014	157	ORDER on Notice of Compliance - Letter Brief re 132 Notice of Compliance - Letter Brief, filed by Sansung Telecommunications America LLC, Research in Motion Ltd, Research In Motion Corporation, Samsung Austin Semiconductor LLC, Samsung Electronics Co LTD, Samsung Electronics America Inc, 134 Notice of Compliance - Letter Brief filed by Research in Motion Ltd, Research In Motion Corporation, 131 Notice of Compliance - Letter Brief, filed by Sansung Telecommunications America LLC, Research in Motion Ltd, Research In Motion Corporation, Samsung Austin Semiconductor LLC, Samsung Electronics Co LTD, Samsung Electronics America Inc. Signed by Magistrate Judge Roy S. Payne on 10/20/2014. (ch,) (Entered: 10/21/2014)
10/24/2014	158	Joint MOTION for Extension of Time to Complete Discovery To Extend the Fact Discovery Deadline by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order Proposed Order)(Talanov, Kyril) (Entered: 10/24/2014)
10/29/2014	159	ORDER granting 158 Motion for Extension of Time to Complete Discovery. Signed by Magistrate Judge Roy S. Payne on 10/29/2014. (ch,) (Entered: 10/29/2014)
11/03/2014	160	RESPONSE in Opposition re 152 SEALED MOTION Defendants' Motion for Leave to Supplement Invalidity Contentions filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15, # 16 Exhibit 16, # 17 Text of Proposed Order)(Enger, Eric) (Entered: 11/03/2014)
11/13/2014	161	REPLY to Response to Motion re 152 SEALED MOTION Defendants' Motion for Leave to Supplement Invalidity Contentions filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Haddad, Gerard) (Entered: 11/13/2014)
11/21/2014	162	Unopposed MOTION for Leave to File for Leave to Serve Supplemental Expert Report, Joint MOTION to Amend Docket Control Order by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order)(Alavi, Amir) (Additional attachment(s) added on 11/24/2014: # 2 Revised Proposed Order) (nkl,). (Entered: 11/21/2014)
11/24/2014	163	SUR-REPLY to Reply to Response to Motion re 152 SEALED MOTION Defendants' Motion for Leave to Supplement Invalidity Contentions filed by Rembrandt Wireless Technologies LP. (Enger, Eric) (Entered: 11/24/2014)
11/24/2014	164	ORDER granting 162 Motion for Leave to Serve Supplemental Expert Report; granting 162 Motion to Amend Docket Control Order. Signed by Magistrate Judge Roy S. Payne on 11/24/2014. (nkl,) (Entered: 11/24/2014)
11/25/2014	165	MOTION to Strike Portions of the Invalidity Report of Dr. David Goodman by Rembrandt Wireless Technologies LP. Responses due by 12/12/2014 (Attachments: # 1 Text of Proposed Order, # 2 Declaration of Blaine Larson, # 3 Exhibit 1, # 4 Exhibit 2, # 5 Exhibit 3, # 6 Exhibit 4, # 7 Exhibit 5, # 8 Exhibit 6, # 9 Exhibit 7, # 10 Exhibit 8, # 11 Exhibit 9, # 12 Exhibit 10, # 13 Exhibit 11, # 14 Exhibit 12, # 15 Exhibit 13)(Larson, Blaine) (Entered: 11/25/2014)
11/25/2014	166	SEALED ADDITIONAL EXHIBITS to Main Document: 165 MOTION to Strike Portions of the Invalidity Report of Dr. David Goodman. (Attachments: # 1 Exhibit 1, # 2 Exhibit 4, # 3 Exhibit 5)(Larson, Blaine) (Entered: 11/25/2014)
11/26/2014	167	MOTION for Summary Judgment of No Damages Prior to the Filing Date of the Complaint for Failure to Mark by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Appendix Claim Chart, # 2 Declaration of Gerard A. Haddad in Support of Defendants' Motion for Summary Judgement, # 3 Exhibit 1 to Declaration in Support (Under Seal), # 4 Exhibit 2 to Declaration in Support (Under Seal), # 5 Exhibit 3 to Declaration in Support (Under Seal), # 6 Exhibit 4 to Declaration in Support (Under Seal), # 7 Exhibit 5 to Declaration in Support, # 8 Exhibit 6 to Declaration in Support (Under Seal), # 9 Exhibit 7 to Declaration in Support, # 10 Exhibit 8 to Declaration in Support (Under Seal), # 11 Exhibit 9 to Declaration in Support, # 12 Exhibit 10 to Declaration in Support, # 13 Exhibit 11 to Declaration in Support, # 14 Exhibit 12 to Declaration in Support, # 15 Exhibit 13 to Declaration in Support, # 16 Exhibit 14 to Declaration in Support (Under Seal), # 17 Text of Proposed Order [Proposed] Order Granting Summary Judgment)(Haddad, Gerard) (Entered: 11/26/2014)

11/26/2014	168	DEFICIENT DOCUMENT - FILED IN ERROR SEALED Exhibits to Declaration of Gerard A. Haddad in Support of Main Document: 167 MOTION for Summary Judgment of No Damages Prior to the Filing Date of the Complaint for Failure to Mark. (Attachments: # 1 Exhibit 1 to Declaration in Support, # 2 Exhibit 2 to Declaration in Support, # 3 Exhibit 3 to Declaration in Support, # 4 Exhibit 4 to Declaration in Support, # 5 Exhibit 6 to Declaration in Support, # 6 Exhibit 8 to Declaration in Support, # 7 Exhibit 14 to Declaration in Support)(Haddad, Gerard) Modified on 12/1/2014 (nkl,). (Entered: 11/26/2014)
12/01/2014		NOTICE of Deficiency regarding the SEALED Exhibits to Declaration of Gerard A. Haddad in Support of Main Document submitted document 168 does not contain a Certificate of Authorization to File Under Seal. Correction should be made by one business day. (nkl,) (Entered: 12/01/2014)
12/01/2014	169	DEFENDANTS' CERTIFICATE OF AUTHORIZATION TO FILE UNDER SEAL and SEALED ADDITIONAL EXHIBITS to Main Document: 168 Sealed Additional Attachments to Main Document,, Notice of Deficiency, 167 MOTION for Summary Judgment of No Damages Prior to the Filing Date of the Complaint for Failure to Mark. (Attachments: # 1 Exhibit 1 to Declaration in Support, # 2 Exhibit 2 to Declaration in Support, # 3 Exhibit 3 to Declaration in Support, # 4 Exhibit 4 to Declaration in Support, # 5 Exhibit 6 to Declaration in Support, # 6 Exhibit 8 to Declaration in Support, # 7 Exhibit 14 to Declaration in Support)(Haddad, Gerard) (Entered: 12/01/2014)
12/04/2014	170	ORDER denying 152 Sealed Motion. Signed by Magistrate Judge Roy S. Payne on 12/04/2014. (nkl,) (Entered: 12/04/2014)
12/04/2014	171	STIPULATION of Dismissal of Defendant BlackBerry by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order)(Larson, Blaine) (Entered: 12/04/2014)
12/05/2014	172	ORDER granting 171 Stipulation of Dismissal. BlackBerry Corp. and Blackberry, Ltd dismissed without prejudice. Signed by Magistrate Judge Roy S. Payne on 12/5/2014. (ch,) (Entered: 12/05/2014)
12/10/2014	173	NOTICE of Attorney Appearance by Gabrielle Elizabeth Higgins on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Higgins, Gabrielle) (Entered: 12/10/2014)
12/10/2014	174	NOTICE of Attorney Appearance by Brian P Biddinger on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Biddinger, Brian) (Entered: 12/10/2014)
12/11/2014	175	NOTICE of Attorney Appearance by Jesse J Jenner on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC (Jenner, Jesse) (Entered: 12/11/2014)
12/12/2014	176	NOTICE of Attorney Appearance - Pro Hac Vice by Vincent Y Ling on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. Filing fee $ 100, receipt number 0540-4964851. (Ling, Vincent) (Entered: 12/12/2014)
12/12/2014	177	NOTICE of Attorney Appearance - Pro Hac Vice by Deanne K Cevasco on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. Filing fee $ 100, receipt number 0540-4965810. (Cevasco, Deanne) (Entered: 12/12/2014)
12/12/2014	178	RESPONSE in Opposition re 165 MOTION to Strike Portions of the Invalidity Report of Dr. David Goodman filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Haddad, Gerard) (Entered: 12/12/2014)
12/12/2014	179	AFFIDAVIT in Opposition re 165 MOTION to Strike Portions of the Invalidity Report of Dr. David Goodman of Ji Young Park filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15, # 16 Exhibit 16, # 17 Exhibit 17, # 18 Exhibit 18, # 19 Exhibit 19)(Haddad, Gerard) (Entered: 12/12/2014)
12/12/2014	180	***FILED IN ERROR. PLEASE IGNORE.***SEALED RESPONSE to Motion re 165 MOTION to Strike Portions of the Invalidity Report of Dr. David Goodman filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Exhibit 6 - Under Seal, # 2 Exhibit 15 - Under Seal, # 3 Exhibit 17 - Under Seal)(Haddad, Gerard) Modified on 12/15/2014 (ch,). (Entered: 12/12/2014)

12/15/2014		***FILED IN ERROR. NOT A RESPONSE TO MOTION 180 Sealed Response to Motion. PLEASE IGNORE.*** (ch,) (Entered: 12/15/2014)
12/15/2014	181	SEALED EXHIBITS to Main Document: 179 Affidavit in Opposition to Motion,,. (Attachments: # 1 Exhibit 6 to Declaration in Opposition 179 , # 2 Exhibit 15 to Declaration in Opposition 179 , # 3 Exhibit 17 to Declaration in Opposition 179)(Haddad, Gerard) (Entered: 12/15/2014)
12/15/2014	182	Additional Attachments to Main Document: 180 Sealed Response to Motion, 179 Affidavit in Opposition to Motion,, 181 Sealed Additional Attachments to Main Document,.. (Attachments: # 1 Certificate of Service for Docket Nos. 179, 180 and 181)(Haddad, Gerard) (Entered: 12/15/2014)
12/15/2014	183	RESPONSE to Motion re 167 MOTION for Summary Judgment of No Damages Prior to the Filing Date of the Complaint for Failure to Mark filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Affidavit Declaration of Amir Alavi, # 2 Exhibit Exhibit 1 to Declaration of Amir Alavi, # 3 Exhibit Exhibit 2 to Declaration of Amir Alavi, # 4 Exhibit Exhibit 3 to Declaration of Amir Alavi, # 5 Exhibit Exhibit 4 of Declaration of Amir Alavi, # 6 Affidavit Declaration of Dr. Robert Akl, # 7 Text of Proposed Order Proposed Order) (Alavi, Amir) (Entered: 12/15/2014)
12/15/2014	184	Unopposed MOTION to Seal for Leave to File Under Seal its Exhibit 1 to Declaration of Dr. Robert Akl in Support of Rembrant's Response in Opposition to Defendants' Motion for Summary Judgment of No Damages by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order Proposed Order)(Alavi, Amir) (Entered: 12/15/2014)
12/15/2014	185	***DEFICIENT DOCUMENT. PLEASE IGNORE.***SEALED ADDITIONAL ATTACHMENTS to Main Document: 184 Unopposed MOTION to Seal for Leave to File Under Seal its Exhibit 1 to Declaration of Dr. Robert Akl in Support of Rembrant's Response in Opposition to Defendants' Motion for Summary Judgment of No Damages. (Alavi, Amir) Modified on 12/16/2014 (ch,). (Entered: 12/15/2014)
12/16/2014		NOTICE of Deficiency regarding the 185 submitted NO CERTIFICATE OF AUTHORIZATION OR CERTIFICATE OF SERVICE. Correction should be made by one business day (ch,) (Entered: 12/16/2014)
12/16/2014	186	SEALED ADDITIONAL ATTACHMENTS to Main Document: 184 Unopposed MOTION to Seal for Leave to File Under Seal its Exhibit 1 to Declaration of Dr. Robert Akl in Support of Rembrant's Response in Opposition to Defendants' Motion for Summary Judgment of No Damages. (Alavi, Amir) (Entered: 12/16/2014)
12/18/2014	187	NOTICE of Attorney Appearance - Pro Hac Vice by Rebecca R Hermes on behalf of Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. Filing fee $ 100, receipt number 0540-4972373. (Hermes, Rebecca) (Entered: 12/18/2014)
12/19/2014	188	ORDER granting 184 Motion to Seal. Signed by Magistrate Judge Roy S. Payne on 12/18/2014. (ch,) (Entered: 12/19/2014)
12/19/2014	189	SEALED MOTION to Exclude Opinions of Roy Weinstein Pursuant to Federal Rules of Evidence 702 and 403 by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Declaration of R. Hermes, # 2 Exhibit A, # 3 Exhibit B, # 4 Exhibit C, # 5 Exhibit D, # 6 Exhibit E, # 7 Exhibit F, # 8 Exhibit G, # 9 Exhibit H, # 10 Exhibit I, # 11 Exhibit J part 1, # 12 Exhibit J part 2, # 13 Text of Proposed Order)(Higgins, Gabrielle) (Entered: 12/19/2014)
12/22/2014	190	REPLY to Response to Motion re 165 MOTION to Strike Portions of the Invalidity Report of Dr. David Goodman filed by Rembrandt Wireless Technologies LP. (Larson, Blaine) (Entered: 12/22/2014)
12/24/2014	191	NOTICE by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC NOTICE OF DEFENDANTS REQUEST FOR DAILY TRANSCRIPTS AND REAL-TIME REPORTING (Haddad, Gerard) (Entered: 12/24/2014)
12/26/2014	192	Unopposed MOTION for Extension of Time to File Response/Reply as to 183 Response to Motion,, 167 MOTION for Summary Judgment of No Damages Prior to the Filing Date of the Complaint for Failure to Mark by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Text of Proposed Order Proposed Order)(Haddad, Gerard) (Entered: 12/26/2014)
12/29/2014	193	REPLY to Response to Motion re 167 MOTION for Summary Judgment of No Damages Prior to the Filing Date of the Complaint for Failure to Mark filed by Samsung Austin

		Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Affidavit /Declaration of Gerard A. Haddad in Support of Defendants' Reply Brief for its Motion for Summary Judgment of No Damages Prior to the Filing Date of the Complaint for Failure to Mark, # 2 Exhibit 15 - November 6, 2014 stipulation)(Haddad, Gerard) (Entered: 12/29/2014)
12/31/2014	194	SEALED MOTION /Defendants' Motions in Limine by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Haddad, Gerard) (Additional attachment(s) added on 1/5/2015: # 1 Text of Proposed Order) (ch,). (Entered: 12/31/2014)
12/31/2014	195	AFFIDAVIT in Support re 194 SEALED MOTION /Defendants' Motions in Limine / Declaration of Gerard A. Haddad in Support of Defendants' Motions in Limine filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15, # 16 Exhibit 16, # 17 Exhibit 17, # 18 Exhibit 18, # 19 Exhibit 19, # 20 Exhibit 20, # 21 Exhibit 21, # 22 Exhibit 22, # 23 Exhibit 23, # 24 Text of Proposed Order Granting Defendants' Motions in Limine) (Haddad, Gerard) (Entered: 12/31/2014)
12/31/2014	196	SEALED ADDITIONAL ATTACHMENTS to Main Document: 195 Affidavit in Support of Motion,,,. (Attachments: # 1 Exhibit 2, # 2 Exhibit 3, # 3 Exhibit 4, # 4 Exhibit 5, # 5 Exhibit 6, # 6 Exhibit 7, # 7 Exhibit 8, # 8 Exhibit 10, # 9 Exhibit 23)(Haddad, Gerard) (Entered: 12/31/2014)
12/31/2014	197	Opposed MOTION in Limine by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order)(Jones, Miranda) (Entered: 12/31/2014)
01/05/2015	198	ORDER granting 192 Motion for Extension of Time to File Response/Reply. Signed by Magistrate Judge Roy S. Payne on 1/5/2015. (ch,) (Entered: 01/05/2015)
01/05/2015	199	NOTICE of Attorney Appearance by Alisa Anne Lipski on behalf of Rembrandt Wireless Technologies LP (Lipski, Alisa) (Entered: 01/05/2015)
01/05/2015	200	NOTICE by Rembrandt Wireless Technologies LP Notice of Plaintiff's Request for Daily Transcripts and Real-Time Reporting (Enger, Eric) (Entered: 01/05/2015)
01/05/2015	201	SEALED RESPONSE to Motion re 189 SEALED MOTION to Exclude Opinions of Roy Weinstein Pursuant to Federal Rules of Evidence 702 and 403 filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order) (Alavi, Amir) (Entered: 01/05/2015)
01/05/2015	202	SUR-REPLY to Reply to Response to Motion re 165 MOTION to Strike Portions of the Invalidity Report of Dr. David Goodman filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Affidavit /Declaration of Gerard A. Haddad in Support of Defendants' Sur-Reply in Opposition to Rembrandt's Motion to Strike Portions of the Invalidity Report of Dr. David Goodman, # 2 Exhibit 20, # 3 Exhibit 21 - Filed Under Seal)(Haddad, Gerard) (Entered: 01/05/2015)
01/05/2015	203	SEALED ADDITIONAL ATTACHMENTS to Main Document: 202 Sur-Reply to Reply to Response to Motion, - Exhibit 21 to Declaration of Gerard A. Haddad in Support of Defendants' Motion to Strike Portions of the Invalidity Report of Dr. David Goodman. (Haddad, Gerard) (Entered: 01/05/2015)
01/06/2015	204	Amended SEALED MOTION - Defendants' Motions in Limine by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Text of Proposed Order Granting Defendants' Motions in Limine)(Haddad, Gerard) (Entered: 01/06/2015)
01/06/2015	205	AFFIDAVIT in Support re 204 Amended SEALED MOTION - Defendants' Motions in Limine **Amended** Declaration of Gerrard A. Haddad in Support of Defendants' Motions in Limine filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Exhibit 11, # 12 Exhibit 12, # 13 Exhibit 13, # 14 Exhibit 14, # 15 Exhibit 15, # 16 Exhibit 16, # 17 Exhibit 17, # 18 Exhibit 18, # 19 Exhibit 19, # 20 Exhibit 20, # 21 Exhibit 21, # 22 Exhibit 22) (Haddad, Gerard) (Entered: 01/06/2015)
01/06/2015	206	Amended SEALED ADDITIONAL ATTACHMENTS to Main Document: 205 Affidavit in Support of Motion: Exhibit 1, (Attachments: # 1 Exhibit 2, # 2 Exhibit 3, # 3 Exhibit 4, # 4 Exhibit 5, # 5 Exhibit 6, # 6 Exhibit 7, # 7 Exhibit 8, # 8 Exhibit 10, # 9 Exhibit 22) (Haddad, Gerard) (Entered: 01/06/2015)

01/07/2015	207	SUR-REPLY to Reply to Response to Motion re 167 MOTION for Summary Judgment of No Damages Prior to the Filing Date of the Complaint for Failure to Mark filed by Rembrandt Wireless Technologies LP. (Alavi, Amir) (Entered: 01/07/2015)
01/08/2015	208	NOTICE by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC - Defendants' Notice of Institution of Inter Parties Review Proceedings and Notice of New Authority Concerning Defendants' Motion to Stay (Haddad, Gerard) (Entered: 01/08/2015)
01/12/2015	209	Proposed Pretrial Order Joint Final Pre-Trial Order by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H)(Enger, Eric) (Entered: 01/12/2015)
01/12/2015	210	NOTICE by Rembrandt Wireless Technologies LP Joint Notice of Proposed Verdict Forms (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Enger, Eric) (Entered: 01/12/2015)
01/12/2015	211	SEALED RESPONSE to Motion re 204 Amended SEALED MOTION - Defendants' Motions in Limine filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order, # 2 Exhibit A, # 3 Exhibit D, # 4 Exhibit M)(Jones, Miranda) (Entered: 01/12/2015)
01/12/2015	212	Additional Attachments to Main Document: 211 Sealed Response to Motion,.. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E, # 6 Exhibit F, # 7 Exhibit G, # 8 Exhibit H, # 9 Exhibit I, # 10 Exhibit J, # 11 Exhibit K, # 12 Exhibit L, # 13 Exhibit M, # 14 Exhibit N, # 15 Exhibit O, # 16 Exhibit P)(Jones, Miranda) (Entered: 01/12/2015)
01/12/2015	213	SEALED RESPONSE to Motion re 197 Opposed MOTION in Limine filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Declaration of Gerard A. Haddad in Support of Defedants' Response in Oppostion to Plaintiff Rembrandt's Omnibus Motions in Limine, # 2 Exhibit A to Haddad Declaration filed under seal, # 3 Exhibit B to Haddad Declaration filed under seal)(Haddad, Gerard) (Additional attachment(s) added on 1/14/2015: # 4 Text of Proposed Order) (ch,). (Entered: 01/12/2015)
01/12/2015	214	AFFIDAVIT in Opposition re 197 Opposed MOTION in Limine / Declaration of Gerard A. Haddad in Support of Defendants' Response in Opposition to Plaintiff Rembrandt's Omnibus Motions in Limine - filed under seal, with Sealed and Public Exhibits filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Exhibit A to Haddad Declaration filed under seal, # 2 Exhibit B to Haddad Declaration filed under seal, # 3 Exhibit C to Haddad Declaration, # 4 Exhibit D to Haddad Declaration, # 5 Exhibit E to Haddad Declaration, # 6 Exhibit F to Haddad Declaration, # 7 Exhibit G to Haddad Declaration, # 8 Exhibit H to Haddad Declaration, # 9 Exhibit I to Haddad Declaration)(Haddad, Gerard) (Entered: 01/12/2015)
01/12/2015	215	CORPORATE DISCLOSURE STATEMENT filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD identifying Other Affiliate Samsung Electronics Co., Ltd. for Samsung Austin Semiconductor LLC, Samsung Electronics America Inc. (Smith, Michael) (Entered: 01/12/2015)
01/12/2015	216	NOTICE by Rembrandt Wireless Technologies LP Joint Notice of Proposed Jury Instructions (Attachments: # 1 Exhibit A, # 2 Exhibit B)(Alavi, Amir) (Entered: 01/12/2015)
01/13/2015	217	Additional Attachments to Main Document: 214 Affidavit in Opposition to Motion,,,.. (Haddad, Gerard) (Entered: 01/13/2015)
01/13/2015	218	***FILED IN ERROR. PLEASE IGNORE.***Additional Attachments to Main Document: 213 Sealed Response to Motion,,.. (Haddad, Gerard) Modified on 1/14/2015 (ch,). (Entered: 01/13/2015)
01/14/2015		***FILED IN ERROR. ORDERS ARE NOT FILE SEPARATELY. Document # 218, Additional Attachment. PLEASE IGNORE.*** (ch,) (Entered: 01/14/2015)
01/14/2015	219	NOTICE by Rembrandt Wireless Technologies LP Notice of Agreements Reached During Meet and Confer (Alavi, Amir) (Entered: 01/14/2015)
01/15/2015	220	NOTICE by Rembrandt Wireless Technologies LP re 219 Notice (Other) Corrected Notice of Agreements Reached During Meet and Confer (Alavi, Amir) (Entered: 01/15/2015)
01/15/2015	221	SEALED REPLY to Response to Motion re 189 SEALED MOTION to Exclude Opinions of Roy Weinstein Pursuant to Federal Rules of Evidence 702 and 403 filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Declaration of R. Hermes, # 2 Exhibit K, part 1 of 2, # 3 Exhibit K, part 2 of 2, # 4 Exhibit L)(Higgins, Gabrielle)

		(Entered: 01/15/2015)
01/15/2015	222	STIPULATION by Rembrandt Wireless Technologies LP, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Hermes, Rebecca) (Entered: 01/15/2015)
01/19/2015	223	SEALED SUR-REPLY to Response to Motion re 189 SEALED MOTION to Exclude Opinions of Roy Weinstein Pursuant to Federal Rules of Evidence 702 and 403 filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Declaration of Amir Alavi, # 2 Exhibit A) (Alavi, Amir) (Entered: 01/19/2015)
01/20/2015	224	SEALED PATENT SUR-REPLY to Reply to Response to PATENT Motion re 189 SEALED MOTION to Exclude Opinions of Roy Weinstein Pursuant to Federal Rules of Evidence 702 and 403 filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Declaration of Amir Alavi, # 2 Exhibit A)(Alavi, Amir) (Entered: 01/20/2015)
01/20/2015		NOTICE of Hearing: Final Pretrial Conference set for 2/2/2015 01:30 PM before Magistrate Judge Roy S. Payne. (bga,) (Entered: 01/20/2015)
01/22/2015	225	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Pretrial Conference held on 1-20-2015 before Judge Roy S. Payne. Court Reporter: Tonya Jackson, Telephone number: 409.654.2833. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 2/16/2015. Redacted Transcript Deadline set for 2/26/2015. Release of Transcript Restriction set for 4/27/2015. (tj,) (Entered: 01/22/2015)
01/22/2015	226	Minute Entry for proceedings held before Magistrate Judge Roy S. Payne: Interim Pretrial Conference held on 1/22/2015. (Court Reporter Tonya Jackson.) (Attachments: # 1 Attorney Sign-In Sheet) (bga,) (Entered: 01/22/2015)
01/23/2015	227	ORDER denying 165 Motion to Strike. Signed by Magistrate Judge Roy S. Payne on 1/23/2015. (ch,) (Entered: 01/23/2015)
01/24/2015	228	ORDER Regarding Mediation. Signed by Magistrate Judge Roy S. Payne on 01/24/2015. (rsp1,) (Entered: 01/24/2015)
01/26/2015	229	Unopposed MOTION to Withdraw as Attorney Frank C. Cimino, Jr. by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Text of Proposed Order Proposed Order)(Haddad, Gerard) (Entered: 01/26/2015)
01/26/2015	230	Supplemental MOTION in Limine Regarding Use of Dr. Paul Schneck's Testimony by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5 (Filed Under Seal), # 6 Text of Proposed Order) (Enger, Eric) (Entered: 01/26/2015)
01/26/2015	231	SEALED ADDITIONAL ATTACHMENT to Main Document: 230 Supplemental MOTION in Limine Regarding Use of Dr. Paul Schneck's Testimony. (Attachments: # 1 Exhibit 5) (Enger, Eric) (Entered: 01/26/2015)
01/26/2015	232	Additional Attachments to Main Document: 230 Supplemental MOTION in Limine Regarding Use of Dr. Paul Schneck's Testimony.. (Enger, Eric) (Entered: 01/26/2015)
01/27/2015	233	REPLY to Response to Motion re 204 Amended SEALED MOTION - Defendants' Motions in Limine SAMSUNG DEFENDANTS REPLY IN SUPPORT OF DEFENDANTS MOTION IN LIMINE NO. 11 (DKT. 204) filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Haddad, Gerard) (Entered: 01/27/2015)
01/27/2015	234	Joint MOTION to Amend Order Referring Case to Pretrial Mediation by Rembrandt Wireless Technologies LP, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Text of Proposed Order)(Smith, Michael) (Entered: 01/27/2015)
01/27/2015	235	Unopposed MOTION for Leave to File Sur-Reply to Defendants' Reply In Support of Their Motion in Limine No. 11 by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order)(Jones, Miranda) (Entered: 01/27/2015)
01/27/2015	236	SUR-REPLY to Reply to Response to Motion re 204 Amended SEALED MOTION - Defendants' Motions in Limine No. 11 filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Declaration of Miranda Y. Jones, # 2 Exhibit Q)(Jones, Miranda) (Entered: 01/27/2015)

01/28/2015	237	ORDER granting 229 Motion to Withdraw as Attorney. Attorney Frank C Cimino, Jr terminated. Signed by Magistrate Judge Roy S. Payne on 1/28/2015. (ch,) (Entered: 01/28/2015)
01/28/2015	238	ORDER REGARDING EXHIBITS. Signed by Judge Rodney Gilstrap on 1/28/2015. (ch,) (Entered: 01/28/2015)
01/28/2015	239	ORDER granting in part and denying in part 234 Motion to Amend Order Referring Case to Pretrial Mediation. Signed by Magistrate Judge Roy S. Payne on 1/28/2015. (rsp1,) (Entered: 01/28/2015)
01/28/2015	240	NOTICE by Rembrandt Wireless Technologies LP re 204 Amended SEALED MOTION - Defendants' Motions in Limine Recent Factual Developments (Attachments: # 1 Exhibit 1, # 2 Exhibit 2)(Enger, Eric) (Entered: 01/28/2015)
01/29/2015	241	Defendants Samsung's Notice of Recent Factual Development Regarding Samsung's Motion to Exclude Opinions of Roy Weinstein and Samsung's Motion in Limine No. 1. Sealed Document. (Attachments: # 1 Attachment 1)(Smith, Michael) (Entered: 01/29/2015)
01/29/2015	242	ORDER denying 112 Motion to Stay Pending Inter Parties Review. Signed by Magistrate Judge Roy S. Payne on 1/29/2015. (ch,) (Entered: 01/29/2015)
01/29/2015	243	ORDER denying 189 Sealed Motion. Signed by Magistrate Judge Roy S. Payne on 01/29/2015. (nkl,) (Entered: 01/29/2015)
01/29/2015	244	Unopposed MOTION to Seal the Courtroom at Trial During Discussion of the Rembrandt/BlackBerry Settlement Payment Amount and/or Rembrandt's Allocation Thereof by BlackBerry Corp., Blackberry, Ltd. (Attachments: # 1 Text of Proposed Order) (Hung, Richard) (Entered: 01/29/2015)
01/29/2015	245	***FILED IN ERROR. PLEASE IGNORE.***SEALED RESPONSE to Motion re 230 Supplemental MOTION in Limine Regarding Use of Dr. Paul Schneck's Testimony filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Text of Proposed Order Denying Motion)(Haddad, Gerard) Modified on 1/30/2015 (ch,). (Entered: 01/29/2015)
01/29/2015	246	AFFIDAVIT in Opposition re 230 Supplemental MOTION in Limine Regarding Use of Dr. Paul Schneck's Testimony / Declaration of Gerard A. Haddad in Support of Defendants' Opposition to Rembrandt's Supplemental Motion in Limine Regarding Use of Dr. Paul Schneck's Testimony filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Affidavit Exhibit 1 to Haddad Declaration)(Haddad, Gerard) (Entered: 01/29/2015)
01/30/2015	247	SEALED RESPONSE to Motion re 230 Supplemental MOTION in Limine Regarding Use of Dr. Paul Schneck's Testimony filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Text of Proposed Order Denying Supplemental Motion in Limine Regarding Use of Dr. Paul Schneck's Testimony)(Haddad, Gerard) (Entered: 01/30/2015)
01/30/2015		***FILED IN ERROR. PER ATTORNEY Document # 245, Sealed Response. PLEASE IGNORE.*** (ch,) (Entered: 01/30/2015)
01/31/2015	248	ORDER REGARDING MOTION IN LIMINE - granting in part and denying in part 197 Motion in Limine; granting in part and denying in part 204 Sealed Motion. Signed by Magistrate Judge Roy S. Payne on 1/30/15. (ch,) (Entered: 01/31/2015)
02/02/2015	249	STIPULATION regarding Witnesses, Demonstratives and Exhibits by Rembrandt Wireless Technologies LP, Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Ward, Thomas) (Entered: 02/02/2015)
02/02/2015	282	Minute Entry for proceedings held before Magistrate Judge Roy S. Payne: Final Pretrial Conference held on 2/2/2015. (Court Reporter Shelly Holmes.) (Attachments: # 1 Attorney Sign-In Sheet) (bga,) (Entered: 02/12/2015)
02/03/2015	250	Proposed Jury Instructions by Rembrandt Wireless Technologies LP. (Attachments: # 1 Joint Preliminary Jury Instructions)(Alavi, Amir) (Entered: 02/03/2015)
02/03/2015	251	ORDER denying 230 Motion in Limine Regarding Use of Dr. Paul Schecks's Testimony. Signed by Magistrate Judge Roy S. Payne on 2/3/2015. (ch,) (Entered: 02/03/2015)
02/03/2015	252	ORDER denying 244 Motion to Seal The Courtroom at Trial. Signed by Magistrate Judge Roy S. Payne on 2/3/2015. (ch,) (Entered: 02/03/2015)

02/03/2015	253	ORDER REGARDING JURY INSTRUCTIONS AND VERDICT FORMS - Signed by Magistrate Judge Roy S. Payne on 2/3/2015. (ch,) (Entered: 02/03/2015)
02/03/2015	254	ORDER granting 235 Motion for Leave to File Sur-Reply to Dft's Reply in Support of their Motion in Limine No. 11. Signed by Magistrate Judge Roy S. Payne on 2/3/2015. (ch,) (Entered: 02/03/2015)
02/03/2015	255	Exhibit List Eleventh Amended Trial Exhibit List by Rembrandt Wireless Technologies LP.. (Alavi, Amir) (Entered: 02/03/2015)
02/03/2015	256	NOTICE by Rembrandt Wireless Technologies LP Rembrandt's Deposition Designations (Enger, Eric) (Entered: 02/03/2015)
02/03/2015	257	Exhibit List Defendants' Tenth Amended Trial Exhibit List by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD.. (Hermes, Rebecca) (Entered: 02/03/2015)
02/03/2015	258	NOTICE by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD Defendants' Deposition Designations (Hermes, Rebecca) (Entered: 02/03/2015)
02/04/2015	259	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 2/2/15 (Pretrial Hearing) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. <P>NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov<P> Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 3/2/2015. Redacted Transcript Deadline set for 3/12/2015. Release of Transcript Restriction set for 5/8/2015. (sholmes,) (Entered: 02/04/2015)
02/04/2015	260	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 2/3/15 (Pretrial Hearing) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. <P>NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov<P> Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 3/2/2015. Redacted Transcript Deadline set for 3/12/2015. Release of Transcript Restriction set for 5/8/2015. (sholmes,) (Entered: 02/04/2015)
02/05/2015	261	REPORT of Mediation by William Jospeh Cornelius, Jr. Mediation result: IMPASSE(Cornelius, William) (Entered: 02/05/2015)
02/05/2015	262	REPORT AND RECOMMENDATIONS re 167 MOTION for Summary Judgment of No Damages Prior to the Filing Date of the Complaint for Failure to Mark filed by Sansung Telecommunications America LLC, Samsung Austin Semiconductor LLC, Samsung Electronics Co LTD, Samsung Electronics America Inc.. Signed by Magistrate Judge Roy S. Payne on 2/5/2015. (ch,) (Entered: 02/05/2015)
02/05/2015	263	Sealed Document. Defendant Samsung's Objections to Magistrate Judge's Evidentiary Rulings (Smith, Michael) (Entered: 02/05/2015)
02/05/2015	264	Sealed Document. Defendant Samsung's Objection to Magistrate Judge's Order Regarding Motion to Exclude Opinions of Roy Weinstein (Smith, Michael) (Entered: 02/05/2015)
02/06/2015	265	ORDER ADOPTING Magistrate Judge's Order Denying Dft's Motion to Exclude Opinions of Roy Weinstein. Signed by Judge Rodney Gilstrap on 2/6/2015. (ch,) Modified on 2/6/2015 (ch,). (Entered: 02/06/2015)
02/06/2015	266	ORDER ADOPTING MAGISTRATE JUDGE'S EVIDENTIARY RULINGS re 248 Order on Motion in Limine, Order on Sealed Motion. Signed by Judge Rodney Gilstrap on 2/6/2015. (ch,) (Entered: 02/06/2015)
02/06/2015	267	ORDER finding as moot 194 Sealed Motion in Limine in view of 204 Amended Defendants' Motions in Limine. Signed by Magistrate Judge Roy S. Payne on 02/06/2015. (No document attached.) (rsp1,) (Entered: 02/06/2015)
02/06/2015	268	ORDER finding as moot 122 Motion to Sever/Separate Trial in view of 172 Order Granting Stipulation of Dismissal as to Blackberry Defendant.. Signed by Magistrate Judge Roy S. Payne on 02/06/2015. (No document attached.) (rsp1,) (Entered: 02/06/2015)

02/06/2015	269	ORDER granting in part and denying in part 88 Motion to Compel as per party agreement and in accordance with the rulings set forth during the May 16, 2014 hearing on the same. See 105 Minute Entry from May 16, 2014 Hearing. Signed by Magistrate Judge Roy S. Payne on 02/06/2015. (No document attached.) (rsp1,) (Entered: 02/06/2015)
02/06/2015	270	OBJECTION to 262 Report and Recommendations by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Smith, Michael) (Entered: 02/06/2015)
02/06/2015	271	MOTION to Seal Blackberry's Motion to Seal the Courtroom at Trial During Discussion of Rembrandt's Computed Effective Royalty Rate of the Rembrandt/Blackberry Settlement by BlackBerry Corp., Blackberry, Ltd. (Attachments: # 1 Text of Proposed Order)(Hung, Richard) (Entered: 02/06/2015)
02/08/2015	272	Opposed MOTION to Extend the Trial Time Limit to 12 Hours Per Side by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Text of Proposed Order) (Smith, Michael) (Entered: 02/08/2015)
02/08/2015	273	Proposed Jury Instructions by Rembrandt Wireless Technologies LP. (Attachments: # 1 Joint Proposed Final Jury Instructions)(Alavi, Amir) (Entered: 02/08/2015)
02/08/2015	274	AGREEMENT FOR VERDICT by Jury of Less than Six Members by Rembrandt Wireless Technologies LP.. (Attachments: # 1 Samsung's Proposed Verdict Form)(Alavi, Amir) (Entered: 02/08/2015)
02/08/2015	275	NOTICE by Rembrandt Wireless Technologies LP Plaintiff's Proposed Verdict Form (Alavi, Amir) (Entered: 02/08/2015)
02/08/2015	276	NOTICE by Rembrandt Wireless Technologies LP re 248 Order on Motion in Limine, Order on Sealed Motion Plaintiff Rembrandt's Objections to Magistrate Judge's Order on Rembrandt's Motion in Limine No. 4 (Alavi, Amir) (Entered: 02/08/2015)
02/09/2015	277	ORDER ADOPTING MAGISTRATE JUDGE REPORT AND RECOMMENDATION DENYING DEFENDANT'S MOTION FOR SUMMARY JUDGMENT re 262 Report and Recommendations,. Signed by Judge Rodney Gilstrap on 2/9/2015. (ch,) (Entered: 02/09/2015)
02/09/2015	278	ORDER ADOPTING MAGISTRATE JUDGE'S ORDER ON REMBRANDT'S MOTION IN LIMINE 4 re 248 Order on Motion in Limine, Order on Sealed Motion. Signed by Judge Rodney Gilstrap on 2/9/2015. (ch,) (Entered: 02/09/2015)
02/09/2015	279	Amended MOTION to Seal BlackBerry's Motion to Seal the Courtroom at Trial During Discussion of Rembrandt's Computed Effective Royalty Rate of the Rembrandt/BlackBerry Settlement by BlackBerry Corp., Blackberry, Ltd. (Attachments: # 1 Text of Proposed Order)(Hung, Richard) (Entered: 02/09/2015)
02/09/2015	280	ORDER denying 272 Motion to Extend the Trial Time Limit to 12 hours Per Side. Signed by Judge Rodney Gilstrap on 2/9/2015. (ch,) (Entered: 02/09/2015)
02/09/2015	302	Minute Entry for proceedings held before Judge Rodney Gilstrap: Jury Selection held on 2/9/2015, Jury Trial held on 2/9/2015. (Court Reporter Shelly Holmes, CSR-TCRR.) (Attachments: # 1 Attorney Attendance Sheet) (jml) (Entered: 02/17/2015)
02/10/2015	281	NOTICE by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC SAMSUNGS IDENTIFICATION OF CLAIM ELEMENT ABBREVIATIONS (Haddad, Gerard) (Entered: 02/10/2015)
02/10/2015	303	Minute Entry for proceedings held before Judge Rodney Gilstrap: Jury Trial held on 2/10/2015. (Court Reporter Shelly Holmes, CSR-TCRR.) (Attachments: # 1 Attorney Attendance Sheet) (jml) (Entered: 02/17/2015)
02/11/2015	304	Minute Entry for proceedings held before Judge Rodney Gilstrap: Jury Trial held on 2/11/2015. (Court Reporter Shelly Holmes, CSR-TCRR.) (Attachments: # 1 Attorney Attendance Sheet) (jml) (Entered: 02/17/2015)
02/12/2015	305	Minute Entry for proceedings held before Judge Rodney Gilstrap: Jury Trial held on 2/12/2015. (Court Reporter Shelly Holmes, CSR-TCRR.) (Attachments: # 1 Attorney Attendance Sheet) (jml) (Entered: 02/17/2015)
02/13/2015	283	MOTION Memorandum in Support of Its Rule 50(a) Motion for Judgment as a Matter of Law by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Smith, Michael) (Entered: 02/13/2015)
02/13/2015	284	Jury Trial Exhibit List by Rembrandt Wireless Technologies LP.. (mrm,) (Entered: 02/13/2015)

02/13/2015	285	Jury Trial Exhibit List by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC.. (mrm,) (Entered: 02/13/2015)
02/13/2015	286	SEALED Jury Notes. (mrm,) (Entered: 02/13/2015)
02/13/2015	287	Sealed Jury Verdict. (mrm,) (Entered: 02/13/2015)
02/13/2015	288	JURY VERDICT. (Redacted)(mrm,) (Entered: 02/13/2015)
02/13/2015	289	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 2/9/15 (Trial Transcript - Morning Session) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 3/9/2015. Redacted Transcript Deadline set for 3/19/2015. Release of Transcript Restriction set for 5/18/2015. (sholmes,) (Entered: 02/13/2015)
02/13/2015	290	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 2/9/15 (Trial Transcript - Afternoon Session) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 3/9/2015. Redacted Transcript Deadline set for 3/19/2015. Release of Transcript Restriction set for 5/18/2015. (sholmes,) (Entered: 02/13/2015)
02/13/2015	291	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 2/10/15 (Trial Transcript - Morning Session) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 3/9/2015. Redacted Transcript Deadline set for 3/19/2015. Release of Transcript Restriction set for 5/18/2015. (sholmes,) (Entered: 02/13/2015)
02/13/2015	292	Sealed Transcript. (sholmes,) (Entered: 02/13/2015)
02/13/2015	293	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 2/10/15 (Trial Transcript - Afternoon Session) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 3/9/2015. Redacted Transcript Deadline set for 3/19/2015. Release of Transcript Restriction set for 5/18/2015. (sholmes,) (Entered: 02/13/2015)
02/13/2015	294	Sealed Transcript. (sholmes,) (Entered: 02/13/2015)
02/13/2015	295	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 2/11/15 (Trial Transcript - Morning Session) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court

		Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 3/9/2015. Redacted Transcript Deadline set for 3/19/2015. Release of Transcript Restriction set for 5/18/2015. (sholmes,) (Entered: 02/13/2015)
02/13/2015	296	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 2/11/15 (Trial Transcript - Afternoon Session) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 3/9/2015. Redacted Transcript Deadline set for 3/19/2015. Release of Transcript Restriction set for 5/18/2015. (sholmes,) (Entered: 02/13/2015)
02/13/2015	297	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 2/12/15 (Trial Transcript - Morning Session) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 3/9/2015. Redacted Transcript Deadline set for 3/19/2015. Release of Transcript Restriction set for 5/18/2015. (sholmes,) (Entered: 02/13/2015)
02/13/2015	298	Sealed Transcript. (sholmes,) (Entered: 02/13/2015)
02/13/2015	299	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 2/12/15 (Trial Transcript - Afternoon Session) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 3/9/2015. Redacted Transcript Deadline set for 3/19/2015. Release of Transcript Restriction set for 5/18/2015. (sholmes,) (Entered: 02/13/2015)
02/13/2015	300	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 2/13/15 (Trial Transcript - Morning Session) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 3/9/2015. Redacted Transcript Deadline set for 3/19/2015. Release of Transcript Restriction set for 5/18/2015. (sholmes,) (Entered: 02/13/2015)
02/13/2015	301	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 2/13/15 (Trial Transcript - Afternoon Session) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 3/9/2015. Redacted Transcript Deadline set for 3/19/2015. Release of Transcript Restriction set for 5/18/2015. (sholmes,) (Entered: 02/13/2015)
02/13/2015	306	Minute Entry for proceedings held before Judge Rodney Gilstrap: Jury Trial completed on

		2/13/2015. (Court Reporter Shelly Holmes, CSR-TCRR.) (Attachments: # 1 Attorney Attendance Sheet) (jml) (Entered: 02/17/2015)
02/26/2015	307	ORDER - The Court sua sponte orders the parties to mediate their disputes before the Hon. Bill Cornelius within the next 45 days. Signed by Judge Rodney Gilstrap on 2/25/2015. (ch,) (Entered: 02/26/2015)
03/23/2015	308	SEALED MOTION for an Ongoing Royalty and Supplemental Damages by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12)(Enger, Eric) (Entered: 03/23/2015)
03/23/2015	309	MOTION for Prejudgment Interest, Postjudgment Interest, and Taxable Costs by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order, # 2 Exhibit A)(Enger, Eric) (Entered: 03/23/2015)
03/23/2015	310	SEALED Exhibit A to Main Document: 309 MOTION for Prejudgment Interest, Postjudgment Interest, and Taxable Costs. (Attachments: # 1 Exhibit A)(Enger, Eric) (Entered: 03/23/2015)
03/26/2015	311	MOTION for Extension of Time to File Response/Reply as to 308 SEALED MOTION for an Ongoing Royalty and Supplemental Damages by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Text of Proposed Order)(Smith, Michael) (Entered: 03/26/2015)
03/30/2015	312	ORDER granting 311 MOTION for Extension of Time to File Response/Reply. Signed by Judge Rodney Gilstrap on 3/29/2015. (ch,) (Entered: 03/30/2015)
03/31/2015	313	REPORT of Mediation by William Jospeh Cornelius, Jr. Mediation result: IMPASSE(Cornelius, William) (Entered: 03/31/2015)
04/16/2015	314	MOTION Entry of Judgment re 308 SEALED MOTION for an Ongoing Royalty and Supplemental Damages, 288 Jury Verdict, 309 MOTION for Prejudgment Interest, Postjudgment Interest, and Taxable Costs by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order Proposed Judgment)(Enger, Eric) (Entered: 04/16/2015)
04/16/2015	315	RESPONSE to Motion re 309 MOTION for Prejudgment Interest, Postjudgment Interest, and Taxable Costs filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Text of Proposed Order)(Smith, Michael) (Entered: 04/16/2015)
04/16/2015	316	SEALED ADDITIONAL ATTACHMENTS to Main Document: 315 Response to Motion,. (Attachments: # 1 Declaration of Stephen L. Becker, Ph.D., # 2 Exhibit A, # 3 Exhibit B) (Smith, Michael) (Entered: 04/16/2015)
04/16/2015	317	SEALED RESPONSE to Motion re 308 SEALED MOTION for an Ongoing Royalty and Supplemental Damages filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Declaration of Deanne K. Cevasco, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Text of Proposed Order)(Smith, Michael) (Entered: 04/16/2015)
04/27/2015	318	SEALED REPLY in Support of Its Motion re 308 SEALED MOTION for an Ongoing Royalty and Supplemental Damages filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 13, # 2 Exhibit 14)(Enger, Eric) (Entered: 04/27/2015)
04/27/2015	319	REPLY to Response to Motion re 309 MOTION for Prejudgment Interest, Postjudgment Interest, and Taxable Costs filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit C)(Enger, Eric) (Entered: 04/27/2015)
04/27/2015	320	SEALED Exhibit B to Main Document: 319 Reply to Response to Motion. (Attachments: # 1 Exhibit B)(Enger, Eric) (Entered: 04/27/2015)
05/04/2015	321	RESPONSE to Motion re 314 MOTION Entry of Judgment re 308 SEALED MOTION for an Ongoing Royalty and Supplemental Damages, 288 Jury Verdict, 309 MOTION for Prejudgment Interest, Postjudgment Interest, and Taxable Costs filed by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Judgment)(Smith, Michael) (Entered: 05/04/2015)
05/14/2015	322	REPLY to Response to Motion re 314 MOTION Entry of Judgment re 308 SEALED MOTION for an Ongoing Royalty and Supplemental Damages, 288 Jury Verdict, 309 MOTION for Prejudgment Interest, Postjudgment Interest, and Taxable Costs filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5)(Enger, Eric) (Entered: 05/14/2015)

