UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,970	08/02/2016	9405947	2039-006	8778

27820 7590 07/13/2016

WITHROW & TERRANOVA, P.L.L.C.
106 Pinedale Springs Way
Cary, NC 27511

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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

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

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

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

Peter Zatloukal, Kirkland, WA;
G. Eric Engstrom, Kirkland, WA;
Cindy M. Smith, Kirkland, WA;
VARIA HOLDINGS LLC, Brooklyn, NY

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.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13750970
Filing Date	2013-01-25
First Named Inventor	Peter Zatloukal
Art Unit	2887
Examiner Name	Daniel I. Walsh
Attorney Docket Number	2039-006

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	7277809	B1	2007-10-02	DeWitt, Jr. et al.	

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20010028302	A1	2001-10-11	Degrauwe et al.	
	2	20030025603	A1	2003-02-06	Smith	
	3	20030104848	A1	2003-06-05	Brideglall	
	4	20050014468	A1	2005-01-20	Salokannel et al.	
	5	20050088285	A1	2005-04-28	Jei	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.I.W/

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

Application Number	13750970
Filing Date	2013-01-25
First Named Inventor	Peter Zatloukal
Art Unit	2887
Examiner Name	Daniel I. Walsh
Attorney Docket Number	2039-006

	6	20080040242	A1	2008-02-14	Chang et al.		
	7	20090102660	A1	2009-04-23	Evans et al.		
	8	20100128642	A1	2010-05-27	BOSSLER et al.		

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

FOREIGN PATENT DOCUMENTS Remove

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

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

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Final Office Action for U.S. Patent Application No. 14/097,152, mailed May 20, 2016, 10 pages	

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

EXAMINER SIGNATURE

Examiner Signature	/DANIEL I WALSH/	Date Considered	06/23/2016

*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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.I.W/

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

Application Number	13750970
Filing Date	2013-01-25
First Named Inventor	Peter Zatloukal
Art Unit	2887
Examiner Name	Daniel I. Walsh
Attorney Docket Number	2039-006

[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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.I.W/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

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	/Matthew Selby/	Date (YYYY-MM-DD)	2016-06-10
Name/Print	Matthew J. Selby	Registration Number	70765

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.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.I.W/

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 record s.

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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.I.W/

APPROVED: /D.I.W/

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Zatloukal *et al.*
Serial No. 13/750,970
Filed: 1/25/2013
Attorney Docket No. 2039-006
For: **EMULATED RADIO FREQUENCY IDENTIFICATION**

Examiner: Daniel I. Walsh
Art Unit: 2887

Mail Stop ISSUE FEE
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

AMENDMENT UNDER 37 CFR § 1.312

In response to the Notice of Allowance mailed April 28, 2016, Applicants submit herewith payment of the issue fee, and the attached amendment under 37 CFR § 1.312. If any additional fees are required in association with this response, the Director is hereby authorized to charge them to Deposit Account 50-1732, and to consider this a petition therefor.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,970	01/25/2013	Peter Zatloukal	2039-006	8778

27820 7590 07/05/2016

WITHROW & TERRANOVA, P.L.L.C.
106 Pinedale Springs Way
Cary, NC 27511

EXAMINER
WALSH, DANIEL I

ART UNIT	PAPER NUMBER
2887	

NOTIFICATION DATE	DELIVERY MODE
07/05/2016	ELECTRONIC

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

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

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@wt-ip.com

Response to Rule 312 Communication	Application No.	Applicant(s)
	13/750,970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

1. ☒ The amendment filed on *13 June 2016* under 37 CFR 1.312 has been considered, and has been:

a) ☒ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.
Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

IDS 6-13-16 initialied

/DANIEL WALSH/
Primary Examiner, Art Unit 2887

PART B - FEE(S) TRANSMITTAL

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

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

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

27820 7590 04/28/2016
WITHROW & TERRANOVA, P.L.L.C.
106 Pinedale Springs Way
Cary, NC 27511

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

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

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,970	01/25/2013	Peter Zatloukal	2039-006	8778

TITLE OF INVENTION: EMULATED RADIO FREQUENCY IDENTIFICATION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	07/28/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
WALSH, DANIEL I	2887	235-380000

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

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

1 Withrow & Terranova, P.L.L.C.
2
3

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

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

(A) NAME OF ASSIGNEE: Varia Holdings LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Brooklyn, NY

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

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☒ Payment by credit card. Form PTO-2038 is attached.
- ☒ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 50-1732 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
  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.
- ☐ 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.

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 /Matthew Selby/ Date 06/07/2016

Typed or printed name Matthew Selby Registration No. 70,765

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Zatloukal *et al.* Examiner: Daniel I. Walsh
Serial No. 13/750,970 Art Unit: 2887
Filed: 1/25/2013
Attorney Docket No. 2039-006
For: **EMULATED RADIO FREQUENCY IDENTIFICATION**

Mail Stop ISSUE FEE
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

AMENDMENT UNDER 37 CFR § 1.312

In response to the Notice of Allowance mailed April 28, 2016, Applicants submit herewith payment of the issue fee, and the attached amendment under 37 CFR § 1.312. If any additional fees are required in association with this response, the Director is hereby authorized to charge them to Deposit Account 50-1732, and to consider this a petition therefor.

In the Specification:

Please amend the first paragraph of the specification as follows:

This application is a continuation of U.S. Patent Application 13/363,202, filed January 31,2012 and entitled "Emulated Radio Frequency Identification," now U.S. Pat. No. 8,381,974, which is a continuation of U.S. Patent Application 10/560,262, filed December 9, 2005 and entitled "Emulated Radio Frequency Identification," now U.S. Pat. No. 8,127,984, which was the National Stage of International Application No. PCT/US04/18397, filed June 10, 2004 and entitled "Emulated Radio Frequency Identification," which itself claims the benefit of U.S. Provisional Application No. 60/478,245, entitled "Radio Frequency Identification Using Mobile Communication Device" and filed June 13, 2003.

REMARKS

Applicants submit herewith an amendment under 37 CFR 1.312. This amendment simply updates priority information. No new matter is added. If any issues remain, the Examiner is invited to contact the undersigned.

Respectfully submitted,

WITHROW & TERRANOVA, P.L.L.C.

By: /Matthew Selby/

Matthew Selby
Registration No. 70,765
106 Pinedale Springs Way
Cary, NC 27511
Telephone: (919) 238-2300

Date: June 7, 2016
Attorney Docket: 2039-006

Electronic Patent Application Fee Transmittal

Application Number:	13750970
Filing Date:	25-Jan-2013
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Filer:	Benjamin Withrow/Jennifer Alkove
Attorney Docket Number:	2039-006

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:				
Utility Appl Issue Fee	2501	1	480	480

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**480**

Electronic Acknowledgement Receipt	
EFS ID:	26046116
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	27820
Filer:	Benjamin Withrow/Jennifer Alkove
Filer Authorized By:	Benjamin Withrow
Attorney Docket Number:	2039-006
Receipt Date:	13-JUN-2016
Filing Date:	25-JAN-2013
Time Stamp:	15:06:14
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$480
RAM confirmation Number	1511
Deposit Account	501732
Authorized User	SELBY, MATTHEW
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

Charge any Additional Fees required under 37 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	Issue Fee Payment (PTO-85B)	2039-006_IssueFee.pdf	188558 0416c2b57dcf1dce64363b64242bab4c28a09aa7	no	1
Warnings:					
Information:					
2		2039-006_Rule312_Amendment.pdf	9866 91bd4b76c4dc170570bc87f2ceed8b5790c7df99	yes	3

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment after Notice of Allowance (Rule 312)	1	1
Specification	2	2
Applicant Arguments/Remarks Made in an Amendment	3	3

Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30964 e9b1697d94f4415a35a1b22e2b438132763 4a6bc	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	229388		

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.

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

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

Application Number	13750970
Filing Date	2013-01-25
First Named Inventor	Peter Zatloukal
Art Unit	2887
Examiner Name	Daniel I. Walsh
Attorney Docket Number	2039-006

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	7277809	B1	2007-10-02	DeWitt, Jr. et al.	

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20010028302	A1	2001-10-11	Degrauwe et al.	
	2	20030025603	A1	2003-02-06	Smith	
	3	20030104848	A1	2003-06-05	Brideglall	
	4	20050014468	A1	2005-01-20	Salokannel et al.	
	5	20050088285	A1	2005-04-28	Jei	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

	6	20080040242	A1	2008-02-14	Chang et al.	
	7	20090102660	A1	2009-04-23	Evans et al.	
	8	20100128642	A1	2010-05-27	BOSSLER et al.	

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

FOREIGN PATENT DOCUMENTS Remove

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

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

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Final Office Action for U.S. Patent Application No. 14/097,152, mailed May 20, 2016, 10 pages	

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

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

[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	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

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	/Matthew Selby/	Date (YYYY-MM-DD)	2016-06-10
Name/Print	Matthew J. Selby	Registration Number	70765

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 record s.

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:	13750970				
Filing Date:	25-Jan-2013				
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION				
First Named Inventor/Applicant Name:	Peter Zatloukal				
Filer:	Benjamin Withrow/Ross Trevor				
Attorney Docket Number:	2039-006				
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($)
Miscellaneous:				
Submission- Information Disclosure Stmt	2806	1	90	90
		Total in USD ($)		**90**

Electronic Acknowledgement Receipt	
EFS ID:	26041812
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	27820
Filer:	Benjamin Withrow/Ross Trevor
Filer Authorized By:	Benjamin Withrow
Attorney Docket Number:	2039-006
Receipt Date:	13-JUN-2016
Filing Date:	25-JAN-2013
Time Stamp:	11:55:45
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$90
RAM confirmation Number	10840
Deposit Account	501732
Authorized User	SELBY, MATTHEW
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

Charge any Additional Fees required under 37 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	Information Disclosure Statement (IDS) Form (SB08)	2039-006_IDS_6-9-16.pdf	612607 2a1b1140046715dd3821cd4af2b207e4e55c029f	no	5
Warnings:					
Information:					
2	Other Reference-Patent/App/Search documents	14097152_OAF_5-20-16.pdf	375008 c3d9f34982432266293 4b10348bac02e364fe123	no	10
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30892 438179a0563b6e0c89464319fcc4b1c323b140c7	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1018507		

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

27820 7590 04/28/2016
WITHROW & TERRANOVA, P.L.L.C.
106 Pinedale Springs Way
Cary, NC 27511

EXAMINER
WALSH, DANIEL I

ART UNIT	PAPER NUMBER
2887	

DATE MAILED: 04/28/2016

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,970	01/25/2013	Peter Zatloukal	2039-006	8778

TITLE OF INVENTION: EMULATED RADIO FREQUENCY IDENTIFICATION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	07/28/2016

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

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

HOW TO REPLY TO THIS NOTICE:

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

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

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

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

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

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

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

PART B - FEE(S) TRANSMITTAL

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

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

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

27820 7590 04/28/2016
WITHROW & TERRANOVA, P.L.L.C.
106 Pinedale Springs Way
Cary, NC 27511

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

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

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,970	01/25/2013	Peter Zatloukal	2039-006	8778

TITLE OF INVENTION: EMULATED RADIO FREQUENCY IDENTIFICATION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	07/28/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
WALSH, DANIEL I	2887	235-380000

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

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

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

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

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

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

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — 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.
- ❑ 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.

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. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,970	01/25/2013	Peter Zatloukal	2039-006	8778

27820 7590 04/28/2016

WITHROW & TERRANOVA, P.L.L.C.
106 Pinedale Springs Way
Cary, NC 27511

EXAMINER	
WALSH, DANIEL I	

ART UNIT	PAPER NUMBER
2887	

DATE MAILED: 04/28/2016

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

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

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

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

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

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

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

Privacy Act Statement

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

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

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

Notice of Allowability	Application No. 13/750,970	Applicant(s) ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	AIA (First Inventor to File) Status No

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

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

1. ☒ This communication is responsive to *2-16-16*.
   ☐ 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 *61,63-68,72,73,75-88,90-92 and 94-99*. 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)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 1-28-16
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

DETAILED ACTION

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

EXAMINER'S AMENDMENT

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

Authorization for this examiner's amendment was given in a telephone interview with Matthew Selby on 4-21-16.

The application has been amended as follows:

1-60. (Cancelled)

61. (Currently Amended) A method for operating a mobile communication device comprising:

[[●]] receiving, by the mobile communication device, a radio frequency identification (RFID) probing signal from an RFID reader external to the mobile communication device;

[[●]] executing, on processing circuitry in the mobile communication device, instructions stored in a memory in the mobile communication device, the instructions configured to cause the mobile communication device to:

- ~~determine if the mobile communication device is in an operational space of the RFID reader based on the RFID probing signal; and~~

[[●]] ~~if the mobile communication device is in the operational space of the RFID reader, output an RFID signal responsive to the RFID probing signal~~ output an RFID signal and output a voice call signal, wherein the RFID signal is output in response to the mobile communication device determining the mobile communication device is in an operational space of the RFID reader based upon receipt of the RFID probing signal, and wherein the voice call signal is output over a wireless network and within a radio frequency range that is different than a radio frequency range used to output the RFID signal.

62. Cancelled.

63. (Previously Presented) The method of claim 61, wherein the RFID signal includes RFID data comprising a selected one of a security key and an identifier.

64. (Previously Presented) The method of claim 63, wherein the security key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

65. (Previously Presented) The method of claim 63, wherein the identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

66. (Previously Presented) The method of claim 63, wherein the method further comprises facilitating a user in selecting the RFID data from a plurality of the RFID data using the mobile communication device.

67. (Previously Presented) The method of claim 63, wherein the method further comprises facilitating provision of the RFID data to the mobile communication device.

68. (Previously Presented) The method of claim 67, wherein facilitating provisioning of the RFID data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID data.

69-71. Cancelled.

72. (Previously Presented) The method of claim 61, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

73. (Currently Amended) A method for operating a mobile communication device comprising:

[[●]] executing, on processing circuitry in the mobile communication device, instructions stored in a memory in the mobile communication device, the instructions configured to cause the mobile communication device to monitor, output an RFID signal, and output a voice call signal;

wherein the monitoring comprises monitoring for a proximal presence of a radio frequency identification (RFID) reader external to the mobile communication device and determining the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received by the mobile communication device from the RFID reader;

wherein the outputting of the RFID signal comprises outputting the RFID signal in response to determining the mobile communication device is within the proximal presence of the RFID reader based upon receipt of the RFID probing signal; and

wherein the outputting of the voice call signal comprises outputting the voice call signal over a wireless network in a radio frequency range different than a radio frequency range in which the RFID signal is output.;

- ~~monitor for a proximal presence of a radio frequency identification (RFID) reader external to the mobile communication device, the monitoring~~

~~comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader;~~

- ~~output an RFID signal upon determining that the mobile communication device is within the proximal presence of the RFID reader; and~~
- ~~output a voice call signal for transmission at least in part over a wireless network.~~

74. Cancelled.

75. (Previously Presented) The method of claim 73, wherein the RFID signal includes RFID data comprising a security key.

76. (Previously Presented) The method of claim 75, wherein the security key comprises a door key.

77. (Previously Presented) The method of claim 76, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

78. (Currently Amended) The method of claim [[73]]75, wherein the instructions are further configured to cause the mobile communication device to facilitate provision of the RFID data to the mobile communication device.

79. (Currently Amended) The method of claim 78, wherein facilitating provisioning of the RFID data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID data.

80. (Previously Presented) The method of claim 73, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

81. (Currently Amended) A mobile communication device comprising:

[[●]] communication circuitry configured to output voice call signals in a first radio frequency range over a wireless network and output radio frequency identification (RFID) signals in a second radio frequency range, which is different than the first radio frequency range;

[[●]] processing circuitry; and

[[●]] a storage medium including instructions, which, when executed by the processing circuitry cause the mobile communication device to:

[[●]] monitor for a proximal presence of an RFID reader external to the mobile communication device via the communication circuitry, the monitoring comprising determining the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received by the mobile device from the RFID reader ~~comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader~~;

[[●]] output a voice call signal for transmission over a wireless network via the communication circuitry in the first radio frequency range; and

[[●]] output an RFID signal via the communication circuitry in response to detection of the proximal presence of the RFID reader external to the mobile communication device based upon receipt of the RFID probing signal, wherein the RFID signal is output in the second radio frequency range.

82. (Previously Presented) The mobile communication device of claim 81, wherein the RFID signal includes RFID data comprising a selected one of a security key and an identifier.

83. (Previously Presented) The mobile communication device of claim 82, wherein the security key comprises a door key.

84. (Previously Presented) The mobile communication device of claim 83, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

85. (Previously Presented) The mobile communication device of claim 82, wherein the identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

86. (Previously Presented) The mobile communication device of claim 82, wherein the instructions are further configured to cause the mobile communication device to facilitate a user in selecting the RFID data from a plurality of RFID data.

87. (Previously Presented) The mobile communication device of claim 82, wherein the instructions are further configured to cause the mobile communication device to facilitate provision of the RFID data to the mobile communication device.

88. (Previously Presented) The mobile communication device of claim 87, wherein the instructions are further configured to cause the mobile communication device to include provisioning of at least a signaling attribute associated with the RFID data in the form of a radio frequency signal.

89. Cancelled.

90. (Previously Presented) The mobile communication device of claim 82, wherein the RFID data includes information identifying a user.

91. (Previously Presented) The mobile communication device of claim 81, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

92. (Currently Amended) A mobile communication device comprising:

[[●]] communication circuitry configured to transmit voice call signals in a first radio frequency range over a wireless network;

[[●]] processing circuitry; and

[[●]] a memory storing instructions, which, when executed by the processing circuitry cause the mobile communication device to:

[[●]] monitor for a proximal presence of [[an]]a radio frequency identification (RFID) reader external to the mobile communication device via the communication circuitry, the monitoring comprising determining the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received by the mobile communication device from the RFID reader ~~comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader~~;

[[●]] in response to determining the mobile communication device is in the operational space of the RFID reader based upon the receipt of the RFID probing signal, output an RFID signal via the communication circuity in a second radio frequency range that is different than the first radio frequency range ~~on detection of the proximal RFID reader, output an RFID signal via the communication circuitry~~; and

[[●]] transmit a voice call signal to another mobile communication device via the communication circuitry at least in part over a wireless network in the first radio frequency range.

93. Cancelled.

94. (Previously Presented) The mobile communication device of claim 92, wherein the RFID signal includes RFID data comprising a security key.

95. (Previously Presented) The mobile communication device of claim 94, wherein the security key comprises a door key.

