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Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., ISSUE DATE, PATENT NO., ATTORNEY DOCKET NO., CONFIRMATION NO.
Row 1: 14/139,817, 09/23/2014, 8842653, 04245.000900, 9703

5514 7590 09/03/2014
FITZPATRICK CELLA HARPER & SCINTO
1290 Avenue of the Americas
NEW YORK, NY 10104-3800

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 0 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):

- IP Holdings, Inc., Palo Alto, CA, Assignee (with 37 CFR 1.172 Interest);
Sanjay K Rao, Palo Alto, CA;
Sunil K Rao, Palo Alto, CA;
Raman K Rao, Palo Alto, CA, Deceased;

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.

Change(s) applied
to document,

/J.E.B./
8/19/2014

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 1

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.

Complete if Known

Application Number	Not Yet Assigned
Filing Date	
First Named Inventor	Sunil K. Rao
Art Unit	
Examiner Name	
Attorney Docket Number	04245.000900.

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)			
↓ /P.S./	1	US- 5691974	11-25-1997	Zehavi	
	2	US- 4654867	03-31-1987	Labeledz	
	3	US- 6,108,314	08-22-2000	Jones et al.	
	4	US- 6,167,099	12-26-2000	Rader et al.	
	5	US- 6,570,871	05-27-2003	Schneider	
	6	US- 7,039,370	05-02-2006	Laroya et al.	
	7	US- 7,848,300	12-07-2010	Rao et al.	
	8	US- 2002/0126745	09-12-2002	Prysbly et al.	
	9	US- 2006/002366 20060002366	02-02-2006 January 5, 2006	Jalali et al. Kawaguchi; Takamasa; et al.	
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

Change(s) applied
to document,
/J.E.B./
8/19/2014

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 Signature	/Phirin Sam/ (03/18/2014)	Date Considered	03/18/2014
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*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.

FORM PTO 1449 (modified)		ATTY DOCKET NO. 04245.000900.		APPLICATION NO. 14/139,817	
U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		APPLICANT SANJAY K. RAO, ET AL.		FILING DATE December 23, 2013	
LIST OF REFERENCES CITED BY APPLICANT(S) (Use several sheets if necessary)					
U.S. PATENT DOCUMENTS					
*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	FILING DATE IF APPROPRIATE
/P.S./	5,633,742	05/27/1997	Shipley		
	5,691,974	11/25/1997	Zehavi et al.		
	5,745,884	04/28/1998	Carnegie et al.		
	5,816,918	10/06/1998	Kelly et al.		
	5,828,658	10/27/1998	Ottersten et al.		
	6,058,422	05/02/2000	Ayanoglu et al.		
	6,072,994	06/06/2000	Phillips et al.		
	6,108,314	08/22/2000	Jones et al.		
	6,167,099	12/26/2000	Rader et al.		
	6,169,789	06/04/1999	Rao et al.	January 2, 2001	
	6,246,688	06/12/2001	Angwin et al.		
	6,377,570	04/23/2002	Vaziri et al.		
	6,405,049	06/11/2002	Herrod et al.		
	6,456,610	09/24/2002	Briley		
	6,466,558	10/15/2002	Ling		
	6,519,478	02/11/2003	Scherzer et al.		
	6,549,534	04/15/2003	Shaffer et al.		
	6,570,871	05/27/2003	Schneider		
	6,600,734	07/29/2003	Gernert et al.		
	6,640,086	10/28/2003	Wall		
	6,895,253	05/17/2005	Carloni et al.		
	7,027,773	04/11/2006	McMillin		
	7,039,370	05/02/2006	Laroia et al.		
	7,099,695	08/29/2006	Ngan		
/P.S./	7,277,679	10/02/2007	Barratt et al.		
FOREIGN PATENT DOCUMENTS					
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	TRANSLATION YES/NO/ OR ABSTRACT
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)					
EXAMINER	/Phirin Sam/ (07/28/2014)		DATE CONSIDERED	07/28/2014	

Change(s) applied to document /J.E.B./ 8/20/2014



*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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. ^{Sheet 2 of 3} /P.S./

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)

5514 7590 08/06/2014
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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 *EFs-web*
 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.

<i>MICHAEL K O'NEILL</i>	(Deponent's name)
<i>Michael K O'Neill</i>	(Signature)
<i>Aug 13, 2014</i>	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/139,817	12/23/2013	Sanjay K Rao	04245.000900.	9703

TITLE OF INVENTION: WIRELESS DEVICES WITH TRANSMISSION CONTROL AND MULTIPLE PATHS OF COMMUNICATION

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	11/06/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
SAM, PHIRIN	2476	370-338000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). <input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. <input type="checkbox"/> "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: **IP HOLDINGS, INC.**

(B) RESIDENCE: (CITY and STATE OR COUNTRY) **PALO ALTO, CALIFORNIA**

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: <input checked="" type="checkbox"/> Issue Fee <input type="checkbox"/> Publication Fee (No small entity discount permitted) <input type="checkbox"/> Advance Order - # of Copies _____	4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above) <input type="checkbox"/> A check is enclosed. <input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached. <input checked="" type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number <u>06-1205</u> (enclose an extra copy of this form).
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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 *Michael K O'Neill* Date *Aug 13, 2014*
 Typed or printed name MICHAEL K. O'NEILL Registration No. 32,622

Electronic Patent Application Fee Transmittal

Application Number:	14139817			
Filing Date:	23-Dec-2013			
Title of Invention:	WIRELESS DEVICES WITH TRANSMISSION CONTROL AND MULTIPLE PATHS OF COMMUNICATION			
First Named Inventor/Applicant Name:	Sanjay K Rao			
Filer:	Michael K. O'Neill/Margaret Lee			
Attorney Docket Number:	04245.000900.			
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:	19860882
Application Number:	14139817
International Application Number:	
Confirmation Number:	9703
Title of Invention:	WIRELESS DEVICES WITH TRANSMISSION CONTROL AND MULTIPLE PATHS OF COMMUNICATION
First Named Inventor/Applicant Name:	Sanjay K Rao
Customer Number:	5514
Filer:	Michael K. O'Neill/Margaret Lee
Filer Authorized By:	Michael K. O'Neill
Attorney Docket Number:	04245.000900.
Receipt Date:	13-AUG-2014
Filing Date:	23-DEC-2013
Time Stamp:	19:36:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$480
RAM confirmation Number	5265
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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1	Issue Fee Payment (PTO-85B)	04245_000900_Fee_Transmittal.pdf	117949 45d5c598ceb5f03125ce65f4fc728be05b041d5d	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30408 c4db4d8f232bd8b453c1e61d83bcfa2ada1610a3	no	2
Warnings:					
Information:					
Total Files Size (in bytes):				148357	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



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NOTICE OF ALLOWANCE AND FEE(S) DUE

5514 7590 08/06/2014
FITZPATRICK CELLA HARPER & SCINTO
1290 Avenue of the Americas
NEW YORK, NY 10104-3800

EXAMINER

SAM, PHIRIN

ART UNIT PAPER NUMBER

2476

DATE MAILED: 08/06/2014

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

14/139,817 12/23/2013 Sanjay K Rao 04245.000900. 9703

TITLE OF INVENTION: WIRELESS DEVICES WITH TRANSMISSION CONTROL AND MULTIPLE PATHS OF COMMUNICATION

Table with 7 columns: 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 11/06/2014

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)

5514 7590 08/06/2014
FITZPATRICK CELLA HARPER & SCINTO
 1290 Avenue of the Americas
 NEW YORK, NY 10104-3800

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

Certificate of Mailing or Transmission

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

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/139,817	12/23/2013	Sanjay K Rao	04245.000900.	9703

TITLE OF INVENTION: WIRELESS DEVICES WITH TRANSMISSION CONTROL AND MULTIPLE PATHS OF COMMUNICATION

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	11/06/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
SAM, PHIRIN	2476	370-338000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "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.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) The names of up to 3 registered patent attorneys or agents OR, alternatively, _____ 1</p> <p>(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</p> <p>_____ 3</p>
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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

<p>4a. The following fee(s) are submitted:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> 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).</p>
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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

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
Values: 14/139,817, 12/23/2013, Sanjay K Rao, 04245.000900., 9703

5514 7590 08/06/2014
FITZPATRICK CELLA HARPER & SCINTO
1290 Avenue of the Americas
NEW YORK, NY 10104-3800

EXAMINER

SAM, PHIRIN

ART UNIT PAPER NUMBER

2476

DATE MAILED: 08/06/2014

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. 14/139,817	Applicant(s) RAO ET AL.	
	Examiner PHIRIN SAM	Art Unit 2476	AIA (First Inventor to File) Status No

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

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

1. This communication is responsive to 05/29/2014.
 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 1-30. 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)

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>05/29/2014</u> 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material 4. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____. | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Examiner's Amendment/Comment 6. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 7. <input type="checkbox"/> Other _____. |
|--|--|

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DETAILED ACTION

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

Allowable Subject Matter

2. Claims 1-30 are allowed.
3. The following is an examiner's statement of reasons for allowance:

In regard to amended claim 1, the prior arts of record do not teach or suggest an Internet-enabled mobile communication device comprising: a memory; display electronics; at least two or more antennas; at least one or more processors; and a plurality of wireless transmit and receive components including a first wireless transmit and receive component and a second wireless transmit and receive component, wherein each wireless transmit receive component is configured to communicate using one or more protocols; wherein the device is configured for multi-band wireless communication; wherein the device is enabled for communication using Internet Protocol wherein the device is enabled for wireless communication on a wireless local area network; wherein the first wireless transmit and receive component is configured to communicate stream using a plurality of antennas; and wherein a transmission interface is created and wherein said transmission interface uses a plurality of IP enabled interfaces on the mobile device which utilize the plurality of wireless transmit and

receive components on the mobile device to enable a single interface comprised of multiplexed signals from the plurality of wireless transmit and receive components.

In regard to amended claim 14, the prior arts of record do not teach or suggest an Internet-enabled mobile communication device comprising: a memory; a display; at least two or more antennas; at least one or more processors; and a plurality of wireless transmit and receive components including a first wireless transmit and receive component and a second wireless transmit and receive component, wherein each wireless transmit receive component is configured to communicate using one or more protocols; wherein the device is enabled for communication using Internet Protocol wherein the device is enabled for wireless communication on a wireless local area network; wherein the first wireless transmit and receive component is enabled to communicate using one or more antennas simultaneously; and wherein the mobile device maintains multiple IP addresses, wherein the first wireless component is accessible on a first IP address and the second wireless transmit and receive component is accessible on a second IP address and wherein the mobile device operates using a plurality of ports.

In regard to amended claim 17, the prior arts of record do not teach or suggest a mobile communication device, comprising: a memory; a display electronics; at least two or more antennas; at least one or more processors; and a plurality of wireless transmit and receive unit including a first wireless transmit and receive unit and a second wireless transmit and receive unit, wherein each wireless transmit receive unit is configured to communicate using one or more protocols; wherein the device is configured for multi-band wireless communication;

Art Unit: 2476

wherein the device is enabled for communication using Internet Protocol wherein the device is enabled for wireless communication on a local area network; wherein the first wireless transmit and receive component is configured to communicate using a plurality of antennas; and wherein the first wireless transmit and receive component is configured to communicate over Internet Protocol with a remote system over a first network path and the second wireless transmit and receive component is configured to communicate with the same or a different remote system using a second network path and wherein the processor on the mobile device is configured to combine the data paths into a single transmission interface to one or more applications on the mobile device.

In regard to amended claim 27, the prior arts of record do not teach or suggest a memory; one or more processors; display electronics a plurality of wireless communication units, wherein the wireless device supports a plurality of transmit and receive frequencies and a plurality of wireless protocols; wherein a first wireless communication unit is coupled to a first set of antennas configured to transmit and receive on a first network and wherein a second wireless communication unit is coupled to a second set of antennas and configured to transmit and receive on a second network; wherein the at least one wireless communication unit is configured for radio frequency communication; wherein the first wireless communication unit is configured to operate at a lower frequency than the second wireless communication unit such that the first wireless communication unit and second wireless communication unit operate as complementary systems; wherein the device is capable of voice, data, and Internet connectivity; and wherein the first wireless transmit and receive unit operates on a first

network path to a remote server and the second wireless transmit and receive unit communicates to the remote server on a second network path at the same time and wherein a plurality of signal are multiplexed to increase throughput and enable simultaneous multi path communication.

Conclusion

4. 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.”

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHIRIN SAM whose telephone number is (571)272-3082. The examiner can normally be reached on Flexible Work Schedule.

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

Application/Control Number: 14/139,817
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Page 6

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.

Respectfully submitted,

Date: July 28, 2014

By: /Phirin Sam/
Primary Examiner
Art Unit 2476

Notice of References Cited	Application/Control No. 14/139,817	Applicant(s)/Patent Under Reexamination RAO ET AL.	
	Examiner PHIRIN SAM	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-2002/0084889	07-2002	BOLAVAGE et al.	340/10.1
*	B US-2001/0006517	07-2001	LIN et al.	370/348
*	C US-6,865,169	03-2005	Quayle et al.	370/335
*	D US-6,542,736	04-2003	Parkvall et al.	455/452.2
	E US-			
	F US-			
	G US-			
	H US-			
	I US-			
	J US-			
	K US-			
	L US-			
	M US-			


FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Issue Classification 	Application/Control No. 14139817	Applicant(s)/Patent Under Reexamination RAO ET AL.
	Examiner PHIRIN SAM	Art Unit 2476

<input checked="" type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input type="checkbox"/> T.D. <input type="checkbox"/> R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		17												
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NONE		Total Claims Allowed:	
		30	
(Assistant Examiner)	(Date)	O.G. Print Claim(s)	O.G. Print Figure
/PHIRIN SAM/ Primary Examiner. Art Unit 2476	07/28/2014	1	5A
(Primary Examiner)	(Date)		

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	526586	(IP or internet) same (wireless or mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/07/28 14:14
L2	135334	multi\$1band or ((plurality or multiple) near4 band\$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/07/28 14:16
L3	526586	(IP or internet) same (wireless or mobile) same (IP or Internet)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/07/28 14:16
L4	254610	antennas	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/07/28 14:17
L5	11723	l1 and l2	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/07/28 14:17
L6	11723	l5 and l3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/07/28 14:17
L7	5139	l6 and l4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/07/28 14:17
L8	92	l7 and @ad< "20000717"	US-	OR	OFF	2014/07/28


			PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB			14:20
L9	100735	370/315,316,327,328,329,334,338,339,340,341,344,351-354,356,389,392,400-402,465,466,473.ccls.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/07/28 14:27
L10	25502	455/101,272,132,562.1,272;375/130,140,144,147,148,316,346,347.ccls.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/07/28 14:27
L11	124650	l9 or l10	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/07/28 14:27
L12	22	l11 and l8	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/07/28 14:27
L14	0	((transmission or transmit\$4 or send\$3) same interface same ((IP or internet) near3 (interfaces or ports)) same ((mobile or wireless) near3 (apparatus or unit\$1 or device)) same (multiplex\$3 near3 (data or packet\$1 or frames or singals))).clm.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/07/28 14:36

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L15	0	((transmission or transmit\$4 or send\$3) same interface same ((IP or internet) near3 (interfaces or ports)) same ((mobile or wireless) near3 (apparatus or unit\$1 or device)) same (multiplex\$3 near3 (data or packet\$1 or frames or singals))).clm.	US- PGPUB; USPAT; UPAD	OR	OFF	2014/07/28 14:37

7/28/2014 2:38:07 PM

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Index of Claims 	Application/Control No. 14139817	Applicant(s)/Patent Under Reexamination RAO ET AL.
	Examiner PHIRIN SAM	Art Unit 2476

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

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

CLAIM		DATE							
Final	Original	03/18/2014	07/28/2014						
	1	✓	=						
	2	✓	=						
	3	✓	=						
	4	○	=						
	5	✓	=						
	6	○	=						
	7	✓	=						
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	29	○	=						
	30	○	=						

04245.000900.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application No.: 14/139,817)	
	:	Examiner: Phirin Sam
First Named Inventor:)	
	:	Group Art Unit: 2476
SANJAY K. RAO, ET AL.)	
	:	Confirmation No.: 9703
Filed: December 23, 2013)	
	:	
For: WIRELESS DEVICES WITH)	
TRANSMISSION CONTROL AND	:	
MULTIPLE PATHS OF)	
COMMUNICATION (as amended	:	
May 29, 2014))	May 29, 2014

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

INFORMATION DISCLOSURE STATEMENT

Commissioner:

Pursuant to 37 C.F.R. § 1.56, Applicants respectfully direct the Examiner's attention to the documents listed below and on the attached Form PTO-1449. Copies of non-U.S. patent documents are enclosed.

U.S. Patent 4,654,867
U.S. Patent 4,675,653

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being filed electronically by EFS-Web transmission to the United States Patent Office on
May 29, 2014

(Date of Deposit)

Michael K. O'Neill, Reg. No. 32,622
(Name of Attorney for Applicants)

/Michael K. O'Neill/
Signature

May 29, 2014
Date of Signature

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /P.S./

U.S. Patent 5,025,486
U.S. Patent 5,121,391
U.S. Patent 5,195,130
U.S. Patent 5,379,341
U.S. Patent 5,410,738
U.S. Patent 5,457,714
U.S. Patent 5,465,401
U.S. Patent 5,507,035
U.S. Patent 5,513,242
U.S. Patent 5,517,553
U.S. Patent 5,533,029
U.S. Patent 5,539,391
U.S. Patent 5,546,429
U.S. Patent 5,555,258
U.S. Patent 5,559,794
U.S. Patent 5,565,929
U.S. Patent 5,566,205
U.S. Patent 5,577,118
U.S. Patent 5,598,407
U.S. Patent 5,610,617
U.S. Patent 5,633,742
U.S. Patent 5,691,974
U.S. Patent 5,745,884
U.S. Patent 5,816,918
U.S. Patent 5,828,658
U.S. Patent 6,058,422
U.S. Patent 6,072,994
U.S. Patent 6,108,314
U.S. Patent 6,167,099
U.S. Patent 6,169,789
U.S. Patent 6,246,688
U.S. Patent 6,377,570
U.S. Patent 6,405,049
U.S. Patent 6,456,610
U.S. Patent 6,466,558
U.S. Patent 6,519,478
U.S. Patent 6,549,534
U.S. Patent 6,570,871
U.S. Patent 6,600,734
U.S. Patent 6,640,086
U.S. Patent 6,895,253
U.S. Patent 7,027,773
U.S. Patent 7,039,370
U.S. Patent 7,099,695
U.S. Patent 7,277,679
U.S. Patent 7,286,502
U.S. Patent 7,643,848
U.S. Patent 7,848,300

- 2 -

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /P.S./

U.S Publication Application No. 2002/0126745
U.S Publication Application No. 2006/0023666
U.S Publication Application No. 2010/0260063
U.S Publication Application No. 2011/0038637

D374,675

U.S. Application No. 10/940,428
U.S. Application No. 12/912,607
U.S. Application No. 13/589,188
U.S. Application No. 13/621,292
U.S. Application No. 13/621,294
U.S. Application No. 14/139,817

This application has received an Office Action on the merits but has not yet received either a final action or a notice of allowance. Accordingly, this Information Disclosure Statement is filed under 37 C.F.R. § 1.97(c) and is accompanied by the \$90.00 fee (small entity) specified at 37 C.F.R. § 1.17(p). Consideration of the art cited herein is accordingly deemed proper, and such action is respectfully requested.

The Examiner is requested to make an independent determination of the relevance and materiality of the cited documents to the claims herein, and to indicate that these documents have been considered by initialing the attached Form PTO-1449.

Applicants' undersigned attorney may be reached in our Costa Mesa, CA office by telephone at (714) 540-8700. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

/Michael K. O'Neill/
Michael K. O'Neill
Attorney for Applicants
Registration No. 32,622

FITZPATRICK, CELLA, HARPER & SCINTO
1290 Avenue of the Americas
New York, New York 10104-3800
Facsimile: (212) 218-2200

FORM PTO 1449 (modified)		ATTY DOCKET NO. 04245.000900.		APPLICATION NO. 14/139,817	
U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		APPLICANT SANJAY K. RAO, ET AL.		FILING DATE December 23, 2013	
LIST OF REFERENCES CITED BY APPLICANT(S) (Use several sheets if necessary)					
U.S. PATENT DOCUMENTS					
*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	FILING DATE IF APPROPRIATE
/P.S./	4,654,867	03/31/1987	Labeledz		
	4,675,653	06/23/1987	Priestly		
	5,025,486	06/18/1991	Klughart		
	5,121,391	06/09/1992	Paneth et al.		
	5,195,130	03/16/1993	Weiss et al.		
	5,379,341	01/03/1995	Wan		
	5,410,738	04/25/1995	Diepstraten et al.		
	5,457,714	10/10/1995	Engel et al.		
	5,465,401	11/07/1995	Thompson		
	5,507,035	04/09/1996	Bantz et al.		
	5,513,242	4/30/1996	Mukerjee et al.		
	5,517,553	05/14/1996	Sato		
	5,533,029	07/02/1996	Gardner		
	5,539,391	07/23/1996	Yuen		
	5,546,429	08/13/1996	Chiasson et al.		
	5,555,258	09/10/1996	Snelling et al.		
	5,559,794	09/24/1996	Willis et al.		
	5,565,929	10/15/1996	Tanaka		
	5,566,205	10/15/1996	Delfine		
	5,577,118	11/19/1996	Sasaki et al.		
	5,598,407	01/28/1997	Bud et al.		
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FOREIGN PATENT DOCUMENTS					
DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)					
EXAMINER	/Phirin Sam/ (07/28/2014)		DATE CONSIDERED	07/28/2014	

*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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. ^{Sheet 1 of 3} /P.S./


FORM PTO 1449 (modified)		ATTY DOCKET NO. 04245.000900.		APPLICATION NO. 14/139,817	
U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		APPLICANT SANJAY K. RAO, ET AL.		FILING DATE December 23, 2013	
LIST OF REFERENCES CITED BY APPLICANT(S) (Use several sheets if necessary)					
U.S. PATENT DOCUMENTS					
*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	FILING DATE IF APPROPRIATE
/P.S./	5,633,742	05/27/1997	Shipley		
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FOREIGN PATENT DOCUMENTS					
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	TRANSLATION YES/NO/ OR ABSTRACT
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)					
EXAMINER	/Phirin Sam/ (07/28/2014)			DATE CONSIDERED	07/28/2014

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /P.S./ Sheet 2 of 3

FORM PTO 1449 (modified)		ATTY DOCKET NO. 04245.000900.		APPLICATION NO. 14/139,817	
U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		APPLICANT SANJAY K. RAO, ET AL.		FILING DATE December 23, 2013	
LIST OF REFERENCES CITED BY APPLICANT(S) (Use several sheets if necessary)					
U.S. PATENT DOCUMENTS					
*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	FILING DATE IF APPROPRIATE
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FOREIGN PATENT DOCUMENTS					
DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/OR ABSTRACT
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)					
EXAMINER	/Phirin Sam/ (07/28/2014)		DATE CONSIDERED	07/28/2014	

*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.