07/03/2015	323	NOTICE by Rembrandt Wireless Technologies LP re 318 Sealed Reply to Response to Motion, 308 SEALED MOTION for an Ongoing Royalty and Supplemental Damages of Relevant Determinations From Related Proceedings (Attachments: # 1 Exhibit A)(Enger, Eric) (Entered: 07/03/2015)
07/09/2015	324	Joint MOTION Entry of a Post-Trial Briefing Schedule by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order)(Larson, Blaine) (Entered: 07/09/2015)
07/09/2015	325	ORDER granting 324 Joint MOTION Entry of a Post-Trial Briefing Schedule. Motion Hearing for all post verdict motions is set for 10/29/2015 01:30 PM before Judge Rodney Gilstrap. Signed by Judge Rodney Gilstrap on 7/9/2015. (ch,) (Entered: 07/09/2015)
07/10/2015	326	RESPONSE to 323 Notice (Other), of Relevant Determinations from Related Proceedings filed by Samsung Electronics Co LTD. (Smith, Michael) (Entered: 07/10/2015)
07/17/2015	327	MOTION to Continue the Hearing Date for all Post-Trial Motions by Samsung Electronics America Inc. (Attachments: # 1 Text of Proposed Order)(Smith, Michael) (Entered: 07/17/2015)
08/07/2015	328	SEALED MOTION for Judgment as a Matter of Law and/or Motion for New Trial on Damages Issues by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD. (Attachments: # 1 Text of Proposed Order)(Smith, Michael) (Entered: 08/07/2015)
08/07/2015	329	MOTION for Judgment as a Matter of Law and/or Rule 59(a) Motion for New Trial on Liability Issues by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD. (Attachments: # 1 Declaration of Vincent Ling, # 2 Exhibit A, # 3 Text of Proposed Order)(Smith, Michael) (Entered: 08/07/2015)
08/07/2015	330	SEALED ADDITIONAL ATTACHMENTS to Main Document: 329 MOTION for Judgment as a Matter of Law and/or Rule 59(a) Motion for New Trial on Liability Issues. (Attachments: # 1 Exhibit B, # 2 Exhibit C)(Smith, Michael) (Entered: 08/07/2015)
08/07/2015	331	Unopposed MOTION for Bill of Costs Rembrandt's Unopposed Motion for Entry of An Agreed Bill of Costs by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Enger, Eric) (Entered: 08/07/2015)
08/11/2015	332	ORDER granting 331 Motion for Bill of Costs. Signed by Judge Rodney Gilstrap on 8/11/2015. (ch,) (Entered: 08/11/2015)
08/20/2015		NOTICE of Hearing on Motions: Motion Hearing RESET for 11/3/2015 01:30 PM in Ctrm 106 (Marshall) before Judge Rodney Gilstrap. (jml) (Entered: 08/20/2015)
08/23/2015	333	Unopposed MOTION to Withdraw as Attorney re Alden Harris by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order)(Enger, Eric) (Entered: 08/23/2015)
08/25/2015	334	ORDER granting 333 Motion to Withdraw as Attorney. Attorney Alden Harris terminated. Signed by Judge Rodney Gilstrap on 8/24/2015. (ch,) (Entered: 08/25/2015)
09/07/2015	335	RESPONSE in Opposition re 329 MOTION for Judgment as a Matter of Law and/or Rule 59(a) Motion for New Trial on Liability Issues filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5)(Enger, Eric) (Entered: 09/07/2015)
09/07/2015	336	SEALED RESPONSE to Motion re 328 SEALED MOTION for Judgment as a Matter of Law and/or Motion for New Trial on Damages Issues filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 1, # 2 Text of Proposed Order)(Alavi, Amir) (Entered: 09/07/2015)
09/22/2015	337	SEALED REPLY to Response to Motion re 328 SEALED MOTION for Judgment as a Matter of Law and/or Motion for New Trial on Damages Issues filed by Samsung Electronics America Inc, Samsung Electronics Co LTD. (Smith, Michael) (Entered: 09/22/2015)
09/22/2015	338	REPLY to Response to Motion re 329 MOTION for Judgment as a Matter of Law and/or Rule 59(a) Motion for New Trial on Liability Issues filed by Samsung Electronics America Inc, Samsung Electronics Co LTD. (Attachments: # 1 Declaration, # 2 Exhibit D)(Smith, Michael) (Entered: 09/22/2015)
10/06/2015	339	NOTICE by Samsung Electronics America Inc, Samsung Electronics Co LTD FINAL WRITTEN DECISIONS IN RELATED INTER PARTES REVIEW PROCEEDINGS (Attachments: # 1 Tab 1, # 2 Tab 2, # 3 Tab3)(Smith, Michael) (Entered: 10/06/2015)
10/07/2015	340	SUR-REPLY to Reply to Response to Motion re 329 MOTION for Judgment as a Matter of Law and/or Rule 59(a) Motion for New Trial on Liability Issues filed by Rembrandt Wireless Technologies LP. (Attachments: # 1 Exhibit 6, # 2 Exhibit 7)(Enger, Eric) (Entered: 10/07/2015)
10/07/2015	341	RESPONSE to 339 Notice (Other) of Final Written Decisions in Related Inter Partes Review

		Proceedings filed by Rembrandt Wireless Technologies LP. (Enger, Eric) (Entered: 10/07/2015)
10/07/2015	342	SEALED REPLY to Response to Motion re 328 SEALED MOTION for Judgment as a Matter of Law and/or Motion for New Trial on Damages Issues filed by Rembrandt Wireless Technologies LP. (Aycock, Jamie) (Entered: 10/07/2015)
11/03/2015	343	Minute Entry for proceedings held before Judge Rodney Gilstrap: Motions Hearing held on 11/3/2015 re 283 MOTION Memorandum in Support of Its Rule 50(a) Motion for Judgment as a Matter of Law filed by Sansung Telecommunications America LLC, Samsung Austin Semiconductor LLC, Samsung Electronics Co LTD, Samsung Electronics America Inc, 329 MOTION for Judgment as a Matter of Law and/or Rule 59(a) Motion for New Trial on Liability Issues filed by Samsung Austin Semiconductor LLC, Samsung Electronics Co LTD, Samsung Electronics America Inc, 328 SEALED MOTION for Judgment as a Matter of Law and/or Motion for New Trial on Damages Issues filed by Samsung Austin Semiconductor LLC, Samsung Electronics Co LTD, Samsung Electronics America Inc. (Court Reporter Shelly Holmes, CSR-TCRR.) (Attachments: # 1 Attorney Attendance Sheet) (jml) (Entered: 11/06/2015)
12/09/2015	344	NOTICE by Samsung Electronics America Inc of RELEVANT AUTHORITY (Attachments: # 1 TAB 1)(Smith, Michael) (Entered: 12/09/2015)
12/09/2015	345	Additional Attachments to Main Document: 344 Notice (Other).. (Smith, Michael) (Entered: 12/09/2015)
12/14/2015	346	SEALED RESPONSE by Rembrandt Wireless Technologies LP to 344 Notice (Other), 345 Additional Attachments to Main Document filed by Rembrandt Wireless Technologies LP. (Alavi, Amir) (Entered: 12/14/2015)
12/21/2015	347	Unopposed MOTION to Withdraw as Attorney regarding Blaine A. Larson by Rembrandt Wireless Technologies LP. (Attachments: # 1 Text of Proposed Order)(Enger, Eric) (Entered: 12/21/2015)
12/22/2015	348	ORDER granting 347 Motion to Withdraw as Attorney. Attorney Blaine Andrew Larson terminated. Signed by Judge Rodney Gilstrap on 12/22/2015. (ch,) (Entered: 12/22/2015)
01/20/2016	349	NOTICE OF FILING OF OFFICIAL TRANSCRIPT of Proceedings held on 11/3/15 (Post Trial Motions Hearing) before Judge Rodney Gilstrap. Court Reporter/Transcriber: Shelly Holmes, CSR-TCRR,Telephone number: (903) 923-7464. NOTICE RE REDACTION OF TRANSCRIPTS: The parties have seven (7) business days to file with the Court a Notice of Intent to Request Redaction of this transcript. If no such Notice is filed, the transcript will be made remotely electronically available to the public without redaction after 90 calendar days. The policy is located on our website at www.txed.uscourts.gov Transcript may be viewed at the court public terminal or purchased through the Court Reporter/Transcriber before the deadline for Release of Transcript Restriction. After that date it may be obtained through PACER.. Redaction Request due 2/15/2016. Redacted Transcript Deadline set for 2/25/2016. Release of Transcript Restriction set for 4/22/2016. (sholmes,) (Entered: 01/20/2016)
01/29/2016	350	MEMORANDUM OPINION AND ORDER. Signed by Judge Rodney Gilstrap on 1/29/2016. (ch,) (Entered: 01/29/2016)
01/29/2016	351	NOTICE of Intent to Request Redaction by Amir H. Alavi re 349 Transcript,,,. (Alavi, Amir) (Entered: 01/29/2016)
02/17/2016	352	MEMORANDUM OPINION AND ORDER -. Signed by Judge Rodney Gilstrap on 2/17/2016. (ch,) (Entered: 02/17/2016)
02/19/2016	353	NOTICE by Samsung Austin Semiconductor LLC, Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC CHANGE OF FIRM AFFILIATION (Smith, Michael) (Entered: 02/19/2016)
02/26/2016	354	ORDER - ORDERS that the issue of post-trial relief as set forth in Rembrandts motion noted above (Dkt. No. 308) is hereby SEVERED from this case and STAYED for forty-five (45) days from this date. It is further ORDERED that the Clerk of the Court shall assign a new case number for such severed issue, and, further, the Clerk shall TRANSFER Rembrandts Motion for Ongoing Royalty and Supplemental Damages into such new case. The new case number is 2:16-cv-170. Signed by Judge Rodney Gilstrap on 2/25/2016. (ch,) (Entered: 02/26/2016)
02/26/2016	355	FINAL JUDGMENT. Signed by Judge Rodney Gilstrap on 2/25/2016. (ch,) (Entered: 02/26/2016)
03/08/2016	356	Agreed MOTION TO ENTER STIPULATED ORDER ON EXECUTION OF JUDGMENT AGAINST SAMSUNG by Samsung Electronics America Inc, Samsung Electronics Co LTD. (Attachments: # 1 Exhibit A, # 2 Text of Proposed Order)(Smith, Michael) (Entered:

		03/08/2016)
03/09/2016	357	STIPULATED ORDER ON EXECUTION OF JUDGMENT AGAINST SAMSUNG. Signed by Judge Rodney Gilstrap on 3/9/2016. (ch,) (Entered: 03/09/2016)
03/17/2016	358	NOTICE OF APPEAL - FEDERAL CIRCUIT by Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. Filing fee $ 505, receipt number 0540-5664373. (Smith, Michael) (Entered: 03/17/2016)
03/18/2016		Transmission of Notice of Appeal, 355 Final Judgment, 352 Memorandum Opinion & Order, 350 Memorandum Opinion & Order, 277 Order Adopting, 266 Order Adopting, 265 Order Adopting, 114 Claim Construction Order, and certified copy of Docket Sheet to US Court of Appeals, Federal Circuit by separate email. re 358 Notice of Appeal - FEDERAL CIRCUIT (dlc,) (Entered: 03/18/2016)
03/18/2016	359	ACKNOWLEDGMENT OF RECEIPT on 3/18/16, by USCA-FEDERAL CIRCUIT as to 114 Claim Construction Order, 266 Order Adopting, 350 Memorandum & Opinion, 277 Order Adopting, 358 Notice of Appeal - FEDERAL CIRCUIT, 265 Order Adopting Report and Recommendations, 352 Memorandum & Opinion, 355 Final Judgment and certified copy of Docket Sheet. (dlc,) (Entered: 03/18/2016)
03/18/2016	360	NOTICE of Docketing Notice of Appeal from USCA-FEDERAL CIRCUIT re 358 Notice of Appeal - FEDERAL CIRCUIT filed by Sansung Telecommunications America LLC, Samsung Electronics Co LTD, Samsung Electronics America Inc. USCA Case Number 16-1729 (dlc,) (Entered: 03/18/2016)
07/15/2016	361	Unopposed MOTION to Withdraw as Attorney VINCENT Y. LING by Samsung Electronics America Inc, Samsung Electronics Co LTD, Sansung Telecommunications America LLC. (Attachments: # 1 Text of Proposed Order)(Smith, Michael) (Entered: 07/15/2016)
07/19/2016	362	ORDER granting 361 Motion to Withdraw as Attorney. Attorney Vincent Y Ling terminated. Signed by Judge Rodney Gilstrap on 7/18/2016. (ch,) (Entered: 07/19/2016)

Citing References (110)

Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	**1. SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, AND SAMSUNG AUSTIN SEMICONDUCTOR, LLC, PETITIONER, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, PATENT OWNER.** 2015 WL 410654, *1+ , Patent Tr. & App. Bd. Petitioner filed a Petition (Paper 1, "Pet.") requesting an inter partes review of claims 23, 25, 29, 30, and 41 of U.S. Patent No. 8,023,580 B2 (Ex. 1301, "the '580 patent")....	Jan. 28, 2015	Administrative Decision		—
Examined by	**2. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONSAMERICA, LLC, AND SAMSUNG AUSTIN SEMICONDUCTOR, LLC, PETITIONER, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, PATENT OWNER.** 2014 WL 4787236, *1+ , Patent Tr. & App. Bd. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC (collectively, "Petitioner")...	Sep. 23, 2014	Administrative Decision		—
Examined by	**3. SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, AND SAMSUNG AUSTIN SEMICONDUCTOR, LLC, PETITIONER, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, PATENT OWNER.** 2014 WL 4787237, *1+ , Patent Tr. & App. Bd. Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC (collectively, "Petitioner")...	Sep. 23, 2014	Administrative Decision		—
Examined by	**4. Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; and Samsung Austin Semiconductor, LLC; Petitioner, v. REMBRANDT WIRELESS TECHNOLOGIES... 2015 WL 1932304, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Apr. 29, 2015	Administrative Filing		—
Examined by	**5. Petitioner's Reply in Support of Its Petition for Inter Partes Review of U.S. Patent No. 8,023,580** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2015 WL 499134, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Feb. 06, 2015	Administrative Filing		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	**6. Petitioner's Reply in Support of Its Petition for Inter Partes Review of U.S. Patent No. 8,023,580** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2015 WL 499135, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Feb. 06, 2015	Administrative Filing		—
Examined by	**7. Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 6779149, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Dec. 01, 2014	Administrative Filing		—
Examined by	**8. Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 6779150, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Dec. 01, 2014	Administrative Filing		—
Examined by	**9. Motion for Joinder to Related Inter Partes Review of U.S. Patent No. 8,023,580 (Case No. IPR2014-00519) Under 37 C.F.R. s 42.122(b)** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 6474781, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 21, 2014	Administrative Filing		—
Examined by	**10. Petition for Inter Partes Review of U.S. Patent No. 8,023,580** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 6474782, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 21, 2014	Administrative Filing		—
Examined by	**11. Motion for Joinder to Related Inter Partes Review of U.S. Patent No. 8,023,580 (Case No. IPR2014-00518) Under 37 C.F.R. s 42.122(b)** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 6474792, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 21, 2014	Administrative Filing		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	**12. Petition for Inter Partes Review of Claims 2, 19, 49, 52, 53, and 59 of U.S. Patent No. 8,023,580** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 6474793, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 21, 2014	Administrative Filing		—
Examined by	**13. Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC; Petit... 2014 WL 4647753, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Sep. 18, 2014	Administrative Filing		—
Examined by	**14. Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 4647754, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Sep. 18, 2014	Administrative Filing		—
Examined by	**15. Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 4647755, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Sep. 18, 2014	Administrative Filing		—
Examined by	**16. Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 4647756, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Sep. 18, 2014	Administrative Filing		—
Examined by	**17. Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 4647757, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Sep. 18, 2014	Administrative Filing		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	**18. Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC; Petit... 2014 WL 4647758, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Sep. 18, 2014	Administrative Filing		—
Examined by	**19. Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC; Petit... 2014 WL 2990596, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	July 03, 2014	Administrative Filing		—
Examined by	**20. Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC; Petit... 2014 WL 2990597, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	July 03, 2014	Administrative Filing		—
Examined by	**21. Patent Owner Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC; Petit... 2014 WL 3002812, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	July 03, 2014	Administrative Filing		—
Examined by	**22. Patent Owner's Preliminary Response to Petition Pursuant to 37 C.F.R. s 42.107** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 3002813, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	July 03, 2014	Administrative Filing		—
Examined by	**23. Amended Petition for Inter Partes Review of U.S. Patent No. 8,023,580** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 1333915, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Apr. 03, 2014	Administrative Filing		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	**24. Amended Petition for Inter Partes Review of U.S. Patent No. 8,023,580** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 1333917, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Apr. 03, 2014	Administrative Filing		—
Examined by	**25. Amended Petition for Inter Partes Review of U.S. Patent No. 8,023,580** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 1333918, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Apr. 03, 2014	Administrative Filing		—
Examined by	**26. Petition for Inter Partes Review of U.S. Patent No. 8,023,580** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 1230285, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Mar. 20, 2014	Administrative Filing		—
Examined by	**27. Petition for Inter Partes Review of U.S. Patent No. 8,023,580** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 1230287, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Mar. 20, 2014	Administrative Filing		—
Examined by	**28. Petition for Inter Partes Review of U.S. Patent No. 8,023,580** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 1230288, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Mar. 20, 2014	Administrative Filing		—
Examined by	**29. Petition for Inter Partes Review of U.S. Patent No. 8,023,580** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 1230286, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Mar. 19, 2014	Administrative Filing		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	**30. Amended Petition for Inter Partes Review of U.S. Patent No. 8,023,580** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 1333916, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Mar. 19, 2014	Administrative Filing		—
Examined by	**31. Brief for Plaintiff-Appellee Rembrandt Wireless Technologies, LP** REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff - Appellee, v. SAMSUNG ELECTRONICS CO., LTD., Samsung Electronics America, Inc., Samsung Telecommunicat... 2016 WL 4035648, *1+ , Fed.Cir. (Appellate Brief)	July 21, 2016	Brief		—
Examined by	**32. Non-Confidential Brief of Defendants-Appellants** REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff-Appellee, v. SAMSUNG ELECTRONICS CO., LTD., Samsung Electronics America, Inc., Samsung Telecommunicatio... 2016 WL 3167522, *1+ , Fed.Cir. (Appellate Brief)	May 31, 2016	Brief		—
Examined by	**33. Rembrandt Wireless Technologies LP's Third Amended Complaint for Patent Infringement** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America... 2014 WL 4408415, *1+ , E.D.Tex. (Trial Pleading)	Mar. 13, 2014	Petition		—
Examined by	**34. Samsung Defendants' Answer to Rembrandt Wireless Technologies Lp's Second Amended Complaint for Patent Infringement** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD., Samsung Electronics America, Inc., Samsung Telecommunications Americ... 2013 WL 12089522, *1+ , E.D.Tex. (Trial Pleading)	July 10, 2013	Petition		—
Examined by	**35. Rembrandt Wireless Technologies LP's Second Amended Complaint for Patent Infringement** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America... 2013 WL 12089519, *1+ , E.D.Tex. (Trial Pleading)	June 05, 2013	Petition		—
Examined by	**36. Rembrandt Wireless Technologies LP's Complaint for Patent Infringement** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, LLC; Samsung Telecommunications America,... 2013 WL 1155028, *1+ , E.D.Tex. (Trial Pleading)	Mar. 15, 2013	Petition		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	**37. Defendant Samsung's Memorandum in Support of Its Rule 50(a) Motion for Judgment as a Matter of Law** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications Americ... 2015 WL 998897, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Feb. 13, 2015	Motion		—
Examined by	**38. Rembrandt's Response in Opposition to Defendants' Motion for Summary Judgment of no Damages Prior to the Filing Date of the Complaint for Failure to M...** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America... 2014 WL 8240219, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Dec. 15, 2014	Motion		—
Examined by	**39. Rembrandt's Response in Opposition to Defendants' Motion for Summary Judgment of No Damages Prior to the Filing Date of the Complaint for Failure to M...** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America... 2014 WL 12487730, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Dec. 15, 2014	Motion		—
Examined by	**40. Defendants' Motion for Summary Judgment of no Damages Prior to the Filing Date of the Complaint for Failure to Mark** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD., Samsung Electronics America, Inc., Samsung Telecommunications Americ... 2014 WL 8240184, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Nov. 26, 2014	Motion		—
Examined by	**41. Defendants' Motion for Summary Judgment of No Damages Prior to the Filing Date of the Complaint for Failure to Mark** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD., Samsung Electronics America, Inc., Samsung Telecommunications Americ... 2014 WL 12487734, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Nov. 26, 2014	Motion		—
Examined by	**42. Rembrandt's Opening Claim Construction Brief** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, v. SAMSUNG ELECTRONICS CO. LTD., et al. 2014 WL 2968267, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Apr. 17, 2014	Motion		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Discussed by	**43. Rembrandt Wireless Technologies, LP v. Samsung Electronics Co., Ltd.** 2016 WL 633909, *1+ , E.D.Tex. Before the Court is Samsung Defendants' ("Samsung") Rule 50(b) Renewed Motion for Judgment as a Matter of Law and/or Rule 59(a) Motion for New Trial on Liability Issues (Dkt. No....	Feb. 17, 2016	Case		—
Discussed by	**44. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, AND SAMSUNG AUSTIN SEMICONDUCTOR, LLC, PETITIONER, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, PATENT OWNER.** 2015 WL 410653, *1+ , Patent Tr. & App. Bd. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC (collectively, "Petitioner") filed...	Jan. 28, 2015	Administrative Decision		—
Discussed by	**45. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONSAMERICA, LLC, AND SAMSUNG AUSTIN SEMICONDUCTOR, LLC, PETITIONER, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, PATENT OWNER.** 2014 WL 4537477, *1+ , Patent Tr. & App. Bd. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC (collectively, "Petitioner")...	Sep. 09, 2014	Administrative Decision		—
Discussed by	**46. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, AND SAMSUNG AUSTIN SEMICONDUCTOR, LLC, PETITIONER, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, PATENT OWNER.** 2014 WL 4537478, *1+ , Patent Tr. & App. Bd. Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC (collectively, "Petitioner")...	Sep. 09, 2014	Administrative Decision		—
Discussed by	**47. Unopposed motion for Pro Hac Vice Admission of Brian P. Biddinger** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; and Samsung Austin Semiconductor, LLC, Petitioner, v. REMBRANDT WIRELESS TECHNOLOGIES... 2015 WL 1360916, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Mar. 25, 2015	Administrative Filing		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Discussed by	**48. Unopposed Motion for Pro Hac Vice Admission of Brian P. Biddinger** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; and Samsung Austin Semiconductor, LLC, Petitioner, v. REMBRANDT WIRELESS TECHNOLOGIES... 2015 WL 1360918, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Mar. 25, 2015	Administrative Filing		—
Discussed by	**49. Petition for Inter Partes Review of U.S. Patent No. 8,457,228** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; and Samsung Austin Semiconductor, LLC, Petitioner, v. REMBRANDT WIRELESS TECHNOLOGIES... 2015 WL 129163, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Jan. 09, 2015	Administrative Filing		—
Discussed by	**50. Patent Owner's Opposition to Motion for Joinder to Related Inter Partes Review of U.S. Patent No. 8,023,580 (IPR2014-00519)** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 6474779, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Nov. 08, 2014	Administrative Filing		—
Discussed by	**51. Patent Owner's Opposition to Motion for Joinder to Related Inter Partes Review of U.S. Patent No. 8,023,580 (IPR2014-00518)** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 6474791, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Nov. 08, 2014	Administrative Filing		—
Discussed by	**52. Petition for Inter Partes Review of U.S. Patent No. 8,457,228** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC; Petit... 2014 WL 2525754, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	June 04, 2014	Administrative Filing		—
Discussed by	**53. Petition for Inter Partes Review of U.S. Patent No. 8,457,228** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC; Petit... 2014 WL 2528319, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	June 04, 2014	Administrative Filing		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Discussed by	**54. Petition for Inter Partes Review of U.S. Patent No. 8,457,228** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC; Petit... 2014 WL 2528320, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	June 04, 2014	Administrative Filing		—
Discussed by	**55. Federal Jury Awards Technology Company $15.7M in Patent Infringement Suit** 2015 WL 3485582, *1+ , E.D.Tex. (Verdict and Settlement Summary)	Feb. 13, 2015	Jury Verdict		—
Discussed by	**56. REMBRANDT WIRELESS TECHNOLOGIES LP vs. SAMSUNG ELECTRONICS CO. LTD. ET AL** 2015 WL 1298643, *1+ , E.D.Tex. (Verdict and Settlement Summary)	Jan. 13, 2015	Jury Verdict		—
Discussed by	**57. REMBRANDT WIRELESS TECHNOLOGIES LP vs. SAMSUNG ELECTRONICS CO. LTD. ET AL** 2015 WL 1298639, *1+ , E.D.Tex. (Verdict and Settlement Summary)	Jan. 13, 2015	Jury Verdict		—
Discussed by	**58. Motion for Summary Judgment** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, v. SAMSUNG ELECTRONICS CO. LTD., et al. 2014 WL 7794895, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Sep. 15, 2014	Motion		—
Discussed by	**59. Rembrandt Wireless Technologies LP's Response to Samsung's Motion to Stay Pending Inter Partes Review** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America... 2014 WL 12487725, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	July 07, 2014	Motion		—
Discussed by	**60. Samsung's Opposed Motion to Stay Pending Inter Partes Review** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD., Samsung Electronics America, Inc., Samsung Telecommunications Americ... 2014 WL 12487729, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	June 18, 2014	Motion		—
Discussed by	**61. Judge's Instructions/Charge to the Jury** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO. LTD,; Samsung Electronics America, LLC; Samsung Telecommunications America,... 2015 WL 4935322, *1+ , E.D.Tex. (Trial Transcript)	Feb. 13, 2015	Transcript		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Discussed by	**62. Verdict Form** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD.; Samsung Electronics America, Inc.; and Samsung Telecommunications Am... 2015 WL 1280541, *1+ , E.D.Tex. (Verdict, Agreement and Settlement)	Feb. 13, 2015	Jury Verdict		—
Discussed by	**63. Verdict Form** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD.; Samsung Electronics America, Inc.; and Samsung Telecommunications Am... 2015 WL 10319202, *1+ , E.D.Tex. (Verdict, Agreement and Settlement)	Feb. 13, 2015	Jury Verdict		—
Cited by	**64. Rembrandt Wireless Technologies, LP v. Samsung Electronics Co., Ltd.** 2016 WL 362540, *1+ , E.D.Tex. Before the Court is Samsung Defendants' ("Samsung") Rule 50(b) Renewed Motion for Judgment as a Matter of Law and/or Rule 59(a) Motion for New Trial on Damages Issues ("Mot.", Dkt....	Jan. 29, 2016	Case		—
Cited by	**65. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, AND SAMSUNG AUSTIN SEMICONDUCTOR, LLC, PETITIONER, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, PATENT OWNER.** 2015 WL 5719795, *6 , Patent Tr. & App. Bd. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC (collectively, "Petitioner") filed...	Sep. 24, 2015	Administrative Decision		—
Cited by	**66. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, AND SAMSUNG AUSTIN SEMICONDUCTOR, LLC, PETITIONER, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, PATENT OWNER.** 2015 WL 5719796, *6 , Patent Tr. & App. Bd. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC (collectively, "Petitioner") filed...	Sep. 24, 2015	Administrative Decision		—
Cited by	**67. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, AND SAMSUNG AUSTIN SEMICONDUCTOR, LLC, PETITIONER, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, PATENT OWNER.** 2015 WL 5719797, *6 , Patent Tr. & App. Bd. Samsung Electronics Co. Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC (collectively, "Petitioner") filed...	Sep. 24, 2015	Administrative Decision		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Cited by	**68. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONSAMERICA, LLC, AND SAMSUNG AUSTIN SEMICONDUCTOR, LLC, PETITIONER, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, PATENT OWNER.** 2014 WL 5840662, *1 , Patent Tr. & App. Bd. Petitioner filed a Request for Rehearing (Paper 19, "Req. Reh'g'D') of the Board's decision entered September 9, 2014 (Paper 18, "Decision"), which declined to institute inter...	Oct. 24, 2014	Administrative Decision		—
Cited by	**69. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, AND SAMSUNG AUSTIN SEMICONDUCTOR, LLC, PETITIONER, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, PATENT OWNER.** 2014 WL 5840663, *1 , Patent Tr. & App. Bd. On October 8, 2014, Petitioner filed a request for rehearing (Paper 19, "Req. Reh'g'D') of the Board's decision (Paper 18, "Dec."), which declined to institute an inter partes...	Oct. 24, 2014	Administrative Decision		—
Cited by	**70. Record of Oral Hearing** Out Of Plan SAMSUNG ELECTRONICS CO. LTD., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC, Petit... 2015 WL 5444442, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Sep. 16, 2015	Administrative Filing		—
Cited by	**71. Petitioners' Request for Oral Hearing** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; and Samsung Austin Semiconductor, LLC, Petitioner, v. REMBRANDT WIRELESS TECHNOLOGIES... 2015 WL 1265497, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Mar. 20, 2015	Administrative Filing		—
Cited by	**72. Petitioners' Request for Oral Hearing** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; and Samsung Austin Semiconductor, LLC, Petitioner, v. REMBRANDT WIRELESS TECHNOLOGIES... 2015 WL 1265501, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Mar. 20, 2015	Administrative Filing		—
Cited by	**73. Patent Owner's Opposition to Motion for Joinder to Inter Partes Review of U.S. Patent No. 8,457,22 (IPR2014-00892)** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; and Samsung Austin Semiconductor, LLC, Petitioner, v. REMBRANDT WIRELESS TECHNOLOGIES... 2015 WL 638749, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Feb. 16, 2015	Administrative Filing		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Cited by	**74. Motion for Joinder to Related Inter Partes Review of U.S. Patent No. 8,457,228 (Case No. IPR2014-00892) Under 37 C.F.R. s 42.122(b)** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; and Samsung Austin Semiconductor, LLC, Petitioner, v. REMBRANDT WIRELESS TECHNOLOGIES... 2015 WL 129162, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Jan. 09, 2015	Administrative Filing		—
Cited by	**75. Decision on Request for Rehearing 37 C.F.R. s 42.71** Out Of Plan SAMSUNG ELECTRONICS CO. LTD., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 6779165, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 24, 2014	Administrative Filing		—
Cited by	**76. Decision Request for Rehearing 37 C.F.R. s 42.71(d)** Out Of Plan SAMSUNG ELECTRONICS CO. LTD., Samsung Electronics America, Inc., Samsung Telecommunicationsamerica, LLC, and Samsung Austin Semiconductor, LLC, Petiti... 2014 WL 6779166, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 24, 2014	Administrative Filing		—
Cited by	**77. Order Conduct of Proceedings 37 C.F.R. s 42.5** Out Of Plan SAMSUNG ELECTRONICS CO. LTD., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 5324793, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 20, 2014	Administrative Filing		—
Cited by	**78. Order Conduct of Proceedings 37 C.F.R. s 42.5** Out Of Plan SAMSUNG ELECTRONICS CO. LTD., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 5324794, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 20, 2014	Administrative Filing		—
Cited by	**79. Petitioners' Request for Rehearing Under 37 C.F.R. s 42.71 on the Decision Not to Institute Inter Partes Review** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 5025201, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 08, 2014	Administrative Filing		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Cited by	**80. Petitioners' Request for Rehearing Under 37 C.F.R. s 42.71 on the Decision Not to Institute Inter Partes Review** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC, Petit... 2014 WL 5025202, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Oct. 08, 2014	Administrative Filing		—
Cited by	**81. Petition for Inter Partes Review of U.S. Patent No. 8,457,228** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC; Petit... 2014 WL 2525753, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	June 04, 2014	Administrative Filing		—
Cited by	**82. Petition for Inter Partes Review of U.S. Patent No. 8,457,228** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC; Petit... 2014 WL 2525755, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	June 04, 2014	Administrative Filing		—
Cited by	**83. Petition for Inter Partes Review of U.S. Patent No. 8,457,228** Out Of Plan SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America, LLC; and Samsung Austin Semiconductor, LLC; Petit... 2014 WL 2528321, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	June 04, 2014	Administrative Filing		—
Cited by	**84. Non-Confidential Reply Brief of Defendants-Appellants** REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff-Appellee, v. SAMSUNG ELECTRONICS CO., LTD., Samsung Electronics America, Inc., and Samsung Telecommunic... 2016 WL 4491434, *1+ , Fed.Cir. (Appellate Brief)	Aug. 15, 2016	Brief		—
Cited by	**85. Samsung's Reply in Support of Its Motion for Extension of Stay Pending Appeal** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO., Ltd.; Samsung Electronics America, Inc.; Samsung Telecommunications Americ... 2016 WL 4362480, *1 , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	May 09, 2016	Motion		—
Cited by	**86. Samsung's Motion for Extension of Stay Pending Appeal** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO., Ltd.; Samsung Electronics America, Inc.; Samsung Telecommunications Americ... 2016 WL 4362460, *1 , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Apr. 11, 2016	Motion		—

Treatment	Title	Date	Type	Depth	Headnote(s)
Cited by	**87. Rembrandt's Sur-Reply in Opposition to Defendants' Motion for Summary Judgment of No Damages Prior to the Filing Date of the Complaint for Failure to ...** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America... 2015 WL 11519745, *1+ , E.D.Tex. (Trial Motion, Memorandum and Affidavit)	Jan. 07, 2015	Motion		—
Cited by	**88. P.R. 4-3 Joint Claim Construction Statement** Out Of Plan REMBRANDT WIRELESS TECHNOLOGIES, LP, Plaintiff, v. SAMSUNG ELECTRONICS CO. LTD.; Samsung Electronics America, Inc.; Samsung Telecommunications America... 2014 WL 4408296, *1 , E.D.Tex. (Trial Filing)	Mar. 06, 2014	Filing		—
—	**89. SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS** Out Of Plan US PAT 8457228+ , U.S. PTO Utility A device may be capable of communicating using at least two type types of modulation methods. Methods and systems are provided for communication of data according to a...	June 04, 2013	Patents	—	—
—	**90. DATA COMMUNICATION SYSTEM HAS TRANSCEIVER THAT TRANSMITS INITIAL SEQUENCE IN FREQUENCY SHIFT KEYING MODULATION INDICATING IMPENDING CHANGE FROM FREQUENCY SHIFT KEYING MODULATION TO SHIFT KEYING MODULATION** Out Of Plan DWPI 2010-J46317	Dec. 05, 1997	DWPI	—	—
—	**91. MULTIPOINT SYSTEM FOR FACILITATING DATA COMMUNICATIONS AMONG MODEMS IN POINT-TO-POINT NETWORK, HAS MASTER TRANSCEIVER TRANSMITTING TRAILING SEQUENCE IN ONE OF MODULATION METHODS E.G. SHIFT KEYING MODULATION METHOD, AFTER TRAINING SEQUENCE** Out Of Plan DWPI 2012-F08686+	Dec. 05, 1997	DWPI	—	—
—	**92. MULTIPOINT COMMUNICATION SYSTEM, HAS TRANSCEIVER TRANSMITTING TRAINING SEQUENCE IN MODULATION PROCESS, WHERE SEQUENCE INDICATES IMPENDING CHANGE FROM ONE PROCESS TO ANOTHER PROCESS AND TRAILING SEQUENCE TRANSMITTED AFTER TRAINING SEQUENCE** Out Of Plan DWPI 2014-K80666	Dec. 05, 1997	DWPI	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**93. MULTIPOINT COMMUNICATION SYSTEM FOR FACILITATING COMMUNICATION AMONG E.G. TRIBUTARY OR TRIB MODEMS IN NETWORK TO PROVIDE PHONE SERVICE, HAS SIMPLE CABLE PHONE AND INTERACT DEVICE FOR SENDING SIGNAL TO TERMINATION SYSTEM AND HEAD ENDS** Out Of Plan DWPI 2015-194092+	Dec. 05, 1997	DWPI	—	—
—	**94. RF 027085/0636** Out Of Plan	Oct. 19, 2011	Assignments	—	—
—	**95. PatStat 8023580**	Dec. 23, 2014	Patent Status Files	—	—
—	**96. PatStat 8023580**	Dec. 23, 2014	Patent Status Files	—	—
—	**97. PatStat 8023580**	May 20, 2014	Patent Status Files	—	—
—	**98. PatStat 8023580**	May 20, 2014	Patent Status Files	—	—
—	**99. PatStat 8023580**	May 20, 2014	Patent Status Files	—	—
—	**100. PatStat 8023580**	May 20, 2014	Patent Status Files	—	—
—	**101. REMBRANDT WIRELESS TECHNOLOGIES, LP v. SAMSUNG ELECTRONICS CO. LTD**	Mar. 15, 2013	Docket Summaries	—	—
—	**102. SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS** Out Of Plan US PAT 9432172+ , U.S. PTO Utility Methods and systems are provided for simple cable phone and internet (SCPI) device that may be coupled with a cable modem (CM) and one or more SCPI head ends, e.g., via an SCPI...	Aug. 30, 2016	Patents	—	—
—	**103. SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS** Out Of Plan US PAT APP 20150078425+ , U.S. PTO Application Methods and systems are provided for simple cable phone and internet (SCPI) device that may be coupled with a cable modem (CM) and one or more SCPI head ends, e.g., via an SCPI...	Mar. 19, 2015	Patents	—	—
—	**104. SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS** Out Of Plan US PAT APP 20140153621 , U.S. PTO Application A device may be capable of communicating using at least two type types of modulation methods. Methods and systems are provided for communication of data according to a...	June 05, 2014	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**105. SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS** Out Of Plan US PAT APP 20120106604 , U.S. PTO Application A device may be capable of communicating using at least two type types of modulation methods. The device may include a transceiver capable of acting as a master according to a...	May 03, 2012	Patents	—	—
—	**106. Annotated Patent Digest (Matthews) s 30:149, No requirement to mark if no product made by patent holder** If the patent holder or its licensees have not made any products under the patent, then there is nothing to mark, and there is no duty on the patent holder to provide any notice to...	2016	Other Secondary Source	—	—
—	**107. Annotated Patent Digest (Matthews) s 30:151, Only need mark patented article that is the subject of infringement suit** The duty to mark only extends to the patented article that is the subject of an infringement suit. If a single patent has different claims directed to different articles, the...	2016	Other Secondary Source	—	—
—	**108. PATENT-E.D. TEX.: SAMSUNG LOSES BID FOR POST-TRIAL JUDGMENT OF NON-INFRINGEMENT OF REMBRANDT PATENTS** Out Of Plan Samsung was not entitled to a post-trial judgment of non-infringement of two Rembrandt Wireless patents, both of which described a wireless communications system that used multiple...	2016	Other Secondary Source	—	—
—	**109. PATENT-E.D. TEX.: SAMSUNG'S EFFORT TO REDUCE $15.7M AWARD FAILS IN BLUETOOTH INFRINGEMENT CASE** Out Of Plan Samsung was not entitled to a post-trial judgment to set aside a $15.7 million damages award that a jury delivered after finding that Samsung had infringed two Rembrandt Wireless...	2016	Other Secondary Source	—	—
—	**110. WORTH NOTING-OTHER IP LAW DEVELOPMENTS** Out Of Plan A periodic roundup of other items of interest to the Intellectual Property community: PATENT—E.D. Tex.: A federal jury in Marshall, Texas, has determined that Samsung must pay...	2015	Other Secondary Source	—	—

1. 9432172, August 30, 2016, System and method of communication using at least two modulation methods, Bremer, Gordon, Clearwater, Florida, United States of America(US); Schneck, Paul, Bala Cynwyd, Pennsylvania, United States of America(US); 549064, January 21, 2015, ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)., REMBRANDT WIRELESS TECHNOLOGIES, LP, SUITE 700, 1655 NORTH FORT MEYERS DRIVE, ARLINGTON, VIRGINIA, UNITED STATES OF AMERICA(US), 22209, reel-frame:034777/0907, REMBRANDT WIRELESS TECHNOLOGIES, LP, Arlington, Virginia, United States of America(US), United States company or corporation

   CORE TERMS: trib, modulation, cable, sequence, master, transceiver, modem, upstream, phone, customer, training, gateway, burst, session, transmission, multipoint, trailing, internet, communicate, interface, modulated, communications system, cable service, channel, transmitted, sub-system, downstream, digital, coupled, network

   ... 8457228 , which is a Continuation of Ser. No. 12543910, August 19, 2009, GRANTED **8023580** , which is a Continuation of Ser. No. 11774803, July 9, 2007, GRANTED 7675965 , which is ...
   ... 7747000, June 29, 2010, Bremer et al., United States of America (US) **8023580**, September 20, 2011, Bremer, United States of America (US) 8457228, June 4, ...
   ... 543,910 filed on Aug. 19, 2009, which issued as U.S. Pat. No. **8,023,580** on Sep. 20, 2011, which is a continuation of U.S. application Ser. No. 11/ ...

2. 8457228, June 4, 2013, System and method of communication using at least two modulation methods, Bremer, Gordon F., Clearwater, Florida, United States of America(US), United States of America(); 198568, October 19, 2011, ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)., REMBRANDT WIRELESS TECHNOLOGIES, LP, SUITE 700, 1655 NORTH FORT MEYERS DRIVE, ARLINGTON, VIRGINIA, UNITED STATES OF AMERICA(US), 22209, reel-frame:027085/0636, Bremer, Gordon F., Clearwater, Florida, United States of America(US), United States of America

   CORE TERMS: modulation, trib, transceiver, master, sequence, modem, training, message, session, trailing, transmission, multipoint, communicate, medium, transmitted, memory, slave, communications system, modulated, user, methods used, transition, magnetic, optical, computer-readable, incompatible, demodulator, compatible, modulator, internet

   Continuation of Ser. No. 12543910, August 19, 2009, GRANTED **8023580** , which is a Continuation of Ser. No. 11774803, July 9, 2007, GRANTED 7675965 , which is ...
   ... 7747000, June 29, 2010, Bremer et al., United States of America (US) **8023580**, September 20, 2011, Bremer, United States of America (US), 375#261 20010022836, September ...

3. 8023580, September 20, 2011, System and method of communication using at least two modulation methods, Bremer, Gordon F., Clearwater, Florida, United States of America(US), United States of America(); 543910, BREMER GORDON F, October 19, 2011, ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)., REMBRANDT WIRELESS TECHNOLOGIES, LP, SUITE 700, 1655 NORTH FORT MEYERS DRIVE, ARLINGTON, VIRGINIA, UNITED STATES OF AMERICA(US), 22209, reel-frame:027085/0636

   CORE TERMS: modulation, trib, sequence, master, transceiver, modem, transmission, training, session, trailing, multipoint, communicate, medium, memory, communications system, transmitted, method used, payload, slave, transition, magnetic, optical, computer-readable, incompatible, destination, demodulator, compatible, modulated, modulator, interval

   8023580

4. 20150078425 (Note: This is a Patent Application only.), March 19, 2015, SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS, Bremer, Gordon, Clearwater, Florida, United States of America(US); Schneck, Paul, Bala Cynwyd, Pennsylvania, United States of America(US); 549064, January 21, 2015, ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)., REMBRANDT WIRELESS TECHNOLOGIES, LP, SUITE 700, 1655 NORTH FORT MEYERS DRIVE, ARLINGTON, VIRGINIA, UNITED STATES OF AMERICA(US), 22209, reel-frame:034777/0907, REMBRANDT WIRELESS TECHNOLOGIES, LP, Arlington, Virginia, United States of America(US), United

States company or corporation

CORE TERMS: trib, modulation, cable, sequence, master, transceiver, modem, upstream, phone, customer, training, gateway, burst, session, transmission, multipoint, internet, trailing, communicate, interface, modulated, communications system, cable service, channel, transmitted, sub-system, downstream, digital, coupled, network

... 8457228 , which is a Continuation of Ser. No. 12543910, August 19, 2009, GRANTED **8023580** , which is a Continuation of Ser. No. 11774803, July 9, 2007, GRANTED 7675965 , which is ...
... 543,910 filed on Aug. 19, 2009, which issued as U.S. Pat. No. **8,023,580** on Sep. 20, 2011, which is a continuation of U.S. application Ser. No. 11/ ...

5. 20140153621 (Note: This is a Patent Application only.), June 5, 2014, SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS, Bremer, Gordon, Clearwater, Florida, United States of America(US); 899227, Summit Technology Systems, LP, Bala Cynwyd, Pennsylvania, United States of America(US), United States company or corporation

   CORE TERMS: modulation, trib, transceiver, master, sequence, modem, training, message, session, trailing, transmission, multipoint, communicate, medium, transmitted, memory, slave, communications system, modulated, user, methods used, transition, magnetic, optical, computer-readable, continuation, incompatible, demodulator, compatible, modulator

   ... 8457228 , which is a Continuation of Ser. No. 12543910, August 19, 2009, GRANTED **8023580** , which is a Continuation of Ser. No. 11774803, July 9, 2007, GRANTED 7675965 , which is ...

6. 20120106604 (Note: This is a Patent Application only.), May 3, 2012, System and Method of Communication Using at Least Two Modulation Methods, Bremer, Gordon F., Clearwater, Florida, United States of America(US), United States of America(); 198568, October 19, 2011, ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)., REMBRANDT WIRELESS TECHNOLOGIES, LP, SUITE 700, 1655 NORTH FORT MEYERS DRIVE, ARLINGTON, VIRGINIA, UNITED STATES OF AMERICA(US), 22209, reel-frame:027085/0636, SUMMIT TECHNOLOGY SYSTEMS, LP, Bala Cynwyd, Pennsylvania, United States of America(US), United States company or corporation

   CORE TERMS: modulation, trib, sequence, master, transceiver, modem, training, transmission, session, trailing, multipoint, communicate, medium, memory, communications system, transmitted, method used, payload, slave, transition, magnetic, optical, computer-readable, incompatible, destination, demodulator, compatible, modulated, modulator, interval

   Continuation of Ser. No. 12543910, August 19, 2009, GRANTED **8023580** , which is a Continuation of Ser. No. 11774803, July 9, 2007, GRANTED 7675965 , which is ...
   8023580, September 20, 2011, BREMER GORDON F [US], United States of ...

Source: **Legal > / . . . / > Utility, Design and Plant Patents**
Terms: **8023580 or 8,023,580** (Suggest Terms for My Search)
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Date/Time: Monday, September 19, 2016 - 10:50 AM EDT

1. Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., CASE NO. 2:13-cv-213-JRG, UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TEXAS, MARSHALL DIVISION, 2016 U.S. Dist. LEXIS 18797, February 17, 2016, Decided, February 17, 2016, Filed

   CORE TERMS: modulation, patent, matter of law, new trial, different types, prior art, they're, infringement, protocol, dropped ...

   ... February 13, 2015. The asserted claims of U.S. Patent No. **8,023,580** ("'580 Patent") and U.S. Patent No. 8,457,228 ("'228 Patent"), the ...

2. Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., Ltd., CASE NO. 2:13-cv-213-JRG, UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TEXAS, MARSHALL DIVISION, 2016 U.S. Dist. LEXIS 10590, January 29, 2016, Decided, January 29, 2016, Filed

   CORE TERMS: chip, new trial, royalty, patented, matter of law, patent, functionality, incremental, technology, patents-in-suit ...

   ... February 13, 2015. The asserted claims of U.S. Patent No. **8,023,580** ("the '580 Patent") and U.S. Patent No. 8,457,228 ("the '228 Patent") ...

3. Rembrandt Wireless Techs. v. Samsung Elecs. Co., Case No. 2:13CV213-JRG-RSP, UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TEXAS, MARSHALL DIVISION, 2015 U.S. Dist. LEXIS 19902, February 9, 2015, Decided, February 9, 2015, Filed

   ... products covered by claim 40 of United States Patent No. **8,023,580** ("the '580 Patent") due to Plaintiff's disclaimer of this claim. ...

