

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

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

Application Number	TBD
Filing Date	Herewith
First Named Inventor	John W. Howard
Title	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK
Art Unit	
Examiner Name	
Attorney Docket Number	BIKN005C8

SIGNATURE of Applicant or Patent Practitioner

Signature	/Bruce Stuckman, Ph.D./	Date (Optional)	2020-09-29
Name	Bruce E. Stuckman	Registration Number	36,693
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			
NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.			
☒ *Total of <u>1</u> forms are submitted.			

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

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

POWER OF ATTORNEY BY APPLICANT

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

Application Number	Filing Date
TBD	Herewith

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

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

34399

OR

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

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

☐ The address associated with the above-mentioned Customer Number

OR

☒ The address associated with Customer Number: 34399

OR

Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

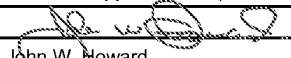
I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

THL Holding Company, LLC

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

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

Signature		Date (Optional)	November 27, 2013
Name	John W. Howard		
Title	CEO		

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

☒ Total of ONE forms are submitted.

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

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

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		
First Named Inventor/Applicant Name:		John W. Howard		
Filer:		Bruce Edward Stuckman/Debbie Watson		
Attorney Docket Number:		BIKN005C8		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	75	75
UTILITY SEARCH FEE	2111	1	330	330
UTILITY EXAMINATION FEE	2311	1	380	380
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				785

Electronic Acknowledgement Receipt	
EFS ID:	40704083
Application Number:	17036535
International Application Number:	
Confirmation Number:	7690
Title of Invention:	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK
First Named Inventor/Applicant Name:	John W. Howard
Customer Number:	34399
Filer:	Bruce Edward Stuckman/Debbie Watson
Filer Authorized By:	Bruce Edward Stuckman
Attorney Docket Number:	BIKN005C8
Receipt Date:	29-SEP-2020
Filing Date:	
Time Stamp:	15:06:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$785
RAM confirmation Number	E20209SF07394083
Deposit Account	502126
Authorized User	Debbie Watson
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	BIKN005C8_ADS.pdf	1227136	no	9
			f264715bf137953416ee6d055ad24e85ab39dc99e		
Warnings:					
Information:					
2	Transmittal Letter	BIKN005C8_APPSTMT.pdf	82550	no	1
			7773d837d59a63b47caae01ea8c8412f4351da94		
Warnings:					
Information:					
3		BIKN005C8_APP.pdf	253809	yes	64
			c3f2caa763ce2ab4cae8093babb1bb0472305b0		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	58	
	Claims		59	63	
	Abstract		64	64	
Warnings:					
Information:					
4	Drawings-only black and white line drawings	BIKN005C8_DWGS.pdf	802682	no	22
			e45ee9f5cf9a76c7450f9a68b78b1b4a14ae108d		
Warnings:					
Information:					
5	Oath or Declaration filed	BIKN005C8_DEC.pdf	951362	no	3
			aa1666547593623daf4370d639034e9299f5cf4a		

Warnings:					
Information:					
6	Power of Attorney	BIKN005C8_POA.pdf	681829	no	2
			02ae7dc68ace63b55ae7b00e732c2530f4b89627		
Warnings:					
Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	35373	no	2
			2bc4a1a2d05b1bdee8baa30643d3c91d7bec596c		
Warnings:					
Information:					
Total Files Size (in bytes):			4034741		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	BIKN005C8
		Application Number	
Title of Invention	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor	1				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	John	W.	Howard			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	Cedar Park	State/Province	TX	Country of Residence	US	
Mailing Address of Inventor:						
Address 1	111 Buckshot Way					
Address 2						
City	Cedar Park	State/Province	TX			
Postal Code	78618	Country	US			
Inventor	2				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Richard		Cutler			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	Round Rock	State/Province	TX	Country of Residence	US	
Mailing Address of Inventor:						
Address 1	3613 Laurel Bay Loop					
Address 2						
City	Round Rock	State/Province	TX			
Postal Code	78681	Country	US			
Inventor	3				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Robert	M.	Kennard			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		BIKN005C8	
		Application Number			
Title of Invention		WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK			
City	Dallas	State/Province	TX	Country of Residence	US
Mailing Address of Inventor:					
Address 1		2919 Bookhout Street			
Address 2					
City	Dallas	State/Province	TX		
Postal Code	75201	Country i	US		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	34399		
Email Address	bstuckman@texaspatents.com	Add Email	Remove Email

Application Information:

Title of the Invention	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		
Attorney Docket Number	BIKN005C8	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	22	Suggested Figure for Publication (if any)	

Filing By Reference:

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

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

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

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐ Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	BIKN005C8
		Application Number	
Title of Invention	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		

Representative Information:

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

Please Select One:			
☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)	
Customer Number	34399		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove			
Application Number	Continuity Type		Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
	Continuation of		16/837481	2020-04-01		
Prior Application Status	Patented		Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)	
16/837481	Continuation of	16/540665	2019-08-14	10645537	2020-05-05	
Prior Application Status	Patented		Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)	
16/540665	Continuation of	16/150498	2018-10-03	10440501	2019-10-08	
Prior Application Status	Patented		Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)	
16/150498	Continuation of	15/910654	2018-03-02	10123161	2018-11-06	
Prior Application Status	Patented		Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)	
15/910654	Continuation of	15/000903	2016-01-19	9942700	2018-04-10	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		BIKN005C8	
		Application Number			
Title of Invention	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK				

Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15/000903	Continuation of	14/281077	2014-05-19	9295024	2016-03-22
Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14/281077	Continuation of	14/044202	2013-10-02	8768381	2014-07-01
Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14/044202	Continuation of	12/713346	2010-02-26	8588806	2013-11-19
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.					

Foreign Priority Information:

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

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

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

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

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	BIKN005C8
		Application Number	
Title of Invention	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	BIKN005C8
		Application Number	
Title of Invention	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.			
Applicant		1	Remove
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.			
		Clear	
☐ Assignee	Legal Representative under 35 U.S.C. 117		Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:			
Name of the Deceased or Legally Incapacitated Inventor:			
If the Applicant is an Organization check here. ☒			
Organization Name	THL Holding Company, LLC		
Mailing Address Information For Applicant:			
Address 1	11044 Research Blvd, Suite D500		
Address 2			
City	Austin	State/Province	TX
Country	US	Postal Code	78759
Phone Number		Fax Number	
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button. Add			

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	BIKN005C8
		Application Number	
Title of Invention	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		

Assignee	1		
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.			
Remove			
If the Assignee or Non-Applicant Assignee is an Organization check here. ☒			
Organization Name	THL Holding Company, LLC		
Mailing Address Information For Assignee including Non-Applicant Assignee:			
Address 1	11044 Research Blvd, Suite D500		
Address 2			
City	Austin	State/Province	TX
Country i	US	Postal Code	78759
Phone Number		Fax Number	
Email Address			
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add			

Signature:				Remove	
NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c). This Application Data Sheet must be signed by a patent practitioner if one or more of the applicants is a juristic entity (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, all joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of all joint inventor-applicants. See 37 CFR 1.4(d) for the manner of making signatures and certifications.					
Signature	Bruce Stuckman, Ph.D./		Date (YYYY-MM-DD)	2020-09-29	
First Name	Bruce E.	Last Name	Stuckman, Ph.D.	Registration Number	36693
Additional Signature may be generated within this form by selecting the Add button. Add					

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	BIKN005C8
		Application Number	
Title of Invention	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Docket No.: BIKN005C8
First Named Inventor: John W. Howard
Filing Date: Herewith

Title: WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK

Date: 9/29/2020

United States Patent and Trademark Office
P. O. Box 1450
Alexandria, VA 22313-1450

The present application claims priority, as a continuation, continuation-in-part, or a divisional of U.S. Utility Application No. 16/837,481, filed 4/1/2020, co-pending, entitled "WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK," may also claim priority to one or more other applications and/or patents, and may be related to other applications and/or related patents, as detailed within the Application Data Sheet and/or the Specification of the present application along with any other applications and/or patents that claim priority from any of the foregoing (collectively, "Predecessor Applications").

The Examiner is advised that the prior art cited in the Predecessor Applications should be reviewed and cited during examination of the present application per the Manual of Patent Examining Procedure Section 904. The Examiner is advised that the rejections made, amendments made, and arguments made in the Predecessor Applications should be reviewed and considered during examination of the present application.

The Examiner is advised that any disclaimer that may be made in the present application should not be read into or against the Predecessor Applications or any patents issuing therefrom. Further, the Examiner is also advised that any disclaimer made in a Predecessor Application is not to be read into or against the present application.

RESPECTFULLY SUBMITTED,

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TITLE OF THE INVENTION

WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK

CROSS REFERENCE TO RELATED APPLICATIONS

5 The present U.S. Utility Patent Application claims priority pursuant to 35 U.S.C. § 120 as
a continuation of U.S. Utility Application No. 16/837,481, entitled WIRELESS DEVICE AND
METHODS FOR USE IN A PAGING NETWORK, filed 4/1/2020, which is a continuation of
U.S. Utility Application No. 16/540,665, entitled WIRELESS DEVICE AND METHODS FOR
USE IN A PAGING NETWORK, filed 8/14/2019, issued as U.S. Patent No. 10,645,537 on
10 5/5/2020, which is a continuation of U.S. Utility Application No. 16/150,498, entitled
WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK, filed
10/3/2018, issued as U.S. Patent No. 10,440,501 on 10/8/2019, which is a continuation of U.S.
Utility Application No. 15/910,654, entitled WIRELESS DEVICE AND METHODS FOR USE
IN A PAGING NETWORK, filed 3/2/2018, issued as U.S. Patent No. 10,123,161 on 11/6/2018,
15 which is a continuation of U.S. Utility Application No. 15/000,903, entitled WIRELESS
DEVICE AND METHODS FOR USE IN A PAGING NETWORK, filed 1/19/2016, issued as
U.S. Patent No. 9,942,700 on 4/10/2018, which is a continuation of U.S. Utility Application No.
14/281,077, entitled WIRELESS DEVICE AND METHODS FOR USE IN A PAGING
NETWORK, filed 5/19/2014, issued as U.S. Patent No. 9,295,024 on 3/22/2016, which is a
20 continuation of U.S. Utility Application No. 14/044,202, entitled WIRELESS DEVICE AND
METHODS FOR USE IN A PAGING NETWORK, filed 10/2/2013, issued as U.S. Patent No.
8,768,381 on 7/1/2014, which is a continuation of U.S. Utility Patent Application No.
12/713,346, entitled WIRELESS DEVICE AND METHODS FOR USE IN A PAGING
NETWORK, filed 2/26/2010, issued as U.S. Patent No. 8,588,806 on 11/19/2013, all of which
25 are hereby incorporated herein by reference in their entirety and made part of the present U.S.
Utility Patent Application for all purposes.

 The present application is related to the following U.S. patent applications that are
commonly assigned:

30

SYSTEM AND WIRELESS DEVICE FOR LOCATING A REMOTE OBJECT, having serial number 12/713,316 filed on 2/26/2010, issued as U.S. Patent No. 8,253,559 on 8/28/2012;

5 ADJUNCT DEVICE AND A HANDHELD WIRELESS COMMUNICATION DEVICE WITH LOCATION FEATURES, having serial number 12/713,319, filed on 2/26/2010, issued as U.S. Patent No. 8,253,560 on 8/28/2012;

10 MULTI-FUNCTION ADJUNCT DEVICE FOR USE WITH A HANDHELD WIRELESS COMMUNICATION DEVICE, having serial number 12/713,329, filed on 2/26/2010, issued as U.S. Patent No. 8,285,248 on 10/9/2012;

15 METHODS FOR USE IN CONJUNCTION WITH A HANDHELD WIRELESS COMMUNICATION DEVICE HAVING AN ADJUNCT DEVICE COUPLED THERETO, having serial number 12/713,334, filed on 2/26/2010, issued as U.S. Patent No. 8,254,878 on 8/28/2012;

20 ADJUNCT DEVICE FOR USE WITH A HANDHELD WIRELESS COMMUNICATION DEVICE AS A SCREEN POINTER, having serial number 12/713,350, filed on 2/26/2010, issued as U.S. Patent No. 8,884,871 on 11/11/2014;

the contents of which are expressly incorporated herein in their entirety by reference thereto.

BACKGROUND OF THE INVENTION

TECHNICAL FIELD OF THE INVENTION

25 The present invention relates to wireless communication devices.

DESCRIPTION OF RELATED ART

30 As is known, wireless communication devices are commonly used to access long range communication networks as well as broadband data networks that provide text messaging, email services, Internet access and enhanced features such as streaming audio and video, television service, etc., in accordance with international wireless communications standards such as 2G,

2.5G, 3G and 4G. Examples of such networks include wireless telephone networks that operate cellular, personal communications service (PCS), general packet radio service (GPRS), global system for mobile communications (GSM), and integrated digital enhanced network (iDEN).

5 Many wireless telephones have operating systems that can run applications that perform additional features and functions. Apart from strictly wireless telephony and messaging, wireless telephones have become general platforms for a plethora of functions associated with, for example, navigational systems, social networking, electronic organizers, audio/video players, shopping tools, and electronic games. Users have the ability to choose a wireless telephone and
10 associated applications that meet the particular needs of that user. Consequently, the wireless telephone has, in some ways, become an important device for many aspects of the user's life. Misplacing a user's wireless telephone can be an annoying experience. Further, while a wide range of wireless telephones and applications are available today, other functions and features are desirable, particularly for use in conjunction with other wireless devices.

15

The disadvantages of conventional approaches will be evident to one skilled in the art when presented the disclosure that follows.

BRIEF SUMMARY OF THE INVENTION

20 The present invention is directed to various system, apparatus and methods of operation that are further described in the following Brief Description of the Drawings, the Detailed Description of the Invention, and the claims. Other features and advantages of the present invention will become apparent from the following detailed description of the invention made with reference to the accompanying drawings.

25

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

FIG. 1 presents a pictorial representation of a location system for use with a handheld wireless communication device 110 in accordance with an embodiment of the present invention.

FIG. 2 presents a pictorial representation of handheld wireless communication device 110
30 and adjunct device 100 in accordance with an embodiment of the present invention.

FIG. 3 presents a pictorial representation of handheld wireless communication device 110 and adjunct device 100 in accordance with an embodiment of the present invention.

FIG. 4 presents a pictorial representation of a location system for use with a handheld wireless communication device 110 in accordance with an embodiment of the present invention.

5 FIG. 5 presents a schematic block diagram of a wireless device 120 and adjunct device 100 in accordance with an embodiment of the present invention.

FIG. 6 presents a pictorial representation of a location system for use with a handheld wireless communication device 110 in accordance with an embodiment of the present invention.

10 FIG. 7 presents a graphical representation of an antenna pattern in accordance with an embodiment of the present invention.

FIG. 8 presents a pictorial representation of handheld wireless communication device 110 and adjunct device 100 in accordance with an embodiment of the present invention.

FIG. 9 presents a schematic block diagram of an antenna 148 in accordance with an embodiment of the present invention.

15 FIG. 10 presents a schematic block diagram of an antenna 148' in accordance with an embodiment of the present invention.

FIG. 11 presents a schematic block diagram of an antenna 148'' in accordance with an embodiment of the present invention.

20 FIG. 12 presents a graphical representation of a signal magnitude in accordance with an embodiment of the present invention.

FIG. 13 presents a schematic block diagram of adjunct device 100 in accordance with an embodiment of the present invention.

FIG. 14 presents a graphical representation of a difference signal in accordance with an embodiment of the present invention.

25 FIG. 15 presents a pictorial representation of handheld wireless communication device 110 and adjunct device 100 in accordance with an embodiment of the present invention.

FIG. 16 presents a schematic block diagram of wireless devices 70 and 72 in accordance with an embodiment of the present invention.

30 FIG. 17 presents a schematic block diagram of paging networks 90 and 92 in accordance with an embodiment of the present invention.

FIG. 18 presents a pictorial representation of a screen display 170 in accordance with an embodiment of the present invention.

FIG. 19 presents a pictorial representation of a screen display 172 in accordance with an embodiment of the present invention.

5 FIG. 20 presents a schematic block diagram of a wireless device 122 and adjunct device 101 in accordance with an embodiment of the present invention.

FIG. 21 presents a schematic block diagram of devices 91, 93 and 94 in accordance with an embodiment of the present invention.

10 FIG. 22 presents a pictorial representation of a screen display 190 in accordance with an embodiment of the present invention.

FIG. 23 presents a pictorial representation of a screen display 192 in accordance with an embodiment of the present invention.

FIG. 24 presents a schematic block diagram of a wireless device 123 and adjunct device 101 in accordance with an embodiment of the present invention.

15 FIG. 25 presents a schematic block diagram of devices 210, 212 and 214 in accordance with an embodiment of the present invention.

FIG. 26 presents a pictorial representation of a screen display 220 in accordance with an embodiment of the present invention.

20 FIG. 27 presents a pictorial representation of a screen display 222 in accordance with an embodiment of the present invention.

FIG. 28 presents a pictorial representation of handheld wireless communication device 110 and adjunct device 100 in accordance with an embodiment of the present invention.

FIG. 29 presents a pictorial representation of handheld wireless communication device 110 and adjunct device 100 in accordance with an embodiment of the present invention.

25 FIG. 30 presents a pictorial representation of screen pointing system in accordance with an embodiment of the present invention.

FIG. 31 presents a schematic block diagram of video device 254 in accordance with an embodiment of the present invention.

30 FIG. 32 presents a schematic block diagram representation of a location system in accordance with an embodiment of the present invention.

FIG. 33 presents a schematic block diagram of a handheld wireless communication device 300 in accordance with an embodiment of the present invention.

FIG. 34 presents a pictorial representation of a back view of an adjunct device 330 in accordance with an embodiment of the present invention.

5 FIG. 35 presents a pictorial representation of a cutaway side view of an adjunct device 330 in accordance with an embodiment of the present invention.

FIG. 36 presents a pictorial representation of a front view of a wireless device 325 in accordance with an embodiment of the present invention.

10 FIG. 37 presents a flowchart representation of a method in accordance with an embodiment of the present invention.

FIG. 38 presents a flowchart representation of a method in accordance with an embodiment of the present invention.

FIG. 39 presents a flowchart representation of a method in accordance with an embodiment of the present invention.

15 FIG. 40 presents a flowchart representation of a method in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

20 FIG. 1 presents a pictorial representation of a location system for use with a handheld wireless communication device 110 in accordance with an embodiment of the present invention. In particular, a handheld wireless communication device 110, such as a smart phone, digital book, netbook, personal computer with wireless data communication or other wireless communication device that includes a wireless transceiver for communicating over a long range wireless network such as a cellular, PCS, CDMA, GPRS, GSM, iDEN or other wireless
25 communications network and/or a short-range wireless network such as an IEEE 802.11 compatible network, a Wimax network, another wireless local area network connection or other communications link. Handheld wireless communication device 110 is capable of engaging in wireless communications such as sending and receiving telephone calls and/or wireless data in conjunction with text messages such as emails, short message service (SMS) messages, pages
30 and other data messages that may include multimedia attachments, such as documents, audio files, video files, images and other graphics. Handheld wireless communication device 110

includes one or more processing devices for executing other applications and a user interface that includes, for example, buttons, a display screen such as a touch screen, a speaker, a microphone, a camera for capturing still and/or video images and/or other user interface devices.

5 Wireless device 120 is shown that includes a user interface that includes push buttons 10, a light emitter 14 such as a light emitting diode (LED) or other emitter, and sound emitter 12 such as a beeper, buzzer, speaker or other audio device. While particular user interface devices are shown, the wireless device can similarly include other devices such as a touch screen or other display screen, a thumb wheel, trackball, and/or other input or output devices. The user interface
10 of the wireless device 120 generates a location request signal in response to an indication from a user by for instance, pushing one of the push buttons 10.

Wireless device 120 further includes a short-range wireless transmitter that transmits an RF paging signal, such as paging signal 16 in response to the location request signal. The short-
15 range wireless transmitter can be part of a transceiver that operates in conjunction with a communication standard such as 802.11, Bluetooth, ZigBee, ultra-wideband, Wimax or other standard short or medium range communication protocol, or other protocol.

Adjunct device 100 includes a housing that is coupleable to the handheld wireless
20 communication device 110 via a communication port of the handheld wireless communication device 110. The adjunct device 100 includes a short-range wireless receiver that receives the RF paging signal, such as paging signal 16. The short-range wireless receiver of adjunct 100 can also be part of a transceiver that operates in conjunction with a communication standard such as 802.11, Bluetooth, ZigBee, ultra-wideband, Wimax or other standard short or medium range
25 communication protocol, or other protocol. In particular, the short-range wireless receiver of adjunct device 100 is configured to receive the paging signal 16 generated by wireless device 120.

Adjunct device includes its own user interface having push buttons 20, sound emitter 22
30 and light emitter 24 that emit audio and/or visual alert signals in response to the paging signal 16 to assist the user in locating the handheld wireless communication device. As with the user

interface of wireless device 120, the user interface of adjunct device 100 can similarly include other devices such as a touch screen or other display screen, a thumb wheel, trackball, and/or other input or output devices.

5 In operation, a user can attach the adjunct device 100 to his or her handheld wireless communication device 110. If the handheld wireless communication device 110 is lost or mislaid, the user can locate the handheld wireless communication device by activating a paging button on the wireless device 120 that causes paging signal 16 to be broadcast. The adjunct device 100 responds to the paging signal 16 by flashing light emitter 24 and/or emitting a loud
10 sound such as a beeping, buzzing or other alarm signal via sound emitter 22. The user can locate the handheld wireless communication device 110 by homing in on the visual and/or audio emissions.

 The further operation of wireless device 120 and adjunct device 100, including several
15 optional implementations, different features and functions spanning complementary embodiments are presented in conjunction with FIGs. 2-40 that follow.

 FIGs. 2 and 3 present pictorial representations of handheld wireless communication device 110 and adjunct device 100 in accordance with an embodiment of the present invention.
20 As shown in FIG. 2, adjunct device 100 and handheld wireless communication device 110 are decoupled. Handheld wireless communication device 110 includes a communication port 26' and adjunct device 100 includes a mating plug 26 for coupling the adjunct device 100 to the communication port 26' of handheld wireless communication device 110. In an embodiment of the present invention, the communication port 26' and plug 26 are configured in conjunction
25 with a standard interface such as universal serial bus (USB), Firewire, or other standard interface, however, a device specific communication port such as an Apple iPod/iPhone port, a Motorola communication port or other communication port can likewise be employed. Further, while a physical connection is shown, a wireless connection, such as a Bluetooth link, 802.11 compatible link, an RFID connection or other wireless connection can be employed in
30 accordance with alternative embodiments.

As shown in FIG. 3, adjunct device 100 is coupled to the handheld wireless communication device 110 by plug 26 being inserted in communication port 26'. Further, adjunct device 100 includes its own communication port 28' for coupling, via a mating plug 28, the adjunct device 100 to an external device 25, such as a computer or other host device, external charger or peripheral device. In an embodiment of the present invention, the communication port 28' and plug 28 are configured in conjunction with a standard interface such as universal serial bus (USB), Firewire, or other standard interface, however, a device specific communication port such as an Apple iPod/iPhone port, a Motorola communication port or other communication port can likewise be employed.

In an embodiment of the present invention, the adjunct device passes signaling between the external device 25 and the handheld wireless communication device 110 including, for instance, charging signals from the external connection and data communicated between the handheld wireless communication device 110 and the external device 25. In this fashion, the external device can communicate with and/or charge the handheld wireless communication device with the adjunct device 100 attached, via pass through of signals from plug 28 to communication port 26'. It should be noted however, that while communication ports 28' and 26' can share a common physical configuration, in another embodiment of the present invention, the communication ports 28' and 26' can be implemented via different physical configurations. For example, communication port 26' can be implemented via a device specific port that carries USB formatted data and charging signals and communication port 28' can be implemented via a standard USB port. Other examples are likewise possible.

In an embodiment of the present invention, when the adjunct device 100 is coupled to handheld wireless communication device 110, the adjunct device 100 initiates communication via the communication port 26' to determine if an application is loaded in the handheld wireless communication device 110 -- to support the interaction with the adjunct device 100. Examples of such applications include a location application or other application that operates in conjunction with the adjunct 100. If no such application is detected, the adjunct 100 can communicate via communication port 26' to initiate a download of such an application directly or to send the browser of the handheld wireless communication device 110 to a website store at a

remote server or other location where supporting applications can be browsed, purchased or otherwise selected for download to the handheld wireless communication device 110.

5 In a further embodiment of the present invention, when a supporting application is loaded in handheld wireless communication device 110, the handheld wireless communication device 110 initiates communications via the communication port 26' to determine if an adjunct device 100 is coupled thereto or whether or not an adjunct device has never been coupled thereto. If no such adjunct device 100 is detected, the application can instruct the user to connect the adjunct device 100. Further, the application can, in response to user selection and/or an indication that
10 an adjunct device has not been previously coupled to the handheld wireless communication device 110, automatically direct a browser of the handheld wireless communication device 110 to a website store at a remote server or other location where a supporting adjunct devices 100 can be selected and purchased, in order to facilitate the purchase of an adjunct device, via the handheld wireless communication device 110.

15

In a further embodiment, the application maintains a flag that indicates if an adjunct device 100 has previously been connected. In response to an indication that an adjunct device has not been previously coupled to the handheld wireless communication device 110, the application can automatically direct a browser of the handheld wireless communication device
20 110 to a website store at a remote server or other location where a supporting adjunct devices 100 can be selected and purchased, in order to facilitate the purchase of an adjunct device, via the handheld wireless communication device 110.

FIG. 4 presents a pictorial representation of a location system for use with a handheld
25 wireless communication device 110 in accordance with an embodiment of the present invention. In particular, adjunct device 100 and wireless device 120 can operate in a reciprocal fashion to locate wireless device 120. In particular, wireless device 120 includes a housing that is attachable to or includes a ring, clip or other fastener that can be coupled to key 30 as shown or to another personal object such as a coat, a person, a pet or other thing. Further, wireless device
30 120 can be embodied as a card or other device that can be slipped into a wallet, an article of clothing, a bag or other thing to be located.

In any of these cases, the wireless device 120 includes its own short-range wireless receiver that receives a paging signal 112 transmitted by adjunct device 110. In response to the paging signal 112, a light or sound emitter of wireless device 120 emits a detectable alert signal that helps the user locate the personal object. In an embodiment of the present invention, the adjunct device 100 operates in a similar fashion to wireless device 120 to initiate the paging signal 112. In particular, the transmission of paging signal 112 can be initiated by pressing a button or otherwise interacting with the user interface of adjunct 100. In a further embodiment, handheld wireless communication device 100 includes an interactive application that generates application data that is passed to adjunct device 100 via the communication port of the handheld wireless communication device 100. Adjunct device 100 responds to such application data by initiating the transmission of the paging signal 112. In either case, a user of handheld wireless communication device 110 that wishes to locate his or her key 30, or other object coupled to wireless device 120, initiates the paging signal 112. The user can then locate the wireless device 120 and corresponding object by homing in on the visual and/or audio emissions of the wireless device 120.

FIG. 5 presents a schematic block diagram of a wireless device 120 and adjunct device 100 in accordance with an embodiment of the present invention. In particular, wireless device 120 includes short-range wireless transceiver 130 coupled to antenna 138, processing module 131, user interface 132 and memory 133. While not expressly shown, wireless device 120 can include a replaceable battery for powering the components of wireless device 120. In the alternative, wireless device 120 can include a battery that is rechargeable via an external charging port, for powering the components of wireless device 120. Adjunct device 100 includes short-range wireless transceiver 140 coupled to antenna 148, processing module 141, user interface 142 and memory 143, device interface 144, and battery 146. The processing modules 131 and 141 control the operation of the wireless device 120 and adjunct device 100, respectively and provide further functionality described in conjunction with, and as a supplement to, the functions provided by the other components of wireless device 120 and adjunct device 100.

As discussed in conjunction with FIGs. 1-4, the short-range wireless transceivers 130 and 140 each can be implemented via a transceiver that operates in conjunction with a communication standard such as 802.11, Bluetooth, ZigBee, ultra-wideband, Wimax or other standard short or medium range communication protocol, or other protocol. User interfaces 132 and 142 each can contain one or more push buttons, a sound emitter, light emitter, a touch screen or other display screen, a thumb wheel, trackball, and/or other user interface devices.

The processing module 131 can be implemented using a microprocessor, micro-controller, digital signal processor, microcomputer, central processing unit, field programmable gate array, programmable logic device, state machine, logic circuitry, analog circuitry, digital circuitry, and/or any device that manipulates signals (analog and/or digital) based on operational instructions that are stored in memory, such as memory 133. Note that when the processing module 131 implements one or more of its functions via a state machine, analog circuitry, digital circuitry, and/or logic circuitry, the memory storing the corresponding operational instructions may be embedded within, or external to, the circuitry comprising the state machine, analog circuitry, digital circuitry, and/or logic circuitry. Further note that, the memory module 133 stores, and the processing module 131 executes, operational instructions corresponding to at least some of the steps and/or functions illustrated herein.

The memory module 133 may be a single memory device or a plurality of memory devices. Such a memory device may be a read-only memory, random access memory, volatile memory, non-volatile memory, static memory, dynamic memory, flash memory, cache memory, and/or any device that stores digital information. While the components of wireless device 120 are shown as being coupled by a particular bus structure, other architectures are likewise possible that include additional data busses and/or direct connectivity between components. Wireless device 120 can include additional components that are not expressly shown.

Likewise, the processing module 141 can be implemented using a microprocessor, micro-controller, digital signal processor, microcomputer, central processing unit, field programmable gate array, programmable logic device, state machine, logic circuitry, analog circuitry, digital circuitry, and/or any device that manipulates signals (analog and/or digital) based on operational

instructions that are stored in memory, such as memory 143. Note that when the processing module 141 implements one or more of its functions via a state machine, analog circuitry, digital circuitry, and/or logic circuitry, the memory storing the corresponding operational instructions may be embedded within, or external to, the circuitry comprising the state machine, analog
5 circuitry, digital circuitry, and/or logic circuitry. Further note that, the memory module 143 stores, and the processing module 141 executes, operational instructions corresponding to at least some of the steps and/or functions illustrated herein.

The memory module 143 may be a single memory device or a plurality of memory
10 devices. Such a memory device may be a read-only memory, random access memory, volatile memory, non-volatile memory, static memory, dynamic memory, flash memory, cache memory, and/or any device that stores digital information. While the components of adjunct device 100 are shown as being coupled by a particular bus structure, other architectures are likewise possible that include additional data busses and/or direct connectivity between components. Adjunct
15 device 100 can include additional components that are not expressly shown.

As shown, the adjunct device includes a battery 146 that is separate from the battery of the handheld wireless communication device 110 and can supply power to short-range wireless transceiver 140, processing module 141, user interface 142, memory 143, and device interface
20 144 in conjunction with a power management circuit, one or more voltage regulators or other supply circuitry. By being separately powered from the handheld wireless communication device 110, the adjunct 100 can operate even if the battery of the handheld wireless communication device is discharged. In this fashion, the user can still page the adjunct device 100 to locate the handheld wireless communication device 110 when the battery of the handheld
25 wireless communication device is discharged.

Device interface 144 provides an interface between the adjunct device 100 and the handheld wireless communication device 110 and an external device 25, such as a computer or other host device, peripheral or charging unit. As previously discussed in conjunction with FIGs.
30 1-4, the housing of adjunct device 100 includes a plug, such as plug 26, or other coupling device for connection to the communication port 26' of the handheld wireless communication device

110. In addition, the housing of adjunct device 100 further includes its own communication port, such as communication port 28 or other coupler for connecting to an external device 25. Device interface 144 is coupled to the communication port 28 that operates as a charging port. When adjunct device 100 is connected to an external source of power, such as external device 25,
5 device interface 144 couples a power signal from the external power source to charge the battery 146. In addition, the device interface 144 couples the power signal from the external power source to the communication port of the handheld wireless communication device 110 to charge the battery of the handheld wireless communication device. In this fashion, both the handheld wireless communication device 110 and the adjunct device 100 can be charged at the same time.
10 Further, the handheld wireless communication device 110 can be charged while the devices are still coupled -- without removing the adjunct device 100 from the handheld wireless communication device 110.

While the battery 146 is separate from the battery of the handheld wireless communication device 110, in an embodiment of the present invention, the device interface 144
15 is switchable between an auxiliary power mode and a battery isolation mode. In the battery isolation mode, the device interface 144 decouples the battery 146 from the battery of the handheld wireless communication device 110, for instance, to preserve the charge of battery 146 for operation even if the battery of the handheld wireless communication device 110 is
20 completely or substantially discharged. In the auxiliary power mode, the device interface 144 couples the power from the battery 146 to the handheld wireless communication device 110 via the communication port to charge the battery of the handheld wireless communication device 110. In this fashion, the user of the handheld wireless communication device 110 at or near a discharged state of the handheld wireless communication device battery could opt to draw power
25 from the battery 146. In an embodiment of the present invention, signaling from user interface 142 could be used to switch the device interface 144 between the battery isolation mode and the auxiliary power mode. Alternatively or in addition, signaling received from the handheld wireless communication device via the communication port, or remotely from wireless device 120, could be used to switch the device interface 144 between the battery isolation mode and the
30 auxiliary power mode.

Device interface 144 includes one or more switches, transistors, relays, or other circuitry for selectively directing the flow of power between the external device 25, the battery 146, and the handheld wireless communication device 110 as previously described. In addition, the device interface 144 includes one or more signal paths, buffers or other circuitry to couple
5 communications between the communication port of the adjunct device 110 and the communication port of the handheld wireless communication device 110 to pass through communications between the handheld wireless communication device 110 and an external device 25. In addition, the device interface 144 can send and receive data from the handheld wireless communication device 110 for communication between the adjunct device 100 and
10 handheld wireless communication device 110.

FIG. 6 presents a pictorial representation of a location system for use with a handheld wireless communication device 110 in accordance with an embodiment of the present invention. In this embodiment, adjunct device 100 operates as previously described to transmit a paging
15 signal 112. In this embodiment however, wireless device 120 transmits a location signal 114 via short-range wireless transceiver 130, such as a beacon signal or other location signal. Adjunct device 100 aids the user of handheld wireless communication device 110 in homing in on the location signal 114 based on the signal strength of the location signal 114 as received by short-range wireless transceiver 140.

20 In an embodiment of the present invention, the handheld wireless communication device 110 executes a location application that operates under user control to initiate the transmission of paging signal 112 to locate key or keys 30 or other object associated with wireless device 120. The signal strength of the location signal 114 from short-range wireless transceiver 140 is
25 converted to signal strength data by processor 141 and sent to handheld wireless communication device 110 via device interface 144 and the communication port of the handheld wireless communication device 110. The signal strength data is used by the location application to generate a graphical user interface including display screen 150. As shown, display screen 150 includes an indication 152 of the particular object being located and a visual signal strength
30 indication 154. In this fashion, the user can move around with the handheld wireless communication device 110 and hunt for the key or keys 30, guided by changes in the visual

signal strength indication 154. In particular, the user of handheld wireless communication device 110 can move about, seeking to maximize the visual signal strength indication 154 until the key or keys 30 are located.

5 While signal strength is described above as a measure of approximate distance to a remote device, the time of flight methodology described in conjunction with FIG. 37 or other distance approximations can likewise be employed.

FIG. 7 presents a graphical representation of an antenna pattern in accordance with an embodiment of the present invention. A possible reception pattern of antenna 148 of adjunct device 100 is shown. The antenna pattern 160 is shown in two dimensions, corresponding to, for instance, the horizontal plane of the user. In particular, antenna 148 can include a pair of loop antennas, monopoles or dipoles or other antenna configurations that are aligned in position and phase to have a directional pattern that includes a single null. While a cardioid pattern is presented, other antenna patterns with a single null or with multiple nulls, such as multiple closely spaced nulls may also be employed.

As previously discussed, the short-range wireless transceiver 140 generates signal strength in response to the location signal 114 from wireless device 120. The signal strength is used to generate signal strength data that is communicated to the location application of handheld wireless communication device 110 via the communication port of the handheld wireless communication device. The use of a directional antenna in the implementation of antenna 148 can assist the location application in determining a direction to the wireless device 120. For example, the user can change the orientation of the handheld wireless communication device to determine the direction to the wireless device 120. The location application can detect when the orientation of the handheld wireless communication device corresponds to the direction of the wireless device, based on the signal strength data. When the null direction of the antenna 148 is pointing toward the wireless device 120, a null signal strength reading will occur. The location application can indicate a match to the user to inform him or her that the handheld wireless communication device 110 is pointed toward the wireless device 120.

In an alternative embodiment, the user is instructed to “turn around” to gather 360 degrees of directional data. The signal strength data can be analyzed in conjunction with one or more orientation sensors of the handheld wireless communication device 110, to determine a direction to the wireless device 120. In particular, the location application can determine the particular orientation of the device corresponding to the point where the null of antenna pattern 160 is aligned with the direction to the wireless device 120, and feedback that direction to the user via a directional indicator.

In an alternative embodiment, the antenna 148 includes a steerable pattern 150 that includes a steerable null. The location application of handheld wireless communication device 110 can, for example, instruct the user to stand still while the short-range wireless transceiver 140 completes a directional sweep. The location application sends application data to the adjunct device via device interface 144 that instructs the processor 141 to command the programmable antenna to sweep the null direction by 360 degrees and to collect corresponding signal strength data. Analysis of the signal strength data by the location application can be used to determine the direction to the wireless device 120 based on the direction corresponding to the null. Feedback of that direction can be provided to the user via a directional indicator generated by the location application.

Further discussion of these features including several different embodiments and optional features are discussed in conjunction with FIGs. 8-15 that follow.

FIG. 8 presents a pictorial representation of handheld wireless communication device 110 and adjunct device 100 in accordance with an embodiment of the present invention. In particular, a display screen 162 is shown that includes a signal strength indication 164 and an indication of direction 166 that can be used in conjunction with the location application examples discussed in association with FIG. 7. It should be noted that the location application of handheld wireless communication device 110 can operate to invert the signal strength data to generate the signal strength indication 164 so that when the null direction of the antenna pattern 160 is aligned with direction to wireless device 120, the low signal strength caused by the null is

translated into a high signal strength indication, indicating to the user the device is pointed in the right direction.

In this particular embodiment, the indication of direction 166 is fixed, and is pointed in the null direction of the antenna 148. As the user changes the orientation of the handheld wireless communication device 110, the (inverted) signal strength indication 164 varies. When the inverted signal strength indication 164 peaks, this indicates that the null direction of the antenna 148 (and the indication of direction 166) is pointing toward the wireless device 120.

FIG. 9 presents a schematic block diagram of an antenna 148 in accordance with an embodiment of the present invention. In particular, antenna 148 includes two separate antennas 168 and 169 that are selectable by switch 161 in response to control signal 165. In an embodiment of the present invention, the antenna 168 is an omnidirectional or substantially omnidirectional antenna and antenna 169 has a radiation pattern that includes a null, as described in conjunction with FIGs. 7-8. RF signals 167 are sent or received by the particular antenna 168 or 169 that is selected. The control signal 165 can be generated by processor 141 or application data from a location application of handheld wireless communication device 110.