Search Notes 	Application/Control No. 14139817	Applicant(s)/Patent Under Reexamination RAO ET AL.
	Examiner PHIRIN SAM	Art Unit 2476

CPC- SEARCHED		
Symbol	Date	Examiner
G06F3/023	03/18/2014	PS

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
370/315,316,327,328,329,334,338,339,340,341,344,351-354,356,389,392,400-402,465,466,473 (Text search - See search history printout).	03/18/2014; 07/28/2014	PS
455/101,272,132,562.1,272;375/130,140,144,147,148,316,346,347 (Text search - See search history printout).	03/18/2014; 07/28/2014	PS
H04L /all (Text search - See search history printout).	03/18/2014	PS

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	See text search history printout for interference	07/28/2014	PS

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04245.000900.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application No.: 14/139,817)	
	:	Examiner: Phirin Sam
First Named Inventor:)	
	:	Group Art Unit: 2476
SANJAY K. RAO, ET AL.)	
	:	Confirmation No.: 9703
Filed: December 23, 2013)	
	:	
For: WIRELESS DEVICES WITH)	
TRANSMISSION CONTROL AND	:	
MULTIPLE PATHS OF)	
COMMUNICATION (as amended herein)	:	May 29, 2014

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

AMENDMENT

Commissioner:

In response to the Office Action dated March 20, 2014, please amend the above-identified application, as follows:

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being filed electronically by
EFS-Web transmission to the United States Patent Office on
May 29, 2014
(Date of Deposit)

Michael K. O'Neill, Reg. No. 32,622
(Name of Attorney for Applicants)

/Michael K. O'Neill/ May 29, 2014
Signature Date of Signature

IN THE TITLE

Please replace the title with the following:

WIRELESS DEVICES WITH TRANSMISSION CONTROL AND
MULTIPLE PATHS OF COMMUNICATION
SYSTEM TO INTERFACE INTERNET PROTOCOL (IP) BASED
WIRELESS DEVICES WITH NETWORKS, TRANSMISSION CONTROL PATHS
AND INTERFACES FOR FLEXIBILITY, PERFORMANCE AND MULTIPLE PATH
OF COMMUNICATION

IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently Amended) An Internet-enabled mobile communication device comprising:

a memory;

~~[[a]] display electronics component;~~

at least two or more antennas;

at least one or more processors; and

a plurality of wireless transmit and receive components including a first wireless transmit and receive component and a second wireless transmit and receive component, wherein each wireless transmit receive component is configured to communicate using one or more protocols;

wherein the device is configured for multi-band wireless communication;

wherein the device is enabled for communication using Internet Protocol (IP); ~~[[and]]~~

wherein the device is enabled for wireless communication on a wireless local area network ~~using an IP protocol;~~ ~~[[and]]~~

wherein the first wireless transmit and receive component is configured to communicate ~~a first signal stream~~ using a plurality of antennas ~~simultaneously to increase data transfer rate;~~ and

wherein a transmission interface is created and wherein said transmission interface uses a plurality of IP enabled interfaces on the mobile device which utilize the

plurality of wireless transmit and receive components on the mobile device to enable a single interface comprised of multiplexed signals from the plurality of wireless transmit and receive components.

2. (Original) The device of Claim 1, wherein a single transmission connection is further comprised of at least two or more wireless transmit and receive connections simultaneously transmitting and receiving using the plurality of antennas, and wherein the processor multiplexes the receiving signals into the single transmission connection.

3. (Original) The device of Claim 1, wherein a single transmission connection is further comprised of at least two or more wireless transmit and receive connections sequentially transmitting and receiving using the plurality of antennas, and wherein the processor multiplexes the receiving signals into the single transmission connection.

4. (Currently Amended) The device of Claim 1, wherein the device is configured to communicate with at least one server, wherein the rate at which data is transferred between the device and the server is improved by parallel paths and wherein data transmitted and received is multiplexed at each end ~~a transmission interface is created and wherein said transmission interface uses a plurality of IP-enabled interfaces on the mobile device which utilize the plurality of wireless transmit and receive components on~~

~~the mobile device to enable a single interface comprised of multiplexed signals from the plurality of wireless transmit and receive components.~~

5. (Original) The device of Claim 2 wherein the mobile device transmits and receives multiple IP data packets and uses protocols including ethernet protocol, USB protocol, internet protocol, transmission control protocol, transport layer communication protocols, or application interfaces.

6. (Original) The device of Claim 1, wherein the first wireless transmit and receive component is configured to communicate over Internet Protocol with a remote system over a first network path and the second wireless transmit and receive component is configured to communicate with the same or different remote system using a second network path and wherein the processor on the mobile device is configured to combine the data paths into a single transmission interface to one or more applications on the mobile device.

7. (Original) The device of Claim 1, wherein the device is comprised of a cellular telephone.

8. (Original) The device of Claim 1, wherein the device is configured to use a Virtual Private Network (VPN).

9. (Original) The device of Claim 1, wherein the use of two or more wireless transmit and receive units create connections to a plurality of remote systems simultaneously and transmit and receive data in a parallel path to increase the rate at which data is transferred.

10. (Original) The device of Claim 1, wherein multiple wireless transmit and receive components are presented to the application as a single connection interface such that the multiple transmission interfaces are virtualized into a single transmission interface.

11. (Original) The device of Claim 1, wherein an application executed by the processor on the mobile device is configured to use a single transport connect interface comprised of two or more wireless connections.

12. (Original) The device of Claim 1, further in communication with a network box, which is configured with a plurality of antennas and a wireless transmit and receive component, wherein the network switch box wireless transmit and receive component is configured to communicate a signal stream using the network switch box plurality of antennas simultaneously.

13. (Original) The device of Claim 1, further comprising of a processor for voice communication and a second processor for data communication.

14. (Currently Amended) ~~The device of Claim 1, wherein the~~ An Internet-enabled mobile communication device is configured for communications using different frequencies comprising:

a memory;

a display;

at least two or more antennas;

at least one or more processors; and

a plurality of wireless transmit and receive components including a first wireless transmit and receive component and a second wireless transmit and receive component, wherein each wireless transmit receive component is configured to communicate using one or more protocols;

wherein the device is enabled for communication using Internet Protocol (IP);

wherein the device is enabled for wireless communication on a wireless local area network;

wherein the first wireless transmit and receive component is enabled to communicate using one or more antennas simultaneously; and

wherein the mobile device maintains multiple IP addresses, wherein the first wireless component is accessible on a first IP address and the second wireless transmit and receive component is accessible on a second IP address and wherein the mobile device operates using a plurality of ports.

15. (Currently Amended) The device of Claim ~~[[1]]~~ 14, ~~wherein the mobile device maintains multiple IP addresses, wherein the first wireless component is accessible on a first IP address and the second wireless transmit and receive component is accessible on a second IP address and wherein the mobile device operates using a further~~ in communication with a server, wherein the mobile device is configured to receive multiple IP data packets on a plurality of ports at substantially the same time and send multiple data packets to the server, to allow multiple simultaneous communication paths over connections between the device and the server such that the communication rate between the server and device is increased.

16. (Currently Amended) The device of Claim ~~[[1]]~~ 14, wherein the device is configured for a plurality of protocols including transmission control, CDMA, TDMA, internet protocol (IP) and/or combinations thereof.

17. (Currently Amended) A mobile communication device, comprising:
~~one or more communication modules, each comprising at least one antenna operable to receive and transmit wireless signals representing data;~~
~~wherein the one or more processors are programmed to process data represented in a wireless signal received and/or transmitted by the one or more communication modules; and~~
~~wherein the one or more communication modules are configured to communicate via a plurality of communication paths, and wherein a first time period during which communication via one of the plurality of communication paths occurs and a~~

~~second time period during which communication via another of the plurality of communication paths occurs overlaps at least partially~~

a memory;

a display electronics;

at least two or more antennas;

at least one or more processors; and

a plurality of wireless transmit and receive unit including a first wireless transmit and receive unit and a second wireless transmit and receive unit, wherein each wireless transmit receive unit is configured to communicate using one or more protocols;

wherein the device is configured for multi-band wireless communication;

wherein the device is enabled for communication using Internet Protocol (IP);

wherein the device is enabled for wireless communication on a local area network;

wherein the first wireless transmit and receive component is configured to communicate using a plurality of antennas; and

wherein the first wireless transmit and receive component is configured to communicate over Internet Protocol with a remote system over a first network path and the second wireless transmit and receive component is configured to communicate with the same or a different remote system using a second network path and wherein the processor on the mobile device is configured to combine the data paths into a single transmission interface to one or more applications on the mobile device.

18. (Original) The communication device of Claim 17, wherein each of the plurality of communication paths employs a different network.

19. (Currently Amended) The communication device of Claim 18, wherein at least one of the different networks comprises a voice network and wherein at least one of the different networks comprises [[the]] an Internet protocol data network.

20. (Original) The communication device of Claim 17, wherein each of the plurality of communication paths employs a different communication protocol and wherein each of the plurality of communication paths involves wireless signals transmitted at a different frequency.

21. (Original) The communication device of Claim 17, wherein one of the plurality of communication paths is used for wireless signals representing voice data, and another of the plurality of communication paths is used for wireless signals representing non-voice data.

22. (Original) The communication device of Claim 17, wherein the one or more communication modules comprises a plurality of communication modules, each of the plurality of communication modules being configured for communication via a different communication path and wherein the one or more communication modules comprises a plurality of communication modules each comprising a separate antenna.

23. (Original) The communication device of Claim 17, wherein the one or more processors are programmed to differentiate between wireless signals received via one of the plurality of communication paths and another of the plurality of communication paths.

24. (Original) The communication device of Claim 23, wherein one or more processors are programmed to process data represented by wireless signals received via the one communication path separately from data represented by wireless signals received via the other communication path.

25. (Original) The communication device of Claim 24, wherein the one or more processors comprise a plurality of processors, a first processor of the plurality of processors being programmed to process data represented by wireless signals received via the one communication path, and a second processor of the plurality of processors being programmed to process data represented by wireless signals received via the other communication path.

26. (Original) The communication device of Claim 17, wherein the one or more processors are programmed to process voice data represented by wireless signals received via one of the plurality of communication paths, and to process non-voice data represented by wireless signals received via another of the plurality of communication paths.

27. (Currently Amended) An IP-enabled communication device comprising:

- a memory;
- one or more processors;
- [[a]] display electronics ~~electronic component~~; [[and]]
- a plurality of wireless communication ~~components~~ units, wherein each ~~wireless communication component~~ comprises a chip set of one or more processors and ~~memory~~, wherein the [[each]] wireless ~~communication component~~ device supports a plurality of transmit and receive frequencies and a plurality of wireless protocols ~~as an integrated component~~;
- wherein a first wireless communication ~~component~~ unit is coupled to a first set of antennas configured to transmit and receive on a first network and wherein a second wireless communication ~~component~~ unit is coupled to a second set of antennas and configured to transmit and receive on a second network;
- wherein the at least one wireless communication ~~component~~ unit is configured for radio frequency communication;
- wherein the first wireless communication ~~component~~ unit is configured to operate at a lower frequency than the second wireless communication ~~component~~ unit such that the first wireless communication unit and second wireless communication ~~components~~ unit operate as complementary systems ~~and reduce interference with each other~~; [[and]]
- wherein the device is ~~configured for~~ capable of voice, ~~and/or~~ data, ~~connectivity~~ and Internet connectivity; and

wherein the first wireless transmit and receive unit operates on a first network path to a remote server and the second wireless transmit and receive unit communicates to the remote server on a second network path at the same time and wherein a plurality of signal are multiplexed to increase throughput and enable simultaneous multi path communication.

28. (Currently Amended) The device of Claim 27, ~~wherein the first wireless transmit and receive component operates on a first network path to a remote server and the second wireless transmit and receive component communicates to the remote server on a second network path at the same time and wherein the signal is multiplexed to increase throughput and enable simultaneous multi path further in communication~~ with the remote server, wherein the mobile device is configured to receive multiple IP data packets on a plurality of ports at substantially the same time and send multiple data packets to the server, to allow multiple simultaneous communication paths over connections between the device and the server.

29. (Currently Amended) The device of Claim 27, wherein the first wireless transmit and receive ~~component~~ unit operates on ~~the~~ [[a]] the first network path to a remote server and the second wireless transmit and receive ~~component~~ unit communicates to the remote server on ~~the~~ [[a]] the second network path in response to a change in the signal strength and/or connectivity of the first wireless communication ~~component~~ unit or second wireless communication ~~component~~ unit.

30. (Currently Amended) The device of Claim 29, wherein the IP enabled communication device is a mobile device, and wherein the mobile device is configured as a server and wherein the mobile device is configured to transmit and receive a signal stream with a second mobile device.

REMARKS

This application has been carefully reviewed in light of the Office Action dated March 20, 2014. Claims 1 to 30 are the in application, of which Claims 1, 14, 17 and 27 are independent. Reconsideration and further examination are respectfully requested.

Claims 17 to 26 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. According to the Office, with respect to first and second time periods during which communication via communication paths occur, there was inadequate description for these time periods to overlap at least partially. The rejection is respectfully traversed, at least in part because the specification describes parallel paths of communication, which those of ordinary skill would immediately recognize as the claimed overlap. See, for example, paragraph [0026] of the as-filed application. Nevertheless, in the interests of advancing prosecution, the claims have been amended to delete the language found objectionable. Withdrawal of the rejection under § 112 is respectfully requested.

Applicants thank the Examiner for his indication of allowable subject matter in Claims 4, 6, 15 and 28 to 30. In keeping with this indication, independent Claims 1, 14, 17 and 27 have been amended with the substance of Claims 4, 6, 15 and 28.

Specifically:

- for independent Claim 1 refer to dependent Claim 4
- for independent Claim 14 refer to dependent Claim 15
- for independent Claim 17 refer to dependent Claim 6
- for independent Claim 27 refer to dependent Claim 28

In making these amendments, certain liberties have been taken with respect to the precise language found in the unamended language of the claims, such as a broadening amendment to Claim 1. Still, the independent claims are believed to capture the substance of the subject matter found by the Examiner to result in allowability. Of course, given these liberties, the claims as a whole should be carefully reviewed by the Examiner to confirm that they recite allowable subject matter.

It will be noted that dependent Claims 29 and 30 have not yet been amended into independent form, but rather remain dependent on Claim 27. This action has been taken strictly for procedural reasons, namely, to preserve the status of this application as eligible for Track One Priority. In particular, continued eligibility for track One Priority requires, *inter alia*, a claim count of no more than 30 claims and no more than four (4) independent claims. As a consequence, it was not possible to amend dependent Claims 29 and 30 into independent form without exceeding the maximum claim count. Since this is strictly a procedural matter, the omission of dependent Claims 29 and 30 in independent form is not a disclaimer of subject matter, and Applicants reserve their right to re-present independent claims corresponding to Claims 29 and 30 in future applications claiming priority from this or related applications.

Independent Claim 1 and various ones of its dependent claims were rejected under 35 U.S.C. § 103(a), primarily over U.S. Patent 5,960,039 (Martin) in view of U.S. Patent 6,496,979 (Chen). Independent Claims 17 and 27, together with various ones of their dependent claims, were rejected under 35 U.S.C. § 103(a), primarily over Martin in view of U.S. Patent 6,128,489 (Seazholtz). As shown above, independent Claims 1, 14, 17 and 27 have been amended with the substance of allowable dependent Claims 4, 6, 15 and

28. These actions have been taken without prejudice or disclaimer of subject matter, and without conceding the correctness of the rejections. Rather, these actions have been taken so as to secure an earlier allowance. This should therefore be viewed as a traversal of the rejections, and Applicants reserve their right to re-present these or other claims in further applications claiming priority from the subject application or applications related thereto.

An Information Disclosure Statement is being filed concurrently herewith. Consideration of the cited art is respectfully requested.

No other matters being raised, it is believed the entire application is fully in condition for allowance, and such action is courteously solicited.

No fees are believed due. However, should it be determined that processing of this paper requires additional fees under 37 C.F.R. 1.16 or 1.17, the Director is hereby authorized to charge such fees to Deposit Account 06-1205.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office by telephone at (714) 540-8700. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

/Michael K. O'Neill/
Michael K. O'Neill
Attorney for Applicants
Registration No. 32,622

FITZPATRICK, CELLA, HARPER & SCINTO
1290 Avenue of the Americas
New York, New York 10104-3800
Facsimile: (212) 218-2200

04245.000900.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application No.: 14/139,817)	
	:	Examiner: Phirin Sam
First Named Inventor:)	
	:	Group Art Unit: 2476
SANJAY K. RAO, ET AL.)	
	:	Confirmation No.: 9703
Filed: December 23, 2013)	
	:	
For: WIRELESS DEVICES WITH)	
TRANSMISSION CONTROL AND	:	
MULTIPLE PATHS OF)	
COMMUNICATION (as amended	:	
May 29, 2014))	May 29, 2014

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

INFORMATION DISCLOSURE STATEMENT

Commissioner:

Pursuant to 37 C.F.R. § 1.56, Applicants respectfully direct the Examiner's attention to the documents listed below and on the attached Form PTO-1449. Copies of non-U.S. patent documents are enclosed.

U.S. Patent 4,654,867
U.S. Patent 4,675,653

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being filed electronically by EFS-Web transmission to the United States Patent Office on
May 29, 2014

(Date of Deposit)

Michael K. O'Neill, Reg. No. 32,622

(Name of Attorney for Applicants)

/Michael K. O'Neill/

Signature

May 29, 2014

Date of Signature

U.S. Patent 5,025,486
U.S. Patent 5,121,391
U.S. Patent 5,195,130
U.S. Patent 5,379,341
U.S. Patent 5,410,738
U.S. Patent 5,457,714
U.S. Patent 5,465,401
U.S. Patent 5,507,035
U.S. Patent 5,513,242
U.S. Patent 5,517,553
U.S. Patent 5,533,029
U.S. Patent 5,539,391
U.S. Patent 5,546,429
U.S. Patent 5,555,258
U.S. Patent 5,559,794
U.S. Patent 5,565,929
U.S. Patent 5,566,205
U.S. Patent 5,577,118
U.S. Patent 5,598,407
U.S. Patent 5,610,617
U.S. Patent 5,633,742
U.S. Patent 5,691,974
U.S. Patent 5,745,884
U.S. Patent 5,816,918
U.S. Patent 5,828,658
U.S. Patent 6,058,422
U.S. Patent 6,072,994
U.S. Patent 6,108,314
U.S. Patent 6,167,099
U.S. Patent 6,169,789
U.S. Patent 6,246,688
U.S. Patent 6,377,570
U.S. Patent 6,405,049
U.S. Patent 6,456,610
U.S. Patent 6,466,558
U.S. Patent 6,519,478
U.S. Patent 6,549,534
U.S. Patent 6,570,871
U.S. Patent 6,600,734
U.S. Patent 6,640,086
U.S. Patent 6,895,253
U.S. Patent 7,027,773
U.S. Patent 7,039,370
U.S. Patent 7,099,695
U.S. Patent 7,277,679
U.S. Patent 7,286,502
U.S. Patent 7,643,848
U.S. Patent 7,848,300

U.S Publication Application No. 2002/0126745
U.S Publication Application No. 2006/0023666
U.S Publication Application No. 2010/0260063
U.S Publication Application No. 2011/0038637

D374,675

U.S. Application No. 10/940,428
U.S. Application No. 12/912,607
U.S. Application No. 13/589,188
U.S. Application No. 13/621,292
U.S. Application No. 13/621,294
U.S. Application No. 14/139,817

This application has received an Office Action on the merits but has not yet received either a final action or a notice of allowance. Accordingly, this Information Disclosure Statement is filed under 37 C.F.R. § 1.97(c) and is accompanied by the \$90.00 fee (small entity) specified at 37 C.F.R. § 1.17(p). Consideration of the art cited herein is accordingly deemed proper, and such action is respectfully requested.

The Examiner is requested to make an independent determination of the relevance and materiality of the cited documents to the claims herein, and to indicate that these documents have been considered by initialing the attached Form PTO-1449.

Applicants' undersigned attorney may be reached in our Costa Mesa, CA office by telephone at (714) 540-8700. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

/Michael K. O'Neill/
Michael K. O'Neill
Attorney for Applicants
Registration No. 32,622

FITZPATRICK, CELLA, HARPER & SCINTO
1290 Avenue of the Americas
New York, New York 10104-3800
Facsimile: (212) 218-2200

FORM PTO 1449 (modified)		ATTY DOCKET NO. 04245.000900.		APPLICATION NO. 14/139,817	
U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		APPLICANT SANJAY K. RAO, ET AL.		FILING DATE December 23, 2013	
LIST OF REFERENCES CITED BY APPLICANT(S) (Use several sheets if necessary)					
U.S. PATENT DOCUMENTS					
*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	FILING DATE IF APPROPRIATE
	4,654,867	03/31/1987	Labeledz		
	4,675,653	06/23/1987	Priestly		
	5,025,486	06/18/1991	Klughart		
	5,121,391	06/09/1992	Paneth et al.		
	5,195,130	03/16/1993	Weiss et al.		
	5,379,341	01/03/1995	Wan		
	5,410,738	04/25/1995	Diepstraten et al.		
	5,457,714	10/10/1995	Engel et al.		
	5,465,401	11/07/1995	Thompson		
	5,507,035	04/09/1996	Bantz et al.		
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FOREIGN PATENT DOCUMENTS					
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	TRANSLATION YES/NO/ OR ABSTRACT
OTHER DOCUMENT(S) (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.