96. (Previously Presented) The mobile communication device of claim 95, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

97. (Previously Presented) The mobile communication device of claim 92, wherein the instructions are further configured to cause the mobile communication device to facilitate provision of RFID data to the mobile communication device.

98. (Previously Presented) The mobile communication device of claim 97, wherein the instructions are further configured to cause the mobile communication device to include provisioning of at least a signaling attribute associated with the outputting of the RFID data in the form of a radio frequency signal.

99. (Previously Presented) The mobile communication device of claim 92, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

Allowable Subject Matter

3. Claims 61, 63-68, 72-73, 75-88, 90-92, and 94-99 are allowed.

4. The prior art of record fails to teach the limitations of the independent claims above, including at least the outputting of the RFID signal in response to determining of being in the operational space of the RFID reader based on receipt of the probing signal and outputting the RFID signal and voice call signal in the different radio frequency ranges as set forth in the claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL WALSH whose telephone number is (571)272-2409. The examiner can normally be reached on M-F 9am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Paik can be reached on 571-272-2404. 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.

/DANIEL WALSH/
Primary Examiner, Art Unit 2887

Notice of References Cited	Application/Control No. 13/750,970	Applicant(s)/Patent Under Reexamination ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	Page 1 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2002/0052193 A1	05-2002	Chetty, Vijay Raghavan	G06F21/35	455/412.1
*	B	US-2003/0220711 A1	11-2003	Allen, Barry	G06K7/0008	700/215
*	C	US-2004/0198233 A1	10-2004	Pratt, Richard M.	G06K7/0008	455/67.11
*	D	US-6,837,427 B2	01-2005	Overhultz; Gary L.	G06Q10/02	235/375
*	E	US-2005/0088285 A1	04-2005	Jei, Dae-Gunn	G06K7/0008	340/10.51
*	F	US-2005/0099309 A1	05-2005	Hum, Peng Jong	G08B26/007	340/573.4
*	G	US-2005/0116050 A1	06-2005	Jei, Dae-Gunn	G06K7/0008	235/492
*	H	US-2005/0242921 A1	11-2005	Zimmerman, Timothy M.	G07C9/00031	340/5.2
*	I	US-2005/0280537 A1	12-2005	Feltz, John F.	G06K1/121	340/572.1
*	J	US-2005/0270185 A1	12-2005	Esterberg, Aanand	G06K7/0008	341/50
*	K	US-2008/0059374 A1	03-2008	Gangi; Frank J.	G06K7/0004	705/41
*	L	US-2008/0068130 A1	03-2008	Batta; Puneet	H04L63/0492	340/10.1
*	M	US-2008/0100419 A1	05-2008	Jatschka; Thomas	G06K19/0723	340/10.1

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Notice of References Cited	Application/Control No. 13/750,970	Applicant(s)/Patent Under Reexamination ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	Page 2 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2009/0209283 A1	08-2009	Yang; Hoe-Sung	H04B1/0057	455/553.1
*	B	US-2011/0312271 A1	12-2011	Ma; Jingwang	H04B5/00	455/41.1
*	C	US-2012/0019363 A1	01-2012	Fein; Michael	G06K19/072	340/10.1
*	D	US-8,127,984 B2	03-2012	Zatloukal; Peter	G06K7/0008	235/375
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

1-60. (Cancelled)

61. (Currently Amended) A method for operating a mobile communication device comprising:

[[●]] receiving, by the mobile communication device, a radio frequency identification (RFID) probing signal from an RFID reader external to the mobile communication device;

[[●]] executing, on processing circuitry in the mobile communication device, instructions stored in a memory in the mobile communication device, the instructions configured to cause the mobile communication device to:

- ~~determine if the mobile communication device is in an operational space of the RFID reader based on the RFID probing signal; and~~

[[●]] ~~if the mobile communication device is in the operational space of the RFID reader, output an RFID signal responsive to the RFID probing signal~~ output an RFID signals and output a voice call signals~~:~~, wherein the RFID signal ~~-~~is output in response to the mobile communication device determining the mobile communication device is in an operational space of the RFID reader based upon ~~the~~ receipt of the RFID probing signal, and wherein the voice call signals ~~is~~are output over a wireless network ~~over~~ and within a radio frequency range that is different than ~~the~~a radio frequency range used to output the RFID signal.

62. Cancelled~~(Previously Presented) The method of claim 61, wherein the instructions are further configured to cause the mobile communication device to process voice call signals~~.

63. (Previously Presented) The method of claim 61, wherein the RFID signal includes RFID data comprising a selected one of a security key and an identifier.

64. (Previously Presented) The method of claim 63, wherein the security key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

65. (Previously Presented) The method of claim 63, wherein the identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

66. (Previously Presented) The method of claim 63, wherein the method further comprises facilitating a user in selecting the RFID data from a plurality of the RFID data using the mobile communication device.

67. (Previously Presented) The method of claim 63, wherein the method further comprises facilitating provision of the RFID data to the mobile communication device.

68. (Previously Presented) The method of claim 67, wherein facilitating provisioning of the RFID data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID data.

69-71. Cancelled.

72. (Previously Presented) The method of claim 61, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

73. (Currently Amended) A method for operating a mobile communication device comprising:

[[●]] executing, on processing circuitry in the mobile communication device, instructions stored in a memory in the mobile communication device, the instructions configured to cause the mobile communication device to monitor, output an RFID signal, and output a voice call signals;
wherein the monitoring comprises monitoring for a proximal presence of a radio frequency identification (RFID) reader external to the mobile communication device, the monitoring further comprising and determining the mobile

communication device is in an operational space of the RFID reader based on an RFID probing signal received by the mobile communication device from the RFID reader;

-wherein the outputting of the RFID signal comprises outputting the~~an~~ RFID signal in response to determining the mobile communication device is within the proximal presence of the RFID reader based upon ~~the~~ receipt of the RFID probing signal; -and

-wherein the outputting of the voice call signal~~s~~ comprises outputting the voice call signal~~s~~ over a wireless network ~~over~~ in a radio frequency range different than a radio frequency range in which the ~~the output~~ RFID signal is output.~~:~~

- ~~monitor for a proximal presence of a radio frequency identification (RFID) reader external to the mobile communication device, the monitoring comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader;~~
- ~~output an RFID signal upon determining that the mobile communication device is within the proximal presence of the RFID reader; and~~
- ~~output a voice call signal for transmission at least in part over a wireless network.~~

74. Cancelled.

75. (Previously Presented) The method of claim 73, wherein the RFID signal includes RFID data comprising a security key.

76. (Previously Presented) The method of claim 75, wherein the security key comprises a door key.

77. (Previously Presented) The method of claim 76, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

78. (~~Previously Presented~~Currently Amended) The method of claim ~~[[~~73~~]]~~75, wherein the instructions are further configured to cause the mobile communication device to facilitate provision of the RFID data to the mobile communication device.

79. (~~Previously Presented~~Currently Amended) The method of claim 78, wherein facilitating provisioning of the RFID data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID data.

80. (Previously Presented) The method of claim 73, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

81. (Currently Amended) A mobile communication device comprising:

[[●]] communication circuitry configured to output voice call signals in a first radio frequency range over a wireless network and output radio frequency identification (RFID) signals in a second radio frequency range, which is different than the first radio frequency range;

[[●]] processing circuitry; and

[[●]] a storage medium including instructions, which, when executed by the processing circuitry cause the mobile communication device to:

[[●]] monitor for a proximal presence of an RFID reader external to the mobile communication device via the communication circuitry, the monitoring ~~further~~ comprising determining the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received by the mobile device from the RFID reader ~~comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader~~;

[[●]] output a voice call signal for transmission over a wireless network via the communication circuitry in the first radio frequency range; and

[[●]] output an RFID signal via the communication circuitry in response to detection of the proximal presence of the RFID reader external to the mobile communication device based upon ~~the~~ receipt of the RFID probing signal, wherein the RFID signal is output in the second radio frequency range.

82. (Previously Presented) The mobile communication device of claim 81, wherein the RFID signal includes RFID data comprising a selected one of a security key and an identifier.

83. (Previously Presented) The mobile communication device of claim 82, wherein the security key comprises a door key.

84. (Previously Presented) The mobile communication device of claim 83, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

85. (Previously Presented) The mobile communication device of claim 82, wherein the identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

86. (Previously Presented) The mobile communication device of claim 82, wherein the instructions are further configured to cause the mobile communication device to facilitate a user in selecting the RFID data from a plurality of RFID data.

87. (Previously Presented) The mobile communication device of claim 82, wherein the instructions are further configured to cause the mobile communication device to facilitate provision of the RFID data to the mobile communication device.

88. (Previously Presented) The mobile communication device of claim 87, wherein the instructions are further configured to cause the mobile communication device to include provisioning of at least a signaling attribute associated with the RFID data in the form of a radio frequency signal.

89. Cancelled.

90. (Previously Presented) The mobile communication device of claim 82, wherein the RFID data includes information identifying a user.

91. (Previously Presented) The mobile communication device of claim 81, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

92. (Currently Amended) A mobile communication device comprising:

[[●]] communication circuitry configured to transmit voice call signals in a first radio frequency range over a wireless network ~~signals~~;

[[●]] processing circuitry; and

[[●]] a memory storing instructions, which, when executed by the processing circuitry cause the mobile communication device to:

[[●]] monitor for a proximal presence of [[an]]a radio frequency identification (RFID) reader external to the mobile communication device via the communication circuitry, the monitoring ~~further~~ comprising determining the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received by the mobile communication device from the RFID reader ~~comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader~~;

[[●]] in response to determining the mobile communication device is in the operational space of the RFID reader based upon the receipt of the RFID probing signal, output an RFID signal via the communication circuity in a second radio frequency range that is different than the first radio frequency range ~~on detection of the proximal RFID reader, output an RFID signal via the communication circuitry~~; and

[[●]] transmit a voice call signal to another mobile communication device via the communication circuitry at least in part over a wireless network ~~over~~ in the first radio frequency range.

93. Cancelled.

94. (Previously Presented) The mobile communication device of claim 92, wherein the RFID signal includes RFID data comprising a security key.

95. (Previously Presented) The mobile communication device of claim 94, wherein the security key comprises a door key.

96. (Previously Presented) The mobile communication device of claim 95, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

97. (Previously Presented) The mobile communication device of claim 92, wherein the instructions are further configured to cause the mobile communication device to facilitate provision of RFID data to the mobile communication device.

98. (Previously Presented) The mobile communication device of claim 97, wherein the instructions are further configured to cause the mobile communication device to include provisioning of at least a signaling attribute associated with the outputting of the RFID data in the form of a radio frequency signal.

99. (Previously Presented) The mobile communication device of claim 92, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

CPC- SEARCHED		
Symbol	Date	Examiner
g06k7/10366,0008	4-22-16	dw
g06k19/0723	4-22-16	dw
g07c9/00111	4-22-16	dw
h04m1/7253,72575	4-22-16	dw
g05b1/01	4-22-16	dw
h04b5/0062	4-22-16	dw

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
EAST search attached	10-30-13	dw
class 235 455 340 keyword search	10-30-13	dw
reviewed parent searches/actions	10-30-13	dw
reviewd 14097152 14097141 and related apps	3-24-14	dw
Reviewed search	7-14-14	dw
EAST search attached	8-10-15	dw
EAST search attached	4-22-16	dw

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

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
same as	above	4-22-16	dw

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13750970
Filing Date	2013-01-25
First Named Inventor	Peter Zatloukal
Art Unit	2887
Examiner Name	Daniel I. Walsh
Attorney Docket Number	2039-006

U.S.PATENTS Remove

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

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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

FOREIGN PATENT DOCUMENTS Remove

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

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

NON-PATENT LITERATURE DOCUMENTS Remove

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

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.I.W/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

	1	Non-final Office Action for U.S. Patent Application No. 14/097,152, mailed October 28, 2015, 9 pages	

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

EXAMINER SIGNATURE

Examiner Signature	/DANIEL I WALSH/	Date Considered	04/07/2016

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

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

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.I.W/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13750970
Filing Date	2013-01-25
First Named Inventor	Peter Zatloukal
Art Unit	2887
Examiner Name	Daniel I. Walsh
Attorney Docket Number	2039-006

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	/Matthew Selby/	Date (YYYY-MM-DD)	2016-01-28
Name/Print	Matthew J. Selby	Registration Number	70765

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.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.I.W/

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 record s.

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

BIB DATA SHEET

CONFIRMATION NO. 8778

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/750,970	01/25/2013 RULE	235	2887	2039-006

APPLICANTS
VARIA HOLDINGS LLC, Brooklyn, NY

INVENTORS
Peter Zatloukal, Kirkland, WA;
G. Eric Engstrom, Kirkland, WA;
Cindy M. Smith, Kirkland, WA;

**** CONTINUING DATA ************************
This application is a CON of 13/363,202 01/31/2012 PAT 8381974 *
which is a CON of 10/560,262 12/09/2005 PAT 8127984
which is a 371 of PCT/US04/18397 06/10/2004
(*)Data provided by applicant is not consistent with PTO records.

**** FOREIGN APPLICATIONS ************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
02/26/2013

Foreign Priority claimed		STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Met after Allowance				
Verified and Acknowledged /DANIEL I WALSH/ Examiner's Signature	dw Initials	WA	12	39	4

ADDRESS
WITHROW & TERRANOVA, P.L.L.C.
106 Pinedale Springs Way
Cary, NC 27511
UNITED STATES

TITLE
EMULATED RADIO FREQUENCY IDENTIFICATION

FILING FEE RECEIVED		
1770	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

BIB (Rev. 05/07).

Walsh, Daniel

From: Matthew Selby <MSelby@wt-ip.com>
Sent: Thursday, April 21, 2016 4:16 PM
To: Walsh, Daniel
Subject: Re: application 13/750,970 (S/MIME: WARNING - cannot verify signature)
Attachments: 2039-006 Examiner Amendments.docx
Signed By: mselby@wt-ip.com

Examiner Walsh,

Sorry for the confusion in the document. I tracked changes in the attached copy, I guess it didn't come through in the fax. Please let me know if you have any further questions.

Thanks,

Matthew J. Selby | Patent Attorney
Office: (919)-238-2320
Mobile: (919)-437-6573
mselby@wt-ip.com

WARNING! This message may contain information that is confidential and/or protected under the attorney-client or other lawfully recognized privilege. If you received this message in error or through inappropriate means, please REPLY to this message to notify the Sender that the message erroneously was received by you, and then permanently delete this message from all storage media, without forwarding or retaining a copy.

> On Apr 21, 2016, at 4:09 PM, Walsh, Daniel <Daniel.Walsh@USPTO.GOV> wrote:
>
> Hello:
>
> The fax is a little difficult for me to read and its hard for me to track the difference between what I sent and your fax.
>
> Could you email it to me?
>
> Thanks
>
> Dan Walsh
>
> ---
> **From:** Matthew Selby [mailto:MSelby@wt-ip.com]
> **Sent:** Thursday, April 14, 2016 3:31 PM
> **To:** Walsh, Daniel <Daniel.Walsh@USPTO.GOV>
> **Subject:** Re: application 13/750,970 (S/MIME: WARNING - cannot verify signature)
>
> Hi Examiner Walsh,
>
> I expect to have an answer for you by early next week, preferably by Monday but I will let you know by the end of Tuesday.
>
> Thanks,

Matthew J. Selby | Patent Attorney
Office: (919)-238-2320
Mobile: (919)-437-6573
mselby@wt-ip.com

WARNING! This message may contain information that is confidential and/or protected under the attorney-client or other lawfully recognized privilege. If you received this message in error or through inappropriate means, please REPLY to this message to notify the Sender that the message erroneously was received by you, and then permanently delete this message from all storage media, without forwarding or retaining a copy.

> On Apr 14, 2016, at 3:28 PM, Walsh, Daniel <Daniel.Walsh@USPTO.GOV> wrote:
>
> Hello:
>
> I wanted to see if you had an expected response time from the client. Will you have heard by early next week?
>
> Thanks,
>
> Dan Walsh
> Primary Examiner
> USPTO

From: Matthew Selby [mailto:MSelby@wt-ip.com]
Sent: Monday, April 11, 2016 11:31 AM
To: Walsh, Daniel <Daniel.Walsh@USPTO.GOV>
Subject: Re: application 13/750,970 (S/MIME: WARNING - cannot verify signature)

Hi Examiner Walsh,

I received the proposed amendments and they are being reviewed by my client. I'll let you know when I hear back.

Thank you,

Matthew J. Selby | Patent Attorney
Office: (919)-238-2320
Mobile: (919)-437-6573
mselby@wt-ip.com

WARNING! This message may contain information that is confidential and/or protected under the attorney-client or other lawfully recognized privilege. If you received this message in error or through inappropriate means, please REPLY to this message to notify the Sender that the message erroneously was received by you, and then permanently delete this message from all storage media, without forwarding or retaining a copy.

> On Apr 11, 2016, at 11:24 AM, Walsh, Daniel <Daniel.Walsh@USPTO.GOV> wrote:
>
> Hello:
>
> I am following up on the proposal.

Dan Walsh
Primary Examiner
USPTO

From: Matthew Selby [mailto:MSelby@wt-ip.com]
Sent: Thursday, April 07, 2016 2:11 PM
To: Walsh, Daniel <Daniel.Walsh@USPTO.GOV>
Subject: Re: application 13/750,970

Hi Examiner Walsh,

You can email me the proposed amendments or fax them to (877)-812-1249.

Thanks,

Matthew J. Selby | Patent Attorney
Office: (919)-238-2320
Mobile: (919)-437-6573
mselby@wt-ip.com

WARNING! This message may contain information that is confidential and/or protected under the attorney-client or other lawfully recognized privilege. If you received this message in error or through inappropriate means, please REPLY to this message to notify the Sender that the message erroneously was received by you, and then permanently delete this message from all storage media, without forwarding or retaining a copy.

