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NOTICE OF ALLOWANCE AND FEE(S) DUE

24374 7590 05/31/2012
VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER

TAYLOR, BARRY W

ART UNIT PAPER NUMBER

2617

DATE MAILED: 05/31/2012

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

12/615,098 11/09/2009 Thomas E. Gorsuch TAN-2-1493US05 9856

TITLE OF INVENTION: DUAL MODE UNIT FOR SHORT RANGE, HIGH RATE AND LONG RANGE, LOWER RATE DATA COMMUNICATIONS

Table with 7 columns: APPLN. TYPE, SMALL ENTITY, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE

nonprovisional NO \$1740 \$300 \$0 \$2040 08/31/2012

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

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

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

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

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

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

If the SMALL ENTITY is shown as NO:

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

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

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

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

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

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)

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.

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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.
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12/615,098 11/09/2009 Thomas E. Gorsuch TAN-2-1493US05 9856

TITLE OF INVENTION: DUAL MODE UNIT FOR SHORT RANGE, HIGH RATE AND LONG RANGE, LOWER RATE DATA COMMUNICATIONS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional NO \$1740 \$300 \$0 \$2040 08/31/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
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TAYLOR, BARRY W 2617 455-553100

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, 1 _____
- (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. 2 _____
- 3 _____

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

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

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

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

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

- Issue Fee
- Publication Fee (No small entity discount permitted)
- Advance Order - # of Copies _____

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

- A check is enclosed.
- Payment by credit card. Form PTO-2038 is attached.
- The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

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

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

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

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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

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EXAMINER

TAYLOR, BARRY W

ART UNIT PAPER NUMBER

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DATE MAILED: 05/31/2012

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 0 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 0 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.

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.

12/615,098

Examiner

BARRY TAYLOR

Applicant(s)

GORSUCH, THOMAS E.

Art Unit

2617

-- 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 T.D. 4/20/2012.
- 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 1,4-11 and 14-48.
- 4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some* c) None of the:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. ____ .
 - 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

- 5. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 - 6. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date ____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
- 7. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

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

/Barry W Taylor/
Primary Examiner, Art Unit 2617

DETAILED ACTION

Allowable Subject Matter

1. The following is an examiner's statement of reasons for allowance.

Applicants in filing the terminal disclaimer has overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent (U.S. Patent 6,526,034) is shown to be commonly owned with this application. The subject matter claimed in the instant application is fully disclosed in the patent (U.S. Patent 6,526,034) and is covered by the patent since the patent and application claim common subject matter.

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

Conclusion

2. Prior art of record (5,577,033) Chang et al teaches in a Local Area Network environment wherein a channel manager monitors traffic on the physical channel and during periods when there is no traffic, the channel manager disconnects the physical channel while maintain the logical channel. When new datagram traffic begins, the channel manager will reassign a physical channel. During this process a physical channel is described as being suspended and later resumed in order to release bandwidth on demand (col. 7 lines 51-62).

Art Unit: 2617

However, Chang et al is not strictly limited to a method and subscriber unit comprising: a cellular transceiver configured to communicate with a cellular wireless network via a plurality of assigned physical channels; an IEEE 802.11 transceiver configured to communicate with an IEEE 802.11 wireless local area network; and a processor configured to maintain a communication session with the cellular wireless network in an absence of the plurality of assigned physical channels while the IEEE 802.11 transceiver communicates packet data with the IEEE 802.11 wireless local area network as recited in independent claims 1, 11 and depicted in figure 6.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry W. Taylor, telephone number (571) 272-7509, who is available Monday-Thursday, 6:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid, can be reached at (571) 272-7922. The central facsimile phone number for this group is **571-273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 2600 receptionist whose telephone number is (571) 272-2600, the 2600 Customer Service telephone number is (571) 272-2600.

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).

Centralized Delivery Policy: For patent related correspondence, hand carry deliveries must be made to the Customer Service Window (now located at the Randolph Building, 401 Dulany Street, Alexandria, VA 22314), and facsimile transmissions must be sent to the central fax number (**571-273-8300**).

/Barry W Taylor/

Primary Examiner, Art Unit 2617

Notice of References Cited	Application/Control No. 12/615,098	Applicant(s)/Patent Under Reexamination GORSUCH, THOMAS E.	
	Examiner BARRY TAYLOR	Art Unit 2617	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-5,577,033	11-1996	Chang et al.	370/402
	B US-			
	C US-			
	D US-			
	E US-			
	F US-			
	G US-			
	H US-			
	I US-			
	J US-			
	K US-			
	L US-			
	M US-			


FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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


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

Issue Classification 	Application/Control No. 12615098	Applicant(s)/Patent Under Reexamination GORSUCH, THOMAS E.
	Examiner BARRY TAYLOR	Art Unit 2617

ORIGINAL						INTERNATIONAL CLASSIFICATION														
CLASS			SUBCLASS			CLAIMED					NON-CLAIMED									
455			553.1			H	0	4	M	1 / 00 (2006.01.01)										
CROSS REFERENCE(S)																				
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)																			
455	552.1																			

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant																<input type="checkbox"/> CPA																<input checked="" type="checkbox"/> T.D.																<input type="checkbox"/> R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original																																				
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NONE		Total Claims Allowed:	
		44	
(Assistant Examiner)		(Date)	
/BARRY TAYLOR/ Primary Examiner. Art Unit 2617		05/16/2012	
(Primary Examiner)		(Date)	
		O.G. Print Claim(s)	O.G. Print Figure
		1	6

Search Notes 	Application/Control No. 12615098	Applicant(s)/Patent Under Reexamination GORSUCH, THOMAS E.
	Examiner Barry W Taylor	Art Unit 2617

SEARCHED			
Class	Subclass	Date	Examiner
455	553.1, 552.1	10/14/2011	BWT
455	553.1, 552.1	5/16/2012	BWT

SEARCH NOTES		
Search Notes	Date	Examiner
updated search for parent applicaitons 10/326,809 10/358,082 10/341,528 09/400,136.	7/23/2010	BWT
updated search.	10/14/2011	BWT
updated search.	5/16/2012	BWT

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
455	553.1, 552.1	5/16/2012	BWT

	/BARRY TAYLOR/ Primary Examiner.Art Unit 2617
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			ART UNIT	PAPER NUMBER
			2617	
			NOTIFICATION DATE	DELIVERY MODE
			02/23/2011	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. 12/615,098	Applicant(s) GORSUCH, THOMAS E.	
	Examiner Barry W. Taylor	Art Unit 2617	

-- 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 28 January 2011.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,2,4-12 and 14-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,2,4-12 and 14-20 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 09 November 2009 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

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

DETAILED ACTION

Claim Rejections - 35 USC § 103

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 negated by the manner in which the invention was made.

1. Claims 1-2, 4-7, 9-12, 14-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sainton et al (2008/0274767 hereinafter Sainton) in view of Kumaki et al (2002/0191562 hereinafter Kumaki) or Lemilainen (7,502,626).

Regarding claim 1. Sainton teaches a subscriber unit comprising:

a first transceiver configured to communicate with a first wireless network via a plurality of assigned physical layer channels (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in Applicants specification), paragraphs 0081-0082);

a second transceiver configured to communicate with a second wireless network (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in Applicants specification), paragraphs 0081-0082); and

a processor coupled to the first transceiver and the second transceiver (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in

Applicants specification), paragraphs 0081-0082), and configured to maintain a communication session, above a physical layer, with the first wireless network in the absence of the plurality of assigned physical layer channels.

Sainton does not explicitly show the processor configured to maintain a communication session, above a physical layer, with the first wireless network in the absence of the plurality of assigned physical layer channels.

The Examiner notes that Applicants have defined “a processor configured to maintain a communication session, with the first wireless network in the absence of the plurality of assigned physical layer channels while communicating packet data with the IEEE 802.11 wireless local area network via the second transceiver”. For example, Applicants generally point to paragraphs 0023 and 0078 (see paper dated 1/28/2011 at page 9 which basically indicates some sort of spoofing (i.e. spoof the terminal into believing that a sufficient wide wireless communication link is continuously available). Furthermore, the Examiner notes that during the interview 10/27/2010, Applicants generally pointed to items 25 and 46 of figure 1 for support wherein items 25 and 46 are basic protocol converters. Applicants indicated that paragraphs 0045 and 0046 describe the protocol converters are nothing more than a middle layer (i.e. intermediate layer) within the context of the OSI model.

Kumaki teaches a mobile can realize handoff by using various handoff methods, and it is possible to change the handoff control scheme to be used according to the protocol and application operating on the upper level layer. For example, when the protocol and application operating on the upper level layer are such protocol and

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application for which the **moving while maintaining the session is preferable**, the mobile carries out the handoff by using the **virtual subnet scheme** or the Mobile IP **so as to continue the IP communication** (paragraph 0661).

Lemilainen also teaches a system wherein a mobile station can switch to an IP access protocol (abstract, col. 2 lines 24-50). Lemilainen teaches the mobile can communicate with the system using short range communication, instead of the cellular network (col. 3 lines 3-7) wherein an **interworking unit** is provided in the mobile station (col. 3 lines 8-15, **figure 11**, col. 12 line 65 - col. 13 line 50) which provides the subscriber the opportunity to utilize the services of one's own mobile communication system anywhere, where an Internet connection is possible, independent of the available access technique (col. 12 line 65 – col. 13 line 50). Lemilainen teaches cellular network and wireless LAN (i.e. 802 compliant) may be used (col. 7 lines 1-19). Lemilainen teaches the mobile represented with **layers 1 to 3** (see **figure 11**, col. 14 lines 13-51) wherein the network layer provides call control management and radio resource management and further comprises a **MUX** (see 536 figure 11) which **"switches"** to a second branch or layer 2 (i.e. data layer which is also above the PHY layer) to demand services of the data link and PHY layer which ultimately allows the mobile subscriber to utilize communication networks, such as private intranets to carry services of cellular network when it is within coverage area.

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the dual mode phone as taught by to incorporate a subnet scheme as taught by Kumaki or the interworking unit as taught by Lemilainen in order to provide

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seamless handovers between different radio communication networks as disclosed by Kumaki and Lemilainen.

Regarding claim 11. Method claim 11 is rejected for the same reasons as apparatus claim 1 since the recited apparatus would perform the claimed method.

Regarding claims 2 and 12. Sinton teaches wherein the first wireless network is a cellular wireless (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in Applicants specification), paragraphs 0081-0082).

Regarding claims 4 and 14. Sinton does not explicitly show wherein the packet data is transmission control protocol and Internet protocol (TCP/IP) packet data.

Lemilainen teaches a system wherein a mobile station can switch to an IP access protocol (abstract, col. 2 lines 24-50). Lemilainen teaches the mobile can communicate with the system using short range communication, instead of the cellular network (col. 3 lines 3-7) wherein an interworking unit is provided in the mobile station (col. 3 lines 8-15) which provides the subscriber the opportunity to utilize the services of one's own mobile communication system anywhere, where an Internet connection is possible, independent of the available access technique (col. 12 line 65 – col. 13 line 50). Lemilainen teaches cellular network and wireless LAN (i.e. 802 compliant) may be used (col. 7 lines 1-19). Lemilainen teaches the mobile represented with layers 1 to 3 (see figure 11, col. 14 lines 13-51) wherein the network layer provides call control management and radio resource management and further comprises a **MUX** (see 536 figure 11) which "switches" to a second branch or layer 2 (i.e. data layer which is also

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above the PHY layer) to demand services of the data link and PHY layer which ultimately allows the mobile subscriber to utilize communication networks, such as private intranets to carry services of cellular network when it is within coverage area.

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the dual mode phone as taught by Sainton in view of Kumaki to use the MUX as taught by Lemilainen in order to provide the mobile subscriber a means to **switch** to an IP access protocol when it is within coverage area.

Regarding claims 5 and 15. Sainton in view of Kumaki do not explicitly show wherein the communication session is a transmission control protocol (TCP) layer session, an Internet protocol (IP) layer session, or a network layer session.

The Examiner notes that Applicants admit that newly accepted standard, IEEE 802.11, specifies a protocol for the MAC and PHY layers of a wireless LAN (see Applicants specification page 3).

Lemilainen teaches a system wherein a mobile station can switch to an IP access protocol (abstract, col. 2 lines 24-50). Lemilainen teaches the mobile can communicate with the system using short range communication, instead of the cellular network (col. 3 lines 3-7) wherein an interworking unit is provided in the mobile station (col. 3 lines 8-15) which provides the subscriber the opportunity to utilize the services of one's own mobile communication system anywhere, where an Internet connection is possible, independent of the available access technique (col. 12 line 65 – col. 13 line 50). Lemilainen teaches cellular network and wireless LAN (i.e. 802 compliant) may be used (col. 7 lines 1-19). Lemilainen teaches the mobile represented with layers 1 to 3

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(see figure 11, col. 14 lines 13-51) wherein the network layer provides call control management and radio resource management and further comprises a **MUX** (see 536 figure 11) which "**switches**" to a second branch or layer 2 (i.e. data layer which is also above the PHY layer) to demand services of the data link and PHY layer which ultimately allows the mobile subscriber to utilize communication networks, such as private intranets to carry services of cellular network when it is within coverage area.

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the dual mode phone as taught by Sinton in view of Kumaki to use the **MUX located in the Network layer** (**see figure 11 wherein MUX is clearly above the PHY layer and within the network layer**) as taught by Lemilainen in order to provide the mobile subscriber a means to **switch** to an IP access protocol when it is within coverage area.

Regarding claims 6 and 16. Sinton teaches a detector configured to detect the IEEE 802 compliant wireless network; and a circuit configured to select the second transceiver in response to the detector detecting the IEEE 802 compliant wireless network (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in Applicants specification), paragraphs 0081-0082).

Regarding claims 7 and 17. Sinton in view of Kumaki do not explicitly show wherein the processor is further configured to release the plurality of assigned physical channels.

