Exhibit C

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

REMBRANDT WIRELESS TECHNOLOGIES, LP,	§	
	§	
v.	§	CASE NO. 2:13-CV-213-JRG-RSP
	§	
SAMSUNG ELECTRONICS CO., LTD., et al.	§	

CLAIM CONSTRUCTION MEMORANDUM AND ORDER

On May 30, 2014, the Court held a hearing to determine the proper construction 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 at the hearing and in the parties' claim construction briefing (Dkt. Nos. 97, 102, and 103),[1] the Court issues this Claim Construction Memorandum and Order.

[1] Citations to documents (such as the parties' briefs and exhibits) in this Claim Construction Memorandum and Order refer to the page numbers of the original documents rather than the page numbers assigned by the Court's electronic docket unless otherwise indicated. Defendants are Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, Samsung Austin Semiconductor, LLC (collectively referred to as "Samsung"), Blackberry Corp., and Blackberry Ltd. (collectively referred to as "Blackberry"; formerly known as Research In Motion Corp. and Research In Motion Ltd., respectively) (all collectively referred to as "Defendants").

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BACKGROUND

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 "patents-in-suit").

The patents-in-suit are both titled "System and Method of Communication Using At Least Two Modulation Methods." The '580 Patent issued on September 20, 2011, and bears a filing date of August 19, 2009. The '228 Patent issued on June 4, 2013, and bears a filing date of August 4, 2011. The '228 Patent is a continuation of the '580 Patent. Both patents-in-suit bear an earliest priority date of December 5, 1997.

In general, the patents-in-suit relate to modulation methods for communications. Plaintiff argues that the patents-in-suit relate to the well-known "Bluetooth" wireless communication standards. *See* Dkt. No. 97 at 1. The Abstract of the '580 Patent is representative and states:

> A device may be capable of communicating using at least two type types [*sic*] 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 [*sic*] 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.

LEGAL PRINCIPLES

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *See id.* at 1313; *see also C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc'ns*

Group, Inc., 262 F.3d 1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *See Phillips*, 415 F.3d at 1314; *C.R. Bard*, 388 F.3d at 861. Courts give claim terms their ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the entire patent. *Phillips*, 415 F.3d at 1312-13; *accord Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

The claims themselves provide substantial guidance in determining the meaning of particular claim terms. *Phillips*, 415 F.3d at 1314. First, a term's context in the asserted claim can be very instructive. *Id.* Other asserted or unasserted claims can aid in determining the claim's meaning because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term's meaning. *Id.* For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id.* at 1314-15.

"[C]laims 'must be read in view of the specification, of which they are a part.'" *Id.* at 1315 (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Phillips*, 415 F.3d at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *accord Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). This is true because a patentee may define his own terms, give a claim term a different meaning than the term would otherwise possess, or disclaim or disavow claim scope. *Phillips*, 415 F.3d at 1316. In these situations, the inventor's lexicography governs. *Id.* The specification may also resolve the meaning of ambiguous claim terms "where the ordinary and accustomed meaning of

the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex*, 299 F.3d at 1325. But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims." *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988)); *accord Phillips*, 415 F.3d at 1323.

The prosecution history is another tool to supply the proper context for claim construction because a patent applicant may also define a term in prosecuting the patent. *Home Diagnostics, Inc., v. Lifescan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004) ("As in the case of the specification, a patent applicant may define a term in prosecuting a patent."). "[T]he prosecution history (or file wrapper) limits the interpretation of claims so as to exclude any interpretation that may have been disclaimed or disavowed during prosecution in order to obtain claim allowance." *Standard Oil Co. v. Am. Cyanamid Co.*, 774 F.2d 448, 452 (Fed. Cir. 1985).

Although extrinsic evidence can be useful, it is "less significant than the intrinsic record in determining the legally operative meaning of claim language." *Phillips*, 415 F.3d at 1317 (citations and internal quotation marks omitted). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are entirely unhelpful to a court. *Id.* Generally, extrinsic

evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

CONSTRUCTION OF DISPUTED TERMS

Shortly before the start of the May 30, 2014 hearing, the Court provided the parties with preliminary constructions of the disputed terms with the aim of focusing the parties' arguments and facilitating discussion. Those preliminary constructions are set forth within the discussion of each term, below.

A. "first modulation method" and "second modulation [method]"

"first modulation method"	
Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
"a first method for varying one or more characteristics of a carrier in accordance with information to be communicated"[2]	"a method of encoding data that is understood by a first type of receiver, but not by a second type of receiver"
"second modulation [method]"	
Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
"a second method for varying one or more characteristics of a carrier in accordance with information to be communicated"[3]	"a method of encoding data that is understood by the second type of receiver, but not by the first type of receiver"

Dkt. No. 97 at 6; Dkt. No. 102 at 2-3. The parties submit that the first of these terms appears in Claims 1, 2, 13, 19, 21, 22, 23, 32, 40, 41, 49, 54, 58, 59, 70, 76, 78, and 79 of the '580 Patent and Claims 1, 5, 15, 17, 18, 22, 25, 26, 37, 38, 39, 41, 47, 48, 49, and 52 of the '228 Patent. Dkt.

[2] Plaintiff previously proposed: "No construction necessary; plain and ordinary meaning applies. Alternatively, 'a first method for encoding data onto a carrier.'" Dkt. No. 81, Ex. A at 7.

[3] Plaintiff previously proposed: "No construction necessary; plain and ordinary meaning applies. Alternatively, 'a second method for encoding data onto a carrier.'" Dkt. No. 81, Ex. A at 9.

No. 82, Ex. A at 7. The parties submit that the second of these terms appears in Claims 1, 13, 20, 22, 23, 32, 40, 49, 54, 58, 70, 77, and 79 of the '580 Patent and Claims 1, 10, 17, 18, 22, 23, 26, 37, 38, 41, 43, 47, and 49 of the '228 Patent. *Id.* at 9.

Shortly before the start of the May 30, 2014 hearing, the Court provided the parties with the following preliminary constructions for these disputed terms: "first modulation method" means "a first method for varying one or more characteristics of a carrier signal in accordance with information to be communicated"; and "second modulation [method]" means "a second method for varying one or more characteristics of a carrier signal in accordance with information to be communicated." Plaintiff had no opposition to these preliminary constructions. Defendants were opposed.

(1) The Parties' Positions

Plaintiff argues that "Defendants' constructions . . . confuse 'modulation' with 'encoding'" and import limitations from a preferred embodiment. Dkt. No. 97 at 6. Plaintiff also submits that examples of the characteristics of a carrier than can be modulated are amplitude, frequency, and phase. *Id.* In this regard, Plaintiff cites extrinsic dictionary definitions (quoted below) as well as statements by Defendant Samsung in an inter partes review ("IPR") filing. *Id.* at 7; *see id.*, Ex. 7, 3/20/2014 Petition for *Inter Partes* Review of U.S. Patent No. 8,023,580 at 9 (citing *The IEEE Standard Dictionary of Electrical and Electronics Terms* 662 (6th ed. 1996)). Plaintiff also argues that the constituent terms "first" and "second" refer to repeated instances rather than to any distinction or incompatibility. *Id.* at 8. Plaintiff explains that this is a patent law convention and that this interpretation is consistent with usage of "first" and "second" in various claims as well as in the Summary section of the '580 Patent. *Id.* at 8-10.

As to Defendants' proposed constructions, Plaintiff argues that the patents-in-suit "never use the term 'encode' at all," and Plaintiff cites the provisional patent application to which the patents-in-suit claim priority as distinguishing between "modulation" and "encoding." *Id.* at 11-12. Plaintiff also argues that Defendants' proposal of incompatibility between the first and second modulation methods is found in a preferred embodiment but not in the claims. *Id.* at 12. Plaintiff submits that such a limitation appears only in dependent claims, namely Claims 18 and 75 of the '580 Patent. *Id.* at 13. Further, Plaintiff argues, Defendants' proposals would improperly exclude embodiments in which "modems may be capable of using several different modulation methods." *Id.* (quoting '580 Patent at 1:36-37; citing *id.* at 5:51-54). Plaintiff likewise argues that "the USPTO examiner recognized that the claimed 'first' and 'second' modulation methods could be understood by a common receiver—contrary to Defendants' constructions." Dkt. No. 97 at 14. Finally, Plaintiff urges that Defendants' proposals "would render claim limitations that explicitly require 'the first modulation method is different than the second modulation method' superfluous." *Id.* at 16 (citing '580 Patent at Claims 23, 32 & 40).

Defendants respond that "the sole disclosed embodiment of the invention has a 'Trib 1'[4] modem that understands 'type A' modulation but not '[t]ype B,' and a 'Trib 2' modem that understands 'type B' modulation but not 'type A.'" Dkt. No. 102 at 3; *see id.* at 6-9. Defendants note that the specification asserts (in Defendants' words) that "in the prior art, because all modems connected to a common circuit needed to use compatible modulation methods, tribs that supported only a low-performance modulation method (e.g. type B) would not work in systems

[4] The patents-in-suit disclose that in a "multipoint architecture," the term "trib" is a shortened form of the word "tributary" and refers to one of several modems that communicates with a single "master" modem. *See* '580 Patent at 1:56-58 & 3:40-44. The term "trib" appears to be synonymous with the term "slave" as used in the patents-in-suit. *See* Dkt. No. 97, Ex. 7, 3/20/2014 Petition for *Inter Partes* Review of U.S. Patent No. 8,023,580 at 11.

that require a high-performance modulation (e.g. type A) for any tasks." *Id.* at 4. Defendants explain that "[i]f the tribs speak each other's language, the alleged invention would be unnecessary." *Id.* at 3; *see id.* at 5 ("If the type B trib could understand type A modulation, type A modulation would simply be used by both devices, as in the prior art.").

As to the prosecution history, Defendants highlight that the patentee deleted from the specification all disclosures of what Defendants refer to as a "bilingual" trib, *i.e.*, a trib with the ability to use two types of modulation. *Id.* at 9-10. Defendants also submit that the examiner statement cited by Plaintiff in its opening brief was made before the patentee deleted the disclosures of a bilingual trib. *Id.* at 10. Further, Defendants cite the prosecution history of ancestor United States Patent No. 6,616,838, during which the patentee stated: "The present invention is directed to the use of differing transceivers responsive to different modulation methods to the exclusion of other modulation methods . . . ." *Id.* at 11 (quoting Ex. 8, 9/27/2001 First Amendment and Response at p. 6 of 10).

As to their proposed constructions, Defendants note that "encoding" appeared in the constructions that Plaintiff had proposed prior to filing its opening claim construction brief. Dkt. No. 102 at 3 & 14. Defendants also argue: "First, contrary to [Plaintiff's] arguments, 'modulation' is 'encoding,' as [Plaintiff's] own dictionary confirms. Second, [Plaintiff's] construction injects the complex concept of carrier waves into the definition. That concept would not assist a jury." *Id.* at 14 (citations omitted). Finally, Defendants argue that the claim limitations requiring "different" modulation methods are "already superfluous." *Id.* at 15.

Plaintiff replies to Defendants' arguments as follows: (1) whether the claims adequately distinguish prior art is a matter of validity, not claim construction, and the patentee did not anywhere state that the point of novelty was that receivers understand only one modulation

method; (2) the claims should not be limited to a particular embodiment and, moreover, the patents-in-suit incorporate related patent applications that disclose bilingual tribs (*see* Dkt. No. 103, Ex. 30 at RIP9770); (3) the patentee removed, from the specification, references to measuring transmission line characteristics, but the patentee did not disclaim all embodiments in which multiple modulation methods could be understood by a single trib; (4) Defendants' technology tutorial submitted to this Court (Dkt. No. 103, Ex. 28) confirms that "modulation" is different than "encoding"; (5) the doctrine of claim differentiation is not overcome by any disclosures in the specification; and (6) Defendants' proposals would render superfluous the claim limitations requiring that the "first" and "second" modulation methods be "different." Dkt. No. 103 at 2-5.

At the May 30, 2014 hearing, Defendants emphasized that the only disclosed embodiment uses monolingual tribs and that during prosecution the patentee deleted disclosure of bilingual tribs. The Court inquired where, if anywhere, the patentee stated that a trib can understand only one modulation method. Defendants responded that the patentee made that statement "by implication" by removing the disclosure of bilingual tribs. In this regard, Defendants cited the case of *Abbott Laboratories v. Sandoz, Inc.*, 566 F.3d 1282 (Fed. Cir. 2009). As to Plaintiff's claim differentiation arguments, Defendants urged that the dependent claim "tail" cannot wag the specification "dog." *See N. Am. Vaccine, Inc. v. Am. Cyanamid Co.*, 7 F.3d 1571, 1577 (Fed. Cir. 1993) ("The dependent claim tail cannot wag the independent claim dog.").

Plaintiff responded that the deletions were merely "housekeeping" and related primarily to test signals and to measuring transmission line characteristic rather than to the use of multilingual tribs. Plaintiff also reiterated that the patents-in-suit incorporate-by-reference

related applications that disclose multilingual tribs. Finally, Plaintiff cited *01 Communique Laboratory, Inc. v. LogMeIn, Inc.*, 687 F.3d 1292 (Fed. Cir. 2012), for the proposition that if the prosecution history is subject to a reasonable, non-limiting interpretation, then there is no disclaimer.

(2) Analysis

Claim 1 of the '580 Patent is representative and recites (emphasis added):

> 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.

As an initial matter, Defendants' proposed constructions appear to render redundant the recital of "wherein the second modulation method is of a different type than the first modulation method." Defendants have countered that "[t]he limitations of these claims requiring 'different' modulation methods are . . . already superfluous" because "[Plaintiff] admits that the terms 'first' and 'second' . . . are used to distinguish two items that (while similarly named) are, in fact,

different." Dkt. No. 102 at 15. Nonetheless, such redundancy is disfavored when construing claims. *See Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) ("A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so."); *see also Unique Concepts, Inc. v. Brown*, 939 F.2d 1558, 1562 (Fed. Cir. 1991) (noting that "[a]ll the limitations of a claim must be considered meaningful").

As for the specification, the Background section of the '580 Patent states that prior art systems required all modems to use a single, common modulation method:

> 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.*

'580 Patent at 1:26-39 (emphasis added). The specification then discloses using different modulation methods:

> 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.
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> * * *
>
> 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.*

Id. at 2:1-8 & 5:17-22 (emphasis added).

> 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. * * *
>
> 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.

Id. at 5:23-25 & 5:42-44 (emphasis added).

> [A]s 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.
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> * * *
>
> 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.

Id. at 5:65-6:2 & 6:25-29.

The specification does not, however, warrant Defendants' proposed finding that the invention is framed exclusively in the realm of monolingual tribs. Instead, the specification discloses that the advantage of using multiple modulation methods is applicable to multi-lingual tribs:

> 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.

'580 Patent at 2:50-57 (emphasis added).

As to the prosecution history, Defendants have focused on: (1) a statement regarding the "present invention" during prosecution of an ancestor patent; and (2) the patentee's deletion of certain paragraphs from the specification of the patents-in-suit.

First, Defendants have cited the prosecution history of ancestor United States Patent No. 6,616,838, during which the patentee stated: "The present invention is directed to the use of differing transceivers responsive to different modulation methods to the exclusion of other modulation methods . . . ." Dkt. No. 97, Ex. 17, 9/27/2001 First Amendment and Response at 6. Yet, the '580 Patent is a continuation of a continuation of a continuation-in-part of the '838 Patent. The multiple intervening applications render the cited prosecution statement too attenuated to be deemed definitive as to the patents-in-suit, particularly given that the patentee was adding the "exclusion" language to a claim and was referring to "[t]he present invention" in the context of that claim. *See id.* at 6 & A-1; *see also Invitrogen Corp. v. Clontech Labs., Inc.*, 429 F.3d 1052, 1078 (Fed. Cir. 2005) ("[T]he prosecution of one claim term in a parent application will generally not limit different claim language in a continuation application."); *cf. Regents of the Univ. of Minn. v. AGA Med. Corp.*, 717 F.3d 929, 943 (Fed. Cir. 2013) ("When the purported disclaimers made during prosecution are directed to specific claim terms that have been omitted or materially altered in subsequent applications (rather than to the invention itself), those disclaimers do not apply.") (quoting *Saunders Grp., Inc. v. Comfortrac, Inc.*, 492 F.3d 1326, 1333 (Fed. Cir. 2007)).

Second, Defendants have cited the patentee's deletion of matter from the specification of the patents-in-suit. In the case of *Abbott Laboratories v. Sandoz, Inc.*, cited by Defendants

during the May 30, 2014 hearing, the court relied at least in part upon the patentee's omission of matter contained in a parent application:

> [T]he specification refers several times to "Crystal A of the compound (I) of the present invention" and offers no suggestion that the recited processes could produce non-Crystal A compounds, even though other types of cefdinir crystals, namely Crystal B, were known in the art. As noted earlier, the Crystal B formulation actually appears in the parent JP '199 application. Thus, Abbott knew exactly how to describe and claim Crystal B compounds. Knowing of Crystal B, however, Abbott chose to claim only the A form in the '507 patent. Thus, the trial court properly limited the term "crystalline" to "Crystal A."
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> * * *
>
> In limiting "crystalline" to "Crystal A" in claims 1-5, the Eastern District of Virginia did not improperly import the preferred embodiment into the claims. Initially, Crystal A is the only embodiment described in the specification. As discussed above, the specification's recitation of Crystal A as its sole embodiment does not alone justify the trial court's limitation of claim scope to that single disclosed embodiment. *See Liebel-Flarsheim* [*Co. v. Medrad, Inc.*], 358 F.3d [898,] 906 [(Fed. Cir. 2004)] ("[T]his court has expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment."). In this case, however, the rest of the intrinsic evidence, including the prosecution history and the priority JP '199 application, evince a clear intention to limit the '507 patent to Crystal A . . . .
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> * * *
>
> The JP '199 application strongly suggests that the '507 patent intentionally excluded Crystal B compounds. As discussed above, the JP '199 application establishes unequivocally that Abbott knew and could describe both Crystal A and Crystal B. Abbott could have retained the disclosure of Crystal B to support the broader claims of the '507 patent, but instead disclosed and claimed A alone.
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> * * *
>
> Given the exclusive focus on Crystal A in the specification as well as the prosecution history of the '507 patent, the Eastern District of Virginia properly limited "crystalline" in claims 1-5 to "Crystal A."
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> * * *
>
> The Eastern District of Virginia correctly construed the '507 patent's recitation of "crystalline" in each of the asserted claims as limited to Crystal A, as outlined in the specification. Because Abbott scrubbed all references to Crystal B in the '507

> patent's specification, which were present in the '507 patent's parent foreign application, Abbott clearly demonstrated its intent to limit the '507 patent to Crystal A. This intent was further underscored by comments made during prosecution. As such, Abbott is unable to recapture Crystal B through broad claim language or under the doctrine of equivalents.

566 F.3d at 1289-90, 1299 (citation omitted).

Here, by contrast, the patentee's deletion of matter relates less directly to the limitation that Defendants seek to impose. The patentee deleted the following paragraphs during prosecution of the '580 Patent:

> [0042] In an alternative embodiment of the present invention, embedded modulations can be used as a way to *measure transmission line characteristics* between a master transceiver and tributary transceiver as shown in FIG 8. In this embodiment, *both a master transceiver 64 and a tributary transceiver 66a would have the ability to transmit using at least two modulation methods, type A and type B*. In the present example, the primary transmission type is type A. Thus, as shown in FIG. 8, the master transceiver 64 establishes type A as the primary modulation in sequence 150.
>
> [0043] To *switch from type A to type B modulation*, master transceiver 64 transmits a notification sequence 152 to the tributary 66a. Thus, the tributary 66a is notified of an impending change to modulation type B. 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, such as a *test signal*. After notifying the tributary 66a of the change to type B modulation, the master transceiver 64[] transmits test signal sequence 151 using type B modulation.
>
> [0044] In this embodiment, the tributary transceiver can contain logic which enables the tributary 66a to *calculate at least one channel parameter from the test signal sequence 154*. Channel parameters typically include *transmission line characteristics*, such as, for example, loss versus frequency, non-linear distortion, listener echoes, talker echoes, bridge tap locations, impedance mismatches, noise profile, signal-to-noise ratio, group delay versus frequency, cross-talk presence, cross-talk type, etc. Moreover, the tributary transceiver 66a could be configured to communicate a channel parameter back to the master transceiver 64.
>
> [0045] After transmitting the *test signal* sequence 154 to the tributary transceiver 66a, the master transceiver 64 can transmit trailing sequence 156 to the tributary transceiver 66a using type A modulation to indicate the end of the transmission using type B modulation. The master transceiver 64 can then send information to the tributary transceiver 66a using primary modulation type A, as shown by

> training, data and trailing sequences 158, 160 and 162. Likewise, the tributary transceiver 66a can send information to the master transceiver 64 using primary modulation type A, as shown by training, data and trailing sequences 164, 166 and 168.
>
> [0046] In a further alternative embodiment, the master transceiver 64 or tributary transceiver 66a may identify a time period within which *test signal* sequences may be transmitted. This would eliminate the training and trailing sequences which alert the tributary transceiver 66a to the beginning of a new modulation method. The identification of the time period could be initiated by the master transceiver 64 or tributary transceiver 66a and could include a time period noted in the header of a transmission between the tributary transceiver 66a and master transceiver 64.

Dkt. No. 97, Ex. 9, 3/1/2011 Reply Pursuant to 37 CFR § 1.111 at 5-6 (RIP3521-22) (emphasis added); *see id.* at 22 ("The MPEP suggests that the applicant modify the brief summary of the invention and restrict the descriptive subject matter 'so as to be in harmony with the claims.' *MPEP 1302.01*, General Review of Disclosure. Accordingly, Applicant has deleted paragraphs [0042] – [0046].") (square brackets in original); *see also* Dkt. No. 102, Ex. 4 at p. 20 of 44 (RIP19) (Figure 8, illustrating "Trib Type A + B"); Dkt. No. 97, Ex. 9, 3/1/2011 Reply Pursuant to 37 CFR § 1.111 at 4 (RIP3520), 22 (RIP3538) & p. 34 of 34 (RIP3549) (replacing Figure 8).

This deletion of disclosure of "a tributary transceiver 66a [that has] the ability to transmit using at least two modulation methods" is notable, and Defendants argued at the May 30, 2014 hearing that a "test signal" is merely an example of a communication with a bilingual trib. Dkt. No. 97, Ex. 9, 3/1/2011 Reply Pursuant to 37 CFR § 1.111 at 5-6 (RIP3521-22). Nonetheless, Plaintiff has persuasively argued that these paragraphs relate primarily to test signals and to measuring transmission line characteristics rather than to the use of bilingual tribs. The above-quoted *Sandoz* case cited by Defendants is therefore distinguishable, and the patentee's deletion of matter from the specification is of no limiting effect here. *See SanDisk Corp. v. Memorex Prods., Inc.*, 415 F.3d 1278, 1286 (Fed. Cir. 2005) ("There is no clear and unmistakable

disclaimer if a prosecution argument is subject to more than one reasonable interpretation, one of which is consistent with a proffered meaning of the disputed term.") (internal quotation marks omitted); *see also 01 Communique*, 687 F.3d at 1297 (quoting *SanDisk*).

Defendants also argued at the May 30, 2014 hearing that the patentee removed this matter because it was introduced in a parent continuation-in-part application. Defendants explained that if the claims of the patents-in-suit were found to rely upon this new matter, the claims would not receive benefit of the earliest priority date. Defendants concluded that the patentee deleted these paragraphs from the specification in order to eliminate this risk. Defendants' argument in this regard appears better suited to a written description challenge because validity analysis is not a regular part of claim construction. *See Phillips*, 415 F.3d at 1327 ("[W]e have certainly not endorsed a regime in which validity analysis is a regular component of claim construction."). Defendants' arguments regarding deletion of matter from the specification are therefore of minimal relevance during the present claim construction proceedings.

In sum, none of the prosecution history cited by Defendants contains any definitive statements that would warrant finding a disclaimer. *See Omega Eng'g v. Raytek Corp.*, 334 F.3d 1314, 1324 (Fed. Cir. 2003) ("As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic evidence and protects the public's reliance on *definitive* statements made during prosecution.") (emphasis added). Further, as explained above, the prosecution history is not otherwise sufficiently clear to justify Defendants' narrow interpretation of the present patents-in-suit.

As to the parties' proposed constructions, "[t]he use of the terms 'first' and 'second' is a common patent-law convention to distinguish between repeated instances of an element or limitation." *3M Innovative Props. Co. v. Avery Dennison Corp.*, 350 F.3d 1365, 1371 (Fed. Cir.

2003). Nothing in the nature of "repeated instances" demands the incompatibility that Defendants have proposed. *Cf. id.* ("In the context of claim 1, the use of the terms 'first . . . pattern' and 'second . . . pattern' is equivalent to a reference to 'pattern A' and 'pattern B,' and should not in and of itself impose a serial or temporal limitation onto claim 1."). Although the above-quoted disclosures in the specification contemplate a trib that can use only one modulation method, nothing in the claim language warrants limiting the disputed terms to such a narrow construction.

The doctrine of claim differentiation also weighs against requiring incompatibility because such a limitation appears in dependent Claims 18 and 75 of the '580 Patent, which recite:

> 18. The device of claim 15, wherein the intended destination is the first type of receiver and unable to demodulate the second modulation method.
>
> * * *
>
> 75. The device of claim 72, wherein the intended destination is the first type of receiver and unable to demodulate the second modulation method.

The doctrine of claim differentiation weighs against any construction of the disputed terms that would render these dependent claims superfluous. *See Phillips*, 415 F.3d at 1315 ("[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim."); *see also Liebel-Flarsheim*, 358 F.3d at 910 ("[W]here the limitation that is sought to be 'read into' an independent claim already appears in a dependent claim, the doctrine of claim differentiation is at its strongest."); *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1233 (Fed. Cir. 2001) ("Claim differentiation, while often argued to be controlling when it does not apply, is clearly applicable when there is a dispute over whether a limitation found in a dependent claim should be read into

an independent claim, and that limitation is the only meaningful difference between the two claims.").

Defendants have countered that "any presumption created by the doctrine of claim differentiation will be overcome by a contrary construction dictated by the written description or prosecution history." *Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1305 (Fed. Cir. 2011) (citations and internal quotation marks omitted); *accord Curtiss-Wright Flow Control Corp. v. Velan, Inc.*, 438 F.3d 1374, 1381 (Fed. Cir. 2006) ("[C]laim differentiation can not broaden claims beyond their correct scope.") (citation and internal quotation marks omitted). On balance, *Retractable* is distinguishable because the above-discussed specification disclosures and prosecution history are not so clear as Defendants have urged. *See Retractable*, 653 F.3d at 1305 (noting that disclosures "recite that 'the invention' has a body constructed as a single structure, expressly distinguish the invention from the prior art based on this feature, and only disclose embodiments that are expressly limited to having a body that is a single piece").

As to the proper construction, Defendants' proposal of "type of receiver" is vague and confusing because it is unclear whether "type" refers to the modulation method or to some other, unspecified characteristic of the receivers.

Also, Plaintiff properly argues that "encoding" is different than "modulation." For example, Plaintiff submits that the word "encode" can be defined as "to encrypt" or as "to use a code, frequently one composed of binary numbers, to represent individual characters or groups of characters in a message." *Id.*, Ex. 4, *Modern Dictionary of Electronics* 341 (6th ed. 1997); *id.*, Ex. 5, *Microsoft Press Computer Dictionary* 175 (3d ed. 1997); *see id.*, Ex. 11, John G. Proakis & Masoud Salehi, *Communication Systems Engineering* 8-11 (1994); *see also id.*, Ex. 12, Bernard Sklar, *Digital Communications: Fundamentals and Applications* 6-7 (1988).

"Modulation," by contrast, is defined as a process of varying some characteristic of a carrier signal. *See* Dkt. No. 97, Ex. 3, *The IEEE Standard Dictionary of Electrical and Electronics Terms* 662 (6th ed. 1996) ("The process by which some characteristic of a carrier is varied in accordance with a modulating wave"); *see also id.*, Ex. 4, *Modern Dictionary of Electronics* 633 (6th ed. 1997) ("The process, or results of the process, whereby some characteristic of one signal is varied in accordance with another signal. The modulated signal is called the carrier and may be modulated in three fundamental ways: by varying the amplitude (amplitude modulation) by varying the frequency (frequency modulation) or by varying the phase (phase modulation)."); *id.*, Ex. 5, *Microsoft Press Computer Dictionary* 313 (3d ed. 1997) ("The process of changing or regulating the characteristics of a carrier wave vibrating at a certain amplitude (height) and frequency (timing) so that the variations represent meaningful information."); *id.*, Ex. 6, D.K. Sharma, et al., *Analog & Digital Modulation Techniques: An Overview* 551 (2010) ("Modulation is the process of varying some parameter of a periodic waveform in order to use that signal to convey a message."); Dkt. No. 102, Ex. 9 at RIP13523 ("Modulation is the process of encoding source data onto a continuous constant frequency signal i.e. carrier signal with frequency fc."). The specification, too, refers to a carrier in relevant contexts. *See* '580 Patent at 1:57 & 2:4. Finally, during oral argument as to the "different type" terms, Defendants themselves referred to modulating data onto a carrier.

Thus, even though Plaintiff itself included the word "encoding" in previously proposed constructions, Defendants' proposals of "encoding" are rejected as tending to confuse rather than clarify the scope of the claims. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("Claim construction is a matter of resolution of disputed meanings and

technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement.").

The Court, having rejected Defendants' proposed constructions for the reasons set forth above, hereby construes the disputed terms as set forth in the following chart:

Term	Construction
"first modulation method"	**"a first method for varying one or more characteristics of a carrier signal in accordance with information to be communicated"**
"second modulation method"	**"a second method for varying one or more characteristics of a carrier signal in accordance with information to be communicated"**

B. "modulation method [] of a different type" and "different types of modulation methods"

Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
"different families of modulation techniques"	"modulation methods that are incompatible with one another"

Dkt. No. 97 at 17; Dkt. No. 102 at 16. The parties submit that these terms appear in Claims 1 and 58 of the '580 Patent and Claims 1, 22, and 26 of the '228 Patent. Dkt. No. 81, Ex. A at 5.

Shortly before the start of the May 30, 2014 hearing, the Court provided the parties with the following preliminary construction for these disputed terms: "different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods." Plaintiff had no opposition to the preliminary construction. Defendants were opposed.

(1) The Parties' Positions

Plaintiff argues that during prosecution, the patentee defined these disputed terms by referring to "two types of modulation methods, *i.e.*, different families of modulation techniques." Dkt. No. 97 at 18. Plaintiff further argues that "Defendants' construction, which only requires 'incompatibility,' has no concept of a group of things having common characteristics. Such a construction effectively reads the word 'type' right out of the claims, rendering it superfluous." *Id.* at 19-20.

Defendants respond:

> As noted above [as to the "first" and "second" modulation methods], the whole purpose of the purported invention is to enable two (or more) trib modems to use different modulation methods on the same circuit. The crucial characteristic of the different modulation methods vis-à-vis one another is that they are incompatible. If they were compatible, there would be no problem for the patents to solve.

Dkt. No. 102 at 16. Defendants also note that the word "family" does not appear in the specification. *Id.* at 17. Defendants suggest that the patentee used the phrase "families of modulation techniques" only in prosecution history remarks—and not in the claims—because "[i]njecting that phrase into [a] claim would have rendered it plainly unsupported by the specification and opened this portion of the claim to a written description challenge." *Id.* at 18. Defendants argue that Plaintiff's authorities regarding the use of "i.e." are applicable only to use of "i.e" in the specification, not the prosecution history. *Id.* at 19. Defendants further argue that "Defendants' construction[] gives full meaning to the word 'type,' by requiring incompatibility." *Id.* Finally, Defendants submit that Plaintiff's proposal of "families" "only raises the further question of what constitutes a family of modulation methods." *Id.* at 20.

Plaintiff replies that the patentee's definition in the prosecution history is supported by disclosures of FSK (frequency-shift keying) and QAM (quadrature amplitude modulation) in the

specification and in related applications cited by the specification. Dkt. No. 103 at 6. Plaintiff also argues that "nothing in the specification—certainly not the passages Defendants cite—reflects the kind of 'clear and unmistakable' intent necessary to depart from the ordinary meaning and define 'type' as 'incompatibility.'" *Id.* at 6-7 (citing *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1366-67 (Fed. Cir. 2012)).

At the May 30, 2014 hearing, Defendants argued that "family" is a much broader term than "type" because modulation methods could be grouped together in any number of ways, such as analog as opposed to digital or phase modulation as opposed to frequency modulation. Defendants also argued that Plaintiff's interpretation is inconsistent with dependent Claim 43 of the '228 Patent, which recites that "at least one" of the first and second modulation methods uses phase modulation.

Plaintiff responded by reiterating that Defendants' proposed construction fails to give meaning to the constituent term "type." Plaintiff also argued that Defendants' proposal is overly restrictive because it could be read to mean that different FM radio stations use "incompatible" methods merely because they transmit at different frequencies. Plaintiff urged that the claims contemplate the use of non-incompatible modulation methods so long as they are different.

(2) Analysis

The Summary section of the specification states: "Another advantage of the present invention is that a master transceiver can communicate seamlessly with tributary transceivers or modems using *incompatible modulation methods*." *Id.* at 2:55-57 (emphasis added). Nonetheless, "[t]he court's task is not to limit claim language to exclude particular devices because they do not serve a perceived 'purpose' of the invention. . . . An invention may possess a number of advantages or purposes, and there is no requirement that every claim directed to that

invention be limited to encompass all of them." *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1370 (Fed. Cir. 2003); *accord Howmedica Osteonics Corp. v. Wright Med. Tech., Inc.*, 540 F.3d 1337, 1345 (Fed. Cir. 2008) (discussing *E-Pass*). Defendants' proposal that different "types" of modulation methods must be "incompatible" would improperly limit the claims to a preferred embodiment. *See Comark*, 156 F.3d at 1187.

Moreover, although it appears in the Summary of the specification as quoted above, the word "incompatible" is unclear and, as Plaintiff has argued, would tend to raise issues concerning the manner or degree of compatibility. Along those lines, uncertainty might arise as to whether modulation methods must be completely incompatible in all respects or could instead be partially compatible. At the May 30, 2014 hearing, the Court expressed concern as to the clarity of "incompatible." Defendants responded that the disputed terms require that the modulation methods be different "waveforms," different "ways to modulate" data onto a carrier, or simply "not the same." These suggestions, however, merely restate that the methods are "different." This adds little, if anything, to the disputed terms themselves, which recite "modulation method [] of a different type" and "different types of modulation methods." Defendants' proposal of "incompatible" is therefore rejected.

The Court turns to whether Plaintiff is correct that the patentee gave the disputed terms an "express definition." Dkt. No. 97 at 19.

"The specification acts as a dictionary 'when it expressly defines terms used in the claims or when it defines terms by implication.'" *Bell Atl. Network Servs.*, 262 F.3d at 1268 (quoting *Vitronics Corp.*, 90 F.3d at 1582). "When a patentee acts as his own lexicographer in redefining the meaning of particular claim terms away from their ordinary meaning, he must clearly express that intent in the written description. We have repeatedly emphasized that the statement in the

specification must have sufficient clarity to put one reasonably skilled in the art on notice that the inventor intended to redefine the claim term." *Merck*, 395 F.3d at 1370 (citations omitted). "[A] patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification or file history." *Vitronics*, 90 F.3d at 1582.

During prosecution, the patentee amended claims so as to add the word "type," and the patentee stated:

> 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 [(frequency shift keying)] family of modulation methods and the QAM [(quadrature amplitude modulation)] family of modulation methods.

Dkt. No. 97, Ex. 9, 3/1/2011 Reply Pursuant to 37 CFR § 1.111 at 20 (RIP3536); *see id.* at 7 (RIP3523) (amending claims). Generally, "i.e." signals an explicit definition. *See, e.g., Abbott Labs. v. Novopharm Ltd.*, 323 F.3d 1324, 1327, 1330 (Fed. Cir. 2003) (finding that the patentee used "i.e." to define a term not known in the art at the relevant time); *but see Pfizer, Inc. v. Teva Pharm., USA, Inc.*, 429 F.3d 1364, 1373 (Fed. Cir. 2005) (specification referred to "saccharides (i.e. sugars)" but also contained further discussion under a section titled "Saccharides," and the court concluded that "the patentee clearly intended for this section to address the meaning of the same term").

The significance of the patentee's use of "i.e." in the prosecution history—as opposed to in the specification—is perhaps less clear. On one hand, some authorities caution against relying upon potentially "self-serving" statements in the prosecution history. *See Biogen, Inc. v. Berlex Labs.*, 318 F.3d 1132, 1140 (Fed. Cir. 2003) ("Representations during prosecution cannot enlarge

the content of the specification, and the district court was correct in relying on the specification in analyzing the claims."); *see also Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 1270 (Fed. Cir. 1986) ("For example, a Citation [of Prior Art] filed [with the PTO] during litigation might very well contain merely self-serving statements which likely would be accorded no more weight than testimony of an interested witness or argument of counsel. Issues of evidentiary weight are resolved on the circumstances of each case."). Also, as Defendants have pointed out, dependent Claim 43 of the '228 Patent is at least somewhat at odds with Plaintiff's interpretation to the extent that it would require that only one, instead of "at least one," of the first and second modulation methods can be phase modulation.

On the other hand, a "claim term will not receive its ordinary meaning if the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification *or prosecution history*." *CCS Fitness v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (emphasis added); *accord Home Diagnostics*, 381 F.3d at 1356; *Advanced Fiber Techs. (AFT) Trust v. J&L Fiber Servs., Inc.*, 674 F.3d 1365, 1374 (Fed. Cir. 2012); *see Vitronics*, 90 F.3d at 1582 (quoted above). Such authorities weigh in favor of construing the disputed term in accordance with the patentee's express definition in the prosecution history.

At the May 30, 2014 hearing, Defendants urged that because the patentee's definition was set forth after the examiner had indicated that the claims were allowable, the definition was self-serving and was not part of the usual back-and-forth negotiation that informs the meaning of claim terms. Plaintiff properly countered, however, that the patentee provided the definition in connection with amending some of the claims so as to introduce the word "types." *See* Dkt. No. 97, Ex. 9, 3/1/2011 Reply Pursuant to 37 CFR § 1.111 at 20 (RIP3536) (quoted above); *see also id.* at 7 (RIP3523) (amending claims). Thus, to whatever extent Defendants are correct that

the prosecution history can only define a term in the context of developing allowable claims, the patentee's definition in this case can properly be considered.

The patentee's express definition is also consistent with disclosure in the specification of various categories of modulation methods. *See* '580 Patent at 2:1-8 ("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"); *see also id.* at 5:17-20 (similar).

Such a definition is also consistent with the extrinsic dictionary definitions submitted by Plaintiff, which define "type" as "a class, kind, or group set apart by common characteristics" and "family" as "a group of things having common characteristics." Dkt. No. 97, Ex. 22, *Merriam-Webster's Dictionary and Thesaurus* 291, 858 (2007); *see id.*, Ex. 23, *The American Century Thesaurus* 129 (1995) (listing "type" as a synonym for "family").

On balance, the patentee's lexicography should be given effect in the Court's construction. *See Vitronics*, 90 F.3d at 1582; *see also Abbott Labs.*, 323 F.3d at 1327, 1330; *CCS Fitness*, 288 F.3d at 1366; *Advanced Fiber Techs.*, 674 F.3d at 1374. As to Defendants' concerns, any dispute regarding whether accused modulation techniques are from different "families" is a factual dispute regarding infringement rather than a legal dispute for claim construction. *See PPG Indus. v. Guardian Indus. Corp.*, 156 F.3d 1351, 1355 (Fed. Cir. 1998) (noting that "the task of determining whether the construed claim reads on the accused product is for the finder of fact").

Nonetheless, although Plaintiff proposes merely "different families of modulation techniques," the patentee's definition in the prosecution history includes examples, namely "the

FSK family of modulation methods and the QAM family of modulation methods."[5] Dkt. No. 97, Ex. 9, 3/1/2011 Reply Pursuant to 37 CFR § 1.111 at 20 (RIP3536). These examples provide useful context for understanding the phrase "different families" and, having been provided as part of the patentee's definition, should be included in the Court's construction.

The Court accordingly hereby construes **"modulation method [] of a different type"** and **"different types of modulation methods"** to mean **"different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods."**

C. "communication[s] device," "device that transmits," and "logic configured to transmit"

"communication[s] device"	
Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
No construction necessary; plain and ordinary meaning applies. Alternatively: "a device that sends or receives information"	Samsung: "a device that sends or receives information over wires" BlackBerry: "a device that sends or receives information over wires in a circuit-switched network"
"device that transmits"	
Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
No construction necessary; plain and ordinary meaning applies. Alternatively: "a device that sends information"	Samsung: "a device that sends information over wires" BlackBerry: "a device that sends information over wires in a circuit-switched network"

[5] The meanings of "FSK" and "QAM" do not appear to be in dispute.

"logic configured to transmit"	
Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
No construction necessary; plain and ordinary meaning applies. Alternatively: "logic configured to send information"	Samsung: "logic configured to send information over wires" BlackBerry: "logic configured to send information over wires in a circuit-switched network"

Dkt. No. 97 at 20; Dkt. No. 102 at 23. The parties submit that the first of these terms appears in Claims 1, 23, 32, and 58 of the '580 Patent and all asserted claims of the '228 Patent. Dkt. No. 81, Ex. A at 11. The parties further submit that the second of these terms appears in Claim 40 of the '580 Patent and that the third appears in Claims 49 and 54 of the '580 Patent. *Id.* at 14 & 16.

Shortly before the start of the May 30, 2014 hearing, the Court provided the parties with the following preliminary constructions for these disputed terms: "communication[s] device" means "a device that sends or receives information"; "device that transmits" means "a device that sends information"; and "logic configured to transmit" means "logic configured to send information." Plaintiff had no objection to these preliminary constructions. Defendants were opposed.

(1) The Parties' Positions

Plaintiff argues that "[t]he words in these terms do not have specialized meanings, have not been otherwise defined by the patentee, and are easily understood based on their ordinary meaning." Dkt. No. 97 at 21. As to Defendants' proposals of "wires" and a "circuit-switched network," Plaintiff responds that such constructions are contrary to the recital in the claims of a

generic "communication medium." *Id.* at 22. Plaintiff urges that the brief mention of wires in the specification is insufficient to redefine the disputed terms. *Id.* at 22-23. To the contrary, Plaintiff argues, during prosecution the patentee deleted text from the specification that referred to "lines." *Id.* at 23. Finally, Plaintiff notes that the words "circuit" and "switched" do not appear in the claims or the written description. *Id.* at 24.

Defendants respond that "[w]ireless networks are never mentioned in the patents-in-suit," despite wireless networks being well-known at the time the patent applications were filed, and "[t]he only example of a network mentioned in the text of the patents is a two-wired system of the prior art, upon which the alleged invention of the patents is an improvement." Dkt. No. 102 at 23; *see id.* at 24. Defendants also express concern that Plaintiff's proposed constructions "provide no boundaries, and as read could encompass a tin can connected to a string." *Id.* at 24. Finally, Defendant Blackberry proposes that the claimed invention is limited to circuit-switched networks because, "by design," "[d]evices on a packet-switched network can use different communication languages or modulation methods." *Id.* at 25. Blackberry cites several extrinsic treatises in support of this proposition and concludes that "[p]ut simply, in a packet-switched network there is no compatibility problem for the patents to solve, and the purported invention is unnecessary." *Id.* at 25-26.

Plaintiff replies that the patents-in-suit "do not limit the invention to wired or wireless 'modems'/'communication media' because both were well-known at the time." Dkt. No. 103 at 8 (citations and footnote omitted). Plaintiff also argues: "Defendants read too much into the Figures. Communications medium 94 is depicted as a line in Figs. 3-4, but that does not imply a wire any more than the absence of a line implies wireless." *Id.* at 8 n.7. As to Blackberry's proposal, Plaintiff replies that the patents-in-suit do not refer to "circuit-switched" or "packet-

switched" networks because "the patents-in-suit are not concerned with low-level network switching protocols, but rather with 'sending transmissions modulated using at least two types of modulation methods.'" *Id.* (quoting '580 Patent at 2:30-31). Plaintiff also submits that "Blackberry has zero evidence to support its claim that devices on a packet-switched network can use different [] modulation methods by design." *Id.* (quoting Dkt. No. 102 at 25).

At the May 30, 2014 hearing, Defendants again highlighted the use of a solid line in the Figures to illustrate the communication medium. Defendants argued that the appropriate way to illustrate wireless communication would have been with an antenna or with a series of three closely-spaced curved lines. Defendants also noted that the provisional patent application refers to a "two-wire" modem. *See* Dkt. No. 97, Ex. 13 at 5. Finally, Defendant Blackberry presented no oral argument on its proposals of "circuit-switched" and instead submitted its proposed constructions on the briefing.

(2) Analysis

Although Plaintiff has proposed that no constructions are required, the parties have presented a "fundamental dispute regarding the scope of . . . claim term[s]," and the Court has a duty to resolve that dispute. *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362-63 (Fed. Cir. 2008).

As a threshold matter, Defendants have not argued that their proposals of a wired network or a circuit-switched network are supported by anything within the claims at issue. The issue, then, is whether Defendants' proposed limitations are adequately supported by anything in the specification or the extrinsic evidence cited by the parties.

As to Defendants' proposals of requiring a wired network, the specification only once refers to wires:

> 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.

'580 Patent at 4:51-54. This passage is insufficient to limit the claims to wired networks, particularly given that it refers to a discussion of only one or two of the Figures. *See id.* at 3:40-4:50; *see also Comark*, 156 F.3d at 1187. Moreover, Defendants have acknowledged that the "foregoing discussion" referred to in this passage is a discussion of "a two-wired system of the prior art." Dkt. No. 102 at 23.

In several other instances, the specification refers to a "communication medium," but those disclosures do not address whether the medium is wired or wireless. *See* '580 Patent at 2:52-54 ("One advantage of the present invention is that it provides to [*sic*, for] the use of a plurality of modem modulation methods on the same communication medium."), 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.") & 5:44-46 ("The master transceiver 64 communicates with trib 66 over communication medium 94.").

Defendants also argue that Figures 3 and 4 depict a wired network because the "communication medium 94" is illustrated by either solid line connectors (Figure 3) or a solid line (Figure 4). *See* Dkt. No. 102 at 24. First, as Plaintiff has urged, any argument that solid lines cannot represent a wireless network is conclusory speculation. Second, even if Figures 3 and 4 were interpreted as depicting a wired network, "patent coverage is not necessarily limited to inventions that look like the ones in the figures. To hold otherwise would be to import limitations [i]nto the claim[s] from the specification, which is fraught with danger." *MBO Labs. Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1333 (Fed. Cir. 2007).

Thus, the specification does not support limiting the claims to wired networks. This conclusion is reinforced by prosecution history in which the examiner rejected claims that recited a "communications device" and "logic configured to transmit" based on the "Siwiak" reference, which discloses a *wireless* communications system. Dkt. No. 97, Ex. 14, 9/1/2010 Office Action at 2-4 (RIP72-74); *id.*, Ex. 20 at 13 & 20 (RIP23 & RIP30) (application claims); *see id.*, Ex. 15, U.S. Pat. No. 5,537,398 (Siwiak) at 2:24-41 ("The messaging system includes a plurality of geographically distributed messaging transmitters, each comprising means for generating a radio frequency signal."); *see also Salazar v. Procter & Gamble Co.*, 414 F.3d 1342, 1347 (Fed. Cir. 2005) ("Statements about a claim term made by an Examiner during prosecution of an application may be evidence of how one of skill in the art understood the term at the time the application was filed."). Finally, although the weight that the specification amendments should be given here is unclear, it is worth noting that the patentee *deleted* paragraphs from the specification that referred to "transmission *line* characteristics." *Id.*, Ex. 9, 3/1/2011 Reply Pursuant to 37 CFR § 1.111 at 5-6 (RIP3521-22) (emphasis added).

As to extrinsic evidence, Plaintiff has submitted two news articles from the relevant time period that use the phrase "wireless modem." Dkt. No. 103, Ex. 33, *Ericsson announces its M2190 OEM Wireless Modem, first PCMCIA modem for mobile data connectivity*, Business Wire, Nov. 2, 1994; *id.*, Ex. 34, *A Wireless Modem that Could Leave 'Em in the Dust*, BusinessWeek, Feb. 24, 1997. Use of the word "modem" in the patents-in-suit is therefore insufficient to require a wired network. Finally, Plaintiff has submitted a dictionary definition of "medium," in the context of "information transfer," as not being limited to wires but rather being any "vehicle capable of transferring data." Dkt. No. 97, Ex. 3, *The IEEE Standard Dictionary of Electrical and Electronics Terms* 643 (6th ed. 1996).

In sum, Defendants have failed to justify limiting the claims to wired networks. The Court therefore turns to the additional proposals by Defendant Blackberry.

Blackberry has submitted extrinsic evidence in support its argument that the claimed invention only has relevance in circuit-switched networks, not packet-switched networks. Dkt. No. 102, Ex. 11, Gurdeep S. Hura & Mukesh Singhal, *Data and Computer Communications: Networking and Internetworking* 130-31 (2001) ("In the case of packet-switched networks, stations with different data rates can communicate with each other, and the necessary conversion between different data rates is done by the network, while in the case of circuit-switched networks, both stations must have the same data rate."); *id.*, Ex. 12, William Stallings, *Data and Computer Communications* 254-55 (5th ed. 1997) ("In [a] circuit-switching network, the connection provides for transmission at a constant data rate. Thus, each of the two devices that are connected must transmit and receive at the same data rate as the other . . . ."; "A packet-switching network can perform data-rate conversions. Two stations of different data rates can exchange packets because each connects to its node at its proper data rate."); *id.*, Ex. 13, Youlu Zheng & Shakil Akhtar, *Networks for Computer Scientists and Engineers* 125 (2002) ("Whereas . . . two networks connected by a circuit switch must operate at the same speed, packet switching can connect networks operating at different speeds.").

A circuit-switched network, at least in the context of Blackberry's proposals, appears to be a species of wired network. The Court therefore rejects Blackberry's proposals based on the Court's rejection of Defendants' proposals of "over wires," above.

Alternatively, even if Blackberry is proposing a circuit-switched network limitation that can be either wired or wireless, Blackberry's above-cited reliance on extrinsic evidence is disfavored. *See Phillips*, 415 F.3d at 1322 ("There is no guarantee that a term is used in the same

way in a treatise as it would be by the patentee. In fact, discrepancies between the patent and treatises are apt to be common because the patent by its nature describes something novel.").

As to Blackberry's reliance on the purpose of the invention (avoiding the inefficiencies of requiring all devices to use the same modulation method), Blackberry is correct as a general matter that "the problem the inventor was attempting to solve, as discerned from the specification and the prosecution history, is a relevant consideration." *CVI/Beta Ventures, Inc. v. Tura LP*, 112 F.3d 1146, 1160 (Fed. Cir. 1997).

Nonetheless, "[t]he court's task is not to limit claim language to exclude particular devices because they do not serve a perceived 'purpose' of the invention. . . . An invention may possess a number of advantages or purposes, and there is no requirement that every claim directed to that invention be limited to encompass all of them." *E-Pass*, 343 F.3d at 1370; *accord Howmedica*, 540 F.3d at 1345 (discussing *E-Pass*).

Blackberry has also cited *Applied Materials, Inc. v. Advanced Semiconductor Materials America, Inc.*, 98 F.3d 1563, 1573 (Fed. Cir. 1996). In *Applied Materials*, the patent specification disclosed a problem of electrostatic contamination in the context of a "cold purge" from a chamber:

> As explained in the . . . specification, static charges are not a problem during subsequent purges of the chamber because after the initial steps the temperature of the chamber remains above about 180° C, the temperature above which static charges do not exist.
>
> In the invention of the . . . patent, static charges during the initial "cold" purges are eliminated by operating the lamps at a low level during the initial gas flow steps.
>
> * * *
>
> The district court found that "cold purge process" means temperatures below 180° C, and that the . . . invention was directed to the use of heat sufficiently high to remove electrostatic contamination in the initial purge steps, that is, heat above

> about 180° C, in a reactor whose operating conditions include temperatures below 180° C. "Cold purge" is interpreted in light of the problem the . . . patent solved: the elimination of electrostatic contamination during the initial purge step.

Id. at 1571, 1573. The limitation imposed in *Applied Materials* was thus founded on *intrinsic* disclosures regarding circumstances in which the stated problem presented itself. Here, by contrast, Blackberry relies upon *extrinsic* evidence in support of the proposed "circuit-switched" limitation. The patents-in-suit contain no reference to circuit-switched networks. *Applied Materials* is therefore distinguishable.

The Court accordingly rejects Defendants' proposed "over wires" and "circuit-switched" limitations. The parties are otherwise in agreement as to the proper meaning of the disputed terms, as set forth by Plaintiff's alternative proposed constructions. Although the plain and ordinary meaning of the disputed terms may well be readily understandable once Defendants' proposed limitations have been rejected, the existence of common ground in the parties' proposals is notable and should be given effect.

As to Defendants' statement that Plaintiff's proposals would "encompass a tin can connected to a string" (Dkt. No. 102 at 24), Defendants' concern is unwarranted because other claim language appropriately limits the scope of the claims. Further, to whatever extent Defendants' concern relates to validity, such arguments are of limited relevance during claim construction proceedings. *See Phillips*, 415 F.3d at 1327 ("[W]e have certainly not endorsed a regime in which validity analysis is a regular component of claim construction.").

For all of these reasons, the Court hereby construes the disputed terms as set forth in the following chart:

Term	Construction
"communication[s] device"	**"a device that sends or receives information"**
"device that transmits"	**"a device that sends information"**
"logic configured to transmit"	**"logic configured to send information"**

D. "training signal" and "trailing signal"

"training signal"	
Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
"a transmission that signifies the beginning of a communication session"	"a distinct transmission that establishes properties of a subsequent data transmission and that can have a different intended destination from the subsequent data transmission"
"trailing signal"	
Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
"a transmission that signifies the end of a communication session"	"a distinct transmission that follows a data transmission and that can have a different intended destination from the data transmission"

Dkt. No. 97 at 24; Dkt. No. 102 at 20. The parties submit that the first of these disputed terms appears in dependent Claims 29, 31, and 36 of the '228 Patent. Dkt. No. 81, Ex. A at 20. The parties submit that the second of these disputed terms appears in dependent Claim 51 of the '228 Patent. *Id.* at 21.

Shortly before the start of the May 30, 2014 hearing, the Court provided the parties with the following preliminary constructions for these disputed terms: "training signal" means "a

transmission that signifies the beginning of a transmission sequence and determines one or more properties of the transmission sequence"; and "trailing signal" means "a transmission that signifies the end of a transmission sequence." Plaintiff had no opposition to these preliminary constructions. Defendants were opposed.

(1) The Parties' Positions

Plaintiff argues that Defendants' proposals "improperly limit the claims to part of a preferred embodiment, in which some training and trailing signals 'can have a different intended destination from the subsequent data transmission.'" Dkt. No. 97 at 25. Plaintiff explains that "[w]hile in a preferred embodiment some of the training and trailing signals have a different intended destination than the data transmission, others do not." *Id.* at 26 (discussing '580 Patent at Figure 8). Plaintiff also argues that Defendants' proposal of "distinct" is vague and "has zero support in the record." Dkt. No. 97 at 25 & 27. Plaintiff submits that "[t]he specification focuses on the order and function of the components—not their 'distinctness.'" *Id.* at 27.

As to "training signal," Defendants respond that the "capab[ility] of having a different intended destination from the subsequent data transmission" is "central to the alleged invention." Dkt. No. 102 at 20. Defendants explain:

> [T]he purpose of the purported invention is to enable two (or more) tribs to use different modulation methods on the same circuit. The alleged invention accomplishes this via a training signal. When the master intends to send data to a type B trib, it first sends a training signal to the type A trib. []'580 patent[] at 6:3-6. The training signal notifies the type A trib that the master will switch to type B modulation. *Id.* In response to the training signal, the type A trib temporarily stops listening to signals on the line. *Id.* at 6:41-46. The master then transmits data to the type B trib using type B modulation. *Id.* at 6:8-12.
>
> Since the type A trib is not listening during the type B transmission, the type A trib — which does not understand type B modulation — does not attempt to decode the type B transmission. This avoids errors and delays caused by tribs trying to decode signals they do not understand. Moreover, the type B trib never

> receives the training signal, because it is only sent using type A modulation, which the type B trib does not understand. *See id.* at 5:67-6:2.

Dkt. No. 102 at 21. As to their proposal of a "distinct" transmission, Defendants argue that the specification "uniformly depicts the training signal as a discrete communication." *Id.* at 22 (citing '580 Patent at Fig. 5).

As to "trailing signal," Defendants respond that "the specification teaches that, just as the training signal notifies a type A trib of an impending change to type B modulation, the trailing signal notifies the type A trib that the type B data transmission is over. The trailing signal must be capable of having a different intended destination from the corresponding data transmission for the same reasons as the training signal." Dkt. No. 102 at 22 (citing '580 Patent at 6:16-19). Finally, Defendants emphasize that their proposals "state that the training and trailing signals '*can* have' different intended destinations from the intervening data transmissions, not that they must." *Id.* at 23.

Plaintiff replies that although one of the disclosed embodiments is consistent with Defendants' proposed constructions, Figure 8 illustrates a "communication session 170" in which "the training signal, communication signal, and trailing signal all have the same intended destination—the Type A transceiver." Dkt. No. 103 at 9. Finally, Plaintiff argues that "the specification focuses on the order and function of the transmitted components, not whether they are 'distinct.'" *Id.*

At the May 30, 2014 hearing, Defendants reiterated that the destinations need not necessarily be different. Nonetheless, Defendants explained, that capability is a limitation because the central purpose of a training signal is to instruct a trib to ignore a subsequent transmission. Defendants also submitted that they would be amenable to substituting the word "discrete" for the word "distinct" in Defendants' proposed constructions.

Plaintiff responded that a "training signal" can also be useful for enabling a master to change modulation methods when communicating with a bilingual trib, perhaps to overcome interference by using a more robust modulation method.

(2) Analysis

The disputed terms appear in Claims 29, 31, 36, and 51 of the '228 Patent, which recite (emphasis added):

> 29. The master communication device as in claim 26, wherein the first transmission sequence includes a *training signal*.
>
> * * *
>
> 31. The master communication device as in claim 29, wherein the *training signal* establishes signal level compensation.
>
> * * *
>
> 36. The master communication device as in claim 29, wherein the *training signal* includes parameters for the selection of optional features.
>
> * * *
>
> 51. The master communication device as in claim 26, wherein the master communication device is configured to transmit a *trailing signal* to complete the master communication transmission.

Nothing in these dependent claims requires that the recited "training signal" or "trailing signal" must be capable of having a different intended destination than the data transmission. Claims 31 and 36 depend from Claim 29, which in turn depends from independent Claim 26. Claim 26 recites the antecedent basis for "the first transmission sequence" recited in Claim 29 (emphasis added; formatting modified):

> 26. A master communication device configured to communicate according to a master/slave relationship in which a slave communication from a slave device to the master communication device occurs in response to a master communication from the master communication device to the slave device, the master communication device comprising:

a transceiver configured to *transmit signals over a communications medium to a slave device using at least two different types of modulation methods* and to receive one or more responses over the communication medium that comprise at least respective response data that is modulated according to one of the at least two different types of modulation methods, the at least two different types of modulation methods comprising a first modulation method and a second modulation method,

wherein the transmitted signals comprise first transmitted signals and second transmitted signals,

the first transmitted signals comprise at least two transmission sequences,

the at least two transmission sequences include *a first transmission sequence* and *a second transmission sequence,*

the transceiver is configured to *transmit the first transmission sequence using the first modulation method*, and

the transceiver is configured to *transmit the second transmission sequence using the second modulation method* wherein:

the first transmission sequence includes information that is indicative of an impending change in modulation method from the first modulation method to the second modulation method,

the second transmission sequence includes a payload portion that is transmitted after the first transmission sequence,

the first transmitted signals include first address information that is indicative of the slave device being an intended destination of the payload portion,

the second transmitted signals comprise at least a third transmission sequence and a fourth transmission sequence,

the transceiver is configured to transmit the third transmission sequence using the first modulation method,

the transceiver is configured to transmit the fourth transmission sequence using the first modulation method,

the third transmission sequence includes information indicative that the fourth transmission sequence will be transmitted using the first modulation method,

the fourth transmission sequence includes a second payload portion that is transmitted after the third transmission sequence, and

the second transmitted signals include second address information that is indicative of a specified slave device being an intended destination of the second payload portion.

Claim 26 thus recites "first transmitted *signals*" that include a "first transmission *sequence*" using a first modulation method and a "second transmission *sequence*" using a second modulation method. The "first transmission sequence" indicates a change from the first modulation method to the second modulation method, and "the second transmission sequence

includes a payload portion that is transmitted after the first transmission sequence." The "first transmitted *signals*" also "include first address information that is indicative of the slave device being an intended destination of the payload portion." Claim 26 further recites "second transmitted signals" with limitations comparable to those of the "first transmitted signals," except that both transmission sequences are transmitted using the first modulation method.

Nowhere does Claim 26 recite that the first transmission sequence must be able to have an intended destination different from that of the subsequent payload. Claim 26 thus contains no support for imposing any such limitation on the "training signal" that is recited in dependent Claims 29, 31, and 36. Similarly, nothing in the claims suggests any such limitation as to the "trailing signal" recited in Claim 51.

Defendants have submitted that, in some cases, disclosure of a critical feature for achieving a central objective can warrant limiting the claims accordingly. *See Alloc*, 342 F.3d at 1369-70 (noting that the "specification . . . criticizes prior art floor systems without play" and finding that the "specification read as a whole leads to the inescapable conclusion that the claimed invention must include play in every embodiment"); *see also Honeywell Int'l, Inc. v. ITT Indus.*, 452 F.3d 1312, 1318 (Fed. Cir. 2006) ("The written description's detailed discussion of the prior art problem addressed by the patented invention, viz., leakage of non-metal fuel filters in EFI [(electronic fuel injection)] systems, further supports the conclusion that the fuel filter is not a preferred embodiment, but an only embodiment.").

This is not such a case. The specification uses the terms "training signal," "training sequence," "trailing signal," and "trailing sequence" several times but does not mandate that such signals or sequences be capable of having a different intended destination than a data transmission. For example, the specification discloses:

[B]efore any communication can begin in [prior art] 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 26a, 26b for communication. Once the modulation scheme is established among the modems in the multipoint system, [t]he 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 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 change[] 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*.

'228 Patent at 4:3-5:7 (emphasis added).

> 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 66a-66a run a type A modulation method while one trib 66b 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.
>
> * * *
>
> To switch from type A modulation to type B modulation, master transceiver 64 transmits a *training sequence 106* to type A tribs 66a 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 66a 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 66b. In an example, embedded modulation permits a secondary modulation to replace the usual primary modulation for a user data segment located after a primary training sequence. For example, master transceiver 64 may change to modulation Type B and may convey user information to type B trib 66b.

Id. at 6:4-13 & 6:27-44 (emphasis added).

> *To initiate a communication session* with a type A trib 66a, *master transceiver 64 transmits a training sequence 126* in which an address of a particular type A trib 66a is identified. The identified type A trib 66a 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, which may include a user data segment transmitted using the usual primary (e.g., type A) modulation, master transceiver 64 transmits a *trailing sequence 134* using type A modulation signifying the *end of the current communication session.*

Id. at 7:11-21 (emphasis added). Contrary to Defendants' arguments, the specification does not establish that the sole purpose of a training signal, for example, must be to notify a trib that the trib will not understand the subsequent data transmission because that data is intended for a different trib. *See* Dkt. No. 102 at 21-22.

As to extrinsic evidence, Plaintiff has cited a dictionary definition of "header" as: "Identification or control information placed at the beginning of a file or message. *Contrast*: trailer." Dkt. No. 97, Ex. 3, *The IEEE Standard Dictionary of Electrical and Electronics Terms* 479 (1996). Plaintiff has also cited definitions of "trailer" as: "Identification or control information placed at the end of a file or message. *Contrast*: header"; and "The contiguous control bits following a transmission that contain information used for such purposes as bit error detection and end-of-transmission indication. *Contrast*: header." *Id.* at 1126.

The claims, specification, and extrinsic evidence are therefore all consistent with Plaintiff's proposal that a "training signal" marks the beginning of a communication session and a "trailing signal" marks the end of a communication session.

As to Defendants' proposals, Defendants have not argued that "training signal" and "trailing signal" are coined terms that the patentee defined in relation to what Defendants have argued is the sole purpose of the invention. To the extent that the specification discloses training and trailing signals that have destinations different from those of associated data transmissions, that capability is a feature of preferred embodiments and should not be imported into the claims. *See Comark*, 156 F.3d at 1187 ("[The specification] simply details how the video delay circuit is

to be used in a single embodiment of the invention."). The Court therefore rejects Defendants' argument that the "training signal" and "trailing signal" must be capable of having a different intended destination than an associated data transmission.

Similarly, as noted above, Defendants have relied upon items 106, 126, and 138 in Figure 5 to support their argument that the "training signal" and "trailing signal" must be "distinct" or "discrete" transmissions. Figure 5 is reproduced here:

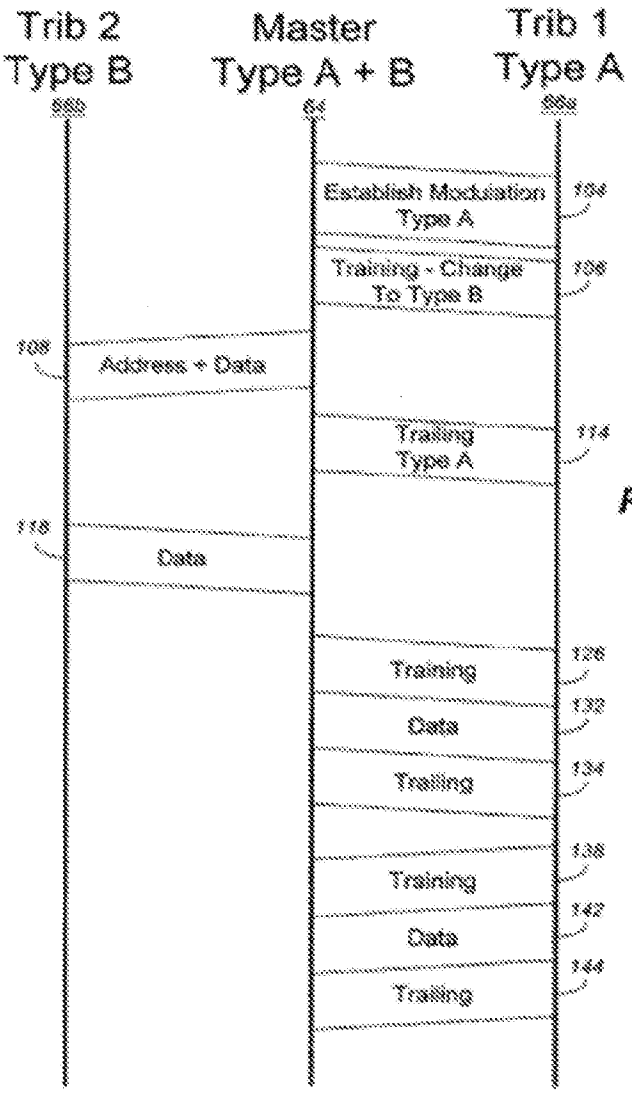


FIG. 5

Defendants have failed to demonstrate that this illustration of a preferred embodiment is limiting. *See MBO Labs.*, 474 F.3d at 1333 ("patent coverage is not necessarily limited to inventions that look like the ones in the figures"). Defendants' proposals in this regard are therefore rejected.

As to the proper constructions, Plaintiff's use of the word "signifies" is supported by the specification, particularly as to the term "trailing signal." *See* '228 Patent at 4:43-45 ("master transceiver 24 transmits data 36 to trib 26a followed by trailing sequence 38, which signifies the end of the communication session") & 7:19-21 ("master transceiver 64 transmits a trailing sequence 134 using type A modulation signifying the end of the current communication session"). The above-quoted disclosures demonstrate that a "training signal" should be construed in a similar manner.

Finally, at the May 30, 2014 hearing, Plaintiff had no objection to Defendants' proposal that a "training signal" must "establish[] properties of a subsequent data transmission."

The Court accordingly hereby construes the disputed terms as set forth in the following chart:

Term	Construction
"training signal"	**"a transmission that signifies the beginning of a transmission sequence and determines one or more properties of the transmission sequence"**
"trailing signal"	**"a transmission that signifies the end of a transmission sequence"**

E. "signal level compensation"

Plaintiff's Proposed Construction	Defendants' Proposed Construction
"adjusting signal parameters in the receiver"[6]	"adjusting the amplitude characteristics of a receiver"

Dkt. No. 97 at 27; Dkt. No. 102 at 26. The parties submit that this term appears in Claim 31 of the '228 Patent. Dkt. No. 81, Ex. A at 19.

Shortly before the start of the May 30, 2014 hearing, the Court provided the parties with the following preliminary construction for this disputed term: "adjusting signal parameters in the receiver." Plaintiff had no opposition to the Court's preliminary construction. Defendants were opposed.

(1) The Parties' Positions

Plaintiff argues that "just as there are many different 'signal levels'—Defendants' dictionary acknowledges 'voltage, current, power, phase shift, or frequency,' to name a few—there are many different ways to compensate those signal levels. For example, the frequency or phase shift of a signal may be compensated independent of the signal's amplitude." Dkt. No. 97 at 28.

Defendants respond that "[t]echnical dictionaries [(quoted below)] define 'signal level' as the strength or power of a signal." Dkt. No. 102 at 26. Defendants argue that Plaintiff's proposed construction "fails to give meaning to the word 'level.'" *Id.* at 27. Defendants explain that "frequency represents the number of signal cycles in a given time period, and phase reflects the signal's position on the x-axis (time). These are not measures of the signal's 'level,' *i.e.*, its

[6] Plaintiff previously proposed: "adjusting signal parameters in the receiver to minimize receiving errors." Dkt. No. 81, Ex. A at 19.

strength or power." *Id.* Defendants argue that their multiple, unambiguous dictionary definitions outweigh Plaintiff's "lone and secondary definition." *Id.* at 28.

Plaintiff replies that the extrinsic dictionary definitions cited by the parties do not limit "signal level" to "amplitude." Dkt. No. 103 at 10.

At the May 30, 2014 hearing, Defendants acknowledged that frequency and phase are characteristics that may be said to have a "level," but Defendants maintained that a person of ordinary skill in the art at the relevant time would have understood "signal level" as referring to amplitude. Plaintiff responded that none of the evidence cited by Defendants refers to "amplitude." Defendants replied that they would have no objection to a construction that referred to "strength" instead of "amplitude." Defendants nonetheless reiterated that in no event should the disputed term encompass frequency or phase.

(2) Analysis

Claim 31 of the '228 Patent recites:

> 31. The master communication device as in claim 29, wherein the training signal establishes signal level compensation.

Claim 31 depends from Claim 29 and, in turn, Claim 26, but nothing in these claims informs the meaning of "signal level compensation." Likewise, the specification identifies "signal level compensation" as one of the uses of training signals (*see* '580 Patent at 3:53-56), but the specification does not otherwise discuss the term.

Plaintiff submits a technical dictionary definition of "compensation" as: "The controlling elements which compensate for, or offset, the undesirable characteristics of the process to be controlled in the system." *Id.*, Ex. 4, *Modern Dictionary of Electronics* 184 (6th ed. 1997). This aspect of the disputed term does not appear to be in dispute. Instead, the parties disagree on the scope of the term "signal level."

Plaintiff has cited a technical dictionary definition of "signal level" as: "The magnitude of a signal parameter or element, such as the magnitude of the electric field strength, voltage, current, power, phase shift, or frequency." Dkt. No. 97, Ex. 27, *Communications Standard Dictionary* 906 (3d ed. 1996). As Defendants have noted, however, that same dictionary alternatively defines "signal level" as: "A measure of the power of a signal at a specified point in a communications system." *Id.*

Defendants have also submitted additional dictionaries that define "signal level" in terms of power. Dkt. No. 102, Ex. 14, *Dictionary of Communications Technology* 401 (2d ed. 1995) ("The strength of a signal, generally expressed in either units of voltage or power."); *id.*, Ex. 15, *Newton's Telecom Dictionary* 544 (11th ed. 1996) ("The strength of a signal, generally expressed in either absolute units of voltage or power, or in units relative to the strength of the signal at its source."); *id.*, Ex. 16, *Dictionary of Telecommunications* 250 (1981) ("The magnitude of a signal at a point in a telecommunication circuit. This can be expressed as an absolute power level in decibels relative to one milliwatt (dBm).") (italics omitted).

In reply, Plaintiff has cited extrinsic articles that refer to signal "frequency level" and signal "phase level." Dkt. No. 103, Ex. 38, Hamid Nawab, et al., *Diagnosis Using the Formal Theory of a Signal-Processing System* 373 (1987); *id.*, Ex. 39, Marco Antonio Chamon & Gerard Salut, *Particle Filtering of Radar Signals for Non-Cooperating Target Imaging* 1041 (1998); *see id.*, Ex. 40, U.S. Pat. No. 3,953,798 at 3:56-63. Plaintiff argues these articles establish that frequency and phase can each have a "level."

These competing definitions and usages demonstrate why extrinsic sources must be considered with caution. *See Phillips*, 415 F.3d at 1321 ("[H]eavy reliance on the dictionary divorced from the intrinsic evidence risks transforming the meaning of the claim term to the

artisan into the meaning of the term in the abstract, out of its particular context, which is the specification. * * * [T]here may be a disconnect between the patentee's responsibility to describe and claim his invention, and the dictionary editors' objective of aggregating all possible definitions for particular words."); *see also id.* at 1322 ("There is no guarantee that a term is used in the same way in a treatise as it would be by the patentee. In fact, discrepancies between the patent and treatises are apt to be common because the patent by its nature describes something novel.").

On balance, because the specification refers to "phase . . . modulation" as well as "amplitude modulation" (*see id.* at 2:5-6), the Court rejects Defendants' reliance on extrinsic evidence and accordingly rejects Defendants' proposal to limit the disputed term to amplitude. *See Phillips*, 415 F.3d at 1321.

The Court therefore hereby construes **"signal level compensation"** to mean **"adjusting signal parameters in the receiver."**

F. "a first portion of the first communication indicating that the second modulation method will be used for modulating the payload data in the payload portion of the first communication"

Plaintiff's Proposed Construction	**Defendants' Proposed Construction**
No construction necessary; plain and ordinary meaning applies.	"a first portion of the first communication indicating that the second modulation method will be used instead of the first modulation method for modulating the payload data in the payload portion of the first communication"

Dkt. No. 97 at 29; Dkt. No. 102 at 28. The parties submit that this term appears in Claim 22 of the '228 Patent. Dkt. No. 81, Ex. A at 21.

Shortly before the start of the May 30, 2014 hearing, the Court provided the parties with the following preliminary construction for this disputed term: "Plain meaning."

(1) The Parties' Positions

Plaintiff argues that "[t]he plain and ordinary meaning of the instant term is apparent on its face and from the context of the surrounding claim language." Dkt. No. 97 at 29. Plaintiff further argues that Defendants' proposed construction "inject[s] an 'instead of the first modulation method' limitation" that "is unnecessary, because it does not help to clarify or explain the meaning of the instant term." *Id.* at 30.

Defendants respond that "[t]he specification discloses a training signal that indicates a *change* to a different modulation method." Dkt. No. 102 at 28. Defendants argue: "Claim 22 therefore must be construed to require an indication of an impending *change* to a second modulation method (*i.e.*, that "the second modulation method will be used instead of the first modulation method"), not simply that a second modulation method will be used." *Id.* at 29. Defendants conclude that "[p]ermitting the claim to encompass a mere indication of the forthcoming modulation method, rather than a *change* to that method, would result in a failure of both the written description and enablement requirements under [35 U.S.C.] Section 112(a)." *Id.* at 30.

Plaintiff replies that "Defendants' construction adds unnecessary verbiage to an unambiguous claim." Dkt. No. 103 at 10.

At the May 30, 2014 hearing, Plaintiff acknowledged that the disputed term and the surrounding claim language require a change from one modulation method to another modulation method. Plaintiff maintained that because this is clear on the face of the claim, no construction is necessary. Plaintiff concluded that Defendants' proposed construction should be rejected as tending to introduce a new limitation or as otherwise confusing the meaning of the

claim. Defendants responded that clarification is warranted because the entire purpose of the purported invention is to notify and then to change modulation methods.

(2) Analysis

The Summary of the Invention refers to a "change in modulation":

> The present invention disclosed herein includes methods and systems for communication of data according to a communications method in which a master transceiver communicates with one or more slave transceivers according to a master/slave relationship.
>
> * * *
>
> The second message may comprise third information (e.g., first information of the second message/high data rate message), and the third information may be modulated according to the *first modulation method*. The third information may be indicative of an impending *change in modulation to a second modulation method* for transmission of fourth information (e.g., second information of the second message/high data rate message).

'228 Patent at 2:27-31 & 2:51-56 (emphasis added). The specification similarly discloses:

> To *switch from type A modulation to type B modulation*, master transceiver 64 transmits a training sequence 106 to type A tribs 66a 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 66a 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 66b. In an example, embedded modulation permits a *secondary modulation to replace the usual primary modulation* for a user data segment located after a primary training sequence. For example, master transceiver 64 may *change* to modulation Type B and may convey user information to type B trib 66b. The type B trib 66b 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.

Id. at 6:27-44 (emphasis added); *see id.* at Figs. 5, 7 & 8 (illustrating "Change to Type B").

Claim 22 of the '228 Patent, which is the only claim that contains the disputed term, recites (emphasis added):

22. A communication device configured to communicate 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 that is configured to send at least a plurality of communications, wherein each communication from among said plurality of communications comprises at least a respective *first portion* and a respective payload portion, wherein each communication from among said plurality of communications is addressed for an intended destination of the respective payload portion of that communication, and wherein *for each communication from among said plurality of communications*:

said respective *first portion is modulated according to a first modulation method* from among at least two types of modulation methods, wherein the at least two types of modulation methods comprise the first modulation method and a second modulation method, wherein the second modulation method is of a different type than the first modulation method,

said respective first portion comprises an indication of which of the first modulation method and the second modulation method is used for modulating respective payload data in the respective payload portion, and

the payload data is modulated according to at least one of the first modulation method or the second modulation method in accordance with what is indicated by the respective first portion;

the transceiver further configured to send at least a first communication of the plurality of communications such that payload data included in a payload portion of the first communication is modulated according to the second modulation method based on *a first portion of the first communication indicating that the second modulation method will be used for modulating the payload data in the payload portion of the first communication*, wherein the payload data is included in the first communication after the first portion of the first communication;

the transceiver further configured to send at least a second communication of the plurality of communications such that payload data included in a payload portion of the second communication is modulated according to the first modulation method based on a first portion of the second communication indicating that the first modulation method will be used for modulating the payload data in the payload portion of the second communication.

On balance, the recital that the "first portion is modulated according to a first modulation method"—coupled with the recital in the disputed term that "the second modulation method will

be used for modulating the payload data in the payload portion of the first communication"—is clear on its face.

Further, as noted above, Plaintiff has agreed that the disputed term and the surrounding claim language require a change from one modulation method to another modulation method.

Defendants' proposed clarification is therefore unnecessary and would tend to confuse rather than clarify the scope of the claim. *See U.S. Surgical*, 103 F.3d at 1568 ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see also O2 Micro*, 521 F.3d at 1362 ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims."); *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1207 (Fed. Cir. 2010) ("Unlike *O2 Micro*, where the court failed to resolve the parties' quarrel, the district court rejected Defendants' construction.").

The Court accordingly hereby expressly rejects Defendants' proposed construction and hereby construes **"a first portion of the first communication indicating that the second modulation method will be used for modulating the payload data in the payload portion of the first communication"** to have its **plain meaning**.

CONCLUSION

The Court adopts the constructions set forth in this opinion for the disputed terms of the patents-in-suit.

The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by

the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

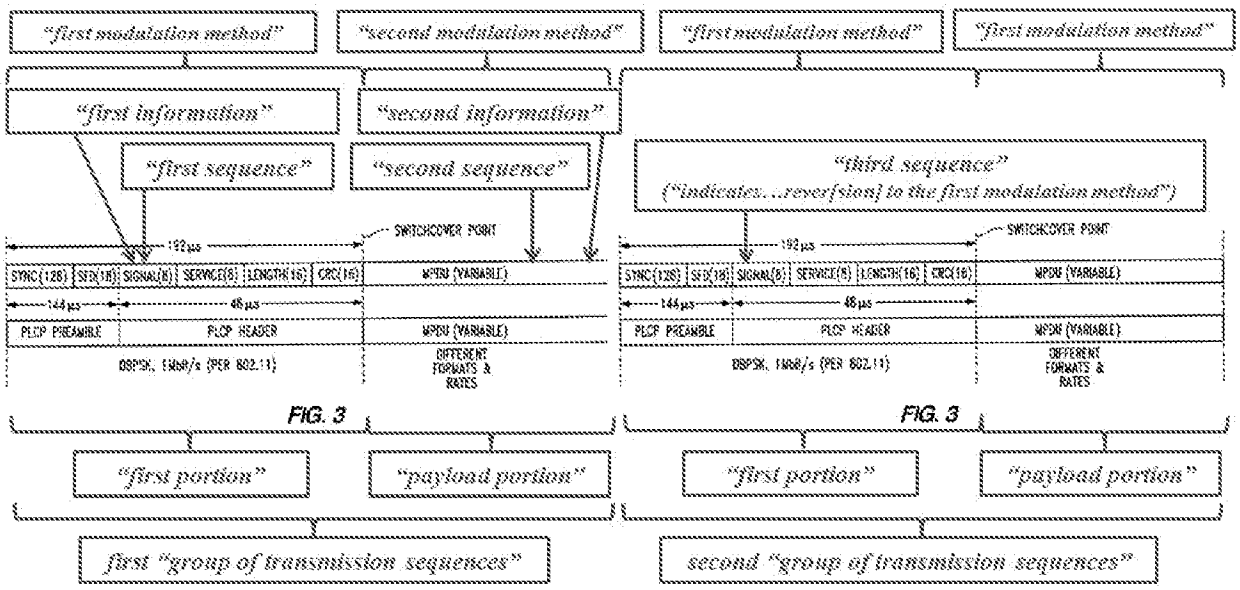
SIGNED this 10th day of July, 2014.

ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE

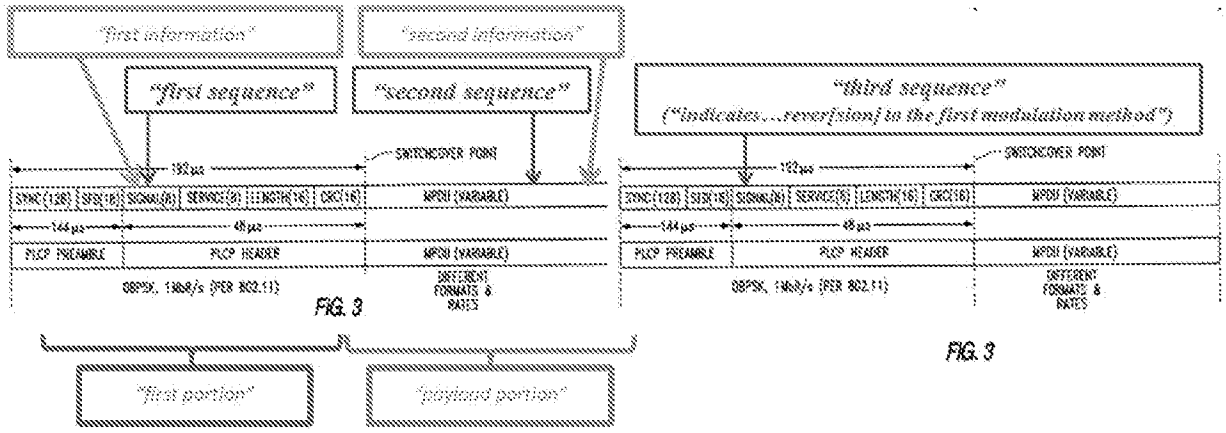
Exhibit D

Comparison of the Requester's Presentation of Snell's Fig. 3 and Boer's Fig. 4

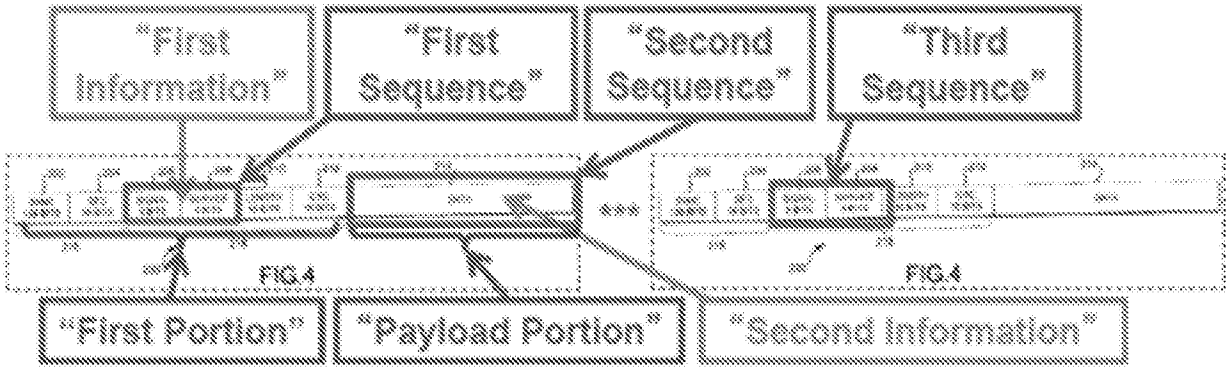
Snell's FIG. 3 from Reexamination Request (modified by Requestor, at 58, 84 & 116:



Above figure modified to match color coding of IPR2014-00518 Petition (extraneous labels removed):



Boer's Fig. 4 from IPR2014-00518 Petition (modified by Petitioner, at 25):



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Control No.	: 90/013,808	Art Unit	: 3992
Patent No.	: 8,023,580	Examiner	: Yuzhen Ge
Filed	: September 12, 2016	Conf. No.	: 2211
Customer No.	: 06449	Atty. No.	: 3277-114.RXM1

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

37 C.F.R. § 1.132 DECLARATION OF DR. ROBERT AKL

I. INTRODUCTION

A. Engagement

1. My name is Robert Akl, and I have been retained by counsel for Rembrandt Wireless Technologies, LP ("Rembrandt") as an expert declarant in this reexamination. I have been asked by counsel to opine on a number of subject relevant to this reexamination, including the patentability of claims 2 and 59 of US Patent No. 8,023,580 ("the '580 Patent") from the perspective of one of ordinary skill in the relevant art prior to December 5, 1997 (when Provisional Patent Application No. 60/067,562 was filed, and to which the '580 Patent claims priority).

2. Specifically, I have been asked by counsel to review the Request for Ex Parte Reexamination of the '580 Patent ("'580 Request"), the Office's Order Granting Request for Ex Parte Reexamination of the '580 Patent (dated 9/27/16) ("Order"), the Office's Office Action in the '580 Reexamination (dated 3-31-17) ("3-31-17 Office Action") and the references relied on in the 9-27-16 Order and/or 3-31-17 Office Action, including U.S. Patent No. 5,982,807 ("Snell"), U.S. Patent No. 6,075,814 ("Yamano"), "Using the PRISMTM Chip Set for Low Data Rate Applications," Harris Semiconductor Application Note No. AN9614 ("Harris AN9614"), "HSP3824 Direct Sequence Spread Spectrum Baseband Processor," Harris Semiconductor File

No. 4064.4, ("Harris 4064.4"), 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"), the Petition for Inter Partes Review in IPR2014-00518 ("'518 Petition"), the PTAB's Institution Decision in IPR2014-00518, Paper 16 (dated September 23, 2014) ("'518 Institution Decision"), the PTAB's Final Written Decision in IPR2014-00518 ("'518 Final Decision"), U.S. Patent No. 5,706,428 ("Boer"), the alleged Admitted Prior Art ("APA"), Upender et al., "Communication Protocols for Embedded Systems," Embedded Systems Programming, Vol. 7, Issue 11, Nov. 1994 ("Upender"), and U.S. Patent No. 5,537,398 to Siwiak ("Siwiak") and to offer rebuttal opinions when, based on my expertise in the relevant art, I disagree with the determinations of the Office.

3. I am being compensated at my normal hourly consulting rate ($650 per hour) for time spent on this matter. I have no financial interest in the outcome of this reexamination, and my compensation is in no way affected by its outcome.

B. Qualifications

4. I have summarized in this section my educational background, work experience, and other relevant qualifications. A true and accurate copy of my curriculum vitae is attached as Exhibit A to my declaration.

5. I earned my Bachelor of Science degrees in Electrical Engineering and Computer Science *summa cum laude* with a grade point average of 4.0/4.0 and a ranking of first in my undergraduate class from Washington University in Saint Louis in 1994. In 1996, I earned my Master of Science degree in Electrical Engineering from Washington University in Saint Louis with a grade point average of 4.0/4.0. I earned my Doctorate of Science in Electrical Engineering

from Washington University in Saint Louis in 2000, again with a grade point average of 4.0/4.0, with my dissertation on "Cell Design to Maximize Capacity in Cellular Code Division Multiple Access (CDMA) Networks."

6. While a graduate student, I worked at MinMax Corporation in St. Louis, where I designed software packages that provided tools to flexibly allocate capacity in a CDMA communications network and maximize the number of subscribers. As part of this work, I validated the hardware architecture for an Asynchronous Transfer Mode (ATM) switch capable of channel group switching, as well as performed logical and timing simulations, and developed the hardware architecture for the ATM switch. I also worked with Teleware Corporation in Seoul, South Korea, where I designed and developed algorithms that were commercially deployed in a software package suite for analyzing the capacity in a CDMA network implementing the IS-95 standard to maximize the number of subscribers.

