To: eoffice@volpe-koenig.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 3624

Jun 03, 2021 04:16:19 AM

Dear PAIR Customer:

VOLPE KOENIG
30 SOUTH 17TH STREET, 18TH FLOOR
PHILADELPHIA, PA 19103
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 3624 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
14458693	ISSUE.NTF	06/02/2021	IPW2-USCN205928

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

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.
14/458,693	06/22/2021	11044010	IPW2-USCN205928	4825

3624 7590 06/02/2021

VOLPE KOENIG
30 SOUTH 17TH STREET, 18TH FLOOR
PHILADELPHIA, PA 19103

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 462 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):

Paul Howard, Bristol, UNITED KINGDOM;
INTELLECTUAL VENTURES HOLDING 81 LLC, Las Vegas, NV;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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)

3624 7590 02/24/2021

Volpe Koenig
30 SOUTH 17TH STREET, 18TH FLOOR
PHILADELPHIA, PA 19103

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

John D. Wilt	(Typed or printed name)
/John D. Wilt/	(Signature)
May 20, 2021	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

TITLE OF INVENTION: COMMUNICATIONS IN A WIRELESS NETWORK

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	05/24/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
ABELSON, RONALD B	2476	370-280000

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 03-09 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 Volpe Koenig
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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Intellectual Ventures II LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Wilmington, DE

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

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

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

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 220493

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /John D. Wilt/ Date May 20, 2021

Typed or printed name John D. Wilt Registration No. 76,110

Electronic Patent Application Fee Transmittal

Application Number:	14458693
Filing Date:	13-Aug-2014
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Filer:	John D. Wilt/Caren Burgoon
Attorney Docket Number:	IPW2-USCN205928

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

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	1200	1200

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1200**

Electronic Acknowledgement Receipt

EFS ID:	42775528
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	John D. Wilt/Caren Burgoon
Filer Authorized By:	John D. Wilt
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	20-MAY-2021
Filing Date:	13-AUG-2014
Time Stamp:	14:51:02
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1200
RAM confirmation Number	E20215JE51490787
Deposit Account	220493
Authorized User	Caren Burgoon

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	IPW2_USCN205928_IssueFeeTransmittal_20210520.pdf	117388 1fa31112bc89f2cc8472461777b360f2b319ad5d	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30457 677124d48bb9b12b3933a9717d6c31f3b715c96f	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	147845		

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.

To: eoffice@volpe-koenig.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 3624

Feb 24, 2021 04:37:26 AM

Dear PAIR Customer:

Volpe Koenig
30 SOUTH 17TH STREET, 18TH FLOOR
PHILADELPHIA, PA 19103
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 3624 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	NOA	02/24/2021	IPW2-USCN205928
	1449	02/24/2021	IPW2-USCN205928
	1449	02/24/2021	IPW2-USCN205928
	1449	02/24/2021	IPW2-USCN205928

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

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

3624 7590 02/24/2021

Volpe Koenig
30 SOUTH 17TH STREET, 18TH FLOOR
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

DATE MAILED: 02/24/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

TITLE OF INVENTION: COMMUNICATIONS IN A WIRELESS NETWORK

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	05/24/2021

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 ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

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

3624 7590 02/24/2021

Volpe Koenig
30 SOUTH 17TH STREET, 18TH FLOOR
PHILADELPHIA, PA 19103

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

TITLE OF INVENTION: COMMUNICATIONS IN A WIRELESS NETWORK

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	05/24/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
ABELSON, RONALD B	2476	370-280000

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 03-09 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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required) ❑ Advance Order - # of Copies _____

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

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

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NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 02/24/2021

Volpe Koenig
30 SOUTH 17TH STREET, 18TH FLOOR
PHILADELPHIA, PA 19103

EXAMINER	
ABELSON, RONALD B	
ART UNIT	PAPER NUMBER
2476	

DATE MAILED: 02/24/2021

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B 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 30 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.

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 disclosure of these records is required by the Freedom of Information Act.
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 inspection 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.

Notice of Allowability	Application No. 14/458,693	Applicant(s) Howard, Paul	
	Examiner RONALD B ABELSON	Art Unit 2476	AIA (FITF) Status No

-- 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 2/18/21, 1/20/21, 9/16/20, 5/7/20.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1,5-9,11 and 15-19 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information , please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

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

   Certified copies:

   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.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ 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. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 1/20/21, 9/16/20, 5/7/20.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14/458,693	Howard, Paul
	Examiner	Art Unit
	RONALD B ABELSON	2476

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

CLAIMS

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

CLAIM		DATE								
Final	Original	02/17/2021	02/17/2021	02/17/2021	02/17/2021	02/17/2021	02/17/2021	02/17/2021		
1	1	✓	✓	✓	✓	✓	✓	=		
	2	✓	✓	-	-	-	-	-		
	3	✓	-	-	-	-	-	-		
	4	✓	✓	-	-	-	-	-		
2	5	✓	✓	✓	✓	✓	✓	=		
3	6	✓	✓	✓	✓	✓	✓	=		
4	7	✓	✓	✓	✓	✓	✓	=		
5	8	✓	✓	✓	✓	✓	✓	=		
6	9	✓	✓	✓	✓	✓	✓	=		
	10	✓	-	-	-	-	-	-		
7	11	✓	✓	✓	✓	✓	✓	=		
	12	✓	✓	-	-	-	-	-		
	13	✓	-	-	-	-	-	-		
	14	✓	✓	-	-	-	-	-		
8	15	✓	✓	✓	✓	✓	✓	=		
9	16	✓	✓	✓	✓	✓	✓	=		
10	17	✓	✓	✓	✓	✓	✓	=		
11	18	✓	✓	✓	✓	✓	✓	=		
12	19	✓	✓	✓	✓	✓	✓	=		
	20	✓	-	-	-	-	-	-		

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14/458,693	Howard, Paul
	Examiner	Art Unit
	RONALD B ABELSON	2476

CPC - Searched*		
Symbol	Date	Examiner
H04B 7/216, 1/707, 7/212, 7/2123, 2201/70701, 7/2643, 7/2628	02/17/2021	RA
H04W 72/0446, 84/12, 74/04,	02/17/2021	RA
H04L 12/2801	02/17/2021	RA

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
370	320,321,335-337,342,345,347,441,442	02/17/2021	RA

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
CPC combined with limited text search in EAST	5/11/18	RA

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
h04b	7/216, 1/707, 7/212, 7/2123, 2201/70701, 7/2643, 7/2628	02/17/2021	RA
h04w	72/0446, 84/12, 74/04	02/17/2021	RA
h04l	12/2801	02/17/2021	RA

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14/458,693	Howard, Paul
	Examiner	**Art Unit**
	RONALD B ABELSON	2476

CPC						
Symbol					**Type**	**Version**
H04B	/	7	/	2643	F	2013-01-01
H04W	/	72	/	0406	I	2013-01-01
H04J	/	3	/	1694	I	2013-01-01
H04L	/	5	/	0053	I	2013-01-01
H04W	/	52	/	146	I	2013-01-01
H04W	/	72	/	042	I	2013-01-01
H04W	/	72	/	0446	I	2013-01-01
H04W	/	52	/	54	A	2013-01-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	12	
/RONALD B ABELSON/ Primary Examiner, Art Unit 2476	17 February 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20210217

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14/458,693	Howard, Paul
	Examiner	**Art Unit**
	RONALD B ABELSON	2476

INTERNATIONAL CLASSIFICATION				
CLAIMED				
H04B	/	7	/	212
H04W	/	72	/	04
H04W	/	52	/	14
H04J	/	3	/	16
H04L	/	5	/	00

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	12	
/RONALD B ABELSON/ Primary Examiner, Art Unit 2476	17 February 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20210217

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	Examiner	**Art Unit**
	RONALD B ABELSON	2476

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

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1		10	12	19										
	2	7	11		20										
	3		12												
	4		13												
2	5		14												
3	6	8	15												
4	7	9	16												
5	8	10	17												
6	9	11	18												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	12	
/RONALD B ABELSON/ Primary Examiner, Art Unit 2476	17 February 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20210217

PTO/SB/08a (02-18)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14458693
Filing Date	2014-08-13
First Named Inventor	Howard
Art Unit	2476
Examiner Name	Ronald B. Abelson
Attorney Docket Number	IPW2-USCN205928

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20040170132	A1	2004-09-02	Shin et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.B.A/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	First Named Inventor	Howard
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

	1	FINAL REJECTION, U.S. Patent Application No. 16/682,854, mailed July 1, 2020.	

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EXAMINER SIGNATURE

Examiner Signature	/RONALD B ABELSON/	Date Considered	02/17/2021

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/John D. Wilt/	Date (YYYY-MM-DD)	2020-09-16
Name/Print	John D. Wilt	Registration Number	76,110

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

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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 record s.

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)).

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Filing Date	2014-08-13
First Named Inventor	Howard
Art Unit	2476
Examiner Name	Ronald B. Abelson
Attorney Docket Number	IPW2-USCN205928

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20040022213	A1	2004-02-05	Choi et al.	
	2	20070058595	A1	2007-03-15	Classon et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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EXAMINER SIGNATURE

Examiner Signature	/RONALD B ABELSON/	Date Considered	02/17/2021

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

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SIGNATURE

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

Signature	/John D. Wilt/	Date (YYYY-MM-DD)	2020-05-07
Name/Print	John D. Wilt	Registration Number	76,110

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(Not for submission under 37 CFR 1.99)

Application Number	14458693
Filing Date	2014-08-13
First Named Inventor	Howard
Art Unit	2476
Examiner Name	Ronald B. Abelson
Attorney Docket Number	IPW2-USCN205928

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	1	20050058103	A1	2005-03-17	Jeong et al.	

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	1	Non-final Rejection issued in U.S. Patent Application No. 16/682,854, dated October 21, 2020.	

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Examiner Signature	/RONALD B ABELSON/	Date Considered	02/17/2021

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Signature	/John D. Wilt/	Date (YYYY-MM-DD)	2021-01-20
Name/Print	John D. Wilt	Registration Number	76,110

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14458693	APDR	02/18/2021	IPW2-USCN205928

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 02/18/2021

Volpe Koenig
30 SOUTH 17TH STREET, 18TH FLOOR
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
02/18/2021	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PAUL HOWARD

Appeal 2019-006328
Application 14/458,693
Technology Center 2400

Before JEAN R. HOMERE, IRVIN E. BRANCH, and MICHAEL J. ENGLE, *Administrative Patent Judges*.

ENGLE, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant[1] appeals under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1, 5–9, 11, and 15–19, which are all of the claims pending in the application. Appeal Br. 3. Claims 2–4, 10, 12–14, and 20 have been canceled. *Id.* at 15–19 (Claims App.). We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

---

[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies Intellectual Ventures II LLC as the real party in interest. Appeal Br. 3.

TECHNOLOGY

The application relates to communications in a wireless network. Spec. Title.

ILLUSTRATIVE CLAIM

Claim 1 is illustrative and reproduced below with certain limitations at issue emphasized:

1. A network device comprising:

a transceiver is configured to transmit, to a user equipment (UE), a first signal that includes resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times;

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the transmitted resource allocation information and wherein the physical uplink control channel is in a same location in the time slot per frame; and

the transceiver is further configured to transmit, over a single downlink control channel to the UE, *a second signal that includes a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE* and wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

REFERENCES

The Examiner relies on the following references as prior art:

Name	Reference	Date
Malladi	US 2008/0090528 A1	Apr. 17, 2008
Mazur	US 2002/0114311 A1	Aug. 22, 2002
Sato	US 2005/0222948 A1	Oct. 6, 2005
Tsunehara	US 2001/0012276 A1	Aug. 9, 2001

REJECTION

Claims 1, 5–9, 11, and 15–19 are rejected under 35 U.S.C. § 103(a) as obvious over Malladi, Tsunehara, Sato, and Mazur. Final Act. 2.

ANALYSIS

Claim 1 recites in relevant part "the transceiver is further configured to transmit, over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE."

Appellant argues that "Sato does not state that control signals for multiple terminals are sent to a relay terminal" and "[t]he relay terminals in Sato simply forward packets between a base station and terminal." Reply Br. 5; *see also* Appeal Br. 11.

Although the Examiner finds that in Sato "each relay terminal may forward control signals to multiple UEs," none of the portions of Sato cited by the Examiner discloses multiple UEs. Ans. 11 (citing Sato ¶¶ 150, 154, Figs. 1, 4, 9, 10). Instead, the relevant figures of Sato depict only *one* destination terminal for each signal (e.g., Figures 1, 4, and 9) and the text merely refers to each signal going to "a destination terminal" or more specifically "terminal C." *E.g.*, Sato ¶¶ 1 ("in order to secure

communication . . . with *a destination terminal* located outside the service area"), 71 ("The terminal A recognizes that the received packets are those to be relayed, and forwards the packets to *the terminal C* according to the address of *the terminal C* included in the header.") (emphasis added). Given Sato's *one* UE for each signal, the Examiner has not sufficiently explained the basis for finding Sato teaches or suggests a second signal that includes a *plurality* of power commands for a *plurality* of UEs.

Accordingly, we do not sustain the Examiner's rejection of claims 1, 5–9, 11, and 15–19.

DECISION SUMMARY

The following table summarizes the outcome of each rejection:

Claim(s) Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 5–9, 11, 15–19	103(a)	Malladi, Tsunehara, Sato, Mazur		1, 5–9, 11, 15–19

REVERSED

PTO/SB/08a (02-18)
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First Named Inventor	Howard
Art Unit	2476
Examiner Name	Ronald B. Abelson
Attorney Docket Number	IPW2-USCN205928

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	1	20050058103	A1	2005-03-17	Jeong et al.	

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See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

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16/682,854	11/13/2019	Paul Howard	IPW2-USCN213316	1678

3624 7590 10/21/2020

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PHILADELPHIA, PA 19103

EXAMINER	
ABELSON, RONALD B	

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- 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 10/1/20.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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*

5) ☑ Claim(s) 1-24 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-24 is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

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

11)☑ The drawing(s) filed on 11/13/19 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).

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).

Certified copies:

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)).

** 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) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 103

2. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 6-8, 12-14, 18-20, and 24 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Ishii JP 2005-346319 (for translation see US 20070265017) in view of Matthews US 20020077151, Choi US 20040022213, and Shin US 20040170132, and Jeong US 20050058103.

Regarding claims 1, 7, 13, and 19, Ishii teaches a user equipment (UE) comprising:

a receiver and processor are configured to receive resource allocation information associated with an uplink physical control channel (uplink control channel, [0207]), wherein the

uplink physical control channel and a physical uplink shared channel / PUSCH have different resources;

a transmitter and the processor are configured to send, over the physical uplink shared channel, data in assigned time intervals (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

Although Ishii teaches time multiplexing the uplink physical control channel and a physical uplink shared channel / PUSCH, the reference is silent on the transmitter and processor are further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send the uplink physical signal based on the received resource allocation information. The Examiner interprets this limitation to be dynamically allocating the time slots for transmitting the uplink physical control channel and a physical uplink shared channel based on received resource allocation information transmitted from the network.

Matthews teaches dynamically allocating control channels on uplink time slots (control channels dynamically allocated on uplink and downlink frequencies, time slots and code

channels, [0074]) based on received resource allocation information transmitted from the network (primary base station subsystem provides principle interface between base station controller and radio network, commands from base station controller interface used to configure primary base station, frequency, time slot and code channel allocation are based on commands received through the base station controller interface, [0084]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Ishii by the transmitter and processor are further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send the uplink physical signal based on the received resource allocation information, as suggested by Matthews. This modification would benefit the system by efficiently using bandwidth.

The combination is silent on wherein the uplink physical signal is used to determine channel conditions by a base station; and

the receiver and the processor are further configured to receive, on a downlink control channel, control information,

wherein the control information is based on the determined channel conditions.

Choi teaches wherein the uplink physical signal is used to determine channel conditions by a base station; and

the receiver and the processor are further configured to receive, on a downlink control channel, control information, wherein the control information is based on the determined channel conditions (It is possible to estimate a variation rate of a [redacted] by determining a Doppler frequency using a pilot signal of an [redacted] (UL DPCCH) or an HS-DPCCH signal received from a UE, [0126], Upon receiving a [redacted] channel signal, a UE must measure channel quality (CQ) of the received [redacted] channel signal, and report the measured channel quality to a Node B. The Node B then receives the channel quality information from the UE, determines an MCS level of an HS-DSCH over which data is actually transmitted to the UE according to the received channel quality information, and creates transport format and resource related information (TFRI), i.e., HS-DSCH [redacted] information, [0010]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the uplink physical signal is used to determine channel conditions by a base station; and the receiver and the processor are

further configured to receive, on a downlink control channel, control information, wherein the control information is based on the determined channel conditions, as shown by Choi. This modification would benefit the system by providing a means for the UEs to receive control information based on the current channel conditions.

Although Ishii teaches a downlink physical control channel (HS-PDSCH, [0079], PDSCH, [0207], the reference is silent on wherein physical control channels are transmitted with other physical channels in a plurality of predetermined time slots in a downlink frame, wherein other time slots of the downlink frame do not include a physical control channel.

Shin teaches wherein physical control channels are transmitted with other physical channels in a plurality of predetermined time slots in a downlink frame, wherein other time slots of the downlink frame do not include a physical control channel (fig. 1, [0019, 0022]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by wherein physical control channels are transmitted with other physical channels in a plurality of predetermined time slots in a downlink frame, wherein other time slots of the downlink frame do not include a physical control channel, as shown by Shin.

This modification would benefit the system by simultaneously transmit the PDSCH and beacon.

The combination is silent on the physical control channels are transmitted in a same time slot with other physical channels in a plurality of predetermined time slots in a downlink frame.

Jeong teaches the physical control channels are transmitted in a same time slot with other physical channels in a plurality of predetermined time slots in a downlink frame (When one UE occupies all physical channels in one downlink [redacted] all physical channels in one downlink time slot, [0035]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the physical control channels are transmitted in a same time slot with other physical channels in a plurality of predetermined time slots in a downlink frame, as shown by Jeong. This modification would benefit the system since using a single time slot to transmit information for a plurality of physical channels is an efficient use of the time slots.

Regarding claims 2, 8, 14, and 20, the processor is further configured to receive data on a physical downlink shared channel (Ishii: PDSCH, [0207]).

Regarding claims 6, 12, 18, and 24, in the time interval that the uplink physical signal is sent by the UE, a plurality of UEs each transmit on respective uplink physical control channels in the time interval (Ishii: (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

4. Claims 3, 9, 15, and 21 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over the combination as applied to claim 1 above, and further in view of Malkamaki US 20020172208.

The combination is silent on the downlink control channel and the physical downlink shared channel are time multiplexed.

Malkamaki teaches the downlink control channel and the physical downlink shared channel are time multiplexed (The shared control channel could be sent as a separate code

channel (i.e. it could be code multiplexed) or could be sent using the same code channels as the HS-PDSCH (i.e. it could be time multiplexed with the HS-PDSCH, [0008]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the downlink control channel and the physical downlink shared channel are time multiplexed, as shown by Malkamaki. This modification would benefit the system by since time multiplexing allows for an efficient use of system resources.

5. Claims 4, 5, 10, 11, 16, 17, 22, and 23 rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over the combination as applied to claim 1 above, and further in view of Anderson US 20080144600.

Regarding claims 4, 10, 16, and 22, although Ishii teaches PLCCH, the reference is silent on the receiver and processor is further configured to receive, on the physical control channel, power control information.

Anderson teaches the receiver and processor is further configured to receive, on the physical control channel, power control information (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the receiver and processor is further configured to receive, on the physical control channel, power control information, as shown by Anderson. This modification would benefit the system by providing an proven, reliable method for sending power control information.

Regarding claims 5, 11, 17, and 23, the physical control channel includes power control information for a plurality of UEs using different bits (Anderson: PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F 8:00-4:30.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is

encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on 571-272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 https://ppair-my.uspto.gov/pair/PrivatePair. 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.

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

Notice of References Cited	Application/Control No. 16/682,854	Applicant(s)/Patent Under Reexamination Howard, Paul	
	Examiner RONALD B ABELSON	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
	A	20050058103	03-2005	Jeong	H04H 7/216	
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC 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.

Electronic Acknowledgement Receipt

EFS ID:	41697034
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	John D. Wilt/Caren Burgoon
Filer Authorized By:	John D. Wilt
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	20-JAN-2021
Filing Date:	13-AUG-2014
Time Stamp:	16:57:53
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	Transmittal Letter	IPW2_USCN205928_IDSTransmittal_20210120.pdf	89196 1bcd9117f41083591af2c86796acb3d9306bcb29	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	IPW2_USCN205928_SB08_EFS.pdf	1077556 4f4d9db0f8c625f46ca775c75e52eeda055e96ac	no	4
Warnings:					
Information:					
3	Non Patent Literature	16_682_854_Non-Final_OA.pdf	453279 a969d206b981604fd4ab05707968caf08f87e0fa	no	14
Warnings:					
Information:					
			Total Files Size (in bytes):	1620031	

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.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of: Howard	
Application No.: 14/458,693	Our File: IPW2-USCN205928
Confirmation No.: 4825	Date: January 20, 2021
Filed: August 13, 2014	
For: COMMUNICATIONS IN A WIRELESS NETWORK	
Group: 2476	
Examiner: Ronald B. Abelson	

INFORMATION DISCLOSURE STATEMENT

Mail Stop Amendment (via EFS)
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Further to Applicant's Duty of Disclosure pursuant to 37 C.F.R. §1.56, Applicant wishes to bring to the Examiner's attention the material cited on the enclosed PTO Form SB-08. Pursuant to 37 C.F.R. §1.98(a)(2)(ii), copies of the cited U.S. publications and/or patent documents have not been included.

This Application is a continuation of U.S. Patent Application No. 13/176,298, filed July 5, 2011, which issued August 19, 2014 as U.S. Patent No. 8,811,356, which is a continuation of U.S. Patent Application No. 11/646,692, filed December 27, 2006, which issued August 30, 2011 as U.S. Patent No. 8,009,639.

This Application is currently under the jurisdiction of the Patent Trial and Appeals Board (Appeal 2019-006328). Applicant respectfully requests, pursuant to MPEP § 1210, that this Information Disclosure Statement be held in abeyance until the Board's jurisdiction end. At the time, it is respectfully requested that the Examiner consider these documents and return an initialed copy of the PTO Form SB-08 indicating consideration of the cited materials.

Respectfully submitted,

Intellectual Ventures Holding 81 LLC

By /John D. Wilt/
John D. Wilt
Registration No. 76,110
(215) 568-6400

Volpe Koenig
United Plaza
30 South 17th Street
Philadelphia, PA 19103

JDW/PCK
Enclosure

6650695.1

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14458693
Filing Date	2014-08-13
First Named Inventor	Howard
Art Unit	2476
Examiner Name	Ronald B. Abelson
Attorney Docket Number	IPW2-USCN205928

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20040170132	A1	2004-09-02	Shin et al.	

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14458693
	Filing Date	2014-08-13
	First Named Inventor	Howard
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

	1	FINAL REJECTION, U.S. Patent Application No. 16/682,854, mailed July 1, 2020.

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14458693
	Filing Date	2014-08-13
	First Named Inventor	Howard
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/John D. Wilt/	Date (YYYY-MM-DD)	2020-09-16
Name/Print	John D. Wilt	Registration Number	76,110

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

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 record s.

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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/682,854	11/13/2019	Paul Howard	IPW2-USCN213316	1678

3624 7590 07/01/2020

VOLPE AND KOENIG, P.C.
30 SOUTH 17TH STREET, 18TH FLOOR
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
07/01/2020	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

Office Action Summary	Application No. 16/682,854	Applicant(s) Howard, Paul	
	Examiner RONALD B ABELSON	Art Unit 2476	AIA (FITF) Status No

-- 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 MONTHS 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 6/19/20.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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*

5) ☑ Claim(s) 1-24 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-24 is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

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

11)☑ The drawing(s) filed on 11/13/19 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).

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).

Certified copies:

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)).

** 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) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 103

2. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 6-8, 12-14, 18-20, and 24 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Ishii JP 2005-346319 (for translation see US 20070265017) in view of Matthews US 20020077151, Choi US 20040022213, and Shin US 20040170132.

Regarding claims 1, 7, 13, and 19, Ishii teaches a user equipment (UE) comprising:

a receiver and processor are configured to receive resource allocation information associated with an uplink physical control channel (uplink control channel, [0207]), wherein the

uplink physical control channel and a physical uplink shared channel / PUSCH have different resources;

a transmitter and the processor are configured to send, over the physical uplink shared channel, data in assigned time intervals (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

Although Ishii teaches time multiplexing the uplink physical control channel and a physical uplink shared channel / PUSCH, the reference is silent on the transmitter and processor are further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send the uplink physical signal based on the received resource allocation information. The Examiner interprets this limitation to be dynamically allocating the time slots for transmitting the uplink physical control channel and a physical uplink shared channel based on received resource allocation information transmitted from the network.

Matthews teaches dynamically allocating control channels on uplink time slots (control channels dynamically allocated on uplink and downlink frequencies, time slots and code

channels, [0074]) based on received resource allocation information transmitted from the network (primary base station subsystem provides principle interface between base station controller and radio network, commands from base station controller interface used to configure primary base station, frequency, time slot and code channel allocation are based on commands received through the base station controller interface, [0084]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Ishii by the transmitter and processor are further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send the uplink physical signal based on the received resource allocation information, as suggested by Matthews. This modification would benefit the system by efficiently using bandwidth.

The combination is silent on wherein the uplink physical signal is used to determine channel conditions by a base station; and

the receiver and the processor are further configured to receive, on a downlink control channel, control information,

wherein the control information is based on the determined channel conditions.

Choi teaches wherein the uplink physical signal is used to determine channel conditions by a base station; and

the receiver and the processor are further configured to receive, on a downlink control channel, control information, wherein the control information is based on the determined channel conditions (It is possible to estimate a variation rate of a [redacted] by determining a Doppler frequency using a pilot signal of an [redacted] (UL DPCCH) or an HS-DPCCH signal received from a UE, [0126], Upon receiving a [redacted] channel signal, a UE must measure channel quality (CQ) of the received [redacted] channel signal, and report the measured channel quality to a Node B. The Node B then receives the channel quality information from the UE, determines an MCS level of an HS-DSCH over which data is actually transmitted to the UE according to the received channel quality information, and creates transport format and resource related information (TFRI), i.e., HS-DSCH [redacted] information, [0010]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the uplink physical signal is used to determine channel conditions by a base station; and the receiver and the processor are

further configured to receive, on a downlink control channel, control information, wherein the control information is based on the determined channel conditions, as shown by Choi. This modification would benefit the system by providing a means for the UEs to receive control information based on the current channel conditions.

Although Ishii teaches a downlink physical control channel (HS-PDSCH, [0079], PDSCH, [0207], the reference is silent on wherein physical control channels are transmitted with other physical channels in a plurality of predetermined time slots in a downlink frame, wherein other time slots of the downlink frame do not include a physical control channel.

Shin teaches wherein physical control channels are transmitted with other physical channels in a plurality of predetermined time slots in a downlink frame, wherein other time slots of the downlink frame do not include a physical control channel (fig. 1, [0019, 0022]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by wherein physical control channels are transmitted with other physical channels in a plurality of predetermined time slots in a downlink frame, wherein other time slots of the downlink frame do not include a physical control channel, as shown by Shin.

This modification would benefit the system by simultaneously transmit the PDSCH and beacon.

Regarding claims 2, 8, 14, and 20, the processor is further configured to receive data on a physical downlink shared channel (Ishii: PDSCH, [0207]).

Regarding claims 6, 12, 18, and 24, in the time interval that the uplink physical signal is sent by the UE, a plurality of UEs each transmit on respective uplink physical control channels in the time interval (Ishii: (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

4. Claims 3, 9, 15, and 21 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over the combination as applied to claim 1 above, and further in view of Malkamaki US 20020172208.

The combination is silent on the downlink control channel and the physical downlink shared channel are time multiplexed.

Malkamaki teaches the downlink control channel and the physical downlink shared channel are time multiplexed (The shared control channel could be sent as a separate code channel (i.e. it could be code multiplexed) or could be sent using the same code channels as the HS-PDSCH (i.e. it could be time multiplexed with the HS-PDSCH, [0008]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the downlink control channel and the physical downlink shared channel are time multiplexed, as shown by Malkamaki. This modification would benefit the system by since time multiplexing allows for an efficient use of system resources.

5. Claims 4, 5, 10, 11, 16, 17, 22, and 23 rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over the combination as applied to claim 1 above, and further in view of Anderson US 20080144600.

Regarding claims 4, 10, 16, and 22, although Ishii teaches PLCCH, the reference is silent on the receiver and processor is further configured to receive, on the physical control channel, power control information.

Anderson teaches the receiver and processor is further configured to receive, on the physical control channel, power

control information (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the receiver and processor is further configured to receive, on the physical control channel, power control information, as shown by Anderson. This modification would benefit the system by providing an proven, reliable method for sending power control information.

Regarding claims 5, 11, 17, and 23, the physical control channel includes power control information for a plurality of UEs using different bits (Anderson: PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F 8:00-4:30.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Ayaz Sheikh can be reached on 571-272-3795. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

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 https://ppair-my.uspto.gov/pair/PrivatePair. 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.

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

Notice of References Cited	Application/Control No. 16/682,854	Applicant(s)/Patent Under Reexamination Howard, Paul	
	Examiner RONALD B ABELSON	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
	A	20040170132	09-2004	Shin	H04L 5/14	
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC 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.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/682,854	Howard, Paul
	Examiner	Art Unit
	RONALD B ABELSON	2476

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

CLAIMS

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

CLAIM		DATE								
Final	Original	01/25/2020	06/25/2020							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4	✓	✓							
	5	✓	✓							
	6	✓	✓							
	7	✓	✓							
	8	✓	✓							
	9	✓	✓							
	10	✓	✓							
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	17	✓	✓							
	18	✓	✓							
	19	✓	✓							
	20	✓	✓							
	21	✓	✓							
	22	✓	✓							
	23	✓	✓							
	24	✓	✓							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/682,854	Howard, Paul
	Examiner	Art Unit
	RONALD B ABELSON	2476

CPC - Searched*		
Symbol	**Date**	**Examiner**
h04b7/2643	06/25/2020	RA
h04j3/1694	06/25/2020	RA
h04l5/0053	06/25/2020	RA
h04w52/146 h04w72/0406 h04w72/042 h04w72/0446	06/25/2020	RA

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
CPC combined with limited text search in EAST	06/25/2020	RA

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

Electronic Acknowledgement Receipt

EFS ID:	40575656
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	John D. Wilt/Caren Burgoon
Filer Authorized By:	John D. Wilt
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	16-SEP-2020
Filing Date:	13-AUG-2014
Time Stamp:	16:18:45
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	Transmittal Letter	IPW2_USCN205928_IDSTransmittal_20200916.pdf	89752 7b24f76bb532aef8f27edcf721da5e7a57973411	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	IPW2_USCN205928_SB08_20200916.pdf	1102191 17d902b885da319e12ade19ecba8a945fc76db06	no	4
Warnings:					
Information:					
3	Other Reference-Patent/App/Search documents	16682854_FR-20200701.pdf	442135 bcefbc982aa45104bffb5759bf462a5c2485c54d	no	15
Warnings:					
Information:					
		Total Files Size (in bytes):	1634078		

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.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of: Howard	
Application No.: 14/458,693	Our File: IPW2-USCN205928
Confirmation No.: 4825	Date: September 16, 2020
Filed: August 13, 2014	
For: COMMUNICATIONS IN A WIRELESS NETWORK	
Group: 2476	
Examiner: Ronald B. Abelson	

INFORMATION DISCLOSURE STATEMENT

Mail Stop Amendment (via EFS)
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Further to Applicant's Duty of Disclosure pursuant to 37 C.F.R. §1.56, Applicant wishes to bring to the Examiner's attention the material cited on the enclosed PTO Form SB-08. Pursuant to 37 C.F.R. §1.98(a)(2)(ii), copies of the cited U.S. publications and/or patent documents have not been included.

This Application is a continuation of U.S. Patent Application No. 13/176,298, filed July 5, 2011, which issued August 19, 2014 as U.S. Patent No. 8,811,356, which is a continuation of U.S. Patent Application No. 11/646,692, filed December 27, 2006, which issued August 30, 2011 as U.S. Patent No. 8,009,639.

This Application is currently under the jurisdiction of the Patent Trial and Appeals Board (Appeal 2019-006328). Applicant respectfully requests, pursuant to MPEP § 1210, that this Information Disclosure Statement be held in abeyance until the Board's jurisdiction end. At the time, it is respectfully requested that the Examiner consider these documents and return an initialed copy of the PTO Form SB-08 indicating consideration of the cited materials.

Respectfully submitted,

Intellectual Ventures Holding 81 LLC

By /John D. Wilt/
John D. Wilt
Registration No. 76,110
(215) 568-6400

Volpe Koenig
United Plaza
30 South 17th Street
Philadelphia, PA 19103

JDW/PCK
Enclosure

6453597.1

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14458693
Filing Date	2014-08-13
First Named Inventor	Howard
Art Unit	2476
Examiner Name	Ronald B. Abelson
Attorney Docket Number	IPW2-USCN205928

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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If you wish to add additional U.S. Patent citation information please click the Add button. Add

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20040022213	A1	2004-02-05	Choi et al.	
	2	20070058595	A1	2007-03-15	Classon et al.	

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14458693
	Filing Date	2014-08-13
	First Named Inventor	Howard
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14458693
	Filing Date	2014-08-13
	First Named Inventor	Howard
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/John D. Wilt/	Date (YYYY-MM-DD)	2020-05-07
Name/Print	John D. Wilt	Registration Number	76,110

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

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 record s.

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 Acknowledgement Receipt

EFS ID:	39381960
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	John D. Wilt/Caren Burgoon
Filer Authorized By:	John D. Wilt
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	07-MAY-2020
Filing Date:	13-AUG-2014
Time Stamp:	16:54:35
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	Transmittal Letter	IPW2_USCN205928_IDSTransmittal_20200507.PDF	60297 5332ee11e5a959b8459b3dba52ea53e71e0c3d08	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	IPW2_USCN205928_SB08_20200507.PDF	1053328 a27387e5bf2eb2f883160ab7c5f154d49c808a7d	no	4
Warnings:					
Information:					
			Total Files Size (in bytes):	1113625	

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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.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of: Howard	
Application No.: 14/458,693	Our File: IPW2-USCN205928
Confirmation No.: 4825	Date: May 7, 2020
Filed: August 13, 2014	
For: COMMUNICATIONS IN A WIRELESS NETWORK	
Group: 2476	
Examiner: Ronald B. Abelson	

INFORMATION DISCLOSURE STATEMENT

Mail Stop Amendment (via EFS)
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Further to Applicant's Duty of Disclosure pursuant to 37 C.F.R. §1.56, Applicant wishes to bring to the Examiner's attention the material cited on the enclosed PTO Form SB-08. Pursuant to 37 C.F.R. §1.98(d) copies of documents cited in the parent application are not enclosed, but copies will be provided upon request.

This Application is a continuation of U.S. Patent Application No. 13/176,298, filed July 5, 2011, which issued August 19, 2014 as U.S. Patent No. 8,811,356, which is a continuation of U.S. Patent Application No. 11/646,692, filed December 27, 2006, which issued August 30, 2011 as U.S. Patent No. 8,009,639.

This Application is currently under the jurisdiction of the Patent Trial and Appeals Board (Appeal 2019-006328). Applicant respectfully requests, pursuant to MPEP § 1210, that this Information Disclosure Statement be held in abeyance until the Board's jurisdiction end. At the time, it is respectfully requested that the Examiner consider these documents and return an initialed copy of the PTO Form SB-08 indicating consideration of the cited materials.

Respectfully submitted,

Intellectual Ventures Holding 81 LLC

By /John D. Wilt/
John D. Wilt
Registration No. 76,110
(215) 568-6400

Volpe and Koenig, P.C.
United Plaza
30 South 17th Street
Philadelphia, PA 19103

JDW/PCK
Enclosure

To: eoffice@volpe-koenig.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 3624

Sep 03, 2019 03:24:07 AM

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PHILADELPHIA, PA 19103
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Application	Document	Mailroom Date	Attorney Docket No.
14458693	AP_DK_M	09/03/2019	IPW2-USCN205928

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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 09/03/2019

VOLPE AND KOENIG, P.C.
30 SOUTH 17TH STREET, 18th Floor
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
09/03/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

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eoffice@volpe-koenig.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PAUL HOWARD

Appeal 2019-006328
Application 14/458,693
Technology Center 2400

APPEAL DOCKETING NOTICE

The Patent Trial and Appeal Board received the appeal in the above-identified application from the Technology Center on August 29, 2019, and has assigned it the appeal number indicated above.

The recipient of this notice is reminded of its ongoing duty, within 20 days of any change during the proceeding, to update its mandatory notices to identify the real party-in-interest and each judicial or administrative proceeding that could affect, or be affected by, the Board proceeding. 37 C.F.R. § 41.8. For example, another docketed appeal in a related application may have the potential to affect, or be affected by, the Board proceeding.

In all future communications regarding this appeal, please include both the application number and the appeal number. Telephone inquiries can be made by calling 571-272-9797 and referencing the appeal number listed above. The mailing address for the Board is:

PATENT TRIAL and APPEAL BOARD
UNITED STATES PATENT AND TRADEMARK OFFICE
P.O. BOX 1450
ALEXANDRIA, VIRGINIA 22313-1450

To: eoffice@volpe-koenig.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 3624

Aug 20, 2019 03:38:42 AM

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UNITED STATES

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	PETDEC	08/20/2019	IPW2-USCN205928

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Monday - Friday 6:00 a.m. to 12:00 a.m.

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 08/20/2019

VOLPE AND KOENIG, P.C.
30 SOUTH 17TH STREET, 18th Floor
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
08/20/2019	ELECTRONIC

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The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
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In re Application of	:	
Howard, Paul	:	
Application No. 14/458,693	:	
Filed: August 13, 2014	:	DECISION ON PETITION
Attorney Docket No. IPW2-USCN205928	:	
For: COMMUNICATIONS IN A WIRELESS NETWORK	:	

This is a decision on the petition under the unintentional provisions of 37 CFR 1.137(a), filed March 22, 2019, to revive the above-identified application.

The petition is **GRANTED.**

This application became abandoned as a result of petitioner's failure to file an appeal forwarding fee required by 37 CFR 41.20(b)(2)) within the time period provided in 37 CFR 41.37(a)(1). As the appeal forwarding fee was not filed within two (2) months of the Examiner's Answer mailed November 23, 2018, and no extensions of time under the provisions of 37 CFR 1.136(a) could be obtained, the appeal was dismissed and the proceedings as to the rejected claims were terminated. See 37 CFR 1.197(b). As no claim was allowed, the application became abandoned on January 24, 2019 by operation of law. See MPEP 1215.04.

The petition satisfies the requirements of 37 CFR 1.137(a) in that petitioner has supplied (1) the reply in the form of the appeal forwarding fee $560, (2) the petition fee of $500, and (3) a proper statement of unintentional delay.

This application is being referred to Technology Center AU 2463 for appropriate action by the Examiner in the normal course of business on the reply received July 27, 2017.

Telephone inquiries concerning this decision should be directed to undersigned at (571) 272-1642.

All other inquiries concerning the examination or status of this application should be directed to the Technology Center at their customer service line 571-272-2400.

/APRIL M WISE/
Paralegal Specialist, Office of Petitions

Doc Code: PET.OP
Document Description: Petition for Review by the Office of Petitions

PTO/SB/64 (01-18)
Approved for use through 11/30/2020. OMB 0651-0031
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 displays a valid OMB control number.

PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)

Docket Number (Optional)
IPW2-USCN205928

First named inventor: Paul Howard

Application No.: 14/458,693 Art Unit: 2476

Filed: August 13, 2014 Examiner: RONALD B ABELSON

Title: COMMUNICATIONS IN A WIRELESS NETWORK

Attention: Office of Petitions
Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
FAX (571) 273-8300

NOTE: If information or assistance is needed in completing this form, please contact the Office of Petitions at (571) 272-3282.

The above-identified application became abandoned for failure to file a timely and proper reply to a notice or action by the United States Patent and Trademark Office. The date of abandonment is the day after the expiration date of the period set for reply in the Office notice or action plus any extensions of time actually obtained.

APPLICANT HEREBY PETITIONS FOR REVIVAL OF THIS APPLICATION.

NOTE: A grantable petition requires the following items:

(1) Petition fee;
(2) Reply and/or issue fee;
(3) Terminal disclaimer with disclaimer fee – required for all utility and plant applications filed before June 8, 1995, and for all design applications; and
(4) Statement that the entire delay was unintentional.

1. **Petition fee**

☐ Small entity fee $ _____ (37 CFR 1.17(m)). Applicant asserts small entity status. See 37 CFR 1.27.

☐ Micro entity fee $ _____ (37 CFR 1.17(m)). Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☒ Undiscounted fee $ 2,000.00 (37 CFR 1.17(m)).

2. **Reply and/or fee**

A The reply and/or fee to the above-noted Office notice or action in the form of

Appeal Forwarding fee and Reply Brief (identify the type of reply):

☐ has been filed previously on _____.

☒ is enclosed herewith.

B The issue fee and publication fee (if applicable) of $ _____

☐ has been paid previously on _____.

☐ is enclosed herewith.

This collection of information is required by 37 CFR 1.137(b). 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 1.11, 1.14 and 41.6. This collection is estimated to take 1 hour 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: Mail Stop Petition, 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.

Doc Code: PET.OP
Document Description: Petition for Review by the Office of Petitions

PTO/SB/64 (01-18)
Approved for use through 11/30/2020. OMB 0651-0031
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 displays a valid OMB control number.

PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)

3. **Terminal disclaimer with disclaimer fee**

☒ Since this utility/plant application was filed on or after June 8, 1995, no terminal disclaimer is required.

☐ A terminal disclaimer (and disclaimer fee (37 CFR 1.20(d)) of $ _____) disclaiming the required period of time is enclosed herewith (see PTO/SB/63).

4. **STATEMENT:** The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(a) was unintentional. [NOTE: The United States Patent and Trademark Office may require additional information if there is a question as to whether either the abandonment or the delay in filing a petition under 37 CFR 1.137(a) was unintentional (MPEP 711.03(c), subsections (III)(C) and (D)).]

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

/Harry Vartanian/	March 22, 2019
Signature	Date
Harry Vartanian	56,787
Typed or Printed Name	Registration Number, if applicable
30 South 17th Street, Suite 1800	215-568-6400
Address	Telephone Number
Philadelphia, PA 19103	
Address	

Enclosures:

☒ Fee Payment

☒ Reply

☐ Terminal Disclaimer Form

☐ Additional sheet(s) containing statements establishing unintentional delay

☒ Other: Certificate and Transmittal of Appeal Forwarding Fee and Appeal Forwarding Fee

CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being:

☐ Deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Petition, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.

☐ Transmitted by facsimile on the date shown below to the United States Patent and Trademark Office at (571) 273-8300.

Date	Signature
	Typed or printed name of person signing certificate

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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 disclosure of these records is required by the Freedom of Information Act.
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.
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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 inspection 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.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:	
Intellectual Ventures Holding 81 LLC	
Application No.:	14/458,693
Confirmation No.:	4825
Filed:	August 13, 2014
For:	COMMUNICATIONS IN A WIRELESS NETWORK
Group:	2476
Examiner:	Ronald B. Abelson

Our File: IPW2-USCN205928

Date: March 22, 2019

REPLY BRIEF
PURSUANT TO 37 CFR § 41.41

Mail Stop Appeal Brief – Patents (via EFS)
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

This Reply Brief responds to the Examiner's Answer of November 23, 2018 (hereinafter "Examiner's Answer"). The appeal forwarding fee is submitted herewith. **A petition for revival for unintentional abandonment and the petition fee is also submitted herewith.**

Contents

I. Status of the Claims 3

II. Grounds of Rejection to be Reviewed on Appeal 3

III. Reply Arguments 4

A. The Examiner argues that Sato transmits control signals to the relay terminals and each relay terminal may forward control signals to multiple user equipments (UEs) and that Sato discloses control signals for multiple terminals are sent to a relay terminal. 4

B. The Examiner argues the combination of the references would have been obvious to one of ordinary skill in the art at the time of the instant application 5

IV. Conclusion 8

I. Status of the Claims

The rejection of claims 1, 5-9, 11, and 15-19 in the Final Office Action issued May 17, 2018 (hereinafter "FOA"), are the subject of the present appeal.

II. Grounds of Rejection to be Reviewed on Appeal

Claims 1, 5-9, 11, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pub. No. 2008/0090528 to Malladi (hereinafter "Malladi") in view of U.S. Pub. No. 2001/0012276 to Tsunehara et al. (hereinafter "Tsunehara"), in view of U.S. Pub. No. 2005/0222948 to Sato et al. (hereinafter "Sato") and U.S. Pub. No. 2002/0114311 to Mazur et al. (hereinafter "Mazur").

III. Reply Arguments

The Appellant provides, in this Reply Brief, arguments specific and responsive to the Examiner's Answer. All arguments made in the Appeal Brief are maintained irrespective of whether they appear in this Reply Brief. In general, Appellant contends that the arguments presented in the Appeal Brief (supplemented in part by the Reply Brief) are not overcome by the Office Actions and Examiner's Answer.

A. The Examiner argues that Sato transmits control signals to the relay terminals and each relay terminal may forward control signals to multiple user equipments (UEs) and Sato discloses control signals for multiple terminals are sent to a relay terminal.

In the Examiner's Answer, in response to the argument that Sato does not teach or suggest "wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE" the Examiner states that "Sato makes this limitation obvious since the base station in Sato is transmitting control signals to the relay terminals and each relay terminal may forward control signals to multiple UEs." *(See pg. 10 lines, 16-20 to page 11, lines 1-2, Examiner's Answer.)* There is no teaching or suggestion in Sato regarding utilizing power control signals between relay terminals. Control signals do not have to be power control signals. Furthermore, reference to power in Sato relates to internal power consumption of relay terminals:

> [0017] The contribution may also be an amount of power internally consumed in the relay terminal during the relaying, whereby the user worrying about the discharge of the battery can be given an incentive based thereon.

However, in claim 1 "each power command controls a transmission power level of the physical uplink control channel." Furthermore, the statement "in every CDMA system power control is an integral component of the system" *(see pg. 11, lines 13-14, Examiner's Answer)* may typically apply to communication between a base station and terminal whereas Sato relates to relay communications where power control may be irrelevant.

With respect to Sato disclosing "control signals for multiple terminals are sent to a relay terminal," the Examiner's Answer contends that in Sato "radio transceiver Z11 transmits control signals to relay terminals, [0150], base station to transmit control signals to relay terminals, [0154] fig. 1, 4, 9, 10)." *(See pg. 11, lines 5-8, Examiner's Answer.)* Sato refers to, at paragraph [0150], "the radio transceiver [of the base station]… transmits and receives packets, control signals, etc. to and from the aforementioned relay terminals." Sato does not state that control signals for multiple terminals are sent to a relay terminal. The relay terminals in Sato simply forward packets between a base station and terminal. Respectfully, Sato is improperly being generalize to teach "to transmit, over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs" of claim 1 by arguing that any traffic through a relay terminal may include power commands for different UEs.

B. The Examiner argues the combination of the references would have been obvious to one of ordinary skill in the art at the time of the instant application.

In the Examiner's Answer, in response to the argument that the Final Office Action uses impermissible hindsight for the motivation of combining Tsunehara and Sato, the Examiner's Answer contends that "Malladi, refers to a CDMA network...Tsunehara reference, which also pertains to a CDMA network...Sato teaches, in a CDMA environment, a base station transmitting control signals to relay terminals wherein each relay terminal may forward the control signals to a plurality of UEs...Mazur teaches sharing a timeslot between traffic channel / 'physical downlink shared channel' and control channel transmissions was well known in the art at the time of the instant application." *(See pgs. 11, lines 23-24 to 12, lines 1-14, Examiner's Answer).*

Tsunehara and Sato cannot properly be combined with Malladi and Mazur without impermissible hindsight since the Examiner "must articulate a reason why a [Person having ordinary skill in the art] would combine the prior art references." (*In re NuVasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016). Operating in a CDMA network or simply referencing CDMA technology is insufficient reasoning and evidence for combining Malladi and Tsunehara with Sato by one of ordinary skill in the art to teach "a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources...to receive, over the physical uplink shared channel, data at assigned times" and "transmitting to the UE a second signal that includes a plurality of

power commands for a plurality of UEs" in claim 1 for the motivation to "benefit the system by when the UE is out of range of the destination base station." *(See pg. 6 of FOA).* Only with impermissible hindsight can Malladi, Tsunehara, Sato, and Mazur be combined to teach or suggest the features of independent claims 1 and 11.

IV. Conclusion

For at least the reasons above and given in the Appeal Brief filed October 17, 2018, the 35 U.S.C. § 103(a) rejection is improper and claims 1, 5-9, 11, and 15-19 are patentable.

Respectfully submitted,

Intellectual Ventures Holding 81 LLC

By: /Harry Vartanian/
Harry Vartanian
Registration No. 56,787

Volpe and Koenig, P.C.
United Plaza Bldg., Suite 1800
30 South 17th Street
Philadelphia, PA 19103
Telephone: (215) 568-6400
Facsimile: (215) 568-6499

HV/JMG/lm

Doc code: WFEE.APPEAL
Doc Description: Certification and Transmittal of Appeal Forwarding Fee

PTO/AIA/34 (06-14)

CERTIFICATION AND TRANSMITTAL OF APPEAL FORWARDING FEE	Docket Number (Optional) IPW2-USCN205928

I hereby certify that this correspondence is being facsimile transmitted to the USPTO, EFS-Web transmitted to the USPTO, or deposited with the United States Postal Service with sufficient postage in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on March 22, 2019. Signature /Harry Vartanian/ Typed or printed name Harry Vartanian	In re Application of Intellectual Ventures Holding 81 LLC Application Number 14/458,693 — Filed August 13, 2014 For COMMUNICATIONS IN A WIRELESS NETWORK Art Unit 2476 — Examiner Ronald B. Abelson

37 CFR 41.45 specifies that, in order to avoid dismissal of the appeal, appellant must pay the fee set in 37 CFR 41.20(b)(4) within two months of the later of the date of either the examiner's answer, or a decision refusing to grant a petition under 37 CFR 1.181 to designate a new ground of rejection in an examiner's answer.

The undersigned certifies that the appropriate fee accompanies this transmittal.

The fee for forwarding this appeal is (37 CFR 41.20(b)(4)) $ $2240.00

☐ Appellant asserts small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by 50%, and the resulting fee is: $ _____

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Extensions of time under 37 CFR 1.136(a) for patent applications are not applicable to the time period set forth in 37 CFR 41.45. See 37 CFR 1.136(b) for extensions of time to reply for patent applications and 37 CFR 1.550(c) for extensions of time to reply for *ex parte* reexamination proceedings.

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☐ appellant

☑ attorney or agent of record Registration number 56,787

☐ attorney or agent acting under 37 CFR 1.34 Registration number _____

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Typed or printed name Harry Vartanian

Telephone Number 215-568-6400

Date March 22, 2019

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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)).
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Electronic Patent Application Fee Transmittal

Application Number:	14458693
Filing Date:	13-Aug-2014
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Filer:	Harry Vartanian/Leah Mulholland
Attorney Docket Number:	IPW2-USCN205928

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
PET. REVIVE ABANDON APP, DELAY PYMT-RESP	1453	1	2000	2000
Patent-Appeals-and-Interference:				
APPEAL FORWARDING FEE	1413	1	2240	2240

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Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**4240**

Electronic Acknowledgement Receipt

EFS ID:	35506254
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Leah Mulholland
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Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	22-MAR-2019
Filing Date:	13-AUG-2014
Time Stamp:	16:12:54
Application Type:	Utility under 35 USC 111(a)

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37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition for review by the Office of Petitions	IPW2-USCN205928_Petition_for_Revival_20190322.PDF	256230 ce150f2ac9108b8aa6f9c9a59560623064376b9c	no	3
Warnings:					
Information:					
2	Reply Brief Filed	IPW2-USCN205928_ReplyBrief_20190322.PDF	130414 de0edda448ec21bb13716ed820fa01808dcbadb5	no	8
Warnings:					
Information:					
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Warnings:					
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4	Fee Worksheet (SB06)	fee-info.pdf	32249 28e2611142fd2bcab7390ecd4e3f8cee43df0f57	no	2
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14458693	ABN	03/19/2019	IPW2-USCN205928

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 03/19/2019

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EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

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Notice of Abandonment	Application No. 14/458,693	Applicant(s) Howard, Paul

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

This application is abandoned in view of:

1. ☐ Applicants failure to timely file a proper reply to the Office letter mailed on _____.
   (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
   (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 to the final rejection. (A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) if this is utility or plant application, a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. Note that RCEs are not permitted in design applications.)
   (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
   (d) ☐ No reply has been received.

2. ☐ Applicants failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
   (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
   (b) ☐ The submitted fee of $ _____ is insufficient. A balance of $ _____ is due.
   The issue fee required by 37 CFR 1.18 is $ _____. The publication fee, if required by 37 CFR 1.18(d), is $ _____.
   (c) ☐ The issue fee and publication fee, if applicable, has not been received.

3. ☐ Applicants failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
   (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
   (b) ☐ No corrected drawings have been received.

4. ☐ The letter of express abandonment which is signed by the attorney or agent of record or other party authorized under 37 CFR 1.33(b). See 37 CFR 1.138(b).

5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34) upon the filing of a continuing application.

6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.

7. ☑ The reason(s) below:

Applicant has not paid all necessary fees.

/RONALD B ABELSON/

Petitions to revive under 37 CFR 1.137, or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

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14458693	M327	02/26/2019	IPW2-USCN205928
	APND	02/26/2019	IPW2-USCN205928

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 02/26/2019

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EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR/ PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
14/458,693	13 August 2014	Howard, Paul	IPW2-USCN205928

	EXAMINER	
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	ART UNIT	**PAPER**
	OPAC	20190220-2

DATE MAILED: _____

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Commissioner for Patents

See attachment

/Theresa OKON/
Patent Appeals Specialist, OPAC

PTO-90C (Rev.04-03)

Communication Re: Appeal	Application No. 14/458,693	Applicant(s) Howard, Paul	
	Examiner ABELSON, RONALD B	Art Unit 2476	AIA Status No

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

1. ☐ The Notice of Appeal filed on _____ is not acceptable because:

(a) ☐ it was not timely filed.

(b) ☐ the statutory fee for filing the appeal was not submitted. See 37 CFR 41.20(b)(1).

(c) ☐ the appeal fee received on_____ was not timely filed.

(d) ☐ the submitted fee of $ _____ is insufficient. The appeal fee required by 37 CFR 41.20(b)(1) is $ _____.

(e) ☐ the appeal is not in compliance with 37 CFR 41.31(a)(1) in that no claim has been twice rejected.

(f) ☐ a Notice of Allowability, PTO-37, was mailed by the Office on _____.

2. ☐ The appeal brief filed on _____ is NOT acceptable for the reason(s) indicated below:

(a) ☐ the brief and/or brief fee is untimely. See 37 CFR 41.37(a).

(b) ☐ the statutory fee for filing the brief has not been submitted. See 37 CFR 41.20(b)(2).

(c) ☐ the submitted brief fee of $ _____ is insufficient. The brief fee required by 37 CFR 41.20(b)(2) is $ _____.

The appeal in this application will be dismissed unless corrective action is taken to timely submit the brief and requisite fee. See 37CFR 41.37(a)(1). Extensions of time may be obtained under 37 CFR 1.136(a). See 37CFR 41.37(e).

3. ☑ The appeal in this application is DISMISSED because:

(a) ☐ the statutory fee for filing the brief as required under 37 CFR 41.20(b)(2) was not timely submitted and the period for obtaining an extension of time to file the brief under 37 CFR 1.136(a) has expired.

(b) ☐ the brief was not timely filed and the period for obtaining an extension of time to file the brief under 37 CFR 1.136(a) has expired.

(c) ☐ a Request for Continued Examination (RCE) under 37 CFR 1.114 was filed on _____.

(d) ☑ other: See Continuation Sheet.

4. ☑ Because of the dismissal of the appeal, this application:

(a) ☐ is abandoned because there are no allowed claims.

(b) ☐ is before the examiner for final disposition because it contains allowed claims. Prosecution on the merits remains CLOSED.

(c) ☑ is before the examiner for consideration.

/Theresa OKON/ (571)272-1603	

Continuation of 3. The appeal in this application is DISMISSED because- (d) Other: Appellant failed to pay the Forwarding Fee. Case may be ABN if there are no allowable claims. See 37CFR 41.45(b)

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	APEA	11/23/2018	IPW2-USCN205928
	892	11/23/2018	IPW2-USCN205928

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 11/23/2018

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ABELSON, RONALD B	

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Application Number: 14/458,693
Filing Date: 13 Aug 2014
Appellant(s): Howard, Paul,

Harry Vartanian
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/17/18.

(1) Grounds of Rejection to be Reviewed on Appeal

Every ground of rejection set forth in the Office action dated 05/17/2018 from which the appeal is taken is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

The following ground(s) of rejection are applicable to the appealed claims.

Claim Rejections - 35 USC § 103

1. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 5-9, 11, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable Malladi US 20080090528 in view of

Tsunehara US 20010012276, Sato US 20050222948 and Mazur US 20020114311.

Regarding claims 1 and 11, Malladi teaches a network device comprising:

in a CDMA/W-CDMA system ([0037]);

a transceiver is configured to transmit, to a user equipment (UE), a first signal that includes resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times (fig. 3, PUSCH, PUCCH, the UE may be assigned no data segment or no control segment in a given slot, [0041], 0042], see also prov. 60/819,268 fig. 4A, 4B);

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information and wherein the physical uplink control channel is in a same

location in the time slot per frame (fig. 3, PUSCH, PUCCH, the UE may be assigned no data segment or no control segment in a given slot, [0041], 0042], see also prov. 60/819,268 fig. 4A, 4B). Note, the Examiner maintains the teachings of Malladi entail the physical uplink control channel is in a same location in the time slot per frame given Malladi does not mention changing the location of the physical uplink control channel.