The Examiner notes that Applicants admit that newly accepted standard, IEEE 802.11, specifies a protocol for the MAC and PHY layers of a wireless LAN (see Applicants specification page 3). Furthermore, it is noted that the MAC layer takes charge of **selecting a physical channel and set or release connection of a call on the selected physical channel.**

In order to advance prosecution, Lemilainen teaches a system wherein a mobile station can switch to an IP access protocol (abstract, col. 2 lines 24-50). Lemilainen teaches the mobile can communicate with the system using short range communication, instead of the cellular network (col. 3 lines 3-7) wherein an interworking unit is provided in the mobile station (col. 3 lines 8-15) which provides the subscriber the opportunity to utilize the services of one's own mobile communication system anywhere, where an Internet connection is possible, independent of the available access technique (col. 12 line 65 – col. 13 line 50). Lemilainen teaches cellular network and wireless LAN (i.e. 802 compliant) may be used (col. 7 lines 1-19). Lemilainen teaches the mobile represented with layers 1 to 3 (see figure 11, col. 14 lines 13-51) wherein the network layer provides call control management and radio resource management and further comprises a **MUX** (see 536 figure 11) which "**switches**" to a second branch or layer 2 (i.e. data layer which is also above the PHY layer) to demand services of the data link and PHY layer which ultimately allows the mobile subscriber to utilize communication networks, such as private intranets to carry services of cellular network when it is within coverage area.

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It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the dual mode phone as taught by Sainton in view of Kumaki to use the **MUX located in the Network layer** (see figure 11 wherein MUX is clearly above the PHY layer and within the network layer) as taught by Lemilainen in order to provide the mobile subscriber a means to **switch** to an IP access protocol when it is within coverage area. **The Examiner notes that by switching to an IP connection frees up PHY layer channels.**

Regarding claims 9 and 19. Sainton in view of Kumaki do not explicitly show wherein at least one of the of physical channels is a data channel.

Lemilainen teaches a system wherein a mobile station can switch to an IP access protocol (abstract, col. 2 lines 24-50). Lemilainen teaches the mobile can communicate with the system using short range communication, instead of the cellular network (col. 3 lines 3-7) wherein an interworking unit is provided in the mobile station (col. 3 lines 8-15) which provides the subscriber the opportunity to utilize the services of one's own mobile communication system anywhere, where an Internet connection is possible, independent of the available access technique (col. 12 line 65 – col. 13 line 50). Lemilainen teaches cellular network and wireless LAN (i.e. 802 compliant) may be used (col. 7 lines 1-19). Lemilainen teaches the mobile represented with layers 1 to 3 (see figure 11, col. 14 lines 13-51) wherein the **network layer provides call control management and radio resource management and further comprises a MUX** (see 536 figure 11) which "**switches**" to a second branch or layer 2 (i.e. **data layer which is also above the PHY layer**) to demand services of the **data link and PHY layer** which

ultimately allows the mobile subscriber to utilize communication networks, such as private intranets to carry services of cellular network when it is within coverage area.

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the dual mode phone as taught by Sainton in view of Kumaki to use the MUX as taught by Lemilainen in order to provide the mobile subscriber a means to **switch** to an IP access protocol when it is within coverage area.

Regarding claims 10 and 20. Sainton teaches wherein the first wireless network is a code division multiple access (CDMA) wireless network, and the first transceiver is a cellular code division multiple access (CDMA) transceiver and the second transceiver is an IEEE 802.11 transceiver (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in Applicants specification), paragraphs 0081-0082).

2. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sainton et al (2008/0274767 hereinafter Sainton) in view of Kumaki et al (2002/0191562 hereinafter Kumaki) or Lemilainen (7,502,626) further in view of Applicants admitted prior art.

Regarding claims 8 and 18. Sainton in view of Kumaki or Lemilainen do not explicitly show wherein the detector is configured to detect a beacon frame or a probe response frame received by the second transceiver from the IEEE 802.11 wireless local area network.

The Examiner notes that Applicants admit that newly accepted standard, IEEE 802.11, specifies a protocol for the MAC and PHY layers of a wireless LAN (see Applicants specification page 3). Applicants further admit that IEEE 802.11-compliant specifies that a beacon frame should be transmitted at regular intervals and the terminal can detect the beacon frame by waiting a minimum period of time equal to the beacon interval (see Applicants specification page 15).

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the teachings of Sainton in view of Kumaki or Lemilainen to incorporate known standards as disclosed by applicants in order to provide a means for mobile stations to detect the presence of a nearby wireless-LAN.

Response to Arguments

3. Applicant's arguments filed 1/28/2011 have been fully considered but they are not persuasive.

a) Applicants generally argue that Sainton fails to teach the processor configured to maintain a communication session, above a physical layer, with the first wireless network in the absence of the plurality of assigned physical layer channels (paper dated 1/28/2011).

The Examiner notes that Applicants have defined "a processor configured to maintain a communication session, with the first wireless network in the absence of the plurality of assigned physical layer channels while communicating packet data with the IEEE 802.11 wireless local area network via the second transceiver". For example, Applicants generally point to paragraphs 0023 and 0078 (see paper dated 1/28/2011 at

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page 9 which basically indicates some sort of spoofing (i.e. spoof the terminal into believing that a sufficient wide wireless communication link is continuously available). Furthermore, the Examiner notes that during the interview 10/27/2010, Applicants generally pointed to items 25 and 46 of figure 1 for support wherein items 25 and 46 are basic protocol converters. Applicants indicated that paragraphs 0045 and 0046 describe the protocol converters are nothing more than a middle layer (i.e. intermediate layer) within the context of the OSI model.

Kumaki teaches a mobile can realize handoff by using various handoff methods, and it is possible to change the handoff control scheme to be used according to the protocol and application operating on the upper level layer. For example, when the protocol and application operating on the upper level layer are such protocol and application for which the **moving while maintaining the session is preferable**, the mobile carries out the handoff by using the **virtual subnet scheme** or the Mobile IP **so as to continue the IP communication** (paragraph 0661).

Lemilainen also teaches a system wherein a mobile station can switch to an IP access protocol (abstract, col. 2 lines 24-50). Lemilainen teaches the mobile can communicate with the system using short range communication, instead of the cellular network (col. 3 lines 3-7) wherein an **interworking unit** is provided in the mobile station (col. 3 lines 8-15, **figure 11**, col. 12 line 65 - col. 13 line 50) which provides the subscriber the opportunity to utilize the services of one's own mobile communication system anywhere, where an Internet connection is possible, independent of the available access technique (col. 12 line 65 – col. 13 line 50). Lemilainen teaches

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cellular network and wireless LAN (i.e. 802 compliant) may be used (col. 7 lines 1-19). Lemilainen teaches the mobile represented with **layers 1 to 3** (see **figure 11**, col. 14 lines 13-51) wherein the network layer provides call control management and radio resource management and further comprises a **MUX** (see 536 figure 11) which "**switches**" to a second branch or layer 2 (i.e. data layer which is also above the PHY layer) to demand services of the data link and PHY layer which ultimately allows the mobile subscriber to utilize communication networks, such as private intranets to carry services of cellular network when it is within coverage area.

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the dual mode phone as taught by to incorporate a subnet scheme as taught by Kumaki or the interworking unit as taught by Lemilainen in order to provide seamless handovers between different radio communication networks as disclosed by Kumaki and Lemilainen.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

---(7,580,715) Gorsuch et al is the sole name inventor of the present application and basically teaches a CDMA transceiver **wherein a state of at least one of the plurality of protocol layers above the Physical layer is maintained during communication session** (see independent claims).

---(7583,971) Gorsuch et al is the sole name inventor of the present application and basically teaches a CDMA user device **wherein a state of at least one of the**

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layers other than the physical layer is maintained during communication session

(see independent claims).

5. 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.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry W. Taylor, telephone number (571) 272-7509, who is available Monday-Thursday, 6:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kent Chang, can be reached at (571) 272-7667. The central facsimile phone number for this group is **571-273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 2600 receptionist whose telephone number is (571) 272-2600, the 2600 Customer Service telephone number is (571) 272-2600.

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).

Centralized Delivery Policy: For patent related correspondence, hand carry deliveries must be made to the Customer Service Window (now located at the Randolph

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Building, 401 Dulany Street, Alexandria, VA 22314), and facsimile transmissions must be sent to the central fax number **(571-273-8300)**.

/Barry W Taylor/

Primary Examiner, Art Unit 2617

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO. TAN-2-1493US05	SERIAL NO. 12/615,098
	APPLICANT Thomas Gorsuch	
	FILING DATE November 9, 2009	GROUP 2617

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	4,107,469	08/1978	Jenkins			
	4,577,316	03/1986	Schiff			
	4,625,308	11/1986	Kim et al.			
	4,675,863	06/1987	Paneth et al.			
	4,817,089	03/1989	Paneth et al.			
	4,841,526	06/1989	Wilson et al.			
	4,862,453	08/1989	West et al.			
	4,866,709	09/1989	West et al.			
	4,912,705	03/1990	Paneth et al.			
	4,949,395	08/1990	Rydbeck			
	5,020,092	05/1991	Phillips et al.			
	5,020,093	05/1991	Pireh			
	5,022,024	06/1991	Paneth et al.			
	5,027,348	06/1991	Curry			
	5,027,400	06/1991	Baji et al.			
	5,114,375	05/1992	Wellhausen et al.			
	5,115,309	05/1992	Hang			
	5,226,044	07/1993	Gupta et al.			
	5,228,074	07/1993	Mizikovsky			
	5,268,900	12/1993	Hluchyj et al.			
	5,282,222	01/1994	Fattouche et al.			
	5,325,419	06/1994	Connolly et al.			
	5,355,374	11/1994	Hester et al.			
	5,369,637	11/1994	Richardson et al.			
	5,373,502	12/1994	Turban			

EXAMINER /Barry Taylor/	DATE CONSIDERED 02/16/2011
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1383987-1 ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /BT/

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO. TAN-2-1493US05	SERIAL NO. 12/615,098
	APPLICANT Thomas Gorsuch	
	FILING DATE November 9, 2009	GROUP 2617

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5,375,124	12/1994	D'Ambrogio, et al.			
	5,388,102	02/1995	Griffith et al.			
	5,394,473	02/1995	Davidson			
	5,406,643	04/1995	Burke et al.			
	5,412,429	05/1995	Glover			
	5,442,625	08/1995	Gitlin et al.			
	5,463,629	10/1995	Ko			
	5,471,463	11/1995	Hulbert			
	5,504,803	04/1996	Yamada et al.			
	5,585,850	12/1996	Schwaller			
	5,586,113	12/1996	Adachi et al.			
	5,592,470	01/1997	Rudrapatna et al.			
	5,592,471	01/1997	Briskman			
	5,594,782	01/1997	Zicker et al.			
	5,603,081	02/1997	Raith et al.			
	5,606,580	02/1997	Mourot et al.			
	5,615,213	03/1997	Griever ¹			
	5,617,423	04/1997	Li et al.			
	5,642,348	06/1997	Barzegar et al.			
	5,655,001	08/1997	Cline et al.			
	5,657,317	08/1997	Mahany et al.			
	5,657,358	08/1997	Panech et al.			
	5,663,958	09/1997	Ward			
	5,663,990	09/1997	Bolgiano et al.			

¹ Corresponds to JP 8-293889.

EXAMINER /Barry Taylor/	DATE CONSIDERED 02/16/2011
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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	FILING DATE November 9, 2009	GROUP 2617

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5,673,259	09/1997	Quick, Jr.			
	5,687,194	11/1997	Paneth et al.			
	5,696,903	12/1997	Mahany			
	5,697,059	12/1997	Carney			
	5,699,364	12/1997	Sato et al. ²			
	5,734,646	03/1998	I et al.			
	5,781,542	07/1998	Tanaka et al.			
	5,784,406	07/1998	DeJaco et al.			
	5,790,551	08/1998	Chan			
	5,793,744	08/1998	Kanerva et al.			
	5,796,727	08/1998	Harrison et al.			
	5,802,465	09/1998	Hamalainen et al.			
	5,815,811	09/1998	Pinard et al.			
	5,825,807	10/1998	Kumar			
	5,828,659	10/1998	Teder et al.			
	5,828,662	10/1998	Jalali et al.			
	5,842,122	11/1998	Schellinger et al.			
	5,844,894	12/1998	Dent			
	5,845,211	12/1998	Roach Jr.			
	5,854,786	12/1998	Henderson et al.			
	5,856,971	01/1999	Gitlin et al.			
	5,859,840	01/1999	Tiedemann, Jr. et al.			
	5,859,879	01/1999	Bolgiano et al.			
	5,872,786	02/1999	Shobatake			
	5,881,060	03/1999	Morrow et al.			

2 Corresponds to JP 8-256065.

EXAMINER /Barry Taylor/	DATE CONSIDERED 02/16/2011
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO. TAN-2-1493US05	SERIAL NO. 12/615,098
	APPLICANT Thomas Gorsuch	
	FILING DATE November 9, 2009	GROUP 2617

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5,896,376	04/1999	Alperovich et al.			
	5,910,945	06/1999	Garrison et al.			
	5,914,950	06/1999	Tiedemann, Jr. et al.			
	5,923,650	07/1999	Chen et al.			
	5,930,230	07/1999	Odenwalder et al.			
	5,950,131	09/1999	Vilmur			
	5,956,332	09/1999	Rasanen et al.			
	5,966,374	10/1999	Rasanen			
	5,991,279	11/1999	Haugli et al.			
	5,999,708	12/1999	Kajita ³			
	6,001,800	12/1999	Mehta et al.			
	6,002,690	12/1999	Takayama et al.			
	6,005,855	12/1999	Zehavi et al.			
	6,009,106	12/1999	Rustad et al.			
	6,011,800	01/2000	Nadgauda et al.			
	6,028,853	02/2000	Haartsen			
	6,028,868	02/2000	Yeung et al.			
	6,052,385	04/2000	Kanerva et al.			
	6,064,678	05/2000	Sindhushayana et al.			
	6,069,883	05/2000	Eizak et al.			
	6,078,572	06/2000	Tanno et al.			
	6,081,536	06/2000	Gorsuch et al.			
	6,084,866	07/2000	Dorenbosch et al.			
	6,088,335	07/2000	I et al.			
	6,097,733	8/2000	Basu et al.			