7. After obtaining my Doctorate of Science degree, I worked as a Senior Systems Engineer at Comspace Corporation from October of 2000 to December of 2001. In this position, I designed and developed advanced data coding and modulation methods for improving the reliability and increasing the available data rates for cellular communications. I coded and simulated different encoding and modulation techniques using amplitude and phase characteristics and multi-level star constellations. This work further entailed the optimization of soft decision parameters and interleavers for additive white Gaussian and Rayleigh faded channels. In addition, I also extended the control and trunking of Logic Trunked Radio (LTR) to include one-to-one and one-to-many voice and data messaging.

8. In January of 2002, I joined the faculty of the University of New Orleans in Louisiana as an Assistant Professor in the Department of Electrical Engineering. While on this faculty, I

designed and taught two new courses called "Computer Systems Design I and II." I also developed a Computer Engineering Curriculum with strong hardware-design emphasis, formed a wireless research group, and advised graduate and undergraduate students.

9. In September of 2002, I received an appointment as an Assistant Professor in the Department of Computer Science and Engineering at the University of North Texas (UNT), in Denton, Texas. In May of 2008, I became a tenured Associate Professor in the Department of Computer Science and Engineering. As a faculty member, I have taught courses and directed research in wireless communications, including 2G, 3G, 4G, CDMA/WCDMA, GSM, UMTS, LTE, wireless sensors, Bluetooth, VoIP, multi-cell network optimization, call admission control, channel coding, ad-hoc networks, and computer architecture. I am the director of the Wireless Sensor Lab ("WiSL"). Several of my research projects were funded by industry. One such project funded by Raytheon encompassed using Bluetooth sensors that allow soldiers to communicate silently in close range engagement and convey hand signals and gestures wirelessly to a head's up display in the absence of line-of-sight. In January of 2015, I was promoted to Associate Chair of Graduate Studies in the Department of Computer Science and Engineering.

10. In addition to advising and mentoring students at UNT, I was asked to join the faculty of the University of Arkansas in Little Rock as an Adjunct Assistant Professor from 2004 to 2008 in order to supervise the research of two Ph.D. graduate students who were doing research in wireless communications. At UNT, I have advised and supervised more than 250 undergraduate and graduate students, many of whom received a master's or doctorate degree under my guidance.

11. In addition to my academic work, I have remained active in the communication industry through my consulting work. In 2002, I consulted for Input/Output Inc. and designed and implemented algorithms for optimizing the frequency selection process used by sonar for scanning the bottom of the ocean. In 2004, I worked with Allegiant Integrated Solutions in Ft. Worth, Texas to design and develop an integrated set of tools for fast deployment of wireless networks. Among other features, these tools optimize the placement of Access Points and determine their respective channel allocations to minimize interference and maximize capacity. I also assisted the Collin County Sheriff's Office (Texas) in a double homicide investigation, analyzing cellular record data to determine user location.

12. I have authored and co-authored approximately 75 journal publications, conference proceedings, technical papers, book chapters, and technical presentations, in a broad array of communications-related technology, including networking and wireless communication. I have also developed and taught over 100 courses related to communications and computer system designs, including a number of courses on LTE, VoIP, wireless communication, communications systems, sensor networks, computer systems design, and computer architecture. These courses have included introductory courses on communication networks and signals and systems, as well as more advanced courses on wireless communications. A complete list of my publications and the courses I have developed and/or taught is also contained in my curriculum vitae.

13. My professional affiliations include services in various professional organizations and serving as a reviewer for a number of technical publications, journals, and conferences. I have also received a number of awards and recognitions, including the IEEE Professionalism Award (2008), UNT College of Engineering Outstanding Teacher Award (2008), and Tech Titan of the Future (2010) among others, which are listed in my curriculum vitae. I have also served as an

expert in certain legal proceedings. Exhibit A contains a list of cases in which I have testified (either via deposition, hearing or trial) during the past four years.

II. MATERIALS REVIEWED AND RELIED ON IN FORMING MY OPINIONS

14. In preparing the opinions and discussion included in this declaration, I have reviewed and considered the documents identified in ¶ 2 above. A list of the documents that I have received, reviewed, and/or relied upon for this report is attached as Exhibit B (as well as those cited in the body of this declaration). I have also relied on my years of education, teaching, research, and experience, and my understanding of the applicable legal principles.

III. SUMMARY OF OPINIONS

15. From the perspective of one of ordinary skill in the relevant art prior to December 5, 1997, I offer the following opinions (discussed in detail below): (1) The disclosure in the documents relied on in the 9-27-16 Order and/or in the 3-31-17 Office Action, individually or in the combinations relied on by the Office, are no more relevant to the patentability of claims 2 and 59 of the '580 Patent than Boer in the combinations previously relied on by Samsung (which the PTAB previously considered when it refused to initiate *inter partes* review of those claims), and thus do not present a substantial new question of patentability. *See* ¶¶ 41-70 below. (2) There is insufficient evidence that either Harris AN9614 or Harris 4064.4 was published prior to the filing date of the '580 Patent, rendering them unavailable to be incorporated by reference, and, even if they were successfully incorporated, Snell's reference to Harris AN9614 does not specifically identify the material relied on by the Office. *See* ¶¶ 71-77 below. (3) None of the art relied on in the 3-31-17 Office Action, considered alone or in the combinations relied on by the Office, anticipates or would have rendered obvious either claim 2 or 59 of the '580 Patent. *See* ¶¶ 94-178 below.

IV. LEGAL PRINCIPLES

16. I am not an attorney. I have been advised of the following general principles of patent law to be considered in formulating my opinions as to the patentability of claims 2 and 59 of the '580 Patent. I have applied these principles to the facts set forth in this report in rendering my opinions.

17. I understand that determining the patentability of a patent claim requires a two-step analysis. First, the meaning and scope of the patent claim is interpreted, or construed, and then the construed claim is compared to the prior art.

A. Claim Construction

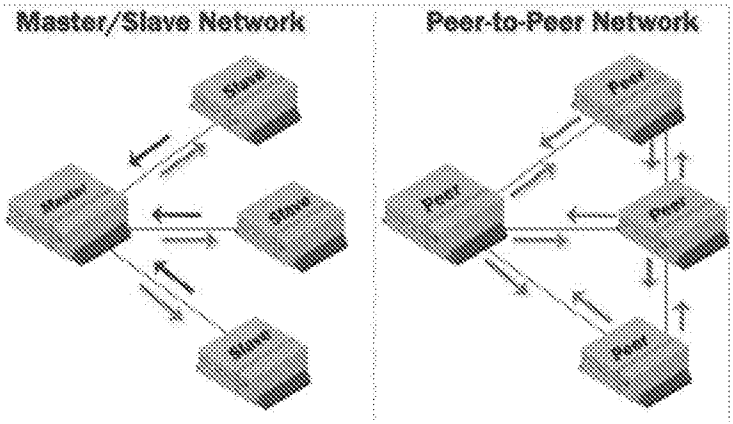
18. With respect to the first step, I understand that claims are to be interpreted from the perspective of one of ordinary skill in the art at the time of the invention and have considered such an interpretation in forming my opinions on patentability. I further understand that, in a reexamination of an issued patent, the claims are to be given their broadest reasonable interpretation when read in light of the specification and the patent's prosecution history. Based on this understanding, I have reviewed the claims, the specification, and the prosecution history. My analysis is informed by the plain and ordinary meaning the claim terms would have to one of ordinary skill in the art at the time of the invention, when read in the context of the claims, the specification and its prosecution history.

19. From the perspective of one of ordinary skill in the relevant art, I interpret the following terms as follows:

20. **Different Types of Modulation Methods** -- On page 7 of the 3-31-17 Office Action, the Office interpreted "Different Types of modulation method" to mean "modulation methods that are incompatible with one another. I disagree with her interpretation. Based on "the clearest statement in the intrinsic record" – which is found in the prosecution history -- the broadest

reasonable interpretation of "different types of modulation methods" is "different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods." *Rembrandt Wireless Tech. v. Samsung Elec. Co.,* No. 2016-1729, slip op. at 9 (Fed. Cir. April 17, 2017) (rehearing denied). Ignoring "types," as construed in the litigation would result in a claim construction that is overly broad and not consistent with how one skilled in the art would understand the term in view of the teachings in the prosecution history.

21. **Master/Slave** – I have defined master/slave by giving the term its plain and ordinary meaning as one skilled in the art would have understood it in the context of the '580 Patent. In the field of data communications, the electrical devices can be arranged in various network configurations. The '580 Patent and its claims are directed to a network historically-referred to in the computer industry as a *master/slave* network because one centralized "master" device controls all network communications with the other subordinate "slave" or "tributary" devices. The slave devices do not directly communicate with one another, but instead only communicate with the master. This is very different from a *peer-to-peer* network, in which network control is distributed amongst the devices in the network and each device communicates directly with its peers:



Persons of ordinary skill at the relevant time would have recognized that the plain and ordinary meaning of a "master" is "a device which controls all communications with other devices (*i.e.*, slaves) in a network" and the plain and ordinary meaning of a "slave" is "a device whose network communications are controlled by a master."

22. My definitions are consistent with the specification of the '580 Patent. The '580 Patent is replete with usage of the terms "master" and "slave" in the context of the master/slave relationship. For example, the device disclosed in the '580 Patent includes "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." '580 Patent at Abstract. "[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." *Id.* at 4:7-9. Similarly, the Summary of the Invention section of the '580 Patent states:

> 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.

Id. at 2:24-29 (emphasis added).

23. My definitions are supported by numerous technical sources. For example, the IEEE Wireless Dictionary states:

> "master: In the context of wireless protocols, this refers to a device that controls the operation of a network. …"
>
> "slave: In the context of wireless protocols, a device that is dependent on another device for control, usually called the master. ..."

E.g., IEEE Wireless Dictionary at 55, 80; *see also* Comprehensive Dictionary of Electrical Engineering (1999) at 397 ("master: the system component responsible for controlling a number

of others (called slaves)."); Modern Dictionary of Electronics (1997) at 932 ("slave: a component in a system that does not act independently, but only under the control of other similar components.").

24. Understanding the claimed master/slave configuration is key to understanding the problem Gordon Bremer identified and solved. The Summary section of the '580 Patent states:

> 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. ['580 Patent at 2:24-33 (emphasis added).]

25. I observe that the '580 Patent uses the term "master" 94 times, the term "slave" 24 times, and the term "trib" 89 times. Further, the master/slave configuration is explicitly recited in claims 2 and 59. *E.g.*, '580 claim 1 (from which claim 2 depends) ("a communication device capable of communicating according to a *master/slave relationship*....") (emphasis added). Persons of ordinary skill would have recognized from the above disclosures that the claimed master/slave configuration is an important part of claims 2 and 59.

26. **Incompatible** – While not a claim term, the '580 Patent uses the term "incompatible" to describe the problem Gordon Bremer identified and solved. I have defined "incompatible" (which was not previously defined by the Office) by giving the term its plain and ordinary meaning as one skilled in the art would understand it in the context of the '580 Patent. In that context, first and second modulation methods are incompatible when one modem using the first method cannot communicate with a second modem using the second method. *See* the '580 Patent, col. 1, ll. 45-65. Importantly, incompatibility as used in the '580 Patent cannot be considered in a vacuum but must be considered in the context in which it is being used.

27. For purposes of my analyses supporting my opinions in this declaration, I have applied these definitions.

B. Anticipation

28. In reexamination, it is my understanding that anticipation under 35 U.S.C. § 102 requires the Office to prove by a preponderance of the evidence that a single prior art reference disclose, expressly or inherently, every limitation of the claimed invention. The relevant subsections of §102 are reproduced below:

> A person shall be entitled to a patent unless --
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or …
>
> (e) the invention was described in ... (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent ....

29. I understand that, in general, the anticipation analysis under 35 U.S.C. § 102 is limited to the use of a single reference. I further understand that portions of additional documents may be relied upon as part of the anticipation analysis if the primary reference incorporates the additional documents by reference. In order for the primary reference to incorporate additional documents by reference, the additional documents must meet certain legal requirements and the primary reference must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the additional documents. A mere reference to another document is insufficient to incorporate that document by reference.

30. I understand that the phrase "printed publication" as used in § 102(a) and (b) means sufficiently accessible to the public interested in the art, and depends on dissemination and accessibility.

C. Obviousness

31. It is my understanding that a claim is unpatentable for obviousness under 35 U.S.C. § 103(a) if one or more prior art references alone or in combination would have suggested the claimed invention to one of ordinary skill in the relevant art at the time the invention was made. I further understand that, in a reexamination, the burden of proving unpatentability is on the Office and must be established by a preponderance of the evidence. The relevant standard for obviousness is as follows:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, 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. [35 U.S.C. §103(a).]

32. I further understand that, in determining whether or not a patented invention would have been obvious, the following factors should be considered: (a) the scope and content of the prior art; (b) the differences between the prior art and the claims at issue; (c) the level of ordinary skill in the art; and (d) whatever "secondary considerations" may be present.

33. I understand that certain "secondary considerations" may be relevant in determining whether or not an invention would have been obvious, and that these secondary considerations may include commercial success of a product using the invention, if that commercial success is due to the invention; long-felt need for the invention; evidence of copying of the claimed

invention; industry acceptance; initial skepticism; failure of others; praise of the invention; and the taking of licenses under the patents by others.

34. I understand that a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. While multiple prior art references or elements may, in some circumstances, be combined to render a patent claim obvious, I understand that I should consider whether an "apparent reason" would have existed to combine the prior art references or elements in the way the patent claims. To determine whether such an "apparent reason" would have existed, it is often be necessary to look to, among other things, the problem identified and solved by the claimed invention, the outcome of a proposed combination and whether that outcome would have been predictable, the interrelated teaching of multiple patents, the effects of demands known to the design community or present in the marketplace, and to the background knowledge possessed by a person having ordinary skill in the art.

35. I also understand that when the prior art "teaches away" from modifying or combining prior art references or certain known elements, i.e., discourages such a modification or combination, the discovery of a successful means of combining them is more likely to be non-obvious. A prior art reference may be said to "teach away" from a patent when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the patent or would be led in a direction divergent from the path that was taken by the patent. Additionally, a prior art reference may "teach away" from a claimed invention when modifying or substituting an element in a prior art device would render the claimed invention inoperable or negatively impact the value of the prior art device.

36. I also understand that it is not permissible to use hindsight in assessing whether a claimed invention would have been obvious. Rather, I understand that, to assess obviousness, you must place yourself in the shoes of a person having ordinary skill in the relevant art at the time the claimed invention was made and ignore the knowledge you currently now have of the claimed invention. Thus, the claims of a patent cannot be used as a roadmap to combine or modify prior art references.

D. Inherent Disclosure

37. I understand that a reference that does not expressly disclose a claim limitation may nevertheless "inherently" disclose the limitation if the missing matter is necessarily present in the system or method described in the reference. I further understand that the disclosure must be sufficient to show that the natural result flowing from the operation of the system or method disclosed in the reference would require the missing matter or result in the performance of a missing step.

E. Person of Ordinary Skill in the Art of the '580 Patent

38. In my opinion, a person of ordinary skill in the art of the '580 Patent on December 5, 1997 would have a bachelor's degree in electrical engineering that included coursework in communications systems and networking, and two years of work experience in electronic communications. In determining who would be one of such ordinary skill, I considered at least the following criteria: (a) the type of problems encountered in the art; (b) prior art solutions to those problems; (c) the rapidity with which innovations are made; (d) the sophistication of the technology; and (e) the education level of active workers in the field.

F. Priority Date

39. I understand that in some situations a later-filed patent application can claim priority to an earlier-filed application. If a patent application claims priority to a prior application, the later-filed application may be entitled to the benefit of the earlier-filed application. For a later-filed patent application to be entitled to the benefit of an earlier filing date, the claims of the later-filed application must be supported by the written description in the earlier application in sufficient detail such that a person skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought.

G. Admitted Prior Art

40. I understand that an inventor can refer to another's work as "prior art" in a patent specification, in which case that admission may cause that work to become prior art for purposes of a patentability analysis. This has been referred to as the "doctrine of prior art by admission." However, I understand that the doctrine of prior art by admission is inapplicable when the subject matter at issue is the inventor's own work. Rather, the doctrine of prior art by admission only applies when the inventor refers to the work of another as "prior art."

V. THE SUBSTANTIAL NEW QUESTION OF PATENTABILITY ISSUE

41. I understand that a reexamination cannot be ordered unless there is a substantial new question of patentability not previously considered by the Office. In that regard, I further understand that "[i]t must first be demonstrated that a patent or printed publication that is relied on in a proposed rejection presents a new, non-cumulative technological teaching that was not previously considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested, and during the prosecution of any other prior proceeding involving the patent for which reexamination is requested." MPEP § 2216.

42. I further understand that the PTAB considered the patentability of claims 2 and 59 of the '580 Patent in view of Boer and several other references and concluded that the '518 Petition, "does not demonstrate a reasonable likelihood of prevailing on the obviousness grounds of unpatentability as to claims 2 … and 59 based on APA and Boer." '518 IPR Institution Decision, at 17.

43. I observe that, in ordering *ex parte* reexamination of the '580 Patent, the Office found:

> 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.").*

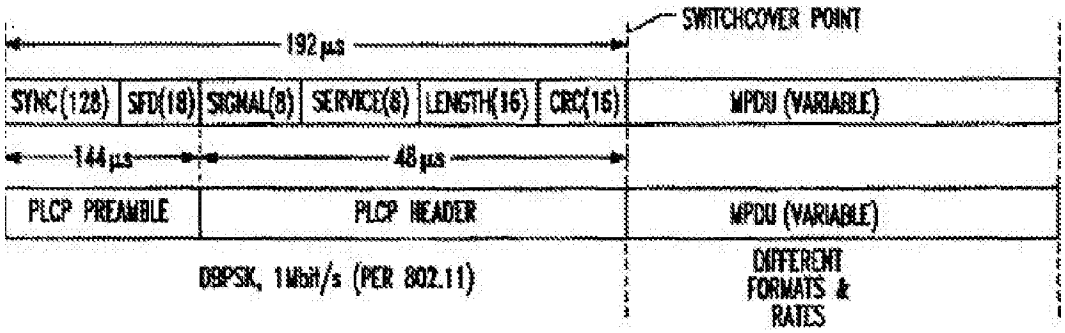


FIG. 3

-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, lines 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, 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.

Order, at 8-9 (emphases in Order).

44. Based on these citations to Snell, the Office drew the following conclusions:

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 "transmitting 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 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.

Order, at 9-11. I observe that the Office does not rely on any teachings, except those in Snell (quoted above), to support its SNQ findings.

45. I observe that, in the above analysis, the Office failed to analyze whether the same question of patentability as to claims 2 and 59 was previously considered by the Office (in this case by the PTAB). For instance, the Office failed to analyze whether Snell is more relevant to the patentability of claims 2 and 59 than Boer, or just cumulative of Boer. In addition, the Office failed to analyze whether Snell is being considered in a new light, or just in the same way that Boer was considered in a number of IPRs, including the '518 IPR.

46. Based on my understanding of what is needed to raise an SNQ and my review of Snell and Boer (and the other documents cited in the Order), in my opinion, the references identified and the arguments made in the Office's Order are at best cumulative to the references relied on and the arguments previously made and considered by the PTAB during several IPRs, including

the '518 IPR. My opinion remains the same, even assuming Harris AN9614 (which I discuss further below) was prior art and was successfully incorporated by reference into Snell (which I understand is not the case). Thus, in my opinion, the Office has not raised an SNQ based on Snell and would not be able to do so based on the other references identified in the Order. I further support my opinions with the following analysis.

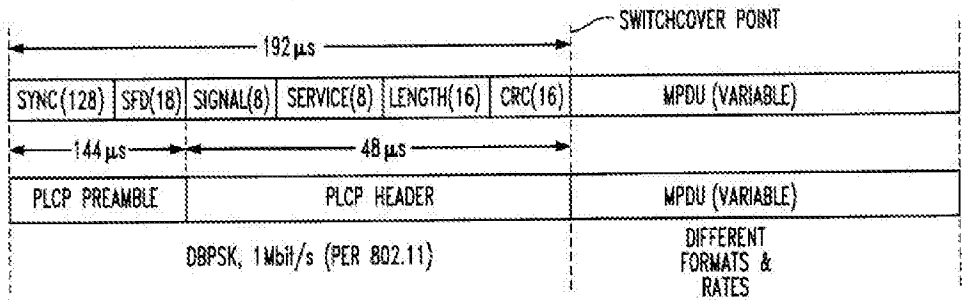
A. Snell Compared to Boer

47. With respect to the patentability of claims 2 and 59 of the '580 Patent, in my opinion, Snell is no more relevant than Boer, which the PTAB previously considered in the '518 IPR in deciding that claims 2 and 59 were unlikely to be proven unpatentable. '518 IPR Institution Decision, at 13-15 & 17.[1] Both Snell and Boer 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. Both references use the packet structure defined by the standard, including packet headers with the same fields.

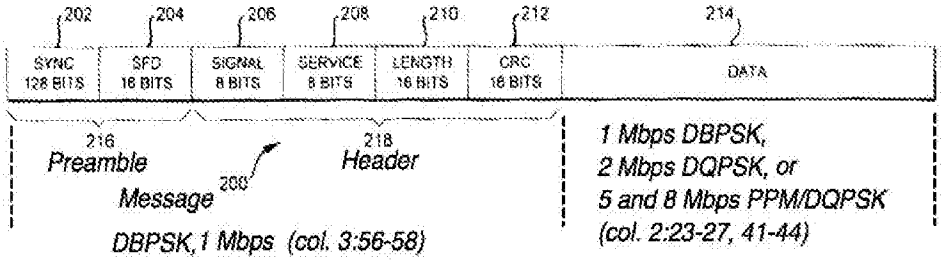
48. The Office relies heavily on Snell's Fig. 3 and its disclosure of these packet structures as providing the additional limitations of claims 2 and 59. Order at 10-11. Substantially identical packet structures disclosed in Boer and Boer's Fig. 4 were fully considered by the PTAB in the '518 IPR and found unlikely to render unpatentable claims 2 and 59 of the '580 Patent. *See* '518 IPR Institution Decision, Paper 16, at 13-15 & 17 (September 23, 2014) (quoted below in ¶ 52).

49. I have compared Snell's Fig. 3 with Boer's Fig. 4 (annotated in italics to identify the numbers in Fig. 4 and the Boer teachings coinciding to those shown in Snell's Fig. 3):

[1] The PTAB's determination was based on alleged Admitted Prior Art ("APA") and Boer. The alleged APA ('580 Patent at 7-8) describes a master/slave communications system. I discuss the combination further below. *See* ¶ 47-54.



(Snell) **FIG. 3**



(Boer) FIG.4

Based on my comparison of these figures and their descriptions in Snell and Boer, I conclude that Snell is at best cumulative to Boer. My opinion is further supported by Exhibit B in which the relied-on material in Snell is compared to Boer's teachings. In fact, based on my review, I conclude that the Snell disclosure relied on by the Office is substantially identical to that in Boer, i.e., a disclosure previously fully considered by the PTAB.

50. I further opine that the Office does not identify a single disclosure in Snell more relevant to the patentability of claims 2 and 59 than that which the PTAB previously considered in Boer. In fact, in my opinion, Snell is even less relevant than Boer due to, *inter alia*, lack of any disclosure of a destination address in Snell. Further, just as in Boer, there is no disclosure in Snell of transmitting "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 required by claims 2 and 59.

B. The Arguments Based on Snell Compared to Those Based on Boer

51. I observe that the Office's arguments based on Snell are being made in the same way they were previously made and considered based on Boer in the '518 IPR. For instance, in its Order, the Office alleges that the SIGNAL/SERVICE fields of a "subsequent" transmission taught the additional limitations of claims 2 and 59. Order, at 10-11 (quoted above). I have compared that argument with the corresponding Boer argument considered in the '518 Institution Decision, at 13-15 (quoted below in ¶ 52) and opine that they are substantially the same.

52. I further observe that, in the '518 IPR, the PTAB considered the packet structure disclosed in Fig. 4 of Boer, which, as noted above, is substantially identical to that disclosed in Fig. 3 of Snell, and rejected the argument now advanced by the Office, namely, that the SIGNAL/SERVICE fields of a "subsequent" transmission taught the additional limitations of claims 2 and 59. In the '518 Institution Decision, the PTAB determined the following:

> Claim 2, which depends from claim 1, recites 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." Petitioner submits that the recitation is met by material in Boer.
>
> Figure 4 of Boer is reproduced below.

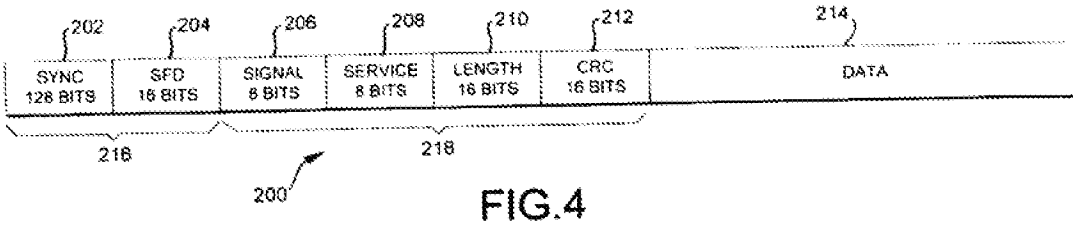


FIG.4

> Figure 4 is said to be a diagram illustrating the format of a data message circulating in Boer's LAN. Ex. 1204, col. 1, ll. 59–60. Message 200 includes preamble 216 and header 218, always transmitted at the 1 Mbps rate using DBPSK modulation. Subsequent DATA field 214, however, may be transmitted at any one of the four rates 1, 2, 5, or 8 Mbps, using the modulation and coding appropriate for the selected rate. Id. at col. 3, ll. 56–62. SIGNAL field 206 has a first value if DATA field 214 is transmitted at the 1 Mbps rate and a second value if the DATA field is transmitted at the 2, 5, or 8 Mbps rate. SERVICE field 208

has a first value for the 1 and 2 Mbps rates, a second value for the 5 Mbps rate, and a third value for the 8 Mbps rate. *Id.* at col. 4, ll. 4–11.

Petitioner submits that the "first sequence" of base claim 1 corresponds to Boer's description of SIGNAL field 206 and SERVICE FIELD 208. E.g., Pet. 32 (claim chart). According to Petitioner, the "third sequence" of claim 2 corresponds to a subsequent transmission of SIGNAL field 206 and SERVICE field 208. Pet. 25. Petitioner concludes that the subject matter of claim 2 would have been obvious because header 218 is always transmitted using DBPSK (the "first" modulation method). *Id.* ….

* * *

Petitioner has not provided sufficient evidence or explanation in support of why the fact that Boer's SIGNAL and SERVICE fields are always transmitted using DBPSK (the "first" modulation method) might demonstrate obviousness of the subject matter of claim 2. Petitioner has failed to show, in particular, how the SIGNAL and SERVICE fields might be deemed, as alleged, to "indicate" that communication from the master to the slave has reverted to the first modulation method, as recited in claim 2.

Independent claim 49, from which challenged claims 52 and 53 depend, recites a similar limitation with respect to how a sequence "indicates" that communication has reverted to the first modulation method. Petitioner relies, again, on Boer's description of header 218 being always transmitted using the "first" modulation method. Pet. 39; Ex. 1220 ¶¶ 192– 195. Petitioner's asserted ground of obviousness with respect to claim 49, thus, fails for the same reasons as that of claim 2.

Claim 59, which depends from independent claim 58, also recites a third sequence that is transmitted in the first modulation method that "indicates" communication from the master to the slave has reverted to the first modulation method. Petitioner submits, correctly, that Boer teaches that the SIGNAL and SERVICE fields in the header "indicate which modulation method is used to transmit DATA field 218." Pet. 49. "When Boer is combined with the APA, it could therefore indicate that communication from the master to the slave has reverted to the first modulation method." *Id.* (citing Ex. 1220 ¶¶ 232–237). Mr. Goodman repeats that "it could therefore indicate" that communication has reverted to the first modulation method (Ex. 1220 ¶ 237) and concludes, "[t]herefore, it is my opinion that claim 59 is obvious in view of the prior art" (*id.* ¶ 238). Although it appears that Petitioner attempts to provide more explanation in its challenge of dependent claim 59, as compared with that of claim 2 or 49, we are not persuaded there is a reasonable likelihood that Petitioner would prevail in its challenge of any of claims 2, 49, and 59.

'518 IPR Institution Decision, at 13-15 (denying *inter partes* review of claims 2 and 59).

53. I opine that, as is the case with Boer (and as the PTAB determined), there's nothing in Snell that requires "the third sequence [to be] transmitted in the first modulation method and [to] indicate[] that communication from the master to the slave has reverted to the first modulation method." Claims 2 and 59. Just as in Boer, the fact that "[t]he PLCP preamble and PLCP header are always at 1 Mbit/s," Snell 6:64-66, does not require that the "communication … revert[] to the first modulation method," as required by claims 2 and 59. Neither does the fact that Snell's SIGNAL field in PLCP header has four predetermined values that correlate with four data rates/modulation methods that are used to send the payload, Snell 6:48-59 (also describing Snell's Fig. 3). Boer discloses substantially the same information in describing Boer's Fig. 4. *See* Boer's Fig. 4 above and its description at 3:42-4:24; Exhibit B. The PTAB found that disclosure in Boer inadequate to even institute an IPR with respect to claims 2 and 59, even when combined with the APA.[2] *See* '518 Institution Decision, at 13-15 (quoted above in ¶ 52).

54. Summarizing my opinions regarding Snell compared to Boer: Snell is at best cumulative of Boer, and the Office has presented it in the same way that Boer was presented and considered in a number of IPRs, including the '518 IPR. Moreover, the arguments based on Snell were previously made in the '518 IPR and were rejected by the PTAB in the context of Boer. Thus, based on my understanding of the requirements to support an SNQ, Snell fails to do so.

C. Harris 4064.4 and Harris AN9614

55. The Order lists as "Prior Art" Harris 4064.4 and Harris AN9614 (collectively "Harris Documents") and posits that they are "incorporated by reference by Snell" and are "therefore

[2] The APA considered by the PTAB is described in the '518 Institution Decision, at 7-8. It describes a master/slave communications system.

prior art under at least 35 U.S.C. 102(e) as Snell." Order, at 3-4. I observe that the Office does not discuss the substance of either Harris Document in its Order or even mention either again.

56. It is my understanding that the Harris Documents are not prior art and were not successful incorporated by reference. Nevertheless, for purposes of this portion of my analysis, I have been asked to assume that the Harris Documents were prior art and were successfully incorporated by reference into Snell. Given that assumption, I have compared the disclosure in the Harris Documents with that of the art previously and fully considered by the PTAB in a number of the IPRs of the '580 Patent, including the '518 IPR, i.e., Boer and APA.

57. Harris 4064.4 discloses a preamble and header that are always transmitted as DBPSK waveforms, a data portion transmitted as either DBPSK or DQPSK, and a SIGNAL field that indicates whether the data portion is modulated as DBPSK or DQPSK. Harris 4064.4 at Fig. 10, 14-16. Boer discloses a preamble 216 and header 218 that always are sent using DBPSK and a data field 214 transmitted in DBPSK, DQPSK, or PPM/QPSK, and SIGNAL and SERVICE fields that indicate whether the data field 214 is modulated in DBPSK, DQPSK, or PPM/QPSK. Boer at Fig. 4, Abstract, 3:42-49, 3:56-62, 4:4-11, 6:5-21.

58. Based on my comparison of Harris 4064.4 with Boer, I opine that Harris 4064.4 is at best cumulative of Boer. The DBPSK and DQPSK of Boer were previously considered as allegedly corresponding to the claimed "first modulation method" and "second modulation method," respectively, and the SIGNAL and SERVICE fields of Boer were relied on as allegedly corresponding to the claimed "first sequence." '518 Institution Decision, at 9-11, 13-15.

59. Based on the above, it is my opinion that Snell (even with Harris 4064.4 incorporated by reference) would not have raised an SNQ.

60. With respect to Harris AN9614 (again with no mention as to its merits in the Order), I have been asked to assume the Office is relying on Harris AN9614 for its disclosure of a "polled scheme," on page 3, as allegedly corresponding to or suggesting the claimed "master/slave relationship."[3] Based on that assumption and my review of Harris AN9614 and the previously cited and considered APA, Harris AN9614 is no more relevant than the APA which includes an express disclosure of a master/slave relationship. The APA was previously fully considered in a number of IPRs of the '580 Patent, including the '518 IPR, and relied upon as allegedly corresponding to the claimed "master/slave relationship." *See, e.g.,* '518 IPR Institution Decision, at 17 (denying review of claims 2 and 59 based on the APA and Boer).

61. I have reviewed Harris AN9614's disclosure of a "polled scheme" and the Office's presumed reliance on it to satisfy the claim limitations requiring a "master/slave relationship." Harris AN9614 at 3. However, even if Harris AN9614 were prior art (which I understand it is not), in my opinion, Harris AN9614 would have, at most, suggested polling in the context of peer-to-peer communications given that both the Snell and Harris AN9614 disclosures are of such communications rather than master/slave communications as is taught and claimed in the '580 Patent. *See* ¶¶ 113-120. below for a further discussion of this issue.

62. Based on the above, it is my opinion that Harris AN9614 is at best cumulative of the APA which was previously presented to and considered by the PTAB in a number of IPRs, including the '518 IPR, in combination with Boer. *See* '518 IPR Institution Decision, at 17

[3] Moreover, to the extent the Office is drawing inferences from the disclosure of Harris AN9614 based on the '580 Patent's disclosure (*e.g.,* that Harris AN9614's "polled scheme" is equivalent to master/slave), such inferences are not well supported and incorrect, as explained below in ¶¶ 113-120.

(denying review of claims 2 and 59 based on the APA and Boer). Thus, Snell (even with Harris AN9614 incorporated by reference) would not have raised an SNQ.

D. The Other Art Identified in the Office's Alleged SNQs

63. I note again that the Office relied solely on Snell to support its SNQs. Nevertheless, in addition to Snell, I have considered the possible relevance of the other art included in the three SNQs identified in the Order, *i.e.,* Kamerman and Yamano, and Upender. Based on my review of these documents and possible arguments compared to the documents and arguments considered and rejected by the PTAB, *i.e.,* APA and Boer, I conclude that none of the other identified art, if considered, would raise an SNQ. My opinion is based on my determinations that the additional documents (i) were previously considered by the Office or are cumulative to art previously considered by the Office and (ii) are presented in the same way as the art was previously considered with respect to claims 2 and 59 (*e.g.*, in the '518 IPR).[4]

1. Kamerman

64. With respect to Kamerman, as an initial matter I note that Kamerman was Boer's co-inventor, and his presentation followed the filing of the Boer patent application.[5] Based on my

[4] While the Office has not based its SNQ determination on any reference other than Snell, I have been asked to address the additional documents identified in the Order, to the extent I am able to understand their possible alleged relevancy to claims 2 and 59 of the '580 Patent. Should the Office adopt new reasoning to support an SNQ, I respectfully reserve the right to supplement my opinions in response to such reasoning.

[5] The Kamerman paper is dated August, 1996, a few months after he, Boer and others filed the Boer patent:

comparison of Kamerman with Boer, it is my opinion that Kamerman's presentation neither discloses nor would have suggested anything more than Boer discloses or would have suggested. Thus, in my opinion, Kamerman's disclosure, including that of the same automatic rate control algorithm disclosed in Boer, would not raise an SNQ.

65. From the perspective of one skilled in the relevant art, I would expect such a presentation to disclose a less detailed version of the automatic rate control algorithm than that disclosed in Boer. *See* Boer, col. 7, l. 12-col. 8. l. 16 (quoted below). More specifically, just as in Boer, Kamerman's presentation describes an automatic rate control scheme in which the data rate is reduced when there are unacknowledged transmissions, and the data rate is raised after correctly acknowledged transmissions. Thus, in my opinion, Snell in view of Kamerman is at best cumulative of the previously-considered disclosure in Boer.

66. More specifically, Kamerman discloses:

> An automatic rate selection scheme based on the reliability of the individual uplink and downlink could be applied. The basic rate adaptation

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United States Patent [19]

Boer et al.

[11] **Patent Number: 5,706,428**

[45] **Date of Patent: Jan. 6, 1998**

[54] **MULTIRATE WIRELESS DATA COMMUNICATION SYSTEM**

[75] Inventors: **Jan Boer**, Odijk; **Wilhelmus Josephus Diepstraten**, Diessen; **Adriaan Kamerman**, Nieuwegein; **Hendrik van Bokhorst**, Nijkerk; **Hans van Driest**, Bilthoven, all of Netherlands

[73] Assignee: **Lucent Technologies Inc.**, Murray Hill, N.J.

[21] Appl. No.: **615,408**

[22] Filed: **Mar. 14, 1996**

"Welcome to IEEE P802.11"; Working Group for Wireless Local Area Networks; Set-up on Dec. 17, 1996, update of May 20, 1997.

"Bell Labs Unveils 10–Megabit Wireless–Network Technology, Offering Five Times Today's Highest Data–Transmission Capacity"; ICA New Product Announcement, Apr. 22, 1997.

Primary Examiner—James P. Trammell
Assistant Examiner—Shah Kaminis
Attorney, Agent, or Firm—Christopher N. Malvone

[57] **ABSTRACT**

In my experience, inventors like Kamerman are permitted to talk about an invention disclosed in a patent application once the application was filed. Such a procedure is typical with large companies like Lucent Technologies (assignee of the Boer patent and Kamerman's employer).

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. … 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.

….

… 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 11-12.

67. My opinion that Boer discloses the same automatic rate control algorithm is supported by the following disclosure in Boer:

Referring now to Fig. 7, there is shown a flowchart 500 illustrating an automatic data rate update procedure for the data rate to be used in the transmit mode … the flowchart proceeds to block 508 where a determination is made as to whether the ACK has been received and within a predetermined time-out time. If yes, the flowchart proceeds to block 510, where a successive correct (SC) count value is incremented. Next, as seen in block 512, a check is made as to whether the SC count value is greater than a predetermined value, selected as value 9, by way of example. In other words, a check is made as to whether more than nine successive ACK messages have been correctly and timely received. If yes, the flowchart proceeds to block 514 where a check is made as to whether the local SNR (signal-to-noise ratio) value is greater than a predetermined value, suitable for data rate incrementation. (The SNR is the ratio of received signal strength during the reception of the ACK message to the average silence level during periods at which no carrier signal is being received). If the SNR value is suitable, then the flowchart proceeds to block 516, where a data rate incrementation is implemented (if the maximum data rate is not already being used), and the SC (successive correct) count value is reset to zero. Thereafter, the data rate value and SC count value are stored (block 518), and the flowchart ends at block 520.

Returning to block 508, if an ACK message is not received correctly and within the predetermined time interval, then the flowchart proceeds to block 522 where the SC count value is reset to zero and the data rate is decremented (if the

> minimum data rate is not already being used), and the flowchart proceeds over line 524 to block 518 where the new data rate and SC count value are stored. …
>
> Returning now to block 504, if it is determined that the data rate is 5 or 8 Mbps, then the flowchart proceeds to block 506, where a determination is made as to whether the system is configured for overruling the preferred data rate by a data rate defined by monitoring the receipt of ACK messages. If no, the flowchart proceeds to block 508, previously discussed. If yes, the flowchart proceeds to block 526, where a determination is made as to whether the preferred data rate defined in the short ACK message 400 (Fig. 6) is greater than the actual data rate of the original message being acknowledged. If so, the flowchart proceeds to block 516 where the data rate is incremented and SC count value is reset to zero. … .
>
> To summarise the procedure described above with reference to the flowchart 500, it will be appreciated that an automatic data rate selection procedure has been described. … If a station 22 doesn't receive the expected ACK message in return correctly and in due time, it will retransmit the original message packet at a lower data rate. If a station 22 does receive the expected ACK messages correctly and in due time from a particular station for a predetermined number of successive times, then it will transmit the next message to that station at a higher data rate. In this way the stations 22 adapt the operating data rate dependent on channel conditions (degradation by noise--SNR, time dispersion in the channel--delay spread) and co-channel interference (SIR).

Boer, col. 7, l. 12-col. 8. l. 16.

68. I observe that, just like the disclosure in Boer, nothing in the Kamerman presentation requires an indication that "communication from the master to the slave has reverted to the first modulation method." Thus, it is my opinion that Kamerman's presentation merely summarizes Boer et al.'s work described in Boer and does not provide any further information relevant to the patentability of claims 2 and 59. Thus, it would not raise an SNQ, alone or combined with Snell.

2. Yamano

69. Based on my review of Yamano, it is my opinion that Yamano is at best[6] cumulative of Boer. Yamano discloses a destination address in the preamble 701 of a packet 700 as allegedly

[6] I note that the combination of Snell and Yamano requires some motivation to combine the two references, while having the destination address in the same reference, i.e., Boer, does not.

corresponding to addressing a group of transmission sequences for an intended destination of the payload portion. Yamano at 19:63-64, 20:54-59, Fig. 8).[7] Boer discloses a destination address in the data field 214 of a message 200 (Boer at 6:28-31), which was relied on in the '518 IPR as meeting the "addressed for an intended destination of the payload portion" limitation. '518 Petition, at 23, and was *sub silentio* adopted by the PTAB. See '518 Final Written Decision, at 21 (determining, e.g., claims 1 and 58 were unpatentable). Thus Yamano adds nothing to Boer and could not raise an SNQ.

70. I have also reviewed U.S. Patent No. 5,537,398 to Siwiak ("Siwiak"), which discloses an address block 106 in the first transmission portion 102 of the transmission format protocol 100 (and not in the second transmission portion 104 that includes the message data 110), Siwiak at Fig. 2, col. 4, ll. 31-39. Siwiak was fully considered by the Office during prosecution of the '580 patent. *See* Office Action in Appl'n No. 12/543,910, at 4 (recognizing the address disclosure of Siwiak) (the "9-01-10 Office Action"); '580 Patent at p. 2 (listing Siwiak as a cited reference). Based on my review of Siwiak and the 9-01-10 Office Action, it is my opinion that Yamano is at best cumulative of Siwiak. For this second reason, Yamano could not have raised an SNQ.

VI. THE INCORPORATION BY REFERENCE ISSUE

71. The Office relies on incorporation by reference of Harris AN9614 and Harris 4064.4 ("Harris Documents") into Snell in its attempt to address some of the deficiencies of Snell, Yamano, and Kamerman. 3-31-17 Office Action, at 12-13, 15-16.

[7] In my opinion, the fact that the destination address of Yamano is in the preamble while the destination address of Boer is in the data field is not relevant to claims 2 and 59, which do not require a destination address in any particular portion of the "group of transmission sequences" (claim 2) or "message" (claim 59). In any case, such a disclosure was already before the Office in Siwiak. *See* ¶ 70 below.

72. I understand that, in the circumstances of this case, a non-patent document *must be published*, i.e., available to those of ordinary skill in the relevant art to be incorporated by reference based on the requirements of 37 CFR. § 1.57 (e) limit the material that may be incorporated by reference:

> (e) Other material ("Nonessential material") may be incorporated by reference to U.S. patents, U.S. patent application publications, foreign patents, foreign published applications, prior and concurrently filed commonly owned U.S. applications, or non-patent publications. …."

37 CFR. § 1.57 (e) (emphasis added).

73. I further understand that, if a non-patent document was not published before the filing date of a patent application attempting incorporation by reference of the non-patent document, any attempt to do so must fail. In this regard, in spite of my expertise in the relevant art, prior to the *Rembrandt v. Samsung* litigation, I was not aware of either Harris Document. Further, based on my experience in the art, from the face of these documents it cannot be discerned whether they were created solely for use internally within the Harris Corporation, or alternatively for use by the public.

74. Also, with respect to incorporation by reference, I understand that to "incorporate material by reference, the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents." *Advanced Display Systems, Inc. v. Kent State University*, 212 F.3d 1272 (Fed.Cir. 2000). In that regard, I have reviewed the portion of Snell at col. 5, lines 2-5, which provides as follows:

> 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.

I have also reviewed Harris AN9614.

75. In my opinion, a person of ordinary skill in the art would interpret Snell's reference to "filters" and "voltage controlled oscillators" described in Harris AN9614 to include at most the discussion of (i) "External IF Filtering" on pages 1-2 of the application note, (ii) "Limitations of HFA3724 LPFs" on page 2 of the application note, and (iii) clock oscillators on page 2 of application note. A person of ordinary skill in the art would not interpret Snell's reference to "filters" and "voltage controlled oscillators" described in Harris AN9614 to include the statements on page 3 of Harris AN9614, as that page is directed to a different topic, *i.e.*, "High Rate Burst Transmissions With Low Average Rate."

76. In any case, to the extent the Harris Documents are determined to have been legally incorporated by reference, they add nothing to Boer and the APA. *See* ¶¶ 55-62 above.

77. Further, Harris AN9614 merely makes vague reference to a "polled scheme" without indicating what configuration the document is referring to. Because the Harris Documents merely further describe PRISM™ (Harris's commercial device claimed in Snell, see Snell, at col. 1, ll. 47-54; col. 5, ll.11-16), one of ordinary skill in the relevant art would have understood Harris AN9614's reference to a "polled scheme" to be referring to such a scheme in the context of PRISM's peer-to-peer communications and not to undisclosed master/slave communications. My opinion is further supported by the fact that PRISM, as described in Harris 4064.4, includes clear channel assessment (CCA) which is used "to avoid data collisions" (Snell, col. 5, ll. 23-29) as "a carrier sense multiple access (CSMA) networking scheme." Harris 4064.4, at 18, col. 2.

VII. THE '580 PATENT TECHNOLOGY

A. Brief Explanation of the State of Master/Slave Art Prior to the '580 Invention

78. According to the '580 Patent, prior art master/slave systems could only communicate when all network devices used a single common type of modulation method. *See* '580 Patent at 1:27-65, 3:40-48. Thus, if a slave using an additional type of modulation method were added to the network, the new slave could not easily communicate with the master using the different modulation type because it would not be compatible with the common type of modulation method. *Id.* Annotated figure 1 of the patents shows such a prior art master/slave system, where all devices in the network communicate using only a single common type of modulation method (such as the amplitude modulation used by AM radio), even though some of the devices may be capable of communication via other types of modulation methods:

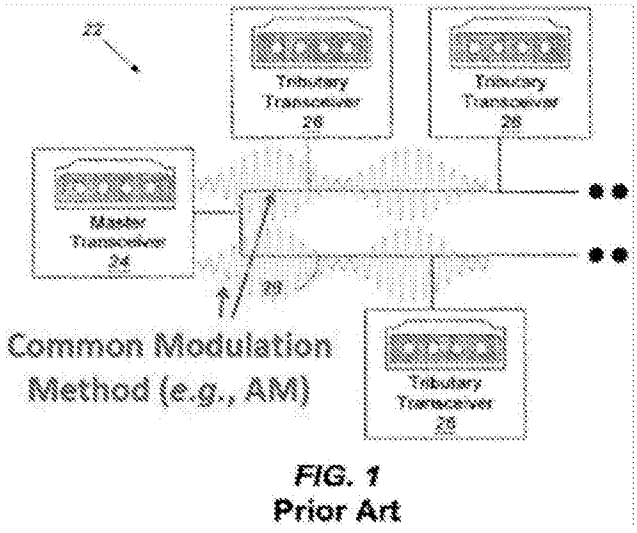


FIG. 1
Prior Art

79. The state of master/slave art prior to the '580 invention is described in the '580 Patent at col. 3, l. 40-col. 4, l. 50, with reference to Fig. 2.

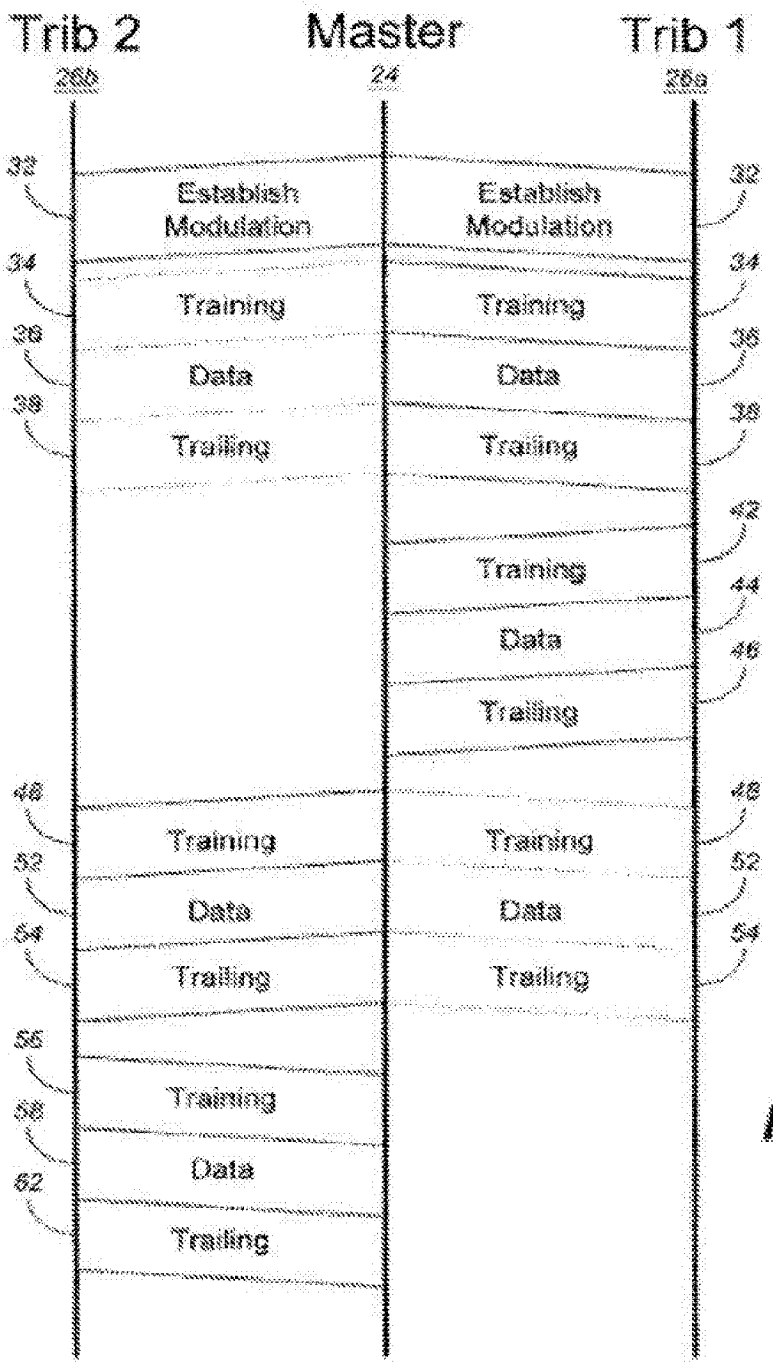


FIG. 2

80. Briefly, Fig. 2 discloses a polled multipoint master/slave system. At the beginning of a session, the master established a common modulation type for communication with all its slaves (32 in Fig. 2). All slaves were identical in that they shared a common modulation with the master.

The master then communicated with its slaves, one at a time, by sending a training sequence with the address of the slave with which it wants to communicate, followed by data, and finally a trailing sequence to end the communication (34-38 in Fig. 2). A slave could not initiate a communication, but, if the slave was polled by the master, it could respond to the master in a similar fashion (42-46 in Fig. 2). When the master had completed its communications with the first slave, it could then communicate with a second slave using the *same* negotiated common modulation (48-54 in Fig. 2).

B. The Problem Identified in the '580 Patent

81. Again, with reference to Fig. 2, the problem Gordon Bremer identifies and addresses in his detailed description is as follows:

> Consider the circumstance in which master transceiver 24 and trib 26b share a common modulation type A while trib 26a uses a second modulation type B. When master transceiver attempts to establish A as a common modulation during sequence 32, trib 26a will not be able to understand that communication. Moreover, trib 26a 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 26a because trib 26a will never transmit training sequence 42, data 44, and trailing sequence 46 due to the failure of trib 26a 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. [col. 4, l. 55-col. 5, l. 6]

82. Summarizing the incompatibility problem Gordon Bremer identified:

a) If the Master in the APA wanted to communicate with a slave using a second modulation method that was incompatible with that used to communicate with its other slaves, it was necessary to tear down the session and begin a new session. Doing so was disruptive.

b) If the APA master attempted to communicate using an incompatible modulation type without beginning a new session, the other slaves would not understand the attempted communications and would not respond to any polling directed at them, resulting in repeated attempts by the Master to communicate. In addition, the slaves may be confused by the transmissions and make improper communication attempts.

83. One of ordinary skill in the relevant art would have understood that Fig. 2 and its description do not disclose or suggest the incompatibility problem identified by Gordon Bremer, or even the goal of using incompatible modulations in one master/slave session.

C. The '580 Solution to These Incompatibility Problems in a Master/Slave Setting

84. In the context of the master/slave system described above, Gordon Bremer invented "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" (col. 2, ll. 17-20). Mr. Bremer solved the above-described incompatibility problem with his claimed master/slave communication system in which slaves can communicate over a network through a master using multiple types of modulation methods, thereby permitting selection of the modulation type best suited for a particular application. Col. 1, l. 66- col. 2, l. 33.

85. The claimed invention of the '580 Patent is further described with reference to Figure 2 and in Figures 3-8 and the written description. Specifically, Figures 3 and 4 show block diagrams of the master transceiver and tributary transceivers, while Figure 5 shows a ladder diagram illustrating the operation of those transceivers. Figures 6 and 7 show state diagrams for exemplary tributary transceivers. And Figure 8 shows a signal diagram for exemplary transmissions.

86. Annotated Fig. 4 shows an embodiment of the patented technology where some devices in the network communicate using one type of modulation method (*e.g.*, amplitude modulation used by AM radio), while other devices communicate using a different type of modulation method (*e.g.*, the frequency modulation used by FM radio):

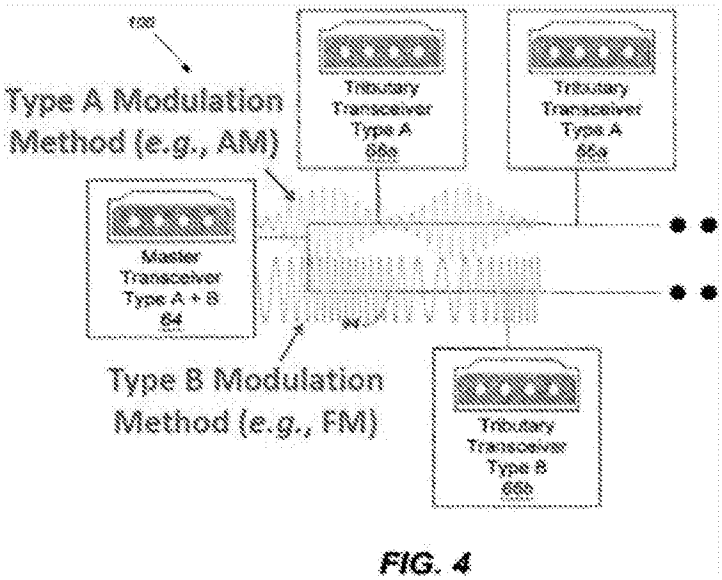
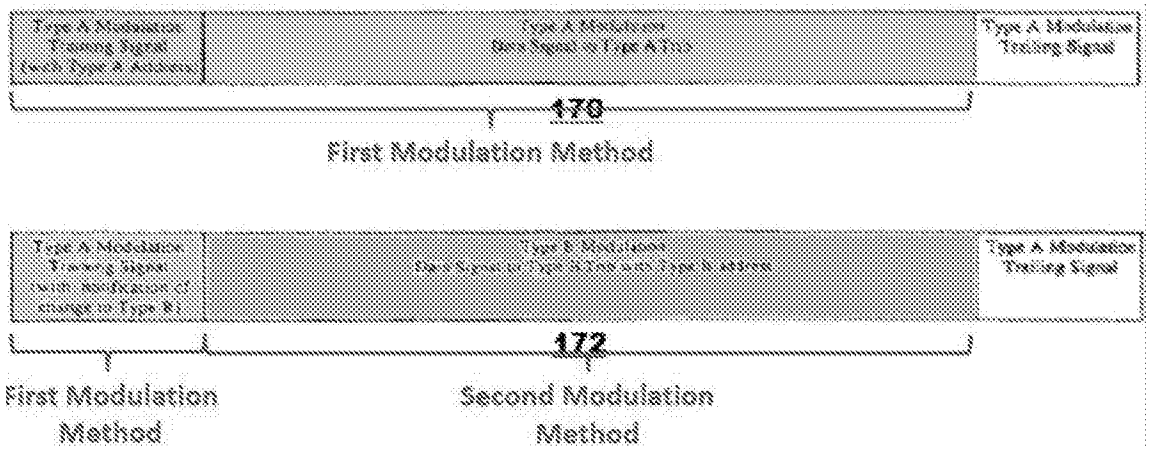


FIG. 4

Col. 5, ll. 47-56. Such a system provides for greater efficiency, seamless communication with all devices, backward-compatibility, and decreased costs. Col. 2, ll. 50-57; *see also* col. 1, l. 66-col. 2, l. 15.

87. Annotated Fig. 8 shows two communications intended for different slaves. The first communication 170 uses a first type of modulation method for both the initial training signal and the subsequent data signal, while communication 172 uses the first type of modulation method for the training signal and the second type of modulation method for the data signal:



Col. 4, ll. 21-24, 42-44, Fig. 8. Information in the training signal indicates whether there will be an impending change from the first type of modulation method to the second type of modulation method. *Id.* (training signal includes "notification of change to Type B" modulation method). Mr. Bremer's solution is captured and claimed in his "switches" from one modulation type to another and is described with reference to Fig. 5:

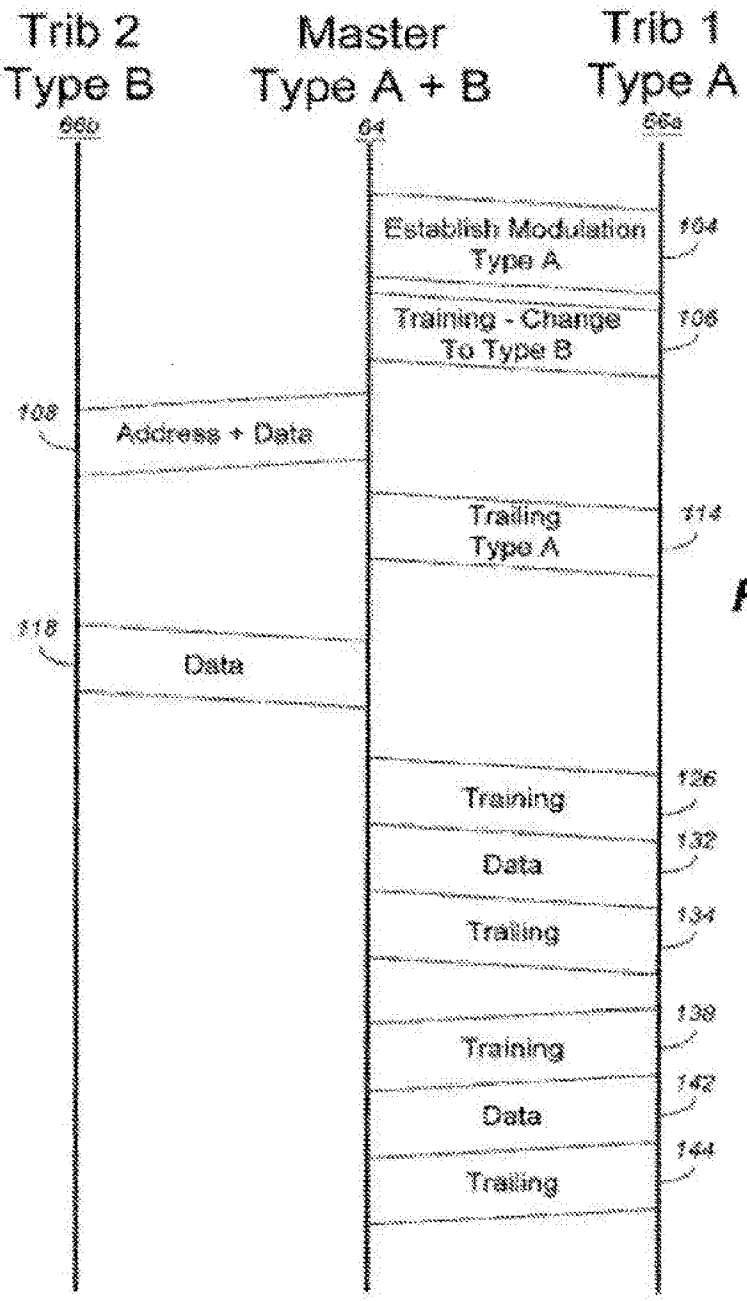


FIG. 5

88. With reference to Fig. 5, if the Master is communicating with a Type A trib ("Trib 1 Type A") using a negotiated first modulation type A in the normal fashion and then wants to communicate with a Type B trib ("Trib 2 Type B"), the Master transmits "first information" comprising a "*first sequence*" modulated according to the "first modulation method" (one that the Type A trib understands) comprising "*a first sequence*" that "indicates an impending change"

to a second modulation method (illustrated as 106). The Master then transmits to the Type B trib "second information for at least one group of transmission sequences compris[ing] *a second sequence* that is modulated according to the second modulation method," which is "a different type than the first modulation method." In the Fig. 5 embodiment, the "second sequence" is illustrated as 108 and uses the second type modulation method is one that the Type B trib can understand and Type A cannot.

89. It is at this point in the embodiment of Fig. 5 that the limitations of claim 2 (and similarly claim 59) come into play. To satisfy claim 2, the transceiver must be "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*."

90. Again, with reference to Fig. 5, after the Master completes its communication with a Type B trib using Type B modulation (transmission sequence 108), the Master sends a "third sequence" to inform Type A trib that "communication from the Master has reverted to the first modulation method" (illustrated as 114, 126-132).

91. The '580 specification describes the claimed switches as follows:

> To switch from type A modulation to type B modulation, master transceiver 64 transmits a training sequence 106 to type A tribs 66a in which these tribs are notified of an impending change to type B modulation. … After notifying the type A tribs 66a 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 66b. …. [Col. 6, ll. 3-12.]
>
> … If, however, master transceiver transmits a training sequence in which the type A tribs 66a-66a 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 66a returns to state 122 where it awaits a training sequence." [Col. 6, ll. 41-48.]

> To initiate a communication session with a type A trib 66a, master transceiver 64 transmits a training sequence 126 in which an address of a particular Type A trib 66a is identified. The identified Type A trib 66a recognizes its own address and transitions to state 128 to receive data from master transceiver 64 as part of sequence 132. [Col. 6, ll. 49-54.]

92. Thus, with reference to Fig. 5 (and using the language of claim 2), Mr. Bremer's switches include:

a) "a first sequence" sent by the master using the first modulation method to inform the Type A tribs of "an impending change" to a second modulation method – one that is incompatible with the first -- telling Type A tribs to ignore the second message's "second sequence" which they cannot understand and is not intended for them;

b) a second sequence" sent by the master using the second, incompatible modulation method to the Type B trib -- one that does understand the communication; and

c) a third sequence" sent by the master using the first modulation method to inform Type A tribs that "communication from the Master has reverted to the first modulation method."

93. The combination of Gordon Bremer's claimed sequences captures his solution to the incompatibility problem, i.e., switching from one modulation type to another incompatible modulation type when switching from one trib type to another. None of the cited references discloses or suggests either the problem Mr. Bremer set out to solve in the master/slave setting, or his solution to that problem. *See* col. 5, l. 57 – col. 7, l. 3 (describing Fig. 5).

VIII. THE ART RELIED ON BY THE OFFICE TO SUPPORT ITS ANTICIPATION AND OBVIOUSNESS REJECTIONS OF CLAIMS 2 AND 59

A. Overview of the Art Relied on by the Office

94. None of the cited art is directed to a master/slave system in which incompatible modulation methods are used by a master to communicate with its slaves. In fact, none of the art relied on in the 3-31-17 Office Action, *i.e.*, Snell, Kamerman, or Yamano, has anything to do with communications between a master and slave. Rather they each are directed to peer-to-peer

communications in which the modems, or stations, share a common modulation and thus are compatible with each other. These references were attempting to solve different problems created by their peer-to-peer configuration – e.g., increasing data rates while avoiding interference and collisions –and not the '580 incompatibility problem in a master/slave configuration. That is at least because master/slave and peer-to-peer configurations, or protocols, are fundamentally different protocol types.

95. Summarizing the fundamental differences between the '580 claimed invention and the relied-on art, Snell, Yamano, and Kamerman:

a) Focus on peer-to-peer communications, such as those used in CSMA and CDMA, in which a *single* modem, or station, may, e.g., "switch on-the-fly between different data rates and/or formats." (Snell, col. 2, ll. 27-30). *See also* Kamerman at 6 ("CSMA/CA protocol is designed to reduce the collision probability between multiple stations accessing the medium"); Yamano at col. 1, ll. 9-13 ("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.. .").

b) Do not have a master, or any other device, that negotiates a modulation type, polls slaves (or stations) and initiates all communications with the system's slaves (or stations). *See* the cited references *passim*.

c) Do not have slaves that may only respond when polled by a master. Instead, once part of the network, any of the stations in the cited references can initiate communications with any other station using a data rate it knows will work (in the absence of interference/collisions). *See, e.g.*, Kamerman, at 6 ("The basic medium access behavior allows interoperability between compatible PHYs through the use of CSMA/CA").

d) Identify and solve very different problems –e.g., collision or interference avoidance—than those Bremer identified and solved using very different solutions. *See, e.g.*, Snell, at col. 5, ll. 23-29 (providing" a clear channel assessment (CCA) to avoid data collisions"); Kamerman, at 11 ("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."). Notably, interference and collision avoidance is completely unnecessary in a master/slave setting because the master controls all communications. Thus, there would have been no motivation to employ

the prior art solutions used to avoid interference or collisions in order to solve Bremer's incompatibility problem in a master/slave setting.

96. Thus, in my opinion, the problems addressed by Snell, Yamano, and Kamerman would not have been relevant to those identified and addressed by the '580 Patent. Just like Boer, Snell was interested in providing a transceiver that could operate at higher data rates than previously provided while avoiding collisions by only transmitting when the communication channel was clear. *See* Snell, col. 2, ll. 22-25; col. 3, ll. 41-44; col. 5, ll. 23-29. *See also* Kamerman at 11. As noted previously, such a problem does not occur in a master/slave setting because the master controls communications with its slaves. In contrast and as explained above, Mr. Bremer invented a way for the master to communicate with slaves that utilized incompatible modulation types without tearing down the system to make a switch from one modulation type to another. Mr. Bremer's solution is captured, in part, in his third sequence.

97. None of Snell, Yamano, or Kamerman even recognizes an incompatibility problem that needed solving. Rather Snell's switches, just like Boer's, were for very different reasons, i.e., to address/minimize collisions and interferences. Because of these substantial differences, one skilled in the art would not have been motivated to combine Snell, Yamano, and Kamerman – if at all -- in a way that would have yielded Bremer's claimed invention without using the claimed invention as a roadmap. More specifically, primarily because of these substantial differences, one skilled in the art would not have been motivated to solve the '580 problem in a master/slave setting in the way Mr. Bremer did. That solution included, among other things, the claimed first and second modulation types and the claimed sequences, particularly the third sequence, arranged as claimed. None of the Office's relied-on art, alone or together, discloses or would have suggested these claim elements.

B. Claim Limitations Missing From All References and All Grounds of Rejection

98. The Office has rejected claims 2 and 59 of the '580 Patent as allegedly (i) anticipated by Snell, (ii) unpatentable over Snell in view of Yamano, and (iii) unpatentable over Snell in view of Yamano and Kamerman. 3-31-17 Office Action, at 8-20. Based on my review of these references, as combined, I conclude that all three bases for rejection fail to establish unpatentability because the following three limitations are missing from all of the relied-on art and would not have been obvious based on any of the Office's grounds of rejection. Those missing limitations are (i) "the master/slave relationship," (ii) the "two [different] types of modulation methods," and (iii) "the third sequence."

99. With respect to both claims, those missing limitations are found in the following claim language:

(i) "A communications device capable of communicating according to 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, the device comprising: a transceiver, in the role of the master according to the master/slave relationship,"

(ii) for sending or transmitting "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," and

(iii) "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."

100. The primary reference, Snell, alone or in view of Yamano and/or Kamerman, does not disclose and would not have suggested any of these three limitations to one of ordinary skill in the relevant art.

1. The Claimed Master/Slave Relationship

101. Claims 2 and 59 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]."

102. 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[8] 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 …" (3-31 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);

[8] The Office repeatedly uses the phrase "capable of." However, I note that the claims require that the claimed transceiver be "configured to" transmit the claimed sequences (claim 58) and, more specifically, to transmit the claimed third sequence (claims 2 and 59). Thus, in my opinion, the claimed transceiver must be configured in a particular way to satisfy the claim limitations. *See* ¶¶ above 18, 21-25 (discussing claim construction).

(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 …" (3-31 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) …." (3-31 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 ...." (3-31 Office Action, at 15 (emphasis added)) ((citations in quoted text) (§ 103(a) rejection of claim 59 based on Snell in view of Yamano).[9]

103. I have carefully reviewed these summary conclusions and the citations allegedly supporting them and find no mention or suggestion of the words "master" or "slave" in any of them, let alone an express teaching of the master/slave relationship as claimed.[10]

a. Snell's Carrier Sense Transceiver and The Claimed Master/Slave System

104. The primary reference, Snell, discloses a transceiver 30 (Snell at Fig. 1, 4:42-43) designed for peer-to-peer communications, such as carrier sense multiple access with collision avoidance (CSMA/CA) communications. *See* Snell at 5:26-29 (disclosing that Snell's transceiver includes a "CCA circuit block 44" that "provides a clear channel assessment (CCA) to avoid data collisions," i.e., collisions which do not occur in a master/slave setting). *See also* Fig. 1. Systems that implement a CSMA/CA protocol for collision avoidance are distinctly different than a master/slave system. In a CSMA/CA system, any device on the network can

[9] With respect to the master/slave limitations, the Office relies on the reasoning set forth in 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* 3-31-17 Office Action, at 17-20).

[10] To the extent that the Office relies on page 3 of Harris AN9614 to address the master/slave limitations, I understand that (1) Harris AN9614 is not prior art and thus, legally, could not have been incorporated by reference (*see* ¶¶ 72-73 above) and (2) the portions of Harris AN9614 that Snell attempted to incorporate by reference have nothing to do with a master/slave relationship and are found on the first two pages of Harris AN9614, not the page relied on by the Office. *See* ¶¶ 74-77 above. Significantly, page 3 of Harris AN9614 is silent about a master/slave relationship and does not even mention "master/slave" or "master" or "slave." In any case, Harris AN9614 uses its "polled scheme" in the context of peer-to-peer communications (which is the topic being discussed in Snell and Harris AN9614), not master/slave communications. Not even with hindsight would one of ordinary skill in the relevant art have surmised the polled scheme of Harris AN9614 as being used in a context other than peer-to-peer communications.

initiate a communication whenever the device determines that no other communications are occurring.

In stark contrast, the claims of the '580 Patent are limited to master/slave communications, as noted above, in which slave devices can only communicate on a network when prompted by a master. Because of this fundamental difference, the problem the '580 Patent set out to solve within the context of a more rigid master/slave setting was not one faced by Snell, and the solution claimed in the '580 Patent is not one disclosed or suggested by Snell. *See* the discussion above, at ¶¶ 94-97. Thus, Snell does not disclose and would not have suggested master/slave communications, let alone the master/slave relationship claimed in the '580 Patent.[11] In my opinion, the rejections in this case are based on hindsight – with the claimed invention of the '580 Patent used as a roadmap.

105. Further, even if the problem identified in the '580 Patent had been previously identified (which I see no evidence of in the documents I've reviewed), a skilled artisan simply would not have known how to configure Snell's transceiver to address that problem as is described and claimed in the '580 Patent.

106. I observe that, with respect to the master/slave relationship limitations in both claims 2 and 59, the Office merely concludes – without explaining its position – that "the transceiver of Snell is capable of such communication." 3-31-17 Office Action, at 9. *See also id.* at 10, 12, 15

[11] The same is true of Kamerman and Yamano in that they also describe peer-to-peer communications– again, fundamentally different than the claimed master/slave system in the '580 Patent. Kamerman expressly relates to "wireless LANs that operate to conform to the IEEE 802.11 DSSS (direct sequence spread spectrum) standard." Kamerman at 6 (disclosing that IEEE 802.11 is compatible with a "CSMA/CS (carrier sensor multiple access with collision avoidance"' protocol). *See also id.* at 8 ("IEEE 802.11 CSMA/CA"), *id.* at 12 ("[t]he CSMA/CA behavior of wireless LANs operating to conform to IEEE 802.11 DS"). See Yamano, at col. 19, ll. 21-36 (recommending using 'a carrier sense multiple access (CSMA) scheme"). Like Snell, Yamano and Kamerman are completely silent regarding any master/slave communications.

(with citations to Snell). Based on my review of the cited art, there is no evidence supporting the Office's summary conclusion that Snell's transceiver is, in fact, of a design either capable of or configured to communicate in the manner required by the claims.

107. Based on my understanding of the requirements of a § 102(e) rejection (identified in ¶¶ 28-30 above), I opine that the Office's failure to establish that Snell's transceiver (without modification) is capable of functioning "in the role of the master according to the master/slave relationship" defeats its § 102(e) rejection based on Snell.

108. With respect to the Office's two § 103(a) rejections, the Office again relies on the summary conclusion that "Snell teaches a communication device capable of communicating according to a master/slave relationship." Office Action, at 12 (citing Snell at Fig. 1, 1:34-46, 1:47-50, 1:55-57, 4:27-30, 4:42-47, 5:2-7; Harris AN9614 at p. 3). However, as noted above, the materials cited do not mention "master/slave" or "master" or "slave," and the Office does not explain where such a teaching or suggestion is found in Snell (or any of the other cited materials).

109. In my opinion, the Office has failed to explain how Snell's transceiver (even with modification) would have been "capable of communicating according to a master/slave relationship" and thus would have rendered that claims 2 and 59 of the '580 Patent obvious. Given the fundamental differences between Snell's teachings and those in the '580 Patent, it is my opinion that claims 2 and 59 would not have been obvious based on Snell, alone or in the combinations suggested by the Office.

b. The Office's Reliance on "Incorporation by Reference" of Harris AN9614

110. The Office states that "Harris AN9614 is incorporated by reference" in Snell. Office Action, at 12 (citing Snell, at col. 5, ll. 2-7). However, for the reasons set forth above, I

understand that Harris AN9614 was not published before the December 5, 1997, priority date of the '580 patent and, therefore, is not prior art and could not have been properly incorporated by reference into Snell because of the legal restrictions on what materials can be so incorporated. *See* ¶¶ 72-73 above.

111. In any case, the Office does not explain how Harris AN9614 supports its position that Snell's transceiver is configured to act in the "role of master" and to communicate "according to a master/slave relationship" as claimed. *If* the Office is relying on language in Harris AN9614 discussing a "polled scheme" (found on page 3 of Harris AN9614), for the reasons set forth above in ¶¶ 74-75, I understand that the attempted incorporation by reference of the "polled scheme" discussion fails for a second reason: Snell did not identify that specific material with detailed particularity but rather identified discussions of filters and oscillators – topics that have nothing to do with the "polled scheme" and that appear in a different section of Harris AN9614. *See* ¶¶ 76-77 above.

112. In any case, *even if*, contrary to the case we have here, (1) Harris AN9614 were prior art so, as a matter of law, it could have been incorporated by reference *and* (2) the Office were relying on the "polled scheme" discussion in Harris AN9614 *and* (3) the sections discussing the "polled scheme" were properly incorporated, I opine that those sections do not disclose and would not have suggested the claimed "master/slave relationship" for the reasons given below.

c. No Inherent Disclosure Of The Claimed Master/Slave Relationship From The "Polled Scheme" in Harris AN9614

113. I observe that, without explaining its relevance, the Office cites to page 3 of Harris AN9614 in an attempt to establish that Snell teaches "a communication device capable of communication device capable of communicating according to a master in a master/slave relationship," as recited in claims 2 and 59. 3-31-17 Office Action, at 12. *See also id.* at 15 ("to

the extent that the preamble is given patentable weight, Snell teaches it"). Assuming the Office is relying on the discussion of the "polled scheme" on page 3 of Harris AN9614, that page does not even mention "master" or "master/slave" but instead merely states:

> With a low power watch crystal, the controller [of the PRISM chip set] 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.

Harris AN9614 at 3.

114. Given the brevity of this discussion, and the fact that both Snell and Harris AN9614 are focused on peer-to-peer communications, one of ordinary skill in the relevant art would have concluded that the discussion of a "polled scheme" refers to polling as part of peer-to-peer communications, not master/slave communications. One of ordinary skill would not have understood the Harris AN9614 discussion as suggesting more.

115. Assuming for the sake of argument that the "polling scheme" on page 3 of Harris AN9614 had been properly incorporated into Snell, to the extent the Office is implying that the master/slave limitations of the claims are inherently disclosed in Snell (by incorporation of Harris AN9614), I disagree, based on my understanding of inherency (described above in ¶ 37).

116. I see no evidence that the Office has provided any "basis in fact and/or technical reasoning to reasonably support" the determination that the master/slave limitations in the challenged claims necessarily flow from the teachings of Snell (even with Harris AN9614 incorporated in Snell).

117. Moreover, a "master/slave relationship" is not inherent in Harris AN9614's "polling scheme," because polling can and does take place in peer-to-peer systems (like the CCA systems described at col. 5, lines 26-29 of Snell).

118. For example, node A and node B could communicate according to a polled scheme in which (i) node A polls node B to request information from node B, (ii) after node B sends the requested information to node A, node B polls node A to request information from node A, and (iii) node A sends the requested information to node B. In this way, nodes A and B would use a polled scheme to communicate, but neither of nodes A and B would be a master or slave. *See* "Telecommunications network," at 2, Britannica Online Encyclopedia ("A decentralized form of polling is called token passing. In this system, a special "token" packet is passed from node to node. Only the node with the token is authorized to transmit; all others are listeners.")).

119. To the extent that the Office is equating Harris AN9614's "polled scheme" to a master/slave configuration, that position is based on a faulty understanding of the scope of "polling" in the relevant art and on an incorrect reading of Harris AN9614 and the '580 Patent. While polling can also take place in a master/slave system, *see* '580 Patent at 4: 6-9 (describing its master/slave protocol as a "polled multipoint communications protocol,") that discussion does not limit polling – which is a more general term in the relevant art -- to master/slave protocols but rather describes one aspect of the claimed protocol. In fact, there is no suggestion in Harris AN9614 that its "polled scheme" is taking place in anything other than the peer-to-peer communications protocol being discussed in Harris AN9614. *See* Harris AN9614 at 3.

120. Based on my analysis above, in my opinion, Harris AN9614 does not inherently disclose and would not have suggested that its "polled scheme" includes "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," as required by claim 1 of the '580 patent (and by the similar recitation of claim 58 of the '580 patent).

2. The Claimed At Least Two Different Types of Modulation Methods

121. Each of the challenged claims requires that "the second modulation method is of a different type than the first modulation method." As explained above (*see* ¶ 20), and confirmed by the Federal Circuit, the proper construction of "different types of modulation methods" is "different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods." *Rembrandt Wireless Tech. v. Samsung Elec. Co.*, Docket No. 2016-1729, slip op. at 7 (April 17, 2017) ("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.").

122. In my opinion, the Federal Circuit's determination is consistent with the broadest reasonable construction of "different types of modulation methods," when considered in light of the intrinsic record, including the '580 specification and its prosecution history.

123. The Office appears to take the position that the "different type" limitation is met by the two PSK formats disclosed in Snell, namely the BPSK format and QPSK format.[12] *See* 3-31-17 Office Action, at 12 (citing Snell at Abstract, col. 1, ll. 58-61, co. 2, ll. 56-59, col. 2, l. 61-col. 3,

[12] There is no clear statement in the Office Action explaining what disclosure in the cited art satisfies the "at least two types of modulation methods." *See* 3-31-17 Office Action *passim*.

l. 5, col. 6, ll. 64-66, col. 7, ll. 6-8, Figs. 2, 3, and 5,[13] Harris 4064.4, at 14-16). In my opinion, the Office's position conflicts with the broadest reasonable construction of "different types," as there can be no dispute that B*PSK* format and Q*PSK* are in the same family. I further opine that, based on my review of Yamano and Kamerman, neither cures this deficiency.

124. Further, even under the Office's overly broad, flawed claim construction in which it defines "Different types of modulation method[s]" to mean "modulation methods that are incompatible with one another" (3-31-17 Office Action, at 7), the Office's rejection fails because this requirement is not disclosed nor would it have been suggested by any of the cited references, as none discloses or would have suggested any incompatibility problem whatsoever.

125. The Office does not define the term "incompatible," but, in the context of the '580 Patent, first and second modulation methods may be incompatible when, for example, one modem using the first method cannot communicate with a second modem using the second method. *See* the '580 Patent, col. 1, ll. 45-65. Importantly, whether two modulation methods are incompatible, as used in the '580 Patent, cannot be considered in a vacuum but rather depends on the context in which the term or phrase is being used. In my opinion, in the case of Snell, there is no issue of incompatible modulation methods because Snell lacks an incompatibility problem.

126. The lack of any incompatibility problem faced in the cited references explains why none of Snell (including Harris AN9614 and Harris 4064.4), Yamano, or Kamerman discloses the invention claimed in the '580 Patent, including the indication that "communication from the master to the slave has reverted to the first modulation method." That incompatibility problem was identified and solved in a master/slave setting, as described in the '580 Patent, and was

[13] While the cited figures and Harris 4064.4 refer to "DBPSK" and "DQPSK," the inclusion of "D" (Differential) does not change the family in which the modulation method falls. They remain in the same family.

specific to a master/slave setting when a master attempts to communicate with a slave using an incompatible modulation method.

127. Part of the solution claimed in the '580 Patent requires the master to indicate when communication has reverted to the first modulation method so that the master can communicate using the first modulation method rather than the incompatible method previously used.

128. Again, in my opinion, the named inventors of the peer-to-peer communications systems described in the references were not faced with that problem. Instead they were faced with different problems that resulted from the fundamentally different ways their peer-to-peer systems accessed the shared medium. Those "fundamentally different ways" involve peer-to-peer communications, such as CSMA and CDMA types, instead of those between a master and a slave.

129. More specifically, the problems Snell (including Harris 4064.4), Yamano, and Kamerman were facing and attempting to address as the result of peer-to-peer communications, while at the same time attempting to increase date rates for communications between the stations, were, e.g., collisions, interference, and the like. *See, e.g.,* Snell at col. 1, l. 64-col. 2, l. 19 (describing a problem with prior art DSSS); col. 2, ll. 22-30 (summarizing Snell's solution to the problem); col. 3, ll. 40-43 (discussing the need for a "clear channel"); col. 5, ll. 23-29 (identifying how "to avoid data collisions"); and col. 5, ll. 54-59 (identifying how to "combat multi-path and reduce the effects of interference"); Yamano, at col. 11, l. 62-col. 12, l. 9 (explaining the interference problem); col. 19, ll. 21-36 (explaining how to address the collision problem using CSMA system); Kamerman, at 6 (explaining how CSMA/CA "is designed to reduce the collision probability between multiple stations"); 11 (discussing the problem "due to mutilation of transmissions by interference").

130. For these reasons, even under the Office's overly broad claim construction, the cited references neither identify nor address incompatible modulation methods, as are addressed in the '580 Patent in a master/slave setting when attempting to allow a master to communicate using different, incompatible modulation methods. Thus, they do not disclose and would not have suggested the problem of incompatible modulation methods, let alone the claimed solution to that problem provided in the '580 Patent. Without recognition of the incompatibility problem created by incompatible modulation methods in a master/slave setting, one skilled in the art would not have turned to any of the peer-to-peer disclosures in the cited references to solve that problem and would not have been motivated to combine the cited art in the way the Office is suggesting.

3. The Claimed Third Sequence

131. Claims 2 and 59 require that "the transceiver [be] 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." Thus, the "third sequence" requires more than just being "transmitted in the first modulation method," i.e., the word "and" requires it to contain information that "indicates that communication from the master to the slave has reverted to the first modulation method."

132. Based on my review of the cited references, I opine that they do not disclose and would not have suggested the claimed transceiver capable of transmitting the claimed "third sequence [that] is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method."

133. Again, the reason why Snell and the other references do not teach and would not have suggested the claimed invention is because of the fundamentally different systems and the very

different problems/solutions presented due to those fundamental differences. *See* the discussion above at ¶¶ 94-97. Only through a contrived application of disclosures in the prior art peer-to-peer communication systems is the Office able to arrive at the invention claimed in the '580 Patent, including the third sequence, a sequence that permits a master to communicate with one or more slaves using a modulation type that is incompatible with that used by other slaves in a master/slave system. *See* ¶ 131. Notably, in the '518 IPR, the PTAB refused to do what the Office is now attempting to do. *See* the '518 IPR Institution Decision, at 13-15 (quoted above in ¶ 52).

134. The Office posits that the PLCP preamble and the PLCP header of Snell in an Office-created "next packet" correspond to the claimed "third sequence." 3-31-17 Office Action at 13, 16 (citing Snell and stating that "PLCP preamble and PLCP header is 'transmitted in the first modulation method' e.g., BPSK, … the data can be modulated according to a method different than BPSK, then a 'third sequence,' with its 'SIGNAL' field in the PLCP header, 'indicates,' e.g., using '0Ah,' the modulation type, e.g., BPSK, for modulating the MPDU data of the next packet or the third sequence"). *See also* 3-31-17 Office Action at 11 (citing Snell and taking substantially the same position). That is, the Office posits two instances of Fig. 3, as illustrated below: (1) a first instance that contains a "first sequence" (the SIGNAL field in the PLCP header) and a "second sequence" (the MPDU data field); and (2) an Office-created second instance (a "next packet") that contains a "third sequence" (the SIGNAL field purportedly containing "0Ah" indicating that the MPDU data field is transmitted at 1 Mbps and BPSK).

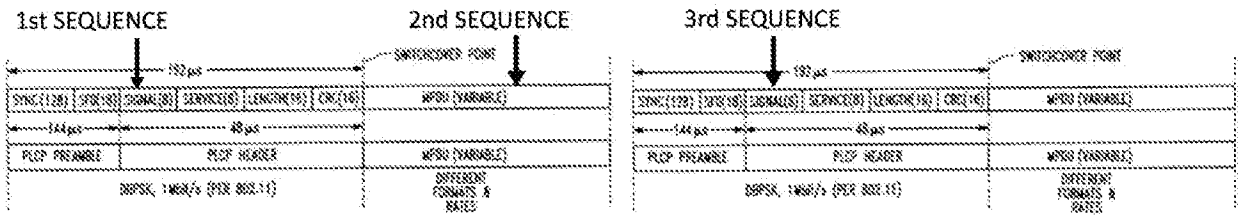


FIG. 3 FIG. 3

135. With respect to the third sequence limitation, the rejections cannot stand for at least four reasons. First, the citations relied on by the Office merely support the position that, while the header is always transmitted at 1 Mbit/s BPSK, the "MPDU is variable" (Snell at 6:62-65), and may be sent using BPSK or QPSK. *See* Snell 7:10-14 ("The variable data may be modulated and demodulated in different formats than the header portion ...").

136. The PTAB previously considered substantially the same argument with respect to substantially the same disclosure in Boer[14] and concluded such a disclosure was not sufficient to even institute an IPR of claims 2 and 59 because that disclosure failed to show "how the SIGNAL and SERVICE fields might be deemed, as alleged, to 'indicate' that communication from the master to the slave has reverted to the first modulation method, as recited in claim 2" and claim 59. *See* '518 Institution Decision, at 13-15 (quoted more extensively in ¶ 52).

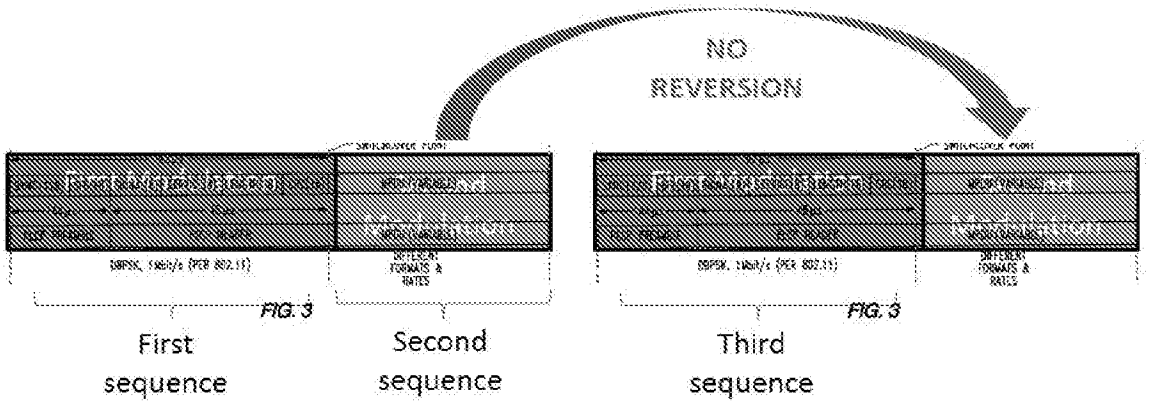
137. Second, Snell's SIGNAL field in the PLCP header does not explicitly or inherently teach that the SIGNAL field "indicates that communication [*i.e.*, the MPDU data] from the master to the slave has reverted to the first modulation method." Thus, the SIGNAL field cannot be the claimed "third sequence."

138. More specifically, claims 2 and 59 require a very specific ordering of sequences: a "first sequence" in a "first modulation method," followed by a "second sequence" in a "second

[14] See a comparison of the way Snell's Fig. 3 and Boer's Fig. 4 were presented in Exhibit D.

modulation method," followed by a "third sequence" in a "first modulation method," whereby the "third sequence" indicates that subsequent "communication" in a next set of information will "revert" to the "first modulation method" (and not use the "second modulation method" of the "second sequence"). Based on my review of Snell, Snell does not teach and would not have suggested this specific ordering of sequences and only includes one instance of Fig. 3. Thus, in my opinion, Fig. 3 does not explicitly teach the claimed "reversion," nor is that teaching inherent in Snell.