In operation, control signal 165 is generated to select antenna 168 for standard operation. In this fashion, when the adjunct device 100 sends paging signals 112 or receives paging signal 16, signals can be received from all directions. When the adjunct device 100 is receiving location signals 114 from a remote wireless device 120, control signal 165 is generated to switch antenna 148 to antenna 169. In this fashion the null pattern of antenna 169 can be used by the location application of handheld wireless communication device 110 to provide directional feedback to the user.

FIG. 10 presents a schematic block diagram of an antenna 148' in accordance with an embodiment of the present invention. In particular, antenna 148 is implemented via a programmable antenna 148' that has a controllable radiation pattern. In one mode of operation, the programmable antenna is controlled via control signal 163 to an omnidirectional or substantially omnidirectional antenna pattern. The control signal 163 can be generated by

processor 141 or application data from a location application of handheld wireless communication device 110. This mode of operation is selected when the adjunct device 100 sends paging signals 112 or receives paging signal 16. In this fashion, signals can be received from all directions.

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When the adjunct device is receiving location signals 114 from a remote wireless device 120, control signal 163 is generated to switch antenna 148' to an antenna pattern, such as antenna pattern 160, and optionally to steer the null direction in conjunction with a directional sweep. In this mode of operation, the null pattern of antenna 148' can be used by the location application of handheld wireless communication device 110 to provide directional feedback to the user.

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FIG. 11 presents a schematic block diagram of an antenna 148'' in accordance with an embodiment of the present invention. In particular, antenna 148'' is a programmable antenna that includes two separate antenna elements 176 and 174. The antenna 148'' is configurable to a first configuration where switch 161 decouples antenna element 174 and only antenna element 176 is active. In a second configuration, switch 161 coupled antenna element 174 to antenna element 176 and both elements are active.

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In an embodiment of the present invention, antenna elements 174 and 176 are separate loops, monopoles, dipoles or other antenna elements. The antenna formed by only antenna element 176 produces an omnidirectional or substantially omnidirectional antenna pattern. The antenna formed by the combined antenna with antenna elements 174 and 176 has a radiation pattern that includes a null. Antenna 148'' can be operated in response to control signals 165 in a similar fashion to the antenna 148 of FIG. 9.

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In operation, control signal 165 is generated to select the omnidirectional antenna configuration for standard operation. In this fashion, when the adjunct device 100 sends paging signals 112 or receives paging signal 16, signals can be received from all directions. When the adjunct device is receiving location signals 114 from a remote wireless device 120, control signal 165 is generated to switch antenna 148'' to the second configuration. In this fashion the null

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pattern of antenna 148'' can be used by the location application of handheld wireless communication device 110 to provide directional feedback to the user.

FIG. 12 presents a graphical representation of a signal magnitude in accordance with an embodiment of the present invention. In particular, signal strength M represents signal strength data collected by short-range wireless transceiver 140 in response to location signal 114. As discussed in conjunction with FIGs. 7-11, an antenna having a null direction is used in this mode of operation of adjunct 100. Signal strength M is generated over a range of directions, such as over 360 degrees of rotation, either by manually steering the handheld wireless communication device 110 coupled to adjunct 100 in the case of a fixed antenna such as antenna 148 or 148'', or by steering the beam of the antenna in an implementation of a programmable antenna, such as antenna 148'. In either case the direction to the wireless device 120 can be determined based on the direction θ_l , where the antenna null is pointed at the wireless device 120. As shown, the null in the antenna pattern causes the signal strength data to dip in a recognizable way.

In an embodiment of the present invention, the direction θ_l is determined based on the direction of lowest signal magnitude M . However other methodologies including pattern recognition can be employed to analyze the characteristics of the signal strength data to recognize the null direction.

FIG. 13 presents a schematic block diagram representation of adjunct device 100' in accordance with an embodiment of the present invention. In particular, a further embodiment of adjunct device 100 is shown that includes many common elements of the embodiment of FIG. 5 that are referred to by common reference numerals. In addition, adjunct device 100' includes a second short-range wireless transceiver 140' and a second antenna 169.

In this embodiment, the antenna 168 is an omnidirectional or substantially omnidirectional antenna and antenna 169' has either a fixed or steerable radiation pattern that includes a null, as described in conjunction with antennas 148, 148', 148'' or 169. In operation, when the adjunct device 100 sends paging signals 112 or receives paging signal 16, short-range wireless transceiver 140 is used and signals can be received from all directions. When the

adjunct device is receiving location signals 114 from a remote wireless device 120, short-range wireless transceivers 140 and 140' are both engaged and generate separate signal strength data. A difference between the signal strength data corresponding to antennas 168 and 148' is used to determine the null direction. In this fashion, the difference between the signal strength data from the two signal paths can be used to distinguish between high loss conditions and a direction corresponding to a null.

FIG. 14 presents a graphical representation of a difference signal in accordance with an embodiment of the present invention. In particular, signal strength $D(\theta)$ represents the difference between the magnitude of the signal strength data collected by short-range wireless transceivers 140 and 140' in response to location signal 114. Representing the signal strength generated by the short-range wireless transceiver 140 as $SS_o(\theta)$, and the signal strength of the short-range wireless transceiver 140 as $SS_n(\theta)$, the difference $D(\theta)$, can be determined based on:

$$D(\theta) = |SS_o(\theta)| - |SS_n(\theta)|$$

As discussed in conjunction with FIGs. 7-13, signal strength difference $D(\theta)$ is generated over a range of directions, such as over 360 degrees of rotation, either by manually steering the handheld wireless communication device 110 coupled to adjunct 100 in the case of a fixed antenna, or by steering the null of the antenna in an implementation of a programmable antenna. In either case the direction to the wireless device 120 can be determined based on the direction θ_l , where the antenna null is pointed at the wireless device 120. As shown, the null in the antenna pattern causes the difference in signal strength data to increase in a recognizable way.

In an embodiment of the present invention, the direction θ_l is determined based on the direction of highest signal magnitude $D(\theta)$. However other methodologies including pattern recognition can be employed to analyze the characteristics of the signal strength data to recognize the null direction.

FIG. 15 presents a pictorial representation of handheld wireless communication device 110 and adjunct device 100 in accordance with an embodiment of the present invention. In

particular, a display screen is shown that includes an indication of direction 166' that can be used in conjunction with the location application examples discussed in association with FIG. 7-14.

In this particular embodiment, the indication of direction 166' moves based on the repeated directional sweeps by a steerable antenna such as antenna 148'. Indication of direction 166' indicates, for instance, the direction θ_1 as previously discussed. As the user changes the orientation of the handheld wireless communication device 110, indication of direction 166' varies based on the updated direction θ_1 . The indication of direction 166' can be used in this fashion to point the user in the direction of the wireless device 120.

It should be noted that while the embodiment of FIGs. 7-15 have discussed the use of one or more antennas with a null, an antenna with a single lobe pattern or a steerable lobe pattern could be employed in a similar fashion to detect signal peaks instead of signal nulls.

In yet another embodiment of the present invention, a single antenna 148 is employed that has an omnidirectional pattern at one frequency or range of frequencies, yet exhibits a null at another frequency or range of frequencies. In particular, a location signal, such as location signal 114, can be sent at frequency corresponding to the null pattern and received by short range wireless transceiver 140. Instead of switching antennas 168 and 169, or programming an antenna 148' to different patterns as described in conjunction with FIGs. 9-11, two different patterns can be implemented in the same antenna to support both omnidirectional and null modes of operation.

In a further embodiment of the present invention, a receive antenna is employed that includes a plurality of null directions at different compass points in two dimensions that are realized at different frequencies. For example, an antenna, such as antenna 148 can exhibit a plurality of null directions θ_i , that each have a corresponding null frequency f_i . In particular, a location signal, such as location signal 114, can include a swept frequency chirp that begins at a low frequency and ends at a high frequency that includes each of the discrete frequencies f_i . The short range wireless transceiver 140 can determine the direction to the remote device by detecting the frequency f_i where the null occurs, for example based on a lowest signal level, and

correlating the null frequency, via a lookup table or other data structure, to the corresponding direction θ_i .

While the foregoing description has focused on location in a two dimensional sense,
5 three-dimensional location can be accomplished in a similar fashion. In particular, directional
antennas can be employed in both the x-y and x-z or y-z planes to distinguish z-axis, as well as x
and y axis, coordinates. It should be noted that multiple directional antennas can be employed
that are arranged orthogonally or non-orthogonally as long as the null directions span either all or
substantially all of three dimensional space or a portion of three dimensional space that is of
10 interest. Further more complex antenna designs with three-dimensional antenna patterns can
likewise be employed in a similar fashion to determine directionality in three-dimensions. Three
dimensional location can be useful, for example, in locating objects on different floors of a
building or other structure such as a mine or a ship, determining of a person with a remote device
has fallen overboard, as well as other three-dimensional applications. In addition or alternative
15 to providing three dimensional direction finding, multiple antennas can be employed in a
diversity receiver that, for example includes two or more receivers. Such configurations can be
employed to mitigate the effects of fading, multipath interference and other path losses to
provide more stable reception of signals, and more stable measurement of signal strength, round
trip signal delay, etc.

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FIG. 16 presents a schematic block diagram of wireless devices 70 and 72 in accordance
with an embodiment of the present invention. In particular, the devices 70 and 72 can each be
either a wireless device 120 or an adjunct device 100. The two devices can be sold as a set and
are pre-paired to communicate with one another. In another embodiment of the present
25 invention, the user can configure the devices 70 and 72 to be paired with one another.

In pairing, one or both devices 70 and 72 initiate the pairing procedure. For example, a
user interface, such as user interface 132 or 142 generates a pairing signal in response to an
indication from a user to pair the devices. A short-range wireless transceiver, such as short-
30 range wireless transceiver 130 or 140, communicates RF signals, such as pairing signals 116 to
pair the devices 70 and 72.

While two devices 70 and 72 are shown, three or more devices can be paired together in this fashion to form a paging network. In one mode of operation, paging signals, such as paging signals 16 or 112 sent by a single device are received by all other devices and cause each of the receiving devices to generate a detectable alert signal. In another mode of operation, paging signals 16 or 112 can be generated that are addressed to a particular unit, based on addresses or other identifiers received from or assigned to, each device during the pairing procedure. For example, each device 70, 72, . . . includes a unique device identifier that is shared with other devices during the pairing procedure. Paging signals, such as paging signals 16 or 112 can include the unique identifier to direct a paging signal to a particular device. In other words, when a device 70 or 72, receives a paging signal, it extracts the device identifier from the signal and compares it to its own device identifier stored in memory. If they match, the device emits a detectable alert. If the identifiers do not match, the page is presumed to be directed to another device and no alert is generated.

In an embodiment of the present invention, the paging signals 16 and/or 112 can further contain an identifier of the device that initiated the page. In this fashion, a device that receives a page and that is paired with multiple devices can determine which other device initiated the paging signal 16 or 112.

In an embodiment of the present invention, the paging signals 16 and/or 112 can also contain an paging data such as text, a text message, voice, graphics or other data that is conveyed from the device 70, 72 . . . that initiated the paging signal 16 or 112 and the device to the device that receives the page. This functionality creates the possibility of wireless device 120 and adjunct device 100 being used for applications, other than simply location of a lost object.

FIG. 17 presents a schematic block diagram of paging networks 90 and 92 in accordance with an embodiment of the present invention. In particular, paging network 90 includes devices 80-83 that have been paired together. In addition, paging network 92 includes devices 83-85 that have been paired together. The devices 80-85 can each be either a wireless device 120 or an

adjunct device 100. As shown, device 83 has been paired with devices from both paging networks.

5 In a broadcast mode of operation, paging signals, such as paging signals 16 or 112 sent by a single device, are received by all other devices in a network and cause each of the receiving devices to generate a detectable alert signal. In this fashion, devices 80-83 can each page all of the remaining devices in paging network 90. Devices 83-85 can each page all of the remaining devices in paging network 92. In an unicast mode of operation, paging signals 16 or 112 can be generated that are addressed to a particular unit, based on addresses or other identifiers received from or assigned to, each device during the pairing procedure. In this fashion, devices 80-83 can each page one of the remaining devices in paging network 90. Devices 83-85 can each page one of the remaining devices in paging network 92.

15 As discussed above, device 83 resides in both networks. Consequently, device 83 can be paged by a device from either network or can page devices from either network. However, in this configuration, device 80 from paging network 90 cannot page device 85 from paging network 92, and vice versa.

20 In an embodiment of the present invention, a device wishing to interact with another device repeatedly transmits a paging signal 16 or 112 for an interval of time greater than a listening device's wake-up-and-listen period. Say for example, a device wakes up every two seconds to "listen," the issuing device can transmit a paging signal 16 or 112 for three seconds. This strategy has obvious power consumption advantages.

25 While a paging application is discussed above, other applications, such as device tracking, can be enabled by the formation of paging networks 90 and 92 described above. Tracking can be implemented slightly differently. On wake-up, say every two seconds, a device transmits "tracking" information one time, then goes into listen mode to see if a paging signal 16 or 112 has been issued. The additional power consumption for the short transmit is nominal, as most of the power is consumed in the wake-up cycle itself. A device that "cares" to listen for location information can be placed into a state of listening for an extended time, say 3 seconds in

our example, but it might do this only every 30 seconds, so this power hungry operation is not repeated very often. This tracking mode of operation allows a listening device to transmit useful information to any device that might care to take the time to listen periodically or on demand. In accordance with this example, a particular device 83 can be configured to track all other devices in the networks 90 and/or 92 in near real-time. The device 83 simply listens at appropriate intervals, as commanded, until all the desired information is collected from devices that are present in networks 90 and/or 92 without having to issue a paging signal 16 or 112, thus conserving battery power for both listener and talker.

In one application, the generation of location signals between devices can be used to determine if two devices are in proximity to one another. For example, devices 80-85 are associated with different people, objects, etc., and the location signals received by device 83 from devices 80-82 or 84-85, indicates which of these devices are present.

In this fashion, device 83 can determine which people or objects are in its proximity, or not in its proximity. For example, if device 83 is an adjunct associated with mom's wireless phone, device 80 is attached to the car keys and device 81 is an adjunct associated with her son's telephone, a mom can determine the proximity of her son and her keys. In response to location signals received by the adjunct device 83, the mom can determine whether or not her son and/or the car keys are in her proximity. A proximity application executed by her wireless phone can keep track of which of the devices 80-82 or 84-85 are in range and which are not, present alerts such as audible or visual alerts when a device comes in range or goes out of range, etc. In addition, the use of directional and/or distance information can augment the application to determine a nearest neighboring device or devices, plot estimated positions on a map, etc.

In addition to the applications listed above, other applications are possible including geocaching and other social networking or gaming applications enabled by one or more devices that have been previously paired are auto-detected to determine the proximity of these devices and or the objects or persons associated therewith.

FIG. 18 presents a pictorial representation of a screen display 170 in accordance with an embodiment of the present invention. In particular, a screen display 170 is shown for display via a graphical user interface generated by a location application of handheld wireless communication device 110. As shown, the graphical user interface includes a menu that indicates the plurality of personal objects, that each correspond to one of a plurality of remote device such as devices 70 or 72, or devices 80-85.

In an embodiment of the present invention, the pairing procedure described in conjunction with FIGs. 16-17 generates a list that identifies the plurality of remote devices and the plurality of personal objects. In particular, as a device is paired with the adjunct device 100, the location application of handheld wireless communication device queries the user to enter a name of an object or other identifier associated with the particular remote device being paired with the adjunct device 100. The names so entered are stored in the list in association with the device identifiers or other address information for the corresponding paired device that is either generated or received during the pairing process.

As shown, the paging menu is generated based on the list of objects – in this case, the objects identified 1-6. The user initiates a page to locate one of the objects via its wireless device 120 or adjunct device 100, by selecting the particular object from the menu.

FIG. 19 presents a pictorial representation of a screen display 172 in accordance with an embodiment of the present invention. In particular, a screen display 172 is shown for display via a graphical user interface generated by an application of handheld wireless communication device 110, such as a general paging application. As shown, the graphical user interface includes paging data received via paging signal 16 that indicates both the source of the page “Sue’s Phone” and a text message, in this case, “Are you ready to leave?”.

In operation, the text message is generated by a similar paging application of Sue’s Phone that is coupled to its own adjunct device 100. The text message is included in the paging data and paging signals 112 sent via the adjunct device 100 of Sue’s Phone. The paging data is received and decoded by the short-range wireless transceiver 140 of adjunct device 100 –

associated with the handheld wireless communication device 110 that generates screen display 172. The processing module 141 passes the paging data via the device interface 144 and communication port 26' of handheld wireless communication device 110 to the paging application. In addition to generating the detectable alert signal via the user interface 142 of adjunct device, the screen display 172 is generated by the paging application of handheld wireless communication device. As shown, this feature provides greater functionality in support of more advanced and complex applications.

FIG. 20 presents a schematic block diagram of a wireless device 122 and adjunct device 101 in accordance with an embodiment of the present invention. In particular, wireless device 122 and adjunct device 101 include each of the components of wireless device 120 and adjunct device 100 previously described. In addition, the wireless device 122 and adjunct device 101 include short-range wireless transceivers 130' and 140' that each include infrared (IR) transmitters for sending IR signals, such as IR signals 182 and 183 to a remote device, such as device 94. Device 94 can be an automobile, alarm system, audio component, video component, game or other home media device or other device that is controlled in response to IR signals from an IR remote controller.

In an embodiment of the present invention, the adjunct device 100 is coupled to a handheld wireless communication device 110 that executes a remote control application that operates in a similar fashion to a universal remote control device for controlling the operation of a device 94 that operates based on IR remote control signals. In operation, the device interface 144 receives application data from the remote control application of the handheld wireless communication device 110 via the communication port of the handheld wireless communication device 110. The application data includes remote control data for controlling the operation of device 94. While a single device 94 is shown, the handheld wireless communication device 110 and adjunct device 101 can control a plurality of such devices in a similar fashion.

In an embodiment of the present invention, the short-range wireless transceiver 140' generates IR signals 182 based on the remote control data to directly control the operation of device 94. In a further embodiment, adjunct device 101 is paired with wireless device 122 to

operate as an IR relay device. In this embodiment, the remote control data is transmitted via short-range wireless transceiver 140 via RF signals 180. Short-range wireless transceiver 130 receives and decodes the remote control data and retransmits the remote control data as IR signals 183 via short-range wireless transceiver 130'. In this further embodiment, the wireless device 122 can be located in close proximity and within line of sight with the device 94. The adjunct device 101 and handheld wireless communication device 110 can control the operation of device 94 from a different room or otherwise, while wireless device 122 is in range of RF signals 180.

While the foregoing description has focused on IR devices, in a similar fashion, devices 101, 122 and/or device 92 can include a short range wireless transceiver 130' or 140', such as a Bluetooth transceiver, 802.11 transceiver or other wireless transceiver that operates via RF signals. In one application, devices 101, 122 and/or device 92 can control a compatible remote device, such as device 94. In addition, the RF implementation of short-range wireless transceiver 130' or 140' can be used for other uses. In an embodiment of the present invention, paging signals or other messages can be transmitted to a home computer via a Bluetooth or 802.11 connection and relayed indirectly to the handheld wireless communication device 110 via the internet, wireless local area network and/or the long range wireless transceiver of the handheld wireless communication device 110.

FIG. 21 presents a schematic block diagram of devices 91, 93 and 94 in accordance with an embodiment of the present invention. In an embodiment of the present invention device 91 is implemented via adjunct device 101 and handheld wireless communication device 110, and device 93 is implemented via either wireless device 122 or adjunct device 101 and handheld wireless communication device 110 operating in a similar fashion to wireless device 122.

In a similar fashion to the system of FIG. 20, device 91 is paired with wireless device 93 to operate as an IR relay device. Remote control data is transmitted via RF signals 180. Device 93 receives the RF signals 184 and decodes the remote control data and retransmits the remote control data as IR signals 186 to control device 94.

FIG. 22 presents a pictorial representation of a screen display 190 in accordance with an embodiment of the present invention. In particular, a screen display 190 is shown that is generated by a remote control application for display on handheld wireless communication device 110. As shown, the user interacts with the remote control setup menu to enter one or more devices to be emulated. In the example shown, a hypothetical “Cony 1200XR DVR” device is selected. In response to the selection, the remote control application retrieves a remote control data configuration for this device from memory, such as the memory 143 of adjunct device 100 or the memory of the handheld wireless communication device so that remote control data transmitted as either RF signals 180 or IR signals 182 are properly formatted for control of the selected device. In an embodiment of the present invention, instead of storing remote control configuration data locally, the application contacts a remote server via the internet to retrieve the remote control configuration data. In this fashion, the long range transceiver or other wireless transceiver of handheld wireless communication device 110 can be used to gather remote control configuration data from an up to date list of current and legacy devices.

In a further mode of operation, remote graphics data corresponding to the look of the native remote control device for the selected “Cony 1200XR DVR” is also retrieved from memory, such as the memory 143 of adjunct device 100, the memory of the handheld wireless communication device, or from a remote server as described above. This remote graphics data can be used by the remote control application for emulating the look of the native remote control device for the selected “Cony 1200XR DVR”, as will be shown further in conjunction with FIG. 23.

While not shown, the set-up menu may further prompt the user to establish one or more tasks to be performed by one or more devices to be controlled. In response, to these selections and the remote control configuration data retrieved for each device, the application can automatically establish a macro program to implement each task. In an example involving the control of a home media center, tasks might include: playing a DVD, watching TV, playing a CD, listening to the radio, playing a stored audio file or stored video file, accessing the internet to listen to streaming audio, accessing the internet to watch a streaming video, etc. For each

selected task, the application configures the specific remote control operations required to control the devices of the home media center to states that correspond to the particular task.

In addition to task selection, the set-up menu may further prompt the user to establish one or more groups of devices to be controlled, and set up tasks associated with each group. For example, one group of devices might include the home media center in the living room, a second group of device might include the stereo in the bedroom, a third group of devices might include the lights in the dining room, etc.

FIG. 23 presents a pictorial representation of a screen display 192 in accordance with an embodiment of the present invention. In particular, a screen display 192 is shown that is generated by a remote control application for display on handheld wireless communication device 110. As shown, the display of handheld wireless communication device 110 creates a virtual remote control that emulates the look of the native remote control device for the device selected to be controlled – in this case, the “Cony 1200XR DVR”. In operation, the user interacts with the virtual remote control to generate remote control data for controlling the selected device, either directly from adjunct device 100 or via an IR relay device such as wireless device 122.

In an alternative embodiment involving one or more tasks established as described in conjunction with FIG. 22, the screen display be “task oriented” instead of device oriented as shown in FIG. 23. For each selected task, the remote control application configures the screen display of the handheld wireless communication device 110 to implement a menu of the particular remote control commands associated with that particular task.

For instance, the user can be presented with a menu of groups that have been configured. Once a group has been selected, a menu of tasks associated with that group is presented. Once a particular task is selected, the menu presents user options to control the particular actions associated with the selected task. For example, when a “watch TV” task is selected, the user can be presented options to increase or decrease the TV volume, change the channel, go to an electronic program guide, etc. In a further example, when a “play a DVD” task is selected, the

user can be presented options to increase the volume, decrease the volume, play, stop, pause, eject, fast forward, skip to the next section, go to the main menu, etc. It should be noted that each task may routinely involve the control of multiple devices of the home media center, and the particular actions associated with the selected task may require different devices of the home media center to be controlled.

FIG. 24 presents a schematic block diagram of a wireless device 123 and adjunct device 103 in accordance with an embodiment of the present invention. In particular, adjunct device 103 includes each of the components of adjunct device 100 previously described. In addition, the adjunct device 103 includes short-range wireless transceiver 140'' that includes a transmitter for RF signals that contain home automation data. Device 123 includes similar components to wireless device 120 but further contains a control interface 134, such as a relay, triac, transistor or other control device for controlling the operation of device 214, such as a lamp or other home lighting, an appliance, a thermostat, or other home device. In an embodiment of the present invention, the wireless device 123 is paired with the adjunct device 103 and operates in a similar fashion to a Homelink, Insteon or other home automation device controller to control the operation of an external device 214 in response to RF signals 200 from adjunct device 103.

In an embodiment of the present invention, the adjunct device 100 is coupled to a handheld wireless communication device 110 that executes a home automation application for controlling the operation of a device 214. In operation, the device interface 144 receives application data from the home automation application of the handheld wireless communication device 110 via the communication port of the handheld wireless communication device 110. The application data includes control data for controlling the operation of device 214 via wireless device 123. While a single device 214 is shown, the handheld wireless communication device 110 and adjunct device 101 can control a plurality of such devices in a similar fashion. The short-range wireless transceiver 140'' generates RF signals 200 based on the control data to control the operation of the device coupled to device 123. The adjunct device 101 and handheld wireless communication device 110 can control the operation of device 214 from a different room or otherwise, while wireless device 123 is in range of RF signals 200.

FIG. 25 presents a schematic block diagram of devices 210, 212 and 214 in accordance with an embodiment of the present invention. In an embodiment of the present invention device 210 is implemented via adjunct device 103 and handheld wireless communication device 110, and device 212 is implemented via a home automation device controller. In a similar fashion to the system of FIG. 24, device 210 is paired with wireless device 212 to operate in a home automation mode. Control data is transmitted via RF signals 200. Device 212 receives the RF signals 200 and decodes the control data to control device 214.

FIG. 26 presents a pictorial representation of a screen display 220 in accordance with an embodiment of the present invention. In particular, a screen display 220 is shown for display via a graphical user interface generated by a home automation application of handheld wireless communication device 110. As shown, the graphical user interface includes a menu that indicates the plurality of devices 214 to be controlled, that each correspond to one of a plurality of devices 212.

In an embodiment of the present invention, the pairing procedure described in conjunction with FIG. 25 generates a list that identifies the plurality of devices 212 and the plurality of devices 214. In particular, as a device 212 is paired with the adjunct device 100, the home automation application of handheld wireless communication device queries the user to enter a name of an object or other identifier of the device 214 associated with the device 212 being paired with the adjunct device 100. The names so entered are stored in the list in association with the device identifiers or other address information for the corresponding paired device 212 that is either generated or received during the pairing process.

As shown, the home automation menu is generated based on the list of devices 214 – in this case, the devices identified 1-6. The user initiates the control of a device 214 via its wireless device 120 or adjunct device 100, by selecting the assigned name of the device 214 from the menu.

While not shown, the set-up menu may further prompt the user to establish one or more tasks to be performed by one or more devices to be controlled. These tasks might include:

watching TV, reading a book, having a party, etc. For each selected task, the application configures the specific remote control operations required to control the devices of the home to states that correspond to the particular task. In the watching TV task, the lights might be dimmed to a particular level, particular lights might be turned on for reading a book. For a party,
5 all of the lights might be turned in areas of the home associated with entertaining while the temperature of the heating and cooling system may be decreased to compensate for the additional heat produced by the guests themselves.

As discussed in conjunction with the remote control application, in addition to task
10 selection, the set-up menu may further prompt the user to establish one or more groups of devices to be controlled, and set up tasks associated with each group. For example, one group of devices might include the living room lighting, a second group of device might include outdoor lighting, a third group of devices might include the home heating/cooling system, etc.

Further, the set-up menu may further prompt the user to establish one or more complex
15 tasks. The operation of lights, TV's, and the like, can be logged over time. This log could be re-played in "vacation-mode" to give a more realistic simulation of being home, compared with the use of timers, not to mention the increased convenience of this method. In addition to remote control and/or home automation devices, the tasks can further involve interaction with one or
20 more remote wireless devices such as remote wireless device 120. For instance, a more complex task might include, turning on an overhead light when a person carrying the remote wireless device enters a room between the hours of x and y, but during other hours illuminate the night light, otherwise turn off all lights.

FIG. 27 presents a pictorial representation of a screen display 222 in accordance with an
25 embodiment of the present invention. In particular, a screen display 222 is shown for display via a graphical user interface generated by an application of handheld wireless communication device 110, such as a general paging application. As shown, the graphical user interface includes an identified device 214 "Bedroom Lamp" and interactive controls for controlling the operation
30 of the selected device 214.

In operation, control data is generated by the home automation application in response to the user's interaction with the screen 222. The control data is passed from the handheld wireless communication device to the adjunct device 103 via the communication port and the device interface 144. RF signals 200 containing the control data are generated by short-range wireless transceiver 140'' and transmitted to the device 212 for control of the selected device 214.

In an alternative embodiment involving one or more tasks established as described in conjunction with FIG. 26, the screen display be "task oriented" instead of device oriented as shown in FIG. 27. For each selected task, the home automation application configures the screen display of the handheld wireless communication device 110 to implement a menu of the particular home automation commands associated with that particular task. For instance, the user can be presented with a menu of groups that have been configured. Once a group has been selected, a menu of tasks associated with that group is presented. Once a particular task is selected, the menu presents user options to control the particular actions associated with the selected task.

FIG. 28 presents a pictorial representation of handheld wireless communication device 110 and adjunct device 100 in accordance with an embodiment of the present invention. In particular, handheld wireless communication device 110 includes a wireless telephony transceiver and further includes a wireless telephony application for sending and receiving telephone calls via the wireless telephony transceiver in communication with a wireless telephony network.

The wireless telephony application receives a 911 signal generated by the adjunct device 100 via the communication port of the handheld wireless communication device 110. In particular, the 911 signal can be generated in response to a user interaction with the user interface 142 of the adjunct device 100 – such as by the user pressing an emergency call button on the adjunct device 100. In response to the 911 signal from the adjunct device, the wireless telephony application initiates an emergency call, such as a 911 telephone call, or other emergency call. In addition, emergency call can be initiated to a monitoring service as an alternative to a traditional 911 call. In this fashion, a telephone call such as an automated voice

call or other call, SMS message, text message, email or other communication can be initiated to alert the service to an emergency or distress situation. The monitoring service can include an eldercare monitoring service that can respond via its own resources to emergency or distress calls. In addition or in the alternative, the monitoring service can itself initiate a 911 call in response to the receipt of the emergency call from the handheld wireless communication device 110. As will be understood by one skilled in the art, the emergency call, can include location information, such as GPS coordinates or other position information that is relayed to the monitoring service, or the 911 call center to facilitate the location of the handheld wireless communication device 110 that initiated the emergency call.

In this fashion, the user of handheld wireless communication device 110 with adjunct device 100 need only to press a single button on the adjunct device to launch an emergency call, saving time in the event of an actual emergency.

In a further embodiment of the present invention, the handheld wireless communication device 110 can initiate an emergency call in response to the activation of a remote wireless device 120, for example, by the user pressing an emergency call button on the remote wireless device 120. In particular, the wireless device 120 transmits a special paging signal, similar to paging signal 16, that includes data or another indication that an emergency call should be initiated. When the adjunct device 100 receives the special paging signal, the adjunct device communicates the 911 signal to the handheld wireless communication device 100 to initiate the 911 call, as if an emergency call button of the adjunct device 100 had been directly pressed by the user as described above.

As discussed in conjunction with FIG. 5, the adjunct device 100 can include a device interface 144 that is switchable between an auxiliary power mode and a battery isolation mode. In the battery isolation mode, the device interface 144 decouples the battery 146 from the battery of the handheld wireless communication device 110, for instance, to preserve the charge of battery 146 for operation even if the battery of the handheld wireless communication device 110 is completely or substantially discharged. In the auxiliary power mode, the device interface 144 couples the power from the battery 146 to the handheld wireless communication device 110 via

the communication port to charge the battery of the handheld wireless communication device 110. In an embodiment of the present invention, activation of the emergency call feature in the adjunct device 100 can automatically initiate a switch of the device interface 144 to the auxiliary power mode to support emergency calling. In a further embodiment, if the device interface 144
5 detects a low battery condition during an emergency calling event, the device interface 144 can automatically switch to auxiliary power mode to support emergency calling.

FIG. 29 presents a pictorial representation of handheld wireless communication device 110 and adjunct device 100 in accordance with an embodiment of the present invention. In particular, adjunct device 100 includes a plurality of infrared emitters 240 that emit a corresponding plurality of infrared signals, such as IR location signals 242 for use by a sensor coupled to a screen to generate a screen pointer graphic on the display screen. The adjunct device 100 provides feedback to a video device on the position, orientation and or the perspective of the user and/or to otherwise allow the user to interact with a media application on
15 a remote monitor, television or other display device.

The plurality of infrared emitters 240 can be implemented using IR light emitting diodes that emit light with a wavelength of 880 nM, however, other infrared emitters can likewise be used. The plurality of infrared emitters 240 can be arranged in a row, a grid or other pattern to
20 facilitate a remote device to determine the position, orientation and or the perspective of the handheld wireless communication device 110 and/or by inference, the user of the handheld wireless communication device 110.

In an embodiment of the present invention, the handheld wireless communication device 110 includes a processor that executes a screen pointer application or other application and wherein the plurality of IR emitters 240 are controlled based on application data from the screen pointer application received by the adjunct device 100 via the communication port of the handheld wireless communication device 110 and device interface 144. In this fashion, the IR emitters 240 can be selectively enabled or disabled. In addition, the IR emitters can be used in
25 conjunction with other applications such as short-range wireless transceiver 140', an infrared data association (IrDA) transceiver or to support other applications of the adjunct device 100 and
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handheld wireless communication device 110. While a particular form factor for adjunct device 100 is shown, as previously discussed, adjunct 100 can likewise be implemented as a case that encloses a portion of the handheld wireless communication device 110.

5 Further examples of this embodiment, including the interoperability between the adjunct device 100 and a display screen are presented in conjunction with FIG. 30 that follows.

FIG. 30 presents a pictorial representation of screen pointing system in accordance with an embodiment of the present invention. In particular, a handheld device 256, such as handheld
10 wireless communication device 110 equipped with adjunct device 100 emits IR location signals 242, that are viewed by video camera 250. In an embodiment of the present invention, video camera 250 includes a charged coupled device (CCD) array that responds to the infrared location signals 242. In particular, an infrared sensor such as video camera 250 generates a video signal that includes bright spots corresponding to each of the IR emitters 240. In an embodiment of the
15 present invention, the video camera 250 includes an infrared filter such as a plastic window injected with an infrared die that allows transmission of infrared light through the window while filtering visible light and other light wavelengths. In this fashion, other light sources can be attenuated providing a clearer video image of the IR emitters 240.

20 Video device 254 receives the video signal from video camera 250 and analyzes the video signal to determine the position and/or orientation of the IR emitters 240 in the video image. In response, the video device 254 generates a graphical overlay for display screen 252 of the screen pointer that appears on the display screen 252. In this fashion, as the position of the handheld device 256 changes, the position of the screen pointer displayed on display screen 252
25 changes as well. Further, changes of orientation, such as the rotation of the handheld device 256 about roll, pitch or yaw axes can be detected and used to adjust the orientation of the screen pointer.

In an embodiment of the present invention, the video device 254 can include a video
30 game console, computer, set top box, digital video disc player or other video device that operates in conjunction with a display screen 252. While shown as separate elements, the video camera

250 and/or video device 254 can both be incorporated within a display screen 252, such as a television or computer monitor.

It should also be noted that, in other embodiments, the positioning of the video camera 250 and the IR emitters 240 can be reversed. In particular, the plurality of IR emitters 242 can be placed above the display screen 252 and the handheld device 256 can include video camera 250. In the embodiment where handheld device 256 is implemented via handheld wireless communication device 110 and adjunct device 100, the short-range wireless transceiver 140 of adjunct device 100 or other wireless transceiver of adjunct device 100 or handheld wireless communication device 110 can be used to send the video signal produced by the video camera 250 wirelessly to a complementary wireless transceiver included in video device 254.

While the foregoing description has focused on a screen pointer application, other applications including the display of three-dimensional video content including 3D movies or video games can also be adapted to the use of position and directional information of a player or viewer. In particular, in presentations with a single player or viewer, the video content displayed on display screen 252 can be transformed based on the position and/or orientation of the handheld device 256 to present the illusion of a three-dimensional display.

For example, the handheld device 256 can be replaced by an alternative device such as glasses, a hat or other object that tracks the position and/or orientation of a user's head. Objects in the background of either a static or dynamic video image can be shifted up when the user's head moves down, and shifted right when a user's head moves left to provide the illusion, via the two-dimensional display screen, that the user is interacting with a three-dimensional virtual world. It should be noted that such an embodiment can be implemented without polarized or colored lenses or other optical filtering used in conjunction with standard three-dimensional programs.

FIG. 31 presents a schematic block diagram of video device 254 in accordance with an embodiment of the present invention. In particular, video device 254 includes pattern recognition module 260, position/orientation generator 264, and graphics overlay generator 268.

In operation, video device 254 receives the video signal from video camera 250. Pattern recognition module 260 analyzes frames of the video image to recognize the line, grid or other pattern of the IR emitters 240 in the frames, based on the bright spots produced by IR location signals 242.

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After the bright spots produced by IR location signals 242 are located, position/orientation sensor 264 generates position and/or orientation signals corresponding to, for instance, x, y, and z-axis translations and roll, pitch and yaw axis orientations of the handheld device 256. These position and/or orientation signals are presented to graphics overlay generator 268, that generates a graphic, such as a screen pointer graphic, cursor, icon or other graphic corresponding to the position and/or orientation determined by position/orientation generator 264. In addition, graphics overlay generator 268 overlays the generated graphic on video signal 262 to generate a video output signal to display device 252. The video input signal can be a locally generated video input signal in embodiments where the video device 254 is a video game console, computer, set top box, digital video disc player or other video device generates its own video signals. In the alternative, video signal 262 can be coupled from an external source such as a video game console, computer, set top box, digital video disc player or other video device that operates in conjunction with a display screen 252.

20 The video signal from video camera 250, video signal 262 and the video output to video display device 252 can each be analog or digital video signals. While not expressly shown, video device 254 can include one or more video decoders, video encoders or video transcoders for converting the video format, frame rate and/or resolution of the video signal from video camera 250, video signal 262 and the video output to video display device 252 for processing in conjunction with video device 254.

In the embodiment discussed in conjunction with FIG. 30 where position and orientation information is used to present the illusion of three-dimensions, video device 254 can include a transformation generator in place of graphics overlay generator 268. In particular, the transformation generator can transform the video signal 262, based on the position and/or orientation determined by position/orientation generator 264 to present a video output signal that

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video display device 252 that presents the illusion of three-dimensions, without the need for polarized or colored lenses or other optical filtering.

5 The components of video device 254 can be implemented using a microprocessor, micro-controller, digital signal processor, microcomputer, central processing unit, field programmable gate array, programmable logic device, state machine, logic circuitry, analog circuitry, digital circuitry, and/or any device that manipulates signals (analog and/or digital) based on operational instructions that are stored in memory. Note that when the components of video device 254 implement one or more functions via a state machine, analog circuitry, digital circuitry, and/or
10 logic circuitry, the memory storing the corresponding operational instructions may be embedded within, or external to, the circuitry comprising the state machine, analog circuitry, digital circuitry, and/or logic circuitry. Video device 254 can include additional components that are not expressly shown.