3 Corresponds to JP 9-205513.

EXAMINER /Barry Taylor/	DATE CONSIDERED 02/16/2011
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	APPLICANT Thomas Gorsuch	
	FILING DATE November 9, 2009	GROUP 2617

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6,111,863	08/2000	Rostoker et al.			
	6,112,092	08/2000	Benveniste			
	6,134,233	10/2000	Kay			
	6,151,332	11/2000	Gorsuch et al.			
	6,157,619	12/2000	Ozluturk et al.			
	6,161,013	12/2000	Anderson et al.			
	6,196,362	02/2001	Darcie et al.			
	6,198,723	03/2001	Parruck et al.			
	6,208,871	03/2001	Hall et al.			
	6,215,798	04/2001	Carneheim et al.			
	6,222,828	04/2001	Ohlson et al.			
	6,236,642	05/2001	Shaffer et al.			
	6,236,647	05/2001	Amalfitano			
	6,243,372	06/2001	Petch et al.			
	6,259,683	07/2001	Sekine et al.			
	6,262,980	07/2001	Leung et al.			
	6,269,088	07/2001	Masui et al.			
	6,272,168	08/2001	Lomp et al.			
	6,285,665	09/2001	Chuah			
	6,307,840	10/2001	Wheatley III et al.			
	6,310,859	10/2001	Morita et al.			
	6,366,570	04/2002	Bhagalia			
	6,370,117	04/2002	Koraitim et al.			
	6,373,830	04/2002	Ozluturk			
	6,373,834	04/2002	Lundh et al.			
	6,377,548	04/2002	Chuah			

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	6,377,809	04/2002	Rezaifar et al.			
	6,388,999	05/2002	Gorsuch et al.			
	6,389,000	05/2002	Jou			
	6,396,804	05/2002	Odenwalder			
	6,418,148	07/2002	Kumar et al.			
	6,456,608	09/2002	Lomp			
	6,469,991	10/2002	Chuah			
	6,473,623	10/2002	Benveniste			
	6,504,830	01/2003	Östberg et al.			
	6,510,146	01/2003	Korpela et al. ⁴			
	6,519,651	02/2003	Dillon			
	6,526,039	02/2003	Dahlman et al.			
	6,526,064	02/2003	Bousquet			
	6,526,281	02/2003	Gorsuch et al.			
	6,532,365	03/2003	Anderson et al.			
	6,542,481	04/2003	Foore et al.			
	6,545,986	04/2003	Stellakis			
	6,567,416	05/2003	Chuah			
	6,570,865	05/2003	Masui et al.			
	6,571,296	05/2003	Dillon			
	6,574,211	06/2003	Padovani et al.			
	6,574,473	06/2003	Rinne et al. ⁵			
	6,597,913	07/2003	Natarajan			
	6,845,104	01/2005	Johnson et al.			

4 Corresponds to JP 11-075237.

5 Corresponds to JP 11-113071.

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	6,973,140	12/2005	Hoffman et al.			
	2004/0160910	08/2004	Gorsuch et al.			
	2004/0180696	09/2004	Foore et al.			
	2005/0286476	12/2005	Crosswy et al. ⁶			

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

⁶ Corresponds to KR 2006-0048042.

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						YES	NO
	4426183	10/1995	DE ⁷			X**	
	443061	08/1991	EP			X	
	526106	02/1993	EP				
	682423	11/1995	EP				
	682426	11/1995	EP				
	719062	06/1996	EP				
	635949	01/1995	EP ⁸				
	2761557	01/1998	FR ⁹				
	11-205857	07/1999	JP			X**	
	11-220776	08/1999	JP			X**	
	2000-236343	08/2000	JP			X**	
	2000-286851	10/2000	JP			X**	
	2002-51044	04/2002	JP ¹⁰				
	9-55764	02/1997	JP			X**	
*	100187823	01/1999	KR ¹¹			X**	
	1401626	06/1988	SU			X	
	1837403	08/1993	SU			X	
	95/07578	03/1995	WO ¹²				
	95/08900	03/1995	WO				

- 7 Corresponds to WO 96/03815
- 8 Corresponds to US 5,606,580
- 9 Corresponds to US 6,526,039
- 10 Corresponds to WO 98/59523
- 11 Correspondst to KR1998-39337
- 12 Corresponds to JP 9-504914

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	96/08934	03/1996	WO				
	96/27994	12/1996	WO				
	96/37081	11/1996	WO				
	97/23073	06/1997	WO				
	97/32412	04/1997	WO				
	97/46044	12/1997	WO				
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	98/59523	12/1998	WO				
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	99/44341	09/1999	WO				
	99/63713	12/1999	WO				
	99/48312	09/1999	WO				

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EXAMINER INITIAL	DESCRIPTION (Including Author, Title, Date, Pertinent Pages, Etc.)
	ANDERMO ET AL., "Code Division Testbed, CODIT," IEEE International Conference on Universal Personal Communications, Volume 1, pp. 397-401 (October 12-15, 1993).
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	Attachment 2, <i>High Speed Data RLP</i> Lucent Technologies, Version 0.1, January 16, 1997.

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	Azad et al., Multirate Spread Spectrum Direct Sequence CDMA Techniques, 1994, The Institute of Electrical Engineers.
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	Data Service Options for Wideband Spread Spectrum Systems, TIA/EIA Interim Standard. TIA/EIA/IS-707, February 1998.
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	<i>Data Services Option Standard for Wideband Spread Spectrum Digital Cellular System.</i> TIA/EIA/IS-99. TIA/EIA Interim Standard. July 1995.
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X** English abstract provided.

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Index of Claims 	Application/Control No. 12615098	Applicant(s)/Patent Under Reexamination GORSUCH, THOMAS E.
	Examiner Barry W Taylor	Art Unit 2617

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

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

CLAIM		DATE							
Final	Original	07/22/2010	02/16/2011						
	1	✓	✓						
	2	✓	✓						
	3	✓	-						
	4	✓	✓						
	5	✓	✓						
	6	✓	✓						
	7	✓	✓						
	8	✓	✓						
	9	✓	✓						
	10	✓	✓						
	11	✓	✓						
	12	✓	✓						
	13	✓	-						
	14	✓	✓						
	15	✓	✓						
	16	✓	✓						
	17	✓	✓						
	18	✓	✓						
	19	✓	✓						
	20	✓	✓						

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Thomas Gorsuch

Application No.: 12/615,098

Confirmation No.: 9856

Filed: November 9, 2009

For: DUAL MODE UNIT FOR SHORT
RANGE, HIGH RATE AND LONG RANGE,
LOWER RATE DATA COMMUNICATIONS

Group: 2617

Examiner: Barry W. Taylor

Our File: TAN-2-1493US05

Date: January 28, 2011

REPLY PURSUANT TO 37 C.F.R. §1.111

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

Sir:

This Reply is being filed in response to the Office Action dated July 28, 2010.

An appropriate Petition for Extension of Time is also being filed.

Please amend the application without prejudice or disclaimer as follows:

Amendments to the Claims:

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

1. (Currently Amended) A subscriber unit comprising:
 - a first transceiver configured to communicate with a first wireless network via a plurality of assigned physical ~~layer~~ channels;
 - a second transceiver configured to communicate with ~~a second wireless network~~ an IEEE 802.11 wireless local area network; and
 - a processor coupled to the first transceiver and the second transceiver, and configured to maintain a communication session, ~~above a physical layer,~~ with the first wireless network in the absence of the plurality of assigned physical channels while communicating packet data with the IEEE 802.11 wireless local area network via the second transceiver.

2. (Currently Amended) The subscriber unit of claim 1, wherein the first wireless network is a cellular wireless network ~~and the second wireless network is an IEEE 802-compliant wireless network.~~

3. (Canceled)

4. (Currently Amended) The subscriber unit of claim 1, wherein the ~~packet data is second transceiver is configured to transmit~~ transmission control protocol and Internet protocol (TCP/IP) packet data to the second wireless network ~~while the communication session above the physical layer is maintained.~~

5. (Currently Amended) The subscriber unit of claim 1, wherein the communication session ~~above the physical layer~~ is a transmission control protocol (TCP) layer session, an Internet protocol (IP) layer session, or a network layer session.

6. (Currently Amended) The subscriber unit of claim ~~[[2]]~~ 1, further comprising:

a detector configured to detect the IEEE 802.11 ~~compliant~~ wireless local area network; and

a circuit configured to select the second transceiver in response to the detector detecting the IEEE 802.11 ~~compliant~~ wireless network.

7. (Currently Amended) The subscriber unit of claim 6, wherein the processor is further configured to release the plurality of assigned physical ~~layer~~ channels.

8. (Currently Amended) The subscriber unit of claim 6, wherein the detector is configured to detect a beacon frame or a probe response frame received by the second transceiver from the IEEE 802.11 ~~compliant~~ wireless local area network.

9. (Currently Amended) The subscriber unit of claim 1, wherein at least one of the plurality of physical ~~layer~~ channels is a data channel.

10. (Currently Amended) The subscriber unit of claim [[2]] 1, wherein the first wireless network is a code division multiple access (CDMA) wireless network ~~and the second wireless network is an IEEE 802.11x compliant wireless network,~~ and the first transceiver is a cellular code division multiple access (CDMA) transceiver and the second transceiver is an IEEE 802.11[[x]] ~~compliant~~ transceiver.

11. (Currently Amended) A method for use in a dual mode subscriber unit, the method comprising:

establishing a ~~non-physical layer~~ communication session ~~with~~ via a first wireless network;

maintaining the ~~non-physical layer~~ communication session in the absence of any physical ~~layer~~ channels associated with the first wireless network; and

communicating packet data with ~~a second~~ an IEEE 802.11 wireless local area network while maintaining the ~~non-physical layer~~ communication session with the first wireless network.

12. (Currently Amended) The method of claim 11, wherein the first wireless network is a cellular wireless network ~~and the second wireless network is an IEEE 802-compliant wireless network.~~

13. (Canceled)

14. (Currently Amended) The method of claim 11, wherein ~~communicating with the second wireless network comprises transmitting~~ the packet data is transmission control protocol and Internet protocol (TCP/IP) packet data.

15. (Currently Amended) The method of claim 11, wherein the ~~non-physical layer~~ communication session is a transmission control protocol (TCP) layer session, an Internet protocol (IP) layer session, or a network layer session.

16. (Currently Amended) The method of claim 12, further comprising:
detecting the IEEE 802.11 ~~compliant~~ wireless local area network; and
communicating with the IEEE 802.11 ~~compliant~~ wireless local area network
in response to detecting the IEEE 802.11 ~~compliant~~ wireless local area network.

17. (Currently Amended) The method of claim 16, further comprising:
releasing ~~any~~ all of the assigned physical ~~layer~~ channels associated with the
first wireless network.

18. (Currently Amended) The method of claim 16, wherein detecting the
IEEE 802.11 ~~compliant~~ wireless local area network comprises receiving a beacon
frame or a probe response frame from the IEEE 802.11 ~~compliant~~ wireless local
area network.

19. (Currently Amended) The method of claim 11, wherein at least one of the physical layer channels is a data channel.

20. (Currently Amended) The method of claim 12, wherein the first wireless network is a code division multiple access (CDMA) wireless network and ~~the second wireless network is an IEEE 802.11x compliant wireless network.~~

REMARKS/ARGUMENTS

Claims 1-2, 4-12, and 14-20 are currently pending in this application. Claims 3 and 13 are canceled. Claims 1-2, 4-12, and 14-20 are amended.

Examiner Interview

The Examiner is thanked for granting and conducting a telephonic interview with the Applicant's representative on October 22, 2010.

Claim Rejections – 35 USC §112

Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the enablement requirement. In particular, with regard to claims 1, 4, 11 and 14, the Examiner contends that one of ordinary skill in the art would be unable to make and use the invention because the present specification fails to disclose maintaining a communication session, above a physical layer, in the absence of assigned physical channels. Applicant respectfully disagrees and asserts that the pending claims are fully supported and enabled by the present specification.

For example, the present specification states that a subscriber unit may establish a logical connection "using a higher layer protocol, such as a network layer

protocol” (U.S. Patent Application Publication No. 2010/0202425 at [0023]). The logical connection is initially made through at least one physical wireless channel (id.). As noted in the specification, “the network layer need not allocate the assigned wireless bandwidth *for the entirety of the communication session*” if there is no data available for transmission (id. at [0078]). In other words, the communication session may be maintained via the logical connection (for example, a higher layer protocol) even as one or more physical wireless channels are released. The physical wireless channels may subsequently be reallocated when there is data present for transmission (id. at [0023] and [0078]).

Accordingly, Applicant respectfully submits that claims 1, 4, 11 and 14 are fully supported and enabled by the present specification. In addition, as claims 2, 3 and 5-10 depend from claim 1 and claims 12, 13 and 15-20 depend from claim 11, Applicant further submits that the dependent claims satisfy the requirements of 35 U.S.C. 112 for at least the same reasons noted above. Withdrawal of the rejection under 35 U.S.C. 112, first paragraph, is, therefore, respectfully requested.

Claim Rejections – 35 USC §103

Claims 1-3, 6, 10-13, 16 and 20 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over 2008/0274767 to Sinton et al. (hereinafter Sinton) in view of 2002/0191562 to Kumaki et al. (hereinafter Kumaki).

Claims 4-5, 7, 9, 14-15, 17-19 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Sinton in view of Kumaki in further view of 7,502,626 to Lemilainen (hereinafter Lemilainen).

As acknowledged in the Office Action, Sinton fails to teach the previously claimed limitation “a processor coupled to the first transceiver and the second transceiver, and configured to maintain a communication session, above a physical layer, with the first wireless network in the absence of the plurality of assigned physical layer channels.” However, the Examiner contends that Kumaki supplies the missing teachings of Sinton. In particular, the Examiner cites paragraph [0661] of Kumaki as disclosing the claimed subject matter. Applicant respectfully disagrees.

Kumaki generally, and the cited portion specifically, discusses handoff between base stations of a single radio access network. Nowhere does Kumaki teach or suggest *maintain[ing] a communication session with the first wireless network in the absence of the plurality of assigned physical channels while*

communicating packet data with the IEEE 802.11 wireless local area network via the second transceiver as presently recited in claim 1.