139. Even the Office's imagined two instances of Fig. 3 does not teach the claimed "reversion," as the skilled artisan would understand that both packets in the Office's scenario are identical. Thus, if based on Snell's disclosure, one assigns first and second modulation methods to the SIGNAL and data fields (i.e., in the claim's terms, to the first and second sequences) in the first instance of Fig. 3, then the skilled artisan would have envisioned the same assignment to the SIGNAL and data fields, i.e., the same first and second modulation methods, to the second instance of Fig. 3. Such a repetition does not meet the claim limitation requiring reversion to the first modulation method as shown in the drawing below:



140. Additionally, even assuming that the data *may be* in one of four formats, there is no teaching or suggestion in Snell *requiring* the claimed reversion which is what I understand to be required by law for an inherency teaching. The fact that one of the formats *may* result in using

the first modulation method, it is at least equally possible that it will not do so, particularly given Snell's goal to *increase* the data rate. Thus, the use of two Figs. 3 does not inherently meet the claims' requirement that the SIGNAL field "indicate[] that communication from the master to the slave has reverted to the first modulation method."

141. Summarizing, nowhere does Snell explicitly or inherently teach two different instances of Fig. 3—much less a first instance of Fig. 3 with a MPDU data field modulated using QPSK and an immediately subsequent second instance of Fig. 3 with a SIGNAL field indicating its MPDU data field will "revert" to using BPSK modulation with a 1 Mbps data rate. Snell does not disclose and would not have suggested different versions of its Fig. 3 packet and SIGNAL field functions combined in the way the Office has attempted to combine them without using hindsight, i.e., in view of the '580 Patent teachings.

142. Third, Snell does not disclose and would not have suggested a master/slave relationship and therefore could not "indicate[] that communication from the master to the slave has reverted to the first modulation method." Further, even assuming, *arguendo*, that it would have been obvious to modify Snell to be a master/slave system, one skilled in the art would have used the same signal format of Fig. 3 of Snell which, as described above, does not explicitly or inherently teach a "third sequence . . . [that] indicates that communication . . . has reverted to the first modulation method."

143. Fourth, Snell discloses "switch[ing] on-the-fly between different data rates and/or formats," Snell at 2:29-30, but not in the manner claimed or for the reason behind the '580 claims. More specifically, the ability of Snell's transceiver to "switch on-the-fly" is not a teaching of sending multiple packets of the signal format shown in Fig. 3 that switch from using a second modulation method *for the payload portion* of the first packet to using a first

modulation method *for the payload portion* of the second packet (labelled the "next packet"). *See* Snell at Fig. 3.

144. That is, Snell's on-the-fly switching does not teach and would not have suggested that the claimed "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 the Office posits. To the contrary, the on-the-fly switching of Snell relates to a modulation switch between the PLCP header and the MPDU *variable* data portion *within* a *single* packet having the signal format shown in Fig. 3. *See* Snell at Fig. 3 (clearly showing the "switchover point" to be between the PLCP header and the MPDU variable data portion of the signal format), Snell 3:18-20 ("The carrier tracking loops permit switching to the desired format after the header and on-the-fly." Snell 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."). Snell does not disclose and would not have suggested first and second packets of the signal format shown in Fig. 3 having payload portions modulated using different methods and certainly does not disclose and would not have suggested the Office-created second packet without using the claimed invention as a roadmap.

145. Accordingly, Snell does not disclose and would not have suggested that Snell's 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." In fact, there would have been no motivation for Snell to "indicate" a reversion to "the first modulation method" because Snell can transmit/receive using all modulation methods. In other words, there was no

incompatibility issue that required such notification when a switch in modulation methods is made such as that required by claims 2 and 59 of the '580 Patent.

146. Based on my review of Yamano and Kamerman, I opine that neither discloses or would have suggested the claimed third sequence. I observe that Yamano is only applied for its disclosure of a destination address in an effort to provide an address "for an intended destination of the payload portion" as recited in independent claim 1 (3-31-17 Office Action, at 14), and an address "for an intended destination of the second sequence," as recited in independent claim 58 (3-31-17 Office Action at 16-17), and is not applied to the "third sequence" limitation, so it will not be further discussed here. Yamano is discussed further in ¶¶ 69-70 above.

147. As to Kamerman, the Office concludes that "[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." 3-31-17 Office Action, at 19 (citing Kamerman at 6, 11-12).

148. Based on my review of Kamerman, just like previously and fully considered Boer (*see* Boer, at 7:12-8:16), it discloses a transmission rate that "falls back" during higher load conditions and that "goes up" during load conditions that occur "most of the time." Kamerman at 11. There is no teaching or suggestion that it would "fall back" to address an incompatibility issue when a master – which it does not have and would not have suggested – wants to communicate with a slave –which it does not have and would not have suggested. Just like the disclosure in Boer, nothing in Kamerman relied on by the Office requires that the transceiver in

Kamerman "indicate[] that communication from the master to the slave has reverted to the first modulation method." Rather, Kamerman merely summarizes Boer's, his, and other's work[15] described in the Boer patent and does not provide any further information relevant to the patentability of claims 2 and 59. *See* my previous discussion of Kamerman, at ¶¶ 64-68.

149. Notably, maximizing the data transfer rate and adapting to changing channel conditions in a peer-to-peer communications system – objectives of both Boer and Kamerman -- would not have provided the solution to the incompatibility problem identified and claimed in the '580 Patent, i.e., it would not have provided a "transceiver 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." Claims 2 and 59.

150. Instead, if Snell were modified in the proposed manner (i.e., implementing Kamerman's automatic rate selection in Snell's system), Snell's transceiver would increase the transmission rate during lower load periods (e.g., as indicated by "a number … of successive correctly acknowledged packet transmissions") and would decrease the transmission rate during higher load periods (e.g., as indicated by "unacknowledged packet transmissions"). *See* Kamerman at 11.

151. Such modification would not provide the claimed third sequence, as Kamerman's rationale as to when to change modulation methods has *nothing to do with* making a change in modulation method so that a master can communicate with a particular slave using a different modulation method to address a potential incompatibility issue. For that reason alone, one of ordinary skill would not have been motivated by Kamerman to vary the modulation method

[15] Kamerman is a named inventor on the Boer et al. patent. *See* the discussion above in ¶¶ 64-68.

when needed to address the '580 Patent incompatibility problem as done in the '580 Patent, *i.e.*, to provide a "third sequence [that] indicates that communication from the master to the slave has reverted to the first modulation method."

IX. The Combinations And Modifications Proposed By The Office

A. The Office's Suggestion Regarding Adapting Snell To A Master/Slave System In View Of The Problem Identified and Solved in the '580 Patent

152. In my opinion, all the outstanding rejections share a common, significant deficiency – one that weighs against the Office's proposed combinations. As previously noted, none of Snell, Yamano, or Kamerman discloses communications in a master/slave setting *at all,* even if Harris AN9614 and Harris 4064.4 had been successfully incorporated by reference into Snell (which I understand that they have not been). *See* the discussion above, at ¶¶ 101-120.

153. Further, even if adapting Snell to a master/slave setting were suggested (which, in my opinion, it is not), it would not have been obvious to combine the art as the Office has proposed in a way that would have yielded the invention claimed in the '580 Patent because there was no recognition of the problem identified and solved in the '580 Patent – a problem specific to the master/slave setting when a master attempts to communicate with a slave using an incompatible modulation method. *See* the discussion above, at ¶¶ 81-83, 94-97.

154. The named inventors of the systems described in the references were not faced with that problem and thus would have had no reason to invent the '580 solution. *Id.* Instead they were faced with different problems that resulted from the fundamentally different ways their systems accessed the shared medium. *See* ¶¶ 94-97 above. As previously noted, those "fundamentally different ways" involved peer-to-peer communications, such as CSMA and CDMA types, instead of those between a master and a slave. *See id.*

155. Summarizing my analyses above, it would not have been obvious to a skilled artisan to adapt Snell to a master/slave system and solve the problem identified and solved in the '580 patent because of the fundamental differences between peer-to-peer and master/slave communications.

B. The Office's Possible Suggestion That The "Polled Scheme" Disclosure in Harris AN9614 Would Have Suggested The Claimed Master/Slave System In View Of The Polled Scheme's "Single Rate" Applications

156. The disclosure in Harris AN9614 at page 3 is not of a communications system using multiple modulation methods, as claimed in the '580 Patent. In addition to the limitations described above, Harris AN9614's "polled scheme" appears in a section of Harris AN9614 dedicated to describing a protocol where burst transmissions are used for achieving a "Low Average Data Rate" by operating the PRISM 1 chip at a single, low data rate of 1 MBPS:

> The system approach is to accept the 1 MBPS data rate of the radio as long as the achievable range is acceptable, and use it in a short burst mode which is consistent with its packet nature. With a low power watch crystal, the controller can keep adequate time to operate either in a polled or time allocated scheme. In these modes, the radio is powered off most of the time and only awakens when communications is expected. … 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.

157. There is nothing in Harris AN9614 suggesting that its 1 MBPS system should or even could be used in combination with the higher data rate schemes described in the body of Snell. Put another way, there is nothing in Harris AN9614 suggesting that its 1 MBPS polled scheme was intended to be used to accomplish, for example, the scheme depicted at col. 6, lines 55-60 of Snell, which the Office has mapped to other elements in the claim.

158. In order for the Office's rejection to stand, I understand that the elements in Snell/Harris must be arranged or combined in the same way as recited in the claim, regardless of whether it is based on expressed or inherent disclosure. The Office has not shown such an arrangement.

159. Rather, in my opinion, Harris AN9614 suggests adapting its "high data rate configuration" to one using 1 MBPS only in order to avoid "the design considerations … of concern" with high data rate configurations. *See* Harris AN9614 at 3. Significantly, this suggestion is directly contrary to Snell's goal of obtaining higher variable data rates "from 1 Mbit/s BPSK and 2 Mbit/s QPSK to 5.5 Mbit/s BPSK and 11 Mbit/s QPSK," Snell at 5:30-32. Thus, one of ordinary skill in the art reading Snell and Harris AN9614 would have understood the discussion in Harris AN9614 of a polled scheme to be inapplicable to the multi-data rate scheme that is the focus of Snell. Accordingly, I opine that, even if Harris AN9614 were a publication, and the "polled scheme" of Harris AN9614 were incorporated by reference into Snell, and the disclosure of a polled scheme in Harris AN9614 would have suggested a "master/slave relationship," the combination of Snell with Harris AN9614 would not have yielded or suggested the communications system claimed in the '580 Patent that requires at least two different types of modulation methods.

160. Summarizing, based on my analyses above, the "polled scheme" disclosure in Harris AN9614 is limited to "single rate" applications and thus does not disclose and would not have suggested more than one modulation method. Thus, the skilled artisan would not have been motivated to combine in a way that would have yielded the claimed invention, and thus the Office's proposed modification/combination would not have been obvious to one of ordinary skill in the art.

C. The Office's Combination of Snell and Kamerman Following Adapting Snell to a Master/Slave System And the Lack of Any Teachings Regarding The Proposed IEEE 802.11 Standard

161. I observe that Snell's disclosure relates to an extension of the "proposed IEEE 802.11 standard." [16] While Snell may have been privy to the proposed standard through the involvement of his employer (Harris) on the standard committee, I see no evidence that the proposed standard itself was publicly known at that time. In fact, I understand the PTAB has already found that, as of the priority date of the '580 patent, the draft IEEE 802.11 standard was not available to anyone outside the IEEE 802.11 Working Group:

> Notably absent … from the Petition and Mr. O'Hara's declaration are any assertions or evidence in support of the availability of Draft Standard to individuals other than members of the 802.11 Working Group and those who already knew about Draft Standard or the July 8–12 meeting of the 802.11 Working Group. We do not find sufficient argument or evidence to indicate that the July 8–12 meeting of the 802.11 Working Group (or any other 802.11 Working Group meeting) was advertised or otherwise announced to the public. Nor do we find sufficient argument or evidence that any individual who was not already a member of, or otherwise aware of, the Working Group would have known about Draft Standard such that he or she would have known to request a copy or ask to be added to an email list for access to the document.

Samsung Electronics Co. LTD. et al. v. Rembrandt Wireless Technologies, LP., IPR2014-00514, Paper No. 18 at 7-8 (PTAB September 9, 2014).[17]

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[16] *See, e.g.,* Snell at 1:47-50 (describing "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 5:30-32 (describing "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"); and Snell at 4:42-43, 5:30-32 (describing "a wireless transceiver 30" that "may be readily used for WLAN applications in the 2.4 GHz ISM band in accordance with the proposed IEEE 802.11 standard.").

[17] *See also Samsung Electronics Co. LTD. v. Rembrandt Wireless Technologies, LP.*, IPR2014-00515, Paper No. 18 at 6-10 (PTAB September 9, 2014); *Samsung Electronics Co. LTD v. Rembrandt Wireless Technologies, LP.*, IPR2014-00889, Paper No. 8 at 7-10 (PTAB December

162. In view of the above, it is my opinion that the Office's position that the draft IEEE 802.11 standard was "available at that time" (3-31-17 Office Action, at 19) is incorrect.

163. Without access to the proposed IEEE 802.11 standard, one of ordinary skill reading Snell would have known only that the proposed standard employed a collision avoidance protocol (like CSA), as that is the only protocol disclosed in Snell. Such a conclusion would have been buttressed by Kamerman, which similarly described the proposed standard only in the context of a CSMA/CA (carrier sense multiple access with collision avoidance) protocol.

164. Despite the indications in both Snell and Kamerman tying the proposed IEEE 802.11 standard to a collision avoidance protocol, the Office's position is that Snell would have been converted to a master/slave system (although, again, it is not clear how that would be done) prior to combining Snell and Kamerman. Assuming that were done, there would be no reasonable expectation that the Snell transceiver adapted to a master/slave system would function in accord with the draft IEEE 802.11 standard, particularly when both Snell and Kamerman discussed the proposed standard only in connection with collision avoidance protocols.

165. In other words, it would not have been obvious to combine Snell with Kamerman after adapting Snell to a master/slave system because there is no evidence that Snell would have remained compliant with the draft IEEE 802.11 standard. In my opinion, lack if such evidence would have discouraged the skilled artisan from making the suggested combination, as one of the intended purposes of Snell invention was to maintain compatibility with the proposed IEEE

10, 2014); *Samsung Electronics Co. LTD v. Rembrandt Wireless Technologies, LP.*, IPR2014-00890, Paper No. 8 at 7-10 (PTAB December 10, 2014); *Samsung Electronics Co. LTD. v. Rembrandt Wireless Technologies, LP.*, IPR2014-00891, Paper No. 8 at 8-12 (PTAB December 10, 2014).

802.11 standard. *See* Snell at 1:47-50 ("PRISM 1 … is compatible with the proposed IEEE 802.11 standard"), 4:42-46 (a wireless transceiver 30 used "in accordance with the proposed IEEE 802.11 standard"), 5:30-32 ("[t]he present invention provides an extension of the PRISM 1 product").

166. Without access to any teachings of the proposed IEEE 802.11 standard, one of ordinary skill in the art would not have any reasonable expectation that Snell's transceiver would still act in accordance with the proposed IEEE 802.11 standard if it were modified to act in a master/slave relationship instead of a peer-to-peer relationship, such as a carrier sense multiple access with collision avoidance (CSMA/CA) relationship.

167. Accordingly, one of ordinary skill in the relevant art would have been discouraged from modifying Snell's transceiver as suggested by the Office without a reasonable expectation that it would function as intended, *i.e.,* in accordance with the proposed IEEE 802.11 standard. Thus, it would not have been obvious to modify Snell's transceiver to act in the role of the master according to a master/slave relationship and then combine Snell as modified with Kamerman.

168. Similarly, given that peer-to-peer communication systems, such as that described in Snell, are fundamentally different than master/slave systems (*see* ¶¶ 94-97 above), one of ordinary skill in the art would have been further discouraged from making the proposed modification of Snell as that fundamental difference would have weighed against having any reasonable expectation that Snell, as modified, would still act in accordance with the proposed IEEE 802.11 standard or would have provided predictable results. *See, e.g.,* MPEP § 2143.01(III) (citing *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007)) ("The mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art.").

169. Summarizing, based on my reasoning above, one of ordinary skill would not have been motivated to adapt Snell to a master/slave system and *then* combine with Kamerman lacking any teachings regarding the proposed IEEE 802.11 standard. Thus, in my opinion, such a combination following the suggested modification would not have been obvious to the skilled artisan.

D. The Office's Combination of Snell and Yamano Following Adapting Snell To A Master/Slave System to Satisfy The "Addressed For An Intended Destination" Limitation

170. Claim 2 of the '580 patent requires a transceiver that is capable of sending a transmission comprising "a group of transmission sequences" that "is structured with at least a first portion and a payload portion" and "is addressed for an intended destination of the payload portion." Claim 59 requires a transceiver that is capable transmitting "at least one message" with first and second sequences and that "is addressed for an intended destination of the second sequence." Neither of these limitations is disclosed by or would have been obvious in view of the cited art.

171. I observe that Snell is silent regarding a destination address. *See* Snell *passim*; 3-31-17 Office Action, at 14 ("Snell does not expressly teach wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion."), 16 ("Snell does not expressly teach wherein the at least one message is addressed for an intended destination of the second sequence.").

172. The Office relies on Yamano as disclosing the missing destination address and asserts that "[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 teaching of a communication system." 3-31-17 Office Action, at 14, 16-17. The cited portions indicate that Yamano's destination address is in the preamble. Yamano at 20:1-7 (disclosing a packet 700 having a preamble 701 that "can include information which identifies …

packet source and destination addresses"); 20-54-59 (disclosing that, "[w]hen 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."); and Fig. 8. Based on my review of Snell and Yamano, I disagree with the Office's assertion.

173. In my opinion, the goal of Snell is to increase the data rate at which information is communicated. *See, e.g.,* Snell at 2:24-25 ("permitting operation at higher data rates than conventional transceivers"), 2:28-29 ("permit operation at higher data rates"); 5:30-34 ("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" and "allows the same RF circuits to be used for higher data rates."), 7:10-14 ("increase the data rate").

174. However, Snell discloses that the preamble is always transmitted at the lowest (i.e., 1 Mbit/s) data rate. *Snell* at 6:64-66. Therefore, adding a destination address to the preamble of Snell would increase the amount of information transmitted at the lowest data rate, frustrating Snell's goal of increasing the data rate.

175. For at least this reason, it would not have been obvious to one of ordinary skill in the relevant art to combine Yamano's teaching of a destination address in a preamble with Snell.

176. In addition, given that the proposed IEEE 802.11 standard was not publicly available, one of ordinary skill would have been concerned that Snell's system would not remain complaint with the proposed IEEE standard if Snell was modified to include address information in the header. Again, that would have discouraged the skilled artisan from making the suggested combination, as one of the intended purposes of Snell invention was to maintain compatibility with the proposed IEEE 802.11 standard.

177. Without access to the teachings of the proposed IEEE 802.11 standard, one of ordinary skill in the art would not have any reasonable expectation that Snell's transceiver would still act in accordance with the proposed IEEE 802.11 standard if it were modified to include address information in the header.

178. For this additional reason, one of ordinary skill in the relevant art would have been discouraged from modifying Snell's transceiver to include Yamano's address information in the header (as suggested by the Office) without a reasonable expectation that it would function as intended, *i.e.,* in accordance with the proposed IEEE 802.11 standard.

X. CONCLUSION

179. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the '580 Patent.

Date: 6/29/2017

Robert Akl.

Dr. Robert Akl

Exhibit A
to Akl
Declaration

Robert Akl, D.Sc.

Professional Summary

Dr. Akl has over 20 years of industry and academic experience. He is currently a Tenured Associate Professor at the University of North Texas and a Senior Member of IEEE. He has designed, implemented, and optimized both hardware and software aspects of several wireless communication systems for CDMA, WiFi, and sensor networks. Dr. Akl has broad expertise in wireless communication, Bluetooth, CDMA/WCDMA network optimization, GSM, LTE, VoIP, telephony, computer architecture, and computer networks. He is a very active researcher and is well published and cited. He has been awarded many research grants by leading companies in the industry and the National Science Foundation. He has developed and taught over 100 courses in his field. Dr. Akl has received several awards and commendation for his work, including the 2008 IEEE Professionalism Award and was the winner of the 2010 Tech Titan of the Future Award.

Dr. Akl has extensive experience with patents in the wireless and networking industry. In the past ten years, he has worked as a technical expert in dozens of patent related matters, involving thousands of hours of research, investigation, and study. He has repeatedly been qualified as an expert by Courts, and has provided numerous technology tutorials to Courts, and given testimony by deposition and at trial. He has worked with companies large and small, both for and against the validity and infringement of patents, and has also helped counsel and Courts to understand technology that often seems complex. In doing so, he has become familiar with, and actively worked with, the legal principles that underlie patentability and validity and claim interpretation in the wireless and networking industries.

Areas of Expertise

2G, 3G, 4G, CDMA/WCDMA, GSM, UMTS, LTE, Ad-hoc Networks, Bluetooth, Call Admission Control, Channel Coding, Compression, Computer Architecture, Multi-cell Network Optimization, Packet-networks, Telephony, VoIP, Wi-Fi, Wireless Communication, Wireless Sensors.

Education

Year	College/University	Degree	GPA
2000	Washington University in Saint Louis	D.Sc. in Electrical Engineering	**4.0 / 4.0**
1996	Washington University in Saint Louis	M.S. in Electrical Engineering	**4.0 / 4.0**
1994	Washington University in Saint Louis	B.S. in Electrical Engineering	**4.0 / 4.0**
1994	Washington University in Saint Louis	B.S. in Computer Science	**4.0 / 4.0**

Graduated *summa cum laude* and ranked first in undergraduate class.
Dissertation: "Cell Design to Maximize Capacity in Cellular Code Division Multiple Access (CDMA) Networks." Advisors: Dr. Manju Hegde and Dr. Paul Min.

Litigation Support and Expert Witness Experience

L1. 2017 **Finnegan Henderson Farabow Garrett & Dunner LLP**
Case: Motorola Solutions, Inc. v. Hytera Communications Corp. Ltd. et al.
In the Matter of Certain Two-way Radio Equipment Systems, Related Software and Components Thereof, ITC Investigation No. 337-TA-1053
Matter: Patent infringement, two-way radio
Project: Consulting

L2. 2017 **Haynes and Boone, LLP**
Case: Rackspace US, Inc. v. Realtime Data LLC
IPR2017-xxxx
Matter: *Inter Partes* Review, data compression
Project: Declarations to support IPR petition

L3. 2017 **Pillsbury Winthrop Shaw Pittman LLP**
Case: HTC Corp and ZTE (USA) v. Cellular Communications Equipment
IPR2017-01508, IPR2017-01509
Matter: *Inter Partes* Review, LTE, power control, emergency notification
Project: Two declarations to support two IPR petitions

L4. 2017 **Alston & Bird LLP**
Case: Itron, Inc. and Duke Energy Corp. v. Smart Meter Technologies
IPR2017-01199
Matter: *Inter Partes* Review, power meter
Project: Declaration to support IPR petition

L5. 2017 **Haynes and Boone, LLP**
Case: Ericsson Inc. v. Regents of the University of Minnesota
IPR2017-01186, IPR2017-01200, IPR2017-01213
Matter: *Inter Partes* Review, OFDM and MIMO
Project: Three declarations to support three IPR petitions

L6. 2017 **Quinn Emanuel Urquhart & Sullivan, LLP**
Case: GENBAND US, LLC v. Metaswitch Networks Ltd, et al.
Eastern district of Texas, Marshal division, Case No. 2:16-cv-582-JRG-RSP
Matter: Patent infringement, Internet protocols and VoIP
Project: Expert report regarding essentiality

L7. 2017 **Mayer Brown LLP**
Case: Uniloc USA, Inc. et al. v. Avaya Inc., and ShoreTel, Inc., et al.
Eastern district of Texas, Tyler division, Case Nos. 6:15-cv-1168-JRG
Matter: Patent infringement, instant messaging and conference calling

Project: Source code review, non-infringement consulting

L8. 2017 **Fish & Richardson P.C.**
Case: Nokia Solutions and Networks US LLC, et al. v. Huawei Technologies Co. Ltd., et al.
Eastern district of Texas, Marshal division, Case Nos. 2:16-cv-753-JRG-RSP, 2:16-cv-754
Matter: Patent infringement, 4G LTE
Project: Claim construction, two declarations

L9. 2017 **Rothwell Figg Ernst & Manbeck, PC**
Case: Samsung v. Rembrandt Wireless
Matter: *Ex Parte* Reexamination, Bluetooth
Project: Declaration to support patent owner response

L10. 2016 **Sidley Austin LLP**
Case: Huawei Technologies Co., et al. v. Samsung Electronics Co, et al. and Samsung Research America v. Hisilicon Technologies Co, LTD
Northern district of California, San Francisco division, Case No. 3:16-cv-2787-WHO
Matter: Patent infringement, 3G/4G LTE
Project: Source code review, declaration to support claim construction

L11. 2016 **Bragalone Conroy PC**
Case: Securus Technologies, Inc. v. Global Tel*Link Corporation
CBM2017-00034
Matter: Covered Business Method Review, call monitoring and recording
Project: Declaration to support CBM petition

L12. 2016 **Braxton, Hilton & Perrone PLLC**
Case: Biosonix, LLC. v. Hydrowave, LLC et al.
Eastern district of Texas, Case No. 2:16-cv-139-RC
Matter: Patent infringement, underwater transceivers
Project: Claim construction, Markman hearing testimony

L13. 2016 **Gray Reed & McGraw**
Case: Optis Cellular Technology, LLC and PanOptis Patent Management, LLC. v. Blackberry Corporation, et al.
Eastern district of Texas, Marshal division, Case No. 2:16-cv-59-JRG-RSP, Case No. 2:16-cv-61-JRG-RSP, Case No. 2:16-cv-62-JRG-RSP
Matter: Patent infringement, LTE
Project: Claim construction, three declarations regarding claim construction, deposition

L14. 2016 **Davidson Berquist Jackson & Gowdey**
Case: SIPCO, LLC et al v. Emerson Electric Co. et al
Eastern district of Texas, Tyler division, Case No. 6:15-cv-907
Emerson Electric Co. et al v. SIPCO, LLC et al.
Northern district of Georgia, Atlanta division, Case No. 1:15-cv-00319-AT
Matter: Patent infringement, links in wireless networks and remote monitoring
Project: Source code review, invalidity consulting

L15. 2016 **McKool Smith**
Case: Regents of University of Minnesota v. AT&T Mobility LLC, et al.
District of Minnesota, Case No. 0:14-cv-04666-JRT-TNL
Matter: Patent infringement, LTE and MIMO
Project: Non-infringement and invalidity consulting, declaration

L16. 2016 **EIP US LLP**
Case: GENBAND US, LLC et al. v. Metaswitch Networks Ltd
IPR2015-01456, IPR2015-01457
Matter: *Inter Partes* Review, media gateways
Project: Two declarations to support Patent Owner, two depositions

L17. 2016 **Haynes and Boone, LLP**
Case: Cox Communications, Inc. v. AT&T Intellectual Property I, II, LP
IPR2015-01187, IPR2015-01227, IPR2015-01273, IPR2015-01536
Matter: *Inter Partes* Review, cable networks
Project: Four declarations to support Patent Owner, four depositions

L18. 2016 **Mayer Brown LLP**
Case: Odyssey Wireless v. Motorola Mobility LLC
Eastern district of North Carolina, Western division, Case No. 5:14-cv-491-D
Southern district of California, Case No. 3:15-cv-01741-H-RBB
Matter: Patent infringement, LTE
Project: Source code review, non-infringement consulting

L19. 2016 **Cooley LLP**
Case: Saint Lawrence Comm. LLC v. Motorola Mobility LLC, ZTE (USA) Inc.
Eastern district of Texas, Marshal division, Case No. 2:15-cv-000351-JRG, Case No. 2:15-cv-000349-JRG
Matter: Patent infringement, speech compression, coding and decoding
Project: Invalidity expert report, expert report regarding AMR-WB standard, expert report regarding Opus and Silk, supplemental expert report regarding invalidity, two-day depositions, jury trial testimony for Motorola

L20. 2015 **Sidley Austin LLP**
Case: Evolved Wireless, LLC v. Microsoft Corp. et al.
District of Delaware, Case No. 15-cv-546
Matter: Patent infringement, LTE
Project: Prior art and invalidity consulting

L21. 2015 **McKool Smith**
Case: Optis Wireless Technology, LLC and PanOptis Patent Management, LLC. v. ZTE Corporation and ZTE (USA) Inc.
Eastern district of Texas, Marshal division, Case No. 2:15-cv-300-JRG-RSP
Matter: Patent infringement, cellular messages and multimedia attachments
Project: Source code review, claim construction, declaration

L22. 2015 **Fish & Richardson, P.C.**
Case: Saint Lawrence Comm. LLC v. LG Elec., Inc. et al.
Eastern district of Texas, Marshal division, Case No. 2:14-cv-1055-JRG
Matter: Patent infringement, speech compression, coding and decoding
Project: Invalidity expert report

L23. 2015 **Finnegan Henderson Farabow Garrett & Dunner LLP**
Case: LG Electronics, Inc. v. Cellular Communications Equipment LLC
IPR2016-00178
Matter: *Inter Partes* Review, LTE
Project: Declaration to support IPR petition

L24. 2015 **McKool Smith**
Case: AT&T, et al. v. Cox Communication, Inc., et al.
District of Delaware, Case No. 14-1106-GMS
Matter: Patent infringement, cable networks
Project: Claim construction, declaration

L25. 2015 **McKool Smith**
Case: Ericsson Inc., et al. v. TCL Communication, et al.
Eastern district of Texas, Marshal division, Case No. 2:15-cv-00011-RSP
Matter: Patent infringement, wireless devices and systems
Project: Source code review, claim construction, declaration, infringement expert report, validity expert report, two-day depositions

L26. 2015 **Foley & Lardner LLP**
Case: Kyocera Communications, Inc. v. Cellular Communications Equipment LLC
IPR2015-01559, IPR2015-01564
Matter: *Inter Partes* Review, LTE

Project: Two declarations to support two IPR petitions

L27. 2015 **Fish & Richardson, P.C.**
Case: Fairfield Industries Inc. v. Wireless Seismic, Inc.
Southern district of Texas, Case No. 4:14-cv-02972-KPE
Matter: Patent infringement, wireless sensor networks
Project: Non-infringement expert report

L28. 2015 **Quinn Emanuel Urquhart & Sullivan, LLP**
Case: GENBAND US, LLC v. Metaswitch Networks Ltd, et al.
Eastern district of Texas, Marshal division, Case No. 2:14-cv-33-JRG-RSP
Matter: Patent infringement, Internet protocols and VoIP
Project: Expert report regarding essentiality, non-infringement expert report, rebuttal expert report regarding non-practice, supplemental rebuttal expert report, three-day depositions, jury trial testimony

L29. 2015 **Foley & Lardner LLP; Duane Morris LLP**
Case: Mobile Telecommunications Technologies, LLC v. Leap Wireless International, Cricket Communications, Inc.
Eastern district of Texas, Marshal division, Case No. 2:13-cv-00885-RSP
Matter: Patent infringement, OFDM and MIMO
Project: Non-infringement expert report, deposition

L30. 2015 **Hogan Lovells US LLP; Kenyon & Kenyon LLP**
Case: One-E-Way v. Beats Electronics, LLC, Sony Corporation, et al.
In the Matter of Certain Wireless Headsets, ITC Investigation No. 337-TA-943
Matter: Patent infringement, wireless communication
Project: Claim construction, declaration

L31. 2015 **McKool Smith**
Case: Solocron Media, LLC v. AT&T Inc., et al.
Eastern district of Texas, Marshal division, Case No. 2:13-cv-1059-JRG
Matter: Patent infringement, ringtone download
Project: Claim construction, claim invalidity expert report

L32. 2015 **EIP US LLP**
Case: Good Technology Software, Inc. v. Mobile Iron, Inc.
IPR2015-00833, IPR2015-00836, IPR2015-01090
Matter: *Inter Partes* Review, software management in wireless devices
Project: Three declarations to support three IPR petitions

L33. 2015 **McKool Smith**
Case: AirWatch LLC v. Good Technology Corp
Northern district of Georgia, Case No. 1:14-cv-02281-SCJ
Matter: Patent infringement, software management in wireless devices
Project: Claim construction, declaration

L34. 2015 **Simpson Thacher & Bartlett LLP**
Case: IXI Mobile (R&D) Ltd. et al. v. Apple Inc.
Southern district of New York, Case No. 14-cv-7594-RJS
Matter: Patent infringement, PDA and Bluetooth
Project: Invalidity consulting

L35. 2014 **Bragalone Conroy PC**
Case: Global Tel*Link Corporation v. Securus Technologies, Inc.
IPR2014-00785, IPR2014-00810, IPR2014-00824, IPR2014-00825, IPR2014-01278, IPR2014-01282, IPR2014-01283
Matter: *Inter Partes* Review, VoIP call monitoring and recording, allocating telecommunication resources and information systems
Project: Seven declarations to support seven Patent Owner's responses, five depositions

L36. 2014 **Orrick, Herrington & Sutcliffe LLP**
Case: Shopkick, Inc. v. Novitaz, Inc.
IPR2015-00277, IPR2015-00278
Matter: *Inter Partes* Review, wireless customer service management
Project: Two declarations to support two IPR petitions

L37. 2014 **Paul Hastings LLP**
Case: Cellular Communications Equipment LLC v. AT&T, et al.
Eastern district of Texas, Tyler division, Case No. 6:13-cv-507-LED (Lead Case for Consolidation)
Matter: Patent infringement, 3G cellular communication
Project: Claim construction, declaration

L38. 2014 **Baker Botts LLP**
Case: Orlando Communications LLC v. AT&T, et al.
M.D. Florida, Case No. 6:14-cv-01021
Matter: Patent infringement, 3G/4G cellular communication
Project: Non-infringement and claim construction consulting

L39. 2014 **EIP US LLP**
Case: Good Technology Software, Inc. v. AirWatch, LLC
IPR2015-00248, IPR2015-00875
Matter: *Inter Partes* Review, software management in wireless devices
Project: Two declarations to support two IPR petitions

L40. 2014 **Bragalone Conroy PC**
Case: Securus Technologies, Inc. v. Global Tel*Link Corporation
IPR2015-00153, IPR2015-00155, IPR2015-00156
Matter: *Inter Partes* Review, VoIP call monitoring and recording
Project: Three declarations to support three IPR petitions, two depositions

L41. 2014 **Andrews Kurth LLP**
Case: Sony Mobile Communications (USA) v. Adaptix Inc.
IPR2014-01524, IPR2014-01525
Matter: *Inter Partes* Review, subcarrier selection in LTE
Project: Two declarations to support two IPR petitions, deposition

L42. 2014 **Steptoe & Johnson LLP, Baker & McKenzie LLP**
Case: VTech Communications, Inc. and Uniden America Corporations v. Spherix Incorporated
IPR2014-01432
Matter: *Inter Partes* Review, IP telephony
Project: Declaration to support IPR petition, deposition, reply declaration, deposition

L43. 2014 **Steptoe & Johnson LLP, Baker & McKenzie LLP**
Case: Spherix Inc. v. VTech Telecommunications Ltd., et al.
Spherix Inc. v. Uniden Corp, et al.
Northern district of Texas, Dallas Division, Case No. 3:13-cv-3494 and 3:13-cv-3496
Matter: Patent infringement, IP telephony
Project: Claim construction, declaration, deposition

L44. 2014 **McKool Smith**
Case: Good Technology Corp. v. MobileIron, Inc.
Northern district of California, Case No. 5:12-cv-05826-PSG
Matter: Patent infringement, software management in wireless devices
Project: Claim construction, three declarations, claim invalidity expert report, non-infringement expert report, deposition, jury trial testimony

L45. 2014 **Lee & Hayes**
Case: Broadcom Corp. v. Ericsson, Inc.
IPR2013-00601, IPR2013-00602, and IPR2013-00636
Matter: *Inter Partes* Review, ARQ protocols
Project: Three declarations to support Patent Owner's Response, two declarations to support Patent Owner's Motion to Amend, deposition, two reply declarations

L46. 2014 **Sidley Austin LLP**
Case: Adaptix, Inc. v. Huawei Technologies Co., et al.
Eastern district of Texas, Case No. 6:13-cv-00438, 439, 440 and 441

Matter: Patent infringement, subcarrier selection in LTE
Project: Non-infringement consulting, source code review

L47. 2014 **Finnegan Henderson Farabow Garrett & Dunner LLP**
Case: Cell and Network Selection LLC v. Huawei Technologies Co., et al.
Eastern district of Texas, Case No. 6:13-cv-00404-LED-JDL
Matter: Patent infringement, base station selection in LTE
Project: Non-infringement consulting

L48. 2014 **Feinberg Day Alberti & Thompson LLP**
Case: DSS Technology Management, Inc. v. Apple Inc.
Eastern district of Texas, Tyler division, Case No. 6:13-cv-00919-JDL
Matter: Patent infringement, PDA and Bluetooth
Project: Claim construction and invalidity consulting

L49. 2014 **Sheppard Mullin Richter & Hampton LLP**
Case: Digcom Inc. v. ZTE (USA), Inc.
District of Nevada, Case No. 3:13-cv-00178-RCJ-WGC
Matter: Patent infringement, cellular communication
Project: Claim construction consulting

L50. 2014 **Lott & Fischer**
Case: Zenith Electronics, LLC, et al. v. Craig Electronics, Inc.
Southern district of Florida, Case No. 9:13-cv-80567-DMM/DLB
Matter: Patent infringement, HDTV transmission and reception
Project: Opening expert report regarding nonessentiality

L51. 2013 **McKool Smith**
Case: Zenith Electronics, LLC, et al. v. Curtis International Ltd.
Southern district of Florida, Case No. 9:13-cv-80568-DMM/DLB
Matter: Patent infringement, HDTV transmission and reception
Project: Claim construction, declaration, deposition

L52. 2013 **Gibson Dunn**
Case: Straight Path IP Group v. Sharp Corp. and Sharp Electronics Corp.
In the Matter of Certain Point-to-Point Network Communication Devices and Products Containing Same, ITC Investigation No. 337-TA-892
Matter: Patent infringement, point-to-point network communication
Project: Non-infringement consulting

L53. 2013 **Kilpatrick Townsend & Stockton LLP**
Case: Monec Holding AG v. Motorola Mobility LLC, et al.
District of Delaware, Case No. 1:11-cv-798-LPS-SRF
Matter: Patent infringement, displaying books on tablets
Project: Non-infringement expert report for Motorola, non-infringement expert

report for HTC, deposition

L54. 2013 **Gartman Law Group**
Case: Lone Star WiFi LLC v. Legacy Stonebriar Hotel, Ltd; et al.
Eastern Dist. Of Texas, Tyler, Case No. 6:12-cv-957
Matter: Patent infringement, levels of access in Wi-Fi networks
Project: Claim validity consulting

L55. 2013 **White & Case, LLP**
Case: Nokia Corp and Nokia, Inc. v. HTC Corp and HTC America, Inc.
In the Matter of Certain Portable Electronic Communication Devices, Including Mobile Phones and Components Thereof, ITC Investigation No. 337-TA-885
Matter: Patent infringement, App download and installation
Project: Non-infringement consulting

L56. 2013 **Heim, Payne & Chorush, LLP**
Case: Rembrandt Wireless v. Samsung Electronics Co., et al.
Eastern Dist. of Texas, Marshal, Case No. 2:13-cv-213-JRG-RSP
Matter: Patent infringement, Bluetooth
Project: Expert report regarding validity, deposition, jury trial

L57. 2013 **Davis Polk & Wardwell LLP; Baker Hostetler**
Case: Comcast v. Sprint; and Nextel Inc.
Eastern Dist. of Pennsylvania, Case No. 2:12-cv-00859-JD
Matter: Patent infringement, SMS/MMS in Cellular Networks
Project: Infringement expert report, validity expert report, reply expert report, declaration, two-day depositions, jury trial testimony

L58. 2013 **McKool Smith**
Case: Samsung Electronics America v. Ericsson Inc.
In the Matter of Certain Wireless Communications Equipment and Articles Therein, ITC Investigation No. 337-TA-866
Matter: Patent infringement, LTE uplink and downlink
Project: Prior art research, source code review, claim construction, claim invalidity expert report, non-infringement expert report, ITC hearing testimony

L59. 2012 **DLA Piper US LLP**
Case: CSR Technology Inc. v. Freescale Semiconductor, Inc.
USDC-San Francisco, Case No. 3:12-cv-02619-RS
Matter: Patent infringement, radio transceivers
Project: Claim construction, declaration

L60. 2012 **Fish & Richardson PC**
Case: GPNE Corp. v. Apple, Inc.; et al.

USDC-ND California, Case No. 5:12-cv-02885-LHK
Matter: Patent infringement, resource allocation in wireless networks
Project: Prior art research consulting

L61. 2012 **Polsinelli Shughart PC**
Case: Single Touch Interactive, Inc. v. Zoove Corporation
Northern district of California, Case No. 3:12-cv-00831-JSC
Matter: Patent infringement, abbreviated dialing, information delivery
Project: Claim construction, Markman hearing testimony, two declarations

L62. 2012 **K & L Gates**
Case: EON Corp. IP Holdings, LLC v. Novatel Wireless, Inc.; et al.
DC-Tyler, Texas, Case No. 6:11-cv-00015-LED-JDL
Matter: Patent infringement, wireless modem and 3G services
Project: Non-infringement expert report, deposition

L63. 2012 **Simpson Thacher & Bartlett LLP**
Case: CSR Technology, Inc. v. Bandspeed, Inc.
Western Dist. of Texas, Case No. 1:12-cv-297-LY
Matter: Patent infringement, packet identification in 2.4 GHz and 5 GHz
Project: Source code review, Markman hearing testimony, infringement expert report

L64. 2012 **Sheppard Mullin Richter & Hampton LLP**
Case: Wi-LAN v. HTC America, Inc., et al.
Eastern Dist. of Texas, Case No. 6:10-cv-521-LED
Matter: Patent infringement, CDMA, Orthogonal Codes
Project: Source code review, non-infringement expert report, deposition, jury trial testimony

L65. 2012 **Dechert LLP**
Case: Hitachi v. TPV and Vizio, Inc.; and Vizio v. Hitachi, LTD.
Eastern Dist. of Texas, Case No. 2:10-cv-260
Matter: Patent infringement, HD television transmission and reception
Project: Prior art research, claim invalidity consulting

L66. 2012 **Fish & Richardson PC**
Case: InterDigital Commc'n, LLC v. Huawei Tech. Co. LTD; LG Electronics, Inc.; Nokia, Inc.; and ZTE (USA) Inc.
Certain Wireless Devices With 3G Capabilities and Components Thereof, ITC Investigation No. 337-TA-800
Matter: Patent infringement, channel coding in UMTS, HSDPA
Project: Non-infringement consulting

L67. 2012 **Fish & Richardson PC**
Case: InterDigital Commc'n, LLC v. Huawei Tech. Co. LTD; LG Electronics, Inc.; Nokia, Inc.; and ZTE (USA) Inc.
Dist. of Delaware, Case No. 1:11-cv-00654-UNA
Matter: Patent infringement, channel coding in UMTS, HSDPA
Project: Non-infringement consulting

L68. 2011 **O'Melveny & Myers LLP**
Case: MobileMedia Ideas, LLC v. Apple, Inc.
Dist. of Delaware, Case No. 1:10-cv-00258-SLR-MPT
Matter: Patent infringement, voice control, call rejection in mobile phones
Project: Source code review, prior art research, declaration, claim invalidity expert report, non-infringement expert report, deposition, jury trial testimony

L69. 2011 **Wilmer Cutler Pickering Hale and Dorr**
Case: Apple, Inc. v. Samsung Electronics Co.
Northern Dist. of California, Case No. 5:11-cv-01846-LHK
Matter: Patent infringement, channel coding in CDMA, E-AGCH, TFCI
Project: Prior art research, claim construction consulting

L70. 2011 **Weil, Gotshal & Manges LLP**
Case: Vizio, Inc. v. Renesas Electronics America, Inc.
ITC Investigation No. 337-TA-789
Matter: Patent infringement, HD television transmission and reception
Project: Claim invalidity consulting

L71. 2011 **Shapiro Cohen**
Case: TenXc Wireless Inc. v. Andrew LLC
TenXc Wireless Inc. v. Mobi Antenna Technologies Ltd.
Matter: Patent infringement, antenna design, sectorized cellular network
Project: Claim validity consulting

L72. 2010 **Fish & Richardson PC**
Case: Vizio, Inc., v. LG Electronics, Inc.
ITC Investigation No. 337-TA-733
Matter: Patent infringement, HD television transmission and reception
Project: Claim charts, claim construction expert report, deposition

L73. 2010 **Fish & Richardson PC**
Case: Vizio, Inc., v. LG Electronics, Inc.
Dist. of Maryland, Case No. 1:09-cv-1481-BEL
Matter: Patent infringement, HD television transmission and reception
Project: Claim charts, claim construction expert report, deposition

L74. 2008 **Kaye Scholer LLP**
Case: eBay Inc. v. IDT.
Western Dist. of Arkansas, Case No. 4:08-cv-4015-HFB
Matter: Patent infringement, long distance communication using Internet
Project: Prior art research, claim construction consulting

L75. 2008 **Simpson Thacher & Bartlett LLP**
Case: Commil USA, LLC v. Cisco Systems, Inc.
Eastern Dist. of Texas, Case No. 2:07-cv-00341-DF-CE
Matter: Patent infringement, two-level wireless protocol
Project: Prior art research

L76. 2006 **Woodfill and Pressler**
Case: Charles Russell v. Interinsurance Exchange of the Auto Club
Harris County, Texas, Case No. 2005-19706
Matter: House fire and insurance claim
Project: Determining user location using cellular phone records, expert report, deposition, jury trial testimony

Consulting History

From: 1/2013 **Heim, Payne & Chorush, LLP**
To: 3/2013 Houston, TX
Duties: Analyze patents on wireless technologies.

From: 4/2007 **Collin County Sheriff's Office**
To: 5/2007 McKinney, TX
Duties: Analyzed cellular record data and determined user location in a double-homicide investigation.

From: 4/2004 **Allegiant Integrated Solutions**
To: 5/2004 Fort Worth, TX
Duties: Designed and developed an integrated set of tools for fast deployment of wireless networks. The tools optimize the placement of Access Points and determine their respective channel allocations to minimize interference and maximize capacity.

From: 3/2002 **Input/Output Incorporated**
To: 4/2002 New Orleans, LA
Duties: Designed and implemented an algorithm in MATLAB for optimizing the frequency selection process used by sonar for scanning the bottom of the ocean.

From: 6/1998 **Teleware Corporation**
To: 7/1998 Seoul, South Korea
Duties: Designed and developed a software package for analyzing the capacity

in a CDMA network to maximize the number of subscribers.

Employment History

From: 1/2015 **University of North Texas**
To: Present Denton, TX
Position: *Associate Chair of Graduate Studies Department of Computer Science and Engineering*
In charge of all administrative duties related to the Masters and PhD programs in the department.

From: 5/2008 **University of North Texas**
To: Present Denton, TX
Position: *Tenured Associate Professor Department of Computer Science and Engineering*
Conducting research on cellular networks and wireless sensor networks. Teaching wireless communication courses. Advising graduate and undergraduate students.

From: 9/2002 **University of North Texas**
To: 5/2008 Denton, TX
Position: *Assistant Professor Department of Computer Science and Engineering*
Conducting research on WCDMA/UMTS wireless networks. Teaching wireless communication and computer architecture courses. Advising graduate and undergraduate students.

From: 1/2002 **University of New Orleans**
To: 8/2002 New Orleans, LA
Position: *Assistant Professor Department of Electrical Engineering*
Designed and taught two new courses "Computer Systems Design I and II". Developed a Computer Engineering Curriculum with strong hardware-design emphasis. Formed a wireless research group. Advised graduate and undergraduate students.

From: 10/2000 **Comspace Corporation**
To: 12/2001 Coppell, TX
Position: *Senior Systems Engineer*
Designed, coded (in Matlab), and simulated Viterbi decoding, Turbo coding, trellis coded modulation (TCM), and Reed-Muller codes. Optimized soft decision parameters and interleavers for additive white Gaussian and Rayleigh faded channels. Extended the control and trunking of push-to-talk Logic Trunked Radio (LTR) to include one-to-one and one-to-many voice and data messaging.

From: 8/1996 **MinMax Corporation**
To: 8/2000 Saint Louis, MO

Position: *Research Associate*
Designed software packages that provide the tools to flexibly allocate capacity in a CDMA network and maximize the number of subscribers. Analyzed and simulated different audio compression schemes. Validated, simulated (logical and timing), and developed the hardware architecture for an ATM switch capable of channel group switching.

From: 8/1994 **Washington University**
To: 8/2000 Saint Louis, MO
Position: *Research and Teaching Assistant*
Taught, consulted, and graded Circuit Analysis at the undergraduate level and Network Design at the graduate level.

Publications

Conference Proceedings

C1. U. Sawant, **R. Akl**, "Evaluation of Adaptive and Non Adaptive LTE Fractional Frequency Reuse Mechanisms," *IEEE WOCC 2017 The 26th Annual Wireless and Optical Communications Conference*, April 2017, paper no. 1570341174, 6 pgs.

C2. U. Sawant, **R. Akl**, "A Novel Metric to Study the Performance of Sectorized Fractional Frequency Reuse Techniques in LTE," *IEEE WTS 2017 The 16th Annual Wireless Telecommunications Symposium*, April 2017, paper no. 1570338498, 7 pgs

C3. S. Alotaibi, **R. Akl**, "Dynamic Frequency Partitioning Scheme for LTE HetNet Networks Using Fractional Frequency Reuse," *IEEE WCNC '17 Wireless Communications and Networking Conference*, March 2017, paper no. 1570332420, 5 pgs.

C4. U. Sawant, **R. Akl**, "Performance Evaluation of Network Productivity for LTE Heterogenous Networks with Reward-Penalty Weights Assessment," *IEEE CCWC 2017 The 7th Annual Computing and Communication Workshop Conference*, January 2017, paper no. 1570328396, 6 pgs.

C5. S. Alotaibi, **R. Akl**, "Self-Adjustment Downlink Transmission Power for Femtocells in Co-Channel Deployment in Heterogeneous Networks," *IEEE CCWC 2017 The 7th Annual Computing and Communication Workshop Conference*, January 2017, paper no. 1570326815, 6 pgs.

C6. U. Sawant, **R. Akl**, "Performance Evaluation of Sectorized Fractional Frequency Reuse Techniques Using Novel Metric," *IEEE ISCC 2016 The Twenty-First IEEE Symposium on Computers and Communications*, June 2016, paper no. 1570275270, 7 pgs.

C7. R. Tidwell, S. Akumalla, S. Karlaputi, **R. Akl**, K. Kavi, and D. Struble, "Evaluating the Feasibility of EMG and Bend Sensors for Classifying Hand Gestures," *1st International Conference on Multimedia and Human Computer Interaction*, July 2013, paper no. 63, 8 pgs.

C8. **R. Akl**, K. Pasupathy, and M. Haidar, "Anchor Nodes Placement for Effective Passive Localization," *2011 IEEE International Conference on Selected Topics in Mobile and Wireless Networks (iCOST)*, October 2011, paper no. 1569490799, pp. 127 - 132.

C9. **R. Akl**, P. Kadiyala, and M. Haidar, "Non-Uniform Grid-Based Routing in Sensor Networks", *9th IEEE Malaysia International Conference on Communications*, December 2009, paper no. 1569243649, pp. 536 - 540.

C10. M. Haidar, M. Al-Rizzo, Y. Chan, **R. Akl**, M. Bouharras, "Throughput Validation of an Advanced Channel Assignment Algorithm in IEEE 802.11 WLAN", *ICCSN 2009 – International Conference on Communication Software and Networks*, February 2009, paper no. P385, pp. 801 - 806.

C11. **R. Akl** and D. Keathly, "Robocamp: Encouraging Young Women to Embrace STEM," 4th Annual TETC Best Practices Conference, February 2009, 13 pgs.

C12. M. Haidar, R. Ghimire, M. Al-Rizzo, **R. Akl**, Y. Chan, "Channel Assignment in an IEEE 802.11 WLAN Based on Signal-to-interference Ratio", *IEEE CCECE – Canadian Conference on Electrical and Computer Engineering: Communications and Networking*, May 2008, paper no. 1569092894, pp. 1169 - 1174.

C13. H. Al-Rizzo, M. Haidar, **R. Akl**, and Y. Chan, "Enhanced Channel Assignment and Load Distribution in IEEE 802.11 WLANs," *IEEE International Conference on Signal Processing and Communication*, November 2007, paper no. 1569042132, pp. 768 - 771.

C14. **R. Akl** and Y. Saravanos, "Hybrid Energy-Aware Synchronization Algorithm in Wireless Sensor Networks," *18th Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications*, September 2007, paper no 692, 5 pgs.

C15. M. Haidar, **R. Akl**, and H. Al-Rizzo, "Channel Assignment and Load Distribution in a Power-Managed WLAN," *18th Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications*, September 2007, paper no. 463, 5 pgs.

C16. D. Keathly and **R. Akl,** "Attracting and Retaining Women in Computer Science and Engineering: Evaluating the Results," *Proceedings of American Society for*

Engineering Education: ASEE Annual Conference, June 2007, paper no. AC 2007-1229, 10 pgs.

C17. M. Haidar, **R. Akl**, H. Al-Rizzo, Y. Chan, R. Adada, "Optimal Load Distribution in Large Scale WLAN Networks Utilizing a Power Management Algorithm," *Proceedings of IEEE Sarnoff Symposium*, May 2007, 5 pgs.

C18. R. Dantu, P. Kolan, **R. Akl,** and K. Loper, "Classification of Attributes and Behavior in Risk Management Using Bayesian Networks," *Proceedings of IEEE Intelligence and Security Informatics Conference*, May 2007, pp. 71-74.

C19. **R. Akl** and A. Arepally, "Dynamic Channel Assignment in IEEE 802.11 Networks," *Proceedings of IEEE Portable 2007: International Conference on Portable Information Devices*, March 2007, pp 309-313.

C20. **R. Akl** and U. Sawant, "Grid-based Coordinated Routing in Wireless Sensor Networks," *Proceedings of IEEE CCNC 2007: Consumer Communications and Networking Conference*, January 2007, pp. 860-864.

C21. **R. Akl** and A. Arepally, "Simulation of Throughput in UMTS Networks with Different Spreading Factors," *Proceedings of IEEE VTC Fall 2006: Vehicular Technology Conference,* September 2006, pp. C1-5.

C22. A. Alhabsi, H. Al-Rizzo, and **R. Akl,** "Parity Assisted Decision Making for QAM Modulation," *International Conference on Mobile Computing and Wireless Communications*, September 2006, paper no. 1568988776, 5 pgs.

C23. **R. Akl** and R. Garlick, "Retention and Recruitment of Women in Computer Engineering," *ICEE 2006: International Conference on Engineering Education,* July 2006, paper no. 3318, 5 pgs.

C24. R. Garlick and **R. Akl,** "Intra-Class Competitive Assignments in CS2: A One-Year Study," *ICEE 2006: International Conference on Engineering Education,* July 2006, paper no. 3325, 5 pgs.

C25. **R. Akl**, D. Tummala, and X. Li, "Indoor Propagation Modeling at 2.4 GHz for IEEE 802.11 Networks," *WNET 2006: Wireless Networks and Emerging Technologies,* July 2006, paper no. 510-014, 6 pgs.

C26. P. Chen, K. Kavi, and **R. Akl,** "Performance Enhancement by Eliminating Redundant Function Execution," *Proceedings of IEEE: 39th Annual Simulation Symposium*, April 2006, pp. 143-150.

C27. **R. Akl** and S. Nguyen, "Capacity Allocation in Multi-cell UMTS Networks for Different Spreading Factors with Perfect and Imperfect Power Control," *Proceedings of IEEE CCNC 2006: Consumer Communications and Networking*

Conference, January 2006, vol. 2, pp. 928-932.

C28. W. Li, K. Kavi, and **R. Akl**, "An Efficient Non-Preemptive Real-Time Scheduling," *18th International Conference on Parallel and Distributed Computing Systems*, Las Vegas, NV, September 2005, pp. 154-160.

C29. S. Nguyen and **R. Akl**, "Approximating User Distributions in WCDMA Networks Using 2-D Gaussian," *CCCC20T 05: International Conference on Computing, Communications, and Control Technologies*, July 2005, 5 pgs.

C30. **R. Akl** and S. Park, "Optimal Access Point Selection and Traffic Allocation in IEEE 802.11 Networks," *Proceedings of 9th World Multiconference on Systemics, Cybernetics and Informatics (WMSCI 2005): Communication and Network Systems, Technologies and Applications*, July 2005, vol. 8, pp. 75-79.

C31. **R. Akl**, M. Naraghi-Pour, M. Hegde, "Throughput Optimization in Multi-Cell CDMA Networks," *IEEE WCNC 2005 - Wireless Communications, and Networking Conference*, March 2005, vol. 3, pp. 1292-1297.

C32. **R. Akl**, "Subscriber Maximization in CDMA Cellular Networks," *Proceedings of CCCT 04: International Conference on Computing, Communications, and Control Technologies*, August 2004, vol. 3, pp. 234-239.

C33. **R. Akl** and A. Parvez, "Global versus Local Call Admission Control in CDMA Cellular Networks," *Proceedings of CITSA 04: Communications, Information and Control Systems, Technologies and Applications*, July 2004, vol. 2, pp. 283-288.

C34. **R. Akl** and A. Parvez, "Impact of Interference Model on Capacity in CDMA Cellular Networks," *Proceedings of SCI 04: Communication and Network Systems, Technologies and Applications*, July 2004, vol. 3, pp. 404-408. Selected as **best paper** of those presented in the session: Tele-Communication Systems, Technologies and Application II.

C35. **R.G. Akl**, M.V. Hegde, M. Naraghi-Pour, P.S. Min, "Call Admission Control Scheme for Arbitrary Traffic Distribution in CDMA Cellular Systems," *IEEE Wireless Communications and Networking Conference*, September 2000, vol. 1, pp. 465-470.

C36. **R.G. Akl**, M.V. Hegde, M. Naraghi-Pour, P.S. Min, "Cell Placement in a CDMA Network," *IEEE Wireless Communications and Networking Conference*, September 1999, vol. 2, pp. 903-907.

C37. **R.G. Akl**, M.V. Hegde, P.S. Min, "Effects of Call Arrival Rate and Mobility on Network Throughput in Multi-Cell CDMA," *IEEE International Conference on Communications*, June 1999, vol. 3, pp. 1763-1767.

C38. **R.G. Akl**, M.V. Hegde, M. Naraghi-Pour, P.S. Min, "Flexible Allocation of Capacity in Multi-Cell CDMA Networks," *IEEE Vehicular Technology Conference*, May 1999, vol. 2, pp. 1643-1647.

Journal Publications

J1. M. Haidar, H.M. Al-Rizzo, **R. Akl**, and Z. Elbazzal, "The Effect of an Enhanced Channel Assignment Algorithm in an IEEE 802.11 WLAN," *World Scientific and Engineering Academy and Society Transactions on Communications*, WSEAS, Vol. 8, Issue 12, December 2009.

J2. **R. Akl**, P. Kadiyala, and M. Haidar, "Non-Uniform Grid-Based Coordinated Routing in Wireless Sensor Networks", *Journal of Sensors*, article ID 491349, volume 2009, 11 pages.

J3. M. Haidar, M. Al-Rizzo, Y. Chan, **R. Akl**, "User-Based Channel Assignment Algorithm in a Load-Balanced IEEE 802.11 WLAN", *International Journal of Interdisciplinary Telecommunications & Networking (IJITN)*, April-June 2009, 1(2), pp. 66-81.

J4. **R. Akl**, D. Keathly, and R. Garlick, "Strategies for Retention and Recruitment of Women and Minorities in Computer Science and Engineering," *iNEER Special Volume: Innovations 2007- World Innovations in Engineering Education and Research*, 9 pgs., 2007.

J5. R. Garlick and **R. Akl**, "Motivating and Retaining CS2 Students with a Competitive Game Programming Project," *iNEER Special Volume: Innovations 2007- World Innovations in Engineering Education and Research*, 9 pgs., 2007.

J6. **R. Akl** and S. Nguyen, "UMTS Capacity and Throughput Maximization for Different Spreading Factors," *Journal of Networks*, July 2006, vol. 1, issue 3, pp. 40-49. ISSN: 1796-2056

J7. W. Li, K. Kavi, and **R. Akl**, "A Non-preemptive Scheduling Algorithm for Soft Real-time Systems," *Journal of Computer and Electrical Engineering*, 2006, vol. 32, 18 pgs. ISSN: 0045-7906

J8. **R. Akl**, A. Parvez, and S. Nguyen, "Effects of Interference on Capacity in Multi-Cell CDMA Networks," *Journal of Systemics, Cybernetics and Informatics*, 2006, vol. 3, no. 1, p825612, 7 pgs. ISSN: 1690-4524

J9. **R.G. Akl**, M. Hegde and M. Naraghi-Pour, "Mobility-based CAC Algorithm for Arbitrary Traffic Distribution in CDMA Cellular Systems," *IEEE Transactions on Vehicular Technology*, March 2005, vol. 54, no. 2, pp. 639-651.

J10. **R.G. Akl**, M.V. Hegde, M. Naraghi-Pour, P.S. Min, "Multi-Cell CDMA Network Design," *IEEE Transactions on Vehicular Technology*, May 2001, vol. 50, no. 3, pp. 711-722.

Technical Papers

T1. J. Williams, **R. Akl,** et al, "Flight Control Subsystem," *The Eagle Feather*, Special Section: Undergraduate Research Initiative in Engineering, University of North Texas, Vol. 7, 2010.

T2. **R.G. Akl**, M.V. Hegde, A. Chandra, P.S. Min, "CDMA Capacity Allocation and Planning," Technical Document, Washington University Department of Electrical Engineering WUEE-98, April 1998.

Book Chapters

B1. R. Akl, Y. Saravanos, and M. Haidar, "Chapter 18: Hybrid Approach for Energy-Aware Synchronization in Sensor Networks," *Sustainable Wireless Sensor Networks*, December 2010, pgs. 413-429, ISBN: 978-953-307-297-5.

B2. K. Kavi, **R. Akl** and A. Hurson, "Real-Time Systems: An Introduction and the State-of-the-Art," *Encyclopedia of Computer Science and Engineering*, John Wiley & Sons, Volume 4, January 2009, pgs. 2369-2377.

B3. **R. Akl** and K. Kavi, "Chapter 12: Modeling and Analysis using Computational Tools," *Introduction to Queuing Theory: Modeling and Analysis*, Birkhauser Boston, December 2008, pgs. 295-320.

Technical Presentations

P1. "Bio-Com Project," Raytheon, Richardson TX, May 2012, (invited).

P2. "Bio-Com Project," Net-Centric Software and Systems I/UCRC Meeting, Denton TX, December 2011, (invited).

P3. "Student Outreach Report: Robocamp," College of Engineering Advisory Board Meeting, Denton TX, May 2011, (invited).

P4. "Robocamp: Encouraging Young Women to Embrace STEM," 4th Annual TETC Best Practices Conference, Austin TX, February 2009, (invited).

P5. "Self-Configuring Wireless MEMS Network (demo)," Southern Methodist University, Dallas TX, January 2008, (invited).

P6. "Energy-aware Routing and Hybrid Synchronization in Sensor Networks," *Southern Methodist University*, Dallas TX, September 2007, (invited).

P7. "Retention and Recruitment of Women in Computer Engineering," *ICEE 2006: International Conference on Engineering Education,* Puerto Rico, July 2006, (refereed).

P8. "Capacity Allocation in Multi-cell UMTS Networks for Different Spreading Factors with Perfect and Imperfect Power Control," *IEEE CCNC 2006: Consumer Communications and Networking Conference*, Las Vegas, NV, January 2006, (refereed).

P9. "Research, Teaching, and Outreach," CSE Advisory Council Meeting, *UNT Research Park*, Denton, TX, December 2005, (invited).

P10. "WiFi and WCDMA Network Design," *University of Arkansas*, Little Rock, AR, April 2005, (invited).

P11. "WiFi and WCDMA Network Design," *Southern Methodist University*, Dallas, TX, March 2005, (invited).

P12. "Current Research in Wireless at UNT," *Nortel Networks*, Richardson, TX, October 2004, (invited).

P13. "Subscriber Maximization in CDMA Cellular Networks," *International Conference on Computing, Communications, and Control Technologies*, Austin, TX, August 2004, (refereed).

P14. "Global versus Local Call Admission Control in CDMA Cellular Networks," *International Conference on Cybernetics and Information Technologies, Systems and Applications*, Orlando, FL, July 2004, (refereed).

P15. "Impact of Interference Model on Capacity in CDMA Cellular Networks," *8th World Multi-Conference on Systemics, Cybernetics, and Informatics*, Orlando, FL, July 2004, (refereed).

P16. "CDMA Network Design," IEEE Communications Society – New Orleans Chapter, New Orleans, LA, May 2002, (invited).

P17. "Cell Design to Maximize Capacity in CDMA Networks," Louisiana State University, Baton Rouge, LA, April 2002, (invited).

P18. "Call Admission Control Scheme for Arbitrary Traffic Distribution in CDMA Cellular Systems," *IEEE Wireless Communications and Networking Conference*, Chicago, IL, September 2000, (refereed).

P19. "Cell Placement in a CDMA Network," *IEEE Wireless Communications and Networking Conference*, September 1999, (refereed).

P20. "Effects of Call Arrival Rate and Mobility on Network Throughput in Multi-Cell CDMA," *IEEE International Conference on Communications*, June 1999, (refereed).

P21. "Flexible Allocation of Capacity in Multi-Cell CDMA Networks," *IEEE Vehicular Technology Conference*, May 1999, (refereed).

P22. "CCAP: A Strategic Tool for Managing Capacity of CDMA Networks," Teleware Co. Ltd., Seoul, South Korea, 1998, (invited).

Courses Developed

- CSCE 5933: LTE Physical Layer Using MATLAB.
  Research issues in the design of LTE physical layer and simulate using MATLAB. Topics include modulation and coding, OFDM, channel modeling, MIMO, and link adaption.

- CSCE 6590: Advanced Topics in Wireless Communications & Networks: 4G/LTE.
  Research issues in the design of next generation wireless networks: cellular systems, medium access techniques, signaling, mobility management, control and management for mobile networks, wireless data networks, Internet mobility, quality-of-service for multimedia applications, caching for wireless web access, and ad hoc networks.

- CSCE 5933: Fundamentals of VoIP.
  Fundamentals of VoIP, with emphasis on network infrastructure implementation and security. Topics include IP protocol suite, SS7, speech-coding techniques, quality of service, session initiation protocol, and security issues.

- CSCE 5540: Introduction to Sensor Networks.
  Topics include: design implications of energy (hardware and software), and otherwise resource-constrained nodes; network self-configuration; services such as routing under network dynamics, localization, time-synchronization and calibration; distributed data management, in-network aggregation and collaborative signal processing, programming tools and language support.

- CSCE 5510. Wireless Communication.
  Point-to-point signal transmission through a wireless channel, channel capacity, channel encoding, and multi-user transmissions. First, second, and third generation cellular systems, and mobility management.

- CSCE 3510. Introduction to Wireless Communication.
  Fundamentals of wireless communications and networking, with emphasis on first, second, and third generation cellular systems. Topics include point-to-point signal

transmission through a wireless channel, cellular capacity, multi-user transmissions, and mobility management.

- CSCE 3020. Communications Systems.
  Introduction to the concepts of transmission of information via communication channels. Amplitude and angle modulation for the transmission of continuous-time signals. Analog-to-digital conversion and pulse code modulation. Transmission of digital data. Introduction to random signals and noise and their effects on communication. Optimum detection systems in the presence of noise.

- ENEE 3583. Computer Systems Design I (UNO).
  The design process of digital computer systems is studied from the instruction set level, system architecture level, and digital logic level. Topics include machine organization, register transfer notation, processor design, memory design, and input/output considerations. Includes semester project.

- ENEE 3584. Computer Systems Design II (UNO).
  The design and evaluation of contemporary computer systems are analyzed to compare the performance of different architectures. Topics include performance metrics, computer arithmetic, pipelining, memory hierarchies, and multiprocessor systems.

- ENEE 3514. Computer Architecture Laboratory (UNO).
  Selected experiments examining programmable logic, VHDL and logic synthesis, and including a final design project, to accompany and complement the lecture course ENEE 3584. Three hours of laboratory.

Courses Taught

Spring 2017
- CSCE 6950.743: Dissertation (no evaluation done)

Fall 2016
- CSCE 5933.3: LTE Physical Layer Using MATLAB (4.7 / 5.0)

Spring 2016
- CSCE 5950.743: Thesis (no evaluation done)
- CSCE 6950.743: Dissertation (no evaluation done)

Fall 2015
- CSCE 3010.1: Signals and Systems (5.7 / 7.0)

Spring 2015
- CSCE 5934.743: Directed Study (no evaluation done)

Fall 2014
- CSCE 3010.1: Signals and Systems (3.32 / 4.00)
- CSCE 6590.1: Advanced Topics in Wireless Communications & Networks: 4G/LTE (3.79 / 4.00)

Spring 2014

- CSCE 3510.1: Intro to Wireless Communication (808 – Highly Effective)
- CSCE 5510.1: Wireless Communications (808 – Highly Effective)

Fall 2013

- CSCE 6590.1: Advanced Topics in Wireless Communications & Networks: 4G/LTE (804 – Highly Effective)

Spring 2013

- CSCE 4890.743: Directed Study (no evaluation done)
- CSCE 6940.743: Individual Research (no evaluation done)

Fall 2012

- CSCE 3010.1: Signals and Systems (793 – Highly Effective)
- CSCE 5540.1: Intro to Sensor Networks (814 – Highly Effective)

Spring 2012

- CSCE 3020.1: Communication Systems (809 – Highly Effective)
- CSCE 3510.1: Intro to Wireless Communication (811 – Highly Effective)
- CSCE 5510.1: Wireless Communications (817 – Highly Effective)
- EENG 3810.1: Communication Systems (801 – Highly Effective)

Fall 2011

- CSCE 3010.1: Signals and Systems (793 – Highly Effective)
- CSCE 5540.1: Intro to Sensor Networks (824 – Highly Effective)

Spring 2011

- CSCE 3020.1: Communication Systems (820 – Highly Effective)
- CSCE 3510.1: Intro to Wireless Communication (812 – Highly Effective)
- CSCE 5510.1: Wireless Communications (812 – Highly Effective)
- EENG 3810.1: Communication Systems (826 – Highly Effective)

Fall 2010

- CSCE 3010.1: Signals and Systems (857 – Highly Effective)
- CSCE 5540.1: Intro to Sensor Networks (831 – Highly Effective)

Spring 2010

- CSCE 3020.1: Communication Systems (792 – Highly Effective)
- CSCE 3510.1: Intro to Wireless Communication (793 – Highly Effective)
- CSCE 5510.1: Wireless Communications (834 – Highly Effective)
- EENG 3810.1: Communication Systems (854 – Highly Effective)

Fall 2009

- CSCE 3010.1: Signals and Systems (4.40 / 5.00)
- CSCE 5540.1: Intro to Sensor Networks (4.70 / 5.00)
- EENG 2620.1: Signals and Systems (4.40 / 5.00)

Spring 2009

- CSCE 3020.1: Communication Systems (4.87 / 5.00)
- CSCE 3510.1: Intro to Wireless Communication (4.65 / 5.00)
- CSCE 5510.1: Wireless Communications (4.79 / 5.00)

Fall 2008

- CSCE 3010.1: Signals and Systems (4.91 / 5.00)
- CSCE 5540.2: Intro to Sensor Networks (4.10 / 5.00)
- EENG 2620.3: Signals and Systems (4.91 / 5.00)

Spring 2008
- CSCE 3020.1: Communication Systems (4.68 / 5.00)
- CSCE 3510.1: Intro to Wireless Communication (3.96 / 5.00)
- CSCE 5510.1: Wireless Communications (4.75 / 5.00)

Fall 2007
- CSCE 3010.1: Signals and Systems (4.57 / 5.00)
- CSCE 5540.2: Intro to Sensor Networks (4.01 /5.00)

Summer 2007
- CSCE 3020.1: Fund. of Communication Theory (no evaluation done)
- EENG 3810.1: Communication Systems (no evaluation done)

Spring 2007
- CSCE 5510.2: Wireless Communications (4.75 / 5.00)
- CSCE 5933.6: Fundamentals of VoIP (4.70 / 5.00)

Fall 2006
- CSCE 3010.1: Signals and Systems (4.58 / 5.00)
- CSCE 5540.1: Intro to Sensor Networks (4.70 / 5.00)
- EENG 2620.1: Signals and Systems (4.58 / 5.00)

Summer 2006
- CSCE 3020.1: Fund. of Communication Theory (no evaluation done)
- CSCE 3510.21: Intro to Wireless Communications (no evaluation done)
- CSCE 5510.21: Intro to Wireless Communications (no evaluation done)
- EENG 3810.1: Communication Systems (no evaluation done)

Spring 2006
- CSCE 2610.2: Computer Organization (3.69 / 5.00)
- CSCE 3010.1: Signals and Systems (4.41 / 5.00)
- EENG 2620.1: Signals and Systems (4.41 / 5.00)

Fall 2005
- CSCE 3510.1: Intro to Wireless Communications (4.52 / 5.00)
- CSCE 5510.1: Wireless Communications (4.46 / 5.00)
- CSCE 5933.6: Intro to Sensor Networks (4.60 / 5.00)

Summer 2005
- CSCE 3010.21: Signals and Systems (no evaluation done)
- CSCE 3510.21: Intro to Wireless Communications (no evaluation done)

Spring 2005
- CSCE 3510.02: Intro to Wireless Communications (4.46 / 5.00)
- CSCI 3100.02: Computer Organization (4.14 / 5.00)

Fall 2004
- CSCE 3510.01: Intro to Wireless Communications (4.15 / 5.00)
- CSCI 4510.01: Machine Structures (4.55 / 5.00)
- CSCI 5330.02: Intro to Wireless Communications (4.05 / 5.00)

Summer 2004
- CSCI 4330.22: Intro to Wireless Communications (no evaluation done)
- CSCI 4330.23: Intro to Wireless Communications (no evaluation done)
- CSCI 5330.22: Intro to Wireless Communications (no evaluation done)

Spring 2004
- CSCI 3100: Computer Organization (4.64 / 5.00)
- CSCI 4330: Intro to Wireless Communications (4.22 / 5.00)

Fall 2003
- CSCI 4510: Machine Structures (4.49 / 5.00)
- CSCI 5330: Intro to Wireless Communications (4.83 / 5.00)

Summer 2003
- CSCI 3100: Computer Organization (no evaluation done)

Spring 2003
- CSCI 3100: Computer Organization (3.84 / 5.00)

Fall 2002
- CSCI 4510: Machine Structures (4.38 / 5.00)

Funded Proposals

R1. "Robotics and App Design Summer Camp" under Texas Higher Education Coordinating Board: Engineering Summer Program. Requested amount is $11,727. Submitted 5/5/17. Robert Akl (PI), **awarded $11,727.**

R2. "UNT GenCyber Summer Program: Inspiring the Next Generation of Cyber Stars in North Texas," National Security Agency (NSA). Requested amount is $85,000. Submitted 11/4/2016. Robert Akl (co-PI), **awarded $85,000**.

R3. "App Design Summer Camp" under Texas Higher Education Coordinating Board: Engineering Summer Program. Requested amount is $12,900. Submitted 5/6/16. Robert Akl (PI), **awarded $12,900.**

R4. "Robotics, Game and App Programming Summer Camps" under Texas Workforce Commission: Summer Merit Program. Requested amount is $63,000. Submitted 11/16/15. Robert Akl (PI), **awarded $63,000**.

R5. "App Design Summer Camp" under Texas Higher Education Coordinating Board: Engineering Summer Program. Requested amount is $13,998. Submitted 5/1/15. Robert Akl (PI), **awarded $13,988**.

R6. "App Design Summer Camp" under Texas Higher Education Coordinating Board: Engineering Summer Program. Requested amount is $12,500. Submitted 5/2/14. Robert Akl (PI), **awarded $12,500**.

R7. "Robotics, Game and App Programming Summer Camps" under Texas Workforce Commission: Summer Merit Program. Requested amount is $63,000. Submitted 12/14/12. Robert Akl (PI), **awarded $63,000**.

R8. "Bio-Com Project," funded by Raytheon under Net-Centric Software and Systems I/UCRC 2nd year. Requested amount is $30,000. Submitted 5/12/12. Krishna Kavi (PI), Robert Akl (co-PI), **awarded $30,000.**

R9. "Bio-Com Project," funded by Raytheon under Net-Centric Software and Systems I/UCRC. Requested amount is $30,000. Submitted 5/12/11. Krishna Kavi (PI), Robert Akl (co-PI), **awarded $30,000.**

R10. "Game Programming for Xbox 360 Summer Camp" under Texas Higher Education Coordinating Board: Engineering Summer Program. Requested amount is $20,000. Submitted 3/21/11. Robert Akl (PI), **awarded $20,000**.

R11. "RoboCamps and Game Programming Summer Camps" under Texas Workforce Commission: Summer Merit Program. Requested amount is $63,000. Submitted 2/17/11. Robert Akl (PI), **awarded $63,000**.

R12. "Game Programming for Xbox 360 Summer Camp" under Texas Higher Education Coordinating Board: Engineering Summer Program. Requested amount is $13,000. Submitted 2/22/10. Robert Akl (PI), **awarded $18,000.**

R13. "Robotics and Game Programming Summer Camps" under Texas Workforce Commission: Summer Merit Program. Requested amount is $63,000. Submitted 10/16/09. Robert Akl (PI), **awarded $63,000**.

R14. "Micro Air Vehicle Design: A Collaborative Undergraduate Project for Electrical Engineering, Computer Engineering, and Computer Science Students," under UNT Undergraduate Research Initiative. Submitted 9/25/2009. Robert Akl (co-PI), **awarded $8,000**.

R15. "Summer Merit Program" under Texas Workforce Commission. Requested amount is $42,000. Submitted 3/20/09. Robert Akl (PI), **awarded $42,000**.

R16. "Robocamp at Stewpot" under Dallas Women's Foundation. Requested amount is $20,000. Submitted 2/23/09. Robert Akl (PI), **awarded $18,600**.

R17. "Robocamp Jump Start" under Motorola Foundation Innovation Generation Grant. Requested amount is $29,852. Submitted 2/12/09. Robert Akl (PI), **awarded $30,700**.

R18. "Engineering Summer Program" under Texas Higher Education Coordinating Board. Requested amount is $7,944. Submitted 2/13/09. Robert Akl (PI), **awarded $11,111**.

R19. "Texas Youth in Technology" under Texas Workforce Commission. Requested amount is $152,393. Submitted 11/10/08. Robert Akl (PI), **awarded $152,393**.

R20. "IUCRC Center Proposal: Net-Centric Software and Systems," under NSF-07-537: Industry/University Cooperative Research Centers. Requested amount is $349,482. Submitted 9/26/08. Krishna Kavi (PI), Robert Akl (co-PI), **awarded $60,000 per year for 5 years**.

R21. "Robocamp and Beyond" under Motorola Foundation Innovation Generation Grant. Requested amount is $30,000. Submitted 6/20/08. Robert Akl (PI), **awarded $30,000**.

R22. Texas Youth in Technology" under Texas Workforce Commission. Requested amount is $30,000. Submitted 2/27/08. Robert Akl (PI), **awarded $31,500**.

R23. "Robocamp Program for Young Women" under RGK foundation. Requested amount is $30,000. Submitted 11/5/07. Robert Akl (PI), **awarded $15,000**.

R24. "Texas Youth in Technology" under Texas Workforce Commission. Requested amount is $102,514. Submitted 10/22/07. Robert Akl (PI), **awarded $102,514**.

R25. "Women Art Technology" under Hispanic and Global Studies Initiatives Fund. Requested amount is $14,125. Submitted 9/30/07. Jennifer Way (PI), Robert Akl (co-PI), **awarded $12,785**.

R26. "Robocamp Mobile Unit" under Motorola Foundation Innovation Generation Grant. Requested amount is $35,000. Submitted 6/20/07. Robert Akl (PI), **awarded $30,000**.

R27. "ICER: UNT Engineering Challenge Camps" under NSF 0547299. Requested amount is $35,000. Submitted 4/27/07. Oscar Garcia (PI), Robert Akl (senior personnel), **awarded $32,792**.

R28. "IUCRC-Planning Proposal: UNT Research Site Proposal to join Embedded Systems I/UCRC," under NSF-01-116: Industry/University Cooperative Research Centers. Requested amount is $10,000. Submitted 3/31/07. Krishna Kavi (PI), Robert Akl (co-PI), **awarded $10,000**.

R29. "High-assurance NCCS: Ultra Dependability Integration Engineering," Department of Defense. Requested amount is $20,000. Submitted 3/12/07. Krishna Kavi (PI), Robert Akl (co-PI), **awarded $20,000**.

R30. "Recruiting and Retention Strategies for Computer Science at UNT" under Texas Technology Workforce Development Grant Program – 2005. Requested amount is $163,322. Submitted 3/17/05. Robert Akl (PI), **awarded $125,322**.

R31. UNT Faculty Research Grant for Fall 2003, Robert Akl (PI), $5,000, **awarded $4,000**.

R32. UNT Junior Faculty Summer Research Fellowship for Summer 2003, Robert Akl (PI), $5,000, **awarded $5,000**.

Professional Associations and Achievements

Membership in Professional Organizations

- Senior Member IEEE
- Member, Federation Council of North Texas Universities
- Member, Eta Kappa Nu Electrical Engineering Honor Society
- Member, Golden Key National Honor Society
- Member, Tau Beta Pi Engineering Honor Society

Offices and Committee Assignments in Professional Organizations

- Technical Program Committee Member, IEEE Wireless Communications and Networking Conference, IEEE WCNC
- Technical Program Committee Member, International Wireless Symposium, IWS
- Technical Program Committee Member, IEEE International Conference on Computational Science, IEEE ICCS
- Technical Program Committee Member, IASTED International Conference on Wireless Communications, WC
- Technical Program Committee Member, WTS Wireless Telecommunications Symposium
- Technical Program Committee Member, Mosharaka International Conference on Computer Science and Engineering, Amman
- Invitation to serve as an NSF reviewer/panelist for Engineering Research Centers (ERC) proposals
- Technical Program Committee Member, 18th IEEE International Symposium on Personal, Indoor and Mobile Radio Communication, Greece
- International Program Committee, IASTED International Conference on Wireless and Optical Communication, Canada
- Program Committee Member, Fifth Annual Wireless Telecommunications Symposium, CA
- Technical Publications Chair, IEEE Vehicular Technology Conference, Dallas TX
- Session Chair, International Conference on Computing, Commun. and Control Tech., Austin TX
- Session Chair, International Conference on Cybernetics and Information Technologies, Orlando FL
- Session Chair, 8th World Multi Conference on Systemics, Cybernetic, and Informatics, Orlando FL

Additional Responsibilities and Activities

- Reviewer, *Wireless Communications and Mobile Computing*, 2012 – present
- Reviewer, *Journal of Sensor and Actuator Networks*, 2012 – present
- Reviewer, *IEEE Transactions on Vehicular Technology*, 2011 – present
- Reviewer, *Elsevier Journal of Computers & Electrical Engineering*, 2008 – present
- Reviewer, *IEEE Globecom*, 2007 – present
- Reviewer, *IEEE International Conference on Advanced Networks and Telecommunication Systems (ANTS)*, 2008 – present
- Reviewer, *The International Wireless Communications and Mobile Computing Conference*, 2007 – present
- Reviewer, *Journal on Wireless Communications and Networking*, 2007 – present
- Reviewer, *IEEE Transactions on Communications*, 2007 - present
- Reviewer, *International Journal of Communication Systems*, 2007 – present
- Reviewer, *IEEE Communications Magazine*, 2005 – present
- Reviewer, *Journal of Wireless Networks*, 2004 – present
- Reviewer, *IEEE Transactions on Mobile Computing*, 2004 – present
- Reviewer, *IEEE Transactions on Wireless Communications*, 2004 – present
- Reviewer, *ACM Crossroads*, 2004 – present

Honors and Awards

- Who's Who in America, 2012 Edition
- Winner of Tech Titan of the Future – University Level Award for UNT Robocamps for Girls, Metroplex Technology Business Council, 2010 with **$15,000 cash prize**.
- IEEE Professionalism Award, Ft Worth Chapter, 2008
- UNT College of Engineering Outstanding Teacher Award, 2008
- Certificate of Appreciation: IEEE Vehicular Technology Conference, Dallas, TX, 2005
- Certificate of Appreciation: Denton County Boosting Engineering, Science and Technology (BEST) Robotics Competition, 2004
- Summa Cum Laude Graduate, Ranked First in Undergraduate Class
- The Computer Science Departmental Award for Academic Excellence, Washington University, 1993
- The Dual Degree Engineering Award for Outstanding Senior, Washington University, 1993
- The 1992 Technical Writing Competition Award, The Society for Technical Communication

Exhibit B
to Akl Declaration

List of Documents Considered

All materials considered are identified in the Declaration.

Electronic Acknowledgement Receipt

EFS ID:	29668068
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:	30-JUN-2017
Filing Date:	12-SEP-2016
Time Stamp:	15:24:28
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		ReplytoOfficeAction.pdf	2492566 f7ec628c74da84e293348596641c95434eadc271	yes	105

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response after non-final action-owner timely	1	104
	Reexam Certificate of Service	105	105

Warnings:					
Information:					
2	Miscellaneous Incoming Letter	ResponseExhibitA.pdf	57469 11768a7e6af809636808c96883e42b4596edba44	no	7
Warnings:					
Information:					
3	Miscellaneous Incoming Letter	ResponseExhibtB.pdf	72957 fbcb4732206b7bbccec9a963ecd71def310f2460	no	9
Warnings:					
Information:					
4	Miscellaneous Incoming Letter	ResponseExhibitC.pdf	745101 6e8961022899d57085153069fab2870e4e93aa2d	no	58
Warnings:					
Information:					
5	Miscellaneous Incoming Letter	ResponseExhibitD.pdf	726900 aaa65ee6df7ceec460ac5cf6a401f93a4185cf49	no	2
Warnings:					
Information:					
6	Reexam Miscellaneous Incoming Letter	AklDeclaration.pdf	2811477 e1c62ee1fbaff548df313cdc9712553989a37062	no	105
Warnings:					
Information:					
		Total Files Size (in bytes):	6906470		

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

Control No.	: 90/013,808	Art Unit	: 3992
Patent No.	: 8,023,580	Examiner	: Yuzhen Ge
Filed	: September 12, 2016	Conf. No.	: 2211
Customer No.	: 06449	Atty. No.	: 3277-114.RXM1

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

Mail Stop *Ex Parte* Reexam
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO OFFICE ACTION

This Reply is in response to the non-final Office Action dated March 31, 2017. On April 24, 2017, Patent Owner's petition for an extension of time was granted, extending the period for filing a response from the original due date of May 31, 2017, to June 30, 2017. Accordingly, this Reply is being timely filed.

A **Table of Contents** begins on **page 2** of this paper.

Remarks begin on **page 5** of this paper.

Table of Contents

Table of Exhibits

Exhibit A: Timeline of Rembrandt Litigation, IPRs and Reexaminations

Exhibit B: Comparison of Cited Portions of Snell with Substantially Identical Portions of Boer

Exhibit C: Claim Construction Order in *Rembrandt Wireless Tech. v. Samsung Elec. Co.*, No. 2:13-cv-00213 (E.D. Tex. 2013)

Exhibit D: Comparison of the Requester's Presentation of Snell's Fig. 3 and Boer's Fig. 4

Remarks

I. Introduction

Claims 2 and 59 of the U.S. Patent No. 8,023,580 ("'580 Patent") are the subject of this *ex parte* reexamination, Control No. 90/013,808. In their entirety, they read:

> 2. [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],
>
> 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.
>
> 59. [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],

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.

In this Response, Patent Owner challenges the Office's findings and determinations made in the Office's Order for Ex Parte Reexamination (mailed 9/27/16) ("Order") and its non-final Office Action (mailed March 31, 2017) ("3-31-17 Office Action") rejecting claims 2 and 59 of the '580 Patent. Notably, neither the Order nor the 3-31-17 Office Action cites to or incorporates material in the Request, except to merely

identify the SNQs proposed by the Requestor (Order, at 8), and to provide certain claim term definitions (3-31-17 Office Action, at 7).[1]

A. Summary of the Office's Order Determining That There Existed A Substantial New Question ("SNQ") and Its Office Action Rejecting Claims 2 and 59 of the '580 Patent

1. The Office's Order

In its Order, the Office identified the following alleged 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").

Order at 3-4.

Based on this art, the Office identified the following four SNQs:

[1] The claims of the '580 Patent have been the subject of numerous IPRs and district court litigation. *See* their history in the timeline in Exhibit A. All relevant litigation is identified in Exhibit A. With respect to invalidity/patentability issues, all litigation has been completed in the district court and in the Federal Circuit.

1) Claims 2 and 59 of the '580 Patent based on Snell alone;

2) Claims 2 and 59 of the '580 Patent based on Snell in view of Yamano and Kamerman;

3) Claims 2 and 59 of the '580 Patent based on Snell in view of Harris 4064.4, Harris AN9614, Yamano, and Kamerman; and

4) Claims 2 and 59 of the '580 Patent based on Snell in view of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman.

Order at 11 ("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.").

Based on the Office's analysis of Snell *alone*, the Office concluded that Snell raised an SNQ and thus that the proposed combinations also raised additional SNQs. Order at 8-11. In so concluding, the Office did not compare the art previously before it and considered in the IPRs of the '580 Patent but instead reasoned:

> 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 the *ex parte* reexamination proceeding.

Order, at 4.

