

AO 120 (Rev. 08/10)

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
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In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Eastern District of Texas on the following

☐ Trademarks or ☒ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED 12/30/2021	U.S. DISTRICT COURT Eastern District of Texas
PLAINTIFF SPEIR TECHNOLOGIES LTD.		DEFENDANT SAMSUNG ELECTRONICS CO., LTD. and SAMSUNG ELECTRONICS AMERICA, INC.
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 8,345,780	1/1/2013	SPEIR TECHNOLOGIES LTD.
2 7,110,779	9/16/2006	SPEIR TECHNOLOGIES LTD.
3 7,321,777	1/22/2008	SPEIR TECHNOLOGIES LTD.
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY <input type="checkbox"/> Amendment <input type="checkbox"/> Answer <input type="checkbox"/> Cross Bill <input type="checkbox"/> Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
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Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

Print

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AO 120 (Rev. 08/10)

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
---------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Western District of Texas on the following

☐ Trademarks or ☒ Patents. (☐ the patent action involves 35 U.S.C. § 292.);

DOCKET NO.	DATE FILED 1/20/2022	U.S. DISTRICT COURT Western District of Texas
PLAINTIFF SPEIR TECHNOLOGIES LTD.		DEFENDANT APPLE INC.
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 8,345,780	1/1/2013	SPEIR TECHNOLOGIES LTD.
2 7,321,777	1/22/2008	SPEIR TECHNOLOGIES LTD.
3		
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY <input type="checkbox"/> Amendment <input type="checkbox"/> Answer <input type="checkbox"/> Cross Bill <input type="checkbox"/> Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
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Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
 Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

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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
11/531,487	09/13/2006	Thomas Jay Billhartz	GCSD1494/51360CON1

CONFIRMATION NO. 1292

POA ACCEPTANCE LETTER

74701

ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST
255 S ORANGE AVENUE
SUITE 1401
ORLANDO, FL 32801



Date Mailed: 01/27/2009

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 01/14/2009.

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.

/gbien-aime/

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

51360low1

PTO/SB/80 (01-06)

Approved for use through 12/31/2008. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

☒ Practitioners associated with the Customer Number:

74701

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

☒ The address associated with Customer Number:

74701

OR

<input type="checkbox"/> Firm or Individual Name			
Address			
City	State	Zip	
Country			
Telephone	Email		

Assignee Name and Address:

HARRIS CORPORATION
1025 WEST NASA BLVD
MELBOURNE, FL 32919**A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.****SIGNATURE of Assignee of Record**

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	<i>MS4 Scott T. Mikuen</i>	Date	8-7-08, 2008
Name	Scott T. Mikuen	Telephone	321-727-9100
Title	VP, Associate General Counsel Secretary		

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.**

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

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: BILLHARTZ ET AL.

Application No./Patent No.: 7,321,777 Filed/Issue Date: 01/22/2008

Entitled: WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS

HARRIS CORPORATION

, a CORPORATION

(Name of Assignee)

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

states that it is:

1. ☒ the assignee of the entire right, title, and interest; or
2. ☐ an assignee of less than the entire right, title and interest
(The extent (by percentage) of its ownership interest is _____ %)

in the patent application/patent identified above by virtue of either:

- 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 014945, Frame 0941, or for which a copy therefore is attached.

OR

- 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.

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.

☐ Additional documents in the chain of title are listed on a supplemental sheet.

- ☒ As required by 37 CFR 3.73(b)(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.

/CHRISTOPHER F. REGAN/

Signature

01/07/2009

Date

CHRISTOPHER F. REGAN

Printed or Typed Name

407-841-2330

Telephone Number

APPOINTED PRACTITIONER

Title

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.

Electronic Acknowledgement Receipt	
EFS ID:	4608470
Application Number:	11531487
International Application Number:	
Confirmation Number:	1292
Title of Invention:	WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS
First Named Inventor/Applicant Name:	Thomas Jay Billhartz
Customer Number:	27975
Filer:	Christopher F. Regan/joellen murphy
Filer Authorized By:	Christopher F. Regan
Attorney Docket Number:	GCSD1494/51360CON1
Receipt Date:	14-JAN-2009
Filing Date:	13-SEP-2006
Time Stamp:	10:42:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	51360con1pwrstatement.pdf	179306 f12fb975aa35f8ed1c341c58da3b3afc8bb37444	no	2

Warnings:

Information:

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/531,487	01/22/2008	7321777	GCSD1494/51360CON1	1292

27975 7590 01/02/2008
ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A.
1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE
P.O. BOX 3791
ORLANDO, FL 32802-3791

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 Customer Service Center of the Office of Patent Publication at (571)-272-4200.

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

Thomas Jay Billhartz, Melbourne, FL;
Vivek Krishna, Palm Bay, FL;
Steve Kopman, Melbourne, FL;

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:) Docket No.
BILLHARTZ ET AL.) 51360_CON1-GCSD-1494
)
Serial No. 11/531,487) Examiner: K. Afshar
)
Filing Date: September 13, 2006) Art Unit: 2617
)
For: WIRELESS COMMUNICATIONS)
SYSTEM INCLUDING A WIRELESS)
DEVICE LOCATOR AND RELATED)
METHODS)
_____)

REQUEST FOR ENTRY OF ATTORNEY REGISTRATION NUMBERS AS ORIGINALLY
IDENTIFIED IN THE ORIGINAL OATH AND DECLARATION

EFILED

Commissioner for Patents

Sir:

Applicants in the above-referenced application respectfully request entry of the following FIVE (5) attorney registration numbers as identified in the original Oath and Declaration, a copy of which is submitted herewith.

Christopher F. Regan	Reg. No. 34,906
David L. Sigalow	Reg. No. 36,006
Richard K. Warther	Reg. No. 32,180
Michael W. Taylor	Reg. No. 43,182
John F. Woodson, II	Reg. No. 45,236

Respectfully submitted,

/CHRISTOPHER F. REGAN/
CHRISTOPHER F. REGAN
Reg. No. 34,906
Attorney Named in the Papers

Customer No. 27975

01/29/2004 04:07 32172754

COMM&SIGNAL PROCES.

PAGE 02

**DECLARATION AND POWER OF ATTORNEY FOR PATENT
APPLICATION**

Attorney Docket No.: GCSD-1494 (51360)

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated
below next to my name,

I believe I am the original, first and sole inventor (if only one
name is listed below) or an original, first and joint inventor
(if plural names are listed below) of the subject matter which is
claimed and for which a patent is sought on the invention
entitled: WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS
DEVICE LOCATOR AND RELATED METHODS, the specification of which:

(check one)

 X is attached hereto

 was filed on

as Application Serial No.

and was amended on
(if applicable)

I hereby state that I have reviewed and understand the contents
of the above-identified specification, including the claims, as
amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material
to the examination of this application in accordance with Title
37, Code of Federal Regulation, 1.56(a).

I hereby claim foreign priority benefits under Title 35, United
States Code, 119 of any foreign application(s) for patent or
inventor's certificate listed below and have also identified
below any foreign application for patent or inventor's
certificate having a filing date before that of the application
on which priority is claimed:

01/29/2004 04:07 3217275:

COMM&SIGNAL PROCEL

PAGE 03

Prior Foreign Application(s) Priority Claimed

<u>(Number)</u>	<u>(Country)</u>	<u>(Day/Month/Year Filed)</u>	[] []
			Yes No
<u>(Number)</u>	<u>(Country)</u>	<u>(Day/Month/Year Filed)</u>	[] []
			Yes No
<u>(Number)</u>	<u>(Country)</u>	<u>(Day/Month/Year Filed)</u>	[] []
			Yes No

I hereby claim the benefit under Title 35, United States Code, 120, of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

<u>(Appln Serial No.)</u>	<u>(Filing Date)</u>	<u>(Status)</u>
		(patented, pending, aban.)

<u>(Appln Serial No.)</u>	<u>(Filing Date)</u>	<u>(Status)</u>
		(patented, pending, aban.)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

01/29/2004 04:07 32172754

COMM&SIGNAL PROCES

PAGE 04

English Language Declaration

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorneys/patent agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Christopher F. Regan, Reg. No. 34,906; Herbert L. Allen, Reg. No. 25,322; David L. Sigalow, Reg. No. 36,006; Richard K. Warther, Reg. No. 32,180; Michael W. Taylor, Reg. No. 43,182; Enrique Estevez, Reg. No. 37,823; Paul J. Dittmyer, Reg. No. 40,455; John F. Woodson, II, Reg. No. 45,236; Charles E. Wands, Reg. No. 25,649; Jacqueline E. Hartt, Reg. No. 37,845; Carl Napolitano, Reg. No. 37,405 and David L. Stewart, Reg. No. 37,578.

Send Correspondence to:

CHRISTOPHER F. REGAN, ESQUIRE
ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST, P.A.
P.O. Box 3791
Orlando, Florida 32802-3791

Direct Telephone Calls to:

Christopher F. Regan
(407) 841-2330

Full name of first inventor: Thomas Jay BILLHARTZ

Inventor's
Signature: Thomas Jay Billhartz

Date: 1/28/04

Residence: Melbourne, Florida

Citizenship: Citizen of United States

Mailing Address: 2355 Polonius Lane
Melbourne, Florida 32934

01/29/2004 04:07 32172754.

COMM&SIGNAL PROCES

PAGE 05

Full name of second inventor: Vivek KRISHNA

Inventor's
Signature:  Date: 1/28/04

Residence: Palm Bay, Florida

Citizenship: Citizen of United States

Mailing Address: 1634 Palm Place Drive NE
Palm Bay, Florida 32905

Full name of third inventor: Steve KOPMAN

Inventor's
Signature:  Date: 1/28/04

Residence: Melbourne, Florida

Citizenship: Citizen of United States

Mailing Address: 2299 Windham Drive
Melbourne, Florida 32935

Electronic Acknowledgement Receipt	
EFS ID:	2608589
Application Number:	11531487
International Application Number:	
Confirmation Number:	1292
Title of Invention:	WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS
First Named Inventor/Applicant Name:	Thomas Jay Billhartz
Customer Number:	27975
Filer:	David L. Stewart/Kristen Ferguson
Filer Authorized By:	David L. Stewart
Attorney Docket Number:	GCSD1494/51360CON1
Receipt Date:	18-DEC-2007
Filing Date:	13-SEP-2006
Time Stamp:	16:47:59
Application Type:	Utility under 35 USC 111(a)


Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1		51360_CON1POA.pdf	237026	yes	5
			0d1dd4e455ba79dee5711091383f7ae21d93e666		

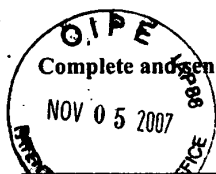
	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Miscellaneous Incoming Letter	1	1
	Oath or Declaration filed	2	5
Warnings:			
Information:			
Total Files Size (in bytes):		237026	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of 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>			

Issue Classification 	Application/Control No.	Applicant(s)/Patent under Reexamination	
	11/531,487	BILLHARTZ ET AL.	
	Examiner	Art Unit	
	Kamran Afshar, 571-272-7796	2617	

ISSUE CLASSIFICATION									
ORIGINAL				CROSS REFERENCE(S)					
CLASS		SUBCLASS		CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
455		456.2		455	456.1	456.5	456.6		
INTERNATIONAL CLASSIFICATION				342	457				
H	0	4	Q	7/20	370	328			
				/					
				/					
				/					
				/					

Kamran Afshar 10/12/2007 (Assistant Examiner) (Date)		George Eng 10/15/07 GEORGE ENG SUPERVISORY PATENT EXAMINER (Primary Examiner) (Date)		Total Claims Allowed: 25	
(Legal Instruments Examiner) (Date)				O.G. Print Claim(s) 1	O.G. Print Fig. 11

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant				<input type="checkbox"/> CPA				<input checked="" type="checkbox"/> T.D.				<input type="checkbox"/> R.1.47			
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original		
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2	2		32		62		92		122		152		182		
3	3		33		63		93		123		153		183		
4	4	22	34		64		94		124		154		184		
5	5	23	35		65		95		125		155		185		
6	6	24	36		66		96		126		156		186		
3	7	25	37		67		97		127		157		187		
4	8		38		68		98		128		158		188		
5	9		39		69		99		129		159		189		
6	10		40		70		100		130		160		190		
7	11		41		71		101		131		161		191		
8	12		42		72		102		132		162		192		
9	13		43		73		103		133		163		193		
10	14		44		74		104		134		164		194		
11	15		45		75		105		135		165		195		
12	16		46		76		106		136		166		196		
13	17		47		77		107		137		167		197		
14	18		48		78		108		138		168		198		
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12	20		50		80		110		140		170		200		
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15	23		53		83		113		143		173		203		
14	24		54		84		114		144		174		204		
15	25		55		85		115		145		175		205		
16	26		56		86		116		146		176		206		
17	27		57		87		117		147		177		207		
18	28		58		88		118		148		178		208		
19	29		59		89		119		149		179		209		
20	30		60		90		120		150		180		210		



PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: MailMail 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. 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)

27975 7590 10/23/2007

ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A.
1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE
P.O. BOX 3791
ORLANDO, FL 32802-3791

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.

Justin Goree	(Depositor's name)
<i>Justin Goree</i>	(Signature)
October 30, 2007	(Date)

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

11/531,487	09/13/2006	Thomas Jay Billhartz	GCSD1494/51360CON1	1292
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TITLE OF INVENTION: WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$300	\$0	\$1740	01/23/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
AFSHAR, KAMRAN	2617	455-456100

11/06/2007 HNGUYEN2 00000323 000870 11531487
01 FC:1501 1440.00 DA
02 FC:1504 300.00 DA

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

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

2. For printing on the patent front page, list

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

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

ALLEN, DYER, DOPPELT,
MILBRATH & GILCHRIST, P.A.
Attorneys at Law
255 S. Orange Ave. Ste. 1401
P. O. Box 3791
Orlando, FL 32802-3791

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

HARRIS CORPORATION

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

MELBOURNE, FLORIDA

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

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

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

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

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 08-0870 (enclose an extra copy of this form).

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

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

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

Authorized Signature

Christopher F. Regan

Date October 30, 2007

Typed or printed name

Registration No. 34,906

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

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Alexandria, Virginia 22313-1450
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NOTICE OF ALLOWANCE AND FEE(S) DUE

27975 7590 10/23/2007

ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A.
1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE
P.O. BOX 3791
ORLANDO, FL 32802-3791

EXAMINER

AFSHAR, KAMRAN

ART UNIT

PAPER NUMBER

2617

DATE MAILED: 10/23/2007

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/531,487	09/13/2006	Thomas Jay Billhartz	GCSD1494/51360CONI	1292

TITLE OF INVENTION: WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$300	\$0	\$1740	01/23/2008

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

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

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

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

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

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

If the SMALL ENTITY is shown as NO:

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

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

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

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

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

PART B - FEE(S) TRANSMITTAL

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

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

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

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

27975 7590 10/23/2007

ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A.
 1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE
 P.O. BOX 3791
 ORLANDO, FL 32802-3791

Certificate of Mailing or Transmission

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

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

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

11/531,487 09/13/2006 Thomas Jay Billhartz GCSD1494/51360CON1 1292

TITLE OF INVENTION: WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional NO \$1440 \$300 \$0 \$1740 01/23/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
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AFSHAR, KAMRAN 2617 455-456100

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

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

1 _____
 2 _____
 3 _____

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

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.111. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

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

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

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

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

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

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

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

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

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

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

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

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/531,487	09/13/2006	Thomas Jay Billhartz	GCSD1494/51360CON1	1292
27975	7590	10/23/2007		
ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A. 1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE P.O. BOX 3791 ORLANDO, FL 32802-3791				
EXAMINER AFSHAR, KAMRAN				
ART UNIT		PAPER NUMBER		
2617		DATE MAILED: 10/23/2007		

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

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

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

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

Notice of Allowability	Application No.	Applicant(s)	
	11/531,487	BILLHARTZ ET AL.	
	Examiner	Art Unit	
	Kamran Afshar, 571-272-7796	2617	

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

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

1. ☒ This communication is responsive to 08/14/2007.
2. ☒ The allowed claim(s) is/are 1,2,7-14,19-31 and 34-37.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

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

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

<ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material 	<ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____ 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input checked="" type="checkbox"/> Other _____
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

GEORGE ENG
SUPERVISORY PATENT EXAMINER

Kamran Afshar, 571-272-7796
Patent Examiner
Art Unit: 2617

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. David Carus, Reg. No: 59, 291 on 10/12/2007.

The application has been amended as follows:

In The Claim(s):

30. (Currently Amended) A method for locating a target wireless communications device from among a plurality of wireless *communications* devices, each wireless communications device having a device type associated therewith from among a plurality of different device types, and each device type having a known device latency associated therewith, the method comprising:

using a controller cooperating with a transceiver for transmitting a plurality of location finding signals to the target wireless communications device, and receiving a respective reply signal for each of the location finding signals therefrom;

using the controller for determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of the target wireless communications device; and

further using the controller for estimating a range to the target wireless communications device based upon a plurality of determined propagation delays.

Allowable Subject Matter

2. Claims 1-2, 7-14, 19-31, and 34-37 are allowed.

The following is an examiner's statement of reasons for allowance: 1-2, 7-14, 19-31, and 34-37.

Claims 1-2, 7-14, 19-31, and 34-37 are allowed for the reasons as set forth in applicant's response filed on 08/14/2007, (See Page 11-15).

With respect to claim 1, the prior art of record fails to disclose singly or in combination or render obvious that each device type having a known device latency associated therewith; and a wireless device locator comprising at least one antenna and a transceiver connected thereto, and a controller for cooperating with the transceiver for transmitting a plurality of location finding signals to a target wireless communications device from among the plurality of wireless communications devices; the target wireless communications device transmitting a respective reply signal for each of the location finding signals; the controller of the wireless device locator also for cooperating with the transceiver for receiving the reply signals, determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of the target wireless communications device, and estimating a range to the target wireless communications device based upon a plurality of determined propagation delays.

With respect to claim 14, the prior art of record fails to disclose singly or in combination or render obvious that each device type having a known device latency associated therewith; and a wireless device locator comprising at least one antenna and a transceiver connected thereto, and a controller for cooperating with the transceiver for transmitting a plurality of location finding signals to a target WLAN device from among the plurality of WLAN devices; the target WLAN device transmitting a respective reply signal for each of the location finding signals; the controller of the wireless device locator also for cooperating with the transceiver for receiving the reply signals, determining a propagation delay

associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of the target WLAN device, and estimating a range to the target WLAN device based upon an average of a plurality of determined propagation delays.

With respect to claim 20, the prior art of record fails to disclose singly or in combination or render obvious that a target wireless communications device comprising: at least one antenna and a transceiver connected thereto; and a controller for cooperating with the transceiver for transmitting a plurality of location finding signals to the target wireless communications device and receiving a respective reply signal therefrom for each of the location finding signals, determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon a known device latency of the target wireless *communications* device, and estimating a range to the target wireless communications device based upon a plurality of determined propagation delays.

With respect to claim 30, the prior art of record fails to disclose singly or in combination or render obvious that each device type having a known device latency associated and or the method comprising: using a controller cooperating with a transceiver for transmitting a plurality of location finding signals to the target wireless communications device, and receiving a respective reply signal for each of the location finding signals therefrom; using the controller for determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of the target wireless communications device; and further using the controller for estimating a range to the target wireless communications device based upon a plurality of determined propagation delays.

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

Conclusion

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

Art Unit: 2617

a) Runkle (U.S. 7,042,868 B2).

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kamran Afshar whose telephone number is (571) 272-7796. The examiner can be reached on Monday-Friday.

If attempts to reach the examiner by the telephone are unsuccessful, the examiner's supervisor, **Eng, George** can be reached @ (571) 272-3984. The fax number for the organization where this application or proceeding is assigned is **571-273-8300** for all communications.

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).


Kamran Afshar


GEORGE ENG
SUPERVISORY PATENT EXAMINER

Interview Summary	Application No.	Applicant(s)	
	11/531,487	BILLHARTZ ET AL.	
	Examiner	Art Unit	
	Kamran Afshar, 571-272-7796	2617	

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

(1) Kamran Afshar, 571-272-7796. (3) _____

(2) Mr. David Carus, Reg. No: 59, 291. (4) _____

Date of Interview: 12 October 2007.

Type: a) ☒ Telephonic b) ☐ Video Conference
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☐ No.
If Yes, brief description: _____

Claim(s) discussed: Merits of Claim 30.

Identification of prior art discussed: _____

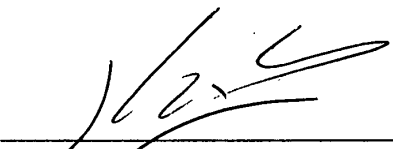
Agreement with respect to the claims f) ☒ was reached. g) ☐ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Merits of the claim and Applicant authorized the Examiner's Amendment, which is fully addressed in the Office Action.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.


Examiner's signature, if required

Notice of References Cited	Application/Control No. 11/531,487		Applicant(s)/Patent Under Reexamination BILLHARTZ ET AL.	
	Examiner <i>16</i> Kamran Afshar, 571-272-7796		Art Unit 2617	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-7,042,868	05-2006	Runkle et al.	370/347
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			


FOREIGN PATENT DOCUMENTS


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

NON-PATENT DOCUMENTS


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

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

Issue Classification 	Application/Control No.	Applicant(s)/Patent under Reexamination	
	11/531,487	BILLHARTZ ET AL.	
	Examiner	Art Unit	
	Kamran Afshar, 571-272-7796	2617	

ISSUE CLASSIFICATION									
ORIGINAL					CROSS REFERENCE(S)				
CLASS		SUBCLASS			CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)			
455		456.2			455	456.1	456.5	456.6	
INTERNATIONAL CLASSIFICATION					342	457			
H	0	4	Q	7/20	370	328			
				/					
				/					
				/					
				/					
Kamran Afshar 10/12/2007 (Assistant Examiner) (Date)					 GEORGE ENG SUPERVISORY PATENT EXAMINER				
(Legal Instruments Examiner) (Date)					(Primary Examiner) (Date)				
					Total Claims Allowed: 25				
					O.G. Print Claim(s)				
					1				
					O.G. Print Fig.				
					11				

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant				<input type="checkbox"/> CPA				<input checked="" type="checkbox"/> T.D.				<input type="checkbox"/> R.1.47			
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original		
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	2	32	32		62		92		122		152		182		
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	4	34	34		64		94		124		154		184		
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	7	37	37		67		97		127		157		187		
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	9	39	39		69		99		129		159		189		
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19	29	59	59		89		119		149		179		209		
20	30	60	60		90		120		150		180		210		

Search Notes 	Application/Control No.		Applicant(s)/Patent under Reexamination	
	11/531,487		BILLHARTZ ET AL.	
	Examiner <i>[Signature]</i>		Art Unit	
	Kamran Afshar, 571-272-7796		2617	

SEARCHED			
Class	Subclass	Date	Examiner
455	41.2-41.3	11/21/2005	KA
455	456.1-457	11/21/2005	KA
455	553.1, 63	11/21/2005	KA
455	562.1, 67	11/21/2005	KA
455	67.13, 67	11/21/2005	KA
455	402.2	11/21/2005	KA
342	357.08 357	11/21/2005	KA
342	357.1 450	11/21/2005	KA
340	426.19 426	11/21/2005	KA
340	539.23 825	11/21/2005	KA
370	310.2 328	11/21/2005	KA
370	331, 338	11/21/2005	KA
701	201	11/21/2005	KA
702	149	11/21/2005	KA

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
Txet	Search	10/13/2007	

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
East Search (US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB)	11/21/2005	KA
Temica Beamer	2/24/2006	KA
Updated East Search	6/14/2006	KA
Joseph Feild	6/27/2006	KA
Updated East Search	5/4/2007	KA
Updated East Search	10/08/2007	KA
George Eng	10/11/2007	KA

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L26	4	15 and 25	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:54
L25	7215	8 9 10 11 12 13	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:54
L24	4	15 and 19	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:54
L23	4	15 and 22	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:54
L22	78	17 and 18	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:53
L20	4	14 and 15	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:52
L19	52291	(different or plurality) near3 type. clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:50

EAST Search History

L18	3520	(propagation near3 dela\$3).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:49
L17	18041	((estimat\$3 or determin\$3 or calculat\$3) near3 range).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:49
L16	21	((estimat\$3 or determin\$3 or calculat\$3) near3 rang).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:48
L15	31	(known near3 latenc\$3).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:48
L14	109	(transmission with locationwith signal with respective with reply). clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:47
L13	402	(340/457).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/12 06:46
L12	2599	(370/328).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/12 06:46

EAST Search History

L11	581	(455/456.6).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/12 06:45
L10	684	(455/456.5).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/12 06:45
L9	637	(455/456.2).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/12 06:45
L8	3245	(455/456.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/12 06:45
L7	2599	(370/328).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/12 06:45
L6	1897	L1 L2 L3 L4 L5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/12 06:45
L5	1327	(340/825.49).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/12 06:45

EAST Search History

L4	190	(340/539.23).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/12 06:45
L3	87	(340/426.22).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/12 06:45
L2	125	(340/426.19).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/12 06:45
L1	229	(340/991).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/12 06:45
S34 3	17	S337 and S342	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:25
S34 2	280	S339 same S341	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:25
S34 1	2400	S338 with S340	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:25

EAST Search History

S340	202088	(determin\$3) near5 (type)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:25
S339	1297402	(estimat\$3 or calculat\$3 or determin\$3 or measur\$4) near5 (range or distance or proximit\$4 or location or position or present)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:25
S338	992081	(cellular or mobile or phone or PDA or radiotelephone or radio or wireless) near5 ((local near2 (area or network or WLAN)) or network or terminal or apparatus or laptop or station or device or unit or phone or telephone)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:25
S337	46805	propagat\$4 near5 (dela\$3 or latenc\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:25
S336	1897	S335 and S329 and S328 or S323	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:24
S335	2632	S330 S331 S332 S333 S334	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:24
S334	593	(342/458).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24

EAST Search History

S33 3	722	(342/450).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S33 2	561	(342/357.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S33 1	619	(342/357.09).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S33 0	418	(342/357.08).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S32 9	860	(701/201).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S32 8	12697	S324 S325 S326 S327 S315 S316 S317 S314	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:24
S32 7	1213	(370/350).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24

EAST Search History

S32 6	322	(370/346).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S32 5	522	(370/324).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S32 4	97	(370/310.2).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S32 3	1896	S318 S319 S320 S321 S322	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:24
S32 2	1326	(340/825.49).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S32 1	190	(340/539.23).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S32 0	87	(340/426.22).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24

EAST Search History

S31 9	125	(340/426.19).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S31 8	229	(340/991).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S31 7	3480	(370/335).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S31 6	2074	(370/331).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S31 5	2588	(370/328).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S31 4	3241	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:24
S31 3	4763	S307 S308 S309 S310 S311 S312	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:23
S31 2	163	(455/456.4).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:23

EAST Search History

S31 1	801	(455/456.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:23
S31 0	581	(455/456.6).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:23
S30 9	683	(455/456.5).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:23
S30 8	636	(455/456.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:23
S30 7	3241	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:23
S30 6	18	S298 S299 S300 S301 S302 S303 S304 S305	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:23
S30 5	2	"20030043073"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:23
S30 4	2	"20030025602"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:23
S30 3	3	"20020118655"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:23
S30 2	3	"20020080759"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:23

