DESCRIPTION

CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD

This is a continuation of application no. 10/522,980 filed February 2, 2005, the entire content of which is expressly incorporated by reference herein.

Technical Field

The present invention relates to a transmission apparatus and transmission method which transmits signals from a plurality of transmission antennas like an MIMO (Multi-Input/Multi-Output) communication and adopts a CDMA (Code Division Multiple Access) scheme.

Background Art

An MIMO (Multi-Input / Multi-Output) communication is attracting attention as a technology for realizing communications of large-volume data such as images in recent years. In the MIMO communication, different items of transmission data (substreams) are transmitted from a plurality of antennas on a transmitting side and the plurality of items of transmission data mixed along a propagation path is separated into the original items of transmission data on a receiving side using a propagation path estimated value (e.g., see FIG.4 in the Unexamined Japanese Patent Publication No.2002-44051).

In the MIMO communication, a signal transmitted from

a transmission apparatus is actually received by at least the same number of antennas as transmission apparatuses and characteristics of propagation paths between the antennas are estimated based on pilot signals inserted in the signals received by the respective antennas. When, for example, there are two antennas on the transmitting side and two reception antennas, this estimated propagation path characteristic H is expressed by a matrix with 2 rows × 2 columns. In the MIMO communication, transmission signals transmitted from the respective transmission antennas are obtained based on an inverse matrix of this propagation path characteristic H and received signals obtained from the respective reception antennas.

Thus, in the MIMO communication, it is possible to separate signals sent from a plurality of transmission antennas at the same timing and same frequency in substream units on the receiving side, and thereby transmit an amount of data proportional to the number of transmission antennas and realize a high-speed, high-volume communication.

However, a reception apparatus which carries out a conventional MIMO communication has a problem that when an interference compensation error occurs due to influences of noise, etc., in a process of separating (compensating for interference) a plurality of items of transmission data, the error rate characteristic of reception data deteriorates. Deterioration of an error

rate characteristic of data expected to have higher channel quality than that of other data such as data directed to users having poor channel quality, control information of a communication system or retransmission information in particular has a greater influence on the communication system.

In order to prevent deterioration of the error rate characteristic of reception data due to the interference compensation error, a method of transmitting specific data assigned to only one antenna and a method of transmitting the same data assigned to a plurality of antennas are available. However, using such methods contrarily reduces the transmission rate of the communication system, causing a problem that the data transmission efficiency deteriorates.

Disclosure of Invention

It is an object of the present invention to improve reception performance of specific data on a receiving side while maintaining the transmission efficiency of a communication system.

This object can be attained with a CDMA transmission apparatus which transmits different code division multiplexed signals from a plurality of transmission antennas by apportioning specific data to a plurality of antennas and spreading/modulating the specific data with different spreading codes assigned thereto before being transmitted.

Brief Description of Drawings

FIG.1 is a block diagram showing the main configuration of a CDMA transmission apparatus according to Embodiment 1 of the present invention;

FIG.2 is a block diagram showing the main internal configuration of a control section according to Embodiment 1 of the present invention;

FIG.3 illustrates an example of the configuration of a transmission signal of the CDMA transmission apparatus according to Embodiment 1 of the present invention;

FIG.4 illustrates another example of the configuration of a transmission signal of the CDMA transmission apparatus according to Embodiment 1 of the present invention; and

FIG.5 illustrates an example of the configuration of a signal transmitted by a conventional CDMA transmission apparatus.

Best Mode for Carrying out the Invention

With reference now to the attached drawings, an embodiment of the present invention will be explained in detail below.

(Embodiment 1)

FIG.1 is a block diagram showing the main configuration of a CDMA transmission apparatus according

to Embodiment 1 of the present invention. Here, a case where this CDMA transmission apparatus has two antennas will be explained as an example, but the number of antennas is not limited to 2 and the number of antennas can be 3 or more.

This CDMA transmission apparatus is provided with an S/P conversion section 101, spreading sections 102 (102-1 to 102-N), 103 (103-1 to 103-N), addition sections 104-1, 104-2, transmission sections 105-1, 105-2, antennas 106-1, 106-2, a spreading control section 107 and a control section 110. Of these sections, suppose the sections from the spreading sections 102 to the antenna 106-1 are collectively called a "first transmission system" while the sections from the spreading sections 103 to the antenna 106-2 are collectively called a "second transmission system."

In FIG.1, a transmission signal including data D_1, D_2, ···, D_N, D_{N+1}, ···, D_{2N} to be sent to users 1, 2, ···, N, N+1, ···, 2N (that is, the number of users is 2N) is input to the control section 110.

The control section 110 recognizes the type of data included in the transmission signal input, and then outputs the transmission signal to the S/P conversion section 101. Furthermore, the control section 110 outputs a control signal C1 to the S/P conversion section 101 and spreading control section 107 according to the type of data recognized. Furthermore, the control section 110 outputs a control signal C2 to the S/P

conversion section 101 and spreading control section 107 according to a retransmission flag notified from a reception section (not shown) which has received a retransmission request from the receiving side. A more specific operation of the control section 110 will be explained later.

The S/P conversion section 101 converts the transmission signal output from the control section 110 to parallel data separated for each transmission system and outputs the parallel data to their corresponding spreading sections 102-1 to 102-N and spreading sections 103-1 to 103-N.

In the case of the spreading section 102, the spreading sections 102-1 to 102-N corresponding to the respective parallel data output from the S/P conversion section 101 carry out spreading processing on the respective data under the control of the spreading control section 107 and output the spread data to the addition section 104-1. Likewise, in the case of the spreading section 103, the spreading sections 103-1 to 103-N corresponding to the respective parallel data output from the S/P conversion section 101 carry out spreading processing on the respective data under the control of the spreading control section 107 and output the spread data to the addition section 104-2.

The addition sections 104-1, 104-2 add up (multiplex) the parallel data output from the respective spreading sections 102, 103 and output the addition

results to the transmission sections 105-1, 105-2.

The transmission sections 105-1, 105-2 carry out predetermined radio transmission processing such as up-conversion, etc., on the multiplexed signals output from the addition sections 104-1, 104-2 and send this data through the antennas 106-1, 106-2 by radio.

FIG.2 is a block diagram showing the main internal configuration of the control section 110. The control section 110 includes a data recognition section 111, a buffer 112 and a retransmission control section 113.

The data recognition section 111 recognizes the type of data included in the transmission signal based on the channel quality and moving speed on the receiving side output from the channel quality measuring section and moving speed measuring section (both are not shown) and then writes the transmission signal in the buffer 112. Furthermore, the data recognition section 111 outputs the control signal C1 to the S/P conversion section 101 and spreading control section 107 according to the recognized type of data. The retransmission control section 113 outputs the control signal C2 to the S/P conversion section 101 and buffer 112 according to the retransmission flag notified from the reception section (not shown) which has received a retransmission request from the receiving side. The buffer 112 outputs the buffered data to the S/P conversion section 101 based on the control signal C2 output from the retransmission control section 113.

Next, the operation of the CDMA transmission apparatus in the above described configuration will be explained.

The recognition processing on the above described type of data carried out by the data recognition section 111 refers to processing of recognizing and distinguishing data to which the CDMA transmission apparatus according to this embodiment gives higher priority in transmission (hereinafter referred to as "specific data") from other data. Here, the specific data more specifically refers to a control signal for controlling a communication with the receiving side or data to be transmitted now to the receiving side having poor channel quality (channel quality of a predetermined level or lower) or the receiving side having a higher moving speed (moving speed of a predetermined level or higher). The data recognition section 111 notifies the S/P conversion section 101 and spreading control section 107 of specific data information indicating which data is specific data using the control signal C1.

The specific data also includes data whose retransmission is requested by the receiving side (retransmission data) or data having a large retransmission count (retransmission count is equal to or higher than a predetermined count). The specific data is notified by the retransmission control section 113 to the S/P conversion section 101 and spreading control section 107 using the control signal C2.

The S/P conversion section 101 apportions the transmission data output from the control section 110 to the spreading sections 102-1 to 102-N, 103-1 to 103-N based on the specific data information notified by the control signals C1, C2. When the transmission data is not specific data but data indicating simple information, the transmission data is apportioned substantially equally to the respective spreading sections to improve the transmission efficiency. On the other hand, when the transmission data is specific data, this data is read from the buffer 112 at least twice and this data is apportioned so as to be transmitted using both of the first transmission system and second transmission system or more transmission systems (at least two transmission systems when there are three or more transmission systems).

The spreading control section 107 controls the spreading sections 102, 103 using a control signal C3 so that the specific data apportioned to the first transmission system and second transmission system is spread/modulated using different spreading codes (differing between the first transmission system and second transmission system).

The specific data and other data spread/modulated by the respective spreading sections are multiplexed by the addition sections 104-1, 104-2 for each transmission system and transmitted by radio through the transmission sections 105-1, 105-2 and antennas 106-1, 106-2.

FIG.3 illustrates an example of the configuration of a transmission signal of the CDMA transmission apparatus according to this embodiment. Here, a case where the specific data is retransmission data will be explained as an example.

As shown in this figure, data 1 transmitted at a first transmission timing is data directed to user 1 to user 2N and the data 1 directed to user 1 to user N is transmitted from the first transmission system (antenna 1), while the data 1 directed to user (N+1) to user 2N is transmitted from the second transmission system (antenna 2). The above described data is not specific data. On the other hand, retransmission data is also transmitted accompanying the data 1. This retransmission data is specific data, apportioned to the first transmission system and second transmission system based on the configuration of the CDMA transmission apparatus according to this embodiment and spread/modulated using different spreading codes. Data 2 which is transmitted at the next transmission timing also has the same configuration as that of the data 1 as shown in the figure.

FIG.4 illustrates another example of the configuration of a transmission signal of the CDMA transmission apparatus according to this embodiment. Here, a case where the data 1 directed to user 1 to user N and the data 2 likewise directed to user 1 to user N are transmitted simultaneously at a first transmission

timing using the first transmission system (antenna 1) and second transmission system (antenna 2). As with the case described above, the data is not specific data. On the other hand, retransmission data is also transmitted accompanying the data 1 and data 2. This retransmission data is specific data, apportioned to the first transmission system and second transmission system based on the configuration of the CDMA transmission apparatus according to this embodiment and spread/modulated using different spreading codes. The data transmitted at the next transmission timing is data directed to user (N+1) to user 2N as shown in the figure.

FIG.5 illustrates an example of the configuration of a signal transmitted by a conventional CDMA transmission apparatus under the same condition settings as those described above. For example, when an interference compensation error occurs in a signal transmitted from the antenna 1, retransmission data results in a reception error, and therefore the transmitting side further repeats retransmission, which deteriorates the transmission efficiency of the communication system.

As explained above, the CDMA transmission apparatus according to this embodiment uses two transmission systems to transmit different items of data, and thus maintains high transmission efficiency which is an original feature of an MIMO communication. On the other hand, for data to be transmitted with higher priority,

two transmission systems (at least two transmission systems when there are three or more transmission systems) are always used and such data is spread/modulated using different spreading codes, and therefore it is possible to separate signals through despreading processing even when an interference compensation error increases due to influences of a mixture of noise, etc., on the receiving side, that is, when sufficient separation performance using the MIMO technology cannot be obtained.

Thus, this embodiment can improve the reception performance on the receiving side for specific data while maintaining the transmission efficiency of the communication system.

When a turbo code is used as an error correcting code for the CDMA transmission apparatus according to this embodiment, systematic bits can also be used as the specific data. When turbo decoding is performed using systematic bits and parity bits, the systematic bits have large influences on the error rate characteristic of the data after the turbo decoding. Therefore, using systematic bits as the specific data can improve the reception quality of the systematic bits and can improve the error rate characteristic of the data after the turbo decoding.

Furthermore, when transmit power control is performed, transmit power may also be used instead of channel quality. This is because when transmit power control is performed, in the case of poor channel quality,

the transmit power must also have increased according to the channel quality.

Furthermore, a retransmission count of data can also be used instead of the channel quality. This is because in the case of poor channel quality, the retransmission count of data must also have increased.

The CDMA transmission apparatus according to the present invention is also applicable to a transmission apparatus using a multicarrier scheme such as an OFDM (Orthogonal Frequency Division Multiplex), and can thereby provide a multicarrier transmission apparatus having operations and effects similar to those described above. A transmission scheme using multicarriers has a symbol rate set to a low level (long symbol length) and has the effect of reducing interference among codes due to multipaths in a multipath environment. Furthermore, by inserting guard intervals, it is also possible to remove interference among codes due to multipaths.

Here, the case where the components of the present invention are incorporated in one CDMA transmission apparatus has been explained as an example, but the present invention is also applicable to a case where spreading sections 102 to antenna 106-1, spreading sections 103 to antenna 106-2, spreading control section 107, and control section 110 are incorporated in different apparatuses, constituting one communication system as a whole.

Furthermore, an MIMO communication has been

explained as an example here, but the present invention is not limited to the MIMO communication and is also applicable to a case where different items of data are transmitted in parallel from a plurality of antennas (transmission systems).

The CDMA transmission apparatus according to the present invention can be mounted on a communication terminal apparatus and base station apparatus in a mobile communication system, and can thereby provide a communication terminal apparatus and base station apparatus having operations and effects similar to those described above.

Here, the case where the present invention is constructed by hardware has been explained as an example, but the present invention can also be implemented by software.

As described above, the present invention can improve reception performance on the receiving side for specific data while maintaining the transmission efficiency of the communication system.

This application is based on the Japanese Patent Application No. 2003-132133 filed on May 9, 2003, entire content of which is expressly incorporated by reference herein.

Industrial Applicability

The present invention is applicable to a transmission apparatus and transmission method, etc.,

which transmits signals from a plurality of transmission antennas like an MIMO communication and adopts a CDMA scheme.

What is claimed is:

1. A transmitting apparatus employing a MIMO (multi-input/multi-output) scheme of transmitting a plurality of data items for a same receiving apparatus using a plurality of antennas in parallel, the transmitting apparatus comprising:

a mapping section that maps the plurality of data items to one of the plurality of antennas; and

a transmitting section that transmits the plurality of data items using the one of the plurality of antennas to the receiving apparatus,

wherein the mapping section maps a specific data item of the plurality of data items such that a communication employing the MIMO scheme is not executed.

2. The transmitting apparatus according to claim 1, wherein the specific data item comprises user data requiring a better communication quality than other user data.

3. The transmitting apparatus according to claim 1, wherein the transmitting section transmits the specific data item using the one of the plurality of antennas repeatedly.

4. A communication terminal apparatus, comprising the transmitting apparatus according to claim 1.

5. A base station apparatus, comprising the transmitting apparatus according to claim 1.

6. A transmitting method employing a MIMO (multi-input/multi-output) scheme of transmitting a plurality of data items for a same receiving apparatus using a plurality of antennas in parallel, the transmitting method comprising:

a mapping step of mapping the plurality of data items to one of the plurality of antennas; and

a transmitting step of transmitting the plurality of data items using the one of the plurality of antennas to the receiving apparatus,

wherein, in the mapping step, a specific data item of the plurality of data items is mapped such that a communication employing the MIMO scheme is not executed.

ABSTRACT

A control section (110) recognizes the type of data included in a transmission signal and outputs a control signal (C1) to an S/P conversion section (101) and a spreading control section (107). The S/P conversion section (101) apportions a specific type of data output from the control section (110) to different transmission systems. Spreading sections (102, 103) carry out spreading processing on the specific type of data output from the S/P conversion section (101) with different spreading codes assigned thereto under the control of the spreading control section (107). The data output from the spreading sections (102, 103) is transmitted by radio through addition sections (104-1, 104-2), transmission sections (105-1, 105-2) and antennas (106-1, 106-2). In this way, it is possible to improve the reception performance on the receiving side for specific data while maintaining the transmission efficiency of an MIMO communication system.

[FIG.1]

107 SPREADING CONTROL SECTION

TRANSMISSION SIGNAL

RETRANSMISSION FLAG

110 CONTROL SECTION

102-1 SPREADING SECTION

102-2 SPREADING SECTION

102-N SPREADING SECTION

103-1 SPREADING SECTION

103-2 SPREADING SECTION

103-N SPREADING SECTION

104-1 ADDITION SECTION

104-2 ADDITION SECTION

105-1 TRANSMISSION SECTION

105-2 TRANSMISSION SECTION

[FIG.2]

CHANNEL QUALITY

MOVING SPEED

TRANSMISSION SIGNAL

RETRANSMISSION FLAG

111 DATA RECOGNITION SECTION

113 RETRANSMISSION CONTROL SECTION

112 BUFFER

TO SPREADING CONTROL SECTION 107

TO S/P CONVERSION SECTION 101

TO S/P CONVERSION SECTION 101

TO S/P CONVERSION SECTION 101

TO SPREADING CONTROL SECTION 107

[FIG.3]

SPACE

ANTENNA 1

ANTENNA 2

DATA 1 (USER 1 TO N) + RETRANSMISSION DATA (SPREADING CODE DIFFERENT FROM THAT OF ANTENNA 2)

DATA 1 (USER N+1 TO 2N) + RETRANSMISSION DATA (SPREADING CODE DIFFERENT FROM THAT OF ANTENNA 1)

DATA 2 (USER 1 TO N) + RETRANSMISSION DATA (SPREADING CODE DIFFERENT FROM THAT OF ANTENNA 2)

DATA 2 (USER N+1 TO 2N) + RETRANSMISSION DATA (SPREADING CODE DIFFERENT FROM THAT OF ANTENNA 1)

TIME

[FIG.4]

SPACE

ANTENNA 1

ANTENNA 2

DATA 1 (USER 1 TO N) + RETRANSMISSION DATA (SPREADING CODE DIFFERENT FROM THAT OF ANTENNA 2)

DATA 2 (USER 1 TO N) + RETRANSMISSION DATA (SPREADING CODE DIFFERENT FROM THAT OF ANTENNA 1)

DATA 1 (USER N+1 TO 2N) + RETRANSMISSION DATA (SPREADING CODE DIFFERENT FROM THAT OF ANTENNA 2)

DATA 2 (USER N+1 TO 2N) + RETRANSMISSION DATA (SPREADING CODE DIFFERENT FROM THAT OF ANTENNA 1)

TIME

[FIG.5]

SPACE

ANTENNA 1

ANTENNA 2

DATA 1 (USER 1 TO N) + RETRANSMISSION DATA

DATA 1 (USER N+1 TO 2N)

DATA 2 (USER 1 TO N) + RETRANSMISSION DATA

DATA 2 (USER N+1 TO 2N)

TIME

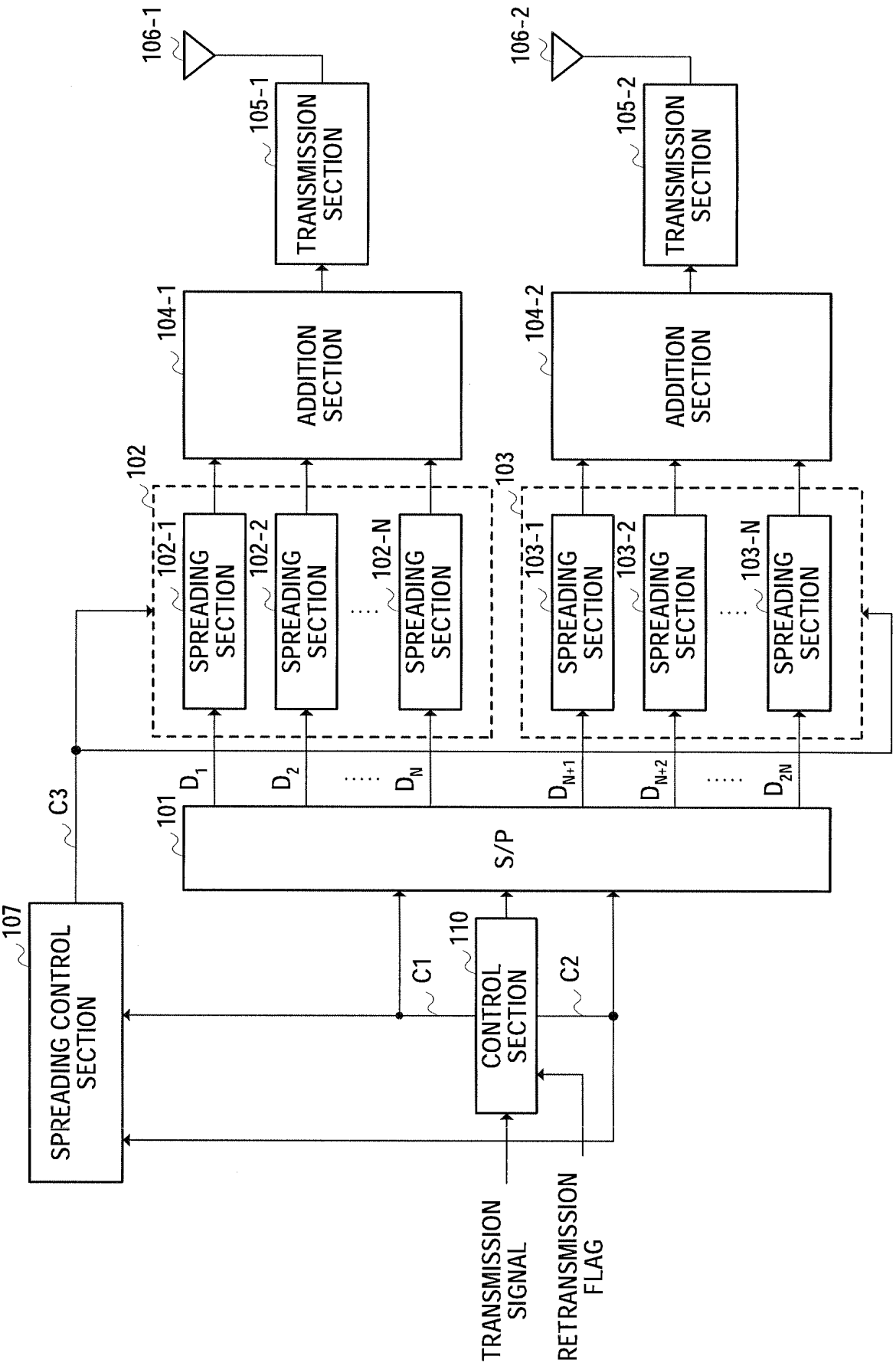

106-1
106-2
105-1
105-2
TRANSMISSION SECTION
TRANSMISSION SECTION
104-1
104-2
ADDITION SECTION
ADDITION SECTION
102
103
102-1
102-2
102-N
103-1
103-2
103-N
SPREADING SECTION
SPREADING SECTION
SPREADING SECTION
SPREADING SECTION
SPREADING SECTION
SPREADING SECTION
C3
D1
D2
DN
DN+1
DN+2
D2N
101
S/P
107
SPREADING CONTROL SECTION
C1
110
CONTROL SECTION
C2
TRANSMISSION SIGNAL
RETRANSMISSION FLAG

FIG.1

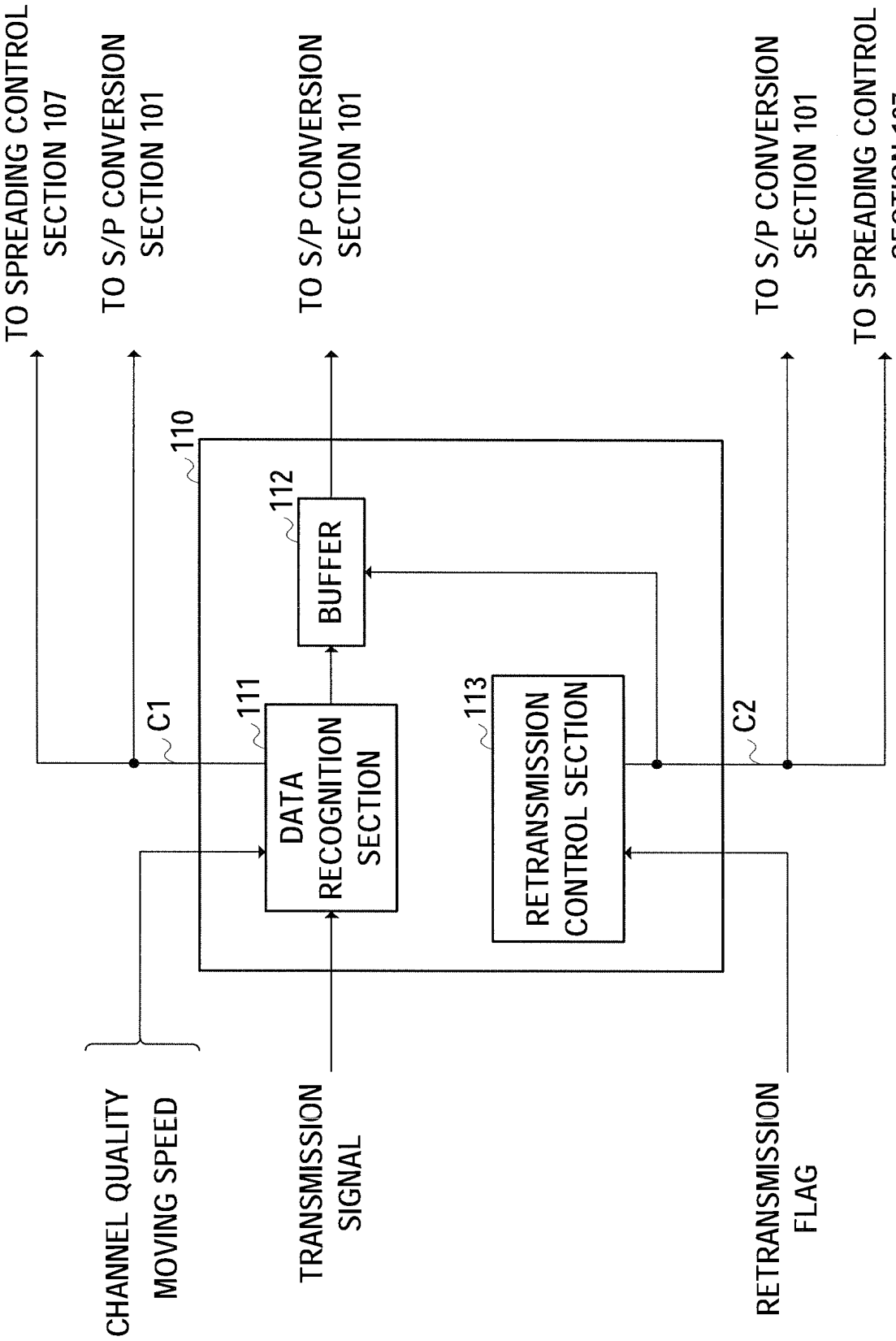

TO SPREADING CONTROL SECTION 107
TO S/P CONVERSION SECTION 101
TO S/P CONVERSION SECTION 101
TO S/P CONVERSION SECTION 101
TO SPREADING CONTROL SECTION 107
110
112
BUFFER
111
DATA RECOGNITION SECTION
113
RETRANSMISSION CONTROL SECTION
C1
C2
CHANNEL QUALITY
MOVING SPEED
TRANSMISSION SIGNAL
RETRANSMISSION FLAG

FIG.2

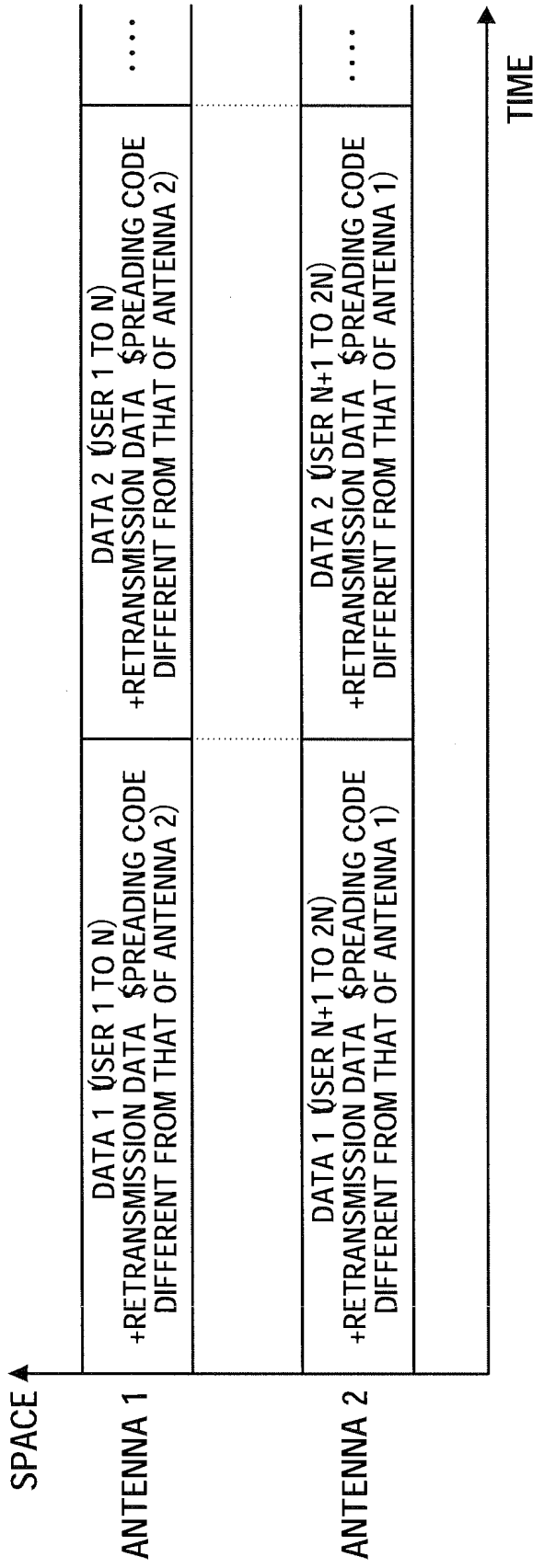

SPACE
ANTENNA 1
ANTENNA 2
TIME
DATA 1 (USER 1 TO N)
+RETRANSMISSION DATA $PREADING CODE
DIFFERENT FROM THAT OF ANTENNA 2)
DATA 2 (USER 1 TO N)
+RETRANSMISSION DATA $PREADING CODE
DIFFERENT FROM THAT OF ANTENNA 2)
DATA 1 (USER N+1 TO 2N)
+RETRANSMISSION DATA $PREADING CODE
DIFFERENT FROM THAT OF ANTENNA 1)
DATA 2 (USER N+1 TO 2N)
+RETRANSMISSION DATA $PREADING CODE
DIFFERENT FROM THAT OF ANTENNA 1)

FIG.3

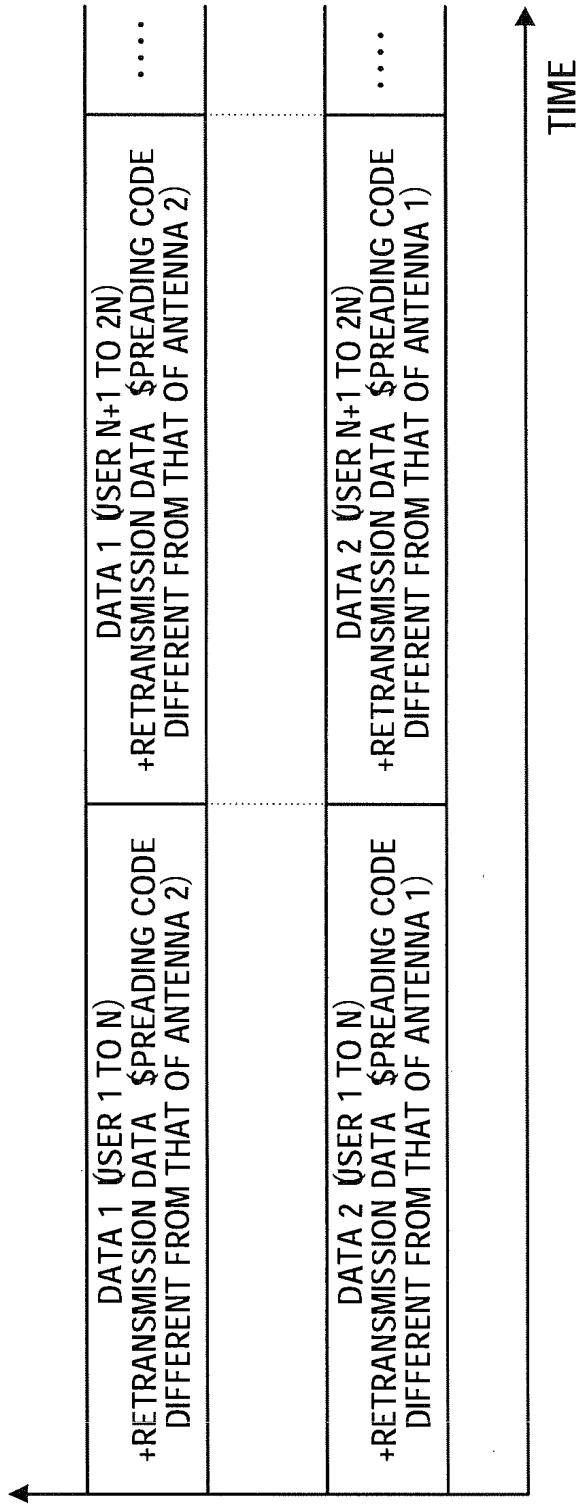
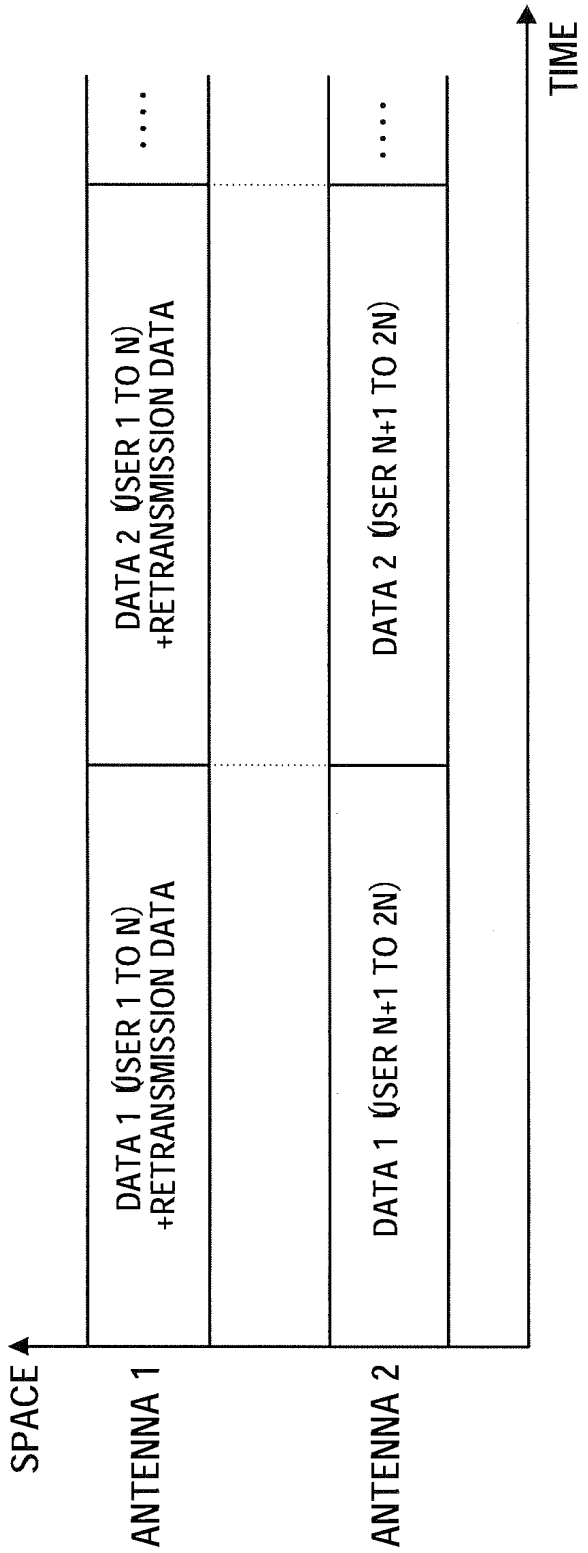

SPACE
ANTENNA 1
ANTENNA 2
TIME
DATA 1 (USER 1 TO N)
+RETRANSMISSION DATA $PREADING CODE
DIFFERENT FROM THAT OF ANTENNA 2)
DATA 1 (USER N+1 TO 2N)
+RETRANSMISSION DATA $PREADING CODE
DIFFERENT FROM THAT OF ANTENNA 2)
DATA 2 (USER 1 TO N)
+RETRANSMISSION DATA $PREADING CODE
DIFFERENT FROM THAT OF ANTENNA 1)
DATA 2 (USER N+1 TO 2N)
+RETRANSMISSION DATA $PREADING CODE
DIFFERENT FROM THAT OF ANTENNA 1)
....
....

FIG.4



PRIOR ART

FIG.5

APPLICATION FOR UNITED STATES PATENT
Declaration for Patent Application

As a below named inventor, I hereby declare that:
My residence, post office address and citizenship are as stated below next to my name.
I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on

the invention entitled: CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD

the specification of which 2 (file no _____)

(check at least one)
3 [ ] is attached hereto
4 [ ] was filed on _____ as (5) U.S. Application Serial No. _____
6 [ ] and was amended _____ (if applicable)

Use this portion only if you are entering the U.S. National phase based on a PCT International Application designating the U.S.

7 [x] was filed as PCT international application
8 Number PCT/JP2004/006154
9 on 28/April/2004
and was amended under PCT Article(s) 19 and/or 34
10 on _____ (if applicable).
11 priority date claimed in PCT International Application

(Country)	(Number)	(Day/Month/Year Filed)
JAPAN	2003-132133	09/May/2003

I hereby declare that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended, by any amendment referred to above.
I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me which is material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56.
I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application (s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date earlier than that of the application(s) on which priority is claimed.

Prior (Foreign) Application(s) any Priority Claims Under 35 U.S.C. 119

12a

(Country)	(Number)	(Day/Month/Year Filed)	Priority Claimed Yes	Priority Claimed No
			[ ]	[ ]
			[ ]	[ ]

Priority Claim(s) from U.S. Provisional Application(s) – I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below:

12b

Application No.	Day/Month/Year Filed	Application No.	Day/Month/Year Filed

Do not use this portion to identify a PCT application if the parent application is the U.S. National phase of the PCT application

I hereby claim the benefit under Title 35, United States Code, 120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between filing date of the prior application and the national or PCT international filing date of this application.

13

(U.S. Application Number)	(U.S. Filing Date)	Status (patented, pending, abandoned)

I hereby appoint the following attorneys of the firm of Stevens, Davis, Miller & Mosher, L.L.P. as my attorneys of record with full power of substitution and revocation to prosecute this application and to transact all business in the Patent and Trademark Office:
James E. Ledbetter, Reg. No. 28732; Thomas P. Pavelko, Reg. No. 31689; and Anthony P. Venturino, Reg. No. 31674.
ALL CORRESPONDENCE IN CONNECTION WITH THIS APPLICATION SHOULD BE SENT TO STEVENS, DAVIS, MILLER & MOSHER, L.L.P., 1615 L Street, N.W., Suite 850, Washington, D.C. 20036, TELEPHONE (202) 408-5100, FACSIMILE (202) 408-5200.

See page 2 for signature lines

other side for instructions for completing this form

INSTRUCTIONS FOR COMPLETION OF THIS FORM

line 1 Insert the same title as is used on the specification and in the assignment.

line 2 Is optional but is provided so that you can use it to identify more readily an application prior to the time that the Patent Office application serial numbe assigned. We suggest that the specification, drawings and declaration always bear a file number since it can help to get the papers together in case they become inadve separated. In instances where the specification is filed without a signed declaration form (under 37 CFR §1.53) a file number on a later-received separate form will assist us in associating it with the correct case.

line 3 Check this box if the specification, claims and drawing (if any) are attached to this declaration form, e.g., when filing a new patent application.

lines 4-5 Are only used in an instance where the application is already on file and the declaration from is being separately filed, e.g.,when the application was originally filed without a signed declaration or where the Patent Office has required a new declaration because of a deficiency in the original declaration. In such an instance the Patent Office will require that lines 4 and 5 be completed with the filing date and application serial number already assigned.

line 6 Is used in conjunction with line 5 but only when there have been one or more amendments to the specification or claims. Line 6 is also used when the Examiner requires a new declaration because claims inserted by amendment cover subject matter not originally claimed (37 CFR §1.67).

lines 7-11 Are for PCT (Patent Cooperation Treaty) cases and are used only when you are entering the U.S. National phase (Chapter I or II) based upon a previously filed PCT International application designating the U.S.

line 7 Check this box if this is a PCT National Phase application.

line 8 Insert PCT International application number.

line 9 Insert date of filing of PCT International application.

lines 10-11 Insert the date of all amendments filed in the PCT International application. Such amendments are optional, so this line at times will not be used.

line 12a Is used in the following instances:

(i) If a single priority is being claimed from a foreign application you need to list only the first-filed application; you do not need to list other countries if all applications were filed within one year of the U.S. filing.

(ii) If multiple priorities are being claimed, from a plurality of applications filed in one or more countries, you must list the first filed application for each aspect of the invention. Example: if aspect A of the invention was disclosed in an application filed 11 months earlier in country X and aspect B was disclosed 9 months earlier in an application filed in country Y, then the applications in both countries X and Y must be identified. Only the first application for each aspect of the invention needs to be identified provided all applications on that aspect were filed within one year prior to the U.S. filing.

(iii) If a non-priority application is being filed you must list all applications in all countries where corresponding foreign applications were filed more than one year prior to the U.S. filing. This is so the Examiner can check to see if any of those applications were published or patented early enough to be prior art against the U.S. application.

(iv) If there are more than two applications to be listed we suggest that you type in on this form only "See attached Schedule A" and then list all of the previous applications on an attached sheet.

line 12b Is used to claim priority under 35 USC §119(e) based on a provisional application filed within one year of the filing of the instant application. More than one provisional application may be identified provided neither was filed more than one year earlier.

line 13 This block is used only in instances where there is a previously filed U.S. non-provisional application which was copending at the time the present applicatio was (or is being) filed. that previous application could be a U.S. non-provisional application or the National Phase of a PCT allocation. In such a case the present application may be entitled to the priority of the previous application's U.S. filing date (and consequently the foreign priority thereof) provided the present application is identified as a continuing application (continuation, divisional or continuation-in-part) of the earlier (parent) application. If the foregoing is applicable, please fill in one line for each such prior application.

line 14 Type the inventor's proper legal name in the order specified, e.g., "John B. JONES" or "J. Bob JONES" if the inventor so prefers. It is not acceptable to us only initials such as "J. B. JONES."

line 15 The inventor's "signature" may be his (or her) usual manner of signing but it is preferable that the inventor simply write his (or her) name in his (or her) own cursive handwriting in the same order as on line 14, e.g., given name, middle initial and Family name.

line 16 Insert the actual date of signature.

line 17 Insert simply the city and state or country, e.g., "Paris, France", of the inventor's residence, not citizenship. No street address or postal code is required on this line.

line 18 Insert the inventor's citizenship. The statement of citizenship (or subject of) is a statutory requirement (35 USC §115). Simply the name of the country of citizenship, e.g., "Japan" is sufficient.

line 19 Insert the inventor's mailing address. The purpose of requiring the post office address is to enable the Patent Office to communicate directly with the inventor if desired, such as in the case of death of the U.S. attorney. It should be the address where the inventor customarily receives his (or her) mail and should include the postal code. If applicable it can be the inventor's business address or address at place of employment.

Applicants are reminded that the U.S. Patent and Trademark Office has very strict requirements as to proper execution of an application. The applicant should make sure that he reviews the declaration, prior to signing to make sure the declaration properly identifies the application and all relevant information; and should review the specification and claims (including drawings, if any) before signing the declaration. Failure to do so will require the filing of a supplemental declaration --- 37 CFR §1.67(c)

Any handwritten changes to the specification, claims or drawings must be in ink personally by all of the inventors prior to signing the declaration and the adjacent left margin must be initialed and dated by all of the inventors, e.g., "JBJ 6-9-91".

Please let us know if there are any questions regarding proper completion of this form. Thank you.

An assignment, a separate document requiring separate signature and dating may be enclosed. Please look for it and sign and date it in the same manner as in lines 15 and 16 above.

I hereby declare that all statements made herein of [illegible]wn knowledge are true and that all statements made on i[illegible]nation and belief are believed to be true; and further that these statements were made with the knowledge th[illegible]lful false statements and the like so made are punishable [illegible]ne or imprisonment, or both, under Section 1001 of Tit 18 of the United States Code, and that such willful statements may jeopardize the validity of the application or any patent issuing thereon.

PAGE 2 OF U.S.A. DECLARATION FORM

14a	Typewritten Full Name of Sole or First Inventor	Hiroaki		SUDO
		Given Name	Middle Name	Family Name
15a	Inventor's Signature	Hiroaki		Sudo
16a	Date of Signature	January	17	2005
		Month	Day	Year
17a	Residence	Yokohama-shi	Kanagawa	Japan
		City	State or Province	Country
18a	Citizenship	JAPAN		
19a	Post Office Address (*Insert complete mailing address, including country*)	597-20, Higashikata-cho, Tsuzuki-ku, Yokohama-shi, Kanagawa 224-0045 Japan		
14b	Typewritten Full Name of Sole or First Inventor			
		Given Name	Middle Name	Family Name
15b	Inventor's Signature			
16b	Date of Signature			
		Month	Day	Year
17b	Residence	City	State or Province	Country
18b	Citizenship			
19b	Post Office Address (*Insert complete mailing address, including country*)			
14c	Typewritten Full Name of Sole or First Inventor			
		Given Name	Middle Name	Family Name
15c	Inventor's Signature			
16c	Date of Signature			
		Month	Day	Year
17c	Residence	City	State or Province	Country
18c	Citizenship			
19c	Post Office Address (*Insert complete mailing address, including country*)			
14d	Typewritten Full Name of Sole or First Inventor			
		Given Name	Middle Name	Family Name
15d	Inventor's Signature			
16d	Date of Signature			
		Month	Day	Year
17d	Residence	City	State or Province	Country
18d	Citizenship			
19d	Post Office Address (*Insert complete mailing address, including country*)			

*Note to Inventor: Please sign name on line 15 exactly as it appears in line 14 and insert the actual date of signing on line 16. If there are more than four inventors, please add a copy of this page for identification and signatures for the additional inventors.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Inventors:	Hiroaki SUDO	Prior Art Unit:	2618
Serial No.:	Cont. App. of Serial No. 10/522,980 filed February 2, 2005	Prior Examiner:	P. Tran
Filed:	June 22, 2007		
For:	CDMA TRANSMITTING APPARATUS AND CDMA TRANSMITTING METHOD		

CONFIRMATION CLAIM FOR PRIORITY

Assistant Commissioner of Patents
Washington, D.C. 20231

Sir:

The benefit of the filing date of the following foreign application filed in the following foreign country and priority provided in the 35 USC §119 have been claimed for the above-identified application:

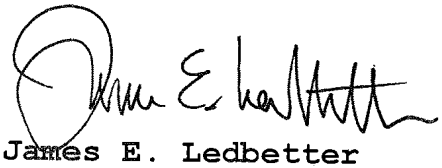
JAPANESE PATENT APPLICATION NO. 2003-132133
FILED May 9, 2003.

The International Bureau received the priority document within the time limit in parent application serial no. 10/522,980 filed February 2, 2005.

It is requested that the file of this application be marked to indicate that the requirements of 35 USC §119 have been

fulfilled and that the Patent and Trademark Office kindly acknowledge receipt of these papers.

Respectfully submitted,



Date: June 22, 2007

James E. Ledbetter
Registration No. 28,732

JEL/jpf
ATTORNEY DOCKET NO. L9289.04198A
STEVENS, DAVIS, MILLER & MOSHER, L.L.P.
1615 L Street, NW, Suite 850
P.O. Box 34387
Washington, DC 20043-4387
Telephone: (202) 785-0100
Facsimile: (202) 408-5200

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Inventors:	Hiroaki SUDO	Prior Art Unit:	2618
Serial No.:	Cont. App. of Serial No. 10/522,980 filed February 2, 2005	Prior Examiner:	P. Tran
Filed:	June 22, 2007		
For:	CDMA TRANSMITTING APPARATUS AND CDMA TRANSMITTING METHOD		

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.56

Assistant Commissioner of Patents
Washington, D. C. 20231

Sir:

Pursuant to 37 C.F.R. §1.56, applicants hereby call to the attention of the Patent and Trademark Office the references listed on the attached List of References. All of these references are of record in the parent application; copies need not be submitted (see 37 CFR §1.98(d)). This list of references is being provided to ensure listing of these references on a patent to issue in this application in accordance with the following paragraph of MPEP 609:

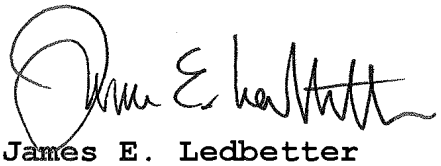
> "A citation on form PTO-1449 and considered by the Examiner...will be printed on the patent."

Applicants present these references so that the Patent and Trademark Office may, in the first instance, determine any relevancy thereof to the presently claimed invention; see Beckman

Instruments, Inc. v. Chemtronics, Inc., 439 F.2d 1369, 1380, 165 USPQ 355, 364 (5th Cir., 1970). Also see Patent Office Rules 104 and 106.

Applicants respectfully request that these references be expressly considered during the prosecution of this application and made of record herein and appear among the "References Cited" on any patent to issue herefrom.

Respectfully submitted,



Date: June 22, 2007

James E. Ledbetter
Registration No. 28,732

JEL/jpf

ATTORNEY DOCKET NO. L9289.04198A
STEVENS, DAVIS, MILLER & MOSHER, L.L.P.
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Washington, DC 20043-4387
Telephone: (202) 785-0100
Facsimile: (202) 408-5200

FORM PTO-1449 (Rev. 4/92) U.S. Department of Commerce Patent and Trademark Office

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use several sheets if necessary)

ATTY. DOCKET NO.	DIVISION OF SERIAL NO.
L9289.04198A	10/522,980
APPLICANT: Hiroaki SUDO	
FILING DATE: June 22, 2007	PRIOR GROUP: 2618

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		6,677,862	08/2004	Lozano et al.			
	2001	0,054,314	12/2001	Li et al.			
		5,550,475	04/1996	Chouly et al.			
	2002	0,191,535	12/2002	Sugiyama et al.			
		6,603,796	08/2003	Kondo			
	2004	0,208,258	10/2004	Lozano et al.			
		7,113,558	09/2006	Lozano et al.			
		7,050,510	05/2006	Foschini et al.			
		7,027,523	04/2006	Jalali et al.			

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO
		2002-124894	04/2002	JP			Abstract	
		2002-044051	02/2002	JP			Abstract	
		2002-374253	12/2002	JP				
		11-275054	10/1999	JP				
		2003-032226	01/2003	JP				

EXAMINER INITIAL		OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)
		PCT International Search Report dated August 17, 2004.
		D. SAMARDZIJA, et al.; "Performance Evaluation of the VBLAST Algorithm in W-CDMA Systems," Vehicular Technology Conference 2001, Fall, vol. 2, Oct. 11, 2001, pp. 723-727.
		M. CHEN, et al.; "Space-time Codes of Multi-code Transmission for WCDMA," Vehicular Technology Conference 2001, Spring, vol. 2, May 9, 2001, pp. 1311-1313.

EXAMINER	DATE CONSIDERED

EXAMINER: Initial if citation is considered, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

(Form PTO-1449 [6-4])

FORM PTO-1449 (Rev. 4/92) U.S. Department of Commerce Patent and Trademark Office

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use several sheets if necessary)

ATTY. DOCKET NO.	DIVISION OF SERIAL NO.
L9289.04198A	10/522,980
APPLICANT: Hiroaki SUDO	
FILING DATE: June 22, 2007	PRIOR GROUP: 2618

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		6 9 8 7 8 1 9	01/2006	Thomas et al.			
	2006	0 2 9 1 5 8 1	12/2006	Onggosanusi et al.			
	2006	0 2 8 5 5 8 5	12/2006	Sampath			
	2006	0 2 5 0 9 4 1	11/2006	Onggosanusi et al.			
	2006	0 1 8 9 2 8 0	08/2006	Goldberg			
	2006	0 1 5 9 1 6 0	07/2006	Kim et al.			
	2006	0 0 8 3 2 9 1	04/2006	Hongming et al.			
	2005	0 2 6 5 4 6 5	12/2005	Hosur et al.			
	2005	0 0 6 3 3 4 5	03/2005	Wu et al.			

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

		OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER	DATE CONSIDERED

EXAMINER: Initial if citation is considered, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

(Form PTO-1449 [6-4])

Express Mail Label No.

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
L9289.04198A

Total Pages in this Submission
4

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD

and invented by:

Hiroaki SUDO

If a CONTINUATION APPLICATION, *check appropriate box and supply the requisite information:*

☒ **Continuation** ☐ **Divisional** ☐ **Continuation-in-part (CIP)** of prior application No.: **10/522,980**

Which is a:

☐ **Continuation** ☐ **Divisional** ☐ **Continuation-in-part (CIP)** of prior application No.: _____

Which is a:

☐ **Continuation** ☐ **Divisional** ☐ **Continuation-in-part (CIP)** of prior application No.: _____

Enclosed are:

Application Elements

1. ☒ Filing fee as calculated and transmitted as described below

2. ☒ Specification having **21** pages and including the following:

   a. ☒ Descriptive Title of the Invention

   b. ☐ Cross References to Related Applications *(if applicable)*

   c. ☐ Statement Regarding Federally-sponsored Research/Development *(if applicable)*

   d. ☐ Reference to Sequence Listing, a Table, or a Computer Program Listing Appendix

   e. ☒ Background of the Invention

   f. ☒ Brief Summary of the Invention

   g. ☒ Brief Description of the Drawings *(if filed)*

   h. ☒ Detailed Description

   i. ☒ Claim(s) as Classified Below

   j. ☒ Abstract of the Disclosure

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No. L9289.04198A
Total Pages in this Submission 4

Application Elements (Continued)

3. ☒ Drawing(s) *(when necessary as prescribed by 35 USC 113)*
   a. ☒ Formal Number of Sheets 5
   b. ☐ Informal Number of Sheets _____
4. ☒ Oath or Declaration
   a. ☐ Newly executed *(original or copy)* ☐ Unexecuted
   b. ☒ Copy from a prior application (37 CFR 1.63(d)) *(for continuation/divisional application only)*
   c. ☐ With Power of Attorney ☐ Without Power of Attorney
   d. ☐ *DELETION OF INVENTOR(S)*
   Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference *(usable if Box 4b is checked)*
   The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. ☐ CD ROM or CD-R in duplicate, large table or Computer Program (Appendix)
7. ☒ Application Data Sheet (See 37 CFR 1.76)
8. ☐ Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all must be included)*
   a. ☐ Computer Readable Form (CRF)
   b. ☐ Specification Sequence Listing on:
      i. ☐ CD-ROM or CD-R (2 copies); or
      ii. ☐ Paper
   c. ☐ Statement(s) Verifying Identical Paper and Computer Readable Copy

Accompanying Application Parts

9. ☐ Assignment Papers *(cover sheet & document(s))*
10. ☐ 37 CFR 3.73(B) Statement *(when there is an assignee)*
11. ☐ English Translation Document *(if applicable)*
12. ☐ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations
13. ☐ Preliminary Amendment
14. ☐ Return Receipt Postcard (MPEP 503) *(Should be specifically itemized)*
15. ☐ Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
16. ☐ Certificate of Mailing
    ☐ First Class ☐ Express Mail *(Specify Label No.):* _____

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
L9289.04198A
Total Pages in this Submission
4

Accompanying Application Parts (Continued)

17. ☒ Additional Enclosures *(please identify below):*

Confirmation Claim for Priority **Information Disclosure Statment w/ PTO-1449**

Request That Application Not Be Published Pursuant To 35 U.S.C. 122(b)(2)

18. ☐ Pursuant to 35 U.S.C. 122(b)(2), Applicant hereby requests that this patent application not be published pursuant to 35 U.S.C. 122(b)(1). Applicant hereby certifies that the invention disclosed in this application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing of the application.

Warning

An applicant who makes a request not to publish, but who subsequently files in a foreign country or under a multilateral international agreement specified in 35 U.S.C. 122(b)(2)(B)(i), must notify the Director of such filing not later than 45 days after the date of the filing of such foreign or international application. A failure of the applicant to provide such notice within the prescribed period shall result in the application being regarded as abandoned, unless it is shown to the satisfaction of the Director that the delay in submitting the notice was unintentional.

19. ☐ Other:

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
L9289.04198A

Total Pages in this Submission
4

Fee Calculation and Transmittal

CLAIMS AS FILED						
For	**#Filed**	**#Allowed**	**#Extra**		**Rate**	**Fee**
Total Claims	6	- 20 =	0	x	$50.00	$0.00
Indep. Claims	2	- 3 =	0	x	$200.00	$0.00
Multiple Dependent Claims (check if applicable)	☐					$0.00
Total # of Pages in Specification	21	**Total # of Drawing Sheets**	5			
Total # of Sheets	26				**Application Size Fee**	$0.00
					Basic Fee	$300.00
					Search Fee	$500.00
					Examination Fee	$200.00
OTHER FEE *(specify purpose)*						$0.00
					TOTAL FILING FEE	$1,000.00

☐ A check in the amount of to cover the filing fee is enclosed.

☒ The Director is hereby authorized to charge and credit Deposit Account No. **19-4375** as described below.