Although Malladi US 20080090528 teaches the limitations above and the provisional teaches the PUSCH and PUCCH being assigned time and frequency resources, the ***provisional*** is silent on the network device is configured to receive at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information. However, sharing a time slot was well known in the art as a means for conserving time resources (see Mazur [0038]).

Malladi is silent on the transceiver is further configured to transmit, over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs, wherein each power command controls a

transmission power level of the physical uplink control channel of a respective UE.

Tsunehara teaches the transceiver is further configured to transmit, over a single downlink control channel to a plurality of UEs, a plurality of power commands, wherein each power command controls a transmission power level of a respective UE (common channel shared by the mobile terminals, base station can perform transmission power control of mobile terminals by transmitting power control signals via single common channel, [0072], CDMA, abstract).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi by the transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE, as suggested by Tsunehara. This modification would benefit the system by providing a proven, reliable method for power control.

Although Tsunehara teaches the transceiver is further configured to transmit, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of a plurality of UEs, the

combination is silent on transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs.

Sato makes obvious transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs ([0001, radio transceiver Z11 transmits control signals to relay terminals, [0150], base station to transmit control signals to relay terminals, [0154], CDMA, [0102], fig. 1, 4, 9, 10). Note, power control signals are control signals.

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs, as suggested by Sato. This modification would benefit the system by when the UE is out of range of the destination base station.

Although Malladi teaches CDMA ([0005]) and transmitting downlink control channels and a physical downlink shared channel (see provisional [0024]) and it was well known in the art at the time of the instant application in CDMA networks to transmit in the downlink control channel information in a single timeslot (see 20010048711: each frame of the pilot channel consists of plural time slots, abstract and 20020085522: time slots of the dedicated physical channels can be shifted in time in relation

to the time slots (slot 0, slot 1, . . .) of the pilot channel (CPICH), abstract) and shared channel information in a single timeslot (see 20020105929: for each slot, transmitting a forward shared channel, [0017] and 20020136193: each time slot includes a high-speed downlink shared channel, [0029]), the combination is silent on wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

Mazur teaches sharing a timeslot between traffic channel / “physical downlink shared channel” and control channel transmissions ([0038]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the single downlink control channel shares a time slot with a physical downlink shared channel, as suggested by Mazur. This modification would benefit the system by conserving time resources.

Regarding claims 5, 15, the downlink control channel includes power control information for a plurality of UEs using different bits (Tsunehara: common channel shared by the mobile terminals, base station can perform transmission power control of mobile terminals by transmitting power control signals via single common channel, [0072], CDMA, abstract).

Regarding claims 6 and 16, the times that the signal over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the times from a plurality of UEs (as shown above, it was well known in the art at the time of the instant application to transmit over the physical uplink control channel and physical uplink shared control channel in defined time slots).

Regarding claims 7-9 and 17-19, the uplink physical control channel, the respective uplink physical control channels, or the physical uplink shared channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) physical channel (Malladi: CDMA [0037]).

(2) Response to Argument

Appellant contends, "Since Tsunehara only relates to CDMA, the channels and timing described for the power control are structured differently than claim 1 such that "wherein the

single downlink control channel shares a time slot with a physical downlink shared channel" for the operation of transmitting "over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE." (pg. 9 last paragraph). However, as stated above, Malladi teaches CDMA ([0005]) and transmitting downlink control channels and a physical downlink shared channel (see provisional [0024]) and it was well known in the art at the time of the instant application in CDMA networks to transmit in the downlink control channel information in a single timeslot (see 20010048711: abstract and 20020085522: abstract) and shared channel information in a single timeslot (see 20020105929 [0017] and 20020136193 [0029]).

Appellant states Sato does not teach or suggest "wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE" (pg. 10 last paragraph). As shown above, the Examiner maintains Sato makes this limitation obvious since the base station in Sato is

transmitting control signals to the relay terminals and each relay terminal may forward control signals to multiple UEs. Furthermore, Appellant contends Sato does not state control signals for multiple terminals are sent to a relay terminal (pg. 11 1st paragraph). However, this is false (see Sato radio transceiver Z11 transmits control signals to relay terminals, [0150], base station to transmit control signals to relay terminals, [0154] fig. 1, 4, 9, 10). Appellant contends Sato does not state control signals are sent on a single downlink control channel (pg. 11 1st paragraph). However, Tsunehara teaches transmitting on a downlink control channel. Also, (pg. 11 1st paragraph) Appellant states control signals do not have to be power control signals. However, in every CDMA system power control is an integral component of the system.

Appellant contends "a substantial reconstruction or redesign at least of Malladi, Tsunehara, and Sato is needed to provide the basis for a prima facie case of obviousness" (pg. 11 last paragraph). For the reasons described above, the Examiner maintains this contention is false.

On pages 12 and 13 of the Appeal Brief the Appellant contends impermissible hindsight for combining the references Malladi, Tsunehara, Sato, and Mazur. The primary reference, Malladi, refers to a CDMA network. The Tsunehara reference, which also pertains to a CDMA network, teaches the limitation

"the transceiver is further configured to transmit, over a single downlink control channel to a plurality of UEs, a plurality of power commands, wherein each power command controls a transmission power level of a respective UE". Furthermore, Sato teaches, in a CDMA environment, a base station transmitting control signals to relay terminals wherein each relay terminal may forward the control signals to a plurality of UEs. In addition, Mazur teaches sharing a timeslot between traffic channel / "physical downlink shared channel" and control channel transmissions was well known in the art at the time of the instant application. Therefore, the Examiner maintains the combination of the references would have been obvious to one of ordinary skill in the art at the time of the instant application.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

Conferees:

/PHIRIN SAM/
Primary Examiner, Art Unit 2476

/AYAZ R SHEIKH/
Supervisory Patent Examiner, Art Unit 2476

Requirement to pay appeal forwarding fee. In order to avoid dismissal of the instant appeal in any application or ex parte reexamination proceeding, 37 CFR 41.45 requires payment of an appeal forwarding fee within the time permitted by 37 CFR 41.45(a), unless appellant had timely paid the fee for filing a brief required by 37 CFR 41.20(b) in effect on March 18, 2013.

Notice of References Cited	Application/Control No. 14/458,693	Applicant(s)/Patent Under Reexamination Howard, Paul	
	Examiner RONALD B ABELSON	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
	A	20010048711	12-2001	Sun	H04K 1/00	
	B	20020085522	07-2002	Huber	H04B 7/216	
	C	20020105929	08-2002	Chen	H04B 7/216	
	D	20020136193	09-2002	Chang	H04B 7/185	
	E					
	F					
	G					
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	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC 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.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:	
Paul Howard	
Application No.:	14/458,693
Confirmation No.:	4825
Filed:	August 13, 2014
For:	COMMUNICATIONS IN A WIRELESS NETWORK
Group:	2476
Examiner: Ronald B. Abelson	

Our File: IPW2-USCN205928

Date: October 17, 2018

APPEAL BRIEF

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Alexandria, VA 22313-1450

This Appeal Brief is being filed in response to the Final Office Action dated May 17, 2018 (hereinafter "FOA") and the Notice of Appeal filed August 17, 2018.

IPR2024-00221 Exhibit 2008 Page 138 of 692

TABLE OF CONTENTS

APPEAL BRIEF ..... - 1 -

TABLE OF CONTENTS ..... - 2 -

I. Real Party in Interest ..... - 3 -

II. Related Appeals, Interferences, and Trials ..... - 3 -

III. Status of the Claims ..... - 3 -

IV. Prosecution History ..... - 3 -

V. Summary of Claimed Subject Matter ..... - 4 -

VI. Grounds of Rejection to be Reviewed on Appeal ..... - 8 -

VII. Argument ..... - 8 -

a. Claims 1, 5-9, 11, and 15-19 are patentable under 35 U.S.C. § 103(a) (claims subject to the ground of rejection all stand or fall together) ..... - 8 -

i. Tsunehara and Sato combined with Malladi and Mazur do not provide a *Prima Facia* case of Obviousness. ..... - 8 -

ii. The FOA uses impermissible hindsight for the motivation of combining Tsunehara and Sato. ..... - 12 -

VIII. Conclusion ..... - 14 -

IX. Claims Appendix ..... - 15 -

I. Real Party in Interest

In this Appeal, the real party in interest is the assignee of record, INTELLECTUAL VENTURES II LLC, a company located in Wilmington, Delaware.

II. Related Appeals, Interferences, and Trials

The Appellant, and the undersigned representative, do not know of any other appeal, interference, or judicial proceeding that is related to, directly affects, is directly affected by, or has a bearing on decision of the Patent Trial and Appeals Board (hereinafter the "Board" or the "Board of Appeals") in this Appeal.

III. Status of the Claims

The rejection of claims 1, 5-9, 11, and 15-19 in the Final Office Action issued May 17, 2018, are the subject of the present appeal. The pending claims on appeal are attached in the Claims Listing in Section IX.

IV. Prosecution History

This application was removed from issuance by the USPTO on December 16, 2015 after a first action Notice of Allowance was mailed November 16, 2015. Appellant filed a Response on March 30, 2016, subsequent to the Non-Final Rejection mailed on December 30, 2015, wherein the Appellant amended claims and argued the patentability of claims 1, 2, 4-9, 11, 12, and 14-19. Appellant filed a Response after Final to the Final Office Action on August 10, 2016,

subsequent to the Final Rejection mailed on May 10, 2016, wherein the Appellant further amended the claims and argued the patentability of claims 1, 5-9, 11, and 15-19. An Advisory Action was mailed in response to the Response after Final filed on August 25, 2016 which Applicant responded to with a Request for Continued Examination (RCE) on October 31, 2016 with further claim amendments and arguments for the patentability of claims 1, 5-9, 11, and 15-19.

Furthermore, Appellant filed a Response on March 2, 2017, subsequent to the Non-Final Rejection mailed on December 2, 2016, wherein the Appellant amended claims and argued the patentability of claims 1, 5-9, 11, and 15-19. A Notice of Appeal was filed September 21, 2017 with a Pre-brief Appeal Conference request in response to a Final Rejection mailed on March 21, 2017, wherein the Appellant argued the patentability of claims 1, 5-9, 11, and 15-19. ***A Pre-Brief Appeal Conference decision mailed on October 18, 2017 reopened prosecution.*** Appellant filed a Response on April 23, 2018, subsequent to the Non-Final Rejection mailed on October 23, 2017, wherein the Appellant amended claims and argued the patentability of claims 1, 5-9, 11, and 15-19. A Final Rejection was mailed May 17, 2018.

Lastly, in an effort to advance prosecution, the case was also interviewed June 26, 2017 and January 22, 2018.

V. Summary of Claimed Subject Matter

Each pending independent claim 1 and 11, under consideration in this appeal, is repeated below, with support for each element from the original specification found in at least the exemplary paragraph(s) or reference numeral(s) identified in parenthesis.

1. (Rejected) A network device **(See Fig. 1, item 112 or 118 of U.S. Pub. No. 2014/0348041)** comprising:

a transceiver is configured to transmit, to a user equipment (UE), a first signal that includes resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources; **(See Fig. 2, Pars. [0009], [0027], and [0034] of U.S. Pub. No. 2014/0348041)**

the network device is configured to receive, over the physical uplink shared channel, data at assigned times; **(See Par. [0009] of U.S. Pub. No. 2014/0348041)**

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, **(See Pars. [0009] and [0030] of U.S. Pub. No. 2014/0348041)** control information over the physical uplink control channel in relation to the transmitted resource allocation information and wherein the physical uplink control channel is in a same location in the time slot per frame; and **(See Pars. [0027], [0030], and [0031] of U.S. Pub. No. 2014/0348041)**

the transceiver is further configured to transmit, over a single downlink control channel to the UE, a second signal that includes a plurality of power

commands for a plurality of UEs, **(See Par. [0028] of U.S. Pub. No. 2014/0348041)**

wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and **(See Pars. [0027] and [0028] of U.S. Pub. No. 2014/0348041)**

wherein the single downlink control channel shares a time slot with a physical downlink shared channel. **(See Fig. 2, Pars. [0010] and [0034] of U.S. Pub. No. 2014/0348041)**

11. (Rejected) A method performed by a network device **(See Fig. 1, item 112 or 118 of U.S. Pub. No. 2014/0348041)**, the method comprising:

transmitting, by the network device to a user equipment (UE), a first signal including resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources; **(See Fig. 2, Pars. [0009], [0027], and [0034] of U.S. Pub. No. 2014/0348041)**

receiving, by the network device over the physical uplink shared channel, data at assigned times; **(See Par. [0009] of U.S. Pub. No. 2014/0348041)**

receiving, by the network device at a time slot that it is not receiving the physical uplink shared channel, **(See Pars. [0009] and [0030] of U.S. Pub. No. 2014/0348041)**

control information over the physical uplink control channel in relation to the transmitted resource allocation information and wherein the physical uplink control channel is in a same location in the time slot per frame; and **(See Pars. [0027], [0030], and [0031] of U.S. Pub. No. 2014/0348041)**

transmitting, by the network device over a single downlink control channel to the UE, a second signal including a plurality of power commands for a plurality of UEs, **(See Par. [0028] of U.S. Pub. No. 2014/0348041)**

wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and **(See Pars. [0027] and [0028] of U.S. Pub. No. 2014/0348041)**

wherein the single downlink control channel shares a time slot with a physical downlink shared channel. **(See Fig. 2, Pars. [0010] and [0034] of U.S. Pub. No. 2014/0348041)**

VI. Grounds of Rejection to be Reviewed on Appeal

The grounds of rejection to be reviewed on Appeal are as follows:

Claims 1, 5-9, 11, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pub. No. 2008/0090528 to Malladi (hereinafter "Malladi") in view of U.S. Pub. No. 2001/0012276 to Tsunehara et al. (hereinafter "Tsunehara"), in view of U.S. Pub. No. 2005/0222948 to Sato et al. (hereinafter "Sato") and U.S. Pub. No. 2002/0114311 to Mazur et al. (hereinafter "Mazur").

VII. Argument

a. Claims 1, 5-9, 11, and 15-19 are patentable under 35 U.S.C. § 103(a) (claims subject to the ground of rejection all stand or fall together)

The Applicant respectfully traverses the § 103(a) rejection in the FOA and submits that the independent claims 1 and 11 recite features not taught, suggested, or otherwise yielded by any proper combination of Malladi, Tsunehara, Sato, and Mazur. Accordingly, the Applicant submits that the present claims are patentable for at least the following reasons.

i. Tsunehara and Sato combined with Malladi and Mazur do not provide a *Prima Facia* case of Obviousness.

A *prima facie* case of obviousness cannot be established when the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the reference] as well as a change in the basic principle

under which the [reference] construction was designed to operate." (*In re Ratti*, 46 C.C.P.A. 976, 981, 270 F.2d 810, 813 (C.C.P.A. 1959). As a result, the MPEP instructs, that when "the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, [] the teachings of the references are not sufficient to render the claims prima facie obvious." (MPEP §2143.01). Respectfully, the FOA suggests a reconstruction or redesign of Malladi, Tsunehara, and Sato to provide the basis for a *prima facie* case of obviousness.

Tsunehara relates to power control ***only for a code-division multiple access (CDMA) system***. Tsunehara discloses "a CDMA packet data communication system in which a base station controls the transmission power of each of a plurality of mobile terminals by using a single downlink traffic channel common for all mobile stations." (Tsunehara, Paragraph [0013]). Since Tsunehara only relates to CDMA, the channels and timing described for the power control are structured differently than claim 1 such that "wherein the single downlink control channel shares a time slot with a physical downlink shared channel" for the operation of transmitting "over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE." For the present case, an example of the channels and timing of claim 1 is given in figure 2 of U.S. Pub. No. 2014/0348041:

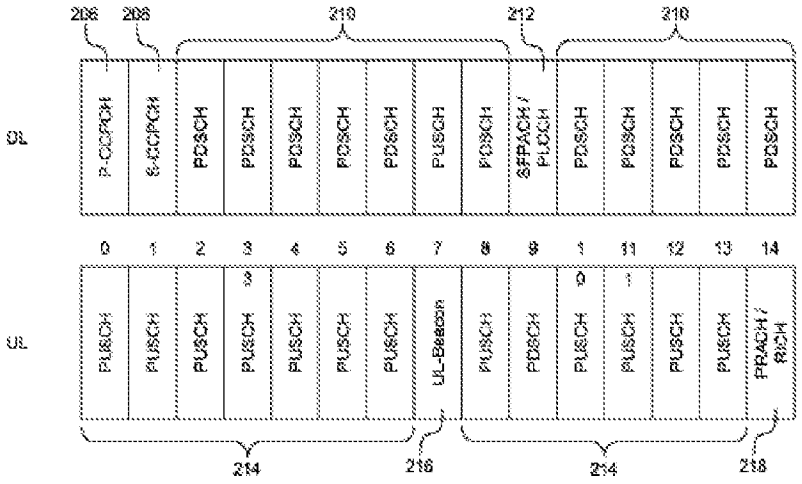


FIG. 2

As explained in par. [0034] of the current case, "FIG. 2 illustrates an example of a timeslot arrangement supporting the UL_Beacon and its corresponding PLCCH within a TD-CDMA frame structure modified to support FDD" which is operationally different than the basic principle of CDMA disclosed by Tsunehara.

The FOA states that the combination of Malladi and Tsunehara "is silent on transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs." (See pg. 5 of FOA). Sato is introduced to "makes obvious transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs ([0001, radio transceiver Z11 transmits control signals to relay terminals, [0150], base station to transmit control signals to relay terminals, [0154] fig. 1, 4, 9)." (See pg. 5 of FOA). However, Sato relates to a relay terminal in a network used to relay packet communication between a base station and a destination terminal and does not teach or suggest "wherein each power command controls a transmission power level of the physical uplink control channel of a

respective UE" in the manner given in claim 1.

Sato is silent to communicating power commands or power control in a network with the arrangement of a physical uplink control channel, a physical uplink shared channel, a single downlink control channel, or a physical downlink shared channel as given in claim 1. Sato refers to, at paragraph [0150], "the radio transceiver [of the base station]… transmits and receives packets, control signals, etc. to and from the aforementioned relay terminals." Sato does not state that control signals for multiple terminals are sent to a relay terminal. Sato also does not state that the control signals are sent on a single downlink control channel. Furthermore, Sato does not state that the control signals include power control commands. Control signals do not have to be power control signals. At best, Sato refers to in paragraph [0154] relay route information and nothing regarding power control signals.

Thus, a substantial reconstruction or redesign at least of Malladi, Tsunehara, and Sato is needed to provide the basis for a *prima facie* case of obviousness. Accordingly, changing Tsunehara's CDMA system and Sato's relay architecture to that of the present claims would require substantial reconstruction or redesign and would change the principle of operation. Therefore, Tsunehara and Sato cannot be combined with Malladi and Mazur to form a *prima facie* case of obviousness because a *prima facie* case of obviousness cannot be established when the principle of operation is changed. Therefore, the Appellant submits that the 35 U.S.C. § 103(a) rejection of claims is improper.

ii. The FOA uses impermissible hindsight for the motivation of combining Tsunehara and Sato.

"Hindsight reconstruction of references to reach the claimed invention without any explanation as to how or why the references would be combined to produce the claimed invention" is not permitted to establish a *prime facie* case of obviousness. (*Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1374, fn. 3 (Fed. Cir. 2008)). Furthermore, the Supreme Court warns that "[a] fact finder should be aware...of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning." (*KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (U.S. 2007)). Further, the high court stated that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." (*KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418, 127 S. Ct. 1727, 1741 (2007) As a result, "the selective hindsight combination of references that show various elements of the claim generally does not suffice to establish obviousness." (*In re Mettke*, 570 F.3d 1356, 1360 (Fed. Cir. 2009)). Instead, an Examiner "must articulate a reason why a PHOSITA would combine the prior art references." (*In re NuVasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016)

For at least reasons explained in section VII(a)(i), Tsunehara and Sato cannot properly be combined with Malladi and Mazur without impermissible hindsight. Furthermore, in the present case, the FOA states that Malladi can be modified to be

combined with Tsunehara since the "modification would benefit the system by providing a proven, reliable method for power control." (See pg. 5 of FOA). The FOA also states that Malladi and Tsunehara can be modified to be combined with Sato by one of ordinary skill in the art for "transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs" to "benefit the system by when the UE is out of range of the destination base station." (See FOA pg. 6). However, the Examiner for 35 U.S.C. 103(a) "must articulate a reason why a PHOSITA would combine the prior art references." (*In re NuVasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016)

As a result, a *prima facie* case of obviousness has not been established, and therefore the Appellant submits that the 35 U.S.C. § 103(a) rejection of claims is improper.

VIII. Conclusion

For at least the reasons noted above, claims the 35 U.S.C. § 103(a) rejection is improper and claims 1, 5-9, 11, and 15-19 are patentable.

In view of these differences, the rejections should be withdrawn and the claims allowed.

Respectfully submitted,

Intellectual Ventures Holding 81 LLC

By: /Harry Vartanian/
Harry Vartanian
Registration No. 56,787

Volpe and Koenig, P.C.
30 South 17th Street
Philadelphia, PA 19103-4009
Telephone: (215) 568-6400
Facsimile: (215) 568-6499

IX. Claims Appendix

1. (Rejected) A network device comprising:

a transceiver is configured to transmit, to a user equipment (UE), a first signal that includes resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times;

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the transmitted resource allocation information and wherein the physical uplink control channel is in a same location in the time slot per frame; and

the transceiver is further configured to transmit, over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

2.-4. (Canceled)

5. (Rejected) The network device of claim 1, wherein the single downlink control channel includes power control information for the plurality of UEs using different bits.

6. (Rejected) The network device of claim 1, wherein the time slot that the control information over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the time slot from the plurality of UEs.

7. (Rejected) The network device of claim 1 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the single downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

8. (Rejected) The network device of claim 1, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

9. (Rejected) The network device of claim 1, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

10. (Canceled)

11. (Rejected) A method performed by a network device, the method comprising:

transmitting, by the network device to a user equipment (UE), a first signal including resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

receiving, by the network device over the physical uplink shared channel, data at assigned times;

receiving, by the network device at a time slot that it is not receiving the physical uplink shared channel, control information over the physical uplink control channel in relation to the transmitted resource allocation information and wherein the physical uplink control channel is in a same location in the time slot per frame; and

transmitting, by the network device over a single downlink control channel to the UE, a second signal including a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

12.-14. (Canceled)

15. (Rejected) The method of claim 11, wherein the single downlink control channel includes power control information for the plurality of UEs using different bits.

16. (Rejected) The method of claim 11, wherein the time slot that the control information over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the time slot from the plurality of UEs.

17. (Rejected) The method of claim 11 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the single downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD),

frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

18. (Rejected) The method of claim 11, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

19. (Rejected) The method of claim 11, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

20. (Canceled)

Electronic Acknowledgement Receipt

EFS ID:	34039034
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Elizabeth McGinty
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	17-OCT-2018
Filing Date:	13-AUG-2014
Time Stamp:	16:32:13
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	Appeal Brief Filed	IPW2-USCN205928_-_Appeal_Brief_-_20181017.PDF	164693 f919160831dd93a5f1cd94af69651227f4fe79f4	no	19

Warnings:

Information:	
Total Files Size (in bytes):	164693

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

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

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

New International Application Filed with the USPTO as a Receiving Office

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

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PTO/AIA/31 (03-14)
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NOTICE OF APPEAL FROM THE EXAMINER TO THE PATENT TRIAL AND APPEAL BOARD

Docket Number (Optional): IPW2-USCN205928

I hereby certify that this correspondence is being facsimile transmitted to the USPTO, EFS-Web transmitted to the USPTO, or deposited with the United States Postal Service with sufficient postage in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, on Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on August 17, 2018 via FAX.
Signature /Harry Vartanian/
Typed or printed name Harry Vartanian

In re Application of: Paul Howard et al.
Application Number: 14/458,693
Filed: August 13, 2014
For: COMMUNICATIONS IN A WIRELESS NETWORK
Art Unit: 2476
Examiner: Ronald B. Abelson

Applicant hereby **appeals** to the Patent Trial and Appeal Board from the last decision of the examiner.

The fee for this Notice of Appeal is (37 CFR 41.20(b)(1)) $ 800

☐ Applicant asserts small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by 50%, and the resulting fee is: $ _____

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Therefore, the fee shown above is reduced by 75%, and the resulting fee is: $ _____
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

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

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

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 22-0493.

☐ Payment made via EFS-Web.

☐ A petition for an extension of time under 37 CFR 1.136(a) (PTO/AIA/22 or equivalent) is enclosed.
For extensions of time in reexamination proceedings, see 37 CFR 1.550.

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.

I am the

☐ applicant ☑ attorney or agent of record Registration number 56,787 ☐ attorney or agent acting under 37 CFR 1.34 Registration number _____

Signature /Harry Vartanian/
Typed or printed name Harry Vartanian
Telephone Number 215-568-6400
Date August 17, 2018

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☑ * Total of 1 forms are submitted.

This collection of information is required by 37 CFR 41.20(b)(1) and 41.31. 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 1.11, 1.14 and 41.6. 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.

08/29/2018 STANN1 00000037 220493 14458693

01 FC:1401 800.00 DA

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 disclosure of these records is required by the Freedom of Information Act.
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 inspection 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.

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Volpe and Koenig P.C.

United Plaza
30 South 17th Street
Philadelphia, PA 19103-4009
Main: +1-215-568-6400
Facsimile: +1-215-568-6499

To: Commissioner for Patents

Company: USPTO
Fax: 15712738300
Phone:

From: Volpe and Koenig P.C.

Fax: (215) 568-6499
Phone: 215.255.9149
E-mail: EMcGinty@vklaw.com

Notes: US Appln. No. 14/458,693; Notice of Appeal (IPW2-USCN205928)

Date and time of transmission: Friday, August 17, 2018 2:11:48 PM
Number of pages including this cover sheet: 04

Please see the attached Notice of Appeal for US Appln. No. 14/458,693.

Regards,
Elizabeth McGinty

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 05/17/2018

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET, 18th Floor
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
05/17/2018	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

Office Action Summary	Application No. 14/458,693	Applicant(s) HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	AIA (First Inventor to File) Status No

-- 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* MONTHS 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 *4/23/18*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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*

5)☒ Claim(s) *1,5-9,11 and 15-19* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1,5-9,11 and 15-19* is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *8/13/14* 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).

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).

Certified copies:

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)).

** 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) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 103

2. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 5-9, 11, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable Malladi US 20080090528 in view of Tsunehara US 20010012276, Sato US 20050222948 and Mazur US 20020114311.

Regarding claims 1 and 11, Malladi teaches a network device comprising:

in a CDMA/W-CDMA system ([0037]);

a transceiver is configured to transmit, to a user equipment (UE), a first signal that includes resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times (fig. 3, PUSCH, PUCCH, the UE may be assigned no data segment or no control segment in a given slot, [0041], 0042], see also prov. 60/819,268 fig. 4A, 4B);

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information and wherein the physical uplink control channel is in a same location in the time slot per frame (fig. 3, PUSCH, PUCCH, the UE may be assigned no data segment or no control segment in a given slot, [0041], 0042], see also prov. 60/819,268 fig. 4A, 4B). Note, the Examiner maintains the teachings of Malladi entail the physical uplink control channel is in a same location in the time slot per frame.

Although Malladi US 20080090528 teaches the limitations above and the provisional teaches the PUSCH and PUCCH being assigned time and frequency resources, the ***provisional*** is silent on the network device is configured to receive at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information. However, sharing a time slot was well known in the art as a means for conserving time resources (see Mazur [0038]).

Malladi is silent on the transceiver is further configured to transmit, over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE.

Tsunehara teaches the transceiver is further configured to transmit, over a single downlink control channel to a plurality of UEs, a plurality of power commands, wherein each power command controls a transmission power level of a respective UE (common channel shared by the mobile terminals, base station can perform transmission power control of mobile terminals by

transmitting power control signals via single common channel, [0072], CDMA, abstract).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi by the transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE, as suggested by Tsunehara. This modification would benefit the system by providing a proven, reliable method for power control.

Although Tsunehara teaches the transceiver is further configured to transmit, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of a plurality of UEs, the combination is silent on transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs.

Sato makes obvious transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs ([0001, radio transceiver Z11 transmits control signals to relay terminals, [0150], base station to transmit control signals to relay terminals, [0154] fig. 1, 4, 9). Note, power

control signals are control signals.

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs, as suggested by Sato. This modification would benefit the system by when the UE is out of range of the destination base station.

The combination is silent on wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

Mazur teaches sharing a timeslot between traffic channel / “physical downlink shared channel” and control channel transmissions ([0038]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the single downlink control channel shares a time slot with a physical downlink shared channel, as suggested by Mazur. This modification would benefit the system by conserving time resources.

Regarding claims 5, 15, the downlink control channel includes power control information for a plurality of UEs using different bits (Tsunehara: common channel shared by the mobile terminals, base station can perform transmission power control of mobile terminals by transmitting power control signals via single common channel, [0072], CDMA, abstract).

Regarding claims 6 and 16, the times that the signal over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the times from a plurality of UEs (as shown above, it was well known in the art at the time of the instant application to transmit over the physical uplink control channel and physical uplink shared control channel in defined time slots).

Regarding claims 7-9 and 17-19, the uplink physical control channel, the respective uplink physical control channels, or the physical uplink shared channel is any one of a time division

multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) physical channel (Malladi: CDMA [0037]).

Response to Arguments

4. Applicant's arguments filed 4/23/18 have been fully considered but they are not persuasive. The Examiner maintains with respect to the applicant's argument (pg. 8 last paragraph) Mazur makes "the single downlink control channel shares a time slot with a physical downlink shared channel" and (pg 10 1st paragraph) Malladi teaches "at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information and wherein the physical uplink control channel is in a same location in the time slot per frame".

Prior Art of Record

5. US 20050022098 [0041, 0046] teaches WCDMA HS-DPCCH (high

speed uplink control channel)

US 20050013287 [0006] teaches WCDMA PUSCH (uplink shared channel)

Anderson WO 2006015984 (see also US 20080144600) (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, pg. 29 lines 10-19)

US 20020094834 [0042] teaches an MS adjusting the uplink physical control channel based on TPC commands. US 20010026543 [0228] downlink control channel used to send power control command.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B. ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 http://pair-direct.uspto.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.

RONALD B ABELSON
Primary Examiner
Art Unit 2476

***

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

/AYAZ SHEIKH/

Supervisory Patent Examiner, Art Unit 2476

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	**Art Unit**
	RONALD B ABELSON	2476

✓	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	11/05/2014	05/03/2016	11/29/2016	03/15/2017	10/17/2017	05/11/2018			
	1	✓	✓	✓	✓	✓	✓			
	2	✓	✓	-	-	-	-			
	3	✓	-	-	-	-	-			
	4	✓	✓	-	-	-	-			
	5	✓	✓	✓	✓	✓	✓			
	6	✓	✓	✓	✓	✓	✓			
	7	✓	✓	✓	✓	✓	✓			
	8	✓	✓	✓	✓	✓	✓			
	9	✓	✓	✓	✓	✓	✓			
	10	✓	-	-	-	-	-			
	11	✓	✓	✓	✓	✓	✓			
	12	✓	✓	-	-	-	-			
	13	✓	-	-	-	-	-			
	14	✓	✓	-	-	-	-			
	15	✓	✓	✓	✓	✓	✓			
	16	✓	✓	✓	✓	✓	✓			
	17	✓	✓	✓	✓	✓	✓			
	18	✓	✓	✓	✓	✓	✓			
	19	✓	✓	✓	✓	✓	✓			
	20	✓	-	-	-	-	-			

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	Art Unit
	RONALD B ABELSON	2476

CPC- SEARCHED		
Symbol	Date	Examiner
H04B 7/216, 1/707, 7/212, 7/2123, 2201/70701, 7/2643, 7/2628	5/11/18	RA
H04W 72/0446, 84/12, 74/04,	5/11/18	RA
H04L 12/2801	5/11/18	RA

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
370	320,321,335-337,342,345,347,441,442	3/15/17	RA

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
CPC combined with limited text search in EAST	5/11/18	RA

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

To: eoffice@volpe-koenig.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 3624

May 17, 2018 04:41:40 AM

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	CTFR	05/17/2018	IPW2-USCN205928

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UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:	
Intellectual Ventures Holding 81 LLC	
Application No.: 14/458,693	Our File: IPW2-USCN205928
Confirmation No.: 4825	Date: April 23, 2018
Filed: August 13, 2014	
For: Communications in a Wireless Network	
Group: 2476	
Examiner: Ronald B. Abelson	

RESPONSE PURSUANT TO 37 C.F.R. § 1.111

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

This Response is being filed in response to the Non-Final Office Action dated October 23, 2017 and is submitted in conjunction with an appropriate petition for extension of time.

Please amend the application without prejudice or disclaimer as follows:

Amendments to the Claims:

This listing of the claims will replace all prior versions of the claims in the application:

1. (Currently Amended) A network device comprising:

a transceiver is configured to transmit, to a user equipment (UE), a first signal that includes resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times;

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the transmitted resource allocation information and wherein the physical uplink control channel is in a same location in the time slot per frame; and

the transceiver is further configured to transmit, over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

2.-4. (Canceled)

5. (Previously Presented) The network device of claim 1, wherein the single downlink control channel includes power control information for the plurality of UEs using different bits.

6. (Previously Presented) The network device of claim 1, wherein the time slot that the control information over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the time slot from the plurality of UEs.

7. (Previously Presented) The network device of claim 1 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the single downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

8. (Original) The network device of claim 1, wherein the network device is configured as any one of a time division multiple access (TDMA), code division

multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

9. (Original) The network device of claim 1, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

10. (Canceled)

11. (Currently Amended) A method performed by a network device, the method comprising:

transmitting, by the network device to a user equipment (UE), a first signal including resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

receiving, by the network device over the physical uplink shared channel, data at assigned times;

receiving, by the network device at a time slot that it is not receiving the physical uplink shared channel, control information over the physical uplink control channel in relation to the transmitted resource allocation information and wherein the physical uplink control channel is in a same location in the time slot per frame; and

transmitting, by the network device over a single downlink control channel to the UE, a second signal including a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

12.-14. (Canceled)

15. (Previously Presented) The method of claim 11, wherein the single downlink control channel includes power control information for the plurality of UEs using different bits.

16. (Previously Presented) The method of claim 11, wherein the time slot that the control information over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the time slot from the plurality of UEs.

17. (Previously Presented) The method of claim 11 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the single downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

18. (Original) The method of claim 11, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

19. (Original) The method of claim 11, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

20. (Canceled)

REMARKS/ARGUMENTS

After the foregoing Amendment, claims 1, 5-9, 11, and 15-19 are currently pending in this application. Claims 2-4, 10, 12-14, and 20 are canceled. Claims 1 and 11 are amended.

Examiner Interview

Applicant thanks the Examiner for granting a telephonic interview with the Applicant's representative on January 30, 2018. During the telephonic interview the claims were briefly discussed. No agreement was reached.

Claim Rejections - 35 U.S.C. § 103(a)

Claims 1, 5-9, 11, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pub. No. 2008/0090528 to Malladi (hereinafter "Malladi") in view of U.S. Pub. No. 2001/0012276 to Tsunehara et al. (hereinafter "Tsunehara"), in view of U.S. Pub. No. 2005/0222948 to Sato et al. (hereinafter "Sato") and U.S. Pub. No. 2002/0114311 to Mazur et al. (hereinafter "Mazur"). Without conceding the propriety of the rejection and in an effort to advance prosecution, claim 1 is amended. Malladi in view of Tsunehara, Sato, or Mazur at least do not teach or suggest a network device that receives "at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the transmitted resource allocation information and wherein

the physical uplink control channel is in a same location in the time slot per frame...transmit, over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel" of amended claim 1.

The Non-final Office Action mailed October 23, 2017 states the following:

> "Tsunehara teaches the transceiver is further configured to transmit, over a single downlink control channel to a plurality of UEs, a plurality of power commands, wherein each power command controls a transmission power level of a respective UE (common channel shared by the mobile terminals, base station can perform transmission power control of mobile terminals by transmitting power control signals via single common channel, [0072], CDMA, abstract).
> ...
> Although Tsunehara teaches the transceiver is further configured to transmit, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of a plurality of UEs, the combination is silent on transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs.
>
> Sato makes obvious transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs ([0001, radio transceiver Z11 transmits control signals to relay terminals, [0150], base station to transmit control signals to relay terminals, [0154] fig. 1, 4, 9). Note, power control signals are control signals." *(See Pages 4 and 5, Non-final Office Action mailed October 23, 2017)*

Applicant respectfully disagrees. Tsunehara cannot be combined with Sato without impermissible hindsight to at least teach or suggest "the transceiver is further

configured to transmit, over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel." Tsunehara relates to power control in a CDMA network between a base station and mobile station. However, Sato relates to a relay terminal in a network used to relay packet communication between a base station and a destination terminal making the combination impermissible without hindsight. Furthermore, Sato is silent to even communicating power commands or power control in a network.

In addition, Malladi in view of Tsunehara, Sato, or Mazur at least do not teach or suggest a network device that receives "**at a time slot that the physical uplink shared channel is not received,** control information over the physical uplink control channel in relation to the transmitted resource allocation information and **wherein the physical uplink control channel is in a same location in the time slot per frame**" in combination with the other features of amended claim 1. (Emphasis added.)

Claims 5-9 are allowable for at least the same reasons as amended claim 1. Amended claim 11 is allowable for at least the same reasons as amended claim 1. Claims 15-19 are allowable for at least the same reasons as amended 11. Based on

the arguments presented above, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1, 5-9, 11, and 15-19 is respectfully requested.

Conclusion

It should also be noted that although arguments have been presented with respect to certain claims herein, the recited subject matter as well as various other subject matter and/or combinations of subject matter may be patentable for other reasons. Further, the failure to address any statement by the Examiner herein should not be interpreted as acquiescence or agreement with such statement. The Applicant expressly reserves the right to set forth additional and/or alternative reasons for patentability and/or allowance with the present application or in any other future proceeding, and to rebut any statement presented by the Examiner in this or other papers during prosecution of the present application.

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephonic interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing, Applicant respectfully submits that the present application, including claims 1, 5-9, 11, and 15-19, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

Intellectual Ventures Holding 81 LLC

By: /Harry Vartanian/
Harry Vartanian
Registration No. 56,787

Volpe and Koenig, P.C.
30 South 17th Street
Philadelphia, PA 19103-4009
Telephone: (215) 568-6400
Facsimile: (215) 568-6499
HV/JMG/eam

PTO/AIA/22 (03-13)
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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): IPW2-USCN205928

Application Number: 14/458,693

Filed: August 13, 2014

For: COMMUNICATIONS IN A WIRELESS NETWORK

Art Unit: 2476

Examiner: Ronald B. Abelson

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	Micro Entity Fee	
☐ One month (37 CFR 1.17(a)(1))	$200	$100	$50	$
☐ Two months (37 CFR 1.17(a)(2))	$600	$300	$150	$
☑ Three months (37 CFR 1.17(a)(3))	$1,400	$700	$350	$ 1,400
☐ Four months (37 CFR 1.17(a)(4))	$2,200	$1,100	$550	$
☐ Five months (37 CFR 1.17(a)(5))	$3,000	$1,500	$750	$

☐ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

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

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

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 22-0493.

☑ Payment made via EFS-Web.

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.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 56,787.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/Harry Vartanian/ — Signature

April 23, 2018 — Date

Harry Vartanian — Typed or printed name

215-568-6400 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☐ * Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.136(a). 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 1.11 and 1.14. This collection is estimated to take 6 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: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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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:

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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.
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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 inspection 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:	14458693
Filing Date:	13-Aug-2014
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Filer:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 3 months with $0 paid	1253	1	1400	1400
Miscellaneous:				
			Total in USD ($)	**1400**

Electronic Acknowledgement Receipt

EFS ID:	32416233
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Elizabeth McGinty
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	23-APR-2018
Filing Date:	13-AUG-2014
Time Stamp:	16:41:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1400
RAM confirmation Number	042418INTEFSW16484900
Deposit Account	220493
Authorized User	Elizabeth McGinty

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		IPW2-USCN205928_-_Response_to_Non-Final_-_20180423.PDF	106517 4390c7136af04b5275b5fec0e492d58cdda503ee	yes	12
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	7	
	Applicant Arguments/Remarks Made in an Amendment		8	12	
Warnings:					
Information:					
2	Extension of Time	IPW2-USCN205928_-_Extension_of_Time_-_20180423.PDF	148677 84b88add8ede24975e8c3a7cb9dc96205b384442	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30593 84830831a979e4a1795235ee7cd13d08f96ca368	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	285787		

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

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

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

New International Application Filed with the USPTO as a Receiving Office

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

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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 04/10/2018

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET, 18th Floor
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
04/10/2018	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	14/458,693	HOWARD, PAUL	
	Examiner	Art Unit	
	RONALD B. ABELSON	2476	

All participants (applicant, applicant's representative, PTO personnel):

(1) *RONALD B. ABELSON*. (3)_____.

(2) *Harry Vartanian*. (4)_____.

Date of Interview: *22 January 2018*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1*.

Identification of prior art discussed: *References from last office action*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

No agreement was reached.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/RONALD B ABELSON/ Primary Examiner, Art Unit 2476	

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

To: eoffice@volpe-koenig.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 3624

Apr 10, 2018 04:28:16 AM

Dear PAIR Customer:

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UNITED PLAZA
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UNITED STATES

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	INTV.SUM.APP	04/10/2018	IPW2-USCN205928

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

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PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

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USPTO Automated Interview Request (AIR)

Jan 18 2018

This paper requesting to schedule and/or conduct an interview is appropriate because:

This submission is requested to be accepted as an authorization for this interview to communicate via the internet. Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with the undersigned concerning scheduling of the interview via video conference, instant messaging, or electronic mail, and to conduct the interview in accordance with office practice including video conferencing.

Name(s):
Harry Vartanian

S-signature:
/Harry Vartanian/

Registration Number:
56787

U.S. Application Number:
14458693

Confirmation Number:
4825

E-mail Address:
hvartanian@vklaw.com

Phone Number:
2152559121

Proposed Time of Interview:
1-26-2018 1:30 PM ET

Prefered Interview Type:
Telephonic

I am the applicant or applicant's representative for this application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 10/23/2017

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET, 18th Floor
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
10/23/2017	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

Office Action Summary	Application No. 14/458,693	Applicant(s) HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	AIA (First Inventor to File) Status No

-- 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* MONTHS 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 *9/21/17*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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*

5)☒ Claim(s) *1,5-9,11 and 15-19* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1, 5-9, 11, and 15-19* is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *8* 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).

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).

Certified copies:

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)).

** 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) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 103

1. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 5-9, 11, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable Malladi US 20080090528 in view of Tsunehara US 20010012276, Sato US 20050222948 and Mazur US 20020114311.

Regarding claims 1 and 11, Malladi teaches a network device comprising:

in a CDMA/W-CDMA system ([0037]);

a transceiver is configured to transmit, to a user equipment (UE), a first signal that includes resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times (fig. 3, PUSCH, PUCCH, the UE may be assigned no data segment or no control segment in a given slot, [0041], 0042], see also prov. 60/819,268 fig. 4A, 4B);

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information (fig. 3, PUSCH, PUCCH, the UE may be assigned no data segment or no control segment in a given slot, [0041], 0042], see also prov. 60/819,268 fig. 4A, 4B).

Although Malladi US 20080090528 teaches the limitations above and the provisional teaches the PUSCH and PUCCH being assigned time and frequency resources, the ***provisional*** is silent

on the network device is configured to receive at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information. However, sharing a time slot was well known in the art as a means for conserving time resources (see Mazur [0038]).

Malladi is silent on the transceiver is further configured to transmit, over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE.

Tsunehara teaches the transceiver is further configured to transmit, over a single downlink control channel to a plurality of UEs, a plurality of power commands, wherein each power command controls a transmission power level of a respective UE (common channel shared by the mobile terminals, base station can perform transmission power control of mobile terminals by transmitting power control signals via single common channel, [0072], CDMA, abstract).

Therefore it would have been obvious to one of ordinary

skill in the art, to modify the system of Malladi by the transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE, as suggested by Tsunehara. This modification would benefit the system by providing a proven, reliable method for power control.

Although Tsunehara teaches the transceiver is further configured to transmit, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of a plurality of UEs, the combination is silent on transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs.

Sato makes obvious transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs ([0001, radio transceiver Z11 transmits control signals to relay terminals, [0150], base station to transmit control signals to relay terminals, [0154] fig. 1, 4, 9). Note, power control signals are control signals.

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by

transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs, as suggested by Sato. This modification would benefit the system by when the UE is out of range of the destination base station.

The combination is silent on wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

Mazur teaches sharing a timeslot between traffic channel / “physical shared channel” and control channel transmissions ([0038]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the single downlink control channel shares a time slot with a physical downlink shared channel, as suggested by Mazur. This modification would benefit the system by conserving time resources.

Regarding claims 5, 15, the downlink control channel includes power control information for a plurality of UEs using different bits (Tsunehara: common channel shared by the mobile terminals, base station can perform transmission power control of mobile terminals by transmitting power control signals via single common channel, [0072], CDMA, abstract).

Regarding claims 6 and 16, the times that the signal over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the times from a plurality of UEs (as shown above, it was well known in the art at the time of the instant application to transmit over the physical uplink control channel and physical uplink shared control channel in defined time slots).

Regarding claims 7-9 and 17-19, the uplink physical control channel, the respective uplink physical control channels, or the physical uplink shared channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or

universal mobile telecommunication system (UMTS) physical channel (Malladi: CDMA [0037]).

Response to Arguments

3. Applicant's arguments with respect to the claims have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Prior Art of Record

4. US 20050022098 [0041, 0046] teaches WCDMA HS-DPCCH (high speed uplink control channel)

US 20050013287 [0006] teaches WCDMA PUSCH (uplink shared channel)

Anderson WO 2006015984 (see also US 20080144600) (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, pg. 29 lines 10-19)

US 20020094834 [0042] teaches an MS adjusting the uplink physical control channel based on TPC commands. US 20010026543 [0228] downlink control channel used to send power control command.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B. ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 http://pair-direct.uspto.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.

RONALD B ABELSON
Primary Examiner
Art Unit 2476

***

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

/AYAZ SHEIKH/

Supervisory Patent Examiner, Art Unit 2476

Notice of References Cited	Application/Control No. 14/458,693	Applicant(s)/Patent Under Reexamination HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2001/0012276 A1	08-2001	Tsunehara, Katsuhiko	H04W52/245	370/318
	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	CPC 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.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	**Art Unit**
	RONALD B ABELSON	2476

✓	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	11/05/2014	05/03/2016	11/29/2016	03/15/2017	10/17/2017				
	1	✓	✓	✓	✓	✓				
	2	✓	✓	-	-	-				
	3	✓	-	-	-	-				
	4	✓	✓	-	-	-				
	5	✓	✓	✓	✓	✓				
	6	✓	✓	✓	✓	✓				
	7	✓	✓	✓	✓	✓				
	8	✓	✓	✓	✓	✓				
	9	✓	✓	✓	✓	✓				
	10	✓	-	-	-	-				
	11	✓	✓	✓	✓	✓				
	12	✓	✓	-	-	-				
	13	✓	-	-	-	-				
	14	✓	✓	-	-	-				
	15	✓	✓	✓	✓	✓				
	16	✓	✓	✓	✓	✓				
	17	✓	✓	✓	✓	✓				
	18	✓	✓	✓	✓	✓				
	19	✓	✓	✓	✓	✓				
	20	✓	-	-	-	-				

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	Art Unit
	RONALD B ABELSON	2476

CPC- SEARCHED		
Symbol	Date	Examiner
H04B 7/216, 1/707, 7/212, 7/2123, 2201/70701, 7/2643, 7/2628	10/17/17	RA
H04W 72/0446, 84/12, 74/04,	10/17/17	RA
H04L 12/2801	10/17/17	RA

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
370	320,321,335-337,342,345,347,441,442	3/15/17	RA

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
CPC combined with limited text search in EAST	10/17/17	RA

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 3624

Oct 23, 2017 03:44:59 AM

Dear PAIR Customer:

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UNITED PLAZA
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UNITED STATES

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	CTNF	10/23/2017	IPW2-USCN205928
	892	10/23/2017	IPW2-USCN205928

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3624 7590 10/18/2017

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EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
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skill in the art, to modify the system of Malladi by the transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE, as suggested by Tsunehara. This modification would benefit the system by providing a proven, reliable method for power control.

Although Tsunehara teaches the transceiver is further configured to transmit, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of a plurality of UEs, the combination is silent on transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs.

Sato makes obvious transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs ([0001, radio transceiver Z11 transmits control signals to relay terminals, [0150], base station to transmit control signals to relay terminals, [0154] fig. 1, 4, 9). Note, power control signals are control signals.

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by

transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs, as suggested by Sato. This modification would benefit the system by when the UE is out of range of the destination base station.

The combination is silent on wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

Mazur teaches sharing a timeslot between traffic channel / “physical shared channel” and control channel transmissions ([0038]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the single downlink control channel shares a time slot with a physical downlink shared channel, as suggested by Mazur. This modification would benefit the system by conserving time resources.

Regarding claims 5, 15, the downlink control channel includes power control information for a plurality of UEs using different bits (Tsunehara: common channel shared by the mobile terminals, base station can perform transmission power control of mobile terminals by transmitting power control signals via single common channel, [0072], CDMA, abstract).

Regarding claims 6 and 16, the times that the signal over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the times from a plurality of UEs (as shown above, it was well known in the art at the time of the instant application to transmit over the physical uplink control channel and physical uplink shared control channel in defined time slots).

Regarding claims 7-9 and 17-19, the uplink physical control channel, the respective uplink physical control channels, or the physical uplink shared channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or

universal mobile telecommunication system (UMTS) physical channel (Malladi: CDMA [0037]).

Response to Arguments

3. Applicant's arguments with respect to the amended independent claims have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Prior Art of Record

4. US 20050022098 [0041, 0046] teaches WCDMA HS-DPCCH (high speed uplink control channel)

US 20050013287 [0006] teaches WCDMA PUSCH (uplink shared channel)

Anderson WO 2006015984 (see also US 20080144600) (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, pg. 29 lines 10-19)

US 20020094834 [0042] teaches an MS adjusting the uplink physical control channel based on TPC commands. US 20010026543 [0228] downlink control channel used to send power control command.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B. ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 http://pair-direct.uspto.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.

RONALD B ABELSON
Primary Examiner
Art Unit 2476

***

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

/AYAZ SHEIKH/

Supervisory Patent Examiner, Art Unit 2476

Notice of Panel Decision from Pre-Appeal Brief Review	Application No. 14/458,693	Applicant(s) HOWARD, PAUL
	Examiner RONALD B. ABELSON	Art Unit 2476

This is in response to the Pre-Appeal Brief Request for Review filed .

1. ☐ **Improper Request** – The Request is improper and a conference will not be held for the following reason(s):

☐ The Notice of Appeal has not been filed concurrent with the Pre-Appeal Brief Request.
☐ The request does not include reasons why a review is appropriate.
☐ A proposed amendment is included with the Pre-Appeal Brief request.
☐ Other: .

The time period for filing a response continues to run from the receipt date of the Notice of Appeal or from the mail date of the last Office communication, if no Notice of Appeal has been received.

2. ☐ **Proceed to Board of Patent Appeals and Interferences** – A Pre-Appeal Brief conference has been held. The application remains under appeal because there is at least one actual issue for appeal. Applicant is required to submit an appeal brief in accordance with 37 CFR 41.37. The time period for filing an appeal brief will be reset to be one month from mailing this decision, or the balance of the two-month time period running from the receipt of the notice of appeal, whichever is greater. Further, the time period for filing of the appeal brief is extendible under 37 CFR 1.136 based upon the mail date of this decision or the receipt date of the notice of appeal, as applicable.

☐ The panel has determined the status of the claim(s) is as follows:
Claim(s) allowed: _____.
Claim(s) objected to: _____.
Claim(s) rejected: _____.
Claim(s) withdrawn from consideration: _____.

3. ☐ **Allowable application** – A conference has been held. The rejection is withdrawn and a Notice of Allowance will be mailed. Prosecution on the merits remains closed. No further action is required by applicant at this time.

4. ☒ **Reopen Prosecution** – A conference has been held. The rejection is withdrawn and a new Office action will be mailed. No further action is required by applicant at this time.

All participants:

(1) *RONALD B. ABELSON*.	(3) *Ayaz Sheikh*.
(2) *Phirin Sam*.	(4)_____.

/RONALD B ABELSON/ Primary Examiner, Art Unit 2476	/Phirin Sam/ Primary Examiner, Art Unit 2476	/AYAZ SHEIKH/ Supervisory Patent Examiner, Art Unit 2476

To: eoffice@volpe-koenig.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 3624

Oct 18, 2017 04:21:57 AM

Dear PAIR Customer:

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET, 18th Floor
PHILADELPHIA, PA 19103
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 3624 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	AP.PRE.DEC	10/18/2017	IPW2-USCN205928

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): IPW2-USCN205928

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

on September 21, 2017

Signature /Harry Vartanian/

Typed or printed name Harry Vartanian

Application Number	Filed
14/458,693	August 13, 2014

First Named Inventor: Paul Howard

Art Unit	Examiner
2476	Ronald B. Abelson

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 56,787.

☐ attorney or agent acting under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34 _____

/Harry Vartanian/
Signature

Harry Vartanian
Typed or printed name

215-568-6400
Telephone number

September 21, 2017
Date

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

This collection of information is required by 35 U.S.C. 132. 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 1.11, 1.14 and 41.6. 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: Mail Stop AF, 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.

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 disclosure of these records is required by the Freedom of Information Act.
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 inspection 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.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:	
Paul Howard	
Application No.:	14/458,693
Confirmation No.:	4825
Filed:	August 13, 2014
For: COMMUNICATIONS IN A WIRELESS NETWORK	
Group:	2476
Examiner:	Ronald B. Abelson

Our File: IPW2-USCN205928

Date: September 21, 2017

REASONS FOR PRE-APPEAL BRIEF REQUEST FOR REVIEW

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

This Communication is being filed in response to the Final Office Action dated March 21, 2017 (hereinafter "Final Office Action"). Claims 1, 5-9, 11, and 15-19 are pending in this application. Claims 1, 5-9, 11, and 15-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2008/0090528 to Malladi (hereinafter "Malladi") in view of U.S. Patent No. 6,754,505 to Baker et al. (hereinafter "Baker"), U.S. Publication No. 2005/0222948 to Sato et al. (hereinafter "Sato"), and U.S. Publication No. 2002/0114311 to Mazur et al. (hereinafter "Mazur").

A Pre-Appeal Brief Review is hereby requested in the above application for the following reason:

I. There are errors and omissions with using Baker and Sato to teach or suggest a network device with a transceiver "configured to transmit, over a single downlink control channel to the UE...a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel" of claim 1 for obviousness under pre-AIA 35 U.S.C. § 103(a). There are similar errors and omissions for claim 11.

The Final Office Action recites that:

> "Malladi is silent on the transceiver is further configured to transmit, over a single downlink control channel to the UE, a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE. Baker teaches the transceiver is further configured to transmit, over a single downlink control channel to the UE, a plurality of power commands, wherein each power command controls a transmission power level of a respective UE (col. 1 line 57 – col. 2 line 41, CDMA col. 7 lines 1-11).
> ...
> Although Baker teaches the transceiver is further configured to transmit, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of a respective UE, the combination is silent on transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs.
>
> Sato makes obvious transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs ([0001, radio transceiver Z11 transmits control signals to relay terminals, [0150], base station to transmit control signals to relay terminals, [0154] fig. 1, 4, 9). Note, power control signals are control signals." *(See pages 4 and 5 of the Final Office Action.)*

Malladi and Mazur cannot be modified with Baker and Sato to at least teach or suggest "a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel" of claim 1. Baker does not teach or suggest the particular operation of a UE being sent by a network device "a plurality of power commands,

wherein each power command controls a transmission power level of a respective UE" of claim 1. In Baker, each mobile station (MS) receives power control commands specific to the MS.

The Final Office Action relies mostly on the Summary of the Invention of Baker as evidence for the rejection. The Summary of the Invention of Baker discloses the following:

> "According to a first aspect of the present invention there is provided a radio communication system comprising a primary station and a plurality of secondary stations, the system having a communication channel between the primary station and a secondary station, the channel comprising an uplink and a downlink control channel for transmission of control information, including power control commands, and a data channel for the transmission of data, wherein power control means are provided for adjusting the power of the control and data channels in response to the power control commands and means are provided for setting the initial transmission power after an interruption in transmission to that before the interruption adjusted by an offset." *(Col. 1, line 57 – Col. 2, line 2, Baker)*

In Baker a primary station sends a power control command to a secondary station to adjust the power of control or data channels particular to that secondary station without any power control information regarding other secondary stations. In particular, in Column 5, lines 1-27 and Column 6, lines 5-37 the power control operation is particular to base station (BS) 100 and mobile station (MS) 110. Thus, in Baker each mobile station (MS) receives power control commands specific to the MS. Furthermore, Baker refers to "a downlink control channel" between the primary and the secondary channel. Accordingly, to send power control commands to different secondary stations, Baker requires the use of a different downlink control channel for each secondary station or MS 110.

Sato does not cure any of the deficiencies of Baker. Sato relates to a relay terminal, which is a device in a network used to relay packet communications between a base station and a destination terminal. Sato refers to, at paragraph [0150], "the radio transceiver [of the base station]… transmits and receives packets,

control signals, etc. to and from the aforementioned relay terminals." Sato does not state that control signals for multiple terminals are sent to a relay terminal. Sato does not state that the control signals are sent on a single downlink control channel. Furthermore, it does not state that the control signals include power control commands. Accordingly, Sato does not cure the deficiencies of Baker and Malladi.