> On Apr 7, 2016, at 1:54 PM, Walsh, Daniel <Daniel.Walsh@USPTO.GOV> wrote:
>
> Hello:
>
> I am the Examiner of record in 13750970 and am seeking a fax number to fax a proposed examiner amendment.
>
> Thanks,
>
> Dan Walsh
> Primary Examiner
> USPTO

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013	03/24/2014	07/14/2014	08/10/2015	04/22/2016				
	1	-	-	-	-	-				
	2	-	-	-	-	-				
	3	-	-	-	-	-				
	4	-	-	-	-	-				
	5	-	-	-	-	-				
	6	-	-	-	-	-				
	7	-	-	-	-	-				
	8	-	-	-	-	-				
	9	-	-	-	-	-				
	10	-	-	-	-	-				
	11	-	-	-	-	-				
	12	-	-	-	-	-				
	13	-	-	-	-	-				
	14	-	-	-	-	-				
	15	-	-	-	-	-				
	16	-	-	-	-	-				
	17	-	-	-	-	-				
	18	-	-	-	-	-				
	19	-	-	-	-	-				
	20	-	-	-	-	-				
	21	-	-	-	-	-				
	22	-	-	-	-	-				
	23	-	-	-	-	-				
	24	-	-	-	-	-				
	25	-	-	-	-	-				
	26	-	-	-	-	-				
	27	-	-	-	-	-				
	28	-	-	-	-	-				
	29	-	-	-	-	-				
	30	-	-	-	-	-				
	31	-	-	-	-	-				
	32	-	-	-	-	-				
	33	-	-	-	-	-				
	34	-	-	-	-	-				
	35	-	-	-	-	-				
	36	-	-	-	-	-				

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013	03/24/2014	07/14/2014	08/10/2015	04/22/2016				
	37	-	-	-	-	-				
	38	-	-	-	-	-				
	39	-	-	-	-	-				
	40	-	-	-	-	-				
	41	-	-	-	-	-				
	42	-	-	-	-	-				
	43	-	-	-	-	-				
	44	-	-	-	-	-				
	45	-	-	-	-	-				
	46	-	-	-	-	-				
	47	-	-	-	-	-				
	48	-	-	-	-	-				
	49	-	-	-	-	-				
	50	-	-	-	-	-				
	51	-	-	-	-	-				
	52	-	-	-	-	-				
	53	-	-	-	-	-				
	54	-	-	-	-	-				
	55	-	-	-	-	-				
	56	-	-	-	-	-				
	57	-	-	-	-	-				
	58	-	-	-	-	-				
	59	-	-	-	-	-				
	60	-	-	-	-	-				
1	61	✓	✓	✓	✓	=				
	62	✓	✓	✓	✓	-				
2	63	✓	✓	✓	✓	=				
3	64	✓	✓	✓	✓	=				
4	65	✓	✓	✓	✓	=				
5	66	✓	✓	✓	✓	=				
6	67	✓	✓	✓	✓	=				
7	68	✓	✓	✓	✓	=				
	69	✓	✓	✓	-	-				
	70	✓	✓	✓	-	-				
	71	✓	✓	✓	-	-				
8	72	✓	✓	✓	✓	=				

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013	03/24/2014	07/14/2014	08/10/2015	04/22/2016				
9	73	✓	✓	✓	✓	=				
	74	✓	✓	✓	-	-				
10	75	✓	✓	✓	✓	=				
11	76	✓	✓	✓	✓	=				
12	77	✓	✓	✓	✓	=				
13	78	✓	✓	✓	✓	=				
14	79	✓	✓	✓	✓	=				
15	80	✓	✓	✓	✓	=				
16	81	✓	✓	✓	✓	=				
17	82	✓	✓	✓	✓	=				
18	83	✓	✓	✓	✓	=				
19	84	✓	✓	✓	✓	=				
20	85	✓	✓	✓	✓	=				
21	86	✓	✓	✓	✓	=				
22	87	✓	✓	✓	✓	=				
23	88	✓	✓	✓	✓	=				
	89	✓	✓	✓	-	-				
24	90	✓	✓	✓	✓	=				
25	91	✓	✓	✓	✓	=				
26	92	✓	✓	✓	✓	=				
	93	✓	✓	✓	-	-				
27	94	✓	✓	✓	✓	=				
28	95	✓	✓	✓	✓	=				
29	96	✓	✓	✓	✓	=				
30	97	✓	✓	✓	✓	=				
31	98	✓	✓	✓	✓	=				
32	99	✓	✓	✓	✓	=				

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	28487	(mobile or portable or handheld or phone or pda) same (rfid or "radio frequency" or transponder or radio or fob) same (call$3) with (phone or cellular or telephone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 11:50
L2	23226	(mobile or portable or handheld) same (rfid or "radio frequency" or transponder or radio or fob) same (call$3) with (phone or cellular or telephone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:04
L3	590	(mobile or portable or handheld) with (dual or switch or both) with (rfid or "radio frequency" or transponder or radio or fob) with (call$3) near3 (phone or cellular or telephone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:05
L4	211002	"455"/$.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:05
L5	1744	455/552.1.ccls. and (rfid or "radio frequency")	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:07
L6	40	455/552.1.ccls. and (rfid or "radio frequency") with (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:08
L7	2	455/552.1.ccls. and (rfid or "radio frequency") near3 read$4 with (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:25
L8	13	"455"/$.ccls. and (rfid or "radio frequency") near3 reader with (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:25
L9	0	"455"/$.ccls. and (rfid or "radio frequency") near3 tag with (output$4 or signal$4) with (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:38
L10	1	"6771981".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:38

L11	2	"455"/$.ccls. and (rfid or "radio frequency") near3 tag with (output$4 or signal$4) with (reader or interrogat$4) same (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:39
L12	7	("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.) and (RFID or "radio frequency") near3 tag with (phone or telephone or voice) near3 call with (switch$3 or mode or state)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:44
L13	2	("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.) and (RFID or "radio frequency") near3 tag with (output$4 or signal$4) same (phone or telephone or voice) near3 call same (switch$3 or mode or state) with (rfid or "radio frequency") with (phone or telephone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:47
L14	7	("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.) and (phone or telephone or mobile or handheld) with (switch$3 or chang$4 or mode or state) with (RFID or "radio frequency") near3 tag with (telephone or voice or phone) near3 call	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:51
L15	76	("20020160775" | "20030069048" | "20030158785" | "20040069852" | "20040077352" | "20040087273" | "20040093274" | "20040127256" | "20040171373" | "20040248616" | "20040263319" | "20050127156" | "20060003772" | "20060017544" | "20060022802" | "20060044111" | "20060052055" | "20060097848" | "20060111053" | "20060116127" | "20060237528" | "20060280149" | "20070030124" | "20070032261" | "20070037605" | "20070060212" | "20070066278" | "20070120679" | "20070159330" | "20070178935" | "20070197261" | "20070263595" | "20070274242" | "20070286171" | "20070293202" | "20080018433" | "20080057876" | "20080146167" | "20090058652" | "20090090783" | "20090170519" | "20090209283" | "20090221232" | "20090243810" | "20090291634" | "20100026454" | "20100137024" | "20100158077" | "20100239079" | "4119800" | "5448620" | "5473318" | "5530702" | "5793843" | "5957995" | "6026308" | "6164551" | "6167128" | "6314281" | "6359866" | "6421347" | "6434395" | "6476708" | "6771981" | "7110792" | "7245997" | "7280810" | "7283044" | "7324476" | "7375616" | "7440743" | "7502615" | "7605701").PN. OR ("8127984").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:08
L16	0	(phone or telephone or voice) near3 (call$3) with (rfid or "radio frequency") near3 (tag) near3 (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3(reader or interrogat$4)	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:23

L17	0	(phone or telephone or voice) near3 (call$3) with (rfid or "radio frequency") near3 (tag) near3 (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3(read$3 or interrogat$4)	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:24
L18	1	(phone or telephone or voice) near3 (call$3) with (rfid or "radio frequency") near3 (tag) with (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3(read$3 or interrogat$4) same (mobile or portable or handheld)	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:25
L19	0	(phone or telephone or voice) near5 (call$3) same (rfid or "radio frequency") near3 (tag) with (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3(read$3 or interrogat$4) same (mobile or portable or handheld) same (mode or state or configuration) with (switch$4 or chang$4 or first or second)	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:27
L20	44	(phone or telephone or voice) near3 (call$3 or communicat$4 or signal$4) same (rfid or "radio frequency") near3 (tag) with (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3 (read$3 or interrogat$4) same (mobile or portable or handheld)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	ON	2013/10/30 13:30
L21	1	"6421347".pn.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	ON	2013/10/30 13:52
L22	1	"20020123325".pn.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	ON	2013/10/30 13:56
L23	1	"6078806".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 14:18
L24	3	13/370,970	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 14:29
L25	1	13/750,970	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 14:29
L26	2	("8381974" "8127984").pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 14:29

10/30/2013 3:52:36 PM
C:\Users\dwalsh1\Documents\EAST\Workspaces\East Searches\13750970.wsp

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	28487	(mobile or portable or handheld or phone or pda) same (rfid or "radio frequency" or transponder or radio or fob) same (call$3) with (phone or cellular or telephone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 11:50
L2	23226	(mobile or portable or handheld) same (rfid or "radio frequency" or transponder or radio or fob) same (call$3) with (phone or cellular or telephone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:04
L3	590	(mobile or portable or handheld) with (dual or switch or both) with (rfid or "radio frequency" or transponder or radio or fob) with (call$3) near3 (phone or cellular or telephone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:05
L4	211002	"455"/$.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:05
L5	1744	455/552.1.ccls. and (rfid or "radio frequency")	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:07
L6	40	455/552.1.ccls. and (rfid or "radio frequency") with (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:08
L7	2	455/552.1.ccls. and (rfid or "radio frequency") near3 read$4 with (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:25
L8	13	"455"/$.ccls. and (rfid or "radio frequency") near3 reader with (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:25
L9	0	"455"/$.ccls. and (rfid or "radio frequency") near3 tag with (output$4 or signal$4) with (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:38
L10	1	"6771981".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:38

L11	2	"455"/$.ccls. and (rfid or "radio frequency") near3 tag with (output$4 or signal$4) with (reader or interrogat$4) same (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:39
L12	7	("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.) and (RFID or "radio frequency") near3 tag with (phone or telephone or voice) near3 call with (switch$3 or mode or state)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:44
L13	2	("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.) and (RFID or "radio frequency") near3 tag with (output$4 or signal$4) same (phone or telephone or voice) near3 call same (switch$3 or mode or state) with (rfid or "radio frequency") with (phone or telephone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:47
L14	7	("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.) and (phone or telephone or mobile or handheld) with (switch$3 or chang$4 or mode or state) with (RFID or "radio frequency") near3 tag with (telephone or voice or phone) near3 call	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:51
L15	76	("20020160775" | "20030069048" | "20030158785" | "20040069852" | "20040077352" | "20040087273" | "20040093274" | "20040127256" | "20040171373" | "20040248616" | "20040263319" | "20050127156" | "20060003772" | "20060017544" | "20060022802" | "20060044111" | "20060052055" | "20060097848" | "20060111053" | "20060116127" | "20060237528" | "20060280149" | "20070030124" | "20070032261" | "20070037605" | "20070060212" | "20070066278" | "20070120679" | "20070159330" | "20070178935" | "20070197261" | "20070263595" | "20070274242" | "20070286171" | "20070293202" | "20080018433" | "20080057876" | "20080146167" | "20090058652" | "20090090783" | "20090170519" | "20090209283" | "20090221232" | "20090243810" | "20090291634" | "20100026454" | "20100137024" | "20100158077" | "20100239079" | "4119800" | "5448620" | "5473318" | "5530702" | "5793843" | "5957995" | "6026308" | "6164551" | "6167128" | "6314281" | "6359866" | "6421347" | "6434395" | "6476708" | "6771981" | "7110792" | "7245997" | "7280810" | "7283044" | "7324476" | "7375616" | "7440743" | "7502615" | "7605701").PN. OR ("8127984").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:08
L16	0	(phone or telephone or voice) near3 (call$3) with (rfid or "radio frequency") near3 (tag) near3 (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3(reader or interrogat$4)	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:23

L17	0	(phone or telephone or voice) near3 (call$3) with (rfid or "radio frequency") near3 (tag) near3 (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3(read$3 or interrogat$4)	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:24
L18	1	(phone or telephone or voice) near3 (call$3) with (rfid or "radio frequency") near3 (tag) with (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3(read$3 or interrogat$4) same (mobile or portable or handheld)	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:25
L19	0	(phone or telephone or voice) near5 (call$3) same (rfid or "radio frequency") near3 (tag) with (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3(read$3 or interrogat$4) same (mobile or portable or handheld) same (mode or state or configuration) with (switch$4 or chang$4 or first or second)	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:27
L20	44	(phone or telephone or voice) near3 (call$3 or communicat$4 or signal$4) same (rfid or "radio frequency") near3 (tag) with (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3 (read$3 or interrogat$4) same (mobile or portable or handheld)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	ON	2013/10/30 13:30
L21	1	"6421347".pn.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	ON	2013/10/30 13:52
L22	1	"20020123325".pn.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	ON	2013/10/30 13:56
L23	1	"6078806".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 14:18
L24	3	13/370,970	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 14:29
L25	1	13/750,970	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 14:29
L26	2	("8381974" "8127984").pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 14:29

10/30/2013 3:47:49 PM
C:\Users\dwalsh1\Documents\EAST\Workspaces\East Searches\13750970.wsp

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L3	1	"6771981".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/24 16:43
L4	1	"6837427".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/24 16:54
S1	85	("20020081987" | "20020123325" | "20020160775" | "20030069048" | "20030114186" | "20030158785" | "20040069852" | "20040077352" | "20040087273" | "20040093274" | "20040127256" | "20040171373" | "20040204038" | "20040248616" | "20040263319" | "20050127156" | "20050184856" | "20060003772" | "20060017544" | "20060022802" | "20060044111" | "20060052055" | "20060097848" | "20060111053" | "20060116127" | "20060237528" | "20060280149" | "20070030124" | "20070032261" | "20070037605" | "20070060212" | "20070066278" | "20070120679" | "20070159330" | "20070178935" | "20070197261" | "20070263595" | "20070274242" | "20070286171" | "20070293202" | "20080018433" | "20080057876" | "20080146167" | "20090058652" | "20090090783" | "20090143013" | "20090170519" | "20090209283" | "20090221232" | "20090243810" | "20090291634" | "20100026454" | "20100137024" | "20100158077" | "20100239079" | "20110021246" | "20120133483" | "4119800" | "5448620" | "5473318" | "5530702" | "5793843" | "5957995" | "6026308" | "6032054" | "6164551" | "6167128" | "6314281" | "6359866" | "6421347" | "6434395" | "6476708" | "6771981" | "7110792" | "7245997" | "7280810" | "7283044" | "7324476" | "7375616" | "7440743" | "7502615" | "7605701" | "8127984" | "8381974" | "8519847").PN.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 11:13
S2	74	(RFID or transponder or "radio frequency") with (emulat$4) with card with credit	US-PGPUB; USPAT; EPO;	OR	ON	2014/03/10 13:50

			JPO			
S3	8	(RFID or transponder or "radio frequency") with (emulat$4) with card with credit same (telephone or phone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:46
S4	170	(RFID or transponder or "radio frequency") with (pick$4 or choos$4 or select$4) with (list$3) same (telephone or phone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:48
S5	24	(RFID or transponder or "radio frequency") with (pick$4 or choos$4 or select$4) with (list$3) with (card or account)same (telephone or phone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:48
S6	24	(telephone or phone or voice) same (RFID or transponder or "radio frequency") with (pick$4 or choos$4 or select$4) with (list$3) with (card or account)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:52
S7	395	(telephone or phone or voice) same (RFID or transponder or "radio frequency") with (pick$4 or choos$4 or select$4 or list$3) with (card or account or name)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:52
S8	106	S7 and ("235"/$.ccls. "340"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:52
S9	170	S7 and ("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:52
S10	372	(telephone or phone or voice) same (RFID or transponder or "radio frequency") same (pick$4 or choos$4 or select$4 or list$3) with (card or account or name) with (screen or display$3)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 15:16
S11	84	S10 and ("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 15:16
S12	3621	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone) same (select$4 or pick$4 or choos$4 or list$4) with (card or account or payment) same (select$4 or pick$4 or choos$3) near3 (account or payment)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 15:50
S13	152	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone) same (select$4 or pick$4 or choos$4 or list$4) with (card or account or payment) same (select$4 or pick$4 or choos$3) near3 (account or payment) same (rfid or transponder or "radio frequency" or fob)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 15:51

S14	877	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone) same (select$4 or pick$4 or choos$4 or list$4) with (card or account or payment or credit or account or payment) same (rfid or transponder or "radio frequency" or fob or nfc or "near field")	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 11:16
S15	547	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone) same (select$4 or pick$4 or choos$4 or list$4) with (card or account or payment or credit or account or payment or name) same (rfid or transponder or "radio frequency" or fob or nfc or "near field") same (payment or transaction)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 11:18
S16	187	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone) with (select$4 or pick$4 or choos$4 or list$4) with (card or account or payment or credit) same (rfid or transponder or "radio frequency" or fob or nfc or "near field") same (payment or transaction)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 11:42
S17	1	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone) with (select$4 or pick$4 or choos$4 or list$4) with (card or account or payment or credit or name) with list$3 same (rfid or transponder or "radio frequency" or fob or nfc or "near field") same (emulat$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 11:50
S18	0	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone or mobile) with (select$4 or pick$4 or choos$4 or list$4) near5 (card or account or payment or credit or name) with (multiple or plurality or list$3) same (rfid or transponder or "radio frequency" or fob or nfc or "near field") same (emulat$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 11:52
S19	19	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone or mobile) with (activat$4 or emulat$4 or select$4 or pick$4 or choos$4 or list$4) with (card or account or payment or credit or name or key or entry or entrance or garage or office or car or automobile or key or door ro license or ssn or "social security") with (multiple or plurality or list$3) same (rfid or transponder or "radio frequency" or fob or nfc or "near field") same (emulat$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 11:55
S20	1	"20030208438".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:09
S21	162	10/340,352	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:11
S22	0	"screen shot 1100" and berardi.in.	US-	OR	ON	2014/03/11

			PGPUB; USPAT; EPO; JPO			12:14
S23	8	"screen shot 1100" and bishop.in.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:14
S24	798	(phone or telephone or mobile) with (nfc or rfid or "radio frequency" or transponder or tag) with (select$4 or pick$4 or choos$4 or emulat$4) with (account or card or name or key or credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:17
S25	563	S24 and ("340"/$.ccls. "455"/$.ccls. "235"/$.ccls. "705"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:18
S26	188	(phone or telephone or mobile) near3 (nfc or rfid or "radio frequency" or transponder) with (select$4 or pick$4 or choos$4 or emulat$4) with (account or card or name or key or credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:28
S27	147	S26 and ("340"/$.ccls. "455"/$.ccls. "235"/$.ccls. "705"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:28
S28	599	(phone or telephone or mobile) with (nfc or rfid or "radio frequency" or transponder) with (select$4 or pick$4 or choos$4 or emulat$4 or display$3) near4 (account or card or name or key or credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:36
S29	403	S28 and ("340"/$.ccls. "455"/$.ccls. "235"/$.ccls. "705"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:37
S30	68836	(phone or telephone or mobile) with (nfc or rfid or "radio frequency" or transponder)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:42
S31	47532	(phone or telephone or voice) with (nfc or rfid or "radio frequency" or transponder)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:42
S32	1726	(phone or telephone or voice) with (nfc or rfid or "radio frequency" or transponder) same (display$4 or screen$4) with (account or name or card or key or door)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:43
S33	2364	(phone or telephone or voice) with (nfc or rfid or "radio frequency" or transponder) same (display$4 or screen$4 or select$4 or emulat$4) with (account or name or card or key or door)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:43
S34	1342	S33 and ("340"/$.ccls. "455"/$.ccls.	US-	OR	ON	2014/03/11