- ☐ Charge the amount of as filing fee.
- ☒ Credit any overpayment.
- ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
- ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

☐ Payment by credit card. Form PTO-2038 is attached.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

Dated: **June 22, 2007**

Signature

James E. Ledbetter, Esq.
Registration No. 28,732
Stevens, Davis, Miller & Mosher, LLP

Customer Number: **52989**

cc:

PTO/SB/14 (08-05)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	L9289.04198A
	Application Number	
Title of Invention	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Applicant Information:

Applicant 1 Remove

Applicant Authority ◉ Inventor ○ Legal Representative under 35 U.S.C. 117 ○ Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
	Hiroaki		SUDO	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Yokohama-shi	Country Of Residence[i]	JP
Citizenship under 37 CFR 1.41(b)[i]	JP		

Mailing Address of Applicant:

Address 1	597-20, Higashikata-cho, Tsuzuki-ku, Yokohama-shi		
Address 2			
City	Yokohama-shi	State/Province	
Postal Code	224-0045	Country[i]	JP

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	52989		
Email Address	ledbetter@stevensdavis.com	Add Email	Remove Email

Application Information:

Title of the Invention	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD		
Attorney Docket Number	L9289.04198A	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)		Suggested Figure for Publication (if any)	

PTO/SB/14 (08-05)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	L9289.04198A
	Application Number	
Title of Invention	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD	

Publication Information:
☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐ Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not been and will not be the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ US Representative (37 CFR 11.9)
Customer Number	52989		

Domestic Priority Information:

This section allows for the applicant to claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c). Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	a 371 of international	PCT/JP2004/006154	2004-04-28
Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	10/522980	2005-02-02

Additional Domestic Priority Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

Remove

Application Number	Country [i]	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
2003-132133	JP	2003-05-09	◉ Yes ○ No

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

PTO/SB/14 (08-05)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	L9289.04198A
	Application Number	
Title of Invention	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD	

Assignee Information:

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.

Assignee 1 Remove

If the Assignee is an Organization check here. ☒

Organization Name	MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.		
Mailing Address Information:			
Address 1	1006, Oaza Kadoma, Kadoma-shi		
Address 2			
City	Osaka	**State/Province**	
Country [i] JP		Postal Code	571-8501
Phone Number		Fax Number	
Email Address			

Additional Assignee Data may be generated within this form by selecting the **Add** button. Add

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.

Signature	James/Edward/Ledbetter			Date (YYYY-MM-DD)	2007-06-22
First Name	James	Last Name	Ledbetter	Registration Number	28732

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD
First Named Inventor/Applicant Name:	Hiroaki SUDO
Filer:	James Edward Ledbetter/Jessicaq Fu
Attorney Docket Number:	L9289.04198A

Filed as Large Entity

Utility Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	300	300
Utility Search Fee	1111	1	500	500
Utility Examination Fee	1311	1	200	200
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1000**

Electronic Acknowledgement Receipt

EFS ID:	1900442
Application Number:	11767124
International Application Number:	
Confirmation Number:	1688
Title of Invention:	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD
First Named Inventor/Applicant Name:	Hiroaki SUDO
Customer Number:	52989
Filer:	James Edward Ledbetter
Filer Authorized By:	
Attorney Docket Number:	L9289.04198A
Receipt Date:	22-JUN-2007
Filing Date:	
Time Stamp:	15:36:59
Application Type:	Utility

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	$1000
RAM confirmation Number	667
Deposit Account	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)

1		L928904198A_APPLN.pdf	1166056	yes	29

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	15
Claims	16	17
Abstract	18	18
Specification	19	21
Drawings	22	26
Oath or Declaration filed	27	29

Warnings:

Information:

2	Continued Prosecution Application - Continuation (ACPA)	L928904198A_ConfCFP.pdf	53941	no	2

Warnings:

Information:

3	Information Disclosure Statement (IDS) Filed	L928904198A_IDS.pdf	249538	no	4

Warnings:

Information:

This is not an USPTO supplied IDS fillable form

4	Continued Prosecution Application - Continuation (ACPA)	L928904198A_TRNS.pdf	274878	no	4

Warnings:

Information:

5	Application Data Sheet	L928904198A_ADS.pdf	914617	no	4

Warnings:

Information:

6	Fee Worksheet (PTO-06)	fee-info.pdf	8383	no	2

Warnings:

Information:	
Total Files Size (in bytes):	2667413

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.

Approved for use through 7/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 11,767,124

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	300
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	500
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	200
2 (37 CFR 1.16(i))	6 minus 20 =	*	X 25=		OR	X 50=	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*	X 100=			X 200=	
APPLICATION SIZE FEE (37 CFR 1.16(s))							
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			N/A			N/A	
			TOTAL				1000

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	X =		OR	X =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X =		OR	X =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	X =		OR	X =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X =		OR	X =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO
11/767,124	06/22/2007		1000	L9289.04198A

CONFIRMATION NO. 1688

52989
STEVENS, DAVIS, MILLER & MOSHER, LLP
1615 L. STREET N.W.
SUITE 850
WASHINGTON, DC20036

FILING RECEIPT

Date Mailed: 07/23/2007

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Hiroaki SUDO, Yokohama-shi, JAPAN;

Assignment For Published Patent Application

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD., Osaka, JAPAN

Power of Attorney:
James Ledbetter--28732
Anthony Venturino--31674
Thomas Pavelko--31689

Domestic Priority data as claimed by applicant

This application is a CON of 10/522,980 02/02/2005 PAT 7,251,469
which is a 371 of PCT/JP04/06154 04/28/2004

Foreign Applications

JAPAN 2003-132133 05/09/2003

If Required, Foreign Filing License Granted: 07/21/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US11/767,124**

Projected Publication Date: 11/01/2007

Non-Publication Request: No

Early Publication Request: No

Title

CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD

Preliminary Class

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/767,124	06/22/2007	Hiroaki SUDO	L9289.04198A	1688

52989 7590 11/06/2008

Dickinson Wright PLLC
James E. Ledbetter, Esq.
International Square
1875 Eye Street, N.W., Suite 1200
Washington, DC 20006

EXAMINER	
TRAN, PABLO N	

ART UNIT	PAPER NUMBER
2618	

MAIL DATE	DELIVERY MODE
11/06/2008	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.

Office Action Summary	Application No.	Applicant(s)	
	11/767,124	SUDO, HIROAKI	
	Examiner	Art Unit	
	Pablo N. Tran	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance 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.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 10/522980.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 1, the claimed limitations, "a mapping section that maps the plurality of data items to one of the plurality of antennas; wherein the mapping section maps a specific data item of the plurality of data items such that a communication employing the MIMO scheme is not executed", contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 2-5 are dependent claims and are rejected for the same reasoning as stated above.

Regarding claim 6, the claimed limitations, "a mapping step of mapping the plurality of data items to one of the plurality of antennas; wherein, in the mapping step, a

specific data item of the plurality of data items is mapped such that a communication employing the MIMO scheme is not executed", contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pablo Tran whose telephone number is (571)272-7898. The examiner normal hours are 9:30 -5:00 (Monday-Friday). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (571)272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

4. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) System. Status information for Published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see httpr//pair-directauspto.gov. Should You have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (in USA or CANADA) or 571-272-1000.

October 26, 2008

/Pablo N Tran/

Primary Examiner, Art Unit 2618

Notice of References Cited	Application/Control No. 11/767,124	Applicant(s)/Patent Under Reexamination SUDO, HIROAKI	
	Examiner Pablo N. Tran	Art Unit 2618	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,662,024	12-2003	Walton et al.	455/562.1
*	B	US-6,751,187	06-2004	Walton et al.	370/210
*	C	US-6,771,706	08-2004	Ling et al.	375/267
*	D	US-6,850,741	02-2005	Lei et al.	455/101
*	E	US-6,907,270	06-2005	Blanz, Josef J.	455/562.1
*	F	US-7,020,110	03-2006	Walton et al.	370/334
*	G	US-7,069,050	06-2006	Yoshida, Shousei	455/562.1
*	H	US-7,120,395	10-2006	Tong et al.	455/101
*	I	US-7,120,395	10-2006	Tong et al.	455/101
*	J	US-7,167,690	01-2007	Baker et al.	455/101
*	K	US-7,269,403	09-2007	Miao, George J.	455/402
*	L	US-7,324,481	01-2008	Kobayashi et al.	370/334
*	M	US-7,349,439	03-2008	Lakkis, Ismail	370/480

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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BIB DATA SHEET

CONFIRMATION NO. 1688

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/767,124	06/22/2007	375	2618	L9289.04198A

APPLICANTS

Hiroaki SUDO, Yokohama-shi, JAPAN;

**** CONTINUING DATA ***************************

This application is a CON of 10/522,980 02/02/2005 PAT 7,251,469
which is a 371 of PCT/JP04/06154 04/28/2004

**** FOREIGN APPLICATIONS ***************************

JAPAN 2003-132133 05/09/2003

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

07/21/2007

Foreign Priority claimed ☑ Yes ☐ No 35 USC 119(a-d) conditions met ☑ Yes ☐ No Verified and Acknowledged /PABLO N TRAN/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		JAPAN	5	6	2

ADDRESS

Dickinson Wright PLLC
James E. Ledbetter, Esq.
International Square
1875 Eye Street, N.W., Suite 1200
Washington, DC 20006
UNITED STATES

TITLE

CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD

FILING FEE RECEIVED		
1000	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

FORM PTO-1449 (Rev. 4/92) U.S. Department of Commerce Patent and Trademark Office

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use several sheets if necessary)

ATTY. DOCKET NO.	DIVISION OF SERIAL NO.
L9289.04198A	10/522,980
APPLICANT: Hiroaki SUDO	
FILING DATE: June 22, 2007	PRIOR GROUP: 2618

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		6,677,861	08/2004	Lozano et al.			
	2001	0,058,143	12/2001	Li et al.			
		5,550,475	04/1996	Chouly et al.			
	2002	0,191,535	12/2002	Sugiyama et al.			
		6,603,796	08/2003	Kondo			
	2004	0,208,258	10/2004	Lozano et al.			
		7,113,558	09/2006	Lozano et al.			
		7,050,510	05/2006	Foschini et al.			
		7,027,523	04/2006	Jalali et al.			

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO
		2002 124895	04/2002	JP			Abstract	
		2002 044051	02/2002	JP			Abstract	
		2002 374275	12/2002	JP				
		11 275054	10/1999	JP				
		2003 023262	01/2003	JP				

	OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)
	PCT International Search Report dated August 17, 2004.
	D. SAMARDZIJA, et al.; "Performance Evaluation of the VBLAST Algorithm in W-CDMA Systems," Vehicular Technology Conference 2001, Fall, vol. 2, Oct. 11, 2001, pp. 723-727.
	M. CHEN, et al.; "Space-time Codes of Multi-code Transmission for WCDMA," Vehicular Technology Conference 2001, Spring, vol. 2, May 9, 2001, pp. 1311-1313.

EXAMINER /Pablo Tran/ **DATE CONSIDERED** 10/27/2008

EXAMINER: Initial if citation is considered, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

(Form PTO-1449 [6-4])

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /PT/

FORM PTO-1449 (Rev. 4/92) U.S. Department of Commerce Patent and Trademark Office

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use several sheets if necessary)

ATTY. DOCKET NO.	DIVISION OF SERIAL NO.
L9289.04198A	10/522,980
APPLICANT: Hiroaki SUDO	
FILING DATE: June 22, 2007	PRIOR GROUP: 2618

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		6 9 8 7 8 1 9	01/2006	Thomas et al.			
	2006	0 2 9 1 5 8 1	12/2006	Onggosanusi et al.			
	2006	0 2 8 5 5 8 5	12/2006	Sampath			
	2006	0 2 5 0 9 4 1	11/2006	Onggosanusi et al.			
	2006	0 1 8 9 2 8 0	08/2006	Goldberg			
	2006	0 1 5 9 1 6 0	07/2006	Kim et al.			
	2006	0 0 8 3 2 9 1	04/2006	Hongming et al.			
	2005	0 2 6 5 4 6 5	12/2005	Hosur et al.			
	2005	0 0 6 3 3 4 5	03/2005	Wu et al.			

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

		OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER /Pablo Tran/ **DATE CONSIDERED** 10/26/2008

EXAMINER: Initial if citation is considered, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

(Form PTO-1449 [6-4])

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /PT/

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11767124	SUDO, HIROAKI
	Examiner	**Art Unit**
	Pablo N Tran	2618

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/26/2008								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11767124	SUDO, HIROAKI
	Examiner	**Art Unit**
	Pablo N Tran	2618

SEARCHED

Class	Subclass	Date	Examiner
370	342,, 335,, 441, 334, 336, 337, 342, 343, 267, 347, 441, 445, 265	10/26/08	PT
455	562.1, 575.7, 552.1, 553.1, 101-103, 132, 277.2, 561.2, 452.1, 452.2, 342	10/26/08	PT
375	299, 349, 347, 267, 265, 260	10/26/08	PT

SEARCH NOTES

Search Notes	Date	Examiner
East/West	10/26/08	PT

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner

	/P. N. T./ Primary Examiner.Art Unit 2618

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Inventor:	Hiroaki SUDO	Art Unit 2618
Appln. No.:	11/767,124	Exr. P. Tran
Filed:	June 22, 2007	Conf. No. 1688
For:	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD	

AMENDMENT UNDER 37 CFR §1.111

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated November 6, 2008, please amend the above-captioned application as follows:

IN THE CLAIMS

Please amend the claims to read as follows:

Listing of Claims

1. (Currently Amended) A transmitting apparatus employing a MIMO (multi-input/multi-output) scheme of transmitting a plurality of data items for a same receiving apparatus using a plurality of antennas in parallel, the transmitting apparatus comprising:

a mapping section that maps the plurality of data items to one of the plurality of antennas; and

a transmitting section that transmits the plurality of data items using the one of the plurality of antennas to the receiving apparatus,

wherein the mapping section generates a replica data item by replicating a specific data item of the plurality of data items, and maps the plurality of data items to the plurality of antennas such that the specific data item and the replica data item are transmitted in an overlapping manner from different antennas at a same time ~~maps a specific data item of the plurality of data items such that a communication employing the MIMO scheme is not executed~~.

2. (Original) The transmitting apparatus according to claim 1, wherein the specific data item comprises user data requiring a better communication quality than other user data.

3. (Currently Amended) The transmitting apparatus according to claim 1, wherein, in each antenna transmitting the specific data item and the replica data item, the transmitting

section code division multiplexes different data from the specific data item upon the specific data item, and transmits the code division multiplexed data at the same time ~~the transmitting section transmits the specific data item using the one of the plurality of antennas repeatedly~~.

4. (Original) A communication terminal apparatus, comprising the transmitting apparatus according to claim 1.

5. (Original) A base station apparatus, comprising the transmitting apparatus according to claim 1.

6. (Currently Amended) A transmitting method employing a MIMO (multi-input/multi-output) scheme of transmitting a plurality of data items for a same receiving apparatus using a plurality of antennas in parallel, the transmitting method comprising:

a mapping step of mapping the plurality of data items to one of the plurality of antennas; and

a transmitting step of transmitting the plurality of data items using the one of the plurality of antennas to the receiving apparatus,

wherein, in the mapping step, a replica data item is generated by replicating a specific data item of the plurality of data items, and the plurality of data items are mapped to the plurality of antennas such that the specific data item and the replica data item are transmitted in an overlapping manner from different antennas at a same time ~~a specific data item of the plurality of data items is mapped such that a communication employing the MIMO scheme is not executed~~.

REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the above amendments and the following remarks.

Claims 1, 3, and 6 have been amended to overcome the 35 USC 112, first paragraph, rejections applied to claims 1-6. Support for the amendments is provided for example in the specification on page 9, line 9, through page 10, line 22. (References herein to the specification and drawings are for illustrative purposes only and are not intended to limit the scope of the invention to the referenced embodiments.)

In view of the above, it is submitted that this application is in condition for allowance, and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,

/James Edward Ledbetter/

Date: February 6, 2009
JEL/DWW/att

James E. Ledbetter
Registration No. 28,732

Attorney Docket No. 009289-41981
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application

Inventor:	Hiroaki SUDO	Art Unit 2618
Appln. No.:	11/767,124	Exr. P. Tran
Filed:	June 22, 2007	Conf. No. 1688
For:	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD	

CERTIFICATION UNDER 37 CFR §1.97(e)(1)

Assistant Commissioner of Patents
Washington, DC 20231

Dear Sir:

In fulfillment of 37 CFR 1.97(c)(1) and 1.97(e)(1), it is hereby certified that each item of information contained in the attached Information Disclosure Statement was first cited in any communication (see the attached copy of a Japanese Office Action dated November 11, 2008) from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

Respectfully submitted,

/James Edward Ledbetter/

Date: February 6, 2009

James E. Ledbetter
Registration No. 28,732

JEL/jcw

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Inventor:	Hiroaki SUDO	Art Unit 2618
Appln. No.:	11/767,124	Exr. P. Tran
Filed:	June 22, 2007	Conf. No. 1688
For:	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD	

INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner of Patents
Washington, DC 20231

Dear Sir:

Pursuant to Rules 56 and 99, Applicants hereby call the attention of the Patent Office to the art listed on the attached Form PTO 1449. Attached is a Japanese Office Action dated November 11, 2008 with an English translation thereof.

Applicants present this art so that the Patent Office may, in the first instance, determine any relevancy thereof to the presently claimed invention, see Beckman Instruments, Inc. v. Chemtronics, Inc., 439 F.2d 1369, 1380, 165 USPQ 355, 364 (5th Cir. 1970). Also see Patent Office Rules 104 and 106. Applicants respectfully request that this art be expressly considered

during the prosecution of this application and made of record herein and appear among the "References Cited" on any patent to issue herefrom.

If any fee is due, it may be charged to Deposit Account No. 04-1061.

Respectfully submitted,

/James Edward Ledbetter/

Date: February 6, 2009

James E. Ledbetter
Registration No. 28,732

JEL/jcw

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SUBSTITUTE FOR FORM PTO-1449 U.S. Department of Commerce Patent and Trademark Office **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** (Use several sheets if necessary)	ATTY. DOCKET NO. 009289-41981	SERIAL NO. 11/767,124
	APPLICANT Hiroaki SUDO	
	FILING DATE June 22, 2007	GROUP 2618

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CORRESPONDENT	DISCUSSED AND CITED IN SPEC? (insert page and line number where cited)
	2005/0002421	01/2005	Ito		

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CORRESPONDENT	TRANSLATION?	DISCUSSED AND CITED IN SPEC? (insert page and line number where cited)
	2004-350259	12/2004	JP	US 2005/0002421		

	OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)	DISCUSSED AND CITED IN SPEC?
	Japanese Office Action dated November 11, 2008 with English translation thereof.	

EXAMINER: Initial if citation is considered, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

(Form PTO-1449 [6-4])

(English Translation)

NOTICE OF REASON FOR REJECTION

Dispatch Date	: November 11, 2008
Japanese Patent Application Number	: No. 2005-362672
Drafting Date	: November 6, 2008
Examiner of Patent Office	: Hiroshi TAKANO 9647 5K00
Attorney	: Kimihito WASHIDA
Applied Provision	: Section 29(2)

This application should be refused for the reason mentioned below. If the applicant has any argument against the reason, such argument should be submitted within 60 days from the date on which this notification was dispatched.

REASON(S)

The invention(s) in the claim(s) listed below of the subject application should not be granted a patent under the provision of Patent Law Section 29bis since it is identical with an invention or device described in the specification or drawings originally attached to the request of the application for patent or utility model registration listed below, which was filed prior to the filing date of the subject application and was laid-open (Kokai) after the filing of the subject application, the inventor of the subject application is not identical with the inventor who has made said invention or device, and the applicant of the subject application is also not identical

with the applicant of said application for patent or utility model registration at the time of filing of the subject application.

Reference [Refer to the list of Cited Reference(s).]

Cited Reference(s)

1. Japanese Patent Application No.2003-125198 (Japanese Patent Application Laid-Open No.2004-350259)

・Claims: 1-6
・Cited References: 1
・Remarks:

Cited reference, in [0009] and other parts, discloses, when the reception in the previous data transmission fails, transmitting the data that failed through different channels at the same time. Then, the data that has failed needs to be transmitted reliably and therefore requires good communication quality.

In association with this, in [0123], MIMO is assumed for these channels. In this case, data that has failed is subjected to diversity transmission, that is, transmitted in an overlapping manner from a plurality of antennas.

That is to say, cited reference 1 discloses adopting such a signal arrangement in a MIMO scheme that information requiring good communication quality is not communicated by the MIMO scheme.

Consequently, in comparison to the invention disclosed in cited reference 1, the invention according to the claims of the present application show no distinct features, and these inventions are therefore substantially the same.

拒絶理由通知書

特許出願の番号	特願２００５－３６２６７２
起案日	平成２０年１１月　６日
特許庁審査官	高野　洋　　９６４７　５Ｋ００
特許出願人代理人	鷲田　公一　様
適用条文	第２９条の２

この出願は、次の理由によって拒絶をすべきものです。これについて意見がありましたら、この通知書の発送の日から６０日以内に意見書を提出してください。

理　由

この出願の下記の請求項に係る発明は、その出願の日前の特許出願であって、その出願後に特許掲載公報の発行又は出願公開がされた下記の特許出願の願書に最初に添付された明細書、特許請求の範囲又は図面に記載された発明と同一であり、しかも、この出願の発明者がその出願前の特許出願に係る上記の発明をした者と同一ではなく、またこの出願の時において、その出願人が上記特許出願の出願人と同一でもないので、特許法第２９条の２の規定により、特許を受けることができない。

記　　（引用文献等については引用文献等一覧参照）

引　用　文　献　等　一　覧

１.特願２００３－１２５１９８号（特開２００４－３５０２５９号）

・請求項：１－６
・引用文献等：１
・備考：
引用文献１には、【０００９】等において、前回のデータ送信において受信に失敗したときには、失敗にかかるデータを同時に異なる伝送路により送信することが記載されている。ここで、失敗にかかるデータは確実に送信する必要があるため、良好な通信品質が要求されるものである。
また、あわせて【０１２３】には、この伝送路としてＭＩＭＯを想定することが記載されており、この場合、失敗にかかるデータは、複数のアンテナから重複して送信されるダイバーシチ送信となる。

すなわち、引用文献１には、ＭＩＭＯ方式において、良好な通信品質を要求される情報についてはＭＩＭＯ方式の通信を行わないように信号配置を行うことが記載されている。

したがって、本願の各請求項に係る発明と引用文献１に記載された発明とを比較すると、格別相違する点はなく、両者は実質同一であると認められる。

先行技術文献調査結果の記録

・調査した分野　　ＩＰＣ

Ｈ０４Ｊ１１／００

・先行技術文献

この先行技術文献調査結果の記録は拒絶理由を構成するものではありません。

この拒絶理由通知の内容に関するお問い合わせ、または面接のご希望がございましたら下記までご連絡下さい。

特許審査第四部デジタル通信　高野　洋

TEL. 03(3581)1101　内線　3555　FAX. 03(3501)0699

(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2004-350259
(P2004-350259A)
(43)公開日　平成16年12月9日(2004.12.9)

(51)Int.Cl.[7]		F I			テーマコード（参考）
H04J	15/00	H04J	15/00		5K014
H04B	7/06	H04B	7/06		5K022
H04J	11/00	H04J	11/00	Z	5K059
H04L	1/22	H04L	1/22		

審査請求 有　請求項の数 34　ＯＬ　（全 31 頁）

(21)出願番号　特願2003-355847(P2003-355847)
(22)出願日　平成15年10月16日(2003.10.16)
(31)優先権主張番号　特願2003-125198(P2003-125198)
(32)優先日　平成15年4月30日(2003.4.30)
(33)優先権主張国　日本国(JP)

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ソニー株式会社
東京都品川区北品川６丁目７番３５号
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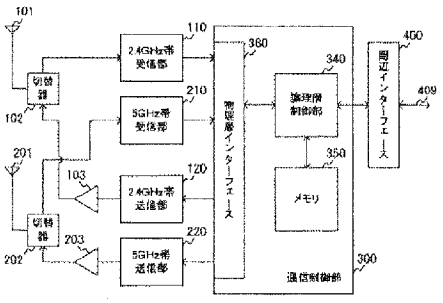
東京都品川区北品川６丁目７番３５号　ソニー株式会社内

Ｆターム(参考)　5K014 AA01 CA06 DA02 FA03 FA11
5K022 DD01 DD13 DD19 DD21 FF00
5K059 CC02

(54)【発明の名称】無線通信システム、送信装置および受信装置

(57)【要約】
【課題】　異なる伝送路を同時に使用して通信状態に応じた伝送形態によって効率の良い伝送を実現する。
【解決手段】　受信部１１０および送信部１２０は、２．４ＧＨｚ帯の無線通信を行うための変復調等を行う。受信部２１０および送信部２２０は、５ＧＨｚ帯の無線通信を行うための変復調等を行う。送信装置側の論理層制御部３４０は、データを分配して送信部１２０および２２０により２．４ＧＨｚ帯および５ＧＨｚ帯の両者を使用して同時にデータ送信を行う。受信装置側の論理層制御部３４０は、受信部１１０および２１０により２．４ＧＨｚ帯および５ＧＨｚ帯の両者からデータを同時に受信して、データを併合する。データを受信できなかった場合には、通信状態に応じて伝送形態を設定する。
【選択図】　図２



【特許請求の範囲】
【請求項1】
送信データを分配するデータ分配手段と、
前記分配された送信データに分配順序を付加するデータ出力手段と、
前記分配順序が付加された前記分配された送信データ同士を同時に異なる伝送路により送信する送信手段と
を具備することを特徴とする送信装置。
【請求項2】
前記データ分配手段は、前記分配された送信データ同士が実質的に等しい時間長で送信されるように前記送信データを分配する
ことを特徴とする請求項１記載の送信装置。
【請求項3】
前記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、
前記データ分配手段は、前記レスポンス判別手段により前記前回のデータ送信において送信データの何れかの受信に失敗したと判別された場合には前回と同じ送信データを再送するように分配する
ことを特徴とする請求項１記載の送信装置。
【請求項4】
前記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、
前記データ分配手段は、前記レスポンス判別手段により前記前回のデータ送信において送信データの何れかの受信に失敗したと判別された場合には当該失敗に係る送信データを同時に異なる伝送路により送信するように分配する
ことを特徴とする請求項１記載の送信装置。
【請求項5】
前記送信手段は、前記失敗に係る送信データを同時に異なる伝送路により送信する際には前記前回のデータ送信において送信データの受信に成功した伝送路の変調モードと同じ変調モードで送信する
ことを特徴とする請求項４記載の送信装置。
【請求項6】
前記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、
前記データ分配手段は、前記レスポンス判別手段により前記前回のデータ送信において送信データの受信に失敗したと判別された頻度が同一の伝送路において所定基準を超えた場合にはそれ以降当該伝送路における送信を行わないように送信データを分配する
ことを特徴とする請求項１記載の送信装置。
【請求項7】
前記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、
前記データ分配手段は、前記レスポンス判別手段により同一の伝送路において所定回数以上連続して前記前回のデータ送信における送信データの受信に失敗したと判別された場合にはそれ以降当該伝送路における送信を行わないように送信データを分配する
ことを特徴とする請求項１記載の送信装置。
【請求項8】
前記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、
前記データ分配手段は、前記レスポンス判別手段により前記レスポンスの受信に成功したと判別された頻度が同一の伝送路において所定基準を超えた場合にはそれ以降当該伝送路における送信を行うように送信データを分配する

ことを特徴とする請求項１記載の送信装置。
【請求項9】
　前記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、
　前記データ分配手段は、前記レスポンス判別手段により同一の伝送路において所定回数以上連続して前記レスポンスの受信に成功したと判別された場合にはそれ以降当該伝送路における送信を行うように送信データを分配する
ことを特徴とする請求項１記載の送信装置。
【請求項10】
　前記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、
　前記データ分配手段は、前記レスポンス判別手段により前記前回のデータ送信において送信データの受信に失敗したと判別された頻度が同一の伝送路において所定基準を超えた場合にはそれ以降当該伝送路における送信をより雑音耐性のある変調モードにより行うように送信データを分配する
ことを特徴とする請求項１記載の送信装置。
【請求項11】
　前記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、
　前記データ分配手段は、前記レスポンス判別手段により同一の伝送路において所定回数以上連続して前記前回のデータ送信における送信データの受信に失敗したと判別された場合にはそれ以降当該伝送路における送信をより雑音耐性のある変調モードにより行うように送信データを分配する
ことを特徴とする請求項１記載の送信装置。
【請求項12】
　前記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、
　前記データ分配手段は、前記レスポンス判別手段により前記レスポンスの受信に成功したと判別された頻度が同一の伝送路において所定基準を超えた場合にはそれ以降当該伝送路における送信をより雑音耐性のない変調モードにより行うように送信データを分配する
ことを特徴とする請求項１記載の送信装置。
【請求項13】
　前記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、
　前記データ分配手段は、前記レスポンス判別手段により同一の伝送路において所定回数以上連続して前記レスポンスの受信に成功したと判別された場合にはそれ以降当該伝送路における送信をより雑音耐性のない変調モードにより行うように送信データを分配する
ことを特徴とする請求項１記載の送信装置。
【請求項14】
　データ送信に先立ち各伝送路の空き状況を報告するキャリアセンス手段をさらに具備し、
　前記送信手段は、前記キャリアセンス手段により空いていないと報告された伝送路への前記データ送信を行わず且つ当該伝送路以外の伝送路における前記データ送信を開始した後で前記空いていないと判断された伝送路に空きが生じた場合にも前記空いていないと判断された伝送路への前記データ送信を行わない
ことを特徴とする請求項１記載の送信装置。
【請求項15】
　前記異なる伝送路は、互いに異なる周波数帯を用いることを特徴とする請求項１記載の送信装置。
【請求項16】

前記異なる伝送路は、同一の周波数帯における互いに異なるチャネルを用いることを特徴とする請求項１記載の送信装置。
【請求項17】
前記異なる伝送路は、同一のチャネルにおける互いに異なる伝達関数を有する伝搬路を用いることを特徴とする請求項１記載の送信装置。
【請求項18】
分配されてその分配順序を付加されたデータを同時に異なる伝送路により受信するデータ受信手段と、
前記分配順序に従って前記受信したデータを併合するデータ併合手段と
を具備することを特徴とする受信装置。
【請求項19】
前記異なる伝送路毎にデータ受信状態を判別するデータ判別手段と、
このデータ判別手段による全ての判別結果を含む同一のレスポンスを前記異なる伝送路の全てに出力するレスポンス出力手段と
をさらに具備することを特徴とする請求項１８記載の受信装置。
【請求項20】
前記異なる伝送路は、互いに異なる周波数帯を用いることを特徴とする請求項１８記載の受信装置。
【請求項21】
前記異なる伝送路は、同一の周波数帯における互いに異なるチャネルを用いることを特徴とする請求項１８記載の受信装置。
【請求項22】
前記異なる伝送路は、同一のチャネルにおける互いに異なる伝達関数を有する伝搬路を用いることを特徴とする請求項１８記載の受信装置。
【請求項23】
無線により通信を行う送信装置および受信装置を具備する通信システムであって、
前記送信装置は、送信データを分配するデータ分配手段と、前記分配された送信データに分配順序を付加するデータ出力手段と、前記分配順序が付加された前記分配された送信データ同士を同時に異なる伝送路により送信する送信手段とを備え、
前記受信装置は、前記分配順序を付加されたデータを同時に異なる伝送路により受信するデータ受信手段と、前記分配順序に従って前記受信したデータを併合するデータ併合手段と、前記異なる伝送路毎にデータ受信状態を判別するデータ判別手段と、このデータ判別手段による全ての判別結果を含む同一のレスポンスを前記異なる伝送路の全てにより前記装置装置に出力するレスポンス出力手段とを備える
ことを特徴とする通信システム。
【請求項24】
前記異なる伝送路は、互いに異なる周波数帯を用いることを特徴とする請求項２３記載の通信システム。
【請求項25】
前記異なる伝送路は、同一の周波数帯における互いに異なるチャネルを用いることを特徴とする請求項２３記載の通信システム。
【請求項26】
前記異なる伝送路は、同一のチャネルにおける互いに異なる伝達関数を有する伝搬路を用いることを特徴とする請求項２３記載の通信システム。
【請求項27】
送信データを分配する手順と、
前記分配された送信データに分配順序を付加する手順と、
前記分配順序が付加された前記分配された送信データ同士を同時に異なる伝送路により送信する手順と
を具備することを特徴とする処理方法。

【請求項28】
送信データを分配する手順と、
前記分配された送信データに分配順序を付加する手順と、
前記分配順序が付加された前記分配された送信データ同士を同時に異なる伝送路により送信する手順と、
前記異なる伝送路の何れかの伝送路において前記送信データの受信に失敗した場合には当該送信と同じ送信データを再送するように分配する手順と
を具備することを特徴とする処理方法。
【請求項29】
送信データを分配する手順と、
前記分配された送信データに分配順序を付加する手順と、
前記分配順序が付加された前記分配された送信データ同士を同時に異なる伝送路により送信する手順と、
前記異なる伝送路の何れかの伝送路において前記送信データの受信に失敗した場合には当該失敗に係るデータを同時に異なる伝送路により送信するように分配する手順と
を具備することを特徴とする処理方法。
【請求項30】
分配されてその分配順序を付加されたデータを同時に異なる伝送路により受信する手順と、
前記分配順序に従って前記受信したデータを併合する手順と、
前記異なる伝送路毎にデータ受信状態を判別する手順と、
前記異なる伝送路毎のデータ受信状態の判別結果を含む同一のレスポンスを前記異なる伝送路の全てに出力する手順と
を具備することを特徴とする処理方法。
【請求項31】
送信データを分配する手順と、
前記分配された送信データに分配順序を付加する手順と、
前記分配順序が付加された前記分配された送信データ同士を同時に異なる伝送路により送信する手順と
をコンピュータに実行させることを特徴とするプログラム。
【請求項32】
送信データを分配する手順と、
前記分配された送信データに分配順序を付加する手順と、
前記分配順序が付加された前記分配された送信データ同士を同時に異なる伝送路により送信する手順と、
前記異なる伝送路の何れかの伝送路において前記送信データの受信に失敗した場合には当該送信と同じ送信データを再送するように分配する手順と
をコンピュータに実行させることを特徴とするプログラム。
【請求項33】
送信データを分配する手順と、
前記分配された送信データに分配順序を付加する手順と、
前記分配順序が付加された前記分配された送信データ同士を同時に異なる伝送路により送信する手順と、
前記異なる伝送路の何れかの伝送路において前記送信データの受信に失敗した場合には当該失敗に係るデータを同時に異なる伝送路により送信するように分配する手順と
をコンピュータに実行させることを特徴とするプログラム。
【請求項34】
分配されてその分配順序を付加されたデータを同時に異なる伝送路により受信する手順と、
前記分配順序に従って前記受信したデータを併合する手順と、

前記異なる伝送路毎にデータ受信状態を判別する手順と、
前記異なる伝送路毎のデータ受信状態の判別結果を含む同一のレスポンスを前記異なる伝送路の全てに出力する手順と
をコンピュータに実行させることを特徴とするプログラム。

【発明の詳細な説明】
【技術分野】
【0001】
本発明は、分配されたデータ同士を同時に異なる伝送路により送受信する通信システムに関し、特に通信システム、送信装置、受信装置、および、これらにおける処理方法ならびに当該方法をコンピュータに実行させるプログラムに関する。
【背景技術】
【0002】
周波数ダイバーシティ方式は、異なる複数の搬送波により同一の信号を送信し、受信側においてそれらを選択または合成することにより特性改善を図る方法である。この周波数ダイバーシティ方式においては、同一信号が複数の搬送波により送信されるため、そのうちのいくつかが受信不可能となった場合でも他の搬送波により受信を行なうことができるという利点を有する。特に、ＯＦＤＭ（直交周波数分割多重）方式では多くの搬送波を持つため、全ての搬送波が受信不能となる可能性は極めて低く、また、同一信号を送る搬送波の組合わせを柔軟に選択できるという理由から広く用いられている（例えば、特許文献１および特許文献２参照。）。
【特許文献1】特開２０００－２０１１３０号公報（図５）
【特許文献2】特開平１０－３３６１５９号公報（図１）
【発明の開示】
【発明が解決しようとする課題】
【0003】
上述の周波数ダイバーシティ方式では、同一信号を複数の搬送波により送信することにより、例えば、マルチパスの影響によって受信側で直接波と遅延波とが逆相となるキャリアにより受信電波強度が落ち込むというディップ現象を生じた場合であっても、何れかの搬送波により受信を行うことができる。
【0004】
しかし、この周波数ダイバーシティ方式では、同一信号を同時に送信するため、それだけ伝送レートが低下することになる。現状の技術では、例えばＩＥＥＥ（米国電気電子学会）の８０２標準化委員会のワーキンググループによるＩＥＥＥ８０２．１１ａ規格における無線伝送速度の最大値は５４Ｍｂｐｓ（ビット／秒）であり、有線による伝送速度と比べて十分とは言えない。
【0005】
そこで、本発明の目的は、異なる伝送路を同時に使用して通信状態に応じた伝送形態によって効率の良い伝送を実現することにある。
【課題を解決するための手段】
【0006】
上記課題を解決するために本発明の請求項１記載の送信装置は、送信データを分配するデータ分配手段と、上記分配された送信データに分配順序を付加するデータ出力手段と、上記分配順序が付加された上記分配された送信データ同士を同時に異なる伝送路により送信する送信手段とを具備する。これにより、受信側にて分配順序に従って併合できる状態で送信データが同時に異なる伝送路により送信されるという作用をもたらす。
【0007】
また、本発明の請求項２記載の送信装置は、請求項１記載の送信装置において、上記データ分配手段が、上記分配された送信データ同士が実質的に等しい時間長で送信されるように上記送信データを分配するものである。これにより、同時に異なる伝送路により送信される時間長が揃い、伝送効率を向上させるという作用をもたらす。

【0008】
また、本発明の請求項３記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、上記データ分配手段は、上記レスポンス判別手段により上記前回のデータ送信において送信データの何れかの受信に失敗したと判別された場合には前回と同じ送信データを再送するように分配するものである。これにより、再送のための制御を簡略にするという作用をもたらす。
【0009】
また、本発明の請求項４記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、上記データ分配手段は、上記レスポンス判別手段により上記前回のデータ送信において送信データの受信に失敗したと判別された場合には当該失敗に係る送信データを同時に異なる伝送路により送信するように分配するものである。これにより、受信に失敗したデータをより確実に送信するという作用をもたらす。
【0010】
また、本発明の請求項５記載の送信装置は、請求項４記載の送信装置において、上記送信手段が上記失敗に係る送信データを同時に異なる伝送路により送信する際には上記前回のデータ送信において送信データの受信に成功した伝送路の変調モードと同じ変調モードで送信するものである。これにより、実績のある変調モードによってより確実に送信するという作用をもたらす。
【0011】
また、本発明の請求項６記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、上記データ分配手段は、上記レスポンス判別手段により上記前回のデータ送信において送信データの受信に失敗したと判別された頻度が同一の伝送路において所定基準を超えた場合にはそれ以降当該伝送路における送信を行わないように送信データを分配するものである。これにより、受信の失敗頻度の高い伝送路は通信状態が悪化しているものとみなして送信中止にするという作用をもたらす。
【0012】
また、本発明の請求項７記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、上記データ分配手段は、上記レスポンス判別手段により同一の伝送路において所定回数以上連続して上記前回のデータ送信における送信データの受信に失敗したと判別された場合にはそれ以降当該伝送路における送信を行わないように送信データを分配するものである。これにより、所定回数以上連続して受信に失敗した伝送路は通信状態が悪化しているものとみなして送信中止にするという作用をもたらす。
【0013】
また、本発明の請求項８記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、上記データ分配手段は、上記レスポンス判別手段により上記レスポンスの受信に成功したと判別された頻度が同一の伝送路において所定基準を超えた場合にはそれ以降当該伝送路における送信を行うように送信データを分配するものである。これにより、受信の成功頻度の高くなった伝送路は通信状態が改善しているものとみなして送信再開するという作用をもたらす。
【0014】
また、本発明の請求項９記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、上記データ分配手段は、上記レスポンス判別手段により同一の伝送路において所定回数以上連続して上記レスポンスの受信に成功したと判別された場合にはそれ以降当該伝送路における送信を行うように送信データを分配するものである。これにより、所

定回数以上連続して受信に成功した伝送路は通信状態が改善しているものとみなして送信再開するという作用をもたらす。

【0015】

また、本発明の請求項１０記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、上記データ分配手段は、上記レスポンス判別手段により上記前回のデータ送信において送信データの受信に失敗したと判別された頻度が同一の伝送路において所定基準を超えた場合にはそれ以降当該伝送路における送信をより雑音耐性のある変調モードにより行うように送信データを分配するものである。これにより、受信の失敗頻度の高い伝送路は通信状態が悪化しているものとみなしてより雑音耐性のある変調モードにより送信するという作用をもたらす。

【0016】

また、本発明の請求項１１記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、上記データ分配手段は、上記レスポンス判別手段により同一の伝送路において所定回数以上連続して上記前回のデータ送信における送信データの受信に失敗したと判別された場合にはそれ以降当該伝送路における送信をより雑音耐性のある変調モードにより行うように送信データを分配するものである。これにより、所定回数以上連続して受信に失敗した伝送路は通信状態が悪化しているものとみなしてより雑音耐性のある変調モードにより送信するという作用をもたらす。

【0017】

また、本発明の請求項１２記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、上記データ分配手段は、上記レスポンス判別手段により上記レスポンスの受信に成功したと判別された頻度が同一の伝送路において所定基準を超えた場合にはそれ以降当該伝送路における送信をより雑音耐性のない変調モードにより行うように送信データを分配するものである。これにより、受信の成功頻度の高くなった伝送路は通信状態が改善しているものとみなしてより雑音耐性のない変調モードにより送信するという作用をもたらす。

【0018】

また、本発明の請求項１３記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路毎に前回のデータ送信に対するレスポンスを判別するレスポンス判別手段をさらに具備し、上記データ分配手段は、上記レスポンス判別手段により同一の伝送路において所定回数以上連続して上記レスポンスの受信に成功したと判別された場合にはそれ以降当該伝送路における送信をより雑音耐性のない変調モードにより行うように送信データを分配するものである。これにより、所定回数以上連続して受信に成功した伝送路は通信状態が改善しているものとみなしてより雑音耐性のない変調モードにより送信するという作用をもたらす。

【0019】

また、本発明の請求項１４記載の送信装置は、請求項１記載の送信装置において、データ送信に先立ち各伝送路の空き状況を報告するキャリアセンス手段をさらに具備し、上記送信手段は、上記キャリアセンス手段により空いていないと報告された伝送路への上記データ送信を行わず且つ当該伝送路以外の伝送路における上記データ送信を開始した後で上記空いていないと判断された伝送路に空きが生じた場合にも上記空いていないと判断された伝送路への上記データ送信を行わないというものである。これにより、送信のための制御を簡略にするという作用をもたらす。

【0020】

また、本発明の請求項１５記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路が互いに異なる周波数帯を用いるものである。これにより、例えば２．４ＧＨｚ帯と５ＧＨｚ帯という異なる周波数帯により送信データが同時に送信されるという作

用をもたらす。

【0021】

また、本発明の請求項１６記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路が同一の周波数帯における互いに異なるチャネルを用いるものである。これにより、同一の周波数帯であっても異なるチャネルにより送信データが同時に送信されるという作用をもたらす。

【0022】

また、本発明の請求項１７記載の送信装置は、請求項１記載の送信装置において、上記異なる伝送路が同一のチャネルにおける互いに異なる伝達関数を有する伝搬路を用いるものである。これにより、同一のチャネルであっても異なる伝達関数を有する伝搬路により送信データが同時に送信されるという作用をもたらす。

【0023】

また、本発明の請求項１８記載の受信装置は、分配されてその分配順序を付加されたデータを同時に異なる伝送路により受信するデータ受信手段と、上記分配順序に従って上記受信したデータを併合するデータ併合手段とを具備する。これにより、送信側で分配されたデータを同時に異なる伝送路により受信して併合するという作用をもたらす。

【0024】

また、本発明の請求項１９記載の受信装置は、請求項１８記載の受信装置において、上記異なる伝送路毎にデータ受信状態を判別するデータ判別手段と、このデータ判別手段による全ての判別結果を含む同一のレスポンスを上記異なる伝送路の全てに出力するレスポンス出力手段とをさらに具備する。これにより、何れかの伝送路の通信状態が悪化している場合でもデータ送信元に対してより確実にレスポンスを返送するという作用をもたらす。

【0025】

また、本発明の請求項２０記載の受信装置は、請求項１８記載の受信装置において、上記異なる伝送路が互いに異なる周波数帯を用いるものである。これにより、送信側で分配されたデータが異なる周波数帯により同時に受信されるという作用をもたらす。

【0026】

また、本発明の請求項２１記載の受信装置は、請求項１８記載の受信装置において、上記異なる伝送路が同一の周波数帯における互いに異なるチャネルを用いるものである。これにより、同一の周波数帯であっても異なるチャネルによりデータが同時に受信されるという作用をもたらす。

【0027】

また、本発明の請求項２２記載の受信装置は、請求項１８記載の受信装置において、上記異なる伝送路が同一のチャネルにおける互いに異なる伝達関数を有する伝搬路を用いるものである。これにより、同一のチャネルであっても異なる伝達関数を有する伝搬路によりデータが同時に受信されるという作用をもたらす。

【0028】

また、本発明の請求項２３記載の通信システムは、無線により通信を行う送信装置および受信装置を具備する通信システムであって、上記送信装置は、送信データを分配するデータ分配手段と、上記分配された送信データに分配順序を付加するデータ出力手段と、上記分配順序が付加された上記分配された送信データ同士を同時に異なる伝送路により送信する送信手段とを備え、上記受信装置は、上記分配順序を付加されたデータを同時に異なる伝送路により受信するデータ受信手段と、上記分配順序に従って上記受信したデータを併合するデータ併合手段と、上記異なる伝送路毎にデータ受信状態を判別するデータ判別手段と、このデータ判別手段による全ての判別結果を含む同一のレスポンスを上記異なる伝送路の全てにより上記装置装置に出力するレスポンス出力手段とを備える。これにより、送信側で分配されたデータに分配順序を付加して同時に異なる伝送路により送信し、受信側にて分配順序に従ってデータを併合するという作用をもたらす。

【0029】

また、本発明の請求項２４記載の通信システムは、請求項２３記載の通信システムにおいて、上記異なる伝送路が互いに異なる周波数帯を用いるものである。これにより、送信側で分配されたデータを異なる周波数帯により同時に送信し、受信側で異なる周波数帯により受信して併合するという作用をもたらす。

【0030】

また、本発明の請求項２５記載の通信システムは、請求項２３記載の通信システムにおいて、上記異なる伝送路が同一の周波数帯における互いに異なるチャネルを用いるものである。これにより、同一の周波数帯であっても異なるチャネルによりデータが同時に送受信されるという作用をもたらす。

【0031】

また、本発明の請求項２６記載の通信システムは、請求項２３記載の通信システムにおいて、上記異なる伝送路が同一のチャネルにおける互いに異なる伝達関数を有する伝搬路を用いるものである。これにより、同一のチャネルであっても異なる伝達関数を有する伝搬路によりデータが同時に送受信されるという作用をもたらす。

【0032】

また、本発明の請求項２７記載の処理方法は、送信データを分配する手順と、上記分配された送信データに分配順序を付加する手順と、上記分配順序が付加された上記分配された送信データ同士を同時に異なる伝送路により送信する手順とを具備する。これにより、受信側にて分配順序に従って併合できる状態で送信データが同時に異なる伝送路により送信されるという作用をもたらす。

【0033】

また、本発明の請求項２８記載の処理方法は、送信データを分配する手順と、上記分配された送信データに分配順序を付加する手順と、上記分配順序が付加された上記分配された送信データ同士を同時に異なる伝送路により送信する手順と、上記異なる伝送路の何れかの伝送路において上記送信データの受信に失敗した場合には当該送信と同じ送信データを再送するように分配する手順とを具備する。これにより、再送のための制御を簡略にするという作用をもたらす。

【0034】

また、本発明の請求項２９記載の処理方法は、送信データを分配する手順と、上記分配された送信データに分配順序を付加する手順と、上記分配順序が付加された上記分配された送信データ同士を同時に異なる伝送路により送信する手順と、上記異なる伝送路の何れかの伝送路において上記送信データの受信に失敗した場合には当該失敗に係るデータを同時に異なる伝送路により送信するように分配する手順とを具備する。これにより、受信に失敗したデータをより確実に送信するという作用をもたらす。

【0035】

また、本発明の請求項３０記載の処理方法は、分配されてその分配順序を付加されたデータを同時に異なる伝送路により受信する手順と、上記分配順序に従って上記受信したデータを併合する手順と、上記異なる伝送路毎にデータ受信状態を判別する手順と、上記異なる伝送路毎のデータ受信状態の判別結果を含む同一のレスポンスを上記異なる伝送路の全てに出力する手順とを具備する。これにより、何れかの伝送路の通信状態が悪化している場合でもデータ送信元に対してより確実にレスポンスを返送するという作用をもたらす。

【0036】

また、本発明の請求項３１記載のプログラムは、送信データを分配する手順と、上記分配された送信データに分配順序を付加する手順と、上記分配順序が付加された上記分配された送信データ同士を同時に異なる伝送路により送信する手順とをコンピュータに実行させるものである。これにより、受信側にて分配順序に従って併合できる状態で送信データが同時に異なる伝送路により送信されるという作用をもたらす。

【0037】

また、本発明の請求項３２記載のプログラムは、送信データを分配する手順と、上記分

配された送信データに分配順序を付加する手順と、上記分配順序が付加された上記分配された送信データ同士を同時に異なる伝送路により送信する手順と、上記異なる伝送路の何れかの伝送路において上記送信データの受信に失敗した場合には当該送信と同じ送信データを再送するように分配する手順とをコンピュータに実行させるものである。これにより、再送のための制御を簡略にするという作用をもたらす。

【0038】

また、本発明の請求項３３記載のプログラムは、送信データを分配する手順と、上記分配された送信データに分配順序を付加する手順と、上記分配順序が付加された上記分配された送信データ同士を同時に異なる伝送路により送信する手順と、上記異なる伝送路の何れかの伝送路において上記送信データの受信に失敗した場合には当該失敗に係るデータを同時に異なる伝送路により送信するように分配する手順とをコンピュータに実行させるものである。これにより、受信に失敗したデータをより確実に送信するという作用をもたらす。

【0039】

また、本発明の請求項３４記載のプログラムは、分配されてその分配順序を付加されたデータを同時に異なる伝送路により受信する手順と、上記分配順序に従って上記受信したデータを併合する手順と、上記異なる伝送路毎にデータ受信状態を判別する手順と、上記異なる伝送路毎のデータ受信状態の判別結果を含む同一のレスポンスを上記異なる伝送路の全てに出力する手順とをコンピュータに実行させるものである。これにより、何れかの伝送路の通信状態が悪化している場合でもデータ送信元に対してより確実にレスポンスを返送するという作用をもたらす。

【発明の効果】

【0040】

本発明によれば、異なる伝送路を同時に使用して通信状態に応じた伝送形態によって効率の良い伝送を実現するという優れた効果を奏し得る。

【発明を実施するための最良の形態】

【0041】

次に本発明の実施の形態について図面を参照して詳細に説明する。

【0042】

図１は、本発明の実施の形態におけるデータ分配の概要を示す図である。送信装置における送信対象のデータは、先頭からＤ１とＤ２、Ｄ３とＤ４、といった具合に順次分割される。そして、分割されたデータは例えばデータＤ１を伝送路Ａで、データＤ２を伝送路Ｂでといった具合に複数の異なる伝送路に分配されて送信される。この図１では、伝送路ＡおよびＢという２つの伝送路に分配する例が示されているが、分配する伝送路の数は適宜設定することができる。

【0043】

分配されたデータＤ１およびＤ２は、異なる伝送路ＡおよびＢによりそれぞれ同時に送信される。各伝送路における変調モードは一致している必要はないが、送信に要する時間長が略一致するようにデータ分割の際のビット数を設定することが望ましい。データＤ１およびＤ２が送信された後には、データＤ３およびＤ４が伝送路ＡおよびＢによりそれぞれ同時に送信される。各伝送路における通信状態が許す限り、このような伝送路ＡおよびＢによる同時送信が順次行われる。

【0044】

伝送路ＡおよびＢの具体的な周波数については特に制約はないが、無線ＬＡＮ（ローカルエリアネットワーク）における使用を想定すると、例えば、２．４ＧＨｚ帯および５ＧＨｚ帯を使用することが考えられる。ＩＥＥＥ８０２．１１規格では２．４ＧＨｚ帯の使用が規定されている。また、その拡張規格であるＩＥＥＥ８０２．１１ａ規格では、５ＧＨｚ帯が使用され、変調方式としてＯＦＤＭ方式が採用されている。従って、ＩＥＥＥ８０２．１１ａ規格によるＯＦＤＭ方式を５ＧＨｚ帯および２．４ＧＨｚ帯の両者で同時に用いることにより高い伝送レートを実現することが可能である。

【0045】
一方、他の拡張規格であるＩＥＥＥ８０２．１１ｂおよびｇ規格では、２．４ＧＨｚ帯においてＤＳＳＳ（直接スペクトラム拡散）方式が採用されている。従って、５ＧＨｚ帯でＯＦＤＭ方式を使用して、２．４ＧＨｚ帯ではＤＳＳＳ方式を使用することにより、ＩＥＥＥ８０２．１１ａ、ｂおよびｇ規格の互換性を維持しながら高い伝送レートを実現することが可能である。
【0046】
本発明において異なる伝送路により同時に通信を行う際、異なる周波数帯を用いてもよく、同一周波数帯の異なるチャネルを用いてもよく、また、同一のチャネルにおける異なる伝達関数を有する伝搬路を用いてもよいが、この実施の形態では、一例として、異なる周波数帯を用いて同時に送受信を行うことを想定して構成および動作について説明する。
【0047】
図２は、本発明の実施の形態における端末局または基地局の構成を示す図である。この端末局または基地局は、２．４ＧＨｚ帯および５ＧＨｚ帯用の送信装置または受信装置としての機能を有する。すなわち、２．４ＧＨｚ帯用のアンテナ１０１と、切替器１０２と、パワーアンプ１０３と、受信部１１０と、送信部１２０とを備えるとともに、５ＧＨｚ帯用のアンテナ２０１と、切替器２０２と、パワーアンプ２０３と、受信部２１０と、送信部２２０とを備える。従って、２．４ＧＨｚ帯における送受信と５ＧＨｚ帯における送受信とを同時に行うことができる。
【0048】
アンテナ１０１および２０１は、それぞれ２．４ＧＨｚ帯および５ＧＨｚ帯の高周波信号を送受信するために用いられる。切替器１０２および２０２は、それぞれ２．４ＧＨｚ帯および５ＧＨｚ帯における受信部１１０および２１０と送信部１２０および２２０とを切替えてアンテナ１０１および２０１に接続するものである。２．４ＧＨｚ帯および５ＧＨｚ帯の受信部１１０および２１０は、それぞれ２．４ＧＨｚ帯および５ＧＨｚ帯における高周波信号を受信して復調および復号するものである。一方、２．４ＧＨｚ帯および５ＧＨｚ帯の送信部１２０および２２０は、それぞれ２．４ＧＨｚ帯および５ＧＨｚ帯における高周波信号を送信するために符号化および変調するものである。２．４ＧＨｚ帯および５ＧＨｚ帯の送信部１２０および２２０の出力部には、それぞれパワーアンプ１０３および２０３が接続されている。このパワーアンプ１０３および２０３は、送信信号を増幅する。
【0049】
端末局または基地局は通信制御部３００をさらに有する。この通信制御部３００は主として論理層の処理を行うものであり、論理層制御部３４０と、メモリ３５０と、物理層インターフェース３６０とを含む。論理層制御部３４０は、論理層として例えばデータリンク層におけるＭＡＣ（メディアアクセス制御）副層のフレームを処理する。メモリ３５０は、論理層制御部３４０による処理に必要な作業データ等を保持するものである。物理層インターフェース３６０は、２．４ＧＨｚ帯および５ＧＨｚ帯の受信部１１０および２１０ならびに送信部１２０および２２０により実現される物理層とのやりとりを行うインターフェースである。
【0050】
端末局または基地局は周辺インターフェース４００をさらに有する。端末局の場合は、周辺インターフェース４００としてホストインターフェースが使用され、このホストインターフェースのポート４０９にはコンピュータ等のホスト機器が接続される。一方、基地局の場合は、周辺インターフェース４００としてネットワークインターフェースが使用され、このネットワークインターフェースのポート４０９にはインターネット等を利用するためのモデム等が接続される。
【0051】
図３は、本発明の実施の形態における端末局または基地局の受信部２１０の構成を示す図である。この受信部２１０は、アンテナ２０１により受信した５ＧＨｚ帯の高周波信号

を中間信号に変換して復調および復号するものである。ＯＦＤＭ方式を想定すると、この受信部２１０は、ダウンコンバータ２１１と、直交復調器２１２と、離散フーリエ変換器２１３と、差動復号器２１４と、デマップ回路２１５と、誤り訂正回路２１６とを有する。

【0052】

ダウンコンバータ２１１は、５ＧＨｚ帯の高周波信号を所定の中間周波数帯の中間信号に変換する。直交復調器２１２は、ダウンコンバータ２１１により変換された中間信号を直交検波して、中間信号と同相の同相信号（Ｉ信号）および中間信号の直交成分である直交信号（Ｑ信号）からなるベースバンド信号を抽出する。離散フーリエ変換器２１３は、直交復調器２１２により抽出されたベースバンド信号をガード期間を除いた有効シンボル期間でフーリエ変換して各副搬送波毎に複素データを復調する。

【0053】

差動復号器２１４は、離散フーリエ変換器２１３により復調された複素データを差動復号するものであり、例えばＰＳＫ方式において利用される。デマップ回路２１５は、差動復号器２１４により復号された複素データをデマップしてデータシンボルを取り出す。誤り訂正回路２１６は、ビタビ復号等によりデータの訂正を行う。このようにして得られたデータは通信制御部３００の物理層インターフェース３６０に出力される。

【0054】

ここでは５ＧＨｚ帯受信部２１０について説明したが、２．４ＧＨｚ帯受信部１１０も同様の構成により、アンテナ１０１により受信した２．４ＧＨｚ帯の高周波信号を中間信号に変換して復調および復号する。

【0055】

図４は、本発明の実施の形態における端末局または基地局の送信部２２０の構成を示す図である。この送信部２２０は、物理層インターフェース３６０からのデータを符号化および変調して高周波信号に変換してアンテナ２０１に向けて出力するものである。ＯＦＤＭ方式を想定すると、この送信部２２０は、誤り訂正符号化回路２２１と、マップ回路２２２と、差動符号化器２２３と、逆離散フーリエ変換器２２４と、直交変調器２２５と、アップコンバータ２２６とを有する。