4. Rembrandt Wireless Techs. v. Samsung Elecs. Co., Case No. 2:13CV213-JRG-RSP, UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TEXAS, MARSHALL DIVISION, 2015 U.S. Dist. LEXIS 19900, February 5, 2015, Decided, February 5, 2015, Filed, Adopted by, Objection overruled by, Summary judgment denied by Rembrandt Wireless Techs. v. Samsung Elecs. Co., 2015 U.S. Dist. LEXIS 19902 (E.D. Tex., Feb. 9, 2015)

   CORE TERMS: marking, summary judgment, patentee, patent, material fact, remaining claims, claim-by-claim, notice, genuine issue, infringement ...

   ... is the assignee and owner of United States Patent No. **8,023,580** ("the '580 Patent"). (Dkt. No. 84 at ¶ 2, "Third Amended ...

5. Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., Case No. 2:13CV213-JRG-RSP, UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TEXAS, MARSHALL DIVISION, 2015 U.S. Dist. LEXIS 20303, January 29, 2015, Decided, January 29, 2015, Filed

   CORE TERMS: non-instituted, inter partes, patent, trial date, disadvantage, tactical, weigh, patents-in-suit, simplification, infringement ...

   ... is the assignee and owner of United States Patent No. **8,023,580** ("the '580 Patent") and United States Patent No. 8,457,228 ("the '228 Patent") ...

6. Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., CASE NO. 2:13-CV-213-JRG-RSP, UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TEXAS, MARSHALL DIVISION, 2014 U.S. Dist. LEXIS 93645, July 10, 2014, Decided, July 10, 2014, Filed, Motion denied by Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., 2015 U.S. Dist. LEXIS 54755 (E.D. Tex., Jan. 23, 2015)Stay denied by Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., 2015 U.S. Dist. LEXIS 20303 (E.D. Tex., Jan. 29, 2015)Motion denied by Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., 2015 U.S. Dist. LEXIS 20305 (E.D. Tex., Jan. 29, 2015)Motion denied by, Motion granted by Rembrandt Wireless Techs., LP v.

Samsung Elecs. Co., 2015 U.S. Dist. LEXIS 20306 (E.D. Tex., Jan. 30, 2015)Magistrate's recommendation at Rembrandt Wireless Techs. v. Samsung Elecs. Co., 2015 U.S. Dist. LEXIS 19900 (E.D. Tex., Feb. 5, 2015)Objection overruled by, Motion denied by Rembrandt Wireless Techs., LP v. Samsung Elecs. Co. Ltd., 2015 U.S. Dist. LEXIS 14193 (E.D. Tex., Feb. 6, 2015)Motion denied by Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., 2015 U.S. Dist. LEXIS 19904 (E.D. Tex., Feb. 9, 2015)Motion denied by, Motion for new trial denied by Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., Ltd., 2016 U.S. Dist. LEXIS 10590 (E.D. Tex., Jan. 29, 2016)Motion denied by, Motion for new trial denied by Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., 2016 U.S. Dist. LEXIS 18797 (E.D. Tex., Feb. 17, 2016)

CORE TERMS: modulation, signal, sequence, trib, transmission, transceiver, specification, training, invention, patentee ...

... of the disputed claim terms in United States Patents No. **8,023,580** and 8,457,228. After considering the arguments made by the parties ...
... Plaintiff brings suit alleging infringement of United States Patents No. **8,023,580** ("the '580 Patent") and 8,457,228 ("the '228 Patent") (collectively, the " ...
... 2014 Petition for Inter Partes Review of U.S. Patent No. **8,023,580** at 9 (citing The IEEE Standard Dictionary of Electrical and ...
... 2014 Petition for Inter Partes Review of U.S. Patent No. **8,023,580** at 11. ...

7. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, and SAMSUNG AUSTIN SEMICONDUCTOR, LLC, Petitioner, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, Patent Owner., Case IPR2014-00892, Paper 46 Patent 8,457,228 B2, Patent Trial and Appeal Board Representative Orders, Decisions and Notices, 2015 Pat. App. LEXIS 12959, September 24, 2015, Decided

   CORE TERMS: modulation, slave, phase, wave, carrier, amplitude, protocol, transceiver, modem, frequency ...

   ... argument in related case IPR2014-00518, which concerns U.S. Patent No. **8,023,580** B2 (which issued from the parent application (12/543,910) of the '228 patent):JUDGE LEE: ...

8. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, and SAMSUNG AUSTIN SEMICONDUCTOR, LLC, Petitioner, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, Patent Owner., Case IPR2014-00893, Paper 44 Patent 8,457,228 B2, Patent Trial and Appeal Board Representative Orders, Decisions and Notices, 2015 Pat. App. LEXIS 12960, September 24, 2015, Decided

   CORE TERMS: modulation, phase, wave, carrier, amplitude, slave, protocol, modem, payload, frequency ...

   ... argument in related case IPR2014-00518, which concerns U.S. Patent No. **8,023,580** B2 (which issued from the parent application (12/543,910) of the '228 patent):JUDGE LEE: ...

9. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, and SAMSUNG AUSTIN SEMICONDUCTOR, LLC, Petitioner, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, Patent Owner., Case IPR2014-00895, Paper 44 Patent 8,457,228 B2, Patent Trial and Appeal Board Representative Orders, Decisions and Notices, 2015 Pat. App. LEXIS 12961, September 24, 2015, Decided

   CORE TERMS: modulation, phase, transmission, sequence, wave, carrier, signal, slave, amplitude, protocol ...

   ... argument in related case IPR2014-00518, which concerns U.S. Patent No. **8,023,580** B2 (which issued from the parent application (12/543,910) of the '228 patent):JUDGE LEE: ...

10. SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG

TELECOMMUNICATIONSAMERICA, LLC, and SAMSUNG AUSTIN SEMICONDUCTOR, LLC, Petitioner, v. REMBRANDT WIRELESS TECHNOLOGIES, LP, Patent Owner., Case IPR2014-00518, Paper 47 Patent 8,023,580 B2, Patent Trial and Appeal Board Representative Orders, Decisions and Notices, 2015 Pat. App. LEXIS 12892, September 17, 2015, Decided

CORE TERMS: modulation, phase, carrier, wave, slave, amplitude, protocol, modem, frequency, sequence ...

... 59, 61, 62, 66, 70, and 76-79 of U.S. Patent No. **8,023,580** B2 ("the '580 patent," Ex. 1201) under 35 U.S.C. §§ 311-319 ...

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1. US Official News, March 3, 2015 Tuesday, 401 words, Ward & Smith Helps Rembrandt Technologies Win $15.7 Million Patent Verdict, New York

   ... 2013 based on the infringement of two Rembrandt patents, U.S. Patent Nos. **8,023,580** and 8,457,228. Rembrandt claimed Samsung was using both patents without permission to enable the ...

2. US Official News, March 3, 2015 Tuesday, 401 words, Ward & Smith Helps Rembrandt Technologies Win $15.7 Million Patent Verdict, New York

   ... 2013 based on the infringement of two Rembrandt patents, U.S. Patent Nos. **8,023,580** and 8,457,228. Rembrandt claimed Samsung was using both patents without permission to enable the ...

3. Professional Services Close-Up, February 28, 2015 Saturday, 281 words, Ward & Smith Helps Rembrandt Technologies Get $15.7M Patent Infringement Verdict

   ... 2013 based on the infringement of two Rembrandt patents, U.S. Patent Nos. **8,023,580** and 8,457,228. Rembrandt claimed Samsung was using both patents without permission to enable the ...

4. Manufacturing Close-Up, February 26, 2015 Thursday, 281 words, Ward & Smith Helps Rembrandt Technologies Win $15.7M Patent Infringement Verdict

   ... 2013 based on the infringement of two Rembrandt patents, U.S. Patent Nos. **8,023,580** and 8,457,228. Rembrandt claimed Samsung was using both patents without permission to enable the ...

5. PR Newswire, February 23, 2015 Monday 2:35 PM EST, , 406 words, Ward & Smith Helps Rembrandt Technologies Win $15.7 Million Patent Verdict; Texas jury issues multimillion-dollar decision against Samsung over Bluetooth patents, MARSHALL, Texas, Feb. 23, 2015

   ... 2013 based on the infringement of two Rembrandt patents, U.S. Patent Nos. **8,023,580** and 8,457,228. Rembrandt claimed Samsung was using both patents without permission to enable the ...

6. Legal Monitor Worldwide, February 17, 2015 Tuesday, 294 words, Rembrandt Technologies Wins $15.7 Million Jury Verdict in Patent Infringement Case Against Samsung

   ... day trial focused on two Rembrandt patents, U.S. Patent Nos. **8,023,580** and 8,457,228. In addition to the $15.7 million award, Rembrandt also will receive ...

7. Legal Monitor Worldwide, February 17, 2015 Tuesday, 294 words, Rembrandt Technologies Wins $15.7 Million Jury Verdict in Patent Infringement Case Against Samsung

   ... day trial focused on two Rembrandt patents, U.S. Patent Nos. **8,023,580** and 8,457,228. In addition to the $15.7 million award, Rembrandt also will receive ...

8. PR Newswire, February 16, 2015 Monday 4:34 PM EST, , 487 words, Rembrandt Technologies Wins $15.7 Million Jury Verdict in Patent Infringement Case Against Samsung; Royalties to be paid for life of infringed patents, MARSHALL, Texas, Feb. 16, 2015

   ... day trial focused on two Rembrandt patents, U.S. Patent Nos. **8,023,580** and 8,457,228. In addition to the $15.7 million award, Rembrandt also will receive ...

9. Targeted News Service, September 22, 2011 Thursday 2:03 PM EST, , 4148 words, U.S. Patents Awarded to Inventors in Florida (Sept. 22), Targeted News Service Targeted News Service, Alexandria, VA.

   ... Sept. 22 -- Gordon F. Bremer, Clearwater, Fla., has developed a patent (**8,023,580**) for "system and method of communication using at least two modulation methods." The ...
   ... r=1&f=G&l=50&co1=AND&d=PTXT&s1=**8,023,580**.PN.&OS=PN/**8,023,580**&RS=PN/**8,023,580**
   Written by Anjali Jha; edited by Jaya Anand. *** Tellabs Vienna ...

10. London Stock Exchange Aggregated Regulatory News Service (ARNS), May 26, 2011 Thursday 8:41 AM GMT, , 42 words, PS Clean En Fd Net Asset Value(s)

... Powershares 25.05.2011 PSBW IE00B23D9133 1,700,001 EUR **8,023,580** 4.71975 ...

Source: **News & Business > Combined Sources > All English Language News**
Terms: **8023580 or 8,023,580** (Suggest Terms for My Search)
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,808	09/12/2016	8023580	110797-0019-501	2211

15027 7590 09/27/2016

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EXAMINER
GE, YUZHEN

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
09/27/2016	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. 90/013,808.

PATENT NO. 8023580.

ART UNIT 3992.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

PTOL-465 (Rev.07-04)

Yuzhen Ge

Primary Examiner

Art Unit: 3992

ORDER GRANTING REQUEST FOR EX PARTE REEXAMINATION – CONTINUED

I. ACKNOWLEDGMENTS

On Sep. 12, 2016, a third-party requester ("**Requester**") filed a request ("**Request**") for *ex parte* reexamination of claims 2 and 59 of US Patent 8,023,580 ("**580 patent**") which issued to Bremer. The 580 patent was filed on Aug. 19, 2009 with application number 12/543,910 ("**910 application**") and issued on Sep. 20, 2011.

Based upon Examiner's review of the 580 patent itself and its prosecution history, the Examiner finds that there are no prior or concurrent *ex parte* or supplemental reexaminations for the `580 patent.

II. INFORMATION DISCLOSURE STATEMENT

An information disclosure statement was submitted by the Requester on Sep. 12, 2016 (Sep 2016 IDS). The Sep 2016 IDS is in compliance with the provisions of 37 C.F.R. § 1.97. Accordingly, the Sep 2016 IDS has been considered by the Examiner.

III. PRIORITY CLAIMS

Based upon a review of the 580 Patent, the Examiner finds that the 580 patent is a continuation of US Patent Application 11/774,803, filed on Jul. 9, 2007, now patent US 7,675,965, which is continuation of US Patent Application 10/412,878, filed on Apr. 14, 2003, now patent US 7,248,626, which is continuation-in-part of application 09/205,205, filed on Dec.

4, 1998, now patent US 6,614,838. The application 09/205,205 also claims priority to US provisional application 60/067,562 filed on Dec. 5, 1997. The 580 patent does not claim any foreign priority.

Because the effective filing date of the 580 patent is not on or after March 16, 2013, the AIA First Inventor to File ("AIA-FITF") provisions do not apply. Instead, the earlier 'First to Invent' provisions apply.

IV. PRIOR ART

A. References cited herein

i. U.S. Patent No. 5,982,807, filed on Mar. 17, 1997 and issued on Nov. 9, 1999, to Snell, J. ("Snell").

ii. U.S. Patent No. 6,075,814, filed on May 9, 1997 and issued on Jun. 13, 2000, to Yamano, L., et al. ("Yamano")."

iii. Andren, C. et al., "Using the PRISM™ Chip Set for Low Data Rate Applications," Harris Semiconductor Application Note No. AN9614, March 1996 ("Harris AN9614").

iv. "HSP3824 Direct Sequence Spread Spectrum Baseband Processor," Harris Semiconductor File No. 4064.4, Oct. 1996 ("Harris 4064.4").

v. Kamerman, A., "Throughput Density Constraints for Wireless LANs Based on DSSS," IEEE 4th International Symposium on Spread Spectrum Techniques and Applications Proceedings, Mainz, Germany, Sept. 22-25, 1996, pp. 1344-1350 vol.3 ("Kamerman").

vi. Upender et al., “Communication Protocols for Embedded Systems,” Embedded Systems Programming, Vol. 7, Issue 11, November 1994. - (“Upender”).

B. Availability of references as prior art

References, i and ii, i.e., Snell and Yamano, filed before the priority dates of claims 2 and 59 of the 580 patent, therefore qualify as prior art under 35 U.S.C. 102(e). References iii and iv, i.e., Harris AN9614 and Harries 4064.4, are incorporated by reference by Snell (col. 5, lines 2-7 and 11-17) and therefore are prior art under at least 35 U.S.C. 102(e) as Snell. References v-vi, i.e., Kamerman and Upender, have publication dates before the priority date of claims 2 and 59 of the 580 patent and therefore qualify as prior art under 35 U.S.C. 102(a).

None of the references i-v, i.e., Snell, Yamano, Harries 4064.4, Harris AN9614 and Kamerman, appears to have been considered or applied during prosecutions of the 580 patent, its parent applications and during inter partes reviews of the 580 patent. Upender was before the Office during prior IPR proceedings.

Because Snell was not cited or before the Office during prior prosecutions of the 580 patent and related patents and during prior inter partes review of the 580 patent, Snell in combination with other references are not before the Office prior to the instant reexamination. Accordingly, Snell in combination with other references can be used to raise a substantially new question of patentability in this *ex parte* reexamination proceeding.

V. PROSECUTION HISTORY

1. Prosecution history of the 580 patent

(Request, pp. 9-11)

Based upon the Examiner's independent review of the file history of the 580 patent and the Requester's description of the prosecution history of the 580 patent, the Examiner agrees with the description of the prosecution history provided by the Requester in the Request at pp. 9-11.

In summary, Claims 1 and 2 were objected to due to an antecedent basis but otherwise deemed allowable in the first office action dated Sep. 1, 2010. In Mar. 1, 2011 response, Patent Owner amended claims 1 and 2 and added claims 123-124 which would issue as claims 58 and 59, respectively. Claims 1 and 2 and 123-124 (patented claims 58-59) were allowed after further amendments by the Patent Owner. No reason for allowance was given by the Examiner of the 910 application.

<u>2. Prosecution history of Inter partes Reviews of the 580 patent</u>

(Request, pp. 11-15)

A. IPR2014-00518

Based upon the Examiner's independent review of the file history of IPR2014-00518 and the Requester's description of the prosecution history of IPR2014-00518, the Examiner agrees with the description of the prosecution history provided by the Requester in the Request at pp. 11-12.

Specifically, the PTAB did not institute review of claims 2 and 59 of the 580 patent because the petitioner did not show that the prior art taught the limitations of these claims which requires "`indicat[ing]' that the communication from the master to the slave has reverted to the first modulation method." IPR2014-00518, Pap. 16 at pp. 14-15.

On Sep. 17, 2015, the PTAB found all reviewed claims, i.e., claims 1, 4-5, 10, 13, 20-22, 54, 57, 58, 61-62, 66, 70 and 76-79, including the independent claims 1 and 58 from which claims 2 and 59 depend, unpatentable over Boer in view of Applicant's admitted prior art. IPR2014-00518, Pap. 47 at p. 21.

B. IPR2014-00519

Based upon the Examiner's independent review of the file history of IPR2014-00519 and the Requester's description of the prosecution history of IPR2014-00519, the Examiner basically agrees with the description of the prosecution history provided by the Requester in the Request at p. 14.

To summarize, PTAB instituted inter partes reviews of claims 32, 34, 38, 40, 43, 44 and 47 of the 580 patent but declined to institute reviews of claims 23, 25, 29, 30 and 41. Patent Owner disclaimed claims 32, 34, 40, 43 and 44 later. On Sep. 17, 2015, the PTAB found the remaining claims, i.e., claims 38 and 47, unpatentable. IPR2014-00519, Pap. 49 at p. 11.

C. IPR2014-00514 and IPR2014-00515

Based upon the Examiner's independent review of the file history of IPR2014-00514 and IPR2014-00515 and the Requester's description of the prosecution history of IPR2014-00514 and IPR2014-00515, the Examiner agrees with the description of the prosecution history provided by the Requester in the Request at pp. 14-15.

To summarize, PTAB did not institute inter partes review because the petitioner did not make a sufficient showing that the references relied upon in the petitions was publicly available before the claimed priority date.

D. IPR2015-00114 and IPR2015-00118

Based upon the Examiner's independent review of the file history of IPR2015-00114 and IPR2015-00118 and the Requester's description of the prosecution history of IPR2015-00114 and IPR2015-00118, the Examiner agrees with the description of the prosecution history provided by the Requester in the Request at p. 15.

To summarize, PTAB did not institute inter partes reviews because the petitioner merely presented "the same or substantially the same prior art or arguments" presented in IPR 2014-00518 and IPR 2014-00519.

3. Reason of Allowance based on Prosecution history

Based on the prosecution histories of the 580 patent and the IPR proceedings in which the independent claims 1 and 58 were found unpatentable, the Examiner finds that a reference or a combination of references teaching or suggesting at least the following features:

> transmit[ing] a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.

in the context of data communication and modulators and demodulators using two modulation methods would be a new, non-cumulative teaching not previously before the Office during the examination of the 580 patent and the prior IPR proceedings and therefore may raise a substantial new question of patentability.

VI. PROPOSED SUBSTANTIAL NEW QUESTION OF PATENTABILITY

The Request alleges the following substantial new questions of patentability (SNQs) based on the above-identified prior art:

SNQ1: Claims 2 and 59 of the 580 patent are unpatentable under 35 U .S.C. §103(a) as being obvious over Snell in view of Yamano and Kamerman.

SNQ2: Claims 2 and 59 of the 580 patent is unpatentable under 35 U.S.C §103(a) as being obvious over Snell in view of Harris 4064.4, Harris AN9614, Yamano, and Kamerman.

SNQ3: Claims 2 and 59 of the 580 patent are unpatentable under 35 U.S.C §103(a) as being obvious over Snell in view of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman.

Snell discloses a transceiver that serves as an access point for communicating data with other transceivers connected to a wireless local area network (WLAN). Snell at col. 4, lines 42-47 and col. 5, lines 18-21. Snell's transceiver transmits data packets intended for another transceiver, where the communication may switch on-the-fly between a "first modulation method" (e.g., BPSK) and a "second modulation method" (e.g., QPSK) that is "of a different type than the first modulation method." (col. 2, lines 27-30, "*It is another object of the invention to provide a spread spectrum transceiver and associated method to permit operation at higher* *data rates and which may switch on-the-fly between different data rates and/or formats.*" col. 7, lines 10-14, "*The variable data may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly.*" col. 2, lines 15-17, "*Moreover, a WLAN application, for example, may require a change between BPSK and QPSK during operation, that is, on-the-fly.*").

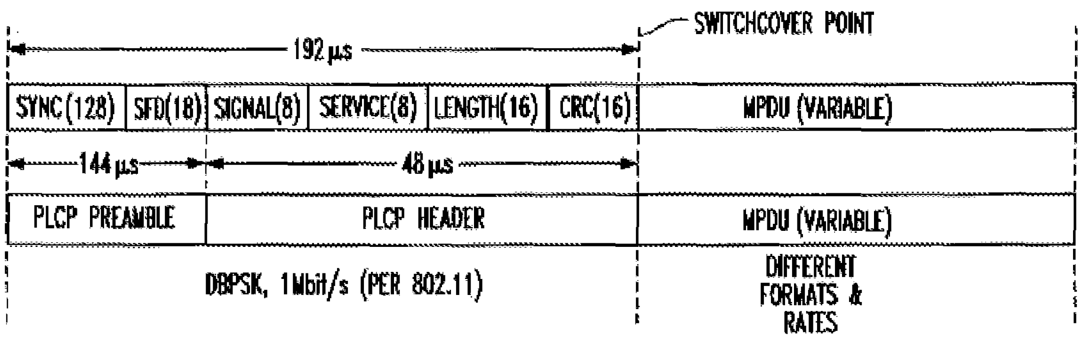

FIG. 3

-Snell, Fig. 3.

Snell discloses that each data packet transmission comprises a "group of transmission sequences" structured with a "first portion" (e.g., a PLCP preamble and PLCP header) and a "payload portion" (e.g., MPDU data). Id. at col. 6, lines 35-36, col. 6, lines 64-66, col. 7, lines5-14, Fig. 3. The PLCP preamble contains SYNC and SFD fields, and the PLCP header contains SIGNAL, SERVICE, LENGTH, and CRC fields. Id. at Fig. 3, col. 6, line 48-col. 7, lines 14. The MPDU data is the data to be transmitted to the receiving transceiver. Id. at col. 7, lines 5-6 ("*MPDU is serially provided by Interface 80 and is the variable data scrambled for normal operation.*"); see also Id. at col. 7, lines 6-14, Fig. 3.

Snell teaches that the PLCP preamble and PLCP header are always modulated using the "first modulation method" (e.g., BPSK) (col. 6, lines 35-36, "*The header may always be BPSK,*" Fig. 3). Snell further discloses that "*first information in the first portion*" (e.g., the SIGNAL field in the PLCP header) "*indicates*" which of the "*first modulation method*" (e.g., BPSK) and "*second modulation method*" (e.g., QPSK) is used for modulating "*second information*" in the "*payload portion*" (e.g., MPDU data).

Snell teaches that the SIGNAL field in the PLCP header can have four values (col. 6, lines 54-59), each of which corresponds to a modulation method for the MPDU data (col. 6, lines 52-59, col. 7, lines 1-2, col. 7, lines 5-14, Fig. 3).

SFD is F3A0h for the PLCP preamble **90**. Now relating to the PLCP header **91**, the SIGNAL is:

0Ah	1 Mbit/s BPSK,
14h	2 Mbit/S QPSK,
37h	5.5 Mbit/s BPSK, and
6Eh	11 Mbit/s QPSK.

-Snell, col. 6, lines 52-59.

Snell's transceiver transmits a first group of transmission sequences comprising a "first sequence" (e.g., PLCP preamble and PLCP header) that is "*modulated according to the first modulation method*" (e.g., BPSK) where the "*first sequence*" (e.g., "SIGNAL" field in PLCP header) "*indicates*" (e.g., using "14h") the modulation type (e.g., QPSK) used for modulating the "*second sequence*" (e.g., MPDU data). For the first packet, the "SIGNAL" field in the PLCP header uses a code (e.g., "14h") that "*indicates*" when the MPDU data is modulated "*according* *to the second modulation method*" (e.g., QPSK). The "*second modulation method*" (e.g., QPSK) "*is of a different type than the first modulation method*" (e.g., BPSK).

Snell's transceiver then transmits a second packet comprising a "*third sequence*" (e.g., PLCP preamble and PLCP header) "*transmitted in the first modulation method*" (e.g., BPSK) where the "*third sequence*" (e.g., "SIGNAL" field in PLCP header) "*indicates*" (e.g., using "OAh") the modulation type (e.g., BPSK) used for modulating the MPDU data of the second packet.

Thus Snell teaches "transmit[ting] a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method."

Because Snell teaches the limitations of claims 2 and 59 of the 580 patent, found important to the patentability of claims 2 and 59 of the 580 patent by the examiner of the 580 patent and the PTAB, there is a substantial likelihood that a reasonable examiner would consider this teaching important in deciding whether or not claims 2 and 59 of the 580 patent are patentable. Accordingly, Snell raises a substantial new question of patentability as to claims 2 and 59 of the 580 patent.

Because Snell raises a substantial new question of patentability as to claims 2 and 59 of the 580 patent, Snell in view of Yamano and Kamerman, Snell in view of Harris 4064.4, Harris AN9614, Yamano, and Kamerman, or Snell in view of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman, also raises a substantial new question of patentability as to claims 2 and 59 of the 580 patent.

VII. NOTICE RE PATENT OWNER'S CORRESPONDENCE ADDRESS

37 C.F.R. § 1.33(c) states:

(c) All notices, official letters, and other communications for the patent owner or owners in a reexamination or supplemental examination proceeding will be directed to the correspondence address in the patent file.

The correspondence address for any pending reexamination proceeding not having the same correspondence address as that of the patent is, by way of this revision to 37 CFR 1.33(c), <u>automatically changed to that of the patent file as of the effective date.</u>

This change is effective for any reexamination proceeding which is pending before the Office as of May 16, 2007, including the present reexamination proceeding, and to any reexamination proceeding which is filed after that date.

Parties are to take this change into account when filing papers, and direct communications accordingly.

In the event the patent owner's correspondence address listed in the papers (record) for the present proceeding is different from the correspondence address of the patent, it is strongly encouraged that the patent owner affirmatively file a Notification of Change of Correspondence Address in the reexamination proceeding and/or the patent (depending on which address patent owner desires), to conform the address of the proceeding with that of the patent and to clarify the record as to which address should be used for correspondence.

Telephone Numbers for reexamination inquiries:

Reexamination	(571) 272-7703
Central Reexam Unit (CRU)	(571) 272-7705

VIII. CONCLUSION

Extensions of time under 37 C.F.R. § 1.136(a) will not be permitted in these proceedings because the provisions of 37 C.F.R. § 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that ex parte reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in ex parte reexamination proceedings are provided for in 37 CFR 1.550(c).

Patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a), to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the '285 patent throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286. The third party requester is similarly apprised of the ability to disclose such proceedings.

Registered users of EFS-Web may alternatively submit correspondence via the electronic filing system at https://efs.uspto.gov/efile/nwportal/efs-registered

Any inquiry concerning this communication or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed:

/Yuzhen Ge /
Primary Examiner
Art Unit 3992

Conferees:

/CML/

/Kenneth J. Whittington/
Primary Examiner
Acting SPE, AU3992

Order Granting Request For Ex Parte Reexamination	**Control No.** 90/013,808	**Patent Under Reexamination** 8023580
	Examiner Yuzhen Ge	**Art Unit** 3992

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The request for *ex parte* reexamination filed *12 September 2016* has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☐ PTO-892, b)☒ PTO/SB/08, c)☐ Other: ______

1. ☒ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

/Yuzhen Ge/ Primary Examiner, Art Unit 3992	/KENNETH J WHITTINGTON/ Primary Examiner, Art Unit 3992	

cc:Requester (if third party requester)

Reexamination	Application/Control No. 90013808	Applicant(s)/Patent Under Reexamination 8023580
	Certificate Date	**Certificate Number**

Requester Correspondence Address: ☐ **Patent Owner** ☒ **Third Party**

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LITIGATION REVIEW ☒	/YG/ (examiner initials)	09/20/2016 (date)

Case Name	Director Initials
Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., C.A. No. 2:13-cv-00213-JRG (E D. Tex.), open.	
Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., C.A. No. 2:16-cv-00170-JRG (E D. Tex.), open.	
Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., No. 2016-1729 (Fed. Cir.), open.	

COPENDING OFFICE PROCEEDINGS

TYPE OF PROCEEDING	NUMBER
1. None	

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	RE of Patent No. 8,023,580
				Issue Date	September 20, 2011
				First Named Inventor	Gordon F. Bremer
(Use as many sheets as necessary)				Art Unit	2611
				Examiner Name	Dac V. Ha
Sheet	1	of	2	Attorney Docket Number	110797-0019-501

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	Ex. D	US-5,982,807	11-09-1999	Snell	
	Ex. H	US-6,075,814	06-13-2000	Yamano et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /Y.G/

Substitute for form 1449/PTO				*Complete if Known*	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	RE of Patent No. 8,023,580
				Issue Date	September 20, 2011
				First Named Inventor	Gordon F. Bremer
				Art Unit	2611
(Use as many sheets as necessary)				Examiner Name	Dac V. Ha
Sheet	2		2	Attorney Docket Number	110797-0019-501

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	Ex. E	Andren and Fakatselis, "Using the PRISM^{TM} Chip Set for Low Data Rate Applications," Harris Semiconductor Application Note 9614 (March 1996), pp. 1-3.	
	Ex. F	Harris Semiconductor – "HSP3824, Direct Sequence Spread Spectrum Baseband Processor," Harris Semiconductor File Number 4064.4 (October 1996), pp. 1-40.	
	Ex. G	Declaration of Jon Mears, Exhibit A thereto (Upender et al., "Communication Protocols for Embedded Systems," *Embedded Systems* Programming, Vol. 7, Issue 11, November 1994), pp. 1-12.	
	Ex. I	Kamerman, A., "Throughput Density Constraints for Wireless LANs Based on DSSS", *Spread Spectrum Techniques and Applications Proceedings, IEEE 4th International Symposium on*, Mainz, Germany, Sept. 22-25, 1996, pp. 1344-1350 vol.3	

Examiner Signature	/YUZHEN GE/	Date Considered	09/20/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /Y.G/

POWER OF ATTORNEY and CORRESPONDENCE ADDRESS INDICATION FORM	**Application/Patent Number**	**12/543,910 / 8,023,580**
	Filing Date	**August 19, 2009**
	First Named Inventor	**Gordon F. Bremer**
	Art Unit	**2611**
	Examiner Name	**Dac V. Ha**
	Attorney Docket Number	**3277-114**
	Title	**System and Method of Communication Using at Least Two Modulation Methods**

The below-named Assignee of record of the entire interest in the subject application, through its authorized representative identified below, hereby revokes all previous powers of attorney given in the above-identified application and hereby appoints the practitioners associated with the Customer Number 06449 as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Statement under 37 CFR 3.73(b)

A chain of title from the inventors, of the patent application/patent identified above to the current assignee as follows:

1. Assignment From: Summit Technology Systems, LP
   To: Rembrandt Wireless Technologies, LP
   The document was recorded in the U.S. Patent and Trademark Office at Reel 027085, Frame 0636.

ACKNOWLEDGEMENT AND CONSENT BY ASSIGNEE TO OBTAIN INSTRUCTIONS FROM ANOTHER PARTY

Assignee, through its undersigned authorized representative, hereby acknowledges that the practitioners appointed herein may obtain instructions as to any action to be taken in the U.S. Patent and Trademark Office on any application to which this power of attorney may be directed, or on any patent which may issue on any such application, from assignee's third-party agents or attorneys, or other designee, who have been authorized by assignee to convey such instructions, and assignee expressly consents to this arrangement. In the event of a change in the persons from whom instructions are to be taken, the practitioners appointed herein shall be so notified by the assignee.

Assignee Name	**Rembrandt Wireless Technologies, LP**, by its general partner,
Signature of Authorized Representative	Rembrandt Virginia Management, LLC
Typed or Printed Name	Alex Lempiner
Typed or Printed Title	Secretary
Date	9/27/2016

Electronic Acknowledgement Receipt

EFS ID:	27050862
Application Number:	90013808
International Application Number:	
Confirmation Number:	2211
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Customer Number:	15027
Filer:	Martin M. Zoltick/Tamika Miles
Filer Authorized By:	Martin M. Zoltick
Attorney Docket Number:	110797-0019-501
Receipt Date:	27-SEP-2016
Filing Date:	12-SEP-2016
Time Stamp:	18:08:14
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	Power_of_Attorney.pdf	163808 3e1a5f9569830f74b911f20740490b970634bdfc	no	1

Warnings:

Information:	
Total Files Size (in bytes):	163808

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 2211

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
90/013,808	09/12/2016 RULE	375	3992	110797-0019-501

APPLICANTS

INVENTORS

8023580, Residence Not Provided;
REMBRANDT WIRELESS TECHNOLOGIES, LP, ARLINGTON, VA;
SAMSUNG ELECTRONICS CO., LTD. (3RD PTY REQ.), GYEONGGI-DO, KOREA, REPUBLIC OF;
SAMSUNG ELECTRONICS AMERICA, INC. (3RD PTY REQ.), RIDGEFIELD PARK, NJ;
ROPES & GRAY LLP PRUDENTIAL TOWER, BOSTON, MA

**** CONTINUING DATA** *************************

This application is a REX of 12/543,910 08/19/2009 PAT 8023580
which is a CON of 11/774,803 07/09/2007 PAT 7675965
which is a CON of 10/412,878 04/14/2003 PAT 7248626
which is a CIP of 09/205,205 12/04/1998 PAT 6614838
which claims benefit of 60/067,562 12/05/1997

**** FOREIGN APPLICATIONS** *************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

Foreign Priority claimed ☐ Yes ☐ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and Acknowledged ____ Examiner's Signature	☐ Met after Allowance ____ Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
				79	7

ADDRESS

ROTHWELL, FIGG, ERNST & MANBECK, P.C.
607 14th Street, N.W.
SUITE 800
WASHINGTON, DC 20005
UNITED STATES

TITLE

SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

FILING FEE RECEIVED	FEES: Authority has been given in Paper	
12000	No.___________ to charge/credit DEPOSIT ACCOUNT No.___________ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other ____________ ☐ Credit

BIB (Rev. 05/07).

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
90/013,808	09/12/2016	8023580	110797-0019-501

CONFIRMATION NO. 2211

POWER OF ATTORNEY NOTICE

OC000000086174255

15027
Condo Roccia Koptiw LLP
1800 JFK Boulevard
Suite 1700
Philadelphia, PA 19103

Date Mailed: 09/30/2016

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/27/2016.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/rbell/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
90/013,808	09/12/2016	8023580	110797-0019-501

CONFIRMATION NO. 2211

6449
ROTHWELL, FIGG, ERNST & MANBECK, P.C.
607 14th Street, N.W.
SUITE 800
WASHINGTON, DC 20005

POA ACCEPTANCE LETTER

OC000000086174770

Date Mailed: 09/30/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/27/2016.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/rbell/

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In *Ex Parte* Reexamination of	:	Group Art Unit: 2633
Gordon F. BREMER	:	
Patent No.: 8,023,580 B2	:	Control No.: 90/013,808
Issued: September 20, 2011	:	

Reexam Request Filed: September 12, 2016

For: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

Attn: Mail Stop "*Ex Parte* Reexam"
Central Reexamination Unit
Office of Patent Legal Administration
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION REQUESTING THE DIRECTOR TO EXERCISE HER DISCRETIONARY AUTHORITY UNDER 35 U.S.C. § 325(d) PURSUANT TO 37 C.F.R. § 1.181(a)(2) AND/OR § 1.182

Pursuant to 37 C.F.R. §1.181(a)(2) and/or § 1.182, Rembrandt Wireless Technologies, LP ("Rembrandt") respectfully requests the Director to exercise her discretionary authority under 35 U.S.C. § 325(d) to reject the Request for *Ex Parte* Reexamination of claims 2 and 59 of U.S. Patent No. 8,023,580 ("Request") filed by Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc. (collectively "Samsung"). By its plain language, the second sentence of § 325(d) applies to such Requests in the same way that it applies to AIA review proceedings:

> **In determining whether to institute *or order* a proceeding under this chapter, *chapter 30 [the ex parte reexamination chapter]*, or chapter 31, the Director may take into account whether, and reject the petition *or request* because, the same or substantially the same prior art or arguments previously were presented to the Office [emphasis added].**

This Petition is timely filed, i.e., within two months of Samsung's filing of the Request and prior to the Office acting on the Request. To the extent the Office believes any rules, such as 37 C.F.R. § 1.530 or § 1.33, prevent consideration of Rembrandt's Petition, Rembrandt further petitions the Director to suspend such rules under the power granted to the Director by 37 C.F.R. § 1.183.

Samsung's present request is the ***seventh*** challenge it has made in the Office to U.S. Patent No. 8,023,580 (the "'580 Patent") and the ***fourth*** challenge it has made to claims 2 and 59 in particular (the claims challenged in its present Request).[1] A brief history of Samsung's challenges to the claims of the '580 Patent in the Office,[2] including those to claims 2 and 59, is as follows:

On March 20, 2014, Samsung filed *four* petitions for *inter partes* review of claims of the '580 Patent. Two of these four petitions were denied with respect to all challenged claims because Samsung failed to show a reasonable likelihood it would prevail on any of the grounds raised. See IPR2014-00514, Paper 18, at 10 (Sept. 9, 2014)(denied as to claims 1, 2, 4, 5, 10, 13, 19–22, 49, 52–54, 57–59, 61, 62, 66, 70, and 76– 79); and IPR2014-00515, Paper 18, at 10-11 (Sept. 9, 2014)(denied as to claims 23, 25, 29, 30, 32, 34, 38, 40, 41, 43, 44, and 47). In the two

---

[1] Samsung has also concurrently filed a Request for *Ex Parte* Reexamination of claim 21 of U.S. Patent No. 8,457,228 (the "'228 Patent"), the child of the '580 Patent. With respect to the '228 Patent, Samsung's Request is its *eighth* challenge to the claims of that patent. See IPR2014-00889, -00890, -00891, -00892, -00893, -00895, and 2015-00555). Rembrandt has also concurrently filed a petition under 37 CFR § 1.181(a)(3) and § 1.182 asking the Director to reject Samsung's Request for *Ex Parte* Reexamination of claim 21 of the '228 Patent for substantially the same reasons it is requesting the Director to do so here.

[2] The '580 Patent and the '228 Patent are also the subject of a lawsuit in which Rembrandt served the complaint on June 5, 2013 and asserted infringement by Samsung. *Rembrandt Wireless Technologies, LP v. Samsung Electronics Co.*, No. 2:13-cv-00213 (E.D. Tex.). Samsung *unsuccessfully* challenged the validity of claims 2 and 59 of the '580 Patent and of claim 21 of the '228 Patent in that lawsuit as well. That case is now on appeal at the Federal Circuit, No. 16-1729.

others filed the same day, the petitions were partially granted with respect to some claims but denied with respect to others. See IPR2014-00518, Paper 16, at 17 (Sept. 23, 2014)(granted as to claims 1, 4, 5, 10, 13, 20–22, 54, 57, 58, 61, 62, 66, 70, and 76–79, but denied as to claims 2, 19, 49, 52, 53, and 59); and IPR2014-00519, Paper 16, at 15 (Sept. 23, 2014)(granted as to claims 32, 34, 38, 40, 43, 44, and 47, but denied as to claims 23, 25, 29, 30, and 41). Two of Samsung's four petitions filed on March 3, 2014 included a challenge of claims 2 and 59, and in *both* instances the petitions for review of these claims were denied. IPR2014-00514, Paper 18, at 10, and IPR2014-00518, Paper 16, at 17. In each case, the Board determined that Samsung had not demonstrated a reasonable likelihood of prevailing as to either claim 2 or claim 59. *Id.*

Having failed in its first round of challenges with respect to claims 2 and 59 of the '580 Patent, Samsung filed two more petitions for *inter partes* review of the '580 patent on October 21, 2014, presenting additional reasoning to support its allegations of obviousness. The Board denied these fifth and sixth challenges to claims of the '580 Patent through the exercise of the Director's discretion under 35 U.S.C. § 325(d). See IPR2015-00114, Paper 14, at 6-9 (January 28, 2015) (denying review of all claims challenged, *i.e.*, claims 2, 19, 49, 53, 53, and 59); and IPR2015-00118, Paper 14, at 5-7 (January 28, 2015) (denying review for all claims challenged, *i.e.*, claims 23, 25, 29, 30, and 41).

When exercising the Director's discretion to deny institution in IPR2015-00114, the Board has explained its reasoning as follows:

> Petitioner is requesting, essentially, a second chance to challenge the claims. We, however, are not persuaded that a second chance would help "secure the just, speedy, and inexpensive resolution of every proceeding." 37 C.F.R. § 42.1(b). Permitting second chances in cases like this one ties up the Board's limited resources; we must be mindful not only of this proceeding, but of "every proceeding." *Id.*; *see also ZTE Corp. v. ContentGuard Holdings,*

> *Inc.*, Case IPR2013-00454, slip op. at 5–6 (Paper 12) (PTAB Sept. 25, 2013) ("The Board is concerned about encouraging, unnecessarily, the filing of petitions which are partially inadequate.") ….
>
> In this proceeding, however, we are not apprised of a reason that merits a second chance. Petitioner simply presents arguments now that it could have made in IPR '518, had it merely chosen to do so. In view of the foregoing, … we exercise our discretion under 35 U.S.C. § 325(d) to deny the Petition, because it presents merely "the same or substantially the same prior art or arguments" presented to us in IPR '518. [IPR2015-00114, Paper 14, at 7-8; see also IPR2015-00118, Paper 14, at 5-7 (applying similar reasoning).]

While in its present Request Samsung has cited additional art that it did not cite in any of its earlier thirteen IPRs challenging the '580 and '228 Patents, it does not explain why the additional art could not have been presented earlier. The Board addressed such tardy citation of additional art in one of the '228 Patent IPRs when it exercised the Director's discretion to deny the petition in spite of the inclusion of an additional reference:

> The difference between what Petitioner presents in this proceeding and what Petitioner presented in IPR '892 with respect to claim 21 of the '228 patent is that Petitioner now offers Siwiak as support for the asserted obviousness of placing address data in a message header as taught by Boer. Pet. 24–57; Mot. Join. 5–6. Petitioner, however, presents no argument or evidence that Siwiak was not known or available to it at the time of filing IPR '892. … .
>
> Petitioner is requesting, essentially, a second chance to challenge the claims. … .
>
> In this proceeding … we are not apprised of a reason that merits a second chance. Petitioner simply presents arguments now that it could have made in IPR '892, had it merely chosen to do so. [IPR2015-00555, Paper 20, at 7-9.]

The Board has consistently denied such "follow-on" challenges as representing impermissible "second bites at the apple," which use the prior institution decision "to bolster challenges that were advanced, unsuccessfully, in [an earlier petition]," *Unilever Inc. v. Proctor & Gamble*, IPR2014-00506, Paper 17, at 8 (July 7, 2014), "as a roadmap to remedy [petitioner's] prior, deficient challenge," *Butamax v. Gevo, Inc.*, IPR2014-00581, Paper 8, at 12-13 (Oct. 14, 2014), or "as an entry ticket, and a how-to guide … to challenge those claims which [petitioner] unsuccessfully challenged in the first petition," *ZTE Corp. v. ContentGuard*, IPR2013-00454, Paper 12, at 6 (Sept. 25, 2013).

Indeed, in rebuffing such attempts to remedy earlier failures, the Board has especially weighed whether a petitioner has demonstrated that the art or arguments were not known or available to it at the time of filing the earlier petition. *See, e.g.*, *Unilever Inc. v. Proctor & Gamble*, IPR2014-00506, Paper 17, at 6, 8 (July 7, 2014) ("Unilever, however, presents no argument or evidence that the seven newly cited references were not known or available to it at the time of filing of [an earlier petition] …Based on the information presented, we are persuaded that the instant Petition uses our prior Decision on Institution to bolster challenges that were advanced, unsuccessfully, in the [earlier petition]."); *Butamax v. Gevo, Inc.*, IPR2014-00581, Paper 8, at 12-13 (Oct. 14, 2014) ("Our discretion to deny these grounds is further guided by several additional facts. First, we note that Butamax does not contend that the newly cited references were not known or available to it at the time it filed the [earlier petition]. *See Unilever, Inc. v. Procter & Gamble Co.*, Case IPR2014-00506, Paper 17, at 6 (July 7, 2014) (considering, in exercising § 325(d) discretion, whether new references were previously known).").

In Samsung's present Request, Samsung does not argue that the newly cited references were not available to it at the time of its multiple earlier IPRs, and there is no reason why Samsung should be afforded a "second bite" here.

Denying Samsung's present Request is consistent with the legislative intent behind § 325(d), which is to prevent gamesmanship through the filing of multiple proceedings in a piecemeal manner. *See* 157 Cong. Rec. S1042 (daily ed. Mar. 1, 2011) (Statement of Sen. Kyl) (Sen. Kyl stating that § 325(d) "allows the Patent Office to reject any request for a proceeding, *including a request for ex parte reexamination,* if the same or substantially the same prior art or arguments previously were presented to the Office with respect to that patent.") (emphasis added). *See also Butamax,* IPR2014-00581, Paper 8, at 13 ("Our discretion to deny these grounds is further guided by several additional facts. First, we note that Butamax does not contend that the newly cited references were not known or available to it at the time it filed the [earlier petition]… Allowing similar, serial challenges to the same patent, by the same petitioner, risks harassment of patent owners and frustration of Congress's intent in enacting the Leahy-Smith America Invents Act. *See* H.R. Rep. No. 112-98, pt.1, at 48 (2011) ('While this amendment is intended to remove current disincentives to current administrative processes, the changes made by it are not to be used as tools for harassment or a means to prevent market entry through repeated litigation and administrative attacks on the validity of a patent. Doing so would frustrate the purpose of the section as providing quick and cost effective alternatives to litigation.')"). *See also Conopco, Inc. dba Unilever v. Proctor & Gamble*, IPR2014-00628, Paper 21, at 11 ("the interests of fairness, economy, and efficiency support declining review – a result that discourages the filing of a first petition that holds back….").

Granting Samsung's Request in this proceeding would incentivize patent challengers to file serial petitions and requests and increase the burden on both the Office and patent owners in having to respond to renewed attacks from unhappy challengers seeking a reconsideration of the

Office's decisions denying institution and/or reexamination, based on arguments that the challenger could have set forth from the beginning. Clearly, this was not the intent of Congress.

When Congress established *ex parte* reexamination and the AIA review proceedings, Congress wanted to provide a more efficient system for challenging patents and a way to reduce litigation costs. However, in petitioning for multiple IPRs and now requesting *ex parte* reexamination for claims it unsuccessfully challenged in the IPRs and district court, Samsung was not and is not seeking such efficiency and cost reduction. Samsung could have filed its IPRs (as well as its present *ex parte* reexamination requests) early in the district court litigation process, and moved to stay the district court litigation. It chose not to do so. Rather, Samsung allowed the district court litigation to advance and waited until the last possible day to file its first six IPRs challenging the '580 Patent claims – making a stay of the litigation unlikely and ensuring that the IPRs would not reach the stage of a final written decision until *after* the district court case was tried in February 2015. This timing eliminated any risk that Samsung would be estopped (by a final decision from the Office) from contesting validity at trial, and secured for Samsung another venue in which it could seek to invalidate the patent in the event it lost at trial. Contrary to the intent of Congress, Samsung has timed its multiple challenges in the Office in a manner that actually decreases efficiency and increases litigation costs.