		"235"/$.ccls. "705"/$.ccls.)	PGPUB; USPAT; EPO; JPO			12:43
S35	160	(phone or telephone or voice) with (nfc or rfid or "radio frequency" or transponder) same (display$4 or screen$4 or select$4) with (account or name or card or key or door) with (emulat$4 or mimic$4 or function$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:44
S36	115	S35 and ("340"/$.ccls. "455"/$.ccls. "235"/$.ccls. "705"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:44
S37	3408	electronic adj wallet	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 14:47
S38	41	S37 and default adj account	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 14:47
S39	5	wallet with (select$4 or pick$3) near3 (default) adj (card or credit or account)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 14:54
S40	223	(select$4 or pick$3) near3 (default) adj (card or credit or account)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 14:54
S41	51	pitroda.in. and default	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:04
S42	4	pitroda.in. and default adj account	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:04
S43	42	(digital or electronic) adj wallet and (set$4 or select$4 or pick$4) with (default) adj (card or account)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:05
S44	133	(set$4 or select$4 or pick$4) with (default) adj (card or account) same (mobile or portable or handheld)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:12
S45	142	(set$4 or select$4 or pick$4) with (default) adj (card or account) same (mobile or portable or handheld or phone or rfid or smartcard)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:15

S46	3	(predetermined adj interval) same (electronic adj wallet or digital adj wallet)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:32
S47	29	(interval) same (electronic adj wallet or digital adj wallet)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:32
S48	18	(interval) near3 time same (electronic adj wallet or digital adj wallet)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:33
S49	0	14/097,141	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:34
S50	59	wallet with (communicat$4 or transmit$4 or send$4) with predetermin$5	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:44
S51	22	wallet with (communicat$4 or transmit$4 or send$4) with predetermin$5 near3 (tim$3 or interval)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:47
S52	22	wallet with (communicat$4 or transmit$4 or send$4) with predetermin$5 near3 (times or intervals)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:55
S53	788	RFID with predetermined adj (time or interval)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:13
S54	6	RFID with predetermined adj (time or interval) same (credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:13
S55	1402	(\wallet or rfid or smartcard or tag) with (time or interval) same (credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:15
S56	1402	(wallet or rfid or smartcard or tag) with (time or interval) same (credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:15
S57	0	(wallet or rfid or smartcard or tag) with (time or interval) adj predetermined same (credit or debit) with (repeat$4 or retry$3)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:18

S58	1	(wallet or rfid or smartcard or tag) with (time or interval) adj predetermined same (credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:18
S59	283	rfid with tag with (signal$4 or output$4) with (predetermined) near3 (time or interval or timing)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:30
S60	182	rfid with tag with (signal$4 or output$4) with (predetermined) near3 (time or interval or timing) with (transmit$4 or send$3)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:33
S61	10	rfid with tag with (signal$4 or output$4) with (predetermined) near3 (time) adj interval with (transmit$4 or send$3)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:43
S62	19	rfid with (signal$4 or output$4) with (predetermined) near3 (time) adj interval with (transmit$4 or send$3)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:44
S63	177	("radio frequency" or rfid) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) near3 (time) adj interval	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:46
S64	1	("radio frequency" or rfid) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) near3 (time) adj interval same (account or card or credit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:57
S65	40	("radio frequency" or rfid) with (tag or emualt$4) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) near3 (time) adj interval	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:58
S66	0	("radio frequency" or rfid) with (credit or debit) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) near3 (time) adj interval	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 18:03
S67	0	("radio frequency" or rfid) with (credit or debit or account) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) near3 (time) adj interval	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 18:03
S68	1	("radio frequency" or rfid or transponder) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) near3 (time) adj interval same (credit or debit or account)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 18:04
S69	0	("radio frequency" or rfid or transponder) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) adj (time) adj interval same (credit or debit or account)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 18:04

S70	0	"83231346".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 23:41
S71	307429	celi, jr.in.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 23:41
S72	51	"celi, jr".in.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 23:42
S73	3	RFID with (credit or debit) with account same (periodic or predetermined) near3 time adj interval with (communicat$3 or transmit$4 or send$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 23:50
S74	4	(fob or transponder or RFID or "radio frequency") with (credit or debit or account) same (periodic or predetermined) near3 time adj interval with (communicat$3 or transmit$4 or send$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 23:53

3/24/2014 5:14:58 PM
C:\Users\dwalsh1\Documents\EAST\Workspaces\East Searches\13750970_3.wsp

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	**Art Unit**
	DANIEL WALSH	2887

CPC						
Symbol					**Type**	**Version**
G06K		7	/	10366	F	2013-01-01
G06K		7	/	0008	I	2013-01-01
G06K		19	/	0723	I	2013-01-01
G07C		9	/	00111	I	2013-01-01
H04M		1	/	7253	I	2013-01-01
H04M		1	/	72575	I	2013-01-01
G05B		1	/	01	I	2013-01-01
H04B		5	/	0062	I	2013-01-01
			/			
			/			
			/			
			/			
			/			
			/			
			/			

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	32	
/DANIEL WALSH/ Primary Examiner.Art Unit 2887	04/22/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	61	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	**Art Unit**
	DANIEL WALSH	2887

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION		
CLASS	SUBCLASS	CLAIMED		NON-CLAIMED
		G 0 6 K 7 / 10 (2006.01.01)		
CROSS REFERENCE(S)		G 0 6 K 7 / 00 (2006.01.01)		
		G 0 6 K 19 / 07 (2006.01.01)		
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)	G 0 7 C 9 / 00 (2006.01.01)		
		H 0 4 M 1 / 725 (2006.01.01)		
		G 0 5 B 1 / 01 (2006.01.01)		
		H 0 4 B 5 / 00 (2006.01.01)		

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 32	
/DANIEL WALSH/ Primary Examiner.Art Unit 2887 (Primary Examiner)	04/22/2016 (Date)	O.G. Print Claim(s) 61	O.G. Print Figure 1

U.S. Patent and Trademark Office

Part of Paper No. 20160422

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	**Art Unit**
	DANIEL WALSH	2887

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

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		17		33		49	4	65	16	81	30	97		
	2		18		34		50	5	66	17	82	31	98		
	3		19		35		51	6	67	18	83	32	99		
	4		20		36		52	7	68	19	84				
	5		21		37		53		69	20	85				
	6		22		38		54		70	21	86				
	7		23		39		55		71	22	87				
	8		24		40		56	8	72	23	88				
	9		25		41		57	9	73		89				
	10		26		42		58		74	24	90				
	11		27		43		59	10	75	25	91				
	12		28		44		60	11	76	26	92				
	13		29		45	1	61	12	77		93				
	14		30		46		62	13	78	27	94				
	15		31		47	2	63	14	79	28	95				
	16		32		48	3	64	15	80	29	96				

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 32	
/DANIEL WALSH/ Primary Examiner.Art Unit 2887 (Primary Examiner)	04/22/2016 (Date)	O.G. Print Claim(s) 61	O.G. Print Figure 1

U.S. Patent and Trademark Office Part of Paper No. 20160422

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/750,970	Filing Date 01/25/2013	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

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

APPLICATION AS AMENDED – PART II

AMENDMENT		(Column 1)		(Column 2)	(Column 3)		
	02/16/2016	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 33	Minus	** 39	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 4	Minus	***4	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	**0**

AMENDMENT		(Column 1)		(Column 2)	(Column 3)		
		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	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/MARQUITA JONES/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Peter Zatloukal et al.
Application No. 13/750,970
Filed: 1/25/2013
Attorney Docket No. 2039-006
For: **EMULATED RADIO FREQUENCY IDENTIFICATION**

Examiner: Daniel I. Walsh
Art Unit: 2887

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

RESPONSE TO THE OFFICE ACTION MAILED AUGUST 14, 2015

In response to the Office Action mailed August 14, 2015, Applicant offers the following amendments and remarks. Applicant submits herewith $700.00 to cover the fees associated with a three-month Extension of Time; and Applicant requests that this be considered a petition for a three-month Extension of Time. If any additional fees are required in association with this response, the Director is hereby authorized to charge them to Deposit Account 50-1732, and consider this a petition therefor.

In the Claims:

1-60. (Cancelled)

61. (Currently Amended) A method for ~~emulating radio frequency identification (RFID) signals from a mobile communication device~~ operating a mobile communication device comprising:

- ~~receiving, by the mobile communication device,~~ receiving a radio frequency identification (RFID) probing signal from an RFID reader external to the mobile communication device~~, an RFID probing signal~~;
- executing, on processing circuitry in the mobile communication device, instructions stored in a memory in the mobile communication device, the instructions configured to cause the mobile communication device to:
  - ~~determining, by the mobile communication device,~~ determine ~~whether~~ if the mobile communication device is in an operational space of the RFID reader based on the RFID probing signal; and
  - if the mobile communication device is in the operational space of the RFID reader, ~~outputting, by the mobile communication device~~ output an RFID signal responsive to the RFID probing signal.

62. (Currently Amended) The method of claim 61, wherein the ~~mobile communication device is configured~~ instructions are further configured to cause the mobile communication device to process voice call signals ~~and the RFID signals~~.

63. (Previously Presented) The method of claim 61, wherein the RFID signal includes RFID data comprising a selected one of a security key and an identifier.

64. (Previously Presented) The method of claim 63, wherein the security key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

65. (Previously Presented) The method of claim 63, wherein the identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

66. (Previously Presented) The method of claim 63, wherein the method further comprises facilitating a user in selecting the RFID data from a plurality of the RFID data using the mobile communication device.

67. (Previously Presented) The method of claim 63, wherein the method further comprises facilitating provision of the RFID data to the mobile communication device.

68. (Previously Presented) The method of claim 67, wherein facilitating provisioning of the RFID data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID data.

69-71. Cancelled.

72. (Currently Amended) The method of claim 61, wherein the mobile communication device is ~~a selected~~ one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

73. (Currently Amended) A method for ~~emulating radio frequency identification (RFID) signals from a mobile communication device~~ operating a mobile communication device comprising:

- executing, on processing circuitry in the mobile communication device, instructions stored in a memory in the mobile communication device, the instructions configured to cause the mobile communication device to:
  - ~~monitoring, by the mobile communication device,~~ monitor for a proximal presence of [[an] a radio frequency identification (RFID) reader external to the mobile communication device, the monitoring comprising determining whether

the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader;

- ~~outputting, by the mobile communication device~~ output an RFID signal upon ~~the mobile communication device determining~~ determining that the mobile communication device is within the proximal presence of the RFID reader; and
- ~~outputting, by the mobile communication device,~~ output a voice call signal for transmission at least in part over a wireless network.

74. Cancelled.

75. (Previously Presented) The method of claim 73, wherein the RFID signal includes RFID data comprising a security key.

76. (Previously Presented) The method of claim 75, wherein the security key comprises a door key.

77. (Previously Presented) The method of claim 76, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

78. (Currently Amended) The method of claim 73, wherein the ~~method further comprises facilitating~~ instructions are further configured to cause the mobile communication device to facilitate provision of the RFID data to the mobile communication device.

79. (Previously Presented) The method of claim 78, wherein facilitating provisioning of the RFID data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID.

80. (Previously Presented) The method of claim 73, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

81. (Currently Amended) A mobile communication device comprising:

- communication circuitry configured to output voice call signals in a first radio frequency range and output radio frequency identification (RFID) signals in a second radio frequency range;
- processing circuitry; and
- a storage medium including instructions, which, when executed by the processing circuitry cause the mobile communication device ~~for the communication circuitry~~ to:
  - monitor for a proximal presence of an RFID reader external to the mobile communication device via the communication circuitry, the monitoring comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader;
  - output a voice call signal for transmission over a wireless network via the communication circuitry; and
  - output an RFID signal via the communication circuitry in response to detection of the proximal presence of [[an]]the RFID reader external to the mobile communication device.

82. (Previously Presented) The mobile communication device of claim 81, wherein the RFID signal includes RFID data comprising a selected one of a security key and an identifier.

83. (Previously Presented) The mobile communication device of claim 82, wherein the security key comprises a door key.

84. (Previously Presented) The mobile communication device of claim 83, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

85. (Previously Presented) The mobile communication device of claim 82, wherein the identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

86. (Currently Amended) The mobile communication device of claim 82, wherein the instructions are further ~~designed~~ configured to cause the mobile communication device to facilitate a user in selecting the RFID data from a plurality of RFID data.

87. (Currently Amended) The mobile communication device of claim 82, wherein the instructions are further ~~designed~~ configured to cause the mobile communication device to facilitate provision of the RFID data to the mobile communication device.

88. (Currently Amended) The mobile communication device of claim 87, wherein the instructions are further ~~designed~~ configured to cause the mobile communication device to include provisioning of at least a signaling attribute associated with the RFID data in the form of a radio frequency signal.

89. Cancelled.

90. (Previously Presented) The mobile communication device of claim 82, wherein the RFID data includes information identifying a user.

91. (Previously Presented) The mobile communication device of claim 81, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

92. (Currently Amended) A mobile communication device comprising:

- communication circuitry configured to transmit voice call signals;
- processing circuitry; and

- ~~a control system configured to cause the communication circuitry to~~ a memory storing instructions, which, when executed by the processing circuitry cause the mobile communication device to:
  - monitor for a proximal presence of an RFID reader external to the mobile communication device via the communication circuitry, the monitoring comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader;
  - on detection of the proximal RFID reader, output an RFID signal via the communication circuitry; and
  - transmit a voice call signal to another mobile communication device via the communication circuitry at least in part over a wireless network.

93. Cancelled.

94. (Previously Presented) The mobile communication device of claim 92, wherein the RFID signal includes RFID data comprising a security key.

95. (Previously Presented) The mobile communication device of claim 94, wherein the security key comprises a door key.

96. (Previously Presented) The mobile communication device of claim 95, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

97. (Currently Amended) The mobile communication device of claim 92, wherein the ~~control system is~~ instructions are further configured to cause the mobile communication device to facilitate provision of RFID data to the mobile communication device.

98. (Currently Amended) The mobile communication device of claim 97, wherein the ~~control system is~~ instructions are further configured to cause the mobile communication device to

include provisioning of at least a signaling attribute associated with the outputting of the RFID data in the form of a radio frequency signal.

99. (Previously Presented) The mobile communication device of claim 92, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

REMARKS

Applicant has carefully reviewed the Office Action mailed August 14, 2015, and offers the following remarks to accompany the above amendments.

Status of the Claims

Claims 61-68, 72, 73, 75-88, 90-92, and 94-99 were previously pending. No claims are added or cancelled herein. Claims 61, 62, 72, 73, 78, 81, 86-88, 92, 97, and 98 are amended herein. Accordingly, claims 61-68, 72, 73, 75-88, 90-92, and 94-99 remain pending.

Rejection Under 35 U.S.C. § 112, Second Paragraph

Claims 61-68, 72, 73, and 75-80 were rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. Claims 61 and 73 are amended herein to correct any and all deficiencies in claim language. The remaining claims depend from these claims. Accordingly, Applicant respectfully requests withdrawal of the §112 rejections at this time.

Rejection Under 35 U.S.C. § 102(b) - Zalewski

Claims 61-64 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,771,981 B1 to Zalewski et al. (hereinafter "Zalewski"). Applicant respectfully traverses. The standards for a successful § 102 rejection are discussed in MPEP § 2131: "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."[1] "The identical invention must be shown in as complete detail as is contained in the ... claim."[2] Because the hallmark of anticipation is prior invention, the prior art reference--in order to anticipate under 35 U.S.C. § 102--must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements "arranged as in the claim."[3]

Claim 61 requires determining if a mobile communication device is within an operational space of a radio frequency identification (RFID) reader based on an RFID probing signal from

[1] *Verdegaal Bros. v. Union Oil Co. of California,* 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).
[2] *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).
[3] *Net Moneyin, Inc. v. Verisign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983).

the RFID reader. Notably, this determination is accomplished by executing instructions, which are stored in a memory, on processing circuitry within the mobile communication device. Zalewski fails to describe at least these features. As discussed in Applicant's previous response to the Final Office Action mailed July 22, 2014, Zalewski describes attaching a passive RFID transponder to a mobile station via a changeable cover. Accordingly, as previously described, the passive RFID transponder described in Zalewski will either obtain sufficient energy from a nearby electric field to power on, or it will remain off. In other words, it is assumed that any time the passive RFID transponder is powered on, it is within the operational space of an RFID reader. This may be true or not, as the passive RFID transponder described in Zalewski may power on in the presence of an electric field that is not provided by an RFID reader.[4] In contrast, claim 61 describes determining if a mobile communication device is within an operational space of an RFID reader *based on an RFID probing signal* provided by the RFID reader. No such determination is made by Zalewski, and certainly is not made by executing instructions stored in a memory in a mobile communication device.

In contrast to claim 61, the passive RFID transponder described in Zalewski will assume that it is within the operational space of an RFID reader any time it is powered on. These operational principles are not equivalent to those described in claim 61. In particular, the operational principles described in Zalewski differ in several ways with respect to claim 61. First, the mobile terminal described in Zalewski does not determine if it is in the operational space of an RFID reader at all.[5] Instead, it is assumed by the passive RFID transponder described in Zalewski that if there is sufficient energy to power on, that the passive RFID transponder is in the operational space of the RFID reader. Applicant respectfully submits that simply turning on in the presence of a sufficient electric field provided by an RFID reader is not equivalent to making a determination regarding whether or not a device is within an operational space of an RFID reader.[6] This is evident considering that the passive RFID transponder described in Zalewski may turn on and attempt to transmit an RFID signal in the presence of an electric field that is not provided by an RFID reader. However, even if said turning on in response to a sufficient electric field provided by an RFID reader can be read as such a determination, this determination is not made by the mobile terminal, but rather by the passive

[4] *See* Declaration of Roger Stewart.
[5] *See id.*
[6] *See id.*

RFID transponder in a cover attached to the mobile terminal. This carries to the next operational difference, which is that the determination is not made by executing instructions stored in memory in the mobile communication device. Instead, if any determination is made at all (which Applicant respectfully submits that one is not), it does not involve any control logic or the execution of any instructions, as it simply relies upon turning on one or more elements in the passive RFID transponder.