FORM PTO 1449 (modified)		ATTY DOCKET NO. 04245.000900.		APPLICATION NO. 14/139,817	
U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		APPLICANT SANJAY K. RAO, ET AL.		FILING DATE December 23, 2013	
LIST OF REFERENCES CITED BY APPLICANT(S) (Use several sheets if necessary)					
U.S. PATENT DOCUMENTS					
*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	FILING DATE IF APPROPRIATE
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FOREIGN PATENT DOCUMENTS					
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	TRANSLATION YES/NO/ OR ABSTRACT
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)					
EXAMINER			DATE CONSIDERED		

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U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE			APPLICANT SANJAY K. RAO, ET AL.			FILING DATE December 23, 2013		
LIST OF REFERENCES CITED BY APPLICANT(S) (Use several sheets if necessary)								
U.S. PATENT DOCUMENTS								
*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
		7,286,502	10/23/2007	Rao et al.				
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FOREIGN PATENT DOCUMENTS								
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT	
OTHER DOCUMENT(S) (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.

Electronic Patent Application Fee Transmittal

Application Number:	14139817			
Filing Date:	23-Dec-2013			
Title of Invention:	System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication			
First Named Inventor/Applicant Name:	Sanjay K Rao			
Filer:	Michael K. O'Neill			
Attorney Docket Number:	04245.000900.			
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:				
Independent Claims in Excess of 3	2201	1	210	210
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	2806	1	90	90
Total in USD (\$)				300

Electronic Acknowledgement Receipt

EFS ID:	19164813
Application Number:	14139817
International Application Number:	
Confirmation Number:	9703
Title of Invention:	System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication
First Named Inventor/Applicant Name:	Sanjay K Rao
Customer Number:	5514
Filer:	Michael K. O'Neill
Filer Authorized By:	
Attorney Docket Number:	04245.000900.
Receipt Date:	29-MAY-2014
Filing Date:	23-DEC-2013
Time Stamp:	21:21:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$300
RAM confirmation Number	5729
Deposit Account	503939
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)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	04245_000900_Amend_05292014.pdf	100974 851258f6dea2b7f5c138e029132c39045630c073	no	17
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	04245_000900_IDS_05292014.pdf	166387 bc328cf1c4c285b6bb712eaa584dc97e680053d5	no	7
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Fee Worksheet (SB06)	fee-info.pdf	32301 46130f557e47835c036f6ed98e9885ddc5bca2ea	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			299662		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

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

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875			Application or Docket Number 14/139,817	Filing Date 12/23/2013	<input type="checkbox"/> To be Mailed
ENTITY: <input type="checkbox"/> LARGE <input checked="" type="checkbox"/> SMALL <input type="checkbox"/> MICRO					
APPLICATION AS FILED – PART I					
(Column 1)		(Column 2)			
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A		
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A	N/A		
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A		
TOTAL CLAIMS <small>(37 CFR 1.16(i))</small>	minus 20 =	*	X \$ =		
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	minus 3 =	*	X \$ =		
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$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).				
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>					
* 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	05/29/2014	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 30	Minus	** 30	= 0	X \$40 =	0	
	Independent (37 CFR 1.16(h))	* 4	Minus	***3	= 1	X \$210 =	210	
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))							
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
						TOTAL ADD'L FEE	210	

(Column 1)		(Column 2)		(Column 3)				
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		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 \$ =		
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))							
	<input type="checkbox"/> 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
/TERRY MALLOY/

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

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



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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14/139,817	12/23/2013	Sanjay K Rao	04245.000900.	9703
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5514 7590 03/20/2014
 FITZPATRICK CELLA HARPER & SCINTO
 1290 Avenue of the Americas
 NEW YORK, NY 10104-3800

EXAMINER

SAM, PHIRIN

ART UNIT	PAPER NUMBER
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2476

MAIL DATE	DELIVERY MODE
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03/20/2014

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. 14/139,817	Applicant(s) RAO ET AL.	
	Examiner PHIRIN SAM	Art Unit 2476	AIA (First Inventor to File) Status No

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

Period for Reply

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

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

Status

- 1) Responsive to communication(s) filed on 12/23/2013.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

- 5) Claim(s) 1-30 is/are pending in the application.
5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) Claim(s) _____ is/are allowed.
- 7) Claim(s) 1-3,5,7-14 and 16-27 is/are rejected.
- 8) Claim(s) 4,6,15 and 28-30 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 12/23/13 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

Certified copies:

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

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

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date 12/23/13
- 3) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 4) Other: _____

DETAILED ACTION

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

Claim Rejections - 35 USC § 112

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

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

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

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

3. Claims 17-26 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention.

In regard to claim 17, the limitation, “wherein a first time period during which communication via one of the plurality of communication paths occurs and a second time period during which communication via another of the plurality of communication paths *occurs overlaps at least partially*”.

Claims 18-26 are rejected as they depend on the rejected claim.

Claim Rejections - 35 USC § 103

4. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

5. 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.

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).

6. Claims 1-3, 7, 9, 11, 12, and 14 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over US Patent 5,960,039 to Martin et al. (hereinafter Martin) in view of US Patent 6,496,979 to Chen et al. (hereinafter Chen).

In regard to claim 1, Martin teaches or suggests an Internet-enabled mobile communication device comprising:

- (a) a memory (see col. 10, lines 40-43, *the receiver further comprising a memory connected to the receiver processor for storing information concerning the controllable offset of said at least one transmit antenna*);
- (b) at least two or more antennas (see Fig. 3, elements 120₁-120_M and 142₁-142_M);
- (c) at least one or more processors (see Fig. 3, element 131); and
- (d) a plurality of wireless transmit and receive components including a first wireless transmit and receive component and a second wireless transmit and receive component (see Figs. 3-3b, col. 3, lines 64-67, col. 4, lines 1-8, 16-25, col. 5, lines 1-13);
- (e) wherein the device is configured for multi-band wireless communication (see col. 7, lines 8-26, *a cellular ("TDMA") system in which 3 remotes communicate with a base station in each 30 kHz channel within a 824 to 849 mHz (mobile to base) and 869-894 mHz (base to mobile) frequency range, at a data rate of 13 kbps per user using differential quadrature phase shift keyed ("DQPSK") modulation*); and
- (g) wherein the first wireless transmit and receive component is configured to communicate a first signal stream using a plurality of antennas simultaneously to increase data transfer rate (see Fig. 3, col. 3, lines 64-67, and col. 4, lines 1-26, 37-58).

Martin may not teach or suggest a display electronics component; wherein each wireless transmit receive component is configured to communicate using one or more protocols; and a wireless communication on a local area network using an IP protocol.

However, Chen discloses a display electronics component (see Figs. 1 and 3, element 84, *display 84*); wherein each wireless transmit receive component is configured to communicate using one or more protocols (see col. 6, lines 34-66); a wireless communication on a local area network using an IP protocol (see Figs. 1 and 2, col. 4, lines 1-10, col. 6, lines 46-67, col. 7, lines 1-7).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an adaptive high speed data transmission system of Martin by including a display electronics component, wherein each wireless transmit receive component is configured to communicate using one or more protocols, and a wireless communication on a local area network using an IP protocol suggested by Chen. This modification would provide to enhance the storage by install applications from a storage source read on column 2, lines 60-61.

In regard to claim 2, Martin discloses the device of Claim 1, wherein a single transmission connection is further comprised of at least two or more wireless transmit and receive connections simultaneously transmitting and receiving using the plurality of antennas (see Fig. 3, col. 3, lines 64-67, col. 4, lines 1-9, *the offset signals are transmitted across communication channels which are represented collectively by zigzagging line 115. They are then received by receiver antennas 120.sub.1 . . . 120.sub.m in the mobile 103. The received signals are connected to inputs of a demodulator/receiver matrix 130 which is controlled by a processor 131*), and wherein the processor multiplexes the receiving signals into the single transmission connection (see Figs. 3b and 3c, col. 6, lines 4-10, *each of the antennas 181 and 182 receives a combined signal consisting of the addition of the signals transmitted by*

antennas 172 and 173, after their transmission through various multipaths, and after modification by noise, delay, and distortion. The received signals are combined in the weighting circuitry 183 whose output becomes the input of the RF filter and amplifier section 184).

In regard to claim 3, Martin teaches or suggests the device of Claim 1, wherein a single transmission connection is further comprised of at least two or more wireless transmit and receive connections sequentially transmitting and receiving using the plurality of antennas (see Fig. 3, col. 3, lines 64-67, col. 4, lines 1-9, *the offset signals are transmitted across communication channels which are represented collectively by zigzagging line 115. They are then received by receiver antennas 120.sub.1 . . . 120.sub.m in the mobile 103. The received signals are connected to inputs of a demodulator/receiver matrix 130 which is controlled by a processor 131*), and wherein the processor multiplexes the receiving signals into the single transmission connection (see Figs. 3b and 3c, col. 6, lines 4-10, *each of the antennas 181 and 182 receives a combined signal consisting of the addition of the signals transmitted by antennas 172 and 173, after their transmission through various multipaths, and after modification by noise, delay, and distortion. The received signals are combined in the weighting circuitry 183 whose output becomes the input of the RF filter and amplifier section 184*).

In regard to claim 7, Martin teaches or suggests the device of Claim 1, wherein the device is comprised of a cellular telephone (see Figs. 3 and 5).

In regard to claim 9, Martin teaches or suggests the device of Claim 1, wherein the use of two or more wireless transmit and receive units create connections to a plurality of remote systems simultaneously and transmit and receive data in a parallel path to increase the rate at which data is transferred (see Fig. 3, col. 3, lines 64-67, and col. 4, lines 1-26, 37-58).

In regard to claim 11, Martin teaches or suggests the device of Claim 1, wherein an application executed by the processor on the mobile device is configured to use a single transport connect interface comprised of two or more wireless connections (see Fig. 3, element 131).

In regard to claim 12, Martin teaches or suggests the device of Claim 1, further in communication with a network box, which is configured with a plurality of antennas and a wireless transmit and receive component, wherein the network switch box wireless transmit and receive component is configured to communicate a signal stream using the network switch box plurality of antennas simultaneously (see Fig. 3).

In regard to claim 14, Martin teaches or suggests the device of Claim 1, wherein the device is configured for communications using different frequencies (see col. 7, lines 8-26, *a cellular ("TDMA") system in which 3 remotes communicate with a base station in each 30 kHz channel within a 824 to 849 mHz (mobile to base) and 869-894 mHz (base to mobile) frequency range, at a data rate of 13 kbps per user using differential quadrature phase shift keyed ("DQPSK") modulation*).

7. Claims 17-24, 26, and 27 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Martin in view of US Patent 6,128,489 to Seazholtz et al. (hereinafter Seazholtz).

In regard to claim 17, Martin discloses a communication device (see Fig. 3, col. 3, lines 51-54), comprising:

- (a) one or more communication modules, each comprising at least one antenna operable to receive and transmit wireless signals representing data (see Fig. 3, col. 4, lines 41-58,);
- (b) wherein the one or more processors are programmed to process data represented in a wireless signal received and/or transmitted by the one or more communication modules (see Fig. 3, element 131, col. 3, lines 66-67, col. 4, lines 1-8, 41-48);
- (c) plurality of communication paths (see Fig. 3, element 115, col. 3, lines 64-66), and wherein a first time period during which communication via one of the plurality of communication paths occurs (see col. 7, lines 17-26, *each user's slot contains 324 bits, including a 28 bit synchronization sequence, plus 260 data bits, resulting in a data rate for each channel of 48.6 kbps or 24.3 kbaud*);

Martin may not teach or suggest a second time period during which communication via another of the plurality of communication paths occur overlaps at least partially.

However, Seazholtz discloses a second time period during which communication via another of the plurality of communication paths occur overlaps at least partially (see 1, col. 11, lines 16-24, col. 24, lines 9-28).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an adaptive high speed data transmission system of Martin by including a second time period during which communication via another of the plurality of communication paths occur overlaps at least partially suggested by Seazholtz. This modification would provide decrease power expenditure for roaming cellular subscriber station handsets read on column 8, lines 24-25.

In regard to claim 18, Martin may not teach or suggest the communication device of Claim 17, wherein each of the plurality of communication paths employs a different network.

However, Seazholtz teaches or suggests wherein each of the plurality of communication paths employs a different network (see Figs. 7, 10, col. 19, lines 41-57, col. 23, lines 53-66).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an adaptive high speed data transmission system of Martin by including wherein each of the plurality of communication paths employs a different network suggested by Seazholtz. This modification would provide decrease power expenditure for roaming cellular subscriber station handsets read on column 8, lines 24-25.

In regard to claim 19, Martin may not teach or suggest the communication device of Claim 18, wherein at least one of the different networks comprises a voice network and wherein at least one of the different networks comprises the Internet.

However, Seazholtz teaches or suggests at least one of the different networks comprises a voice network and wherein at least one of the different networks comprises the Internet (see Fig. 8, elements 807 and 805).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an adaptive high speed data transmission system of Martin and a system of installing applications for mobile devices of Chen including at least one of the different networks comprises a voice network and wherein at least one of the different networks comprises the Internet suggested by Seazholtz. This modification would provide decrease power expenditure for roaming cellular subscriber station handsets read on column 8, lines 24-25.

In regard to claim 20, Martin teaches or suggests the communication device of Claim 17, wherein each of the plurality of communication paths employs a different communication protocol and wherein each of the plurality of communication paths involves wireless signals transmitted at a different frequency (see col. 7, lines 8-26, *a cellular ("TDMA") system in which 3 remotes communicate with a base station in each 30 kHz channel within a 824 to 849 MHz (mobile to base) and 869-894 MHz (base to mobile) frequency range, at a data rate of 13 kbps per user using differential quadrature phase shift keyed ("DQPSK") modulation*).

In regard to claim 21, Martin may not teach or suggest the communication device of Claim 17, wherein one of the pluralities of communication paths is used for wireless signals representing voice data, and another of the plurality of communication paths is used for wireless signals representing non-voice data.

However, Seazholtz teaches or suggests wherein one of the plurality of communication paths is used for wireless signals representing voice data, and another of the plurality of communication paths is used for wireless signals representing non-voice data (see Fig. 8, elements 807 and 805).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an adaptive high speed data transmission system of Martin including one of the plurality of communication paths is used for wireless signals representing voice data, and another of the plurality of communication paths is used for wireless signals representing non-voice data suggested by Seazholtz. This modification would provide decrease power expenditure for roaming cellular subscriber station handsets read on column 8, lines 24-25.

In regard to claim 22, Martin teaches or suggests the communication device of Claim 17, wherein the one or more communication modules comprises a plurality of communication modules, each of the plurality of communication modules being configured for communication via a different communication path (see Fig. 3) and wherein the one or more communication modules comprises a plurality of communication modules each comprising a separate antenna (see Fig. 3).

In regard to claim 23, Martin teaches or suggests the communication device of Claim 17, wherein the one or more processors are programmed to differentiate between wireless signals received via one of the plurality of communication paths and another of the plurality of communication paths (see Fig. 3, col. 3, lines 55-67).

In regard to claim 24, Martin teaches or suggests the communication device of Claim 23, wherein one or more processors are programmed to process data represented by wireless signals received via the one communication path separately from data represented by wireless signals received via the other communication path (see Fig. 3, col. 3, lines 64-67, col. 4, lines 1-8, 15-25).

In regard to claim 26, Martin may not teach or suggest the communication device of Claim 17, wherein the one or more processors are programmed to process voice data represented by wireless signals received via one of the plurality of communication paths, and to process non-voice data represented by wireless signals received via another of the plurality of communication paths.

However, Seazholtz teaches or suggests the one or more processors are programmed to process voice data represented by wireless signals received via one of the plurality of communication paths, and to process non-voice data represented by wireless signals received via another of the plurality of communication paths (see Fig. 8, elements 807 and 805).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an adaptive high speed data transmission system of Martin including the one or

more processors are programmed to process voice data represented by wireless signals received via one of the plurality of communication paths, and to process non-voice data represented by wireless signals received via another of the plurality of communication paths suggested by Seazholtz. This modification would provide decrease power expenditure for roaming cellular subscriber station handsets read on column 8, lines 24-25.

In regard to claim 27, Martin teaches or suggests an IP-enabled communication device comprising:

- (a) a memory (see col. 10, lines 40-43, *the receiver further comprising a memory connected to the receiver processor for storing information concerning the controllable offset of said at least one transmit antenna*);
- (b) one or more processors (see Fig. 3, element 131, col. 4, lines 1-2, *processor 131*);
- (c) a display electronic component (see Fig. 3, *mobile 103 always has display screen*);
- (d) a plurality of wireless communication components (see Fig. 3, elements 120, 130, 131, 140, col. 3, lines 64-67, col. 4, lines 1-8, *the offset signals are transmitted across communication channels which are represented collectively by zigzagging line 115. They are then received by receiver antennas 120.sub.1 . . . 120.sub.m in the mobile 103. The received signals are connected to inputs of a demodulator/receiver matrix 130 which is controlled by a processor 131. The matrix 130 then provides received signals $s_{.sub.1}(k) . . . s_{.sub.m}(k)$ at its outputs. As addressed further below, the matrix 130 also collects information concerning the communication channels 102 between the transmitting antennas 112.sub.1 . . . 112.sub.m and the receiving antennas 120.sub.1 . . . 120.sub.m and provides an output signal $x_{.sub.k}$ which is*

fed to the processor 131), wherein each wireless communication component comprises a chip set of one or more processors and memory (see Fig. 3, element 131), wherein the each wireless communication component supports a plurality of transmit and receive frequencies and a plurality of wireless protocols as an integrated component (see Fig. 3, col. 7, lines 8-26, *cellular ("TDMA") system in which 3 remotes communicate with a base station in each 30 kHz channel within a 824 to 849 MHz (mobile to base) and 869-894 MHz (base to mobile) frequency range, at a data rate of 13 kbps per user using differential quadrature phase shift keyed ("DQPSK") modulation*);

(e) wherein a first wireless communication component is coupled to a first set of antennas configured to transmit and receive on a first network (see Fig. 3, element 130, 120₁- 120_M, col. Col. 3, lines 64-67, and col. 4, lines 1-8) and wherein a second wireless communication component is coupled to a second set of antennas and configured to transmit and receive on a second network (see Fig. 3, element 142₁ – 142_M, col. 4, lines 15-25);

(f) wherein the at least one wireless communication component is configured for radio frequency communication (see Fig. 3);

(g) wherein the first wireless communication component is configured to operate at a lower frequency than the second wireless communication component such that the first and second wireless communication components operate as complementary systems and reduce interference with each other (see Fig. 3, col. 7, lines 8-26);

Martin may not teach or suggest wherein the device is configured for voice and/or data connectivity and Internet connectivity.

However, Seazholtz discloses wherein the device is configured for voice and/or data connectivity and Internet connectivity (see Fig. 8, elements 807 and 805).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an adaptive high speed data transmission system of Martin including the device is configured for voice and/or data connectivity and Internet connectivity suggested by Seazholtz. This modification would provide decrease power expenditure for roaming cellular subscriber station handsets read on column 8, lines 24-25.

8. Claims 5 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Martin in view of Chen as applied to claims above, and further in view of US Patent 5,636,211 to Newlin et al. (hereinafter Newlin).

In regard to claim 5, Martin may not explicitly teaches or suggests the device of claim 2, uses protocols including, USB protocol, , transmission control protocol, transport layer communication protocols, or application interfaces. However, Chen teaches or suggests uses protocols including, USB protocol, , transmission control protocol, transport layer communication protocols, or application interfaces (see Figs. 1, 2, and 4, col. 6, lines 27-45, col. 7, lines 55-67, and col. 8, lines 1-10, *program modules 37, and program data 38. A serial port interface 46 that is coupled to the system bus 23, but may be connected by other interfaces, such as a sound card, a parallel port, a game port or a universal serial bus (USB). The operating system 98 is preferably designed for mobile devices and implements database*

features which can be utilized by the application programs 5A-5C through a set of exposed application programming interfaces (API) and methods).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an adaptive high speed data transmission system of Martin by including uses protocols including, USB protocol, transmission control protocol, transport layer communication protocols, or application interfaces suggested by Chen. This modification would provide to enhance the storage by install applications from a storage source read on column 2, lines 60-61.

Chen and Martin may not explicitly teach or suggest wherein the mobile device transmits and receives multiple IP data packets and uses protocols Ethernet protocol, Internet protocol.

However, Newlin discloses the mobile device transmits and receives multiple IP data packets and uses protocols Ethernet protocol, Internet protocol (see Fig. 1, 2, col. 2, lines 1-54, ***the universal multimedia access apparatus support applications including, but not limited to, high-speed data access (e.g. Internet access).*** At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an adaptive high speed data transmission system of Martin and a system of installing applications for mobile devices of Chen including the mobile device transmits and receives multiple IP data packets and uses protocols Ethernet protocol, Internet protocol suggested by Newlin. This modification would provide to diverse multimedia access applications delivered via network read on column 1, lines 61-64.

9. Claims 8, 10, and 16 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Martin in view of Chen as applied to claims above, and further in view of US Patent 6,067,290 to Paulraj et al. (hereinafter Paulraj).

In regard to claims 8 and 10, Chen and Martin may not explicitly teach or suggest the device of Claim 1, wherein the device is configured to use a Virtual Private Network (VPN).

However, Paulraj teaches or suggests the device is configured to use a VPN (see Fig. 1a, col. 6, lines 31-36, *a plurality of subscriber units wirelessly coupled over a cellular network to a network 100. Network 100 may include: a local area network (LAN), a wide area network (WAN), a public switched telephone network (PSTN), Public Land Mobile Network (PLMN), an adhoc network, a virtual private network, an intranet or the internet*).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an adaptive high speed data transmission system of Martin and a system of installing applications for mobile devices of Chen including the device is configured to use a Virtual Private Network (VPN) suggested by Paulraj. This modification would provide for implement spatial multiplexing in conjunction with access protocols during broadcast of information read on column 1, lines 54-56.