The Office's analysis falls short of that required to establish an SNQ in that it fails to recognize the fact that Snell is *at best* cumulative to U.S. Patent No. 4,706,428 ("Boer") – a reference fully considered by the PTAB in multiple IPRs. An argument already decided by the Office cannot raise a new question of patentability. *E.g., Ex parte Lam Research Corp.*, 2012

WL 1178196, at 5 (PTAB 2013); MPEP § 2242 (no substantial new question of patentability if "the same question of patentability has already been decided as to the claim"). A finding that the art was not previously before the Office is not sufficient to conclude it raises an SNQ, as "the same question of patentability may have already been decided by the Office where the examiner finds the additional (newly provided) prior art patents or printed publications are merely cumulative to similar prior art already fully considered by the Office in an earlier concluded examination or review of the claim." MPEP § 2242 I.b. *See also infra* at § II; 37 C.F.R. § 1.132 Declaration of Dr. Robert Akl ("Akl") at ¶¶ 41-70.

For the reasons given below, Patent Owner respectfully requests reconsideration of the Office's SNQ determination and termination of this reexamination because no SNQ was identified in the Order.

2. The Office's Grounds for Rejection of Claims 2 and 59

In its 3-31-17 Office Action, the Office rejected claims 2 and 59 of the '580 Patent under 35 U.S.C. § 102(e) based on Snell. Office Action at 8-11. In addition to its § 102(e) rejections, the Office has rejected claims 2 and 59 of the '580 Patent under 35 U.S.C. §103(a) based on Snell combined with other alleged prior art as follows:[2]

1. Snell in view of Yamano (relying on the alleged incorporation by reference of Harris AN9614 and Harris 4064.4) (3-31-17 Office Action at 12-17); and

[2] While the 3-31-17 Office Action lists Upender in its list of alleged "Prior Art" (3-31-17 Office Action at 3), none of the Office's grounds of rejection relies on Upender. Thus, Patent Owner presumes the Office meant to remove this reference that appeared in the previous 10-27-16 Office Action (now stricken by the CRU Director from the record). To the extent that presumption is not correct, Patent Owner requests that the Office issue another non-final Office Action explaining the relevance of the Office's citation to Upender.

2. Snell in view of Yamano further in view of Kamerman (3-31-17 Office Action at 17-20).

For the reasons given below, Patent Owner respectfully requests that these grounds of rejection be withdrawn and the reexamination terminated.

B. Summary of Patent Owner's Arguments That The Office Has Not Identified A Substantial New Question of Patentability and Has Not Established That Either Claim 2 or 59 is Unpatentable Based on the Any of the Three Grounds Identified Above

The Office has not (1) identified a substantial new question of patentability or (2) established that either claim 2 or 59 is unpatentable based on any of the above-noted grounds of rejection. That is the case for a number of reasons, summarized as follows:

1. The Office has not identified a substantial new question of patentability ("SNQ") because the art identified in its alleged SNQs (and relied on to support its grounds of rejection) is at best cumulative of art previously presented in a number of the IPRs challenging the '580 Patent and fully considered by the PTAB. *See infra* at § II; Akl, at ¶¶ 41-70.

2. The Office has not based its rejections on the broadest *reasonable* claim construction and thus has not identified where in the cited art a number of the claim limitations, when properly construed, are disclosed or suggested. *See infra* at § 3; Akl, at ¶¶ 18-27.

3. Harris AN9614 and Harris 4064.4 (collectively "Harris Documents") are not prior art and therefore could not be incorporated by reference into Snell or used as references against the '580 Patent, as their earliest publication date in the record is the date Snell issued as a patent, *i.e.*, November 9, 1999 (after the '580 priority date of December 5, 1997). *See infra* at § V. A-C; Akl, at ¶¶ 71-73.

4. The material Snell attempted to incorporate by reference is not the material the Office now relies on to support its rejections. Thus, even assuming portions of the Harris Documents were legally incorporated by reference, the material the Office is relying on was still not incorporated by reference. *See infra* at § V.D; Akl, at ¶¶ 74-75.

5. The master/slave limitations were not disclosed and would not have been suggested by any of the art relied on in the three grounds of rejection, alone or combined as the Office has proposed. *See infra* at § VI.A; Akl, at ¶¶ 101-120.

6. The "at least two types of modulation methods" limitation was not disclosed and would not have been suggested by any of the art relied on in the three grounds of rejection, alone or combined as the Office has proposed. *See infra* at § VI.B; Akl, at ¶¶ 121-130.

7. "[T]he 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" limitation was not disclosed and would not have been suggested by any of the art relied on in the three grounds of rejection, alone or combined as the Office has proposed. *See infra* at § VI.C; Akl, at ¶¶ 131-151.

8. It would not have been obvious to modify or combine the cited art, as the Office has proposed, as there would have been no motivation to do so. In fact, one of ordinary skill in the relevant art would have been discouraged from doing so. *See infra* at § VII; Akl, at ¶¶ 152-178.

II. The Office Has Not Identified A Substantial New Question of Patentability

The Office identified four alleged SNQs in its Order[3] (listed *supra* at § I.A.1) but did not explain how any of the art included in its alleged SNQs raises an SNQ, other than stating that the same art was not previously before the Office. Further, in its Order, the Office doesn't identify what portions of the Harris Documents, Kamerman, or Yamano it is relying on to support its SNQs. Instead it relies *solely* on Snell but even then does not compare Snell with the art previously considered by the Office. In fact, all of the art cited in the Order, including Snell, the Harris Documents, Kamerman, and Yamano (i) were previously considered by the Office or are at best cumulative to art previously considered by the Office and (ii) are being considered in the same way as the art previously considered with respect to claims 2 and 59 (*e.g.*, in the '518 IPR). The Office does not attempt to argue otherwise in its Order and does not identify any additional SNQ in its 3-31-17 Office Action. Should the Office adopt a new basis or new reasoning to support an SNQ, Patent Owner reserves the right to supplement the points set forth herein. However, it is Patent Owner's position that attempting to establish an SNQ based on the art identified in the Order and 3-31-17 Office Action would be futile, as it is no more than cumulative of the art already considered by the PTAB. *See* the discussion *infra* at § II.A-F; Akl, at ¶¶ 41-70.

More specifically, in determining that there was a substantial new question of patentability ("SNQ") based on Snell, the Office failed to properly and fully analyze the

[3] As the 3-31-17 Office Action does not base any rejection on the alleged fourth SNQ, it will not be addressed further in this Response.

threshold issue of whether the same question of patentability as to claims 2 and 59 was previously decided by the PTAB. Specifically, the Office failed to analyze whether Snell is more relevant to the patentability of claims 2 and 59 than the previously-considered Boer reference, or no more than cumulative to Boer. In addition, the Office failed to analyze whether Snell is being considered in a new light, or just in the same way that Boer was previously considered by the PTAB in, *e.g.,* IPR2014-00518 ("'518 IPR"). In fact, Snell is cumulative to Boer and is being considered in exactly the same light as Boer was previously considered. Merely substituting previously uncited art that is no more relevant to the claims' patentability than that already considered and applying it in the same way does not raise an SNQ.

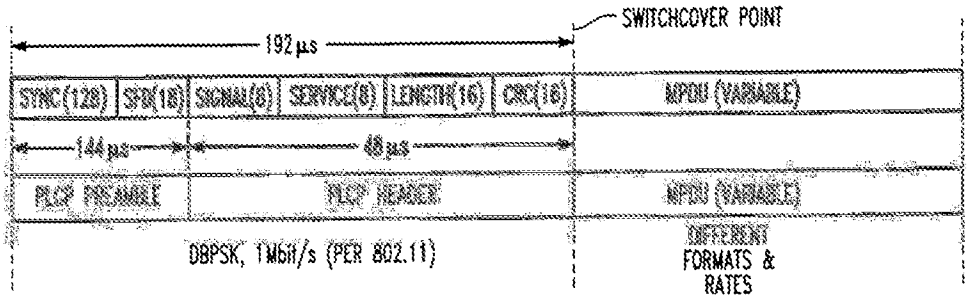
Based on the reasoning below, Rembrandt respectfully requests the Office to reconsider its decision that Snell alone raises an SNQ and thus Snell combined with other art also raises other SNQs. Order, at 11.

A. Snell is Cumulative to Boer

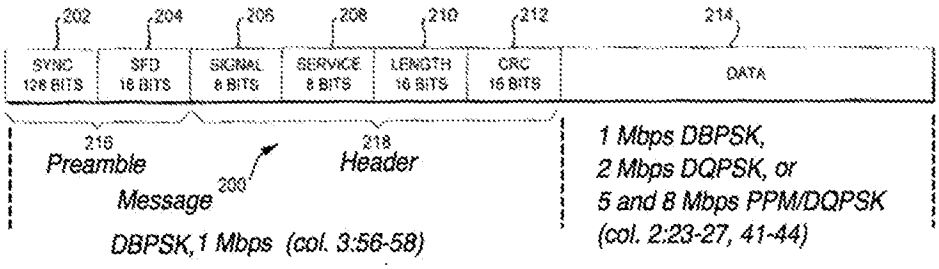
Snell is cumulative to Boer, which the PTAB fully considered in a number of IPRs of the '580 Patent, including the '518 IPR. Both references propose similar extensions to what became known as the 802.11 standard (or WiFi), namely adding two higher data rates to the 1MB/s and 2MB/s data rates in the standard. Both references use the packet structure defined by the standard, including packet headers with the same fields. The Office relies heavily on Snell's Fig. 3 and its description of these packet structures as providing the additional limitations of claims 2 and 59. Order at 8-11 (citing to Fig. 3 seven times in four pages). Substantially identical packet structures, described in Boer and Boer's Fig. 4, were fully considered by the PTAB in the '518 IPR and found unlikely to render unpatentable claims 2 and 59 of the '580 Patent. *See* '518 IPR

Institution Decision, Paper 16, at 13-15 & 17 (September 23, 2014) (quoted *infra* at § II.B).

Compare Snell's Fig. 3 *with* Boer's Fig. 4:



(Snell) *FIG. 3*



(Boer) FIG.4

Comparing Snell's Fig. 3 with Boer's Fig. 4 and their corresponding descriptions makes clear that Snell adds nothing to Boer. This comparison demonstrates that Snell is *at best* cumulative to Boer. *See* Akl, at ¶¶ 47-50.[4]

More specifically, in ordering *ex parte* reexamination of the '580 Patent, the Office found:

> 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

[4] *See also* Exhibit D (comparing the way Requester presented Snell's Fig. 3 and Boer's Fig. 4).

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.").*

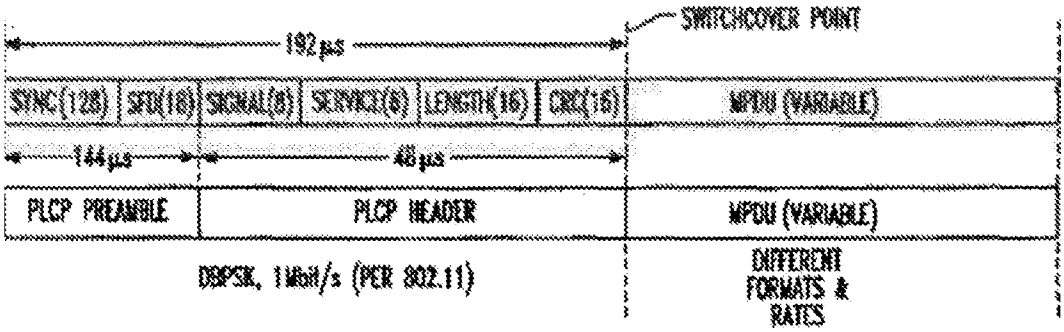


FIG. 3

-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, lines 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, 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.

Order, at 8-9 (emphasis in Order).

Based on these citations of Snell (produced in their entirety above) and using the claimed invention as a roadmap, the Office drew the following conclusions:

> 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 "transmitting 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."

Order, at 9-11 (emphasis in Order).

In fact, the Snell disclosure relied on by the Office in its Order is *substantially identical* to the fully-considered disclosure in Boer.[5] *See* Exhibit B comparing the portions of Snell cited by the Office with substantially identical portions of Boer.

The Office does not identify a single disclosure in Snell more relevant to the patentability of claims 2 and 59 than that which the Office previously considered in Boer. In fact, Snell is even less relevant than Boer (due to, *inter alia*, lack of any disclosure of a destination address in Snell), which explains why it was not cited previously during the multitude of IPRs earlier filed against Rembrandt's '580 and '228 Patents or during the *Rembrandt v. Samsung* litigation.

B. Snell is Being Considered in the Same Way that Boer Was Previously Considered by the PTAB

In the Order, the Office has taken the position that the SIGNAL/SERVICE fields of a "subsequent" transmission taught the additional limitations of claims 2 and 59. *See* Order, at 10-11 (quoted above).

In the '518 IPR, the Board considered the packet structure disclosed in Fig. 4 of Boer, which, as noted above, is *substantially identical* to that of Snell, and squarely *rejected* the argument now advanced by the Office, namely, that the SIGNAL/SERVICE fields of a "subsequent" transmission taught the additional limitations of claims 2 and 59:

[5] By the time the PTAB finally decided the '518 IPR in September 2015, Boer had been cited to the PTAB in at least twelve IPRs. *See* Exhibit A.

Claim 2, which depends from claim 1, recites 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." Petitioner submits that the recitation is met by material in Boer.

Figure 4 of Boer is reproduced below.

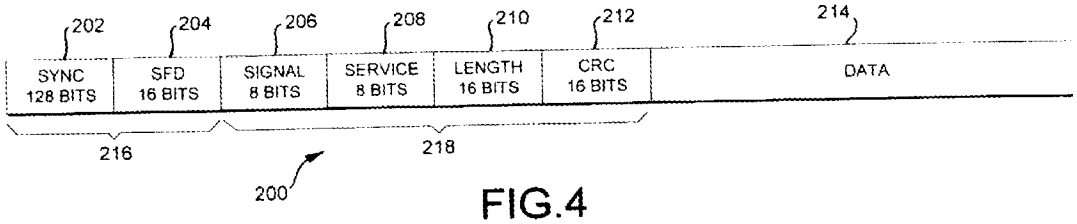


FIG.4

Figure 4 is said to be a diagram illustrating the format of a data message circulating in Boer's LAN. Ex. 1204, col. 1, ll. 59–60. Message 200 includes preamble 216 and header 218, always transmitted at the 1 Mbps rate using DBPSK modulation. Subsequent DATA field 214, however, may be transmitted at any one of the four rates 1, 2, 5, or 8 Mbps, using the modulation and coding appropriate for the selected rate. Id. at col. 3, ll. 56–62. SIGNAL field 206 has a first value if DATA field 214 is transmitted at the 1 Mbps rate and a second value if the DATA field is transmitted at the 2, 5, or 8 Mbps rate. SERVICE field 208 has a first value for the 1 and 2 Mbps rates, a second value for the 5 Mbps rate, and a third value for the 8 Mbps rate. *Id.* at col. 4, ll. 4–11.

Petitioner submits that the "first sequence" of base claim 1 corresponds to Boer's description of SIGNAL field 206 and SERVICE FIELD 208. E.g., Pet. 32 (claim chart). According to Petitioner, the "third sequence" of claim 2 corresponds to a subsequent transmission of SIGNAL field 206 and SERVICE field 208. Pet. 25. Petitioner concludes that the subject matter of claim 2 would have been obvious because header 218 is always transmitted using DBPSK (the "first" modulation method). Id. ….

* * *

Petitioner has not provided sufficient evidence or explanation in support of why the fact that Boer's SIGNAL and SERVICE fields are always transmitted using DBPSK (the "first" modulation method) might demonstrate obviousness of the subject matter of claim 2. Petitioner has failed to show, in particular, how the SIGNAL and SERVICE fields might be deemed, as alleged, to "indicate" that communication from the master to the slave has reverted to the first modulation method, as recited in claim 2.

> Independent claim 49, from which challenged claims 52 and 53 depend, recites a similar limitation with respect to how a sequence "indicates" that communication has reverted to the first modulation method. Petitioner relies, again, on Boer's description of header 218 being always transmitted using the "first" modulation method. Pet. 39; Ex. 1220 ¶¶ 192– 195. Petitioner's asserted ground of obviousness with respect to claim 49, thus, fails for the same reasons as that of claim 2.
>
> Claim 59, which depends from independent claim 58, also recites a third sequence that is transmitted in the first modulation method that "indicates" communication from the master to the slave has reverted to the first modulation method. Petitioner submits, correctly, that Boer teaches that the SIGNAL and SERVICE fields in the header "indicate which modulation method is used to transmit DATA field 218." Pet. 49. "When Boer is combined with the APA, it could therefore indicate that communication from the master to the slave has reverted to the first modulation method." *Id.* (citing Ex. 1220 ¶¶ 232–237). Mr. Goodman repeats that "it could therefore indicate" that communication has reverted to the first modulation method (Ex. 1220 ¶ 237) and concludes, "[t]herefore, it is my opinion that claim 59 is obvious in view of the prior art" (*id.* ¶ 238). Although it appears that Petitioner attempts to provide more explanation in its challenge of dependent claim 59, as compared with that of claim 2 or 49, we are not persuaded there is a reasonable likelihood that Petitioner would prevail in its challenge of any of claims 2, 49, and 59.

'518 IPR Institution Decision, at 13-15 (denying institution re: claims 2 and 59)(emphasis added). *See* Akl, at ¶¶ 51-54.

As was the case with Boer, there's nothing in Snell that requires "the third sequence [to be] transmitted in the first modulation method and [to] indicate[] that *communication from the master to the slave has reverted to the first modulation method*." Claims 2 and 59 (emphasis added). Akl, at ¶ 53. The fact that "*[t]he PLCP preamble and PLCP header are always at 1 Mbit/s,*" Snell 6:64-66 (describing Snell's Fig. 3), does not meet this limitation. Akl, at ¶ 53. Neither does the fact that Snell's SIGNAL field in PLCP header has four predetermined values that correlate with four data rates/modulation methods that are used to send the payload, Snell 6:48-59 (also describing Snell's Fig. 3). Akl, at ¶ 53. Boer discloses substantially the same

information in describing Boer's Fig. 4. *See* Boer's Fig. 4 above and its description at 3:42-4:24; Akl, at ¶ 53; Exhibit B. The PTAB found that disclosure in Boer inadequate to even institute an IPR with respect to claims 2 and 59, even when combined with the APA.[6] *See* '518 Institution Decision (quoted *supra* at § V.B).

C. The Harris Documents Are Cumulative To Art Previously Considered

There is no indication that the Office is relying on Snell's incorporation by reference of the Harris Documents in the Order and no citation to the section of Snell containing Snell's attempted incorporation by reference. However, to the extent it is doing so, the Harris Documents add nothing to the art previously and fully considered by the PTAB in a number of the IPRs of the '580 Patent, including the '518 IPR. *See* Akl, at ¶¶ 55-62.

Harris 4064.4 discloses a preamble and header that are always transmitted as *DBPSK* waveforms, a data portion transmitted as either DBPSK or DQPSK, and a SIGNAL field that indicates whether the data portion is modulated as DBPSK or DQPSK. Harris 4064.4 at FIG. 10, 14-16. Even if Harris 4064.4 were prior art (which it is not for the reasons set forth below in Section V), Harris 4064.4 adds nothing relevant to the patentability of claims 2 and 59 when compared to Boer, which discloses a preamble 216 and header 218 that always are sent using DBPSK and a data field 214 transmitted in DBPSK, DQPSK, or PPM/QPSK, and SIGNAL and SERVICE fields that indicate whether the data field 214 is modulated in DBPSK, DQPSK, or PPM/QPSK. Boer at FIG. 4, Abstract, 3:42-49, 3:56-62, 4:4-11, 6:5-21. *See also* Akl, at ¶¶ 57-

[6] The APA considered by the PTAB is described in the '518 Institution Decision, at 7-8. It describes a master/slave communications system. Akl, at ¶ 47, note 1.

59. The DBPSK and DQPSK of Boer were previously considered as allegedly corresponding to the claimed "first modulation method" and "second modulation method," respectively, and the SIGNAL and SERVICE fields of Boer were relied on as allegedly corresponding to the claimed "first sequence." '518 Institution Decision, at 9-11. *See* Akl, at ¶¶ 57-59 (comparing Harris 4064.4 with Boer).

Again, the Office does not mention either Harris Document in its discussion of an SNQ. Nevertheless, presuming the Office is relying on Harris AN9614 on for its disclosure of a "polled scheme" (Harris AN9614 at 3), as allegedly corresponding to or suggesting the claimed "master/slave relationship,"[7] (which it does not for the reasons given *infra* at § VI.A.3), and, even if Harris AN9614 were prior art (which it is not for the reasons given *infra* at § V.A-C), Harris AN9614 is no more relevant than the *express* disclosure of a master/slave relationship in the alleged Admitted Prior Art ("APA") of a multipoint communication system including a master and tributaries, which was previously fully considered in a number of IPRs of the '580 Patent, including the '518 IPR, and relied upon as allegedly corresponding to the claimed "master/slave relationship." *See, e.g.,* '518 IPR Institution Decision, at 17 (denying review of claims 2 and 59 based on the APA and Boer). *See* Akl, at ¶¶ 60-62 (comparing Harris AN9614 with APA and Boer).

[7] Moreover, to the extent the Office is drawing inferences from the disclosure of Harris AN9614 based on the '580 Patent's disclosure (*e.g.*, that Harris AN9614's "polled scheme" is equivalent to master/slave) are not well supported and incorrect, as explained *infra* at § VI.A.3. Akl, at ¶¶ 112-120.

D. Snell Does Not Support an SNQ Based on Anticipation

In its Order, the Office did not indicate what statutory bases were implicated or what claim construction it was applying in its determination that Snell raised an SNQ. Given that the Office does not even discuss a number of the claim limitations in its Order, including for example, the master/slave limitations or the destination address limitation, one can only surmise that (1) the Office assumes these limitations are inherent in or obvious in view of Snell, and/or (2) the Office has construed the claims in such a way that many of the limitations have not been given patentable weight.

With respect to (1), Snell remains cumulative to Boer and is being considered in the same light as Boer was previously considered, as previously discussed, and thus cannot form the basis for an SNQ. Akl, at ¶¶ 47-54. With respect to (2), the question of whether the limitations of claims 2 and 59 should be accorded patentable weight *has already been decided* in the affirmative by the PTAB. Specifically, the Board construed claims 2 and 59 in a manner that *accorded patentable weight to all the limitations of the claims*. Given that the Board *instituted* a trial with respect to independent claims 1 and 58, but *denied* institution with respect to dependent claims 2 and 59, it necessarily follows that the Board accorded patentable weight to the additional limitations recited in claims 2 and 59. Moreover, a fair reading of the PTAB's Institution Decision and Final Written Decision in the '518 IPR demonstrates that *all* of the limitations of base claims 1 and 58 were also accorded patentable weight by the Board. *See* both the '518 Institution Decision and Final Written Decision *passim*. As explained by the Board in *Ex parte Hisamitsu Pharaceutical Co., Inc.*, 2014 WL 955762, slip op. at 6 (PTAB 2014), such a "difference of opinion" on claim construction cannot raise a substantial new question:

> While claim construction is a matter of law that is considered de novo and without deference, in our view, this principal does not supersede the limitation on revisiting a specific issue that was previously decided. On the record before us, the scope of the claims as including or excluding pores is simply not a new issue. The Tsubota reference is relied on for the same teachings as in the original prosecution. Only the determination as to the scope of the claims is different. That is, a mere difference in the opinions between the CRU Examiner and the original Examiner on the same question (whether the claims exclude the pores) does not raise a substantial new question …

Thus, the Office cannot support an SNQ by attempting to construe the claims differently than did the PTAB. *See Ex parte Lam Research Corp.*, 2012 WL 1178196, at 5 (PTAB 2013) (holding that an argument already decided by the Office cannot raise a new question of patentability). *See also* the discussion regarding claim construction, *infra* at § III.A.

E. The Office's Determination That Snell Raises An SNQ Is Contrary To The Record and Congress's Intent, And Thus Requires That This *Ex Parte* Reexamination Be Terminated

Congress intended that the substantial new question standard be judiciously interpreted to prevent cases of abusive tactics and harassment of patentees through reexamination. *In re Swanson*, 540 F.3d 1368, 1380-1381 (Fed. Cir. 2008) (*citing* H. R. Rep. No. 107-120, at 3). Thus, an argument already decided by the Office cannot raise a new question of patentability. *Ex parte Lam Research Corp.*, 2012 WL 1178196, slip at 5 (PTAB 2013) (citing *Swanson*, 540 F.3d at 1380; MPEP § 2242 (no substantial new question of patentability if "the same question of patentability has already been decided as to the claim").

The substantial new question requirement guards against repetition of issues and arguments that have been previously raised and overcome. *Lam,* at 5. Thus, the substantial new question standard clearly cannot be met by advancing a previously rejected interpretation of substantially the same teachings to reach a different conclusion as to obviousness. *See Ex parte*

Muzzy Products Corp., 2010 WL 3448876, slip op. at 6 (BPAI 2010). *See also* MPEP § 2242 I.b. ("[T]he same question of patentability may have already been decided by the Office where the examiner finds the additional (newly provided) prior art patents or printed publications are merely cumulative to similar prior art already fully considered by the Office in an earlier concluded examination or review of the claim."). Where, as here, a previously considered prior art *teaching* is being considered again for the same or similar purpose in reexamination, no substantial new question exists. *See Muzzy*, slip op. at 6.

For the reasons given above, Snell is *at best* cumulative of Boer and is being considered in the same way that Boer was considered in a number of IPRs of the '580 Patent, including the '518 IPR. Thus, nothing in Snell is sufficient to create an SNQ (even assuming incorporation by reference of the Harris Documents). The same is true of the other art included in the Office's alleged SNQs. *See* Akl, at ¶¶ 63-70.

MPEP §2246 *requires* the Office to articulate *in its Order* its rationale supporting each SNQ. As stated in MPEP §2246:

> In the examiner's decision, *the examiner must identify at least one substantial new question of patentability and explain how the prior art patents and/or printed publications raise such a question.* The examiner should indicate, insofar as possible, his or her initial position on all the issues identified in the request or by the requester (without rejecting claims) so that comment thereon may be received in the patent owner's statement and in the requester's reply. (emphasis added).

In the present case, the Office discharged this requirement with a *singular* explanation that Snell *alone* supported its alleged SNQs by comparing the Snell disclosure to the claims (but not to previously considered art). Order, at 8-11. Thus, the Office's reasoning that its alleged SNQs exist was based *solely* on its mistaken finding that Snell presents an SNQ. Significantly,

apart from recognizing that Snell, the Harris Documents, Kamerman, and Yamano had not been considered before (Order, at 4), the Office articulated no other basis for an SNQ, either in its Order or in its 3-31-17 Office Action.[8]

Where, as here, it is clear that the reasoning set forth in the reexamination Order is inadequate to support even a single SNQ, the reexamination proceedings should be terminated. In this respect, the Federal Circuit's decision in *In re Recreative Technologies Corp.*, 83 F.3d 1394 (Fed. Cir. 1996) is controlling. In that case, the Board attempted to "cure" a reexamination that should not have been granted in the first place by introducing a "new issue" at a later stage of the proceedings. In reversing the Board and finding that the reexamination should have been terminated, the Federal Circuit explained:

> … this procedure by the Board can not overcome the fact that reexamination should not have been granted …. Thus even on the Commissioner's argument that a rejection on the same reference but styled as lack of novelty instead of obviousness is a "new ground"—an interesting question that we do not reach—the requirement of § 303 was not met. It would eviscerate the statutory safeguard to permit the Board to cure an improper reexamination with the creation of a new issue at the appellate stage of the reexamination proceeding.

Id. at 1398-99. As was the case in *Recreative Technologies*, the Office in the present reexamination cannot "cure" its deficient reasoning set forth in its Order by setting forth a "new" explanation later in the process as to how the references raise SNQs, as doing so would deprive Patent Owner of its due process right to fully address such action. Under such circumstances,

[8] Again, neither the Order nor the 3-31-17 Office Action cites to or incorporates any part of the Request, except to merely identify the SNQs proposed by the Requestor, Order, at 8, and to provide certain claim term definitions, 3-31-17 Office Action, at 7.

where no SNQ exists, the Office lacks jurisdiction to proceed, and the present reexamination proceedings should be terminated.

F. None of the Art Cited in the Order Raises An SNQ

For the reasons given above, Snell and the Harris Documents are at best cumulative to the art previously and fully considered by the PTAB, *i.e.,* Boer and APA. *See supra*, at § II.A-C; Akl, at ¶¶ 47-62.

Kamerman also is cumulative of Boer. In fact, *Kamerman was Boer's co-inventor*,[9] and the rate control algorithm in Kamerman's presentation[10] (that aspect of Kamerman relied on in the 3-31-17 Office Action) was described in detail in the Boer patent. *See, e.g.,* Boer, col. 7, l. 12-col. 8. l. 16; Akl, at ¶¶ 64-68 (comparing Kamerman to Boer).

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[9] A portion of the cover of the Boer (with highlighting) is reproduced below.

United States Patent [19]
Boer et al.

[11] **Patent Number: 5,706,428**
[45] **Date of Patent: Jan. 6, 1998**

[54] **MULTIRATE WIRELESS DATA COMMUNICATION SYSTEM**

[75] Inventors: **Jan Boer**, Odijk; **Wilhelmus Josephus Diepstraten**, Diessen; **Adriaan Kamerman**, Nieuwegein; **Hendrik van Bokhorst**, Nijkerk; **Hans van Driest**, Bilthoven, all of Netherlands

[73] Assignee: **Lucent Technologies Inc.**, Murray Hill, N.J.

[21] Appl. No.: **615,408**

[22] Filed: **Mar. 14, 1996**

"Welcome to IEEE P802.11"; Working Group for Wireless Local Area Networks; Set-up on Dec. 17, 1996, update of May 20, 1997.

"Bell Labs Unveils 10-Megabit Wireless-Network Technology, Offering Five Times Today's Highest Data-Transmission Capacity"; ICA New Product Announcment, Apr. 22, 1997.

Primary Examiner—James P. Trammell
Assistant Examiner—Shah Kaminis
Attorney, Agent, or Firm—Christopher N. Malvone

[57] **ABSTRACT**

[10] It appears Kamerman was permitted to talk about the invention disclosed in the Boer patent once the application was filed. Such a procedure is typical with companies, particularly large companies like Lucent Technologies (assignee of the Boer patent and Kamerman's employer). *See* Akl, at ¶ 64, note 5.

The Yamano disclosure of a destination address (that aspect of Yamano relied on in the 3-31-17 Office Action is at best cumulative[11] of the disclosure in Boer of a destination address in the data field 214 of a message 200. That portion of Boer was considered in IPR2015-00518 as allegedly disclosing addressing a group of transmission sequences for an intended destination of the payload portion. Petition in IPR2014-00514 at 23 (citing Boer at 6:28-31). Thus, Yamano adds nothing to Boer's teachings with respect to claims 2 and 59 of the '580 Patent.[12] *See* Akl, at ¶¶ 69-70 (comparing the Yamano disclosure to that in Boer and Siwiak (a reference considered during prosecution of the '580 Patent).

Because the art identified in the alleged SNQs is cumulative to that previously considered and is being presented in the same light (based on the Order and 3-31-17 Office Action), even if the Office were to try to bolster its reasoning in an attempt to support an SNQ, such as exercise would be futile. Thus, the reexamination should be terminated as improvidently ordered.

[11] The term "at best" is used because, *inter alia*, the combination of Snell and Yamano requires some motivation to combine the two references, while having the destination address in the *same* reference, i.e., Boer, does not.

[12] The fact that the destination address of Yamano is in the preamble while the destination address of Boer is in the data field is not relevant to claims 2 and 59, which do not require a destination address in any particular portion of the "group of transmission sequences" (claim 2) or "message" (claim 59). In any case, such a disclosure was already before the Office in Siwiak. *See* Akl, at ¶ 69, note 7.

III. Broadest Reasonable Interpretation of Claims 2 and 59

During reexamination of an unexpired patent, the Office applies the broadest reasonable construction when determining the meaning of claim terms. MPEP § 2111. That is not to say, however, that the Office may construe claims so broadly that its constructions are *unreasonable* under general claim construction principles.[13] *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015). Even under the broadest reasonable interpretation, the Office's construction "cannot be divorced from the specification and the record evidence." *Id.* A construction that is "unreasonably broad" and which does not "reasonably reflect the plain language and disclosure" will not pass muster. *Id.*

To support its § 102(e) rejection, the Office relies on a claim construction that ignores substantially all of the claim limitations contrary to what was done by the PTAB in the multiple IPRs (now concluded favorably to Patent Owner with respect to claims 2 and 59) and contrary to the district court construction (now affirmed by the Federal Circuit). Neither the PTAB nor the

[13] The Examiner asserts that the claims being reexamined "are single means claims" (3-31-17 Office Action, at 6), which would render them *indefinite* because a "single means" claim covers *every conceivable means* for achieving the desired result. *Ex parte David Chater-Lea*, 2010 WL 665664 (BPAI 2010). If 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. *See Google, Inc. v. Function Media*, L.L.C., 2012 WL 1891077 (BPAI 2012); *Ex parte Webexchange Inc.*, 2014 WL 2946395 (PTAB 2014); and *Superior Communications, Inc., v. Voltstar Technologies, Inc.*, 2014 WL 5474770 (PTAB 2014). Rembrandt disputes that claims 2 and 59 of the '580 Patent are "single means" claims, or indefinite, as such a construction is clearly unreasonable. However, under the decisions set forth above, if the Examiner maintains her view that the claims are single means claims (tantamount to an improper indefiniteness rejection), she cannot issue a prior art rejection and these reexamination proceedings must be terminated.

court ignored the master/slave limitations in the claims and neither determined that the claims were "single means" claims, as now alleged by the Office. *See* 3-31-17 Office Action at 6-11. The Office does not explain why its positions are different than those of the PTAB or the district court, contrary to MPEP § 2258 I.G. (quoted *infra* § III.A, note 13).

As a specific example regarding the Office's failure to properly analyze the meaning of the claim terms, the Office concluded that it was "unable to locate any lexicographic definitions with reasonable clarity, deliberateness, and precision." 3-31-17 Office Action at 4. In fact, the district court drew just the opposite conclusion with respect to the meaning of "modulation method [] of a different type" based on the prosecution history. The Federal Circuit affirmed the district court's claim construction as follows:

> 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.
>
> ....
>
> 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*.

Rembrandt Wireless Tech. v. Samsung Elec. Co., No. 16-1729, at 7 (Fed. Cir. April 17, 2017) (rehearing denied) (emphasis added). In view of the Federal Circuit's determination, the Office's present claim construction in this reexamination cannot stand. *See infra* at § V.A-C ("Broadest Reasonable Interpretation of Claims 2 and 59"); Akl, at ¶¶ 18-27.

A. According No Patentable Weight To Most Of The Claim Limitations Is An Unreasonable Claim Construction

In several parentheticals, and without citation to any authority, the Office asserts that all of the limitations after "for" (in claim 2) and after "capable" (in claim 59) "do not further limit the structure of the transceiver" and are "not given patentable weight." 3-31-17 Office Action, at 10-11. Based on this analysis, the Office goes on to assert that the claims are met by *any transceiver capable of functioning as a master*. Simply put, this claim construction is completely divorced from the specification, and unreasonably broad. It is also completely at odds with the PTAB's institution decision in IPR2014-00518, which accorded *all* limitations of the claims patentable weight, and found that the additional limitations in dependent claims 2 and 59 were *decisive* in distinguishing those claims over the cited references. The Office fails to even acknowledge the PTAB's findings that accord all limitations patentable weight, let alone supply reasoning to support a different interpretation.[14] *See* 3-31-17 Office Action *passim*.

The failure to accord patentable weight to virtually all of the claim limitations on the ground that they are "functional," is also divorced from numerous decisions from the Office

[14] The 3-31-17 Office Action also is inconsistent with the district court's construction which, like the PTAB's, accorded patentable weight to all the claim limitations. *See Rembrandt Wireless Tech. v. Samsung Elec. Co.*, No. 2016-1729 (April 17, 2017); Claim Construction Order in *Rembrandt Wireless Tech. v. Samsung Elec. Co.* (Exhibit C). *See also* MPEP 2258 I.G. ("Where there is related litigation and a federal court has made a judicial interpretation of a disputed claim term, the examiner in treating the disputed claim term should set forth his or her reasoning by, for example, acknowledging the judicial interpretation and assessing whether the judicial interpretation is consistent with the broadest reasonable construction of the term. Moreover, if adopting a different claim construction than the judicial interpretation, the examiner should supply reasoning to support the different interpretation.").

interpreting the meaning of "*configured to*" in similar claims. In this regard, both claims 2 and 59 of the '580 Patent specify as follows:

> 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. (emphasis added).

The law is clear and well settled that where, as here, the term "*configured to*" is used to describe programming or structure required to perform a specified function, it cannot be ignored by the Examiner when applying the prior art. In *Ex parte Hosoito*, faced with similar claim language, the Board reasoned as follows:

> … the Examiner repeatedly dismisses all of the claim limitations that begin with "*configured to*" as "intended use and therefore *carries no patentable weight*." We disagree. To the extent that the Examiner's position is that these claims recite only general purpose control unit(s) as the claimed control units, determining unit, etc., *the Examiner's position is untenable*. Although it is well established that claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function, in order to satisfy the functional limitations in an apparatus claim, however, the prior art apparatus must be capable of performing the claimed function. As such, to be capable of performing the functional limitations in claim 1, *the control units or comparable structure must possess the necessary structure, that is, programming, to function as claimed*. (emphasis added)(citations omitted).

2012 WL 889723, slip op. at 3 (BPAI 2012) (citing *In re Schreiber*, 128 F.3d 1473, 1477-78 (Fed. Cir. 1997). *See also Ex parte Hider*, 2016 WL 6216592, slip op at 3 (PTAB 2016)(rejecting Examiner's position that limitations reciting structure "*configured to*" send data are non-limiting statements of intended use); *Ex parte Heyman*, 2016 WL 7487206, slip op. at 5 (PTAB 2016) (citing *Typhoon Touch Techs. v. Dell, Inc.*, 659 F.3d 1376, 1380 (Fed. Cir. 2011) (Board rejecting Examiner's position that functional recitations using "for," "*configured to*" or "operable" are intended use language entitled to no patentable weight); *Ex parte Eckardt*, 2016

WL 827260, slip op. at 2 (PTAB 2016) (citing *K-2 Corp. v. Solomon SA*, 191 F.3d 1356, 1363 (Fed. Cir. 1999) (Board rejecting Examiner's position "that the '*configured to*' language in the claim is a recitation of intended use that does not patentably distinguish the claimed invention from the prior art").

In *Ex parte Black*, 2007 WL 4178434 (BPAI 2007), the Board explained why limitations describing a device as "*configured to*" perform certain functions cannot be ignored. Specifically, in rejecting the Examiner's finding that such limitations could be dismissed as "intended uses," the Board stated:

> The Examiner alleges that Santini '838 teaches all of the limitations of claim 8. The Examiner errs, however, in reading "configured to" as "capable of," *i.e.*, the Examiner reads it as merely being limited to intended use. Specifically, according to the Examiner:
>
> > With respect to the recitations … "configured to release", "configured to activate" and "configured to sense" these recitations are intended use of the circuit … If the prior art structure is capable of performing the intended use, then it meets the claim. Therefore, Santini … reads on the instantly recited claims.
>
> "Configure," however, is defined as to "design, arrange, set up, or shape with a view to specific applications or uses." That definition is consistent with the case law cited by Appellants to support their assertion that "a processor that is programmed to provide a particular function is structurally different than other processor circuits that are programmed to provide a different function."

Ex parte Black, 2007 WL 4178434, slip op. at 2 (BPAI 2007). *See also Ex parte Kumar*, 2015 WL 729625, slip op. at 3 (PTAB 2015)(rejecting Examiner's reasoning that "*configured to*" expressions in the claims could be met by any device "capable of being adapted to provide the recited function," noting that a "programmed machine is structurally different from a machine without that program"); *Ex parte Hahn-Carlson*, 2013 WL 5402246, slip op. at 1 (PTAB 2013)(rejecting Examiner's determination that "*configured* and arranged to" language should not

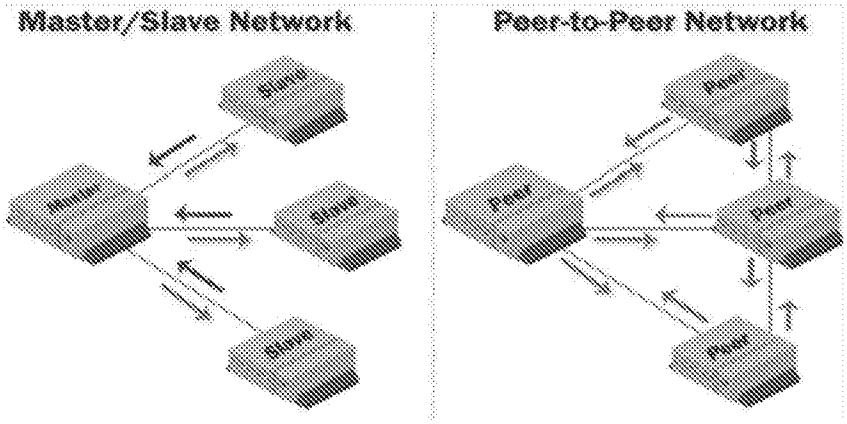
be given patentable weight because it "imparts functional characteristics to the underlying processor structure, and thus are not intended use."); *Ex parte Stahl*, 2012 WL 177838, slip op. at 2 (BPAI 2012)("A computing unit that is *configured to* perform the steps recited in claim 17 is structurally different from a computing unit that is not configured or otherwise set up to perform the recited steps. Thus, the claim language at issue is not merely an intended use but rather imparts structure to the claimed apparatus."); *Ex parte Hodsdon*, 2009 WL 383716, slip op. at 2 (BPAI 2009) (rejecting Examiner's finding that a computer "configured to" perform a certain function is merely a statement of intended use which need not be given patentable weight).

Simply put, the Office's position that most of the limitations of the challenged claims can be ignored as "intended uses," and that the claims are met by *any transceiver functioning as a master,* is contrary to the law and at odds with the analysis of the PTAB in IPR2014-00518 (and that of the district court in *Rembrandt Wireless Tech. v. Samsung Elec. Co*). The limitations of the challenged claims that have been dismissed as "intended uses" cannot be ignored. In addition, such limitations can only be met by prior art that is programmed or otherwise set up to perform the functions specified by such limitations.

B. The Broadest Reasonable Interpretation of "Master/Slave"

The claim term "master/slave" should be given its plain and ordinary meaning as one skilled in the art would have understood it in the context of the '580 Patent. In the field of data communications, the electrical devices can be arranged in various network configurations. The '580 Patent and its claims are directed to a network historically-referred to in the computer industry as a *master/slave* network because one centralized "master" device controls all network communications with the other subordinate "slave" or "tributary" devices. The slave devices do

not directly communicate with one another, but instead only communicate with the master. This is very different from a *peer-to-peer* network, in which network control is distributed amongst the devices in the network and each device communicates directly with its peers:



Persons of ordinary skill at the relevant time would have recognized that the plain and ordinary meaning of a "master" is "a device which controls all communications with other devices (*i.e.*, slaves) in a network" and the plain and ordinary meaning of a "slave" is "a device whose network communications are controlled by a master." Akl, at ¶ 21. That is the way "master/slave" is used in the specification of the '580 Patent. For example, the device disclosed in the '580 Patent includes "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." '580 Patent at Abstract. "[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." *Id.* at 4:7-9. Similarly, the Summary of the Invention section of the '580 Patent states:

> 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. [*Id.*at 2:24-29 (emphasis added).]

This definition is supported by numerous technical sources. For example, the IEEE Wireless Dictionary states:

> "master: In the context of wireless protocols, this refers to a device that controls the operation of a network. …"
>
> "slave: In the context of wireless protocols, a device that is dependent on another device for control, usually called the master. …"

E.g., IEEE Wireless Dictionary at 55, 80; *see also* Comprehensive Dictionary of Electrical Engineering (1999) at 397 ("master: the system component responsible for controlling a number of others (called slaves)."); Modern Dictionary of Electronics (1997) at 932 ("slave: a component in a system that does not act independently, but only under the control of other similar components."). Akl, at ¶ 23.

Understanding the claimed master/slave configuration is key to understanding the problem Gordon Bremer identified and solved. The Summary section of the '580 Patent states:

> 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. ['580 Patent at 2:24-33 (emphasis added).]

Indeed, the '580 Patent uses the term "master" 94 times, the term "slave" 24 times, and the term "trib" 89 times. Further, the master/slave configuration is explicitly recited in claims 2

and 59. *E.g.*, '580 claim 1 (from which claim 2 depends) ("a communication device capable of communicating according to a *master/slave relationship....*") (emphasis added). Persons of ordinary skill would have recognized from the above disclosures that the claimed master/slave configuration is an important part of claims 2 and 59. Akl, at ¶ 25.

C. The Federal Circuit Has Determined That The Prosecution History Of The '580 Patent Unambiguously Defines Modulation Methods Of "A Different Type" To Mean Different Families Of Modulation Methods

In *Rembrandt Wireless Tech. v. Samsung Elec. Co.*, No. 2016-1729 (April 17, 2017), the Federal Circuit analyzed the prosecution history of the '580 Patent, and confirmed that it includes an *unambiguous* statement that defines "different types of modulation methods" as "different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods." Slip op. at 9. The Federal Circuit reasoned as follows:

> 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." 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*.
>
> … 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. 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. Indeed, the term "i.e." is Latin for *id est*, which means "that is." … *The context here strongly supports the conclusion that Rembrandt used "i.e." to define the "different types" limitation* ….
>
> * * *
>
> 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." [Slip op. at 9 (emphasis added; citations omitted).]

The 3-31-17 Office Action does not acknowledge (let alone analyze) applicant's unambiguous remarks in the prosecution history defining "different types" of modulation methods. Instead, it simply states:

> After careful review of the original specification, the *prosecution history*, and unless expressly noted otherwise by the Examiner below,[15] 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*. [3-31-17 Office Action, at 4 (emphasis added).]

[15] No lexicographic definitions were identified later in the 3-31-17 Office Action.

To the extent the Examiner's conclusion that "Applicants are not their own lexicographer" was based on her belief that applicant's definitional statement in the prosecution history lacked "*reasonable clarity, deliberateness, and precision*," the Examiner's reasoning cannot stand, as it is squarely at odds with the Federal Circuit's determination that Rembrandt *unambiguously defined* the "different types" limitation in the prosecution history. As explained below, and in light of the Federal Circuit's opinion, the *only reasonable* construction of "different types" is the one Rembrandt explicitly set forth in the prosecution history. Akl, at ¶ 20.

1. The Prosecution History Defined "Different Types"

The original claims of the '580 Patent required a first modulation method that was "different" from a second modulation method, but did not require "different ***types***" of modulation methods. For example, claim 1 required in material part:

> 1. A communication system, comprising:
> a transmitter capable of transmitting at least two modulation methods, wherein the at least two modulation methods comprise a first modulation method and a second modulation, wherein the second method is ***different*** than the first modulation method, …

US Application Serial No. 12/543,910, Claim 1 (emphasis added).

In the first Office Action, a number of claims were allowed, including Claim 1 and its dependent claims. A significant number of other claims were rejected under §§ 102 and 103 based on U.S. Patent No. 5,537,398 to Siwiak ("Siwiak"). Siwiak disclosed a messaging system for a plurality of geographically distributed transmitters designed to transmit in a first modulation format, such as FM (frequency modulation) during a first transmission portion, and in a second modulation format, such as OFDM (orthogonal frequency division multiplexing),

during a second transmission portion. *See* Siwiak Abstract. In response, many of the claims were amended to further distance them from Siwiak. The amendments to claim 1 (shown below) are illustrative of the amendments made to further distance the claims from Siwiak:

> 1. (Currently Amended) A communication ~~system~~ 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 ~~transmitter capable of transmitting~~ 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, ~~and~~ wherein the ~~first transceiver is configured to transmit~~ transmissions comprise groups of transmission sequences, each group of said groups of transmission sequences structured with 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 ~~that~~ 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, ~~in~~ modulated according to the second modulation method, wherein the second sequence is transmitted after the first ~~data~~ sequence. [March 1, 2011 Reply at 2 (emphasis added).]

Specifically, the narrowing amendments to Claim 1 fall into three general categories: (i) the claim was amended to require that the first and second modulation methods were "of different types" of modulation, rather than merely requiring that the modulations were "different;" (ii) the communication system and transceiver were narrowed to require a

master/slave relationship; and (iii) the claim was amended to specifically require that the indication of an impending modulation change was located in the first portion of the transmission sequence. Each of these amendments further distinguished the claim from Siwiak. In conjunction with this amendment, the applicant made clear its intention, stating it was adding additional limitations "to more precisely claim the subject matter":

> 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*. [March 1, 2011 Reply at 20 (emphasis added).]

This prosecution history statement from the original '580 prosecution clearly reflects a narrowing of the claims to require two different ***types*** of modulation methods, and further clarified that "different types of modulation methods" refers to "different families of modulation techniques" in a definitional *i.e.* statement. Akl, at ¶ 20.

2. Under The Broadest Reasonable Construction, A Definition Governs If It Is Set Forth In The Prosecution History

As the Federal Circuit has explained, as part of its determination of the broadest reasonable construction, "[t]he PTO *should also consult the patent's prosecution history* in proceedings in which the patent has been brought back to the agency for a second review." *Microsoft Corp.,* 789 F.3d at 1298; *see also Straight Path IP Group, Inc. v. Snipet EU S.R.O.*, 806 F.3d 1356, 1262 (Fed. Cir. 2015)(stating that prosecution history "is to be consulted even in determining a claim's broadest reasonable interpretation"); *Mylan Pharamceuticals v. Yeda Research & Development*, 2015 WL 5169139 (PTAB 2015)(noting that the Federal Circuit

"instructed that we should "also consult the patent's prosecution history in proceedings in which the patent has been brought back to the agency for a second review," and agreeing "with Patent Owner that, during prosecution, the applicant clearly disavowed" certain claim scope); *Google v. Motorola Mobility*, 2105 WL 4976582 (PTAB 2015)("[s]ince Patent Owner filed its Response and Petitioners filed their Reply, the Federal Circuit has admonished that "[t]he PTO should also consult the patent's prosecution history in proceedings in which the patent has been brought back to the agency for a second review" (citing *Microsoft Corp.,* 789 F.3d at 1298)).

Moreover, under the broadest reasonable construction, where the patentee sets forth a definition in either the specification *or* prosecution history, that definition governs. *Cisco Systems, Inc. v. AIP Acquisition, LLC*, 2014 WL 2364452, at *6 (PTAB May 27, 2014); *accord Advanced Fiber Techs. Trust v. J&L Fiber Servs.*, 674 F.3d 1365, 1374 (Fed. Cir. 2012). The Federal Circuit has repeatedly held that an inventor can act as his own lexicographer if he uses a "special definition of the term [that] is clearly stated in the patent specification or file history." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

Further, in *Abbott Labs. v. Novopharm Ltd.*, 323 F.3d 1324 (Fed. Cir. 2003), the Federal Circuit held that a patent specification's use of the letters "i.e." (Latin for "that is") in conjunction with a claim term typically connotes a binding definition. *Id.* at 1330. In *Abbott*, the patentee argued for a definition that was different than it had given in an "i.e." parenthetical in the specification, while the accused infringer argued that the "i.e." definition was controlling. The Court held that "i.e." defined the claim term "co-micronization," which was "in fact explicitly defined at column 1, lines 35-38, of the '726 patent." *Id.*

Given the Federal Circuit's analysis of the prosecution history of the '580 Patent, there can no longer be any serious dispute that Rembrandt's use of "i.e." in the prosecution history of the '580 Patent was indeed definitional and clear. Akl, at ¶ 20.

3. A Construction That Equates "Different Modulation Methods" With "Different *Types* Of Modulation Methods" Is Unreasonably Broad Because It Reads "Types" Out of The Claims

The claims themselves make it apparent that the inclusion of the word "***types***" was purposeful and must be given meaning. The requirement that the first and second modulation methods constitute "different types" of modulation methods appears in independent claims 1 and 58, but not in other '580 claims. Independent Claim 40, by way of contrast, requires only "a second modulation method that is different than the first modulation method." Thus, claim 40 only specifies that the first modulation method and the second modulation are "different," whereas claims 1 and 59 require that the first and second modulation methods are "of different types." Thus, "different types" must mean something more than that the modulation methods are "different" in some respect. Akl, at ¶ 20.

Moreover, a construction that ignores or gives no weight to claim terms is improper. *PPC Broadband, Inc. v Corning Optical Communications RF, LLC*, 815 F.3d 734, 744 (Fed. Cir. 2016 (claims expressly require that "continuity member … *maintains* a continuous electrical connection," which the Board declined to require in its treatment of claims) (emphasis in original); *In re Buszard*, 504 F.3d 1364, 1367 (Fed. Cir. 2007) (claims specifically require "a *flexible* polyurethane foam reaction mixture" which cannot be broadly construed to cover a rigid foam reaction mixture) (emphasis added). If "different types of modulation methods" is construed the same as "different modulation methods," then the word "type" has not been given

any weight. To the extent that the Examiner's "incompatible"[16] construction equates "different types" of modulation methods with modulation methods that are simply "different," it is legally improper.

4. Differences Between The BRI And *Philips* Are Irrelevant To Whether The '580 Prosecution History Unambiguously Defines "Different Types"

While there may be differences between the broadest reasonable construction ("BRI") standard applied by the Office, and the *Philips* standard applied in infringement cases, those differences do not impact the claim construction analysis with respect to "different types." More specifically, where, as here, an applicant unambiguously defines a claim limitation in the intrinsic record, that definition governs *regardless* of whether the claim is being interpreted under the BRI or *Philips.* In addition, it would make no sense for the Office to argue that whether a particular definition is or is not ambiguous differs depending on whether one is applying the BRI or *Philips*. In this respect, ambiguity (or the lack thereof) is binary: Something either "is" or "is not" ambiguous, there is no in between.

[16] In advancing its "incompatible" construction, the Office has not defined "incompatible" nor explained whether it means anything other than "different." In any case, there is no evidence that the cited references disclose or were addressing incompatible modulation methods, as that term is used in the '580 Patent. In that context, first and second modulation methods are incompatible when one modem using the first method cannot communicate with a second modem using the second method. *See* the '580 Patent, col. 1, ll. 45-65. Importantly, "incompatible" as used in the '580 Patent cannot be considered in a vacuum but must be considered in the context in which it is used. *See infra* at § III.C; Akl, at ¶ 26.

5. The Office's Construction Of "Different Types" Cannot Be Justified By The PTAB's Final Written Decision In The '518 IPR

The Office's claim construction cannot be justified based on the PTAB's Final Written decision in the '518 IPR. When the PTAB issued its Final Written Decision in the '518 IPR, it did not have the benefit of the Federal Circuit's decision regarding the construction of the '580 Patent claims. In addition, the PTAB's findings that "Patent Owner's purported 'definition' is *anything but clear or precise*" (Final Decision, at 8) and that the "prosecution history is, *at best ambiguous*" (Final Decision, at 9) cannot be squared with the Federal Circuit's conclusion that the patent applicant *unambiguously* defined the "different types" limitation in the prosecution history. On the legal question of whether the definition of "different types" set forth in the prosecution history is or is not ambiguous, the PTAB's decision in the '518 IPR has been superseded and effectively has been overruled by the Federal Circuit.

For these reasons, and in light of the Federal Circuit's opinion construing the claims of the '580 Patent, Rembrandt respectfully submits that the *only reasonable* construction of "different types" of modulation methods is the one Rembrandt explicitly set forth in the prosecution history namely, "different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods." *See* Akl, at ¶ 20. Based on this construction alone, all the rejections in the 3-31-17 Office Action must be withdrawn because none of the cited art discloses two types of modulation methods. *See* the discussion *infra* at § VI.B; Akl, at ¶¶ 121-130.

IV. Description of the Invention Disclosed and Claimed in the '580 Patent

A. A Brief Explanation of the State of Master/Slave Art Prior to the '580 Invention

According to the '580 Patent, prior art master/slave systems could only communicate when all network devices used a single common type of modulation method. *See* '580 Patent at 1:27-65, 3:40-48. Thus, if a slave using an additional type of modulation method were added to the network, the new slave could not easily communicate with the master using the different modulation type because it would not be compatible with the common type of modulation method. *Id.* Annotated figure 1 of the patents shows such a prior art master/slave system, where all devices in the network communicate using only a single common type of modulation method (such as the amplitude modulation used by AM radio), even though some of the devices may be capable of communication via other types of modulation methods:

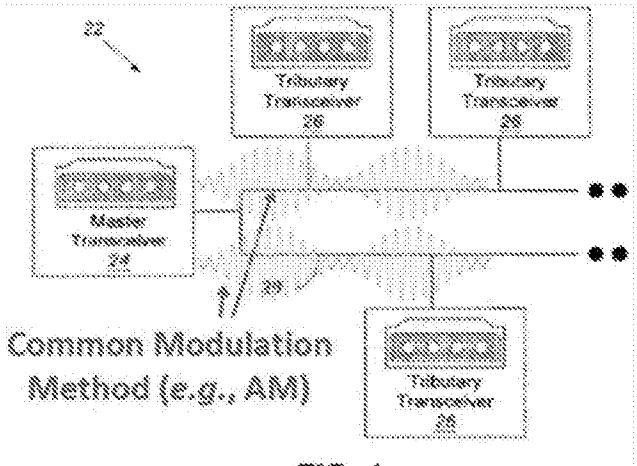


FIG. 1
Prior Art

The state of master/slave art prior to the '580 invention is described in the '580 Patent at col. 3, l. 40-col. 4, l. 50, with reference to Fig. 2. Akl, at ¶¶ 78-80.

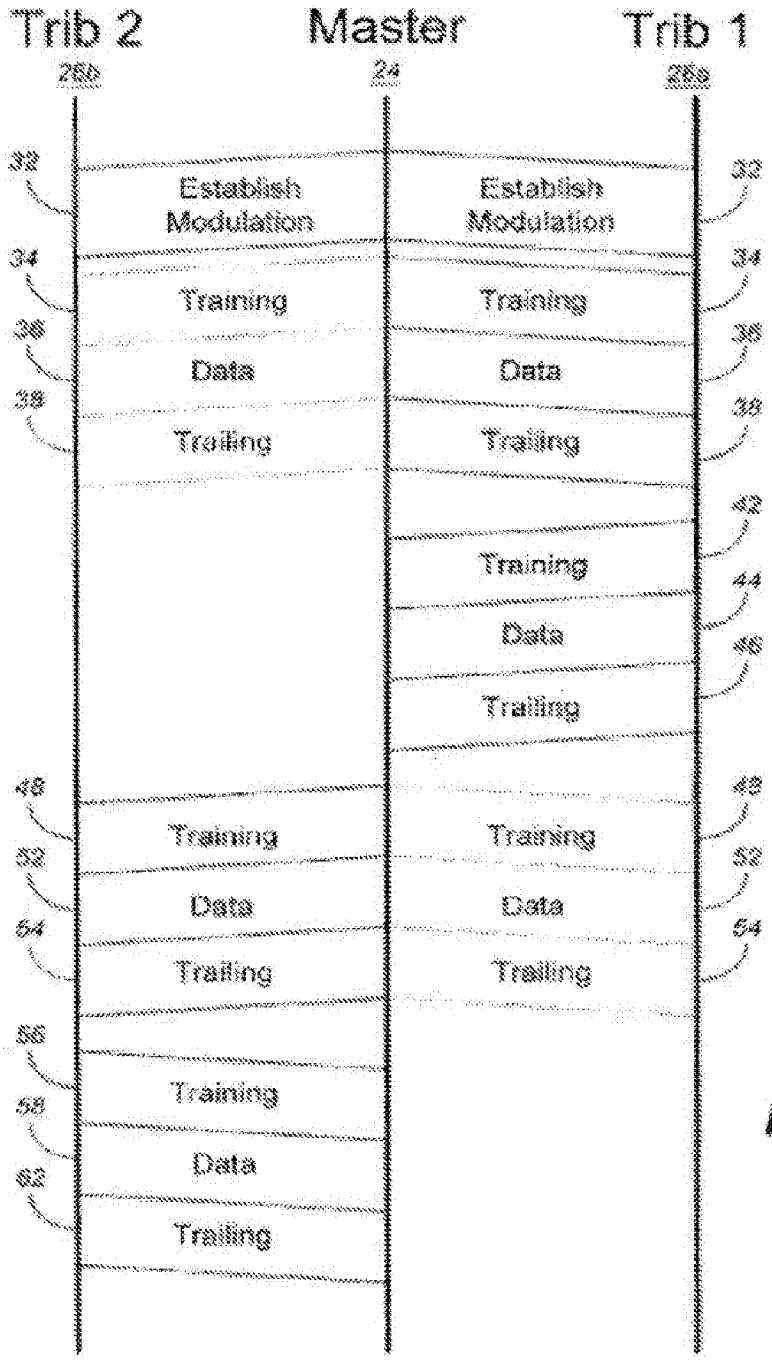


FIG. 2

Briefly, Fig. 2 discloses a polled multipoint master/slave system. At the beginning of a session, the master established a common modulation type for communication with all its slaves

(32 in Fig. 2). All slaves were identical in that they shared a common modulation with the master.

The master then communicated with its slaves, one at a time, by sending a training sequence with the address of the slave with which it wants to communicate, followed by data, and finally a trailing sequence to end the communication. (34-38 in Fig. 2) A slave could not initiate a communication, but, if the slave were polled by the master, it could respond to the master in a similar fashion. (42-46 in Fig. 2) When the master had completed its communications with the first slave, it could then communicate with a second slave using the *same* negotiated common modulation (48-54 in Fig. 2). Akl, at ¶ 80.

B. The Problem Identified in the '580 Patent

Again, with reference to FIG. 2, the problem Gordon Bremer both identifies and addresses in his detailed description is as follows:

> Consider the circumstance in which master transceiver 24 and trib 26b share a common modulation type A while trib 26a uses a second modulation type B. When master transceiver attempts to establish A as a common modulation during sequence 32, trib 26a will not be able to understand that communication. Moreover, trib 26a 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 26a because trib 26a will never transmit training sequence 42, data 44, and trailing sequence 46 due to the failure of trib 26a 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. [col. 4, l. 55-col. 5, l. 6]

Summarizing the incompatibility problem Gordon Bremer identified:

a) If the master in the APA wanted to communicate with a slave using a second modulation method that was incompatible with that used to communicate with its other slaves, it was necessary to tear down the session and begin a new session. Doing so was disruptive.

b) If the APA master attempted to communicate using an incompatible modulation type without beginning a new session, the other slaves would not understand the attempted communications and would not respond to any polling directed at them, resulting in repeated attempts by the Master to communicate. In addition, the slaves may be confused by the transmissions and make improper communication attempts.

One of ordinary skill in the relevant art would have understood that FIG. 2 and its description do not disclose or suggest the incompatibility problem identified by Gordon Bremer, or even the goal of using incompatible modulations in one master/slave session. Akl, at ¶¶ 81-83.

C. The '580 Solution to These Incompatibility Problems in a Master/Slave Setting

In the context of the master/slave system described above, Gordon Bremer invented "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" (col. 2, ll. 17-20). Mr. Bremer solved the above-described incompatibility problem with his claimed master/slave communication system in which slaves can seamlessly communicate over a network through a master using multiple types of modulation methods, thereby permitting selection of the modulation type best suited for a particular application (col. 1, l. 66- col. 2, l. 33). Akl, at ¶ 84.

The claimed invention of the '580 Patent is further described with reference to Figure 2 and in Figures 3-8 and the written description. Specifically, Figures 3 and 4 show block diagrams

of the master transceiver and tributary transceivers, while Figure 5 shows a ladder diagram illustrating the operation of those transceivers. Figures 6 and 7 show state diagrams for exemplary tributary transceivers. And Figure 8 shows a signal diagram for exemplary transmissions. Akl, at ¶ 85.

Annotated FIG. 4 shows an embodiment of the patented technology where some devices in the network communicate using one type of modulation method (*e.g.*, amplitude modulation used by AM radio), while other devices communicate using a different type of modulation method (*e.g.*, the frequency modulation used by FM radio):

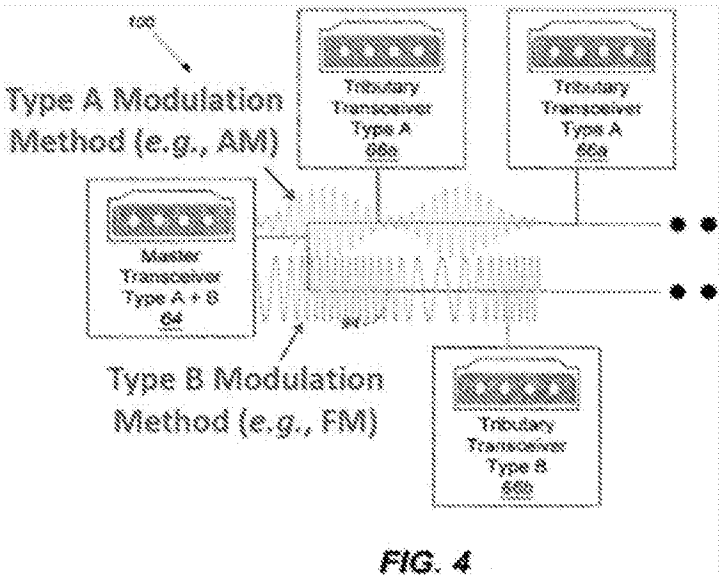
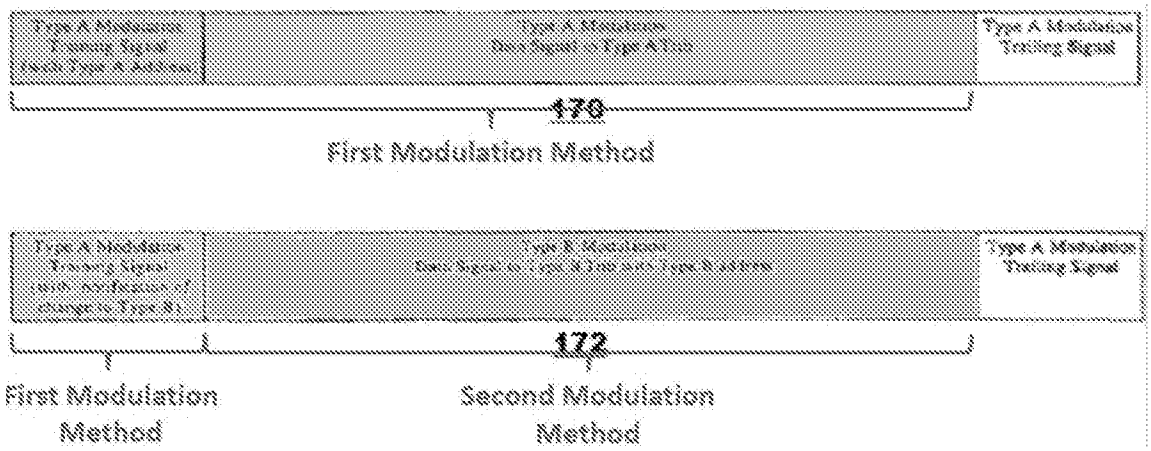


FIG. 4

Col. 5, ll. 47-56. Such a system provides for greater efficiency, seamless communication with all devices, backward-compatibility, and decreased costs. Col. 2, ll. 50-57; *see also* col. 1, l. 66-col. 2, l. 15. Akl, at ¶ 86.

Annotated FIG. 8 shows two communications intended for different slaves. The first communication 170 uses a first type of modulation method for both the initial training signal and

the subsequent data signal, while communication 172 uses the first type of modulation method for the training signal and the second type of modulation method for the data signal:



Col. 4, ll. 21-24, 42-44, Fig. 8. Information in the training signal indicates whether there will be an impending change from the first type of modulation method to the second type of modulation method. *Id.* (training signal includes "notification of change to Type B" modulation method). Akl, at ¶ 87.

Mr. Bremer's solution is captured and claimed in his seamless "switches" from one modulation type to another and is described with reference to Fig. 5:

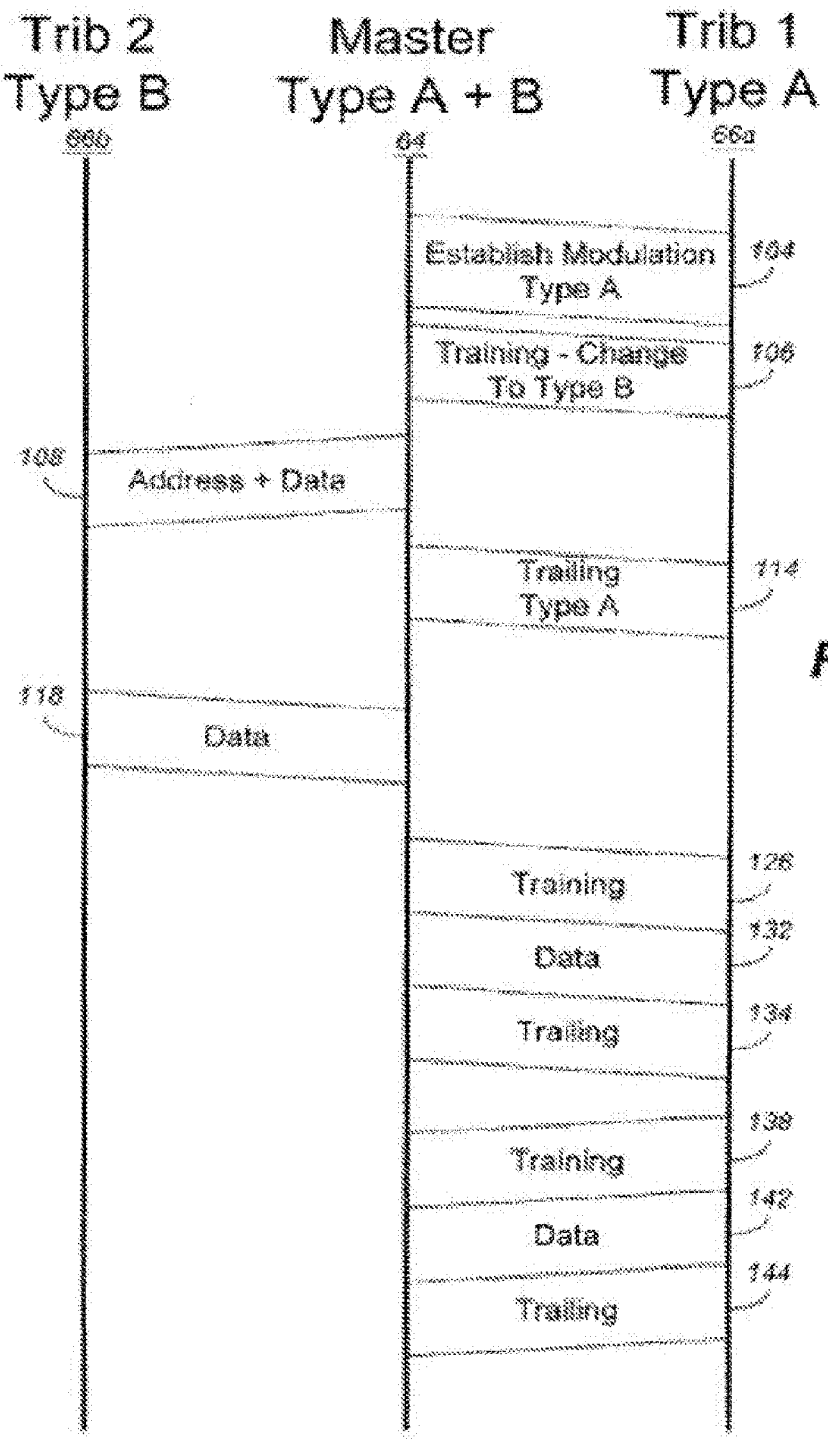


FIG. 5

With reference to FIG. 5, if the Master is communicating with a Type A trib ("Trib 1 Type A") using a negotiated first modulation type A in the normal fashion and then wants to

communicate with a Type B trib ("Trib 2 Type B"), the Master transmits "first information" comprising a "*first sequence*" modulated according to the "first modulation method" (one that the Type A trib understands) comprising "*a first sequence*" that "indicates an impending change" to a second modulation method (illustrated as 106). The Master then transmits to the Type B trib "second information for at least one group of transmission sequences compris[ing] *a second sequence* that is modulated according to the second modulation method," which is "a different type than the first modulation method." In the Fig. 5 embodiment, the "second sequence" is illustrated as 108 and uses the second type modulation method, i.e., one that the Type B trib can understand and Type A cannot. Akl, at ¶ 88.

It is at this point in the embodiment of Fig. 5 that the limitations of claim 2 (and similarly claim 59) come into play. To satisfy claim 2, the transceiver must be "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*." Akl, at ¶ 89.

Again, with reference to Fig. 5, after the Master completes its communication with a Type B trib using Type B modulation (transmission sequence 108), the Master sends a "third sequence" to inform Type A trib that "communication from the Master has reverted to the first modulation method" (illustrated as 114, 126-132). Akl, at ¶ 90.

The '580 specification describes the claimed switches as follows:

> "To switch from type A modulation to type B modulation, master transceiver 64 transmits a training sequence 106 to type A tribs 66a in which these tribs are notified of an impending change to type B modulation. … After notifying the type A tribs 66a 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 66b. .... [Col. 6, ll. 3-12]
>
> .... If, however, master transceiver transmits a training sequence in which the type A tribs 66a-66a 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 66a returns to state 122 where it awaits a training sequence." [Col. 6, ll. 41-48]
>
> "To initiate a communication session with a type A trib 66a, master transceiver 64 transmits a training sequence 126 in which an address of a particular Type A trib 66a is identified. The identified Type A trib 66a recognizes its own address and transitions to state 128 to receive data from master transceiver 64 as part of sequence 132." [Col. 6, ll. 49-54]

Thus, with reference to Fig. 5 (and using the language of claim 2), Mr. Bremer's switches include:

a) "a first sequence" sent by the master using the first modulation method to inform the Type A tribs of "an impending change" to a second modulation method – one that is incompatible with the first -- telling Type A tribs to ignore the second message's "second sequence" which they cannot understand and is not intended for them;

b) "a second sequence" sent by the master using the second, incompatible modulation method to the Type B trib -- one that does understand the communication; and

c) "a third sequence" sent by the master using the first modulation method to inform Type A tribs that "communication from the Master has reverted to the first modulation method."

Akl, at ¶ 92. The combination of Gordon Bremer's claimed sequences captures his solution to the incompatibility problem, i.e., switching from one modulation type to another incompatible modulation type when switching from one trib type to another. None of the cited references discloses or suggests either the problem Mr. Bremer set out to solve in the master/slave setting,

or his solution to that problem. (*See* '580 Patent at col. 5, l. 57 – col. 7, l. 3 (describing FIG. 5); Akl, at ¶ 93).

V. The Evidence Is Not Sufficient to Establish That The Harris Documents Were Published Because There Is No Evidence That Either Was Accessible to The Relevant Public and Thus Snell's Attempted Incorporation by Reference Fails

Neither Harris AN9614 nor Harris 4064.4 qualifies as prior art under 35 U.S.C. § 102 because the evidence is not sufficient to establish that either was published, i.e., made available to the interested public, as required by statute.[17] In order to prove that a document is a publication under § 102, the document must have been "disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, can locate it." *In re Wyer*, 655 F.2d 221, 226 (CCPA 1981) (quoted in MPEP § 2128). *See also Bruckelmyer v. Ground Heaters, Inc.*, 445 F.3d 1374, 1378 (Fed. Cir. 2006) (quoting *In re Wyer*, 655 F.2d 221, 226 (CCPA 1981)); *Ex parte Jennings*, Appeal 2007-0064, 2007 WL 774798, at *2-3 (BPAI Mar. 9, 2007); *Ex Parte Textron Innovations, Inc.*, Appeal 2010-011891, 2011 WL 2095629, at * 21-22 (BPAI May 23, 2011). Public accessibility is the "touchstone in determining whether a reference constitutes a 'printed publication' bar under 35 U.S.C. § 102." *In re Hall*, 781 F.2d 897, 898-99 (Fed. Cir. 1986), quoted in *SRI Int'l, v. Internet Sec. Sys.*, 511 F.3d 1186, 1194 (Fed. Cir. 2008). *See also In re Lister*, 583 F.3d 1307, 1316-17 (Fed. Cir. 2009) (rev'g the Board's rejection because the government failed to make a prima facie case that the relied-upon reference was publicly accessible prior to critical date); *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 936

[17] The plain meaning of "publication" requires that a document be made accessible to the public to be considered a publication. *See, e.g.,* American Heritage Dictionary of the English Language (5th ed. 2016) (Houghton Mifflin Harcourt Publishing Co.) ("publication" means the act of making public).

(Fed. Cir. 1990) ("A document, to serve as a 'printed publication', must be generally available."); MPEP § 2128.02.

The 3-31-17 Office Action contains no discussion addressing (let alone establishing) public accessibility of the Harris Documents. The Order reasoned that the Harris Documents are prior art simply because they "are incorporated by reference by Snell."[18] Order, at 4. As explained below, the mere attempted incorporation by reference of the Harris Documents into Snell does not transform the Harris Documents into prior art. The burden to establish public accessibility of the Harris Documents (i.e., Harris AN9614 and Harris 4064.4) is on the patent challenger. *See, e.g., Ex parte Trend Micro*, Appeal 2012-005205, 2012 WL 2991616, at *3-4 (BPAI July 17, 2012); *Ex parte Spalding*, Patent Interference No. 104,699, 2002 WL 230978, at *5-6 (BPAI 2002). In this case, the Office Action fails to meet that burden.

Nothing on the face of either Harris Document evidences that it was publicly accessible prior to the priority date of the '580 Patent and, thus, available as a § 102 reference. The mere inclusion of an unregistered copyright date is not sufficient. Snell's attempted incorporation by reference of the Harris Documents is also ineffective to render them "printed publications," because documents such as the Harris Documents, which are not publications (in the legal

[18] Although pages 29-32 of the Request contained additional arguments that the Harris Documents were "printed publications," those portions of the Request were *not* incorporated by reference in the 3-31-17 Office Action. While the Office Action has not adopted or incorporated these additional arguments, in an effort to expedite this proceeding, Rembrandt provides preliminary remarks responsive to Requestor's additional arguments on this issue. Should the Examiner adopt some or all of Requestor's additional arguments relating to the Harris Documents being "printed publications" in a future Office Action, the Patent Owner reserves the right to supplement the points set forth in this Reply.

sense), cannot be incorporated by reference, and any attempt to do so fails. Finally, Snell's submission of the Harris Documents to the U.S. Patent and Trademark Office ("USPTO") in an Information Disclosure Statement ("IDS") during the prosecution of Snell, which resulted in the Harris Documents being included in the Snell file wrapper and listed on the Snell cover, also fails to establish public accessibility of the Harris Documents *at the time the Snell application was filed* (or any time before the Dec. 5, 1997, priority date of the '580 Patent). In fact, there is no evidence in the record of their public accessibility prior to the issuance of the Snell patent, which did not occur until Nov. 9, 1999 (well after the priority date of the '580 Patent).

A. Nothing in the Harris Documents Demonstrates Accessibility to the Relevant Public

The "March 1996" and "October 1996" dates on Harris AN9614 and Harris 4064.4, respectively, and their 1996 copyright notices by Harris Corporation are not sufficient to establish a date of dissemination or accessibility to "persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence." *Wyer*, 655 F.2d at 226. Unlike a publication date, a copyright date merely establishes "the date the document was created or printed." *Hilgraeve, Inc. v. Symantic Corp.*, 271 F. Supp. 2d 964, 975 (E.D. Mich. 2003). *See also Ex parte Rembrandt Gaming Technologies, LP*, Appeal 2014-007853, Reexamination Control No. 90/012,379 at 5 (PTAB December 3, 2014) ("the 1993 copyright date in Tequila Sunrise does not show the requisite availability in 1993"); *ServiceNow, Inc. v. Hewlett-Packard Co.*, IPR2015-00716, Paper No. 13 at 17 (PTAB Aug. 26, 2015) ("we are not persuaded that the presence of a copyright notice, without more, is sufficient evidence of public accessibility as of a particular date"). In this case, there is no evidence that the copyrighted material was ever

registered or that the documents were deposited with the Library of Congress. Lacking such evidence, a copyright notice has little, if any, evidentiary value.

Accordingly, the dates and copyright notices on the Harris Documents merely establish the dates they were created or printed, and do not establish that they were disseminated or otherwise made available to the relevant public by those dates.

B. No Other Cited Evidence Remedies the Above-Described Shortcomings of the Harris Documents

Harris Semiconductor submitted the Harris Documents to the Office on March 17, 1997, in an IDS during the prosecution of Snell. While that submission apparently resulted in the Harris Documents being included in the Snell file wrapper and listed under "Other Publications" on the cover of Snell, that handling of the Harris Documents in the Office does not establish their public accessibility. Neither does the fact that Snell refers to Harris 4064.4 as "a publication," Snell at 1:50-54, 5:13-17, and to Harris AN9614 as being part of "the Harris PRISM 1 chip set literature." *Id.* at 4:65-5:7. Like the dates and copyright notices of the Harris Documents, these statements fail to establish that the documents were publicly accessible any time prior to the issuance of the Snell patent, which occurred *after* the priority date of the '580 Patent.

First, the submission of the Harris Documents in an IDS does not demonstrate that they were prior art publications because the "[m]ere listing of a reference in an information disclosure statement is not taken as an admission that the reference is prior art against the claims." MPEP § 2129(IV) (citing *Riverwood Int'l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1354-55 (Fed Cir. 2003) (listing of applicant's own prior patent in an IDS does not make it available as prior art absent a statutory basis). *See also* 37 CFR § 1.97(h) ("The filing of an information disclosure statement shall not be construed to be an admission that the information cited in the statement is,

or is considered to be, material to patentability as defined in § 1.56(b).")). Moreover, although the Harris Documents were listed as "Other Publications" on the cover of Snell when it issued in 1999, Harris Semiconductor did not submit the documents as publications and instead labelled them as "Other Art." Request, Exhibit L at 78.

Second, the presence of the Harris Documents in the file wrapper of the *unpublished* Snell application does not demonstrate that they were publicly accessible at any time before the Snell application issued as a patent on November 9, 1999. *See* MPEP § 1120(I) (35 U.S.C. § 122(a)) ("Except as provided in subsection (b),[19] applications for patents shall be kept in confidence by the Patent and Trademark Office and no information concerning the same given without authority of the applicant or owner unless necessary to carry out the provisions of an Act of Congress or in such special circumstances as may be determined by the Director."). Thus, *until the Snell patent issued*, the interested public would not have known of the Snell application's existence and would not have known of the existence of the Harris Documents in its file wrapper. *Microsoft Corp. v. Biscotti Inc.*, Case IPR2014-01457 (PTAB Mar. 19, 2015) (Paper 9) addressed this exact situation:

> Patent Owner argues that the citation of the HDMI Specification in an IDS filed in the prosecution of U.S. Patent No. 7,940,809 also fails to support Petitioner's position. Patent Owner notes that "[t]he published application from which the '809 patent derives … does not cite [the HDMI Specification]," and that "U.S. Patent No. 7,940,809 was not granted until 2011, long *after* the priority date of the '182 patent." Patent Owner elaborates that Petitioner does not explain how submission of a document in an IDS of an unpublished, ungranted patent application demonstrates public accessibility of the document, noting that

[19] Section (b) applies only to applications filed on or after November 29, 2000. Thus, section (b) does not apply to Snell, which was filed in 1997.

> Petitioner does not identify any way that an interested person could or would have located the document submitted in the IDS of an unpublished, ungranted patent application. Patent Owner argues that "the mere apparent possession of the specification by the assignee [of the unpublished, ungranted patent application]—a single company—does not demonstrate the document's *public* availability."
>
> . . .
>
> We are persuaded that Petitioner has not demonstrated the public accessibility of the HDMI Specification. For the reasons explained by Patent Owner, the evidence cited by Petitioner facially fails to demonstrate the public accessibility of the document prior to the effective filing date of the '182 patent.

Microsoft Corp. v. Biscotti Inc., Case IPR2014-01457, slip op. at 26–28 (PTAB Mar. 19, 2015) (Paper 9) (citations and footnotes omitted, emphasis in original).

In *Microsoft Corp.,* the PTAB found that Petitioner had not demonstrated the public accessibility of the HDMI Specification even though: (1) in addition to the citation of the HDMI Specification in an IDS of an unpublished application, Petitioner provided the date on the HDMI Specification, a press release regarding the HDMI Specification, and a PC Magazine article about the HDMI Specification as evidence, *id.* at 25-26, and (2) the HDMI Specification was cited in an IDS by an assignee (Synerchip Co. Ltd.) who was *not* the source of the HDMI Specification (Hitachi, Ltd. et al.), which indicated that a company other than the source has possession. *Id.* at 7; U.S. Patent No. 7,940,809. Here, (1) there is even less evidence of public accessibility for the Harris Documents, and (2) Harris Semiconductor was the source of *both* the Harris Documents and the IDS submitting the Harris Documents. Accordingly, like the situation in *Microsoft Corp.*, public accessibility of the Harris Documents has not been established.

Notably absent is any evidence in the record demonstrating that the Harris Documents were disseminated to anyone other than the Office before the December 5, 1997, priority date of the '580 Patent. In fact, there is no evidence that anyone outside of Harris Semiconductor and

the Office even knew of the Harris Documents before the issuance of Snell as a patent on November 9, 1999. *See De Graffenried v. United States*, 20 Cl.Ct. 458, 471 (Cl. Ct. 1990) ("There is no evidence in the record of any distribution beyond DTIC [Defense Technical Information Center]; there is no indication that any entity, much less those entities technologically knowledgeable and interested, ever requested or received from DTIC either an actual copy of the Haag report or any information … indicating that the report existed."). *See also* Akl, at ¶ 73. In addition, even if interested persons had known of the existence of the Harris Documents, there is no evidence that an interested person, exercising reasonable diligence, could have located the Harris Documents submitted to the Office in an IDS of an *unpublished* patent application, an application that did not issue before the priority date of the '580 Patent. To the contrary, by law, the Snell application (including the IDS and the Harris Documents) was kept in confidence by the Office until the Snell patent issued on November 9, 1999. *See* 35 U.S.C. § 122(b); MPEP § 1120(I).

Moreover, there is a complete absence of evidence as to how an interested person could have located and accessed the Harris Documents before November 9, 1999. For instance, there is no evidence that, before the December 5, 1997 priority date of the '580 Patent, the Harris Documents were indexed or catalogued in any meaningful way to enable an interested person to locate them. *See SRI Int'l, Inc. v. Internet Security Sys., Inc.*, 511 F.3d 1186, 1195-96 (Fed. Cir. 2008) (citing *Application of Bayer*, 568 F.2d 1357, 1358–59 (CCPA1978); *In re Cronyn*, 890 F.2d 1158, 1161 (Fed.Cir.1989)). Accordingly, the Office has failed to establish that the Harris Documents were "disseminated or otherwise made available to the extent that persons interested

and ordinarily skilled in the subject matter or art, exercising reasonable diligence, can locate it." *Wyer*, 655 F.2d at 226.

C. The Harris Documents Were Not "Incorporated by Reference" in Snell

Snell's attempt to incorporate by reference "the entire disclosure" of the Harris Documents fails because such incorporation is limited by law.[20] *See* 37 C.F.R. §§ 1.57(d) & (e). Thus, contrary to the Office's position (Order, at 4), Snell's attempt at incorporation fails and thus does not render the Harris Documents prior art under § 102(e).

Sections 1.57(d) and (e) read:

> (d) *"Essential material" may be incorporated by reference, but only by way of an incorporation by reference to a U.S. patent or U.S. patent application publication*, which patent or patent application publication does not itself incorporate such essential material by reference. "Essential material" is material that is necessary to: …
>
> (e) *Other material ("Nonessential material") may be incorporated by reference to* U.S. patents, U.S. patent application publications, foreign patents, foreign published applications, prior and concurrently filed commonly owned U.S. applications, or *non-patent publications*. …." [emphasis added]

Thus, only certain types of documents may be incorporated by reference. Other than U.S. patent applications, *only published* documents, i.e., ones reasonably accessible to the interested public, may be incorporated by reference. If a document is not published and thus is not a

[20] Incorporation by reference is a legal tool that permits certain documents – or parts of certain documents -- to be considered part of a patent specification without writing the document's disclosure into the specification. *See Zenon Envtl, Inc. v. U.S. Filter Corp*., 506 F.3d 1370, 1378 (Fed. Cir. 2007) ("Incorporation by reference 'provides a method for integrating material from various documents into a host document ....'"). Incorporation by reference is accomplished by identifying the document in whole or in part and indicating the applicant's intent to incorporate the material by reference. *See id.*

publication in the legal sense, it cannot be incorporated by reference, and any attempt to do so must fail.

More specifically, assuming that the Harris Documents were "non-essential" to Snell's disclosure, they could only be incorporated by reference if they were "*publications*" under section (e) above. However, the record does not support a finding that these documents were publications, for the reasons given above. The fact that the Snell application refers to the Harris Documents and states Snell's intent to incorporate them by reference does not render them so incorporated, as there is no basis in law for incorporation by reference of a nonpublished document. *See* 37 C.F.R. § 1.57(e) (quoted above); *cf. Quaker City Gear Works, Inc. v. Skil Corp.*, 747 F.2d 1446 (Fed. Cir. 1984) ("Incorporation by reference has never been permissible under 35 U.S.C. § 112 of material necessary for an adequate disclosure which is unavailable to the public"); *In re Howarth*, 654 F.2d 103, 106 (CCPA 1981) ("After ruling that prior U.S. patents may be so incorporated … this court extended the doctrine of incorporation by reference stating as a general guideline …that 'any reference to a disclosure *which is available to the public* is permissible.'" (emphasis added)); *Atmel Corp. v. Information Storage Devices, Inc.*, 198 F.3d 1374 (Fed. Cir. 1999) ("If an incorporated reference, which is the sole support for a corresponding structure, is publicly unavailable, then the claim is not understandable"); *General Elec. Co. v. Brenner*, 407 F.2d 1258, 1262 (D.C. Cir. 1968)("[I]ncorporation by reference has a home in patent cases *provided that any reference made is to that which is available to the public*")(emphasis added); *Linear Technology Corp. v. Micrel, Inc.*, 524 F.Supp.2d 1147, 1153 (N.D. Cal. 2005)("A patent applicant may incorporate external *public works* in the specification of a patent by explicit reference")(citations omitted); *Chiron Corp. v. SourceCF Inc.*, 431

F.Supp.2d 1019, n. 5 (N.D. Cal. 2006)("A patentee may, in fact, incorporate by reference any source 'which is *available to the public*'")(citations omitted); *In re Lund*, 376 F.2d 982, 989 (CCPA 1967)("the disclosure in a patent application may be deliberately supplemented or completed by reference to … 'disclosure which is *available to the public*'")(citations omitted). At most, Snell's attempted incorporation renders the documents publications as of Snell's issue date – well after the '580 priority date.