【0056】

誤り訂正符号化回路２２１は、ビットレートに応じて畳み込み符号等で符号化する。マップ回路２２２は、誤り訂正符号化回路２２１により誤り符号化されたデータを複素データシンボルにマッピングする。差動符号化器２２３は、マップ回路２２２によりマッピングされた複素データシンボルを差動符号化して各副搬送波毎に複素データを割り当てる。

【0057】

逆離散フーリエ変換器２２４は、差動符号化器２２３により差動符号化された複素データを逆フーリエ変換により変調して、ベースバンド信号（Ｉ信号およびＱ信号）を出力する。直交変調器２２５は、ベースバンド信号を直交変調して所定の中間周波数帯の中間信号を生成する。アップコンバータ２２６は、直交変調器２２５により生成された中間信号を５ＧＨｚ帯の高周波信号に変換してアンテナ２０１に向けて出力する。

【0058】

なお、ここでは５ＧＨｚ帯送信部２２０について説明したが、２．４ＧＨｚ帯送信部１２０も同様の構成により、物理層インターフェース３６０からのデータを符号化および変調して２．４ＧＨｚ帯の高周波信号に変換してアンテナ１０１に向けて出力する。

【0059】

図５は、本発明の実施の形態における通信制御部３００によるデータ送信制御機能の機能構成を示す図である。このデータ送信制御機能は、データバッファ３３２に保持されたデータを分配するデータ分配部３３１と、周波数帯Ａ（例えば２．４ＧＨｚ帯）におけるデータ分配を制御する分配制御部Ａ３１０と、周波数帯Ｂ（例えば５ＧＨｚ帯）におけるデータ分配を制御する分配制御部Ｂ３２０とからなる。

【0060】

分配制御部Ａ３１０は、キャリアセンス部Ａ３１１と、レスポンス判別部Ａ３１２と、カウンタＡ３１３と、データ出力部Ａ３１５とからなる。キャリアセンス部Ａ３１１は、周波数帯Ａにおける空き状況をデータ出力部Ａ３１５、レスポンス判別部Ａ３１２およびデータ分配器３３１に報告する。キャリアセンス部Ａ３１１により周波数帯Ａが空いていないと報告された場合、データ出力部Ａ３１５はデータを出力しない。その結果、周波数帯Ｂが空いていれば周波数帯Ｂだけでデータ送信が行われることになる。その場合、周波数帯Ｂにおけるデータ送信が開始されてしまうと、その後で周波数帯Ａが空いたことが判明したとしてもその回の周波数帯Ａにおけるデータ転送は行われないように制御することが望ましい。これは、各周波数帯におけるデータ送信のタイミングにずれが生じることによる制御の複雑化を回避するためである。また、レスポンス判別部Ａ３１２およびデータ分配器３３１は、キャリアセンス部Ａ３１１により周波数帯Ａが空いていないと報告された場合、実際のレスポンスを待つことなく次のデータ送信に関する制御を行うことができる。

【0061】

レスポンス判別部Ａ３１２は、周波数帯Ａにおける前回のデータ送信に対するレスポンスを判別してその結果をデータ分配部３３１、カウンタＡ３１３およびカウンタＢ３２３に供給する。データ分配部３３１は、データバッファ３３２からのデータを後述のように順次、データ出力部Ａ３１５およびデータ出力部Ｂ３２５に分配していく。但し、次のようにカウンタＡ３１３の状態に応じて、周波数帯Ａにおけるデータ送信を中止（すなわち、送信中止モードへ移行）し、または再開（すなわち、送信モードへ移行）する。

【0062】

カウンタＡ３１３は、成功カウンタＡおよび失敗カウンタＡからなる。成功カウンタＡは、周波数帯Ａにおけるデータ送信に対するレスポンスの受信に連続して成功した際の連続回数をカウントする。一方、失敗カウンタＡは、周波数帯Ａにおける送信データの受信に連続して失敗した際の連続回数をカウントする。データ分配部３３１は、失敗カウンタＡの値が所定回数以上を示した場合、それ以降は周波数帯Ａにおけるデータ送信を行わないように送信データを分配する。すなわち、周波数帯Ａに関し送信モードから送信中止モードに移行する。一方、データ分配部３３１は、送信中止モードにおいて成功カウンタＡの値が所定回数以上を示した場合、それ以降は周波数帯Ａにおけるデータ送信を行うように送信データを分配する。すなわち、周波数帯Ａに関し送信中止モードから送信モードに移行する。

【0063】

なお、カウンタＡ３１３にはレスポンス判別部Ａ３１２およびレスポンス判別部Ｂ３２２の両者からレスポンス判別結果が供給されるようになっており、何れか一方の周波数帯における通信状態が悪化してレスポンスを受信できないような場合であっても、少なくとも一方の周波数帯においてレスポンスを受信できれば、全ての周波数帯におけるデータの受信状態を認識することができる。

【0064】

ここでは分配制御部Ａ３１０について説明したが、分配制御部Ｂ３２０も同様の構成により周波数帯Ｂにおけるデータ分配を制御する。データ分配部３３１における周波数帯Ｂにおけるデータ送信の中止および再開についても、周波数帯Ａの状態に依存せず、カウンタＢ３２３の状態に応じて独立して制御される。

【0065】

図６は、本発明の実施の形態における通信制御部３００によるデータ受信制御機能の機能構成を示す図である。このデータ受信制御機能は、各周波数帯において受信したデータを併合してデータバッファ３７２に保持させるデータ併合部３７１と、周波数帯Ａ（例えば２．４ＧＨｚ帯）におけるデータ併合を制御する併合制御部Ａ３５０と、周波数帯Ｂ（例えば５ＧＨｚ帯）におけるデータ併合を制御する併合制御部Ｂ３６０とからなる。

【0066】

併合制御部Ａ３５０は、データ判別部Ａ３５１と、レスポンス出力部Ａ３５２とからな

る。また、併合制御部Ｂ３６０は、データ判別部Ｂ３６１と、レスポンス出力部Ｂ３６２とからなる。ここで、データ判別部Ａ３５１は、周波数帯Ａにおけるデータ受信状態を判別して、その結果をデータ併合部３７１およびレスポンス出力部Ａ３５２およびＢ３６２に供給する。また、データ判別部Ｂ３６１は、周波数帯Ｂにおけるデータ受信状態を判別して、その結果をデータ併合部３７１およびレスポンス出力部Ａ３５２およびＢ３６２に供給する。

【0067】

レスポンス出力部Ａ３５２は、データ判別部Ａ３５１による周波数帯Ａにおけるデータ受信状態の判別結果およびデータ判別部Ｂ３６１による周波数帯Ｂにおけるデータ受信状態の判別結果を併せて、周波数帯Ａにおけるレスポンスとして出力する。また、レスポンス出力部Ｂ３６２は、データ判別部Ａ３５１による周波数帯Ａにおけるデータ受信状態の判別結果およびデータ判別部Ｂ３６１による周波数帯Ｂにおけるデータ受信状態の判別結果を併せて、周波数帯Ｂにおけるレスポンスとして出力する。すなわち、各周波数帯におけるレスポンスには、全ての周波数帯におけるデータ受信状態の判別結果が含まれることになる。

【0068】

図７は、本発明の実施の形態におけるデータパケットのフレーム構成を示す図である。このデータパケットは、端末局または基地局からデータを送信する際に用いられるものであり、物理層ヘッダ６１０と、ＭＡＣヘッダ６２０と、ペイロード６３０とからなる。物理層ヘッダ６１０は、物理層として例えばＰＬＣＰ（物理層コンバージェンスプロトコル）副層における情報を伝達するＰＬＣＰフレームのヘッダであり、伝送速度、変調方式やＰＬＣＰフレームの長さ等を示すフィールドを含む。ＭＡＣヘッダ６２０は、ＭＡＣ副層における情報を伝達するＭＡＣフレームのヘッダであり、フレームの種類やフレームの送受信アドレス等を示すフィールドを含む。ペイロード６３０は、ＭＡＣフレームのペイロードであり、データ６３１およびＣＲＣ６３２を含む。

【0069】

本発明の実施の形態では、データパケットにおけるＭＡＣヘッダ６２０に使用状況６２１、順序６２２、および、ＣＲＣ６２３の各フィールドを含んでいる。使用状況６２１は、このフレームが送信された際の各周波数帯の使用状況を示すフィールドであり、各周波数帯毎に１ビットが割り当てられている。例えば、１ビット目が「０」の場合に２．４ＧＨｚ帯は未使用であることを示し、「１」の場合に２．４ＧＨｚ帯が使用されていることを示す。同様に、２ビット目が「０」の場合に５ＧＨｚ帯は未使用であることを示し、「１」の場合に５ＧＨｚ帯が使用されていることを示す。これにより、フレームを受信した受信部１１０および２１０は、他の周波数帯において同時に送信されたフレームが存在するか否かを知ることができる。順序６２２は、同時に送信されたデータ同士の順序関係を示すフィールドであり、例えば同時に２つのデータが分配されるものとすると、「０」の場合に前半データであることを示し、「１」の場合に後半データであることを示す。ＣＲＣ６２３は、ＭＡＣヘッダ６２０におけるデータ誤りを検出するための巡回型冗長チェック符号である。

【0070】

フレーム送信の際、通信制御部３００のデータ分配部３３１は、これら周波数帯６２１および順序６２２を生成してＭＡＣヘッダ６２０に付加する。一方、フレーム受信側では、通信制御部３００のデータ併合部３７１が順序６２２に従ってデータをデータバッファ３７２に格納する。

【0071】

ここで、データ６３１の分配は以下の条件により行われる。

【0072】

図８は、本発明の実施の形態におけるデータ分配の例を示す図である。転送対象のデータ６０１を２つに分配してデータパケット６０２および６０３により送信する例について説明する。この例では、転送データ６０１が１５１２バイトであり、データパケット６０

２に含まれるデータが５０４バイト、データパケット６０３に含まれるデータが１００８バイトとなっている。分配する為の条件として、データパケット６０２では変調モードがＱＰＳＫで符号化率が１／２、データパケット６０３では変調モードが１６ＱＡＭで符号化率が１／２としている。この条件により、データパケット６０２に含まれる５０４バイトのデータとデータパケット６０３に含まれる１００８バイトのデータとで送信に要する時間が等しくなる。

【0073】

前半部および後半部の変調方式に関わるビット数をそれぞれｍ１およびｍ２とし、符号化率をそれぞれｒ１およびｒ２とすると、

ｍ１×ｒ１ ： ｍ２×ｒ２

の比に従ってデータを分配すれば両者の送信時間が等しくなる。上述の例では、

２×（１／２）： ４×（１／２）＝ １ ： ２

であり、前半部と後半部との比が１対２になる。また、他の例として、前半部の変調モードがＢＰＳＫで符号化率が１／２、後半部の変調モードが６４ＱＡＭで符号化率が３／４とすると、

１×（１／２）： ６×（３／４）＝ １ ： ９

となる。このようなデータ分配を行うことにより送信に要する時間を等しくすることができる。

【0074】

なお、ＭＡＣヘッダやデータのＣＲＣまで加味した詳細な計算は以下のようになる。但し、物理層ヘッダは各送信毎に変調モードを変動させず、同一の変調モードであることを仮定する。ＭＡＣヘッダを３０バイト、データのＣＲＣを４バイト、送信データのバイト数をｄ、前半部および後半部のデータのバイト数をそれぞれｄ１およびｄ２、変調方式に関わるビット数をそれぞれｍ１およびｍ２、符号化率をそれぞれｒ１およびｒ２とすると、前半部および後半部のデータ送信時間を等しくするという条件から以下の式が成り立つ。

（３０＋ｄ１＋４）／（ｍ１×ｒ１）＝（３０＋ｄ２＋４）／（ｍ２×ｒ２）

ｄ＝ｄ１＋ｄ２

これをｄ１およびｄ２について解くと、

ｄ１＝ｄ×（ｍ１×ｒ１）／（ｍ１×ｒ１＋ｍ２×ｒ２）

＋３４×（ｍ１×ｒ１－ｍ２×ｒ２）／（ｍ１×ｒ１＋ｍ２×ｒ２）

ｄ２＝ｄ×（ｍ２×ｒ２）／（ｍ１×ｒ１＋ｍ２×ｒ２）

＋３４×（ｍ２×ｒ２－ｍ１×ｒ１）／（ｍ１×ｒ１＋ｍ２×ｒ２）

となる。

【0075】

また、物理層ヘッダの一部で変調モードに依存して送信される情報が含まれてパケットが定義されている場合には、上両式の右辺第二項の「３４」に相当する所の値が適宜変更される。もちろん、ＭＡＣヘッダのデータ長が異なれば、この「３４」に相当する所の値が適宜変更される。

【0076】

図９は、本発明の実施の形態におけるレスポンスパケットのフレーム構成を示す図である。このレスポンスパケットは、データを受信した端末局または基地局からデータ送信元の端末局または基地局に返送されるものであり、物理層ヘッダ６４０と、ＭＡＣヘッダ６５０と、ペイロード６６０とからなる。物理層ヘッダ６４０がＰＬＣＰ副層における情報を伝達するＰＬＣＰフレームのヘッダであり、ＭＡＣヘッダ６５０がＭＡＣ副層における情報を伝達するＭＡＣフレームのヘッダである点は、図７におけるデータパケットの物理層ヘッダ６１０およびＭＡＣヘッダ６２０と同様である。

【0077】

本発明の実施の形態におけるレスポンスパケットでは、ペイロード６６０において状態６６１およびＣＲＣ６６２の各フィールドを含んでいる。状態６６１は、分配されたデー

タの受信状態を示すフィールドである。また、ＣＲＣ６６２はＭＡＣヘッダ６５０およびペイロード６６０におけるデータ誤りを検出するための巡回型冗長チェック符号である。

【0078】

状態６６１は、分配されて同時に送信されたデータに関する受信状態を全て含む。従って、例えば周波数帯Ａにおけるレスポンスパケットであっても周波数帯Ａのみならず周波数帯Ｂの受信状態も含む。そのため、状態６６１は、分配されたデータの数に応じた情報を含み、データが２つに分配されて送信された場合には例えば１ビット目で前半部の受信状態を示し、２ビットで後半部の受信状態を示すものとすることができる。すなわち、前半部の受信に成功した場合には１ビット目が「０」、前半部の受信に失敗した場合には１ビット目が「１」となる。同様に、後半部の受信に成功した場合には２ビット目が「０」、後半部の受信に失敗した場合には２ビット目が「１」となる。

【0079】

このレスポンスパケットの状態６６１は、データを受信した端末局または基地局の通信制御部３００のデータ判別部Ａ３５１およびＢ３６１における判別結果に基づいてレスポンス出力部Ａ３５２およびＢ３６２により生成される。このレスポンスパケットはデータ送信元の端末局または基地局に返送されて、データ送信元の端末局または基地局のレスポンス判別部Ａ３１２およびＢ３２２において状態６６１が判別される。

【0080】

次に本発明の実施の形態における端末局および基地局の動作について図面を参照して説明する。

【0081】

図１０は、本発明の実施の形態における端末局および基地局の動作の一例を示すシーケンスチャートである。ここでは、基地局から端末局に対して周波数帯Ａ（例えば、２．４ＧＨｚ帯）および周波数帯Ｂ（例えば、５ＧＨｚ帯）を使用してデータを送信するものとする。基地局における周波数帯Ａによる処理を「基地局Ａ」、基地局における周波数帯Ｂによる処理を「基地局Ｂ」、端末局における周波数帯Ａによる処理を「端末局Ａ」、また、端末局における周波数帯Ｂによる処理を「端末局Ｂ」として表している。

【0082】

まず、基地局はデータをデータＤ１とデータＤ２に分配して、データＤ１を周波数帯Ａで、データＤ２を周波数帯Ｂで、両者を同時に送信（１３１、２３１）する。端末局はこれらデータＤ１およびデータＤ２の受信に成功したものとする。端末局Ａおよび端末局Ｂの右側に記載された「ＯＫ」または「ＮＧ」がデータの受信状態としてそれぞれ「成功」または「失敗」を示している。端末局は周波数帯Ａおよび周波数帯Ｂにおける受信状態をレスポンスとして周波数帯Ａおよび周波数帯Ｂの両者により同時に基地局に返送（１４１、２４１）する。基地局はこれらレスポンス１４１および２４１の受信に成功したものとする。基地局Ａおよび基地局Ｂの左側に記載された「ＯＫ」または「ＮＧ」がレスポンスの受信状態としてそれぞれ「成功」または「失敗」を示している。

【0083】

続いて基地局はデータをデータＤ３とデータＤ４に分配して、データＤ３を周波数帯Ａで、データＤ４を周波数帯Ｂで、両者を同時に送信（１３２、２３２）する。端末局はデータＤ４の受信に成功したが、データＤ３の受信には失敗したものとする。端末局は周波数帯Ａおよび周波数帯Ｂにおける受信状態をレスポンスとして周波数帯Ａおよび周波数帯Ｂの両者により同時に基地局に返送（１４２、２４２）する。基地局はこれらレスポンス１４２および２４２の受信に成功したものとする。

【0084】

これらレスポンス１４２および２４２によりデータＤ３が受信できなかったことが判明するため、データ分配部３３１は再度データＤ３を周波数帯Ａで、データＤ４を周波数帯Ｂで、両者を同時に送信（１３３、２３３）する。このときも、端末局はデータＤ４の受信に成功したが、データＤ３の受信に失敗したものとする。端末局は周波数帯Ａおよび周波数帯Ｂにおける受信状態をレスポンスとして、周波数帯Ａおよび周波数帯Ｂの両者によ

り同時に基地局に返送（１４３、２４３）する。ここで、基地局はレスポンス２４３の受信に成功したがレスポンス１４３の受信には失敗したものとする。

【0085】

レスポンス２４３には周波数帯Ｂにおける受信状態だけでなく周波数帯Ａにおける受信状態も含まれているため、データ分配部３３１はデータＤ３が送信できなかったことを認識し、再度データＤ３およびデータＤ４の送信を試みる。ここで、周波数帯Ａにおける通信状態が悪化して、データＤ３およびデータＤ４の再送に成功しなかった場合を想定する。データ分配部３３１がデータＤ３およびデータＤ４をｎ回連続して送信（１３４、２３４）したにもかかわらず、このときも、端末局はデータＤ４の受信に成功したが、データＤ３の受信に失敗したものとする。

【0086】

データＤ３が周波数帯Ａにおいて正常に受信されなかった連続回数は、カウンタＡ３１３の失敗カウンタＡによりカウントされる。レスポンス２４４によりデータＤ３が受信されなかったことが通知され、周波数帯Ａにおける送信データの受信に連続してｎ回失敗したことが判明すると、周波数帯Ａにおける通信状態が悪化したものとして、それ以降は周波数帯Ａによるデータ転送が行われなくなる。そして、受信されていないデータＤ３は、周波数帯Ｂにおいて送信（２３５）され、これは無事に受信される。このデータＤ３の送信２３５に対して、周波数帯Ｂにおけるレスポンス２４５の受信が失敗しても、周波数帯Ｂにおけるレスポンス１４５の受信が成功することにより、データＤ３の送信２３５が成功した旨が基地局において認識される。

【0087】

周波数帯Ａにおけるデータ送信は中止されているため、これに続くデータＤ５以降は周波数帯Ｂにおいて順次送信（２３６）されるが、これに対するレスポンス１４６および２４６は周波数帯Ａおよび周波数帯Ｂにおいてそのまま継続される。これらレスポンス１４６および２４６においては、送信が中止されている周波数帯Ａにおける受信状態は「失敗」であるとして通知される。

【0088】

図１１は、図１０の例におけるデータ再送処理の判断の内容について示す図である。図１０の例では、周波数帯Ａにおいてデータ３（１３２）の受信に失敗した際、周波数帯Ａにおいてデータ３を再送（１３３）すると同時に、正常に受信されているデータＤ４も周波数帯Ｂにおいて再送（２３３）している。この場合の判断は次のようになる。まず、周波数帯Ａおよび周波数帯Ｂの何れにおいてもレスポンスが受信できない場合（ステップＳ９３１）、送信データが受信できているのか否かの判断ができないため、再度周波数帯Ａおよび周波数帯Ｂにおいてデータを再送する（ステップＳ９３４）。なお、ステップＳ９３１において、キャリアセンスの結果として、周波数帯Ａおよび周波数帯Ｂの何れにおいてもデータ送信を行うことができない場合もこれに含まれる。

【0089】

また、周波数帯Ａおよび周波数帯Ｂの何れかにおいてレスポンスが受信できたものの、その内容から何れかの送信データが受信できなかった（ステップＳ９３３）ことが判明した場合、再度周波数帯Ａおよび周波数帯Ｂにおいて各データを再送する（ステップＳ９３４）。また、キャリアセンスの結果、周波数帯Ａおよび周波数帯Ｂの何れかにおいてデータ送信を行うことができない場合も同様にステップＳ９３４が実行される。

【0090】

一方、レスポンスの内容から送信データが全て受信できたことが判明した場合（ステップＳ９３３）には、次のデータが新たに送信される（ステップＳ９３５）。なお、データ送信が再送によるものであって前回までに受信に成功しているデータがある場合には、そのデータも含めてステップＳ９３３における成否の判断が行われる。

【0091】

図１２は、本発明の実施の形態における端末局および基地局の動作の他の例を示すシーケンスチャートである。ここでは、図１０の最後の状態のように、周波数帯Ａにおける送

信が中止されている状態を想定する。そのため、基地局はデータＤ１１を周波数帯Ｂで送信（２５１）する。端末局はデータＤ１１の受信に成功したものとする。端末局は周波数帯Ａおよび周波数帯Ｂにおける受信状態をレスポンスとして、周波数帯Ａおよび周波数帯Ｂの両者により同時に基地局に返送（１６１、２６１）する。但し、送信が中止されている周波数帯Ａにおける受信状態は「失敗」であるとして通知される。基地局は周波数帯Ｂによるレスポンス２６１を正常に受信したが、周波数帯Ａによるレスポンス１６１は受信できなかったものとする。

【0092】

続いて基地局はデータＤ１２を周波数帯Ｂで送信（２５２）する。端末局はデータＤ１２の受信に成功したものとする。端末局は周波数帯Ａおよび周波数帯Ｂにおける受信状態をレスポンスとして、周波数帯Ａおよび周波数帯Ｂの両者により同時に基地局に返送（１６２、２６２）する。基地局はこれらレスポンス１６２および２６２の受信に成功したものとする。

【0093】

さらに基地局はデータＤ１３を周波数帯Ｂで送信（２５３）する。端末局はデータＤ１３の受信に成功したものとする。端末局は周波数帯Ａおよび周波数帯Ｂにおける受信状態をレスポンスとして、周波数帯Ａおよび周波数帯Ｂの両者により同時に基地局に返送（１６３、２６３）する。基地局はこれらレスポンス１６３および２６３の受信に成功したものとする。

【0094】

同様の処理を繰り返し、基地局がデータＤ２１を周波数帯Ｂで送信（２５４）し、そのレスポンス１６４および２６４が基地局において無事に受信されたものとする。

【0095】

レスポンスが周波数帯Ａにおいて正常に受信された連続回数は、カウンタＡ３１３の成功カウンタＡによりカウントされる。レスポンス１６４が正常に受信され、周波数帯Ａにおけるレスポンスの受信が連続してｍ回成功したことが判明すると、周波数帯Ａにおける通信状態が改善したものとして、それ以降は周波数帯Ａによるデータ転送が行われるようになる。そのため、続くデータＤ２２およびデータＤ２３は、周波数帯Ａおよび周波数帯Ｂに分配されて、同時に送信（１５５、２５５）される。

【0096】

図１３は、本発明の実施の形態におけるカウンタＡ３１３による送信の中止および再開の制御について示す図である。この図では、カウンタＡ３１３における成功カウンタＡをＯＫ＿Ａ、失敗カウンタＡをＮＧ＿Ａにより表している。

【0097】

失敗カウンタＡ（ＮＧ＿Ａ）は、予めゼロクリアされる（ステップＳ９１０）。周波数帯Ａにおける送信データの受信に成功すると（ステップＳ９１１）、失敗カウンタＡはゼロクリアされる（ステップＳ９１２）。一方、周波数帯Ａにおける送信データの受信に失敗すると（ステップＳ９１１）、失敗カウンタＡは１つ加算される（ステップＳ９１３）。その結果、失敗カウンタＡが所定の回数「ｎ」以上になると（ステップＳ９１４）、周波数帯Ａにおけるデータの送信はそれ以降中止される（ステップＳ９１５）。周波数帯Ａにおけるデータの送信がされている状態（送信モード）では、これらステップＳ９１１乃至Ｓ９１４の判断が繰り返される。

【0098】

成功カウンタＡ（ＯＫ＿Ａ）は、予めゼロクリアされる（ステップＳ９２０）。周波数帯Ａにおけるデータの送信が中止されている状態（送信中止モード）においても、レスポンスは周波数帯Ａにおいても継続して送信される。周波数帯Ａにおけるレスポンスの受信に成功すると（ステップＳ９２１）、成功カウンタＡは１つ加算される（ステップＳ９２２）。一方、周波数帯Ａにおけるレスポンスの受信に失敗すると（ステップＳ９２１）、成功カウンタＡはゼロクリアされる（ステップＳ９２３）。その結果、成功カウンタＡが所定の回数「ｍ」以上になると（ステップＳ９２４）、周波数帯Ａにおけるデータの送信

はそれ以降再開される（ステップＳ９２５）。周波数帯Ａにおけるデータの送信が中止されている状態（送信中止モード）では、これらステップＳ９２１乃至Ｓ９２４の判断が繰り返される。

【0099】

図１４は、本発明の実施の形態における端末局および基地局の動作のさらに他の例を示すシーケンスチャートである。図１０の例では、周波数帯Ａにおいてデータ Ｄ３（１３２）の受信に失敗した際、周波数帯Ａにおいてデータ Ｄ３を再送（１３３）すると同時に、既に正常に受信されているデータ Ｄ４も周波数帯Ｂにおいて再送（２３３）している。この図１４の例では、何れかの周波数帯においてデータの受信に失敗した場合には、既に正常に受信されているデータを送信せず、受信に失敗したデータを異なる周波数帯において同時に送信することにより通信効率を向上させるものである。

【0100】

まず、基地局はデータをデータ Ｄ３１とデータ Ｄ３２に分配して、データ Ｄ３１を周波数帯Ａで、データ Ｄ３２を周波数帯Ｂで、両者を同時に送信（１７１、２７１）する。端末局はこれらデータ Ｄ３１およびデータ Ｄ３２の受信に成功したものとする。端末局は周波数帯Ａおよび周波数帯Ｂにおける受信状態をレスポンスとして周波数帯Ａおよび周波数帯Ｂの両者により同時に基地局に返送（１８１、２８１）する。基地局はこれらレスポンス１８１および２８１の受信に成功したものとする。

【0101】

続いて基地局はデータをデータ Ｄ３３とデータ Ｄ３４に分配して、データ Ｄ３３を周波数帯Ａで、データ Ｄ３４を周波数帯Ｂで、両者を同時に送信（１７２、２７２）する。端末局はデータ Ｄ３４の受信に成功したが、データ Ｄ３３の受信には失敗したものとする。端末局は周波数帯Ａおよび周波数帯Ｂにおける受信状態をレスポンスとして周波数帯Ａおよび周波数帯Ｂの両者により同時に基地局に返送（１８２、２８２）する。基地局はこれらレスポンス１８２および２８２の受信に成功したものとする。

【0102】

これらレスポンス１８２および２８２によりデータ Ｄ３３が受信できなかったことが判明するため、データ分配部３３１はデータ Ｄ３３を周波数帯Ａおよび周波数帯Ｂの両者により同時に送信（１７３、２７３）する。端末局は周波数帯Ａによるデータ Ｄ３３の受信に失敗したが、周波数帯Ｂによるデータ Ｄ３３の受信に成功したものとする。この受信状態は同様にして端末局からのレスポンスにより周波数帯Ａおよび周波数帯Ｂの両者で同時に基地局に返送（１８３、２８３）される。ここで、基地局はレスポンス２８３の受信に成功したがレスポンス１８３の受信には失敗したものとする。

【0103】

なお、このデータ Ｄ３３の送信（１７３、２７３）の際、周波数帯Ａおよび周波数帯Ｂで変調モードを一致させることが望ましい。この場合、データ Ｄ３４（２７２）の受信に成功した周波数帯Ｂにおける変調モードを採用することが考えられるが、相対的に周波数帯Ａの通信状態が良く、誤りの原因がビットエラーと考えられる場合等には受信に失敗した周波数帯Ａにおける変調モードを採用することもできる。また、送受信装置の制約から変調モードを変更できない場合には変調モードを変更せずに送信してもよい。

【0104】

レスポンス２８３によりデータ Ｄ３３が正常に受信されたことが判明すると、基地局は次の送信データをデータ Ｄ３５とデータ Ｄ３６に分配して、データ Ｄ３５を周波数帯Ａで、データ Ｄ３６を周波数帯Ｂで、両者を同時に送信（１７４、２７４）する。端末局はデータ Ｄ３６の受信に成功したが、データ Ｄ３５の受信には失敗したものとする。端末局は周波数帯Ａおよび周波数帯Ｂにおける受信状態をレスポンスとして周波数帯Ａおよび周波数帯Ｂの両者により同時に基地局に返送（１８４、２８４）する。ここで、基地局はレスポンス２８４の受信に成功したがレスポンス１８４の受信には失敗したものとする。

【0105】

レスポンス２８４によりデータ Ｄ３５が受信できなかったことが判明するため、データ

分配部３３１はデータＤ３５を周波数帯Ａおよび周波数帯Ｂの両者により同時に送信（１７５、２７５）する。以下、同様にして、何れかの周波数帯においてデータの受信に失敗した場合には、受信に失敗したデータが異なる周波数帯において同時に送信される。

【0106】

図１５は、図１４の例におけるデータ再送処理の判断の内容の一例について示す図である。ここでは、周波数帯Ａおよび周波数帯Ｂにより異なるデータが分配されて送信された場合を想定する。図１４の例では、データＤ３３の送信１７２のように一方の周波数帯において受信に失敗した際、周波数帯Ａおよび周波数帯Ｂの両者においてデータＤ３３を送信（１７３、２７３）している。この場合の判断は次のようになる。まず、周波数帯Ａおよび周波数帯Ｂの何れにおいてもレスポンスが受信できない場合（ステップＳ９４１）、送信データが受信できているのか否かの判断ができないため、再度周波数帯Ａおよび周波数帯Ｂにおいて各データを再送する（ステップＳ９４４）。なお、ステップＳ９４１において、キャリアセンスの結果として、周波数帯Ａおよび周波数帯Ｂの何れにおいてもデータ送信を行うことができない場合も同様にステップＳ９４４が実行される。

【0107】

また、周波数帯Ａおよび周波数帯Ｂの何れかにおいてレスポンスが受信できたものの、その内容から何れかの送信データが受信できなかったことが判明した場合（ステップＳ９４３）、受信できなかったデータを周波数帯Ａおよび周波数帯Ｂの両者により送信する（ステップＳ９４６）。なお、キャリアセンスの結果、周波数帯Ａおよび周波数帯Ｂの何れかにおいてデータ送信を行うことができない場合も同様にステップＳ９４６が実行される。一方、全ての送信データが受信できたことが判明した場合（ステップＳ９４３）には、次のデータが新たに送信される（ステップＳ９４５）。なお、データ送信が再送によるものであって前回までに受信に成功しているデータがある場合には、そのデータも含めてステップＳ９４３における成否の判断が行われる。

【0108】

図１６は、図１４の例におけるデータ再送処理の判断の内容の他の例について示す図である。ここでは、周波数帯Ａおよび周波数帯Ｂにより同一のデータが同時に送信された場合を想定する。図１４の例では、データＤ３３の送信１７３および２７３のように周波数帯Ａおよび周波数帯Ｂの両者によりデータを再送する場合が生じ得る。この場合の判断は次のようになる。まず、周波数帯Ａおよび周波数帯Ｂの何れにおいてもレスポンスが受信できない場合（ステップＳ９５１）、送信データが受信できているのか否かの判断ができないため、再度周波数帯Ａおよび周波数帯Ｂにおいて同一のデータ（失敗データ）を同時に再送する（ステップＳ９５４）。なお、ステップＳ９５１において、キャリアセンスの結果として、周波数帯Ａおよび周波数帯Ｂの何れにおいてもデータ送信を行うことができない場合も同様にステップＳ９５４が実行される。

【0109】

また、周波数帯Ａおよび周波数帯Ｂの何れかにおいてレスポンスが受信できたものの、その内容から再送データが全て受信できなかったことが判明した場合（ステップＳ９５２）、やはり再度周波数帯Ａおよび周波数帯Ｂにおいて同一のデータを再送する（ステップＳ９５４）。一方、何れかの周波数帯において再送データが受信できたことが判明した場合（ステップＳ９５２）には、次のデータが分配されて新たに送信される（ステップＳ９５５）。

【0110】

次に、本発明の実施の形態における無線通信システムの構成例について説明する。

【0111】

図１７は、本発明の実施の形態における無線通信システムの一構成例を示す図である。基地局２１は、ネットワークインターフェースを通じてネットワーク３０に接続する。ネットワーク３０としては、例えばインターネットやイントラネットを想定することができる。端末局１１および１２は、周辺インターフェースを通じてコンピュータ等に接続する。端末局１１および１２は、基地局２１と無線により通信し、基地局２１を経由してネッ

トワーク３０にアクセスする。

【0112】

例えば、基地局２１として図２の構成により２つの周波数帯の送受信を同時に行えるものとして、２．４ＧＨｚ帯ではＩＥＥＥ８０２．１１ｂおよびｇ規格の送受信を行い、５ＧＨｚ帯ではＩＥＥＥ８０２．１１ａ規格の送受信を行うものとする。このとき、端末局１１も同様の構成を有するものとすれば、基地局２１と端末局１１との間では、２．４ＧＨｚ帯および５ＧＨｚ帯によりデータを分配して同時に送受信することができる。

【0113】

また、端末局１２が従来技術によるもので、１つの周波数帯による送受信を行うものであれば、基地局２１と端末局１２との間では、ＩＥＥＥ８０２．１１ｂおよびｇ規格による２．４ＧＨｚ帯による送受信か、ＩＥＥＥ８０２．１１ａ規格５ＧＨｚ帯による送受信の何れか一方が行われる。

【0114】

また、もし基地局２１が従来技術によるものである場合には、図２の構成による端末局１１との間でも、ＩＥＥＥ８０２．１１ｂおよびｇ規格による２．４ＧＨｚ帯による送受信か、ＩＥＥＥ８０２．１１ａ規格５ＧＨｚ帯による送受信の何れか一方が行われる。

【0115】

このように、本発明の実施の形態によれば、送信装置側でデータ分配部３３１により送信データを分配して異なる周波数帯の送信部１２０および２２０により同時に送信し、受信装置側で異なる周波数帯の受信部１１０および２１０により受信したデータをデータ併合部３７１により併合することにより、効率の良いデータ通信を実現することができる。例えば、ＩＥＥＥ８０２．１１ａ規格による伝送速度は最大５４Ｍｂｐｓであるが、本発明の実施の形態のように２つの周波数帯を用いた場合には理論上はその２倍の伝送速度を得ることができる。これは有線における１００Ｂａｓｅ－Ｔのイーサネット（登録商標）に匹敵する伝送速度である。

【0116】

なお、本発明の実施の形態では、受信側でデータの受信に連続して所定回数失敗した場合には送信側で送信を中止しているが、送信を中止する代わりに、より雑音耐性のある変調モードに移行するようにしてもよい。また、本発明の実施の形態では、送信中止の状態において送信側でレスポンスの受信に連続して所定回数成功した場合には送信を再開しているが、送信を中止せずに送信を継続させた上でレスポンスの受信に連続して所定回数成功した場合には、より雑音耐性のない変調モードに移行するようにしてもよい。ここで、雑音耐性については、変調方式６４ＱＡＭで符号化率３／４による変調モード、変調方式６４ＱＡＭで符号化率２／３による変調モード、変調方式１６ＱＡＭで符号化率３／４による変調モード、変調方式１６ＱＡＭで符号化率１／２による変調モード、変調方式ＱＰＳＫで符号化率３／４による変調モード、変調方式ＱＰＳＫで符号化率１／２による変調モード、変調方式ＢＰＳＫで符号化率３／４による変調モード、変調方式ＢＰＳＫで符号化率１／２による変調モードの順に、後者になるほど雑音耐性が高くなる。

【0117】

次に、本発明の実施の形態における変形例について図面を参照して説明する。上述の実施の形態においては、同時に送受信される伝送路として異なる周波数帯を用いることを想定したが、以下に説明するように同一周波数帯における異なるチャネルを用いた伝送路により通信を行ってもよい。さらに、同一チャネルにおいて異なる伝達関数を有する伝送路により通信を行うようにしてもよい。

【0118】

図１８は、本発明の実施の形態における端末局または基地局の構成の第１の変形例を示す図である。この構成例では、図２の構成例と比較して２．４ＧＨｚ帯受信部１１０が５ＧＨｚ帯受信部１３０に置き換えられ、２．４ＧＨｚ帯送信部１２０が５ＧＨｚ帯送信部１４０に置き換えられている。これにより、同一の周波数帯における複数の異なるチャネルを用いて同時に送信し、また受信することができる。例えば、ＩＥＥＥ８０２．１１ａ

規格のＯＦＤＭ方式を想定した場合、日本国内では５ＧＨｚ帯における１００ＭＨｚの周波数帯域に２０ＭＨｚ間隔で４つのチャネルが配置されている。したがって、同一周波数帯において互いに異なるチャネルを用いることにより、同時に送受信を行うことができる。

【0119】

このような同一の周波数帯における複数の異なるチャネルを用いた場合でも、通信制御部３００におけるデータ受信制御およびデータ送信制御の内容は、異なる周波数帯を用いた図５および図６と同様である。

【0120】

また、図１８の構成例では同一の周波数帯における複数の異なるチャネルを用いて同時に送受信しているが、さらに異なる周波数帯および同一の周波数帯における異なるチャネルを適宜選択できるようにしてもよい。図１９は、本発明の実施の形態における端末局または基地局の構成の第２の変形例を示す図である。この構成例では、２．４ＧＨｚ帯送信部１２０および５ＧＨｚ帯送信部１４０の出力がそれぞれパワーアンプ１０３および１０４を通じて選択器１０５に入力され、何れか一方が切替器１０２に送信信号として供給される。また、２．４ＧＨｚ帯送信部２４０および５ＧＨｚ帯送信部２２０の出力がそれぞれパワーアンプ２０４および２０３を通じて選択器２０５に入力され、何れか一方が切替器２０２に送信信号として供給される。これにより、２．４ＧＨｚ帯および５ＧＨｚ帯を用いて同時に送信するか、２．４ＧＨｚ帯における異なるチャネルを用いて同時に送信するか、または、５ＧＨｚ帯における異なるチャネルを用いて同時に送信するかを適宜選択することができる。

【0121】

また、切替器１０２における受信信号は２．４ＧＨｚ帯受信部１１０および５ＧＨｚ帯受信部１３０に供給され、切替器２０２における受信信号は２．４ＧＨｚ帯受信部２３０および５ＧＨｚ帯受信部２１０に供給される。これにより、２．４ＧＨｚ帯および５ＧＨｚ帯を用いて同時に受信するか、２．４ＧＨｚ帯における異なるチャネルを用いて同時に受信するか、または、５ＧＨｚ帯における異なるチャネルを用いて同時に受信するかを適宜選択ことができる。

【0122】

また、図１８の構成例では同一の周波数帯における複数の異なるチャネルを用いて同時に送受信しているが、同一の周波数帯において同一のチャネルを用いることも可能である。例えば、送信局から送信された電波が２回反射物にぶつかった後に受信局に到達する伝搬路と、送信局から送信された電波が５回反射物にぶつかった後に受信局に到達する伝搬路とでは伝達関数の周波数特性が異なるため、これら伝搬路を別個のものとして扱うことができる。このように異なる伝達関数を有する伝搬路を用いた例が次の図２０の構成例である。

【0123】

図２０は、本発明の実施の形態における端末局または基地局の構成の第３の変形例を示す図である。この構成例は、ＭＩＭＯ（Multiple Input Multiple Output）技術を利用したものであり、受信部１３０および２１０の前段に干渉補償器１９２が設けられ、パワーアンプ１０３および２０３の後段に時空間符号化器２９１が設けられている。干渉補償器１９２は干渉キャンセラであり、同一チャネルにおいて混在した複数の伝達関数の異なる信号を個々に分離するものである。時空間符号化器２９１は時間的な次元と複数アンテナにわたる空間的な次元とをまとめて符号化するものである。

【0124】

このような同一のチャネルにおける異なる伝達関数を有する伝搬路を用いた場合でも、通信制御部３００におけるデータ受信制御およびデータ送信制御の内容は、異なる周波数帯を用いた図５および図６と同様である。

【0125】

このように、本発明の実施の形態の変形例によれば、異なる周波数帯を用いるだけでな

く、同一の周波数帯の異なるチャネルを用いて同時に送受信することができる。さらに、同一のチャネルにおける異なる伝達関数を有する伝搬路を用いて同時に送受信することもできる。すなわち、本発明において異なる伝送路により同時に通信を行う際、異なる周波数帯を用いてもよく、同一周波数帯の異なるチャネルを用いてもよく、また、同一のチャネルにおける異なる伝達関数を有する伝搬路を用いてもよい。

【0126】

なお、本発明の実施の形態は本発明を具現化するための一例を示したものであり、以下に示すように特許請求の範囲における発明特定事項とそれぞれ対応関係を有するが、これに限定されるものではなく本発明の要旨を逸脱しない範囲において種々の変形を施すことができる。

【0127】

すなわち、請求項１において、データ分配手段は例えばデータ分配部３３１に対応する。データ出力手段は例えばデータ出力部Ａ３１５およびデータ出力部Ｂ３２５に対応する。送信手段は例えば送信部１２０および２２０に対応する。

【0128】

また、請求項３、４および６乃至１３において、レスポンス判別手段は例えばレスポンス判別部Ａ３１２およびレスポンス判別部Ｂ３２２に対応する。

【0129】

また、請求項１８において、データ受信手段は例えば受信部１１０および２１０に対応する。データ併合手段は例えばデータ併合部３７１に対応する。

【0130】

また、請求項１９において、データ判別手段は例えばデータ判別部Ａ３５１およびデータ判別部Ｂ３６１に対応する。レスポンス出力手段は例えばレスポンス出力部Ａ３５２およびレスポンス出力部Ｂ３６２に対応する。

【0131】

また、請求項２３において、データ分配手段は例えばデータ分配部３３１に対応する。データ出力手段は例えばデータ出力部Ａ３１５およびデータ出力部Ｂ３２５に対応する。送信手段は例えば送信部１２０および２２０に対応する。データ受信手段は例えば受信部１１０および２１０に対応する。データ併合手段は例えばデータ併合部３７１に対応する。データ判別手段は例えばデータ判別部Ａ３５１およびデータ判別部Ｂ３６１に対応する。レスポンス出力手段は例えばレスポンス出力部Ａ３５２およびレスポンス出力部Ｂ３６２に対応する。

【0132】

また、請求項２７乃至２９および３１乃至３３において、送信データを分配する手順は例えばデータ分配部３３１における処理に対応する。分配された送信データに分配順序を付加する手順は例えばデータ出力部Ａ３１５およびデータ出力部Ｂ３２５における処理に対応する。分配された送信データ同士を同時に異なる周波数帯により送信する手順は例えば送信部１２０および２２０における処理に対応する。

【0133】

また、請求項３０および３４において、分配されてその分配順序を付加されたデータを同時に異なる周波数帯により受信する手順は例えば受信部１１０および２１０における処理に対応する。分配順序に従って受信したデータを併合する手順は例えばデータ併合部３７１における処理に対応する。異なる周波数帯毎にデータ受信状態を判別する手順は例えばデータ判別部Ａ３５１およびデータ判別部Ｂ３６１における処理に対応する。異なる周波数帯毎のデータ受信状態の判別結果を含む同一のレスポンスを異なる周波数帯の全てに出力する手順は例えばレスポンス出力部Ａ３５２およびレスポンス出力部Ｂ３６２における処理に対応する。

【0134】

なお、本発明の実施の形態において説明した処理手順は、これら一連の手順を有する方法として捉えてもよく、また、これら一連の手順をコンピュータに実行させるためのプロ

グラム乃至そのプログラムを記憶する記録媒体として捉えてもよい。

【産業上の利用可能性】

【0135】

本発明の活用例として、例えば無線通信システムにおいて複数の異なる伝送路により通信を行う際に本発明を適用することができる。

【図面の簡単な説明】

【0136】

【図1】本発明の実施の形態におけるデータ分配の概要を示す図である。

【図2】本発明の実施の形態における端末局または基地局の構成を示す図である。

【図3】本発明の実施の形態における端末局または基地局の受信部２１０の構成を示す図である。

【図4】本発明の実施の形態における端末局または基地局の送信部２２０の構成を示す図である。

【図5】本発明の実施の形態における通信制御部３００によるデータ送信制御機能の機能構成を示す図である。

【図6】本発明の実施の形態における通信制御部３００によるデータ受信制御機能の機能構成を示す図である。

【図7】本発明の実施の形態におけるデータパケットのフレーム構成を示す図である。

【図8】本発明の実施の形態におけるデータ分配の例を示す図である。

【図9】本発明の実施の形態におけるレスポンスパケットのフレーム構成を示す図である。

【図10】本発明の実施の形態における端末局および基地局の動作の一例を示すシーケンスチャートである。

【図11】図１０の例におけるデータ再送処理の判断の内容について示す図である。

【図12】本発明の実施の形態における端末局および基地局の動作の他の例を示すシーケンスチャートである。

【図13】本発明の実施の形態におけるカウンタＡ３１３による送信の中止および再開の制御について示す図である。

【図14】本発明の実施の形態における端末局および基地局の動作のさらに他の例を示すシーケンスチャートである。

【図15】図１４の例におけるデータ再送処理の判断の内容の一例について示す図である。

【図16】図１４の例におけるデータ再送処理の判断の内容の他の例について示す図である。

【図17】本発明の実施の形態における無線通信システムの一構成例を示す図である。

【図18】本発明の実施の形態における端末局または基地局の構成の第１の変形例を示す図である。

【図19】本発明の実施の形態における端末局または基地局の構成の第２の変形例を示す図である。

【図20】本発明の実施の形態における端末局または基地局の構成の第３の変形例を示す図である。

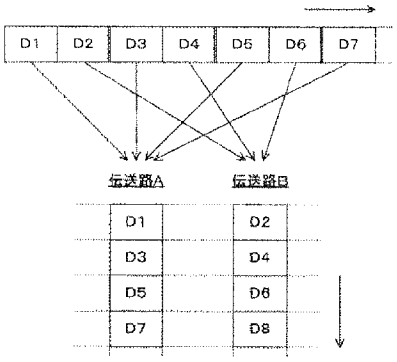
【符号の説明】

【0137】

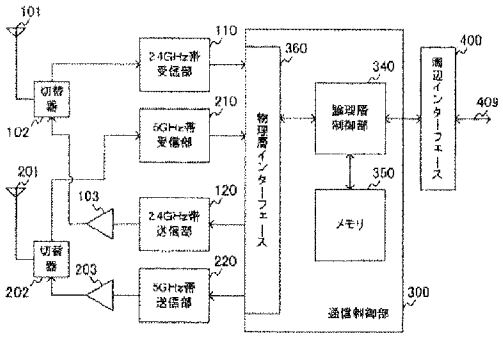
１１、１２　端末局
２１　基地局
３０　ネットワーク
１０１、２０１　アンテナ
１０２、２０２　切替器
１０３、１０４、２０３、２０４　パワーアンプ
１０５、２０５　選択器
１１０、１３０、２１０、２３０　受信部

１２０、１４０、２２０、２４０　送信部
１９２　干渉補償器
２９１　時空間符号化器
３００　通信制御部
３３１　データ分配部
３３２　データバッファ
３４０　論理層制御部
３５０　メモリ
３６０　物理層インターフェース
３７１　データ併合部
３７２　データバッファ
４００　周辺インターフェース
３１０、３２０　分配制御部
３１１、３２１　キャリアセンス部
３１２、３２２　レスポンス判別部
３１３、３２３　カウンタ
３１５、３２５　データ出力部
３５０、３６０　併合制御部
３５１、３６１　データ判別部
３５２、３６２　レスポンス出力部

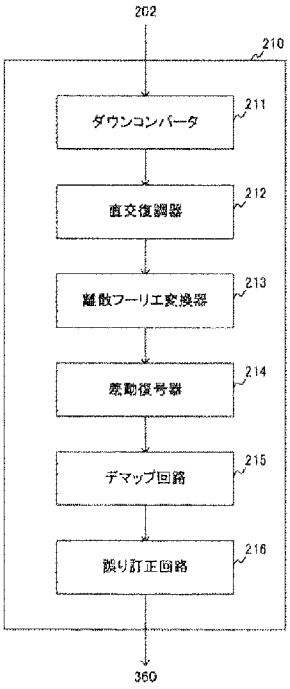
【図1】



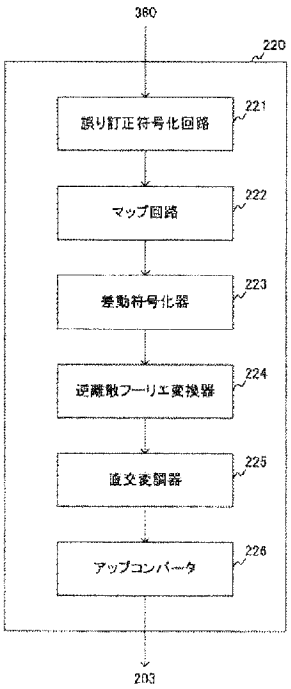
【図2】



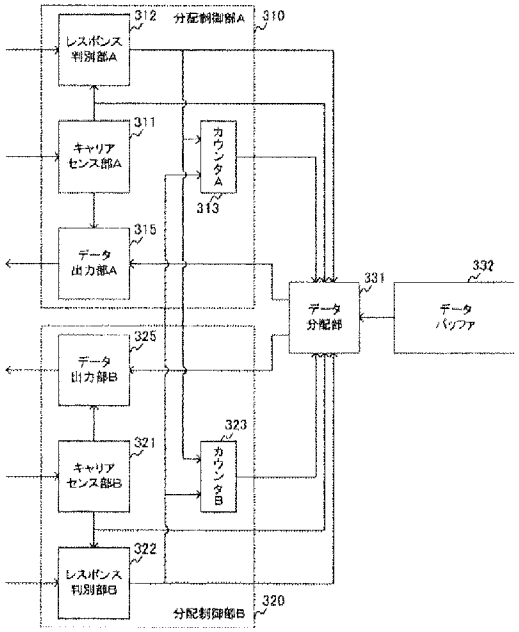
【図3】


202
210
ダウンコンバータ
211
直交復調器
212
離散フーリエ変換器
213
差動復号器
214
デマップ回路
215
誤り訂正回路
216
360

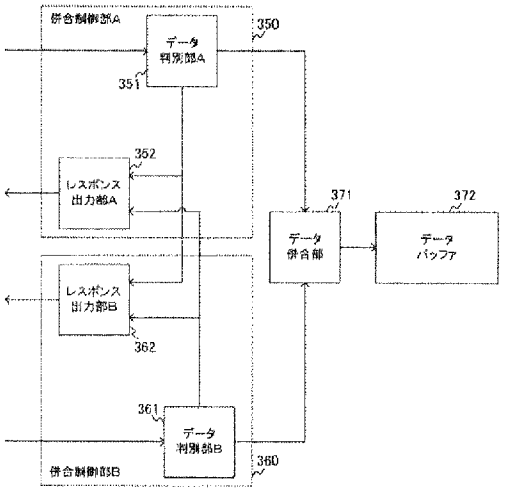
【図4】


360
220
誤り訂正符号化回路
221
マップ回路
222
差動符号化器
223
逆離散フーリエ変換器
224
直交変調器
225
アップコンバータ
226
203

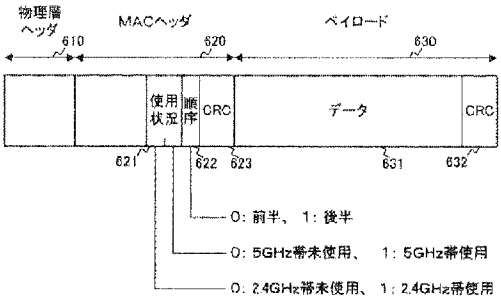
【図5】


312
分配制御部A
310
レスポンス判別部A
311
キャリアセンス部A
カウンタA
313
315
データ出力部A
331
データ分配部
332
データバッファ
325
データ出力部B
323
カウンタB
321
キャリアセンス部B
322
レスポンス判別部B
分配制御部B
320

【図6】


併合制御部A
データ判別部A
350
351
352
レスポンス出力部A
371
データ併合部
372
データバッファ
レスポンス出力部B
362
361
データ判別部B
併合制御部B
360

【図7】



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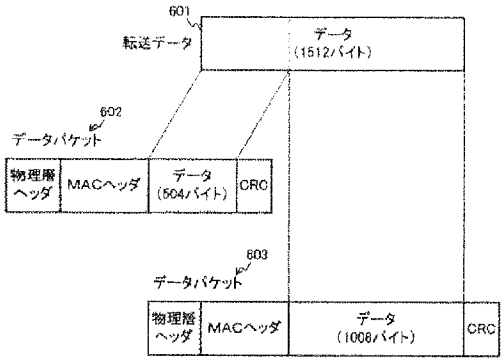
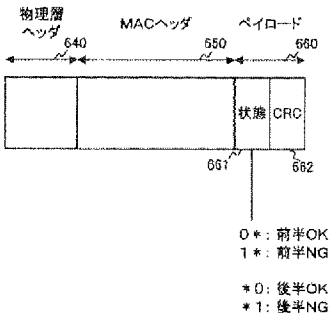


【図9】



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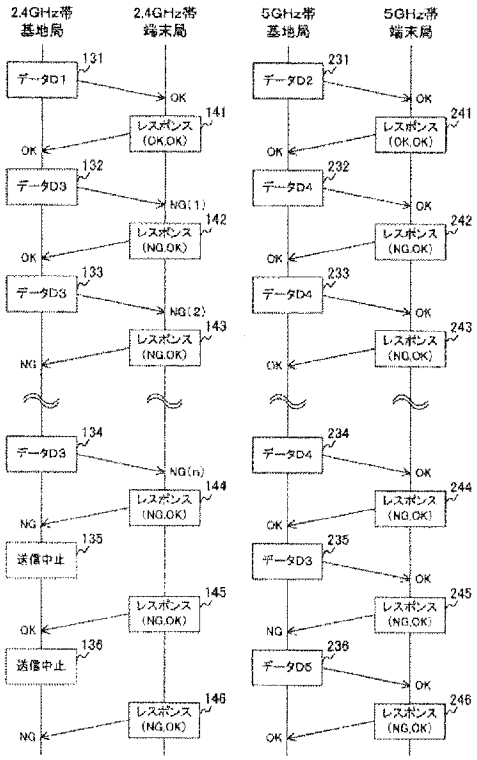

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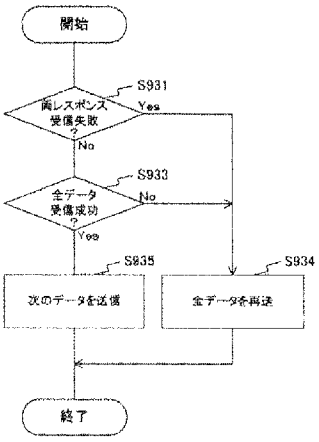

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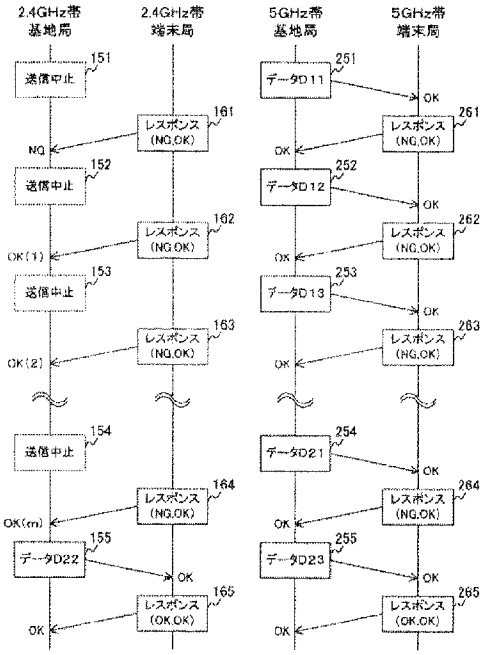
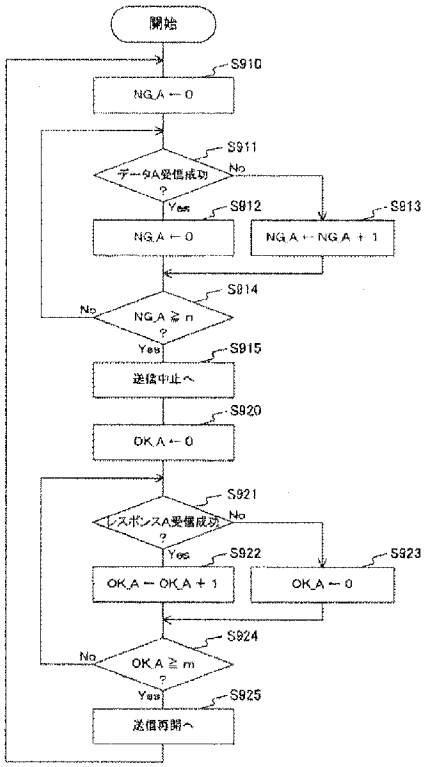


【図13】



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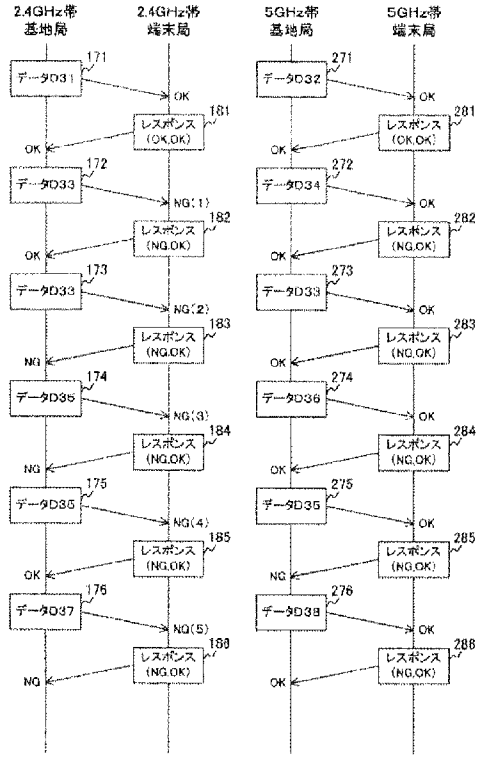

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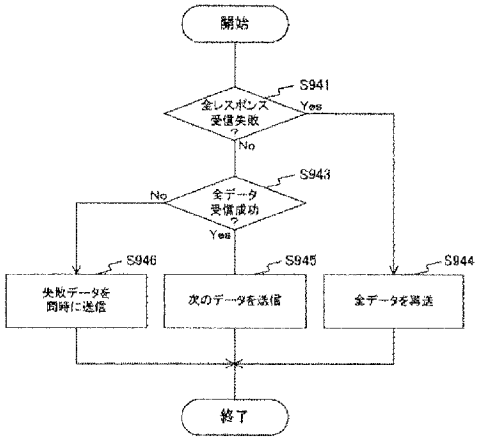

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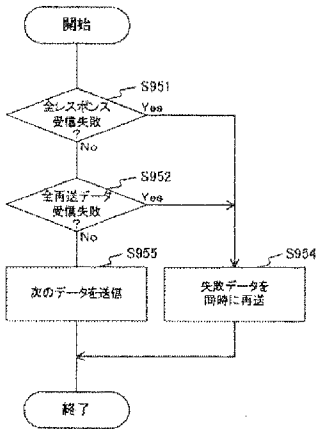

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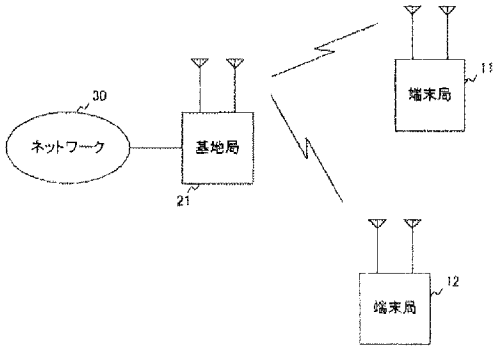

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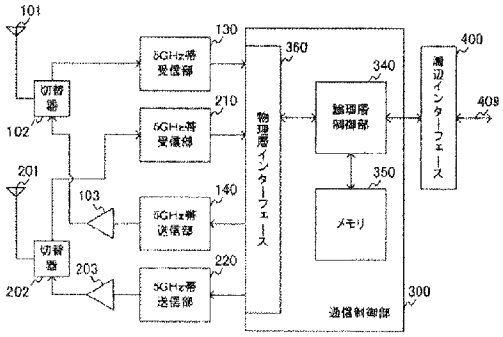

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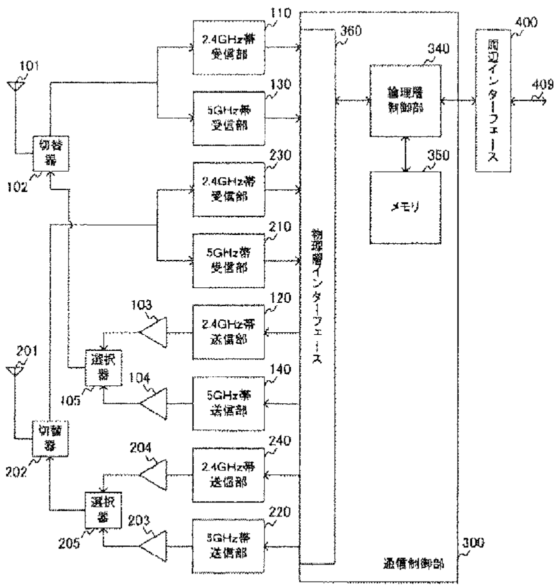
101
102
切替器
110
2.4GHz帯受信部
130
5GHz帯受信部
230
2.4GHz帯受信部
210
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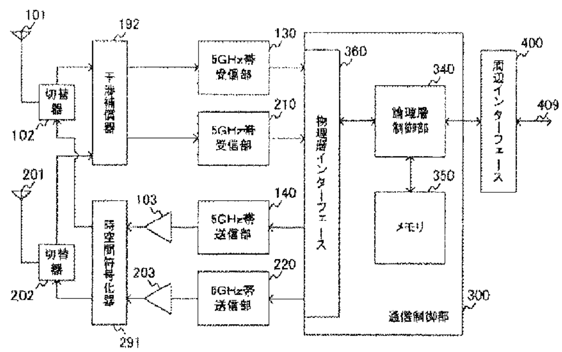
103
120
2.4GHz帯送信部
201
選択器
105
104
140
5GHz帯送信部
切替器
202
204
240
2.4GHz帯送信部
選択器
205
203
220
5GHz帯送信部
360
物理層インターフェース
340
論理層制御部
350
メモリ
300
通信制御部
400
周辺インターフェース
409

【図20】


101
切替器
102
192
干渉補償器
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5GHz帯受信部
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5GHz帯受信部
201
切替器
202
時空間符号化器
291
103
140
5GHz帯送信部
203
220
5GHz帯送信部
360
物理層インターフェース
340
論理層制御部
350
メモリ
300
通信制御部
400
周辺インターフェース
409

Electronic Acknowledgement Receipt

EFS ID:	4752029
Application Number:	11767124
International Application Number:	
Confirmation Number:	1688
Title of Invention:	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD
First Named Inventor/Applicant Name:	Hiroaki SUDO
Customer Number:	52989
Filer:	James Edward Ledbetter
Filer Authorized By:	
Attorney Docket Number:	L9289.04198A
Receipt Date:	06-FEB-2009
Filing Date:	22-JUN-2007
Time Stamp:	18:27:03
Application Type:	Utility under 35 USC 111(a)

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	Miscellaneous Incoming Letter	AmendTrans.pdf	324225 4564fbdf2aed4bcc61b692c95f314c915b0c fcc0	no	1

Warnings:	
Information:	

2	Amendment/Req. Reconsideration-After Non-Final Reject	Amendment.pdf	486515 d52a5a3dd0b2af718fef1d102ca4dd26bf636963	no	4
Warnings:					
Information:					
3	Information Disclosure Statement Letter	97Cert.pdf	125609 3cafb76a95fcc0dc1eb3ea65ffb954427dee20db	no	1
Warnings:					
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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.