In regard to claim 16, Martin and Chen may not teach or suggest the device of Claim 1, wherein the device is configured for a plurality of protocols including transmission control, CDMA, TDMA, internet protocol (IP) and/or combinations thereof.

However, Paulraj discloses the device is configured for a plurality of protocols including transmission control, CDMA, TDMA, internet protocol (IP) and/or combinations thereof (see Fig. 3, col. 5, col. 38-55, col. 12, lines 44-60).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an adaptive high speed data transmission system of Martin and a system of installing applications for mobile devices of Chen including the device is configured for a plurality of protocols including transmission control, CDMA, TDMA, internet protocol (IP) and/or combinations thereof suggested by Paulraj. This modification would provide for implement spatial multiplexing in conjunction with access protocols during broadcast of information read on column 1, lines 54-56.

10. Claim 13 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Martin in view of Chen as applied to claims above, and further in view of Seazholtz.

In regard to claim 13, Chen and Martin may not teach or suggest the device of Claim 1, further comprising of a processor for voice communication and a second processor for data communication.

However, Seazholtz teaches or suggests the device further comprises a processor for voice communication and a second processor for data communication (see Fig. 8, elements 807 and 805).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an adaptive high speed data transmission system of Martin and a system of installing applications for mobile devices of Chen including the device further comprises a processor for voice communication and a second processor for data communication suggested by Seazholtz. This modification would provide decrease power expenditure for roaming cellular subscriber station handsets read on column 8, lines 24-25.

Allowable Subject Matter

11. Claims 4, 6, 15, and 28-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHIRIN SAM whose telephone number is (571)272-3082. The examiner can normally be reached on Flexible Work Schedule.

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

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Respectfully submitted,

Date: March 18, 2014

By: /Phirin Sam/
Primary Examiner
Art Unit 2476

Notice of References Cited	Application/Control No. 14/139,817	Applicant(s)/Patent Under Reexamination RAO ET AL.	
	Examiner PHIRIN SAM	Art Unit 2476	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-5,802,469	09-1998	Nounin et al.	455/422.1
*	B US-5,889,816	03-1999	Agrawal et al.	375/220
*	C US-5,636,211	06-1997	Newlin et al.	370/465
*	D US-5,909,183	06-1999	Borgstahl et al.	340/12.29
*	E US-6,496,979	12-2002	Chen et al.	717/178
*	F US-6,128,489	10-2000	Seazholtz et al.	455/432.1
*	G US-6,067,290	05-2000	Paulraj et al.	370/329
*	H US-5,960,039	09-1999	Martin et al.	375/267
	I US-			
	J US-			
	K US-			
	L US-			
	M US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	5	"7848300".pn. or "7286502".pn. or "6169789".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:56
L2	1359243	((mobile or wireless) near3 (staton\$1 or device\$1 or node\$1 or apparatus or unit\$1)) or hand\$1held or PDA\$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:57
L3	30091	((dual or plurality) adj3 antenna\$2) and ((receiver\$1 and transmitter\$1) or transceiver\$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:57
L4	17133	L2 and L3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:57
L5	1857934	IP or Internet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:57
L6	8418	L4 and L5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:57
L7	60109	(plurality adj2 band\$1) or multi\$1band\$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:57
L8	764185	increas\$3 near4 rate\$1	US-PGPUB;	OR	OFF	2014/03/18 09:57

			USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB			
L9	702	L6 and L7	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:57
L10	167	L9 and L8	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:57
L11	4689	((plurality adj3 antenna\$1) or antennas or (dual adj3 antenna\$1)) same (increas\$3 or adjust\$3 or vary\$3) same (transmission or transfer\$4) same rate\$1	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:58
L12	91372	(LAN or (local adj3 area adj3 network)) same (IP or internet) same protocol\$1	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:58
L13	95	L11 and L12	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:58
L14	1359243	((mobile or wireless) near3 (staton\$1 or device\$1 or node\$1 or apparatus or unit\$1)) or hand\$1held or PDA\$1)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:58
L15	527992	L14 and (IP or internet)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:58
L16	6382	L15 and @ad<"19990604"	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2014/03/18 09:58

L17	4324	L16 and display\$1	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:58
L18	1627	L17 and mobile	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:58
L19	687	L18 and (LAN or (local adj2 area adj2 network))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:58
L20	469	L19 and (ports or interfaces)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:58
L21	85	L20 and USB	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 09:58
L22	1359243	((mobile or wireless) near3 (staton\$1 or device\$1 or node\$1 or apparatus or unit\$1)) or hand\$1held or PDA\$1	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:03
L23	255911	((plurality adj3 antenna\$1) or antennas or (dual adj3 antenna\$1))	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:03
L24	103461	L22 and L23	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:03
L25	51847	L24 and (IP or internet)	US- PGPUB; USPAT; USOCR;	OR	OFF	2014/03/18 10:03

			FPRS; EPO; JPO; IBM_TDB			
L26	121	L25 and @pd<"19990604"	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:03
L27	3	"7848300".pn.	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:08
L28	1	27 AND ((A61K2300/00 OR A61K31/70 OR A61K31/7034 OR A61K45/06).CPC.)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:09
L29	1	28 AND ((A61K2300/00 OR A61K31/70 OR A61K31/7034 OR A61K45/06 OR C07C45/46 OR C07C49/84 OR C07C43/225 OR C07H15/203).CPC.)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:11
L30	253	9 AND ((H01Q1/243 OR H01Q21/28 OR H01Q1/38 OR H01Q9/42 OR H01Q5/0058 OR H01Q9/0421 OR H01Q21/30 OR H01Q13/10 OR H01Q9/0407 OR H01Q3/24 OR H01Q1/2266 OR H01Q1/2291 OR H01Q5/0072 OR H01Q1/36 OR H01Q1/521 OR H01Q21/24 OR H01Q5/0051 OR H01Q9/285 OR H01Q1/242 OR H01Q1/44 OR H01Q21/062 OR H01Q3/26 OR H01Q9/0442 OR H01Q1/24 OR H01Q3/36 OR H01Q5/0062 OR H01Q7/00 OR H01Q9/36 OR H01Q1/362 OR H01Q15/0006 OR H01Q21/205 OR H01Q5/001 OR H01Q9/0464 OR H01Q9/28 OR H01Q1/245 OR H01Q1/50 OR H01Q23/00 OR H01Q3/005 OR H01Q5/00 OR H01Q9/40 OR H01Q15/0086 OR H01Q15/148 OR H01Q19/24 OR H01Q1/244 OR H01Q1/246 OR H01Q1/48 OR H01Q21/0025 OR H01Q21/0093 OR H01Q21/064 OR H01Q21/08 OR H01Q3/446 OR H01Q5/0034 OR H01Q5/0055 OR H01Q5/0075 OR H01Q9/14 OR H01Q9/145 OR H01Q9/265 OR H01Q13/103 OR H01Q15/242 OR H01Q21/26 OR H01Q3/2605 OR H01Q9/06 OR H01Q9/065 OR H01Q9/30 OR H01Q13/18 OR H01Q1/241 OR H01Q1/247 OR H01Q1/3275 OR H01Q1/42 OR H01Q1/525 OR H01Q3/2611 OR H01Q5/0048 OR H01Q9/0457 OR H01Q9/16 OR H01Q19/005 OR H01Q19/28 OR H01Q1/22 OR H01Q21/061 OR H01Q5/01 OR H01Q9/04 OR H01Q11/14 OR H01Q13/02 OR H01Q13/085 OR H01Q13/20 OR H01Q1/085 OR H01Q1/103 OR H01Q1/2258 OR H01Q1/2283 OR H01Q1/3208 OR H01Q1/3291 OR H01Q1/368 OR H01Q1/40 OR H01Q1/52 OR H01Q21/0075 OR H01Q21/0087 OR H01Q25/005 OR H01Q3/30 OR H01Q5/0027 OR H01Q5/0041 OR H01Q5/0065 OR H01Q9/0428 OR H01Q9/0485 OR H01Q9/26 OR H01Q9/46 OR H01Q11/08 OR H01Q13/106 OR H01Q13/16 OR H01Q13/203 OR H01Q15/008 OR H01Q15/14 OR H01Q15/16 OR H01Q15/24 OR H01Q19/10 OR H01Q19/136 OR H01Q19/17 OR H01Q19/193 OR H01Q1/088 OR H01Q1/12 OR H01Q1/1214 OR H01Q1/1221 OR H01Q1/1271 OR H01Q1/20 OR H01Q1/2225 OR H01Q1/3266 OR H01Q1/34 OR H01Q21/00 OR H01Q21/067 OR H01Q21/20 OR H01Q25/02 OR H01Q3/02 OR H01Q3/247 OR H01Q3/2617 OR H01Q3/2647 OR H01Q3/267 OR H01Q5/0031 OR H01Q5/0037 OR H01Q5/0082 OR H01Q5/0093 OR	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:18

		H01C9/44).CPC.)				
L31	3	1 AND ((G06F3/023).CPC.)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:37
L32	830230	transceiver\$1 or (transmitter\$1 and receiver\$1)	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:45
L33	8418	I6 and I32	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:45
L34	26696	multi\$1band\$1	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:46
L35	476	I33 and I34	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:46
L36	85053	multi\$1path\$1 or multi\$1link\$3	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:47
L37	54	I35 and I36	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:47
L38	37	37 AND ((H04B1/719 OR H04B1/71635 OR H04B1/71637 OR H04B1/71632 OR H04B1/7176 OR H04B1/7163 OR H04B7/10 OR H04B7/15585 OR H04B1/692 OR H04B1/7183 OR H04B7/0689 OR H04B1/036 OR H04B1/406 OR H04B1/69 OR H04B7/0413 OR H04B7/0669 OR H04B7/0693 OR H04B7/0825 OR H04B17/0007 OR H04B17/002 OR H04B17/0092 OR H04B1/38 OR H04B7/0404 OR H04B7/0408 OR H04B7/068 OR H04B7/0691 OR H04B7/08 OR H04B7/0837 OR H04B7/0871 OR H04B7/0877 OR H04B7/0891 OR H04B7/12 OR A61B2560/0233 OR A61B2560/0412 OR A61B5/0022 OR A61B5/0024 OR A61B5/0026 OR A61B5/0205 OR A61B5/02055 OR A61B5/021 OR A61B5/0402 OR A61B5/0476 OR A61B5/0488 OR A61B5/0492 OR A61B5/1112 OR A61B5/1117 OR A61B5/1128 OR	US- PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:48

		A61B5/14532 OR A61B5/14542 OR A61B5/411 OR A61B5/681 OR A61B5/6826 OR A61B5/686 OR A61B5/6891 OR A61B5/7214 OR A61B5/7225 OR A61B5/7257 OR A61B5/726 OR A61B5/7267 OR A61B5/742 OR A61B5/7465 OR A61B7/04).CPC.)				
L39	333	35 AND ((H01Q1/243 OR H01Q21/28 OR H01Q1/38 OR H01Q9/42 OR H01Q5/0058 OR H01Q9/0421 OR H01Q21/30 OR H01Q13/10 OR H01Q9/0407 OR H01Q1/2266 OR H01Q5/0072 OR H01Q1/36 OR H01Q3/24 OR H01Q5/0051 OR H01Q1/2291 OR H01Q1/242 OR H01Q1/44 OR H01Q1/521 OR H01Q3/26 OR H01Q9/0442 OR H01Q3/36 OR H01Q5/0062 OR H01Q7/00 OR H01Q9/36 OR H01Q1/24 OR H01Q1/362 OR H01Q15/0006 OR H01Q21/24 OR H01Q5/001 OR H01Q9/0464 OR H01Q9/28 OR H01Q1/245 OR H01Q1/50 OR H01Q23/00 OR H01Q5/00 OR H01Q9/40 OR H01Q15/0086 OR H01Q1/244 OR H01Q21/0025 OR H01Q21/0093 OR H01Q21/062 OR H01Q21/064 OR H01Q21/08 OR H01Q5/0034 OR H01Q5/0055 OR H01Q5/0075 OR H01Q9/14 OR H01Q9/265 OR H01Q9/285 OR H01Q13/103 OR H01Q15/242 OR H01Q1/246 OR H01Q9/06 OR H01Q9/065 OR H01Q9/30 OR H01Q13/18 OR H01Q1/241 OR H01Q1/247 OR H01Q1/3275 OR H01Q1/42 OR H01Q1/48 OR H01Q5/0048 OR H01Q9/0457 OR H01Q9/145 OR H01Q19/005 OR H01Q19/28 OR H01Q21/061 OR H01Q5/01 OR H01Q9/04 OR H01Q11/14 OR H01Q13/02 OR H01Q13/085 OR H01Q13/20 OR H01Q1/085 OR H01Q1/103 OR H01Q1/22 OR H01Q1/2258 OR H01Q1/2283 OR H01Q1/3208 OR H01Q1/3291 OR H01Q1/368 OR H01Q1/40 OR H01Q1/52 OR H01Q21/0075 OR H01Q21/0087 OR H01Q21/205 OR H01Q21/26 OR H01Q3/30 OR H01Q5/0041 OR H01Q5/0065 OR H01Q9/0428 OR H01Q9/0485 OR H01Q9/26 OR H01Q9/46 OR H01Q11/08 OR H01Q13/16 OR H01Q13/203 OR H01Q15/008 OR H01Q15/14 OR H01Q15/16 OR H01Q15/24 OR H01Q19/10 OR H01Q19/136 OR H01Q19/17 OR H01Q19/193 OR H01Q1/088 OR H01Q1/12 OR H01Q1/1214 OR H01Q1/1221 OR H01Q1/1271 OR H01Q1/20 OR H01Q1/2225 OR H01Q1/3266 OR H01Q1/34 OR H01Q21/067 OR H01Q21/20 OR H01Q25/02 OR H01Q3/005 OR H01Q3/02 OR H01Q3/247 OR H01Q3/2605 OR H01Q3/2617 OR H01Q3/2647 OR H01Q5/0027 OR H01Q5/0031 OR H01Q5/0037 OR H01Q5/0082 OR H01Q9/16 OR H01Q9/44 OR H04W88/06 OR H04W36/14 OR H04W36/22 OR H04W36/38 OR H04W8/245 OR H04W88/085 OR H04W24/10 OR H04W16/14 OR H04W48/16 OR H04W72/0413 OR H04W24/02 OR H04W40/246 OR H04W48/18 OR H04W64/006 OR H04W72/1215 OR H04W12/12 OR H04W52/0229 OR H04W52/146 OR H04W52/325 OR H04W52/365 OR H04W52/367 OR H04W72/1231 OR H04W84/10 OR H04W8/005 OR H04W72/082 OR H04W84/18 OR H04W88/12 OR H04W16/28 OR H04W52/246 OR H04W52/283 OR H04W52/52 OR H04W56/00 OR H04W64/00 OR H04W68/02 OR H04W76/025 OR H04W84/04 OR H04W88/02 OR H04W88/14 OR H04W8/26 OR H04W48/04 OR H04W48/20 OR H04W4/02 OR H04W52/42 OR H04W56/001 OR H04W56/0035 OR H04W56/0045 OR H04W74/02 OR H04W84/12 OR H04W88/08 OR H04W28/18 OR H04W4/06 OR H04W4/22 OR H04W52/244 OR H04W52/245 OR H04W52/265 OR H04W72/042 OR H04W74/00 OR H04W76/007 OR H04W76/04 OR H04W84/005 OR H04W84/045 OR H04W88/10 OR H04W92/02 OR H04W92/18).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:51
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		OR H04L9/0841 OR H04L9/321 OR H04L9/3231 OR H04L9/3263 OR H04L9/3273 OR H04L12/2697 OR H04L12/2825 OR H04L12/2859 OR H04L12/403 OR H04L12/58 OR H04L12/5835 OR H04L12/5895 OR H04L12/64 OR H04L12/6418 OR H04L12/66 OR H04L1/0017 OR H04L1/0047 OR H04L1/0054 OR H04L1/1671 OR H04L1/1685 OR H04L1/20 OR H04L2012/6472 OR H04L2012/6475 OR H04L2463/101 OR H04L25/085 OR H04L25/14 OR H04L25/497 OR H04L27/12 OR H04L27/14 OR H04L27/156 OR H04L29/12047 OR H04L29/12169 OR H04L29/1233 OR H04L41/06 OR H04L41/065 OR H04L41/0659 OR H04L41/18 OR H04L41/5032 OR H04L41/5048 OR H04L41/5064 OR H04L41/509 OR H04L43/06 OR H04L43/0811 OR H04L43/0817 OR H04L43/0852 OR H04L43/0888 OR H04L43/50 OR H04L45/00 OR H04L49/90 OR H04L49/9073 OR H04L51/066 OR H04L51/38 OR H04L61/15 OR H04L61/1576 OR H04L61/25 OR H04L63/0236 OR H04L63/0272 OR H04L63/04 OR H04L63/0428 OR H04L63/0442 OR H04L63/045 OR H04L63/0471 OR H04L63/0869 OR H04L63/10 OR H04L63/102 OR H04L63/12 OR H04L63/123 OR H04L63/126 OR H04L65/103 OR H04L65/104 OR H04L65/4084 OR H04L65/604 OR H04L65/80 OR H04L67/12 OR H04L67/18 OR H04L67/2804 OR H04L67/2814 OR H04L67/2833 OR H04L67/2842 OR H04L67/2857 OR H04L67/2871 OR H04L67/288 OR H04L67/303 OR H04L69/24 OR H04L69/324 OR H04L69/325 OR H04L7/0008).CPC.)				
L41	95782	370/315,316,327,328,329,334,338,339,340,341,344,351-354,356,389,392,400-402,465,466,473.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:56
L42	24685	455/101,272,132,562.1,272;375/130,140,144,147,148,316,346,347.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:56
L43	118981	I41 or I42	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:57
L44	43	I43 and I10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:57
L45	2	I43 and I21	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:57
L46	8	I43 and I37	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:57

EAST Search History


L47	61	I43 and I35	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 10:57
L51	3854	G06F3/023.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 11:54
L52	656	I51 and I2	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 11:54
L53	3	I52 and I3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 11:54
L54	90	I52 and antenna\$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 11:55
L55	14	I54 and band\$1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2014/03/18 11:55

EAST Search History (Interference)

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3/18/2014 12:01:36 PM

C:\Users\psam\Documents\EAST\Workspaces\370Searches.wsp

Index of Claims 	Application/Control No. 14139817	Applicant(s)/Patent Under Reexamination RAO ET AL.
	Examiner PHIRIN SAM	Art Unit 2476

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

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

CLAIM		DATE									
Final	Original	03/18/2014									
	1	✓									
	2	✓									
	3	✓									
	4	○									
	5	✓									
	6	○									
	7	✓									
	8	✓									
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	30	○									



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BIB DATA SHEET

CONFIRMATION NO. 9703

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.		
14/139,817	12/23/2013	370	2476	04245.000900.		
APPLICANTS IP Holdings, Inc., Palo Alto, CA, Assignee (with 37 CFR 1.172 Interest); INVENTORS Sanjay K Rao, Palo Alto, CA; Sunil K Rao, Palo Alto, CA; Raman K Rao, Palo Alto, CA, Deceased; ** CONTINUING DATA ***** This application is a CON of 12/912,607 10/26/2010 which is a CON of 10/940,428 09/13/2004 PAT 7848300 which is a CON of 09/617,608 07/17/2000 PAT 7286502 which is a CIP of 09/281,739 06/04/1999 PAT 6169789 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 01/10/2014						
Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Verified and Acknowledged <u>/PHIRIN SAM/</u> Examiner's Signature		<input type="checkbox"/> Met after Allowance Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 5	TOTAL CLAIMS 30	INDEPENDENT CLAIMS 3
ADDRESS FITZPATRICK CELLA HARPER & SCINTO 1290 Avenue of the Americas NEW YORK, NY 10104-3800 UNITED STATES						
TITLE System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication						
FILING FEE RECEIVED 1430	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit			

04245.000900.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
 :
 SUNIL RAO, ET AL.)
 :
 Application No.: Not Yet Assigned)
 :
 Filed: Concurrently Herewith)
 :
 For: A SYSTEM TO INTERFACE)
 INTERNET PROTOCOL (IP) :
 BASED WIRELESS DEVICES)
 WITH NETWORKS, :
 TRANSMISSION CONTROL)
 PATHS AND INTERFACES FOR :
 FLEXIBILITY, PERFORMANCE)
 AND MULTIPLE PATH OF :
 COMMUNICATION) December 23, 2013

**This application is a continuation
 under 37 C.F.R. § 1.53(b) of
 U.S. Patent Appln. No. 12/912,607**

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

INFORMATION DISCLOSURE STATEMENT

Sir:

Pursuant to 37 C.F.R. § 1.56, please consider the information on the
 attached Form PTO-1449.

CERTIFICATE OF EFS-WEB TRANSMISSION
 I hereby certify that this correspondence is being filed electronically by
 EFS-Web transmission to the United States Patent Office on
 December 23, 2013

 (Date of Deposit)

Michael K. O'Neill, Reg. No. 32,622

 (Name of Attorney for Applicants)

_____/Michael K. O'Neill/_____
 Signature

_____/December 23, 2013_____
 Date of Signature

Applicants' undersigned attorney may be reached in our Costa Mesa, California office by telephone at (714) 540-8700. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

/Michael K. O'Neill/
Michael K. O'Neill
Attorney for Applicants
Registration No. 32,622

FITZPATRICK, CELLA, HARPER & SCINTO
1290 Avenue of the Americas
New York, New York 10104-3800
Facsimile: (212) 218-2200

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Complete if Known	
		Application Number	Not Yet Assigned
		Filing Date	
		First Named Inventor	Sunil K. Rao
		Art Unit	
		Examiner Name	
Sheet	1	of	1
		Attorney Docket Number	04245.000900.