Having failed yet a *third* time in challenging claims 2 and 59 of the '580 Patent through *inter partes* review, Samsung now makes a *fourth* attempt by turning to another Office proceeding, *ex parte* reexamination. Samsung presents no argument or evidence that was not known or available to it at the time it filed the multiple *inter partes* reviews described above.[3]

[3] *Cf. Praxair Distribution, Inc. v. iNO Therapeutics LLC*, IPR2016-00781, Paper 10, at 7 (Aug. 25, 2016) (exercising its discretion to deny an *inter partes* petition under § 325(d), the PTAB determined that "reasonably could have been raised," in the context of § 315(e)(1), included

Thus, for the reasons given above, including those the Board gave in denying institution of IPR2015-00114 and IPR2015-00555 through the exercise of the Director's discretion under § 325(d) (both quoted above), Patent Owner Rembrandt respectfully requests that the Director exercise her discretion in this case to reject Samsung's Request for *Ex Parte* Reexamination of claims 2 and 59 of U.S. Patent No. 8,023,580.

Any fee required for submission of this Petition may be charged to Counsel's Deposit Account Number 02-2135.

Respectfully submitted,

Date: September 30, 2016

By: */ Nancy J. Linck /*

Nancy J. Linck, Reg. No. 31,920
ROTHWELL, FIGG, ERNST & MANBECK, P.C.
607 14th Street, N.W., Suite 800
Washington, DC 20005
Phone: 202-783-6040
Facsimile: 202-783-6031

Attorney for Petitioner
Rembrandt Wireless Technologies, LP

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prior art "'which a skilled searcher conducting a diligent search reasonably could have been expected to discover.' 157 Cong. Rec. S1375 (daily ed. Mar. 8, 2011) (statement of Sen. Kyl)".). This reasoning should apply equally to late-cited prior art that reasonably could have been raised in an earlier Office proceeding.

CERTIFICATE OF SERVICE

It is hereby certified that on this 30th day of September, 2016, the foregoing **PETITION REQUESTING THE DIRECTOR TO EXERCISE HER DISCRETIONARY AUTHORITY UNDER 35 U.S.C. § 325(d) PURSUANT TO 37 C.F.R. § 1.181(a)(2) AND/OR § 1.182** was served, by first-class U.S. Mail, on the attorney of record for the third-party Requesters Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc., at the following address:

J. Steven Baughman, Esq.
Ropes & Gray LLP
IPRM – Floor 43
Prudential Tower
800 Boylston Street
Boston, Massachusetts 02199-3600
Phone: 202-508-4606
Facsimile: 202-383-8371

/ Nancy J. Linck /
Nancy J. Linck
Reg. No. 31,920

Electronic Acknowledgement Receipt

EFS ID:	27089650
Application Number:	90013808
International Application Number:	
Confirmation Number:	2211
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Customer Number:	6449
Filer:	Martin M. Zoltick/Tamika Miles
Filer Authorized By:	Martin M. Zoltick
Attorney Docket Number:	110797-0019-501
Receipt Date:	30-SEP-2016
Filing Date:	12-SEP-2016
Time Stamp:	15:10:20
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Petition.pdf	145930 9e667b2e347559c6067b5d22c6b6baa8852148a7	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Petition for review by the Office of Petitions	1	8
	Reexam Certificate of Service	9	9
Warnings:			
Information:			
	Total Files Size (in bytes):	145930	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Gordon F. Bremer	§	Control No. 90/013,808
U.S. Patent No. 8,023,580	§	Attorney Docket No.: 110797-0019-501
Formerly Application No. 12/543,910	§	Customer No.: 28120
Issue Date: September 20, 2011	§	Examiner: Yuzhen Ge
Filing Date: August 19, 2009	§	Requesters: Samsung Electronics Co., Ltd.,
Former Group Art Unit: 2611	§	Samsung Electronics America, Inc.
Former Examiner: Dac Ha	§	

For: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

MAIL STOP *EX PARTE* REEXAM
Central Reexamination Unit
Office of Patent Legal Administration
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

THIRD PARTY REQUESTERS' OPPOSITION TO PATENT OWNER'S <u>PETITION TO REJECT REEXAMINATION REQUEST</u>

Rembrandt's petition to reject the *ex parte* reexamination request in this proceeding should be denied. Rembrandt's petition is an improper submission not permitted under the rules for reexamination and not invited by the Director. Moreover, the Examiner already granted the request for reexamination of the '580 patent *before* Rembrandt filed its petition to reject the request, making findings that contradict arguments made by Rembrandt's petition. Rembrandt does not even attempt to show, as required by § 325(d), that the cited reexamination references or arguments are "the same or substantially the same" as any prior challenges—and they are not. Rembrandt's petition should be rejected as an improper and meritless attempt to derail this reexamination.

I. BACKGROUND

On September 12, 2016, Samsung filed requests for *ex parte* reexamination of U.S. Patent Nos. 8,023,580 (the "'580 patent") and 8,457,228 (the "'228 patent"). The '228 patent is a continuation of the '580 patent, and the challenged claims of both patents involve substantially the same subject matter: "a data communications system in which a plurality of modulation methods are used to facilitate communication among a plurality of modem types." '580 patent at 1:19-23. Each request cites the same six references, five of which the PTO has never considered in connection with the challenged patents.[1] Furthermore, each request details the patent's history before the PTO, including original prosecution and all post-grant proceedings. *E.g.*, Request at 7-15. Except for the present reexamination ordered by the Examiner on September 27, 2016, the Office has not conducted any prior or concurrent reexaminations and has never instituted any post-grant trial on the challenged claims.

On September 27, 2016, only fifteen days after Samsung filed the Request for the '580 patent, the Examiner ordered reexamination of all challenged claims. *See* Order Granting Request for *Ex Parte* Reexamination ("Order"). In doing so, the Examiner reviewed in detail the prosecution history and each *inter partes* review involving the '580 patent. *See id.* at 5-8. After analyzing this record, the Examiner found that:

> Based on the prosecution histories of the 580 patent ***and the IPR proceedings*** in which the independent claims 1 and 58 were found unpatentable, the Examiner finds that a reference or a combination of references teaching or suggesting at least the following features . . . in the context of data communication and

[1] None of the cited Snell, Yamano, Harris 4064.4, Harris AN9614, and Kamerman references was considered or applied during prosecution of the '580 patent, its parent applications, or during *inter partes* review of the '580 patent. *See* Order Granting Request for *Ex Parte* Reexamination ("Order") at 3-4; Request for *Ex Parte* Reexamination of U.S. Patent No. 8,023,580 ("Request") at 5-7. Upender was before the Office during prior *inter partes* review proceedings (*see* Order at 3-4), but only to establish motivation to combine the master/slave relationship of the admitted prior art with a different prior art reference (Boer) (*see* Request at 1-2, 5-7, 13).

> modulators and demodulators using two modulation methods would be a ***new, non-cumulative teaching not previously considered*** before the Office during the examination of the 580 patent ***and the prior IPR proceedings*** and therefore may raise a substantial new question of patentability.

Id. at 7-8 (emphases added). Accordingly, the Examiner agreed with Samsung that the cited Snell reference raises multiple SNQs in combination with additional cited references, and further determined *sua sponte* that Snell raises an SNQ by itself. *See id.* at 11.

On September 30, 2016—three days *after* reexamination of the '580 patent was granted—Rembrandt filed petitions seeking rejection of the reexamination requests for both patents. *See* Rembrandt Petition ("Petition"). Each petition is based solely on the provision of § 325(d) that permits the Director to "take into account whether . . . the same or substantially the same prior art or arguments previously were presented to the Office." *See id.* at 1.

II. REMBRANDT'S PETITION IS BASELESS AND SHOULD BE DENIED

Rembrandt's petition has no procedural basis under Office rules. The Petition is also meritless because the Office has already ordered reexamination and determined that the prior art and arguments in this proceeding present new and non-cumulative teachings that were not previously considered by the Patent Office.

A. The Petition is Improper and Untimely

Rembrandt's Petition is an improper attempt by the Patent Owner to influence this *ex parte* reexamination. The Office's rules plainly prohibit any patent owner statements prior to the Examiner's decision on a reexamination request: "The patent owner has no right to file a statement subsequent to the filing of the request under 35 U.S.C. 302 but prior to the order for reexamination." MPEP § 2249. After an order granting reexamination and before further examination, a patent owner may file a single statement limited to "why the subject matter as claimed is not anticipated or rendered obvious." 37 C.F.R. § 1.530(c). Rembrandt's Petition does not address the prior art or any substantive arguments. While Rembrandt invokes § 325(d) as a basis for rejecting the Request, the governing rules—as with other questions concerning the grant or denial of a reexamination request—do not call for the patent owner's input regarding § 325(d) at this stage, and the Director has not invited any briefing or submissions on this issue in reexamination. For this reason alone, the Petition is an improper patent owner submission.[2]

Moreover, the Petition is untimely and moot because the Examiner *had already ordered reexamination* before the Petition was filed. Rembrandt asserts that the Petition is "timely filed . . . prior to the Office acting on the Request." Petition at 2. This is plainly false because the Examiner granted reexamination three days before the Petition was filed. Therefore, Rembrandt's demand that the Director "reject the Request for *Ex Parte* Reexamination" is not only improper, but was also already moot when it was filed.

B. Rembrandt Fails to Show That any Art or Arguments are the Same or Substantially the Same as Previous Submissions

Despite invoking § 325(d) as the sole basis for denying reexamination, Rembrandt wholly ignores the statutory test of whether "the same or substantially the same prior art or arguments" are involved. The Petition does not even identify a single reference cited in the Request—much less explain how any are substantially the same as those presented previously. In fact, Rembrandt cannot make this showing because five of the six references are entirely new materials never before considered by the Office.[3] Indeed, Rembrandt concedes that "in its present Request Samsung has cited additional art that it did not cite" in earlier proceedings. Petition at 4.

---

[2] Samsung contends that Rembrandt's submission is procedurally improper. To the extent the Office permits Rembrandt's Petition in this reexamination, Samsung respectfully requests that the Office also grant Samsung's petition to oppose Rembrandt's arguments.

[3] There is no estoppel under § 315(e) because the challenged claims have not been the subject of any final written decisions in prior proceedings.

The Examiner already resolved any doubt about the presence of "the same or substantially the same" challenges here by ordering reexamination. As explained above, the Examiner determined that the cited prior art presents "a ***new, non-cumulative*** teaching not previously considered before the Office and therefore may raise a substantial new question of patentability." Order at 7-8 (emphasis added). Rembrandt's baseless arguments about purported delay and multiple proceedings are also misplaced—the Examiner expressly reviewed the entire history of the '580 patent, including "the IPR proceedings" (*id.* at 7), and nonetheless ordered that the newly presented art warrants reexamination. Accordingly, the Office has already determined that § 325(d) does not apply to this proceeding.

Rembrandt refers to PTAB decisions that purportedly support its position, but each is readily distinguishable. In each case, the Board expressly identified the use of the same or substantially the same references or arguments. In *Unilever Inc. v. Procter & Gamble*, the Board applied § 325(d) to deny institution of an *inter partes* review because six of thirteen asserted references were raised in a prior petition and "the claim charts essentially are identical in both petitions." IPR2014-00506, Paper 17, at 6-7 (P.T.A.B. July 7, 2014). Here, in this reexamination, the claim charts differ entirely, five of six cited references are new, and the Examiner has already found that the art presents new, non-cumulative teachings. Similarly, in *Butamax Advanced Biofuels LLC v. Gevo, Inc.*, the PTAB denied institution because four of six prior art references appeared in a prior petition, and the art cited for obviousness "overlaps completely" with previously asserted grounds. IPR2014-00581, Paper 8, at 12 (P.T.A.B. Oct. 14, 2014). In *ZTE Corp. v. ContentGuard Holdings Inc.*, the *inter partes* review petition started "on weak footing" because it was untimely and subject to an unsuccessful joinder motion. IPR2013-00454, Paper 12, at 5-6 (P.T.A.B. Sept. 25, 2013). Moreover, "half of the grounds of invalidity" were "based on the same prior art references" presented in an earlier petition. *Id.* at 7. Likewise, *Praxair Distribution, Inc. v. iNO Therapeutics LLC* involved a situation where petitioners' "underlying argument" about the teachings of the prior art was "essentially the same" as that raised in a prior petition. IPR2016-00781, Paper 10, at 12 (P.T.A.B. Aug. 25, 2016). Again, no such overlap of art or arguments exists here, and Rembrandt has not even attempted to show that the same or substantially the same art or arguments were previously asserted.

Rembrandt also incorrectly claims that the Board previously denied institution of a prior petition against the '228 patent due to "tardy citation of additional art." Petition at 4. Critically, Rembrandt misleadingly omits the portion of the Board's decision stating that the reference at issue (Siwiak) was *not* a new reference but one that had actually been previously cited in an earlier petition (bolded portion omitted by Rembrandt):

> Petitioner, however, presents no argument or evidence that Siwiak was not known or available to it at the time of filing IPR '892. **In fact, Petitioner applied Siwiak in proposed grounds of rejection against claim 21 of the '228 patent in another petition filed the same day as that in the IPR '892 proceeding. *See* IPR2014-00889, Paper 2 at 58–60. On this record, we exercise our discretion and 'reject the petition' because 'the same or substantially the same prior art' previously was 'presented to the Office' in the IPR '892 proceeding.**

Samsung Elecs. Co. v. Rembrandt Wireless Techs., LP, IPR2015-00555, Paper 20, at 7-8 (P.T.A.B. June 19, 2015); *compare* Petition at 4. Thus, Rembrandt leaves out the fact that Siwiak was cited as prior art in both an earlier and later petition. Moreover, Siwiak was one of only two references cited in the later petition. *See id.* at 5. The Board expressly relied on these facts in applying § 325(d). Rembrandt has not, and cannot, make such a showing here.

III. CONCLUSION

For the foregoing reasons, Samsung respectfully requests that the Office deny Patent Owner's September 30, 2016 petition.

Dated: October 13, 2016

Respectfully submitted,

/J. Steven Baughman/
J. Steven Baughman
Registration No. 47,414
James F. Mack
Registration No. 74,196
Customer No. 28120
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(202) 383-8371 (Fax)

Attorneys/Agents for Requesters
Samsung Electronics Co., Ltd. and Samsung
Electronics America, Inc.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Gordon F. Bremer	§	Control No. 90/013,808
U.S. Patent No. 8,023,580	§	Attorney Docket No.: 110797-0019-501
Formerly Application No. 12/543,910	§	Customer No.: 28120
Issue Date: September 20, 2011	§	Examiner: Yuzhen Ge
Filing Date: August 19, 2009	§	Requesters: Samsung Electronics Co., Ltd.,
Former Group Art Unit: 2611	§	Samsung Electronics America, Inc.
Former Examiner: Dac Ha	§	

For: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

MAIL STOP *EX PARTE* REEXAM
Central Reexamination Unit
Office of Patent Legal Administration
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

THIRD PARTY REQUESTERS' PETITION TO RESPOND TO PATENT OWNER'S PETITION TO REJECT REEXAMINATION REQUEST

Pursuant to 37 C.F.R. § 1.183, third-party requesters Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. ("Samsung") respectfully petition the Director for permission to oppose Patent Owner Rembrandt Wireless Technologies, LP's ("Rembrandt") September 30, 2016 petition requesting that the Director exercise her discretionary authority under 35 U.S.C. § 325(d) to reject the reexamination request in this proceeding.

Extraordinary circumstances justify allowing Samsung to submit an opposition to the Patent Owner's petition. Office rules do not permit the Patent Owner to submit arguments challenging a request for reexamination at this stage. Samsung has no means for addressing this petition other than seeking permission to respond. Moreover, the petition advances an application of § 325(d) that is unsupported by the statute and warrants briefing. Rembrandt fails to show that Samsung's cited prior art or arguments in this reexamination are "the same or substantially the same" as those previously presented to the Office, as required by § 325(d). Moreover, Patent Owner filed its petition *after* the Examiner determined that the cited references do, in fact, present new, non-cumulative technological teachings and multiple substantial new questions of patentability. Accordingly, Samsung seeks permission to oppose the Patent Owner's petition and hereby submits the proposed Opposition.

Samsung hereby requests that any fees required for timely consideration of this petition and Opposition be charged to Deposit Account No. 18-1945, under Order No. 110797-0019-501, from which the undersigned is authorized to draw. If there are any questions, counsel for Samsung may be contacted through the direct telephone number provided below.

Dated: October 13, 2016

Respectfully submitted,

/J. Steven Baughman/
J. Steven Baughman
Registration No. 47,414
James F. Mack
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Attorneys/Agents for Requesters
Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.

Electronic Acknowledgement Receipt

EFS ID:	27210552
Application Number:	90013808
International Application Number:	
Confirmation Number:	2211
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Customer Number:	6449
Filer:	Jon Steven Baughman/ginny blundell
Filer Authorized By:	Jon Steven Baughman
Attorney Docket Number:	3277-0114US-RXM1
Receipt Date:	13-OCT-2016
Filing Date:	12-SEP-2016
Time Stamp:	20:59:12
Application Type:	Reexam (Third Party)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Reexam Certificate of Service	110797-0019-501_COS.pdf	81444 3ad76b649cd3065d24ce8c52e2c95b118a4735e3	no	2

Warnings:

Information:					
2	Reexam - Opposition filed in response to petition	110797-0019-501_Opposition_to_Reject_Exam_Request.pdf	150965 b86e835aa997b70c0e6ec435fed119417f6087f3	no	7
Warnings:					
Information:					
3	Receipt of Petition in a Reexam	110797-0019-501_Petition.pdf	109965 57652f66744608319894dc4216dba88545475dd	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	342374		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Gordon F. Bremer	§	Control No. 90/013,808
U.S. Patent No. 8,023,580	§	Attorney Docket No.: 110797-0019-501
Formerly Application No. 12/543,910	§	Customer No.: 28120
Issue Date: September 20, 2011	§	Examiner: Yuzhen Ge
Filing Date: August 19, 2009	§	Requesters: Samsung Electronics Co., Ltd.,
Former Group Art Unit: 2611	§	Samsung Electronics America, Inc.
Former Examiner: Dac Ha	§	

For: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

MAIL STOP *EX PARTE* REEXAM
Central Reexamination Unit
Office of Patent Legal Administration
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF SERVICE

It is certified that copies of the following documents have been served in their entireties on the patent owner at the correspondence address of record as provided for in 37 C.F.R. § 1.33(c):

1. Third Party Requesters' Petition To Respond To Patent Owner's Petition To Reject Reexamination Request.

2. Third Party Requesters' Opposition To Patent Owner's Petition To Reject Reexamination Request.

The copy has been served on October 13, 2016 by causing the aforementioned documents to be deposited with the United States Postal Service as first class mail postage pre-paid in an envelope addressed to:

Rothwell, Figg, Ernst & Manbeck, P.C.
607 14th Street, N.W.
Suite 800
Washington, DC 20005

/ James F. Mack /________
James F. Mack

ROPES & GRAY LLP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In *Ex Parte* Reexamination of	:	Group Art Unit: 2633
Gordon F. BREMER	:	
Patent No.: 8,023,580 B2	:	Control No.: 90/013,808
Issued: September 20, 2011		:
Reexam Request Filed: September 12, 2016		

For: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

Attn: Mail Stop "*Ex Parte* Reexam"
Central Reexamination Unit
Office of Patent Legal Administration
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PATENT OWNER'S REQUEST FOR A TWO-MONTH EXTENSION OF TIME UNDER 37 C.F.R. § 1.550(c) TO FILE ITS PATENT OWNER'S STATEMENT PURSUANT TO 35 U.S.C. § 304

Pursuant to 37 CFR § 1.550(c), Patent Owner Rembrandt respectfully requests a two-month extension of time to file its Patent Owner's Statement in *Ex Parte* Reexamination of U.S. Patent 8,023,580 ("'580 Reexamination"). The additional time is necessary for Counsel to fully review the voluminous record relevant to this reexamination and prepare an informed Patent Owner's Statement. Present Counsel for Patent Owner was just recently engaged to handle this and a second related *ex parte* reexamination[1] and did not obtain an acknowledgement of Power of Attorney until September 30, 2016 (after the grant of the '580 Reexamination).[2]

Samsung's request comprises more than the 1,000 pages (including the exhibits). In addition, the history of Samsung's prior challenges to claims 2 and 59 dates back to March 20, 2014. At that time, Samsung filed 4 IPRs against the '580 Patent. Then, due to its unsuccessful challenges of, *inter alia*, claims 2 and 59, Samsung again challenged these claims by filing two additional IPRs on October 21, 2014. Those challenges also failed. Given the magnitude of the '580 Request, the significant number of documents filed in the multiple IPRs and issued by the Board, and the lack of any time to review the '580 Request prior to its almost immediate grant, Patent Owner Rembrandt respectfully requests a two-month extension of time to review these potentially relevant documents so that it can properly prepare Patent Owner's Statement.

While Rembrandt recognizes the need to handle reexaminations with "special dispatch," there is no reason to deny Rembrandt a fair opportunity to respond to yet another challenge to the patentability of its claims 2 and 59. Thus, to the extent Samsung has argued that this matter is particularly urgent (see Request at i-ii), Rembrandt notes that Samsung has offered no reason why it could not have submitted the references submitted in this *ex parte* reexamination as early as March 20, 2014, when Samsung first challenged the patentability of claims 2 and 59. Thus, Samsung's plea for expediting this case more than is called for by the "special dispatch" requirement should be ignored.

[1] Ex Parte Reexamination of U.S. 8,457,228 (90/013,809) ("'228 Reexamination). Via a second petition, Rembrandt is also requesting an extension of time in this case.

[2] The '580 Request was granted on Sept. 27, 2016, only 15 days after the Request was filed and prior to present Counsel's receipt of the '580 Request. The new Power of Attorney was not acknowledged until September 30, 2016, after the Examiner granted the request.

The petition fee of $200 set forth in 37 C.F.R. § 1.17(g) for filing a petition for an extension of time under 37 C.F.R. § 1.1550(c) together with any additional fees that may be due with respect to this paper may be charged to Counsel's Deposit Account No. 02-2135.

Respectfully submitted,

Date: November 1, 2016 By: /Nancy J. Linck/

Nancy J. Linck, Reg. No. 31,920
ROTHWELL, FIGG, ERNST & MANBECK, P.C.
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Washington, DC 20005
Phone: 202-783-6040
Facsimile: 202-783-6031

Attorney for Petitioner
Rembrandt Wireless Technologies, LP

CERTIFICATE OF SERVICE

It is hereby certified that on this 1st day of November, 2016, the foregoing **PATENT OWNER'S REQUEST FOR A TWO-MONTH EXTENSION OF TIME UNDER 37 C.F.R. § 1.550 TO FILE IT'S PATENT OWNER'S STATEMENT PURSUANT TO 35 U.S.C. § 304** was served, by first-class U.S. Mail, on the attorney of record for the third-party Requesters Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc., at the following address:

J. Steven Baughman, Esq.
Ropes & Gray LLP
IPRM – Floor 43
Prudential Tower
800 Boylston Street
Boston, Massachusetts 02199-3600
Phone: 202-508-4606
Facsimile: 202-383-8371

/ Nancy J. Linck /
Nancy J. Linck
Reg. No. 31,920

Electronic Acknowledgement Receipt

EFS ID:	27387152
Application Number:	90013808
International Application Number:	
Confirmation Number:	2211
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Customer Number:	6449
Filer:	Edward Anthony Figg/Judith Pennington
Filer Authorized By:	Edward Anthony Figg
Attorney Docket Number:	3277-0114US-RXM1
Receipt Date:	01-NOV-2016
Filing Date:	12-SEP-2016
Time Stamp:	16:18:05
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		580EOTRequest.pdf	38094 2b082191ef59e3f4d4f830a9fa11b9d668938f93	yes	4

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Reexam Request for Extension of Time	1	3
	Reexam Certificate of Service	4	4
Warnings:			
Information:			
	Total Files Size (in bytes):	38094	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,808	09/12/2016	8023580	3277-0114US-RXM1	2211

6449 7590 11/04/2016

ROTHWELL, FIGG, ERNST & MANBECK, P.C.
607 14th Street, N.W.
SUITE 800
WASHINGTON, DC 20005

EXAMINER	
GE, YUZHEN	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
11/04/2016	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patents and Trademark Office
P.O.Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS
ROPES & GRAY LLP
PRUDENTIAL TOWER IPRM DOCKETING -FLOOR 43
800 BOYLSON STREET
BOSTON, MA 02199-3600

Date: MAILED

NOV 04 2016

CENTRAL REEXAMINATION UNIT

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90013808
PATENT NO. : 8023580
ART UNIT : 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Decision on Petition for Extension of Time in Reexamination	Application No.	Applicant(s)	
	90/013,808	8023580	
	Examiner	Art Unit	
	Ge, Yuzhen	3992	

1. THIS IS A DECISION ON THE PETITION FILED November 1, 2016.

2. THIS DECISION IS ISSUED PURSUANT TO:
   A. ☒ 37 CFR 1.550(c) – The time for taking any action by a patent owner in a third party requested *ex parte* reexamination proceeding will be extended only for sufficient cause and for a reasonable time specified.
   B. ☐ 37 CFR 1.550(c) – The time for taking action by a patent owner in a patent owner requested *ex parte* reexamination proceeding will only be extended for more than two months for sufficient cause and for a reasonable time specified.
   C. ☐ 37 CFR 1.956 – The time for taking any action by a patent owner in an *inter partes* reexamination proceeding will be extended only for sufficient cause and for a reasonable time specified.

   The petition is before the Central Reexamination Unit for consideration.

3. FORMAL MATTERS
   Patent owner requests that the period for filing its patent owner's statement be extended by 2 months.
   A. Petition fee per 37 CFR §1.17(g)):
      i. ☒ Petition includes authorization to debit a deposit account.
      ii. ☐ Petition includes authorization to charge a credit card account.
      iii. ☐ Other _____.
   B. ☒ Proper certificate of service was provided. (Not required in reexamination where patent owner is requester.)
   C. ☒ Petition was timely filed.
   D. ☒ Petition properly signed.

4. DECISION (See MPEP 2265 and 2665)
   A. ☐ Granted or ☒ Granted-in-part for one (1) month. The period for response will expire on **December 27, 2016**.

      No extraordinary circumstances were shown. See MPEP 2265 VI.
   B. ☐ Dismissed because:
      i. ☐ Formal matters (See unchecked box(es) (A, B, C and/or D) in section 4 above).
      ii. ☐ Petitioner failed to provide a factual accounting of reasonably diligent behavior by all those responsible for preparing a response to the outstanding Office action within the statutory time period.
      iii. ☐ Petitioner failed to explain why, in spite of the action taken thus far, the requested additional time is needed.
      iv. ☐ The statements provided fail to establish sufficient cause to warrant extension of the time for taking action (See attached).
      v. ☐ The petition is moot.
      vi. ☐ Other/comment: _____

5. CONCLUSION

   Telephone inquiries with regard to this decision should be directed to Michael Fuelling at 571-270-1367. In his/her absence, calls may be directed to Alexander Kosowski in the Central Reexamination Unit.

	/Michael Fuelling/ Supervisory Patent Reexamination Specialist

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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EXAMINER	
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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

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THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS
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Date: MAILED

NOV

CENTRAL REEXAMINATION UNIT

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90013808
PATENT NO. : 8023580
ART UNIT : 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

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CENTRAL REEXAMINATION UNIT

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In re Bremer :
Ex Parte Reexamination Proceeding : **DECISION**
Control No. 90/013,808 : **DISMISSING**
Filed: September 12, 2016 : **PETITIONS**
For: U.S. Patent No.: 8,023,580 :

This decision addresses the following papers:

- Patent owner's September 30, 2016 petition entitled "Petition Requesting the Director to Exercise Her Discretionary Authority under 35 U.S.C. § 325(d) Pursuant to 37 C.F.R. § 181(a)(2) and/or § 1.182", which is taken as a petition under 37 CFR 1.182 to vacate the order granting reexamination mailed on September 27, 2016 and to issue an order denying reexamination (patent owner's September 30, 2016 petition under 37 CFR 1.182);

- Requester's October 13, 2016 opposition entitled "Third Party Requester's Opposition to Patent Owner's Petition to Reject Reexamination Request", which is an opposition to patent owner's September 30, 2016 petition (requester's October 13, 2016 opposition);

- Requester's October 13, 2016 petition under 37 CFR 1.183 entitled "Third Party Requester's Petition to Respond to Patent Owner's Petition to Reject Reexamination Request", which requests permission from the Director to oppose patent owner's September 30, 2016 petition (requester's October 13, 2016 petition under 37 CFR 1.183); and

- Patent owner's October 25, 2016 paper entitled "Patent Owner's Reply to Third Party Requester's Opposition to Patent Owner's Petition Requesting the Director to Exercise Her Discretionary Authority under 35 U.S.C. § 325(d) Pursuant to 37 C.F.R. § 181(a)(2) and/or § 1.182", which is a response by the patent owner to requester's October 13, 2016 opposition (patent owner's October 25, 2016 paper).

Patent owner's September 30, 2016 petition under 37 CFR 1.182, requester's October 13, 2016 opposition, requester's October 13, 2016 petition under 37 CFR 1.183, patent owner's

October 25, 2016 paper, and the record as a whole, are before the Office of Patent Legal Administration for consideration.

SUMMARY

Patent owner's September 30, 2016 petition under 37 CFR 1.182 is **dismissed**.

The September 27, 2016 order granting reexamination **will not be vacated**. Prosecution in the present reexamination proceeding **will continue**.

Requester's October 13, 2016 petition under 37 CFR 1.183 is **dismissed as moot**. Requester's October 13, 2016 opposition has been entered and considered.

Patent owner's October 25, 2016 paper entitled "Patent Owner's Reply to Third Party Requester's Opposition to Patent Owner's Petition Requesting the Director to Exercise Her Discretionary Authority under 35 U.S.C. § 325(d) Pursuant to 37 C.F.R. § 181(a)(2) and/or § 1.182" is **improper** and **will not be considered**. Patent owner's October 25, 2016 paper is being *sua sponte* **expunged** from the record by marking the papers "closed" and "non-public," and will not constitute part of the record of the present reexamination proceeding.

REVIEW OF THE RELEVANT FACTS

- On September 20, 2011, U.S. Patent No. 8,023,580 (the '580 patent) issued to Gordon F. Bremer.

- On September 12, 2016, the third party requester filed a request for *ex parte* reexamination of the '580 patent, requesting reexamination of claims 2 and 59. The reexamination proceeding was assigned control no. 90/013,808 (the present proceeding) and was accorded a filing date of September 12, 2016.

- On September 27, 2016, reexamination of claims 2 and 59 of the '580 patent was ordered in the present proceeding.

- On September 30, 2016, the patent owner filed the present petition entitled "Petition Requesting the Director to Exercise Her Discretionary Authority under 35 U.S.C. § 325(d) Pursuant to 37 C.F.R. § 181(a)(2) and/or § 1.182" (patent owner's September 30, 2016 petition).

- On October 13, 2016, the requester filed an opposition to patent owner's September 30, 2016 petition (requester's October 13, 2016 opposition).

- Also on October 13, 2016, the requester filed a petition entitled "Third Party Requester's Petition to Respond to Patent Owner's Petition to Reject Reexamination Request", which requests permission from the Director to oppose patent owner's September 30, 2016 petition (requester's October 13, 2016 petition under 37 CFR 1.183).

- On October 25, 2016, the patent owner filed a paper entitled "Patent Owner's Reply to Third Party Requester's Opposition to Patent Owner's Petition Requesting the Director to Exercise Her Discretionary Authority under 35 U.S.C. § 325(d) Pursuant to 37 C.F.R. § 181(a)(2) and/or § 1.182", which is a response by patent owner to requester's October 13, 2016 opposition (patent owner's October 25, 2016 paper).

DECISION

Patent Owner's September 30, 2016 Petition

The patent owner requests the Office to "reject" the request filed in the present proceeding for *ex parte* reexamination of claims 2 and 59 of the '580 patent, pursuant to 35 U.S.C. 325(d). The present petition is taken as a petition under 37 CFR 1.182 to vacate the September 27, 2016 order granting reexamination, and to issue an order denying reexamination, on the basis that the request is allegedly limited to the same or substantially the same prior art or arguments previously presented to the Office, pursuant to 35 U.S.C. 325(d).

As an initial matter, the Office notes that the present petition, and requester's opposition thereto, were **timely filed** after the order for reexamination was mailed. The patent owner, however, appears to have intended to file its petition prior to the mailing of the order. The parties are reminded that any papers filed prior to the decision on the request which are directed to the merits of the reexamination will not be considered and will be expunged from the record.[1] See MPEP 2225. For example, a petition to vacate the order granting reexamination as *ultra vires* on the basis that the request does not raise a substantial new question of patentability, may only be filed *after* the decision on the request is rendered. See, e.g., MPEP 2246. Papers directed to the merits of the reexamination include petitions alleging that the request is limited to the same or substantially the same prior art or arguments previously presented to the Office, contrary to 35 U.S.C. 325(d), and any opposition thereto.

35 U.S.C. 325(d) provides, in pertinent part (emphasis added):

> In determining whether to . . . order a proceeding under . . . chapter 30, . . . the Director may take into account whether, and reject the . . . request because, the same or substantially the same prior art or arguments previously were presented to the Office.

The patent owner points to the legislative history of 35 U.S.C. 325(d) to show that the provisions of the statute apply to requests for *ex parte* reexamination, citing 157 Cong. Rec. S1042 (Daily Ed. Mar. 1, 2011)(Statement of Sen. Kyl) (emphasis added):

> [35 U.S.C. 325(d)] allows the Patent Office to reject any request for a proceeding, **including a request for ex parte reexamination**, if the same or substantially the same prior art or arguments previously were presented to the Office with respect to that patent.

The patent owner, however, does not argue that the same or substantially the same prior art or arguments previously were presented to the Office. In fact, the patent owner admits that the art

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[1] Some exceptions, which are enumerated in MPEP 2225, apply.

relied upon by the third party requester in the present request was not previously presented to the Office,[2] also as argued by the requester in its October 13, 2016 opposition.[3] Furthermore, the patent owner does not provide any discussion regarding whether the arguments presented in the request are the same or substantially the same as those previously presented to the Office. More importantly, however, even if some or all of the arguments are later shown to be the same or substantially the same as those previously presented to the Office, the patent owner has not shown that the prior art relied upon in the request is cumulative to the prior art of record, or, for that matter, that the request does not raise a substantial new question of patentability for other reasons.

The standard for determining whether a request for *ex parte* reexamination is granted is whether a substantial new question of patentability affecting any claim of the patent concerned is raised by the request. See 35 U.S.C. 303(a) and 304. 35 U.S.C. 325(d) does not *require* the Office to reject a request for reexamination. The statute merely permits the Office, within the Office's discretion, to reject the request if the same or substantially the same prior art or arguments previously were presented to the Office with respect to that patent. 35 U.S.C. 304, however, *requires* the Office to order reexamination if the Office finds that a substantial new question of patentability affecting any claim of the patent concerned is raised by the request. See 35 U.S.C. 304, which provides, in pertinent part (emphasis added):

> If . . . the Director finds that a substantial new question of patentability affecting any claim of a patent is raised, **the determination will include an order for reexamination** of the patent for resolution of the question.

A reference raises a substantial new question of patentability where 1) the reference contains a new, non-cumulative technological teaching that was not previously considered and discussed on the record during the prior examination of the patent; and 2) there is a substantial likelihood that a reasonable examiner would consider the teaching of the reference important in determining the patentability of a claim of the patent under reexamination. See MPEP 2216. See also MPEP 2242, which provides, in pertinent part:

> If the prior art patents and printed publications raise a substantial question of patentability of at least one claim of the patent, then a substantial new question of patentability as to the claim is present, unless the same question of patentability has already been: (A) decided in a final holding of invalidity by a federal court in a decision on the merits involving the claim, after all appeals; (B) decided in an earlier concluded examination or review of the patent by the Office; or (C) raised to or by the Office in a pending reexamination or supplemental examination of the patent.

The patent owner does not argue that the request does not raise a substantial new question of patentability. Instead, the patent owner argues that the requester has not explained why the art

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[2] The requester notes, in its October 13, 2016 opposition, that the Upender reference was before the Office during prior *inter partes* review proceedings, but only to establish motivation to combine the admitted prior art with a different prior art reference (the Boer reference). See footnote 1 of requester's October 13, 2016 opposition.

[3] See page 4 of requester's October 13, 2016 opposition.

could not have been presented earlier.[4] The patent owner points to a total of six petitions for *inter partes* reviews (IPRs) of the '580 patent: IPR2014-00514, IPR2014-00515, IPR2014-00518, IPR2014-00519, IPR2015-00114, and IPR2015-00118. In four of them, institution was denied. In the remaining two (IPR2014-00518 and IPR2014-00519) final written decisions were rendered before the present request for reexamination was filed; however, neither *inter partes* review involved a review of claims 2 and 59 of the '580 patent, which are the only claims under reexamination in the present proceeding. In fact, only two of the *inter partes* reviews included challenges to claims 2 and 59, and in each case, review of these claims was denied.[5]

The patent owner argues that the third party requester has not shown that the art or arguments were known or available to the requester at the time of filing the earlier petitions for *inter partes* review. The patent owner points out that the Patent Trial and Appeals Board (Board), when determining whether to institute an *inter partes* review, has analyzed whether a petitioner has shown whether the art or arguments were known or available to the requester at the time of filing the earlier *inter partes* reviews.

The present proceeding, however, is an *ex parte* reexamination proceeding, not an *inter partes* review. The standard for determining whether a request for *ex parte* reexamination is granted is whether a substantial new question of patentability affecting any claim of the patent concerned is raised by the request, as stated previously.

The patent owner argues that permitting the requester to request *ex parte* reexamination in the present proceeding "would incentivize patent challengers to file serial petitions and requests and increase the burden on the both the Office and patent owners in having to respond to renewed attacks." In other words, the patent owner is essentially arguing that permitting the filing of the present request for *ex parte* reexamination would encourage harassment of the patent owner.

The legislative history of the *ex parte* reexamination statute, however, reflects an intent by Congress that the *ex parte* reexamination process would not create new opportunities to harass the patent owner. See, e.g., H.R. Rep. No. 1307 (part I), 96th Cong., 2d Sess. 7 (Statement of Congressman Kastenmeier, September 9, 1980):

> This "substantial new question" requirement would protect patentees from having to respond to, or participate in unjustified reexaminations.

The legislative history of the 2002 amendment to the reexamination statute also states that the amendment "preserves the 'substantial new question standard' that is an important safeguard to protect all inventors against frivolous action and against harassment," and "also preserves the discretion of the Patent and Trademark Office in evaluating these cases."[6] See also *Industrial Innovation & Patent & Copyright Law Amendments: Hearings on H.R. 6933, 6934, 3806, &*

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[4] See page 4 of the present petition, in which the patent owner states:

> While in its present Request Samsung has cited additional art that it did not cite in any of its earlier thirteen IPRs challenging the '580 and '280 Patents, it does not explain why the additional art could not have been presented earlier.

[5] See IPR2014-00514 and IPR2014-00518.

[6] 147 Cong. Rec H 5358, 107th Congress, (September 5, 2001).

214 Before the Subcommittee on Courts, Civil Liberties and the Administration of Justice of the House Committee on the Judiciary, 96th Cong., 2nd Sess. 594 (1980) (statement of Sidney Diamond, Commissioner of Patents & Trademarks, April 24, 1980):

> [The proposed *ex parte* reexamination statute] carefully protects patent owners from reexamination proceedings brought for harassment or spite. The possibility of harassing patent holders is a classic criticism of some foreign reexamination systems and we made sure it would not happen here.

To prevent the use of the reexamination process to harass the patent owner, Congress included the requirement that a substantial new question of patentability based on patents and printed publications must be raised by the request. See also *Patlex v. Mossinghoff*, 771 F.2d 480, 483-484 (Fed. Cir. 1985)(italics in original), where the Federal Circuit, in quoting the statement of Commissioner Diamond immediately above, stated:

> Study of the genesis of the reexamination statute leaves no doubt that the major purpose of the threshold determination whether or not to reexamine is to provide a safeguard to the patent holder . . . That is the only purpose of the procedure established by *35 U.S.C. § 303*: "carefully" to protect holders of issued patents from being subjected to unwarranted reexaminations.

Furthermore, the purpose of reexamination is to permit the Office to reexamine the patent on the basis of prior art which was not previously considered during an earlier examination or review of the patent. There is a strong public interest that all of the prior art be considered. See, for example, *In re Etter*, 225 USPQ 1 (Fed. Cir. 1985), in which the Federal Circuit, when discussing whether the § 282 presumption of validity has application in reexamination proceedings, stated:

> Reexamination is thus neutral, the patentee and the public having an equal interest in the issuance and maintenance of valid patents.

In this instance, prior art relied upon in the request for reexamination was found by the examiner to raise a substantial new question of patentability. Reexamination was then ordered, as required by 35 U.S.C. 304. The examiner issued a 13-page order for reexamination detailing the substantial new questions of patentability presented in the request, and it is in the public interest to resolve those questions. The public has a right to the resolution of any legitimate substantial new question of patentability affecting the claims under reexamination.

For all of the reasons stated above, patent owner's September 30, 2016 petition under 37 CFR 1.182 is **dismissed**.

The September 27, 2016 order granting reexamination **will not be vacated**. Prosecution in the present reexamination proceeding **will continue**.

Requester's October 13, 2016 Petition under 37 CFR 1.183

The requester requests the Office to permit the requester to file an opposition to patent owner's September 30, 2016 petition. The requester asserts that extraordinary circumstances justify entry and consideration of requester's opposition, which was concurrently filed with its petition under 37 CFR 1.183.

Patent owner's September 30, 2016 petition, however, is taken as a petition to vacate the order granting reexamination on the basis that the request for reexamination allegedly is limited to the same or substantially the same prior art or arguments previously presented to the Office. An opposition by the requester to such a petition has a right of entry in the same manner as an opposition by the requester to a petition to vacate the order granting reexamination as *ultra vires* on the basis that the request does not raise a substantial new question of patentability (see MPEP 2246).

For this reason, requester's October 13, 2016 petition is **dismissed as moot**. Requester's October 13, 2016 opposition has been entered and considered.

Patent Owner's October 25, 2016 Paper

Patent owner's October 25, 2016 paper entitled "Patent Owner's Reply to Third Party Requester's Opposition to Patent Owner's Petition Requesting the Director to Exercise Her Discretionary Authority under 35 U.S.C. § 325(d) Pursuant to 37 C.F.R. § 181(a)(2) and/or § 1.182" is a response to requester's opposition to patent owner's September 30, 2016 petition, and for this reason, is **improper** and **will not be considered**. See MPEP 2267, subsection II, which provides, in pertinent part (emphasis added):

> In those rare instances where an opposition to a patent owner petition is filed, after such opposition is filed by a third party requester (regardless of whether such opposition has an entry right or not), **any further paper in opposition/rebuttal/response to the third party opposition paper will not be considered and will be expunged**. There must be a limitation on party iterations of input, especially given the statutory mandate for special dispatch in reexamination.

Pursuant to MPEP 2267, patent owner's October 25, 2016 paper is being *sua sponte* **expunged** from the record by marking the papers "closed" and "non-public," and will not constitute part of the record of the present reexamination proceeding.

CONCLUSION

- Patent owner's September 30, 2016 under 37 CFR 1.182 to vacate the order granting reexamination and issue an order denying reexamination in the present reexaminaton proceeding is **dismissed.**

- The order granting reexamination mailed on September 27, 2016 **will not be vacated**. Prosecution in the present reexamination proceeding **will continue**.

- Requester's October 13, 2016 petition under 37 CFR 1.183 is **dismissed as moot**. Requester's October 13, 2016 opposition has been entered and considered.

- Patent owner's October 25, 2016 paper entitled "Patent Owner's Reply to Third Party Requester's Opposition to Patent Owner's Petition Requesting the Director to Exercise Her Discretionary Authority under 35 U.S.C. § 325(d) Pursuant to 37 C.F.R. § 181(a)(2) and/or § 1.182" is **improper** and **will not be considered**. Patent owner's October 25, 2016 paper is being *sua sponte* **expunged** from the record by marking the papers "closed" and "non-public," and will not constitute part of the record of the present reexamination proceeding.

- The present proceeding is being forwarded to the Central Reexamination Unit to continue prosecution.

- Any inquiry concerning this communication should be directed to the undersigned at (571) 272-7724.

/Cynthia L. Nessler/

Cynthia L. Nessler
Senior Legal Advisor
Office of Patent Legal Administration

11/22/2016

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In *Ex Parte* Reexamination of	:	Group Art Unit: 2633
Gordon F. BREMER	:	
Patent No.: 8,023,580 B2	:	Control No.: 90/013,808
Issued: September 20, 2011	:	

Reexam Request Filed: September 12, 2016

For: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

Attn: Mail Stop "*Ex Parte* Reexam"
Central Reexamination Unit
Office of Patent Legal Administration
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION REQUESTING THE DIRECTOR TO EXERCISE HER SUPERVISORY AUTHORITY PURSUANT TO 37 C.F.R. § 1.181(a)(1) AND/OR § 1.182

Pursuant to 37 C.F.R. § 1.181(a)(1) and/or § 1.182, Rembrandt Wireless Technologies, LP ("Rembrandt") respectfully requests the Director to exercise her supervisory authority under Rule 181(a)(1) to require revision and reissue of the non-final Office Action (mailed January 24, 2017) rejecting claims 2 and 59 of U.S. Patent No. 8,023,580 ("the '580 Patent") in the above-referenced *ex parte* reexamination. Rembrandt respectfully further requests that the Director require the original January 24 Office Action to be stricken from the record. Rembrandt's request is based on the limits and requirements of *ex parte* reexamination and examination generally, which Rembrandt believes have not been observed in the outstanding Office Action. These limitations and requirements are: (1) With respect to original claims, *ex parte* reexamination is limited to examination "on the basis of patents or printed publications," MPEP

2258 (quoting 37 CFR 1.552(a)), and therefore does not permit examination on, *inter alia*, § 112 issues or other objections to the specification in the absence of amendments during reexamination. (2) As acknowledged in the Office Action at 3, a claim in *ex parte* reexamination that has not expired must be given its "broadest reasonable interpretation in light of the specification," MPEP 2111. Rembrandt is entitled to know what that interpretation is. The Office Action does not identify what it considers to be the broadest reasonable interpretation but rather relies on two different interpretations to reject the same claims. There is no provision in the *ex parte* reexamination statutes, regulations, or the MPEP that permits more than one such interpretation for any given claim. Further, also with respect to the Office's claim interpretation, Rembrandt is entitled to know whether the Office is giving patentable weight to the claims' preambles. The Office Action does not take a position on this issue. (3) Finally, the Office Action enters a § 102(e) rejection, based on a single reference (Snell) and not proposed in the Request for Ex Parte Reexamination of U.S. Patent No. 8,023,580 ("Samsung's Request"), that does not provide support for concluding that Snell discloses several significant claim limitations. Rembrandt is entitled to know the Office's bases for this rejection. *See* 37 CFR 1.104(c)(2) (During any examination, "[w]hen a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable [and] [t]he pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified."). *See also* MPEP 2262 ("The first Office action must be sufficiently detailed that the pertinency and manner of applying the cited prior art to the claims in each rejection is clearly set forth therein.").

Statement of Facts Relevant to Petition

1) On September 12, 2016, following its repeated failure to successfully attack claims 2 and 59 of the '580 Patent in multiple IPRs and after the conclusion of a district court action involving the '580 Patent that has been pending since March 2013 and is now awaiting a decision from the Federal Circuit, Samsung requested this *ex parte* reexamination attacking the same claims it was unable to defeat during the IPRs or during the district court litigation.

2) On September 30, 2016, Rembrandt filed a petition asking the Director to exercise her discretion under 35 U.S.C.§325(d) to deny the petition based on multiple proceedings attacking the same claims and lack of any reason why Samsung should have yet another opportunity to attack the same claims. That petition was dismissed on November 28, 2016.

3) On September 27, 2016, the Office granted Samsung's Request.