In the Office Action mailed August 14, 2015, the Patent Office argued that the step of determining if a mobile communication device is in the operational space of an RFID reader can be encompassed by an "RFID responding to interrogation signals." Applicant respectfully disagrees. In making such an argument, the Patent Office has completely ignored an element of claim 61. Claim 61 requires receiving an RFID probing signal, determining if a mobile communication device is in an operational space of the RFID reader based on the RFID probing signal, and outputting an RFID signal responsive to the RFID probing signal if the mobile communication device is within the operational space of the RFID reader. The Patent Office is essentially arguing that performing first and third of these steps (receiving and outputting) necessarily results in the performance of the second of these steps (determining). However, a device is perfectly capable of receiving and responding to an RFID probing signal without determining if the device is within the operational space of the RFID reader, as evidenced by the declaration of Roger Stewart submitted along with Applicant's previous response stating that "the passive RFID transponder described in Zalewski may turn on in the presence of an electric field not provided by an RFID reader, and thus may attempt, albeit unsuccessfully, to transmit an RFID signal outside of the operational space of an RFID reader." The Patent Office noted that "if the Applicant wishes to claim that the determination is not merely the response to the interrogation signal being received, that such limitations should be recited in the claims…" However, Applicant *has* specifically recited such limitations (namely, the determining) as separate from receiving an RFID probing signal and responding thereto. For at least these reasons, Zalewski fails to describe each and every feature of claim 61. Claim 61 is therefore allowable, and such action is respectfully requested at this time.

Claims 62-64 depend either directly or indirectly from claim 61. Accordingly, claims 62-64 are allowable at least by virtue of their dependence from claim 1.

Applicant reserves the right to specifically address the rejections with respect to claims 62-64 in the future, if necessary.

Rejection Under 35 U.S.C. § 103(a) - Zalewski

Claims 65-68, 72, 73, 75-88, 90-92, and 94-99 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Zalewski. Applicant respectfully traverses. When rejecting a claim under 35 U.S.C. § 103, the Patent Office must either show that the prior art references teach or suggest all limitations of the claim or explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art.[7] The gap between the prior art and the claimed invention may not be "so great as to render the [claim] nonobvious to one reasonably skilled in the art."[8]

Claims 65-68 and 72 depend either directly or indirectly from claim 61. Accordingly, claims 65-68 and 72 are allowable at least by virtue of their dependence from claim 61.

Claims 73, 81, and 92 are independent claims with features similar to those of claim 61. Accordingly, claims 73, 81, and 92 are allowable for at least the same reasons as claim 61.

Claims 75-80, 82-88, 90, 91, and 94-99 depend either directly or indirectly from independent claims 73, 81, and 92. Accordingly, claims 75-80, 82-88, 90, 91, and 94-99 are allowable at least by virtue of their dependence from claims 73, 81, and 92.

Applicant reserves the right to specifically address the rejections with respect to claims 65-68, 72, 73, 75-88, 90-92, and 94-99 in the future, if necessary.

Rejection Under 35 U.S.C. § 103(a) – Zalewski and Overhultz

Claims 73, 75-88, 90-92, and 94-99 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Zalewski in view of U.S. Patent No. 6,837,427 B2 to Overhultz et al. (hereinafter "Overhultz"). Applicant respectfully traverses. The standards for obviousness are set forth above.

Claims 73, 81, and 92 are independent claims with features similar to those of claim 61. Accordingly, claims 73, 81, and 92 are allowable for at least the same reasons as claim 61.

[7] *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418, 82 U.S.P.Q.2d (BNA) 1385 (2007).
[8] *Dann v. Johnston*, 425 U.S. 219, 230, 189 U.S.P.Q. (BNA) 257, 261 (1976).

Claims 75-80, 82-88, 90, 91, and 94-99 depend either directly or indirectly from independent claims 73, 81, and 92. Accordingly, claims 75-80, 82-88, 90, 91, and 94-99 are allowable at least by virtue of their dependence from claims 73, 81, and 92.

Applicant reserves the right to specifically address the rejections with respect to claims 73, 75-88, 90-92, and 94-99 in the future, if necessary.

Rejection Under 35 U.S.C. § 103(a) – Albanese and Overhultz

Claims 61-63, 66-68, 72, 73, 78-82, 86-88, 90-92, and 97-99 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2004/0111360 A1 to Albanese (hereinafter "Albanese") in view of Overhultz. Applicant respectfully traverses. The standards for obviousness are set forth above.

Claim 61 requires determining if a mobile communication device is within an operational space of a radio frequency identification (RFID) reader based on an RFID probing signal from the RFID reader. Notably, this determination is accomplished by executing instructions, which are stored in a memory, on processing circuitry within the mobile communication device. Both Albanese and Overhultz fail to describe at least these features. In the Office Action, the Patent Office admitted that Albanese failed to describe determining if a device was in the operational space of an RFID reader whatsoever, and therefore relied completely on Overhultz to describe these features. However, Overhultz fails to remedy the deficiencies of Albanese. Overhultz describes both active and passive RFID tags. In the case of the passive RFID tags described in Overhultz, these tags function similarly to the passive RFID transponder described above with respect to Zalewski. With respect to the active RFID tags described in Overhultz, these tags provide a response to any received interrogation signal. Accordingly, similar to the differences between claim 61 and Zalewski discussed above, Overhultz completely fails to describe determining if a mobile communication device is within an operational space of an RFID reader based on an RFID probing signal. This is due to the automatic receive-and-respond behavior described in Overhultz. For at least these reasons, the combination of Albanese and Overhultz fails to render claim 61 obvious to those skilled in the art. Accordingly, claim 61 is allowable, and such action is respectfully requested at this time.

Claims 62, 63, 66-68, and 72 depend directly or indirectly from claim 61.

Claims 73, 81, and 92 are independent claims with features similar to those of claim 61. Accordingly, claims 73, 81, and 92 are allowable for at least the same reasons as claim 61.

Claims 78-80, 82, 86-88, 90, 91, and 97-99 depend from independent claims 73, 81, and 92. Accordingly, claims 78-80, 82, 86-88, 90, 91, and 97-99 are allowable at least by virtue of their dependence from claims 73, 81, and 92.

Applicant reserves the right to specifically address the rejections with respect to claims 62, 63, 66-68, 72, 73, 78-82, 86-88, 90-92, and 97-99 in the future, if necessary.

Rejection Under 35 U.S.C. § 103(a) – Albanese, Overhultz, and Zalewski

Claims 64, 65, 75-77, 83-85, and 94-96 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Albanese in view of Overhultz and further in view of Zalewski. Applicant respectfully traverses.

Claims 64, 65, 75-77, 83-85, and 94-96 depend either directly or indirectly from independent claims 61, 73, 81, and 92. Accordingly, claims 64, 65, 75-77, 83-85, and 94-96 are allowable at least by virtue of their dependence from claims 61, 73, 81, and 92.

Applicant reserves the right to specifically address the rejections with respect to claims 64, 65, 75-77, 83-85, and 94-96 in the future, if necessary.

Conclusion

The present application is now in condition for allowance and such action is respectfully requested. The Examiner is encouraged to contact Applicant's representative regarding any remaining issues in an effort to expedite allowance and issuance of the present application.

Respectfully submitted,

WITHROW & TERRANOVA, P.L.L.C.

By: /Matthew Selby/

Matthew Selby
Registration No. 70,765
2530 Meridian Parkway, Suite 300
Durham, NC 27713
Telephone: (919) 238-2300

Date: February 16, 2016
Attorney Docket: 2039-006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Zatloukal et al.
Serial No. 13/750,970
Filed: 01/25/2013
Attorney Docket No. 2039-006
For: **EMULATED RADIO FREQUENCY IDENTIFICATION**

Examiner: Daniel Walsh
Art Unit: 2887

Mail Stop AF
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

DECLARATION UNDER 37 C.F.R. § 1.132

I, Roger Stewart, hereby declare that:

1. I have read the Patent Application and the currently pending claims enclosed herein as Exhibit A ("Application as Filed") and Exhibit B ("Current Claims") and am familiar with the subject matter thereof.

2. I have over 37 years of industry experience working with radio frequency identification (RFID) technologies, am a named inventor on 45 patents and/or patent applications in the RFID technology area, and have authored 15 published papers relating to RFID technology, as described in my resume, which is enclosed herein as Exhibit C ("Stewart Resume"). I hold a Masters Degree in Electrical Engineering. Most of my engineering career has involved RFID technologies; including developing the non-volatile memory and building the world's first high-volume RFID chips at Alien Technology Corporation in Morgan Hill, CA. I also have significant experience working with and understanding patent applications in my work managing hundreds of patent applications for RCA Laboratories, the Sarnoff Corporation, Alien Technology Corporation, Intelleflex, AWID, and others. Further, I have been providing patent consulting services and expertise on a full-time basis since 2006 in my current role as President of Sourland Mountain Associates LLC.

3. I have read and understand U.S. Patent No. 6,771,981 B1 to Zalewski et al., enclosed herein as Exhibit D ("Zalewski"). It is my opinion that Zalewski does not describe the feature of *"executing, on processing circuitry in [a] mobile communication device, instructions stored in a memory in the*

mobile communication device, the instructions configured to cause the mobile communication device to determine if the mobile communication device is in an operational space of [an] RFID reader based on [an] RFID probing signal". Zalewski describes attaching a passive RFID transponder to a mobile station via a changeable cover. Because this passive RFID transponder does not include a power source, it must be powered by an external electric field of a sufficient magnitude, which is present inside of the operational space of an RFID reader but not outside the operational space thereof. Because the passive RFID transponder described in Zalewski only powers on in the presence of an electric field having a sufficient magnitude, which only occurs in the context of an RFID reader within the operational space thereof, the passive RFID transponder does not need to, and indeed does not, determine whether it is in the operational space of an RFID reader.

The amendments to the claims such that the determination is accomplished by executing instructions stored in a memory in the mobile communication device by processing circuitry in the mobile communication device further distinguish the claims from Zalewski. As discussed above, Zalewski does not make any determination regarding whether or not it is in the operational space of an RFID reader. Instead, the passive RFID transponder described in Zalewski either obtains sufficient energy from an electric field to turn on and thus is assumed to be in the operational space of an RFID reader, or remains off. Notably, the passive RFID transponder described in Zalewski may turn on in the presence of an electric field not provided by an RFID reader, and thus may attempt, albeit unsuccessfully, to transmit an RFID signal outside of the operational space of an RFID reader. Accordingly, it is clear that there is no control logic (nor any need for control logic) in Zalewski to determine whether or not this passive RFID transponder is in the operational space of the RFID reader. Instead, it is automatically assumed by the passive RFID transponder that it is within the operational space of the RFID reader when powered on.

4. I have read and understand U.S. Patent No. 6,837,427 B2 to Overhultz et al., enclosed herein as Exhibit G ("Overhultz"). It is my opinion that Overhultz does not describe the features of *"executing, on processing circuitry in [a] mobile communication device, instructions stored in a memory in the mobile communication device, the instructions configured to cause the mobile communication device to determine if the mobile communication device is in an operational space of [an] RFID reader based on [an] RFID probing signal"*. While Overhultz describes both passive and active RFID tags, in the case of the passive RFID tags, these tags make no determination regarding whether or not they are in the operational space of an RFID reader as discussed above. With regard to the active RFID tags,

while Overhultz does describe these tags responding to an interrogation signal, it does not describe these tags "*determining if they are in the operational space of an RFID reader*" before responding to an interrogation signal. Rather, if the active RFID tags described in Overhultz receive an interrogation signal, they will respond thereto without any determination regarding whether or not they are in the operational space of the reader that sent the signal.

The amendments to the claims such that the determination is accomplished by executing instructions stored in a memory in the mobile communication device by processing circuitry in the mobile communication device further distinguish the claims from Overhultz. As discussed above, Overhultz does not make any determination regarding whether or not it is in the operational space of an RFID reader. Similar to Zalewski above, the passive RFID tags described in Overhultz are assumed to be within an operational space if they are powered on. In the case of the active RFID tags described in Overhultz, these tags are assumed to be in the operational space of the RFID reader if they receive an interrogation signal at all. Accordingly, there is no need for any control logic in Overhultz to determine whether or not the RFID tags are in the operational space of the RFID reader (since it is automatically assumed that is within the operational space of the RFID reader when powered on and/or when an interrogation signal is received). Indeed, no such control logic is described in Overhultz.

5. I hereby declare that all declarations 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.

Roger G. Stewart

February 12, 2016

Roger G. Stewart Date

EXHIBIT

A

EMULATED RADIO FREQUENCY IDENTIFICATION

RELATED APPLICATION

This application is a non-provisional application of provisional application number 60/478,245, titled "Radio Frequency Identification Using Mobile Communication Device", filed on June 13, 2003, and claims priority to said provisional application.

FIELD OF THE INVENTION

The present invention relates to the fields of security, communication, and data processing. More specifically, the present invention is related to an emulated radio frequency data input method.

BACKGROUND OF THE INVENTION

It wasn't that long ago, even residents in medium size cities still feel secured enough to leave their homes unlocked and/or their garages open. In general, one can access one's place of employment, including parking facilities as well as one's office without identification or access keys.

In the world of commerce, things were also simpler. One typically may shop and consume goods and services, at relatively low prices, without having to be affiliated with any programs or entities.

However, the world has become a lot more complex in recent years. Virtually, all properties of any value, premises, including one's home, have to be secured, even for relatively small towns and cities. One can hardly shop and consume any goods and services, without having signed up with some promotional frequent "usage" programs or becoming affiliated with the commercial entities. The employment of affinity marketing has reached a point even neighboring grocery chains employ them, and not just airlines, hotels, or wholesale discount retailers.

As a result, it is not uncommon to find a person having to carry a number of physical keys and access/identification cards/tags to gain access to secured premises, such as one's home, office, parking garage, and so forth. Additionally, the

person is likely to carry a number of remote security control devices, such as a key with remote control for gaining access to his/her vehicle, a garage door opener for gaining access to the person's garage at home, and so forth. The person is also likely to carry a number of affinity identification cards with member identifiers identifying the person as being affiliated with certain co-op or frequent patronage programs, such as wholesale discount retailers, airline or hotel frequent traveler program, and so forth, that entitle the person to certain benefits, such as discounts or rewards.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references denote similar elements, and in which:

Figure 1 illustrates an overview of the present invention, in accordance with one embodiment;

Figure 2 illustrates a method view of the present invention, in accordance with one embodiment;

Figure 3 illustrates the relevant hardware elements of the device of **Fig. 1** in further details, in accordance with one embodiment;

Figure 4 illustrates the transceiver of **Fig. 3** in further details, in accordance with another embodiment;

Figures 5a-5b illustrate the exploded views of two embodiments of the mobile communication device of **Fig. 1**;

Figures 5c-5d illustrate an exploded view of another embodiment of the mobile communication device of **Fig. 1**;

Figure 6a-6h illustrate a number of example screens of an end user interface, suitable for use to practice the present invention, in accordance with one embodiment; and

Figure 7 illustrates the operational flow of the relevant aspects of the software in support of the RFID feature of the present invention, in accordance with one embodiment.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

Embodiments of the present invention includes an emulated RFID method, more specifically, an emulated RFID method, using a mobile communication device, including the device itself, and certain hardware and/or software embodied therein for the practice of the emulated RFID method.

In the following description, various aspects of the illustrative embodiments of the present invention will be described. However, alternate embodiments may be practiced with only some or all aspects of the illustrative embodiments of the present invention. For purposes of explanation, specific numbers, materials and configurations are set forth in order to provide a thorough understanding of the present invention. However, alternate embodiments may be practiced without the specific details. In other instances, well-known features are omitted or simplified in order not to obscure the essence of the illustrative embodiments of the present invention.

Terminology

Parts of the description will be presented in data processing terms, such as data, selection, retrieval, generation, and so forth, consistent with the manner commonly employed by those skilled in the art to convey the substance of their work to others skilled in the art. As well understood by those skilled in the art, these quantities take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, and otherwise manipulated through electrical and/or optical components of a processor and its subsystems.

Part of the descriptions will employ various abbreviations, including but are not limited to:

CDROM	Compact Disc Read Only Memory
DDRAM	Dynamic Direct Random Access Memory
DVD	Digital Versatile Disc
EEPROM	Electrically Eraseable Programmable Read-Only-

	Memory
HTTP	HyperText Transmission Protocol
SDRAM	Static Direct Random Access Memory
SMS	Small Messaging Service

The term "number" as used in this application to describe a data, including both its usage in the specification and the claims, typically refers to numeric data, as the word "number" is conventionally used in mathematics. However, in certain contexts, the "number" may also include alphabet or special characters, as the term is conventionally understood by those skilled in the art in those contexts. For examples, a driver's license number, a passport number, an employee number, or a student ID number, as each of these terms is conventionally used, often includes one or more alphabets or special characters, even though they are referred to as "numbers". The term accordingly is to be given the meaning that is consistent with the context under which the term is used.

Section Headings, Order of Descriptions and Embodiments

Section headings are merely employed to improve readability, and they are not to be construed to restrict or narrow the present invention.

Various operations will be described as multiple discrete steps in turn, in a manner that is most helpful in understanding the present invention, however, the order of description should not be construed as to imply that these operations are necessarily order dependent. In particular, these operations need not be performed in the order of presentation.

The phrase "in one embodiment" is used repeatedly. The phrase generally does not refer to the same embodiment, however, it may. The terms "comprising", "having" and "including" are synonymous, unless the context dictates otherwise.

Overview

Refer now to **Figure 1**, wherein a block diagram illustrating an overview of the present invention **100**, in accordance with one embodiment, is shown. As illustrated, for the embodiment, mobile communication device **102** is equipped with hardware and/or software elements **104** to perform its primary function, which is to facilitate a user of device **102** to engage in communication with another user of another communication device (not shown). In various embodiments, the communication may be audio (such as phone calls), textual (such as messaging) and/or visual (such as airtexting using light sources). Additionally, for the embodiment, mobile communication device **102** is equipped with hardware and/or software elements **106** to facilitate provision or transfer of a key/identifier in a form a radio frequency signal **110**, which may be read e.g. by a radio frequency identifier (RFID) reader **120**. In turn, the provision of RFID **110** may be responded to by a system (not shown) with which RFID reader **120** is a part or coupled to.