In fact, Sato is silent to even communicating power commands or power control in a network as indirectly indicated by the Final Office Action where it is stated that "power control signals are control signals." *(See page 5 of the Final Office Action.)* Control signals do not have to be power control signals. Sato refers to in paragraph [0154] relay route information and nothing regarding power control signals.

Thus, Claims 1, 5-9, 11, and 15-19 are allowable over Malladi in view of Baker, Sato, and Mazur since the combination at least does not teach or suggest a network device with a transceiver "configured to transmit, over a single downlink control channel to the UE...a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel" of claim 1.

Claims 5-9 are allowable for at least the same reasons given above for claim 1. Claim 11 is allowable for at least the same reasons given above for claim 1. Claims 15-19 are allowable for at least the same reasons given above for claim 11.

In view of the foregoing remarks, Applicant respectfully requests a Pre-Appeal Brief Review and a notice to that effect is respectfully requested.

Respectfully submitted,

Intellectual Ventures II LLC

By: /Harry Vartanian/
Harry Vartanian
Registration No. 56,787

Volpe and Koenig, P.C.
United Plaza, Suite 1800
30 South 17th Street
Philadelphia, PA 19103
Telephone: (215) 568-6400
Facsimile: (215) 568-6499

HV/JMG/eam

PTO/AIA/22 (03-13)
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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): IPW2-USCN205928

Application Number: 14/458,693

Filed: August 13, 2014

For: COMMUNICATIONS IN A WIRELESS NETWORK

Art Unit: 2476

Examiner: Ronald B. Abelson

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	Micro Entity Fee	
☐ One month (37 CFR 1.17(a)(1))	$200	$100	$50	$
☐ Two months (37 CFR 1.17(a)(2))	$600	$300	$150	$
☑ Three months (37 CFR 1.17(a)(3))	$1,400	$700	$350	$ 1,400
☐ Four months (37 CFR 1.17(a)(4))	$2,200	$1,100	$550	$
☐ Five months (37 CFR 1.17(a)(5))	$3,000	$1,500	$750	$

☐ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

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

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

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 22-0493.

☑ Payment made via EFS-Web.

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.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 56,787.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/Harry Vartanian/ — Signature

September 21, 2017 — Date

Harry Vartanian — Typed or printed name

215-568-6400 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☐ * Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.136(a). 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 1.11 and 1.14. This collection is estimated to take 6 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: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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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 disclosure of these records is required by the Freedom of Information Act.
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 inspection 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:	14458693
Filing Date:	13-Aug-2014
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Filer:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
NOTICE OF APPEAL	1401	1	800	800
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Extension - 3 months with $0 paid	1253	1	1400	1400
Miscellaneous:				
			Total in USD ($)	**2200**

Electronic Acknowledgement Receipt

EFS ID:	30438276
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Elizabeth McGinty
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	21-SEP-2017
Filing Date:	13-AUG-2014
Time Stamp:	16:57:02
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$2200
RAM confirmation Number	092217INTEFSW16573500
Deposit Account	220493
Authorized User	Elizabeth McGinty

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Notice of Appeal Filed	IPW2-USCN205928_-_Notice_of_Appeal_-_20170921.PDF	237237 6c6f750ac0801c9621f189a3aae93ba6b3e0b362	no	2
Warnings:					
Information:					
2	Pre-Brief Conference request	IPW2-USCN205928_-_Request_for_Pre-Appeal_Review-_20170921.PDF	196374 90af1a37065f2f89f2990a05d280065106987023	no	2
Warnings:					
Information:					
3	Pre-Brief Conference request	IPW2-USCN205928_-_Reasons_for_Pre-Appeal_Review_-_20170921.PDF	84541 639b2b9273cbe21b9a6fe0db20a80b94a51d3b8b	no	5
Warnings:					
Information:					
4	Extension of Time	IPW2-USCN205928_-_Extension_of_Time_-_20170921.PDF	163191 d39efc006b46a0829ddb6d76e73f5a1c60537873	no	2
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	32135 c265d5f78c12de7697d68ad62b18fc1b2448a121	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	713478		

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.

PTO/AIA/31 (03-14)
Approved for use through 07/31/2016. OMB 0651-0031
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NOTICE OF APPEAL FROM THE EXAMINER TO THE PATENT TRIAL AND APPEAL BOARD

Docket Number (Optional)
IPW2-USCN205928

I hereby certify that this correspondence is being facsimile transmitted to the USPTO, EFS-Web transmitted to the USPTO, or deposited with the United States Postal Service with sufficient postage in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, on Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on September 21, 2017.

Signature /Harry Vartanian/

Typed or printed name Harry Vartanian

In re Application of
Paul Howard

Application Number	Filed
14/458,693	August 13, 2014

For
COMMUNICATIONS IN A WIRELESS NETWORK

Art Unit	Examiner
2476	Ronald B. Abelson

Applicant hereby **appeals** to the Patent Trial and Appeal Board from the last decision of the examiner.

The fee for this Notice of Appeal is (37 CFR 41.20(b)(1)) $ 800

☐ Applicant asserts small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by 50%, and the resulting fee is: $ _____

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Therefore, the fee shown above is reduced by 75%, and the resulting fee is: $ _____
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

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

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

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 22-0493.

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☐ A petition for an extension of time under 37 CFR 1.136(a) (PTO/AIA/22 or equivalent) is enclosed.
For extensions of time in reexamination proceedings, see 37 CFR 1.550.

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.

I am the

☐ applicant

☑ attorney or agent of record
Registration number 56,787

☐ attorney or agent acting under 37 CFR 1.34
Registration number _____

Signature /Harry Vartanian/

Typed or printed name Harry Vartanian

Telephone Number 215-568-6400

Date September 21, 2017

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☐ * Total of _____ forms are submitted.

This collection of information is required by 37 CFR 41.20(b)(1) and 41.31. 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 1.11, 1.14 and 41.6. 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.**

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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 disclosure of these records is required by the Freedom of Information Act.
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 inspection 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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 07/07/2017

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET, 18th Floor
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
07/07/2017	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	14/458,693	HOWARD, PAUL	
	Examiner	Art Unit	
	RONALD B. ABELSON	2476	

All participants (applicant, applicant's representative, PTO personnel):

(1) *RONALD B. ABELSON*. (3)_____.

(2) *Harry Vartanian*. (4)_____.

Date of Interview: *26 June 2017*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1*.

Identification of prior art discussed: *US 20060221809 and US 20090262711*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Discussed new references US 20060221809 and US 20090262711. See attached PTO-892.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☒ Attachment

/RONALD B ABELSON/ Primary Examiner, Art Unit 2476	

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

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4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
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Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

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Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
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	Examiner	Art Unit	
	RONALD B. ABELSON	2476	

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If Yes, brief description: _____.

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(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

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Notice of References Cited	Application/Control No. 14/458,693	Applicant(s)/Patent Under Reexamination HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2006/0221809 A1	10-2006	Malladi; Durga Prasad	H04L25/03012	370/206
*	B	US-2009/0262711 A1	10-2009	Ahn; Joon Kui	H04W72/14	370/336
	C	US-				
	D	US-				
	E	US-				
	F	US-				
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	H	US-				
	I	US-				
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	K	US-				
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FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
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Cc: PAIR_eOfficeAction@uspto.gov
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Jul 07, 2017 04:39:58 AM

Dear PAIR Customer:

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET, 18th Floor
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UNITED STATES

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	INTV.SUM.EX	07/07/2017	IPW2-USCN205928
	INTV.SUM.APP	07/07/2017	IPW2-USCN205928
	892	07/07/2017	IPW2-USCN205928

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If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

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Thank you for prompt attention to this notice,

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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3624 7590 03/21/2017

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PHILADELPHIA, PA 19103

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ABELSON, RONALD B

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 14/458,693	Applicant(s) HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	AIA (First Inventor to File) Status No

-- 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* MONTHS 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 *3/10/17, 3/2/17*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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*

5)☒ Claim(s) *1,5-9,11 and 15-19* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1, 5-9, 11, and 15-19* is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *8/13/14* 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).

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).

Certified copies:

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)).

** 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) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *3/10/17*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 103

2. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 5-9, 11, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable Malladi US 20080090528 in view of Baker US 6754505, Sato US 20050222948 and Mazur US 20020114311.

Regarding claims 1 and 11, Malladi teaches a network device comprising:

in a CDMA/W-CDMA system ([0037]);

a transceiver is configured to send, to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times (fig. 3, PUSCH, PUCCH, the UE may be assigned no data segment or no control segment in a given slot, [0041], 0042], see also prov. 60/819,268 fig. 4A, 4B);

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information (fig. 3, PUSCH, PUCCH, the UE may be assigned no data segment or no control segment in a given slot, [0041], 0042], see also prov. 60/819,268 fig. 4A, 4B).

Although Malladi US 20080090528 teaches the limitations above and the provisional teaches the PUSCH and PUCCH being assigned time and frequency resources, the ***provisional*** is silent

on the network device is configured to receive at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information. However, sharing a time slot was well known in the art as a means for conserving time resources (see Mazur [0038]).

Malladi is silent on the transceiver is further configured to transmit, over a single downlink control channel to the UE, a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE.

Baker teaches the transceiver is further configured to transmit, over a single downlink control channel to the UE, a plurality of power commands, wherein each power command controls a transmission power level of a respective UE (col. 1 line 57 – col. 2 line 41, CDMA col. 7 lines 1-11).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi by the transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of the

physical uplink control channel of a respective UE, as suggested by Baker. This modification would benefit the system by providing a proven, reliable method for power control.

Although Baker teaches the transceiver is further configured to transmit, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of a respective UE, the combination is silent on transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs.

Sato makes obvious transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs ([0001, radio transceiver Z11 transmits control signals to relay terminals, [0150], base station to transmit control signals to relay terminals, [0154] fig. 1, 4, 9). Note, power control signals are control signals.

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by transmitting to the UE a second signal that includes a plurality of power commands for a plurality of UEs, as suggested by Sato. This modification would benefit the system by when the UE is out of range of the destination base station.

The combination is silent on wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

Mazur teaches sharing a timeslot between traffic channel / “physical shared channel” and control channel transmissions ([0038]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the single downlink control channel shares a time slot with a physical downlink shared channel, as suggested by Mazur. This modification would benefit the system by conserving time resources.

Regarding claims 5, 15, the downlink control channel includes power control information for a plurality of UEs using different bits (Anderson: PLCCH implement by including one TPC data bit and two SS data bits for each UE, pg. 29 lines 21-27).

Regarding claims 6 and 16, the times that the signal over the physical uplink control channel is received by the network

device, signals are received over other physical uplink control channels in the times from a plurality of UEs (as shown above, it was well known in the art at the time of the instant application to transmit over the physical uplink control channel and physical uplink shared control channel in defined time slots).

Regarding claims 7-9 and 17-19, the uplink physical control channel, the respective uplink physical control channels, or the physical uplink shared channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) physical channel (Malladi: CDMA [0037]).

Response to Arguments

4. Applicant's arguments with respect to the amended independent claims have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Prior Art of Record

5. US 20050022098 [0041, 0046] teaches WCDMA HS-DPCCH (high speed uplink control channel)

US 20050013287 [0006] teaches WCDMA PUSCH (uplink shared channel)

Anderson WO 2006015984 (see also US 20080144600) (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, pg. 29 lines 10-19)

US 20020094834 [0042] teaches an MS adjusting the uplink physical control channel based on TPC commands. US 20010026543 [0228] downlink control channel used to send power control command.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B. ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 http://pair-direct.uspto.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.

RONALD B ABELSON
Primary Examiner
Art Unit 2476

***

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

Notice of References Cited	Application/Control No. 14/458,693	Applicant(s)/Patent Under Reexamination HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2005/0222948 A1	10-2005	Sato, Hijin	G06Q20/102	705/40
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
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	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC 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.

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14458693
Filing Date	2014-08-13
First Named Inventor	Paul Howard
Art Unit	2476
Examiner Name	Ronald B. Abelson
Attorney Docket Number	IPW2-USCN205928

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20010026543	A1	2001-10-04	Hwang et al.	
	2	20020094834	A1	2002-07-18	Baker et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2014-08-13
	First Named Inventor	Paul Howard
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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EXAMINER SIGNATURE

Examiner Signature	/RONALD B ABELSON/	Date Considered	03/15/2017

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	First Named Inventor	Paul Howard
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Harry Vartanian/	Date (YYYY-MM-DD)	2017-03-10
Name/Print	Harry Vartanian	Registration Number	56,787

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

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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.

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	**Art Unit**
	RONALD B ABELSON	2476

✓	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	11/05/2014	05/03/2016	11/29/2016	03/15/2017					
	1	✓	✓	✓	✓					
	2	✓	✓	-	-					
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	18	✓	✓	✓	✓					
	19	✓	✓	✓	✓					
	20	✓	-	-	-					

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
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	Examiner	Art Unit
	RONALD B ABELSON	2476

CPC- SEARCHED		
Symbol	Date	Examiner
H04B 7/216, 1/707, 7/212, 7/2123, 2201/70701, 7/2643, 7/2628	3/15/17	RA
H04W 72/0446, 84/12, 74/04,	3/15/17	RA
H04L 12/2801	3/15/17	RA

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
370	320,321,335-337,342,345,347,441,442	3/15/17	RA

SEARCH NOTES		
Search Notes	Date	Examiner
CPC combined with limited text search in EAST	3/15/17	RA

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	CTFR	03/21/2017	IPW2-USCN205928
	892	03/21/2017	IPW2-USCN205928
	1449	03/21/2017	IPW2-USCN205928

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Thank you for prompt attention to this notice,

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20010026543	A1	2001-10-04	Hwang et al.	
	2	20020094834	A1	2002-07-18	Baker et al.	

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	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14458693
	Filing Date	2014-08-13
	First Named Inventor	Paul Howard
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Harry Vartanian/	Date (YYYY-MM-DD)	2017-03-10
Name/Print	Harry Vartanian	Registration Number	56,787

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

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 record s.

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:	14458693
Filing Date:	13-Aug-2014
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Filer:	Harry Vartanian/Carey Kulp
Attorney Docket Number:	IPW2-USCN205928

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	28569145
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Carey Kulp
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	10-MAR-2017
Filing Date:	13-AUG-2014
Time Stamp:	15:17:20
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	Information Disclosure Statement (IDS) Form (SB08)	SB08.pdf	612194 8b01002d259b1e1f405bda55270e705a906383e4	no	4

Warnings:

Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30707 6b4355c548fa1d8f3a824f9c99efbcb420ed6c7d	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	642901	

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

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

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

New International Application Filed with the USPTO as a Receiving Office

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

Electronic Patent Application Fee Transmittal

Application Number:	14458693
Filing Date:	13-Aug-2014
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Filer:	Harry Vartanian/Carey Kulp
Attorney Docket Number:	IPW2-USCN205928

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	28598087
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Carey Kulp
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	10-MAR-2017
Filing Date:	13-AUG-2014
Time Stamp:	15:45:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$180
RAM confirmation Number	031317INTEFSW15462700
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (SB06)	fee-info.pdf	30708 feb92fccd2b6bb0872c0e807dbdb7c6cdf51fd5a	no	2

Warnings:

Information:

Total Files Size (in bytes):	30708

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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.

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

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.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:	
Paul Howard	
Application No.: 14/458,693	
Confirmation No.: 4825	
Filed: August 13, 2014	
For: COMMUNICATIONS IN A WIRELESS NETWORK	
Group: 2476	
Examiner: Ronald B. Abelson	

Our File: IPW2-USCN205928

Date: March 2, 2017

RESPONSE PURSUANT TO 37 C.F.R. § 1.111

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

This Response is being timely filed in response to the Non-Final Office Action dated December 2, 2016.

Please amend the application without prejudice or disclaimer as follows:

Electronic Acknowledgement Receipt

EFS ID:	28513789
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Elizabeth McGinty
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	02-MAR-2017
Filing Date:	13-AUG-2014
Time Stamp:	14:48:40
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		IPW2-USCN205928_-_Response_to_NonFinal_-_20170302.PDF	102247 95b9ec0a69e1b5a67d11bd1f2e883b34341da011	yes	10

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Applicant Arguments/Remarks Made in an Amendment	7	10
	Claims	2	6
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
Warnings:			
Information:			
	Total Files Size (in bytes):	102247	

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.

REMARKS/ARGUMENTS

After the foregoing Amendment, claims 1, 5-9, 11, and 15-19 are currently pending in this application. Claims 2-4, 10, 12-14, and 20 are canceled. Claims 1, 5, 6, 11, 15, and 16 are amended.

Claim Rejections - 35 U.S.C. §103(a)

Claims 1, 5-9, 11, and 15-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US Publication No. 2008/0090528 to Malladi (hereinafter "Malladi") in view of US Patent No. 6,754,505 to Baker (hereinafter "Baker") and US Publication No. 2002/0114311 to Mazur (hereinafter "Mazur"). Without conceding the propriety of the rejection, and in an effort to advance prosecution, claims 1 and 11 are amended. In particular, Malladi in view of Baker and Mazur cannot be modified to teach or suggest "**the transceiver is further configured to transmit, over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs**, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel" of amended claim 1.

Baker is introduced to teach a "transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of a respective UE." *(See page*

5 of Non-final Office Action mailed December 2, 2016). Applicant respectfully disagrees. Baker does not teach or suggest that a UE is sent "a plurality of power commands, wherein each power command controls a transmission power level of a respective UE" of claim 1 as filed on October 31, 2016. In Baker, each mobile station (MS) receives power control commands specific to the MS. Furthermore, claim 1 is amended to recite that "over a single downlink control channel" a UE is transmitted "a plurality of power commands for a plurality of UEs." Baker does not teach or suggest this operation between a network and a MS.

As previously mentioned, Mazur relates to allocating resources of real time traffic (e.g., speech) in a time slot based communication medium while considering frequency reuse between cells. Mazur does not cure any of the deficiencies of Malladi or Baker and is completely silent to using power control and in particular transmitting a plurality of power commands over a "single downlink control channel [that] shares a time slot with a physical downlink shared channel" as given in amended claim 1.

Claims 5-9 are allowable for at least the same reasons as amended claim 1. Amended claim 11 is allowable for at least the same reasons as amended claim 1. Claims 14-19 are allowable for at least the same reasons as amended 11. Based on the arguments presented above and those given in the Amendment filed August 10, 2016, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1, 4-9, 11, and 14-19 is respectfully requested.

Conclusion

It should also be noted that although arguments have been presented with respect to certain claims herein, the recited subject matter as well as various other subject matter and/or combinations of subject matter may be patentable for other reasons. Further, the failure to address any statement by the Examiner herein should not be interpreted as acquiescence or agreement with such statement. The Applicant expressly reserves the right to set forth additional and/or alternative reasons for patentability and/or allowance with the present application or in any other future proceeding, and to rebut any statement presented by the Examiner in this or other papers during prosecution of the present application.

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephonic interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing, Applicant respectfully submits that the present application, including claims 1, 5-9, 11, and 15-19, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

Intellectual Ventures Holding 81 LLC

By: /Harry Vartanian/
Harry Vartanian
Registration No. 56,787

Volpe and Koenig, P.C.
United Plaza
30 South 17th Street
Philadelphia, PA 19103-4009
Telephone: (215) 568-6400
Facsimile: (215) 568-6499

HV/JMG/eam

Amendments to the Claims:

This listing of the claims will replace all prior versions of the claims in the application:

1. (Currently Amended) A network device comprising:

a transceiver is configured to transmit [[send]], to a user equipment (UE), a first signal that includes resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times;

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the [[sent]] transmitted resource allocation information; and

the transceiver is further configured to transmit [[send]], over a single downlink control channel to the UE, a second signal that includes a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

2.-4. (Canceled)

5. (Currently Amended) The network device of claim 1, wherein the single downlink control channel includes power control information for [[a]] the plurality of UEs using different bits.

6. (Currently Amended) The network device of claim 1, wherein the time slot that the control information over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the time slot from [[a]] the plurality of UEs.

7. (Previously Presented) The network device of claim 1 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the single downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

8. (Original) The network device of claim 1, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex

(FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

9. (Original) The network device of claim 1, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

10. (Canceled)

11. (Currently Amended) A method performed by a network device, the method comprising:

transmitting ~~sending~~, by the network device to a user equipment (UE), a first signal including resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

receiving, by the network device over the physical uplink shared channel, data at assigned times;

receiving, by the network device at a time slot that it is not receiving the physical uplink shared channel, control information over the physical uplink control channel in relation to the [[sent]] transmitted resource allocation information; and

transmitting ~~sending~~, by the network device over a single downlink control channel to the UE, a second signal including a plurality of power commands for a plurality of UEs, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

12.-14. (Canceled)

15. (Currently Amended) The method of claim 11, wherein the single downlink control channel includes power control information for [[a]] the plurality of UEs using different bits.

16. (Currently Amended) The method of claim 11, wherein the time slot that the control information over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the time slot from [[a]] the plurality of UEs.

17. (Previously Presented) The method of claim 11 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the single downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

18. (Original) The method of claim 11, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

19. (Original) The method of claim 11, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

20. (Canceled)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 12/02/2016

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET, 18th Floor
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
12/02/2016	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

Office Action Summary	Application No. 14/458,693	Applicant(s) HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	AIA (First Inventor to File) Status No

-- 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* MONTHS 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 *10/31/16*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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*

5)☒ Claim(s) *1,5-9,11 and 15-19* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1, 5-9, 11, 15-19* is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *8/13/14* 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).

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).

Certified copies:

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)).

** 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) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 103

2. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 5-9, 11, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable Malladi US 20080090528 in view of Baker US ***6754505*** and Mazur US 20020114311.

Regarding claims 1 and 11, Malladi teaches a network device comprising:

in a CDMA/W-CDMA system ([0037]);

a transceiver is configured to send, to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times (fig. 3, PUSCH, PUCCH, the UE may be assigned no data segment or no control segment in a given slot, [0041], 0042], see also prov. 60/819,268 fig. 4A, 4B);

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information (fig. 3, PUSCH, PUCCH, the UE may be assigned no data segment or no control segment in a given slot, [0041], 0042], see also prov. 60/819,268 fig. 4A, 4B).

Although Malladi US 20080090528 teaches the limitations above and the provisional teaches the PUSCH and PUCCH being assigned time and frequency resources, the ***provisional*** is silent

on the network device is configured to receive at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information. However, sharing a time slot was well known in the art as a means for conserving time resources (see Mazur [0038]).

Malladi is silent on the transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE.

Baker teaches the transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of a respective UE (***col. 1 line 57 – col. 2 line 41, CDMA col. 7 lines 1-11).***

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi by the transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of the

physical uplink control channel of a respective UE, as suggested by Baker. This modification would benefit the system by providing a proven, reliable method for power control.

The combination is silent on wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

Mazur teaches sharing a timeslot between traffic channel / “physical shared channel” and control channel transmissions ([0038]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the single downlink control channel shares a time slot with a physical downlink shared channel, as suggested by Mazur. This modification would benefit the system by conserving time resources.

Regarding claims 5, 15, the downlink control channel includes power control information for a plurality of UEs using different bits (Anderson: PLCCH implement by including one TPC data bit and two SS data bits for each UE, pg. 29 lines 21-27).

Regarding claims 6 and 16, the times that the signal over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the times from a plurality of UEs (as shown above, it was well known in the art at the time of the instant application to transmit over the physical uplink control channel and physical uplink shared control channel in defined time slots).

Regarding claims 7-9 and 17-19, the uplink physical control channel, the respective uplink physical control channels, or the physical uplink shared channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) physical channel (Malladi: CDMA [0037]).

Response to Arguments

4. Applicant's arguments filed 10/31/16 have been fully considered but they are not persuasive. Examiner has modified rejection to include Baker.

Prior Art of Record

5. US 20050022098 [0041, 0046] teaches WCDMA HS-DPCCH (high speed uplink control channel)

US 20050013287 [0006] teaches WCDMA PUSCH (uplink shared channel)

Anderson WO 2006015984 (see also US 20080144600) (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, pg. 29 lines 10-19)

US 20020094834 [0042] teaches an MS adjusting the uplink physical control channel based on TPC commands. US 20010026543 [0228] downlink control channel used to send power control command.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B.

ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 http://pair-direct.uspto.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.

RONALD B ABELSON
Primary Examiner
Art Unit 2476

***

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

Notice of References Cited	Application/Control No. 14/458,693	Applicant(s)/Patent Under Reexamination HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6,754,505 B1	06-2004	Baker; Matthew P. J.	H04W52/225	370/318
	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	CPC 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.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	Art Unit
	RONALD B ABELSON	2476

CPC- SEARCHED		
Symbol	Date	Examiner
H04B 7/216, 1/707, 7/212, 7/2123, 2201/70701, 7/2643, 7/2628	11/29/16	RA
H04W 72/0446, 84/12, 74/04,	11/29/16	RA
H04L 12/2801	11/29/16	RA

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
370	320,321,335-337,342,345,347,441,442	11/29/16	RA

SEARCH NOTES		
Search Notes	Date	Examiner
CPC combined with limited text search in EAST	11/29/16	RA

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	**Art Unit**
	RONALD B ABELSON	2476

✓	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	11/05/2014	05/03/2016	11/29/2016						
	1	✓	✓	✓						
	2	✓	✓	-						
	3	✓	-	-						
	4	✓	✓	-						
	5	✓	✓	✓						
	6	✓	✓	✓						
	7	✓	✓	✓						
	8	✓	✓	✓						
	9	✓	✓	✓						
	10	✓	-	-						
	11	✓	✓	✓						
	12	✓	✓	-						
	13	✓	-	-						
	14	✓	✓	-						
	15	✓	✓	✓						
	16	✓	✓	✓						
	17	✓	✓	✓						
	18	✓	✓	✓						
	19	✓	✓	✓						
	20	✓	-	-						

To: eoffice@volpe-koenig.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
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Dec 02, 2016 04:15:01 AM

Dear PAIR Customer:

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UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 3624 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	CTNF	12/02/2016	IPW2-USCN205928
	892	12/02/2016	IPW2-USCN205928

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
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.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	14/458,693	Filing Date	2014-08-13	Docket Number (if applicable)	IPW2-USCN205928	Art Unit	2476
First Named Inventor	Paul Howard			Examiner Name	Ronald B. Abelson		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, to any international application that does not comply with the requirements of 35 U.S.C. 371, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV.

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☒ Other three-month extension of time

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 220493

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
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.

Signature of Registered U.S. Patent Practitioner			
Signature	/Harry Vartanian/	Date (YYYY-MM-DD)	2016-10-31
Name	Harry Vartanian	Registration Number	56787

This collection of information is required by 37 CFR 1.114. 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 1.11 and 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.

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

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.

PTO/AIA/22 (03-13)
Approved for use through 7/31/2016. OMB 0651-0031
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 displays a valid OMB control number.

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): IPW2-USCN205928

Application Number: 14/458,693

Filed: August 13, 2014

For: COMMUNICATIONS IN A WIRELESS NETWORK

Art Unit: 2476

Examiner: Ronald B. Abelson

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	Micro Entity Fee	
☐ One month (37 CFR 1.17(a)(1))	$200	$100	$50	$
☐ Two months (37 CFR 1.17(a)(2))	$600	$300	$150	$
☑ Three months (37 CFR 1.17(a)(3))	$1,400	$700	$350	$ 1,400
☐ Four months (37 CFR 1.17(a)(4))	$2,200	$1,100	$550	$
☐ Five months (37 CFR 1.17(a)(5))	$3,000	$1,500	$750	$

☐ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

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

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

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 220493.

☑ Payment made via EFS-Web.

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.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 56,787.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/Harry Vartanian/ — Signature

October 31, 2016 — Date

Harry Vartanian — Typed or printed name

215-568-6400 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☑ * Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.136(a). 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 1.11 and 1.14. This collection is estimated to take 6 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: Mail Stop PCT, 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 disclosure of these records is required by the Freedom of Information Act.
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 inspection 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:	14458693
Filing Date:	13-Aug-2014
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Filer:	Harry Vartanian/Elizabeth McGinty
Attorney Docket Number:	IPW2-USCN205928

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 3 months with $0 paid	1253	1	1400	1400
Miscellaneous:				
RCE- 1st Request	1801	1	1200	1200
		Total in USD ($)		**2600**

Electronic Acknowledgement Receipt

EFS ID:	27371845
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Elizabeth McGinty
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	31-OCT-2016
Filing Date:	13-AUG-2014
Time Stamp:	16:16:24
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$2600
RAM confirmation Number	110116INTEFSW16171700
Deposit Account	220493
Authorized User	Elizabeth McGinty

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		IPW2-USCN205928-RCE_Response-20161031.PDF	91556 e57b0e694b0b5b79e2d91288cb3a6f1a15bc95d3	yes	10
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Amendment Submitted/Entered with Filing of CPA/RCE		1	1	
	Claims		2	6	
	Applicant Arguments/Remarks Made in an Amendment		7	10	
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	IPW2-USCN205928-RCE_Transmittal-20161031.PDF	1350092 57108d927fda2ef55c74d9f8754a1ca6e9995cfb	no	3
Warnings:					
Information:					
3	Extension of Time	IPW2-USCN205928-Extension_of_Time-20161031.PDF	163862 f91e830ae44d938715f970cd52301cbd577ebc5f	no	2
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	32724 a9f5b173abbed226a76bc9a1a8ee63af913a5687	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1638234		

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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.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:	
Paul Howard	
Application No.: 14/458,693	Our File: IPW2-USCN205928
Confirmation No.: 4825	Date: October 31, 2016
Filed: August 13, 2014	
For: COMMUNICATIONS IN A WIRELESS NETWORK	
Group: 2476	
Examiner: Ronald B. Abelson	

RESPONSE PURSUANT TO 37 C.F.R. § 1.114

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

This Response is being filed in response to the Final Office Action dated May 10, 2016 and the Advisory Action dated August 25, 2016 (hereinafter "Advisory Action") and is submitted in conjunction with an appropriate petition for extension of time. A Request for Continued Examination (RCE) is filed concurrently herewith.

Please amend the application without prejudice or disclaimer as follows:

Amendments to the Claims:

This listing of the claims will replace all prior versions of the claims in the application:

1. (Currently Amended) A network device comprising:

a transceiver is configured to send, to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times;

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information; and

the transceiver is further configured to send, over a single downlink control channel, ~~feedback information~~ a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

2.-4. (Canceled)

5. (Currently Amended) The network device of claim 1, wherein the single downlink control channel includes power control information for a plurality of UEs using different bits.

6. (Previously Presented) The network device of claim 1, wherein the time slot that the control information over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the time slot from a plurality of UEs.

7. (Currently Amended) The network device of claim 1 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the single downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

8. (Original) The network device of claim 1, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile

telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

9. (Original) The network device of claim 1, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

10. (Canceled)

11. (Currently Amended) A method performed by a network device, the method comprising:

sending, by the network device to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

receiving, by the network device over the physical uplink shared channel, data at assigned times;

receiving, by the network device at a time slot that it is not receiving the physical uplink shared channel, control information over the physical uplink control channel in relation to the sent resource allocation information; and

sending, by the network device over a single downlink control channel, ~~feedback information~~ a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

12.-14. (Canceled)

15. (Currently Amended) The method of claim 11, wherein the single downlink control channel includes power control information for a plurality of UEs using different bits.

16. (Previously Presented) The method of claim 11, wherein the time slot that the control information over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the time slot from a plurality of UEs.

17. (Currently Amended) The method of claim 11 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the single downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

18. (Original) The method of claim 11, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

19. (Original) The method of claim 11, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

20. (Canceled)

REMARKS/ARGUMENTS

After the foregoing Amendment, claims 1, 5-9, 11, and 15-19 are currently pending in this application. Claims 2-4, 10, 12-14, and 20 are canceled. Claims 1, 5, 7, 11, 15, and 17 are amended.

Request for an Interview

If any of the claims submitted herewith will be rejected by the Examiner, the Applicant respectfully requests a telephonic interview.

Claim Rejections - 35 U.S.C. § 103(a)

Claims 1, 4-9, 11, and 14-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2008/0090528 to Malladi (hereinafter "Malladi") in view of W.O. Publication No. 2006/015984 to Anderson (hereinafter "Anderson") (see also U.S. Publication No. 2008/0144600). Applicant respectfully disagrees. Applicant provided arguments in the Amendment filed August 10, 2016 for distinctions of amended claims 1 and 11 over Malladi in view of Anderson.

Furthermore, the Advisory Action mailed August 25, 2016 includes a potential rejection of the unentered amendment filed August 10, 2016 of claims 1, 5-9, 11, and 15-19 over Malladi in view of Anderson and U.S. Publication No. 2002/0114311 to Mazur et al. (hereinafter "Mazur"). Applicant respectfully disagrees. Malladi in view of Anderson and Mazur cannot be combined to teach or

suggest the channel arrangements and power control operation in amended claims 1 and 11 without impermissible hindsight. In particular, Malladi in view of Anderson and Mazur cannot be modified to teach or suggest "the transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel" of amended claim 1.

Mazur relates to allocating resources of real time traffic (e.g., speech) in a time slot based communication medium while accounting for frequency reuse between cells. Mazur is completely silent to using power control and in particular sending a plurality of power commands over a "single downlink control channel [that] shares a time slot with a physical downlink shared channel" as given in amended claim 1. Furthermore, Anderson mostly relates to a communication system using code division multiple access (CDMA) whereas Mazur relate to a Time Division Multiple Access (TDMA) system. CDMA and TDMA are completely different air interface technologies. Thus, **the TDMA channel scheme given in Mazur for sending real time traffic cannot and would not be combined with the CDMA power control scheme given in Anderson by one of ordinary skill in the art without impermissible hindsight**.

Based on the arguments presented above and those given in the Amendment filed August 10, 2016, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1, 4-9, 11, and 14-19 is respectfully requested.

Conclusion

It should also be noted that although arguments have been presented with respect to certain claims herein, the recited subject matter as well as various other subject matter and/or combinations of subject matter may be patentable for other reasons. Further, the failure to address any statement by the Examiner herein should not be interpreted as acquiescence or agreement with such statement. The Applicant expressly reserves the right to set forth additional and/or alternative reasons for patentability and/or allowance with the present application or in any other future proceeding, and to rebut any statement presented by the Examiner in this or other papers during prosecution of the present application.

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephonic interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing, Applicant respectfully submits that the present application, including claims 1, 5-9, 11, and 15-19, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

Intellectual Ventures Holding 81 LLC

By: /Harry Vartanian/
Harry Vartanian
Registration No. 56,787

Volpe and Koenig, P.C.
United Plaza
30 South 17th Street
Philadelphia, PA 19103-4009
Telephone: (215) 568-6400
Facsimile: (215) 568-6499

HV/JMG/eam

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/458,693	Filing Date 08/13/2014	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	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 $310 ($155 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	

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)		
	10/31/2016	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 12	Minus	** 20	= 0	X $80 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	**0**

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

LIE
EVELYN NIMMONS

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.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 08/25/2016

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET, 18th Floor
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
08/25/2016	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

1. The present application is being examined under the pre-AIA first to invent provisions.

2. Claims 1, 5-9, 11, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable Malladi US 20080090528 in view of Anderson WO 2006015984 (see also US 20080144600) and Mazur US 20020114311.

Regarding claims 1 and 11, Malladi teaches a network device comprising:

in a CDMA/W-CDMA system ([0037]);

a transceiver is configured to send, to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times (fig. 3, PUSCH, PUCCH, the UE may be assigned no data segment or no

control segment in a given slot, [0041], 0042], see also prov. 60/819,268 fig. 4A, 4B);

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information (fig. 3, PUSCH, PUCCH, the UE may be assigned no data segment or no control segment in a given slot, [0041], 0042], see also prov. 60/819,268 fig. 4A, 4B).

Although Malladi US 20080090528 teaches the limitations above and the provisional teaches the PUSCH and PUCCH being assigned time and frequency resources, the ***provisional*** is silent on the network device is configured to receive at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information. However, sharing a time slot was well known in the art as a means for conserving time resources (see Mazur [0038]).

Malladi is silent on the transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE.

Anderson teaches the transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of a respective UE (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, pg. 29 lines 10-19).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi by the transceiver is further configured to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE, as suggested by Anderson. This modification would benefit the system by providing a proven, reliable method for power control.

The combination is silent on wherein the single downlink control channel shares a time slot with a physical downlink

shared channel.

Mazur teaches sharing a timeslot between traffic channel and control channel transmissions ([0038]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the single downlink control channel shares a time slot with a physical downlink shared channel, as suggested by Mazur. This modification would benefit the system by conserving time resources.

Regarding claims 5, 15, the downlink control channel includes power control information for a plurality of UEs using different bits (Anderson: PLCCH implement by including one TPC data bit and two SS data bits for each UE, pg. 29 lines 21-27).

Regarding claims 6 and 16, the times that the signal over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the times from a plurality of UEs (as shown above, it was well known in the art at the time of the instant application to transmit over the physical uplink control channel and physical uplink shared control channel in defined time slots).

Regarding claims 7-9 and 17-19, the uplink physical control channel, the respective uplink physical control channels, or the physical uplink shared channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) physical channel (Malladi: CDMA [0037]).

Prior Art of Record

3. US 20050022098 [0041, 0046] teaches WCDMA HS-DPCCH (high speed uplink control channel)

US 20050013287 [0006] teaches WCDMA PUSCH (uplink shared channel)

RONALD B ABELSON
Primary Examiner
Art Unit 2476

***

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 14/458,693	**Applicant(s)** HOWARD, PAUL	
	Examiner RONALD B. ABELSON	**Art Unit** 2476	**AIA (First Inventor to File) Status** No

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

THE REPLY FILED 10 August 2016 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☐ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance;

(2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:

a) ☒ The period for reply expires *3* months from the mailing date of the final rejection.

b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☒ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: *See attached PTO-892*. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☒ For purposes of appeal, the proposed amendment(s): (a) ☒ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:

_____.

13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____

14. ☐ Other: _____.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: .
Claim(s) objected to: .
Claim(s) rejected: 1, 5-9, 11, and 15-19.
Claim(s) withdrawn from consideration: .

RONALD B ABELSON
Primary Examiner

Notice of References Cited	Application/Control No. 14/458,693	Applicant(s)/Patent Under Reexamination HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2002/0114311 A1	08-2002	Mazur, Sara	H04W72/1236	370/347
	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	CPC Classification
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	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.

To: eoffice@volpe-koenig.com,,
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Aug 25, 2016 05:59:01 AM

Dear PAIR Customer:

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PHILADELPHIA, PA 19103
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 3624 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	CTAV	08/25/2016	IPW2-USCN205928
	892	08/25/2016	IPW2-USCN205928

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PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:	
	Paul Howard
Application No.:	14/458,693
Confirmation No.:	4825
Filed:	August 13, 2014
For:	COMMUNICATIONS IN A WIRELESS NETWORK
Group:	2476
Examiner:	Ronald B. Abelson

Our File: IPW2-USCN205928

Date: August 10, 2016

RESPONSE PURSUANT TO 37 C.F.R. § 1.116

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

This Response is being timely filed in response to the Final Office Action dated May 10, 2016.

Please amend the application without prejudice or disclaimer as follows:

Amendments to the Claims:

This listing of the claims will replace all prior versions of the claims in the application:

1. (Currently Amended) A network device comprising:

a transceiver is configured to send, to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times;

the network device is further configured to receive, at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information; and

the transceiver is further configured to send, over a single downlink control channel, ~~feedback information~~ a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

2.-4. (Canceled)

5. (Currently Amended) The network device of claim 1, wherein the single downlink control channel includes power control information for a plurality of UEs using different bits.

6. (Previously Presented) The network device of claim 1, wherein the time slot that the control information over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the time slot from a plurality of UEs.

7. (Currently Amended) The network device of claim 1 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the single downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

8. (Original) The network device of claim 1, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile

telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

9. (Original) The network device of claim 1, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

10. (Canceled)

11. (Currently Amended) A method performed by a network device, the method comprising:

sending, by the network device to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

receiving, by the network device over the physical uplink shared channel, data at assigned times;

receiving, by the network device at a time slot that it is not receiving the physical uplink shared channel, control information over the physical uplink control channel in relation to the sent resource allocation information; and

sending, by the network device over a single downlink control channel, ~~feedback information~~ a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel.

12.-14. (Canceled)

15. (Currently Amended) The method of claim 11, wherein the single downlink control channel includes power control information for a plurality of UEs using different bits.

16. (Previously Presented) The method of claim 11, wherein the time slot that the control information over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the time slot from a plurality of UEs.

17. (Currently Amended) The method of claim 11 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the single downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

18. (Original) The method of claim 11, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

19. (Original) The method of claim 11, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

20. (Canceled)

REMARKS/ARGUMENTS

After the foregoing Amendment, claims 1, 5-9, 11, and 15-19 are currently pending in this application. Claims 1 and 11 are independent claims. Claims 2-4, 10, 12-14, and 20 are canceled. Claims 1, 5, 7, 11, 15, and 17 are amended.

Request for an Interview

If any of the claims submitted herewith will be rejected by the Examiner, the Applicant respectfully requests a telephonic interview.

Claim Rejections - 35 U.S.C. § 103(a)

Claims 1, 4-9, 11, and 14-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2008/0090528 to Malladi (hereinafter "Malladi") in view of W.O. Publication No. 2006/015984 to Anderson (hereinafter "Anderson") (see also U.S. Publication No. 2008/0144600). Claims 4 and 14 are canceled making the rejection moot.

With respect to claim 1, Applicant respectfully reiterates that Malladi in view Anderson at least does not teach or suggest receiving "resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources" where a network device receives "at a time slot that the physical uplink shared channel is not received, control information over the

physical uplink control channel in relation to the sent resource allocation information."

As explained in the last response, paragraphs [0029] and [0030] and figure 4 of the provisional application of Malladi show control and data being sent concurrently across a 0.5 ms period. Moreover, the provisional application of Malladi at least does not teach or suggest resource allocation of a control channel where in particular "at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information" given in claim 1. Anderson does not cure these or any of other deficiency of Malladi.

Nevertheless, without conceding the propriety of the rejection and in an effort to advance prosecution, claim 1 is amended. In addition to the aforementioned deficiencies, Malladi in view Anderson at least does not teach or suggest "to send, over a single downlink control channel, a plurality of power commands, wherein each power command controls a transmission power level of the physical uplink control channel of a respective UE and wherein the single downlink control channel shares a time slot with a physical downlink shared channel" of amended claim 1.

Claims 5-9 are allowable for at least the same reasons as amended claim 1. Amended claim 11, although different, is allowable for at least the same reasons as amended claim 1. Claims 15-19 are allowable for at least the same reasons as

amended claim 11. Based on the arguments presented above, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1, 4-9, 11, and 14-19 is respectfully requested.

Claims 2 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Malladi and Anderson as applied to claims 1 and 11, and further in view of U.S. Publication No. 2005/0002360 to Lamontagne (hereinafter "Lamontagne"). Without conceding the propriety of the rejection and in an effort to advance prosecution, claims 2 and 12 are canceled making the rejection moot.

Based on the arguments presented above, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 2 and 12 is respectfully requested.

Conclusion

It should also be noted that although arguments have been presented with respect to certain claims herein, the recited subject matter as well as various other subject matter and/or combinations of subject matter may be patentable for other reasons. Further, the failure to address any statement by the Examiner herein should not be interpreted as acquiescence or agreement with such statement. The Applicant expressly reserves the right to set forth additional and/or alternative reasons for patentability and/or allowance with the present application or in any other future proceeding, and to rebut any statement presented by the Examiner in this or other papers during prosecution of the present application.

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephonic interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing, Applicant respectfully submits that the present application, including claims 1, 5-9, 11, and 15-19, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

Intellectual Ventures Holding 81 LLC

By: /Harry Vartanian/
Harry Vartanian
Registration No. 56,787

Volpe and Koenig, P.C.
United Plaza
30 South 17th Street
Philadelphia, PA 19103-4009
Telephone: (215) 568-6400
Facsimile: (215) 568-6499

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Electronic Acknowledgement Receipt

EFS ID:	26602261
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Elizabeth McGinty
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	10-AUG-2016
Filing Date:	13-AUG-2014
Time Stamp:	14:45:47
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		IPW2-USCN205928-After_Final_Response-20160810.PDF	88630 531e6ae4f9798fcbb5d659990b31f8042307a065	yes	10

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response After Final Action	1	1
	Claims	2	6
	Applicant Arguments/Remarks Made in an Amendment	7	10
Warnings:			
Information:			
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/458,693	Filing Date 08/13/2014	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	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 $310 ($155 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	

APPLICATION AS AMENDED – PART II

AMENDMENT	08/10/2016	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 13	Minus	** 20	= 0	X $80 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

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

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PEARLIE A. FENNELL

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 05/20/2016

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET, 18th Floor
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
14/458,693	13 August, 2014	HOWARD, PAUL	IPW2-USCN205928

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET, 18th Floor
PHILADELPHIA, PA 19103

EXAMINER	
RONALD B. ABELSON	
ART UNIT	PAPER
2476	20160512

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Commissioner for Patents

See attached PTO-892

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

PTO-90C (Rev.04-03)

Notice of References Cited	Application/Control No. 14/458,693	Applicant(s)/Patent Under Reexamination HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2007/0177656 A1	08-2007	Maruta; Yasushi	H04B1/712	375/148
	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

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	O					
	P					
	Q					
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	S					
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*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
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Application	Document	Mailroom Date	Attorney Docket No.
14458693	M327	05/20/2016	IPW2-USCN205928
	892	05/20/2016	IPW2-USCN205928

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 05/10/2016

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET, 18th Floor
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
05/10/2016	ELECTRONIC

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Office Action Summary	Application No. 14/458,693	Applicant(s) HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	AIA (First Inventor to File) Status No

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- 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 *3/30/16*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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*

5)☒ Claim(s) *1,2,4-9,11,12 and 14-19* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1, 2, 4-9, 11, 12, and 14-19* is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *8/13/14* 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).

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).

Certified copies:

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)).

** 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) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application is being examined under the pre-AIA first to invent provisions.

2. Claims 1, 4-9, 11, and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable Malladi US 20080090528 in view of Anderson WO 2006015984 (see also US 20080144600).

Regarding claims 1 and 11, Malladi teaches a network device comprising:

in a CDMA/W-CDMA system ([0037]);

a transceiver is configured to send, to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned frequencies;

the network device is further configured to receive, at frequencies that the physical uplink shared channel is not

received, a signal over the physical uplink control channel in relation to the sent resource allocation information (fig. 3, PUSCH, PUCCH, [0041, 0042], see also prov. 60/819,268 fig. 4A, 4B).

Although Malladi teaches W-CDMA and frequency multiplexing the PUSCH and PUCCH, the reference is silent on the network device is configured to receive at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information. However, time slotting physical uplink control channels and physical uplink shared control channels was well known in the art at the time of the instant invention. Raaf US 7180902 col. 1 ln 66 – col. 2 ln 4 teaches time slots for a physical uplink control channel (DPCCH); Muraoka WO 2005083897 (for translation see US 20070177656 [0015, 0044] teaches time-slots shared uplink channel; and Masseroni US 20030054850 teaches time slots for physical uplink shared control channel, abstract, claim 1.

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi teaches by the network device is configured to receive at a time slot that

the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information. This modification would benefit the system by decreasing the probability of interference by time multiplexing the PUSCH and PUCCH.

Malladi is silent on the transceiver is further configured to send, over a downlink control channel, feedback information.

Anderson teaches a processor in a UE configured to receive feedback information from a downlink control channel (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, pg. 29 lines 10-19).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi by the processor is further configured to receive feedback information from a downlink control channel, as suggested by Anderson. This modification would benefit the system by providing a proven, reliable method for the UEs to receive feedback data.

Regarding claims 4, 14, the feedback information includes power control information (Anderson: PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, pg. 29 lines 10-19).

Regarding claims 5, 15, the downlink control channel includes power control information for a plurality of UEs using different bits (Anderson: PLCCH implement by including one TPC data bit and two SS data bits for each UE, pg. 29 lines 21-27).

Regarding claims 6 and 16, the times that the signal over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the times from a plurality of UEs (as shown above, it was well known in the art at the time of the instant application to transmit over the physical uplink control channel and physical uplink shared control channel in defined time slots).

Regarding claims 7-9 and 17-19, the uplink physical control channel, the respective uplink physical control channels, or the physical uplink shared channel is any one of a time division

multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) physical channel (Malladi: CDMA [0037]).

3. Claims 2 and 12 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over the combination of Malladi and Anderson as applied to claims 1 and 11 above, and further in view of Lamontagne US 20050002360.

The combination is silent on the processor is further configured to send data on a physical downlink shared channel.

Lamontagne teaches the processor is further configured to send data on a physical downlink shared channel ([0037]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the processor is further configured to send data on a physical downlink shared channel, as shown by Lamontagne. This modification would benefit the system by providing a proven, reliable method for transmitting downlink data.

Prior Art of Record

4. US 20050022098 [0041, 0046] teaches WCDMA HS-DPCCH (high speed uplink control channel)

US 20050013287 [0006] teaches WCDMA PUSCH (uplink shared channel)

Response to Arguments

5. Applicant’s arguments with respect to amended claims have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened

statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B. ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 http://pair-direct.uspto.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.

RONALD B ABELSON
Primary Examiner
Art Unit 2476

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/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

Notice of References Cited	Application/Control No. 14/458,693	Applicant(s)/Patent Under Reexamination HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	Page 1 of 1

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
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*	B	US-2003/0054850 A1	03-2003	Masseroni, Carlo	H04W52/367	455/522
*	C	US-2005/0002360 A1	01-2005	Lamontagne, Rene	H04L27/2608	370/335
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	O	WO2005083897	09-2005	Japan	Maruta	H04B 1/707
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	Q					
	R					
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	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.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	Art Unit
	RONALD B ABELSON	2476

CPC- SEARCHED		
Symbol	Date	Examiner
H04B 7/216, 1/707, 7/212, 7/2123, 2201/70701, 7/2643, 7/2628	5/2/16	RA
H04W 72/0446, 84/12, 74/04,	5/2/16	RA
H04L 12/2801	5/2/16	RA

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
370	320,321,335-337,342,345,347,441,442	5/2/16	RA

SEARCH NOTES		
Search Notes	Date	Examiner
CPC combined with limited text search in EAST	5/2/16	RA

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
370	320,321,335-337,342,345,347,441,442	11/5/14	RA

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(71) 出願人 (米国を除く全ての指定国について): 日本電気株式会社 (NEC CORPORATION) [JP/JP]; 〒1088001 東京都港区芝五丁目７番１号 Tokyo (JP).

(72) 発明者; および

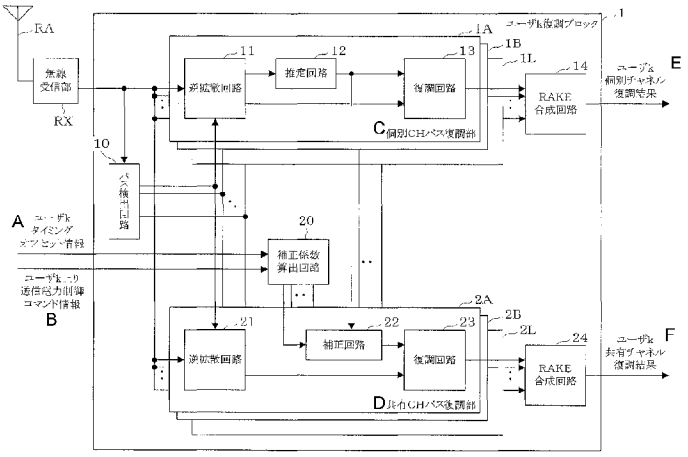
(75) 発明者/出願人 (米国についてのみ): 丸田 靖 (MARUTA, Yasushi) [JP/JP]; 〒1088001 東京都港区芝五丁目７番１号 日本電気株式会社内 Tokyo (JP). 大浦 聡 (OURA, Satoshi) [JP/JP]; 〒1088001 東京都港区芝五丁目７番１号 日本電気株式会社内 Tokyo (JP). 村岡 真也 (MURAOKA, Shinya) [JP/JP]; 〒1088001 東京都港区芝五丁目７番１号 日本電気株式会社内 Tokyo (JP).

(74) 代理人: 山川 政樹, 外(YAMAKAWA, Masaki et al.); 〒1000014 東京都千代田区永田町２丁目４番２号 秀和溜池ビル８階 山川国際特許事務所内 Tokyo (JP).

[続葉有]

(54) Title: CDMA RECEIVING APPARATUS AND METHOD

(54) 発明の名称: ＣＤＭＡ受信装置および方法



RX RADIO RECEPTION PART
A USER K TIMING OFFSET INFORMATION
B USER K UPSTREAM TRANSMISSION POWER CONTROL COMMAND INFORMATION
10 PATH DETECTION CIRCUIT
11 DESPREAD CIRCUIT
12 ESTIMATION CIRCUIT
13 DEMODULATION CIRCUIT
C INDIVIDUAL-CH PATH DEMODULATION PART
1 USER K DEMODULATION BLOCK
14 RAKE COMBINATION CIRCUIT
E USER K INDIVIDUAL-CHANNEL DEMODULATION RESULT
20 CORRECTION COEFFICIENT CALCULATION CIRCUIT
21 DESPREAD CIRCUIT
22 CORRECTION CIRCUIT
23 DEMODULATION CIRCUIT
D SHARED-CH PATH DEMODULATION PART
24 RAKE COMBINATION CIRCUIT
F USER K SHARED-CHANNEL DEMODULATION RESULT

(57) Abstract: A transmission path estimation circuit (12) in an individual-CH path demodulation part (1A-1L) performs a transmission path estimation from an individual CH, and thereafter a transmission path estimation value correction circuit (22) in a shared-CH path demodulation part (2A-2L) corrects reception power variations due to an upstream transmission power control caused by a timing offset between the individual-CH and the shared-CH. The resultant output from the transmission path estimation value correction circuit (22) is used for a modulation by a shared-CH demodulation circuit (23).