The Examiner cited Lemilainen in rejecting claim 4. Claim 4 is currently amended and certain features of claim 4 are now recited in amended claim 1. Lemilainen fails to teach or suggest *maintain[ing] a communication session with the first wireless network in the absence of the plurality of assigned physical channels while communicating packet data with the IEEE 802.11 wireless local area network via the second transceiver as presently recited in claim 1.*

Claim 11 recites similar limitations as claim 1. Claims 2, and 4-10 depend from claim 1, and claims 12, and 14-20 depend from claim 11. For these reasons, withdrawal of the 35 U.S.C. 103(a) rejection is respectfully requested.

Conclusion

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 remarks, Applicant submits that the present application is in condition for allowance and a notice to that effect is requested.

Respectfully submitted,

Thomas Gorsuch

By /Robert D. Leonard/
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Facsimile: (215) 568-6499

RDL/kmc

Enclosure

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) FY 2009 <i>(Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).)</i>		Docket Number (Optional) TAN-2-1493US05	
Application Number 12/615,098		Filed November 9, 2009	
For DUAL MODE UNIT FOR SHORT RANGE, HIGH RATE AND LONG RANGE, LOWER RATE			
Art Unit 2617		Examiner Barry W. Taylor	
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):			
		<u>Fee</u>	<u>Small Entity Fee</u>
<input type="checkbox"/>	One month (37 CFR 1.17(a)(1))	\$130	\$65 \$ _____
<input type="checkbox"/>	Two months (37 CFR 1.17(a)(2))	\$490	\$245 \$ _____
<input checked="" type="checkbox"/>	Three months (37 CFR 1.17(a)(3))	\$1110	\$555 \$ <u>1110</u>
<input type="checkbox"/>	Four months (37 CFR 1.17(a)(4))	\$1730	\$865 \$ _____
<input type="checkbox"/>	Five months (37 CFR 1.17(a)(5))	\$2350	\$1175 \$ _____
<input type="checkbox"/>	Applicant claims small entity status. See 37 CFR 1.27.		
<input type="checkbox"/>	A check in the amount of the fee is enclosed.		
<input type="checkbox"/>	Payment by credit card. Form PTO-2038 is attached.		
<input type="checkbox"/>	The Director has already been authorized to charge fees in this application to a Deposit Account.		
<input checked="" type="checkbox"/>	The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number <u>09-0435</u> .		
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	<input type="checkbox"/>	applicant/inventor.	
	<input type="checkbox"/>	assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).	
	<input checked="" type="checkbox"/>	attorney or agent of record. Registration Number <u>57204</u>	
	<input type="checkbox"/>	attorney or agent under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____	
<u>/Robert D. Leonard/</u>		<u>January 28, 2011</u>	
Signature		Date	
<u>Robert D. Leonard</u>		<u>215-568-6400</u>	
Typed or printed name		Telephone Number	
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.			
<input type="checkbox"/>	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: 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.

Electronic Patent Application Fee Transmittal

Application Number:	12615098			
Filing Date:	09-Nov-2009			
Title of Invention:	DUAL MODE UNIT FOR SHORT RANGE, HIGH RATE AND LONG RANGE, LOWER RATE DATA COMMUNICATIONS			
First Named Inventor/Applicant Name:	Thomas E. Gorsuch			
Filer:	Robert D. Leonard/Katie Carlson			
Attorney Docket Number:	TAN-2-1493US05			
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 3 months with \$0 paid	1253	1	1110	1110

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				1110

Electronic Acknowledgement Receipt

EFS ID:	9332192
Application Number:	12615098
International Application Number:	
Confirmation Number:	9856
Title of Invention:	DUAL MODE UNIT FOR SHORT RANGE, HIGH RATE AND LONG RANGE, LOWER RATE DATA COMMUNICATIONS
First Named Inventor/Applicant Name:	Thomas E. Gorsuch
Customer Number:	24374
Filer:	Robert D. Leonard/Katie Carlson
Filer Authorized By:	Robert D. Leonard
Attorney Docket Number:	TAN-2-1493US05
Receipt Date:	28-JAN-2011
Filing Date:	09-NOV-2009
Time Stamp:	16:12:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$1110
RAM confirmation Number	3274
Deposit Account	090435
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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1		20110128_TAN_2_1493US05_Reply.pdf	122870 e16c5c6255541de50b82188b5ca45af1ae623548b	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	20110128_TAN_2_1493US05_Extension of Time OT.PDF	227743 c63c05a42c35143a9e50665c3516815e38f742fe	no	1
Warnings:					
Information:					
3	Fee Worksheet (PTO-875)	fee-info.pdf	30644 083da523fc355c139e630241a3b5ecd23f9dd6ad	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			381257		
<p>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.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 12/615,098	Filing Date 11/09/2009	<input type="checkbox"/> To be Mailed
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APPLICATION AS FILED – PART I			OTHER THAN SMALL ENTITY			
	(Column 1)	(Column 2)	SMALL ENTITY <input type="checkbox"/>	OR		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A		N/A	
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A	N/A		N/A	
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A		N/A	
TOTAL CLAIMS <small>(37 CFR 1.16(i))</small>	minus 20 =	*	X \$ =	OR	X \$ =	
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	minus 3 =	*	X \$ =		X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).					
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>						
			TOTAL		TOTAL	

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

APPLICATION AS AMENDED – PART II					OTHER THAN SMALL ENTITY			
	(Column 1)	(Column 2)	(Column 3)		SMALL ENTITY	OR		
AMENDMENT	01/28/2011	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	* 18	Minus ** 20	= 0	X \$ =		OR	X \$52= 0
	Independent (37 CFR 1.16(h))	* 2	Minus ***3	= 0	X \$ =		OR	X \$220= 0
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))						OR	
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE 0

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

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

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

Legal Instrument Examiner:
/BRUCE HARRISON/

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.
12/615,098	11/09/2009	Thomas E. Gorsuch	TAN-2-1493US05	9856
24374	7590	07/28/2010	EXAMINER	
VOLPE AND KOENIG, P.C. DEPT. ICC UNITED PLAZA 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103			TAYLOR, BARRY W	
			ART UNIT	PAPER NUMBER
			2617	
			NOTIFICATION DATE	DELIVERY MODE
			07/28/2010	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
hrivera@volpe-koenig.com

Office Action Summary	Application No. 12/615,098	Applicant(s) GORSUCH, THOMAS E.	
	Examiner Barry W. Taylor	Art Unit 2617	

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

Period for Reply

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

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

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-20 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 09 November 2009 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

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

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

Attachment(s)

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

DETAILED ACTION

Claim Rejections - 35 USC § 112

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

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

1. Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claims 1-10. The Examiner is unable to determine from the originally filed specification as to how one of ordinary skill in the art would be able to make and use the invention. The specification provides no basis for the claimed subject matter. Specifically, as by way of example, independent claim 1 recites "a processor coupled to the first transceiver and the second transceiver, and configured to maintain a communication session, above a physical layer, with the first wireless network in the absence of the plurality of assigned physical layer channels".

The Examiner is unable to find support in Applicants original filed application. In contrast, **Applicants specification recites the physical layer channel is released while maintaining the appearance of a network layer connection to the higher level protocols.** However, Applicants specification never discloses or defines "a processor coupled to the first transceiver and the second transceiver, and configured to

Art Unit: 2617

maintain a communication session, above a physical layer, with the first wireless network in the absence of the plurality of assigned physical layer channels”.

Regarding claim 4. The Examiner is unable to determine from the originally filed specification as to how one of ordinary skill in the art would be able to make and use the invention. The specification provides no basis for the claimed subject matter.

Specifically, as by way of example, dependent claim 4 recites “the second transceiver is configured to transmit transmission control protocol and Internet protocol (TCP/IP) data to the second wireless network while the communication session above the physical layer is maintained”.

The Examiner is unable to find support in Applicants original filed application. In contrast, **Applicants specification recites the physical layer channel is released while maintaining the appearance of a network layer connection to the higher level protocols**. However, Applicants specification never discloses or defines “the second transceiver is configured to transmit transmission control protocol and Internet protocol (TCP/IP) data to the second wireless network while the communication session above the physical layer is maintained”.

Regarding claims 11-20. The Examiner is unable to determine from the originally filed specification as to how one of ordinary skill in the art would be able to make and use the invention. The specification provides no basis for the claimed subject matter. Specifically, as by way of example, independent claim 11 recites “A method for use in a dual mode subscriber unit, the method comprising: establishing a non-physical layer communication session with a first wireless network; maintaining the non-physical layer

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communication session in the absence of any physical layer channels associated with the first wireless network; and communicating with a second wireless network while maintaining the non-physical layer communication session with the first wireless network".

It appears that claim 11 is the corresponding method claim. The Examiner notes that Applicants specification does not support the recited claim limitations. In contrast, **Applicants specification recites the physical layer channel is released while maintaining the appearance of a network layer connection to the higher level protocols.** However, Applicants specification never discloses or defines: "establishing a non-physical layer communication session with a first wireless network; maintaining the non-physical layer communication session in the absence of any physical layer channels associated with the first wireless network; and communicating with a second wireless network while maintaining the non-physical layer communication session with the first wireless network".

Regarding claim 14. The Examiner is unable to determine from the originally filed specification as to how one of ordinary skill in the art would be able to make and use the invention. The specification provides no basis for the claimed subject matter. Specifically, as by way of example, dependent claim 14 recites "wherein communicating with the second wireless network comprises transmitting transmission control protocol and Internet protocol (TCP/IP) data."

The Examiner is unable to find support in Applicants original filed application. In contrast, **Applicants specification recites the physical layer channel is released**

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while maintaining the appearance of a network layer connection to the higher level protocols. However, Applicants specification never discloses or defines “wherein communicating with the second wireless network comprises transmitting transmission control protocol and Internet protocol (TCP/IP) data.”.

Claim Rejections - 35 USC § 103

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 negated by the manner in which the invention was made.

2. Claims 1-3, 6, 10-13, 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinton et al (2008/0274767 hereinafter Sinton) in view of Kumaki et al (2002/0191562 hereinafter Kumaki). **The following rejection is being made as best understood by the Examiner in response to the 112 first rejection listed above.**

Regarding claim 1. Sinton teaches a subscriber unit comprising:

a first transceiver configured to communicate with a first wireless network via a plurality of assigned physical layer channels (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in Applicants specification), paragraphs 0081-0082);

a second transceiver configured to communicate with a second wireless network (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first

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transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in Applicants specification), paragraphs 0081-0082); and

a processor coupled to the first transceiver and the second transceiver (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in Applicants specification), paragraphs 0081-0082), and configured to maintain a communication session, above a physical layer, with the first wireless network in the absence of the plurality of assigned physical layer channels.

Sainton does not explicitly show the processor configured to maintain a communication session, above a physical layer, with the first wireless network in the absence of the plurality of assigned physical layer channels.

Kumaki teaches a mobile can realize **handoff by using various handoff methods**, and it is possible to change the handoff control scheme to be used according to the protocol and application **operating on the upper level layer**. For example, when the protocol and application operating on the upper level layer are such protocol and application for which the **moving while maintaining the session is preferable**, the mobile carries out the handoff by using the virtual subnet scheme or the Mobile IP **so as to continue the IP communication** (paragraph 0661).

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the dual mode phone as taught by Sainton to maintain network level (i.e. upper level) communication session while moving as taught by Kumaki in order to provide seamless handoff between different radio communication networks.

Regarding claim 11. Method claim 11 is rejected for the same reasons as apparatus claim 1 since the recited apparatus would perform the claimed method.

Regarding claims 2 and 12. Sinton teaches wherein the first wireless network is a cellular wireless network and the second wireless network is an IEEE 802 compliant wireless network (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in Applicants specification), paragraphs 0081-0082).

Regarding claims 3 and 13. Sinton teaches wherein the second wireless network is an IEEE 802.11x compliant wireless network (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in Applicants specification), paragraphs 0081-0082).

Regarding claims 6 and 16. Sinton teaches a detector configured to detect the IEEE 802 compliant wireless network; and a circuit configured to select the second transceiver in response to the detector detecting the IEEE 802 compliant wireless network (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in Applicants specification), paragraphs 0081-0082).

Regarding claims 10 and 20. Sinton teaches wherein the first wireless network is a code division multiple access (CDMA) wireless network and the second wireless network is an IEEE 802.11x compliant wireless network, and the first transceiver is a cellular code division multiple access (CDMA) transceiver and the second transceiver is

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an IEEE 802.11x compliant transceiver (abstract, paragraphs 0027-0028, see paragraphs 0039-0040 and 0083 wherein first transceiver can be CDMA and second transceiver can be wireless LAN (i.e. 802.11 as defined in Applicants specification), paragraphs 0081-0082).

3. Claims 4-5, 7, 9, 14-15, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinton et al (2008/0274767 hereinafter Sinton) in view of Kumaki et al (2002/0191562 hereinafter Kumaki) further in view of Lemilainen (7,502,626). **The following rejection is being made as best understood by the Examiner in response to the 112 first rejection listed above.**

Regarding claims 4 and 14. Sinton in view of Kumaki do not explicitly show wherein the second transceiver is configured to transmit transmission control protocol and Internet protocol (TCP/IP) data to the second wireless network while the communication session above the physical layer is maintained.

Lemilainen teaches a system wherein a mobile station can switch to an IP access protocol (abstract, col. 2 lines 24-50). Lemilainen teaches the mobile can communicate with the system using short range communication, instead of the cellular network (col. 3 lines 3-7) wherein an interworking unit is provided in the mobile station (col. 3 lines 8-15) which provides the subscriber the opportunity to utilize the services of one's own mobile communication system anywhere, where an Internet connection is possible, independent of the available access technique (col. 12 line 65 – col. 13 line 50). Lemilainen teaches cellular network and wireless LAN (i.e. 802 compliant) may be used (col. 7 lines 1-19). Lemilainen teaches the mobile represented with layers 1 to 3

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(see figure 11, col. 14 lines 13-51) wherein the network layer provides call control management and radio resource management and further comprises a **MUX** (see 536 figure 11) which "**switches**" to a second branch or layer 2 (i.e. data layer which is also above the PHY layer) to demand services of the data link and PHY layer which ultimately allows the mobile subscriber to utilize communication networks, such as private intranets to carry services of cellular network when it is within coverage area.

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the dual mode phone as taught by Sainton in view of Kumaki to use the MUX as taught by Lemilainen in order to provide the mobile subscriber a means to **switch** to an IP access protocol when it is within coverage area.