As depicted in **Fig. 1**, blocks **104** and **106** "intersect" with one another. The "intersection" represents the fact that in preferred embodiments of the present invention, substantial portions of the hardware and/or software elements employed to provide a RFID, are the same elements employed to facilitate the primary function of device **102**, i.e. to facilitate a user in communicating with another user of another communication device.

In other words, illustrative embodiments of the present invention advantageously leverage on existing elements of mobile communication device **102**, and supplement them, to enable mobile communication device **102** to be able to provide a RFID, emulating a RFID transponder, as well as facilitating user communication.

As will be described in more detail below, in preferred embodiments, mobile communication device **102** is equipped to provide RFID, emulating an active and/or a passive RFID transponder.

Further, RFID **110** may be any keys and/or identifiers, including but not limited to security keys, such as garage door "keys", exterior or interior door keys, or identifiers, such as, employee numbers, driver's license numbers, social security

numbers, credit card numbers (optionally, including expiration dates), affinity program member identifiers, and so forth.

Continue to refer to **Fig. 1**, except for the present invention incorporated therein, mobile communication device **102** represents a broad range of mobile communication devices known in the art, including but are not limited to wireless mobile phones and personal digital assistants equipped with communication capability.

The term "wireless mobile phone" as used herein, including the specification and the claims, refers to the class of telephony devices equipped to facilitate a user in communicating with another user of another communication device, notwithstanding the user's movement around different geographic areas, so long the wireless mobile phone is in contact with a base/service station of a wireless network service provider. The term includes the analog as well as the digital subclasses. Communication may be voice and/or data, audio, textual and/or visual. The other user/communication device may be mobile or land line based.

RFID reader **120** represents a broad range of such devices known in the art or to be designed. Currently, most RFID readers **120** employ proprietary formats/protocols. That is, RFID readers **120** of different manufacturers tend to employ different frequencies, amplitudes, and/or keying schemes (which may be frequency shifting keying (FSK), amplitude shifting keying (ASK) or phase shifting keying (PSK)).

Various embodiments of the methods of the present inventions, including elements **106**, in particular, added elements, will be described in turn below.

Method

Figure 2 illustrates a method view of the present invention, in accordance with one embodiment. As illustrated, device **102** is first provided with the RFIDs, block **202**. The RFIDs may be provided in any one of a number of known or to be designed manners, including but are not limited to

- manual entry, using a keypad of device **102**,

- read into device **102**, from an access/identification card, using a magnetic or optical card reader of device **102**,

- downloaded into device **102**, from a coupled computing device, through a serial/parallel port of device **102** or through a network interface of device **102** using SMS or HTTP messages.

Typically, provision of a RFID will include the manner the RFID is to be outputted, i.e. signaled. As alluded to earlier, the manner it is to be signaled is dependent on the format/protocol employed by the intended RFID reader **120**. For examples, for a garage door key, the format/protocol employed by RFID reader **120** of the garage opener system, and for an affinity program member identifier, the format/protocol employed by RFID reader **120** of the point-of-sale system of the entity offering the affinity program.

Alternatively, a default signaling format/protocol, such as an industry standard, the most popular proprietary format/protocol, or a selected proprietary format/protocol may be assumed instead, when one is not provided.

During operation, in response to a user instruction, typically after the user has selected the RFID to be outputted from a number of RFIDs stored in device **102**, block **203**, device **102** outputs the selected RFID as instructed, emulating an active RFID transponder, block **204**.

For the embodiment, one RFID, e.g. an access key/identifier (such as an employee number), may also be selected/designated as a default RFID, the output of which may be emulated in a passive manner. That is, the selected/designated default RFID will be outputted automatically, whenever device **102** is within the proximal presence, or more specifically, the operational space, of an intended RFID reader **120**.

Accordingly, device **102** monitors for probing signals of an intended RFID reader **120** (or a type of RFID readers **120**), to determine whether device **102** is within the operational space of such a RFID reader **120**, block **205**. On so determining, device **102** outputs the designated RFID automatically, emulating a passive RFID transponder, block **206**.

A Hardware/Software Implementation

Figure 3 illustrates the relevant elements of device **102**, in accordance with one embodiment. As illustrated, for the embodiment, device **102** includes processor **302**, memory **304**, persistent store **306**, transceiver **308**, and a number of other components **310**, coupled to each other via bus **312**.

Persistent store **306** and memory **304** are employed to store permanent and working copies of a software implementation of the operating logic **320** of device **102**, including the supplemental RFID feature **322**. In various embodiments, persistent store **306** may be an EEPROM (or like kind variants, such as a Flash Memory, a Memory Stick), a magnetic or optical disk drive, a CDROM, a DVD drive and so forth. Memory **304** may be any SDRAM, DDRAM or other high speed volatile as way as non-volatile storage devices known in the art.

Processor **302** is employed to execute operating logic **320**, including RFID feature **322**. As will be readily apparent from the description to follow, operating logic **320** may be implemented in any one of a number of suitable system programming languages, including but not limited to high level languages that may be compiled into executable instructions supported by processor **302**. Processor **302** may be any one of a number of processors designed or to be designed for mobile devices.

Except for transceivers **308**, RFID feature **322** and the manner the various elements of **Fig. 3** are used to practice the present invention, the other illustrated elements are known in the art, and accordingly will not be further described. One embodiment of transceiver **308** will be described referencing **Fig. 4**, and one embodiment of RFID feature **322** will be described, referencing **Fig. 6-7**.

As described earlier, processor **302**, memory **304**, persistent store **306** and bus **312** may be shared elements of device **102**, also employed to implement the primary communication function of device **102**. However, in alternate embodiments, dedicated elements may be employed for some or all of these elements instead.

In one embodiment, device **102** is a wireless mobile telephone, an exploded view of which is illustrated in **Fig. 5a**. Wireless mobile phone **500**, in addition to the earlier described elements, also includes display **506**, control buttons **504**, keypad

502, antenna **508**, body **512** and cover **514**. Body **512** is substantially rectangular in shape. Further, body **512** is palm-sized or smaller.

For the embodiment, cover **514** includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance phone **500**. Phone **500** includes complementary electronic component interface **516** in support of such personalization, customization and/or enhancement.

Cover **514** may form a part of housing **512**, i.e. a required element to complete phone **500**, or it may be an accessory to be adorned by phone **500**, i.e. not a required element to complete phone **500**.

In another embodiment, device **102** is a PDA, an exploded view of which, is illustrated in **Fig. 5b**. PDA **502**, in addition to the earlier described elements, also includes display **524**, control buttons **522**, antenna **526**, body **532**, and cover **534**. Body **530** is also substantially rectangular in shape, as well as palm-sized or smaller.

Similarly, for the embodiment, cover **534** includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance PDA **520**. PDA **520** includes complementary electronic component interface **536** in support of such personalization, customization and/or enhancement.

Cover **534** may form a part of housing **532**, i.e. a required element to complete PDA **520**, or it may be an accessory to be adorned by PDA **520**, i.e. not a required element to complete PDA **520**.

Figure 5c-5d illustrate yet another embodiment of device **102**, another wireless mobile telephone, an exploded view of which is illustrated. Wireless mobile phone **540** is similarly constituted as the earlier described embodiments, including body **542** and cover **544**. However, body **542** has a substantially boomerang or banana shape. Body **542** is also typically palm-sized or smaller.

For the embodiment, cover **544** also includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance phone **540**. Phone **540** includes complementary electronic component interface (not shown) in support of such personalization, customization and/or enhancement.

Cover **544** may form a part of housing **542**, i.e. a required element to complete phone **540**, or it may be an accessory to be adorned by phone **540**, i.e. not a required element to complete phone **540**.

In all or selected one(s) of these embodiments, some or all elements **106** in support of the RFID feature of the present invention may be provided through embedded electronic components of the housing/accessory covers.

Smart covers are the subject matters of subject matter of co-pending U.S. Application, number 10/087,098, filed March 1, 2002, entitled "Personalizing Electronic Devices and Smart Covering", and U.S. Application, number <insert>, filed May 2, 2003, entitled "Personalization of Mobile Electronic Devices and Smart Accessory Cover", which specifications are hereby fully incorporated by reference.

While all three embodiments of **Fig. 5a-5d** have been illustrated with smart covers and external antennas. In alternate embodiments, the present invention may be practiced without smart covers and/or external antennas. The present invention may be practiced with conventional covers, without embedded intelligence and/or internal antennas.

Transceiver

Figure 4 illustrates transceiver **308** of **Fig. 3** in further details, in accordance with one embodiment. As illustrated, for the embodiment, transceiver **308** includes a joint radio frequency (RF) transmit/receive (TX/RX) section **402**, separate signal processing sections **408** and **410** for a range of higher frequencies and a range of low frequencies, switch **404** and splitter **406**. The elements are coupled to each other as shown.

For the embodiment, joint RF TX/RX **402** includes in particular, switch **420**, filters **412** and **422**, low noise amplifier **424** and power amplifier **414**, coupled to one another as shown. Switch **420** is employed to switch between transmitting and receiving RF signals. Filters **412** and **422**, low noise amplifier **424** and power amplifier **414** are employed to perform their conventional filtering and amplification functions on the transmit and receive signals.

For transmission, switch **404** switches between the output of high frequency signal processing **410** and the output of low frequency signal processing **408** to the transmit path of Joint RF TX/RX **402**.

For reception, splitter **406** splits the output of the receive path of Joint RF TX/RX **402** and provides the receive signal to high frequency signal processing **410** as well as low frequency signal processing **408**.

For the embodiment, high frequency signal processing **410** performs up and down conversions of the transmit and receive signals of the primary communication function of mobile communication device **102**, e.g. the transmit and receive signals of a voice call. In one embodiment, the transmit and receive signals are transmitted and received in the GHz ranges.

Low frequency signal processing **408**, on the other hand, performs up and down conversions of the transmit and receive signals of the RFID feature, e.g. the output signal of a RFID to emulate either an active or a passive transponder, and the received probing signal of a RFID reader. In one embodiment, the transmit and receive signals are transmitted and received in the MHz ranges.

Up and down conversions, filtering, amplifications, and so forth, in and of themselves, except for the manner they are being used to provide RFIDs using a mobile communication device, are known in the art, accordingly, will not be further described.

RFID Feature

Figures 6-7 illustrate selected portions of an example end user interface, and the operational flow of the relevant aspects of RFID feature **322** respectively, in accordance with one embodiment. **Figure 6** comprises **Fig. 6a-6h**.

As illustrated in **Fig. 6a**, for the embodiment, the user interface includes screen **602** having selectable text display "RFID" **604**, with which a user may interact to launch the RFID function (by selecting text display **604**, using e.g. control keys **504**).

As illustrated in **Fig. 6b**, for the embodiment, the user interface further includes screen **612** enumerating a list of RFIDs **614** stored in device **102**. List **614** may be displayed for example, among other situations, in response to a user's

selection of text display **604** of screen **602**. A user may select one of the RFIDs, and instruct device **102** to output the selected RFID in a form of an appropriate radio frequency signal, emulating provision of the RFID by an active RFID transponder, using e.g. a "send/call" key of device **102**.

Screen **612** also includes selectable "option" button **616**, with which a user may interact to display a list of RFID management options, using e.g. control keys **504**.

As illustrated in **Fig. 6c**, for the embodiment, the user interface further includes screen **622** enumerating a list of RFID management options **624**, such as "add", "edit" or "delete" RFIDs. List **624** may be displayed for example, among other situations, in response to a user's selection of "option" **616** of screen **612**.

As illustrated in **Fig. 6d**, for the embodiment, the user interface further includes screen **632** displaying field **634**, through which a user may enter/edit a RFID name. Field **634** may be displayed for example, among other situations, in response to a user's selection of "add" or "edit" of screen **622**.

As illustrated in **Fig. 6e**, for the embodiment, the user interface further includes screen **642** displaying field **644**, through which a user may enter/edit a RFID. Field **644** may be displayed for example, among other situations, in response to a user indicating completion of entry of a RFID name using screen **632**.

As illustrated in **Fig. 6f**, for the embodiment, the user interface further includes screen **652** displaying a list of RFID types **654**, with which a user may select and associate with a RFID. List **654** may be displayed for example, among other situations, in response to a user indicating completion of entry of a RFID, using screen **642**, thereby allowing the user to associate a RFID reader type with the entered RFID.

Each RFID reader type is assumed to have a deterministic RFID signaling format/protocol. Accordingly, by selecting the RFID reader type, the user is effectively selecting or specifying the RFID signaling format/protocol. In alternate embodiment, a user may be requested to select the RFID signaling format/protocol explicitly, as opposed to implicitly, in the illustrated embodiment.

As illustrated in **Fig. 6g**, for the embodiment, the user interface further includes screen **662** displaying a request **664** to confirm whether a RFID is to be

selected or designated as the default RFID to be used for emulation of passive transponders. Request **664** may be displayed for example, among other situations, in response to a user selecting a RFID reader type, using screen **652**, thereby allowing the user to (implicitly) associate a RFID format/protocol with the entered RFID.

As illustrated in **Fig. 6f**, for the embodiment, the user interface further includes screen **672** displaying a RFID and its details, including but not limited the intended RFID reader type, whether to be designated as the default RFID for use in emulating passive RFID. Request **674** may be displayed for example, among other situations, in response to a user selecting the "edit" option, using screen **622**, or on completion of designating a RFID as the default RFID for emulating passive transponders, using screen **662**

Operationally, as illustrated in **Fig. 7**, upon receipt of a request to launch the RFID function, support logic of the RFID feature **322** is loaded and given execution control, block **702**. Thereafter, support logic **322** waits for user inputs, block **704**.

On receipt of a user input/request, support logic **322** determines the nature of the input/request, block **706**, taking into the context, i.e. the portion of the user interface being displayed, and with which the user just interacted in submitting the input/request.

As illustrated, on determining that the user has requested a current display list to be scrolled (e.g. RFID list **614** of screen **612**), support logic **322** causes the list to be scrolled as requested. Thereafter, support logic **322** returns to block **708** and waits for further input.

Similarly, on determining that the user has requested a selected RFID to be sent (emulating output of the RFID by an active RFID transponder), support logic **322** causes the RFID to be outputted in a form of an appropriate RF signal (in accordance with the associated intended RFID reader type). Thereafter, support logic **322** again returns to block **710** and waits for further input.

On determining that the user has requested a list of options to be displayed (e.g. selection of "option" **616** of screen **612**), support logic **322** causes the list of options to be displayed as requested. Thereafter, support logic **322** returns to block **712** and waits for further input.

On determining that the user has requested to add a RFID (e.g. selection of "Add" of screen **622**), support logic **322** facilitates addition of a RFID (e.g. successively guiding user entry of a RFID using screens **632-662**. Thereafter, support logic **322** returns to block **714** and waits for further input.

These are a few examples of user inputs/requests support logic **322** may support. The present invention contemplates other user inputs/requests may also be supported, and handled accordingly, block **716.**

Conclusion and Epilogue

Thus, it can be seen from the above descriptions, a novel emulated RFID input method, using a mobile communication device, has been described. The present invention advantageously improved the ease of use for a user to provide data captured in a device to another system, especially for data captured in e.g. a mobile device.

While the present invention has been described in terms of the earlier described embodiments, those skilled in the art will recognize that the invention is not limited to the embodiments described. The present invention can be practiced with modification and alteration within the spirit and scope of the appended claims. Thus, the description is to be regarded as illustrative instead of restrictive on the present invention.

CLAIMS

What is claimed is:

1. A method for providing a radio frequency identification (RFID) comprising:

facilitating a user in providing an instruction to a mobile communication device to output a first data in a form of a first radio frequency signal to emulate output of the first data by an active RFID transponder, the mobile communication device being also equipped to facilitate a user in communicating with a user of another communication device, with the communication being facilitated at least in part over a wireless network; and

in response, outputting the first data in the form of a radio frequency signal, emulating output of the first data by an active RFID transponder as instructed by the user.

2. The method of claim 1, wherein said first data comprises a selected one of a security key and an identifier.

3. The method of claim 2, wherein said first data comprises a security key, and said security key comprises a door key.

4. The method of claim 3, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

5. The method of claim 2, wherein said first data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

6. The method of claim 1, wherein the method further comprises facilitating the user in selecting the first data from a plurality of data using the mobile communication device.

7. The method of claim 1, wherein the method further comprises facilitating provision of the first data to the mobile communication device.

8. The method of claim 7, wherein said facilitating of the provisioning of the data to the mobile communication device, including facilitating provision of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

9. The method of claim 1, wherein the method further comprises

detecting for proximal presence of a RFID reader by the mobile communication device; and

on detection, outputting a second data in a form of a second radio frequency signal, using the mobile communication device, emulating output of the second data by a passive RFID transponder.

10. The method of claim 9, wherein said detecting comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

11. The method of claim 9, wherein said first and second data are the same data.

12. The method of claim 1, wherein the mobile communication device is a selected one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

13. A method for providing a radio frequency identifier (RFID), comprising:

detecting for proximal presence of a RFID reader by a mobile communication device, the mobile communication device being also equipped to facilitate a user in communicating with a user of another communication device, with the communication being facilitated at least in part over a wireless network; and

on detection, outputting a data in a form of a radio frequency signal, using the mobile communication device, emulating output of the data by a passive RFID transponder.

14. The method of claim 13, wherein said detecting comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

15. The method of claim 13, wherein said data comprises a security key.

16. The method of claim 15, wherein said security key comprises a door key.

17. The method of claim 16, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

18. The method of claim 13, wherein the method further comprises facilitating provision of the data to the mobile communication device..

19. The method of claim 18, wherein said facilitating of the provisioning of the data to the mobile communication device, including facilitating provision of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

20. The method of claim 13, wherein the mobile communication device is a selected of a wireless mobile phone and a personal digital assistant equipped with communication capability.

21. A mobile communication device comprising:

a transmitter to transmit a radio frequency signal;

a storage medium to store a first data and instructions to operate the transmitter to selectively (a) output the first data in a form of a radio frequency signal, in response to a user instruction, emulating output of the first data by an active radio

frequency identifier (RFID) transponder, and (b) facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a processor coupled to the transmitter and the storage to execute the instructions.

22. The device of claim 21, wherein said first data comprises a selected one of a security key and an identifier.

23. The device of claim 22, wherein said first data comprises a security key, and said security key comprises a door key.

24. The device of claim 23, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

25. The device of claim 22, wherein said first data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

26. The device of claim 21, wherein the instructions are further designed to facilitate the user in selecting the first data from a plurality of data, and instructing said output.

27. The device of claim 21, wherein the instructions are further designed to facilitate provision of the first data to the mobile communication device.

28. The device of claim 27, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first data in the form of a radio frequency signal.