EAST Search History

S30 1	2	("6292665").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:23
S30 0	2	("5687196").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:23
S29 9	2	("5526357").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:23
S29 8	2	("5550549").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/10/08 10:23
S29 7	1239881	S295 or S296	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:23
S29 6	3758	(device or terminal) near3 latenc\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:23
S29 5	1238028	(different or plurality) with (latenc\$4 or type or delay\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 10:23
S29 4	62	S293 same range	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 08:57

EAST Search History

S29 3	652	S291 near5 (subtract\$3 or divid\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 08:57
S29 2	295	S291 near5 (subtract\$3 or devid\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 08:56
S29 1	42262	propagat\$4 near3 delay	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 08:55
S16	34217	propagat\$4 near3 delay	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/10/08 08:55
S29 0	2	("6990428").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/07 11:04
S28 9	2	("7046987").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 10:13
S28 8	14	S274 and S287	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:13
S28 7	254	S277 same S286	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:06

EAST Search History

S28 6	2133	S275 with S285	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:06
S28 5	189956	(determin\$3) near5 (type)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:06
S28 3	788995	(different or plurality) near5 (type)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:05
S28 4	7	S282 and S283	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:02
S27 2	1183346	(different or plurality) with (latenc\$4 or type or delay\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:02
S28 2	69	S278 same S281	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:42
S28 1	34599	S279 same S280	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:42

EAST Search History

S280	1185053	S272 or S273	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:42
S279	1306167	S275 or S276	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:42
S278	2640	S274 same S277	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:41
S277	1243461	(estimat\$3 or calculat\$3 or determin\$3 or measur\$4) near5 (range or distance or proximit\$4 or location or position or present)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:41
S128	778742	(estimat\$3 or calculat\$3 or determin\$3) near5 (range or distance or proximit\$4 or location or position)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:39
S276	499148	(ad-hoc or ad\$2hoc or "802."\$3 or bluetooth or homerf or IrDA or infrared)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:38
S275	912299	(cellular or mobile or phone or PDA or radiotelephone or radio or wireless) near5 ((local near2 (area or network or WLAN)) or network or terminal or apparatus or laptop or station or device or unit or phone or telephone)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:38

EAST Search History

S44	21	cellular with ad-hoc with WLAN	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:29
S27 4	44877	propagat\$4 near5 (dela\$3 or latenc\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:28
S27 3	3454	(device or terminal) near3 latenc\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:28
S55	1666	(device or terminal) adj3 latenc\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:27
S27 1	0	S265 and S270	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:26
S28	7877263	(different or plurality) wit (latenc\$4 or type or delay\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:26
S27 0	1124	S268 S269	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:25
S26 9	1124	S267 S268	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:25

EAST Search History

S26 8	1041	(702/150).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 09:25
S26 7	95	(702/149).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 09:24
S26 6	2	("7110779").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:58
S25 4	0	(455/456.7).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:58
S26 5	115	S264 and S247 and S246 or S241 and S258	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:30
S26 4	2517	S259 S260 S261 S262 S263	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:30
S26 3	585	(342/458).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30

EAST Search History

S26 2	700	(342/450).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S26 1	530	(342/357.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S26 0	562	(342/357.09).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 9	405	(342/357.08).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 8	11033	S248 S249 S250 S251 S252 S253 S254 S255 S256 S257 S231 S232 S233 S234 S235	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:30
S25 7	1015	(455/67.13).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 6	2446	(455/67.11).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30

EAST Search History

S25 5	394	(455/67.16).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 3	536	(455/456.6).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 2	618	(455/456.5).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 1	143	(455/456.4).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 0	714	(455/456.3).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 9	557	(455/456.2).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 8	2911	(455/456.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30

EAST Search History

S24 7	803	(701/201).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 6	11531	S242 S243 S244 S245 S228 S229 S230 S227	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:30
S24 5	1121	(370/350).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 4	293	(370/346).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 3	509	(370/324).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 2	82	(370/310.2).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 1	1800	S236 S237 S238 S239 S240	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:30

EAST Search History

S24 0	1259	(340/825.49).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 9	175	(340/539.23).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 8	80	(340/426.22).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 7	120	(340/426.19).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 6	224	(340/991).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 5	1549	(455/562.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 4	204	(455/63.4).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 3	658	(455/553.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30

EAST Search History

S23 2	159	(455/41.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 1	1420	(455/41.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 0	3260	(370/335).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S22 9	1816	(370/331).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S22 8	2306	(370/328).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S22 7	2911	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S22 6	115	S218 and S201 and S200 or S195 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:24
S21 9	1800	S218 and S201 and S200 or S195	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:24

EAST Search History

S22 5	11079	S202 S203 S204 S205 S206 S207 S208 S209 S210 S211 S220 S221 S222 S223 S224	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:23
S21 2	11033	S202 S203 S204 S205 S206 S207 S208 S209 S210 S211 S185 S186 S187 S188 S189	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:23
S22 4	1550	(455/562.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:22
S22 3	207	(455/63.4).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:22
S22 2	664	(455/553.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:22
S22 1	159	(455/41.3).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:22
S22 0	1456	(455/41.2).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:22

EAST Search History

S18 5	1420	(455/41.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:22
S21 8	2517	S213 S214 S215 S216 S217	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:19
S21 7	585	(342/458).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:19
S20 0	11531	S196 S197 S198 S199 S181 S183 S184 S180	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:19
S21 6	700	(342/450).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:18
S21 5	530	(342/357.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:18
S21 4	562	(342/357.09).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:18

EAST Search History

S21 3	405	(342/357.08).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:18
S21 1	1015	(455/67.13).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:15
S21 0	2446	(455/67.11).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:15
S20 9	394	(455/67.16).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:15
S20 8	0	(455/456.7).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:15
S20 7	536	(455/456.6).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:15
S20 6	618	(455/456.5).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:15

EAST Search History

S20 5	143	(455/456.4).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:14
S20 4	714	(455/456.3).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:14
S20 3	557	(455/456.2).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:14
S20 2	2911	(455/456.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:14
S20 1	803	(701/201).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:14
S18 0	2911	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:14
S19 9	1121	(370/350).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:12

EAST Search History

S19 8	293	(370/346).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:12
S19 7	509	(370/324).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:12
S19 5	1800	S190 S191 S192 S193 S194	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:12
S19 6	82	(370/310.2).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:11
S18 1	2306	(370/328).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:11
S19 4	1259	(340/825.49).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:10
S19 3	175	(340/539.23).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:09

EAST Search History

S19 2	80	(340/426.22).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:06
S19 1	120	(340/426.19).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:06
S19 0	224	(340/991).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:06
S18 9	1549	(455/562.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:05
S18 8	204	(455/63.4).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:04
S18 7	658	(455/553.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:03
S18 6	159	(455/41.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:03
S18 4	3260	(370/335).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:01

EAST Search History

S18 3	1816	(370/331).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:01
S18 2	3502	(370/338).CCLS..	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:01
S15 8	414	(342/458).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:01
S12 3	1022	S120 or S121 or S122	US-PGPUB	OR	ON	2007/05/06 08:00
S66	3169	S59 S60 S61 S62 S63 S64	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:00
S17 9	2	("6933890").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 09:47
S17 8	5	S175 and S138	US-PGPUB	OR	ON	2006/06/14 09:47
S17 7	0	S175 and S142	US-PGPUB	OR	ON	2006/06/14 09:45
S17 6	1	S175 and S161	US-PGPUB	OR	ON	2006/06/14 09:44
S17 5	11	S173 and S174	US-PGPUB	OR	ON	2006/06/14 09:44
S17 4	9828	S167 and S168	US-PGPUB	OR	ON	2006/06/14 09:44
S17 3	29	S171 and S172	US-PGPUB	OR	ON	2006/06/14 09:44
S17 2	37574	S165 and S166	US-PGPUB	OR	ON	2006/06/14 09:44
S17 1	49	S162 and S163 and S164	US-PGPUB	OR	ON	2006/06/14 09:44

EAST Search History

S17 0	1	S169 and S161	US-PGPUB	OR	ON	2006/06/14 09:43
S16 9	13	S153 and S154 and S155	US-PGPUB	OR	ON	2006/06/14 09:43
S16 8	104246	S146.clm.	US-PGPUB	OR	ON	2006/06/14 09:42
S16 7	9828	S145.clm.	US-PGPUB	OR	ON	2006/06/14 09:36
S16 6	194965	S143.clm.	US-PGPUB	OR	ON	2006/06/14 09:36
S16 5	146922	S144.clm.	US-PGPUB	OR	ON	2006/06/14 09:36
S16 4	1072	S150.clm.	US-PGPUB	OR	ON	2006/06/14 09:36
S16 3	179293	S151.clm.	US-PGPUB	OR	ON	2006/06/14 09:36
S16 2	43560	S153.clm.	US-PGPUB	OR	ON	2006/06/14 09:36
S16 1	43	S159.clm.	US-PGPUB	OR	ON	2006/06/14 09:35
S16 0	1	S156 and S159	US-PGPUB	OR	ON	2006/06/14 09:35
S15 9	169	(determin\$3 or recogni\$4) adj5 (((device or terminal or LAN or WLAN or phone or telephone or apparatus or local or network) adj3 (wireless or transceiver or transmit\$4 or receiv\$3)) with (latenc\$4 or type))	US-PGPUB	OR	ON	2006/06/14 09:35
S15 4	3090	(determin\$3 or recogni\$4) with (((device or terminal or LAN or WLAN or phone or telephone or apparatus or local or network) near5 (wireless or transceiver or transmit\$4 or receiv\$3)) with (latenc\$4 or type))	US-PGPUB	OR	ON	2006/06/14 09:34
S15 7	880	(342/457).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 09:18
S15 6	13	S155 and S154	US-PGPUB	OR	ON	2006/06/14 09:17
S15 5	75	S152 and S153	US-PGPUB	OR	ON	2006/06/14 09:15

EAST Search History

S15 3	179667	(determin\$3 or estimat\$3 or calculat\$4) near5 (range or distance or location or position)	US-PGPUB	OR	ON	2006/06/14 09:12
S15 2	91	S149 and S150 and S151	US-PGPUB	OR	ON	2006/06/14 09:10
S15 1	486659	((unique or known) adj3 (identif\$6 or ID or code)) or (identif\$6 or ID or code)	US-PGPUB	OR	ON	2006/06/14 09:07
S15 0	39001	propagat\$4 near5 delay	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/14 09:06
S10 4	30942	propagat\$4 adj2 delay	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/14 09:06
S72	72326	unique adj3 (identif\$6 or ID or code)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/14 09:06
S14 9	702	S148 same S145	US-PGPUB	OR	ON	2006/06/14 09:04
S14 8	49208	S143 with S144	US-PGPUB	OR	ON	2006/06/14 09:04
S14 7	194965	S143.clm.	US-PGPUB	OR	ON	2006/06/14 09:04
S14 6	260382	(locat\$4 or transmit\$4 or receiv\$3 or reply\$3 or acknowldg\$4) near5 signal	US-PGPUB	OR	ON	2006/06/14 09:04
S14 5	43511	locat\$4 near5 signal	US-PGPUB	OR	ON	2006/06/14 09:03
S14 4	304661	(device or terminal or LAN or WLAN or phone or telephone or apparatus or local or network) near5 (wireless or transceiver or transmit\$4 or receiv\$3)	US-PGPUB	OR	ON	2006/06/14 09:02
S71	92481	(device or terminal or LAN or WLAN or phone or telephone or apparatus) near5 (wireless or transceiver or transmit\$4 or receiv\$3)) with (latenc\$5 or dela\$5 or typ\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/14 09:01

EAST Search History

S14 3	937485	(latenc\$4 or typ\$3 or delay\$3 or propag\$6 or ((dela\$4 or latanc\$5 or reply\$ or respon\$3) near5 (signal or propag\$6)))	US-PGPUB	OR	ON	2006/06/14 09:00
S70	919023	(different or plurality) with (latenc\$4 or typ\$3 or delay\$3 or propag\$6 or ((dela\$4 or latanc\$5 or reply\$ or respon\$3) near5 (signal or propag\$6)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/14 09:00
S14 2	1023	S139 or S140 or S141	US-PGPUB	OR	ON	2006/06/14 08:59
S14 1	855	(455/67.13).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S14 0	2023	(455/67.11).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 9	332	(455/67.16).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 8	1867	S131 S132 S133 S134 S135 S136	US-PGPUB	OR	ON	2006/06/14 08:59
S13 7	3563	S131 S132 S133 S134 S135 S136	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/14 08:59
S13 6	116	(455/456.4).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 5	573	(455/456.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 4	430	(455/456.6).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59

EAST Search History

S13 3	500	(455/456.5).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 2	427	(455/456.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 1	2294	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 0	17	S129 and S128	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:54
S12 9	29	S105 and S109	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:54
S12 7	3549	S113 or S114 or S115 or S116 or S117 or S118	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:52
S11 9	3549	S113 S114 S115 S116 S117 S118	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:50
S12 6	2	S105 and S119	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:49
S12 5	2	S105 and S119	US-PGPUB	OR	ON	2006/06/07 08:49
S12 4	95	S108 and S105	US-PGPUB	OR	ON	2006/06/07 08:49
S12 2	852	(455/67.13).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47

EAST Search History

S12 1	2017	(455/67.11).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S12 0	332	(455/67.16).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 8	115	(455/456.4).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 7	569	(455/456.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 6	428	(455/456.6).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 5	496	(455/456.5).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 4	426	(455/456.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 3	2286	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 2	37	S105 and S111	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:42
S11 1	98426	S108 with (identif\$5 or ID or code)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:42

EAST Search History

S109	1167	S108 with latency	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:41
S110	34	S109 with type	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:27
S108	1125392	(wireless or portable or mobile or transceiver or cellular or transmitter or receiver) with (device or terminal or apparatus or unit or transceiver or phone or telephone)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:26
S107	23	S106 same locat\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:22
S106	273	S104 with latency	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:07
S105	536	S104 same latency	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:07
S103	64	wireless with locator with transceiver	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:18
S102	3	S98 and S101	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:17
S101	502	(latenc\$5 or dela\$5) same (WLAN)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:13
S100	18	S98 and latenc\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:13

EAST Search History

S99	1	S98 same latenc\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:08
S98	126	S96 same S97	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:07
S97	443553	type.clm.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:07
S96	2679	plurality adj2 wireless.clm.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:07
S95	0	plurality adj of adj wireless.clm.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:06
S77	18	S74 and S76	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:06
S94	35	S87 and S93	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:19
S93	948	S90 and S91	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:19
S92	132	S90 same S91	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:19
S91	13305	directional near3 antenna	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:19

EAST Search History

S90	17437	(controller or processor or DSP) near5 transceiver	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:18
S89	73902	S80 same S86	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:17
S88	11384	(controller oprocessor or DSP) near5 transceiver	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:17
S87	45639	S80 with averag\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:15
S86	1017841	(position\$3 or locat\$4 or rang\$3 or distan\$3) near5 (measur\$4 or calculat\$3 or determin\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:15
S74	876446	(position\$3 or locat\$4 or rang\$3) near5 (measur\$4 or calculat\$3 or determin\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:10
S85	32	S66 and S84	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:49
S84	127	S81 same S82	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:49
S83	1011	S81 and S82	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:48
S82	17854	(device or terminal or LAN or WLAN or phone or telephone or apparatus) near5 (wireless or transceiver)) with (latenc\$5 or dela\$5 or typ\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:48

EAST Search History

S81	60659	S74 same S80	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:47
S80	1754727	(latenc\$4 or delay\$3 or tim\$4) near5 (propag\$6 or tim\$4 or signal\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:47
S79	12	("5910946" "6023241" "6028764" "6040784" "6047047" "6049291" "6052812" "6272348" "6549543" "6570871" "6601040" "6608832").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2006/02/07 07:42
S78	5	("6680923").URPN.	USPAT	OR	ON	2006/02/07 07:40
S76	64	S73 and S75	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:31
S75	13613	S70 same S71	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:31
S73	266	S71 same S72	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:30
S37	1353	S36 same (identif\$6 or ID or code)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:25
S53	612	known adj3 latency\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:21
S69	792	(455/67.13).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:17

EAST Search History

S68	1851	(455/67.11).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:17
S67	316	(455/67.16).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:17
S65	478	(455/457).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:16
S64	96	(455/456.4).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:16
S63	477	(455/456.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:16
S62	372	(455/456.6).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:16
S61	444	(455/456.5).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:15
S60	370	(455/456.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:15
S59	2014	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:15
S58	1	S49 and S57	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 12:10

EAST Search History

S57	215	S16 and S55	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:54
S56	29	S17 and S55	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:53
S54	12	S53 and S17	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:51
S52	8	S51 and S17	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:50
S51	2323	S49 and S50	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:40
S50	8292568	latenc\$3 nea2 device	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:39
S49	2406	cellular and ((ad-hoc) or (ad adj hoc) or bluetooth\$2) and (WLAN or (wireless adj local))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:39
S21	951	latenc\$3 with wireless	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:39
S47	85	cellular same ((ad-hoc) or (ad adj hoc)) same WLAN	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:38
S48	1	S17 and S47	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:35

EAST Search History

S46	1124414	cellular same (ad-hoc) ro (ad adj hoc) same WLAN	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:34
S45	0	S43 and S44	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:31
S43	8	S39 and S42	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:29
S42	587	S37 same S41	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:27
S41	3870	S40 with type	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:27
S40	42064	S27 with (known or determin\$5)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:26
S36	7898	S29 with (known or determin\$5)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:26
S39	33	S36 and S38	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:25
S38	33	S17 and S37	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:25
S29	91307	S27 with S28	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:10

EAST Search History

S35	11	S29 and S34	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:07
S34	1223	((three adj dimension\$4) or (three-dimension\$3)) near5 bear\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:07
S33	341	(455/456.6).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 10:06
S32	414	(455/456.5).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 10:04
S31	339	(455/456.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 10:04
S30	1883	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 10:04
S27	509136	(wireless or cellular or portable or mobile) with (telephone or phone or PDA or palm or device or terminal)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:01
S26	85	S17 and S25	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:00
S25	445	S16 with averag\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:51
S23	292	S16 near5 averag\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:51

EAST Search History


S24	2	S21 and S23	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:50
S22	6	S21 and S17	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:49
S18	951	latency with wireless	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:43
S20	6	S17 and S18	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:42
S19	1	S17 same S18	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:42
S17	2707	S16 with (locat\$4 or posit\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:42
S15	16	S7 S8 S9 S10 S11 S12 S13 S14	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:41
S14	2	"20030043073"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:37
S13	2	"20030025602"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:36
S12	2	"20020118655"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:36

EAST Search History

S11	2	"20020080759"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:36
S10	2	("6292665").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:36
S9	2	("5687196").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:35
S8	2	("5526357").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:35
S7	2	("5550549").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:35
S6	10	("5216429" "5293642" "5446756" "5600706" "5612703" "5945948" "5952969" "5960047" "6026305" "6031490").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2005/11/21 09:35
S5	6	S1 S2 S4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:30
S4	2	("6292665").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:30
S3	0	("62992665").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:30
S2	2	"20030034887"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:30

EAST Search History

S1	2	("5706010").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:29
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Application Number 	Application/Control No. 11/531,487	Applicant(s)/Patent under Reexamination BILLHARTZ ET AL.
Document Code - DISQ		Internal Document – DO NOT MAIL

TERMINAL DISCLAIMER	<input checked="" type="checkbox"/> APPROVED	<input type="checkbox"/> DISAPPROVED
Date Filed : August 14, 2007	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:
Henry D. Jefferson

U.S. Patent and Trademark Office

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:)
BILLHARTZ ET AL.)
) Examiner: K. Afshar
Serial No. 11/531,487)
)
Filing Date: September 13, 2006) Art Unit: 2617
)
For: WIRELESS COMMUNICATIONS SYSTEM)
INCLUDING A WIRELESS DEVICE)
LOCATOR AND RELATED METHODS)
)

TERMINAL DISCLAIMER TO OBVIATE A DOUBLE
PATENTING REJECTION OVER A PRIOR PATENT

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

Sir:

Assignee, Harris Corporation, having a mailing address of 1025 W. NASA Blvd., Melbourne, Florida 32919, verifies through its duly authorized representative that it is the owner of all right, title and interest in United States Patent Application Serial No. 11/531,487 (hereinafter "the '487 Patent Application") and has remained owner of all right, title and interest from the time of filing the original Assignment to the present. The Assignment was recorded on January 29, 2004, at Reel 014945, Frame 0941.

Assignee hereby disclaims, except as provided below, the terminal part of any patent granted on the '487 Patent Application which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. §154 to §156 and §173 of U.S. Patent No. 7,110,779. Assignee hereby agrees that any patent so granted on the '487 Patent Application shall be enforceable only for and during such period that it and the '779 Patent are commonly owned. This agreement runs with any patent granted on

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BILLHARTZ ET AL.
Serial No. 11/531,487
Filed: September 13, 2006

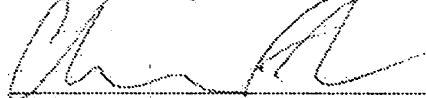
the instant application and is binding upon the Grantees, their successors or assigns.

In making the above disclaimer, Assignee does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. §154 to §156 and §173 of the prior patent, in the event that it later expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 C.F.R. § 1.321, has all claims cancelled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term.

For submission on behalf of Assignee, the undersigned is the attorney of record.

The Commissioner is hereby authorized to charge the fee in the amount of \$130.00 to Deposit Account No. 08-0870.

Respectfully submitted,



CHRISTOPHER F. REGAN
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407-841-2330
Attorney of Record for Applicant

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:)
BILLHARTZ ET AL.)
Serial No. 11/531,487) Examiner: K. AFSHAR
Filing Date: SEPTEMBER 13, 2006) Art Unit: 2617
For: WIRELESS COMMUNICATIONS SYSTEM)
INCLUDING A WIRELESS DEVICE)
LOCATOR AND RELATED METHODS)
_____)

AMENDMENT

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

Sir:

Responsive to the Official Action of May 16, 2007,
please enter the amendments and remarks set out below.

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Filed: September 13, 2006

In the Claims:

This listing of claims replaces all prior versions and listing of claims in the application.

1. (Original) A wireless communications system comprising:

a plurality of wireless communications devices each having a device type associated therewith from among a plurality of different device types, and each device type having a known device latency associated therewith; and

a wireless device locator comprising
at least one antenna and a transceiver connected thereto, and

a controller for cooperating with said transceiver for transmitting a plurality of location finding signals to a target wireless communications device from among said plurality of wireless communications devices;

said target wireless communications device transmitting a respective reply signal for each of said location finding signals;

said controller of said wireless device locator also for

cooperating with said transceiver for receiving the reply signals,

determining a propagation delay associated with the transmission of each location finding signal and

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the respective reply signal therefor based upon the known device latency of said target wireless communications device, and

estimating a range to said target wireless communications device based upon a plurality of determined propagation delays.

2. (Original) The wireless communications system of Claim 1 wherein said controller estimates the range based upon an average of the propagation delays.

Claims 3-6 (canceled).

7. (Original) The wireless communications system of Claim 1 wherein said at least one antenna comprises a plurality of antennas; and wherein said controller cooperates with said plurality of antennas to determine a bearing to said target wireless communications device based upon at least one of the received reply signals.

8. (Original) The wireless communications system of Claim 7 wherein the bearing is a three-dimensional bearing.

9. (Original) The wireless communications system of Claim 1 wherein said at least one antenna comprises at least one directional antenna.

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10. (Original) The wireless communications system of Claim 1 wherein said wireless device locator further comprises a portable housing carrying said at least one antenna, said transceiver, and said controller.

11. (Original) The wireless communications system of Claim 1 wherein said wireless communications devices comprise wireless local area network (WLAN) devices.

12. (Original) The wireless communications system of Claim 1 wherein said wireless communications devices comprise mobile ad-hoc network (MANET) devices.

13. (Original) The wireless communications system of Claim 1 wherein said wireless communications devices comprise cellular communications devices.

14. (Original) A wireless communications system comprising:

a plurality of wireless local area network (WLAN) devices each having a device type associated therewith from among a plurality of different device types, and each device type having a known device latency associated therewith; and

a wireless device locator comprising

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at least one antenna and a transceiver connected thereto, and

a controller for cooperating with said transceiver for transmitting a plurality of location finding signals to a target WLAN device from among said plurality of WLAN devices;

said target WLAN device transmitting a respective reply signal for each of said location finding signals;

said controller of said wireless device locator also for

cooperating with said transceiver for receiving the reply signals,

determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of said target WLAN device, and

estimating a range to said target WLAN device based upon an average of a plurality of determined propagation delays.

Claims 15-18 (canceled).

19. (Original) The wireless communications system of Claim 14 wherein said at least one antenna comprises a plurality of antennas; and wherein said controller cooperates with said plurality of antennas to determine a bearing to said target WLAN device based upon at least one of the received reply signals.

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20. (Original) A wireless device locator for locating a target wireless communications device comprising:

- at least one antenna and a transceiver connected thereto; and
- a controller for
 - cooperating with said transceiver for transmitting a plurality of location finding signals to the target wireless communications device and receiving a respective reply signal therefrom for each of said location finding signals,
 - determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon a known device latency of the target wireless communications device, and
 - estimating a range to the target wireless communications device based upon a plurality of determined propagation delays.

21. (Original) The wireless device locator of Claim 20 wherein said controller estimates the range based upon an average of the propagation delays.

Claims 22-23 (canceled).

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24. (Original) The wireless device locator of Claim 20 wherein said at least one antenna comprises a plurality of antennas; and wherein said controller cooperates with said plurality of antennas to determine a bearing to the target wireless communications device based upon at least one of the received reply signals.

25. (Original) The wireless device locator of Claim 20 wherein said at least one antenna comprises at least one directional antenna.

26. (Original) The wireless device locator of Claim 20 wherein said wireless device locator further comprises a portable housing carrying said at least one antenna, said transceiver, and said controller.

27. (Original) The wireless device locator of Claim 20 wherein the target wireless communications device comprises a wireless local area network (WLAN) device.

28. (Original) The wireless device locator of Claim 20 wherein the target wireless communications device comprises a mobile ad-hoc network (MANET) device.

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29. (Original) The wireless device locator of Claim 20 wherein the target wireless communications device comprises a cellular communications device.

30. (Original) A method for locating a target wireless communications device from among a plurality of wireless communications devices, each wireless communications device having a device type associated therewith from among a plurality of different device types, and each device type having a known device latency associated therewith, the method comprising:

transmitting a plurality of location finding signals to the target wireless communications device, and receiving a respective reply signal for each of the location finding signals therefrom;

determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of the target wireless communications device; and

estimating a range to the target wireless communications device based upon a plurality of determined propagation delays.

31. (Original) The method of Claim 30 wherein the controller estimates the range based upon an average of the propagation delays.

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Claims 32-33 (canceled).

34. (Original) The method of Claim 30 further comprising determining a bearing to the target wireless communications device based upon at least one of the received reply signals.

35. (Original) The method of Claim 30 wherein the target wireless communications device comprises a wireless local area network (WLAN) device.

36. (Original) The method of Claim 30 wherein the target wireless communications device comprises a mobile ad-hoc network (MANET) device.

37. (Original) The method of Claim 30 wherein the target wireless communications device comprises a cellular communications device.

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REMARKS

The Examiner is thanked for the thorough examination of the present application. The double patenting rejection has been addressed by filing a terminal disclaimer. The patentability of the claims is discussed below.