Regarding claims 5 and 15. Sainton in view of Kumaki do not explicitly show wherein the communication session above the physical layer is a transmission control protocol (TCP) layer session, an Internet protocol (IP) layer session, or a network layer session.

The Examiner notes that Applicants admit that newly accepted standard, IEEE 802.11, specifies a protocol for the MAC and PHY layers of a wireless LAN (see Applicants specification page 3).

Lemilainen teaches a system wherein a mobile station can switch to an IP access protocol (abstract, col. 2 lines 24-50). Lemilainen teaches the mobile can communicate with the system using short range communication, instead of the cellular network (col. 3 lines 3-7) wherein an interworking unit is provided in the mobile station (col. 3 lines 8-15) which provides the subscriber the opportunity to utilize the services of

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one's own mobile communication system anywhere, where an Internet connection is possible, independent of the available access technique (col. 12 line 65 – col. 13 line 50). Lemilainen teaches cellular network and wireless LAN (i.e. 802 compliant) may be used (col. 7 lines 1-19). Lemilainen teaches the mobile represented with layers 1 to 3 (see figure 11, col. 14 lines 13-51) wherein the network layer provides call control management and radio resource management and further comprises a **MUX** (see 536 figure 11) which "**switches**" to a second branch or layer 2 (i.e. data layer which is also above the PHY layer) to demand services of the data link and PHY layer which ultimately allows the mobile subscriber to utilize communication networks, such as private intranets to carry services of cellular network when it is within coverage area.

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the dual mode phone as taught by Sinton in view of Kumaki to use the **MUX located in the Network layer (see figure 11 wherein MUX is clearly above the PHY layer and within the network layer)** as taught by Lemilainen in order to provide the mobile subscriber a means to **switch** to an IP access protocol when it is within coverage area

Regarding claims 7 and 17. Sinton in view of Kumaki do not explicitly show wherein the processor is further configured to release the plurality of assigned physical layer channels.

The Examiner notes that Applicants admit that newly accepted standard, IEEE 802.11, specifies a protocol for the MAC and PHY layers of a wireless LAN (see Applicants specification page 3). Furthermore, it is noted that the MAC layer takes

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charge of **selecting a physical channel and set or release connection of a call on the selected physical channel.**

In order to advance prosecution, Lemilainen teaches a system wherein a mobile station can switch to an IP access protocol (abstract, col. 2 lines 24-50). Lemilainen teaches the mobile can communicate with the system using short range communication, instead of the cellular network (col. 3 lines 3-7) wherein an interworking unit is provided in the mobile station (col. 3 lines 8-15) which provides the subscriber the opportunity to utilize the services of one's own mobile communication system anywhere, where an Internet connection is possible, independent of the available access technique (col. 12 line 65 – col. 13 line 50). Lemilainen teaches cellular network and wireless LAN (i.e. 802 compliant) may be used (col. 7 lines 1-19). Lemilainen teaches the mobile represented with layers 1 to 3 (see figure 11, col. 14 lines 13-51) wherein the network layer provides call control management and radio resource management and further comprises a **MUX** (see 536 figure 11) which "**switches**" to a second branch or layer 2 (i.e. data layer which is also above the PHY layer) to demand services of the data link and PHY layer which ultimately allows the mobile subscriber to utilize communication networks, such as private intranets to carry services of cellular network when it is within coverage area.

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the dual mode phone as taught by Sainton in view of Kumaki to use the **MUX located in the Network layer (see figure 11 wherein MUX is clearly above the PHY layer and within the network layer)** as taught by Lemilainen in order to

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provide the mobile subscriber a means to **switch** to an IP access protocol when it is within coverage area. **The Examiner notes that by switching to an IP connection frees up PHY layer channels.**

Regarding claims 9 and 19. Sainton in view of Kumaki do not explicitly show wherein at least one of the plurality of physical layer channels is a data channel.

Lemilainen teaches a system wherein a mobile station can switch to an IP access protocol (abstract, col. 2 lines 24-50). Lemilainen teaches the mobile can communicate with the system using short range communication, instead of the cellular network (col. 3 lines 3-7) wherein an interworking unit is provided in the mobile station (col. 3 lines 8-15) which provides the subscriber the opportunity to utilize the services of one's own mobile communication system anywhere, where an Internet connection is possible, independent of the available access technique (col. 12 line 65 – col. 13 line 50). Lemilainen teaches cellular network and wireless LAN (i.e. 802 compliant) may be used (col. 7 lines 1-19). Lemilainen teaches the mobile represented with layers 1 to 3 (see figure 11, col. 14 lines 13-51) wherein the **network layer provides call control management and radio resource management and further comprises a MUX** (see 536 figure 11) which "**switches**" to a second branch or layer 2 (i.e. **data layer which is also above the PHY layer**) to demand services of the **data link and PHY layer** which ultimately allows the mobile subscriber to utilize communication networks, such as private intranets to carry services of cellular network when it is within coverage area.

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the dual mode phone as taught by Sainton in view of Kumaki to use

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the MUX as taught by Lemilainen in order to provide the mobile subscriber a means to **switch** to an IP access protocol when it is within coverage area.

4. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sainton et al (2008/0274767 hereinafter Sainton) in view of Kumaki et al (2002/0191562 hereinafter Kumaki) and Lemilainen (7,502,626) further in view of Applicants admitted prior art. **The following rejection is being made as best understood by the Examiner in response to the 112 first rejection listed above.**

Regarding claims 8 and 18. Sainton in view of Kumaki and Lemilainen do not explicitly show wherein the detector is configured to detect a beacon frame or a probe response frame received by the second transceiver from the IEEE 802 compliant wireless network.

The Examiner notes that Applicants admit that newly accepted standard, IEEE 802.11, specifies a protocol for the MAC and PHY layers of a wireless LAN (see Applicants specification page 3). Applicants further admit that IEEE 802.11-compliant specifies that a beacon frame should be transmitted at regular intervals and the terminal can detect the beacon frame by waiting a minimum period of time equal to the beacon interval (see Applicants specification page 15).

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the teachings of Sainton in view of Kumaki and Lemilainen to incorporate known standards as disclosed by applicants in order to provide a means for mobile stations to detect the presence of a nearby wireless-LAN.

Conclusion

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5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

---(7,580,715) Gorsuch et al is the sole name inventor of the present application and basically teaches a CDMA transceiver **wherein a state of at least one of the plurality of protocol layers above the Physical layer is maintained during communication session** (see independent claims).

---(7583,971) Gorsuch et al is the sole name inventor of the present application and basically teaches a CDMA user device **wherein a state of at least one of the layers other than the physical layer is maintained during communication session** (see independent claims).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry W. Taylor, telephone number (571) 272-7509, who is available Monday-Thursday, 6:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kent Chang, can be reached at (571) 272-7667. The central facsimile phone number for this group is **571-273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 2600 receptionist whose telephone number is (571) 272-2600, the 2600 Customer Service telephone number is (571) 272-2600.

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).

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/Barry W Taylor/

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Notice of References Cited	Application/Control No. 12/615,098	Applicant(s)/Patent Under Reexamination GORSUCH, THOMAS E.	
	Examiner Barry W. Taylor	Art Unit 2617	Page 1 of 1

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*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-2002/0191562	12-2002	Kumaki et al.	370/331
*	B US-2008/0274767	11-2008	Sainton et al.	455/552.1
*	C US-7,502,626	03-2009	Lemilainen, Jussi	455/554.2
*	D US-7,580,715	08-2009	Gorsuch et al.	455/452.1
*	E US-7,583,971	09-2009	Gorsuch et al.	455/452.1
	F US-			
	G US-			
	H US-			
	I US-			
	J US-			
	K US-			
	L US-			
	M US-			


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

NON-PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	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. 12615098	Applicant(s)/Patent Under Reexamination GORSUCH, THOMAS E.
	Examiner Barry W Taylor	Art Unit 2617

✓	Rejected
=	Allowed


-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

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

CLAIM		DATE							
Final	Original	07/22/2010							
	1	✓							
	2	✓							
	3	✓							
	4	✓							
	5	✓							
	6	✓							
	7	✓							
	8	✓							
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	17	✓							
	18	✓							
	19	✓							
	20	✓							

Search Notes 	Application/Control No. 12615098	Applicant(s)/Patent Under Reexamination GORSUCH, THOMAS E.
	Examiner Barry W Taylor	Art Unit 2617

SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
updated search for parent applicaitons 10/326,809 10/358,082 10/341,528 09/400,136.	7/23/2010	BWT

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO. TAN-2-1493US05		
12/615,098	11/09/2009	455	2617			
APPLICANTS Thomas E. Gorsuch, Merritt Island, FL; ** CONTINUING DATA ***** This application is a CON of 11/326,809 01/06/2006 PAT 7,616,970 which is a CON of 10/358,082 02/03/2003 PAT 7,013,162 and is a CON of 10/341,528 01/13/2003 PAT 7,024,222 which is a CON of 09/400,136 09/21/1999 PAT 6,526,034 and said 10/358,082 02/03/2003 is a CON of 09/400,136 09/21/1999 PAT 6,526,034 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 11/19/2009						
Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 35 USC 119(a-d) conditions met <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Verified and Acknowledged <u>/BARRY W TAYLOR/</u> Examiner's Signature		<input type="checkbox"/> Met after Allowance BWT Initials	STATE OR COUNTRY FL	SHEETS DRAWINGS 6	TOTAL CLAIMS 20	INDEPENDENT CLAIMS 2
ADDRESS VOLPE AND KOENIG, P.C. DEPT. ICC UNITED PLAZA 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103 UNITED STATES						
TITLE DUAL MODE UNIT FOR SHORT RANGE, HIGH RATE AND LONG RANGE, LOWER RATE DATA COMMUNICATIONS						
FILING FEE RECEIVED 1090	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:			<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit		

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO. TAN-2-1493US05	SERIAL NO. 12/615,098
	APPLICANT Thomas Gorsuch	
	FILING DATE November 9, 2009	GROUP 2617

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

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	APPLICANT Thomas Gorsuch	
	FILING DATE November 9, 2009	GROUP 2617

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¹ Corresponds to JP 8-293889.

EXAMINER /Barry Taylor/	DATE CONSIDERED 07/22/2010
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	APPLICANT Thomas Gorsuch	
	FILING DATE November 9, 2009	GROUP 2617

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	5,859,840	01/1999	Tiedemann, Jr. et al.			
	5,859,879	01/1999	Bolgiano et al.			
	5,872,786	02/1999	Shobatake			
	5,881,060	03/1999	Morrow et al.			

2 Corresponds to JP 8-256065.

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	APPLICANT Thomas Gorsuch	
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	5,896,376	04/1999	Alperovich et al.			
	5,910,945	06/1999	Garrison et al.			
	5,914,950	06/1999	Tiedemann, Jr. et al.			
	5,923,650	07/1999	Chen et al.			
	5,930,230	07/1999	Odenwalder et al.			
	5,950,131	09/1999	Vilmur			
	5,956,332	09/1999	Rasanen et al.			
	5,966,374	10/1999	Rasanen			
	5,991,279	11/1999	Haugli et al.			
*	5,999,708	12/1999	Kajita ³			
	6,001,800	12/1999	Mehta et al.			
	6,002,690	12/1999	Takayama et al.			
	6,005,855	12/1999	Zehavi et al.			
	6,009,106	12/1999	Rustad et al.			
	6,011,800	01/2000	Nadgouda et al.			
	6,028,853	02/2000	Haartsen			
	6,028,868	02/2000	Yeung et al.			
	6,052,385	04/2000	Kanerva et al.			
	6,064,678	05/2000	Sindhushayana et al.			
	6,069,883	05/2000	Ejzak et al.			
	6,078,572	06/2000	Tanno et al.			
	6,081,536	06/2000	Gorsuch et al.			
	6,084,866	07/2000	Dorenbosch et al.			
	6,088,335	07/2000	I et al.			
	6,097,733	8/2000	Basu et al.			

3 Corresponds to JP 9-205513.

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	6,111,863	08/2000	Rostoker et al.			
	6,112,092	08/2000	Benveniste			
	6,134,233	10/2000	Kay			
	6,151,332	11/2000	Gorsuch et al.			
	6,157,619	12/2000	Ozluturk et al.			
	6,161,013	12/2000	Anderson et al.			
	6,196,362	02/2001	Darcie et al.			
	6,198,723	03/2001	Parruck et al.			
	6,208,871	03/2001	Hall et al.			
	6,215,798	04/2001	Carneheim et al.			
	6,222,828	04/2001	Ohlson et al.			
	6,236,642	05/2001	Shaffer et al.			
	6,236,647	05/2001	Amalfitano			
	6,243,372	06/2001	Petch et al.			
	6,259,683	07/2001	Sekine et al.			
	6,262,980	07/2001	Leung et al.			
	6,269,088	07/2001	Masui et al.			
	6,272,168	08/2001	Lomp et al.			
	6,285,665	09/2001	Chuah			
	6,307,840	10/2001	Wheatley III et al.			
	6,310,859	10/2001	Morita et al.			
	6,366,570	04/2002	Bhagalia			
	6,370,117	04/2002	Koraitim et al.			
	6,373,830	04/2002	Ozluturk			
	6,373,834	04/2002	Lundh et al.			
	6,377,548	04/2002	Chuah			

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	6,388,999	05/2002	Gorsuch et al.			
	6,389,000	05/2002	Jou			
	6,396,804	05/2002	Odenwalder			
	6,418,148	07/2002	Kumar et al.			
	6,456,608	09/2002	Lomp			
	6,469,991	10/2002	Chuah			
	6,473,623	10/2002	Benveniste			
	6,504,830	01/2003	Östberg et al.			
*	6,510,146	01/2003	Korpela et al. ⁴			
	6,519,651	02/2003	Dillon			
	6,526,039	02/2003	Dahlman et al.			
	6,526,064	02/2003	Bousquet			
	6,526,281	02/2003	Gorsuch et al.			
	6,532,365	03/2003	Anderson et al.			
	6,542,481	04/2003	Foore et al.			
	6,545,986	04/2003	Stellakis			
	6,567,416	05/2003	Chuah			
	6,570,865	05/2003	Masui et al.			
	6,571,296	05/2003	Dillon			
	6,574,211	06/2003	Padovani et al.			
*	6,574,473	06/2003	Rinne et al. ⁵			
	6,597,913	07/2003	Natarajan			
	6,845,104	01/2005	Johnson et al.			