4) On January 24, 2017, the Office issued a non-final Office Action ("OA") that is outside the scope of *ex parte* reexamination. In the absence of any amendments, *ex parte* reexamination is limited to reexamination based on patents and printed publications. The Office Action exceeds its authority by (a) reexamining the claims under 35 U.S.C. § 112 and concluding that "a rejection under 35 USC 112 1st paragraph scope of enablement would be advanced for both claims 2 and 59," if such a rejection could be made (OA at 4-6); (b) reexamining and objecting to the '580 drawings and demanding that Rembrandt amend the '580 Patent by providing substitute drawings and labelling Figure 2 with "a legend such as –Prior Art -- … to avoid abandonment" (OA at 11); and (c) reexamining and objecting to the specification as "failing to provide proper antecedent basis for the claimed subject matter" (OA at 12 (citing 37 CFR 1.75(d)(1) and MPEP § 608.01)). With respect to the objection to the drawings, the Office Action threatens "abandonment of the application," if they are not corrected as

instructed. (OA at 11). Rembrandt is not aware of any basis in law for such actions during an *ex parte* reexamination.

5) The January 24 Office Action relies on two different claim interpretations to reject claims 2 and 59 and thus does not provide the Office's broadest reasonable interpretation of these claims. (OA at 6-9). Based on "Interpretation B" (OA at 15, lines 21-23), it adopts all of Samsung's 35 U.S.C. § 103 bases for unpatentability based on combinations of from three to six references by incorporating significant portions of Samsung's Request (OA at 15-19). Based on "Interpretation A" (OA at 12, lines 25-27), the Office Action enters another ground of rejection under 35 U.S.C. § 102(e) based on Snell (OA at 12-15). There cannot be more than one broadest reasonable construction of the claims, and it is inappropriate to require Rembrandt to address multiple or hypothetical constructions in response to an Office Action.

6) Further, also with respect to the Office's claim interpretation, the Office fails to indicate whether the claims' preambles are to be given patentable weight. All three of the Office's § 103(a) rejections in the January 24 Office Action rely heavily on incorporation by reference of the claim charts in Samsung's Request. (See OA at 15-19 (incorporating Samsung's Request at 39-62, 62-88, & 88-102)). In fact, two of the rejections are based solely on the incorporated claim charts, without further comment. (See OA at 19). In addressing the preambles to the rejected claims, the cited portions of Samsung's Request take no position on whether the preambles are a limitation of the claims. (See Samsung's Request at 40, 70, 98 ("To the extent this preamble is considered a limitation of the claim ...."). And, like the Request, the Office takes no position either. As part of the Office Action and its broadest reasonable interpretation of the claims, the Office is required to take a position on this issue.

It is inappropriate to require Rembrandt to respond to the Office Action without knowing how the Office is construing the preamble language in claims 2 and 59.

7) The January 24 Office Action also fails to provide supporting citations and clear explanations for at least part of its analyses of claims 2 and 59 under § 102(e) based on Snell. The claimed invention is limited to "a communication device capable of communicating according to a *master/slave* relationship" (emphasis added). In its § 102(e) rejection, the Office Action is completely silent as to where Snell discloses a master/slave relationship as claimed. For example, with respect to the anticipation rejection based on Snell (OA at 12-15), there is no support given for the conclusion that Snell's communication device is "capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave" (OA at 13). While the Office Action states "Snell is capable of such communication," no citation to Snell is provided. Furthermore citations to Snell are not provided for the remaining findings and conclusions on the same page (*see id.*), nor for related findings and conclusions that continue on pages 14 to 15.

Rembrandt's Petition Should Be Granted Because the Office Action Exceeds The Limited Scope of *Ex Parte* Reexamination

The scope of *ex parte* reexamination is set forth in 37 CFR 1.552:

> (a) Claims in an *ex parte* reexamination proceeding will be examined on the basis of patents or printed publications and, *with respect to subject matter added or deleted in the reexamination proceeding, on the basis of the requirements of 35 U.S.C. 112*.
>
> (b) Claims in an *ex parte* reexamination proceeding will not be permitted to enlarge the scope of the claims of the patent.
>
> (c) *Issues other than those indicated in paragraphs (a) and (b) of this section will **not** be resolved in a reexamination proceeding*…. [emphasis added].

No subject matter has been "added or deleted" in this reexamination proceeding, and, therefore, ***no*** authority exists to examine "on the basis of the requirements of 35 USC 112," even if a formal rejection has not been entered. Only new or amended claims are to be examined under § 112. MPEP 2258 (quoting 37 CFR 1.552(a)).[1] By raising § 112 issues and objecting to the specification and to the drawings (see Fact 4 above), the Office has exceeded its limited authority to examine the claims based on "patents and printed publications," and is clearly *ultra vires*.

Unless the Office Action is revised and reissued, Rembrandt will be prejudiced by its issuance, including its *ultra vires* determination in the Office's statement that, if permitted to do so, "a rejection under 35 USC 112 1st paragraph scope of enablement would be advanced for both claims 2 and 59." (OA at 6.) By law, the Office has no authority to conduct such an examination of claims 2 and 59 or make such a determination with respect to the claims' enablement.[2] Such a determination on the record, if left unrebutted, has the potential to

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[1] MPEP 2258 makes clear that such action is not appropriate by providing: "If such issues are raised *by the patent owner or third party requester* during a reexamination proceeding, the existence of such issues will be *noted* by the examiner in the next Office action …." *Id.* (quoting 37 CFR 1.552(c) (emphasis added)). In this case, neither the patent owner nor the third party requester raised any § 112 issues, and, even if either party had raised such an issue, the MPEP limits the examiner's action to *noting* them – not conducting a § 112 examination and drawing conclusions regarding the result of such an examination as was done here.

[2] In this regard, MPEP 2258 clearly provides as follows:

> In reexaminations ordered under 35 U.S.C. 304, where new claims are presented or where any part of the disclosure is amended, the claims of the reexamination proceeding, are to be examined for compliance with 35 U.S.C. 112. *Consideration of 35 U.S.C. 112 issues should, however, be limited to the amendatory (e.g., new language) matter*. For example, a claim which is amended or a new claim which is presented containing a limitation not found in the original patent claim should be considered for compliance under 35 U.S.C. 112 only with respect to that limitation. *To go further would be inconsistent with the statute to*

undermine Rembrandt's ability to enforce its patent rights. For this reason alone, the January 24 Office Action should be revised and reissued and the original January 24 Office Action should be stricken from the record. Without such relief, Rembrandt will be further prejudiced by being forced to respond to the Office's position on enablement, and, thus, further resources of the Office and Rembrandt will be spent needlessly on an issue that is the outside the scope of this *ex parte* reexamination.

In addition to the Office's improper examination of the claims under § 112, its objection to the specification "as failing to provide proper antecedent basis for the claimed subject matter" (OA, at 12) and its objection to the drawings which "will not be held in abeyance" (OA at 11-12) are beyond the scope of *ex parte* reexamination. Again, Rembrandt will be prejudiced if it is forced to respond to these objections or risk a final rejection on such grounds. In the absence of amendments to the specification or new or amended claims, there is no basis in law for making such objections during *ex parte* reexamination. As with the Office's § 112 1st paragraph determination, if these objections are not rebutted, they have the potential to undermine Rembrandt's ability to enforce its patent rights. For these further reasons, the January 24 Office Action should be reissued without such improper analyses and determinations that go beyond the scope of *ex parte* reexamination, and the original January 24 Office Action should be stricken from the record. Again, further resources of the Office and Rembrandt should not be spent on such issues that are clearly the outside the scope of this *ex parte* reexamination. For these reasons, Rembrandt respectfully requests that Director exercise her supervisory authority to order

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> *the extent that 35 U.S.C. 112 issues would be raised as to matter in the original patent claim.* [emphasis added].

Claims 2 and 59 are original, unamended claims.

the revision and reissuance of the pending non-final Office Action to address these issues and further requests that the original Office Action be stricken from the record.

Rembrandt's Petition Should Be Granted Based on The Office's Failure to Identify the Broadest Reasonable Interpretation of Claims 2 and 59

The Office has failed to identify what it considers to be the broadest reasonable interpretation of claims 2 and 59 for the following two reasons. First, the Office Action relies on two different interpretations -- Interpretation A to reject the claims under § 102(e) and on Interpretation B to reject these same claims under § 103. Second, the Office does not indicate whether the claims' preambles are to be given patentable weight, i.e., whether they are to be considered when determining the scope of the claims. *See* Facts 5 and 6 above. There can be *only one* broadest reasonable interpretation for any given claim, and Rembrandt is entitled to know what the Office's interpretation is before a response to the Office Action is required. Thus, Rembrandt respectfully requests the Director to order the revision and reissuance of the pending non-final Office Action to indicate what claim interpretation the Office Action is applying.

Rembrandt's Petition Should Be Granted Based On the Office's Lack of Support and Clear Explanation for its Rejection Under § 102(e)

The Office Action fails to provide support and clear explanation for findings made and conclusions drawn in the Office Action, at least with respect to its anticipation rejection under § 102(e) based on Snell. See Fact 7 above. Rembrandt is entitled to know the bases for the Office Action's contention that Snell teaches the multiple claim limitations requiring that, for example, the 'communication device [be] capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave," claims 2 and 59 (preamble). Other limitations in the claims also require the disclosure of implementation in a master/slave system.

See, e.g., "a transceiver, in the role of master according to the master/slave relationship …" and "that communication from the master to the slave has reverted to the first modulation" (language in the body of both claims 2 and 59). Again, Rembrandt respectfully requests that Director exercise her supervisory authority to order the revision and reissuance of the pending non-final Office Action to address these deficiencies.

This Petition is timely filed, i.e., within two months of the non-final Office action mailed January 24, 2017. To the extent the Office believes any rules prevent consideration of this petition, Rembrandt further petitions the Director to suspend such rules under the power granted to the Director by 37 C.F.R. § 1.183.

Any fee required for submission of this Petition may be charged to Counsel's Deposit Account Number 02-2135.

Respectfully submitted,

Date: February 9, 2017

By: /Michael V. Battaglia/

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Attorney for Petitioner
Rembrandt Wireless Technologies, LP

cc: Nancy J. Linck, Ph.D.
Counsel for Rembrandt Wireless Technologies, LP

Electronic Acknowledgement Receipt

EFS ID:	28314971
Application Number:	90013808
International Application Number:	
Confirmation Number:	2211
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Customer Number:	6449
Filer:	Michael Vincent Battaglia/Judith Pennington
Filer Authorized By:	Michael Vincent Battaglia
Attorney Docket Number:	3277-0114US-RXM1
Receipt Date:	09-FEB-2017
Filing Date:	12-SEP-2016
Time Stamp:	16:24:56
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Petition.pdf	62689 7dd77308da07220e73d3727001cb2204e90786cb	yes	10

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Reexam Certificate of Mailing	10	10
	Receipt of Petition in a Reexam	1	9
Warnings:			
Information:			
	Total Files Size (in bytes):	62689	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

CERTIFICATE OF SERVICE

It is hereby certified that on this 9th day of February, 2017, the foregoing **PETITION REQUESTING THE DIRECTOR TO EXERCISE HER SUPERVISORY AUTHORITY PURSUANT TO 37 C.F.R. § 1.181(a)(1) AND/OR § 1.182** was served, by first-class U.S. Mail, on the attorney of record for the third-party Requesters Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc., at the following address:

J. Steven Baughman, Esq.
Ropes & Gray LLP
IPRM – Floor 43
Prudential Tower
800 Boylston Street
Boston, Massachusetts 02199-3600
Phone: 202-508-4606
Facsimile: 202-383-8371

/Michael V. Battaglia/
Michael V. Battaglia
Reg. No. 64,932

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In *Ex Parte* Reexamination of	:	Group Art Unit: 3992
Gordon F. BREMER	:	
Patent No.: 8,023,580 B2	:	Control No.: 90/013,808
Issued: September 20, 2011	:	

Reexam Request Filed: September 12, 2016

For: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

Attn: Mail Stop "*Ex Parte* Reexam"
Central Reexamination Unit
Office of Patent Legal Administration
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PATENT OWNER'S REQUEST FOR AN EXTENSION OF TIME UNDER 37 C.F.R. § 1.550(c) TO FILE ITS RESPONSE TO THE JANUARY 24, 2017 OFFICE ACTION PURSUANT TO 35 U.S.C. § 305

Pursuant to 37 C.F.R. § 1.550(c), Patent Owner Rembrandt respectfully requests an extension of time to file its Patent Owner's Response in the *Ex Parte* Reexamination of U.S. Patent 8,023,580 ("'580 Patent") to the Office Action mailed January 24, 2017 ("January 24 Office Action"). More specifically, Rembrandt requests an extension of time until the later of one (1) month after the Director decides the Patent Owner's Petition Requesting The Director To Exercise Her Supervisory Authority Pursuant To 37 C.F.R. § 1.181(a)(1) and/or § 1.182 (filed February 9, 2017) ("February 9 Petition"), or (2) two months after Patent Owner's Response to the January 24 Office Action is due. Patent Owner's February 9 Petition asks the Director to exercise her supervisory authority to reissue the January 24 Office Action so that the Office Action (1) is limited to issues within the scope of *ex parte* reexamination, (2) provides a *single* broadest reasonable claim interpretation (including a statement whether the PTO is giving weight to the claim preambles), and (3) explains the PTO's bases for its § 102(e) anticipation rejection based on Snell. For the reasons given in its February 9 Petition, unless the January 24 Office Action is reissued in response to the issues Rembrandt has raised in its February 9 Petition, Rembrandt will have serious difficulty properly responding to the Office Action due to lack of clarity in the Office Action and will be required to respond to issues that should not have been raised. The Director's grant of Patent Owner's February 9 Petition is necessary to ensure that both Patent Owner and the PTO are not unnecessarily burdened with addressing issues that cannot be properly decided in an ex parte reexamination, or with addressing issues based on more than one broadest reasonable claim construction.

In addition to the need for an extension to permit the Director to decide the outstanding February 9 Petition, Patent Owner Rembrandt requires more time to investigate when inventor Gordon Bremer first conceived of the claimed invention, as several of the cited references are available as prior art only under § 102(e). In particular, U.S. Patent No. 6,075,814 ("Yamano") has a priority date of May 9, 1997, less than one month before the complete claimed invention was memorialized on June 8, 1997 in an internal document at Paradyne where inventor Bremer was employed. See Broadband Tech Note 137 (attachment A). During the Rembrandt v. Samsung district court litigation, inventor Bremer testified that he conceived of the claimed invention much earlier than June 8, 1997. See Bremer trial testimony at 93:19-94:21 (attachment B). Given these facts, Patent Owner has reason to believe the claimed invention was conceived prior to the priority date of at least Yamano. However, to investigate this issue, Patent Owner must examine documents that are almost 20 years old and must probe the memories of those involved in the patenting process at Paradyne and its patent counsel at that time. Patent Owner has begun its investigation of this issue but does not expect to complete its investigation in time to prepare the needed declarations and the response to the January 24 Office Action by the present due date.

Further, while the January 24 Office Action is only 22 pages, it incorporates 64 pages from Samsung's Request for *Ex Parte* Reexamination of the '580 Patent (excluding the many exhibits cited in those incorporated pages). The Request itself comprises more than the 1,000 pages (including the exhibits). In addition, the history of Samsung's prior challenges to claims 2 and 59 dates back to March 20, 2014. At that time, Samsung filed 4 IPRs against the '580 Patent. Then, due to its unsuccessful challenges of, *inter alia*, claims 2 and 59, Samsung again challenged these claims by filing two additional IPRs on October 21, 2014. Those challenges also failed. Given the magnitude of the '580 Request and the PTO's significant incorporation by reference of Samsung's Request, and the significant number of related documents filed in the multiple IPRs and issued by the Board, Patent Owner needs additional time to file a complete and proper response to the PTO's January 24 Office Action, particularly if Patent Owner's February 9 Petition is denied.

Finally, the corresponding district court litigation (pending since March 2013) has concluded and is on appeal to the Federal Circuit. That appeal has been fully briefed and was argued on January 12, 2017. The Federal Circuit may well issue a decision that either moots the issues now before the PTO in this reexamination or sheds light on how the issues should be addressed by the PTO. Thus, granting Patent Owner's request for an extension of time may eliminate or simplify the work of both the Patent Owner and the PTO with respect to this reexamination.

While Patent Owner recognizes the need to handle reexaminations with "special dispatch," there is no reason to deny Rembrandt a fair opportunity to respond to yet another challenge to the patentability of its claims 2 and 59. Thus, to the extent Samsung has argued that this matter is particularly urgent (see Request at i-ii), Patent Owner notes that Samsung has offered no reason why it could not have submitted the references submitted in this *ex parte* reexamination as early as March 20, 2014, when Samsung first challenged the patentability of claims 2 and 59. Thus, Samsung's plea for expediting this case more than is called for by the "special dispatch" requirement should be ignored.

Statement of Facts Relevant to Petition

In addition to the facts identified above, the following facts are relevant to the PTO's consideration of Patent Owner's request for an extension of time to respond to the January 24 Office Action.

1) On September 12, 2016, following its repeated failure to successfully attack claims 2 and 59 of the '580 Patent in multiple IPRs and after the conclusion of a district court action involving the '580 Patent that has been pending since March 2013 and is now awaiting a decision from the Federal Circuit, Samsung requested this *ex parte* reexamination attacking the same claims it was unable to defeat during the IPRs or during the district court litigation ("Samsung's Request").

2) On September 30, 2016, Rembrandt filed a petition asking the Director to exercise her discretion under 35 U.S.C.§325(d) to deny the petition based on multiple proceedings attacking the same claims and the lack of any reason why Samsung should have yet another opportunity to attack the same claims. That petition was dismissed on November 28, 2016.

3) On September 27, 2016, the Office granted Samsung's Request.

4) On January 24, 2017, the Office issued a non-final Office Action ("January 24 Office Action") that is outside the scope of *ex parte* reexamination. In the absence of any amendments, *ex parte* reexamination is limited to reexamination based on patents and printed publications. Thus, the January 24 Office Action exceeds its authority by (a) reexamining

the claims under 35 U.S.C. § 112 and concluding that "a rejection under 35 USC 112 1st paragraph scope of enablement would be advanced for both claims 2 and 59," if such a rejection could be made (OA at 4-6); (b) reexamining and objecting to the '580 drawings and demanding that Rembrandt amend the '580 Patent by providing substitute drawings and labelling Figure 2 with "a legend such as –Prior Art -- … to avoid abandonment" (OA at 11); and (c) reexamining and objecting to the specification as "failing to provide proper antecedent basis for the claimed subject matter" (OA at 12 (citing 37 CFR 1.75(d)(1) and MPEP § 608.01)). With respect to the objection to the drawings, the Office Action threatens "abandonment of the application," if they are not corrected as instructed. (OA at 11). Rembrandt is not aware of any basis in law for such actions during an *ex parte* reexamination.

5) The January 24 Office Action relies on two different claim interpretations to reject claims 2 and 59 and thus does not provide the Office's broadest reasonable interpretation of these claims. (OA at 6-9). Based on "Interpretation B" (OA at 15, lines 21-23), it adopts all of Samsung's 35 U.S.C. § 103 bases for unpatentability based on combinations of from three to six references by incorporating significant portions of Samsung's Request (OA at 15-19). Based on "Interpretation A" (OA at 12, lines 25-27), the Office Action enters another ground of rejection under 35 U.S.C. § 102(e) based on Snell (OA at 12-15). There cannot be more than one broadest reasonable construction of the claims, and it is inappropriate to require Rembrandt to address multiple or hypothetical constructions in response to an Office Action.

6) Further, also with respect to the Office's claim interpretation, the Office fails to indicate whether the claims' preambles are to be given patentable weight. All three of the Office's § 103(a) rejections in the January 24 Office Action rely heavily on incorporation by reference of the claim charts in Samsung's Request. (See OA at 15-19 (incorporating Samsung's

Request at 39-62, 62-88, & 88-102)). In fact, two of the rejections are based solely on the incorporated claim charts, without further comment. (See OA at 19). In addressing the preambles to the rejected claims, the cited portions of Samsung's Request take no position on whether the preambles are a limitation of the claims. (See Samsung's Request at 40, 70, 98 ("To the extent this preamble is considered a limitation of the claim ...."). And, like the Request, the Office takes no position either. As part of the January 24 Office Action and its broadest reasonable interpretation of the claims, the Office is required to take a position on this issue. It is inappropriate to require Rembrandt to respond to the Office Action without knowing how the Office is construing the preamble language in claims 2 and 59.

7) The January 24 Office Action also fails to provide supporting citations and clear explanations for at least part of its analyses of claims 2 and 59 under § 102(e) based on Snell. The claimed invention is limited to "a communication device capable of communicating according to a *master/slave* relationship" (emphasis added). In its § 102(e) rejection, the Jnauary 24 Office Action is completely silent as to where in Snell a master/slave relationship is disclosed as claimed. For example, with respect to the anticipation rejection based on Snell (OA at 12-15), there is no support given for the conclusion that Snell's communication device is "capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave" (OA at 13). While the Office Action states "Snell is capable of such communication," no citation to Snell is provided. Furthermore citations to Snell are not provided for the remaining findings and conclusions on the same page (*see id.*), nor for related findings and conclusions that continue on pages 14 to 15.

8) On February 9, 2017, Rembrandt filed its Petition Requesting the Director To Exercise Her Supervisory Authority Pursuant to 37 C.F.R. § 1.181(a)(1) and/or § 1.182. In the February 9

Petition, Rembrandt has requested that the Director require that the January 24 Office Action be reissued such that the reissued Office Action addresses the issues identified above.

For the reasons given above, Patent Owner Rembrandt respectfully requests an extention of time to respond to the January 24 Office Action until the later of one (1) month after the Director decides the Patent Owner's February 9 Petition, or (2) two months after Patent Owner's Response to the January 24 Office Action is due.

The petition fee of $200 set forth in 37 C.F.R. § 1.17(g) for filing a petition for an extension of time under 37 C.F.R. § 1.1550(c) together with any additional fees that may be due with respect to this paper may be charged to Counsel's Deposit Account No. 02-2135.

Respectfully submitted,

Date: February 27, 2017 By: /Michael V. Battaglia/

Michael V. Battaglia, Reg. No. 64,932
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Facsimile: 202-783-6031

Attorney for Petitioner
Rembrandt Wireless Technologies, LP

cc: Nancy J. Linck, Ph.D.
Counsel for Rembrandt Wireless Technologies, LP

CERTIFICATE OF SERVICE

It is hereby certified that on this 27th day of February, 2017, the foregoing **PATENT OWNER'S REQUEST FOR AN EXTENSION OF TIME UNDER 37 C.F.R. § 1.550 TO FILE ITS RESPONSE PURSUANT TO 35 U.S.C. § 305** was served, by first-class U.S. Mail, on the attorney of record for the third-party Requesters Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc., at the following address:

J. Steven Baughman, Esq.
Ropes & Gray LLP
IPRM – Floor 43
Prudential Tower
800 Boylston Street
Boston, Massachusetts 02199-3600
Phone: 202-508-4606
Facsimile: 202-383-8371

/Michael V. Battaglia/
Michael V. Battaglia
Reg. No. 64,932

cc: Nancy J. Linck, Ph.D.
Counsel for Rembrandt Wireless Technologies, LP

Electronic Acknowledgement Receipt

EFS ID:	28471772
Application Number:	90013808
International Application Number:	
Confirmation Number:	2211
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Customer Number:	6449
Filer:	Michael Vincent Battaglia/Judith Pennington
Filer Authorized By:	Michael Vincent Battaglia
Attorney Docket Number:	3277-0114US-RXM1
Receipt Date:	27-FEB-2017
Filing Date:	12-SEP-2016
Time Stamp:	15:54:30
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Reexam Request for Extension of Time	RequestEOTwithattachments.pdf	4430427 f2cae3565570e2c720ff92a093a5ddbe358da5a8	no	192

Warnings:

Information:	
Total Files Size (in bytes):	4430427

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Patent Application Fee Transmittal

Application Number:	90013808
Filing Date:	12-Sep-2016
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Filer:	Michael Vincent Battaglia/Judith Pennington
Attorney Docket Number:	3277-0114US-RXM1
Filed as Large Entity	

Filing Fees for **ex parte reexam**

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
PETITION FEE- 37 CFR 1.17(G) (GROUP II)	1463	1	200	200
Miscellaneous:				
		Total in USD ($)		**200**

Electronic Acknowledgement Receipt

EFS ID:	28472305
Application Number:	90013808
International Application Number:	
Confirmation Number:	2211
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Customer Number:	6449
Filer:	Michael Vincent Battaglia/Judith Pennington
Filer Authorized By:	Michael Vincent Battaglia
Attorney Docket Number:	3277-0114US-RXM1
Receipt Date:	27-FEB-2017
Filing Date:	12-SEP-2016
Time Stamp:	16:11:24
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$200
RAM confirmation Number	022817INTEFSW00016418022135
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (SB06)	fee-info.pdf	30710 77dabbc648038556274ac6e5bb306812c7136e7c	no	2

Warnings:

Information:

Total Files Size (in bytes):	30710

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New Applications Under 35 U.S.C. 111
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New International Application Filed with the USPTO as a Receiving Office
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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,808	09/12/2016	8023580	3277-0114US-RXM1	2211

6449 7590 03/13/2017

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WASHINGTON, DC 20005

EXAMINER	
GE, YUZHEN	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
03/13/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patents and Trademark Office
P.O.Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS
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800 BOYLSON STREET
BOSTON, MA 02199-3600

Date: MAILED

MAR 13 2017

CENTRAL REEXAMINATION UNIT

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90013808
PATENT NO. : 8023580
ART UNIT : 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Decision on Petition for Extension of Time in Reexamination	Application No. 90/013,808	Applicant(s) 8,023,580	
	Examiner Yuzhen Ge	Art Unit 3992	

1. THIS IS A DECISION ON THE PETITION FILED February 27, 2017

2. THIS DECISION IS ISSUED PURSUANT TO:
   A. ☒ 37 CFR 1.550(c) – The time for taking any action by a patent owner in a third party requested *ex parte* reexamination proceeding will be extended only for sufficient cause and for a reasonable time specified.
   B. ☐ 37 CFR 1.550(c) – The time for taking action by a patent owner in a patent owner requested *ex parte* reexamination proceeding will only be extended for more than two months for sufficient cause and for a reasonable time specified.
   C. ☐ 37 CFR 1.956 – The time for taking any action by a patent owner in an *inter partes* reexamination proceeding will be extended only for sufficient cause and for a reasonable time specified.

   The petition is before the Central Reexamination Unit for consideration.

3. FORMAL MATTERS
   Patent owner requests that the period filing a response to the non-final Office action mailed on January 24, 2017 which set a 2 month period for filing a response, be extended by the later of one month after the Director decides Patent Owner's petition under 1.181(a) and/or 1.182 filed February 9, 2017, or in the alternative, two months from the mailing date of the non-final Office action.

   Petition fee per 37 CFR §1.17(g)):
      i. ☒ Petition includes authorization to debit a deposit account.
      ii. ☐ Petition includes authorization to charge a credit card account.
      iii. ☐ Other _____.

   B. ☒ Proper certificate of service was provided. (Not required in reexamination where patent owner is requester.)
   C. ☒ Petition was timely filed.
   D. ☒ Petition properly signed.

4. DECISION (See MPEP 2265 and 2665)
   A. ☐ Granted or ☒ Granted-in-part for **one (1) month,** because petitioner provided a factual accounting that established sufficient cause. (See 37 CFR 1.550(c) and 37 CFR 1.956).
      i. ☒ Other/comment: **(See attached)**
   B. ☐ Dismissed because:
      i. ☐ Formal matters (See unchecked box(es) (A, B, C and/or D) in section 4 above).
      ii. ☐ Petitioner failed to provide a factual accounting of reasonably diligent behavior by all those responsible for preparing a response to the outstanding Office action within the statutory time period.
      iii. ☐ Petitioner failed to explain why, in spite of the action taken thus far, the requested additional time is needed.
      iv. ☐ The statements provided fail to establish sufficient cause to warrant extension of the time for taking action.
      v. ☐ The petition is moot.

5. CONCLUSION: **The response to the non-final Office Action mailed January 24, 2017 is due April 24, 2017**.

6. Telephone inquiries with regard to this decision should be directed to Stephen Stein at 571-272-1544 in the CRU.

/Stephen J. Stein/
Supervisory Patent Reexamination Specialist
AU-3991

The February 27, 2017 petition for an extension of time requests an extension of time to respond to the January 24, 2017 non-final Office action, until the later of one month after the Director decides Patent Owner's petition under 1.181(a) and/or 1.182 filed February 9, 2017, or in the alternative, two months from the mailing date of the non-final Office action.

The petition speaks to the considerations of (1) providing time for the Office to decide a previously filed petition under 1.181/1.182 seeking the Director's supervisory authority to reissue the January 24, 2017 Office action, (2) to provide Patent Owner with additional time to investigate when the inventor of US 8,023,580 first conceived of the claimed invention in view of the fact that several the cited reference are only available as prior art under 35 USC 102(e), (3) the length of the Office Action and (4) in view of the related district court litigation which is on appeal to the CAFC, and which may shed light on the issues in the reexam (See pages 2 and 3 of the petition for extension of time).

These considerations are noted; however, they must be balanced with the statutory requirement of special dispatch under 35 USC 305.

Pursuant to MPEP § 2265 (in-part) "First requests for extensions of these time periods will be granted for sufficient cause, and for a reasonable time specified-usually 1 month. The reasons stated in the request will be evaluated, and the request will be favorably considered where there is a factual accounting of reasonably diligent behavior by all those responsible for preparing a response or comments within the statutory time period. Second or subsequent requests for extensions of time, or <u>requests for more than one month, will be granted only in extraordinary circumstances involved</u>"; e.g., death or incapacitation of the patent owner. (See MPEP § 2265).

With regard to the consideration providing time for the Office to decide a previously filed petition under 1.181/1.182 (consideration 1), 37 CFR 1.181(f) states "[t]he mere filing of a petition will not stay any period for reply that may be running against the application, nor act as a stay of other proceedings".

With regard the remaining considerations presented in the petition (considerations 2-4), the circumstances presented do not rise to the level of "extraordinary circumstances" so as to grant the requested 2 month extension of time.

It is agreed however, that patent owner needs to be given opportunity to complete all aspects of investigation prior to responding to the Office action in an *ex parte* reexamination proceedings.

<u>Accordingly, the Request for an extension of time is granted-in-part for one (1) additional month.</u>

<u>Patent Owner's response to the non-final Office Action mailed January 24, 2017 is due April 24, 2017.</u>

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,808	09/12/2016	8023580	3277-0114US-RXM1	2211

6449 7590 03/27/2017
ROTHWELL, FIGG, ERNST & MANBECK, P.C.
607 14th Street, N.W.
SUITE 800
WASHINGTON, DC 20005

EXAMINER	
GE, YUZHEN	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
03/27/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

UNITED STATES PATENT AND TRADEMARK OFFICE

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THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS
ROPES & GRAY LLP
PRUDENTIAL TOWER IPRM DOCKETING -FLOOR 43
800 BOYLSON STREET
BOSTON, MA 02199-3600

Date: MAILED

MAR 27 2017

CENTRAL REEXAMINATION UNIT

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90013808
PATENT NO. : 8023580
ART UNIT : 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

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ROTHWELL, FIGG, ERNST & MANBECK, P.C.
607 14th Street, N.W.
WASHINGTON, DC 20005

For Patent Owner

MAR 27 2017

CENTRAL REEXAMINATION UNIT

ROPES & GRAY, LLP
Prudential Tower IPRM Docketing- Floor 43
800 Boylson Street
Boston, MA 02199-3600

For 3rd Party Requester

Ex Parte Reexamination Proceeding
Control No. 90/013,808
Filed: September 12, 2016
For: U.S. Patent No. 8,023,580

DECISION *SUA SPONTE* VACATING NON FINAL OFFICE ACTION

The purpose of this communication is to inform the parties to this *ex parte* reexamination proceeding that the non-final Office action mailed on January 24, 2017 is hereby vacated for the following reason:

A review of the January 24, 2017 Office action indicates that the Office Action includes a discussion of issues outside the scope of *ex parte* reexamination and therefore, the January 24, 2017 Office action does not comply with 37 CFR 1.552. Accordingly, the January 24, 2017 non final Office action is hereby vacated. The Office Action will form no part of the record and will not be available to the public. This decision will be made of record in the reexamination file and the proceeding will be returned to the Examiner in order to take further action. A new Office action will issued in due course.

Any inquiry concerning this communication should be directed to Stephen Stein, Supervisory Patent Reexamination Specialist of the Central Reexamination Unit, at telephone (571) 272-1544.

John R. Cottingham,
Director
Central Reexamination Unit

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,808	09/12/2016	8023580	3277-0114US-RXM1	2211

6449 7590 03/31/2017
ROTHWELL, FIGG, ERNST & MANBECK, P.C.
607 14th Street, N.W.
SUITE 800
WASHINGTON, DC 20005

EXAMINER	
GE, YUZHEN	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
03/31/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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ROPES & GRAY LLP

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800 BOYLSTON STREET

BOSTON, MA 02199-3600

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. 90/013,808.

PATENT NO. 8023580.

ART UNIT 3992.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

PTOL-465 (Rev.07-04)

Yuzhen Ge

Primary Examiner

Art Unit: 3992

Office Action in Ex Parte Reexamination	**Control No.** 90/013,808	**Patent Under Reexamination** 8023580	
	Examiner Yuzhen Ge	**Art Unit** 3992	**AIA (First Inventor to File) Status** No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

a.☐ Responsive to the communication(s) filed on ______ .
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ______.

b.☐ This action is made FINAL.

c.☒ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire _2_ month(s) from the mailing date of this letter.
Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**
If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☐ Information Disclosure Statement, PTO/SB/08.
3. ☐ Interview Summary, PTO-474.
4. ☐ ______.

Part II SUMMARY OF ACTION

1a. ☒ Claims _2 and 59_ are subject to reexamination.
1b. ☐ Claims ______ are not subject to reexamination.
2. ☐ Claims ______ have been canceled in the present reexamination proceeding.
3. ☐ Claims ______ are patentable and/or confirmed.
4. ☒ Claims _2 and 59_ are rejected.
5. ☐ Claims ______ are objected to.
6. ☐ The drawings, filed on ______ are acceptable.
7. ☒ The proposed drawing correction, filed on _12 September 2016_ has been (7a) ☐ approved (7b) ☒ disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the certified copies have
   1 ☐ been received.
   2 ☐ not been received.
   3 ☐ been filed in Application No. ______ .
   4 ☐ been filed in reexamination Control No. ______.
   5 ☐ been received by the International Bureau in PCT application No. ______.
   * See the attached detailed Office action for a list of the certified copies not received.
9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.
10. ☐ Other: ______

cc: Requester (if third party requester)

REEXAMINATION OF U.S. PATENT 8,023,580

I. ACKNOWLEDGMENTS

On Sep. 12, 2016, a third-party requester ("**Requester**") filed a request ("**Request**") for *ex parte* reexamination of claims 2 and 59 of US Patent 8,023,580 ("580 patent") which issued to Bremer. The 580 patent was filed on Aug. 19, 2009 with application number 12/543,910 ("910 application") and issued on Sep. 20, 2011.

On Sep. 27, 2016, the Office mailed an order granting reexamination of claims 2 and 59 of the 580 patent.

II. PRIORITY CLAIMS

Based upon a review and 580 Patent, the Examiner finds that the 580 patent, is a continuation of US Patent Application 11/774,803, filed on Jul. 9, 2007, now patent US 7,675,965, which is continuation of US Patent Application 10/412,878, filed on Apr. 14, 2003, now patent US 7,248,626, which is continuation-in-part of application 09/205,205, filed on Dec. 4, 1998, now patent US 6,614,838. The 09/205,205 application also claims priority to US provisional application 60/067,562, filed on Dec. 5, 1997.

Based upon a review of the 910 application itself, the Examiner finds that the 580 patent does not claim any foreign priority.

Because the effective filing date of the 910 application or the 580 patent is before March 16, 2013, the AIA First Inventor to File ("AIA-FITF") provisions does not apply. Instead, the earlier 'First to Invent' provisions apply.

III. PRIOR ART

i. U.S. Patent No. 5,982,807, filed on Mar. 17, 1997 and issued on Nov. 9, 1999, to Snell, J. (“Snell”).

ii. U.S. Patent No. 6,075,814, filed on May 9, 1997 and issued on Jun. 13, 2000, to Yamano, L., et al. (“Yamano”)."

iii. Andren, C. et al., “Using the PRISM™ Chip Set for Low Data Rate Applications,” Harris Semiconductor Application Note No. AN9614, March 1996 (“Harris AN9614”).

iv. “HSP3824 Direct Sequence Spread Spectrum Baseband Processor,” Harris Semiconductor File No. 4064.4, Oct. 1996 (“Harris 4064.4”).

v. Kamerman, A., “Throughput Density Constraints for Wireless LANs Based on DSSS,” IEEE 4th International Symposium on Spread Spectrum Techniques and Applications Proceedings, Mainz, Germany, Sept. 22-25, 1996, pp. 1344-1350 vol.3 (“Kamerman”).

vi. Upender et al., “Communication Protocols for Embedded Systems,” Embedded Systems Programming, Vol. 7, Issue 11, November 1994. - (“Upender”).

IV. CLAIM INTERPRETATION

During examination, claims are given the broadest reasonable interpretation consistent with the specification and limitations in the specification are not read into the claims. See MPEP § 2111 et seq.

A. Lexicographic Definitions

A first exception occurs when there is lexicographic definition in the specification. After careful review of the original specification, the prosecution history, and unless expressly noted otherwise by the Examiner below, the Examiner finds that she is unable to locate any lexicographic definitions (either express or implied) with reasonable clarity, deliberateness, and precision. Because the Examiner is unable to locate any lexicographic definitions with reasonable clarity, deliberateness, and precision, the Examiner concludes that Applicants are not their own lexicographer. See MPEP §2111.01 IV.

B. 35 U.S.C. § 112 6th Paragraph

A second exception is when a claimed phrase is interpreted in accordance with 35 U.S.C. § 112 6th paragraph. See MPEP § 2181 *et seq*. The statute, 35 U.S.C. § 112, ¶6 states:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.
>
> -- 35 U.S.C. § 112 6th Paragraph.

To invoke 35 U.S.C. § 112 6^{th} paragraph, a claimed phrase must be an element in a claim for a combination.

Claims 2 and 59 recite:

> 1. A communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave, the device comprising:
>
> a transceiver, in the role of the master according to the master/slave relationship, for sending at least transmissions modulated using at least two types

of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method, wherein each transmission comprises a group of transmission sequences, wherein each group of transmission sequences is structured with at least a first portion and a payload portion wherein first information in the first portion indicates at least which of the first modulation method and the second modulation method is used for modulating second information in the payload portion, wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion, and wherein for the at least one group of transmission sequences:

the first information for said at least one group of transmission sequences comprises a first sequence, in the first portion and modulated according to the first modulation method, wherein the first sequence indicates an impending change from the first modulation method to the second modulation method, and

the second information for said at least one group of transmission sequences comprises a second sequence that is modulated according to the second modulation method, wherein the second sequence is transmitted after the first sequence.

2. The device of claim 1, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.

Claim 59 recites:

58. A communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave, the device comprising:

a transceiver, in the role of the master according to the master/slave relationship, capable of transmitting using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method, and wherein the transceiver is configured to transmit messages with:

a first sequence, in the first modulation method, that indicates at least which of the first modulation method and the second modulation method is used for modulating a second sequence, wherein, in at least one message, the first sequence indicates an impending change from the first modulation method to the second modulation method, and wherein the at least one message is addressed for an intended destination of the second sequence, and

the second sequence, modulated in accordance with the modulation method indicated by the first sequence and, in the at least one message, modulated using the second modulation method, wherein the second sequence is transmitted after the first sequence.

59. The device of claim 58, wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.

As can be seen above, claim 2 and claim 59 are single means claims, i.e., both claim 2 and claim 59 comprise a single means, a transceiver. Because claim 2 and claim 59 are single means claims and because according to 35 U.S.C. 112 6th paragraph, only limitation or element in a claim for a combination may invoke 112 6th paragraph, the Examiner concludes that claim 2 and claim 59 do not invoke 35 USC 112 6th paragraph.

C. Sources.

Except for either (a) any lexicographic definitions noted in § IV.A of this Office action (if any); or (b), any entire claim phases that *invoke* 35 U.S.C. § 112 6th paragraph as noted in § IV.B of this Office action (if any); the Examiner hereby adopts the following interpretations under the broadest reasonable interpretation standard. In other words, the Examiner has provided the following interpretations simply as *express notice* of how she is interpreting particular terms under the broadest reasonable interpretation standard. Additionally, these interpretations are only a guide to claim terminology since claim terms must be interpreted in context of the surrounding claim language. In accordance with *In re Morris*, 127 F.3d 1048, 1056, 44 USPQ2d 1023, 1029 (Fed. Cir. 1997), the Examiner points to these other "sources" to support her interpretation of the claims. Finally, the following list is not intended to be exhaustive in any way:

1. **Modulation** -- the process by which some characteristic of a carrier is varied in accordance with a modulation wave (IPR2014-00518, Pap. 47 at p. 7; Request, p. 19).

2. **Different Types of modulation method**– modulation methods that are incompatible with one another (IPR2015-00518, Pap. 47 at p. 12, lines 18-19, Request, p. 12 and pp. 19-23).

3. **Transceiver** -- Short for a combination of transmitter/receiver (Snell, col. 1, lines 34-36).

D. Product-by-Process Claims

A third exception is for product-by-process claims. Based upon a review of the claims themselves, the Examiner concludes that claims 2 and 59 are product claims.[1]

Additionally, the Examiner notes that "the PTO and the CCPA acknowledged product-by-process claims as an exception to the general rule requiring claims to define products in terms of structural characteristics." *Atlantic Thermoplastics Co. v. Faytex Corp*., 970 F.2d 834, 845, 23 USPQ2d 1481, 1490 (Fed. Cir. 1992) (hereinafter *"Atlantic Thermoplastics v. Faytex I*"). Furthermore, the Federal Circuit "acknowledges that it has in effect recognized . . . product-by-

[1] "Product claims are claims that are directed to either machines, manufactures, or compositions of matter." MPEP § 2103 I C.

process claims as exceptional." *Atlantic Thermoplastics v. Faytex I*, 970 F.2d at 847, 23 USPQ2d at 1491.

Because of this exceptional status, the Examiner has carefully reviewed claims 2 and 59 and it is the Examiner's position that the Examined Claims *do not* contain any product-by-process limitations whether in a conventional format or otherwise. If Applicant disagrees with the Examiner, the Examiner respectfully requests Applicant in his or her next response to expressly point out any product-by-process claim(s) and their limitations so that they may be afforded their exceptional status and treated accordingly. Applicant is reminded that "even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself." *In re Thorpe*, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).[2] Failure by Applicant in his or her next response to also address this issue in accordance with 37 C.F.R. §1.111(b) or to be non-responsive to this issue entirely will be considered intent by Applicant *not* to recite any product-by-process limitations. Unless expressly noted otherwise by the Examiner, the preceding discussion on product-by-process principles applies to all Examined Claims.

V. CLAIM REJECTIONS - 35 USC § 102

The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant

[2] See also MPEP § 2113.

> for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 2 and 59 are rejected under pre-AIA 35 U.S.C. 102 (e) as being anticipated by Snell.

Regarding claim 1, Snell teaches a communication device (Abstract, Figs. 1-2 and 5-8) capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave (the transceiver of Snell is capable of such communication), the device comprising:

a transceiver (Fig. 1), in the role of the master according to the master/slave relationship, for (**all the limitations after "for" is intended use and do not further limit the structure of the transceiver, therefore is not given patentable weight**) sending at least transmissions modulated using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method, wherein each transmission comprises a group of transmission sequences, wherein each group of transmission sequences is structured with at least a first portion and a payload portion wherein first information in the first portion indicates at least which of the first modulation method and the second modulation method is used for modulating second information in the payload portion, wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion, and wherein for the at least one group of transmission sequences:

the first information for said at least one group of transmission sequences comprises a first sequence, in the first portion and modulated according to the first modulation method, wherein the first sequence indicates an impending change from the first modulation method to the second modulation method, and

the second information for said at least one group of transmission sequences comprises a second sequence that is modulated according to the second modulation method, wherein the second sequence is transmitted after the first sequence.

Regarding claim 58, Snell teaches a communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave, the device comprising: a transceiver (Fig. 1), in the role of the master according to the master/slave relationship, capable of (**the function below not performed, or is intended use, will not have patentable weight**) transmitting using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method, and wherein the transceiver is configured to transmit messages (Fig. 1, Fig. 3 and col. 6, lines 54-64) with: a first sequence, in the first modulation method, that indicates at least which of the first modulation method and the second modulation method is used for modulating a second sequence, wherein, in at least one message, the first sequence indicates an impending change from the first modulation method to the second modulation method, and wherein the at least one message is addressed for an intended destination of the second sequence, and the second sequence, modulated in accordance with the modulation method indicated by the first sequence and, in the at least one message, modulated using the second modulation method, wherein the second sequence is transmitted after the first sequence (Figs. 1, 3, col. 6, lines 54-64 and associated descriptions).

Regarding claims 2 and 59, Snell teaches the device of claim 1 and claim 58, wherein the transceiver is configured to transmit a third sequence after the second sequence (Fig. 1), wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method (**does not further limits the transceiver**, also met by Fig. 3, PLCP preamble and PLCP header is "transmitted in the first modulation method" e.g., BPSK, col. 6, lines 35-36, where the "third sequence," e.g., "SIGNAL" field in PLCP header, "indicates," e.g., using "OAh," the modulation type, e.g., BPSK, used for modulating the MPDU data of the second packet.).

VI. CLAIM REJECTIONS - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

A. Claims 2 and 59 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Snell in view of Yamano.

Regarding claim 2, as explained above in Section V, Snell teaches the transceiver as recited claims 2 and 59. To the extent that Patent Owner intends to argue that the intended use limitations should be given patentable weight, Snell teaches

a communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave (to the extent that the preamble is given patentable weight, Snell teaches it at col. 1, lines 34-46, 47-50, and 55-57, col. 4, lines 27-30, col. 4, lines 42-47 and col. 5, lines 2-7 and 18-21, Fig. 1; Harris AN9614 at p. 3, Harris AN9614 is incorporated by reference at col. 5, lines 2-7 of Snell), the device comprising:

a transceiver (Fig. 1), in the role of the master according to the master/slave relationship, for sending at least transmissions modulated using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method (Abstract, col. 1, lines 58-61, col. 2, lines 56-59, col. 2, line 61-col. 3, line 5, col. 6, lines 64-66, col. 7, lines 6-8, Figs. 2, 3, and 5; Harris 4064.4 at 14-16, Harris 4064 is incorporated by reference at col. 5, lines 11-17 of Snell), wherein each transmission comprises a group of transmission sequences, wherein each group of transmission sequences is structured with at least a first portion and a payload portion (col. 6, lines 35-36, col. 6, lines 64-66 and col. 7, lines 5-14, Fig. 3), wherein first information in the first portion indicates at least which of the first modulation method and the second modulation method is used for modulating second information in the payload portion (col. 6, lines 35-36, 52-59 and 64-66 and col. 7, lines 1-2 and 5-14, Fig. 3; Harris 4064.4 at pp. 15-16 and Fig. 10), and

wherein for the at least one group of transmission sequences:

the first information for said at least one group of transmission sequences comprises a first sequence, in the first portion and modulated according to the first modulation method, wherein the first sequence indicates an impending change from the first modulation method to the second modulation method (Snell, col. 2, line 61-col. 3, line 5, col. 6, lines 35-36 and 64-66, col. 7, lines 1-2 and 5-14, Figs. 2, 3, and 5, and Harris 4064.4 at 15-16, Fig. 10) and

the second information for said at least one group of transmission sequences comprises a second sequence that is modulated according to the second modulation method, wherein the second sequence is transmitted after the first sequence (Snell, col. 2, line 61-col. 3, line 5, col. 6, lines 35-36 and 64-66, col. 7, lines 1-2 and 5-14, Figs. 2, 3, and 5, and Harris 4064.4 at 15-16, Fig. 10).

wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method (col. 1, lines 55-57, col. 2, lines 27-30 and 61-63, col. 6, lines 35-36, 52-59 and 64-66, col. 7, lines 1-2 and 5-14, Fig. 3, PLCP preamble and PLCP header is "transmitted in the first modulation method" e.g., BPSK, col. 6, lines 35-36, the data can be modulated according to a method different from BPSK, then a "third sequence," with its "SIGNAL" field in PLCP header, "indicates," e.g., using "OAh," the modulation type, e.g., BPSK, for modulating the MPDU data of the next packet or the third sequence).