29. The device of claim 21, wherein the instructions are further designed to detect for proximal presence of a RFID reader; and

on detection, outputting a second data in a form of a second radio frequency signal, emulating output of the second data by a passive RFID transponder.

30. The device of claim 29, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

31. The device of claim 29, wherein said first and second data are the same data.

32. The device of claim 21, wherein the mobile communication device is a selected of a wireless mobile phone and a personal digital assistant equipped with communication capability.

33. A mobile communication device comprising:

a transmitter to transmit a radio frequency signal;

a storage medium to store a first data and instructions to operate the transmitter to selectively (a) detect for proximal presence of a radio frequency identifier (RFID) reader, and on detection, output a data in a form of a radio frequency signal, emulating output of the data by a passive RFID transponder, and (b) facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a processor coupled to the transmitter and the storage to execute the instructions.

34. The device of claim 33, wherein said instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

35. The device of claim 33, wherein said data comprises a security key.

36. The device of claim 35, wherein said security key comprises a door key.

37. The device of claim 36, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

38. The device of claim 33, wherein the instructions are further designed to facilitate provision of the data to the mobile communication device.

39. The device of claim 38, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

40. The device of claim 33, wherein the mobile communication device is a selected of a wireless mobile phone and a personal digital assistant equipped with communication capability.

41. A cover comprising:

a body designed to be mated with a mobile communication device equipped to facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a storage medium embedded in said body, to store a selected one of a plurality of instructions and one or more locations to obtain all or a part of said instructions, the instructions being designed to operate a transmitter of the mobile communication device to output a first data in a form of a radio frequency signal, in response to a user instruction, emulating output of the first data by an active radio frequency identifier (RFID) transponder, using the mobile communication device.

42. The cover of claim 41, wherein said first data comprises a selected one of a security key and an identifier.

43. The cover of claim 42, wherein said first data comprises a security key, and said security key comprises a door key.

44. The cover of claim 43, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

45. The cover of claim 42, wherein said first data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

46. The cover of claim 41, wherein the instructions are further designed to facilitate the user in selecting the first data from a plurality of data, and instructing said output.

47. The cover of claim 41, wherein the instructions are further designed to facilitate provision of the first data to the mobile communication device.

48. The cover of claim 47, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first data in the form of a radio frequency signal.

49. The cover of claim 41, wherein the instructions are further designed to
detect for proximal presence of a RFID reader; and
on detection, outputting a second data in a form of a second radio frequency signal, emulating output of the second data by a passive RFID transponder.

50. The cover of claim 49, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

51. The cover of claim 49, wherein said first and second data are the same data.

52. The cover of claim 41, wherein the cover is an accessory cover to be adorned by the mobile communication device.

53. A cover comprising:

a body designed to be mated with a mobile communication device equipped to facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a storage medium embedded in said body, to store a selected one of a plurality of instructions and one or more locations to obtain all or a part of said instructions, the instructions being designed to operate the transmitter to detect for proximal presence of a radio frequency identifier (RFID) reader, and on detection, output a data in a form of a radio frequency signal, emulating output of the data by a passive RFID transponder, using the mobile communication device.

54. The cover of claim 53, wherein said instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

55. The cover of claim 53, wherein said data comprises a security key.

56. The cover of claim 55, wherein said security key comprises a door key.

57. The cover of claim 56, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

58. The cover of claim 53, wherein the instructions are further designed to facilitate provision of the data to the mobile communication device.

59. The cover of claim 58, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

60. The cover of claim 53, wherein the cover is an accessory cover to be adorned by the mobile communication device.

ABSTRACT OF THE DISCLOSURE

A mobile communication device is equipped with hardware and/or software components to enable the device to output a data in a form of a radio frequency signal, emulating outputting of the data by either an active or a passive RFID transponder. The data may be a security key or an identifier. Emulation of an active RFID transponder includes facilitating selection of the data and instruction to output by a user. Emulation of a passive RFID transponder includes detecting for proximal presence of a RFID reader. Either case, provision of the data to the mobile communication device may include provision of associated signal attribute(s).

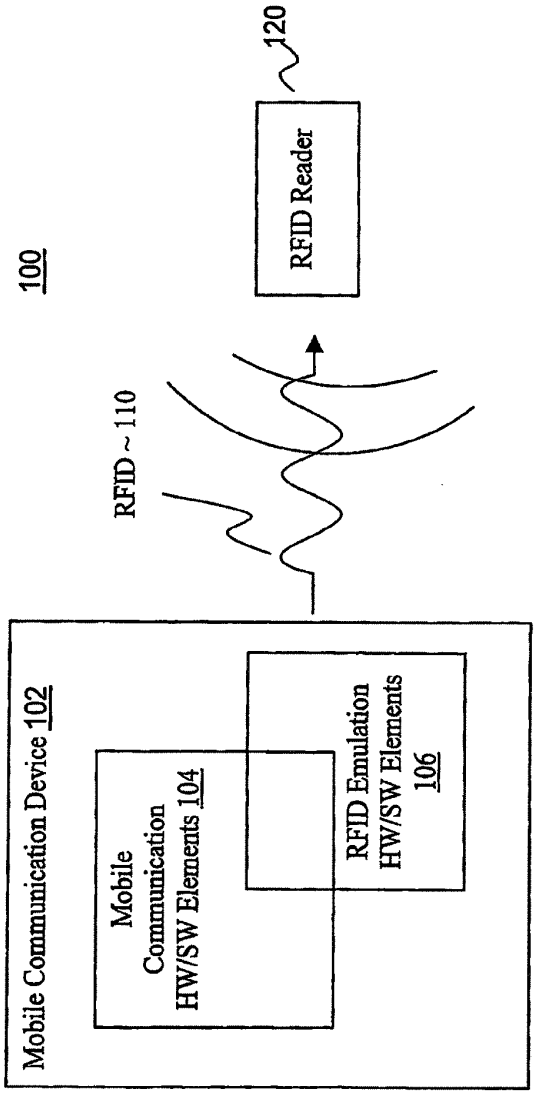

100
120
RFID Reader
RFID ~ 110
Mobile Communication Device 102
Mobile Communication HW/SW Elements 104
RFID Emulation HW/SW Elements 106

Figure 1

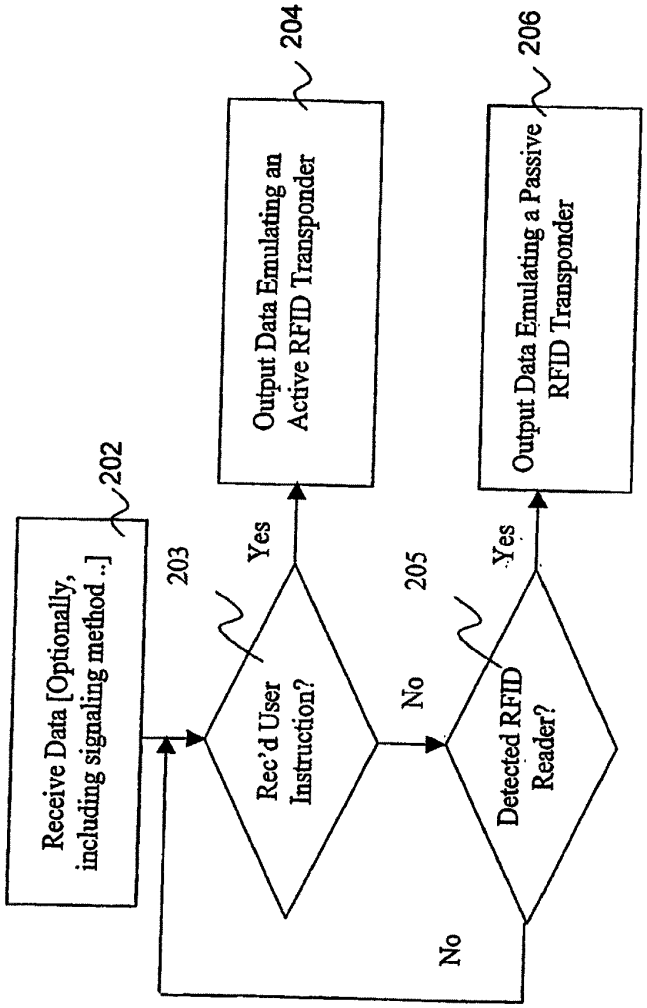

Receive Data [Optionally, including signaling method ..]
202
Rec'd User Instruction?
203
Yes
Output Data Emulating an Active RFID Transponder
204
No
Detected RFID Reader?
205
Yes
Output Data Emulating a Passive RFID Transponder
206
No

Figure 2

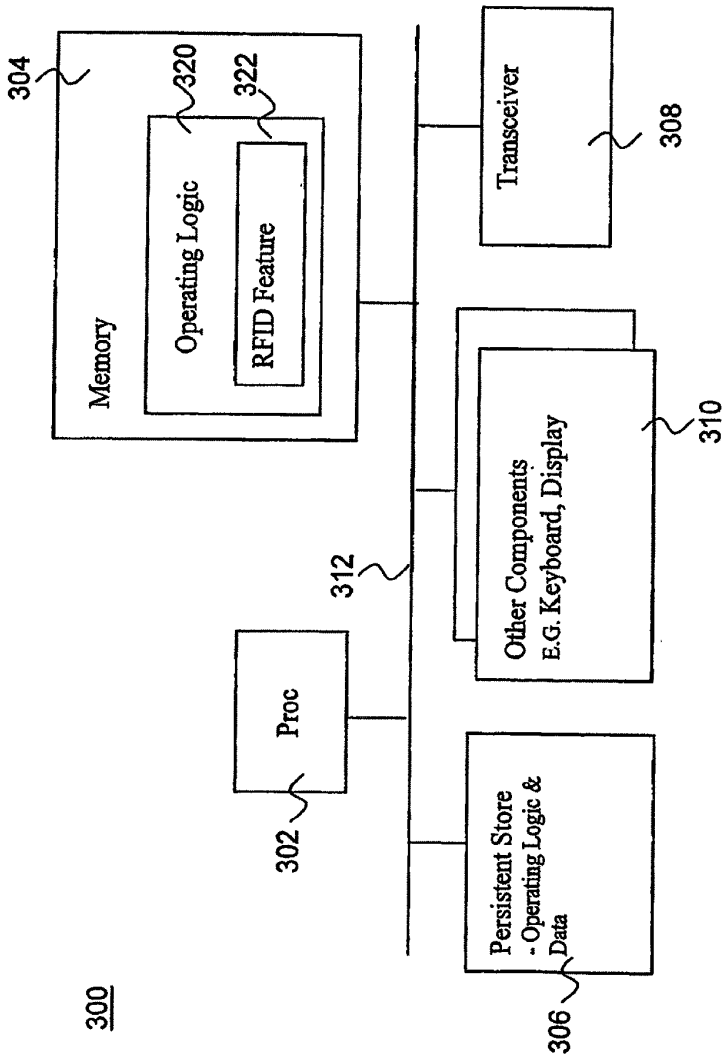

300
304
Memory
320
Operating Logic
322
RFID Feature
Transceiver
308
312
Other Components
E.G. Keyboard, Display
310
Proc
302
Persistent Store
- Operating Logic &
Data
306

Figure 3

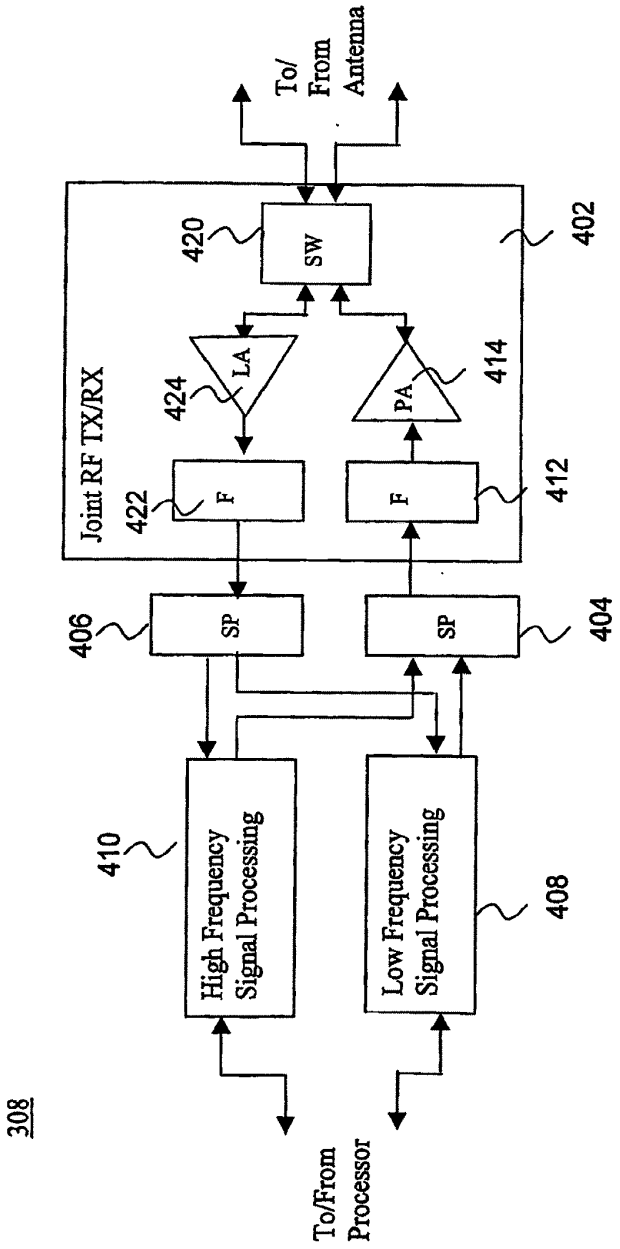

308
To/From Processor
High Frequency Signal Processing
Low Frequency Signal Processing
410
408
SP
SP
406
404
Joint RF TX/RX
F
F
422
412
LA
PA
424
414
SW
420
402
To/ From Antenna
Legend:
F = Filter
LA = Low Noise Amplifier
PA = Power Amplifier
SP=Splitter
SW = Switch