4 Corresponds to JP 11-075237.

5 Corresponds to JP 11-113071.

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	6,973,140	12/2005	Hoffman et al.				
	2004/0160910	08/2004	Gorsuch et al.				
	2004/0180696	09/2004	Foore et al.				
*	2005/0286476	12/2005	Crosswy et al. ⁶				
FOREIGN PATENT DOCUMENTS							
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

⁶ Corresponds to KR 2006-0048042.

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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	4426183	10/1995	DE ⁷			X**	
	443061	08/1991	EP			X	
	526106	02/1993	EP				
	682423	11/1995	EP				
	682426	11/1995	EP				
	719062	06/1996	EP				
	635949	01/1995	EP ⁸				
	2761557	01/1998	FR ⁹				
	2000-286851	10/2000	JP			X**	
	2000-236343	08/2000	JP			X**	
	9-55764	02/1997	JP			X**	
	2002-51044	04/2002	JP ¹⁰				
	1401626	06/1988	SU			X	
	1837403	08/1993	SU			X	
	95/07578	03/1995	WO ¹¹				
	95/08900	03/1995	WO				
	96/08934	03/1996	WO				
	96/27994	12/1996	WO				
	96/37081	11/1996	WO				

7 Corresponds to WO 96/03815
 8 Corresponds to US 5,606,580
 9 Corresponds to US 6,526,039
 10 Corresponds to WO 98/59523
 **English Abstract Only
 11 Corresponds to JP 9-504914

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						YES	NO
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	97/32412	04/1997	WO				
	97/46044	12/1997	WO				
	98/59447	12/1998	WO				
	98/59523	12/1998	WO				
	99/38083	07/1999	WO				
	99/44341	09/1999	WO				
	99/63713	12/1999	WO				
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FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO. TAN-2-1493US05	SERIAL NO. 12/615,098
	APPLICANT Thomas Gorsuch	
	FILING DATE November 9, 2009	GROUP 2617

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	4,107,469	08/1978	Jenkins				
	4,577,316	03/1986	Schiff				
	4,625,308	11/1986	Kim et al.				
	4,675,863	06/1987	Paneth et al.				
	4,817,089	03/1989	Paneth et al.				
	4,841,526	06/1989	Wilson et al.				
	4,862,453	08/1989	West et al.				
	4,866,709	09/1989	West et al.				
	4,912,705	03/1990	Paneth et al.				
	4,949,395	08/1990	Rydbeck				
	5,020,092	05/1991	Phillips et al.				
	5,020,093	05/1991	Pireh				
	5,022,024	06/1991	Paneth et al.				
	5,027,348	06/1991	Curry				
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	5,115,309	05/1992	Hang				
	5,226,044	07/1993	Gupta et al.				
	5,228,074	07/1993	Mizikovsky				
	5,268,900	12/1993	Hluchyj et al.				
	5,282,222	01/1994	Fattouche et al.				
	5,325,419	06/1994	Connolly et al.				
	5,355,374	11/1994	Hester et al.				
	5,369,637	11/1994	Richardson et al.				
	5,373,502	12/1994	Turban				

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	5,375,124	12/1994	D'Ambrogio, et al.			
	5,388,102	02/1995	Griffith et al.			
	5,394,473	02/1995	Davidson			
	5,406,643	04/1995	Burke et al.			
	5,412,429	05/1995	Glover			
	5,442,625	08/1995	Gitlin et al.			
	5,463,629	10/1995	Ko			
	5,471,463	11/1995	Hulbert			
	5,504,803	04/1996	Yamada et al.			
	5,585,850	12/1996	Schwaller			
	5,586,113	12/1996	Adachi et al.			
	5,592,470	01/1997	Rudrapatna et al.			
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	5,594,782	01/1997	Zicker et al.			
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	5,606,580	02/1997	Mourot et al.			
	5,615,213	03/1997	Griefer ¹			
	5,617,423	04/1997	Li et al.			
	5,642,348	06/1997	Barzegar et al.			
	5,655,001	08/1997	Cline et al.			
	5,657,317	08/1997	Mahany et al.			
	5,657,358	08/1997	Panech et al.			
	5,663,958	09/1997	Ward			
	5,663,990	09/1997	Bolgiano et al.			

1 Corresponds to JP 8-293889.

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	5,673,259	09/1997	Quick, Jr.			
	5,687,194	11/1997	Paneth et al.			
	5,696,903	12/1997	Mahany			
	5,697,059	12/1997	Carney			
	5,699,364	12/1997	Sato et al. ²			
	5,734,646	03/1998	I et al.			
	5,781,542	07/1998	Tanaka et al.			
	5,784,406	07/1998	DeJaco et al.			
	5,790,551	08/1998	Chan			
	5,793,744	08/1998	Kanerva et al.			
	5,796,727	08/1998	Harrison et al.			
	5,802,465	09/1998	Hamalainen et al.			
	5,815,811	09/1998	Pinard et al.			
	5,825,807	10/1998	Kumar			
	5,828,659	10/1998	Teder et al.			
	5,828,662	10/1998	Jalali et al.			
	5,842,122	11/1998	Schellinger et al.			
	5,844,894	12/1998	Dent			
	5,845,211	12/1998	Roach Jr.			
	5,854,786	12/1998	Henderson et al.			
	5,856,971	01/1999	Gitlin et al.			
	5,859,840	01/1999	Tiedemann, Jr. et al.			
	5,859,879	01/1999	Bolgiano et al.			
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	5,881,060	03/1999	Morrow et al.			

2 Corresponds to JP 8-256065.

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	5,896,376	04/1999	Alperovich et al.			
	5,910,945	06/1999	Garrison et al.			
	5,914,950	06/1999	Tiedemann, Jr. et al.			
	5,923,650	07/1999	Chen et al.			
	5,930,230	07/1999	Odenwalder et al.			
	5,950,131	09/1999	Vilmur			
	5,956,332	09/1999	Rasanen et al.			
	5,966,374	10/1999	Rasanen			
	5,991,279	11/1999	Haugli et al.			
	5,999,708	12/1999	Kajita ³			
	6,001,800	12/1999	Mehta et al.			
	6,002,690	12/1999	Takayama et al.			
	6,005,855	12/1999	Zehavi et al.			
	6,009,106	12/1999	Rustad et al.			
	6,011,800	01/2000	Nadguda et al.			
	6,028,853	02/2000	Haartsen			
	6,028,868	02/2000	Yeung et al.			
	6,052,385	04/2000	Kanerva et al.			
	6,064,678	05/2000	Sindhushayana et al.			
	6,069,883	05/2000	Ejzak et al.			
	6,078,572	06/2000	Tanno et al.			
	6,081,536	06/2000	Gorsuch et al.			
	6,084,866	07/2000	Dorenbosch et al.			
	6,088,335	07/2000	I et al.			
	6,097,733	8/2000	Basu et al.			

3 Corresponds to JP 9-205513.

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	6,111,863	08/2000	Rostoker et al.			
	6,112,092	08/2000	Benveniste			
	6,134,233	10/2000	Kay			
	6,151,332	11/2000	Gorsuch et al.			
	6,157,619	12/2000	Ozluturk et al.			
	6,161,013	12/2000	Anderson et al.			
	6,196,362	02/2001	Darcie et al.			
	6,198,723	03/2001	Parruck et al.			
	6,208,871	03/2001	Hall et al.			
	6,215,798	04/2001	Carneheim et al.			
	6,222,828	04/2001	Ohlson et al.			
	6,236,642	05/2001	Shaffer et al.			
	6,236,647	05/2001	Amalfitano			
	6,243,372	06/2001	Petch et al.			
	6,259,683	07/2001	Sekine et al.			
	6,262,980	07/2001	Leung et al.			
	6,269,088	07/2001	Masui et al.			
	6,272,168	08/2001	Lomp et al.			
	6,285,665	09/2001	Chuah			
	6,307,840	10/2001	Wheatley III et al.			
	6,310,859	10/2001	Morita et al.			
	6,366,570	04/2002	Bhagalia			
	6,370,117	04/2002	Koraitim et al.			
	6,373,830	04/2002	Ozluturk			
	6,373,834	04/2002	Lundh et al.			
	6,377,548	04/2002	Chuah			

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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6,377,809	04/2002	Rezaiifar et al.			
	6,388,999	05/2002	Gorsuch et al.			
	6,389,000	05/2002	Jou			
	6,396,804	05/2002	Odenwalder			
	6,418,148	07/2002	Kumar et al.			
	6,456,608	09/2002	Lomp			
	6,469,991	10/2002	Chuah			
	6,473,623	10/2002	Benveniste			
	6,504,830	01/2003	Östberg et al.			
	6,510,146	01/2003	Korpela et al. ⁴			
	6,519,651	02/2003	Dillon			
	6,526,039	02/2003	Dahlman et al.			
	6,526,064	02/2003	Bousquet			
	6,526,281	02/2003	Gorsuch et al.			
	6,532,365	03/2003	Anderson et al.			
	6,542,481	04/2003	Foore et al.			
	6,545,986	04/2003	Stellakis			
	6,567,416	05/2003	Chuah			
	6,570,865	05/2003	Masui et al.			
	6,571,296	05/2003	Dillon			
	6,574,211	06/2003	Padovani et al.			
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	6,597,913	07/2003	Natarajan			
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4 Corresponds to JP 11-075237.

5 Corresponds to JP 11-113071.

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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6,973,140	12/2005	Hoffman et al.			
	2004/0160910	08/2004	Gorsuch et al.			
	2004/0180696	09/2004	Foore et al.			
	2005/0286476	12/2005	Crosswy et al. ⁶			

⁶ Corresponds to KR 2006-0048042.

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FOREIGN PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
		4426183	10/1995	DE ⁷			X**	
		443061	08/1991	EP			X	
		526106	02/1993	EP				
		682423	11/1995	EP				
		682426	11/1995	EP				
		719062	06/1996	EP				
		635949	01/1995	EP ⁸				
		2761557	01/1998	FR ⁹				
	*	11-205857	07/1999	JP			X**	
	*	11-220776	08/1999	JP			X**	
		2000-236343	08/2000	JP			X**	
		2000-286851	10/2000	JP			X**	
		2002-51044	04/2002	JP ¹⁰				
		9-55764	02/1997	JP			X**	
		1401626	06/1988	SU			X	
		1837403	08/1993	SU			X	
		95/07578	03/1995	WO ¹¹				
		95/08900	03/1995	WO				

7 Corresponds to WO 96/03815
 8 Corresponds to US 5,606,580
 9 Corresponds to US 6,526,039
 10 Corresponds to WO 98/59523
 **English Abstract Only
 11 Corresponds to JP 9-504914

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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	96/08934	03/1996	WO				
	96/27994	12/1996	WO				
	96/37081	11/1996	WO				
	97/23073	06/1997	WO				
	97/32412	04/1997	WO				
	97/46044	12/1997	WO				
	98/59447	12/1998	WO				
	98/59523	12/1998	WO				
	99/38083	07/1999	WO				
	99/44341	09/1999	WO				
	99/63713	12/1999	WO				
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EXAMINER INITIAL	DESCRIPTION (Including Author, Title, Date, Pertinent Pages, Etc.)
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EXAMINER INITIAL	DESCRIPTION (Including Author, Title, Date, Pertinent Pages, Etc.)
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FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO. TAN-2-1493US05	SERIAL NO. 12/615,098
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DUAL MODE UNIT FOR SHORT RANGE, HIGH RATE AND
LONG RANGE, LOWER RATE DATA COMMUNICATIONS

RELATED APPLICATIONS

This application is a continuation of U.S. Application No. 11/326,809, filed January 6, 2006. U.S. Application No. 11/326,809 is a continuation of U.S. Application No. 10/358,082, filed February 3, 2003, and a continuation of U.S. Application No. 10/341,528, filed January 13, 2003. U.S. Application No. 10/358,082 and U.S. Application No. 10/341,528 are both continuations of U.S. Application No. 09/400,136, filed September 21, 1999. The entire teachings of the above applications are incorporated by reference herein.

BACKGROUND OF THE INVENTION

The widespread availability of personal computers at low cost has led to a situation where the general public increasingly demands access to the Internet and other computer networks. A similar demand exists for wireless communications in that the public increasingly demands that cellular telephones be available at low cost with ubiquitous coverage.

As a result of its familiarity with these two technologies, the general population now increasingly wishes to not only access computer networks, but to access such networks in wireless fashion as well. This is of particular concern to users of portable computers, laptop computers, hand-held personal digital assistants (PDAs) and the like, who would prefer and indeed now expect to be able to access such networks with the same convenience they have grown accustomed to when using their cellular telephones.

Unfortunately, there still is no widely available satisfactory solution for providing low cost, broad geographical coverage, high speed access to the Internet and other networks using the existing wireless infrastructure which has been built at some expense to support cellular telephony. Indeed, at the present time, the users of wireless modems that operate with the existing

cellular telephone network often experience a difficult time when trying to, for example, access the Internet to view web pages. The same frustration level is felt in any situation when attempting to perform other tasks that require the transfer of relatively large amounts of data between computers.

This is at least in part due to the architecture of cellular telephone networks, which were originally designed to support voice communications, as compared to the communications protocols in use for the Internet, which were originally optimized for wireline communication. In particular, the protocols used for connecting computers over wireline networks do not lend themselves well to efficient transmission over standard wireless connections.

For example, cellular networks were originally designed to deliver voice grade services, having an information bandwidth of approximately three kilohertz (kHz). While techniques exist for communicating data over such radio channels at the rate of 9600 kilobits per second (kbps), such low frequency channels do not lend themselves directly to transmitting data at rates of 28.8 kbps or even the 56.6 kbps that is now commonly available using inexpensive wireline modems. These rates are presently thought to be the minimum acceptable data rates for Internet access.

