



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/676,207	12/30/2014	8923754	08610001C3	3678

30743 7590 12/10/2014
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 48 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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

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

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Theodore S. Rappaport, Riner, VA;

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

PTO/SB/08a (07-09)

Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

Application Number	13/676,207
Filing Date	11-14-2012
First Named Inventor	Rappaport
Art Unit	2472
Examiner Name	Kizou, Hassan
Attorney Docket Number	08610001C3

Sheet 1 of 3

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 7289813	10-2007	Karaoguz, Jeyhan	
	2	US- 6348986	02-2002	Doucet et al.	
	3	US- 6186908	02-2001	Kawasaki et al.	
	4	US- 6934511	08-2005	Lovinggood et al.	
	5	US- 5012211	04-1991	Young et al.	
	6	US- 4626845	12-1986	Ley, John F.	
	7	US- 4298179	11-1981	Gilcher, Heinz	
	8	US- 6952456	10-2005	Aiello et al.	
	9	US- 7787513	08-2010	Siwiak et al.	
	10	US- 6806821	10-2004	McLemore, Donald P.	
	11	US- 7983613	~~04-18-2010~~	Rappaport	July 19, 2011
	12	US- 6754882	06-2004	Sanchez	
	13	US- 8331854	~~06-10-2011~~	Rappaport	December 11, 2012
	14	US- 20020093928	07-18-2002	LoGalbo et al.	
	15	US- 20040259494	12-2004	Mazar, Scott T.	
	16	US- 20030162504	08-2003	Sabongi et al.	
	17	US- 20030220075	11-2003	Baker et al.	
	18	US- 20060285577	12-2006	Santhoff et al.	
	19	US- 20050018640	01-2005	Fullerton et al.	

Change(s) applied
to document,
/P.H./
9/24/2014

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ³ Number ⁴ Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶

Examiner
Signature

/Dominic Rego/

Date

Considered

04/06/2014

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

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours 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, 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 (1-800-786-9199) and select option 2.

Samsung Ex. 1004

Page 2 of 233

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.R./



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
13/676,207	11/14/2012	2647	755	08610001C3	22	1

CONFIRMATION NO. 3678

CORRECTED FILING RECEIPT



30743
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

Date Mailed: 11/14/2014

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

Inventor(s)

Theodore S. Rappaport, Riner, VA;

Applicant(s)

Theodore S. Rappaport, Riner, VA;

Power of Attorney: The patent practitioners associated with Customer Number 30743

Domestic Priority data as claimed by applicant

This application is a CON of 13/157,789 06/10/2011 PAT 8331854 *
which is a CON of 12/689,052 01/18/2010 PAT 7983613
which is a CON of 10/919,515 08/17/2004 PAT 7676194
which claims benefit of 60/498,324 08/28/2003
and claims benefit of 60/496,913 08/22/2003

(*)Data provided by applicant is not consistent with PTO records.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 12/28/2012

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/676,207**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

INTELLIGENT BROADBAND RELAY FOR WIRELESS NETWORKS

Preliminary Class

455

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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

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

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

NOT GRANTED

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

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

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)

30743 7590 08/14/2014
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

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

Certificate of Mailing or Transmission

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

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/676,207	11/14/2012	Theodore S. Rappaport	08610001C3	3678

TITLE OF INVENTION:

INTELLENT BROADBAND RELAY FOR WIRELESS NETWORKS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	11/14/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
REGO, DOMINIC E	2647	455-011100

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

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
- (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

Whitham Curtis
 Christofferson & Cook, PC

2 _____
 3 _____

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

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

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

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

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

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

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

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 50-2041 (enclose an extra copy of this form).

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

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

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

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

Authorized Signature _____

Date 10/16/14

Typed or printed name Michael E. Whitham

Registration No. 32,635

Electronic Patent Application Fee Transmittal

Application Number:	13676207			
Filing Date:	14-Nov-2012			
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES			
First Named Inventor/Applicant Name:	Theodore S. Rappaport			
Filer:	Michael E. Whitham/karen lumpkins			
Attorney Docket Number:	08610001C3			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				480

Electronic Acknowledgement Receipt

EFS ID:	20683507
Application Number:	13676207
International Application Number:	
Confirmation Number:	3678
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES
First Named Inventor/Applicant Name:	Theodore S. Rappaport
Customer Number:	30743
Filer:	Michael E. Whitham/karen lumpkins
Filer Authorized By:	Michael E. Whitham
Attorney Docket Number:	08610001C3
Receipt Date:	13-NOV-2014
Filing Date:	14-NOV-2012
Time Stamp:	11:20:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$480
RAM confirmation Number	7572
Deposit Account	502041
Authorized User	

File Listing:

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

1	Issue Fee Payment (PTO-85B)	08610001C3-payIF.pdf	78517 cb76f82b575cefe4aa98aa4b06f55ba822530752	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30429 f51219ae2c829d42ccdf74ebbfcec10285c683ca	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			108946		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/676,207	11/14/2012	Theodore S. Rappaport	08610001C3	3678

30743 7590 11/12/2014
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

EXAMINER

REGO, DOMINIC E

ART UNIT	PAPER NUMBER
----------	--------------

2647

MAIL DATE	DELIVERY MODE
-----------	---------------

11/12/2014

PAPER

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

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

Response to Rule 312 Communication	Application No. 13/676,207	Applicant(s) RAPPAPORT, THEODORE S.
	Examiner DOMINIC E. REGO	Art Unit 2647
-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address -- 1. ☒ The amendment filed on <u>06 November 2014</u> under 37 CFR 1.312 has been considered, and has been: a) ☐ entered. b) ☒ entered as directed to matters of form not affecting the scope of the invention. c) ☐ disapproved because the amendment was filed after the payment of the issue fee. Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue. d) ☐ disapproved. See explanation below. e) ☐ entered in part. See explanation below. Applicant's amendment to specification has not substantially changed the scope of previously allowed claims 45-70.		
		/DOMINIC E REGO/ Primary Examiner, Art Unit 2647

Docket: 08610001C3

1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of

Rappaport

Confirmation No. 3678

Serial No. 13/676,207

Group Art Unit 2647

Filed November 14, 2012

Examiner Dominic Rego

For BROADBAND REPEATER WITH SECURITY FOR
ULTRAWIDEBAND TECHNOLOGIES

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

AMENDMENT UNDER 37 C.F.R. 1.312

Sir:

This Amendment is being filed after the mailing of the Notice of Allowance but prior to the payment of the issue fee. The Amendment is exclusively drawn to formal matters and does not amend the claims.

The Applicant requests amendment of the application as follows:

Amendments to the Specification: begin on page 2.

Amendments to the Claims: No amendments to the claims are made by this Amendment.

Remarks begin on page 3.

Response to Rule 312 Communication	Application No. 13/676,207	Applicant(s) RAPPAPORT, THEODORE S.
	Examiner DOMINIC E. REGO	Art Unit 2647
-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address -- 1. ☒ The amendment filed on <u>06 November 2014</u> under 37 CFR 1.312 has been considered, and has been: a) ☐ entered. b) ☒ entered as directed to matters of form not affecting the scope of the invention. c) ☐ disapproved because the amendment was filed after the payment of the issue fee. Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue. d) ☐ disapproved. See explanation below. e) ☐ entered in part. See explanation below. Applicant's amendment to specification has not substantially changed the scope of previously allowed claims 45-70.		
		/DOMINIC E REGO/ Primary Examiner, Art Unit 2647

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of

Rappaport

Serial No. 13/676,207

Filed November 14, 2012

Confirmation No. 3678

Group Art Unit 2647

Examiner Dominic Rego

For BROADBAND REPEATER WITH SECURITY FOR
ULTRAWIDEBAND TECHNOLOGIES

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

AMENDMENT UNDER 37 C.F.R. 1.312

Sir:

This Amendment is being filed after the mailing of the Notice of Allowance but prior to the payment of the issue fee. The Amendment is exclusively drawn to formal matters and does not amend the claims.

The Applicant requests amendment of the application as follows:

Amendments to the Specification: begin on page 2.

Amendments to the Claims: No amendments to the claims are made by this Amendment.

Remarks begin on page 3.

Amendments to the Specification:

Please amend the specification as follows:

Amend the title at page 1 lines 1-2 of the specification as follows:

~~BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND~~
~~TECHNOLOGIES~~
INTELLIGENT BROADBAND RELAY FOR WIRELESS NETWORKS

Amend the section of “Cross-Reference to Related Applications” provided at page 1 lines 6-10 as follows:

This application is a continuation application of US. Ser. No. 13/157,789 filed Jun. 10, 2011, now US. Pat. No. 8,331,854, which is a continuation of U.S. Ser. No. 12/689,052 filed Jan. 18, 2010, now US. Pat. No. 7,983,613, which is a continuation of US. Ser. No. 10/919,515 filed Aug. 17, 2004, now US. Pat. No. 7,676,194, and~~This application~~ claims priority to U.S. Provisional Application 60/496,913 filed August 22, 2003, and U.S. Provisional Application 60/498,324 filed August 28, 2003, and the complete contents of both applications ~~[[is]]~~ are herein incorporated by reference.

REMARKS

No amendments to the claims have been made. This Amendment is entirely drawn to formal matters and has no effect on the scope of the allowed claims. Entry of the Amendment is respectfully requested.

The specification has been amended to change the title and update the priority information recited under the section of "Cross-Reference to Related Applications". No new matter has been introduced.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "T. Bryce Miller". The signature is fluid and cursive, with the first name "T." and last name "Miller" clearly distinguishable.

T. Bryce Miller
Reg. No. 72,545

Whitham, Curtis, Christofferson & Cook, P.C.
11491 Sunset Hills Road, Suite 340
Reston, VA 20190

Tel. (703) 787-9400
Fax. (703) 787-7557

Customer No.: 30743

Electronic Acknowledgement Receipt

EFS ID:	20625800
Application Number:	13676207
International Application Number:	
Confirmation Number:	3678
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES
First Named Inventor/Applicant Name:	Theodore S. Rappaport
Customer Number:	30743
Filer:	Timothy Bryce Miller
Filer Authorized By:	
Attorney Docket Number:	08610001C3
Receipt Date:	06-NOV-2014
Filing Date:	14-NOV-2012
Time Stamp:	14:28:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		08610001C3_Rule312_filed_2014-11-06.pdf	62671 f4f52f0c07834a6dfa7475104763483825a76bb3	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Amendment after Notice of Allowance (Rule 312)	1	1
	Specification	2	2
	Applicant Arguments/Remarks Made in an Amendment	3	3
Warnings:			
Information:			
Total Files Size (in bytes):		62671	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.			



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

13/676,207

11/14/2012

Theodore S. Rappaport

08610001C3

3678

30743

7590

08/21/2014

WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.

11491 SUNSET HILLS ROAD

SUITE 340

RESTON, VA 20190

EXAMINER

REGO, DOMINIC E

ART UNIT

PAPER NUMBER

2647

MAIL DATE

DELIVERY MODE

08/21/2014

PAPER

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

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

<i>Applicant-Initiated Interview Summary</i>	Application No. 13/676,207	Applicant(s) RAPPAPORT, THEODORE S.	
	Examiner DOMINIC E. REGO	Art Unit 2647	

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

(1) DOMINIC E. REGO. (3)_____.

(2) Michael E. Whitham, Reg. No. 32,635. (4)_____.

Date of Interview: 06 August 2014.

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

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

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

Claim(s) discussed: 45.

Identification of prior art discussed: Aiello et al. (US Patent #6,952,456) and Young et al. (US Pub. #5,012,211).

Substance of Interview

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

Discussed above claim in view of following references and Applicant's representative will amend all the independent claims in such a way in order to overcome above prior arts.

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

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

☐ Attachment

/DOMINIC E REGO/
Primary Examiner, Art Unit 2647

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

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

Paragraph (b)

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

37 CFR §1.2 Business to be transacted in writing.

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

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

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

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

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

The Form provides for recordation of the following information:

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

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

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

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

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

Examiner to Check for Accuracy

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



UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

30743 7590 08/14/2014
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

EXAMINER

REGO, DOMINIC E

ART UNIT

PAPER NUMBER

2647

DATE MAILED: 08/14/2014

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

13/676,207

11/14/2012

Theodore S. Rappaport

08610001C3

3678

TITLE OF INVENTION: BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	11/14/2014

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

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

HOW TO REPLY TO THIS NOTICE:

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

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

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

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

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

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

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

PART B - FEE(S) TRANSMITTAL

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

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

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

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.

30743 7590 08/14/2014
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

Certificate of Mailing or Transmission

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

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/676,207	11/14/2012	Theodore S. Rappaport	08610001C3	3678

TITLE OF INVENTION: BROADBAND REPEATER WITH SECURITY FOR ULTRA WIDEBAND TECHNOLOGIES

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	11/14/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
REGO, DOMINIC E	2647	455-011100

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 credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).
---	---

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

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

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

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

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/676,207	11/14/2012	Theodore S. Rappaport	08610001C3	3678

30743 7590 08/14/2014
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

EXAMINER

REGO, DOMINIC E

ART UNIT	PAPER NUMBER
----------	--------------

2647

DATE MAILED: 08/14/2014

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

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

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

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

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

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

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 13/676,207	Applicant(s) RAPPAPORT, THEODORE S.	
	Examiner DOMINIC E. REGO	Art Unit 2647	AIA (First Inventor to File) Status No

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

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

1. ☒ This communication is responsive to 08/08/2014.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are 45-70. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) ☐ All b) ☐ Some *c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

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

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

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

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

DETAILED ACTION

Allowable Subject Matter

2. Claims 45-70 are allowed for the same reasons presented in the Patented Application #13/157,789, Patent No. 8,331,854 and updated search report.

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

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOMINIC E. REGO whose telephone number is (571)272-8132. The examiner can normally be reached on Monday-Friday, 9:00 am-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay A. Maung can be reached on 571-272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2647

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DOMINIC E REGO/
Primary Examiner, Art Unit 2647
Tel 571-272-8132

Receipt date: 07/28/2014

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

13676207 - GAIL: 2647

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13676207	
	Filing Date		2012-11-14	
	First Named Inventor	Rappaport		
	Art Unit	2647		
	Examiner Name	Refo, Dominic E.		
	Attorney Docket Number	08610001C5		

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

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

Add

U.S.PATENT APPLICATION PUBLICATIONS						Remove
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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

Add

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

If you wish to add additional Foreign Patent Document citation information please click the Add button

Add

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

Receipt date: 07/28/2014 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13676207	13676207 - GAU: 2647
	Filing Date		2012-11-14	
	First Named Inventor	Rappaport		
	Art Unit	2647		
	Examiner Name	Refo, Dominic E.		
	Attorney Docket Number	08610001C5		

1	E. H. DRUCKER, "Development and Application of a Cellular Repeater," Proceedings of IEEE Vehicular Technology Conference, June 1988, pages 321-325.	☐
2	W.T. SLINGSBY, ET AL., "A high-gain cell enhancer," IEEE Vehicular Technology Conference Proceedings, May 1992, pages 756-758, vol. 1, http://research-information.bristol.ac.uk/files/2999289/slingsby_IEEE_VTC_1992.pdf	☐
3	A. ZEGAR, "Adaptive antenna same frequency repeater," IEEE APS Intl. Symp, October 1976, pages 452-455.	☐
4	T. M. COVER, ET AL., "Capacity theorems for the relay channel," IEEE Trans. Inform. Theory, September 1979, pages 572-584.	☐
5	A. SENDONARIS, ET AL., "Increasing uplink capacity via user cooperation diversity," Proc. IEEE Int. Symp. Information Theory (ISIT), August 1998, page 156, Cambridge, MA.	☐
6	L. ZHENG, ET AL., "Diversity and freedom: A fundamental tradeoff in multiple antenna channels," in Proc. IEEE Int. Symp. Information Theory (ISIT), June/July 2002, page 476, Lausanne, Switzerland.	☐
7	L. ZHENG, ET AL., "Diversity and multiplexing: A fundamental tradeoff in multiple-antenna channels," IEEE Trans. Inform. Theory, May 2003, pages 1073-1096, vol. 49.	☐
8	L. H. OZAROW, ET AL., "Information theoretic considerations for cellular mobile radio," IEEE Trans. Veh. Technology, May 1994, pages 359-378, vol. 43.	☐
9	E. C. VAN DER MEULEN, "Three-terminal communication channels," Adv. Appl. Probab., 1971, pages 120-154, vol. 3.	☐
10	J. N. LANEMAN, ET AL., "Cooperative Diversity in Wireless Networks: Efficient Protocols and Outage Behavior," IEEE Transactions on Inform. Theory, December 2004, pages 3062-3080, vol. 50, no. 12.	☐
11	H. HU, ET AL., "Range Extension without Capacity Penalty in Cellular Networks with Digital Fixed Relays", Proceedings of IEEE Global Telecommunications Conference, November/December 2004, pages 3053-3057, Dallas, TX.	☐

Receipt date: 07/28/2014 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13676207	13676207 - GAU: 2647
	Filing Date		2012-11-14	
	First Named Inventor	Rappaport		
	Art Unit	2647		
	Examiner Name	Refo, Dominic E.		
	Attorney Docket Number	08610001C5		

If you wish to add additional non-patent literature document citation information please click the Add button Add			
EXAMINER SIGNATURE			
Examiner Signature	/Dominic Rego/	Date Considered	08/10/2014
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			
¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.			

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	11339	455/3.02,427.7,11.1,12.1,13.1,13.2,16.CQLS. 370/226,243,246,274,279,293,315,316,492,501.ccls.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2014/08/10 23:39
L2	488365	(ignor\$3 cancel\$4 filter\$3) near6 (signal transmission)	US- PGPUB; USPAT	OR	ON	2014/08/10 23:40
L3	165510	(repeater relay near2 (device unit station terminal) boaster)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 23:40
L4	2536	2 same 3	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 23:43
L5	517189	(mhz megabits near per near second)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 23:43
L6	158	4 same 5	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 23:44
L7	69	1 and 6	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 23:44
L8	45	7 and (@ad <= "20040817" @rlad <= "20040817" @pd <= "20040817")	US- PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2014/08/10 23:44

			EPO; JPO			
S208	2	"8331854".PN.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2014/08/10 19:40
S209	302	(repeater relay near2 (device unit station terminal)) same half near2 duplex same full near2 duplex	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 20:02
S210	240322	"455"/\$.ccls.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 20:02
S211	51	S209 and S210	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 20:02
S212	31	S211 and (@ad <= "20040817" @rlad <= "20040817" @pd <= "20040817")	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 20:02
S213	165510	(repeater relay near2 (device unit station terminal) boaster)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 20:03
S214	517189	(mhz megabits near per near second)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 20:05
S215	1778	S213 same S214	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 20:05
S216	2	S215 same (ignor\$3 cancel\$4 filter\$3) with (data transmi\$6) with (undesir\$3 near2 transmi\$6 data near2 souce noise near2 source)	US- PGPUB; USPAT	OR	ON	2014/08/10 20:07

S217	9465	(ignor\$3 cancel\$4 filter\$3) with undesir\$3 with (data messag\$3 sms signal)	US-PGPUB; USPAT	OR	ON	2014/08/10 20:09
S218	4	S215 same S217	US-PGPUB; USPAT	OR	ON	2014/08/10 20:09
S219	591166	(ignor\$3 cancel\$4 filter\$3) near5 (data messag\$3 sms signal)	US-PGPUB; USPAT	OR	ON	2014/08/10 20:10
S220	2704	S213 same S219	US-PGPUB; USPAT	OR	ON	2014/08/10 20:11
S221	157	S214 same S220	US-PGPUB; USPAT	OR	ON	2014/08/10 20:11
S222	11339	455/3.02,427.7,11.1,12.1,13.1,13.2,16.CCLS.370/226,243,246,274,279,293,315,316,492,501.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2014/08/10 20:11
S223	72	S221 and S222	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2014/08/10 20:11
S224	6400772	"17" and (@ad <= "20040817" @rlad <= "20040817" @pd <= "20040817")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 20:11
S225	48	S223 and (@ad <= "20040817" @rlad <= "20040817" @pd <= "20040817")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/08/10 20:11

8/ 10/ 2014 11:45:18 PM
C:\ Users\ drego\ Documents\ EAST\ Workspaces\ 13676207.wsp

Search Notes 	Application/Control No. 13676207	Applicant(s)/Patent Under Reexamination RAPPAPORT, THEODORE S.
	Examiner DOMINIC E REGO	Art Unit 2647

CPC- SEARCHED		
Symbol	Date	Examiner
H04W 88/04	4/6/2014	DR
H04W 40/22	4/6/2014	DR
H04W 84/047	4/6/2014	DR

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
455	3.02, 427.7, 11.1, 12.1, 13.1, 13.2, 16	4/6/2014	DR
370	226, 243, 246, 274, 279, 293, 315, 316, 492, 501	4/6/2014	DR

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search	4/6/2014	DR
Updated EAST Search	8/10/2014	DR

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	PGPUB Text Search-See Interference Search History	8/10/2014	DR

--	--

Issue Classification 	Application/Control No. 13676207	Applicant(s)/Patent Under Reexamination RAPPAPORT, THEODORE S.	
	Examiner DOMINIC E REGO	Art Unit 2647	

CPC					
Symbol				Type	Version
H04W	24	/	00	A	2013-01-01
H04B	7	/	15542	I	2013-01-01
H04W	88	/	04	I	2013-01-01
H04W	4	/	18	A	2013-01-01
H04W	28	/	10	A	2013-01-01
H04W	12	/	00	A	2013-01-01
H04W	28	/	048	F	2013-01-01
H04W	16	/	14	A	2013-01-01
H04W	28	/	0236	I	2013-01-01
H04B	1	/	719	I	2013-01-01
		/			
		/			
		/			
		/			
		/			

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version

NONE		Total Claims Allowed:	
		26	
(Assistant Examiner)	(Date)	O.G. Print Claim(s)	O.G. Print Figure
/DOMINIC E REGO/ Primary Examiner.Art Unit 2647	8/10/14	45	1
(Primary Examiner)	(Date)		

Issue Classification 	Application/Control No. 13676207	Applicant(s)/Patent Under Reexamination RAPPAPORT, THEODORE S.
	Examiner DOMINIC E REGO	Art Unit 2647

US ORIGINAL CLASSIFICATION						INTERNATIONAL CLASSIFICATION													
CLASS		SUBCLASS				CLAIMED					NON-CLAIMED								
455		11.1				H	0	4	B	7 / 15 (2006.01.01)									
CROSS REFERENCE(S)																			
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)																		
455	7	12.1																	
370	274	279	315	492															
						</													

NONE		Total Claims Allowed:	
		26	
(Assistant Examiner)	(Date)	O.G. Print Claim(s)	O.G. Print Figure
/DOMINIC E REGO/ Primary Examiner.Art Unit 2647	8/10/14	45	1
(Primary Examiner)	(Date)		

Issue Classification 	Application/Control No. 13676207	Applicant(s)/Patent Under Reexamination RAPPAPORT, THEODORE S.
	Examiner DOMINIC E REGO	Art Unit 2647

☐ Claims renumbered in the same order as presented by applicant								☐ CPA		☒ T.D.		☐ R.1.47			
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		17		33	5	49	21	65						
	2		18		34	6	50	22	66						
	3		19		35	7	51	23	67						
	4		20		36	8	52	24	68						
	5		21		37	9	53	25	69						
	6		22		38	10	54	26	70						
	7		23		39	11	55								
	8		24		40	12	56								
	9		25		41	13	57								
	10		26		42	14	58								
	11		27		43	15	59								
	12		28		44	16	60								
	13		29	1	45	17	61								
	14		30	2	46	18	62								
	15		31	3	47	19	63								
	16		32	4	48	20	64								

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 26	
/DOMINIC E REGO/ Primary Examiner.Art Unit 2647 (Primary Examiner) _____ (Date) _____		O.G. Print Claim(s) 45	O.G. Print Figure 1

Application Number 	Application/Control No. 13/676,207	Applicant(s)/Patent under Reexamination RAPPAPORT, THEODORE S.	

Document Code - DISQ	Internal Document – DO NOT MAIL
-----------------------------	--

TERMINAL DISCLAIMER	☒ APPROVED	☐ DISAPPROVED
Date Filed : 07 AUG 2014	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:

FIVE TDS FILED AND APPROVED. JAB

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of

Rappaport

Confirmation No. 3678

Serial No. 13/676,207

Group Art Unit 2647

Filed November 14, 2012

Examiner Dominic Rego

For BROADBAND REPEATER WITH SECURITY FOR
ULTRAWIDEBAND TECHNOLOGIES

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

SUPPLEMENTAL AMENDMENT

Sir:

Applicant filed a response to the office action mailed April 9, 2014, on August 7, 2014. Applicant now supplements that response by making one change to claim 45.

The applicant requests reconsideration and entry of the following amendments.

Listing of the Claims begins on page 2

Remarks begin on page 8

Listing of the Claims

The following is a complete listing of the claims including the status of each:

1-44. (canceled)

45. (previously presented) A broadband wireless repeater or relay, comprising:

at least one receiver or transceiver for signal or data reception from one or more devices;

at least one transmitter or transceiver for signal or data transmission to one or more devices,

wherein the transceiver for signal or data reception and the transceiver for signal or data transmission may be the same or different; and

a controller that is configured or configurable for operation in one or more wireless networks, said controller communicating with said at least one receiver or transceiver for signal or data reception and said at least one transmitter or transceiver for signal or data transmission,

wherein at least one of said receiver or transceiver for signal or data reception and said transmitter or transceiver for signal or data transmission either or both transmit and receive at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more,

wherein said controller is configured or configurable to perform or for performing a plurality one or more of:

- a) ignore or filter out at least some signal or data transmissions from one or more undesired transmitters, users, networks, data sources, or noise sources;
- b) instruct one or more devices or networks to ignore or disregard at least some signal or data transmissions of one or more undesired transmitters, undesired users, undesired networks, or noise sources; and
- c) network provisioning or monitoring

46. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said controller performs a).

47. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said at least one receiver or transceiver for receiving signals or data and said at least one transmitter or transceiver for transmitting signals or data operate in half duplex.

48. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said at least one receiver or transceiver for receiving signals or data and said at least one transmitter or transceiver for transmitting signals or data operate in full duplex.

49. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said at least one receiver or transceiver for receiving signals or data and said at least one transmitter or transceiver for transmitting signals or data operate in simplex.

50. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay is configured such that when in a network which includes one or more devices which can transmit or receive at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more at least one of said one or more devices has a higher data rate than if said repeater or relay was not present in said network.

51. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay is configured such that when in a network which includes one or more devices which can transmit or receive at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more at least one of said one or more devices has a greater coverage distance than if said repeater or relay was not present in said network.

52. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay is configured such that when in a network which includes one or more devices which can transmit or receive at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more at least one of said one or more devices have higher quality of transmission or reception than if said repeater or relay was not present in said network.

53. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay is configured such that when in a network which includes one or more devices which can transmit or receive at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more at least one of said one or more devices has less interference than if said repeater or relay was not present in said network.

54. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay is configured such that when in one or more wireless networks which includes one or more devices which can transmit at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more at least one of said one or more wireless networks has an improved ability to control its capacity than if said repeater or relay was not present in said one or more wireless networks.

55. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said signals or data received by said receiver or transceiver for receiving signals or data, or signals or data transmitted by said transmitter or transceiver for transmitting signals or data, or signals or data controlled by said controller include modified, stored, or delayed signals or data.

56. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said controller is configured to cause said at least one transmitter or transceiver for transmitting signals or data to transmit modified received data or transmissions to one or

more devices at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more.

57. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said controller is configured to identify one or more devices in said one or more wireless networks.

58. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay employs MIMO or adaptive antenna technology.

59. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said controller is self-configurable.

60. (previously presented) The broadband wireless repeater or relay of claim 45 wherein at least one of said receiver or transceiver for signal or data reception, at least one of said transmitter or transceiver for signal or data transmission, or said controller is configured for operation in at least one of said one or more wireless networks in a moving platform environment.

61. (previously presented) The broadband wireless repeater or relay of claim 45 wherein at least one of said receiver or transceiver for signal or data reception, at least one of said transmitter or transceiver for signal or data transmission, or said controller is configured for operation in at least one of said one or more wireless networks ~~is~~ in an indoor environment.

62. (previously presented) The broadband wireless repeater or relay of claim 45 wherein at least one of said receiver or transceiver for signal or data reception, at least one of said transmitter or transceiver for signal or data transmission, or said controller is configured for operation in at least one of said one or more wireless networks ~~is~~ in an outdoor environment.

63. (previously presented) The broadband wireless repeater or relay of claim 45 wherein at least one of said receiver or transceiver for signal or data reception, at least one of said transmitter or transceiver for signal or data transmission, or said controller is configured for operation in at least one of said one or more wireless networks selected from the group consisting of: a cellular network, an enterprise network, a wireless local area network, or a wireless personal area network.

64. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said controller performs b).

65. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay is configured to be integrated with or in communication with a device selected from the group consisting of a television, a telephone, a cellphone, a computer, a camera, a video system, a monitor, a power plug, a wall outlet, a watch, a cable modem, a vehicle or other moving platform, a game console, and an ultrawideband transceiver or device.