AMENDMENT TRANSMITTAL LETTER (Large Entity) Applicant(s): Hiroaki SUDO				Docket No. 009289-41981	
Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
11/767,124	June 22, 2007	P. Tran	52989	2618	1688

Invention: **CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD**

COMMISSIONER FOR PATENTS:

Transmitted herewith is an amendment in the above-identified application.

The fee has been calculated and is transmitted as shown below.

CLAIMS AS AMENDED

	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST # PREV. PAID FOR		NUMBER EXTRA CLAIMS PRESENT	RATE	ADDITIONAL FEE
TOTAL CLAIMS	6	-	20	=	0	x $52.00	$0.00
INDEP. CLAIMS	2	-	3	=	0	x $220.00	$0.00
Multiple Dependent Claims (check if applicable) ☐							$0.00
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT							$0.00

☒ No additional fee is required for amendment.

☐ Please charge Deposit Account No. in the amount of

☐ A check in the amount of to cover the filing fee is enclosed.

☒ The Director is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account **04-1061**

- ☒ Any additional filing fees required under 37 C.F.R. 1.16.
- ☒ Any patent application processing fees under 37 CFR 1.17.

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James E. Ledbetter
Registration No. 28,732

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on

_____ .
(Date)

Signature of Person Mailing Correspondence

Typed or Printed Name of Person Mailing Correspondence

cc:

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
11/767,124	06/22/2007	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☐ RATE ($)	SMALL ENTITY ☐ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	02/06/2009	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 6	Minus	** 20	= 0	X $ =		OR	X $52=	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $ =		OR	X $220=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/DEBRA a. SAVOY/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/767,124	06/22/2007	Hiroaki SUDO	L9289.04198A	1688

52989 7590 05/27/2009

Dickinson Wright PLLC
James E. Ledbetter, Esq.
International Square
1875 Eye Street, N.W., Suite 1200
Washington, DC 20006

EXAMINER	
TRAN, PABLO N	

ART UNIT	PAPER NUMBER
2618	

MAIL DATE	DELIVERY MODE
05/27/2009	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.

Office Action Summary	Application No.	Applicant(s)	
	11/767,124	SUDO, HIROAKI	
	Examiner	Art Unit	
	Pablo N. Tran	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *06 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance 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.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. The amendment filed 02/06/09 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

Regarding claim 1, the new subject matters, “generates a replica data item by replicating a specific data item of the plurality of data items, and maps the plurality of data items to the plurality of antennas such that the specific data item and the replica data item are transmitted in an overlapping manner from different antennas at a same time”.

Regarding claim 3, the new subject matters, “the replica data item, the transmitting section code division multiplexes different data from the specific data item upon the specific item, transmits the code division multiplexed data at the same time".

Regarding claim 6, the new subject matters, “a replica data item is generated by replicating a specific data item of the plurality of data items, and the plurality of data items are mapped to the plurality of antennas such that the specific data item and the replica data item are transmitted in an overlapping manner from different antennas at a same time”.

Accordingly, the amendment is not entered. Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 1, new subject matter, ""generates a replica data item by replicating a specific data item of the plurality of data items, and maps the plurality of data items to the plurality of antennas such that the specific data item and the replica data item are transmitted in an overlapping manner from different antennas at a same time"" was not disclosed in the specification as originally filed.

Regarding claim 3, the new subject matters, "the replica data item, the transmitting section code division multiplexes different data from the specific data item upon the specific item, transmits the code division multiplexed data at the same time" was not disclosed in the specification as originally filed.

Regarding claim 6, the new subject matters, “a replica data item is generated by replicating a specific data item of the plurality of data items, and the plurality of data items are mapped to the plurality of antennas such that the specific data item and the replica data item are transmitted in an overlapping manner from different antennas at a same time” was not disclosed in the specification as originally filed.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pablo Tran whose telephone number is (571)272-7898. The examiner normal hours are 9:30 -5:00 (Monday-Friday). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (571)272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) System. Status information for Published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see httpr//pair-directauspto.gov. Should You have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (in USA or CANADA) or 571-272-1000.

May 7, 2009

/Pablo N Tran/

Primary Examiner, Art Unit 2618

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11767124	SUDO, HIROAKI
	Examiner	Art Unit
	Pablo N Tran	2618

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/26/2008	05/07/2009							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4	✓	✓							
	5	✓	✓							
	6	✓	✓							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11767124	SUDO, HIROAKI
	Examiner	**Art Unit**
	Pablo N Tran	2618

SEARCHED

Class	Subclass	Date	Examiner
370	342,, 335,, 441, 334, 336, 337, 342, 343, 267, 347, 441, 445, 265	5/7/09	PT
455	562.1, 575.7, 552.1, 553.1, 101-103, 132, 277.2, 561.2, 452.1, 452.2, 342	5/7/09	PT
375	299, 349, 347, 267, 265, 260	5/7/09	PT

SEARCH NOTES

Search Notes	Date	Examiner
East/West	5/7/09	PT

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner

	/P. N. T./ Primary Examiner.Art Unit 2618

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Inventor:	Hiroaki SUDO	Art Unit 2618
Appln. No.:	11/767,124	Exr. P. Tran
Filed:	June 22, 2007	Conf. No. 1688
For:	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD	

AMENDMENT UNDER 37 CFR §1.111

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated May 27, 2009, Applicant petitions for a two-month extension of time and requests amendment of the above-captioned application as follows:

IN THE CLAIMS

Please amend the claims to read as follows:

Listing of Claims

1. (Currently Amended) A transmitting apparatus employing a MIMO (multi-input/multi-output) scheme of transmitting a plurality of data items for a same receiving apparatus using a plurality of antennas in parallel, the transmitting apparatus comprising:

a mapping section that maps the plurality of data items to at least one of the plurality of antennas; and

a transmitting section that transmits the plurality of data items using the at least one of the plurality of antennas to the receiving apparatus,

wherein the mapping section generates a replica data item by replicating a specific data item of the plurality of data items, and maps the plurality of data items to the at least one of the plurality of antennas such that the specific data item and the replica data item are transmitted ~~in an overlapping manner~~ from different antennas at a same time.

2. (Original) The transmitting apparatus according to claim 1, wherein the specific data item comprises user data requiring a better communication quality than other user data.

3. (Previously Presented) The transmitting apparatus according to claim 1, wherein, in each antenna transmitting the specific data item and the replica data item, the transmitting section

code division multiplexes different data from the specific data item upon the specific data item, and transmits the code division multiplexed data at the same time.

4. (Original) A communication terminal apparatus, comprising the transmitting apparatus according to claim 1.

5. (Original) A base station apparatus, comprising the transmitting apparatus according to claim 1.

6. (Currently Amended) A transmitting method employing a MIMO (multi-input/multi-output) scheme of transmitting a plurality of data items for a same receiving apparatus using a plurality of antennas in parallel, the transmitting method comprising:

a mapping step of mapping the plurality of data items to at least one of the plurality of antennas; and

a transmitting step of transmitting the plurality of data items using the at least one of the plurality of antennas to the receiving apparatus,

wherein, in the mapping step, a replica data item is generated by replicating a specific data item of the plurality of data items, and the plurality of data items are mapped to the at least one of the plurality of antennas such that the specific data item and the replica data item are transmitted ~~in an overlapping manner~~ from different antennas at a same time.

REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the above amendments and the following remarks.

Claims 1 and 6 have been amended for clarity and to overcome the 35 USC 132 objections and 35 USC 112, first paragraph rejections applied to claims 1-6. Support for the amendments is provided for example in paragraph [0029] of the published specification. (It should be noted that references herein to the specification and drawings are for illustrative purposes only and are not intended to limit the scope of the invention to the referenced embodiments.)

Claims 1, 3, and 6 were objected to under 35 USC §132 for introducing new matter into the disclosure. Additionally, claims 1-6 were rejected under 35 USC §112, first paragraph for containing subject matter that was not described in the original specification. To the extent these objections and rejections may be deemed applicable to the amended claims presented herein, the Applicant respectfully traverses as follows.

The specification discloses that "when the transmission data is specific data, this data is read from the buffer 112 at least twice and this data is apportioned so as to be transmitted using both of the first transmission system and second transmission system or more transmission systems" (see the specification in page 9, lines 9-14). The disclosure in the specification that "this data is read ... at least twice" provides support for the claimed subject matter of "replicating a specific data item" recited in claims 1 and 6. Further, the specification discloses that the first transmission system comprises an antenna 1 and the second transmission system comprises an antenna 2 (see page 10, lines 9-12). Thus, the disclosure in the specification of transmitting the

same data from two different antennas provides support for the claimed subject matter of transmitting data and replicated data from different antennas, as recited in claims 1 and 6.

Moreover, the specification discloses that "data 1 directed to user 1 to user N and the data 2 likewise directed to user 1 to user N are transmitted simultaneously at a first transmission timing using the first transmission system (antenna 1) and second transmission system (antenna 2)" (see specification on page 10, line 26, through page 11, line 2). Additionally, the specification discloses that retransmission data is specific data that is apportioned to the first transmission system (antenna 1) and the second transmission system (antenna 2) and is transmitted accompanying data 1 and data 2 (see page 11, lines 3-10). This disclosure supports the claimed subject matter of mapping a plurality of data items to a plurality of antennas such that a specific data item and a replica data item are transmitted from different antennas at the same time, as recited in claims 1 and 6.

With regard to claim 3, the specification discloses that specific data and other data are multiplexed and transmitted by antennas 106-1 and 106-2 (see specification page 9, lines 24-28). The specification further discloses that the specific data (i.e., retransmission data) is transmitted accompanying the other data (see page 10, lines 13-15). These disclosures provide support for the subject matter recited in claim 3 of multiplexing specific data and different data and transmitting the multiplexed data at the same time.

Thus, Applicant submits that the subject matter of claims 1, 3 and 6 is supported by the original specification. Accordingly, withdrawal of the applied objections and 35 USC 112, first paragraph rejections and allowance of claims 1-6 is deemed to be warranted.

In view of the above, it is submitted that this application is in condition for allowance, and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,

/James Edward Ledbetter/

Date: October 27, 2009
JEL/DWW/att

James E. Ledbetter
Registration No. 28,732

Attorney Docket No. 009289-41981
Dickinson Wright PLLC
1875 Eye Street, NW, Suite 1200
Washington, DC 20006
Telephone: (202) 659-6966
Facsimile: (202) 659-1559

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a) (Large Entity)	Docket No. 009289-41981

In Re Application Of: **Hiroaki SUDO**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
11/767,124	June 22, 2007	P. Tran	52989	2618	1688

Invention: **CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD**

COMMISSIONER FOR PATENTS:

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a response to the Office Action of **May 27, 2009** (*Date*) above-identified application.

The requested extension is as follows (check time period desired):

☐ One month ☒ Two months ☐ Three months ☐ Four months ☐ Five months

from: **August 27, 2009** (*Date*) until: **October 27, 2009** (*Date*)

The fee for the extension of time is **$490** and is to be paid as follows:

☐ A check in the amount of the fee is enclosed.

☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No. **04-1061**

☒ If an additional extension of time is required, please consider this a petition therefor and charge any additional fees which may be required to Deposit Account No. **04-1061**

☐ Payment by credit card. Form PTO-2038 is attached.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

/James Edward Ledbetter/
Signature

Dated: **October 27, 2009**

James E. Ledbetter, Reg. No. 28732
Dickinson Wright PLLC
1875 Eye Street, N.W., Suite 1200
Washington, D.C. 20006
Telephone: 202.457.0160
Facsimile: 202.659.1559

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on _____.
(Date)

Signature of Person Mailing Correspondence

Typed or Printed Name of Person Mailing Correspondence

cc:

Electronic Patent Application Fee Transmittal

Application Number:	11767124
Filing Date:	22-Jun-2007
Title of Invention:	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD
First Named Inventor/Applicant Name:	Hiroaki SUDO
Filer:	James Edward Ledbetter/Erika Satterwhite
Attorney Docket Number:	L9289.04198A

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 2 months with $0 paid	1252	1	490	490

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**490**

Electronic Acknowledgement Receipt

EFS ID:	6336930
Application Number:	11767124
International Application Number:	
Confirmation Number:	1688
Title of Invention:	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD
First Named Inventor/Applicant Name:	Hiroaki SUDO
Customer Number:	52989
Filer:	James Edward Ledbetter
Filer Authorized By:	
Attorney Docket Number:	L9289.04198A
Receipt Date:	27-OCT-2009
Filing Date:	22-JUN-2007
Time Stamp:	16:30:32
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$490
RAM confirmation Number	2851
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Transmittal Letter	aTRANS.pdf	57359 a527ff4f3b6594b8cfb8b874b040498a8d51c157	no	1
Warnings:					
Information:					
2	Amendment/Req. Reconsideration-After Non-Final Reject	aAMEND.pdf	142814 54be623a82e07c537d3f31e494afbc0a45a58b9f	no	6
Warnings:					
Information:					
3	Extension of Time	aEOT.pdf	48227 c257d8d444be4f25051dcaea4510d6f795fa8832	no	1
Warnings:					
Information:					
4	Fee Worksheet (PTO-875)	fee-info.pdf	30503 b339bedcdd7d36dd41de2b7169fc5dfa31525434	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	278903		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

AMENDMENT TRANSMITTAL LETTER (Large Entity) Applicant(s): **Hiroaki SUDO**	Docket No. **009289-41981**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
11/767,124	**June 22, 2007**	**P. Tran**	**52989**	**2618**	**1688**

Invention: **CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD**

COMMISSIONER FOR PATENTS:

Transmitted herewith is an amendment in the above-identified application.

The fee has been calculated and is transmitted as shown below.

CLAIMS AS AMENDED

	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST # PREV. PAID FOR		NUMBER EXTRA CLAIMS PRESENT	RATE	ADDITIONAL FEE
TOTAL CLAIMS	6	-	20	=	0	x $50.00	$0.00
INDEP. CLAIMS	2	-	3	=	0	x $200.00	$0.00
Multiple Dependent Claims (check if applicable) ☐							$0.00
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT							$0.00

☒ No additional fee is required for amendment.

☐ Please charge Deposit Account No. in the amount of

☐ A check in the amount of to cover the filing fee is enclosed.

☒ The Director is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account **04-1061**

- ☒ Any additional filing fees required under 37 C.F.R. 1.16.
- ☒ Any patent application processing fees under 37 CFR 1.17.

☐ Payment by credit card. Form PTO-2038.

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/James Edward Ledbetter/

Signature

Dated: **October 27, 2009**

James E. Ledbetter, Reg. No. 28732
Dickinson Wright PLLC
1875 Eye Street, N.W., Suite 1200
Washington, D.C. 20006
Telephone: 202.457.0160
Facsimile: 202.659.1559

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_____ .
(Date)

Signature of Person Mailing Correspondence

Typed or Printed Name of Person Mailing Correspondence

cc:

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
11/767,124	06/22/2007	

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☐		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	10/27/2009	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 6	Minus	** 20	= 0	X $ =		OR	X $52=	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $ =		OR	X $220=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/WANDA ANTHONY/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

52989 7590 02/22/2010

Dickinson Wright PLLC
James E. Ledbetter, Esq.
International Square
1875 Eye Street, N.W., Suite 1200
Washington, DC 20006

EXAMINER	
TRAN, PABLO N	
ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 02/22/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/767,124	06/22/2007	Hiroaki SUDO	009289-41981	1688

TITLE OF INVENTION: CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	05/24/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

52989 7590 02/22/2010

Dickinson Wright PLLC
James E. Ledbetter, Esq.
International Square
1875 Eye Street, N.W., Suite 1200
Washington, DC 20006

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/767,124	06/22/2007	Hiroaki SUDO	009289-41981	1688

TITLE OF INVENTION: CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	05/24/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
TRAN, PABLO N	2618	370-342000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/767,124	06/22/2007	Hiroaki SUDO	009289-41981	1688

52989 7590 02/22/2010

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1875 Eye Street, N.W., Suite 1200
Washington, DC 20006

EXAMINER	
TRAN, PABLO N	
ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 02/22/2010

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 15 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 15 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	11/767,124	SUDO, HIROAKI	
	Examiner	Art Unit	
	Pablo N. Tran	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *10/27/09*.

2. ☒ The allowed claim(s) is/are *1-6*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Pablo N Tran/
Primary Examiner, Art Unit 2618

DETAILED ACTION

Allowable Subject Matter

1. The following is a statement of reasons for the indication of allowable subject matter:

The Applicant's response, October 27, 2009, have clearly stated the inventive steps of the present invention.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pablo Tran whose telephone number is (571)272-7898. The examiner normal hours are 9:30 -5:00 (Monday-Friday). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (571)272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

4. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) System. Status information for

Published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see httpr//pair-directauspto.gov. Should You have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (in USA or CANADA) or 571-272-1000.

February 1, 2010

/Pablo N Tran/
Primary Examiner, Art Unit 2618

Notice of References Cited	Application/Control No. 11/767,124	Applicant(s)/Patent Under Reexamination SUDO, HIROAKI	
	Examiner Pablo N. Tran	Art Unit 2618	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-7,545,832	06-2009	Ito et al.	370/480
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Issue Classification

Application/Control No.	Applicant(s)/Patent Under Reexamination
11767124	SUDO, HIROAKI
Examiner	**Art Unit**
Pablo N Tran	2618

ORIGINAL		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
370	480	H 0 4 J 1 / 00 (2006.01.01)	

CROSS REFERENCE(S)

CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
370	342				

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1														
2	2														
3	3														
4	4														
5	5														
6	6														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	6	
/Pablo N Tran/ Primary Examiner.Art Unit 2618	02/01/10	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 1688

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/767,124	06/22/2007	375	2618	009289-41981

APPLICANTS

Hiroaki SUDO, Yokohama-shi, JAPAN;

**** CONTINUING DATA ***************************

This application is a CON of 10/522,980 02/02/2005 PAT 7,251,469
which is a 371 of PCT/JP04/06154 04/28/2004

**** FOREIGN APPLICATIONS ***************************

JAPAN 2003-132133 05/09/2003

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

07/21/2007

Foreign Priority claimed ☑ Yes ☐ No 35 USC 119(a-d) conditions met ☑ Yes ☐ No Verified and Acknowledged /PABLO N TRAN/ Examiner's Signature	☑ Met after Allowance PT Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		JAPAN	5	6	2

ADDRESS

Dickinson Wright PLLC
James E. Ledbetter, Esq.
International Square
1875 Eye Street, N.W., Suite 1200
Washington, DC 20006
UNITED STATES

TITLE

CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD

FILING FEE RECEIVED		
1000	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11767124	SUDO, HIROAKI
	Examiner	**Art Unit**
	Pablo N Tran	2618

SEARCHED			
Class	**Subclass**	**Date**	**Examiner**
370	480, 342,, 335,, 441, 334336, 337, 342, 343, 267, 347, 441, 445, 265, 208-	2/1/10	PT
455	562.1, 575.7, 552.1, 553.1, 101-103, 132, 277.2, 561.2, 452.1, 452.2, 342	2/1/10	PT
375	299, 349, 347, 267, 265, 260	2/1/10	PT

SEARCH NOTES		
Search Notes	**Date**	**Examiner**
East/West	2/1/10	PT

INTERFERENCE SEARCH			
Class	**Subclass**	**Date**	**Examiner**
370	342	2/1/10	PT

	/P. N. T./ Primary Examiner.Art Unit 2618

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Inventor:	Hiroaki SUDO	Art Unit 2618
Appln. No.:	11/767,124	Exr. P. TRAN
Filed:	June 22, 2007	Conf. No. 1688

For: CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD

REQUEST FOR CONSIDERATION OF
INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

With respect to the Information Disclosure Statement (IDS) filed February 6, 2009, the Examiner has never returned a copy of the PTO-1449 indicating consideration of the document cited therein. It is noted that PAIR contains a copy of the Form PTO-1449, a copy of the IDS, as well as copies of the listed references.

The Applicants respectfully request that the Examiner initial and return a copy of the previously supplied Form PTO-1449 indicating consideration of the above-noted reference.

Respectfully submitted,

/James Edward Ledbetter/

Date: April 6, 2010
JEL/DWW/att

James E. Ledbetter
Registration No. 28,732

Attorney Docket No. 009289-41981
Dickinson Wright PLLC
1875 Eye Street, NW, Suite 1200
Washington, DC 20006
Telephone: (202) 457-0160
Facsimile: (202) 659-1559

Electronic Acknowledgement Receipt

EFS ID:	7358086
Application Number:	11767124
International Application Number:	
Confirmation Number:	1688
Title of Invention:	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD
First Named Inventor/Applicant Name:	Hiroaki SUDO
Customer Number:	52989
Filer:	James Edward Ledbetter
Filer Authorized By:	
Attorney Docket Number:	009289-41981
Receipt Date:	06-APR-2010
Filing Date:	22-JUN-2007
Time Stamp:	17:25:19
Application Type:	Utility under 35 USC 111(a)

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	Miscellaneous Incoming Letter	aREQKNIDS.pdf	23811 df7df3435226fb93764fec1c3407ab758360a414	no	1

Warnings:	
Information:	

Total Files Size (in bytes):	23811

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.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

52989 7590 02/22/2010

Dickinson Wright PLLC
James E. Ledbetter, Esq.
International Square
1875 Eye Street, N.W., Suite 1200
Washington, DC 20006

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/767,124	06/22/2007	Hiroaki SUDO	009289-41981	1688

TITLE OF INVENTION: CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	05/24/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
TRAN, PABLO N	2618	370-342000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 Dickinson Wright, PLLC

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Panasonic Corporation

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Osaka, Japan

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☒ Issue Fee

☒ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 04-1061 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /James Edward Ledbetter/ Date May 24, 2010

Typed or printed name James E. Ledbetter Registration No. 28,732

Electronic Patent Application Fee Transmittal

Application Number:	11767124
Filing Date:	22-Jun-2007
Title of Invention:	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD
First Named Inventor/Applicant Name:	Hiroaki SUDO
Filer:	James Edward Ledbetter/Caroline Scott
Attorney Docket Number:	009289-41981

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1510	1510
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1810**

Electronic Acknowledgement Receipt

EFS ID:	7672962
Application Number:	11767124
International Application Number:	
Confirmation Number:	1688
Title of Invention:	CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD
First Named Inventor/Applicant Name:	Hiroaki SUDO
Customer Number:	52989
Filer:	James Edward Ledbetter
Filer Authorized By:	
Attorney Docket Number:	009289-41981
Receipt Date:	24-MAY-2010
Filing Date:	22-JUN-2007
Time Stamp:	16:19:56
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1810
RAM confirmation Number	3027
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Issue Fee Payment (PTO-85B)	9289-41981_FEE.pdf	102021 540ba98e4f042773b80782ebc6c2b2bda853f5b3	no	1
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	31972 c9252fcdbb85400213f65f80c9427bb3e27a2b80	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	133993	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/767,124	06/22/2007	Hiroaki SUDO	009289-41981	1688

52989 7590 06/11/2010

Dickinson Wright PLLC
James E. Ledbetter, Esq.
International Square
1875 Eye Street, N.W., Suite 1200
Washington, DC 20006

EXAMINER	
TRAN, PABLO N	

ART UNIT	PAPER NUMBER
2618	

MAIL DATE	DELIVERY MODE
06/11/2010	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 DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
11767124	6/22/07	SUDO, HIROAKI	009289-41981

Dickinson Wright PLLC
James E. Ledbetter, Esq.
International Square
1875 Eye Street, N.W., Suite 1200
Washington, DC 20006

EXAMINER	
EDWARD URBAN	
ART UNIT	**PAPER**
2618	20100602

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

Attached is a considered IDS received 2/6/09.

/Edward Urban/
Supervisory Patent Examiner, Art Unit 2618

PTO-90C (Rev.04-03)

SUBSTITUTE FOR FORM PTO-1449 U.S. Department of Commerce Patent and Trademark Office **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** (Use several sheets if necessary)	ATTY. DOCKET NO. 009289-41981	SERIAL NO. 11/767,124
	APPLICANT Hiroaki SUDO	
	FILING DATE June 22, 2007	GROUP 2618

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CORRESPONDENT	DISCUSSED AND CITED IN SPEC? (insert page and line number where cited)
E.U.	2005/0002421	01/2005	Ito		

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CORRESPONDENT	TRANSLATION?	DISCUSSED AND CITED IN SPEC? (insert page and line number where cited)
E.U.	2004-350259	12/2004	JP	US 2005/0002421		

	OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)	DISCUSSED AND CITED IN SPEC?
E.U.	Japanese Office Action dated November 11, 2008 with English translation thereof.	

EXAMINER: Initial if citation is considered, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

(Form PTO-1449 [6-4])

/Edward Urban/ 6/7/10

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/767,124	07/27/2010	7764711	009289-41981	1688

52989 7590 07/07/2010

Dickinson Wright PLLC
James E. Ledbetter, Esq.
International Square
1875 Eye Street, N.W., Suite 1200
Washington, DC 20006

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 48 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Hiroaki SUDO, Yokohama-shi, JAPAN;

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT2667260

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
PANASONIC CORPORATION	12/20/2013

RECEIVING PARTY DATA

Name:	INVENTERGY, INC.
Street Address:	19925 STEVENS CREEK BOULEVARD
Internal Address:	SUITE 100
City:	CUPERTINO
State/Country:	CALIFORNIA
Postal Code:	95014

PROPERTY NUMBERS Total: 115

Property Type	Number
Patent Number:	6726297
Patent Number:	8009549
Patent Number:	8416810
Patent Number:	7646702
Patent Number:	8238226
Patent Number:	7593317
Patent Number:	7929627
Patent Number:	7826557
Patent Number:	7792084
Patent Number:	8064393
Patent Number:	8270332
Patent Number:	8582573
Patent Number:	6400929
Patent Number:	6381445

Patent Number:	6366763
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Patent Number:	8437316
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Patent Number:	RE39954
Patent Number:	RE41444
Application Number:	11575015
Application Number:	10901380
Application Number:	11134448
Application Number:	10419089
Application Number:	11859550
Application Number:	13478996
Application Number:	13532576
Application Number:	13554748
Application Number:	10235918
Application Number:	10322425
Application Number:	13590841
Patent Number:	6876870
Application Number:	11574636
Application Number:	12162592

CORRESPONDENCE DATA

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Phone: 4089737896
Email: wayne@inventergy.com

Correspondence will be sent via US Mail when the email attempt is unsuccessful.

Correspondent Name: WAYNE P. SOBON
Address Line 1: 19925 STEVENS CREEK BOULEVARD
Address Line 2: SUITE 100
Address Line 4: CUPERTINO, CALIFORNIA 95014

NAME OF SUBMITTER:	WAYNE P. SOBON
Signature:	/Wayne P. Sobon/
Date:	01/03/2014
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 5
source=Panasonic Inventergy Appendix B - Transfer Documents 12-20-13#page1.tif
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source=Panasonic Inventergy Appendix A - Appendix Patents#page4.tif

Appendix B – Transfer Documents

Panasonic Corporation, a Japanese corporation having its principal place of business at 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8501, Japan ("**Assignor**"), hereby irrevocably assigns to Inventergy, Inc., a Delaware corporation with a business address at 19925 Stevens Creek Boulevard, Suite 100, Cupertino, California 95014, USA ("**Assignee**"), as of the date set forth below, the entire Assignor's right, title, and interest in and to (a) all US patents as listed in Appendix A (**"Appendix Patents"**), and (b) all of their related families, including all counterpart patents and applications in any geography or jurisdiction, pending applications and lapsed or otherwise abandoned patents or patent applications which: (i) claim priority to the Appendix Patents, (ii) to which the Appendix Patents claimed priority (**"Priority Patents"**), or (iii) which claim priority to the Priority Patents (collectively, (a) and (b) are the **"Patent Assets"**), and any patents or patent applications subject to any terminal disclaimer with regard to such patents and/or patent applications, and all causes of action, rights, and remedies arising under any such Patent Assets prior to, on or after the Effective Date of this Agreement and all claims for damages by reason of past, present or future infringement or other unauthorized use of such Patent Assets with the right to sue for and collect such damages.

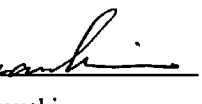
Assignor also hereby authorizes the respective patent office of governmental agency in each jurisdiction to issue any and all patents or certificates of invention which may be granted upon any of the Patent Assets in the name of Assignee, as the assignee to the entire interest therein.

The terms and conditions of this assignment shall inure to the benefit of Assignee, its successors, assigns, and other legal representatives, and shall be binding upon Assignor, its successors, assigns, and other legal representatives.

IN WITNESS WHEREOF, Assignor have caused their duly authorized representatives to execute this Assignment.

ASSIGNOR

Panasonic Corporation

By: 

Name: Ikuo Terauchi

Title: Authorized Signing Officer

Date: December 20, 2013

Appendix A - Appendix Patents

Subtotal Internal Family ID	101 Publication Number	Patent Status
Inv-01	US6726297	Granted
Inv-03	US8009549	Granted
Inv-04	US8416810	Granted
Inv-08	US7646702	Granted
Inv-08	US8238226	Granted
Inv-09	US7593317	Granted
Inv-15	US7929627	Granted
Inv-16	US7826557	Granted
Inv-21	US7792084	Granted
Inv-23	US8064393	Granted
Inv-26	US20120314645	Pending
Inv-26	US8270332	Granted
Pana-01	US6366763	Granted
Pana-01	US6370359	Granted
Pana-01	US6381445	Granted
Pana-01	US6400929	Granted
Pana-01	US6487394	Granted
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Pana-01	US6611676	Granted
Pana-01	US6973289	Granted
Pana-01	US7636551	Granted
Pana-02	US6637001	Granted
Pana-02	US20050002477	lapsed
Pana-03	US6813323	Granted
Pana-03	US20050219071	lapsed
Pana-04	US6734810	Granted
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Pana-06	US6119004	Granted
Pana-07	US6069924	Granted
Pana-08	US20040048578	lapsed

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Pana-15	US6868056	Granted
Pana-16	US6944208	Granted
Pana-17	US6781973	Granted
Pana-18	US7145886	Granted
Pana-19	US6847828	Granted
Pana-19	US7386321	Granted
Pana-20	US7266118	Granted
Pana-21	US7133379	Granted
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Pana-22	US7392019	Granted
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Pana-35	US20070254715	Pending
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Pana-36	US7848439	Granted
Pana-37	US8175604	Granted
Pana-38	US7860184	Granted
Pana-39	US8073070	Granted
Pana-40	US8249132	Granted
Pana-41	US20090116434	Pending
Pana-42	US8218681	Granted
Pana-43	US8249178	Granted
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Pana-48	US6697384	Granted
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Pana-50	US7535864	Granted
Pana-50	US6370134	Granted
Pana-50	US7035233	Granted
WCDMA (pool) 01	US5677929	lapsed
WCDMA (pool) 01	USRE37420	Granted

WCDMA (pool) 01	USRE39954	Granted
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WCDMA (pool) 01	US20060121930	lapsed
WCDMA (pool) 01	US20080261545	lapsed
WCDMA (pool) 07	US7386846	Granted
WCDMA (pool) 07	US7460880	Granted
WCDMA (pool) 07	US7761113	Granted
WCDMA (pool) 09	US7605590	Granted
WCDMA (pool) 09	US7990053	Granted
WCDMA (pool) 09	US7206587	Granted

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT2699760

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY AGREEMENT

CONVEYING PARTY DATA

Name	Execution Date
INVENTERGY, INC.	12/19/2013

RECEIVING PARTY DATA

Name:	JOSEPH BEYERS
Street Address:	19925 STEVENS CREEK BOULEVARD
Internal Address:	SUITE 100
City:	CUPERTINO
State/Country:	CALIFORNIA
Postal Code:	95014

PROPERTY NUMBERS Total: 111

Property Type	Number
Patent Number:	6726297
Patent Number:	8009549
Patent Number:	8416810
Patent Number:	7646702
Patent Number:	8238226
Patent Number:	7593317
Patent Number:	7929627
Patent Number:	7826557
Patent Number:	7792084
Patent Number:	8064393
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Patent Number:	6839335
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Patent Number:	6847828
Patent Number:	7386321

	7266118
Patent Number:	7133379
Patent Number:	7392019
Patent Number:	7339949
Patent Number:	7702025
Patent Number:	7460502
Patent Number:	7269774
Patent Number:	7385934
Patent Number:	7114121
Patent Number:	7162206
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Patent Number:	RE39954
Patent Number:	6738646
Patent Number:	7460880
Patent Number:	7761113
Patent Number:	6760590
Patent Number:	6799053
Patent Number:	7206587
Application Number:	10901380
Application Number:	11134448
Application Number:	10419089
Application Number:	11859550
Application Number:	11575015
Application Number:	13478996
Application Number:	13532576
Application Number:	13554748
Application Number:	10235918
Application Number:	10322425

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	WAYNE P. SOBON
Signature:	/Wayne P. Sobon/
Date:	01/27/2014
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 18
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ASSIGNMENT FOR SECURITY
PATENTS

WHEREAS, **Inventergy, Inc.** (the "Assignor") holds all right, title and interest in the letter patents, design patents and utility patents listed on the annexed Schedule 1, which patents are issued or applied for (the "Patents");

WHEREAS, the Assignor has entered into a Secured Promissory Note, dated as of December 19, 2013 (as amended, restated or otherwise modified from time to time the "Secured Promissory Note"), in favor of **Joseph Beyers** (the "Assignee");

WHEREAS, pursuant to the Secured Promissory Note, the Assignor has assigned to the Assignee and granted to the Assignee a **first priority security interest** in all right, title and interest of the Assignor in, to and under the Patents and the applications and registrations thereof, and all proceeds thereof, including, without limitation, any and all causes of action which may exist by reason of infringement thereof and any and all damages arising from past, present and future violations thereof (the "Collateral"), to secure the payment, performance and observance of the "Obligations" (as defined in "Section 2. Secured Obligation" in the Secured Promissory Note);

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Assignor does hereby pledge, convey, sell, assign, transfer and set over unto the Assignee and grants to the Assignee a **first priority security interest** in the Collateral to secure the prompt payment, performance and for the benefit of the Buyers observance of the Obligations.

The Assignor does hereby further acknowledge and affirm that the rights and remedies of the Assignee with respect to the Collateral are more fully set forth in the Secured Promissory Note, the terms and provisions of which are hereby incorporated herein by reference as if fully set forth herein.

IN WITNESS WHEREOF, the Assignor has caused this Assignment to be duly executed by its officer thereunto duly authorized as of January 24, 2014.

Inventergy, Inc.

By: _____
Name: Wayne P. Sobon
Title: SVP and General Counsel

SCHEDULE 1 TO ASSIGNMENT FOR SECURITY

Patents and Patent Applications
Owned by: **Inventergy, Inc.**

Internal Family ID	Country	Inventergy Understood status 1/14/2014	Publication Number	Publication Date	Title	Application Number	File Date
Inv-01	USA	Granted	US6726297	4/27/2004	Ofdma signal transmission apparatus and method	US10/462491	1/20/2000
Inv-03	USA	Granted	US8009549	8/30/2011	Carrier allocation method in multi cell orthogonal frequency division multiple access system	US12/092950	11/16/2006
Inv-04	USA	Granted	US8416810	4/9/2013	Radio communication base station apparatus and pilot transmission method	US12/160872	1/18/2007
Inv-08	USA	Granted	US7646702	1/12/2010	Ofdm communication apparatus	US10/169716	7/9/2002
Inv-08	USA	Granted	US8238226	8/7/2012	Ofdm communication apparatus	US12/505420	7/17/2009
Inv-09	USA	Granted	US7593317	9/22/2009	Radio base station apparatus	US10/503010	7/29/2004
Inv-15	USA	Granted	US7929627	4/19/2011	Ofdm receiver, integrated circuit and receiving method	US11/885042	2/28/2006

Inv-16	USA	Granted	US7826557	11/2/2010	Retransmitting method and transmitting method in multi-antenna transmission	US11/721911	12/14/2005
Inv-21	USA	Granted	US7792084	9/7/2010	Mimo antenna apparatus controlling number of streams and modulation and demodulation method	US11/892886	8/28/2007
Inv-23	USA	Granted	US8064393	11/22/2011	Wireless communication base station apparatus and wireless communication method in multicarrier communication	US11/997841	8/4/2006
Inv-26	USA	Granted	US8270332	9/18/2012	Wireless communication base station device and wireless communication method	US12/377373	10/12/2007
Inv-26	USA	Granted	US8582573	12/13/2012	Radio communication base station apparatus and radio communication method	US13/590841	8/21/2012
Pana-01	USA	Granted	US6400929	6/4/2002	Radio communication device and method of controlling transmission rate	US09/424843	12/6/1999

Pana-01	USA	Granted	US6381445	4/30/2002	Radio communication device and method of controlling transmission rate	US09/648742	8/28/2000
Pana-01	USA	Granted	US6366763	4/2/2002	Radio communication device and method of controlling transmission rate	US09/648756	8/28/2000
Pana-01	USA	Granted	US6370359	4/9/2002	Radio communication device and method of controlling transmission rate	US09/648757	8/28/2000
Pana-01	USA	Granted	US6487394	11/26/2002	Radio communication device and method of controlling transmission rate	US09/649003	8/28/2000
Pana-01	USA	Granted	US6597894	7/22/2003	Radio communication device and method of controlling transmission rate	US09/649006	8/28/2000
Pana-01	USA	Granted	US6505035	1/7/2003	Radio communication apparatus and transmission rate control method	US10/052261	1/23/2002
Pana-01	USA	Granted	US6973289	12/6/2005	Radio communication device and method of controlling transmission rate	US10/057897	1/29/2002

Pana-01	USA	Granted	US6611676	8/26/2003	Radio communication apparatus and transmission rate control method	US10/083553	2/27/2002
Pana-01	USA	Granted	US7636551	12/22/2009	Radio communication device and method of controlling transmission rate	US11/228339	9/19/2005
Pana-02	USA	Granted	US6637001	10/21/2003	Apparatus and method for image/voice transmission	US09/650743	8/30/2000
Pana-03	USA	Granted	US6813323	11/2/2004	Decoding method and communication terminal apparatus	US10/182270	7/25/2002
Pana-03	USA	Lapsed	US20050002477	1/6/2005	Decoding apparatus and decoding method	10901380	7/29/2004
Pana-04	USA	Granted	US6734810	5/11/2004	Apparatus and method for decoding	US10/221267	9/10/2002
Pana-04	USA	Granted	US6940428	9/6/2005	Apparatus and method for decoding	US10/793737	3/8/2004
Pana-04	USA	Granted	US6922159	7/26/2005	Apparatus and method for decoding	US10/793766	3/8/2004
Pana-04	USA	Lapsed	US20050219071	10/6/2005	Apparatus and method for decoding	11134448	5/23/2005

Pana-05	USA	Granted	US6069884	5/30/2000	Method of communication between a base station and a plurality of mobile unit communication apparatus, a base station, and mobile unit communication apparatus	US08/937005	9/24/1997
Pana-06	USA	Granted	US6119004	9/12/2000	Base station equipment for mobile communication	US09/068541	5/13/1998
Pana-07	USA	Granted	US6069924	5/30/2000	Differential detector with error correcting function	US09/027510	2/20/1998
Pana-08	USA	Granted	US6636723	10/21/2003	Cdma radio communication system using chip interleaving	US09/359020	7/22/1999
Pana-08	USA	Lapsed	US20040048578	3/11/2004	Cdma radio transmission apparatus, cdma radio reception apparatus, and cdma radio communication method	10419089	4/21/2003
Pana-09	USA	Granted	US6628630	9/30/2003	Spread spectrum communication method	US09/058881	4/13/1998
Pana-10	USA	Granted	US6404778	6/11/2002	Radio communication apparatus	US09/159602	9/24/1998

Pana-11	USA	Granted	US6611509	8/26/2003	Cdma/tdd mobile communication system and method	US09/264826	3/9/1999
Pana-11	USA	Granted	US6807162	10/19/2004	Cdma/tdd mobile communication system and method	US10/166268	6/11/2002
Pana-11	USA	Granted	US6973065	12/6/2005	Cdma/tdd mobile communication system and method	US10/419733	4/22/2003
Pana-11	USA	Granted	US7778224	8/17/2010	Cdma/tdd mobile communication system and method	US10/885684	7/8/2004
Pana-12	USA	Granted	US6765894	7/20/2004	Communication terminal apparatus and base station apparatus	US09/606906	6/30/2000
Pana-12	USA	Granted	US7656844	2/2/2010	Radio transmission apparatus and radio reception apparatus in a cdma communication system	US10/868029	6/16/2004
Pana-12	USA	Granted	US8437316	5/7/2013	Radio transmission apparatus and radio reception apparatus in a cdma communication system	US12/641177	12/17/2009

Pana-13	USA	Granted	US6839335	1/4/2005	Radio communication apparatus and radio communication method	US09/605862	6/29/2000
Pana-14	USA	Granted	US7072416	7/4/2006	Transmitting/receiving device and transmitting/receiving method	US09/582558	6/29/2000
Pana-14	USA	Granted	US7760815	7/20/2010	Apparatus and method for transmission/reception	US11/431606	5/11/2006
Pana-15	USA	Granted	US6868056	3/15/2005	Apparatus and method for ofdm communication	US09/635096	8/9/2000
Pana-16	USA	Granted	US6944208	9/13/2005	Interference signal canceling apparatus and interference signal canceling method	US09/936727	9/17/2001
Pana-17	USA	Granted	US6781973	8/24/2004	Combined signaling and sir inner-loop power control	US09/538888	3/30/2000
Pana-18	USA	Granted	US7145886	12/5/2006	Communication terminal, base station system, and method of controlling transmission power	US09/889919	7/25/2001
Pana-19	USA	Granted	US6847828	1/25/2005	Base station apparatus and radio communication method	US10/069484	2/27/2002

Pana-19	USA	Granted	US7386321	6/10/2008	Base station apparatus and radio communication method	US10/793738	3/8/2004
Pana-20	USA	Granted	US7266118	9/4/2007	Packet receiving apparatus and packet transmission method	US10/143989	5/14/2002
Pana-21	USA	Granted	US7133379	11/7/2006	Wireless communication system, and base station apparatus and communication terminal apparatus accommodated in the system	US10/181349	7/17/2002
Pana-22	USA	Granted	US7392019	6/24/2008	Wireless base station apparatus and wireless communication method	US11/053837	2/10/2005
Pana-23	USA	Granted	US7339949	3/4/2008	Arq transmission and reception methods and apparatus	US10/222989	8/19/2002
Pana-24	USA	Granted	US7702025	4/20/2010	Transmission/reception apparatus and transmission/reception method	US10/487574	2/25/2004
Pana-25	USA	Granted	US7460502	12/2/2008	Scheduling creation apparatus, base station apparatus, and radio communication method	US10/250487	7/3/2003

Pana-26	USA	Granted	US7269774	9/11/2007	Data receiving apparatus, data transmitting apparatus and retransmission request method	US10/484951	1/28/2004
Pana-27	USA	Granted	US7385934	6/10/2008	Radio communication apparatus and transfer rate decision method	US10/476845	11/6/2003
Pana-28	USA	Granted	US7114121	9/26/2006	Rate matching device and rate matching method	US10/478139	11/20/2003
Pana-29	USA	Granted	US7162206	1/9/2007	Test apparatus, mobile terminal apparatus, test method	US10/612289	7/3/2003
Pana-30	USA	Granted	US7746762	6/29/2010	Transmitting apparatus and transmitting method	US10/534987	5/16/2005
Pana-31	USA	Granted	US7693140	4/6/2010	Cdma transmitting apparatus and cdma receiving apparatus	US10/527199	3/10/2005
Pana-32	USA	Granted	US7299027	11/20/2007	Mimo receiver and mimo reception method for selection of mimo separation and channel variation compensation	US10/536010	5/23/2005
Pana-32	USA	Lapsed	US20080020802	1/24/2008	Wireless receiver and wireless reception method	11859550	9/21/2007

Pana-33	USA	Pending	US20070255993	11/1/2007	Automatic retransmission request control system and retransmission method in memo-ofdm system	11575015	3/30/2007
Pana-33	USA	Lapsed	US20120230257	9/13/2012	Retransmission method and transmitter	13478996	5/23/2012
Pana-33	USA	Lapsed	US20120263250	10/18/2012	Retransmission method, transmitter, and communication system	13532576	6/25/2012
Pana-33	USA	Lapsed	US20120287775	11/15/2012	Automatic retransmission request control system and retransmission method in mimo-ofdm system	13554748	7/20/2012
Pana-34	USA	Granted	US7251469	7/31/2007	Cdma transmitting apparatus and cdma transmitting method	US10/522980	2/2/2005
Pana-34	USA	Granted	US7764711	7/27/2010	Cdma transmission apparatus and cdma transmission method	US11/767124	6/22/2007
Pana-35	USA	Granted	US8086270	12/27/2011	Classifying-synthesizing transmission method of multi-user feedback information at base station	US11/574636	9/5/2005

Pana-36	USA	Granted	US7848439	12/7/2010	Communication apparatus, communication system, and communication method	US11/719611	11/18/2005
Pana-37	USA	Granted	US8175604	5/8/2012	Efficient rise over thermal (rot) control during soft handover	US10/588073	8/31/2005
Pana-38	USA	Granted	US7860184	12/28/2010	Multi-antenna communication method and multi-antenna communicaton apparatus	US11/813650	1/10/2006
Pana-39	USA	Granted	US8073070	12/6/2011	Multi-pilot generation method and detection method in multi-antenna communication system	US12/092944	11/22/2006
Pana-40	USA	Granted	US8249132	8/21/2012	Communication terminal and receiving method	US11/909425	3/3/2006
Pana-41	USA	Granted	US8576784	5/7/2009	Uplink resource allocation in a mobile communication system	US12/162592	11/2/2006
Pana-42	USA	Granted	US8218681	7/10/2012	Ofdm transmitter and ofdm receiver	US12/440894	3/11/2009
Pana-43	USA	Granted	US8249178	8/21/2012	Multicarrier transmitter and multicarrier receiver	US12/601804	5/25/2007

Pana-44	USA	Granted	US5583851	12/10/1996	Mobile communication apparatus having multi-codes allocating function	US08/272158	7/8/1994
Pana-45	USA	Granted	US5873027	2/16/1999	Mobile radio system with control over radio wave output if a malfunction is detected	US08/761552	12/6/1996
Pana-45	USA	Granted	US6336040	1/1/2002	Mobile radio system with control over radio wave output if a malfunction is detected	US09/207662	12/9/1998
Pana-46	USA	Granted	US5757870	5/26/1998	Spread spectrum communication synchronizing method and its circuit	US08/517408	8/21/1995
Pana-46	USA	Granted	US5818869	10/6/1998	Spread spectrum communication synchronizing method and its circuit	US08/858146	5/15/1997
Pana-47	USA	Granted	US6175558	1/16/2001	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/000947	12/30/1997

Pana-47	USA	Granted	US6301237	10/9/2001	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/562921	5/2/2000
Pana-47	USA	Granted	US6529492	3/4/2003	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/562922	5/2/2000
Pana-47	USA	Granted	US6370131	4/9/2002	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/576250	5/24/2000
Pana-47	USA	Granted	US6584088	6/24/2003	Cdma radio multiplex transmitting device and cdma radio multiplex receiving device	US09/825998	4/5/2001
Pana-47	USA	Granted	US6549526	4/15/2003	Cdma radio multiplex transmitting device and a cdma multiplex receiving device	US09/826005	4/5/2001
Pana-47	USA	Granted	US7136367	11/14/2006	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US10/335916	1/3/2003

Pana-47	USA	Granted	USRE41444	7/20/2010	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US12/270499	11/13/2008
Pana-48	USA	Granted	US6295301	9/25/2001	Pn code generating apparatus and mobile radio communication system	US09/139325	8/25/1998
Pana-48	USA	Granted	US6697384	2/24/2004	Method and apparatus for calculating a state of starting a pn code generating operation	US09/916284	7/30/2001
Pana-49	USA	Granted	US6466563	10/15/2002	Cdma mobile station and cdma transmission method	US10/147831	3/16/1999
Pana-49	USA	Lapsed	US20030007472	1/9/2003	Cdma mobile station apparatus and cdma transmission method	10235918	9/6/2002
Pana-50	USA	Granted	US6370134	4/9/2002	Cdma radio communication apparatus	US09/115502	7/15/1998
Pana-50	USA	Granted	US7035233	4/25/2006	Radio communication terminal apparatus and radio communication base station apparatus	US10/014352	12/14/2001

Pana-50	USA	Granted	US7535864	5/19/2009	Radio communication terminal apparatus and radio communication base station apparatus	US11/372152	3/10/2006
WCDMA (pool) 01	USA	Granted	US5677929	10/14/1997	Automobile on-board and/or portable telephone system	US08/272156	7/8/1994
WCDMA (pool) 01	USA	Granted	USRE37420	10/23/2001	Automobile on-board and/or portable telephone system	US09/337403	6/21/1999
WCDMA (pool) 01	USA	Granted	USRE39954	12/25/2007	Automobile on-board and/or portable telephone system	US09/887042	6/25/2001
WCDMA (pool) 07	USA	Granted	US6738646	5/18/2004	Base station device and method for communication	US10/069267	2/25/2002
WCDMA (pool) 07	USA	Lapsed	US20030087644	5/8/2003	Communication terminal apparatus and base station apparatus	10322425	12/19/2002
WCDMA (pool) 07	USA	Granted	US7460880	12/2/2008	Communication terminal apparatus and base station apparatus	US11/341430	1/30/2006
WCDMA (pool) 07	USA	Granted	US7761113	7/20/2010	Communication terminal apparatus and base station apparatus	US12/132992	6/4/2008

WCDMA (pool) 09	USA	Granted	US6760590	7/6/2004	Communication terminal apparatus, base station apparatus, and radio communication method	US10/089605	4/1/2002
WCDMA (pool) 09	USA	Granted	US6799053	9/28/2004	Communication terminal apparatus	US10/321500	12/18/2002
WCDMA (pool) 09	USA	Granted	US7206587	4/17/2007	Communication terminal apparatus, base station apparatus, and radio communication method	US10/321623	12/18/2002

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT2704390

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY AGREEMENT

CONVEYING PARTY DATA

Name	Execution Date
INVENTERGY, INC.	01/28/2014

RECEIVING PARTY DATA

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State/Country:	NEW YORK
Postal Code:	10017

PROPERTY NUMBERS Total: 111

Property Type	Number
Patent Number:	6726297
Patent Number:	8009549
Patent Number:	8416810
Patent Number:	7646702
Patent Number:	8238226
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Patent Number:	6799053
Patent Number:	7206587
Application Number:	10901380
Application Number:	11134448
Application Number:	10419089
Application Number:	11859550
Application Number:	11575015
Application Number:	13478996
Application Number:	13532576
Application Number:	13554748
Application Number:	10235918
Application Number:	10322425

CORRESPONDENCE DATA

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Email: paul@inventergy.com
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Address Line 4: CUPERTINO, CALIFORNIA 95014

	WAYNE P. SOBON
Signature:	/Wayne P. Sobon/
Date:	01/29/2014
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 18
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source=Hudson Security 2d priority in patents from Panasonic (2014-01-28US) executed#page18.tif

ASSIGNMENT FOR SECURITY
PATENTS

WHEREAS, **Inventergy, Inc.** (the "Assignor") holds all right, title and interest in the letter patents, design patents and utility patents listed on the annexed Schedule 1, which patents are issued or applied for in the United States Patent and Trademark Office (the "Patents");

WHEREAS, the Assignor has entered into a Pledge and Security Agreement, dated as of May 10, 2013 (as amended, restated or otherwise modified from time to time the "Security Agreement"), in favor of **Hudson Bay IP Opportunities Master Fund, LP**, as collateral agent for certain buyers (the "Assignee");

WHEREAS, the Assignor has entered into a Secured Promissory Note, dated as of December 19, 2013 (as amended, restated or otherwise modified from time to time the "Secured Promissory Note"), in favor of **Joseph Beyers** ("Beyers"), as Permitted Indebtedness under the Security Agreement for the purchase of the Patents;

WHEREAS, the Assignor has assigned a continuing first priority security interest in favor of Beyers as a Permitted Lien under the Security Agreement; and

WHEREAS, pursuant to the Security Agreement, the Assignor has assigned to the Assignee and granted to the Assignee for the benefit of the Buyers (as defined in the Security Agreement) a **continuing second priority security interest,** expressly subject to that first priority security interest in favor of Beyers, in all right, title and interest of the Assignor in, to and under the Patents and the applications and registrations thereof, and all proceeds thereof, including, without limitation, any and all causes of action which may exist by reason of infringement thereof and any and all damages arising from past, present and future violations thereof (the "Collateral"), to secure the payment, performance and observance of the "Obligations" (as defined in the Security Agreement).