15 FIG. 32 presents a schematic block diagram representation of a location system in accordance with an embodiment of the present invention. In particular, a layout is shown of a building that includes a plurality of paging devices 270, 272, 274, 276, 278 and 280 that have been paired together to form a paging network. Each of the paging devices 270, 272, 274 and 276 is a stationary device that is positioned in a fixed location, such as being attached to a wall or
20 ceiling, or placed in another location that is stationary. The paging devices 270, 272, 274 and 276 can each be implemented, for instance, via any of the embodiments of wireless device 120. The paging device 278 is a mobile paging device to be located. In particular, paging device 278 can be implemented via either any of the embodiments of wireless device 120 or adjunct device 100 and handheld wireless communication device 110.

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After these devices have been paired, the mobile paging device 278 can be located as follows. A paging signal, such as paging signal 16 or 112 is transmitted to the paging device 278 by paging device 280. The paging device 280 can either be a fixed paging device or mobile paging device having a short-range wireless transmitter capable of transmitting such a paging
30 signal -- such as any of the embodiments of wireless device 120 or adjunct device 100 and handheld wireless communication device 110. In an embodiment of the present invention, the

paging signal includes a broadcast listen command. The broadcast listen command can, for example, instruct the fixed paging devices 270, 272, 274 and/or 276 to beginning listening for a location signal from the device to be located. In response to the paging signal, the mobile paging device 278 generates the location signal, such as location signal 114 or other location
5 signal generated by an adjunct device 100.

The location signal is received by one or more of the fixed paging devices 270, 272, 274 and/or 276. In response, the fixed paging devices 270, 272, 274 and/or 276 that received the location signal generate location information that is transmitted to the paging device 280. The
10 paging device 280 receives location information pertaining to the mobile paging device 278 via its short-range wireless receiver. In response, the paging device 280 determines a location of the mobile paging device 278 based on the location information.

In an embodiment of the present invention, the location information includes directional
15 information gathered by one or more of the fixed paging devices 270, 272, 274 and/or 276 that describe a direction between that fixed paging device and the mobile paging device 278. When directional information is received by two or more of the fixed paging devices 270, 272, 274 and/or 276, the paging device 280 can triangulate the position of the mobile paging device in two dimensions, based on the directional information.

20 In an embodiment of the present invention, the fixed paging devices are each implemented via a wireless device 120 that includes an antenna 138, such as antenna 148' that is programmable. In this embodiment, wireless device 120 operates in a similar fashion to adjunct device 100 and handheld wireless communication device 110 described in conjunction with
25 FIGs. 7-15 to locate a remote paging device that is transmitting a location signal, such as location signal 112.

For example, the processing device 131 of a particular fixed paging device 270, 272, 274 or 276, generates control signals 163 to scan a null or lobe of the programmable antenna 148'
30 over different orientations, determines signal strengths corresponding to the different orientations and determines a direction θ_1 , between the particular fixed paging device and the mobile paging

device 278, based on a lowest or highest signal strength M , lowest or highest differential signal strength $D(\theta_i)$, etc. Each such fixed paging device 270, 272, 274 or 276 generates directional information that indicates the direction θ_i , and transmits this data to the paging device 280 for analysis. In an embodiment of the present invention, the paging device 280 stores the position of each of the fixed paging devices 270, 272, 274 and 276, and uses this information in conjunction with each of the received directions θ_i , to triangulate the location of the mobile paging device 278.

In another embodiment of the present invention, the fixed paging devices 270, 272, 274 and 276 generate location information that includes signal strength information of the received location signal from mobile paging device 278. The fixed paging devices 270, 272, 274 and 276 transmit this information to the paging device 280. In response, the paging device 280 determines which of the fixed devices 270, 272, 274 and 276 has the greatest signal strength. In this fashion, the paging device can infer that the mobile paging device 278 is closest to the fixed paging device 270, 272, 274 or 276 having the greatest signal strength.

It should be noted that the handheld wireless communication device 110 can include an internal compass that generates an indication of its own orientation. This orientation information can also be used in conjunction with the received directions θ_i , to triangulate the location of the mobile paging device 278 or provide absolute directional information.

The location system of FIG. 32 enables many interesting applications. For example, a restaurant can be equipped with a plurality of fixed paging devices that are paired with a plurality of mobile paging devices and a master console that operates as paging device 280. When a customer enters the restaurant, he or she is assigned a mobile paging device, such as mobile paging device 278. The master console can be used to page the mobile paging device when a table is ready. When the customer is assigned a table, the customer continues to use the mobile paging device 278. For instance, the mobile paging device 278 can be used to initiate pages to the master console to place an order or supplement an existing order, to request a server, etc. In conjunction with these activities, the location system provided by the fixed paging devices can

be used to locate the mobile paging device, correlate the location to a table and server, locate a lost paging device, etc.

In other applications, the location system of the present invention can be used in conjunction with the location of persons in hospitals, nursing homes and hospices; the location of files or records in an office building; or the location of boxes or inventory in a warehouse or manufacturing facility or for a host of other applications. In pertinent part, the mobile paging device 278 is constructed with a form factor that can be enclosed in or attached to an object, person or other thing to be located.

It should be noted further that the applications described above can alternatively be implemented without the use of a fixed network of paging devices. A remote wireless device 120 or adjunct device 100 can be associated with each table via a table ID or other data structure. A notebook computer, wireless telephone, iPad device other handheld wireless computing device 110 can be paired with and used to receive pages or other signaling to monitor each of the remote wireless devices 120 and overlay information on a map or other layout of the restaurant's layout. This provides a simpler implementation without the need of a plurality of fixed paging devices. In this case, the table ID provides the location information used to identify the table associated with each mobile device.

It should be specifically noted that the emergency monitoring functionality described in conjunction with FIG. 28 can be combined in the implementations above for applications in a hospital, hospice, nursing home or other care facility. Location and tracking information gathered as described above can be combined with emergency calling to a monitoring center or other emergency messaging to inform a monitoring center of an emergency event and further to provide enhanced location information.

In a further embodiment, accelerometer information from the handheld wireless communication device 110, such as an iPhone can be used to trigger an emergency call. For example, if a period of inactivity is detected based on a lack of motion over an inactivity period,

such as 30, 60, or 90 minutes, a fail-safe distress call can be initiated to the monitoring center to check on the person associated with the device.

While the foregoing description has focused on emergency calling, other automatic
5 calling and alerts can also be implemented in accordance with various implementations of the present invention. In particular, the pairing procedure described in conjunction with FIG. 18 can be expanded to set-up additional options such as those described below.

1) If Sue's phone is not located at home at a particular time (such as when Sue should be
10 home from school in the afternoon), as determined by proximity to one or more fixed paging devices 270, 272, 274, 276, etc., initiate a text message, email, telephone call or other communication to Mom's phone.

2) If Sue's phone initiates a 911 call, automatically broadcast a paging signal 112 to all
15 remote devices 120.

3) If Sue's phone initiates any telephone call or text message after 11:00pm at night,
initiate a paging signal to Mom's phone that indicates a call or text message and the
20 destination number.

As discussed in conjunction with FIG. 20, the RF implementation of short-range wireless
transceivers 130' and 140' can be used for other uses. In an embodiment of the present
invention, distress signals, emergency calling signals and other automatic messages and alerts
can be transmitted to a home computer via a Bluetooth or 802.11 connection and relayed
25 indirectly to the handheld wireless communication device 110 via the internet, wireless local area network and/or the long range wireless transceiver of the handheld wireless communication device 110.

FIG. 33 presents a schematic block diagram of a handheld wireless communication
30 device 300 in accordance with an embodiment of the present invention. While many of the descriptions of the present invention contained herein focus on functions and features ascribed to

an adjunct device operating in conjunction with a handheld wireless communication device, the functions and features of the adjunct device handheld wireless communication device combination can be implemented in an enhanced handheld wireless communication device that includes structure and functionality drawn from an adjunct device, such as adjunct devices 100, 100', 101 and 103. Handheld wireless communication device 300 presents such a device that includes a handheld wireless communication device portion having the standard components of a handheld wireless communication device and an adjunct portion that adds the components necessary to provide the additional functions and features of the adjunct device 100, 100', 101 and 103. In summary, handheld wireless communication device 300 includes the structure and functionality of any of the embodiments of handheld wireless communication device 110 and adjunct device 100, 100', 101 and 103, within a single housing, and without the external connections required to couple adjunct device 100, 100', 101 or 103 to handheld wireless communication device 110.

In particular, handheld wireless communication device 300 includes long range wireless transceiver module 306, such as a wireless telephony receiver for communicating voice and/or data signals in conjunction with a handheld wireless communication device network, wireless local area network or other wireless network. In addition, handheld wireless communication device 300 includes a user interface 312 that include one or more pushbuttons such as a keypad or other buttons, a touch screen or other display screen, a microphone, speaker, headphone port or other audio port, a thumbwheel, touch pad and/or other user interface device. User interface 312 includes the user interface devices ascribed to handheld wireless communication device 110 and further provides the functionality and/or structure of the user interface devices 142 described in conjunction with adjunct device 100, 100', 101 and 103.

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Handheld wireless communication device 300 includes a main battery 308 that operates in a similar fashion to the battery of handheld wireless communication device 110, while a separate battery 146 provides the functions and features described in conjunction with adjunct device 100, 100', 101 and 103. For example, in isolation mode, battery 146 provides power to the adjunct portions of handheld wireless communication device 300, while main battery 308 provides power to the wireless telephony portions of the handheld wireless communication

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device 300. Device interface 310 functions as device interface 310 without, however, an internal communication port and plug connection between the adjunct device 100 and handheld wireless communication device 110. Short-range wireless transceiver module 304 includes one or more short-range wireless transceivers such as short-range wireless transceivers 140, 140', 140'', etc.

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The handheld wireless communication device 300 includes a processing module 314 that operates in conjunction with memory 316 to execute a plurality of applications including a wireless telephony application and other general applications of the handheld wireless communication device and other specific applications described in conjunction with the operation of adjunct device 100, 100', 101 and 103 and handheld wireless communication device 110.

The processing module 314 can be implemented using a microprocessor, micro-controller, digital signal processor, microcomputer, central processing unit, field programmable gate array, programmable logic device, state machine, logic circuitry, analog circuitry, digital circuitry, and/or any device that manipulates signals (analog and/or digital) based on operational instructions that are stored in memory, such as memory 316. Note that when the processing module 314 implements one or more of its functions via a state machine, analog circuitry, digital circuitry, and/or logic circuitry, the memory storing the corresponding operational instructions may be embedded within, or external to, the circuitry comprising the state machine, analog circuitry, digital circuitry, and/or logic circuitry. Further note that, the memory module 316 stores, and the processing module 314 executes, operational instructions corresponding to at least some of the steps and/or functions illustrated herein.

The memory module 316 may be a single memory device or a plurality of memory devices. Such a memory device may be a read-only memory, random access memory, volatile memory, non-volatile memory, static memory, dynamic memory, flash memory, cache memory, and/or any device that stores digital information. While the components of handheld wireless communication device 300 are shown as being coupled by a particular bus structure, other architectures are likewise possible that include additional data busses and/or direct connectivity

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between components. Handheld wireless communication device 300 can include additional components that are not expressly shown.

Further, while the present invention has been described in conjunction with a handheld
5 wireless communication device 300 or 110, it should be noted that the functions and features of
the present invention can be implemented in conjunction with an adjunct device coupled to
another mobile or stationary computing device capable of executing one or more of the
applications described herein in conjunction with handheld wireless communication device 110
or in an another integrated device that includes one or more functions and features of adjunct
10 device 100, 100', 101 and 103 and handheld wireless communication device 110.

FIG. 34 presents a pictorial representation of a back view of an adjunct device 330 in
accordance with an embodiment of the present invention. In particular, adjunct device 330, such
as adjunct device 100, 100', 101 and/or 103, is implemented as a case for an Apple iPhone, iPod
15 or iTouch device. The case includes a camera hole for the camera of the iPhone, an external
device connector 334, such as communication port 28' implemented as a micro-USB port. An
audio port 336 is included for a beeper, buzzer or other sound emitter included in user interface
142. IR port 332 is included for coupling to the emitters/detectors of short-range wireless
transceiver 140', IR emitters 240, or a video camera that operates in an embodiment of FIGs. 29
20 - 30, where the IR emitters are mounted in association with the display screen 252.

FIG. 35 presents a pictorial representation of a cutaway side view of an adjunct device
330 in accordance with an embodiment of the present invention. As shown, the adjunct device
330 includes a connector 340, that operates in a similar fashion to plug 26 to couple the adjunct
25 device 330 to the communication port of the Apple iPhone, iPod or iTouch device. The case is
constructed of a flexible plastic or other flexible material so as to be clipped onto the iPhone,
iPod or iTouch device, while enclosing the back, sides, top and bottom of the iPhone, iPod or
iTouch device, yet leaving open substantially all of the front to allow the user to interact with the
touch screen and optionally the front panel button of the device. Internal components 338
30 include the components of adjunct device 100, 100', 101 and/or 103. The internal components

338 can include one or more flexible circuit boards to support the flexibility of adjunct device 330, without damage to the components of adjunct device 330.

While not expressly shown, the adjunct device 330 includes one or more other ports to provide user access to the headphone jack, power button, speaker and microphone of the iPhone, iPod or iTouch device. While the adjunct device 330 is shown as a case for an Apple iPhone, iPod or iTouch device, similar adjunct devices are possible for use with other handheld wireless communication devices and handheld devices in accordance with the present invention.

FIG. 36 presents a pictorial representation of a front view of a wireless device 325 in accordance with an embodiment of the present invention. In particular, a wireless device 325, such as wireless device 120, 122 or 123, includes a keychain hole 328. In addition, wireless device 325 includes audio emitter 322, LED 326 and push button 324 that are included in user interface 132. Infrared port 320 is coupled to an infrared wireless transceiver, such as short-range wireless transceiver 130'. While not shown, the wireless device 325 includes a back connector interface for connection to an external charger for charging an internal rechargeable battery.

As previously discussed, the wireless device 325 can be implemented using a ZigBee short-range wireless transceiver that operates in conjunction with the RF4CE standard. When the button is pressed and released on a wireless device 325, a broadcast message will be sent to all devices in its paging network. Paging commands can use the NLDE-Data request primitive as described in section 3.1.1.1 of the RF4CE specification with the TxOptions: Broadcast, IEEE Address, Acknowledged, Security on, Single Channel, Specify. A broadcast message can optionally be sent from the adjunct 330 as well, or specific items can be paged. If specific items are targeted, then the PairingRef field is specified, and "broadcast" in the TxOptions field is not enabled. The remainder of the data service messaging can proceed as specified in section 3.1.1 of the RF4CE specification.

The wireless device 325 can be paired with similar devices as well as adjunct device 100, 100', 101, 103 or 330 as set forth in the RF4CE standard. Two such wireless devices 325 can

implement a pairing procedure that includes, for instance, pressing and holding down the pushbuttons 324 or some other button, such as a small recessed button of both devices for at least four seconds. When they are paired with each other, they will both chirp twice via sound emitter 322 and the LED 326 will stop flashing. Pairing can be cleared by pressing and holding the pushbutton for 8 seconds. Clearing can be acknowledged by a single chirp via sound emitter 322 and the flashing of LED 326. Other compatible devices can be configured for pairing or cleared in a similar fashion, however, the user interface of handheld wireless communication device 110 can optionally be used to assist the pairing process.

In operation, when the pushbutton on one unit is depressed, all the other units in the same paging network can emit a loud alarm via audio emitter 322, flash a light such as LED 326, etc. In one example of operation, a user may purchase a wireless device 325 that he puts on his key ring and one in his wallet. If the user misplaces his wallet but has his keys in his pocket, he simply pages his wallet using the key ring wireless device 325, or vice versa. A very forgetful person may buy one more wireless device 325, so he had two for the keys and the wallet and one more stuck on the wall next his bed. If both the keys and wallet are lost he pushes the wireless device 325 next to his bed and the buzzer sounds on both items.

In a further example, a mother of five children in a supermarket may put one wireless device 325 in the pocket of each child to retrieve them should they wander off. Wireless device 325 can be programmed to send signals such as periodic beacons or polling signals to determine if all other wireless devices 325 are present in the network. In this fashion, a wireless devices 325 can be programmed to sound an alarm if a child wanders outside of a certain range, based on lack of a response to a poll, low signal power, etc. As previously discussed, the adjunct device 330 can operate as a wireless device 325 in any of the examples discussed above.

As discussed in conjunction with FIGs. 20-23, wireless device 325 can respond to wireless commands from an adjunct device 330, to relay infrared commands to other wireless device 325 of other devices to be controlled. So, a user can tape a tag on the inside door of a home entertainment system and control that system from places that are not possible with standard infrared remotes. The system can be used to control multiple TVs or entertainment

centers within the same home or across multiple sites based on a user selected group of devices and/or selected tasks including complex tasks based on, for example, GPS position information, time of day, compass direction, distance and other parameters.

5 As discussed in conjunction with FIGs. 24-27, a user can replace their existing garage door opener button with a wireless device 325 and control their garage door from their handheld wireless communication device via an adjunct device 330. Since many smartphones have GPS, this would allow intelligent handheld wireless communication device applications such as automatically opening the garage door as the user drives up. Home lighting can be similarly
10 controlled, where the lights in the house automatically turn off if there is no wireless device 325 or adjunct 330 present in the home.

 As previously discussed a wireless device 325 will be able to function as both a pager and IR relay device at the same time. The network topology for IR Relay devices is slightly different,
15 however. Where the paging function was performed among peers, IR relay can operate based on a master-slave relationship between the adjunct device 330 and the wireless device 325. Multiple adjunct devices 330 can control a single wireless device 325 and one adjunct device 330 can control many wireless devices 325.

20 In an example of operation, three wireless devices 325 are set up in various places for IR relay, one in front of the TV, one inside a cabinet in front of the DVD and VCR, and a third on the other side of the room where the CD player sits. Each has its own network for IR relay. Both Mom's iPhone and the teenager's iPhone (via corresponding adjunct devices 330) can control all three devices. The adjunct devices 330 can initiate data delivery.

25 To save power, wireless devices 325 may only be awake a small percentage of the time during in a standby mode of operation. For example, a wireless device 325 may typically be awake to transmit and receive a small amount of time every two or more seconds while waiting for a command. The wireless devices 325 can switch itself to an active state when a command or
30 other signaling is received from another device. For instance, following the example discussed above, the adjunct device 330 can send to the target wireless devices 325 the RX-

ENABLE.request signal for a reasonable active period such as 5 seconds, to wake up the device and keep it awake for a period of time. After that, the adjunct device 330 can transmit codes such as commands and other control data.

5 FIG. 37 presents a flowchart representation of a method in accordance with an embodiment of the present invention. In particular, a method is presented for use in conjunction with one or more functions and features described in FIGs. 1-36. In step 400, data is generated to present for display on a handheld wireless communication device a graphical user interface that receives an indication of a user to locate at least one personal object and that generates a
10 location signal in response thereto. In step 402, the location signal is communicated to an adjunct device via the communication port of the handheld wireless communication device to cause the adjunct device to transmit an RF paging signal to at least one remote wireless device via a short-range wireless transceiver of the adjunct device.

15 In an embodiment of the present invention, the at least one personal object includes a plurality of personal objects and the at least one remote wireless device includes a plurality of remote wireless devices. The graphical user interface can include a menu that indicates the plurality of personal objects. The indication of the user to locate the at least one personal object can include a selected one of the plurality of personal objects. The location signals can indicate a
20 corresponding one of the plurality of remote wireless devices.

 The method can also include a pairing procedure for pairing the adjunct device with the plurality of remote wireless devices. The pairing procedure can generate a list that identifies the plurality of remote devices and the plurality of personal objects. The menu that indicates the
25 plurality of personal objects can be generated based on the list.

 In an embodiment of the present invention the remote device can generate a location signal in response to the paging signal. The adjunct device can include a directional antenna, coupled to the short-range wireless receiver. The short-range wireless receiver of the adjunct
30 device can generate a signal strength in response to the location signal. The homing application can further include receiving the signal strength via the communication port and the graphical

user interface can further generate a signal strength indication to the user. The directional antenna can have a reception pattern that includes a null.

In an embodiment of the present invention, a time of flight can be used instead of or in addition to signal strength to determine the distance to a remote device. In particular, the time can be measured from the transmission of the paging signal to the reception of the location signal. This time delay (round trip flight time) can indicate the distance to the remote device. The time delay, T_d , can be represented as follows:

$$T_d = T_{f1} + T_{f2} + T_p$$

where, T_p represents the processing time to generate the location signal in response to the paging signal and to recognize the location signal, T_{f1} represents the flight time for the paging signal to travel to the remote device and T_{f2} represents the flight time for the location signal to travel from the remote device to the adjunct device. Considering the processing time T_p to be fixed, the distance to a remote device, D_{ft} , can be approximated based on the following:

$$D_{ft} = c(T_f) = c(T_d - T_p)$$

where c is a proportionality constant that is based on the speed of light in air and $T_f = (T_{f1} + T_{f2})$.

It should be noted that signal strength and flight time and both be considered in estimating the distance to a remote device. Consider for example, a distance measurement can be expressed as a function f of signal strength, D_{ss} , as follows:

$$D_{ss} = f(RSSI)$$

where RSSI is a received signal strength indication. A final distance measurement D can be determined based on either:

$$D = g(D_{ft}, D_{ss}) \text{ or}$$

$$D = h(T_f, RSSI)$$

5 where g and h are either linear or nonlinear functions. For example, distance can be calculated both ways and averaged to determine a more refined measurement. In a further example, the difference between the two measurements can be used to determine a relative accuracy of the distance estimate.

10 It should be noted that the functions g or h can be generated to determine distance differently under different conditions. For example, for longer distances determined for instance by either a value of T_f that is above a high flight time threshold and/or a RSSI below a low signal strength threshold, the distance D can be estimated either exclusively based on either T_f or D_{ft} or by predominately weighting the values of T_f or D_{ft} in combination with D_{ft} or RSSI. Further, for
15 midrange distances determined for instance by either a value of T_f that is below a high flight time threshold, but above a low flight time threshold and/or a RSSI above a low signal strength threshold and below a high signal strength threshold, the distance D can be estimated based on a more equal weighting of the values of T_f or D_{ft} in combination with D_{ft} or RSSI. In addition, for shorter distances determined for instance by either a value of T_f that is below a low flight time
20 threshold and/or a RSSI above a high signal strength threshold, the distance D can be estimated either exclusively based on either D_{ft} or RSSI or by predominately weighting the values of D_{ft} or RSSI in combination with T_f or D_{ft} . In this fashion, greater importance can be attributed to high values of RSSI and/or T_f .

25 FIG. 38 presents a flowchart representation of a method in accordance with an embodiment of the present invention. In particular, a method is presented for use in conjunction with one or more functions and features described in FIGs. 1-37. In step 410, data is generated to present for display on the handheld wireless communication device a graphical user interface that receives an indication of a user to control at least one home device and that generates a
30 control signal in response thereto. In step 412, the control signal is communicated to an adjunct device via the communication port of a handheld wireless communication device to cause the

adjunct device to transmit a wireless signal to at least one wireless interface via a short-range wireless transmitter of the adjunct device.

In an embodiment of the present invention, the home devices can include a plurality of home devices, each of the plurality of home devices having a wireless interface. The graphical user interface can include a menu that indicates the plurality of home devices and the indication of the user to control the home device can include a selected one of the plurality of home device. The control signal can indicate a corresponding one of the plurality of home devices.

In an embodiment of the present invention, the remote control application further includes a pairing procedure for pairing the adjunct device with the plurality of home devices. The pairing procedure can generate a list that identifies the plurality of home devices and the menu that indicates the plurality of home devices can be generated, based on the list. Home devices can include a home automation device or a home media device. The short-range wireless transmitter can include an infrared transmitter.

FIG. 39 presents a flowchart representation of a method in accordance with an embodiment of the present invention. In particular, a method is presented for use in conjunction with one or more functions and features described in FIGs. 1-38. In step 420, a 911 signal generated by an adjunct device is received via a communication port of the handheld wireless communication device. In step 422, a 911 call is initiated via the wireless telephony transceiver in response to the 911 signal. As discussed in conjunction with FIG. 28, the emergency call can include location information, such as GPS coordinates or other position information that is relayed to a monitoring service, or a 911 call center to facilitate the location of the handheld wireless communication device 110 that initiated the emergency call.

FIG. 40 presents a flowchart representation of a method in accordance with an embodiment of the present invention. In particular, a method is presented for use in conjunction with one or more functions and features described in FIGs. 1-39. In step 430, a plurality of paging devices are paired to form a paging network, the plurality of paging devices including a plurality of fixed paging devices and the mobile paging device. In step 432, a paging signal is

transmitted to the plurality of paging devices via a short-range wireless transmitter. In step 434, location information is received via a short-range wireless receiver pertaining to the mobile paging device from at least one of the plurality of fixed paging devices. In step 436, a location of the mobile paging device is determined based on the location information.

5

In an embodiment of the present invention, the location information includes directional and distance information between the at least one of the plurality of fixed devices to the at least one mobile device and wherein determining the location of the at least one mobile device includes a triangulation of the directional information. The method can further include receiving
10 a location signal, at the at least one of the plurality of fixed paging devices; scanning a programmable antenna in the at least one of the plurality of fixed paging devices to determine signal strengths corresponding to a plurality of null directions; determining a lowest of the signal strengths; and determining the directional information based on the one of the plurality of null directions corresponding to the lowest of the signal strengths. In this method, the paging signal
15 can be transmitted via a handheld wireless communication device or via an adjunct device coupled to a handheld wireless communication device or other device.

In an embodiment of the present invention, the location information includes signal strength information and step 436 includes: determining the at least one of the plurality of fixed
20 devices having the greatest signal strength; and determining a proximity to the at least one of the plurality of fixed devices having the greatest signal strength.

As previously discussed, distance can be determined based on a time of flight methodology that looks to round trip signal delay to determine a measure of distance to a remote
25 device.

While the description above has set forth several different modes of operation, the devices described here may simultaneously be in two or more of these modes, unless, by their nature, these modes necessarily cannot be implemented simultaneously. While the foregoing
30 description includes the description of many different embodiments and implementations, the functions and features of these implementations and embodiments can be combined in additional

embodiments of the present invention not expressly disclosed by any single implementation or embodiment, yet nevertheless understood by one skilled in the art when presented this disclosure.

5 As one of ordinary skill in the art will appreciate, the term “substantially” or “approximately”, as may be used herein, provides an industry-accepted tolerance to its corresponding term and/or relativity between items. Such an industry-accepted tolerance ranges from less than one percent to twenty percent and corresponds to, but is not limited to, component values, integrated circuit process variations, temperature variations, rise and fall times, and/or
10 thermal noise. Such relativity between items ranges from a difference of a few percent to magnitude differences. As one of ordinary skill in the art will further appreciate, the term “coupled”, as may be used herein, includes direct coupling and indirect coupling via another component, element, circuit, or module where, for indirect coupling, the intervening component, element, circuit, or module does not modify the information of a signal but may adjust its current
15 level, voltage level, and/or power level. As one of ordinary skill in the art will also appreciate, inferred coupling (i.e., where one element is coupled to another element by inference) includes direct and indirect coupling between two elements in the same manner as “coupled”. As one of ordinary skill in the art will further appreciate, the term “compares favorably”, as may be used herein, indicates that a comparison between two or more elements, items, signals, etc., provides a
20 desired relationship. For example, when the desired relationship is that signal 1 has a greater magnitude than signal 2, a favorable comparison may be achieved when the magnitude of signal 1 is greater than that of signal 2 or when the magnitude of signal 2 is less than that of signal 1.

 In preferred embodiments, the various circuit components are implemented using 0.35
25 micron or smaller CMOS technology and can include one or more system on a chip integrated circuits that implement any combination of the devices, modules, submodules and other functional components presented herein. Provided however that other circuit technologies including other transistor, diode and resistive logic, both integrated or non-integrated, may be used within the broad scope of the present invention. Likewise, various embodiments described
30 herein can also be implemented as software programs running on a computer processor. It should also be noted that the software implementations of the present invention can be stored on a

tangible storage medium such as a magnetic or optical disk, read-only memory or random access memory and also be produced as an article of manufacture.

5 Thus, there has been described herein an apparatus and method, as well as several embodiments including a preferred embodiment. Various embodiments of the present invention herein-described have features that distinguish the present invention from the prior art.

10 It will be apparent to those skilled in the art that the disclosed invention may be modified in numerous ways and may assume many embodiments other than the preferred forms specifically set out and described above. Accordingly, it is intended by the appended claims to cover all modifications of the invention which fall within the true spirit and scope of the invention.

CLAIMS

What is claimed is:

1. A mobile communication device comprising:
 - 5 a short-range wireless transceiver;
 - a memory that stores operational instructions;
 - a touch screen; and
 - a processor coupled to the memory and to the touch screen, wherein the processor executes the operational instructions that cause the processor to present a graphical user interface via the touch screen and wherein the processor operates in association with the graphical user interface to:
 - 10 generate a pairing signal in response to a first indication from a user to pair the mobile communication device to at least one remote device, the at least one remote device including a non-touch screen user interface, wherein the short-range wireless transceiver, responds to the pairing signal generated by the graphical user interface by communicating RF signals to pair the mobile communication device to the at least one remote device;
 - 15 generate a first location request signal in response to a second indication from the user to locate the at least one remote device, wherein the short-range wireless transceiver transmits a first RF signal to the at least one remote device in response to the first location request signal; and
 - 20 present a display that visually assists the user to determine a location of the at least one remote device, wherein the short-range wireless transceiver receives a second RF signal from the at least one remote device that facilitates determining the location of the at least one remote device.
- 25

2. The mobile communication device of claim 1 wherein the display visually assists the user based on a signal strength of the second RF signal from the at least one remote device.
3. The mobile communication device of claim 1 wherein the display visually assists the user by displaying an indication of a signal strength of the second RF signal from the at least one remote device.
4. The mobile communication device of claim 1 wherein the mobile communication device is a handheld wireless communication device and the graphical user interface includes a touch screen of the handheld wireless communication device.
5. The mobile communication device of claim 4 wherein handheld wireless communication device includes a long range transceiver for sending and receiving telephone calls via a telephony network and further for communicating Internet data.
6. The mobile communication device of claim 1 wherein the at least one remote device emits a detectable alert signal in response to the first RF signal to further assist the user in determining the location of the at least one remote device.
7. The mobile communication device of claim 1 wherein the at least one remote device includes a plurality of remote devices and wherein the graphical user interface allows selection of a particular one of the plurality of remote devices to be located.
8. The mobile communication device of claim 7 wherein the display visually indicates the selection of the particular one of the plurality of remote devices to be located.
9. The mobile communication device of claim 7 wherein the plurality of remote devices comprise a first paging network wherein each of the plurality of remote devices emits corresponding detectable alert signals in response to the first RF signal to assist the user in determining the location of the plurality of remote devices.

10. A mobile communication device comprising:
- a short-range wireless transceiver;
 - a touchscreen;
 - a memory that stores operational instructions; and
- 5 a processor configured to execute operational instructions, wherein the operational instructions cause the processor to present a graphical user interface via the touch screen and wherein the processor operates in association with the graphical user interface to:
- respond to a first user interaction with the touchscreen by pairing, via the short-range wireless transceiver, the mobile communication device with at least one remote device, the at least one remote device including a non-touch screen user interface and a
- 10 sound emitter configured to generate an audio alert;
- facilitates, via a second interaction with the touch screen, selection of the at least one remote device from a plurality of remote devices;
 - responds to a third interaction with the touchscreen by transmitting, via the short-range wireless transceiver, a first paging signal to the at least one remote device, wherein the first paging signal causes the at least one remote device to generate the audio alert; and
- 15
- present a display on the touchscreen, based on a signal received via the short-range wireless transceiver from the at least one remote device, wherein the display
- 20 visually assists a user to determine a location of the at least one remote device.
11. The mobile communication device of claim 10 wherein the display visually assists the user based on a signal strength of the signal received via the short-range wireless transceiver from the at least one remote device.
12. The mobile communication device of claim 10 wherein the display visually assists the
- 25 user in determining a distance to the at least one remote device.

13. The mobile communication device of claim 10 wherein the display visually assists the user by displaying an indication of a signal strength of the signal received via the short-range wireless transceiver from the at least one remote device.

14. The mobile communication device of claim 10 wherein the mobile communication
5 device is a handheld wireless communication device.

15. The mobile communication device of claim 14 wherein handheld wireless communication device includes a long range transceiver for sending and receiving telephone calls via a telephony network and further for communicating Internet data.

16. The mobile communication device of claim 14 wherein handheld wireless
10 communication device includes a long range transceiver for communicating Internet data.

17. The mobile communication device of claim 10 wherein the audio alert further assists the user in determining the location of the at least one remote device.

18. The mobile communication device of claim 11 wherein the plurality of remote devices comprise a first paging network wherein each of the plurality of remote devices emits
15 corresponding audio alerts in response to the first paging signal to assist the user in determining the location of the plurality of remote devices.

19. The mobile communication device of claim 11 wherein the plurality of remote devices comprise a plurality of paging networks including:

20 a first paging network wherein a first subset of the plurality of remote devices emits corresponding audio alerts in response to the first paging signal to assist the user in determining the location of the at least one of the plurality of remote devices in the first subset of the plurality of remote devices.

20. The mobile communication device of claim 19 wherein the plurality of paging networks further include:

5 a second paging network wherein a second subset of the plurality of remote devices emits corresponding audio alerts in response to a second paging signal generated by the short-range wireless transceiver to assist the user in determining the location of the least one of the plurality of remote devices in the second subset of the plurality of remote devices.

ABSTRACT OF THE DISCLOSURE

A wireless device includes a user interface that generates a pairing signal in response to an indication from a user to pair the wireless device to at least one remote device and generates a first location request signal in response to a second indication from a user to locate the at least one remote device. A short-range wireless transceiver communicates RF signals to pair the wireless device to the at least one remote device and that transmits a first RF paging signal to the at least one remote device in response to the location request signal.