66. (previously presented) The broadband wireless repeater or relay of claim 45 wherein one or more of said receiver or transceiver for signal or data reception, said transmitter or transceiver for signal or data transmission, and said controller is embedded in one or more integrated circuit chips.

67. (Previously presented) The broadband wireless repeater or relay of claim 45 wherein said controller performs c).

68. (Previously presented) The broadband wireless repeater or relay of claim 45 wherein in c) includes one or more of:

- i) bandwidth or delay provisioning of repeated or relayed transmissions,
- ii) application prioritization,
- iii) prioritizing, delaying or altering of data transmissions, traffic, or bandwidth,

and

iv) monitoring or measuring traffic from one or more devices, users or networks.

69. (previously presented) The broadband wireless repeater or relay of claim 45 wherein said broadband wireless repeater or relay is configured or configurable for monitoring or measuring traffic passed through, received by or transmitted by said broadband wireless repeater or relay.

70. (Previously presented) The broadband wireless repeater or relay of claim 45 wherein said broadband wireless repeater or relay is configured or configurable to modify at least some received signals or data from one or more devices, users or networks and transmit modified or delayed signals or data to at least one device, network or user via wireless communication.

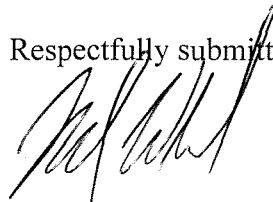
REMARKS

Claim 45 is amended. The application includes claims 45-70. The claims are in condition for allowance for reasons outlined in the amendment filed August 7, 2014.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Michael E. Whitham', is written over the typed name.

Michael E. Whitham
Reg. No. 32,635

Whitham, Curtis, Christofferson & Cook, P.C.
11491 Sunset Hills Road, Suite 340
Reston, VA 20190
Tel. (703) 787-9400
Fax. (703) 787-7557
Customer No.: 30743

Electronic Acknowledgement Receipt

EFS ID:	19815502
Application Number:	13676207
International Application Number:	
Confirmation Number:	3678
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES
First Named Inventor/Applicant Name:	Theodore S. Rappaport
Customer Number:	30743
Filer:	Michael E. Whitham
Filer Authorized By:	
Attorney Docket Number:	08610001C3
Receipt Date:	08-AUG-2014
Filing Date:	14-NOV-2012
Time Stamp:	13:46:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		08610001c3supp_8_8_14.pdf	248630 141437ef6b49406646d2b6655527c53d05a8441d	yes	8

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Supplemental Response or Supplemental Amendment	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	8
Warnings:			
Information:			
Total Files Size (in bytes):		248630	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.			

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 13/676,207	Filing Date 11/14/2012	☐ To be Mailed
---	---	----------------------------------	---------------------------------------

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO**APPLICATION AS FILED – PART I**

(Column 1)

(Column 2)

FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

(Column 1)

(Column 2)

(Column 3)

AMENDMENT	08/08/2014	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	* 26	Minus	** 26	= 0	X \$40 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0	X \$210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

(Column 1)

(Column 2)

(Column 3)

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

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

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

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

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

LIE
/JOY J. DOBBS/

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

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

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/676,207	Filing Date 11/14/2012	☐ To be Mailed
---	---	----------------------------------	---------------------------------------

 ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

(Column 1)

(Column 2)

FOR	NUMBER FILED	NUMBER EXTRA		RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		X \$ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		X \$ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED – PART II

(Column 1)

(Column 2)

(Column 3)

	08/08/2014	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT	Total (37 CFR 1.16(i))	* 26	Minus	** 26	= 0		X \$40 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0		X \$210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
TOTAL ADD'L FEE								0

(Column 1)

(Column 2)

(Column 3)

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

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

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

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

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

 LIE
 /PAMELA YOUNG/

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of

Rappaport

Confirmation No. 3678

Serial No. 13/676,207

Group Art Unit 2647

Filed November 14, 2012

Examiner Dominic Rego

For BROADBAND REPEATER WITH SECURITY FOR
ULTRAWIDEBAND TECHNOLOGIES

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

**PETITION FOR A ONE MONTH EXTENSION OF TIME AND
AMENDMENT UNDER 37 CFR 1.111**

Sir:

Applicant hereby petitions for a one month extension of time to respond to the office action mailed April 9, 2014. The Examiner is authorized to charge attorney's deposit account 50-2041 (Whitham, Curtis, Christofferson & Cook) for an extension of time fee, and for any other fee required to gain entry and consideration of this amendment.

The undersigned thanks Examiner Rego for the telephone interview which took place on August 6, 2014. This amendment makes the substance of the interview of record in the case.

In response to the office action mailed April 9, 2014, the applicant requests reconsideration and entry of the following amendments.

Listing of the Claims begins on page 2

Remarks begin on page 8

Listing of the Claims

The following is a complete listing of the claims including the status of each:

1-44. (canceled)

45. (currently amended) A broadband wireless ~~repeater or relay containing~~ ,comprising:
_____ at least one receiver or transceiver for signal or data reception from one or more
devices; and

_____ at least one transmitter or transceiver for signal or data transmission to one or
more devices,

wherein the transceiver for signal or data reception and the transceiver for
signal or data transmission may be the same or different, comprising: ;and

a controller that is configured or configurable for operation in one or more
 wireless networks, ~~said controller cooperating with said at least one receiver to receive~~
~~transmissions of one or more ultrawideband devices wherein said one or more~~
~~ultrawideband devices~~ said controller communicating with said at least one receiver or
transceiver for signal or data reception and said at least one transmitter or transceiver for
signal or data transmission,

_____ wherein at least one of said receiver or transceiver for signal or data reception and
said transmitter or transceiver for signal or data transmission either or both transmit and
receive electromagnetic signals that have at an instantaneous or overall occupied
 bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per
 second or more, ~~said controller cooperating with said at least one receiver and said at~~
~~least one transmitter~~

_____ to perform wherein said controller is configured or configurable to or for to
perform one or more of:

- a) ignore or filter out at least some signal or data transmissions ~~or data~~
 from one or more undesired transmitters, users, networks, data
 sources, or noise sources;
- b) instruct one or more ~~ultrawideband~~ devices or networks to ignore or
 disregard at least some signal or data ~~the~~ transmissions ~~or data~~ of one

or more undesired transmitters, undesired users, undesired networks,

or noise sources; and

c) network provisioning or monitoring ~~for said one or more ultrawideband devices, including one or more of~~

_____ i) bandwidth or delay provisioning,

_____ ii) application prioritization, and

_____ iii) traffic, bandwidth, delay or data transmission priorities or
monitoring ~~for said one or more ultrawideband devices.~~

46. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said controller performs a).

47. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said at least one receiver or transceiver for receiving signals or data and said at least one transmitter or transceiver for transmitting signals or data operate in half duplex.

48. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said at least one receiver or transceiver for receiving signals or data and said at least one transmitter or transceiver for transmitting signals or data operate in full duplex.

49. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said at least one receiver or transceiver for receiving signals or data and said at least one transmitter or transceiver for transmitting signals or data operate in simplex.

50. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay is configured such that when in a network which includes one or more devices which can transmit or receive at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more at least one of said one or more ~~ultrawide band~~ devices has a higher data rate than if said repeater or relay was not present in said network ~~one or more wireless networks~~.

51. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay is configured such that when in a network which includes one or more devices which can transmit or receive at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more at least one of said one or more ultrawide-band devices has a greater coverage distance than if said repeater or relay was not present in said network one or more wireless networks.

52. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay is configured such that when in a network which includes one or more devices which can transmit or receive at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more at least one of said one or more ultrawide-band devices have higher quality of transmission or reception than if said repeater or relay was not present in said network one or more wireless networks.

53. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay is configured such that when in a network which includes one or more devices which can transmit or receive at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more at least one of said one or more ultrawide-band devices has less interference than if said repeater or relay was not present in said network one or more wireless networks.

54. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay is configured such that when in one or more wireless networks which includes one or more devices which can transmit at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more at least one of said one or more wireless networks has an

improved ability to control its capacity than if said repeater or relay was not present in said one or more wireless networks.

55. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said signals or data received by said receiver or transceiver for receiving signals or data, or signals or data transmitted by said transmitter or transceiver for transmitting signals or data, or signals or data controlled by said controller is configured to modify received data or transmissions include modified, stored, or delayed signals or data.

56. (currently amended) The broadband wireless repeater or relay of claim ~~45~~ **55** wherein said controller is configured to cause said at least one or more transmitters transmitter or transceiver for transmitting signals or data to transmit modified received data or transmissions to one or more ~~ultrawideband~~ devices at an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more.

57. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said controller is configured to identify one or more devices in said one or more wireless networks.

58. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay employs MIMO or adaptive antenna technology.

59. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said controller is self-configurable.

60. (currently amended) The broadband wireless repeater or relay of claim 45 wherein at least one of said receiver or transceiver for signal or data reception, at least one of said transmitter or transceiver for signal or data transmission, or said controller is configured for operation in at least one of said one or more wireless networks is in a moving

~~platform an in-vehicle environment and said controller is configurable for operation in said in-vehicle environment.~~

61. (currently amended) The broadband wireless repeater or relay of claim 45 wherein at least one of said receiver or transceiver for signal or data reception, at least one of said transmitter or transceiver for signal or data transmission, or said controller is configured for operation in at least one of said one or more wireless networks ~~is- in an indoor environment and said controller is configurable for operation in said indoor environment.~~

62. (currently amended) The broadband wireless repeater or relay of claim 45 wherein at least one of said receiver or transceiver for signal or data reception, at least one of said transmitter or transceiver for signal or data transmission, or said controller is configured for operation in at least one of said one or more wireless networks ~~is- in an outdoor environment and said controller is configurable for operation in said outdoor environment.~~

63. (currently amended) The broadband wireless repeater or relay of claim 45 wherein at least one of said receiver or transceiver for signal or data reception, at least one of said transmitter or transceiver for signal or data transmission, or said controller is configured for operation in at least one of said one or more wireless networks selected from the group consisting of: is a cellular network, an enterprise network, a wireless local area network, or a wireless personal area network ~~and said controller is configurable for operation in said cellular network.~~

64. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said controller performs b).

65. (currently amended) The broadband wireless repeater or relay of claim 45 wherein said repeater or relay is configured to be integrated with or in communication with a device selected from the group consisting of a ~~said one or more UWB devices are selected from UWB-equipped television, a UWB-equipped telephone, a UWB-equipped~~

cellphone, ~~a UWB repeater, UWB-equipped computer, a UWB-equipped camera, a UWB-equipped video system, UWB-equipped airplane, a UWB-equipped monitor, a UWB-equipped power plug, a or-wall outlet, a UWB-equipped watch, a cable UWB-Cable~~ modem, a vehicle or other moving platform ~~UWB-equipped vehicle, a UWB-equipped game console, and an ultrawideband transceiver or device~~ UWB-Transeeiver.

66. (currently amended) The broadband wireless repeater or relay of claim 45 wherein one or more of said receiver or transceiver for signal or data reception, said transmitter or transceiver for signal or data transmission, and said controller ~~is embedded into an integrated circuit chip which is insertable into said one or more devices~~ is embedded in one or more integrated circuit chips.

67. (New) The broadband wireless repeater or relay of claim 45 wherein said controller performs c).

68. (New) The broadband wireless repeater or relay of claim 45 wherein in c) includes one or more of:

- i) bandwidth or delay provisioning of repeated or relayed transmissions,
 - ii) application prioritization,
 - iii) prioritizing, delaying or altering of data transmissions, traffic, or bandwidth,
- and
- iv) monitoring or measuring traffic from one or more devices, users or networks.

69. (New) The broadband wireless repeater or relay of claim 45 wherein said broadband wireless repeater or relay is configured or configurable for monitoring or measuring traffic passed through, received by or transmitted by said broadband wireless repeater or relay.

70. (New) The broadband wireless repeater or relay of claim 45 wherein said broadband wireless repeater or relay is configured or configurable to modify at least some received signals or data from one or more devices, users or networks and transmit modified or

delayed signals or data to at least one device, network or user via wireless communication.

REMARKS

Claims 45-66 have been amended. New Claims 67-70 have been added. The Commissioner is authorized to charge attorney's deposit account 50-2041 (Whitham, Curtis, Christofferson & Cook) for the one additional claim. The application now includes claims 45-70.

Claims 45-66 were rejected for obviousness type double patenting over claims 1-32 of U.S. Patent 7,983,613 and claims 1-20 of U.S. Patent 8,331,854. The undersigned notes that similar claims have also issued in U.S. Patent 7,676,194, U.S. Patent 8,600,295 and U.S. Patent 8,611,812. To simplify matters and to accelerate the application to grant, the applicant tenders here a terminal disclaimer for each of the four patents, thereby overcoming the rejection and any rejection that may have been made for the two additional patents.

Claims 45, 46, 58, 61-63 and 65 were rejected as being obvious over U.S. Patent Publication 2006/0063484 to Proctor in view of U.S. Patent 6,952,456 to Aiello and further in view of U.S. Patent 5,012,211 to Young. Claim 64 was rejected as being obvious over Proctor/Aiello/Young further in view of U.S. Patent Publication 2004/0259494 to Mazar. Claims 47 and 48 were rejected as being obvious over Proctor/Aiello/Young further in view of U.S. Patent Publication 2003/0162504 to Sabongi. Claim 49 was rejected as being obvious over Proctor/Aiello/Young further in view of U.S. Patent Publication 2003/0220075 to Baker. Claims 50 and 52-54 were rejected as being obvious over Proctor/Aiello/Young further in view of U.S. Patent Publication 2006/0285577 to Santhoff. Claim 51 was rejected as being obvious over Proctor/Aiello/Young further in view of U.S. Patent 7,289,813 to Karaoguz. Claims 55 and 56 were rejected as being obvious over Proctor/Aiello/Young further in view of U.S. Patent Publication 2005/0018640 to Fullerton. Claim 57 was rejected as being obvious over Proctor/Aiello/Young further in view of U.S. Patent Publication 2005/0197121 to Fujiwara. Claim 59 is rejected as being obvious over Proctor/Aiello/Young further in view of U.S. Patent Publication 2003/0211828 to Dalglish. Claim 60 was rejected as being obvious over Proctor/Aiello/Young further in view of U.S. Patent Publication 2003/0162528 to Juzswik. Claim 66 was rejected as being obvious over

Proctor/Aiello/Young further in view of U.S. Patent 6,754,882 to Sanchez. Each of these rejections are traversed.

Each of these references has been considered during the prosecution of prior patents in this series (each of which is now subject to a terminal disclaimer).

The principle patent to Proctor differs markedly from the claimed invention and pertains to a repeater having frequency translation. Proctor filters undesired analog signals in the course of signal processing. Proctor does no controlling. With reference to paragraphs [0022] to [0024] it can be seen that Proctor only contemplates frequency translation (i.e., converting from one frequency to another for retransmission), and that Proctor does not perform any function similar to ignoring or filtering out or modifying or delaying signals or data transmissions; instructing at least some networks or devices to ignore or disregard some signals or data; application prioritization; prioritization, delay or altering of data transmissions, traffic, or bandwidth; or monitoring traffic, devices or networks.

The secondary reference of Aiello teaches ultrawideband (UWB) was a known technology and satisfies the requirements of transmitting or receiving at electromagnetic signals that have an instantaneous or overall occupied bandwidth of 100 MHz or more or data transmission of 100 Megabits per second or more, BUT Aiello does not include a broadband repeater or relay with a controller configured to or for ignoring or filtering out signals or data transmissions; instructing at least some networks or devices to ignore or disregard some signals or data; application prioritization; prioritization, delay or altering of data transmissions, traffic, or bandwidth; or monitoring traffic, devices or networks.

The secondary reference to Young teaches the use of a low loss bandpass filter, BUT does not teach a controller configured to or for ignoring or filtering out signals or data transmissions; instructing at least some networks or devices to ignore or disregard some signals or data; application prioritization; prioritization, delay or altering of data transmissions, traffic, or bandwidth; or monitoring traffic, devices or networks.

As the Examiner will recognize, the claimed invention is not a jammer, it is not a mechanical filter, etc. Rather, the claimed invention is specifically designed to repeat or relay. Hence, even if one of ordinary skill in the art were to have full knowledge of Proctor, Aiello, and Young (it not being conceded that one of ordinary skill in the art

would combine the features as proposed in the office action), the combination would not produce or make obvious the claimed invention.

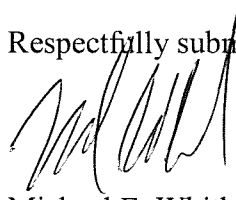
The tertiary references do not make up for the shortcomings of the basic combination of Proctor/Aiello/Young. For example, Mazar describes a blocking or jamming technology. Further, Mazar's description of providing an instruction to the medical device 605 from the repeater 625 to stop recording and/or transmitting data upon the repeater 625 receiving the user input, underscores the basic difference between the claimed invention and the prior art. Santoff shows only mapping noise by coordinated use of time bursts. Baker describes only distinguishing remote communications from a repeater versus communications not from a repeater. Sabongi describes only identifying non-functional two way radios using time windows and noted absences. Fujiwara only describes updating of location registration information and a relay that aggregates data for paging requests to send to each mobile terminal subordinate to itself. Fullerton describes only a wireless local area network using impulse radio and Gaussian pulse shape. Karagoaz describes only a signal generated locator to measure the reflections of wideband signals to determine distances of radio devices. Sanchez teaches only a support software packages for a system on a chip. Juzswick merely shows an in-vehicle environment in which a network is deployed, not one which includes any sort of repeater or relay, particularly as claimed. Dalgleish merely has been cited as showing self-configuring concepts, but clearly has nothing to do with self configuring a controller in a repeater or relay as is claimed.

In view of the foregoing, it is respectfully requested that the application be reconsidered, that claims 45-70 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'M. Whitham', is written over the text 'Respectfully submitted,'.

Michael E. Whitham
Reg. No. 32,635

Whitham, Curtis, Christofferson & Cook, P.C.
11491 Sunset Hills Road, Suite 340
Reston, VA 20190
Tel. (703) 787-9400
Fax. (703) 787-7557
Customer No.: 30743

**TERMINAL DISCLAIMER TO OBIATE A DOUBLE PATENTING
REJECTION OVER A "PRIOR" PATENT**

Docket Number (Optional)
08610001c3

In re Application of: Rappaport

Application No.: 13/676,207

Filed: November 14, 2012

For: BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES

The applicant, Theodore S. Rappaport, owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 8,600,295 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

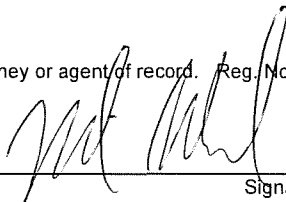
expires for failure to pay a maintenance fee;
is held unenforceable;
is found invalid by a court of competent jurisdiction;
is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
has all claims canceled by a reexamination certificate;
is reissued; or
is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 32,635



Signature

Date

Michael E. Whitham
Typed or printed name

Title

703-787-9400
Telephone Number

- ☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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

**TERMINAL DISCLAIMER TO OBIATE A DOUBLE PATENTING
REJECTION OVER A "PRIOR" PATENT**

Docket Number (Optional)
08610001c3

In re Application of: Rappaport

Application No.: 13/676,207

Filed: November 14, 2012

For: BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES

The applicant, Theodore S. Rappaport, owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 8,611,812 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

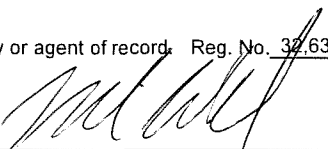
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 32,635



Signature

Date

Michael E. Whitham
Typed or printed name

Title

703-787-9400
Telephone Number

- ☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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

Electronic Patent Application Fee Transmittal

Application Number:	13676207			
Filing Date:	14-Nov-2012			
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES			
First Named Inventor/Applicant Name:	Theodore S. Rappaport			
Filer:	Michael E. Whitham			
Attorney Docket Number:	08610001C3			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	4	40	160
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 1 month with \$0 paid	2251	1	100	100
Miscellaneous:				
Statutory or Terminal Disclaimer	1814	5	160	800
Total in USD (\$)				1060

Electronic Acknowledgement Receipt

EFS ID:	19806760
Application Number:	13676207
International Application Number:	
Confirmation Number:	3678
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES
First Named Inventor/Applicant Name:	Theodore S. Rappaport
Customer Number:	30743
Filer:	Michael E. Whitham
Filer Authorized By:	
Attorney Docket Number:	08610001C3
Receipt Date:	07-AUG-2014
Filing Date:	14-NOV-2012
Time Stamp:	16:23:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 1060
RAM confirmation Number	2921
Deposit Account	502041
Authorized User	

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

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		08610001c3_8_7_14.pdf	675073 d97f3679d05e0f25b3499b38d4041b3e7ff6091c	yes	17
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	8	
	Applicant Arguments/Remarks Made in an Amendment		9	12	
	Terminal Disclaimer Filed		13	13	
	Terminal Disclaimer Filed		14	14	
	Terminal Disclaimer Filed		15	15	
	Terminal Disclaimer Filed		16	16	
	Terminal Disclaimer Filed		17	17	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	33811 a88c23ee63e6cf29855290c94e9de483e4081b47	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			708884		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

Electronic Patent Application Fee Transmittal

Application Number:	13676207			
Filing Date:	14-Nov-2012			
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES			
First Named Inventor/Applicant Name:	Theodore S. Rappaport			
Filer:	Michael E. Whitham			
Attorney Docket Number:	08610001C3			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	4	40	160
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 1 month with \$0 paid	2251	1	100	100
Miscellaneous:				
Statutory or Terminal Disclaimer	1814	5	160	800
Total in USD (\$)				1060

**TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING
REJECTION OVER A "PRIOR" PATENT**

Docket Number (Optional)
08610001c3

In re Application of: Rappaport

Application No.: 13/676,207

Filed: November 14, 2012

For: BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES

The applicant, Theodore S. Rappaport, owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 7,676,194 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

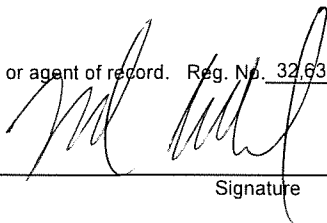
expires for failure to pay a maintenance fee;
is held unenforceable;
is found invalid by a court of competent jurisdiction;
is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
has all claims canceled by a reexamination certificate;
is reissued; or
is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 32,635



Signature

August 7, 2014

Date

Michael E. Whitham

Typed or printed name

Title

703-787-9400

Telephone Number

☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

**TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING
REJECTION OVER A "PRIOR" PATENT**

Docket Number (Optional)
08610001c3

In re Application of: Rappaport

Application No.: 13/676,207

Filed: November 14, 2012

For: BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES

The applicant, Theodore S. Rappaport, owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 8,331,854 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

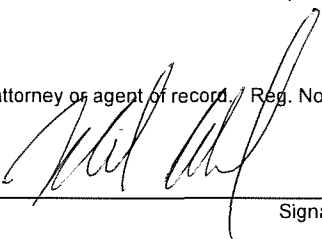
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 32,635



Signature

Date

Michael E. Whitham
Typed or printed name

Title

703-787-9400
Telephone Number

- ☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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

**TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING
REJECTION OVER A "PRIOR" PATENT**

Docket Number (Optional)
08610001c3

In re Application of: Rappaport

Application No.: 13/676,207

Filed: November 14, 2012

For: BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES

The applicant, Theodore S. Rappaport, owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 7,983,613 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

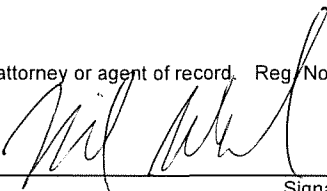
expires for failure to pay a maintenance fee;
is held unenforceable;
is found invalid by a court of competent jurisdiction;
is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
has all claims canceled by a reexamination certificate;
is reissued; or
is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 32,635



Signature

Date

Michael E. Whitham
Typed or printed name

Title

703-787-9400
Telephone Number

☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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

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 13/676,207	Filing Date 11/14/2012	☐ To be Mailed
---	---	----------------------------------	---------------------------------------

 ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

(Column 1)

(Column 2)

FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

(Column 1)

(Column 2)

(Column 3)

AMENDMENT	08/07/2014	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	* 26	Minus	** 22	= 4	X \$40 =	160
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0	X \$210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
TOTAL ADD'L FEE							160

(Column 1)

(Column 2)

(Column 3)

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

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

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

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

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

LIE
/TRACIE ROBERTSON/

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13676207	
	Filing Date		2012-11-14	
	First Named Inventor	Rappaport		
	Art Unit	2647		
	Examiner Name	Refo, Dominic E.		
	Attorney Docket Number	08610001C5		

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

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

Add

U.S.PATENT APPLICATION PUBLICATIONS						Remove
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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

Add

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

If you wish to add additional Foreign Patent Document citation information please click the Add button

Add

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

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	13676207
Filing Date	2012-11-14
First Named Inventor	Rappaport
Art Unit	2647
Examiner Name	Refo, Dominic E.
Attorney Docket Number	08610001C5

1	E. H. DRUCKER, "Development and Application of a Cellular Repeater," Proceedings of IEEE Vehicular Technology Conference, June 1988, pages 321-325.	☐
2	W.T. SLINGSBY, ET AL., "A high-gain cell enhancer," IEEE Vehicular Technology Conference Proceedings, May 1992, pages 756-758, vol. 1, http://research-information.bristol.ac.uk/files/2999289/slingsby_IEEE_VTC_1992.pdf	☐
3	A. ZEGAR, "Adaptive antenna same frequency repeater," IEEE APS Intl. Symp, October 1976, pages 452-455.	☐
4	T. M. COVER, ET AL., "Capacity theorems for the relay channel," IEEE Trans. Inform. Theory, September 1979, pages 572-584.	☐
5	A. SENDONARIS, ET AL., "Increasing uplink capacity via user cooperation diversity," Proc. IEEE Int. Symp. Information Theory (ISIT), August 1998, page 156, Cambridge, MA.	☐
6	L. ZHENG, ET AL., "Diversity and freedom: A fundamental tradeoff in multiple antenna channels," in Proc. IEEE Int. Symp. Information Theory (ISIT), June/July 2002, page 476, Lausanne, Switzerland.	☐
7	L. ZHENG, ET AL., "Diversity and multiplexing: A fundamental tradeoff in multiple-antenna channels," IEEE Trans. Inform. Theory, May 2003, pages 1073-1096, vol. 49.	☐
8	L. H. OZAROW, ET AL., "Information theoretic considerations for cellular mobile radio," IEEE Trans. Veh. Technology, May 1994, pages 359-378, vol. 43.	☐
9	E. C. VAN DER MEULEN, "Three-terminal communication channels," Adv. Appl. Probab., 1971, pages 120-154, vol. 3.	☐
10	J. N. LANEMAN, ET AL., "Cooperative Diversity in Wireless Networks: Efficient Protocols and Outage Behavior," IEEE Transactions on Inform. Theory, December 2004, pages 3062-3080, vol. 50, no. 12.	☐
11	H. HU, ET AL., "Range Extension without Capacity Penalty in Cellular Networks with Digital Fixed Relays", Proceedings of IEEE Global Telecommunications Conference, November/December 2004, pages 3053-3057, Dallas, TX.	☐

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	13676207
Filing Date	2012-11-14
First Named Inventor	Rappaport
Art Unit	2647
Examiner Name	Refo, Dominic E.
Attorney Docket Number	08610001C5

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

EXAMINER SIGNATURE

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

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

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

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	13676207
Filing Date	2012-11-14
First Named Inventor	Rappaport
Art Unit	2647
Examiner Name	Refo, Dominic E.
Attorney Docket Number	08610001C5

CERTIFICATION STATEMENT

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

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

OR

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

☐ See attached certification statement.