(57) 要約: 個別ＣＨパス復調部(1A-1L)の伝送路推定回路(12)で、個別ＣＨから伝送路推定を行った後、共有ＣＨパス復調部(2A-2L)の伝送路推定値補正回路(22)で、その個別ＣＨと共有ＣＨとの間のタイミングオフセットに起因する上り送信電力制御による受信電力変動を補正し、これを共有ＣＨ用復調回路(23)の復調に用いる。

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(81) 指定国 (表示のない限り、全ての種類の国内保護が可能): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) 指定国 (表示のない限り、全ての種類の広域保護が可能): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), ユーラシア (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), ヨーロッパ (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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— 国際調査報告書

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5/3/2016, EAST Version: 3.2.1.1

明 細 書

CDMA受信装置および方法

技術分野

[0001] 本発明は、CDMA(Code Division Multiple Access:符号分割多元接続)方式の無線通信技術に関し、特に無線基地局で用いられるCDMA受信装置での復調技術に関するものである。

背景技術

[0002] CDMA通信システムは、各ユーザ端末と基地局とがCDMA方式を用いて通信を行う際に、上り通信チャネル(以下、CHという)として、各ユーザが占有する個別CHと、全ユーザで共有する共有CHとを用いる。この際、CDMA通信システムの多くは、各ユーザの個別CHおよび共有CHは、互いに符号多重されており、復調時にはこれら各ユーザ毎に個別CHおよび共有CHを分離して復調するものとなっている。

[0003] この際、個別CHはスロット単位に構成されており、各スロットの開始タイミングは呼接続時に各ユーザに対して独立に決められる。また、各スロットはPilot部とData部とから構成されている。Pilot部には、スロット毎に予め定められた既知のシンボル系列が収容されており、個別CHおよび共有CHのData部の復調に必要な伝送路推定値を求めるために用いられる。Data部にはユーザデータが収容されている。

[0004] 共有CHは全ユーザで共有されるため、スロット単位に構成されているという点は個別CHと同様であるが、開始タイミングは全ユーザ共通であり、予め定められている。共有CHはData部のみで構成され、Data部にはユーザデータが収容されている。共有CHはPilot部が存在しないため、個別CHよりも多くのユーザデータを収容することが可能である。

このようなことから、個別CHと共有CHのスロット開始タイミング差はユーザ毎に異なり、呼接続時に決定されることが分かる。これをタイミングオフセットと定義する。

[0005] 従来、このようなCDMA通信システムで用いられるCDMA受信装置として、図4に示すような構成が提案されている(例えば、特開2003−069451号公報、特開2002−111570号公報など参照)。このCDMA受信装置は、受信アンテナ部RA、無線受

信部RX、複数のユーザ復調ブロックから構成されている。なお、図4では、ユーザk復調ブロック1のみが示されているが他のユーザ復調ブロックも同様の構成である。

[0006] 無線受信部RXは、受信アンテナ部RAで受信された無線帯域の信号を入力とし、入力信号の増幅、無線帯域から基底帯域への周波数変換、直交検波、アナログ／ディジタル変換などの処理を行い、結果をユーザk復調ブロック1へと出力する。ユーザk復調ブロック1は、パス検出回路10、個別CHパス復調部1Aー1L、個別CH用RAKE合成回路（以下、RAKE合成回路という）14、共有CHパス復調部2Aー2L、および共有CH用RAKE合成回路（以下、RAKE合成回路という）24から構成される。

[0007] パス検出回路10は、無線受信部RXの出力を入力とし、入力信号に対するユーザk個別CH信号のパス遅延を検出し、個別CHパス復調部1Aー1L、共有CHパス復調部2Aー2Lへパス遅延を通知する。ここで、入力信号にはユーザA個別CH信号ーユーザk個別CH信号および共有CH信号が多重され、さらに伝搬遅延による各信号のマルチパス成分が多重されている。

[0008] ユーザ個別CH信号および共有CHの多重方法としては、通常、CDMAを用いるが、ユーザ個別CH信号の多重にはTDMA（Time Division Multiple Access：時分割多元接続）を用いることも可能である。また、多重された複数のユーザ信号の分離方法とマルチパス成分のパス遅延の検出方法および検出されるパス遅延の数に制限はない。

[0009] 個別CHパス復調部1Aー1Lでは、個別CH用逆拡散回路（以下、逆拡散回路という）11で、無線受信部RXからの無線受信出力と、パス検出回路10から通知された個別CHパスのパス遅延とを入力とし、無線受信部RXからの無線受信出力に対する逆拡散操作を行い、ユーザkの個別CHパスに対応する信号を抽出する。また、伝送路推定回路（以下、推定回路という）12で、逆拡散回路11の出力に基づき伝送路推定を行う。

[0010] 次に、個別CH用復調回路（以下、復調回路という）13で、逆拡散回路11の出力と、推定回路12の出力である伝送路推定値とを入力とし、Data部の復調を行う。これにより、Data部は、該当Data部の受信タイミングにおける伝送路推定値を用いて伝

送路の影響を取り除くことにより復調される。そして、RAKE合成回路14では、個別CHパス復調部1Aー1Lの出力をRAKE合成し、ユーザk個別CH復調結果を出力する。

[0011] 一方、共有CHパス復調部2Aー2Lでは、共有CH用逆拡散回路(以下、逆拡散回路という)21で、無線受信部RXからの無線受信出力と、パス検出回路10から通知された個別CHパスのパス遅延とを入力とし、無線受信部RXからの無線受信出力に対する逆拡散操作を行い、ユーザkの共有CHパスに対応する信号を抽出する。次に、共有CH用復調回路(以下、復調回路という)23で、逆拡散回路21の出力と、個別CHパス復調部1Aー1Lのうち対応するいずれかの推定回路12からの伝送路推定値とを入力とし、共有CHのData部の復調を行う。

[0012] これにより、共有CHのData部は、個別CHでのData部の受信タイミングにおける伝送路推定値を用いて伝送路の影響を取り除くことにより復調される。そして、RAKE合成回路24では、共有CHパス復調部2Aー2Lの出力を入力とし、RAKE合成を行い、ユーザk共有CH復調結果を出力する。

[0013] 図5にの復調動作例を示すように、個別CHおよび共有CHのData部の復調においては、まず個別CHのPilot部を用いて伝送路推定値を算出する。個別CHのData部は、自スロットの伝送路推定値、または自スロットおよび前後いくつかのスロットの伝送路推定値から補間して求めた該当Data部の受信タイミングにおける伝送路推定値を用いて伝送路の影響を取り除くことにより復調される。また、共有CHのData部は、個別CHのData部と同様に該当Data部の受信タイミングにおける伝送路推定値を用いて伝送路の影響を取り除くことにより復調される。

[0014] 上り送信電力制御は、個別CHのスロット単位で行われる。一方、共有CHの上り送信電力は、個別CHの上り送信電力に対して固定、または可変の電力オフセットを与えることで決定される。したがって、共有CHの上り送信電力制御は、タイミングオフセットで定義された一定の時間ずれを持ちながら、スロット単位で行われる。また、共有CHでは上り送信電力制御を行わない、つまり常に一定の上り送信電力とされる場合もある。

[0015] ここで言う上り送信電力制御とは、基地局における上り受信SIR(Signal to

Interference Ratio:信号対干渉電力比)を予め定められた閾値と比較し、閾値より小さければ上り送信電力増加制御を、大きければ上り送信電力減少制御をユーザ端末に対して行う動作のことである。上記CDMA無線通信システムのように、共有CHを用いてユーザデータを送信する方式によれば、効率的な無線リソースの利用を実現できる。また、全ユーザを共通のタイミングでスケジューリングできるため、各ユーザデータの遅延時間の制御にも適している。

発明の開示

発明が解決しようとする課題

[0016] しかしながら、このような従来技術では、タイミングオフセットが存在し、かつ、上り送信電力制御が実施されている場合には、共有CHの復調精度が劣化してしまう、という問題がある。以下、前述した図5を参照して、個別CHと共有CHとの間にタイミングオフセットが存在し、かつ、上り送信電力制御が実施されている場合を例に挙げて考える。

[0017] 任意のスロット(n)における個別CHの送信信号をTx(n)、個別CHのフェージングを含む伝送路による位相・振幅変動、すなわち伝送路推定値をH(n)とすると、個別CHの受信信号Rx(n)は以下のように表すことができる。

$$Rx(n) = H(n) \cdot Tx(n)$$

個別CHの復調時には上式のTx(n)を復元するために、以下の演算が行われる。ここで$H^*(n)$はH(n)の複素共役を表す。

$$Tx(n) = H^*(n) \cdot Rx(n)$$

また、任意のスロット番号nにおける共有CHの送信信号をtx(n)、共有CHの伝送路推定値をh(n)とすると、共有CHの受信信号rx(n)は以下のように表すことができる。

$$rx(n) = h(n) \cdot tx(n)$$

[0018] タイミングオフセットが存在しない場合は、任意のスロット(n)における個別CHの伝送路推定値をH(n)、予め定められた個別CHに対する共有CHの電力オフセットP_{OFFSET}から求められた係数をA_{OFFSET}とすると、共有CHの復調に用いられる伝送路推定値h(n)は以下のように算出される。

$h(n)=A_{OFFSET}\cdot H(n)$

共有CHの復調時には上式のtx(n)を復元するために、以下の演算が行われる。ここで*は複素共役を表す。

$tx(n)=h^{*}(n)\cdot rx(n)$

$=A_{OFFSET}\cdot H^{*}(n)\cdot rx(n)$

[0019] しかし、図5のシンボルmのように伝送路推定に使われた個別CHのシンボルのスロット番号と復調すべき共有CHのシンボルのスロット番号とがタイミングオフセットによってずれている場合、上式は以下のようになる。

$tx(n)=h^{*}(n)\cdot rx(n)$

$=A_{OFFSET}\cdot H^{*}(n+1)\cdot rx(n)$

[0020] ここで、スロット(n)からスロット(n+1)への上り送信電力制御による受信電力変動から求められる係数をΔ、スロット(n)からスロット(n+1)への時間経過による伝送路の変動をαとすると、H(n+1)は以下のようになる。

$H(n+1)=\Delta\cdot(H(n)+\alpha)$

このため、H(n+1)から求められたh(n)には明らかに上り送信電力制御による受信電力変動も含まれていることになる。

[0021] 一方、共有CHのシンボルmには、時間経過による伝送路の変動のみが含まれ、上り送信電力制御による受信電力変動は含まれていない。したがって、この伝送路推定値h(n)を共有CHのシンボルmに対してそのまま用いて復調を行うと、h(n)に含まれている上り送信電力制御による受信電力変動の影響で共有CHの復調精度が劣化してしまう。

$tx(n)=h^{*}(n)\cdot rx(n)$

$=A_{OFFSET}\cdot H^{*}(n+1)\cdot rx(n)$

$=A_{OFFSET}\cdot\Delta\cdot(H(n)+\alpha)^{*}\cdot rx(n)$

[0022] これに対して、本来必要とされる演算式は以下の通りである。ここで*は複素共役を表す。

$tx(n)=A_{OFFSET}\cdot(H(n)+\alpha)^{*}\cdot rx(n)$

上式からも共有CH復調時に上り送信電力制御による受信電力変動から求められ

る係数Δに相当する誤差が発生していることが分かる。

課題を解決するための手段

[0023] 本発明はこのような課題を解決するためのものであり、個別CHと共有CHとの間にタイミングオフセットが存在し、かつ、上り送信電力制御が実施されている場合でも、共有CHの復調精度の劣化を防ぐことができるCDMA受信装置および方法を提供することを目的としている。

[0024] 本発明にかかるCDMA受信装置は、受信アンテナで受信された無線帯域信号を信号処理することにより、CDMA方式に基づき各ユーザが占有する個別チャネルと全ユーザで共有する共有チャネルとが多重された上り通信チャネルの無線受信出力を出力する無線受信部と、前記無線受信出力に対して逆拡散操作を行って得られた任意のユーザの個別チャネルに対応する信号を入力とし、その既知のPilot部シンボルに対する逆拡散後の位相／振幅情報から伝送路による位相および振幅変動を示す伝送路推定値を算出する推定回路と、当該ユーザの個別チャネルと共有チャネルとの間のタイミングオフセットに起因する上り送信電力制御による受信電力変動に基づき、前記伝送路推定回路からの伝送路推定値を補正する伝送路推定値補正回路と、この伝送路推定値補正回路で補正された伝送路推定値に基づいて、前記無線受信出力に対して逆拡散操作を行って得られた当該ユーザの共有チャネルに対応する信号を復調する共有チャネル復調回路とを備えている。

[0025] また、本発明にかかるCDMA受信方法は、受信アンテナで受信された無線帯域信号を信号処理することにより、CDMA方式に基づき各ユーザが占有する個別チャネルと全ユーザで共有する共有チャネルとが多重された上り通信チャネルの無線受信出力を出力する無線受信ステップと、無線受信出力に対して逆拡散操作を行って得られた任意のユーザの個別チャネルに対応する信号を入力とし、その既知のPilot部シンボルに対する逆拡散後の位相／振幅情報から伝送路による位相および振幅変動をホす伝送路推定値を算出する伝送路推定ステップと、当該ユーザの個別チャネルと共有チャネルとの間のタイミングオフセットに起因する上り送信電力制御による受信電力変動に基づき算出された伝送路推定値を補正する伝送路推定値補正ステップと、この伝送路推定値補正ステップで補正された伝送路推定値に基づいて、無線

受信出力に対して逆拡散操作を行って得られた当該ユーザの共有チャネルに対応する信号を復調する共有チャネル復調ステップとを備えている。

発明の効果

[0026] 本発明によれば、個別CHでの伝送路推定値に対して、個別CHと共有CHとの間のタイミングオフセットに起因する上り送信電力制御による受信電力変動が補正したものが、共有CHの復調に用いられるため、タイミングオフセットが存在し、かつ、上り送信電力制御が実施されている場合でも、共有CHの復調精度の劣化を防ぐことができる。

図面の簡単な説明

[0027] [図1]図1は、本発明の一実施の形態にかかるCDMA受信装置の構成を示すブロック図である。

[図2]図2は、本発明の一実施の形態にかかるCDMA受信装置の動作を示すタイミングチャートである。

[図3]図3は、本発明の一実施の形態にかかるCDMA受信装置の他の動作を示すタイミングチャートである。

[図4]図4は、従来のCDMA受信装置の構成を示すブロック図である。

[図5]図5は、従来のCDMA受信装置の動作を示すタイミングチャートである。

発明を実施するための最良の形態

[0028] 次に、本発明の実施の形態について図面を参照して説明する。

[CDMA受信装置の概要]

本実施の形態にかかるCDMA受信装置は、Pilot部を含み、上り送信電力制御を行う個別チャネル(以下、CHという)と、個別CHの伝送路推定値を用いて復調を行う共有CHとから構成されるCDMA通信システムで用いられる受信装置であって、個別CHから伝送路推定を行った後、その個別CHと共有CHとの間のタイミングオフセットに起因する上り送信電力制御による受信電力変動を補正し、これを共有CHの復調に用いるものである。

[0029] 本実施の形態では、各ユーザ端末が基地局とCDMA方式を用いて通信を行う際に、上り通信CHとして、各ユーザの占有する個別CHと、全ユーザで共有する共有C

Hとを用いることを前提とする。各ユーザの個別CHおよび共有CHは、互いに符号多重されており、復調時には分離可能であるとする。なお、各ユーザの個別CHおよび共有CHが互いに多重されており、復調時に分離可能であれば、CDMA以外の多重方式でも本発明を適用可能である。

[0030] 個別CHはスロット単位に構成されており、このスロットの開始タイミングは呼接続時に各ユーザに対して独立に決められる。また、各スロットはPilot部とData部とから構成されている。Pilot部には、スロット毎に予め定められた既知のシンボル系列が収容されており、個別CHおよび共有CHのData部の復調に必要な伝送路を推定するために用いられる。Data部にはユーザデータが収容されている。なお、個別CHがPilot部のみから構成される場合も本発明を適用可能である。

[0031] 共有CHは全ユーザで共有されるため、スロット単位に構成されているという点は個別CHと同様であるが、開始タイミングは全ユーザ共通であり、予め定められている。共有CHはData部のみで構成され、Data部にはユーザデータが収容されている。共有CHはPilot部が存在しないため、個別CHよりも多くのユーザデータを収容することが可能である。したがって、個別CHと共有CHのスロット開始タイミング差、すなわちタイミングオフセットは、ユーザ毎に異なっており、また呼接続時に決定されためユーザ毎に取得可能であることが分かる。

[0032] 上り送信電力制御は、個別CHのスロット単位で行われる。また、共有CHの上り送信電力は、個別CHの上り送信電力に対して固定、または可変の電力オフセットを与えることで決定される。なお、ここで言う上り送信電力制御とは、基地局における上り受信SIR(Signal to Interference Ratio:信号対干渉電力比)を予め定められた閾値と比較し、閾値より小さければ上り送信電力増加制御を、大きければ上り送信電力減少制御をユーザ端末に対して行う動作のことである。

[0033] したがって、共有CHの上り送信電力制御は、タイミングオフセットで定義された一定の時間ずれを持ちながら、スロット単位で行われる。また、共有CHでは上り送信電力制御を行わない、つまり常に固定電力で受信される場合も考えられる。上り送信電力制御コマンドに従って発生するユーザ端末の送信電力変動は、そのまま基地局における受信電力変動として観測される。これにより、各スロットにおける上り送信電力

制御による受信電力変動は、下り信号として送信した上り送信電力制御コマンド情報から推定することが可能である。

[0034] 本実施の形態にかかるCDMA受信装置では、個別CHから伝送路推定を行った後、その個別CHと共有CHとの間のタイミングオフセットに起因する上り送信電力制御による受信電力変動を補正し、これを共有CHの復調に用いることで共有CHの復調精度の劣化を防いでいる。

[0035] [CDMA受信装置の構成]

次に、図1を参照して、本発明の一実施の形態にかかるCDMA受信装置について説明する。なお、図1に示した本発明の一実施の形態にかかるCDMA受信装置のブロック図において、前述した図4と同じまたは同等部分には同一符号が付されている。図1のCDMA受信装置は、受信アンテナ部RA、無線受信部RX、複数のユーザ復調ブロックから構成されている。ここでは、ユーザk復調ブロック1のみが示されているが他のユーザ復調ブロックも同様の構成である。なおユーザ数kおよび復調可能なパス数Lはともに正整数であり、ユーザ数およびパス数に制限はない。

[0036] 受信アンテナ部RAは、1個以上の受信アンテナ素子から構成される。なお、受信アンテナ素子数に制限はない。また、アンテナ素子の水平面内および垂直面内指向性に制限はなく、例としてはオムニ(無指向性)、ダイポール(双極指向性)が挙げられる。

[0037] 無線受信部RXは、ローノイズアンプ、帯域制限フィルタ、ミキサ、局部発信器、AGC(Auto Gain Controller)、直交検波器、低域通過フィルタ、アナログ/ディジタル変換器などから構成される(図示せず)。この無線受信部RXでは、受信アンテナ部RAで受信された無線帯域の信号を入力とし、入力信号の増幅、無線帯域から基底帯域への周波数変換、直交検波、アナログ/ディジタル変換などの処理を行い、結果をユーザk復調ブロック1へと出力する。

[0038] ユーザk復調ブロック1は、パス検出回路10、受信電力差補正係数算出回路(以下、補正係数算出回路という)20、個別CHパス復調部1A-1L、RAKE合成回路14、共有CHパス復調部2A-2L、およびRAKE合成回路24から構成される。

[0039] パス検出回路10は、無線受信部RXの出力を入力とし、入力信号に対するユーザk

個別CH信号のパス遅延を検出し、個別CHパス復調部1Aー1L、共有CHパス復調部2Aー2Lへパス遅延を通知する。ここで、入力信号にはユーザA個別CH信号ーユーザk個別CH信号および共有CH信号が多重され、さらに伝搬遅延による各信号のマルチパス成分が多重されている。

[0040] ユーザ個別CH信号および共有CHの多重方法としては、通常、CDMAを用いるが、ユーザ個別CH信号の多重にはTDMA(Time Division Multiple Access:時分割多元接続)を用いることも可能である。また、多重された複数のユーザ信号の分離方法とマルチパス成分のパス遅延の検出方法および検出されるパス遅延の数に制限はない。

[0041] 補正係数算出回路20は、ユーザkのタイミングオフセット情報と、ユーザkの上り送信電力制御コマンド情報とを入力とし、タイミングオフセットに起因する上り送信電力制御による受信電力変動を補正するための受信電力差補正係数を出力する。タイミングオフセット区間内における上り送信電力制御コマンドに応じた受信電力変動を推定することにより受信電力変動を補正する受信電力差補正係数を算出する。

[0042] この際、共有CHの上り送信電力が、個別CHの上り送信電力に対して固定、または可変の電力オフセット(P_{OFFSET})を与えることで決定される場合には、その電力オフセットを考慮した受信電力差補正係数を算出することも可能である。なお、受信電力差補正係数はパスによらず、ユーザkのタイミングオフセット情報と、ユーザkの上り送信電力制御コマンド情報とから算出される。

[0043] 個別CHパス復調部1Aー1Lは、それぞれ、逆拡散回路11、推定回路12、および復調回路13から構成されている。逆拡散回路11は、無線受信部RXからの無線受信出力と、パス検出回路10から通知された個別CHパスのパス遅延とを入力とし、無線受信部からの出力に対する逆拡散操作を行い、ユーザkの個別CHパスに対応する信号を抽出する。

[0044] 推定回路12は、逆拡散回路11の出力を入力とし、既知Pilot部シンボルに対する逆拡散後の位相/振幅情報から伝送路による位相・振幅変動を示す伝送路推定値を算出する。この伝送路推定値はパス毎に異なり、個別CH復調回路に与えられ個別CHのData部の復調に使われるとともに、後述する伝送路推定値補正回路(以下

、補正回路という）22にも与えられる。この伝送路推定値は、自スロットのPilot部シンボル、もしくは自スロットおよび前後いくつかのスロットの伝送路推定値から補間して求めることが可能である。なお、使用するスロット数および補間方法に制限はない。

[0045] 伝送路推定値を補正回路22に与える場合には、個別CHのData部の硬判定結果をPilot部シンボルと同様に扱い、個別CHのData部シンボルの硬判定結果に対する逆拡散後の位相／振幅情報から伝送路推定値を算出することも可能である。この方法を用いることで、共有CHの受信タイミングにおける伝送路推定値の精度を向上させることができる。

[0046] 復調回路13は、逆拡散回路11の出力と、推定回路12の出力である伝送路推定値とを入力とし、Data部の復調を行う。Data部は、該当Data部の受信タイミングにおける伝送路推定値を用いて伝送路の影響を取り除くことにより復調される。RAKE合成回路14は、個別CHパス復調部1A－1Lの出力をRAKE合成し、ユーザk個別CH復調結果を出力する。

[0047] 共有CHパス復調部2A－2Lは、それぞれ、逆拡散回路21、補正回路22、および復調回路23から構成されている。逆拡散回路21は、無線受信部RXからの無線受信出力と、パス検出回路10から通知された個別CHパスのパス遅延とを入力とし、無線受信部RXからの無線受信出力に対する逆拡散操作を行い、ユーザkの共有CHパスに対応する信号を抽出する。

[0048] 補正回路22は、推定回路12の出力である伝送路推定値と、補正係数算出回路20の出力である受信電力差補正係数とを入力とし、伝送路推定値に受信電力差補正係数を適用することにより、補正された伝送路推定値を算出し出力する。伝送路推定値はパス毎に異なるため、補正された伝送路推定値もパス毎に算出される。

[0049] 復調回路23は、逆拡散回路21の出力と、個別CHパス復調部1A－1Lの補正回路22からの補正された伝送路推定値とを入力とし、共有CHのData部の復調を行う。これにより、共有CHのData部は、個別CHでのData部の受信タイミングにおける伝送路推定値を用いて伝送路の影響を取り除くことにより復調される。RAKE合成回路24は、共有CHパス復調部2A－2Lの出力を入力とし、RAKE合成を行い、ユーザk共有CH復調結果を出力する。

[0050] [CDMA受信装置の動作]

次に、図2を参照して、本実施の形態にかかるCDMA受信装置の動作について説明する。

図2のタイミングチャートに示すように、まず、個別CHと共有CHとの間にタイミングオフセットが存在し、かつ、上り送信電力制御が実施されている任意のユーザkの任意のパスにおける伝送路推定値の補正を想定する。任意のスロット(n)における個別CHの送信信号をTx(n)、推定回路12の出力である伝送路推定値H(n)とすると、個別CHの受信信号Rx(n)は以下のように表すことができる。

$$Rx(n) = H(n) \cdot Tx(n)$$

[0051] 復調時には上式のTx(n)を復元するために、復調回路13において、以下の演算が行われる。ここで$H^*(n)$はH(n)の複素共役を表す。

$$Tx(n) = H^*(n) \cdot Rx(n)$$

また、任意のスロット番号nにおける共有CHの送信信号をtx(n)、共有CHの伝送路推定値をh(n)とすると、共有CHの受信信号rx(n)は以下のように表すことができる。

$$rx(n) = h(n) \cdot tx(n)$$

[0052] 次に、個別CHと共有CHとの間にタイミングオフセットが存在しない場合を想定すると、任意のスロット(n)における個別CHの伝送路推定値をH(n)、予め定められた個別CHに対する共有CHの電力オフセットP_{OFFSET}から求められた係数をA_{OFFSET}とすると、共有CHの復調に用いられる伝送路推定値h(n)は、補正係数算出回路20において以下のように算出される。

$$h(n) = A_{OFFSET} \cdot H(n)$$

[0053] 共有CHの復調時には上式のtx(n)を復元するために、復調回路23において、以下の演算が行われる。ここで*は複素共役を表す。

$$tx(n) = h^*(n) \cdot rx(n)$$
$$= A_{OFFSET} \cdot H^*(n) \cdot rx(n)$$

[0054] しかし、シンボルmのように伝送路推定に使われた個別CHのシンボルのスロット番号と復調すべき共有CHのシンボルのスロット番号とがタイミングオフセットによってず

れている場合、上式は以下のようになる。

$$tx(n) = h^{*}(n) \cdot rx(n)$$
$$= A_{OFFSET} \cdot H^{*}(n+1) \cdot rx(n)$$

[0055] ここで、スロット(n)からスロット(n+1)への上り送信電力制御による受信電力変動から求められる係数をΔ、スロット(n)からスロット(n+1)への時間経過による伝送路の変動をαとすると、H(n+1)は以下のようになる。

$$H(n+1) = \Delta \cdot (H(n) + \alpha)$$

このため、H(n+1)から求められたh(n)には明らかに上り送信電力制御による受信電力変動も含まれていることになる。一方、共有CHのシンボルmには、時間経過による伝送路の変動のみが含まれ、上り送信電力制御による受信電力変動は含まれていない。

[0056] 本実施の形態では、補正係数算出回路20において、ユーザkのタイミングオフセット情報と上り送信電力制御コマンド情報とから、タイミングオフセットに起因する上り送信電力制御による受信電力変動を補正するための受信電力差補正係数を算出する。そして、補正回路22において、伝送路推定値に受信電力差補正係数を適用することにより、補正された伝送路推定値を算出する。

[0057] 具体的には、まず、ユーザkのタイミングオフセット情報を取得し、補正係数算出回路20に入力する。ここで、タイミングオフセットは呼接続時に決定される。また、ユーザkのスロット(n)受信開始時からスロット(n+1)受信開始時までの間に下り信号として送信した上り送信電力制御コマンド情報を取得し、補正係数算出回路20に入力する。

[0058] 次に、補正係数算出回路20において、入力されたユーザkのスロット(n)受信開始時からスロット(n+1)受信開始時までの間に下り信号として送信した上り送信電力制御コマンド情報を用いて、ユーザkのスロット(n)からスロット(n+1)への上り送信電力制御による受信電力変動を推定する。ここで、上り送信電力制御コマンドに従って発生するユーザ端末の送信電力変動は、そのまま基地局における受信電力変動として観測されると考えられる。

[0059] 下り信号として送信した上り送信電力制御コマンド情報の総和から推定された受信

電力変動係数をCTPCとし、スロット(n)からスロット(n+1)への上り送信電力制御による受信電力変動から求められた係数をΔとすると、以下の近似式が成り立つ。

$$CTPC \fallingdotseq \Delta$$

[0060] 次に、補正係数算出回路20において、タイミングオフセットと、推定された上り送信電力制御による受信電力変動とを用いて、タイミングオフセット区間内において上り送信電力制御による受信電力変動を打ち消す受信電力差補正係数βを算出し、補正回路22に出力する。

β =CTPC−1(タイミングオフセット区間内の場合)

β =1(タイミングオフセット区間外の場合)

[0061] 次に、補正回路22において、推定回路12の出力である伝送路推定値に受信電力差補正係数を適用することにより、補正された伝送路推定値を算出する。ここで、補正された伝送路推定値をhc(n)とすると、以下のように表される。

$$hc(n) = A_{OFFSET} \cdot \beta \cdot H(n+1)$$

[0062] 補正された伝送路推定値を図2のシンボルmの復調に用いることで、タイミングオフセットに起因する上り送信電力制御による受信電力変動の影響を除去することができる。

$$\begin{aligned} tx(n) &= hc^{*}(n) \cdot rx(n) \\ &= A_{OFFSET} \cdot \beta \cdot H^{*}(n+1) \cdot rx(n) \\ &= A_{OFFSET} \cdot \beta \cdot \Delta \cdot (H(n)+\alpha)^{*} \cdot rx(n) \\ &\fallingdotseq A_{OFFSET} \cdot (H(n)+\alpha)^{*} \cdot rx(n) \end{aligned}$$

本来必要とされる演算式は以下の通りであるため、

$$tx(n) = A_{OFFSET} \cdot (H(n)+\alpha)^{*} \cdot rx(n)$$

上式からも共有CH復調時の誤差を除去できることが分かる。ここで*は複素共役を表す。

[0063] このように、個別CHから伝送路推定を行った後、その個別CHと共有CHとの間のタイミングオフセットに起因する上り送信電力制御による受信電力変動を補正し、これを共有CHの復調に用いるようにしたので、個別CHと共有CHとの間のタイミングオフセットが存在し、かつ、上り送信電力制御が実施されている場合にも、共有CHの復

調精度の劣化を防ぐことができる。

[0064] この際、図3に示すように、共有CHのData部の復調において、該当Data部の受信タイミングにおける伝送路推定値として、該当Data部の近傍の受信タイミングにおける伝送路推定値を重み付け平均した結果を用いる場合にも適用可能である。この場合は、それぞれの伝送路推定値に対して受信電力差補正係数を適用してから重み付け平均を行うことで、タイミングオフセットに起因する上り送信電力制御による受信電力変動の影響を除去することができる。

産業上の利用可能性

[0065] 携帯電話網などの移動体通信網を構成する無線基地局で用いられるCDMA受信装置に適している。

請求の範囲

[1] 受信アンテナで受信された無線帯域信号を信号処理することにより、CDMA方式に基づき各ユーザが占有する個別チャネルと全ユーザで共有する共有チャネルとが多重された上り通信チャネルの無線受信出力を出力する無線受信部と、

前記無線受信出力に対して逆拡散操作を行って得られた任意のユーザの個別チャネルに対応する信号を入力とし、その既知のPilot部シンボルに対する逆拡散後の位相／振幅情報から伝送路による位相および振幅変動を示す伝送路推定値を算出する伝送路推定回路と、

当該ユーザの個別チャネルと共有チャネルとの間のタイミングオフセットに起因する上り送信電力制御による受信電力変動に基づき、前記伝送路推定回路からの伝送路推定値を補正する伝送路推定値補正回路と、

この伝送路推定値補正回路で補正された伝送路推定値に基づいて、前記無線受信出力に対して逆拡散操作を行って得られた当該ユーザの共有チャネルに対応する信号を復調する共有チャネル復調回路と

を備えることを特徴とするCDMA受信装置。

[2] 請求項1に記載のCDMA受信装置において、

当該ユーザのタイミングオフセット情報および上り送信電力制御コマンド情報を入力とし、タイミングオフセット区間内における上り送信電力制御コマンドに応じた受信電力変動を推定することにより受信電力変動を補正する受信電力差補正係数を算出する受信電力差補正係数算出回路をさらに備え、

前記伝送路推定値補正回路は、前記受信電力差補正係数算出回路からの受信電力差補正係数に基づき、前記伝送路推定回路からの伝送路推定値を補正する

ことを特徴とするCDMA受信装置。

[3] 請求項1に記載のCDMA受信装置において、

前記伝送路推定値補正回路は、前記伝送路推定回路から得られた当該タイミング前後の複数の伝送路推定値を前記受信電力変動に基づき補正した後、これら補正後の伝送路推定値を重み付け平均して出力する

ことを特徴とするCDMA受信装置。

[4] 請求項1に記載のCDMA受信装置において、

前記無線受信出力から当該ユーザの個別チャネルおよび共通チャネルに関するパス遅延を検出するパス検出回路と、

当該ユーザの個別チャネルのパス遅延に基づき前記無線受信出力を逆拡散操作して前記ユーザの個別チャネルに対応する信号を出力する個別チャネル用逆拡散回路と、

当該ユーザの共通チャネルのパス遅延に基づき前記無線受信出力を逆拡散操作して前記ユーザの共通チャネルに対応する信号を出力する共通チャネル用逆拡散回路と

をさらに備えることを特徴とするCDMA受信装置。

[5] 請求項4に記載のCDMA受信装置において、

前記伝送路推定値に基づいて当該ユーザの個別チャネルに対応する信号から当該個別チャネルのData部の復調を行う個別チャネル用復調回路をさらに備える

ことを特徴とするCDMA受信装置。

[6] 請求項5に記載のCDMA受信装置において、

前記個別チャネル用逆拡散回路、前記伝送路推定回路、および前記個別チャネル用復調回路からなる個別チャネルパス復調部を当該ユーザの各個別チャネル毎に備え、

これら個別チャネルパス復調部の個別チャネル用復調回路からの復調出力をRAKE合成して得られた当該ユーザの個別チャネル復調結果を出力する個別チャネル用RAKE合成回路をさらに備え、

前記共有チャネル用逆拡散回路、前記伝送路推定値補正回路、および前記共有チャネル用復調回路からなる共有チャネルパス復調部を当該ユーザの各共通チャネル毎に備え、

これら共有チャネルパス復調部の共有チャネル用復調回路からの復調出力をRAKE合成して得られた当該ユーザの共有チャネル復調結果を出力する共有チャネル用RAKE合成回路をさらに備える

ことを特徴とするCDMA受信装置。

[7] 受信アンテナで受信された無線帯域信号を信号処理することにより、CDMA方式に基づき各ユーザが占有する個別チャネルと全ユーザで共有する共有チャネルとが多重された上り通信チャネルの無線受信出力を出力する無線受信ステップと、

無線受信出力に対して逆拡散操作を行って得られた任意のユーザの個別チャネルに対応する信号を入力とし、その既知のPilot部シンボルに対する逆拡散後の位相／振幅情報から伝送路による位相および振幅変動を示す伝送路推定値を算出する伝送路推定ステップと、

当該ユーザの個別チャネルと共有チャネルとの間のタイミングオフセットに起因する上り送信電力制御による受信電力変動に基づき算出された伝送路推定値を補正する伝送路推定値補正ステップと、

この伝送路推定値補正ステップで補正された伝送路推定値に基づいて、無線受信出力に対して逆拡散操作を行って得られた当該ユーザの共有チャネルに対応する信号を復調する共有チャネル復調ステップと

を備えることを特徴とするCDMA受信方法。

[8] 請求項7に記載のCDMA受信方法において、

当該ユーザのタイミングオフセット情報および上り送信電力制御コマンド情報を入力とし、タイミングオフセット区間内における上り送信電力制御コマンドに応じた受信電力変動を推定することにより受信電力変動を補正する受信電力差補正係数を算出する受信電力差補正係数算出ステップをさらに備え、

前記伝送路推定値補正ステップは、算出された受信電力差補正係数に基づき、算出された伝送路推定値を補正するステップを備える

ことを特徴とするCDMA受信方法。

[9] 請求項7に記載のCDMA受信方法において、

前記伝送路推定値補正ステップは、

得られた当該タイミング前後の複数の伝送路推定値を前記受信電力変動に基づき補正するステップと、

これら補正後の伝送路推定値を重み付け平均して出力するステップと

を備えることを特徴とするCDMA受信方法。

5/3/2016, EAST Version: 3.2.1.1

[10] 請求項7に記載のCDMA受信方法において、

前記無線受信出力から当該ユーザの個別チャネルおよび共通チャネルに関するパス遅延を検出するパス検出ステップと、

当該ユーザの個別チャネルのパス遅延に基づき前記無線受信出力を逆拡散操作して前記ユーザの個別チャネルに対応する信号を出力する個別チャネル用逆拡散ステップと、

当該ユーザの共通チャネルのパス遅延に基づき前記無線受信出力を逆拡散操作して前記ユーザの共通チャネルに対応する信号を出力する共通チャネル用逆拡散ステップと

をさらに備えることを特徴とするCDMA受信方法。

[11] 請求項10に記載のCDMA受信方法において、

前記伝送路推定値に基づいて当該ユーザの個別チャネルに対応する信号から当該個別チャネルのData部の復調を行う個別チャネル用復調ステップをさらに備えることを特徴とするCDMA受信方法。

[12] 請求項11に記載のCDMA受信方法において、

前記個別チャネル用逆拡散ステップ、前記伝送路推定ステップ、および前記個別チャネル用復調ステップからなる個別チャネルパス復調ステップを当該ユーザの各個別チャネル毎に備え、

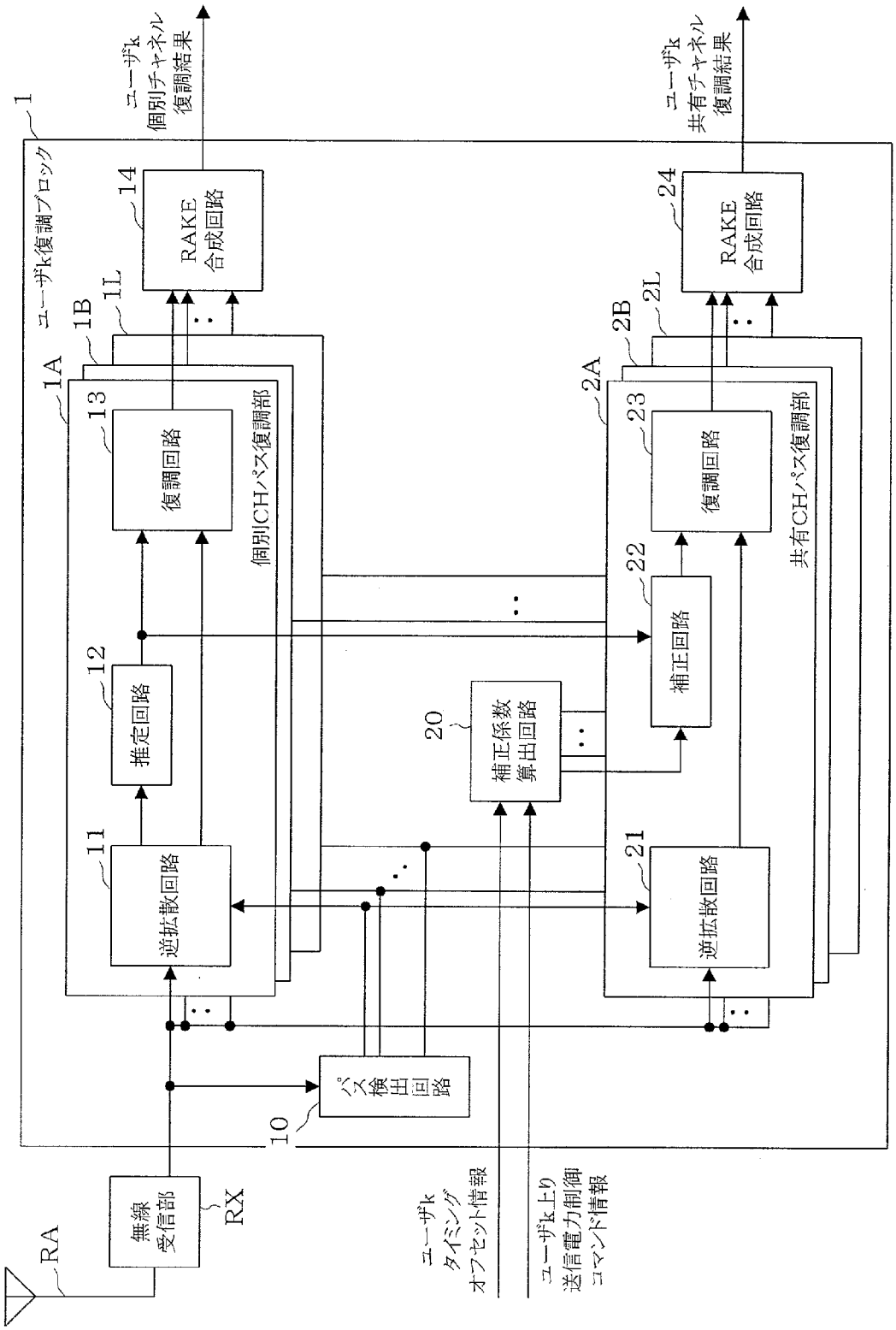
これら個別チャネルパス復調ステップの個別チャネル用復調ステップからの復調出力をRAKE合成して得られた当該ユーザの個別チャネル復調結果を出力する個別チャネル用RAKE合成ステップをさらに備え、

前記共有チャネル用逆拡散ステップ、前記伝送路推定値補正ステップ、および前記共有チャネル用復調ステップからなる共有チャネルパス復調ステップを当該ユーザの各共通チャネル毎に備え、

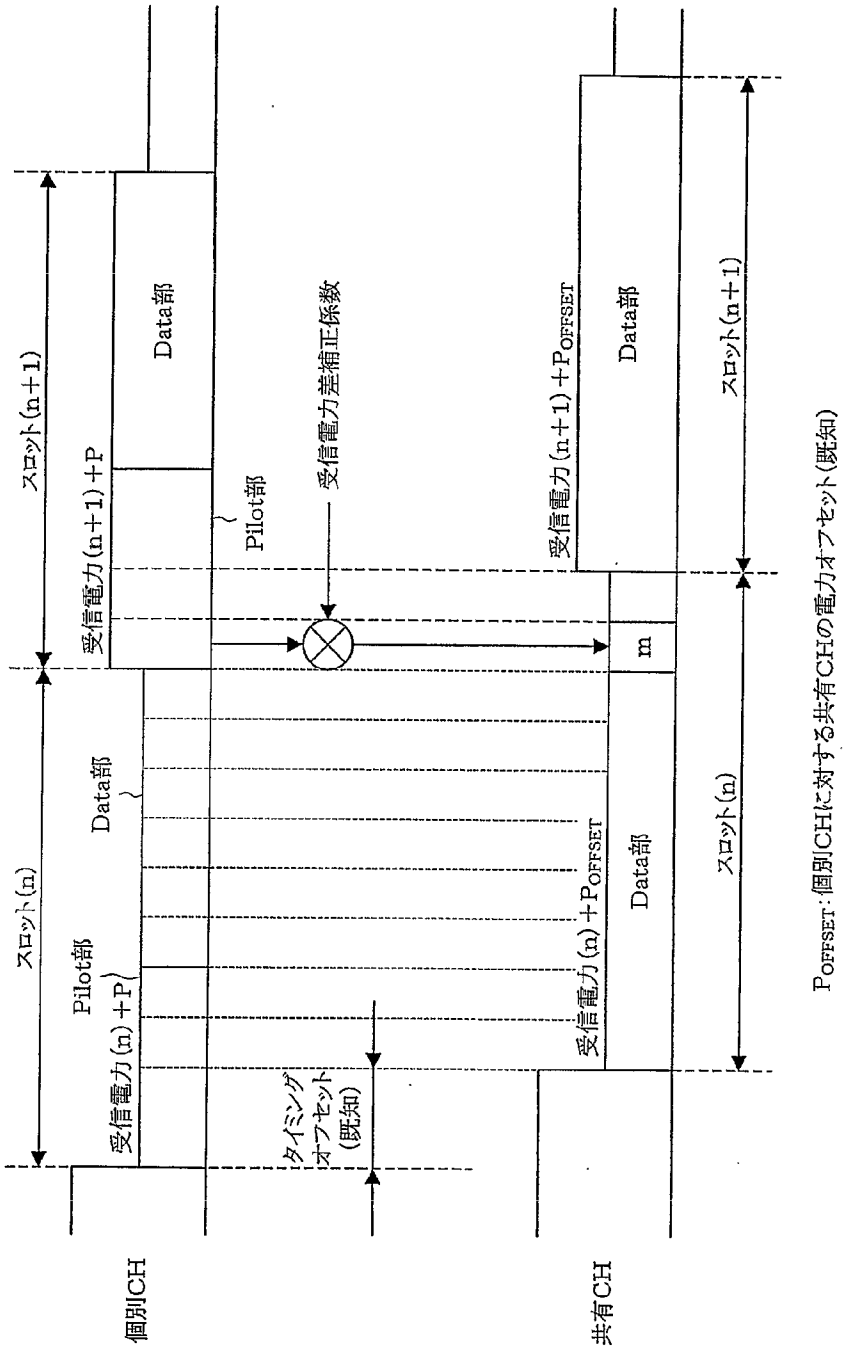
これら共有チャネルパス復調ステップの共有チャネル用復調ステップからの復調出力をRAKE合成して得られた当該ユーザの共有チャネル復調結果を出力する共有チャネル用RAKE合成ステップをさらに備える

ことを特徴とするCDMA受信方法。

[図1]

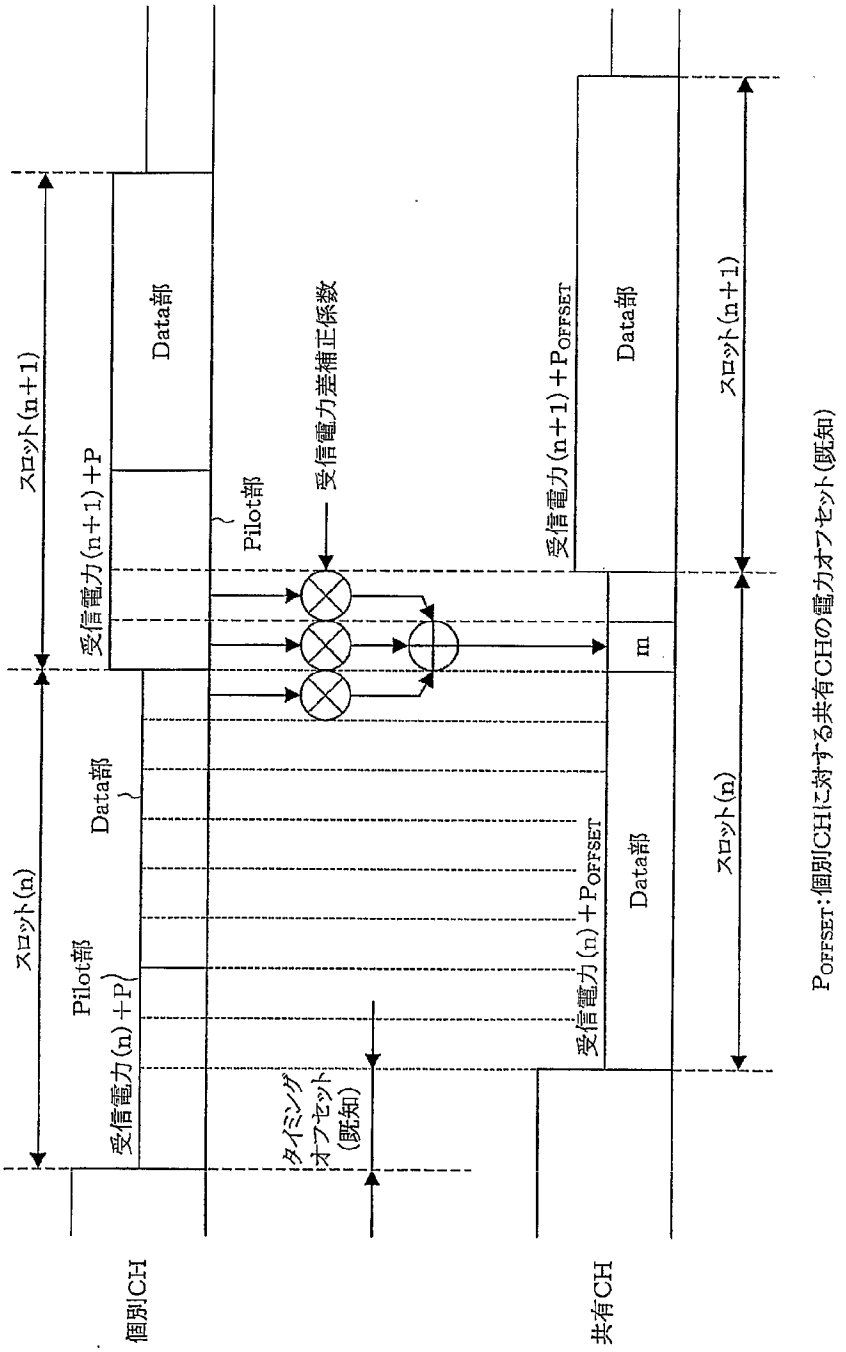

1
ユーザk復調ブロック
ユーザk
個別チャネル
復調結果
ユーザk
共有チャネル
復調結果
14
RAKE
合成回路
24
RAKE
合成回路
1L
2L
1B
2B
1A
2A
13
復調回路
23
復調回路
個別CHパス復調部
共有CHパス復調部
12
推定回路
22
補正回路
20
補正係数
算出回路
11
逆拡散回路
21
逆拡散回路
パス
検出
回路
10
RA
無線
受信部
RX
ユーザk
タイミング
オフセット情報
ユーザk上り
送信電力制御
コマンド情報

[図2]

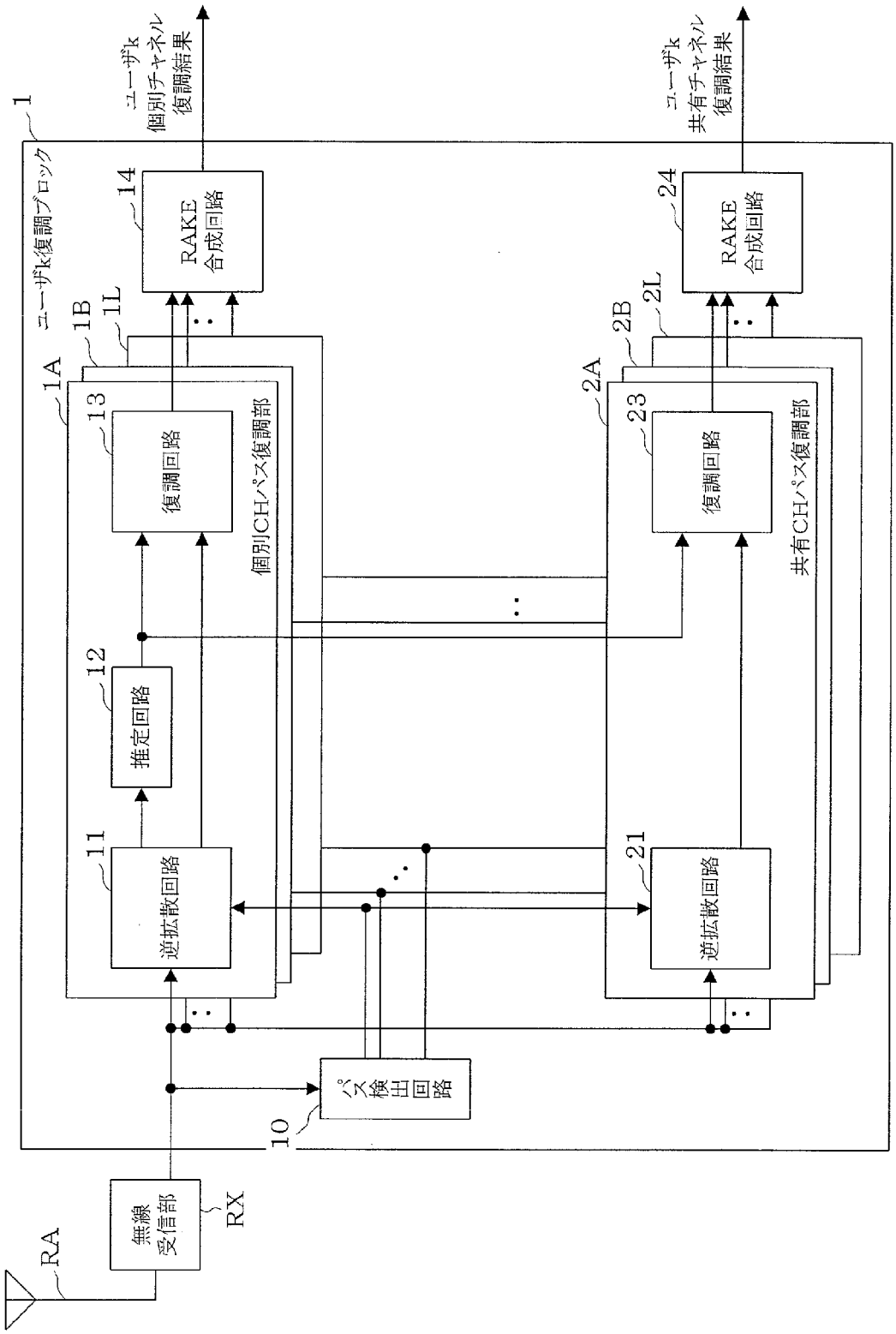


差換え用紙(規則26)

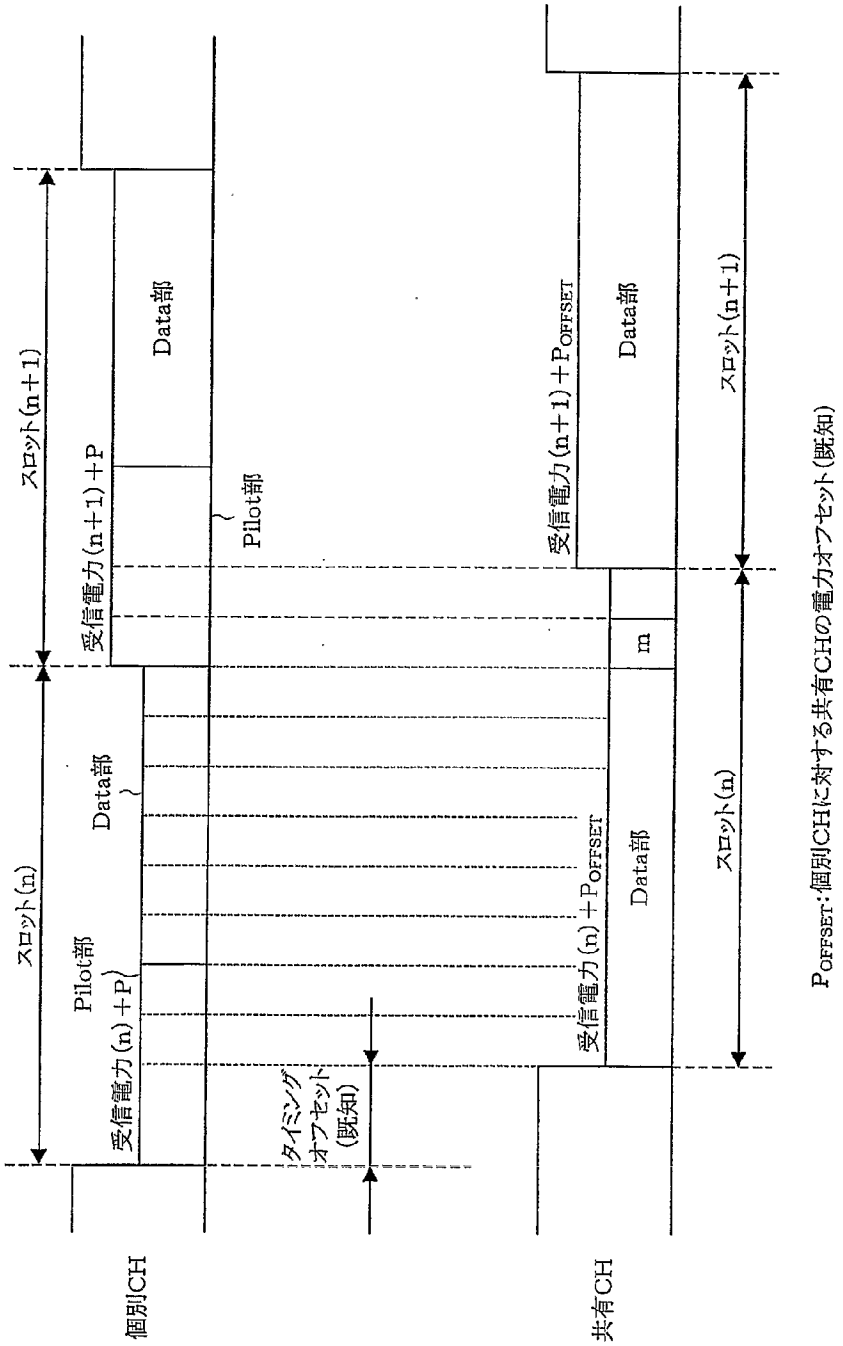
[図3]


スロット(n+1)
受信電力(n+1)+P
Data部
Pilot部
受信電力差補正係数
受信電力(n+1)+POFFSET
Data部
スロット(n+1)
m
スロット(n)
Data部
Pilot部
受信電力(n)+P
受信電力(n)+POFFSET
Data部
スロット(n)
タイミング
オフセット
(既知)
個別CH
共有CH
POFFSET:個別CHに対する共有CHの電力オフセット(既知)

[図4]


1
ユーザk復調ブロック
ユーザk
個別チャネル
復調結果
ユーザk
共有チャネル
復調結果
14
RAKE
合成回路
24
RAKE
合成回路
1B
1L
2B
2L
1A
2A
13
復調回路
23
復調回路
個別CHパス復調部
共有CHパス復調部
12
推定回路
11
逆拡散回路
21
逆拡散回路
パス
検出
回路
10
無線
受信部
RX
RA

[図5]



差換え用紙(規則26)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2005/002586

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl[7] H04B1/707, 7/26, H04Q7/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl[7] H04B1/707, 7/26, H04Q7/38

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2005
Kokai Jitsuyo Shinan Koho	1971-2005	Toroku Jitsuyo Shinan Koho	1994-2005

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2002-111570 A (Sharp Corp.), 12 April, 2002 (12.04.02), Fig. 3 (Family: none)	1-12
A	JP 2003-18081 A (Toshiba Corp.), 17 January, 2003 (17.01.03), Claim 1 (Family: none)	1-12
A	JP 2003-289278 A (Toshiba Corp.), 10 October, 2003 (10.10.03), Fig. 2 (Family: none)	6

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search 08 April, 2005 (08.04.05)	Date of mailing of the international search report 26 April, 2005 (26.04.05)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2004)

5/3/2016, EAST Version: 3.2.1.1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2005/002586

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2003-523687 A (SAMSUNG ELECTRONICS CO., LTD.), 05 August, 2003 (05.08.03), Full text; all drawings & US 2001/0046220 A1 29 November, 2001 (29.11.01) & KR 365613 B 26 December, 2002 (26.12.02) & KR 1082745 A 30 August, 2001 (30.08.01) & WO 2001/061878 A1 23 August, 2001 (23.08.01) & JP 3512774 B2 31 March, 2004 (31.03.04) & EP 1190496 B1 27 October, 2004 (27.10.04) & EP 1313331 A2 21 May, 2003 (21.05.03) & EP 1313332 A1 21 May, 2003 (21.05.03) & EP 1190496 A1 27 March, 2002 (27.03.02) & DE 60106706 E 02 December, 2004 (02.12.04) & CN 1363144 A 07 August, 2002 (07.08.02) & AU 759898 B 01 May, 2003 (01.05.03) & AU 3615501 A 27 August, 2001 (27.08.01)	1-12

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国際調査報告

国際出願番号 PCT／JP2005／002586

A. 発明の属する分野の分類（国際特許分類（IPC））

Int.Cl.[7] H04B1/707, 7/26, H04Q7/38

B. 調査を行った分野

調査を行った最小限資料（国際特許分類（IPC））

Int.Cl.[7] H04B1/707, 7/26, H04Q7/38

最小限資料以外の資料で調査を行った分野に含まれるもの

日本国実用新案公報	1922－1996年
日本国公開実用新案公報	1971－2005年
日本国実用新案登録公報	1996－2005年
日本国登録実用新案公報	1994－2005年

国際調査で使用した電子データベース（データベースの名称、調査に使用した用語）

C. 関連すると認められる文献

引用文献のカテゴリー＊	引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示	関連する請求の範囲の番号
A	JP 2002-111570 A，（シャープ株式会社），2002.04.12, 第3図, （ファミリーなし）	1-12
A	JP 2003-18081 A，（株式会社東芝），2003.01.17, 請求項1, （ファミリーなし）	1-12
A	JP 2003-289278 A，（株式会社東芝），2003.10.10, 第2図, （ファミリーなし）	6

☑ C欄の続きにも文献が列挙されている。

☐ パテントファミリーに関する別紙を参照。

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「&」同一パテントファミリー文献

国際調査を完了した日 08.04.2005	国際調査報告の発送日 26.4.2005
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A	JP 2003-523687 A 2003.08.05, （サムスン　エレクトロニクス カンパニー　リミテッド）, 全文全図, & US 2001/0046220 A1 , 2001.11.29, & KR 365613 B , 2002.12.26, & KR 1082745 A , 2001.08.30, & WO 2001/061878 A1 , 2001.08.23, & JP 3512774 B2 2004.03.31, & EP 1190496 B1 2004.10.27, & EP 1313331 A2 , 2003.05.21, & EP 1313332 A1 , 2003.05.21, & EP 1190496 A1 , 2002.03.27, & DE 60106706 E 2004.12.02, & CN 1363144 A , 2002.08.07, & AU 759898 B 2003.05.01, & AU 3615501 A , 2001.08.27	1-12

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(71) Applicant *(for all designated States except US)*: IP WIRELESS INC [US/US]; 1001 Bayhill Drive, Second Floor, San Bruno, CA 94066 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: ANDERSON, Nicholas William [GB/GB]; 72 London Road, Warmley Wiltshire BS30 5JL (GB).