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Assignor does hereby pledge, convey, sell, assign, transfer and set over unto the Assignee and grants to the Assignee for the benefit of the Buyers a **continuing second priority security interest,** expressly subject to a first priority security interest in favor of Joseph Beyers, in the Collateral to secure the prompt payment, performance and for the benefit of the Buyers observance of the Obligations.

The Assignor does hereby further acknowledge and affirm that the rights and remedies of the Assignee with respect to the Collateral are more fully set forth in the Security Agreement, the terms and provisions of which are hereby incorporated herein by reference as if fully set forth herein.

IN WITNESS WHEREOF, the Assignor has caused this Assignment to be duly executed by its officer thereunto duly authorized as of January 28, 2014.

Inventergy, Inc.

By: _____
Name: Wayne P. Sobon
Title: SVP and General Counsel

SCHEDULE 1 TO ASSIGNMENT FOR SECURITY

Patents and Patent Applications
Owned by: **Inventergy, Inc.**

Internal Family ID	Country	Inventergy Understood status 1/14/2014	Publication Number	Publication Date	Title	Application Number	File Date
Inv-01	USA	Granted	US6726297	4/27/2004	Ofdma signal transmission apparatus and method	US10/462491	1/20/2000
Inv-03	USA	Granted	US8009549	8/30/2011	Carrier allocation method in multi cell orthogonal frequency division multiple access system	US12/092950	11/16/2006
Inv-04	USA	Granted	US8416810	4/9/2013	Radio communication base station apparatus and pilot transmission method	US12/160872	1/18/2007
Inv-08	USA	Granted	US7646702	1/12/2010	Ofdm communication apparatus	US10/169716	7/9/2002
Inv-08	USA	Granted	US8238226	8/7/2012	Ofdm communication apparatus	US12/505420	7/17/2009
Inv-09	USA	Granted	US7593317	9/22/2009	Radio base station apparatus	US10/503010	7/29/2004
Inv-15	USA	Granted	US7929627	4/19/2011	Ofdm receiver, integrated circuit and receiving method	US11/885042	2/28/2006

Inv-16	USA	Granted	US7826557	11/2/2010	Retransmitting method and transmitting method in multi-antenna transmission	US11/721911	12/14/2005
Inv-21	USA	Granted	US7792084	9/7/2010	Mimo antenna apparatus controlling number of streams and modulation and demodulation method	US11/892886	8/28/2007
Inv-23	USA	Granted	US8064393	11/22/2011	Wireless communication base station apparatus and wireless communication method in multicarrier communication	US11/997841	8/4/2006
Inv-26	USA	Granted	US8270332	9/18/2012	Wireless communication base station device and wireless communication method	US12/377373	10/12/2007
Inv-26	USA	Granted	US8582573	12/13/2012	Radio communication base station apparatus and radio communication method	US13/590841	8/21/2012
Pana-01	USA	Granted	US6400929	6/4/2002	Radio communication device and method of controlling transmission rate	US09/424843	12/6/1999

Pana-01	USA	Granted	US6381445	4/30/2002	Radio communication device and method of controlling transmission rate	US09/648742	8/28/2000
Pana-01	USA	Granted	US6366763	4/2/2002	Radio communication device and method of controlling transmission rate	US09/648756	8/28/2000
Pana-01	USA	Granted	US6370359	4/9/2002	Radio communication device and method of controlling transmission rate	US09/648757	8/28/2000
Pana-01	USA	Granted	US6487394	11/26/2002	Radio communication device and method of controlling transmission rate	US09/649003	8/28/2000
Pana-01	USA	Granted	US6597894	7/22/2003	Radio communication device and method of controlling transmission rate	US09/649006	8/28/2000
Pana-01	USA	Granted	US6505035	1/7/2003	Radio communication apparatus and transmission rate control method	US10/052261	1/23/2002
Pana-01	USA	Granted	US6973289	12/6/2005	Radio communication device and method of controlling transmission rate	US10/057897	1/29/2002

Pana-01	USA	Granted	US6611676	8/26/2003	Radio communication apparatus and transmission rate control method	US10/083553	2/27/2002
Pana-01	USA	Granted	US7636551	12/22/2009	Radio communication device and method of controlling transmission rate	US11/228339	9/19/2005
Pana-02	USA	Granted	US6637001	10/21/2003	Apparatus and method for image/voice transmission	US09/650743	8/30/2000
Pana-03	USA	Granted	US6813323	11/2/2004	Decoding method and communication terminal apparatus	US10/182270	7/25/2002
Pana-03	USA	Lapsed	US20050002477	1/6/2005	Decoding apparatus and decoding method	10901380	7/29/2004
Pana-04	USA	Granted	US6734810	5/11/2004	Apparatus and method for decoding	US10/221267	9/10/2002
Pana-04	USA	Granted	US6940428	9/6/2005	Apparatus and method for decoding	US10/793737	3/8/2004
Pana-04	USA	Granted	US6922159	7/26/2005	Apparatus and method for decoding	US10/793766	3/8/2004
Pana-04	USA	Lapsed	US20050219071	10/6/2005	Apparatus and method for decoding	11134448	5/23/2005

Pana-05	USA	Granted	US6069884	5/30/2000	Method of communication between a base station and a plurality of mobile unit communication apparatus, a base station, and mobile unit communication apparatus	US08/937005	9/24/1997
Pana-06	USA	Granted	US6119004	9/12/2000	Base station equipment for mobile communication	US09/068541	5/13/1998
Pana-07	USA	Granted	US6069924	5/30/2000	Differential detector with error correcting function	US09/027510	2/20/1998
Pana-08	USA	Granted	US6636723	10/21/2003	Cdma radio communication system using chip interleaving	US09/359020	7/22/1999
Pana-08	USA	Lapsed	US20040048578	3/11/2004	Cdma radio transmission apparatus, cdma radio reception apparatus, and cdma radio communication method	10419089	4/21/2003
Pana-09	USA	Granted	US6628630	9/30/2003	Spread spectrum communication method	US09/058881	4/13/1998
Pana-10	USA	Granted	US6404778	6/11/2002	Radio communication apparatus	US09/159602	9/24/1998

Pana-11	USA	Granted	US6611509	8/26/2003	Cdma/tdd mobile communication system and method	US09/264826	3/9/1999
Pana-11	USA	Granted	US6807162	10/19/2004	Cdma/tdd mobile communication system and method	US10/166268	6/11/2002
Pana-11	USA	Granted	US6973065	12/6/2005	Cdma/tdd mobile communication system and method	US10/419733	4/22/2003
Pana-11	USA	Granted	US7778224	8/17/2010	Cdma/tdd mobile communication system and method	US10/885684	7/8/2004
Pana-12	USA	Granted	US6765894	7/20/2004	Communication terminal apparatus and base station apparatus	US09/606906	6/30/2000
Pana-12	USA	Granted	US7656844	2/2/2010	Radio transmission apparatus and radio reception apparatus in a cdma communication system	US10/868029	6/16/2004
Pana-12	USA	Granted	US8437316	5/7/2013	Radio transmission apparatus and radio reception apparatus in a cdma communication system	US12/641177	12/17/2009

Pana-13	USA	Granted	US6839335	1/4/2005	Radio communication apparatus and radio communication method	US09/605862	6/29/2000
Pana-14	USA	Granted	US7072416	7/4/2006	Transmitting/receiving device and transmitting/receiving method	US09/582558	6/29/2000
Pana-14	USA	Granted	US7760815	7/20/2010	Apparatus and method for transmission/reception	US11/431606	5/11/2006
Pana-15	USA	Granted	US6868056	3/15/2005	Apparatus and method for ofdm communication	US09/635096	8/9/2000
Pana-16	USA	Granted	US6944208	9/13/2005	Interference signal canceling apparatus and interference signal canceling method	US09/936727	9/17/2001
Pana-17	USA	Granted	US6781973	8/24/2004	Combined signaling and sir inner-loop power control	US09/538888	3/30/2000
Pana-18	USA	Granted	US7145886	12/5/2006	Communication terminal, base station system, and method of controlling transmission power	US09/889919	7/25/2001
Pana-19	USA	Granted	US6847828	1/25/2005	Base station apparatus and radio communication method	US10/069484	2/27/2002

Pana-19	USA	Granted	US7386321	6/10/2008	Base station apparatus and radio communication method	US10/793738	3/8/2004
Pana-20	USA	Granted	US7266118	9/4/2007	Packet receiving apparatus and packet transmission method	US10/143989	5/14/2002
Pana-21	USA	Granted	US7133379	11/7/2006	Wireless communication system, and base station apparatus and communication terminal apparatus accommodated in the system	US10/181349	7/17/2002
Pana-22	USA	Granted	US7392019	6/24/2008	Wireless base station apparatus and wireless communication method	US11/053837	2/10/2005
Pana-23	USA	Granted	US7339949	3/4/2008	Arq transmission and reception methods and apparatus	US10/222989	8/19/2002
Pana-24	USA	Granted	US7702025	4/20/2010	Transmission/reception apparatus and transmission/reception method	US10/487574	2/25/2004
Pana-25	USA	Granted	US7460502	12/2/2008	Scheduling creation apparatus, base station apparatus, and radio communication method	US10/250487	7/3/2003

Pana-26	USA	Granted	US7269774	9/11/2007	Data receiving apparatus, data transmitting apparatus and retransmission request method	US10/484951	1/28/2004
Pana-27	USA	Granted	US7385934	6/10/2008	Radio communication apparatus and transfer rate decision method	US10/476845	11/6/2003
Pana-28	USA	Granted	US7114121	9/26/2006	Rate matching device and rate matching method	US10/478139	11/20/2003
Pana-29	USA	Granted	US7162206	1/9/2007	Test apparatus, mobile terminal apparatus, test method	US10/612289	7/3/2003
Pana-30	USA	Granted	US7746762	6/29/2010	Transmitting apparatus and transmitting method	US10/534987	5/16/2005
Pana-31	USA	Granted	US7693140	4/6/2010	Cdma transmitting apparatus and cdma receiving apparatus	US10/527199	3/10/2005
Pana-32	USA	Granted	US7299027	11/20/2007	Mimo receiver and mimo reception method for selection of mimo separation and channel variation compensation	US10/536010	5/23/2005
Pana-32	USA	Lapsed	US20080020802	1/24/2008	Wireless receiver and wireless reception method	11859550	9/21/2007

Pana-33	USA	Pending	US20070255993	11/1/2007	Automatic retransmission request control system and retransmission method in memo-ofdm system	11575015	3/30/2007
Pana-33	USA	Lapsed	US20120230257	9/13/2012	Retransmission method and transmitter	13478996	5/23/2012
Pana-33	USA	Lapsed	US20120263250	10/18/2012	Retransmission method, transmitter, and communication system	13532576	6/25/2012
Pana-33	USA	Lapsed	US20120287775	11/15/2012	Automatic retransmission request control system and retransmission method in mimo-ofdm system	13554748	7/20/2012
Pana-34	USA	Granted	US7251469	7/31/2007	Cdma transmitting apparatus and cdma transmitting method	US10/522980	2/2/2005
Pana-34	USA	Granted	US7764711	7/27/2010	Cdma transmission apparatus and cdma transmission method	US11/767124	6/22/2007
Pana-35	USA	Granted	US8086270	12/27/2011	Classifying-synthesizing transmission method of multi-user feedback information at base station	US11/574636	9/5/2005

Pana-36	USA	Granted	US7848439	12/7/2010	Communication apparatus, communication system, and communication method	US11/719611	11/18/2005
Pana-37	USA	Granted	US8175604	5/8/2012	Efficient rise over thermal (rot) control during soft handover	US10/588073	8/31/2005
Pana-38	USA	Granted	US7860184	12/28/2010	Multi-antenna communication method and multi-antenna communicaton apparatus	US11/813650	1/10/2006
Pana-39	USA	Granted	US8073070	12/6/2011	Multi-pilot generation method and detection method in multi-antenna communication system	US12/092944	11/22/2006
Pana-40	USA	Granted	US8249132	8/21/2012	Communication terminal and receiving method	US11/909425	3/3/2006
Pana-41	USA	Granted	US8576784	5/7/2009	Uplink resource allocation in a mobile communication system	US12/162592	11/2/2006
Pana-42	USA	Granted	US8218681	7/10/2012	Ofdm transmitter and ofdm receiver	US12/440894	3/11/2009
Pana-43	USA	Granted	US8249178	8/21/2012	Multicarrier transmitter and multicarrier receiver	US12/601804	5/25/2007

Pana-44	USA	Granted	US5583851	12/10/1996	Mobile communication apparatus having multi-codes allocating function	US08/272158	7/8/1994
Pana-45	USA	Granted	US5873027	2/16/1999	Mobile radio system with control over radio wave output if a malfunction is detected	US08/761552	12/6/1996
Pana-45	USA	Granted	US6336040	1/1/2002	Mobile radio system with control over radio wave output if a malfunction is detected	US09/207662	12/9/1998
Pana-46	USA	Granted	US5757870	5/26/1998	Spread spectrum communication synchronizing method and its circuit	US08/517408	8/21/1995
Pana-46	USA	Granted	US5818869	10/6/1998	Spread spectrum communication synchronizing method and its circuit	US08/858146	5/15/1997
Pana-47	USA	Granted	US6175558	1/16/2001	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/000947	12/30/1997

Pana-47	USA	Granted	US6301237	10/9/2001	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/562921	5/2/2000
Pana-47	USA	Granted	US6529492	3/4/2003	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/562922	5/2/2000
Pana-47	USA	Granted	US6370131	4/9/2002	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/576250	5/24/2000
Pana-47	USA	Granted	US6584088	6/24/2003	Cdma radio multiplex transmitting device and cdma radio multiplex receiving device	US09/825998	4/5/2001
Pana-47	USA	Granted	US6549526	4/15/2003	Cdma radio multiplex transmitting device and a cdma multiplex receiving device	US09/826005	4/5/2001
Pana-47	USA	Granted	US7136367	11/14/2006	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US10/335916	1/3/2003

Pana-47	USA	Granted	USRE41444	7/20/2010	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US12/270499	11/13/2008
Pana-48	USA	Granted	US6295301	9/25/2001	Pn code generating apparatus and mobile radio communication system	US09/139325	8/25/1998
Pana-48	USA	Granted	US6697384	2/24/2004	Method and apparatus for calculating a state of starting a pn code generating operation	US09/916284	7/30/2001
Pana-49	USA	Granted	US6466563	10/15/2002	Cdma mobile station and cdma transmission method	US10/147831	3/16/1999
Pana-49	USA	Lapsed	US20030007472	1/9/2003	Cdma mobile station apparatus and cdma transmission method	10235918	9/6/2002
Pana-50	USA	Granted	US6370134	4/9/2002	Cdma radio communication apparatus	US09/115502	7/15/1998
Pana-50	USA	Granted	US7035233	4/25/2006	Radio communication terminal apparatus and radio communication base station apparatus	US10/014352	12/14/2001

Pana-50	USA	Granted	US7535864	5/19/2009	Radio communication terminal apparatus and radio communication base station apparatus	US11/372152	3/10/2006
WCDMA (pool) 01	USA	Granted	US5677929	10/14/1997	Automobile on-board and/or portable telephone system	US08/272156	7/8/1994
WCDMA (pool) 01	USA	Granted	USRE37420	10/23/2001	Automobile on-board and/or portable telephone system	US09/337403	6/21/1999
WCDMA (pool) 01	USA	Granted	USRE39954	12/25/2007	Automobile on-board and/or portable telephone system	US09/887042	6/25/2001
WCDMA (pool) 07	USA	Granted	US6738646	5/18/2004	Base station device and method for communication	US10/069267	2/25/2002
WCDMA (pool) 07	USA	Lapsed	US20030087644	5/8/2003	Communication terminal apparatus and base station apparatus	10322425	12/19/2002
WCDMA (pool) 07	USA	Granted	US7460880	12/2/2008	Communication terminal apparatus and base station apparatus	US11/341430	1/30/2006
WCDMA (pool) 07	USA	Granted	US7761113	7/20/2010	Communication terminal apparatus and base station apparatus	US12/132992	6/4/2008

WCDMA (pool) 09	USA	Granted	US6760590	7/6/2004	Communication terminal apparatus, base station apparatus, and radio communication method	US10/089605	4/1/2002
WCDMA (pool) 09	USA	Granted	US6799053	9/28/2004	Communication terminal apparatus	US10/321500	12/18/2002
WCDMA (pool) 09	USA	Granted	US7206587	4/17/2007	Communication terminal apparatus, base station apparatus, and radio communication method	US10/321623	12/18/2002

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT2782882

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	RELEASE BY SECURED PARTY

CONVEYING PARTY DATA

Name	Execution Date
JOSEPH BEYERS	03/24/2014

RECEIVING PARTY DATA

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City:	CUPERTINO
State/Country:	CALIFORNIA
Postal Code:	95014

PROPERTY NUMBERS Total: 111

Property Type	Number
Patent Number:	6726297
Patent Number:	8009549
Patent Number:	8416810
Patent Number:	7646702
Patent Number:	8238226
Patent Number:	7593317
Patent Number:	7929627
Patent Number:	7826557
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Patent Number:	8064393
Patent Number:	8270332
Patent Number:	8582573
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Patent Number:	6370359
Patent Number:	6487394
Patent Number:	6597894
Patent Number:	6505035
Patent Number:	6973289
Patent Number:	6611676

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Patent Number:	7636551
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Patent Number:	6813323
Patent Number:	6734810
Patent Number:	6940428
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Patent Number:	6119004
Patent Number:	6069924
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Patent Number:	7114121
Patent Number:	7162206
Patent Number:	7746762

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Patent Number:	8218681
Patent Number:	8249178
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Patent Number:	6370131
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Patent Number:	6549526
Patent Number:	7136367
Patent Number:	RE41444
Patent Number:	6295301
Patent Number:	6697384
Patent Number:	6466563
Patent Number:	6370134
Patent Number:	7035233
Patent Number:	7535864
Patent Number:	5677929
Patent Number:	RE37420
Patent Number:	RE39954
Patent Number:	6738646
Patent Number:	7460880
Patent Number:	7761113
Patent Number:	6760590

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Application Number:	10322425

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NAME OF SUBMITTER:	PAUL A. ROBERTS
SIGNATURE:	/Paul A. Roberts/
DATE SIGNED:	03/25/2014
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 18
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TERMINATION AND RELEASE OF SECURITY INTEREST IN PATENTS

This **TERMINATION AND RELEASE OF SECURITY INTEREST IN PATENTS** (this "**Release**"), dated as of March 24, 2014, is made by Joseph Beyers, in its capacity as Assignee for Security.

Reference is made to (a) that certain promissory note dated December 19, 2013 as amended on February 6, 2014 by Inventergy, Inc., a Delaware corporation in favor Joseph Beyers, and (b) that Assignment for Security-Patents made by Inventergy, Inc. in favor of Joseph Beyers dated January 24, 2014;

WHEREAS, the Assignment for Security-Patents was recorded in the U.S. Patent and Trademark Office on January 27, 2014 at Reel/Frame No.032127/0234 ; and

NOW THEREFORE, Joseph Beyers does hereby **RELEASE** his security interest in, to and under the collateral covered by the Assignment for Security-Patents, and Joseph Beyers hereby reassigns, without representation, recourse or warranty whatsoever, such collateral to Inventergy, Inc. Joseph Beyers agrees to make appropriate filings with the U.S. Patent and Trademark Office and other necessary filings, in each case reasonably requested by Inventergy, Inc. at the expense of Inventergy, Inc., to evidence the release and termination of such security interests covering the collateral.

IN WITNESS WHEREOF, the Joseph Beyers has executed this Release, to take effect as of the date first set forth above.

Joseph Beyers

ANNEX I

RELEASE TO ASSIGNMENT FOR SECURITY

Internal Family ID	Country	Inventergy Understood status 1/14/2014	Publication Number	Publication Date	Title	Application Number	File Date
Inv-01	USA	Granted	US6726297	4/27/2004	Ofdma signal transmission apparatus and method	US10/462491	1/20/2000
Inv-03	USA	Granted	US8009549	8/30/2011	Carrier allocation method in multi cell orthogonal frequency division multiple access system	US12/092950	11/16/2006
Inv-04	USA	Granted	US8416810	4/9/2013	Radio communication base station apparatus and pilot transmission method	US12/160872	1/18/2007
Inv-08	USA	Granted	US7646702	1/12/2010	Ofdm communication apparatus	US10/169716	7/9/2002
Inv-08	USA	Granted	US8238226	8/7/2012	Ofdm communication apparatus	US12/505420	7/17/2009
Inv-09	USA	Granted	US7593317	9/22/2009	Radio base station apparatus	US10/503010	7/29/2004
Inv-15	USA	Granted	US7929627	4/19/2011	Ofdm receiver, integrated circuit and receiving method	US11/885042	2/28/2006

Inv-16	USA	Granted	US7826557	11/2/2010	Retransmitting method and transmitting method in multi-antenna transmission	US11/721911	12/14/2005
Inv-21	USA	Granted	US7792084	9/7/2010	Mimo antenna apparatus controlling number of streams and modulation and demodulation method	US11/892886	8/28/2007
Inv-23	USA	Granted	US8064393	11/22/2011	Wireless communication base station apparatus and wireless communication method in multicarrier communication	US11/997841	8/4/2006
Inv-26	USA	Granted	US8270332	9/18/2012	Wireless communication base station device and wireless communication method	US12/377373	10/12/2007
Inv-26	USA	Granted	US8582573	12/13/2012	Radio communication base station apparatus and radio communication method	US13/590841	8/21/2012
Pana-01	USA	Granted	US6400929	6/4/2002	Radio communication device and method of controlling transmission rate	US09/424843	12/6/1999

Pana-01	USA	Granted	US6381445	4/30/2002	Radio communication device and method of controlling transmission rate	US09/648742	8/28/2000
Pana-01	USA	Granted	US6366763	4/2/2002	Radio communication device and method of controlling transmission rate	US09/648756	8/28/2000
Pana-01	USA	Granted	US6370359	4/9/2002	Radio communication device and method of controlling transmission rate	US09/648757	8/28/2000
Pana-01	USA	Granted	US6487394	11/26/2002	Radio communication device and method of controlling transmission rate	US09/649003	8/28/2000
Pana-01	USA	Granted	US6597894	7/22/2003	Radio communication device and method of controlling transmission rate	US09/649006	8/28/2000
Pana-01	USA	Granted	US6505035	1/7/2003	Radio communication apparatus and transmission rate control method	US10/052261	1/23/2002
Pana-01	USA	Granted	US6973289	12/6/2005	Radio communication device and method of controlling transmission rate	US10/057897	1/29/2002

Pana-01	USA	Granted	US6611676	8/26/2003	Radio communication apparatus and transmission rate control method	US10/083553	2/27/2002
Pana-01	USA	Granted	US7636551	12/22/2009	Radio communication device and method of controlling transmission rate	US11/228339	9/19/2005
Pana-02	USA	Granted	US6637001	10/21/2003	Apparatus and method for image/voice transmission	US09/650743	8/30/2000
Pana-03	USA	Granted	US6813323	11/2/2004	Decoding method and communication terminal apparatus	US10/182270	7/25/2002
Pana-03	USA	Lapsed	US20050002477	1/6/2005	Decoding apparatus and decoding method	10901380	7/29/2004
Pana-04	USA	Granted	US6734810	5/11/2004	Apparatus and method for decoding	US10/221267	9/10/2002
Pana-04	USA	Granted	US6940428	9/6/2005	Apparatus and method for decoding	US10/793737	3/8/2004
Pana-04	USA	Granted	US6922159	7/26/2005	Apparatus and method for decoding	US10/793766	3/8/2004
Pana-04	USA	Lapsed	US20050219071	10/6/2005	Apparatus and method for decoding	11134448	5/23/2005

Pana-05	USA	Granted	US6069884	5/30/2000	Method of communication between a base station and a plurality of mobile unit communication apparatus, a base station, and mobile unit communication apparatus	US08/937005	9/24/1997
Pana-06	USA	Granted	US6119004	9/12/2000	Base station equipment for mobile communication	US09/068541	5/13/1998
Pana-07	USA	Granted	US6069924	5/30/2000	Differential detector with error correcting function	US09/027510	2/20/1998
Pana-08	USA	Granted	US6636723	10/21/2003	Cdma radio communication system using chip interleaving	US09/359020	7/22/1999
Pana-08	USA	Lapsed	US20040048578	3/11/2004	Cdma radio transmission apparatus, cdma radio reception apparatus, and cdma radio communication method	10419089	4/21/2003
Pana-09	USA	Granted	US6628630	9/30/2003	Spread spectrum communication method	US09/058881	4/13/1998
Pana-10	USA	Granted	US6404778	6/11/2002	Radio communication apparatus	US09/159602	9/24/1998

Pana-11	USA	Granted	US6611509	8/26/2003	Cdma/tdd mobile communication system and method	US09/264826	3/9/1999
Pana-11	USA	Granted	US6807162	10/19/2004	Cdma/tdd mobile communication system and method	US10/166268	6/11/2002
Pana-11	USA	Granted	US6973065	12/6/2005	Cdma/tdd mobile communication system and method	US10/419733	4/22/2003
Pana-11	USA	Granted	US7778224	8/17/2010	Cdma/tdd mobile communication system and method	US10/885684	7/8/2004
Pana-12	USA	Granted	US6765894	7/20/2004	Communication terminal apparatus and base station apparatus	US09/606906	6/30/2000
Pana-12	USA	Granted	US7656844	2/2/2010	Radio transmission apparatus and radio reception apparatus in a cdma communication system	US10/868029	6/16/2004
Pana-12	USA	Granted	US8437316	5/7/2013	Radio transmission apparatus and radio reception apparatus in a cdma communication system	US12/641177	12/17/2009

Pana-13	USA	Granted	US6839335	1/4/2005	Radio communication apparatus and radio communication method	US09/605862	6/29/2000
Pana-14	USA	Granted	US7072416	7/4/2006	Transmitting/receiving device and transmitting/receiving method	US09/582558	6/29/2000
Pana-14	USA	Granted	US7760815	7/20/2010	Apparatus and method for transmission/reception	US11/431606	5/11/2006
Pana-15	USA	Granted	US6868056	3/15/2005	Apparatus and method for ofdm communication	US09/635096	8/9/2000
Pana-16	USA	Granted	US6944208	9/13/2005	Interference signal canceling apparatus and interference signal canceling method	US09/936727	9/17/2001
Pana-17	USA	Granted	US6781973	8/24/2004	Combined signaling and sir inner-loop power control	US09/538888	3/30/2000
Pana-18	USA	Granted	US7145886	12/5/2006	Communication terminal, base station system, and method of controlling transmission power	US09/889919	7/25/2001
Pana-19	USA	Granted	US6847828	1/25/2005	Base station apparatus and radio communication method	US10/069484	2/27/2002

Pana-19	USA	Granted	US7386321	6/10/2008	Base station apparatus and radio communication method	US10/793738	3/8/2004
Pana-20	USA	Granted	US7266118	9/4/2007	Packet receiving apparatus and packet transmission method	US10/143989	5/14/2002
Pana-21	USA	Granted	US7133379	11/7/2006	Wireless communication system, and base station apparatus and communication terminal apparatus accommodated in the system	US10/181349	7/17/2002
Pana-22	USA	Granted	US7392019	6/24/2008	Wireless base station apparatus and wireless communication method	US11/053837	2/10/2005
Pana-23	USA	Granted	US7339949	3/4/2008	Arq transmission and reception methods and apparatus	US10/222989	8/19/2002
Pana-24	USA	Granted	US7702025	4/20/2010	Transmission/reception apparatus and transmission/reception method	US10/487574	2/25/2004
Pana-25	USA	Granted	US7460502	12/2/2008	Scheduling creation apparatus, base station apparatus, and radio communication method	US10/250487	7/3/2003

Pana-26	USA	Granted	US7269774	9/11/2007	Data receiving apparatus, data transmitting apparatus and retransmission request method	US10/484951	1/28/2004
Pana-27	USA	Granted	US7385934	6/10/2008	Radio communication apparatus and transfer rate decision method	US10/476845	11/6/2003
Pana-28	USA	Granted	US7114121	9/26/2006	Rate matching device and rate matching method	US10/478139	11/20/2003
Pana-29	USA	Granted	US7162206	1/9/2007	Test apparatus, mobile terminal apparatus, test method	US10/612289	7/3/2003
Pana-30	USA	Granted	US7746762	6/29/2010	Transmitting apparatus and transmitting method	US10/534987	5/16/2005
Pana-31	USA	Granted	US7693140	4/6/2010	Cdma transmitting apparatus and cdma receiving apparatus	US10/527199	3/10/2005
Pana-32	USA	Granted	US7299027	11/20/2007	Mimo receiver and mimo reception method for selection of mimo separation and channel variation compensation	US10/536010	5/23/2005
Pana-32	USA	Lapsed	US20080020802	1/24/2008	Wireless receiver and wireless reception method	11859550	9/21/2007

Pana-33	USA	Pending	US20070255993	11/1/2007	Automatic retransmission request control system and retransmission method in memo-ofdm system	11575015	3/30/2007
Pana-33	USA	Lapsed	US20120230257	9/13/2012	Retransmission method and transmitter	13478996	5/23/2012
Pana-33	USA	Lapsed	US20120263250	10/18/2012	Retransmission method, transmitter, and communication system	13532576	6/25/2012
Pana-33	USA	Lapsed	US20120287775	11/15/2012	Automatic retransmission request control system and retransmission method in mimo-ofdm system	13554748	7/20/2012
Pana-34	USA	Granted	US7251469	7/31/2007	Cdma transmitting apparatus and cdma transmitting method	US10/522980	2/2/2005
Pana-34	USA	Granted	US7764711	7/27/2010	Cdma transmission apparatus and cdma transmission method	US11/767124	6/22/2007
Pana-35	USA	Granted	US8086270	12/27/2011	Classifying-synthesizing transmission method of multi-user feedback information at base station	US11/574636	9/5/2005

Pana-36	USA	Granted	US7848439	12/7/2010	Communication apparatus, communication system, and communication method	US11/719611	11/18/2005
Pana-37	USA	Granted	US8175604	5/8/2012	Efficient rise over thermal (rot) control during soft handover	US10/588073	8/31/2005
Pana-38	USA	Granted	US7860184	12/28/2010	Multi-antenna communication method and multi-antenna communicaton apparatus	US11/813650	1/10/2006
Pana-39	USA	Granted	US8073070	12/6/2011	Multi-pilot generation method and detection method in multi-antenna communication system	US12/092944	11/22/2006
Pana-40	USA	Granted	US8249132	8/21/2012	Communication terminal and receiving method	US11/909425	3/3/2006
Pana-41	USA	Granted	US8576784	5/7/2009	Uplink resource allocation in a mobile communication system	US12/162592	11/2/2006
Pana-42	USA	Granted	US8218681	7/10/2012	Ofdm transmitter and ofdm receiver	US12/440894	3/11/2009
Pana-43	USA	Granted	US8249178	8/21/2012	Multicarrier transmitter and multicarrier receiver	US12/601804	5/25/2007

Pana-44	USA	Granted	US5583851	12/10/1996	Mobile communication apparatus having multi-codes allocating function	US08/272158	7/8/1994
Pana-45	USA	Granted	US5873027	2/16/1999	Mobile radio system with control over radio wave output if a malfunction is detected	US08/761552	12/6/1996
Pana-45	USA	Granted	US6336040	1/1/2002	Mobile radio system with control over radio wave output if a malfunction is detected	US09/207662	12/9/1998
Pana-46	USA	Granted	US5757870	5/26/1998	Spread spectrum communication synchronizing method and its circuit	US08/517408	8/21/1995
Pana-46	USA	Granted	US5818869	10/6/1998	Spread spectrum communication synchronizing method and its circuit	US08/858146	5/15/1997
Pana-47	USA	Granted	US6175558	1/16/2001	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/000947	12/30/1997

Pana-47	USA	Granted	US6301237	10/9/2001	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/562921	5/2/2000
Pana-47	USA	Granted	US6529492	3/4/2003	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/562922	5/2/2000
Pana-47	USA	Granted	US6370131	4/9/2002	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/576250	5/24/2000
Pana-47	USA	Granted	US6584088	6/24/2003	Cdma radio multiplex transmitting device and cdma radio multiplex receiving device	US09/825998	4/5/2001
Pana-47	USA	Granted	US6549526	4/15/2003	Cdma radio multiplex transmitting device and a cdma multiplex receiving device	US09/826005	4/5/2001
Pana-47	USA	Granted	US7136367	11/14/2006	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US10/335916	1/3/2003

Pana-47	USA	Granted	USRE41444	7/20/2010	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US12/270499	11/13/2008
Pana-48	USA	Granted	US6295301	9/25/2001	Pn code generating apparatus and mobile radio communication system	US09/139325	8/25/1998
Pana-48	USA	Granted	US6697384	2/24/2004	Method and apparatus for calculating a state of starting a pn code generating operation	US09/916284	7/30/2001
Pana-49	USA	Granted	US6466563	10/15/2002	Cdma mobile station and cdma transmission method	US10/147831	3/16/1999
Pana-49	USA	Lapsed	US20030007472	1/9/2003	Cdma mobile station apparatus and cdma transmission method	10235918	9/6/2002
Pana-50	USA	Granted	US6370134	4/9/2002	Cdma radio communication apparatus	US09/115502	7/15/1998
Pana-50	USA	Granted	US7035233	4/25/2006	Radio communication terminal apparatus and radio communication base station apparatus	US10/014352	12/14/2001

Pana-50	USA	Granted	US7535864	5/19/2009	Radio communication terminal apparatus and radio communication base station apparatus	US11/372152	3/10/2006
WCDMA (pool) 01	USA	Granted	US5677929	10/14/1997	Automobile on-board and/or portable telephone system	US08/272156	7/8/1994
WCDMA (pool) 01	USA	Granted	USRE37420	10/23/2001	Automobile on-board and/or portable telephone system	US09/337403	6/21/1999
WCDMA (pool) 01	USA	Granted	USRE39954	12/25/2007	Automobile on-board and/or portable telephone system	US09/887042	6/25/2001
WCDMA (pool) 07	USA	Granted	US6738646	5/18/2004	Base station device and method for communication	US10/069267	2/25/2002
WCDMA (pool) 07	USA	Lapsed	US20030087644	5/8/2003	Communication terminal apparatus and base station apparatus	10322425	12/19/2002
WCDMA (pool) 07	USA	Granted	US7460880	12/2/2008	Communication terminal apparatus and base station apparatus	US11/341430	1/30/2006
WCDMA (pool) 07	USA	Granted	US7761113	7/20/2010	Communication terminal apparatus and base station apparatus	US12/132992	6/4/2008

WCDMA (pool) 09	USA	Granted	US6760590	7/6/2004	Communication terminal apparatus, base station apparatus, and radio communication method	US10/089605	4/1/2002
WCDMA (pool) 09	USA	Granted	US6799053	9/28/2004	Communication terminal apparatus	US10/321500	12/18/2002
WCDMA (pool) 09	USA	Granted	US7206587	4/17/2007	Communication terminal apparatus, base station apparatus, and radio communication method	US10/321623	12/18/2002

PATENT ASSIGNMENT COVER SHEET

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Stylesheet Version v1.2

EPAS ID: PAT2785017

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY AGREEMENT

CONVEYING PARTY DATA

Name	Execution Date
INVENTERGY, INC.	03/25/2014

RECEIVING PARTY DATA

Name:	HUDSON BAY IP OPPORTUNITIES MASTER FUND, LP, AS COLLATERAL AGENT FOR CERTAIN BUYERS
Street Address:	777 THIRD AVENUE, 30TH FLOOR
Internal Address:	ATTENTION: YOAV ROTH
City:	NEW YORK
State/Country:	NEW YORK
Postal Code:	10017

PROPERTY NUMBERS Total: 111

Property Type	Number
Application Number:	10901380
Application Number:	11134448
Application Number:	10419089
Application Number:	11859550
Application Number:	11575015
Application Number:	13478996
Application Number:	13532576
Application Number:	13554748
Application Number:	10235918
Application Number:	10322425
Patent Number:	6726297
Patent Number:	8009549
Patent Number:	8416810
Patent Number:	7646702
Patent Number:	8238226
Patent Number:	7593317
Patent Number:	7929627
Patent Number:	7826557
Patent Number:	7792084

Property Type	Number
Patent Number:	8064393
Patent Number:	8270332
Patent Number:	8582573
Patent Number:	6400929
Patent Number:	6381445
Patent Number:	6366763
Patent Number:	6370359
Patent Number:	6487394
Patent Number:	6597894
Patent Number:	6505035
Patent Number:	6973289
Patent Number:	6611676
Patent Number:	7636551
Patent Number:	6637001
Patent Number:	6813323
Patent Number:	6734810
Patent Number:	6940428
Patent Number:	6922159
Patent Number:	6069884
Patent Number:	6119004
Patent Number:	6069924
Patent Number:	6636723
Patent Number:	6628630
Patent Number:	6404778
Patent Number:	6611509
Patent Number:	6807162
Patent Number:	6973065
Patent Number:	7778224
Patent Number:	6765894
Patent Number:	7656844
Patent Number:	8437316
Patent Number:	6839335
Patent Number:	7072416
Patent Number:	7760815
Patent Number:	6868056
Patent Number:	6944208
Patent Number:	6781973
Patent Number:	7145886
Patent Number:	6847828

Property Type	Number
Patent Number:	7386321
Patent Number:	7266118
Patent Number:	7133379
Patent Number:	7392019
Patent Number:	7339949
Patent Number:	7702025
Patent Number:	7460502
Patent Number:	7269774
Patent Number:	7385934
Patent Number:	7114121
Patent Number:	7162206
Patent Number:	7746762
Patent Number:	7693140
Patent Number:	7299027
Patent Number:	7251469
Patent Number:	7764711
Patent Number:	8086270
Patent Number:	7848439
Patent Number:	8175604
Patent Number:	7860184
Patent Number:	8073070
Patent Number:	8249132
Patent Number:	8576784
Patent Number:	8218681
Patent Number:	8249178
Patent Number:	5583851
Patent Number:	5873027
Patent Number:	6336040
Patent Number:	5757870
Patent Number:	5818869
Patent Number:	6175558
Patent Number:	6301237
Patent Number:	6529492
Patent Number:	6370131
Patent Number:	6584088
Patent Number:	6549526
Patent Number:	7136367
Patent Number:	RE41444
Patent Number:	6295301

Property Type	Number
Patent Number:	6697384
Patent Number:	6466563
Patent Number:	6370134
Patent Number:	7035233
Patent Number:	7535864
Patent Number:	5677929
Patent Number:	RE37420
Patent Number:	RE39954
Patent Number:	6738646
Patent Number:	7460880
Patent Number:	7761113
Patent Number:	6760590
Patent Number:	6799053
Patent Number:	7206587

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent via US Mail.

Phone: 4089737896
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Correspondent Name: WAYNE P. SOBON
Address Line 1: 19925 STEVENS CREEK BOULEVARD
Address Line 2: SUITE 100
Address Line 4: CUPERTINO, CALIFORNIA 95014

NAME OF SUBMITTER:	PAUL A. ROBERTS
SIGNATURE:	/Paul A. Roberts/
DATE SIGNED:	03/25/2014
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 18
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ASSIGNMENT FOR SECURITY
PATENTS

WHEREAS, **Inventergy, Inc.** (the "Assignor") holds all right, title and interest in the letter patents, design patents and utility patents listed on the annexed Schedule 1, which patents are issued or applied for in the United States Patent and Trademark Office (the "Patents");

WHEREAS, the Assignor has entered into a Pledge and Security Agreement, dated as of May 10, 2013 (as amended, restated or otherwise modified from time to time the "Security Agreement"), in favor of **Hudson Bay IP Opportunities Master Fund, LP**, as collateral agent for certain buyers (the "Assignee");

WHEREAS, pursuant to the Security Agreement, the Assignor has assigned to the Assignee and granted to the Assignee for the benefit of the Buyers (as defined in the Security Agreement) a continuing security interest in all right, title and interest of the Assignor in, to and under the Patents and the applications and registrations thereof, and all proceeds thereof, including, without limitation, any and all causes of action which may exist by reason of infringement thereof and any and all damages arising from past, present and future violations thereof (the "Collateral"), to secure the payment, performance and observance of the "Obligations" (as defined in the Security Agreement);

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Assignor does hereby pledge, convey, sell, assign, transfer and set over unto the Assignee and grants to the Assignee for the benefit of the Buyers a continuing security interest in the Collateral to secure the prompt payment, performance and for the benefit of the Buyers observance of the Obligations.

The Assignor does hereby further acknowledge and affirm that the rights and remedies of the Assignee with respect to the Collateral are more fully set forth in the Security Agreement, the terms and provisions of which are hereby incorporated herein by reference as if fully set forth herein.

IN WITNESS WHEREOF, the Assignor has caused this Assignment to be duly executed by its officer thereunto duly authorized as of March 25, 2014.

Inventergy, Inc.

By: Joseph W. Beyers
Name: Joseph W. Beyers
Title: Chairman and CEO

State of California
County of Santa Clara

On March 25, 2014 before me, Sheila Meinecke Notary Public (insert name and title of the officer) personally appeared **Joseph W. Beyers**, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (Seal)

SHEILA MEINECKE
COMM. #1998839
Notary Public - California
Santa Clara County
My Comm. Expires Dec. 19, 2016

SCHEDULE 1 TO ASSIGNMENT FOR SECURITY

Patents and Patent Applications
Owned by: **Inventergy, Inc.**

Internal Family ID	Country	Inventergy Understood status 1/14/2014	Publication Number	Publication Date	Title	Application Number	File Date
Inv-01	USA	Granted	US6726297	4/27/2004	Ofdma signal transmission apparatus and method	US10/462491	1/20/2000
Inv-03	USA	Granted	US8009549	8/30/2011	Carrier allocation method in multi cell orthogonal frequency division multiple access system	US12/092950	11/16/2006
Inv-04	USA	Granted	US8416810	4/9/2013	Radio communication base station apparatus and pilot transmission method	US12/160872	1/18/2007
Inv-08	USA	Granted	US7646702	1/12/2010	Ofdm communication apparatus	US10/169716	7/9/2002
Inv-08	USA	Granted	US8238226	8/7/2012	Ofdm communication apparatus	US12/505420	7/17/2009
Inv-09	USA	Granted	US7593317	9/22/2009	Radio base station apparatus	US10/503010	7/29/2004
Inv-15	USA	Granted	US7929627	4/19/2011	Ofdm receiver, integrated circuit and receiving method	US11/885042	2/28/2006

Inv-16	USA	Granted	US7826557	11/2/2010	Retransmitting method and transmitting method in multi-antenna transmission	US11/721911	12/14/2005
Inv-21	USA	Granted	US7792084	9/7/2010	Mimo antenna apparatus controlling number of streams and modulation and demodulation method	US11/892886	8/28/2007
Inv-23	USA	Granted	US8064393	11/22/2011	Wireless communication base station apparatus and wireless communication method in multicarrier communication	US11/997841	8/4/2006
Inv-26	USA	Granted	US8270332	9/18/2012	Wireless communication base station device and wireless communication method	US12/377373	10/12/2007
Inv-26	USA	Granted	US8582573	12/13/2012	Radio communication base station apparatus and radio communication method	US13/590841	8/21/2012
Pana-01	USA	Granted	US6400929	6/4/2002	Radio communication device and method of controlling transmission rate	US09/424843	12/6/1999

Pana-01	USA	Granted	US6381445	4/30/2002	Radio communication device and method of controlling transmission rate	US09/648742	8/28/2000
Pana-01	USA	Granted	US6366763	4/2/2002	Radio communication device and method of controlling transmission rate	US09/648756	8/28/2000
Pana-01	USA	Granted	US6370359	4/9/2002	Radio communication device and method of controlling transmission rate	US09/648757	8/28/2000
Pana-01	USA	Granted	US6487394	11/26/2002	Radio communication device and method of controlling transmission rate	US09/649003	8/28/2000
Pana-01	USA	Granted	US6597894	7/22/2003	Radio communication device and method of controlling transmission rate	US09/649006	8/28/2000
Pana-01	USA	Granted	US6505035	1/7/2003	Radio communication apparatus and transmission rate control method	US10/052261	1/23/2002
Pana-01	USA	Granted	US6973289	12/6/2005	Radio communication device and method of controlling transmission rate	US10/057897	1/29/2002

Pana-01	USA	Granted	US6611676	8/26/2003	Radio communication apparatus and transmission rate control method	US10/083553	2/27/2002
Pana-01	USA	Granted	US7636551	12/22/2009	Radio communication device and method of controlling transmission rate	US11/228339	9/19/2005
Pana-02	USA	Granted	US6637001	10/21/2003	Apparatus and method for image/voice transmission	US09/650743	8/30/2000
Pana-03	USA	Granted	US6813323	11/2/2004	Decoding method and communication terminal apparatus	US10/182270	7/25/2002
Pana-03	USA	Lapsed	US20050002477	1/6/2005	Decoding apparatus and decoding method	10901380	7/29/2004
Pana-04	USA	Granted	US6734810	5/11/2004	Apparatus and method for decoding	US10/221267	9/10/2002
Pana-04	USA	Granted	US6940428	9/6/2005	Apparatus and method for decoding	US10/793737	3/8/2004
Pana-04	USA	Granted	US6922159	7/26/2005	Apparatus and method for decoding	US10/793766	3/8/2004
Pana-04	USA	Lapsed	US20050219071	10/6/2005	Apparatus and method for decoding	11134448	5/23/2005

Pana-05	USA	Granted	US6069884	5/30/2000	Method of communication between a base station and a plurality of mobile unit communication apparatus, a base station, and mobile unit communication apparatus	US08/937005	9/24/1997
Pana-06	USA	Granted	US6119004	9/12/2000	Base station equipment for mobile communication	US09/068541	5/13/1998
Pana-07	USA	Granted	US6069924	5/30/2000	Differential detector with error correcting function	US09/027510	2/20/1998
Pana-08	USA	Granted	US6636723	10/21/2003	Cdma radio communication system using chip interleaving	US09/359020	7/22/1999
Pana-08	USA	Lapsed	US20040048578	3/11/2004	Cdma radio transmission apparatus, cdma radio reception apparatus, and cdma radio communication method	10419089	4/21/2003
Pana-09	USA	Granted	US6628630	9/30/2003	Spread spectrum communication method	US09/058881	4/13/1998
Pana-10	USA	Granted	US6404778	6/11/2002	Radio communication apparatus	US09/159602	9/24/1998

Pana-11	USA	Granted	US6611509	8/26/2003	Cdma/tdd mobile communication system and method	US09/264826	3/9/1999
Pana-11	USA	Granted	US6807162	10/19/2004	Cdma/tdd mobile communication system and method	US10/166268	6/11/2002
Pana-11	USA	Granted	US6973065	12/6/2005	Cdma/tdd mobile communication system and method	US10/419733	4/22/2003
Pana-11	USA	Granted	US7778224	8/17/2010	Cdma/tdd mobile communication system and method	US10/885684	7/8/2004
Pana-12	USA	Granted	US6765894	7/20/2004	Communication terminal apparatus and base station apparatus	US09/606906	6/30/2000
Pana-12	USA	Granted	US7656844	2/2/2010	Radio transmission apparatus and radio reception apparatus in a cdma communication system	US10/868029	6/16/2004
Pana-12	USA	Granted	US8437316	5/7/2013	Radio transmission apparatus and radio reception apparatus in a cdma communication system	US12/641177	12/17/2009

Pana-13	USA	Granted	US6839335	1/4/2005	Radio communication apparatus and radio communication method	US09/605862	6/29/2000
Pana-14	USA	Granted	US7072416	7/4/2006	Transmitting/receiving device and transmitting/receiving method	US09/582558	6/29/2000
Pana-14	USA	Granted	US7760815	7/20/2010	Apparatus and method for transmission/reception	US11/431606	5/11/2006
Pana-15	USA	Granted	US6868056	3/15/2005	Apparatus and method for ofdm communication	US09/635096	8/9/2000
Pana-16	USA	Granted	US6944208	9/13/2005	Interference signal canceling apparatus and interference signal canceling method	US09/936727	9/17/2001
Pana-17	USA	Granted	US6781973	8/24/2004	Combined signaling and sir inner-loop power control	US09/538888	3/30/2000
Pana-18	USA	Granted	US7145886	12/5/2006	Communication terminal, base station system, and method of controlling transmission power	US09/889919	7/25/2001
Pana-19	USA	Granted	US6847828	1/25/2005	Base station apparatus and radio communication method	US10/069484	2/27/2002

Pana-19	USA	Granted	US7386321	6/10/2008	Base station apparatus and radio communication method	US10/793738	3/8/2004
Pana-20	USA	Granted	US7266118	9/4/2007	Packet receiving apparatus and packet transmission method	US10/143989	5/14/2002
Pana-21	USA	Granted	US7133379	11/7/2006	Wireless communication system, and base station apparatus and communication terminal apparatus accommodated in the system	US10/181349	7/17/2002
Pana-22	USA	Granted	US7392019	6/24/2008	Wireless base station apparatus and wireless communication method	US11/053837	2/10/2005
Pana-23	USA	Granted	US7339949	3/4/2008	Arq transmission and reception methods and apparatus	US10/222989	8/19/2002
Pana-24	USA	Granted	US7702025	4/20/2010	Transmission/reception apparatus and transmission/reception method	US10/487574	2/25/2004
Pana-25	USA	Granted	US7460502	12/2/2008	Scheduling creation apparatus, base station apparatus, and radio communication method	US10/250487	7/3/2003

Pana-26	USA	Granted	US7269774	9/11/2007	Data receiving apparatus, data transmitting apparatus and retransmission request method	US10/484951	1/28/2004
Pana-27	USA	Granted	US7385934	6/10/2008	Radio communication apparatus and transfer rate decision method	US10/476845	11/6/2003
Pana-28	USA	Granted	US7114121	9/26/2006	Rate matching device and rate matching method	US10/478139	11/20/2003
Pana-29	USA	Granted	US7162206	1/9/2007	Test apparatus, mobile terminal apparatus, test method	US10/612289	7/3/2003
Pana-30	USA	Granted	US7746762	6/29/2010	Transmitting apparatus and transmitting method	US10/534987	5/16/2005
Pana-31	USA	Granted	US7693140	4/6/2010	Cdma transmitting apparatus and cdma receiving apparatus	US10/527199	3/10/2005
Pana-32	USA	Granted	US7299027	11/20/2007	Mimo receiver and mimo reception method for selection of mimo separation and channel variation compensation	US10/536010	5/23/2005
Pana-32	USA	Lapsed	US20080020802	1/24/2008	Wireless receiver and wireless reception method	11859550	9/21/2007

Pana-33	USA	Pending	US20070255993	11/1/2007	Automatic retransmission request control system and retransmission method in memo-ofdm system	11575015	3/30/2007
Pana-33	USA	Lapsed	US20120230257	9/13/2012	Retransmission method and transmitter	13478996	5/23/2012
Pana-33	USA	Lapsed	US20120263250	10/18/2012	Retransmission method, transmitter, and communication system	13532576	6/25/2012
Pana-33	USA	Lapsed	US20120287775	11/15/2012	Automatic retransmission request control system and retransmission method in mimo-ofdm system	13554748	7/20/2012
Pana-34	USA	Granted	US7251469	7/31/2007	Cdma transmitting apparatus and cdma transmitting method	US10/522980	2/2/2005
Pana-34	USA	Granted	US7764711	7/27/2010	Cdma transmission apparatus and cdma transmission method	US11/767124	6/22/2007
Pana-35	USA	Granted	US8086270	12/27/2011	Classifying-synthesizing transmission method of multi-user feedback information at base station	US11/574636	9/5/2005

Pana-36	USA	Granted	US7848439	12/7/2010	Communication apparatus, communication system, and communication method	US11/719611	11/18/2005
Pana-37	USA	Granted	US8175604	5/8/2012	Efficient rise over thermal (rot) control during soft handover	US10/588073	8/31/2005
Pana-38	USA	Granted	US7860184	12/28/2010	Multi-antenna communication method and multi-antenna communicaton apparatus	US11/813650	1/10/2006
Pana-39	USA	Granted	US8073070	12/6/2011	Multi-pilot generation method and detection method in multi-antenna communication system	US12/092944	11/22/2006
Pana-40	USA	Granted	US8249132	8/21/2012	Communication terminal and receiving method	US11/909425	3/3/2006
Pana-41	USA	Granted	US8576784	5/7/2009	Uplink resource allocation in a mobile communication system	US12/162592	11/2/2006
Pana-42	USA	Granted	US8218681	7/10/2012	Ofdm transmitter and ofdm receiver	US12/440894	3/11/2009
Pana-43	USA	Granted	US8249178	8/21/2012	Multicarrier transmitter and multicarrier receiver	US12/601804	5/25/2007

Pana-44	USA	Granted	US5583851	12/10/1996	Mobile communication apparatus having multi-codes allocating function	US08/272158	7/8/1994
Pana-45	USA	Granted	US5873027	2/16/1999	Mobile radio system with control over radio wave output if a malfunction is detected	US08/761552	12/6/1996
Pana-45	USA	Granted	US6336040	1/1/2002	Mobile radio system with control over radio wave output if a malfunction is detected	US09/207662	12/9/1998
Pana-46	USA	Granted	US5757870	5/26/1998	Spread spectrum communication synchronizing method and its circuit	US08/517408	8/21/1995
Pana-46	USA	Granted	US5818869	10/6/1998	Spread spectrum communication synchronizing method and its circuit	US08/858146	5/15/1997
Pana-47	USA	Granted	US6175558	1/16/2001	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/000947	12/30/1997

Pana-47	USA	Granted	US6301237	10/9/2001	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/562921	5/2/2000
Pana-47	USA	Granted	US6529492	3/4/2003	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/562922	5/2/2000
Pana-47	USA	Granted	US6370131	4/9/2002	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US09/576250	5/24/2000
Pana-47	USA	Granted	US6584088	6/24/2003	Cdma radio multiplex transmitting device and cdma radio multiplex receiving device	US09/825998	4/5/2001
Pana-47	USA	Granted	US6549526	4/15/2003	Cdma radio multiplex transmitting device and a cdma multiplex receiving device	US09/826005	4/5/2001
Pana-47	USA	Granted	US7136367	11/14/2006	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US10/335916	1/3/2003

Pana-47	USA	Granted	USRE41444	7/20/2010	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	US12/270499	11/13/2008
Pana-48	USA	Granted	US6295301	9/25/2001	Pn code generating apparatus and mobile radio communication system	US09/139325	8/25/1998
Pana-48	USA	Granted	US6697384	2/24/2004	Method and apparatus for calculating a state of starting a pn code generating operation	US09/916284	7/30/2001
Pana-49	USA	Granted	US6466563	10/15/2002	Cdma mobile station and cdma transmission method	US10/147831	3/16/1999
Pana-49	USA	Lapsed	US20030007472	1/9/2003	Cdma mobile station apparatus and cdma transmission method	10235918	9/6/2002
Pana-50	USA	Granted	US6370134	4/9/2002	Cdma radio communication apparatus	US09/115502	7/15/1998
Pana-50	USA	Granted	US7035233	4/25/2006	Radio communication terminal apparatus and radio communication base station apparatus	US10/014352	12/14/2001

Pana-50	USA	Granted	US7535864	5/19/2009	Radio communication terminal apparatus and radio communication base station apparatus	US11/372152	3/10/2006
WCDMA (pool) 01	USA	Granted	US5677929	10/14/1997	Automobile on-board and/or portable telephone system	US08/272156	7/8/1994
WCDMA (pool) 01	USA	Granted	USRE37420	10/23/2001	Automobile on-board and/or portable telephone system	US09/337403	6/21/1999
WCDMA (pool) 01	USA	Granted	USRE39954	12/25/2007	Automobile on-board and/or portable telephone system	US09/887042	6/25/2001
WCDMA (pool) 07	USA	Granted	US6738646	5/18/2004	Base station device and method for communication	US10/069267	2/25/2002
WCDMA (pool) 07	USA	Lapsed	US20030087644	5/8/2003	Communication terminal apparatus and base station apparatus	10322425	12/19/2002
WCDMA (pool) 07	USA	Granted	US7460880	12/2/2008	Communication terminal apparatus and base station apparatus	US11/341430	1/30/2006
WCDMA (pool) 07	USA	Granted	US7761113	7/20/2010	Communication terminal apparatus and base station apparatus	US12/132992	6/4/2008

WCDMA (pool) 09	USA	Granted	US6760590	7/6/2004	Communication terminal apparatus, base station apparatus, and radio communication method	US10/089605	4/1/2002
WCDMA (pool) 09	USA	Granted	US6799053	9/28/2004	Communication terminal apparatus	US10/321500	12/18/2002
WCDMA (pool) 09	USA	Granted	US7206587	4/17/2007	Communication terminal apparatus, base station apparatus, and radio communication method	US10/321623	12/18/2002

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT3092617

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	RELEASE OF SECURITY INTEREST

CONVEYING PARTY DATA

Name	Execution Date
HUDSON BAY IP OPPORTUNITIES MASTER FUND, LP, FOR ITSELF AND AS COLLATERAL AGENT FOR CERTAIN BUYERS	09/30/2014

RECEIVING PARTY DATA

Name:	INVENTERGY, INC.
Street Address:	900 E. HAMILTON AVE.
Internal Address:	SUITE 180
City:	CAMPBELL
State/Country:	CALIFORNIA
Postal Code:	95008

PROPERTY NUMBERS Total: 156

Property Type	Number
Patent Number:	7925762
Patent Number:	7623529
Patent Number:	7065339
Patent Number:	7991894
Patent Number:	7304966
Patent Number:	6885828
Patent Number:	6801542
Patent Number:	8681751
Patent Number:	6904035
Patent Number:	7900242
Patent Number:	7917620
Patent Number:	7560102
Patent Number:	7796990
Patent Number:	7822035
Patent Number:	6726297
Patent Number:	8009549
Patent Number:	8416810
Patent Number:	7646702
Patent Number:	8238226

Property Type	Number
Patent Number:	7593317
Patent Number:	7929627
Patent Number:	7826557
Patent Number:	7792084
Patent Number:	8064393
Patent Number:	8270332
Patent Number:	8582573
Patent Number:	6400929
Patent Number:	6381445
Patent Number:	6366763
Patent Number:	6370359
Patent Number:	6487394
Patent Number:	6597894
Patent Number:	6505035
Patent Number:	6973289
Patent Number:	6611676
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Patent Number:	6922159
Patent Number:	6069884
Patent Number:	6119004
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Patent Number:	6807162
Patent Number:	6973065
Patent Number:	7778224
Patent Number:	6765894
Patent Number:	7656844
Patent Number:	8437316
Patent Number:	6839335
Patent Number:	7072416
Patent Number:	7760815
Patent Number:	6868056

Property Type	Number
Patent Number:	6944208
Patent Number:	6781973
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Patent Number:	7392019
Patent Number:	7339949
Patent Number:	7702025
Patent Number:	7460502
Patent Number:	7269774
Patent Number:	7385934
Patent Number:	7114121
Patent Number:	7162206
Patent Number:	7746762
Patent Number:	7693140
Patent Number:	7299027
Patent Number:	8775890
Patent Number:	7251469
Patent Number:	7764711
Patent Number:	8086270
Patent Number:	7848439
Patent Number:	8175604
Patent Number:	7860184
Patent Number:	8073070
Patent Number:	8249132
Patent Number:	8576784
Patent Number:	8218681
Patent Number:	8249178
Patent Number:	5583851
Patent Number:	5873027
Patent Number:	6336040
Patent Number:	5757870
Patent Number:	5818869
Patent Number:	6175558
Patent Number:	6301237
Patent Number:	6529492
Patent Number:	6370131

Property Type	Number
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Patent Number:	6549526
Patent Number:	7136367
Patent Number:	RE41444
Patent Number:	6295301
Patent Number:	6697384
Patent Number:	6466563
Patent Number:	6370134
Patent Number:	7035233
Patent Number:	7535864
Patent Number:	5677929
Patent Number:	RE37420
Patent Number:	RE39954
Patent Number:	6738646
Patent Number:	7460880
Patent Number:	7761113
Patent Number:	6760590
Patent Number:	6799053
Patent Number:	7206587
Patent Number:	8582766
Patent Number:	7349693
Patent Number:	7583612
Patent Number:	7653076
Patent Number:	7693141
Patent Number:	7710880
Patent Number:	7764953
Patent Number:	7787608
Patent Number:	7787878
Patent Number:	7792116
Patent Number:	7835352
Patent Number:	7881317
Patent Number:	7898943
Patent Number:	7899065
Patent Number:	7920579
Patent Number:	7948955
Patent Number:	7986775
Patent Number:	8085712
Patent Number:	8108526
Patent Number:	8116322

Property Type	Number
Patent Number:	8125995
Patent Number:	8149824
Patent Number:	8185105
Patent Number:	8195942
Patent Number:	8213419
Patent Number:	8224325
Patent Number:	8335221
Patent Number:	8335487
Patent Number:	8417240
Application Number:	11691417
Application Number:	10901380
Application Number:	11134448
Application Number:	10419089
Application Number:	11859550
Application Number:	13478996
Application Number:	13532576
Application Number:	13554748
Application Number:	10235918
Application Number:	10322425
Application Number:	11698891

CORRESPONDENCE DATA

Fax Number: (408)389-3518

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

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Email: paul@inventergy.com
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Address Line 1: 900 E. HAMILTON AVE.
Address Line 2: SUITE 180
Address Line 4: CAMPBELL, CALIFORNIA 95008

NAME OF SUBMITTER:	PAUL A. ROBERTS
SIGNATURE:	/Paul A. Roberts/
DATE SIGNED:	11/03/2014
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 61
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RELEASE

This Release of Security Interest is dated as of September 30, 2014, is by Hudson Bay IP Opportunities Master Fund, LP for itself and as collateral agent for certain buyers ("**Lender**").