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

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Michael E. Whitham/	Date (YYYY-MM-DD)	2014-07-28
Name/Print	Michael E. Whitham	Registration Number	32635

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	13676207			
Filing Date:	14-Nov-2012			
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES			
First Named Inventor/Applicant Name:	Theodore S. Rappaport			
Filer:	Michael E. Whitham/Ivan Torres			
Attorney Docket Number:	08610001C3			
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				180

Electronic Acknowledgement Receipt

EFS ID:	19707081
Application Number:	13676207
International Application Number:	
Confirmation Number:	3678
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES
First Named Inventor/Applicant Name:	Theodore S. Rappaport
Customer Number:	30743
Filer:	Michael E. Whitham/Ivan Torres
Filer Authorized By:	Michael E. Whitham
Attorney Docket Number:	08610001C3
Receipt Date:	28-JUL-2014
Filing Date:	14-NOV-2012
Time Stamp:	19:44:42
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 180
RAM confirmation Number	8795
Deposit Account	502041
Authorized User	

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

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Samsung Ex. 1004

Page 85 of 233

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	08610001C3_IDS2.pdf	613582 ae75b69b50a4d57d8505e8ef9a24b627b8c5ddac	no	5
Warnings:					
Information:					
A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.					
2	Non Patent Literature	08610001C3_ids2_NPL_1.pdf	274689 00c5c0ca1edb207d7c400952b99ad483fb4d7966	no	5
Warnings:					
Information:					
3	Non Patent Literature	08610001C3_ids2_NPL_2.pdf	146139 5ef6a1a94cf0f8d38adea50f541a57f2ee61992d	no	3
Warnings:					
Information:					
4	Non Patent Literature	08610001C3_ids2_NPL_3.pdf	181169 10bee1db5c9e739c5320a3e9847cc5c998cf4f7	no	4
Warnings:					
Information:					
5	Non Patent Literature	08610001C3_ids2_NPL_4.pdf	916349 02d742cc29575c25b06f0d1d92aec3f7aa328154	no	13
Warnings:					
Information:					
6	Non Patent Literature	08610001C3_ids2_NPL_5.pdf	70397 fa1685f8b8b43d9adC554ca2db355e4951a3eade	no	1
Warnings:					
Information:					
7	Non Patent Literature	08610001C3_ids2_NPL_6.pdf	69359 8a000cfb86861001fb9310c476b44f3caf3a7fd1	no	1
Warnings:					
Information:					

8	Non Patent Literature	08610001C3_ids2_NPL_7.pdf	1930341	no	24
			97a255ae49e4ea6ec30613829b8a62c84607e7fe		
Warnings:					
Information:					
9	Non Patent Literature	08610001C3_ids2_NPL_8.pdf	1442797	no	20
			a5c4bada5a8f9e43dad22c48efb9b2b10b6aee7		
Warnings:					
Information:					
10	Non Patent Literature	08610001C3_ids2_NPL_9.pdf	1394346	no	35
			f8a1ff303a2b8b76cfa904ed97076c9f52530a2a		
Warnings:					
Information:					
11	Non Patent Literature	08610001C3_ids2_NPL_10.pdf	1572926	no	19
			62ac0e5bba94432ec50af330d76ee434d87fa950		
Warnings:					
Information:					
12	Non Patent Literature	08610001C3_ids2_NPL_11.pdf	427234	no	5
			88efaf5676f7d6152e233a993dabca55138fd38c		
Warnings:					
Information:					
13	Fee Worksheet (SB06)	fee-info.pdf	30528	no	2
			2e05540783663c8958b7d5222e81cede668d730f		
Warnings:					
Information:					
Total Files Size (in bytes):			9069856		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

13/676,207

11/14/2012

Theodore S. Rappaport

08610001C3

3678

30743

7590

04/09/2014

WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.

11491 SUNSET HILLS ROAD

SUITE 340

RESTON, VA 20190

EXAMINER

REGO, DOMINIC E

ART UNIT

PAPER NUMBER

2647

MAIL DATE

DELIVERY MODE

04/09/2014

PAPER

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

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

Office Action Summary	Application No. 13/676,207	Applicant(s) RAPPAPORT, THEODORE S.	
	Examiner DOMINIC E. REGO	Art Unit 2647	AIA (First Inventor to File) Status No

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

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

Status

- 1) ☒ Responsive to communication(s) filed on 11/14/2012.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

- 5) ☒ Claim(s) 45-66 is/are pending in the application.
5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) _____ is/are allowed.
- 7) ☒ Claim(s) 45-66 is/are rejected.
- 8) ☐ Claim(s) _____ is/are objected to.
- 9) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

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

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 11/14/2012 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

Certified copies:

- a) ☐ All b) ☐ Some** c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Attachment(s)

- | | |
|--|---|
| 1) ☐ Notice of References Cited (PTO-892) | 3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date _____ | 4) ☐ Other: _____ |

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

DETAILED ACTION

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 45-66 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-32 of U.S. Patent No. 7,983,613 or claims 1-20 of U.S. Patent #8,331,854. Although the conflicting claims are not identical, they are not patentably distinct from each other.

Claim Rejections - 35 USC § 103

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

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 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.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under pre-AIA 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under pre-AIA 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of pre-AIA 35 U.S.C. 103(c) and potential pre-AIA 35 U.S.C. 102(e), (f) or (g) prior art under pre-AIA 35 U.S.C. 103(a).

7. Claims 45, 46, 58, 61, 62, 63, and 65 are rejected under 35 U.S.C. 103(a) as being obvious over Proctor, JR. et al. (US Patent Application Publication #2006/0063484) in view of Aiello et al. (US Patent #6,952,456), and further in view of Young et al. (US Patent #5,012,211).

Regarding claim 45, Proctor teaches a broadband wireless relay containing at least one receiver and at least one transmitter, comprising:

a controller that is configurable for operation in one or more wireless networks, said controller cooperating with said at least one receiver to receive transmissions of one or more ultrawideband devices (Paragraph 0011), but does not specifically teach wherein said one or more ultrawideband devices either or both transmit and receive electromagnetic signals that have an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more, said controller cooperating with said at least one receiver and said at least one transmitter to perform one or more of

a) ignore or filter out transmissions or data from one or more undesired transmitters, data sources, or noise sources;

b) instruct one or more ultrawideband devices to ignore or disregard the transmissions or data of one or more undesired transmitters, undesired users or noise sources; and

c) network provisioning or monitoring for said one or more ultrawideband devices, including one or more of

i) bandwidth or delay provisioning,
ii) application prioritization, and
iii) traffic, bandwidth, delay or data transmission priorities or monitoring for said one or more ultrawideband devices.

However, in related art, Aiello teaches wherein said one or more ultrawideband devices either or both transmit and receive electromagnetic signals that have an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more (*Col 2, lines 8-21, Aiello teaches Ultra wide band (UWB) is a wireless technology for transmitting large amounts of digital data over a wide spectrum of frequency bands with very low power. UWB is an extension of conventional spread spectrum technology. The major distinction is that while conventional spread spectrum signals require a few megahertz to about 20 to 30 MHz of bandwidth, UWB uses vastly more spectrum from a few megahertz to several gigahertz. Therefore, UWB communication systems broadcast digital pulses that are timed very precisely on a signal across a very wide spectrum. The transmitter and receiver must be coordinated to send and receive at the proper time. One of the applications for UWB is to allow low powered voice and data communications at very high bit rates. Col 6, lines 9-18, teaches transmitter 16 is preferably a wide band transmitter device which generates a modulated ultra wide band pulse stream output from data modulation unit 20 and transmits the shaped modulated ultra wide band pulse stream via antenna 14 as a stream of electromagnetic radio frequency (RF) pulses. In the preferred embodiment, data is transmitted via impulses having 100 picosecond*

risetime and 200 picosecond width, which corresponds to a bandwidth of between about 2.5 GHz and 5 GHz). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Aiello to Proctor in order to achieve high RF performance.

The combination of Proctor and Aiello do not specifically teaches said controller cooperating with said at least one receiver and said at least one transmitter to perform one or more of

a) ignore or filter out transmissions or data from one or more undesired transmitters, data sources, or noise sources;

b) instruct one or more ultrawideband devices to ignore or disregard the transmissions or data of one or more undesired transmitters, undesired users or noise sources; and

c) network provisioning or monitoring for said one or more ultrawideband devices, including one or more of

i) bandwidth or delay provisioning,

ii) application prioritization, and

iii) traffic, bandwidth, delay or data transmission priorities or monitoring for said one or more ultrawideband devices.

However, in related art, Young teaches said controller cooperating with said at least one receiver and said at least one transmitter to perform one or more of

a) ignore or filter out transmissions or data from one or more undesired transmitters, data sources, or noise sources (*Col 3, lines 33-40, Young teaches by way*

of example in the use of the filter 10 of the invention, it is noted that a low loss bandpass filter is necessary to protect communication repeaters against unwanted signals while establishing a desired noise bandwidth). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Young to Proctor and Aiello in order to have secure communication with other terminal.

Regarding claim 46, the combination of Proctor, Aiello, and Young teach all the claimed elements in claim 45. In addition, Young teaches the broadband wireless relay of claim 45 wherein said controller performs a) *(Col 3, lines 33-40, Young teaches by way of example in the use of the filter 10 of the invention, it is noted that a low loss bandpass filter is necessary to protect communication repeaters against unwanted signals while establishing a desired noise bandwidth).*

Regarding claim 58, the combination of Proctor, Aiello, and Young teach all the claimed elements in claim 45. In addition, Young teaches the broadband wireless relay of claim 45 wherein said relay employs MIMO or adaptive antenna technology (Paragraph 0036).

Regarding claim 61, the combination of Proctor, Aiello, and Young teach all the claimed elements in claim 45. In addition, Proctor teaches the broadband wireless relay of claim 45 wherein at least one of said one or more wireless networks is in an indoor environment and said controller is configurable for operation in said indoor environment (Paragraph 0004).

Regarding claim 62, the combination of Proctor, Aiello, and Young teach all the claimed elements in claim 45. In addition, Proctor teaches the broadband wireless relay

of claim 45 wherein at least one of said one or more wireless networks is in an outdoor environment and said controller is configurable for operation in said outdoor environment (Paragraph 0005).

Regarding claim 63, the combination of Proctor, Aiello, and Young teach all the claimed elements in claim 45. In addition, Proctor teaches the broadband wireless relay of claim 45 wherein at least one of said one or more wireless networks is a cellular network and said controller is configurable for operation in said cellular network (Paragraph 0006, 0007).

Regarding claim 65, the combination of Proctor, Aiello, and Young teach all the claimed elements in claim 45. In addition, Proctor teaches broadband wireless relay of claim 45 wherein said one or more UWB devices are selected from UWB equipped television, UWB equipped telephone, UWB equipped cellphone, UWB repeater, UWB equipped computer, UWB equipped camera, UWB equipped video system, UWB equipped airplane, UWB equipped monitor, UWB equipped power plug or wall outlet, UWB equipped watch, UWB Cable modem, UWB equipped vehicle, UWB equipped game console, and UWB Transceiver (Paragraph 0011; and Aiello, Fig 1; *Col 2, lines 8-21 and Col 6, lines 9-18*).

8. Claim 64 is rejected under 35 U.S.C. 103(a) as being obvious over Proctor, JR. et al. (US Patent Application Publication #2006/0063484) in view of Aiello et al. (US Patent #6,952,456) in view of Young et al. (US Patent #5,012,211) and further in view of Mazar (US 2004/0259494).

Regarding claim 64, the combination of Proctor, Aiello, and Young fail to teach broadband wireless relay of claim 45 wherein said controller performs b).

However, in related art, Mazar teaches b) instructing one or more devices to ignore or disregard the transmissions or data of one or more undesired transmitters, undesired users or noise sources (*See Abstract, Mazar teaches systems and methods provide for the selective prevention of data transfer from a medical device to allow the patient to have privacy when desired. These systems and methods provide medical devices that can be instructed in various ways to stop recording data and/or transmitting data to external devices and systems. Paragraph 0108, Mazar teaches the medical device 605 may include a sensor that allows the patient to provide a signal to prevent the medical device 605 from recording and/or transmitting data or an instruction may be provided to the medical device 605 from the repeater 625 to stop recording and/or transmitting data upon the repeater 625 receiving a user input. Alternatively, the external repeater 625 may receive a user input to cause the repeater to stop initiating data transfer with the medical device and/or to stop recording data transmitted by the medical device*). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Mazar to Proctor, Aiello, and Young in order to protect stealing or accessing data from illegal user(s) or eavesdropper.

9. Claims 47 and 48 are rejected under 35 U.S.C. 103(a) as being obvious over Proctor, JR. et al. (US Patent Application Publication #2006/0063484) in view of Aiello

et al. (US Patent #6,952,456) in view of Young et al. (US Patent #5,012,211) and further in view of Sabongi et al. (US 2003/0162504).

Regarding claim 47, the combination of Proctor, Aiello, and Young fail to teach the broadband wireless relay of claim 45 wherein said at least one receiver and said at least one transmitter operate in half duplex.

However, in related art, Sabongi teaches the broadband wireless relay of claim 45 wherein said at least one receiver and said at least one transmitter operate in half duplex (Paragraph 0023). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Sabongi to the combination of Proctor, Aiello, and Young in order to transmit or receive signal in both directions on a single carrier, but not at the same time.

Regarding claim 48, the combination of Proctor, Aiello, and Young fail to teach the broadband wireless relay of claim 45 wherein said at least one receiver and said at least one transmitter operate in full duplex.

However, in related art, Sabongi the broadband wireless relay of claim 45 wherein said at least one receiver and said at least one transmitter operate in full duplex (Paragraph 0023). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Sabongi to Proctor, Aiello, and Young in order to transmit data in both directions on a single carrier at the same time.

Art Unit: 2647

10. Claim 49 is rejected under 35 U.S.C. 103(a) as being obvious over Proctor, JR. et al. (US Patent Application Publication #2006/0063484) in view of Aiello et al. (US Patent #6,952,456) in view of Young et al. (US Patent #5,012,211) and further in view of Baker et al. (US 2003/0220075).

Regarding claim 49, the combination of Proctor, Aiello, and Young fail to teach the broadband wireless relay of claim 45 wherein said at least one receiver and said at least one transmitter operate in simplex.

However, in related art, Baker teaches the b broadband wireless relay of claim 45 wherein said at least one receiver and said at least one transmitter operate in simplex (Paragraph 0048). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Baler to Proctor, Aiello, and Young in order to have one way communication.

11. Claims 50 and 52-54 are rejected under 35 U.S.C. 103(a) as being obvious over Proctor, JR. et al. (US Patent Application Publication #2006/0063484) in view of Aiello et al. (US Patent #6,952,456) in view of Young et al. (US Patent #5,012,211) and further in view of Santhoff et al. (US 2006/0285577).

Regarding claim 50, the combination of Proctor, Aiello, and Young fail to teach the broadband wireless relay of claim 45 wherein at least one of said one or more ultrawide band devices has a higher data rate than if said relay was not present in said one or more wireless networks.

However, in related art, Santhoff teaches the broadband wireless relay of claim 45 wherein at least one of said one or more ultrawide band devices has a higher data rate than if said relay was not present in said one or more wireless networks (Paragraph 0005). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Santhoff to Proctor, Aiello, and Young in order to enhance communication between mobile devices.

Regarding claim 52, the combination of Proctor, Aiello, and Young fail to teach the broadband wireless relay of claim 45 wherein at least one of said one or more ultrawide band devices have higher quality of transmission or reception than if said relay was not present in said one or more wireless networks.

However, in related art, Santhoff teaches the broadband wireless relay of claim 45 wherein at least one of said one or more ultrawide band devices have higher quality of transmission or reception than if said relay was not present in said one or more wireless networks (Paragraphs 0008, 0009, 0012). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Santhoff to Proctor, Aiello, and Young in order to enhance communication between mobile devices.

Regarding claim 53, the combination of Proctor, Aiello, and Young fail to teach the broadband wireless relay of claim 45 wherein at least one of said one or more ultrawide band devices has less interference than if said relay was not present in said one or more wireless networks.

However, in related art, Santhoff teaches the broadband wireless relay of claim 45 wherein at least one of said one or more ultrawide band devices has less interference than if said relay was not present in said one or more wireless networks (Paragraphs 0012, 0034, 0036). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Santhoff to Proctor, Aiello, and Young in order to enhance communication between mobile devices.

Regarding claim 54, the combination of Proctor, Aiello, and Young fail to teach to teach the broadband wireless relay of claim 45 wherein at least one of said one or more wireless networks has an improved ability to control its capacity than if said relay was not present in said one or more wireless networks.

However, in related art, Santhoff teaches the broadband wireless relay of claim 45 wherein at least one of said one or more wireless networks has an improved ability to control its capacity than if said relay was not present in said one or more wireless networks (Paragraph 0034). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Santhoff to Proctor, Aiello, and Young in order to enhance communication between mobile devices.

12. Claim 51 is rejected under 35 U.S.C. 103(a) as being obvious over Proctor, JR. et al. (US Patent Application Publication #2006/0063484) in view of Aiello et al. (US Patent #6,952,456) in view of Young et al. (US Patent #5,012,211) and further in view of Karaoguz et al. (US Patent #7,289,813).

Regarding claim 51, the combination of Proctor, Aiello, and Young fail to teach the broadband wireless relay of claim 45 wherein at least one of said one or more ultrawide band devices has a greater coverage distance than if said relay was not present in said one or more wireless networks.

However, in related art, Karaoguz teaches the broadband wireless relay of claim 45 wherein at least one of said one or more ultrawide band devices has a greater coverage distance than if said relay was not present in said one or more wireless networks (Col 4, lines 39-48). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Karaoguz to Proctor, Aiello, and Young in order to enhance communication between mobile devices.

13. Claims 55 and 56 are rejected under 35 U.S.C. 103(a) as being obvious over Proctor, JR. et al. (US Patent Application Publication #2006/0063484) in view of Aiello et al. (US Patent #6,952,456) in view of Young et al. (US Patent #5,012,211) and further in view of Fullerton (US 2005/0018640).

Regarding claim 55, the combination of Proctor, Aiello, and Young fail to teach the broadband wireless relay of claim 45 wherein said controller is configured to modify received data or transmissions.

However, in related art, Fullerton teaches the broadband wireless relay of claim 45 wherein said controller is configured to modify received data or transmissions (Claims 48 and 49). Therefore, it would have been obvious to one of ordinary skill in the

art at the time of the invention to provide the above teaching of Fullerton to Proctor, Aiello, and Young in order to improve the signal quality.

Regarding claim 56, the combination of the combination of Proctor, Aiello, Young, and Fullerton teach all the claimed elements in claim 55. In addition, Fullerton teach the broadband wireless relay of claim 55 wherein said controller is configured to cause said one or more transmitters to transmit modified received data or transmissions to one or more ultrawideband devices (Claims 48 and 49).

14. Claim 57 is rejected under 35 U.S.C. 103(a) as being obvious over Proctor, JR. et al. (US Patent Application Publication #2006/0063484) in view of Aiello et al. (US Patent #6,952,456) in view of Young et al. (US Patent #5,012,211) and further in view of Fujiwara et al. (US 2005/0197121).

Regarding claim 57, the combination of Proctor, Aiello, and Young fail to teach the broadband wireless relay of claim 45 wherein said controller is configured to identify one or more devices in said one or more wireless networks.

However, in related art, Fujiwara teaches the broadband wireless relay of claim 45 wherein said controller is configured to identify one or more devices in said one or more wireless networks (Paragraph 0034). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Karaoguz to Proctor, Aiello, and Young in order to enhance wireless communication performance.

15. Claim 59 is rejected under 35 U.S.C. 103(a) as being obvious over Proctor, JR. et al. (US Patent Application Publication #2006/0063484) in view of Aiello et al. (US Patent #6,952,456) in view of Young et al. (US Patent #5,012,211) and further in view of Dagleish et al. (US 2003/0211828).

Regarding claim 59, the combination of Proctor, Aiello, and Young fail to teach the broadband wireless relay of claim 45 wherein said controller is self-configurable.

However, in related art, Dagleish teaches the broadband wireless relay of claim 45 wherein said controller is self-configurable (See abstract; Paragraphs 0001, 0015, and claim 16). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Karaoguz to Proctor, Aiello, and Young in order to balance downlink and uplink gain.

16. Claim 60 is rejected under 35 U.S.C. 103(a) as being obvious over Proctor, JR. et al. (US Patent Application Publication #2006/0063484) in view of Aiello et al. (US Patent #6,952,456) in view of Young et al. (US Patent #5,012,211) and further in view of Juzswik (US 2003/0162528).

Regarding claim 60, the combination of Proctor, Aiello, and Young fail to teach the broadband wireless relay of claim 45 wherein at least one of said one or more

wireless networks is in an in-vehicle environment and said controller is configurable for operation in said in-vehicle environment.

However, in related art, Juzswik teaches the broadband wireless relay of claim 45 wherein at least one of said one or more wireless networks is in an in-vehicle environment and said controller is configurable for operation in said in-vehicle environment (Paragraphs 0039 and 0048). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Juzswik to Proctor, Aiello, and Young in order to maintain extended area communication.

17. Claim 66 is rejected under 35 U.S.C. 103(a) as being obvious over Proctor, JR. et al. (US Patent Application Publication #2006/0063484) in view of Aiello et al. (US Patent #6,952,456) in view of Young et al. (US Patent #5,012,211) and further in view of Sanchez et al. (US Patent #6,754,882).

Regarding claim 66, the combination of Proctor, Aiello, and Young fail to teach the broadband wireless relay of claim 45 wherein said controller is embedded into an integrated circuit chip which is insertable into said one or more UWB devices.

However, in related art, Sanchez teaches the broadband wireless relay of claim 45 wherein said controller is embedded into an integrated circuit chip which is insertable into said one or more UWB devices (Col 1, lines 43-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above

Art Unit: 2647

teaching of Sanchez to Proctor, Aiello, and Young in order to control the phone both internally and externally.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOMINIC E. REGO whose telephone number is (571)272-8132. The examiner can normally be reached on Monday-Friday, 9:00 am-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bobbak Y. Safaipour can be reached on 571-270-1092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DOMINIC E REGO/

Application/Control Number: 13/676,207

Page 19

Art Unit: 2647

Primary Examiner, Art Unit 2647

Tel 571-272-8132

Approved for use through 07/31/2012 OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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

Substitute for form 1449/PTO

(Use as many sheets as necessary)

Complete if Known

Application Number	13/676,207
Filing Date	11-14-2012
First Named Inventor	Rappaport
Art Unit	2472
Examiner Name	Kizou, Hassan
Attorney Docket Number	08610001C3

Sheet	1	of	3
-------	---	----	---

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	1	US- 7289813	10-2007	Karaoguz, Jeyhan	
	2	US- 6348986	02-2002	Doucet et al.	
	3	US- 6186908	02-2001	Kawasaki et al.	
	4	US- 6934511	08-2005	Lovinggood et al.	
	5	US- 5012211	04-1991	Young et al.	
	6	US- 4626845	12-1986	Ley, John F.	
	7	US- 4298179	11-1981	Gllicher, Heinz	
	8	US- 6952456	10-2005	Aiello et al.	
	9	US- 7787513	08-2010	Siwiak et al.	
	10	US- 6806821	10-2004	McLemore, Donald P.	
	11	US- 7983613	01-18-2010	Rappaport	
	12	US- 6754882	06-2004	Sanchez	
	13	US- 8331854	06-10-2011	Rappaport	
	14	US- 20020093928	07-18-2002	LoGalbo et al.	
	15	US- 20040259494	12-2004	Mazar, Scott T.	
	16	US- 20030162504	08-2003	Sabongi et al.	
	17	US- 20030220075	11-2003	Baker et al.	
	18	US- 20060285577	12-2006	Santhoff et al.	
	19	US- 20050018640	01-2005	Fullerton et al.	

FOREIGN PATENT DOCUMENTS

[illegible]

Examiner
Signature

/Dominic Rego/

Date _____

Considered

04/06/2014

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

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours 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, 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 (1-800-786-9199) and select option 2.

PTO/SB/08a (07-09)

Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 2 of 3

Complete if Known

Application Number	13/676,207
Filing Date	11-14-2012
First Named Inventor	Rappaport
Art Unit	2472
Examiner Name	Kizou, Hassan
Attorney Docket Number	08610001C3

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	20	US- 20050197121	09-2005	Fujiwara et al.	
	21	US- 20030211828	11-2003	Dagleish et al.	
	22	US- 20030162528	08-2003	Juzsik, David Leonard	
	23	US- 20040178928	09-2004	Butzer et al.	
	24	US- 20120033714	02-2012	Lakkis et al.	
	25	US- 20040212537	10-2004	Mohammadian, Alireza Hormoz	
	26	US- 20080136644	06-2008	McCorkle, John W.	
	27	US- 20080107162	05-2008	Moore et al.	
	28	US- 20060251148	11-2006	Welborn et al.	
	29	US- 20050026563	02-2005	Leeper et al.	
	30	US- 20040190594	09-2004	Santhoff, John	
	31	US- 20040178942	09-2004	McLemore, Donald P.	
	32	US- 20040146092	07-2004	Balakrishnan et al.	
	33	US- 20040017306	01-2004	Miao, George J.	
	34	US- 20030063597	04-2003	Suzuki, Mitsuhiro	
	35	US- 20030053521	03-2003	Huang et al.	
	36	US- 20040198260	10-2004	Molisch et al.	
	37	US- 20030110157	06-2003	Maki et al.	
	38	US- 20040010605	01-2004	Furukawa et al.	

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)			

Examiner Signature	/Dominic Rego/	Date Considered	04/06/2014
--------------------	----------------	-----------------	------------

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

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours 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, 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 (1-800-786-9199) and select option 2.

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

Complete if Known

(Use as many sheets as necessary)

Sheet	3	of	3
-------	---	----	---

Application Number	13/676,207
Filing Date	11-14-2012
First Named Inventor	Rappaport
Art Unit	2472
Examiner Name	Kizou, Hassan
Attorney Docket Number	08610001C3

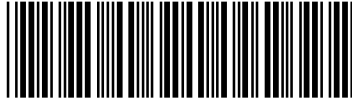
[illegible][illegible]

Examiner Signature	/Dominic Rego/	Date Considered	04/06/2014
-----------------------	----------------	--------------------	------------

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

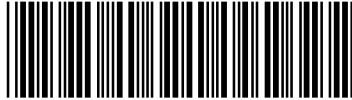
This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours 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, 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 (1-800-786-9199) and select option 2.

<i>Index of Claims</i> 	Application/Control No. 13676207	Applicant(s)/Patent Under Reexamination RAPPAPORT, THEODORE S.
	Examiner DOMINIC E REGO	Art Unit 2647

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

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47			
CLAIM		DATE							
Final	Original	04/06/2014							
	1	-							
	2	-							
	3	-							
	4	-							
	5	-							
	6	-							
	7	-							
	8	-							
	9	-							
	10	-							
	11	-							
	12	-							
	13	-							
	14	-							
	15	-							
	16	-							
	17	-							
	18	-							
	19	-							
	20	-							
	21	-							
	22	-							
	23	-							
	24	-							
	25	-							
	26	-							
	27	-							
	28	-							
	29	-							
	30	-							
	31	-							
	32	-							
	33	-							
	34	-							
	35	-							
	36	-							

<i>Index of Claims</i> 	Application/Control No. 13676207	Applicant(s)/Patent Under Reexamination RAPPAPORT, THEODORE S.
	Examiner DOMINIC E REGO	Art Unit 2647

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

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47			
CLAIM		DATE							
Final	Original	04/06/2014							
	37	-							
	38	-							
	39	-							
	40	-							
	41	-							
	42	-							
	43	-							
	44	-							
	45	✓							
	46	✓							
	47	✓							
	48	✓							
	49	✓							
	50	✓							
	51	✓							
	52	✓							
	53	✓							
	54	✓							
	55	✓							
	56	✓							
	57	✓							
	58	✓							
	59	✓							
	60	✓							
	61	✓							
	62	✓							
	63	✓							
	64	✓							
	65	✓							
	66	✓							

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	13	(ultra\$wide\$band ultra adj wide\$band ultra adj wide adj band uwb) near2 (device terminal unt station) same repeater	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/04/06 23:48
L2	13	1 AND ((H04B1/719 OR H04B7/15542 OR H04W12/00 OR H04W16/14 OR H04W24/00 OR H04W28/0236 OR H04W28/048 OR H04W28/10 OR H04W4/18 OR H04W88/04 OR H04W4/02 OR H04W52/0254 OR H04W64/006 OR H04W88/06).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/04/06 23:48
L3	49	(repeater relay\$3 booster) same (alter\$3 chang\$3 substitut\$3 replac\$3 vary\$3 modify\$3 adjust\$3) near3 (data information) same (ultra\$wide\$band ultra adj wide\$band ultra adj wide adj band uwb)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2014/04/06 23:58
L4	10950	455/3.02,427.7,11.1,12.1,13.1,13.2,16.CCLS. 370/226,243,246,274,279,293,315,316,492,501.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2014/04/07 00:00
L5	5	3 and 4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2014/04/07 00:00
L6	156	(repeater relay\$3 booster) and (alter\$3 chang\$3 substitut\$3 replac\$3 vary\$3 modify\$3 adjust\$3) near5 (data information) same (ultra\$wide\$band ultra adj wide\$band ultra adj wide adj band uwb)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2014/04/07 00:04
L7	7	4 and 6	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2014/04/07 00:05

C:\ Users\ drego\ Documents\ EAST\ Workspaces\ 13157789.wsp

Search Notes 	Application/Control No. 13676207	Applicant(s)/Patent Under Reexamination RAPPAPORT, THEODORE S.
	Examiner DOMINIC E REGO	Art Unit 2647

CPC- SEARCHED		
Symbol	Date	Examiner
H04W 88/04	4/6/2014	DR
H04W 40/22	4/6/2014	DR
H04W 84/047	4/6/2014	DR

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
455	3.02, 427.7, 11.1, 12.1, 13.1, 13.2, 16	4/6/2014	DR
370	226, 243, 246, 274, 279, 293, 315, 316, 492, 501	4/6/2014	DR

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search	4/6/2014	DR

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

--	--

Receipt date: 11/14/2012

Doc description: Information Disclosure Statement (IDS) Filed

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

13676207 - GAU-2647

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		
First Named Inventor	Theodore S. Rappaport	
Art Unit		
Examiner Name		
Attorney Docket Number	08610001C3	

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	5592491		1997-01-07	Dinkins	
	2	4659878		1987-04-21	Dinkins	
	3	5633876		1997-05-27	Dinkins	
	4	4932049		1990-06-05	Lee	
	5	5086506		1992-02-04	Hall et al.	
	6	6671351		2003-12-30	Menard et al.	
	7	6804739		2004-10-12	Young et al.	
	8	7009573		2006-03-07	Hornsby et al.	