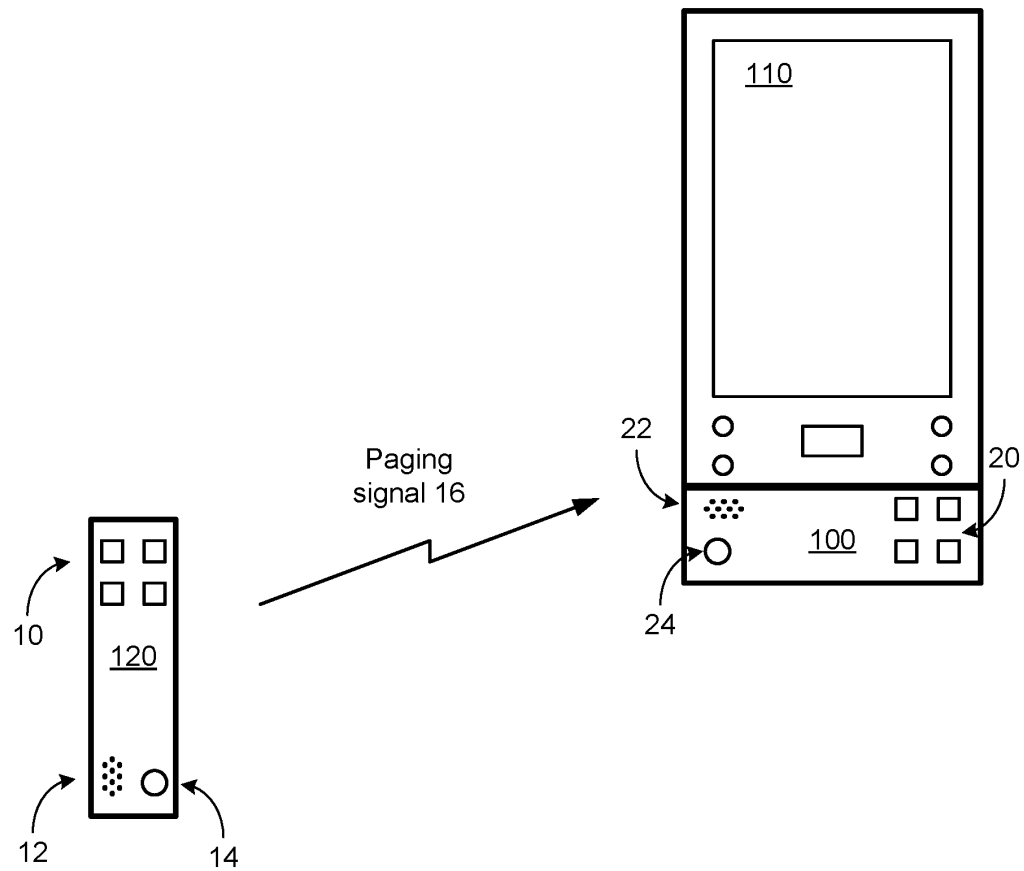


FIG. 1

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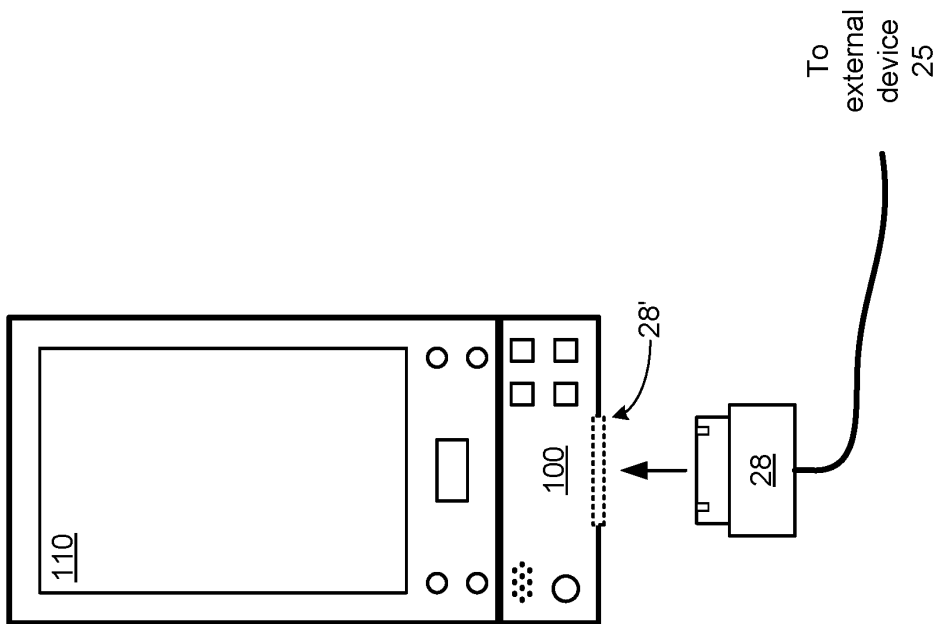


FIG. 3

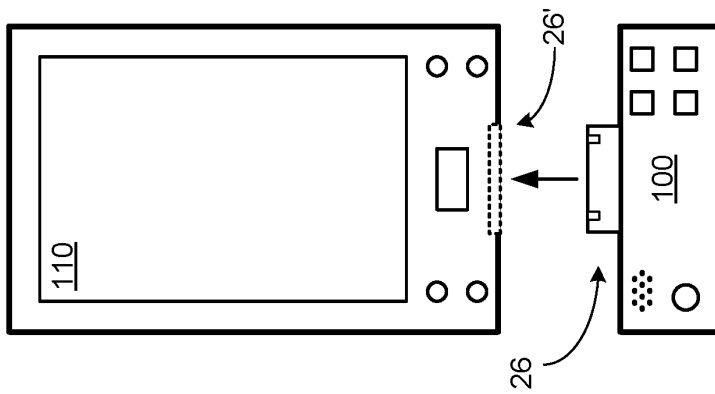


FIG. 2

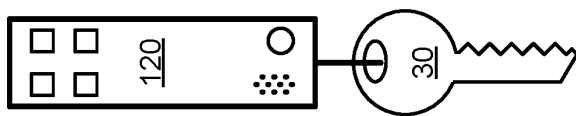
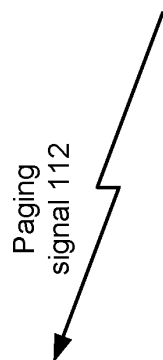
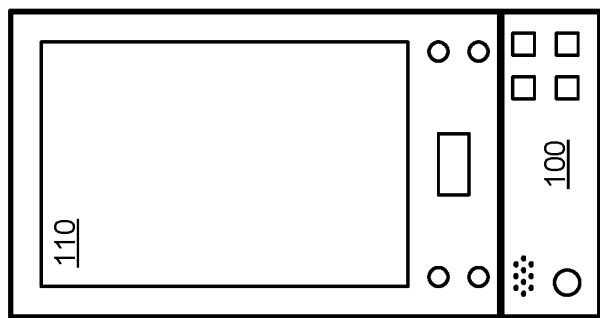


FIG. 4

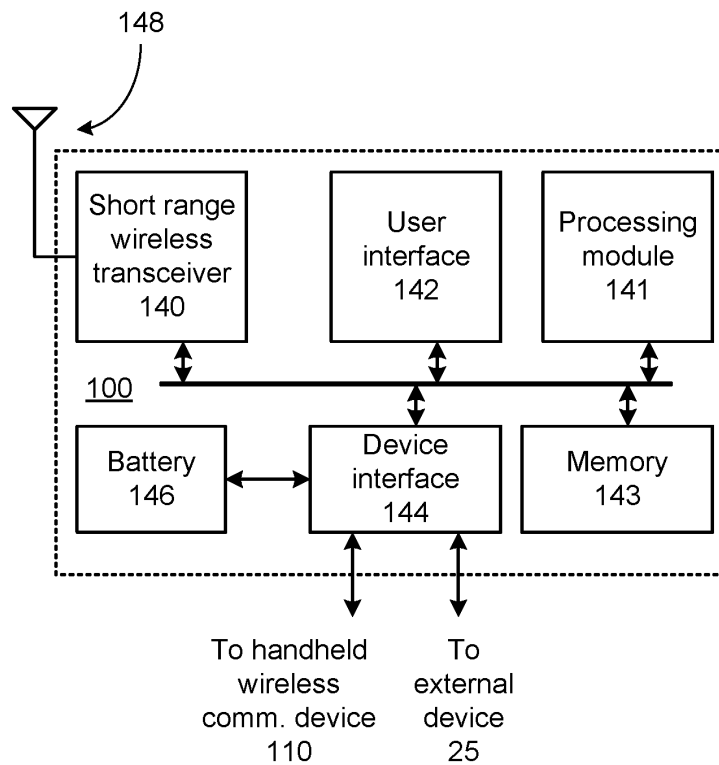
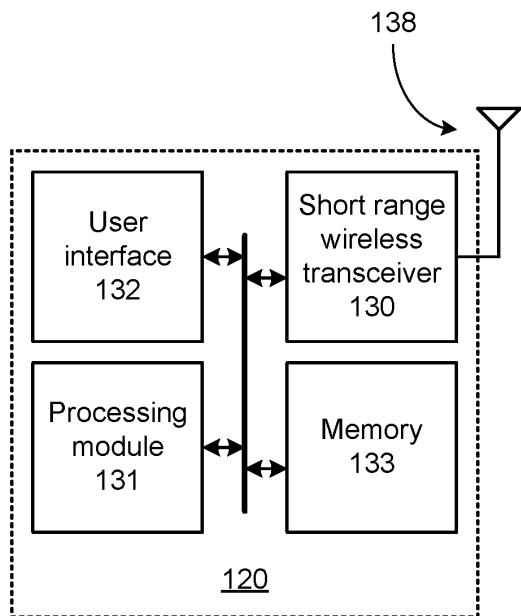


FIG. 5

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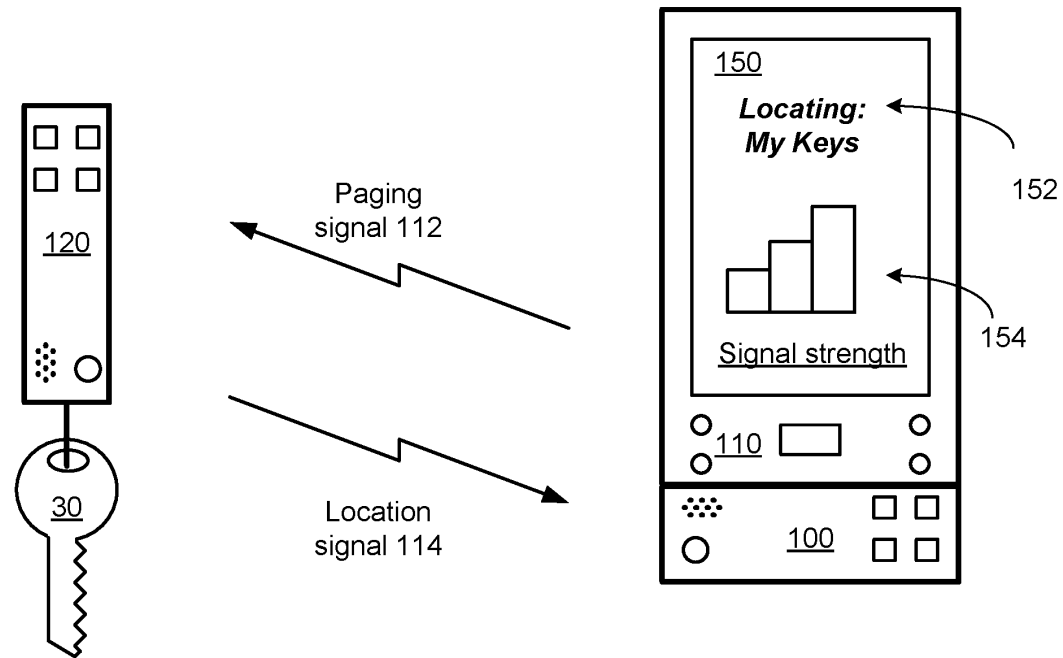


FIG. 6

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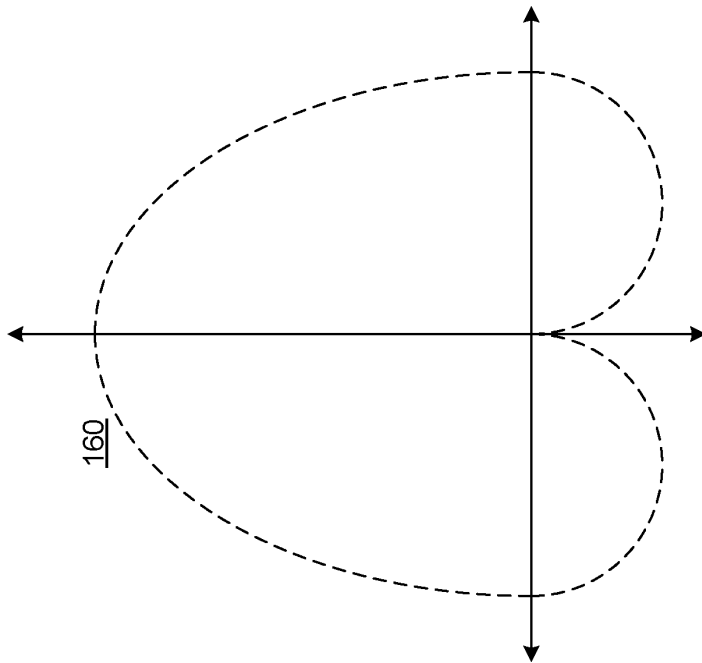


FIG. 7

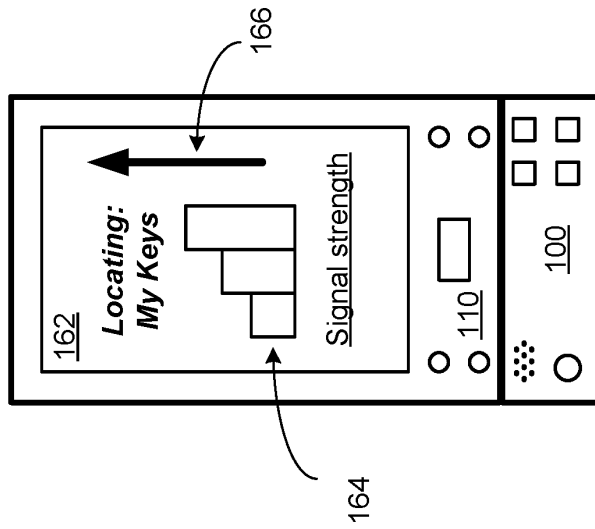


FIG. 8

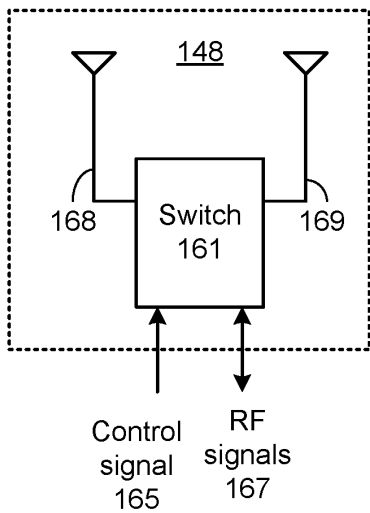


FIG. 9

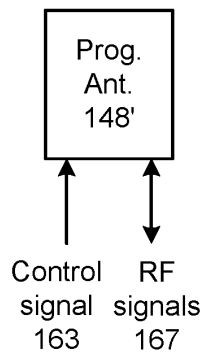


FIG. 10

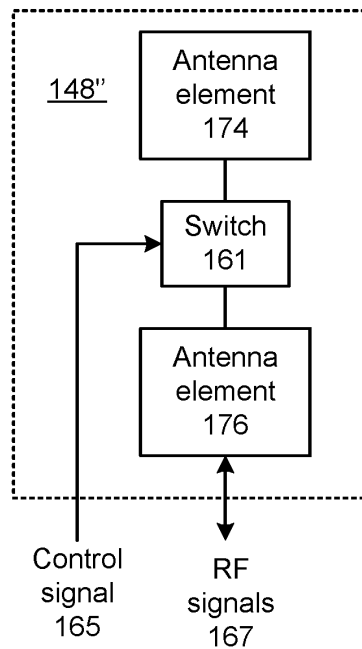


FIG. 11

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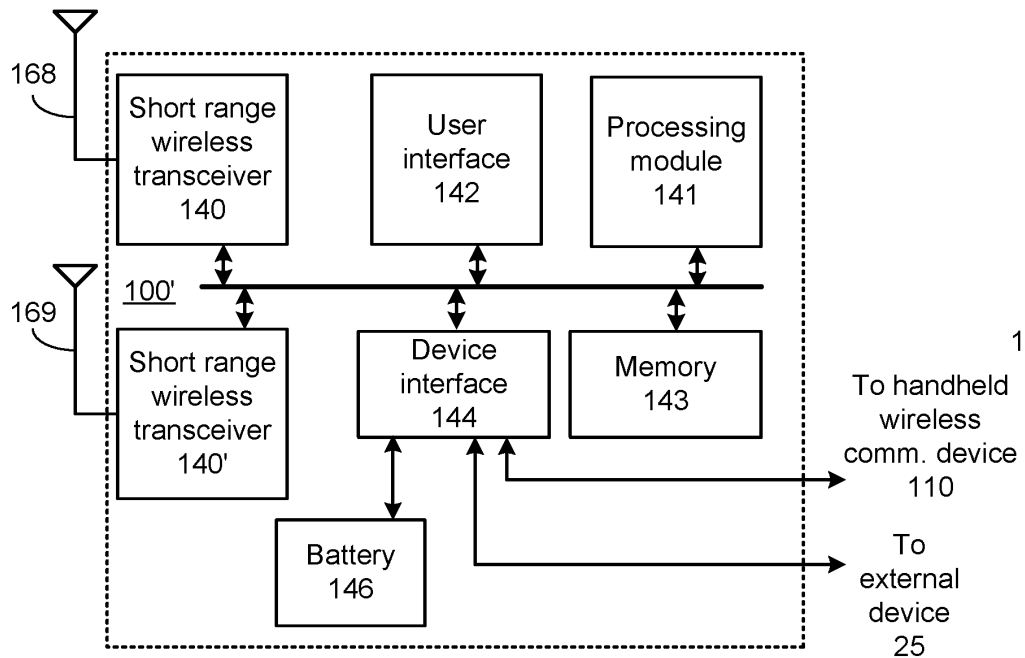


FIG. 13

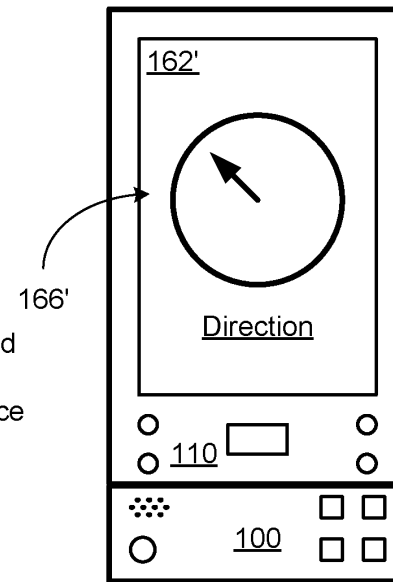


FIG. 15

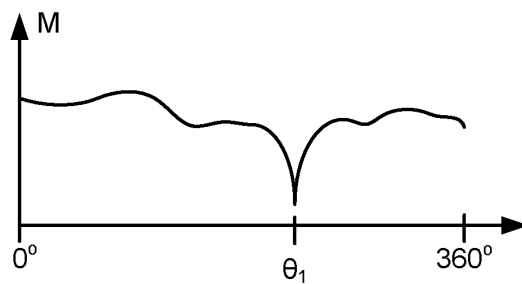


FIG. 12

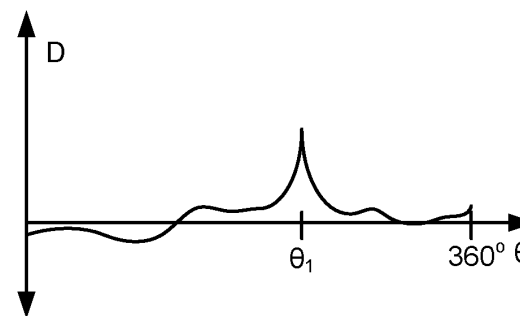
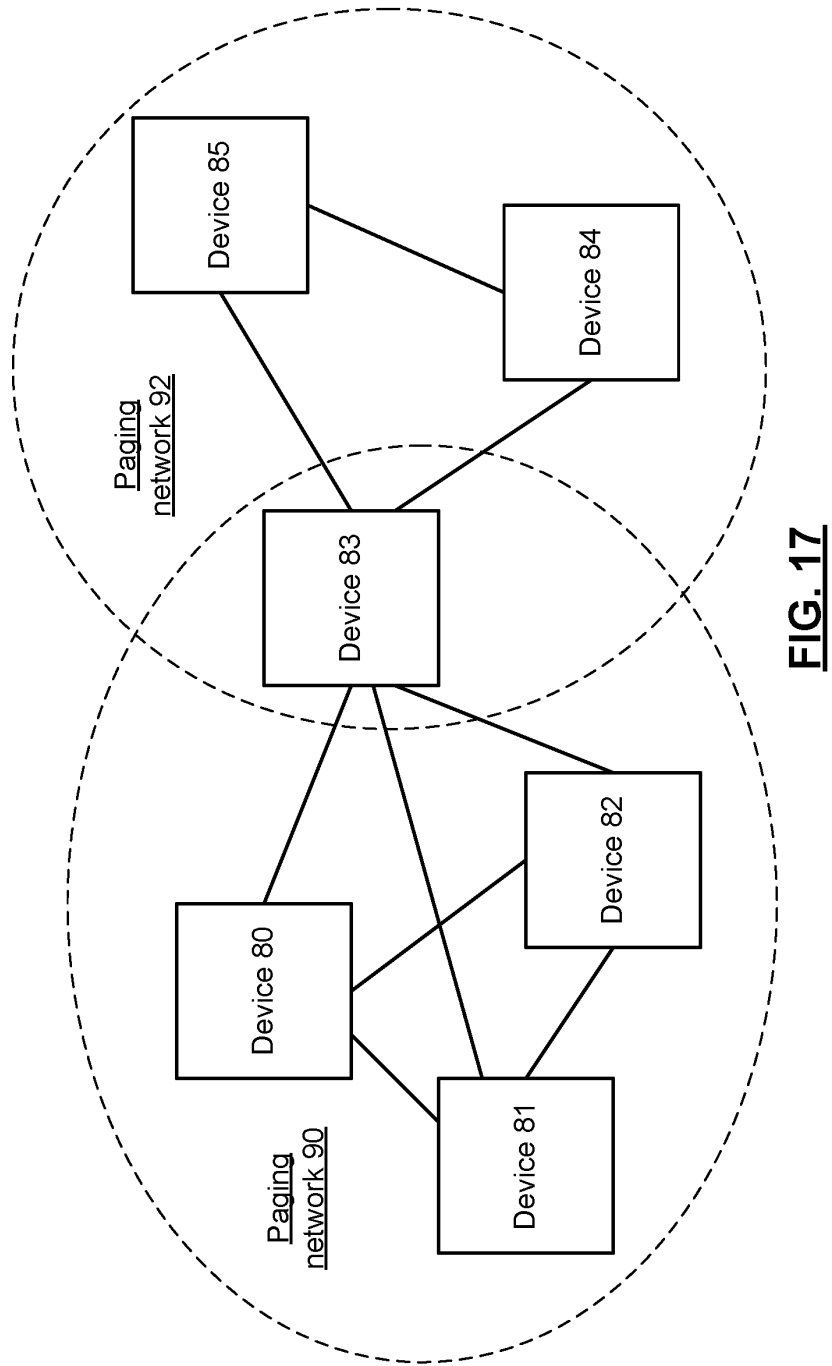
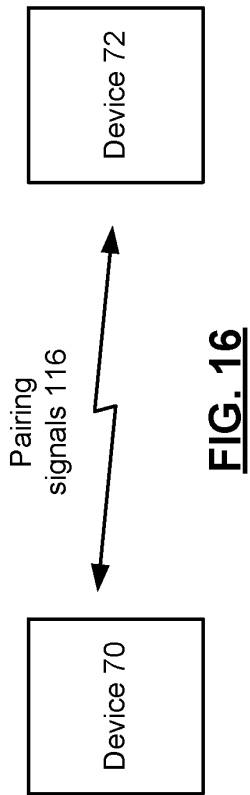


FIG. 14

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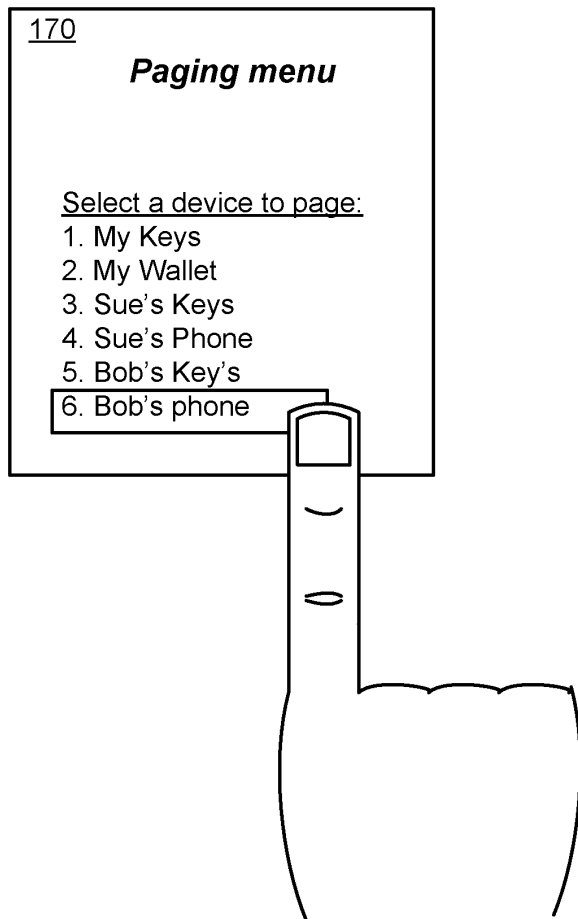


FIG. 18

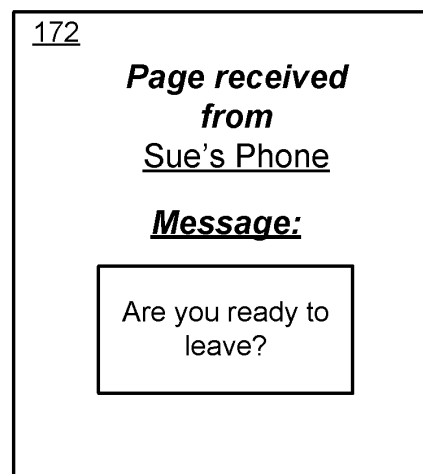


FIG. 19

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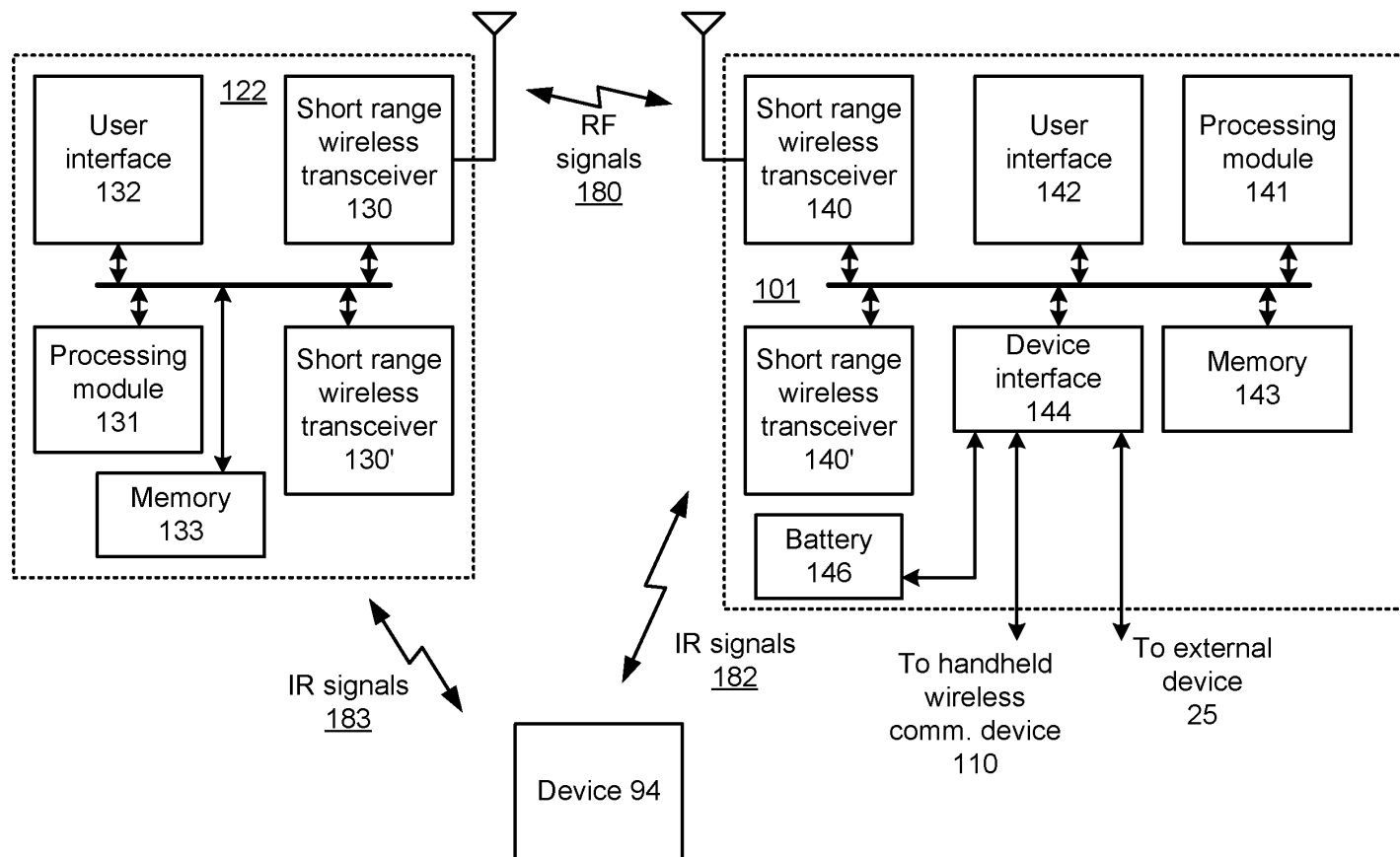


FIG. 20

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11/22

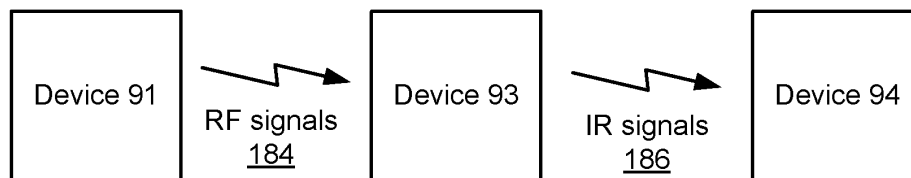


FIG. 21

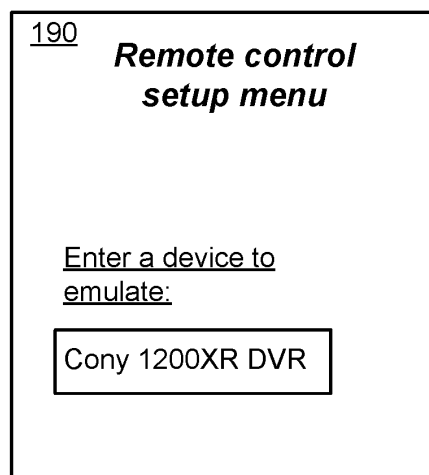


FIG. 22

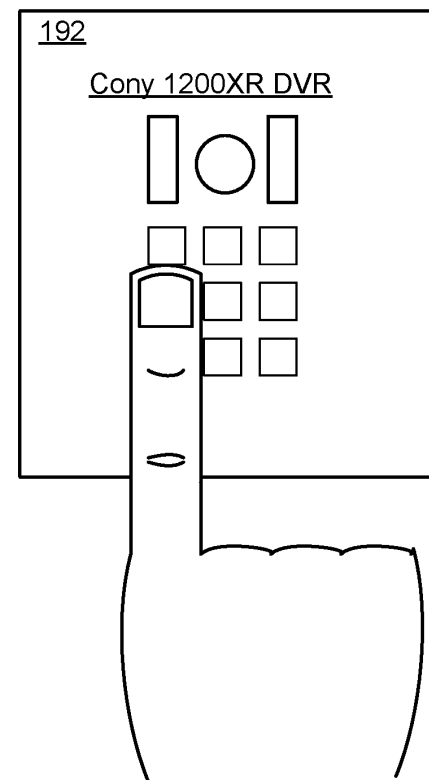


FIG. 23

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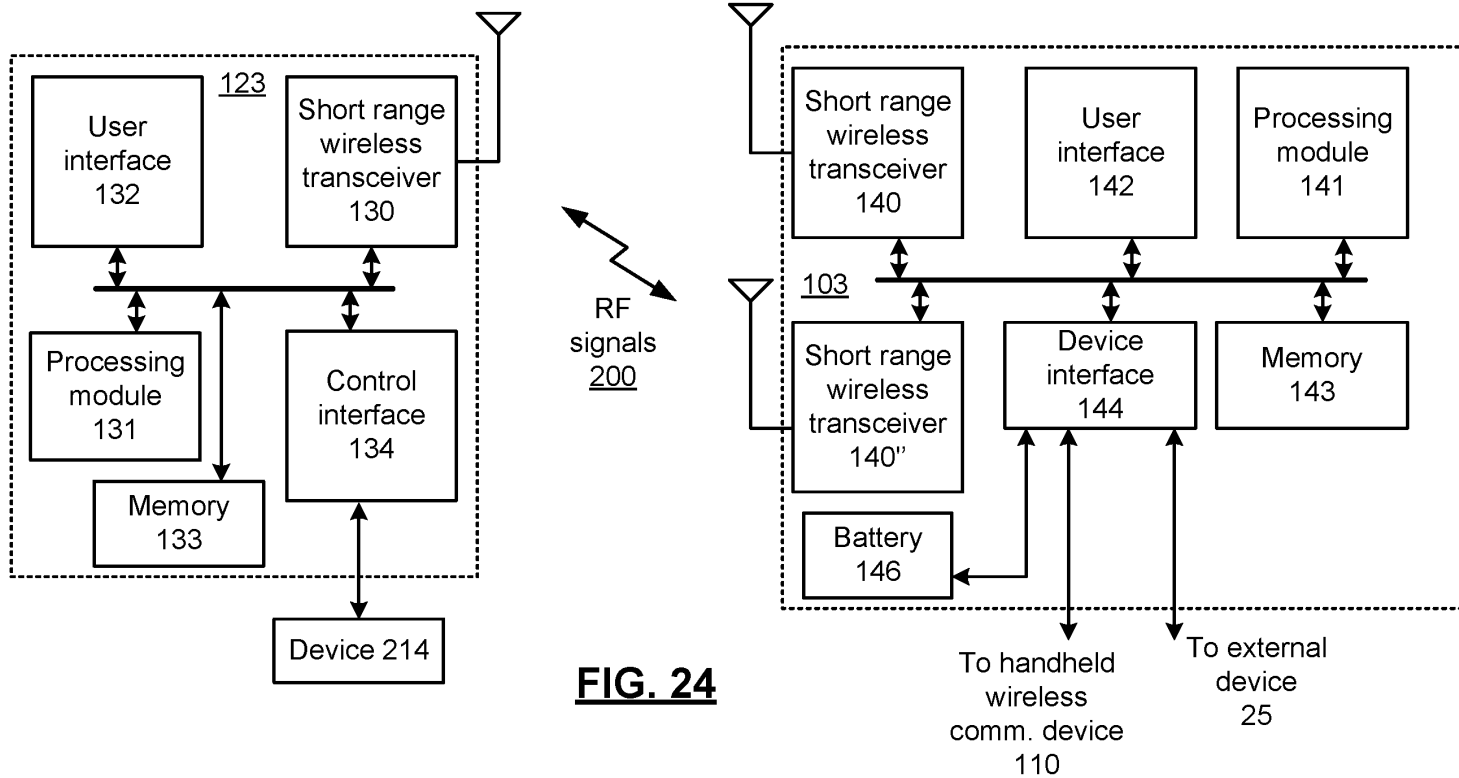


FIG. 24

FIG. 25

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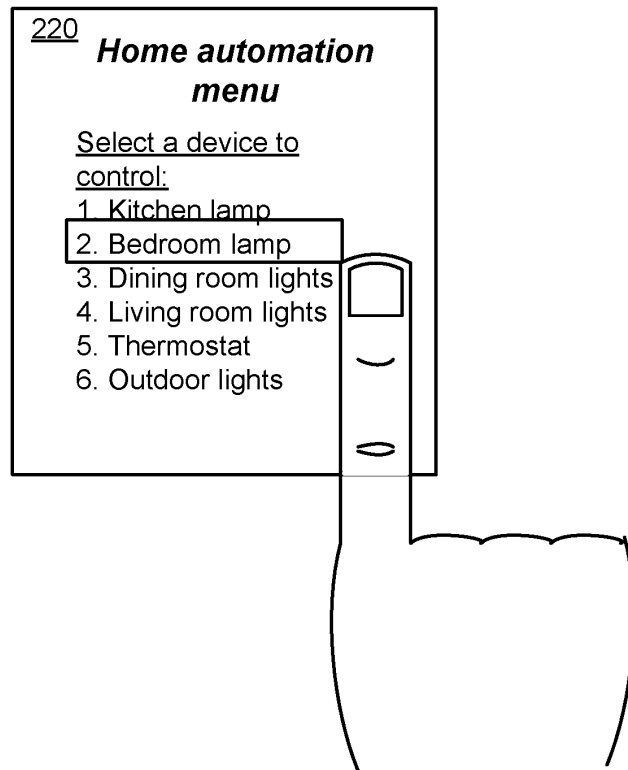


FIG. 26

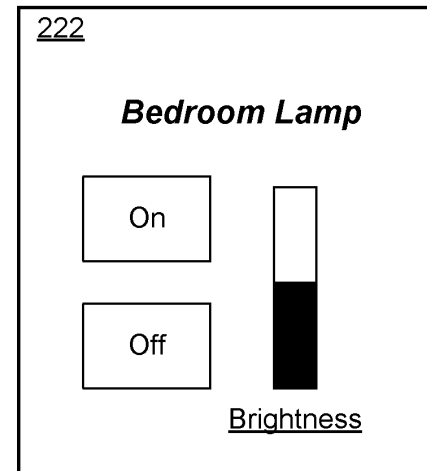


FIG. 27

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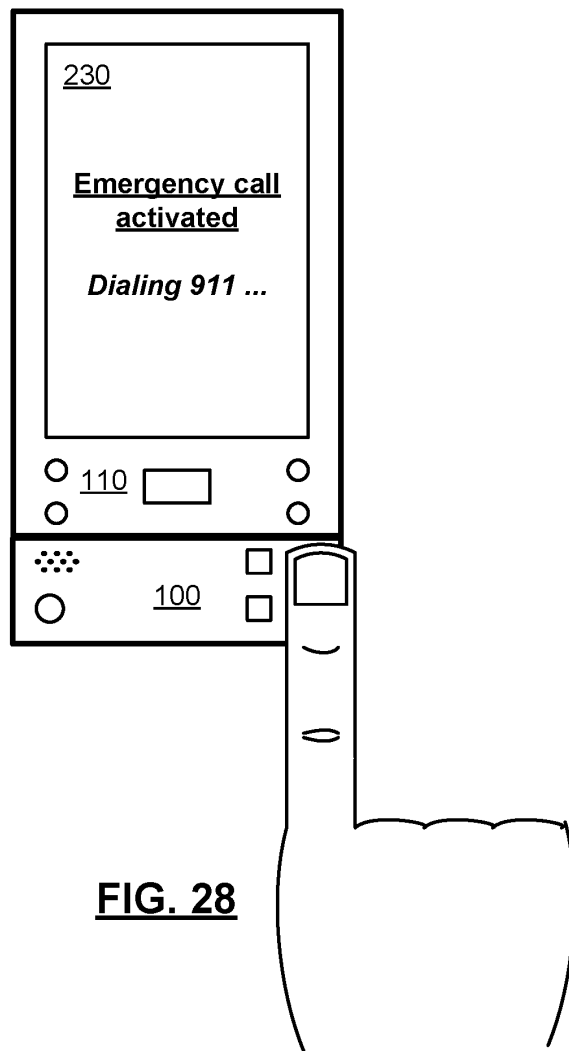


FIG. 28

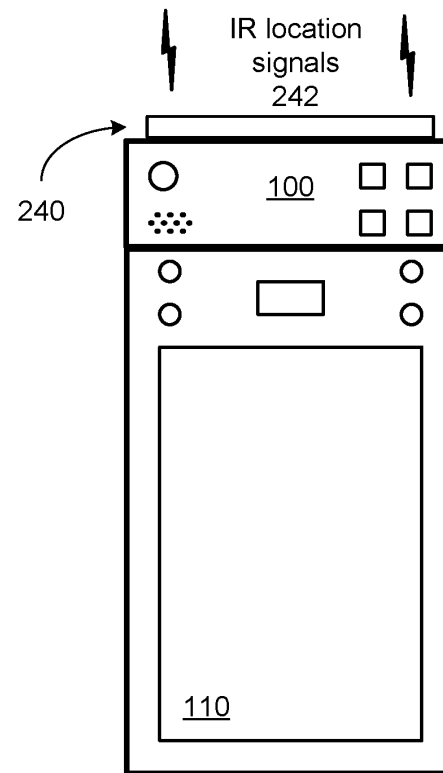


FIG. 29

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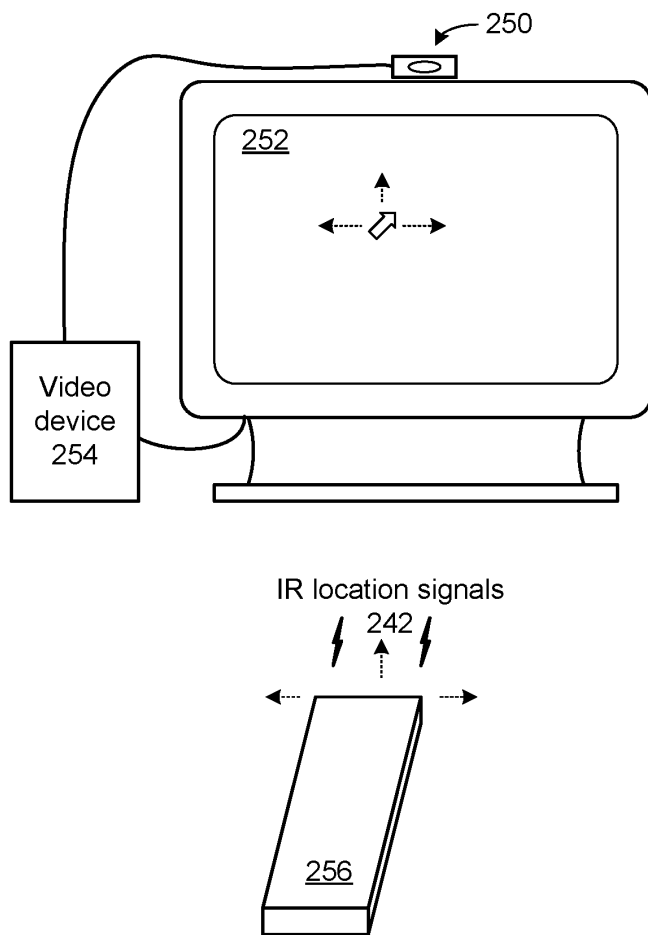