The Examiner is also thanked for the courtesies extended during the telephonic interview of August 6, 2007 during which the subject matter of the parent patent as related to the present continuation application was discussed. Based upon that discussion, Applicants believe the claims are patentable for the reasons presented in detail below.

I. The Claimed Invention

The invention is directed to a wireless communications system. Independent Claim 1, for example, recites a plurality of wireless communications devices each having a device type associated therewith from among a plurality of different device types. Further, each device type has a known device latency associated therewith. The system also includes a wireless device locator. More particularly, the wireless device locator includes at least one antenna and a transceiver connected thereto, and a controller for cooperating with the transceiver for transmitting a plurality of location finding signals to a target wireless communications device from among the plurality of wireless communications devices. The target wireless communications device transmits a respective reply signal for each of the location

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finding signals. The controller of the wireless device locator cooperates with the transceiver for receiving the reply signals and determines a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefore based upon the known device latency of the target wireless communications device. The controller of the wireless device locator also estimates a range to the target wireless communications device based on a plurality of determined propagation delays.

Independent Claim 14 is directed to a corresponding wireless local area network device. Independent Claim 20 is directed to a corresponding wireless device locator, and independent Claim 30 is directed to a corresponding method.

II. The Claims Are Patentable

The Examiner rejected independent Claims 1, 14, 20, and 31 over a combination of Deshpande et al. and Kuwahara et al. Deshpande et al. is directed to a device for finding and sharing device capabilities. A requesting device sends a request to share a capability of a sharing device located in the vicinity of the requesting device. Presence information of the requesting device and the sharing devices are compared to find a match. Presence data includes records of mobile stations or stations connected to the server. The records include information about device ID, IP address, type of requesting device, current status, type of interface, and a location at the time of sending the

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request. The device further includes an RF transceiver, an antenna, and a locator. The locator transmits the location of the requesting device to the server via the RF transceiver. The server receives the request from the requesting device and locates a sharing device matching the request. If a match is found, the server will provide the requesting device with directions to the sharing device.

The Examiner correctly recognized that Deshpande et al. does not disclose the controller of the wireless device locator determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal based upon the known device latency of the target wireless communications device, as in the claimed invention. The Examiner also correctly recognized that Deshpande et al. does not disclose estimating a range to the target wireless communications device based upon a plurality of determined propagation delays. The Examiner then turned to Kuwahara et al. for these critical deficiencies.

Kuwahara et al. is directed to a position calculation method that calculates the position of a terminal, when errors are not distributed symmetrically for positive and negative values, by calculating the position of the terminal using the delay time of received signals. The method calculates a first range that is a difference between a range from the terminal to each antenna and a range from the terminal to a base antenna, the range being calculated from a wireless signal delay time. A

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second range is calculated that is a difference between a range from an assumed terminal position for calculation to each antenna and a range from the assumed terminal position for calculation to the base antenna. Furthermore, a likelihood of the position of the terminal is calculated, these procedures are repeated to obtain a point where the likelihood is maximized, and an obtained most likely solution is determined as the position of the terminal. (Paragraphs 0009-0010).

It is respectfully submitted that even the selective combination of references proposed by the Examiner fails to teach or fairly suggest all of the recitations of the above-noted independent claims. More particularly, the Examiner contends that Kuwahara et al. teaches determining a propagation delay associated with the transmission of location finding signals and respective reply signals based upon a known device latency of target wireless communications device, and estimating a range to the target wireless communications device based upon the determined propagation delays as recited in the above-noted independent claims. As support, the Examiner points to the title, abstract, and paragraph 0015 of Kuwahara et al., which merely notes that the disclosure is directed to a method for measuring the range between a transmitter or a receiver and a terminal engaging in wireless communications to calculate the position of the terminal from the range measurement result. The range measurement result is calculated from a wireless signal delay time.

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Yet, none of the text cited by the Examiner teaches how the position of the terminal is calculated from the range measurement result. However, as noted in paragraph 0002 of Kuwahara et al., the approach set forth therein is intended for Code Division Multiple Access (CDMA) systems. In CDMA systems, all of the CDMA stations are synchronized. As a result, a receiving station will know the exact time that a signal is received, and a sending station sends its communications. This is how Kuwahara et al. estimates ranges to a sending station, as discussed in paragraphs 0032-0033 thereof:

"[0032] The receiver 2 converts the frequency of a received signal to produce a baseband signal. The delay profile analysis apparatus 3 performs sliding correlation with a known signal sent from a base station using a matched filter to detect the timing of a received signal and to calculate the reception timing of the received signal. The transmission timing of a signal from a base station, which is known information defined for each base station, may be obtained from a center unit (not shown) connected via a base station unit or from a database in the terminal in which the correspondence between the transmission timing of a base station and a base station ID is stored.

[0033] In addition, the delay profile analysis apparatus 3 calculates the difference between the calculated reception timing and the transmission timing of the base station to calculate the delay time required for propagation and then multiplies the delay time by the radio wave propagation

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speed (light velocity) to estimate the propagation range. In this way, the delay profile analysis apparatus 3 calculates a pseudo measured range." (Emphasis added).

Accordingly, Kuwahara et al. does not teach determining a propagation delay associated with the transmission of a location finding signal and a respective reply signal based upon a known device latency of a target wireless communications device. That is, the Kuwahara et al. approach merely looks at the time of transmission from a transmitting device and the time of reception at a receiving device, both of which are known, and then uses an estimated radio wave propagation speed (i.e., the speed of light) to estimate a position of the transmitting device based upon a difference between the known transmit and receive times. As such, Kuwahara et al. simply does not take into account any device latency of the transmitting terminal, nor a propagation delay associated with a "location" signal that prompts the transmitting terminal to send a reply. Thus, the proposed combination of reference fails to teach or fairly suggest all of the recitations of the above-noted independent claims.

Additionally, Applicants respectively submit that the Examiner is improperly combining the prior art references. Initially, Applicants point out that Deshpande et al. is directed to utilizing multiple functions of different devices by matching a requesting device that is requesting a service with a sharing

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device offering that requested service. In contrast, Kuwahara et al. is directed to locating the positions of wireless devices based on a propagation delay analysis.

Secondly, Deshpande et al. teaches the sharing devices, or requesting devices send their location to the server. In other words, the locator 360 in each sharing or requesting device determines the locations of the sharing devices. That is, each requesting device 300 is designed to self locate (i.e., via the GPS locator 360) and report its respective position information to the server 200. Conversely, in Kuwahara et al. the locations of the devices are unknown. To apply the teachings of Kuwahara et al. to achieve the claimed invention would require the server 200 of Deshpande et al. to instead attempt to locate the position of all of the requesting devices 300, which may otherwise place an unacceptable processing burden on the server 200, for example. Accordingly, there is simply no proper motivation to combine the two prior references. Applicants submit that the Examiner is improperly using Applicants' own specification as the motivation to assemble disjoint pieces from Deshpande et al. and Kuwahara et al. Indeed, a person having ordinary skill in the art would be taught away from combining the device matching teachings of Deshpande et al. with the signal analysis and position determination teachings of Kuwahara et al.

Accordingly, it is submitted that independent Claims 1, 14, 20, and 31 are patentable over the prior art. Their respective dependent claims, which recite yet further

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Filed: September 13, 2006

distinguishing features, are also patentable over the prior art and require no further discussion herein.

III. CONCLUSION

In view of the arguments provided herein, it is submitted that all the claims are patentable. Accordingly, a Notice of Allowance is requested in due course. Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,



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& Gilchrist, P.A.
255 S. Orange Avenue, Suite 1401
Post Office Box 3791
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407-841-2330
Attorney for Applicant(s)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:)
BILLHARTZ ET AL.)
) Examiner: K. Afshar
Serial No. 11/531,487)
)
Filing Date: September 13, 2006) Art Unit: 2617
)
For: WIRELESS COMMUNICATIONS SYSTEM))
 INCLUDING A WIRELESS DEVICE)
 LOCATOR AND RELATED METHODS)
_____))

TERMINAL DISCLAIMER TO OBVIATE A DOUBLE
PATENTING REJECTION OVER A PRIOR PATENT

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

Sir:

Assignee, Harris Corporation, having a mailing address of 1025 W. NASA Blvd., Melbourne, Florida 32919, verifies through its duly authorized representative that it is the owner of all right, title and interest in United States Patent Application Serial No. 11/531,487 (hereinafter "the '487 Patent Application") and has remained owner of all right, title and interest from the time of filing the original Assignment to the present. The Assignment was recorded on January 29, 2004, at Reel 014945, Frame 0941.

Assignee hereby disclaims, except as provided below, the terminal part of any patent granted on the '487 Patent Application which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. §154 to §156 and §173 of U.S. Patent No. 7,110,779. Assignee hereby agrees that any patent so granted on the '487 Patent Application shall be enforceable only for and during such period that it and the '779 Patent are commonly owned. This agreement runs with any patent granted on

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BILLHARTZ ET AL.
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_____ /

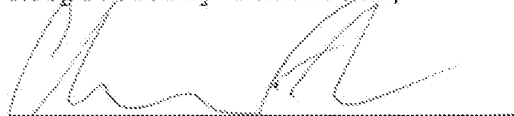
the instant application and is binding upon the Grantees, their successors or assigns.

In making the above disclaimer, Assignee does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. §154 to §156 and §173 of the prior patent, in the event that it later expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 C.F.R. § 1.321, has all claims cancelled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term.

For submission on behalf of Assignee, the undersigned is the attorney of record.

The Commissioner is hereby authorized to charge the fee in the amount of \$130.00 to Deposit Account No. 08-0870.

Respectfully submitted,



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407-841-2330

Attorney of Record for Applicant

Electronic Patent Application Fee Transmittal				
Application Number:		11531487		
Filing Date:		13-Sep-2006		
Title of Invention:		WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS		
First Named Inventor/Applicant Name:		Thomas Jay Billhartz		
Filer:		Paul Joseph Ditmyer./Sandra Kemraj		
Attorney Docket Number:		GCSD1494/51360CON1		
Filed as Large Entity				
Utility 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:				
Statutory disclaimer	1814	1	130	130
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				130

Electronic Acknowledgement Receipt	
EFS ID:	2079575
Application Number:	11531487
International Application Number:	
Confirmation Number:	1292
Title of Invention:	WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS
First Named Inventor/Applicant Name:	Thomas Jay Billhartz
Customer Number:	27975
Filer:	Paul Joseph Ditmyer./Sandra Kemraj
Filer Authorized By:	Paul Joseph Ditmyer.
Attorney Docket Number:	GCSD1494/51360CON1
Receipt Date:	14-AUG-2007
Filing Date:	13-SEP-2006
Time Stamp:	10:29:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$ 130
RAM confirmation Number	5061
Deposit Account	080870
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 and 1.17	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)		
1		Amendment.pdf	539126 8fadd7452b728dca64c3a6abf823d1064ef9758a	yes	17		
Multipart Description/PDF files in .zip description							
	Document Description	Start	End				
	Amendment - After Non-Final Rejection	1	1				
	Claims	2	9				
	Applicant Arguments/Remarks Made in an Amendment	10	17				
Warnings:							
Information:							
2	Terminal Disclaimer Filed	Terminal_disclaimer.pdf	190091 46c89f56175f5d074565e4bca0c1811b8356ff08	no	2		
Warnings:							
Information:							
3	Fee Worksheet (PTO-06)	fee-info.pdf	8215 5c6d6763786901450d013b9eec252fbc4324ba61	no	2		
Warnings:							
Information:							
Total Files Size (in bytes):			737432				
<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					11/531,487	
APPLICATION AS FILED – PART I						
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY
FOR	NUMBER FILED	NUMBER EXTRA		RATE (\$)	FEE (\$)	
BASIC FEE (37 CFR 1.18(a), (b), or (c))						300
SEARCH FEE (37 CFR 1.18(k), (l), or (m))						500
EXAMINATION FEE (37 CFR 1.18(o), (p), or (q))						200
TOTAL CLAIMS (37 CFR 1.18(j))	25	minus 20 =		X\$25=		X\$50 = 250
INDEPENDENT CLAIMS (37 CFR 1.18(h))	4	minus 3 =		X\$100=		X\$200= 200
APPLICATION SIZE FEE (37 CFR 1.18(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR					
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				N/A		N/A
				TOTAL		TOTAL 1450
* If the difference in column 1 is less than zero, enter "0" in column 2.						
APPLICATION AS AMENDED – PART II						
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR		RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.18(j))	25	Minus ** 25 = 0	X =		X =
	Independent (37 CFR 1.18(h))	4	Minus *** 4 = 0	X =		X =
Application Size Fee (37 CFR 1.18(s))				N/A		N/A
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.18(j))				TOTAL ADD'T FEE		TOTAL ADD'T FEE
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR		RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.18(j))	25	Minus ** 25 = 0	X =		X =
	Independent (37 CFR 1.18(h))	4	Minus *** 4 = 0	X =		X =
Application Size Fee (37 CFR 1.18(s))				N/A		N/A
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.18(j))				TOTAL ADD'T FEE		TOTAL ADD'T FEE
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.						

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

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/531,487	09/13/2006	Thomas Jay Billhartz	GCSD1494/51360CONI	1292

27975 7590 05/16/2007
ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A.
1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE
P.O. BOX 3791
ORLANDO, FL 32802-3791

EXAMINER

AFSHAR, KAMRAN

ART UNIT PAPER NUMBER

2617

MAIL DATE DELIVERY MODE

05/16/2007

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. 11/531,487	Applicant(s) BILLHARTZ ET AL.	
	Examiner <i>K. Afshar</i> Kamran Afshar, 571-272-7796	Art Unit 2617	

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

Period for Reply

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

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

Status

1) ☒ Responsive to communication(s) filed on 13 September 2006.

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

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1,2,7-14,19-31 and 34-37 is/are pending in the application.

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

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1,2,7-14,19-31 and 34-37 is/are rejected.

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

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

Application Papers

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

10) ☒ The drawing(s) filed on 13 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

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

Priority under 35 U.S.C. § 119

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

 a) ☐ All b) ☐ Some * c) ☐ None of:

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

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

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

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

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>09/13/2006</u> .	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ 5) <input type="checkbox"/> Notice of Informal Patent Application 6) <input type="checkbox"/> Other: _____.
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DETAILED ACTION***Double Patenting***

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

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

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

2. Claims 1,2,7-14,19-31 and 34-37 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-24 of U.S. Patent No. 7,110,779 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both basically claim the same subject matter which includes: 1) A wireless communications system, 2) a plurality of wireless communications devices each having a device type associated therewith from among a plurality of different device types, and each device type having a known device latency associated therewith, 3) a wireless device locator comprising at least one antenna and a transceiver connected thereto, 4) a controller for cooperating with said transceiver for transmitting a plurality of location finding signals to a target wireless communications device from among said plurality of wireless communications devices, 5) target wireless communications device transmitting a respective reply signal for each of said location finding signals; said controller of said wireless device locator also for cooperating with said transceiver for receiving the reply signals, 6) determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of said target wireless communications device, 7) estimating a range to said target wireless communications device based upon a plurality of determined propagation delays.

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3. Claims 1,2,7-14,19-31 and 34-37 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-25 of copending Application No. 11/058,931. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both basically claim the same subject matter which includes: 1) A wireless communications system, 2) a plurality of wireless communications devices each having a device type associated therewith from among a plurality of different device types, and each device type having a known device latency associated therewith, 3) a wireless device locator comprising at least one antenna and a transceiver connected thereto, 4) a controller for cooperating with said transceiver for transmitting a plurality of location finding signals to a target wireless communications device from among said plurality of wireless communications devices, 5) target wireless communications device transmitting a respective reply signal for each of said location finding signals; said controller of said wireless device locator also for cooperating with said transceiver for receiving the reply signals, 6) determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of said target wireless communications device, 7) estimating a range to said target wireless communications device based upon a plurality of determined propagation delays.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

"A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obviousness-type double patenting because the claims at issue were obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (affirming a holding of obviousness-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus). " **ELI LILLY AND COMPANY v BARR LABORATORIES, INC.**, United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

Claim Rejections - 35 USC § 103

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

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

5. Claims 1-2, 9-14, 20-21, 25-31, 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deshpande (U.S. Pub. No.: 2004/0266348 A1) in view of Kuwahara (U.S. Pub. No.: 2003/0191604 A1).

With respect to claim 1, 14, 20, 30, Deshpande discloses a wireless communications system, device, and / or method (i.e. cellular system, digital wireless system, Wireless LAN system and or short-range and /or Wi-Fi system), a plurality of wireless communications devices each inherently having a device type associated therewith from among a plurality of different device types (See Deshpande e.g. Page 2, ¶ [0016]) and each device type (inherently) having a known device latency associated therewith (See Deshpande e.g. Page, Cellular phone, PDA, Palmtop, mobile phone; wireless terminal, smart telephone, etc. ¶ [0029] - ¶ [0032]). Further, Deshpande discloses a wireless device locator (inherently) (i.e. adapted include hybrid system: WLAN, ad-hoc network, cellular network, LAN, WAN, etc. Page 1, ¶ [00012]) comprising at least one antenna and a transceiver connected thereto, and a controller (inherently) for cooperating with the transceiver for transmitting a plurality of location finding signals (See Deshpande e.g. 310, 320, 340, 36 of Fig.3, Page, 3, ¶ [0034]) to a target wireless communications device from among the plurality of wireless communications devices (See Deshpande e.g. 1000 of Fig. 1); the target wireless communications device (inherently) transmitting a respective reply signal for each (See Deshpande e.g. 110-120 to and from 130 and / or 120 to and from 185 of Fig. 1) of location finding signals (See Deshpande e.g. 360 of Fig 3, Lines 5-8 of ¶ [0036]); controller of wireless device locator also (inherently) for cooperating with the transceiver for receiving the reply signals (See Deshpande e.g. 330 of Fig. 3). In an analogous field of endeavor, Kuwahara discloses determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal and

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estimating a range to the target wireless communications device (or WLAN device) based upon a plurality of determined propagation delays (See Kuwahara e.g. Title, Abstract, Page 1, ¶ [0015]), and Figs. 1-7). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provide above teaching of Kuwahara to Deshpande to provide a method / system / a procedure for calculating, for each of the plurality of antennas, a first range that is a difference between a range from the terminal to each of the plurality of antennas, the range being calculated based on a wireless signal delay time, and a range from the terminal to the base antenna, the range being calculated based on a wireless signal delay time as suggested (See Kuwahara e.g. Page 1, ¶ [0010]).

Regarding claims 2, 21, 31, it is obvious that the controller estimates the range based upon an average of the propagation delays (See Kuwahara, e.g. Page 1, Lines 6-11 of ¶ [0003]).

Regarding claims 9, 25, Deshpande discloses at least one antenna comprises at least one directional antenna (See Deshpande e.g. Page 3, ¶ [0034]).

Regarding claims 10, 26, Deshpande discloses the wireless device locator further inherently comprises a portable housing carrying the at least one antenna, the transceiver, and the controller (See Deshpande e.g. Page 3, ¶ [0034]).

Regarding claims 11, 27, 35, Deshpande discloses the wireless communications devices comprise wireless local area network (WLAN) devices (See Deshpande e.g. Page 1, ¶ [0012]).

Regarding claims 12, 28, 36, Deshpande discloses the wireless communications devices comprise mobile ad-hoc network (MANET) devices (See Deshpande e.g. Page 1, ¶ [0012]).

Regarding claims 13, 29, 37, Deshpande discloses the wireless communications devices comprise cellular communications devices (See Deshpande e.g. Page 1, ¶ [0012]).

6. Claims 7-8, 19, 24 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deshpande (U.S. Pub. No.: 2004/0266348 A1) in view of Kuwahara (U.S. Pub. No.: 2003/0191604 A1) further in view of Kim (U.S. Pub. No.: 2003/0117320 A1).

Regarding claims 7-8, 19, 24, 34, both Kuwahara and Deshpande disclose everything as discussed above in rejected claims 1, 14, and 20. Further, Kuwahara discloses that the at least one antenna comprises a plurality of antennas (See Kuwahara e.g. a antenna or plurality of antennas, Page 1,

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¶ [0009]); and wherein the controller cooperates with the plurality of antennas (See Kuwahara e.g. 4 of Fig. 1, 7 of Fig. 7, Page 2, ¶ [0036]). However, both Kuwahara and Deshpande do not specifically teach determining a bearing to the target wireless communication device or the target WLAN device based upon at least one of the received reply signals. In an analogous field of endeavor, Kim specifically teach to determining a bearing (or a three-dimensional bearing) to the target wireless communication device or the target WLAN device based upon at least one of the received reply signals (See Kim, azimuth, angle, distance, etc., Page 1, ¶ [0013], Figs. 1-4). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provide above teaching of Kim to Kuwahara and Deshpande to provide an apparatus and method for tracking three-dimensional locations of a mobile station used for mobile communication systems as suggested (See Kim e.g. Page 1, ¶ [0002]).

Conclusion

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


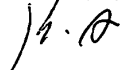
- a) Mizugaki (U.S. Pub. No.: 2003/0128163 A1).
- c) Siegel (U.S. 7,046,987 B2).
- b) Kuwahara (U.S. Pub. No.: 2004/0072566 A1).
- d) Kaiser (U.S. 6,990,428 B1).

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kamran Afshar whose telephone number is (571) 272-7796. The examiner can be reached on Monday-Friday.

If attempts to reach the examiner by the telephone are unsuccessful, the examiner's supervisor, **Eng, George** can be reached @ (571) 272-3984. The fax number for the organization where this application or proceeding is assigned is **571-273-8300** for all communications.

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).

Kamran Afshar



GEORGE ENG
SUPERVISORY PATENT EXAMINER

Notice of References Cited	Application/Control No. 11/531,487	Applicant(s)/Patent Under Reexamination BILLHARTZ ET AL.	
	Examiner <i>JK</i> Kamran Afshar, 571-272-7796	Art Unit 2617	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2003/0117320	06-2003	Kim et al.	342/457
*	B	US-2003/0128163	07-2003	Mizugaki et al.	342/464
*	C	US-6,990,428	01-2006	Kaiser et al.	455/456.1
*	D	US-2004/0072566	04-2004	Kuwahara et al.	455/440
*	E	US-2006/0183488	08-2006	Billhartz, Thomas Jay	455/456.5
*	F	US-7,110,779	09-2006	Billhartz et al.	455/456.2
*	G	US-7,046,987	05-2006	Siegel et al.	455/404.2
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
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NON-PATENT DOCUMENTS

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

INFORMATION DISCLOSURE STATEMENT				Atty Docket: Serial No.: Applicant: Filing Date: Group:	GCSD-1494 (51360) Not yet assigned Billhartz et al. Herewith		
U.S. PATENT DOCUMENTS							
Examiner Initials		Document Number	Date	Name	Class	Sub Class	Filing Date
/KA/	AA	5,550,549	8/27/96	Procter, Jr. et al.	342	47	
/KA/	AB	5,526,357	6/11/96	Jandrell	370	95.2	
/KA/	AC	5,687,196	11/11/97	Proctor, Jr. et al.	375	347	
/KA/	AD	5,706,010	1/6/98	Franke	342	47	
/KA/	AE	6,292,665	9/18/01	Hildebrand et al.	455	456	
/KA/	AF	2002/0080759	06/2002	Harrington et al.	370	338	
/KA/	AG	2002/0118655	08/2002	Harrington et al.	370	328	
/KA/	AH	2003/0025602	02/2003	Medema et al.	340	568.1	
/KA/	AI	2003/0034887	02/2003	Crabtree et al.	340	539	
/KA/	AJ	2003/0043073	03/2003	Gray et al.	342	465	
/KA/	AK	2005/0037775	02/2005	Moeglein et al.	455	456.1	
/KA/	AL	2005/0059411	03/2005	Zhengdi	455	456.1	
/KA/	AM	2002/0171686	11/2002	Martorana et al.	342	458	
/KA/	AN	2004/0266348	12/2004	Deshpande et al.	455	041.2	
/KA/	AO	6,680,923	01/2004	Leon	370	328	
/KA/	AP	2003/0162550	08/2003	Kuwahara et al.	455	456	
/KA/	AQ	6,865,394	03/2005	Ogino et al.	455	456.1	
/KA/	AR	2004/0203889	10/2004	Karaoguz	455	456.1	
/KA/	AS	2003/0191604	10/2003	Kuwahara et al.	702	150	
/KA/	AT	2004/0081139	04/2004	Beckmann et al.	370	352	
/KA/	AU	2004/0110514	06/2004	Kim et al.	455	456.1	
/KA/	AV	2003/0182052	09/2003	DeLome et al.	701	201	
OTHER ART (Including Author, Title, Date, Pertinent Pages, etc.)							
/KA/	AW	Yellowjacket-A, 802.11a Wi-Fi Analysis System, Berkeley Varitronics Systems					

EXAMINER: /Kamran Afshar/	DATE CONSIDERED: 05/06/2007
<p>*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.</p>	



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Bib Data Sheet

CONFIRMATION NO. 1292

SERIAL NUMBER 11/531,487	FILING OR 371(c) DATE 09/13/2006 RULE	CLASS 455	GROUP ART UNIT 2617	ATTORNEY DOCKET NO. GCSD1494/51360CON1
APPLICANTS Thomas Jay Billhartz, Melbourne, FL; ✓ Vivek Krishna, Palm Bay, FL; ✓ Steve Kopman, Melbourne, FL; ✓				
** CONTINUING DATA ***** This application is a CON of 10/767,794 01/29/2004 PAT 7,110,779 <i>See K.P.</i>				
** FOREIGN APPLICATIONS ***** <i>None K.P.</i>				
IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 10/26/2006				
Foreign Priority claimed <input type="checkbox"/> yes <input checked="" type="checkbox"/> no 35 USC 119 (a-d) conditions <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Met after Allowance <i>K.P.</i> Verified and Acknowledged <i>K.P.</i>		STATE OR COUNTRY FL	SHEETS DRAWING 9	TOTAL CLAIMS 25
				INDEPENDENT CLAIMS 4
ADDRESS 27975				
TITLE WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS				
FILING FEE RECEIVED 1450	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	

Index of Claims



Application/Control No.

11/531,487

Examiner

Kamran Afshar, 571-272-7796

Applicant(s)/Patent under Reexamination

BILLHARTZ ET AL.

Art Unit

2617

✓	Rejected
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-	(Through numeral) Cancelled
+	Restricted

N	Non-Elected
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A	Appeal
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Claim		Date			
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1	✓				
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Search Notes

Application/Control No.

11/531,487

Examiner

Kamran Afshar, 571-272-7796

Applicant(s)/Patent under
Reexamination

BILLHARTZ ET AL.