Receipt date: 11/14/2012 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13676207 - GAU: 2647	
	Filing Date			
	First Named Inventor	Theodore S. Rappaport		
	Art Unit			
	Examiner Name			
	Attorney Docket Number		08610001C3	

	9	5844905		1998-12-01	McKay et al.	
	10	8103798		2012-01-24	Omura	
	11	8077735		2011-12-13	Unruh	

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

Add

U.S.PATENT APPLICATION PUBLICATIONS

Remove

Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	20040166802		2004-08-26	McKay et al.	

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

Add

FOREIGN PATENT DOCUMENTS

Remove

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

If you wish to add additional Foreign Patent Document citation information please click the Add button

Add

NON-PATENT LITERATURE DOCUMENTS

Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	"BellSouth Tests In-Building Service Using its Cellularone Network . . . In-Building Services Time Has Come . . . Panasonic Enters PCS Product Market Early"; Mobile Phone News, Feb. 21, 1994	☐

Receipt date: 11/14/2012

18676207 CAU: 2647

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY DOCKET NO.

08610001C3

APPLICATION NO.

Not Assigned

T. Rappaport

FILING

Concurrently

GROUP ART

Not Assigned

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6,741,834	05/2004	Godwin			
	5,974,236	10/1999	Sherman			
	7,676,194	3/2010	Rappaport			

U.S. PATENT APPLICATION PUBLICATIONS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2006/0071776	04/2006	White et al.			
	2002/0072357	06/2002	Matsuda			
	2006/0106961	05/2006	Ebata et al.			
	2008/0065416	03/2008	Mazar et al.			

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

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

EXAMINER

/Dominic Rego/

DATE CONSIDERED

04/06/2014

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

Receipt date: 11/14/2012

ATTY DOCKET NO.
08610001C3

13376207 - GAU: 2647

APPLICATION NO.

Not Assigned

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

T. Rappaport

FILING

Concurrently

GROUP ART

Not Assigned

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5,818,821	10/1998	Schurig			
	6,466,766	10/2002	Treatch			
	6,272,640	08/2001	Sokol			
	5,898,382	04/1999	Treatch			
	6,718,160	04/2004	Schmutz			

U.S. PATENT APPLICATION PUBLICATIONS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2003/0124976	07/2003	Tamaki et al.			
	2002/0111137	08/2002	Walkup			
	2002/0197990	12/2002	Jochim et al.			
	2002/0142767	10/2002	Mears et al.			

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

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

R. Buehrer, Dong Ha., J. Reed, D. McKinstry, N. Kumar "Range Extension for UWB Communications," May 30, 2002, White Paper, Virginia Tech

"WiDeFi Repeats History," Unstrung, April 9, 2004, by Dan Jones, Site Editor for Unstrung
(www.unstrung.com/document.asp?oc id=50796)

EXAMINER /Dominic Rego/

DATE CONSIDERED

04/06/2014

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

Receipt date: 11/14/2012

ATTY DOCKET NO.

13676207 - GAU. 2647

APPLICATION NO.

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

08610001C3

Not Assigned

APPLICANT(S)

T. Rappaport

FILING DATE

Concurrently

GROUP ART UNIT

Not Assigned

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6,505,032	01/2003	McCorkle et al.			
	6,590,545	07/2003	McCorkle			
	5,634,196	05/1997	Alford			
	6,110,221	08/2000	Pai et al.			
	6,373,833	04/2002	Suonvieri et al.			

U.S. PATENT APPLICATION PUBLICATIONS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2002/0198977	12/2002	Cho			
	2003/0096578	05/2003	McCorkle et al.			
	2006/0063484	03/2006	Proctor et al.			
	2005/0208889	09/2005	Baker et al.			

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

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

			Intel Technology Journal; Vol. 7, Issue 3; August 2003
/D.R./			"Pick Your Wireless Solution", publication date and source/author unknown

EXAMINER	/Dominic Rego/	DATE CONSIDERED	04/06/2014
----------	----------------	-----------------	------------

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

Receipt date: 11/14/2012 INFORMATION DISCLOSURE CITATION <i>(Use several sheets if necessary)</i>	ATTY DOCKET NO. 08610001C3 APPLICANT(S) T.S. Rappaport FILING DATE concurrently	APPLICATION NO. 2676207 GAU. 2647 not assigned GROUP ART UNIT not assigned
--	---	---

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

U.S. PATENT APPLICATION PUBLICATIONS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2002/0188530	12/2002	Wojcik, et al.			

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO

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

EXAMINER /Dominic Rego/	DATE CONSIDERED 04/06/2014
-------------------------	----------------------------

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

Receipt date: 11/14/2012

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY DOCKET NO.

08610001C3

13878207 GAU: 2647

Not Assigned

Applicant(s)

Rappaport

Filing Date

Concurrently

Group Art Unit

Not Assigned

*EXAMINER
INITIAL

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

/D.R./

R. Fontana; "Recent Applications of Ultra-Wideband Radar and Communications Systems"; to be published in
Ultra-Wideband, Short-Pulse Electromagnetics

/D.R./

N. Kumar; "802.15.3 MAC Layer Overview and Proposed Enhancements to Support UWB PHY"; Virginia Tech MPRG

W. Ahmed and B. Parmar; "High-tech Uweeba (uwb) - from bandwidth to bucks? Part 1"; www.thechilli.com; August 24, 2003

"New Technology Bulletin"; Vol. 1, Issue 7; March 2001

Paul Withington; "Time Modulated Ultra-Wideband"; Federal Wireless Users' Forum; May 2001

R. Cringeley; "Good News"; www.pbs.org/cringeley/pulpit (The Pulpit); August 8, 2002

WiDeFi Products Webpage, www.widen.com/products

"New Products: Buffalo Tech announces 11g bridge/repeater"; smallnetbuilder.com; posted by Tim on June 17, 2003

"SMC intros 11b AP, repeater, bridge"; smallnetbuilder.com; posted by Tim on June 10, 2003

"PROPAGATOR Fully Integrated Repeater"; Andrew Corporation's website - www.andrew.com/products

"Ultrawideband.ca Mesh Networking Explained"; 2003

EXAMINER

/Dominic Rego/

DATE CONSIDERED

04/06/2014

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

Receipt date: 11/14/2012

ATTY DOCKET NO.

Application Number 08610001C3

08610001C3

Applicant(s)

Theodore S. Rappaport

Filing Date

Group Art Unit

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

*EXAMINER
INITIAL

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

Intel Technology Journal, "Wireless Technologies," Vol. 7, Issue 3, August 19, 2003, ISSN-864X

"Pick Your Wireless Solution", White Paper, Published by the University of Texas at Austin IT Staff, May 2002

R. J. Fontana, "Recent Applications of Ultra Wideband Radar and Communications Systems," appearing in Kluwer Academic Press/Plenum Publishers book: "Ultra-Wideband, Short-Pulse Electromagnetics," c. 2002, ISBN 978-0-306-47338-8 and ISBN 978-0-306-4798-9

"802.15.3 MAC layer Overview and Proposed Enhancements to Support UWB PHY", Masters Thesis of Nishant Kumar, Virginia Polytechnic Institute and State University, May, 2004, <http://scholar.lib.vt.edu/theses/index.html>

"MAC and physical layer design for ultra-wideband communications," Masters Thesis of Nishant Kumar, Virginia Polytechnic Institute and State University, May 2004, <http://scholar.lib.vt.edu/theses/available/etd-05172004-123657/unrestricted/Thesis NishantKumar.pdf>

EXAMINER

/Dominic Rego/

DATE CONSIDERED

04/06/2014

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



UNITED STATES PATENT AND TRADEMARK OFFICE

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

BIB DATA SHEET

CONFIRMATION NO. 3678

SERIAL NUMBER 13/676,207	FILING or 371(c) DATE 11/14/2012 RULE	CLASS 455	GROUP ART UNIT 2647	ATTORNEY DOCKET NO. 08610001C3	
APPLICANTS INVENTORS Theodore S. Rappaport, Riner, VA; ** CONTINUING DATA ***** This application is a CON of 13/157,789 06/10/2011 PAT 8331854 * which is a CON of 12/689,052 01/18/2010 PAT 7983613 which is a CON of 10/919,515 08/17/2004 PAT 7676194 which claims benefit of 60/498,324 08/28/2003 and claims benefit of 60/496,913 08/22/2003 (*)Data provided by applicant is not consistent with PTO records. ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 12/28/2012					
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and Acknowledged <u>/DOMINIC E REGO/</u> Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY VA	SHEETS DRAWINGS 6	TOTAL CLAIMS 22	INDEPENDENT CLAIMS 1
ADDRESS WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C. 11491 SUNSET HILLS ROAD SUITE 340 RESTON, VA 20190 UNITED STATES					
TITLE BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES					
FILING FEE RECEIVED 595	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit		



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/676,207	11/14/2012	Theodore S. Rappaport	08610001C3

CONFIRMATION NO. 3678

POA ACCEPTANCE LETTER



30743
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

Date Mailed: 08/05/2013

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/29/2013.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/hsarwari/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA/82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	13/676,207
Filing Date	November 14, 2012
First Named Inventor	Theodore S. Rappaport
Title	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES
Art Unit	2472
Examiner Name	Kizou
Attorney Docket Number	08610001C3

SIGNATURE of Applicant or Patent Practitioner

Signature	/Marshall M. Curtis/	Date (Optional)	07/29/2013
Name	Marshall M. Curtis	Registration Number	33,138
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.



*Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Doc Code: PA..

Document Description: Power of Attorney

PTO/AIA/82B (07-13)

Approved for use through 11/30/2014. OMB 0051-0051
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

POWER OF ATTORNEY BY APPLICANTI hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number

Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)



I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

30743

OR



I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter to:



The address associated with the above-mentioned Customer Number

OR



The address associated with Customer Number:

OR

Firm or
Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant (If the Applicant is a juristic entity, list the Applicant name in the box):



Inventor or Joint Inventor (title not required below)



Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)



Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)



Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Name

Theodore S. Rappaport

Date (Optional)

Title

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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

Electronic Acknowledgement Receipt

EFS ID:	16440725
Application Number:	13676207
International Application Number:	
Confirmation Number:	3678
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES
First Named Inventor/Applicant Name:	Theodore S. Rappaport
Customer Number:	30743
Filer:	Michael E. Whitham/Walter Richardson
Filer Authorized By:	Michael E. Whitham
Attorney Docket Number:	08610001C3
Receipt Date:	29-JUL-2013
Filing Date:	14-NOV-2012
Time Stamp:	14:45:30
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	08610001c3_poa.PDF	68909 b8b9e39e309f6a68ec3d458e23838e6eb9a fba3b	no	2

Warnings:

Information:

Samsung Ex. 1004

Page 129 of 233

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

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

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

Application Number	13/676,207
Filing Date	11-14-2012
First Named Inventor	Rappaport
Art Unit	2472
Examiner Name	Kizou, Hassan
Attorney Docket Number	08610001C3

Sheet 1 of 3

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	1	US- 7289813	10-2007	Karaoguz, Jeyhan	
	2	US- 6348986	02-2002	Doucet et al.	
	3	US- 6186908	02-2001	Kawasaki et al.	
	4	US- 6934511	08-2005	Lovinggood et al.	
	5	US- 5012211	04-1991	Young et al.	
	6	US- 4626845	12-1986	Ley, John F.	
	7	US- 4298179	11-1981	Gilcher, Heinz	
	8	US- 6952456	10-2005	Aiello et al.	
	9	US- 7787513	08-2010	Siwiak et al.	
	10	US- 6806821	10-2004	McLemore, Donald P.	
	11	US- 7983613	01-18-2010	Rappaport	
	12	US- 6754882	06-2004	Sanchez	
	13	US- 8331854	06-10-2011	Rappaport	
	14	US- 20020093928	07-18-2002	LoGalbo et al.	
	15	US- 20040259494	12-2004	Mazar, Scott T.	
	16	US- 20030162504	08-2003	Sabongi et al.	
	17	US- 20030220075	11-2003	Baker et al.	
	18	US- 20060285577	12-2006	Santhoff et al.	
	19	US- 20050018640	01-2005	Fullerton et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				

Examiner
SignatureDate
Considered

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

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours 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, 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 (1-800-786-9199) and select option 2.

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

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet **2** of **3****Complete if Known**

Application Number	13/676,207
Filing Date	11-14-2012
First Named Inventor	Rappaport
Art Unit	2472
Examiner Name	Kizou, Hassan
Attorney Docket Number	08610001C3

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	20	US- 20050197121	09-2005	Fujiwara et al.	
	21	US- 20030211828	11-2003	Dagleish et al.	
	22	US- 20030162528	08-2003	Juzsik, David Leonard	
	23	US- 20040178928	09-2004	Butzer et al.	
	24	US- 20120033714	02-2012	Lakkis et al.	
	25	US- 20040212537	10-2004	Mohammadian, Alireza Hormoz	
	26	US- 20080136644	06-2008	McCorkle, John W.	
	27	US- 20080107162	05-2008	Moore et al.	
	28	US- 20060251148	11-2006	Welborn et al.	
	29	US- 20050026563	02-2005	Leeper et al.	
	30	US- 20040190594	09-2004	Santhoff, John	
	31	US- 20040178942	09-2004	McLemore, Donald P.	
	32	US- 20040146092	07-2004	Balakrishnan et al.	
	33	US- 20040017306	01-2004	Miao, George J.	
	34	US- 20030063597	04-2003	Suzuki, Mitsuhiro	
	35	US- 20030053521	03-2003	Huang et al.	
	36	US- 20040198260	10-2004	Molisch et al.	
	37	US- 20030110157	06-2003	Maki et al.	
	38	US- 20040010605	01-2004	Furukawa et al.	

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)			

Examiner Signature	Date Considered
--------------------	-----------------

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

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours 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, 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 (1-800-786-9199) and select option 2.

Substitute for form 1449/PTO

(Use as many sheets as necessary)

Application Number	13/676,207
Filing Date	11-14-2012
First Named Inventor	Rappaport
Art Unit	2472
Examiner Name	Kizou, Hassan
Attorney Docket Number	08610001C3

Sheet	3	of	3
-------	---	----	---

[illegible][illegible]

Date	
Considered	

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours 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, 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.

Samsung Ex. 1004
Page 133 of 233

Electronic Acknowledgement Receipt

EFS ID:	15861878
Application Number:	13676207
International Application Number:	
Confirmation Number:	3678
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES
First Named Inventor/Applicant Name:	Theodore S. Rappaport
Customer Number:	30743
Filer:	Michael E. Whitham/Bryce Miller
Filer Authorized By:	Michael E. Whitham
Attorney Docket Number:	08610001C3
Receipt Date:	24-MAY-2013
Filing Date:	14-NOV-2012
Time Stamp:	09:36:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		08610001c3_ids.PDF	82647 525a8cc73de6759165df888e0009e541d310d3c3	yes	5

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Transmittal Letter	1	2
	Information Disclosure Statement (IDS) Form (SB08)	3	5
Warnings:			
Information:			
Total Files Size (in bytes):		82647	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.			

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of

Theodore S. Rappaport

Serial No. 13/676,207

Filed November 14, 2012

Confirmation No. 3678

Group Art Unit 2472

Examiner Hassan Kizou

For BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND
TECHNOLOGIES

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

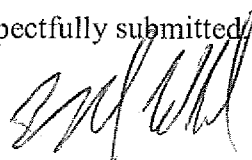
Under the provisions of 37 CFR 1.97 through 1.99 and pursuant to applicant's duty of disclosure under 37 CFR 1.56, applicant respectfully brings the following documents, listed on the attached PTO/SB/08 forms (3 pages), to the attention of the Examiner in charge of the above-identified application.

These citations do not constitute an admission that the references are relevant or material to the claims. They are only cited as constituting related art of which the applicant is aware.

It is respectfully requested that the listed references be considered by the Examiner and formally made of record in this application.

Please charge any deficiencies in fees which would prevent consideration of the information disclosure statement and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted



Michael E. Whitham
Reg. No. 32,635

Whitham, Curtis, Christofferson & Cook, P.C.
11491 Sunset Hills Road, Suite 340
Reston, VA 20190
Tel. (703) 787-9400
Fax. (703) 787-7557
Customer No.: 30743



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/676,207	11/14/2012	Theodore S. Rappaport	08610001C3

CONFIRMATION NO. 3678

PUBLICATION NOTICE



OC00000060427797

30743
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

Title:BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES

Publication No.US-2013-0088963-A1

Publication Date:04/11/2013

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <http://pair.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 13/676,207				
APPLICATION AS FILED - PART I										
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)			
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	98		N/A				
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	310		N/A				
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	125		N/A				
TOTAL CLAIMS (37 CFR 1.16(j))	22 minus 20 =	*	x 31 =	62	OR					
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 125 =	0.00						
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00						
			TOTAL	595		TOTAL				
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT A		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 =	
	Application Size Fee (37 CFR 1.16(s))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT B		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 =	
	Application Size Fee (37 CFR 1.16(s))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.										



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
13/676,207	11/14/2012	2649	595	08610001C3	22	1

CONFIRMATION NO. 3678

30743

WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

FILING RECEIPT



Date Mailed: 01/04/2013

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

Inventor(s)

Theodore S. Rappaport, Riner, VA;

Applicant(s)

Theodore S. Rappaport, Riner, VA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 13/157,789 06/10/2011 PAT 8331854 *
which is a CON of 12/689,052 01/18/2010 PAT 7983613
which is a CON of 10/919,515 08/17/2004 PAT 7676194
which claims benefit of 60/498,324 08/28/2003
and claims benefit of 60/496,913 08/22/2003

(*)Data provided by applicant is not consistent with PTO records.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 12/28/2012

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/676,207**

Projected Publication Date: 04/11/2013

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES

Preliminary Class

455

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

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

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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

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

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

NOT GRANTED

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

SelectUSA

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

Utility Patent Application Transmittal

Docket Number

08610001C3

Address To
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

First Named Inventor

Name	Theodore S. Rappaport		
Mailing Address	12 W. 15th St. Apt. 5A		
City	New York	State	New York
Country	United States of America	Postal Code	10011
City of Residence	Riner	State of Residence	Virginia
Country of Residence	United States of America	Citizenship	United States of America

Title of Invention

BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES

Assignee Information*

Name			
Company			
Address			
City		State	
Country		Postal Code	

*Complete this section if applicant wants the patent application publication to include assignee information. Providing this information does not substitute for compliance with any requirement of Part 3 of 37 CFR to have an assignment recorded by the Patent Office.

Application Elements

See MPEP chapter 600 concerning utility patent application contents.

- | | |
|--|--|
| <p>1. ☒ USPTO Filing Fee (as calculated <i>infra</i>)</p> <p>2. ☒ Applicant claims small entity status
See 37 CFR 1.27</p> <p>3. ☒ Specification
Total number of pages <u>48</u>
Both the claims and abstract must start on a new page
(For information on the preferred arrangement, see MPEP 608.01(a))</p> <p>4. ☒ Drawing(s) (35 U.S.C. 113)
Total number of sheets <u>6</u></p> <p>5. ☒ Oath or Declaration
a. ☐ Newly executed (original or copy), or ☐ Unexecuted
b. ☐ A copy from a prior application (37 CFR 1.63(d))
(for Continuation or Divisional Application)
i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s)
named in the prior application (see 37 CFR
1.63(d) and 1.33(b).)</p> | <p>6. ☒ Application Data Sheet (37 CFR 1.76)</p> <p>7. ☐ CD-ROM or CD-R in duplicate, large table or
Computer Program (<i>Appendix</i>)
☐ Landscape Table on CD</p> <p>8. ☐ Nucleotide and/or Amino Acid Sequence Submission
(if applicable, items a. - c. are required)
a. ☐ Computer Readable Form (CRF)
b. Specification Sequence listing on:
i. ☐ CD-ROM or CD-R (2 copies), or
ii. ☐ Paper
c. ☐ Statements verifying identity of above copies</p> |
|--|--|

Utility Patent Application Transmittal

Docket Number

08610001C3

Accompanying Application Parts

9. ☐ **Assignment**
a. ☐ Recordation Form Cover Sheet
10. ☐ **37 CFR 3.73(b) Statement** (when there is an assignee)
11. ☐ **Power of Attorney** ☐ **No Power of Attorney**
12. ☐ **English Translation Document** (if applicable)
13. ☒ **Information Disclosure Statement**
a. ☐ Copies of citations attached
14. ☒ **Preliminary Amendment**
15. ☐ **Return Receipt Postcard** (MPEP 503)
(Should be specifically itemized)
16. ☐ **Certified Copy of Priority Document(s)**
(if foreign priority is claimed)
17. ☐ **Nonpublication Request** under 35 USC 122(b)(2)(B)(i)

18. ☐ **Certificate of Mailing**
a. ☐ First Class Mail, or
b. ☐ Express Mail
Label Number _____

19. ☐ **Other:**

20. If a **CONTINUING APPLICATION**, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:

☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No. 13/157,789
(XX/YYY,YYY)

Prior application information: Examiner REGO Art Unit: 2618

Request Not To Publish*

21. ☐ Applicant hereby requests that the attached application not be published under 35 U.S.C. 122(b).

Applicant hereby certifies that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

*Warning

This request must be signed in compliance with 37 CFR 1.33(b) and submitted with the application upon filing.

Applicant may rescind this nonpublication request at any time. If applicant rescinds a request that an application not be published under 35 U.S.C. 122(b), the application will be scheduled for publication at eighteen months from the earliest claimed filing date for which a benefit is claimed.

If applicant subsequently files an application directed to the invention disclosed in the attached application in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the applicant must notify the United States Patent and Trademark Office of such filing within forty-five (45) days after the date of the filing of such foreign or international application. Failure to do so will result in abandonment of this application (35 U.S.C. 122(b)(2)(B)(iii)).

Request To Publish Early

22. ☐ Applicant hereby requests the publication of this patent application earlier than as set forth in 37 CFR 1.211(a) pursuant to 37 CFR 1.219 as provided in 37 CFR 1.215(c).

Utility Patent Application Transmittal

Docket Number

08610001C3

Fee Calculation

Utility Patent Application Fee

Claims as Filed

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	22	- 20 =	2	x 31 =	\$62
Total Indep. Claims	1	- 3 =		x 125 =	
Multiple Dependent Claims (check if applicable) ☐					
☒ E-Filing (small entity must be selected to get Filing Fee discount)				Basic Filing Fee	\$98
Number of Specification Pages	48	Number of Drawing Sheets	6		
Total Pages	54	Application Size Fee			\$ 0

Pre-Grant Publication Fee

Early publication fee as set forth in 37 CFR 1.18(d) ☐

Processing fee for publication or republication as set forth in 37 CFR 1.17(i) ☐

Assignment Recordal Fee

Enter Number of Properties Affected by Recordal x 40 =

Examination Fee

Examination Fee \$125

Search Fee

Search Fee \$310

TOTAL \$598

Method of Payment

☒ Deposit Account ☐ Credit Card ☐ Check ☐ Money Order ☐ Other: _____

Deposit Account Number 50-2041

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge the fee(s) set forth above

☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17

☐ Charge fee(s) indicated above, **except for the filing fee**

☒ Credit any overpayments

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 form PTO-2038.

Amount Grand Total \$598

Utility Patent Application Transmittal

Docket Number

08610001C3

Correspondence Address

Customer Number 30743

-OR-

Name

Address

City

State

Country

Postal Code

Phone Number

E-mail Address

Certificate of Mailing by Express Mail

I hereby certify that this Patent Application, accompanying documents, and fee are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on the date indicated below:

(Date of Mailing)

(Typed or Printed Name of Person Mailing Correspondence)

(Signature of Person Mailing Correspondence)

("Express Mail" Mailing Label Number)

Certificate of Mailing by First Class Mail

I hereby certify that this Patent Application, accompanying documents, and fee are being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on the date indicated below:

(Date of Mailing)

(Name of Person Mailing Correspondence)

(Signature of Person Mailing Correspondence)

Certificate of Transmission

I hereby certify that this Patent Application, accompanying documents, and fee authorization are being facsimile transmitted to the United States Patent and Trademark Office on the date indicated below:

(Date of Transmission)

(Name of Person Transmitting Correspondence)

(Signature of Person Transmitting Correspondence)

Signature Instructions

Select the name of the person who will electronically sign the Patent Application from the drop-down box below.

If a practitioner is not present in the drop-down list, you must close this form and select 'Add Practitioner...' in the Form Manager's Utility menu.

Verify that the signatory information is correct and press the 'eSign' button to electronically sign the submission. If you prefer to sign the form manually, simply do not click the 'eSign' button; just print and manually sign.

Signatory Drop-Down Box

Michael E. Whitham

Name

Michael E. Whitham

Registration Number

32,635

Signatory Capacity

Attorney for Applicant(s)

E-mail Address

action@wcc-ip.com

eSign

Date Signed

11/14/12

BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES

CROSS-REFERENCE TO RELATED APPLICATIONS

5 This application claims priority to U.S. Provisional
Application 60/496,913 filed August 22, 2003, and U.S.
Provisional Application 60/498,324 filed August 28, 2003, and
the complete contents of both applications is herein
10 incorporated by reference.

DESCRIPTION

BACKGROUND OF THE INVENTION

15

Field of the Invention

 The present invention generally relates to electronic
signal and data repeaters and, more particularly, to a repeater
20 to be used in conjunction with ultrawideband technologies.

Background Description

 In the coming years, ultrawideband (UWB) transmission
25 technologies will dominate high data rate communications in the
last 10 - 1000 meters of wireless/portable access to a
telecommunications grid. With the huge data rates and position
location capabilities afforded by UWB, offices, homes, and
small environments such as doctors offices, vehicles, or small
30 buildings will rely on UWB communication devices for
connections between consumer electronic devices and computer
devices.

 As UWB devices proliferate, it will be possible to
provide immense data rates, at burst rates up to 480 Megabits
35 per second and even greater, in order to create a wireless
Universal Serial Bus (USB) capability or home/enterprise
networking capability. This will allow cameras, cellphones,
computers, and computer and home entertainment and video

systems to have very good and fast data rate transmissions in small (say 10 to 50 feet or greater) distances. The great data rates of UWB will open up an entire new world of high speed personal area networks which currently does not exist.

- 5 Companies such as Time Domain, Xtreme Spectrum Inc, Motorola, Intel and Texas Instruments, are likely to be leading manufacturers or developers of products for UWB communications.

In typical doctors offices, homes, apartment buildings, and large warehouses and store rooms, etc, today there are
10 Wireless (WiFi) access points that can be connected to the ethernet backbone in order to provide WLAN access and internet access to computer platforms. The backbone medium is typically Cat-3 or Cat-5 cabling that has 10baseT, 100baseT or 1 GHz ethernet signaling, and higher. In the future, this backbone
15 may be wireless, for example, where cable companies or telephone/wireless/internet service providers may use mesh networks, WiMax, or last mile MIMO modem devices that bring broadband video, audio, and data/internet traffic to homes from lampposts or street corners. Satellite radio and fiber cable
20 are also viable methods of delivering the backbone plant to buildings and cars.

Today, the expense of the WiFi access points is on the order of one to several hundred dollars when the hardware and installation is factored in. These access points provide the
25 ability of multiple WLAN users (typically computer or PDA users) to gain portable access the internet, and hot spots such as those implemented by Schlotzskys Deli and Starbucks are becoming popular throughout the world. However, these WiFi access points are made to allow users to access the internet,
30 which is a different use and approach than is likely to emerge with UWB networks, which connect devices together in close-in

networks.

Ultrawideband technologies are about to become mainstream, and are described in US patent application 20030096578, published May 22, 2003, by John McCorkle, et. al. of Xtreme Spectrum, Inc., US Patent 6,505,032 (the patent publication and U.S. patent being herein incorporated by reference), as well as in "Recent Applications of Ultra Wideband Radar and Communications Systems", by Robert Fonatna of Multispectral Solutions, Inc. The IEEE 802.15.3 standards bodies have been developing Physical (PHY) and MAC layer standards for dynamic channel selection and repeater service for UWB, which falls under the general IEEE 802.15.3 standards body.

As explained in the powerpoint presentation by Nishant Kumar, of Virginia Tech's MPRG, as well as in the IEEE standards proceedings, the IEEE 802.15.3 MAC operation provides for repeater service request and repeater service grant commands. Devices use passive scanning to listen for beacon frames or for any nearby user device. If there are not nearby devices which are radiating, a device may establish its own piconet. There are a number of frame and superframe structures, and subsections which permit various types of access, such as contention based schemes using, for example, carrier sense multiple access (CSMA), as well as guaranteed time slots for asynchronous or isochronous data streams and management time slots.