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)			
	/P.S./	US- 5691974	11-25-1997	Zehavi	
	2	US- 4654867	03-31-1987	Labeledz	
	3	US- 6,108,314	08-22-2000	Jones et al.	
	4	US- 6,167,099	12-26-2000	Rader et al.	
	5	US- 6,570,871	05-27-2003	Schneider	
	6	US- 7,039,370	05-02-2006	Laroya et al.	
	7	US- 7,848,300	12-07-2010	Rao et al.	
↓	8	US- 2002/0126745	09-12-2002	Prysbly et al.	
/P.S./	9	US- 2006/002366	02-02-2006	Jalali et al.	
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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 Signature	/Phirin Sam/ (03/18/2014)	Date Considered	03/18/2014
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*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.**

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Search Notes 	Application/Control No. 14139817	Applicant(s)/Patent Under Reexamination RAO ET AL.
	Examiner PHIRIN SAM	Art Unit 2476

CPC- SEARCHED		
Symbol	Date	Examiner
G06F3/023	03/18/2014	PS

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
370/315,316,327,328,329,334,338,339,340,341,344,351-354,356,389,392,400-402,465,466,473 (Text search - See searcy history printout).	03/18/2014	PS
455/101,272,132,562.1,272;375/130,140,144,147,148,316,346,347 (Text search - See search history printout).	03/18/2014	PS
H04L /all (Text search - See search history printout).	03/18/2014	PS

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

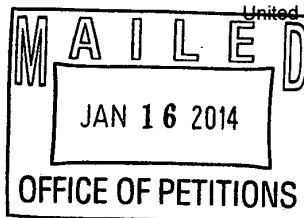
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1290 Avenue of the Americas
NEW YORK NY 10104-3800



Doc Code: TRACK1.GRANT

Decision Granting Request for Prioritized Examination (Track I or After RCE)	Application No.: 14/139,817
<p>1. THE REQUEST FILED <u>December 23, 2013</u> IS GRANTED.</p> <p>The above-identified application has met the requirements for prioritized examination</p> <p>A. <input checked="" type="checkbox"/> for an original nonprovisional application (Track I).</p> <p>B. <input type="checkbox"/> for an application undergoing continued examination (RCE).</p> <p>2. The above-identified application will undergo prioritized examination. The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:</p> <p>A. filing a <u>petition for extension of time</u> to extend the time period for filing a reply;</p> <p>B. filing an <u>amendment to amend the application to contain more than four independent claims, more than thirty total claims</u>, or a multiple dependent claim;</p> <p>C. filing a <u>request for continued examination</u>;</p> <p>D. filing a notice of appeal;</p> <p>E. filing a request for suspension of action;</p> <p>F. mailing of a notice of allowance;</p> <p>G. mailing of a final Office action;</p> <p>H. completion of examination as defined in 37 CFR 41.102; or</p> <p>I. abandonment of the application.</p> <p>Telephone inquiries with regard to this decision should be directed to Brian W. Brown at 571-272-5338.</p> <p>/Brian W. Brown/ [Signature]</p> <p>Petitions Examiner, Office of Petitions (Title)</p>	



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Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY DOCKET NO, TOT CLAIMS, IND CLAIMS. Row 1: 14/139,817, 12/23/2013, 2642, 1430, 04245.000900, 30, 3

CONFIRMATION NO. 9703

5514
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1290 Avenue of the Americas
NEW YORK, NY 10104-3800

FILING RECEIPT



Date Mailed: 01/15/2014

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)

Sanjay K Rao, Palo Alto, CA;
Sunil K Rao, Palo Alto, CA;
Raman K Rao, Palo Alto, CA, Deceased;

Applicant(s)

IP Holdings, Inc., Palo Alto, CA

Assignment For Published Patent Application

IP Holdings, Inc., Palo Alto, CA

Power of Attorney: The patent practitioners associated with Customer Number 05514

Domestic Priority data as claimed by applicant

This application is a CON of 12/912,607 10/26/2010
which is a CON of 10/940,428 09/13/2004 PAT 7848300
which is a CON of 09/617,608 07/17/2000 PAT 7286502
which is a CIP of 09/281,739 06/04/1999 PAT 6169789

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.

If Required, Foreign Filing License Granted: 01/10/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 14/139,817

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

**** SMALL ENTITY ****

Title

System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication

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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/139,817
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APPLICATION AS FILED - PART I			SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	(Column 1)	(Column 2)					
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)
BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A	70		N/A	
SEARCH FEE <small>(37 CFR 1.16(k), (j), or (m))</small>	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS <small>(37 CFR 1.16(i))</small>	30	minus 20 = *	x 40 =	400	OR		
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	3	minus 3 = *	x 210 =	0.00			
APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$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 <small>(37 CFR 1.16(j))</small>				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	1130		TOTAL	

APPLICATION AS AMENDED - PART II					SMALL ENTITY		OR	OTHER THAN SMALL ENTITY		
	(Column 1)	(Column 2)	(Column 3)							
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	x	=	OR	x	=	
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	x	=	OR	x	=	
	Application Size Fee <small>(37 CFR 1.16(s))</small>							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE		
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	x	=	OR	x	=	
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	x	=	OR	x	=	
	Application Size Fee <small>(37 CFR 1.16(s))</small>							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE		
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.</p>										



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
14/139,817	12/23/2013	Sanjay K Rao	04245.000900.

CONFIRMATION NO. 9703

POA ACCEPTANCE LETTER

5514
FITZPATRICK CELLA HARPER & SCINTO
1290 Avenue of the Americas
NEW YORK, NY 10104-3800



Date Mailed: 01/15/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 12/23/2013.

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.

/tqlam/

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

04245.000900.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
 :
 SUNIL RAO, ET AL.)
 :
 Application No.: Not Yet Assigned)
 :
 Filed: Concurrently Herewith)
 :
 For: A SYSTEM TO INTERFACE INTERNET)
 :
 PROTOCOL (IP) BASED WIRELESS)
 :
 DEVICES WITH NETWORKS,)
 :
 TRANSMISSION CONTROL PATHS)
 :
 AND INTERFACES FOR FLEXIBILITY,)
 :
 PERFORMANCE AND MULTIPLE PATH)
 :
 OF COMMUNICATION)

December 23, 2013

**This application is a continuation
 under 37 C.F.R. § 1.53(b) of
 U.S. Patent Appln. No. 12/912,607**

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

TRANSMITTAL OF NEW APPLICATION

Sir:

This application is being filed as a small entity, together with a Request for Non Publication, and a Request for Prioritized Examination (Track I). The following fees are being paid upon filing:

CERTIFICATE OF EFS-WEB TRANSMISSION
 I hereby certify that this correspondence is being filed electronically by
 EFS-Web transmission to the United States Patent Office on
 December 23, 2013

 (Date of Deposit)

Michael K. O'Neill, Reg. No. 32,622

 (Name of Attorney for Applicants)

 /Michael K. O'Neill/
 Signature

 December 23, 2013
 Date of Signature

4011	1.16(a)(1)	Basic filing fee - Utility (electronic filing for small entities)	70.00
2111	1.16(k)	Utility Search Fee	300.00
2311	1.16(o)	Utility Examination Fee	360.00
2081	1.16(s)	Zero (-0-) x Utility Application Size Fee - for each additional 50 sheets that exceeds 100 sheets @ \$160.00 each	.00
2201	1.16(h)	One (-1-) x Independent claims in excess of three @ \$210.00 each	210.00
2202	1.16(i)	Ten (10) x Claims in excess of 20 @ \$40.00 each	400.00
1504	1.18(d)	Publication fee for early, voluntary, or normal publication	300.00
2817	1.17(c)	Request for prioritized examination	2,000.00
1808	1.17(i)	Processing fee, except in provisional applications	130.00
		Total	3,770.00

Because the application will not be published, a refund is requested for the publication fee.

Should it be determined that any additional fees are required for processing of this application for prioritized examination (Track I), the Director is hereby authorized to charge such fees to Deposit Account No. 06-1205.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office by telephone at (714) 540-8700. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

/Michael K. O'Neill/
Michael K. O'Neill
Attorney for Applicants
Registration No. 32,622

FITZPATRICK, CELLA, HARPER & SCINTO
1290 Avenue of the Americas
New York, New York 10104-3800
Facsimile: (212) 218-2200

FCBS_WS 9723499v1.doc

04245.000900.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
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 SUNIL RAO, ET AL.)
 :
 Application No.: Not Yet Assigned)
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 Filed: Concurrently Herewith)
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 For: A SYSTEM TO INTERFACE INTERNET)
 :
 PROTOCOL (IP) BASED WIRELESS)
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 DEVICES WITH NETWORKS,)
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 TRANSMISSION CONTROL PATHS)
 :
 AND INTERFACES FOR FLEXIBILITY,)
 :
 PERFORMANCE AND MULTIPLE PATH)
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Michael K. O'Neill, Reg. No. 32,622

 (Name of Attorney for Applicants)

/Michael K. O'Neill/

 Signature

December 23, 2013

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Applicants' undersigned attorney may be reached in our Costa Mesa, California office by telephone at (714) 540-8700. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

/Michael K. O'Neill/
Michael K. O'Neill
Attorney for Applicants
Registration No. 32,622

FITZPATRICK, CELLA, HARPER & SCINTO
1290 Avenue of the Americas
New York, New York 10104-3800
Facsimile: (212) 218-2200

FCBS_WS 9723499v1.doc

STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: IP Holdings, Inc.Application No./Patent No.: Not Yet Assigned Filed/Issue Date: Concurrently HerewithTitled: A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of CommunicationIP Holdings, Inc., a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. The assignee of the entire right, title, and interest.
2. An assignee of less than the entire right, title, and interest (check applicable box):
- The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 026974, Frame 0545, or for which a copy thereof is attached.
- B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 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.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet(s).

As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Michael K. O'Neill/

December 23, 2013

Signature

Date

Michael K. O'Neill

32,622

Printed or Typed Name

Title or Registration Number

ASSIGNMENT

In consideration of good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Raman K. Rao, Sunil K. Rao, and Sanjay K. Rao, the undersigned Assignor, believing to be the original, first and sole or joint inventors of any and all new and useful improvements disclosed in the application for the United States patent entitled

METHOD AND SYSTEM TO INTERFACE INTERNET PROTOCOL (IP) BASED WIRELESS DEVICES WITH WIRELESS NETWORKS

hereby sell, assign, and transfer to **IP Holdings, Inc., a corporation of CALIFORNIA**, having a principal place of business at 3099 Alexis Drive, Palo Alto, CA 94304 ("Assignee"), and its successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all foreign countries, in and to any and all improvements that are disclosed in the same patent application

X which was filed with the United States Patent and Trademark Office on September 13, 2004, and which was assigned Application Number 10/940,428.

..... which has been executed by the undersigned prior hereto or concurrently herewith on the dates indicated below.

The undersigned further sell, assign, and transfer to Assignee said application and all divisional applications, continuation applications, continued prosecution applications, continuation-in-part applications, substitute applications, renewal applications, reissue applications, reexaminations, extensions, and all other patent applications that have been or shall be filed in the United States and all foreign countries on any of said improvements; and in and to all original patents, reissued patents, reexamination certificates, and extensions, that have been or shall be issued in the United States and all foreign countries on said improvements; and in and to all rights of priority resulting from the filing of said United States application; and the right to file foreign applications directly in the name of the Assignee and to claim for any such foreign applications any priority rights to which such applications are entitled under international conventions, treaties or otherwise.

The undersigned further agree that said Assignee may apply for and receive a patent or patents for said improvements in its own name; and that, when requested, without charge to, but at the expense of, said Assignee, its successors, assigns, and legal representatives, to carry out in good faith the intent and purpose of this Assignment, the undersigned will execute all divisional applications, continuation applications, continued prosecution applications, continuation-in-part applications, substitute applications, renewal applications, reissue applications, reexaminations, extensions and all other patent applications on any and all said improvements; execute all rightful oaths, assignments, powers of attorney, and other papers; communicate to said Assignee, its successors, assigns, and representatives all facts known to the undersigned relating to said improvements and the history thereof; and generally assist said Assignee, its successors,

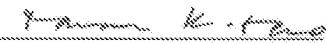
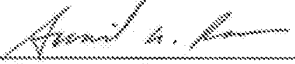
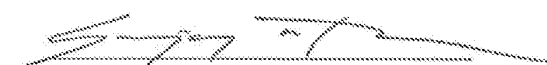
assigns, or representatives in securing and maintaining proper patent protection for said improvements and for vesting title to said improvements, and all applications for patents and all patents on said improvements, in said Assignee, its successors, assigns, and legal representatives.

The undersigned covenant with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

The undersigned hereby authorize and request the Officials of the United States Patent and Trademark Office and any and all foreign Patent Offices to issue any and all Letters Patents, when granted, to said Assignee as the assignee of the entire right, title and interest in and to the same, for the sole use of said Assignee, its successors and assigns, to the full end of the term for which said Letters Patents may be granted.

The undersigned hereby grant to the practitioners at Customer Number 53186, the Customer Number of Courtney Staniford & Gregory LLP, the power to insert on this document any further identification necessary or desirable to comply with the rules of the United States Patent and Trademark Office for recordation of this Assignment.

Inventor/Assignor: Please Sign and Date Below:

<u>2/22</u> Date	2008	 Name: Raman K. RAO
<u>2/22</u> Date	2008	 Name: Sunil K. RAO
<u>2/22</u> Date	2008	 Name: Sanjay K. RAO

Privacy Act Statement

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

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

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

Electronic Patent Application Fee Transmittal

Application Number:				
Filing Date:				
Title of Invention:	A SYSTEM TO INTERFACE INTERNET PROTOCOL (IP) BASED WIRELESS DEVICES WITH NETWORKS, TRANSMISSION CONTROL PATHS AND INTERFACES FOR FLEXIBILITY, PERFORMANCE AND MULTIPLE PATH OF COMMUNICATION			
First Named Inventor/Applicant Name:	Sunil K Rao			
Filer:	Michael K. O'Neill/Margaret Lee			
Attorney Docket Number:	04245.000900.			
Filed as Small Entity				
Track I Prioritized Examination - Nonprovisional Application 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	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Request for Prioritized Examination	2817	1	2000	2000
Pages:				
Claims:				
Claims in excess of 20	2202	10	40	400
Independent Claims in Excess of 3	2201	1	210	210

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous-Filing:				
Publ. Fee- Early, Voluntary, or Normal	1504	1	300	300
PROCESSING FEE, EXCEPT PROV. APPLS.	2830	1	70	70
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				3710

Electronic Acknowledgement Receipt

EFS ID:	17749898
Application Number:	14139817
International Application Number:	
Confirmation Number:	9703
Title of Invention:	A SYSTEM TO INTERFACE INTERNET PROTOCOL (IP) BASED WIRELESS DEVICES WITH NETWORKS, TRANSMISSION CONTROL PATHS AND INTERFACES FOR FLEXIBILITY, PERFORMANCE AND MULTIPLE PATH OF COMMUNICATION
First Named Inventor/Applicant Name:	Sunil K Rao
Customer Number:	5514
Filer:	Michael K. O'Neill/Margaret Lee
Filer Authorized By:	Michael K. O'Neill
Attorney Docket Number:	04245.000900.
Receipt Date:	23-DEC-2013
Filing Date:	
Time Stamp:	21:40:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$3710
RAM confirmation Number	9557
Deposit Account	503939
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)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	TrackOne Request	04245_000900_Track_One_Request.pdf	153862 36bd3e9ca8948e5fdd2ab329f130db9a53409187	no	2
Warnings:					
Information:					
2	Application Data Sheet	04245_000900_ADS.PDF	1561696 67f6563f7cac0728312105a4fbc4623df1c41199	no	8
Warnings:					
Information:					
3	Oath or Declaration filed	04245_000900_Declarations.pdf	594667 d64ba1f4e880b6277c61be13247964c29f95e0c4	no	5
Warnings:					
Information:					
4	Drawings-only black and white line drawings	04245_000900_Drawings.pdf	142546 72f5bfedf27519b2a8e89b3793a99623e44935af	no	5
Warnings:					
Information:					
5	Information Disclosure Statement (IDS) Form (SB08)	04245_000900_IDS_12232013.pdf	98283 ccfdbc4166432877f8dcb0246a556bde77acb8f9	no	3
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
6	Nonpublication request from applicant.	04245_000900_NonPublication_Request.pdf	584535 084dfdc87904a6ebc9ed2973f5968a1ffd8eb3e	no	6
Warnings:					
Information:					
7	Power of Attorney	04245_000900_POA_12232013.pdf	607346 e812b6f2b8428f80a1c4ef5c45b4620390efd317	no	5
Warnings:					
Information:					
8	Specification	04245_000900_Specification.pdf	147429 8f833d9e38aa0bf9a797112dd7a8c7849d533a6	no	33
Warnings:					
Information:					

9	Transmittal of New Application	04245_000900_Transmittal_of New_App.pdf	153242 880e67ca6c8a92076044db4c7833eab6d9a 22c2e	no	2
Warnings:					
Information:					
10	Assignee showing of ownership per 37 CFR 3.73.	04245_000900_Assignment.pdf	976196 315717e443ad60829e1d8ad28238aa57c44 400a6	no	5
Warnings:					
Information:					
11	Fee Worksheet (SB06)	fee-info.pdf	43496 72bec804bc9748cf05b1eb44209c1b484d0 be004	no	2
Warnings:					
Information:					
Total Files Size (in bytes):				5063298	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

**CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION
 UNDER 37 CFR 1.102(e) (Page 1 of 1)**

First Named Inventor:	Sanjay K. Rao	Nonprovisional Application Number (if known):	Not Yet Assigned
Title of Invention:	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i)(1), the prioritized examination fee set forth in 37 CFR 1.17(c), and if not already paid, the publication fee set forth in 37 CFR 1.18(d) have been filed with the request. The basic filing fee, search fee, examination fee, and any required excess claims and application size fees are filed with the request or have been already been paid.
2. The application contains or is amended to contain no more than four independent claims and no more than thirty total claims, and no multiple dependent claims.
3. The applicable box is checked below:
 - I. **Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)**
 - i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.
 ---OR---
 - (b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.
 - ii. The executed inventor's oath or declaration is filed with the application. (37 CFR 1.63 and 1.64)
 - II. **Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)**
 - i. A request for continued examination has been filed with, or prior to, this form.
 - ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
 - iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
 - iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
 - v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature /Michael K. O'Neill/	Date December 23, 2013
Name (Print/Typed) Michael K. O'Neill	Practitioner Registration Number 32,622

Note: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required.*

*Total of 1 forms are submitted.

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.

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	04245.000900.
		Application Number	
Title of Invention	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication		
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

<input type="checkbox"/>	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					<input type="button" value="Remove"/>
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Sanjay	K	Rao		
Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service					
City	Palo Alto	State/Province	CA	Country of Residence i	US
Mailing Address of Inventor:					
Address 1	3087 Alexis Drive				
Address 2					
City	Palo Alto	State/Province	CA		
Postal Code	94304	Country i	US		
Inventor 2					<input type="button" value="Remove"/>
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Sunil	K	Rao		
Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service					
City	Palo Alto	State/Province	CA	Country of Residence i	US
Mailing Address of Inventor:					
Address 1	3087 Alexis Drive				
Address 2					
City	Palo Alto	State/Province	CA		
Postal Code	94304	Country i	US		
Inventor 3					<input type="button" value="Remove"/>
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Raman	K	Rao		
Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service					

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	04245.000900.		
		Application Number			
Title of Invention	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication				
City	Palo Alto	State/Province	CA	Country of Residence i	US
Mailing Address of Inventor:					
Address 1	3087 Alexis Drive				
Address 2					
City	Palo Alto	State/Province	CA		
Postal Code	94304	Country i	US		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					<input type="button" value="Add"/>

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).	
<input type="checkbox"/> An Address is being provided for the correspondence information of this application.	
Customer Number	05514
Email Address	<input type="button" value="Add Email"/> <input type="button" value="Remove Email"/>

Application Information:

Title of the Invention	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication		
Attorney Docket Number	04245.000900.	Small Entity Status Claimed	<input checked="" type="checkbox"/>
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	5	Suggested Figure for Publication (if any)	

Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country i

Publication Information:

<input type="checkbox"/> Request Early Publication (Fee required at time of Request 37 CFR 1.219)
<input checked="" type="checkbox"/> 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.

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	04245.000900.
		Application Number	
Title of Invention	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication		

Representative Information:

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

Please Select One:	<input checked="" type="radio"/> Customer Number	<input type="radio"/> US Patent Practitioner	<input type="radio"/> Limited Recognition (37 CFR 11.9)
Customer Number	05514		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the application number blank.

Prior Application Status	Pending		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
This	Continuation of	12/912607	2010-10-26		
Prior Application Status	Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12/912607	Continuation of	10/940428	2004-09-13	7848300	2010-12-07
Prior Application Status	Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
10/940428	Continuation of	09/617608	2000-07-17	7286502	2007-10-23
Prior Application Status	Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
09/617608	Continuation in part of	09/281739	1999-06-04	6169789	2001-01-02
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.					Add

Foreign Priority Information:

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	04245.000900.
		Application Number	
Title of Invention	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication		

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

<input type="button" value="Remove"/>			
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			<input type="button" value="Add"/>

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

Authorization to Permit Access to the Instant Application by the Participating Offices

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	04245.000900.
	Application Number	
Title of Invention	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication	

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.			
Applicant 1			<input type="button" value="Remove"/>
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.			
			<input type="button" value="Clear"/>
<input checked="" type="radio"/> Assignee	<input type="radio"/> Legal Representative under 35 U.S.C. 117	<input type="radio"/> Joint Inventor	
<input type="radio"/> Person to whom the inventor is obligated to assign.		<input type="radio"/> 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 : <input type="text"/>			
If the Applicant is an Organization check here. <input checked="" type="checkbox"/>			
Organization Name	IP Holdings, Inc.		
Mailing Address Information:			
Address 1	3087 Alexis Drive		
Address 2			
City	Palo Alto	State/Province	CA
Country ⁱ	US	Postal Code	94304
Phone Number		Fax Number	

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	04245.000900.
		Application Number	
Title of Invention	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication		
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button.			<input type="button" value="Add"/>

Assignee Information including Non-Applicant Assignee 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.				
Assignee 1				
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.				
				<input type="button" value="Remove"/>
If the Assignee or Non-Applicant Assignee is an Organization check here. <input type="checkbox"/>				
Prefix	Given Name	Middle Name	Family Name	Suffix
Mailing Address Information For Assignee including Non-Applicant Assignee:				
Address 1				
Address 2				
City		State/Province		
Country i	Postal Code			
Phone Number		Fax Number		
Email Address				
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.				<input type="button" value="Add"/>

Signature:

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 K. O'Neill/		Date (YYYY-MM-DD)	2013-12-23
First Name	Michael K.	Last Name	O'Neill	Registration Number
				32622
Additional Signature may be generated within this form by selecting the Add button.				<input type="button" value="Add"/>

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	04245.000900.
		Application Number	
Title of Invention	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication		

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.