For the reasons set forth above, the Office has not established that either of the Harris Documents was a publication, i.e., available to the relevant public, as required by law, as of the March 17, 1997, filing date of the Snell application (or any time prior to the '580 priority date). Therefore, the Harris Documents could not be and were not incorporated by reference into Snell and, thus, are not prior art under § 102(e).

D. Even Assuming That The Harris Documents Were Published, Incorporation by Reference Fails Because Snell Did Not Specifically Incorporate The Materials in the Documents Assumed to be Relied on by The Office to Support Its Rejections

The Office does not explain what portions of the Harris Documents it is relying on (if any) to support its rejections in either its Order or in the 3-31-17 Office Action. However, none of the sections of either Harris Document specifically referenced by Snell provide any support for the Office's rejections. Thus, incorporation by reference, even if successful (which it cannot be), would not have incorporated material useful to support the Office's positions.

Assuming that the Office is relying on the disclosure in Harris AN9614 of a controller that can keep adequate time to operate in either a polled or a time allocated scheme and asserts that the polled scheme of Harris AN9614 corresponds to the claimed "master/slave relationship," that reliance is flawed for two reasons. First, as explained above, Harris AN9614 could not have

been properly incorporated by reference into Snell because the Office did not establish that Harris AN9614 was a publication accessible by the relevant public before the December 5, 1997, priority date of the '580 application. *See supra* at V.A-B. Second, even assuming, solely for the sake of argument, that Harris AN9614 was a publication capable of being incorporated by reference into Snell, Snell would have only incorporated the description of various filters and voltage controlled oscillators in Harris AN9614 and not the communication using a polled scheme. Snell's description of Harris AN9614 is limited to the following:

> 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* .... Snell at 5:2-6 (emphasis added).

As explained below, at most, Snell's reference to Harris AN9614 incorporated *only* the description of various *filters* and *voltage controlled oscillators* from Harris AN9614 into Snell, and not any disclosure relating to the unrelated concept of *polling*.

"To incorporate material by reference, the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents." *Advanced Display Systems, Inc. v. Kent State University*, 212 F.3d 1272 (Fed.Cir. 2000) (citing *In re Seversky*, 474 F.2d 671, 674 (CCPA 1973); *In re Saunders*, 444 F.2d 599, 602–03 (CCPA 1971); *National Latex Prods. Co. v. Sun Rubber Co.*, 274 F.2d 224, 230 (6th Cir.1959); *In re Lund*, 376 F.2d 982, 989 (CCPA 1967)) (quoted in *Zenon Environmental, Inc. v. U.S. Filter Corp.*, 506 F.3d 1370, 1378 (Fed.Cir. 2007); *Cook Biotech Inc. v. Acell, Inc.*, 460 F.3d 1365, 1376 (Fed.Cir.2006)). Snell does not identify at all (and certainly not "with detailed particularity") communication using a polled scheme as the specific material it incorporates. Snell at 5:2-7. Instead, Snell identifies only the "filters" and

"oscillators" described in Harris AN9614 as the specific material it incorporates. *Id.* Accordingly, the polled scheme of Harris AN9614 relied upon by the Office was not incorporated into Snell.

For example, in *Zenon Environmental*, the Fed. Cir. considered the following incorporation by reference language:

> The vertical skein is not the subject matter of this invention and any prior art vertical skein may be used. Further *details relating to the construction and deployment of a most preferred skein* are found in the parent U.S. Pat. No. 5,639,373, and in Ser. No. 08/690,045, *the relevant disclosures of each of which are included by reference* thereto as if fully set forth herein.

Zenon Environmental, 506 F.3d at 1379. The Federal Circuit agreed "that the gas distribution system disclosed in the '373 patent is not a detail that relates to the construction and deployment of a vertical skein," *id.* at 1379-80, and found that "the '250 patent fails to incorporate by reference, with sufficient particularity to one reasonably skilled in the art, the gas distribution system disclosed in the '373 patent." *Id.* at 1382. Here, Snell fails to incorporate by reference, with sufficient particularity to one reasonably skilled in the art, the polled scheme of Harris AN9614, which is not a detail that relates to the "filters" and "oscillators" described in Harris AN9614. *See* Snell at 5:2-7; Harris AN9614 at 3. *See also Ex parte Carlucci*, 2012 WL 4718549 (BPAI 2012)("Although Hammons states '[t]he disclosures of all patents . . . mentioned throughout this patent application are hereby incorporated by reference herein', Hammons does not identify with specificity the transparency of Ahr '045's apertured film. … Hammons's disclosure is directed to the function and dimensions of Ahr '045's apertured film. Accordingly, we do not find that Hammons incorporates by reference the transparent characteristic of Ahr '045's apertured film. Hence, the Examiner's finding that "Hammons discloses a transparent

topsheet through incorporation of the Ahr ['045] reference'' is incorrect"); *Ojmar US, LLC v. Security People, Inc*., 2015 WL 6510359 (PTAB 2015)(specific reference to "drive unit" coupled with general incorporation by reference insufficient to incorporate subject matter other than the "drive unit.").

Moreover, to the extent that that Snell attempted a blanket incorporation by reference of Harris AN9614 in its entirety (as opposed to merely the portions of Harris AN9614 describing various filters and voltage controlled oscillators), the PTAB has *rejected* the notion that a patent can incorporate by reference another document in its entirety (as opposed to merely specific material identified with detailed particularity). In *Ex parte Koppolu*, the PTAB explained the rationale for prohibiting applicants from incorporating entire documents without an explanation of what they are being on relied on to show:

> [I]t is evident that the absence of a specific identification of the material of the source document that is being incorporated by reference and an explanation of what it is being relied on to show *will make it difficult for examiners*, the public, and the courts *to determine which material the inventor considered to be part of his or her invention* when the application was filed. …
>
> [B]y permitting applicants to incorporate by reference entire documents without an explanation of what they are being relied on to show would invite the wholesale incorporation by reference of large numbers of documents and correspondingly increase the burden on examiners, the public, and the courts to determine the metes and bounds of the application disclosures.
>
> For the foregoing reasons, we will apply the law on incorporation by reference as stated in *Advanced Display* and repeated in *Cook Biotech*.
>
> Appellants' argument that MPEP § 2163.07(b) "expressly authorizes the incorporation by reference of an entire document," … is unconvincing because an incorporation by reference must satisfy the specificity requirement of *Advanced Display*. [2005 WL 4806276 (BPAI 2005) (emphasis added).]

See, e.g., Oxford Nanopore v. Univ. of Washington, 2014 WL 4644357 (PTAB 2014) ("In the instant case, although Petitioner urges that Akeson incorporates by reference the disclosure at column 13, lines 10-13 of the '782 patent, the Petition does not direct us to any express or specific disclosure in Akeson mentioning that passage with detailed particularity. … Nor does the Petition direct us to any clear or specific disclosure in Akeson suggesting that Akeson sought to incorporate by reference any teachings in the '782 patent as to the physical properties Akeson required of its nanopores. … Accordingly, we are not persuaded that the Petition has shown that, because Akeson incorporates the '782 patent as a whole by reference, among many other references, Akeson in effect can be considered as positively teaching the subject matter disclosed at column 10, lines 10-13 of the '782 patent." (citations omitted)); *Ex parte Carlucci*, 2012 WL 4718549 (BPAI 2012)(rejecting assertion that blanket incorporation by reference was effective to incorporate transparent characteristic of Ahr '045's apertured film). Accordingly, despite Snell's attempt to incorporate by reference "the entire disclosure" of Harris AN9614, Snell at 5:2-7, Snell should not be considered as positively teaching the polled scheme of Harris AN9614.

VI. Claim Limitations Missing From All References and All Grounds of Rejection

The Office has rejected claims 2 and 59 of the '580 Patent as allegedly (i) anticipated by Snell, (ii) unpatentable over Snell in view of Yamano, and (iii) unpatentable over Snell in view of Yamano and Kamerman. All three bases for rejection fail to establish unpatentability because the following three limitations are missing from all of the relied-on art and would not have been obvious based on any of the Office's grounds of rejection. Those missing limitations are (i) "the master/slave relationship," (ii) the "two [different] types of modulation methods," and (iii) "the third sequence."

With respect to both claims, those missing limitations are found in the following claim language:

(i) "A communications device capable of communicating according to 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, the device comprising: a transceiver, in the role of the master according to the master/slave relationship,"

(ii) for sending or transmitting "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," and

(iii) "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."

The primary reference, Snell, alone or in view of Yamano and/or Kamerman, does not disclose and would not have suggested any of these three limitations to one of ordinary skill in the relevant art (even if the Harris Documents were properly incorporated by reference).

A. The Claimed Master/Slave Relationship

Claims 2 and 59 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[21] 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 …" (3-31 Office Action, at 9 (emphasis added)) (without supporting citations

[21] The Office repeatedly uses the phrase "capable of." However, the claims require that the claimed transceiver be "configured to" transmit the claimed sequences (claim 58) and, more specifically, to transmit the claimed third sequence (claims 2 and 59). Thus, it is Rembrandt's position that the claimed transceiver must be configured in a particular way to satisfy the claim limitations. *See* Akl, at ¶ 102, note 8; *supra* at § III.B (discussing claim construction).

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 …" (3-31 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) …." (3-31 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 ...." (3-31 Office Action, at 15 (emphasis added)) ((citations in quoted text) (§ 103(a) rejection of claim 59 based on Snell in view of Yamano).[22]

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. To the extent that the Office's position is that the claimed master/slave relationship is either inherent in one or more of the citations or that one or more of the citations would have *suggested* the claimed master/slave relationship, the burden is on the Office to explain its position.[23] It is not Rembrandt's burden to make the Office's arguments for it. Thus, Rembrandt respectfully requests the Office withdraw

[22] With respect to the master/slave limitations, the Office relies on the reasoning set forth in 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* 3-31-17 Office Action, at 17-20).

[23] To the extent that the Office relies on page 3 of Harris AN9614 to address the master/slave limitations, Rembrandt notes (1) Harris AN9614 is not prior art and thus, legally, could not have been incorporated by reference (*see supra* at § V) and (2) the portions of Harris AN9614 that Snell attempted to incorporate by reference have nothing to do with a master/slave relationship and are found on the first two pages of Harris AN9614, not the page relied on by the Office. Significantly, the cited portion of Harris AN9614 is silent about a master/slave relationship and does not even mention "master/slave" or "master" or "slave." Significantly Harris AN9614 uses the polled scheme in the context of peer-to-peer communications (which is the topic being discussed in Snell and Harris AN9614), not master/slave communications. *See* Akl, at ¶¶ 103 (note 10), 112-120. Not even with hindsight would one of ordinary skill in the relevant art have surmised the polled scheme of Harris AN9614 as being used in a context other than peer-to-peer communications. *Id.* at ¶ 103, note 10.

its rejections for lack of disclosure or suggestion of the claimed master/slave relationship or issue another non-final Office Action adequately explaining and supporting its position.[24]

1. There is No Evidence that Snell's Carrier Sense Transceiver is Configured to Act in the Role of Master or Slave in a Master/Slave System as Claimed

The primary reference, Snell, discloses a transceiver 30, Snell at Fig. 1, 4:42-43, designed for peer-to-peer communications, such as carrier sense multiple access with collision avoidance (CSMA/CA) communications. *See* Snell at 5:26-29 (disclosing that Snell's transceiver includes a "CCA circuit block 44" that "provides a clear channel assessment (CCA) to avoid data collisions," i.e., collisions which do not occur in a master/slave setting). *See also* Fig. 1. Akl, at ¶ 104. Systems that implement a CSMA/CA protocol for collision avoidance are distinctly different than a master/slave system. IN a CSMA/CA system, any device on the network can initiate a communication whenever the device determines thatno other communications are occurring. In stark contrast, the claims of the '580 Patent are limited to master/slave communications, as noted above, in which slave devices can only communicate on a network when prompted by a master. Because of this fundamental difference, the problem the '580 Patent set out to solve within the context of a more rigid master/slave setting was not one faced by Snell, and the solution claimed in the '580 Patent is not one disclosed or suggested by Snell. *See supra* at § IV.B-C; Akl, at ¶¶ 94-97, 104. Thus, Snell does not disclose and would not have suggested master/slave communications, let alone the master/slave relationship claimed in the

[24] In an effort to advance prosecution, the "polled scheme" of Harris AN9614 is discussed *infra* at ¶ VI.A.3. If the Office explains its position in the next Office Action, that action must be made non-final to give Rembrandt an opportunity to fully respond.

'580 Patent, without using the claimed invention as a roadmap.[25] *See* Akl, at ¶¶ 81-93 (describing the '580 Patent technology), 104. An analogous issue was addressed in the rehearing of *In re Prater*:

> We have carefully considered the basic position of the Patent Office that it would be obvious to program a general-purpose digital computer to practice appellants' invention and that apparatus claim 10 reads on such a computer, as well as the disclosed analog device. We find that position fatally defective in that it, in effect, assumes the existence *as prior art* of appellants' discovery that the relationship indicative of error amplification "is related to, and may be expressed in terms of, the determinants of the subsets of equations, the determinant of largest magnitude indicating the subset of equations involving least error amplification." Perhaps today, *after* reading appellants' disclosure, the public dissemination of which the patent system fosters and encourages, it might be obvious to program a general-purpose digital computer to practice the invention. But 35 U.S.C. § 103 requires an analysis of the prior art *at the time the invention was made* to determine whether the invention was obvious. *Graham v. John Deere Co.*, 383 U.S. 1, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966). Assuming the existence, at the time of the invention, of general-purpose digital computers as well as typical programming techniques therefor, it is nevertheless plain that appellants' invention, as defined in apparatus claim 10, was not obvious under 35 U.S.C. § 103 because one not having knowledge of appellants' discovery simply would not know what to program the computer to do. See *Ex parte King*, 146 USPQ 590 (Pat.Off.Bd.App. 1964).

In re Prater, 415 F.2d 1393, 1397-98 (CCPA 1969) (emphasis added). As occurred in *Prater*, the rejections based on hindsight – with the claimed invention of the '580 Patent used as a

[25] The same is true of Kamerman and Yamano in that they also describe peer-to-peer communications– again, fundamentally different than the claimed master/slave system in the '580 Patent. Akl, ¶ 104, note 11. Kamerman expressly relates to "wireless LANs that operate to conform to the IEEE 802.11 DSSS (direct sequence spread spectrum) standard." Kamerman at 6 (disclosing that IEEE 802.11 is compatible with a "CSMA/CS (carrier sensor multiple access with collision avoidance"' protocol). *See also id.* at at 8 ("IEEE 802.11 CSMA/CA"), *id.* at 12 ("[t]he CSMA/CA behavior of wireless LANs operating to conform to IEEE 802.11 DS"). *See* Yamano, at col. 19, ll. 21-36 (recommending using 'a carrier sense multiple access (CSMA) scheme"). Yamano and Kamerman are silent regarding any master/slave communications. Akl, at ¶ 104, note 11.

roadmap – cannot stand. One simply would not know how to configure Snell's transceiver to address the problem Gordon Bremer identified and solved. Akl, at ¶¶ 104-109.

With respect to the master/slave relationship limitations in both claims 2 and 59, the Office summarily and repeatedly concludes – without explaining its position – that "the transceiver of Snell is capable of such communication." 3-31-17 Office Action at 9. *See also id.* at 10, 12, 15 (with citations to Snell). Such summary conclusions do not point to any evidence that Snell's transceiver is, in fact, of a design configured to communicate in the manner claimed. For that reason alone, all of the rejections based in whole or in part on Snell fail.

With respect to the Office's § 102(e) rejection based on Snell, the Office's failure to establish that Snell's transceiver (without modification) is capable of functioning "in the role of the master according to the master/slave relationship" defeats the Office's anticipation rejection. *See, e.g., Ex parte Kumar*, Appeal 2012-010829, 2015 WL 729625 at *4 (PTAB February 18, 2015) (citing *Typhoon Touch Techs*, 659 F.3d at 1380) ("Because the Examiner has not shown that Proulx's apparatus can perform the function stated in the claim without requiring to specifically program or reconfigure the apparatus, and thus change the apparatus's structure, the Examiner does not establish that Proulx's apparatus anticipates claim 67."); *Ex parte Eckardt*, Appeal No. 2013-007294, 2016 WL 827260 at *2 (PTAB February 29, 2016) ("Lacking any explanation by the Examiner regarding why the functional language in claim 1 following the term "configured to" fails to limit the structure of the claimed system, and lacking any explicit finding that Eckhardt's device including a catalytic recombiner would satisfy the "configured to" language of claim 1, we do not sustain the rejection of claim 1.").

With respect to the Office's two § 103(a) rejections, the Office again posits that "Snell teaches a communication device capable of communicating according to a master/slave relationship." Office Action at 12 (citing Snell at Fig. 1, 1:34-46, 1:47-50, 1:55-57, 4:27-30, 4:42-47, 5:2-7; Harris AN9614 at p. 3). However, as noted above, the materials cited do not mention "master/slave" or "master" or "slave," and the Office does not explain where such a teaching or suggestion is found in the cited material. The Office has failed to explain how Snell's transceiver (with or without modification) would have rendered that claimed in the '580 Patent obvious. It is not enough to just state that Snell's transceiver is theoretically "capable of" being modified to include the master/slave communications in claims 2 and 59. Again, given the fundamental differences between Snell's teachings and those in the '580 Patent, claims 2 and 59 would not have been obvious based on Snell in the absence of hindsight. *See* Akl, at ¶¶ 104-109. *See also In re Prater*, 415 F.2d at 1397-98 (quoted above).

2. The Office's Reliance on "Incorporation by Reference" of Harris AN9614 Fails

The Office states that "Harris AN9614 is incorporated by reference" in Snell. Office Action at 12 (citing Snell, at col. 5, ll. 2-7). However, for the reasons set forth above, Harris AN9614 was not published before the December 5, 1997, priority date of the '580 patent. Therefore, it is not prior art and could not have been properly incorporated by reference into Snell because of the legal restrictions on what materials can be so incorporated. *See supra* at § V.A-C; Akl, at ¶¶ 71-73. In any case, the Office does not explain how Harris AN9614 supports its position that Snell's transceiver is configured to act in the "role of master" and to communicate "according to a master/slave relationship" as claimed. Again, it is not Rembrandt's burden to make the Office's arguments for it. However, to expedite prosecution of

this reexamination, Rembrandt responds to one possible argument the Office may be making (based on arguments made in the Request regarding a brief discussion in Harris AN9614 of a "polled scheme" – arguments that have not been incorporated in the 3-31-17 Office Action).

If the Office is relying on language in Harris AN9614 discussing a "polled scheme" (found on page 3 of Harris AN9614), for the reasons set forth *supra* at § V.D, Rembrandt again points out that the attempted incorporation by reference of the "polled scheme" discussion fails for a second reason: Snell did not identify that specific material with detailed particularity but rather identified discussions of filters and oscillators – topics that have nothing to do with the "polled scheme" and that appear in a different section of Harris AN9614. *See* Snell, at col. 5, ll. 2-7 ("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."). The sections of Harris AN9614 discussing filters and oscillators appear in Harris AN9614, at pages 1 and 2 and not the page cited by the Office, i.e., page 3. In fact, page 3 of Harris AN9614 turns to a new topic, *i.e.*, "High Rate Burst Transmissions With Low Average Rate." In any case, *even if*, contrary to the case we have here, (1) Harris AN9614 were prior art so, as a matter of law, it could have been incorporated by reference *and* (2) the Office were relying on the "polled scheme" discussion in Harris AN9614 *and* (3) the sections discussing the "polled scheme" were properly incorporated, those sections do not disclose and would not have suggested the claimed "master/slave relationship." *See infra* at § VI.A.3; Akl, at ¶¶ 112-120.

3. The Claimed Master/Slave Relationship is Not Inherent in Harris AN9614's "Polled Scheme" and would Not have been Suggested to One of Ordinary Skill in the Relevant Art by Harris AN9614's "Polled Scheme"

Assuming *arguendo* that the "polling scheme" on page 3 of Harris AN9614 had been properly incorporated into Snell, to the extent the Office is implying that the master/slave limitations of the claims are inherently disclosed in Snell, Rembrandt disagrees. *See* Akl, at ¶¶ 112-120. Whether described expressly or inherently, "[a]nticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim." *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983) (citing *Sound-scriber Corp. v. U.S.*, 360 F.2d 954, 960, 148 USPQ 298, 301 (Ct. Cl. 1966)). *See also Verdegaal Bros. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987). Thus, a finding of inherent anticipation requires more than "probabilities or possibilities." *Motorola Mobility LLC v. Int'l Trade Comm'n,* 737 F.3d 1345, 1350 (Fed. Cir. 2013); *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999). "The mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish inherency." *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993); *In re Robertson,* 169 F.3d at 745.

Further, the burden rests on the Office to "reasonably support" any allegation of inherent disclosure:

> "*In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.*"*Ex parte Levy,* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original) (Applicant's invention was directed to a biaxially oriented, flexible dilation catheter balloon (a tube which expands upon inflation) used, for example, in clearing the blood vessels of heart patients). The examiner applied a U.S. patent to Schjeldahl which disclosed injection molding a tubular preform and then injecting air into the preform to expand it against a mold (blow

> molding). The reference did not directly state that the end product balloon was biaxially oriented. It did disclose that the balloon was "formed from a thin flexible inelastic, high tensile strength, biaxially oriented synthetic plastic material." *Id.* at 1462 (emphasis in original). The examiner argued that Schjeldahl's balloon was inherently biaxially oriented. The Board reversed on the basis that the examiner did not provide objective evidence or cogent technical reasoning to support the conclusion of inherency.).

MPEP § 2112.

In this case, to the extent the Office is relying on inherent disclosure in Snell, the Office has failed to meet its burden because it has failed to provide a "basis in fact and/or technical reasoning to reasonably support" the determination that the master/slave limitations in the challenged claims necessarily flow from the teachings of Snell (even presuming that Harris AN9614 had been properly incorporated). Moreover, it is plain that a "master/slave relationship" is not inherent in Harris AN9614's "polling scheme," because polling can and does take place in peer-to-peer systems (like the CCA systems described at col. 5, lines 26-29 of Snell).

For example, node A and node B could communicate according to a polled scheme in which (i) node A polls node B to request information from node B, (ii) after node B sends the requested information to node A, node B polls node A to request information from node A, and (iii) node A sends the requested information to node B. In this way, nodes A and B would use a polled scheme to communicate, but neither of nodes A and B would be a master or slave. *See* Akl, at ¶¶ 117-118 (citing "Telecommunications network," at 2, Britannica Online Encyclopedia ("A decentralized form of polling is called token passing. In this system, a special "token" packet is passed from node to node. Only the node with the token is authorized to transmit; all others are listeners.")).

Futher, to the extent that the Office is equating Harris AN9614's "polled scheme" to a master/slave configuration, that position is based on a faulty understanding of the scope of "polling" in the relevant art and on an incorrect reading of Harris AN9614 and the '580 Patent. While polling can also take place in a master/slave system, *see* '580 Patent at 4: 6-9 (describing its master/slave protocol as a "polled multipoint communications protocol,") that discussion does not limit polling – which is a more general term in the relevant art -- to master/slave protocols but rather describes one aspect of the claimed protocol. In fact, there is no suggestion in Harris AN9614 that its "polled scheme" is taking place in anything other than the peer-to-peer communications protocol being discussed in Harris AN9614. *See* Harris AN9614 at 3. Akl, at ¶ 119. *See also infra* at § VII.C (discussing the need to maintain a peer-to-peer system in order to maintain compatibility with the IEEE 802.11 standard).

Without explaining its relevance, the Office cites to page 3 of Harris AN9614 in an attempt to establish that Snell teaches "a communication device capable of communication device capable of communicating according to a master in a master/slave relationship," as recited in claims 2 and 59. 3-31-17 Office Action at 12. *See also id.* at 15 ("to the extent that the preamble is given patentable weight, Snell teaches it"). Again, assuming the Office is relying on the discussion of the "polled scheme on page 3 of Harris AN9614, that page does not even mention "master" or "master/slave" but instead merely states:

> With a low power watch crystal, the controller [of the PRISM chip set] 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.

Harris AN9614 at 3. That is the full extent of the "polled scheme" discussion in Harris AN9614. Given the brevity of this discussion, and the fact that both Snell and Harris AN9614 are focused on peer-to-peer communications, one of ordinary skill in the relevant art would conclude that the discussion of a "polled scheme" refers to polling as part of peer-to-peer communications, not master/slave communications. Akl, at ¶ 114. Not even with hindsight would one of ordinary skill in the art have understood the Harris AN9614 discussion as suggesting more. *Id.* Thus, Harris AN9614 does not inherently disclose and would not have suggested that its polled scheme includes "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," as required by claim 1 of the '580 patent (and by the similar recitation of claim 58 of the '580 patent). Akl, at ¶¶ 113-120.

B. The Claimed At Least Two Different Types of Modulation Methods

Each of the challenged claims requires that "the second modulation method is of a *different type* than the first modulation method." As explained above, and confirmed by the Federal Circuit, the proper construction of "different types of modulation methods" is "*different families* of modulation techniques, *such as the FSK family* of modulation methods and the QAM family of modulation methods." *Rembrandt Wireless Tech. v. Samsung Elec. Co.*, Docket No. 2016-1729 (April 17, 2017) ("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.") (emphases added). *See also supra* at § III.C (discussing the broadest reasonable interpretation of the claims).

In the 3-31-17 Office Action, apparently the Office is asserting that the "different type" limitation is met by the two *PSK formats* disclosed in Snell, namely the BPSK format and QPSK format.[26] *See* 3-31-17 Office Action, at 12 (citing Snell at Abstract, col. 1, ll. 58-61, co. 2, ll. 56-59, col. 2, l. 61-col. 3, l. 5, col. 6, ll. 64-66, col. 7, ll. 6-8, Figs. 2, 3, and 5,[27] Harris 4064.4, at 14-16). The Office's assertion fails under the proper construction of "different types," as there can be no dispute that B*PSK* format and Q*PSK* are in the same family. Akl, ¶ 123. Neither Yamano nor Kamerman cures this deficiency. *Id.*

Further, even under the Office's overly broad, flawed claim construction in which it defines "Different types of modulation method[s]" to mean "modulation methods that are incompatible with one another," the Office's rejection fails because this requirement is not disclosed nor would it have been suggested by the cited references, as none discloses or would have suggested any incompatibility problem whatsoever. The Office does not define the term "incompatible," but, in the context of the '580 Patent, first and second modulation methods may be incompatible when, for example, one modem using the first method cannot communicate with a second modem using the second method, i.e., when no common modulation method is shared.

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[26] There is no clear statement in the Office Action explaining what disclosure in the cited art satisfies the "at least two types of modulation methods." *See* 3-31-17 Office Action *passim.*

[27] While the cited figures and Harris 4064.4 refer to "DBPSK" and "DQPSK," the inclusion of "D" (Differential) does not change the family in which the modulation method falls. They remain in the same family. Akl, at ¶ 123, note 13.

See '580 Patent at col. 1, ll. 45-65; Akl at ¶ 125. Importantly, whether two modulation methods are incompatible, as used in the '580 Patent, cannot be considered in a vacuum but must be considered in the context in which term or phrase is used. *See* Akl, at ¶ 125. In the case of Snell, there is no issue of incompatible modulation methods because Snell lacks an incompatibility problem. *See id.*

The lack of any incompatibility problem faced in the cited references explains why none of Snell (including Harris AN9614 and Harris 4064.4), Yamano, or Kamerman discloses the invention claimed in the '580 Patent, including the indication that "*communication from the master to the slave has reverted to the first modulation method*." *See* the discussion *infra* at § VI.C. That incompatibility problem was identified and solved *in a master/slave setting*, as described in the '580 Patent, and was specific to a master/slave setting when a master attempts to communicate with a slave using an incompatible modulation method. Part of the solution claimed in the '580 Patent requires the master to indicate when communication has reverted to the first modulation method so that the master can communicate using the first modulation method rather than the incompatible method previously used. Again, the named inventors of the peer-to-peer communications systems described in the references were not faced with that problem. Instead they were faced with different problems that resulted from the fundamentally different ways their peer-to-peer systems accessed the shared medium. Akl, at ¶¶ 126-128. Those "fundamentally different ways" involve peer-to-peer communications, such as CSMA and CDMA types, instead of those between a master and a slave. Akl, at ¶ 128. *See also supra* at § V.A.1.

More specifically, the problems Snell (including Harris 4064.4), Yamano, and Kamerman were facing and attempting to address as the result of peer-to-peer communications, while at the same time attempting to increase date rates for communications between the stations, were, *e.g.*, collisions, interference, and the like. *See, e.g.,* Snell at col. 1, l. 64-col. 2, l. 19 (describing a problem with prior art DSSS); col. 2, ll. 22-30 (summarizing Snell's solution to the problem); col. 3, ll. 40-43 (discussing the need for a "clear channel"); col. 5, ll. 23-29 (identifying how "to avoid data collisions"); and col. 5, ll. 54-59 (identifying how to "combat multi-path and reduce the effects of interference"); Yamano, at col. 11, l. 62-col. 12, l. 9 (explaining the interference problem); col. 19, ll. 21-36 (explaining how to address the collision problem using CSMA system); Kamerman, at 6 (explaining how CSMA/CA "is designed to reduce the collision probability between multiple stations"); 11 (discussing the problem "due to mutilation of transmissions by interference"). Akl, at ¶ 129.

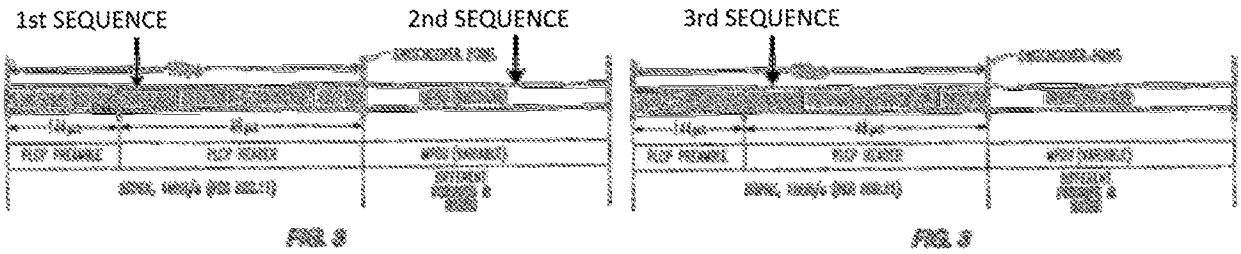
For these reasons, even under the Office's overly broad claim construction, the cited references neither identify nor address incompatible modulation methods, as are addressed in the '580 Patent in a master/slave setting when attempting to allow a master to communicate using different, incompatible modulation methods. Thus, they do not disclose and would not have suggested the problem of incompatible modulation methods, let alone the claimed solution to that problem provided in the '580 Patent. Without recognition of the incompatibility problem created by incompatible modulation methods in a master/slave setting, one skilled in the art would not have turned to any of the peer-to-peer disclosures in the cited references to solve that problem. Akl, at ¶ 130.

C. The Claimed Third Sequence

Claims 2 and 59 require that "the transceiver [be] 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" (emphasis added). Thus, the "third sequence" requires more than just being "transmitted in the first modulation method," *i.e.*, the word "and" requires it to contain information that "indicates that communication from the master to the slave has reverted to the first modulation method." The cited references do not disclose and would not have suggested the claimed transceiver capable of transmitting the claimed "third sequence [that] is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method." Akl, at ¶¶ 131-151. Again, the reason why Snell and the other references do not teach and would not have suggested the claimed invention is because of the fundamentally different systems and the very different problems/solutions presented due to those fundamental differences. *See* the discussion *supra* at § VI.A; Akl, at ¶¶ 94-97, 133. Only through a contrived application of disclosures in the prior art peer-to-peer communication systems is the Office able to arrive at the invention claimed in the '580 Patent, including the third sequence, a sequence that permits a master to communicate with one or more slaves using a modulation type that is incompatible with that used by other slaves in a master/slave system. *See id.* at 131, 133. Notably, the PTAB refused to do what the Office is now attempting to do.

Not even acknowledging the PTAB's earlier determination regarding the third sequence limitation (see the discussion *supra* at § II.B), the Office posits that the PLCP preamble and the PLCP header of Snell in an Office-created "next packet" correspond to the claimed "third

sequence." 3-31-17 Office Action at 13, 16 (citing Snell and stating that "PLCP preamble and PLCP header is 'transmitted in the first modulation method' e.g., BPSK, … the data can be modulated according to a method different than BPSK, then a 'third sequence,' with its 'SIGNAL' field in the PLCP header, 'indicates,' e.g., using '0Ah,' the modulation type, e.g., BPSK, for modulating the MPDU data of the next packet or the third sequence"). *See also* 3-31-17 Office Action at 11 (citing Snell and taking substantially the same position). That is, the Office posits two instances of Fig. 3, as illustrated below: (1) a first instance that contains a "first sequence" (the SIGNAL field in the PLCP header) and a "second sequence" (the MPDU data field); and (2) an Office-created second instance (a "next packet") that contains a "third sequence" (the SIGNAL field purportedly containing "0Ah" indicating that the MPDU data field is transmitted at 1 Mbps and BPSK).



With respect to the third sequence limitation alone, the rejection cannot stand for at least four reasons. First, the citations relied on by the Office merely support the position that, while the header is always transmitted at 1 Mbit/s BPSK, the "MPDU is variable," Snell at 6:62-65, and may be sent using BPSK or QPSK. *See* Snell 7:10-14 ("The variable data *may be* modulated and demodulated in different formats than the header portion ...") (emphasis added). The PTAB

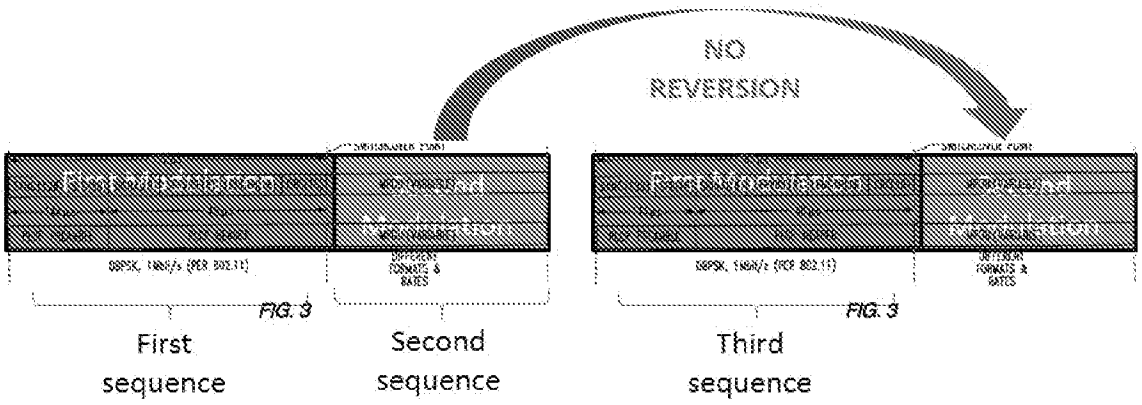
previously considered substantially the same argument with respect to substantially the same disclosure in Boer[28] and concluded such a disclosure was not sufficient to even institute an IPR of claims 2 and 59 because that disclosure failed to show "how the SIGNAL and SERVICE fields might be deemed, as alleged, to 'indicate' that communication from the master to the slave has reverted to the first modulation method, as recited in claim 2" and claim 59. *See* '518 Institution Decision, at 13-15 (quoted more extensively *supra* at § II.B). The Office fails to acknowledge, let alone address, this conclusion.

Second, Snell's SIGNAL field in the PLCP header only "indicates" the modulation format and rate of the subsequent MPDU for that packet (Snell at 6:52-59), but does not explicitly or inherently teach that the SIGNAL field also "indicates that *communication* [*i.e.*, the MPDU data] from the master to the slave has reverted to the first modulation method." Thus, the SIGNAL field cannot be the claimed "third sequence."

More specifically, claims 2 and 59 require a very specific ordering of sequences: a "first sequence" in a "first modulation method," followed by a "second sequence" in a "second modulation method," followed by a "third sequence" in a "first modulation method," whereby the "third sequence" indicates that subsequent "communication" in a next set of information will "revert" to the "first modulation method" (and not use the "second modulation method" of the "second sequence"). Snell never teaches or suggests this specific ordering of sequences and only includes one instance of Fig. 3. Thus, Fig. 3 does not explicitly teach the claimed "reversion," nor is that teaching inherent in Snell.

[28] *See* a comparison of the way Snell's Fig. 3 and Boer's Fig. 4 were presented in Exhibit D.

Even the Examiner's imagined two instances of Fig. 3 does not teach the claimed "reversion," as both packets in the Examiner's scenario are identical. Thus, if based on Snell's disclosure, one assigns first and second modulation methods to the SIGNAL and data fields (i.e., in the claim's terms, to the first and second sequences) in the first instance of Fig. 3, then one must assign the same first and second modulation methods to the second instance of Fig. 3, *i.e.,* to its header and data field. Such a repetition does not meet the claim limitation requiring reversion to the first modulation method:



Additionally, even assuming that the data *may be* in one of four formats, there is no teaching or suggestion in Snell *requiring* the claimed reversion, which is what is required by law for an inherency teaching. The fact that one of the formats may result in using the first modulation method, it is at least equally possible it will not do so, particularly given Snell's goal to *increase* the data rate. Thus, the use of two Figs. 3 does not inherently meet the claims' requirement that the SIGNAL field "indicate[] that communication from the masterto the slave has reverted to the first modulation method."

Summarizing, nowhere does Snell explicitly or inherently teach two different instances of Fig. 3—much less a first instance of Fig. 3 with a MPDU data field modulated using QPSK and

an immediately subsequent second instance of Fig. 3 with a SIGNAL field indicating its MPDU data field will "revert" to using BPSK modulation with a 1 Mbps data rate. Snell does not disclose and would not have suggested different versions of its Fig. 3 packet and SIGNAL field functions combined in the way the Office has attempted to combine them without using hindsight, i.e., in view of the '580 Patent teachings.

Third, Snell does not have and would not have suggested a master/slave relationship and therefore could not "indicate[] that communication from the master to the slave has reverted to the first modulation method." Further, even assuming, *arguendo*, that it would have been obvious to modify Snell to be a master/slave system, it would use the same signal format of Fig. 3 of Snell which, as described above, does not explicitly or inherently teach a "third sequence . . . [that] indicates that communication . . . has reverted to the first modulation method." *See* Akl, at ¶ 142.

Fourth, Snell discloses "switch[ing] on-the-fly between different data rates and/or formats," Snell at 2:29-30, but not in the manner claimed or for the reason behind the '580 claims. More specifically, the ability of Snell's transceiver to "switch on-the-fly" is not a teaching of sending multiple packets of the signal format shown in Fig. 3 that switch from using a second modulation method *for the payload portion* of the first packet to using a first modulation method *for the payload portion* of the second packet (labelled the "next packet"). *See* Snell at Fig. 3. That is, Snell's on-the-fly switching does not teach and would not have suggested that the claimed "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 the Office posits. To the contrary, the on-the-fly switching of Snell relates to a

modulation switch between the PLCP header and the MPDU *variable* data portion *within* a *single* packet having the signal format shown in Fig. 3. *See* Snell at Fig. 3 (clearly showing the "switchover point" to be between the PLCP header and the MPDU variable data portion of the signal format), 3:18-20 ("The carrier tracking loops permit switching to the desired format *after the header* and on-the-fly." (emphasis added)), 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." (emphasis added)). Snell does not disclose and would not have suggested first and second packets of the signal format shown in Fig. 3 having payload portions modulated using different methods and certainly does not disclose and would not have suggested the specific second packet the Office created using the claimed invention as a roadmap.

Accordingly, Snell does not disclose and would not have suggested that Snell's 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." In fact, there would have been no motivation for Snell to "indicate" a reversion to "the first modulation method" because Snell can transmit/receive using all modulation methods. Akl, at ¶ 145. In other words, there was no incompatibility issue that required such notification when a switch in modulation methods is made. *Id.* And that is what the '580 Patent is all about. *See the discussion supra* at § IV.

Neither Yamano nor Kamerman discloses or would have suggested the claimed third sequence. Yamano is only applied for its disclosure of a destination address in an effort to

provide an address "for an intended destination of the payload portion" as recited in independent claim 1 (3-31-17 Office Action at 14), and an address "for an intended destination of the second sequence," as recited in independent claim 58 (3-31-17 Office Action at 16-17), and is not applied to the "third sequence" limitation, so it will not be further discussed here.

As to Kamerman, the Office concludes that "[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." Office Action at 19 (citing Kamerman at 6, 11-12).

Kamerman, *just like previously and fully considered Boer*,[29] discloses a transmission rate that "falls back" during higher load conditions and that "goes up" during load conditions that occur "most of the time." Kamerman at 11. There is no teaching or suggestion that it would "fall back" to address an incompatibility issue when a master – which it does not have and would not have suggested – wants to communicate with a slave –which it does not have and would not have suggested. Further, Kamerman is completely silent about how the transceiver would indicate changes to the transmission rate. Just like the disclosure in Boer, nothing in Kamerman relied on by the Office requires that the transceiver in Kamerman "indicate[] that communication

[29] *See* Boer, at 7:12-8:16. *See also* Akl, at ¶¶ 64-68 and the discussion regarding no substantial new question *supra* at § II.F.

from the master to the slave has reverted to the first modulation method." Rather, Kamerman merely summarizes Boer's, his, and other's work[30] described in the Boer patent and does not provide any further information relevant to the patentability of claims 2 and 59.

Notably, maximizing the data transfer rate and adapting to changing channel conditions in a peer-to-peer communications system – objectives of Boer and Kamerman -- would not have provided the solution to the incompatibility problem identified and claimed in the '580 Patent, i.e., it would not have provided a "transceiver 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." Claims 2 and 59.

Instead, if Snell were modified in the proposed manner (i.e., implementing Kamerman's automatic rate selection in Snell's system), Snell's transceiver would increase the transmission rate during lower load periods (e.g., as indicated by "a number … of successive correctly acknowledged packet transmissions") and would decrease the transmission rate during higher load periods (e.g., as indicated by "unacknowledged packet transmissions"). *See* Kamerman at 11. Such modification would not provide the claimed third sequence, as Kamerman's rationale as to when to change modulation methods has *nothing to do with* making a change in modulation method so that a master can communicate with a particular slave using a different modulation method to address a potential incompatibility issue. For that reason alone, one of ordinary skill

[30] Kamerman is a named inventor on the Boer et al. patent. Again, see the discussion *supra* at § II.F.

would not have been motivated by Kamerman to vary the modulation method when needed to address the '580 Patent incompatibility problem as done in the '580 Patent, *i.e.,* to provide a "third sequence [that] indicates that communication from the master to the slave has reverted to the first modulation method."

VII. It Would Not Have Been Obvious to Adapt Snell to A Master/Slave System or Combine Snell with Kamerman and/or Yamano

A. It Would Not Have Been Obvious to Adapt Snell To A Master/Slave System and Solve The Problem Identified and Solved in the '580 Patent Because of The Fundamental Differences Between Peer-to-Peer and Master/Slave Communications

All the outstanding rejections must be withdrawn because they share a common, significant deficiency – one that weighs against the Office's proposed combinations. As previously noted, none of Snell, Yamano, or Kamerman discloses communications in a master/slave setting *at all,* even if Harris AN9614 and Harris 4064.4 had been successfully incorporated by reference into Snell (which they have not been[31]). *See* the discussion *supra* at § VI.A; Akl, at ¶¶ 101-120, 152. And, even if adapting Snell to a master/slave setting were suggested (which it is not), it would not have been obvious to combine the art as the Office has proposed in a way that would have yielded the invention claimed in the '580 Patent because there was no recognition of the problem identified and solved in the '580 Patent – a problem specific to the master/slave setting when a master attempts to communicate with a slave using an incompatible modulation method. *See* detailed discussion *supra* at § IV.B-C; Akl, at ¶¶ 81-97, 153. The named inventors of the systems described in the references were not faced with that problem and thus would have had no reason to invent the '580 solution. Akl, at ¶ 154. Instead they were faced with different

[31] As earlier argued, the evidence of record does not establish that these two Harris Documents are prior art. *See supra* at § V.A-C. In any case, neither discloses a master/slave system. Akl, at ¶¶ 112-120. The "polling" briefly discussed in Harris 9614 does not necessarily disclose a master/slave system, *see id.*, does not explain how Snell would be adapted to address the problem the '580 solved, and in any case is not particularly identified as being incorporated by reference. See the discussion below, at §§ V.D, VI.A.3.

problems that resulted from the fundamentally different ways their systems accessed the shared medium. Akl, at ¶ 133, 154. As previously noted, those "fundamentally different ways" involved peer-to-peer communications, such as CSMA and CDMA types, instead of those between a master and a slave. *See supra* at § VI.A.1; Akl, at ¶¶ 94-97, 104-109, 154.

B. The "Polled Scheme" Disclosure in Harris AN9614 is Limited to "Single Rate" Applications and Thus Does Not Disclose and Would Not Have Suggested More than One Modulation Method

The disclosure in Harris AN9614 at page 3 is not of a communications system using multiple modulation methods, as claimed in the '580 Patent. In addition to the limitations described above, Harris AN9614's "polled scheme" appears in a section of Harris AN9614 dedicated to describing a protocol where burst transmissions are used for achieving a "Low Average Data Rate" by operating the PRISM 1 chip at a *single, low data rate of 1 MBPS*:

> The system approach is to accept the 1 MBPS data rate of the radio as long as the achievable range is acceptable, and use it in a short burst mode which is consistent with its packet nature. With a low power watch crystal, the controller can keep adequate time to operate either in a polled or time allocated scheme. In these modes, the radio is powered off most of the time and only awakens when communications is expected. … 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.

There is nothing in Harris AN9614 suggesting that its 1 MBPS system should or even could be used in combination with the higher data rate schemes described in the body of Snell. Put another way, there is nothing in Harris AN9614 suggesting that its 1 MBPS polled scheme was intended to be used to accomplish, for example, the scheme depicted at col. 6, lines 55-60 of Snell, which the Office has mapped to other elements in the claim.

In order for the Office's rejection to stand, the elements in Snell/Harris must be "*arranged or combined in the same way as recited in the claim*," regardless of whether it is based on expressed or inherent disclosure. *See, e.g., Net MoneyIN, Inc. v. Verisign, Inc.*, 545 F.3d 1359, 1368-71 (Fed. Cir. 2008) (holding that "unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102" and citing numerous cases supporting its holding); *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983) ("Anticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim."). The Office has not shown such an arrangement.

Rather Harris AN9614 suggests adapting its "high data rate configuration" to one using 1 MBPS only in order to avoid "the design considerations … of concern" with high data rate configurations. *See* Harris AN9614 at 3. Significantly, this suggestion is directly contrary to Snell's goal of obtaining higher variable data rates "from 1 Mbit/s BPSK and 2 Mbit/s QPSK to 5.5 Mbit/s BPSK and 11 Mbit/s QPSK," Snell at 5:30-32. Thus, one of ordinary skill in the art reading Snell and Harris AN9614 would have understood the discussion in Harris AN9614 of a polled scheme to be inapplicable to the *multi-data rate* scheme that is the focus of Snell. Akl, at ¶ 159. Accordingly, even if Harris AN9614 *were* a publication (it was not), *and* the "polled scheme" of Harris AN9614 *were* incorporated by reference into Snell (it was not), *and* the disclosure of a polled scheme in Harris AN9614 would have suggested a "master/slave relationship" (it would not have), the combination of Snell with Harris AN9614 would not have

yielded or suggested the communications system claimed in the '580 Patent that requires at least two modulation methods. Akl, at ¶ 159.

C. One of Ordinary Skill Would Not Have Been Motivated To Adapt Snell to a Master/Slave System and *Then* Combine with Kamerman Lacking Any Teachings Regarding The Proposed IEEE 802.11 Standard

Snell's disclosure relates to an extension of the "proposed IEEE 802.11 standard." [32] Significantly, while Snell may have been privy to the proposed standard through the involvement of his employer (Harris) on the standard committee, there is no evidence that the proposed standard itself was publicly known at that time. In fact, the Office has already found that, as of the priority date of the '580 patent, the draft IEEE 802.11 standard was not available to anyone outside the IEEE 802.11 Working Group:

> Notably absent … from the Petition and Mr. O'Hara's declaration are any assertions or evidence in support of the availability of Draft Standard to individuals other than members of the 802.11 Working Group and those who already knew about Draft Standard or the July 8–12 meeting of the 802.11 Working Group. We do not find sufficient argument or evidence to indicate that the July 8–12 meeting of the 802.11 Working Group (or any other 802.11 Working Group meeting) was advertised or otherwise announced to the public. Nor do we find sufficient argument or evidence that any individual who was not already a member of, or otherwise aware of, the Working Group would have known about Draft Standard such that he or she would have known to request a copy or ask to be added to an email list for access to the document.

[32] *See, e.g.,* Snell at 1:47-50 (describing "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 5:30-32 (disclosing "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"); and Snell at 4:42-43, 5:30-32 (describing "a wireless transceiver 30" that "may be readily used for WLAN applications in the 2.4 GHz ISM band *in accordance with the proposed IEEE 802.11 standard*.") (emphasis added).

Samsung Electronics Co. LTD v. Rembrandt Wireless Technologies, LP, IPR2014-00514, Paper No. 18 at 7-8 (PTAB September 9, 2014).[33]

In view of the above, it is clear that the Office's assertion that the draft IEEE 802.11 standard was "*available at that time*"[34] (3-31-17 Office Action, at 19) is incorrect. Moreover, the question of the lack of public availability of the draft standard has already been decided by the Office, and cannot be revisited in these reexamination proceedings.

Without access to the proposed IEEE 802.11 standard, one of ordinary skill reading Snell would know only that the proposed standard used a collision avoidance protocol (like CSA), as that is the only protocol disclosed in Snell. Such a conclusion would have been buttressed by Kamerman, which similarly described the proposed standard only in the context of a CSMA/CA (carrier sense multiple access with collision avoidance) protocol. Akl, at ¶ 163.

Despite the indications in both Snell and Kamerman tying the proposed IEEE 802.11 standard to a collision avoidance protocol, it is the Office's position that, prior to combining Snell and Kamerman, Snell would have been converted to a master/slave system (although,

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[33] *See also Samsung Electronics Co. LTD. v. Rembrandt Wireless Technologies, LP*, IPR2014-00515, Paper No. 18 at 6-10 (PTAB September 9, 2014); *Samsung Electronics Co. LTD v. Rembrandt Wireless Technologies, LP*, IPR2014-00889, Paper No. 8 at 7-10 (PTAB December 10, 2014); *Samsung Electronics Co. LTD v. Rembrandt Wireless Technologies, LP*, IPR2014-00890, Paper No. 8 at 7-10 (PTAB December 10, 2014); *Samsung Electronics Co. LTD v. Rembrandt Wireless Technologies, LP*, IPR2014-00891, Paper No. 8 at 8-12 (PTAB December 10, 2014).

[34] "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*." 3-31-17 Office Action, at 19 (emphasis added).

again, it is not clear how that would be done). Assuming that were done, there would be no reasonable expectation that the Snell transceiver adapted to a master/slave system would function in accord with the draft IEEE 802.11 standard, particularly when both Snell and Kamerman discussed the proposed standard only in connection with collision avoidance protocols. *See* the discussion *supra* at § VI.A.1; Akl, at ¶ 164.

In other words, it would not have been obvious to combine Snell with Kamerman *after adapting Snell to a master/slave system* because there is no evidence that Snell would remain compliant with the draft IEEE 802.11 standard. That would have discouraged the skilled artisan from making the suggested combination, as one of the intended purposes of Snell invention was to maintain compatibility with the proposed IEEE 802.11 standard. *See* Snell at 1:47-50 ("PRISM 1 … is compatible with the proposed IEEE 802.11 standard"), 4:42-46 (a wireless transceiver 30 used "in accordance with the proposed IEEE 802.11 standard"), 5:30-32 ("[t]he present invention provides an extension of the PRISM 1 product"); Akl, at ¶ 165. Without access to any teachings of the proposed IEEE 802.11 standard, one of ordinary skill in the art would not have any reasonable expectation that Snell's transceiver would still act in accordance with the proposed IEEE 802.11 standard if it were modified to act in a master/slave relationship instead of a peer-to-peer relationship, such as a carrier sense multiple access with collision avoidance (CSMA/CA) relationship. Akl, at ¶ 166. Accordingly, one of ordinary skill in the relevant art would have been discouraged from modifying Snell's transceiver as suggested by the Office without a reasonable expectation that it would function as intended, *i.e.,* in accordance with the proposed IEEE 802.11 standard. *See, e.g., In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984)) (prior art reference "teaches away" from proposed modification because the prior art

apparatus "would be rendered inoperable for its intended purpose"), cited in *In re Urbanski*, 809 F.3d 1237, 1243 (Fed. Cir. 2016) and MPEP § 2143.01(V) ("If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification."). *See also* Akl, at ¶ 167. Thus, it would not have been obvious to modify Snell's transceiver to act in the role of the master according to a master/slave relationship and then combine Snell as modified with Kamerman. Akl, at ¶ 169.

Similarly, given that peer-to-peer communication systems, such as that described in Snell, are fundamentally different than master/slave systems (*see supra* at § VI.A.1), one of ordinary skill in the art would have been further discouraged from making the proposed modification of Snell as that fundamental difference would have weighed against having any reasonable expectation that Snell, as modified, would still act in accordance with the proposed IEEE 802.11 standard or would have provided predictable results. Akl, ¶ 168. *See also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (U.S. 2007) ("a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions"); *L.A. Biomedical Research Inst. at Harbor-UCLA Med. Ctr. v. Eli Lilly & Co.*, 849 F.3d 1049 (Fed. Cir. Feb. 28, 2017) (citing *Genzyme Therapeutic Prods. Ltd. P'ship v. Biomarin Pharm. Inc., 825 F.3d 1360, 1373* (Fed. Cir. 2016)) ("In the case of a combination of references that together disclose all the limitations of the claimed invention, the adjudicator must determine … whether a person of skill in the art at the time of the invention would have had a 'reasonable expectation of success' in pursuing that combination."); *PersonalWeb Techs., LLC v. Apple, Inc.*, 848 F.3d 987 (Fed. Cir. Feb. 14, 2017) (citing *In re NuVasive, Inc.*, 842 F.3d 1376, 1381-82

(Fed. Cir. 2016); *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333-34 (Fed. Cir. 2016); *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1364-67 (Fed. Cir. 2015)) ("the Board had to find that a person of ordinary skill in the art would have been motivated to combine the prior art in the way claimed … and had a reasonable expectation of success in doing so"); MPEP § 2143.02 (citing *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)) ("The prior art can be modified or combined to reject claims as prima facie obvious as long as there is a reasonable expectation of success."); MPEP § 2143.02 ("Obviousness does not require absolute predictability, however, at least some degree of predictability is required."); MPEP § 2143.01(III) (citing *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007)) ("The mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art.").

Thus, *if* Snell *were* adapted to a master/slave system as the Office suggests (in spite of no motivation to do so), there is no evidence it could have been combined with Kamerman and still conform to the draft IEEE 802.11 standard, and, in fact, the skilled artisan would have been discouraged from making such a combination. Akl, at ¶¶ 161-169.

D. It Would Not Have Been Obvious to One Of Ordinary Skill To Adapt Snell To A Master/Slave System and Then Combine with Yamano to Satisfy The "Addressed For An Intended Destination" Limitation in Claims 2 and 59

Claim 2 of the '580 patent requires a transceiver that is capable of sending a transmission comprising "a group of transmission sequences" that "is structured with at least a first portion and a payload portion" and "is addressed for an intended destination of the payload portion." Claim 59 requires a transceiver that is capable transmitting "at least one message" with first and

second sequences and that "is addressed for an intended destination of the second sequence." Neither of these limitations is disclosed by or would have been obvious in view of the cited art. Akl, at ¶ 170.

Snell is silent regarding a destination address.[35] Akl, at ¶ 171. The Office instead relies on Yamano as disclosing a destination address,[36] asserting that "[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 teaching of a communication system." 3-31-17 Office Action at 14, 16-17. *See also* Akl, at ¶ 172.

Patent Owner respectfully disagrees. The goal of Snell is to *increase the data rate* at which information is communicated.[37] However, the preamble of Snell is transmitted at the

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[35] *See* Snell *passim*. *See also* 3-31-17 Office Action, at 14 ("Snell does not expressly teach wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion."), 16 ("Snell does not expressly teach wherein the at least one message is addressed for an intended destination of the second sequence.").

[36] 3-31-17 Office Action, at 14 (citing Yamano at Fig. 8, 19:63-64, 20:1-7, 20:54-59), 16 (citing Yamano at Fig. 8, 19:63-64, 20:1-7, 20:54-59). At the cited portion, Yamano that its packet is in the preamble, i.e., a packet 700 having a preamble 701 that "can include information which identifies … packet source and destination addresses." Yamano at 20:1-7. See also id. at 20:54-59 (disclosing that, "[w]hen 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."); and Fig. 8.

[37] *See, e.g.,* Snell at 2:24-25 ("permitting operation at higher data rates than conventional transceivers"), 2:28-29 ("permit operation at higher data rates"); 5:30-34 ("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" and "allows the same RF circuits to be used for higher data rates."), 7:10-14 ("increase the data rate").

lowest (i.e., 1 Mbit/s) data rate.[38] Therefore, adding a destination address to the preamble of Snell would increase the amount of information *transmitted at the lowest data rate*, frustrating Snell's goal of *increasing the data rate.* Akl, at ¶ 174. For at least this reason, it would not have been obvious to one of ordinary skill in the relevant art to combine Yamano's teaching of a destination address in a preamble with Snell. *See* Akl, at ¶ 175.

In addition, given that the proposed IEEE 802.11 standard was not publicly available, one of ordinary skill would have been concerned that Snell's system would not remain complaint with the proposed IEEE standard if Snell was modified to include address information in the header. Akl, at ¶ 176. Again, that would have discouraged the skilled artisan from making the suggested combination, as one of the intended purposes of Snell invention was to maintain compatibility with the proposed IEEE 802.11 standard. Akl, at ¶ 176. Without access to the teachings of the proposed IEEE 802.11 standard, one of ordinary skill in the art would not have any reasonable expectation that Snell's transceiver would still act in accordance with the proposed IEEE 802.11 standard if it were modified to include address information in the header. Akl, at ¶ 177. For this additional reason, one of ordinary skill in the relevant art would have been discouraged from modifying Snell's transceiver to include Yamano's address information in the header (as suggested by the Office) without a reasonable expectation that it would function as intended, *i.e.,* in accordance with the proposed IEEE 802.11 standard. *See* Akl, at ¶ 178.

[38] *Snell* at 6:64-66 ("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."). *See also id.* at Fig. 3, 6:51-59, 7:10-14.

VIII. Litigation

Pursuant to 37 C.F.R. § 1.565(a), Patent Owner hereby informs the Office of prior and concurrent proceedings in which the patent is or has been involved by listing them in Exhibit A.

Respectfully submitted,

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CERTIFICATE OF SERVICE

It is hereby certified that on this 30th day of June, 2017, the foregoing **REPLY TO OFFICE ACTION** 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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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)).

Yuzhen Ge

Primary Examiner

Art Unit: 3992

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 ("**Sep 2016 Order**") granting reexamination of claims 2 and 59 of the `580 patent.

On Mar. 31, 2017, the Office mailed a non-final office action ("**Mar 2017 Non-Final Office Action**").

On Jun. 30, 2017, the Patent Owner filed a response ("**Jun 2017 Response**") to the Mar 2017 Non-Final Office action. The Jun 2017 Response includes, among other things, remarks ("**Jun 2017 Remarks**") and declarations by Robert Aki ("**Jun 2017 Aki Dec**") under 37 C.F.R. §1.132. No claims has been amended.

II. 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 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").

vii. Admitted Prior Art, Figs. 1 and 2, col. 3, line 40-col. 4, line 50 of the `580 patent (see IPR2014-00518, Final Written Decision, p. 13) ("APA")

viii. U.S. Patent No, 5,706,428, filed Mar. 14, 1996, issued Jan. 6, 1998 to Boer ("Boer").

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.

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 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; Harris AN9614 at p.3 discloses poll scheme/protocol or master/slave relationship), 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 V, 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. RESPONSE TO ARGUMENTS

1. SNQs

Patent Owner argues that the Sep 2016 Order did not explain how any of the art included in its alleged SNQs raises an SNQ, other than stating that the same art was not previously before the Office (Jun 2017 Remarks, p. 12).

The Examiner disagrees. The Sep 2016 Order at pp. 7-11 explained clearly in detail how Snell raised an SNQ.

Patent Owner argues:

> The Office's analysis falls short of that required to establish an SNQ in that it fails to recognize the fact that Snell is at best cumulative to U.S. Patent No. 4,706,428 ("Boer") – a reference fully considered by the PTAB in multiple IPRs. An argument already decided by the Office cannot raise a new question of patentability. E.g., Ex parte Lam Research Corp., 2012 WL 1178196, at 5 (PTAB 2013); MPEP § 2242 (no substantial new question of patentability if "the same question of patentability has already been decided as to the claim").
> --Jun 2017 Remarks, pp. 8-9.

Patent Owner appears to argue that Snell and the references incorporated by reference by Snell are at best cumulative to Boer and because Boer was considered by the PTAB in multiple IPRs, no SNQ could be raised in the Order (Jun 2017 Remarks, pp. 8-21).

The Examiner disagrees. MPEP 2242 states:

> 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. Issues involving 35 U.S.C. 325(d) must be referred to the Director of the CRU.

MPEP 2216 states:

> For requests filed under 35 U.S.C. 302, it is not sufficient that a request for reexamination merely proposes one or more rejections of a patent claim or claims as a basis for reexamination. It must first be demonstrated that a patent or printed publication that is relied upon in a proposed rejection presents a new, non-cumulative technological teaching that was not previously considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested, and during the prosecution of any other prior proceeding involving the patent for which reexamination is requested. See also MPEP § 2242.

First, Snell presents a new, non-cumulative technological teaching that was not previously considered and discussed on the record *during the prosecution of the application that resulted in the patent for which reexamination is requested* (see Sep 2016 Order, pp. 9-11).

Second, in all the previous IPRs, i.e., IPR2014-00518, IPR2014-00519, IPR2014-00514, IPR2014-00515, IPR2015-00114 and IPR2015-00118, PTAB did not institute review of claims 2 and 59 and therefore the teaching presented by Snell and references incorporated by Snell regarding claims 2 and 59 is new and non-cumulative. Although the reference of Boer is similar to Snell, there is no provision in MPEP that requires comparing two prior art references and determines if one is cumulative to another to determine if a SNQ exists for claims that have not been reexamined before.

Accordingly, because Snell was never considered by the Office regarding claims 2 and 59, the question of patentability raised by Snell is new.

Patent Owner argues:

> Congress intended that the substantial new question standard be judiciously interpreted to prevent cases of abusive tactics and harassment of

> patentees through reexamination. In re Swanson, 540 F.3d 1368, 1380-1381 (Fed. Cir. 2008) (citing H. R. Rep. No. 107-120, at 3).
>
> Thus, an argument already decided by the Office cannot raise a new question of patentability. Ex parte Lam Research Corp., 2012 WL 1178196, slip at 5 (PTAB 2013) (citing Swanson, 540 F.3d at 1380; MPEP § 2242 (no substantial new question of patentability if "the same question of patentability has already been decided as to the claim").
>
> --Jun 2017 Remarks, p. 23.

The Examiner would like to point out that there is no question of patentability that has been decided as to claims 2 and 59 of the `580 patent because claims 2 and 59 were not the subject of previous IPRs or any previous reexamination proceedings. Snell is new and therefore "the same question of patentability" has not been raised before and Snell can be used to raise a SNQ.

Patent Owner further cites *In re Recreative Technologies Corp.*, 83 F.3d 1394 (Fed. Cir. 1996) to conclude the Office lacks jurisdiction to proceed (Jun 2017 Remarks, pp. 25-26).

The Examiner disagrees. The case of *In re Recreative Technologies Corp.*, 83 F.3d 1394 (Fed. Cir. 1996) is different from the instant reexamination proceeding in the following:

> On reexamination the examiner rejected claims 1, 2, 4-7, and 17 as unpatentable on the ground of obviousness, 35 U.S.C. § 103, in view of a reference to Ota. The examiner did not reject any claim on any of the eight new references cited by Preferred, and did not cite any reference other than Ota. The examiner confirmed original claims 13-16 and 18-20 and held patentable original claims 3 and 8-12. The Ota reference had been cited in the original examination on the same ground, obviousness, and the claims had been held patentable over Ota.

--Background, 83 F.3d 1394, 38 U.S. P.Q.2d 1776.

In other words, the Examiner in the reexamination proceeding leading to *In re Recreative Technologies Corp.*, 83 F.3d 1394 (Fed. Cir. 1996) used the same reference Ota to reject some claims while the same reference had been cited in the original examination on the same ground, i.e., obviousness, and the claims had been held patentable over Ota. In the instant proceeding, Snell was not on the record in the original examination, in the multiple IPRs and has not been considered as to the patentability of claims 2 and 59. Therefore *In re Recreative Technologies Corp.*, 83 F.3d 1394 (Fed. Cir. 1996) is not applicable to the instant reexamination proceeding.

Conclusion: Because Snell has never been considered prior to the instant reexamination proceeding and was not on the record prior to the instant reexamination proceeding and because claims 2 and 59 have not been the subject of IPRs, the SNQs as explained in the Sep 2016 Order at pp. 8-11 are fully supported by MPEP 2216 and 2242.

2. Broadest Reasonable Interpretation

Patent Owner cites *Microsoft Corp. v. Proxyconn, Inc., 789 F.3d 1292, 1298 (Fed. Cir. 2015)* and the claim construction in other infringement court cases and IPRs to argue that no patentable weight to most of the claim limitation is an unreasonable claim construction (Jun 2017 Remarks, pp. 28-33).

The Examiner disagrees. In *Microsoft Corp. v. Proxyconn, Inc., 789 F.3d 1292, 1298 (Fed. Cir. 2015)*, Proxyconn could not amend claims, similar to other infringement court cases. On the contrary, in *ex parte* reexamination proceedings as in the current

reexamination proceeding, Patent Owner is given the opportunity to amend claims. Therefore, the conclusion drawn by IPRs or infringement court cases or the claim interpretation set forth in IPRs or infringement court cases may not be applied in the current ex parte reexamination. Further PTAB in IPR2014-00518 (Final Written Decision, p. 5) reiterates that in IPR,

> the Board construes claim terms in an unexpired patent using their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); In re Cuozzo Speed Techs., LLC, 793 F.3d 1268, 1275–79 (Fed. Cir. 2015). The claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art. In re Am. Acad. of Sci. Tech. Ctr., 367 F.3d 1359, 1364 (Fed. Cir. 2004). The Office must apply the broadest reasonable meaning to the claim language, taking into account any definitions presented in the specification. Id. (citing In re Bass, 314 F.3d 575, 577 (Fed. Cir. 2002)). The "ordinary and customary meaning" is that which the term would have to a person of ordinary skill in the art in question. In re Translogic Tech., Inc., 504 F.3d 1249, 1257 (Fed. Cir. 2007).
> -IPR2014-00518, Final Written Decision, p. 5.

Therefore in this ex parte reexamination proceeding, just like IPRs of an unexpired patent, broadest reasonable interpretation of claim terms in light of specification is used.

Further, MPEP 2103.I.C states:

> Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. The following are examples of language that may raise a question as to the limiting effect of the language in a claim:
>
> (A) statements of intended use or field of use,
>
> (B) "adapted to" or "adapted for" clauses,
>
> (C) "wherein" clauses, or
>
> (D) "whereby" clauses.

MPEP 2111.04 states:

> Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. However, examples of claim language, although not exhaustive, that may raise a question as to the limiting effect of the language in a claim are:
>
> (A) "adapted to" or "adapted for" clauses;
> (B) "wherein" clauses; and
> (C) "whereby" clauses.

Sections IV.B and Section V of Mar 2017 Non-Final Office explained why some of the limitations were not given patentable weight.

Patent Owner cites *Ex parte Hosoito* which states

> …the prior art apparatus must be capable of performing the claimed function. As such to be capable of performing the functional limitations in claim 1, the control units or comparable structure must possess the necessary structure, that is, programming, to function as claimed. (emphasis added) (citation omitted)."

--Jun 2017 Remarks, p. 31.

First, the Examiner agrees with the statement in *Ex Parte Hosoito*. As long as a transceiver having the capability of being programmable then the transceiver is able to meet the claim limitations of claims 2 and 59. The transceiver as disclosed by Snell comprises of a HSP3824 baseband processor (col. 1, lines 55-64) which is programmable. The limitations of original claim 1 of the `580 patent does not use the language of "configured to." Instead, it uses terms like "capable of" and "for." Only one limitation in claim 58 uses "configured to," i.e., "*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...," which is disclosed by Snell. Claims 2 and 59, dependent on claim 1 and claim 58 respectively, use the term "configured to." However, the functions or limitations in claims 2 and 58-59 that are after "configured to" are disclosed by Snell and they are given patentable weight as explained in the rejection, i.e., Sections V and VI of Mar 2017 Non-Final Office Action.

Therefore the transceiver of Snell is capable of performing the functions as recited in claims 2 and 59 and anticipates claims 2 and 59 of the `580 patent.

Patent Owner argues that Mar 2017 Non-Final Office Action was too narrow on the interpretation of "different type of modulation methods" (Jun 2017 Remarks, pp. 36-44) and argues that "different type of modulation methods" means "different family of modulation methods" (Jun 2017 Remarks, pp. 36-44).

First, the Examiner would like to point out that PTAB has explained why "different type of modulation methods" are interpreted as modulation methods that are incompatible with one another in great length (see IPR2014-00518, Final Written Decision, pp. 7-12). PTAB also agrees with the Petitioner in IPR2015-00518 to the extent that prosecution history is entitled to little weight under the broadest reasonable interpretation standard (IPR2015-00518, Final Written Decision at pp. 7-8). PTAB also pointed out that Patent Owner's proffered construction of "types" of modulation methods being based on "one or more" of the carrier waves's frequency, phase and amplitude "families" is, itself, ambiguous and PTAB would interpret different "types" of

modulation as modulation methods that are incompatible with one another (IPR2015-00518, Final Written Decision at pp. 9-12).

Second, the Examiner would like to point out that unlike in infringement court cases, in an *ex parte* reexamination proceeding of an expired patent, the Patent Owner can choose to amend the claims to clearly define what a term means. The Patent Owner appears to ask the Examiner to interpret the term narrower than the plain meaning of the term. As explained in Section IV of the Mar 2017 Non-Final Office Action, unless the specification clearly defines what "different type of modulation" means, the term "different type of modulation method" is interpreted under broadest reasonable interpretation and the interpretation set forth in IPR2015-00518 is adopted (see Mar 2017 Non-Final Office Action, p. 7). The Patent Owner can amend the claim if the Patent Owner would like to have a narrower meaning of the term. Further, the instant specification, i.e., the specification of the `580 patent, also fails to clearly define what a "different family of modulation methods" means. In fact, the term "different family of modulation methods" was not even present in the specification of the `580 patent.

3. Harris AN9614 and Harris 4064.4

Patent Owner argues that there is no sufficient evidence that Harris AN9614 and Harris 4064.4 are public accessible and the documents were not incorporated by Reference by Snell (Jun 2017 Remarks, pp. 55-62).

The Examiner disagrees.

First, 37 CFR 1.11 states:

> (a) The specification, drawings, and all papers relating to the file of: A published application; a patent; or a statutory invention registration are open to inspection by the public, and copies may be obtained upon the payment of the fee set forth in § 1.19(b)(2).

In other words, as long as the documents, i.e., Harris AN9614 and Harris 4064.4, were provided by Snell at the time the application was filed, these documents are publicly accessible and incorporation by reference is reasonable.

Second, Snell is a 102(e) reference. According to 102(e)(2), the invention was described in a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent…. It does not matter whether the content of that patent (in this case, Snell) was published before the invention or not.

Third, the publications that are incorporated by reference are different from publications used for prior art. As long as at the time of application of Snell, the documents of Harris were provided by Snell, then the material in Harris documents can be incorporated by reference into the application of Snell.

MPEP 2163.07(b) states:

> Instead of repeating some information contained in another document, an application may attempt to incorporate the content of another document or part thereof by reference to the document in the text of the specification. The information incorporated is as much a part of the application as filed as if the text was repeated in the application, and should be treated as part of the text of the application as filed. Replacing the identified material incorporated by reference with the actual text is not new matter. See 37 CFR 1.57 and MPEP § 608.01(p) for Office policy regarding incorporation by reference. See MPEP § 2181 for the impact of incorporation by reference on the determination of whether applicant has complied with the requirements of 35 U.S.C. 112(b) or pre-AIA 35 U.S.C. 112, second paragraph when 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph is invoked.

In other words, the purpose of incorporation by reference is to avoid repeating some information in another document. At the time of filing of Snell, the Harris documents were available to the Office. Therefore, instead of repeating the material of the Harris documents, incorporation by references of these two documents in the specification of Snell made the specification more concise and is supported by MPEP and the material incorporated by reference in Snell is part of the text of the application of Snell as filed.

Fourth, 37 CFR 1.57 (e) states:

> (e) Other material ("Nonessential material") may be incorporated by reference to U.S. patents, U.S. patent application publications, foreign patents, foreign published applications, prior and concurrently filed commonly owned U.S. applications, or non-patent publications. An incorporation by reference by hyperlink or other form of browser executable code is not permitted.

Nowhere in the above section requires the non-patent publications be public accessible.

Fifth, to the extent that Patent Owner insists the Harris documents should be public accessible, each of the Harris documents has a publication date and copyright information and it was therefore accessible to the pertinent part of the public and available for duplication. In re Wyer 210 USPQ 790.

Based on the above reasons, incorporation by references of Harris publications, i.e., Harris AN9614 and Harris 4064.4, in Snell conforms to MPEP and the specification of Snell includes the text of Harris AN9614 and Harris 4064.4.

4. Master/Slave Relationship

Patent Owner alleges that three limitations are missing from all of the relied-on art and master/slave relationship being one of them (Jun 2017 Remarks, pp. 70-73).

The Examiner disagrees.

Claim 2 recites:

> 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.
>
> 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.

MPEP § 2103 I C states “Product claims are claims that are directed to either machines, manufactures, or compositions of matter.”

First, the Examiner disagrees that the master/slave relationship is a limitation. Claim 2 is a single means claim and cannot invoke 112 6th paragraph, the whole claim of claim 2 comprises a transceiver which as it is known in the art as comprising a transmitter and a receiver. The only limitation in claim 2 that precedes with "configured to" is “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 explained in the rejection under 35 USC 102 in Section V of the Mar 2017 Non-Final Office Action, Snell met this limitation. As to claim 59, in addition to the transceiver is configured to send the third sequence as in claim 2, the transceiver is also configured to transmit a first sequence and a second sequence as claimed, which is also disclosed by Snell. Because claims 2 and 59 do not invoke 112 6th paragraph and a master/slave relationship is not a structure, the term "master/slave relationship" is not part of a transceiver or the device of claims 2 and 59. Accordingly, in response to Patent Owner's argument that the references fail to show certain features of Patent Owner's invention, it is noted that the features upon which Patent Owner relies (i.e., master/slave relationship) are not a structure in the rejected product claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Second, to the extent that the Patent Owner argues that a master/slave relationship should be part of the structure of the transceiver, the transceiver of Snell is also capable of communication in a master role in a master/slave relationship just like the transceiver in claims 2 and 59 of the `580 patent because both transceivers are programmable.

Third, Snell discloses a spread spectrum transceiver that can be used as an access point for WLAN or wireless local area network (col. 1, lines 34-46) and is capable of acting as a master in a master/slave relationship. On contrary to Patent Owner's statement, Snell's

transceiver is not set up only in a peer to peer communication. Harris AN9614 discloses that the PRISM chipset described in Snell can operate in a polled (master/slave) protocol:

> [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's transceiver is configured to operate in a polled (master/slave) protocol, power consumption can beneficially be reduced by more than an order of magnitude.

A polled protocol is a master/slave protocol, as confirmed by the '580 patent ('580 patent at col. 4, lines 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."); IPR2014-00518, Exhibit 1220 (Goodman Declaration) ¶103.

Further, both claims 1 and 58 recite master/slave relationship and it is determined by PTAB that master-slave relationship is unpatentable subject matter.

To distinguish from prior art, the Examiner suggests the Patent Owner to claim a device comprising a processor together with at least one other component shown in Fig. 3 if functional claiming is used.

5. Two different types of modulation method

Patent Owner argues that the proper construction of "different types of modulation methods," confirmed by the Federal Circuit, is "different families of modulation techniques, such as FSK family of modulation methods and the QAM family of modulation methods" (Jun 2017 Remarks, p. 81).

The Examiner disagrees. Unlike in an infringement case such as in *Rembrandt Wireless Tech. v. Samsung Elec. Co.*, claims can be amended in an examination or reexamination proceeding and therefore must be given broadest reasonable interpretation in light of the specification (see MPEP 2111).

The specification does not use the term "different family of modulation method" or "FSK family of modulation method." In fact, the specification of the `580 patent does not mention frequency shift key modulation or FSK modulation, let alone FSK family of modulation method. Therefore in light of specification, the Examiner could not interpret "different types of modulation method" as "different family of modulation method." The instant specification states:

> 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.

--col. 5, lines 7-21, the `580 patent.

As stated in the above section of the `580 patent, one type of modulation method can be used to implement both the high and low data rate application, though using a low performance one can be cost saving. Anyway, the specification of the `580 patent fails to describe that different types of modulation methods are different families of modulation methods and the Examiner will interpret different type of modulation method according to its plain meaning. For example, BPSK is a different type of modulation method than QPSK because they use different algorithms when performing modulation and the data modulated with BPSK cannot be demodulated with a QPSK demodulator or vice versa.

Patent Owner argues "even under the Office's overly broad, flawed claim construction in which it defines "Different types of modulation method[s]" to mean "modulation methods that are incompatible with one another," the Office's rejection fails because this requirement is not disclosed nor would it have been suggested by the cited references, as non discloses or would have suggested any incompatibility problem whatsoever." (Jun 2017 Remarks, p. 82).

The Examiner disagrees. Snell teaches using two types of modulation methods, i.e., BPSK and QPSK. It is well known in the art at the time of invention of the `580 patent that BPSK and QPSK are incompatible because signal modulated using one method cannot be demodulated by another method or the number of phases each of the methods uses to modulate data is different than that of the other. In other words, signal modulated by BPSK method cannot be demodulated using QPSK demodulator or vice

versa and therefore they are incompatible with each other. See also the section above titled "Broadest Reasonable Interpretation."

Therefore Snell teaches "different type of modulation method."

Further, in IPR2014-00518, PTAB clearly explained how to interpret "different type of modulation methods" and determined that Boer teaches different types of modulation methods. Similarly Snell also teaches different types of modulation methods.

6. The Third Sequence

Patent Owner argues that the cited references do not disclose and would not have suggested the claimed transceiver capable of transmitting the claimed "third sequence [that] is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method." (Jun 2017 Remarks, p. 85).

The Examiner disagrees. As explained in the Sep 2016 Order at pp. 8-11 Snell teaches transmitting the third sequence as recited in claims 2 and 59. This section from Sep 2016 Order is enclosed below:

> 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.*").

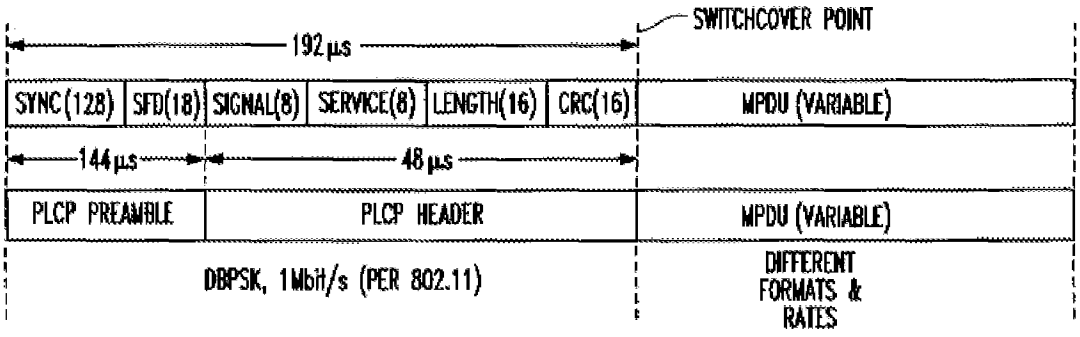

FIG. 3

-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.

-- Sep 2016 Order at pp. 8-11.

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."

Patent Owner alleges that "disclosure failed to show "how the SIGNAL and SERVICE fields might be deemed, as alleged, to `indicate' that communication from the master to the slave has reverted to the first modulation method, as recited in claim 2" and claim 59 (Jun 2017 Remarks, p. 87).

As explained in the Sep 2016 Order at p. 11 that Snell's transceiver that 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., PLCP header with the SIGNAL field) "*indicates*" (e.g., using "0Ah") the modulation type (e.g., BPSK) used for modulating the MPDU data of the second packet has reverted to use the first modulation method, i.e., BPSK. More specifically,

First sequence ----- PLCP header including SIGNAL field of a first packet - SIGNAL field is modulated using BPSK. The value of SIGNAL is "14h."

Second sequence ------ MPDU (variable) shown in Fig. 3, modulated by 2Mbits/S QPSK indicated by "14h" (see col. 6, lines 47-63 of Snell).

Third sequence ------ PLCP header including SIGNAL field of a second packet - SIGNAL field is modulated using BPSK. The value of SIGNAL is "0Ah," indicating the modulation for the MPDU (variable) for the second packet has reverted to BPSK.

As explained in the Sept 2016 Order at pp. 8-11 enclosed above, the transceiver of Snell transmits a first packet comprising a first sequence (PLCP preamble and PLCP header, SIGNAL field in PLCP header indicates "14h") and a second sequence, i.e., MPDU (variable) in the first packet is modulated with a second modulation method indicated by "14h," i.e., QPSK, and then transmits a second packet which comprises PLCP preamble and PLCP header, i.e., the third sequence, and the SIGNAL field of the PLCP header of the third sequence indicates the use of a first modulation method BPSK by having the value of "0Ah" for modulating the MPDU (variable) in the second packing. Because the third sequence indicates using BPSK, which is used to modulate the first

sequence, to modulate the MPDU (variable), the third sequence indicates the communication from the master to the slave has reverted to the first modulation method.

Patent Owner argues:

> Snell discloses "switch[ing] on-the-fly between different data rates and/or formats," Snell at 2:29-30, but not in the manner claimed or for the reason behind the `580 claims. More specifically, the ability of Snell's transceiver to "switch on-the-fly" is not a teaching of sending multiple packets of the signal format shown in Fig. 3 that switch from using a second modulation method for the payload portion of the first packet to using a first modulation method for the payload portion of the second packet (labelled as the "next packet"). See Snell at Fig. 3. ... the on-the-fly switching of Snell relates to a modulation switch between the PLCP header and the MPDU variable data portion within a single packet having the signal format shown in Fig. 3. See Snell at Fig. 3...
>
> --Jun 2017 Remarks, pp. 89-90.

As explained above, the teaching of Snell reads on the claim limitations of claims 2 and 59. Therefore Snell teaches claims 2 and 59 in the manner claimed. In response to Patent Owner's argument that the references fail to show certain features of Patent Owner's invention, it is noted that the features upon which Patent Owner relies (i.e., the reason behind the `580 claims) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The Examiner suggests the Patent Owner to amend the claims to distinguish them from the disclosure of Snell to overcome the rejections set forth in the Mar 2017 Non-Final Office Action.

Regarding Kamerman, Patent Owner argues "there is no teaching or suggestion that it would `fall back' to address an incompatibility issue when a master –which it does not have and would not have suggested – wants to communicate with a slave – which it does not have and would not have suggested." (Jun 2017 Remarks, p. 91). Patent Owner further argues "maximizing the data transfer rate and adapting to changing conditions in a peer-to-peer communication system – objective of Boer and Kamerman – would not have provided the solution to the incompatibility problem identified and claimed in the `580 patent."(Jun 2017 Remarks, p. 92).

In response to Patent Owner's argument that Kamerman fails to address an incompatibility issue, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Patent Owner further argues "Snell's transceiver would increase the transmission rate during lower load periods and would decrease the transmission rate during higher load periods" (Jun 2017 Remarks, p. 92).

The Examiner disagrees. MPEP 2141.II.C states:

> "A person of ordinary skill in the art is also a person of ordinary creativity, not an automaton." KSR, 550 U.S. at 421, 82 USPQ2d at 1397. "[I]n many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." Id. at 420, 82 USPQ2d at 1397. Office personnel may also take into account "the inferences and creative steps that a person of ordinary skill in the art would employ." Id. at 418, 82 USPQ2d at 1396.

Patent Owner fails to provide evidence why the combination of Snell and Kamerman would increase data rate during lower load periods, etc.. Further, increasing data or decreasing data rate is not recited in the claims and Patent Owner is arguing limitation not being claimed again.

7. Combination of Snell with Kamerman and/or Yamano

Patent Owner asserts "it would not have been obvious to adapt Snell to a master/slave system and solve the problem identified and solved in the `580 patent because of the fundamental differences between peer-to-peer and master/slave communications" (Jun 2017 Remark, p. 94).

As explained above, claims 2 and 59 recite only a transceiver. A master/slave communication relationship is not a structure. It is not clear how it can be part of a transceiver. Because claims 2 and 59 are single means claims, they cannot invoke 112 6th paragraph. The only limitations that have patentable weights are the limitations that are after "configured to." Snell teaches the limitations as explained above and in Mar 2017 Non-Final Office Action.

Further as explained above, the problem of the `580 patent solve must result in structural difference to be distinguished from prior art such as Snell. In this case, claims 2 and 59 claim a transceiver and Snell teaches a transceiver.

To the extent that a master/slave relationship should be given patentable weight, Snell discloses a spread spectrum transceiver that can be used as an access point for WLAN or wireless local area network (col. 1, lines 34-46) and is capable of acting as a master in a master/slave relationship (Harris AN9614 at p. 3). On contrary to Patent Owner's statement,

Snell's transceiver is not set up only in a peer to peer communication. In fact, Snell is silent on what kind of setting the transceiver is in. An ordinary skill in the art would be able to configure it to use in the master/slave setting.

To the extent that a reviewing person does not agree that Snell teaches the third sequence, Kamerman is introduced to teach switching between different modulation methods in the limitation of transmitting the third sequence, i.e., the limitation "*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*," which only requires 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 explained in Mar 2017 Non-Final Office Action at p. 18, 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). The third sequence is the unacknowledged packet or a number of successive correctly acknowledged packet transmission.

8. Polled Scheme of Harris AN9614

Patent Owner argues that the polled scheme of Harris AN9614 is single rate and is not a communication system using multiple modulation methods (Jun 2017 Remarks, p. 95).

In response to Patent Owner's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Snell teaches using multiple modulation methods so does Kamerman.

Harris AN9614 is used to show that the transceiver of Snell can be used in a master/slave relationship. Further, claims 1 and 58 recite using multiple modulation methods and it is determined by PTAB that APA and Boer discloses it. Snell and Harris AN9614 similarly disclose all the limitation of claims 1 and 58.

9. Snell, Kamerman and IEEE802.11 standard

Patent Owner argues "one of ordinary skill would not have been motivated to adapt Snell to a master/slave system and then combine with Kamerman lacking any teaching regarding the proposed IEEE 802.11 standard"(Jun 2017 Remarks, p. 97). Patent Owner further asserts the draft IEEE 802.11 standard was not available to anyone outside the IEEE 802.11 working group (Jun 2017 Remarks, p. 97). Patent Owner further argues "it would not have been obvious to combine Snell with Kamerman after adapting Snell to a master/slave system because there is no evidence that Snell would remain compliant with the draft IEEE 802.11 standard." (Jun 2017 Remarks, p. 99).

In response to Patent Owner's argument that the references fail to show certain features of Patent Owner's invention, it is noted that the features upon which Patent Owner relies (i.e., compliant to IEEE 802.11) are not recited in the rejected product claim(s). Although the claims

are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Claims 2 and 59 of the `580 patent do not recite "IEEE 802.11" standard. The rejection of Snell, in view of Yamano and Kamerman do not rely on the standard either.

10. Snell and Yamano

Patent Owner argues

> the goal of Snell is to increase the data rate at which information is communicated. However the preamble of Snell is transmitted at the lowest (i.e., 1 Mbits/s) data rate. Therefore adding a destination address to the preamble of Snell would increase the amount of information transmitted at the lowest data rate, frustrating Snell's goal of increasing the data rate. Akl, at ¶174. For at least this reason, it would not have been obvious to one of ordinary skill in the relevant art to combine Yamano's teaching of a destination address in a preamble with Snell.
>
> --Jun 2017 Remarks, pp. 102-103.

Patent Owner's argument is not persuasive.

First, as explained above, claims 2 and 59 merely claim a transceiver. Because claims 2 and 59 are single means claims and cannot invoke 112 6th paragraph and product claims are directed to structure, the transceiver of claims 2 and 59 only configured to transmit some sequences which can include addresses or data or any information.