While the MAC standard suggests repeater service to be used by IEEE 802.15.3 devices when the links between devices are not satisfactory, these types of links can only be established if there is sufficient time available in the channel seen by one of the devices which is involved in the

repeating operation. As proliferation of UWB devices is likely to be rapid, there is likely to be contention such that the current mode of MAC repeater operation, envisioned by the presently proposed 802.15.3 standard, is not adequate to

5 provide one or more of sufficient security, proper traffic filtering, bandwidth provisioning, network management features, or flexibility of networks that can be installed or controlled easily by a consumer. That is to say, the current repeater operation contemplated by 802.15.3 and proposed UWB devices is

10 based on the assumption that a single chip can perform necessary repeater functions, but this functionality alone will not be adequate for the rapid emergence of UWB and the onslaught of wireless data that is certain to occur.

Currently, IEEE 802.15.3a , the Ultrawideband Physical

15 Layer standard committee, is working on creating a standard that may either be Multiband OFDM transmission (MBOA), with 500 MHz channels, or a Direct Sequence Spread Spectrum impulse radio standard that has broader channel bandwidths (UWB Forum). Ratification of one or both of these standards may

20 occur by the end of 2004, as described in a recent paper submitted to High Frequency Electronics, coauthored by the present inventor.

The High-Tech article by Woz Ahmed and Bipin Parmar (the Chilli) provides a glimpse at the various activities in the

25 Ultrawideband standard bodies. Ultra-Wideband Technology was also discussed in the New Technology Bulletin in March 2001, Vol. 1, Issue 7, before the multiband OFDM proposal was created. In fact, Time Domain's Paul Withington presented the talk "Time Modulated Ultra-Wideband" to the Federal Wireless

30 User's Forum in May 2001. As described by Robert X. Cringely in his August 8, 2002 article, "Good News!", it was mentioned that

Xtreme Spectrum had already produced a working UWB chip capable of 100 megabits per second over 10 meters, and the article further explained the idea of mesh networking, which will provide efficient network paths that allow very high data rates across the internet for remote downloading of files.

In "Ultrawideband.ca Mesh Networking Explained", Ultrawideband.ca explains they have software that allows a user to install, on their PC, a MeshBoot disk which attempts to find internet gateways at particular Internet Protocol addresses using a DHCP client. If no gateway can be found, the software causes the users' PC to simply serve as a wireless repeater-cell. This type of operation is controlled by the software on the CD, and requires installation by the user. In future years, there are parallels that can be drawn between some of the features and functionality in the MeshBoot software for Internet use, and the capabilities that will be required to be embedded in network hardware, rather than provided on a CD for installation on PCs, in order to support massive amounts of traffic in and around homes and offices (Rather than on the world-wide web or internet).

Repeaters are well known in the art, and they have been manufactured for decades in the cellular and PCS industries, and more recently, a company in Melbourne FL, WiDeFi has developed WiFi repeaters for the IEEE 802.11a/b marketplace (See WiDeFi web pages describing their patent pending designs for range and bridge extension for Wireless LAN standards). Buffalo Technology announced a bridge and repeater product for IEEE 802.11g wireless LAN WiFi standard on June 17, 2003 (See SmallNet Builder website page), and indicated that its repeater provides point-to-point or 6 station point-to-multi-point operation. Buffalo indicated it had security features such as WiFi Protected Access (WPA), WEP, Password protection, and MAC address association control. It uses a browser based interface

for configuration, and has a 10/100 Ethernet LAN connection port, and sells for the suggested price of \$149. SMC Networks introduced, on June 6, 2003, its SMC2671W 2.4 GHz 11 Mbps Wireless Ethernet Adapter, which provides an interface between the wired internet backbone and the wireless LAN network. It also has wireless repeater capabilities for WLAN range extension, and has both Ad-Hoc (peer-to-peer) and Infrastructure (client to AP) operating modes, WEP encryption, WPA, MAC Address filtering, and SSID Broadcast Disable. It uses a web browser or Window-based administration software for configuration. Andrew Corporation makes classic PCS/Cellular repeaters, such as the fully integrated PROPAGATOR repeater shown on its webpage. The repeater uses standard 110VAC power and has a single package for all signal processing components. Qualcomm has recently developed repeater technology for CDMA.

SUMMARY OF THE INVENTION

This document describes a new type of wireless network device that will be required as wideband UWB devices proliferate rapidly. In anticipation of the increased traffic, ubiquity, security and bandwidth provisioning needs of future UWB devices, we disclose a low cost repeater/transceiver that is tailored for easy and rapid deployment to facilitate the interconnection of network devices using ultrawideband radio, which will likely be standardized by or before 2005.

Ultrawideband is meant here to be any type of electromagnetic signals that have an instantaneous or overall occupied bandwidth of 100 MHz or more and that are used to communicate or to position-locate between 2 or more devices. Such wide bandwidths, when considered to have the same RF power transmitter levels as today's wireless devices, require receivers to be within much closer propagation distances than conventional cellular/PCS and WiFi networks, due to the fundamentals of the Power-Bandwidth product. That is, for a given RF transmit power level, a larger passband (e.g. RF

channel) bandwidth generally implies a proportionally higher noise floor power level, which requires UWB devices generally to be physically closer in distant to each other in order to obtain a sufficiently strong signal to noise ratio (SNR) when
5 compared to equal power devices with smaller passband bandwidths. Thus, repeaters will become necessary to connect devices over greater distances than the range of a single UWB device.

10 UWB adoption is likely to be rapid, and just as spam e-mail occurs today with increased frequency on the internet, wireless UWB devices will be subject to tremendous and increased amount of interference, spam traffic, and RF interferences, as well as security attacks by rouge or spoofed
15 message sources or unwanted transmitters. Proper repeater functionality will require the ability to detect and process such unwanted traffic in a personal or local area network, as well as to report back attempted breaches of security or interference sources to a network controller or host device
20 which is connected to the internet (for example, the home computer, the media center, game console, or a remotely located server or security server that may be in a different neighborhood or city but which is connected via Internet). The need to properly process, filter, ensure security, and provide
25 sufficient or prioritized bandwidth will also emerge because of - future wireless networks that will allow devices in the home or office to remain connected to the outdoor wireless network through roaming systems and protocols, as proposed by Dong-Ho Cho in US Patent Application 2002 0198977 Published December
30 26, 2002, and other networks such as those described by Rappaport in "Wireless Communications: Principles and Practice", 2/e, c. 2002 and the invited 50th anniversary paper by Rappaport, et. al., Wireless Communications: Past Events and

Future Perspectives, June 2002, IEEE Communications Magazine.

In future UWB applications in the home or office, it is likely that only one or two devices, such as a computer, a server, or a television set or game console, will need to be
5 connected to the ethernet/internet backbone (the plant that comes in to the home or office or car, etc.), while many other devices, such as home entertainment systems, telephones, portable computers, video monitors, and
display/video/audio/entertainment devices in the home or office
10 will be untethered within the same room or within several tens of meters of these "fixed" or stationary internet-connected devices. Of course, these fixed devices connected to the plant may also be portable or mobile, in fact, as wireless proliferates. In hospitals, hotels, or homes and offices and
15 businesses, the UWB technologies will open up an entirely new way of communicating high data rates, and will create entirely new architectures for communications within small spaces (e.g, homes, apartment buildings, cars, stores, offices, etc.). In vehicles, trains, aircraft, and other moving platforms, one can
20 envision a single or a few main devices connected to an outside wireless internet connection, while in the vehicle itself, piconets will be formed between UWB devices.

The invention described here is a low cost ultrawideband repeater device, which allows a home or office user to rapidly
25 deploy a repeater which can extend the range of these UWB piconets, so that a home or business owner does not have to install wiring such as Cat -5 cable throughout an office or home. Instead of wires which carry the internet traffic from today's cable or T1 or DSL jack to a particular device, the UWB
30 repeater invented here will allow just one or a handful of internet-connected devices to serve as the "internet source"

for a local wireless network, and the disclosed invention will better enable that "source" to serve as the local hub or access point for a whole host of portable or fixed UWB devices in a home or office.

5 It is thus the goals of the present invention to meet at least some or all of the following objectives, which are specified subsequently in this application:

 It is an object of the invention to provide a method and system that allows the Internet, Cable TV, satellite,
10 telephone, or other communications sources to be connected from the external wired or wireless plant and distributed by UWB radio within an indoor or in-vehicle environment.

 It is yet another object of the invention to provide a method and system that enables ultrawideband radio signals to
15 be repeated by a UWB radio device within an indoor or in-vehicle environment.

 It is yet another object of the invention to provide a method and system that enables ultrawideband radio signals and baseband signals carried on wires to be connected together in a
20 single device, while allowing UWB radio signals to be repeated in the RF spectrum and baseband signals to be routed on wires within an indoor or in-vehicle environment.

 It is yet another object of the invention to provide a method and system that provides the selective screening of data
25 received over UWB radio or baseband, where such selective screening of data is based upon the received UWB data or upon preprogrammed control instructions provided by the desired network or from a desired source.

It is yet another object of the invention to provide a method and system that provides the selective screening of data received over UWB radio or baseband, where such selective screening of data is based upon the received UWB data or upon
5 preprogrammed control instructions provided by the desired network or from a desired source.

It is yet another object of the invention to provide a method and system that provides the selective screening of data received over UWB radio or baseband, where such selective
10 screening of data ignores, rejects, or kills received UWB data that is from undesired networks or from undesired sources.

It is yet another object of the invention to provide a method and system that provides the selective modification of data received over UWB radio or baseband, and provides said
15 modified data for retransmission on UWB radio frequencies, or for storage.

It is yet another object of the invention to provide a method and system that ignores, rejects, or kills received UWB data that is from undesired networks or from undesired sources.

20 It is yet another object of the invention to provide a method and system that provides selective and adaptive priorities on UWB messages that are to be repeated or stored.

It is yet another object of the invention to provide a method and system of monitoring network traffic statistics over
25 a UWB network, and to report such statistics to a central host - controlling unit or to the plant.

It is yet another object of the invention to provide a method and system of maintaining a UWB network, through the periodic reporting of traffic conditions, user numbers, user
30 locations, statistics, interference levels, and IDs observed.

It is yet another object of the invention to provide a method and system that provides for flexible and adaptive data processing for real time detection, flexible transmission rates, different PHY and MAC implementations, adaptive ID or

watermark transmissions, transmissions pertaining to network quality, network activity, or security breaches, position location transmissions, or repeat or beacon transmission at preset intervals.

5 It is yet another object of the invention to provide a method and system that provides an adaptive UWB radio interface, depending on the priority of the message, or the instantaneous radio channel conditions, interference conditions, or undesired traffic in the network.

10 It is yet another object of the invention to provide a method and system that provides for the use of adaptable, steerable, electronic phasing, or MIMO (multiple-input multiple-output) antennas with UWB networks to improve wireless network performance.

15 **BRIEF DESCRIPTION OF THE DRAWINGS**

 The foregoing and other objects, aspects and advantages will be better understood from the following detailed description of the preferred embodiments of the invention with
20 reference to the drawings, in which:

 Figure 1 illustrates a Personal Area Network in a home, business, vehicle, or some other personal environment consisting of a host device and a number of portable devices,
25 each equipped with UWB technology.

 Figure 2 illustrates a Personal Area Network in a close-in space, consisting of a host device, a number of portable devices, all equipped with UWB technology, and the disclosed UWB repeater invention, as well as an undesired neighboring
30 transmitter.

 Figure 3 illustrates a block diagram of the UWB repeater.

Figure 4 illustrates another embodiment of the UWB repeater, using a more integrated approach with more reliance upon signal processing and software.

Figure 5 illustrates an architectural diagram of the UWB repeater operation with security and filtering.

Figure 6 illustrates the UWB repeater using combined RF and baseband signaling capabilities.

Figure 7 illustrates a flow diagram of UWB repeater processing.

Figure 8 illustrates the current invention as embedded in an AC outlet.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS OF THE INVENTION

The Ultrawideband repeater disclosed here serves to "repeat" data signals coming from one or many devices so that other devices, located farther away from the "source" will be able to access the internet, Cable TV, Satellite source, phone/DSL line, or other broadband "plant" source via the repeater. This will obviate the need for any wiring whatsoever in homes and offices, and will enable rapid deployment of networks that perform properly and adapt to traffic loading, spam, interference, and desired characteristics of the plant provider of the network owner (e.g. home owner, enterprise owner, vehicle owner). The repeater will provide for additional coverage and will enable high data rate channels to work in confined environments more efficiently and more reliably than stock UWB equipment currently being offered by the marketplace. The invention here offers advantages, flexibility, and improved performance and security than the currently proposed IEEE 802.15.3 activities which call for "repeater service" as part of the MAC definition.

The disclosed Ultrawideband repeater has the additional important and novel capabilities of being able to filter and process data, and to provide for the storage, processing, and forwarding of received data at the input, and also allows for the suppression or "killing" of data that is not part of the desired network or which may be from undesired users, spammers, or interference sources. Also, the ability of the device to prioritize traffic access and flows, based on application requirements, make this invention a powerful device used to enable high bandwidth personal area networks, where a number of wireless devices in a home or office or car all share the same UWB spectrum without requiring wiring, but which may have different real time requirements, different priorities and bandwidth requirements, and different security requirements. Thus, the intelligence of the repeater, afforded by processing, storage, and antenna/RF control is a marked improvement over what is currently contemplated or known.

The invention differs from prior art because, among a number of reasons, of the much greater bandwidth of UWB compared with current wireless devices, and the presently unforeseen challenges and unmet solutions that UWB will encounter because of the massive amounts of wireless traffic that will occur. The invented repeater and associated architecture solves a critical and unmet need for future high speed UWB networks, and provides needed network coverage, performance, security, filtering, addressability, configuration, and connectivity for a home or business or vehicle personal area network. The invention provides needed network infrastructure to provide coverage where only one or a few sources can be linked to the ethernet or another telecommunications backbone (e.g., a central server/hub, or a "plant", which may be an optical cable source, RF, coax, baseband, satellite signaling, etc.) At the same time, the disclosed invention provides embedded security and traffic intelligence, and the ability to interpret, modify, and selectively filter wireless traffic for the benefit of the network user. In addition, the disclosed invention works with both wireless UWB transmissions, as well as with standard

baseband wiring-types of data transmissions, allowing the invention to be addressable by and responsive to wired networks as well as the wireless networks. In fact, the present invention allows for the fusing of wireless and wired network components so that they may be commingled and served by a single plant or server, within the same network. Thus, the invention facilitates new capabilities in connecting UWB equipped devices through a repeater operation for many other devices that may exist in a room or office or building or vehicle. In this way, for example, a doctor's office complex would only need to have a single computer, say the receptionist's desk computer or a media center, which might be connected to the internet, cable TV, copper line, or satellite station, and this single computer could serve as the host computer or server to the office network. If this receptionist's desk computer or a media center is equipped with a UWB radio, and all other devices, for example, portable computers, pen tablets, gaming devices, video monitors, or Voice over IP portable communicator devices used in the office, were configured to be on the same network (piconet) as this desk computer, then our invention would allow coverage and data transmission throughout the entire office complex, rather than being limited in range to 10 or 20 feet as would be the case for a single point-to-point communication between 2 UWB devices. Wired network devices could also be connected and served on the same network, serviced by the same plant, using the disclosed invention. Also, at the same time, the described invention provides a low cost way of providing massive data transfers, with bandwidth prioritization and security, network monitoring, and "network learning" and spam filtering not currently available in today's wireless devices. Thus, the invention helps improve and facilitate wireless high speed networking, for both mobile/portable and fixed applications, in environments such as stores, homes, apartments, cars, and factories, etc. where broadband data communications between devices, and access to the plant by several networked devices is necessary.

Figure 1 shows the internet connection 10 coming into the

home or office, which may be data only, or analog voice and data, where this "backbone" connection may be provided using wires or fiber (such as T1, T3, DSL, cable, cable modem, OC3, etc.) or wireless (last mile wireless service, mesh networks, LMDS, MMDS, WiMax, Satellite, 802.16, 802.20, 802.11a/b/g, or some other wireless distribution mechanism, such as 802.15.3.a, etc.). Once in the home or office (or vehicle, etc.), a host device 12, such as personal computer or server, or building router (a personal computer, as an example, is shown in Figure 1) is connected to the backbone. The host device 12 is further equipped with a UWB transceiver 14, which may be integrated, stand alone, plug-in, or part of a multi-band, multi-mode radio that is either discrete or embedded within a microprocessor chip, or which is connected to, attachable to, insertable into, or integrated within the host device. Plug-in cards, discrete components, embedded devices and other such embodiments are contemplated. Once connected to the backbone internet and the UWB transceiver 14, the host device 12 is able to facilitate communication to other UWB devices in the home or office. For example, in Figure 1, provided that the distance is short enough and the local interference is low enough, it is possible for the UWB Transceiver on the host device to support meaningful communications to a UWB-equipped Portable Table computer 16, a UWB-equipped television set 18, a UWB-equipped telephone 20, and even a UWB-equipped wrist watch 22, as examples but not limitations to viable uses of UWB wireless technology for personal area networks. As explained in the prior art, UWB possess sufficiently high bandwidth that new services, such as ranging or position location are easily incorporated with high speed communications, and the current invention considers supporting the myriad of applications and implementations of UWB devices. Using the standards proposed in the IEEE 802.15.3 committees, it is known that it would be possible to configure Personal Area Networks such as shown in Figure 1 using UWB, all without wiring up the local area.

Note, however, from Figure 1, that the distances (d_1 , d_2 , d_3 , d_4) between devices vary, and the local environment may have walls or metal partitions that cause signals to decay or

fade (not shown). Thus, it is possible that the host device 12, which is typically (but not necessarily) fixed, may not be close enough to all locations where portable users of the UWB network which to operate from at a particular instant of time.

5 Furthermore, since the signal power falls off with distance, UWB transceivers that are further away from the host 12 will be more susceptible to interference from undesired users or noise sources (not shown), and will also be more susceptible to security breaches or spam attacks by undesired transmitters

10 (not shown). Battery life of portable devices will also be shorter for those which have to provide sufficient bandwidths over longer distances (higher power consumption).

Now consider Figure 2, where the same UWB network of Figure 1 now contains the invention, the UWB Repeater 24. With

15 placement of the UWB repeater 24, the distances between the host 12 and the repeater 24 are shorter than the distances between the host and other users. Thus, the repeater is able to provide the ability to extend range to outlying users, which will be important to maintain high data rates in interference

20 or crowded spectral situations. Furthermore, the repeater 24 is also able to receive the transmissions from the undesired transmitter, and may be equipped to ignore the undesired transmission, as well as instruct other users of the network to ignore the undesired transmission, thus improving personal area

25 network performance. With the invention used in the Personal Area Network, battery life of portable devices may be extended, as well.

The repeater 24 of Figure 2, in order to work properly, requires careful signal processing that is able to null out

30 noise and interference across the very wide bandwidth used by UWB (such as noise from an undesired transmitter or attacker 26). In addition, the repeater must provide significant isolation between the input and the output, typically 40 to 50 dB minimum and more if possible, in order to prevent

35 oscillation and feed forward interference. A wide range of techniques to perform such electrical performance are well understood by those skilled in the art of RF circuit and filter

design. In addition, the UWB repeater 24 must faithfully re-transmit both the forward and reverse paths of a two way communication, and must provide uniform/even group delay across most, if not all, the occupied bandwidth of UWB.

5 As shown in Figure 3, to possibly achieve fastest time to market, would be to implement this invention by using two UWB chips or devices 28 and 28'. These may be standard UWB modem devices, with sufficiently fast controlling and memory circuitry that creates a data bridge 30 between the two UWB
10 chips. These two chips, and the controlling/memory circuitry bridge 30, are built and encapsulated in a housing or chamber 32 which has good electromagnetic isolation between the input side (the side in which signals needing to be repeated are entering) and the output side (the side in which signals that
15 are being repeated are regenerated and reradiated). Power (either AC or DC) from a source 31 for the repeater can be provided from a battery or an outlet. Also, an RF switch for switching/processing antennas may be integrated in the controller circuitry, or may be a separate, discrete component
20 or series of components, such as a butler matrix circuit, simple RF single-pull multiple-throw, or phase shifter network for phased array antennas, or a wide range of well known antenna switching or phasing/processing mechanisms. While Figure 3 shows a preferred embodiment, it should be clear that
25 the entire assembly could be implemented in a different manner, for example using mixed-signal circuitry and included on a single chip, or a hybrid chip could be used and packaged as a single device, or discrete RF/baseband ICs could be developed and used. The ability to control RF antenna signals, coupled
30 with baseband processing, would allow many well known Multiple Input Multiple Output (MIMO) antenna technologies to be used to improve link quality. It also should be clear that each of the antennas (32, 34, and 36 shown in Figures 3, and 38 and 40
shown in Figure 4) may be a single antenna, multiple antennas,
35 antenna arrays, and may take on many different physical forms.

Each physical side of the UWB repeater invention may at one time serve as the input and another time serve as the

output, as the invention offers simplex, half duplex, or full duplex capability. It should be understood that each side of the invention could itself use MIMO antennas or phased/steerable antennas. Similarly, the forward or reverse signal path may use either side of the UWB repeater. Antennas, such as those developed by Prof. Hao Ling at the WNCG at University of Texas, and by Warren Stutzman of Virginia Tech, allow wideband UWB transmissions with some directionality, and these are easily sprayed on or built from metal stock using metallic film on plastic cases. Dielectric antennas, or antennas with inherent notching capabilities, may also be incorporated as is known in the prior art. The directionality helps with isolation between the input and output of the repeater. Further, the repeater may use multiple antennas, in a sector arrangement, that can automatically be sensed and switched by the UWB devices and/or the controller circuitry, in order to focus energy in directions of where devices needing to be transmitted through the repeater are located. This could be used on both or either transmit or receive operations. A wideband RF switch, which may be a MEMS device such as contemplated by Hughes Electronics or Teravicta of Austin, TX, is part of the circuitry contained within the repeater, so that various antenna selections are made. Alternately, RF switches can be avoided and RF processing may be used to provide Maximum Ratio Combining, Linear Combining, Equal Weight Combining, or MIMO implementations, all which are well understood by those skilled in the art, may be made. Other low-cost RF switches could be employed, as well, for antenna phasing/steering and selection, and the switch could actually be incorporated in future UWB chipsets or other integrated circuitry in various ways known now and in the future.

- As shown in Figure 4, an alternative approach to creating the UWB repeater invention, rather than using two stock UWB devices with some additional control and memory logic for data processing, signal processing, and antenna switching or diversity/beam forming, would be to use a true bent-pipe repeater approach, where all signals at the input are simply re-radiated at the output. Note that the very wide bandwidths involved with UWB make this approach more difficult today, yet

viable in a low noise environment that does not have swamping. Even in higher noise environments, DSP noise cancellation and wideband compensation such as phase linear processing, and careful isolation and compensation across the wideband spectrum could be employed. This type of DSP processing will be available in reasonably low cost platforms within the next several years.

Alternatively, Figure 4 represents an application specific integrated circuit 42 made of Si, SiGe, GaAs, or other known materials either within a chip, a system on a chip, or discrete circuitry, could be fabricated to implement an integrated repeater with processing circuits for data processing that provides network security and data buffering as well as desired bandwidth provisioning for different applications passing through the repeater. Clearly, an integrated antenna would be a less expensive per-part product price, once the design was perfected, and a single antenna repeater with near omni-directional radiation pattern offers lower costs to manufacture, and would be more preferable for generic in-home or office use. As noted in Figure 3, power (either AC or DC) can be provided by a source 31, such as a batter or outlet.

Note that instead of using multiple antennas and having two "sides" (an input and an output) as shown in Fig. 4, the UWB repeater could instead use a single antenna, and could use a vast memory (either onboard in chip or external to the RF or processing circuitry) to simply buffer and retransmit the received data. This would induce a greater delay in the repeated signal, but would provide a less expensive form factor, due to fewer antennas, would offer smaller size, and would save costs due to the lack of expense incurred with an RF switch for the antennas. In addition, a store and forward approach embodiment such as contemplated in this paragraph would remove isolation concerns that provide design challenges in bent-pipe or simultaneous receive/transmit repeaters.

A key part of this invention, which is now described, is the data processing capabilities afforded by the UWB Repeater disclosed herein. Figure 5 illustrates the architecture of the invention, which includes RF component 50 and 50', baseband

component 52 and 52', pipeline component 54 and 54', memory 56, and a controller 58 with an integrated or separate processor component 60. Each of these architectural components may be used for both the received (incoming) and repeated (outgoing) signals, or may be replicated so that one set of components is used for the incoming side and one set of components is used for the output side. (e.g., see Figures 3 and 4 and alternate embodiments described). The pipeline, processing, control circuitry and memory may be the same entity (e.g. all contained within a microprocessor, a DSP engine, or microcontroller, for example), and it may also be the same physical circuit or chip that also contains also the baseband and RF components. Alternatively, the memory (or any one of the other components, or combinations of components) may be in a separate chip or device. Note that the architectural components shown in Figure 5 may be of a wide range of varieties and physical structures that may be on chip or on a separate chip or substrates, or may be distributed in different pieces of equipment or embedded in other components or circuit boards, or embedded in firmware, software, or operating system software, not shown explicitly. It is clear that multiple processors and multiple replications or parallel implementations of the embodiment shown in Figure 5 may be practiced. Alternatively, the pipeline processors or memory (or other components) shown in Figure 5 may actually be the same physical device, and may only require a single device for handling both input and output functions. While the architecture shown in Figure 5 is a preferred embodiment, the functionality of the architecture, described below, may be implemented in alternate embodiments with varying approaches to providing the functional architecture, which are not meant to be excluded or limited herein. It should be clear that well-known signaling details, such as clock signals, analog and digital voltage sources, and power supplies, etc., while not explicitly shown in Figure 5, are known to one of ordinary skill to be a required part of any functional device, and the sources of such signals could be provided in a distributed fashion or represented within any one of the architectural components during normal operation.

Note that the architecture of Figure 5, when equipped with a sufficiently powerful baseband component 52 and 52', allows the UWB repeater to be used in a hybrid wireless-wireline network, where input signals may be applied directly to the baseband component 52, and output signals may be sent out the baseband component 52', for example, using standard Ethernet, DSL, ATM, SoNET, or other standard baseband signaling format. When implemented using parallel components (e.g. parallel baseband and pipeline functions or multithread processing or fast time slicing), the architecture of the invention allows for both RF UWB signals and baseband signals to be received at the input-side, and both RF and baseband signaling to be transmitted at the output-side, due to the fact that the baseband processor is able to implement both wireline PHY and MAC standards, as well as wireless UWB standards (or a universal PHY/MAC). This is shown in Figure 6.

The ability to handle both wireless network and wired network traffic is a valuable capability, as it allows the disclosed UWB transceiver/repeater 62 to not only function in an all-wireless network, but allows it to be connected in a hybrid network, where wired devices and wireless devices may all be connected together through the invention, making it easier for the consumer to connect multiple devices in a home, for example, or to connect all devices (both wired and wireless) to a single plant connection 63 (an internet plug, for example) in the home (thus, the invention not only provides repeater functionality, but also itself may be connected to an Internet/DSL/Cable/Satellite/Wireless backbone plant or server). It is possible that both input signals at RF and input signals at baseband could arrive at the invention simultaneously, and may be properly processed and filtered and buffered and routed to provide network connectivity to other devices and the plant or server, as well as providing additional sources of data for traffic statistics, security, monitoring, and network maintenance chores. This architecture enables a low cost, flexible UWB repeater to serve as a junction box, connecting both wired and wireless devices to the same network, and optionally to the backbone plant, as well (See Figure 6).

Figure 7 shows a flow chart of the processing steps preferably performed by the invention, it being understood that the order of these steps may be varied. The controller component of the UWB Repeater/Transceiver architecture first acquires network information and/or desired performance criteria at step 64. That is to say, the controller component of the disclosed UWB repeater must be given explicit or implicit operating instructions, either from the plant, from the network itself, from one or more components in the network, from the owner or operator of the network, or from a rule-base developed from past history of the repeater itself, or from the particular device or devices the invention is intended to communicate with within the network. When embedded in a consumer electronic device, such as a PC, a car, or a home media center, the controller component may be accessed by a very simple user interface provided for the user, that allows the user to enter in one or more of a network ID (his or her own password or desired name, etc.), a listing of equipment to be configured, a count of equipment that they own, a listing of computer applications to be used in the network, a rough coverage area of particular wireless devices or components she wishes to have connected on the network, or other such data necessary to provide a rough guideline of the network operational characteristics desired by the user.

To be clear, however, an alternative embodiment would require no user interaction, as the home media device or the UWB repeater device itself may have a unique serial number ID associated with it, or may have some embedded data, or a table look up for a particular application, and this may be used (in connection with other data, such as provided by the plant) as the basis to launch transmissions in the network to detect and "train" all other UWB devices in the home network to assure they are properly connected to the network, all without any intervention or knowledge by the user.