(74) Agent: WRAY, Antony; Grove House, Lutyens Close Chineham Court, Basingstoke Hampshire RG24 8AG (GB).

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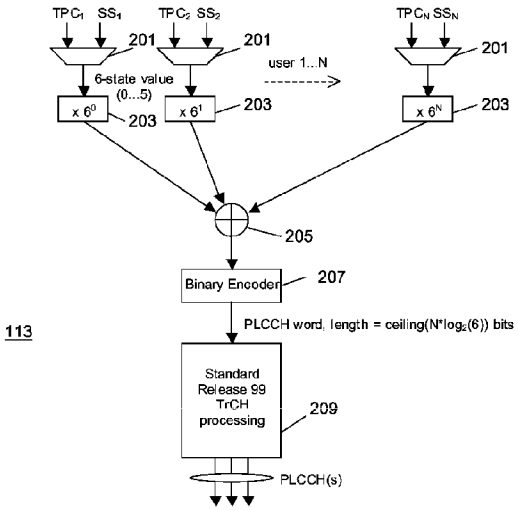
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[Continued on next page]

(54) Title: APPARATUS AND METHOD FOR COMMUNICATING USER EQUIPMENT SPECIFIC INFORMATION IN CELLULAR COMMUNICATION SYSTEM



(57) Abstract: A cellular communication system comprises a base station (101) and a plurality of user equipment (103). The base station (101) comprises a combine processor (111) which combines user equipment specific information, such as power control commands or synchronisation information, for a plurality of user equipment (103). An encode processor (113) encodes the combined user equipment specific information and a transceiver (109) transmits the combined user equipment specific information in a minimum transmission resource unit of the cellular communication system. The minimum transmission resource unit may be a single channelisation code in a single time slot. The UE (103) comprises a receiver (115) for receiving the minimum transmission resource unit and a UE data processor (117) which decodes the minimum transmission resource unit and extracts the user equipment specific information for that UE (103). The invention may provide a more efficient communication of small data blocks.

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APPARATUS AND METHOD FOR COMMUNICATING USER EQUIPMENT SPECIFIC INFORMATION IN CELLULAR COMMUNICATION SYSTEM

Field of the invention

The invention relates to an apparatus and method for communicating user equipment specific information in cellular communication system and in particular, but not exclusively, to communication of transmit power control and synchronisation data.

Background of the Invention

In the last decades, cellular communication systems for mobile communication have become commonplace. Originally cellular communication systems provided only voice services but over time an increasing number of services have been provided either through enhancements to existing cellular communication systems or through the development of new cellular communication systems.

For example, 3rd generation cellular communication systems have been, and are being, standardized by the 3rd Generation Partnership Project (3GPP). These 3rd generation cellular communication systems have been standardised to provide a large number of different services aimed at different applications.

In particular data packet services suitable for data communication are supported by most cellular communication systems. For example, downlink packet data services are supported within the 3GPP release 5 specifications in the form of the High Speed Downlink Packet Access (HSDPA) service. In this system, transmission code resources are shared amongst users according to their traffic needs. The base station or "Node-B" is responsible for allocating and distributing the resources to the users, within a so-called scheduling task.

The allocation information itself is transmitted to the users via a High Speed - Shared Common Control CHannel (HS-SCCH). This furnishes the user equipment (UE) with knowledge of the forthcoming transmission on the HSDPA shared resources (the High Speed - Downlink Shared CHannel - HS-DSCH). The UE can thus prepare itself and configure its receiver appropriately for the transmission.

In addition to these shared resources used for data and signalling purposes, the current release 5 specifications mandate the existence of associated uplink and downlink Dedicated Physical CHannels (DPCH's).

In accordance with the 3GPP specifications, the HSDPA service may be used in both Frequency Division Duplex (FDD) mode and Time Division Duplex (TDD) mode.

For the FDD mode, the purpose of these channels is:
Downlink DPCH:

- to potentially carry data from the layers above the physical layer (provided that any data is mapped to the Dedicated CHannel (DCH))
- to carry Transmit Power Control (TPC) commands to the UE to control the uplink DPCH
- to carry downlink pilot symbols to the UE (these symbols are used to derive channel quality feedback for transmission to the base station and to facilitate demodulation of downlink signals)

Uplink DPCH:

- to carry data from the layers above the physical layer
- to carry TPC feedback for the downlink DPCH

For the TDD mode, the purpose of these channels is:

1.28Mcps TDD service

- to carry data from the layers above the physical layer (provided that any data is mapped to the DCH)
- to carry TPC data for the uplink DPCH power control
- to carry SS for uplink DPCH synchronisation

3.84Mcps TDD Service

- to carry data from the layers above the physical layer (provided that any data is mapped to the DCH)

A disadvantage of the current approach for HSDPA is that the assignment of a dedicated channelisation code to each active user equipment consumes a large fraction of the available code resources. The channelisation code is used by the Code

Division Multiple Access (CDMA) system to separate between data for different user equipment. In a 3rd Generation cellular communication system, the number of available channelisation codes that can be used by a base station is significantly limited on the downlink for FDD and TDD, and on the uplink for TDD. In addition, the transmit power associated with transmission of the control information to the individual user equipment causes interference to other communications. Accordingly the current approach may significantly reduce the code and power resources available for use by other channels, such as for the HS-DSCH.

The HS-DSCH is especially efficient at handling bursty user traffic profiles, such as are common in packet-data communication systems. Dedicated channels on the other hand are generally more suited to constant bit rate applications, such as voice, and some types of video conferencing technologies. These services are generally termed "conversational class" services. When using HSDPA packet data services without the existence of parallel conversational class services, it is possible to map all higher layer data for downlink onto other downlink transport channels than the DCH. In such situations, only very little information is communicated on the DPCH physical channel.

Specifically, only the following information may in some cases be carried by the DPCH:

FDD

- TPC commands for uplink DPCH power control
- Dedicated pilot symbols for downlink

1.28 Mcps TDD

- TPC commands for uplink DPCH power control
- SS commands for uplink DPCH synchronisation

3.84Mcps TDD

- <no uses>

As the data rate for this information is extremely low, the use of a dedicated DPCH results in a highly inefficient communication. Therefore, it would be advantageous if a more efficient means of communicating dedicated UE specific information to individual UEs could be found. In particular, it would be advantageous to more efficiently carry the TPC/pilot/SS information to the user equipment such that the requirement for an associated downlink DPCH to exist with each HSDPA service could be removed or relaxed.

One solution which has been proposed is known as the "fractionated DPCH" (F-DPCH) concept. This approach is only applicable to FDD and seeks to improve the channelisation code efficiency of HSDPA. In this concept, for HSDPA "data-only" users (ie: those with no conversational-class traffic), downlink signalling (DCCH) and traffic (DTCH) are not mapped to a DCH transport channel but are instead mapped to either the HS-DSCH or FACH transport channels. Furthermore, in the F-DPCH concept, the downlink code resources used for transmission of TPC and (possibly) pilot symbols are time multiplexed onto the same channelisation code which may be continuously transmitted.

However, although the proposed time multiplexing of data onto a transmitted channelisation code may be suited for

some applications, it may be disadvantageous in other circumstances.

For example, the FDD F-DPCH concept is unsuitable for TDD communication.

Specifically, the TDD data is transmitted in timeslots with a data portion either side of a midamble portion and a guard-period at the end of the burst. The midamble portion must be received in order to detect, demodulate and receive the data payload portions. Thus a whole timeslot must be received to transfer any data.

Furthermore for TDD, the maximum channelisation code spreading factor is 16, whereas for FDD it is 256. Thus, whereas the minimum unit of transmission for TDD is one timeslot with one channelisation code at spreading factor 16, the minimum transmission unit for FDD may be much smaller and it is therefore much better suited for transmission of small amounts of UE specific data. For example, the minimum transmission unit for 1.28Mcps TDD (1 timeslot, 1 code at SF16, QPSK modulation) communication comprises 88 bits. It is clear that the minimum transmission unit for TDD is therefore too large to efficiently carry the TPC and SS information which is typically only 3 bits.

Some of the above disadvantages may be alleviated through the use of a duty-cycle wherein data is transmitted to users using a single minimum transmission unit only one frame in every "N" frames. However, this has the disadvantage that the update rate of the signalling is substantially reduced

and this will greatly impair the performance of the power control and synchronisation loops.

Thus, the current approach for transmitting small amounts of UE specific information to individual UEs is inefficient, cumbersome and may result in low update rates.

Hence, an improved system for communicating user equipment specific information in a cellular communication system would be advantageous.

Summary of the Invention

Accordingly, the Invention seeks to preferably mitigate, alleviate or eliminate one or more of the above mentioned disadvantages singly or in any combination.

According to a first aspect of the invention there is provided an apparatus for transmitting user equipment specific information from a base station to a user equipment in a cellular communication system; the apparatus comprising: means for combining user equipment specific information for a plurality of user equipment to generate combined user equipment specific information; means for encoding the combined user equipment specific information; and means for transmitting the combined user equipment specific information in a minimum transmission resource unit.

The UE specific information may be control information.

The invention may allow a more efficient communication of user equipment (UE) specific information. In particular, low amounts of UE specific information may efficiently be communicated with high update rates. For example, in situations where the UE specific information is significantly less than the capacity of a minimum transmission resource unit, the overhead associated with communicating the information may be substantially reduced

Embodiments of the invention may provide reduced interference, increased update rates, reduced transmit resource usage and/or improved performance of the cellular communication system as a whole. In particular, the cellular communication system's usage of code and power resources could be significantly improved and system capacity could be correspondingly increased.

According to an optional feature of the invention, the minimum transmission resource unit is a time slot. The invention may allow an efficient communication of UE specific information for a plurality of UEs in a single time slot. In embodiments, such as for the 3GPP TDD system, the minimum transmission resource unit may be a channelisation code on a time slot.

According to an optional feature of the invention, the minimum transmission resource unit is a single time code frequency resource allocation unit.

The invention may allow an efficient communication of UE specific information for a plurality of UEs in a single time code frequency resource allocation unit. The time code

frequency resource allocation unit uses a single code in a time interval on a single frequency carrier. In embodiments wherein code division is not used, the time code frequency resource allocation unit will inherently be associated with a single code (corresponding to no spreading or channelisation or code division). In embodiments wherein time division is not used, the time code frequency resource allocation unit will inherently be associated with a single time interval.

According to an optional feature of the invention, the means for encoding is operable to jointly encode user equipment specific information for at least two of the plurality of user equipment.

The joint encoding may be such that encoded data relating to a first user equipment is determined in response to user equipment specific information associated with at least a second user equipment. The joint encoding may be such that at least one data bit of the encoded data comprises information relating to UE specific information for more than one user equipment.

The feature may allow a more efficient communication of the UE specific information. For example, if three parameters of the UE specific information may take on five potential values, each individual parameter requires three data bits to represent the actual value. However, the total number of possible values for the three parameters is $(5^3)=125$ potential values. Hence a combined parameter value may be represented by seven bits rather than the nine bits required for individual coding. The optional feature may in some embodiments allow a binary signalling efficiency which is increased by combining the data streams for more than one UE.

According to an optional feature of the invention, the means for encoding is operable to jointly encode user equipment specific information associated with all user equipment of the plurality of user equipment. This may improve the encoding efficiency.

According to an optional feature of the invention, the encoding comprises forward error correcting coding. This may improve performance of the communication of the UE specific information. A joint forward error correcting coding may be applied to UE specific information for a plurality of UEs. This may provide enhanced error correcting performance compared to only applying the error correction to individual data for a single UE. In particular improved time diversity may be achieved. Interleaving may be performed as part of the forward error correction coding.

According to an optional feature of the invention, the user equipment specific information comprises a plurality of parameters each having a number of possible values, and the

means for encoding is operable to encode the plurality of parameters by encoding a combined parameter having a combined number of possible values equal to the product of the number of possible values of the plurality of parameters. This provides for improved efficiency and/or facilitated implementation. For example, a first parameter having five possible values, a second parameter having six possible values and a third parameter having seven possible values may be encoded by encoding of a combined parameter having 5*6*7=210 possible values, i.e. by eight bits rather than 3*3=9 bits.

According to an optional feature of the invention, the user equipment specific information comprises power control information. The invention may provide an efficient means for communicating power control information. In particular, a low overhead and/or high update rate may be achieved. Power control information typically comprises small amounts of information to be communicated at a sufficiently high data rate and the invention may therefore provide a particularly advantageous means of operating a power control loop over the air interface.

According to an optional feature of the invention, the user equipment specific information comprises synchronisation information.

The synchronisation information may e.g. be code synchronisation and/or timing synchronisation including data symbol timing synchronisation.

The invention may provide an efficient means for communicating synchronisation information. In particular, a low overhead and/or high update rate may be achieved. Synchronisation information typically comprises small amounts of information to be communicated at a sufficiently high data rate and the invention may therefore provide a particularly advantageous means of operating a power control loop over the air interface.

The UE specific information may in some embodiments consist in power control information and synchronisation.

According to an optional feature of the invention, the user equipment specific information comprises only synchronisation information. This may improve the efficiency of communication of control information in some systems as the data rate may be reduced. For example, power control may be achieved through other means such as open loop power control loop methods.

According to an optional feature of the invention, the user equipment specific information is associated with an uplink channel from each of the plurality of user equipment.

The uplink channel may for example be a dedicated physical channel of the cellular communication system and the user equipment specific information may be control information associated with the uplink channel. The invention may thus provide an efficient means of e.g. controlling or managing an uplink channel by transmission of downlink data using little communication resource and having a high update rate.

According to an optional feature of the invention, the apparatus further comprises means for setting a transmit power for the minimum transmission resource unit in response to a transmit power requirement of the plurality of user equipment.

Specifically, a required or desired transmit power may be determined for each user equipment of the plurality of user equipment and the transmit power of the minimum transmission resource unit may be set to the highest determined transmit power. This may ensure an efficient communication with low transmit power resource use while ensuring that all user equipment of the plurality of user equipment receive a signal of adequate quality.

According to an optional feature of the invention, the apparatus further comprises means for transmitting position information indicative of a position of user equipment specific information for a first user equipment.

The position information may indicate the position of data for the first user equipment within the minimum transmission resource unit. The position information may enable or assist an individual user equipment in determining the user specific data for that individual user equipment within the combined information stream. The position information may be an explicit and/or direct indication or may for example be an associative and/or indirect indication.

According to an optional feature of the invention, the user equipment specific information is control information

associated with a High Speed Downlink Packet Access (HSDPA) service.

The High Speed Downlink Packet Access (HSDPA) may specifically be the HSDPA service specified by the 3rd Generation Partnership Project (3GPP). The invention may thus provide for an efficient communication of control information for an HSDPA service and may in particular provide for an efficient control or feedback for uplink communication.

According to an optional feature of the invention, the user equipment specific information is associated with an uplink dedicated physical channel (DPCH) of the HSDPA downlink packet data service.

In particular, the DPCH may be an uplink dedicated physical channel (DPCH) as standardized by 3GPP. The invention may provide an extremely efficient control of uplink DPCH channels with a low resource use and a high performance due to a high update rate.

According to an optional feature of the invention, the means for encoding is operable to encode the combined user equipment specific information by using processing algorithms of a group of algorithms used by a plurality of services.

The plurality of services may be dedicated or shared channels and may correspond to data communication using other physical or logical channels than used for the minimum transmission resource unit. Specifically for a 3GPP

embodiment, the encoding of the UE specific information may use standardised 3GPP transport channel processing methods. Thus a toolbox of standardised algorithms and processes may be used to map the multiplexed, concatenated, or otherwise combined user data from the plurality of users to common physical resources. This may facilitate encoding and may allow for reduced complexity of the apparatus as functionality may be shared.

According to an optional feature of the invention, the cellular communication system is a Time Division Duplex (TDD) cellular communication system.

The cellular communication system may specifically implement the 1.28 Mcps mode variant of the 3GPP TDD system. The user equipment specific information may be user equipment specific information associated with a TDD uplink communication.

According to an optional feature of the invention, the cellular communication system is a UTRA (UMTS (Universal Mobile Telecommunication System) Terrestrial Radio Access) TDD cellular communication system specified by the 3rd Generation Partnership Project. The invention may provide a particularly advantageous and efficient means of communicating UE specific information specifically suitable for and compliant with the UTRA TDD system.

According to an optional feature of the invention, the user equipment specific information consists of Transmit Power Control (TPC) and Synchronisation Shift (SS) data. The invention may provide a particularly advantageous and

efficient means of communicating TPC and SS data in a UTRA TDD system. The invention may allow a reduced resource use, improved performance and/or increased update rate. For example, an efficient and frequent communication of TPC and SS data may be accomplished resulting in improved performance of an associated uplink DPCH.

According to an optional feature of the invention, the apparatus further comprises means for determining a transmit power of the minimum transmission resource unit in response to a number of user equipment for which the minimum transmission resource unit comprises user equipment specific information.

This may improve the reliability of the communication and/or may reduce the resource use and/or caused interference. For example, if UE specific information is communicated only to a few users, increased redundancy may be introduced and the transmit power may be reduced.

According to an optional feature of the invention, the apparatus further comprises means for determining an encoding process for the minimum transmission resource unit in response to a number of user equipment for which the minimum transmission resource unit comprises user equipment specific information.

This may improve the reliability of the communication and/or may reduce the resource use and/or caused interference. The encoding process may for example include a forward error correcting coding process. For example, if UE specific information is communicated only to a few users, a high

performance forward error correcting code (with high redundancy and thus low data rate) may be used with a reduced transmit power.

According to an optional feature of the invention, the minimum transmission resource unit does not comprise verification data.

This may provide a reduced overhead and may exploit that general reliability of the minimum transmission resource unit is typically not important to the individual UE as only errors in the UE specific information for the UE will have an impact. Errors experienced by a UE in the UE specific information may not directly affect the reliability of the information for other UEs.

According to an optional feature of the invention, the means for transmitting is operable to transmit user equipment specific information for a first user in intermittent minimum transmission resource units.

For example, UE specific information for a specific UE may only be transmitted in every other minimum transmission resource unit. This may improve the communication efficiency and may provide an increased flexibility of the resource allocation for communication of UE specific information.

According to an optional feature of the invention, the minimum transmission resource unit corresponds to a minimum size transmission block of user equipment specific information which can be transmitted by the means for transmitting.

In some embodiments, the minimum transmission resource unit may be the smallest data block which can be allocated by a resource scheduler for transmission by the means for transmitting. Specifically, in some embodiments, the minimum transmission resource unit may be the smallest data block or unit which can be transmitted individually in accordance with the specifications of the cellular communication system. For example, for a 3GPP TDD communication system, the minimum transmission resource unit may be a single channelisation code in a single time slot on a single carrier.

The apparatus may be a base station also known as a Node B in some cellular communication systems.

According to a second aspect of the invention, there is provided a user equipment for receiving user equipment specific information from a base station in a cellular communication system; the apparatus comprising: means for receiving a minimum transmission resource unit comprising combined user equipment specific information for a plurality of user equipment; and means for determining user specific information for the user equipment from the minimum transmission resource unit.

According to an optional feature of the invention the combined user equipment specific information is jointly encoded; and the means for determining comprises means for decoding the combined user equipment specific information and for selecting the user equipment specific information for the user equipment.

According to a third aspect of the invention, there is provided a cellular communication system comprising: a first apparatus for transmitting user equipment specific information from a base station to a user equipment, the first apparatus comprising: means for combining user equipment specific information for a plurality of user equipment to generate combined user equipment specific information, means for encoding the combined user equipment specific information, and means for transmitting the combined user equipment specific information in a minimum transmission resource unit; and the user equipment comprising: means for receiving a minimum transmission resource unit comprising combined user equipment specific information for a plurality of user equipment; and means for determining user specific information for the user equipment from the minimum transmission resource unit.

According to a fourth aspect of the invention, there is provided a method of transmitting user equipment specific information from a base station to a user equipment in a cellular communication system; the method comprising the steps of: combining user equipment specific information for a plurality of user equipment to generate combined user equipment specific information; encoding the combined user equipment specific information; and transmitting the combined user equipment specific information in a minimum transmission resource unit.

According to a fifth aspect of the invention, there is provided method of receiving user equipment specific information from a base station in a cellular communication

system; the method comprising the steps of: receiving a minimum transmission resource unit comprising combined user equipment specific information for a plurality of user equipment; and determining user specific information for the user equipment from the minimum transmission resource unit.

These and other aspects, features and advantages of the invention will be apparent from and elucidated with reference to the embodiment(s) described hereinafter.

Brief Description of the Drawings

An embodiment of the invention will be described, by way of example only, with reference to the drawings, in which

FIG. 1 illustrates a cellular communication system in accordance with an embodiment of the invention; and

FIG. 2 illustrates an example of an encode processor for a base station in accordance with an embodiment of the invention.

Detailed Description of an Embodiment of the Invention

FIG. 1 illustrates a cellular communication system 100 in accordance with an embodiment of the invention.

The cellular communication system 100 comprises a base station, henceforth referred to as a Node B 101 in accordance with the terminology used for 3rd generation

cellular communication systems. The Node B 101 communicates with a plurality of User Equipment (UE)(of which only one 103 is shown) as is well known by the person skilled in the art.

The UE 103 may be a subscriber unit, a wireless user equipment, a mobile station, a communication terminal, a personal digital assistant, a laptop computer, an embedded communication processor or any communication element capable of communicating over the air interface of the cellular communication system.

The Node B 101 is further coupled to a fixed network which interconnects base stations and is operable to route data between any two base stations, thereby enabling a UE in a cell to communicate with a UE in any other cell. In addition, the fixed network comprises gateway functions for interconnecting to external networks such as the Public Switched Telephone Network (PSTN), thereby allowing UEs to communicate with landline telephones and other communication terminals connected by a landline. Furthermore, the fixed network comprises much of the functionality required for managing a conventional cellular communication network including functionality for routing data, admission control, resource allocation, subscriber billing, mobile station authentication etc. The fixed network may specifically include Radio Network Controllers (RNCs) and a core network as well known to the person skilled in the art.

In the embodiment of FIG. 1, the Node B 101 supports one or more services of the UE 103. In the example, the Node B 101 frequently communicates very small amounts of data to the UE

103. The data is UE specific information that is not applicable or relevant to other UEs. The UE specific information may be data which is part of a communication service provided to the UE 103 or may be data which is communicated in support of the services provided to the UE 103.

As a specific example, the Node B 101 may in the embodiment of FIG. 1 transmit 3 bits of data to the UE 103 every five msec.

In addition, to the transmission to the UE 103, the node B 101 may also support similar services for a number of other UEs. Hence, the Node B 101 must communicate a potentially large number of very small data blocks to individual UEs. Conventionally, this is very inefficient in cellular communication systems and results in a large overhead and very high resource consumption per transmitted data bit.

In accordance with the embodiment of FIG. 1, the Node B 101 comprises a Node B controller 107. The Node B controller 107 is operable to implement the functionality desired or required by a Node B 101 as is well known to a person skilled in the art.

In the example of FIG. 1, the Node B controller 107 is coupled to a Node B transceiver 109 which is operable to transmit and receive data over the air interface of the cellular communication system. In the specific embodiment, the Node B controller 107 is operable to generate control information for the individual UEs in response to signals received from the UEs. For example, the Node B controller

107 may generate uplink power control or synchronisation (e.g. code timing synchronisation) data for each individual UE.

The Node B controller 107 is coupled to a combine processor 111. In accordance with the embodiment of FIG. 1, the combine processor 111 is operable to combine user equipment specific information for a plurality of user equipment to generate combined UE specific information. For example, the combine processor 111 may receive power control and synchronisation data from the Node B controller 107 and combine these into a single block of control data comprising information for a group of UEs.

The combine processor 111 is coupled to an encode processor 113 which receives the combined UE specific information from the combine processor 111. For example, the encode processor 113 receives the data block of power control and synchronisation information from the combine processor 111.

The encode processor 113 is operable to encode the combined UE specific information to generate data suitable for transmission. In the embodiment of FIG. 1, the encode processor 113 performs error correcting coding, interleaving and symbol mapping for transmission.

In some embodiments, the encode processor 113 encodes data for each UE individually and independently of the data for other UEs. However, as described later, the encode processor 113 may in other embodiments perform a joint encoding wherein the data for different UEs is encoded together

resulting in encoded data which depends on UE specific information associated with more than one UE.

The encode processor 113 thus encodes the combined UE specific information and feeds it to the Node B transceiver 109 which transmits it over the air interface in a minimum transmission resource unit.

Hence, in accordance with the embodiment, a minimum transmission resource unit is generated which comprises UE specific information for a plurality of UEs. Hence, the embodiment may allow for UE specific information to be transmitted efficiently in granularities significantly lower than the resource granularity corresponding to the minimum transmission resource unit.

The minimum transmission resource unit typically depends on the specific embodiment.

The minimum transmission resource unit may be a single time code frequency resource allocation unit. For example in cellular communication systems, a resource allocation may generally allocate resource in the form of a resource unit corresponding to a specified carrier frequency, a specified time interval and a specified code division code. Thus, the minimum transmission resource unit may be the smallest time interval which can be allocated for one carrier and one code. Specifically, the minimum transmission resource unit may be a time slot of a Time Division Multiple Access (TDMA) or Time Division Duplex (TDD) cellular communication system. In some communication systems, code division is not applied and the minimum transmission resource unit may be determined

by the remaining parameters used for separation between UEs - e.g. by time slots and carrier frequencies.

In some embodiments, other constraints may limit the minimum size of resource units. Hence, the minimum size of a resource unit used in a cellular communication system may be determined by limitations in technical specifications which have been standardised or by implementation constraints.

The minimum transmission resource unit may be the smallest resource unit which can be transmitted continuously by the Node B transceiver 109.

Hence, in accordance with the embodiment, the Node B 101 is capable of transmitting UE specific data of a size much smaller than the minimum transmission resource unit without incurring an overhead determined by the size of the minimum transmission resource unit. Hence, a much more efficient communication of small amounts of UE specific information is achieved.

The UE specific information for a plurality of UEs may for example be transmitted in a single time slot using the same channelisation code. The individual UEs may then receive the time slot, decode the time slot and retrieve the UE specific information for the individual UE.

Accordingly, the UE 103 comprises a UE transceiver 115 which receives and transmits data over the air interface. Specifically, the UE transceiver 115 receives the minimum transmission resource unit and feeds this to a UE data processor 117. The UE data processor 117 is operable to

decode the minimum transmission resource unit and to extract the UE specific information for the specific UE 103.

In the embodiment of FIG. 1, the UE 103 further comprises a UE controller 119 which implements all other functionality required by the UE 103 as is well known to the person skilled in the art.

In the embodiment of FIG. 1, the UE data processor 117 is coupled to the UE controller 119. Hence, as an example, the Node B 101 may transmit power control and synchronisation data for a plurality of UEs in a single time slot on a single channelisation code. The UE 103 may receive this transmission, decode it and extract the power control and synchronisation data for the UE 103. This data may then be fed to the UE controller 119 which may adjust the transmit power and timing of the uplink transmissions accordingly. Hence, an efficient system for transmitting low data rate control information is provided.

In order for the individual UE to select the relevant data, it is necessary for it to have knowledge of which data of the received minimum transmission resource unit is for that UE.

This may be achieved in many ways. In the embodiment of FIG. 1, the Node B 101 is operable to transmit data position information which is indicative of the position of UE specific information for the different user equipment. The position information may be transmitted in the minimum transmission resource unit or by another transmission. The position information may be direct and explicit. For

example, a message may be transmitted by the Node B 101 to all UEs specifically associating a UE identity with each data of the minimum transmission resource unit. As the same association may be used for a large number of minimum transmission resource units, the resource usage associated with transmitting the position information may be kept acceptably low.

The position information may in some embodiments be provided indirectly by e.g. associative information. For example, the position information may be related to other system or UE parameters, and from knowledge of these system or UE parameters, the position of data from a specific UE may be determined.

In the following, a more detailed description of an embodiment of the invention applicable to a 3GPP UTRA TDD mobile radio communications system is described. In particular, the description will focus on communication of control information for a 1.28 Mcps TDD HSDPA service. However, it will be appreciated that the invention is not limited to this application but may be applied to many other cellular communication systems. The embodiment is compatible with the embodiment of FIG. 1 and will be described with reference to this.

In the specific embodiment, downlink packet data services are offered by means of HSDPA and using the HS-DSCH transport channel. Within the system, a fair proportion of HSDPA-active users do not have conversational-class traffic (ie: they are so-called data-only users). Accordingly a

significant number of UEs tend to exhibit a bursty traffic profile.

In the system, an uplink dedicated physical channel (DPCH) is associated with the HSDPA operation. A downlink dedicated physical channel is not configured. The uplink DPCH is controlled by information provided from the Node B 101. In particular, the code timing and transmit power levels are controlled by Transmit Power Commands (TPC) data and Synchronisation Shift(SS) commands transmitted from the Node B 101.

In the embodiment, the TPC command is binary, representing either "power-up" or "power-down". The SS command is tri-state representing either "up", "down" or "do nothing". Hence, in the example, the Node B 101 communicates six levels of control information at a rate sufficiently high for the dynamic requirements of the power control and the synchronisation.

In accordance with the exemplary embodiment, the TPC and SS bits for each UE are not transmitted on an individual channelisation code of a time slot. Rather a TDD minimum transmission resource unit is used to convey information destined for a plurality of users within a cell. A single minimum transmission resource unit (in this case one timeslot and one channelisation code) is used to communicate TPC and SS bits to a plurality of UEs.

Hence, in accordance with the embodiment, the combine processor 111 of the Node B 101 may combine the TPC and SS data bits generated for a plurality of UEs into a single data block which can be transmitted in one time slot and with one channelisation code. Accordingly, one channelisation code is shared between a plurality of UEs thereby significantly reducing the number of channelisation codes used for communicating TPC and SS data and thus freeing up channelisation codes for other uses.

In some such embodiments, a new physical channel, henceforth denoted a Physical Layer Common Control Channel (PLCCH), may be implemented for efficient communication of TPC and SS data. The PLCCH may be implemented by transmission of messages on a single channelisation code of single time slots with each transmission comprising TPC and SS data bits for a plurality of UEs. As the PLCCH is shared between different UEs, the resource use is significantly reduced compared to the conventional approach for communication of TCP and SS data for HSDPA services.

In some embodiments, the PLCCH is implemented by the combine processor 111 generating a combined data block by including one TPC data bit and two SS data bits for each UE of the PLCCH message. Furthermore, the PLCCH message may simply be generated and transmitted by the encode processor 113 encoding the individual data bits of the data block in a suitable fashion.

However, in other embodiments the encode processor 113 is operable to jointly encode the TPC and SS information which relates to a plurality of UEs.

For example, in order to send TPC and SS data to a single user, a six-state value must be signalled (two possible values for the TPC and three possible values for the SS data). Rather than using 3 bits to achieve this per user (1 bit for TPC and 2 bits for SS) as per the current 3GPP specifications, the TPC and SS data for a plurality of UEs may be jointly encoded.

For example, if the TPC and SS data for one user has 6 possible values, the TPC and SS data for five UEs has 6^5 = 7776 possible data values. Thus, by generating a combined parameter value comprising information of the TPC and SS data for five UEs, a 7776 state value must be encoded. This can be achieved by thirteen bits (2^{13}=8192). In contrast, the individual encoding of the TPC and SS data will result in a requirement of 5*3=15 data bits. Hence a reduction in the number of data bits which must be transmitted is achieved.

As another example, in the prior art, 10 users using 1 bit for TPC and 2 bits for SS would require a total of 10*3=30 bits, and these would be distributed across multiple DPCHs (one to each user). However, by jointly encoding the commands across users onto a common PLCCH, this could be achieved using $10*\log_2(6)$ = 25.85 (round up to 26) bits; a 13% saving. Furthermore as this can be transmitted on a single PLCCH message a very substantial reduction in the resource use is achieved.

It will be appreciated that the efficiency improvement may increase for increasing numbers of TPC and SS data being jointly encoded and that in some embodiments all TPC and SS data of a given PLCCH message may be jointly encoded.

In these examples, to decode the TPC and SS information, the UE would convert the received word into a base 6 number and select the digit position assigned to that user. The resulting six-state value maps directly to both a binary TPC command and a tri-state SS command.

It will be appreciated that any suitable way of jointly encoding the information may be used in accordance with the embodiment. For example, a simple one to one mapping between a block of TPC and SS bits for a plurality of UEs and an encoded PLCCH symbol representing the combined state may be implemented. The mapping may for example be implemented by a simple look-up table. The UE 103 may simply perform the joint decoding by implementing the reverse one to one mapping and selecting the appropriate TPC and SS data bits of the result.

An example of an encode processor 113 using joint encoding is shown in FIG. 2. The encode processor 113 of FIG. 2 comprises N input circuits 201 which receive the TCP and SS data bits from the Node B controller 107. The TCP and SS data bits for each UE are converted into a value in the range from 0 to 5 (inclusive) in state converters 203. The output values of the state converters 203 are added in a summer 205. The sum is then encoded into a binary PLCCH word by a binary encoder 207. The resulting PLCCH word is then fed to a physical layer encoder 209 which generates the PLCCH message that is fed to the Node B transceiver 109 for transmission.

In the example, the physical layer encoder may encode the PLCCH using ½ rate or 1/3 rate convolutional or 1/3 rate turbo coding, or using no coding (as per the standard 3GPP release 99 transport channel processing). However, it should be understood that e.g. any generic forward error correcting entity could be used in its place, such as block codes, repetition codes, concatenated coding schemes etc.

In some embodiments, the encode processor 113 is operable to encode the PLCCH word by using processing algorithms of a group of algorithms used by a plurality of services.

Specifically, once constructed, traditional 3GPP transport channel processing could be employed to map the PLCCH word onto the physical channel(s). This means that the coding retains the full flexibility of the Layer 1 transport channel processing toolbox, and the PLCCH may be adapted to varying numbers of users (affecting the information bit rate) and to various system deployments and configurations.

As such, a transmit power or an encoding process for the PLCCH message may be determined in response to a number of UEs for which the minimum transmission resource unit comprises UE specific information. For example, for a small number of users, a low forward error correction code rate could be employed (this has more redundancy and requires less transmission power), whereas for a larger number of users a progressively higher code rate could be used (having less redundancy and higher transmit power requirements).

Additionally, if one physical channel transmission unit is not sufficient to carry the data for all of the intended

users, a further physical channel may be used. The data destined for each physical channel may be handled by an encoder separately for each, or it may be encoded together by a single encoding unit and separated only at the output of the encoder. The formation of the PLCCH would thus resemble that of FIG. 2 for n=1…N UE's using the PLCCH. In this example, the data destined for multiple physical channels is encoded using a single encoder.

Thus, the use of a common TPC/SS physical channel (the PLCCH) may provide advantages in many embodiments. Specifically, for a given TPC/SS update rate, overall transmission power resources are reduced when compared to multiple DPCH or special burst transmissions. Furthermore, the code resources used for the transmission of TPC and SS information to the multiple users are greatly reduced (many downlink DPCH's are potentially replaced by a single PLCCH).

A further and substantial benefit is that the uplink power control and synchronisation update rates may be maintained if desired, whereas when using special bursts or multi-frame DPCH's (transmitted only every m^{th} frame), the update rate is correspondingly slower. (As will be known to the person skilled in the art special bursts are transmitted as a "keep-alive" signal at certain regular periods when no higher layer data is available to map to a physical channel. In the time between special burst, discontinuous transmission (DTX) is used).

However, in some embodiments the Node B may be operable to transmit TCP and SS information for a given UE in intermittent PLCCH messages.

For example, the framing structure of 1.28Mcps TDD is repeated every subframe (5ms) and in some examples the PLCCH may not need to be transmitted in every subframe. This would allow flexible use of system resources as the number of UEs actively using the PLCCH is increased or decreased. However, there is of course some degree of trade-off in that the TPC and SS update rates are also a function of how often the PLCCH is transmitted.

Additionally, the information for a given user need not be present in each PLCCH instance. This would enable the system to handle higher loads without consuming more resources, at the expense of a slower TPC and SS update rate. Conversely, more resources could be used to handle higher loads without compromising TPC and SS update rates.

As a specific example, assuming a ½ rate convolutional code is used, the minimum transmission unit of 88 channel bits (1 code at SF16, QPSK) would be able to convey 36 information bits. At $\log_2(6)$ bits per user, this could carry TPC and SS streams for approximately 14 users.

If the PLCCH were transmitted once per 5ms subframe, and the TPC and SS update rate for the uplink DPCH was once every (say) 10 or 20ms, it is clear that a single PLCCH could serve all active data-only HSDPA users in the cell (28 users at 10ms update rate, or 56 users at 20ms update rate). Here, a total of 13 SF16 downlink channelisation codes (previously used for downlink DPCH) are freed-up for use by other channels such as HS-DSCH by means of the invention. By being able to more efficiently use these codes, the

system is able to serve higher data throughputs in each cell.

In some embodiments, the Node B 101 may comprise means for setting a transmit power for the PLCCH in response to a transmit power requirement of the plurality of user equipment. Specifically, the Node B controller 107 may calculate a suitable power level for each UE addressed by the PLCCH message, and the transmit power may be set to the highest of these values as this should ensure that the PLCCH message can be received by all UEs.

In general, the PLCCH must be received by multiple UE's and for this reason it is impractical to minimise the transmission power separately for each individual user. Although this may result in some power efficiency loss for the TPC and SS symbols, a far greater power saving is generally made due to the fact that the redundant data payload portions (ie: the non-TPC/SS symbols) of the downlink DPCH (or so-called 'special bursts) no longer need to be transmitted.

Simplistically, if e.g. 4 users had DL the DPCH powers P_1, P_2, P_3, P_4, and these could be replaced by a single channel of power $P_0 = \max(P_1, P_2, P_3, P_4)$, then it follows that $P_0 < (P_1+P_2+P_3+P_4)$.

In some embodiments the PLCCH message may only comprise synchronisation commands with the uplink power control being achieved by other means (eg: using open-loop power control methods).

In some embodiments, the PLCCH does not comprise verification data.

Since the PLCCH message contains information for a plurality of users, it is not of importance that all of the data is received correctly by each UE. The block or frame error rate (BLER or FER respectively) is thus not of particular relevance in determining TPC or SS error performance. Rather the post-decoded bit error rate (BER) has the most direct relevance to TPC and SS performance. Because of this, there is typically no explicit need to protect the integrity of the data block with a cyclic redundancy check (CRC) or other checksum technique.

The invention can be implemented in any suitable form including hardware, software, firmware or any combination of these. However, preferably, the invention is implemented at least partly as computer software running on one or more data processors and/or digital signal processors. The elements and components of an embodiment of the invention may be physically, functionally and logically implemented in any suitable way. Indeed the functionality may be implemented in a single unit, in a plurality of units or as part of other functional units. As such, the invention may be implemented in a single unit or may be physically and functionally distributed between different units and processors.

Although the present invention has been described in connection with the preferred embodiment, it is not intended to be limited to the specific form set forth herein. Rather, the scope of the present invention is limited only by the

accompanying claims. In the claims, the term comprising does not exclude the presence of other elements or steps. Furthermore, although individually listed, a plurality of means, elements or method steps may be implemented by e.g. a single unit or processor. Additionally, although individual features may be included in different claims, these may possibly be advantageously combined, and the inclusion in different claims does not imply that a combination of features is not feasible and/or advantageous. In addition, singular references do not exclude a plurality. Thus references to "a", "an", "first", "second" etc do not preclude a plurality.

CLAIMS

1. An apparatus for transmitting user equipment specific information from a base station to a user equipment in a cellular communication system; the apparatus comprising:

means for combining user equipment specific information for a plurality of user equipment to generate combined user equipment specific information;

means for encoding the combined user equipment specific information; and

means for transmitting the combined user equipment specific information in a minimum transmission resource unit.

2. An apparatus as claimed in claim 1 wherein the minimum transmission resource unit is a time slot.

3. An apparatus as claimed in claim 1 wherein the minimum transmission resource unit is a single time code frequency resource allocation unit.

4. An apparatus as claimed in any of the previous claims wherein the means for encoding is operable to jointly encode user equipment specific information for at least two of the plurality of user equipment.

5. An apparatus as claimed in claim 4 wherein the means for encoding is operable to jointly encode user equipment specific information associated with all user equipment of the plurality of user equipment.

6. An apparatus as claimed in claim 4 or 5 wherein the encoding comprises forward error correcting coding

7. An apparatus as claimed in any of the claims 4 to 6 wherein the user equipment specific information comprises a plurality of parameters each having a number of possible values, and wherein the means for encoding is operable to encode the plurality of parameters by encoding a combined parameter having a combined number of possible values equal to the product of the number of possible values of the plurality of parameters.

8. An apparatus as claimed in any of the previous claims wherein the user equipment specific information comprises power control information.

9. An apparatus as claimed in any of the previous claims wherein the user equipment specific information comprises synchronisation information.

10. An apparatus as claimed in any of the previous claims wherein the user equipment specific information comprises only synchronisation information.

11. An apparatus as claimed in any of the previous claims wherein the user equipment specific information is associated with an uplink channel from each of the plurality of user equipment.

12. An apparatus as claimed in any of the previous claims further comprising means for setting a transmit power for the minimum transmission resource unit in response to a

transmit power requirement of the plurality of user equipment.

13. An apparatus as claimed in any of the previous claims further comprising means for transmitting position information indicative of a position of user equipment specific information for a first user equipment.

14. An apparatus as claimed in any of the previous claims wherein the user equipment specific information is control information associated with High Speed Downlink Packet Access (HSDPA) service.

15. An apparatus as claimed in claim 14 wherein the user equipment specific information is associated with an uplink dedicated physical channel (DPCH) of the HSDPA downlink packet data service.

16. An apparatus as claimed in any of the previous claim wherein the means for encoding is operable to encode the combined user equipment specific information by using processing algorithms of a group of algorithms used by a plurality of services.

17. An apparatus as claimed in any of the previous claims wherein the cellular communication system is a Time Division Duplex (TDD) cellular communication system.

18. An apparatus as claimed in claim 16 wherein the cellular communication system is the UTRA (UMTS (Universal Mobile Telecommunication System) Terrestrial Radio Access)

TDD cellular communication system specified by the 3rd Generation Partnership Project.

19. An apparatus as claimed in claim 18 wherein the user equipment specific information consists of Transmit Power Control (TPC) and Synchronisation Shift (SS) data.

20. An apparatus as claimed in any of the previous claims further comprising means for determining a transmit power of the minimum transmission resource unit in response to a number of user equipment for which the minimum transmission resource unit comprises user equipment specific information.

21. An apparatus as claimed in any of the previous claims further comprising means for determining an encoding process for the minimum transmission resource unit in response to a number of user equipment for which the minimum transmission resource unit comprises user equipment specific information.

22. An apparatus as claimed in any of the previous claims wherein the minimum transmission resource unit does not comprise verification data.

23. An apparatus as claimed in any of the previous claims wherein the means for transmitting is operable to transmit user equipment specific information for a first user in intermittent minimum transmission resource units.

24. An apparatus as claimed in any of the previous claims wherein the minimum transmission resource unit corresponds to a minimum size transmission block of user equipment

specific information which can be transmitted by the means for transmitting.

25. An apparatus as claimed in any of the previous claims wherein the apparatus is a base station

26. A user equipment for receiving user equipment specific information from a base station in a cellular communication system; the apparatus comprising:

means for receiving a minimum transmission resource unit comprising combined user equipment specific information for a plurality of user equipment; and

means for determining user specific information for the user equipment from the minimum transmission resource unit.

27. A user equipment as claimed in claim 26 wherein the combined user equipment specific information is jointly encoded; and wherein the means for determining comprises means for decoding the combined user equipment specific information and for selecting the user equipment specific information for the user equipment.

28. A cellular communication system comprising

a first apparatus for transmitting user equipment specific information from a base station to a user equipment, the first apparatus comprising:

means for combining user equipment specific information for a plurality of user equipment to generate combined user equipment specific information,

means for encoding the combined user equipment specific information, and

means for transmitting the combined user equipment specific information in a minimum transmission resource unit; and

the user equipment comprising:

means for receiving a minimum transmission resource unit comprising combined user equipment specific information for a plurality of user equipment; and

means for determining user specific information for the user equipment from the minimum transmission resource unit.

29. A method of transmitting user equipment specific information from a base station to a user equipment in a cellular communication system; the method comprising the steps of:

combining user equipment specific information for a plurality of user equipment to generate combined user equipment specific information;

encoding the combined user equipment specific information; and

transmitting the combined user equipment specific information in a minimum transmission resource unit.

30. A method of receiving user equipment specific information from a base station in a cellular communication system; the method comprising the steps of:

receiving a minimum transmission resource unit comprising combined user equipment specific information for a plurality of user equipment; and

determining user specific information for the user equipment from the minimum transmission resource unit.

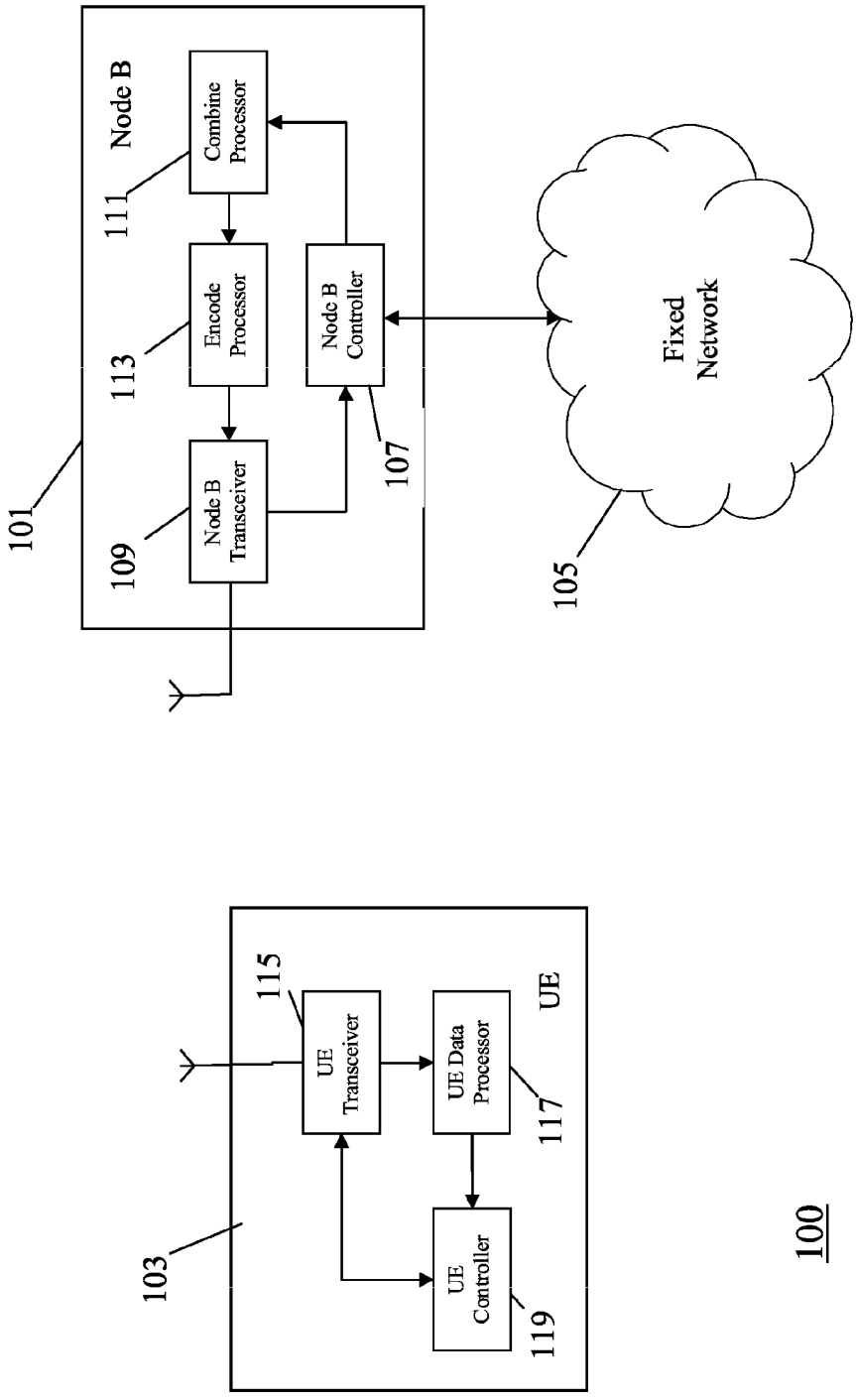

Node B
Combine Processor
Encode Processor
Node B Transceiver
Node B Controller
Fixed Network
UE
UE Transceiver
UE Data Processor
UE Controller
101
103
105
107
109
111
113
115
117
119

FIG. 1

100

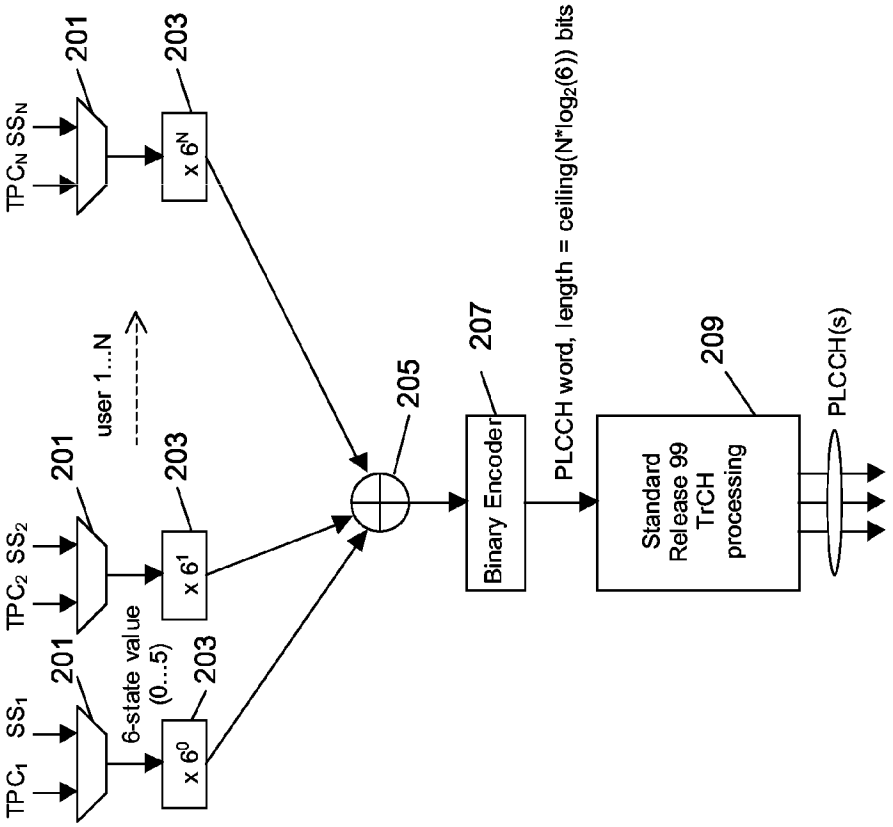

TPC1 SS1
TPC2 SS2
TPCN SSN
201
6-state value (0...5)
user 1...N
x 6^0
x 6^1
x 6^N
203
205
Binary Encoder
207
PLCCH word, length = ceiling(N*log2(6)) bits
Standard Release 99 TrCH processing
209
PLCCH(s)
113

FIG. 2

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2005/053933

A. CLASSIFICATION OF SUBJECT MATTER
H04Q7/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04Q H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 977 370 A (LUCENT TECHNOLOGIES INC) 2 February 2000 (2000-02-02)	26,30
Y	figures 8-10 paragraphs '0001!, '0010!, '0028!, '0029!, '0031!	1-25, 27-29
X	US 2003/053426 A1 (TSUNEHARA KATSUHIKO ET AL) 20 March 2003 (2003-03-20)	26,30
Y	figure 7 paragraphs '0001!, '0012! - '0015!, '0043! - '0046!, '0055! - '0057!, '0060!, '0061!, '0072!	1-25, 27-29

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

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Date of the actual completion of the international search	Date of mailing of the international search report
23 November 2005	30/11/2005

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Chimet, D

Form PCT/ISA/210 (second sheet) (January 2004)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2002/168994 A1 (TERRY STEPHEN E ET AL) 14 November 2002 (2002-11-14) paragraphs '0001!, '0006!, '0010!, '0024!, '0043! claims 3,4,7	1-25, 27-29

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/EP2005/053933

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0977370 A	02-02-2000	AU 719179 B2	04-05-2000
		AU 4116799 A	17-02-2000
		BR 9902885 A	08-03-2000
		CA 2273529 A1	28-01-2000
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		EP 1388263 A1	11-02-2004
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Form PCT/ISA/210 (patent family annex) (January 2004)

5/3/2016, EAST Version: 3.2.1.1

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	Art Unit
	RONALD B ABELSON	2476

✓	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	11/05/2014	05/03/2016							
	1	✓	✓							
	2	✓	✓							
	3	✓	-							
	4	✓	✓							
	5	✓	✓							
	6	✓	✓							
	7	✓	✓							
	8	✓	✓							
	9	✓	✓							
	10	✓	-							
	11	✓	✓							
	12	✓	✓							
	13	✓	-							
	14	✓	✓							
	15	✓	✓							
	16	✓	✓							
	17	✓	✓							
	18	✓	✓							
	19	✓	✓							
	20	✓	-							

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	CTFR	05/10/2016	IPW2-USCN205928
	892	05/10/2016	IPW2-USCN205928

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PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:	
Paul Howard	
Application No.: 14/458,693	Our File: IPW2-USCN205928
Confirmation No.: 4825	Date: March 30, 2016
Filed: August 13, 2014	
For: COMMUNICATIONS IN A WIRELESS NETWORK	
Group: 2476	
Examiner: Ronald B. Abelson	

RESPONSE PURSUANT TO 37 C.F.R. § 1.111

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

This Response is being timely filed in response to the Non-Final Office Action dated December 30, 2015.

Please amend the application without prejudice or disclaimer as follows:

Amendments to the Claims:

This listing of the claims will replace all prior versions of the claims in the application:

1. (Currently Amended) A network device comprising ~~characterized in that~~:

a transceiver is configured to send, to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times;

the network device is further configured to receive, at [[times]] a time slot that the physical uplink shared channel is not received, ~~a signal~~ control information over the physical uplink control channel in relation to the sent resource allocation information; and

the transceiver is further configured to send, over a downlink control channel, feedback information.

2. (Original) The network device of claim 1, wherein the transceiver is further configured to send data over a physical downlink shared channel.

3. (Canceled)

4. (Original) The network device of claim 1, wherein the feedback information includes power control information.

5. (Original) The network device of claim 1, wherein the downlink control channel includes power control information for a plurality of UEs using different bits.

6. (Currently Amended) The network device of claim 1, wherein the ~~times~~ time slot that the ~~signal~~ control information over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the ~~times~~ time slot from a plurality of UEs.

7. (Original) The network device of claim 1 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

8. (Original) The network device of claim 1, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

9. (Original) The network device of claim 1, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

10. (CANCELED)

11. (Currently Amended) A method performed by a network device, the method comprising:

sending, by the network device to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different frequency resources;

receiving, by the network device over the physical uplink shared channel, data at assigned times;

receiving, by the network device at [[times]] a time slot that it is not receiving the physical uplink shared channel, ~~a signal~~ control information over the physical uplink control channel in relation to the sent resource allocation information; and

sending, by the network device over a downlink control channel, feedback information.

12. (Original) The method of claim 11, wherein the network device is further configured to send data over a physical downlink shared channel.

13. (Canceled)

14. (Original) The method of claim 11, wherein the feedback information includes power control information.

15. (Original) The method of claim 11, wherein the downlink control channel includes power control information for a plurality of UEs using different bits.

16. (Currently Amended) The method of claim 11, wherein the ~~times~~ time slot that the ~~signal~~ control information over the physical uplink control channel is

received by the network device, signals are received over other physical uplink control channels in the ~~times~~ time slot from a plurality of UEs.

17. (Original) The method of claim 11 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

18. (Original) The method of claim 11, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

19. (Original) The method of claim 11, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time

division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

20. (Canceled)

Amendments to the Specification:

Please substitute the Abstract with the following new Abstract:

ABSTRACT

A network device may send resource allocation information associated with a physical uplink control channel. The physical uplink control channel and a physical uplink shared channel may have different resources. The network device may receive, at times that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information.

REMARKS/ARGUMENTS

After the foregoing Amendment, claims 1, 2, 4-9, 11, 12, and 14-19 are currently pending in this application. Claims 3, 10, 13 and 20 are canceled. Claims 1, 6, 11, and 16 are amended. A new Abstract is submitted herewith.

Examiner Interview

Applicant thanks the Examiner for granting a telephonic interview with the Applicant's representative on March 9, 2016. During the telephonic interview the deficiencies of the provisional application of U.S. Pub. No. 2008/0090528 to Malladi to teach or suggest features of claim 1 were discussed. No agreement was reached.

Declaration Pursuant to 37 C.F.R. § 1.131

A Declaration pursuant to 37 C.F.R. §1.131 with Exhibits is submitted herewith to swear behind U.S. Publication No. 2007-0265017 to Ishii (hereinafter "Ishii"). The declaration has evidence that the present claimed invention was made at least before November 29, 2006 (Ishii's earliest U.S. filing date).