Art Unit

2617

SEARCHED

Class	Subclass	Date	Examiner
455	41.2-41.3	11/21/2005	KA
455	456.1-457	11/21/2005	KA
455	553.1, 63.4	11/21/2005	KA
455	562.1, 67.11	11/21/2005	KA
455	67.13, 67.16	11/21/2005	KA
455	402.2	11/21/2005	KA
342	357.08- 357.09	11/21/2005	KA
342	357.1 450	11/21/2005	KA
340	426.19 426.21	11/21/2005	KA
340	539.23 825.49	11/21/2005	KA
370	310.2 328	11/21/2005	KA
370	331, 338	11/21/2005	KA
701	201	11/21/2005	KA
702	149	11/21/2005	KA

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
East Search (US-PGPUB; USPAT; EPO; DERWENT; IBM_TDB)	11/21/2005	KA
Temica Beamer	2/24/2006	KA
Updated East Search	6/14/2006	KA
Joseph Feild	6/27/2006	KA
Updated East Search	5/4/2007	KA

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L75	2	("6990428").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/07 11:04
S28 8	14	S274 and S287	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:13
S28 9	2	("7046987").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 10:13
S28 7	254	S277 same S286	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:06
S28 6	2133	S275 with S285	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:06
S28 5	189956	(determin\$3) near5 (type)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:06
S28 3	788995	(different or plurality) near5 (type)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:05

EAST Search History

S28 4	7	S282 and S283	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:02
S27 2	1183346	(different or plurality) with (latenc\$4 or type or delay\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 10:02
S28 1	34599	S279 same S280	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:42
S28 2	69	S278 same S281	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:42
S27 9	1306167	S275 or S276	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:42
S28 0	1185053	S272 or S273	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:42
S27 8	2640	S274 same S277	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:41

EAST Search History

S27 7	1243461	(estimat\$3 or calculat\$3 or determin\$3 or measur\$4) near5 (range or distance or proximit\$4 or location or position or present)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:41
S12 8	778742	(estimat\$3 or calculat\$3 or determin\$3) near5 (range or distance or proximit\$4 or location or position)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:39
S27 5	912299	(cellular or mobile or phone or PDA or radiotelephone or radio or wireless) near5 ((local near2 (area or network or WLAN)) or network or terminal or apparatus or laptop or station or device or unit or phone or telephone)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:38
S27 6	499148	(ad-hoc or ad\$2hoc or "802."\$3 or bluetooth or homerf or IrDA or infrared)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:38
S44	21	cellular with ad-hoc with WLAN	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:29
S27 4	44877	propagat\$4 near5 (dela\$3 or latenc\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:28
S27 3	3454	(device or terminal) near3 latenc\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:28
S55	1666	(device or terminal) adj3 latenc\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:27

EAST Search History

S27 1	0	S265 and S270	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:26
S16	34217	propagat\$4 near3 delay	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:26
S28	7877263	(different or plurality) wit (latenc\$4 or type or delay\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:26
S27 0	1124	S268 S269	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:25
S26 9	1124	S267 S268	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 09:25
S26 8	1041	(702/150).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 09:25
S26 7	95	(702/149).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 09:24

EAST Search History

S25 4	0	(455/456.7).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:58
S26 6	2	("7110779").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:58
S26 5	115	S264 and S247 and S246 or S241 and S258	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:30
S26 4	2517	S259 S260 S261 S262 S263	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:30
S25 8	11033	S248 S249 S250 S251 S252 S253 S254 S255 S256 S257 S231 S232 S233 S234 S235	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:30
S24 6	11531	S242 S243 S244 S245 S228 S229 S230 S227	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:30
S24 1	1800	S236 S237 S238 S239 S240	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:30

EAST Search History

S24 7	803	(701/201).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 5	394	(455/67.16).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 7	1015	(455/67.13).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 6	2446	(455/67.11).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 4	204	(455/63.4).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 5	1549	(455/562.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 3	658	(455/553.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 3	536	(455/456.6).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30

EAST Search History

S25 2	618	(455/456.5).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 1	143	(455/456.4).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 0	714	(455/456.3).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 9	557	(455/456.2).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 8	2911	(455/456.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S22 7	2911	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 2	159	(455/41.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 1	1420	(455/41.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30

EAST Search History

S24 5	1121	(370/350).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 4	293	(370/346).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 0	3260	(370/335).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S22 9	1816	(370/331).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S22 8	2306	(370/328).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 3	509	(370/324).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 2	82	(370/310.2).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30

EAST Search History

S26 3	585	(342/458).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S26 2	700	(342/450).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S26 1	530	(342/357.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S26 0	562	(342/357.09).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S25 9	405	(342/357.08).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 6	224	(340/991).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S24 0	1259	(340/825.49).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30

EAST Search History

S23 9	175	(340/539.23).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 8	80	(340/426.22).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S23 7	120	(340/426.19).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:30
S22 6	115	S218 and S201 and S200 or S195 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:24
S21 9	1800	S218 and S201 and S200 or S195	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:24
S22 5	11079	S202 S203 S204 S205 S206 S207 S208 S209 S210 S211 S220 S221 S222 S223 S224	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:23
S21 2	11033	S202 S203 S204 S205 S206 S207 S208 S209 S210 S211 S185 S186 S187 S188 S189	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:23

EAST Search History

S22 3	207	(455/63.4).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:22
S22 4	1550	(455/562.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:22
S22 2	664	(455/553.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:22
S22 1	159	(455/41.3).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:22
S22 0	1456	(455/41.2).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:22
S18 5	1420	(455/41.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:22
S21 8	2517	S213 S214 S215 S216 S217	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:19

EAST Search History

S20 0	11531	S196 S197 S198 S199 S181 S183 S184 S180	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:19
S21 7	585	(342/458).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:19
S21 6	700	(342/450).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:18
S21 5	530	(342/357.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:18
S21 4	562	(342/357.09).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:18
S21 3	405	(342/357.08).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:18
S20 9	394	(455/67.16).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:15

EAST Search History

S21 1	1015	(455/67.13).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:15
S21 0	2446	(455/67.11).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:15
S20 8	0	(455/456.7).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:15
S20 7	536	(455/456.6).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:15
S20 6	618	(455/456.5).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:15
S20 1	803	(701/201).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:14
S20 5	143	(455/456.4).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:14

EAST Search History

S20 4	714	(455/456.3).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:14
S20 3	557	(455/456.2).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:14
S20 2	2911	(455/456.1).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:14
S18 0	2911	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:14
S19 5	1800	S190 S191 S192 S193 S194	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:12
S19 9	1121	(370/350).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:12
S19 8	293	(370/346).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:12

EAST Search History

S19 7	509	(370/324).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:12
S18 1	2306	(370/328).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:11
S19 6	82	(370/310.2).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:11
S19 4	1259	(340/825.49).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:10
S19 3	175	(340/539.23).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:09
S19 0	224	(340/991).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:06
S19 2	80	(340/426.22).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:06

EAST Search History

S19 1	120	(340/426.19).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:06
S18 9	1549	(455/562.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:05
S18 8	204	(455/63.4).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:04
S18 7	658	(455/553.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:03
S18 6	159	(455/41.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:03
S18 2	3502	(370/338).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:01
S18 4	3260	(370/335).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:01
S18 3	1816	(370/331).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:01

EAST Search History

S15 8	414	(342/458).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/05/06 08:01
S66	3169	S59 S60 S61 S62 S63 S64	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/06 08:00
S12 3	1022	S120 or S121 or S122	US-PGPUB	OR	ON	2007/05/06 08:00
S17 8	5	S175 and S138	US-PGPUB	OR	ON	2006/06/14 09:47
S17 9	2	("6933890").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 09:47
S17 7	0	S175 and S142	US-PGPUB	OR	ON	2006/06/14 09:45
S17 6	1	S175 and S161	US-PGPUB	OR	ON	2006/06/14 09:44
S17 5	11	S173 and S174	US-PGPUB	OR	ON	2006/06/14 09:44
S17 3	29	S171 and S172	US-PGPUB	OR	ON	2006/06/14 09:44
S17 4	9828	S167 and S168	US-PGPUB	OR	ON	2006/06/14 09:44
S17 2	37574	S165 and S166	US-PGPUB	OR	ON	2006/06/14 09:44
S17 1	49	S162 and S163 and S164	US-PGPUB	OR	ON	2006/06/14 09:44
S17 0	1	S169 and S161	US-PGPUB	OR	ON	2006/06/14 09:43
S16 9	13	S153 and S154 and S155	US-PGPUB	OR	ON	2006/06/14 09:43
S16 8	104246	S146.clm.	US-PGPUB	OR	ON	2006/06/14 09:42
S16 2	43560	S153.clm.	US-PGPUB	OR	ON	2006/06/14 09:36
S16 3	179293	S151.clm.	US-PGPUB	OR	ON	2006/06/14 09:36
S16 4	1072	S150.clm.	US-PGPUB	OR	ON	2006/06/14 09:36

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S16 7	9828	S145.clm.	US-PGPUB	OR	ON	2006/06/14 09:36
S16 5	146922	S144.clm.	US-PGPUB	OR	ON	2006/06/14 09:36
S16 6	194965	S143.clm.	US-PGPUB	OR	ON	2006/06/14 09:36
S16 1	43	S159.clm.	US-PGPUB	OR	ON	2006/06/14 09:35
S16 0	1	S156 and S159	US-PGPUB	OR	ON	2006/06/14 09:35
S15 9	169	(determin\$3 or recogni\$4) adj5 (((device or terminal or LAN or WLAN or phone or telephone or apparatus or local or network) adj3 (wireless or transceiver or transmit\$4 or receiv\$3)) with (latenc\$4 or type))	US-PGPUB	OR	ON	2006/06/14 09:35
S15 4	3090	(determin\$3 or recogni\$4) with (((device or terminal or LAN or WLAN or phone or telephone or apparatus or local or network) near5 (wireless or transceiver or transmit\$4 or receiv\$3)) with (latenc\$4 or type))	US-PGPUB	OR	ON	2006/06/14 09:34
S15 7	880	(342/457).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 09:18
S15 6	13	S155 and S154	US-PGPUB	OR	ON	2006/06/14 09:17
S15 5	75	S152 and S153	US-PGPUB	OR	ON	2006/06/14 09:15
S15 3	179667	(determin\$3 or estimat\$3 or calculat\$4) near5 (range or distance or location or position)	US-PGPUB	OR	ON	2006/06/14 09:12
S15 2	91	S149 and S150 and S151	US-PGPUB	OR	ON	2006/06/14 09:10
S15 1	486659	((unique or known) adj3 (identif\$6 or ID or code)) or (identif\$6 or ID or code)	US-PGPUB	OR	ON	2006/06/14 09:07
S72	72326	unique adj3 (identif\$6 or ID or code)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/14 09:06

EAST Search History

S15 0	39001	propagat\$4 near5 delay	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/14 09:06
S10 4	30942	propagat\$4 adj2 delay	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/14 09:06
S14 9	702	S148 same S145	US-PGPUB	OR	ON	2006/06/14 09:04
S14 7	194965	S143.clm.	US-PGPUB	OR	ON	2006/06/14 09:04
S14 8	49208	S143 with S144	US-PGPUB	OR	ON	2006/06/14 09:04
S14 6	260382	(locat\$4 or transmit\$4 or receiv\$3 or reply\$3 or acknowldg\$4) near5 signal	US-PGPUB	OR	ON	2006/06/14 09:04
S14 5	43511	locat\$4 near5 signal	US-PGPUB	OR	ON	2006/06/14 09:03
S14 4	304661	(device or terminal or LAN or WLAN or phone or telephone or apparatus or local or network) near5 (wireless or transceiver or transmit\$4 or receiv\$3)	US-PGPUB	OR	ON	2006/06/14 09:02
S71	92481	(device or terminal or LAN or WLAN or phone or telephone or apparatus) near5 (wireless or transceiver or transmit\$4 or receiv\$3)) with (latenc\$5 or dela\$5 or typ\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/14 09:01
S14 3	937485	(latenc\$4 or typ\$3 or delay\$3 or propag\$6 or ((dela\$4 or latanc\$5 or reply\$ or respon\$3) near5 (signal or propag\$6)))	US-PGPUB	OR	ON	2006/06/14 09:00
S70	919023	(different or plurality) with (latenc\$4 or typ\$3 or delay\$3 or propag\$6 or ((dela\$4 or latanc\$5 or reply\$ or respon\$3) near5 (signal or propag\$6)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/14 09:00
S14 2	1023	S139 or S140 or S141	US-PGPUB	OR	ON	2006/06/14 08:59
S13 8	1867	S131 S132 S133 S134 S135 S136	US-PGPUB	OR	ON	2006/06/14 08:59

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S13 7	3563	S131 S132 S133 S134 S135 S136	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/14 08:59
S13 9	332	(455/67.16).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S14 1	855	(455/67.13).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S14 0	2023	(455/67.11).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 4	430	(455/456.6).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 3	500	(455/456.5).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 6	116	(455/456.4).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 5	573	(455/456.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 2	427	(455/456.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59
S13 1	2294	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/14 08:59

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S13 0	17	S129 and S128	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:54
S12 9	29	S105 and S109	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:54
S12 7	3549	S113 or S114 or S115 or S116 or S117 or S118	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:52
S11 9	3549	S113 S114 S115 S116 S117 S118	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:50
S12 4	95	S108 and S105	US-PGPUB	OR	ON	2006/06/07 08:49
S12 6	2	S105 and S119	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:49
S12 5	2	S105 and S119	US-PGPUB	OR	ON	2006/06/07 08:49
S12 0	332	(455/67.16).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S12 2	852	(455/67.13).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S12 1	2017	(455/67.11).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47

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S11 6	428	(455/456.6).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 5	496	(455/456.5).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 8	115	(455/456.4).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 7	569	(455/456.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 4	426	(455/456.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 3	2286	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/07 08:47
S11 1	98426	S108 with (identif\$5 or ID or code)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:42
S11 2	37	S105 and S111	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:42
S10 9	1167	S108 with latency	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:41
S11 0	34	S109 with type	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:27

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S10 8	1125392	(wireless or portable or mobile or transceiver or cellular or transmitter or receiver) with (device or terminal or apparatus or unit or transceiver or phone or telephone)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:26
S10 7	23	S106 same locat\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:22
S10 6	273	S104 with latency	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:07
S10 5	536	S104 same latency	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/06/07 08:07
S10 3	64	wireless with locator with transceiver	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:18
S10 2	3	S98 and S101	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:17
S10 0	18	S98 and latenc\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:13
S10 1	502	(latenc\$5 or dela\$5) same (WLAN)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:13
S99	1	S98 same latenc\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:08

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S97	443553	type.clm.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:07
S98	126	S96 same S97	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:07
S96	2679	plurality adj2 wireless.clm.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:07
S77	18	S74 and S76	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:06
S95	0	plurality adj of adj wireless.clm.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/15 08:06
S92	132	S90 same S91	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:19
S93	948	S90 and S91	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:19
S94	35	S87 and S93	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:19
S91	13305	directional near3 antenna	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:19
S90	17437	(controller or processor or DSP) near5 transceiver	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:18

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S89	73902	S80 same S86	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:17
S88	11384	(controller oprocessor or DSP) near5 transceiver	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:17
S87	45639	S80 with averag\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:15
S86	1017841	(position\$3 or locat\$4 or rang\$3 or distanc\$3) near5 (measur\$4 or calculat\$3 or determin\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:15
S74	876446	(position\$3 or locat\$4 or rang\$3) near5 (measur\$4 or calculat\$3 or determin\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 08:10
S84	127	S81 same S82	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:49
S85	32	S66 and S84	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:49
S83	1011	S81 and S82	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:48
S82	17854	(device or terminal or LAN or WLAN or phone or telephone or apparatus) near5 (wireless or transceiver)) with (latenc\$5 or dela\$5 or typ\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:48
S81	60659	S74 same S80	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:47

EAST Search History

S80	1754727	(latenc\$4 or delay\$3 or tim\$4) near5 (propag\$6 or tim\$4 or signal\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:47
S79	12	("5910946" "6023241" "6028764" "6040784" "6047047" "6049291" "6052812" "6272348" "6549543" "6570871" "6601040" "6608832").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2006/02/07 07:42
S78	5	("6680923").URPN.	USPAT	OR	ON	2006/02/07 07:40
S76	64	S73 and S75	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:31
S75	13613	S70 same S71	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:31
S73	266	S71 same S72	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:30
S37	1353	S36 same (identif\$6 or ID or code)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:25
S53	612	known adj3 latency\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/07 07:21
S67	316	(455/67.16).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:17
S69	792	(455/67.13).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:17

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S68	1851	(455/67.11).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:17
S65	478	(455/457).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:16
S62	372	(455/456.6).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:16
S64	96	(455/456.4).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:16
S63	477	(455/456.3).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:16
S61	444	(455/456.5).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:15
S60	370	(455/456.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:15
S59	2014	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/02/07 07:15
S58	1	S49 and S57	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 12:10
S57	215	S16 and S55	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:54

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S56	29	S17 and S55	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:53
S54	12	S53 and S17	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:51
S52	8	S51 and S17	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:50
S51	2323	S49 and S50	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:40
S21	951	latenc\$3 with wireless	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:39
S50	8292568	latenc\$3 nea2 device	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:39
S49	2406	cellular and ((ad-hoc) or (ad adj hoc) or bluetooth\$2) and (WLAN or (wireless adj local))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:39
S47	85	cellular same ((ad-hoc) or (ad adj hoc)) same WLAN	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:38
S48	1	S17 and S47	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:35
S46	1124414	cellular same (ad-hoc) ro (ad adj hoc) same WLAN	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:34

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S45	0	S43 and S44	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:31
S43	8	S39 and S42	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:29
S41	3870	S40 with type	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:27
S42	587	S37 same S41	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:27
S36	7898	S29 with (known or determin\$5)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:26
S40	42064	S27 with (known or determin\$5)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:26
S39	33	S36 and S38	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:25
S38	33	S17 and S37	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:25
S29	91307	S27 with S28	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:10
S35	11	S29 and S34	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:07

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S34	1223	((three adj dimension\$4) or (three-dimension\$3)) near5 bear\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:07
S33	341	(455/456.6).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 10:06
S32	414	(455/456.5).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 10:04
S31	339	(455/456.2).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 10:04
S30	1883	(455/456.1).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 10:04
S27	509136	(wireless or cellular or portable or mobile) with (telephne or phone or PDA or palm or device or terminal)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:01
S26	85	S17 and S25	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 10:00
S25	445	S16 with averag\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:51
S23	292	S16 near5 averag\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:51
S24	2	S21 and S23	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:50

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EAST Search History

S22	6	S21 and S17	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:49
S18	951	latency with wireless	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:43
S19	1	S17 same S18	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:42
S20	6	S17 and S18	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:42
S17	2707	S16 with (locat\$4 or posit\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:42
S15	16	S7 S8 S9 S10 S11 S12 S13 S14	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:41
S14	2	"20030043073"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:37
S10	2	("6292665").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:36
S13	2	"20030025602"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:36
S12	2	"20020118655"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:36

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EAST Search History

S11	2	"20020080759"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:36
S9	2	("5687196").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:35
S7	2	("5550549").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:35
S8	2	("5526357").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:35
S6	10	("5216429" "5293642" "5446756" "5600706" "5612703" "5945948" "5952969" "5960047" "6026305" "6031490").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2005/11/21 09:35
S5	6	S1 S2 S4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:30
S3	0	("62992665").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:30
S4	2	("6292665").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:30
S2	2	"20030034887"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 09:30
S1	2	("5706010").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/11/21 09:29

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APPLICATION NUMBER	FILING OR 371(c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/531,487	09/13/2006	Thomas Jay Billhartz	GCSD1494/51360CON1

CONFIRMATION NO. 1292

27975
ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A.
1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE
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ORLANDO, FL32802-3791

Title: WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS

Publication No. US-2007-0026873-A1

Publication Date: 02/01/2007

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

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

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Pre-Grant Publication Division, 703-605-4283

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PATENT APPLICATION FEE DETERMINATION RECORD					11/531,487	
Substitute for Form PTO-875						
APPLICATION AS FILED – PART I						
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY
FOR	NUMBER FILED	NUMBER EXTRA		RATE (\$)	FEE (\$)	
BASIC FEE (37 CFR 1.16(a), (b), or (c))						300
SEARCH FEE (37 CFR 1.16(k), (l), or (m))						500
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))						200
TOTAL CLAIMS (37 CFR 1.16(i))	25	minus 20 =		X\$25=		X\$50 250
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4	minus 3 =		X\$100=		X\$200= 200
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR					
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				N/A		N/A
				TOTAL		TOTAL 1450
* If the difference in column 1 is less than zero, enter "0" in column 2.						
APPLICATION AS AMENDED – PART II						
(Column 1)		(Column 2)		(Column 3)		
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
	Total (37 CFR 1.16(i))	*	Minus **	=		
	Independent (37 CFR 1.16(h))	*	Minus ***	=		
	Application Size Fee (37 CFR 1.16(s))					
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
(Column 1)		(Column 2)		(Column 3)		
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
	Total (37 CFR 1.16(i))	*	Minus **	=		
	Independent (37 CFR 1.16(h))	*	Minus ***	=		
	Application Size Fee (37 CFR 1.16(s))					
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
(Column 1)		(Column 2)		(Column 3)		
SMALL ENTITY		OTHER THAN SMALL ENTITY		OR		
RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)		ADDITIONAL FEE (\$)	
X =			X =			
X =			X =			
N/A			N/A			
TOTAL ADD'T FEE				TOTAL ADD'T FEE		
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.						

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

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Docket No. GCSD1494/51360CON1

Anticipated Classification of this application: Class 439/181

Prior Application Examiner: Kamran AFSHAR, Art Unit: 2617

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

Sir:

This is a request for filing a continuation of pending prior application Serial No. 10/767,794 filed on January 29, 2004 for WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS.

Inventors: Thomas Jay BILLHARTZ; Vivek KRISHNA; Steve KOPMAN


1. ☒ Enclosed is a copy of the prior application, including the oath or declaration as originally filed and an affidavit or declaration verifying it as a true copy.
2. ☐ Prepare a copy of the prior application.
3. ☒ A preliminary amendment is enclosed. (Claims added by this amendment have been properly numbered consecutively beginning with the number next following the highest numbered original claim in the prior application.)
4. ☒ The suggested drawing figure to be published is FIG. 1.
5. ☒ The filing fee is calculated below:

CLAIMS AS FILED IN THE PRIOR APPLICATION, LESS ANY CLAIMS CANCELED BY AMENDMENT

	(Col. 1)		(Col. 2)		SMALL ENTITY		LARGE ENTITY	
FOR:	# FILED		# EXTRA		RATE	FEE	RATE	FEE
BASIC FEE								\$300
SEARCH FEE								\$500
EXAMINATION FEE								\$200
TOTAL CLAIMS	25	-20	5		X 25	\$	X 50	\$250
INDEP CLAIMS	4	- 3	1		X 100	\$	X 200	\$200
TOTAL PAGES		- 100	0		X 125*	\$	X 250*	
* for each additional 50 sheets that exceeds 100 sheets					TOTAL	\$	TOTAL	\$1450

6. ☒ The Commissioner is authorized to charge the filing fee of \$1450 to Harris Corporation Deposit Account No. 08-0870.
7. ☐ Transfer the drawings from the prior application to this application and abandon said prior application as of the filing date accorded this application. A duplicate copy of this sheet is enclosed for filing in the prior application file.
8. ☒ New formal drawings are enclosed.
9. ☐ Priority of application Serial No. _____ filed on _____ in _____
is claimed under 35 U.S.C. 119. (country)
10. ☐ The certified copy has been filed in prior application Serial No. _____ filed _____
11. ☒ The prior application is assigned of record to Harris Corporation.
- 11a. ☒ Assignee info:
Name: Harris Corporation
Address: 1025 West NASA Blvd., Melbourne, Florida 32919
State of Incorporation: Delaware
12. ☒ Citation Under 37 CFR 1.97 and PTO-1449.
13. ☒ The power of attorney in the prior application is to practitioners associated with 27975.
- 13a. ☒ The power appears in the original papers in the prior application.
- 13b. ☐ Since the power does not appear in the original papers, a copy of the power in the prior application is enclosed.
- 13c. ☒ Continue to address all future communications to customer number **27975**.
14. ☐ Applicant qualifies as a small entity under 37 CFR § 1.27.
15. ☒ I hereby verify that the attached papers are a true copy of prior application Serial No. 10/767,794 as originally filed on January 29, 2004.

Date: September 13, 2006


CHRISTOPHER F. REGAN
Registration No. 34,906
Attorney of record

WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS
DEVICE LOCATOR AND RELATED METHODS

Field of the Invention

[0001] The present invention relates to the field of wireless communications systems, and, more particularly, to wireless location devices and related methods.

Background of the Invention

[0002] Wireless location techniques are used in numerous applications. Perhaps the most basic of these applications is for locating lost articles. By way of example, published U.S. patent application no. 2003/0034887 to Crabtree et al. discloses a portable article locator system for locating lost articles such as glasses, keys, pets, television remotes, etc. More particularly, a wireless transceiver is attached to a person, animal, or other object. A handheld locator transmits a locator signal to the wireless transceiver which includes a unique address code of the transceiver. If the received code matches that stored by the wireless transceiver, it sends a return signal back to the locator

device. The locator device uses the return signal to determine the distance and/or direction to the wireless transceiver from the user's location.

[0003] The locator device includes an antenna array which includes a plurality of omni-directional antennas. The locator unit determines the bearing to the wireless transceiver by switching between antennas in the antenna array and using Doppler processing to determine a direction of a wireless signal received from the transceiver. The distance to the wireless transmitter is also determined based upon the reception of the wireless signal at each of the antennas of the antenna array. Furthermore, in one embodiment, which is intended to avoid interference between two or more locators in a common area, a plurality of locator signals may be sent from a locator at a standard repetition rate. The locator's receiver then only listens for responses during predetermined windows following each transmission.

[0004] In contrast, in some applications it is desirable to determine the location of an unknown signal transmitter. U.S. Patent No. 5,706,010 to Franke discloses such a system in which a transmitter locator receives a signal from the unknown signal transmitter and processes the signal to determine a bearing to the unknown signal transmitter. The transmitter locator then sends an interrogating signal to the unknown signal transmitter. Upon receiving the interrogating signal, the unknown signal transmitter heterodynes the interrogation signal with its own carrier signal to generate an intermodulation return signal. A processor of the transmitter locator measures the round-trip transit time

from the transmission of the interrogation signal to the reception of the intermodulation return signal. A range to the unknown signal transmitter is then calculated based upon the round-trip transit time.

[0005] Still another application in which locating a wireless communications device is often necessary is in cellular telephone networks. That is, it may be necessary to locate particular cellular telephone users for law enforcement or emergency purposes, for example. U.S. Patent No. 6,292,665 to Hildebrand et al., which is assigned to the present assignee, discloses a method for geolocating a cellular phone initiating a 911 call. A base station transceiver transmits a supervisory audio tone (SAT), which is automatically looped back by the calling cellular phone. Returned SAT signals are correlated with those transmitted to determine the range of the cellular phone. In addition, incoming signals from the cellular phone, such as the returned SAT signals, are received by a phased array antenna and subjected to angle of arrival processing to determine the direction of the cellular phone relative to the base station. The cellular phone is geolocated based upon the angle of arrival and the range information. A correction factor provided by the manufacturer of a given cellular telephone is used to account for the loopback path delay through the phone.

[0006] One additional area in which wireless device location can be important is in wireless networks, such as wireless local area networks (WLANs) or wide area networks (WANs), for example. A typical prior art approach to locating terminals within a WLAN includes locating a plurality of receivers at fixed locations

within a building, for example, and then determining (i.e., triangulating) the position of a terminal based upon a signal received therefrom at each of the receivers.

[0007] Another prior art approach for wireless terminal location is to use a direction finding (DF) device which includes a directional antenna for receiving signals when pointed in the direction of a transmitting node. An example of a portable DF device for WLANs is the Yellowjacket 802.11a wi-fi analysis system from Berkeley Varitronics. This device uses a passive DF technique, i.e., it does not solicit any signals from a terminal but instead waits for the terminal to transmit signals before it can determine the direction of the transmission.

[0008] Despite the advantages of such prior art wireless communications device locators, additional wireless location features may be desirable in various applications.

Summary of the Invention

[0009] In view of the foregoing background, it is therefore an object of the present invention to provide a wireless communications device locator which provides enhanced location features and related methods.