However Snell does not expressly teach wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion.

Yamano discloses transmitting a group of transmission sequences or messages, including a preamble and main body, and that the preamble includes a destination address “for an intended destination of the payload portion.” (Fig. 8, col. 19, 63-64, col. 20, lines 1-7 and 54-59).

Snell and Yamano are in the same field of art, with both relating to transmitting data packets over a network (see, e.g., Snell at 1:55-58, 2:61-63, 2:66-3:3, 5:18-21, 6:48-63, Fig. 3; Yamano at 1:1-29, 19:54-20:33, Fig. 8), at varying rates (see, e.g., Snell at 2:15-17, 6:52-59; Yamano at 19:54-56). It was well-known in the art, as demonstrated by Yamano, that packets can be advantageously addressed for an intended destination. A person of ordinary skill in the art would have been motivated and found it obvious to use Yamano’s teaching of including a destination address in the data packet in implementing Snell’s teachings of a communication system for transmitting data packets to advantageously specify which receiver the data is intended for and to beneficially reduce processing requirements of receiving devices by allowing the receiving device to filter out packets which it does not need to demodulate.

The combination of Snell and Yamano is also supported by KSR Rationale (C), “Use of known technique to improve similar devices (methods, or products) in the same way” (see MPEP 2143) because the method of including a destination address of Yamano can be used to improve the system of Snell so that the receiving device of Snell can filter out packets which it does not need to demodulate.

Regarding claim 59, as explained above in Section VII, Snell teaches the transceiver as recited claim 59. To the extent that Patent Owner intends to argue that the intended use limitations should be given patentable weight, Snell teaches

Snell teaches a communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave, the device comprising: a transceiver (to the extent that the preamble is given patentable weight, Snell teaches it at col. 1, lines 34-46, 47-50, and 55-57, col. 4, lines 27-30, col. 4, lines 42-47 and col. 5, lines 2-7 and 18-21, Fig. 1, Harris AN9614 at p. 3, Harris AN9614 is incorporated by reference at col. 5, lines 2-7 of Snell), in the role of the master according to the master/slave relationship, capable of transmitting using at least two types of modulation methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method (Abstract, col. 1, lines 58-61, col. 2, lines 56-59, col. 2, line 61-col. 3, line 5, col. 6, lines 64-66, col. 7, lines 6-8, Figs. 2, 3, and 5; Harris 4064.4 at 14-16, Harris 4064 is incorporated by reference at col. 5, lines 11-17 of Snell), and wherein the transceiver is configured to transmit messages (Fig. 1, Fig. 3 and col. 6, lines 54-64) with: a first sequence, in the first modulation method, that indicates at least which of the first modulation method and the second modulation method is used for modulating a second sequence, wherein, in at least one message, the first sequence indicates an impending change from the first modulation method to the second modulation method (col. 6, lines 35-36, 52-59 and 64-66 and col. 7, lines 1-2 and 5-14, Fig. 3; Harris 4064.4 at pp. 15-16 and Fig. 10), and the second sequence, modulated in accordance with the modulation method indicated by the first sequence and, in the at least one message, modulated using the second modulation method, wherein the second sequence is transmitted after the first sequence (col. 6, lines 35-36, 52-59 and 64-66 and col. 7, lines 1-2 and 5-14, Fig. 3; Harris 4064.4 at pp. 15-16 and Fig. 10).

wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method (col. 1, lines 55-57, col. 2, lines 27-30 and 61-63, col. 6, lines 35-36, 52-59 and 64-66, col. 7, lines 1-2 and 5-14, Fig. 3, PLCP preamble and PLCP header is "transmitted in the first modulation method" e.g., BPSK, col. 6, lines 35-36, the data can be modulated according to a method different from BPSK, then a "third sequence," with its "SIGNAL" field in PLCP header, "indicates," e.g., using "OAh," the modulation type, e.g., BPSK, for modulating the MPDU data of the next packet or the third sequence.).

However Snell does not expressly teach wherein the at least one message is addressed for an intended destination of the second sequence.

Yamano discloses transmitting a group of transmission sequences or messages, including a preamble and main body, and that the preamble includes a destination address "for an intended destination of the payload portion." (Fig. 8, col. 19, 63-64, col. 20, lines 1-7 and 54-59).

Snell and Yamano are in the same field of art, with both relating to transmitting data packets over a network (see, e.g., Snell at 1:55-58, 2:61-63, 2:66-3:3, 5:18-21, 6:48-63, Fig. 3; Yamano at 1:1-29, 19:54-20:33, Fig. 8), at varying rates (see, e.g., Snell at 2:15-17, 6:52-59; Yamano at 19:54-56). It was well-known in the art, as demonstrated by Yamano, that packets can be advantageously addressed for an intended destination. A person of ordinary skill in the art would have been motivated and found it obvious to use Yamano's teaching of including a destination address in the data packet in implementing Snell's teachings of a communication system for transmitting data packets to advantageously specify which receiver the data is intended for and to beneficially reduce processing requirements of receiving devices by allowing the receiving device to filter out packets which it does not need to demodulate.

The combination of Snell and Yamano is also supported by KSR Rationale (C), "Use of known technique to improve similar devices (methods, or products) in the same way" (see MPEP 2143) because the method of including a destination address can be used to improve the system of Snell so that the receiving device of Snell can filter out packets which it does not need to demodulate.

B. Claims 2 and 59 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Snell in view of Yamano further in view Kamerman.

As explained in Section VI.A above, the Examiner believe Snell in view of Yamano teaches claims 2 and 59 including the limitation wherein the transceiver is configured to transmit a third sequence after the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.

To the extent that the Patent Owner disagrees, Kamerman discloses an automatic rate selection scheme for reverting (e.g. falling back) from a "second modulation method" (e.g., QPSK) corresponding to a higher data rate (e.g., 2Mbits/s) to a "first modulation method" (e.g., BPSK) corresponding to a lower data rate (e.g., 1 Mbit/s) after unacknowledged packet transmissions, for instance where there is a high load in neighbor cells causing cochannel interference (pp. 6, 11 and 12). Kamerman further teaches:

> IEEE 802.11 DS specifies BPSK and QPSK, in addition there could be applied proprietary modes with M-PSK and QAM schemes that provide higher bit rates by encoding more bits per symbol.... An automatic rate selection scheme based on the reliability of the individual uplink and downlink could be applied. The basic rate adaptation scheme could be: after unacknowledged packet transmissions the rate falls back, and after a number (e.g. 10) of successive correctly acknowledged packet transmissions the bit rate goes up.
>
> - Kamerman at p. 11.

> At lower load in the neighbor cells the highest bit rate can be used more often. At higher load the transmissions from the access point to stations at the outer part of the cells, will be done often at fallback rates due to mutilation of transmissions by interference. In practice the network load for LANs at nowadays client-server applications is very bursty, with sometimes transmission bursts over an individual links and low activity during the major part of the time. Therefore the higher bit rate can be used during the most of the time, and at high load in the neighbor cells (as will evoked by test applications) there will be switched to fall back rates in the outer part of the cell.
>
> - Kamerman at p. 11.

> The application of proprietary bit rates of 3 and 4 Mbps in addition to the basic 1 and 2 Mbps, can be combined with an automatic rate selection. This automatic rate selection gives fall forward at reliable connections and fall back at strong cochannel interference.
>
> - Kamerman at p. 12.

Snell and Kamerman are in the same field of art, with both relating to communications between transceivers that use BPSK and QPSK modulation methods to transfer data at different rates according to the draft IEEE 802.11 standard available at that time.

Therefore it was well-known in the art, as demonstrated in the above cited sections of Kamerman, to transmit a data packet where the data is modulated using a second modulation method, such as QPSK (corresponding to a higher data transfer rate), after unacknowledged packet (third sequence) transmissions or after a number (e.g. 10) of successive correctly acknowledged packet transmissions, to next transmit other data packets where the data is modulated using a first modulation method, such as BPSK (corresponding to a lower data transfer rate) (i.e., to revert to the first modulation method) (Kamerman at 6, 11 and 12).

A person of ordinary skill in the art would have been motivated and found it obvious to use Kamerman's teaching of transmitting a first data packet where the data is modulated using a second modulation method and next transmitting a second data packet where the data is modulated using a first modulation method in implementing Snell's system for communicating data packets modulated according to different modulation methods to advantageously maximize the data transfer rate and adapt to changing channel conditions (as also taught by Kamerman at 6 and 11-12). In particular, Kamerman expressly teaches that it is beneficial to transmit the data of a first data packet using a second modulation method corresponding to a higher data transfer rate (e.g., QPSK modulation at 2 mbps) during lower load conditions to maximize the data transfer rate during lower load conditions when the connection is more reliable and to next transmit the data of a second data packet using a first modulation method corresponding to a lower data transfer rate (e.g., BPSK modulation at 1 mbps) (i.e., falling back) during higher load conditions when a more robust signal is needed due to “mutilation of transmissions by interference.” (Kamerman at 6 and 11-12).

The combination of Snell and Kamerman is also supported by KSR Rationale (C), “Use of known technique to improve similar devices (methods, or products) in the same way” (see MPEP 2143) because the method of Kamerman of reverting from a "second modulation method" corresponding to a higher data rate to a "first modulation method" can be used to improve the system of Snell to advantageously maximize the data transfer rate and adapt to changing channel conditions

VII. NOTICE RE PATENT OWNER'S CORRESPONDENCE ADDRESS

37 C.F.R. § 1.33(c) states:

> (c) All notices, official letters, and other communications for the patent owner or owners in a reexamination or supplemental examination proceeding will be directed to the correspondence address in the patent file.

The correspondence address for any pending reexamination proceeding not having the same correspondence address as that of the patent is, by way of this revision to 37 CFR 1.33(c), <u>automatically changed to that of the patent file as of the effective date.</u>

This change is effective for any reexamination proceeding which is pending before the Office as of May 16, 2007, including the present reexamination proceeding, and to any reexamination proceeding which is filed after that date.

Parties are to take this change into account when filing papers, and direct communications accordingly.

In the event the patent owner's correspondence address listed in the papers (record) for the present proceeding is different from the correspondence address of the patent, it is strongly encouraged that the patent owner affirmatively file a Notification of Change of Correspondence Address in the reexamination proceeding and/or the patent (depending on which address patent owner desires), to conform the address of the proceeding with that of the patent and to clarify the record as to which address should be used for correspondence.

Telephone Numbers for reexamination inquiries:

Reexamination	(571) 272-7703
Central Reexam Unit (CRU)	(571) 272-7705

VIII. CONCLUSION

In order to ensure full consideration of any amendments, affidavits or declarations, or other documents as evidence of patentability, such documents must be submitted in response to this Office action. Submissions after the next Office action, which is intended to be a final action, will be governed by the requirements of 37 CFR 1.116, after final rejection and 37 CFR 41.33 after appeal, which will be strictly enforced.

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that ex parte reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in ex parte reexamination proceedings are provided for in 37 CFR 1.550(c).

Patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a), to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the '285 patent throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286. The third party requester is similarly apprised of the ability to disclose such proceedings.

All correspondence relating to this ex parte reexam proceeding should be directed as follows:

By **U.S. Postal Service Mail** to:
Mail Stop Ex Parte Reexam
ATTN: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to:
(571) 273-9900
Central Reexamination Unit

By hand to:
Customer Service Window
Randolph Building
401 Dulany St.
Alexandria, VA 22314

Registered users of EFS-Web may alternatively submit correspondence via the electronic filing system at https://efs.uspto.gov/efile/nwportal/efs-registered

Any inquiry concerning this communication or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed:

/Yuzhen Ge /
Primary Examiner
Central Reexamination Unit 3992
(571) 272-7636

Conferees:

/Colin LaRose/

/Kenneth J. Whittington/
Primary Examiner, Art Unit 3992

Reexamination	Application/Control No. 90013808	Applicant(s)/Patent Under Reexamination 8023580
	Certificate Date	**Certificate Number**

Requester Correspondence Address: ☐ **Patent Owner** ☒ **Third Party**

ROPES & GRAY LLP
IPRM DOCKETING - FLOOR 43
PRUDENTIAL TOWER
800 BOYLSTON STREET
BOSTON, MA 02199-3600

LITIGATION REVIEW ☒	/YG/ (examiner initials)	09/20/2016 (date)

Case Name	Director Initials
Rembrandt Wireless Techs., LP v. SamsungElecs. Co., C.A. No.	
Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., C.A. No.	

COPENDING OFFICE PROCEEDINGS

TYPE OF PROCEEDING	NUMBER
1. None	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90013808	8023580
	Examiner	**Art Unit**
	YUZHEN GE	3992

CPC- SEARCHED

Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED

Symbol	Date	Examiner

US CLASSIFICATION SEARCHED

Class	Subclass	Date	Examiner

SEARCH NOTES

Search Notes	Date	Examiner
Review prosecution history of the patent file.	12/20/2016	/YG/

INTERFERENCE SEARCH

US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,808	09/12/2016	8023580	3277-0114US-RXM1	2211

6449 7590 04/03/2017

ROTHWELL, FIGG, ERNST & MANBECK, P.C.
607 14th Street, N.W.
SUITE 800
WASHINGTON, DC 20005

EXAMINER	
GE, YUZHEN	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
04/03/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patents and Trademark Office
P.O.Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS
ROPES & GRAY LLP
PRUDENTIAL TOWER IPRM DOCKETING -FLOOR 43
800 BOYLSON STREET
BOSTON, MA 02199-3600

Date:

APR 03 2017

CENTRAL REEXAMINATION UNIT

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90013808
PATENT NO. : 8023580
ART UNIT : 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Decision on Petition(s) Decided Under 37 C.F.R. 1.181	Control No.:90/013,808

APR 03 2017

CENTRAL REEXAMINATION UNIT

1. THIS IS A DECISION ON THE PETITION Filed by:
☒ Patent Owner ☐ Third Party Requester on February 9, 2017.

and the OPPOSITION PETITION Filed by:
☐ Patent Owner ☐ Third Party Requester on__________.

2. THIS DECISION IS ISSUED PURSUANT TO 37 CFR 1.181.

The petition is before the Director of the Central Reexamination Unit for consideration.

3. RELIEF REQUESTED

The relief requested is: to strike from the record the January 24, 2017 Office action and to reissue a new non-final Office action.

4. FORMAL MATTERS
A. ☒ Petition fee per 37 CFR §1.20(c)(6):
   i. ☐ Petition includes authorization to debit a deposit account.
   ii. ☒ Petition includes authorization to charge a credit card account.
   iii. ☐ Other: _________.
B. ☒ Proper certificate of service was provided. (Not required in reexamination where patent owner is requester.)
C. ☒ Petition properly signed.

5. The Petition filed February 9, 2017 is **Dismissed** for the following reasons:
   i. ☐ Formal matters (See unchecked box(es) (A, B and/or C) in section 4 above).
   ii. ☐ The petition is premature since there has been no decision by the Office as to whether the submission by ☐ Patent Owner ☐ Third Party Requester is in compliance with Office Rules and procedures.
   iii. ☐ The petition is untimely since the petition was filed more than 2 months from the action by the Office dated ____________ from which relief is requested (37 CFR 1.181(f)).
   iv. ☒ The petition is **moot** since the ultimate relief requested by petitioner was already granted in the *sua sponte* decision mailed March 27, 2017 which vacated the January 24, 2017 Office action and the new non-final Office action mailed March 31, 2017.
   v. ☐ Other/comment:____________.

6. ☐ The Opposition Petition filed ______ by __________is ________in view of the dismissal of the petition(s) for the reasons identified above.

7. **STATUS: A new non-final Office action was mailed to Patent Owner on March 31, 2017.**

Telephone inquiries with regard to this decision should be directed to Stephen J. Stein at 571-272-1544 in the Central Reexamination Unit.

Stephen Stein

Stephen J. Stein
[*Signature*]

Supervisory Patent Reexamination Specialist
Central Reexamination Unit
(Title)

U.S. Patent and Trademark Office
PTOL-2307 (Rev. 04-2012)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In *Ex Parte* Reexamination of	:	Group Art Unit: 2633
Gordon F. BREMER	:	
Patent No.: 8,023,580 B2	:	Control No.: 90/013,808
Issued: September 20, 2011	:	

Reexam Request Filed: September 12, 2016

For: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

Attn: Mail Stop "*Ex Parte* Reexam"
Central Reexamination Unit
Office of Patent Legal Administration
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PATENT OWNER'S REQUEST FOR AN EXTENSION OF TIME UNDER 37 C.F.R. § 1.550(c) TO FILE ITS RESPONSE TO THE MARCH 31, 2017 OFFICE ACTION PURSUANT TO 35 U.S.C. § 305

Pursuant to 37 C.F.R. § 1.550(c), Patent Owner Rembrandt respectfully requests an extension of time to file its Response in *Ex Parte* Reexamination of U.S. Patent 8,023,580 ("'580 Patent") to the Office Action mailed March 31, 2017 ("March 31 Office Action.") More specifically, Rembrandt requests an extension of time until two months after Patent Owner's Response to the March 31 Office Action is due. This is Rembrandt's first request for an extension of time to respond to the March 31 Office Action.

Earlier this week, the U.S. Court of Appeals for Federal Circuit issued an opinion (attached as Exhibit A) involving the '580 patent. *Rembrandt Wireless Technologies, LP, v. Samsung Electronics Co., Ltd.*, No. 2016-1729 (Fed. Cir. April 17, 2017). The Federal Circuit's opinion addresses claim construction issues that are relevant to these reexamination proceedings.

Slip op. 6-9. For example, the Federal Circuit's opinion found that the prosecution history of the '580 patent contains an ***unambiguous*** definition of the term "modulation method … of a different type." Slip op. at 7 ("Here, the clearest statement in the intrinsic record regarding the meaning of the different types limitation is the descriptive statement the applicant made to the examiner when he inserted the limitation into the claims. Samsung's arguments to the contrary do not diminish this unambiguous statement in the prosecution history.").

Based on this unambiguous definition, the Federal Circuit determined that "modulation method … of a different type" in the claims mean "different families of modulation techniques…," as defined in the prosecution history. Slip op. at 9. With respect to claim construction, the Federal Circuit's opinion is at odds with the March 31 Office Action (stating at p. 4 that the Examiner failed to locate any definitions in the prosecution history "with reasonable clarity, deliberateness, and precision") and the PTAB's Final Written Decision in IPR2014-00518 (relied on at p.7 of the March 31 Office Action, and finding the applicant's definition in the prosecution history "at best, ***ambiguous***")('518 IPR, Pap. 47, at 9)(emphasis added).

With respect to obviousness, the Federal Circuit's opinion analyzed U.S. Patent No. 5,706,428 to Boer et al. ("Boer et al.") and Upender et al., "Communication Protocols for Embedded Systems" ("Upender"), and found that there was substantial evidence of nonobviousness. Slip op. at 9-14. Boer et al. is extremely similar to U.S. Patent No. 5,982,807 to Snell ("Snell"), which is at issue in this reexamination proceeding. For example, both references propose similar extensions to what became known as the 802.11 standard (or WiFi), namely adding two higher data rates to the 1MB/s and 2MB/s data rates in the standard, and both references use the packet structure defined by the standard, including packet headers with the same fields. *See* Boer et al. at Abstract, Fig. 4, 3:56-4:24; Snell at Fig. 3, 5:30-53, 6:48-7:14. In addition, Boer et al. is strikingly similar to the portion of Kamerman, A., "Throughput Density Constraints for Wireless LANs Based on DSSS" ("Kamerman") at issue in these reexamination proceedings. *Compare* Boer et al. at Fig. 7, 7:11-8:15 *with* Kamerman at 11. This is not surprising, given that Kamerman was a named co-inventor on the Boer et al. patent. Thus, the Federal Circuit's analysis of Boer et al. is directly relevant to Snell and Kamerman, which are at issue in this reexamination proceeding.

While Patent Owner has been diligently preparing its response to the March 31 Office Action since the time it issued, those efforts occurred without consideration of the Federal Circuit's recent opinion on the '580 patent. At this point, Patent Owner needs additional time to consider the implications of the Federal Circuit's opinion to the claim construction and obviousness issues raised in these reexamination proceedings, and to revise and rework its positions opposing the rejections in the March 31 Office Action in a manner that is consistent with the findings of the Federal Circuit. Given that the Examiner issued the March 31 Office Action without the benefit of the Federal Circuit's opinion, Patent Owner's response to the Office Action will be the first paper in these reexamination proceedings to address this Federal Circuit's opinion. Granting Patent Owner's request for an extension of time will permit the Patent Owner to fully analyze the Federal Circuit's opinon and present its response in a way that sheds light on how issues such as claim construction and obviousness should be addressed by the PTO. Thus, granting Patent Owner's request for an extension of time may eliminate or simplify the work of both the Patent Owner and the PTO with respect to this reexamination.

While Patent Owner recognizes the need to handle reexaminations with "special dispatch," there is no reason to deny Patent Owner a fair opportunity to respond to yet another challenge to the patentability of its claims 2 and 59. Thus, to the extent Samsung has argued that this matter is particularly urgent (see Request at i-ii), Patent Owner notes that Samsung has offered no reason why it could not have submitted the references submitted in this *ex parte* reexamination as early as March 20, 2014, when Samsung first challenged the patentability of claims 2 and 59. Thus, Samsung's plea for expediting this case more than is called for by the "special dispatch" requirement should be ignored.

Statement of Facts Relevant to Petition

In addition to the facts identified above, the following facts are relevant to the PTO's consideration of Patent Owner's request for an extension of time to respond to the March 31 Office Action.

1) On September 12, 2016, following its repeated failure to successfully attack claims 2 and 59 of the '580 Patent in multiple IPRs and after the conclusion of a district court action involving the '580 Patent that has been pending since March 2013, Samsung requested this *ex parte* reexamination attacking the same claims it was unable to defeat during the IPRs or during the district court litigation ("Samsung's Request").
2) On September 30, 2016, Rembrandt filed a petition asking the Director to exercise her discretion under 35 U.S.C.§325(d) to deny the petition based on multiple proceedings attacking the same claims and the lack of any reason why Samsung should have yet another opportunity to attack the same claims. That petition was dismissed on November 28, 2016.
3) On September 27, 2016, the Office granted Samsung's Request.
4) On January 24, 2017, the Office issued a non-final Office Action ("January 24 Office Action.")
5) On February 9, 2017, Rembrandt filed its Petition Requesting the Director To Exercise Her Supervisory Authority Pursuant to 37 C.F.R. § 1.181(a)(1) and/or § 1.182. In the February 9

Petition, Rembrandt has requested that the Director require that the January 24 Office Action be vacated because, *inter alia*, it contained a discussion of matters outside the scope of *ex parte* reexamination.

6) On March 27, 2017, the Director issued a letter vacating the January 24, 2017.

7) On March 31, 2017, the Office issued a new Office Action, which rejects claims 2 and 59 of the '580 patent as (i) anticipated by Snell, (ii) obvious over Snell and Yamano, and (iii) obvious over Snell, Yamano and Kamerman.

8) On April 17, 2017, the Federal Circuit issued an opinion on the '580 patent. The Federal Circuit's opinion addresses claim construction and obviousness issues that are relevant to these reexamination proceedings.

For the reasons discussed above, Patent Owner is requesting a two month extension to provide it time to consider the implications of the Federal Circuit's opinion to the claim construction and obviousness issues raised in these reexamination proceedings, and to revise and rework its positions opposing the rejections in the March 31 Office Action in a manner that is consistent with the findings of the Federal Circuit.

The petition fee of $200 set forth in 37 C.F.R. § 1.17(g) for filing a petition for an extension of time under 37 C.F.R. § 1.1550(c) together with any additional fees that may be due with respect to this paper may be charged to Counsel's Deposit Account No. 02-2135.

Respectfully submitted,

Date: April 20, 2017 By: /Michael V. Battaglia/

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Attorney for Petitioner Rembrandt Wireless Technologies, LP

cc: Nancy J. Linck, Ph.D.
Counsel for Rembrandt Wireless Technologies, LP

CERTIFICATE OF SERVICE

It is hereby certified that on this 20th day of April, 2017, the foregoing **PATENT OWNER'S REQUEST FOR AN EXTENSION OF TIME UNDER 37 C.F.R. § 1.550 TO FILE ITS RESPONSE PURSUANT TO 35 U.S.C. § 305** was served, by first-class U.S. Mail, on the attorney of record for the third-party Requesters Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc., at the following address:

J. Steven Baughman, Esq.
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/Michael V. Battaglia/
Michael V. Battaglia
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cc: Nancy J. Linck, Ph.D.
Counsel for Rembrandt Wireless Technologies, LP

Electronic Patent Application Fee Transmittal

Application Number:	90013808
Filing Date:	12-Sep-2016
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Filer:	Michael Vincent Battaglia/Tamika Miles
Attorney Docket Number:	3277-0114US-RXM1

Filed as Large Entity

Filing Fees for **ex parte reexam**

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
PETITION FEE- 37 CFR 1.17(G) (GROUP II)	1463	1	200	200
Miscellaneous:				
		Total in USD ($)		**200**

Electronic Acknowledgement Receipt

EFS ID:	28978506
Application Number:	90013808
International Application Number:	
Confirmation Number:	2211
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Customer Number:	6449
Filer:	Michael Vincent Battaglia/Tamika Miles
Filer Authorized By:	Michael Vincent Battaglia
Attorney Docket Number:	3277-0114US-RXM1
Receipt Date:	20-APR-2017
Filing Date:	12-SEP-2016
Time Stamp:	12:28:03
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$200
RAM confirmation Number	042017INTEFSW00012469022135
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Request_for_Extension_of_Time.pdf	131416 9ad56b82c0caa9b199b615788e37082c2437cd0b	yes	7

Multipart Description/PDF files in .zip description

Document Description	Start	End
Reexam Request for Extension of Time	1	6
Reexam Certificate of Service	7	7

Warnings:

Information:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
2	Reexam Miscellaneous Incoming Letter	Exhibit_A.pdf	297060 9a2727943bd608d502023f92d97c48a3034bd66a	no	28

Warnings:

Information:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
3	Fee Worksheet (SB06)	fee-info.pdf	30685 e27bf7f26755896 56e397b1c99c47587841161e5	no	2

Warnings:

Information:

Total Files Size (in bytes):	459161

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In *Ex Parte* Reexamination of	:	Group Art Unit: 3992
Gordon F. BREMER	:	
Patent No.: 8,023,580 B2	:	Control No.: 90/013,808
Issued: September 20, 2011	:	

Reexam Request Filed: September 12, 2016

For: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

Mail Stop *Ex Parte* Reexam
ATTN: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUBMISSION PURSUANT TO 37 C.F.R. § 1.565(A)

Pursuant to 37 C.F.R. § 1.565(a), Patent Owner Rembrandt respectfully submits a copy of a Federal Circuit decision (attached as Exhibit A) for prompt entry into the record of the reexamination file. The decision (i.e., *Rembrandt Wireless Technologies, LP, v. Samsung Electronics Co., Ltd.*, No. 2016-1729 (Fed. Cir. April 17, 2017)) involves U.S. Patent No. 8,023,580 and is to the merits of the patent claims. Patent Owner respectfully requests that the examiner consider the content of the decision when the reexamination proceeding comes up for action on the merits. *See* MPEP § 2282.

Any fee required for submission of this Petition may be charged to Counsel's Deposit Account Number 02-2135.

Respectfully submitted,

Date: April 20, 2017 By: /Michael V. Battaglia/

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Attorney for Petitioner
Rembrandt Wireless Technologies, LP

cc: Nancy J. Linck, Ph.D.
Counsel for Rembrandt Wireless Technologies, LP

CERTIFICATE OF SERVICE

It is hereby certified that on this 20th day of April, 2017, the foregoing **SUBMISSION PURSUANT TO 37 C.F.R. § 1.565(A)** was served, by first-class U.S. Mail, on the attorney of record for the third-party Requesters Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc., at the following address:

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/Michael V. Battaglia/
Michael V. Battaglia
Reg. No. 64,932

cc: Nancy J. Linck, Ph.D.
Counsel for Rembrandt Wireless Technologies, LP

Exhibit A

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

NOTICE OF ENTRY OF JUDGMENT ACCOMPANIED BY OPINION

OPINION FILED AND JUDGMENT ENTERED: 04/17/2017

The attached opinion announcing the judgment of the court in your case was filed and judgment was entered on the date indicated above. The mandate will be issued in due course.

Information is also provided about petitions for rehearing and suggestions for rehearing en banc. The questions and answers are those frequently asked and answered by the Clerk's Office.

Each side shall bear its own costs.

Regarding exhibits and visual aids: Your attention is directed Fed. R. App. P. 34(g) which states that the clerk may destroy or dispose of the exhibits if counsel does not reclaim them within a reasonable time after the clerk gives notice to remove them. (The clerk deems a reasonable time to be 15 days from the date the final mandate is issued.)

FOR THE COURT

/s/ Peter R. Marksteiner
Peter R. Marksteiner
Clerk of Court

16-1729 - Rembrandt Wireless v. Samsung Electronics
United States District Court for the Eastern District of Texas, Case No. 2:13-cv-00213-JRG

United States Court of Appeals for the Federal Circuit

REMBRANDT WIRELESS TECHNOLOGIES, LP,
Plaintiff-Appellee

v.

SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC., SAMSUNG TELECOMMUNICATIONS AMERICA, LLC,
Defendants-Appellants

SAMSUNG AUSTIN SEMICONDUCTOR, L.L.C., RESEARCH IN MOTION CORPORATION, RESEARCH IN MOTION LTD.,
Defendants

2016-1729

Appeal from the United States District Court for the Eastern District of Texas in No. 2:13-cv-00213-JRG, Judge J. Rodney Gilstrap.

Decided: April 17, 2017

MICHAEL F. HEIM, Heim, Payne & Chorush, LLP, Houston, TX, argued for plaintiff-appellee. Also represented by ERIC J. ENGER, MIRANDA Y. JONES; DEMETRIOS ANAIPAKOS, AMIR H. ALAVI, JAMIE ALAN AYCOCK, ALISA A.

LIPSKI, Ahmad, Zavitsanos, Anaipakos, Alavi & Mensing PC, Houston, TX.

JESSE J. JENNER, Ropes & Gray LLP, New York, NY, argued for defendants-appellants. Also represented by DOUGLAS HALLWARD-DRIEMEIER, Washington, DC; GABRIELLE E. HIGGINS, East Palo Alto, CA; BRIAN P. BIDDINGER, Quinn Emanuel Urquhart & Sullivan, LLP, New York, NY.

Before TARANTO, CHEN, and STOLL, *Circuit Judges*.

STOLL, *Circuit Judge*.

A jury found that Samsung infringed Rembrandt's asserted patents, which the jury also found not invalid over prior art cited by Samsung. The jury awarded Rembrandt $15.7 million in damages. After trial, Samsung moved for judgment as a matter of law on obviousness and damages, which the district court denied. Samsung appeals the district court's denial of JMOL, as well as the district court's claim construction order and an order denying Samsung's motion to limit Rembrandt's damages for alleged failure to mark patented articles.

Because we agree with the district court's challenged claim construction and its denial of Samsung's JMOL motions, we affirm those decisions. We disagree, however, with the district court's denial of Samsung's motion based on the marking statute, and we vacate that decision and remand for proceedings consistent with this opinion.

BACKGROUND

Rembrandt Wireless Technologies, LP, sued Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Telecommunications America, LLC in the United States District Court for Eastern District of Texas on March 15, 2013 for infringement of two patents that share a specification: U.S. Patent No. 8,023,580 and a continuation patent, U.S. Patent No. 8,457,228. These patents claim priority to a provisional application filed on December 5, 1997, and relate to "a system and method of communication in which multiple modulation methods are used to facilitate communication among a plurality of modems in a network, which have heretofore been incompatible." '580 patent col. 2 ll. 17–20. The patents explain that in the prior art "a transmitter and receiver modem pair can successfully communicate only when the modems are compatible at the physical layer." *Id.* at col. 1 ll. 27–29. As a result, "communication between modems is generally unsuccessful unless a common modulation method is used." *Id.* at col. 1 ll. 45–47. Particularly with modems communicating via master/slave protocol, the patents explain that "[i]f one or more of the trib modems [slaves] are not compatible with the modulation method used by the master, those tribs will be unable to receive communications from the master." *Id.* at col. 1 ll. 58–61. To overcome the challenges described in the prior art, the patents propose using the first section of a transmitted message (the message "header") to indicate the modulation method being used for the substance of the message (the message "payload").

Claim 2 of the '580 patent, which is dependent upon claim 1, is representative:

> 1. A communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave, the device comprising:
>
>> a transceiver, in the role of the master according to the master/slave relationship, for sending at least transmissions modulated using at least *two types of modula-*

tion methods, wherein the at least two types of modulation methods comprise a first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method, wherein each transmission comprises a group of transmission sequences, wherein each group of transmission sequences is structured with at least a first portion and a payload portion wherein first information in the first portion indicates at least which of the first modulation method and the second modulation method is used for modulating second information in the payload portion, wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion, and wherein for the at least one group of transmission sequences:

the first information for said at least one group of transmission sequences comprises a first sequence, in the first portion and modulated according to the first modulation method, wherein the first sequence indicates an impending change from the first modulation method to the second modulation method, and

the second information for said at least one group of transmission sequences comprises a second sequence that is modulated according to the second modulation method, wherein the second sequence is transmitted after the first sequence.

2. The device of claim 1, wherein the transceiver is configured to transmit a third sequence after

> the second sequence, wherein the third sequence is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method.

Id. at col. 7 l. 53 – col. 8 l. 24 (emphasis added to show dispute). Relevant here, the district court construed "modulation method [] of a different type" as "different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods." *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co.*, No. 2:13-CV-213-JRG-RSP, 2014 WL 3385125, at *15 (E.D. Tex. July 10, 2014) (*Claim Construction Order*).

Rembrandt alleged at trial that Samsung devices incorporating the Bluetooth enhanced data rate ("EDR") standard infringed its patents. After a five-day trial, the jury found that Samsung infringed Rembrandt's patents, and that the patents were valid over the prior art Samsung presented. The jury awarded Rembrandt $15.7 million in damages. The district court denied Samsung's post-trial motions for judgment as a matter of law—on both liability and on damages—and entered final judgment.

Samsung appeals, and we have jurisdiction under 28 U.S.C. § 1295(a)(1).

Discussion

Samsung appeals several issues: (1) the district court's construction of the "different types" limitation; (2) the district court's denial of JMOL of obviousness; (3) the district court's denial of Samsung's *Daubert* motion, motions for a new trial, and motion for JMOL on damages; and (4) the district court's denial of Samsung's motion to limit damages based on Rembrandt's purported failure to mark products embodying the '580 patent. Samsung does not appeal the jury's finding of infringement. We address each issue in turn.

I. Claim Construction

Samsung disputes the district court's construction of "modulation method [] of a different type." The district court construed this limitation as "different families of modulation techniques, such as the FSK [frequency-shift keying] family of modulation methods and the QAM [quadrature amplitude modulation] family of modulation methods." *Claim Construction Order*, 2014 WL 3385125, at *15. We review claim constructions based solely on the intrinsic record, as here, de novo. *Shire Dev., LLC v. Watson Pharm., Inc.*, 787 F.3d 1359, 1364 (Fed. Cir. 2015) (quoting *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 840–42 (2015)).

The district court arrived at its construction relying on the applicant's characterization of the "different types" term in the prosecution history. During prosecution of the '580 parent patent, the applicant inserted the "different types" limitation into its claims after the examiner had already issued a notice of allowance. In the applicant's contemporaneous remarks to the examiner, he indicated that he inserted the limitation into the independent claims to "more precisely claim the subject-matter." J.A. 2234. The applicant explained:

> Applicant has further amended [its] claims . . . with additional recitations to more precisely claim the subject matter. For example, the language of independent claim 1 has been clarified to refer to two *types* of modulation methods, i.e., different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods.

Id.

Samsung disputes the court's construction, arguing that it improperly affords dispositive weight to a single self-serving statement in the prosecution history made after the examiner had allowed certain claims. Samsung contends that the plain claim language requires only that the different types of modulation methods be "incompatible" with one another. According to Samsung, the claims cover devices that modulate signals using the same family of modulation methods (for example, FSK modulation), but operating with different amplitudes between modems. Samsung asserts that, because modulating using different amplitudes makes the devices incompatible, this arrangement embodies "different types" of modulation.

We disagree with Samsung and adopt the construction entered by the district court. While the specification is the principal source of the meaning of a disputed term, the prosecution history may also be relevant. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). Here, the clearest statement in the intrinsic record regarding the meaning of the "different types" limitation is the descriptive statement the applicant made to the examiner when he inserted the limitation into the claims. Samsung's arguments to the contrary do not diminish this unambiguous statement in the prosecution history.

For example, Samsung avers that we should not give the prosecution history statement definitional weight because it uses the phrase "i.e.," which Samsung argues introduces an exemplary item in a set. A patentee's use of "i.e.," in the intrinsic record, however, is often definitional. *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1334 (Fed. Cir. 2009) ("[U]se of 'i.e.' signals an intent to define the word to which it refers."); *see also Abbott Labs. v. Novopharm Ltd.*, 323 F.3d 1324, 1330 (Fed. Cir. 2003) (holding that a patentee "explicitly defined" a term by using "i.e." followed by an explanatory phrase). Indeed, the term "i.e." is Latin for *id est*, which means "that is."

On a related note in the context of disavowal, we have explained that "[w]hether a statement to the PTO that includes 'i.e.' constitutes a clear and unmistakable disavowal of claim scope depends on the context." *Braintree Labs., Inc. v. Novel Labs., Inc.*, 749 F.3d 1349, 1355 (Fed. Cir. 2014). The context here strongly supports the conclusion that Rembrandt used "i.e." to define the "different types" limitation because Rembrandt used it to describe to the examiner a new limitation it had inserted to further limit its claims.

Samsung directs us to cases where we have held that "i.e." was not used to define, particularly in instances where interpreting "i.e." as definitional would be internally inconsistent, *see Pfizer, Inc. v. Teva Pharm., USA, Inc.*, 429 F.3d 1364, 1373 (Fed. Cir. 2005), or where it would read out preferred embodiments, *see Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1326 (Fed. Cir. 2012). Samsung argues that interpreting the "i.e." statement as definitional here would create an internal inconsistency with claim 43, which recites that "at least one of said modulation methods implements phase modulation." Samsung asserts that because claim 43 refers to "at least one" of the methods using phase modulation, more than one of them could use phase modulation, even though under the district court's construction that would mean they are not in different families.

We are not convinced that there would necessarily be a conflict with claim 43 under the adopted construction. As Rembrandt points out, claim 26—from which claim 43 depends—also uses the "at least" language to describe "at least two different types of modulation methods," which cuts against Samsung's inference. In any event, we do not find that this parsing of the claims overcomes the definitional statement the applicant provided in the prosecution history. *See ERBE Elektromedizin GmbH v. Canady Tech. LLC*, 629 F.3d 1278, 1286–87 (Fed. Cir. 2010) (rejecting patent owner's claim differentiation argument based on disclaimer in the prosecution history). Nor do we find that the specification is at odds with the prosecution history definition. The specification repeatedly refers to different types of modulation methods, but it does not provide examples of what would constitute different methods or otherwise define this limitation.

Samsung also mentions that in related IPR proceedings, the Patent Trial and Appeal Board adopted the broader construction Samsung argues for here. As Samsung admits, however, this construction does not bind our court. And the Board in IPR proceedings operates under a broader claim construction standard than the federal courts. *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142, 2146 (2016). We also note that even after adopting Samsung's construction, the Board refused to deem Rembrandt's patents unpatentable over the prior art, which is ultimately what Samsung seeks under its proposed construction.

We therefore agree with the construction entered by the district court that the term "modulation method [] of a different type" means "different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods." *Claim Construction Order*, 2014 WL 3385125, at *15.

II. Obviousness

Samsung argues that even under the district court's construction of "different types," it proved by clear and convincing evidence that Rembrandt's patents are invalid for obviousness under 35 U.S.C. § 103 and that the jury verdict of nonobviousness must be overturned as a matter of law.[1]

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[1] Given the effective filing dates of the '580 and '228 patents' claims, the version of 35 U.S.C. § 103 that applies

We review the district court's post-trial denial of judgment as a matter of law under the law of the regional circuit, here the Fifth Circuit. *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1328 (Fed. Cir. 2008). Fifth Circuit law has us review the denial of JMOL de novo, asking, as the district court did, whether a "reasonable jury would not have a legally sufficient evidentiary basis to find for the party on that issue." *Cambridge Toxicology Grp. v. Exnicios*, 495 F.3d 169, 179 (5th Cir. 2007) (quoting Fed. R. Civ. P. 50(a)(1)). When a jury returns a general verdict regarding obviousness, a legal question with factual underpinnings, "[w]e first presume that the jury resolved the underlying factual disputes in favor of the verdict winner and leave those presumed findings undisturbed if they are supported by substantial evidence. Then we examine the legal conclusion de novo to see whether it is correct in light of the presumed jury fact findings." *Circuit Check Inc. v. QXQ Inc.*, 795 F.3d 1331, 1334 (Fed. Cir. 2015) (quoting *Jurgens v. McKasy*, 927 F.2d 1552, 1557 (Fed. Cir. 1991)).

To allege obviousness, Samsung presented at trial a prior art combination consisting of U.S. Patent No. 5,706,428 ("Boer") as the primary reference and an article by Bhargav P. Upender and Philip J. Koopman, Jr. ("Upender") as a secondary reference. According to Samsung, the DBPSK and PPM/DQPSK modulation methods discussed in Boer are in "different families," and are therefore different types of modulation methods under the district court's construction. Samsung's expert, Dr. Goodman, testified that, much like the QAM and PSK modulation methods that the district court specifically noted were in different families, Boer's cited modulation

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here is the one in force preceding the changes made by the America Invents Act. *See* Leahy–Smith America Invents Act, Pub. L. No. 112-29, § 3(n), 125 Stat. 284, 293 (2011).

methods alter different sets of characteristics: PPM/DQPSK alters phase and position, but DBPSK alters only phase.

On the other hand, Rembrandt's infringement expert,[2] Dr. Morrow, testified that, in his experience, modulation methods are in different families if they have "no overlapping characteristics." J.A. 1083, 18:13–24. Rembrandt therefore argued that PPM/DQPSK and DBPSK were not in different families because they both altered phase.

The jury was, of course, free to credit Dr. Morrow's testimony and reject Dr. Goodman's. *MobileMedia Ideas LLC v. Apple Inc.*, 780 F.3d 1159, 1168 (Fed. Cir.) ("[W]hen there is conflicting testimony at trial, and the evidence overall does not make only one finding on the point reasonable, the jury is permitted to make credibility determinations and believe the witness it considers more trustworthy."), *cert. denied*, 136 S. Ct. 270 (2015). Samsung argues, however, that Dr. Morrow's testimony, and Rembrandt's argument based on it, constitute an improper reinterpretation of the court's "different types" construction. Samsung urges that modulation methods can have some overlapping characteristics and still be in different families, as required by the court's construction. Samsung couches this argument as a claim construction

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[2] Rembrandt did not present a validity expert, and Samsung suggests it was improper for Rembrandt to rely on its infringement expert's testimony for issues of validity. We disagree. Dr. Morrow's testimony regarding whether two modulation techniques are in the same or different families is equally applicable to the infringement and validity issues. Samsung does not argue that the testimony was improperly admitted into evidence or that the testimony was admitted only for limited purposes not including use for validity.

issue. We disagree. As the district court correctly noted, any dispute regarding whether particular modulation techniques are in different families is a factual one. "[A] sound claim construction need not always purge every shred of ambiguity," including potential ambiguity arising from "the words a court uses to construe a claim term." *Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1318 (Fed. Cir. 2016) (citation omitted), *cert. denied*, 137 S. Ct. 640 (2017). "Such an endeavor could proceed ad infinitum." *Id.*

Contrary to the way Samsung has cast the issue, whether Boer meets the "different types" limitation under the court's construction is a factual question. Particularly with regard to obviousness, it is a factual question going to the scope and content of the prior art. *See Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17 (1966). We review such factual questions underlying obviousness for substantial evidence. *Circuit Check*, 795 F.3d at 1334. Taken with Dr. Morrow's testimony, the fact that Boer's DBPSK and PPM/DQPSK modulation methods both alter phase is substantial evidence to support the jury's presumed fact finding that Boer did not teach the "different types" limitation.

Substantial evidence likewise supports the jury's presumed finding that there was no motivation to combine Boer with Upender, as Rembrandt had argued. The '580 and '228 patents claim a master/slave communication protocol, whereas Boer discloses devices communicating under the CSMA/CA protocol.[3] Samsung had argued that combining Boer with Upender—which discusses and compares several communication protocols, including

[3] Upender defines CSMA/CA as Carrier Sense Multiple Access with Collision Avoidance.

master/slave[4]—would render Rembrandt's patents obvious. Rembrandt countered that one of skill in the art would not have been motivated to combine the references because Upender teaches away from substituting Boer's CSMA/CA approach with master/slave. Specifically, Upender analyzes the tradeoffs between different communication protocols based on various attributes, such as efficiency, robustness, and cost. Upender concludes that CSMA/CA is at least as good—and most often, better—than master/slave in every respect. We conclude that this disclosure provides substantial evidence to support the jury's presumed finding that one of ordinary skill in the art would not have been motivated to replace the CSMA/CA protocol already in place in Boer with a master/slave arrangement as taught by Upender.

Samsung misses the mark by arguing that we must find a motivation to combine if we agree with it that there is not substantial evidence to support a finding that Upender teaches away from substituting CSMA/CA with master/slave. Whether a reference teaches away is doctrinally distinct from whether there is no motivation to combine prior art references. *See Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1051 n.15 (Fed. Cir. 2016) (en banc) (identifying motivation to combine and teaching away as "two discrete bases" supporting district court's denial of JMOL); *see also Star Sci., Inc. v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1374–75 (Fed. Cir. 2011). Surely a showing that a prior art reference teaches away from a given combination is evidence that one of skill in the art would not have been motivated to make that combination to arrive at the claimed invention. But the absence of a formal teaching away in one reference does

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[4] Upender refers to master/slave as the "polling" protocol, but both parties agree that the two are synonymous for the purposes of this case.

not automatically establish a motivation to combine it with another reference in the same field.

As such, the jury did not need to find that Upender taught away from using master/slave in order to find that there would be no motivation to replace CSMA/CA in Boer with master/slave. Even if Upender "does not teach away, its statements regarding users['] prefer[ences] . . . are relevant to a finding regarding whether a skilled artisan would be motivated to combine" Upender with Boer. *Apple*, 839 F.3d at 1051 n.15. Therefore, because Upender strongly suggests that master/slave is inferior to CSMA/CA, substantial evidence supports the jury's presumed factual finding that one of skill in the art would not have been motivated to combine Boer with Upender's teaching of master/slave.

The jury's presumed findings that Boer does not teach the "different types" limitation and that one of skill in the art would not have been motivated to combine Boer with Upender undermine Samsung's obviousness challenge against all of the infringed independent claims. Because substantial evidence supports both of these findings, we need not address Samsung's additional obviousness arguments for the infringed dependent claims. *See In re Fine*, 837 F.2d 1071, 1076 (Fed. Cir. 1988) ("Dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious."). We therefore affirm the district court's denial of JMOL that the infringed claims are invalid as obvious.

III. Damages

On appeal, Samsung also challenges the jury's royalty award of $15.7 million. Samsung first asserts that the district court erred in resolving certain damages-related evidentiary disputes. Applying Fifth Circuit law, we review these rulings for an abuse of discretion. *i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 852

(Fed. Cir. 2010) (applying Fifth Circuit law), *aff'd,* 564 U.S. 91 (2011).