Second, Snell teaches that the transceiver is for use in a WLAN (col. 4, lines 41-47). It is known in the art that a packet has a destination address in WLAN and it is so well known that Snell does not even mention it. Yamano is introduced only if a

reviewing person does not agree that Snell inherently teaches it. Using some bits for destination address in a packet is necessary to send the packet to a right destination. The necessity outweighs any increase of bit rate needed as it is commonly done in wired and wireless communications. Further, the combination of Snell with Yamano is supported by KSR Rationale (C) as explained in Mar 2017 Non-Final Office Action at p. 14.

VIII. 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), automatically changed to that of the patent file as of the effective date.

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

IX. CONCLUSION

THIS ACTION IS MADE FINAL.

A shortened statutory period for response to this action is set to expire two months from the mailing date of this action.

Extensions of time under 37 CFR 1.136(a) do not apply in reexamination proceedings. The provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Further, in 35 U.S.C. 305 and in 37 CFR 1.550(a), it is required that reexamination proceedings "will be conducted with special dispatch within the Office."

Extensions of time in reexamination proceedings are provided for in 37 CFR 1.550(c). A request for extension of time must specify the requested period of extension and it must be accompanied by the petition fee set forth in 37 CFR 1.17(g). Any request for an extension in a third party requested ex parte reexamination must be filed on or before the day on

which action by the patent owner is due, and the mere filing of a request will not effect any extension of time. A request for an extension of time in a third party requested ex parte reexamination will be granted only for sufficient cause, and for a reasonable time specified. Any request for extension in a patent owner requested ex parte reexamination (including reexamination ordered under 35 U.S.C. 257) for up to two months from the time period set in the Office action must be filed no later than two months from the expiration of the time period set in the Office action. A request for an extension in a patent owner requested ex parte reexamination for more than two months from the time period set in the Office action must be filed on or before the day on which action by the patent owner is due, and the mere filing of a request for an extension for more than two months will not effect the extension. The time for taking action in a patent owner requested ex parte reexamination will not be extended for more than two months from the time period set in the Office action in the absence of sufficient cause or for more than a reasonable time.

The filing of a timely first response to this final rejection will be construed as including a request to extend the shortened statutory period for an additional two months. In no event, however, will the statutory period for response expire later than SIX MONTHS from the mailing date of the final action. See MPEP § 2265.

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/

/M. F./
Supervisory Patent 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 *6/30/2017* .
☐ 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 _____ 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)

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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 07/28/2017

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3992	

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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.

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THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS

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BOSTON, MA 02199-3600

Date:

JUL 27 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)).

Decision Expunging/Returning Papers in Reexamination	Control No.: 90/013,808

1. ☒ THIS IS A DECISION EXPUNGING THE PAPERS FILED June 23, 2017 by Third Party Requester from the record of the reexamination proceeding(s). Since each expunged paper does not form part of the record, it is being expunged by marking it "closed" and "not public" in the Office's Image File Wrapper (IFW) system.
☐ THIS IS A DECISION RETURNING/DESTROYING THE PAPER(S) FILED _____ by_____.

2. The papers being ☒ expunged ☐ returned ☐ destroyed are:

Third Party Requester's June 23, 2017 submission entitled "Third Party Requesters' to Respond to Patent Owner's Letter to the Director" and Exhibit A and "Third Party Requester's Response to Patent Owner's Letter to the Director".

This decision will be made of record in the reexamination file(s).

3. THE ABOVE-IDENTIFIED PAPERS LACK A RIGHT OF ENTRY BECAUSE:
   - A. ☐ Patent Owner may not file papers in the record prior to the order granting/denying reexamination (*ex parte*) or first action (*inter partes*). 37 CFR §§1.530(a) and 1.939(b).
   - B. ☒ Third party requester in an *ex parte* reexamination may not file papers in the reexamination file subsequent to the request, except a reply to a proper patent owner statement under 37 CFR 1.530 *or a notice of concurrent proceedings as described in MPEP 2282*. See 37 CFR §§1.535 and 1.550(g).
   - C. ☐ Third party requester in an *inter partes* reexamination may not file papers in the record, except as specified in the rules, 37 CFR §§1.947, 1.951(b) and 1.983, and 37 CFR §§ 41.61-79, other than a notice of concurrent proceedings as described in MPEP 2686. See 37 CFR1.939.
   - D. ☐ Parties other than patent owner and a third party requester may not file documents in the record except a notice of concurrent proceedings. See 37 CFR §§1.550(h) and 1.939(a).
   - E. ☐ The notice of concurrent proceedings exceeds the permitted scope. See MPEP 2282, 2686.
   - F. ☒ Other: It is noted that the requester's papers purportedly were filed to respond to a patent owner letter. As no such letter was filed in this proceeding, the issue of whether the requester may file a response in opposition to such a paper is not relevant.

4. CONCLUSION
Telephone inquiries with regard to this decision should be directed to Stephen Stein at 571-272-1544, in the Central Reexamination Unit.

/Stephen J. Stein/
[*Signature*]

SPE, Central Reexamination Unit
(Title)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Control No.	: 90/013,808	Art Unit	: 3992
Patent No.	: 8,023,580	Examiner	: Yuzhen Ge
Filed	: September 12, 2016	Conf. No.	: 2211
Customer No.	: 06449	Atty. No.	: 3277-114.RXM1

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

Mail Stop *Ex Parte* Reexam
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO FINAL OFFICE ACTION

This Response is to the Final Office Action mailed July 18, 2017 ("FOA"). This Response is timely-filed, i.e., within the two-month period from the mailing date of the FOA. Thus, this Response will be construed as including a request to extend the shortened statutory period for an additional two months, i.e., to November 18, 2017, as indicated in the FOA, at 44. *See* MPEP § 2265(VII).

Introduction

Patent Owner Rembrandt ("Rembrandt") maintains the arguments made in its June 30, 2017 Reply to the non-final Office Action (mailed March 31, 2017). Rembrandt also continues to rely on the evidence it submitted in support of those arguments, including that submitted through the Declaration of Dr. Robert Akl ("Akl Declaration I"). Rembrandt has carefully considered the Examiner's arguments in the FOA but does not believe they are sufficient to fully address Rembrandt's arguments or outweigh Rembrandt's evidence in support of those arguments. Thus, Rembrandt respectfully requests that the Examiner reconsider Rembrandt's arguments in its June 30, 2017 Reply and the supporting evidence provided in the Akl Declaration I and issue a favorable Office Action based on that reconsideration.

In addition to Rembrandt's arguments and evidence provided in its June 30, 2017 Reply, Rembrandt respectfully requests the Examiner to consider the following additional arguments, which are supported by evidence provided in the accompanying Supplemental 37 C.F.R. § 1.132 Declaration of Dr. Robert Akl ("Akl Declaration II"). Although submitted after a final rejection, the Akl Declaration II is timely presented because it is necessary to rebut to the Examiner's new arguments made for first time in the FOA. 37 C.F.R. § 1.116(e) ("An affidavit or other evidence submitted after a final rejection … in an ex parte reexamination filed under § 1.510 … but before or on the same date of filing an appeal … may be admitted upon a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented."). *See also* MPEP § 716.01(A). The Examiner's new arguments introduced in the FOA include: (i) arguing that "Snell inherently teaches" a destination address, FOA at 41-42, (ii) providing a new construction for "different type[s]" of modulation methods, *id.* at 31, (iii) based

on the new construction, arguing that "BPSK is a different type of modulation method than QPSK," *id.*, and (iv) arguing that Snell's disclosure that the transceiver can provide an access point for a wireless access point supports the Office's position that the transceiver of Snell is capable of acting as a master in a master/slave relationship. *Id.* at 28, 38 (citing Snell at 1:34-46). *See also* Petition Requesting the Director to Exercise His Supervisory Authority Pursuant to 37 C.F.R. § 1.181 and/or § 1.182 (filed concurrently) at 12-16. As the Akl Declaration II is timely presented, it "must be considered by the examiner." MPEP § 716.01(B) ("Evidence traversing rejections, when timely presented, must be considered by the examiner whenever present.").

The Harris Documents Were Not Publicly Accessible at the Time Snell was Filed

Also, for the first time, the Examiner relies on a regulation that was not in effect at the time of the Snell application:

> First, 37 CFR 1.11 states:
>
> > (a) The specification, drawings, and all papers relating to the file of: A published application; a patent; or a statutory invention registration are open to inspection by the public, and copies may be obtained upon the payment of the fee set forth in§ 1.19(b)(2).
>
> In other words, as long as the documents, i.e., Harris AN9614 and Harris 4064.4, were provided by Snell at the time the application was filed, these documents are publicly accessible and incorporation by reference is reasonable.

FOA, at 23-24. At that time, there was no mechanism for publishing applications and, in any event, Snell was not published prior to its issuance. Thus, the Examiner's reliance on 37 C.F.R. § 1.11 is misplaced. It is beyond dispute that the Snell file wrapper (which included the Harris documents) was not "open to inspection by the public" until Snell issued on November 9, 1999 – long after the priority date of the '580 Patent. It is well established that documents in a file

wrapper only become publicly accessible once the file wrapper is open to inspection by the public. *See, e.g., Microsoft Corp. v. Biscotti Inc.*, Case IPR2014-01457 (PTAB Mar. 19, 2015) (Paper 9) ("Petitioner does not identify any way that an interested person could or would have located the document submitted in the IDS of an unpublished, ungranted patent application … We are persuaded that Petitioner has not demonstrated the public accessibility of the HDMI Specification."). Therefore, the Harris documents are not prior art printed publications to the '580 patent as Snell was not subject to 37 C.F.R. § 1.11 and the Snell file wrapper became open for inspection *after* issuance of the '580 Patent.

The Combination of Snell and Harris AN9613 Does Not Suggest a Master/Slave Relationship

The Examiner posits:

> Snell discloses a spread spectrum transceiver that can be used as an access point for WLAN or wireless local area network (col. 1, lines 34-46) and is capable of acting as a master in a master/slave relationship. On contrary to Patent Owner's statement, Snell's transceiver is not set up only in a peer to peer communication. Harris AN9614 discloses that the PRISM chipset described in Snell can operate in a polled (master/slave) protocol:
>
> > [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's transceiver is configured to operate in a polled (master/slave) protocol, power consumption can beneficially be reduced by more than an order of magnitude.

FOA, at 28-29.

In other words, the Examiner assumes that a polled scheme or protocol can be equated to a master/slave configuration because a master/slave configuration may utilize a polled scheme. In doing so, the Examiner assumes that, because a master/slave configuration may utilize a polled scheme, the polled scheme taught in Harris AN9614 is part of a master/slate configuration. This is, of course, false. Instead, as explained by Dr. Akl:

> To the extent that the Office is equating Harris AN9614's "polled scheme" to a master/slave configuration, that position is based on a faulty understanding of the scope of "polling" in the relevant art and on an incorrect reading of Harris AN9614 and the '580 Patent. **While polling can also take place in a master/slave system, *see* '580 Patent at 4: 6-9 (describing its master/slave protocol as a "polled multipoint communications protocol,") that discussion does not limit polling — which is a more general term in the relevant art -- to master/slave protocols but rather describes one aspect of the claimed protocol. In fact, there is no suggestion in Harris AN9614 that its "polled scheme" is taking place in anything other than the peer-to-peer communications protocol being discussed in Harris AN9614.** *See* Harris AN9614 at 3.

Akl Declaration I at 119 (emphasis added); *see also id.* at 113-120.

In other words, while master/slave configurations *may* use polling protocols, the presence of a polling protocol neither necessitates nor implies the presence of a master/slave configuration. Furthermore, as Dr. Akl explains, a person or ordinary skill in the art would understand that Snell and the Harris documents are discussing peer-to-peer communications, not master/slave communications:

> The primary reference, **Snell, discloses a transceiver 30 (Snell at Fig. 1, 4:42-43) designed for peer-to-peer communications, such as carrier sense multiple access with collision avoidance (CSMA/CA) communications. *See* Snell at 5:26-29 (disclosing that Snell's transceiver includes a "CCA circuit block 44" that "provides a clear channel assessment (CCA) to avoid data collisions," i.e., collisions which do not occur in a master/slave setting). *See* also Fig. 1. Systems that implement a CSMA/CA protocol for collision**

> **avoidance are distinctly different than a master/slave system.** In a CSMA/CA system, any device on the network can initiate a communication whenever the device determines that no other communications are occurring.
>
> **In stark contrast, the claims of the '580 Patent are limited to master/slave communications**, as noted above, in which slave devices can only communicate on a network when prompted by a master.

Akl Declaration I at 104 (emphasis added); *see also id.* at note 10.

Accordingly, the Examiner's position is contrary to how one of ordinary skill in the relevant art would interpret the teachings of Snell and Harris AN9614. *See* Akl Declaration I, at 104, 113-120; *see also* Akl Declaration II at 10. Further, it is contrary to how one of ordinary skill would understand the use of an access point. An access point, if present, does not poll or control anything but rather merely serves as an interface between the WLAN and the wired network and thus does not act as a master. Snell, 1:36-38.

As explained by Dr. Akl:

> An access point acts as a distribution point, much like a router with gateway functionality, which allows a device in one network to talk to other devices in that network and/or another network. However, an access point is not the same as a master that controls communications from one or more slaves, where communication from a slave to a master occurs in response to a master communication from the master to the slave. There is no requirement that an access point be so configured. In fact, in Snell, the access point is configured in a peer-to-peer relationship with the other nodes in the network. Snell, 5:24-30.

Akl Declaration II, at ¶ 10. Notably, the access point described in Snell is described in the "Background of the Invention" section and never mentioned again in relation to Snell's invention.

The Examiner's "Plain Meaning" of Two Modulation Types Cannot Be Squared With The '580 Prosecution History or the Federal Circuit's Construction

The Court of Appeals for the Federal Circuit provided a construction for the "at least two types of modulation methods" recited in the claims of the '580 Patent as "different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods." *Rembrandt Wireless Tech.. v. Samsung Electronics*, 853 F. 3d 1370, 1377 (Fed. Cir. 2017). This determination was based upon claim construction rules that apply to both the *Phillips* standard and the broadest reasonable interpretation standard used in reexamination proceedings. Specifically, the CAFC looked to an "unambiguous" statement in the prosecution history of the '580 Patent to reach its conclusion. *See, e.g., Microsoft Corp. v. Proxyconn, Inc.*, 789 F. 3d 1292, 1298 (Fed. Cir. 2015) ("The PTO should also consult the patent's prosecution history in proceedings in which the patent has been brought back to the agency for a second review."). Nevertheless, according to the Examiner:

> [O]ne type of modulation method can be used to implement both the high and low data rate application, though using a low performance one can be cost saving. Anyway, the specification of the '580 patent fails to describe that different types of modulation methods are different families of modulation methods and the Examiner will interpret different type of modulation method according to its plain meaning. For example, BPSK is a different type of modulation method than QPSK because they use different algorithms when performing modulation and the data modulated with BPSK cannot be demodulated with a QPSK demodulator or vice versa.

FOA, at 31.

In other words, the Examiner divorces her interpretation from the prosecution history, explicitly declining to interpret the "at least two types of modulation methods" as "different families of modulation techniques." Even under the broadest reasonable interpretation, "the claims cannot be divorced from the specification and the prosecution history, as perceived by

persons in the field of the invention." *Personal Audio, LLC, v. Electronic Frontier Foundation*, No. 16-1123, slip op. at 8 (Fed. Cir. Aug. 7, 2017), *see also In re NTP, Inc.*, 654 F.3d 1279, 1288 (Fed. Cir. 2011).

Again, Rembrandt points to the prosecution history of the '580 Patent and to the Federal Circuit's determination: ("[T]he **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." *Rembrandt Wireless Tech. v. Samsung Elec. Co.*, Docket No. 2016-1729 (April 17, 2017) (emphases added). The Examiner has not explained what her "plain meaning" is or why her interpretation is different than that of the Office's reviewing court. The difference between the BRI and *Phillips* does not justify ignoring *fact findings* made by that court. Instead, construing a claim pursuant to the broadest reasonable interpretation standard includes "consult[ing] the patent's prosecution history in proceedings in which the patent has been brought back to the agency for a second review." *Proxyconn* at 1298. Accordingly, the Examiner is bound by the "unambiguous statement" from the prosecution history, identified by the Federal Circuit as the "**clearest** statement in the intrinsic record regarding the meaning of the 'different types' limitation." *Rembrandt Wireless Tech.. v. Samsung Electronics*, 853 F. 3d 1370, 1377 (Fed. Cir. 2017).

The Examiner's Assertion That A QPSK Demodulator Is Unable To Demodulate A BPSK Signal Is Incorrect

In the FOA, the Examiner states that "BPSK is a different type of modulation method than QPSK because they use different algorithms when performing modulation and the data modulated with BPSK cannot be demodulated with a QPSK demodulator." FOA, at 31. That

assertion is simply incorrect. BPSK is a simplified version of QPSK, where two of the four quadrants in the QPSK constellation are null. As a result, a demodulator that is able to demodulate a QPSK signal can also demodulate a BPSK signal. *See* Akl Declaration II, at ¶¶ 11-13. As explained by Dr. Akl:

> If a QPSK demodulator received a BPSK transmission, the QPSK demodulator would produce all of the information in the in-phase channel of the BPSK transmission. That is, **a QPSK demodulator is a BPSK demodulator** that additionally produces information from the quadrature channel. *See, e.g.,* Snell at 7:60-8:1 (disclosing that, for QPSK, the I channel is formed, and "[t]he Q channel is processed in parallel in the same manner," but, for BPSK, "only I sym is output."), 8:29-32 ("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."). Similarly, a QPSK modulator can transmit a BPSK transmission by simply turning off the quadrature channel and using only the in-phase channel. *See, e.g.,* Snell at 5:63-6:3 ("For QPSK, 2 nibbles are presented in parallel … the first nibble from the B serial-in/parallel-out SIPO circuit block 52b and the second from A SIPO 52a. … For BPSK, nibbles are presented from the A SIPO 52a only. The B SIPO 52b is disabled."). Accordingly, even under the Office's unreasonably broad interpretation, the BPSK and QPSK of Snell are not "different type[s]" of modulations methods as required by claims 2 and 59 of the '580 patent because, contrary to the Office's assertion, a BPSK signal can be demodulated with a QPSK demodulator.

Akl Declaration II at 13 (emphasis added).

Further, the issue relating to modulation methods in the '580 Patent was whether the methods were "incompatible" in the claimed invention such that the transceivers could not communicate with each other. *See* Akl Declaration I, at, e.g., ¶¶ 26, 82-84, 93-97, 124-130. In Snell, there is no evidence of any incompatibility issue. *See id.* at ¶¶ 124-130. That is because Snell's transceiver is designed to communicate using both BPSK and QPSK modulation methods. *See* Akl Declaration II, at ¶¶ 11-13 ("BPSK is a simplified version of QPSK, where two of the four quadrants in the QPSK constellation are null. As a result, a demodulator that is

able to demodulate a QPSK signal can also demodulate a BPSK signal. … That is, a QPSK demodulator is a BPSK demodulator …").

Kamerman's "Unacknowledged Packet" Is Not The Claimed Third Sequence

According to the Examiner:

> 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). The third sequence is the unacknowledged packet or a number of successive correctly acknowledged packet transmission.

FOA, at 39.

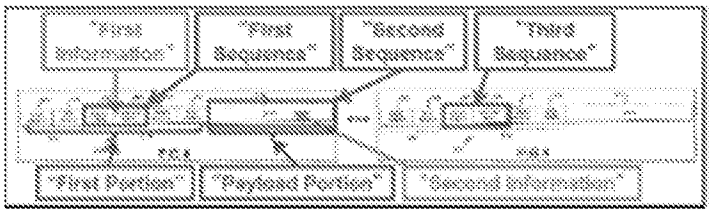
Respectfully, there is no support for equating Kamerman's unacknowledged packet to the claimed "third sequence" that "is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method." Kamerman's disclosure adds nothing to that of Boer,[1] and the Office has already determined that Boer's teachings are insufficient to invalidate the claims of the '580 patent.[2] Specifically, Samsung made substantially the same argument based, *inter alia*, on Boer that it is now setting forth based on Kamerman:

> Dependent claim 2 requires that the transceiver "transmit a third sequence after the second sequence." This limitation is in both the APA and Boer. In the APA, transmission of multiple sequences is shown in Figure 2, with an exemplar "third

[1] As previously noted, Kamerman is a named inventor on the Boer patent, and the Kamerman paper merely describes a high-level presentation about the work disclosed in the Boer patent. *See* the discussion in Rembrandt's Reply, at 26 (citing, *inter alia*, the Akl Declaration I, at ¶¶ 64-68).

[2] IPR2014-00518, Institution Decision, at 13-15.

> sequence" being training sequence 48. *See also* Ex. 1201, 4:4-50. Boer teaches this as well. Ex. 1204, 1:33-40 ("Therefore, according to the present invention, there is provided a method of operating a wireless local area network station adapted to transmit and receive messages at a plurality of data rates, wherein said messages include an initial portion and a data portion, including the steps of: transmitting the initial portion of a message to be transmitted by a station at a first predetermined one of a first plurality of data rates..."). **A subsequent transmission of SIGNAL 206 and SERVICE 208 fields would be the "third sequence**." The annotated figure [below] illustrates the arrangement of "information," "portions," and "sequences" according to claim 1. Ex. 1220, ¶141-142.



IPR2014-00518 Petition at 24-25 (emphasis added). The PTAB rejected this argument, IPR2014-00518, Institution Decision, paper 16 at 13-15, just as substantially the same argument based on Kamerman should be rejected.

Snell is Cumulative of Boer

> Finally, in the FOA, with respect to whether Snell raises an SNQ, the Examiner posits:
>
> Although the reference of Boer is similar to Snell, there is no provision in MPEP that requires comparing two prior art references and determines if one is cumulative to another to determine if a SNQ exists for claims that have not been reexamined before.

FOA, at 17.

Rembrandt respectfully disagrees with the Examiner's position regarding the Office's burden to compare the art relied on in a reexamination request with that previously relied on to support an IPR petition. Nonetheless, Rembrandt presents the following comparison of the arguments Samsung made to support its '580 reexamination request with those previously made

to support its petitions in the '518 IPR and the '114 IPR and respectfully requests the Examiner consider these comparisons and terminate the '580 reexamination for lack of any SNQ.

Samsung's Arguments: Snell Compared to Boer

Samsung's arguments in its '580 Reexam Request based on Snell are the same or substantially the same arguments previously presented in its '518 and '114 IPR Petitions based on Boer. Notably, Samsung's heavy reliance on Snell's **Figure 3** and on Boer's **Figure 4** exposes their striking similarity and lack of any significant differences.[3] Snell's references to these two figures have been bolded to emphasize this point.

In its "Overview of Snell," Samsung begins:

> 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." *Id* at 2:61-63 ..., 1:55-57 …, 2:27-30 … , 7:10-14 …, 1:58-61 … , 2: 15-17 …. *See id* at Abstract, 1:55-61, 2:56-59, Fig. 2, **Fig. 3**, Fig. 5.

'580 Reexam Request, at 23-24.[4]

In its '518 IPR Petition, Samsung previously presented substantially the same arguments with respect to Boer:

> Boer discloses the use of transceivers. See e.g. Ex. 1204, 2:6-22 ("Referring first to FIG. 1, there is shown a preferred embodiment of a wireless

[3] In Exhibit 3, Rembrandt has placed side by side Samsung's claim chart comparison in its '580 Reexam Request and that in its '114 IPR Petition Request.

[4] The parentheticals and footnotes have been omitted. Emphases (except that of Figs. 3 and 4) are Samsung's.

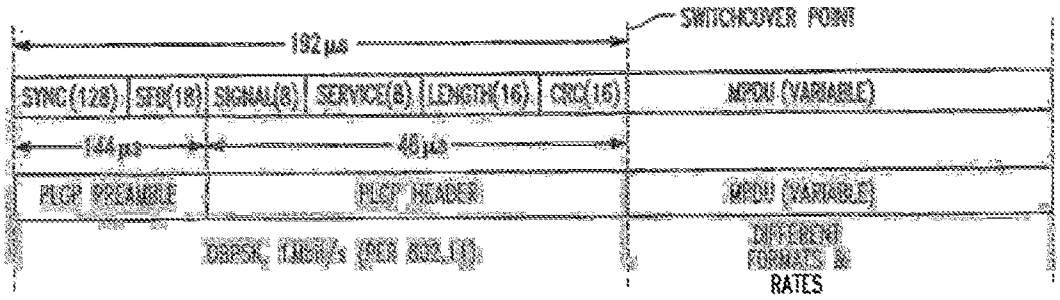
LAN (local area network) 10 in which the present invention is implemented... The access point 12 has antennas 16 and 17 for **transmitting and receiving messages** over a wireless communication channel... The mobile stations 18 are capable of **transmitting and receiving messages** selectively at a data rate of 1 Mbps (Megabit per second) or 2 Mbps, using DSSS (direct sequence spread spectrum) coding."). A person of skill in the art would have recognized that an access point could act as a master in a basic service set of a wireless LAN. Ex. 1220, ¶95, 114. *See also* Ex. 1204, 2:34-37 ….

…. Boer plainly discloses transmissions using "at least two types of modulation methods," since it teaches sending transmissions using DBPSK, DQPSK and PPM/DQPSK. Abstract ("A wireless LAN includes first stations adapted to operate at a 1 or a 2 Mbps data rate and second stations adapted to operate at a 1,2,5 or 8 Mbps data rate. The 1 and 2 Mbps rates use DBPSK and DQPSK modulation, respectively. The 5 and 8 Mbps rates use PPM/DQPSK modulation."). Ex. 1220, ¶116-118.

'518 IPR Petition, at 19-20.

In its '580 Request, Samsung continues:

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 …; *see also id* at 7:6-14, **Fig. 3**.



(Snell) FIG. 3

Id at **Fig. 3**.

'580 Reexam Request, at 24-25.

Again, Samsung made substantially the same arguments in its '518 Petition:

> … Boer discloses a message 200, shown in **Figure 4**, that "include[s] an initial portion and a data portion." *See e.g.* Ex. 1204, 1:33-37 ("Therefore, according to the present invention, there is provided a method of operating a wireless local area network station adapted to transmit and receive messages at a plurality of data rates, wherein said messages include an initial portion and a data portion . . . ."). The "initial portion" is the claimed "first portion," while the "data portion" is the claimed "payload portion." Ex. 1220, ¶127-128.
>
> … Boer discloses a communication device where "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." An embodiment of message 200 is shown in **Figure 4** [below].

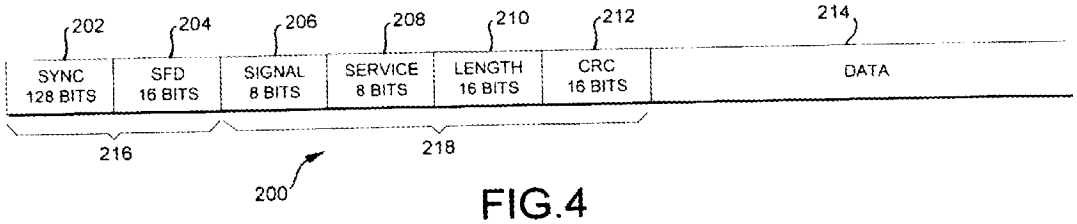


FIG.4

> Messages 200 comprise several fields, including a Header 218 comprised, *inter alia*, of SIGNAL field 206, SERVICE field 208, and LENGTH field 210. *Id.* at 3:42-49. After Header 218, message 200 contains DATA field 214, which also contains the address of the intended recipient. *Id.* at 6:28-31. Ex. 1220, ¶129-130.

'518 IPR Petition, at 21-22.

Samsung argues in its '580 Request:

> 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).

'580 Request, at 25.

Again, substantially the same argument was made with respect to Boer in Samsung's '518 IPR Petition:

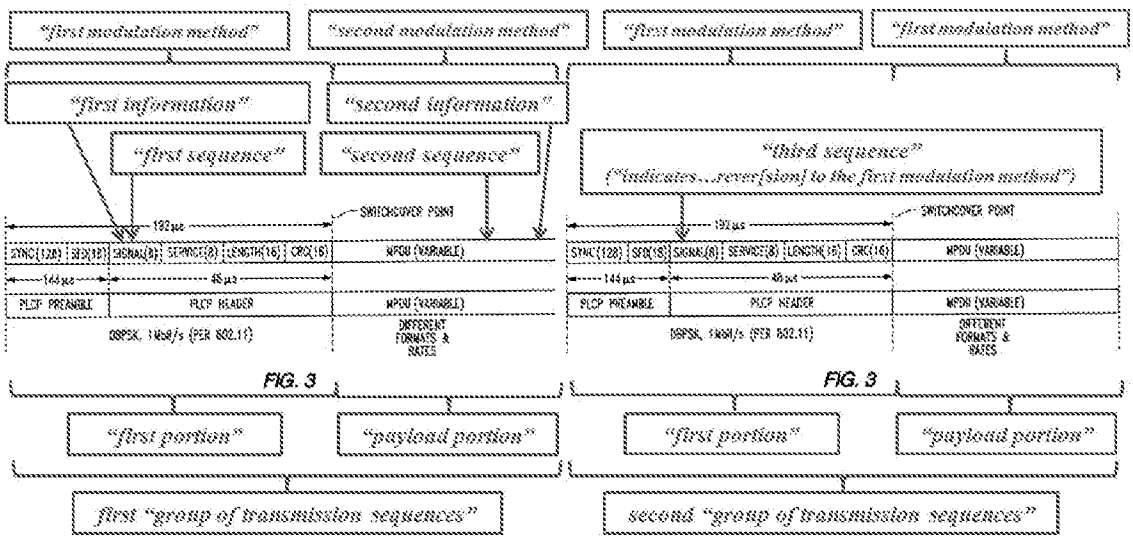
> Boer also discloses claim 1's requirement that the "first information" (i.e., the identification of the modulation method) comprise a "first sequence" that is modulated using the "first modulation method." Boer teaches that Header 218, which includes the SIGNAL 206 and SERVICE 208 fields, is modulated using DBPSK, which is the "first modulation method." Ex. 1204, 3:56-58 ("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**.") (emphasis added [by Samsung]). SIGNAL 206 and SERVICE 208 fields comprise the "first sequence." Given that data within the SIGNAL 206 and SERVICE 208 fields indicate what type of modulation the DATA field 214 will be transmitted with, they meet claim 1's requirement that the "the first sequence indicate[] an impending change from the first modulation method to the second modulation method." Ex. 1220, ¶136-137.

'518 IPR Petition, at 23-24.

In its '580 Request, Samsung continued:

> …Snell discloses "[n]ow relating to the *PLCP header* 91, *the SIGNAL* is:
>
> | | |
> |---|---|
> | 0Ah | 1Mbits/s BPSK |
> | 14h | 2Mbits/s QPSK |
> | 37h | 5.5 Mbits/s BPSK, and |
> | 6Eh | 11Mbits/s QPSK. |

Snell at 6:52-59. Thus, Snell teaches that the SIGNAL field in the PLCP header includes the symbol "OAh" 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.



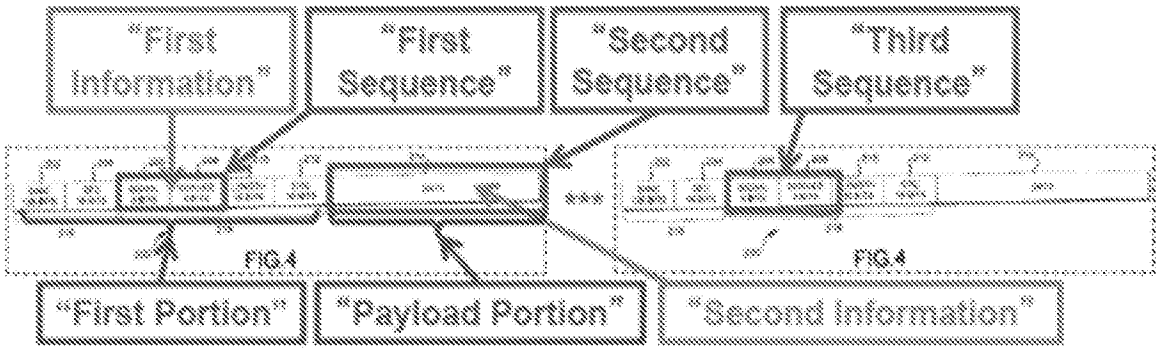
Id at **Fig. 3** (annotated).

'580 Reexam Request, at 25-26.

Similarly, Samsung previously argued in its '518 IPR Petition:

> … Boer teaches 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," since the data (the "second information") within DATA field 214 (the "second sequence") will be modulated using the second type of modulation method (DQPSK or PPM/DQPSK) when the SIGNAL 206 and SERVICE 208 fields so indicate. Ex. 1204, 1:33-47, 3:56-62, 4:4-11 & 6:5-21. Finally, as plainly seen in **Figure 4** in Boer, DATA field 214 (i.e, the recited "second sequence") is transmitted after SIGNAL field 206 and SERVICE field 208 (the recited "first sequence"). *See also id*., 3:56-62 ("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.") (Emphasis added [by Samsung]). Ex. 1220, ¶[138-140. Thus, claim 1 is rendered obvious by the combination of the APA and Boer.
>
> Dependent claim 2 requires that the transceiver "transmit a third sequence after the second sequence." This limitation is in both the APA and Boer. In the APA, transmission of multiple sequences is shown in Figure 2, with an exemplar "third sequence" being training sequence 48. *See also* Ex. 1201, 4:4-50. Boer teaches this as well. Ex. 1204, 1:33-40 ("Therefore, according to the present invention, there is provided a method of operating a wireless local area network

station adapted to transmit and receive messages at a plurality of data rates, wherein said **messages** include an initial portion and a data portion, including the steps of: transmitting the initial portion of a message to be transmitted by a station at a first predetermined one of a first plurality of data rates..."). A subsequent transmission of SIGNAL 206 and SERVICE 208 fields would be the "third sequence." The annotated figure [**Fig. 4** below]



illustrates the arrangement of "information," "portions," and "sequences" according to claim 1. Ex. 1220, ¶141-142.

Claim 2 further requires that the third sequence be "transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method." As discussed, Header 218, which includes SIGNAL 206 and SERVICE 208 fields, always transmitted using DBPSK (the "first modulation method"). Ex. 1204, 3:56-58. Ex. 1220, ¶143. Thus, claim 2 is obvious in view of the prior art.

'518 IPR Petition, at 24-25.

Samsung continued along the same line of arguments in its '580 Reexam Request:

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. [*See supra*, at ___.] 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.,* "l4h") 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. 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." … For the second packet, the "SIGNAL" field in the PLCP header uses a code *(e.g.,* "OAh") 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.

'580 Reexam Request, at 26-27.

While these latter Samsung arguments are substantially repetitive of those quoted above and thus also addressed by the arguments made in the '518 IPR Petition quoted above, Samsung also made substantially the same arguments in its '114 IPR Petition:

> …Petitioner respectfully submits that a person having ordinary skill in the art would have understood that Boer teaches that the SIGNAL 206 and SERVICE 208 fields in Boer can indicate that communication has reverted to the first modulation method. Ex. 1221, ¶13. First, Boer indisputably teaches transmission of multiple messages 200. Ex. 1204, 1:33-40 ("Therefore, according to the present invention, there is provided a method of operating a wireless local area network station adapted to **transmit** and receive **messages** at a plurality of data rates, wherein said **messages** include an initial portion and a data portion, including the steps of: transmitting the initial portion of a message to be transmitted by a station at a first predetermined one of a first plurality of data rates..."). Indeed, a person having ordinary skill in the art would have known that a communication system utilizing data packets such as message 200 transmits multiple sequential packets. Ex. 1221, ¶14-15. Thus, a person having ordinary skill in the art would understand that the SIGNAL 206 and SERVICE 208 fields of a second message

200 is the (i) "third sequence" of claims 2 & 59, and (ii) "second sequence" of claim 49. Ex. 1221, ¶15.

Boer also teaches each claim's requirement that the recited "third sequence" and "second sequence" indicate that communication "has reverted to the first modulation method." First, Petitioner respectfully submits that a person having ordinary skill in the art would have known that in Boer, a first message 200 where the DATA field 214 is transmitted using PPM/DQPSK ("second modulation method") could be followed by a second message 200. Ex. 1221, ¶17. This second message 200, by virtue of being transmitted after a first message 200, meets the requirement that the "third sequence" and "second sequence" be transmitted "after" the previous sequences recited by each claim. Ex. 1221, ¶18.

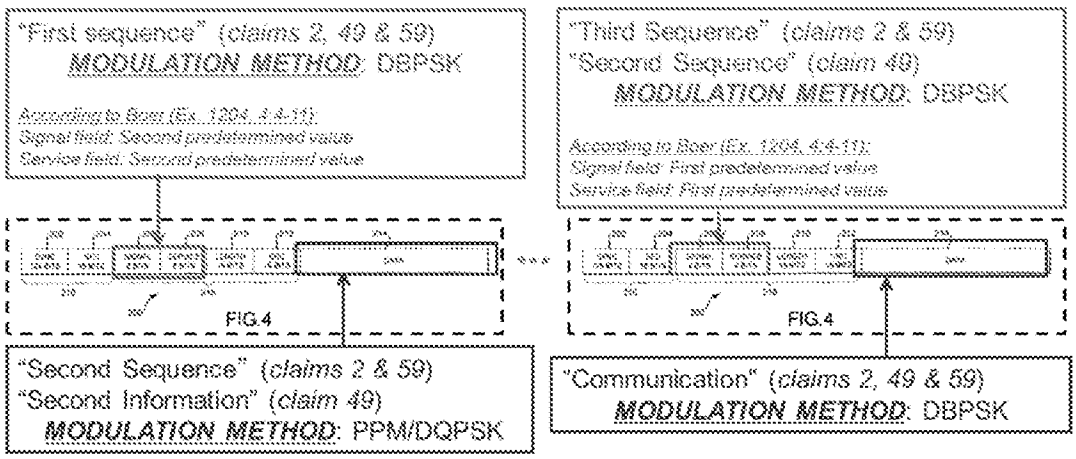
Second, this ordinarily skilled person would have known that the DATA 214 field in second message 200 could be transmitted using DBPSK ("first modulation method"). Ex. 1221, ¶19. Indeed, Boer explicitly teaches that DATA field 214 can be modulated using any of the modulation methods described therein. *See e.g.*, Ex. 1204, 3:56-62 ("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**."). Ex. 1221, ¶19.

Boer teaches that values contained in the SIGNAL field 206 and SERVICE field 208 indicate which modulation method will be used to transmit DATA field 214. Ex. 1204, 4:4-11 ("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."). Ex. 1221, ¶20.

Thus, when transmitting the **first** message 200 in the sequence, DATA field 214 will be modulated in PPM/DQPSK ("second modulation method") as indicated by SIGNAL field 206 containing a second predetermined value while SERVICE field 208 contains a second (or third) predetermined value. *See* Ex. 1204, 4:4-11. Ex. 1221, ¶21. When transmitting the **second** message, the DATA field 214 reverts to DBPSK ("first modulation method") as indicated by SIGNAL field 206 containing a first predetermined value while the SERVICE field 208 contains a first predetermined value, which Boer states is "typically all zero bits." *See* Ex. 1204, 4:4-11. Ex. 1221, ¶22. By placing the first predetermined value in SIGNAL field 206 and the first predetermined value in SERVICE field 208, these two fields indicate that transmission of the DATA field 214 "has reverted to the

first modulation method," as required by claims 2, 49, 52-53 and 59. *See* Ex. 1221, ¶23.

The following figure [**FIG. 4**] shows the location in two messages 200 in Boer of terms in claims 2, 49, and 59. It also shows how Boer uses the claimed modulation methods:



Ex. 1221, ¶24.

Because Boer teaches that DATA field 214 can be transmitted with either DBPSK, DQPSK, or PPM/DQPSK, a person having ordinary skill in the art would have known, and found it obvious, that a transmitted message 200 in which DATA field 214 was transmitted using PPM/DQPSK could be followed by a message 200 where the DATA field 214 is transmitted using DBPSK. Ex. 1221, ¶25. Indeed, Boer specifies that such a reversion would occur if ACK messages are not received correctly. Ex. 1204, Fig 7 (block 522) and 7:41-51 ("Returning to block 508, if an ACK message is not received correctly and within the predetermined time interval, then the flowchart proceeds to block 522 where the SC count value is reset to zero and the data rate is decremented (if the minimum data rate is not already being used)...."). See the annotated Fig. 7 (Ex. 1204):

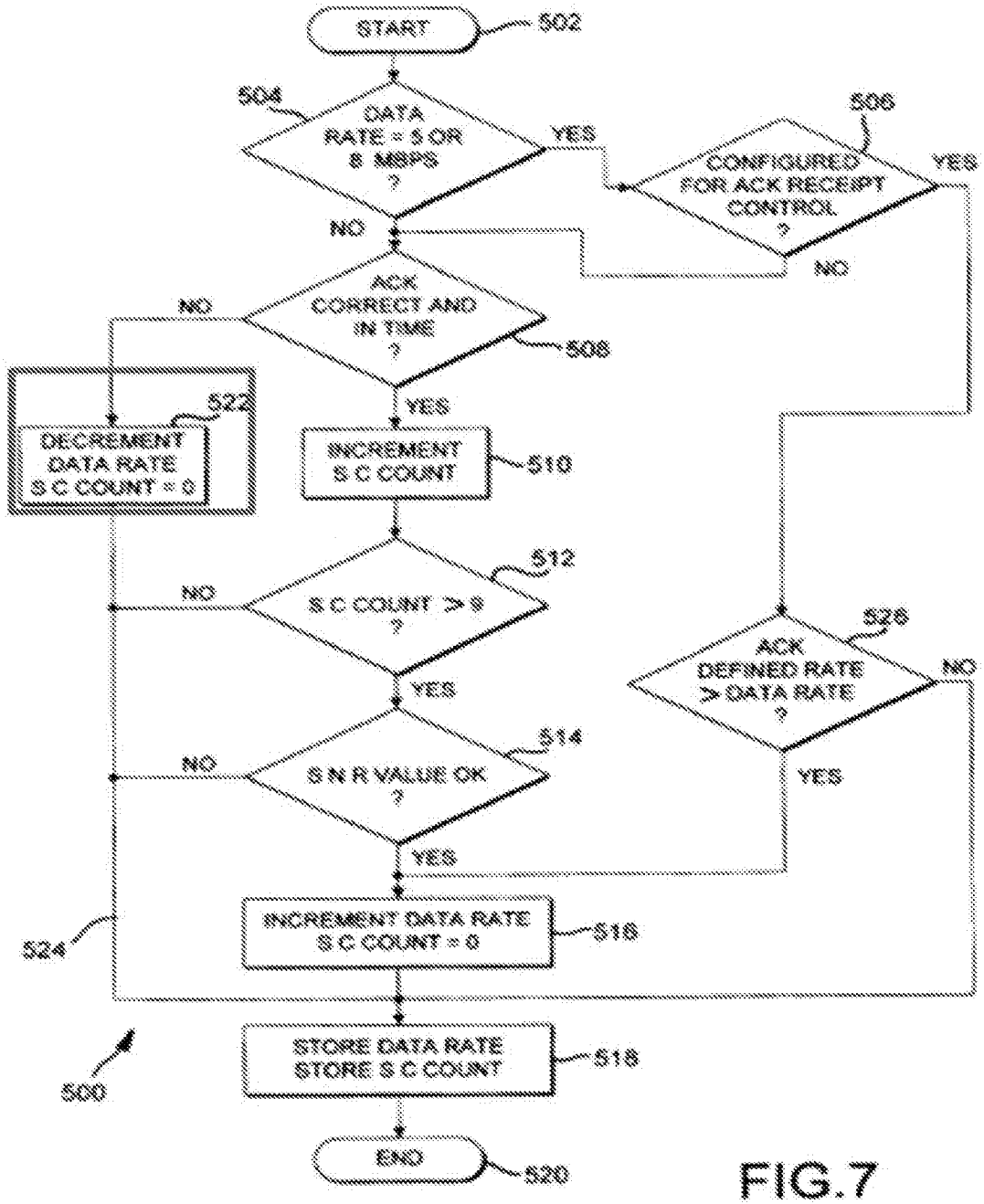


FIG.7

See also Id. at 8:6-9 and Ex. 1221, ¶25. A person of ordinary skill in the art would have understood that ACK messages may not be received correctly when channel conditions change for the worse, such as when the transceivers are moved apart from one another or when interference increases. Ex. 1221, ¶26. Boer discloses that under such conditions, "the data rate is decremented." Based on the flow chart in Fig. 7 of Boer, reprinted above, it is seen that if enough ACK messages

> are not received correctly, the data rate may be decremented until the data rate reaches 1 Mbps, which is transmitted using DBPSK. Ex. 1221, ¶26. Whenever this happens, the SIGNAL and SERVICE fields indicate that communication "has reverted to the first modulation method," thereby meeting the "reverted" limitation required by claims 2, 49, 52-53 and 59. Ex. 1221, ¶27.
>
> Moreover, a person having ordinary skill in the art would have known, and found it obvious, that following routine events such as an increase in interference in the communications channel, the SIGNAL field 206 and SERVICE field 208 would have contained values indicating that communication "has reverted to the first modulation method," as required by claims 2, 49, 52-53 and 59. Ex. 1221, ¶28.

'114 IPR Petition, at 15-21.

Samsung's Arguments: Harris 4064.4 Compared to Boer

In its "Overview of Harris 4064.4," Samsung argued that Harris 4064.4 discloses DBPSK and DQPSK. '580 Reexam Request, at 29-31. So does Boer, as Samsung repeatedly argued in its '518 IPR Petition, for example, at 19-20 ("Boer plainly discloses transmissions using 'at least two types of modulation methods,' since it teaches sending transmissions using DBPSK, DQPSK and PPM/DQPSK.").

More specifically, in its '580 Reexam Request, Samsung relied on Harris 4064.4 for its disclosure of a preamble and header that are always transmitted as *DBPSK* waveforms, a data portion transmitted as either DBPSK or DQPSK, and a SIGNAL field that indicates whether the data portion is modulated as DBPSK or DQPSK. '580 Request at 48-49, 52, 56-57, 63-64, 74-75, 77-79, 82-83, 89-90, 106, 109-110 (citing Harris 4064.4 at Fig. 10, 14-16).

Samsung's arguments based on Harris 4064.4 add nothing of relevance when compared to those previously made based on Boer, which discloses a preamble 216 and header 218 that always are sent using DBPSK and a data field 214 transmitted in DBPSK, DQPSK, or PPM/QPSK, and SIGNAL and SERVICE fields that indicate whether the data field 214 is

modulated in DBPSK, DQPSK, or PPM/QPSK. *See, e.g.*, IPR2014-00518 Petition at 20, 22-24 (citing Boer at Fig. 4, Abstract, 3:42-49, 3:56-62, 4:4-11, 6:5-21). The DBPSK and DQPSK of Boer were relied upon as allegedly corresponding to the claimed "first modulation method" and "second modulation method," respectively, and the SIGNAL and SERVICE fields of Boer were relied on as allegedly corresponding to the claimed "first sequence." *See, e.g.*, IPR2014-00518 Petition at 20, 22-24; IPR2014-00892 Petition at 20, 22-24.

Samsung's other arguments based on Harris 4064.4 are substantially the same arguments made with respect to Snell. *See* '580 Reexam Request, at 29-31. And, in turn, those arguments made with respect to Snell were made in Samsung's '518 and '114 IPR Petitions (quoted above).

Samsung's Arguments: Harris AN9614 Compared to the APA and Boer

In its "Overview of Harris AN9614," Samsung argued in its '580 Reexam Request that Harris AN9614 discloses that Snell can be configured to operate in a polled (master/slave) protocol such that "power consumption can be beneficially … reduced by more than an order of magnitude." '580 Reexam Request, at 32. To the extent Rembrandt agrees that the "polling scheme" in Harris AN9614 can be equated to a master/slave protocol (which it vigorously contests), this reference adds nothing to the that Samsung previously argued "plainly disclosed" a "master/slave relationship." '518 IPR Petition, at 19. With respect to Samsung's "power consumption" argument, Samsung previously argued along the same lines that "simplicity and determinacy are motivations to combine Boer with the master/slave communication system" of the APA. '518 IPR Petition, at 14.

In fact, the CRU has determined *in this proceeding* that the teachings of Boer in combination with those of the APA are the same as the teachings of Snell in combination with

Harris AN9614. While addressing features recited in claims 1 and 58, the CRU argues that her arguments presented based on Snell and Harris AN9614 must be valid and maintained because the teachings of these references are the same as those of Boer in view of APA, grounds relied upon by the Board in rejecting claims 1 and 58 in the '518 IPR:

> Harris AN9614 is used to show that the transceiver of Snell can be used in a master/slave relationship. Further, claims 1 and 58 recite using multiple modulations and it is determined by PTAB that APA and Boer discloses it. Snell and Harris AN9614 similarly disclose all the limitation of claims 1 and 58.

FOA at 40. It is not just Rembrandt who believes that this art and the arguments based upon it are the same, the CRU believes it and relies on this equivalency in an attempt to strengthen its position.

Samsung's Arguments: Yamano Compared to Boer

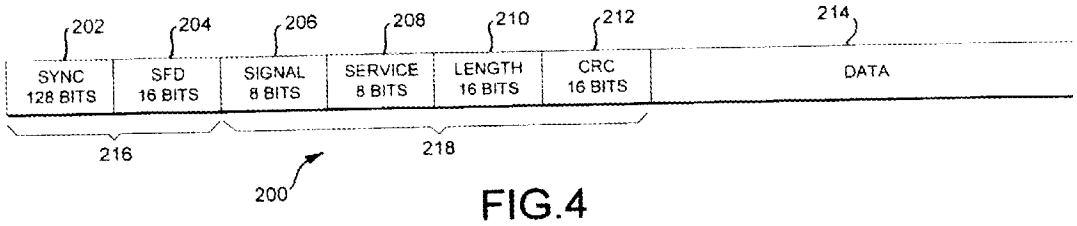
In its "Overview of Yamano" in its '580 Reexam Request, Samsung argued that Yamano discloses the claimed destination address:

> 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.").

'580 Reexam Request, at 36.[5]

[5] While Samsung also argues that Yamano discloses the destination address in the preamble, '580 Reexam Request, at 36-37, that fact is not relevant to the patentability of claims 2 and 59 which are not limited to having the destination address in the preamble. See claim 1 ("wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion") and claim 58 ("wherein the at least one message is addressed for an intended destination of the second sequence").

In its '518 IPR Petition, Samsung argued that Boer disclosed the claimed destination address:

> An embodiment of message 200 is shown in Figure 4 [below].
>
> 
>
>
> FIG.4
>
> Messages 200 comprise several fields, including a Header 218 comprised, *inter alia*, of SIGNAL field 206, SERVICE field 208, and LENGTH field 210. *Id.* at 3:42-49. After Header 218, message 200 contains DATA field 214, which also contains the address of the intended recipient. *Id.* at 6:28-31. Ex. 1220, ¶129-130.

'518 IPR Petition, at 22. Thus, Samsung previously presented substantially the same arguments based on Boer as it now bases on Yamano.

Samsung's Arguments: Kamerman Compared to Boer

In its '580 Reexam Request, Samsung fails to even acknowledge that *Kamerman was Boer's co-inventor.*[6] Significantly, the rate control algorithm in Kamerman's presentation (the only aspect of that reference relied on in the '580 Reexam Request) was described in detail in the Boer patent which was previously presented and fully considered in numerous IPRs. *See* the summary of IPRs in Exhibit 1. Samsung alleged that "Kamerman has not been previously cited to or considered by the Office." '580 Reexam Request at 37. This statement is misleading because it does not disclose Kamerman's close relationship to the Boer patent and the substantial

[6] The Kamerman paper is dated August, 1996, a few months after he, Boer and others filed the Boer patent. It appears Kamerman was permitted to talk about the invention disclosed in the Boer patent once the application was filed. Such a procedure is typical with companies, particularly large companies like Lucent Technologies (assignee of the Boer patent and Kamerman's employer).

identity of the two disclosures. In fact, Kamerman's automatic rate control algorithm is nothing more than a less detailed version of the automatic rate control algorithm repeatedly relied on by Samsung in Boer patent.

In its "Overview of Kamerman" in its '580 Reexam Request, Samsung argued:

> 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/all *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.

'580 Reexam Request, at 38-39.

In the '518 and '114 IPR Petitions, Samsung previously made substantially the same arguments based on Boer. *See, e.g.,* the '114 IPR Petition, at 15-21 (quoted above).

The Substantial Identity of Samsung's Arguments in its '580 Reexam Request to Those It Previously Presented to the PTAB Establish The Lack of Any SNQ and Thus Require Termination of the Reexamination

The combinations of art presented by Samsung to support its '580 Reexam Request are at best cumulative of Samsung's previously presented combinations of art to support its '518 and '114 IPR Petitions. Except for the claimed master/slave relationship, Samsung previously alleged that Boer disclosed all the limitations of claims 2 and 59 (including a destination address). Samsung relied on the APA to show the master/slave relationship. And Samsung previously relied on Upender to argue that there was motivation to combine the APA and Boer. In sum, in its '580 Reexam Request, to support its proposed SNQs 1 and 2, Samsung merely has

presented Snell, Yamano, and Kamerman (or Snell, Yamano, Kamerman, and Harris 4064.4) to substitute for the Boer teachings and has presented Harris AN9614 to replace the APA. Perhaps recognizing that its combination of *five* references may still not provide any teaching or suggestion of a master/slave relationship (which they do not), to support its proposed SNQ 3, Samsung substitutes Harris AN9614 with the APA and Upender, i.e., references previously presented to the Office. By using substitute references for those previously presented, Samsung is able to argue the art has not been previously cited or considered. But Samsung's position misses the mark with respect to the application of § 325(d) – the relevant question is whether the art *or* arguments are substantially the same as those previously presented. In fact, Samsung's "new" art, considered alone or in combination, adds nothing to the art it previously presented to the Office in two or more IPR petitions and thus is substantially the same. Samsung's harassment of Rembrandt through the use of substitute art is exactly the type of harassment that the requirements for a substantial new question of patentability were designed to curb.

Snell Does Not Inherently Teach A Destination Address

In the FOA, for the first time, the Examiner takes the position that "Snell inherently teaches" a destination address:

> It is known in the art that a packet has a destination address in WLAN and it is so well known that Snell does not even mention it. Yamano is introduced only if a reviewing person does not agree that Snell inherently teaches it. Using some bits for destination address in a packet is necessary to send the packet to a right destination. The necessity outweighs any increase of bit rate needed as it is commonly done in wired and wireless communications.

FOA, at 41-42.[7]

[7] The Examiner did not previously rely on Snell as disclosing inherently the destination address feature. *See* Non-Final Office Action at 9-11, 14, 16-17. In particular, in the anticipation

Rembrandt respectfully disagrees with the Examiner's position. *Inherency* is limited to cases where the proposed inherent element is "necessarily … present" in the prior art. *See PAR Pharm., Inc. v. TWI Pharm., Inc.*, 773 F.3d 1186, 1194–95 (Fed. Cir. 2014). In this case, there is no evidence that a transceiver such as Snell's must necessarily use "some bits for destination address," and, in fact, that is not the case. *See* Akl Declaration II, at ¶¶ 7-9. Moreover, the Examiner appears to admit that not all transceivers have such bits in her statement "it is *commonly* done in wired and wireless communications."

The claimed destination address is recited as follows in claims 1: "wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion." And claim 58 recites the destination address limitation as follows: "wherein the at least one message is addressed for an intended destination of the second sequence." The specification makes clear that the "intended destination" is a particular trib in the network. *See*, e.g., '580 Patent at 4:14-16 ("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"); 6:10-12 ("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 66b.").

In particular, according to Dr. Akl:

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rejections set forth in the Non-Final Office Action, the Examiner did not give patentable weight to the destination address feature. *Id.* at 9-11. In the obviousness rejections, the Examiner did not rely on Snell as disclosing the destination address feature and instead relied on Yamano. *Id.* at 14 ("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 …"), 16-17 ("Snell does not expressly teach wherein the at least one message is addressed for an intended destination of the second sequence. Yamano discloses …").

> The claimed destination address is not necessarily present in Snell because … Snell's system could have been implemented as a broadcast system. In a broadcast system, each message from the access point is directed to all of the tribs in the WLAN and is not addressed to a particular trib. Such a broadcast system would have been clearly feasible with Snell, since all of the tribs in Snell were able to communicate using the same modulation method. By contrast, no such broadcast would have been possible to the Type A and Type B tribs disclosed in the '580 Patent, as they failed to use any common modulation method.

Akl Declaration II at ¶ 9.

Conclusion

In view of the above, Rembrandt respectfully requests the Examiner to reconsider her determination in the FOA, terminate the reexamination, and indicate that claims 2 and 59 are patentable over the prior art of record.

Date: September 18, 2017 By: /Michael V. Battaglia/

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CERTIFICATE OF SERVICE

It is hereby certified that on this 18th day of September, 2017, the foregoing **REPLY TO FINAL OFFICE ACTION** 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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cc: Nancy J. Linck, Ph.D.
Counsel for Rembrandt Wireless Technologies, LP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Control No.	: 90/013,808	Art Unit	: 3992
Patent No.	: 8,023,580	Examiner	: Yuzhen Ge
Filed	: September 12, 2016	Conf. No.	: 2211
Customer No.	: 06449	Atty. No.	: 3277-114.RXM1

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

SUPPLEMENTAL 37 C.F.R. § 1.132 DECLARATION OF DR. ROBERT AKL

I. INTRODUCTION

A. Engagement

1. My name is Robert Akl, and I have been retained by counsel for Rembrandt Wireless Technologies, LP ("Rembrandt") as an expert declarant in this reexamination. I have been asked by counsel to opine on a number of subjects relevant to this reexamination, including the patentability of claims 2 and 59 of US Patent No. 8,023,580 ("the '580 Patent") from the perspective of one of ordinary skill in the relevant art prior to December 5, 1997 (when Provisional Patent Application No. 60/067,562 was filed, and to which the '580 Patent claims priority).

2. Specifically, I have been asked by counsel to review the Request for Ex Parte Reexamination of the '580 Patent, the Office's Order Granting Request for Ex Parte Reexamination of the '580 Patent dated September 27, 2016 ("Order"), the Office's Non-Final Office Action dated March 31, 2017, the Office's Final Office Action dated July 18, 2017, and the references relied on in the Order, Non-Final Office Action, and/or Final Office Action, including U.S. Patent No. 5,982,807 ("Snell"), U.S. Patent No. 6,075,814 ("Yamano"), "Using the PRISM™ Chip Set for Low Data Rate Applications," Harris Semiconductor Application Note No. AN9614 ("Harris AN9614"), "HSP3824 Direct Sequence Spread Spectrum Baseband Processor," Harris Semiconductor File No. 4064.4 ("Harris 4064.4"), 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"), the Petition for Inter Partes Review in IPR2014-00518, the PTAB's Institution Decision in IPR2014-00518, Paper 16 (dated September 23, 2014), the PTAB's Final Written Decision in IPR2014-00518, U.S. Patent No. 5,706,428 ("Boer"), the alleged Admitted Prior Art ("APA"), Upender et al., "Communication Protocols for Embedded Systems," Embedded Systems Programming, Vol. 7, Issue 11, Nov. 1994 ("Upender"), and U.S. Patent No. 5,537,398 to Siwiak ("Siwiak") and to offer rebuttal opinions when, based on my expertise in the relevant art, I disagree with the determinations of the Office.

3. I am being compensated at my normal hourly consulting rate ($650 per hour) for time spent on this matter. I have no financial interest in the outcome of this reexamination, and my compensation is in no way affected by its outcome.

B. Qualifications

4. I have summarized my educational background, work experience, and other relevant qualifications in ¶¶ 4-13 of my 37 C.F.R. § 1.132 Declaration filed on June 30, 2017 ("First Akl Declaration"), and a true and accurate copy of my curriculum vitae is attached as Exhibit A to the First Akl Declaration.

II. MATERIALS REVIEWED AND RELIED ON IN FORMING MY OPINIONS

5. In preparing the opinions and discussion included in this declaration, I have reviewed and considered the documents identified in ¶ 2 above. I have also relied on my years of education, teaching, research, and experience, and my understanding of the applicable legal principles.

III. LEGAL PRINCIPLES

6. I am not an attorney. I have been advised of general principles of patent law to be considered in formulating my opinions as to the patentability of claims 2 and 59 of the '580

Patent. The general principles are set forth in ¶¶ 16-40 of the First Akl Declaration. I have applied these principles to the facts set forth in this report in rendering my opinions.

IV. OPINIONS

7. In the Final Office Action, the Office states that "Snell inherently teaches" the claimed destination address. Final Office Action, at 41-42 ("It is known the art that a packet has a destination address in WLAN and it is so well known that Snell does not even mention it. Yamano is introduced only if a reviewing person does not agree that Snell inherently teaches it."). I understand that inherency is limited to cases where the proposed inherent element is necessarily present in the prior art.

8. Claim 1 recites the claimed destination address as follows: "wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion." Claim 58 recites the claimed destination address as follows: "wherein the at least one message is addressed for an intended destination of the second sequence." The specification makes clear that the "intended destination" is a particular trib in the network. *See*, *e.g.*, '580 patent at 4:14-16 ("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"); 6:10-12 ("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 66b.").

9. The claimed destination address is not necessarily present in Snell because Snell does not mention a destination address, and Snell's system could have been implemented as a broadcast system. In a broadcast system, each message from the access point is directed to all of the tribs in the WLAN and is not addressed to a particular trib. Such a broadcast system would have been clearly feasible with Snell, since all of the tribs in Snell were able to communicate using the same modulation method. By contrast, no such broadcast would have been possible to the Type

A and Type B tribs disclosed in the '580 patent, as they failed to use any common modulation method.

10. In the Final Office Action, the Office appears to equate an access point with the master/slave functionality set forth in the claims. *See* Final Office Action, at 28 ("Snell discloses a spread spectrum transceiver that can be used as an access point for WLAN or wireless local area network (col. 1, lines 34-46) and is capable of acting as a master in a master/slave relationship."), 38 ("[t]o the extent that a master/slave relationship should be given patentable weight, Snell discloses a spread spectrum transceiver that can be used as an access point for WLAN or wireless local area network (col. 1, lines 34-46) ..."). An access point acts as a distribution point, much like a router with gateway functionality, which allows a device in one network to talk to other devices in that network and/or another network. However, an access point is not the same as a master that controls communications from one or more slaves, where communication from a slave to a master occurs in response to a master communication from the master to the slave. There is no requirement that an access point be so configured. In fact, in Snell, the access point is configured in a peer-to-peer relationship with the other nodes in the network. Snell, 5:24-30.

11. In the Final Office Action, the Office states that "BPSK is a different type of modulation method than QPSK because they use different algorithms when performing modulation and the data modulated with BPSK cannot be demodulated with a QPSK demodulator." Final Office Action, at 31. I disagree with the assertion that a BPSK signal cannot be demodulated with a QPSK demodulator. BPSK is a simplified version of QPSK, where two of the four quadrants in the QPSK constellation are null. As a result, a demodulator that is able to demodulate a QPSK signal can also demodulate a BPSK signal.

12. In particular, BPSK stands for bi-phase (or binary) phase shift keying, and QPSK stands for quadrature phase shift keying. *See, e.g.,* Snell at Abstract, 2:36, 2:56-59. BPSK and QPSK have a common phase shift keying modulation method. BPSK uses an in-phase (real or I) channel in which an in-phase sinusoidal carrier is modulated to have one of two possible values (i.e., 0 or 1) per cycle of the carrier. As BPSK uses only the in-phase channel having one of two possible values per cycle, BPSK produces 1 bit of information per cycle. QPSK uses the in-phase channel and additionally uses a quadrature (imaginary or Q) channel in which a quadrature sinusoidal carrier is modulated to have one of two values per cycle of the carrier. As QPSK uses both the in-phase and quadrature channels, each having one of two possible values per cycle for a total of four possible values (i.e., 00, 01, 10, or 11) per cycle, QPSK produces 2 bits of information per cycle.

13. If a QPSK demodulator received a BPSK transmission, the QPSK demodulator would produce all of the information in the in-phase channel of the BPSK transmission. That is, a QPSK demodulator is a BPSK demodulator that additionally produces information from the quadrature channel. *See, e.g.,* Snell at 7:60-8:1 (disclosing that, for QPSK, the I channel is formed, and "[t]he Q channel is processed in parallel in the same manner," but, for BPSK, "only I sym is output."), 8:29-32 ("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."). Similarly, a QPSK modulator can transmit a BPSK transmission by simply turning off the quadrature channel and using only the in-phase channel. *See, e.g.,* Snell at 5:63-6:3 ("For QPSK, 2 nibbles are presented in parallel … the first nibble from the B serial-in/parallel-out SIPO circuit block 52b and the second from A SIPO 52a. … For BPSK, nibbles are presented from the A SIPO 52a only. The B SIPO 52b is disabled."). Accordingly, even under the Office's

unreasonably broad interpretation, the BPSK and QPSK of Snell are not "different type[s]" of modulations methods as required by claims 2 and 59 of the '580 patent because, contrary to the Office's assertion, a BPSK signal can be demodulated with a QPSK demodulator.

14. Further, the issue relating to modulation methods in the '580 Patent was whether the methods were "incompatible" in the claimed invention such that the transceivers could not communicate with each other. In Snell, there is no evidence of any incompatibility issue. In my opinion, that is because Snell's transceiver is designed to communicate using both BPSK and QPSK modulation methods. *See* First Akl Declaration 94-97, 124-130.

15. In particular, Snell does not disclose and would not have suggested incompatible types of modulation methods because Snell does not even mention, let alone address, incompatibility. *See* Snell *passim*. For instance, the transceiver 30 of Snell is capable of communicating using any of "1 Mbit/s BPSK," "2 Mbit/s QPSK," "5.5 Mbit/s BPSK," and "11 Mbit/s BPSK." Snell at 5:30-36, 6:51-59. Snell does not disclose or suggest that Snell's transceiver 30 and another transceiver are incompatible in any way when operating at one or more of 1 Mbit/s BPSK, 2 Mbit/s QPSK, 5.5 Mbit/s BPSK, and 11 Mbit/s BPSK. *Id. passim.* Instead, Snell's transceivers are all capable of communicating with each other using any of 1 Mbit/s BPSK, 2 Mbit/s QPSK, 5.5 Mbit/s BPSK, and 11 Mbit/s BPSK based on whether the bits of the SIGNAL field are "0Ah," "14h," "37h," or "6Eh." *See* Snell at 6:51-59. Therefore, incompatibility is not an issue in Snell, and there is no disclosure in Snell of the claimed "different type[s]" of modulation methods (even under the Office's unreasonably broad interpretation).

16. In addition to the opinions above, I incorporate by reference the First Akl Declaration.

V. CONCLUSION

17. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these

statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the '580 Patent.

Date: 9/14/2017

Dr. Robert Akl

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

PETITION REQUESTING THE DIRECTOR TO EXERCISE HIS SUPERVISORY AUTHORITY PURSUANT TO 37 C.F.R. § 1.181 AND/OR § 1.182

Pursuant to 37 C.F.R. § 1.181 and/or § 1.182, Rembrandt Wireless Technologies, LP ("Rembrandt") respectfully requests the Director to exercise his supervisory authority under Rule 181 to withdraw the finality of the Final Office Action dated July 18, 2017 ("Request"). The bases for Rembrandt's Request are twofold: The Final Office Action (i) fails to address a number of arguments Rembrandt set forth in the Rembrandt's Reply to Office Action (filed June 30, 2017) ("Reply") and the evidence submitted supporting those arguments through the 37 C.F.R. § 1.132 Declaration of Dr. Robert Akl ("Akl Dec."); and (ii) raises several arguments for the first time to which Rembrandt has not had an opportunity to respond. Rembrandt's Request is based on the limits and requirements of *ex parte* reexamination and examination generally, which have not been observed in the Final Office Action. The Office recognizes the importance of

addressing all arguments and evidence, clearly defining the Office's position, and giving the Patent Owner two opportunities to respond to that position:

> Before a final action is in order, a clear issue should be developed between the examiner and the patent owner. To bring the prosecution to a speedy conclusion and at the same time deal justly with the patent owner and the public, the examiner will twice provide the patent owner with such information and references as may be useful in defining the position of the Office as to unpatentability before the action is made final.

MPEP § 2271.

Based on this and other provisions governing the issuance of a Final Office Action, a Final Office Action must (i) include a rebuttal of any arguments raised in a patent owner's response; (ii) consider any evidence traversing the rejections and, if the evidence is insufficient to overcome the rejections, specifically explain why; and (iii) limit the arguments to those previously made to "twice provide the patent owner with such information … as may be useful in defining the position of the Office". MPEP § 2271. *See also* MPEP §§ 706.07, 707.07(f), 716.01. As explained below, none of these limitations and requirements is met by the Final Office Action.

Statement of Facts and Issues Relevant to Petition

1) On September 27, 2017, the Office issued an Order granting reexamination of claims 2 and 59 of the '580 patent.
2) On March 31, 2017, the Office issued a Non-Final Office Action.
3) On June 30, 2017, Rembrandt filed a Reply to the Non-Final Office Action. The Reply included arguments for patentability supported by evidence submitted through Dr. Robert Akl (37 C.F.R. § 1.132 Declaration of Dr. Robert Akl ("Akl Dec.")).
4) On July 18, 2017, the Office issued a Final Office Action.

5) The Final Office Action does not address Patent Owner's evidence on many issues, including those identified below. That evidence was submitted through Dr. Akl in his declaration. Instead, the Final Office Action merely acknowledges the declaration's existence. Final Office Action at 3.

6) The Final Office Action does not address any of Patent Owner's arguments and does not address the evidence supporting those arguments that (i) a construction that equates "different modulation methods" with "different types of modulation methods" is unreasonably broad because it reads "types" out of the claims, (ii) differences between the BRI and *Philips* standards are irrelevant to whether the prosecution history of the '580 patent unambiguously defines "different type[s]," and (iii) the Office's construction of "different type[s]" cannot be justified by the PTAB's Final Written Decision in the '518 IPR. Reply at § III.C.3-5 (pages 42-44) (supported by the Akl Dec., at ¶¶ 20, 26, 121-130); Final Office Action at 22-23.

7) In the Final Office Action, the Office continues to assert that "claims 2 and 29 are single means claims." Final Office Action at 38. *See also id.* at 27 ("[c]laim 2 is a single means claim"). With respect to that assertion, the Final Office Action fails to address Patent Owner's argument that the reexamination cannot proceed because no prior art rejection can be issued, as doing so would necessarily be based on a speculative assumption as to the meaning of the claims. *See* Reply at 28, n. 13; Final Office Action *passim.*

8) The Final Office Action fails to address Patent Owner's argument or the evidence supporting that argument that "whether two modulation methods are incompatible, as used in the '580 Patent, cannot be considered in a vacuum but must be considered in the context in which term or phrase is used." Reply at 83 (citing Akl Dec., at ¶ 125). *See also* Reply at 43, n. 16;

Final Office Action at 31-32 (defining, for the first time and without any citation to support the new argument, the meaning of incompatibility with respect modulation methods).

9) The Final Office Action does not address Patent Owner's argument (or the case law supporting that argument) that "the dates and copyright notices on the Harris Documents merely establish the dates they were created or printed, and do not establish that they were disseminated or otherwise made available to the relevant public by those dates," Reply at 57-58 (citing *Hilgraeve, Inc. v. Symantic Corp.*, 271 F. Supp. 2d 964, 975 (E.D. Mich. 2003); *Ex parte Rembrandt Gaming Technologies, LP*, Appeal 2014-007853, Reexamination Control No. 90/012,379 at 5 (PTAB December 3, 2014); *ServiceNow, Inc. v. Hewlett-Packard Co.*, IPR2015-00716, Paper No. 13 at 17 (PTAB Aug. 26, 2015)). *See* Final Office Action at 25.

10) The Final Office Action does not address Patent Owner's argument (or the cases supporting that argument) that Snell did not incorporate the "polled scheme" disclosure of Harris AN9614 because Snell did not identify it with detailed particularity as the specific material of Harris AN9614 that Snell incorporates. Reply at § V.D (pages 64-68); Final Office Action at 23-25.

11) The Final Office Action does not address Patent Owner's argument or the evidence supporting that argument that the claimed "master/slave relationship" is not inherent in, or even suggested by, Harris AN9614's "polled scheme." Reply at § VI.A.3 (pages 78-81) (supported by Akl Dec. at ¶¶ 112-120); Final Office Action at 25-29.

12) The Final Office Action does not address Patent Owner's argument or evidence supporting that argument that Snell is not silent about the transceiver setting and instead discloses a transceiver that "includes a 'CCA circuit block 44' that 'provides a clear channel assessment (CCA) to avoid data collisions,' i.e., collisions which do not occur in a master/slave setting."

Reply at 73 (citing Snell at 5:26-29 & Fig. 1 and supported by Akl Dec. at ¶ 104); Final Office Action at 39.

13) With respect to Rembrandt's other arguments that the Final Office Action purports to address, the Final Office Action does not address the evidence submitted through Dr. Akl (including the evidence supporting Rembrandt's arguments why one of ordinary skill in the art would not have been motivated to modify the cited art or combine it in the way the Examiner has done). *See e.g.*, Reply at 94-103 (supported by Akl Dec. at ¶¶ 152-178); Final Office Action at 38-42.

14) In the Final Office Action, for the first time, the Office introduces a new argument that "Snell inherently teaches" a destination address. Final Office Action at 41-42 ("It is known the art that a packet has a destination address in WLAN and it is so well known that Snell does not even mention it. Yamano is introduced only if a reviewing person does not agree that Snell inherently teaches it.").

15) In the Final Office Action, for the first time, the Office introduces a new argument that first and second modulation methods are "different type[s]" if "they use different algorithms when performing modulation and the data modulated with the [first modulation method] cannot be demodulated with a [second modulation method] demodulator or vice versa." Final Office Action at 31. In addition, based on the Office's new definition of "different type[s]," the Office for the first time argues that "BPSK is a different type of modulation method than QPSK because they use different algorithms when performing modulation and the data modulated with BPSK cannot be demodulated with a QPSK demodulator or vice versa." *Id.*

16) In the Final Office Action, for the first time, the Office introduces a new argument that Snell's disclosure that the transceiver can provide an access point for a wireless access point

supports the Office's position that the transceiver of Snell is capable of acting as a master in a master/slave relationship. Final Office Action at 38 (citing Snell at 1:34-46) ("[t]o the extent that a master/slave relationship should be given patentable weight, Snell discloses a spread spectrum transceiver that can be used as an access point for WLAN or wireless local area network …"), 28 (citing Snell at 1:34-46) ("Snell discloses a spread spectrum transceiver that can be used as an access point for WLAN or wireless local area network").

17) In the Final Office Action, for the first time, the Office relies on a Declaration of David Goodman ("Goodman Declaration") to support its assertion that "a polled protocol is a master/slave protocol." Final Office Action at 29 (citing IPR2014-00518, Exhibit 1220 at ¶ 103).

The Final Office Action Should be Vacated or At Least Made Non-Final Because the Examiner Failed to Respond to Numerous Arguments Traversing the Rejections

The Examiner maintained the rejections but failed to address the substance of numerous arguments for patentability (and failed to address the evidence submitting supporting those arguments) despite the requirement to do so. *See* MPEP § 2271 ("the final rejection … should include a rebuttal of any arguments raised in the patent owner's response"); MPEP § 707.07(f) ("Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it."). *See also* MPEP § 2271 ("The grounds of rejection must (in the final rejection) be clearly developed to such an extent that the patent owner may readily judge the advisability of an appeal.").

In Rembrandt's Reply, Rembrandt argued that (i) a construction that equates "different modulation methods" with "different types of modulation methods" is unreasonably broad because it reads "types" out of the claims, Reply at § III.C.3 (pages 42-43) (supported by Akl Dec., at ¶¶ 20, 26, 121-130), (ii) differences between the BRI and *Philips* standards are irrelevant

to whether the prosecution history of the '580 patent unambiguously defines "different type[s]," *id.* at § III.C.4 (page 43), and (iii) the Office's construction of "different type[s]" cannot be justified by the PTAB's Final Written Decision in the '518 IPR. *Id.* at § III.C.5 (page 44). The Examiner did not address any of these arguments *and did not address the declaratory evidence supporting them* despite continuing to rely on (i) an "incompatible" construction that equates "different types" of modulation methods with modulation methods that are simply "different," (ii) the BRI standard to ignore the unambiguous definition of "different type[s]" in the prosecution history, and (iii) the PTAB's Final Written Decision in the '518 IPR to justify her construction of "different type[s]." *See* Final Office Action at 22-23.

In the Reply, Rembrandt argued that:

> The Examiner asserts that the claims being reexamined "are single means claims" (3-31-17 Office Action, at 6), which would render them *indefinite* because a "single means" claim covers *every conceivable means* for achieving the desired result. *Ex parte David Chater-Lea*, 2010 WL 665664 (BPAI 2010). If 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. *See Google, Inc. v. Function Media*, L.L.C., 2012 WL 1891077 (BPAI 2012); *Ex parte Webexchange Inc.*, 2014 WL 2946395 (PTAB 2014); and *Superior Communications, Inc., v. Voltstar Technologies, Inc.*, 2014 WL 5474770 (PTAB 2014). Rembrandt disputes that claims 2 and 59 of the '580 Patent are "single means" claims, or indefinite, as such a construction is clearly unreasonable. However, under the decisions set forth above, if the Examiner maintains her view that the claims are single means claims (tantamount to an improper indefiniteness rejection), she cannot issue a prior art rejection and these reexamination proceedings must be terminated.

Reply at 28, n. 13. The Examiner did not address Rembrandt's arguments but instead merely maintained her view that "claims 2 and 29 are single means claims." Final Office Action at 38. *See also id.* at 27 ("[c]laim 2 is a single means claim").

In the Reply, Rembrandt argued that "whether two modulation methods are incompatible, as used in the '580 Patent, cannot be considered in a vacuum but must be considered in the

context in which term or phrase is used." Reply at 83 (supported by Akl Dec., at ¶ 125). *See also* Reply at 43, n. 16 (supported by Akl Dec., at ¶ 26). The Examiner addressed neither this argument nor the declaratory evidence supporting it despite considering in a vacuum whether two modulation methods are incompatible. Final Office Action at 31-32.

In the Reply, Rembrandt argued that "the dates and copyright notices on the Harris Documents merely establish the dates they were created or printed, and do not establish that they were disseminated or otherwise made available to the relevant public by those dates." Reply at 57-58 (citing *Hilgraeve, Inc. v. Symantic Corp.*, 271 F. Supp. 2d 964, 975 (E.D. Mich. 2003); *Ex parte Rembrandt Gaming Technologies, LP*, Appeal 2014-007853, Reexamination Control No. 90/012,379 at 5 (PTAB December 3, 2014); *ServiceNow, Inc. v. Hewlett-Packard Co.*, IPR2015-00716, Paper No. 13 at 17 (PTAB Aug. 26, 2015)). The Examiner asserted that "each of the Harris documents has a publication date and copyright information and it was therefore accessible to the pertinent part of the public and available for duplication." Final Office Action at 25. However, the Examiner addressed neither Patent Owner's arguments regarding the difference between copyright and publication dates nor the case law supporting Patent Owner's arguments. *See id.*

In the Reply, Rembrandt argued that Snell did not incorporate the "polled scheme" disclosure of Harris AN9614 because Snell did not identify it with detailed particularity as the specific material of Harris AN9614 that Snell incorporates. Reply at § V.D (pages 64-68). The Examiner failed to respond to this argument. *See* Final Office Action at 23-25. For instance, the Examiner did not dispute that the law is that, "[t]o incorporate material by reference, the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents." Reply at 66 (quoting

Advanced Display Systems, Inc. v. Kent State University, 212 F.3d 1272 (Fed.Cir. 2000)). The Examiner also did not dispute Patent Owner's statement of the fact that "Snell does not identify at all (and certainly not 'with detailed particularity') communication using a polled scheme as the specific material it incorporates" and instead "identifies only the 'filters' and 'oscillators' described in Harris AN9614 as the specific material it incorporates." Reply at 65-66 (citing Snell at 5:2-7).

In the Reply, Rembrandt argued that the claimed "master/slave relationship" is not inherent in Harris AN9614's "polled scheme." Reply at § VI.A.3 (pages 78-81) (supported by, *inter alia*, Akl Dec. at ¶¶ 112-120). The Examiner failed to respond to this argument and the evidence supporting it. *See* Final Office Action at 25-29. For instance, the Examiner did not dispute Patent Owner's assertion that the Office "has failed to provide a 'basis in fact and/or technical reasoning to reasonably support' the determination that the master/slave limitations in the challenged claims necessarily flow from the teachings of Snell (even presuming that Harris AN9614 had been properly incorporated)." Reply at 79. Moreover, Rembrandt argued that:

> [T]o the extent that the Office is equating Harris AN9614's "polled scheme" to a master/slave configuration, that position is based on a faulty understanding of the scope of "polling" in the relevant art and on an incorrect reading of Harris AN9614 and the '580 Patent. While polling can also take place in a master/slave system, *see* '580 Patent at 4: 6-9 (describing its master/slave protocol as a "polled multipoint communications protocol,") that discussion does not limit polling – which is a more general term in the relevant art -- to master/slave protocols but rather describes one aspect of the claimed protocol. In fact, there is no suggestion in Harris AN9614 that its "polled scheme" is taking place in anything other than the peer-to-peer communications protocol being discussed in Harris AN9614. *See* Harris AN9614 at 3. Akl, at ¶ 119. *See also infra* at § VII.C (discussing the need to maintain a peer-to-peer system in order to maintain compatibility with the IEEE 802.11 standard).

Reply at 80. The Examiner continues to equate Harris AN9614's "polled scheme" to a master/slave configuration, Final Office Action at 29 ("[a] polled protocol is a master/slave

protocol"), but failed to respond to Patent Owner's contrary arguments and the evidence supporting those arguments. *See* Final Office Action at 25-29.

In the Reply, Rembrandt argued that:

> The primary reference, Snell, discloses a transceiver 30, Snell at Fig. 1, 4:42-43, designed for peer-to-peer communications, such as carrier sense multiple access with collision avoidance (CSMA/CA) communications. *See* Snell at 5:26-29 (disclosing that Snell's transceiver includes a "CCA circuit block 44" that "provides a clear channel assessment (CCA) to avoid data collisions," i.e., collisions which do not occur in a master/slave setting). *See also* Fig. 1. Akl, at ¶ 104. Systems that implement a CSMA/CA protocol for collision avoidance are distinctly different than a master/slave system. In a CSMA/CA system, any device on the network can initiate a communication whenever the device determines that no other communications are occurring. In stark contrast, the claims of the '580 Patent are limited to master/slave communications, as noted above, in which slave devices can only communicate on a network when prompted by a master.

Reply at 73 (supported by Akl Dec. at ¶ 104). The Examiner asserts that "Snell's transceiver is not set up only in a peer to peer communication. In fact, Snell is silent on what kind of setting the transceiver is in." Final Office Action at 39. The Examiner's assertion that Snell is silent ignores Rembrandt's argument explaining why Snell is not silent and instead discloses a transceiver that "includes a 'CCA circuit block 44' that 'provides a clear channel assessment (CCA) to avoid data collisions,' i.e., collisions which do not occur in a master/slave setting." Reply at 73 (supported by Snell at 5:26-29 & Fig. 1; and by Akl Dec. at ¶ 104). Accordingly, the Examiner failed to respond to this argument as well.

For the reasons set forth above, the Examiner failed to address the substance of numerous arguments for patentability despite the MPEP's requirement to do so. *See* MPEP §§ 707.07(f), 2271. Accordingly, Rembrandt respectfully requests that the Final Office Action be vacated or at least made non-final.

Final Office Action Should be Vacated Because Examiner Failed to Comment on the Akl Dec. and Failed to Explain Why the Akl Dec. Is Insufficient to Overcome the Rejections

As set forth in the MPEP:

> Evidence traversing rejections, when timely presented, must be considered by the examiner whenever present. All entered affidavits, declarations, and other evidence traversing rejections are acknowledged and commented upon by the examiner in the next succeeding action. … Where the evidence is insufficient to overcome the rejection, the examiner must specifically explain why the evidence is insufficient. General statements such as "the declaration lacks technical validity" or "the evidence is not commensurate with the scope of the claims" without an explanation supporting such findings are insufficient.

MPEP § 716.01. *See also* MPEP § 716 ("It is the responsibility of the primary examiner to personally review and decide whether affidavits or declarations submitted under 37 CFR 1.132 for the purpose of traversing grounds of rejection are responsive to the rejection and present sufficient facts to overcome the rejection."); MPEP § 2145 ("Office personnel should consider all rebuttal arguments and evidence presented by applicants. … Consideration of rebuttal evidence and arguments requires Office personnel to weigh the proffered evidence and arguments.").

Here, Rembrandt timely submitted Dr. Akl's declaration on June 30, 2017 with the Reply to the non-final Office Action, which was prior to the final rejection issued on July 18, 2017. *See* MPEP § 716.01 ("Affidavits and declarations submitted under 37 CFR 1.132 and other evidence traversing rejections are considered timely if submitted [*inter alia*] prior to a final rejection."). The Examiner noted that it had been submitted. Final Office Action at 3 ("The Jun 2017 Reply includes, among other things, remarks … and declarations by Robert Aki [*sic*] … 37 C.F.R. § 1.132."). The Examiner did not mention the declaration again. *See id. passim.* Thus, the Examiner failed to address any of the evidence submitted in the Akl declaration supporting Rembrandt's arguments, despite the requirement to do so. MPEP § 716.01 ("All entered affidavits, declarations, and other evidence traversing rejections are acknowledged *and*

commented upon by the examiner in the next succeeding action." (Emphasis added.)). In addition, although the Examiner maintained the rejections, the Examiner failed to explain specifically why the evidence in the declaration was not sufficient to overcome the rejections despite the requirement to do so. MPEP § 716.01 ("Where the evidence is insufficient to overcome the rejection, the examiner *must* specifically explain why the evidence is insufficient." (Emphasis added.)). Thus, there is no evidence in the Final Office Action that the Examiner considered evidence in the Akl declaration, as the Examiner is required to do. MPEP § 716.01 ("Evidence traversing rejections, when timely presented, *must* be considered by the examiner whenever present." (Emphasis added.)).

This shortcoming of the Final Office Action applies to all of Rembrandt's arguments that are supported by the Akl Declaration. However, the Examiner's failure to consider and comment on the evidence in the Akl Declaration is particularly problematic with respect to the evidence in the Akl Declaration that supports Rembrandt's arguments why one of ordinary skill in the art would not have been motivated to modify the cited art or combine it in the way the Examiner has proposed. *See, e.g.*, Reply at 94-103 (supported by Akl Dec. at ¶¶ 152-178); Final Office Action at 38-42.

Rembrandt respectfully requests that the Office (a) withdraw its rejections because the evidence submitted through Dr. Akl is sufficient to overcome the rejections or (b) issue a new Office Action that adequately comments on that evidence and explains why the Examiner believes it is not sufficient to overcome the rejections, as required by MPEP § 716.01.

Finality Must be Withdrawn so that Patent Owner may Challenge the Examiner's New Arguments and Submit Evidence in Response

In the Final Office Action, the Examiner introduced several new arguments, including: (i) Snell discloses inherently a destination address, Final Office Action at 41-42, (ii) the meaning of

"different type[s]" of modulations methods, *id.* at 31-32, (iii) the transceiver of Snell is capable of acting as a master in a master/slave relationship because the transceiver of Snell can provide an access point for a WLAN, *id.* at 38, and (iv) and reliance on the Declaration of David Goodman ("Goodman Dec.").

New Argument 1: Snell Discloses Inherently a Destination Address

With respect to the alleged inherent teaching of Snell, the Examiner argues for the first time that "Snell inherently teaches" a destination address. Final Office Action at 41-42 ("It is known the art that a packet has a destination address in WLAN and it is so well known that Snell does not even mention it. Yamano is introduced only if a reviewing person does not agree that Snell inherently teaches it."). The argument is new because the Examiner did not previously rely on Snell as disclosing inherently the destination address feature. *See* Non-Final Office Action at 9-11, 14, 16-17. In particular, in the anticipation rejections set forth in the Non-Final Office Action, the Examiner did not give patentable weight to the destination address feature. *Id.* at 9-11. In the obviousness rejections, the Examiner did not rely on Snell as disclosing the destination address feature and instead relied on Yamano. *Id.* at 14 ("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 …"), 16-17 ("Snell does not expressly teach wherein the at least one message is addressed for an intended destination of the second sequence. Yamano discloses …").

Rembrandt respectfully requests that the Office withdraw the finality of the rejections relying on the new inherency argument so that Rembrandt may challenge this argument and submit evidence showing that Snell does not disclose inherently the destination address feature of claims 2 and 59.

New Argument 2: New Definition of "Different Type[s]" of Modulation Methods

With respect to different types of modulation methods, the Examiner for the first time argues that "different type[s]" or "incompatible" has a new meaning with respect to modulation methods. Final Office Action at 31-32. By doing so, in the Final Office Action, the Examiner sets forth a new interpretation of the claimed "different type[s]" of modulation methods.