A Several Security Agreements have been filed in the United States Patent and Trademark Office (the "**Security Agreements**").

B. In connection with the Security Agreements, Inventergy, Inc. ("**Grantor**") granted to Lender a security interest (the "Security Interest") in certain of its now existing or hereafter acquired intellectual property (collectively, the "**Collateral**").

C. Grantor has requested Lender to release the Security Interest in and to the Collateral, including the Patent Rights (as defined below) and Lender wishes to release the Security Interest

NOW, THEREFORE, FOR VALUE RECEIVED, Lender does hereby irrevocably and unconditionally release the Security Interest in and to the following intellectual property held as Collateral and all rights therein of any type or description including, without limitation: (a) the patents and patent applications listed on **Exhibit A** attached hereto (the "**Patents**"); (b) all patents and patent applications (i) to which any of the Patents directly or indirectly claims priority, (ii) for which any of the Patents directly or indirectly forms a basis for priority, or (iii) that were co-owned applications that incorporate by reference, or are incorporated by reference into, the Patents; (c) all reissues, reexaminations, extensions, continuations, continuations in part, continuing prosecution applications, requests for continuing examinations, divisions, registrations of any item in any of the foregoing categories (a) and (b); (d) all foreign patents, patent applications, and counterparts relating to any item in any of the foregoing categories (a) through (c), including, without limitation, certificates of invention, utility models, industrial design protection, design patent protection, and other governmental grants or issuances; (e) all items in any of the foregoing in categories (b) through (d), whether or not expressly listed as Patents above and whether or not claims in any of the foregoing have been rejected, withdrawn, cancelled, or the like; (f) inventions, invention disclosures, and discoveries described in any of the Patents or any item in the foregoing categories (b) through (e) that (i) are included in any claim in the Patents or any item in the foregoing categories (b) through (e), (ii) are subject matter capable of being reduced to a patent claim in a reissue or reexamination proceeding brought on any of the Patents or any item in the foregoing categories (b) through (e), or (iii) could have been included as a claim in any of the Patents or any item in the foregoing categories (b) through (e); (g) all rights to apply in any or all countries of the world for patents, certificates of invention, utility models, industrial design protections, design patent protections, or other governmental grants or issuances of any type related to any item in any of the foregoing categories (a) through (f), including, without limitation, under the Paris Convention for the Protection of Industrial Property, the International Patent Cooperation Treaty, or any other convention, treaty, agreement, or understanding; (h) all causes of action (whether known or unknown or whether currently pending, filed, or otherwise) and other enforcement rights under, or on account of, any of the Patents or any item in any of the foregoing categories (b) through (g), including, without limitation, all causes of action and other enforcement rights for (1) damages, (2) injunctive relief, and (3) any other remedies of any kind for past, current, and future infringement; and (i) all rights to collect royalties and other payments under or on account of any of the Patents or any item in any of the foregoing categories (b) through (h) (the "**Patent Rights**").

Lender hereby authorizes Grantor or Grantor's authorized representative to (i) record this Release with the United States Patent and Trademark Office, and in other patent offices in the world, (ii) file UCC Financing Statement Amendments with the applicable filing office in order to terminate UCC financing statements filed on behalf of Lender against the Grantor and/or (iii) otherwise file this Release.

This Release is governed by and in accordance with the laws of the State of New York without regard to its rules of conflict of law, except Section 5-1401 of the New York General Obligations Law. This Release will be binding upon Lender and its successors and assigns and inures to the benefit of Grantor, any acquirer of the Patents and their respective successors and assigns.

To the extent a court of competent jurisdiction would apply the law of the State of California notwithstanding the express selection of the laws of New York, Lender acknowledges that it is aware that it may hereafter discover facts different from or in addition to what it now knows, believes or suspects to be true with respect to the matters herein released, and the releases in this Release will be and remain in effect in all respects as complete, general releases, notwithstanding any such different or additional facts. Lender acknowledges that it has been informed of Section 1542 of the Civil Code of the State of California, and does hereby expressly waive and relinquish all rights and benefits, if any, which it has or may have under said Section 1542, which reads as follows:

> A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him must have materially affected his settlement with the debtor.

IN WITNESS WHEREOF, Lender has caused this Release to be executed as of the date set forth above.

Hudson Bay Master Fund Ltd

By: _____

Name: George Antonopoulos

Title: Authorized Signatory

EXHIBIT A

Unique ID	Patent Number	Country	Portfolio Status	Title	Issue / Publication Date	Application Number	Filing Date
13HU01-001-01	BRPI0614848	BR	Pending	Method, system and equipment for processing sip requests in IMS network	2011/04/19	BRPI614848A	2006/07/26
13HU01-001-02	CN100502402	CN	Granted	Method and device for processing session message in IMS network	2009/06/17	CN200510119756.9	2005/11/04
13HU01-001-03	CN101189850	CN	Granted	Method, system and device in IMS network processing SIP message	2012/02/22	CN200680011706.1	2006/07/26
13HU01-001-04	EP1755310	DE	Granted	Methods and apparatuses for processing SIP requests in an IMS network comprising an AS	2011/06/08	EP2006254341A	2006/08/18
13HU01-001-05	EP1755310	EP	PreCursor(EP)	Methods and apparatuses for processing SIP requests in an IMS network comprising an AS	2011/06/08	EP2006254341A	2006/08/18
13HU01-001-06	EP1755310	ES	Granted	Methods and apparatuses for processing SIP requests in an IMS network comprising an AS	2011/06/08	EP2006254341A	2006/08/18
13HU01-001-07	EP1755310	FR	Granted	Methods and apparatuses for processing SIP requests in an IMS network comprising an AS	2011/06/08	EP2006254341A	2006/08/18
13HU01-001-08	EP1755310	GB	Granted	Methods and apparatuses for processing SIP requests in an IMS network comprising an AS	2011/06/08	EP2006254341A	2006/08/18
13HU01-001-10	EP1755310	IT	Granted	Methods and apparatuses for processing SIP requests in an IMS network comprising an AS	2011/06/08	EP2006254341A	2006/08/18
13HU01-001-09	IN254557	IN	Granted	Method, system and equipment for processing sip requests in IMS network	2012/11/23	IN2008CN454A	2008/01/28
13HU01-001-11	US7835352	US	Granted	Method, system and equipment for processing sip requests in IMS network	2010/11/16	US2006506581A 11/506,581	2006/08/18
13HU01-002-01	CN100551148	CN	Granted	Method for realizing system switch in encryption mode	2007/03/07	CN200510093678.X	2005/09/01
13HU01-002-02	CN101156498	CN	Granted	Method for implementing inter-system switch-over	2011/10/26	CN200680011893.3	2006/09/01
13HU01-002-03	EP1871134	DE	Granted	METHOD FOR HANDOVER BETWEEN SYSTEMS	2009/12/16	EP2006775581A	2006/09/01
13HU01-002-04	EP1871134	EP	PreCursor(EP)	METHOD FOR HANDOVER BETWEEN SYSTEMS	2009/12/16	EP2006775581A	2006/09/01
13HU01-002-05	EP1871134	FR	Granted	METHOD FOR HANDOVER BETWEEN SYSTEMS	2009/12/16	EP2006775581A	2006/09/01
13HU01-002-06	EP1871134	GB	Granted	METHOD FOR HANDOVER BETWEEN SYSTEMS	2009/12/16	EP2006775581A	2006/09/01
13HU01-002-07	WO2007025487	WO	Lapsed	A METHOD FOR REALIZING HANDOVER BETWEEN SYSTEMS	2007/03/08	WO2006CN2264A	2006/09/01

13HU01-003-01	CN101031004	CN	Granted	Method for realizing on-hook triggering service	2010/05/12	CN200610058041.1	2006/02/28
13HU01-003-02	CN101160940	CN	Granted	Method for implementing service triggered by off-hook	2010/08/11	CN200680012256.8	2006/10/31
13HU01-003-03	EP1993274	EP	Lapsed	METHOD FOR REALIZING SERVICE TRIGGERING WHEN PICKED-UP	2008/11/19	EP2006805125A	2006/10/31
13HU01-003-04	US8149824	US	Granted	Method and system for implementing service triggered by off-hook	2012/04/03	US2007668532A 11/668,523	2007/01/30
13HU01-003-05	WO2007098654	WO	Lapsed	METHOD FOR REALIZING SERVICE TRIGGERING WHEN PICKED-UP	2007/09/07	WO2006CN2924A	2006/10/31
13HU01-004-02	CN101156398	CN	Granted	Method and system for switching terminal state of media gateway	2010/10/27	CN200680011910.3	2006/10/24
13HU01-004-01	CN1964365	CN	Granted	Method for switching terminal status in media gateway	2011/06/22	CN200510101368.8	2005/11/11
13HU01-004-03	EP1786216	DE	Granted	Method and system for switching the state of a termination in a media gateway	2009/12/30	EP2006023462A	2006/11/10
13HU01-004-04	EP1786216	EP	PreCursor(EP)	Method and system for switching the state of a termination in a media gateway	2009/12/30	EP2006023462A	2006/11/10
13HU01-004-05	EP1786216	FR	Granted	Method and system for switching the state of a termination in a media gateway	2009/12/30	EP2006023462A	2006/11/10
13HU01-004-06	US7693141	US	Granted	Method and system for switching the state of a termination in a media gateway	2010/04/06	US2006595768A 11/595,768	2006/11/10
13HU01-004-07	WO2007054011	WO	Lapsed	A METHOD FOR SWITCHING THE TERMINATION STATE IN THE MEDIA GATEWAY	2007/05/18	WO2006CN2841A	2006/10/24
13HU01-005-02	CN1901550	CN	Granted	Subscribing method based on conversation start protocol and its system and device	2011/08/10	CN200610106654.8	2006/07/21
13HU01-005-01	CN200510028074.7	CN	Lapsed	Subscribing Method Based On Conversation Start Protocol and Its System and Device		CN200510028074.7	2005/07/22
13HU01-005-03	EP1909434	EP	Lapsed	SUBSCRIBING METHOD AND DEVICE	2008/04/09	EP20060761541A	2006/07/21
13HU01-005-04	EP2086203	EP	Lapsed	Subscribing method and device	2009/10/28	EP2009160916A	2006/07/21
13HU01-005-05	US7948955	US	Granted	Subscription method and device	2011/05/24	US200817423A [08/0113,669] 12/017,423	2008/01/22
13HU01-005-06	WO2007009396	WO	Lapsed	SUBSCRIBING METHOD AND DEVICE	2007/01/25	WO2006CN1806A	2006/07/21

13HU01-006-02	CN1764140	CN	Granted	Method for realizing application server communication	2007/03/07	CN200510103571.9	2005/09/21
13HU01-006-01	CN200410078266.4	CN	Lapsed	Method for realizing application server communication		CN200410078266.4	2005/09/21
13HU01-006-03	EP1796326	DE	Granted	A METHOD FOR ENABLING COMMUNICATION IN APPLICATION SERVERS	2012/01/18	EP2005791501A	2005/09/21
13HU01-006-04	EP1796326	EP	PreCursor(EP)	A METHOD FOR ENABLING COMMUNICATION IN APPLICATION SERVERS	2012/01/18	EP2005791501A	2005/09/21
13HU01-006-05	EP1796326	FR	Granted	A METHOD FOR ENABLING COMMUNICATION IN APPLICATION SERVERS	2012/01/18	EP2005791501A	2005/09/21
13HU01-006-06	EP1796326	GB	Granted	A METHOD FOR ENABLING COMMUNICATION IN APPLICATION SERVERS	2012/01/18	EP2005791501A	2005/09/21
13HU01-006-07	EP1796326	IT	Granted	A METHOD FOR ENABLING COMMUNICATION IN APPLICATION SERVERS	2012/01/18	EP2005791501A	2005/09/21
13HU01-006-08	EP1796326	NL	Granted	A METHOD FOR ENABLING COMMUNICATION IN APPLICATION SERVERS	2012/01/18	EP2005791501A	2005/09/21
13HU01-006-09	EP1796326	SE	Granted	A METHOD FOR ENABLING COMMUNICATION IN APPLICATION SERVERS	2012/01/18	EP2005791501A	2005/09/21
13HU01-006-10	WO2006032204	WO	Lapsed	A METHOD FOR ENABLING COMMUNICATION IN THE APPLICATION SERVERS	2006/03/30	WO2005CN1523A	2005/09/21
13HU01-007-01	CN1929627	CN	Granted	A kind of realizing public user identification in IMS network of method that decreases pneumococcus nasal carriage and system	2012/02/01	CN200510098402.0	2005/09/06
13HU01-007-03	CN1941739	CN	Granted	Method and system for allocating and using user mark	2010/06/23	CN200510108129.5	2005/09/29
13HU01-007-02	CN1941774	CN	Granted	Method and system for realizing public user mark carrier	2012/07/04	CN200510108128.0	2005/09/29
13HU01-007-04	EP1761077	DE	Granted	Method and system for enabling number portability in IMS networks	2008/08/27	EP2006018705A	2006/09/06
13HU01-007-05	EP1761077	EP	PreCursor(EP)	Method and system for enabling number portability in IMS networks	2008/08/27	EP2006018705A	2006/09/06
13HU01-007-06	EP1761077	FR	Granted	Method and system for enabling number portability in IMS networks	2008/08/27	EP2006018705A	2006/09/06
13HU01-007-07	EP1761077	SE	Granted	Method and system for enabling number portability in IMS networks	2008/08/27	EP2006018705A	2006/09/06

13HU01-007-08	US7787878	US	Granted	Method and system for enabling number portability in IMS networks	2010/08/31	US2006516946A 11/516,946	2006/09/06
13HU01-007-09	WO2007028332	WO	Lapsed	METHOD AND SYSTEM FOR ENABLING NUMBER PORTABILITY IN IMS NETWORKS	2007/03/15	WO2006CN2299A	2006/09/06
13HU01-008-01	CN1758649	CN	Lapsed	Method of interconnected protocol network communicating between different edition network	2010/04/28	CN200410079321.1	2004/10/05
13HU01-008-02	CN200710167705.2	CN	Lapsed	Inter-network interconnection protocol network intercommunicating method of different version		CN200710167705.2	2004/10/05
13HU01-008-03	EP1798918	EP	Lapsed	A METHOD FOR INTERCOMMUNICATION BETWEEN NETWORKS HAVING DIFFERENT VERSION OF INTERNET PROTOCOL	2007/06/20	EP2005795754A	2005/10/08
13HU01-008-04	US7792116	US	Granted	Method and device for interworking between internet protocol networks	2010/09/07	US2007703709A 11/703,709	2007/02/08
13HU01-008-05	WO2006037276	WO	Lapsed	A METHOD FOR INTERCOMMUNICATION BETWEEN NETWORKS HAVING DIFFERENT VERSION OF INTERNET PROTOCOL	2006/04/13	WO2005CN1640A	2005/10/08
13HU01-009-07r	US14/323165	US	Reissuing	Interworking network element, interworking system between the CSI terminal and the IMS terminal and the method thereof		14/323165	2014/07/03
13HU01-009-01	CN100563235	CN	Granted	Network element with interconnecting function, CSI terminal, IMS terminal interconnecting system and method	2009/11/25	CN200610077923.2	2006/04/26
13HU01-009-02	CN101313543	CN	Granted	Exchange functional network element, CSI terminal, IMS terminal exchange system and method	2011/07/20	CN200780000211.3	2007/01/09
13HU01-009-03	EP1973283	DE	Granted	INTERWORKING NETWORK ELEMENT, INTERWORKING SYSTEM BETWEEN THE CSI TERMINAL AND THE IMS TERMINAL AND THE METHOD THEREOF	2010/09/29	EP2007702010A	2007/01/09
13HU01-009-04	EP1973283	EP	PreCursor(EP)	INTERWORKING NETWORK ELEMENT, INTERWORKING SYSTEM BETWEEN THE CSI TERMINAL AND THE IMS	2010/09/29	EP2007702010A	2007/01/09

				TERMINAL AND THE METHOD THEREOF			
13HU01-009-05	EP1973283	FR	Granted	INTERWORKING NETWORK ELEMENT, INTERWORKING SYSTEM BETWEEN THE CSI TERMINAL AND THE IMS TERMINAL AND THE METHOD THEREOF	2010/09/29	EP2007702010A	2007/01/09
13HU01-009-06	EP1973283	GB	Granted	INTERWORKING NETWORK ELEMENT, INTERWORKING SYSTEM BETWEEN THE CSI TERMINAL AND THE IMS TERMINAL AND THE METHOD THEREOF	2010/09/29	EP2007702010A	2007/01/09
13HU01-009-07	US8213419	US	Granted	Interworking network element, interworking system between the CSI terminal and the IMS terminal and the method thereof	2012/07/03	US2008170227A '12/170,227	2008/07/09
13HU01-009-08	WO2007079679	WO	Lapsed	INTERWORKING NETWORK ELEMENT, INTERWORKING SYSTEM BETWEEN THE CSI TERMINAL AND THE IMS TERMINAL AND THE METHOD THEREOF	2007/07/19	WO2007CN78A	2007/01/09
13HU01-010-01	CN100411398	CN	Granted	Edge or packet gateway controlling method in next generation network and its system	2006/12/20	CN200510026714.0	2005/06/13
13HU01-010-02	CN100426805	CN	Granted	Edge or packet gateway control system in next generation network and its method	2006/12/20	CN200510026736.7	2005/06/14
13HU01-010-03	CN100438515	CN	Granted	Edge or packet gateway controlling method in next generation network and its system	2006/12/20	CN200510026737.1	2005/06/14
13HU01-010-04	CN101160799	CN	Granted	Fringe or packet gateway control system and control method thereof	2011/04/20	CN200680012195.5	2006/05/25
13HU01-010-05	EP1796312	EP	Lapsed	AN EDGE/PACKET GATEWAY CONTROL SYSTEM AND A METHOD FOR ACHIEVING THE CONTROL BY THE EDGE/PACKET GATEWAY	2007/06/13	EP20060741982	2006/05/26
13HU01-010-06	US7881317	US	Granted	Border/packet gateway control system and control method	2011/02/01	US2007680234A 11/680,234	2007/02/28
13HU01-010-07	WO2006133622	WO	Lapsed	AN EDGE/PACKET GATEWAY CONTROL SYSTEM AND A METHOD FOR ACHIEVING THE CONTROL BY THE EDGE/PACKET GATEWAY	2006/12/21	WO2006CN1094A	2006/05/25
13HU01-	CN100563282	CN	Lapsed	Method for listening dailed	2009/11/25	CN200510034992.0	2005/05/29

011-01				signal sound at dail line terminal when network communicating			
13HU01-011-02	EP1786162	DE	Granted	METHOD FOR THE CALLING USER TERMINAL LISTENING TO THE SIGNAL TONE OF THE CALLED USER TERMINAL WHEN INTER-NETWORKING	2009/09/30	EP2006741937A	2006/05/22
13HU01-011-03	EP1786162	EP	PreCursor(EP)	METHOD FOR THE CALLING USER TERMINAL LISTENING TO THE SIGNAL TONE OF THE CALLED USER TERMINAL WHEN INTER-NETWORKING	2009/09/30	EP2006741937A	2006/05/22
13HU01-011-04	EP1786162	GB	Granted	METHOD FOR THE CALLING USER TERMINAL LISTENING TO THE SIGNAL TONE OF THE CALLED USER TERMINAL WHEN INTER-NETWORKING	2009/09/30	EP2006741937A	2006/05/22
13HU01-011-05	US8335221	US	Granted	Method for listening to signal tone from a called party by a calling party during network interworking	2012/12/18	US2007707759A 11/707,759	2007/02/16
13HU01-011-06	WO2006128356	WO	Lapsed	METHOD FOR THE CALLING USER TERMINAL LISTENING TO THE SIGNAL TONE OF THE CALLED USER TERMINAL WHEN INTER-NETWORKING	2006/12/07	WO2006CN1049A	2006/05/22
13HU01-012-01	BRPI0613589	BR	Lapsed	método e sistema para implementação de roteamento de sinalização dinámica	2011/01/18	BRPI0613589A2	2006/08/10
13HU01-012-03	CN101161011	CN	Lapsed	Method and system of improving network reliability through implementing dynamic routing of signaling	2011/08/10	CN200680012205.5	2006/08/10
13HU01-012-02	CN1921459	CN	Lapsed	Method for improving reliability of network by realizing dynamic route of signal	2007/02/28	CN200510093052.9	2005/08/25
13HU01-012-04	EP1816887	DE	Granted	METHOD AND SYSTEM FOR IMPROVING NETWORK RELIABILITY BY REALIZING DYMANIC ROUTE OF SIGNALING	2010/05/05	EP2006775336A	2006/08/10
13HU01-012-05	EP1816887	EP	PreCursor(EP)	METHOD AND SYSTEM FOR IMPROVING NETWORK RELIABILITY BY REALIZING DYMANIC ROUTE OF SIGNALING	2010/05/05	EP2006775336A	2006/08/10
13HU01-012-06	EP1816887	FR	Granted	METHOD AND SYSTEM FOR IMPROVING NETWORK RELIABILITY BY REALIZING DYMANIC ROUTE OF	2010/05/05	EP2006775336A	2006/08/10

				SIGNALING			
13HU01-012-07	IN200704950	IN	Lapsed	METHOD AND SYSTEM FOR IMPROVING NETWORK RELIABILITY BY REALIZING DYMANIC ROUTE OF SIGNALING	2008/08/01	IN2007KN4950A	2007/12/20
13HU01-012-08	JP04619441	JP	Granted	The method and system which implement	2011/01/26	JP2008527289A	2006/08/10
13HU01-012-09	RU2408154	RU	Granted	METHOD AND SYSTEM FOR REALISATION OF DYNAMIC ROUTING OF CALL SIGNALS	2010/12/27	RU2008101969A	2006/08/10
13HU01-012-10	US8125995	US	Granted	Method and system for implementing dynamic signaling routing	2012/02/28	US2007821113A 11/821,113	2007/06/21
13HU01-012-11	WO2007022692	WO	Lapsed	METHOD AND SYSTEM FOR IMPROVING NETWORK RELIABILITY BY REALIZING DYMANIC ROUTE OF SIGNALING	2007/03/01	WO2006CN2018A	2006/08/10
13HU01-013-01	CN100459569	CN	Granted	Quick route switching method and apparatus for network node devices	2009/02/04	CN200510032840.7	2005/01/14
13HU01-013-02	EP1718014	EP	PreCursor(EP)	A ROUTE SWITCHING METHOD AND A NETWORK NODE DEVICE	2008/10/15	EP2006705441A	2006/01/09
13HU01-013-03	EP1718014	FR	Granted	A ROUTE SWITCHING METHOD AND A NETWORK NODE DEVICE	2008/10/15	EP2006705441A	2006/01/09
13HU01-013-04	EP1718014	SE	Granted	A ROUTE SWITCHING METHOD AND A NETWORK NODE DEVICE	2008/10/15	EP2006705441A	2006/01/09
13HU01-013-05	US7898943	US	Granted	Method for switching route and network device thereof	2011/03/01	US2003591218A 10/591,218	2007/11/21
13HU01-013-06	WO2006074596	WO	Lapsed	A ROUTE SWITCHING METHOD AND A NETWORK NODE DEVICE	2006/07/20	WO2006CN18A	2006/01/09
13HU01-014-01	CN100479417	CN	Granted	Communication method preventing circumbendibus of media-flow	2009/04/15	CN200510098546.6	2005/09/02
13HU01-014-02	CN101164290	CN	Lapsed	Communication method and equipment for preventing media stream circuity	2008/04/16	CN200680013147.8	2006/06/14
13HU01-014-03	EP1760986	DE	EP-Designated	Communication method and device for preventing media stream circuity (tromboning)	2007/03/07	EP2006119909A	2006/08/31
13HU01-014-11	EP1760986	EP	EP-Pending	Communication method and device for preventing media stream circuity (tromboning)	2007/03/07	EP2006119909A	2006/08/31
13HU01-014-04	EP1760986	EP	PreCursor(EP)	Communication method and device for preventing media stream circuity (tromboning)	2007/03/07	EP2006119909A	2006/08/31

13HU01-014-05	EP1760986	FI	EP-Designated	Communication method and device for preventing media stream circuity (tromboning)	2007/03/07	EP2006119909A	2006/08/31
13HU01-014-06	EP1760986	FR	EP-Designated	Communication method and device for preventing media stream circuity (tromboning)	2007/03/07	EP2006119909A	2006/08/31
13HU01-014-07	EP1760986	GB	EP-Designated	Communication method and device for preventing media stream circuity (tromboning)	2007/03/07	EP2006119909A	2006/08/31
13HU01-014-08	EP1760986	SE	EP-Designated	Communication method and device for preventing media stream circuity (tromboning)	2007/03/07	EP2006119909A	2006/08/31
13HU01-014-09	US8108526	US	Granted	Communication method and device for preventing media stream circuitry	2012/01/31	US2006469796A 11/469,796	2006/09/01
13HU01-014-10	WO2007025429	WO	Lapsed	A METHOD FOR PREVENTING THE MEDIA STREAM FROM BYPASSING AND THE DEVICE THEREOF	2007/03/08	WO2006CN1325A	2006/06/14
13HU01-015-01	CN101212309	CN	Granted	Method for controlling time stamp of reported event	2011/06/15	CN200610170447.9	2006/12/30
13HU01-015-02	EP2037627	DE	Granted	METHOD AND DEVICE FOR CONTROLLING REPORTING TIMESTAMP OF EVENT	2012/03/14	EP2007846226A	2007/12/29
13HU01-015-03	EP2037627	EP	PreCursor(EP)	METHOD AND DEVICE FOR CONTROLLING REPORTING TIMESTAMP OF EVENT	2012/03/14	EP2007846226A	2007/12/29
13HU01-015-04	EP2037627	FR	Granted	METHOD AND DEVICE FOR CONTROLLING REPORTING TIMESTAMP OF EVENT	2012/03/14	EP2007846226A	2007/12/29
13HU01-015-05	EP2037627	IT	Granted	METHOD AND DEVICE FOR CONTROLLING REPORTING TIMESTAMP OF EVENT	2012/03/14	EP2007846226A	2007/12/29
13HU01-015-06	US8116322	US	Granted	Method and apparatus for controlling reporting of an event timestamp	2012/02/14	US2009354289A 12/354289	2009/01/15
13HU01-015-07	WO2008083606	WO	Lapsed	METHOD AND DEVICE FOR CONTROLLING REPORTING TIMESTAMP OF EVENT	2008/07/17	WO2007CN71400A	2007/12/29
13HU01-016-01	CN1996968	CN	Granted	Decision method for the media gateway controller to distribute the resource	2010/04/14	CN200610093956.6	2006/06/26
13HU01-016-02	CN200810189659.0	CN	Lapsed	Method for down distributing resource and providing decision for medium gateway by medium gateway controller	1900/01/00	CN200810189659.0	2006/06/26
13HU01-016-03	EP2034670	DE	Granted	METHOD, APPARATUS, AND SYSTEM FOR THE MGC DISTRIBUTING A RESOURCE PROVISION DECISION TO THE MG	2012/06/15	EP2007721793A	2007/06/25
13HU01-	EP2034670	EP	PreCursor(EP)	METHOD, APPARATUS, AND	2012/06/13	EP2007721793A	2007/06/25

016-04				SYSTEM FOR THE MGC DISTRIBUTING A RESOURCE PROVISION DECISION TO THE MG			
13HU01-016-05	EP2034670	FR	Granted	METHOD, APPARATUS, AND SYSTEM FOR THE MGC DISTRIBUTING A RESOURCE PROVISION DECISION TO THE MG	2012/06/14	EP2007721793A	2007/06/25
13HU01-016-06	EP2034670	IT	Granted	METHOD, APPARATUS, AND SYSTEM FOR THE MGC DISTRIBUTING A RESOURCE PROVISION DECISION TO THE MG	2012/06/16	EP2007721793A	2007/06/25
13HU01-016-07	US7899065	US	Granted	Method, apparatus and system for a media gateway controller to deliver a resource provision decision to a media gateway	2011/03/01	US2008342546A 12/342,546	2008/12/23
13HU01-016-08	WO2008003252	WO	Lapsed	METHOD, APPARATUS, AND SYSTEM FOR THE MGC DISTRIBUTING A RESOURCE PROVISION DECISION TO THE MG	2008/01/10	WO2007CN70177A	2007/06/25
13HU01-017-01	CN100442930	CN	Granted	Mobile exchanging center and called parner processing method	1900/01/00	CN200510110891.7	2005/11/29
13HU01-017-02	CN101161019	CN	Lapsed	Mobile switching centre and called process method thereof	2008/04/09	CN200680012331.0	2006/08/22
13HU01-017-03	EP1898658	DE	Granted	MSC AND CALLED PROCESS METHOD THEREOF	2009/12/02	EP2006775455A	2006/08/22
13HU01-017-04	EP1898658	EP	PreCursor(EP)	MSC AND CALLED PROCESS METHOD THEREOF	2009/12/02	EP2006775455A	2006/08/22
13HU01-017-05	WO2007062560	WO	Lapsed	MSC AND CALLED PROCESS METHOD THEREOF	2007/06/07	WO2006CN2137A	2006/08/22
13HU01-018-01	CN100471140	CN	Granted	Method for detecting QoS	2009/03/18	CN200610062951.7	2006/09/29
13HU01-018-02	CN101001208	CN	Granted	Method for detecting QoS	2007/07/18	CN200610165838.1	2006/12/13
13HU01-018-03	CN101052014	CN	Granted	Method for detecting QoS	2007/10/10	CN200710107595.0	2007/05/21
13HU01-018-05	EP07871768.3	EP	Lapsed	Method for detecting QoS		EP07871768.3	2007/12/12
13HU01-018-04	EP1983688	DE	Granted	METHOD FOR DETECTING QOS	2012/04/25	EP2007817016A	2007/09/29
13HU01-018-06	EP1983688	EP	PreCursor(EP)	METHOD FOR DETECTING QOS	2012/04/25	EP2007817016A	2007/09/29
13HU01-018-07	EP1983688	FR	Granted	METHOD FOR DETECTING QOS	2012/04/25	EP2007817016A	2007/09/29
13HU01-018-08	EP1983688	GB	Granted	METHOD FOR DETECTING QOS	2012/04/25	EP2007817016A	2007/09/29
13HU01-018-09	US20090016233	US	Lapsed	Method for detecting QoS	2009/01/15	US2008211555A 12/211555	2008/09/16

13HU01-018-10	WO2008/086720	WO	Lapsed	Method for detecting QoS		PCT/CN2007/071220	2007/12/12
13HU01-018-11	WO2008/141580	WO	Lapsed	Method for detecting QoS		PCT/CN2008/071008	2008/05/19
13HU01-018-12	WO2008043304	WO	Lapsed	METHOD FOR DETECTING QOS	2008/04/17	WO2007CN70825A	2007/09/29
13HU01-019-01	CN1905472	CN	Granted	Method for implementing IMS network reliability	2010/05/05	CN200510085400.8	2005/07/27
13HU01-019-02	EP1914937	DE	Granted	METHOD AND SYSTEM FOR REALIZING IMS NETWORK RELIABILITY	2013/01/26	EP2006761564A	2006/07/28
13HU01-019-03	EP1914937	EP	PreCursor(EP)	METHOD AND SYSTEM FOR REALIZING IMS NETWORK RELIABILITY	2013/01/23	EP2006761564A	2006/07/25
13HU01-019-04	EP1914937	FR	Granted	METHOD AND SYSTEM FOR REALIZING IMS NETWORK RELIABILITY	2013/01/23	EP2006761564A	2006/07/25
13HU01-019-05	EP1914937	GB	Granted	METHOD AND SYSTEM FOR REALIZING IMS NETWORK RELIABILITY	2013/01/23	EP2006761564A	2006/07/25
13HU01-019-06	WO2007012270	WO	Lapsed	A METHOD FOR REALIZING THE IMS NETWORK RELIABILITY	2007/02/01	WO2006CN1834A	2006/07/25
13HU01-020-01	CN100546308	CN	Granted	Gateway control protocol message transmission method	2009/09/30	CN200510034409.6	2005/04/22
13HU01-020-02	US7653076	US	Granted	Method and apparatus for gateway control protocol message transmission	2010/01/26	US2007856152A 11/856,152	2007/09/17
13HU01-020-03	WO2006111104	WO	Lapsed	A GATEWAY CONTROL PROTOCOL MESSAGE TRANSFERRING METHOD AND THE APPARATUS THEREOF	2006/10/26	WO2006CN780A	2006/04/24
13HU01-021-02	CN100349411	CN	Granted	Medium flow service quality reporting method	2007/11/14	CN200410062978.7	2004/06/30
13HU01-021-01	CN100493069	CN	Lapsed	Method for detecting medium flow service quality	2006/01/04	CN200410062977.2	2004/06/30
13HU01-021-03	EP1739900	EP	PreCursor(EP)	A METHOD FOR ACQUIRING THE QOS OF THE MULTIMEDIA STREAM PERIODICALLY	2008/10/29	EP2005759437A	2005/06/30
13HU01-021-04	EP1739900	ES	Lapsed	A METHOD FOR ACQUIRING THE QOS OF THE MULTIMEDIA STREAM PERIODICALLY	2008/10/29	EP2005759437A	2005/06/30
13HU01-021-05	EP1739900	FR	Lapsed	A METHOD FOR ACQUIRING THE QOS OF THE MULTIMEDIA STREAM PERIODICALLY	2008/10/29	EP2005759437A	2005/06/30
13HU01-021-06	EP1739900	PT	Granted	A METHOD FOR ACQUIRING THE QOS OF THE MULTIMEDIA STREAM PERIODICALLY	2008/10/29	EP2005759437A	2005/06/30
13HU01-021-07	EP1739900	SE	Lapsed	A METHOD FOR ACQUIRING THE QOS OF THE MULTIMEDIA STREAM PERIODICALLY	2008/10/29	EP2005759437A	2005/06/30
13HU01-021-08	US7583612	US	Granted	Method for periodically acquiring the QoS of media	2009/09/01	US2006558619A	2006/11/10

				stream and system thereof			
13HU01-021-09	WO2006002597	WO	Lapsed	A METHOD FOR ACQUIRING THE QOS OF THE MULTIMEDIA STREAM PERIODICALLY	2006/01/12	WO2005CN958A	2005/06/30
13HU01-022-01	CN100499656	CN	Granted	Method for implementing medium gateway function, wireless access controlling apparatus and access system	2009/06/10	CN200510051044.8	2005/02/25
13HU01-022-02	US8085712	US	Granted	Method for implementing media gateway function,radio access control device and access system	2011/12/27	US20080049705A1 US2007844481A	2006/02/27
13HU01-022-03	WO2006089491	WO	Lapsed	METHOD FOR REALIZING MEDIA-GATEWAY FUNCTION, EQUIPMENT FOR WIRELESS ACCESS CONTROL AND ACCESS SYSTEM	2006/08/31	WO2006CN281A	2006/02/27
13HU01-023-01	CN100583918	CN	Granted	Safety protection method for service interruption of exchange network and its device	2010/01/20	CN200610065066.4	2006/03/16
13HU01-023-02	CN101160869	CN	Lapsed	Method and apparatus for security protection of service interruption in switch network	2008/04/09	CN200680012823.X	2006/11/22
13HU01-023-03	US7710880	US	Granted	Method and apparatus for security protection of service interruption in switch network	2010/05/04	US2006618597A	2006/12/29
13HU01-023-04	WO2007104199	WO	Lapsed	A SECURITY PROTECTING METOD USED FOR SERVICE INTERRUPTION IN THE SWITCHING NETWORK AND A SYSTEM THEREOF	2007/09/20	WO2006CN3144A	2006/11/22
13HU01-024-01	CN101841888	CN	Granted	Resource control method, related equipment and related system	2012/06/27	CN200910118794.0	2009/03/16
13HU01-024-02	EP2439979	DE	EP-Designated	RESOURCE CONTROL METHOD, RELEVANT DEVIDE AND SYSTEM	2012/04/11	EP2010753112A EP10753112.1	2010/03/16
13HU01-024-03	EP2439979	EP	EP-Pending	RESOURCE CONTROL METHOD, RELEVANT DEVIDE AND SYSTEM	2012/04/11	EP2010753112A EP10753112.1	2010/03/16
13HU01-024-04	EP2439979	FI	EP-Designated	RESOURCE CONTROL METHOD, RELEVANT DEVIDE AND SYSTEM	2012/04/11	EP2010753112A EP10753112.1	2010/03/16
13HU01-024-05	EP2439979	FR	EP-Designated	RESOURCE CONTROL METHOD, RELEVANT DEVIDE AND SYSTEM	2012/04/11	EP2010753112A EP10753112.1	2010/03/16
13HU01-024-06	EP2439979	GB	EP-Designated	RESOURCE CONTROL METHOD, RELEVANT DEVIDE AND SYSTEM	2012/04/11	EP2010753112A EP10753112.1	2010/03/16
13HU01-024-07	EP2439979	SE	EP-Designated	RESOURCE CONTROL METHOD, RELEVANT DEVIDE AND	2012/04/11	EP2010753112A EP10753112.1	2010/03/16

				SYSTEM			
13HU01-024-08	US8224325	US	Granted	Resource control method, relevant device, and system	2012/07/17	US13235062A	2011/09/16
13HU01-024-09	WO2010105545	WO	Lapsed	RESOURCE CONTROL METHOD, RELEVANT DEVIDE AND SYSTEM	2010/09/23	WO2010CN71057A	2010/03/16
13HU01-025-01	AU2003271027	AU	Lapsed	A network security authentication method	2007/08/09	AU2003271027A	2003/09/22
13HU01-025-02	CN1275419	CN	Lapsed	Network safety authentication method	2006/09/13	CN2002144191A	2002/10/18
13HU01-025-03	US8195942	US	Granted	Network security authentication method	2012/06/05	US2003531569A	2005/04/18
13HU01-025-04	WO2004036828	WO	Lapsed	A NETWORK SECURITY AUTHENTICATION METHOD	2004/04/29	WO2003CN801A	2003/09/22
13HU01-026-01	CN100574185	CN	Granted	Method for ensuring media stream safety in IP multimedia service subsystem network	2009/12/23	CN200510000097.7	2005/01/07
13HU01-026-02	EP1835652	DE	Granted	A METHOD FOR ENSURING THE SAFETY OF THE MEDIA-FLOW IN IP MULTIMEDIA SUB-SYSTEM	2010/06/16	EP2005848163A	2005/12/31
13HU01-026-03	EP1835652	EP	PreCursor(EP)	A METHOD FOR ENSURING THE SAFETY OF THE MEDIA-FLOW IN IP MULTIMEDIA SUB-SYSTEM	2010/06/16	EP2005848163A	2005/12/31
13HU01-026-04	EP1835652	GB	Granted	A METHOD FOR ENSURING THE SAFETY OF THE MEDIA-FLOW IN IP MULTIMEDIA SUB-SYSTEM	2010/06/16	EP2005848163A	2005/12/31
13HU01-026-05	US20140169563	US	Pending	METHOD FOR ENSURING MEDIA STREAM SECURITY IN IP MULTIMEDIA SUB-SYSTEM	2007/12/20	14/050,768	2013/10/10
13HU01-026-06	US8582766	US	Granted	METHOD FOR ENSURING MEDIA STREAM SECURITY IN IP MULTIMEDIA SUB-SYSTEM	2007/12/20	US2007774271A 11774271	2007/07/06
13HU01-026-07	WO2006072212	WO	Lapsed	A METHOD FOR ENSURING THE SAFETY OF THE MEDIA-FLOW IN IP MULTIMEDIA SUB-SYSTEM	2006/07/13	WO2005CN2429A	2005/12/31
13HU01-027.1-01	AR053615	AR	Granted	Method for Implementing Access Domain Security of IP Multimedia Subsystem	2007/05/07	ARP20060102194A	2006/05/26
13HU01-027.1-02	CN100461942	CN	Granted	Method for selecting safety mechanism of IP multimedia subsystem acess field	2009/02/11	CN200510071538.2	2005/05/27
13HU01-027.1-03	DE602006007648.7	DE	Granted	VERFAHREN ZUR IMPLEMENTIERUNG DER ZUGRIFFSBEREICHS	2009/08/20	DE602006007648T	2006/04/03
13HU01-027.1-04	EP1755311	DE	Duplicate	A METHOD FOR IMPLEMENTING THE ACCESS DOMAIN SECURITY OF AN IP MULTIMEDIA SUBSYSTEM	2009/07/08	EP2006722247A	2006/04/03

13HU01-027.1-05	EP1755311	EP	PreCursor(EP)	A METHOD FOR IMPLEMENTING THE ACCESS DOMAIN SECURITY OF AN IP MULTIMEDIA SUBSYSTEM	2009/07/08	EP2006722247A	2006/04/03
13HU01-027.1-06	EP1755311	FR	Granted	A METHOD FOR IMPLEMENTING THE ACCESS DOMAIN SECURITY OF AN IP MULTIMEDIA SUBSYSTEM	2009/07/08	EP2006722247A	2006/04/03
13HU01-027.1-07	EP1755311	GB	Granted	A METHOD FOR IMPLEMENTING THE ACCESS DOMAIN SECURITY OF AN IP MULTIMEDIA SUBSYSTEM	2009/07/08	EP2006722247A	2006/04/03
13HU01-027.1-08	TWI314414	TW	Granted	A METHOD FOR IMPLEMENTING THE ACCESS DOMAIN SECURITY OF AN IP MULTIMEDIA SUBSYSTEM	2009/09/01	TW2006118609A	2006/05/25
13HU01-027.1-09	US20080209532	US	Lapsed	Method for Implementing Access Domain Security of IP Multimedia Subsystem	2008/08/28	US2006629346A 11/629,346	2007/05/07
13HU01-027.1-10	WO2006125359	WO	Lapsed	A METHOD FOR IMPLEMENTING THE ACCESS DOMAIN SECURITY OF AN IP MULTIMEDIA SUBSYSTEM	2006/11/30	WO2006CN595A	2006/04/03
13HU01-027.2-01	CN100571134	CN	Granted	Method for verifying user terminal in IP multimedia subsystem	2009/12/16	CN200510070351.0	2005/04/30
13HU01-027.2-02	EP1879324	DE	Granted	A METHOD FOR AUTHENTICATING USER TERMINAL IN IP MULTIMEDIA SUB-SYSTEM	2012/08/01	EP2006741743A	2006/04/27
13HU01-027.2-03	EP1879324	EP	PreCursor(EP)	A METHOD FOR AUTHENTICATING USER TERMINAL IN IP MULTIMEDIA SUB-SYSTEM	2012/08/01	EP2006741743A	2006/04/27
13HU01-027.2-04	EP1879324	ES	Granted	A METHOD FOR AUTHENTICATING USER TERMINAL IN IP MULTIMEDIA SUB-SYSTEM	2012/08/01	EP2006741743A	2006/04/27
13HU01-027.2-05	EP1879324	FR	Granted	A METHOD FOR AUTHENTICATING USER TERMINAL IN IP MULTIMEDIA SUB-SYSTEM	2012/08/01	EP2006741743A	2006/04/27
13HU01-027.2-06	EP1879324	GB	Granted	A METHOD FOR AUTHENTICATING USER TERMINAL IN IP MULTIMEDIA SUB-SYSTEM	2012/08/01	EP2006741743A	2006/04/27
13HU01-027.2-07	EP1879324	IT	Granted	A METHOD FOR AUTHENTICATING USER TERMINAL IN IP MULTIMEDIA SUB-SYSTEM	2012/08/01	EP2006741743A	2006/04/27
13HU01-027.2-08	US8335487	US	Granted	Method for authenticating user terminal in IP multimedia sub-	2012/12/18	US11/896389	2007/08/31

				system			
13HU01-027.2-09	WO2006116921	WO	Lapsed	A METHOD FOR AUTHENTICATING USER TERMINAL IN IP MULTIMEDIA SUB-SYSTEM	2006/11/09	WO2006CN822A	2006/04/27
13HU01-028-02	CN101128049	CN	Granted	Method and system for providing circuit domain service and service control node SCP	2012/07/04	CN200610141030.X	2006/09/28
13HU01-028-01	CN200610111254.6	CN	Lapsed	Method and system for providing circuit domain service and service control node SCP		CN200610111254.6	2006/08/17
13HU01-028-03	EP2056536	DE	Granted	A METHOD, A SYSTEM AND A SERVICE CONTROL POINT FOR PROVIDING CIRCUIT DOMAIN SERVICE	2012/01/25	EP2007785297A	2007/08/09
13HU01-028-04	EP2056536	EP	PreCursor(EP)	A METHOD, A SYSTEM AND A SERVICE CONTROL POINT FOR PROVIDING CIRCUIT DOMAIN SERVICE	2012/01/25	EP2007785297A	2007/08/09
13HU01-028-05	EP2056536	FR	Granted	A METHOD, A SYSTEM AND A SERVICE CONTROL POINT FOR PROVIDING CIRCUIT DOMAIN SERVICE	2012/01/25	EP2007785297A	2007/08/09
13HU01-028-06	EP2056536	GB	Granted	A METHOD, A SYSTEM AND A SERVICE CONTROL POINT FOR PROVIDING CIRCUIT DOMAIN SERVICE	2012/01/25	EP2007785297A	2007/08/09
13HU01-028-07	WO2008022536	WO	Lapsed	A METHOD, A SYSTEM AND A SERVICE CONTROL POINT FOR PROVIDING CIRCUIT DOMAIN SERVICE	2008/02/28	WO2007CN2390A	2007/08/09
13HU01-029-01	AR50123	AR	Lapsed	SISTEMA DE RED DE COMUNICACIONES PARA IMPLEMENTAR SERVICIOS COMBINADOS Y SUS METODOS.	2006/09/27	ARP20050103360A	2005/08/11
13HU01-029-02	BR200507677	BR	Lapsed	sistema de rede de comunicações para implementação de serviços mistos e seu método	2007/07/17	BRPI507677A	2005/08/11
13HU01-029-04	CN100349473	CN	Lapsed	Method and system for realizing short message intercommunication based on mixed telephone number		CN200410059165.2	2004/08/11
13HU01-029-03	CN1735268	CN	Lapsed	Method for realizing mixed telephone number and communications network system	2006/02/15	CN200410059164.8	2004/08/11
13HU01-029-05	EP1713241	EP	Lapsed	A COMMUNICATION NETWORK SYSTEM AND	2006/10/18	EP2005774458A	2005/08/11

				METHOD OF ACHIEVING MIXED SERVICE			
13HU01-029-06	ID0024111	ID	Lapsed	Method and system for realizing short message intercommunication based on mixed telephone number		IDW-00200602090	2005/08/11
13HU01-029-07	IN246930	IN	Lapsed	Method and system for realizing short message intercommunication based on mixed telephone number	2011/03/25	IN2006CN4422A	2006/12/01
13HU01-029-08	RU2370904	RU	Granted	TELECOMMUNICATION NETWORK SYSTEM FOR IMPLEMENTING VARIOUS SERVICES AND METHOD OF IMPLEMENTING THEREOF	2009/10/20	RU2006130835A	2005/08/11
13HU01-029-09	US7787608	US	Granted	Communications network system for implementing mixed services and method thereof	2010/08/31	US11/489208	2006/07/19
13HU01-029-10	WO2006015551	WO	Lapsed	A COMMUNICATION NETWORK SYSTEM AND METHOD OF ACHIEVING MIXED SERVICE	2006/02/16	WO2005CN1241A	2005/08/11
13HU01-030-01	CN101247632	CN	Granted	Method, system and device for using IMS communication service identification in communication system	2008/08/20	CN200710079246.2	2007/02/13
13HU01-030-02	CN101517960	CN	Lapsed	Method, system and device for application IMS communication service identification in communication system	2009/08/26	CN200780000599.7	2007/11/19
13HU01-030-03	EP1959632	DE	EP-Designated	Method, system and apparatus for using IMS communication service identifier	2008/08/20	EP2008101535A	2008/02/12
13HU01-030-04	EP1959632	EP	EP-Pending	Method, system and apparatus for using IMS communication service identifier	2008/08/20	EP2008101535A	2008/02/12
13HU01-030-05	EP1959632	FI	EP-Designated	Method, system and apparatus for using IMS communication service identifier	2008/08/20	EP2008101535A	2008/02/12
13HU01-030-06	EP1959632	FR	EP-Designated	Method, system and apparatus for using IMS communication service identifier	2008/08/20	EP2008101535A	2008/02/12
13HU01-030-07	EP1959632	GB	EP-Designated	Method, system and apparatus for using IMS communication service identifier	2008/08/20	EP2008101535A	2008/02/12
13HU01-030-10	EP1959632	SE	EP-Designated	Method, system and apparatus for using IMS communication service identifier	2008/08/20	EP2008101535A	2008/02/12
13HU01-030-08	IN5391/DELNP/2009	IN	Pending	Method, System and Apparatus for Using IMS	1900/01/00	IN5391/DELNP/2009	2007/11/19

				Communication Service Identifiers in a Communication System			
13HU01-030-09	RU2434351	RU	Granted	METHOD, SYSTEM AND APPARATUS FOR USING IMS COMMUNICATION SERVICE IDENTIFIER IN COMMUNICATION SYSTEM	2011/11/20	RU2009134133A	2007/11/19
13HU01-030-12	US8185105	US	Granted	METHOD, SYSTEM AND APPARATUS FOR USING IMS COMMUNICATION SERVICE IDENTIFIER	2012/05/22	US12/539890	2009/08/12
13HU01-030-11	US8417240	US	Granted	METHOD, SYSTEM AND APPARATUS FOR USING IMS COMMUNICATION SERVICE IDENTIFIER	2013/04/09	US13/414770	2012/03/08
13HU01-030-11r	US14/285524	US	Reissuing	METHOD, SYSTEM AND APPARATUS FOR USING IMS COMMUNICATION SERVICE IDENTIFIER		US14/285524	2014/05/22
13HU01-030-13	WO2008098459	WO	Lapsed	METHOD, SYSTEM AND MEANS FOR APPLYING IMS COMMUNICATION SERVICE IDENTIFIERS IN A COMMUNICATION SYSTEM	2008/08/21	WO2007CN71090A	2007/11/19
13HU01-031-02	CN101064661	CN	Granted	Method and apparatus for notifying user to complement service	2011/08/24	CN200610099533.5	2006/07/28
13HU01-031-03	CN101317438	CN	Granted	Method and device for perceiving supplementary service executed by user	2012/04/25	CN200780000297.X	2007/02/08
13HU01-031-01	CN200610079107.5	CN	Lapsed	Method and apparatus for notifying user to complement service	1900/01/00	CN200610079107.5	2006/04/29
13HU01-031-04	EP1881689	DE	Granted	A METHOD AND DEVICE FOR PERCEIVING THE USER TRIGGERING A SUPPLEMENTARY SERVICE	2010/06/02	EP2007702308A	2007/02/08
13HU01-031-05	EP1881689	EP	PreCursor(EP)	A METHOD AND DEVICE FOR PERCEIVING THE USER TRIGGERING A SUPPLEMENTARY SERVICE	2010/06/02	EP2007702308A	2007/02/08
13HU01-031-06	EP1881689	FR	Granted	A METHOD AND DEVICE FOR PERCEIVING THE USER TRIGGERING A SUPPLEMENTARY SERVICE	2010/06/02	EP2007702308A	2007/02/08
13HU01-031-07	EP1881689	GB	Granted	A METHOD AND DEVICE FOR PERCEIVING THE USER TRIGGERING A SUPPLEMENTARY SERVICE	2010/06/02	EP2007702308A	2007/02/08
13HU01-031-08	US20080032686	US	Lapsed	Method and device for making awareness of occurence of a	2008/02/07	US2007881806A	2007/07/27

				supplementary service			
13HU01-031-09	WO2007124641	WO	Lapsed	A METHOD AND DEVICE FOR PERCEIVING THE USER TRIGGERING A SUPPLEMENTARY SERVICE	2007/11/08	WO2007CN435A	2007/02/08
13HU01-032-01	CN101056452	CN	Granted	Method and system for negotiating the voice encoding and decoding format in the communication system	2010/05/12	CN200610035050.9	2006/04/18
13HU01-032-02	CN101167374	CN	Granted	Method, system and device for negotiating voice coding/decoding in communication system	2011/02/09	CN200680013004.7	2006/11/29
13HU01-032-03	EP1848190	DE	EP-Designated	Method, system and device for speech codec negotiation in communication system	2007/10/24	EP20077802A	2007/04/17
13HU01-032-04	EP1848190	EP	EP-Pending	Method, system and device for speech codec negotiation in communication system	2007/10/24	EP20077802A	2007/04/17
13HU01-032-05	EP1848190	FI	EP-Designated	Method, system and device for speech codec negotiation in communication system	2007/10/24	EP20077802A	2007/04/17
13HU01-032-06	EP1848190	FR	EP-Designated	Method, system and device for speech codec negotiation in communication system	2007/10/24	EP20077802A	2007/04/17
13HU01-032-07	EP1848190	GB	EP-Designated	Method, system and device for speech codec negotiation in communication system	2007/10/24	EP20077802A	2007/04/17
13HU01-032-08	EP1848190	SE	EP-Designated	Method, system and device for speech codec negotiation in communication system	2007/10/24	EP20077802A	2007/04/17
13HU01-032-09	US7764953	US	Granted	Method, system and device for speech Codec negotiation in communication system	2010/07/27	US2007787527A	2007/04/17
13HU01-032-10	WO2007118380	WO	Lapsed	METHOD, SYSTEM AND DEVICE FOR NEGOTIATING VOICE CODING/DECODING IN COMMUNICATION SYSTEM	2007/10/25	WO2006CN3214A	2006/11/29
13HU01-033-01	CN101026653	CN	Granted	System and method for realizing colour image business	2011/08/24	CN200610057699.0	2006/02/24
13HU01-033-02	CN101156426	CN	Granted	System and method for implementing polychrome service	2011/02/16	CN200680011755.5	2006/11/01
13HU01-033-03	CN102394863	CN	Pending	System and method for realizing colour image business	2012/03/28	CN201110266055.3	2006/02/24
13HU01-033-04	EP1826985	DE	Granted	System and method for implementing multimedia calling line identification presentation service	2009/10/28	EP2007101173A	2007/01/25
13HU01-033-05	EP1826985	EP	PreCursor(EP)	System and method for implementing multimedia calling line identification	2009/10/28	EP2007101173A	2007/01/25

				presentation service			
13HU01-033-06	EP1826985	FR	Granted	System and method for implementing multimedia calling line identification presentation service	2009/10/28	EP2007101173A	2007/01/25
13HU01-033-07	EP1826985	GB	Granted	System and method for implementing multimedia calling line identification presentation service	2009/10/28	EP2007101173A	2007/01/25
13HU01-033-08	US20070201635	US	Pending	System and method for implementing multimedia calling line identification presentation service	2007/08/30	US11/698891	2007/01/29
13HU01-033-09	WO2007095802	WO	Lapsed	SYSTEM AND METHOD FOR REALIZING COLOR-IMAGE SERVICE	2007/08/30	WO2006CN2933A	2006/11/01
13HU01-034-01	CN100487788	CN	Granted	A method to realize the function of text-to-speech convert	2009/05/13	CN200510114277.8	2005/10/21
13HU01-034-02	EP1950737	DE	Granted	A METHOD, DEVICE AND SYSTEM FOR ACCOMPLISHING THE FUNCTION OF TEXT-TO-SPEECH CONVERSION	2010/05/26	EP2006805015A	2006/10/20
13HU01-034-03	EP1950737	EP	PreCursor(EP)	A METHOD, DEVICE AND SYSTEM FOR ACCOMPLISHING THE FUNCTION OF TEXT-TO-SPEECH CONVERSION	2010/05/26	EP2006805015A	2006/10/20
13HU01-034-04	EP1950737	GB	Granted	A METHOD, DEVICE AND SYSTEM FOR ACCOMPLISHING THE FUNCTION OF TEXT-TO-SPEECH CONVERSION	2010/05/26	EP2006805015A	2006/10/20
13HU01-034-05	US20080205279	US	Lapsed	Method, Apparatus and System for Accomplishing the Function of Text-to-Speech Conversion	2008/08/28	US2008106693A	2008/04/21
13HU01-034-06	WO2007045187	WO	Lapsed	A METHOD, APPARATUS AND SYSTEM FOR ACCOMPLISHING THE FUNCTION OF TEXT-TO-SPEECH CONVERSION	2007/04/26	WO2006CN2806A	2006/10/20
13HU01-035-01	CN101155148	CN	Granted	Media gateway issuing receiving multicast data to method, system and device	2012/02/22	CN200610140147.6	2006/09/30
13HU01-035-02	EP2068513	DE	Granted	METHOD, SYSTEM AND DEVICE FOR DISTRUBUTING AND RECEIVING THE MULTICAST DATA IN THE MEDIA GATEWAY	2010/11/24	EP2007816481A	2007/09/29
13HU01-035-03	EP2068513	EP	PreCursor(EP)	METHOD, SYSTEM AND DEVICE FOR DISTRUBUTING AND RECEIVING THE MULTICAST DATA IN THE MEDIA GATEWAY	2010/11/24	EP2007816481A	2007/09/29
13HU01-035-04	EP2068513	IT	Granted	METHOD, SYSTEM AND DEVICE FOR DISTRUBUTING AND	2010/11/24	EP2007816481A	2007/09/29