First, Samsung argues that the district court should have excluded the testimony of Rembrandt's damages expert, Mr. Weinstein, based on the allegedly flawed methodology he used to calculate his proposed reasonable royalty rate. In an effort to determine the incremental value associated with implementing the infringing EDR functionality, Mr. Weinstein compared the prices of two Bluetooth chips Samsung purchased from Texas Instruments—one with EDR functionality and the other without. After calculating the price premium Samsung had paid to procure the EDR chips as compared to the non-EDR chips, Mr. Weinstein concluded that the reasonable royalty rate would be between 5 and 11 cents per infringing unit, resulting in a total damages range of $14.5–$31.9 million.

We see no reversible error in the district court's denial of Samsung's motion to exclude Mr. Weinstein's testimony. Samsung complains that the time periods that Mr. Weinstein chose to compare the two sets of chips were ones where Samsung purchased many more non-EDR chips than EDR chips, making the relative cost of EDR chips artificially high due to mismatched economies of scale. Rembrandt responds that Mr. Weinstein testified in his deposition that the seller of the chips, Texas Instruments, suggested to him that the data from these time periods were most suitable for his purposes. Rembrandt also explains that Mr. Weinstein aptly focused on the earliest periods where significant sales of infringing chips were made because the added value of technology fades with time. We find these explanations plausible, as they show that Mr. Weinstein's royalty calculations were properly "based on the incremental value that the patented invention adds to the end product." *Ericsson, Inc. v. D-Link Sys., Inc.,* 773 F.3d 1201, 1226 (Fed. Cir. 2014). We also note that while Mr. Weinstein compared the chips for a time period when the non-EDR and EDR chip price differential was on the high end of the spectrum, Samsung was free to cross-examine Mr. Weinstein on this issue and the jury's award of $15.7 million fell within the low end of Mr. Weinstein's $14.5–$31.9 million suggested damages range.

Samsung also takes issue with Mr. Weinstein's attribution of the chips' cost differential solely to the addition of the EDR functionality, which it asserts was not the only technological difference between the two sets of chips. Rembrandt responds that all of the technical expert testimony in the case shows that the major difference between the chips was the incorporation of EDR and that Samsung could have cross-examined Rembrandt's damages expert on this point, but did not. Regardless, Samsung's criticism of Mr. Weinstein's selected benchmark "goes to evidentiary weight, not [its] admissibility." *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1319 (Fed. Cir. 2014), *overruled on other grounds by Williamson v. Citrix Online, LLC*, 792 F.3d 1339 (Fed. Cir. 2015) (en banc). Ultimately, we do not find that the district court abused its discretion in permitting Mr. Weinstein to use the methodology he adopted.

Mr. Weinstein used a settlement agreement Rembrandt entered into with BlackBerry, which was a defendant in this suit before settling, and a licensing agreement Rembrandt entered into with Zhone Technologies, Inc., to confirm his proposed royalty rate. On appeal, Samsung argues that it was improper for Mr. Weinstein to consider the BlackBerry agreement at all because it is not representative of an arms-length agreement between the parties and, therefore, is inappropriate for use in determining the reasonable royalty rate. We hold that the district court did not abuse its discretion in allowing Mr. Weinstein to discuss the BlackBerry agreement, as our cases allow relevant settlement agreements to be considered in determining a reasonable royalty rate.

Summit 6, LLC v. Samsung Elecs. Co., 802 F.3d 1283, 1299–1300 (Fed. Cir. 2015). The BlackBerry settlement agreement was relevant here because it contained a license of the very patents Samsung was found to infringe. We are also not convinced by Samsung's argument that Mr. Weinstein should not have cited the agreement at all because BlackBerry would not agree to a particular per-sale allocation clause Rembrandt wanted to include in the agreement. Even though BlackBerry did not agree to that express term, Mr. Weinstein explained his understanding of the agreement to be that BlackBerry effectively paid Rembrandt a per-sale amount consistent with his proposed royalty rate, he was cross-examined on that point, and the jury was free to consider that testimony.

Samsung also avers that the district court improperly redacted pertinent information from the BlackBerry settlement agreement and the Zhone licensing agreement that would have been necessary for the jury to understand the context of those agreements. Particularly, Samsung asserts that by redacting the agreements, the jury was unable to see how Mr. Weinstein allocated payments made by BlackBerry and Zhone to arrive at his proposed royalty rate. We disagree. It was within the district court's discretion to redact information from these agreements to prevent exposing confidential business information and to avoid jury confusion, and we will not disrupt that decision as an abuse of discretion.

Finally, Samsung argues that substantial evidence does not support the jury's damages award of $15.7 million. Because we have rejected Samsung's challenges to Mr. Weinstein's expert presentation on damages, and because the jury's award fell within the $14.5–$31.9 million range he suggested, we hold that substantial evidence supports the jury's damages award as it relates to all of Samsung's infringing sales. As will be discussed in the next section, however, we remand this case for the district court to consider in the first instance whether

Samsung is liable for pre-notice damages due to Rembrandt's purported failure to mark certain licensed products. If the district court determines that Samsung is not liable for pre-notice damages, the jury's damages award should be adjusted to strip out the royalties from pre-notice sales. The parties agreed at oral argument that this adjustment involves a pure accounting function that the district court could perform based on the sales data already in the record and without holding a new damages trial. *See* Oral Arg. at 21:11–22:41 (Samsung), 45:56–46:46 (Rembrandt), http://oralarguments.cafc.uscourts.gov/default.aspx?fl=2016-1729.mp3.

IV. Marking

Samsung argues that the district court erred in refusing to bar Rembrandt's recovery of pre-notice damages based on Rembrandt's failure to mark products covered by a claim Rembrandt later disclaimed.[5] We agree with Samsung that Rembrandt cannot use disclaimer to avoid the marking requirement in 35 U.S.C. § 287, and vacate the judgment of the district court as it relates to marking.

A.

Before trial, Samsung moved to limit Rembrandt's potential damages award based on its failure to mark products covered by previously-asserted claim 40 of the '580

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[5] Rembrandt argues as a threshold matter that Samsung did not properly preserve this issue by raising it at trial and, thus, waived it on appeal. We disagree. The district court ruled on this issue as a matter of law before trial, and Samsung continually objected to that legal ruling before the district court. Therefore, the issue has not been waived and is ripe for appeal. *See Lighting Ballast Control LLC v. Philips Elecs. N. Am. Corp.*, 790 F.3d 1329, 1338 (Fed. Cir. 2015), *cert. denied*, 136 S. Ct. 1226 (2016).

patent. Specifically, Rembrandt had licensed the '580 patent to Zhone Technologies, Inc., and Samsung alleged that Zhone sold unmarked products embodying asserted claim 40 of the '580 patent. The license agreement between Rembrandt and Zhone did not require Zhone to mark its products with the patent number. Pursuant to the patent marking statute, 35 U.S.C. § 287, Samsung sought to limit Rembrandt's damages to those incurred after Samsung received notice of Rembrandt's patents, which, according to Samsung, occurred when Rembrandt filed its complaint. Eight days later, Rembrandt withdrew claim 40 from its infringement allegations and filed a statutory disclaimer pursuant to 35 U.S.C. § 253(a) and 37 C.F.R. § 1.321(a), disclaiming claim 40 in the U.S. Patent and Trademark Office.

The district court denied Samsung's motion to bar Rembrandt's recovery of pre-notice damages based on Rembrandt's disclaimer of claim 40. The court accepted Rembrandt's argument that any prior obligation to mark products embodying claim 40 vanished once it disclaimed claim 40. Adopting the Magistrate Judge's recommendation, the District Judge relied on the proposition that "[u]nder Federal Circuit precedent, a disclaimed patent claim is treated as if it never existed." J.A. 337, 342 (citing *Genetics Inst., LLC v. Novartis Vaccines & Diagnostics, Inc.*, 655 F.3d 1291 (Fed. Cir. 2011)).

B.

The patent marking statute provides that "[p]atentees, and persons making, offering for sale, or selling within the United States any patented article for or under them, or importing any patented article into the United States, may give notice to the public that the same is patented" by marking the article in a method provided by the statute. 35 U.S.C § 287(a). Marking under the statute is permissive, not mandatory. While permissive, there is a consequence if the patent owner chooses not to mark: "In the event of failure so to mark, no damages shall be recovered by the patentee in any action for infringement, except on proof that the infringer was notified of the infringement and continued to infringe thereafter, in which event damages may be recovered only for infringement occurring after such notice." *Id.* "A licensee who makes or sells a patented article does so 'for or under' the patentee, thereby limiting the patentee's damage recovery when the patented article is not marked." *Amsted Indus. Inc. v. Buckeye Steel Castings Co.*, 24 F.3d 178, 185 (Fed. Cir. 1994) (citing *Devices for Med., Inc. v. Boehl*, 822 F.2d 1062, 1066 (Fed. Cir. 1987)).

Consistent with Supreme Court precedent, we have repeatedly emphasized that the marking statute serves to protect the public. The marking statute protects the public's ability to exploit an unmarked product's features without liability for damages until a patentee provides either constructive notice through marking or actual notice. *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 162 (1989) ("The notice requirement is designed 'for the information of the public,' [and] . . . [t]he public may rely upon the lack of notice in exploiting shapes and designs accessible to all." (quoting *Wine Ry. Appliance Co. v. Enter. Ry. Equip. Co.*, 297 U.S. 387, 397 (1936))). The essence of "the marking statute is to encourage the patentee to give notice to the public of the patent." *Crown Packaging Tech., Inc. v. Rexam Beverage Can Co.*, 559 F.3d 1308, 1316 (Fed. Cir. 2009) (quoting *Am. Med. Sys., Inc. v. Med. Eng'g Corp.*, 6 F.3d 1523, 1538 (Fed. Cir. 1993)). More specifically, "[t]he marking statute serves three related purposes: 1) helping to avoid innocent infringement; 2) encouraging patentees to give notice to the public that the article is patented; and 3) aiding the public to identify whether an article is patented." *Nike, Inc. v. Wal-Mart Stores, Inc.*, 138 F.3d 1437, 1443 (Fed. Cir. 1998) (internal citations omitted).

Rembrandt's position, adopted by the district court, effectively provides an end-run around the marking statute and is irreconcilable with the statute's purpose. Allowing Rembrandt to use disclaimer to avoid the consequence of its failure to mark undermines the marking statute's public notice function.

In denying Samsung's motion, the district court relied on the proposition that a disclaimed patent claim is treated as if it "had never existed in the patent," *Guinn v. Kopf*, 96 F.3d 1419, 1422 (Fed. Cir. 1996) (citing *Altoona Publix Theatres, Inc. v. Am. Tri-Ergon Corp.*, 294 U.S. 477, 492 (1935)), and allowed Rembrandt's disclaimer to retroactively excuse its failure to mark. But while we have held that a disclaimer relinquishes the rights of the patent owner, we have never held that the patent owner's disclaimer relinquishes the rights of the public. Indeed, our precedent and that of other courts have not readily extended the effects of disclaimer to situations where others besides the patentee have an interest that relates to the relinquished claims. *See Kearney & Trecker Corp. v. Cincinnati Milacron Inc.*, 562 F.2d 365, 372 (6th Cir. 1977) (recognizing accused infringer's inequitable conduct defense against original patent claims after reissue claims secured through inequitable conduct were disclaimed); *Nat'l Semiconductor Corp. v. Linear Tech. Corp.*, 703 F. Supp. 845, 850 (N.D. Cal. 1988) (allowing antitrust and patent misuse counterclaims premised on disclaimed claims to proceed). *Cf. Guinn*, 96 F.3d at 1422 (holding disclaimer of an allegedly interfering claim did not divest the Board of jurisdiction over interference proceeding). As our marking cases make clear, the marking statute's focus is not only the rights of the patentee, but the rights of the public. *See, e.g., Crown Packaging*, 559 F.3d at 1316; *Nike*, 138 F.3d at 1443; *Bonito Boats*, 489 U.S. at 162. Considering these rights held by the public, we hold that disclaimer cannot serve to retroactively dissolve the § 287(a) marking requirement for a patentee to collect pre-notice damages.

C.

Separate from its disclaimer argument, Rembrandt also argued to the district court that the marking statute should attach on a claim-by-claim, rather than on a patent-by-patent, basis. Applying Rembrandt's claim-by-claim approach in this case, for example, would permit Rembrandt to recover pre-notice damages for Samsung's infringement of claims other than claim 40, which is the only claim that Samsung alleges the unmarked Zhone product embodied. Samsung disagreed with Rembrandt's position at the district court, arguing that the marking statute attaches on a patent-by-patent basis. Put another way, Samsung argued that because Rembrandt's licensee Zhone sold a product embodying one claim of the '580 patent (claim 40), Rembrandt may not recover pre-notice damages for any infringed claim of the patent.

The Magistrate Judge, after deciding Samsung's motion to limit damages on the disclaimer ground, expressly declined to rule on this theory, as did the District Judge. *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co.*, No. 2:13-CV-213-JRG-RSP, 2015 WL 627971, at *1, *3 & n.4 (E.D. Tex. Feb. 9, 2015). On appeal, Rembrandt did not present this argument as an alternative basis for affirming the district court's marking decision. Oral Arg. at 45:04–45:55, http://oralarguments.cafc.uscourts.gov/default.aspx?fl=2016-1729.mp3. Rembrandt did concede, however, that the Zhone product practices claim 40, and thus that question is no longer a "live dispute" in this case. *Id.* at 43:38–45:43.

The patent-by-patent versus claim-by-claim marking dispute between the parties raises a novel legal issue not squarely addressed by our past decisions. Although Rembrandt did not raise this issue on appeal, it has not waived this argument. *See WesternGeco L.L.C. v. ION*

Geophysical Corp., 837 F.3d 1358, 1364 n.3 (Fed. Cir. 2016) (holding arguments are not waived if they involve issues both not decided by district court and "properly considered moot" until reversal of another district court ruling). But as we have remarked in earlier cases regarding legal issues not addressed by the parties:

> It is tempting to explore these unanswered questions, both because they are interesting and because the parties and the trial court might benefit from early answers. But, that is a temptation to be resisted. None are questions directly raised in this appeal, and the parties have not briefed or argued them. We thus leave to the trial court in the first instance the responsibility to address such questions . . . .

Cardiosom, L.L.C. v. United States, 656 F.3d 1322, 1329 (Fed. Cir. 2011); *see also In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1321 (Fed. Cir. 2011) (remanding legal issue not briefed on appeal for district court to address on remand). We therefore remand to the district court to address in the first instance whether the patent marking statute should attach on a patent-by-patent or claim-by-claim basis.

CONCLUSION

We have considered Samsung's remaining arguments and find them unpersuasive. Accordingly, we affirm the challenged portion of the district court's claim construction order and the district court's denial of Samsung's JMOL motions. We vacate the district court's denial of Samsung's motion to limit damages, and remand that issue for proceedings consistent with this opinion.

AFFIRMED-IN-PART, VACATED-IN-PART, AND REMANDED

COSTS

Each party shall bear its own costs.

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

INFORMATION SHEET

FILING A PETITION FOR A WRIT OF CERTIORARI

There is no automatic right of appeal to the Supreme Court of the United States from judgments of the Federal Circuit. You must file a petition for a writ of certiorari which the Supreme Court will grant only when there are compelling reasons. (See Rule 10 of the Rules of the Supreme Court of the United States, hereinafter called Rules.)

Time. The petition must be filed in the Supreme Court of the United States within 90 days of the entry of judgment in this Court or within 90 days of the denial of a timely petition for rehearing. The judgment is entered on the day the Federal Circuit issues a final decision in your case. [The time does not run from the issuance of the mandate, which has no effect on the right to petition.] (See Rule 13 of the Rules.)

Fees. Either the $300 docketing fee or a motion for leave to proceed in forma pauperis with an affidavit in support thereof must accompany the petition. (See Rules 38 and 39.)

Authorized Filer. The petition must be filed by a member of the bar of the Supreme Court of the United States or by the petitioner representing himself or herself.

Format of a Petition. The Rules are very specific about the order of the required information and should be consulted before you start drafting your petition. (See Rule 14.) Rules 33 and 34 should be consulted regarding type size and font, paper size, paper weight, margins, page limits, cover, etc.

Number of Copies. Forty copies of a petition must be filed unless the petitioner is proceeding in forma pauperis, in which case an original and ten copies of the petition for writ of certiorari and of the motion for leave to proceed in forma pauperis. (See Rule 12.)

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No documents are filed at the Federal Circuit and the Federal Circuit provides no information to the Supreme Court unless the Supreme Court asks for the information.

Access to the Rules. The current rules can be found in Title 28 of the United States Code Annotated and other legal publications available in many public libraries.

Revised December 16, 1999

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Questions and Answers

Petitions for Rehearing (Fed. Cir. R. 40) and Petitions for Hearing or Rehearing En Banc (Fed. Cir. R. 35)

Q. When is a petition for rehearing appropriate?

A. Petitions for panel rehearing are rarely successful because they most often fail to articulate sufficient grounds upon which to grant them. For example, a petition for panel rehearing should not be used to reargue issues already briefed and orally argued; if a party failed to persuade the court on an issue in the first instance, a petition for panel rehearing should not be used as an attempt to get a second "bite at the apple." This is especially so when the court has entered a judgment of affirmance without opinion under Fed. Cir. R. 36. Such dispositions are entered if the court determines the judgment of the trial court is based on findings that are not clearly erroneous, the evidence supporting the jury verdict is sufficient, the record supports the trial court's ruling, the decision of the administrative agency warrants affirmance under the appropriate standard of review, or the judgment or decision is without an error of law.

Q. When is a petition for hearing or rehearing en banc appropriate?

A. En banc decisions are extraordinary occurrences. To properly answer the question, one must first understand the responsibility of a three-judge merits panel of the court. The panel is charged with deciding individual appeals according to the law of the circuit as established in the court's precedential opinions. While each merits panel is empowered to enter precedential opinions, the ultimate duty of the court en banc is to set forth the law of the Federal Circuit, which merit panels are obliged to follow.

Thus, as a usual prerequisite, a merits panel of the court must have entered a precedential opinion in support of its judgment for a suggestion for rehearing en banc to be appropriate. In addition, the party seeking rehearing en banc must show that either the merits panel has failed to follow identifiable decisions of the U.S. Supreme Court or Federal Circuit precedential opinions or that the merits panel has followed circuit precedent, which the party seeks to have overruled by the court en banc.

Q. How frequently are petitions for rehearing granted by merits panels or petitions for rehearing en banc accepted by the court?

A. The data regarding petitions for rehearing since 1982 shows that merits panels granted some relief in only three percent of the more than 1900 petitions filed. The relief granted usually involved only minor corrections of factual misstatements, rarely resulting in a change of outcome in the decision.

En banc petitions were accepted less frequently, in only 16 of more than 1100 requests. Historically, the court itself initiated en banc review in more than half (21 of 37) of the very few appeals decided en banc since 1982. This sua sponte, en banc review is a by-product of the court's practice of circulating every precedential panel decision to all the judges of the Federal Circuit before it is published. No count is kept of sua sponte, en banc polls that fail to carry enough judges, but one of the reasons that virtually all of the more than 1100 petitions made by the parties since 1982 have been declined is that the court itself has already implicitly approved the precedential opinions before they are filed by the merits panel.

Q. Is it necessary to have filed either of these petitions before filing a petition for certiorari in the U.S. Supreme Court?

A. No. All that is needed is a final judgment of the Court of Appeals. As a matter of interest, very few petitions for certiorari from Federal Circuit decisions are granted. Since 1982, the U.S. Supreme Court has granted certiorari in only 31 appeals heard in the Federal Circuit. Almost 1000 petitions for certiorari have been filed in that period.

October 20, 2016

Electronic Acknowledgement Receipt

EFS ID:	28982484
Application Number:	90013808
International Application Number:	
Confirmation Number:	2211
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Customer Number:	6449
Filer:	Michael Vincent Battaglia/Tamika Miles
Filer Authorized By:	Michael Vincent Battaglia
Attorney Docket Number:	3277-0114US-RXM1
Receipt Date:	20-APR-2017
Filing Date:	12-SEP-2016
Time Stamp:	15:25:36
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Submission_pursuant_to_1_565_A.pdf	106899 62decb598184dfb39d8e4ed1f8cddb5b07918038	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Miscellaneous Incoming Letter	1	2
	Reexam Certificate of Service	3	3

Warnings:

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2	Reexam Miscellaneous Incoming Letter	Exhibit_A.pdf	297050 b09ac7448219d1ba37ac4f24f0e6a28e7980a201	no	28

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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

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If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,808	09/12/2016	8023580	3277-0114US-RXM1	2211

6449 7590 04/24/2017

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EXAMINER	
GE, YUZHEN	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
04/24/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

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A... 24 ...

CENTRAL REEXAMINATION UNIT

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90013808
PATENT NO. : 8023580
ART UNIT : 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Decision on Petition for Extension of Time in Reexamination	**Application No.** 90/013,808	**Applicant(s)** 8,023,580	
	Examiner Ge, Yuzhen	**Art Unit** 3993	

1. THIS IS A DECISION ON THE PETITION FILED April 20, 2017.

2. THIS DECISION IS ISSUED PURSUANT TO:
   A. ☒ 37 CFR 1.550(c) – The time for taking any action by a patent owner in a third party requested *ex parte* reexamination proceeding will be extended only for sufficient cause and for a reasonable time specified.
   B. ☐ 37 CFR 1.550(c) – The time for taking action by a patent owner in a patent owner requested *ex parte* reexamination proceeding will only be extended for more than two months for sufficient cause and for a reasonable time specified.
   C. ☐ 37 CFR 1.956 – The time for taking any action by a patent owner in an *inter partes* reexamination proceeding will be extended only for sufficient cause and for a reasonable time specified.

   The petition is before the Central Reexamination Unit for consideration.

3. FORMAL MATTERS

Patent owner requests that the period for responding to the Office action mailed on March 31, 2017 which set a 2 (two) month period for filing a response thereto, be extended by an additional two (2) months.

   A. Petition fee per 37 CFR §1.17(g)):
      i. ☒ Petition includes authorization to debit a deposit account.
      ii. ☐ Petition includes authorization to charge a credit card account.
      iii. ☐ Other _____.
   B. ☒ Proper certificate of service was provided. (Not required in reexamination where patent owner is requester.)
   C. ☒ Petition was timely filed.
   D. ☒ Petition properly signed.

4. DECISION (See MPEP 2265 and 2665)
   A. ☐ Granted or ☒ Granted-in-part for **one (1) month**, because petitioner provided a factual accounting that established sufficient cause. (See 37 CFR 1.550(c) and 37 CFR 1.956).
      i. ☒ Other/comment: (See attached)
   B. ☐ Dismissed because:
      i. ☐ Formal matters (See unchecked box(es) (A, B, C and/or D) in section 4 above).
      ii. ☐ Petitioner failed to provide a factual accounting of reasonably diligent behavior by all those responsible for preparing a response to the outstanding Office action within the statutory time period.
      iii. ☐ Petitioner failed to explain why, in spite of the action taken thus far, the requested additional time is needed.
      iv. ☐ The statements provided fail to establish sufficient cause to warrant extension of the time for taking action (See attached).
      v. ☐ The petition is moot.
      vi. ☐ Other/comment: _____

5. CONCLUSION: **The petition for a 2 (two) month extension of time is granted-in-part for 1 (one) month.**

   Telephone inquiries with regard to this decision should be directed to Stephen Stein at 571-272-1544 in the CRU.

/Stephen Stein/
Supervisory Patent Reexamination Specialist
Central Reexamination Unit

The April 20, 2017 petition for an extension of time requests two (2) additional month to respond to the final Office Action mailed March 31, 2017. The petition speaks to the considerations of providing Patent Owner additional time to "consider the implications of the Federal Circuit's opinion to the claim construction and obviousness issues raised in these reexamination proceedings, and to revise and rework its positions opposing the rejections in the March 31 Office Action in a manner that is consistent with the findings of the federal circuit." (See page 3 of Patent Owner's April 20, 2017 petition for an extension of time).

All these considerations are noted; however, they must be balanced with the statutory requirement of special dispatch under 35 USC 305.

Pursuant to MPEP § 2265 (in-part) "[I]n third party requested *ex parte* reexaminations, a first request for an extension of time will generally be granted if a sufficient cause is shown, and for a reasonable time specified — usually one month. The reasons stated in the request will be evaluated by the CRU SPRS or TC Director, and the requests will be favorably considered where there is a factual accounting of reasonably diligent behavior by all those responsible for preparing a response within the statutory time period. Second or subsequent requests for an extension of time **and requests for an extension of more than one month in third party requested reexaminations will only be granted in extraordinary situations"** e.g., death or incapacitation of the patent owner. (See MPEP § 2265).

The circumstances presented to the petition do not rise to the level of "extraordinary circumstances".

It is agreed however, that patent owner needs to be given opportunity to complete all aspects of investigation prior to responding to the Office action in an *ex parte* reexamination proceedings.

Therefore, the Request for an extension of time is hereby granted-in-part for 1 month.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In *Ex Parte* Reexamination of	:	Group Art Unit: 3923
Gordon F. BREMER	:	
Patent No.: 8,023,580 B2	:	Control No.: 90/013,808
Issued: September 20, 2011	:	

Reexam Request Filed: September 12, 2016

For: SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS

Attn: Mail Stop "*Ex Parte* Reexam"
Central Reexamination Unit
Office of Patent Legal Administration
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION REQUESTING THE DIRECTOR TO EXERCISE HER SUPERVISORY AUTHORITY PURSUANT TO 37 C.F.R. § 1.181(a)(1) AND/OR § 1.182

Pursuant to 37 C.F.R. § 1.181(a)(1) and/or § 1.182, Rembrandt Wireless Technologies, LP ("Rembrandt") respectfully requests the Director to exercise her supervisory authority under Rule 181(a)(1) to terminate the above-referenced *ex parte* reexamination. The non-final Office Action mailed March 31, 2017 (the "March 31 Office Action") asserts that the claims being reexamined "are single means claims," March 31 Office Action at 6, which would render them *indefinite* because "single means" cover *every conceivable means*[1] for achieving the desired result. *Ex parte David Chater-Lea*, 2010 WL 665664 (BPAI 2010).

Where the Office's view is that claims are indefinite, no prior art rejection can be issued (and hence reexamination on the basis of patents and printed publications cannot proceed), as

[1] *In re Hyatt*, 708 F.2d 712, 714-15 (Fed. Cir. 1983)("The long-recognized problem with a single means claim is that it covers every conceivable means for achieving the stated result.").

doing so would necessarily be based on a speculative assumption as to the meaning of the claims. The Office has consistently terminated similar proceedings where it believed that the scope of claims being challenged could not be determined without speculation, and that same course should be followed here.

Alternatively, Rembrandt respectfully requests the Director to exercise her supervisory authority under Rule 181(a)(1) to require revision and reissue of the March 31 Office Action, and that it be stricken from the record. Rembrandt's request is based on the limits and requirements of *ex parte* reexamination and examination generally, which have not been observed in the March 31 Office Action. These limitations and requirements specify: (i) with respect to original claims, that *ex parte* reexamination does not permit examination on § 112 issues, and (ii) that "[t]he first Office action must be sufficiently detailed that the pertinency and manner of applying the cited prior art to the claims in each rejection is clearly set forth therein." MPEP 2262. As explained below, neither of these limitations and requirements is met by the March 31 Office Action.

Statement of Facts Relevant to Petition

1) On September 12, 2016, following its repeated failure to successfully attack claims 2 and 59 of the '580 Patent in multiple IPRs and after the conclusion of a district court action involving the '580 Patent that has been pending since March 2013, Samsung requested this *ex parte* reexamination attacking the same claims it was unable to defeat during the IPRs or during the district court litigation.
2) On September 30, 2016, Rembrandt filed a petition asking the Director to exercise her discretion under 35 U.S.C.§325(d) to deny the petition based on multiple proceedings

attacking the same claims and lack of any reason why Samsung should have yet another opportunity to attack the same claims. That petition was dismissed on November 28, 2016.

3) On September 27, 2016, the Office granted Samsung's Request.

4) On January 24, 2017, the Office issued a non-final Office Action ("January 24 Office Action") that was outside the scope of *ex parte* reexamination. In the absence of any amendments, *ex parte* reexamination is limited to reexamination based on patents and printed publications. The January 24 Office Action exceeded its authority by (a) reexamining the claims under 35 U.S.C. § 112 and concluding that "a rejection under 35 USC 112 1st paragraph scope of enablement would be advanced for both claims 2 and 59," if such a rejection could be made (January 24 Office Action at 4-6); (b) reexamining and objecting to the '580 drawings and demanding that Rembrandt amend the '580 Patent by providing substitute drawings and labelling Figure 2 with "a legend such as –Prior Art -- ... to avoid abandonment" (January 24 Office Action at 11); and (c) reexamining and objecting to the specification as "failing to provide proper antecedent basis for the claimed subject matter" (January 24 Office Action at 12 (citing 37 CFR 1.75(d)(1) and MPEP § 608.01)).

5) On February 9, 2017, Rembrandt filed a Petition Requesting The Director Exercise Her Supervisory Authority Pursuant To 37 C.F.R. 1.181(a)(1) And/Or 1.182. In that Petition, Rembrandt requested that the January 24 Office Action be stricken from the record because, *inter alia*, it exceeded the limits of *ex parte* reexamination.

6) On March 27, 2017, the Director of the CRU issued a Decision vacating the January 24 Office Action and striking it from the record, on the ground that it "includes a discussion of issues outside the scope of *ex parte* reexamination." Thereafter, on April 3, 2017,

Rembrandt's February 9 Petition was dismissed as "moot," even though all the issues raised in the petition were not addressed in the Decision vacating the January 24 Office Action.

7) On March 31, 2017, the Office issued a further non-final Office Action ("March 31 Office Action"). Like the recently-vacated January 24 Office Action, the March 31 Office Action again includes a discussion of § 112 issues, reasoning that the claims being reexamined are "single means" claims. *See* March 31 Office Action at 6 ("both claim 2 and claim 59 comprise a single means, a transceiver."). As the Board has held, "single means" claims are *indefinite* and therefore not amenable to construction. Where, as here, the Office's view is that claims are indefinite, no prior art rejection can be issued (and hence reexamination on the basis of patents and printed publications cannot proceed), as doing so would necessarily be based on a speculative assumption as to the meaning of the claims.

8) Rather than terminating the proceedings on the ground that the claims are not amenable to construction, the March 31 Office Action proffers a further construction of the so-called "single means" element (March 31 Office Action at 7 (construing transceiver as "[s]hort for a combination of transmitter/receiver")) and then applies that further construction in rejecting the claims over the prior art.

9) Finally, the March 31 Office Action fails to adequately set forth the manner in which the Office applied the cited prior art to meet the master/slave limitations recited in the challenged claims, in violation of MPEP 2262. Neither the expression "master/slave" nor any variation of this expression appears in any of the references cited by the Office in support of the rejections. Based on the complete lack of any explanation of how these limitations are met by the cited references, it is impossible for Rembrandt to know how to respond to the March 31 Office Action.

<u>The Office Must Terminate These Proceedings Because It Believes That The Scope Of The Claims Cannot Be Determined Without Speculation</u>

In *Ex parte David Chater-Lea*, 2010 WL 665664 (BPAI 2010), the Board found that a "single means" claim is indefinite under 35 U.S.C. 112, second paragraph. The Board described a "single means" claim as covering "every achievable means for achieving the desired result," and, as such, was unable to determine the metes and bounds of the claim.[2] The Board reversed the Examiner's prior art rejection of the claim, stating that "the prior art rejection must fall, *pro forma*, because it necessarily is based on speculative assumption as to the meaning of the claim."[3]

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[2] In *Ex parte David Chater-Lea*, the Board found that claim 23 was a single means claim which covered "every conceivable means" for achieving the desired result. Since the specification only disclosed those means known to the inventor, it did not enable everything within the scope of the claim and was subject to an enablement rejection (35 USC 112, first paragraph). In addition, an indefiniteness rejection (35 USC 112, second paragraph) was also made, because, in the case of a single means claim, there is by definition insufficient disclosure in the specification to enable one skilled in the art to "identify the structure, material, or acts for performing the claimed function" of the single means element. The same reasoning was applied in *Ex parte Duvaut et al.*, 2009 WL 1155602 (BPAI 2009), where after finding that the claims were single means claims, they were rejected by the Board under both 35 U.S.C. first paragraph and second paragraph.

[3] *See also Application of Steele et al.*, 305 F.2d 859, 862 (CCPA 1962)("Our analysis of the claims indicates that considerable speculation as to meaning of the terms employed and assumptions as to the scope of such claims were made by the examiner and the board. We do not think a rejection under 35 U.S.C. § 103 should be based on such speculations and assumptions"); *Kaiser Aluminum v. Patent of Alcoa*, 2015 WL 5440658 (PTAB 2015)("[T]he claims do not set forth with reasonable precision, a particular area as required in order to satisfy 35 U.S.C. § 112, 2nd paragraph. Therefore, claims 1-6, and 8 are rejected under 35 U.S.C. § 112, 2nd paragraph. ... Rejections of claims over prior art should not be based on "considerable speculation as to the meaning of the terms employed and assumptions as to the scope of such claims." ... [W]e reverse, *pro forma*, all the rejections of claims 1-6 and 8 based on prior art"); *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010) ("If a claim is indefinite, the claim, by definition, cannot be construed.").

Where, as here, the Office's view is that claims are "single means" claims[4] and therefore indefinite, reexamination on the basis of patents and printed publications cannot proceed, as doing so would necessarily be based on a speculative assumption as to the meaning of the claims. As the Board explained in *CBS Interactive Inc. et al., v. Helferich Patent Licensing, LLC*, 2016 WL 7494542 (PTAB 2016):

> ... the Board will not address the question of whether any original claim in an *inter partes* reexamination is indefinite under 35 U.S.C. § 112, ¶ 2. ... Nonetheless, our reviewing court has also instructed the Board not to speculate as to the meaning of claim terms when reviewing the reasonableness of an obviousness rejection. *See In re Steele,* 305 F.2d at 862 (holding that the Examiner and the Board were wrong in relying on what, at best, were speculative assumptions as to the meaning of the claims and in basing a rejection under 35 U.S.C. § 103 thereon).
>
> For the reasons set forth above, we conclude that undue speculation is required to determine the meaning, as well as the interrelationships among, the claim terms "content provider, "content notification system," and internet-accessible storage system." <u>*Because each of the claims on appeal contain these terms, the Examiner could not have reasonably determined the metes and bounds of the claims undergoing reexamination. As such, the Examiner erred in adopting each of the proposed obviousness rejections because doing so necessarily entailed engaging in undue speculation*</u>.
>
> For the reasons set forth above, we do not sustain any of the adopted obviousness rejections of claims 1-78.

Id. (emphasis added). *See also Google, Inc. v. Function Media*, L.L.C., 2012 WL 1891077 (BPAI 2012)("[I]n the present case, it would be pointless to enter a new ground of rejection on the basis of indefiniteness because such rejections are beyond the scope of reexamination for issued claims ... Yet, without a discernable claim construction, an anticipation or obviousness analysis cannot be performed .... Consequently, we find that proper disposition of this appeal is

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[4] Rembrandt disputes that claims 2 and 59 of the '580 patent are "single means" claims, or indefinite. The correct claim construction was reached by the district court in *Rembrandt Wireless Technologies, LP, v. Samsung Electronics Co., Ltd.*, 2014 WL 3385125 (E.D. Texas 2014), and affirmed on appeal by the Federal Circuit in *Rembrandt Wireless Technologies, LP, v. Samsung Electronics Co., Ltd.*, 2017 WL 1370089 (Fed. Cir. 2017).

to reverse the speculative prior art rejections of record .... [W]e understand this disposition leaves a critical issue with the claims unresolved ... "); *Ex parte Webexchange Inc.*, 2014 WL 2946395 (PTAB 2014)("[R]ejections based on 35 U.S.C. § 112 are beyond the scope of a reexamination proceeding for originally issued patent claims .... Thus, we are constrained from presenting a rejection under 35 U.S.C. § 112, second paragraph for these claims. Yet, we reverse the rejections of independent claim 1 and its dependent claims, because applying prior art to such claims would be speculative"); *Superior Communications, Inc., v. Voltstar Technologies, Inc.*, 2014 WL 5474770 (PTAB 2014)("[R]ejections based on 35 U.S.C. § 112 are beyond the scope of a reexamination proceeding for originally issued patent claims. ... Thus, we are constrained from presenting a rejection under 35 U.S.C. § 112, ¶ 2, for these claims. Accordingly, we do not sustain the Examiner's decision to reject independent claims 1 and 10, as well as their dependent claims, claims 5-8 and 11-16, because applying prior art to such claims would be unduly speculative.").

Similarly, in the context of *inter partes* review proceedings, the Board has explained:

> If the scope of the claims cannot be determined without speculation, the differences between the claimed invention and the prior art cannot be ascertained. The Board has previously terminated proceedings or denied institution when the scope of the claims being challenged could not be determined without speculation. Several such decisions arise in the context of means-plus-function claim terms for which supporting structure or a specific algorithm for performing the function was not identified in the specification. However, Board decisions have applied the same reasoning to other types of claim terms whose metes and bounds are unclear.

Globus Medical v. Flexuspine, IPR2015-01830, paper 11, at 9-10 (PTAB 2016)(citations omitted). In refusing to move forward with a patentability analysis with respect to prior art, the Board in *Globus Medical* reiterated that "prior art grounds of unpatentability must fall, *pro forma*, because they [would be] based on speculative assumption as to the meaning of the claims." IPR2015-01830, paper 11, at 15. *See also Samsung Display et al. v. Gold Charm Ltd.*, IPR2015-01452, paper 12, at p.13 (PTAB 2015)(denying institution)("the prior art grounds of unpatentability must fall, *pro forma*, because they [would be] based on speculative assumption as to the meaning of the claims." ... Therefore, we decline to institute an *inter partes* review of claims 1–14"); *Apple Inc., v. Immersion Corp.*, IPR2016-01372, paper 7, at 20-21 (PTAB 2017)(denying institution)("Because we are unable to determine the scope and meaning of claims 12-18 ... we cannot conduct the necessary factual inquiry for determining obviousness .... Accordingly, we decline to institute an *inter partes* review of claims 12-18"); *Facebook, Inc., v. TLI Communications, LLC.*, IPR2014-00566, paper 14, at 13 (PTAB 2014)(denying institution)("[B]ecause the claims are not amenable to construction, we are unable to conclude that there is a reasonable likelihood that Petitioner would prevail in its challenge ... "); *American Honda Motor Co., v. Signal IP, Inc.*, 2015 WL 5818259 (PTAB 2015)(denying institution)("In the absence of a sufficient demonstration of the scope of the claimed invention, we do not attempt to apply claims 1 and 7 to the asserted prior art.").

Simply put, the Office has consistently terminated similar proceedings where it believed that the scope of claims being challenged could not be determined without speculation. Given the Office's belief that claims 2 and 59 of the '580 patent are "single means" claims[5] (which

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[5] In the present case, after finding that the claims being reexamined "are single means claims," the Examiner goes on to dismiss this finding as inapplicable: "Because claim 2 and claim 59 are single means claims and because according to 35 U.S.C. 112 6th paragraph, only limitation[s] or element[s] in a claim for a combination may invoke 112 6th paragraph, the Examiner concludes that claim 2 and claim 59 do not invoke 35 USC 112 6th paragraph." March 31 Office Action, at 6. The Examiner's reasoning that the "single means" finding does not apply because claims 2 and 59 are not directed to combination claims is deeply flawed. As the Federal Circuit stated in *In re Hyatt*, 708 F.2d at 714:

> The final paragraph of § 112 saves *combination* claims drafted using means-plus-function format from this problem by providing a construction of that format narrow enough to avoid the problem of undue breadth as forbidden by the first

would render the claims indefinite), the Office should follow that same course here and terminate these proceedings.

<u>Alternatively, the Office Action Should Be Vacated Because It Exceeds The Limited Scope Of *Ex Parte* Reexamination</u>

Notwithstanding its characterization of the claims as "single means" claims (which, if correct, would render construction of the claims speculative), the March 31 Office Action goes on to construe the so-called single means element (i.e., the "transceiver") as "a combination of transmitter/receiver." *Compare* March 31 Office Action at 6 ("both claim 2 and claim 59 comprise a single means, a transceiver") *with* March 31 Office Action at 7 (construing transceiver as "[s]hort for a combination of transmitter/receiver.") The March 31 Office Action then applies the latter construction to reject the claims over the cited references.

In the event that the Office decides to proceed with this reexamination despite its belief that the challenged claims are indefinite, the Office's assertion that the claims are "single means" claims would be superfluous to the Office's rejection of the claims over the cited references. In such a case, the Office's "single means" analysis would represent nothing more than an examination of the claims under 35 U.S.C. § 112, which is prohibited by the reexamination rules, and would be little different from the statement in the now-vacated January 24 Office Action that "a rejection under 35 USC 112 1st paragraph scope of enablement would be advanced for both claims 2 and 59," if such a rejection could be made.

The scope of *ex parte* reexamination is set forth in 37 CFR 1.552:

> (a) Claims in an *ex parte* reexamination proceeding will be examined on the basis of patents or printed publications and, *with respect to subject matter added or*

> paragraph. But <u>*no provision saves a claim drafted in means-plus-function format which is not drawn to a combination, i.e., a single means claim*</u>.

Id. at 714 (emphasis added).

deleted in the reexamination proceeding, on the basis of the requirements of 35 U.S.C. 112.

> (b) Claims in an *ex parte* reexamination proceeding will not be permitted to enlarge the scope of the claims of the patent.

> (c) *Issues other than those indicated in paragraphs (a) and (b) of this section will* ***not*** *be resolved in a reexamination proceeding....* [emphasis added].

No subject matter has been "added or deleted" in this reexamination proceeding, and, therefore, ***no*** authority exists to examine "on the basis of the requirements of 35 USC 112," even if a formal rejection has not been entered. In a reexamination proceeding, only new or amended claims are to be examined under § 112. MPEP 2258 (quoting 37 CFR 1.552(a)).[6] By raising § 112 issues, the Office has exceeded its limited authority to examine the claims based on "patents and printed publications," and is clearly *ultra vires*. By law, the Office has no authority to conduct such an examination of claims 2 and 59 or make such a determination with respect to the claims.[7] Such a determination on the record, if left unrebutted, has the potential to undermine Rembrandt's ability to enforce its patent rights.

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[6] MPEP 2258 makes clear that such action is not appropriate by providing: "If such issues are raised *by the patent owner or third party requester* during a reexamination proceeding, the existence of such issues will be *noted* by the examiner in the next Office action ...." *Id.* (quoting 37 CFR 1.552(c) (emphasis added)). In this case, neither the patent owner nor the third party requester raised any § 112 issues, and, even if either party had raised such an issue, the MPEP limits the examiner's action to *noting* them – not conducting a § 112 examination and drawing conclusions regarding the result of such an examination as was done here.

[7] In this regard, MPEP 2258 clearly provides as follows:

> In reexaminations ordered under 35 U.S.C. 304, where new claims are presented or where any part of the disclosure is amended, the claims of the reexamination proceeding, are to be examined for compliance with 35 U.S.C. 112. *Consideration of 35 U.S.C. 112 issues should, however, be limited to the amendatory (e.g., new language) matter.* For example, a claim which is amended or a new claim which is presented containing a limitation not found in the original patent claim should be considered for compliance under 35 U.S.C. 112 only with respect to that limitation. *To go further would be inconsistent with the statute to*

For these reasons, the March 31 Office Action (like the now-vacated January 24 Office Action) should be revised and reissued, and the original March 31 Office Action should be stricken from the record. Without such relief, Rembrandt will be further prejudiced by being forced to respond to the Office's superfluous position that the claims are "single means" claims, and thus further resources of the Office and Rembrandt will be spent needlessly on an issue that is the outside the scope of this *ex parte* reexamination.

<u>Alternatively the Office Action Should Be Vacated Because It Fails To Adequately Detail The Pertinency And Manner Of Applying The Cited Art</u>

Claims 2 and 59 (rejected in the March 31 Office Action) require "a master/slave relationship in which a slave communication [or message] from a slave to a master occurs in response to a master communication [or message] from the master to the slave." They also require that the "transceiver" act "in the role of the master according to the master/slave relationship." Considered together, these limitations require "a transceiver in the role of the master according to the master/slave relationship [in which a slave communication or message from a slave to a master occurs in response to a master communication or message from the master to the slave]."

To address these requirements, the Office has drawn the following summary conclusions relying *solely on* Snell's "teaching" of the claimed master/slave relationship to support each of its three grounds of rejection:

(1) "Snell *teaches* a communication device (Abstract, Figs. 1-2 and 5-8) capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to

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the extent that 35 U.S.C. 112 issues would be raised as to matter in the original patent claim. [emphasis added].

Claims 2 and 59 are original, unamended claims.

the slave (the transceiver of Snell is capable of such communication), the device comprising: a transceiver (Fig. 1), in the role of the master according to the master/slave relationship ... " (March 31 Office Action, at 9 (emphasis added)) (without supporting citations for the alleged teaching of the claimed master/slave relationship) (§ 102(e) rejection of claim 2 based on Snell);

(2) "Snell *teaches* a communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave, the device comprising: a transceiver (Fig. 1), in the role of the master according to the master/slave relationship ... " (March 31 Office Action, at 10 (emphasis added)) (again without supporting citations for the alleged teaching of the claimed master/slave relationship) (§ 102(e) rejection of claim 59 based on Snell);

(3) "Snell *teaches* a communication device capable of communicating according to a master/slave relationship in which a slave communication from a slave to a master occurs in response to a master communication from the master to the slave (to the extent that the preamble is given patentable weight, Snell teaches it at col. 1, lines 34-46, 47-50, and 55-57, col. 4, lines 27-30, col. 4, lines 42-47 and col. 5, lines 2-7 and 18-21, Fig. 1; Harris AN9614 at p. 3, Harris AN9614 is incorporated by reference at col. 5, lines 2-7 of Snell) ... ." (Office Action, at 12 (emphasis added)) (citations in quoted text) (§ 103(a) rejection of claim 2 based on Snell in view of Yamano); and

(4) "Snell *teaches* a communication device capable of communicating according to a master/slave relationship in which a slave message from a slave to a master occurs in response to a master message from the master to the slave, the device comprising: a

transceiver (to the extent that the preamble is given patentable weight, Snell teaches it at col. 1, lines 34-46, 47-50, and 55- 57, col. 4, lines 27-30, col. 4, lines 42-47 and col. 5, lines 2-7 and 18-21, Fig. 1, Harris AN9614 at p. 3, Harris AN9614 is incorporated by reference at col. 5, lines 2-7 of Snell), in the role of the master according to the master/slave relationship ... ." (Office Action, at 15 (emphasis added)) ((citations in quoted text) (§ 103(a) rejection of claim 59 based on Snell in view of Yamano).[8]

Rembrandt has carefully reviewed these summary conclusions and the citations allegedly supporting them and finds no mention of the words "master" or "slave" in any of them, let alone an express teaching of the master/slave relationship as claimed. Based on the complete lack of any explanation how these limitations are met by the cited references, it is impossible for Rembrandt to know how to respond to the March 31 Office Action. Thus, Rembrandt respectfully requests the Office withdraw its rejections for lack of disclosure of the claimed master/slave relationship or issue another non-final Office Action that adequately explains and details its position, as required by MPEP 2262.

[8] The Office relies on the § 103(a) rejection based on Snell in view of Yamano to support her § 103(a) rejection based on Snell in view of Yamano and Kamerman and thus provides no additional explanation or citations to support her position that the master/slave relationship is disclosed or would have been obvious based on the three references. (See OA, at 17-20).

This Petition is timely filed, i.e., within two months of the non-final Office action mailed March 31, 2017. To the extent the Office believes any rules prevent consideration of this petition, Rembrandt further petitions the Director to suspend such rules under the power granted to the Director by 37 C.F.R. § 1.183.

Any fee required for submission of this Petition may be charged to Counsel's Deposit Account Number 02-2135.