[0010] This and other objects, features, and advantages in accordance with the present invention are provided by a wireless communications system which may include a plurality of wireless communications devices each having a device type associated therewith from among a plurality of different device types. Further, each device type may have a known device latency associated

therewith. The system may also include a wireless device locator. More particularly, the wireless device locator may include at least one antenna and a transceiver connected thereto, and a controller for cooperating with the transceiver for transmitting a plurality of location finding signals to a target wireless communications device from among the plurality of wireless communications devices. The target wireless communications device may transmit a respective reply signal for each of the location finding signals.

[0011] Additionally, the controller of the wireless device locator may also cooperate with the transceiver for receiving the reply signals, and it may determine a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor. This may be done based upon the known device latency of the target wireless communications device. As such, the controller may estimate a range to the target wireless communications device based upon a plurality of determined propagation delays.

[0012] In other words, the wireless device locator advantageously provides active range finding. In other words, the wireless device locator prompts the target wireless communications device to send reply signals using the location finding signals, rather than passively waiting until the target wireless communications device begins transmitting. This allows for quicker and more efficient device location.

[0013] Furthermore, by estimating the range based upon a plurality of propagation delays, the wireless device locator mitigates the effects of variations in the device

latency time. That is, while the target wireless communication device has a known device latency, there will necessarily be some amount of variance from one transmission to the next. Using a plurality of propagation delays associated with different transmissions provides a significantly more accurate approximation of the device latency time and, thus, a more accurate range estimation. By way of example, the controller may estimate the range based upon an average (e.g., mean, median, mode, etc.) of the propagation delays.

[0014] In addition, each wireless communications device may have a unique identifier (UID) associated therewith, and the controller may insert the UID for the target wireless communications device in each of the location finding signals. Furthermore, the target wireless communications device may generate respective reply signals based upon the UID in the location finding signals. That is, the target wireless communications device will act upon the location finding signals because these signals include its UID, whereas the other wireless communications device will not.

[0015] The target wireless communications device may generate unsolicited signals including the UID thereof. As such, the controller may cooperate with the transceiver to receive at least one unsolicited signal from the target device, and the controller may also determine the UID for the target device from the at least one unsolicited signal. Thus, if the UID of a target wireless communications device is not already known, the wireless device locator may passively "listen" for

unsolicited signals therefrom (i.e., signals that the wireless communications device did not solicit) and determine the UID based thereon.

[0016] Additionally, the controller may also determine the device type of the target wireless communications device based upon the UID. By way of example, the UIDs may include media access control (MAC) addresses of respective wireless communications devices. Accordingly, the controller may determine the device type of the target wireless communications device based upon the MAC address in some applications.

[0017] In accordance with another advantageous aspect of the invention, the at least one antenna may be a plurality of antennas, and the controller may cooperate with the plurality of antennas to determine a bearing to the target wireless communications device based upon at least one of the received reply signals. More particularly, the bearing may be a three-dimensional bearing, which may be particularly useful for locating wireless communications devices within a multi-story building, for example. In particular, the antenna(s) may be one or more directional antennas, for example. Further, the wireless device locator may further include a portable housing carrying the at least one antenna, the transceiver, and the controller.

[0018] The wireless device locator may be used with numerous type of wireless communications device. For example, the wireless communications devices may be wireless local area network (WLAN) devices, mobile ad-hoc network (MANET) devices, and cellular communications devices.

[0019] A method aspect of the invention is for locating a target wireless communications device from among a plurality of wireless communications devices, such as those discussed briefly above. The method may include transmitting a plurality of location finding signals to the target wireless communications device, and receiving a respective reply signal for each of the location finding signals therefrom. The method may further include determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of the target wireless communications device. As such, a range to the target wireless communications device may be estimated based upon a plurality of determined propagation delays.

Brief Description of the Drawings

[0020] FIG. 1 is schematic block diagram of a wireless communications system in accordance with the present invention including a wireless local area network (WLAN) and wireless device locator for locating WLAN devices thereof.

[0021] FIG. 2 is a schematic block diagram generally illustrating the components of the wireless device locator of FIG. 1.

[0022] FIG. 3 is a graph illustrating the signal propagation delay and device latency components used by the controller of FIG. 2 to estimate range.

[0023] FIG. 4 is a schematic block diagram illustrating an embodiment of the wireless device locator of FIG. 2 for a WLAN implementation.

[0024] FIG. 5 is a schematic block diagram illustrating in greater detail an embodiment of the transceiver of the wireless device locator of FIG. 4.

[0025] FIGS. 6 and 7 are histograms illustrating range estimation test results performed using the wireless device locator of FIG. 4.

[0026] FIG. 8 is a graph illustrating bearing determination in accordance with the present invention.

[0027] FIGS. 9 and 10 are schematic block diagrams illustrating alternate embodiments of the wireless communications system of FIG. 1 including a mobile ad-hoc network (MANET) and a cellular network, respectively.

[0028] FIG. 11 is a flow diagram illustrating a wireless device location method in accordance with the present invention.

Detailed Description of the Preferred Embodiments

[0029] The present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout, and prime and multiple prime notation are used to indicate similar elements in different embodiments.

[0030] Referring initially to FIGS. 1 and 2, a wireless communications system 30 illustratively includes

a wireless local area network (WLAN) 31 and a wireless location device 32. The WLAN 31 illustratively includes an access point 33 (e.g., a server) and a plurality of WLAN devices or terminals which communicate therewith wirelessly, such as the laptop computers 34, 35, and the desktop computer 36. Various WLAN protocols may be used in accordance with the present invention for such wireless communications (e.g., IEEE 802.11, Bluetooth, etc.), as will be appreciated by those of skill in the art. Moreover, it will also be appreciated that additional access points and/or other numbers of wireless communications devices may be used, even though only a few number thereof are shown for clarity of illustration. Further, numerous other types of WLAN enabled wireless communications devices (e.g., personal data assistants, etc.) may also be used, as will be further appreciated by those skilled in the art.

[0031] Each wireless communications device 34-36 in the WLAN 31 has a device type associated therewith from among a plurality of different device types. More particularly, the device type may signify the particular manufacturer and/or model of a given WLAN card or chip set used therein. In some embodiments, it may also signify the standard the device complies with (e.g., IEEE 802.11).

[0032] The device type is important in that different device types will have known device latencies associated therewith. For example, different WLAN cards or chip sets will have a certain latency associated with the time they take to process a received signal and generate an acknowledgement reply thereto. These delay times may be

fairly consistent across different models from a same manufacturer, or they may vary significantly. Additionally, WLAN protocols such as IEEE 802.11 have a specified interframe spacing associated therewith, as will be appreciated by those skilled in the art. Thus, in circumstances where the interframe spacing requirements are closely adhered to, the latency of a given WLAN card or chip set will be substantially equal to the interframe spacing.

[0033] The wireless device locator 32 illustratively includes an antenna 39 and a transceiver 41 connected thereto, as well as a controller 42 connected to the transceiver. These components may conveniently be carried by a portable housing 43 in some embodiments, although they could be implemented in a more stationary embodiment, if desired. In the illustrated example, the antenna 39 is a directional antenna, although omnidirectional antennas may also be used, as will be appreciated by those skilled in the art. It will also be appreciated that various antenna/transceiver combinations may be used. As will be discussed further below, more than one antenna may be used in certain embodiments to provide bearing determination capabilities, and separate transceivers may optionally be used for respective antennas, if desired.

[0034] Operation of the wireless device locator 32 will now be described with reference to FIG. 3. The controller 42 cooperates with the transceiver 41 for transmitting a plurality of location finding signals to a target wireless communications device to be located from among the plurality of wireless communications devices.

In the present example, the laptop 34 is the target device.

[0035] As will be appreciated by those skilled in the art, each WLAN device 34-36 in the network 31 will have a unique identifier (UID) associated therewith which is used in signals transmitted between the respective devices and the access point 33. The UID distinguishes the devices 34-36 from one another so that each device only acts upon or responds to signals intended for it, and so the access point 33 knows which device it is receiving signals from.

[0036] Depending upon a given implementation, the wireless locator device 32 may or may not know the UID of the target device 34 before hand. For example, in some embodiments the wireless device locator 32 could download the UID from the access point 33 (either wirelessly or over a wired network connection, for example). This may be the case when trying to locate a node in a LAN where the node is already registered with the network. However, if the UID is not known, the wireless device locator 32 may passively listen to the target device 34 for unsolicited signals being transmitted therefrom. This feature may be advantageous for law enforcement applications, or for locating an interfering node that is not registered with a particular network but causes interference therewith, for example. By "unsolicited" signals it is meant that these signals are not solicited by the wireless device locator 32 itself, although such signals may have been solicited from another source (e.g., the access point 33).

[0037] The controller 42 cooperates with the transceiver 41 to receive one or more of the unsolicited signals, and the controller determines the UID for the target device 34 therefrom. Of course, the method by which the controller 42 determines the UID from the unsolicited signal will depend upon the given implementation, and whether or to what degree such signals are encrypted.

[0038] Additionally, the controller 42 may also determine the device type of the target wireless communications device 34 based upon the UID thereof. By way of example, the UIDs may include media access control (MAC) addresses of respective wireless communications devices. The MAC addresses may be specific to a particular type of device manufacturer, or indicate a particular operational protocol with which the device is operating, as will be appreciated by those skilled in the art. Accordingly, the controller may determine the device type of the target wireless communications device 34 based upon the MAC address thereof in some applications.

[0039] As such, to locate the target device 34, the controller inserts the UID therefor in each of the location finding signals. By way of example, the location finding signal may include the UID of the target device 34 in a header packet and a valid but empty data packet. This will force the target device 34 to generate a reply signal acknowledging receipt of the location finding signal (i.e., an ACK signal). Of course, various other location finding signals could be used to cause the target terminal 34 to generate an ACK signal, as will be appreciated by those skilled in the art. The controller

42 cooperates with the transceiver 41 for receiving the reply signals from the target device 34 via the antenna 39. The location finding signals and reply signals may be radio frequency (RF), microwave, optical, or other suitable types of signals, as will be appreciated by those skilled in the art.

[0040] The controller 42 determines the propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor, and it uses this propagation delay to estimate a range to the target device 34. However, the propagation delay has to first be determined based upon the total round trip time from the sending of the location finding signal to the reception of the respective reply signal.

[0041] The total round trip time will include several components. Referring more particularly to FIG. 3, the first component is the time associated with transmitting a location finding signal 45, which is illustrated with an arrow. That is, this is the time from the beginning of the location finding signal transmission (time t_0) to end thereof (time t_1). Two time axes are shown in FIG. 3. The top or upper axis represents events that occur at the target device 34, while the bottom or lower axis represents events that occur at the wireless device locator 32.

[0042] The second component of the round trip time is the propagation delay or time t_{PD1} it takes for the location finding signal 45 to travel from the wireless device locator 32 to the target device 34 (i.e., from time t_1 to t_2). The third component of the round trip time is the device latency t_{DL} of the target device 34 (i.e.,

form time t_2 to t_3). This is the time it takes the target device 34 to receive, process, and transmit a reply signal 46 responsive to the location finding signal 45. The final components of the round trip time are propagation delay t_{PD2} of the reply signal 46 (i.e., from time t_3 to t_4), and the reception time thereof by the wireless device locator 32 (i.e., from time t_4 to t_5).

[0043] The controller 42 will know the times associated with the transmission of the location finding signal 45 (i.e., from time t_0 to t_1), as well as the time associated with the reception of the reply signal 46 (i.e., from time t_4 to t_5) for each round trip, since these can be readily measured by the controller. The quantities that the controller 42 will not know are the propagation delays t_{PD1} , t_{PD2} and the actual device latency t_{DL} .

[0044] Yet, as noted above, the controller 42 will have access to the known device latency (i.e., a mean latency) for the given device type of the target device 34, which provides a close approximation of the actual device latency t_{DL} . The known device latency could be a measured value based upon collected data, it could be provided by manufacturers, or it could be based upon a value set in a communications standard, as discussed above, for example.

[0045] As will be appreciated by those skilled in the art, the actual device latency will likely vary somewhat from one transmission to the next for any wireless communications device, potentially by as little as a few nanoseconds to a few microseconds, depending upon device configurations, processing loads, etc. Accordingly, a

close approximation of the total propagation delay (i.e., time t_{PD1} + time t_{PD2}) may therefore be obtained by substituting the known device latency for the actual device latency t_{DL} , and subtracting this value from the time between times t_1 and t_4 . Dividing the total propagation delay by two (since both propagation delays may be considered equal or substantially equal for a stationary or relatively slow moving target device 34) and multiplying this by the speed of light gives the estimated distance to the target device 39, based upon the single propagation delay associated with the signal pair 45, 46.

[0046] Yet, as noted above, device latencies tend to vary from one transmission to the next. Since the location finding signals and reply signals are traveling at the speed of light, such variances can make a significant difference in the estimated distances. More particularly, light travels approximately 1000 ft. in one microsecond. Thus, if the device latency varies by one microsecond from one transmission to the next, the estimated distance to the target device 34 would similarly vary by 1000 ft. or so, which likely will be an unacceptable accuracy for many applications.

[0047] In accordance with the present invention, the controller 42 advantageously estimates the range to the target device 34 not solely based upon a single measured propagation delay, but rather upon a plurality thereof. More particularly, by estimating the range based upon a plurality of propagation delays, the wireless device locator 32 mitigates the effects of the variations in the actual device latency time. This provides a significantly

more accurate approximation of the device latency time and, thus, a more accurate range estimation. By way of example, the controller 42 may estimate the range based upon an average of the propagation delays, though other suitable statistical functions may also be used (e.g., mean, median, mode, etc.). Of course, it should be noted that the average may be taken on the entire round trip delay instead of first subtracting out the known device latency as described above. That is, the same result may be obtained by first taking the average and then subtracting out the known device latency, as will be appreciated by those skilled in the art.

[0048] An exemplary embodiment of the present invention is now described with reference to FIGS. 4 and 5. The wireless device locator 32' may use a personal data assistant (PDA) as the controller 42', although a personal computer (PC) or other suitable computing device may also be used. More particularly, the PDA 42' illustratively includes a graphical user interface (GUI) 50', and a received signal strength indication (RSSI) processing module 51' for cooperating with the transceiver 41' to perform above-described range estimation processing operations. More particularly, the RSSI module 51' may be implemented as a software module which is run on the PDA 42', as will be appreciated by those skilled in the art, and which cooperates with the GUI to provide range estimates to a user.

[0049] The PDA 50' also illustratively includes a battery 52', which may conveniently be used for powering the various transceiver 41' components, as shown. Of course, it will be appreciated that separate batteries

may be used, or one or more components of the wireless device locator 32' may be powered by an external (e.g., AC) source. The transceiver 41' operates in accordance with the IEEE 802.11b standard and includes a MAC-less 802.11b radio 58' and a field-programmable gate array (FPGA) 53' connected thereto. The FPGA 53' illustratively includes a packet building module 54', a radio configuration module 55', a receiver filtering module 56', and a simple MAC processing module 57' for processing the location finding signals and reply signals and communicating with the radio 53' in accordance with the 802.11b standard, as will be appreciated by those skilled in the art.

[0050] More specifically, the MAC-less radio 58' may be a GINA model RF module from GRE America, Inc., and the FPGA 53' may be a module EPXA10 from Altera Corp. The hardware components of the FPGA 53'' illustratively include an ARM922T processor 60'', block RAM 61'' therefor, a serial/universal serial bus (USB) interface 62'', and a programmable logic section 63''. Additional circuitry including an oscillator 64'', power management circuitry (i.e., regulators, microprocessor supervisor, etc.) 65'', and a programmable read-only memory (PROM)/boot flash memory 66'' are connected thereto as shown, as will be appreciated by those skilled in the art.

[0051] Referring now to FIGS. 6-7, a test was conducted in accordance with the present invention in which approximately 1500 location finding signals were transmitted to a stationary wireless IEEE 802.11 device. The time it took to receive the reply signal was measured

by ticks of an internal clock of the controller 42, where each tick represents 7.567 ns. From FIG. 6 it may be seen that the reply signals from the target device were returned within between about 20,960 and 21,045 clock ticks, where the transmission of the respective location signals each began at 0 clock ticks. Moreover, if this range is divided into equal sections or bins, the frequency (i.e., number) of round trip times that fell within each of the bins is shown in FIG. 7.

[0052] Plotting various statistical functions of the measured clock tick samples (such as the mean and the mode) versus the known distance to the target device allowed statistical curve-fitting to take place, as shown in FIG. 6. It was determined from the test results that taking the mean of the samples provided the most accurate range estimation. More particularly, the ranges to several 802.11b target devices at varying distances were estimated using this approach, and the worst case error for the estimated range was never more than 20 ft. Preferably, the location finding signals are transmitted over a relatively short interval (a few seconds or less) so that if the target device is moving the accuracy of the results will not be significantly diminished. Of course, various numbers of location finding signals and transmission intervals may be used depending upon the particular implementation, as will be appreciated by those skilled in the art.

[0053] In accordance with another advantageous aspect of the invention, multiple antennas 39a'', 39b'' (FIG. 5) may be used to provide target bearing in addition to the estimated range. Referring more particularly to FIG. 8,

bearing determination in the case where the antennas 39a'', 39b'' are directional antennas will now be described. The antennas 39a'', 39b'' have respective reception patterns 70a, 70b, which may be orthogonal to one another (i.e., the former is directed along the x-axis, while the latter is directed along the y-axis).

[0054] The target device is at a point P, which is within the reception patterns 70a, 70b. Each of the antenna gain patterns 70a and 70b can be measured and known to the locator, and represented by gain functions $G1(\theta)$ and $G2(\theta)$ where θ represents the angle of deviation from a particular reference direction.

[0055] As such, to determine the line of bearing to the target device, the received signal strength is measured from each of the antennas 70a, 70b, respectively. Based upon this information, the controller 42' may then find the angle θ_t using the relationship $G1(\theta_t) - G2(\theta_t) = P1 - P2$, where P1 and P2 is the received signal power off antenna 1 and antenna 2, respectively. In other words, the difference in the signal strength received between the two antennas ($P1 - P2$) should equal the difference in the antenna gain of the two antennas at the angle of the line of bearing ($G1(\theta_t) - G2(\theta_t)$). Thus, the target line of bearing to the target device is at θ_t . It should be noted that it is possible that more than one angle θ may satisfy the relationship $G1(\theta_t) - G2(\theta_t) = P1 - P2$. These multiple angles represent a line of bearing ambiguity that can easily be resolved by making multiple measurements, as can be appreciated by those skilled in the art.

[0056] As noted above, more than one transceiver 41' may be used in certain embodiments, which would allow signal strength measurements to be taken based upon a same reply signal from the target device. However, if only a single transceiver 41' is used, the controller 42' may alternate which antenna 70a, 70b is receiving and measure the received signal strength of successive signals, for example. Moreover, the bearing may be determined in three dimensions, if desired, which may be particularly useful for locating wireless communications devices within a multi-story building, for example, as will be appreciated by those skilled in the art.

[0057] While the present invention has been described above with reference to a WLAN wireless device locator 32', it will be appreciated by those skilled in the art that it may also be used in other wireless communications systems with other types of wireless communications devices. Referring more particularly to FIG. 9, a mobile ad-hoc network (MANET) system 90 illustratively includes a wireless device locator 92 including an antenna 99, such as those described above, and a MANET 91. More particularly, the MANET includes MANET nodes or devices 93-96, of which the node 94 is the target node in the illustrated example. Here, the wireless device locator 92 performs range and/or bearing estimation in the same manner described above, except that it will operate in accordance with the appropriate MANET protocol used within the system 90, as will be appreciated by those skilled in the art.

[0058] Another embodiment is illustrated in FIG. 10, in which a wireless device locator 102 having an antenna

109 is used within a cellular communications system 100 for locating cellular devices (e.g., cellular telephones) 104-106 in cellular network 101. The cellular devices 104-106 place and receive calls via a cellular tower 103, as will be appreciated by those skilled in the art. In the illustrated example, the target device is the cell phone 104. Here again, the wireless device locator 102 will communicate using the appropriate operating protocol being used in the cellular network 101 (e.g., code-division multiple access (CDMA), short message service (SMS), etc.), as will be appreciated by those skilled in the art.

[0059] Turning now additionally to FIG. 11, a method aspect of the invention is for locating a target wireless communications 34 device from among a plurality of wireless communications devices 34-36. Beginning at Block 110, if the UID for the target device 34 is unknown, the controller 42 may determine the UID from unsolicited signals transmitted by the target device, for example, as described above (Block 112). Of course, in some embodiments, the controller 42 may download the signals from a network access point 33, etc., as also described above.

[0060] Once the UID for the target wireless communication device 34 is known, location finding signals are transmitted to the target wireless communications device, at Block 113, and respective reply signals for each of the location finding signals are received therefrom, at Block 114. If the device type (and, thus, the known device latency) are known, at Block 115, then the propagation delay associated with the

transmission of each location finding signal and the respective reply signal therefor is determined based upon the known device latency of the target wireless communications device 34, at Block 116. As such, a range to the target wireless communications device 34 is estimated based upon a plurality of determined propagation delays (Block 117), as previously discussed above, thus concluding the illustrated method (Block 118).

[0061] Of course, if the device type is unknown, the controller 42 may determine the device type from the reply signal (Block 119), as discussed above, or by other suitable methods which will be appreciated by those skilled in the art. It should be noted that while this step is shown as occurring after the receipt of the reply signals in the illustrated example, the device type determination may be performed prior thereto, such as while determining the UID, for example.

[0062] Many modifications and other embodiments of the invention will come to the mind of one skilled in the art having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is understood that the invention is not to be limited to the specific embodiments disclosed, and that modifications and embodiments are intended to be included within the scope of the appended claims.

THAT WHICH IS CLAIMED IS:

1. A wireless communications system comprising:
 - a plurality of wireless communications devices each having a device type associated therewith from among a plurality of different device types, and each device type having a known device latency associated therewith; and
 - a wireless device locator comprising
 - at least one antenna and a transceiver connected thereto, and
 - a controller for cooperating with said transceiver for transmitting a plurality of location finding signals to a target wireless communications device from among said plurality of wireless communications devices;
 - said target wireless communications device transmitting a respective reply signal for each of said location finding signals;
 - said controller of said wireless device locator also for
 - cooperating with said transceiver for receiving the reply signals,
 - determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of said target wireless communications device, and

estimating a range to said target wireless communications device based upon a plurality of determined propagation delays.

2. The wireless communications system of Claim 1 wherein said controller estimates the range based upon an average of the propagation delays.

3. The wireless communications system of Claim 1 wherein each wireless communications device has a unique identifier (UID) associated therewith; wherein said controller inserts the UID for said target wireless communications device in each of the location finding signals; and wherein said target wireless communications device generates respective reply signals based upon the UID in the locations signals.

4. The wireless communications system of Claim 3 wherein said target wireless communications device generates unsolicited signals including the UID thereof; wherein said controller cooperates with said transceiver to receive at least one unsolicited signal from said target device; and wherein said controller determines the UID for said target wireless communications device from the at least one unsolicited signal.

5. The wireless communications system of Claim 4 wherein said controller determines the device type of said target wireless communications device based upon the UID thereof.

6. The wireless communications system of Claim 5 wherein the UIDs comprise media access control (MAC) addresses of respective wireless communications devices, and wherein said controller determines the device type of said target wireless communications device based upon the MAC address thereof.

7. The wireless communications system of Claim 1 wherein said at least one antenna comprises a plurality of antennas; and wherein said controller cooperates with said plurality of antennas to determine a bearing to said target wireless communications device based upon at least one of the received reply signals.

8. The wireless communications system of Claim 7 wherein the bearing is a three-dimensional bearing.

9. The wireless communications system of Claim 1 wherein said at least one antenna comprises at least one directional antenna.

10. The wireless communications system of Claim 1 wherein said wireless device locator further comprises a portable housing carrying said at least one antenna, said transceiver, and said controller.

11. The wireless communications system of Claim 1 wherein said wireless communications devices comprise wireless local area network (WLAN) devices.

12. The wireless communications system of Claim 1 wherein said wireless communications devices comprise mobile ad-hoc network (MANET) devices.

13. The wireless communications system of Claim 1 wherein said wireless communications devices comprise cellular communications devices.

14. A wireless communications system comprising:

- a plurality of wireless local area network (WLAN) devices each having a device type associated therewith from among a plurality of different device types, and each device type having a known device latency associated therewith; and

- a wireless device locator comprising

- at least one antenna and a transceiver connected thereto, and

- a controller for cooperating with said transceiver for transmitting a plurality of location finding signals to a target WLAN device from among said plurality of WLAN devices;

- said target WLAN device transmitting a respective reply signal for each of said location finding signals;

- said controller of said wireless device locator also for

- cooperating with said transceiver for receiving the reply signals,

determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of said target WLAN device, and

estimating a range to said target WLAN device based upon an average of a plurality of determined propagation delays.

15. The wireless communications system of Claim 14 wherein each WLAN device has a unique identifier (UID) associated therewith; wherein said controller inserts the UID for said target WLAN device in each of the location finding signals; and wherein said target WLAN device generates respective reply signals based upon the UID in the locations signals.

16. The wireless communications system of Claim 15 wherein said target WLAN device generates unsolicited signals including the UID thereof; wherein said controller cooperates with said transceiver to receive at least one unsolicited signal from said target WLAN device; and wherein said controller determines the UID for said target WLAN device from the at least one unsolicited signal.

17. The wireless communications system of Claim 16 wherein said controller determines the device type of said target WLAN device based upon the UID thereof.

18. The wireless communications system of Claim 17 wherein the UIDs comprise media access control (MAC) addresses of respective WLAN devices, and wherein said controller determines the device type of said target WLAN device based upon the MAC address thereof.

19. The wireless communications system of Claim 14 wherein said at least one antenna comprises a plurality of antennas; and wherein said controller cooperates with said plurality of antennas to determine a bearing to said target WLAN device based upon at least one of the received reply signals.

20. A wireless device locator for locating a target wireless communications device comprising:

at least one antenna and a transceiver connected thereto; and
a controller for

cooperating with said transceiver for transmitting a plurality of location finding signals to the target wireless communications device and receiving a respective reply signal therefrom for each of said location finding signals,

determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon a known device latency of the target wireless communications device, and

estimating a range to the target wireless communications device based upon a plurality of determined propagation delays.

21. The wireless device locator of Claim 20 wherein said controller estimates the range based upon an average of the propagation delays.

22. The wireless device locator of Claim 20 wherein the target wireless communications device has a unique identifier (UID) associated therewith; wherein said controller inserts the UID for the target wireless communications device in each of the location finding signals; and wherein the target wireless communications device generates respective reply signals based upon the UID in the locations signals.

23. The wireless device locator of Claim 22 wherein the target wireless communications device generates unsolicited signals including the UID thereof; wherein said controller cooperates with said transceiver to receive at least one unsolicited signal from the target device; and wherein said controller determines the UID for the target wireless communications device from the at least one unsolicited signal.

24. The wireless device locator of Claim 20 wherein said at least one antenna comprises a plurality of antennas; and wherein said controller cooperates with said plurality of antennas to determine a bearing to the

target wireless communications device based upon at least one of the received reply signals.

25. The wireless device locator of Claim 20 wherein said at least one antenna comprises at least one directional antenna.

26. The wireless device locator of Claim 20 wherein said wireless device locator further comprises a portable housing carrying said at least one antenna, said transceiver, and said controller.