FIG. 30

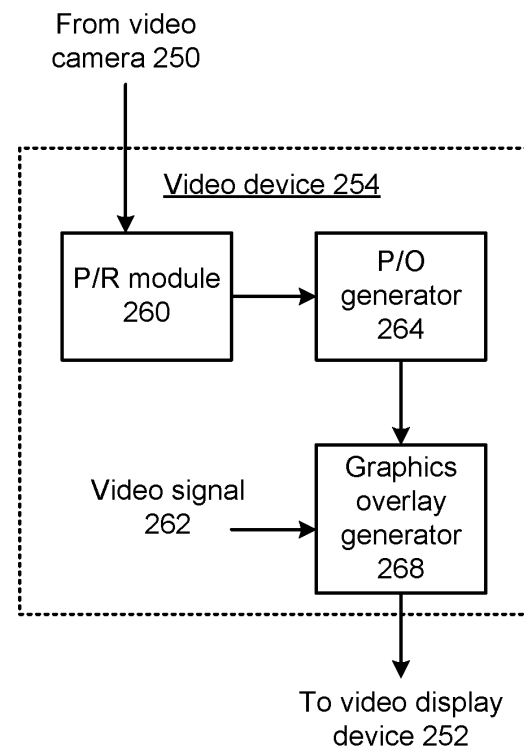


FIG. 31

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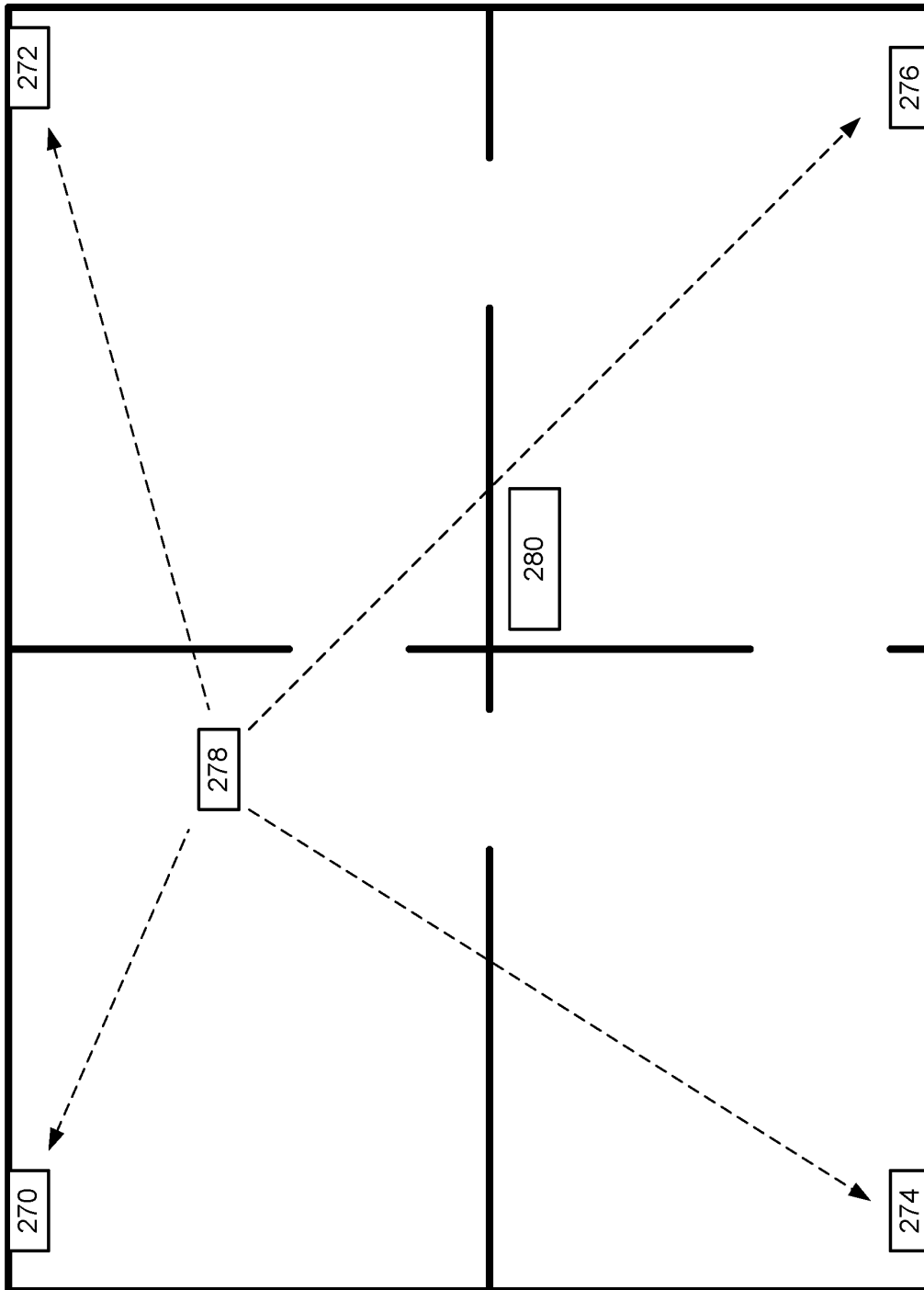


FIG. 32

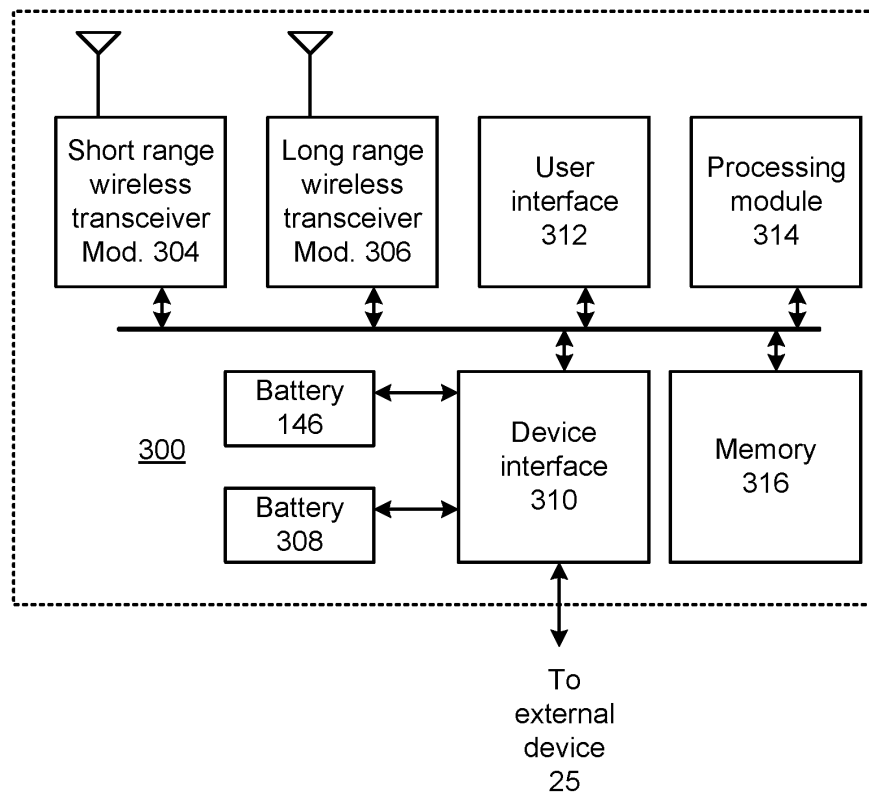


FIG. 33

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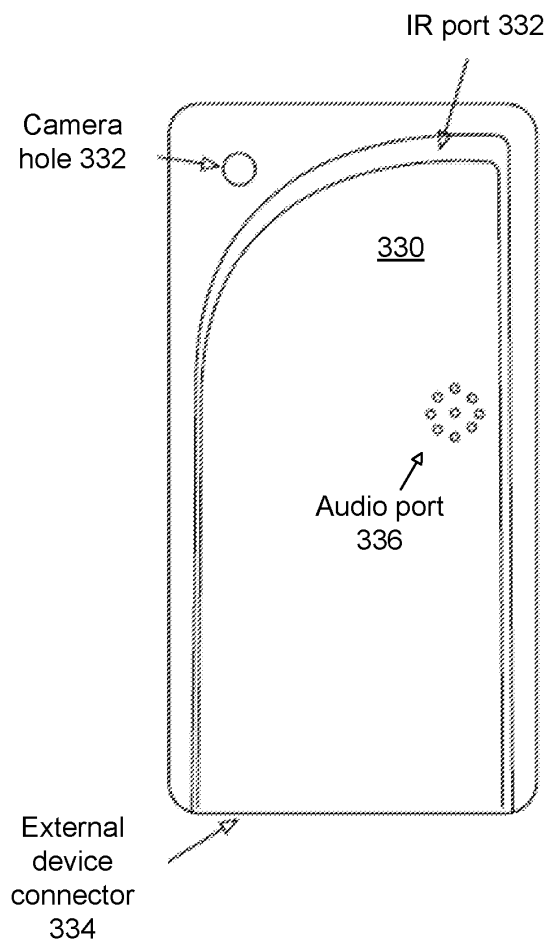


FIG. 34

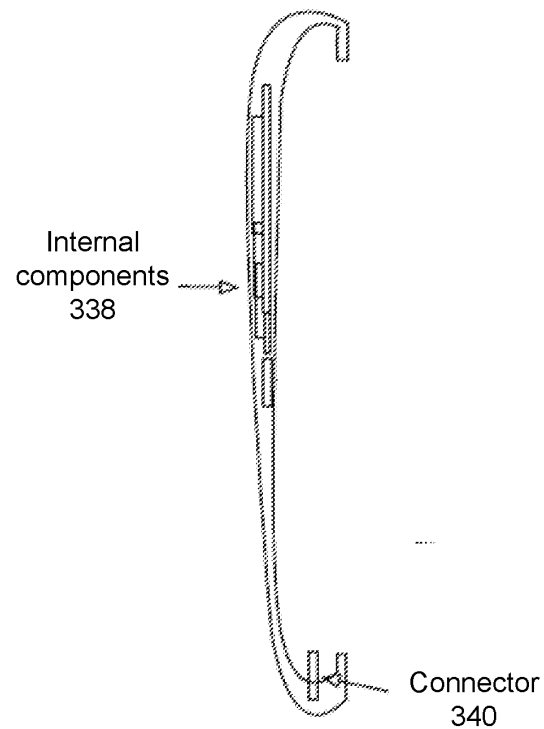


FIG. 35

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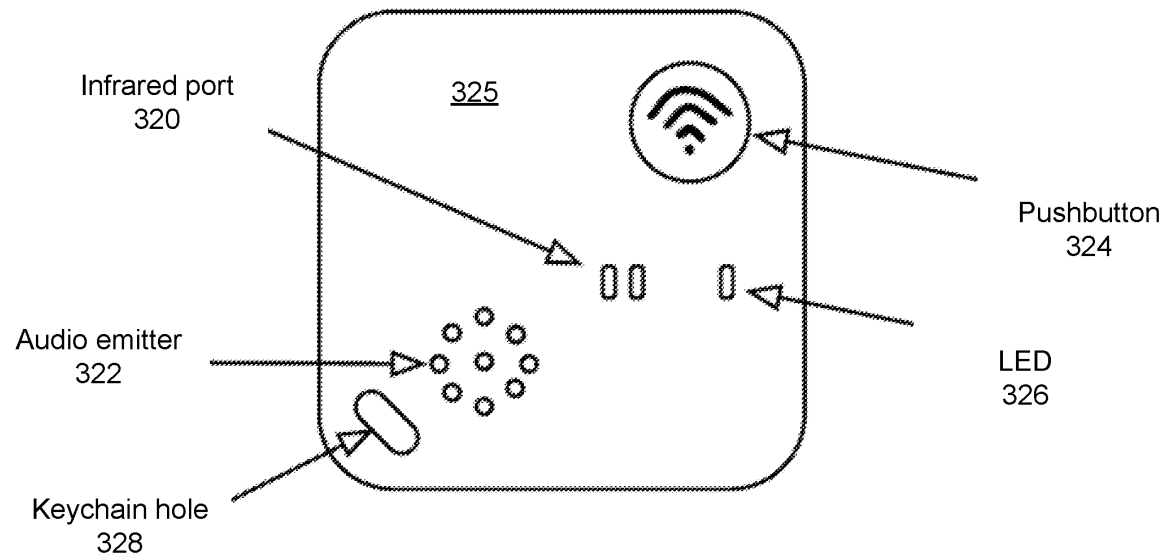


FIG. 36

BIK005C8
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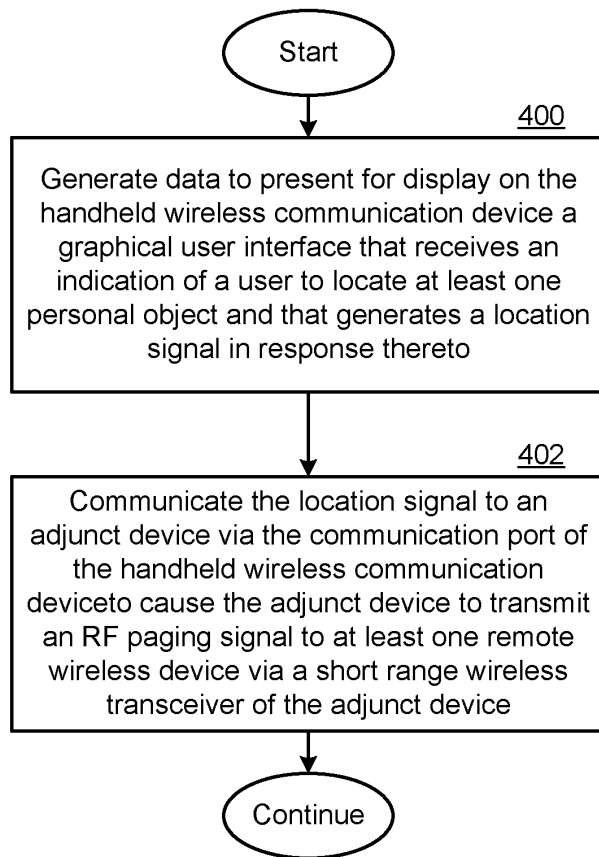


FIG. 37

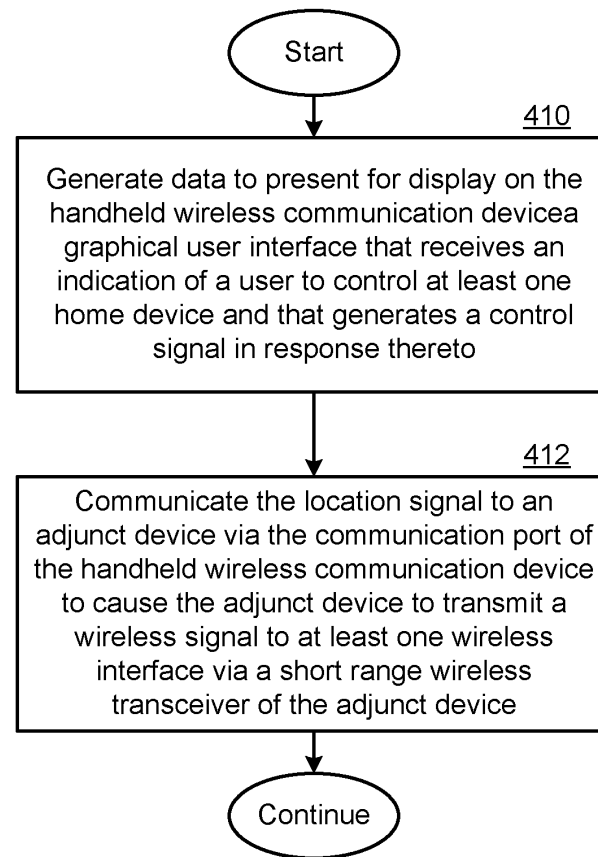


FIG. 38

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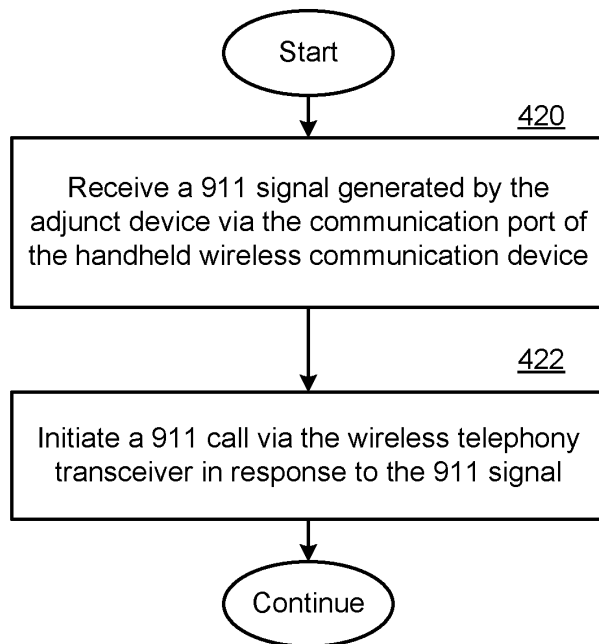


FIG. 39

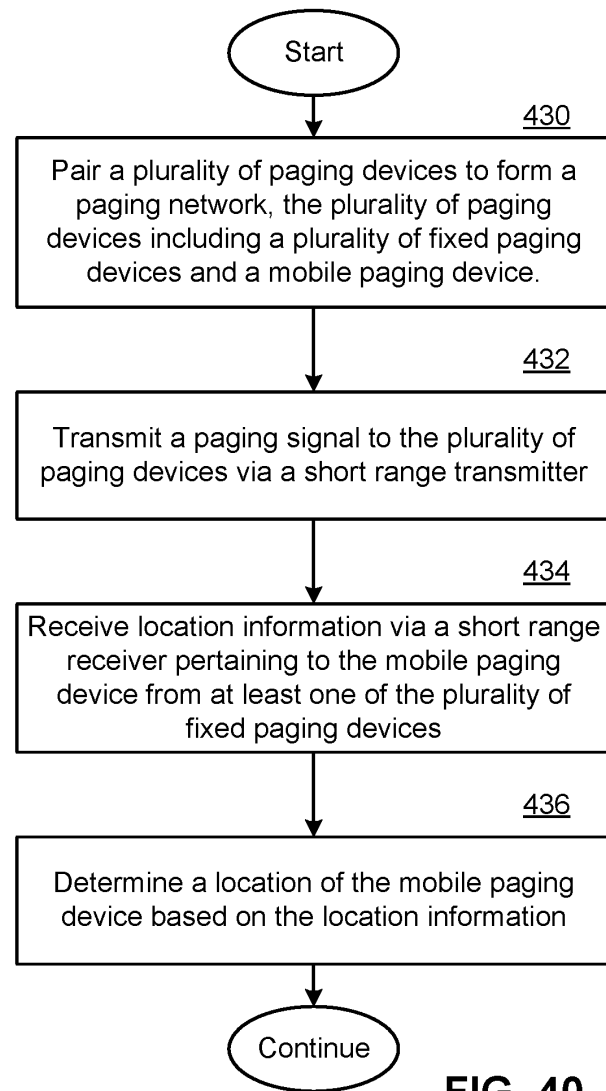
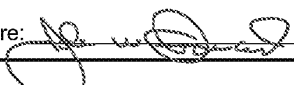


FIG. 40

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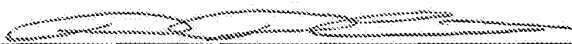
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Title of Invention	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK
As the below named inventor, I hereby declare that: This declaration is directed to: ☐ The attached application, or ☒ United States application or PCT international application number <u>15/000,903</u> filed on <u>19 Jan 2016</u>. The above-identified application was made or authorized to be made by me. I believe that I am the original inventor or an original joint inventor of a claimed invention in the application. I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both. WARNING: Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.	
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Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.	

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

Title of Invention	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK
As the below named inventor, I hereby declare that: This declaration is directed to: ☐ The attached application, or ☒ United States application or PCT international application number <u>15/000,963</u> <u>filed on 19 Jan 2016</u> The above-identified application was made or authorized to be made by me. I believe that I am the original inventor or an original joint inventor of a claimed invention in the application. I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both. WARNING: Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.	
LEGAL NAME OF INVENTOR	
Inventor: <u>Robert M. Kennard</u> Date (Optional): <u>03.25.17</u> Signature: <u><i>Robert M. Kennard</i></u>	
Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.	

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	Filing Date	2020-09-29
	First Named Inventor	John W. Howard
	Art Unit	
	Examiner Name	
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	2	5146231		1992-09-08	Ghaem et al.	
	3	5343136		1994-08-30	Yamaguchi et al.	
	4	5448261		1995-09-05	Koike et al.	
	5	5497339		1996-03-05	Bernard	
	6	5545857		1996-08-13	Lee et al.	
	7	5675524		1997-10-07	Bernard	
	8	5714932		1998-02-03	Castellon et al.	

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	9	5752205		1998-05-12	Dzung et al.	
	10	5857148		1999-01-05	Weissbappel et al.	
	11	5857157		1999-01-05	Shindo	
	12	6067018		2000-05-23	Skelton et al.	
	13	6172640		2001-01-09	Durst et al.	
	14	6286060		2001-09-04	DiGiorgio et al.	
	15	6400270		2002-06-04	Person	
	16	6446127		2002-09-03	Schuster et al.	
	17	6624752		2003-09-23	Klitsgaard et al.	
	18	6625472		2003-09-23	Farazmandnia et al.	
	19	6774787		2004-08-10	Melbourne	

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	20	6889057		2005-05-03	Tordera et al.	
	21	6980546		2005-12-27	Purpura et al.	
	22	7034684		2006-04-25	Boman et al.	
	23	7110789		2006-09-19	Curtiss et al.	
	24	7266391		2007-09-04	Warren	
	25	7453357		2008-11-18	Bernal-Silva et al.	
	26	7647511		2010-01-12	Misawa	
	27	7690994		2010-04-06	Dohla	
	28	7714737		2007-08-08	James Morningstar	
	29	7843427		2010-11-30	Ording et al.	
	30	7912503		2011-03-22	Chang et al.	

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	31	8000647		2011-08-16	Hill	
	32	8018726		2011-09-13	Friedlander et al.	
	33	8078787		2011-12-13	Lydon et al.	
	34	8174359		2008-04-30	Salvatore Veni	
	35	8253559		2012-08-28	Howard et al.	
	36	8253560		2012-08-28	Howard et al.	
	37	8254878		2012-08-28	Howard et al.	
	38	8285248		2012-10-09	Howard et al.	
	39	8422954		2013-04-16	Howard et al.	
	40	8588806		2013-11-19	Howard et al.	
	41	8750928		2014-06-10	Moran et al.	

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	42	9295024		2016-03-22	Howard et al.	
	43	10123161		2018-11-06	Howard et al.	

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	1	20020103008	A1	2002-08-01	Rahn Michael D. et al.	
	2	20030052860	A1	2003-03-20	Park Hee-Seon et al.	
	3	20030162574	A1	2003-08-28	Fan	
	4	20030193399	A1	2003-10-16	Hum et al.	
	5	20040097127	A1	2004-05-20	Smith et al.	
	6	20040125080	A1	2004-07-01	Ha et al.	
	7	20040167820	A1	2004-08-26	Melick et al.	

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	Examiner Name		
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	8	20040204074	A1	2004-10-14	Desai	
	9	20050065851	A1	2005-03-24	Aronoff Jeffrey M. et al.	
	10	20050186968	A1	2005-08-25	Durst et al.	
	11	20050231361	A1	2005-10-20	Godbey	
	12	20060012488	A1	2006-01-19	Hilbrink et al.	
	13	20060152487	A1	2006-07-13	Grunnet-Jepsen et al.	
	14	20060152488	A1	2006-07-13	Salsman et al.	
	15	20060152489	A1	2006-07-13	Sweetser et al.	
	16	20060154642	A1	2006-07-13	Scannell	
	17	20060259942	A1	2006-11-16	Toyama et al.	
	18	20070005840	A1	2007-01-04	Cheng et al.	

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	19	20070013526	A1	2007-01-18	Kazdin et al.	
	20	20070021148	A1	2007-01-25	Mahini	
	21	20070038785	A1	2007-02-15	Varanda et al.	
	22	20070052177	A1	2007-03-08	Ikeda et al.	
	23	20070060228	A1	2007-03-15	Akasaka et al.	
	24	20070060384	A1	2007-03-15	Dohta	
	25	20070066394	A1	2007-03-22	Ikeda et al.	
	26	20070080933	A1	2007-04-12	Chen et al.	
	27	20070130592	A1	2007-06-07	Haeusel	
	28	20070136264	A1	2007-06-14	Tran	
	29	20070279245	A1	2007-12-06	Sholem	

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	First Named Inventor	John W. Howard	
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	Examiner Name		
	Attorney Docket Number	BIKN005C8	

	30	20080001814	A1	2008-01-03	Durst et al.	
	31	20080012824	A1	2008-01-17	Grunnet-Jepsen et al.	
	32	20080032713	A1	2008-02-07	Yang	
	33	20080052750	A1	2008-02-28	Grunnet-Jepsen et al.	
	34	20080062120	A1	2008-03-13	Wheeler et al.	
	35	20080166968	A1	2008-07-10	Tang et al.	
	36	20080278445	A1	2008-11-13	Sweetser et al.	
	37	20090074051	A1	2009-03-19	Manapragada et al.	
	38	20090217335	A1	2009-08-27	Wong et al.	
	39	20090237209	A1	2009-09-24	Seal et al.	
	40	20090240814	A1	2009-09-24	Brubacher et al.	

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	Art Unit			
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	41	20090249247	A1	2009-10-01	Tseng et al.	
	42	20090284664	A1	2009-11-19	Barry et al.	
	43	20110210849	A1	2011-09-01	Howard et al.	
	44	20110210959	A1	2011-09-01	Howard et al.	
	45	20110212699	A1	2011-09-01	Howard et al.	
	46	20110212702	A1	2011-09-01	Howard et al.	
	47	20110215921	A1	2011-09-08	Ben Ayed et al.	
	48	20120077439	A1	2012-03-29	Howard et al.	
	49	20160227362	A1	2016-08-04	Howard et al.	
	50	20180192236	A1	2018-07-05	Howard et al.	

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	1	International Preliminary Report on Patentability; PCT Application No. PCT/US11/24923; February 10, 2012, 11 pages	
	2	International Search Report, Application Number PCT/US2011/024923, April 19, 2011, 11 Pages	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17036535
	Filing Date		2020-09-29
	First Named Inventor	John W. Howard	
	Art Unit		
	Examiner Name		
	Attorney Docket Number		BIKN005C8

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Bruce E. Stuckman, Ph.D./	Date (YYYY-MM-DD)	2020-09-29
Name/Print	Bruce E. Stuckman, Ph.D.	Registration Number	36693

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

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

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
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PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
BRUCE E. STUCKMAN
GARLICK HARRISON & MARKISON
P.O. BOX 160727
AUSTIN, TX 78716-0727

PCT

NOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Rule 71.1)

Date of mailing
(day/month/year)

10 FEB 2012

Applicant's or agent's file reference

BIKN001PCT

IMPORTANT NOTIFICATION

International application No.

PCT/US11/24923

International filing date (day/month/year)

15 February 2011 (15.02.2011)

Priority date (day/month/year)

26 February 2010

Applicant

THE HOLDING COMPANY, LLP

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the *PCT Applicant's Guide*.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the IPEA/ US

Mail Stop PCT, Attn: IPEA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer

Ken Wieder
Telephone No. 571-272-2986

Form PCT/IPEA/416 (January 2004)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BIKN001PCT	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/US11/24923	International filing date (day/month/year) 15 February 2011 (15.02.2011)	Priority date (day/month/year) 26 February 2010 (26.02.2010)	
International Patent Classification (IPC) or national classification and IPC IPC: G08B 1/08(2006.01) USPC: 340/539.32			
Applicant THE HOLDING COMPANY, LLP			
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>10</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☐ (sent to the applicant and to the International Bureau) a total of <u>0</u> sheets, as follows: ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).			
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the report ☐ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement ☐ Box No. VI Certain documents cited ☐ Box No. VII Certain defects in the international application ☐ Box No. VIII Certain observations on the international application			
Date of submission of the demand 04 November 2011 (04.11.2011)		Date of completion of this report 08 February 2012 (08.02.2012)	
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer Ken Wieder Telephone No. 571-272-2986	

Form PCT/IPEA/409 (cover sheet)(April 2007)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY	International application No. PCT/US11/24923
Box No. I Basis of the report	
1. With regard to the language, this report is based on: ☒ the international application in the language in which it was filed. ☐ a translation of the international application into <u>English</u>, which is the language of a translation furnished for the purposes of: ☐ international search (under Rules 12.3(a) and 23.1(b)) ☐ publication of the international application (under Rule 12.4(a)) ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a)) 2. With regard to the elements of the international application, this report is based on <i>(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)</i>: ☒ the international application as originally filed/furnished ☒ the description: pages 1-46 _____ as originally filed/furnished pages* <u>NONE</u> _____ received by this Authority on _____ pages* <u>NONE</u> _____ received by this Authority on _____ ☒ the claims: pages 47-50 _____ as originally filed/furnished pages* <u>NONE</u> _____ as amended (together with any statement) under Article 19 pages* <u>NONE</u> _____ received by this Authority on _____ pages* <u>NONE</u> _____ received by this Authority on _____ ☒ the drawings: pages 1/22-22/22 _____ as originally filed/furnished pages* <u>NONE</u> _____ received by this Authority on _____ pages* <u>NONE</u> _____ received by this Authority on _____ ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing. 3. ☐ The amendments have resulted in the cancellation of: ☐ the description, pages _____ ☐ the claims, Nos. _____ ☐ the drawings, sheets/figs _____ ☐ the sequence listing (<i>specify</i>): _____ ☐ any table(s) related to the sequence listing (<i>specify</i>): _____ 4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)). ☐ the description, pages _____ ☐ the claims, Nos. _____ ☐ the drawings, sheets/figs _____ ☐ the sequence listing (<i>specify</i>): _____ ☐ any table(s) related to the sequence listing (<i>specify</i>): _____ 5. ☐ This report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 70.2(e)). <i>* If item 4 applies, some or all of those sheets may be marked "superseded."</i>	

Form PCT/IPEA/409 (Box No. I) (April 2007)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY		International application No. PCT/US11/24923
Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement		
Novelty (N)	Claims <u>1-46</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-16</u>	NO
Industrial Applicability (IA)	Claims <u>1-16</u>	YES
	Claims <u>NONE</u>	NO
2. Citations and Explanations (Rule 70.7) Please See Continuation Sheet		

Form PCT/IPEA/409 (Box No. V) (April 2007)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY	International application No. PCT/US11/24923
Supplemental Box	
In case the space in any of the preceding boxes is not sufficient.	
Continuation of:	
V. 2. Citations and Explanations:	
Claims 1-2 and 9-10 lack an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander.	
Referring to Claim 1, Godbey discloses a system for locating at least one remote object including a handheld wireless communication device (Abstract and [0022], locating misplaced or lost items such as cell phones), the system comprising: a first wireless device (Fig. 1, pager unit 12) that includes: a first user interface (Fig. 1, 18) that generates a first location request signal in response to an indication from a user ([0023], a manually depressible pager button 18 [i.e., user interface] is located on the front side 14 of pager unit 12; [0026] and Claim 2, the pager unit having a manually operable push button that upon actuation transmits a signal [i.e., location request signal] to the transmitter unit thereby activating the light emitting diode and the speaker so that the item can be located); a first wireless transmitter, coupled to the first user interface, that transmits a first paging signal in response to the first location request signal ([0025], manually pressing the pager button 18 causes an electrical signal of a designation frequency to be sent to the transmitter unit 20 - Because the pager unit 12 has the ability to send signals wirelessly, it is interpreted that it has a wireless transmitting means); and an adjunct device (Fig. 1, transmitter unit 20) that includes: a first housing that is coupleable to the handheld wireless communication device ([0024], a transmitter unit 20 that is attached to the object to be located such as a cell phone 22. FIG. 1 shows that transmitter unit 20 has a housing unit); a first wireless receiver, coupled to the first housing, that receives the first paging signal ([0025], Manually pressing the pager button 18 causes an electrical signal of a designated frequency to be sent to the transmitter unit 20, thereby activating the buzzer or speaker 34 and the LED 36 to produce visual and audio discernible signals - Because the buzzer and LED of	

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY	International application No. PCT/US11/24923
Supplemental Box	
the transmitter unit 20 are actuated in response to the frequency signal that was sent by the pager unit 12, then it is interpreted that the transmitter unit 20 has a wireless receiving means); and a second user interface (Fig. 1, 34, 36), coupled to the first housing and the first wireless receiver, that emits a first detectable alert signal in response to the first paging signal to assist the user in locating the handheld wireless communication device ([0025], the transmitter unit 20 includes a buzzer or speaker 34 and a LED 36 for producing both audible and visual locating signals [i.e., detectable alert signals]; Claim 1, the transmitter unit including a buzzer and a light emitting diode that can be selectively actuated for locating the item), but is silent on the first housing being coupleable to the handheld wireless communication device via a communication port of the handheld wireless communication device; the first wireless transmitter and the first wireless receiver being short-range, and the paging signal being an RF paging signal. However, connecting two devices using a communication port is a practice known in the art, and the specifics would be a matter of design choice. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey in order to provide a secure connection between the devices. In disclosing means for assisting in locating an object (Title), Lander teaches the first wireless transmitter and the first wireless receiver being short-range (Col. 1 lines 31-49, locator means comprising a transmitter-transponder system which comprises: a hand-held "searcher" device comprising a short-range signal transmitter and a miniature "locator" device comprising a transponder. The term "short range" is preferably at least 20 feet or about 6 meters in normal domestic or office conditions), and the paging signal being an RF paging signal (Col. 5 lines 56-67, a transmitter-transponder system employing radio transmission of a single coded address signal. Pulse-position-modulation of a radio frequency carrier wave is employed, the frequency being preferably in the range 10 to 150 kHz; Col. 7 lines 9-11, RF transmitter circuitry operating at 100 kHz). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Lander in order to facilitate the tracking of devices within normal domestic or office conditions (Lander, Col. 1 lines 46-49). Referring to Claim 2, Godbey discloses wherein the adjunct device (Fig. 1, transmitter unit 20) further includes: a battery (Fig. 5, 30), coupled to provide power to the second user interface (Fig. 5, 34, 36), separate from a battery of the handheld wireless communication device ([0025], the electrical circuitry of the transmitter unit 20 includes a DC power source 30, where the buzzer or speaker 34 and the LED 36 are electrically powered from the DC power source 30 for producing both audible and visual locating signals), but is silent on providing power to the first short-range wireless receiver. However, using a battery to power a wireless receiver is a practice known in the art, and the specifics would be a matter of design choice. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey in order to power the electrical components of the device. Referring to Claim 9, Godbey discloses wherein the first user interface (Fig. 1, 18) generates first paging data in response to actions of the user and wherein the first RF paging signal includes the first paging data ([0025], Manually pressing the pager button 18 causes an electrical signal of a designated frequency to be sent to the transmitter unit 20 thereby activating the buzzer or speaker 34 and the LED 36 to produce visual and audio discernible signals - it is interpreted that a pager unit 12 would generate paging data). Referring to Claim 10, Godbey discloses a wireless device (Fig. 1, pager unit 12) that includes: a user interface (Fig. 1, pager button 18) that generates a location request signal in response to an indication from the user ([0023], a manually depressible pager button 18 is located on the front side 14 of pager unit 12; [0026] and Claim 2, the pager unit having a manually operable push button that upon actuation transmits a signal [i.e., location request signal] to the transmitter unit thereby activating the light emitting diode and the speaker so that the item can be located); and a short-range wireless transmitter, coupled to the user interface, that, in response to the location request signal, transmits an RF paging signal to at least one of: the first wireless device, and the adjunct device ([0025], manually pressing the pager button 18 causes an electrical signal of a designation frequency to be sent to the transmitter unit 20 [i.e., adjunct device] - Because the pager unit 12 has the ability to send signals wirelessly, it is interpreted that it has a wireless transmitting means), but is silent on the wireless device being a second wireless device. However, providing a second wireless device is merely a duplication of parts, which involves only routine skill in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey in order to provide several devices and thus, facilitate the location of an item. Claims 3-4 and 11 lack an inventive step under PCT Article 33(3) as being obvious over Godbey in view of	

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY	International application No. PCT/US11/24923
Supplemental Box	
Lander, and further in view of Seal et al. (hereinafter, Seal) and Durst et al. (hereinafter, Durst). Referring to Claim 3, Godbey discloses wherein the first wireless device (Fig. 1, pager unit 12) further includes: a second housing coupled to the first user interface (Fig. 1, 18) and the first short-range wireless transmitter (Fig. 1 shows that pager unit 12 has a housing unit 16 coupled to pager button 18; [0025], pressing the pager button 18 causes an electrical signal of a designation frequency to be sent to the transmitter unit 20 - Because pager unit 12 has the ability to send signals wirelessly, it is interpreted that it has a wireless transmitting means), but is silent on wherein the at least one remote object includes a personal object; the second housing being coupleable to the personal object; a second short-range wireless receiver, coupled to the first user interface, that receives a second RF paging signal from the adjunct device; wherein the first user interface emits a second detectable alert signal in response to the second RF paging signal to assist the user in locating the personal object. In disclosing a method of locating one device with the other (Abstract), Seal teaches wherein the at least one remote object includes a personal object (Fig. 1, Key 12); a second housing of a wireless device being coupleable to the personal object (Fig. 1 shows that the casing of the wireless keychain device 11 is coupled to a key 12), a second short-range wireless receiver coupled to the first user interface ([0008], a Bluetooth or radiofrequency [i.e., short range] keychain device; [0025], Fig. 1, 14 represents a means for wireless communication; [0060], The key ring device could be used as a communicator to talk with someone that has the cellular device; Claim 1, the ability to transmit information between the devices - it is interpreted that the keychain device 11 has a receiving means in order to be able to communicate and receive information from a cellular phone); wherein the first user interface emits a second detectable alert signal to assist the user in locating the personal object ([0060], The keychain device can be equipped with a ringer or vibrate. The key ring device can include GPS and track a user's lost phone by emitting noise [i.e., detectable alert signal] depending on proximity to the phone. The phone could do the same thing to find a missing key ring; [0063], The ability to use your cellular device to locate your lost keys). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Seal in order to the ability to use your key chain device to locate your lost cellular device and the ability to use your cellular device to locate your lost keys (Seal, [0062-0063]). In disclosing an object locator system for requesting and obtaining information about the location of a mobile object, having attached thereon a lightweight object locator (Abstract), Durst teaches receiving an RF paging signal from the adjunct device (Fig. 11 shows a wireless telephone set 25 receiving signals from object locator 42 [i.e., adjunct device]; [0066], The base station 351 includes a paging receiver 304. Paging receiver 304 receives location information transmitted by object locator 42; [0032]. The base station 18 may have an input 20 for receiving a dialed-in telephone number from wireless telephone set 25; [0060], FIG. 1 utilizes a two-way paging system to provide the RF or wireless link between the base station 18 and the object locator 42). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Durst in order to determine the location or position of a mobile object by utilizing the capabilities of paging systems (Durst, [0002]). Referring to Claim 4, Godbey discloses wherein the adjunct device further includes: a second short-range wireless transmitter (Fig. 1, transmitter unit 20) coupled to the second user interface (Fig. 1, buzzer 34, LED 36), but is silent on transmitting the second RF paging signal to at least one remote device in response to a second location request signal. Durst teaches transmitting the second RF paging signal to at least one remote device in response to a second location request signal ([0003], the positioning information is only transmitted in response to receiving a request; [0057], The locator is triggered to determine the location in response to receiving a signal from a paging system. The paging system directs a message over a wireless link to a moving object. This only requires the inclusion of a paging receiver tuned to the frequency of the paging transmitters). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Durst in order to determine the location or position of a mobile object by utilizing the capabilities of paging systems (Durst, [0002]). Referring to Claim 11, Godbey discloses the system further comprising: a wireless device (Fig. 1, pager unit 12) that includes: a user interface (Fig. 1, pager button 18); a housing, coupled to the user interface (Fig. 1 shows that pager unit 12 has a housing unit 16 coupled to pager button 18), but is silent on the wireless device being a second wireless device, wherein the at least one remote object includes a personal object; the housing being coupleable to the personal object; and a second short-range wireless receiver, coupled to the third user interface, that receives a second RF paging signal from one of: the adjunct device and the first wireless device; wherein the third user interface emits a second detectable alert signal in response to the second RF paging signal to	