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication
---------------------------	--

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: Sanjay K. Rao Date (Optional): 12/22/2013

Signature: 

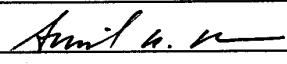
Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

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**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN
APPLICATION DATA SHEET (37 CFR 1.76)**

Title of Invention	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication
<p>As the below named inventor, I hereby declare that:</p> <p>This declaration is directed to: <input checked="" type="checkbox"/> The attached application, or <input type="checkbox"/> United States application or PCT international application number _____ filed on _____.</p> <p>The above-identified application was made or authorized to be made by me.</p> <p>I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.</p> <p>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.</p> <p align="center">WARNING:</p> <p>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.</p>	
LEGAL NAME OF INVENTOR	
Inventor: <u>Sunil K. Rao</u> Date (Optional): <u>12/22/2013</u>	
Signature: <u></u>	
<p>Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.</p>	

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication
<p>As the below named inventor, I hereby declare that:</p> <p>This declaration is directed to: <input checked="" type="checkbox"/> The attached application, or <input type="checkbox"/> United States application or PCT international application number _____ filed on _____.</p> <p>The above-identified application was made or authorized to be made by me.</p> <p>I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.</p> <p>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.</p> <p style="text-align: center;">WARNING:</p> <p>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.</p>	
<p>LEGAL NAME OF INVENTOR</p> <p>Inventor: <u>Raman K Rao [deceased]</u> Date (Optional) : _____</p> <p>Signature: _____</p>	
<p>Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.</p>	

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

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**SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY
OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)**

Title of Invention	A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks, Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of Communication		
This statement is directed to:			
<input checked="" type="checkbox"/> The attached application,			
OR			
<input type="checkbox"/> United States application or PCT international application number _____ filed on _____.			
LEGAL NAME of inventor to whom this substitute statement applies:			
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)			
Raman K. Rao			
Residence (except for a deceased or legally incapacitated inventor):			
City	Palo Alto	State	CA US
Mailing Address (except for a deceased or legally incapacitated inventor):			
3087 Alexis Drive			
City	Palo Alto	State	CA 94304 US
I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.			
The above-identified application was made or authorized to be made by me.			
I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.			
Relationship to the inventor to whom this substitute statement applies:			
<input checked="" type="checkbox"/> Legal Representative (for deceased or legally incapacitated inventor only),			
<input type="checkbox"/> Assignee,			
<input type="checkbox"/> Person to whom the inventor is under an obligation to assign,			
<input type="checkbox"/> Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or			
<input type="checkbox"/> Joint Inventor.			

[Page 1 of 2]

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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.

SUBSTITUTE STATEMENT

Circumstances permitting execution of this substitute statement:

- Inventor is deceased,
 Inventor is under legal incapacity,
 Inventor cannot be found or reached after diligent effort, or
 Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

- An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been or is currently submitted.

OR

- An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

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.

PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

Name: **Rekha K. Rao** Date (Optional): **12/22/2013**

Signature: *Rekha K. Rao***APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:**

If the applicant is a juristic entity, list the applicant name and the title of the signer:

Applicant Name: **IP Holdings, Inc.**Title of Person Executing
This Substitute Statement: **Chief Executive Officer**

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

Residence of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent):

City State Country

Mailing Address of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent)**3087 Alexis Drive**

City **Palo Alto** State **CA** Zip **94304** Country **US**

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

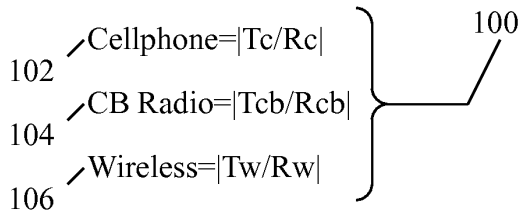


FIG. 1A
-Prior Art-

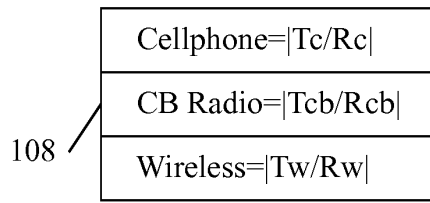


FIG. 1B

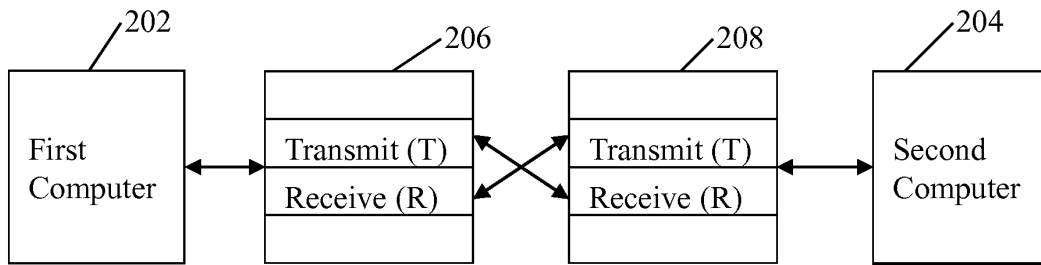


FIG. 2

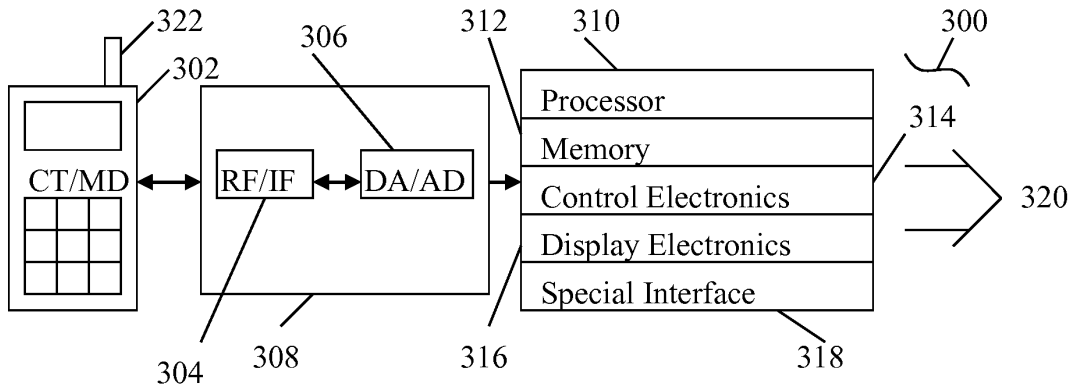


FIG. 3
-Prior Art-

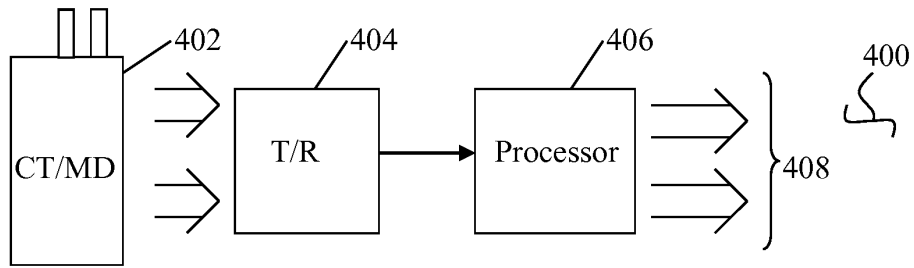


FIG. 4

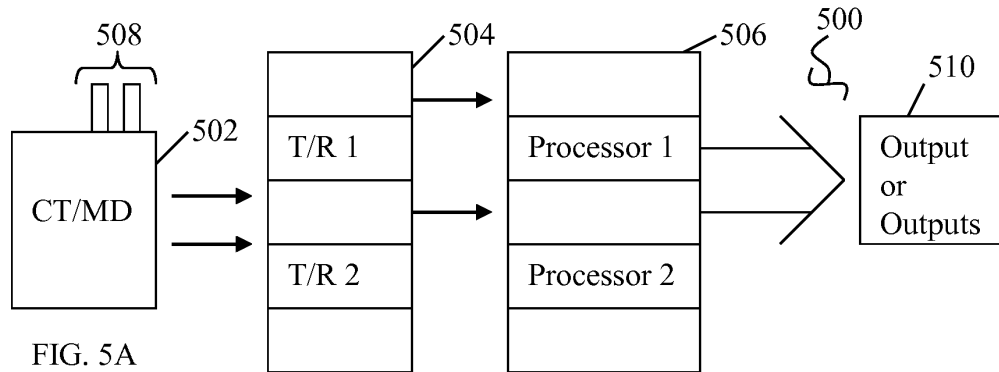


FIG. 5A

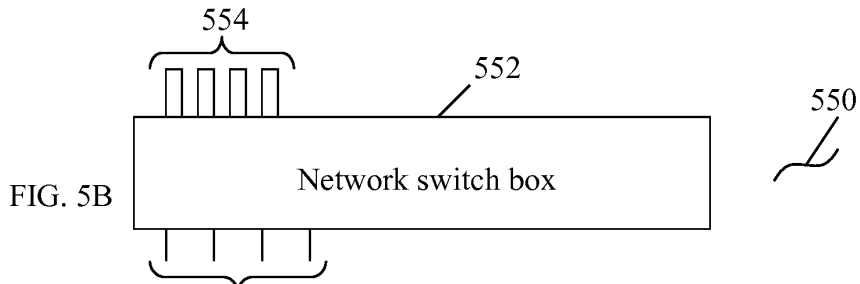


FIG. 5B

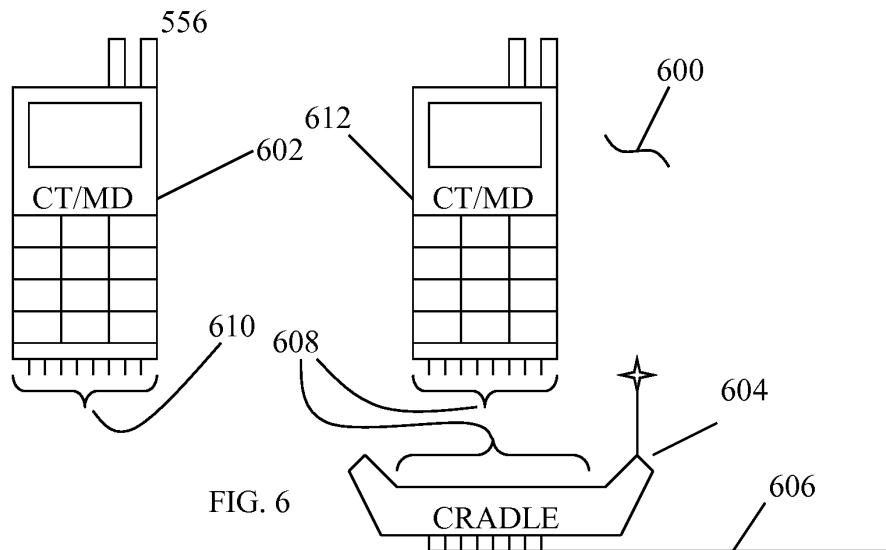


FIG. 6

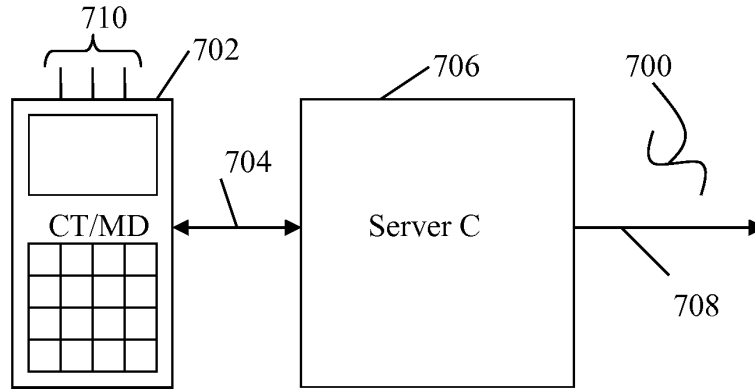


FIG. 7

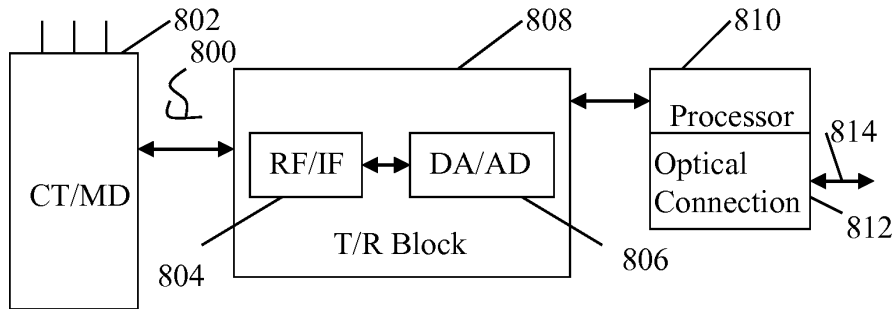


FIG 8

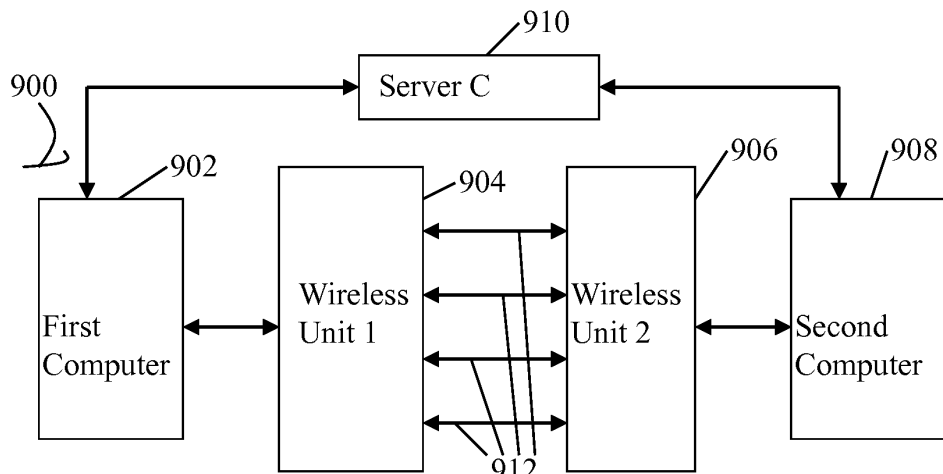


FIG. 9

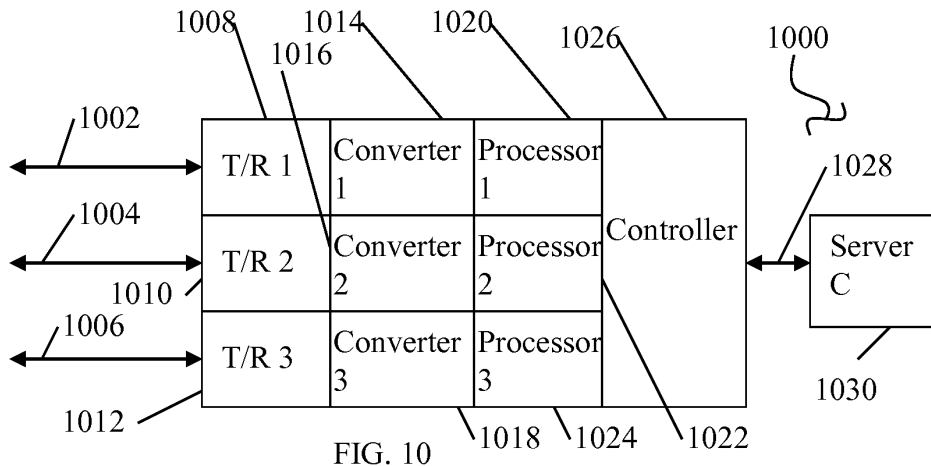


FIG. 10

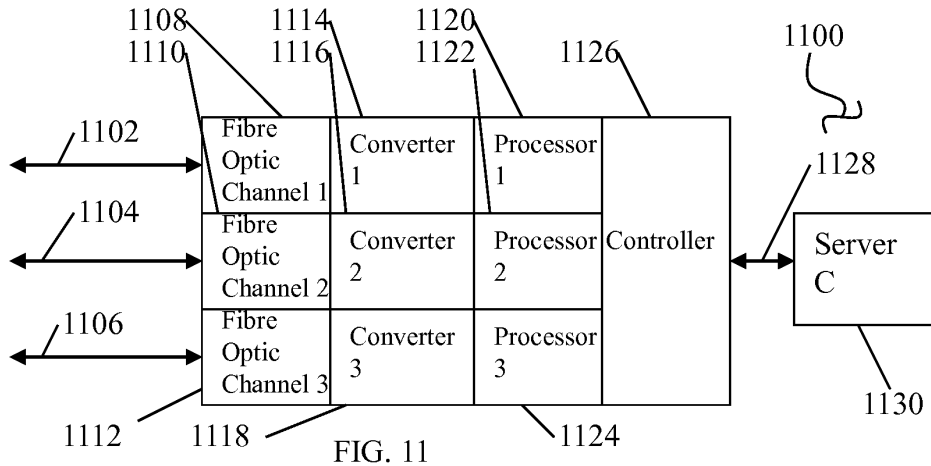


FIG. 11

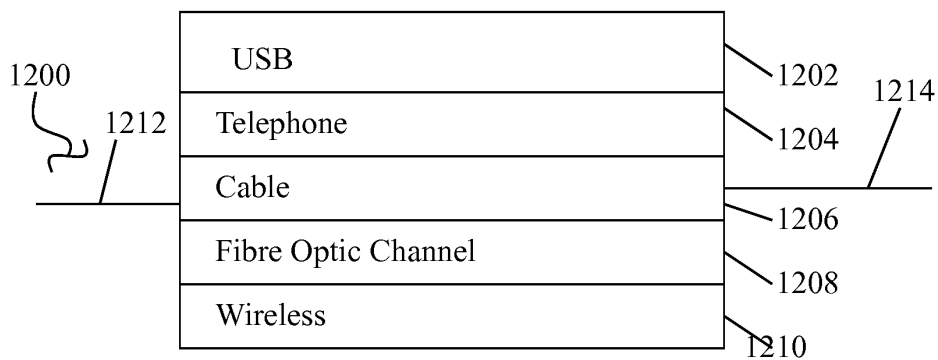


FIG. 12

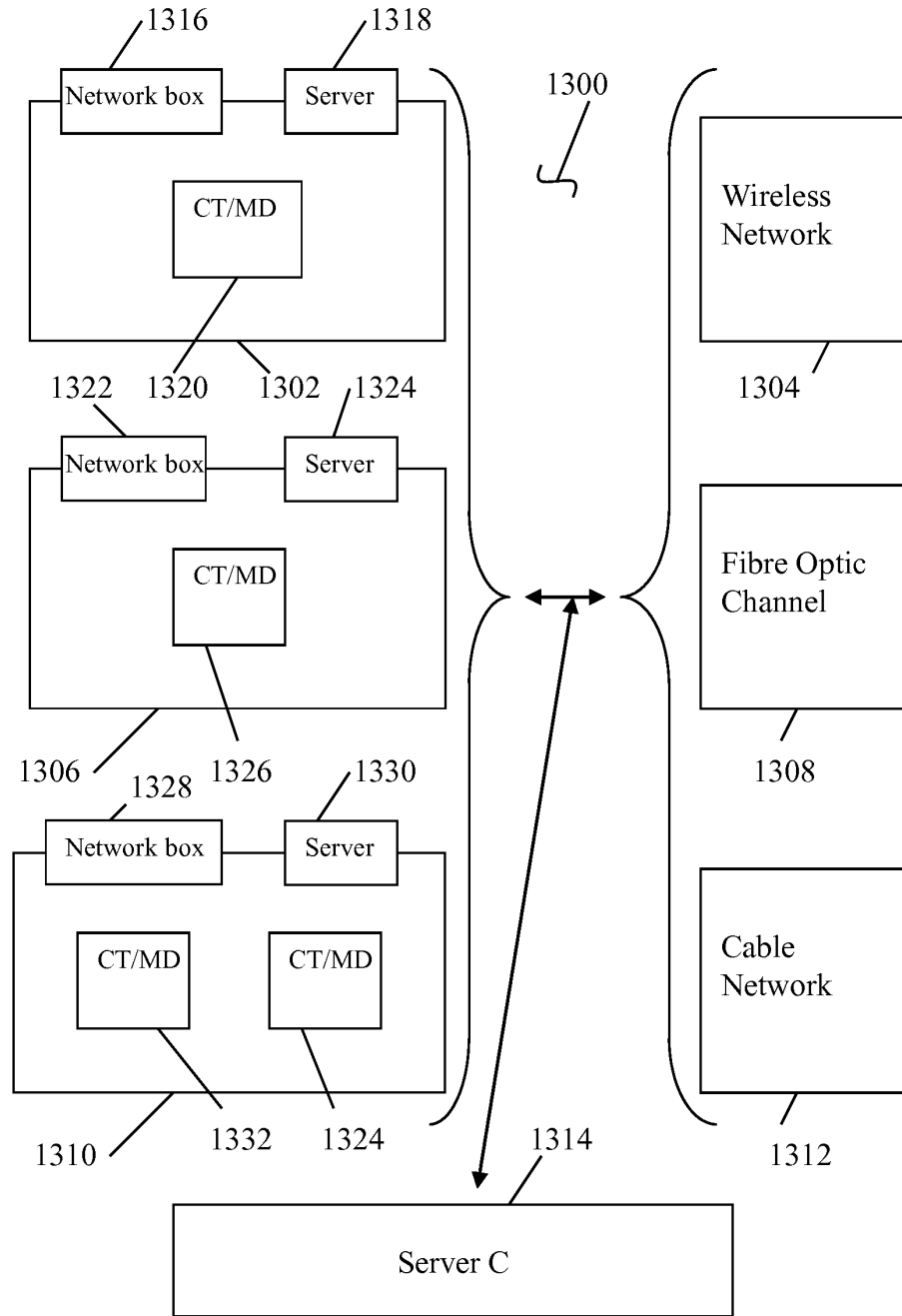


FIG. 13

04245.000900.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
:)
SUNIL RAO, ET AL.)
:)
Application No.: Not Yet Assigned)
:)
Filed: Concurrently Herewith)
:)
For: A SYSTEM TO INTERFACE)
INTERNET PROTOCOL (IP))
BASED WIRELESS DEVICES)
WITH NETWORKS,)
TRANSMISSION CONTROL)
PATHS AND INTERFACES FOR)
FLEXIBILITY, PERFORMANCE)
AND MULTIPLE PATH OF)
COMMUNICATION) December 23, 2013

**This application is a continuation
under 37 C.F.R. § 1.53(b) of
U.S. Patent Appln. No. 12/912,607**

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

INFORMATION DISCLOSURE STATEMENT

Sir:

Pursuant to 37 C.F.R. § 1.56, please consider the information on the
attached Form PTO-1449.