27. The wireless device locator of Claim 20 wherein the target wireless communications device comprises a wireless local area network (WLAN) device.

28. The wireless device locator of Claim 20 wherein the target wireless communications device comprises a mobile ad-hoc network (MANET) device.

29. The wireless device locator of Claim 20 wherein the target wireless communications device comprises a cellular communications device.

30. A method for locating a target wireless communications device from among a plurality of wireless communications devices, each wireless communications device having a device type associated therewith from among a plurality of different device types, and each device type having a known device latency associated therewith, the method comprising:

transmitting a plurality of location finding signals to the target wireless communications device, and receiving a respective reply signal for each of the location finding signals therefrom;

determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of the target wireless communications device; and

estimating a range to the target wireless communications device based upon a plurality of determined propagation delays.

31. The method of Claim 30 wherein the controller estimates the range based upon an average of the propagation delays.

32. The method of Claim 30 wherein each wireless communications device has a unique identifier (UID) associated therewith; wherein the target wireless communications device generates unsolicited signals including the UID thereof; and further comprising:

receiving at least one unsolicited signal from the target device;

determining the UID for the target wireless communications device from the at least one unsolicited signal; and

inserting the UID in the location finding signals.

33. The method of Claim 32 further comprising determining the device type of the target wireless communications device based upon the UID thereof.

34. The method of Claim 30 further comprising determining a bearing to the target wireless communications device based upon at least one of the received reply signals.

35. The method of Claim 30 wherein the target wireless communications device comprises a wireless local area network (WLAN) device.

36. The method of Claim 30 wherein the target wireless communications device comprises a mobile ad-hoc network (MANET) device.

37. The method of Claim 30 wherein the target wireless communications device comprises a cellular communications device.

WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS
DEVICE LOCATOR AND RELATED METHODS

Abstract of the Disclosure

A wireless communications system may include a plurality of wireless communications devices and a wireless device locator. More particularly, the wireless device locator may include at least one antenna and a transceiver connected thereto, and a controller for cooperating with the transceiver for transmitting a plurality of location finding signals to a target wireless communications device from among the plurality thereof. The target device may transmit a respective reply signal for each of the location finding signals. Additionally, the controller may also cooperate with the transceiver for receiving the reply signals, and it may determine a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon a known device latency of the target device. As such, the controller may estimate a range to the target device based upon a plurality of determined propagation delays.