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY	International application No. PCT/US11/24923
Supplemental Box	
assist the user in locating the personal object. However, providing a second wireless device is merely a duplication of parts, which involves only routine skill in the art. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey in order to provide several devices and thus, facilitate the location of an item. Seal teaches wherein the at least one remote object includes a personal object (Fig. 1, Key 12); a second housing being culpable to the personal object (Fig. 1 shows that the casing of the wireless keychain device 11 is coupled to a key 12), a second short-range wireless receiver coupled to the third user interface ([0008], a Bluetooth Or radiofrequency [i.e., short range] keychain device; [0025], Fig. 1, 14 represents a means for wireless communication; [0060], The key ring device could be used as a communicator to talk with someone that has the cellular device; Claim 1, the ability to transmit information between the devices - it is interpreted that the keychain device 11 has a receiving means in order to be able to communicate and receive information from a cellular phone); wherein the third user interface emits a second detectable alert signal to assist the user in locating the personal object ([0060], The keychain device can be equipped with a ringer or vibrate. The key ring device can include GPS and track a user's lost phone by emitting noise [i.e., detectable alert signal] depending on proximity to the phone. The phone could do the same thing to find a missing key ring; [0063], The ability to use your cellular device to locate your lost keys). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Seal in order to the ability to use your key chain device to locate your lost cellular device and the ability to use your cellular device to locate your lost keys (Seal, [0062-0063]). Durst teaches receiving an RF paging signal from one of: the adjunct device and the first wireless device (Fig. 11 shows a wireless telephone set 25 receiving signals from object locator 42 [i.e., adjunct device]; [0066], The base station 351 includes a paging receiver 304. Paging receiver 304 receives location information transmitted by object locator 42; [0032], The base station 18 may have an input 20 for receiving a dialed-in telephone number from wireless telephone set 25; [0060], FIG. 1 utilizes a two-way paging system to provide the RF or wireless link between the base station 18 and the object locator 42). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Durst in order to determine the location or position of a mobile object by utilizing the capabilities of paging systems (Durst, [0002]). Claims 5-6 lack an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander, Seal and Durst, and further in view of Kazdin et al. (hereinafter, Kazdin). Referring to Claim 5, Godbey is silent on wherein the adjunct device receives the second location request signal from a location application executed by the handheld wireless communication device, via the communication port of the handheld wireless communication device. Durst teaches wherein the adjunct device receives the second location request signal from a location application (Fig 4, object locator 42; [0054], requests location information by paging the object locator 42 - it is interpreted that object locator [i.e., adjunct device] receives the location request). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Durst in order to determine the location or position of a mobile object by utilizing the capabilities of paging systems (Durst, [0002]). In disclosing a locator system (Title), Kazdin teaches a location application executed by the handheld wireless communication device ([0014], The RF tracking signal is transmitted by the fob and can be tracked by a mobile tracking unit (MTU) which could be attached to a handheld tracking unit (HHTU). The MTU and the HHTU include a highly directional antenna which locates the direction from which the RF Beacon signal is coming and its strength), but is silent on executing via the communication handheld wireless communication device. However, wherein an application is executed via a port of a wireless device is a practice known in the art, and the specifics would be a matter of design choice. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Kazdin in order to determine the direction of the module and distance of the module according to the strength of the monitoring signals. Referring to Claim 6, Godbey is silent on wherein the first short-range wireless transmitter transmits a first RF location signal in response to the second RF paging signal, and wherein adjunct device includes: a directional antenna, coupled to the first short-range wireless receiver; wherein the first short-range wireless receiver generates a signal strength in response to the first RF location signal; wherein the signal strength is coupled to the location application via the communication port of the handheld wireless communication device to assist the location application in determining a direction to the first wireless device. Seal teaches wherein the first	

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY	International application No. PCT/US11/24923
Supplemental Box	
short-range wireless transmitter transmits a first RF location signal in response to the second RF paging signal (Fig. 1 and [0008], a Bluetooth or radiofrequency [i.e., short range] keychain device; [0060], The keychain device would be capable of sending information to a phone. The keychain device can include GPS and track a user's lost phone. The phone could do the same thing to find a missing key; [0063], The ability to use your cellular device to locate your lost keys; Claim 1, the ability to transmit information between the devices - it is interpreted that the second RF paging signal is sent from a device tracking a missing key). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Seal in order to the ability to use your key chain device to locate your lost cellular device and the ability to use your cellular device to locate your lost keys (Seal, [0062-0063]). Durst teaches wherein adjunct device (Fig. 4, object locator 42) includes: antenna (Fig. 4, 36R), coupled to the first short-range wireless receiver (Fig. 4 and [0037], paging receiver 60 receives paging communications via antenna 36R which are coupled along cable 38R to RF input 40R of paging receiver 60); wherein the first short-range wireless receiver generates a signal strength in response to the first RF location signal ([0040], measure the RF signal energy, i.e., the signal field strength noise that is present at antenna 36R. Such threshold may represent a limiting point beyond which the object locator is enabled to operate; [0049], The object locator 42, by comparing the received signal strength of the signal transmitted by the base station from antenna 126 with a reference signal stored within the signal detector 120, is able to make a determination as to where it is in relation to the base station in terms of the distance that separates the object locator 42 and the base station 18). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Durst in order to determine the location or position of a mobile object by utilizing the capabilities of paging systems (Durst, [0002]). Kazdin teaches using a directional antenna~ wherein the signal strength is coupled to the location application via the communication port of the handheld wireless communication device to assist the location application in determining a direction to the first wireless device ([0014], The RF tracking signal is transmitted by the fob and can be tracked by a mobile tracking unit (MTU) which could be attached to a handheld tracking unit (HTTU). The MTU and the HTTU include a highly directional antenna which locates the direction from which the RF Beacon signal is coming and its strength; Claim 19, a movable directional and distance locating signal input in said control unit for moving to receive the maximum strength of said monitoring signals). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Kazdin in order to determine the direction of the module and distance of the module according to the strength of the monitoring signals. Claim 7 lacks an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander, Seal, Durst and Kazdin, and further in view of Ghaem. Referring to Claim 7, Godbey is silent on wherein the directional antenna includes a reception pattern that includes a null. Ghaem teaches wherein the directional antenna includes a reception pattern that includes a null (Col. 11 lines 13-14, the directional antenna pattern 100 or 101 has one narrow band null). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Ghaem because detecting reception of a GPS signal would require a signal lock up time which is not needed to detect a loss of GPS signal (Ghaem, Col. 11 lines 24-26). Claim 8 lacks an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander, Seal, Durst and Kazdin, and further in view of Yang. Referring to Claim 8, Godbey is silent on wherein the location application generates first paging data and wherein the second RF paging signal includes the first paging data. In disclosing a wireless paging method (Title), Yang teaches wherein the location application generates first paging data ([0007], generating a paging list comprising a plurality of cells using a location data for a wireless terminal), but is silent wherein the second RF paging signal includes the first paging data. However, the type of data included in a signal is merely a matter of design choice, which is known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Yang in order to determine the location or position of a mobile object by utilizing the capabilities of paging systems. Claims 12-14, and 16 lack an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander, and further in view of Curtiss et al. (hereinafter, Curtiss). Referring to Claim 12, Godbey is silent on wherein the adjunct device further comprises: a charging port, coupled to the housing, for coupling a power signal from an external power source to charge the battery of the adjunct device. In disclosing a method of locating one device with the other (abstract), Curtiss teaches wherein	

Form PCT/PEA/409 (Supplemental Box) (April 2007)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY	International application No. PCT/US11/24923
Supplemental Box	
the adjunct device (Figs. 2-3, 110) further comprises: a charging port (Fig. 3, 420), coupled to the housing (Fig. 3, 110), for coupling a power signal from an external power source to charge the battery of the adjunct device (Fig. 3, 410 and "External Power Supply"; Col. 8 lines 28-34, the docking station 110 includes a power supply 410 [e.g., a rechargeable battery] that is coupled to a recharging unit 420. The recharging unit 420 may also be hooked up to an external power supply [e.g., an AC plug connected to a wall outlet]. If the external power supply is coupled to the recharging unit 420, then the recharging unit 420 recharges the power supply 410). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Curtiss in order to provide a means for charging the device. Referring to claim 13, Godbey is silent on wherein the adjunct device further comprises: a device interface that couples the power signal to the communication port of the handheld wireless communication device to charge the battery of the handheld wireless communication device. Curtiss teaches wherein the adjunct device (Fig. 2, 110) further comprises: a device interface (Fig. 2, 140) that couples the power signal to the communication port of the handheld wireless communication device (Fig. 2, 300) to charge the battery of the handheld wireless communication device (Col. 8 lines 41-43, if the cellular phone 120 is properly engaged in the docking port 140, the recharging unit 420 recharges the power supply 390). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Curtiss in order to efficiently recharge the handheld wireless device without disconnecting it from the adjunct device. Referring to Claim 14, Godbey is silent on wherein the adjunct device further comprises: a device interface that couples the power from the battery of the adjunct device to the handheld wireless communication device via the communication port of the handheld wireless communication device to charge the battery of the handheld wireless communication device. Curtiss teaches wherein the adjunct device (Fig. 2, 110) further comprises: a device interface (Fig. 2, 140) that couples the power from the battery of the adjunct device (Fig. 2, 110) to the handheld wireless communication device (Fig. 2, 120) via the communication port of the handheld wireless communication device (Fig. 2, 300) to charge the battery of the handheld wireless communication device (Fig. 3 and Col. 8 lines 28-36, the docking station 110 includes a power supply 410 [e.g., a rechargeable battery] that is coupled to a recharging unit 420. The recharging unit 420 may also be hooked up to an external power supply [e.g., an AC plug connected to a wall outlet]. If the external power supply is coupled to the recharging unit 420, then the recharging unit 420 recharges the power supply 410 and, if the cellular phone 120 is properly engaged in the docking port 140, the recharging unit 420 also recharges the power supply 390). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Curtiss so that the user need not to be concerned with depleting the battery charge of the cellular phone when using the adjunct device (Curtiss, Col. 6 lines 29-31). Referring to Claim 16, Godbey is silent on wherein the adjunct device further comprises: a communication port, coupled to the housing, for communication with an external device; and a device interface that couples communications between the communication port of the adjunct device and the communication port of the handheld wireless communication device. Curtiss teaches wherein the adjunct device (Fig. 2, 110) further comprises: a communication port (Fig. 2, 320) coupled to the housing, for communication with an external device (Fig. 2, 250); and a device interface (Fig. 2, 140) that couples communications between the communication port of the adjunct device (Fig. 2, 290) and the communication port of the handheld wireless communication device (Fig. 2, 300). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Curtiss to establish communication and the exchange of information between the devices. Claim 15 lacks an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander, and further in view of Curtiss and Elias et al. (hereinafter, Elias). Referring to Claim 15, Godbey is silent on wherein the device interface operates in an auxiliary power mode to couple the power from the battery of the adjunct device to the handheld wireless communication device via the communication port of the handheld wireless communication device to charge the battery of the handheld wireless communication device, and wherein the device interface operates in a battery isolation mode to decouple the battery of the adjunct device from the battery of the handheld wireless communication device. Curtiss teaches wherein the device interface (Fig. 2, 140) operates to couple the power from the battery of the adjunct device (Fig. 3, 110) to the handheld wireless communication device (Fig. 2, 120) via the communication port of the handheld wireless communication device (Fig. 2, 300) to charge the battery of the handheld wireless communication device (Col. 8 lines 28-36, the docking station 110 includes a power supply 410 [e.g., a	

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY	International application No. PCT/US11/24923
Supplemental Box	
rechargeable battery] that is coupled to a recharging unit 420. The recharging unit 420 may also be hooked up to an external power supply [e.g., an AC plug connected to a wall outlet]. If the external power supply is coupled to the recharging unit 420, then the recharging unit 420 recharges the power supply 410 and, if the cellular phone 120 is properly engaged in the docking port 140, the recharging unit 420 also recharges the power supply 390). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Curtiss in order to be able to charge the power supply of both devices simultaneously. In disclosing a method for operating a rechargeable battery (Abstract), Elias teaches wherein the device interface operates in an auxiliary power mode ([17], an auxiliary power source being able to power said electronic device independently of said battery source), and wherein the device interface operates in a battery isolation mode to decouple the battery of the adjunct device from the battery of the handheld wireless communication device ([17], a disconnection circuit for isolating current flow from said rechargeable battery to said device). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Elias in order to provide an appropriate battery management system. Claims 1-16 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry ----- NEW CITATIONS ----- NONE	

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

To:
BRUCE STUCKMAN
GARLICK HARRISON & MARKISON
P.O. BOX 160727
AUSTIN, TX 78716-0727

Date of mailing
(day/month/year)

19 APR 2011

Applicant's or agent's file reference
BIKN001PCT

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.
PCT/US2011/024923

International filing date
(day/month/year) **15 February 2011**

Applicant **THL HOLDING COMPANY, LLP**

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300

Telephone No. PCT OSP: 571-272-7774

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference BIKN001PCT	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2011/024923	International filing date (day/month/year) 15 February 2011	(Earliest) Priority Date (day/month/year) 26 February 2010
Applicant THL HOLDING COMPANY, LLP		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed.
☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (see Box No. II).

3. ☐ Unity of invention is lacking (see Box No. III).

4. With regard to the title,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 1
☒ as suggested by the applicant.
☐ as selected by this Authority, because the applicant failed to suggest a figure.
☐ as selected by this Authority, because this figure better characterizes the invention.
 b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/024923

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G08B 1/08 (2011.01)

USPC - 340/539.32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) - G08B 1/08, 13/14 (2011.01)

USPC - 340/539.15, 539.21, 539.23, 539.32, 572.1, 573.3

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatBase, Orbit, Google Patent

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2005/0231361 A1 (GODBEY) 20 October 2005 (20.10.2005) entire document	1-16
Y	US 4,476,469 A (LANDER) 09 October 1984 (09.10.1984) entire document	1-16
Y	US 7,110,789 B1 (CURTISS et al) 19 September 2006 (19.09.2006) entire document	12-16
Y	WO 2006/022645 A1 (ELIAS et al) 02 March 2006 (02.03.2006) entire document	15
Y	US 2009/0237209 A1 (SEAL et al) 24 September 2009 (24.09.2009) entire document	3-8, 11
Y	US 2005/0186968 A1 (DURST et al) 25 August 2005 (25.08.2005) entire document	3-8, 11
Y	US 2007/0013526 A1 (KAZDIN et al) 18 January 2007 (18.01.2007) entire document	5-8
Y	US 5,146,231 A (GHAEM et al) 08 September 1992 (08.09.1992) entire document	7
Y	US 2008/0032713 A1 (YANG) 07 February 2008 (07.02.2008) entire document	8

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

29 March 2011

Date of mailing of the international search report

19 APR 2011

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

BRUCE STUCKMAN
GARLICK HARRISON & MARKISON
P.O. BOX 160727
AUSTIN, TX 78716-0727

Date of mailing
(day/month/year)

19 APR 2011

Applicant's or agent's file reference
BIKN001PCT

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US2011/024923

International filing date (day/month/year)

15 February 2011

Priority date (day/month/year)

26 February 2010

International Patent Classification (IPC) or both national classification and IPC

IPC(8) - G08B 1/08 (2011.01)

USPC - 340/539.32

Applicant THL HOLDING COMPANY, LLP

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis. 1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3-months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Date of completion of this opinion 29 March 2011	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774
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Form PCT/ISA/237 (cover sheet) (July 2009)

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2011/024923

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a)).
3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
 - a. (means)
 - ☐ on paper
 - ☐ in electronic form
 - b. (time)
 - ☐ in the international application as filed
 - ☐ together with the international application in electronic form
 - ☐ subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2011/024923

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-16	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-16	NO
Industrial applicability (IA)	Claims	1-16	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-2 and 9-10 lack an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander.

Referring to Claim 1, Godbey discloses a system for locating at least one remote object including a handheld wireless communication device (Abstract and [0022], locating misplaced or lost items such as cell phones), the system comprising: a first wireless device (Fig. 1, pager unit 12) that includes: a first user interface (Fig. 1, 18) that generates a first location request signal in response to an indication from a user ([0023], a manually depressible pager button 18 [i.e., user interface] is located on the front side 14 of pager unit 12; [0026] and Claim 2, the pager unit having a manually operable push button that upon actuation transmits a signal [i.e., location request signal] to the transmitter unit thereby activating the light emitting diode and the speaker so that the item can be located); a first wireless transmitter, coupled to the first user interface, that transmits a first paging signal in response to the first location request signal ([0025], manually pressing the pager button 18 causes an electrical signal of a designation frequency to be sent to the transmitter unit 20 – Because the pager unit 12 has the ability to send signals wirelessly, it is interpreted that it has a wireless transmitting means); and an adjunct device (Fig. 1, transmitter unit 20) that includes: a first housing that is coupleable to the handheld wireless communication device ([0024], a transmitter unit 20 that is attached to the object to be located such as a cell phone 22. FIG. 1 shows that transmitter unit 20 has a housing unit); a first wireless receiver, coupled to the first housing, that receives the first paging signal ([0025], Manually pressing the pager button 18 causes an electrical signal of a designated frequency to be sent to the transmitter unit 20, thereby activating the buzzer or speaker 34 and the LED 36 to produce visual and audio discernible signals – Because the buzzer and LED of the transmitter unit 20 are actuated in response to the frequency signal that was sent by the pager unit 12, then it is interpreted that the transmitter unit 20 has a wireless receiving means); and a second user interface (Fig. 1, 34, 36), coupled to the first housing and the first wireless receiver, that emits a first detectable alert signal in response to the first paging signal to assist the user in locating the handheld wireless communication device ([0025], the transmitter unit 20 includes a buzzer or speaker 34 and a LED 36 for producing both audible and visual locating signals [i.e., detectable alert signals]; Claim 1, the transmitter unit including a buzzer and a light emitting diode that can be selectively actuated for locating the item), but is silent on the first housing being coupleable to the handheld wireless communication device via a communication port of the handheld wireless communication device; the first wireless transmitter and the first wireless receiver being short-range, and the paging signal being an RF paging signal. However, connecting two devices using a communication port is a practice known in the art, and the specifics would be a matter of design choice. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey in order to provide a secure connection between the devices. In disclosing means for assisting in locating an object (Title), Lander teaches the first wireless transmitter and the first wireless receiver being short-range (Col. 1 lines 31-49, locator means comprising a transmitter-transponder system which comprises: a hand-held "searcher" device comprising a short-range signal transmitter and a miniature "locator" device comprising a transponder. The term "short range" is preferably at least 20 feet or about 6 meters in normal domestic or office conditions), and the paging signal being an RF paging signal (Col. 5 lines 56-67, a transmitter-transponder system employing radio transmission of a single coded address signal. Pulse-position-modulation of a radio frequency carrier wave is employed, the frequency being preferably in the range 10 to 150 kHz; Col. 7 lines 9-11, RF transmitter circuitry operating at 100 kHz). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Lander in order to facilitate the tracking of devices within normal domestic or office conditions (Lander, Col. 1 lines 46-49).

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Referring to Claim 2, Godbey discloses wherein the adjunct device (Fig. 1, transmitter unit 20) further includes: a battery (Fig. 5, 30), coupled to provide power to the second user interface (Fig. 5, 34, 36), separate from a battery of the handheld wireless communication device ([0025]), the electrical circuitry of the transmitter unit 20 includes a DC power source 30, where the buzzer or speaker 34 and the LED 36 are electrically powered from the DC power source 30 for producing both audible and visual locating signals), but is silent on providing power to the first short-range wireless receiver. However, using a battery to power a wireless receiver is a practice known in the art, and the specifics would be a matter of design choice. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey in order to power the electrical components of the device.

Referring to Claim 9, Godbey discloses wherein the first user interface (Fig. 1, 18) generates first paging data in response to actions of the user and wherein the first RF paging signal includes the first paging data ([0025]). Manually pressing the pager button 18 causes an electrical signal of a designated frequency to be sent to the transmitter unit 20 thereby activating the buzzer or speaker 34 and the LED 36 to produce visual and audio discernible signals – it is interpreted that a pager unit 12 would generate paging data).

Referring to Claim 10, Godbey discloses a wireless device (Fig. 1, pager unit 12) that includes: a user interface (Fig. 1, pager button 18) that generates a location request signal in response to an indication from the user ([0023]), a manually depressible pager button 18 is located on the front side 14 of pager unit 12; [0026] and Claim 2, the pager unit having a manually operable push button that upon actuation transmits a signal [i.e., location request signal] to the transmitter unit thereby activating the light emitting diode and the speaker so that the item can be located); and a short-range wireless transmitter, coupled to the user interface, that, in response to the location request signal, transmits an RF paging signal to at least one of: the first wireless device, and the adjunct device ([0025]), manually pressing the pager button 18 causes an electrical signal of a designation frequency to be sent to the transmitter unit 20 [i.e., adjunct device] – Because the pager unit 12 has the ability to send signals wirelessly, it is interpreted that it has a wireless transmitting means), but is silent on the wireless device being a second wireless device. However, providing a second wireless device is merely a duplication of parts, which involves only routine skill in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey in order to provide several devices and thus, facilitate the location of an item.

Claims 3-4 and 11 lack an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander, and further in view of Seal et al. (hereinafter, Seal) and Durst et al. (hereinafter, Durst).

Referring to Claim 3, Godbey discloses wherein the first wireless device (Fig. 1, pager unit 12) further includes: a second housing coupled to the first user interface (Fig. 1, 18) and the first short-range wireless transmitter (Fig. 1 shows that pager unit 12 has a housing unit 16 coupled to pager button 18; [0025]), pressing the pager button 18 causes an electrical signal of a designation frequency to be sent to the transmitter unit 20 – Because pager unit 12 has the ability to send signals wirelessly, it is interpreted that it has a wireless transmitting means), but is silent on wherein the at least one remote object includes a personal object; the second housing being couplable to the personal object; a second short-range wireless receiver, coupled to the first user interface, that receives a second RF paging signal from the adjunct device; wherein the first user interface emits a second detectable alert signal in response to the second RF paging signal to assist the user in locating the personal object. In disclosing a method of locating one device with the other (Abstract), Seal teaches wherein the at least one remote object includes a personal object (Fig. 1, Key 12); a second housing of a wireless device being couplable to the personal object (Fig. 1 shows that the casing of the wireless keychain device 11 is coupled to a key 12), a second short-range wireless receiver coupled to the first user interface ([0008], a Bluetooth or radiofrequency [i.e., short range] keychain device; [0025], Fig. 1, 14 represents a means for wireless communication; [0060]), The key ring device could be used as a communicator to talk with someone that has the cellular device; Claim 1, the ability to transmit information between the devices – it is interpreted that the keychain device 11 has a receiving means in order to be able to communicate and receive information from a cellular phone); wherein the first user interface emits a second detectable alert signal to assist the user in locating the personal object ([0060]), The keychain device can be equipped with a ringer or vibrate. The key ring device can include GPS and track a user's lost phone by emitting noise [i.e., detectable alert signal] depending on proximity to the phone. The phone could do the same thing to find a missing key ring; [0063], The ability to use your cellular device to locate your lost keys). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Seal in order to the ability to use your key chain device to locate your lost cellular device and the ability to use your cellular device to locate your lost keys (Seal, [0062-0063]). In disclosing an object locator system for requesting and obtaining information about the location of a mobile object, having attached thereon a lightweight object locator (Abstract), Durst teaches receiving an RF paging signal from the adjunct device (Fig. 11 shows a wireless telephone set 25 receiving signals from object locator 42 [i.e., adjunct device]; [0066]), The base station 351 includes a paging receiver 304. Paging receiver 304 receives location information transmitted by object locator 42; [0032], The base station 18 may have an input 20 for receiving a dialed-in telephone number from wireless telephone set 25; [0060], FIG. 1 utilizes a two-way paging system to provide the RF or wireless link between the base station 18 and the object locator 42). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Durst in order to determine the location or position of a mobile object by utilizing the capabilities of paging systems (Durst, [0002]).

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Referring to Claim 4, Godbey discloses wherein the adjunct device further includes: a second short-range wireless transmitter (Fig. 1, transmitter unit 20) coupled to the second user interface (Fig. 1, buzzer 34, LED 36), but is silent on transmitting the second RF paging signal to at least one remote device in response to a second location request signal. Durst teaches transmitting the second RF paging signal to at least one remote device in response to a second location request signal ([0003], the positioning information is only transmitted in response to receiving a request; [0057]. The locator is triggered to determine the location in response to receiving a signal from a paging system. The paging system directs a message over a wireless link to a moving object. This only requires the inclusion of a paging receiver tuned to the frequency of the paging transmitters). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Durst in order to determine the location or position of a mobile object by utilizing the capabilities of paging systems (Durst, [0002]).

Referring to Claim 11, Godbey discloses the system further comprising: a wireless device (Fig. 1, pager unit 12) that includes: a user interface (Fig. 1, pager button 18); a housing, coupled to the user interface (Fig. 1 shows that pager unit 12 has a housing unit 16 coupled to pager button 18), but is silent on the wireless device being a second wireless device, wherein the at least one remote object includes a personal object; the housing being couplable to the personal object; and a second short-range wireless receiver, coupled to the third user interface, that receives a second RF paging signal from one of: the adjunct device and the first wireless device; wherein the third user interface emits a second detectable alert signal in response to the second RF paging signal to assist the user in locating the personal object. However, providing a second wireless device is merely a duplication of parts, which involves only routine skill in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey in order to provide several devices and thus, facilitate the location of an item. Seal teaches wherein the at least one remote object includes a personal object (Fig. 1, Key 12); a second housing being couplable to the personal object (Fig. 1 shows that the casing of the wireless keychain device 11 is coupled to a key 12), a second short-range wireless receiver coupled to the third user interface ([0008], a Bluetooth or radiofrequency [i.e., short range] keychain device; [0025]. Fig. 1, 14 represents a means for wireless communication; [0060]. The key ring device could be used as a communicator to talk with someone that has the cellular device; Claim 1, the ability to transmit information between the devices – it is interpreted that the keychain device 11 has a receiving means in order to be able to communicate and receive information from a cellular phone); wherein the third user interface emits a second detectable alert signal to assist the user in locating the personal object ([0060]. The keychain device can be equipped with a ringer or vibrate. The key ring device can include GPS and track a user's lost phone by emitting noise [i.e., detectable alert signal] depending on proximity to the phone. The phone could do the same thing to find a missing key ring; [0063]. The ability to use your cellular device to locate your lost keys). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Seal in order to the ability to use your key chain device to locate your lost cellular device and the ability to use your cellular device to locate your lost keys (Seal, [0062-0063]). Durst teaches receiving an RF paging signal from one of: the adjunct device and the first wireless device (Fig. 11 shows a wireless telephone set 25 receiving signals from object locator 42 [i.e., adjunct device]; [0066]. The base station 351 includes a paging receiver 304. Paging receiver 304 receives location information transmitted by object locator 42; [0032]. The base station 18 may have an input 20 for receiving a dialed-in telephone number from wireless telephone set 25; [0060]. FIG. 1 utilizes a two-way paging system to provide the RF or wireless link between the base station 18 and the object locator 42). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Durst in order to determine the location or position of a mobile object by utilizing the capabilities of paging systems (Durst, [0002]).

Claims 5-6 lack an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander, Seal and Durst, and further in view of Kazdin et al. (hereinafter, Kazdin).

Referring to Claim 5, Godbey is silent on wherein the adjunct device receives the second location request signal from a location application executed by the handheld wireless communication device, via the communication port of the handheld wireless communication device. Durst teaches wherein the adjunct device receives the second location request signal from a location application (Fig 4, object locator 42; [0054], requests location information by paging the object locator 42 – it is interpreted that object locator [i.e., adjunct device] receives the location request). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Durst in order to determine the location or position of a mobile object by utilizing the capabilities of paging systems (Durst, [0002]). In disclosing a locator system (Title), Kazdin teaches a location application executed by the handheld wireless communication device ([0014]. The RF tracking signal is transmitted by the fob and can be tracked by a mobile tracking unit (MTU) which could be attached to a handheld tracking unit (HHTU). The MTU and the HHTU include a highly directional antenna which locates the direction from which the RF Beacon signal is coming and its strength), but is silent on executing via the communication port of the handheld wireless communication device. However, wherein an application is executed via a port of a wireless device is a practice known in the art, and the specifics would be a matter of design choice. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Kazdin in order to determine the direction of the module and distance of the module according to the strength of the monitoring signals.

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Referring to Claim 6, Godbey is silent on wherein the first short-range wireless transmitter transmits a first RF location signal in response to the second RF paging signal, and wherein adjunct device includes: a directional antenna, coupled to the first short-range wireless receiver; wherein the first short-range wireless receiver generates a signal strength in response to the first RF location signal; wherein the signal strength is coupled to the location application via the communication port of the handheld wireless communication device to assist the location application in determining a direction to the first wireless device. Seal teaches wherein the first short-range wireless transmitter transmits a first RF location signal in response to the second RF paging signal (Fig. 1 and [0008], a Bluetooth or radiofrequency [i.e., short range] keychain device; [0060], The keychain device would be capable of sending information to a phone. The keychain device can include GPS and track a user's lost phone. The phone could do the same thing to find a missing key; [0063], The ability to use your cellular device to locate your lost keys; Claim 1, the ability to transmit information between the devices — it is interpreted that the second RF paging signal is sent from a device tracking a missing key). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Seal in order to the ability to use your key chain device to locate your lost cellular device and the ability to use your cellular device to locate your lost keys (Seal, [0062-0063]). Durst teaches wherein adjunct device (Fig. 4, object locator 42) includes: antenna (Fig. 4, 36R), coupled to the first short-range wireless receiver (Fig. 4 and [0037], paging receiver 60 receives paging communications via antenna 36R which are coupled along cable 38R to RF input 40R of paging receiver 60); wherein the first short-range wireless receiver generates a signal strength in response to the first RF location signal ([0040], measure the RF signal energy, i.e., the signal field strength noise that is present at antenna 36R. Such threshold may represent a limiting point beyond which the object locator is enabled to operate; [0049], The object locator 42, by comparing the received signal strength of the signal transmitted by the base station from antenna 126 with a reference signal stored within the signal detector 120, is able to make a determination as to where it is in relation to the base station in terms of the distance that separates the object locator 42 and the base station 18). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Durst in order to determine the location or position of a mobile object by utilizing the capabilities of paging systems (Durst, [0002]). Kazdin teaches using a directional antenna, wherein the signal strength is coupled to the location application via the communication port of the handheld wireless communication device to assist the location application in determining a direction to the first wireless device ([0014], The RF tracking signal is transmitted by the fob and can be tracked by a mobile tracking unit (MTU) which could be attached to a handheld tracking unit (HHTU). The MTU and the HHTU include a highly directional antenna which locates the direction from which the RF Beacon signal is coming and its strength; Claim 19, a movable directional and distance locating signal input in said control unit for moving to receive the maximum strength of said monitoring signals). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Kazdin in order to determine the direction of the module and distance of the module according to the strength of the monitoring signals.

Claim 7 lacks an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander, Seal, Durst and Kazdin, and further in view of Ghaem.

Referring to Claim 7, Godbey is silent on wherein the directional antenna includes a reception pattern that includes a null. Ghaem teaches wherein the directional antenna includes a reception pattern that includes a null (Col. 11 lines 13-14, the directional antenna pattern 100 or 101 has one narrow band null). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Ghaem because detecting reception of a GPS signal would require a signal lock up time which is not needed to detect a loss of GPS signal (Ghaem, Col. 11 lines 24-26).

Claim 8 lacks an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander, Seal, Durst and Kazdin, and further in view of Yang.

Referring to Claim 8, Godbey is silent on wherein the location application generates first paging data and wherein the second RF paging signal includes the first paging data. In disclosing a wireless paging method (Title), Yang teaches wherein the location application generates first paging data ([0007], generating a paging list comprising a plurality of cells using a location data for a wireless terminal), but is silent wherein the second RF paging signal includes the first paging data. However, the type of data included in a signal is merely a matter of design choice, which is known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Yang in order to determine the location or position of a mobile object by utilizing the capabilities of paging systems.

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Claims 12-14, and 16 lack an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander, and further in view of Curtiss et al. (hereinafter, Curtiss).

Referring to Claim 12, Godbey is silent on wherein the adjunct device further comprises: a charging port, coupled to the housing, for coupling a power signal from an external power source to charge the battery of the adjunct device. In disclosing a method of locating one device with the other (abstract), Curtiss teaches wherein the adjunct device (Figs. 2-3, 110) further comprises: a charging port (Fig. 3, 420), coupled to the housing (Fig. 3, 110), for coupling a power signal from an external power source to charge the battery of the adjunct device (Fig. 3, 410 and "External Power Supply"; Col. 8 lines 28-34, the docking station 110 includes a power supply 410 [e.g., a rechargeable battery] that is coupled to a recharging unit 420. The recharging unit 420 may also be hooked up to an external power supply [e.g., an AC plug connected to a wall outlet]. If the external power supply is coupled to the recharging unit 420, then the recharging unit 420 recharges the power supply 410). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Curtiss in order to provide a means for charging the device.

Referring to Claim 13, Godbey is silent on wherein the adjunct device further comprises: a device interface that couples the power signal to the communication port of the handheld wireless communication device to charge the battery of the handheld wireless communication device. Curtiss teaches wherein the adjunct device (Fig. 2, 110) further comprises: a device interface (Fig. 2, 140) that couples the power signal to the communication port of the handheld wireless communication device (Fig. 2, 300) to charge the battery of the handheld wireless communication device (Col. 8 lines 41-43, if the cellular phone 120 is properly engaged in the docking port 140, the recharging unit 420 recharges the power supply 390). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Curtiss in order to efficiently recharge the handheld wireless device without disconnecting it from the adjunct device.

Referring to Claim 14, Godbey is silent on wherein the adjunct device further comprises: a device interface that couples the power from the battery of the adjunct device to the handheld wireless communication device via the communication port of the handheld wireless communication device to charge the battery of the handheld wireless communication device. Curtiss teaches wherein the adjunct device (Fig. 2, 110) further comprises: a device interface (Fig. 2, 140) that couples the power from the battery of the adjunct device (Fig. 2, 110) to the handheld wireless communication device (Fig. 2, 120) via the communication port of the handheld wireless communication device (Fig. 2, 300) to charge the battery of the handheld wireless communication device (Fig. 3 and Col. 8 lines 28-36, the docking station 110 includes a power supply 410 [e.g., a rechargeable battery] that is coupled to a recharging unit 420. The recharging unit 420 may also be hooked up to an external power supply [e.g., an AC plug connected to a wall outlet]. If the external power supply is coupled to the recharging unit 420, then the recharging unit 420 recharges the power supply 410 and, if the cellular phone 120 is properly engaged in the docking port 140, the recharging unit 420 also recharges the power supply 390). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Curtiss so that the user need not be concerned with depleting the battery charge of the cellular phone when using the adjunct device (Curtiss, Col. 6 lines 29-31).

Referring to Claim 16, Godbey is silent on wherein the adjunct device further comprises: a communication port, coupled to the housing, for communication with an external device; and a device interface that couples communications between the communication port of the adjunct device and the communication port of the handheld wireless communication device. Curtiss teaches wherein the adjunct device (Fig. 2, 110) further comprises: a communication port (Fig. 2, 320) coupled to the housing, for communication with an external device (Fig. 2, 250); and a device interface (Fig. 2, 140) that couples communications between the communication port of the adjunct device (Fig. 2, 290) and the communication port of the handheld wireless communication device (Fig. 2, 300). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Curtiss to establish communication and the exchange of information between the devices.

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Claim 15 lacks an inventive step under PCT Article 33(3) as being obvious over Godbey in view of Lander, and further in view of Curtiss and Elias et al. (hereinafter, Elias).

Referring to Claim 15, Godbey is silent on wherein the device interface operates in an auxiliary power mode to couple the power from the battery of the adjunct device to the handheld wireless communication device via the communication port of the handheld wireless communication device to charge the battery of the handheld wireless communication device, and wherein the device interface operates in a battery isolation mode to decouple the battery of the adjunct device from the battery of the handheld wireless communication device. Curtiss teaches wherein the device interface (Fig. 2, 140) operates to couple the power from the battery of the adjunct device (Fig. 3, 110) to the handheld wireless communication device (Fig. 2, 120) via the communication port of the handheld wireless communication device (Fig. 2, 300) to charge the battery of the handheld wireless communication device (Col. 8 lines 28-36, the docking station 110 includes a power supply 410 [e.g., a rechargeable battery] that is coupled to a recharging unit 420. The recharging unit 420 may also be hooked up to an external power supply [e.g., an AC plug connected to a wall outlet]. If the external power supply is coupled to the recharging unit 420, then the recharging unit 420 recharges the power supply 410 and, if the cellular phone 120 is properly engaged in the docking port 140, the recharging unit 420 also recharges the power supply 390). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Curtiss in order to be able to charge the power supply of both devices simultaneously. In disclosing a method for operating a rechargeable battery (Abstract), Elias teaches wherein the device interface operates in an auxiliary power mode ([17], an auxiliary power source being able to power said electronic device independently of said battery source), and wherein the device interface operates in a battery isolation mode to decouple the battery of the adjunct device from the battery of the handheld wireless communication device ([17], a disconnection circuit for isolating current flow from said rechargeable battery to said device). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the above features in the invention of Godbey as taught by Elias in order to provide an appropriate battery management system.