Claims 2 and 59 of the '580 Patent recites that "the second modulation method is of a different type than the first modulation method." The Examiner previously defined "different types of modulation method [*sic*]" as "modulation methods that are incompatible with one another." Non-Final Office Action at 7 (citing the PTAB's Final Written Decision in the '518 IPR at 12:18-19; Request at 12, 19-23). However, the Examiner never defined the meaning of "incompatible." *Id.*[1] In the Reply, Rembrandt pointed out that the Office had not defined "incompatible" and argued that, in the context of the '580 Patent, "first and second modulation methods may be incompatible when, for example, one modem using the first method cannot communicate with a second modem using the second method, i.e., when no common modulation method is shared." Reply at 82-83 (citing Akl Dec. at '580 Patent at col. 1, ll. 45-65; Akl at ¶ 125). *See also* Reply at 43, n. 16 (citing '580 Patent, col. 1, ll. 45-65; Akl Dec. at ¶ 26). In the Final Office Action, the Examiner introduces a new definition of "incompatible." Final Office Action at 31-32. In particular, the Examiner makes a new argument that first and second modulation methods are "different type[s]" or "incompatible" if "they use different algorithms when performing modulation and the data modulated with the [first modulation method] cannot be demodulated with a [second modulation method] demodulator or vice versa." *Id.* at 31. In

[1] Likewise, although the PTAB "interpret[ed] different 'types' of modulation methods as modulation methods that are incompatible with one another," the PTAB did not define the meaning of "incompatible." Final Written Decision in the '518 IPR at 12.

addition, based on the Examiner's new definition of "different type[s]," the Examiner for the first time argues that "BPSK is a different type of modulation method than QPSK because they use different algorithms when performing modulation and the data modulated with BPSK cannot be demodulated with a QPSK demodulator or vice versa." *Id.*

Rembrandt respectfully requests that the Office withdraw the finality of the rejections relying on the new argument as to the meaning of the claimed "different type[s]" of modulation methods so that Rembrandt has the opportunity to twice challenge these new arguments and submit evidence showing that (i) the Examiner's new interpretation of "different type[s]" of modulation methods is incorrect and (ii) even under the Examiner's new interpretation, BPSK and QPSK are not different types of modulation methods.

New Argument 3: WLAN Access Point Means Master in Master/Slave Relationship

With respect to the claimed master/slave relationship, the Examiner for the first time argues that Snell's disclosure that the transceiver can provide an access point for a wireless access point supports the Examiner's position that the transceiver of Snell is capable of acting as a master in a master/slave relationship. Final Office Action at 38 (citing Snell at 1:34-46) ("[t]o the extent that a master/slave relationship should be given patentable weight, Snell discloses a spread spectrum transceiver that can be used as an access point for WLAN or wireless local area network …"), 28 (citing Snell at 1:34-46) ("Snell discloses a spread spectrum transceiver that can be used as an access point for WLAN or wireless local area network").

Rembrandt respectfully requests that the Office withdraw the finality of the rejections relying on the new master/slave relationship argument so that Rembrandt may challenge this argument and submit evidence showing that Snell's access point does not disclose inherently the master/slave feature of claims 2 and 59.

New Argument 4: Reliance on the Goodman Declaration

In addition, in the Final Office Action, the Examiner relies on the Goodman Declaration. for the first time. Final Office Action at 29 (citing IPR2014-00518, Exhibit 1220 at ¶ 103). Rembrandt respectfully requests that the Office withdraw the finality of the rejections relying on Goodman Dec. so that Rembrandt may challenge the statements made in the Goodman Dec. and submit rebuttal evidence.

This Petition is timely filed, i.e., within two months of the Final Office action mailed July 18, 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: September 18, 2017 By: /Michael V. Battaglia/

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cc: Nancy J. Linck, Ph.D.
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CERTIFICATE OF SERVICE

It is hereby certified that on this 18th day of September, 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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IPRM – Floor 43
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/Michael V. Battaglia/
Michael V. Battaglia
Reg. No. 64,932

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:				
PETITION IN REEXAM PROCEEDING	1824	1	1940	1940
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1940**

Electronic Acknowledgement Receipt

EFS ID:	30391116
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:	18-SEP-2017
Filing Date:	12-SEP-2016
Time Stamp:	16:08:59
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1940
RAM confirmation Number	091917INTEFSW00003011022135
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		808Response.pdf	1350982 daf7e9e015181e7c4d5f5aa5431b2cf22ed429bf	yes	31

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Reexam Response to Final Rejection	1	30
	Reexam Certificate of Service	31	31

Warnings:

Information:

2	Reexam Miscellaneous Incoming Letter	AkiDeclaration.pdf	142461 cf6819b03bde6f49fe9e79bd7374324a8606a96b	no	7

Warnings:

Information:

3		Petition.pdf	93991 03e569f13a681af8e480aed1b3ad7311ce30c521	yes	17

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Receipt of Petition in a Reexam	1	16
	Reexam Certificate of Service	17	17

Warnings:

Information:

4	Fee Worksheet (SB06)	fee-info.pdf	30664 142716c5c010dd3a2ca3ea62bb185dc5d088bfca	no	2

Warnings:

Information:	
Total Files Size (in bytes):	1618098

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.

CERTIFICATE OF SERVICE

It is hereby certified that on this 18th day of September, 2017, the foregoing **PETITION REQUESTING TERMINATION OF GROUNDS OF REJECTION PURSUANT TO 37 C.F.R. § 1.181** 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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Facsimile: 202-383-8371

/Michael V. Battaglia/
Michael V. Battaglia
Reg. No. 64,932

Electronic Acknowledgement Receipt

EFS ID:	30397569
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:	18-SEP-2017
Filing Date:	12-SEP-2016
Time Stamp:	16:59:34
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		PetitionReqTermination.pdf	113676 ee543823b96a79be2c154b011a6177caa026d4bd	yes	16

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Petition for review by the Office of Petitions	1	15
	Reexam Certificate of Service	16	16
Warnings:			
Information:			
	Total Files Size (in bytes):	113676	

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

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 RECONSIDERATION OF OPLA'S NOVEMBER 28, 2016 DISMISSAL OF REMBRANDT'S SEPTEMBER 30, 2016 PETITION UNDER RULE 181/182 REQUESTING THE DIRECTOR TO EXERCISE HER DISCRETIONARY AUTHORITY UNDER 35 U.S.C. § 325(D) AND A FINAL PETITION DECISION IN ACCORDANCE WITH PTAB PRACTICE

Patent Owner ("Rembrandt") respectfully requests (1) reconsideration of OPLA's November 28, 2016 Dismissal ("'580 Petition Dismissal") of Rembrandt's September 30, 2016 "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" ("'580 Petition") and (2) a Final Petition Decision in accordance with the PTAB's consistent § 325(d) practice for the reasons given below.

Rembrandt is not aware of any regulation which would render Rembrandt's request for reconsideration and a final petition decision untimely or prevent OPLA's consideration of Rembrandt's request, particularly given that OPLA has not yet issued a final decision on the '580

Petition and further in view of the CRU's perpetuation of the Office's errors and material changes in facts in the July 18, 2017 Final Office Action ("FOA"). For example, in the FOA the CRU conceded substantial similarity between at least some of the art and arguments in the present reexamination and those previously presented to the Office in the Third Party Requester's thirteen previous IPR petitions. S*ee, e.g.,* FOA at 40 ("Further, claims 1 and 58 recite using multiple modulations and it is determined by PTAB that APA and Boer discloses it. Snell and Harris AN9614 similarly disclose all the limitation of claims 1 and 58 "); *see also, e.g.,* page 35, *infra.* The CRU's concession of substantially similar art cited in the present proceeding and that previously presented to the Office is a material change in fact that must be taken into consideration in an analysis pursuant to § 325(d). This material change in fact only came to light in the FOA of July 18, 2017, and therefore, the present request to revisit the Petition Dismissal is timely. Nevertheless, to the extent OPLA believes a regulation exists that would render the present request is untimely, Rembrandt further petitions the Director to suspend any such regulation under the power granted to the Director by 37 C.F.R. § 1.183.

On September 12, 2016, Third Party Requester ("Samsung") filed a request for *ex parte* reexamination of U.S. Patent 8,023,580 ("'580 Patent"). On September 30, 2016, Rembrandt filed the '580 Petition in Ex Parte Reexamination Control No. 90/013,808 ("'808 Reexamination"). Samsung filed an opposition to the '580 Petition on October 13, 2016. On October 25, 2016, Rembrandt filed a reply to Samsung's opposition. The Office of Patent Legal Administration ("OPLA") treated the '580 Petition as a petition to vacate the order granting

reexamination mailed September 27, 2016 and to issue an order denying reexamination pursuant to § 325(d). '580 Petition Dismissal, at 3.[1]

Section 325(d) gives the Director discretion to deny a reexamination request when "the same or substantially the same prior art or arguments ***previously were presented*** to the Office." Thus, even prior to considering the substantial new question issue and the analysis that entails, the Director has the power to curb abuse of the reexamination system under § 325(d).[2] However, while exercise of that power is discretionary, the statute obligates the Director to at least determine whether substantially the same art ***or*** arguments were previously presented. Failure to do so is contrary to the statute and Congressional intent (as explained further below).

In this case, without determining whether the same ***or substantially the same*** art ***or*** arguments had been previously presented to the Office through a comparison of the art and arguments presented in the request with those previously presented, OPLA dismissed the '580 Petition. '580 Petition Dismissal, at 6-7.[3] Instead of making the necessary comparison, OPLA improperly placed the burden on Rembrandt to do so.[4] *Id.* at 3-4. OPLA then proceeded to

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[1] A complete history of the events relevant to this reconsideration request are included in Exhibit 2.

[2] By considering § 325(d) as a threshold matter, the Director can exercise his/her discretion prior to making the substantial new question ("SNQ") determination under § 304. This order of consideration would conserve Office resources and clearly *is* permitted by § 325(d) ("In determining whether to … order a proceeding under chapter 30 …."). OPLA's statement to the contrary, i.e., that the petition could not have been filed before the reexamination was ordered ('580 Petition Dismissal, at 3) cannot be correct. However, such an order is not required. *See Ariosa Diagnostics v. Verinata Health, Inc.,* IPR2013-00276 and -00277, paper 63, at 5.

[3] In dismissing the '580 petition, OPLA considered the'580 Petition and Samsung's opposition but not Rembrandt's reply.

[4] Rembrandt believes this burden rests on the Director. Of course, the Director has the option of refusing to order reexamination if a requester fails to provide the necessary comparison as part of

focus on the issues raised by § 304 rather than those raised by § 325(d), based primarily on OPLA's misunderstanding of the relationship between 35 U.S.C. § 325(d) and § 304. *Id.* at 4-6. The CRU perpetuated those errors in the FOA, mailed July 18, 2017.

Rembrandt respectfully disagrees with OPLA's approach as explained further below. Again, the Director has an obligation to at least consider whether he/she should exercise his/her discretion when "the same or substantially the same prior art or arguments were previously presented to the Office." Accordingly, Rembrandt respectfully requests OPLA to reconsider its earlier dismissal and render a final decision on the '580 Petition by exercising the Director's § 325(d) authority to vacate and terminate the improvidently ordered *ex parte* reexamination of the '580 Patent. Should OPLA render a final decision without considering whether "the same or substantially the same prior art or arguments were previously presented to the Office," such a decision would be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A).

I. Reconsideration of the '580 Petition Dismissal is Warranted Based on the Office's Misunderstanding of the Second Sentence of 35 U.S.C. § 325(d)

The second sentence of 35 U.S.C. § 325(d) states:

> In determining whether to institute or order a proceeding under this chapter, chapter 30, 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.

As reflected in the '580 Petition Dismissal and the FOA, OPLA and the CRU misunderstand the obligations and authority this statute imposes on the Office, its relationship to 35 U.S.C. § 304, the requirements for its consideration and application, its application in *ex parte*

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its request (in the present case, Samsung failed to provide such a comparison in its request). In any case, Rembrandt responds to OPLA's criticism by providing such a comparison in section II.A, *infra*, and Exhibit 3.

reexamination compared to *inter partes* review, and the Office's consistent agency practice with respect to its consideration and application.

A. The '580 Petition Dismissal Misunderstands the Relationships between §§ 325(d) and 304

In the '580 Petition Dismissal, OPLA takes the position that 35 U.S.C. § 304 does not permit the Office to deny a request for reexamination pursuant to 35 U.S.C. § 325(d) when the petition for reexamination presents a substantial new question of patentability. '580 Petition Dismissal, at 4-6 ("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.")(emphasis original).

With all due respect, OPLA misunderstands the relationship between §§325(d) and 304. The Office's own prior decisions confirm OPLA's error. For example, the Board has previously explained that:

> Under section 325(d), second sentence, however, the Office could nevertheless refuse a subsequent request for ex parte reexamination with respect to such an issue, **even if it raises a substantial new question of patentability**, because the issue previously was presented to the Office in the petition for inter partes or post-grant review.

Ariosa Diagnostics v. Verinata Health, Inc., IPR2013-00276 and -00277, paper 63, at 6 (emphasis added). The panel in *Ariosa* reached this conclusion based on a clearly expressed intent behind the inclusion of the second sentence in § 325(d). As explained in the legislative history of the America Invents Act:

> In the second sentence of 325(d), the present bill also authorizes the Director to reject **any** request for *ex parte* reexamination or petition for post-grant

> or *inter partes* review on the basis that the same or substantially the same prior art or arguments previously were presented to the Office. This will prevent parties from mounting attacks on patents that raise issues that are substantially the same as issues that were already before the Office with respect to the patent. The Patent Office has indicated that it currently is **forced to accept many requests for *ex parte* and *inter partes* reexamination** that raise challenges that are cumulative of or substantially overlap with issues previously considered by the Office with respect to the patent.

157 Cong. Rec. S1360-S1394, S1376 (emphasis added).

In other words, the purpose behind the second sentence of § 325(d) is to permit the Office to reject reexamination requests that it was previously "forced to accept." Of course, the only such requests that the Office was forced to accept were those that presented a substantial new question of patentability. 35 U.S.C. §§ 302-304. Because § 325(d) is intended to permit the Office to reject requests for reexamination that it previously was forced to grant, i.e., those that presented a substantial new question of patentability, it *must* be the case that § 325(d) permits the Office to deny requests that present a substantial new question of patentability; a result correctly reached by the panel in *Ariosa.*

Said differently, the '580 Petition Dismissal essentially reads the second sentence of § 325(d) out of the statute. OPLA takes the position that § 325(d), which was implemented *after* § 304, only permits the Office to deny reexamination requests that do not present a substantial new question of patentability. '580 Petition Dismissal, at 4. Of course, the Office lacks authority to grant such requests and has no discretion to do otherwise. 35 U.S.C. § 303(a); *see also Ethicon, Inc. v. Quigg,* 849 F. 2d 1422, 1427 (Fed. Cir. 1988) ("The Commissioner, on the other hand, has no inherent authority, only that which Congress gives."). Accordingly, OPLA reads the second sentence of § 325(d) as a nullity providing no meaning beyond that already in the law. Such an interpretation must be incorrect. *Williams v. Taylor*, 529 US 362, 404 (2000) ("It is,

however, a cardinal principle of statutory construction that we must give effect, if possible, to every clause and word of a statute.") (internal quotations omitted); *Walton v. United States*, 551 F. 3d 1367, 1370 (Fed. Cir. 2009); *BASR Partnership v. United States*, 795 F.3d 1338, 1360 (Fed. Cir. 2015). Furthermore, as indicated above, the legislative history of the America Invents Act makes explicitly clear the intended effect for the second sentence of § 325(d): providing the authority for the Director to deny requests for reexamination even if those requests present a substantial new question of patentability.

In fact, the Director has championed Rembrandt's interpretation of the authority provided by § 325(d) to the Court of Appeals for the Federal Circuit. "Brief for the Intervenor, Director of USPTO," *Ariosa Diagnostics v. Illumina, Inc.*, Fed. Cir. Appeal Nos. 2016-2388, 2017-1020, filed April 26, 2017, at 12, 23-24 ("[u]nder section 325(d), second sentence … the Office could … refuse a subsequent request for ex parte reexamination with respect to such an issue, even if it raises a substantial new question of patentability, because the issue previously was presented to the Office in the petition for inter partes or post-grant review.").

Accordingly, the '580 Petition Dismissal is based on a clear misunderstanding of the authority provided by the second sentence of § 325(d) – one that conflicts with how § 325(d) is interpreted and applied by the Office. Rembrandt respectfully requests reconsideration of the '580 Petition Dismissal in view of the clear meaning of the second sentence of § 325(d) relative to that of § 304.

B. The '580 Petition Dismissal Incorrectly Requires an Instituted or Completed Proceeding Before § 325(d) Applies

In the '580 Petition Dismissal, OPLA incorrectly determined that failure to institute an *inter partes* review upon certain grounds or based on certain art prevents the Office from

applying 325(d) to deny a subsequent reexamination request based upon substantially the same art. *See, e.g.,* '580 Petition Dismissal at 4-5 ("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] Accordingly, OPLA has taken the position that § 325(d)'s instruction to take into account whether or not "the same or substantially the same prior art or arguments previously *were presented to the Office*" is limited to considering issues which have been considered after an *inter partes* review trial has begun and has been completed. Again, with due respect, this is an incorrect application of § 325(d). The Office's own decisions, including those held up as "informative" by the Board, illustrate that a previously denied petition for *inter partes* review is more than sufficient to deny a subsequent request for review pursuant to § 325(d). *See, e.g., Unilever v. Proctor & Gamble,* IPR2014-00506, paper 25 at 4-5. In other words, issues "presented to the Office" in a petition for *inter partes* review, even if the petition is denied, are sufficient "presentation" for denying a subsequent petition for review *or* subsequent request for reexamination under § 325(d).

In *Unilever*, the Board denied a subsequent petition for *inter partes* review after determining that the art and arguments presented in the second petition were substantially the same as those presented in an earlier first petition. *Unilever v. Proctor & Gamble,* IPR2014-00506, paper 25 at 4-5. The Board relied upon its authority pursuant to § 325(d) to deny the

[5] For completeness, Rembrandt notes that OPLA incorrectly stated that "only two of the *inter partes* reviews included challenges to claims 2 and 59 [of the '580 patent]." '580 Petition Dismissal at 5. Claims 2 and 59 have been unsuccessfully challenged in *inter partes* reviews IPR2014-00514, IPR2014-00518, and IPR2015-00114, as well as in a related litigation. In any case, OPLA's apparent focus on only the *inter partes* reviews involving a challenge to claims 2 and 59 of the '580 Patent ignores the close relationship between the '580 and '228 Patents and the significant overlap of the art and arguments presented repeatedly in each. Exhibit 2 identifies the many attacks on these patents and the harassment that the PTAB recognized when it applied § 325(d).

second petition even though the Board had previously declined to institute an *inter partes* review in response to the first petition. *Id.* Clearly, based on *Unilever,* an earlier denied petition is more than sufficient "presentation" to the Office to deny a subsequent request for reexamination pursuant to 35 U.S.C. § 325(d).

Unilever also clarifies that a subsequent request for review of a patent may be decided pursuant to 35 U.S.C. § 325(d) even when the art in the subsequent review is different than that cited in an earlier denied petition for *inter partes* review. *Unilever v. Proctor & Gamble,* IPR2014-00506, paper 25 at 5 ("Unilever points out differences between the art and arguments raised in the two petitions. We did not overlook these differences. … We considered the differences, but found the art and arguments are nonetheless 'substantially the same' within the meaning of the statute.") (internal citations omitted).

Furthermore, OPLA should not lose sight of the fact that the PTAB did in fact render decisions regarding claims 2 and 59 of the '580 patent and did finally conclude the *inter partes* review. With respect to claims 2 and 59, the PTAB was "not persuaded there is a reasonable likelihood that Petitioner would prevail in its challenge" of these claims. *Samsung Electronics Co. Ltd., v. Rembrandt Wireless Technologies, LP*, IPR2014-00518, paper 17 at 15. The PTAB's decision regarding claims 2 and 59 was based on art and arguments that are substantially the same and cumulative of the art cited in the '580 reexamination. *See, infra,* section II.A, Exhibit 3. While again, Rembrandt believes it is not its burden to compare the art and arguments presented in the earlier proceedings with that presented in the '580 reexamination, that

comparison has been made (*see* section II.A, *infra,* and Exhibit 3) and supports the application of § 325(d).[6]

Accordingly, the '580 Petition Dismissal is based on a clear misunderstanding of the second sentence of § 325(d) and the obligation placed on the Office by that sentence. Section 325(d) provides authority to reject a subsequent request for reexamination over an earlier filed petition for *inter partes* review even when the earlier filed petition did not result in an instituted *inter partes* review of the challenged claims (as is the case here). *See* IPR2015-00114, paper 14, at 4, 6-8 (applying § 325(d) to reject another attack on claims 2 and 59 even though *inter partes* review of claims 2 and 59 had never been instituted on these claims); IPR2015-00555, paper 20, at 5, 7-9 (applying § 325(d) to reject another attack on claim 21 even though *inter partes* review of claim 21 had never been instituted on that claim). Furthermore, § 325(d) provides authority to deny a subsequent reexamination request even when the art being cited is not the same as that previously presented to the Office. *See Unilever v. Proctor & Gamble,* IPR2014-00506, paper 25 at 5; IPR2015-00555, paper 20, at 7-9 (applying § 325(d) to reject another attack on claim 21 even though allegedly "new" art (Siwiak) had not been cited in the earlier *inter partes* review petition). Again, Rembrandt respectfully requests reconsideration of the '580 Petition Dismissal in view of the clear meaning of the second sentence of § 325(d) which provides the Director with the authority to deny a subsequent request for reexamination over a previously denied petition for *inter partes* review based on newly cited references. In fact, based on the language of §

[6] Again, there is no requirement that *patent owner* show that the art presented in a follow-on request for review is substantially the same or cumulative of that presented in an earlier request in order for the Office to exercise its authority pursuant to § 325(d). *See, e.g., Ariosa Diagnostics v. Verinata Health, Inc.,* IPR2013-00276 and -00277, paper 63 at 11-12; *Samsung Electronics Co. Ltd., v. Rembrandt Wireless Technologies, LP*, IPR2015-00555, paper 20, at 6-9 (denying request under § 325(d) without patent owner arguing that § 325(d) should be applied).

325(d), this would be true even if the art is not substantially the same, if the arguments are substantially the same. See § 325(d) ("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").

C. OPLA Incorrectly Assumes the Analysis Pursuant to § 325(d) is Different for Inter Partes Review and Ex Parte Reexamination

In the '580 Petition Dismissal, OPLA posits that the standard for denying a reexamination request pursuant to § 325(d) is somehow different than denying a subsequent *inter partes* review petition. '580 Petition Dismissal at 5 ("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 a result, OPLA declined to consider factors that the Office has consistently applied when making determinations pursuant to § 325(d). *Id.* However, there is no such distinction in the law; § 325(d) applies equally to chapter 30 (the *inter partes* review chapter) and chapter 31 (the *ex parte* reexamination chapter) of Title 35 of the U.S. Code. Furthermore, no such distinction has ever been recognized by the Office. *See, e.g., Ariosa Diagnostics v. Verinata Health, Inc.,* IPR2013-00276 and -00277, paper 63.

For example, in the *Ariosa* case, the Office rejected a subsequently filed *ex parte* reexamination request using the same factors that the Office used in the *Unilever* case to reject a

subsequently filed *inter partes* review petition. *Compare Ariosa Diagnostics v. Verinata Health, Inc.,* IPR2013-00276 and -00277, Paper 63, at 10-12 *with Unilever v. Proctor & Gamble,* IPR2014-00506, paper 17, at 5-8; paper 25 at 2-5. In fact, in the *Ariosa* case the Office explicitly considered whether or not the references cited in the subsequently filed *ex parte* reexamination request were known to the requester at the time of the earlier filed petition for *inter partes* review. *Ariosa Diagnostics v. Verinata Health, Inc.,* IPR2013-00276 and -00277, paper 63, at 12 ("Finally, Petitioner does not appear to have offered any explanation as to why those references could not have been relied upon in the petitions for *inter partes* review in IPR2013-00276 and IPR2013-00277."). Respectfully, OPLA is simply mistaken that such factors are not part of a § 325(d) analysis. *Contrast Ariosa Diagnostics v. Verinata Health, Inc.,* IPR2013-00276 and -00277, paper 63, at 12 *with* '580 Petition Dismissal, at 5.

Accordingly, Rembrandt respectfully requests reconsideration of the '580 Petition Dismissal so that OPLA can fairly and consistently apply § 325(d) pursuant to the Office's procedures as followed in the *Unilever* and *Ariosa* cases, including consideration of the all of the relevant factors, such as whether or not the art cited in the reexamination request was available to and known by Samsung at the time of the earlier filed *inter partes* review petitions.

D. The '580 Petition Dismissal is Arbitrary as it Deviates From Consistent Agency Practice

As illustrated above (*see supra* at sections I.A-C), the '580 Petition Dismissal deviates from consistent agency practice regarding the interpretation and application of § 325(d). Specifically, the Office has consistently interpreted § 325(d) as charging the Office with the responsibility to consider whether the authority given to it by § 325(d) should be exercised to reject a subsequent challenge to the patentability of an issued claim, including one made through

a request for *ex parte* reexamination, even if the request presents a substantial new question of patentability. The '580 Petition Dismissal takes the exact opposite approach. *Compare* '580 Petition Dismissal, at 4-6 *with* "Brief for the Intervenor, Director of USPTO," *Ariosa Diagnostics v. Illumina, Inc.*, Fed. Cir. Appeal Nos. 2016-2388, 2017-1020, filed April 26, 2017, at 12, 23-24 *and Ariosa Diagnostics v. Verinata Health, Inc.,* IPR2013-00276 and -00277, paper 63, at 6; *see also Unified Patents, Inc., v. PersonalWeb Techs., LLC,* IPR2014-00702, paper 13; *Medtronic Inc., v. Nuvasive, Inc.,* IPR2014-00487, paper 8; *Prism Pharma Co. Ltd., v. Choongwae Pharma Corp.,* IPR2014-00315, paper 14; *Medtronic Inc., v. Robert Bosch Healthcare Systems, Inc.,* IPR2014-00436, paper 17; *Intelligent Bio-Systems, Inc., v. Illumina Cambridge Ltd.,* IPR2013-00324, paper 19; *ZTE Corp. v. ContentGuard Holdings, Inc.*, IPR2013-00454, paper 12. "An unexplained inconsistency in agency policy is a reason for holding an interpretation to be an arbitrary and capricious change from agency practice." *Encino Motorcars, LLC v. Navarro*, 136 S. Ct. 2117, 2126 (2016)(internal quotations omitted). Accordingly, the '580 Petition Dismissal, if made final in its present form, would represent an unlawful agency action. 5 U.S.C. § 706(2)(A) ("The reviewing court shall hold unlawful and set aside agency action, findings, and conclusions found to be arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law …").

The failure of OPLA to properly consider whether the '808 reexamination should be terminated under § 325(d) is particularly troublesome as the '580 Patent (and its continuation, U.S. Patent 8,457,228) have been previously challenged by Samsung in *thirteen* IPRs, and in district court litigation, all of which have concluded in Rembrandt's favor with respect to the validity of claims 2 and 59 of the '580 Patent (and of claim 21 of the '228 patent). *See* Exhibit 2.

This number of challenges is extreme.[7] As illustrated in the discussion *supra,* it is the Office's consistent practice to deny follow-on petitions for review when petitioners have been given significantly fewer "bites at the apple" than is the case here. The PTAB has followed this consistent practice with regard to Samsung's multiple challenges to the '580 and '228 Patents. When the PTAB was faced with Samsung's cumulative follow-on petitions, it considered whether the Director's authority under § 325(d) should be exercised and correctly declined to institute further *inter partes* reviews. *Samsung v. Rembrandt Wireless Tech., LP*, IPR2015-00555, Paper 20, at 7-9. *See also Samsung v. Rembrandt Wireless Tech., LP*, IPR2015-00114, Paper 14 at 7; *Samsung v. Rembrandt Wireless Tech., LP*, IPR2015-00118, Paper 14 at 6-7. OPLA's '580 Dismissal to the contrary is inexplicable.

The America Invents Act was implemented to provide *inter partes* review as a substitute for litigation and to correct the problems in reexamination that forced the Office to accept serial challenges. *See, e.g.,* 157 Cong. Rec S1360-S1394, S1376. Here, Samsung has already frustrated that purpose as it has been permitted to challenge the '580 Patent (and '228 Patent) in both litigation and *inter partes* review. OPLA has now permitted Samsung to further frustrate the purpose of the America Invents Act by allowing Samsung's fifteenth and sixteenth challenges to Rembrandt's two patents to proceed.

[7] *See, e.g.,* the Remarks by Michelle K. Lee at the George Washington University School of Law on May 16, 2017: "In sum, the data shows that the large majority of patents are only challenged only one time in AIA trials. And a relatively small percentage are challenged more than two times. Although it is important to understand the overall numbers, we understand that multiple challenges to even a single patent are a serious concern to our patent holders. And even a single challenge simply to harass a patent owner is unacceptable." The pie chart accompanying Director Lee's presentation indicates that less than 0.5% of the patents challenged in IPRs are challenged 7 times or more.

The mistaken dismissal by the Office of Rembrandt's § 325(d) Petition is highlighted by the fact that the CRU has determined in this proceeding that at least some of the references cited in the present proceeding are the same as those in the earlier filed IPRs and relies on this equivalency in an attempt to justify the grounds of rejection. *See, e.g.,* FOA at 40. Specifically, the Examiner argues that:

> Harris AN9614 is used to show that the transceiver of Snell can be used in a master/slave relationship. Further, claims 1 and 58 recite using multiple modulations and it is determined by PTAB that APA and Boer discloses it. Snell and Harris AN9614 similarly disclose all the limitation of claims 1 and 58.

FOA at 40.

This argument supports Rembrandt's position that the Office should exercise its discretion under § 325(d): the CRU recognizes that the teachings of these references are the same and relies on this equivalency for its own purposes while simultaneously declining to recognize this equivalency for purposes of the analysis under § 325(d). These internally inconsistent positions undermine any argument by the Office that it is fairly and consistently applying § 325(d) in the current proceeding.

Accordingly, Rembrandt respectfully requests reconsideration of the '580 Petition Dismissal and a final decision that conforms to the Office's consistent agency practice. Without such a final decision, the '580 Petition Dismissal represents an unlawful exercise of the Office's authority.

E. The CRU Has Perpetuated OPLA's Errors by Failing to Properly Consider the Issues "Previously … Presented to the Office"

In the FOA of July 18, 2017 in the '808 reexamination ("FOA"), the CRU perpetuates OPLA's errors by taking the untenable position that the Office is under no obligation to compare the art cited in the '580 Reexamination Request to other art previously presented to the Office in

determining whether or not to order or maintain the '808 Reexamination. *See, e.g., FOA* at 17. This position is contrary to the appropriate way in which § 325(d) has been applied by the Office.

As an initial matter, Rembrandt notes that the MPEP presumes that an analysis pursuant to § 325(d) will be performed when deciding whether or not to order a reexamination on a reexamination request. *See, e.g.,* MPEP § 2242(I)-(II) ("Issues involving 35 U.S.C. § 325(d) must be referred to the Director of the CRU."). Yet, as illustrated through the *Unilever* case, deemed "informative" by the Board, an analysis under § 325(d) includes a close comparison of the art and arguments presented in the previous and current proceeding. *Unilever v. Proctor & Gamble,* IPR2014-00506, paper 17 at pp. 5-8; paper 25 at 5 ("We considered all of the papers filed **in both proceedings** …") (emphasis added) (internal quotations omitted); *see also Ariosa Diagnostics v. Verinata Health, Inc.,* IPR2013-00276 and -00277, Paper 63 at 11-12. Yet, in the FOA, the CRU takes the exact opposite approach, declining to compare the art previously cited in Samsung's *inter partes* review petitions with that cited in the request to *ex parte* reexamination. FOA at 17 ("[T]here is no provision in MPEP that requires comparing two prior art references and determines if one is cumulative to another …").

Like OPLA, the CRU further erred in failing to realize that § 325(d) applies to proceedings in which a previous *inter partes* review was not instituted. Specifically, the CRU declined to terminate the '808 Reexamination based on the following reasoning:

> Second, in all the previous IPRs, i.e., IPR2014-00518, IPR2014-00519, IPR2014-00514, IPR2014-00515, IPR2015-00114 and IPR2015-00118, PTAB did not institute review of claims 2 and 59 and therefore the teaching presented by Snell and references incorporated by Snell regarding claims 2 and 59 is new and non-cumulative.

FOA at 17 (emphasis added).

This conclusion is in direct conflict with the Office's *Unilever* opinion:

> Unilever filed this second petition for inter partes review of the challenged claims of the '569 patent after we denied the first petition. Paper 2 ("second petition"); IPR2013-00505, Paper 4 ("first petition"); Paper 17 (decision denying Unilever's first petition). We denied the second petition because it raised "substantially the same prior art or argument" that Unilever "previously presented" in the first petition.

Unilever v. Proctor & Gamble, IPR2014-00506, paper 25 at p. 3 (emphasis added).

Accordingly, the CRU's determination to continue the '808 Reexamination failed to properly apply the correct analysis for § 325(d), perpetuating rather than remedying the errors made in the '580 Petition Dismissal. S*ee, e.g.,* '580 Petition Dismissal, at 4-6. Therefore, again, reconsideration of the '580 Petition Dismissal is requested so that OPLA can address the CRU's errors and properly consider whether the Director's authority under § 325(d) should be exercised consistent with agency practice as laid out in the *Unilever* and *Ariosa* cases.

II. The '808 Reexamination Should be Terminated Pursuant to § 325(d)

Rembrandt respectfully submits that when the decision to order the '808 Reexamination is reconsidered in light of the correct understanding of § 325(d), the Office should terminate the '808 Reexamination. Specifically, the art and arguments presented in the '808 reexamination are substantially the same and cumulative of those previously presented and found lacking in Samsung's previous petitions for *inter partes* review of the claims of the '508 patent. Second, vacating the order and terminating the '808 Reexamination would conform to the Office's consistent practice in such cases for applying § 325(d). Third, policy considerations support terminating the '808 and '809 reexaminations.

A. The Art and Arguments Presented in the '808 Reexamination are Substantially the Same as Those Previously Presented to the Office in the '518 Inter Partes Review

To determine whether the Director should exercise his authority under § 325(d), the Office must consider whether the art and arguments presented for consideration were previously presented to the Office, including art and arguments presented in earlier petitions for *inter partes* review that were ultimately not instituted on the claims being challenged. *See, supra* at section I.B (discussing the *Unilever* and *Ariosa* cases). It is not sufficient to merely conclude that the *same* art was not cited. Rembrandt maintains its position that it does not bear the burden to make that required comparison in this case. Nevertheless, Rembrandt has done so in the interest of assisting the Office and advancing this case. That comparison establishes that substantially the same art or arguments were previously presented to the Office in Samsung's *inter partes* review petitions challenging the '580 Patent.

As will be shown below, the art cited in the '808 reexamination and the previously decided IPRs provides substantially the same teachings because the primary references, Snell (cited in the '808 reexamination) and U.S. Patent No. 5,706,428 ("Boer") (cited in the IPRs) in particular, are directed to substantially the same improvement to the Institute of Electrical and Electronics Engineers ("IEEE") standard for WiFi communication, IEEE 802.11. *See, e.g.,* Snell at 1:47-50, 4:42-46; *see also, e.g.,* Boer at 1:16-19. That is, both Boer and Snell disclose a technique to transmit at higher data rates within the IEEE 802.11 standard using the same types of signal modulation with spread spectrum transceivers. *Compare,* Snell at, 1:22-30 ("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.) *with* Boer at Abstract, 1:26-30 ("The 1 and 2 Mbps rates use DBPSK and

DQPSK modulation, respectively. The 5 and 8 Mbps rates use PPM/DQPSK modulation. All four data rates use direct sequence spread spectrum (DSSS) coding. … It is an object of the present invention to provide a method of operating a wireless local area network station which enables communication between stations operating at different data rates."). Furthermore, the comparison shows that the art presented in Samsung's '580 Reexam Request actually discloses *less* than that previously presented and found by the PTAB to be unlikely to be successful in invalidating claims 2 and 59 of the '580 Patent.[8]

1. The Art Presented by Samsung in the '580 Reexam Request

In Samsung's '580 Reexam Request, Samsung alleged that the cited references presented three SNQs with respect to the claims 2 and 59 of the '580 Patent:

1) Unpatentability Under 35 U.S.C. § 103 Over Snell, Yamano, and Kamerman (relying on the incorporation by reference of Harris 4064.4 and Harris AN9614) ["SNQ 1"];

2) Unpatentability Under 35 U.S.C. § 103 Over Snell, Harris 4064.4, Harris AN9614, Yamano, and Kamerman ["SNQ 2"]; and

3) Unpatentability Under 35 U.S.C. § 103 Over Snell in View of Harris 4064.4, the Admitted Prior Art, Upender, Yamano, and Kamerman ["SNQ 3"].

Request for *Ex Parte* Reexamination, U.S. Patent No. 8,023,580 ("'580 Reexam Request"), at iv.[9]

As explained below, Samsung presented the art in each SNQ in substantially the same way it previously presented the alleged Admitted Prior Art ("APA") and Boer in Samsung's IPR

[8] For the Office's easy reference, claims 2 and 59, including the claims on which they depend, are reproduced in the attached Exhibit 1.

[9] Samsung presented the same art to support the same SNQs in its challenge to U.S. Patent No. 8,457, 228 (continuation of the '580 Patent). Request for *Ex Parte* Reexamination, U.S. Patent No. 8,457, 228 ("'228 Reexam Request"), at iv.

Petitions challenging the '580 Patent. While Snell, Yamano, Kamerman, Harris 4064.4, and Harris AN9614 were not previously cited in any of the '580 or '228 IPRs, their allegedly relevant disclosures are at most cumulative of the APA and Boer, as is demonstrated through a comparison of Samsung's arguments based on these allegedly "new" references with those made based on the APA and Boer in at least the '518 and '114 IPR Petitions.

With respect to SNQ 1, Rembrandt has made an exhaustive comparison of Samsung's claim charts presented in its '580 Reexam Request to support its alleged SNQ 1 for claims 2 and 59 of the '580 Patent (pp. 44-62) with Samsung's claim charts presented to support its '114 IPR Petition for claims 2 and 59 of the '580 Patent (pp. 25-32 (claims 1 and 2) and pp. 43-49 (claims 58 and 59).[10] That comparison is included in Exhibit 3 and shows that Samsung's present arguments were previously presented to the Office and are based on substantially the same art.

SNQ 2 relies on the same art as SNQ 1, and thus the comparisons with respect to SNQ 1 apply equally to SNQ 2. SNQ 3 additionally relies on the APA and Upender – art that was previously presented to and considered by the Office. Thus, it will not be discussed further.

2. Samsung's Arguments Presented to Support its Alleged SNQs Compared to those it Previously Presented in its '518 and '114 IPR Petitions

In its '580 Reexam Request, Samsung relied on Snell as its primary reference to support all of its proposed SNQs. Snell is at best cumulative of Boer, which Samsung previously and repeatedly presented to the PTAB in numerous IPR Petitions. *See* Samsung's Petitions in IPR2014-00518, -00519; IPR2015-00114, -00118 (summarized in Exhibit 2).[11] Both references

[10] Substantially the same comparisons were made in the '518 IPR Petition. *See* pp. 28-33 (claims 1 and 2), 52-57 (claims 58 and 59).

[11] Similarly, in its challenges to the '228 Patent, Samsung previously presented Boer in its petitions in IPR2014-00889, -00890, -00891, -00892, -00893, -00895; IPR2015-00555.

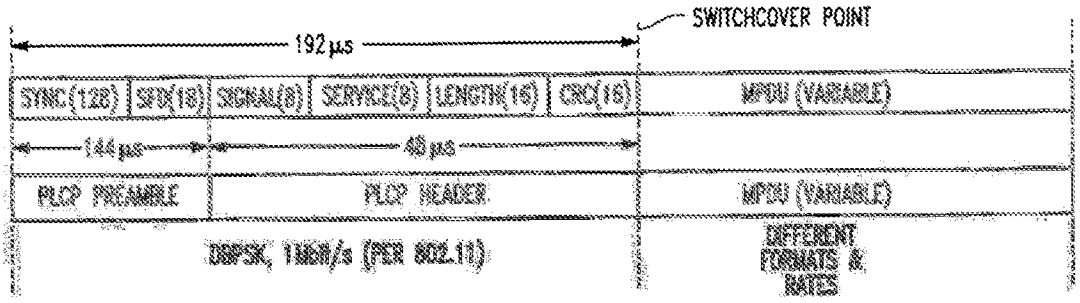
propose similar extensions to the IEEE 802.11 standard[12] (or WiFi),[13] namely adding two higher data rates to the 1MB/s and 2MB/s data rates in the standard. Both references use the WiFi packet structure defined by the standard (shown Fig. 4 in Boer and Fig. 3 in Snell), including packet headers with the same fields, and Samsung relies heavily on these common aspects as a basis for presenting an SNQ in each case.

In its '580 Reexam Request, Samsung relied on Snell's Fig. 3 *45 times* in its attempt to establish the existence of SNQs.[14] In fact, Snell's Fig. 3 is *substantially identical* to Fig. 4 in Boer – a figure fully considered by the PTAB in numerous IPRs and found unlikely to render unpatentable claims 2 and 59 of the '580 Patent. *See* the PTAB Institution Decision in IPR2014-00518, at 13-15 (quoted *supra* at 9). Snell's Fig. 3 (as it appears in Snell without Samsung's commentary) is compared below with Boer's Fig. 4 (annotated in italics to identify the numbers in Fig. 4 and the Boer teachings coinciding to those shown in Snell's Fig. 3):

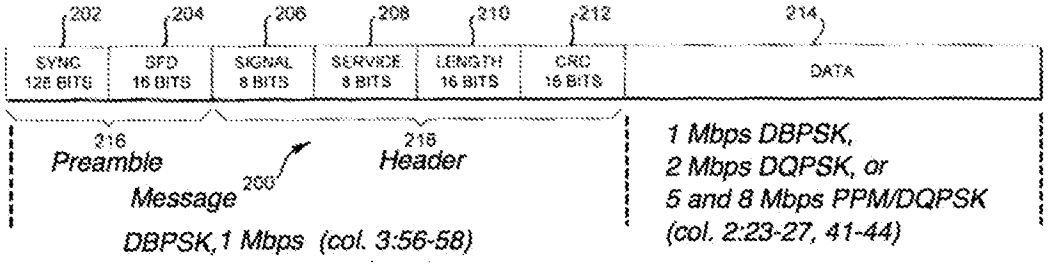
[12] *See* Snell, col. 4, lines 43-46 ("The transceiver 30 may be readily used … in accordance with the *proposed IEEE 802.11 standard*" (emphasis added)); Boer, col. 1, lines 17-20 ("… there is being produced *IEEE standard 802.11, currently in draft form*, which specifies appropriate standards for use in wireless LANs" (emphasis added)). Both Boer and Snell were members of the committee responsible for drafting the standard, and both had access to the packet structure before the standard was approved and published.

[13] Starting in 2000, the WiFi Alliance initiated programs to certify devices as operating in accordance with the standard. Certified devices are permitted to use the "WiFi" trademark. As a result, "WiFi" and IEEE 802.11 are often used interchangeably.

[14] Similarly, in its '228 Reexam Request, Samsung relied on Snell's Fig. 3 *40 times*.



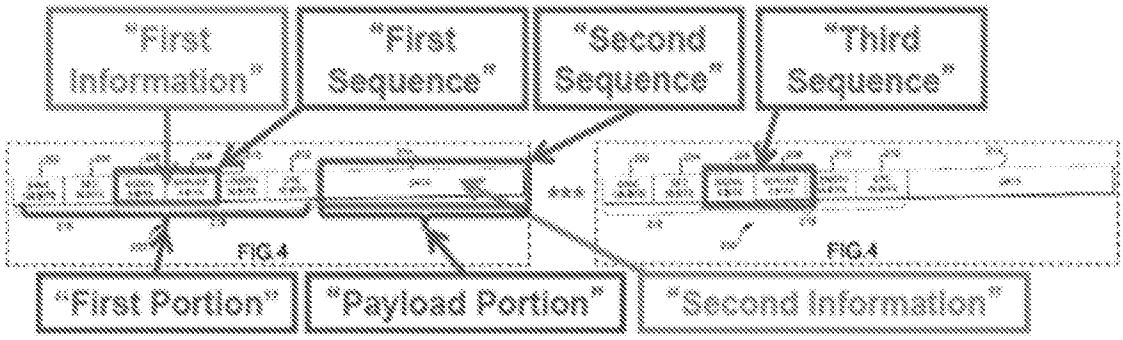
(Snell) *FIG. 3*



(Boer) FIG.4

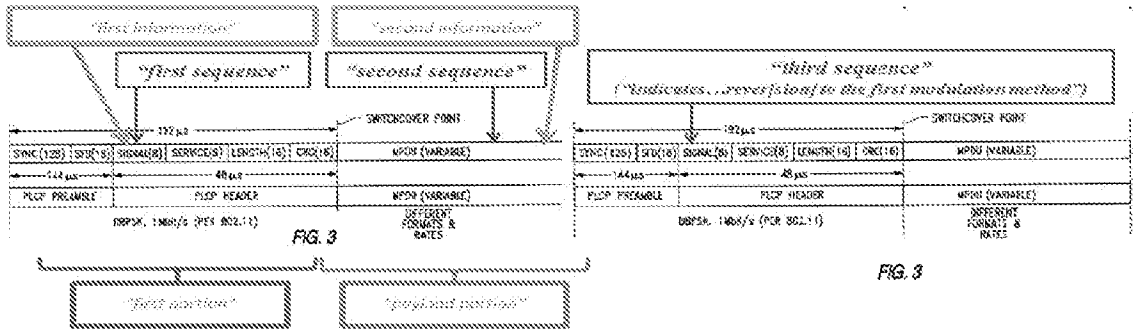
With respect to the additional "third sequence" limitation found in claims 2 and 59 of the '580 Patent, Samsung is making the *same* argument against patentability (albeit based on Snell instead of Boer) that it advanced unsuccessfully in the prior IPRs. As shown below, in both cases, Samsung argued that the SIGNAL/SERVICE fields of a "subsequent" transmission taught the additional limitations of claims 2 and 59. With respect to the Samsung's modified Figure 3 from the Request (below), Rembrandt has changed the color coding to match that used by Samsung in one of its previous IPR Petitions in which Samsung modified Boer's Figure 4, and removed extraneous labelling that obscured the sameness of Samsung's position in both proceedings.

Petition in IPR2014-00518 (argument based on Boer)



'518 IPR Petition, at 25. *See also* '114 IPR Petition, at 25.

Reexamination Request (same argument based on Snell)



'580 Reexam Request at 58, 84 and 116.

Tellingly, in its '580 Reexam Request, Samsung does not identify a single disclosure from Snell more relevant to the patentability of claims 2 and 59 than that which the Office previously considered in Boer.[15] In fact, Snell is even less relevant than the references earlier cited by Samsung and considered by the Office,[16] which explains why Samsung did not cite

[15] *Compare*, e.g., '580 Request, at 27-29 *with*, e.g., '114 IPR Petition, at 16-21.

[16] Boer is more relevant than Snell in that Boer additionally discloses a destination address and a modulation method that was relied on heavily by the PTAB, i.e., PPM/DQPSK. *See* '518 IPR Institution Decision, at 11-12; '518 IPR Final Decision, at 18-21.

Snell during the multitude of IPRs Samsung earlier filed against Rembrandt's '580 and '228 Patents.

Samsung's Arguments: Snell Compared to Boer

Samsung's arguments in its '580 Reexam Request based on Snell are the same or substantially the same arguments previously presented in its '518 and '114 IPR Petitions based on Boer. Notably, Samsung's heavy reliance on Snell's **Figure 3** and on Boer's **Figure 4** exposes their striking similarity and lack of any significant differences.[17] Snell's references to these two figures have been bolded to emphasize this point.

In its "Overview of Snell," Samsung begins:

> 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." *Id* at 2:61-63 ..., 1:55-57 …, 2:27-30 … , 7:10-14 …, 1:58-61 … , 2: 15-17 …. *See id* at Abstract, 1:55-61, 2:56-59, Fig. 2, **Fig. 3**, Fig. 5.

'580 Reexam Request, at 23-24.[18]

In its '518 IPR Petition, Samsung previously presented substantially the same arguments with respect to Boer:

> Boer discloses the use of transceivers. See e.g. Ex. 1204, 2:6-22 ("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 access point 12 has antennas 16 and 17 for **transmitting and receiving messages** over a wireless communication channel... The mobile stations 18 are capable of

[17] In Exhibit 3, Rembrandt has placed side by side Samsung's claim chart comparison in its '580 Reexam Request and that in its '114 IPR Petition Request.

[18] The parentheticals and footnotes have been omitted. Emphases (except that of Figs. 3 and 4) are Samsung's.

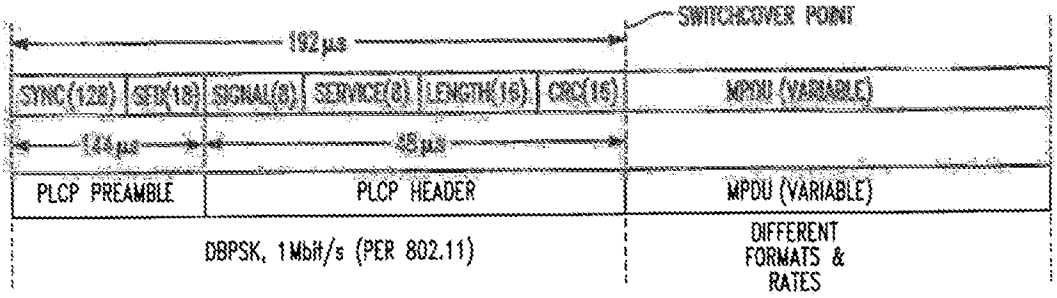
transmitting and receiving messages selectively at a data rate of 1 Mbps (Megabit per second) or 2 Mbps, using DSSS (direct sequence spread spectrum) coding."). A person of skill in the art would have recognized that an access point could act as a master in a basic service set of a wireless LAN. Ex. 1220, ¶95, 114. *See also* Ex. 1204, 2:34-37 ….

…. Boer plainly discloses transmissions using "at least two types of modulation methods," since it teaches sending transmissions using DBPSK, DQPSK and PPM/DQPSK. Abstract ("A wireless LAN includes first stations adapted to operate at a 1 or a 2 Mbps data rate and second stations adapted to operate at a 1,2,5 or 8 Mbps data rate. The 1 and 2 Mbps rates use DBPSK and DQPSK modulation, respectively. The 5 and 8 Mbps rates use PPM/DQPSK modulation."). Ex. 1220, ¶116-118.

'518 IPR Petition, at 19-20.

In its '580 Request, Samsung continues:

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 …; *see also id* at 7:6-14, **Fig. 3**.



(Snell) FIG. 3

Id at **Fig. 3**.

'580 Reexam Request, at 24-25.

Again, Samsung made substantially the same arguments in its '518 Petition:

... Boer discloses a message 200, shown in **Figure 4**, that "include[s] an initial portion and a data portion." *See e.g.* Ex. 1204, 1:33-37 ("Therefore, according to the present invention, there is provided a method of operating a wireless local area network station adapted to transmit and receive messages at a plurality of data rates, wherein said messages include an initial portion and a data portion . . . ."). The "initial portion" is the claimed "first portion," while the "data portion" is the claimed "payload portion." Ex. 1220, ¶127-128.

... Boer discloses a communication device where "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." An embodiment of message 200 is shown in **Figure 4** [below].

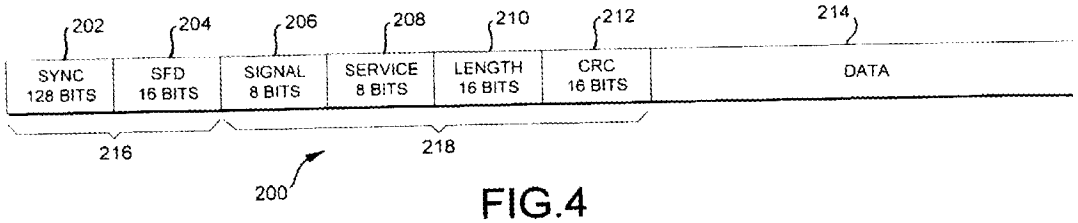


FIG.4

Messages 200 comprise several fields, including a Header 218 comprised, *inter alia*, of SIGNAL field 206, SERVICE field 208, and LENGTH field 210. *Id.* at 3:42-49. After Header 218, message 200 contains DATA field 214, which also contains the address of the intended recipient. *Id.* at 6:28-31. Ex. 1220, ¶129-130.

'518 IPR Petition, at 21-22.

Samsung argues in its '580 Request:

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).

'580 Request, at 25.

Again, substantially the same argument was made with respect to Boer in Samsung's '518 IPR Petition:

Boer also discloses claim 1's requirement that the "first information" (i.e., the identification of the modulation method) comprise a "first sequence" that is

> modulated using the "first modulation method." Boer teaches that Header 218, which includes the SIGNAL 206 and SERVICE 208 fields, is modulated using DBPSK, which is the "first modulation method." Ex. 1204, 3:56-58 ("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**.") (emphasis added [by Samsung]). SIGNAL 206 and SERVICE 208 fields comprise the "first sequence." Given that data within the SIGNAL 206 and SERVICE 208 fields indicate what type of modulation the DATA field 214 will be transmitted with, they meet claim 1's requirement that the "the first sequence indicate[] an impending change from the first modulation method to the second modulation method." Ex. 1220, ¶136-137.

'518 IPR Petition, at 23-24.

In its '580 Request, Samsung continued:

> …Snell discloses "[n]ow relating to the *PLCP header* 91, *the SIGNAL* is:
>
> | | |
> |---|---|
> | 0Ah | 1Mbits/s BPSK |
> | 14h | 2Mbits/s QPSK |
> | 37h | 5.5 Mbits/s BPSK, and |
> | 6Eh | 11Mbits/s QPSK. |
>
> Snell at 6:52-59. Thus, Snell teaches that the SIGNAL field in the PLCP header includes the symbol "OAh" 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.

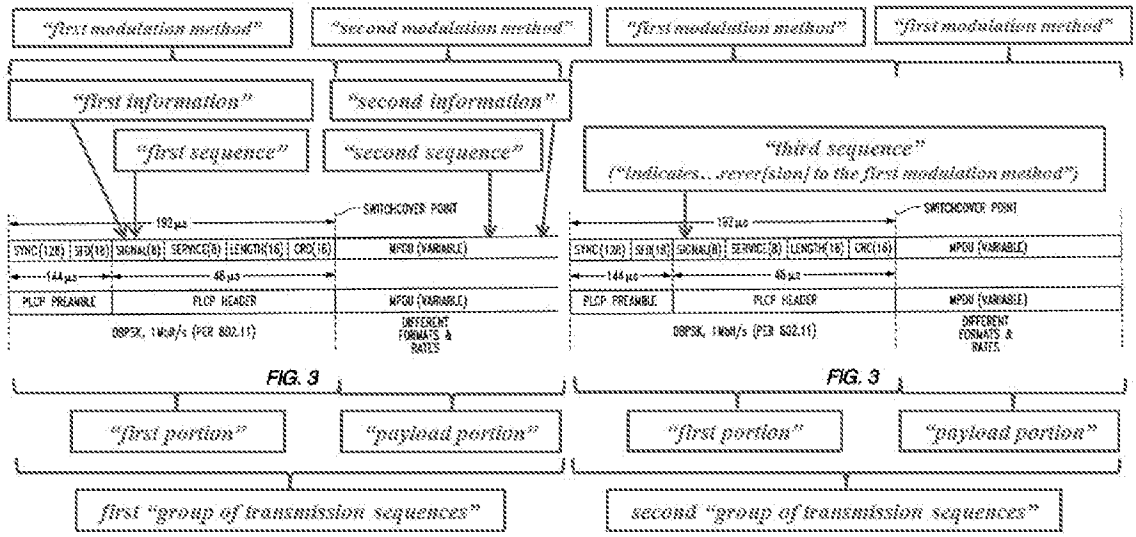


FIG. 3 FIG. 3

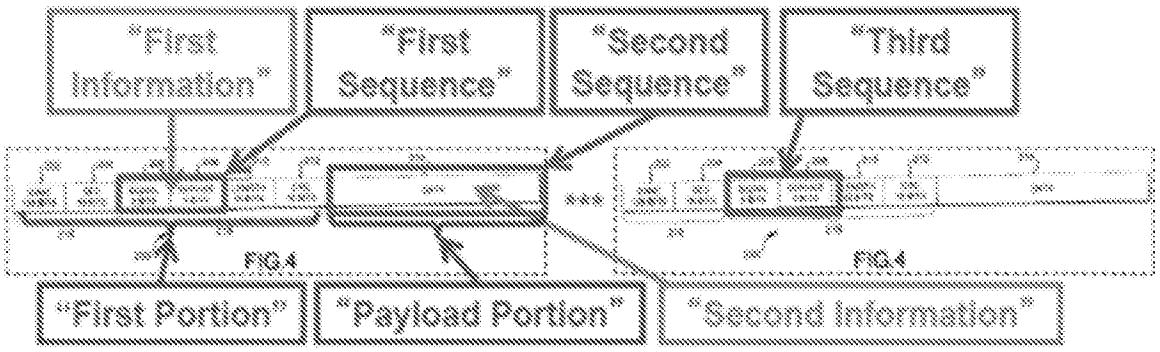
Id at **Fig. 3** (annotated).

'580 Reexam Request, at 25-26.

Similarly, Samsung previously argued in its '518 IPR Petition:

> … Boer teaches 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," since the data (the "second information") within DATA field 214 (the "second sequence") will be modulated using the second type of modulation method (DQPSK or PPM/DQPSK) when the SIGNAL 206 and SERVICE 208 fields so indicate. Ex. 1204, 1:33-47, 3:56-62, 4:4-11 & 6:5-21. Finally, as plainly seen in **Figure 4** in Boer, DATA field 214 (i.e., the recited "second sequence") is transmitted after SIGNAL field 206 and SERVICE field 208 (the recited "first sequence"). *See also id.*, 3:56-62 ("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.") (Emphasis added [by Samsung]). Ex. 1220, ¶138-140. Thus, claim 1 is rendered obvious by the combination of the APA and Boer.
>
> Dependent claim 2 requires that the transceiver "transmit a third sequence after the second sequence." This limitation is in both the APA and Boer. In the APA, transmission of multiple sequences is shown in Figure 2, with an exemplar "third sequence" being training sequence 48. *See also* Ex. 1201, 4:4-50. Boer teaches this as well. Ex. 1204, 1:33-40 ("Therefore, according to the present invention, there is provided a method of operating a wireless local area network

station adapted to transmit and receive messages at a plurality of data rates, wherein said **messages** include an initial portion and a data portion, including the steps of: transmitting the initial portion of a message to be transmitted by a station at a first predetermined one of a first plurality of data rates..."). A subsequent transmission of SIGNAL 206 and SERVICE 208 fields would be the "third sequence." The annotated figure [**Fig. 4** below]



illustrates the arrangement of "information," "portions," and "sequences" according to claim 1. Ex. 1220, ¶141-142.

Claim 2 further requires that the third sequence be "transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method." As discussed, Header 218, which includes SIGNAL 206 and SERVICE 208 fields, always transmitted using DBPSK (the "first modulation method"). Ex. 1204, 3:56-58. Ex. 1220, ¶143. Thus, claim 2 is obvious in view of the prior art.

'518 IPR Petition, at 24-25.

Samsung continued along the same line of arguments in its '580 Reexam Request:

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. [*See supra*, at 28] 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.,* "l4h") 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. 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." … For the second packet, the "SIGNAL" field in the PLCP header uses a code *(e.g.,* "OAh") 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 I 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 Reexam Request, at 26-27.

While these latter Samsung arguments are substantially repetitive of those quoted above and thus also addressed by the arguments made in the '518 IPR Petition quoted above, Samsung also made substantially the same arguments in its '114 IPR Petition:

> …Petitioner respectfully submits that a person having ordinary skill in the art would have understood that Boer teaches that the SIGNAL 206 and SERVICE 208 fields in Boer can indicate that communication has reverted to the first modulation method. Ex. 1221, ¶13. First, Boer indisputably teaches transmission of multiple messages 200. Ex. 1204, 1:33-40 ("Therefore, according to the present invention, there is provided a method of operating a wireless local area network station adapted to **transmit** and receive **messages** at a plurality of data rates, wherein said **messages** include an initial portion and a data portion, including the steps of: transmitting the initial portion of a message to be transmitted by a station at a first predetermined one of a first plurality of data rates..."). Indeed, a person having ordinary skill in the art would have known that a communication system utilizing data packets such as message 200 transmits multiple sequential packets. Ex. 1221, ¶14-15. Thus, a person having ordinary skill in the art would understand that the SIGNAL 206 and SERVICE 208 fields of a second message 200 is the (i) "third sequence" of claims 2 & 59, and (ii) "second sequence" of claim 49. Ex. 1221, ¶15.

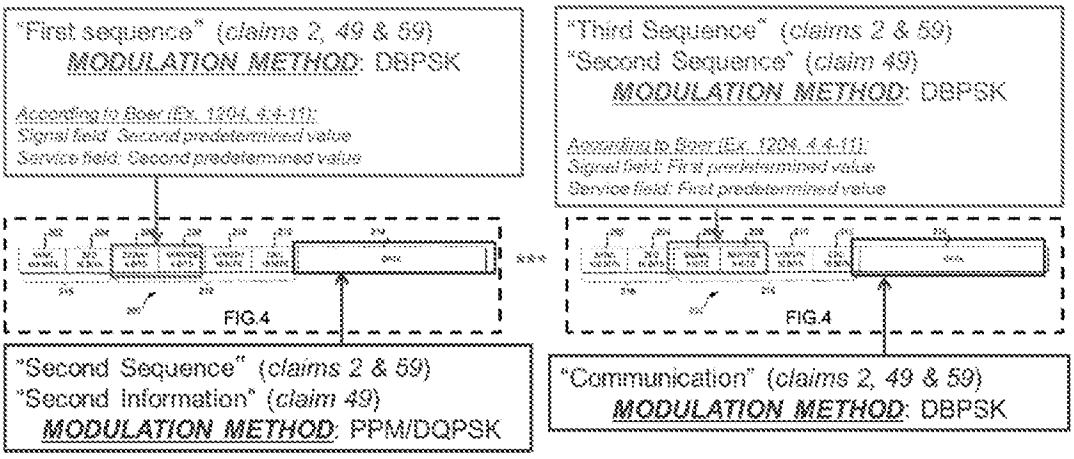
Boer also teaches each claim's requirement that the recited "third sequence" and "second sequence" indicate that communication "has reverted to the first modulation method." First, Petitioner respectfully submits that a person having ordinary skill in the art would have known that in Boer, a first message 200 where the DATA field 214 is transmitted using PPM/DQPSK ("second modulation method") could be followed by a second message 200. Ex. 1221, ¶17. This second message 200, by virtue of being transmitted after a first message 200, meets the requirement that the "third sequence" and "second sequence" be transmitted "after" the previous sequences recited by each claim. Ex. 1221, ¶18.

Second, this ordinarily skilled person would have known that the DATA 214 field in second message 200 could be transmitted using DBPSK ("first modulation method"). Ex. 1221, ¶19. Indeed, Boer explicitly teaches that DATA field 214 can be modulated using any of the modulation methods described therein. *See e.g.*, Ex. 1204, 3:56-62 ("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**."). Ex. 1221, ¶19.

Boer teaches that values contained in the SIGNAL field 206 and SERVICE field 208 indicate which modulation method will be used to transmit DATA field 214. Ex. 1204, 4:4-11 ("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."). Ex. 1221, ¶20.

Thus, when transmitting the **first** message 200 in the sequence, DATA field 214 will be modulated in PPM/DQPSK ("second modulation method") as indicated by SIGNAL field 206 containing a second predetermined value while SERVICE field 208 contains a second (or third) predetermined value. *See* Ex. 1204, 4:4-11. Ex. 1221, ¶21. When transmitting the **second** message, the DATA field 214 reverts to DBPSK ("first modulation method") as indicated by SIGNAL field 206 containing a first predetermined value while the SERVICE field 208 contains a first predetermined value, which Boer states is "typically all zero bits." *See* Ex. 1204, 4:4-11. Ex. 1221, ¶22. By placing the first predetermined value in SIGNAL field 206 and the first predetermined value in SERVICE field 208, these two fields indicate that transmission of the DATA field 214 "has reverted to the first modulation method," as required by claims 2, 49, 52-53 and 59. *See* Ex. 1221, ¶23.

The following figure [**FIG. 4**] shows the location in two messages 200 in Boer of terms in claims 2, 49, and 59. It also shows how Boer uses the claimed modulation methods:



Ex. 1221, ¶24.

Because Boer teaches that DATA field 214 can be transmitted with either DBPSK, DQPSK, or PPM/DQPSK, a person having ordinary skill in the art would have known, and found it obvious, that a transmitted message 200 in which DATA field 214 was transmitted using PPM/DQPSK could be followed by a message 200 where the DATA field 214 is transmitted using DBPSK. Ex. 1221, ¶25. Indeed, Boer specifies that such a reversion would occur if ACK messages are not received correctly. Ex. 1204, Fig 7 (block 522) and 7:41-51 ("Returning to block 508, if an ACK message is not received correctly and within the predetermined time interval, then the flowchart proceeds to block 522 where the SC count value is reset to zero and the data rate is decremented (if the minimum data rate is not already being used)...."). See the annotated Fig. 7 (Ex. 1204):

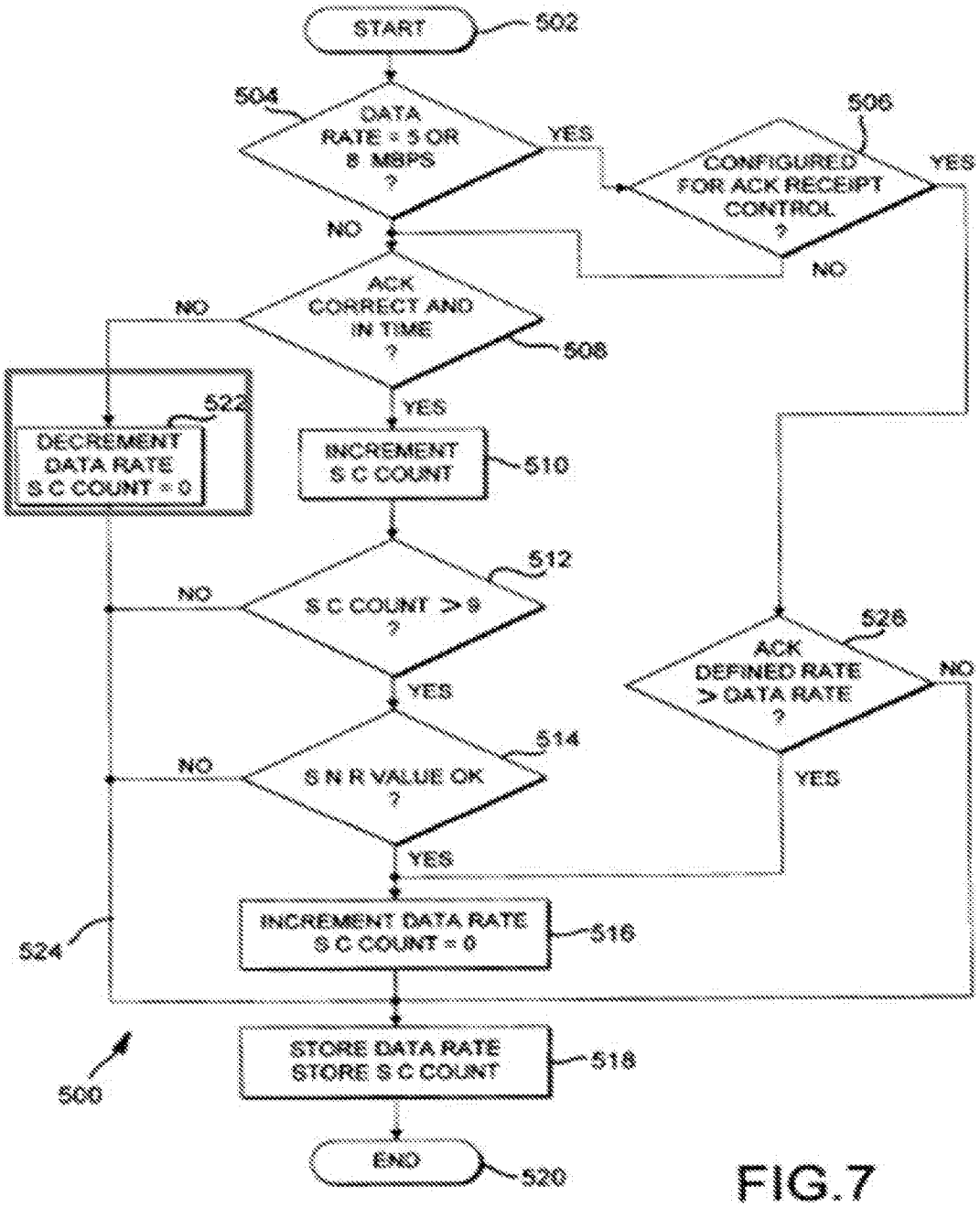


FIG.7

See also Id. at 8:6-9 and Ex. 1221, ¶25. A person of ordinary skill in the art would have understood that ACK messages may not be received correctly when channel conditions change for the worse, such as when the transceivers are

> moved apart from one another or when interference increases. Ex. 1221, ¶26. Boer discloses that under such conditions, "the data rate is decremented." Based on the flow chart in Fig. 7 of Boer, reprinted above, it is seen that if enough ACK messages are not received correctly, the data rate may be decremented until the data rate reaches 1 Mbps, which is transmitted using DBPSK. Ex. 1221, ¶26. Whenever this happens, the SIGNAL and SERVICE fields indicate that communication "has reverted to the first modulation method," thereby meeting the "reverted" limitation required by claims 2, 49, 52-53 and 59. Ex. 1221, ¶27.
>
> Moreover, a person having ordinary skill in the art would have known, and found it obvious, that following routine events such as an increase in interference in the communications channel, the SIGNAL field 206 and SERVICE field 208 would have contained values indicating that communication "has reverted to the first modulation method," as required by claims 2, 49, 52-53 and 59. Ex. 1221, ¶28.

'114 IPR Petition, at 15-21.

Samsung's Arguments: Harris 4064.4 Compared to Boer

In its "Overview of Harris 4064.4," Samsung argued that Harris 4064.4 discloses DBPSK and DQPSK. '580 Reexam Request, at 29-31. So does Boer, as Samsung repeatedly argued in its '518 IPR Petition, for example, at 19-20 ("Boer plainly discloses transmissions using 'at least two types of modulation methods,' since it teaches sending transmissions using DBPSK, DQPSK and PPM/DQPSK.").

More specifically, in its '580 Reexam Request, Samsung relied on Harris 4064.4 for its disclosure of a preamble and header that are always transmitted as *DBPSK* waveforms, a data portion transmitted as either DBPSK or DQPSK, and a SIGNAL field that indicates whether the data portion is modulated as DBPSK or DQPSK. '580 Request at 48-49, 52, 56-57, 63-64, 74-75, 77-79, 82-83, 89-90, 106, 109-110 (citing Harris 4064.4 at Fig. 10, 14-16).

Samsung's arguments based on Harris 4064.4 add nothing of relevance when compared to those previously made based on Boer, which discloses a preamble 216 and header 218 that always are sent using DBPSK and a data field 214 transmitted in DBPSK, DQPSK, or

PPM/QPSK, and SIGNAL and SERVICE fields that indicate whether the data field 214 is modulated in DBPSK, DQPSK, or PPM/QPSK. *See*, *e.g.*, IPR2014-00518 Petition at 20, 22-24 (citing Boer at Fig. 4, Abstract, 3:42-49, 3:56-62, 4:4-11, 6:5-21). The DBPSK and DQPSK of Boer were relied upon as allegedly corresponding to the claimed "first modulation method" and "second modulation method," respectively, and the SIGNAL and SERVICE fields of Boer were relied on as allegedly corresponding to the claimed "first sequence." *See, e.g.*, IPR2014-00518 Petition at 20, 22-24; IPR2014-00892 Petition at 20, 22-24.

Samsung's other arguments based on Harris 4064.4 are substantially the same arguments made with respect to Snell. *See* '580 Reexam Request, at 29-31. And, in turn, those arguments made with respect to Snell were made in Samsung's '518 and '114 IPR Petitions (quoted above).

Samsung's Arguments: Harris AN9614 Compared to the APA and Boer

In its "Overview of Harris AN9614," Samsung argued in its '580 Reexam Request that Harris AN9614 discloses that Snell can be configured to operate in a polled (master/slave) protocol such that "power consumption can be beneficially … reduced by more than an order of magnitude." '580 Reexam Request, at 32. To the extent Rembrandt agrees that the "polling scheme" in Harris AN9614 can be equated to a master/slave protocol (which it vigorously contests), this reference adds nothing to what Samsung previously argued "plainly disclosed" a "master/slave relationship." '518 IPR Petition, at 19. With respect to Samsung's "power consumption" argument, Samsung previously argued along the same lines that "simplicity and determinacy are motivations to combine Boer with the master/slave communication system" of the APA. '518 IPR Petition, at 14.

In fact, the Examiner has determined *in this proceeding* that the teachings of Boer in combination with those of the APA are the same as the teachings of Snell in combination with

Harris AN9614. While addressing features recited in claims 1 and 58, the Examiner argues that her arguments presented based on Snell and Harris AN9614 must be valid and maintained because the teachings of these references are the same as those of Boer in view of APA, grounds relied upon by the Board in rejecting claims 1 and 58 in the '518 IPR:

> Harris AN9614 is used to show that the transceiver of Snell can be used in a master/slave relationship. Further, claims 1 and 58 recite using multiple modulations and it is determined by PTAB that APA and Boer discloses it. Snell and Harris AN9614 similarly disclose all the limitation of claims 1 and 58.

FOA at 40. It is not just Rembrandt who believes that this art and the arguments based upon it are the same, the Examiner believes it and relies on this equivalency in an attempt to strengthen her position.

Samsung's Arguments: Yamano Compared to Boer

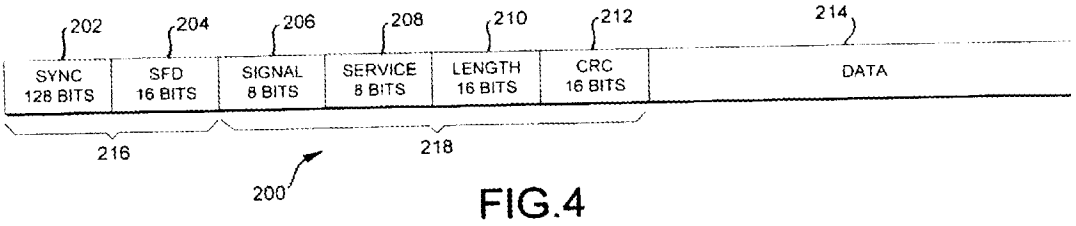
In its "Overview of Yamano" in its '580 Reexam Request, Samsung argued that Yamano discloses the claimed destination address:

> 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.").

'580 Reexam Request, at 36.[19]

[19] While Samsung also argues that Yamano discloses the destination address in the preamble, '580 Reexam Request, at 36-37, that fact is not relevant to the patentability of claims 2 and 59 which are not limited to having the destination address in the preamble. *See* claim 1 ("wherein at least one group of transmission sequences is addressed for an intended destination of the payload portion") and claim 58 ("wherein the at least one message is addressed for an intended destination of the second sequence").

In its '518 IPR Petition, Samsung argued that Boer disclosed the claimed destination address:

> An embodiment of message 200 is shown in Figure 4 [below].
>
> 
>
> FIG.4
>
> Messages 200 comprise several fields, including a Header 218 comprised, *inter alia*, of SIGNAL field 206, SERVICE field 208, and LENGTH field 210. *Id.* at 3:42-49. After Header 218, message 200 contains DATA field 214, which also contains the address of the intended recipient. *Id.* at 6:28-31. Ex. 1220, ¶129-130.

'518 IPR Petition, at 22. Thus, Samsung previously presented substantially the same arguments based on Boer as it now bases on Yamano.

Samsung's Arguments: Kamerman Compared to Boer

In its '580 Reexam Request, Samsung fails to even acknowledge that *Kamerman was Boer's co-inventor.*[20] Significantly, the rate control algorithm in Kamerman's presentation (the only aspect of that reference relied on in the '580 Reexam Request) was described in detail in the Boer patent which was previously presented and fully considered in numerous IPRs. *See* the summary of IPRs in Exhibit 2. Samsung alleged that "Kamerman has not been previously cited to or considered by the Office." '580 Reexam Request at 37. This statement is misleading because it does not disclose Kamerman's close relationship to the Boer patent and the substantial identity of the two disclosures. In fact, Kamerman's automatic rate control algorithm is nothing

[20] The Kamerman paper is dated August, 1996, a few months after he, Boer and others filed the Boer patent. It appears Kamerman was permitted to talk about the invention disclosed in the Boer patent once the application was filed. Such a procedure is typical with companies, particularly large companies like Lucent Technologies (assignee of the Boer patent and Kamerman's employer).

more than a less detailed version of the automatic rate control algorithm repeatedly relied on by Samsung in Boer patent.

In its "Overview of Kamerman" in its '580 Reexam Request, Samsung argued:

> 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/all *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.

'580 Reexam Request, at 38-39.

In the '518 and '114 IPR Petitions, Samsung previously made substantially the same arguments based on Boer. *See, e.g.,* the '114 IPR Petition, at 15-21 (quoted above).

3. The Substantial Identity of Samsung's Arguments in its '580 Reexam Request to Those it Previously Presented to the PTAB Warrant Application of 35 U.S.C. § 325(d)

As illustrated above, the combinations of art presented by Samsung to support its '580 Reexam Request are at best cumulative of Samsung's previously presented combinations of art to support its '518 and '114 IPR Petitions. In the IPR Petitions, Samsung alleged that Boer disclosed all the limitations of claims 2 and 59 except the claimed master/slave relationship. Samsung relied on the APA to show the master/slave relationship. And Samsung relied on Upender to argue that there was motivation to combine the APA and Boer. In its '580 Reexam Request, to support its proposed SNQs 1 and 2, Samsung merely has presented Snell, Yamano, and Kamerman (or Snell, Yamano, Kamerman, and Harris 4064.4) to substitute for the Boer teachings and has presented Harris AN9614 to replace the APA. Perhaps recognizing that its

combination of *five* references may still not provide any teaching or suggestion of a master/slave relationship (which they do not), to support its proposed SNQ 3, Samsung substitutes Harris AN9614 with the APA and Upender, i.e., references previously presented to the Office. By using substitute references for those previously presented, Samsung is able to argue the art has not been previously cited or considered. But Samsung's position misses the mark with respect to the application of § 325(d) – the relevant question is whether the art *or* arguments are substantially the same as those previously presented. In fact, Samsung's "new" art, considered alone or in combination, adds nothing to the art it previously presented to the Office in two or more IPR petitions and thus is substantially the same. Samsung's harassment of Rembrandt through the use of substitute art is exactly the type of harassment that § 325(d) was designed to curb.

B. The '808 Reexamination Must be Terminated in Conformity with the Office's Consistent Agency Practice

It is the Office's consistent practice to refuse to institute or terminate follow-on proceedings, such as the '808 Reexamination. *See, e.g., Unilever v. Proctor & Gamble,* IPR2014-00506, paper 25; *Ariosa Diagnostics v. Verinata Health, Inc.,* IPR2013-00276 and -00277, paper 63, at 11-12; *Unified Patents, Inc., v. PersonalWeb Techs., LLC,* IPR2014-00702, paper 13; *Medtronic Inc., v. Nuvasive, Inc.,* IPR2014-00487, paper 8; *Prism Pharma Co. Ltd., v. Choongwae Pharma Corp.,* IPR2014-00315, paper 14; *Medtronic Inc., v. Robert Bosch Healthcare Systems, Inc.,* IPR2014-00436, paper 17; *Intelligent Bio-Systems, Inc., v. Illumina Cambridge Ltd.,* IPR2013-00324, paper 19; *ZTE Corp. v. ContentGuard Holdings, Inc.,* IPR2013-00454, paper 12. To reach any other conclusion would be unfair to Rembrandt, would be in violation of the core function of the post-grant review and reexamination statutory framework, would reward Samsung for belatedly filing a reexamination request, and would

undermine the integrity of the Office. *See, e.g., Ariosa Diagnostics v. Verinata Health, Inc.,* IPR2013-00276 and -00277, paper 63, at 11-12.

Specifically, the Office has consistently denied "follow-on" petitions for post-grant review as representing impermissible "second bites at the apple," which use the prior proceedings "to bolster challenges that were advanced, unsuccessfully, in [an earlier proceeding]," *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). As illustrated above, the '808 Reexamination of the '580 Patent resulted from such a "follow-on" request, provided Samsung with yet another "second bite at the apple," and used the related *thirteen* previously filed *inter partes* reviews as a road map for Samsung's request. Accordingly, the '808 Reexamination should be terminated in conformity with the Office's consistent practice with respect to follow-on requests for review, as reflected in the PTAB's "informative" decisions. *See, e.g., Unilever v. Proctor & Gamble,* IPR2014-00506, paper 25; *Ariosa Diagnostics v. Verinata Health, Inc.,* IPR2013-00276 and -00277, paper 63; *Unified Patents, Inc., v. PersonalWeb Techs., LLC,* IPR2014-00702, paper 13; *Medtronic Inc., v. Nuvasive, Inc.,* IPR2014-00487, paper 8; *Prism Pharma Co. Ltd., v. Choongwae Pharma Corp.,* IPR2014-00315, paper 14; *Medtronic Inc., v. Robert Bosch Healthcare Systems, Inc.,* IPR2014-00436, paper 17; *Intelligent Bio-Systems, Inc., v. Illumina Cambridge Ltd.,* IPR2013-00324, paper 19; *ZTE Corp. v. ContentGuard Holdings, Inc.*, IPR2013-00454, paper 12. Taking an inconsistent approach with respect to the '808 Reexamination would be arbitrary and thus unlawful.

C. Policy Considerations Favor Terminating the '808 Reexamination

OPLA argues that "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." '580 Petition Dismissal, at 6. While this may have been Congress's intent for the substantial new question standard, in the more than two decades since the substantial new question standard was implemented Congress has reached the conclusion that the substantial new question standard has been inadequate to achieve its intended purpose:

> In the second sentence of 325(d), the present bill also authorizes the Director to reject any request for *ex parte* reexamination or petition for post-grant or *inter partes* review on the basis that the same or substantially the same prior art or arguments previously were presented to the Office. This will prevent parties from mounting attacks on patents that raise issues that are substantially the same as issues that were already before the Office with respect to the patent. The Patent Office has indicated that it currently is **forced to accept may requests for *ex parte* and *inter partes* reexamination** that raise challenges that are cumulative of or substantially overlap with issues previously considered by the Office with respect to the patent.
>
> **The second sentence of 325(d) complements the protections against abuse of *ex parte* reexamination** that are created by sections 315(e) and 325(e).

157 Cong. Rec S1360-S1394, S1376 (emphasis added).

OPLA cannot ignore that § 325(d) was added to the America Invents Act for, *inter alia*, the express purpose of curing the inability of the substantial new question standard to prevent abuse of *ex parte* reexamination. Allowing the '808 Reexamination to proceed, as the Office has permitted thus far and as the CRU has done, would frustrate that purpose and would permit the type of harassment that § 325(d) was designed to curb. *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 ….").

Further, allowing the '808 Reexamination to proceed incentivizes patent challengers to file serial petitions and requests and increases 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.

The PTAB has consistently and effectively used §325(d) to curb attempts by challengers to game the Office through follow-on challenges. *See, e.g., Unilever v. Proctor & Gamble,* IPR2014-00506, paper 25; *Ariosa Diagnostics v. Verinata Health, Inc.,* IPR2013-00276 and -00277, paper 63; *Unified Patents, Inc., v. PersonalWeb Techs., LLC,* IPR2014-00702, paper 13; *Medtronic Inc., v. Nuvasive, Inc.,* IPR2014-00487, paper 8; *Prism Pharma Co. Ltd., v. Choongwae Pharma Corp.,* IPR2014-00315, paper 14; *Medtronic Inc., v. Robert Bosch Healthcare Systems, Inc.,* IPR2014-00436, paper 17; *Intelligent Bio-Systems, Inc., v. Illumina Cambridge Ltd.,* IPR2013-00324, paper 19; *ZTE Corp. v. ContentGuard Holdings, Inc.*, IPR2013-00454, paper 12. Treating reexaminations differently – in spite of the statutory language – would serve as both an indication and a road map for future and current challengers that it is now "open season" on patent owners at the Office through reexamination attacks. Allowing the '808 reexamination to proceed will serve as an invitation for every party unhappy

with a denial of an *inter partes* review to file a request for *ex parte* reexamination on substantially the same or cumulative art and arguments. That is an invitation that the Office should decline to extend.

D. Conclusion

In light of the above, Rembrandt respectfully requests that the '580 Petition Dismissal be reconsidered, the Order for reexamination be vacated, and the '808 Reexamination be terminated. Rembrandt further requests that the Office's decision on this Request for Reconsideration be made a final agency action. *See, e.g.,* MPEP § 1002.02.

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: September 18, 2017 By: /Michael V. Battaglia/

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CERTIFICATE OF SERVICE

It is hereby certified that on this 18th day of September, 2017, the foregoing **PETITION REQUESTING RECONSIDERATION OF OPLA'S NOVEMBER 28, 2016 DISMISSAL OF REMBRANDT'S SEPTEMBER 30, 2016 PETITION UNDER RULE 181/182 REQUESTING THE DIRECTOR TO EXERCISE HER DISCRETIONARY AUTHORITY UNDER 35 U.S.C. § 325(D) AND A FINAL PETITION DECISION IN ACCORDANCE WITH PTAB PRACTICE** 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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EXHIBIT 1

Claims 2 and 59 of the '580 Patent

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 [106], 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 [108] 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 [114] 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.

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 [106], 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 [108], 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 [114] 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 21 of the '228 Patent

1. A master communication device configured to communicate with one or more slave transceivers according to a master/slave relationship in which a slave communication from a slave device to the master communication device occurs in response to a master communication from the master communication device to the slave device, the master communication device comprising:

a master transceiver configured to transmit a first message over a communication medium from the master transceiver to the one or more slave transceivers, wherein the first message comprises:

first information [126] modulated according to a first modulation method,

second information [132], including a payload portion, modulated according to the first modulation method, wherein the second information comprises data intended for one of the one or more slave transceivers and

first message address information that is indicative of the one of the one or more slave transceivers being an intended destination of the second information; and

said master transceiver configured to transmit a second message over the communication medium from the master transceiver to the one or more slave transceivers wherein the second message comprises:

third information [106] modulated according to the first modulation method, wherein the third information comprises information that is indicative of an impending change in modulation to a second modulation method, and

fourth information [108], including a payload portion, transmitted after transmission of the third information, the fourth information being modulated according to the second modulation method, the second modulation method being of a different type than the first modulation method, wherein the fourth information comprises data intended for a single slave transceiver of the one or more slave transceivers, and

second message address information that is indicative of the single slave transceiver being an intended destination of the fourth information; and

wherein the second modulation method results in a higher data rate than the first modulation method.

21. The master communication device as in claim 1, wherein the first information that is included in the first message comprises the first message address data.

EXHIBIT 2

Timeline of Rembrandt Litigation, IPRs and Reexaminations

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).

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).

***Inter Partes* Review Proceedings:**

March 20, 2014: Samsung filed 4 IPRs against the '580 Patent, IPR2014-00514, -00515, -00518, -00519.

In IPR2014-00514, 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.

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 22, 2017: The Office issued a decision on Rembrandt's May 2, 2017 Petition in the '808 case ('580 Patent) asking the Directed to terminate the '808 reexamination or vacate and revise the March 31, 2017 non-final Office Action. In the decision, the Office dismissed Rembrandt's petition finding the examiner did not abuse her discretion in the March 31, 2017 Office Action. The decision also indicated that some of the issues raised in the petition were appealable, not petitionable, issues.
June 30, 2017: The Office issued a Final Office Action in the '808 case ('580 Patent). Rembrandt's response is due September 18, 2017.

July 7, 2017: Rembrandt requested an extension of time to respond to the May 3, 2017 non-final Office Action in the '809 case ('228 Patent).

July 10, 2017: The Office granted Rembrandt's request for an extension of time to respond to the May 3, 2017 non-final Office Action in the '809 case ('228 Patent), extending the due date from August 3, 2017 to August 13, 2017.

August 14, 2017: Rembrandt filed its response to the to the May 3, 2017 non-final Office Action in the '809 case ('228 Patent). The response was filed on August 14, 2017 as August 13, 2017 was a Sunday.

EXHIBIT 3

The following table compares Samsung's claim charts presented in its '580 Reexam Request to support its alleged SNQ 1 re claims 2 and 59 of the '580 Patent (pp. 44-62) with Samsung's claim charts presented to support its '114 IPR Petition re claims 2 and 59 of the '580 Patent (pp. 25-32 (claims 1 and 2) and pp. 43-49 (claims 58 and 59)) (emphases are Samsung's).[1] The claim limitations in the left-hand column are reproduced from the '580 Reexam Request. To address the fact that Samsung divided up the claim elements differently in the IPR claim charts than it did in the reexamination request claim charts, the right-hand column indicates what element in the '114 IPR Petition match up with those in the '580 Reexam Request.

'580 Patent Claim 2	Samsung's Argument in the '808 Reexamination	Samsung's Argument in the '114 IPR
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	[1a]: For a communication system that communicates according to a master/slave relationship, *see* Ex. 1201 (APA), Figs. 1 & 2; 3:6-10 ("FIG. 1 is a block diagram of a prior art multipoint communication system including a master transceiver and a plurality of tributary transceivers."); and 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.").

[1] Substantially the same comparisons were made in the '518 IPR Petition. See pp. 28-33 (claims 1 and 2), 52-57 (claims 58 and 59).

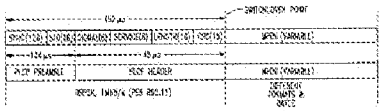
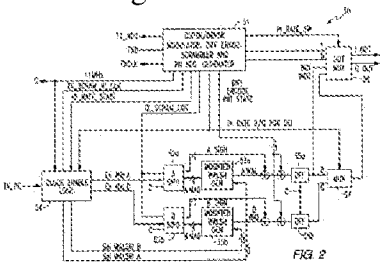
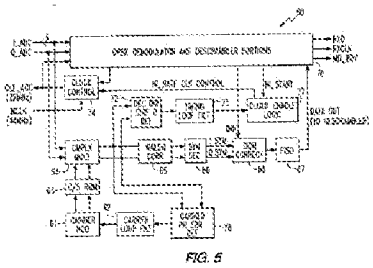
	combination transmitter and receiver, connects to the wired network from a fixed location. Accordingly, the access transceiver receives, buffers, and transmits data between the WLAN and the wired network. *A single access transceiver can support a small group of collocated users within a range of less 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. *See also, e.g.*, Snell at 2:27-30 ("It is another object of the invention to provide *a*	For master/slave relationship, *see* Ex. 1201 (APA), 4:4-9 ("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."). Boer discloses a communication system. *See e.g.* Ex. 1204, Figs. 1-3 and 8.