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being filed electronically by
EFS-Web transmission to the United States Patent Office on
December 23, 2013

(Date of Deposit)

Michael K. O'Neill, Reg. No. 32,622

(Name of Attorney for Applicants)

/ Michael K. O'Neill/
Signature

December 23, 2013
Date of Signature

Applicants' undersigned attorney may be reached in our Costa Mesa, California office by telephone at (714) 540-8700. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

/Michael K. O'Neill/
Michael K. O'Neill
Attorney for Applicants
Registration No. 32,622

FITZPATRICK, CELLA, HARPER & SCINTO
1290 Avenue of the Americas
New York, New York 10104-3800
Facsimile: (212) 218-2200

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Complete if Known	
		Application Number	Not Yet Assigned
		Filing Date	
		First Named Inventor	Sunil K. Rao
		Art Unit	
		Examiner Name	
Sheet	1	of	1
		Attorney Docket Number	04245.000900.

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- 5691974	11-25-1997	Zehavi	
	2	US- 4654867	03-31-1987	Labeledz	
	3	US- 6,108,314	08-22-2000	Jones et al.	
	4	US- 6,167,099	12-26-2000	Rader et al.	
	5	US- 6,570,871	05-27-2003	Schneider	
	6	US- 7,039,370	05-02-2006	Laroya et al.	
	7	US- 7,848,300	12-07-2010	Rao et al.	
	8	US- 2002/0126745	09-12-2002	Prysbly et al.	
	9	US- 2006/002366	02-02-2006	Jalali et al.	
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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 Signature		Date Considered	
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*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 displays a valid OMB control number.

NONPUBLICATION REQUEST UNDER 35 U.S.C. 122(b)(2)(B)(i)	First Named Inventor		Sanjay K. Rao
	Title	A System to Interface Internet Protocol (IP) Base	
	Attorney Docket Number		04245.000900

I hereby 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.

I hereby request that the attached application not be published under 35 U.S.C. 122(b).

/Sanjay K. Rao/

12/22/2013

Signature

Date

Sanjay K. Rao

Typed or printed name

Registration Number, if applicable

Telephone Number

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)).**

This collection of information is required by 37 CFR 1.213(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Privacy Act Statement

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

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

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

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NONPUBLICATION REQUEST UNDER 35 U.S.C. 122(b)(2)(B)(i)	First Named Inventor		Sanjay K. Rao
	Title	A System to Interface Internet Protocol (IP) Base	
	Attorney Docket Number		04245.000900

I hereby 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.

I hereby request that the attached application not be published under 35 U.S.C. 122(b).

/Sunil K. Rao/

12/22/2013

Signature

Date

Sunil K. Rao

Typed or printed name

Registration Number, if applicable

Telephone Number

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.

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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).
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NONPUBLICATION REQUEST UNDER 35 U.S.C. 122(b)(2)(B)(i)	First Named Inventor		Sanjay K. Rao
	Title	A System to Interface Internet Protocol (IP) Base	
	Attorney Docket Number		04245.000900

I hereby 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.

I hereby request that the attached application not be published under 35 U.S.C. 122(b).

/Rekha K. Rao/

12/22/2013

Signature

Date

Rekha K. Rao

Typed or printed name

Registration Number, if applicable

Telephone Number

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

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Doc Code: PA..

Document Description: Power of Attorney

PTO/AIA/82A (07-12)

Approved for use through 11/30/2014. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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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 or equivalent) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5. If the Power of Attorney by Applicant form is not accompanied by this transmittal form or an equivalent, the Power of Attorney will not be recognized in the application.

Application Number	
Filing Date	
First Named Inventor	Sanjay K. Rao, et al.
Title	A SYSTEM TO INTERFACE INTERNET PROTOCOL (IP) BASED WIRELESS DEVICES WITH NETWORKS, TRANSMISSION CONTROL PATHS AND INTERFACES FOR FLEXIBILITY, PERFORMANCE
Art Unit	
Examiner Name	
Attorney Docket Number	04245.000900.

SIGNATURE of Applicant or Patent Practitioner			
Signature	/Michael K. O'Neill/	Date	December 23, 2013
Name	Michael K. O'Neill	Telephone	(714) 540-8700
Registration Number	32,622		

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

*Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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POWER OF ATTORNEY BY APPLICANT

I 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: 05514

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 or the boxes above to:

The address associated with the above-mentioned Customer Number

OR
 The address associated with Customer Number: 05514

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		Date (Optional)	
Name	Sunil K. Rao		
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.

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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Table with 2 columns: 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: 05514

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 or the boxes above to:

The address associated with the above-mentioned Customer Number

OR
The address associated with Customer Number: 05514

Form fields for 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):

- Inventory 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 fields for Name, Title, Date (Optional)

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.

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- 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 or the boxes above to:

- The address associated with the above-mentioned Customer Number
- OR
- The address associated with Customer Number: 05514
- 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)
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Signature	<i>Rekha K. Rao</i>	Date (Optional)	12/16/2013
Name	Rekha K. Rao		
Title	Legal Representative of Inventor Raman K. Rao		

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Name	Rekha K. Rao		
Title	CEO, IP Holdings, Inc. (Assignee)		

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A System to Interface Internet Protocol (IP) Based Wireless Devices with Networks,
Transmission Control Paths and Interfaces for Flexibility, Performance and Multiple Path of
Communication

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By:

Sanjay K. Rao

Sunil K. Rao

Raman K. Rao

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CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation and claims the priority benefit of co-
pending U.S. Patent Application No. 12/912,607, filed October, 26, 2010, which is a
continuation of Patent Application No. 10/940,428, filed September 13, 2004, now Patent No.
15 7,848,300, which is a continuation of Patent Application No. 09/617,608, filed on July 17, 2000
now Patent No. 7,286,502, which is a continuation-in-part of Patent Application No. 09/281,739,
filed June 4, 1999, now Patent No. 6,169,789; the disclosures of all the above referenced matters
are herein incorporated by reference in the entirety.

BACKGROUND OF THE INVENTION

[0002] ABBREVIATIONS: Cellular Telephone as CT. Mobile Device as MD. Non-
Wireless Device as NWD. Internet Protocol as IP. The typical cellular telephone/mobile device
(CT/MD) today has a single antenna, which is directly connected to a single receiver. While
5 spread spectrum techniques often used in the CT/MD use a broad band of frequencies, at any
specific point in time, only a single frequency connected to one receiver is used. While spread
spectrum techniques greatly increase the reliability and stability of the transmission, signal
"fade" and communication disconnects are often encountered. Some communications systems
may rely on two separate systems; one at a high frequency and preferably using spread spectrum
10 transmissions for clarity and reliability, and another providing a different set of frequencies, such
as lower frequencies. The secondary system is used when signal fade is a problem in the main
system. These are two separate, complementary systems, each devoted to solving a separate,
distinguishable problem.

SUMMARY OF THE INVENTION

[0003] It is an object of the present invention to provide wireless enhancements to IP based cellular telephones/mobile wireless devices (CT/MD). The same enhancements are applied to IP based and locally based network switch boxes.

5 [0004] The typical CT/MD has one transmitter and one receiver (T/R), with one antenna. An unfulfilled need exists for multiple T/R in a CT/MD, providing enhanced capabilities, and the multiple T/R capabilities will often be best met with multiple antennas. The present invention is possible due to advances in the art which allow the necessary components to be integrated, with the size shrunk to achieve the package, performance, and cost desired. The multiple T/R
10 capability allows the single CT/MD to perform tasks in different environments – each T/R being specifically designed or configured for that specific purpose.

[0005] Other objects, features and advantages of the present invention will become apparent from the following detailed description when taken in conjunction with the accompanying drawings.

15

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0006] The accompanying drawings, being incorporated in and forming a part of this specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the present invention:

5 [0007] FIG. 1A illustrates characteristics of a cellular telephone (CT/MD) of the prior art as opposed to a desired CT /MD of the present invention. FIG 1B shows the CT/MD has three transmit frequencies and three receive frequencies.

[0008] FIG. 2 illustrates an embodiment of the present invention for a communication system with data being transferred from computer to computer.

10 [0009] FIG. 3 illustrates characteristics of the prior art showing a computer to computer data path with one channel.

[0010] FIG. 4 illustrates a dual antenna, dual transmit/receive (T/R) unit in the CT/MD of the present invention in a dual band system.

15 [0011] FIG. 5A illustrates a dual antenna, dual T/R unit in a CT/MD interfacing with a dual processor in the present invention in a dual band system.

[0012] FIG. 5B illustrates a wide band network switch box system that is capable of operating in a number of network environments sequentially or simultaneously.

[0013] FIG. 6 is an embodiment of the present invention showing a wired interface system for wireless or non-wireless devices and including a wireless cradle adapter.

20 [0014] FIG. 7 is an embodiment of the present invention showing a CT/MD with multiple T/R units and multiple antennas in a communication system connecting to a Server C through a wireless connection.

[0015] FIG. 8 is an embodiment of the present invention illustrating the connection of multiple wireless signals to an optical network for connection to a wide area network (WAN) or local area network (LAN) or to the Internet.

5 [0016] FIG. 9 is an embodiment of the present invention showing a multiple processing system.

[0017] FIG. 10 is an embodiment of the present invention showing a data system with three data streams.

[0018] FIG. 11 is an embodiment of the present invention showing a data system with three data streams.

10 [0019] FIG. 12 is an embodiment of the present invention showing a Virtual Private Network (VPN).

[0020] FIG. 13 is an embodiment of the present invention showing how Virtual Private Network or Networks (VPN) system may be provided.

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DETAILED DESCRIPTION OF THE INVENTION

[0021] Reference will now be made in detail to preferred embodiments of the invention, with examples illustrated in the accompanying drawings. The invention is described in conjunction with the preferred embodiments, however, it will be understood that the preferred embodiments are not intended to limit the invention. The invention is intended to cover alternatives, modifications and equivalents included, now or later, within the spirit and scope of the present invention as defined by the appended claims.

[0022] In the present invention, one or more antennas and T/R units in a CT/MD will provide better tuning and greater bandwidth for a given frequency/application. For example, consider an embodiment of a cell phone, CB radio, and wireless phone, all in a single CT/MD for improving the data rates of a wireless device/network:

[0023] It is seen that the data rate of the CT/MD is increased. Currently the CT/MD data rates are very low and pose a severe limitation for high speed wireless data networking. 14.4 KBPS (kilobits per second) is probably the best reliable speed for a wireless network that is commercially available. The speed at which RF waves are transmitted from point A to point B is a physical property based on the frequency of transmission and reception in a given medium such as air. The signal speed is determined by the frequency and the signal strength is determined by the power, line of sight, interference, etc. In a given assigned frequency band, the data speed is fixed but the power may be varied. The rate at which data may be transmitted over a wireless network is also determined by the ability to encode and decode the signal at the T/R ends using the electronics and computing power resident at each end.

[0024] Data transferred to a CT/MD over a wireless network comes in encoded form and must be decoded at the CT/MD after the data is received, such as by a receiver. The ability to encode and decode the data is a function of the number of encoders/decoders available and assigned to the task at the CT/MD or at a network switch box. It will be appreciated that while a CT/MD and a network switch box are very similar in many ways, they are completely different functional units, with the CT/MD providing personal services and the network switch box providing system services. The ability to encode and decode the data is also a function of the speed at which the encoder/decoder electronics operate at the T/R ends. Of course, each encoder/decoder must be associated with appropriate electronics to effect this task when more than one encoder/decoder is used.

[0025] FIG. 1A illustrates characteristics of a cellular telephone/mobile device (CT/MD) of the prior art as opposed to a desired CT /MD of the present invention having multiple transmit/receive (T/R) units and multiple antennas. In FIG. 1A, Cellphone 102, CB Radio 104, and Wireless 106 of the prior art all have a single transmit frequency and a single receive frequency. In contrast, the CT /MD 108 of FIG. 1B of this embodiment of the present invention has three transmit frequencies and three receive frequencies.

[0026] FIG. 2 illustrates an embodiment of the present invention for a communication system 200 with data being transferred from computer 202 to computer 204. In FIG. 2, computer 202 communicates through a system of T/R units 206, located within or in proximity to computer system 202, with computer system 204 through T/R unit 208. T/R 208 may be located within computer system 204 or in close proximity to computer system 204 to route the data to computer 204 or alternatively to a network server 204, as required. The rate at which data from

system 202 to system 204 is transferred is gated by the speed of the transmit and receive units is improved by the parallel paths provided by the present invention. The signal is sampled and may be multiplexed at each end, at a rate that assures accuracy.

[0027] FIG. 3 is an embodiment of the prior art showing a computer to computer data path with a single channel 300. In FIG. 3, using a single antenna and a single T/R unit the signal is processed through the internal electronics module 308 of the CT/MD 302, said module 308, which is shown separate from CT/MD 302 for illustrative purposes only but is normally included within CT/MD 302. Module 308 contains RF/IF 304 and A/D, D/A converter 306, as well as processor 310, memory 312, control electronics 314, and other electronics such as display electronics 316 and special interface circuitry 318, such as for driving the output 320. It should be clear that output 320 can also be an input/output for the CT/MD 302. This is also true for a network switch box such as network switch box 552 with the functionality of CT/MD 302. The module 308 and elements 310 through 318 are included within CT/MD 302 or network switch box 552. All of these components or systems are normally contained within CT/MD 302. Since there is only one path, however, it is clear that this system does not form an efficient, convenient interface. The transmission data rate is limited by antenna 322 of CT/MD 302, which has only one antenna 322.

[0028] The antenna 322 is capable of receiving only a limited frequency band due to its design limitations, which are common to single antennas used for this purpose.

[0029] Adding additional antennas gives the CT/MD (by extension the same is true for the network switch box) enhanced capabilities to differentiate between various signals or to combine multiple paths into a single communication channel. As an example, the design

considerations for receiving cellular telephone frequencies may be totally different from those for streaming video or data signals, and with the present invention both can be combined into the CT/MD.

[0030] FIG. 4 illustrates a dual antenna, dual T/R unit in the CT/MD of the present invention in a dual band system 400. In FIG. 4, this scheme with CT/MD 402 transmitting on the dual T/R unit 404 allows the internal processor 406 to independently process the two incoming signal streams separately and optimally, causing the appropriate output to be delivered on the desired output port. In FIG. 4 the processor 406 is shown as a single processor, however, the processor 406 is not limited to only one processor and may contain multiple processors.

Alternately, the single processor may have multiple channels for parallel processing of each data stream to process accurately two distinct signals 408 that were more optimally received by two dedicated antennas and two separate T/R units contained within the CT/MD to improve performance and quality of output. An example is a CT/MD 402 which is optimized for video and voice.

[0031] Having more than one T/R unit gives a performance edge as each signal can be better processed and tuned to the specific frequency band of the signal. Thus better quality of output can be achieved for each type of signal and application. As an example, by having each of the data streams sampled at differing clock frequencies the performance can be better optimized.

[0032] FIG. 5A illustrates a dual antenna, dual T/R unit 504 in a CT/MD 502 interfacing with a dual processor 506 in the present invention in a dual band system 500. In FIG. 5A, in addition to multiple antennas 508 and multiple T/R units 504 the figure also shows multiple processors 506 in a process unit functional block in a CT/MD. The system may communicate

through an output or outputs 510. For example, these outputs may be fibre optic channel, ethernet, cable, telephone, or other. By extension the feature of multiple antennas, multiple T/R units and multiple processors is extendable to the network switch box or network switch boxes that form a local, wide area, Virtual private network or connect to the Internet.

5 **[0033]** Server C controls the communication protocols in conjunction with the network switching box or other devices, such as CT/MD 502. The multiple processors 506 allow for parallel and custom processing of each signal or data stream to achieve higher speed and better quality of output. This can also be done with a single processor that has the parallelism and pipeline capability built in for handling one or more data streams simultaneously. Processor 506
10 is the complete electronics inclusive of DSP, CPU, memory controller, and other elements essential to process various types of signals. These can be defined as, for example, either single chip or multichip solutions. The processor contained within the CT/MD 502 is further capable of delivering the required outputs to a number of different ports such as optical, USB, cable and others such as 1202 to 1210. The CT/MD 502 is also capable of taking different inputs, as well
15 as wireless, for the appropriate processing to be done on these signals within the CT/MD 502 and outputting the desired signal on a designated port or ports. Thus the CT/MD 502 has universal connectivity in addition to having a wide range of functionality made possible through the features of multiple antennas, multiple T/R units 504 and processors 506 in this invention. These features may also exist in a network switch box, such as network switch box 552.

20 **[0034]** FIG. 5B illustrates a wide band network switch box system 550 that is capable of operating in a number of network environments sequentially or simultaneously. The network switch box is configured with multiple processors, multiple antennas and multiple T/R units that

can be multiplexed to process incoming and outgoing wireless signals. In addition to wireless signals there is a need to process other types of input/output signals such as optical, cable, USB etc. to fully interface with other types of devices and networks. The network switch box is normally a fixed part of a network, whereas the CT/MD is portable. However, the network switch box may be portable and may be used in the wireless mode only in a wireless network or it may also be connected to one or more networks by wired and wireless means to fully leverage all the input/output ports.

[0035] In FIG. 5B, network switch box 552 that is limited in quality because of the limitations of wireless may fully leverage the networks, including fibre optic networks, such as by multiple antennas 554 and multiple I/O ports 556. As an example, the ability to view streaming video on a network switch box 552 may be limited by the wireless signal quality due to the need for compression. This is due to transmissions that are inherently impaired in air as opposed to fibre optic cable. A prior art network switch box while in the mobile mode may receive video of poorer quality. The network switch box 552, when at home or in the office, could be easily connected to the optical network directly or through I/O ports 556, such as by a cradle adapter. In this mode the best data, video or audio quality can be received using the same unit. This provides the network switch box 552 single unit to have universal applications since it can sequentially or simultaneously communicate optimally with other systems and networks to deliver quality/performance and speed tailored for each application.

[0036] The network switch box 552 as disclosed above executes substantially the same function as the CT/MD 502. However, the network switch box 552 operates at a network system

level capable of coordinating the operations of a number of mobile and other devices in one or more networks, while the CT/MD 502 performs at a personal level.

[0037] FIG. 6 is an embodiment of the present invention showing a wired interface system 600 for wireless or non-wireless devices. In FIG. 6, a wireless device, CT/MD 602 with I/O ports 610 and CT/MD 612 with the ability to interface through a cradle adapter 604 having both wireless and wired connections 606 interfacing with multiple input/output (I/O) ports 608 is shown. One, all, or some of the connections may be used simultaneously or sequentially for combining multiple data paths into a single path. Whether to combine all the paths into a single data channel or use separate data channels for simultaneous operations will be based on the needs of the application. Examples of inputs/outputs are, for example, standard telephone, coaxial cable, Ethernet, twisted pair, wireless, optical, and USB. In addition to the multiple I/O ports 610 shown on the CT/MD 602 and the ports 608 shown for connecting the CT/MD 612 to cradle adapter 604, the present invention anticipates a universal port and a universal connector. By having the signal path selection done by user defined menu driven software and multiplexing the signals onto a universal input/output port as opposed to the multiple ports 608, 610 or wired connections 606, the desired signals are delivered to the universal port.

[0038] Note that the cradle adapter 604 connection also allows I/O contacts 608 between a non-wireless device (NWD) 613 and a wireless cradle adapter 604 or similar wireless enabling attachment. The enabling attachment can make any non-wireless device (NWD) unit 613 wireless enabled while being plugged into the cradle adapter 604, as shown for CT/MD 612, to access a number of wired, optical or wireless communication paths through the ports 608. The cradle adapter itself may have multiple antennas, multiple T/R units and multiple processors

built-in to deliver full functionality. The cradle adapter 604 may also accommodate multiple wired or wireless devices to be plugged in at the same time. The cradle adapter may also contain power ports for the individual devices in addition to the I/O ports. The cradle adapter 604 may be a passive pass through connection enabling device or may have internal electronic smarts to perform certain server functions to control data traffic. Alternately, a Server C located on a LAN, WAN or the Internet can be the control vehicle.

[0039] FIG. 7 is an embodiment of the present invention showing a CT/MD 702 having multiple T/R units internally and with multiple antennas 710 in a communication system 700 connecting to a Server C 706 through a wireless connection 704. Server C 706 then communicates with a network such as the Internet or other path to data such as a local WAN/LAN line, etc., through connection 708. The multiple T/R units and antennas 710 allow multiple simultaneous communication paths over connection 704 between the CT/MD and the Server C such that the communication rate is increased.

[0040] FIG. 8 is an embodiment of the present invention illustrating the connection of multiple wireless signals to an optical network for connection to a wide area network (WAN) or local area network (LAN) or to the Internet. In FIG. 8, a CT/MD 802 communicates through internal electronic interfaces, such as an RF/IF module 804 and an AD/DA unit 806 in a T/R block 808 with a processor 810. Processor 810 then provides an electrical signal generated by the T/R block 808 and processed by processor 810 to an optical converter (OC) 812. OC 812 then delivers the optical signal to fibre optic cable 814 for delivery to, for example, a network such as a WAN/LAN or the Internet.

[0041] This avoids delay in processing the signal and improves quality/performance.