Claim Rejections - 35 U.S.C. § 103(a)

Claims 1, 2, 4-12, and 14-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pub. No. 2007/0265017 to Ishii (hereinafter "Ishii") in view of U.S. Pub. No. 2008/0144600 to Anderson (hereinafter "Anderson"). Claims 10

and 20 are canceled making the rejection moot. Without conceding the propriety of the rejection, in an effort to advance prosecution of the present application, a declaration pursuant to 37 C.F.R. § 1.131 is submitted herewith that disqualifies Ishii as a 35 U.S.C. 102(e) reference.

Without Ishii as a primary reference, 1, 2, 4-9, 11, 12, and 14-19 are allowable over Anderson. Based on the arguments presented above, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1, 2, 4-12, and 14-20 is respectfully requested.

Claims 3 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishii and Anderson as applied to claims 2 and 12 above, and further in view of U.S. Pub. No. 2002/0172208 to Malkamaki (hereinafter "Malkamaki"). Claims 3 and 13 are canceled making the rejection moot. Based on the arguments presented above, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 3 and 13 is respectfully requested.

Claims 1 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pub. No. 2008/0090528 to Malladi (hereinafter "Malladi") in view of Anderson. Without conceding the propriety of the rejection and in an effort to advance prosecution, claims 1 and 11 are amended. In addition to the arguments made during the interview conducted on March 6, 2016, for amended claim 1 Malladi in view Anderson at least does not teach or suggest receiving "resource allocation information associated with a physical uplink control channel, wherein

the physical uplink control channel and a physical uplink shared channel have different frequency resources" where a network device receives "**at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel in relation to the sent resource allocation information**." (Emphasis added.)

In particular, paragraphs [0029] and [0030] and figure 4 of **the provisional application** of Malladi show control and data being sent concurrently across a 0.5 ms period. Moreover, the provisional application of Malladi at least does not teach or suggest resource allocation of a control channel where in particular "at a time slot that the physical uplink shared channel is not received, control information over the physical uplink control channel **in relation to the sent resource allocation information**." (Emphasis added.) Lastly, Anderson does not cure any of these aforementioned deficiencies of Malladi.

Based on the arguments presented above, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1 and 11 is respectfully requested.

Conclusion

It should also be noted that although arguments have been presented with respect to certain claims herein, the recited subject matter as well as various other subject matter and/or combinations of subject matter may be patentable for other reasons. Further, the failure to address any statement by the Examiner herein

should not be interpreted as acquiescence or agreement with such statement. The Applicant expressly reserves the right to set forth additional and/or alternative reasons for patentability and/or allowance with the present application or in any other future proceeding, and to rebut any statement presented by the Examiner in this or other papers during prosecution of the present application.

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephonic interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing, Applicant respectfully submits that the present application, including claims 1, 2, 4-9, 11, 12, and 14-19, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

Intellectual Ventures Holding 81 LLC

By:____/Harry Vartanian/____
Harry Vartanian
Registration No. 56,787

Volpe and Koenig, P.C.
United Plaza
30 South 17th Street
Philadelphia, PA 19103-4009
Telephone: (215) 568-6400
Facsimile: (215) 568-6499
HV/JMG/eam

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:
Paul Howard
Application No.: 14/458,693
Confirmation No.: 4825
Filed: July 5, 2011
For: COMMUNICATIONS IN A WIRELESS NETWORK
Group: 2476
Examiner: Ronald B. Abelson

Our File: IPW2-USCN205928
Date: March 23, 2016

DECLARATION PURSUANT TO 37 C.F.R. §1.131

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

1. I, Paul Howard, am the sole inventor of the subject matter of the above-identified patent application as described therein.
2. The above-referenced application is a continuation of U.S. Patent Application Serial No. 13/176,298, filed July 5, 2011, which issued as 8,811,356, which is a continuation of U.S. Patent Application Serial No. 11/646,692, filed December 27, 2006, which issued as 8,009,639, which all list me as the sole inventor.
3. Prior to December 27, 2006, the U.S. effective filing date of the above-identified patent application, I conceived of and completed the invention disclosed and claimed in the above-identified patent application.

4. The acts relied upon to establish a date prior to U.S. Publication 2007-0265017 to Ishii (hereinafter "Ishii" that has an effective U.S. filing date under Pre-AIA 35 U.S.C. 102(e) of **November 29, 2006**) were carried out in the United Kingdom. As required by 37 CFR 1.131(a), the United Kingdom was a World Trade Organization (WTO) member country prior to December 27, 2006 and during the entire period of the acts being relied upon herein.
5. Prior to November 29, 2006, I received an email from outside U.S. counsel, Morrison Foerster, to discuss an Invention Disclosure (also referred to as the IPW 20074.00 application) that I had previously prepared for the subject matter of the above-identified patent application (Exhibit A). The dates in the Invention Disclosure are redacted in Exhibit A, but are prior to November 29, 2006. The Invention Disclosure discloses the features of the subject matter claimed in this application.
6. Prior to November 29, 2006, and after the date of Exhibit A, I received an email from U.S. outside counsel, Morrison Foerster, to further discuss the subject matter of the above-identified patent application (Exhibit B). The dates in the email are redacted in Exhibit B, but are prior to November 29, 2006.
7. I received an email from U.S. outside counsel, Morrison Foerster, for feedback related to the subject matter of the above-identified patent application (Exhibit C) on October 13, 2006.

8. I received an email from U.S. outside counsel, Morrison Foerster, with the first draft of the above-identified patent application (Exhibit D) on December 15, 2006. The first draft of the above-identified patent application discloses the features claimed in this application.

9. The patent application, which resulted in U.S. Pat. No. 8,009,639, was then filed on December 27, 2006.

10. It was my intent to file a U.S. patent application based on the Invention Disclosure in Exhibit D without delay. **As proven above, I worked diligently with U.S. patent counsel from a date prior to November 29, 2006 up to the filing date of December 27, 2006** to complete and file the application which resulted in U.S. Pat. No. 8,009,639.

11. I have been warned that willful false statement and the like are punishable by fine or imprisonment or both (18 U.S.C. §1001) and may jeopardize the validity of the application or any patent issuing thereon.

We declare under penalty of perjury that the foregoing is true and correct.

Executed on this 30th day of March 2016 at TENNYSON COTTAGE TENNYSON ROAD HORFIELD BRISTOL BS7 8SB.

Paul Howard

Paul Howard

4039562-1

EXHIBIT A

From: Saltzberg, Robert A. <RSaltzberg@mofo.com>
Sent: [redacted]
To: Paul Howard
Cc: [redacted]
Subject: Patent Application
Attachments: FDD Disclosure.doc

REDACTED

Dear Paul,

Are you free either Wednesday, Thursday or Friday of this week at 5:15 pm UK time to discuss your patent application?

Best regards,
Rob Saltzberg

Robert Saltzberg
Morrison & Foerster
425 Market Street
San Francisco, CA 94105
W: 415 268-6428
F: 415 268-7522

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INTERNAL MEMORANDUM

Patent Disclosure for FDD TD-CDMA Concept

1 Background

TD-CDMA is an air-interface technology that combines benefits of the three elemental concepts of time division multiple access, code division multiple access and time division duplex.

Most pertinent aspect to this disclosure is the concept of time division duplex (TDD). Time division duplex uses the same radio channel for both uplink and downlink communications, discrimination between the links is achieved by separating the transmissions in time. One of the benefits obtained by operating both links on the same frequency is the ability to exploit the phenomenon of channel reciprocity.

In particular, channel reciprocity gives equipment the ability to derive information about the uplink channel conditions from the downlink channel conditions derived from signals received by the equipment. Pathloss is one aspect the channel information that can be obtained from channel reciprocity. Knowledge of the uplink pathloss enables open-loop power control to be employed for uplink transmissions. Note that uplink power control is important for the operation of the CDMA element of TD-CDMA as it counteracts the near-far effect that would otherwise be encountered if all UEs transmitted at a fixed power irrespective of the uplink pathloss.

The open-loop uplink power control feature provides a significant advantage when coupled with a multiple access data transmission system that is used for packet based communication and/or shared channels. When access to a limited number of uplink channels is shared between a large population of terminals it is imperative that access to the channels can be switched between terminals with minimal latency. A data terminal that can derive information needed to access uplink channels from the downlink transmissions (beacon signals) has a significant advantage over a terminal that relies on the (lengthy) configuration of a dedicated channel in order to establish a feedback channel as well as reserved capacity for data transfer.

However, channel reciprocity can not always be guaranteed. For example TDD transmissions may not be permitted in certain spectrum allocations; this is a regulatory issue and may be used to protect other wireless equipment in the same or adjacent bands. In these situations the correlation between uplink and downlink channels is lost because the channels are transported on carrier frequencies that are separated in frequency by an amount that is greater than the coherence bandwidth of the channel (usually, only a few MHz separation is sufficient to make the uplink and downlink fading profiles independent).

In high speed mobile applications, the time delay between downlink and uplink transmissions may exceed the coherence time of the channel. The maximum time delay that can be tolerated is a function of the mobile speed and the RF carrier frequency used, with the coherence time reducing with increasing speed and RF carrier frequency.

Also, the use of multiple transmit and/or receive antennas at the network and/or the mobile terminal can introduce intentional decorrelation between the uplink and downlink channels.

If the TD-CDMA air interface is to be used in applications where the correlation between the uplink and downlink path loss is not guaranteed then a substitute for channel reciprocity needs to be found.

2 Invention

Although there is a lot of prior art on the subject of supporting air-interfaces where the pathloss is not reciprocal, we believe there is little prior art that deals directly with the evolution or adaptation of an air-interface that uses *channel reciprocity* to deliver key features and advantages to operate in the conditions where channel reciprocity is not guaranteed. The adaptation described here introduces a new method for uplink channel control that introduces a feedback scheme as a substitute for the loss in channel reciprocity with minimal impact on the ability of the air interface to support uplink shared channels.

The approach taken here is to try to develop a 'concept-level' disclosure that covers the scheme in the most general sense and this is then supported by a number of detail-level disclosures that capture the specific implementations needed to implement the concept.

2.1 TDD to FDD Evolution

A system designed for operation in Time Division Duplex (TDD) mode has basestations and terminals that transmit and receive at orthogonal points in time. In normal operation terminals are in receive mode when the basestation is transmitting and basestations are in receive mode when terminals are transmitting. In conventional implementations, neither basestations nor the terminals are able to transmit and receive at the same points in time (because the same frequency is used for uplink and downlink communication).

Such a system can be evolved to operate in FDD mode where the uplink and downlink communications occur on different frequencies. In order to make full and efficient use of the spectrum resource, the basestations are adapted to permit them to transmit and receive at the same time (note this is possible since the uplink and downlink communications now occur on different frequencies). The terminals retain the restriction of transmitting and receiving at orthogonal points in time to preserve the complexity saving that come as a consequence for not having to transmit and receive at the same time (eg no duplexer required). The full use of the spectrum is then obtained by allocating the resource across a plurality of terminals.

Additional measures may be required if there are aspects of the air-interface that rely on the channel reciprocity that can be assumed for TDD systems. In the case of TD-CDMA, modifications are required for the correct operation of:

i) **uplink power control and rate adaptation**
This achieved by the definition of an uplink physical control channel used for estimating the uplink channel conditions and a downlink channel used to feeback control information to the terminal. These channels do not need an associated data physical channel to be operational.

ii) **random access channel**
This is achieved by introducing an additional indicator step at the start of any physical random access. A new uplink physical channel is defined to carry the random access indicators. A new downlink physical channel is defined to carry response to received uplink indicators.

2.2 Uplink Physical Channel Control Signal

When pathloss reciprocity is not available, the combination of an uplink physical channel control signal with a downlink feedback channel can be used as an alternative mechanism to keep the terminal informed of the condition of the uplink channel. A system that relies on pathloss reciprocity will need to be expanded to include these additional components. The terminology applied to these channels in the rest of the document refers to the uplink physical control signal as an 'Uplink Beacon' (UL_Beacon) and a Downlink Feedback Channel.

In general, a system that supports shared channels will also support a large number of terminals that share access to them. To extract the maximum benefit from the resulting trunking gain, it is important that the shared channels can be quickly and efficiently re-allocated between the population of UEs. In order to obtain rapid access to the uplink shared channels, terminals need to be able to transmit at the correct power with their first transmission so that latency can be kept to a minimum.

This invention proposes that the physical channel control signal is separate from the uplink (shared) physical channel. With this innovation, terminals are able to transmit an UL_Beacon independently of their access to the uplink shared channel. The system implements a closed loop control system by requiring that the basestation detects the received power and/or other channel information from the UL_Beacon and sends controlling commands back to each terminal in order to keep the terminal informed of the channel conditions observed at the basestation.

In its simplest form the closed loop control system is simply based on the UL_Beacon power received at the basestation. Power control commands are then sent on a shared downlink channel to each terminal based on the power received from the UL_Beacon signal. This channel is referred to as the Physical Layer Control Channel (PLCCH). The capacity of the PLCCH is matched to the number of bits required in the feedback field and the number of UL_Beacon signals that can be supported simultaneously. All terminals transmitting UL_Beacon signals receive this channel and extract the relevant feedback field.

It is possible to extend the complexity of the control loop by sending control commands based on other aspects of the UL_Beacon signal as received by the basestation, such as time-of-arrival, channel impulse response etc. The amount of resource that is required for the feedback channel increases with the size (in bits) of the feedback information to each UE.

2.3 Example Arrangement

For air-interface technologies with a Time Division Multiple Access element, it is possible to adapt the TDMA frame structure to provide separation between the UL_Beacon and the normal physical channels by dedicating at least one uplink timeslot per frame (or at least one timeslot per multi-frame) to carrying UL_Beacon signals.

By placing UL_Beacon signals in a dedicated timeslot, a dedicated detection scheme can be applied which may include performance enhancing features such as intra-cell cancelling (for alleviating the effects of cross-correlation interference between UL_Beacon signals transmitted by multiple terminals in the same cell), or inter-cell cancelling (for reducing the interference from neighbouring cells in the case where the UL_Beacon timeslots are time synchronised). Cross interference between UL_Beacon and normal uplink bursts is avoided by the separation obtained from the use of separate timeslots.

There are a large number of possibilities for the arrangement of UL_Beacon and its associated PLCCH within the frame structure of an existing standard. More than one UL_Beacon and PLCCH per frame could be supported if the feedback update rate is required to be faster than the frame rate (at the expense of system capacity). For system applications that can tolerate a slower feedback rate, it may be possible to fractionate the use of the UL_Beacon timeslot (and the associated PLCCH).

When fractionation is employed, the allocation of the UL_Beacon timeslot in a given frame is assigned to a group of terminals depending on the current fractionation phase, thus increasing the number of terminals that can be supported with active physical channel feedback control. The maximum fractionation cycle length is determined by the feedback update rate that the system requires in order to meet its performance targets.

Figure 1 shows an example of a timeslot arrangement supporting the UL_Beacon and its corresponding PLCCH within a TD-CDMA frame structure modified to support FDD. Note that this is an illustration only; it does not represent a preferred implementation. In this example, the PLCCH shares a timeslot with another downlink shared channel, this is possible since normal downlink physical channels are used to transmit the PLCCH.

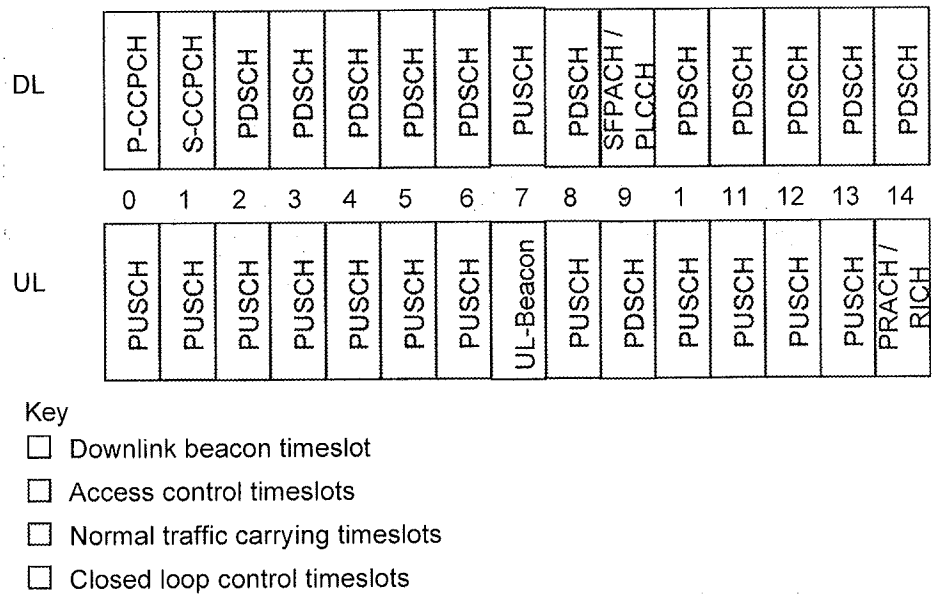


Figure 1 Example of UL_Beacon and PLCCH timeslot arrangement

The diagram in Figure 2 shows an example where fractionation is employed. The UL_Beacon and PLCCH timeslots are active in every frame at the basestation. However the terminals #0, #1 and #2 have been assigned a different fractionation phase. The example shows the case where the fractionation phase is 3.

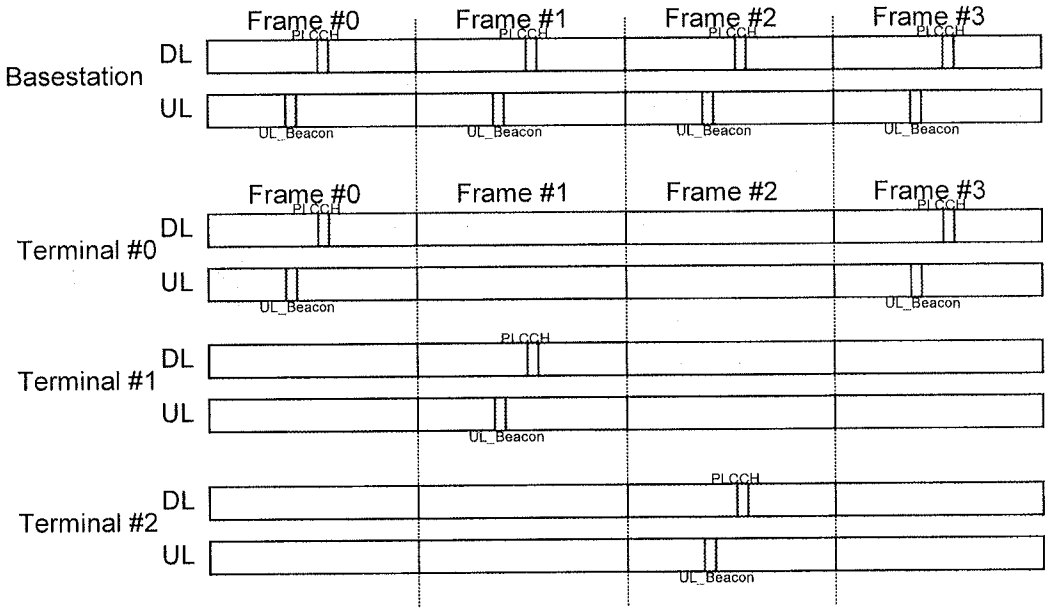


Figure 2 Example of Fractionation Applied to UL_Beacon and PLCCH

2.4 Half Duplex Terminals

A system designed for TDD has basestations and terminals that do not transmit and receive simultaneously. This is termed half-duplex operation. When such a system is evolved to operate in paired spectrum, it becomes inefficient if basestations retain their half duplex operation. The same is not necessarily true for the terminals as half duplex operation has some advantages.in the design and implementation of the terminal that are beyond the scope of this disclosure.

However, there are some important points that need to be considered. A single terminal is not able to access all transmit and all receive slots, therefore the system will have to manage the resource across the population of terminals in order to ensure all the available resource at the basestation is efficiently utilised. To prevent blocking of timeslots, half duplex terminals should be operated with a fractionation cycle of greater than one (note that this would also apply for the case where there are more than one UL_Beacon timeslots per frame). Half duplex terminals take time to switch between transmit and receive functions. In some cases this time exceeds the guard period inserted between consecutive timeslots and in this case the terminal is unable to transmit and receive on adjacent timeslots. This will affect the locations of the UL_Beacon, PLCCH and other common channels and the timeslot arrangement must take these locations into consideration when the system is configured.

Note that operation of full-duplex terminals is not precluded from inclusion in the system, it is just that half duplex operation is supported as a fundamental operational mode.

2.5 Terminal Management

This disclosure is describing a technique for implementing a closed-loop feedback control mechanism to replace the information normally obtained from the assumption of channel reciprocity. One of the central themes is the separation of the physical implementation of this uplink control from the uplink physical traffic. This step allows the control feedback to operate even when the terminal does not have data to send with the consequence that uplink shared channels can be used with maximum efficiency.

In order to use shared channels efficiently, a relatively large user base is required. At the same time, the network resource required to support the control feedback channels for these terminals needs to be minimised. In general, the number of users can be supported with active control feedback channels is smaller than the typical number of users per cell. Therefore the terminals in this active state need to be managed.

In UMTS terminology, we have introduced a new UTRA RRC-Connected substate into the system. UTRA systems already support the idea of different RRC-Connected states [1], eg CELL_DCH, CELL_FACH etc. For want of a better description we call this substate CELL_ACTIVE state. Figure 3 shows this substate in context with other UTRA RRC-connected states. A UE in Cell_Active substate is transmitting the physical channel control part of the uplink physical channel only.

As shown in Figure 3, CELL_ACTIVE substate is a substate of CELL_FACH state. In general all UEs in CELL_FACH state have an RRC connection, but they may not be actively transferring data. Out of the population of UEs in CELL_FACH state, a smaller number of UEs (determined by the network to be the most-active UEs) are supported in CELL_ACTIVE state. In this state, the UEs transmit the physical channel control signal and listen to the associated feedback channel from the network. Because the UE is aware of the uplink pathloss conditions (from the feedback channel) it can have instant access to the uplink shared channels and the resource allocator in the network can treat the UE accordingly.

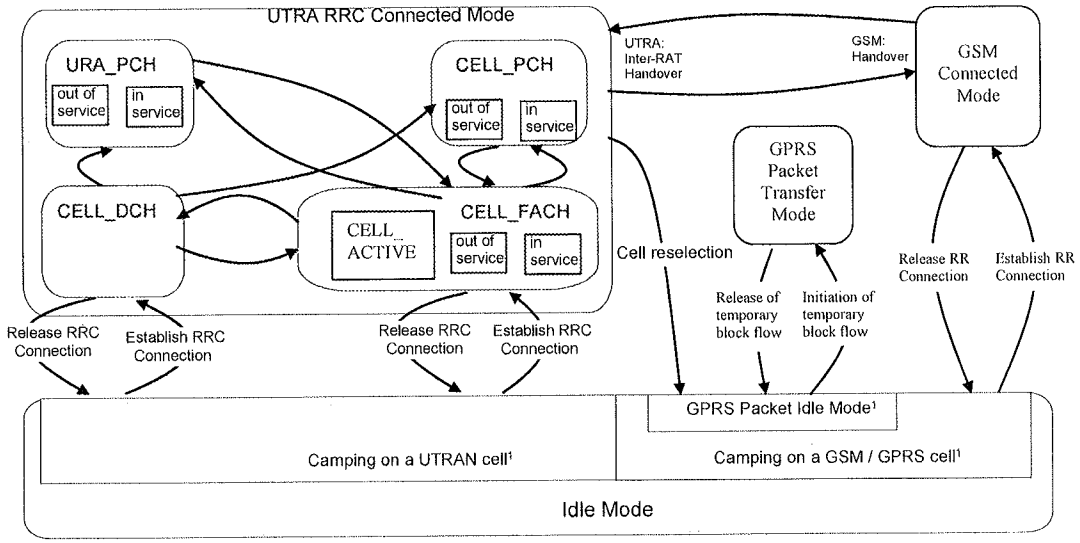


Figure 3 UTRA RRC Connected Modes

The rules governing which UEs are maintained in CELL_ACTIVE state are decided by the network and may be based on factors such as the volume of data transfer required by the UE, the data transfer rate required by a UE, the frequency of short bursts of data transfer, the total number of UEs in CELL_FACH state, the time since the last data transfer, the UE power saving requirements etc. Note, this list of examples is not intended to be exhaustive.

Note that UEs in CELL_ACTIVE state have their transmitters active, therefore it is necessary for these UEs to monitor the status of the downlink and automatically come out of CELL_ACTIVE state if the downlink is deemed to be out-of-synchronisation (for example, very high downlink errors or low received signal strength). This feature prevents UEs continuing to transmit in a state where the feedback channel may be unreliable and thus causing interference.

3 Notes For Possible Claims

This section is to be used as a guide only, it reflects the aspects of the invention that I consider represent the best example of 'inventive step'. The order of the suggestions does not infer any priority.

3.1 Adaption of a System Conceived for TDD (Unpaired) to FDD (Paired) Operation

This basic 'concept level' claim is designed to cover the fundamental idea of expanding the operation of a system designed for TDD, or unpaired operation, to operating in FDD, or paired, mode. This requires that system functions such as an uplink beacon function (for power control) and a modified random access process are added as a replacement for the information lost due to the lack of channel reciprocity in paired operation.

3.2 Separation Between Uplink Physical Channel Control Signals and Uplink Physical Channels

This refers to the ability of a terminal to transmit the uplink physical channel control signal (UL_Beacon) independently from the Uplink Physical Channel. This permits the implementation of a closed loop feedback loop to operate in the absence of an uplink physical channel.

3.3 Concept of Cell_Active state.

The introduction of a new RRC connected state to cover the subset of terminal that are in Cell_FACH that are also transmitting UL_Beacon and receiving PLCCH, and thus have an active control feedback channel. This also covers the management of the UEs that are in Cell_Active state – removing users that are 'less active' and adding users that are newly active whilst retaining users that have on going data transfer requirements.

3.4 Implementation of Uplink Physical Channel Control Signal

This refers to the combination of the UL_Beacon signal with the PLCCH to form a feedback system.

3.5 Providing a Dedicated Timeslot for the Transmission of UL_Beacon

This refers to the grouping of all UL_Beacon signals in a specific uplink timeslot. By grouping the UL_Beacon signals together, it is possible to obtain separation between the UL_Beacon signals and the standard uplink physical channels.

3.6 Cancellation of the UL_Beacon

In a synchronous system it is possible to detect and cancel the UL_Beacon signals from other cell sites (inter-cell interference).

3.7 Implementation of PLCCH on standard DL common physical channel

The PLCCH carries feedback information to the UEs that are transmitting UL_Beacon signals. The physical channel used is a standard physical channel therefore the PLCCH can share a timeslot with other physical channels.

3.8 Fractionation

The number of supported UEs can be increased by fractionating the use of the UL_Beacon and PLCCH across a multiframe period. Fractionation can also prevent timeslot blocking where half duplex UEs have a long UL/DL switching time.

3.9 Half Duplex Terminals

Support for half duplex terminals is implicit due to the nature of the TDMA frame structure. The system is able to manage the allocation of resource across the population of teminals such that the full capacity of the basestation can be utilised even when only half-duplex terminals are deployed. Note that full-duplex terminals can be still be supported along with half duplex UEs.



EXHIBIT B

REDACTED

From: Saltzberg, Robert A. <RSaltzberg@mofo.com>
Sent: [redacted]
To: Paul Howard
Cc: [redacted]
Subject: Patent Application
Attachments: FDD Disclosure.doc

Dear Paul,

Are you free either Wednesday, Thursday or Friday of this week at 5:15 pm UK time to discuss your patent application?

Best regards,
Rob Saltzberg

Robert Saltzberg
Morrison & Foerster
425 Market Street
San Francisco, CA 94105
W: 415 268-6428
F: 415 268-7522

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EXHIBIT C

REDACTED

From: Saltzberg, Robert A. <RSaltzberg@mofo.com>
Sent: Friday, October 13, 2006 8:21 PM
To: Paul Howard
Cc: [redacted]

[redacted]

Hi Paul,

Attached please find a first draft of claims for your review.

Best regards,
Rob

Robert Saltzberg
Morrison & Foerster
425 Market Street
San Francisco, CA 94105
W: 415 268-6428
F: 415 268-7522

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EXHIBIT D

REDACTED

From: Saltzberg, Robert A. <RSaltzberg@mofo.com>
Sent: Friday, December 15, 2006 6:59 PM
To: Paul Howard
Cc: [redacted]
Subject: IPW 20074.00 Draft Application
Attachments: [redacted]5624920074specification_[redacted]

[redacted]<<5624920074specification[redacted]

Hi Paul,

Attached please find a draft application for your invention. We previously sent you draft claims (included herein), but have not yet received your comments.

Please provide your comments on the attached application. We would like to file the application before the end of the year. If you think a telephone conference would expedite preparation of the application, please let us know a convenient day next week (preferably Tuesday or Thursday at around 4:30 or later UK time).

Best regards,
Rob

Robert Saltzberg
Morrison & Foerster
425 Market Street
San Francisco, CA 94105
W: 415 268-6428
F: 415 268-7522

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REDACTED

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION FOR U.S. LETTERS PATENT

Title:

FDD TDD-CDMA CONCEPT

Inventor:

Paul HOWARD

Citizenship: United Kingdom

Robert A. Saltzberg - 36,910
MORRISON & FOERSTER LLP
425 Market Street
San Francisco, California 94105-2482
(415) 268-6428

[redacted]

[redacted]

FDD TDD-CDMA CONCEPT

REDACTED

BACKGROUND OF THE INVENTION

[0001] Time division-code division multiple access (TD-CDMA) is an air interface technology that combines the benefits of the three elemental concepts in a universal mobile telecommunication system (UMTS): time division multiple access (TDMA); code division multiple access (CDMA); and time division duplex (TDD). TDD, in particular, uses the same radio channel for both uplink and downlink communications, and discriminates between signals by separating the transmissions in time. One of the benefits obtained by operating both links on the same frequency is the ability to exploit channel reciprocity.

[0002] Channel reciprocity gives equipment the ability to derive information about uplink channel conditions from downlink channel conditions based upon signals received by the user equipment (UE). Pathloss is one example of channel information that can be obtained from channel reciprocity. Knowledge of the uplink pathloss enables open-loop power control to be employed for uplink transmissions. For example, uplink power control is important for the operation of the CDMA element of TD-CDMA as it counteracts the near-far effect that would otherwise be encountered if all UEs transmitted at a fixed power regardless of the uplink pathloss.

[0003] The open-loop uplink power control feature provides a significant advantage when coupled with a multiple access data transmission system that is used for packet-based communication and/or shared channels. When access to a limited number of uplink channels is shared between a large population of terminals it is imperative that access to the channels can be switched between terminals with minimal latency. A data terminal that can derive information needed to access uplink channels from the downlink transmissions (beacon signals) has a significant advantage over a terminal that relies on the (lengthy) configuration of a dedicated channel in order to establish a feedback channel, [redacted]

[0004] However, channel reciprocity cannot always be guaranteed. For example TDD transmissions may not be permitted in certain frequency spectrum allocations; this is a regulatory

[redacted]

issue and may be used to protect other wireless equipment in the same or adjacent frequency bands. In these situations the correlation between uplink and downlink channels is lost because the channels are transported on carrier frequencies that are separated in frequency by an amount that is greater than the coherence bandwidth of the channel (usually, only a few MHz separation is sufficient to cause the uplink and downlink fading profiles to be independent).

[0005] In high speed mobile applications, the time delay between downlink and uplink transmissions may exceed the coherence time of the channel. The maximum time delay that can be tolerated is a function of the mobile speed and the RF carrier frequency used, with the coherence time reducing with increasing speed and RF carrier frequency. Also, the use of multiple transmit and/or receive antennas at the network and/or the mobile terminal can introduce intentional decorrelation between the uplink and downlink channels.

[0006] If the TD-CDMA air interface is to be used in applications where the correlation between the uplink and downlink path loss is not guaranteed, then a substitute for channel reciprocity needs to be found.

BRIEF SUMMARY OF THE INVENTION

[0007] Although it is known that methods need to be developed to support air interfaces where the pathloss is not reciprocal, there is not a method that deals directly with the evolution or adaptation of an air interface that uses channel reciprocity to deliver key features and advantages to operate in the conditions where channel reciprocity is not guaranteed. The adaptation provided in embodiments of the invention introduces a new method for uplink channel control that uses a feedback scheme as a substitute for the absence of channel reciprocity, with minimal impact on the ability of the air interface to support uplink shared channels.

[0008] Embodiments of the present invention enables active feedback control between a base station and user equipment (UE). In particular, the operation of a system designed for TDD, or unpaired operation, is expanded to operate in FDD, or paired, mode. For example, an uplink beacon function (for power control) and a modified random access process are added as a

replacement for the information lost due to the lack of channel reciprocity in paired operation. A UE allocates a time slot for a beacon signal in a frame separated from the time slots for data. A second time slot is allocated within the frame for the base station to transmit a control signal in response to the beacon signal. Embodiments of the invention allow a terminal to transmit the uplink physical channel control signal (UL_Beacon) independently from tanhe uplink physical channel. Therefore, the implementation of closed loop feedback may operate in the absence of an uplink physical channel. The control signal instructs the UE to adjust a transmission parameter.

[0009] In other embodiments of the invention a UL_Beacon signal may be combined with a physical layer common control channel (PLCCH) to form a feedback system. A dedicated timeslot groups all of the UL_Beacon signals in a specific uplink timeslot. By grouping the UL_Beacon signals together, embodiments obtain separation between the UL_Beacon signals and the standard uplink physical channels. Additionally, in a synchronous system embodiments of the invention detect and cancel the UL_Beacon signals from other cell sites (inter-cell interference). The PLCCH carries feedback information to the UEs that are transmitting UL_Beacon signals. The PLCCH can share a timeslot with other physical channels.

[0010] In other embodiments, the number of supported UEs can be increased by fractionating the use of the UL_Beacon and PLCCH across a multiframe period. Fractionation may also prevent timeslot blocking where half duplex UEs have a long UL/DL switching time. Additionally, support for half duplex terminals is implicit due to the nature of the TDMA frame structure. The system may manage the allocation of resource across the population of terminals such that the full capacity of the base station can be utilized even when only half-duplex terminals are deployed. In embodiments of the invention, full-duplex terminals can be still be supported along with half duplex UEs.

[0011] Moreover, in other embodiments, a radio resource control (RRC) connected state covers the subset of terminals that are in cell forward access channel (Cell_FACH), which are also transmitting UL_Beacon and receiving PLCCH, thus creating an active control feedback channel. Management of the UEs that are in Cell_Active state may remove users that are less active, and may

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add users that are newly active while retaining users that may have on-going data transfer requirements.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Figure 1 illustrates a cellular communication system according to embodiments of the invention;

[0013] Figure 2 illustrates a timeslot arrangement for uplink and downlink messages supporting the UL_Beacon and its corresponding PLCCH within a TD-CDMA frame structure modified to support FDD according to embodiments of the invention;

[0014] Figure 3 illustrates fractionation in different frames at the base station according to embodiments of the invention;

[0015] Figure 4 illustrates UTRA RRC connected modes according to embodiments of the invention;

[0016] Figure 5 illustrates a computer system that may be employed to implement embodiments of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0002] Figure 1 illustrates an example of a cellular communication system according to embodiments of the invention. The network includes a user equipment (UE) domain, a radio access network (RAN) domain, and a core network domain. The UE domain includes user equipment 110 that communicate with at least one base station 112 in the RAN domain via a wireless interface. The RAN domain may also include a network controller 118 (e.g., radio network controller), such as that used in UMTS systems. Alternatively, such functionality may be distributed between the Node Bs and the access gateway (AGW) or other controller in the core network. Figure 1 also illustrates an optional radio resource manager (RRM) 114. As described below, the RRM may perform functions otherwise performed by the Node Bs or an AGW in some embodiments.

[redacted]

[0003] The core network (CN) 116 includes, in this example, an access gateway (AGW) 118, a serving GPRS support node (SGSN) 120, and a gateway GPRS support node (GGSN) 122. The core network is coupled to an external network 124. The SGSN 120 is responsible for session control, including keeping track of the location of the UEs. The GGSN 122 concentrates and tunnels user data within the core network 116 to the ultimate destination (e.g., an Internet service provider) in the external network 124. Further details may be found in the 3GPP UMTS technical specifications, such as TS23.246 v6.4.0 "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Multimedia Broadcast/Multicast Service (MBMS); Architecture and Functional Description (Release 6)," published by the 3GPP Support Office, 650 Route des Lucioles - Sophia Antipolis, Valbonne - FRANCE, which are incorporated by reference herein.

[0001] Further details regarding exemplary communications systems that may implement embodiments of the invention may be found in 3GPP UMTS technical specifications, such as TR 23.882, "3GPP System Architecture Evolution: Report on Technical Options and Conclusions"; TR 25.912, "Feasibility Study for Evolved UTRA and UTRAN"; TS 23.101, "General Universal Mobile Telecommunications System (UMTS) Architecture," all of which are incorporated by reference herein.

TDD to FDD Evolution

[0002] A system designed for operation in Time Division Duplex (TDD) mode has base stations and terminals that transmit and receive at orthogonal points in time. In normal operation terminals are in receive mode when the base station is transmitting, and base stations are in receive mode when terminals are transmitting. In conventional TDD implementations, neither base stations nor the terminals are able to transmit and receive at the same points in time because the same frequency is used for uplink and downlink communication.

[redacted]

[0003] Such a system can be adjusted to operate in Frequency Division Duplex (FDD) mode, where the uplink and downlink communications occur on different frequencies. According to embodiments of the invention, to make full and efficient use of the frequency spectrum resources, the base stations are adapted to transmit and receive at the same time. This is possible since the uplink and downlink communications now occur on different frequencies. The terminals, however, retain the restriction of transmitting and receiving at orthogonal points in time to retain the simplicity of not having to transmit and receive at the same time (e.g., no duplexer required). The full use of the frequency spectrum is then obtained by allocating the resource across a plurality of terminals.

[0004] Additional measures may be needed if there are aspects of the air interface that rely on the channel reciprocity that can be assumed for TDD systems. In the case of TD-CDMA, modifications may be made for the correct operation of uplink power control and rate adaptation. This can be achieved by defining an uplink physical control channel used for estimating the uplink channel conditions and a downlink channel used to feed back control information to the terminal. These channels may not need an associated data physical channel to be operational.

[0005] Modifications may be made to the random access channel. This may be achieved by introducing an additional indicator step at the start of any physical random access. A new uplink physical channel carries the random access indicators. A new downlink physical channel carries the response to received uplink indicators.

Uplink Physical Channel Control Signal

[0006] When pathloss reciprocity is not available, the combination of an uplink physical channel control signal with a downlink feedback channel may be used to keep the terminal informed of the condition of the uplink channel. The uplink physical control signal is referred to herein as an "Uplink Beacon" (UL_Beacon).

[0007] In general, a system that supports shared channels may also support shared access to a large number of terminals. To extract the maximum benefit from the resulting trunking gain, shared channels can be quickly and efficiently re-allocated between the population of UEs. In order

[redacted]

to obtain rapid access to the uplink shared channels, terminals can transmit at the correct power with their first transmission so that latency can be kept to a minimum.

[0008] According to embodiments of the invention, the physical channel control signal is separate from the uplink (shared) physical channel. Thus, terminals are able to transmit an UL_Beacon independently of their access to the uplink shared channel. The system may implement a closed loop control system, in which the base station detects the received power and/or other channel information from the UL_Beacon, and sends controlling commands back to each terminal to keep the terminal informed of the channel conditions observed at the base station.

[0009] In certain embodiments, the closed loop control system is simply based on the UL_Beacon power received at the base station. The base station may send power control commands on a shared downlink channel to each terminal based on the power received from the UL_Beacon signal. Each power control command may, for example, indicate whether terminal power should be increased or decreased by a predetermined amount. [redacted] This downlink channel is referred to as the "Physical Layer Control Channel" (PLCCH). The capacity of the PLCCH may be matched to the number of bits required in the feedback field and the number of UL_Beacon signals that can be simultaneously supported. That is, each UL_Beacon may correspond to one bit of the PLLCH. All terminals transmitting UL_Beacon signals may receive this channel and extract the relevant feedback field.

[0010] It is possible to extend the complexity of the control loop by sending control commands based on other aspects of the UL_Beacon signal as received by the base station, such as time-of-arrival, and channel impulse response. The amount of resource that is required for the feedback channel increases with the size (in bits) of the feedback information to each UE.

[0011] For example, for air interface technologies with a TDMA element, it is possible to adapt the TDMA frame structure to provide separation between the UL_Beacon and the normal physical channels by dedicating at least one uplink time slot per frame (or at least one time slot per multi-frame) to carrying UL_Beacon signals.

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[redacted]

[0012] By placing UL_Beacon signals in a dedicated timeslot, a dedicated detection scheme can be applied which may include performance enhancing features such as intra-cell cancelling (for alleviating the effects of cross-correlation interference between UL_Beacon signals transmitted by multiple terminals in the same cell), or inter-cell cancelling (for reducing the interference from neighboring cells in the case where the UL_Beacon timeslots are time synchronized). Cross-interference between UL_Beacon and normal uplink bursts is avoided by the separation obtained from the use of separate time slots.

[0013] Those skilled in the art will recognize that there are a large number of possibilities for the arrangement of a UL_Beacon and its associated PLCCH within the frame structure according to embodiments of the invention. More than one UL_Beacon and PLCCH per frame could be supported if the feedback update rate is required to be faster than the frame rate (at the expense of system capacity). For system applications that can tolerate a slower feedback rate, embodiments may fractionate the use of the UL_Beacon timeslot (and the associated PLCCH).

[0014] When fractionation is employed, the allocation of the UL_Beacon timeslot in a given frame may be assigned to a group of terminals depending on the current fractionation phase, thus increasing the number of terminals that can be supported with active physical channel feedback control. The maximum fractionation cycle length may be determined by the feedback update rate that the system requires in order to meet its performance targets.

[0015] Figure 2 illustrates an example of a timeslot arrangement supporting the UL_Beacon and its corresponding PLCCH within a TD-CDMA frame structure modified to support FDD. In this example, the PLCCH 212 shares a timeslot with another downlink shared channel. This is possible since normal downlink physical channels are used to transmit the PLCCH. The downlink frame also comprises a downlink beacon timeslot 206, a access control timeslot 208, and normal traffic carrying timeslots 210. The uplink frame comprises a UL_Beacon control timeslot 216, an access control timeslot 218, and normal traffic carrying timeslots 214.

[0016] Figure 3 illustrates an example where fractionation is employed. The UL_Beacon and PLCCH timeslots are active in every frame at the base station 302. However, terminal 304, terminal 306, and terminal 308 have been assigned a different fractionation phase. Figure 3

[redacted]

illustrates the case where the fractionation phase is 3. For example, the fractionation phase of terminal 304 occurs in frame #0 310, the fractionation phase of terminal 306 occurs in frame #1 312, and the fractionation phase of terminal 308 occurs in frame #2. Since the fractionation phase is 3, the phase for terminal 304 occurs again in frame #3 316.

Half Duplex Terminals

[0017] Embodiments of the invention enable terminals to operate in half duplex or full duplex mode. In a half duplex system, base stations and terminals do not transmit and receive simultaneously. When such a system is evolved to operate in paired spectrum, it becomes inefficient if base stations retain their half duplex operation. It is not necessarily inefficient for the terminals to do so, however, since half duplex operation may have some advantages in the design and implementation of the terminal.

[0018] Nonetheless, there are some points that should be considered. For example, a single terminal may not be able to access all transmit and all receive slots. Therefore, the system may have to manage resources across the population of terminals to ensure all the available resources at the base station are efficiently utilized. To prevent blocking of timeslots, half duplex terminals may be operated with a fractionation cycle of greater than one. In particular, this may also apply for the case where there are more than one UL_Beacon timeslot per frame. There is a time delay for half duplex terminals to switch between transmit and receive functions. In some cases this delay exceeds the guard period inserted between consecutive timeslots. In the half duplex terminal case, the terminal is unable to transmit and receive on adjacent timeslots. This will affect the locations of the UL_Beacon, PLCCH, and other common channels. Accordingly, the timeslot arrangement may be adjusted when the system is configured.

Terminal Management

[0019] Embodiments of this invention separate uplink control from the uplink physical traffic. This allows the control feedback to operate even when the terminal does not have data to send, with the consequence that uplink shared channels can be used with maximum efficiency.

[redacted]

[0020] In order to use shared channels efficiently, a relatively large user base may be needed. At the same time, the network resources required to support the control feedback channels for these terminals need to be minimized. In general, the number of users that can be supported with active control feedback channels is smaller than the typical number of users per cell. Therefore, the terminals in this active state may be managed.

[0021] In UMTS terminology, embodiments of the invention provide a new Universal Terrestrial Radio Access- Radio Resource Control-Connected (UTRA RRC-Control) sub-state into the system. UTRA systems already support the idea of different RRC-Connected states (see, TS25.331 Radio Resource Control (RRC) Protocol Specification, which is incorporated herein by reference), e.g., CELL_DCH, CELL_FACH etc. This sub-state is referred to as the CELL_ACTIVE state. Figure 4 illustrates this sub-state in context with other UTRA RRC-connected states. A UE in a Cell_Active sub-state transmits the physical channel control part of the uplink physical channel only, and nothing else (i.e., no data).

[0022] [redacted] As shown in Figure 4, CELL_ACTIVE sub-state is a sub-state of CELL_FACH state 404. In general, UEs in CELL_FACH state have an RRC connection, but they may not be actively transferring data. Out of the population of UEs in CELL_FACH state 404, a smaller number of UEs, determined by the network to be the most-active UEs, are supported in a CELL_ACTIVE state 406. In this state, the UEs transmit the physical channel control signal and listen to the associated feedback channel from the network. Because the UE is aware of the uplink pathloss conditions from the feedback channel, it can have instant access to the uplink shared channels, and the resource allocator in the network can treat the UE accordingly.

[0023] The rules governing which UEs are maintained in CELL_ACTIVE state are decided by the network and may be based on factors such as the volume of data transfer required by the UE, the data transfer rate required by a UE, the frequency of short bursts of data transfer, the total number of UEs in CELL_FACH state, the time since the last data transfer, the UE power saving requirements, etc.

REDACTED

[0024] Note that UEs in CELL_ACTIVE state have their transmitters active, therefore it is necessary for these UEs to monitor the status of the downlink and automatically come out of CELL_ACTIVE state if the downlink is deemed to be out-of-synchronization (for example, very high downlink errors or low received signal strength). This feature prevents UEs continuing to transmit in a state where the feedback channel may be unreliable and thus causing interference.

[0025] While the invention has been described in terms of particular embodiments and illustrative figures, those of ordinary skill in the art will recognize that the invention is not limited to the embodiments or figures described. Although embodiments of the present invention are described, in some instances, using UMTS terminology, those skilled in the art will recognize that such terms are also used in a generic sense herein, and that the present invention is not limited to such systems.

[0026] Those skilled in the art will recognize that the operations of the various embodiments may be implemented using hardware, software, firmware, or combinations thereof, as appropriate. For example, some processes can be carried out using processors or other digital circuitry under the control of software, firmware, or hard-wired logic. (The term "logic" herein refers to fixed hardware, programmable logic and/or an appropriate combination thereof, as would be recognized by one skilled in the art to carry out the recited functions.) Software and firmware can be stored on computer-readable media. Some other processes can be implemented using analog circuitry, as is well known to one of ordinary skill in the art. Additionally, memory or other storage, as well as communication components, may be employed in embodiments of the invention.

[0027] Figure 5 illustrates a typical computing system 500 that may be employed to implement processing functionality in embodiments of the invention. Computing systems of this type may be used in the SC, the radio controllers, the base stations, and the UEs, for example. Those skilled in the relevant art will also recognize how to implement the invention using other computer systems or architectures. Computing system 500 may represent, for example, a desktop, laptop or notebook computer, hand-held computing device (PDA, cell phone, palmtop, etc.), mainframe, server, client, or any other type of special or general purpose computing device as may be desirable or appropriate for a given application or environment. Computing system 500 can

include one or more processors, such as a processor 504. Processor 504 can be implemented using a general or special purpose processing engine such as, for example, a microprocessor, microcontroller or other control logic. In this example, processor 504 is connected to a bus 502 or other communications medium.

[0028] Computing system 500 can also include a main memory 508, such as random access memory (RAM) or other dynamic memory, for storing information and instructions to be executed by processor 504. Main memory 508 also may be used for storing temporary variables or other intermediate information during execution of instructions to be executed by processor 504. Computing system 500 may likewise include a read only memory ("ROM") or other static storage device coupled to bus 502 for storing static information and instructions for processor 504.

[0029] The computing system 500 may also include information storage system 510, which may include, for example, a media drive 512 and a removable storage interface 520. The media drive 512 may include a drive or other mechanism to support fixed or removable storage media, such as a hard disk drive, a floppy disk drive, a magnetic tape drive, an optical disk drive, a CD or DVD drive (R or RW), or other removable or fixed media drive. Storage media 518, may include, for example, a hard disk, floppy disk, magnetic tape, optical disk, CD or DVD, or other fixed or removable medium that is read by and written to by media drive 514. As these examples illustrate, the storage media 518 may include a computer-readable storage medium having stored therein particular computer software or data.

[0030] In alternative embodiments, information storage system 510 may include other similar components for allowing computer programs or other instructions or data to be loaded into computing system 500. Such components may include, for example, a removable storage unit 522 and an interface 520, such as a program cartridge and cartridge interface, a removable memory (for example, a flash memory or other removable memory module) and memory slot, and other removable storage units 522 and interfaces 520 that allow software and data to be transferred from the removable storage unit 518 to computing system 500.

[0031] Computing system 500 can also include a communications interface 524. Communications interface 524 can be used to allow software and data to be transferred between

computing system 500 and external devices. Examples of communications interface 524 can include a modem, a network interface (such as an Ethernet or other NIC card), a communications port (such as for example, a USB port), a PCMCIA slot and card, etc. Software and data transferred via communications interface 524 are in the form of signals which can be electronic, electromagnetic, optical or other signals capable of being received by communications interface 524. These signals are provided to communications interface 524 via a channel 528. This channel 528 may carry signals and may be implemented using a wireless medium, wire or cable, fiber optics, or other communications medium. Some examples of a channel include a phone line, a cellular phone link, an RF link, a network interface, a local or wide area network, and other communications channels.

[0032] In this document, the terms "computer program product," "computer-readable medium" and the like may be used generally to refer to media such as, for example, memory 508, storage device 518, or storage unit 522. These and other forms of computer-readable media may store one or more instructions for use by processor 504, to cause the processor to perform specified operations. Such instructions, generally referred to as "computer program code" (which may be grouped in the form of computer programs or other groupings), when executed, enable the computing system 500 to perform functions of embodiments of the present invention. Note that the code may directly cause the processor to perform specified operations, be compiled to do so, and/or be combined with other software, hardware, and/or firmware elements (e.g., libraries for performing standard functions) to do so.

[0033] In an embodiment where the elements are implemented using software, the software may be stored in a computer-readable medium and loaded into computing system 500 using, for example, removable storage drive 514, drive 512 or communications interface 524. The control logic (in this example, software instructions or computer program code), when executed by the processor 504, causes the processor 504 to perform the functions of the invention as described herein.

[0034] It will be appreciated that, for clarity purposes, the above description has described embodiments of the invention with reference to different functional units and processors. However,

it will be apparent that any suitable distribution of functionality between different functional units, processors or domains may be used without detracting from the invention. For example, functionality illustrated to be performed by separate processors or controllers may be performed by the same processor or controller. Hence, references to specific functional units are only to be seen as references to suitable means for providing the described functionality, rather than indicative of a strict logical or physical structure or organization.

[0035] Although the present invention has been described in connection with some embodiments, it is not intended to be limited to the specific form set forth herein. Rather, the scope of the present invention is limited only by the claims. Additionally, although a feature may appear to be described in connection with particular embodiments, one skilled in the art would recognize that various features of the described embodiments may be combined in accordance with the invention.

[0036] Furthermore, although individually listed, a plurality of means, elements or method steps may be implemented by, for example, a single unit or processor. Additionally, although individual features may be included in different claims, these may possibly be advantageously combined, and the inclusion in different claims does not imply that a combination of features is not feasible and/or advantageous. Also, the inclusion of a feature in one category of claims does not imply a limitation to this category, but rather the feature may be equally applicable to other claim categories, as appropriate.

REDACTED

REDACTED

[redacted]

1.

[redacted]

REDACTED

[redacted]

ABSTRACT

[redacted]

Electronic Acknowledgement Receipt

EFS ID:	25349264
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Elizabeth McGinty
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	30-MAR-2016
Filing Date:	13-AUG-2014
Time Stamp:	16:52:39
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		IPW2-USCN205928-Response_to_NonFinal-20160330.PDF	92252 a379f2bb58856999a0e4510357e851c95abe4d94	yes	13

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	7
	Specification	8	8
	Abstract	9	9
	Applicant Arguments/Remarks Made in an Amendment	10	13

Warnings:					
Information:					
2	Affidavit-Rule 131-pre-AIA (FTI) ONLY	IPW2-USCN205928-37_CFR_1-131-Signed_Declaration-20160330.PDF	65219 eddee6fb4c9bb4473cd20b7b6b456e1963e27c39	no	3
Warnings:					
Information:					
3	Other Reference-Patent/App/Search documents	IPW2-USCN205928-37_CFR_1-131-Exhibits-20160330.PDF	1548937 847583ec6fab75edf19ae91eeec17bb0f0624c42	no	34
Warnings:					
Information:					
		Total Files Size (in bytes):	1706408		

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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.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/458,693	Filing Date 08/13/2014	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	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 $310 ($155 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	

APPLICATION AS AMENDED – PART II

AMENDMENT **03/30/2016**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 16	Minus	** 20	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

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

LIE
/ANTHONY WILLIAMS/

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.**
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Dec 31, 2015 05:40:06 AM

Dear PAIR Customer:

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 3624 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	N416	12/16/2015	IPW2-USCN205928

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 12/30/2015

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
12/30/2015	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

Office Action Summary	Application No. 14/458,693	Applicant(s) HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	AIA (First Inventor to File) Status No

-- 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* MONTHS 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 *10/22/14 and 8/13/14*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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*

5)☒ Claim(s) *1-20* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-20* is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *8/13/14* 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).

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).

Certified copies:

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)).

** 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) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *10/22/14*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application is being examined under the pre-AIA first to invent provisions.

The Notice of Allowance sent on 11/16/15 is hereby removed.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 4-12, and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable Ishii US 20070265017 in view of Anderson US 20080144600.

Regarding claims 1 and 11, Ishii teaches a network device comprising:

a transceiver is configured to send, to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different resources (uplink control channel, PUSCH, [0207]);

the network device is configured to receive, over the physical uplink shared channel, data at assigned times (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]);

the network device is further configured to receive, at times that the physical uplink shared channel is not received, a signal over the physical uplink control channel in relation to the sent resource allocation information (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]); and

Ishii is silent on the transceiver is further configured to send, over a downlink control channel, feedback information.

Anderson teaches a processor in a UE configured to receive feedback information from a downlink control channel (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Ishii by the processor is further configured to receive feedback information from a downlink control channel, as suggested by Anderson. This modification would benefit the system by providing a proven, reliable method for the UEs to receive feedback data.

Regarding claims 2, 12, the processor is further configured to send data on a physical downlink shared channel (Ishii: PDSCH, [0207]).

Regarding claims 4, 14, the feedback information includes power control information (Anderson: PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Regarding claims 5, 15, the downlink control channel includes power control information for a plurality of UEs using different bits (Anderson: PLCCH implement by including one TPC data bit and two SS data bits for each UE, [0132], [0136]).

Regarding claims 6 and 16, the times that the signal over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the times from a plurality of UEs (Ishii: uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

Regarding claims 7-10 and 17-20 , the uplink physical control channel, the respective uplink physical control channels, or the physical uplink shared channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) physical channel (Ishii: (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink

shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

4. Claims 3 and 13 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over the combination of Ishii and Anderson as applied to claims 2 and 12 above, and further in view of Malkamaki US 20020172208.

The combination is silent on the downlink control channel and the physical downlink shared channel are time multiplexed.

Malkamaki teaches time multiplexing a physical downlink shared channel and another channel ([0008]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by having the downlink control channel and the physical downlink shared channel time multiplexed, as suggested by Malkamaki. This modification would benefit the system by providing a method of reducing interference between the two channels.

5. Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable Malladi US 20080090528 in view of Anderson US 20080144600.

Regarding claims 1 and 11, Malladi teaches a network device comprising:

a transceiver is configured to send, to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned frequencies;

the network device is further configured to receive, at frequencies that the physical uplink shared channel is not received, a signal over the physical uplink control channel in relation to the sent resource allocation information (fig. 3, PUSCH, PUCCH, [0041, 0042], see also prov. 60/819,268 fig. 4A, 4B). Although Malladi teaches frequency multiplexing the PUSCH and PUCCH, time multiplexing the channels would have been

obvious to one of ordinary skill in the art at the time of the instant application.

Malladi is silent on the transceiver is further configured to send, over a downlink control channel, feedback information.

Anderson teaches a processor in a UE configured to receive feedback information from a downlink control channel (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi by the processor is further configured to receive feedback information from a downlink control channel, as suggested by Anderson. This modification would benefit the system by providing a proven, reliable method for the UEs to receive feedback data.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B.

ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 http://pair-direct.uspto.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.