Once it knows the "parameters" or "openness of the network" and knows the characteristics or ID's of those devices that "belong" on the wireless network, the controller component is able to then provide low-level instructions for the proper functioning of the UWB repeater. In this manner, the

controller component establishes initial operation mode settings for the repeater at step 66, so that the busses are properly configured and the architectural components are preset to properly respond to various signals or conditions received from the UWB input-side, the plant, the wired network, or from the host device, etc. In other words, preset conditions (initial operation mode settings) may instruct the repeater to perform certain functions in a wide range of scenarios. For example, the initial operational mode settings may instruct the repeater to provide: (A) normal repeater functions (bent-pipe operation) with no storage functionality when the RF channel is clean and no spammer or interferer is detected at the input side of the UWB repeater, (B) to provide no repeater function when spam is detected, and (C) to report traffic statistics to the strongest or closest network component when a particular command is received over-the-air or on the baseband network. This is meant to simply illustrate the processing logic which is possible, and is merely a representative example not intended to limit the possible set of logic tables and condition mappings that are possible. It is clear that command and control logic can be created to provide sufficient flexibility and breadth of preset conditions. Further examples are given throughout the text below. It should be clear that for rapid flexibility and adaptability, preset conditions for several operational scenarios provides a low-overhead way of assuring the architectural components have access to the busses and to each other, in an efficient manner, when a key event (a trigger event) occurs due to a received signal or due to a need to transmit.

The controller component receives and sends electronic signals via one or more busses from one or more of the RF, baseband, memory, pipeline, and processor components. The controller has connection with the other components of the transceiver architecture, and facilitates instructions that may be read or written between each of the components over a bus (for example, I2C bus or new higher speed busses). Thus, communication of instructions and control signals and information may be written or read between the components, using either serial or parallel and unidirectional or

bidirectional bus structures. The controller component is able to address each other component of the architecture within the UWB repeater, and then has the ability to read or write control data to each component as shown in step 68, in order to

5 establish or learn operating conditions from the received input signals or plant, to instruct devices with preset instructions, or to provide instructions that have been established by the network or user or application that is being received or transmitted by the invention. The proper configuration and

10 access to the busses is preprogrammed (preset) for specific operational instructions depending on the operational conditions encountered by the repeater. That is, each component, based on received signals and the computations performed during normal preset programmed operation which

15 proceeds according to step 70, knows through preset instructions how it should send signals to the controller or to the other architectural components, for proper desired operation in various operational conditions.

A trigger event 72 occurs when there is a perceptible

20 change or instruction, obtained through either the data received over the air on the UWB radio channel(s), or through the wired baseband network, or through instructions issued by the host unit housing the invention 74, or through data received from the plant 76. The order of these and possibly

25 other trigger events caused by the repeater reacting to particular received data or host device, plant, or server instructions, could be different from that shown in Figure 7. A trigger event may also occur when the transmitter is instructed or preprogrammed to transmit data (not shown in Figure 7 flow

30 diagram). Trigger events are due to signaling which is found to trip a condition or to signify a change in the current operation condition, or may occur due to preprogrammed, timing-based instructions previously instructed and preset by the controller component. Depending on the interpretation of the

35 trigger event (performed by the controller architecture in conjunction with other architectural elements), the UWB repeater may simply continue to operate with the preset mode settings as originally programmed (with the same preset operational conditions), or a new course of action may need to

be taken, in which the trigger event causes the controller architecture to consider providing new preset instructions for various operational conditions going forward.

The controller architecture determines at step 78 if such
5 new preset instructions are needed, based on the computational results of the pipeline and processing components, in conjunction with memory, and may use one or more rule-based algorithms that tracks history, or may simply follow instructions specified by the network user, the host device,
10 the plant, or the repeater itself. As described in more detail below, trigger events (e.g., 72, 74, 76, etc.) occur when there is a change in the network, and may be due to the reception of undesired data at the UWB input-side, undesired data on the baseband network, errant or counterfeited or spoofed ID's,
15 watermarks, or a wide range of important conditions that indicate a change in network performance, the user's application, security conditions, signal or data integrity of desired transmissions, or the presence of jammers, hackers, or interferers.

20 As an example of how a trigger event may be detected, and to understand why the controller may wish to assign a different set of preset instructions for operational conditions going forward after a particular trigger event, consider the example of a UWB repeater functioning in a benign RF environment
25 without interference. The device is receiving transmissions from desired in-network components and is retransmitting them, per the normal operational instructions. Now, assume a spammer or hacker attempts to jam or intrude on the network. The disclosed invention is able to detect the demodulated signal
30 using the processing power pipeline processor in conjunction with memory and the processor, that the intruder is not a valid in-network component, and in fact may further check the intruder's ID or characteristics to find a match with an "unwanted" list of known attackers housed in memory. This
35 detection of the intruder is a trigger event. Now, consider the case where the preset operational instructions simply called for the repeater to stop retransmitting the intruder's transmission when an intruder is detected. Now, because the hacker appeared on the "unwanted" list in memory, this intruder

may be deemed to be a serious problem, in which case the controller architecture has the opportunity to alter the preset instructions for operational conditions going forward, as is done in step 80, and it may be advisable to now alert other
5 devices and the host computer of the presence of the hacker whenever it is detected going forward. The new preset instructions passed from the controller component to the other architectural components may now be such that if the hacker transmission is identified again at the input-side of the
10 repeater the repeater doesn't stop retransmitting (as before), but now the repeater rebroadcasts a warning message, an alert message, or a message to the network that instructs all other users of the hacker. It should be clear that various techniques known now or in the future to protect from spamming and to
15 avoid unwanted intrusions may be incorporated into the invention using the processing techniques described here.

Using the system and method described here, network usage, network statistics, network provisioning information, or network security status for particular users, devices,
20 applications, transmissions, or ID's would be known, measured or detected, and can be stored and communicated to a network server, another network component, a device controller, or through the plant using techniques known now or in the future.

The controller component updates the preset instructions
25 for operational conditions at step 80, and provides actual control of RF and baseband signals, at a relatively slow rate (slow relative to the individual per-bit durations of the multi- megabit per second data rate received and sent by the invention over the air). Slow tasks for 100 Megabit per second
30 data transmission for example, would require processing and control signaling on the order of a microsecond or so, as
- opposed to fast real-time data processing that would require speeds on the order of 10 nanoseconds or faster (such fast processing is handled by the pipeline and processing
35 components, and the baseband and RF components). It should be clear that slow and fast are relative, and that this should in no way be limiting, since real time and "near" real time speeds shall change over time, application, and technology. Slow tasks handled by the controller component include enabling the

adaptive signal processing, so that the initial antenna configurations may adapt to interference from a new transmitting source, or halting the transmission of an undesired signal, or the halting of spam over packet duration or multiple packet duration intervals (rather than bit duration intervals), or determining and invoking new instructions for operational conditions, or instructing memory or computation operations to begin or end, or instructing various warning or response messages or traffic statistics to be computed or reported. The actual computational chores invoked by these instructional messages by the controller architecture may happen at much faster rates. For example, the controller architecture is required to issue control signals to allow for antenna pointing, steering/phasing, MIMO adaptation to be invoked, and once the controller component enables this functionality to the appropriate architectural components, the on-going processing and signal manipulations and adaptations occur at much faster speeds.

The controller architecture provides preset instructions for operational conditions to various components, as well as enabling what operations they should perform ahead of time of the actual trigger event (e.g., the pipeline devices would be instructed the network ID or watermark to search for, or the particular error control coding or MAC or PHY that is to be used). The controller architecture also provides operational instructions to the memory, for gathering of data and statistics, as well as providing event-driven (trigger-driven) instructions for handling the gating of packets and data. Also, the controller allows the processor to communicate the results of its computations to other architectural components, or translates the results (with the aid of the processor) into control signals. Clearly, for implementing security features and software radio/antenna pointing chores, signal results must be detected and computational problems must be solved by the Pipeline and Processor components, as well as baseband and RF components, as described below, and the results of these solved computations must be used to continually drive the proper performance of the device without delays imposed by the controller component. The controller thus provides the initial

and overall approval, and then simply facilitates the communication of such commands and instructions, and ensures the busses connecting the components are properly aligned for the specific tasks that need to occur for particular fast and slow processing and data passing chores.

As shown in Figure 7, the UWB repeater continues to process in the manner described above, in a continual loop as shown in step 82, until an instruction to terminate operation is received as shown in step 84 (either received from a data source - wired or over the air, or from the plant, or the host device, or from the controller architecture, or the power supply is simply turned off to the device), at which point the processing is completed as noted in step 86

To describe the architecture of the invention in more detail, and to provide further examples to illuminate Figures 6 and 7, the following detailed description is useful.

Memory may take a wide range of forms as understood by those skilled in the art, including high speed RAM, DRAM, Flash chips, memory sticks, removable disks, etc, and this memory may be programmable, static, dynamic, random access, optically-processed, etc. such that vast amounts of data received at the input of the invention may at any time be stored, buffered, processed, interpreted, or retransmitted. The power required for the memory may be supplied by the same power supply that powers the processor and RF components, or it may be a separately provided DC or AC power supply, depending on the particular implementation or structure. For example, if the disclosed UWB Transceiver were embedded in a plug-in memory stick, it would likely receive power and data flows from the standard USB expansion slot, whereas if the invention were embedded within a PC or Media Entertainment Center, the pipeline processor, memory and UWB RF and baseband circuitry might be embedded in a chip or an assembly on the mother board of the PC, itself, thereby obtaining power from the internal PC supply. Memory is used by the present invention to store one or more of received data, forwarded data, to hold data strings or compressed versions of such strings needed by the controller or processor, to store execution instructions of the processor or controller, to store watermarks, identification data,

(ID's), PHY or MAC instructions, other software radio instructions, calibration settings, table-look-up data for modulation, demodulation, coding, antenna pointing, antenna phasing, coding and decoding, processed data statistics, or any
5 other data that needs to be stored and retrieved later. Memory may actually be comprised of different technologies, with different power levels, sizes, speeds, etc. whereas some part of memory is used for very fast storing and recalling, and the other part of memory is for longer term storage that does not
10 have to be accessed very quickly.

The pipeline component processes data on a bit by bit or word by word basis, and thus has an extremely fast ability to process or make decisions on applied data. They have special architecture and house their own memory, and are designed
15 specifically for rapid real-time data-streaming processing. The Pipeline component is able to implement real-time processing algorithms (such as coding, etc.) or compare or process inputted data to a preset pattern of data in a very streamlined, fast manner (e.g. it can function as a digital
20 matched filter, or correlator, an error correction coder or decoder, a check sum counter, or provide other fast, bit-by-bit computational functions that provide very rapid processing typically required in broadband communications), thereby allowing the device to know whether patterns of data are
25 properly tagged or apportioned. Stripping of headers in packets, finding ID's of words or bit-sequences in data streams, detecting or correcting bit errors, verifying or inserting watermarks in data transmissions, detecting security information, such as keys, passwords, handshake data, etc. are
30 typical tasks performed by the Pipeline. The Controller is able to instruct the Pipeline component as to which data should be checked, and may also provide timing or observation interval information, as well.

Furthermore, the pipeline process is instructed to
35 correct errors or insert ID's or watermarks or security data on transmissions, if it has been so instructed to by the controller. This is a powerful feature that allows the device to modify the data for retransmission in the network. For example, if the invention is used in a home network, a

particular home network ID or watermark or key code may be assigned (inserted into the data) of all desired home network transmissions, and the Pipeline component on the input-side of the repeater may be instructed by the Controller to constantly
5 search for this ID or watermark or key code to be received in order to determine the received signal is "desirable" or valid and that it should be repeated for retransmission. If errors occur, the invention may modify the received data stream for error correction. Alternatively, the network may need to change
10 the watermark or ID or key code of the received data, and the invention is able to make such alterations to received data, and retransmit the altered data.

Also, the pipeline component may be constantly be searching for "critical" or "unwanted" or bad transmissions,
15 which have data streams, ID's, erroneous crypto words, or other identifying data segments or information that is stored or updated in memory and which can be compared to received data. Such critical or unwanted transmissions may be indicative of an attack or unwanted spam or an emergency reason to stop
20 transmitting, and upon receipt of such data, the invention may, under previously set directions of the controller component, send an alarm message or urgent traffic message, or may send a message for network shutdown or device shutdown.

Depending on the type of network, the desired security,
25 the particular protocol or common air interface, PHY, MAC, the particular watermark or ID, etc., it may be desired for the received signal to be immediately retransmitted (repeated) at the output-side of the repeater with minimal delay, in which case the controller would have directed the pipeline component
30 to pass the data immediately to the baseband modulator on the output side of the repeater. (In this case, the pipeline components may have modified the data to correct errors, insert ID's, insert position or time stamp information, pass along network statistics or traffic/spam/utilization data, or other
35 important network -specific data that is to be carried and repeated for the particular application or particular network implementation). This streamlined operation avoids delays in reading and writing to and from memory, and would provide an extremely fast retransmit time, while allowing modification or

repair of received data. Alternatively, while the data is sent to the output-side, it may also be stored in the memory simultaneously (most likely through a memory pre-buffer that is used to capture all the data in parallel as it is sent to the transmitter, but with a sufficiently deep buffer that allows the transmitted data to be cached and stored to memory which operates at slower speeds than over-the-air RF transmissions - this is not shown but understood to one skilled in the art). Furthermore, the controller may have provided instructions to the pipeline device that upon one or more particular received data streams (for example, data streams that have been associated with Spam, peer-to-peer, or undesired transmissions, and which were stored in memory and earlier communicated to the pipeline device and stored there), the pipeline device is not connected directly to the baseband component of the output side, but instead the data passed by the pipeline component is stored directly to memory, or is simply ignored. In this manner, the invention is able to detect and filter unwanted RF data. The device may also have a reradiate mode, where received RF data stream is demodulated, pipelined, stored in memory or modified with a network ID, watermark, or counter, and then rebroadcast back to the originating RF source. This would be valuable for position location determination using time delay and/or signal strength measurement or prediction (as explained in many well known references, including work by Bahl, Rappaport, US Wireless, etc.), auditing of the network to determine how many devices are on the network, and with what ID's or watermarks or codes, determining propagation times, or used as part of a network throughput measurement scheme or traffic monitoring capability, etc.

- The controller component thus works to ensure the Pipeline component and the memory and the Processor component, and the busses are properly configured to handle the desired chores. Received data is received at RF, demodulated at Baseband, and passed to the pipeline component, and the preprogrammed pipeline processing component thus works with the controller and the memory to either store (and not retransmit) the received data, store and forward (e.g. retransmit) the received data through the baseband and RF components on the

output-side of the repeater, or alternatively the repeater may ignore the received data and not store it, or store the received data and retransmit it back to the originating source. Alternatively, the received data may be stored and retransmitted out of one or more antennas, including the antenna which originally received the received data. Furthermore, the data may be modified by the pipeline processing circuitry (or by the processor and memory) once its received, for example, to strip off unwanted or hostile data contained in the received data stream at the input of the repeater, or to add bit or packet changes in the packet data structure to implement ID or security or validation or bandwidth priority information in the repeated data which is radiated out of the repeater. Thus, the UWB repeater has the ability to monitor data which it receives, as well as to store it, forward it, return it, or modify it. All the while, the memory, working in conjunction with the processor, may use a different or same thread to build statistics and observe particular behaviors of the traffic, including the ability to sniff the packets and determine desired and undesired users, attacks on the home or vehicle or enterprise network. Thus modification of the MAC and IP layers, based on the flow of data or the availability of errors or desired QoS detected by the controller, is contemplated and capable with the invention.

It should be clear that the above description and following preferred embodiment emphasizes modification of a received signal and the associated processing steps prior to retransmission out of the UWB repeater. However, it should also be clear that similar functionality and capabilities may be achieved for the transmitted signal itself, where the same architectural components may be used to similarly process, modify, store, retransmit, or ignore signals that are otherwise intended to be sent to the output side of the device. Also, prepared messages or messages based on the computation of statistics or memory contents, messages based on alarms, network activity, the errors or transmissions or security breaches or ID's detected on the input-side of the repeater, or messages that are meant to synchronize for timing, positioning, or used to simply communicate the repeater's health, status, or

alarm status (due to spamming or RF overload or interference, for example) may be sent by using the memory and based on results computed from the processor component or controller component. Such messages or data transmissions may be read out
5 of memory, or processed through the pipeline component, passed to the baseband and RF components for transmissions to the output-side of the repeater. This enables the invention to provide beacon signals and messages regarding traffic, security, spam alert, alarm, position location, network use or,
10 other preset messages for use in various applications, independent of the exact data being received at the moment by the input-side of the invention.

The capability of the UWB repeater to process and to modify the bit streams sent and received is powerful, as future
15 security methodologies will rely on streamlined processing to implement rapid/dynamic key changes, dynamic network ID or watermark changes, and to allow authentication and validation. Emerging security standards, such as IEEE 802.11i, which use dynamic keys and strong codes, as well as EAP, 801.1X, WPA,
20 and future security techniques that may encompass both indoor and outdoor networks, will be able to be used by the disclosed invention, due to the capabilities of the processing and the modification capabilities of streams flowing in and out of the repeater. Furthermore, the repeater itself will be addressable
25 on the personal area network, allowing the host/master "source" device, such as the office PC or TV console, to inquire, control, and to gather characteristics of piconet users, their traffic, attacks, throughput performance, coverage performance, or unintended or intended usage through the repeater. For
30 example, the host could access the memory of the UWB repeater for detailed data, as well as collect statistics gathered and processed and stored by the UWB repeater, so that the human user of the network could gather a report of activity. Getting reports back from the UWB repeater can be done over the same
35 Personal area network (PAN) that is used for wireless connectivity, or could be carried out using a wired network, if the invention happened to also be connected to a wired backbone, such as Cat-5 Cable (As described subsequently, the UWB repeater invention may have internet connection jacks that

would allow it to also be connected to a wired infrastructure).

Furthermore, without human intervention, the host could gather data from the UWB device, and use that knowledge for real time or near real time control for providing security, changes in
5 security keys or protocols, changes in bandwidth provisioning, and could even provide a termination of the home network from the internet, in order to prevent the home network from being attacked or compromised.

The ability of the UWB repeater to process data and
10 gather traffic and network conditions, including bandwidth provisioning data and security-related data, will be extremely useful in appliances that serve as in-home or in-office network controllers and interfaces, where the Internet is connected and then served wirelessly throughout a building. The UWB Repeater
15 disclosed here would be fully compatible with RADIUS servers, and in fact could help provide the connectivity required for home devices to gain access to the Internet, as disclosed earlier. A web-enabled interface, or windows, or some other PC or Tivo/TV/VCR/Cable Modem/Satellite type programming interface
20 could be supplied to program and control, as well as gather data from, the UWB repeater disclosed here.

The controller uses memory, such as flash, dram, PROM, and a wide range of other possibilities, based on speed, price, form factor and availability, to support the processing and
25 buffer-and-forward operations. Coupled with the computational capabilities of the processor and pipeline components, and given the functionality of the baseband and RF components, one can readily see that a powerful network security capability can be implemented while simultaneously providing broader, reliable
30 network coverage.

Consider one embodiment of the memory portion of this
invention to be like today's Memory Sticks that currently have 60 MB of memory (but will have much more in the future) and plug into a PC port for power -- the invention could have the
35 same form factor, for example, as a plug in memory stick today, where the UWB repeater invention, including memory, is simply plugged into an access port on a PC or other home appliance. The UWB repeater, if in the form of a plug in "stick", could also enable the equipped device (which could be the source/host

device, or some other device in the PAN) to connect via the UWB home network, while supporting the repeater operation within the PAN, while providing the capabilities of identifying the types of traffic and priorities which should be given such traffic within the PAN. Also, network management protocols and external devices and software, such as that located on the host PC, may query and retrieve the gathered data at the UWB repeater, and may adjust or control the UWB repeater processing modes (via the controller component) for particular desired network goals - such as greater security, more stringent prioritization on traffic, or even complete reboot/restart of processing in the UWB repeater. It is obvious to one skilled in the art that the UWB repeater could operate in concert with other devices, such as the host or other users of the Personal Area Network (e.g. home network) in order to provide distributed communication and command and control functions between the UWB repeater and other devices. In fact, it should be clear that the architectural structure of the UWB repeater may be distributed between hardware, embedded software, and an operating system which ships separately from the hardware, such as Windows or Linux, so that mass-produced UWB repeaters could be embedded or easily attached to existing appliances or computers.

The repeater may also have security provisioning such as an "authentication" or validation, as well as non-eradication function. Depending on the particular network scenario, network assignment steps can ensure the UWB repeater is being used to "repeat" signals from only those devices which are intended to be repeated within the home or office. This functionality could be done at layer 1 (PHY) with identification or authentication code sent over the air and detected by the Repeater, or performed at layer 2 (MAC) with handshake with other devices on the network, or a combination of layers being used for the security or authentication step, but this just as easily could be performed at higher layers, even performed up at the application layer (such as with VPN, web login, telephone dial, or some other computer-controlled authentication implemented automatically by one or more devices on the network, or implemented by the user on a

software interface, computer program, web site, or data entry method that connects to the home/office UWB network). Also, just as today's IEEE 802.11 bridge/repeater products, the UWB repeater may be equipped with MAC address association control, and could easily have one or more integrated wired Ethernet port connections for use on a standard wired Ethernet connection (not shown in figures). These techniques are well understood by those knowledgeable in IEEE 802.11a/b/g and 802.15.3a/b standards activities, which have become widely popular in recent years, and the present invention, while not required by such standards, could implement such standards if the baseband and RF architectural components were properly configured to conform to the MAC and PHY standards.

For example, a preferred embodiment of this invention has the UWB transceiver/repeater 88 be mounted in an AC outlet for wall use or for barrier-strip extension cord use (See Figure 8). Alternatively, the device could be integrated in a consumer electronic device (a cellphone, or PC, or a home entertainment center, for example), and would be controlled by or interact with a software program running on a home computer or a game console or TV (a "host"). The host would allow the person using the home/business/vehicle network to type in or use a remote control or mouse device to connect his or her own home/office network, and the network would use UWB devices to communicate with each other to provide the network, and in doing this manual configuration, the user is able to input identifiers, such as product name or manufacturing codes or some other identifier of other appliances for the home network that the user is able to enter. This operation may also occur automatically, without manual intervention by the user, by the self-configuring Personal Area network "waking up" and reading the serial numbers/device codes through the airwaves automatically, and finding the UWB repeater.

Returning to the manual example of a home network appliance, in doing this data entry, the user is implicitly setting up security features which allow the myriad devices in the home to know they are on the desired network, and the UWB repeater is then able to know, through shared knowledge of this security information, which devices should be "repeated" and

which devices (say from a neighboring building) should be "ignored" and not repeated. In this example, the UWB repeater could be embedded within the PC or cable TV product, or it could be communicated to wirelessly or via cable by the home computer or cable TV product, or it even could serve as the host, itself, where it is connected to the internet using wireless or wired means. Of course, one skilled in the art would understand the invention could also having no security or more limited security, where some or all messages within earshot would be repeated by the UWB repeater, or whereby some messages would not be repeated due to inherent knowledge of local devices and their valid signaling or data transmission. Also, it is clear that much simpler, automated, or built in configuration capabilities for specification of network parameters or operational conditions could be supplied, say within an operating system, or embedded in software or hard codes in a consumer device, itself.

In addition to security features disclosed above, the ability of the UWB Repeater to sense real-time data transmissions, such as network ID's or bit-streams associated with security or keys, allows any application to provide its own data coding, carried above the MAC and PHY layers, to enable particular desired features of network provisioning and bandwidth provisioning controls, so that some users (such as portable email or low rate data or low rate audio) are allocated some delay, or less important priority, in being retransmitted than are high priority data, such as video data or voice over IP telephony, or high bandwidth messaging or urgent information which has less tolerance to delay. This quality of service (QOS) intelligence could be identified within the MAC, PHY of standardized UWB equipment, but also can be inserted and detected by the disclosed invention when such signaling appears in the IP layer and/or other higher layers of the application data that is transmitted over the network. Thus, the invention allows electronics makers to create their own higher layer UWB protocol, or even a universal PHY and MAC layer, using standardized components, which also allows the UWB Repeater to prioritize and provision certain repeated data over other repeated data, by simply exploiting the fact that each

UWB repeater device is able to detect actual data and can operate on such data using the architecture described above (see Figures 5 and 7). For example, data bits which alert the repeater and the network to the particular type of user/device can be used to help prioritize the UWB repeater's processing of the data which is to be repeated. In fact, the UWB repeater could be used in network test, where the memory and controlling circuits are used to induce a fixed, known, preset, or desired delay on particular traffic which is received by the repeater, in order to test "ringing of the network" or to determine if attackers or interference are correlated with the operation/transmissions of particular devices on the PAN.

The form factor of the UWB repeater may take on a wide range of sizes, shapes, and mounting/fixture options. This repeater could be installed or embedded in PCs, servers, or appliances, or it could be a stand alone device that could be purchased and placed in any home or office, embedded within a fire alarm, air freshener, night light, or phone. Alternatively, it could be a plug-in device, much like plug-in chassis cards are used today to enable WLAN access or modem access in PCs.

Figure 8 illustrates a preferred embodiment of the invention, embedded within an AC Power strip. The AC strip could be built into the wall or purchased as an extension cord in hardware stores, etc. Note that the power strip has standard AC wiring to connect to the home or office AC power, but also has a connection to the "plant". This plant connection 94, which is optional in the practice of the invention, may be a physical connection, such as through a cable that connects the UWB transceiver to an Ethernet port, Cable TV outlet, DSL outlet, etc., or this port connection may be a wireless connection (for wireless access, the embedded UWB transceiver might be connected to a WiMax radio or Mesh Network transceiver, enabling wireless to come in to the UWB transceiver and be redistributed through the repeating function. Alternatively, the plant connection may be optional or unused, and the UWB transceiver simply implements the repeating and security functions described herein. This is an example of one of the myriad of form factors that can be used.

One could use the invention as part of AC extension cords, photocopiers, game consoles, television/video displays, video consoles, hospital video equipment, multimedia centers, air fresheners, fire alarms, etc. Fixtures, colors, shapes, and sizes may be very similar to fire alarms or air fresheners that plug into AC outlets in the home, or are wired into a car DC power supply, and the repeater device may also become embedded in objects that are typically carried around the home or office, such as but not excluding cordless phones, cell phones, portable computers, home stereos, TVs, pet collars, tennis shoes, and a wide range of portable, common devices that when moved could provide a wide array of range extension and coverage improvements of UWB devices. In fact, devices which integrate video, gaming, audio, and computing will likely benefit greatly from the disclosed invention. This invention may be a stand alone plug-in device, or may be embedded in AC outlets, receptacle extensions, and could become part of future phones or AC extension cords. The positioning and ranging capabilities of UWB make this applicable to tracking children and pets, or finding vehicles in large parking lots, as well.

It will be clear to one skilled in the art that the above disclosed invention may be applied in a wide range of applications and configurations as captured in the scope of the appended claims. Furthermore, the specification is not limited to a particular radio air interface standard or radio PHY or MAC definition or implementation.

CLAIMS

I claim:

1. A broadband wireless repeater, comprising:

at least one receiver for receiving electronic signals at least some of which are sent by one or more ultrawideband devices, and at least one transmitter for transmitting received, modified, or stored electronic signals or data, wherein said at least one receiver and at least one transmitter may be separate components or be combined as a transceiver, and wherein said at least one receiver and at least one transmitter may be dedicated receive only and transmit only or may function alternatively as a receiver and as a transmitter; and

a controller, which is either pre-programmed or programmable with network information, which controls the screening of data received by said at least one receiver, and either passes, ignores, rejects, redirects, modifies, or kills received data, said controller providing such data screening in order to differentiate between desired and undesired data for network security, network management, or interference mitigation purposes,

said controller controlling reception of electronic signals or data by said at least one receiver and transmission by said at least one transmitter,

said controller further providing for the collecting, - reporting, or storing of network usage, network statistics, or network information.

2. The broadband repeater of claim 1 wherein said network information includes IDs for each of the components to be used in a network.

3. The broadband repeater of claim 1 wherein said network

information includes IDs for users permitted to be used in a network.

4. The broadband repeater of claim 1 wherein said network information includes a specified coverage area for wireless devices to permit use of a network.

5. The broadband repeater of claim 1 wherein said network information includes specified applications permitted to be used in a network.

6. The broadband repeater of claim 1 further comprising a buffer memory for storing received electronic signals for processing by said controller.

7. The broadband repeater of claim 1 wherein said at least one receiver receives electronic signals by either or both a wireless communication or a wired link.

8. The broadband repeater of claim 1 wherein said at least one transmitter transmits electronic signals by wireless communication.

9. The broadband repeater of claim 1 wherein said at least one transmitter transmits electronic signals by wired link.

10. The broadband repeater of claim 1 wherein said at least one transmitter transmits electronic signals by either or both wireless communication or by wired link.

11. The broadband repeater of claim 1 wherein said at least one receiver and said at least one transmitter and said

controller are associated with an AC outlet or a wall fixture.