				RECEIVING THE MULTICAST DATA IN THE MEDIA GATEWAY			
13HU01-035-05	US7920579	US	Granted	Method, system and apparatus for media gateway to transmit and receive multicast data	2011/04/05	US2009413015A 12/413,015	2009/03/27
13HU01-035-06	WO2008040191	WO	Lapsed	METHOD, SYSTEM AND DEVICE FOR DISTRUBUTING AND RECEIVING THE MULTICAST DATA IN THE MEDIA GATEWAY	2008/04/10	WO2007CN2867A	2007/09/29
13HU01-036-01	CN101277343	CN	Granted	Method, terminal and system for implementing video binding in voice communication network	2012/01/04	CN200710095931.4	2007/03/30
13HU01-036-02	EP2120440	DE	Granted	A METHOD, TERMINAL AND SYSTEM FOR IMPLEMENTING VIDEO BINDING IN A VOICE COMMUNICATION NETWORK	2011/10/19	EP2008706632A	2008/02/03
13HU01-036-03	EP2120440	EP	PreCursor(EP)	A METHOD, TERMINAL AND SYSTEM FOR IMPLEMENTING VIDEO BINDING IN A VOICE COMMUNICATION NETWORK	2011/10/19	EP2008706632A	2008/02/03
13HU01-036-04	EP2120440	FR	Granted	A METHOD, TERMINAL AND SYSTEM FOR IMPLEMENTING VIDEO BINDING IN A VOICE COMMUNICATION NETWORK	2011/10/19	EP2008706632A	2008/02/03
13HU01-036-05	EP2120440	GB	Granted	A METHOD, TERMINAL AND SYSTEM FOR IMPLEMENTING VIDEO BINDING IN A VOICE COMMUNICATION NETWORK	2011/10/19	EP2008706632A	2008/02/03
13HU01-036-06	WO2008119272	WO	Lapsed	A METHOD, TERMINAL AND SYSTEM FOR IMPLEMENTING VIDEO BINDING IN A VOICE COMMUNICATION NETWORK	2008/10/09	WO2008CN70257A	2008/02/03
13HU01-037-01	CN101064680	CN	Granted	Method, system and apparatus for realizing multimedia calling service	2010/04/21	CN200610079110.7	2006/04/29
13HU01-037-02	EP2015592	DE	Granted	REALIZING A MULTIMEDIA CALL SERVICE	2012/07/11	EP2007720936A	2007/04/24
13HU01-037-03	EP2015592	EP	PreCursor(EP)	REALIZING A MULTIMEDIA CALL SERVICE	2012/07/11	EP2007720936A	2007/04/24
13HU01-037-04	EP2015592	GB	Granted	REALIZING A MULTIMEDIA CALL SERVICE	2012/07/11	EP2007720936A	2007/04/24
13HU01-037-05	WO2007124684	WO	Lapsed	A METHOD, SYSTEM AND APPARATUS FOR REALIZING MULTIMEDIA CALLING SERVICE	2007/11/08	WO2007CN1363A	2007/04/24
13HU01-038-01	CN100531267	CN	Granted	Method for realizing echo in communication system	2009/08/19	CN200510034345.X	2005/04/21
13HU01-038-02	EP1874016	EP	Lapsed	A METHOD FOR REALIZING RING BACK TONE IN COMMUNICATION SYSTEM	2008/01/02	EP2006741698A	2006/04/21
13HU01-038-03	US7986775	US	Granted	Method for realizing ring back tone in communication system	2011/07/26	US11/875195	2007/10/19

13HU01-038-04	WO2006111100	WO	Lapsed	A METHOD FOR REALIZING RING BACK TONE IN COMMUNICATION SYSTEM	2006/10/26	WO2006CN754A	2006/04/21
13HU01-039-01	CN1177508	CN	Granted	Method for implementing long-distance intelligent user roam calling	2004/11/24	CN2001123948A	2001/08/07
13HU01-039-02	CN1400843	CN	Lapsed	Method for implementing long-distance intelligent user roam calling	2003/03/05	CN2001123948A	2001/08/07
13HU01-039-03	EP1420605	EP	Lapsed	Implementing roaming call to foreign intelligent client	2007/11/28	EP2002719621A	2002/03/29
13HU01-039-04	RU2267865	RU	Lapsed	METHOD FOR CALLING EXTERNAL CLIENT OF INTELLECTUAL NETWORK IN ROAMING MODE	2006/01/10	RU2004104321A	2002/03/29
13HU01-039-05	US7349693	US	Granted	Method for implementing a call connection between a non-local calling subscriber and a local called subscriber who is an intelligent network subscriber	2008/03/25	US2003486322A 10486322	2002/03/29
13HU01-039-06	WO2003015437	WO	Lapsed	METHOD FOR ROAMING CALL IMPLEMENT TO FOREIGN INTELLIGENT CLIENT	2003/02/20	WO2002CN219A	2002/03/29

Unique ID	Patent Number	Country	Portfolio Status	Title	Issue / Publication Date	Application Number	Filing Date
13PA01-001-01	CN1173499	CN	Granted	Ofdma signal transmitting apparatus and method	2004/10/27	CN99800972	1999/05/28
13PA01-001-03	EP1001566	DE	EP-Designated	Ofdma signal transmitting apparatus and method	2000/05/17	EP99922578	1999/05/28
13PA01-001-02	EP1001566	EP	EP-Pending	Ofdma signal transmitting apparatus and method	2000/05/17	EP99922578	1999/05/28
13PA01-001-04	EP1001566	FR	EP-Designated	Ofdma signal transmitting apparatus and method	2000/05/17	EP99922578	1999/05/28
13PA01-001-05	EP1001566	GB	EP-Designated	Ofdma signal transmitting apparatus and method	2000/05/17	EP99922578	1999/05/28
13PA01-001-06	EP1001566	IT	EP-Designated	Ofdma signal transmitting apparatus and method	2000/05/17	EP99922578	1999/05/28
13PA01-001-07	EP1001566	NL	EP-Designated	Ofdma signal transmitting apparatus and method	2000/05/17	EP99922578	1999/05/28
13PA01-001-08	JP3515690	JP	Granted	Ofdma signal transmitter and its method	2004/04/05	JP15321498	1998/06/02
13PA01-001-09	US6726297	US	Granted	Ofdma signal transmission apparatus and method	2004/04/27	US09/462491	2000/01/20
13PA01-002-01	JP4864008	JP	Granted	Method of the carrier allotment in the multiple cell orthogonal frequency division multiple access system	2012/01/25	JP2007545294	2006/11/16
13PA01-002-02	US8009549	US	Granted	Carrier allocation method in multi cell orthogonal frequency division multiple access system	2011/08/30	US12/092950	2006/11/16
13PA01-003-01	EP1968335	DE	Granted	Radio communication base station device and pilot transmission method	2011/10/05	EP07706996	2007/01/18
13PA01-003-02	EP1968335	FR	Granted	Radio communication base station device and pilot transmission method	2011/10/05	EP07706996	2007/01/18
13PA01-003-03	EP1968335	GB	Granted	Radio communication base station device and pilot transmission method	2011/10/05	EP07706996	2007/01/18
13PA01-003-04	JP4832450	JP	Granted	Radio communication base station device and pilot transmission method	2011/12/07	JP2007554946	2007/01/18
13PA01-003-05	US8416810	US	Granted	Radio communication base station apparatus and pilot transmission method	2013/04/09	US12/160872	2007/01/18
13PA01-004-01	CN100440762	CN	Granted	Ofdm communication device	2008/12/03	CN01803504	2001/11/14
13PA01-004-02	DE60143934	DE	Granted	Ofdm nachrichtenÃƒÅ“bertragungsvorrichtung	2011/03/10	DE60143934	2001/11/14
13PA01-004-03	DE60143978	DE	Granted	Ofdm-kommunikationsvorrichtung	2011/03/10	DE60143978	2001/11/14
13PA01-004-05	EP1249955	FR	Granted	Ofdm communication device	2011/01/26	EP01982773	2001/11/14

13PA01-004-04	EP1249955	GB	Granted	Ofdm communication device	2011/01/26	EP01982773	2001/11/14
13PA01-004-07	EP2161867	FR	Granted	Ofdm communication device	2010/03/10	EP09178209	2001/11/14
13PA01-004-06	EP2161867	GB	Granted	Ofdm communication device	2010/03/10	EP09178209	2001/11/14
13PA01-004-08	JP4000057	JP	Granted	Ofdm communication device	2007/10/31	JP2002543837	2001/11/14
13PA01-004-09	US7646702	US	Granted	Ofdm communication apparatus	2010/01/12	US10/169716	2002/07/09
13PA01-004-10	US8238226	US	Granted	Ofdm communication apparatus	2012/08/07	US12/505420	2009/07/17
13PA01-005-01	CN100544237	CN	Granted	Radio base station apparatus	2009/09/23	CN03804886	2003/08/01
13PA01-005-02	DE60325861	DE	Granted	Funkbasisstationsvorrichtung	2009/03/05	DE60325861	2003/08/01
13PA01-005-03	EP1525687	FR	Granted	Radio base station apparatus	2009/01/14	EP03766690	2003/08/01
13PA01-005-04	EP1525687	GB	Granted	Radio base station apparatus	2009/01/14	EP03766690	2003/08/01
13PA01-005-05	JP4098027	JP	Granted	Radio base station apparatus	2008/06/11	JP2002224571	2002/08/01
13PA01-005-06	US7593317	US	Granted	Radio base station apparatus	2009/09/22	US10/503010	2004/07/29
13PA01-006-01	CN101133614	CN	Lapsed	Ofdm receiver, integrated circuit and receiving method	2011/06/29	CN200680006764	2006/02/28
13PA01-006-02	DE602006004975	DE	Lapsed	Ofdm-empfÃƒÂ¤nger und empfangsverfahren	2009/03/12	DE602006004975	2006/02/28
13PA01-006-03	EP1861977	FR	Lapsed	Ofdm receiver and receiving method	2009/01/21	EP06728642	2006/02/28
13PA01-006-04	EP1861977	GB	Lapsed	Ofdm receiver and receiving method	2009/01/21	EP06728642	2006/02/28
13PA01-006-05	EP1861977	IT	Lapsed	Ofdm receiver and receiving method	2009/01/21	EP06728642	2006/02/28
13PA01-006-06	JP4971172	JP	Granted	Receiving device, integrated circuit and reception method	2012/07/11	JP2007539403	2006/02/28
13PA01-006-07	US7929627	US	Granted	Ofdm receiver, integrated circuit and receiving method	2011/04/19	US11/885042	2006/02/28
13PA01-007-01	CN101080893	CN	Granted	Re-transmission method and transmitting device for multi-antenna transmission	2010/12/29	CN200580043160	2005/12/14
13PA01-007-02	EP1821440	EP	Lapsed	Retransmitting method and transmitting method in multi-antenna transmission	2007/08/22	EP05816694	2005/12/14
13PA01-007-03	JP4863884	JP	Granted	The retransmission method in multiple antenna transmitting	2012/01/25	JP2006548891	2005/12/14
13PA01-007-04	KR100912762	KR	Granted	Retransmitting method and transmitting method in multi-antenna transmission	2009/08/18	KR20077013565	2007/06/15
13PA01-007-05	US7826557	US	Granted	Retransmitting method and transmitting method in multi-antenna transmission	2010/11/02	US11/721911	2005/12/14

13PA01-008-01	EP1895679	DE	Granted	Mimo antenna apparatus controlling number of streams and modulation and demodulation method	2012/07/11	EP07115147	2007/08/29
13PA01-008-02	EP1895679	GB	Granted	Mimo antenna apparatus controlling number of streams and modulation and demodulation method	2012/07/11	EP07115147	2007/08/29
13PA01-008-03	JP4837638	JP	Granted	Mimo antenna apparatus and wireless communication apparatus having it	2011/12/14	JP2007222315	2007/08/29
13PA01-008-04	US7792084	US	Granted	Mimo antenna apparatus controlling number of streams and modulation and demodulation method	2010/09/07	US11/892886	2007/08/28
13PA01-009-01	JP4864000	JP	Granted	The radio communication base station device and the radio communication method in multiple carrier communicating	2012/01/25	JP2007529557	2006/08/04
13PA01-009-02	KR20080031377	KR	Lapsed	Wireless communication base station apparatus and wireless communication method in multicarrier communication	2008/04/08	KR20087002994	2008/02/04
13PA01-009-03	US8064393	US	Granted	Wireless communication base station apparatus and wireless communication method in multicarrier communication	2011/11/22	US11/997841	2006/08/04
13PA01-010-01	CN101502025	CN	Granted	Wireless communication base station device and wireless communication method	2012/11/28	CN200780028893	2007/10/12
13PA01-010-03	EP2051410	DE	EP-Designated	Wireless communication base station device and wireless communication method	2009/04/22	EP07829721	2007/10/12
13PA01-010-02	EP2051410	EP	EP-Pending	Wireless communication base station device and wireless communication method	2009/04/22	EP07829721	2007/10/12
13PA01-010-06	EP2051410	FI	EP-Designated	Wireless communication base station device and wireless communication method	2009/04/22	EP07829721	2007/10/12
13PA01-010-04	EP2051410	FR	EP-Designated	Wireless communication base station device and wireless communication method	2009/04/22	EP07829721	2007/10/12
13PA01-010-05	EP2051410	GB	EP-Designated	Wireless communication base station device and wireless communication method	2009/04/22	EP07829721	2007/10/12
13PA01-010-07	EP2051410	SE	EP-Designated	Wireless communication base station device and wireless communication method	2009/04/22	EP07829721	2007/10/12
13PA01-010-08	JP4903033	JP	Granted	Wireless communication base station device and wireless communication method	2012/03/21	JP2006344925	2006/12/21
13PA01-	US8270332	US	Granted	Wireless communication base	2012/09/18	US12/377373	2007/10/12

010-09				station device and wireless communication method			
13PA01-010-10	US8582573	US	Granted	Radio communication base station apparatus and radio communication method	2012/12/13	US13/590841	2012/08/21
13PA01-011-01	BR9906339	BR	Pending	"aparelho de comunicaÃ§Ã£o de rÃ¡dio e mÃ©todo de controle de coeficiente de transmissÃ£o"	2000/09/19	BR9906339	1999/04/19
13PA01-011-02	CA2293606	CA	Granted	Radio communication apparatus and transmission rate control method	2005/02/08	CA2293606	1999/04/19
13PA01-011-03	CN1130944	CN	Granted	Radio communication device and method for controlling transmission rate	2003/12/10	CN99800567	1999/04/19
13PA01-011-04	DE69903110	DE	Granted	FunkÃœbertragungsgerÃ„t und verfahren zur kontrolle der Ãœbertragungsrate	2003/01/23	DE69903110	1999/04/19
13PA01-011-05	DE69914351	DE	Granted	FunkkommunikationsgerÃ¤t und verfahren zur einstellung der Ãœbertragungsrate	2004/06/24	DE69914351	1999/04/19
13PA01-011-12	EP0986282	FI	Granted	Radio communication device and method of controlling transmission rate	2002/09/25	EP99913715	1999/04/19
13PA01-011-11	EP0986282	FR	Granted	Radio communication device and method of controlling transmission rate	2002/09/25	EP99913715	1999/04/19
13PA01-011-13	EP0986282	GB	Granted	Radio communication device and method of controlling transmission rate	2002/09/25	EP99913715	1999/04/19
13PA01-011-14	EP0986282	IT	Granted	Radio communication device and method of controlling transmission rate	2002/09/25	EP99913715	1999/04/19
13PA01-011-15	EP0986282	NL	Granted	Radio communication device and method of controlling transmission rate	2002/09/25	EP99913715	1999/04/19
13PA01-011-07	EP1122965	FI	Granted	Radio communication device and method of controlling transmission rate	2004/01/21	EP01106695	1999/04/19
13PA01-011-06	EP1122965	FR	Granted	Radio communication device and method of controlling transmission rate	2004/01/21	EP01106695	1999/04/19
13PA01-011-08	EP1122965	GB	Granted	Radio communication device and method of controlling transmission rate	2004/01/21	EP01106695	1999/04/19
13PA01-011-09	EP1122965	IT	Granted	Radio communication device and method of controlling transmission rate	2004/01/21	EP01106695	1999/04/19
13PA01-011-10	EP1122965	NL	Granted	Radio communication device and method of controlling transmission rate	2004/01/21	EP01106695	1999/04/19
13PA01-	ES2184430	ES	Granted	Dispositivo de comunicacion por	2003/04/01	ES99913715	1999/04/19

011-17				radio y procedimiento que permite ajustar la velocidad de transmision.			
13PA01-011-16	ES2214356	ES	Granted	Dispositivo de comunicacion por radio y metodo para controlar la velocidad de transmision.	2004/09/16	ES01106695	1999/04/19
13PA01-011-18	JP4738451	JP	Granted	Communication terminal apparatus and communication method therefor	2011/08/03	JP2008194038	2008/07/28
13PA01-011-21	US6366763	US	Granted	Radio communication device and method of controlling transmission rate	2002/04/02	US09/648756	2000/08/28
13PA01-011-22	US6370359	US	Granted	Radio communication device and method of controlling transmission rate	2002/04/09	US09/648757	2000/08/28
13PA01-011-20	US6381445	US	Granted	Radio communication device and method of controlling transmission rate	2002/04/30	US09/648742	2000/08/28
13PA01-011-19	US6400929	US	Granted	Radio communication device and method of controlling transmission rate	2002/06/04	US09/424843	1999/12/06
13PA01-011-23	US6487394	US	Granted	Radio communication device and method of controlling transmission rate	2002/11/26	US09/649003	2000/08/28
13PA01-011-25	US6505035	US	Granted	Radio communication apparatus and transmission rate control method	2003/01/07	US10/052261	2002/01/23
13PA01-011-24	US6597894	US	Granted	Radio communication device and method of controlling transmission rate	2003/07/22	US09/649006	2000/08/28
13PA01-011-27	US6611676	US	Granted	Radio communication apparatus and transmission rate control method	2003/08/26	US10/083553	2002/02/27
13PA01-011-26	US6973289	US	Granted	Radio communication device and method of controlling transmission rate	2005/12/06	US10/057897	2002/01/29
13PA01-011-28	US7636551	US	Granted	Radio communication device and method of controlling transmission rate	2009/12/22	US11/228339	2005/09/19
13PA01-012-01	US6637001	US	Granted	Apparatus and method for image/voice transmission	2003/10/21	US09/650743	2000/08/30
13PA01-013-01	AU2407202	AU	Lapsed	Decoder and decoding method	2002/06/11	AU2407202	2001/11/22
13PA01-013-02	CN1266868	CN	Granted	Communication terminal device and decoding method	2006/07/26	CN01804109	2001/11/22
13PA01-013-03	JP3399923	JP	Granted	Decoding device and decoding method	2003/04/28	JP2000362431	2000/11/29
13PA01-013-05	US20050002477	US	Lapsed	Decoding apparatus and decoding method	2005/01/06	US10/901380	2004/07/29
13PA01-013-04	US6813323	US	Granted	Decoding method and communication terminal apparatus	2004/11/02	US10/182270	2002/07/25

13PA01-014-03	JP3492637	JP	Granted	Decoding device and decoding method	2004/02/03	JP2001046559	2001/02/22
13PA01-014-01	JP3522700	JP	Granted	Channel detecting apparatus and method therefor	2004/04/26	JP2001023713	2001/01/31
13PA01-014-02	JP3526271	JP	Granted	Decoding device and decoding method	2004/05/10	JP2001031850	2001/02/08
13PA01-014-04	KR100727732	KR	Granted	Decoding device and decoding method	2007/06/13	KR20057021280	2005/11/09
13PA01-014-08	US20050219071	US	Lapsed	Apparatus and method for decoding	2005/10/06	US11/134448	2005/05/23
13PA01-014-05	US6734810	US	Granted	Apparatus and method for decoding	2004/05/11	US10/221267	2002/09/10
13PA01-014-07	US6922159	US	Granted	Apparatus and method for decoding	2005/07/26	US10/793766	2004/03/08
13PA01-014-06	US6940428	US	Granted	Apparatus and method for decoding	2005/09/06	US10/793737	2004/03/08
13PA01-015-01	CN1114324	CN	Granted	Base station, mobile unit communication apparatus and method of communication between them	2003/07/09	CN97119237	1997/09/30
13PA01-015-02	DE69708823	DE	Granted	Spreizspektrum-verfahren und system zur ÃƒÅ“bertragung zwischen einer basisstation und einer vielzahl von mobilen stationen	2002/06/20	DE69708823	1997/10/01
13PA01-015-03	EP0836288	FI	Granted	Spread-spectrum method and system for communication between a base station and a plurality of mobile units	2001/12/05	EP97307725	1997/10/01
13PA01-015-04	EP0836288	FR	Granted	Spread-spectrum method and system for communication between a base station and a plurality of mobile units	2001/12/05	EP97307725	1997/10/01
13PA01-015-05	EP0836288	GB	Granted	Spread-spectrum method and system for communication between a base station and a plurality of mobile units	2001/12/05	EP97307725	1997/10/01
13PA01-015-06	EP0836288	SE	Granted	Spread-spectrum method and system for communication between a base station and a plurality of mobile units	2001/12/05	EP97307725	1997/10/01
13PA01-015-07	JP3720141	JP	Granted	Mobile communication method and its system	2005/11/24	JP26062596	1996/10/01
13PA01-015-08	US6069884	US	Granted	Method of communication between a base station and a plurality of mobile unit communication apparatus, a base station, and mobile unit communication apparatus	2000/05/30	US08/937005	1997/09/24
13PA01-016-01	AU710430	AU	Granted	Base station equipment for mobile communication	1999/09/23	AU4320797	1997/09/25
13PA01-	CA2238358	CA	Granted	Base station apparatus for	2001/12/04	CA2238358	1997/09/25

016-02				mobile communication			
13PA01-016-03	CN1175592	CN	Granted	Base station equipment for mobile communication	2004/11/10	CN97191312	1997/09/25
13PA01-016-04	DE69721224	DE	Granted	Verfahren fÃœr sanftes weiterreichen in einer basisstation mit sektoren und basisstation dafÃœr	2003/11/13	DE69721224	1997/09/25
13PA01-016-05	EP0869629	FR	Granted	Soft handover method in a sectored base station and base station therefor	2003/04/23	EP97941232	1997/09/25
13PA01-016-06	EP0869629	GB	Granted	Soft handover method in a sectored base station and base station therefor	2003/04/23	EP97941232	1997/09/25
13PA01-016-07	EP0869629	IT	Granted	Soft handover method in a sectored base station and base station therefor	2003/04/23	EP97941232	1997/09/25
13PA01-016-08	EP0869629	NL	Granted	Soft handover method in a sectored base station and base station therefor	2003/04/23	EP97941232	1997/09/25
13PA01-016-09	JP4098833	JP	Granted	Mobile communication base station device	2008/06/11	JP51549798	1997/09/25
13PA01-016-10	US6119004	US	Granted	Base station equipment for mobile communication	2000/09/12	US09/068541	1998/05/13
13PA01-017-01	CN1100464	CN	Granted	Differential detector with error correcting function	2003/01/29	CN98105319	1998/02/20
13PA01-017-02	DE69818323	DE	Granted	Differential-detektor mit fehlerkorrekturfunktion	2004/07/01	DE69818323	1998/02/11
13PA01-017-03	EP0860964	FR	Granted	Differential detector with error correcting function	2003/09/24	EP98301000	1998/02/11
13PA01-017-04	EP0860964	GB	Granted	Differential detector with error correcting function	2003/09/24	EP98301000	1998/02/11
13PA01-017-05	JP3468657	JP	Lapsed	Delay detector with error correction	2003/11/17	JP5251497	1997/02/21
13PA01-017-06	US6069924	US	Granted	Differential detector with error correcting function	2000/05/30	US09/027510	1998/02/20
13PA01-018-01	CN1262083	CN	Granted	Cdma radio communication system and its method	2006/06/28	CN99110630	1999/07/23
13PA01-018-02	DE69936019	DE	Granted	Cdma-funkÃ¼bertragungssystem und -verfahren	2007/08/30	DE69936019	1999/07/21
13PA01-018-04	EP0975118	ES	Lapsed	Cdma radio communication system and method	2007/05/09	EP99114151	1999/07/21
13PA01-018-05	EP0975118	FR	Granted	Cdma radio communication system and method	2007/05/09	EP99114151	1999/07/21
13PA01-018-06	EP0975118	GB	Granted	Cdma radio communication system and method	2007/05/09	EP99114151	1999/07/21
13PA01-018-07	EP0975118	IT	Lapsed	Cdma radio communication system and method	2007/05/09	EP99114151	1999/07/21
13PA01-018-08	EP0975118	SE	Lapsed	Cdma radio communication system and method	2007/05/09	EP99114151	1999/07/21
13PA01-	EP1826938 - DIV	EP	Lapsed	Cdma radio communication	2007/08/29	EP07105867	1999/07/21

018-03				system and method			
13PA01-018-10	JP3411850	JP	Granted	Cdma radio communication system	2003/06/03	JP9142999	1999/03/31
13PA01-018-09	JP3411854	JP	Granted	Cdma radio communication system and method	2003/06/03	JP19480599	1999/07/08
13PA01-018-12	US20040048578	US	Lapsed	Cdma radio transmission apparatus, cdma radio reception apparatus, and cdma radio communication method	2004/03/11	US10/419089	2003/04/21
13PA01-018-11	US6636723	US	Granted	Cdma radio communication system using chip interleaving	2003/10/21	US09/359020	1999/07/22
13PA01-019-02	CN1086524	CN	Granted	Switching over method for cdma system and base station of mobile station	2002/06/19	CN98106939	1998/04/15
13PA01-019-01	CN1170388	CN	Granted	Commutation method in cdma	2004/10/06	CN02105576	1998/04/15
13PA01-019-03	DE69817904	DE	Granted	Weiterreichen verfahren in einem spreizspektrumÃ¼betragungseinrichtung	2004/05/19	DE69817904	1998/04/14
13PA01-019-04	DE69824054	DE	Granted	Spreizspectrumkommunikations system	2004/09/09	DE69824054	1998/04/14
13PA01-019-09	EP0873034	FR	Granted	Handover method in a spread spectrum communication system	2003/09/10	EP98106758	1998/04/14
13PA01-019-10	EP0873034	GB	Granted	Handover method in a spread spectrum communication system	2003/09/10	EP98106758	1998/04/14
13PA01-019-11	EP0873034	NL	Granted	Handover method in a spread spectrum communication system	2003/09/10	EP98106758	1998/04/14
13PA01-019-12	EP0873034	SE	Granted	Handover method in a spread spectrum communication system	2003/09/10	EP98106758	1998/04/14
13PA01-019-05	EP1304899	FR	Granted	Spread spectrum communication system	2004/05/19	EP02026952	1998/04/14
13PA01-019-06	EP1304899	GB	Granted	Spread spectrum communication system	2004/05/19	EP02026952	1998/04/14
13PA01-019-07	EP1304899	NL	Granted	Spread spectrum communication system	2004/05/19	EP02026952	1998/04/14
13PA01-019-08	EP1304899	SE	Granted	Spread spectrum communication system	2004/05/19	EP02026952	1998/04/14
13PA01-019-13	KR100371837	KR	Granted	Hand-over method, mobile station apparatus and base station apparatus	2003/01/28	KR20020030497	2002/05/31
13PA01-019-14	US6628630	US	Granted	Spread spectrum communication method	2003/09/30	US09/058881	1998/04/13
13PA01-020-01	JP9271070	JP	Non-applicable	Digital mobile object communication equipment	1997/10/14	JP7642396	1996/03/29
13PA01-020-02	US6404778	US	Granted	Radio communication apparatus	2002/06/11	US09/159602	1998/09/24

13PA01-021-01	CN1134128	CN	Granted	Cdma/tdd mobile communication system and method	2004/01/07	CN99103968	1999/03/09
13PA01-021-02	DE69927200	DE	Granted	Cdma/tdd mobiles kommunikationssystem und verfahren	2006/01/12	DE69927200	1999/03/04
13PA01-021-03	DE69942350	DE	Granted	Cdma/tdd mobilstation und verfahren	2010/06/17	DE69942350	1999/03/04
13PA01-021-07	EP0948221	FR	Granted	Cdma/tdd mobile communication system and method	2005/09/14	EP99102882	1999/03/04
13PA01-021-08	EP0948221	GB	Granted	Cdma/tdd mobile communication system and method	2005/09/14	EP99102882	1999/03/04
13PA01-021-09	EP0948221	IT	Granted	Cdma/tdd mobile communication system and method	2005/09/14	EP99102882	1999/03/04
13PA01-021-04	EP1578163	FR	Granted	Cdma/tdd mobile station and method	2010/05/05	EP05013391	1999/03/04
13PA01-021-05	EP1578163	GB	Granted	Cdma/tdd mobile station and method	2010/05/05	EP05013391	1999/03/04
13PA01-021-06	EP1578163	IT	Granted	Cdma/tdd mobile station and method	2010/05/05	EP05013391	1999/03/04
13PA01-021-11	ES2248932	ES	Granted	Sistema de comunicacion movil cdma/tdd y metodo.	2006/03/16	ES99102882	1999/03/04
13PA01-021-10	ES2343414	ES	Granted	Estacion movil cdma/tdd y metodo.	2010/07/30	ES05013391	1999/03/04
13PA01-021-12	JP3881770	JP	Granted	System and method for time division duplex cdma mobile communication	2007/02/14	JP7831798	1998/03/10
13PA01-021-13	US6611509	US	Granted	Cdma/tdd mobile communication system and method	2003/08/26	US09/264826	1999/03/09
13PA01-021-14	US6807162	US	Granted	Cdma/tdd mobile communication system and method	2004/10/19	US10/166268	2002/06/11
13PA01-021-15	US6973065	US	Granted	Cdma/tdd mobile communication system and method	2005/12/06	US10/419733	2003/04/22
13PA01-021-16	US7778224	US	Granted	Cdma/tdd mobile communication system and method	2010/08/17	US10/885684	2004/07/08
13PA01-022-01	CN100413233	CN	Granted	Communication terminal device and base station device	2008/08/20	CN00131890	2000/07/05
13PA01-022-02	DE60026907	DE	Granted	KommunikationsendgerÃ¤tvorrichtung und basisstationvorrichtung	2006/08/17	DE60026907	2000/07/04
13PA01-022-03	DE60043953	DE	Granted	Cdma-sender und -empfÃ¤nger unter verwendung von midambles	2010/04/15	DE60043953	2000/07/04
13PA01-022-04	EP1067723	FR	Granted	Communication terminal apparatus and base station	2006/03/29	EP00114318	2000/07/04

				apparatus			
13PA01-022-05	EP1067723	GB	Granted	Communication terminal apparatus and base station apparatus	2006/03/29	EP00114318	2000/07/04
13PA01-022-06	EP1067723	SE	Lapsed	Communication terminal apparatus and base station apparatus	2006/03/29	EP00114318	2000/07/04
13PA01-022-07	EP1667337	FR	Granted	Cdma transmitter and receiver using midambles	2010/03/03	EP06001107	2000/07/04
13PA01-022-08	EP1667337	GB	Granted	Cdma transmitter and receiver using midambles	2010/03/03	EP06001107	2000/07/04
13PA01-022-09	EP1667337	SE	Granted	Cdma transmitter and receiver using midambles	2010/03/03	EP06001107	2000/07/04
13PA01-022-10	JP2001024556	JP	Lapsed	Communication device	2001/01/26	JP19005099	1999/07/05
13PA01-022-11	JP2001257626	JP	Lapsed	Communication unit and communication method	2001/09/21	JP2000068426	2000/03/13
13PA01-022-12	JP3748351	JP	Granted	Communication equipment and communication method	2006/02/22	JP33139199	1999/11/22
13PA01-022-13	KR20010015160	KR	Non-applicable	Communication device	2001/02/26	KR20000037971	2000/07/04
13PA01-022-14	US6765894	US	Granted	Communication terminal apparatus and base station apparatus	2004/07/20	US09/606906	2000/06/30
13PA01-022-15	US7656844	US	Granted	Radio transmission apparatus and radio reception apparatus in a cdma communication system	2010/02/02	US10/868029	2004/06/16
13PA01-022-16	US8437316	US	Granted	Radio transmission apparatus and radio reception apparatus in a cdma communication system	2013/05/07	US12/641177	2009/12/17
13PA01-023-01	CN1233119	CN	Granted	Wireless communication device and wireless communication method	2005/12/21	CN00119928	2000/07/03
13PA01-023-02	EP1065804	EP	Lapsed	Transmission/reception apparatus	2001/01/03	EP00113933	2000/06/30
13PA01-023-03	JP3678944	JP	Granted	Transmitter-receiver	2005/08/03	JP18952099	1999/07/02
13PA01-023-04	KR20010015127	KR	Granted	Transmitter-receiver	2001/02/26	KR20000037494	2000/07/01
13PA01-023-05	US6839335	US	Granted	Radio communication apparatus and radio communication method	2005/01/04	US09/605862	2000/06/29
13PA01-024-01	CA2316782	CA	Granted	Apparatus and method for transmission/reception	2012/08/21	CA2316782	1999/11/08
13PA01-024-02	CN1248438	CN	Granted	Transmitting / receiving device and transmitting / receiving method	2006/03/29	CN99801989	1999/11/08
13PA01-024-03	EP1043858	DE	Granted	Transmitting/receiving device and transmitting/receiving method	2011/08/17	EP99954417	1999/11/08
13PA01-	EP1043858	FR	Granted	Transmitting/receiving device	2011/08/17	EP99954417	1999/11/08

024-04				and transmitting/receiving method			
13PA01-024-05	EP1043858	GB	Granted	Transmitting/receiving device and transmitting/receiving method	2011/08/17	EP99954417	1999/11/08
13PA01-024-06	IL137058	IL	Granted	Apparatus and method for transmission/reception	2001/06/14	IL13705899	1999/11/08
13PA01-024-07	JP2000201132	JP	Lapsed	Transmitter-receiver	2000/07/18	JP22082799	1999/08/04
13PA01-024-11	KR388400	KR	Granted	Apparatus and method for transmission/reception	2003/06/09	KR2000-7007459	1999/11/08
13PA01-024-12	KR611866	KR	Granted	Apparatus and method for transmission/reception	2006/08/04	KR2003-7000348	2003/01/10
13PA01-024-08	NO332385	NO	Granted	Fremgangsmate og apparat for sending/mottaking	2012/09/10	NO20003476	2000/07/05
13PA01-024-09	US7072416	US	Granted	Transmitting/receiving device and transmitting/receiving method	2006/07/04	US09/582558	2000/06/29
13PA01-024-10	US7760815	US	Granted	Apparatus and method for transmission/reception	2010/07/20	US11/431606	2006/05/11
13PA01-025-01	CN1281009	CN	Granted	Apparatus and method for orthogonal frequency division multiplexing communication	2006/10/18	CN00126839	2000/09/06
13PA01-025-02	DE60041618	DE	Granted	MehrtrÃƒÂ¤gerempfÃƒÂ¤nger mit auswÃƒÂ¤hlbaren demodulatoren	2009/04/09	DE60041618	2000/09/06
13PA01-025-03	EP1083718	FR	Granted	Multicarrier receiver with selectable demodulators	2009/02/25	EP00119285	2000/09/06
13PA01-025-04	EP1083718	GB	Granted	Multicarrier receiver with selectable demodulators	2009/02/25	EP00119285	2000/09/06
13PA01-025-05	EP1083718	SE	Granted	Multicarrier receiver with selectable demodulators	2009/02/25	EP00119285	2000/09/06
13PA01-025-06	JP2001077790	JP	Precursor	Ofdm communication equipment	2001/03/23	JP25363399	1999/09/07
13PA01-025-07	JP3796076	JP	Granted	Ofdm communication equipment	2006/07/12	JP25363399	1999/09/07
13PA01-025-08	KR20010050345	KR	Non-applicable	Ofdm communication equipment	2001/06/15	KR20000052621	2000/09/06
13PA01-025-09	US6868056	US	Granted	Apparatus and method for ofdm communication	2005/03/15	US09/635096	2000/08/09
13PA01-026-01	CN1153392	CN	Granted	Interference signal removing device and interference signal removing method	2004/06/09	CN01800054	2001/01/15
13PA01-026-02	DE60114511	DE	Granted	Verfahren und vorrichtung zur beseitigung von stÃƒâ€“rsignalen	2006/06/01	DE60114511	2001/01/15
13PA01-026-03	EP1164735	FR	Granted	Interference signal removing device and interference signal removing method	2005/11/02	EP01900770	2001/01/15
13PA01-026-04	EP1164735	GB	Granted	Interference signal removing device and interference signal removing method	2005/11/02	EP01900770	2001/01/15

13PA01-026-05	JP3515033	JP	Granted	Interference signal elimination device and interference signal elimination method	2004/04/05	JP2000010877	2000/01/19
13PA01-026-06	US6944208	US	Granted	Interference signal canceling apparatus and interference signal canceling method	2005/09/13	US09/936727	2001/09/17
13PA01-027-01	CN1174643	CN	Granted	Combined signalling and signal interference ratio internal ring power control	2004/11/03	CN01102993	2001/02/13
13PA01-027-02	CN1315810	CN	Lapsed	Combined signalling and signal interference ratio internal ring power control	2001/10/03	CN01102993	2001/02/13
13PA01-027-03	DE60045506	DE	Granted	Sendeleistungsregelung mittels einer inneren schleife	2011/02/24	DE60045506	2000/11/21
13PA01-027-04	EP1139580	FR	Granted	Inner-loop power control	2011/01/12	EP00310315	2000/11/21
13PA01-027-05	EP1139580	GB	Granted	Inner-loop power control	2011/01/12	EP00310315	2000/11/21
13PA01-027-06	EP1139580	IT	Granted	Inner-loop power control	2011/01/12	EP00310315	2000/11/21
13PA01-027-07	ES2358388	ES	Granted	Control de potencia de lazo interno.	2011/05/10	ES00310315	2000/11/21
13PA01-027-08	US6781973	US	Granted	Combined signaling and sir inner-loop power control	2004/08/24	US09/538888	2000/03/30
13PA01-028-01	CN1181625	CN	Granted	Communication terminal device and transmit power control method	2004/12/22	CN00802695	2000/11/27
13PA01-028-03	EP1146668	DE	EP-Designated	Communication terminal, base station system, and method of controlling transmission power	2001/10/17	EP00977949	2000/11/27
13PA01-028-02	EP1146668	EP	EP-Pending	Communication terminal, base station system, and method of controlling transmission power	2001/10/17	EP00977949	2000/11/27
13PA01-028-04	EP1146668	FR	EP-Designated	Communication terminal, base station system, and method of controlling transmission power	2001/10/17	EP00977949	2000/11/27
13PA01-028-05	EP1146668	GB	EP-Designated	Communication terminal, base station system, and method of controlling transmission power	2001/10/17	EP00977949	2000/11/27
13PA01-028-06	JP3583343	JP	Granted	Communication terminal, base station unit and transmission power control method	2004/11/04	JP2000076032	2000/03/17
13PA01-028-07	US7145886	US	Granted	Communication terminal, base station system, and method of controlling transmission power	2006/12/05	US09/889919	2001/07/25
13PA01-029-01	AU6789101	AU	Lapsed	Base station unit and method for radio communication	2002/01/14	AU6789101	2001/07/02
13PA01-029-02	CN1148895	CN	Granted	Base station unit and method for radio communication	2004/05/05	CN01801884	2001/07/02
13PA01-029-03	CN1276596	CN	Granted	Base station apparatus and radio communication method	2006/09/20	CN200410007371	2001/07/02

13PA01-029-04	DE60117263	DE	Granted	Basisstationseinheit und verfahren zur funkkommunikation	2006/07/27	DE60117263	2001/07/02
13PA01-029-05	DE60121055	DE	Granted	Basisstationsvorrichtung und funkkommunikationsverfahren zur hochgeschwindigkeitsdatenÃ¼bertragung	2006/11/09	DE60121055	2001/07/02
13PA01-029-06	EP1209824	FR	Granted	Base station unit and method for radio communication	2006/02/15	EP01945745	2001/07/02
13PA01-029-07	EP1209824	GB	Granted	Base station unit and method for radio communication	2006/02/15	EP01945745	2001/07/02
13PA01-029-08	EP1437841	FR	Granted	Base station apparatus and radio communication method for high-speed data communication	2006/06/21	EP04003162	2001/07/02
13PA01-029-09	EP1437841	GB	Granted	Base station apparatus and radio communication method for high-speed data communication	2006/06/21	EP04003162	2001/07/02
13PA01-029-11	JP4359218	JP	Granted	Base station system and radio communication method	2009/11/04	JP2004293911	2004/10/06
13PA01-029-10	JP4409793	JP	Granted	Base station equipment and method for radio communication	2010/02/03	JP2001200184	2001/06/29
13PA01-029-12	US6847828	US	Granted	Base station apparatus and radio communication method	2005/01/25	US10/069484	2002/02/27
13PA01-029-13	US7386321	US	Granted	Base station apparatus and radio communication method	2008/06/10	US10/793738	2004/03/08
13PA01-030-01	CN1174588	CN	Granted	Grouping receiver and transmission method thereof	2004/11/03	CN02119390	2002/05/15
13PA01-030-02	DE60208466	DE	Granted	Verfahren und vorrichtung zur fehlerkorrektur der statischen informationen im kopffeld eines empfangenen packets	2006/07/13	DE60208466	2002/05/15
13PA01-030-03	EP1261184	FR	Granted	Method and device for error correction in the static header information of a received packet	2006/01/04	EP02010884	2002/05/15
13PA01-030-04	EP1261184	GB	Granted	Method and device for error correction in the static header information of a received packet	2006/01/04	EP02010884	2002/05/15
13PA01-030-05	JP3512177	JP	Granted	Packet receiver and packet transmission method	2004/03/29	JP2001146281	2001/05/16
13PA01-030-06	US7266118	US	Granted	Packet receiving apparatus and packet transmission method	2007/09/04	US10/143989	2002/05/14
13PA01-031-01	AT279085	AT	Lapsed	Funkkommunikationssystem, basisstationsgerÃ„t sowie ein in dem system aufgenommenes kommunikationsendgerÃ„t	2004/10/15	AT01999126	2001/11/27
13PA01-031-02	AT308864	AT	Lapsed	Funkkommunikationssystem, basisstation und kommunikationsendgerÃ„t	2005/11/15	AT03025316	2001/11/27

13PA01-031-03	AU2410802	AU	Lapsed	Radio communication system, base station device and communication terminal accommodated in the system	2002/06/11	AU2410802	2001/11/27
13PA01-031-04	CN1288939	CN	Granted	Radio communication system, base station device and communication terminal accommodated in the system	2006/12/06	CN01804070	2001/11/27
13PA01-031-05	CZ20022591	CZ	Lapsed	Wireless communication system and apparatus for a base station and communication terminal apparatus applied within the system	2003/03/12	CZ20022591	2001/11/27
13PA01-031-06	DE60106196	DE	Granted	Funkkommunikationssystem, basisstationsgerÃ„t sowie ein in dem system aufgenommenes kommunikationsendgerÃ„t	2005/02/17	DE60106196	2001/11/27
13PA01-031-07	DE60114671	DE	Granted	Funkkommunikationssystem, basisstation und kommunikationsendgerÃ¤t	2006/04/20	DE60114671	2001/11/27
13PA01-031-13	EP1246492	FI	Granted	Radio communication system, base station device and communication terminal accommodated in the system	2004/10/06	EP01999126	2001/11/27
13PA01-031-12	EP1246492	FR	Granted	Radio communication system, base station device and communication terminal accommodated in the system	2004/10/06	EP01999126	2001/11/27
13PA01-031-11	EP1246492	GB	Granted	Radio communication system, base station device and communication terminal accommodated in the system	2004/10/06	EP01999126	2001/11/27
13PA01-031-10	EP1246492	IT	Granted	Radio communication system, base station device and communication terminal accommodated in the system	2004/10/06	EP01999126	2001/11/27
13PA01-031-09	EP1246492	NL	Granted	Radio communication system, base station device and communication terminal accommodated in the system	2004/10/06	EP01999126	2001/11/27
13PA01-031-08	EP1246492	SE	Granted	Radio communication system, base station device and communication terminal accommodated in the system	2004/10/06	EP01999126	2001/11/27
13PA01-031-14	EP1387597	FR	Granted	Radio communication system, base station and communication terminal	2005/11/02	EP03025316	2001/11/27
13PA01-031-15	EP1387597	GB	Granted	Radio communication system, base station and communication terminal	2005/11/02	EP03025316	2001/11/27
13PA01-031-16	ES2230395	ES	Granted	Sistema de radiocomunicacion que comprende un dispositivo	2005/05/01	ES01999126	2001/11/27

				de estacion base y un terminal de comunicacion.			
13PA01-031-17	JP3691383	JP	Granted	Radio communication system, base station device and communication terminal accommodated in the system	2005/09/07	JP2000363649	2000/11/29
13PA01-031-18	US7133379	US	Granted	Wireless communication system, and base station apparatus and communication terminal apparatus accommodated in the system	2006/11/07	US10/181349	2002/07/17
13PA01-032-01	AU1745202	AU	Lapsed	Radio base station apparatus and radio communication method	2002/07/01	AU1745202	2001/12/19
13PA01-032-02	BR0108503	BR	Lapsed	Aparelho de estaÃ§Ã£o de base sem fio e mÃ©todo de comunicaÃ§Ã£o sem fio	2002/12/24	BR0108503	2001/12/19
13PA01-032-03	CA2400990	CA	Lapsed	Wireless base station apparatus and wireless communication method	2010/10/19	CA2400990	2001/12/19
13PA01-032-05	CN100534005	CN	Granted	Wireless base station apparatus and wireless communication method	2009/08/26	CN200510088453	2001/12/19
13PA01-032-04	CN1162989	CN	Granted	Radio base station device and radio communication method	2004/08/18	CN01805368	2001/12/19
13PA01-032-06	CZ20022827	CZ	Lapsed	Apparatus for wireless base station and wireless communication method	2003/02/12	CZ20022827	2001/12/19
13PA01-032-07	DE60117694	DE	Lapsed	Funk-basisstationsvorrichtung und funk-kommunikationsverfahren	2006/10/05	DE60117694	2001/12/19
13PA01-032-08	EP1249949	FR	Lapsed	Radio base station apparatus and radio communication method	2006/03/08	EP01271705	2001/12/19
13PA01-032-09	EP1249949	GB	Lapsed	Radio base station apparatus and radio communication method	2006/03/08	EP01271705	2001/12/19
13PA01-032-10	JP2002190757	JP	Precursor	Radio base station equipment and radio communication method	2002/07/05	JP2000389473	2000/12/21
13PA01-032-11	JP3679000	JP	Granted	Radio base station equipment and radio communication method	2005/08/03	JP2000389473	2000/12/21
13PA01-032-12	KR100567502	KR	Lapsed	Radio transmission apparatus and radio transmission method	2006/04/03	KR20057005182	2005/03/25
13PA01-032-13	US7392019	US	Granted	Wireless base station apparatus and wireless communication method	2008/06/24	US11/053837	2005/02/10
13PA01-033-01	CN1224207	CN	Granted	Method and apparatus for automatic request repeat of sending and receiving	2005/10/19	CN02142556	2002/08/22
13PA01-	DE60104113	DE	Granted	ÃƒÅ“bertragungsverfahren und	2004/10/28	DE60104113	2001/08/22

033-02				ÃƒÅ“bertragungsgerÃƒÂ¤t mit mehrkanal-arq			
13PA01-033-03	EP1286491	FR	Granted	Multichannel arq method and apparatus	2004/06/30	EP01120182	2001/08/22
13PA01-033-04	EP1286491	GB	Granted	Multichannel arq method and apparatus	2004/06/30	EP01120182	2001/08/22
13PA01-033-05	JP3650383	JP	Granted	Transmitter, receiver and arq transmitting and receiving method	2005/05/18	JP2002241027	2002/08/21
13PA01-033-06	KR100494251	KR	Granted	Arq transmission and reception methods and apparatus	2005/06/13	KR20020049754	2002/08/22
13PA01-033-07	US7339949	US	Granted	Arq transmission and reception methods and apparatus	2008/03/04	US10/222989	2002/08/19
13PA01-034-01	CN1319307	CN	Granted	Transmission/reception apparatus and transmission/reception method	2007/05/30	CN02820398	2002/08/07
13PA01-034-02	DE60239543	DE	Granted	Sende-empfangs-vorrichtung und sende-empfangs-verfahren	2011/05/05	DE60239543	2002/08/07
13PA01-034-03	EP1422861	FR	Granted	Transmission / reception apparatus and transmission / reception method	2011/03/23	EP02755868	2002/08/07
13PA01-034-04	EP1422861	GB	Granted	Transmission / reception apparatus and transmission / reception method	2011/03/23	EP02755868	2002/08/07
13PA01-034-05	JP3880437	JP	Granted	Transmission/reception apparatus and transmission/ reception method	2007/02/14	JP2002113607	2002/04/16
13PA01-034-06	US7702025	US	Granted	Transmission/reception apparatus and transmission/reception method	2010/04/20	US10/487574	2004/02/25
13PA01-035-01	CN1224293	CN	Granted	Dispatching device, base station device and wireless communication method	2005/10/19	CN02804809	2002/11/11
13PA01-035-03	EP1365617	DE	Granted	Schedule creation apparatus, base station apparatus, and radio communication method	2012/05/09	EP02780065	2002/11/11
13PA01-035-02	EP1365617	FR	Granted	Schedule creation apparatus, base station apparatus, and radio communication method	2012/05/09	EP02780065	2002/11/11
13PA01-035-04	EP1365617	GB	Granted	Schedule creation apparatus, base station apparatus, and radio communication method	2012/05/09	EP02780065	2002/11/11
13PA01-035-05	JP3576525	JP	Granted	Schedule maker, base station device, and radio communication method	2004/10/13	JP2001345444	2001/11/09
13PA01-035-06	US7460502	US	Granted	Scheduling creation apparatus, base station apparatus, and radio communication method	2008/12/02	US10/250487	2003/07/03
13PA01-036-01	CN100514895	CN	Granted	Method of data retransmission in multi-carrier transmission and communication apparatus having data retransmission	2009/07/15	CN03800915	2003/03/19

				control device			
13PA01-036-03	EP1492258	DE	EP-Designated	Method of data retransmission in multi-carrier transmission and communication apparatus having data retransmission control device	2010/08/11	EP03710414	2003/03/19
13PA01-036-02	EP1492258	EP	EP-Pending	Method of data retransmission in multi-carrier transmission and communication apparatus having data retransmission control device	2010/08/11	EP03710414	2003/03/19
13PA01-036-06	EP1492258	FI	EP-Designated	Method of data retransmission in multi-carrier transmission and communication apparatus having data retransmission control device	2010/08/11	EP03710414	2003/03/19
13PA01-036-04	EP1492258	FR	EP-Designated	Method of data retransmission in multi-carrier transmission and communication apparatus having data retransmission control device	2010/08/11	EP03710414	2003/03/19
13PA01-036-05	EP1492258	GB	EP-Designated	Method of data retransmission in multi-carrier transmission and communication apparatus having data retransmission control device	2010/08/11	EP03710414	2003/03/19
13PA01-036-07	EP1492258	SE	EP-Designated	Method of data retransmission in multi-carrier transmission and communication apparatus having data retransmission control device	2010/08/11	EP03710414	2003/03/19
13PA01-036-08	JP4287751	JP	Granted	The data retransmission method in multiple carrier transmitting and the communication device which has the data retransmission control control equipment	2009/07/01	JP2003581390	2003/03/19
13PA01-036-09	US7269774	US	Granted	Data receiving apparatus, data transmitting apparatus and retransmission request method	2007/09/11	US10/484951	2004/01/28
13PA01-037-01	CN1266982	CN	Granted	Radio communication apparatus and transfer rate decision method	2006/07/26	CN03800365	2003/02/06
13PA01-037-02	DE60314588	DE	Granted	Funkkommunikationsvorrichtung und transferratenentscheidungsverfahren	2007/10/25	DE60314588	2003/02/06
13PA01-037-03	EP1424869	FR	Granted	Radio communication apparatus and transfer rate decision method	2007/06/27	EP03705051	2003/02/06
13PA01-037-04	EP1424869	GB	Granted	Radio communication apparatus and transfer rate decision	2007/06/27	EP03705051	2003/02/06

				method			
13PA01-037-06	JP2005260992	JP	Lapsed	Wireless communication apparatus and transmission rate decision method	2005/09/22	JP2005112396	2005/04/08
13PA01-037-05	JP3686614	JP	Granted	Wireless communication apparatus and transmission rate decision method	2005/08/24	JP2002030942	2002/02/07
13PA01-037-07	US7385934	US	Granted	Radio communication apparatus and transfer rate decision method	2008/06/10	US10/476845	2003/11/06
13PA01-038-01	CN100514973	CN	Granted	Rate matching device and rate matching method	2009/07/15	CN03800419	2003/01/30
13PA01-038-02	EP1388992	EP	Lapsed	Rate matching device and rate matching method	2008/04/02	EP03734892	2003/01/30
13PA01-038-03	JP3629241	JP	Granted	Device and method for rate matching	2005/03/16	JP2002021499	2002/01/30
13PA01-038-04	US7114121	US	Granted	Rate matching device and rate matching method	2006/09/26	US10/478139	2003/11/20
13PA01-039-01	CN100502273	CN	Granted	Test device, mobile terminal device and test method	2009/06/17	CN200310102691	2003/10/29
13PA01-039-02	CN1964243	CN	Granted	Test apparatus, mobile terminal apparatus and wireless transmission property test method	2012/11/07	CN200610073263	2003/10/29
13PA01-039-04	EP1441554	CH	Granted	Test apparatus, mobile terminal apparatus and test method	2013/03/13	EP04000733	2004/01/15
13PA01-039-05	EP1441554	DE	Granted	Test apparatus, mobile terminal apparatus and test method	2013/03/13	EP04000733	2004/01/15
13PA01-039-03	EP1441554	EP	PreCursor(EP)	Test apparatus, mobile terminal apparatus and test method	2013/03/13	EP04000733	2004/01/15
13PA01-039-06	EP1441554	FR	Granted	Test apparatus, mobile terminal apparatus and test method	2013/03/13	EP04000733	2004/01/15
13PA01-039-07	EP1441554	GB	Granted	Test apparatus, mobile terminal apparatus and test method	2013/03/13	EP04000733	2004/01/15
13PA01-039-08	EP1441554	IE	Granted	Test apparatus, mobile terminal apparatus and test method	2013/03/13	EP04000733	2004/01/15
13PA01-039-09	EP1441554	LI	Granted	Test apparatus, mobile terminal apparatus and test method	2013/03/13	EP04000733	2004/01/15
13PA01-039-10	EP1441554	LU	Granted	Test apparatus, mobile terminal apparatus and test method	2013/03/13	EP04000733	2004/01/15
13PA01-039-11	EP1441554	MC	Granted	Test apparatus, mobile terminal apparatus and test method	2013/03/13	EP04000733	2004/01/15
13PA01-039-12	JP2004228762	JP	Lapsed	Test apparatus, mobile terminal apparatus and test method	2004/08/12	JP2003012312	2003/01/21
13PA01-039-13	KR20040067911	KR	Lapsed	Testing device, mobile terminal and testing method, particularly for testing radio transmission characteristics with certain transmission power	2004/07/30	KR20040002903	2004/01/15
13PA01-039-14	US7162206	US	Granted	Test apparatus, mobile terminal apparatus, test method	2007/01/09	US10/612289	2003/07/03