RONALD B ABELSON
Primary Examiner
Art Unit 2476

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/RONALD B ABELSON/

Primary Examiner, Art Unit 2476

Notice of References Cited	Application/Control No. 14/458,693	Applicant(s)/Patent Under Reexamination HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	Page 1 of 1

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	J	US-				
	K	US-				
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	M	US-				

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
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	T					

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

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	"2009157822".pn.	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 11:38
L3	1	"20080090528".pn.	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 12:12
L4	0	L3 and pdsch	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 12:12
L5	5	"11646692"	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 12:30
L6	3387	h04w72/0446 h04w84/12 h04w74/04 ho4b7/216 ho4b1/707 ho4b7/212 ho4b7/2123 ho4b2201/70701 ho4b7/2643 ho4b7/2628 h04l12/2801	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 12:37
L7	6748	(pusch) same ((uplink adj2 physical adj3 control) pucch)	US-PGPUB; EPO	OR	ON	2015/10/23 12:37
L8	224	L6 and L7	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 12:37
S1	3123	h04w72/0446 h04w84/12 h04w74/04 ho4b7/216 ho4b1/707 ho4b7/212 ho4b7/2123 ho4b2201/70701 ho4b7/2643 ho4b7/2628 h04l12/2801	US-PGPUB; USPAT; EPO	OR	ON	2015/09/24 13:06
S2	4	"8009639".pn. 13/176,298	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 13:39
S3	2	S2 and (physical adj1 uplink)	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 13:43
S4	2	S2 and (physical adj1 uplink).clm.	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 13:43
S5	0	S2 and (pucch).clm.	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 13:56
S6	0	S2 and (pcch pucch).clm.	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 13:56
S7	0	S2 and (pcch pucch)	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 13:56
S8	4	S2 and ((physical with control)pcch pucch)	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 13:56
S9	4	S2 and ((uplink adj2 physical adj3	US-PGPUB;	OR	ON	2015/10/06

		control)pcch pucch)	USPAT; EPO			13:57
S10	7988	(pusch) with ((uplink adj2 physical adj3 control)pcch pucch)	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 13:57
S11	7984	(pusch) with ((uplink adj2 physical adj3 control) pucch)	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 13:57
S12	120	(pusch) with ((uplink adj2 physical adj3 control))	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 13:57
S13	7984	(pusch) with ((uplink adj2 physical adj3 control) pucch)	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 13:57
S14	463	(pusch) with ((uplink adj2 physical adj3 control) pucch) and (pusch with ((time with multiplex$3)tdma))	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 13:59
S15	1	"20070265017".pn.	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:00
S16	168	(ishii and hanaki and akihito).inv.	US-PGPUB; USPAT; FPRS; EPO	OR	ON	2015/10/06 14:00
S17	30	(ishii and hanaki and akihito).inv. and (call adj1 admission).ti.	US-PGPUB; USPAT; FPRS; EPO	OR	ON	2015/10/06 14:01
S18	7984	(pusch) with ((uplink adj2 physical adj3 control) pucch)	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:03
S19	2172	(pusch) with ((uplink adj2 physical adj3 control) pucch)	USPAT	OR	ON	2015/10/06 14:04
S20	1	11/773,943	USPAT	OR	ON	2015/10/06 14:06
S21	3	11/773,943	US-PGPUB; USPAT	OR	ON	2015/10/06 14:06
S22	3	S21 and (pucch pusch)	US-PGPUB; USPAT	OR	ON	2015/10/06 14:07
S23	5812	(pusch) with ((uplink adj2 physical adj3 control) pucch)	US-PGPUB; EPO	OR	ON	2015/10/06 14:08
S24	321	(pusch) with ((uplink adj2 physical adj3 control) pucch) and "2007"	US-PGPUB; EPO	OR	ON	2015/10/06 14:09
S25	276	(pusch) with ((uplink adj2 physical adj3 control) pucch) and "2006"	US-PGPUB; EPO	OR	ON	2015/10/06 14:11
S26	0	S25 and 11/773,943	US-PGPUB; EPO	OR	ON	2015/10/06 14:12
S27	109	(pusch) with ((uplink adj2 physical adj3 control) pucch) and "2005"	US-PGPUB; EPO	OR	ON	2015/10/06 14:12
S28	1045	(pusch) with ((uplink adj2 physical adj3 control) pucch) and "2008"	US-PGPUB; EPO	OR	ON	2015/10/06 14:21
S29	1172	(pusch) same ((uplink adj2 physical adj3 control) pucch) and "2008"	US-PGPUB; EPO	OR	ON	2015/10/06 14:26
S30	6611	(pusch) same ((uplink adj2 physical adj3 control) pucch)	US-PGPUB; EPO	OR	ON	2015/10/06 14:27
S31	799	S30 not S13	US-PGPUB;	OR	ON	2015/10/06

			EPO			14:27
S32	799	S30 not S13	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:28
S33	9040	(pusch) same ((uplink adj2 physical adj3 control) pucch)	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:28
S34	2429	S33 not S30	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:28
S35	274	(pusch) same ((uplink adj2 physical adj3 control) pucch) and "2005"	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:29
S36	691	(pusch) same ((uplink adj2 physical adj3 control) pucch) and "2006"	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:29
S37	992	(pusch) same ((uplink adj2 physical adj3 control) pucch) and "2007"	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:29
S38	1444	S35 S36 S37	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:29
S39	3123	(pusch) same ((uplink with physical with control) pucch) and ("2005" "2006" "2008" "2007")	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:34
S40	2903	(pusch) same ((uplink near4 physical near4 control) pucch) and ("2005" "2006" "2008" "2007")	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:35
S41	1539	(pusch) same ((uplink near4 physical near4 control) pucch) and ("2005" "2006" "2008" "2007")	US-PGPUB; EPO	OR	ON	2015/10/06 14:36
S42	1369	(pusch) same ((uplink near4 physical near4 control) pucch) and ("2005" "2006" "2008" "2007")	USPAT; EPO	OR	ON	2015/10/06 14:37
S43	0	"20070265017".pn.	USPAT; EPO	OR	ON	2015/10/06 14:38
S44	1	"20070265017".pn.	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:39
S45	1	S44 and (pusch pucch)	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:41
S46	302	(pusch) same ((uplink near4 physical near4 control) pucch) and ("2004")	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:42
S47	130	(pusch) same ((uplink near4 physical near4 control) pucch) and ("2003")	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:43
S48	1	("20070265017").pn.	US-PGPUB; USPAT; EPO	OR	ON	2015/10/06 14:54
S49	35	(ishii and hanaki and akihito).inv. and (call adj1 admission)	US-PGPUB; USPAT; FPRS; EPO	OR	ON	2015/10/06 14:56
S50	1	"14458693"	US-PGPUB; USPAT;	OR	ON	2015/10/23 07:11

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S51	1	S50 and feedback	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 07:11
S52	1	"20070265017".pn.	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 07:12
S53	0	S52 and plcch	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 07:12
S54	0	pdsch with plcch	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 08:03
S55	14815	pdsch	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 08:04
S56	33	plcch	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 08:04
S57	1	S50 and S56	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 08:04
S58	2240	(pdsch plcch)with multiplex$3	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 08:05
S59	664	(pdsch plcch)with (tdm$1 (time with multiplex$3))	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 08:06
S60	0	(plcch)with (tdm$1 (time with multiplex$3))	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 08:10
S61	0	S59 and plcch	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 08:10
S62	0	20070265017/pn.	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 08:13
S63	1	"20070265017".pn.	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 08:13
S64	198	(ishii and hanaki).inv.	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2015/10/23 08:14
S65	31	S64 and admission.ti.	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2015/10/23 08:15
S66	1	"20080090528".pn.	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 08:59
S67	1	S66 and (pusch pucch)	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 09:03
S68	1	S66 and (control (physical adj1 uplink))	US-PGPUB; USPAT; EPO	OR	ON	2015/10/23 09:04

10/23/2015 12:37:46 PM
C:\Users\rabelson\Documents\EAST\Workspaces\14458693.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	Art Unit
	RONALD B ABELSON	2476

CPC- SEARCHED		
Symbol	Date	Examiner
H04B 7/216, 1/707, 7/212, 7/2123, 2201/70701, 7/2643, 7/2628	11/5/14	RA
H04W 72/0446, 84/12, 74/04,	11/5/14	RA
H04L 12/2801	11/5/14	RA

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
370	320,321,335-337,342,345,347,441,442	11/5/14	RA

SEARCH NOTES		
Search Notes	Date	Examiner
CPC combined with limited text search in EAST	11/5/14	RA

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
370	320,321,335-337,342,345,347,441,442	11/5/14	RA

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14/458,693	08/13/2014 RULE	370	2476	IPW2-USCN205928

APPLICANTS

INTELLECTUAL VENTURES HOLDING 81 LLC, Las Vegas, NV;

INVENTORS

Paul Howard, Bristol, UNITED KINGDOM;

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

This application is a CON of 13/176,298 07/05/2011 PAT 8811356
which is a CON of 11/646,692 12/27/2006 PAT 8009639

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

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08/21/2014

Foreign Priority claimed	☐ Yes ☑ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Yes ☑ No		UNITED KINGDOM	5	20	2
Verified and Acknowledged	/RONALD B ABELSON/ Examiner's Signature	Initials				

ADDRESS

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103
UNITED STATES

TITLE

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Application Number	14458693
Filing Date	2014-08-13
First Named Inventor	Intellectual Ventures Holding 81 LLC
Art Unit	2476
Examiner Name	Ronald B. Abelson
Attorney Docket Number	IPW2-USCN205928

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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	7	6978151	B2	2005-12-20	Choi et al.	
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	First Named Inventor	Intellectual Ventures Holding 81 LLC
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

	9	7215657	B2	2007-05-08	Toshimitsu et al.	
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	11	8072916	B2	2011-12-06	Dateki	* Corresponds to JP 2006-197318

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	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	"3 UMTS Interfaces," UMTS Protocols and Protocol Testing, pp. 9-14, located at <http://www.tek.com/Measurement/App.sub. --Notes/2F.sub. --14251 /eng/in!- erfaces.pdf>.	☐
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	8	Final Rejection issued by USPTO, dated November 19, 2009 for 11/646,692.	☐
	9	FINAL REJECTION, U.S. Patent Application No. 13/176,298, dated November 6, 2013.	☐
	10	Ghadialy, Z. "Tutorial: Medium Access Control (MAC) in 3G/UMTS Protocol Stack," located at <http://www.3g4g.co.ukl Tutorial/ZG/zg.sub.--mac.html> visited on Jun. 20, 2007. (9 pages).	☐

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.A./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14458693
	Filing Date	2014-08-13
	First Named Inventor	Intellectual Ventures Holding 81 LLC
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

	11	International Engineering Consortium. "Universal Mobile Telecommunications System (UMTS) Protocols and Protocol Testing," located at <http://www.iec.org/online/tutorials/umts/topic02.html> visited on Jun. 20, 2007. (7 pages).	☐
	12	International Preliminary Report on Patentability issued on Jun. 30, 2009 from PCT Application No. PCT/EP20071064483.	☐
	13	Non-Final Rejection issued by USPTO, dated May 14, 2009 for 11/646,692.	☐
	14	Non-Final Rejection issued by USPTO, dated May 28, 2010 for 11/646,692.	☐
	15	NON-FINAL REJECTION, U.S. Patent Application No. 13/176,298, dated July 24, 2013.	☐
	16	NON-FINAL REJECTION, U.S. Patent Application No. 13/176,298, dated April 10, 2013.	☐
	17	Notice of Allowance issued by USPTO, dated February 2, 2011 for 11/646,692.	☐
	18	Notice of Allowance issued by USPTO, dated May 17, 2011 for 11/646,692.	☐
	19	NOTICE OF ALLOWANCE, U.S. Patent Application No. 13/176,298, dated April 15, 2014.	☐
	20	OFFICE ACTION, Japanese Patent Application No. 2009-543459, dated December 18,2012.	☐

If you wish to add additional non-patent literature document citation information please click the Add button Add

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.A./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14458693
	Filing Date	2014-08-13
	First Named Inventor	Intellectual Ventures Holding 81 LLC
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

EXAMINER SIGNATURE			
Examiner Signature	/Ronald Abelson/	Date Considered	10/23/2015

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.A./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14458693
	Filing Date	2014-08-13
	First Named Inventor	Intellectual Ventures Holding 81 LLC
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Harry Vartanian/	Date (YYYY-MM-DD)	2014-10-22
Name/Print	Harry Vartanian	Registration Number	56,787

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.A./

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 record s.

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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.A./

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	**Art Unit**
	RONALD B ABELSON	2476

✓	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	11/05/2014								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								
	9	✓								
	10	✓								
	11	✓								
	12	✓								
	13	✓								
	14	✓								
	15	✓								
	16	✓								
	17	✓								
	18	✓								
	19	✓								
	20	✓								

To: eoffice@volpe-koenig.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 3624

Dec 30, 2015 05:37:51 AM

Dear PAIR Customer:

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 3624 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
14458693	CTNF	12/30/2015	IPW2-USCN205928
	892	12/30/2015	IPW2-USCN205928
	1449	12/30/2015	IPW2-USCN205928

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

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.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 12/16/2015

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER	
ABELSON, RONALD B	

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
12/16/2015	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450
www.uspto.gov

MAILED
DEC 11 2015
DIRECTOR
TECHNOLOGY CENTER
TECHNOLOGY CENTER 2400

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

In Re Application:	:	NOTICE OF WITHDRAWAL
Paul Howard	:	
Appl No. 14/458,693	:	
Filed: August 13, 2014	:	FROM ISSUE
Attorney Docket No.: IPWQ2-USCN205928	:	UNDER 37 CFR 1.31(b)

For: COMMUNICATIONS IN A WIRELESS NETWORK

The application is being withdrawn to permit reopening of prosecution, because the application contains at least one claim that is unpatentable. See 37 CFR 1.313(b)(3).

The above-identified application is hereby withdrawn from issue.

The issue fee is refundable upon written request. If, however, the application is again found allowable, the issue fee can be applied toward payment of the issue fee in the amount identified on the new Notice of Allowance and Issue Fee Due upon written request. This request and any balance due must be received on or before the due date noted in the new Notice of Allowance in order to prevent abandonment of the application.

Telephone inquiries should be directed to Ayaz Sheikh 571-272-3795.

The above-identified application is being forwarded to the examiner for prompt appropriate action, including notifying applicant of the new status of this application.

Timothy P. Callahan
Director, Technology Center 2400
Network, Multiplexing, Cable
and Security

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450
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DEC 11 2015
DIRECTOR OFFICE
TECHNOLOGY CENTER 2400

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

In Re Application:	:	NOTICE OF WITHDRAWAL
Paul Howard	:	
Appl No. 14/458,693	:	
Filed: August 13, 2014	:	FROM ISSUE
Attorney Docket No.: IPWQ2-USCN205928	:	UNDER 37 CFR 1.31(b)

For: COMMUNICATIONS IN A WIRELESS NETWORK

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Timothy P. Callahan
Director, Technology Center 2400
Network, Multiplexing, Cable
and Security

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
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 12/16/2015

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER	
ABELSON, RONALD B	

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
12/16/2015	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

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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NOTICE OF ALLOWANCE AND FEE(S) DUE

3624 7590 11/16/2015

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

DATE MAILED: 11/16/2015

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

TITLE OF INVENTION: COMMUNICATIONS IN A WIRELESS NETWORK

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	02/16/2016

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 ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

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.

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)

3624 7590 11/16/2015
VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

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.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

TITLE OF INVENTION: COMMUNICATIONS IN A WIRELESS NETWORK

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	02/16/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
ABELSON, RONALD B	2476	370-280000

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 credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29
  NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27
  NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status.
  NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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.
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928	4825

3624 7590 11/16/2015

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER	
ABELSON, RONALD B	
ART UNIT	PAPER NUMBER
2476	

DATE MAILED: 11/16/2015

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B 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.

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 disclosure of these records is required by the Freedom of Information Act.
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 inspection 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.

Notice of Allowability	Application No. 14/458,693	Applicant(s) HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	AIA (First Inventor to File) Status No

-- 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 *10/22/14 and 8/13/14*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☐ The allowed claim(s) is/are _____. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   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.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ 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. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 10/22/14
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

Reasons for Allowance

Ishii US 20070265017 teaches a user equipment (UE) comprising:

a processor configured to receive resource allocation information associated with an uplink physical control channel (uplink control channel, [0207]), wherein the uplink physical control channel and a physical uplink shared channel / PUSCH have different resources;

the processor is further configured to send data over the physical uplink shared channel in assigned time intervals (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

Although Ishii teaches time multiplexing the uplink physical control channel and a physical uplink shared channel / PUSCH, the reference is silent on the processor is further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the

received resource allocation information. The Examiner interprets this limitation to be dynamically allocating the time slots for transmitting the uplink physical control channel and a physical uplink shared channel based on received resource allocation information transmitted from the network.

Matthews US 20020077151 teaches dynamically allocating control channels on uplink time slots (control channels dynamically allocated on uplink and downlink frequencies, time slots and code channels, [0074]) based on received resource allocation information transmitted from the network (primary base station subsystem provides principle interface between base station controller and radio network, commands from base station controller interface used to configure primary base station, frequency, time slot and code channel allocation are based on commands received through the base station controller interface, [0084]).

Although Ishii teaches PLCCH, the reference is silent on the processor is further configured to receive feedback information from a downlink control channel.

Anderson US 20080144600 teaches a processor in a UE configured to receive feedback information from a downlink

control channel (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

However, the independent claims are not obvious in view of the combination of the references.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B. ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 http://pair-direct.uspto.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.

RONALD B ABELSON
Primary Examiner
Art Unit 2476

***

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

Notice of References Cited	Application/Control No. 14/458,693	Applicant(s)/Patent Under Reexamination HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2007/0265017	11-2007	Ishii et al.	455/453
*	B	US-2002/0077151	06-2002	Matthews et al.	455/561
*	C	US-2008/0144600	06-2008	Anderson, Nicholas William	370/350
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
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	M	US-			

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*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.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	**Art Unit**
	RONALD B ABELSON	2476

✓	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	11/05/2014								
1	1	=								
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20	20	=								

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14458693
Filing Date	2014-08-13
First Named Inventor	Intellectual Ventures Holding 81 LLC
Art Unit	2476
Examiner Name	Ronald B. Abelson
Attorney Docket Number	IPW2-USCN205928

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5056109	B1	1991-10-08	Gilhousen et al.	
	2	5265119	B1	1993-11-23	Gilhousen et al.	
	3	5485486	B1	1996-01-16	Gilhousen et al.	
	4	6061784	B1	2000-05-09	Tarsky et al.	
	5	6567459	B1	2003-05-20	Hakkinen et al.	
	6	6611509	B1	2003-08-26	Hayashi et al.	* Corresponds to JP 11-261544
	7	6978151	B2	2005-12-20	Choi et al.	
	8	7120134	B2	2006-10-10	Tiedemann, Jr. et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.A./

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	9	7215657	B2	2007-05-08	Toshimitsu et al.	
	10	8009639	B2	2011-08-30	Howard	
	11	8072916	B2	2011-12-06	Dateki	* Corresponds to JP 2006-197318

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020061005	A1	2002-05-23	Lee et al.	
	2	20020075891	A1	2002-06-20	Souissi	
	3	20020077151	A1	2002-06-20	Matthews et al.	
	4	20020119798	A1	2002-08-29	Hamabe	
	5	20020150058	A1	2002-10-17	Kim et al.	
	6	20020168993	A1	2002-11-14	Choi et al.	

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	7	20020196766	A1	2002-12-26	Hwang et al.	
	8	20030022683	A1	2003-01-30	Beckmann et al.	
	9	20030069020	A1	2003-04-10	Speight	
	10	20040152473	A1	2004-08-05	Kuwano et al.	
	11	20040203419	A1	2004-10-14	Crocker et al.	
	12	20060093026	A1	2006-05-04	Montojo et al.	
	13	20060211417	A1	2006-09-21	Pedlar	
	14	20070173256	A1	2007-07-26	Laroia et al.	
	15	20070265017	A1	2007-11-15	Ishii et al.	
	16	20080090528	A1	2008-04-17	Malladi	
	17	20080144600	A1	2008-06-19	Anderson	

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	1	10201270	DE	A1	2002-08-08	Samsung Electronics Co., Ltd.		☐
	2	1467582	EP	A1	2004-10-13	Telefonaktiebolaget LM Ericsson		☐
	3	1615384	EP	A1	2006-01-11	Qualcomm Incorporated		☐
	4	1681780	EP	A1	2006-07-19	Fujitsu Limited		☐
	5	11261544	JP	A2	1999-09-24	Hayashi et al.		☐
	6	2006197318	JP	A2	2006-07-27	Dateki		☐
	7	2006019263	WO	A2	2006-02-23	Chun		☐
	8	2006063138	WO	A2	2006-06-15	Adaptix, Inc.		☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	"3 UMTS Interfaces," UMTS Protocols and Protocol Testing, pp. 9-14, located at <http://www.tek.com/Measurement/App.sub. --Notes/2F.sub. --14251 /eng/in!- erfaces.pdf>.	☐
	2	"3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Feasibility Study for Evolved UTRA and UTRAN (Release 7)," (Mar. 2006). 3GPP:Valbonne, France, TS 25.912 v0.0.4:1-13.	☐
	3	"3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3GPP System Architecture Evolution: Report on Technical Options and Conclusions (Release 7)," (Jul. 2005). 3GPP:Valbonne, France, TS 23.882 v0.3.0:1-13.	☐
	4	"3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; General UMTS Architecture (3G TS23.101 version 3.0.1)," (Apr. 1999). 3GPP:Valbonne, France, TS 23.101 v3.0.1 :1-13.	☐
	5	"3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Multimedia Broadcast/Multicast Service (MBMS); Architecture and Functional Description (Release 6); 3GPP: Valbonne, France; 3GPP TS 23.246 v.6.4.0 (2004-09).	☐
	6	"UMTS Protocols and Protocol Testing," Tektronix, The International Engineering Consortium, pp. 1-45, located at <http://www.rfpeople.com/docs/umts.pdf>.	☐
	7	3RD GENERATION PARTNERSHIP PROJECT. "Technical Specification Group Radio Access Network; Radio Resource Control (RRC); Protocol Specification (Release 7)," 3GPP TS 25.331 V7.3.0, December 2006.	☐
	8	Final Rejection issued by USPTO, dated November 19, 2009 for 11/646,692.	☐
	9	FINAL REJECTION, U.S. Patent Application No. 13/176,298, dated November 6, 2013.	☐
	10	Ghadialy, Z. "Tutorial: Medium Access Control (MAC) in 3G/UMTS Protocol Stack," located at <http://www.3g4g.co.ukl Tutoriai/ZG/zg.sub.--mac.html> visited on Jun. 20, 2007. (9 pages).	☐

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	11	International Engineering Consortium. "Universal Mobile Telecommunications System (UMTS) Protocols and Protocol Testing," located at <http://www.iec.org/online/tutorials/umts/topic02.html> visited on Jun. 20, 2007. (7 pages).	☐
	12	International Preliminary Report on Patentability issued on Jun. 30, 2009 from PCT Application No. PCT/EP20071064483.	☐
	13	Non-Final Rejection issued by USPTO, dated May 14, 2009 for 11/646,692.	☐
	14	Non-Final Rejection issued by USPTO, dated May 28, 2010 for 11/646,692.	☐
	15	NON-FINAL REJECTION, U.S. Patent Application No. 13/176,298, dated July 24, 2013.	☐
	16	NON-FINAL REJECTION, U.S. Patent Application No. 13/176,298, dated April 10, 2013.	☐
	17	Notice of Allowance issued by USPTO, dated February 2, 2011 for 11/646,692.	☐
	18	Notice of Allowance issued by USPTO, dated May 17, 2011 for 11/646,692.	☐
	19	NOTICE OF ALLOWANCE, U.S. Patent Application No. 13/176,298, dated April 15, 2014.	☐
	20	OFFICE ACTION, Japanese Patent Application No. 2009-543459, dated December 18,2012.	☐

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	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

EXAMINER SIGNATURE			
Examiner Signature	/Ronald Abelson/	Date Considered	11/05/2014

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CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Harry Vartanian/	Date (YYYY-MM-DD)	2014-10-22
Name/Print	Harry Vartanian	Registration Number	56,787

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

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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.

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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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.A./

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	**Art Unit**
	RONALD B ABELSON	2476

CPC						
Symbol					**Type**	**Version**
H04B		7	/	2643	F	2013-01-01
H04W		52	/	54	A	2013-01-01
H04W		72	/	0406	I	2013-01-01
H04J		3	/	1694	I	2013-01-01
H04L		5	/	0053	I	2013-01-01
H04W		52	/	146	I	2013-01-01
H04W		72	/	042	I	2013-01-01
H04W		72	/	0446	I	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/RONALD B ABELSON/ Primary Examiner.Art Unit 2476	03/12/2015	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	**Art Unit**
	RONALD B ABELSON	2476

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
		H	0	4	B	7 / 212 (2006.01.01)						
CROSS REFERENCE(S)												
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/RONALD B ABELSON/ Primary Examiner.Art Unit 2476	03/12/2015	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	**Art Unit**
	RONALD B ABELSON	2476

☐ 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	17	17												
2	2	18	18												
3	3	19	19												
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11	11														
12	12														
13	13														
14	14														
15	15														
16	16														

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 20	
/RONALD B ABELSON/ Primary Examiner.Art Unit 2476 (Primary Examiner)	03/12/2015 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14458693	HOWARD, PAUL
	Examiner	Art Unit
	RONALD B ABELSON	2476

CPC- SEARCHED		
Symbol	Date	Examiner
H04B 7/216, 1/707, 7/212, 7/2123, 2201/70701, 7/2643, 7/2628	11/5/14	RA
H04W 72/0446, 84/12, 74/04,	11/5/14	RA
H04L 12/2801	11/5/14	RA

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
370	320,321,335-337,342,345,347,441,442	11/5/14	RA

SEARCH NOTES		
Search Notes	Date	Examiner
CPC combined with limited text search in EAST	11/5/14	RA

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
370	320,321,335-337,342,345,347,441,442	11/5/14	RA

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	3123	h04w72/0446 h04w84/12 h04w74/04 ho4b7/216 ho4b1/707 ho4b7/212 ho4b7/2123 ho4b2201/70701 ho4b7/2643 ho4b7/2628 h04l12/2801	US-PGPUB; USPAT; EPO	OR	ON	2015/09/24 13:06

9/ 24/ 2015 1:08:03 PM
C:\ Users\ rabelson\ Documents\ EAST\ Workspaces\ 14458693.wsp

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BIB DATA SHEET

CONFIRMATION NO. 4825

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/458,693	08/13/2014	370	2476	IPW2-USCN205928

APPLICANTS

INTELLECTUAL VENTURES HOLDING 81 LLC, Las Vegas, NV, Assignee (with 37 CFR 1.172 Interest);

INVENTORS

Paul Howard, Bristol, UNITED KINGDOM;

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

This application is a CON of 13/176,298 07/05/2011 PAT 8811356
which is a CON of 11/646,692 12/27/2006 PAT 8009639

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

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

08/21/2014

Foreign Priority claimed	❑ Yes ☑ No	❑ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	❑ Yes ☑ No		UNITED KINGDOM	5	20	2
Verified and Acknowledged	/RONALD B ABELSON/ Examiner's Signature	Initials				

ADDRESS

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103
UNITED STATES

TITLE

COMMUNICATIONS IN A WIRELESS NETWORK

FILING FEE RECEIVED		
1740	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

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	NOA	11/16/2015	IPW2-USCN205928
	892	11/16/2015	IPW2-USCN205928
	1449	11/16/2015	IPW2-USCN205928

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928

CONFIRMATION NO. 4825

3624
VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

PUBLICATION NOTICE

OC000000072082462

Title:COMMUNICATIONS IN A WIRELESS NETWORK

Publication No.US-2014-0348041-A1
Publication Date:11/27/2014

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

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In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	NTC.PUB	11/28/2014	IPW2-USCN205928

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	COMMUNICATIONS IN A WIRELESS NETWORK

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 14/458,693 filed on August 13, 2014.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

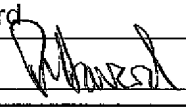
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Paul Howard Date (Optional): 22 October 2014

Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1.11 and 1.14. This collection is estimated to take 1 minute 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.**

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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.
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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 Acknowledgement Receipt

EFS ID:	20551001
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Elizabeth McGinty
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	30-OCT-2014
Filing Date:	13-AUG-2014
Time Stamp:	17:08:47
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	Oath or Declaration filed	IPW2-USCN205928-SignedDeclaration-Howard.PDF	95201 e4d0b8ac8c55d15d32d8d61b32abbc4380604132	no	2

Warnings:

Information:

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928

CONFIRMATION NO. 4825

3624
VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

POA ACCEPTANCE LETTER

OC000000071511427

Date Mailed: 10/27/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/22/2014.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/zabraha/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

To: eoffice@volpe-koenig.com,,
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Oct 27, 2014 05:26:04 AM

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	N570	10/27/2014	IPW2-USCN205928

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PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

Application Number	Application/Control No.	Applicant(s)/Patent under Reexamination	
	14/458,693	HOWARD, PAUL	

Document Code - DISQ	Internal Document – DO NOT MAIL

TERMINAL DISCLAIMER	☒ APPROVED	☐ DISAPPROVED
Date Filed : 10/22/14	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:

Felicia D. Roberts

8,811,356

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PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14458693
Filing Date	2014-08-13
First Named Inventor	Intellectual Ventures Holding 81 LLC
Art Unit	2476
Examiner Name	Ronald B. Abelson
Attorney Docket Number	IPW2-USCN205928

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5056109	B1	1991-10-08	Gilhousen et al.	
	2	5265119	B1	1993-11-23	Gilhousen et al.	
	3	5485486	B1	1996-01-16	Gilhousen et al.	
	4	6061784	B1	2000-05-09	Tarsky et al.	
	5	6567459	B1	2003-05-20	Hakkinen et al.	
	6	6611509	B1	2003-08-26	Hayashi et al.	* Corresponds to JP 11-261544
	7	6978151	B2	2005-12-20	Choi et al.	
	8	7120134	B2	2006-10-10	Tiedemann, Jr. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14458693
	Filing Date	2014-08-13
	First Named Inventor	Intellectual Ventures Holding 81 LLC
	Art Unit	2476
	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

	9	7215657	B2	2007-05-08	Toshimitsu et al.	
	10	8009639	B2	2011-08-30	Howard	
	11	8072916	B2	2011-12-06	Dateki	* Corresponds to JP 2006-197318

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	1	20020061005	A1	2002-05-23	Lee et al.	
	2	20020075891	A1	2002-06-20	Souissi	
	3	20020077151	A1	2002-06-20	Matthews et al.	
	4	20020119798	A1	2002-08-29	Hamabe	
	5	20020150058	A1	2002-10-17	Kim et al.	
	6	20020168993	A1	2002-11-14	Choi et al.	

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	7	20020196766	A1	2002-12-26	Hwang et al.	
	8	20030022683	A1	2003-01-30	Beckmann et al.	
	9	20030069020	A1	2003-04-10	Speight	
	10	20040152473	A1	2004-08-05	Kuwano et al.	
	11	20040203419	A1	2004-10-14	Crocker et al.	
	12	20060093026	A1	2006-05-04	Montojo et al.	
	13	20060211417	A1	2006-09-21	Pedlar	
	14	20070173256	A1	2007-07-26	Laroia et al.	
	15	20070265017	A1	2007-11-15	Ishii et al.	
	16	20080090528	A1	2008-04-17	Malladi	
	17	20080144600	A1	2008-06-19	Anderson	

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	1	10201270	DE	A1	2002-08-08	Samsung Electronics Co., Ltd.		☐
	2	1467582	EP	A1	2004-10-13	Telefonaktiebolaget LM Ericsson		☐
	3	1615384	EP	A1	2006-01-11	Qualcomm Incorporated		☐
	4	1681780	EP	A1	2006-07-19	Fujitsu Limited		☐
	5	11261544	JP	A2	1999-09-24	Hayashi et al.		☐
	6	2006197318	JP	A2	2006-07-27	Dateki		☐
	7	2006019263	WO	A2	2006-02-23	Chun		☐
	8	2006063138	WO	A2	2006-06-15	Adaptix, Inc.		☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	"3 UMTS Interfaces," UMTS Protocols and Protocol Testing, pp. 9-14, located at <http://www.tek.com/Measurement/App.sub. --Notes/2F.sub. --14251 /eng/in!- erfaces.pdf>.	☐
	2	"3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Feasibility Study for Evolved UTRA and UTRAN (Release 7)," (Mar. 2006). 3GPP:Valbonne, France, TS 25.912 v0.0.4:1-13.	☐
	3	"3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3GPP System Architecture Evolution: Report on Technical Options and Conclusions (Release 7)," (Jul. 2005). 3GPP:Valbonne, France, TS 23.882 v0.3.0:1-13.	☐
	4	"3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; General UMTS Architecture (3G TS23.101 version 3.0.1)," (Apr. 1999). 3GPP:Valbonne, France, TS 23.101 v3.0.1 :1-13.	☐
	5	"3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Multimedia Broadcast/Multicast Service (MBMS); Architecture and Functional Description (Release 6); 3GPP: Valbonne, France; 3GPP TS 23.246 v.6.4.0 (2004-09).	☐
	6	"UMTS Protocols and Protocol Testing," Tektronix, The International Engineering Consortium, pp. 1-45, located at <http://www.rfpeople.com/docs/umts.pdf>.	☐
	7	3RD GENERATION PARTNERSHIP PROJECT. "Technical Specification Group Radio Access Network; Radio Resource Control (RRC); Protocol Specification (Release 7)," 3GPP TS 25.331 V7.3.0, December 2006.	☐
	8	Final Rejection issued by USPTO, dated November 19, 2009 for 11/646,692.	☐
	9	FINAL REJECTION, U.S. Patent Application No. 13/176,298, dated November 6, 2013.	☐
	10	Ghadialy, Z. "Tutorial: Medium Access Control (MAC) in 3G/UMTS Protocol Stack," located at <http://www.3g4g.co.ukl Tutoriai/ZG/zg.sub.--mac.html> visited on Jun. 20, 2007. (9 pages).	☐

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	11	International Engineering Consortium. "Universal Mobile Telecommunications System (UMTS) Protocols and Protocol Testing," located at <http://www.iec.org/online/tutorials/umts/topic02.html> visited on Jun. 20, 2007. (7 pages).	☐
	12	International Preliminary Report on Patentability issued on Jun. 30, 2009 from PCT Application No. PCT/ EP20071064483.	☐
	13	Non-Final Rejection issued by USPTO, dated May 14, 2009 for 11/646,692.	☐
	14	Non-Final Rejection issued by USPTO, dated May 28, 2010 for 11/646,692.	☐
	15	NON-FINAL REJECTION, U.S. Patent Application No. 13/176,298, dated July 24, 2013.	☐
	16	NON-FINAL REJECTION, U.S. Patent Application No. 13/176,298, dated April 10, 2013.	☐
	17	Notice of Allowance issued by USPTO, dated February 2, 2011 for 11/646,692.	☐
	18	Notice of Allowance issued by USPTO, dated May 17, 2011 for 11/646,692.	☐
	19	NOTICE OF ALLOWANCE, U.S. Patent Application No. 13/176,298, dated April 15, 2014.	☐
	20	OFFICE ACTION, Japanese Patent Application No. 2009-543459, dated December 18,2012.	☐

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	Examiner Name	Ronald B. Abelson
	Attorney Docket Number	IPW2-USCN205928

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Attorney Docket Number	IPW2-USCN205928

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Harry Vartanian/	Date (YYYY-MM-DD)	2014-10-22
Name/Print	Harry Vartanian	Registration Number	56,787

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

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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.

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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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/176,298	07/05/2011	Paul Howard	IPW2-USCN191712	4342

3624 7590 11/06/2013

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER	
ABELSON, RONALD B	
ART UNIT	**PAPER NUMBER**
2476	

NOTIFICATION DATE	DELIVERY MODE
11/06/2013	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

Office Action Summary	Application No. 13/176,298	Applicant(s) HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	AIA (First Inventor to File) Status No

-- 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 *10/24/13*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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

5)☒ Claim(s) *45,47-52,54-59,61-66,68-73,75-80 and 82-96* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *45,47-52,54-59,61-66,68-73,75-80 and 82-96* is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *1/19/13* 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).

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).

Certified copies:

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)).

* 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) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 45, 47, 49, 50, 52, 54, 56, 57, 59, 61, 63, 64, 66, 68, 70, 71, 73, 75, 77, 78, 80, 82, 84, 85, and 89-96 are rejected under 35 U.S.C. 103(a) as being unpatentable Ishii US 20070265017 in view of Matthews US 20020077151 and Anderson US 20080144600.

Regarding claims 45, 52, 59, 66, 73, and 80, Ishii teaches a user equipment (UE) comprising:

a processor configured to receive resource allocation information associated with an uplink physical control channel (uplink control channel, [0207]), wherein the uplink physical control channel and a physical uplink shared channel / PUSCH have different resources;

the processor is further configured to send data over the physical uplink shared channel in assigned time intervals (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

Although Ishii teaches time multiplexing the uplink physical control channel and a physical uplink shared channel / PUSCH, the reference is silent on the processor is further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information. The Examiner interprets this limitation to be dynamically allocating the time slots for transmitting the uplink physical control channel and a

physical uplink shared channel based on received resource allocation information transmitted from the network.

Matthews teaches dynamically allocating control channels on uplink time slots (control channels dynamically allocated on uplink and downlink frequencies, time slots and code channels, [0074]) based on received resource allocation information transmitted from the network (primary base station subsystem provides principle interface between base station controller and radio network, commands from base station controller interface used to configure primary base station, frequency, time slot and code channel allocation are based on commands received through the base station controller interface, [0084]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Ishii by the processor is further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information, as suggested by Matthews. This modification would benefit the system by efficiently using bandwidth.

Although Ishii teaches PLCCH, the reference is silent on the processor is further configured to receive feedback information from a downlink control channel.

Anderson teaches a processor in a UE configured to receive feedback information from a downlink control channel (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi by the processor is further configured to receive feedback information from a downlink control channel, as suggested by Anderson. This modification would benefit the system by providing a proven, reliable method for the UEs to receive feedback data.

Regarding claims 47, 54, 61, 68, 75, 82, the processor is further configured to receive data on a physical downlink shared channel (Ishii: PDSCH, [0207]).

Regarding claims 49, 56, 63, 70, 77, 84, the feedback information includes power control information (Anderson: PLCCH

implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Regarding claims 50, 57, 64, 71, 78, 85, the downlink control channel includes power control information for a plurality of UEs using different bits (Anderson: PLCCH implement by including one TPC data bit and two SS data bits for each UE, [0132], [0136]).

Regarding claims 89-94, the uplink physical control channel, the respective uplink physical control channels, or the physical
uplink shared channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) physical channel (Ishii: (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

Regarding claims 95, 96, the uplink physical control channel, the respective uplink physical control channels, or the physical uplink shared channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) physical channel (Ishii: uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

4. Claims 48, 55, 62, 69, 76, and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ishii, Matthews, and Anderson as applied to claim 47, 54, 61, 68, 75, 82 above, and further in view of Beckmann US 20030022683.

Anderson teaches the downlink control channel is time multiplexed (TDD, PLCCH, [0149]).

The combination is silent on teaches the physical downlink shared channel is time multiplexed.

Beckmann teaches the physical downlink shared channel is time multiplexed (TDD, PDSCH, [0030]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by the downlink control channel and the physical downlink shared channel are time multiplexed, as shown by Anderson and Beckmann. This modification would benefit the system by providing efficient use of resources.

5. Claim 51, 58, 65, 72, 79, 86, rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ishii, Matthews, and Anderson as applied to claim 45, 52, 59, 66, 73, 80 above, and further in view of Kim US 20020150058.

The combination is silent on in the time interval that the uplink physical control channel is sent, a plurality of UEs transmit on uplink physical control channels in that time interval.

Kim teaches a channelization code serves to identify uplink channel of each UE, when plurality of UEs simultaneously transmit data in one time slot in NB-TDD CDMA mobile communication system ([0087]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by in the time interval that the uplink physical control channel is sent, a plurality of UEs transmit on uplink physical control channels in that time interval, as suggested by Kim. This modification would benefit the system by allowing a plurality of UEs to transmit simultaneously.

6. Claims 87 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable Ishii US 20070265017 in view of Matthews US 20020077151, Anderson US 20080144600, and Kim US 20020150058.

Regarding claims 87 and 88, Ishii teaches a user equipment (UE) comprising:

a processor configured to receive resource allocation information associated with an uplink physical control channel (uplink control channel, [0207]), wherein the uplink physical control channel and a physical uplink shared channel / PUSCH have different resources;

the processor is further configured to send data over the physical uplink shared channel in assigned time intervals (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

Although Ishii teaches time multiplexing the uplink physical control channel and a physical uplink shared channel / PUSCH, the reference is silent on the processor is further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information. The Examiner interprets this limitation to be dynamically allocating the time

slots for transmitting the uplink physical control channel and a physical uplink shared channel.

Matthews teaches dynamically allocating control channels on uplink time slots (control channels dynamically allocated on uplink and downlink frequencies, time slots and code channels, [0074]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Ishii by the processor is further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information, as suggested by Matthews. This modification would benefit the system by efficiently using bandwidth.

Although Ishii teaches PLCCH, the reference is silent on the processor is further configured to receive feedback information from a downlink control channel.

Anderson teaches a processor in a UE configured to receive feedback information from a downlink control channel (PLCCH

implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi by the processor is further configured to receive feedback information from a downlink control channel, as suggested by Anderson. This modification would benefit the system by providing a proven, reliable method for the UEs to receive feedback data.

The combination is silent on in the time interval that the uplink physical control channel is sent, a plurality of UEs transmit on uplink physical control channels in that time interval.

Kim teaches a channelization code serves to identify uplink channel of each UE, when plurality of UEs simultaneously transmit data in one time slot in NB-TDD CDMA mobile communication system ([0087]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by in the time interval that the uplink physical control channel is sent, a plurality of UEs transmit on uplink physical control

channels in that time interval, as suggested by Kim. This modification would benefit the system by allowing a plurality of UEs to transmit simultaneously.

Response to Arguments

7. Applicant's arguments filed 10/24/13 have been fully considered but they are not persuasive. Applicant argues Matthews or paragraph [0074] do not specifically teach the channel configurations, channel resource allocation, and timing relationships where "in a time interval that it is not sending information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information..." as found in claim 45 (pg. 1st paragraph). However, Ishii teaches time multiplexing the physical uplink shared channel and the uplink physical control channel. Furthermore, Matthews teaches dynamically allocating control channels on uplink time slots based on received resource allocation information transmitted from the network. In the same paragraph the applicant states, “Matthews does not even teach or suggest the interworking between an uplink shared channel and an uplink physical control channel as in claim 45”. However, as shown above, Ishii teaches

interworking between an uplink shared channel and an uplink physical control channel.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B. ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 http://pair-direct.uspto.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.

RONALD B ABELSON
Primary Examiner
Art Unit 2476

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/RONALD B ABELSON/

Primary Examiner, Art Unit 2476

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/176,298	07/05/2011	Paul Howard	IPW2-USCN191712	4342

3624 7590 04/10/2013

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER	
ABELSON, RONALD B	
ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
04/10/2013	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

Office Action Summary	Application No.	Applicant(s)	
	13/176,298	HOWARD, PAUL	
	Examiner	Art Unit	
	RONALD B. ABELSON	2476	

-- 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 *2/7/13, 1/19/13, 7/20/12, 4/16/12*.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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

5)☒ Claim(s) *45-86* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *45,51,52,73 and 80* is/are rejected.

8)☒ Claim(s) *46-50,53-72,74-79 and 81-86* is/are objected to.

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *19 January 2013* 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).

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) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/7/13,7/20/12 and 4/16/12*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

2. Claims 45, 52, 59, 66, 73, and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malladi US 20080090528. For support see US 60819268 (fig. 4A top drawing).

Regarding claims 45, 52, 59, 66, 73, and 80, Malladi teaches a user equipment (UE) comprising:

a processor configured to receive resource allocation information associated with an uplink physical control channel / PUCCH, wherein the uplink physical control channel and a physical uplink shared channel / PUSCH have different resources;

the processor is further configured to send data over the physical uplink shared channel in assigned frequency intervals; and

the processor is further configured, in a frequency interval that it is not sending data over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information (fig. 3, UE assigned control segment of M contiguous subcarriers, M may be fixed or configurable, control segment referred to as physical uplink control channel 'PUCCH', UE may also be assigned Q contiguous subcarriers, Q may be fixed or configurable, data segment referred to as physical uplink shared channel 'PUSCH', [0040, 0041]).

Although Malladi teaches assigning the PUCCH and PUSCH in different frequency intervals, it would have been obvious to one of ordinary skill in the art to assign the two channels in different time intervals. Note, Speight US 20030069020 teaches assigning PUSCH timeslots.

3. Claim 51 rejected under 35 U.S.C. 103(a) as being unpatentable over Malladi as applied to claim 45 above, and further in view of Kim US 20020150058.

Malladi is silent on in the time interval that the uplink physical control channel is sent, a plurality of UEs transmit on uplink physical control channels in that time interval.

Kim teaches a channelization code serves to identify uplink channel of each UE, when plurality of UEs simultaneously transmit data in one time slot in NB-TDD CDMA mobile communication system ([0087]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi by in the time interval that the uplink physical control channel is sent, a plurality of UEs transmit on uplink physical control channels in that time interval, as suggested by Kim. This modification would benefit the system by allowing a plurality of UEs to transmit simultaneously.

Allowable Subject Matter

4. Claims 46-50, 53-68, 60-65, 67-72, 74-79, and 81-86 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B. ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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RONALD B ABELSON
Primary Examiner
Art Unit 2476

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/RONALD B ABELSON/

Primary Examiner, Art Unit 2476

Notice of References Cited	Application/Control No. 13/176,298	Applicant(s)/Patent Under Reexamination HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2008/0090528	04-2008	Malladi, Durga Prasad	455/070
*	B	US-2002/0150058	10-2002	Kim et al.	370/280
*	C	US-2003/0069020	04-2003	Speight, Timothy James	455/450
	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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/176,298	07/05/2011	Paul Howard	IPW2-USCN191712	4342

3624 7590 07/24/2013

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER	
ABELSON, RONALD B	

ART UNIT	PAPER NUMBER
2476	

NOTIFICATION DATE	DELIVERY MODE
07/24/2013	ELECTRONIC

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The time period for reply, if any, is set in the attached communication.

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eoffice@volpe-koenig.com

Office Action Summary	Application No. 13/176,298	Applicant(s) HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	AIA (First Inventor to File) Status No

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

Period for Reply

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- 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 *13 June 2013*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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

5)☒ Claim(s) *45,47-52,54-59,61-66,68-73,75-80 and 82-96* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *45,47-52,54-59,61-66,68-73,75-80 and 82-96* is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *1/19/13* 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).

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).

Certified copies:

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)).

* 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) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

IPR2024-00221 Exhibit 2008 Page 613 of 692

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 45, 47, 49, 50, 52, 54, 56, 57, 59, 61, 63, 64, 66, 68, 70, 71, 73, 75, 77, 78, 80, 82, 84, 85, and 89-96 are rejected under 35 U.S.C. 103(a) as being unpatentable Ishii US 20070265017 in view of Matthews US 20020077151 and Anderson US 20080144600.

Regarding claims 45, 52, 59, 66, 73, and 80, Ishii teaches a user equipment (UE) comprising:

a processor configured to receive resource allocation information associated with an uplink physical control channel (uplink control channel, [0207]), wherein the uplink physical

control channel and a physical uplink shared channel / PUSCH have different resources;

the processor is further configured to send data over the physical uplink shared channel in assigned time intervals (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

Although Ishii teaches time multiplexing the uplink physical control channel and a physical uplink shared channel / PUSCH, the reference is silent on the processor is further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information. The Examiner interprets this limitation to be dynamically allocating the time slots for transmitting the uplink physical control channel and a physical uplink shared channel.

Matthews teaches dynamically allocating control channels on uplink time slots (control channels dynamically allocated on

uplink and downlink frequencies, time slots and code channels, [0074]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Ishii by the processor is further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information, as suggested by Matthews. This modification would benefit the system by efficiently using bandwidth.

Although Ishii teaches PLCCH, the reference is silent on the processor is further configured to receive feedback information from a downlink control channel.

Anderson teaches a processor in a UE configured to receive feedback information from a downlink control channel (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi by the processor is further configured to receive feedback information

from a downlink control channel, as suggested by Anderson. This modification would benefit the system by providing a proven, reliable method for the UEs to receive feedback data.

Regarding claims 47, 54, 61, 68, 75, 82, the processor is further configured to receive data on a physical downlink shared channel (Ishii: PDSCH, [0207]).

Regarding claims 49, 56, 63, 70, 77, 84, the feedback information includes power control information (Anderson: PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Regarding claims 50, 57, 64, 71, 78, 85, the downlink control channel includes power control information for a plurality of UEs using different bits (Anderson: PLCCH implement by including one TPC data bit and two SS data bits for each UE, [0132], [0136]).

Regarding claims 89-94, the uplink physical control channel, the respective uplink physical control channels, or the physical
uplink shared channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) physical channel (Ishii: (uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

Regarding claims 95, 96, the uplink physical control channel, the respective uplink physical control channels, or the physical uplink shared channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal
mobile telecommunication system (UMTS) physical channel (Ishii: uplink control channel can be one of two types, a channel to be

time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

3. Claims 48, 55, 62, 69, 76, and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ishii, Matthews, and Anderson as applied to claim 47, 54, 61, 68, 75, 82 above, and further in view of Beckmann US 20030022683.

Anderson teaches the downlink control channel is time multiplexed (TDD, PLCCH, [0149]).

The combination is silent on teaches the physical downlink shared channel is time multiplexed.

Beckmann teaches the physical downlink shared channel is time multiplexed (TDD, PDSCH, [0030]).

Therefore it would have been obvious to one of ordinary

skill in the art, to modify the system of the combination by the downlink control channel and the physical downlink shared channel are time multiplexed, as shown by Anderson and Beckmann. This modification would benefit the system by providing efficient use of resources.

4. Claim 51, 58, 65, 72, 79, 86, rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ishii, Matthews, and Anderson as applied to claim 45, 52, 59, 66, 73, 80 above, and further in view of Kim US 20020150058.

The combination is silent on in the time interval that the uplink physical control channel is sent, a plurality of UEs transmit on uplink physical control channels in that time interval.

Kim teaches a channelization code serves to identify uplink channel of each UE, when plurality of UEs simultaneously transmit data in one time slot in NB-TDD CDMA mobile communication system ([0087]).

Therefore it would have been obvious to one of ordinary

skill in the art, to modify the system of the combination by in the time interval that the uplink physical control channel is sent, a plurality of UEs transmit on uplink physical control channels in that time interval, as suggested by Kim. This modification would benefit the system by allowing a plurality of UEs to transmit simultaneously.

5. 87 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable Ishii US 20070265017 in view of Matthews US 20020077151, Anderson US 20080144600, and Kim US 20020150058.

Regarding claims 87 and 88, Ishii teaches a user equipment (UE) comprising:

a processor configured to receive resource allocation information associated with an uplink physical control channel (uplink control channel, [0207]), wherein the uplink physical control channel and a physical uplink shared channel / PUSCH have different resources;

the processor is further configured to send data over the physical uplink shared channel in assigned time intervals

(uplink control channel can be one of two types, a channel to be time-multiplexed with physical uplink shared channel PUSCH and a channel to be frequency-multiplexed with it, [0207]).

Although Ishii teaches time multiplexing the uplink physical control channel and a physical uplink shared channel / PUSCH, the reference is silent on the processor is further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information. The Examiner interprets this limitation to be dynamically allocating the time slots for transmitting the uplink physical control channel and a physical uplink shared channel.

Matthews teaches dynamically allocating control channels on uplink time slots (control channels dynamically allocated on uplink and downlink frequencies, time slots and code channels, [0074]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Ishii by the processor is further configured, in a time interval that it is not sending

information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information, as suggested by Matthews. This modification would benefit the system by efficiently using bandwidth.

Although Ishii teaches PLCCH, the reference is silent on the processor is further configured to receive feedback information from a downlink control channel.

Anderson teaches a processor in a UE configured to receive feedback information from a downlink control channel (PLCCH implemented for communication of TPC and SS data, transmission comprising TPC and SS data bits for plurality of UEs, [0131]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Malladi by the processor is further configured to receive feedback information from a downlink control channel, as suggested by Anderson. This modification would benefit the system by providing a proven, reliable method for the UEs to receive feedback data.

The combination is silent on in the time interval that the uplink physical control channel is sent, a plurality of UEs transmit on uplink physical control channels in that time interval.

Kim teaches a channelization code serves to identify uplink channel of each UE, when plurality of UEs simultaneously transmit data in one time slot in NB-TDD CDMA mobile communication system ([0087]).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of the combination by in the time interval that the uplink physical control channel is sent, a plurality of UEs transmit on uplink physical control channels in that time interval, as suggested by Kim. This modification would benefit the system by allowing a plurality of UEs to transmit simultaneously.

Response to Arguments

6. Applicant’s arguments with respect to claims have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD B. ABELSON whose telephone number is (571)272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 http://pair-direct.uspto.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.

RONALD B ABELSON
Primary Examiner
Art Unit 2476

***

***

/RONALD B ABELSON/

Primary Examiner, Art Unit 2476

Notice of References Cited	Application/Control No. 13/176,298	Applicant(s)/Patent Under Reexamination HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2007/0265017	11-2007	Ishii et al.	455/453
*	B	US-2002/0077151	06-2002	Matthews et al.	455/561
*	C	US-2008/0144600	06-2008	Anderson, Nicholas William	370/350
*	D	US-2003/0022683	01-2003	Beckmann et al.	455/518
*	E	US-2002/0150058	10-2002	Kim et al.	370/280
	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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

3624 7590 04/15/2014

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER
ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2476	

DATE MAILED: 04/15/2014

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/176,298	07/05/2011	Paul Howard	IPW2-USCN191712	4342

TITLE OF INVENTION: Feedback Control in an FDD TDD-CDMA System

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	07/15/2014

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 ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

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.

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)

3624 7590 04/15/2014
VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

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.
13/176,298	07/05/2011	Paul Howard	IPW2-USCN191712	4342

TITLE OF INVENTION: Feedback Control in an FDD TDD-CDMA System

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	07/15/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
ABELSON, RONALD B	2476	370-281000

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 credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29
  NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27
  NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status.
  NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/176,298	07/05/2011	Paul Howard	IPW2-USCN191712	4342

3624 7590 04/15/2014

VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER	
ABELSON, RONALD B	

ART UNIT	PAPER NUMBER
2476	

DATE MAILED: 04/15/2014

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 127 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 127 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.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B 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.

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 disclosure of these records is required by the Freedom of Information Act.
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 inspection 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.

Notice of Allowability	Application No. 13/176,298	Applicant(s) HOWARD, PAUL	
	Examiner RONALD B. ABELSON	Art Unit 2476	AIA (First Inventor to File) Status No

-- 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 *4/1/14, 7/19/13*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *45, 47-51, 89, 52, 54-58, 90, 59, 61-65, 91, 66, 68-72, 92, 73, 75-79, 93, 80, 82-86, 94, 87, 95, 88, 96; renumbered as 1-46*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   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.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ 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. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 7/19/13
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/RONALD B ABELSON/
Primary Examiner, Art Unit 2476

PTO/AIA/80 (07-12)
Approved for use through 11/30/2014. OMB 0651-0035
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 displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒ Practitioners associated with Customer Number: 3624

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☒ The address associated with Customer Number: 3624

OR

☐

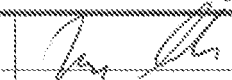
Firm or Individual Name			
Address			
City		State	Zip
Country			
Telephone		Email	

Assignee Name and Address: Intellectual Ventures Holding 81 LLC
7251 W. Lake Mead Blvd.
Suite 300
Las Vegas, NV 89128

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	5 March 2013
Name	Jeremy Sanders	Telephone	
Title	Authorized Person for Intellectual Ventures Holding 81 LLC		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. 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 1.11 and 1.14. This collection is estimated to take 3 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.**

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office;U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of1995, no persons arerequired to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Intellectual Ventures Holding 81 LLC

Application No./Patent No.: 14/458,693 Filed/Issue Date: August 13, 2014

Titled: COMMUNICATIONS IN A WIRELESS NETWORK

Intellectual Ventures Holding 81 LLC, a limited liability company

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Paul Howard To: IPWireless, Inc.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 027937, Frame 0788, or for which a copy thereof is attached.

2. From: IPWireless, Inc. To: Northrop Grumman Information Technology, Inc.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 027938, Frame 0301, or for which a copy thereof is attached.

This collection of information is required by37 CFR3.73(b). The information is required toobtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentialityis governed by35 U.S.C. 122and 37 CFR1.11 and1.14. Thiscollection is estimated to take 12 minutes to complete, including gathering, preparing, and submittingthe 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 tothe 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.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: Northrop Grumman Information Technology, Inc. To: IPWireless, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 027938, Frame 0464, or for which a copy thereof is attached.

4. From: IPWireless, Inc. To: Wireless Technology Solutions LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 027938, Frame 0566, or for which a copy thereof is attached.

5. From: Wireless Technology Solutions LLC To: IPWireless, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 027910, Frame 0649, or for which a copy thereof is attached.