Respectfully submitted,

Date: May 2, 2017

By: /Michael V. Battaglia/

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cc: Nancy J. Linck, Ph.D.
Counsel for Rembrandt Wireless Technologies, LP

CERTIFICATE OF SERVICE

It is hereby certified that on this 2nd day of May, 2017, the foregoing **PETITION REQUESTING THE DIRECTOR TO EXERCISE HER SUPERVISORY AUTHORITY PURSUANT TO 37 C.F.R. § 1.181(a)(1) AND/OR § 1.182** was served, by first-class U.S. Mail, on the attorney of record for the third-party Requesters Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc., at the following address:

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Electronic Patent Application Fee Transmittal

Application Number:	90013808
Filing Date:	12-Sep-2016
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Filer:	Michael Vincent Battaglia/Mihoko Shirai
Attorney Docket Number:	3277-0114US-RXM1

Filed as Large Entity

Filing Fees for ex parte reexam

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Petitions to the Chief	1405	1	400	400
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**400**

Electronic Acknowledgement Receipt

EFS ID:	29096816
Application Number:	90013808
International Application Number:	
Confirmation Number:	2211
Title of Invention:	SYSTEM AND METHOD OF COMMUNICATION USING AT LEAST TWO MODULATION METHODS
First Named Inventor/Applicant Name:	8023580
Customer Number:	6449
Filer:	Michael Vincent Battaglia/Mihoko Shirai
Filer Authorized By:	Michael Vincent Battaglia
Attorney Docket Number:	3277-0114US-RXM1
Receipt Date:	02-MAY-2017
Filing Date:	12-SEP-2016
Time Stamp:	18:02:07
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$400
RAM confirmation Number	050317INTEFSW18024800
Deposit Account	022135
Authorized User	Mihoko Shirai

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Petition-Rule181-182.pdf	562102 b0ff567cd1f8d33eae0d2b9ab08d47c16242ff7d	yes	15

Multipart Description/PDF files in .zip description

Document Description	Start	End
Reexam Miscellaneous Incoming Letter	1	14
Reexam Certificate of Service	15	15

Warnings:

Information:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
2	Fee Worksheet (SB06)	fee-info.pdf	30501 216242c8d35ad82ea867e389a7e8be6eb619b323	no	2

Warnings:

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,808	09/12/2016	8023580	3277-0114US-RXM1	2211

6449 7590 06/22/2017
ROTHWELL, FIGG, ERNST & MANBECK, P.C.
607 14th Street, N.W.
SUITE 800
WASHINGTON, DC 20005

EXAMINER
GE, YUZHEN

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
06/22/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

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THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS
ROPES & GRAY LLP
PRUDENTIAL TOWER IPRM DOCKETING -FLOOR 43
800 BOYLSON STREET
BOSTON, MA 02199-3600

Date: JUN 2 2 2017

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90013808
PATENT NO. : 8023580
ART UNIT : 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

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In re Bremer	:	
Ex Parte Reexamination Proceeding	:	DECISION ON PETITION
Control No. 90/013,808	:	UNDER 37 C.F.R. § 1.181
Filed: September 12, 2016	:	
For: U.S. Patent No.: 8,023,580 B2	:	

This is a decision on a petition filed by Patent Owner, entitled "PETITION REQUESTING THE DIRECTOR TO EXERCISE HER SUPERVISORY AUTHORITY PURSUANT TO 37 C.F.R. § 1.181(a)(1) AND/OR § 1.182." (hereinafter "May 2, 2017 petition" or "instant petition").

The May 2, 2017 petition requests that the Office terminate this proceeding and/or vacate and/or revise the non-final office action of March 31, 2017.

The petition is before the Director of the Central Reexamination Unit (CRU).

REVIEW OF RELEVANT FACTS

1. On September 20, 2011, U.S. Patent No. 8,023,580 (the '580 patent) issued to Gordon F. Bremer.

2. On September 12, 2016, the third party requester filed a request for *ex parte* reexamination of the '580 patent, requesting reexamination of claims 2 and 59. The reexamination proceeding was assigned control no. 90/013,808 and was given a filing date of September 12, 2016.

3. On September 27, 2016, reexamination of claims 2 and 59 of the '580 patent was ordered in this proceeding.

4. On September 30, 2016, Patent Owner filed a petition under 37 C.F.R. § 1.182 requesting that this proceeding be terminated.

5. On November 28, 2016, the Office dismissed Patent Owner's petition under 37 C.F.R. § 1.182 requesting that this proceeding be terminated.

6. On January 24, 2017, the Office issued a non-final office action.

7. On February 9, 2017, Patent Owner filed a petition under 37 C.F.R. § 1.181 requesting that the January 24, 2017 office action be stricken from the record.

8. On March 27, 2017, the Office mailed a *sua sponte* decision which vacated the January 24, 2017 office action.

9. On March 31, 2017, the new office action mailed.

10. On April 3, 2017, Patent Owner's February 9, 2017 petition under 37 C.F.R. § 1.181 was dismissed as moot because the relief requested was already granted in the *sua sponte* decision which vacated the January 24, 2017 office action.

11. The instant petition requests that the Office terminate this proceeding and/or vacate and/or revise the non-final office action of March 31, 2017.

APPLICABLE REGULATIONS

37 C.F.R. § 1.552 Scope of reexamination in *ex parte* reexamination proceedings.

(a) Claims in an *ex parte* reexamination proceeding will be examined on the basis of patents or printed publications and, with respect to subject matter added or deleted in the reexamination proceeding, on the basis of the requirements of 35 U.S.C. 112.

37 C.F.R. § 1.181 Petition to the Director.

(c) When a petition is taken from an action or requirement of an examiner in the *ex parte* prosecution of an application, or in the *ex parte* or *inter partes* prosecution of a reexamination proceeding, it may be required that there have been a proper request for reconsideration (§ 1.111) and a repeated action by the examiner. The examiner may be directed by the Director to furnish a written statement, within a specified time, setting forth the reasons for his or her decision upon the matters averred in the petition, supplying a copy to the petitioner.

37 C.F.R. § 41.31 Appeal to Board.

(c) An appeal, when taken, is presumed to be taken from the rejection of all claims under rejection unless cancelled by an amendment filed by the applicant and entered by the Office. Questions relating to matters not affecting the merits of the invention may be required to be settled before an appeal can be considered.

APPLICABLE PROCEDURES

MPEP 2258 Scope of *Ex Parte* Reexamination [R-07.2015]

II. COMPLIANCE WITH 35 U.S.C. 112

In reexaminations ordered under 35 U.S.C. 304, where new claims are presented or where any part of the disclosure is amended, the claims of the reexamination proceeding, are to be examined for compliance with 35 U.S.C. 112.Consideration of 35 U.S.C. 112 issues should, however, be limited to the amendatory (e.g., new language) matter. For example, a claim which is amended or a new claim which is presented containing a limitation not found in the original patent claim should be considered for compliance under 35 U.S.C. 112 only with respect to that limitation. To go further would be inconsistent with the statute to the extent that 35 U.S.C. 112 issues would be raised as to matter in the original patent claim. Thus, a term in a patent claim which the examiner might deem to be too broad cannot be considered as too broad in a new or amended claim *unless* the amendatory matter in the new or amended claim creates the issue. If a limitation that appears in an existing patent claim also appears in a claim newly presented in a reexamination proceeding, that limitation cannot be examined as to 35 U.S.C. 112. If a dependent claim is rewritten as an independent claim in a reexamination proceeding, that independent claim cannot be examined as to 35 U.S.C. 112, unless the nature of the rewriting raises a new question (e.g., by newly providing a lack of claim antecedent for a term in the claim). However, a specific determination regarding whether the claimed invention (including original patent claims) is entitled to a particular priority or benefit date is permitted. See *In re NTP, Inc.*, 654 F.3d 1268, 99 USPQ2d 1500 (Fed. Cir. 2011)(holding that the USPTO is not prohibited from performing a 35 U.S.C. 112 written description priority analysis during reexamination).

MPEP 2173.06 Practice Compact Prosecution [R-07.2015]

I. INTERPRET THE CLAIM AND APPLY ART WITH AN EXPLANATION OF HOW AN INDEFINITE TERM IS INTERPRETED

The goal of examination is to clearly articulate any rejection early in the prosecution process so that the applicant has the chance to provide evidence of patentability and otherwise reply completely at the earliest opportunity. See MPEP § 706. Under the principles of compact prosecution, the examiner should review each claim for compliance with every statutory requirement for patentability in the initial review of the application and identify all of the applicable grounds of rejection in the first Office action to avoid unnecessary delays in the prosecution of the application. See 37 CFR 1.104(a)(1) ("On taking up an application for examination or a patent in a reexamination proceeding, the examiner shall make a thorough study thereof and shall make a thorough investigation of the available prior art relating to the subject matter of the claimed invention. The examination shall be complete with respect both to compliance of the application . . . with the applicable statutes and rules and to the patentability of the invention as claimed, as well as with respect to matters of form, unless otherwise indicated.").

Thus, when the examiner determines that a claim term or phrase renders the claim indefinite, the examiner should make a rejection based on indefiniteness under 35 U.S.C. 112(b) or pre-AIA 35 U.S.C. 112, second paragraph, as well as a rejection(s) in view of the prior art under 35 U.S.C. 102 or 103 that renders the prior art applicable based on the examiner's interpretation of the claim. See *In re Packard,* 751 F.3d 1307, 1312 (Fed. Cir. 2014) (stating that the *prima facie* case is appropriately used for making an indefiniteness rejection). When making a rejection over prior art in these circumstances, it is important that the examiner state on the record how the claim term or phrase is being interpreted with respect to the prior art applied in the rejection. By rejecting each claim on all reasonable grounds available, the examiner can avoid piecemeal examination. See MPEP § 707.07(g) ("Piecemeal examination should be avoided as much as possible. The examiner ordinarily should reject each claim on all valid grounds available . . . .").

II. PRIOR ART REJECTION OF CLAIM REJECTED AS INDEFINITE

All words in a claim must be considered in judging the patentability of a claim against the prior art. *In re Wilson,* 424 F.2d 1382, 165 USPQ 494 (CCPA 1970). The fact that terms may be indefinite does not make the claim obvious over the prior art. When the terms of a claim are considered to be indefinite, at least two approaches to the examination of an indefinite claim relative to the prior art are possible.

First, where the degree of uncertainty is not great, and where the claim is subject to more than one interpretation and at least one interpretation would render the claim unpatentable over the prior art, an appropriate course of action would be for the examiner to enter two rejections: (A) a rejection based on indefiniteness under 35 U.S.C. 112(b) or pre-AIA 35 U.S.C. 112, second paragraph; and (B) a rejection over the prior art based on the interpretation of the claims which renders the prior art applicable. See, e.g., *Ex parte Ionescu,* 222 USPQ 537 (Bd. App. 1984). When making a rejection over prior art in these circumstances, it is important for the examiner to point out how the claim is being interpreted. Second, where there is a great deal of confusion and uncertainty as to the proper interpretation of the limitations of a claim, it would not be proper to reject such a claim on the basis of prior art. As stated in *In re Steele,* 305 F.2d 859, 134 USPQ 292 (CCPA 1962), a rejection under 35 U.S.C. 103 should not be based on considerable speculation about the meaning of terms employed in a claim or assumptions that must be made as to the scope of the claims.

The first approach is recommended from an examination standpoint because it avoids piecemeal examination in the event that the examiner's 35 U.S.C. 112, second paragraph rejection is not affirmed, and may give applicant a better appreciation for relevant prior art if the claims are redrafted to avoid the 35 U.S.C. 112(b) or pre-AIA 35 U.S.C. 112, second paragraph rejection.

DECISION

In the instant petition, Patent Owner requests that the Office invoke supervisory review to terminate this proceeding and/or vacate and/or revise the non-final office action of March 31, 2017.

Patent Owner asserts that the examiner abused her discretion, and did not follow 37 C.F.R. § 1.552, such that the outstanding non-final office action allegedly exceeds the scope of reexamination in *ex parte* reexamination proceedings.

In particular, Patent Owner asserts that the Office action's characterization of the claims as part of the action's discussion as to why the claims are properly interpreted under the broadest reasonable interpretation standard as opposed to 35 U.S.C 112, sixth paragraph, renders the construction of the claims as speculative and indefinite.

A review of the March 31, 2017 Office Action indicates that the examiner did not identify the claims as indefinite or indicate that the construction of the claims was speculative. Rather, the examiner made a 35 U.S.C. § 112, sixth paragraph analysis with respect to certain claimed element(s),which is required under MPEP 2173.06 I, per the Office's longstanding principles of compact prosecution.

The examiner also followed MPEP 2258, which states, in part:

> "For example, a claim which is amended or a new claim which is presented containing a limitation not found in the original patent claim should be considered for compliance under 35 U.S.C. 112 only with respect to that limitation. <u>To go further would be inconsistent with the statute to the extent that 35 U.S.C. 112 issues would be raised as to matter in the original patent claim</u>." (emphasis added)

No 35 U.S.C. 112 issue was raised as no 35 U.S.C. 112 rejection was made anywhere in the March 31, 2017 Office action. Indeed, the examiner actually found that the claims were compliant with 35 U.S.C. 112.

Patent Owner alternatively seems to suggest that based on the claim construction in the Office action, the claims would be so insolubly ambiguous that the examiner could not have, and should not have, made any art rejection(s), per MPEP 2173.06:

> "Second, <u>where there is a great deal of confusion and uncertainty as to the proper interpretation of the limitations of a claim, it would not be proper to reject such a claim on the basis of prior art</u>. As stated in *In re Steele,* 305 F.2d 859, 134 USPQ 292 (CCPA 1962), a rejection under 35 U.S.C. 103 should not be based on considerable speculation about the meaning of terms employed in a claim or assumptions that must be made as to the scope of the claims." (emphasis added)

However, as stated above, the Office action in no way indicates that the claims are ambiguous or that the interpretation of the claims is merely speculative. Rather, the Office action explicitly applies the broadest reasonable interpretation standard to interpret the claims.

A demand for a Notice of Intent to Issue a Reexamination Certificate (NIRC) is not the subject of a petition. To the extent that Patent Owner affirmatively and clearly represents, in its response to the outstanding non-final rejection, that the claims are so insolubly ambiguous that the examiner could not have, and should not have, made any art rejection(s), a NIRC might be appropriate, at that time.

Turning to Patent Owner's remarks on whether or not the claims being reexamined are single means claims, and/or if the examiner properly established a *prima facie* case of obviousness, such issue(s) are not petitionable. First, per 37 C.F.R. § 1.181(c), a proper request for reconsideration is required, and that initially would be a proper and complete reply by Patent Owner to the outstanding non-final office action. Moreover, per 37 C.F.R. § 41.3(c), claim construction is an appealable, rather than a petitionable matter, because it impacts the merits of the invention, *c.f. Ex parte* TayMac Corporation (BPAI Appeal 2011-010682, Reexamination Control 90/008,823).

For the reasons set forth above, the examiner followed all applicable rules, regulations and procedures, and did not abuse her discretion in her decision to make a 35 U.S.C. § 112, sixth paragraph analysis with respect to certain claimed element(s).

Accordingly, Patent Owner's May 2, 2017 petition is dismissed.

CONCLUSION

1. Patent Owner's May 2, 2017 petition to invoke supervisory review, to terminate this proceeding and/or vacate and/or revise the non-final office action of March 31, 2017, is **dismissed** for the reasons discussed above.

2. Telephone inquiries related to this decision should be directed to Michael Fuelling, Supervisory Patent Reexamination Specialist, at (571) 270-1367.

John Cottingham,
Director, Central Reexamination Unit

EXHIBIT A

<u>Timeline of Rembrandt Litigation, IPRs and Reexaminations</u>

District Court Litigation:

March 15, 2013: Rembrandt sued Samsung for infringement of the '580 Patent. *Rembrandt Wireless Tech., LP v. Samsung Elect. Co. Ltd.*, No. 2:13-cv-00213 (E.D. Tex. 2013).

June 5, 2013: Rembrandt filed an Amended Complaint alleging infringement of the '228 Patent.

July 10, 2014: The district court judge issued his claim construction memorandum and order.

February 9-13, 2015: *Rembrandt Wireless Tech. v. Samsung Elect. Co.* was tried before a jury. In the case, Rembrandt asserted claims 2 and 59 of the '580 Patent and claim 21 of the '228 Patent. On February 13, 2015, the jury rendered its verdict finding that all asserted claims were infringed and had not been proven invalid.

February 17, 2016: The district court denied Samsung's motion for JMOL (liability issues). The district court then severed the issue of post-trial relief and assigned case no. 2:16-cv-00170 to that severed issue.

April 17, 2017: The Federal Circuit affirmed the district court's claim construction in the *Rembrandt Wireless Tech. v. Samsung Elect. Co.* case and affirmed the jury's determination that claims 2 and 59 of the '580 Patent and claim 21 of the '228 Patent are not invalid. Samsung did not challenge the jury's infringement findings on appeal. The case was remanded on an issue of damages. *Rembrandt Wireless Techs., LP v. Samsung Elect. Co. Ltd.*, No. 16-1729 (Fed. Cir. 2016).

June 22, 2017: The Federal Circuit denied Samsung's petitions for panel rehearing and rehearing *en banc*.

***Inter Partes* Review Proceedings:**

March 20, 2014: Samsung filed 4 IPRs against the '580 Patent, IPR2014-00514, -00515, -00518, -00519.

In <u>IPR2014-00514</u>, Samsung asserted that claims 1, 2, 4, 5, 10, 13, 19-22, 49, 52-54, 57-59, 61, 62, 66, 70, and 76-79 of the '580 Patent were unpatentable under § 102(b)/103 based on a draft version of the 802.11 standard (the "Draft Standard") and under § 103(a) based on the Draft Standard and U.S. 5,706,428 ("Boer"). On September 9, 2014, the PTAB denied the petition because Samsung did not establish that the Draft Standard was a printed publication, and the

"Petition fails to demonstrate a reasonable likelihood of prevailing on the grounds that the challenged claims are anticipated by, or obvious over, Draft Standard or obvious over Draft Standard and Boer." On October 24, 2014, the PTAB denied Samsung's Rehearing Request.

In IPR2014-00515, Samsung asserted that claims 23, 25, 29, 30, 32, 34, 38, 40, 41, 43, 44, and 47 of the '580 Patent were anticipated by or obvious in view of the Draft Standard. On September 9, 2014, the PTAB denied the petition because Samsung did not establish that the Draft Standard was a printed publication. On October 24, 2014, the PTAB denied Samsung's Rehearing Request.

In IPR2014-00518, Samsung asserted that claims 1, 2, 4, 5, 10, 13, 19-22, 49, 52-54, 57-59, 61, 62, 66, 70, and 76-79 of the '580 Patent were unpatentable under 35 U.S.C. § 103(a) over Admitted Prior Art ("APA") and Boer (also in view of Upender). On September 23, 2014, the PTAB instituted the IPR to review claims 1, 4, 5, 10, 13, 20-22, 54, 57, 58, 61, 62, 66, 70, and 76-79 but did *not* institute review of claims 2, 19, 49, 52, 53, and 59. With respect to claims 2, 49, and 59, the PTAB was "not persuaded there is a reasonable likelihood that Petitioner would prevail in its challenge." On September 17, 2015, in its final decision, the PTAB concluded that claims 1, 4, 5, 10, 13, 20-22, 54, 57, 58, 61, 62, 66, 70, and 76-79 were unpatentable under § 103(a) over APA and Boer (combination motivated by Upender).

In IPR2014-00519, Samsung asserted that claims 23, 25, 30, 32, 34, 40, 41, 43, and 44 of the '580 Patent were unpatentable under § 102(e) based on Boer and that claims 29, 38, and 47 were unpatentable under § 103(a) based on Boer and APA (also in view of Upender). On September 23, 2014, the PTAB instituted the IPR to review claims 32, 34, 38, 40, 43, 44, and 47 but *not* claims 23, 25, 29, 30, and 41 because Samsung "ha[d] not shown a reasonable likelihood that it would prevail in demonstrating" that those claims are unpatentable on any ground." On September 17, 2015, in its final decision, the PTAB terminated the trial with respect to claims 32, 34, 40, 43, and 44 (disclaimed) and concluded that claims 38 and 47 of the '580 Patent were unpatentable over APA and Boer (combination motivated by Upender).

June 4, 2014: Samsung files 6 IPRs against the '228 Patent, IPR2014-00889, 00890, 00891, 00892, 00893, 00895

In IPR2014-00889, Samsung asserted that claims 1-3, 5, 10, and 11-21of the '228 Patent were unpatentable based on the Draft Standard, Boer, and U.S. 5,537,398 ("Siwiak"). On December 10, 2014, the PTAB denied the petition because Samsung did not establish that the Draft Standard was a printed publication and thus had not shown a reasonable likelihood of prevailing on the grounds asserted.

In IPR2014-00890, Samsung asserted that claims 22, 23, and 25 of the '228 Patent were unpatentable based on the Draft Standard and Boer. On December 10, 2014, the PTAB denied

Samsung's petition because Samsung failed to establish that the Draft Standard was a "printed publication" and, thus, had not shown a reasonable likelihood of prevailing on the grounds asserted based on the Draft Standard alone or in combination with Boer.

In IPR2014-00891, Samsung alleged that claims 26-29, 31, 36-41, 43, and 47-52 of the '228 Patent were unpatentable. To support its allegations, Samsung relied on the Draft Standard alone, combined with Boer, combined with the APA, and combined with Boer and APA. On December 10, 2014, the PTAB denied Samsung's petition concluding that Samsung "has not shown a reasonable likelihood that it would prevail in demonstrating that: (1) claims 26-29, 37-41, 43, and 47-52 of the '228 Patent are unpatentable as anticipated or obvious in view of Draft Standard; (2) claims 26-29, 36- 41, 43, and 47-52 of the '228 Patent are unpatentable as obvious in view of Draft Standard and Boer; (3) claims 29, 31, 36, and 51 of the '228 Patent are unpatentable as obvious in view of Draft Standard and APA; or (4) claims 29, 31, 36, and 51 of the '228 Patent are unpatentable as obvious in view of Draft Standard, Boer, and APA."

In IPR2014-00892, Samsung alleged that claims 1-3, 5, and 10-21 of the '228 Patent were unpatentable under 35 U.S.C. § 103(a) over the APA and Boer. Upender was cited as Ex. 1322 to provide motivation to combine. On December 10, 2014, the PTAB instituted the IPR to review claims 1-3, 5, and 10-20 but *not* claim 21 because the petition did not demonstrate a reasonable likelihood of prevailing on the obviousness ground of unpatentability as to claim 21. In its final decision, the PTAB concluded that claims 1-3, 5, and 10-20 were unpatentable for obviousness over APA and Boer (using Ex. 1322 to find motivation to combine APA and Boer). On January 27, 2015, the PTAB denied Samsung's Rehearing Request with respect to claim 21.

In IPR2014-00893, Samsung alleged that claims 22, 23, and 25 of the '228 Patent were unpatentable under § 103(a) based on the APA and Boer (using Upender (now Ex. 1422) to combine APA and Boer). Samsung relied on Upender to support its allegation that there was motivation to combine. On December 10, 2014, the PTAB instituted the IPR. In its final decision, the PTAB concluded that claims 22, 23, and 25 were unpatentable for obviousness over APA and Boer (using Upender to find motivation to combine APA and Boer).

In IPR2014-00895, Samsung alleged that claims 26-29, 31, 36-41, 43, and 47-52 of the '228 Patent were unpatentable under § 103(a) based on the APA and Boer. Samsung also relied on Upender (Ex. 1522) to provide motivation to combine APA and Boer. The PTAB instituted the IPR to review all challenged claims. In its final decision, the PTAB concluded that these claims were unpatentable under § 103(a) based on the APA and Boer (and relying on Upender to make the claimed combination).

October 21, 2014: Samsung filed two additional IPRs against the '580 Patent, namely, IPR2015-00114 and IPR2015-00118. These IPRs challenged the claims for which the PTAB failed to institute in IPR2104-00518 and IPR2015-00519. Since the IPRs were outside the 1 year window, they were accompanied by motions seeking to join the new IPRs to IPR2014-00518 and IPR2014-00519 respectively.

In IPR2015-00114, Samsung again challenged claims 2, 19, 49, 52, 53, 59 of the ‘580 Patent under § 103(a) based on APA and Boer (and citing Upender for motivation to combine these references). On January 28, 2015, the PTAB denied institution under § 325(d) and denied the joinder motion.

In IPR2015-00118, Samsung again challenged claims 23, 25, 29, 30, and 41 of the ‘580 Patent under § 103(a) based on the APA and Boer (and citing Upender for motivation to combine these references). On January 28, 2015, the PTAB denied institution under § 325(d) and denied the joinder motion.

January 9, 2015: Samsung filed an additional IPR against the ‘228 Patent, namely, IPR2015-00555. In this IPR, Samsung challenged claim 21, i.e., the claim for which the PTAB failed to institute in IPR2014-00892, under § 103(a) based on the APA, Boer, and Siwiak. Samsung also sought joinder with IPR2014-00892. On June 19, 2015, the PTAB denied institution under Section 325(d) and denied the joinder motion.

***Ex Parte* Reexaminations:**

September 12, 2016: Samsung filed 2 requests for reexamination, 90/013,808 attacking claims 2 and 59 of the ‘580 Patent and 90/013,809 attacking claim 21 of the ‘228 Patent.

September 27, 2016: The Office ordered reexamination in the ‘808 case (‘580 Patent).

September 30, 2016: Rembrandt filed petitions in both reexaminations asking the Director to exercise her authority under Section 325(d) and pointing to the PTAB’s numerous refusals under Section 325(6) to consider additional IPRs.

October 17, 2016: The Office ordered reexamination in the ‘809 case (‘228 Patent).

November 28, 2016: Rembrandt’s two Section 325(d) petitions were dismissed based on the Office’s position that Rembrandt had not established there was no substantial new question of patentability.

January 24, 2017: The Office issued a non-final Office Action in the ‘808 case (‘580 Patent) which, *inter alia*, raised issues beyond the scope of reexamination.

February 9, 2017: Rembrandt filed a petition in the '808 case ('580 Patent) asking the Director to withdraw the January 24, 2017 non-final Office Action and revise and reissue another non-final Office Action.

March 9, 2017: The Office issued a non-final Office Action in the '809 case ('228 Patent) which, *inter alia*, raised issues beyond the scope of reexamination.

March 27, 2017: The CRU Director issued a "Decision Sua Sponte Vacating Non Final Office Action" in the '808 case ('580 Patent) because it "include[d] a discussion of issues outside the scope of ex parte reexamination …." The Decision also indicated the Office Action "will form no part of the record and will not be available to the public."

March 31, 2017: The Office issued another non-final Office Action in the '808 case ('580 Patent). Rembrandt's response is due June 30, 2017.

April 3, 2017: Rembrandt's February 9, 2017 petition in the '808 case ('580 Patent) was dismissed as "moot" in view of the CRU Director's withdrawal of the January 24, 2017 Office Action and issuance of another Office Action on March 31, 2017.

April 3, 2017: Rembrandt filed a petition in the '809 case ('228 Patent) asking the Director to withdraw the March 9, 2017 non-final Office Action and revise and reissue another non-final Office Action.

April 5, 2017: The CRU Director issued a "Decision Sua Sponte Vacating Examiner's Answer [*sic*: Non Final Office Action]" in the '809 case ('228 Patent) because it "include[d] a discussion of issues outside the scope of ex parte reexamination …." The Decision also indicated the Office Action "will form no part of the record and will not be available to the public."

May 2, 2017: Rembrandt filed a petition in the '808 case ('580 Patent) asking the Director to either (a) terminate the reexamination proceeding because the Office views the claims as indefinite and proceeding would necessarily be based on speculative assumption as to the meaning of the claims or (b) vacate the March 31, 2017 non-final Office Action and revise and reissue another non-final Office Action because the Office Action exceeds the limited scope of *ex parte* reexamination and fails to adequately detail the pertinence and manner of applying the cited art. This petition is still pending.

May 3, 2017: The Office issued another non-final Office Action in the '809 case ('228 Patent). That same day, Rembrandt's April 3, 2017 petition was dismissed as "moot" in view of the CRU Director's withdrawal of the March 9, 2017 Office Action and issuance of another Office Action on May 3, 2017. Rembrandt's response is due August 3, 2017.

June 8, 2017: Rembrandt filed a petition in the '809 case ('228 Patent) asking the Director to vacate the May 3, 2017 non-final Office Action as *ultra vires* because the Office has not made the threshold finding that the rejection based on Boer, the so-called Admitted Prior Art ("APA"), and Yamano ("the Boer Rejection") presented a substantial new question of patentability. In addition, the petition asked the Director to terminate the portion of the reexamination relating to the Boer Rejection under 35 U.S.C. §325(d) because it merely rehashes prior art and arguments substantively identical to those presented previously in IPR2015-00555. This petition is pending.

June 14, 2017: Rembrandt sent a letter to the Acting Director, requesting that he exercise his discretion under 35 U.S.C. §325(d) to withdraw the reexamination orders in the '808 case ('580 Patent) and the '809 case ('228 Patent) and terminate the reexaminations.

June 22, 2017: The CRU Director issued a decision dismissing Rembrandt's May 2, 2017 petition in the '808 case.

June 23, 2017: Samsung filed a response to Rembrandt's June 14, 2017 letter to the Acting Director.

Exhibit B

Comparison of Cited Portions of Snell with Substantially Identical Portions of Boer

Portions of Snell Cited in the 9-27-16 Order	Substantially Identical Portions of Boer
1. The Office cited col. 4, ll. 42-47 and col. 5, ll. 18-21 of Snell to support an allegation that "Snell discloses a transceiver that serves as an access point for communicating data with other transceivers connected to a wireless local area network (WLAN)." 9-27-16 Grant at 8. "Referring to FIG. 1, a wireless transceiver 30 in accordance with the invention is first described. The transceiver 30 may be readily used for WLAN applications in the 2.4 GHz ISM band in accordance with the proposed IEEE 802.11 standard. Those of skill in the art will readily recognize other applications for the transceiver 30 as well." Snell at col. 4, ll. 42-47. "Like the HSP3824 baseband processor, the high data rate baseband processor 40 of the invention contains all of the functions necessary for a full or half duplex packet baseband transceiver." Snell at col. 5, ll. 18-21.	1. Boer discloses a transceiver that serves as an access point 12 for communicating data with other transceivers 18 connected to a wireless local area network (WLAN). *See, e.g.,* Boer at col. 2, ll. 6-21; col. 1, ll. 16-26; col. 2, l. 63-col. 3, l. 24. "Referring first to FIG. 1, there is shown a preferred embodiment of a wireless LAN (local area network) 10 in which the present invention is implemented. The LAN 10 includes an access point 12, which serves as base station, and is connected to a cable 14 which may be part of a backbone LAN (not shown), connected to other devices and/or networks with which stations in the LAN 10 may communicate. The access point 12 has antennas 16 and 17 for transmitting and receiving messages over a wireless communication channel." Boer, col. 2, ll. 6-15. "The network 10 includes mobile stations 18, referred to individually as mobile stations 18-1, 18-2, and having antennas 20 and 21, referred to individually as antennas 20-1, 20-2 and 21-1, 21-2. The mobile stations 18 are capable of transmitting and receiving messages … ." Boer at col. 2, ll. 16-21. "[T]here is being produced IEEE standard 802.11, currently available in draft form, which specifies appropriate standards for use in wireless LANs. This standard specifies two possible data rates for data transmission, namely 1 Mbps (Megabit per second) and 2 Mbps. Accordingly, manufacturers have produced commercially available systems operating at these data rates. However, it may be advantageous to provide stations operating at higher data rates, which are not in accordance with the standard." Boer, col. 1, ll. 16-26.

Portions of Snell Cited in the 9-27-16 Order	Substantially Identical Portions of Boer
	Fig. 2 of Boer shows functional blocks necessary for a full or half duplex packet baseboard transmission: "Referring now to FIG. 2, there is shown a functional block diagram illustrating, for a station 18, the interconnection of the functional blocks which relate to the implementation of the present invention. The block 30 represents a MAC (medium access control) control unit which includes four state machines, namely a MAC control state machine C-MST 32, a MAC management state machine M-MST 34, a transmitter state machine T-MST 36 and a receiver state machine R-MST 38. The MAC control unit 30 is shown as connected over a line 40 to a 1-out-of-2 rate selector 42 and a scrambler 44. The rate selector 42 and scrambler 44 are connected to a 1-out-of-2 encoder 46 which encodes the data bits from the scrambler 44 in accordance with the selected 1 or 2 Mbps data rate. The output of the encoder 46 is connected to a spreader 48 which effects the above-discussed spread spectrum coding and applies the signal to an RF front-end transmitter 50 for application to the antenna 20. "The receive antenna 21 is connected to an RF front-end receiver 52 which is connected to a correlator 54 which effects a correlation to "despread" the received signal. A first output of the correlator 54 is connected to carrier detector 56. A second output of the correlator 54 is connected to a 1-out-of-2 detector/decoder 58 which has an output connected to an input of a descrambler 60. The output of the descrambler 60 is connected over a line 62 to the MAC control unit 30 and to a 1-out-of-2 rate selector 64 which has an output connected to the detector/decoder 58 to control the detector/decoder 58 appropriately in accordance with control information contained in received messages." Col. 2, l. 63-col. 3, l. 24.

Portions of Snell Cited in the 9-27-16 Order	Substantially Identical Portions of Boer
2. The Office cited col. 2, ll. 15-17; col. 2, ll. 27-30; col. 7, ll. 10-14; and Fig. 3 of Snell to support an allegation that Snell's transceiver transmits data packets intended for another transceiver, where the communication may switch on-the-fly between BPSK and QPSK. 9-27-16 Grant at 8-9. "Moreover, a WLAN application, for example, may require a change between BPSK and QPSK during operation, that is, on-the-fly. Spreading codes may be difficult to use in such an application where an on-the-fly change is required." Snell at col. 2, ll. 15-17. "It is another object of the invention to provide a spread spectrum transceiver and associated method to permit operation at higher data rates and which may switch on-the-fly between different data rates and/or formats." Snell at col. 2, ll. 27-30. "The variable data may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at col. 7, ll. 10-14. Fig. 3 is reproduced on page ___ above, where it is shown to be substantially the same as Boer's Fig. 4.	2. Boer discloses a transceiver that transmits data packets intended for another transmitter. Boer at Fig. 1; col. 2, ll. 6-62. Just like the communication in Snell that can switch from BPSK for the preamble and header to QPSK for the subsequent variable data portion, Snell at col. 6, l. 34-col. 7, l. 14, communication in Boer can switch from DBPSK for the preamble and header to DQPSK for the subsequent data field. *See, e.g.*, Boer at Fig. 4; col. 3, ll. 56-62; col. 4, ll. 4-11. "With regard to the message 200, FIG. 4, it should be understood that the preamble 216 and header 218 are always transmitted at the 1 Mbps rate using DBPSK modulation. The subsequent DATA field 214, however, may be transmitted at a selected one of the four possible rates 1, 2, 5 or 8 Mbps, using the modulation and coding discussed hereinabove." Boer at col. 3, ll. 56-62. "The SIGNAL field 206 has a first predetermined value if the DATA field 214 is transmitted at the 1 Mbps rate and a second predetermined value if the DATA field 214 is transmitted at the 2, 5 or 8 Mbps rates. The SERVICE field 208 has a first predetermined value (typically all zero bits) for the 1 and 2 Mbps rates, a second predetermined value for the 5 Mbps rate and a third predetermined value for the 8 Mbps rate." Boer at col. 4, ll. 4-11.
3. The Office cited col. 6, ll. 35-36; col. 6, ll. 64-66; col. 7, ll. 5-14; and Fig. 3 of Snell to support an allegation that Snell discloses that each data packet transmission comprises a group of transmission sequences structured with a PLCP preamble and PLCP header portion and an MPDU data portion. 9-27-16 Grant at 9. "The header may always be BPSK." Snell at col. 6, ll. 35-36.	3. Boer discloses a message 200 that comprises a group of transmission sequences structured with a preamble 216, header 218, and a data field 214. *See, e.g.*, Boer at Fig. 4; col. 3, ll. 56-62; col. 4, ll. 4-11. "With regard to the message 200, FIG. 4, it should be understood that the preamble 216 and header 218 are always transmitted at the 1 Mbps rate using DBPSK modulation. The subsequent DATA field 214, however, may be transmitted at a selected one of the four

Portions of Snell Cited in the 9-27-16 Order	Substantially Identical Portions of Boer
"The PLCP preamble and PLCP header are always at 1 Mbit/s, Diff encoded, scrambled and spread with an 11 chip barker. SYNC and SFD are internally generated." Snell at col. 6, ll. 64-66. "MPDU is serially provided by Interface 80 and is the variable data scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. The variable data may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at col. 7, ll. 5-14. Fig. 3 is reproduced on page ___ above, where it is shown to be substantially the same as Boer's Fig. 4.	possible rates 1, 2, 5 or 8 Mbps, using the modulation and coding discussed hereinabove." Boer at col. 3, ll. 56-62. "The SIGNAL field 206 has a first predetermined value if the DATA field 214 is transmitted at the 1 Mbps rate and a second predetermined value if the DATA field 214 is transmitted at the 2, 5 or 8 Mbps rates. The SERVICE field 208 has a first predetermined value (typically all zero bits) for the 1 and 2 Mbps rates, a second predetermined value for the 5 Mbps rate and a third predetermined value for the 8 Mbps rate." Boer at col. 4, ll. 4-11.
4. The Office cited Fig. 3 and col. 6, line 48-col. 7, line 14 of Snell to support an allegation that "[t]he PLCP preamble contains SYNC and SFD fields, and the PLCP header contains SIGNAL, SERVICE, LENGTH, and CRC fields." 9-27-16 Grant at 9. Fig. 3 is reproduced on page ___ above, where it is shown to be substantially the same as Boer's Fig. 4. "Referring now additionally to FIG. 3, the timing and signal format for the interface 80 is described in greater detail. Referring to the left hand portion, Sync is all 1's, and SFD is F3AOh for the PLCP preamble 90. Now relating to the PLCP header 91, the SIGNAL is: 0Ah 1 Mbit/s BPSK, 14h 2 Mbit/S QPSK,	4. Boer discloses a preamble 216 that contains SYNC and SFD fields 202, 204 and a header 218 that contains SIGNAL, SERVICE, LENGTH, and CRC fields 206, 208, 210, 212. *See, e.g.*, Boer at Fig. 4; col. 3, l. 42-col. 4, l. 24. "Referring now to FIG. 4, there is shown the format of a typical message 200 used in the LAN 10. The message 200 includes a 128-bit SYNC (synchronisation) field 202, a 16-bit SFD (start of frame delimiter) field 204, an 8-bit SIGNAL field 206 (to be explained), an 8-bit SERVICE field 208 (to be explained), a 16-bit LENGTH field 210 (to be explained), a 16-bit CRC check field 212, which provides a CRC check for the portions 206, 208 and 210, and finally a DATA field 214 which comprises a variable number of data "octets", that is 8-bit data segments, sometimes referred to as "bytes". The fields 202 and 204 are together conveniently referred to as a preamble 216 and

Portions of Snell Cited in the 9-27-16 Order	Substantially Identical Portions of Boer
37h 5.5 Mbit/s BPSK, and 6Eh 11 Mbit/s QPSK. "The SERVICE is OOh, the LENGTH is XXXXh wherein the length is in μs, and the CRC is XXXXh calculated based on SIGNAL, SERVICE and LENGTH. MPDU is variable with a number of octets (bytes). "The PLCP preamble and PLCP header are always at 1 Mbit/s, Diff encoded, scrambled and spread with an 11 chip barker. SYNC and SFD are internally generated. SIGNAL, SERVICE and LENGTH fields are provided by the interface 80 via a control port. SIGNAL is indicated by 2 control bits and then formatted as described. The interface 80 provides the LENGTH in μs. CRC in PLCP header is performed on SIGNAL, SERVICE and LENGTH fields. "MPDU is serially provided by Interface 80 and is the variable data scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. The variable data may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at col. 6, line 48-col. 7, line 14.	the fields 206, 208, 210 and 212 are together conveniently referred to as a header 218. "With regard to the message 200, FIG. 4, it should be understood that the preamble 216 and header 218 are always transmitted at the 1 Mbps rate using DBPSK modulation. The subsequent DATA field 214, however, may be transmitted at a selected one of the four possible rates 1, 2, 5 or 8 Mbps, using the modulation and coding discussed hereinabove. Of course, the stations 18 are capable of transmitting at the 1 and 2 Mbps rates only, whereas the stations 22 can transmit the DATA field 214 at a selected one of the four data rates. "In more detail concerning the format of the message 200, the SYNC field 202 consists of 128 bits of scrambled "1" bits, enabling a receiving device to perform the necessary operations for synchronisation. The SFD field 204 consists of a predetermined 16-bit field identifying the impending start of the header 218. The SIGNAL field 206 has a first predetermined value if the DATA field 214 is transmitted at the 1 Mbps rate and a second predetermined value if the DATA field 214 is transmitted at the 2, 5 or 8 Mbps rates. The SERVICE field 208 has a first predetermined value (typically all zero bits) for the 1 and 2 Mbps rates, a second predetermined value for the 5 Mbps rate and a third predetermined value for the 8 Mbps rate. It should be understood at this point that the stations 18, adapted to operate at the 1 and 2 Mbps rates only, ignore the SERVICE field 208. This aspect will be discussed more fully hereinafter. The LENGTH field 210 contains, if the bit rate is designated as 1 or 2 Mbps, a value corresponding to the actual number of octets in the DATA field 214. However for the 5 and 8 Mbps rates, the LENGTH field 210 contains a value which is a fraction, 2/5 and 2/8, times the actual number of octets in the DATA field 214, respectively. These values correspond to the

Portions of Snell Cited in the 9-27-16 Order	Substantially Identical Portions of Boer
	length in octets of a transmission at 2 Mbps which would give the same transmission time of the DATA field 214, which is actually transmitted at 5 Mbps, or 8 Mbps respectively." Boer at col. 3, l. 42-col. 4, l. 24.
5. The Office cited col. 7, line 5-14 and Fig. 3 of Snell to support an allegation that "[t]he MPDU data is the data to be transmitted to the receiving transmitter." 9-27-16 Grant at 9. "MPDU is serially provided by Interface 80 and is the variable data scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. The variable data may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at col. 7, ll. 5-14. Fig. 3 is reproduced on page ___ above, where it is shown to be substantially the same as Boer's Fig. 4.	5. Boer discloses that the data in DATA field 214 is the data to be transmitted to the receiving transmitter. *See, e.g.*, Boer at Fig. 4; col. 3, ll. 56-62; col. 4, ll. 4-11. "With regard to the message 200, FIG. 4, it should be understood that the preamble 216 and header 218 are always transmitted at the 1 Mbps rate using DBPSK modulation. The subsequent DATA field 214, however, may be transmitted at a selected one of the four possible rates 1, 2, 5 or 8 Mbps, using the modulation and coding discussed hereinabove." Boer at col. 3, ll. 56-62. "The SIGNAL field 206 has a first predetermined value if the DATA field 214 is transmitted at the 1 Mbps rate and a second predetermined value if the DATA field 214 is transmitted at the 2, 5 or 8 Mbps rates. The SERVICE field 208 has a first predetermined value (typically all zero bits) for the 1 and 2 Mbps rates, a second predetermined value for the 5 Mbps rate and a third predetermined value for the 8 Mbps rate." Boer at col. 4, ll. 4-11.
6. The Office cited col. 6, ll. 35-36 of Snell to support an allegation that Snell teaches that the PLCP preamble and PLCP header are always modulated using BPSK. 9-27-16 Grant at 10. "The header may always be BPSK." Snell at col. 6, ll. 35-36.	6. Boer discloses that "the preamble 216 and header 218 are always transmitted at the 1 Mbps rate using DBPSK modulation." Boer at col. 3, ll. 56-58. *See also id.* at Fig. 4.
7. The Office provided no citations to support an allegation that Snell discloses that the SIGNAL field in the PLCP header indicates which of BPSK and QPSK is used for modulating information in the MPDU data. 9-	7. Boer discloses that the SIGNAL and SERVICE fields 206 and 208 of the header 218 indicate which of DBPSK and DQPSK is used for modulating information in the DATA field 214. *See, e.g.,* Boer at col. 4, ll. 4-11; col.

<table>
<tr><th>Portions of Snell Cited in the 9-27-16 Order</th><th>Substantially Identical Portions of Boer</th></tr>
<tr><td>27-16 Grant at 10.</td><td>6, ll. 12-18.

“The SIGNAL field 206 has a first predetermined value if the DATA field 214 is transmitted at the 1 Mbps rate and a second predetermined value if the DATA field 214 is transmitted at the 2, 5 or 8 Mbps rates. The SERVICE field 208 has a first predetermined value (typically all zero bits) for the 1 and 2 Mbps rates, a second predetermined value for the 5 Mbps rate and a third predetermined value for the 8 Mbps rate.” Boer at col. 4, ll. 4-11.

“If rate switching is to take place, then after the last bit of the header 218 has passed through, the rate selector 142 provides a control signal to the encoder, to switch from operation in the 1 Mbps DBPSK mode to the 2 Mbps DQPSK mode, 5 Mbps PPM/QPSK mode or the 8 Mbps PPM/QPSK mode, whereby the DATA field 214 is encoded in the selected manner.” Boer at col. 6, ll. 12-18.</td></tr>
<tr><td>8. The Office cited col. 6, ll. 52-59; col. 7, ll. 1-2; col. 7, ll. 5-14; and Fig. 3 to support an allegation that “Snell teaches that the SIGNAL field in the PLCP header can have four values … , each of which corresponds to a modulation method for the MPDU data.” 9-27-16 Grant at 10.

“Now relating to the PLCP header 91, the SIGNAL is:
<table><tr><td>0Ah</td><td>1Mbits/s BPSK</td></tr><tr><td>14h</td><td>2Mbits/s QPSK</td></tr><tr><td>37h</td><td>5.5 Mbits/s BPSK, and</td></tr><tr><td>6Eh</td><td>11Mbits/s QPSK.</td></tr></table>
Snell at col. 6, ll. 52-59.

“SIGNAL is indicated by 2 control bits and then formatted as described.” Snell at col. 7, ll. 1-2.</td><td>8. Boer discloses that the SIGNAL and SERVICE fields 206 and 208 of the header 218 together indicate one of four data rates, each of which corresponds to a modulation mode for the DATA field 214. See, e.g., Boer at col. 3, ll. 56-62; col. 4, ll. 4-11; col. 6, ll. 12-18.

“With regard to the message 200, FIG. 4, it should be understood that the preamble 216 and header 218 are always transmitted at the 1 Mbps rate using DBPSK modulation. The subsequent DATA field 214, however, may be transmitted at a selected one of the four possible rates 1, 2, 5 or 8 Mbps, using the modulation and coding discussed hereinabove.” Boer at col. 3, ll. 56-62.

“The SIGNAL field 206 has a first predetermined value if the DATA field 214 is transmitted at the 1 Mbps rate and a second predetermined value if the DATA field 214 is</td></tr>
</table>

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"MPDU is serially provided by Interface 80 and is the variable data scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed by the first bit of the MPDU. The variable data may be modulated and demodulated in different formats than the header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at col. 7, ll. 5-14. Fig. 3 is reproduced on page ___ above, where it is shown to be substantially the same as Boer's Fig. 4.	transmitted at the 2, 5 or 8 Mbps rates. The SERVICE field 208 has a first predetermined value (typically all zero bits) for the 1 and 2 Mbps rates, a second predetermined value for the 5 Mbps rate and a third predetermined value for the 8 Mbps rate." Boer at col. 4, ll. 4-11. "If rate switching is to take place, then after the last bit of the header 218 has passed through, the rate selector 142 provides a control signal to the encoder, to switch from operation in the 1 Mbps DBPSK mode to the 2 Mbps DQPSK mode, 5 Mbps PPM/QPSK mode or the 8 Mbps PPM/QPSK mode, whereby the DATA field 214 is encoded in the selected manner." Boer at col. 6, ll. 12-18.