12. The broadband repeater of claim 1 wherein said controller permits network information to be modified.

13. The broadband repeater of claim 1 wherein said controller uses adaptive or steerable antennas or MIMO technologies to control the direction or coverage zones of transmissions or reception.

14. The broadband repeater of claim 1 wherein said controller permits support of position location capabilities for use by a network.

15. The broadband repeater of claim 1 wherein said controller directs undesired user or intruder information to be passed to other components of a network from said at least one transmitter using either wireless or wired connectivity.

16. The broadband repeater of claim 1 where network provisioning information is passed to or pre-programmed with said controller, for purposes of network traffic provisioning, wherein said controller uses said provisioning information to prioritize either or both reception of data and transmission of data to or from said repeater.

17. The broadband repeater of claim 1 wherein said transmitter and said receiver have reversible input/output directions.

18. A broadband wireless repeater, comprising:
at least one receiver for receiving electronic signals
at least some of which are sent by one or more ultrawideband

devices, and at least one transmitter for transmitting received, modified, or stored electronic signals or data, wherein said at least one receiver and at least one transmitter may be separate components or be combined as a transceiver, and wherein said at least one receiver and at least one transmitter may be dedicated receive only and transmit only or may function alternatively as a receiver and as a transmitter; and

a controller which is either pre-programmed or programmable with provisioning information for purposes of network traffic provisioning, wherein said controller uses said provisioning information to prioritize either or both reception of data by said at least one receiver and transmission of data by said at least one transmitter, said controller controlling reception of electronic signals or data by said at least one receiver and transmission of electronic signals or data by said at least one transmitter.

19. The broadband repeater of claim 18 wherein said provisioning information prioritizes by network user.

20. The broadband repeater of claim 18 wherein said provisioning information prioritizes by type of data being received by said at least one receiver.

21. The broadband repeater of claim 18 wherein said provisioning information prioritizes by type of data being transmitted by said at least one transmitter.

22. The broadband repeater of claim 18 wherein said provisioning information prioritizes by the particular type of application being used by one or more users of the network and

being received by said at least one receiver.

23. The broadband repeater of claim 18 wherein said provisioning information prioritizes by the particular type of application being used by one or more users of the network being transmitted by said at least one transmitter.

24. The broadband repeater of claim 18 further comprising a buffer memory for storing received electronic signals or data for processing by said controller.

25. The broadband repeater of claim 18 wherein said at least one receiver receives electronic signals or data by either or both a wireless communication or a wired link.

26. The broadband repeater of claim 18 wherein said at least one transmitter transmits electronic signals or data by wireless communication.

27. The broadband repeater of claim 18 wherein said at least one transmitter transmits electronic signals or data by wired link.

28. The broadband repeater of claim 18 wherein said at least one transmitter transmits electronic signals or data by either
- or both wireless communication or by wired link.

29. The broadband repeater of claim 18 wherein said at least one receiver and said at least one transmitter and said controller are associated with an AC outlet or a wall fixture.

30. The broadband repeater of claim 18 wherein said controller

permits provisioning information to be modified.

31. The broadband repeater of claim 18 wherein said provisioning information supplied to said controller is communicated using either a wireless or wired link.

32. The broadband repeater of claim 31 wherein said provisioning information is further supplied to said controller by over-the-air ultrawideband signaling.

33. The broadband repeater of claim 31, wherein said provisioning information is further supplied to said controller by a wired connection from another device.

34. The broadband repeater of claim 18 wherein said controller uses adaptive or steerable antennas or MIMO technologies to control the direction or coverage zones of transmissions or reception.

35. The broadband repeater of claim 18 wherein said controller permits support of position location capabilities for use by a network

36. The broadband repeater of claim 18 wherein said controller directs undesired user or intruder information to be passed to other components of a network from said at least one transmitter using either wireless or wired connectivity.

37. The broadband repeater of claim 18 wherein said transmitter and said receiver have reversible input/output directions.

38. A broadband wireless repeater, comprising:

at least one receiver for receiving electronic signals at least some of which are sent by one or more ultrawideband devices, and at least one transmitter for transmitting received, modified, or stored electronic signals or data, wherein said at least one receiver and at least one transmitter may be separate components or be combined as a transceiver, and wherein said at least one receiver and at least one transmitter may be dedicated receive only and transmit only or may function alternatively as a receiver and as a transmitter; and

a controller which is either pre-programmed or programmable to collect traffic information or security information related to received and transmitted data, said controller controlling reception of electronic signals or data by said at least one receiver and transmission by said at least one transmitter.

39. The broadband repeater of claim 38 further comprising a means for exporting traffic information or security information to one or more computer processors or devices.

40. The broadband repeater of claim 38 further comprising means for adjusting one or more operations of said controller based on said traffic information or security information.

41. A broadband repeater, comprising:

at least one receiver for receiving electronic signals at least some of which are sent by one or more ultrawideband devices and at least some of said signals being sent by a wired link, and at least one transmitter for transmitting received, modified, or stored electronic signals or data, wherein said at least one receiver and at least one transmitter may be separate components or be combined as a transceiver, and wherein said at

least one receiver and at least one transmitter may be dedicated receive only and transmit only or may function alternatively as a receiver and as a transmitter; and

a controller for controlling reception of electronic signals by said at least one receiver and transmission by said at least one transmitter,

wherein said controller supports a hub or router function to allow for the commingling of both wireless and wired traffic within said broadband repeater.

42. The broadband repeater of claim 1 wherein either pre-programmed or programmable network information supplied to said controller is communicated using either a wireless or wired link.

43. The broadband repeater of claim 42 wherein said network information is further supplied to said controller by over-the-air ultrawideband signaling.

44. The broadband repeater of claim 42, wherein said network information is further supplied to said controller by a wired connection from another device.

BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES

ABSTRACT OF THE DISCLOSURE

5 An ultrawideband radio transceiver/repeater provides a
low cost infrastructure solution that merges wireless and wired
network devices while providing connection to the plant,
flexible repeater capabilities, network security, traffic
monitoring and provisioning, and traffic flow control for wired
10 and wireless connectivity of devices or networks. The
ultrawideband radio transceiver/repeater can be implemented in
discrete, integrated, distributed or embedded forms.

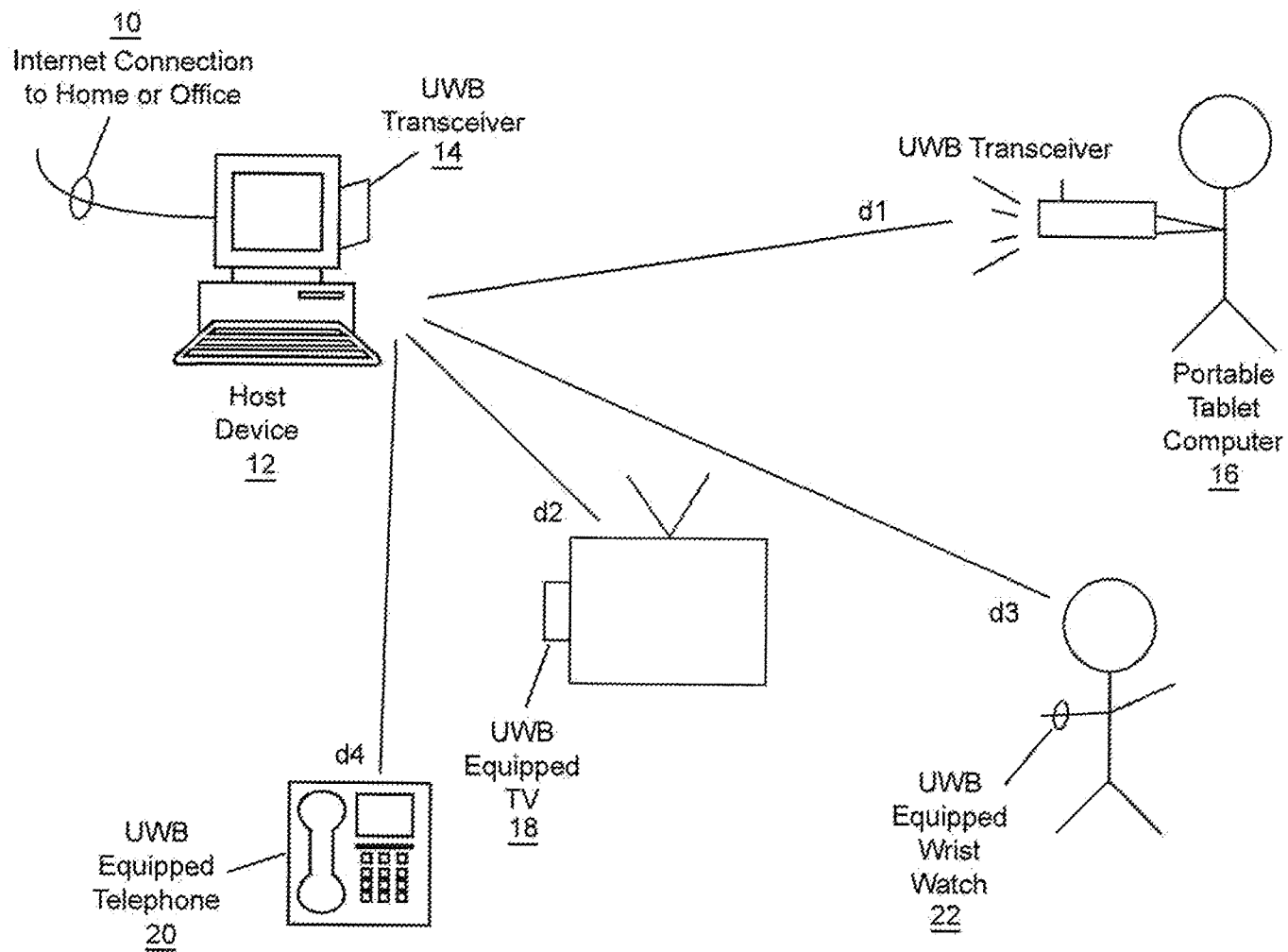


Figure 1

1/6

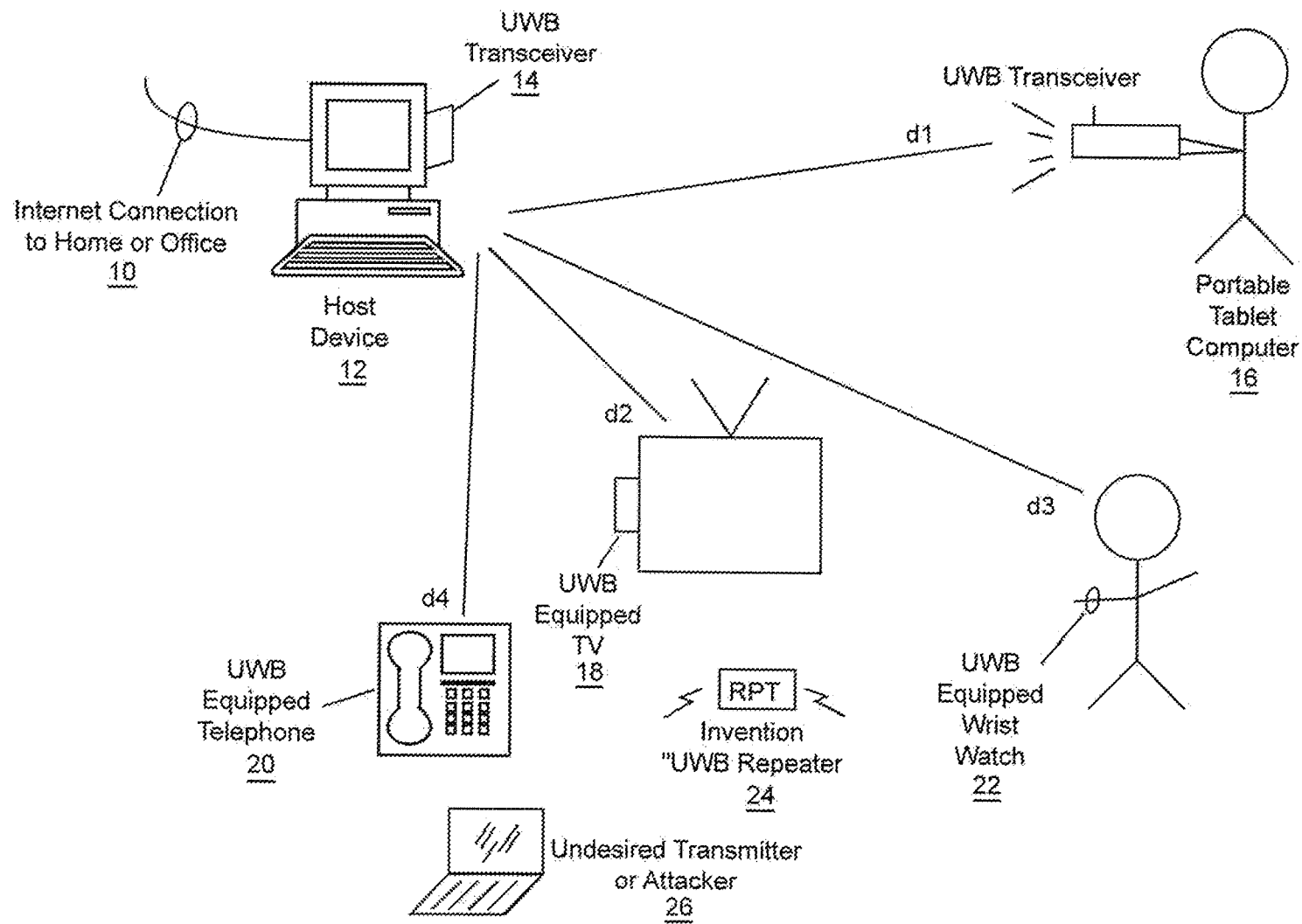


Figure 2

2/6

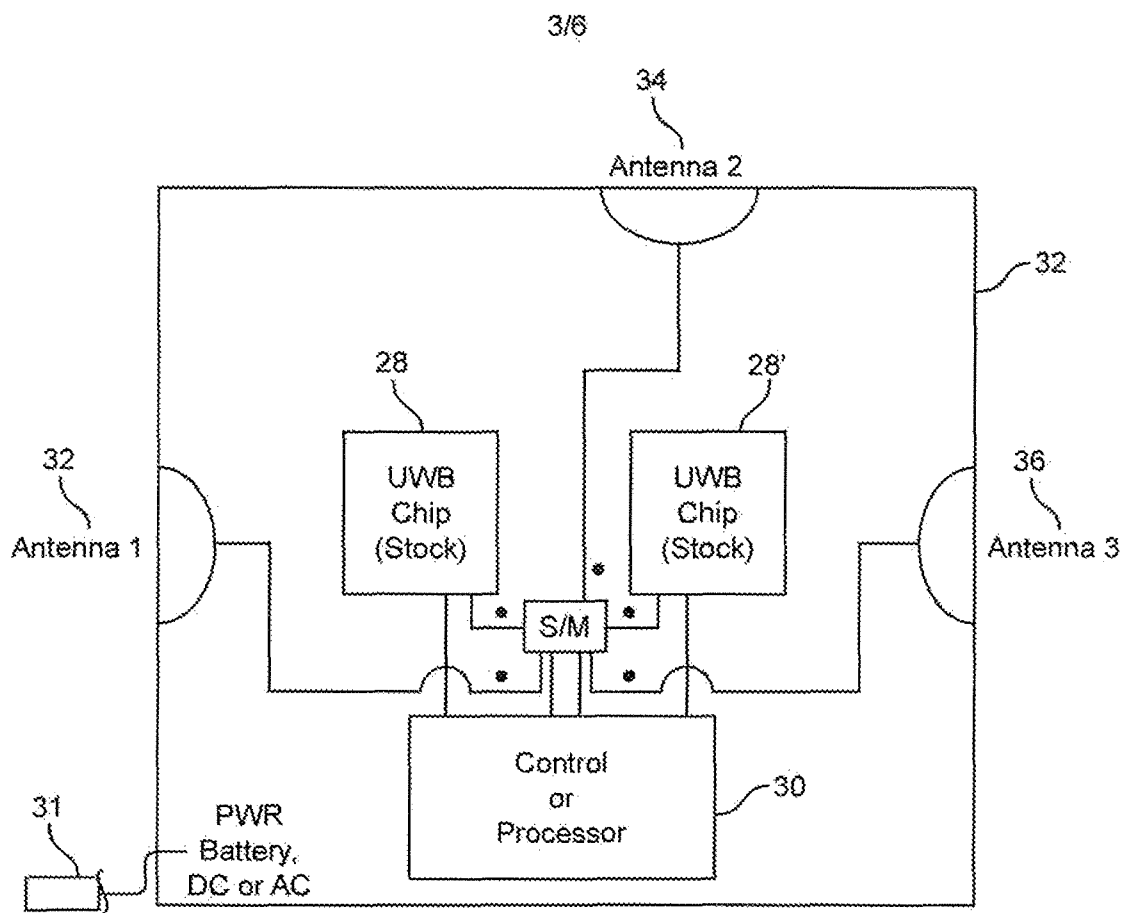


Figure 3

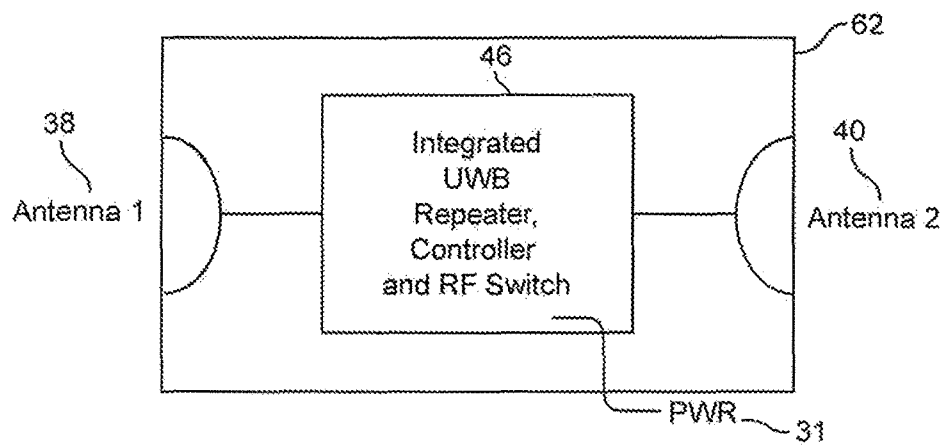


Figure 4

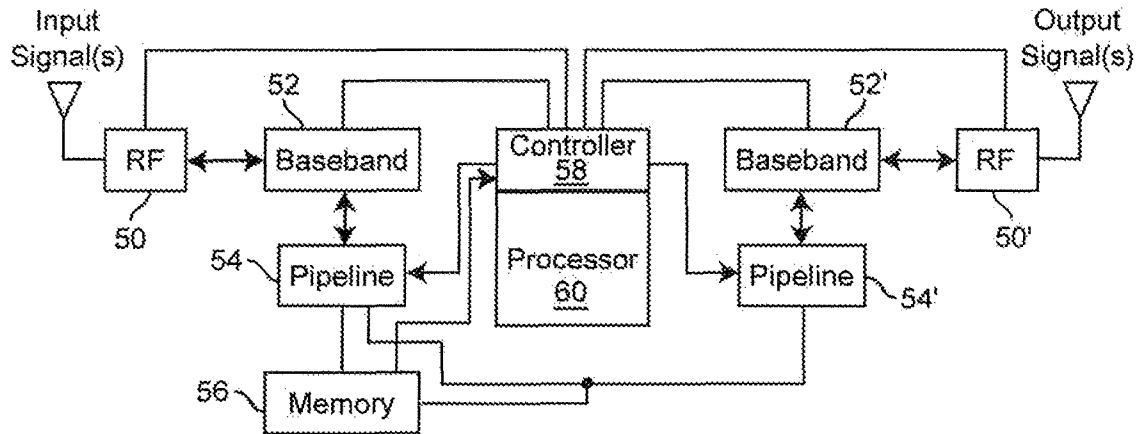


Figure 5

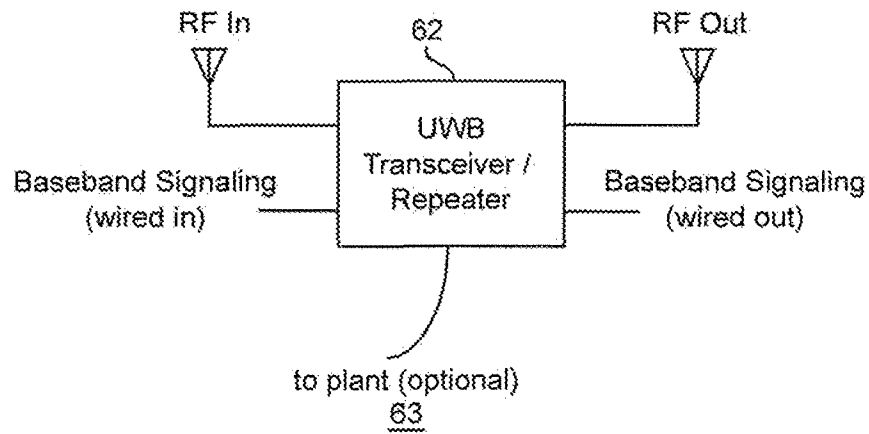


Figure 6

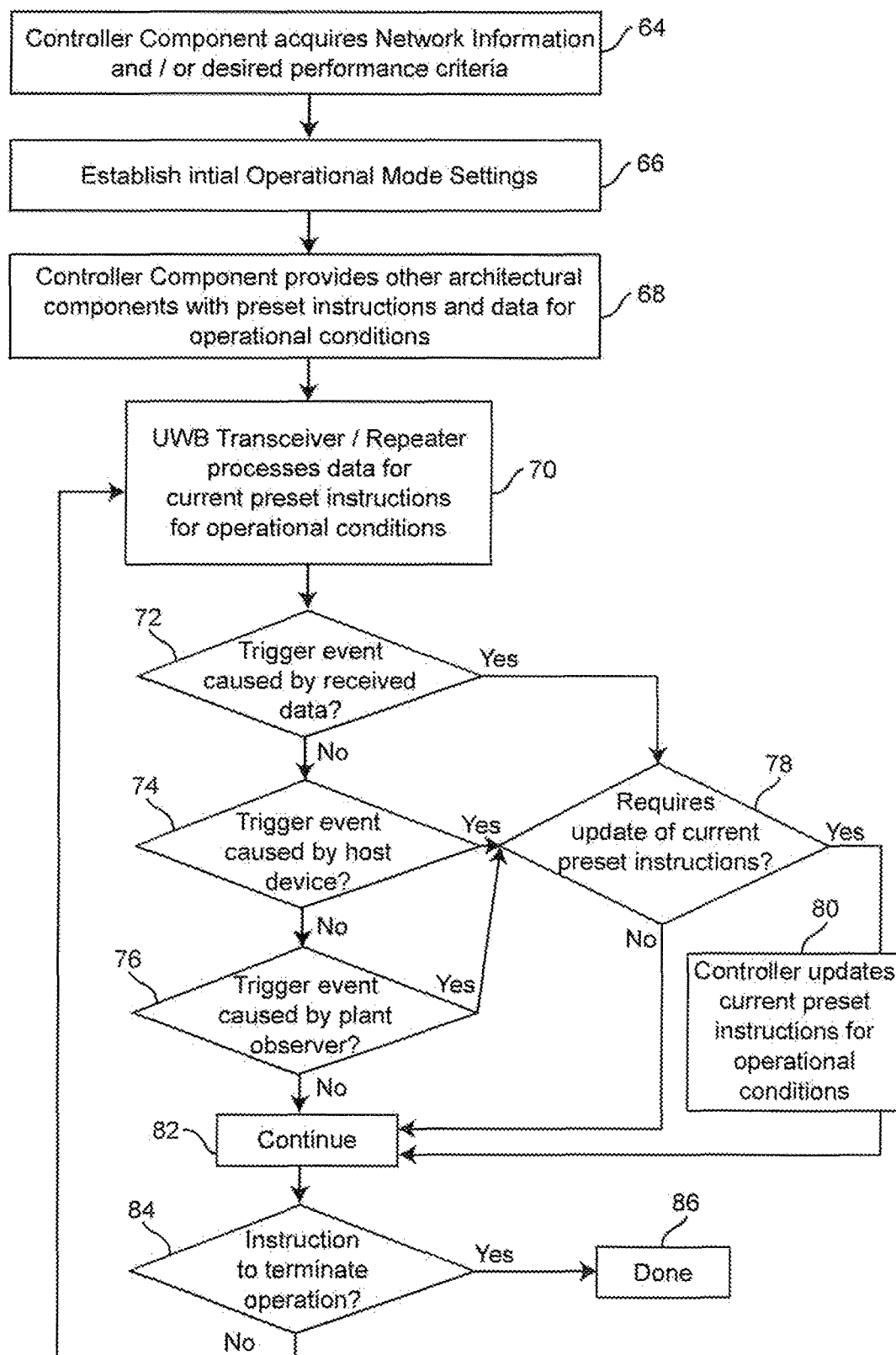


Figure 7

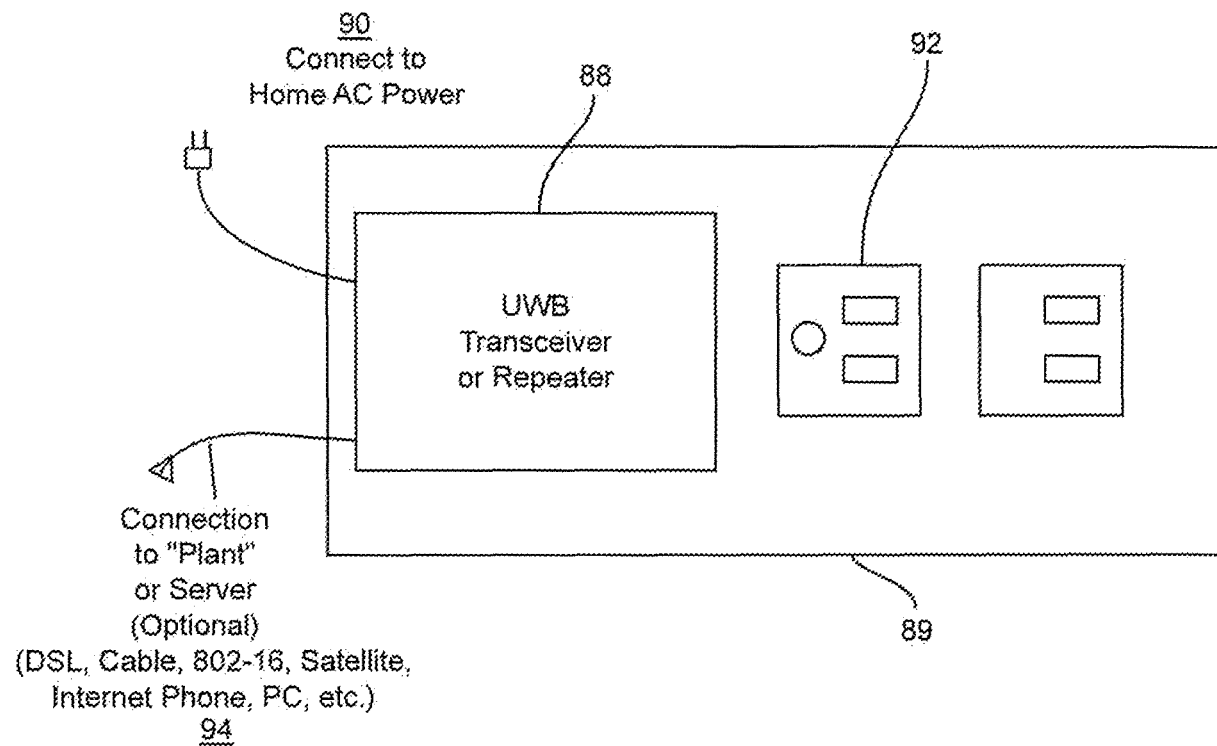


Figure 8

6/6

Utility Patent Application Transmittal

Docket Number

08610001C3

Address To
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

First Named Inventor

Name	Theodore S. Rappaport		
Mailing Address	12 W. 15th St. Apt. 5A		
City	New York	State	New York
Country	United States of America	Postal Code	10011
City of Residence	Riner	State of Residence	Virginia
Country of Residence	United States of America	Citizenship	United States of America

Title of Invention

BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES

Assignee Information*

Name			
Company			
Address			
City		State	
Country		Postal Code	

*Complete this section if applicant wants the patent application publication to include assignee information. Providing this information does not substitute for compliance with any requirement of Part 3 of 37 CFR to have an assignment recorded by the Patent Office.

Application Elements

See MPEP chapter 600 concerning utility patent application contents.