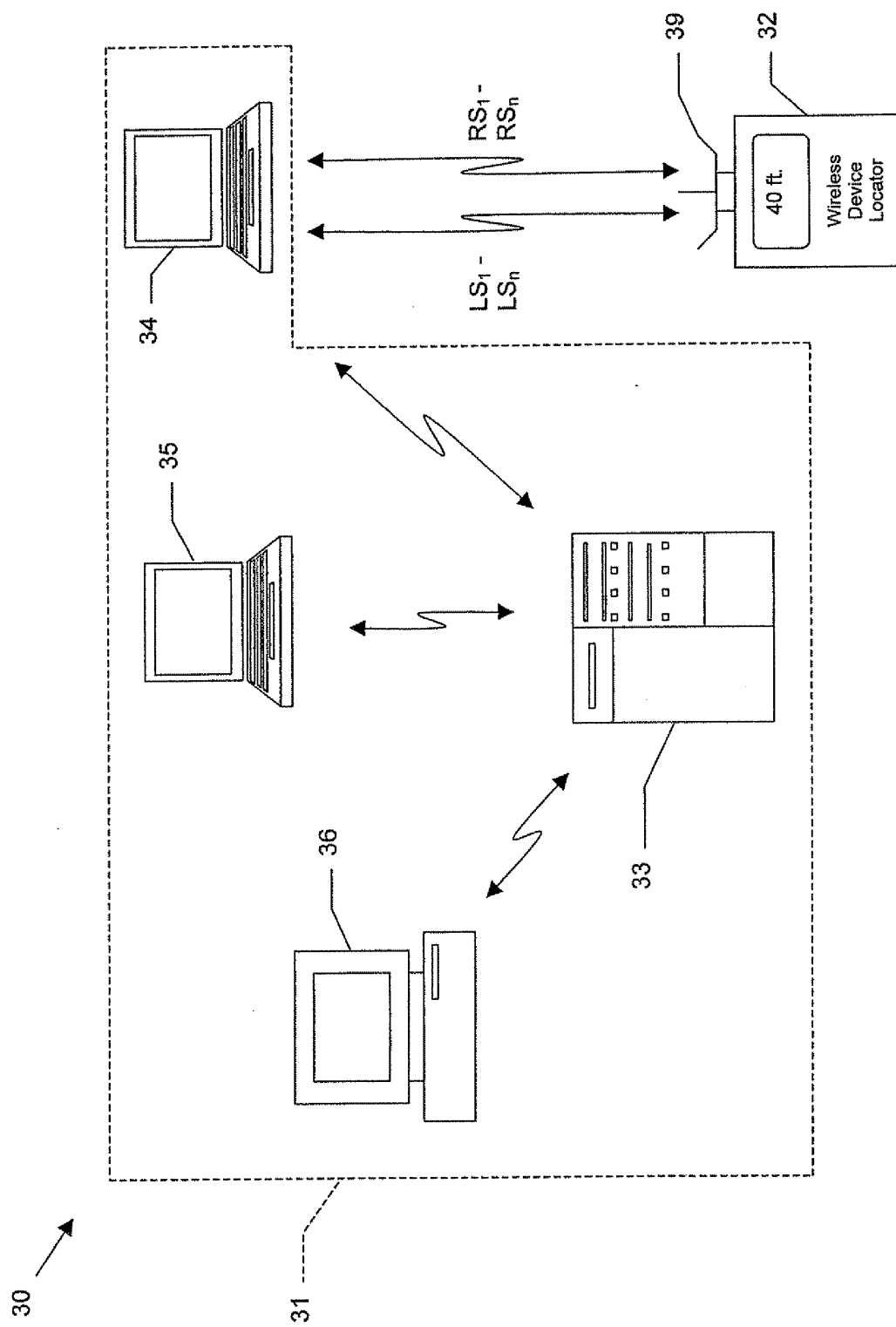


FIG. 1

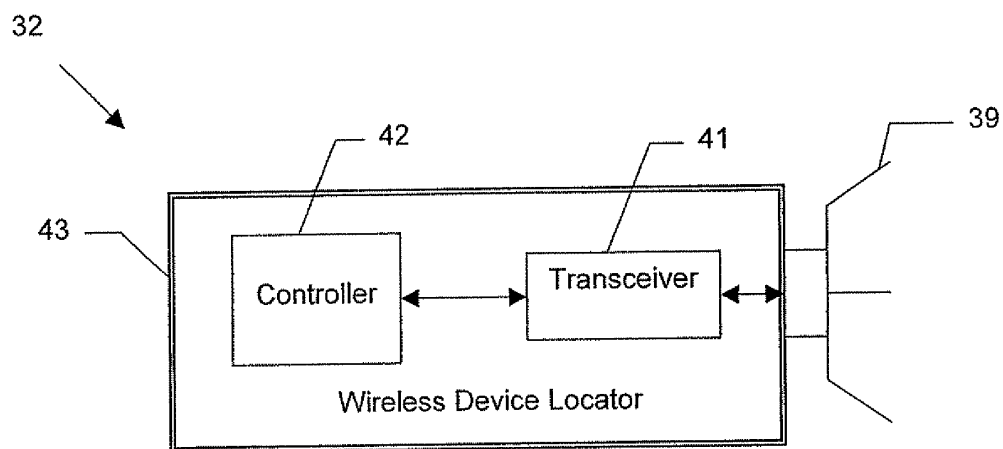


FIG. 2

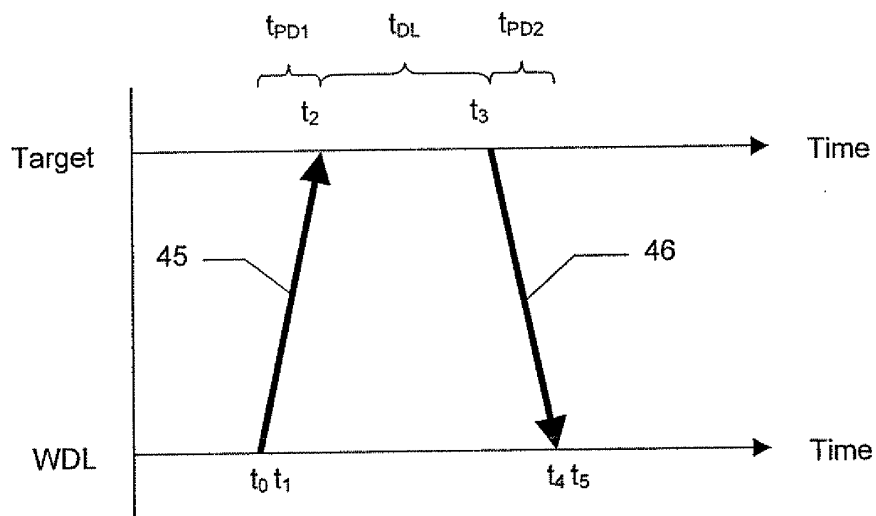


FIG. 3

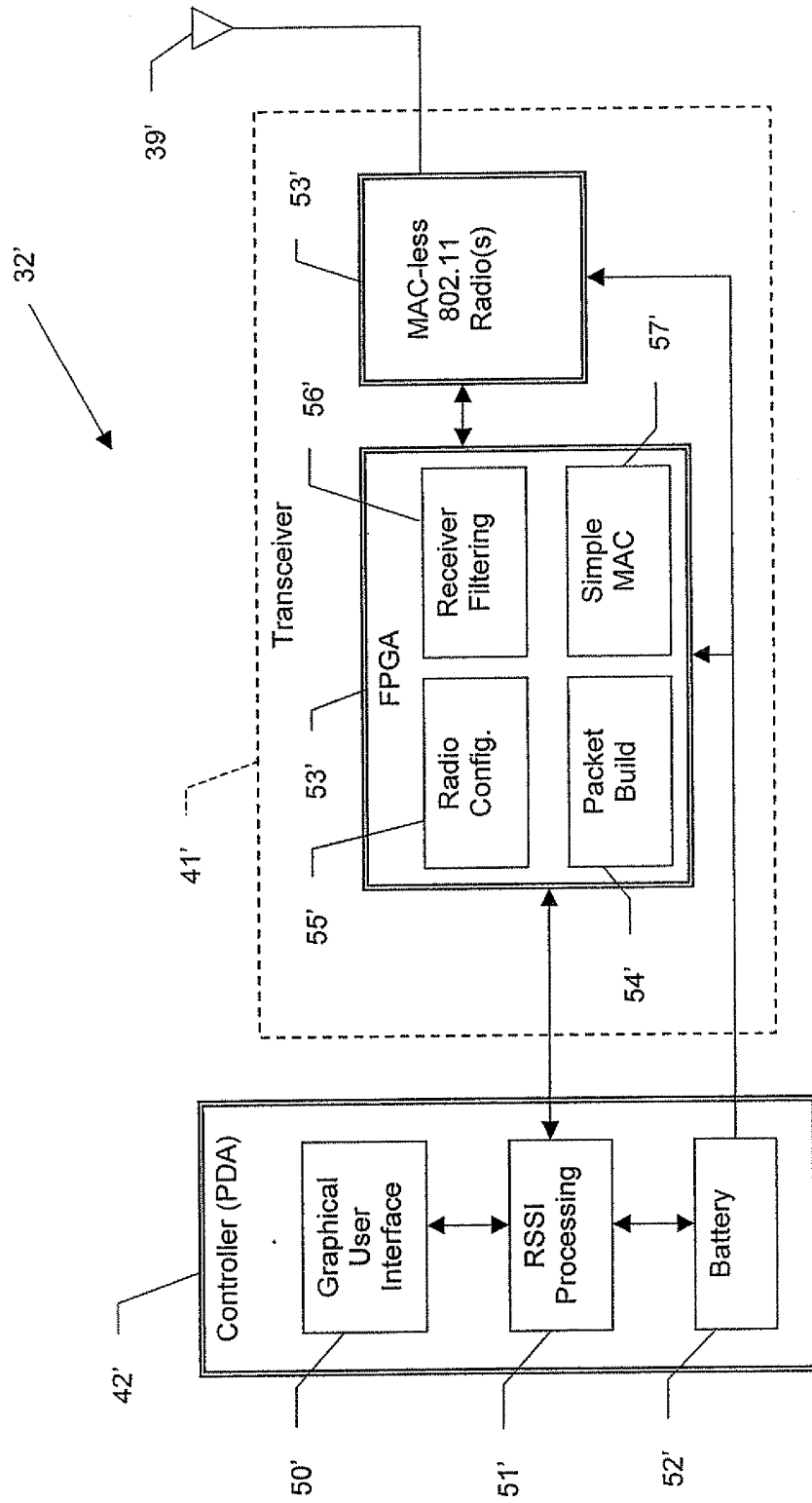


FIG. 4

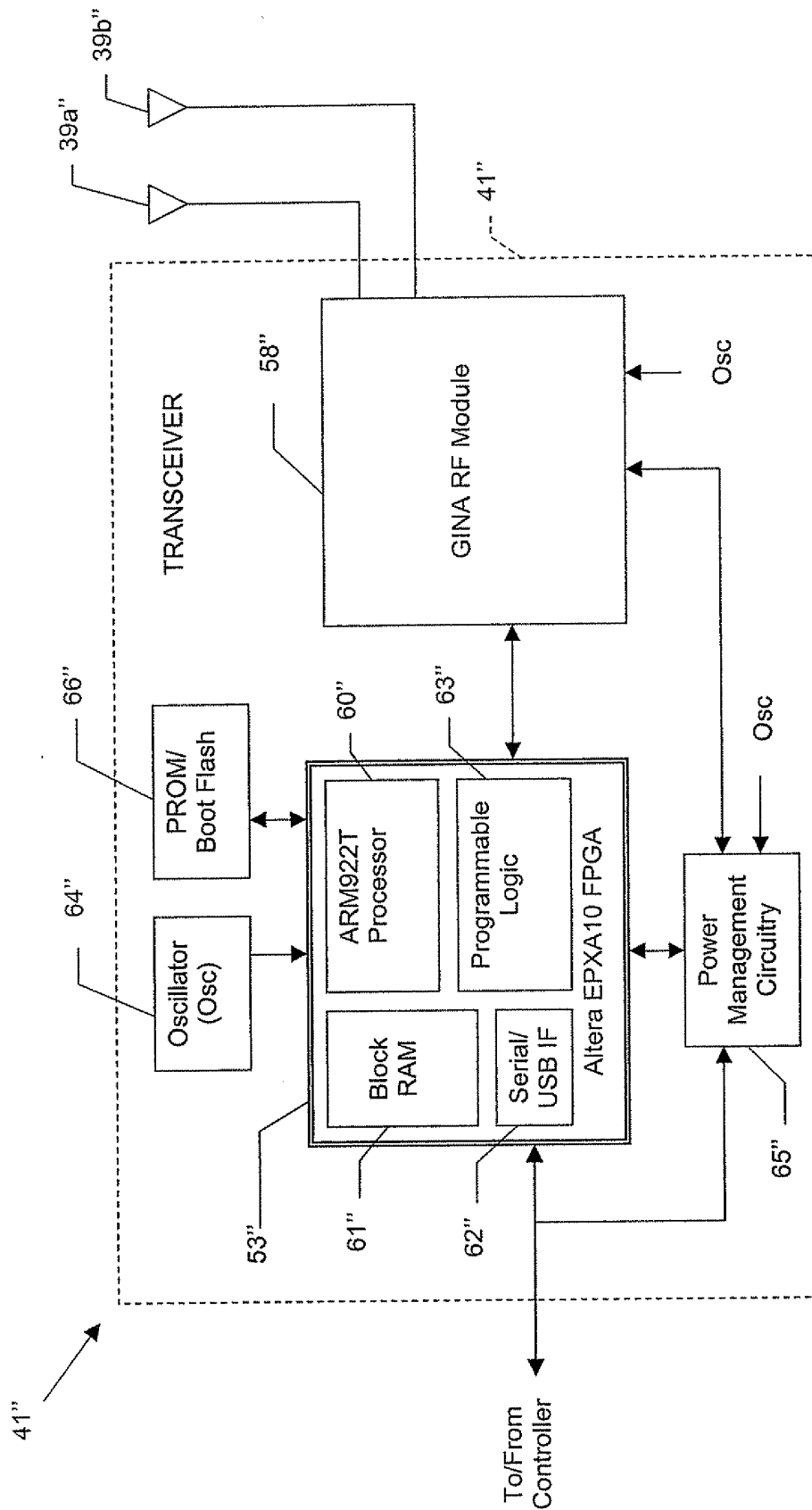


FIG. 5

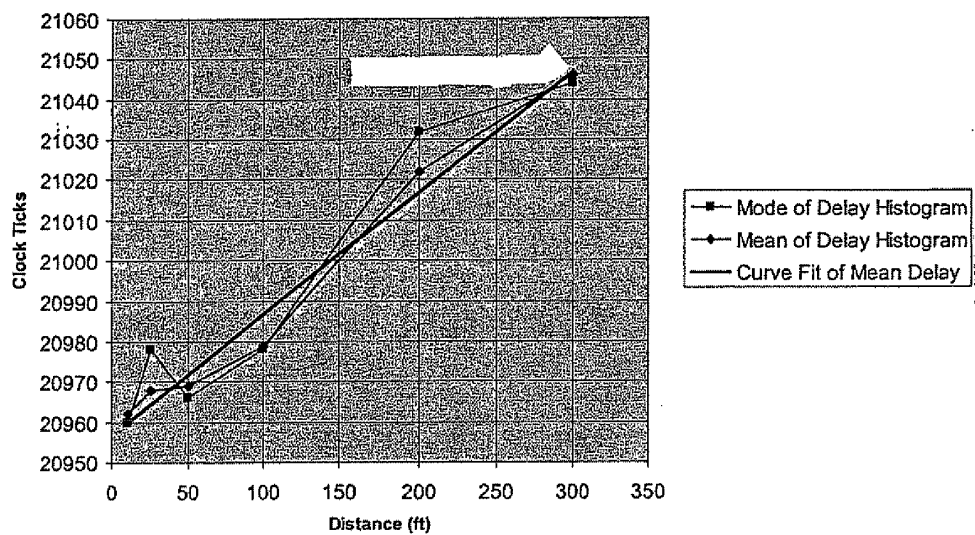


FIG. 6

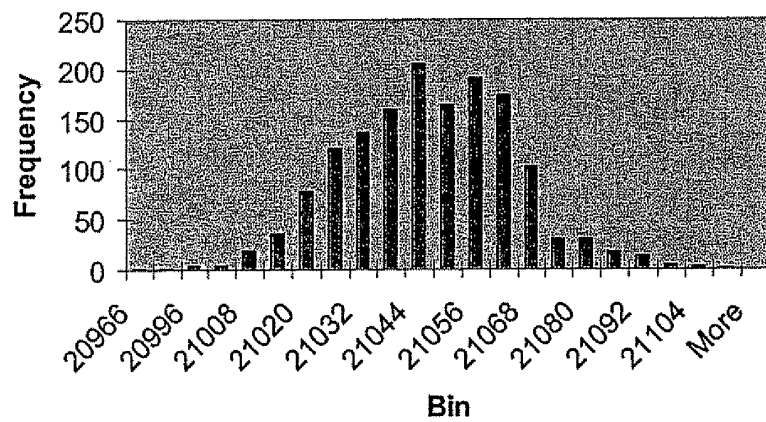


FIG. 7

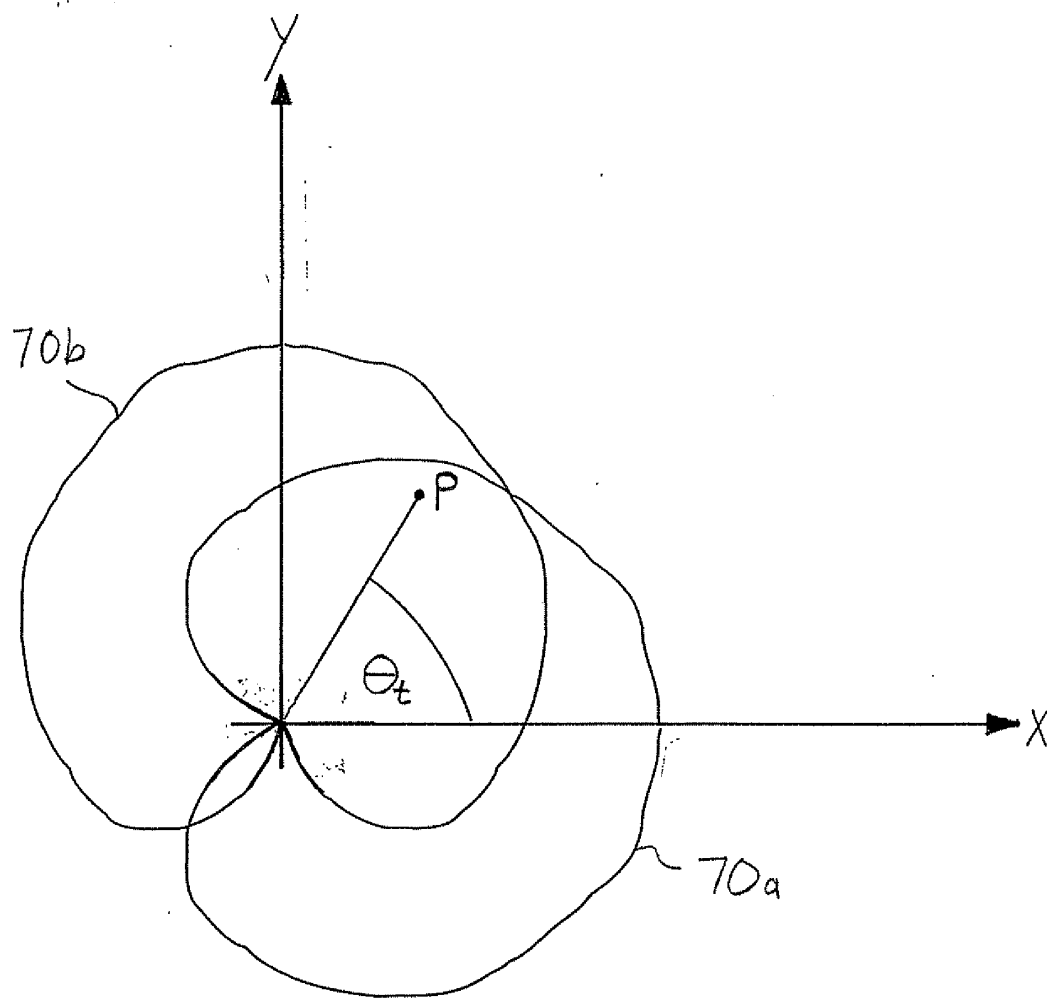


FIG. 8

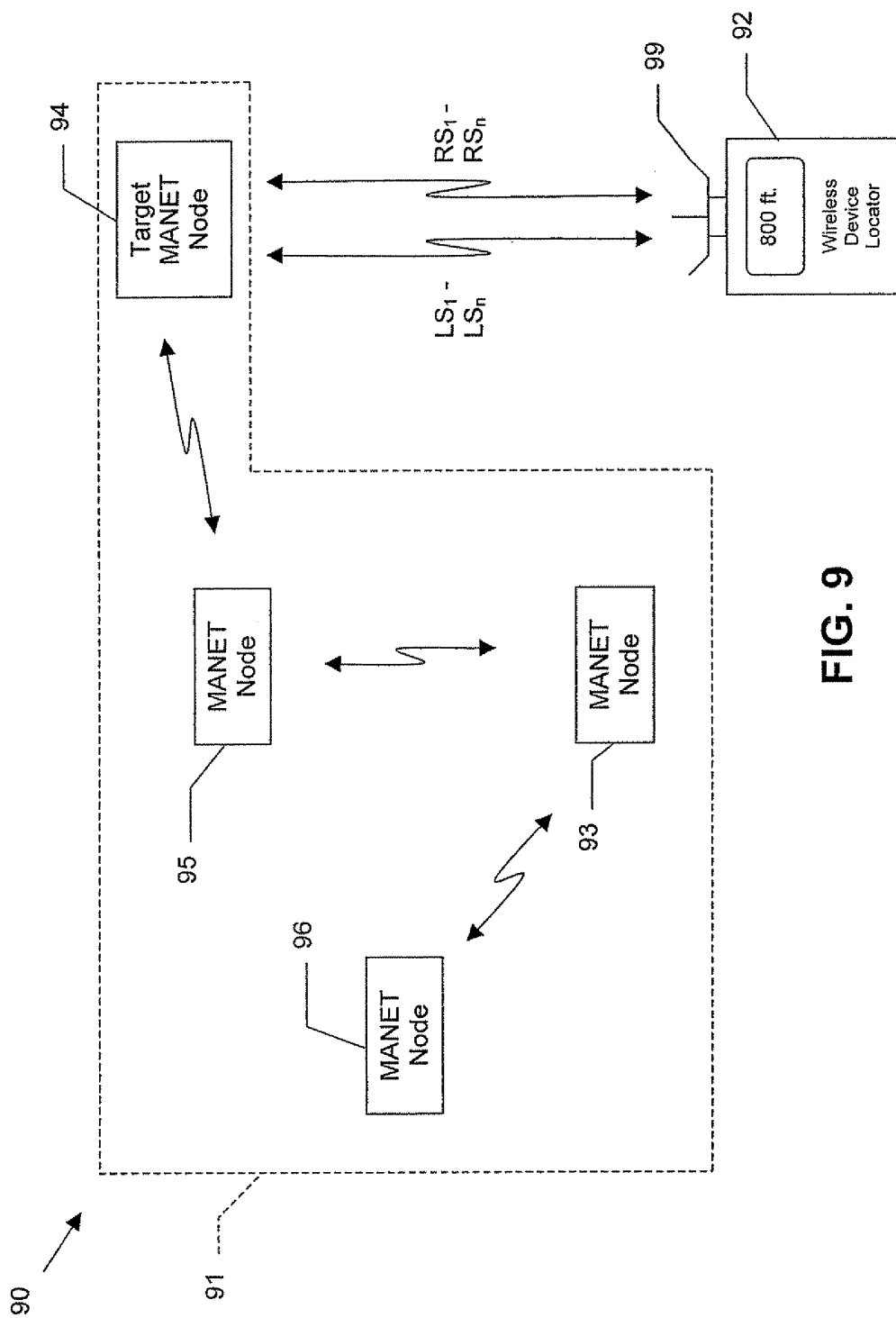


FIG. 9

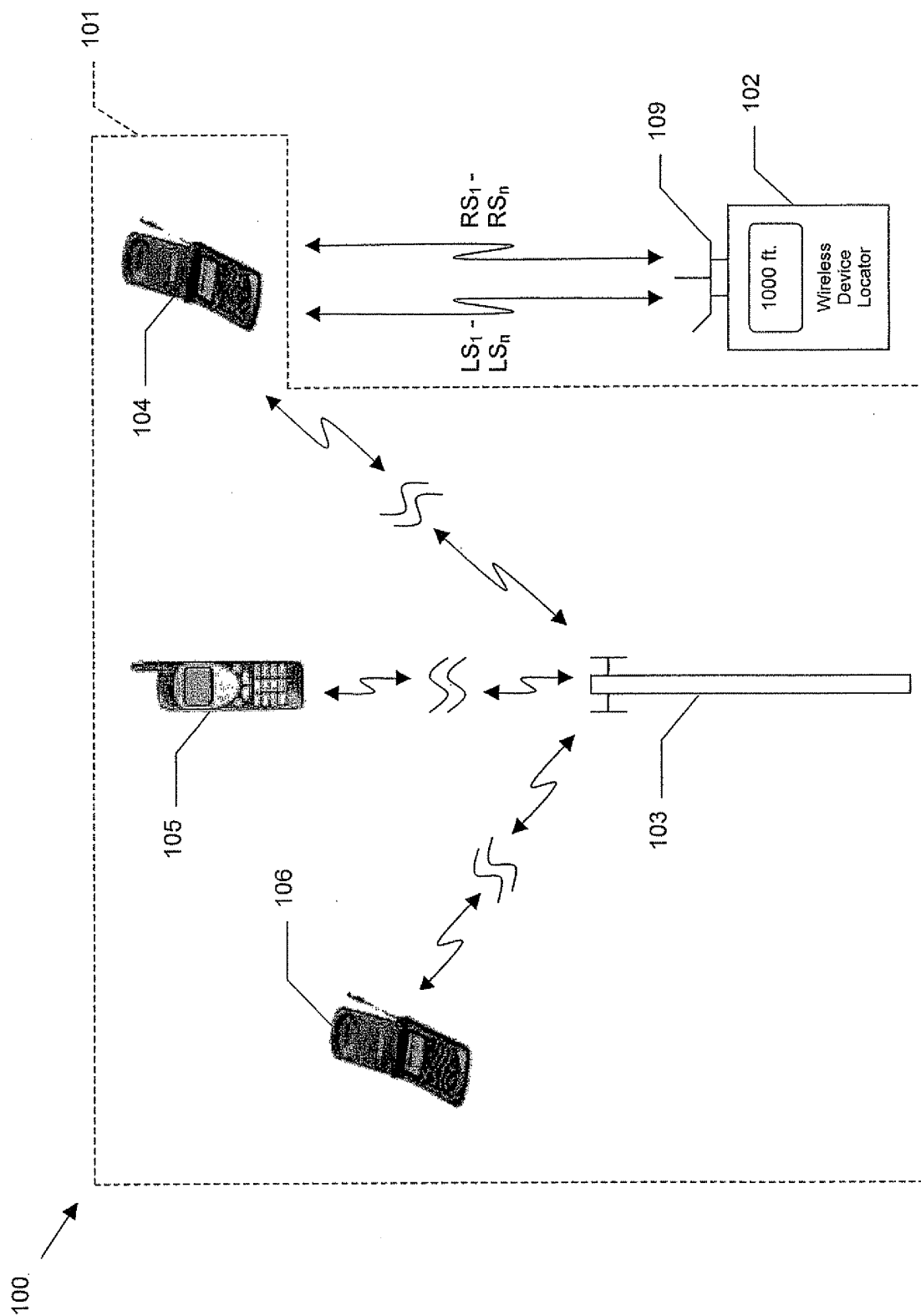


FIG. 10

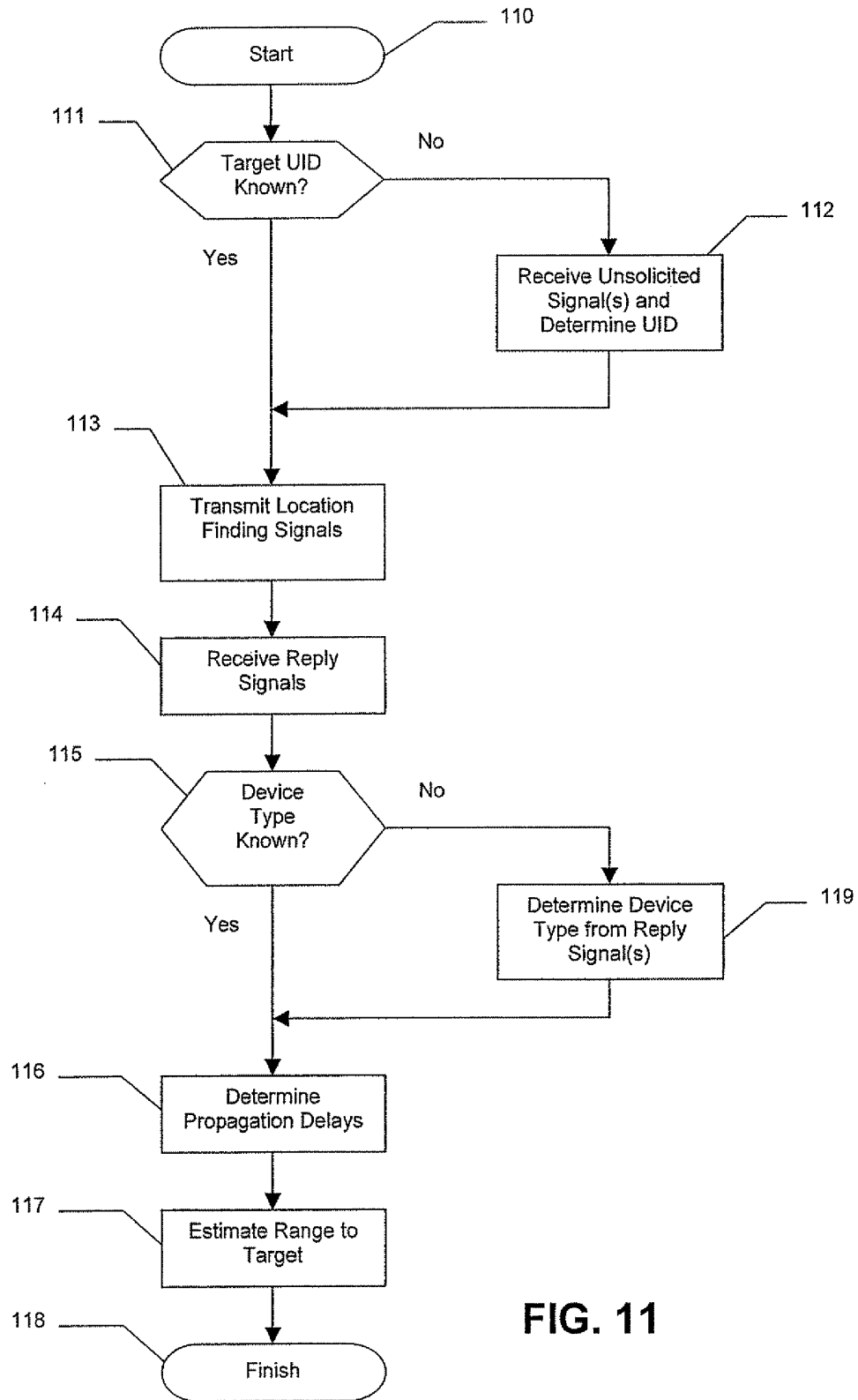


FIG. 11

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PAGE 02

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

Attorney Docket No.: **GCSD-1494 (51360)**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS**, the specification of which:

(check one)

 X is attached hereto

 was filed on

as Application Serial No.

and was amended on
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulation, 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

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PAGE 03

Prior Foreign Application(s) Priority Claimed

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

I hereby claim the benefit under Title 35, United States Code, 120, of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

_____ (Appln Serial No.)	_____ (Filing Date)	_____ (Status) (patented, pending, aban.)
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_____ (Appln Serial No.)	_____ (Filing Date)	_____ (Status) (patented, pending, aban.)
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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PAGE 04

English Language Declaration

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorneys/patent agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: **Christopher F. Regan**, Reg. No. 34,906; **Herbert L. Allen**, Reg. No. 25,322; **David L. Sigalow**, Reg. No. 36,006; **Richard K. Warther**, Reg. No. 32,180; **Michael W. Taylor**, Reg. No. 43,182; **Enrique Estevez**, Reg. No. 37,823; **Paul J. Dittmyer**, Reg. No. 40,455; **John F. Woodson, II**, Reg. No. 45,236; **Charles E. Wands**, Reg. No. 25,649; **Jacqueline E. Hartt**, Reg. No. 37,845; **Carl Napolitano**, Reg. No. 37,405 and **David L. Stewart**, Reg. No. 37,578.

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PAGE 05

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Inventor's

Signature: 

Date: 1/28/04

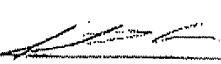
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Inventor's

Signature: 

Date: 1/28/04

Residence: Melbourne, Florida

Citizenship: Citizen of United States

Mailing Address: 2299 Windham Drive
Melbourne, Florida 32935

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:)
BILLHARTZ ET AL.)
)
Serial No. NOT YET ASSIGNED) Attorney Docket No.:
) GCSD1494/51360CON1
Filing Date: HEREWITH)
)
For: WIRELESS COMMUNICATIONS SYSTEM)
INCLUDING A WIRELESS DEVICE)
LOCATOR AND RELATED METHODS)
)

PRELIMINARY AMENDMENT

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

Sir:

Prior to the calculation of fees and examination of the present application, please enter the amendments and consider the remarks set out below.

In Re Patent Application of:
BILLHARTZ ET AL.
Serial No: NOT YET ASSIGNED
Filing Date: HERewith

In the Specification:

Please replace paragraph [0001] with the following
rewritten paragraph:

[0001] The present application is a continuation of U.S.
patent application serial No. 10/767,794 filed January 29, 2004,
the entire content of which is incorporated herein by reference.

In Re Patent Application of:
BILLHARTZ ET AL.
Serial No: **NOT YET ASSIGNED**
Filing Date: **HEREWITH**

In the Claims:

1. (Original) A wireless communications system comprising:

- a plurality of wireless communications devices each having a device type associated therewith from among a plurality of different device types, and each device type having a known device latency associated therewith; and
- a wireless device locator comprising
 - at least one antenna and a transceiver connected thereto, and
 - a controller for cooperating with said transceiver for transmitting a plurality of location finding signals to a target wireless communications device from among said plurality of wireless communications devices;

said target wireless communications device transmitting a respective reply signal for each of said location finding signals;

said controller of said wireless device locator also for

- cooperating with said transceiver for receiving the reply signals,
- determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of said target wireless communications device, and
- estimating a range to said target wireless communications device based upon a plurality of determined propagation delays.

In Re Patent Application of:
BILLHARTZ ET AL.
Serial No: **NOT YET ASSIGNED**
Filing Date: **HEREWITH**

2. (Original) The wireless communications system of Claim 1 wherein said controller estimates the range based upon an average of the propagation delays.

Claims 3-6 (canceled).

7. (Original) The wireless communications system of Claim 1 wherein said at least one antenna comprises a plurality of antennas; and wherein said controller cooperates with said plurality of antennas to determine a bearing to said target wireless communications device based upon at least one of the received reply signals.

8. (Original) The wireless communications system of Claim 7 wherein the bearing is a three-dimensional bearing.

9. (Original) The wireless communications system of Claim 1 wherein said at least one antenna comprises at least one directional antenna.

10. (Original) The wireless communications system of Claim 1 wherein said wireless device locator further comprises a portable housing carrying said at least one antenna, said transceiver, and said controller.

11. (Original) The wireless communications system of Claim 1 wherein said wireless communications devices comprise wireless local area network (WLAN) devices.

In Re Patent Application of:
BILLHARTZ ET AL.
Serial No: **NOT YET ASSIGNED**
Filing Date: **HEREWITH**

12. (Original) The wireless communications system of Claim 1 wherein said wireless communications devices comprise mobile ad-hoc network (MANET) devices.

13. (Original) The wireless communications system of Claim 1 wherein said wireless communications devices comprise cellular communications devices.

14. (Original) A wireless communications system comprising:

- a plurality of wireless local area network (WLAN) devices each having a device type associated therewith from among a plurality of different device types, and each device type having a known device latency associated therewith; and

- a wireless device locator comprising

- at least one antenna and a transceiver connected thereto, and

- a controller for cooperating with said transceiver for transmitting a plurality of location finding signals to a target WLAN device from among said plurality of WLAN devices;

- said target WLAN device transmitting a respective reply signal for each of said location finding signals;

- said controller of said wireless device locator also for

- cooperating with said transceiver for receiving the reply signals,

- determining a propagation delay associated with the transmission of each location finding signal and

In Re Patent Application of:
BILLHARTZ ET AL.
Serial No: **NOT YET ASSIGNED**
Filing Date: **HEREWITH**

the respective reply signal therefor based upon the known device latency of said target WLAN device, and estimating a range to said target WLAN device based upon an average of a plurality of determined propagation delays.

Claims 15-18 (canceled).

19. (Original) The wireless communications system of Claim 14 wherein said at least one antenna comprises a plurality of antennas; and wherein said controller cooperates with said plurality of antennas to determine a bearing to said target WLAN device based upon at least one of the received reply signals.

20. (Original) A wireless device locator for locating a target wireless communications device comprising:

at least one antenna and a transceiver connected thereto; and

a controller for

cooperating with said transceiver for transmitting a plurality of location finding signals to the target wireless communications device and receiving a respective reply signal therefrom for each of said location finding signals,

determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon a known device latency of the target wireless communications device, and

In Re Patent Application of:
BILLHARTZ ET AL.
Serial No: **NOT YET ASSIGNED**
Filing Date: **HEREWITH**

estimating a range to the target wireless communications device based upon a plurality of determined propagation delays.

21. (Original) The wireless device locator of Claim 20 wherein said controller estimates the range based upon an average of the propagation delays.

Claims 22-23 (canceled).

24. (Original) The wireless device locator of Claim 20 wherein said at least one antenna comprises a plurality of antennas; and wherein said controller cooperates with said plurality of antennas to determine a bearing to the target wireless communications device based upon at least one of the received reply signals.

25. (Original) The wireless device locator of Claim 20 wherein said at least one antenna comprises at least one directional antenna.

26. (Original) The wireless device locator of Claim 20 wherein said wireless device locator further comprises a portable housing carrying said at least one antenna, said transceiver, and said controller.

27. (Original) The wireless device locator of Claim 20 wherein the target wireless communications device comprises a wireless local area network (WLAN) device.

In Re Patent Application of:
BILLHARTZ ET AL.
Serial No: **NOT YET ASSIGNED**
Filing Date: **HEREWITH**

28. (Original) The wireless device locator of Claim 20 wherein the target wireless communications device comprises a mobile ad-hoc network (MANET) device.

29. (Original) The wireless device locator of Claim 20 wherein the target wireless communications device comprises a cellular communications device.

30. (Original) A method for locating a target wireless communications device from among a plurality of wireless communications devices, each wireless communications device having a device type associated therewith from among a plurality of different device types, and each device type having a known device latency associated therewith, the method comprising:

transmitting a plurality of location finding signals to the target wireless communications device, and receiving a respective reply signal for each of the location finding signals therefrom;

determining a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon the known device latency of the target wireless communications device; and

estimating a range to the target wireless communications device based upon a plurality of determined propagation delays.

31. (Original) The method of Claim 30 wherein the controller estimates the range based upon an average of the propagation delays.

In Re Patent Application of:
BILLHARTZ ET AL.
Serial No: **NOT YET ASSIGNED**
Filing Date: **HEREWITH**

Claims 32-33 (canceled).

34. (Original) The method of Claim 30 further comprising determining a bearing to the target wireless communications device based upon at least one of the received reply signals.

35. (Original) The method of Claim 30 wherein the target wireless communications device comprises a wireless local area network (WLAN) device.

36. (Original) The method of Claim 30 wherein the target wireless communications device comprises a mobile ad-hoc network (MANET) device.

37. (Original) The method of Claim 30 wherein the target wireless communications device comprises a cellular communications device.

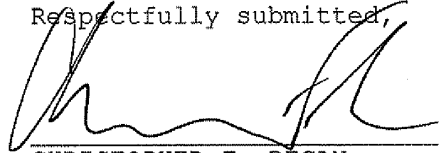
In re Patent Application of
BILLHARTZ
Serial No: **NOT YET ASSIGNED**
Filing Date: **HEREWITH**

REMARKS

Applicants file this continuation application with original Claims 1-37. Claims 3-6, 15-18, 22-23 and 32-33 have been cancelled.

It is believed that all of the remaining claims in this continuation patent application are patentable over the prior art. Accordingly, after the Examiner completes a thorough examination, a Notice of Allowance is respectfully requested in due course. If any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number below.

Respectfully submitted,



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Attorneys for Applicants

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:)
BILLHARTZ ET AL.)
Serial No. NOT YET ASSIGNED) Attorney Docket No.:
Filing Date: HEREWITH) GCSD1494/51360CON1
For: WIRELESS COMMUNICATIONS SYSTEM)
INCLUDING A WIRELESS DEVICE)
LOCATOR AND RELATED METHODS)

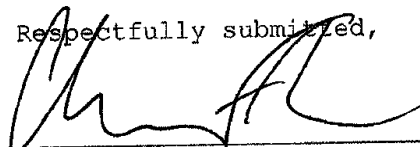
CITATION UNDER 37 CFR §1.97

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

Sir:

Attached is Form PTO-1449 listing several references for consideration in the examination of the above-identified application. In accordance with current USPTO procedures published 05 AUG. 2003, in 1276 OG 55, copies of the U.S. patent documents cited in the form 1449A are not attached. The undersigned would be happy to provide copies of these references if requested. Copies of non-U.S. patent references, if any, are attached. It is requested that these references be considered by the Examiner and officially made of record in accordance with the provisions of 37 CFR §1.97 and Section 609 of the MPEP.

Respectfully submitted,



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407-841-2330
407-841-2343 fax
Attorney for Applicants

INFORMATION DISCLOSURE STATEMENT			Atty Docket: Serial No.: Applicant: Filing Date: Group:		GCSD-1494 (51360) Not yet assigned Billhartz et al. Herewith		
U.S. PATENT DOCUMENTS							
Examiner Initials		Document Number	Date	Name	Class	Sub Class	Filing Date
	AA	5,550,549	8/27/96	Procter, Jr. et al.	342	47	
	AB	5,526,357	6/11/96	Jandrell	370	95.2	
	AC	5,687,196	11/11/97	Proctor, Jr. et al.	375	347	
	AD	5,706,010	1/6/98	Franke	342	47	
	AE	6,292,665	9/18/01	Hildebrand et al.	455	456	
	AF	2002/0080759	06/2002	Harrington et al.	370	338	
	AG	2002/0118655	08/2002	Harrington et al.	370	328	
	AH	2003/0025602	02/2003	Medema et al.	340	568.1	
	AI	2003/0034887	02/2003	Crabtree et al.	340	539	
	AJ	2003/0043073	03/2003	Gray et al.	342	465	
	AK	2005/0037775	02/2005	Moeglein et al.	455	456.1	
	AL	2005/0059411	03/2005	Zhengdi	455	456.1	
	AM	2002/0171586	11/2002	Martorana et al.	342	458	
	AN	2004/0266348	12/2004	Deshpande et al.	455	041.2	
	AO	6,680,923	01/2004	Leon	370	328	
	AP	2003/0162550	08/2003	Kuwahara et al.	455	456	
	AQ	6,865,394	03/2005	Ogino et al.	455	456.1	
	AR	2004/0203889	10/2004	Karaoguz	455	456.1	
	AS	2003/0191604	10/2003	Kuwahara et al.	702	150	
	AT	2004/0081139	04/2004	Beckmann et al.	370	352	
	AU	2004/0110514	06/2004	Kim et al.	455	456.1	
	AV	2003/0182052	09/2003	DeLome et al.	701	201	
OTHER ART (Including Author, Title, Date, Pertinent Pages, etc.)							
	AW	Yellowjacket-A, 802.11a Wi-Fi Analysis System, Berkeley Varitronics Systems					
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.							

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:)
BILLHARTZ ET AL.)
)
Serial No. NOT YET ASSIGNED) Attorney Docket No.:
) GCSD1494/51360CON1
Filing Date: HEREWITH)
)
For: WIRELESS COMMUNICATIONS SYSTEM)
INCLUDING A WIRELESS DEVICE)
LOCATOR AND RELATED METHODS)
)

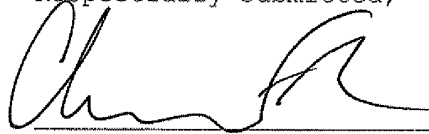
TRANSMITTAL OF FORMAL DRAWINGS

Commissioner for Patents
Alexandria, VA 22313-1450

Sir:

Enclosed are nine (9) sheets of formal drawings to be
filed in the above-identified patent application.

Respectfully submitted,



CHRISTOPHER F. REGAN
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(407) 841-2330

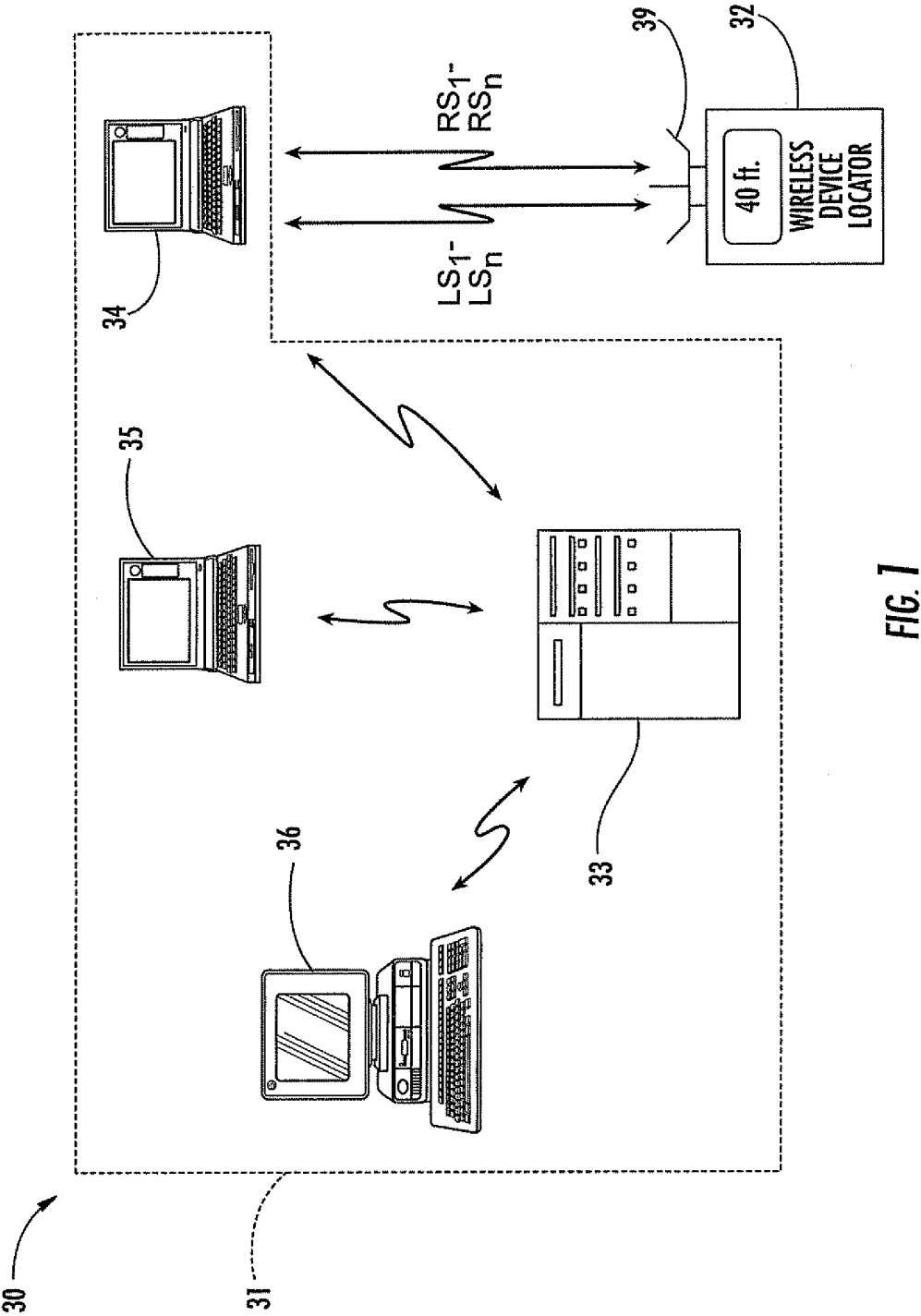


FIG. 1

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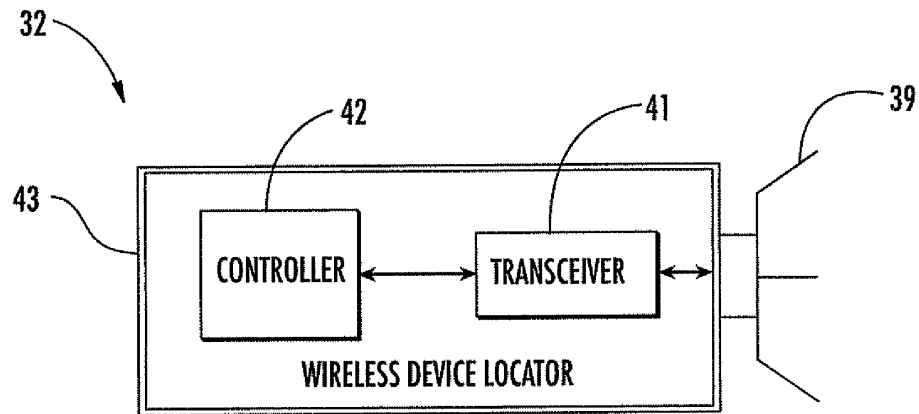