This situation is true for advanced digital wireless communication protocols as well, such as Code Division Multiple Access (CDMA). Even though such systems convert input voice information to digital signals, they too were designed to provide communication channels at voice grade bandwidth. As a result, they use communication channels that may exhibit a bit error rate (BER) as high as one in one thousand bits in multipath fading environments. While such a bit error rate is perfectly acceptable for the transmission of voice signals, it becomes cumbersome for most data transmission environments.

Unfortunately, in wireless environments, access to channels by multiple subscribers is expensive and there is competition for them. Whether the multiple access is provided by the traditional Frequency Division Multiple Access (FDMA) using analog modulation on a group of radio carriers, or by newer digital modulation schemes that sharing of a radio carrier using Time Division Multiple Access (TDMA) or Code Division Multiple Access (CDMA), the nature of the cellular radio spectrum is such that it is a medium that is expected to be shared. This is quite dissimilar to the traditional environment for data transmission, in which the wireline medium is relatively inexpensive to obtain, and is therefore not typically intended to be shared.

On the other hand, wireless local area networks (W-LANs) have been developed to allow communications between users over a relatively small range without the need for a physical connection, or alternatively, to allow communications between a wired LAN and wireless users. W-LANs typically have a much smaller range and higher data rates.

A newly accepted standard, IEEE 802.11, specifies a protocol for the media access control (MAC) and physical (PHY) layers of a wireless LAN. As with cellular systems, a W-LAN connection can be handed off from one area of coverage (a "basic service set" in IEEE 802.11 parlance) to the next. A good description of wireless LANs, and the IEEE 802.11 standard in particular, may be found in Geier, J., *Wireless LANs* (Macmillan Technical Publishing, 1999).

SUMMARY OF THE INVENTION

Wireless LANs are generally private networks, that is they are installed, owned, and maintained by a private party, such as a business, educational institution or home owner. Such networks are therefore generally cheaper to access than long range networks which utilize shared public

access frequencies licensed by a government authority to complete a connection, and which generally require subscriber fees.

In addition, W-LANs typically operate at a much faster data rate than the long range network. However, as the word "local" implies, the range of a W-LAN is rather limited - typically tens or hundreds of feet, as compared to several miles for a long range cellular telephone network.

It would therefore be desirable to have a device which can automatically select the cheaper and faster W-LAN when possible, e.g., when within its range, and to resort to the long range cellular network when access to the W-LAN is not possible or practical. Previously, two devices would have been required, one for accessing the WLAN and one for accessing the long range network. At best, these two devices could fit into two slots in, for example, a laptop computer, requiring the user to select, either through software or hardware, which device, and hence, which network to access. The user might typically then have to disconnect one of the devices to install the other, and manually reconfigure the computer.

The present invention, on the other hand, is a single device which connects directly to a W-LAN using a protocol such as IEEE 802.11 when such a connection is possible, and automatically reverts to connecting to the long range network only when out of range of the W-LAN base stations. Thus, the same equipment can be used without any reconfiguration and even without the knowledge of the user. For example, when the user is on a company campus and within range of the less expensive, faster W-LAN, the user's laptop or PDA automatically communicates with the W-LAN. If the user leaves the office, for example, for lunch, or at the end of the day, heads home, the same laptop or PDA, being out of range of the W-LAN, will automatically communicate instead with the wider range, more expensive cellular network.

Therefore, the present invention is also a method which uses a first wireless digital communication path and a second wireless digital

communication path for coupling data communication signals with a local wireless transceiver at a first site. The second digital communication path provides wider coverage and a slower communication rate than the first digital communication path. The local wireless transceiver conducts wireless communications with a remote wireless transceiver at a second site.

One of the wireless communication path is selected upon a request to establish a communication session between the first and second sites by first determining whether the first wireless digital communication path is available.

In one embodiment, the first wireless communication path comprises a wireless LAN connection, preferably using carrier sense multiple access with collision avoidance (CSWCA), preferably according to the IEEE 802.11 specification. The second wireless communication path comprises a cellular connection. Access costs associated with the first wireless communication path are smaller than access costs associated with the second wireless communication path. Preferably, access to the first wireless communication path is essentially free, excluding expenses such as set-up and maintenance costs, while access to the second wireless communication path can be subscription-based.

The local wireless transceiver can be a single transceiver which is capable of communicating with a second site or destination over both wireless communication paths. Alternatively, the local wireless transceiver can comprise two transceivers, one for each communication path.

In one embodiment, the first wireless communication path is a private network. Conversely, the second wireless communication path can be a public network, in which channels are allocated centrally.

In one embodiment, the step of determining whether the first wireless communication mode is available is performed by passive scanning, such as by detecting a beacon signal. In another embodiment, active scanning is used, for example, by transmitting a probe request message and detecting a probe

response message in response to the probe request which indicates the presence of the first wireless communication path. In yet another embodiment, determining whether the first wireless communication path is available comprises simply detecting activity on the first wireless communication path.

If the first wireless digital communication mode is available, a communication session between the first and second sites using the first wireless digital communication path is established.

On the other hand, if the first wireless digital communication path is not available, a communication session between the first and second sites using the second wireless digital communication path is established. In this case, the local wireless transceiver is controlled to make it appear to the second wireless digital communication path as though the bandwidth were continuously available during the communication session, irrespective of any actual need to transport data communication signals between said first and second sites. In the absence of such a need to transport data communication signals between the first and second sites, the bandwidth is made available for wireless communication by other wireless transceivers.

In one preferred embodiment, the second wireless digital communication path is provided by establishing a logical connection using a higher layer protocol, such as a network layer protocol, from a subscriber unit, such as may be connected to a portable computer node, to an intended peer node, such as another computer. The network layer logical connection is made through a wireless channel which provides a physical layer connection between the portable computer node, through a base station, and the intended peer node. In response to relatively low utilization of the wireless channel, the physical layer channel is released while maintaining the appearance of a network layer connection to the higher level protocols.

This has two consequences. First, it frees wireless channel bandwidth for use by other subscriber units, without the overhead associated with

having to set up an end to end connection each time that data needs to be transferred. In addition, and perhaps more importantly, by allocating wireless channels only when needed, the bandwidth necessary to provide a temporary but very high speed connection is available at critical times. These may occur, for example, when a particular subscriber unit requests that a web page file be downloaded from the Internet.

More specifically, the technique, which is here called spoofing, involves stripping off the lower layers of the protocol while reformatting higher layer messages for transmission using a more efficient CDMA based encapsulated protocol.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other objects, features and advantages of the invention will be apparent from the following more particular description of preferred embodiments of the invention, as illustrated in the accompanying drawings in which like reference characters refer to the same parts throughout the different views. The drawings are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention.

Fig. 1 is a block diagram of a system in which a portable device such a laptop computer is making use of a protocol converter according to the invention to connect to a computer network over a wireless cellular link.

Fig. 2 is a diagram depicting how network layer data frames are divided among multiple physical links or channels.

Fig. 3 is a more detailed diagram showing how network layer frames are divided into subframes by a protocol converter located at a sender.

Fig. 4 is a continuation of the diagram of Fig. 3.

Fig. 5 is a schematic diagram of a short range, high speed wireless LAN overlapping with a longer range, lower speed wireless communication network.

Fig. 6 is a high-level block diagram of a subscriber unit of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Turning attention now to the drawings more particularly, Fig. 1 is a block diagram of a system 10 for implementing high speed data communication over a cellular link according to the invention. The system 10 consists of a remote or subscriber unit 20, multiple bi-directional communication links 30, and a local or service provider unit 40.

The subscriber unit 20 connects to terminal equipment 22 such as a portable or laptop computer, hand held Personal Digital Assistant (PDA) or the like, via a computer interface 24 such as a modem. The interface 24 in turn provides data to a protocol converter 25, which in turn provides data to a multichannel digital transceiver 26 and antenna 27.

The interface 24 receives data from the computer 20, and together with appropriate hardware and/or software, converts it to a format suitable for transmission such as in accordance with known communication standards. For example, the interface 24 may convert data signals from the terminal equipment 22 to a wireline physical layer protocol format such as specified by the Integrated Services Digital Network (ISDN) standard at rates of 128 kbps, or the Kflex standard at rates of 56.6 kbps. At a network layer, the data provided by the interface 24 is preferably formatted in a manner consistent with suitable network communication protocols such as TCP/IP to permit the terminal equipment 22 to connect to other computers over networks such as the Internet. This description of the interface 24 and

protocols is exemplary only and it should be understood that other protocols can be used.

The protocol converter 25 implements an intermediate protocol layer suitable for converting the data provided by the interface 24 to a format appropriate for the multichannel transceiver 26 according to the invention, and as is described in greater detail below.

The multichannel digital transceiver 26 provides access to one or more physical communication links such as the illustrated radio channels 30. The physical links are preferably known wireless communication air interfaces using digital modulation techniques such as Code Division Multiple Access (CDMA) standard specified by IS-95. It should be understood that other wireless communication protocols and other types of links 30 may also be used to advantage with the invention.

The channels 30 represent one or more relatively slower communication channels, such as operating at a 9.6 kbps rate typical of voice grade communication. These communications channels may be provided by a single wide bandwidth CDMA carrier such as having a 1.25 MegaHertz bandwidth, and then providing the individual channels with unique orthogonal CDMA codes. Alternatively, the multiple channels 30 may be provided by single channel communication media such as provided by other wireless communication protocols. However, what is important is that the net effect is that the channels 30 represent multiple communication channels that may be adversely effected by significant bit error rates that are unique to each link 30.

An "error" as described herein is a bit error perceived at the higher layer such as the network layer. The invention only strives to improve the system level bit error rate, and does not attempt to guarantee absolute data integrity.

On the local provider unit, the service provider equipment 40 may for example be implemented at a wireless Internet Service Provider (ISP) 40-1.

In this case, the equipment includes an antenna 42-1, a multichannel transceiver 44-1, a protocol converter 46-1, and other equipment 48-1 such as modems, interfaces, routers, and the like which are needed for the ISP to provide connections to the Internet 49-1.

At the ISP 40-1, the multichannel transceiver 44-1 provides functions analogous to the multichannel transceiver 26 of the subscriber unit, but in an inverse fashion. The same is true of the protocol converter 46-1, that is, it provides inverse functionality to the protocol converter 25 in the subscriber unit 20. The ISP 40-1 accepts data from the protocol converter 46-1 in the TCP/IP frame format and then communicates such data to the Internet 49-1. It should be understood that the configuration of the remaining ISP equipment 48-1 may take any number of forms such as a local area networks, multiple dial up connections, T1 carrier connection equipment, or other high speed communication links to the Internet 49-1.

Alternatively, the provider 40 may function *as* a radio base station in a cellular telephone system to permit a dial-up connection between the terminal equipment 22 and a server 49-2. In this instance, the base station 40-2 includes an antenna 42-2, multichannel transceiver 44-2, and protocol converter 46-2 providing one or more connections to a public switched telephone network (PSTN) 48-2, and ultimately to the server 49-2.

In addition to the illustrated implementations 40-1, 40-2, there may be various other ways of implementing the provider 40 in order to provide a connection to data processing equipment from the terminal equipment 22.

Attention is now turned to the functions of the protocol converters 25 and 46, which can be thought of as an intermediate layer within the context of the Open System Interconnect (OSI) model for communication. In particular, the protocol converter provides a bandwidth management functionality 29 implemented between a physical layer such as that provided by the CDMA protocol in use with the multichannel transceivers 26 and a

network layer protocol such as TCP/IP providing connections between the terminal equipment 22 and the Internet 49-1 or server 49-2.

The bandwidth management functionality 29 preferably provides a number of functions in order to keep both the physical layer and network layer connections properly maintained over multiple communication links 30. For example, certain physical layer connections may expect to receive a continuous stream of synchronous data bits regardless of whether terminal equipment at either end actually has data to transmit. Such functions may also include rate adaptation, bonding of multiple channels on the links, spoofing, radio channel setup and takedown.

The present invention is more particularly concerned with the technique used by the protocol converters 25 and 46 for adjusting the frame size of individual channels used over each of the multiple links 30 in order to improve the effective throughput rate between a sender and a receiver in a bit error rate prone environment. It should be understood in the following discussion that the connections discussed herein are bidirectional, and that a sender may either be the subscriber unit 22 or the provider unit 40.

More specifically, the problem addressed by the present invention is shown in Fig. 2. The frame 60 as received at the receiver end must be identical to the frame 50 originating at the sender. This is despite the fact that multiple channels are used with much higher bit error rates, with the received frame 60 being transmitted reliably with a bit error rate of 10^{-6} or better as is typically required in TCP/IP or other network layer protocols. The present invention optimizes the effective data throughput such that the received frames 60 are not affected by the experienced bit error rate performance of network layer connections.

It should be understood that another assumption is that the individual channels 30-1, 30-2 ... 30-N may experience different bit error rate levels both over time and in an average sense. Although each of the channels 30 may operate quite similarly, given the statistical nature of errors, identical

behavior of all of the channels 30 is not assumed. For example, a specific channel 30-3 may receive severe interference from another connection in a neighboring cell, and be capable of providing only a 10^{-3} whereby other channels 30 may experience very little interference.

In order to optimize the throughput for the system 10 on a global basis, the invention also preferably optimizes the parameters of each channel 30 separately. Otherwise, a relatively good channel 30-1 might suffer down speed procedures required to accommodate a weaker channel 30-3.

It should also be understood that the number of channels 30 that may be needed to carry a single data stream such as a rate of 128 kbps at a given point in time may be relatively large. For example, up to 20 channels 30 may be assigned at a particular time in order to accommodate a desired data transfer rate. Therefore, the probability of significantly different characteristics in any given one of the channels 30 is high.

Turning attention now more particularly to Fig. 3, the operations of the protocol converter 25 or 46 at the sender will be more particularly described. As shown, the input frame 50 as received from the network layer is relatively large, such as for example 1480 bits long, in the case of a TCP/IP frame.

The input frame 50 is first divided into a set of smaller pieces 54-1, 54-2. The size of the individual pieces 54 are chosen based upon the optimum subframe size for each of the channels 30 available. For example a bandwidth management function may make only a certain number of channels 30 available at any time. A subset of the available channels 30 is selected, and then the optimum number of bits for each subframe intended to be transmitted over respective one of the channels, is then chosen. Thus, as illustrated in the figure, a given frame 54-1 may be divided into pieces associated with four channels. At a later time, there may be nine

channels 30 available for a frame, with different optimum subframe sizes for the piece 54-2.