6. From: IPWireless, Inc. To: Intellectual Ventures Holding 81 LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 033824, Frame 0851, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Harry Vartanian/	October 22, 2014
Signature	Date
Harry Vartanian	56,787
Printed or Typed Name	Title or Registration Number

Privacy Act Statement

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

The informationprovided 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 disclosure of these records is required by the Freedom of Information Act.
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 informationin 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 InternationalApplication 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, arecord 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 inspection or an issued patent.
9. A record from thissystem 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:	14458693
Filing Date:	13-Aug-2014
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Filer:	Harry Vartanian/Elizabeth McGinty
Attorney Docket Number:	IPW2-USCN205928

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:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Statutory or Terminal Disclaimer	1814	1	160	160
		Total in USD ($)		**160**

Electronic Acknowledgement Receipt

EFS ID:	20478385
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Elizabeth McGinty
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	22-OCT-2014
Filing Date:	13-AUG-2014
Time Stamp:	16:06:42
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$160
RAM confirmation Number	2616
Deposit Account	220493
Authorized User	VARTANIAN, HARRY

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	IDS.pdf	60688 feebb5e391099738568fdfafa403fdc402cbe5c8	no	2
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	SB08.pdf	646183 826e47b32311120ca1efe0fed081f659e304f36c	no	9
Warnings:					
Information:					
3	Other Reference-Patent/App/Search documents	FR_Nov2013.pdf	453056 84184ddcfc340b1f1f76484e833527d0d1c69f8a	no	17
Warnings:					
Information:					
4	Other Reference-Patent/App/Search documents	NFR_Apr2013.pdf	228908 f9fd3166c5040e40c691f657d80831f9288d531c	no	9
Warnings:					
Information:					
5	Other Reference-Patent/App/Search documents	NFR_Jul2013.pdf	413860 8db25451bfdf635f5c4e65ca12f38c993a3f4c37	no	16
Warnings:					
Information:					
6	Other Reference-Patent/App/Search documents	NOA_Apr2014.pdf	350488 46590473ece461938fe63bccb9f271038a866388	no	5
Warnings:					
Information:					
7	Terminal Disclaimer Filed	IPW2-USCN205928-TerminalDisclaimer-20141021.PDF	160271 6985c6377771e6dd87991822b637522930eaea23	no	2
Warnings:					
Information:					
8	Power of Attorney	IPW2-USCN205928-AIA-POA.PDF	834979 189232b1e82a1a3b88aefda8199e410bc51441ed	no	1

Warnings:					
Information:					
9	Assignee showing of ownership per 37 CFR 3.73.	IPW2-USCN205928-373cStatement-20141022.PDF	124408 bddd0d7d7a227dc84196884744acf58ea674c018	no	3
Warnings:					
Information:					
10	Fee Worksheet (SB06)	fee-info.pdf	30474 c8f8d62129d4c1748d58cbedc9dd1e60310226d9	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	3303315	

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.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of: Intellectual Ventures Holding 81 LLC **Application No.:** 14/458,693 **Confirmation No.: 4825** **Filed:** August 13, 2014 For: COMMUNICATIONS IN A WIRELESS NETWORK Group: 2476 Examiner: Ronald B. Abelson	Our File: IPW2-USCN205928 Date: October 22, 2014

INFORMATION DISCLOSURE STATEMENT

Mail Stop Amendment (via EFS)
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Madam:

Further to Applicant's Duty of Disclosure pursuant to 37 C.F.R. §1.56, Applicant wishes to bring to the Examiner's attention the material cited on the enclosed PTO Form SB-08.

Pursuant to 37 C.F.R. §1.98(d) copies of documents cited in the parent application are not enclosed, but copies will be provided upon request. Documents that were not cited in the parent application are enclosed.

This Application is a continuation of U.S. Patent Application No. 13/176,298, filed July 5, 2011, which issued August 19, 2014 as U.S. Patent No. 8,811,356,

which is a continuation of U.S. Patent Application No. 11/646,692, filed December 27, 2006, which issued August 30, 2011 as U.S. Patent No. 8,009,639.

It is respectfully requested that the Examiner consider these documents and return an initialed copy of the PTO Form SB-08 indicating consideration of the cited materials.

Respectfully submitted,

Intellectual Ventures Holding 81 LLC

By /Harry Vartanian/
Harry Vartanian
Registration No. 56,787
(215) 568-6400

Volpe and Koenig, P.C.
United Plaza
30 South 17th Street
Philadelphia, PA 19103

HV/PCK
Enclosures (5)

PTO/AIA/26 (04-14)
Approved for use through 07/31/2016. OMB 0651-0031
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 displays a valid OMB control number.

TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	Docket Number (Optional) IPW2-USCN205928

In re Application of: Intellectual Ventures Holding 81 LLC

Application No.: 14/458,693

Filed: August 13, 2014

For: COMMUNICATIONS IN A WIRELESS NETWORK

The applicant, Intellectual Ventures Holding 81 LLC, owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 8,811,356 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

expires for failure to pay a maintenance fee;
is held unenforceable;
is found invalid by a court of competent jurisdiction;
is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
has all claims canceled by a reexamination certificate;
is reissued; or
is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. ☑ The undersigned is an attorney or agent of record. Reg. No. 56,787

/Harry Vartanian/ — Signature
October 22, 2014 — Date

Harry Vartanian — Typed or printed name

Title

215-568-6400 — Telephone Number

☑ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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.

This collection of information is required by 37 CFR 1.321. 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 1.11 and 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.

Privacy Act Statement

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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 disclosure of these records is required by the Freedom of Information Act.
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 inspection 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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/458,693	08/13/2014	2414	1740	IPW2-USCN205928	20	2

CONFIRMATION NO. 4825

3624
VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

FILING RECEIPT

OC00000070329547

Date Mailed: 08/22/2014

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 submit a written request for a Filing Receipt Correction. 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**

Inventor(s)

Paul Howard, Bristol, UNITED KINGDOM;

Applicant(s)

INTELLECTUAL VENTURES HOLDING 81 LLC, Las Vegas, NV

Assignment For Published Patent Application

INTELLECTUAL VENTURES HOLDING 81 LLC, Las Vegas, NV

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 13/176,298 07/05/2011 PAT 8811356
which is a CON of 11/646,692 12/27/2006 PAT 8009639

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 08/21/2014
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/458,693**
Projected Publication Date: 11/27/2014
Non-Publication Request: No

Early Publication Request: No
Title

COMMUNICATIONS IN A WIRELESS NETWORK

Preliminary Class

370

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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 (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/458,693

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	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 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).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1600

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))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L 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))							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 found in the appropriate box in column 1.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/458,693	08/13/2014	Paul Howard	IPW2-USCN205928

CONFIRMATION NO. 4825

3624
VOLPE AND KOENIG, P.C.
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

NOTICE

OC000000070329548

Date Mailed: 08/22/2014

INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  Paul Howard

To: eoffice@volpe-koenig.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
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Aug 22, 2014 05:31:10 AM

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Application	Document	Mailroom Date	Attorney Docket No.
14458693	APP.FILE.REC	08/22/2014	IPW2-USCN205928
	M327	08/22/2014	IPW2-USCN205928

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PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

COMMUNICATIONS IN A WIRELESS NETWORK

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Patent Application Serial No. 13/176,298, filed July 5, 2011, which is a continuation of U.S. Patent Application Serial No. 11/646,692, filed December 27, 2006, which issued as 8,009,639 on August 30, 2011, which are all incorporated by reference as if fully set forth.

BACKGROUND OF THE INVENTION

[0002] Time division-code division multiple access (TD-CDMA) is an air interface technology that combines the benefits of the three elemental concepts in a universal mobile telecommunication system (UMTS): time division multiple access (TDMA); code division multiple access (CDMA); and time division duplex (TDD). TDD, in particular, uses the same radio channel for both uplink and downlink communications, and discriminates between signals by separating the transmissions in time. One of the benefits obtained by operating both links on the same frequency is the ability to exploit channel reciprocity.

[0003] Channel reciprocity gives equipment the ability to derive information about uplink channel conditions from downlink channel conditions based upon signals received by the user equipment (UE). Pathloss is one example of channel information that can be obtained from channel reciprocity. Knowledge of the uplink pathloss enables open-loop power control to be employed for uplink transmissions. For example, uplink power control is important for the operation of the CDMA element of TD-CDMA as it counteracts the near-far effect that would otherwise be encountered if all UEs transmitted at a fixed power regardless of the uplink pathloss.

[0004] The open-loop uplink power control feature provides a significant advantage when coupled with a multiple access data transmission system that is used for packet-based communication and/or shared channels. When access to a

limited number of uplink channels is shared between a large population of terminals it is imperative that access to the channels can be switched between terminals with minimal latency. A data terminal that can derive information needed to access uplink channels from the downlink transmissions (beacon signals) has a significant advantage over a terminal that relies on the (lengthy) configuration of a dedicated channel in order to establish a feedback channel.

[0005] However, channel reciprocity cannot always be guaranteed. For example TDD transmissions may not be permitted in certain frequency spectrum allocations; this is a regulatory issue and may be used to protect other wireless equipment in the same or adjacent frequency bands. In these situations the correlation between uplink and downlink channels is lost because the channels are transported on carrier frequencies that are separated in frequency by an amount that is greater than the coherence bandwidth of the channel (usually, only a few MHz separation is sufficient to cause the uplink and downlink fading profiles to be independent).

[0006] In high speed mobile applications, the time delay between downlink and uplink transmissions may exceed the coherence time of the channel. The maximum time delay that can be tolerated is a function of the mobile speed and the RF carrier frequency used, with the coherence time reducing with increasing speed and RF carrier frequency. Also, the use of multiple transmit and/or receive antennas at the network and/or the mobile terminal can introduce unintentional decorrelation between the uplink and downlink channels.

[0007] If the TD-CDMA air interface is to be used in applications where the correlation between the uplink and downlink path loss is not guaranteed, then it would be advantageous to find a substitute for channel reciprocity.

BRIEF SUMMARY OF THE INVENTION

[0008] Although it is desirable to support air interfaces where the pathloss is not reciprocal, known conventional methods do not deal directly with the evolution

or adaptation of an air interface that uses channel reciprocity to deliver key features and advantages where channel reciprocity is not guaranteed. The adaptation provided in embodiments of the invention introduces a new technique for uplink channel control that uses a feedback scheme as a substitute for the absence of channel reciprocity, with minimal impact on the ability of the air interface to support uplink shared channels.

[0009] Embodiments of the present invention enable active feedback control between a base station and user equipment (UE). In particular, the operation of a system designed for TDD, or unpaired operation, is expanded to operate in FDD, or paired, mode. For example, an uplink beacon function (for power control) and a modified random access process substitute for the information lost due to the lack of channel reciprocity in paired operation. Embodiments of the invention allow a terminal to transmit the uplink physical channel control signal (UL_Beacon) independently from the uplink physical channel. Therefore, the implementation of closed loop feedback may operate in the absence of an uplink physical channel. In one embodiment, a UE allocates a time slot for a beacon signal separated from the time slots for data in a frame. A second time slot is allocated within the frame for the base station to transmit a control signal in response to the beacon signal. The control signal instructs the UE to adjust a transmission parameter.

[0010] A UL_Beacon signal may be combined with a physical layer common control channel (PLCCH) to form a feedback system. A dedicated timeslot groups all of the UL_Beacon signals from multiple UEs in a specific uplink timeslot. By grouping the UL_Beacon signals together, embodiments obtain separation between the UL_Beacon signals and the standard uplink physical channels. Additionally, in a synchronous system embodiments of the invention detect and cancel the UL_Beacon signals from other cell sites (inter-cell interference). The PLCCH carries feedback information to the UEs that are transmitting UL_Beacon signals. The PLCCH can share a timeslot with other physical channels by exploiting the CDMA aspect of the system.

[0011] In other embodiments, the number of supported UEs can be increased by fractionating the use of the UL_Beacon and PLCCH across a multiframe period. Fractionation may also prevent timeslot blocking where half duplex UEs have a long UL/DL switching time. Additionally, support for half duplex terminals is implicit due to the nature of the TDMA frame structure. The system may manage the allocation of resource across the population of terminals such that the full capacity of the base station can be utilized even when only half-duplex terminals are deployed. In embodiments of the invention, full-duplex terminals can be still be supported along with half duplex UEs.

[0012] Moreover, in other embodiments, a radio resource control (RRC) connected state covers the subset of terminals that are in cell forward access channel (Cell_FACH), which are also transmitting UL_Beacon and receiving PLCCH, thus creating an active control feedback channel. Management of the UEs that are in Cell_Active state may remove users that are less active, and may add users that are newly active while retaining users that may have on-going data transfer requirements.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Figure 1 illustrates a cellular communication system according to embodiments of the invention;

[0014] Figure 2 illustrates a timeslot arrangement for uplink and downlink messages supporting the UL_Beacon and its corresponding PLCCH within a TD-CDMA frame structure modified to support FDD according to embodiments of the invention;

[0015] Figure 3 illustrates fractionation in different frames at the base station according to embodiments of the invention;

[0016] Figure 4 illustrates UTRA RRC connected modes according to embodiments of the invention;

[0017] FIG. 5 illustrates a computer system that may be employed to implement embodiments of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0018] Figure 1 illustrates an example of a cellular communication system according to embodiments of the invention. The network includes a user equipment (UE) domain, a radio access network (RAN) domain, and a core network domain. The UE domain includes user equipment 110 that communicate with at least one base station 112 in the RAN domain via a wireless interface. The RAN domain may also include a network controller (RNC) 118 (e.g., radio network controller), such as that used in UMTS systems. Alternatively, such functionality may be distributed between the Node Bs and an access gateway (AGW) (not shown) or other controller in the core network. FIG. 1 also illustrates an optional radio resource manager (RRM) 114. The RRM may perform functions otherwise performed by the Node Bs or an AGW in some embodiments.

[0019] The core network (CN) 116 includes, in this example, a serving GPRS support node (SGSN) 120, and a gateway GPRS support node (GGSN) 122. The core network is coupled to an external network 124. The SGSN 120 is responsible for session control, including keeping track of the location of the UEs. The GGSN 122 concentrates and tunnels user data within the core network 116 to the ultimate destination (e.g., an Internet service provider) in the external network 124. Further details may be found in the 3GPP UMTS technical specifications, such as TS23.246 v6.4.0 "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Multimedia Broadcast/Multicast Service (MBMS); Architecture and Functional Description (Release 6)," published by the 3GPP Support Office, 650 Route des Lucioles--Sophia Antipolis, Valbonne--FRANCE, which are incorporated by reference herein.

[0020] Further details regarding exemplary communications systems that may implement embodiments of the invention may be found in 3GPP UMTS

technical specifications, such as TR 23.882, "3GPP System Architecture Evolution: Report on Technical Options and Conclusions"; TR 25.912, "Feasibility Study for Evolved UTRA and UTRAN"; TS 23.101, "General Universal Mobile Telecommunications System (UMTS) Architecture," all of which are incorporated by reference herein.

TDD to FDD Evolution

[0021] A system designed for operation in Time Division Duplex (TDD) mode has base stations and terminals that transmit and receive at orthogonal points in time. In normal operation terminals are in receive mode when the base station is transmitting, and base stations are in receive mode when terminals are transmitting. In conventional TDD implementations, neither base stations nor the terminals are able to transmit and receive at the same points in time because the same frequency is used for uplink and downlink communication.

[0022] Such a system can be adjusted to operate in Frequency Division Duplex (FDD) mode, where the uplink and downlink communications occur on different frequencies. According to embodiments of the invention, to make full and efficient use of the frequency spectrum resources, the base stations are adapted to transmit and receive at the same time. This is possible since the uplink and downlink communications now occur on different frequencies. The terminals, however, retain the restriction of transmitting and receiving at orthogonal points in time to retain the simplicity of not having to transmit and receive at the same time (e.g., no duplexer required). The full use of the frequency spectrum is then obtained by allocating the resource across a plurality of terminals.

[0023] Additional measures may be needed if there are aspects of the air interface that rely on the channel reciprocity that can be assumed for TDD systems. In the case of TD-CDMA, modifications may be made for the correct operation of uplink power control and rate adaptation. This can be achieved by defining an

uplink physical control channel used for estimating the uplink channel conditions and a downlink channel used to feed back control information to the terminal. These channels may not need an associated data physical channel to be operational.

[0024] Modifications may be made to the random access channel. This may be achieved by introducing an additional indicator step at the start of any physical random access. A new uplink physical channel carries the random access indicators. A new downlink physical channel carries the response to received uplink indicators.

Uplink Physical Channel Control Signal

[0025] When pathloss reciprocity is not available, the combination of an uplink physical channel control signal with a downlink feedback channel may be used to keep the terminal informed of the condition of the uplink channel. The uplink physical control signal is referred to herein as an "Uplink Beacon" (UL_Beacon).

[0026] In general, a system that supports shared channels may also support shared access to a large number of terminals. To extract the maximum benefit from the resulting trunking gain, shared channels can be quickly and efficiently re-allocated between the population of UEs. To obtain rapid access to the uplink shared channels, terminals can transmit at the correct power with their first transmission so that latency can be kept to a minimum.

[0027] According to embodiments of the invention, the RNC or other controller (e.g., other controller having its functionality in the core network) allocates resources so that the physical channel control signal is separate from the uplink (shared) physical channel. Thus, terminals are able to transmit an UL_Beacon independently of their access to the uplink shared channel. The system may implement a closed loop control system, in which the base station detects the received power and/or other channel information from the UL_Beacon, and sends

controlling commands back to each terminal to keep the terminal informed of the channel conditions observed at the base station.

[0028] In certain embodiments, the closed loop control system is simply based on the UL_Beacon power received at the base station. The base station may send power control commands on a shared downlink channel to each terminal based on the power received from the UL_Beacon signal. Each power control command may, for example, indicate whether terminal power should be increased or decreased by a predetermined amount. This downlink channel is referred to as the "Physical Layer Control Channel" (PLCCH). The capacity of the PLCCH may be matched to the number of bits required in the feedback field and the number of UL_Beacon signals that can be simultaneously supported. That is, each UL_Beacon may correspond to one bit of the PLLCH. All terminals transmitting UL_Beacon signals may receive this channel and extract the relevant feedback field.

[0029] It is possible to extend the complexity of the control loop by sending control commands based on other aspects of the UL_Beacon signal as received by the base station, such as time-of-arrival, and channel impulse response. The amount of resource that is required for the feedback channel increases with the size (in bits) of the feedback information to each UE.

[0030] For example, for air interface technologies with a TDMA element, it is possible to adapt the TDMA frame structure to provide separation between the UL_Beacon and the normal physical channels by dedicating at least one uplink time slot per frame (or at least one time slot per multi-frame) to carrying UL_Beacon signals.

[0031] By placing UL_Beacon signals in a dedicated timeslot, a dedicated detection scheme can be applied which may include performance enhancing features such as intra-cell cancelling (for alleviating the effects of cross-correlation interference between UL_Beacon signals transmitted by multiple terminals in the same cell), or inter-cell cancelling (for reducing the interference from neighboring cells in the case where the UL_Beacon timeslots are time synchronized). Cross-

interference between UL_Beacon and normal uplink bursts is avoided by the separation obtained from the use of separate time slots.

[0032] Those skilled in the art will recognize that there are a large number of possibilities for the arrangement of a UL_Beacon and its associated PLCCH within the frame structure according to embodiments of the invention. More than one UL_Beacon and PLCCH per frame could be supported if the feedback update rate is required to be faster than the frame rate (at the expense of system capacity). For system applications that can tolerate a slower feedback rate, embodiments may fractionate the use of the UL_Beacon timeslot (and the associated PLCCH).

[0033] When fractionation is employed, the RNC or other controller may allocate the UL_Beacon timeslot in a given frame to a group of terminals depending on the current fractionation phase, thus increasing the number of terminals that can be supported with active physical channel feedback control. The maximum fractionation cycle length may be determined by the feedback update rate that the system requires in order to meet its performance targets.

[0034] Figure 2 illustrates an example of a timeslot arrangement supporting the UL_Beacon and its corresponding PLCCH within a TD-CDMA frame structure modified to support FDD. In this example, the PLCCH 212 shares a timeslot with another downlink shared channel. This is possible since normal downlink physical channels are used to transmit the PLCCH. The downlink frame also comprises a downlink beacon timeslot 206, an access control timeslot 208, and normal traffic carrying timeslots 210. The uplink frame comprises a UL_Beacon control timeslot 216, an access control timeslot 218, and normal traffic carrying timeslots 214.

[0035] Figure 3 illustrates an example where fractionation is employed. The UL_Beacon and PLCCH timeslots are active in every frame at the base station 302. However, terminal 304, terminal 306, and terminal 308 have been assigned a different fractionation phase. Figure 3 illustrates the case where the fractionation phase is 3. For example, the fractionation phase of terminal 304 occurs in frame #0 310, the fractionation phase of terminal 306 occurs in frame #1 312, and the

fractionation phase of terminal 308 occurs in frame #2 314. Since the fractionation phase is 3, the phase for terminal 304 occurs again in frame #3 316.

Half Duplex Terminals

[0036] Embodiments of the invention enable terminals to operate in half duplex or full duplex mode. In a half duplex system, base stations and terminals do not transmit and receive simultaneously. When such a system is evolved to operate in paired spectrum, it becomes inefficient if base stations retain their half duplex operation. It is not necessarily inefficient for the terminals to do so, however, since half duplex operation may have some advantages in the design and implementation of the terminal.

[0037] Nonetheless, there are some points that should be considered. For example, a single terminal may not be able to access all transmit and all receive slots. Therefore, the system may have to manage resources across the population of terminals to ensure all the available resources at the base station are efficiently utilized. To prevent blocking of timeslots, half duplex terminals may be operated with a fractionation cycle of greater than one. In particular, this may also apply for the case where there are more than one UL_Beacon timeslot per, frame. There is a time delay for half duplex terminals to switch between transmit and receive functions. In some cases this delay exceeds the guard period inserted between consecutive timeslots. In the half duplex terminal case, the terminal is unable to transmit and receive on adjacent timeslots. This will affect the locations of the UL_Beacon, PLCCH, and other common channels. Accordingly, the timeslot arrangement may be adjusted when the system is configured.

Terminal Management

[0038] Embodiments of this invention separate uplink control from the uplink physical traffic. This allows the control feedback to operate even when the terminal does not have data to send, with the consequence that uplink shared channels can be used with maximum efficiency.

[0039] To use shared channels efficiently, a relatively large user base may be needed. At the same time, the network resources required to support the control feedback channels for these terminals need to be minimized. In general, the number of users that can be supported with active control feedback channels is smaller than the typical number of users per cell. Therefore, the terminals in this active state may be managed.

[0040] In UMTS terminology, embodiments of the invention provide a new Universal Terrestrial Radio Access-Radio Resource Control-Connected (UTRA RRC-Control) sub-state into the system. UTRA systems already support the idea of different RRC-Connected states (see, TS25.331 Radio Resource Control (RRC) Protocol Specification, which is incorporated herein by reference), e.g., CELL_DCH, CELL_FACH etc. This sub-state is referred to as the CELL_ACTIVE state. Figure 4 illustrates this sub-state in context with other UTRA RRC-connected states. A UE in a Cell_Active sub-state transmits the physical channel control part of the uplink physical channel only, and nothing else (i.e., no data).

[0041] As shown in Figure 4, CELL_ACTIVE sub-state is a sub-state of CELL_FACH state 404. In general, UEs in CELL_FACH state have an RRC connection, but they may not be actively transferring data. Out of the population of UEs in CELL_FACH state 404, a smaller number of UEs, determined by the network to be the most-active UEs, are supported in a CELL_ACTIVE state 406. In this state, the UEs transmit the physical channel control signal and listen to the associated feedback channel from the network. Because the UE is aware of the uplink pathloss conditions from the feedback channel, it can have instant access to the uplink shared channels, and the resource allocator (controller) in the network can treat the UE accordingly.

[0042] The rules governing which UEs are maintained in CELL_ACTIVE state are decided by the network (e.g., through the RNC) and may be based on factors such as the volume of data transfer required by the UE, the data transfer rate required by a UE, the frequency of short bursts of data transfer, the total number of UEs in CELL_FACH state, the time since the last data transfer, the UE power saving requirements, etc.

[0043] Note that UEs in CELL_ACTIVE state have their transmitters active, therefore it is necessary for these UEs to monitor the status of the downlink and automatically come out of CELL_ACTIVE state if the downlink is deemed to be out-of-synchronization (for example, very high downlink errors or low received signal strength). This feature prevents UEs continuing to transmit in a state where the feedback channel may be unreliable and thus causing interference.

[0044] While the invention has been described in terms of particular embodiments and illustrative figures, those of ordinary skill in the art will recognize that the invention is not limited to the embodiments or figures described. Although embodiments of the present invention are described, in some instances, using UMTS terminology, those skilled in the art will recognize that such terms are also used in a generic sense herein, and that the present invention is not limited to such systems.

[0045] Those skilled in the art will recognize that the operations of the various embodiments may be implemented using hardware, software, firmware, or combinations thereof, as appropriate. For example, some processes can be carried out using processors or other digital circuitry under the control of software, firmware, or hard-wired logic. (The term "logic" herein refers to fixed hardware, programmable logic and/or an appropriate combination thereof, as would be recognized by one skilled in the art to carry out the recited functions.) Software and firmware can be stored on computer-readable media. Some other processes can be implemented using analog circuitry, as is well known to one of ordinary skill in the

art. Additionally, memory or other storage, as well as communication components, may be employed in embodiments of the invention.

[0046] Figure 5 illustrates a typical computing system 500 that may be employed to implement processing functionality in embodiments of the invention. Computing systems of this type may be used in the radio controllers, the base stations, and the UEs, for example. Those skilled in the relevant art will also recognize how to implement the invention using other computer systems or architectures. Computing system 500 may represent, for example, a desktop, laptop, or notebook computer, hand-held computing device (PDA, cell phone, palmtop, etc.), mainframe, server, client, or any other type of special or general purpose computing device as may be desirable or appropriate for a given application or environment. Computing system 500 can include one or more processors, such as a processor 504. Processor 504 can be implemented using a general or special purpose processing engine such as, for example, a microprocessor, microcontroller or other control logic. In this example, processor 504 is connected to a bus 502 or other communications medium.

[0047] Computing system 500 can also include a main memory 508, such as random access memory (RAM) or other dynamic memory, for storing information and instructions to be executed by processor 504. Main memory 508 also may be used for storing temporary variables or other intermediate information during execution of instructions to be executed by processor 504. Computing system 500 may likewise include a read only memory ("ROM") or other static storage device coupled to bus 502 for storing static information and instructions for processor 504.

[0048] The computing system 500 may also include information storage system 510, which may include, for example, a media drive 512 and a removable storage interface 520. The media drive 512 may include a drive or other mechanism to support fixed or removable storage media, such as a hard disk drive, a floppy disk drive, a magnetic tape drive, an optical disk drive, a CD or DVD drive (R or RW), or other removable or fixed media drive. Storage media 518, may include, for example,

a hard disk, floppy disk, magnetic tape, optical disk, CD or DVD, or other fixed or removable medium that is read by and written to by media drive 512. As these examples illustrate, the storage media 518 may include a computer-readable storage medium having stored therein particular computer software or data.

[0049] In alternative embodiments, information storage system 510 may include other similar components for allowing computer programs or other instructions or data to be loaded into computing system 500. Such components may include, for example, a removable storage unit 522 and an interface 520, such as a program cartridge and cartridge interface, a removable memory (for example, a flash memory or other removable memory module) and memory slot, and other removable storage units 522 and interfaces 520 that allow software and data to be transferred from the removable storage unit 522 to computing system 500.

[0050] Computing system 500 can also include a communications interface 524. Communications interface 524 can be used to allow software and data to be transferred between computing system 500 and external devices. Examples of communications interface 524 can include a modem, a network interface (such as an Ethernet or other NIC card), a communications port (such as for example, a USB port), a PCMCIA slot and card, etc. Software and data transferred via communications interface 524 are in the form of signals which can be electronic, electromagnetic, optical or other signals capable of being received by communications interface 524. These signals are provided to communications interface 524 via a channel 528. This channel 528 may carry signals and may be implemented using a wireless medium, wire or cable, fiber optics, or other communications medium. Some examples of a channel include a phone line, a cellular phone link, an RF link, a network interface, a local or wide area network, and other communications channels.

[0051] In this document, the terms "computer program product," "computer-readable medium" and the like may be used generally to refer to media such as, for example, memory 508, storage device 518, or storage unit 522. These and other

forms of computer-readable media may store one or more instructions for use by processor 504, to cause the processor to perform specified operations. Such instructions, generally referred to as "computer program code" (which may be grouped in the form of computer programs or other groupings), when executed, enable the computing system 500 to perform functions of embodiments of the present invention. Note that the code may directly cause the processor to perform specified operations, be compiled to do so, and/or be combined with other software, hardware, and/or firmware elements (e.g., libraries for performing standard functions) to do so.

[0052] In an embodiment where the elements are implemented using software, the software may be stored in a computer-readable medium and loaded into computing system 500 using, for example, removable storage drive 522, drive 512 or communications interface 524. The control logic (in this example, software instructions or computer program code), when executed by the processor 504, causes the processor 504 to perform the functions of the invention as described herein.

[0053] It will be appreciated that, for clarity purposes, the above description has described embodiments of the invention with reference to different functional units and processors. However, it will be apparent that any suitable distribution of functionality between different functional units, processors or domains may be used without detracting from the invention. For example, functionality illustrated to be performed by separate processors or controllers may be performed by the same processor or controller. Hence, references to specific functional units are only to be seen as references to suitable means for providing the described functionality, rather than indicative of a strict logical or physical structure or organization.

[0054] Although the present invention has been described in connection with some embodiments, it is not intended to be limited to the specific form set forth herein. Rather, the scope of the present invention is limited only by the claims. Additionally, although a feature may appear to be described in connection with

particular embodiments, one skilled in the art would recognize that various features of the described embodiments may be combined in accordance with the invention.

[0055] Furthermore, although individually listed, a plurality of means, elements or method steps may be implemented by, for example, a single unit or processor. Additionally, although individual features may be included in different claims, these may possibly be advantageously combined, and the inclusion in different claims does not imply that a combination of features is not feasible and/or advantageous. Also, the inclusion of a feature in one category of claims does not imply a limitation to this category, but rather the feature may be equally applicable to other claim categories, as appropriate.

* * *

CLAIMS

What is claimed is:

1. A network device characterized in that:

a transceiver is configured to send, to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different resources;

the network device is configured to receive, over the physical uplink shared channel, data at assigned times;

the network device is further configured to receive, at times that the physical uplink shared channel is not received, a signal over the physical uplink control channel in relation to the sent resource allocation information; and

the transceiver is further configured to send, over a downlink control channel, feedback information.

2. The network device of claim 1, wherein the transceiver is further configured to send data over a physical downlink shared channel.

3. The network device of claim 2, wherein the downlink control channel and the physical downlink shared channel are time multiplexed.

4. The network device of claim 1, wherein the feedback information includes power control information.

5. The network device of claim 1, wherein the downlink control channel includes power control information for a plurality of UEs using different bits.

6. The network device of claim 1, wherein the times that the signal over the physical uplink control channel is received by the network device, signals are

received over other physical uplink control channels in the times from a plurality of UEs.

7. The network device of claim 1 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

8. The network device of claim 1, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

9. The network device of claim 1, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

10. The network device of claim 1, wherein the resource allocation information provides information related to one of time division multiple access (TDMA) resources or timeslots and the different resources are one of TDMA resources or timeslots.

11. A method performed by a network device, the method comprising:

sending, by the network device to a user equipment (UE), resource allocation information associated with a physical uplink control channel, wherein the physical uplink control channel and a physical uplink shared channel have different resources;

receiving, by the network device over the physical uplink shared channel, data at assigned times;

receiving, by the network device at times that it is not receiving the physical uplink shared channel, a signal over the physical uplink control channel in relation to the sent resource allocation information; and

sending, by the network device over a downlink control channel, feedback information.

12. The method of claim 11, wherein the network device is further configured to send data over a physical downlink shared channel.

13. The method of claim 12, wherein the downlink control channel and the physical downlink shared channel are time multiplexed.

14. The method of claim 11, wherein the feedback information includes power control information.

15. The method of claim 11, wherein the downlink control channel includes power control information for a plurality of UEs using different bits.

16. The method of claim 11, wherein the times that the signal over the physical uplink control channel is received by the network device, signals are received over other physical uplink control channels in the times from a plurality of UEs.

17. The method of claim 11 further comprising:

the physical uplink control channel, the physical uplink shared channel, or the downlink control channel is any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) channel.

18. The method of claim 11, wherein the network device is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) network device or the network device is configured as a radio network controller.

19. The method of claim 11, wherein the UE is configured as any one of a time division multiple access (TDMA), code division multiple access (CDMA), time division duplex (TDD), frequency division duplex (FDD), time division-code division multiple access (TD-CDMA), or universal mobile telecommunication system (UMTS) UE.

20. The method of claim 11, wherein the resource allocation information provides information related to one of time division multiple access (TDMA) resources or timeslots and the different resources are one of TDMA resources or timeslots.

ABSTRACT

A network device that sends resource allocation information associated with a physical uplink control channel is disclosed. The physical uplink control channel and a physical uplink shared channel may have different resources. The network device may receive, at times that the physical uplink shared channel is not received, a signal over the physical uplink control channel in relation to the sent resource allocation information.

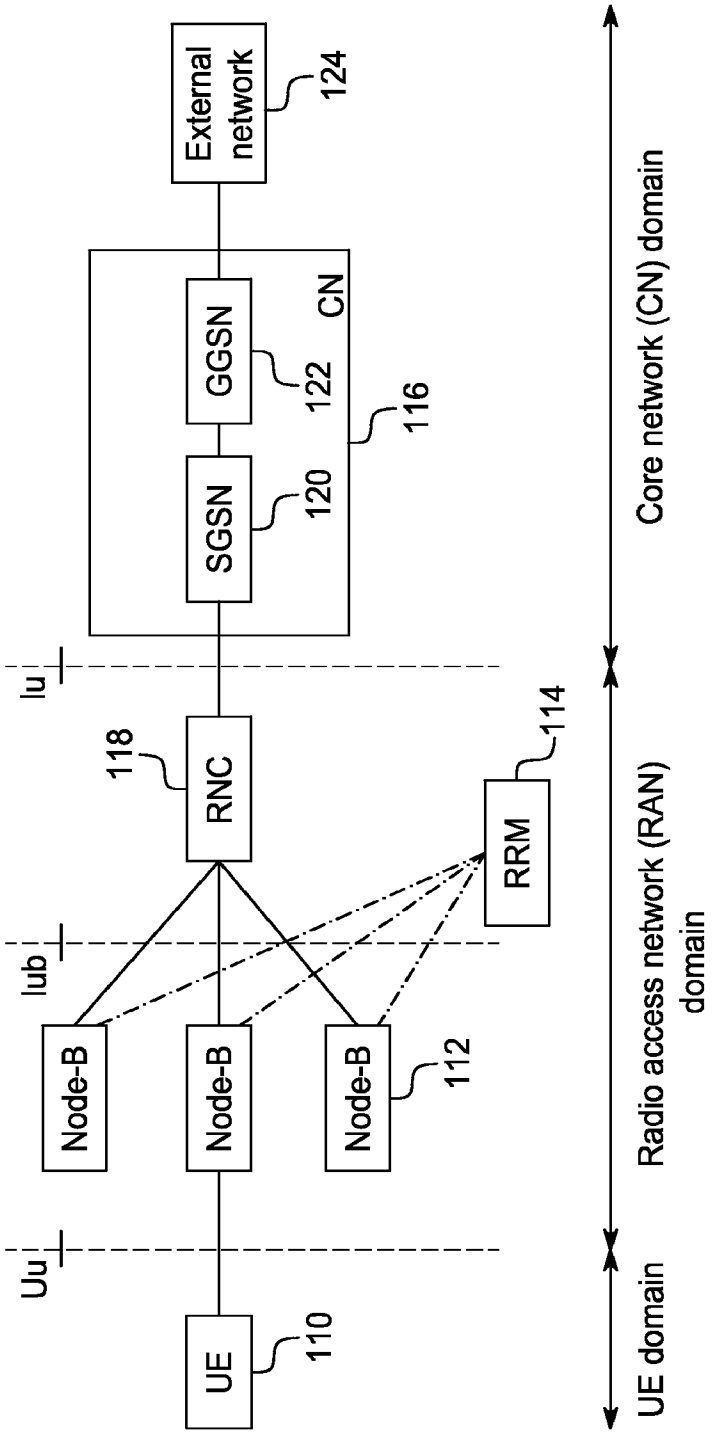

External network
124
GGSN
122
SGSN
120
CN
116
Core network (CN) domain
Iu
118
RNC
114
RRM
Iub
Node-B
Node-B
Node-B
112
Radio access network (RAN) domain
Uu
UE
110
UE domain

FIG. 1

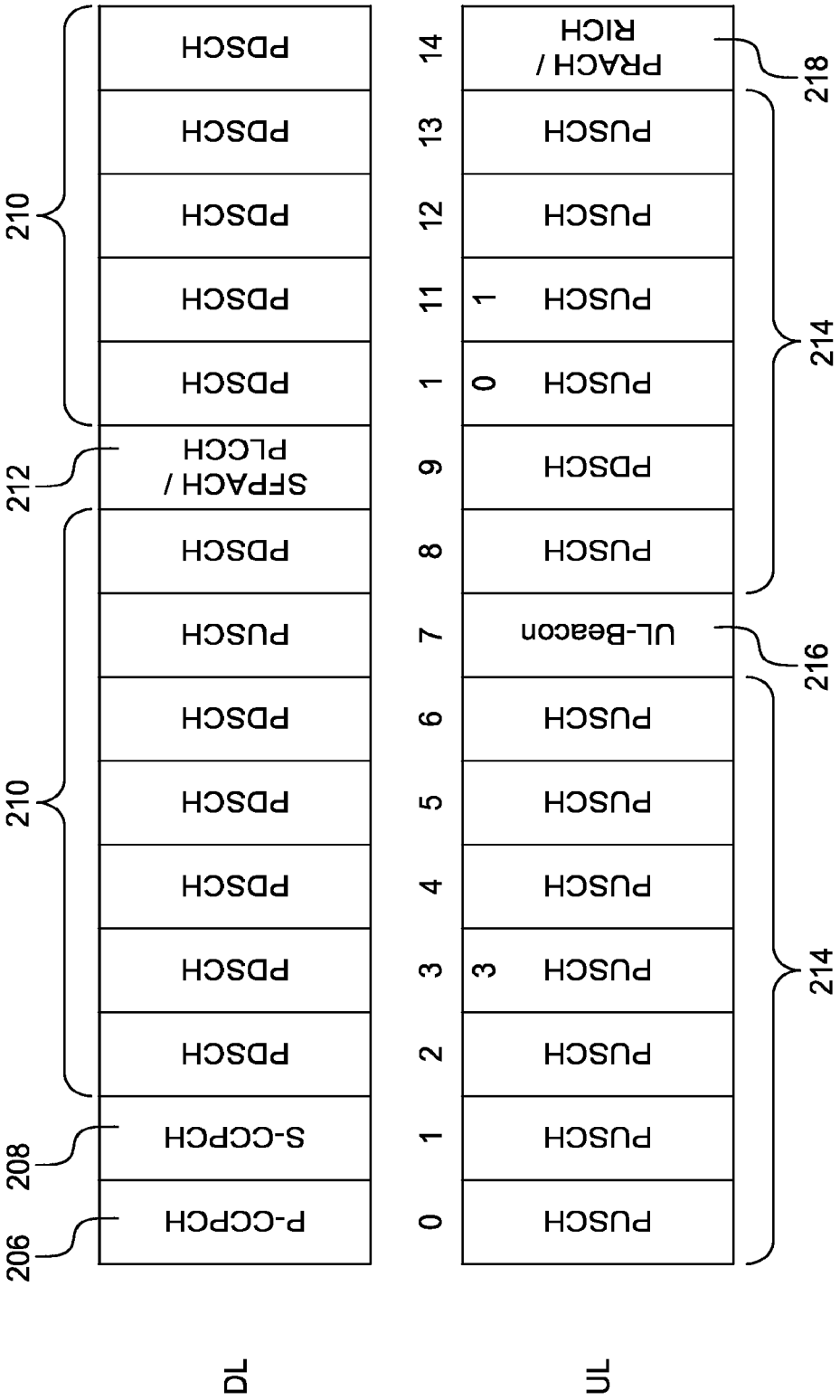

DL
UL
P-CCPCH
S-CCPCH
PDSCH
SFPACH / PLCCH
PUSCH
UL-Beacon
PRACH / RICH
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208
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FIG. 2

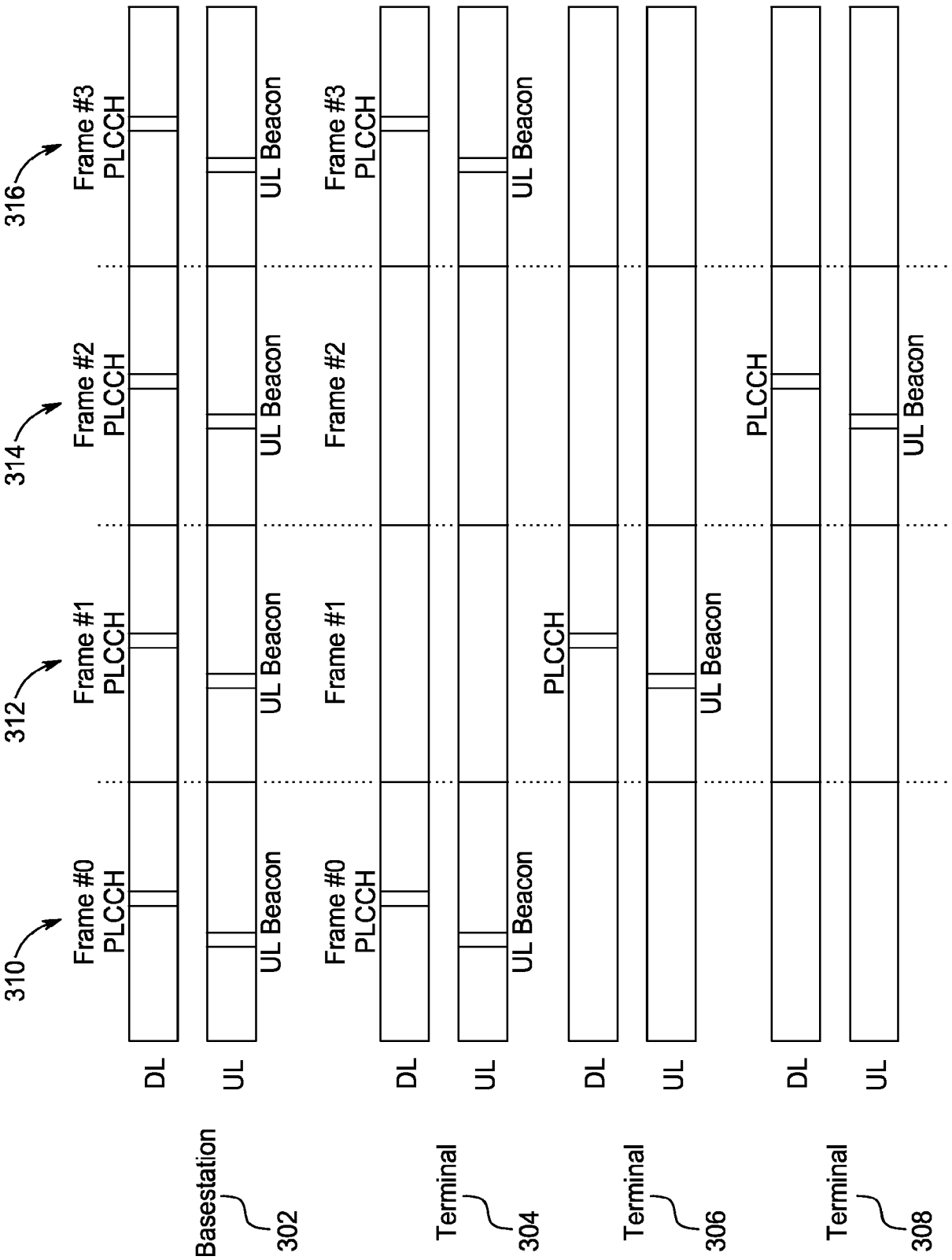

310
312
314
316
Frame #0
PLCCH
Frame #1
PLCCH
Frame #2
PLCCH
Frame #3
PLCCH
UL Beacon
Frame #0
PLCCH
Frame #1
Frame #2
Frame #3
PLCCH
UL Beacon
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DL
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Basestation
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Terminal
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Terminal
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Terminal
308

FIG. 3

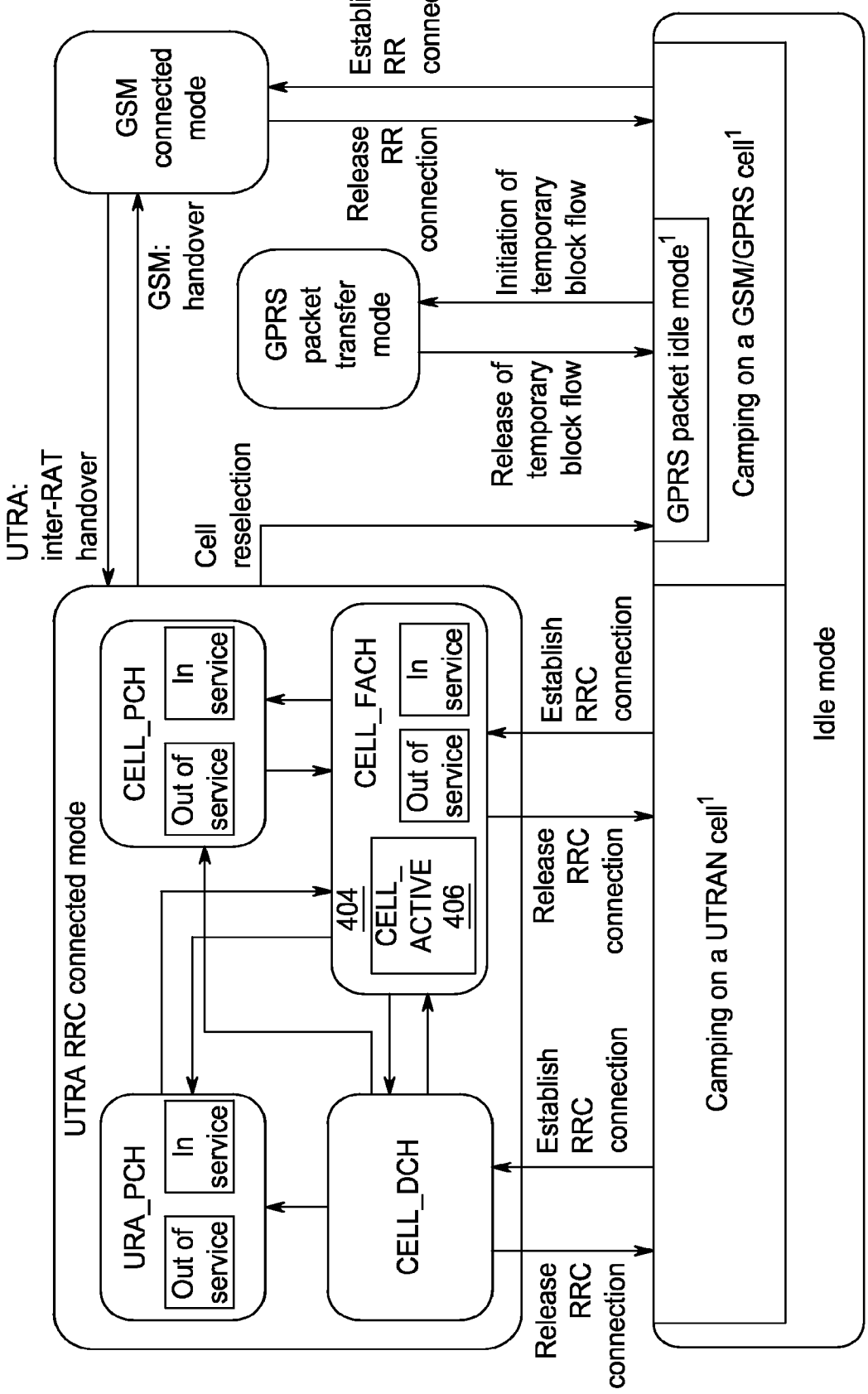

UTRA RRC connected mode
CELL_PCH
In service
Out of service
CELL_FACH
In service
Out of service
404
CELL_ACTIVE 406
URA_PCH
In service
Out of service
CELL_DCH
UTRA: inter-RAT handover
GSM: handover
Cell reselection
GSM connected mode
GPRS packet transfer mode
Establish RR connection
Release RR connection
Initiation of temporary block flow
Release of temporary block flow
Establish RRC connection
Release RRC connection
Establish RRC connection
Release RRC connection
GPRS packet idle mode[1]
Camping on a GSM/GPRS cell[1]
Camping on a UTRAN cell[1]
Idle mode

FIG. 4

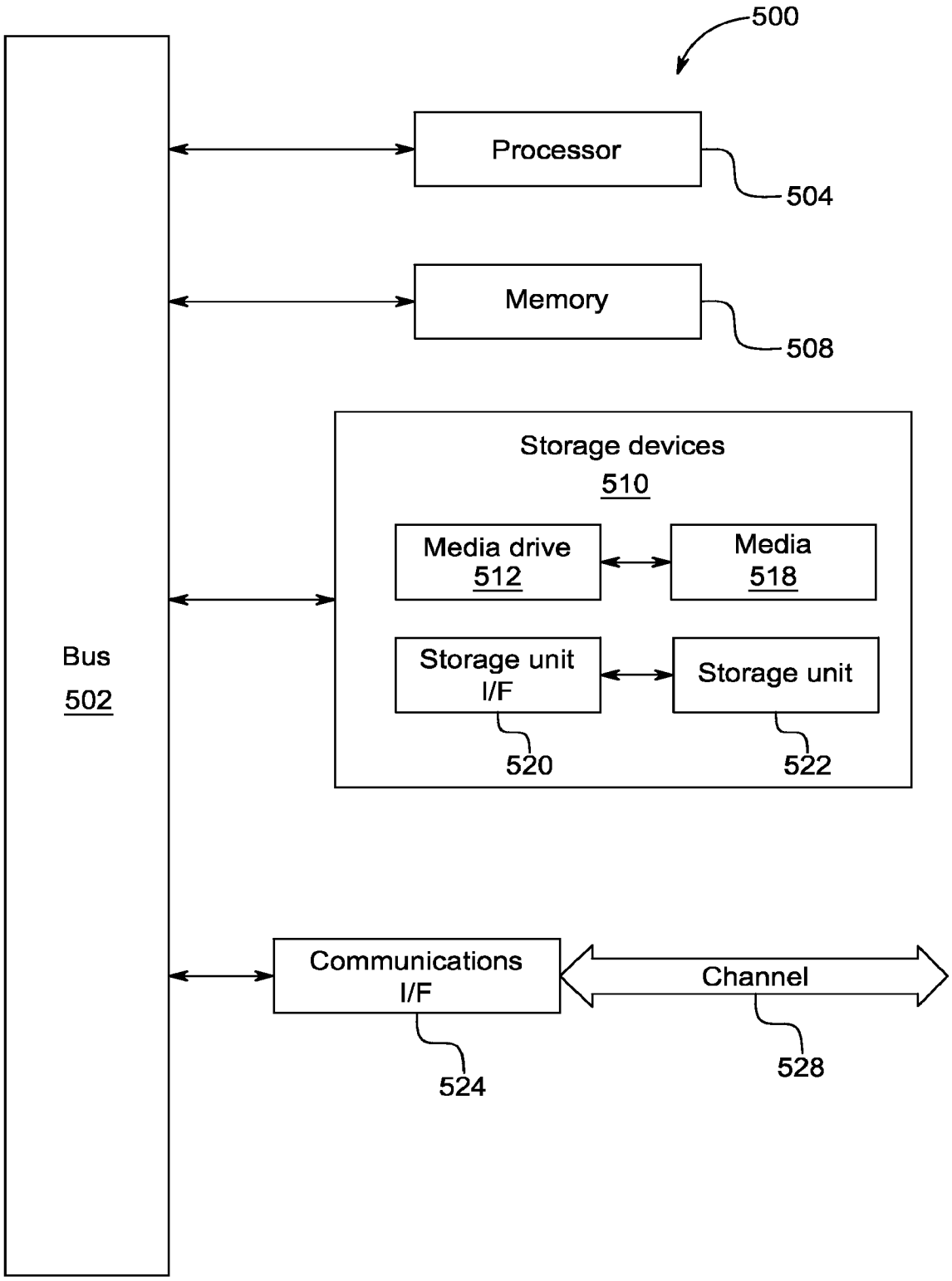

500
Processor
504
Memory
508
Storage devices
510
Media drive
512
Media
518
Storage unit
I/F
Storage unit
520
522
Bus
502
Communications
I/F
Channel
524
528

FIG. 5

PTO/AIA/14 (12-13)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	IPW2-USCN205928
	Application Number	
Title of Invention	COMMUNICATIONS IN A WIRELESS NETWORK	

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.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Paul		Howard	

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

City	Bristol	Country of Residence i	UK

Mailing Address of Inventor:

Address 1	Tennyson Cottage, Tennyson Road		
Address 2	Horfield		
City	Bristol	**State/Province**	
Postal Code	BS7 8SB	**Country** i	UK

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

Correspondence Information:

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For further information see 37 CFR 1.33(a).

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

Customer Number	3624		
Email Address	eoffice@vklaw.com	Add Email	Remove Email

Application Information:

Title of the Invention	COMMUNICATIONS IN A WIRELESS NETWORK		
Attorney Docket Number	IPW2-USCN205928	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	5	**Suggested Figure for Publication (if any)**	3

PTO/AIA/14 (12-13)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	IPW2-USCN205928
	Application Number	
Title of Invention	COMMUNICATIONS IN A WIRELESS NETWORK	

Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

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 and will not** be the subject of an application filed in another country, or under a multilateral international 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).
Either enter 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	○ Limited Recognition (37 CFR 11.9)
Customer Number	3624		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. 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.
When referring to the current application, please leave the application number blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	13176298	2011-07-05
Prior Application Status	Patented		Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13176298	Continuation of	11646692	2006-12-27	8009639	2011-08-30

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	IPW2-USCN205928
	Application Number	
Title of Invention	COMMUNICATIONS IN A WIRELESS NETWORK	

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. 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(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) [i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country [i]	Filing Date (YYYY-MM-DD)	Access Code [i] (if applicable)

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

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	IPW2-USCN205928
	Application Number	
Title of Invention	COMMUNICATIONS IN A WIRELESS NETWORK	

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In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

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

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

(•) Assignee	( ) Legal Representative under 35 U.S.C. 117	( ) Joint Inventor
( ) Person to whom the inventor is obligated to assign.	( ) Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. [X]

Organization Name	Intellectual Ventures Holding 81 LLC

Mailing Address Information:

Address 1	7251 W. Lake Mead Blvd.		
Address 2	Suite 300		
City	Las Vegas	**State/Province**	NV
Country [i]	US	Postal Code	89128
Phone Number		Fax Number	

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	IPW2-USCN205928
	Application Number	
Title of Invention	COMMUNICATIONS IN A WIRELESS NETWORK	

Email Address	

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Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	Intellectual Ventures Holding 81 LLC

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	7251 W. Lake Mead Blvd.		
Address 2	Suite 300		
City	Las Vegas	**State/Province**	NV
Country i	US	Postal Code	89128
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

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Signature	/Harry Vartanian/			Date (YYYY-MM-DD)	2014-08-13
First Name	Harry	Last Name	Vartanian	Registration Number	56787

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	IPW2-USCN205928
	Application Number	
Title of Invention	COMMUNICATIONS IN A WIRELESS NETWORK	

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.**

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Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Filer:	Harry Vartanian/Elizabeth McGinty
Attorney Docket Number:	IPW2-USCN205928

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Claims:				
Miscellaneous-Filing:				
Late Filing Fee for Oath or Declaration	1051	1	140	140
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1740**

Electronic Acknowledgement Receipt

EFS ID:	19851712
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Elizabeth McGinty
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	13-AUG-2014
Filing Date:	
Time Stamp:	15:08:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1740
RAM confirmation Number	1480
Deposit Account	220493
Authorized User	VARTANIAN, HARRY

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		IPW2-USCN205928-Application-20140813.PDF	81265 fcc5f600cda8b81b365f18484ac178a895653df2	yes	21
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Specification		1	16	
	Claims		17	20	
	Abstract		21	21	
Warnings:					
Information:					
2	Drawings-only black and white line drawings	IPW2-USCN205928-Drawings.PDF	193943 d10e7058db5f7bb988de344740a2831255ccb83a	no	5
Warnings:					
Information:					
3	Application Data Sheet	IPW2-USCN205928-ADS-20140813.PDF	1561566 1c60853a0563b5c3bf63889495d5f1a7ea57815d	no	7
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	36930 69ad161c3015c7e88a3b088a3285d88405b0e184	no	2
Warnings:					
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		Total Files Size (in bytes):	1873704		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

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

New International Application Filed with the USPTO as a Receiving Office

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

Electronic Acknowledgement Receipt

EFS ID:	19851712
Application Number:	14458693
International Application Number:	
Confirmation Number:	4825
Title of Invention:	COMMUNICATIONS IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Paul Howard
Customer Number:	3624
Filer:	Harry Vartanian/Elizabeth McGinty
Filer Authorized By:	Harry Vartanian
Attorney Docket Number:	IPW2-USCN205928
Receipt Date:	13-AUG-2014
Filing Date:	
Time Stamp:	15:08:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1740
RAM confirmation Number	1480
Deposit Account	220493
Authorized User	VARTANIAN, HARRY

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		IPW2-USCN205928-Application-20140813.PDF	81265 fcc5f600cda8b81b365f18484ac178a895653df2	yes	21
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Specification		1	16	
	Claims		17	20	
	Abstract		21	21	
Warnings:					
Information:					
2	Drawings-only black and white line drawings	IPW2-USCN205928-Drawings.PDF	193943 d10e7058db5f7bb988de344740a2831255ccb83a	no	5
Warnings:					
Information:					
3	Application Data Sheet	IPW2-USCN205928-ADS-20140813.PDF	1561566 1c60853a0563b5c3bf63889495d5f1a7ea57815d	no	7
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	36930 69ad161c3015c7e88a3b088a3285d88405b0e184	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1873704		

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