FIG. 2

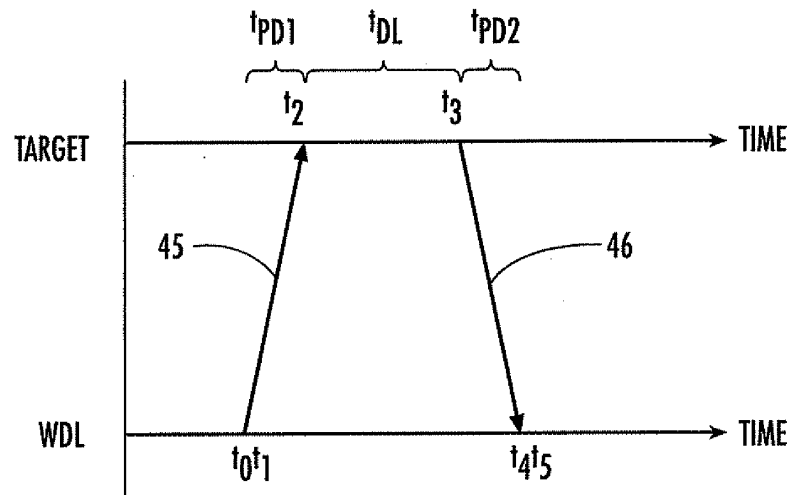


FIG. 3

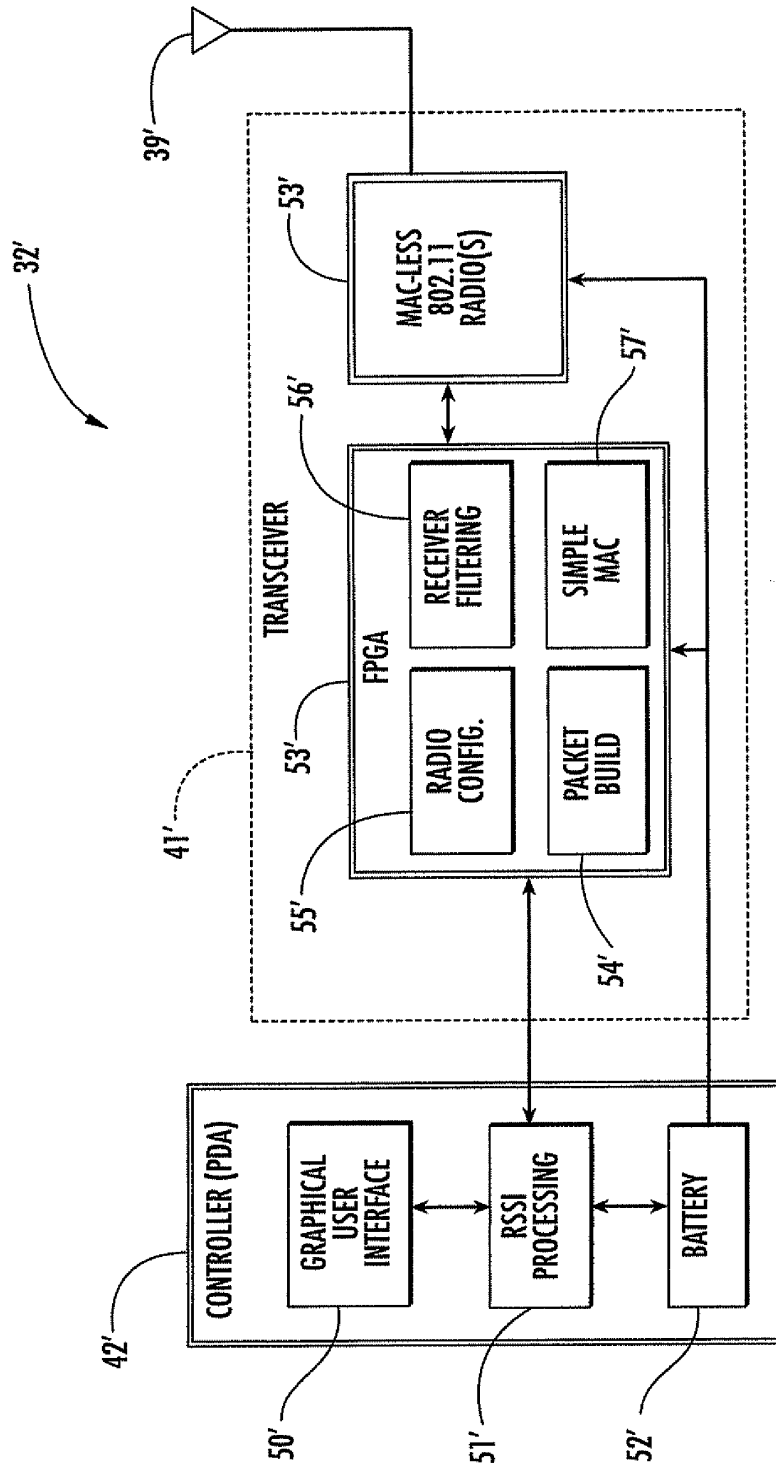


FIG. 4

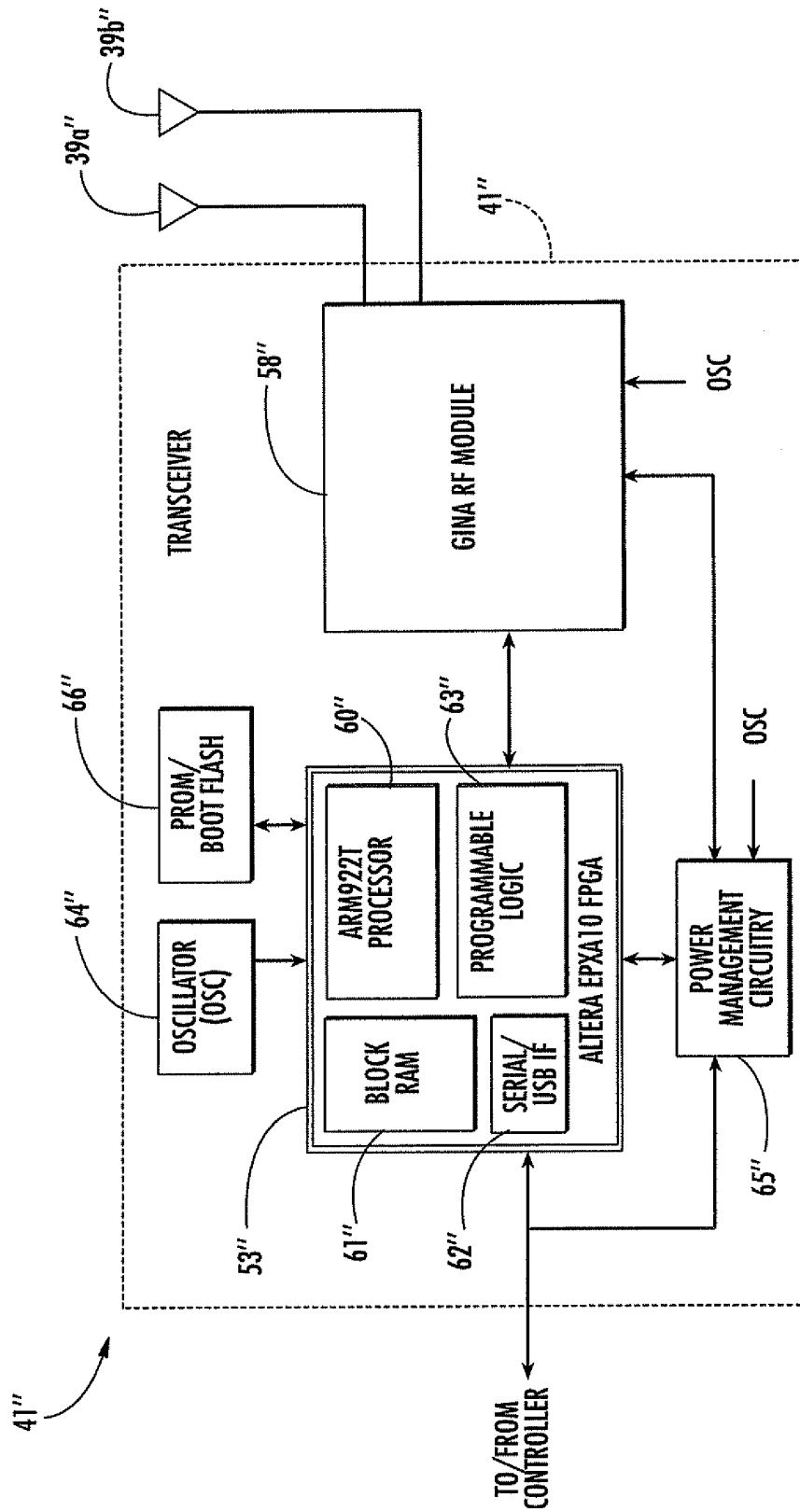


FIG. 5

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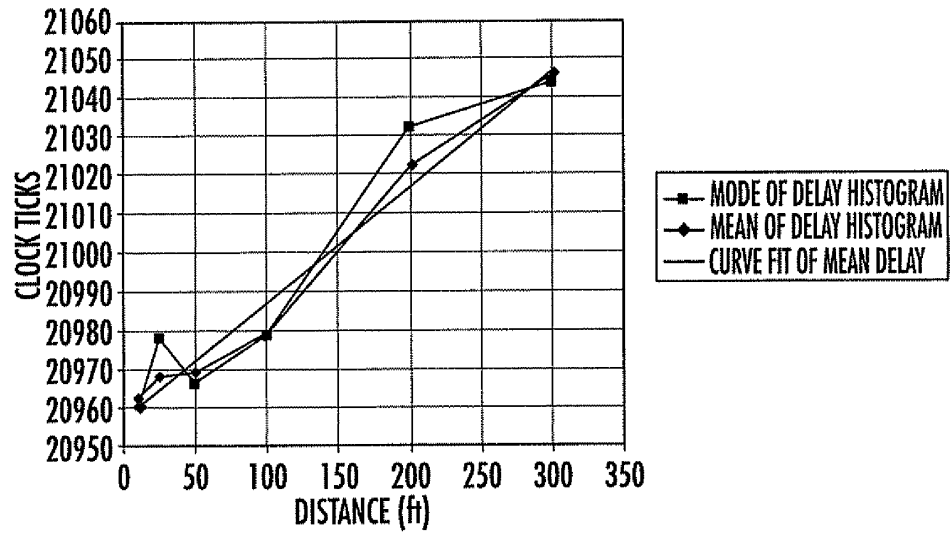


FIG. 6

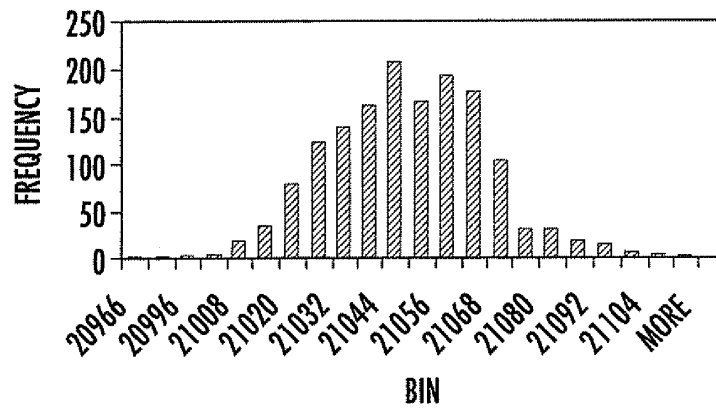
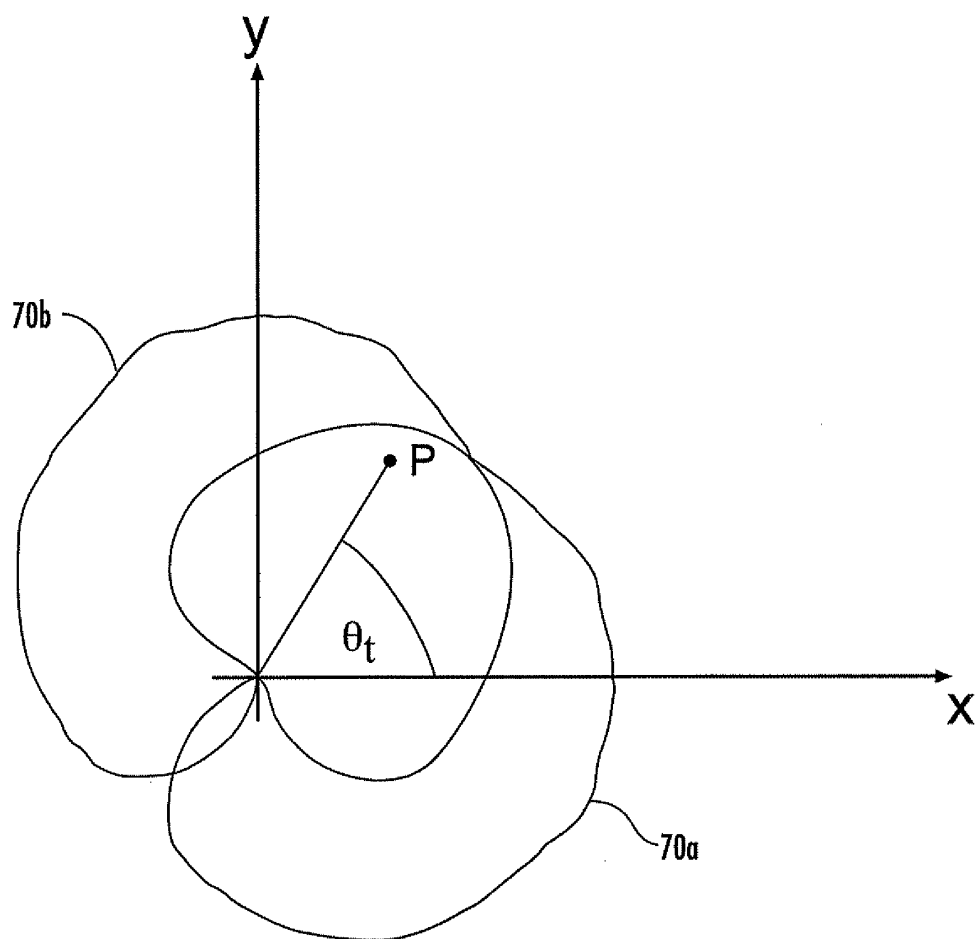


FIG. 7

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**FIG. 8**

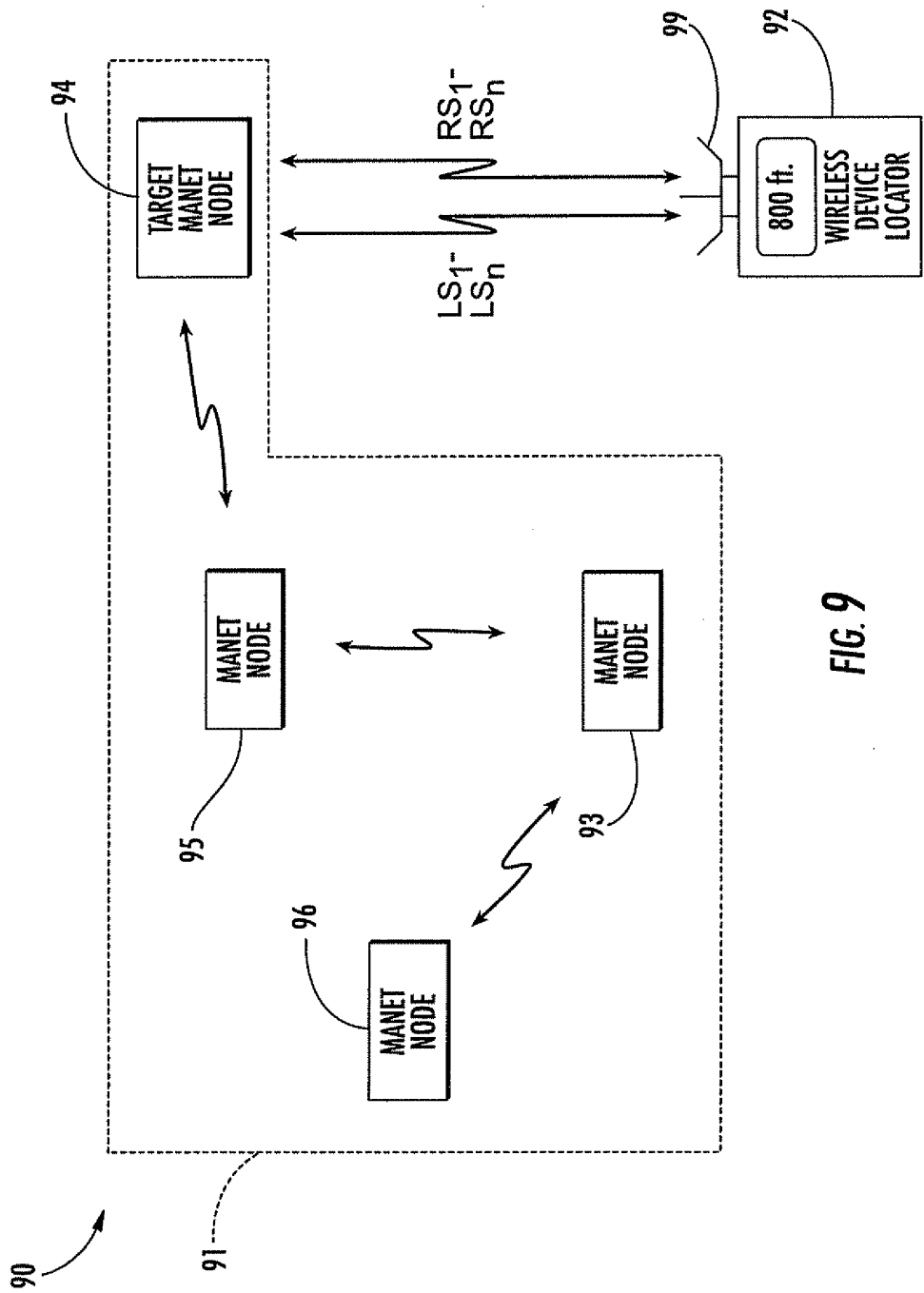


FIG. 9

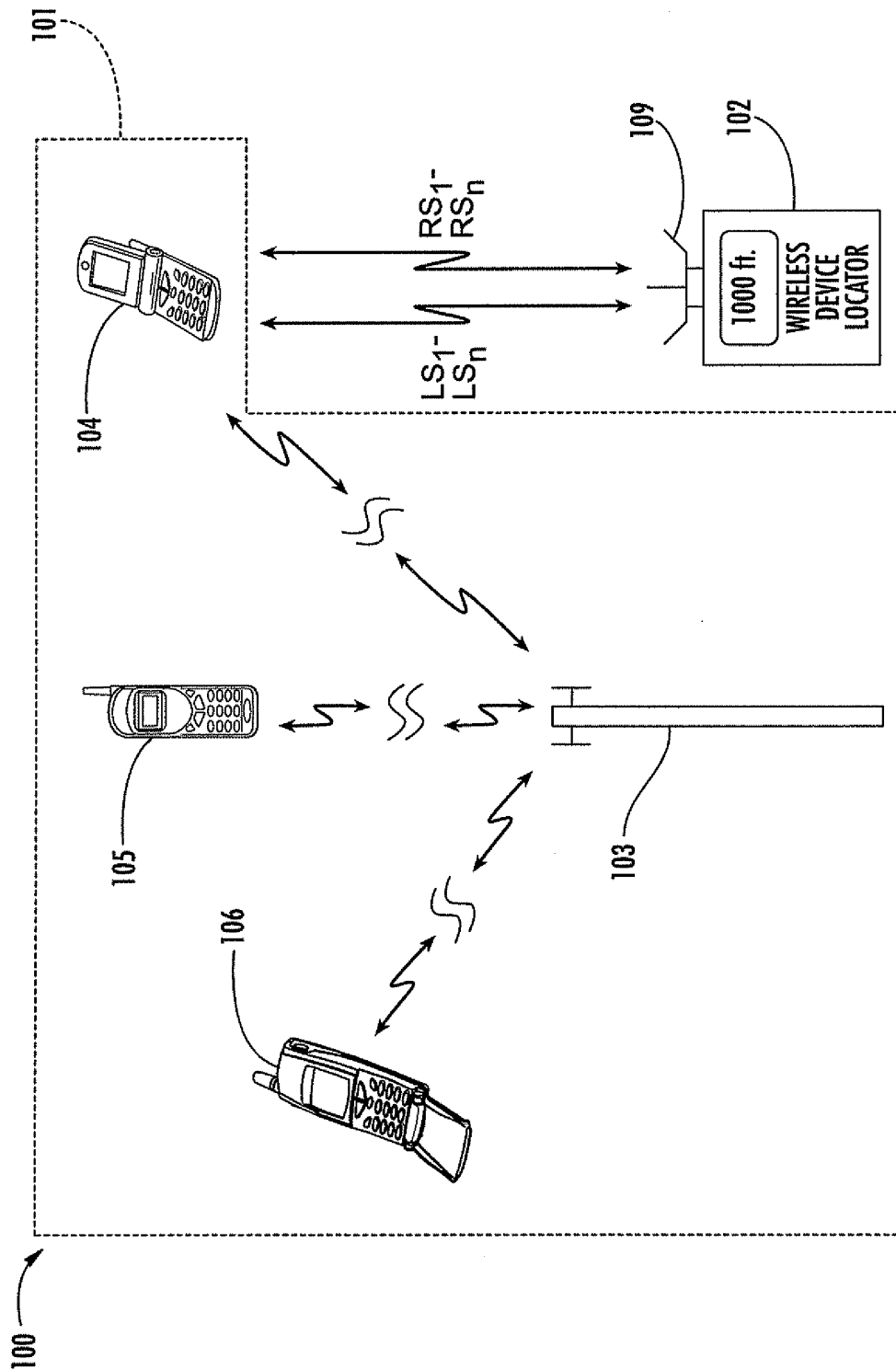


FIG. 10

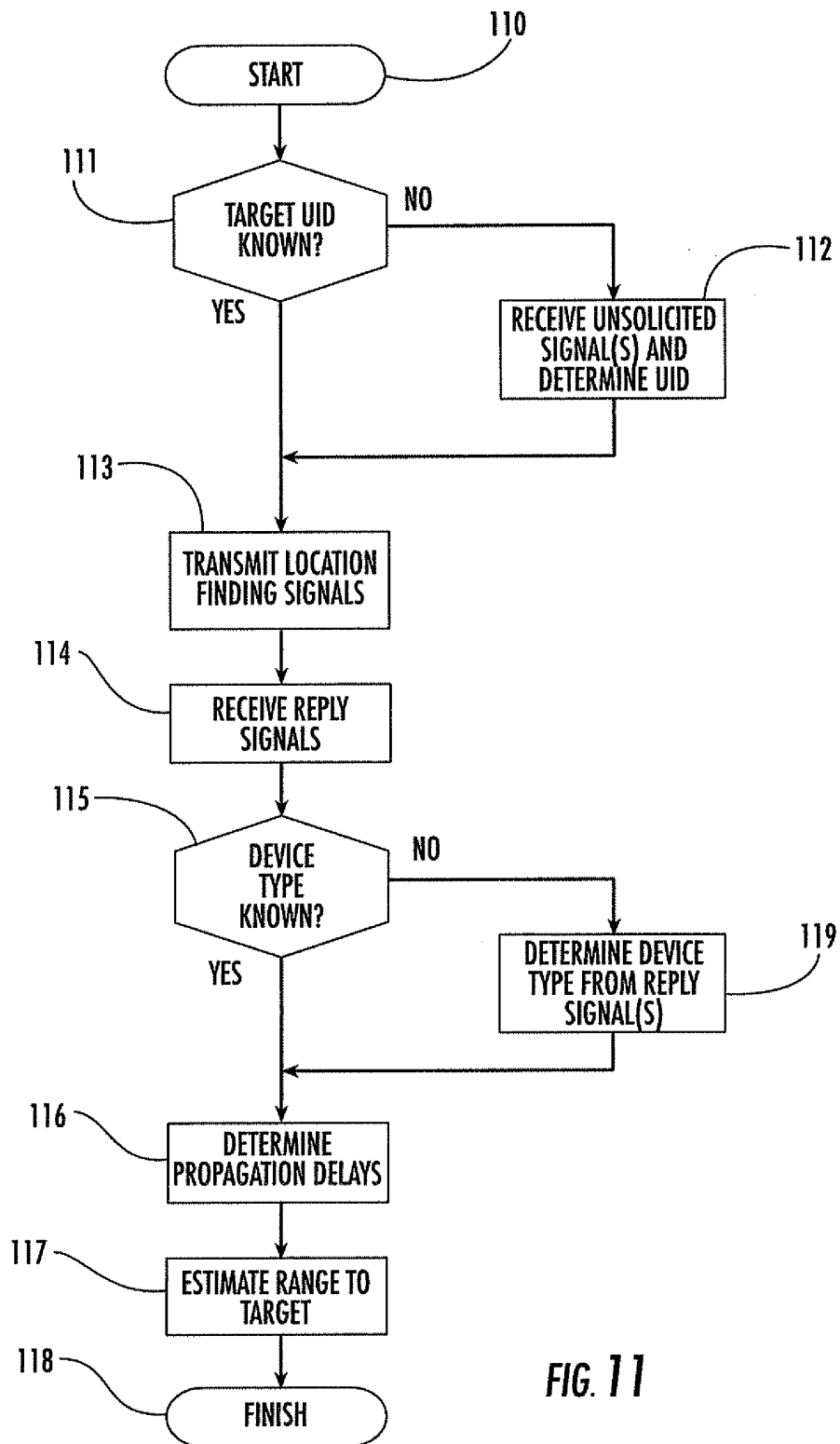


FIG. 11

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS		
First Named Inventor:		Thomas Jay Billhartz		
Filer:		Christopher F. Regan/Barbara Goree		
Attorney Docket Number:		GCSD1494/51360CON1		
Filed as Large Entity				
Utility Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	300	300
Utility Search Fee	1111	1	500	500
Utility Examination Fee	1311	1	200	200
Pages:				
Claims:				
Claims in excess of 20	1202	5	50	250
Independent claims in excess of 3	1201	1	200	200
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1450

Electronic Acknowledgement Receipt

EFS ID:	1199261
Application Number:	11531487
Confirmation Number:	1292
Title of Invention:	WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS
First Named Inventor:	Thomas Jay Billhartz
Customer Number:	27975
Filer:	Christopher F. Regan/Barbara Goree
Filer Authorized By:	Christopher F. Regan
Attorney Docket Number:	GCSD1494/51360CON1
Receipt Date:	13-SEP-2006
Filing Date:	
Time Stamp:	15:56:09
Application Type:	Utility
International Application Number:	

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$ 1450
RAM confirmation Number	183
Deposit Account	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part	Pages
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1		51360CON1_appln.pdf	3064344	yes	73
	Multipart Description				
	Doc Desc		Start	End	
	Application Data Sheet		1	2	
	Specification		3	25	
	Claims		26	35	
	Abstract		36	36	
	Drawings		37	45	
	Oath or Declaration filed		46	49	
	Preliminary Amendment		50	50	
	Specification		51	51	
	Claims		52	58	
	Applicant Arguments/Remarks Made in an Amendment		59	59	
	Information Disclosure Statement (IDS) Filed		60	61	
	NPL Documents		62	63	
	Transmittal letter		64	64	
	Drawings		65	73	
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	8587	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			3072931		

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

New Applications Under 35 U.S.C. 111

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

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

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

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

11/531,487**APPLICATION AS FILED – PART I**

(Column 1)

(Column 2)

FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE (37 CFR 1.18(a), (b), or (c))		
SEARCH FEE (37 CFR 1.18(k), (l), or (m))		
EXAMINATION FEE (37 CFR 1.18(o), (p), or (q))		
TOTAL CLAIMS (37 CFR 1.16(i))	25	minus 20 = 5
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4	minus 3 = 1
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))		

SMALL ENTITY

RATE (\$)	FEE (\$)
X\$25=	
X\$100=	
N/A	
TOTAL	

OR

OTHER THAN SMALL ENTITY

RATE (\$)	FEE (\$)
	300
	500
	200
X\$50	250
X\$200=	200
N/A	
TOTAL	1450

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

APPLICATION AS AMENDED – PART II

(Column 1)

(Column 2)

(Column 3)

AMENDMENT A	9/13/06	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total (37 CFR 1.16(i))	25	Minus	25	=
Independent (37 CFR 1.16(h))	4	Minus	4	=
Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))				

SMALL ENTITY

RATE (\$)	ADDITIONAL FEE (\$)
X =	
X =	
N/A	
TOTAL	
ADD'T FEE	

OR

OTHER THAN SMALL ENTITY

RATE (\$)	ADDITIONAL FEE (\$)
X =	
X =	
N/A	
TOTAL	
ADD'T FEE	

Cancel claims 3-6, 15-18, 22-23
and cancel claims 32-33 and 9.13.06

(Column 1)

(Column 2)

(Column 3)

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total (37 CFR 1.16(i))		Minus		=
Independent (37 CFR 1.16(h))		Minus		=
Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))				

RATE (\$)	ADDITIONAL FEE (\$)
X =	
X =	
N/A	
TOTAL	
ADD'T FEE	

OR

RATE (\$)	ADDITIONAL FEE (\$)
X =	
X =	
N/A	
TOTAL	
ADD'T FEE	

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

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

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

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

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

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