	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, which discloses that the communications between transceivers can operate according to a polled (i.e., master/slave) protocol. See, e.g., Harris AN9614 at 3. "[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	

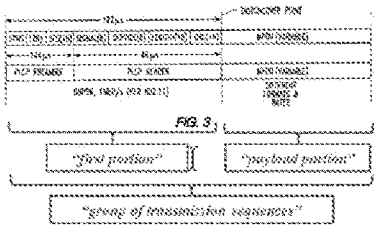
	awakens when communications is expected. This station would be awakened periodically to listen for a beacon transmission. The beacon serves to reset the timing and to alert the radio to traffic. If traffic is waiting, the radio is instructed when to listen and for how long. In a polled scheme, the remote 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 discloses a transceiver, in the role of the master according to the master/ slave relationship.** *See* Element 1.preamble.	See [1a].
[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. *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.**	[This claim language is included in Samsung's '114 claim chart under [1b], [1c], & [1d] (and in the Samsung's '518 claim chart).] [1b]: APA demonstrates master transceivers are in prior art. See claim element [1a]. For Boer's teachings regarding "transceivers, *See e.g.* Ex. 1204, Figures 1-3, 8; 2:6-22 ("Referring first to

	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 biphase 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-	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. 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 selectively at a data rate of 1 Mbps (Megabit per second) or 2 Mbps, using DSSS (direct sequence spread spectrum) coding."); and 2:34-37 ("Also included in the LAN 10 are further mobile stations 22, referred to individually as stations 22-1 and 22- 2, and having antennas 24 and 25, referred to individually as antennas

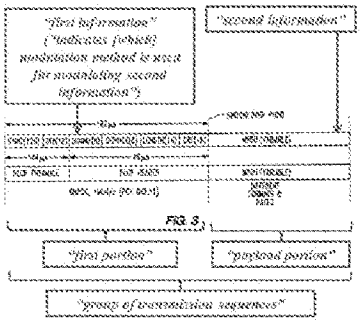
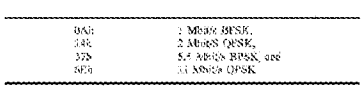
	fly."). Snell describes that the "first modulation method" may be BPSK and the "second modulation method" may be QPSK, which is "of a different type than the first modulation method," and alternatively describes that the "first modulation method" may be differential BPSK ("DBPSK") and that the "second 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.	24-1, 24-2 and 25-1, 25-2.") Transmissions modulated using at least two types of modulation methods: Abstract ("A wireless LAN includes first stations adapted to operate at a 1 or a 2 Mbps data rate and second stations adapted to operate at a 1,2,5 or 8 Mbps data rate. The 1 and 2 Mbps rates use DBPSK and DQPSK modulation, respectively. The 5 and 8 Mbps rates use PPM/DQPSK modulation."); 2:23-27 ("When operating at the 1 Mbps data rate, DBPSK (differential binary phase shift keying) modulation of the RF carrier is utilized, and when operating at the 2 Mbps data rate DQPSK (differential quadrature phase shift keying) modulation of the RF carrier is utilized."); and 2:37-44 ("The stations 22 can operate at a 1 Mbps or a 2 Mbps data rate, using the same modulation and DSSS coding as the stations 18, and in addition can also operate at two higher data rates, namely 5 Mbps and 8 Mbps. These 5 and 8 Mbps data rates utilize PPM/DQPSK (pulse position modulation--differential

	"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.  Snell at Fig. 2.  FIG. 5 Snell at Fig. 5. Snell incorporates by reference Harris 4064.4, 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	quadrature phase shift keying) in combination with the 11-chip Barker code mentioned hereinabove."). [1c]: In Boer, DBPSK is the "first modulation method." Both DQPSK and PPM/DQPSK can be the "second modulation method." See claim element [1b]. [1d]: DBPSK modulation is a different "type" of modulation than either DQPSK or PPM/DQPSK. See claim element [1b].

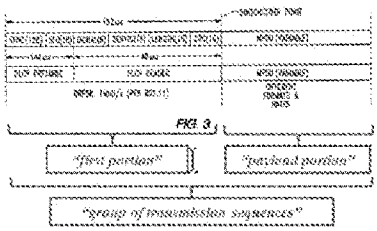
	Sequence Spread Spectrum *DBPSK/DQPSK modulator*." Harris 4064.4 at 14. "The modulator is capable of switching rate automatically in the case where the preamble and header information are DBPSK modulated, and the data is DQPSK modulated." Harris 4064.4 at 14. *See also, e.g.*, Harris 4064.4 at 15 ("The 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 l'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)  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	[1e]: Boer discloses a message 200, shown in Figure 4, that "include[s] an initial portion and a data portion." *See e.g.* Ex. 1204. 1:33-37 ("Therefore, according to the present invention, there is provided a method of operating a wireless local area network station adapted to transmit and receive messages at a plurality of data rates, wherein said messages include an initial portion and a data portion . . . ."); Abstract ("All transmitted messages start with a preamble and header at the 1 Mbps rate. The header includes fields identifying the data rate for the data portion of the message, and a length field. For a 2 Mbps transmission the length field identifies the number of bytes in the data field."). 1:33-37 ("Therefore, according to the present invention, there is provided a method of

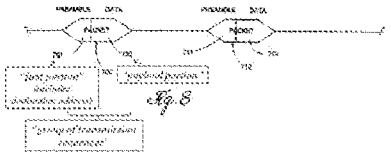
	6:64-66. "*MPDU* is serially provided by Interface 80 and *is the variable data* scrambled for normal operation. The reference phase for the first symbol of the MPDU is the output phase of the last symbol of the header for Diff Encoding. The last symbol of the header into the scrambler 51 must be followed 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.	operating a wireless local area network station adapted to transmit and receive messages at a plurality of data rates, wherein said messages include an initial portion and a data portion..."): 3:56-65 ("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."). The "initial portion" in Boer is the claimed "first portion," while the "data portion" in Boer is the "payload portion."
[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**	[1f]: *See e.g.* Ex. 1204, Abstract ("The 1 and 2 Mbps rates use DBPSK and DQPSK modulation, respectively. The 5 and 8 Mbps rates use PPM/DQPSK

modulating second information in the payload portion,	**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.  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:  " Snell at 6:52-59. "SIGNAL is indicated by 2 control bits and then	modulation... The header includes fields identifying the data rate for the data portion of the message, and a length field."); 4:4-11 ("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."); and 6:5-17 ("In a station 22 which is to transmit a message, the C-MST 132 inserts the preamble 216 and header 218... The rate selector 142 uses the SIGNAL and SERVICE fields 206, 208 to decide whether or not the encoder 146 should switch to the 2, 5 or 8 Mbps modes. 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

	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, 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*	mode or the 8 Mbps PPM/QPSK mode, whereby the DATA field 214 is encoded in the selected manner." The data within SIGNAL and SERVICE fields in Boer are the "first information" and indicate which type of modulation method is used modulate data (the "second information") in DATA field 214. The data within the DATA field 214 in Boer is the "second information."

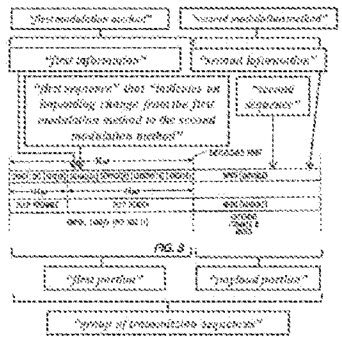
	of the data packet (DBPSK or DQPSK) so the receiver does not need to be preprogrammed to anticipate one or the other. In this mode the device checks the Signal field for the data packet modulation and it switches to DQPSK if it is defined as such in the signal field. Note that the preamble and header 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 1s 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).	[1g]: *See* Ex. 1204, 6:28-31 ("The C-MST 132 determines if an incoming message is addressed to its own station, using a destination address included in the DATA field 214 of the message 200.").

	"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 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).  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.	
[l.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 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"	[This claim language is included in Samsung's '114 claim chart under [1.g], [1.h], & [1.i] (pp. 29-30)(and in Samsung's '518 claim chart).] [1g]: *See* Ex. 1204, 6:28-31 ("The C-MST 132 determines if an incoming message is addressed to its own station, using a destination address included in the DATA field 214 of the message 200."). [1h]: Ex. 1204, 3:56-58 ("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."). SIGNAL field 206 and SERVICE field 208 are the "first sequence."

(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 MbitS QPSK,
37h	5.5 Mbit/s BPSK, see
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

[1i]:

See e.g. Ex. 1204, Abstract ("The 1 and 2 Mbps rates use DBPSK and DQPSK modulation, respectively. The 5 and 8 Mbps rates use PPM/DQPSK modulation... The header includes fields identifying the data rate for the data portion of the message, and a length field.")

4:4-11 ("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."); and

6:5-17 ("In a station 22 which is to transmit a message, the C-MST 132 inserts the preamble 216 and header 218... The rate selector 142 uses the SIGNAL and SERVICE fields 206, 208 to decide whether or not the encoder 146 should switch to the 2, 5 or 8 Mbps modes. If rate switching is to take place, then after the last bit of the

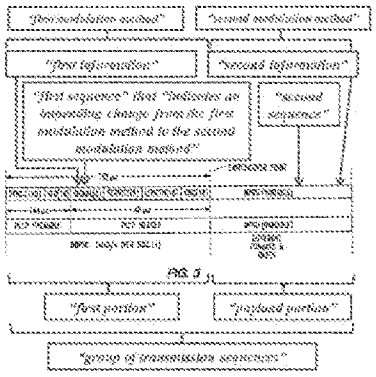
	header portion to thereby increase the data rate, and while a switchover as indicated by the switchover point in FIG. 3, occurs on-the-fly." Snell at 7:5-14. Snell describes that the "first modulation method" may be BPSK and the "second modulation method" may be QPSK, which is of a different "type" than 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., DBPSK) and "indicates an impending change from the first modulation method" (*e.g.*, DBPSK) "to the second modulation method" (*e.g.*, DQPSK). "*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	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."

	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, 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.	[This claim language is included in Samsung's '114 claim chart under [1j] & [1k] (and in Samsung's '518 claim chart). Again, [1.F] in Samsung's Request corresponds to [1g], [1h], & [1i] in Samsung's '114 claim chart (and Samsung's '518 claim chart).] [1j]: Boer teaches that data (the "second sequence") within DATA field 214 can be modulated using the second type of modulation method (DQPSK or PPM/DQPSK) when the SIGNAL 206 and SERVICE 208 fields so indicate. Ex. 1204, 1:33-47, 3:56-62, 4:4-11 & 6:5-21. Each citation is quoted above. [1.k]:

		The DATA field 214 in Boer (i.e., the recited "second sequence") is transmitted after SIGNAL field 206 and SERVICE field 208 (the recited "first sequence"). *See e.g.* Ex. 1204, Fig. 4. *See e.g.* Ex. 1204, 3:56-62. ("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..[sic]").
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**	[In its '114 Petition, Samsung broke claim 2 into [2a] & [2b].] [2.a]: APA teaches transmission of multiple sequences. *See* Figure 2. *See also* Ex. 1201 (APA), 4:4-50. An exemplary "third sequence" is training sequence 48 in Fig. 2. Boer also teaches transmission of multiple sequences. Ex. 1204, 1:33-40 ("Therefore, according to the present invention,

	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	there is provided a method of operating a **wireless local area network station adapted to transmit and receive messages at a plurality of data rates**, wherein said messages include an initial portion and a data portion, including the steps of: transmitting the initial portion of a message to be transmitted by a station at a first predetermined one of a first plurality of data rates..."). A subsequent transmission of SIGNAL 206 and SERVICE 208 fields would be a "third sequence." [2b]: "<u>The Third Sequence Is Transmitted In The First Modulation Method</u>:" *See e.g.* Ex. 1204, 3:56-58 ("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."). *See also* claim element [1h]. "<u>Indicates That Communication From The Master To The Slave Has Reverted To The First Modulation Method</u>:" Ex. 1204, Abstract, ("All

	"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 l.D.  Snell at Fig. 3 (annotated). **Kamerman 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.	transmitted messages start with a preamble and header at the 1 Mbps rate. **The header includes fields identifying the data rate for the data portion of the message**, and a length field. For a 2 Mbps transmission the length field identifies the number of bytes in the data field. For a 5 or 8 Mbps the length field identifies the number of bytes in the data field which, if transmitted at 2 Mbps, would take the same transmission time of the data field, and is thus a fraction 2/5 or 2/8 of the actual number of the bytes."); 2:6-15 ("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**."); 3:56-62 ("With regard to

	"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*	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**."); 4:4-11 ("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."); Fig. 7; 7:41-51 ("Returning to block 508, **if an ACK message is not received correctly** and within the predetermined time interval, then the flowchart proceeds to block 522 where the SC count value is reset to zero and **the**

	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.	**data rate is decremented** (if the minimum data rate is not already being used)...."); and 8:6-9 ("If a station 22 doesn't receive the expected ACK message in return correctly and in due time, it will retransmit the original message packet at a lower data rate.").

'580 Patent Claim 59	Samsung's Argument in the '808 Reexamination	Samsung's Argument in the '114 IPR
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	**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**	[58a]: For a communication system that communicates according to a master/slave relationship, *see* Ex. 1201 (APA), Figs. 1 & 2; 3:6-10 ("FIG. 1 is a block diagram of a prior art multipoint communication system

a master message from the master to the slave, the device comprising:	**occurs in response to a master message from the master to the slave.** *See* Element 1.preamble.	including a master transceiver and a plurality of tributary transceivers."); and 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."). For master/slave relationship, *see* Ex. 1201 (APA), 4:4-9 ("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."). Boer discloses a communication system. *See e.g.* Ex. 1204, Figs. 1-3 and 8.
[58.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.A	[[58b] addresses the claim language included in [58.A] & [58.B] in Samsung's '580 Reexam Request (pp. 60-61).] [58b]: APA demonstrates master transceivers are in prior art.

		See claim element [1a]. For Boer's teachings regarding "transceivers, *See e.g.* Ex. 1204, Figures 1-3, 8; 2:6-22 ("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. 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 selectively at a data rate of 1 Mbps (Megabit per second) or 2 Mbps, using DSSS (direct sequence spread spectrum) coding."); 2:34-37 ("Also included in

		the LAN 10 are further mobile stations 22, referred to individually as stations 22-1 and 22-2, and having antennas 24 and 25, referred to individually as antennas 24-1, 24-2 and 25-1, 25-2.") <u>Transmitting using at least two types of modulation methods</u>: *See e.g.* Ex. 1204, Abstract ("A wireless LAN includes first stations adapted to operate at a 1 or a 2 Mbps data rate and second stations adapted to operate at a 1,2,5 or 8 Mbps data rate. The 1 and 2 Mbps rates use DBPSK and DQPSK modulation, respectively. The 5 and 8 Mbps rates use PPM/DQPSK modulation."); 2:23-27 ("When operating at the 1 Mbps data rate, DBPSK (differential binary phase shift keying) modulation of the RF carrier is utilized, and when operating at the 2 Mbps data rate DQPSK (differential quadrature phase shift keying) modulation of the RF carrier is utilized."); and 2:37-44 ("The stations 22 can operate at a 1 Mbps or a 2 Mbps data rate, using the same modulation and DSSS coding as the stations 18, and in addition can also operate at two higher data

		rates, namely 5 Mbps and 8 Mbps. These 5 and 8 Mbps data rates utilize PPM/DQPSK (pulse position modulation--differential quadrature phase shift keying) in combination with the 11-chip Barker code mentioned hereinabove.").
[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.	[[58c] and [58d] address the claim language in [58.B] in the '580 Reexam Request. [58b] is quoted above.] [58c]: In Boer, DBPSK is the "first modulation method." Both DQPSK and PPM/DQPSK can be the "second modulation method." See claim element [1b]. [58d]: DBPSK modulation is a different "type" of modulation than either DQPSK or PPM/DQPSK. See claim element [1b].
[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	**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**	[58e], [58f], & [58g] address the claim language in [58.C] in the '580 Reexam Request. [58e]: Both APA and Boer teach transceivers that transmit messages. *See* Ex. 1201 (APA), Fig. 1; 4:4-9 ("This

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	**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.	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."). *See e.g.,* Ex. 1204, Fig. 4; (Abstract) ("All transmitted messages start with a preamble and header at the 1 Mbps rate."); 1:33-37 ("Therefore, according to the present invention, there is provided a method of operating a wireless local area network station adapted to transmit and receive messages at a plurality of data rates, wherein said messages include an initial portion and a data portion..."); 3:42-43 ("Referring now to FIG. 4, there is shown the format of a typical message 200 used in the LAN 10.") 3:56-65 ("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."). [58f]: *See e.g.* Ex. 1204, Abstract ("The header includes fields identifying the data rate for the data portion of the message, and a length field."); 4:4-11 ("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."); and 6:5-17 ("In a station 22 which is to transmit a message, the C- MST 132 inserts the preamble 216 and header 218... The rate selector 142 uses the SIGNAL and SERVICE fields 206, 208 to decide whether or not the encoder 146 should switch to the 2,

		5 or 8 Mbps modes. 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." The SIGNAL 206 and SERVICE 208 fields in Boer are the "first sequence." [58g]: Because the SIGNAL 206 and SERVICE 208 fields indicate what type of modulation the DATA field 214 field will be transmitted with, they "indicate[] an impending change from the first modulation method to the second modulation method." *See* claim element [58f]. For "at least one message is addressed for an intended destination of the second sequence," *see* Ex. 1204, 6:28-31 ("The C-MST 132 determines if an incoming message is addressed to its own station, using a destination address included in the DATA field 214 of the message 200.").

[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.	[[58g] also addresses the claim language in [58.D] in the '580 Reexam Request and is quoted directly above.]
[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 l.G.	[[58h] & [58i] address the claim language in [58.E] in the '580 Reexam Request.] [58h]: Boer teaches that data (the "second sequence") within DATA field 214 can be modulated using the second type of modulation method (DQPSK or PPM/DQPSK) when the SIGNAL 206 and SERVICE 208 fields so indicate. Ex. 1204, 1:33-47, 3:56-62, 4:4-11 & 6:5-21. Each citation is quoted above. [58i]: Figure 4 in Boer shows the DATA field 214 (i.e., the recited "second sequence") being transmitted after SIGNAL field 206 and SERVICE field 208 (the recited "first sequence"). *See also* Ex. 1204, 3:56-62 ("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.").
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.	"Transceiver Is Configured To Transmit A Third Sequence After The Second Sequence :" APA teaches transmission of multiple sequences. *See* Figure 2. *See also* Ex. 1201 (APA), 4:4-50. An exemplary "third sequence" is training sequence 48 in Fig. 2. Boer also teaches transmission of multiple sequences. Ex. 1204, 1:33-40 ("Therefore, according to the present invention, there is provided a method of operating a **wireless local area network station adapted to transmit and receive messages at a plurality of data rates**, wherein said messages include an initial portion and a data portion, including the steps of: transmitting the initial portion of a message to be transmitted by a station at a first predetermined one of a first plurality of data rates..."). A subsequent transmission of SIGNAL 206 and SERVICE 208 fields within Header 218 would be a

		"third sequence." "<u>The Third Sequence Is Transmitted In The First Modulation Method</u>:" *See e.g.* Ex. 1204, 3:56-58 ("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."). *See also* claim element [1h]. "<u>Indicates That Communication From The Master To The Slave Has Reverted To The First Modulation Method</u>:" Ex. 1204, Abstract, ("All transmitted messages start with a preamble and header at the 1 Mbps rate. **<u>The header includes fields identifying the data rate for the data portion of the message</u>**, and a length field. For a 2 Mbps transmission the length field identifies the number of bytes in the data field. For a 5 or 8 Mbps the length field identifies the number of bytes in the data field which, if transmitted at 2 Mbps, would take the same transmission time of the data field, and is thus a fraction 2/5 or 2/8 of the actual number of the bytes."); 2:6-15 ("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**."); 3:56-62 ("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**."); 4:4-11 ("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."); Fig. 7; 7:41-51 ("Returning to block 508, **if an ACK message is not received correctly** and within the predetermined time interval, then the flowchart proceeds to block 522 where the SC count value is reset to zero and **the data rate is decremented** (if the minimum data rate is not already being used)...."); and 8:6-9 ("If a station 22 doesn't receive the expected ACK message in return correctly and in due time, it will retransmit the original message packet at a lower data rate.").

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:				
PETITION IN REEXAM PROCEEDING	1824	1	1940	1940
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1940**

Electronic Acknowledgement Receipt

EFS ID:	30397364
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:	18-SEP-2017
Filing Date:	12-SEP-2016
Time Stamp:	16:51:58
Application Type:	Reexam (Patent Owner)

Payment information:

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		PetitionReqReconsideration.pdf	2033804 3b3976ca8fc77711d248c652fcd1fad946b8ca79	yes	45

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Receipt of Petition in a Reexam	1	44
	Reexam Certificate of Service	45	45

Warnings:					
Information:					
2	Reexam Miscellaneous Incoming Letter	Exhibit1.pdf	32255 a178a44cb09b113b798fef0e01266e43875a0147	no	3
Warnings:					
Information:					
3	Reexam Miscellaneous Incoming Letter	Exhibit2.pdf	51697 ccdabd2c5e445e4ec20c09bd6f28f9a9cf9d9fb6	no	6
Warnings:					
Information:					
4	Reexam Miscellaneous Incoming Letter	Exhibit3.pdf	407593 9143993385c6e3104f1316b9f9260a6e8042b5f1	no	37
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	30662 7146d9ea5ea3d8333cc14d37d3ea9f255b7c38ce	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2556011		

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

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 TERMINATION OF GROUNDS OF REJECTION PURSUANT TO 37 C.F.R. § 1.181

Rembrandt Wireless Technologies, LP (hereinafter "Patent Owner") respectfully submits that at least some of the grounds of rejection pending in Reexamination Control No. 90/013,808 (hereinafter the "'808 reexamination") must be terminated as being outside the authority granted to the Office by Congress. Specifically, some of the grounds of rejections set forth in the '808 reexamination are based upon references (*i.e.*, the Harris 1064.4 and Harris AN9614 documents) which under the Office's own reasoning cannot be considered prior art printed publications. As *ex parte* reexamination is limited to substantial new questions raised by prior art printed publications (*see, e.g.,* 35 U.S.C. §§ 301, 302) continuing reexamination on these grounds is an *ultra vires* action that must be terminated. *Ethicon, Inc. v. Quigg,* 849 F. 2d 1422, 1427 (Fed. Cir. 1988) ("The Commissioner, on the other hand, has no inherent authority, only that which

Congress gives.").[1] As all of the currently pending grounds of rejection rely on one or more of the Harris documents,[2] Patent Owner respectfully submits that continuing the present reexamination is beyond the Office's authority. Accordingly, Patent Owner respectfully requests termination of the '808 reexamination.

Statement of Facts

1) On September 12, 2016, Samsung Electronics America, Inc. (hereinafter "Requester") filed a Request for *Ex Parte* Reexamination of U.S. Patent No. 8,023,580 (hereinafter "Request"). Set forth in the Request were alleged substantial new questions of patentability based in part on U.S. Patent No. 5,982,807 to Snell (hereinafter "Snell"), as well as Harris 1064.4 and Harris AN9614 (collectively the "Harris documents").
2) In the Request, Requester alleged that the inclusion of the Harris documents on an information disclosure statement submitted during the prosecution of Snell and an attempted

[1] Patent Owner further notes that the current request is timely. The Office only has that authority granted to it by Congress. *Ethicon, Inc. v. Quigg,* 849 F. 2d 1422, 1427 (Fed. Cir. 1988). Here, where the Office is acting *ultra vires*, a Patent Owner may not grant the Office through waiver the authority to continue with a proceeding for which it was never granted authority to undertake by Congress. Furthermore, the clear legal errors on the part of the Office only came to light in the Final Office Action, which was mailed on July 18, 2017.

[2] Currently pending in the '808 reexamination are the following grounds of rejection: claims 2 and 59 have bene rejected under 35 U.S.C. § 102 as allegedly being anticipated by Snell; claims 2 and 59 have been rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Snell in view of U.S. Patent No. 6,075,814 to Yamano et al. (hereinafter Yamano); and claims 2 and 59 have been rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Snell in view of Yamano in further view of Kamerman, A., "Throughput Density Constraints for Wireless LANs Based on DSSS," IEEE 4th International Symposium on Spread Spectrum Techniques 20 and Applications Proceedings, Mainz, Germany, Sept. 22-25, 1996, pp. 1344-1350 vol.3 (hereinafter "Kamerman"). The grounds under § 103 explicitly rely on teachings contained in the Harris documents. *See, e.g.,* FOA at 7-15. The ground under § 102 relies on Harris AN9614 for the reasons explained on pages 28-29 of the FOA. Specifically, the Examiner relies on the teachings of Harris AN9614 to teach the "master/slave relationship" features of claims 2 and 59. *Id.*

incorporation by reference of the Harris documents by Snell rendered the Harris documents publicly accessible printed publications. Request at 29-31.

3) On September 27, 2017, the Office issued an Order granting reexamination of claims 2 and 59 of the '580 patent.

4) The order granting reexamination of claims 2 and 59 alleged that the Harris documents are prior art, but did not address the public accessibility of the documents.

5) On March 31, 2017, the Office issued a Non-Final Office Action.

6) The Non-Final Office Action did not address the public accessibility of the Harris documents.

7) On June 30, 2017, Patent Owner filed a Reply to the Non-Final Office Action (hereinafter "Reply"). The Reply included arguments challenging the status of the Harris documents as printed publications. Reply at 55-69.

8) On July 18, 2017, the Office issued a Final Office Action.

9) The Final Office Action did not address Patent Owner's argument that the Harris documents have not been shown to be prior art printed publications, as is legally required under the patent laws, i.e., they must be accessible to the relevant public. Final Office Action at 23-25.

10) The Final Office Action presented clearly erroneous arguments allegedly in support of the proposition that the Harris documents are prior art printed publications. *Id.* Those arguments included one based on 37 CFR § 1.11-- a regulation that did not exist at the relevant time. According to the Final Office Action:

> 37 CFR 1.11 states:
>
> (a) The specification, drawings, and all papers relating to the file of: A

> published application; a patent; or a statutory invention registration are open to inspection by the public, and copies may be obtained upon the payment of the fee set forth in§ 1.19(b)(2).
>
> In other words, as long as the documents, i.e., Harris AN9614 and Harris 4064.4, were provided by Snell at the time the application was filed, these documents are publicly accessible and incorporation by reference is reasonable.

FOA, at 23-24. In fact, at the time Snell was filed, there was no mechanism for publishing applications and, in any event, Snell was not published prior to its issuance. Thus, the Examiner's reliance on 37 CFR 1.11 is plainly wrong.

The Burden Rests with the Challenger to Present a *Prima Facie* Showing that a Reference was Publicly Accessible

As a threshold matter, Patent Owner notes that the challenger of the patent, be that the Patent Office or a requester for reexamination, bears the burden of making a *prima facie* showing that a reference is publicly accessible before it may be used a "printed publication." *See, e.g., In re Lister*, 583 F. 3d 1307, 1317 (Fed. Cir. 2009); *see also In re Hall,* 781 F. 2d 897, 899 (Fed. Cir. 1986) ("The **proponent of the publication bar** must show that prior to the critical date the reference was sufficiently accessible, at least to the public interested in the art, so that such a one by examining the reference could make the claimed invention without further research or experimentation.") (emphasis added). As will be shown through the following discussion, neither the Office nor the Requester has met this burden.

Neither the Requester Nor the Examiner has Presented a *Prima Facie* Showing that the Harris Documents were Publicly Accessible

Both Requester and the Examiner have presented arguments alleging to show the public accessibility of the Harris documents. *See, e.g.,* Final Office Action (hereinafter "FOA") at 23-25. The Requester's and the Examiner's arguments are fundamentally flawed and contrary to the Office's own rules and regulations setting forth the evidence that constitutes a sufficient showing

of public accessibility. The arguments by Requester and the Examiner are as follows, all of which are insufficient to prove the public accessibility of a reference:

- It has been argued that an attempted incorporation by reference of the Harris documents into the Snell disclosure renders the Harris documents prior art and publicly accessible. FOA at 23-25.
- It has been argued that the submission of the Harris documents on an information disclosure statement during the prosecution of the Snell reference proves the public accessibility of the references. FOA at 24; *see also* Request for Reexamination (hereinafter "Request") at 29.
- It has been argued that the inclusion of the Harris documents in the file wrapper for the Snell reference renders the documents publicly accessible as of the filing date of the Snell applications. *Id.* at 25.
- It has been argued that an alleged copyright date on the Harris documents proves the publicly accessibility of the documents. FOA at 25.

Each of these arguments runs counter to the definitive rules, regulations and decisions of the Office. Therefore, the Office must find that the Harris documents have not been shown to be prior art printed publications, and the '808 reexamination must be terminated, at least with regard to any ground which relies upon the Harris documents. Any other outcome results in the Office acting beyond its authority.

A. The Alleged Incorporation by Reference of the Harris Documents is Insufficient to Prove their Public Accessibility

In the FOA and the Request it is alleged that the Snell reference's attempt to incorporate the Harris documents by reference is sufficient to render the documents publicly accessible. *Id.*

at 23-25; *see also* Request at 29-30. The Examiner goes so far as to argue that "As long as at the time of application of Snell, the documents of Harris were provided by Snell, then the material in Harris documents can be incorporated by reference into the application of Snell." FOA at 24. The Examiner and Requester make clear errors regarding which type of documents may be incorporated by reference. Only publicly accessible documents may be incorporated by reference. Accordingly, the Examiner and Requester cannot rely on a document's alleged incorporation by reference to prove its public accessibility when public accessibility is a prerequisite for incorporation by reference. Furthermore, even if it is assumed *arguendo* that incorporation by reference may be used to render a document publicly accessible, the attempt to incorporate the Harris documents into Snell lacked the required "detailed particularity" for incorporation by reference.

i. The Harris Documents Could Not be Incorporated by Reference into the Snell Reference

It is established law that only publicly available documents may be incorporated by reference. *General Electric Co. v. Brenner*, 407 F.2d 1258, 1262, 159 USPQ 335, 338 (D.C.Cir.1968) ("[R]eference to a disclosure which is available to the public is permissible.") (emphasis added); *In re Heritage*, 182 F.2d 639, 643, 86 USPQ 160, 164 (CCPA 1950). This requirement that any incorporated reference be publicly available is reflected in 37 C.F.R. § 1.57 which limits the incorporation by reference of non-essential material to U.S. patents, U.S. patent application publications, foreign patents, foreign published applications, prior and concurrently filed commonly owned U.S. applications, or non-patent publications. This requirement presents a fatal flaw in the Examiner's argument that the incorporation by reference of the Harris documents into the Snell reference renders the Harris documents publicly accessible prior art

(i.e., renders them a prior art printed publication): if only publicly accessible documents may be incorporated by reference, the Examiner cannot rely on the incorporation by reference of the Harris documents to render them publicly accessible. That is, the incorporation by reference of the Harris documents cannot render them publicly accessible, as the Harris documents would have had to be publicly accessible prior to their incorporation by reference. They were not.

In the FOA, the Examiner argues that nothing in 37 C.F.R. § 1.57(e) "requires the non-patent publications be public accessible" in order for them to be incorporated by reference into a patent application. FOA at 25. This assertion simply highlights the clear errors in the Examiner's reasoning and her misunderstanding of the issues before her. The Office implemented 37 C.F.R. § 1.57 to codify the limits of incorporation by reference as laid out in the *General Electric* case. *See* 69 Fed. Reg. 56482, 56501 *citing General Electric Co. v. Brenner*, 407 F.2d 1258, 159 USPQ 335 (D.C.Cir.1968). As discussed above, the *General Electric* case limits the Director's authority to incorporate documents by reference to "disclosure[s] which [are] available to the public." *General Electric Co. v. Brenner*, 407 F.2d 1258, 1262, 159 USPQ 335, 338 (D.C.Cir.1968). Accordingly, 37 C.F.R. § 1.57 clearly adopts the legal meaning of "publication," which requires "public accessibility." *See, e.g., In re Wyer,* 655 F.2d 221, 26 (C.C.P.A. 1981) ("In any event, interpretation of the words 'printed' and '**publication**' to mean 'probability of dissemination' and '**public accessibility**,' respectively") (emphasis added).

Put differently, the Examiner and the Requester have placed the "cart before the horse" with regard to public accessibility and incorporation by reference of documents. As stated in the *General Electric* decision, "incorporation by reference has a home in patent cases *provided that any reference made is to that which is available to the public*." *General Electric Co. v. Brenner*, 407 F.2d 1258, 1262, 159 USPQ 335, 338 (D.C.Cir.1968) (emphasis original). A document

must be publicly accessible *before* it is incorporated by reference; incorporation by reference cannot be relied upon to render a document publicly available. Incorporation by reference is permissible only to the extent that previously publicly accessible documents may be incorporated by reference. Incorporation by reference is not a tool by which an applicant may render publicly accessible an otherwise inaccessible document. The Examiner's interpretation would, in effect, write 37 C.F.R. § 1.57 out of the law.

ii. The Attempted Incorporation by Reference of the Harris Documents Lacked the Required "Detailed Particularity" to Incorporate the Harris Documents

Patent Owner further notes that even if it is assumed *arguendo* that an incorporation by reference of the Harris documents could have rendered them publicly accessible, the attempt in the Snell reference to incorporate the Harris documents fails to meet the requirements for an incorporation by reference. "To incorporate material by reference, the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents." *Advanced Display Systems, Inc. v. Kent State University*, 212 F.3d 1272 (Fed.Cir. 2000) (citing *In re Seversky*, 474 F.2d 671, 674 (CCPA 1973); *In re Saunders*, 444 F.2d 599, 602–03 (CCPA 1971); *Cook Biotech Inc. v. Acell, Inc.*, 460 F.3d 1365, 1376 (Fed.Cir.2006)). Snell does not identify at all (and certainly not "with detailed particularity") the information in the Harris documents relied on by the Examiner. Snell at 5:2-17. For example, Snell does not identify the "polled scheme" in Harris AN9614 that is alleged by the Examiner to correspond to or suggest the claimed "master/slave relationship." Instead, Snell identifies:

> 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.
>
> ...
>
> The conventional Harris PRISM 1 chip set includes a loW data rate DSS baseband processor available under the designation HSP3824. This prior base band 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.

Id. (emphasis added).

Snell's attempt to incorporate by reference the Harris documents in their entirety does not remedy the situation because the Office has repeatedly rejected attempts to incorporate by reference documents in their entirety. For example. In *Ex parte Koppolu*, the PTAB explained the rationale for prohibiting applicants from incorporating entire documents without an explanation of what they are being on relied on to show:

> [B]y permitting applicants to incorporate by reference entire documents without an explanation of what they are being relied on to show would invite the wholesale incorporation by reference of large numbers of documents and correspondingly increase the burden on examiners, the public, and the courts to determine the metes and bounds of the application disclosures.
>
> For the foregoing reasons, we will apply the law on incorporation by reference as stated in *Advanced Display* and repeated in *Cook Biotech*.
>
> Appellants' argument that MPEP § 2163.07(b) "expressly authorizes the incorporation by reference of an entire document," ... is unconvincing because an incorporation by reference must satisfy the specificity requirement of *Advanced Display*. [2005 WL 4806276 (BPAI 2005) (emphasis added).]

See, e.g., Oxford Nanopore v. Univ. of Washington, 2014 WL 4644357 (PTAB 2014) ("In the instant case, although Petitioner urges that Akeson incorporates by reference the disclosure at column 13, lines 10-13 of the '782 patent, the Petition does not direct us to any express or specific disclosure in Akeson mentioning that passage with detailed particularity. ... Nor does the Petition direct us to any clear or specific disclosure in Akeson suggesting that Akeson sought

to incorporate by reference any teachings in the '782 patent as to the physical properties Akeson required of its nanopores. … Accordingly, we are not persuaded that the Petition has shown that, because Akeson incorporates the '782 patent as a whole by reference, among many other references, Akeson in effect can be considered as positively teaching the subject matter disclosed at column 10, lines 10-13 of the '782 patent." (citations omitted)); *Ex parte Carlucci*, 2012 WL 4718549 (BPAI 2012) (rejecting assertion that blanket incorporation by reference was effective to incorporate transparent characteristic of Ahr '045's apertured film).

Accordingly, despite Snell's attempt to incorporate by reference "the entire disclosure" of the Harris documents, such an incorporation is insufficient to meet the requirements of *Advanced Display Systems*, and therefore, Snell has not incorporated the relevant portions of the Harris documents by reference. Therefore, any reliance on the incorporation by reference to render the Harris documents publicly accessible must fail.

B. Inclusion of the Harris Documents in an Information Disclosure Statement During Prosecution of the Snell Patent is Insufficient to Show the Harris Documents were Publicly Accessible Prior to the filing date of the '580 Patent

It is further argued by the Examiner that the citation of the Harris documents on an information disclosure statement during the prosecution of the Snell patent shows the public accessibility of the Harris documents. Request at 29. The Office's own rules and regulations confirm that the inclusion of a document in an information disclosure statement is insufficient to show the public accessibility of the document. *ResQNet.com, Inc. v. Lansa, Inc.*, 594 F. 3d 860, 866 (Fed. Cir. 2010) ("We agree that ResQNet did not convert these manuals into printed publication prior art by including them with the IDS submitted to the PTO."); *see also* MPEP § 2129(IV) (citing *Riverwood Int'l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1354-55 (Fed Cir. 2003) (listing of applicant's own prior patent in an IDS does not make it available as prior art

absent a statutory basis). *See also* 37 CFR § 1.97(h) ("The filing of an information disclosure statement shall not be construed to be an admission that the information cited in the statement is, or is considered to be, material to patentability as defined in § 1.56(b)."). This is particularly true under the present facts as the application that matured into the Snell patent was assigned to Harris Corporation during the prosecution of the application. Snell at p. 1. Harris Corporation is also the source of the Harris documents. Harris 10644 at p. 1; Harris AN9614 at p. 1. The inclusion of one's own work on an IDS is not an indication that that work is or was *publicly* accessible, it is only an indication that the *assignee* was aware of the work. *See, e.g.,* MPEP 2129.

The Office's own decision in *Microsoft Corp. v. Biscotti Inc.*, Case IPR2014-01457 (PTAB Mar. 19, 2015) (Paper 9) addressed the exact factual scenario presented herein, and correctly concluded that the cited document was *not* rendered publicly accessible by its inclusion in an IDS:

> Patent Owner argues that the citation of the HDMI Specification in an IDS filed in the prosecution of U.S. Patent No. 7,940,809 also fails to support Petitioner's position. Patent Owner notes that "[t]he published application from which the '809 patent derives … does not cite [the HDMI Specification]," and that "U.S. Patent No. 7,940,809 was not granted until 2011, long after the priority date of the '182 patent." Patent Owner elaborates that Petitioner does not explain how submission of a document in an IDS of an unpublished, ungranted patent application demonstrates public accessibility of the document, noting that Petitioner does not identify any way that an interested person could or would have located the document submitted in the IDS of an unpublished, ungranted patent application. Patent Owner argues that "the mere apparent possession of the specification by the assignee [of the unpublished, ungranted patent application]—a single company—does not demonstrate the document's **public** availability."
>
> …
>
> We are persuaded that Petitioner has not demonstrated the public accessibility of the HDMI Specification. For the reasons explained by Patent

> Owner, the evidence cited by Petitioner facially fails to demonstrate the public accessibility of the document prior to the effective filing date of the '182 patent.

Microsoft Corp. v. Biscotti Inc., Case IPR2014-01457, slip op. at 26–28 (PTAB Mar. 19, 2015) (Paper 9) (citations and footnotes omitted, emphasis in original).

Just as in the *Microsoft* case, the Snell reference issued after the priority date for the '580 patent. Accordingly, the Examiner has failed to demonstrate the public accessibility of the documents prior to the effective filing date of the '580 patent, and therefore, under the Office's own rules, regulation and decisions, the Harris documents are not prior art printed publications to the '580 patent.

C. The Inclusion of the Harris Documents in the File History of the Snell Patent is Insufficient to Show the Harris Documents were Publicly Accessible Prior to the Filing Date of the '580 Patent

It is further argued by the Examiner that the inclusion of the Harris documents in the file history for the Snell patent shows the public accessibility of the Harris documents. FOA at 23-25. This reasoning is also flawed. The presence of the Harris documents in the file wrapper for the Snell reference does not render the Harris documents publicly accessible prior to the Snell patent issuing. *See* MPEP § 1120(I) (35 U.S.C. § 122(a)) ("Except as provided in subsection (b),[3] applications for patents shall be kept in confidence by the Patent and Trademark Office and no information concerning the same given without authority of the applicant or owner unless necessary to carry out the provisions of an Act of Congress or in such special circumstances as may be determined by the Director."). Thus, *until the Snell patent issued*, the interested public would not have known of the Snell application's existence and would not have known of the existence of the Harris Documents in its file wrapper. The issuance of the Snell patent came

[3] Section (b) applies only to applications filed on or after November 29, 2000. Thus, section (b) does not apply to Snell, which was filed in 1997.

after the priority date for the '580 patent, and therefore, the Harris documents are not prior art printed publications to the '580 patent.

Furthermore, the *Microsoft* case discussed above also addressed the inclusion of a document in a file wrapper of a patent application. The reference at issue in the *Microsoft* case was not only cited on an IDS, but it was included in the file wrapper for a patent that ultimately issued. *Microsoft Corp. v. Biscotti Inc.*, Case IPR2014-01457, slip op. at 25 (PTAB Mar. 19, 2015) (Paper 9) ("During the prosecution of this patent, the HDMI Specification v. 1.3a **was submitted** as part of an Information Disclosure Statement to the Patent Office on or about October 5, 2007.") (emphasis added). Nevertheless, the Board determined "that Petitioner [had] not demonstrated the public accessibility of the HDMI Specification." *Id.* at p. 27. Analogously, the Examiner in the '808 reexamination has failed to demonstrate the public accessibility of the Harris documents prior to the effective filing date of the '580 patent. Therefore, under the Office's own rules, regulation and decisions, the Harris documents are not prior art printed publications to the '580 patent.

D. The Dates included on the Harris Documents are Insufficient to Show the Harris Documents were Publicly Accessible Prior to the Filing Date of the '580 Patent

The Examiner also relies on ambiguous dates and unregistered copyright notices on the Harris documents as allegedly providing evidence of the prior art status and public accessibility of the references.[4] FOA at 25. This reasoning is also flawed. The "March 1996" and "October 1996" dates on Harris AN9614 and Harris 4064.4, respectively, and their 1996 copyright notices

[4] The Examiner incorrectly refers to dates on the documents as "publication dates" in the Final Office Action. FOA at 25. There is no evidence or suggestion that these dates are publication dates. Furthermore, the relevant date for public accessibility is the date upon which the document becomes available to the public, not the date a document is created. *See, e.g.,* MPEP §§ 2128.II.B; 2128.02. There is no evidence that the dates contained in the Harris documents indicate a date of public accessibility.

by Harris Corporation are insufficient to establish a date of dissemination or accessibility to "persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence." *Wyer*, 655 F.2d at 226. A copyright date merely establishes "the date the document was created or printed." *Ex parte Rembrandt Gaming Technologies, LP*, Appeal 2014-007853, Reexamination Control No. 90/012,379 at 5 (PTAB December 3, 2014) ("the 1993 copyright date in Tequila Sunrise does not show the requisite availability in 1993"); *ServiceNow, Inc. v. Hewlett-Packard Co.*, IPR2015-00716, Paper No. 13 at 17 (PTAB Aug. 26, 2015) ("we are not persuaded that the presence of a copyright notice, without more, is sufficient evidence of public accessibility as of a particular date"). In this case, there is no evidence that the copyrighted material was ever registered or that the documents were deposited with the Library of Congress. Lacking such evidence, a copyright notice has little, if any, evidentiary value, and is incapable of proving public accessibility.

Conclusion

As indicated above, under the Office's own rules, regulations and decisions, none of the alleged evidence of public accessibility of the Harris documents prior to the priority date of the '580 patent is sufficient to show the Harris documents are prior art printed publications. Accordingly, the Office must terminate the '808 reexamination as continuing the '808 reexamination is action beyond the authority granted to the Office by Congress. *See, e.g.,* 35 U.S.C. §§ 301, 302; *see also Ethicon, Inc. v. Quigg,* 849 F. 2d 1422, 1427 (Fed. Cir. 1988). Any further action on these grounds by the Office is unlawful *ultra vires* action.

This Petition is timely filed, i.e., within two months of the Final Office action mailed July 18, 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: September 18, 2017 By: /Michael V. Battaglia/

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CERTIFICATE OF SERVICE

It is hereby certified that on this 18th day of September, 2017, the foregoing **PETITION REQUESTING TERMINATION OF GROUNDS OF REJECTION PURSUANT TO 37 C.F.R. § 1.181** 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/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:				
PETITION IN REEXAM PROCEEDING	1824	1	1940	1940
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1940**

Electronic Acknowledgement Receipt

EFS ID:	30396279
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:	18-SEP-2017
Filing Date:	12-SEP-2016
Time Stamp:	16:16:25
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		PetitionReqTermination.pdf	113676 ee543823b96a79be2c154b011a6177caa026d4bd	yes	16

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Receipt of Petition in a Reexam	1	15
	Reexam Certificate of Service	16	16

Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30664 72827045d793947786b7dd193bb439ddfc cdf0c8	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	144340		

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.

OK TO ENTER: /Y.G/

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Control No.	: 90/013,808	Art Unit	: 3992
Patent No.	: 8,023,580	Examiner	: Yuzhen Ge
Filed	: September 12, 2016	Conf. No.	: 2211
Customer No.	: 06449	Atty. No.	: 3277-114.RXM1

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

Mail Stop *Ex Parte* Reexam
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO FINAL OFFICE ACTION

This Response is to the Final Office Action mailed July 18, 2017 ("FOA"). This Response is timely-filed, i.e., within the two-month period from the mailing date of the FOA. Thus, this Response will be construed as including a request to extend the shortened statutory period for an additional two months, i.e., to November 18, 2017, as indicated in the FOA, at 44. *See* MPEP § 2265(VII).

UNITED STATES PATENT AND TRADEMARK OFFICE

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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 10/16/2017

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ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
10/16/2017	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

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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)).

Yuzhen Ge

Primary Examiner

Art Unit: 3992

REEXAMINATION OF U.S. PATENT 8,023,580

Advisory Action - 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.

On Sep. 27, 2016, the Office mailed an order ("**Sep 2016 Order**") granting reexamination of claims 2 and 59 of the `580 patent.

On Mar. 31, 2017, the Office mailed a non-final office action ("**Mar 2017 Non-Final Office Action**").

On Jun. 30, 2017, the Patent Owner filed a response ("**Jun 2017 Response**") to the Mar 2017 Non-Final Office action. The Jun 2017 Response includes, among other things, remarks ("**Jun 2017 Remarks**") and declarations by Robert Aki ("**Jun 2017 Aki Dec**") under 37 C.F.R. §1.132. No claims has been amended.

On July 18, 2017, the Office mailed a final office action ("**Jul 2017 Final Office Action**").

On Sep. 18, 2017, the Patent Owner filed an after-final response ("**Sep 2017 PO Response**") to the July 2017 Final Office Action. The Sep 2017 PO response includes, among other things, remarks ("**Sep 2017 Remarks**").

II. RESPONSE TO PATENT OWNER'S AFTER-FINAL SUBMISSION

The Sep 2017 PO Response including Sep 2017 Remarks, has been considered. The Sep 2017 PO Response does not overcome the previous rejections for the reasons that follow, however, for purposes of appeal, it will be entered.

New Arguments by the Examiner

Patent Owner argues:

> The Examiner's new arguments introduced in the FOA include: (i) arguing that "Snell inherently teaches" a destination address, FOA at 41-42, (ii) providing a new construction for "different type[s]" of modulation methods, id. at 31, (iii) based on the new construction, arguing that "BPSK is a different type of modulation method than QPSK," id., and (iv) arguing that Snell's disclosure that the transceiver can provide an access point for a wireless access point supports the Office's position that the transceiver of Snell is capable of acting as a master in a master/slave relationship. Id. at 28, 38 (citing Snell at 1:34-46). …
>
> --Sep 2017 Remarks, pp. 2-3.

The Examiner would like to point out that the new arguments in the Jul 2017 Final Office Action were set forth based on the new arguments presented by the Patent Owner in the Jun 2017 PO Response. MPEP 706.07(a) states:

> Second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims, nor based on information submitted in an information disclosure statement filed during the period set forth in 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p).

Because no new grounds of rejections are set forth in the Jul 2017 Final Office Action, according to MPEP 706.07(a), the office action mailed on Jul. 18, 2017 can be and was made final.

Harris AN9614 and Harris 4064.4

Patent Owner alleges that "the Examiner relies on a regulation that was not in effect at the time of the Snell application and there was no mechanism for publishing applications and, in any event, Snell was not published prior to its issuance …. " (Patent Owner's Remarks, p. 3-4).

The Examiner disagrees.

37 CFR 1.11 states:

> (a) The specification, drawings, and all papers relating to the file of: A published application; a patent; or a statutory invention registration are open to inspection by the public, and copies may be obtained upon the payment of the fee set forth in § 1.19(b)(2).

First, the Patent Owner fails to provide evidence that there was no mechanism for publishing application when Snell was filed and fails to provide evidence the 37 CFR 1.11 was not in effect at the time of the Snell application.

Second, Snell was a prior art reference for the 580 patent under 35 USC 102 (e). According to 102(e)(2), the invention was described in a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent…. Accordingly it does not matter whether the application of Snell was published before the invention or not. To the extent that Snell is a prior art to the 580 patent under 35 USC 102 (e),

the references incorporated by reference by Snell are also prior art references to the 580 patent under 35 USC 102(e) whether or not Snell was published before issuance.

MPEP 2163.07(b) states:

> Instead of repeating some information contained in another document, an application may attempt to incorporate the content of another document or part thereof by reference to the document in the text of the specification. The information incorporated is as much a part of the application as filed as if the text was repeated in the application, and should be treated as part of the text of the application as filed. Replacing the identified material incorporated by reference with the actual text is not new matter. See 37 CFR 1.57 and MPEP § 608.01(p) for Office policy regarding incorporation by reference. See MPEP § 2181 for the impact of incorporation by reference on the determination of whether applicant has complied with the requirements of 35 U.S.C. 112(b) or pre-AIA 35 U.S.C. 112, second paragraph when 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph is invoked.

In other words, the purpose of incorporation by reference is to avoid repeating some information in another document. At the time of filing of Snell, the Harris documents were available to the Office. Therefore, instead of repeating the material of the Harris documents, incorporation by references of these two documents in the specification of Snell made the specification more concise and is supported by MPEP and the material incorporated by reference in Snell is part of the text of the application of Snell as filed.

Third, 37 CFR 1.57 (e) states:

> (e) Other material ("Nonessential material") may be incorporated by reference to U.S. patents, U.S. patent application publications, foreign patents, foreign published applications, prior and concurrently filed commonly owned U.S. applications, or non-patent publications. An incorporation by reference by hyperlink or other form of browser executable code is not permitted.

Nowhere in the above section requires the non-patent publications be public accessible.

Further, to the extent that Patent Owner insists the Harris documents should be public accessible, each of the Harris documents has a publication date and copyright information and it was therefore accessible to the pertinent part of the public and available for duplication. In re Wyer 210 USPQ 790.

Based on the above reasons, incorporation by references of Harris publications, i.e., Harris AN9614 and Harris 4064.4, in Snell conforms to MPEP, the references incorporated by reference in Snell are references under 35 USC 102 (e) references and the specification of Snell includes the text of Harris AN9614 and Harris 4064.4 regardless whether Snell application was published or not.

Master/Slave Relationship

Patent Owner alleges that combination of Snell and Harris AN9613 does not suggest a Master/Slave relationship and the presence of a polling protocol neither necessitates nor implies the presence of a master/slave configuration … (Sep 2017 Remarks, pp. 4-5) and "…an access point, if present, does not poll or control anything but rather merely serves as an interface between the WLAN and the wire network and thus does not act as a master …" (Sep 2017 Remarks, pp. 6-7).

The Examiner disagrees.

Claim 2 recites:

> 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.

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.

MPEP § 2103 I C states "Product claims are claims that are directed to either machines, manufactures, or compositions of matter."

First, the Examiner disagrees that the master/slave relationship is a limitation. Claim 2 is a single means claim and cannot invoke 112 6th paragraph, the whole claim of claim 2 comprises a transceiver which as it is known in the art as comprising a transmitter and a receiver. The only limitation in claim 2 that precedes with "configured to" is "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 explained in the rejection under 35 USC 102 in Section V of the Mar 2017 Non-Final Office Action, Snell met this limitation. As to claim 59, in addition to the transceiver is configured to send the third sequence as in claim 2, the transceiver is also configured to transmit

a first sequence and a second sequence as claimed, which is also disclosed by Snell. Because claims 2 and 59 do not invoke 112 6th paragraph and a master/slave relationship is not a structure, the term "master/slave relationship" is not part of a transceiver or the device of claims 2 and 59. Accordingly, in response to Patent Owner's argument that the references fail to show certain features of Patent Owner's invention, it is noted that the features upon which Patent Owner relies (i.e., master/slave relationship) are not a structure in the rejected product claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Second, to the extent that the Patent Owner argues that a master/slave relationship should be part of the structure of the transceiver, the transceiver of Snell is also capable of communication in a master role in a master/slave relationship just like the transceiver in claims 2 and 59 of the `580 patent because both transceivers are programmable.

Third, Snell discloses a spread spectrum transceiver that can be used as an access point for WLAN or wireless local area network (col. 1, lines 34-46) and is capable of acting as a master in a master/slave relationship because an access point is simply a programmable communication device which is capable of being configured and used as a master device. Contrary to Patent Owner's assertion, Snell's transceiver can be set up in many configurations including in a peer to peer communication. Harris AN9614 discloses that the PRISM chipset described in Snell can operate in a polled (master/slave) protocol:

> [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's transceiver is configured to operate in a polled (master/slave) protocol, power consumption can beneficially be reduced by more than an order of magnitude.

A polled protocol is a master/slave protocol, as confirmed by the '580 patent ('580 patent at col. 4, lines 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."); IPR2014-00518, Exhibit 1220 (Goodman Declaration) ¶103.

Further, both claims 1 and 58 recite master/slave relationship and it is determined by PTAB that master-slave relationship is unpatentable subject matter.

Two different types of modulation method

Patent Owner argues:

> The Court of Appeals for the Federal Circuit provided a construction for the "at least two types of modulation methods" recited in the claims of the '580 Patent as "different families of modulation techniques, such as the FSK family of modulation methods and the QAM family of modulation methods." Rembrandt Wireless Tech., v. Samsung Electronics, 853 F. 3d 1370, 1377 (Fed. Cir. 2017). This determination was based upon claim construction rules that apply to both the Phillips standard and the broadest reasonable interpretation standard used in reexamination proceedings. Specifically, the CAFC looked to an "unambiguous"

> statement in the prosecution history of the '580 Patent to reach its conclusion. See, e.g., Microsoft Corp. v. Proxyconn, Inc., 789 F. 3d 1292, 1298 (Fed. Cir. 2015) ("The PTO should also consult the patent's prosecution history in proceedings in which the patent has been brought back to the agency for a second review.").
>
> …

-- Sep 2017 Remarks, pp. 7-8.

The Examiner disagrees. Unlike in an infringement case such as in *Rembrandt Wireless Tech. v. Samsung Elec. Co.* cited above, claims can be amended in an examination or reexamination proceeding and therefore must be given broadest reasonable interpretation in light of the specification (see MPEP 2111).

Further, in IPR2014-00518, PTAB clearly explained how to interpret "different type of modulation methods" and determined that Boer teaches different types of modulation methods. Similarly Snell also teaches different types of modulation methods.

The specification does not use the term "different family of modulation method" or "FSK family of modulation method." In fact, the specification of the `580 patent does not mention frequency shift key modulation or FSK modulation, let alone FSK family of modulation method. Therefore in light of specification, the Examiner could not interpret "different types of modulation method" as "different family of modulation method." The instant specification states:

> 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.

--col. 5, lines 7-21, the `580 patent.

As stated in the above section of the `580 patent, one type of modulation method can be used to implement both the high and low data rate application, though using a low performance one can be cost saving. Anyway, the specification of the `580 patent fails to describe that different types of modulation methods are different families of modulation methods and the Examiner will interpret different type of modulation method according to its plain meaning. For example, BPSK is a different type of modulation method than QPSK because they use different algorithms when performing modulation and the data modulated with BPSK cannot be demodulated with a QPSK demodulator or vice versa.

QPSK demodulator can demodulate a BPSK signal

Patent Owner uses Akl declaration and argues that a QPSK demodulator can demodulate a BPSK signal and "In Snell, there is no evidence of any incompatibility issue …" (Sep 2017 Remarks, pp. 8-9).

The Examiner disagrees. As can be seen from pp. 8-9 of the Sep 2017 Remarks, specific handling or modification must be made in order for a QPSK demodulator to demodulate a BPSK signal and Akl Declaration is silent on whether a BPSK demodulator can demodulate QPSK signal, which further implies that QPSK and BPSK are different modulation methods. Nonetheless, according to the interpretation set forth in IPR2014-00518, QPSK and BPSK are

different modulation methods. Further, whether QPSK and BPSK methods are incompatible has nothing to do with whether there is any incompatible issues in Snell because a system such as Snell can handle different modulation methods but has no incompatible issues.

The Third Sequence

Patent Owner alleges "there is no support for equating Kamerman's unacknowledged packet to the clamed `third sequence' that `is transmitted in the first modulation method and indicates that communication from the master to the slave has reverted to the first modulation method. …" (Sep 2017 Remarks, pp. 10-11).

The Examiner disagrees. As explained in Jul 2017 Final Office Action, Snell teaches the third sequence.

To the extent that a reviewing person does not agree that Snell teaches the third sequence, Kamerman is introduced to teach switching between different modulation methods in the limitation of transmitting the third sequence, i.e., the limitation "*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*," which only requires 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 explained in Jul 2017 Final Office Action at pp. 13-15, 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). The third sequence is the unacknowledged packet or a number of successive correctly acknowledged packet transmission.

Snell is cumulative to Boer and Samsung's Arguments

Patent Owner presents comparisons of the arguments Samsung made to supports its `580 reexamination request with those previously made to support its petition in the `519 IPR and the `114 IPR and "respectfully requests the Examiner consider these comparisons and terminate the `580 reexamination for lack of any SNQ….." (Sep 2017 Remarks, pp. 11-28).

As explained in Jul 2017 Final Office Action at pp. 16-17, Snell can be used to raise an SNQ because of the following reasons:

1. Snell presents a new, non-cumulative technological teaching that was not previously considered and discussed on the record *during the prosecution of the application that resulted in the patent for which reexamination is requested* (see Sep 2016 Order, pp. 9-11).

2. In all the previous IPRs, i.e., IPR2014-00518, IPR2014-00519, IPR2014-00514, IPR2014-00515, IPR2015-00114 and IPR2015-00118, PTAB did not institute review of claims 2 and 59 and therefore the teaching presented by Snell and references incorporated by Snell regarding claims 2 and 59 is new and non-cumulative. Although the reference of Boer is similar to Snell, there is no provision in MPEP that requires comparing two prior art references and determines if one is cumulative to another to determine if a SNQ exists for claims that have not been reexamined before.

Further, there is no provision in MPEP that requires comparing arguments made in a previous IPRs and the instant reexamination request to determine if one is cumulative to another or to determine if a SNQ exists for claims that have not been reexamined before.

Therefore the arguments presented in pp. 12-28 are considered but are not persuasive.

Snell and Destination Address

Patent Owner asserts that Snell does not inherently teach a destination address because Snell could have been implemented as a broadcast system … (Sep 2017 Remarks, pp. 28-30).

The Examiner disagrees.

First, the Examiner disagrees that the master/slave relationship is a limitation. Claim 2 is a single means claim and cannot invoke 112 6th paragraph, the whole claim of claim 2 comprises a transceiver which as it is known in the art as comprising a transmitter and a receiver. The only limitation in claim 2 that precedes with "configured to" is "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 explained in the rejection under 35 USC 102 in Section V of the Jul 2017 Final Office Action, Snell met this limitation. As to claim 59, in addition to the transceiver is configured to send the third sequence as in claim 2, the transceiver is also configured to transmit a first sequence and a second sequence as claimed, which is also disclosed by Snell. Because claims 2 and 59 do not invoke 112 6th paragraph and a destination address is not a structure, the term "destination address" is not part of a transceiver or the device of claims 2 and 59.

Accordingly, in response to Patent Owner's argument that the references fail to show certain features of Patent Owner's invention, it is noted that the features upon which Patent Owner relies (i.e., destination address) are not a structure in the rejected product claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Second, Snell's system is not a broadcast system. Akl declaration asserted "Snell, discloses a transceiver 30 (Snell at Fig. 1, 4:42-43) designed for peer-to-peer communications..." (Sep 2017 Remarks, p. 5). Therefore based on the Akl declaration, because Snell is not implemented as a broadcast system, it is inherent that Snell teaches a destination address even if a destination address is given patentable weight in the transceivers of claims 2 and 59.

For the above reasons, the rejections of claims 2 and 59 have not been overcome.

Signed:
/Yuzhen Ge /
Primary Examiner
Central Reexamination Unit 3992
(571) 272-7636

Conferees:

/Colin LaRose/

Ex Parte Reexamination Advisory Action *Before the Filing of an Appeal Brief*	**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--

THE PROPOSED RESPONSE FILED *18 September 2017* FAILS TO OVERCOME ALL OF THE REJECTIONS IN THE FINAL REJECTION MAILED *18 July 2017*.

1. ☒ Unless a timely appeal is filed, or other appropriate action by the patent owner is taken to overcome all of the outstanding rejection(s), this prosecution of the present *ex parte* reexamination proceeding WILL BE TERMINATED and a Notice of Intent to Issue *Ex Parte* Reexamination Certificate will be mailed in due course. Any finally rejected claims, or claims objected to, will be CANCELLED.

   THE PERIOD FOR RESPONSE IS EXTENDED TO RUN *5* MONTHS FROM THE MAILING DATE OF THE FINAL REJECTION. Extensions of time are governed by 37 CFR 1.550(c).

NOTICE OF APPEAL

2. ☐ An Appeal Brief is due two months from the date of the Notice of Appeal filed on _____ to avoid dismissal of the appeal. See 37 CFR 41.37(a). Extensions of time are governed by 37 CFR 1.550(c). See 37 CFR 41.37(e).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final action, but prior to the date of filing a brief, will not be entered because:
   (a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ They raise the issue of new matter (see NOTE below);
   (c) ☐ They are not deemed to place the proceeding in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.
   NOTE: _____ (See 37 CFR 1.116 and 41.33(a)).

4. ☐ Patent owner's proposed response filed _____ has overcome the following rejection(s):_____

5. ☐ The proposed new or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

6. ☐ For purposes of appeal, the proposed amendment(s) a)☐ will not be entered, or b)☐ will be entered and an explanation of how the new or amended claim(s) would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) patentable and/or confirmed: _____
   Claim(s) objected to: _____
   Claim(s) rejected: _____
   Claim(s) not subject to reexamination: _____

AFFIDAVIT OR OTHER EVIDENCE

7. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because patent owner failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence fails to overcome all rejections under appeal and/or appellant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: *See the attached documents*.

12. ☐ Note the attached Information Disclosure Statement(s), PTO/SB/08, Paper No(s) _____.

13. ☐ Other:_____..

/Yuzhen Ge/ Primary Examiner, Art Unit 3992		

cc: Requester (if third party requester)

UNITED STATES PATENT AND TRADEMARK OFFICE

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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 · 11/13/2017

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GE, YUZHEN

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
11/13/2017	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.

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THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS

ROPES & GRAY LLP
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BOSTON, MA 02199-3600

Date:

NOV 13 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)).

UNITED STATES PATENT AND TRADEMARK OFFICE

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Boston, MA 02199-3600

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 AND/OR § 1.182." (hereinafter "September 18, 2017 petition" or "instant petition").

The instant petition requests that the Office vacate the Final office action of July 18, 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. Prior to final rejection, another petition under 37 C.F.R. § 1.181 was dismissed.

12. On July 18, 2017, the Office issued a Final office action.

13. The instant petition requests that the Office vacate the Final office action of July 18, 2017.

APPLICABLE REGULATIONS

37 C.F.R. § 1.113 Final rejection or action.

(a) On the second or any subsequent examination or consideration by the examiner the rejection or other action may be made final, whereupon applicant's, or for *ex parte* reexaminations filed under § 1.510, patent owner's reply is limited to appeal in the case of rejection of any claim (§ 41.31 of this title), or to amendment as specified in § 1.114 or § 1.116. Petition may be taken to the Director in the case of objections or requirements not involved in the rejection of any claim (§ 1.181). Reply to a final rejection or action must comply with § 1.114 or paragraph (c) of this section. For final actions in an *inter partes* reexamination filed under § 1.913, see § 1.953.

(b) In making such final rejection, the examiner shall repeat or state all grounds of rejection then considered applicable to the claims in the application, clearly stating the reasons in support thereof.

(c) Reply to a final rejection or action must include cancellation of, or appeal from the rejection of, each rejected claim. If any claim stands allowed, the reply to a final rejection or action must comply with any requirements or objections as to form. (emphasis added)

APPLICABLE PROCEDURES

MPEP 1207.03 III (in part)

A position or rationale that changes the "basic thrust of the rejection" will also give rise to a new ground of rejection. *In re Kronig,* 539 F.2d 1300, 1303 (CCPA 1976). However, the examiner need not use identical language in both the examiner's answer and the Office action from which the appeal is taken to avoid triggering a new ground of rejection. It is not a new ground of rejection, for example, if the examiner's answer responds to appellant's arguments using different language, or restates the reasoning of the rejection in a different way, so long as the "basic thrust of the rejection" is the same. *In re Kronig,* 539 F.2d at 1303; see also *In re Jung,* 637 F.3d 1356, 1364–65 (Fed. Cir. 2001) (additional explanation responding to arguments offered for the first time "did not change the rejection" and appellant had fair opportunity to respond); *In re Noznick,* 391 F.2d 946, 949 (CCPA 1968) (no new ground of rejection made when "explaining to appellants why their arguments were ineffective to overcome the rejection made by the examiner"); *In re Krammes,* 314 F.2d 813, 817 (CCPA 1963) ("It is well established that mere difference in form of expression of the reasons for finding claims unpatentable or unobvious over the references does not amount to reliance on a different ground of rejection." (citations omitted)); *In re Cowles,* 156 F.2d 551, 1241 (CCPA 1946) (holding that the use of "different language" does not necessarily trigger a new ground of rejection).

DECISION

In the instant petition, Patent Owner requests that the Office invoke supervisory review to vacate the Final office action of July 18, 2017.

Patent Owner asserts that the examiner abused her discretion, and did not follow 37 C.F.R. § 1.113, such that the outstanding Final office action allegedly, prematurely closed prosecution.

Patent Owner primarily argues that it is entitled to another new non-final office action because the examiner allegedly did not respond to each of Patent Owner's arguments. In making an action final, the examiner is not required to respond to every argument made by Patent Owner.

Rather, pursuant to 37 C.F.R. § 1.113(b), the examiner "shall repeat or state all grounds of rejection then considered applicable to the claims in the application, clearly stating the reasons in support thereof." A review of the record shows that the examiner repeated or stated all grounds of rejection then considered applicable to the claims in the application, and clearly stated the reasons in support thereof, in the subject final rejection.

Patent Owner conversely argues that the examiner made new grounds of rejection because the examiner apparently, actually responded to all of Patent Owner's arguments. Responding to Patent Owner's arguments is not considered a new ground of rejection.

A review of the record shows that the Final office action did not take any tact which can fairly be considered a new ground of rejection. It did not change the statutory basis of the rejection. It was not based on a different teaching. It did not cite to new part(s) of the reference(s) in support of obviousness. And, it did not cite to a different part of the claim in support of a new matter rejection.

Keeping in mind that the ultimate criterion of whether a rejection is considered 'new' is whether the appellant had fair opportunity to react to the thrust of the rejection, Patent Owner indeed had such an opportunity to respond here. Upon receipt of the initial rejection, Patent Owner had notice that it had to show that the art of record, namely Yamano, does not teach, or teaches away from, a destination address.

The last basis for the instant petition was that the Final office action allegedly contained a new ground of rejection in that it ostensibly cited a new definition. Assuming for the sake of argument that the final rejection did include a new definition, that inclusion alone would not constitute a new ground of rejection. The use of extrinsic evidence, such as dictionary definitions, does not constitute a new grounds of rejection.

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 the last action final.

Accordingly, Patent Owner's September 18, 2017 petition is dismissed.

CONCLUSION

1. Patent Owner's September 18, 2017 petition to invoke supervisory review, to vacate the Final office action of July 18, 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

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

SUPPLEMENTAL PETITION REQUESTING THE DIRECTOR TO EXERCISE HIS SUPERVISORY AUTHORITY PURSUANT TO 37 C.F.R. § 1.181 AND/OR § 1.182

Pursuant to 37 C.F.R. § 1.181 and/or § 1.182, and further to the Petition Requesting the Director to Exercise His Supervisory Authority Pursuant to 37 C.F.R. § 1.181 and/or 1.182, filed September 18, 2017 in the above referenced matter ("Initial Petition"), Rembrandt Wireless Technologies, LP ("Rembrandt") respectfully submits this Supplemental Petition to aid the Director in deciding the Initial Petition. This filing is timely, as the information in the Supplemental Petition first became available in an Advisory Action issued on October 16, 2017 in the above referenced matter ("Advisory Action"). In the Advisory Action, the Examiner conceded that the Final Office Action contained new arguments not previously presented to Rembrandt, contrary to MPEP § 2271. The Examiner's concession supports Rembrandt's request in its Initial Petition that the Office Action of July 18, 2017 should be withdrawn, as it

was made final prematurely. Rembrandt submits this Supplemental Petition to ensure that all relevant facts are before the Director when the decision is rendered on the Initial Petition.

Statement of Facts and Issues Relevant to Petition

1) On September 27, 2017, the Office issued an Order granting reexamination of claims 2 and 59 of the '580 patent.
2) On January 24, 2017, the Office issued a Non-Final Office Action in the '808 case which, *inter alia*, raised issues beyond the scope of reexamination.
3) On February 9, 2017, Rembrandt filed a petition asking the Director to withdraw the January 24, 2017 Non-Final Office Action and revise and reissue another Non-Final Office Action.
4) On March 27, 2017, the CRU Director vacated the January 4, 2017 Non-Final Office Action 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."
5) On March 31, 2017, the Office issued a Non-Final Office Action.
6) On June 30, 2017, Rembrandt filed a Reply to the Non-Final Office Action. The Reply included arguments for patentability supported by evidence submitted through Dr. Robert Akl (37 C.F.R. § 1.132 Declaration of Dr. Robert Akl (hereinafter "Akl Dec.")).
7) On July 18, 2017, the Office issued a Final Office Action.
8) On September 18, 2017, Rembrandt filed a Response to Final Office Action ("Response") that addressed the technical and legal errors in the Final Office Action.
9) On September 18, 2017, concurrent with the filing of the Response, Rembrandt filed the Initial Petition asking the Director to vacate the Final Office Action or at least make it non-final. The Initial Petition was based on, for example, the Examiner's failure to follow the

requirements of MPEP § 2271 for the issuance of a final office action in an *ex parte* reexamination.

10) On October 16, 2017, the Office issued the Advisory Action in which the Examiner conceded that she included new arguments in the final Office Action even though Rembrandt did not amend the claims or cite any new art (Advisory Action at 3).

The Examiner Misunderstands the Requirements for a Final Office Action in *Ex Parte* Reexamination

As illustrated in the Advisory Action and as pointed out in the Initial Petition, the Examiner misunderstands the requirements that must be met before a final office action may be issued in an *ex parte* reexamination proceeding. Specifically, in the Advisory Action, the Examiner relies on MPEP § 706.07(a), the initial examination provision, as justification for designating the Final Office Action as a final action in an *ex parte* reexamination. Advisory Action at 3. While it may be true that the "criteria for making a rejection final in an *ex parte* reexamination proceeding is analogous to that set forth in MPEP § 706.07(a) for making a rejection final in an application," that analogy fails where the requirements of MPEP § 706.07 conflict with those of MPEP § 2271. MPEP § 2271 unambiguously sets forth the standard to be met before an office action may be made final in an *ex parte* reexamination, and it clearly differs from that of § 706.07 and from the standard used by the Examiner in the present proceeding.

Specifically, § 2271 provides that "the examiner will **twice provide** the patent owner with such information and references as may be useful in defining the position of the Office as to unpatentability **before the action is made final**." MPEP § 2271. MPEP § 706, the section the Examiner cites in the Advisory Action, provides that a **"[s]econd or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection** that is neither necessitated by applicant's amendment of the claims, nor based on information

submitted in an information disclosure statement filed during the period set forth in 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p)." MPEP § 706.07(a). Accordingly, *ex parte* reexamination requires the examiner to "twice provide the patent owner with such information and references as may be useful in defining the position of the Office as to unpatentability before the action is made final" (MPEP § 2271), while initial examination permits *any* subsequent action to be final unless the examiner sets forth a new ground of rejection not necessitated by the Applicant's action. In other words, initial examination is much more permissive than *ex parte* reexamination prosecution in allowing for the designation of an Office action as final.

The MPEP explains the reasoning behind this difference – the unavailability of continuation applications and requests for continued examination in *ex parte* prosecution:

> Both the patent owner and the examiner should recognize that a reexamination proceeding may result in the final cancellation of claims from the patent and that the patent owner does not have the right to renew or continue the proceedings by refiling under 37 CFR 1.53(b) or 37 CFR 1.53(d) or former 37 CFR 1.60 or 1.62, nor by filing a request for continued examination under 37 CFR 1.114. Complete and thorough actions by the examiner coupled with complete responses by the patent owner, including early presentation of evidence under 37 CFR 1.131(a) or 37 CFR 1.132, will go far in avoiding such problems and reaching a desirable early termination of the reexamination prosecution.

MPEP § 2271.

Accordingly, the Examiner's reliance on the requirements of MPEP § 706.07 without consideration of MPEP § 2271 is not only procedurally incorrect, but it results in a reexamination which fails to "deal justly with the patent owner," as explained in detail below. *Id.*

Office Action of July 18, 2017 was Made Final Prematurely

Due to the Examiner's reliance on MPEP § 706.07, which came to light in the Advisory Action, the Examiner prematurely deemed final the Final Office Action. As will be shown

through the discussion below, the Examiner concedes that new arguments were presented for the first time in the Final Office, which is contrary to the requirement of MPEP § 2271 that the Examiner "**twice** provide the patent owner with such information and references as may be useful in defining the position of the Office as to unpatentability before the action is made final." (emphasis added).

The Examiner Concedes that New Arguments Were Presented in the Final Office Action of July 18, 2017

While addressing Rembrandt's Response to Final Office Action in the Advisory Action, the Examiner concedes that new arguments were presented. Therefore, the finality of the Final Office Action must be rescinded.

Specifically, in the Advisory Action the Examiner states that "The Examiner would like to point out that **the new arguments in the July 2017 Final Office Action** were set forth based on the new arguments presented by Rembrandt in the June 2017 PO Response." Advisory Action at 3 (emphasis added). Accordingly, given the Examiner's admission, there can be no question that the Examiner improperly raised new arguments in the Final Office Action. Tellingly, the Examiner does not claim to be rebutting or noting errors in Rembrandt's arguments. Instead, the Examiner concedes that new arguments were raised to address Rembrandt's rebuttal arguments.

Furthermore, when one considers the specific new arguments made by the Examiner, it is clear that these arguments are not permissible rebuttal arguments refuting or noting errors in Rembrandt's positions. Instead, the new arguments represent a change in position by the Examiner to avoid addressing Rembrandt's arguments. While Rembrandt described these new arguments in the Initial Petition, the Examiner's new arguments bear repeating here to illustrate that the newly presented arguments were not rebuttal arguments, but set forth newly-taken

positions by the Examiner. Accordingly, Rembrandt highlights the following new arguments set forth by the Examiner in the Final Office Action.

New Argument 1: Snell Discloses Inherently a Destination Address

In the Final Office Action, the Examiner argued for the first time that "Snell inherently teaches" a destination address. Final Office Action at 41-42. This is clearly a new argument because in the Non-Final Office Action the Examiner did not give this feature patentable weight for purposes of the anticipation rejection (Non-Final Office Action at 9-10), and relied on Yamano as disclosing this feature in the two obviousness rejections (Non-Final Office Action at 14, 16-17). Because the Examiner "moves the goal posts" with regard to the destination address feature instead of noting some deficiency in Rembrandt's position, the Examiner set forth for the first time in the Final Office Action "information … [that] may be useful in defining the position of the Office as to unpatentability." MPEP § 2271. Such information must be "twice provid[ed to] the patent owner … before the action is made final." *Id.* Therefore, the finality of the Final Office Action must be rescinded.

New Argument 2: New Definition of "Different Type[s]" of Modulation Methods

In the Final Office Action, the Examiner set forth for the first time a new definition for "different type[s]" of modulation methods. Final Office Action at 31-32. In particular, the Examiner makes a new argument that first and second modulation methods are "different type[s]" if "they use different algorithms when performing modulation and the data modulated with the [first modulation method] cannot be demodulated with a [second modulation method] demodulator or vice versa." Final Office Action at 31. The Examiner previously argued that "different types of modulation method [sic]" are "modulation methods that are incompatible with one another." Non-Final Office Action at 7 (citing the PTAB's Final Written Decision in the '518

IPR at 12:18-19; Request at 12, 19-23). The Examiner set forth the new definition for "different type[s]" of modulation methods after Rembrandt argued that the previous definition was incorrect. In other words, the Examiner did not rebut Rembrandt's position that the previous definition was incorrect, but instead presented a completely new definition for the term. Once again, instead of rebutting Rembrandt's position, the Examiner "moves the goal posts" with a new definition for a claim term, which was set forth for the first time in the Final Office Action. Such information must be "twice provid[ed to] the patent owner … before the action is made final." MPEP §2271. Therefore, the finality of the Final Office Action must be rescinded.

The Examiner Continues to Ignore the Content Requirements for a Final Office Action

As discussed in the Initial Petition, a Final Office Action must (i) include a rebuttal of any arguments raised in a patent owner's response; (ii) consider any evidence traversing the rejections and, if the evidence is insufficient to overcome the rejections, specifically explain why; and as discussed above, (iii) limit the arguments to those previously made to "twice provide the patent owner with such information … as may be useful in defining the position of the Office". MPEP § 2271; *see also* Initial Petition at 2. As shown through the discussion above, the Advisory Action illustrates how the Examiner failed to limit the arguments in the Final Office Action to those previously made to "twice provide the patent owner with such information … as may be useful in defining the position of the Office". The Advisory Action also perpetuates the Final Office Action's failure to include a rebuttal of any arguments raised in a patent owner's response, and consider any evidence traversing the rejections. Rembrandt briefly discusses these deficiencies for the sake of completeness.

As discussed on pages 7 and 8 of the Initial Petition, the Final Office Action failed to address Rembrandt's argument that, if the Examiner is correct and claims 2 and 59 are single

means claims, then the reexamination cannot proceed because no prior art rejection can be issued, as doing so would necessarily be based on a speculative assumption as to the meaning of the claims. Initial Petition at 7-8. When given a second chance to rebut these arguments by Rembrandt in the Advisory Action, the Examiner maintains her position that claims 2 and 59 are single means claims, but does not provide any rebuttal of Rembrandt's case law showing that the reexamination of such claims must be terminated. *See, e.g.,* Advisory Action at 4-6.

As discussed on pages 8 and 9 of the Initial Petition, the Final Action failed to include a rebuttal of Rembrandt's arguments that the Harris documents were not publicly available at the time prior to the invention of the present application and Rembrandt's arguments that the relevant portions of the Harris documents were not incorporated by reference into Snell. Initial Petition at 8-9. When given a second chance to rebut these arguments by Rembrandt in the Advisory Action, the Examiner repeats her previous positions, and never addresses Rembrandt's case law directly refuting the Examiner's positions. *See, e.g.,* Advisory Action at 4-6.

Accordingly, as illustrated in both the Final Office Action and the Advisory Action, the Examiner has failed to include a rebuttal of the arguments raised in the Response and has failed to explain why Rembrandt's arguments and evidence were not sufficient to overcome the rejections. Without such rebuttal or explanation, Rembrandt may not "readily judge the advisability of an appeal." MPEP § 2271. The finality of the Final Office Action must be rescinded, and Rembrandt must be provided with sufficient rebuttal of its argument and/or explanation of the insufficiency of its arguments to "readily judge the advisability of an appeal." *Id.*

Conclusion

In light of the above and the reasons set forth in the Initial Petition, Rembrandt respectfully requests that the Director exercise his supervisory authority and either vacate the Final Office Action of July 18, 2017 or at least make it non-final, as requested in Rembrandt's Initial Petition.

This Supplemental Petition is timely filed, i.e., within two months of the Advisory Action mailed October 16, 2017. To the extent the Office believes any rules prevent its consideration, 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 paper may be charged to Counsel's Deposit Account Number 02-2135.

Respectfully submitted,

Date: November 14, 2017 By: /Michael V. Battaglia/

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CERTIFICATE OF SERVICE

It is hereby certified that on this 14th day of November, 2017, the foregoing **SUPPLEMENTAL 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 Acknowledgement Receipt

EFS ID:	30943396
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:	14-NOV-2017
Filing Date:	12-SEP-2016
Time Stamp:	13:16:48
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		SuppPetition1.pdf	74921 9de2934df6a2a0df39ad005aef87e4a4306e3def	yes	10

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Receipt of Petition in a Reexam	1	9
	Reexam Certificate of Service	10	10
Warnings:			
Information:			
	Total Files Size (in bytes):	74921	

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.

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CERTIFICATE OF SERVICE

It is hereby certified that on this 27th day of November, 2017, the foregoing **REQUEST FOR RECONSIDERATION OF THE DECISION ON PETITION UNDER 37 C.F.R. § 1.181 OF NOVEMBER 13, 2017** 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/
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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

REQUEST FOR RECONSIDERATION OF THE
DECISION ON PETITION UNDER 37 C.F.R. § 1.181 OF NOVEMBER 13, 2017

Pursuant to 37 C.F.R. § 1.181 and/or § 1.182, and further to the Petition Requesting the Director to Exercise His Supervisory Authority Pursuant to 37 C.F.R. § 1.181 and/or 1.182, filed September 18, 2017 in the above referenced matter ("Initial Petition"), and the Supplemental Petition Requesting the Director to Exercise His Supervisory Authority Pursuant to 37 C.F.R. § 1.181 and/or 1.182 ("Supplemental Petitioner"), Rembrandt Wireless Technologies, LP ("Rembrandt") respectfully requests reconsideration of the Decision on Petition Under 37 C.F.R. § 1.181 of November 13, 2017 ("Decision"). Rembrandt further requests the Director exercise his supervisory authority and either vacate the Final Office Action of July 18, 2017 or at least make it non-final, as requested in Rembrandt's Initial Petition and Supplemental Petition. Finally, Rembrandt requests that the Office's decision on this Request for Reconsideration be made a final agency action. *See, e.g.,* MPEP § 1002.02.

Statement of Facts and Issues Relevant to Petition

1) On September 27, 2017, the Office issued an Order granting reexamination of claims 2 and 59 of the '580 patent.

2) On January 24, 2017, the Office issued a Non-Final Office Action in the '808 case which, *inter alia*, raised issues beyond the scope of reexamination.

3) On February 9, 2017, Rembrandt filed a petition asking the Director to withdraw the January 24, 2017 Non-Final Office Action and revise and reissue another Non-Final Office Action.

4) On March 27, 2017, the CRU Director vacated the January 4, 2017 Non-Final Office Action 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."

5) On March 31, 2017, the Office issued a Non-Final Office Action.

6) On June 30, 2017, Rembrandt filed a Reply to the Non-Final Office Action. The Reply included arguments for patentability supported by evidence submitted through Dr. Robert Akl (37 C.F.R. § 1.132 Declaration of Dr. Robert Akl (hereinafter "Akl Dec.")).

7) On July 18, 2017, the Office issued a Final Office Action.

8) On September 18, 2017, Rembrandt filed a Response to Final Office Action ("Response") that addressed the technical and legal errors in the Final Office Action.

9) On September 18, 2017, concurrent with the filing of the Response, Rembrandt filed the Initial Petition asking the Director to vacate the Final Office Action or at least make it non-final. The Initial Petition was based on, for example, the Examiner's failure to follow the requirements of MPEP § 2271 for the issuance of a final office action in an *ex parte* reexamination.

10) On October 16, 2017, the Office issued the Advisory Action in which the examiner admitted that she included new arguments in the final Office Action even though Rembrandt did not amend the claims or cite any new art (Advisory Action at 3).

11) On November 13, 2017, the Director of the Central Reexamination Unit ("CRU") issued a decision denying the September 18 Initial Petition ("CRU's Decision" or "Decision"). In the CRU's Decision, the CRU Director makes errors of procedure and fact that justify reconsideration of the September 18 Initial Petition for the reasons discussed below.

12) On November 14, 2017, prior to receipt of the CRU's Decision, Rembrandt filed the Supplemental Petition, discussing admissions made by the Examiner in the October 16 Advisory Action which support Rembrandt's argument that the Final Office Action should be vacated or rendered non-final.

The CRU's Decision Makes Errors of Procedure and Fact Justifying Reconsideration

In the CRU's Decision, the CRU Director makes numerous errors that justify reconsideration of the Decision. These errors include:

1. The CRU Director's failure to consider the timing and content requirements for final Office actions in *ex parte* reexaminations provided by MPEP § 2271. Decision at 4.
2. An allegation that the Final Office Action "did not take any tact which can fairly be considered a new ground of rejection. … It was not based on a different teaching. It did not cite to new part(s) of the reference(s) in support of the obviousness." *Id.*
3. An allegation that the Examiner's newly set forth construction of a claim term did not amount to a new ground of rejection as it "ostensibly cited a new definition." *Id.*

As will be shown through the discussion below, each of these errors justifies reconsideration of the Decision and compel vacating or rendering non-final the Final Office

Action. Finally, Rembrandt requests reconsideration of the Decision so that the Office may consider the arguments presented in the November 14 Supplemental Petition.

The CRU's Decision Fails to Cite and Apply the Correct Procedure for Issuing a Final Office Action in *Ex Parte* Reexamination

MPEP § 2271 provides timing and content requirements for final Office actions in *ex parte* reexaminations. MPEP § 2271 identifies differences between the requirements for final Office actions in initial prosecution and those in *ex parte* reexamination. *Compare* MPEP § 2271 *with* MPEP § 706.07. The Decision fails to cite or apply MPEP § 2271, and instead cites 37 C.F.R. § 1.113 as an "Applicable Regulation" and MPEP § 1207.03 as an "Applicable Procedure." Decision at 3. The Examiner similarly failed to consider MPEP § 2271 in the Advisory Action, relying instead on MPEP § 706.07, the standard for final office action during initial prosecution. Advisory Action at 3-4. Reconsideration of the CRU's Decision is warranted so that the Office may apply the correct guidance and standards provided by MPEP § 2271.

First, Rembrandt notes that 37 C.F.R. § 1.113 essentially provides a baseline prohibition on making a first action final in both initial examination and *ex parte* reexamination. 37 C.F.R. § 1.113(a). 37 C.F.R. § 1.113 does not describe when a final office action is appropriate, nor does it describe the content requirements for a final office action, those standards are left to MPEP §706.07 (for initial examination) and MPEP § 2271 (for *ex parte* reexamination).

MPEP § 2271 provides the following requirements for the timing of a final Office action in an *ex parte* reexamination:

> Before a final action is in order, a clear issue should be developed between the examiner and the patent owner. To bring the prosecution to a speedy conclusion and at the same time deal justly with the patent owner and the public, **the examiner will twice provide the patent owner with such information and**

> **references as may be useful in defining the position of the Office as to unpatentability before the action is made final.** Initially, the decision ordering reexamination of the patent will contain an identification of the substantial new questions of patentability that the examiner considers to be raised by the cited prior art. In addition, the first Office action will reflect the consideration of any arguments contained in the request, any amendments submitted with a request under 35 U.S.C. 302, any owner's statement filed pursuant to 37 CFR 1.530, and any reply thereto by the requester, and should fully apply all relevant grounds of rejection to the claims.

MPEP § 2271 (emphasis added).

MPEP § 2271 further explains the content requirements of a final Office action in *ex parte* reexamination:

> Both the patent owner and the examiner should recognize that a reexamination proceeding may result in the final cancellation of claims from the patent and that the patent owner does not have the right to renew or continue the proceedings by refiling under 37 CFR 1.53(b) or 37 CFR 1.53(d) or former 37 CFR 1.60 or 1.62, nor by filing a request for continued examination under 37 CFR 1.114. **Complete and thorough actions by the examiner coupled with complete responses by the patent owner, including early presentation of evidence under 37 CFR 1.131(a) or 37 CFR 1.132, will go far in avoiding such problems and reaching a desirable early termination of the reexamination prosecution**.
>
> In making the final rejection, all outstanding grounds of rejection of record should be carefully reviewed and any grounds of rejection relied on should be reiterated. The grounds of rejection must (in the final rejection) be clearly developed to such an extent that the patent owner may readily judge the advisability of an appeal. However, where a single previous Office action contains a complete statement of a ground of rejection, the final rejection may refer to such a statement and also **should include a rebuttal of any arguments raised in the patent owner's response**.

MPEP § 2271 (emphasis added).

In other words, MPEP § 2271 imposes timing requirements ("the examiner will twice provide the patent owner with such information and references as may be useful in defining the