Similar conversions can be done by the processor for other input/output protocols or systems such as universal serial bus (USB) or Ethernet either locally or in conjunction with a server such as Server C 706 to receive/deliver input output signals as needed. By extension, the same features are possible for the network switch box such as network switch box 552.

[0042] Some unique features of the present invention, which apply to either a CT/MD such as CT/MD 802 or to a network switch box such as network switch box 552, are:

Multiple antennas for greater signal range and bandwidth.

Multiple T/R units so that paths or tasks can be paralleled.

Multiple internal signal processors, or one or more processors that execute in parallel.

Multiple built in input/outputs for universal connectivity to different network environments.

Capability to interface wired and wireless devices through a cradle adapter to achieve universal connectivity.

Parallel processing of signals and data streams at a system level using hardware and software on a server such as Server C 706.

[0043] FIG. 9 is an embodiment of the present invention showing a multiple processing system 900. In FIG. 9, computer 902 and computer 908 need to exchange data streams at very fast rates. Having a single channel for T/R with a single antenna or a single processor would cause a limitation in data transfer rates, so multiple channels 912 are provided. Server C 910 polls the tasks by communicating with computer 902 and computer 908, and through computer 902 and computer 908 control the wireless units 904 and 906, such as CT/MDs or wireless

boxes, by optimally allocating channels and transfers of the data. Having multiple channels 912 enhances the data transfer rate compared to a single channel or communication path. Server C 910 oversees the allocation of data to the different channels and keeps the process under control. In addition the multiple channels 912 help overcome the RF to digital electronic conversion rate problem. The rate at which the sampling and conversion takes place is a function of, for example, the A/D and D/A 806 conversion rates and limitations in the other electronics components such as processor 810. Consequently having the data partitioned by the Server C 910 and assigned to multiple channels 912 enables parallel processing of the communications, and having parallel processing of wireless data streams where the data streams coexist, as in the present invention, increases the data transfer rate.

[0044] FIG. 10 is an embodiment of the present invention showing a data system 1000 with three data streams DS1 1002, DS2 1004 and DS3 1006. In FIG. 10, three wireless T/R units 1008, 1010, and 1012 are shown. The three data streams 1002, 1004, and 1006 are processed by the three T/R units 1008, 1010 and 1012, converted by converters 1014, 1016, and 1018, and presented to processors 1020, 1022, and 1024 under the control of controller 1026. The data streams may be interfaced separately with server C 1030 or combined into data stream 1028 and interfaced to Server C 1030. The processor or CPU speed is seldom a limiting factor, so the improvement in speed by providing multiple data paths is fully realized by the present invention. Each subtask being processed can be assigned to a separate channel. The rate at which the data is acquired, processed and converted is dependent on the type of electronic components. Therefore, component limitations can be overcome in a straightforward and convenient way by parallel processing. In such cases, the processor speed is seldom a limitation, and conversion

speed of RF to electrical and electrical to RF, becomes the primary bottleneck in data transfers for wireless systems. By providing, for example, a single chip, multichip, or hybrid converter for parallel conversions in accordance with the present invention under the supervision of the Server C 910, this bottleneck is avoided. Each channel may be sampled and clocked individually as
5 necessary to optimally process each data stream and combine the individual data packets.

[0045] FIG. 11 is an embodiment of the present invention showing a data system 1100 with three data streams DS1 1102, DS2 1104 and DS3 1106. In FIG. 11, three fibre optic channel units 1108, 1110, and 1112 are shown. The three data streams 1102, 1104, and 1106 are processed by the three fibre optic channel units 1108, 1110 and 1112, converted by converters
10 1114, 1116, and 1118, and presented to processors 1120, 1122, and 1124 under the control of controller 1126. The data streams are combined into data stream 1128 and interfaced to Server C 1130. The processor or CPU speed is seldom a limiting factor, and can be overcome by providing multiple processors as shown, including for Server C 1130, so the improvement in speed is fully realized by the present invention. Each subtask being processed can be assigned to
15 a separate optical fibre optic channel. The rate at which the data is acquired, processed and converted is limited by the components used for conversion of optical to electrical and electrical to optical signals. Therefore, component limitations can be overcome in a straightforward and convenient way by parallel processing. This can be especially important with fibre optic transmissions, where fibre optic to electrical and electrical to fibre optic conversions can create
20 significant communications limitations. In such cases, the processor speed is seldom a limitation or can be overcome with parallel processors, and conversion speed becomes the primary bottleneck in data transfers for optical systems. As discussed before, by providing, for example,

a single chip, multichip, or hybrid converter for parallel conversions in accordance with the present invention under the supervision of a Server C, such as Server C 1130, the fibre optic channel conversion bottleneck is avoided.

[0046] FIG. 12 is an embodiment of the present invention showing a Virtual Private
5 Network (VPN) communication path 1200. In FIG. 12, multiple communications channels such
as USB 1202, telephone 1204, cable 1206, fibre optic channel 1208, and wireless 1210 are all
employed to communicate data relating to tasks and subtasks from data path 1212, such as from
Server C 1130, to data path 1214. Data path 1214 may be connected to, for example, another
Server C 1030 or similarly. The result is that multiple communication environments are enabled
10 by the data paths 1200, the environments having, for example, devices such as multiple CT/MDs,
network switch boxes, and combinations for forming a VPN, such as VPN 1302. This is true
even where the individual units belong to another VPN. The VPN, such as VPN 1302, or several
VPNs, such as VPNs 1300, can be under the control of a single or multiple Server C, such as
Server C 1130, machines. Each device in a VPN such as VPN 1300 may operate wireless or
15 wired devices such as the devices in VPN 1302 connected to other wired or wireless networks,
including fibre optic channel networks. The devices in a VPN, such as VPN 1302 of the present
invention can be multiplexed or multitasked by a Server C, such as Server C 1130. This allows
many such devices to be under the supervision and control of a Server C 1130 or multiple Server
C machines such as Server C 1030, 1130.

20 [0047] FIG. 13 is an embodiment of the present invention showing how Virtual Private
Network or Networks (VPN) system 1300 may be provided. In FIG. 13, VPN 1302, 1306, and
1310 are connected through a wide area network (WAN) or local area network (LAN) to

wireless network 1304, optical network, such as a fibre optic channel 1308, and cable network 1312. Other networks could be used as well, the embodiment is not intended to restrict the present invention. All the VPNs such as VPN 1302 and optionally the connections may be under the supervision of a Server C 1314 or many servers. VPN 1302 is shown with a network switch box 1316, server 1318, and a CT/MD 1320, which allows multipath communication through the network switch box 1316 to server 1318. This allows communication from/to the network switch box or from/to an outside source, such as a CT/MD service provider, to CT/MD 1320. The CT/MD 1320 can communicate simultaneously with the network switch box 1316 and an outside source as well.

10 **[0048]** VPN 1306 shows network switch box 1322 communicating with a server 1324 and optionally with CT/MD 1326. As shown, the VPN 1302 and the VPN 1306 operate in parallel, and may both be under the supervision and control of server 1314, which acts as a sort of executive level supervisor.

15 **[0049]** VPN 1310 shows network switch box 1328 and server 1330, with both CT/MD 1332 and CT/MD 1334 in the VPN 1310. Network box 1328 may communicate with either or both CT/MD 1332 and 1334, and CT/MD 1332 and CT/MD 1334 may intercommunicate as well. VPN 1310 may also be under the supervision and control of server 1314. The server 1314 may also control and supervise VPN 1302 and 1306.

[0050] The present invention includes the following features:

20 **[0051]** (1) A cellular telephone/mobile device (CT/MD) with two or more antennas as opposed to the current state of the art in a single antenna system. Each antenna may be

specifically designed for a specific frequency or application or may be multiplexed for different uses.

5 [0052] (2) A CT/MD with two or more transmit/receive (T/R) units as opposed to the prior art single T/R unit. Each T/R unit in the CT/MD may be designed for a specific frequency or application or may be multiplexed for different uses.

10 [0053] (3) A CT/MD with two or more processor units (or a single processor unit with built in parallelism to execute same, different and or custom applications) as opposed to the prior art of a single processor unit. Each processor unit in the CT/MD may be designed for a specific application or may be multiplexed for different uses. As an example one processor may be specifically designed to handle voice, another for data, another for high quality audio and yet another for streaming video.

15 [0054] (4) A CT/MD that has multiple input/output ports as opposed to a single input/output (I/O) port as in the prior art. The CT/MD may have a universal serial bus (USB) port, a coaxial cable port, a standard telephone (POTS) port, a twisted pair port, Ethernet port, and most importantly an optical port. The CT/MD thus can fully interface and interact with different environments sequentially or simultaneously. The feature is more than one port being available with variations in the number of ports (I/O) from one to N.

20 [0055] (5) A network switch box with two or more antennas as opposed to the prior art of a single antenna system. Each antenna may be specifically designed for an assigned frequency or application or may be multiplexed for different uses.

[0056] (6) A network switch box with two or more T/R units within it as opposed to the prior art of a single T/R unit. Each T/R unit may be designed for an assigned frequency or application or may be multiplexed for different uses.

5 [0057] (7) A network switch box with two or more processor units (or a single processor unit with built in parallelism to execute same, different and or custom applications) as opposed to the prior art of a single processor unit. Each processor unit in the network box may be designed for a specific application or may be multiplexed for different uses. As an example one processor may be specifically designed to handle voice, another for data, another for high quality audio and yet another for streaming video.

10 [0058] (8) A network switch box has multiple input/output ports as opposed to a single input/output (I/O) port as in the prior art. The network switch box may have a universal serial bus (USB) port, a coaxial cable port, a standard telephone (POTS) port, a twisted pair port, Ethernet port, and most importantly an optical port. The network switch box thus can fully interface and interact with different environments sequentially or simultaneously. The feature is more than one port being available with variations in the number of ports (I/O) from one to N.

15 [0059] (9) The ability to use the same CT/MD in different environments and applications and the ability to quickly interface to various inputs and outputs by a quick and easy plug in method into a receptacle or socket or by wired or wireless means such as a docking station.

20 [0060] (10) The ability to use the same network switch box in different environments and applications and the ability to quickly interface to various inputs and outputs by a quick and easy plug in method into a receptacle or socket or by wired or wireless means such as a docking station.

[0061] (11) The CT/MD and the network switch box may be used for communication, control, command, compute, entertainment, gaming, or other applications that may be defined in the future for both wireless and wired equipment.

5 [0062] (12) The unique feature that allows one or more antennas, one or more T/R units, one or more processors and one or more input/outputs to coexist in totality or as subsets of any combination of the above in one single CT/MD or a network switch box.

10 [0063] (13) The feature described in item 10 above and this invention allows parallel processing of the signals and data streams through the antennas, through the T/R units, through the multiple processors and through the I/O. This allows the present invention to achieve faster data rates with flexible connections for making multiple applications sequentially or simultaneously available using the same CT/MD or network switch box. As an example, video, audio and other uses can be accessed simultaneously with performance optimized for each through dedicated or multiplexed antenna paths, T/R paths, through multiple processors and I/O paths.

15 [0064] (14) The internal electronics of a CT/MD or a network switch box other than the antenna, T/R and I/O may be shared or separate. For example, the processor, memory, etc. may be common or may be separate as defined by the application, cost, and site, etc.

20 [0065] (15) The ability to have an internal IP based web server function within the CT/MD and the network switch box or an external server C connected by wired or wireless means to keep track of all the communication protocols within the unit and with the outside world and other units.

[0066] (16) The electronics that converts wireless to optical signals directly, to efficiently interface wireless and optical signals and systems without intermediate transport.

[0067] (17) The ability to process in parallel signals derived from optical signals such as at a much higher frequency.

5 [0068] (18) The attachment that makes a non-wireless device fully wireless (see figure 6).

[0069] (19) The ability to form many concentric/overlying networks and have the CT/MD exist in one or more wired or wireless networks simultaneously. Thus one single CT/MD can, at the same time, be part of one or more wired or wireless VPN (virtual private networks) or of a public network. Thus a mixed network, a mixed VPN, is dynamically made possible under the supervision of server C. In this mixed VPN one or more network boxes from different networks, different CT/MDs and base stations coexist in a new virtual network. All of these VPNs, mixed VPNs and public networks being accessible by the CT/MD through the supervision of the central server C located on a LAN, WAN, or the Internet.

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[0070] (20) The ability for a CT/MD to communicate with one or more CT/MDs and other wired or wireless devices in one or more VPNs and public networks directly allowing for paging and data transmission and communication between one or more CT/MDs. This is accomplished with all the VPNs being under the control of Server C located on a LAN, WAN or the Internet.

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[0071] (21) The network box may also operate as a wireless base station, with the characteristics enumerated for the network box, such as multiple antennas, multiple T/R units, multiple processors and multiple I/O ports. The base station may receive inputs from one type of network and transmit to another type of network seamlessly. For example, an optical network

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input may be transmitted as a wireless RF output over the wireless network. In reverse the wireless input to base station may be seamlessly converted into optical output for transmission over an optical network.

[0072] (22) In either the base station configuration or the network box configuration, the units have the ability to take optical data and multiplex the data for wireless transmission over one or more channels, at one or more frequencies and power levels. The base station, the network box or the CT/MD may use one or more transmission protocols as deemed optimal and appropriate by the local server C or the super server C located in a LAN, WAN or the Internet. Thus the base station unit, the network box and the CT/MD determines the required frequency spectrum, other wireless parameters such as power and signal to noise ratio to optimally transmit the data. In addition the units have the ability to multiplex between one or more transmission protocols such as CDMA, TDMA to ensure that the fast data rates of the optical network or matched closely in a wireless network to minimize the potential data transmission speed degradation of a wireless network. As an example, the data path between two optical networks may involve a wireless hop due to physical constraints. In such a case the wireless hop transmission speed is likely to be a bottleneck. The base station or the network box, configured as described in the present invention at the hardware level offers universal functionality. In addition the software capability that is resident internally to the unit, at the local server C level or network server C level, is capable of dynamically determining a number of factors for best data transfer. As an example, the unit can determine the best transmission frequencies and protocols, determine the best error correction and channel coding algorithms and multiplexes the

transmission paths and tasks. Thus it is possible that various optical and wireless protocols can co-exist in a network.

[0073] (23) The network box or network boxes may also be used to configure a predominantly optical network that has wireless capability as an adjunct or a predominantly wireless network that has optical capability as an adjunct. Other combinations are possible by extension with or without multiplexing. The optical to wireless multiplexer, can be part of a wireless ethernet or optical ethernet. Similarly other types of conversion and transmission multiplexers could be defined to be incorporated into the CT/MD, the network box or the base station to optimally and seamlessly transfer data between networks or within a network.

[0074] The foregoing descriptions of specific embodiments of the present invention have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, and it should be understood that many modifications and variations are possible in light of the above teaching. The embodiments were chosen and described in order to best explain the principles of the present invention and its practical application, to thereby enable others skilled in the art to best utilize the present invention and various embodiments, with various modifications, as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the Claims appended hereto and their equivalents.

WHAT IS CLAIMED IS:

1. An Internet-enabled mobile communication device comprising:

a memory;

5 a display electronics component;

at least two or more antennas;

at least one or more processors; and

a plurality of wireless transmit and receive components including a first wireless transmit
and receive component and a second wireless transmit and receive component, wherein each

10 wireless transmit receive component is configured to communicate using one or more protocols;

wherein the device is configured for multi-band wireless communication and for wireless
communication on a local area network using an IP protocol; and

wherein the first wireless transmit and receive component is configured to communicate a
first signal stream using a plurality of antennas simultaneously to increase data transfer rate.

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2. The device of Claim 1, wherein a single transmission connection is further comprised
of at least two or more wireless transmit and receive connections simultaneously transmitting
and receiving using the plurality of antennas, and wherein the processor multiplexes the
receiving signals into the single transmission connection.

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3. The device of Claim 1, wherein a single transmission connection is further comprised
of at least two or more wireless transmit and receive connections sequentially transmitting and

receiving using the plurality of antennas, and wherein the processor multiplexes the receiving signals into the single transmission connection.

5 4. The device of Claim 1, wherein a transmission interface is created and wherein said transmission interface uses a plurality of IP enabled interfaces on the mobile device which utilize the plurality of wireless transmit and receive components on the mobile device to enable a single interface comprised of multiplexed signals from the plurality of wireless transmit and receive components.

10 5. The device of Claim 2 wherein the mobile device transmits and receives multiple IP data packets and uses protocols including ethernet protocol, USB protocol, internet protocol, transmission control protocol, transport layer communication protocols, or application interfaces.

15 6. The device of Claim 1, wherein the first wireless transmit and receive component is configured to communicate over Internet Protocol with a remote system over a first network path and the second wireless transmit and receive component is configured to communicate with the same or different remote system using a second network path and wherein the processor on the mobile device is configured to combine the data paths into a single transmission interface to one or more applications on the mobile device.

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7. The device of Claim 1, wherein the device is comprised of a cellular telephone.

8. The device of Claim 1, wherein the device is configured to use a Virtual Private Network (VPN).

5 9. The device of Claim 1, wherein the use of two or more wireless transmit and receive units create connections to a plurality of remote systems simultaneously and transmit and receive data in a parallel path to increase the rate at which data is transferred.

10 10. The device of Claim 1, wherein multiple wireless transmit and receive components are presented to the application as a single connection interface such that the multiple transmission interfaces are virtualized into a single transmission interface.

15 11. The device of Claim 1, wherein an application executed by the processor on the mobile device is configured to use a single transport connect interface comprised of two or more wireless connections.

20 12. The device of Claim 1, further in communication with a network box, which is configured with a plurality of antennas and a wireless transmit and receive component, wherein the network switch box wireless transmit and receive component is configured to communicate a signal stream using the network switch box plurality of antennas simultaneously.

13. The device of Claim 1, further comprising of a processor for voice communication and a second processor for data communication.

14. The device of Claim 1, wherein the device is configured for communications using different frequencies.

5 15. The device of Claim 1, wherein the mobile device maintains multiple IP addresses, wherein the first wireless component is accessible on a first IP address and the second wireless transmit and receive component is accessible on a second IP address and wherein the mobile device operates using a plurality of ports.

10 16. The device of Claim 1, wherein the device is configured for a plurality of protocols including transmission control, CDMA, TDMA, internet protocol (IP) and/or combinations thereof.

15 17. A communication device, comprising:
one or more communication modules, each comprising at least one antenna operable to receive and transmit wireless signals representing data;
wherein the one or more processors are programmed to process data represented in a wireless signal received and/or transmitted by the one or more communication modules; and
wherein the one or more communication modules are configured to communicate via a
20 plurality of communication paths, and wherein a first time period during which communication via one of the plurality of communication paths occurs and a second time period during which

communication via another of the plurality of communication paths occurs overlaps at least partially.

5 18. The communication device of Claim 17, wherein each of the plurality of communication paths employs a different network.

10 19. The communication device of Claim 18, wherein at least one of the different networks comprises a voice network and wherein at least one of the different networks comprises the Internet.

15 20. The communication device of Claim 17, wherein each of the plurality of communication paths employs a different communication protocol and wherein each of the plurality of communication paths involves wireless signals transmitted at a different frequency.

20 21. The communication device of Claim 17, wherein one of the plurality of communication paths is used for wireless signals representing voice data, and another of the plurality of communication paths is used for wireless signals representing non-voice data.

25 22. The communication device of Claim 17, wherein the one or more communication modules comprises a plurality of communication modules, each of the plurality of communication modules being configured for communication via a different communication

path and wherein the one or more communication modules comprises a plurality of communication modules each comprising a separate antenna.

23. The communication device of Claim 17, wherein the one or more processors are
5 programmed to differentiate between wireless signals received via one of the plurality of communication paths and another of the plurality of communication paths.

24. The communication device of Claim 23, wherein one or more processors are
10 programmed to process data represented by wireless signals received via the one communication path separately from data represented by wireless signals received via the other communication path.

25. The communication device of Claim 24, wherein the one or more processors
15 comprise a plurality of processors, a first processor of the plurality of processors being programmed to process data represented by wireless signals received via the one communication path, and a second processor of the plurality of processors being programmed to process data represented by wireless signals received via the other communication path.

26. The communication device of Claim 17, wherein the one or more processors are
20 programmed to process voice data represented by wireless signals received via one of the plurality of communication paths, and to process non-voice data represented by wireless signals received via another of the plurality of communication paths.

27. An IP-enabled communication device comprising:

a memory;

one or more processors;

5 a display electronic component; and

a plurality of wireless communication components, wherein each wireless communication component comprises a chip set of one or more processors and memory, wherein the each wireless communication component supports a plurality of transmit and receive frequencies and a plurality of wireless protocols as an integrated component;

10 wherein a first wireless communication component is coupled to a first set of antennas configured to transmit and receive on a first network and wherein a second wireless communication component is coupled to a second set of antennas and configured to transmit and receive on a second network;

15 wherein the at least one wireless communication component is configured for radio frequency communication;

wherein the first wireless communication component is configured to operate at a lower frequency than the second wireless communication component such that the first and second wireless communication components operate as complementary systems and reduce interference with each other; and

20 wherein the device is configured for voice and/or data connectivity and Internet connectivity.

28. The device of Claim 27, wherein the first wireless transmit and receive component operates on a first network path to a remote server and the second wireless transmit and receive component communicates to the remote server on a second network path at the same time and wherein the signal is multiplexed to increase throughput and enable simultaneous multi path
5 communication.

29. The device of Claim 27, wherein the first wireless transmit and receive component operates on a first network path to a remote server and the second wireless transmit and receive component communicates to the remote server on a second network path in response to a change
10 in the signal strength and/or connectivity of the first wireless communication component or second wireless communication component.

30. The device of Claim 29, wherein the mobile device is configured as a server and wherein the mobile device is configured to transmit and receive a signal stream with a second
15 mobile device.

ABSTRACT OF THE INVENTION

A method and apparatus in which multiple Internet Protocol (IP) based wireless data transmissions are simultaneously provided between a wireless device and a server, including providing multiple antennas, multiple T/R units, multiple processors and multiple I/O ports on the wireless device. The method includes receiving multiple IP data packets on the I/O ports at substantially the same time, and sending multiple data packets from the wireless device to the server, whereby the transmission rate between the wireless device and the server is increased.

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