Claims 1-16 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

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First Named Inventor/Applicant Name:	John W. Howard
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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Warnings:					
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FILING RECEIPT



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Date Mailed: 10/20/2020

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Inventor(s)

John W. Howard, Cedar Park, TX;
Richard Cutler, Round Rock, TX;
Robert M. Kennard, Dallas, TX;

Applicant(s)

THL Holding Company, LLC, Austin, TX;

Assignment For Published Patent Application

THL Holding Company, LLC, Austin, TX

Power of Attorney: The patent practitioners associated with Customer Number 34399

Domestic Priority data as claimed by applicant

This application is a CON of 16/837,481 04/01/2020
which is a CON of 16/540,665 08/14/2019 PAT 10645537
which is a CON of 16/150,498 10/03/2018 PAT 10440501
which is a CON of 15/910,654 03/02/2018 PAT 10123161
which is a CON of 15/000,903 01/19/2016 PAT 9942700
which is a CON of 14/281,077 05/19/2014 PAT 9295024
which is a CON of 14/044,202 10/02/2013 PAT 8768381
which is a CON of 12/713,346 02/26/2010 PAT 8588806

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

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

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/036,535**

Projected Publication Date: 01/28/2021

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK

Preliminary Class

455

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

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page 2 of 4

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PATENT APPLICATION FEE DETERMINATION RECORD						Application or Docket Number 17/036,535	
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(\$)		RATE(\$)	FEE(\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	80		N/A	
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(j))	20	minus 20 = *	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2	minus 3 = *	x 240 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	830		TOTAL	
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
			TOTAL ADD'L FEE			OR	
(Column 1)		(Column 2)		(Column 3)		OTHER THAN SMALL ENTITY	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
			TOTAL ADD'L FEE			OR	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.							



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/036,535	09/29/2020	John W. Howard	BIKN005C8

CONFIRMATION NO. 7690

34399
GARLICK & MARKISON
100 CONGRESS AVENUE
SUITE 2000
AUSTIN, TX 78701

PUBLICATION NOTICE



Title: WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK

Publication No. US-2021-0029506-A1

Publication Date: 01/28/2021

NOTICE OF PUBLICATION OF APPLICATION

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

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

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

Certification under 37 C.F.R. §1.8

Date of Mailing or Transmission: 6/16/2021

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BY: /Debbie Watson/
Signature

Name: Debbie Watson
Typed Name

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

1st Named Inventor: John W. Howard

Examiner: Barry W. Taylor

Application No.: 17/036,535

Art Unit: 2646

Filing Date: 29 Sep 2020

Docket No.: BIKN005C8

Confirmation No.: 7690

Title: WIRELESS DEVICE AND METHODS FOR USE IN A PAGING
NETWORK

PRELIMINARY AMENDMENT

Date: 6/16/2021

United States Patent and Trademark Office
P. O. Box 1450
Alexandria, VA 22313-1450

Please enter the following Preliminary Amendment to the Claims.

AMENDMENT TO THE CLAIMS

Please replace the claims with the following amended claims:

1. (currently amended) A mobile communication device comprising:

~~a short-range~~ a plurality of wireless transceivers;

a memory that stores operational instructions;

a touch screen; and

a processor coupled to the memory and to the touch screen, wherein the processor executes the operational instructions that cause the processor to present a graphical user interface via the touch screen and wherein the processor operates in association with the graphical user interface to:

generate a pairing signal in response to a first indication from a user to pair the mobile communication device to at least one remote device, the at least one remote device ~~including a non touch screen user interface~~, wherein the ~~short-range~~ at least one of the plurality of wireless transceivers, responds to the pairing signal generated by the graphical user interface by communicating RF signals to pair the mobile communication device to the at least one remote device;

generate a first location request signal in response to a second indication from the user to locate the at least one remote device, wherein ~~the short-range~~ at least one of the plurality of wireless transceivers transmits a first RF signal to the at least one remote device in response to the first location request signal; and

present a display that visually assists the user to determine a location of the at least one remote device, wherein at least one of the plurality of ~~the short-range~~ wireless transceivers receives a second RF signal from the at least one remote device that facilitates determining the location of the at least one remote device, wherein the display visually

- assists the user to determine the location of the at least one remote device via an arrow pointing in a direction to the at least one remote device.
2. (currently amended) The mobile communication device of claim 1 wherein the display visually assists the user further based on a signal strength of the second RF signal from the at least one remote device.
3. (currently amended) The mobile communication device of claim 1 wherein the display visually assists the user further by displaying an indication a distance to ~~of a signal strength of the second RF signal from~~ the at least one remote device.
4. (currently amended) The mobile communication device of claim 1 wherein the mobile communication device is a handheld wireless communication device ~~and the graphical user interface includes a touch screen of the handheld wireless communication device.~~
5. (currently amended) The mobile communication device of claim 4 wherein ~~handheld wireless communication device~~ the plurality of wireless transceivers includes a long range transceiver for sending and receiving telephone calls via a telephony network and further for communicating Internet data.
6. (original) The mobile communication device of claim 1, wherein the at least one remote device emits a detectable alert signal in response to the first RF signal to further assist the user in determining the location of the at least one remote device.
7. (original) The mobile communication device of claim 1 wherein the at least one remote device includes a plurality of remote devices and wherein the graphical user interface allows selection of a particular one of the plurality of remote devices to be located.
8. (original) The mobile communication device of claim 7 wherein the display visually indicates the selection of the particular one of the plurality of remote devices to be located.

9. (original) The mobile communication device of claim 7 wherein the plurality of remote devices comprise a first paging network wherein each of the plurality of remote devices emits corresponding detectable alert signals in response to the first RF signal to assist the user in determining the location of the plurality of remote devices.

10. (currently amended) A mobile communication device comprising:

~~a short range~~ a plurality of wireless transceivers;

a touchscreen;

a memory that stores operational instructions; and

a processor configured to execute operational instructions, wherein the operational instructions cause the processor to present a graphical user interface via the touch screen and wherein the processor operates in association with the graphical user interface to:

respond to a first user interaction with the touchscreen by pairing, via at least one of the plurality of ~~the short range~~ wireless transceivers, the mobile communication device with at least one remote device, the at least one remote device including ~~a touch screen user interface~~ and a sound emitter configured to generate an audio alert;

facilitates, via a second interaction with the ~~touchscreen~~ touch screen, selection of the at least one remote device from a plurality of remote devices;

responds to a third interaction with the touchscreen by transmitting, via at least one of the plurality of ~~the short range~~ wireless transceivers, a first paging signal to the at least one remote device, wherein the first paging signal causes the at least one remote device to generate the audio alert; and

present a display on the touchscreen, based on a signal received via at least one of the plurality of ~~the short range~~ wireless transceivers from the at least one remote device, wherein the display visually assists a user to determine a location of the at least one remote device.

11. (currently amended) The mobile communication device of claim 10 wherein the display visually assists the user based on a signal strength of the signal received via at least one of the plurality of the short-range wireless transceivers from the at least one remote device.

12. (original) The mobile communication device of claim 10 wherein the display visually assists the user in determining a distance to the at least one remote device.

13. (currently amended) The mobile communication device of claim 10 wherein the display visually assists the user by displaying an indication of a signal strength of the signal received via at least one of the plurality of the short-range wireless transceivers from the at least one remote device.

14. (original) The mobile communication device of claim 10 wherein the mobile communication device is a handheld wireless communication device.

15. (currently amended) The mobile communication device of claim 14 wherein ~~handheld wireless communication device~~ the plurality of wireless transceivers includes a long range transceiver for sending and receiving telephone calls via a telephony network and further for communicating Internet data.

16. (currently amended) The mobile communication device of claim 14 ~~handheld wireless communication device~~ the plurality of wireless transceivers includes a long range transceiver for communicating Internet data.

17. (original) The mobile communication device of claim 10 wherein the audio alert further assists the user in determining the location of the at least one remote device.

18. (original) The mobile communication device of claim 11 wherein the plurality of remote devices comprise a first paging network wherein each of the plurality of remote devices emits corresponding audio alerts in response to the first paging signal to assist the user in determining the location of the plurality of remote devices.

19. (original) The mobile communication device of claim 11 wherein the plurality of remote devices comprise a plurality of paging networks including:

a first paging network wherein a first subset of the plurality of remote devices emits corresponding audio alerts in response to the first paging signal to assist the user in determining the location of the at least one of the plurality of remote devices in the first subset of the plurality of remote devices.

20. (currently amended) The mobile communication device of claim 19 wherein the plurality of paging networks further include:

a second paging network wherein a second subset of the plurality of remote devices emits corresponding audio alerts in response to a second paging signal generated by at least one of the plurality of ~~the short-range~~ wireless transceivers to assist the user in determining the location of the least one of the plurality of remote devices in the second subset of the plurality of remote devices.

REMARKS/CONCLUSION

Prior to the examination of the application, Applicant respectfully request that the Examiner review and approve the aforementioned added Claims. Applicant respectfully submits that the foregoing amendments are proper subject matter for an amendment.

No additional fees are believed to be due. In the event that additional fees are due or a credit for an overpayment is due, the Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. 50-2126.

The Examiner is invited to contact the undersigned by telephone or e-mail if the Examiner believes that such a communication would advance the prosecution of the present invention.

RESPECTFULLY SUBMITTED,

By: /Bruce Stuckman, Ph.D./Reg. No. 36693
Bruce E. Stuckman

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100 Congress Avenue, Suite 2000
Austin, TX 78701

Phone: 512-487-7241

E-mail: bstuckman@texaspatents.com

Electronic Acknowledgement Receipt	
EFS ID:	43004363
Application Number:	17036535
International Application Number:	
Confirmation Number:	7690
Title of Invention:	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK
First Named Inventor/Applicant Name:	John W. Howard
Customer Number:	34399
Filer:	Bruce Edward Stuckman/Debbie Watson
Filer Authorized By:	Bruce Edward Stuckman
Attorney Docket Number:	BIKN005C8
Receipt Date:	16-JUN-2021
Filing Date:	29-SEP-2020
Time Stamp:	14:48:36
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		BIKN005C8_PREAMD.pdf	128770	yes	7
			fc6dc184b9b412c9dbcd91656b99a715a3515155		

Multipart Description/PDF files in .zip description			
Document Description	Start	End	
Preliminary Amendment	1	1	
Claims	2	6	
Applicant Arguments/Remarks Made in an Amendment	7	7	

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/036,535	09/29/2020	John W. Howard	BIKN005C8	7690
34399	7590	09/21/2021	EXAMINER	
GARLICK & MARKISON 100 CONGRESS AVENUE SUITE 2000 AUSTIN, TX 78701			TAYLOR, BARRY W	
			ART UNIT	PAPER NUMBER
			2646	
			NOTIFICATION DATE	DELIVERY MODE
			09/21/2021	ELECTRONIC

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

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MMurdock@TEXASPATENTS.COM
bpierotti@texaspatents.com

DETAILED ACTION

Notice of Pre-AIA or AIA Status

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

Double Patenting

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 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); *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 nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file

provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(I)(1) - 706.02(I)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

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1. Claims 1-9 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-2, 4-9 and 12 of U.S. Patent No: 10,834,539 in view of Wheeler et al (2008/0062120) or Griffin et al (2014/0194148).

Regarding claim 1. Claim 1 of U.S. Patent 10,834,539 recites all the elements of claim 1 of the instant application with the exception of “wherein the display visually assists the user to determine the location of the at least one remote device via an arrow pointing in a direction to the at least one remote device”.

Wheeler teaches an arrow is used on mom’s phone enabling mom to quickly locate at least one remote device associated with a child (figure 4, 0040).

Griffin teaches using a directional arrow (item 430 figure 7, 0049) to point to a bluetooth tagged location (item 410 figure 7, 0049, 0035).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify claim 1 of U.S. Patent 10,834,539 use an arrow on a display as taught by Wheeler or Griffin in order to enable the user to quickly find/track a nearby device.

Claim 2 of the instant application is met by claim 2 of U.S. Patent 10,834,539.

Claim 3 of the instant application is met by claim 12 of U.S. Patent 10,834,539.

Claims 4-9 of the instant application is met by claims 4-9 of U.S. Patent 10,834,539.

2. Claims 10-20 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 10-16 and 19-20 of U.S. Patent No. 10,834,539.

Although the claims at issue are not identical, they are not patentably distinct from each other because of the following reasons.

Claim 10 of the instant application is “**anticipated**” by claim 10 of U.S. Patent No. 10,834,539. For example, the instant application is a **broader version** therefore is an obvious variant. Claim 10 of the instant application recites all the elements of claim 10 of U.S. Patent No. 10,834,539 with the **exception** of the remote device including “a non-touch screen” and “via short-range”. Nonetheless, the removal of said limitation from claim 10 of the instant application makes the claim a broader version of U.S. Patent No. 10,834,539. Therefore, since omission of an element and its function in a combination is an obvious expedient if the remaining elements perform the same functions as before (In re Karlsson (CCPA) 136 USPQ (1963), claim 10 of the instant application is not patentably distinct from claim 10 of U.S. Patent No. 10,834,539.

Claims 11-16 of the instant application are covered by claims 11-15 of U.S.

Patent No. 10,834,539.

Claim 17 of the instant application is met by claim 16 of U.S. Patent 10,834,539.

Claim 18 of the instant application is met by claim 19 of U.S. Patent 10,834,539.

Claims 19-20 of the instant application is met by claim 20 of U.S. Patent
10,834,539.

Conclusion

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

---(2007/0080933) Chen et al teaches an arrow is used on mom's phone enabling mom to quickly locate at least one remote device associated with a child (figure 9g).

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BARRY W TAYLOR whose telephone number is (571)272-7509. The examiner can normally be reached on Monday-Thursday: 7-5.

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

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on 571-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/BARRY W TAYLOR/
Primary Examiner, Art Unit 2646

<i>Notice of References Cited</i>	Application/Control No. 17/036,535		Applicant(s)/Patent Under Reexamination Howard et al.	
	Examiner BARRY W TAYLOR		Art Unit 2646	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20070080933-A1	04-2007	Chen; Elaine	G06F3/021	345/156
*	B	US-20080062120-A1	03-2008	Wheeler; Lorraine	G08B25/016	345/156
*	C	US-20140194148-A1	07-2014	GRIFFIN; Jason Tyler	H04W4/02	455/456.3
	D					
	E					
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FOREIGN PATENT DOCUMENTS

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	N					
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*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Search Notes</i> 	Application/Control No. 17/036,535	Applicant(s)/Patent Under Reexamination Howard et al.
	Examiner BARRY W TAYLOR	Art Unit 2646

CPC - Searched*		
Symbol	Date	Examiner
H04W 4/029, 4/024, 4/80, 64/00, 4/02	09/17/2021	BWT

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

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

Search Notes		
Search Notes	Date	Examiner
updated search for parent applications.	09/17/2021	BWT

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

/BARRY W TAYLOR/ Primary Examiner, Art Unit 2646	
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<i>Index of Claims</i> 	Application/Control No. 17/036,535	Applicant(s)/Patent Under Reexamination Howard et al.
	Examiner BARRY W TAYLOR	Art Unit 2646

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

CLAIMS										
☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		DATE								
Final	Original	09/17/2021								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
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	18	✓								
	19	✓								
	20	✓								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	27	(US-20070080933-\$ or US-20110081866-\$ or US-20080094185-\$ or US-20050065851-\$ or US-20030088469-\$ or US-20080320190-\$ or US-20090074051-\$ or US-20070141989-\$ or US-20090270036-\$ or US-20090240814-\$ or US-20090058663-\$ or US-20090249247-\$ or US-20070080934-\$ or US-20110215921-\$ or US-20060199538-\$ or US-20050200478-\$ or US-20070279245-\$ or US-20070049241-\$ or US-20080062120-\$ or US-20110159917-\$ or US-20100171612-\$).did. or (US-8078787-\$ or US-8174359-\$ or US-6681109-\$ or US-6400270-\$ or US-7453357-\$ or US-8736445-\$).did.	US-PGPUB; USPAT	OR	ON	2021/09/16 15:07
L2	1	"20210029506"	US-PGPUB; USPAT	OR	ON	2021/09/16 15:08
L3	0	2 and arrow	US-PGPUB; USPAT	OR	ON	2021/09/16 15:08
L4	1	2 and direction\$5	US-PGPUB; USPAT	OR	ON	2021/09/16 15:11
L5	10	1 and (direction)	US-PGPUB; USPAT	OR	ON	2021/09/16 15:13
L6	2	"20070080933"	US-PGPUB; USPAT	OR	ON	2021/09/16 15:21
L7	2	6 and (arrow or indicator)	US-PGPUB; USPAT	OR	ON	2021/09/16 15:21
L8	2	6 and ("9g")	US-PGPUB; USPAT	OR	ON	2021/09/16 15:22
L9	21	1 and (arrow or indication or indicator or indicat\$5)	US-PGPUB; USPAT	OR	ON	2021/09/16 15:27
L10	1	"20080062120"	US-PGPUB; USPAT	OR	ON	2021/09/16 15:46

L11	1	10 and "304"	US-PGPUB; USPAT	OR	ON	2021/09/16 15:46
L12	6	1 not 9	US-PGPUB; USPAT	OR	ON	2021/09/16 15:50
L13	3	"10834539"	US-PGPUB; USPAT	OR	ON	2021/09/16 15:59
L14	1	"10834539".pn.	US-PGPUB; USPAT	OR	ON	2021/09/16 16:00
L15	1	14 and long.clm.	US-PGPUB; USPAT	OR	ON	2021/09/16 16:00
L16	1	14 and distance.clm.	US-PGPUB; USPAT	OR	ON	2021/09/16 16:08
L17	87,052	(H04W4/02 OR H04W4/024 OR H04W4/029 OR H04W4/80 OR H04W64/00).CPC.	US-PGPUB; USPAT	OR	ON	2021/09/16 16:16
L18	3,456	17 and (direction same arrow)	US-PGPUB; USPAT	OR	ON	2021/09/16 16:17
L19	909	17 and ((display\$4 or visually) same (direction same arrow) same (location or position))	US-PGPUB; USPAT	OR	ON	2021/09/16 16:18
L20	253	19 and (@ad<="20100226" or @rlad<="20100226" or @pd<="20100226")	US-PGPUB; USPAT	OR	ON	2021/09/16 16:18

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Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17036535
	Filing Date	2020-09-29
	First Named Inventor	John W. Howard
	Art Unit	
	Examiner Name	
	Attorney Docket Number	BIKN005C8

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	4476469		1984-10-09	Lander	
	2	5146231		1992-09-08	Ghaem et al.	
	3	5343136		1994-08-30	Yamaguchi et al.	
	4	5448261		1995-09-05	Koike et al.	
	5	5497339		1996-03-05	Bernard	
	6	5545857		1996-08-13	Lee et al.	
	7	5675524		1997-10-07	Bernard	
	8	5714932		1998-02-03	Castellon et al.	

**INFORMATION DISCLOSURE
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9	5752205	1998-05-12	Dzung et al.
10	5857148	1999-01-05	Weissbappel et al.
11	5857157	1999-01-05	Shindo
12	6067018	2000-05-23	Skelton et al.
13	6172640	2001-01-09	Durst et al.
14	6286060	2001-09-04	DiGiorgio et al.
15	6400270	2002-06-04	Person
16	6446127	2002-09-03	Schuster et al.
17	6624752	2003-09-23	Klitgaard et al.
18	6625472	2003-09-23	Farazmandnia et al.
19	6774787	2004-08-10	Melbourne

**INFORMATION DISCLOSURE
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Attorney Docket Number	BIKN005C8

20	6889057		2005-05-03	Tordera et al.	
21	6980546		2005-12-27	Purpura et al.	
22	7034684		2006-04-25	Boman et al.	
23	7110789		2006-09-19	Curtiss et al.	
24	7266391		2007-09-04	Warren	
25	7453357		2008-11-18	Bernal-Silva et al.	
26	7647511		2010-01-12	Misawa	
27	7690994		2010-04-06	Dohda	
28	7714737		2007-08-08	James Morningstar	
29	7843427		2010-11-30	Ording et al.	
30	7912503		2011-03-22	Chang et al.	

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31	8000647	2011-08-16	Hill
32	8018726	2011-09-13	Friedlander et al.
33	8078787	2011-12-13	Lydon et al.
34	8174359	2008-04-30	Salvatore Veni
35	8253559	2012-08-28	Howard et al.
36	8253560	2012-08-28	Howard et al.
37	8254878	2012-08-28	Howard et al.
38	8285248	2012-10-09	Howard et al.
39	8422954	2013-04-16	Howard et al.
40	8588806	2013-11-19	Howard et al.
41	8750928	2014-06-10	Moran et al.

**INFORMATION DISCLOSURE
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42	9295024	2016-03-22	Howard et al.
43	10123161	2018-11-06	Howard et al.

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U.S.PATENT APPLICATION PUBLICATIONS

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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	20020103008	A1	2002-08-01	Rahn Michael D. et al.	
	2	20030052860	A1	2003-03-20	Park Hee-Seon et al.	
	3	20030162574	A1	2003-08-28	Fan	
	4	20030193399	A1	2003-10-16	Hum et al.	
	5	20040097127	A1	2004-05-20	Smith et al.	
	6	20040125080	A1	2004-07-01	Ha et al.	
	7	20040167820	A1	2004-08-26	Melick et al.	

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8	20040204074	A1	2004-10-14	Desai	
9	20050065851	A1	2005-03-24	Aronoff Jeffrey M. et al.	
10	20050186968	A1	2005-08-25	Durst et al.	
11	20050231361	A1	2005-10-20	Godbey	
12	20060012488	A1	2006-01-19	Hilbrink et al.	
13	20060152487	A1	2006-07-13	Grunnet-Jepsen et al.	
14	20060152488	A1	2006-07-13	Salsman et al.	
15	20060152489	A1	2006-07-13	Sweetser et al.	
16	20060154642	A1	2006-07-13	Scannell	
17	20060259942	A1	2006-11-16	Toyama et al.	
18	20070005840	A1	2007-01-04	Cheng et al.	

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Attorney Docket Number	BIKN005C8

19	20070013526	A1	2007-01-18	Kazdin et al.
20	20070021148	A1	2007-01-25	Mahini
21	20070038785	A1	2007-02-15	Varanda et al.
22	20070052177	A1	2007-03-08	Ikeda et al.
23	20070060228	A1	2007-03-15	Akasaka et al.
24	20070060384	A1	2007-03-15	Dohta
25	20070066394	A1	2007-03-22	Ikeda et al.
26	20070080933	A1	2007-04-12	Chen et al.
27	20070130592	A1	2007-06-07	Haeusel
28	20070136264	A1	2007-06-14	Tran
29	20070279245	A1	2007-12-06	Sholem

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30	20080001814	A1	2008-01-03	Durst et al.	
31	20080012824	A1	2008-01-17	Grunnet-Jepsen et al.	
32	20080032713	A1	2008-02-07	Yang	
33	20080052750	A1	2008-02-28	Grunnet-Jepsen et al.	
34	20080062120	A1	2008-03-13	Wheeler et al.	
35	20080166968	A1	2008-07-10	Tang et al.	
36	20080278445	A1	2008-11-13	Sweetser et al.	
37	20090074051	A1	2009-03-19	Manapragada et al.	
38	20090217335	A1	2009-08-27	Wong et al.	
39	20090237209	A1	2009-09-24	Seal et al.	
40	20090240814	A1	2009-09-24	Brubacher et al.	

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41	20090249247	A1	2009-10-01	Tseng et al.	
42	20090284664	A1	2009-11-19	Barry et al.	
43	20110210849	A1	2011-09-01	Howard et al.	
44	20110210959	A1	2011-09-01	Howard et al.	
45	20110212699	A1	2011-09-01	Howard et al.	
46	20110212702	A1	2011-09-01	Howard et al.	
47	20110215921	A1	2011-09-08	Ben Ayed et al.	
48	20120077439	A1	2012-03-29	Howard et al.	
49	20160227362	A1	2016-08-04	Howard et al.	
50	20180192236	A1	2018-07-05	Howard et al.	
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	1	International Preliminary Report on Patentability; PCT Application No. PCT/US11/24923; February 10, 2012, 11 pages	
	2	International Search Report, Application Number PCT/US2011/024923, April 19, 2011, 11 Pages	

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Examiner Signature	/BARRY W TAYLOR/	Date Considered	09/16/2021
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Art Unit	
Examiner Name	
Attorney Docket Number	BIKN005C8

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Bruce E. Stuckman, Ph.D./	Date (YYYY-MM-DD)	2020-09-29
Name/Print	Bruce E. Stuckman, Ph.D.	Registration Number	36693

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

Determining device position through minimal user input

J McNaughton, T Crick, A Hatch - Human-centric ..., 2017 - hci-journal.springeropen.com
 ... Sciences Cover Image. Download PDF. Research; Open Access; Published: 18 December 2017. **Determining device** position through minimal user input. James McNaughton 1 , ; Tom Crick 2 &; Andrew Hatch 1. Human-centric Computing ...

☆ 55 Cited by 9 Related articles All 8 versions

A comparison of ray **pointing** techniques for very large displays

R Jota, M Nacenta, J Jorge, S Carpendale ... - 2009 - prism.ucalgary.ca
 ... We define generic ray **pointing** as any cursor-movement technique that **determines** the position of ... the position and orientation of a **pointing device**, the ray is **determined** through two ... some basic demographic information, was tested for eye dominance (to **determine** the dominant ...

☆ 55 Cited by 128 Related articles All 12 versions

A resource-adaptive mobile navigation system

J Baus, A Krüger, W Wahlster - ... of the 7th international conference on ..., 2002 - dl.acm.org
 ... **With** the help of domain knowledge and a user model, the optimal route is **determined** and forwarded to ... the one hand the sensors' readings are not as reliable and depend on the user's **location** ... probability w_i , which can be computed as follows: First of all, we **determine** the abso ...

☆ 55 Cited by 379 Related articles All 14 versions

Wedge: clutter-free visualization of off-screen **locations**

S Gustafson, P Baudisch, C Gutwin, P Irani - Proceedings of the SIGCHI ..., 2008 - dl.acm.org
 ... Its shape and size are **determined** by the intersection between the two beams emerging ... is important for tasks not involving absolute distances, such as **determining** which of ... THE WEDGE LAYOUT ALGORITHM The layout algorithm **determines** an acceptable layout of wedges by ...

☆ 55 Cited by 241 Related articles All 22 versions

3D **location-pointing** as a navigation aid in Virtual Environments

L Chittaro, S Burigat - Proceedings of the working conference on ..., 2004 - dl.acm.org
 ... a novel navigation aid that aims at allowing users to easily **locate** objects and ... navigation aids provide users **with** visual information they can use to **determine** their current ... be noted here that our experiment compares a new navigation aid, 3D **location-pointing** with the possibility ...

☆ 55 Cited by 130 Related articles All 7 versions

Visualizing references to off-screen content on mobile **devices**: A comparison of **Arrows**, **Wedge**, and Overview+ Detail

S Burigat, L Chittaro - Interacting with Computers, 2011 - academic.oup.com
 ... proposed as a way to provide the user **with** appropriate information to **locate** relevant objects ... part of the two legs of the triangle are displayed on screen to convey **location** information ... Once users have estimated the distance of an object, they can mentally **determine** its position ...

☆ 55 Cited by 62 Related articles All 11 versions

Presenting route instructions on mobile **devices**

C Kray, C Eiting, K Laakso, V Coors - Proceedings of the 8th ..., 2003 - dl.acm.org
 ... The paper concludes **with** guidelines that help to **determine** which presentation to choose for a ... the user's current position is not only a key factor in **determining** what situation ... In a first step, the origin and target **location** (and possibly intermediate **locations**) have to be **determined** ...

☆ 55 Cited by 284 Related articles All 11 versions

Halo: a technique for visualizing off-screen objects

P Baudisch, R Rosenholtz - Proceedings of the SIGCHI conference on ..., 2003 - dl.acm.org
 ... An intense aura indicates a lamp **located** nearby; a weaker aura indicates a more distant lamp ... For the **Locate** task, we measured error as the Euclidian distance between the subject's **location** estimate and the actual **location** of the off-screen **location** ...

☆ 55 Cited by 554 Related articles All 25 versions

Landmark-based pedestrian navigation from collections of geotagged photos

H Hila, R Vedantham, G Cuellar, A Liu... - Proceedings of the 7th ..., 2008 - dl.acm.org
 ... However, the video see-through AR system was **determined** too costly for mobile **devices** and the ... These two **locations** are used to **determine** roughly which **direction** the camera is **pointing** ... This method of **determining** camera **direction** has difficulties **with** very large landmarks (for ...

☆ 55 Cited by 144 Related articles All 4 versions

The role of a self-reference system in spatial navigation

MJ Sholl - International Conference on Spatial Information Theory, 2001 - Springer

... rather than geocentric coordinates, the participant rotated in place a randomly **determined** number of ... 5. The laboratory is **located** at the intersection of the **arrows** depicted on the ... perspective-taking trial, participants imagine themselves at a different reference **location**, so prior to ...

☆  Cited by 108 Related articles All 10 versions 

Bibliographic Data

Application No: 17/036,535

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☒ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /BARRY W TAYLOR/

Examiner's Signature

BWT

Initials

Title:

WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
09/29/2020	455	2646	BIKN005C8
RULE			

APPLICANTS

THL Holding Company, LLC, Austin, TX,

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John W. Howard, Cedar Park, TX, UNITED STATES

Richard Cutler, Round Rock, TX, UNITED STATES

Robert M. Kennard, Dallas, TX, UNITED STATES

CONTINUING DATA

This application is a CON of 16837481 04/01/2020 PAT 10834539

16837481 is a CON of 16540665 08/14/2019 PAT 10645537

16540665 is a CON of 16150498 10/03/2018 PAT 10440501

16150498 is a CON of 15910654 03/02/2018 PAT 10123161

15910654 is a CON of 15000903 01/19/2016 PAT 9942700

15000903 is a CON of 14281077 05/19/2014 PAT 9295024

14281077 is a CON of 14044202 10/02/2013 PAT 8768381

14044202 is a CON of 12713346 02/26/2010 PAT 8588806

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

10/19/2020

** SMALL ENTITY **

STATE OR COUNTRY

UNITED STATES

ADDRESS

GARLICK & MARKISON

100 CONGRESS AVENUE
SUITE 2000
AUSTIN, TX 78701
UNITED STATES

FILING FEE RECEIVED

\$785

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 17/036,535		Filing Date 09/29/2020		☐ To be Mailed	
ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO									
APPLICATION AS FILED - PART I									
	(Column 1)	(Column 2)							
FOR	NUMBER FILED	NUMBER EXTRA			RATE (\$)			FEE (\$)	
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(j))	minus 20 =	*			x \$50 =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*			x \$230 =				
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))									
* If the difference in column 1 is less than zero, enter "0" in column 2.							TOTAL		
APPLICATION AS AMENDED - PART II									
	(Column 1)		(Column 2)	(Column 3)					
AMENDMENT	11/09/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE (\$)		ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(j))	* 20	Minus	** 20	= 0		x \$ 50 =		0
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x \$ 240 =		0
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE	0		
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE (\$)		ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(j))	*	Minus	**	=		x \$ 0 =		
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x \$ 0 =		
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE			
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.						LIE			
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".						/ANTJUAN M RIVERA/			
*** 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.

Certification under 37 C.F.R. §1.8

Date of Mailing or Transmission: 11/9/2021

I hereby certify that I have caused the document indicated herein on the date indicated above to be transmitted via the Office electronic filing system in accordance with 37 C.F.R. §1.6(a)(4).

BY: /Debbie Watson/
Signature

Name: Debbie Watson
Typed Name

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

1st Named Inventor:	John W. Howard	Examiner:	TAYLOR, BARRY W
Application No.:	17/036,535	Art Unit:	2646
Filing Date:	29 Sep 2020	Docket No.:	BIKN005C8
Confirmation No.:	7690		
Title:	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		

RESPONSE TO NON-FINAL OFFICE ACTION

Date: 11/9/2021

United States Patent and Trademark Office
P. O. Box 1450
Alexandria, VA 22313-1450

In response to an office action dated September 21, 2021 regarding the above-captioned patent application, the Applicant respectfully submits the following amendment and response, which is being filed within three (3) months of the mailing date thereof.

The three (3) month due date for responding to the office action falls on December 21, 2021, and the Applicant respectfully asserts that this amendment and response being filed on or before December 21, 2021 is timely filed in accordance with M.P.E.P. §710.05, 35 U.S.C. §21, and 37 C.F.R. §1.7.

AMENDMENT TO THE CLAIMS

1. (previously presented) A mobile communication device comprising:

a plurality of wireless transceivers;

a memory that stores operational instructions;

a touch screen; and

a processor coupled to the memory and to the touch screen, wherein the processor executes the operational instructions that cause the processor to present a graphical user interface via the touch screen and wherein the processor operates in association with the graphical user interface to:

generate a pairing signal in response to a first indication from a user to pair the mobile communication device to at least one remote device, the at least one remote device, wherein the at least one of the plurality of wireless transceivers, responds to the pairing signal generated by the graphical user interface by communicating RF signals to pair the mobile communication device to the at least one remote device;

generate a first location request signal in response to a second indication from the user to locate the at least one remote device, wherein at least one of the plurality of wireless transceivers transmits a first RF signal to the at least one remote device in response to the first location request signal; and

present a display that visually assists the user to determine a location of the at least one remote device, wherein at least one of the plurality of wireless transceivers receives a second RF signal from the at least one remote device that facilitates determining the location of the at least one remote device, wherein the display visually assists the user to determine the location of the at least one remote device via an arrow pointing in a direction to the at least one remote device.

2. (previously presented) The mobile communication device of claim 1 wherein the display visually assists the user further based on a signal strength of the second RF signal from the at least one remote device.
3. (previously presented) The mobile communication device of claim 1 wherein the display visually assists the user further by displaying an indication a distance to the at least one remote device.
4. (previously presented) The mobile communication device of claim 1 wherein the mobile communication device is a handheld wireless communication device.
5. (previously presented) The mobile communication device of claim 4 wherein the plurality of wireless transceivers includes a long range transceiver for sending and receiving telephone calls via a telephony network and further for communicating Internet data.
6. (original) The mobile communication device of claim 1, wherein the at least one remote device emits a detectable alert signal in response to the first RF signal to further assist the user in determining the location of the at least one remote device.
7. (original) The mobile communication device of claim 1 wherein the at least one remote device includes a plurality of remote devices and wherein the graphical user interface allows selection of a particular one of the plurality of remote devices to be located.
8. (original) The mobile communication device of claim 7 wherein the display visually indicates the selection of the particular one of the plurality of remote devices to be located.
9. (original) The mobile communication device of claim 7 wherein the plurality of remote devices comprise a first paging network wherein each of the plurality of remote devices emits corresponding detectable alert signals in response to the first RF signal to assist the user in determining the location of the plurality of remote devices.

10. (previously presented) A mobile communication device comprising:
 - a plurality of wireless transceivers;
 - a touchscreen;
 - a memory that stores operational instructions; and
 - a processor configured to execute operational instructions, wherein the operational instructions cause the processor to present a graphical user interface via the touch screen and wherein the processor operates in association with the graphical user interface to:
 - respond to a first user interaction with the touchscreen by pairing, via at least one of the plurality of wireless transceivers, the mobile communication device with at least one remote device, the at least one remote device including a sound emitter configured to generate an audio alert;
 - facilitates, via a second interaction with the touchscreen, selection of the at least one remote device from a plurality of remote devices;
 - responds to a third interaction with the touchscreen by transmitting, via at least one of the plurality of wireless transceivers, a first paging signal to the at least one remote device, wherein the first paging signal causes the at least one remote device to generate the audio alert; and
 - present a display on the touchscreen, based on a signal received via at least one of the plurality of wireless transceivers from the at least one remote device, wherein the display visually assists a user to determine a location of the at least one remote device.
11. (previously presented) The mobile communication device of claim 10 wherein the display visually assists the user based on a signal strength of the signal received via at least one of the plurality of wireless transceivers from the at least one remote device.
12. (original) The mobile communication device of claim 10 wherein the display visually assists the user in determining a distance to the at least one remote device.

13. (previously presented) The mobile communication device of claim 10 wherein the display visually assists the user by displaying an indication of a signal strength of the signal received via at least one of the plurality of wireless transceivers from the at least one remote device.

14. (original) The mobile communication device of claim 10 wherein the mobile communication device is a handheld wireless communication device.

15. (previously presented) The mobile communication device of claim 14 wherein the plurality of wireless transceivers includes a long range transceiver for sending and receiving telephone calls via a telephony network and further for communicating Internet data.

16. (previously presented) The mobile communication device of claim 14 the plurality of wireless transceivers includes a long range transceiver for communicating Internet data.

17. (original) The mobile communication device of claim 10 wherein the audio alert further assists the user in determining the location of the at least one remote device.

18. (original) The mobile communication device of claim 11 wherein the plurality of remote devices comprise a first paging network wherein each of the plurality of remote devices emits corresponding audio alerts in response to the first paging signal to assist the user in determining the location of the plurality of remote devices.

19. (original) The mobile communication device of claim 11 wherein the plurality of remote devices comprise a plurality of paging networks including:

a first paging network wherein a first subset of the plurality of remote devices emits corresponding audio alerts in response to the first paging signal to assist the user in determining the location of the at least one of the plurality of remote devices in the first subset of the plurality of remote devices.

20. (previously presented) The mobile communication device of claim 19 wherein the plurality of paging networks further include:

a second paging network wherein a second subset of the plurality of remote devices emits corresponding audio alerts in response to a second paging signal generated by at least one of the plurality of wireless transceivers to assist the user in determining the location of the least one of the plurality of remote devices in the second subset of the plurality of remote devices.

REMARKS/ARGUMENTS

1. In the above referenced Office Action:
 - a. Status of the claims.
 - Claims 1-20 are pending;
 - Claims 1-20 are rejected.
 - b. Claims 1-9 have been rejected on the ground of non-statutory double patenting as being unpatentable over claims 1-2, 4-9 and 12 of (U.S. Patent No. 10,834,539) in view of wheeler et al. (U.S. Pub. No. 2008/0062120) or Griffin et al. (U.S. Pub. No. 2014/0194148);
 - c. Claims 10-20 have been rejected on the ground of non-statutory double patenting as being unpatentable over claims 10-16 and 19-20 of (U.S. Patent No. 10,834,539).

The rejections and objections have been traversed. Applicant respectfully requests reconsideration of the allowability of claims 1-20.

2. Claims 1-9 have been rejected on the ground of non-statutory double patenting as being unpatentable over claims 1-2, 4-9 and 12 of (U.S. Patent No. 10,834,539) in view of wheeler et al. (U.S. Pub. No. 2008/0062120) or Griffin et al. (U.S. Pub. No. 2014/0194148). Claims 10-20 have been rejected on the ground of non-statutory double patenting as being unpatentable over claims 10-16 and 19-20 of (U.S. Patent No. 10,834,539). A terminal disclaimer is concurrently filed herewith along with a credit card payment of the associated fee. The Applicant respectfully requests that this rejection be withdrawn.

CONCLUSION

For the foregoing reasons, the Applicant believes that claims 1-20 are in condition for allowance and respectfully requests that they be passed to allowance.