Each of the subframes 56 consists of a position identifier 58a, a data portion 58b, and a trailer typically in the form of an integrity checksum such as a cyclic redundancy check (CRC) 58c. The position identifier 58a for each subframe indicates the position within the associated larger frame 50.

The subframes 56 are then further prepared for transmission on each channel 30. This may be done by adding a sequence number related to each channel at the beginning of each subframe 56. The subframe 56 is then transmitted over the associated channel 30.

Fig. 4 illustrates the operations performed at the receive side. The subframes 56 are first received on the individual channels 30. A subframe 56 is discarded as received if the CRC portion 58c is not correct.

The sequence numbers 58d of the remaining frames 56 are then stripped off and used to determine whether any subframes 56 are missing. Missing subframes 56 can be detected by comparing the received sequence numbers 58d. If a sequence number is missing, it is assumed that the associated subframe 56 was not received properly. It should be understood that appropriate buffering of data and subframes 56 is typically required in order to properly receive the subframes 56 and determine if there are any missing sequence numbers depending upon the transmission rates, number of channels 30 and propagation delays in effect.

Upon the detection of a missing subframe 56, retransmission of the missed subframe is requested by the receiving end. At this point, the transmitting end re-performs transmission of the missing subframe.

Once all of the subframes 56 are received, the position number 58a is used to arrange the data from the subframes 56 in the proper order to construct the output received frame 60.

At this point, also, if any piece of the large output frame 60 is still missing, such as when an end of frame command is encountered,

retransmission of the corresponding subframe can also be requested at the indicated position, specifying a length for the missing piece.

Because of the use of both the position and sequence numbers, the sender and receiver know the ratio of the number of subframes received with errors to the number of frames received without errors. Also, the receiver and sender know the average subframe length for each channel. The optimum subframe size can thus be determined for each channel from these parameters as is described more fully in U.S. Patent No. 6,236,647 filed on February 24, 1998, entitled "Dynamic Frame Size Adjustment and Selective Reject On a Multi-Link Channel to Improve Effective Throughput and Bit Error Rate," incorporated herein by reference in its entirety, and assigned to Tantivy Communications Corp., the assignee of the present application.

Fig. 5 illustrates a short range, high speed wireless LAN (W-LAN) overlapping with a longer range, lower speed wireless cellular communication network ("long range network"). Specifically, within the longer range, lower speed system, which may be a digital cellular mobile telephone system, there are multiple long range regions or "cells" 601 and 603 which provide coverage throughout a given physical area. The range or coverage for each cell 601, 603 is on the order of, for example, greater than one mile radius.

A cellular base station 605 transmits and receives data through its antenna 171 to mobile units located within its associated cell 601. The base station 605 is connected to a public network 619 such as the public switched telephone network (PSTN) or preferably a point of presence (POP) or other data connection 621 to the Internet.

Shown within the cell 601 associated with base station 605 is a wireless local area network (W-LAN) 607. Several terminals or computers 609 are connected directly to the W-LAN 607, including a gateway 609A which is also connected to the public network 619 via any well-known means 621. In addition, two wireless LAN hubs 611A, 611B are connected to the

LAN 607. Each wireless LAN hub 611 has a region of coverage 613A, 613B; the coverage area of the two hubs 611A, 611B may overlap as shown in Fig. 5. The regions of coverage 613A, 613B are generally of the order of tens or hundreds of feet, which is significantly smaller than the cells 601, 603 associated with the long range network. In this respect, it is particularly important to note that Fig. 5 is not drawn to scale.

Also shown are two subscriber units or terminals, such as portable computers, employing the present invention. The first terminal 615 is within range 613A of a wireless LAN base station 611, while the second terminal 617 is outside the range of either wireless LAN base station 611A, 611B but within the range 601 of the long range network base station 605.

Because communication within the short range wireless LAN 613A or 613B is faster and less expensive as compared to the long range network, it is desirable to communicate using the short range path, i.e., the W-LAN protocol, rather than the more costly long range network, when a user's computer terminal 615 is within range of a WLAN base station 611, i.e., within the region of coverage 613A, 613B.

On the other hand, it is desirable that a terminal such as terminal 617, which is not within range of a wireless LAN base station 611, automatically communicate through the long range network's base station 605. Thus it is a primary feature of the present invention that a terminal such as 615 or 617 detects the presence or availability of a wireless LAN hub 611A or 611B, such as an IEEE 802.11-compliant W-LAN hub. This can be done in several ways. For example, IEEE 802.11 specifies that a beacon frame should be transmitted at regular intervals. A terminal 615, 617 can detect the beacon frame by waiting a minimum period of time equal to the beacon interval. See, for example, Geier, J., *Wireless LANs*, pages 137 and 149, (Macmillan Technical Publishing, 1999), incorporated herein by reference, which describes how a W-LAN beacon signal is formatted.

Alternatively, a terminal such as 615 may actively transmit a probe request frame. A wireless LAN base station 611 receiving such a probe request frame will respond with a probe response frame. Receipt of the probe response frame by the terminal 615 indicates accessibility of the wireless LAN, and the terminal 615 will use the wireless LAN and bypass the long range network.

If, on the other hand, no beacon is received within the specified time period or no probe response frame is returned from the base frame, as would be the case with terminal 617, the terminal assumes that the wireless LAN base stations 611 are not accessible and instead communicates with the long range base station 605 using the long range network protocol rather than IEEE 802.11 protocol.

Yet another alternative is simply to listen for activity on the wireless LAN 611. If no activity is heard, the terminal 615, 617 assumes that the LAN is not accessible, and uses the long range communication system.

Fig. 6 shows a terminal 615 which includes a subscriber unit 101 incorporating the features of the present invention. A user at this terminal 615 desires to communicate with a second site using a portable computer 110, PDA or other similar device. The computer 110 is connected to the subscriber unit 101. For example, the subscriber unit 101 may be a PCMCIA card which plugs into a PCMCIA slot, or it may connect to the computer 110 with a modem cable.

The subscriber unit 101 itself preferably consists of an interface 120, a CDMA protocol converter 130 that performs various functions including spoofing 132 and bandwidth management 134 as described earlier, a CDMA transceiver 140, a W-LAN protocol converter 230, a W-LAN transceiver 240, a W-LAN detection circuit 201, path selection switches 211A, 211B, and a subscriber unit antenna 150. The various components of the subscriber unit 101 may be realized in discrete devices or as an integrated unit. For example, an existing conventional computer interface 120 such as the PCMCIA, ISA

bus, PC1 bus, or any other computer interface may be used together with existing transceivers 140, 240. In this case, the unique functions are provided entirely by the protocol converters 130, 230 which may be sold as separate devices, the W-LAN detection circuit 201 and the mode selection switches 211A, 211B.

Alternatively, the interface 120, protocol converters 130,233, and transceivers 140,240 may be integrated as a complete unit and sold as a single subscriber unit device 101. Other types of interface connections such as Ethernet, ISDN, or still other data connections may be used to connect the computing device 110 to the protocol converter 130.

The CDMA protocol converter 130 performs spoofing 132 and basic bandwidth management 134 functions. In general, spoofing 132 consists of insuring that the subscriber unit 101 appears, to the terminal equipment 110, to be connected to the public network 619 (Fig. 5) on the other side of the base station 605 at all times.

The bandwidth management function 134 is responsible for allocating and deallocating CDMA radio channels 160 as required. Bandwidth management 134 also includes the dynamic management of the bandwidth allocated to a given session by dynamically assigning sub-portions of the CDMA radio channels 160 in a manner using a protocol such as that described previously.

The CDMA transceiver 140 accepts the data from the protocol converter 130 and reformats this data in appropriate form for transmission through the subscriber unit antenna 150 over the radio link 160. The CDMA transceiver 140 may operate over only a single 1.25 MHz radio frequency channel or, alternatively, may be tunable over multiple allocatable radio frequency channels.

CDMA signal transmissions are then received and processed by the base station equipment 605 (Fig. 5). The base station 605 then couples the demodulated radio signals to, for example, the public network 619 in a

manner which is well known in the art. For example, the base station 605 may communicate with the public network 619 over any number of different efficient communication protocols such as primary rate, ISDN, or other LAPD based protocols such as IS-634 or V5.2.

It should also be understood that data signals travel bidirectionally across the CDMA radio channels 160. In other words, data signals received from the public network 619 are coupled to the portable computer 110 in a forward link direction, and data signals originating at the portable computer 110 are coupled to the public network 619 in a so-called reverse link direction.

Continuing to refer to Fig. 6 briefly, in the long range, lower data rate mode, the spoofing function 132 involves having the CDMA transceiver 140 loop back synchronous data bits to spoof the terminal equipment 110 into believing that a sufficiently wide wireless communication link 160 is continuously available. However, wireless bandwidth is allocated only when there is actual data present from the terminal equipment to the CDMA transceiver 140. Therefore, the network layer need not allocate the assigned wireless bandwidth for the entirety of the communications session. That is, when data is not being presented upon the terminal equipment to the network equipment, the bandwidth management function 134 deallocates initially assigned radio channel bandwidth 160 and makes it available for another transceiver and another subscriber unit 101.

W-LAN detection circuit 201 detects the presence or availability of a W-LAN base station 611 using, for example, one of the techniques previously discussed. If no W-LAN base station is detected, switches 211A and 211B are controlled by the detection circuit 201 such that the CDMA protocol converter 130 is switched in along with the CDMA transceiver 140.

If, on the other hand, a W-LAN is detected, switches 211A and 211B are switched to the position shown to utilize the W-LAN protocol converter 230 and transceiver 240, which are preferably IEEE 802.11-compliant. Note

that the path switches 21 1 A, 21 1B may be implemented in software or hardware, or a combination of hardware and software. Other functions may also be implemented in hardware and/or software which may further be shared by the W-LAN and CDMA sections where appropriate.

Furthermore, the long-range, low-speed CDMA path could be selected after failure to communicate over the short-range, high speed path for any reason, for example, the inability to successfully complete a communication after some predetermined time period.

While this invention has been particularly shown and described with references to preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the scope of the invention encompassed by the appended claims.

CLAIMS

1. A subscriber unit comprising:
 - a first transceiver configured to communicate with a first wireless network via a plurality of assigned physical layer channels;
 - a second transceiver configured to communicate with a second wireless network; and
 - a processor coupled to the first transceiver and the second transceiver, and configured to maintain a communication session, above a physical layer, with the first wireless network in the absence of the plurality of assigned physical layer channels.
2. The subscriber unit of claim 1, wherein the first wireless network is a cellular wireless network and the second wireless network is an IEEE 802 compliant wireless network.
3. The subscriber unit of claim 2, wherein the second wireless network is an IEEE 802.11x compliant wireless network.
4. The subscriber unit of claim 1, wherein the second transceiver is configured to transmit transmission control protocol and Internet protocol (TCP/IP) data to the second wireless network while the communication session above the physical layer is maintained.
5. The subscriber unit of claim 1, wherein the communication session above the physical layer is a transmission control protocol (TCP) layer session, an Internet protocol (IP) layer session, or a network layer session.
6. The subscriber unit of claim 2, further comprising:

a detector configured to detect the IEEE 802 compliant wireless network; and

a circuit configured to select the second transceiver in response to the detector detecting the IEEE 802 compliant wireless network.

7. The subscriber unit of claim 6, wherein the processor is further configured to release the plurality of assigned physical layer channels.

8. The subscriber unit of claim 6, wherein the detector is configured to detect a beacon frame or a probe response frame received by the second transceiver from the IEEE 802 compliant wireless network.

9. The subscriber unit of claim 1, wherein at least one of the plurality of physical layer channels is a data channel.

10. The subscriber unit of claim 2, wherein the first wireless network is a code division multiple access (CDMA) wireless network and the second wireless network is an IEEE 802.11x compliant wireless network, and the first transceiver is a cellular code division multiple access (CDMA) transceiver and the second transceiver is an IEEE 802.11x compliant transceiver.

11. A method for use in a dual mode subscriber unit, the method comprising:

establishing a non-physical layer communication session with a first wireless network;

maintaining the non-physical layer communication session in the absence of any physical layer channels associated with the first wireless network; and

communicating with a second wireless network while maintaining the non-physical layer communication session with the first wireless network.

12. The method of claim 11, wherein the first wireless network is a cellular wireless network and the second wireless network is an IEEE 802 compliant wireless network.

13. The method of claim 12, wherein the second wireless network is an IEEE 802.11x compliant wireless network.

14. The method of claim 11, wherein communicating with the second wireless network comprises transmitting transmission control protocol and Internet protocol (TCP/IP) data.

15. The method of claim 11, wherein the non-physical layer communication session is a transmission control protocol (TCP) layer session, an Internet protocol (IP) layer session, or a network layer session.

16. The method of claim 12, further comprising:
detecting the IEEE 802 compliant wireless network; and
communicating with the IEEE 802 compliant wireless network
in response to detecting the IEEE 802 compliant wireless network.

17. The method of claim 16, further comprising:
releasing any of the assigned physical layer channels associated
with the first wireless network.

18. The method of claim 16, wherein detecting the IEEE 802 compliant wireless network comprises receiving a beacon frame or a probe response frame from the IEEE 802 compliant wireless network.

19 The method of claim 11, wherein at least one of the physical layer channels is a data channel.

20. The method of claim 12, wherein the first wireless network is a code division multiple access (CDMA) wireless network and the second wireless network is an IEEE 802.11x compliant wireless network.

ABSTRACT

A technique for communication with a local area network (LAN) via a wireless connection determines whether a first short-range, high-speed, wireless communication path is available and connects to the LAN using a longer range, lower speed wireless communication path if the short-range, high-speed wireless communication path is not available. The low-range, high-speed wireless communication path is a wireless LAN connection such as an IEEE 802.11-compliant wireless LAN and the long-range, low-speed wireless communication mode is a cellular CDMA-type connection. Determining whether the first IEEE 802.11 mode is available can be done by detecting a beacon signal, or transmitting a probe request message and detecting a probe response message in response to the probe request, indicating the presence or availability of the short-range, high-speed wireless communication path. Alternatively, the availability of short-range, high-speed wireless communication path can be detected by simply detecting activity on it.