13PA01-040-01	DE60332146	DE	Granted	Sendervorrichtung und sendeverfahren	2010/05/27	DE60332146	2003/11/13
13PA01-040-02	EP1564920	FR	Granted	Transmitter apparatus and transmitting method	2010/04/14	EP03774003	2003/11/13
13PA01-040-03	EP1564920	GB	Granted	Transmitter apparatus and transmitting method	2010/04/14	EP03774003	2003/11/13
13PA01-040-04	JP3796211	JP	Granted	Transmitter and transmitting method	2006/07/12	JP2002333448	2002/11/18
13PA01-040-05	JP4163937	JP	Granted	Ofdm-cdma transmitter and ofdm-cdma transmission method	2008/10/08	JP2002355079	2002/12/06
13PA01-040-06	US7746762	US	Granted	Transmitting apparatus and transmitting method	2010/06/29	US10/534987	2005/05/16
13PA01-041-01	CN1692592	CN	Granted	Cdma transmitting apparatus and cdma receiving apparatus	2010/07/14	CN200380100629	2003/11/14
13PA01-041-02	DE60325751	DE	Granted	Cdma mimo system	2009/02/26	DE60325751	2003/11/14
13PA01-041-03	EP1551124	FR	Granted	Cdma mimo system	2009/01/07	EP03772765	2003/11/14
13PA01-041-04	EP1551124	GB	Granted	Cdma mimo system	2009/01/07	EP03772765	2003/11/14
13PA01-041-05	JP3583414	JP	Granted	Code division multiple access transmitter and code division multiple access receiver	2004/11/04	JP2002330453	2002/11/14
13PA01-041-06	US7693140	US	Granted	Cdma transmitting apparatus and cdma receiving apparatus	2010/04/06	US10/527199	2005/03/10
13PA01-042-01	CN1714519	CN	Granted	Radio reception device and radio reception method	2011/05/04	CN200380103837	2003/11/26
13PA01-042-02	EP1569362	DE	Granted	Radio reception device and radio reception method	2011/10/26	EP03775882	2003/11/26
13PA01-042-03	EP1569362	FR	Granted	Radio reception device and radio reception method	2011/10/26	EP03775882	2003/11/26
13PA01-042-04	EP1569362	GB	Granted	Radio reception device and radio reception method	2011/10/26	EP03775882	2003/11/26
13PA01-042-05	JP3629261	JP	Granted	Apparatus and method for radio reception	2005/03/16	JP2002341741	2002/11/26
13PA01-042-07	US20080020802	US	Lapsed	Wireless receiver and wireless reception method	2008/01/24	US11/859550	2007/09/21
13PA01-042-06	US7299027	US	Granted	Mimo receiver and mimo reception method for selection of mimo separation and channel variation compensation	2007/11/20	US10/536010	2005/05/23
13PA01-043-01	CN101019360	CN	Granted	Automatic retransmission request control system and method in mimo-ofdm system	2012/06/13	CN200480043975	2004/09/13
13PA01-043-03	EP1788742	DE	Granted	Automatic retransmission request control system and retransmission method in mimo-ofdm system	2007/05/23	EP04772990	2004/09/13
13PA01-043-02	EP1788742	EP	PreCursor(EP)	Automatic retransmission request control system and retransmission method in	2007/05/23	EP04772990	2004/09/13

				mimo-ofdm system			
13PA01-043-04	EP1788742	FR	Granted	Automatic retransmission request control system and retransmission method in mimo-ofdm system	2007/05/23	EP04772990	2004/09/13
13PA01-043-05	EP1788742	GB	Granted	Automatic retransmission request control system and retransmission method in mimo-ofdm system	2007/05/23	EP04772990	2004/09/13
13PA01-043-06	EP2518920	EP	Lapsed	Automatic retransmission request control system and retransmission method in mimo-ofdm system	2012/10/31	EP12173393	2004/09/13
13PA01-043-07	EP2518921	EP	Lapsed	Automatic retransmission request (arq) control system and retransmission method in mimo-ofdm system	2012/10/31	EP12173394	2004/09/13
13PA01-043-08	JP4384668	JP	Granted	The automatic request for repetition control system and the retransmission method in the mimo-ofdm system	2009/12/16	JP2006534962	2004/09/13
13PA01-043-09c2	US14/321117	US	Pending	Automatic retransmission request control system and retransmission method in memo-ofdm system		US14/321117	2014/07/01
13PA01-043-09c1	US14/321185	US	Pending	Automatic retransmission request control system and retransmission method in memo-ofdm system		US14/321185	2014/07/01
13PA01-043-10	US20120230257	US	Lapsed	Retransmission method and transmitter	2012/09/13	US13/478996	2012/05/23
13PA01-043-11	US20120263250	US	Lapsed	Retransmission method, transmitter, and communication system	2012/10/18	US13/532576	2012/06/25
13PA01-043-12	US20120287775	US	Pending	Automatic retransmission request control system and retransmission method in mimo-ofdm system	2012/11/15	US13/554748	2012/07/20
13PA01-043-09	US8775890	US	Granted	Automatic retransmission request control system and retransmission method in memo-ofdm system	2007/11/01	US11/575015	2007/03/30
13PA01-044-01	CN100578989	CN	Granted	Cdma transmitting apparatus, base station device usinsg the same and cdma transmitting method	2010/01/06	CN200480000627	2004/04/28
13PA01-044-03	EP1630993	DE	EP-Designated	Cdma transmitting apparatus and cdma transmitting method	2006/03/01	EP04730067	2004/04/28
13PA01-044-02	EP1630993	EP	EP-Pending	Cdma transmitting apparatus and cdma transmitting method	2006/03/01	EP04730067	2004/04/28
13PA01-044-07	EP1630993	FI	EP-Designated	Cdma transmitting apparatus and cdma transmitting method	2006/03/01	EP04730067	2004/04/28

13PA01-044-04	EP1630993	FR	EP-Designated	Cdma transmitting apparatus and cdma transmitting method	2006/03/01	EP04730067	2004/04/28
13PA01-044-05	EP1630993	GB	EP-Designated	Cdma transmitting apparatus and cdma transmitting method	2006/03/01	EP04730067	2004/04/28
13PA01-044-06	EP1630993	SE	EP-Designated	Cdma transmitting apparatus and cdma transmitting method	2006/03/01	EP04730067	2004/04/28
13PA01-044-08	JP3799030	JP	Granted	Device and method for cdma transmission	2006/07/19	JP2003132133	2003/05/09
13PA01-044-09	US7251469	US	Granted	Cdma transmitting apparatus and cdma transmitting method	2007/07/31	US10/522980	2005/02/02
13PA01-044-10	US7764711	US	Granted	Cdma transmission apparatus and cdma transmission method	2010/07/27	US11/767124	2007/06/22
13PA01-045-02	CN100591000	CN	Granted	Classifying-synthesizing transmission method of multi-user feedback information at base station	2010/02/17	CN200580029870	2005/09/05
13PA01-045-03	CN101015161	CN	Granted	Classifying-synthesizing transmission method of multi-user feedback information at base station	2007/08/08	CN200580029870	2005/09/05
13PA01-045-01	CN1747568	CN	Lapsed	Method for base station to transmitting feedback data of multiple clients by sorted combinations	2006/03/15	CN200410068800	2004/09/06
13PA01-045-04	EP1777855	EP	Lapsed	Classifying-synthesizing transmission method of multi-user feedback information at base station	2007/04/25	EP05777044	2005/09/05
13PA01-045-05	JP4675904	JP	Granted	Taxonomic synthetic transmission method of feedback information multi user in base station	2011/04/27	JP2006535743	2005/09/05
13PA01-045-06	US20070254715	US	Precursor	Classifying-synthesizing transmission method of multi-user feedback information at base station	2007/11/01	US11/574636	2005/09/06
13PA01-045-07	US8086270	US	Granted	Classifying-synthesizing transmission method of multi-user feedback information at base station	2011/12/27	US11/574636	2005/09/05
13PA01-046-02	EP1811700	DE	EP-Designated	Communication apparatus, communication system, and communication method	2007/07/25	EP05807089	2005/11/18
13PA01-046-01	EP1811700	EP	EP-Pending	Communication apparatus, communication system, and communication method	2007/07/25	EP05807089	2005/11/18
13PA01-046-03	EP1811700	FR	EP-Designated	Communication apparatus, communication system, and communication method	2007/07/25	EP05807089	2005/11/18
13PA01-046-04	EP1811700	GB	EP-Designated	Communication apparatus, communication system, and communication method	2007/07/25	EP05807089	2005/11/18

13PA01-046-05	JP4838144	JP	Granted	Communication device, communication system and communication method	2011/12/14	JP2006545166	2005/11/18
13PA01-046-06	US7848439	US	Granted	Communication apparatus, communication system, and communication method	2010/12/07	US11/719611	2005/11/18
13PA01-047-01	BRPI0515242	BR	Pending	MÃ©todo para a comunicaÃ§Ã£o das informaÃ§Ãµes que estÃ£o relacionadas com a programaÃ§Ã£o de transmissÃµes de dados de ligaÃ§Ã£o superior, sistema de comunicaÃ§Ã£o mÃ³vel, estaÃ§Ã£o base em um sistema de comunicaÃ§Ã£o mÃ³vel, controlador de rede de rÃ¡dio em um sistema de c	2008/07/15	BRPI0515242	2005/08/31
13PA01-047-02	CN101053272	CN	Granted	Efficient rise over thermal (rot) control during soft handover	2012/05/23	CN200580037780	2005/08/31
13PA01-047-03	DE602004008068	DE	Granted	Effiziente "rise over thermal (rot)" steuerung wÃ¤hrend eines sanften weiterreichens	2007/11/22	DE602004008068	2004/08/31
13PA01-047-04	DE602004021447	DE	Granted	Effiziente rise-over-thermal-steuerung wÃ¤hrend eines sanften handovers	2009/07/16	DE602004021447	2004/08/31
13PA01-047-08	EP1631104	FI	Granted	Efficient rise over thermal (rot) control during soft handover	2007/08/08	EP04020647	2004/08/31
13PA01-047-05	EP1631104	FR	Granted	Efficient rise over thermal (rot) control during soft handover	2007/08/08	EP04020647	2004/08/31
13PA01-047-07	EP1631104	GB	Granted	Efficient rise over thermal (rot) control during soft handover	2007/08/08	EP04020647	2004/08/31
13PA01-047-09	EP1631104	IT	Granted	Efficient rise over thermal (rot) control during soft handover	2007/08/08	EP04020647	2004/08/31
13PA01-047-06	EP1631104	SE	Granted	Efficient rise over thermal (rot) control during soft handover	2007/08/08	EP04020647	2004/08/31
13PA01-047-13	EP1838125	FI	Granted	Efficient rise over thermal (rot) control during soft handover	2009/06/03	EP07011278	2004/08/31
13PA01-047-10	EP1838125	FR	Granted	Efficient rise over thermal (rot) control during soft handover	2009/06/03	EP07011278	2004/08/31
13PA01-047-12	EP1838125	GB	Granted	Efficient rise over thermal (rot) control during soft handover	2009/06/03	EP07011278	2004/08/31
13PA01-047-14	EP1838125	IT	Granted	Efficient rise over thermal (rot) control during soft handover	2009/06/03	EP07011278	2004/08/31
13PA01-047-11	EP1838125	SE	Granted	Efficient rise over thermal (rot) control during soft handover	2009/06/03	EP07011278	2004/08/31
13PA01-047-15	ES2291786	ES	Granted	Control eficaz del aumento de sobreexplotacion termica (rot) durante una transferencia flexible.	2008/03/01	ES04020647	2004/08/31
13PA01-047-16	ES2327008	ES	Granted	Control eficiente del rot durante transferencia blanda.	2009/10/22	ES07011278	2004/08/31

13PA01-047-20	IN200700601P2	IN	Granted	Efficient rise over thermal (rot) control during soft handover	2007/07/06	IN601/KOLNP/2007	2007/02/19
13PA01-047-17	JP2007151146	JP	Lapsed	Method for communicating information relating to scheduling of uplink data transmissions, mobile communication system, base station, wireless network controller, and mobile terminal	2007/06/14	JP2006348525	2006/12/25
13PA01-047-18	JP4041531	JP	Granted	The method of communicating the information which it is related to the scheduling of uplink data transmission, the portable communication system, base station, the radio network controller, and the portable terminal	2008/01/30	JP2007512130	2005/08/31
13PA01-047-19	KR20070051353	KR	Lapsed	Efficient rise over thermal(rot) control during soft handover	2007/05/17	KR20077007354	2007/03/30
13PA01-047-21	US8175604	US	Granted	Efficient rise over thermal (rot) control during soft handover	2012/05/08	US10/588073	2005/08/31
13PA01-048-01	CN101103575	CN	Granted	Multi-antenna communication method and multi-antenna communication device	2012/02/01	CN200680002338	2006/01/10
13PA01-048-02	JP4769201	JP	Granted	Multiple antenna communication method and multiple antenna communication device	2011/09/07	JP2006552910	2006/01/10
13PA01-048-03	US7860184	US	Granted	Multi-antenna communication method and multi-antenna communicaton apparatus	2010/12/28	US11/813650	2006/01/10
13PA01-049-01	CN101283535	CN	Granted	Method for generating and detecting multiple pilot frequencies in multi-antenna communication system	2012/04/04	CN200680037602	2006/11/22
13PA01-049-02	EP1940067	EP	Lapsed	Multi-pilot generation method and detection method in multi-antenna communication system	2008/07/02	EP06823520	2006/11/22
13PA01-049-03	JP4981682	JP	Granted	Multiple pilot formation method and the method of detection in the multiple antenna communication system	2012/07/25	JP2007546481	2006/11/22
13PA01-049-04	US8073070	US	Granted	Multi-pilot generation method and detection method in multi-antenna communication system	2011/12/06	US12/092944	2006/11/22
13PA01-050-01	CN101151832	CN	Lapsed	Communication terminal, base station, and receiving method	2008/03/26	CN200680010719	2006/03/03
13PA01-050-02	EP1855406	EP	Lapsed	Communication terminal, base station, and receiving method	2007/11/14	EP06715227	2006/03/03
13PA01-050-03	JP4914352	JP	Granted	Communication terminal unit and base station device	2012/04/11	JP2007521121	2006/03/03
13PA01-	US8249132	US	Granted	Communication terminal and	2012/08/21	US11/909425	2006/03/03

050-04				receiving method			
13PA01-051-01	CN101411240	CN	Granted	Uplink resource allocation in a mobile communication system	2011/05/25	CN200680054042	2006/11/02
13PA01-051-02	CN102202414	CN	Granted	Uplink resource allocation in a mobile communication system	2011/09/28	CN201110084678	2006/11/02
13PA01-051-04	EP1816883	DE	EP-Designated	Uplink resource allocation in a mobile communication system	2007/08/08	EP06002248	2006/02/03
13PA01-051-03	EP1816883	EP	EP-Pending	Uplink resource allocation in a mobile communication system	2007/08/08	EP06002248	2006/02/03
13PA01-051-07	EP1816883	FI	EP-Designated	Uplink resource allocation in a mobile communication system	2007/08/08	EP06002248	2006/02/03
13PA01-051-05	EP1816883	FR	EP-Designated	Uplink resource allocation in a mobile communication system	2007/08/08	EP06002248	2006/02/03
13PA01-051-06	EP1816883	GB	EP-Designated	Uplink resource allocation in a mobile communication system	2007/08/08	EP06002248	2006/02/03
13PA01-051-08	EP1816883	SE	EP-Designated	Uplink resource allocation in a mobile communication system	2007/08/08	EP06002248	2006/02/03
13PA01-051-10	JP2012157036	JP	Granted	Uplink resource allocation in mobile communication system	2012/08/16	JP2012060156	2012/03/16
13PA01-051-11	JP2012213206	JP	Precursor	Uplink resource allocation in mobile communication system	2012/11/01	JP2012132803	2012/06/12
13PA01-051-09	JP5020263	JP	Granted	Allotment of the uplink resource in the portable communication system	2012/09/05	JP2008552689	2006/11/02
13PA01-051-12	JP5059982	JP	Granted	Uplink resource allocation in mobile communication system	2012/10/31	JP2012132803	2012/06/12
13PA01-051-13	US8576784	US	Granted	Uplink resource allocation in a mobile communication system	2009/05/07	US12/162592	2006/11/02
13PA01-052-02	EP2061170	DE	EP-Designated	Ofdm transmitter and ofdm receiver	2009/05/20	EP06783262	2006/09/11
13PA01-052-01	EP2061170	EP	EP-Pending	Ofdm transmitter and ofdm receiver	2009/05/20	EP06783262	2006/09/11
13PA01-052-03	EP2061170	FR	EP-Designated	Ofdm transmitter and ofdm receiver	2009/05/20	EP06783262	2006/09/11
13PA01-052-04	EP2061170	GB	EP-Designated	Ofdm transmitter and ofdm receiver	2009/05/20	EP06783262	2006/09/11
13PA01-052-05	JP4654298	JP	Granted	Ofdm transmitting device and ofdm receiving device	2011/03/16	JP2008534161	2006/09/11
13PA01-052-06	US8218681	US	Granted	Ofdm transmitter and ofdm receiver	2012/07/10	US12/440894	2009/03/11
13PA01-052-06r	US14/328576	US	Reissuing	Ofdm transmitter and ofdm receiver		US14/328576	2014/07/10
13PA01-053-01	CN101636946	CN	Lapsed	Multicarrier transmitter and multicarrier receiver	2010/01/27	CN200780052347	2007/05/25
13PA01-053-02	EP2151933	EP	Lapsed	Multicarrier transmitter and multicarrier receiver	2010/02/10	EP07744158	2007/05/25
13PA01-053-03	JP5009982	JP	Granted	Multiple carrier transmitting device	2012/08/29	JP2009516088	2007/05/25
13PA01-053-04	US8249178	US	Granted	Multicarrier transmitter and multicarrier receiver	2012/08/21	US12/601804	2007/05/25
13PA01-	CA2127616	CA	Granted	Mobile communication unit	1999/02/09	CA2127616	1994/07/07

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13PA01-054-03	CN1074875	CN	Granted	Mobile communication unit	2001/11/14	CN94108731	1994/07/16
13PA01-054-02	CN1128555	CN	Granted	Mobile communication unit and method	2003/11/19	CN00135098	2000/12/11
13PA01-054-04	KR0126874	KR	Granted	Mobile communication system	1998/04/01	KR19940017210	1994/07/16
13PA01-054-05	US5583851	US	Granted	Mobile communication apparatus having multi-codes allocating function	1996/12/10	US08/272158	1994/07/08
13PA01-055-01	CA2127672	CA	Granted	Mobile radio system	2000/02/01	CA2127672	1994/07/08
13PA01-055-02	CN1068164	CN	Granted	Mobile radio system	2001/07/04	CN94107859	1994/07/15
13PA01-055-03	JP2942977	JP	Granted	Mobile communication equipment	1999/08/30	JP19901893	1993/07/16
13PA01-055-04	KR960016641	KR	Granted	Mobile communication equipment	1996/12/19	KR19940017085	1994/07/15
13PA01-055-05	US5873027	US	Granted	Mobile radio system with control over radio wave output if a malfunction is detected	1999/02/16	US08/761552	1996/12/06
13PA01-055-06	US6336040	US	Granted	Mobile radio system with control over radio wave output if a malfunction is detected	2002/01/01	US09/207662	1998/12/09
13PA01-056-01	DE69534524	DE	Granted	Verfahren und gerÃ¤t zur synchronisierung in einem direktsequenzspreizspektrumkommunikationssystem	2005/11/24	DE69534524	1995/08/16
13PA01-056-02	EP0701333	FR	Granted	Synchronisation method and apparatus for a direct sequence spread spectrum communications system	2005/10/19	EP95305717	1995/08/16
13PA01-056-03	EP0701333	GB	Granted	Synchronisation method and apparatus for a direct sequence spread spectrum communications system	2005/10/19	EP95305717	1995/08/16
13PA01-056-04	JP3142222	JP	Granted	Synchronization method and device for spread spectrum communication	2001/03/07	JP13494595	1995/06/01
13PA01-056-05	US5757870	US	Granted	Spread spectrum communication synchronizing method and its circuit	1998/05/26	US08/517408	1995/08/21
13PA01-056-06	US5818869	US	Granted	Spread spectrum communication synchronizing method and its circuit	1998/10/06	US08/858146	1997/05/15
13PA01-057-01	JP2863993	JP	Granted	Cdma radio multiplex sender and cdma radio multiplex transmitter	1999/03/03	JP15585595	1995/06/22
13PA01-057-02	US6175558	US	Granted	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	2001/01/16	US09/000947	1997/12/30

13PA01-057-03	US6301237	US	Granted	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	2001/10/09	US09/562921	2000/05/02
13PA01-057-05	US6370131	US	Granted	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	2002/04/09	US09/576250	2000/05/24
13PA01-057-04	US6529492	US	Granted	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	2003/03/04	US09/562922	2000/05/02
13PA01-057-07	US6549526	US	Granted	Cdma radio multiplex transmitting device and a cdma multiplex receiving device	2003/04/15	US09/826005	2001/04/05
13PA01-057-06	US6584088	US	Granted	Cdma radio multiplex transmitting device and cdma radio multiplex receiving device	2003/06/24	US09/825998	2001/04/05
13PA01-057-08	US7136367	US	Granted	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	2006/11/14	US10/335916	2003/01/03
13PA01-057-09	USRE41444	US	Granted	Cdma radio multiplex transmitting device and a cdma radio multiplex receiving device	2010/07/20	US12/270499	2008/11/13
13PA01-058-01	CA2246168	CA	Granted	Pn code generating apparatus and mobile radio communication system	2002/11/19	CA2246168	1998/08/31
13PA01-058-02	CA2246168A1	CA	Precursor	Pn code generating apparatus and mobile radio communication system	1999/03/02	CA2246168	1998/08/31
13PA01-058-03	CN100379299	CN	Granted	Pn code producing method and device	2008/04/02	CN02127365	1998/08/27
13PA01-058-04	CN1094019	CN	Granted	Pn code generating device and mobile radio communication system	2002/11/06	CN98118564	1998/08/27
13PA01-058-05	DE69838572	DE	Granted	Pn-kodegenerator	2007/11/29	DE69838572	1998/08/27
13PA01-058-12	EP0901236	FI	Granted	Pn code generator	2007/10/17	EP98116233	1998/08/27
13PA01-058-13	EP0901236	FR	Granted	Pn code generator	2007/10/17	EP98116233	1998/08/27
13PA01-058-14	EP0901236	GB	Granted	Pn code generator	2007/10/17	EP98116233	1998/08/27
13PA01-058-15	EP0901236	SE	Granted	Pn code generator	2007/10/17	EP98116233	1998/08/27
13PA01-058-07	EP1835617	DE	EP-Designated	Pn code generation apparatus and method thereof	2007/10/31	EP07108762	1998/08/27
13PA01-058-06	EP1835617	EP	EP-Pending	Pn code generation apparatus and method thereof	2007/10/31	EP07108762	1998/08/27
13PA01-058-10	EP1835617	FI	EP-Designated	Pn code generation apparatus and method thereof	2007/10/31	EP07108762	1998/08/27
13PA01-058-08	EP1835617	FR	EP-Designated	Pn code generation apparatus and method thereof	2007/10/31	EP07108762	1998/08/27

13PA01-058-09	EP1835617	GB	EP-Designated	Pn code generation apparatus and method thereof	2007/10/31	EP07108762	1998/08/27
13PA01-058-11	EP1835617	SE	EP-Designated	Pn code generation apparatus and method thereof	2007/10/31	EP07108762	1998/08/27
13PA01-058-16	JP3329705	JP	Granted	Pn code generator and mobile radio communication system	2002/09/30	JP25287297	1997/09/02
13PA01-058-17	US6295301	US	Granted	Pn code generating apparatus and mobile radio communication system	2001/09/25	US09/139325	1998/08/25
13PA01-058-18	US6697384	US	Granted	Method and apparatus for calculating a state of starting a pn code generating operation	2004/02/24	US09/916284	2001/07/30
13PA01-059-01	AU8243498	AU	Lapsed	Cdma mobile station and cdma transmission method	1999/02/10	AU8243498	1998/07/16
13PA01-059-02	CA2266104	CA	Granted	Cdma mobile station and cdma transmission method	2003/09/30	CA2266104	1998/07/16
13PA01-059-03	CA2429736	CA	Lapsed	Cdma mobile station apparatus and cdma transmission method	1999/01/28	CA2429736	1998/07/16
13PA01-059-04	CN100442686	CN	Granted	Cdma mobile station equipment and cdma transmitting method	2008/12/10	CN03108352	1998/07/16
13PA01-059-05	CN1109476	CN	Granted	Cdma mobile station apparatus and cdma transmission method	2003/05/21	CN98801017	1998/07/16
13PA01-059-06	DE69831726	DE	Granted	Cdma mobile station und cdma Ãœbertragungsverfahren	2006/02/09	DE69831726	1998/07/16
13PA01-059-07	EP0936831	FR	Granted	Cdma mobile station and cdma transmission method	2005/09/28	EP98932553	1998/07/16
13PA01-059-08	EP0936831	GB	Granted	Cdma mobile station and cdma transmission method	2005/09/28	EP98932553	1998/07/16
13PA01-059-09	EP0936831	IT	Granted	Cdma mobile station and cdma transmission method	2005/09/28	EP98932553	1998/07/16
13PA01-059-10	EP0936831	NL	Granted	Cdma mobile station and cdma transmission method	2005/09/28	EP98932553	1998/07/16
13PA01-059-11	ES2251091	ES	Granted	Estacion movil cdma y procedimiento de transmision cdma.	2006/04/16	ES98932553	1998/07/16
13PA01-059-12	JP3655057	JP	Granted	Cdma mobile transmitting device and transmitting method using the device	2005/06/02	JP20964297	1997/07/19
13PA01-059-14	US20030007472	US	Lapsed	Cdma mobile station apparatus and cdma transmission method	2003/01/09	US10/235918	2002/09/06
13PA01-059-13	US6466563	US	Granted	Cdma mobile station and cdma transmission method	2002/10/15	US09/147831	1999/03/16
13PA01-060-02	CN100353693	CN	Granted	Cdma radio communication apparatus	2007/12/05	CN200410059002	1998/07/17
13PA01-060-03	CN1113497	CN	Granted	Radio communication terminal apparatus	2003/07/02	CN98116336	1998/07/17
13PA01-060-01	CN1167219	CN	Granted	Cdma radio communication equipment	2004/09/15	CN02102800	1998/07/17
13PA01-060-04	DE69825370	DE	Granted	Cdma funknachrichtenÃ¼bertragungsgerÃ¤t	2004/09/09	DE69825370	1998/07/15

13PA01-060-05	DE69839197	DE	Granted	Synchronisationsverfahren in einem kodemultiplexvielfachzugriffsystem	2008/04/10	DE69839197	1998/07/15
13PA01-060-15	EP0892503	FR	Granted	Cdma radio communication apparatus	2005/01/05	EP98113191	1998/07/15
13PA01-060-16	EP0892503	GB	Granted	Cdma radio communication apparatus	2005/01/05	EP98113191	1998/07/15
13PA01-060-17	EP0892503	IT	Granted	Cdma radio communication apparatus	2005/01/05	EP98113191	1998/07/15
13PA01-060-06	EP1447918	FR	Granted	A synchronization method for a cdma system	2008/02/27	EP04012123	1998/07/15
13PA01-060-07	EP1447918	GB	Granted	A synchronization method for a cdma system	2008/02/27	EP04012123	1998/07/15
13PA01-060-08	EP1447918	IT	Granted	A synchronization method for a cdma system	2008/02/27	EP04012123	1998/07/15
13PA01-060-10	EP1914904	DE	EP-Designated	A cdma radio communication system and a transmission apparatus for such a system	2008/04/23	EP08100709 (DE69843248)	1998/07/15
13PA01-060-09	EP1914904	EP	EP-Pending	A cdma radio communication system and a transmission apparatus for such a system	2008/04/23	EP08100709	1998/07/15
13PA01-060-13	EP1914904	ES	EP-Designated	A cdma radio communication system and a transmission apparatus for such a system	2008/04/23	EP08100709	1998/07/15
13PA01-060-11	EP1914904	FR	EP-Designated	A cdma radio communication system and a transmission apparatus for such a system	2008/04/23	EP08100709	1998/07/15
13PA01-060-12	EP1914904	GB	EP-Designated	A cdma radio communication system and a transmission apparatus for such a system	2008/04/23	EP08100709	1998/07/15
13PA01-060-14	EP1914904	IT	EP-Designated	A cdma radio communication system and a transmission apparatus for such a system	2008/04/23	EP08100709	1998/07/15
13PA01-060-19	ES2226037	ES	Granted	Aparato de comunicacion por radio cdma.	2005/03/16	ES98113191	1998/07/15
13PA01-060-18	ES2301896	ES	Granted	Procedimiento de sincronizacion para un sistema cdma.	2008/07/01	ES04012123	1998/07/15
13PA01-060-20	US6370134	US	Granted	Cdma radio communication apparatus	2002/04/09	US09/115502	1998/07/15
13PA01-060-21	US7035233	US	Granted	Radio communication terminal apparatus and radio communication base station apparatus	2006/04/25	US10/014352	2001/12/14
13PA01-060-22	US7535864	US	Granted	Radio communication terminal apparatus and radio communication base station apparatus	2009/05/19	US11/372152	2006/03/10
13PA01-061-01	CA2127606	CA	Granted	Code-division multiple-access mobile telephone system	2001/12/18	CA2127606	1994/07/07
13PA01-061-02	CN1075911	CN	Granted	Automobile on-board and/or portable telephone system	2001/12/05	CN94108729	1994/07/16

13PA01-061-03	CN1102022	CN	Granted	Automobile on-board and/or portable telephone system	1995/04/26	CN94108729	1994/07/16
13PA01-061-04	JP2863975	JP	Granted	Automobile-portable telephone system	1999/03/03	JP19901393	1993/07/16
13PA01-061-05	KR0126628	KR	Granted	Mobile communications system	1998/04/03	KR19940017209	1994/07/16
13PA01-061-06	US5677929	US	Reissue-Surrendered	Automobile on-board and/or portable telephone system	1997/10/14	US08/272156	1994/07/08
13PA01-061-07	USRE37420	US	Granted	Automobile on-board and/or portable telephone system	2001/10/23	US09/337403	1999/06/21
13PA01-061-08	USRE39954	US	Granted	Automobile on-board and/or portable telephone system	2007/12/25	US09/887042	2001/06/25
13PA01-062-02	CN100364247	CN	Granted	Method for controlling transmission power	2008/01/23	CN200410045794	2001/06/25
13PA01-062-01	CN1158790	CN	Granted	Communication terminal apparatus	2004/07/21	CN01802160	2001/06/25
13PA01-062-03	DE60110020	DE	Granted	KommunikationsendgerÃ„t	2005/09/08	DE60110020	2001/06/25
13PA01-062-04	DE60116907	DE	Granted	KommunikationsendgerÃ¤t	2006/07/20	DE60116907	2001/06/25
13PA01-062-11	DE60147140	DE	Granted	Communication terminal apparatus	2012/09/19	EP05025574	2001/06/25
13PA01-062-05	EP1204225	FR	Granted	Communication terminal apparatus	2005/04/13	EP01941209	2001/06/25
13PA01-062-06	EP1204225	GB	Granted	Communication terminal apparatus	2005/04/13	EP01941209	2001/06/25
13PA01-062-07	EP1523111	FR	Granted	Communication terminal apparatus	2006/01/25	EP05000430	2001/06/25
13PA01-062-08	EP1523111	GB	Granted	Communication terminal apparatus	2006/01/25	EP05000430	2001/06/25
13PA01-062-09	EP1630972	FR	Granted	Communication terminal apparatus	2012/09/19	EP05025574	2001/06/25
13PA01-062-10	EP1630972	GB	Granted	Communication terminal apparatus	2012/09/19	EP05025574	2001/06/25
13PA01-062-14	JP2003298510	JP	Lapsed	Method for controlling transmission power	2003/10/17	JP2003064021	2003/03/10
13PA01-062-12	JP3426194	JP	Granted	Base station device, communication terminal device, and communication method	2003/07/14	JP2000231256	2000/07/31
13PA01-062-15	JP4431189	JP	Granted	Radio communication device, radio communication method, and radio communication system	2010/03/10	JP2009197228	2009/08/27
13PA01-062-16	JP4431190	JP	Granted	Radio communication device, radio communication method, and radio communication system	2010/03/10	JP2009197229	2009/08/27
13PA01-062-17	JP4431191	JP	Granted	Radio communication system and radio communication method	2010/03/10	JP2009197230	2009/08/27
13PA01-062-13	JP4511783	JP	Granted	Base station equipment, communication terminal unit,	2010/07/28	JP2002367259	2002/12/18

				and communication method			
13PA01-062-19	US20030087644	US	Lapsed	Communication terminal apparatus and base station apparatus	2003/05/08	US10/322425	2002/12/19
13PA01-062-20	US20060121930	US	Precursor	Communication terminal apparatus and base station apparatus	2006/06/08	US11/341430	2006/01/30
13PA01-062-22	US20080261545	US	Precursor	Communication terminal apparatus and base station apparatus	2008/10/23	US12/132992	2008/06/04
13PA01-062-18	US6738646	US	Granted	Base station device and method for communication	2004/05/18	US10/069267	2002/02/25
13PA01-062-21	US7460880	US	Granted	Communication terminal apparatus and base station apparatus	2008/12/02	US11/341430	2006/01/30
13PA01-062-23	US7761113	US	Granted	Communication terminal apparatus and base station apparatus	2010/07/20	US12/132992	2008/06/04
13PA01-063-01	AU7769801	AU	Lapsed	Communication terminal, base station device, and radio communication method	2002/02/18	AU2001277698	2001/08/02
13PA01-063-02	CN100469169	CN	Granted	Communication terminal device and radio communication method	2009/03/11	CN01802181	2001/08/02
13PA01-063-03	CN1386388	CN	Granted	Communication terminal, base station device, and radio communication method	2002/12/18	CN01802181	2001/08/02
13PA01-063-04	DE60134208	DE	Granted	Nkkommunikationsverfahren	2008/07/10	DE60134208	2001/08/02
13PA01-063-05	EP1217861	FR	Granted	Communication terminal, base station device, and radio communication method	2008/05/28	EP01955557	2001/08/02
13PA01-063-06	EP1217861	GB	Granted	Communication terminal, base station device, and radio communication method	2008/05/28	EP01955557	2001/08/02
13PA01-063-08	EP1976141	DE	EP-Designated	Communication terminal apparatus, base station apparatus, and radio communication method	2008/10/01	EP08004604	2001/08/02
13PA01-063-07	EP1976141	EP	EP-Pending	Communication terminal apparatus, base station apparatus, and radio communication method	2008/10/01	EP08004604	2001/08/02
13PA01-063-09	EP1976141	FR	EP-Designated	Communication terminal apparatus, base station apparatus, and radio communication method	2008/10/01	EP08004604	2001/08/02
13PA01-063-10	EP1976141	GB	EP-Designated	Communication terminal apparatus, base station apparatus, and radio communication method	2008/10/01	EP08004604	2001/08/02

13PA01-063-13	JP2003224516	JP	Granted	Communication terminal apparatus, base station apparatus and radio communication method	2003/08/08	JP2002367213	2002/12/18
13PA01-063-12	JP2003224888	JP	Non-applicable	Communication terminal	2003/08/08	JP2002367212	2002/12/18
13PA01-063-14	JP2009284537	JP	Granted	Transmission method, receiving method, and radio communication method	2009/12/03	JP2009197375	2009/08/27
13PA01-063-11	JP3426200	JP	Granted	Communication terminal device, base station device and radio communication method	2003/07/14	JP2000285405	2000/09/20
13PA01-063-15	JP4536821	JP	Granted	Transmission apparatus, receiving apparatus and wireless communication system	2010/09/01	JP2009197376	2009/08/27
13PA01-063-16	US6760590	US	Granted	Communication terminal apparatus, base station apparatus, and radio communication method	2004/07/06	US10/089605	2002/04/01
13PA01-063-17	US6799053	US	Granted	Communication terminal apparatus	2004/09/28	US10/321500	2002/12/18
13PA01-063-18	US7206587	US	Granted	Communication terminal apparatus, base station apparatus, and radio communication method	2007/04/17	US10/321623	2002/12/18

Unique ID	Patent Number	Country	Portfolio Status	Title	Issue / Publication Date	Application Number	Filing Date
14NC01-001-01	CN1262139	CN	Granted	SERVICE & OTHER INFORMATION TRANSFER FROM E.G. VISITED NETWORK TO HOME NETWORK INR00 REFERENCE ARCHITECTURE	2006/06/28	CN00819795.4	2000/08/10
14NC01-001-02	DE60023359	DE	Granted	SERVICE & OTHER INFORMATION TRANSFER FROM E.G. VISITED NETWORK TO HOME NETWORK INR00 REFERENCE ARCHITECTURE	2006/07/06	EP00956419.6	2000/08/10
14NC01-001-03	FR1310129	FR	Granted	SERVICE & OTHER INFORMATION TRANSFER FROM E.G. VISITED NETWORK TO HOME NETWORK INR00 REFERENCE ARCHITECTURE	2005/10/19	EP00956419.6	2000/08/10
14NC01-001-04	GB1310129	GB	Granted	SERVICE & OTHER INFORMATION TRANSFER FROM E.G. VISITED NETWORK TO HOME NETWORK INR00 REFERENCE ARCHITECTURE	2005/10/19	EP00956419.6	2000/08/10
14NC01-001-05	KR693394	KR	Granted	SERVICE & OTHER INFORMATION TRANSFER FROM E.G. VISITED NETWORK TO HOME NETWORK INR00 REFERENCE ARCHITECTURE	2007/03/12	KR7001821/2003	2000/08/10
14NC01-001-08	PCT/EP00/07779	WO	Precursor			PCT/EP00/07779	2000/08/10
14NC01-001-06	RU2262213	RU	Granted	SERVICE & OTHER INFORMATION TRANSFER FROM E.G. VISITED NETWORK TO HOME NETWORK INR00 REFERENCE ARCHITECTURE	2005/10/10	RU2003103593	2000/08/10
14NC01-001-07	US7925762	US	Granted	SERVICE & OTHER INFORMATION TRANSFER FROM E.G. VISITED NETWORK TO HOME NETWORK INR00 REFERENCE ARCHITECTURE	2011/04/12	US10/343707	2000/08/10
14NC01-002-02	CN100473217	CN	Granted	Communication network system and network device thereof and method of providing communication	2009/03/25	CN01817056	2001/10/09
14NC01-002-04	PCT/EP00/09886	WO	Precursor			PCT/EP00/09886	2000/10/09
14NC01-002-03	PCT/EP01/11656	WO	Precursor			PCT/EP01/11656	2001/10/09
14NC01-002-01	US7623529	US	Granted	NETWORK INITIATED DEREGISTRATION FROM IP MULTIMEDIA SERVICES	2009/11/24	US10/398575	2001/10/09
14NC01-003-01	AT1346558	AT	Granted	PREPAID SERVER	2007/08/15	EP00987457.9	2000/12/22
14NC01-003-02	BRPI0017382	BR	Pending	PREPAID SERVER	2003/10/21	BRPI0017382.7	2000/12/22
14NC01-003-03	CA2428329	CA	Granted	PREPAID SERVER	2007/05/29	CA2428329	2000/12/22
14NC01-003-04	CH1346558	CH	Granted	PREPAID SERVER	2007/07/11	EP00987457.9	2000/12/22

14NC01-003-05	CN1279741	CN	Granted	PREPAID SERVER	2007/07/11	CN00820083.1	2000/12/22
14NC01-003-06	DE60035531	DE	Granted	PREPAID SERVER	2007/07/11	EP00987457.9	2000/12/22
14NC01-003-07	ES1346558	ES	Granted	PREPAID SERVER	2008/01/16	EP00987457.9	2000/12/22
14NC01-003-08	FR1346558	FR	Granted	PREPAID SERVER	2007/07/11	EP00987457.9	2000/12/22
14NC01-003-09	GB1346558	GB	Granted	PREPAID SERVER	2007/07/11	EP00987457.9	2000/12/22
14NC01-003-10	IT1346558	IT	Granted	PREPAID SERVER	2007/07/11	EP00987457.9	2000/12/22
14NC01-003-11	NL1346558	NL	Granted	PREPAID SERVER	2007/07/11	EP00987457.9	2000/12/22
14NC01-003-16	PCT/EP00/013248	WO	Precursor			PCT/EP00/013248	2000/12/22
14NC01-003-12	SE1346558	SE	Granted	PREPAID SERVER	2007/07/11	EP00987457.9	2000/12/22
14NC01-003-13	TR200706776T4	TR	Granted	PREPAID SERVER	2007/07/11	TR00987457.9	2000/12/22
14NC01-003-14	US11/448122	US	Not owned by INVT	PREPAID SERVER		US11/448122	2006/06/07
14NC01-003-15	US7065339	US	Granted	PREPAID SERVER	2006/06/20	US10/451236	2000/12/22
14NC01-004-01	DE60109066	DE	Granted	MULTIPLEXING SIP CALL CONTROL CONTENT OVER SUCCESSIVE SIP MESSAGES	2006/04/13	EP01929406.5	2001/03/05
14NC01-004-02	GB1368946	GB	Granted	MULTIPLEXING SIP CALL CONTROL CONTENT OVER SUCCESSIVE SIP MESSAGES	2005/02/23	EP01929406.5	2001/03/05
14NC01-004-04	PCT/EP01/02473	WO	Precursor			PCT/EP01/02473	2001/03/05
14NC01-004-03	US7991894	US	Granted	MULTIPLEXING SIP CALL CONTROL CONTENT OVER SUCCESSIVE SIP MESSAGES	2011/08/02	US10/469787	2001/03/05
14NC01-005-02	PCT/EP01/06517	WO	Precursor			PCT/EP01/06517	2002/12/20
14NC01-005-01	US7304966	US	Granted	Accessing ip multimedia subsystem	2007/12/04	US10/479457	2003/12/02
14NC01-006-02	PCT/IB02/04029	WO	Precursor			PCT/IB02/04029	2002/01/10
14NC01-006-01	US6888828	US	Granted	SERVICE EXECUTION SERVER CHAINING	2005/05/03	US09/967927	2001/10/02
14NC01-007-01	DE60046674	DE	Granted	AN INTER-WORKING UNIT (GATEWAY) BETWEEN AAL2 (ATM) BASED RANAND RTP MULTIPLEXING (IP) BASED RAN IN 3G CELLULAR ACCESS NETWORKS	2011/11/16	EP00965599.4	2000/08/09
14NC01-007-02	JP2003507936	JP	Lapsed	AN INTER-WORKING UNIT (GATEWAY) BETWEEN AAL2 (ATM) BASED RANAND RTP MULTIPLEXING	2003/02/25	JP2001-517771	2000/08/09

				(IP) BASED RAN IN 3G CELLULAR ACCESS NETWORKS			
14NC01-007-04	PCT/US00/40606	WO	Precursor			PCT/US00/40606	2000/09/08
14NC01-007-03	US6801542	US	Granted	AN INTER-WORKING UNIT (GATEWAY) BETWEEN AAL2 (ATM) BASED RANAND RTP MULTIPLEXING (IP) BASED RAN IN 3G CELLULAR ACCESS NETWORKS	2004/10/05	US09/377263	1999/08/19
14NC01-008-01	BRPI0614221	BR	Pending	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2011/03/15	BRPI0614221.4	2006/07/11
14NC01-008-02	CN101223756B	CN	Granted	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2011/11/30	CN200680025371.9	2006/07/11
14NC01-008-13	EP1905212	DE	Granted	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2011/04/20	EP06795099.8	2006/07/11
14NC01-008-03	EP1905212	EP	PreCursor (EP)	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2011/04/20	EP06795099.8	2006/07/11
14NC01-008-14	EP1905212	FR	Granted	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2011/04/20	EP06795099.8	2006/07/11
14NC01-008-15	EP1905212	GB	Granted	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2011/04/20	EP06795099.8	2006/07/11
14NC01-008-04	IDW00200800123	ID	Pending	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2007/01/18	IDW00200800123	2006/07/11
14NC01-008-05	KR1026155	KR	Granted	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2011/04/05	KR2008-7003214	2006/07/11
14NC01-008-06	MX282232	MX	Granted	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2008/03/14	MXMX/a/2008/000568	2006/07/11
14NC01-008-16	PCT/IB06/001915	WO	Precursor			PCT/IB06/001915	2006/07/11
14NC01-008-07	PH1-2007-502943	PH	Granted	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2007/01/18	PH1-2007-502943	2006/07/11
14NC01-008-08	RU2384004	RU	Granted	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2010/03/10	RU2008100148	2006/07/11
14NC01-008-09	SG139065	SG	Granted	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2011/04/15	SG200800268.5	2006/07/11
14NC01-008-10	US8681751	US	Granted	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2014/03/25	US11/348896	2006/02/07
14NC01-008-11	VN1-2008-00326	VN	Pending	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING	2007/04/05	VN1-2008-00326	2006/07/11

				FOR AVAILABILITY CHANGE			
14NC01-008-12	ZA200800233	ZA	Granted	EXTENDING <STATUS> PRESENCE ATTRIBUTE TO DEFINE REASONING FOR AVAILABILITY CHANGE	2008/12/31	ZA2008/0233	2006/07/11
14NC01-009-01	EP1338152	FR	Granted	3RD GEN MOBILITY USING SIP	2008/11/19	EP1338152	2001/11/21
14NC01-009-03	PCT/IB01/02196	WO	Precursor			PCT/IB01/02196	2001/11/21
14NC01-009-02	US6904035	US	Granted	3RD GEN MOBILITY USING SIP	2005/06/07	US09/991540	2001/11/14
14NC01-010-01	CN1539106	CN	Granted	THREE-PARTY AUTHENTICATION AND AUTHORIZATION SCHEME FOR INTERNET PROTOCLVERSION 6.	2010/05/12	CN02815394.4	2002/07/11
14NC01-010-04	EP1415212	DE	EP-Designated	THREE-PARTY AUTHENTICATION AND AUTHORIZATION SCHEME FOR INTERNET PROTOCLVERSION 6.	2009/12/09	EP02749143.0	2002/07/11
14NC01-010-02	EP1415212	EP	EP-Pending	THREE-PARTY AUTHENTICATION AND AUTHORIZATION SCHEME FOR INTERNET PROTOCLVERSION 6.	2009/12/09	EP02749143.0	2002/07/11
14NC01-010-05	EP1415212	FR	EP-Designated	THREE-PARTY AUTHENTICATION AND AUTHORIZATION SCHEME FOR INTERNET PROTOCLVERSION 6.	2009/12/09	EP02749143.0	2002/07/11
14NC01-010-06	EP1415212	GB	EP-Designated	THREE-PARTY AUTHENTICATION AND AUTHORIZATION SCHEME FOR INTERNET PROTOCLVERSION 6.	2009/12/09	EP02749143.0	2002/07/11
14NC01-010-07	PCT/IB02/02702	WO	Precursor			PCT/IB02/02702	2002/07/11
14NC01-010-03	US7900242	US	Granted	THREE-PARTY AUTHENTICATION AND AUTHORIZATION SCHEME FOR INTERNET PROTOCLVERSION 6.	2011/03/01	US10/192753	2002/07/09
14NC01-011-01	CN100571461	CN	Granted	EXTENDING THE TRUSTED NETWORK CONCEPT IN IMS	2009/12/16	CN200480000385.6	2004/02/17
14NC01-011-07	EP1595418	DE	EP-Designated	EXTENDING THE TRUSTED NETWORK CONCEPT IN IMS	2005/11/16	EP04711676.9	2004/02/17
14NC01-011-02	EP1595418	EP	EP-Pending	EXTENDING THE TRUSTED NETWORK CONCEPT IN IMS	2005/11/16	EP04711676.9	2004/02/17
14NC01-011-08	EP1595418	FR	EP-Designated	EXTENDING THE TRUSTED NETWORK CONCEPT IN IMS	2005/11/16	EP04711676.9	2004/02/17
14NC01-011-09	EP1595418	GB	EP-Designated	EXTENDING THE TRUSTED NETWORK CONCEPT IN IMS	2005/11/16	EP04711676.9	2004/02/17
14NC01-011-03	IDP0030947	ID	Granted	EXTENDING THE TRUSTED NETWORK CONCEPT IN IMS	2004/09/02	IDW00200501937	2004/02/17
14NC01-011-04	IN200403049	IN	Pending	EXTENDING THE TRUSTED NETWORK CONCEPT IN IMS	2006/02/17	IN03049/CHENP/2004	2004/02/17
14NC01-011-10	PCT/IB04/000551	WO	Precursor			PCT/IB04/000551	2004/02/17
14NC01-011-05	SG115865	SG	Granted	EXTENDING THE TRUSTED NETWORK CONCEPT IN IMS	2007/08/31	SG200406163.6	2004/02/17

14NC01-011-06	US7917620	US	Granted	EXTENDING THE TRUSTED NETWORK CONCEPT IN IMS	2011/03/29	US10/614343	2003/07/08
14NC01-012-01	AU2005232140	AU	Granted	SESSION PROGRESS INDICATION IN POC FOR MANUAL ANSWER MODE	2009/10/01	AU2005232140	2005/03/17
14NC01-012-02	CN1961595	CN	Granted	SESSION PROGRESS INDICATION IN POC FOR MANUAL ANSWER MODE	2011/12/21	CN200580017529.3	2005/03/17
14NC01-012-03	IN200605988	IN	Pending	SESSION PROGRESS INDICATION IN POC FOR MANUAL ANSWER MODE	2007/08/24	IN5988/DELNP/2006	2005/03/17
14NC01-012-04	KR0924513	KR	Granted	SESSION PROGRESS INDICATION IN POC FOR MANUAL ANSWER MODE	2009/11/02	KR2006-7023181	2005/03/17
14NC01-012-05	PCT/IB05/000694	WO	Precursor			PCT/IB05/000694	2005/03/17
14NC01-013-01	CN101385313	CN	Granted	IMS-CS INTERWORKING FOR VIDEO CALLS	2012/09/05	CN200780005866.X	2007/01/22
14NC01-013-02	DE602007033333	DE	Granted	IMS-CS INTERWORKING FOR VIDEO CALLS	2013/10/16	EP07700656.7	2007/01/22
14NC01-013-10	EP1987649	CH	Granted	IMS-CS INTERWORKING FOR VIDEO CALLS	2013/10/16	EP07700656.7	2007/01/22
14NC01-013-03	EP1987649	EP	Precursor(EP)	IMS-CS INTERWORKING FOR VIDEO CALLS	2013/10/16	EP07700656.7	2007/01/22
14NC01-013-12	EP1987649	FR	Granted	IMS-CS INTERWORKING FOR VIDEO CALLS	2013/10/16	EP07700656.7	2007/01/22
14NC01-013-04	EP1987649	GB	Granted	IMS-CS INTERWORKING FOR VIDEO CALLS	2013/10/16	EP07700656.7	2007/01/22
14NC01-013-11	EP1987649	IE	Granted	IMS-CS INTERWORKING FOR VIDEO CALLS	2013/10/16	EP07700656.7	2007/01/22
14NC01-013-14	EP1987649	LI	Granted	IMS-CS INTERWORKING FOR VIDEO CALLS	2013/10/16	EP07700656.7	2007/01/22
14NC01-013-13	EP1987649	LU	Granted	IMS-CS INTERWORKING FOR VIDEO CALLS	2013/10/16	EP07700656.7	2007/01/22
14NC01-013-06	EP1987649	NL	Granted	IMS-CS INTERWORKING FOR VIDEO CALLS	2013/10/16	EP07700656.7	2007/01/22
14NC01-013-05	IN200806684	IN	Pending	IMS-CS INTERWORKING FOR VIDEO CALLS	2008/10/24	IN6684/DELNP/2008	2007/01/22
14NC01-013-16	PCT/IB07/050209	WO	Precursor			PCT/IB07/050209	2007/01/22
14NC01-013-15	RU2408998	RU	Granted	IMS-CS INTERWORKING FOR VIDEO CALLS		RU2008132295A	2007/01/22
14NC01-013-07	SG145112	SG	Granted	IMS-CS INTERWORKING FOR VIDEO CALLS	2008/09/29	SG200805775.4	2007/01/22
14NC01-013-08	TH0701000284	TH	Pending	IMS-CS INTERWORKING FOR VIDEO CALLS	2007/11/15	TH0701000284	2007/01/23
14NC01-013-09	US7860102	US	Granted	IMS-CS INTERWORKING FOR VIDEO CALLS	2010/12/28	US11/508258	2006/08/23
14NC01-014-01	CN101444062	CN	Granted	CARRYING TRUSTED NETWORK PROVIDED ACCESS NETWORK INFO IN SIP	2012/03/21	CN200780010857.X	2007/03/27
14NC01-014-04	EP1999929	DE	EP-Designated	CARRYING TRUSTED NETWORK PROVIDED ACCESS NETWORK INFO IN SIP	2008/12/10	EP7734087.5	2007/03/26
14NC01-014-02	EP1999929	EP	EP-Pending	CARRYING TRUSTED NETWORK PROVIDED ACCESS NETWORK INFO	2008/12/10	EP7734087.5	2007/03/26

				IN SIP			
14NC01-014-05	EP1999929	FR	EP-Designated	CARRYING TRUSTED NETWORK PROVIDED ACCESS NETWORK INFO IN SIP	2008/12/10	EP7734087.5	2007/03/26
14NC01-014-06	EP1999929	GB	EP-Designated	CARRYING TRUSTED NETWORK PROVIDED ACCESS NETWORK INFO IN SIP	2008/12/10	EP7734087.5	2007/03/26
14NC01-014-07	PCT/IB07/000758	WO	Precursor			PCT/IB07/000758	2007/03/26
14NC01-014-03	US20080039085	US	Pending	CARRYING TRUSTED NETWORK PROVIDED ACCESS NETWORK INFO IN SIP	2008/02/14	US11/691417	2007/03/26
14NC01-015-01	CN101523858	CN	Pending	DHT-BASED CORE IMS NETWORK	2014/03/26	CN200780038286.0	2007/09/11
14NC01-015-04	EP2062422	DE	EP-Designated	DHT-BASED CORE IMS NETWORK	2014/03/26	EP07803743.9	2007/09/11
14NC01-015-02	EP2062422	EP	EP-Pending	DHT-BASED CORE IMS NETWORK	2014/03/26	EP07803743.9	2007/09/11
14NC01-015-05	EP2062422	FR	EP-Designated	DHT-BASED CORE IMS NETWORK	2014/03/26	EP07803743.9	2007/09/11
14NC01-015-06	EP2062422	GB	EP-Designated	DHT-BASED CORE IMS NETWORK	2014/03/26	EP07803743.9	2007/09/11
14NC01-015-07	PCT/FI07/050482	WO	Precursor			PCT/FI07/050482	2007/09/11
14NC01-015-03	US7796990	US	Granted	DHT-BASED CORE IMS NETWORK	2010/09/14	US11/520655	2006/09/14
14NC01-016-01	US7822035	US	Granted	SIP COMMUNICATION SERVICE IDENTIFIERS	2010/10/26	US11/715209	2007/03/07

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court District of Delaware on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	2/27/2017	District of Delaware

PLAINTIFF	DEFENDANT
Inventergy, Inc.	HTC Corporation and HTC America, Inc.

PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 See Attached Sheet		
2		
3		
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 US 6,466,563 B1	10/15/2002	Inventergy, Inc.
2 US 6,611,676 B2	8/26/2003	Inventergy, Inc.
3 US 7,206,587 B2	4/17/2007	Inventergy, Inc.
4 US 7,760,815 B2	7/20/2010	Inventergy, Inc.
5 US 7,764,711 B2	7/27/2010	Inventergy, Inc.
6 US 7,848,439 B2	12/7/2010	Inventergy, Inc.
7 US 6,760,590 B2	7/6/2004	Inventergy, Inc.

AO 120 (Rev. 08/10)

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☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	2/24/2017	District of Delaware

PLAINTIFF	DEFENDANT
Inventergy, Inc.	Apple Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	See Attached Sheet		
2			
3			
4			
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above---entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1---Upon initiation of action, mail this copy to Director Copy 3---Upon termination of action, mail this copy to Director
Copy 2---Upon filing document adding patent(s), mail this copy to Director Copy 4---Case file copy

PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 US 6,466,563 B1	10/15/2002	Inventergy, Inc.
2 US 6,611,676 B2	8/26/2003	Inventergy, Inc.
3 US 7,206,587 B2	4/17/2007	Inventergy, Inc.
4 US 7,760,815 B2	7/20/2010	Inventergy, Inc.
5 US 7,764,711 B2	7/27/2010	Inventergy, Inc.
6 US 7,848,439 B2	12/7/2010	Inventergy, Inc.
7 US 6,760,590 B2	7/6/2004	Inventergy, Inc.