The Applicant hereby rescinds any disclaimer of claim scope, if made, in any parent application and/or any predecessor application in relation to the instant application. The Examiner is advised that any such previous disclaimer, if made, and any prior art that it was made to avoid, may need to be revisited. Further, the claims in the instant application may be broader than those of any parent application and/or any predecessor application. Moreover, the Examiner should also be advised that any disclaimer made in the instant application should not be read into or against any parent application and/or any predecessor application.

A terminal disclaimer is concurrently filed herewith along with a credit card payment of the associated fee. No additional fees are believed to be due. In the event that additional fees are due or a credit for an overpayment is due, the Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. 50-2126.

The Examiner is invited to contact the undersigned by e-mail if the Examiner believes that such a communication would advance the prosecution of the present invention.

RESPECTFULLY SUBMITTED,

By: /Bruce Stuckman, Ph.D./Reg. No. 36693
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

1st Named Inventor:	John W. Howard	Examiner:	TAYLOR, BARRY W
Application No.:	17/036,535	Art Unit:	2646
Filing Date:	29 Sep 2020	Docket No.:	BIKN005C8
Confirmation No.:	7690		
Title:	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		

**AUTHORIZATION FOR INTERNET COMMUNICATIONS IN A PATENT
APPLICATION OR REQUEST TO WITHDRAW AUTHORIZATION FOR INTERNET
COMMUNICATIONS**

I. To authorize permission for Internet Communications.

Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with the undersigned and practitioners in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via video conferencing, instant messaging, or electronic mail. I understand that a copy of these communications will be made of record in the application file. (MPEP 502.03).

I am the attorney or agent of record. Registration No. 36693.

RESPECTFULLY SUBMITTED,

By: /Bruce Stuckman, Ph.D./Reg. No. 36693
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Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

Approved for use through 11/30/2020. OMB 0651-0031

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17036535
	Filing Date	2020-09-29
	First Named Inventor	John W. Howard
	Art Unit	2646
	Examiner Name	TAYLOR, BARRY W
	Attorney Docket Number	BIKN005C8

U.S.PATENTS							Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	
	1	5939981		1999-08-17	Renney		
	2	6995654		2006-02-07	Nysen		
	3	7330122		2008-02-12	Derrick et al.		
	4	7340260		2008-03-04	McAlexander		
	5	7375632		2008-05-20	Sebanc		
If you wish to add additional U.S. Patent citation information please click the Add button.							Add
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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	
	1	20040009748	A1	2004-01-15	Heinonen et al.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17036535
	Filing Date		2020-09-29
	First Named Inventor	John W. Howard	
	Art Unit	2646	
	Examiner Name	TAYLOR, BARRY W	
	Attorney Docket Number	BIKN005C8	

	2	20070077883	A1	2007-04-05	Childers et al.	
	3	20070194925	A1	2007-08-23	Karr	
	4	20080218358	A1	2008-09-11	Derrick et al.	
	5	20090207014	A1	2009-08-20	AYED	

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

FOREIGN PATENT DOCUMENTS

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NON-PATENT LITERATURE DOCUMENTS

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

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17036535
	Filing Date	2020-09-29
	First Named Inventor	John W. Howard
	Art Unit	2646
	Examiner Name	TAYLOR, BARRY W
	Attorney Docket Number	BIKN005C8

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17036535
	Filing Date	2020-09-29
	First Named Inventor	John W. Howard
	Art Unit	2646
	Examiner Name	TAYLOR, BARRY W
	Attorney Docket Number	BIKN005C8

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Bruce E. Stuckman, Ph.D./	Date (YYYY-MM-DD)	2021-11-09
Name/Print	Bruce E. Stuckman, Ph.D.	Registration Number	36693

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

Privacy Act Statement

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

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

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

Electronic Patent Application Fee Transmittal				
Application Number:		17036535		
Filing Date:		29-Sep-2020		
Title of Invention:		WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		
First Named Inventor/Applicant Name:		John W. Howard		
Filer:		Bruce Edward Stuckman/Debbie Watson		
Attorney Docket Number:		BIKN005C8		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	2806	1	130	130
Total in USD (\$)				130

Electronic Acknowledgement Receipt	
EFS ID:	44241898
Application Number:	17036535
International Application Number:	
Confirmation Number:	7690
Title of Invention:	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK
First Named Inventor/Applicant Name:	John W. Howard
Customer Number:	34399
Filer:	Bruce Edward Stuckman/Debbie Watson
Filer Authorized By:	Bruce Edward Stuckman
Attorney Docket Number:	BIKN005C8
Receipt Date:	09-NOV-2021
Filing Date:	29-SEP-2020
Time Stamp:	16:57:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$130
RAM confirmation Number	E2021A9G57573005
Deposit Account	502126
Authorized User	Debbie Watson
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.21 (Miscellaneous fees and charges) 37 CFR 1.20 (Post Issuance fees)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		BIKN005C8_AMD.pdf	123837	yes	9
			ec0319b714265b6bb38c1227604329268896cdce		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	6	
	Applicant Arguments/Remarks Made in an Amendment		7	8	
	Internet Communications Authorized		9	9	
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	BIKN005C8_IDS.pdf	1034414	no	5
			26f22c276381f70e4c4ee67f1d49d4085069b6f6		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	38290	no	2
			d754f3134736ddb680bb78c4cf6664be0fdadeffe		
Warnings:					
Information:					
Total Files Size (in bytes):			1196541		

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.

Doc Code: DIST.E.FILE Document Description: Electronic Terminal Disclaimer - Filed		PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce	
Electronic Petition Request	TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT		
Application Number	17036535		
Filing Date	29-Sep-2020		
First Named Inventor	John Howard		
Attorney Docket Number	BIKN005C8		
Title of Invention	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		
☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action ☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.			
Owner		Percent Interest	
THL HOLDING COMPANY, LLC		100%	
The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s) 10834539 as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns. In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later: - expires for failure to pay a maintenance fee; - is held unenforceable; - is found invalid by a court of competent jurisdiction; - is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321; - has all claims canceled by a reexamination certificate; - is reissued; or - is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer. ☒ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.			

☐ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.	
Applicant claims the following fee status: ☒ Small Entity ☐ Micro Entity ☐ Regular Undiscounted	
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.	
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ☒ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application Registration Number <u>36693</u> ☐ A sole inventor ☐ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ☐ A joint inventor; all of whom are signing this request	
Signature	/Bruce E. Stuckman, Ph.D./
Name	Bruce E. Stuckman, Ph.D.

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
 Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal				
Application Number:		17036535		
Filing Date:		29-Sep-2020		
Title of Invention:		WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		
First Named Inventor/Applicant Name:		John W. Howard		
Filer:		Bruce Edward Stuckman/Debbie Watson		
Attorney Docket Number:		BIKN005C8		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	2814	1	170	170
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				170

Doc Code: DISQ.E.FILE

Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 17036535

Filing Date: 29-Sep-2020

Applicant/Patent under Reexamination: Howard

Electronic Terminal Disclaimer filed on November 9, 2021

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt	
EFS ID:	44241927
Application Number:	17036535
International Application Number:	
Confirmation Number:	7690
Title of Invention:	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK
First Named Inventor/Applicant Name:	John W. Howard
Customer Number:	34399
Filer:	Bruce Edward Stuckman/Debbie Watson
Filer Authorized By:	Bruce Edward Stuckman
Attorney Docket Number:	BIKN005C8
Receipt Date:	09-NOV-2021
Filing Date:	29-SEP-2020
Time Stamp:	17:03:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$170
RAM confirmation Number	E2021A9H03423137
Deposit Account	502126
Authorized User	Debbie Watson
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.21 (Miscellaneous fees and charges) 37 CFR 1.20 (Post Issuance fees)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer-Filed (Electronic)	eTerminal-Disclaimer.pdf	41362	no	2
			6c285daab12187fce12e4f72afa79cf5f0c1f474		

Warnings:**Information:**

2	Fee Worksheet (SB06)	fee-info.pdf	38473	no	2
			851def3597240d3c2e35e93114caf53b5de7d77e		

Warnings:**Information:**

Total Files Size (in bytes):	79835
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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



UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

34399 7590 01/10/2022
GARLICK & MARKISON
100 CONGRESS AVENUE
SUITE 2000
AUSTIN, TX 78701

EXAMINER

TAYLOR, BARRY W

ART UNIT

PAPER NUMBER

2646

DATE MAILED: 01/10/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/036,535	09/29/2020	John W. Howard	BIKN005C8	7690

TITLE OF INVENTION: WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$600	\$0.00	\$0.00	\$600	04/11/2022

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

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

HOW TO REPLY TO THIS NOTICE:

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

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

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

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

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

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

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

PART B - FEE(S) TRANSMITTAL

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

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

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

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)

34399 7590 01/10/2022
GARLICK & MARKISON
100 CONGRESS AVENUE
SUITE 2000
AUSTIN, TX 78701

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

Certificate of Mailing or Transmission

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

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/036,535	09/29/2020	John W. Howard	BIKN005C8	7690

TITLE OF INVENTION: WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$600	\$0.00	\$0.00	\$600	04/11/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
TAYLOR, BARRY W	2646	455-457000

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/AIA/122 or PTO/SB/122) attached.

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

2. For printing on the patent front page, list

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

1 _____

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

2 _____

3 _____

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

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

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

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

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

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

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

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

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

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

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

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

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

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/036,535	09/29/2020	John W. Howard	BIKN005C8	7690
34399	7590	01/10/2022	EXAMINER	
GARLICK & MARKISON			TAYLOR, BARRY W	
100 CONGRESS AVENUE			ART UNIT	
SUITE 2000			PAPER NUMBER	
AUSTIN, TX 78701			2646	

DATE MAILED: 01/10/2022

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

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

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

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

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

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

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.** Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

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

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

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

Notice of Allowability	Application No. 17/036,535	Applicant(s) Howard et al.	
	Examiner BARRY W TAYLOR	Art Unit 2646	AIA (FITF) Status No

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

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

1. ☒ This communication is responsive to T.D. 11/9/2021.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3. ☒ The allowed claim(s) is/are 1-20 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

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

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

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

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

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

/BARRY W TAYLOR/ Primary Examiner, Art Unit 2646	/BARRY W TAYLOR/ Primary Examiner, Art Unit 2646
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DETAILED ACTION

Notice of Pre-AIA or AIA Status

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

Information Disclosure Statement

1. The information disclosure statement dated 11/9/2021 has been considered by the Examiner.

Allowable Subject Matter

2. Claims 1-20 are allowed.
3. The following is an examiner's statement of reasons for allowance.

Regarding claims 1-20. Applicant in filing the Terminal Disclaimer (11/9/2021) has overcome the non-statutory double patent rejection.

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

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

---(2008/0062120) Wheeler et al teaches an arrow is used on mom's phone enabling mom to quickly locate at least one remote device associated with a child (figure 4, 0040).

---(2014/0194148) Griffin et al teaches using a directional arrow (item 430 figure 7, 0049, 0035) to point to a bluetooth tagged location.

---(2007/0080933) Chen et al teaches displaying an arrow on the display to indicate the direction to a remote device (figure 9g).

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BARRY W TAYLOR whose telephone number is (571)272-7509. The examiner can normally be reached on Monday-Thursday: 7-5.

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

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on 571-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

Application/Control Number: 17/036,535
Art Unit: 2646

Page 4

/BARRY W TAYLOR/
Primary Examiner, Art Unit 2646

<i>Notice of References Cited</i>	Application/Control No. 17/036,535		Applicant(s)/Patent Under Reexamination Howard et al.	
	Examiner BARRY W TAYLOR		Art Unit 2646	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20070080933-A1	04-2007	Chen; Elaine	G06F1/1632	345/156
*	B	US-20080062120-A1	03-2008	Wheeler; Lorraine	G08B25/016	345/156
*	C	US-20140194148-A1	07-2014	GRIFFIN; Jason Tyler	H04W4/02	455/456.3
	D					
	E					
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	I					
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	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
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	Q					
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	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.

<i>Search Notes</i> 	Application/Control No. 17/036,535	Applicant(s)/Patent Under Reexamination Howard et al.
	Examiner BARRY W TAYLOR	Art Unit 2646

CPC - Searched*		
Symbol	Date	Examiner
H04W 4/029, 4/024, 4/80, 64/00, 4/02	09/17/2021	BWT

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

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

Search Notes		
Search Notes	Date	Examiner
updated search for parent applications.	09/17/2021	BWT
updated search.	11/17/2021	BWT

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
H04W	4/029, 4/024, 4/80, 64/00, 4/02	11/17/2021	BWT

/BARRY W TAYLOR/ Primary Examiner, Art Unit 2646	
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Issue Classification 	Application/Control No. 17/036,535	Applicant(s)/Patent Under Reexamination Howard et al.
	Examiner BARRY W TAYLOR	Art Unit 2646

CPC						
Symbol					Type	Version
H04W	/	4	/	029	F	2018-02-01
H04W	/	4	/	80	I	2018-02-01
H04W	/	4	/	024	I	2018-02-01
G08B	/	13	/	1427	I	2013-01-01
G08B	/	21	/	0244	I	2013-01-01
G08B	/	21	/	0247	I	2013-01-01
G08B	/	21	/	0269	I	2013-01-01
G08B	/	21	/	0272	I	2013-01-01
G08B	/	21	/	0277	I	2013-01-01
G08B	/	25	/	016	I	2013-01-01
H04W	/	4	/	02	I	2013-01-01
H04W	/	4	/	20	I	2013-01-01
H04W	/	64	/	00	I	2013-01-01
H04L	/	41	/	0618	I	2013-01-01

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version
/				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/BARRY W TAYLOR/ Primary Examiner, Art Unit 2646	22 December 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	15

U.S. Patent and Trademark Office

Part of Paper No.: 20211117

Issue Classification 	Application/Control No. 17/036,535	Applicant(s)/Patent Under Reexamination Howard et al.
	Examiner BARRY W TAYLOR	Art Unit 2646

INTERNATIONAL CLASSIFICATION			
CLAIMED			
H04W		4	029
NON-CLAIMED			

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

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

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 20	
/BARRY W TAYLOR/ Primary Examiner, Art Unit 2646 (Primary Examiner) _____ (Date) 22 December 2021		O.G. Print Claim(s) 1	O.G. Print Figure 15

Issue Classification 	Application/Control No. 17/036,535	Applicant(s)/Patent Under Reexamination Howard et al.
	Examiner BARRY W TAYLOR	Art Unit 2646

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	10	10	13	19										
2	2	11	11	14	20										
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5	5	17	14												
6	6	18	15												
7	7	19	16												
8	8	20	17												
9	9	12	18												

NONE	Total Claims Allowed:	
(Assistant Examiner)	(Date)	20
/BARRY W TAYLOR/ Primary Examiner, Art Unit 2646	22 December 2021	O.G. Print Claim(s)
(Primary Examiner)	(Date)	1
		O.G. Print Figure
		15

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

Approved for use through 11/30/2020. OMB 0651-0031

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17036535
	Filing Date	2020-09-29
	First Named Inventor	John W. Howard
	Art Unit	2646
	Examiner Name	TAYLOR, BARRY W
	Attorney Docket Number	BIKN005C8

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5939981		1999-08-17	Renney	
	2	6995654		2006-02-07	Nysen	
	3	7330122		2008-02-12	Derrick et al.	
	4	7340260		2008-03-04	McAlexander	
	5	7375632		2008-05-20	Sebanc	
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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20040009748	A1	2004-01-15	Heinonen et al.	

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
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Examiner Name	TAYLOR, BARRY W
Attorney Docket Number	BIKN005C8

2	20070077883	A1	2007-04-05	Childers et al.
3	20070194925	A1	2007-08-23	Karr
4	20080218358	A1	2008-09-11	Derrick et al.
5	20090207014	A1	2009-08-20	AYED

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EXAMINER SIGNATURE

Examiner Signature	/BARRY W TAYLOR/	Date Considered	11/17/2021
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17036535
	Filing Date	2020-09-29
	First Named Inventor	John W. Howard
	Art Unit	2646
	Examiner Name	TAYLOR, BARRY W
	Attorney Docket Number	BIKN005C8

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

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

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Filing Date	2020-09-29
First Named Inventor	John W. Howard
Art Unit	2646
Examiner Name	TAYLOR, BARRY W
Attorney Docket Number	BIKN005C8

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Bruce E. Stuckman, Ph.D./	Date (YYYY-MM-DD)	2021-11-09
Name/Print	Bruce E. Stuckman, Ph.D.	Registration Number	36693

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

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

An RSSI gradient-based AP localization algorithm

F Zhao, H Luo, H Geng, Q Sun - China Communications, 2014 - [ieeexplore.ieee.org](#)

... **direction** illustrates the **direction** in which the **RSSI** increases most rapidly, which approximately corresponds to the transmitting **direction** of an ... From it, an interesting observation can be made that while arrows are all **pointing** to different **directions**, there seems to be a clustering ...

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Practical beamforming based on RSSI measurements using off-the-shelf wireless clients

S Lakshmanan, K Sunderesan, S Rangarajan... - Proceedings of the 9th ..., 2009 - [dl.acm.org](#)

... **used** predominantly in outdoor scenarios and their transmission pattern is pre-set to point a main lobe (providing high gain) in the **direction** ... Consequently, the resulting beam pattern may not have the single main lobe structure (**pointing** in the **direction** of the Rx) of a directional ...

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RSSI-based indoor positioning using diversity and Inertial Navigation

A Fink, H Beikirch, M Voß... - ... Conference on Indoor ..., 2010 - [ieeexplore.ieee.org](#)

... When designing an **RSSI**-based indoor location-sensing system it is recommended to concentrate on the proper acquisition of the **RSSI** ... the z-axis of the BN is **pointing** in the opposite **direction** of the gravity vector. Therefore a strapdown IMU with two accelerometers (x- and y-...

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Rssi-based euclidean distance algorithm for indoor positioning adapted for the use in dynamically changing wlan environments and multi-level buildings

S Gansemer, U Großmann... - ... conference on indoor ..., 2010 - [ieeexplore.ieee.org](#)

... During positioning phase 20 successive measurements of **RSSI**-tuples are carried out in one randomly chosen **direction** at 78 randomly ... As **pointed** out earlier the adapted Euclidean distance algorithm needs 4 parameters (NBSmin, TP1, TP2, TP3). The meaning of the four ...

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Hybrid analog-digital processing system for amplitude-monopulse RSSI-based MIMO WIFI direction-of-arrival estimation

JL Gómez-Tornero... - IEEE Journal of ..., 2018 - [ieeexplore.ieee.org](#)

... **RSSI** data is needed (no IQ data), b) its robustness with respect to **RSSI** variations under certain conditions. As it is well-known, the **use** of **RSSI** in fingerprint-based localization schemes [8]–[11] suffer from **RSSI** ... beam of each antenna is **pointing** to an angle of approximately $\pm 13^\circ$...

☆ Save  Cite Cited by 21 Related articles All 3 versions

A closed-form formula for RSSI-based DoA estimation with Switched Beam Antennas

S Maddio, M Passafiume, A Cidronali... - 2015 European ..., 2015 - [ieeexplore.ieee.org](#)

... The simplest form of SBA consists in an array of N independent elementary radiators **pointing** toward different **directions**, fed by a passive recombining network such as the butler matrix, or directly fed by a non-reflective Single Pole N Through (SPNT) RF switch connected to the ...

☆ Save  Cite Cited by 6 Related articles All 8 versions

RSSI/DoA based positioning systems for wireless sensor network

S Maddio, A Cidronali, G Manes - New Approach of Indoor and ..., 2012 - [books.google.com](#)

... This technology is complementary of the adaptive beamformer, which is an antenna array combined with a phase-shifting device, able to adaptively generate the required radiation pattern **pointing** in arbitrary **direction**. Nevertheless the SBA enables a low-cost, low-complexity ...

☆ Save  Cite Cited by 16 Related articles All 3 versions 

RSSI-based localization of a wireless sensor node with a flying robot

F Bohdanowicz, H Frey, R Funke, D Mosen... - Proceedings of the 30th ..., 2015 - [dl.acm.org](#)

... which is taken from the data sheet of the Tmote Sky sensor nodes [8] **used** in our field experiments). For each measurement point, the mobile robot was always aligned in one **direction** (eg, always **pointing** to the north). We then computed the total antenna gain resulting from the ...

☆ Save  Cite Cited by 5 Related articles All 3 versions

Actuating sensor for determining the direction of arrival using maximal RSSI

M Singh, PM Khilar - Int. J. Sci. Technol. Res., 2014 - Citeseer

... **direction** since electromagnetic radiation is dipole radiation, which is not possible to build an antenna that radiates equally in all **directions**, although such a hypothetical isotropic antenna is **used** ... Close to the antenna **pointing** vector I imaginary (reactive) while further away it is ...

★ Save  Cite Cited by 7 Related articles All 3 versions **Assessment of Anchors Constellation Features in RSSI-Based Indoor Positioning Systems for Smart Environments**

A Cidronali, G Colodi, M Lucarelli, S Maddio... - Electronics, 2020 - mdpi.com

... the respective **direction** of maximum radiation is uniformly spread across the radial **direction**.

In ... 9a, assuming the mobile tag **pointing** upward, 5 averaged **RSSI** data for point and each ...

Figure 9a, assuming the mobile tag **pointing** upward, 5 averaged **RSSI** data for point and each ...

★ Save  Cite Cited by 3 Related articles All 2 versions **Related searches****wireless access point directional antennas**

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L274	24	("2007/0080933").urpn. AND (PGPB USPT USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/17 07:51 AM
L275	86	("8253559").urpn. AND (PGPB USPT USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/17 07:53 AM
L276	17	("8253560").urpn. AND (PGPB USPT USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/17 07:56 AM
L277	30	((US-20070080934-A1 OR US-20140194148-A1 OR US-20080182589-A1 OR US-20100171612-A1 OR US-20110159917-A1 OR US-20080062120-A1 OR US-20070049241-A1 OR US-20070279245-A1 OR US-20050200478-A1 OR US-20060199538-A1 OR US-20110215921-A1 OR US-20070080933-A1 OR US-20090249247-A1 OR US-20090058663-A1 OR US-20090240814-A1 OR US-20090270036-A1 OR US-20070141989-A1 OR US-20090074051-A1 OR US-20080320190-A1 OR US-20030088469-A1 OR US-20050065851-A1 OR US-20080094185-A1 OR US-20110081866-A1).did. AND PGPB.dbnm.) OR ((US-9264856-B1 OR US-8736445-B2 OR US-7453357-B2 OR US-6400270-B1 OR US-6681109-B1 OR US-8174359-B1 OR US-8078787-B2).did. AND USPT.dbnm.)	(USPAT; US-PGPUB; FPRS; USOCR; IBM_TDB; EPO; JPO; DERWENT; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN))	OR	ON	ON	2021/11/17 07:58 AM
L278	4	L277 AND ((display\$4 OR visually) SAME (direction SAME arrow)	(US-PGPUB; USPAT)	OR	ON	ON	2021/11/17 07:59 AM

L279	88616	SAME (location OR position)) (H04W4/02 OR H04W4/024 OR H04W4/029 OR H04W4/80 OR H04W64/00).CPC.	(US-PGPUB; USPAT)	OR	ON	ON	2021/11/17 08:02 AM
L280	925	L279 AND ((display\$4 OR visually) SAME (direction SAME arrow) SAME (location OR position))	(US-PGPUB; USPAT)	OR	ON	ON	2021/11/17 08:03 AM
L281	3445	(generat\$5 adj2 pair\$4 adj2 signal)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/17 08:05 AM
L282	1	280 AND 281	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/17 08:05 AM
L283	1	L280 AND L281	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/17 08:06 AM
L284	62	L279 AND L281	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/17 08:06 AM
L285	1226	L281 AND ((location OR direction) SAME (arrow OR point\$4 OR indicat\$5))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/17 08:13 AM
L286	733	L285 AND (@ad<="20100226" OR @rlad<="20100226" OR @pd<="20100226")	(US-PGPUB; USPAT)	OR	ON	ON	2021/11/17 08:14 AM
L287	373	L286 AND display\$4	(US-PGPUB; USPAT)	OR	ON	ON	2021/11/17 08:15 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Certification under 37 C.F.R. §1.8

Date of Mailing or Transmission: 1/19/2022

I hereby certify that I have caused the document indicated herein on the date indicated above to be transmitted via the Office electronic filing system in accordance with 37 C.F.R. §1.6(a)(4).

BY: /Debbie Watson/
Signature

Name: Debbie Watson
Typed Name

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

1st Named Inventor: John W. Howard
Application No.: 17/036,535
Filing Date: 29 Sep 2020
Confirmation No.: 7690
Title: WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK

Examiner: TAYLOR, BARRY W
Art Unit: 2646
Docket No.: BIKN005C8

COMMENT ON STATEMENT OF REASONS FOR ALLOWANCE

Date: 1/19/2022

United States Patent and Trademark Office
P. O. Box 1450
Alexandria, VA 22313-1450

Applicant recognizes that in accordance with M.P.E.P. § 1302.14, the Examiner's reasons for allowance need not set forth all of the details as to why the claims are allowed. Applicant does not concede that the Examiner's stated reasons for allowance, if any, are the only grounds for patent subject matter eligibility or patentability of the allowed claims or that any element excluded from the Examiner's Reasons for Allowance is taught or suggested by the art of record. Further, Applicant does not concede that all of the elements identified by the Examiner are necessary to distinguish the prior art of record or to satisfy the requirements of 35 U.S.C. § 112. In addition, the Examiner does not assert, and Applicant would not concede, that the Examiner's reasons have any bearing on the patent subject matter eligibility or patentability of claims in any other applications directed to the disclosed subject matter.

Each dependent claim stands on its own and is allowable on its own merits. In particular, each dependent claim may be allowable on the basis of a combination of some of the features recited in the dependent claim and its base claim(s), which combination of features may not include all of the elements identified in the Examiner's reasons for allowance.

No additional fees are believed to be due. In the event that additional fees are due or a credit for an overpayment is due, the Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. 50-2126.

RESPECTFULLY SUBMITTED,

By: /Bruce Stuckman, Ph.D./Reg. No. 36693
Bruce E. Stuckman

Garlick & Markison
100 Congress Avenue, Suite 2000
Austin, TX 78701

Phone: 512-487-7241

E-mail: bstuckman@texaspatents.com

Electronic Acknowledgement Receipt	
EFS ID:	44776952
Application Number:	17036535
International Application Number:	
Confirmation Number:	7690
Title of Invention:	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK
First Named Inventor/Applicant Name:	John W. Howard
Customer Number:	34399
Filer:	Bruce Edward Stuckman/Debbie Watson
Filer Authorized By:	Bruce Edward Stuckman
Attorney Docket Number:	BIKN005C8
Receipt Date:	19-JAN-2022
Filing Date:	29-SEP-2020
Time Stamp:	12:28:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

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

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Post Allowance Communication - Incoming	BIKN005C8_STMTAllow.pdf	109728	no	2
			e81c7e2f343f341ed62f1a06643369ecce496952		

Warnings:

Information:	
Total Files Size (in bytes):	109728
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.	

Document Description: Issue Fee Payment (PTO-85B)

Issue Fee Transmittal Form

Application Number	Filing Date	First Named Inventor	Atty. Docket No.	Confirmation No.
17036535	29-Sep-2020	John W. Howard	BIKN005C8	7690

TITLE OF INVENTION :

WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK

Entity Status	Application Type	Art Unit	Class - Subclass	EXAMINER
Small	Utility under 35 USC 111(a)	2646	457000	
Issue Fee Due	Publication Due	Total Fee(s) Due	Date Due	Prev. Paid Fee
\$600	\$0	\$600	11-Apr-2022	\$0

1.Change of Correspondence Address and/or Indication Of Fee Address (37 CFR 1.33 & 1.363)

Current Correspondence Address:	Current Indicated Fee Address :
34399 GARLICK & MARKISON 100 CONGRESS AVENUE SUITE 2000 AUSTIN TX 78701 UNITED STATES 2149382452 ~~MMurdock@TEXASPATENTS.COM~~	
☐ Change of correspondence address requested, system generated AIA/122-EFS form attached	☐ Fee Address indication requested, system generated SB/47-EFS form attached

2.Entity Status**Change in Entity Status**

Applicant certifying micro entity status; system generated Micro Entity certification form attached. See 37 CFR 1.29.

- ☐ Note: Absent a valid certification of micro entity status, issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. If this box is checked, you will be prompted to choose a micro entity status on the gross income basis (37 CFR 1.29(a)) or the institution of higher education basis (37 CFR 1.29(d)), and make the applicable certification online.

- ☒ Applicant asserting small entity status. See 37 CFR 1.27.

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

- ☐ Applicant changing to regular undiscounted fee status.

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

Document Description: Issue Fee Payment (PTO-85B)

3.The Following Fee(s) Are Submitted:☒ Issue Fee☐ I authorize USPTO to apply my previously paid issue fee to the current fees due☐ Publication Fee☐ The Director is hereby authorized to apply my previously paid issue fee to the current fee due and to charge deficient fees to Deposit Account Number _____☐ Advance Order - # of copies _____

If **in addition to** the payment of the issue fee amount submitted with this form, there are any discrepancies in any amount(s) due, the Director is authorized to charge any deficiency, or credit any overpayment, to Deposit Account Number 502126.

☒ The **issue fee must be submitted** with this form. **If payment of the issue fee does not accompany this form, checking this box and providing a deposit account number will NOT be effective to satisfy full payment of the fee(s) due.**

4.Firm and/or Attorney Names To Be Printed**NOTE: If no name is listed, no name will be printed**

For printing on the patent front page, list to be displayed as entered

1. GARLICK & MARKISON

2. Bruce E. Stuckman, Ph.D.

3.

5.Assignee Name(s) and Residence Data To Be Printed

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.

Name	City	State	Country	Category
THL Holding Company, LLC	Austin	TEXAS	UNITED STATES	corporation

6.Signature

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application. I also certify that this Fee(s) Transmittal form is being transmitted to the USPTO via EFS-WEB on the date indicated below.

Signature	/Bruce E. Stuckman, Ph.D./	Date	01-19-2022
Name	Bruce Edward Stuckman	Registration Number	36693

Electronic Patent Application Fee Transmittal				
Application Number:		17036535		
Filing Date:		29-Sep-2020		
Title of Invention:		WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		
First Named Inventor/Applicant Name:		John W. Howard		
Filer:		Bruce Edward Stuckman/Debbie Watson		
Attorney Docket Number:		BIKN005C8		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY APPL ISSUE FEE	2501	1	600	600
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				600

Electronic Acknowledgement Receipt	
EFS ID:	44776965
Application Number:	17036535
International Application Number:	
Confirmation Number:	7690
Title of Invention:	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK
First Named Inventor/Applicant Name:	John W. Howard
Customer Number:	34399
Filer:	Bruce Edward Stuckman/Debbie Watson
Filer Authorized By:	Bruce Edward Stuckman
Attorney Docket Number:	BIKN005C8
Receipt Date:	19-JAN-2022
Filing Date:	29-SEP-2020
Time Stamp:	12:29:58
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 600
RAM confirmation Number	E20221IC29540099
Deposit Account	502126
Authorized User	Debbie Watson
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.20 (Post Issuance fees) 37 CFR 1.21 (Miscellaneous fees and charges)	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Web85b.pdf	62870	no	2
			962b2323477158a47ea681590563c7ec61f37897		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	40736	no	2
			a171b2960b5004967becf93db76910f58f2c1fec6		
Warnings:					
Information:					
Total Files Size (in bytes):			103606		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

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

Application Number	17036535
Filing Date	2020-09-29
First Named Inventor	John W. Howard
Art Unit	
Examiner Name	
Attorney Docket Number	BIKN005C8

Change(s) applied
to document,
/N.W.S./
1/10/2022

31	8000647		2011-08-16	Hill	
32	8018726		2011-09-13	Friedlander et al.	
33	8078787		2011-12-13	Lydon et al.	
34	8174359		05/2012 ~~2008-04-30~~	Salvatore Veni	
35	8253559		2012-08-28	Howard et al.	
36	8253560		2012-08-28	Howard et al.	
37	8254878		2012-08-28	Howard et al.	
38	8285248		2012-10-09	Howard et al.	
39	8422954		2013-04-16	Howard et al.	
40	8588806		2013-11-19	Howard et al.	
41	8750928		2014-06-10	Moran et al.	

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

Application Number	17036535
Filing Date	2020-09-29
First Named Inventor	John W. Howard
Art Unit	
Examiner Name	
Attorney Docket Number	BIKN005C8

20	6889057		2005-05-03	Tordera et al.	
21	6980546		2005-12-27	Purpura et al.	
22	7034684		2006-04-25	Boman et al.	
23	7110789		2006-09-19	Curtiss et al.	
24	7266391		2007-09-04	Warren	
25	7453357		2008-11-18	Bernal-Silva et al.	
26	7647511		2010-01-12	Misawa	
27	7690994		2010-04-06	Dohda	
28	7714737		~~05/2010~~ ~~2007-06-06~~	James Morningstar	
29	7843427		2010-11-30	Ording et al.	
30	7912503		2011-03-22	Chang et al.	

Change(s) applied
to document.

/N.W.S./
1/10/2022



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/036,535	03/01/2022	11265680	BIKN005C8	7690

34399 7590 02/09/2022
GARLICK & MARKISON
100 CONGRESS AVENUE
SUITE 2000
AUSTIN, TX 78701

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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

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

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

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

John W. Howard, Cedar Park, TX;
Richard Cutler, Round Rock, TX;
Robert M. Kennard, Dallas, TX;

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

THL Holding Company, LLC, Austin, TX;

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

Certification under 37 CFR §1.8

Date of Mailing or Transmission: May 26, 2022

I hereby certify that I have caused the document indicated herein on the date indicated above to be transmitted via the Office electronic filing system in accordance with 37 CFR §1.6(a)(4).

BY: /Debbie Watson/
Signature

Name: Debbie Watson
Typed Name

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

1st Named Inventor:	John W. Howard	Examiner:	TAYLOR, BARRY W
Application No.:	17/036,535	Patent No.:	11,265,680
Filing Date:	29 Sep 2020	Art Unit:	2646
Confirmation No.:	7690	Docket No.:	BIKN005C8
Title:	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		

REQUEST FOR CERTIFICATE OF CORRECTION

Date: May 26, 2022

United States Patent and Trademark Office
P. O. Box 1450
Alexandria, VA 22313-1450

After reviewing the issued U.S. patent referenced above, Applicant discovered one or more mistakes, inadvertently made by Applicant in good faith, for which correction is sought.

Applicant respectfully requests the Director issue a Certificate of Correction to be recorded in the records of U.S. patents.

Applicant respectfully asserts that the mistake(s) made by the Applicant are:

- (1) of a clerical nature,
- (2) of a typographical nature, or
- (3) a mistake of minor character.

Moreover, Applicant respectfully asserts that correction of the mistake(s) made by Applicant does not involve changes which would:

- (1) constitute new matter, or
- (2) require reexamination.

Correction of the following inadvertent mistake(s) made by Applicant in good faith are also depicted on the Certificate of Correction (PTO/SB/44) filed simultaneously herewith.

Errors inadvertently made by the Applicant in good faith.

At column 37, lines 64-65, please delete "the at least one remote device,"

At column 39, line 1, please delete "facilitates," and insert therefor --facilitate,--

At column 39, line 5, please delete "responds" and insert therefor --respond--

Applicant respectfully submits herewith the appropriate fee set forth in 37 CFR § 1.20(a) of \$160.00 for the Certificate of Correction in accordance with MPEP § 1481.

The Office is invited to contact the undersigned by telephone or e-mail with any questions or concerns whatsoever.

RESPECTFULLY SUBMITTED,

By: /Bruce Stuckman, Ph.D./Reg. No. 36693
Bruce E. Stuckman

Garlick & Markison
100 Congress Avenue, Suite 2000
Austin, TX 78701

Phone: 512-487-7241

E-mail: bstuckman@texaspatents.com

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

PATENT NO. : 11265680

APPLICATION NO.: 17/036,535

ISSUE DATE : 3/1/2022

INVENTOR(S) : John W. Howard, Richard Cutler and Robert M. Kennard

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

At column 37, lines 64-65, please delete "the at least one remote device,"

At column 39, line 1, please delete "facilitates," and insert therefor --facilitate,--

At column 39, line 5, please delete "responds" and insert therefor --respond--

MAILING ADDRESS OF SENDER (Please do not use Customer Number below):

Garlick & Markison
100 Congress Avenue, Suite 2000
Austin, TX 78701

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Privacy Act Statement

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

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

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Electronic Patent Application Fee Transmittal				
Application Number:		17036535		
Filing Date:		29-Sep-2020		
Title of Invention:		WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK		
First Named Inventor/Applicant Name:		John W. Howard		
Filer:		Bruce Edward Stuckman/Debbie Watson		
Attorney Docket Number:		BIKN005C8		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
CERTIFICATE OF CORRECTION	2811	1	160	160

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				160

Electronic Acknowledgement Receipt	
EFS ID:	45809920
Application Number:	17036535
International Application Number:	
Confirmation Number:	7690
Title of Invention:	WIRELESS DEVICE AND METHODS FOR USE IN A PAGING NETWORK
First Named Inventor/Applicant Name:	John W. Howard
Customer Number:	34399
Filer:	Bruce Edward Stuckman/Debbie Watson
Filer Authorized By:	Bruce Edward Stuckman
Attorney Docket Number:	BIKN005C8
Receipt Date:	26-MAY-2022
Filing Date:	29-SEP-2020
Time Stamp:	15:18:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$160
RAM confirmation Number	E20225PF19551317
Deposit Account	502126
Authorized User	Debbie Watson
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Certificate of Correction	BIKN005C8_COCRequest.pdf	89641	no	2
			c879aa06b8dab7cb03a3ddc307ef34c825651493		

Warnings:**Information:**

2	Request for Certificate of Correction	BIKN005C8_COC.pdf	175053	no	2
			d4f8a473c4b365d338391772ac42c747a8541b80		

Warnings:**Information:**

3	Fee Worksheet (SB06)	fee-info.pdf	38407	no	2
			acc157cea347c93656665e8adb1d2c1b5196e6cc		

Warnings:**Information:**

Total Files Size (in bytes):	303101
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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
CERTIFICATE OF CORRECTION

PATENT NO. : 11,265,680 B2
APPLICATION NO. : 17/036535
DATED : March 1, 2022
INVENTOR(S) : John W. Howard, Richard Cutler and Robert M. Kennard

Page 1 of 1

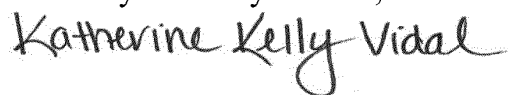
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims

Column 37, Lines 64-65, Claim 1 delete “the at least one remote device,”

Column 39, Line 1, Claim 10 delete “facilitates,” and insert therefor --facilitate,--

Column 39, Line 5, Claim 10 delete “responds” and insert therefor --respond--

Signed and Sealed this
Twenty-first Day of June, 2022


Katherine Kelly Vidal
Director of the United States Patent and Trademark Office