- | | |
|--|--|
| <p>1. ☒ USPTO Filing Fee (as calculated <i>infra</i>)</p> <p>2. ☒ Applicant claims small entity status
See 37 CFR 1.27</p> <p>3. ☒ Specification
Total number of pages <u>48</u>
Both the claims and abstract must start on a new page
(For information on the preferred arrangement, see MPEP 608.01(a))</p> <p>4. ☒ Drawing(s) (35 U.S.C. 113)
Total number of sheets <u>6</u></p> <p>5. ☒ Oath or Declaration
a. ☐ Newly executed (original or copy), or ☐ Unexecuted
b. ☐ A copy from a prior application (37 CFR 1.63(d))
(for Continuation or Divisional Application)
i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s)
named in the prior application (see 37 CFR
1.63(d) and 1.33(b).)</p> | <p>6. ☒ Application Data Sheet (37 CFR 1.76)</p> <p>7. ☐ CD-ROM or CD-R in duplicate, large table or
Computer Program (<i>Appendix</i>)
☐ Landscape Table on CD</p> <p>8. ☐ Nucleotide and/or Amino Acid Sequence Submission
(if applicable, items a. - c. are required)
a. ☐ Computer Readable Form (CRF)
b. Specification Sequence listing on:
i. ☐ CD-ROM or CD-R (2 copies), or
ii. ☐ Paper
c. ☐ Statements verifying identity of above copies</p> |
|--|--|

Utility Patent Application Transmittal

Docket Number

08610001C3

Accompanying Application Parts

9. ☐ **Assignment**
a. ☐ Recordation Form Cover Sheet
10. ☐ **37 CFR 3.73(b) Statement** (when there is an assignee)
11. ☐ **Power of Attorney** ☐ **No Power of Attorney**
12. ☐ **English Translation Document** (if applicable)
13. ☒ **Information Disclosure Statement**
a. ☐ Copies of citations attached
14. ☒ **Preliminary Amendment**
15. ☐ **Return Receipt Postcard** (MPEP 503)
(Should be specifically itemized)
16. ☐ **Certified Copy of Priority Document(s)**
(if foreign priority is claimed)
17. ☐ **Nonpublication Request** under 35 USC 122(b)(2)(B)(i)

18. ☐ **Certificate of Mailing**
a. ☐ First Class Mail, or
b. ☐ Express Mail
Label Number _____

19. ☐ **Other:**

20. If a **CONTINUING APPLICATION**, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:

☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No. 13/157,789
(XX/YYY,YYY)

Prior application information: Examiner REGO Art Unit: 2618

Request Not To Publish*

21. ☐ Applicant hereby requests that the attached application not be published under 35 U.S.C. 122(b).

Applicant hereby certifies that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

*Warning

This request must be signed in compliance with 37 CFR 1.33(b) and submitted with the application upon filing.

Applicant may rescind this nonpublication request at any time. If applicant rescinds a request that an application not be published under 35 U.S.C. 122(b), the application will be scheduled for publication at eighteen months from the earliest claimed filing date for which a benefit is claimed.

If applicant subsequently files an application directed to the invention disclosed in the attached application in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the applicant must notify the United States Patent and Trademark Office of such filing within forty-five (45) days after the date of the filing of such foreign or international application. Failure to do so will result in abandonment of this application (35 U.S.C. 122(b)(2)(B)(iii)).

Request To Publish Early

22. ☐ Applicant hereby requests the publication of this patent application earlier than as set forth in 37 CFR 1.211(a) pursuant to 37 CFR 1.219 as provided in 37 CFR 1.215(c).

Utility Patent Application Transmittal

Docket Number

08610001C3

Fee Calculation

Utility Patent Application Fee

Claims as Filed

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	22	- 20 =	2	x 31 =	\$62
Total Indep. Claims	1	- 3 =		x 125 =	
Multiple Dependent Claims (check if applicable) ☐					
☒ E-Filing (small entity must be selected to get Filing Fee discount)				Basic Filing Fee	\$98
Number of Specification Pages	48	Number of Drawing Sheets	6		
Total Pages	54	Application Size Fee			\$ 0

Pre-Grant Publication Fee

Early publication fee as set forth in 37 CFR 1.18(d) ☐

Processing fee for publication or republication as set forth in 37 CFR 1.17(i) ☐

Assignment Recordal Fee

Enter Number of Properties Affected by Recordal x 40 =

Examination Fee

Examination Fee \$125

Search Fee

Search Fee \$310

TOTAL \$598

Method of Payment

☒ Deposit Account ☐ Credit Card ☐ Check ☐ Money Order ☐ Other: _____

Deposit Account Number 50-2041

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge the fee(s) set forth above

☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17

☐ Charge fee(s) indicated above, **except for the filing fee**

☒ Credit any overpayments

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 form PTO-2038.

Amount Grand Total \$598

Utility Patent Application Transmittal

Docket Number

08610001C3

Correspondence Address

Customer Number 30743

-OR-

Name

Address

City

State

Country

Postal Code

Phone Number

E-mail Address

Certificate of Mailing by Express Mail

I hereby certify that this Patent Application, accompanying documents, and fee are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on the date indicated below:

(Date of Mailing)

(Typed or Printed Name of Person Mailing Correspondence)

(Signature of Person Mailing Correspondence)

("Express Mail" Mailing Label Number)

Certificate of Mailing by First Class Mail

I hereby certify that this Patent Application, accompanying documents, and fee are being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on the date indicated below:

(Date of Mailing)

(Name of Person Mailing Correspondence)

(Signature of Person Mailing Correspondence)

Certificate of Transmission

I hereby certify that this Patent Application, accompanying documents, and fee authorization are being facsimile transmitted to the United States Patent and Trademark Office on the date indicated below:

(Date of Transmission)

(Name of Person Transmitting Correspondence)

(Signature of Person Transmitting Correspondence)

Signature Instructions

Select the name of the person who will electronically sign the Patent Application from the drop-down box below.

If a practitioner is not present in the drop-down list, you must close this form and select 'Add Practitioner...' in the Form Manager's Utility menu.

Verify that the signatory information is correct and press the 'eSign' button to electronically sign the submission. If you prefer to sign the form manually, simply do not click the 'eSign' button; just print and manually sign.

Signatory Drop-Down Box

Michael E. Whitham

Name

Michael E. Whitham

Registration Number

32,635

Signatory Capacity

Attorney for Applicant(s)

E-mail Address

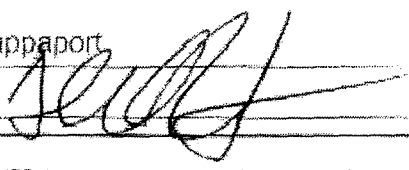
action@wcc-ip.com

eSign

Date Signed

11/14/12

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND
As the below named inventor, I hereby declare that:	
This declaration is directed to ☒ The attached application, or	
☐ United States application or PCT international application number _____	
filed on _____	
The above-identified application was made or authorized to be made by me	
I believe that I am the original inventor or an original joint inventor of a claimed invention in the application	
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.	
WARNING:	
Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.	
LEGAL NAME OF INVENTOR	
Inventor:	Theodore S. Rappaport
Signature:	
Date (Optional):	_____
Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AI/01 form for each additional inventor.	

This collection of information is required by 35 U.S.C. 155 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to be paid by the USPTO to process an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of
Rappaport, et al.

Confirmation No.: not assigned

Serial No.: not assigned
(CON of USSN 13/157,789)

Group Art Unit: not assigned

Filed: Concurrently

Examiner: not assigned

For: BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND
TECHNOLOGIES

INFORMATION DISCLOSURE STATEMENT

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

Sir:

Under the provisions of 37 C.F.R. 1.97 through 1.99 and pursuant to applicant's duty of disclosure under 37 C.F.R. 1.56, applicant respectfully brings the following documents, listed on the attached form PTO-1449, to the attention of the Examiner in charge of the above-identified application. The references cited in the attached PTO/SB/08a and PTO-1449 (9 pages total) are readily available to the Examiner in co-pending U.S. Application Ser. No 13/157,789, filed on June 10, 2011, U.S. Application Ser. No. 12/689,052, filed on January 18, 2010, now USP 7,983,613 issued July 19, 2011, and U.S. Application Ser. No. 10/919,515, filed on August 17, 2004, now USP 7,676,194 issued March 9, 2010.

Thus, according to the rules of practice, these references are not provided herein, but are listed on the PTO-1449 form and should be considered by the Examiner. If the Examiner is unable to obtain the listed references, applicant will gladly provide such references upon notification by the Examiner in charge of the examination of the above-identified application.

These citations do not constitute an admission that the references are relevant or material to the claims. They are only cited as constituting related art of which the applicant is aware.

It is respectfully requested that the listed references be considered by the Examiner and formally made of record in this application.

Respectfully submitted,



Michael E. Whitham

Registration No.: 32,635

Date: 11/14/12

Whitham, Curtis, Christofferson & Cook, PC

11491 Sunset Hills Road - #340

Reston, VA 20190

703/787-94000

Customer No. 30743

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Theodore S. Rappaport
Art Unit	
Examiner Name	
Attorney Docket Number	08610001C3

U.S. PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	5592491		1997-01-07	Dinkins	
	2	4659878		1987-04-21	Dinkins	
	3	5633876		1997-05-27	Dinkins	
	4	4932049		1990-06-05	Lee	
	5	5086506		1992-02-04	Hall et al.	
	6	6671351		2003-12-30	Menard et al.	
	7	6804739		2004-10-12	Young et al.	
	8	7009573		2006-03-07	Hornsby et al.	

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		
First Named Inventor	Theodore S. Rappaport	
Art Unit		
Examiner Name		
Attorney Docket Number	08610001C3	

9	5844905		1998-12-01	McKay et al.	
10	8103798		2012-01-24	Omura	
11	8077735		2011-12-13	Unruh	

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

Add

U.S.PATENT APPLICATION PUBLICATIONS

Remove

Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	20040166802		2004-08-26	McKay et al.	

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

Add

FOREIGN PATENT DOCUMENTS

Remove

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

If you wish to add additional Foreign Patent Document citation information please click the Add button

Add

NON-PATENT LITERATURE DOCUMENTS

Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	"BellSouth Tests In-Building Service Using its Cellularone Network . . . In-Building Services Time Has Come . . . Panasonic Enters PCS Product Market Early"; Mobile Phone News, Feb. 21, 1994	☐

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY DOCKET NO.
08610001C3

APPLICATION NO.
Not Assigned

T. Rappaport

FILING

Concurrently

GROUP ART

Not Assigned

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6,741,834	05/2004	Godwin			
	5,974,236	10/1999	Sherman			
	7,676,194	3/2010	Rappaport			

U.S. PATENT APPLICATION PUBLICATIONS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2006/0071776	04/2006	White et al.			
	2002/0072357	06/2002	Matsuda			
	2006/0106961	05/2006	Ebata et al.			
	2008/0065416	03/2008	Mazar et al.			

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

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

EXAMINER

DATE CONSIDERED

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

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY DOCKET NO.
08610001C3

APPLICATION NO.
Not Assigned

T. Rappaport

FILING

Concurrently

GROUP ART

Not Assigned

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5,818,821	10/1998	Schurig			
	6,466,766	10/2002	Treach			
	6,272,640	08/2001	Sokol			
	5,898,382	04/1999	Treach			
	6,718,160	04/2004	Schmutz			

U.S. PATENT APPLICATION PUBLICATIONS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2003/0124976	07/2003	Tamaki et al.			
	2002/0111137	08/2002	Walkup			
	2002/0197990	12/2002	Jochim et al.			
	2002/0142767	10/2002	Mears et al.			

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

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

			R. Buehrer, Dong Ha., J. Reed, D. McKinstry, N. Kumar "Range Extension for UWB Communications," May 30, 2002, White Paper, Virginia Tech
			"WiDeFi Repeats History," Unstrung, April 9, 2004, by Dan Jones, Site Editor for Unstrung (www.unstrung.com/document.asp?oc id=50796)

EXAMINER

DATE CONSIDERED

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

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY DOCKET NO.

08610001C3

APPLICATION NO.

Not Assigned

APPLICANT(S)

T. Rappaport

FILING DATE

Concurrently

GROUP ART UNIT

Not Assigned

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6,505,032	01/2003	McCorkle et al.			
	6,590,545	07/2003	McCorkle			
	5,634,196	05/1997	Alford			
	6,110,221	08/2000	Pai et al.			
	6,373,833	04/2002	Suonvieri et al.			

U.S. PATENT APPLICATION PUBLICATIONS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2002/0198977	12/2002	Cho			
	2003/0096578	05/2003	McCorkle et al.			
	2006/0063484	03/2006	Proctor et al.			
	2005/0208889	09/2005	Baker et al.			

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

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

		Intel Technology Journal; Vol. 7, Issue 3; August 2003
		"Pick Your Wireless Solution"; publication date and source/author unknown

EXAMINER

DATE CONSIDERED

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

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY DOCKET NO.

08610001C3

APPLICATION NO.

not assigned

APPLICANT(S)

T.S. Rappaport

FILING DATE

concurrently

GROUP ART UNIT

not assigned

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

U.S. PATENT APPLICATION PUBLICATIONS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2002/0188530	12/2002	Wojcik, et al.			

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

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

EXAMINER

DATE CONSIDERED

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

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY DOCKET NO.

08610001C3

Application Number

Not Assigned

Applicant(s)

Rappaport

Filing Date

Concurrently

Group Art Unit

Not Assigned

*EXAMINER

INITIAL

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

R. Fontana; "Recent Applications of Ultra Wideband Radar and Communications Systems"; to be published in Ultra-Wideband, Short-Pulse Electromagnetics

N. Kumar; "802.15.3 MAC Layer Overview and Proposed Enhancements to Support UWB PHY"; Virginia Tech MPRG

W. Ahmed and B. Parmar; "High-tech Uweeba (uwb) - from bandwidth to bucks? Part 1"; www.thechilli.com; August 24, 2003

"New Technology Bulletin"; Vol. 1, Issue 7; March 2001

Paul Withington; "Time Modulated Ultra-Wideband"; Federal Wireless Users' Forum; May 2001

R. Cringeley; "Good News"; www.pbs.org/cringeley/pulpit (The Pulpit); August 8, 2002

WiDeFi Products Webpage; www.widefi.com/products

"New Products: Buffalo Tech announces 11g bridge/repeater"; smallnetbuilder.com; posted by Tim on June 17, 2003

"SMC intros 11b AP, repeater, bridge"; smallnetbuilder.com; posted by Tim on June 10, 2003

"PROPAGATOR Fully Integrated Repeater"; Andrew Corporation's website - www.andrew.com/products

"Ultrawideband.ca Mesh Networking Explained"; 2003

EXAMINER

DATE CONSIDERED

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

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY DOCKET NO.

08610001C3

Application Number

Applicant(s)

Theodore S. Rappaport

Filing Date

Group Art Unit

*EXAMINER
INITIAL

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

Intel Technology Journal, "Wireless Technologies," Vol. 7, Issue 3, August 19, 2003, ISSN-864X

"Pick Your Wireless Solution", White Paper, Published by the University of Texas at Austin IT Staff, May 2002

R. J. Fontana, "Recent Applications of Ultra Wideband Radar and Communications Systems," appearing in Kluwer Academic Press/Plenum Publishers book: "Ultra-Wideband, Short-Pulse Electromagnetics," c. 2002, ISBN 978-0-306-47338-8 and ISBN 978-0-306-4798-9

"802.15.3 MAC layer Overview and Proposed Enhancements to Support UWB PHY", Masters Thesis of Nishant Kumar, Virginia Polytechnic Institute and State University, May, 2004, <http://scholar.lib.vt.edu/theses/index.html>

"MAC and physical layer design for ultra-wideband communications," Masters Thesis of Nishant Kumar, Virginia Polytechnic Institute and State University, May 2004, <http://scholar.lib.vt.edu/theses/available/etd-05172004-123657/unrestricted/Thesis NishantKumar.pdf>

EXAMINER

DATE CONSIDERED

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of

Rappaport	Confirmation No. (not assigned)
Serial No. (Not assigned)	Group Art Unit (not assigned)
Filed Concurrently Herewith	Examiner (not assigned)
For BROADBAND REPEATER WITH SECURITY FOR ULTRA WIDEBAND TECHNOLOGIES	

This application is a continuation application of

In re patent application of

Rappaport	Confirmation 7953
Serial No. 13/157789	Group Art Unit 2618
Filed June 10, 2011	Examiner Rego
For BROADBAND REPEATER WITH SECURITY FOR ULTRA WIDEBAND TECHNOLOGIES	

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

PRELIMINARY AMENDMENT

Sir:

Prior to examination on the merits and calculation of the filing fees, please
amend the application as follows:

Listing of the Claims: begin on page 2

Remarks: begin on page 6

Listing of the Claims:

The following is a complete listing of all the claims in the application, with an indication of the status of each:

1-44. (Canceled)

45. (New) A broadband wireless relay containing at least one receiver and at least one transmitter, comprising:

a controller that is configurable for operation in one or more wireless networks, said controller cooperating with said at least one receiver to receive transmissions of one or more ultrawideband devices wherein said one or more ultrawideband devices either or both transmit and receive electromagnetic signals that have an instantaneous or overall occupied bandwidth of 100 MHz or more or have a data transmission rate of 100 Megabits per second or more, said controller cooperating with said at least one receiver and said at least one transmitter to perform one or more of

- a) ignore or filter out transmissions or data from one or more undesired transmitters, data sources, or noise sources;
- b) instruct one or more ultrawideband devices to ignore or disregard the transmissions or data of one or more undesired transmitters, undesired users or noise sources; and
- c) network provisioning or monitoring for said one or more ultrawideband devices, including one or more of
 - i) bandwidth or delay provisioning,
 - ii) application prioritization, and
 - iii) traffic, bandwidth, delay or data transmission prioritiesor monitoring for said one or more ultrawideband devices.

46. (New) The broadband wireless relay of claim 45 wherein said controller performs a).

47. (New) The broadband wireless relay of claim 45 wherein said at least one

receiver and said at least one transmitter operate in half duplex.

48. (New) The broadband wireless relay of claim 45 wherein said at least one receiver and said at least one transmitter operate in full duplex.

49. (New) The broadband wireless relay of claim 45 wherein said at least one receiver and said at least one transmitter operate in simplex.

50. (New) The broadband wireless relay of claim 45 wherein at least one of said one or more ultrawide band devices has a higher data rate than if said relay was not present in said one or more wireless networks.

51. (New) The broadband wireless relay of claim 45 wherein at least one of said one or more ultrawide band devices has a greater coverage distance than if said relay was not present in said one or more wireless networks.

52. (New) The broadband wireless relay of claim 45 wherein at least one of said one or more ultrawide band devices have higher quality of transmission or reception than if said relay was not present in said one or more wireless networks.

53. (New) The broadband wireless relay of claim 45 wherein at least one of said one or more ultrawide band devices has less interference than if said relay was not present in said one or more wireless networks.

54. (New) The broadband wireless relay of claim 45 wherein at least one of said one or more wireless networks has an improved ability to control its capacity than if said relay was not present in said one or more wireless networks.

55. (New) The broadband wireless relay of claim 45 wherein said controller is configured to modify received data or transmissions.

56. (New) The broadband wireless relay of claim 55 wherein said controller is configured to cause said one or more transmitters to transmit modified received data or transmissions to one or more ultrawideband devices.
57. (New) The broadband wireless relay of claim 45 wherein said controller is configured to identify one or more devices in said one or more wireless networks.
58. (New) The broadband wireless relay of claim 45 wherein said relay employs MIMO or adaptive antenna technology.
59. (New) The broadband wireless relay of claim 45 wherein said controller is self-configurable.
60. (New) The broadband wireless relay of claim 45 wherein at least one of said one or more wireless networks is in an in-vehicle environment and said controller is configurable for operation in said in-vehicle environment.
61. (New) The broadband wireless relay of claim 45 wherein at least one of said one or more wireless networks is in an indoor environment and said controller is configurable for operation in said indoor environment.
62. (New) The broadband wireless relay of claim 45 wherein at least one of said one or more wireless networks is in an outdoor environment and said controller is configurable for operation in said outdoor environment.
63. (New) The broadband wireless relay of claim 45 wherein at least one of said one or more wireless networks is a cellular network and said controller is configurable for operation in said cellular network.
64. (New) The broadband wireless relay of claim 45 wherein said controller performs b).

65. (New) The broadband wireless relay of claim 45 wherein said one or more UWB devices are selected from UWB equipped television, UWB equipped telephone, UWB equipped cellphone, UWB repeater, UWB equipped computer, UWB equipped camera, UWB equipped video system, UWB equipped airplane, UWB equipped monitor, UWB equipped power plug or wall outlet, UWB equipped watch, UWB Cable modem, UWB equipped vehicle, UWB equipped game console, and UWB Transceiver.

66. (New) The broadband wireless relay of claim 45 wherein said controller is embedded into an integrated circuit chip which is insertable into said one or more UWB devices.

REMARKS

Claims 1-44 have been canceled. New claims 45-66 have been added. The application includes claims 45-66.

The claims in the present application are substantially similar to those in the parent application Serial No. 13/157,789, except that base claim 45 requires the controller performing at least one of a) or b), and does not require performing both. The applicant will submit a timely filed terminal disclaimer when required.

In the prior patent application, the Examiner raised issues with respect to U.S. Patent Publication 2006/0063484 to Proctor, U.S. Patent 6,952,456 to Aiello, U.S. Patent 5,012,211 to Young, and U.S. Patent Publication 2004/0259494 to Mazar, as well as a variety of additional secondary references, all of which are included in the concurrently filed information disclosure statement.

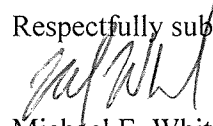
Proctor includes a broadband wireless relay and a controller, BUT does not include transmitting to UWB devices at the specified rates in claim 45. Furthermore, Proctor is not concerned with a) ignoring or filtering out transmissions or data from one or more undesired transmitters, data sources, or noise sources; or b) instructing one or more ultrawideband devices to ignore or disregard the transmissions or data of one or more undesired transmitters, undesired users or noise sources; or c) network provisioning or monitoring for said one or more ultrawideband devices, including one or more of i) bandwidth or delay provisioning, ii) application prioritization, and iii) traffic, bandwidth, delay or data transmission priorities or monitoring for said one or more ultrawideband devices. The Examiner has previously acknowledged that Proctor has no teaching of b) instructing one or more ultrawideband devices to ignore or disregard the transmissions or data of one or more undesired transmitters, undesired users or noise sources (see page of the office action mailed 24, 2011 on page 5). Further, with reference to paragraphs [0042] and [0046] of Proctor, it can be seen that the controller of Proctor does not perform a) ignoring or filtering out transmissions or data from one or more undesired transmitters, data sources, or noise sources. Instead, in Proctor the LPFs 375 and 376 are required to remove the high frequency components remaining after detection leaving the power envelope for

conversion from analog to digital by converters 380 and 381. Proctor also states “Since frequency converter 350 produces the sum and difference of input signals from switch 345 and switch 355, filter 355 is preferably used to remove the undesirable component”. Thus, Proctor is concerned with filtering undesired analog signals in the course of their signal processing. Proctor is not concerned with ignoring or filtering out transmissions or data from undesired transmitters, data sources, or noise sources. Finally, Proctor does not perform network provisioning or monitoring for said one or more ultrawideband devices.

Aiello, Young, and Mazar, and the other references cited by IDS and in the previous application do not make up for the deficiencies of Proctor. Aiello, at most, shows what an ultrawideband (UWB) device is. Aiello is concerned with synchronizing a UWB transmitter to a master clock, and does not teach either ignoring or filtering out transmissions or data from undesired transmitters, data sources or noise sources, or instructing one or more UWB device to ignore or disregard transmission or data of one or more undesired transmitters, undesired users or noise sources. Young teaches a mechanical microwave filter for filtering RF signals. Mazar is directed to a system which allows a patient to have privacy by blocking medical device data, and shows the use of jamming by relying on an interrogator/transceiver unit (ITU). Young and Mazar do not teach a relay, and Young and Mazar do not have any of the features of a relay such as a transmitter, a receiver, and a controller configurable for operation in one or more wireless networks. Young and Mazar also do not teach anything with respect to the claimed rates of transmission specified in claim 45.

Please calculate the filing fee based on the added claims and proceed to examination on the merits.

Respectfully submitted,



Michael E. Whitham
Reg. No. 32,635

Whitham, Curtis, Christofferson & Whitham, P.C.
11491 Sunset Hills Road, Suite 340
Reston, VA 20190
Tel. (703) 787-9400
Fax. (703) 787-7557
Customer No.: 30743

Electronic Patent Application Fee Transmittal

Application Number:				
Filing Date:				
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES			
First Named Inventor/Applicant Name:	Theodore S. Rappaport			
Filer:	Michael E. Whitham/Walter Richardson			
Attorney Docket Number:	08610001C3			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	98	98
Utility Search Fee	2111	1	310	310
Utility Examination Fee	2311	1	125	125
Pages:				
Claims:				
Claims in excess of 20	2202	2	31	62
Miscellaneous-Filing:				
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				595

Electronic Acknowledgement Receipt

EFS ID:	14222497
Application Number:	13676207
International Application Number:	
Confirmation Number:	3678
Title of Invention:	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES
First Named Inventor/Applicant Name:	Theodore S. Rappaport
Customer Number:	30743
Filer:	Michael E. Whitham/Walter Richardson
Filer Authorized By:	Michael E. Whitham
Attorney Docket Number:	08610001C3
Receipt Date:	14-NOV-2012
Filing Date:	
Time Stamp:	10:55:02
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$595
RAM confirmation Number	9605
Deposit Account	502041
Authorized User	

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

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Samsung Ex. 1004

Page 225 of 233

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	08610001C3_ADS.pdf	1189639	no	6
			b7ec5e6a7e58388c3f002e5fa78dce9a2fbb7fe5		
Warnings:					
Information:					
2		08610001c3_app.PDF	1562623	yes	76
			249addc7ccf00bfa6272a8cbcd4f4e038a168f6b		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal of New Application		1	4	
	Specification		5	43	
	Claims		44	51	
	Abstract		52	52	
	Drawings-only black and white line drawings		53	58	
	Oath or Declaration filed		59	59	
	Transmittal Letter		60	61	
	Information Disclosure Statement (IDS) Form (SB08)		62	69	
	Preliminary Amendment		70	70	
	Claims		71	74	
	Applicant Arguments/Remarks Made in an Amendment		75	76	
	Warnings:				
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	36733	no	2
			bd65e3c0d7382fe1ea388f652e50c38dc99d0760		
Warnings:					
Information:					
Total Files Size (in bytes):			2788995		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	08610001C3
		Application Number	
Title of Invention	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

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

Inventor Information:

Inventor 1					Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
Dr.	Theodore	S.	Rappaport			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	Riner	State/Province	VA	Country of Residence i	US	
Mailing Address of Inventor:						
Address 1		120 W. 15th St.				
Address 2		Apt. 5A				
City	New York	State/Province	NY			
Postal Code	10011	Country i	US			
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.						Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	30743		
Email Address	action@wcc-ip.com	Add Email	Remove Email

Application Information:

Title of the Invention	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES		
Attorney Docket Number	08610001C3	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	6	Suggested Figure for Publication (if any)	

Samsung Ex. 1004

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	08610001C3
		Application Number	
Title of Invention	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES		

Publication Information:

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

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.											
<table border="1"> <tr> <td>Please Select One:</td> <td>☒ Customer Number</td> <td>☐ US Patent Practitioner</td> <td>☐ Limited Recognition (37 CFR 11.9)</td> </tr> <tr> <td>Customer Number</td> <td colspan="3">30743</td> </tr> </table>				Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)	Customer Number	30743		
Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)								
Customer Number	30743										

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.					
Prior Application Status	Pending		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
	Continuation of	13157789	2011-06-10		
Prior Application Status	Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13157789	Continuation of	12689052	2010-01-18	7983613	2011-06-19
Prior Application Status	Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12689052	Continuation of	10919515	2004-08-17	7676194	2010-03-09
Prior Application Status	Expired		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
10919515	non provisional of	60498324	2003-08-28		
Prior Application Status	Expired		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
10919515	non provisional of	60496913	2003-08-22		

Samsung Ex. 1004

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	08610001C3
		Application Number	
Title of Invention	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES		

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Add

Foreign Priority Information:

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

			Remove
Application Number	Country i	Filing Date (YYYY-MM-DD)	Priority Claimed
			☒ Yes ☐ No

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

Add

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices
If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application. In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application. In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	08610001C3
		Application Number	
Title of Invention	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES		

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Remove

☐ Assignee	☐ Legal Representative under 35 U.S.C. 117
☐ Person to whom the inventor is obligated to assign.	☐ Person who shows sufficient proprietary interest

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Assignee is an Organization check here. ☐

Prefix	Given Name	Middle Name	Family Name	Suffix

Mailing Address Information:

Address 1			
Address 2			
City		State/Province	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

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

Add

Signature:

Remove

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

Signature	/Michael E. Whitham/		Date (YYYY-MM-DD)	2012-11-13
First Name	Michael	Last Name	Whitham	Registration Number
			32635	

Additional Signature may be generated within this form by selecting the Add button.

Add

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	08610001C3
		Application Number	
Title of Invention	BROADBAND REPEATER WITH SECURITY FOR ULTRAWIDEBAND TECHNOLOGIES		

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

Privacy Act Statement

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.