Figure 4

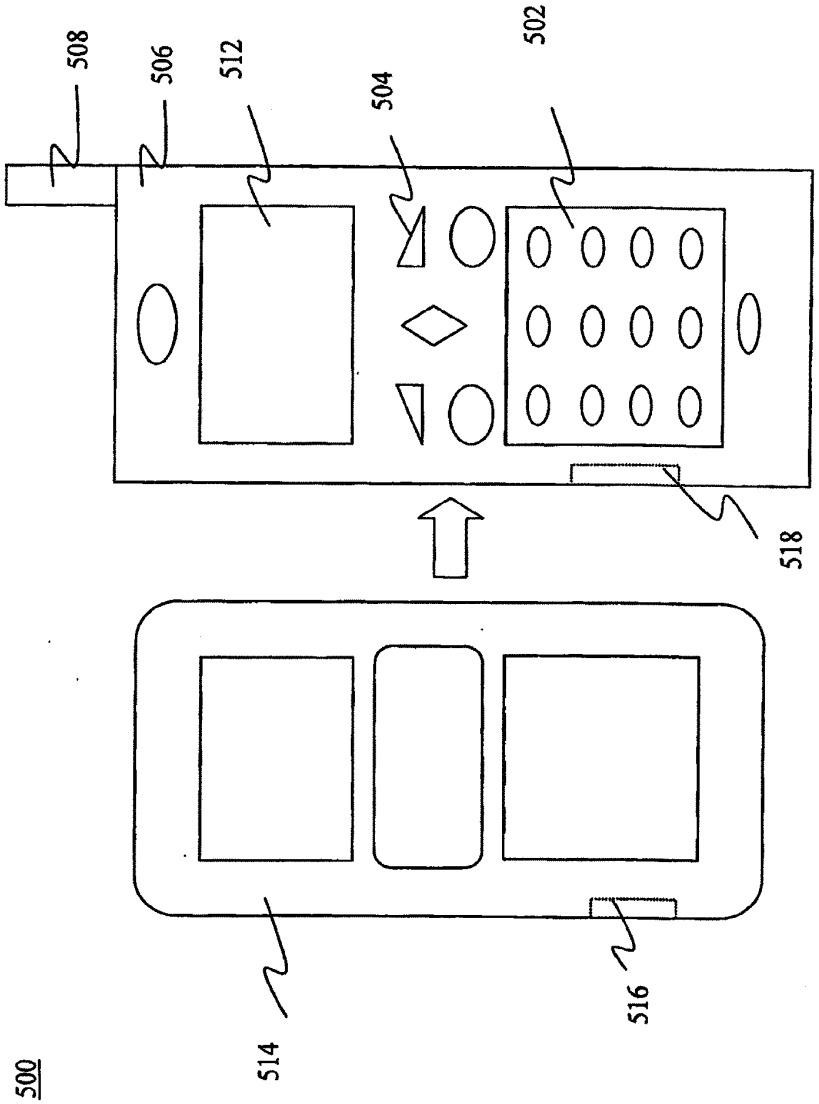


Figure 5a

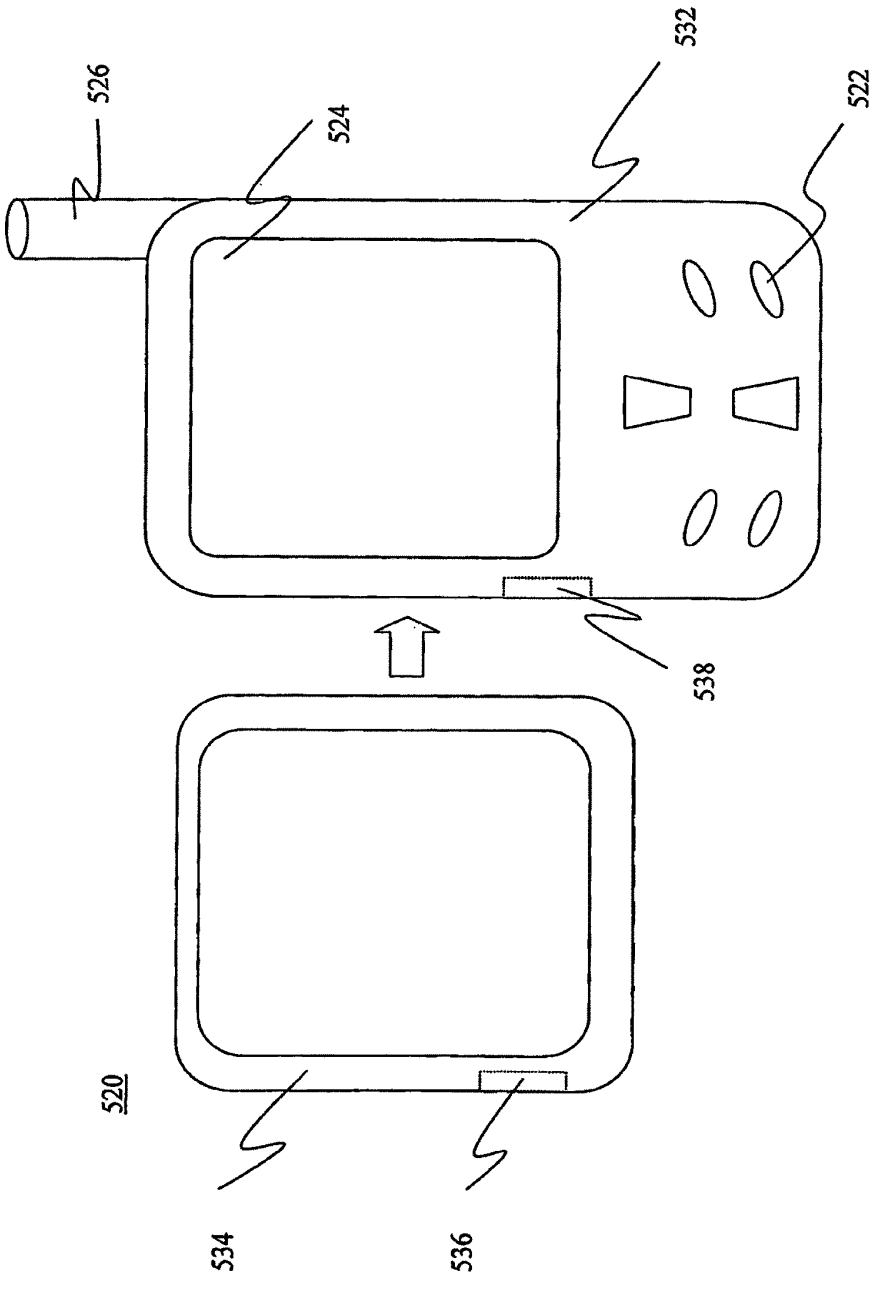


Figure 5b

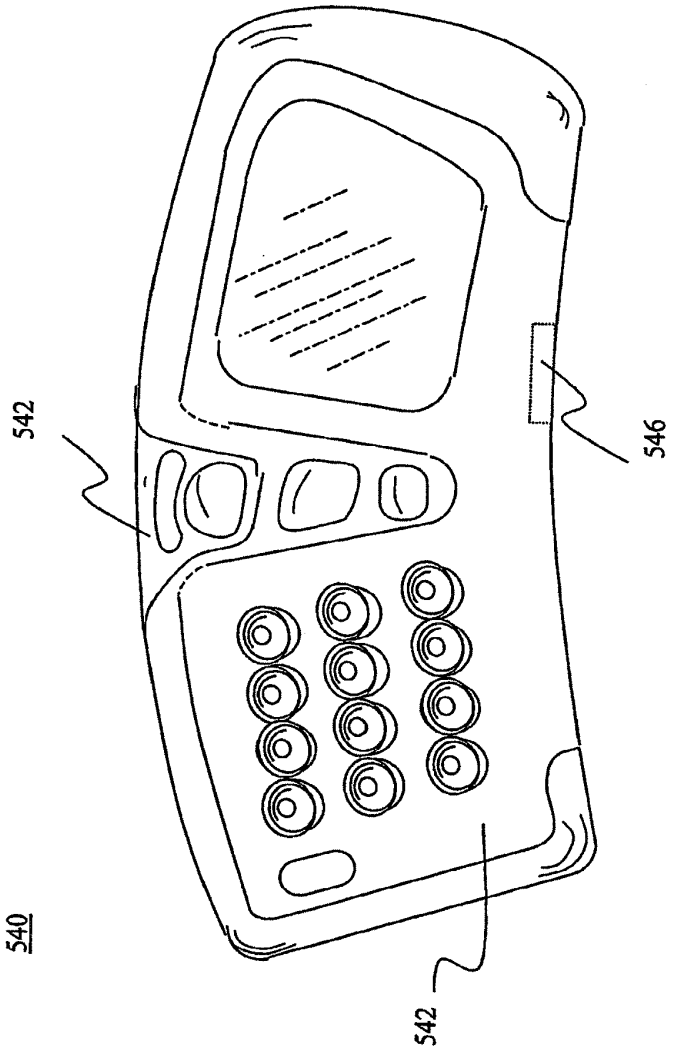


Figure 5c

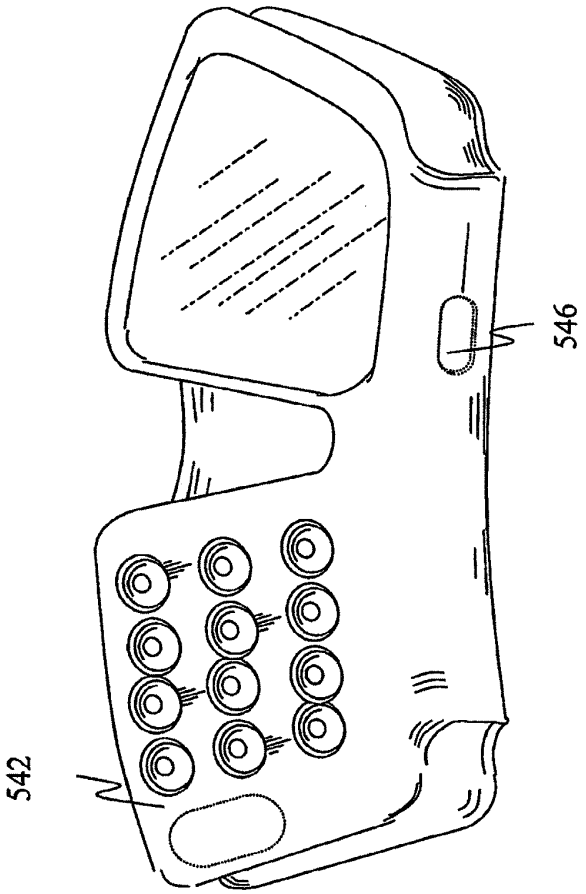


Figure 5d

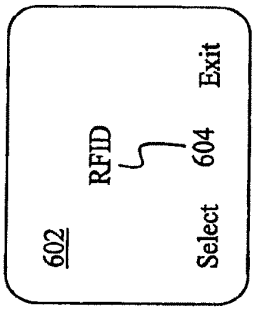


Figure 6a

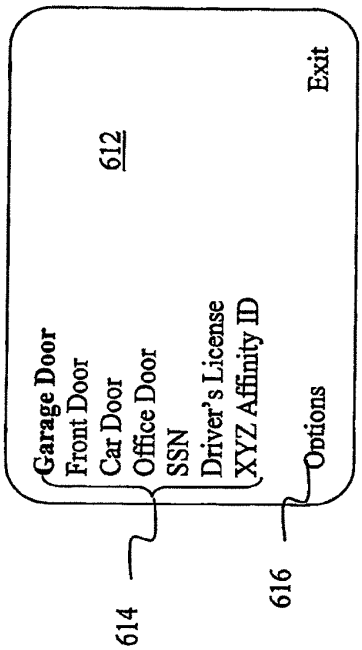


Figure 6b

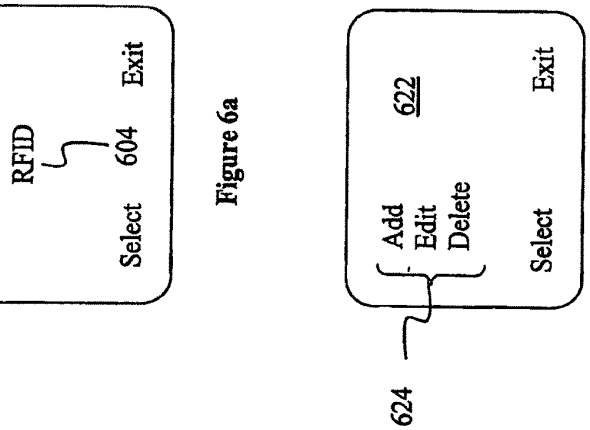


Figure 6c

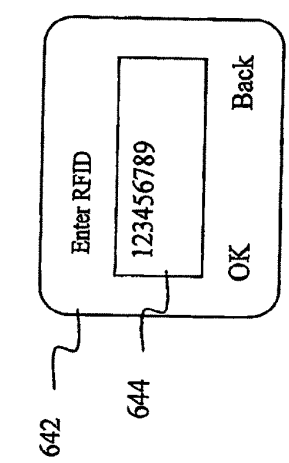


Figure 6e

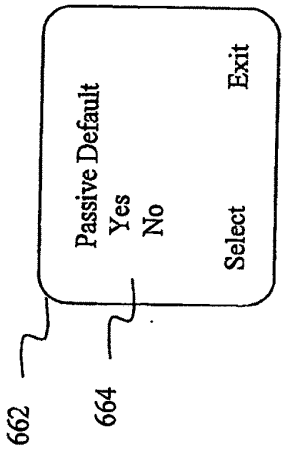


Figure 6g

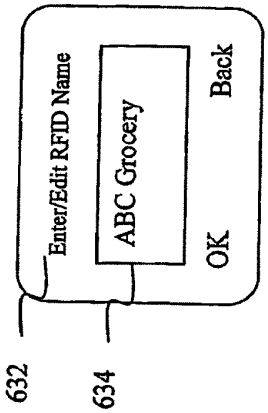


Figure 6d

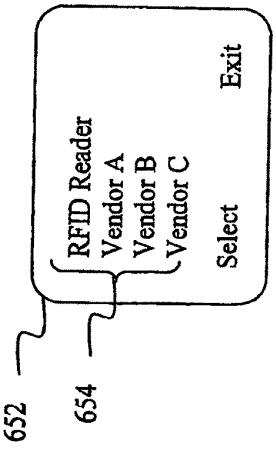


Figure 6f

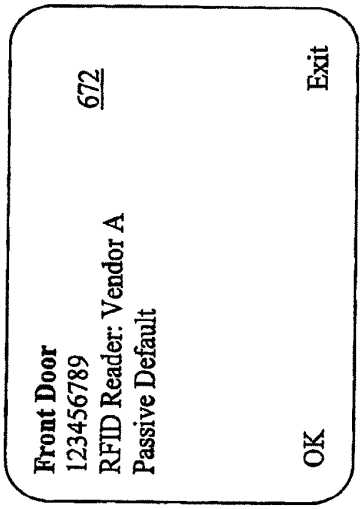

Front Door
123456789
RFID Reader: Vendor A
Passive Default
672
OK
Exit

Figure 6h

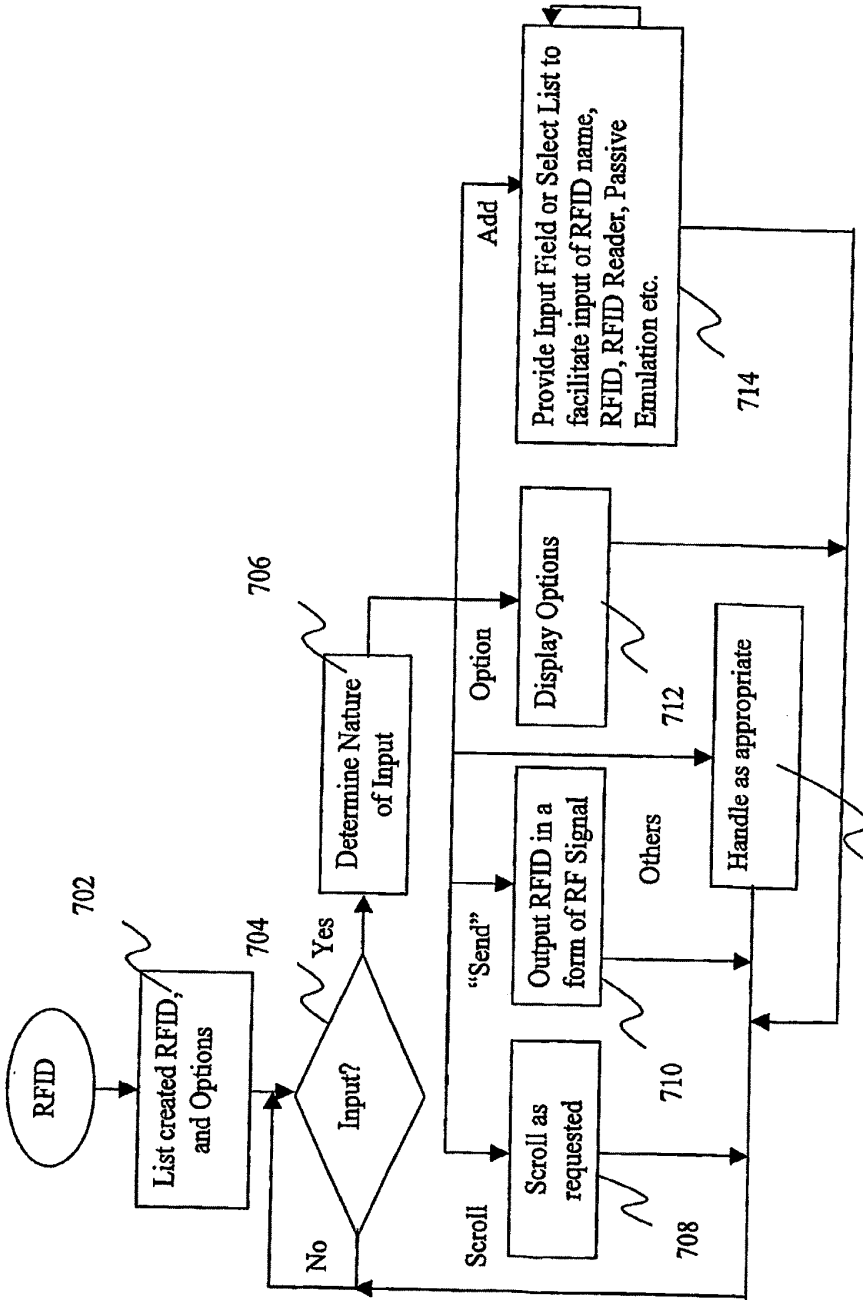

RFID
List created RFID, and Options
Input?
Yes
No
Determine Nature of Input
Option
Add
Scroll
"Send"
Others
Display Options
Provide Input Field or Select List to facilitate input of RFID name, RFID, RFID Reader, Passive Emulation etc.
Scroll as requested
Output RFID in a form of RF Signal
Handle as appropriate
702
704
706
708
710
712
714
716

Figure 7

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application for:	Examiner: Unassigned
Zatloukal et al.	Art Group: Unassigned
Application No.: Unassigned	Confirmation No: Unassigned
Filed: January 25, 2013	
For: EMULATED RADIO FREQUENCY IDENTIFICATION	

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

PRELIMINARY AMENDMENT

Sir:

Applicant respectfully requests that, prior to the examination of the above-referenced application, the Examiner enter the following amendments and consider the following remarks.

Amendments to the Specification begin on page **2** of this paper
Amendments to the Claims begin on page **3** of this paper.
Remarks/Arguments begin on page **9** of this paper.

AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph starting on page 1, line 4 with the following re-written paragraph:

This application is a continuation of U.S. Patent Application 13/363,202, filed January 31, 2012 and entitled "Emulated Radio Frequency Identification," which is a continuation of U.S. Patent Application 10/560,262, filed December 9, 2005 and entitled "Emulated Radio Frequency Identification," which was the National Stage of International Application No. PCT/US04/18397, filed June 10, 2004 and entitled "Emulated Radio Frequency Identification," which itself ~~non-provisional application~~claims the benefit of U.S. Provisional Application No. ~~provisional application number~~ 60/478,245, entitled "Radio Frequency Identification Using Mobile Communication Device"[[,]] and filed [[on]] June 13, 2003~~, and claims priority to said provisional application~~.

AMENDMENTS TO THE CLAIMS

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

Listing of Claims

1-60. (Cancelled)

61. (New) A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising:

receiving, by the mobile communication device, from an RFID reader external to the mobile device, an instruction to output first RFID transponder data in a format compatible with said RFID reader;

switching the mobile communication device from a first state to a second state upon reception of said instruction, the mobile communication device being configured to output voice call signals in the first state and to output the first RFID transponder data in the format compatible with said RFID reader in the second state; and

outputting, by the mobile communication device in the second state, the first RFID transponder data in the format compatible with said RFID reader.

62. (New) The method of claim 61, wherein said mobile communication device comprises a first signal processing unit configured to process voice call signals and a second signal processing unit configured to process RFID signals, said switching comprising coupling the second signal processing unit to a transmission path.

63. (New) The method of claim 61, wherein said first RFID transponder data comprises a selected one of a security key and an identifier.

64. (New) The method of claim 63, wherein said security key comprises a selected one of a

garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

65. (New) The method of claim 61, wherein said first RFID transponder data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

66. (New) . The method of claim 61, wherein the method further comprises facilitating the user in selecting the first RFID transponder data from a plurality of RFID transponder data using the mobile communication device.

67. (New) The method of claim 61, wherein the method further comprises facilitating provision of the first RFID transponder data to the mobile communication device.

68. (New) The method of claim 67, wherein said facilitating of the provisioning of the RFID transponder data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID transponder data in the format compatible with said RFID reader.

69. (New) The method of claim 61, wherein the method further comprises:

monitoring for proximal presence of the RFID reader by the mobile communication device; and

on detection of the RFID reader by the mobile communication device, outputting, by the mobile communication device in the second state, the first RFID transponder data in the format compatible with said RFID reader, and

wherein the mobile communication device emulates an RFID transponder of a passive type.

70. (New) The method of claim 69, wherein said monitoring comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

71. (New) The method of claim 69, wherein said sensing is performed at regular intervals.

72. (New) The method of claim 61, wherein the mobile communication device is a selected one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

73. (New) A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising:

monitoring for a proximal presence of a proximal RFID reader external to said mobile communication device by said mobile communication device, the mobile communication device having communication circuitry configured to output, in a first state, RFID transponder data in a format compatible with said RFID reader upon the mobile communication device determining the proximal presence of said RFID reader, and the communication circuitry being also configured to output, in a second state, a voice call signal for transmission at least in part over a wireless network; and

on detection of said RFID reader, outputting, by the transceiver, the RFID transponder data in a format compatible with said RFID reader as a radio frequency signal.

74. (New) The method of claim 73, wherein said monitoring comprises sensing for a first probing signal from said RFID reader and sensing for a second probing signal from a different RFID reader.

75. (New) The method of claim 73, wherein said data comprises a security key.

76. (New) The method of claim 75, wherein said security key comprises a door key.

77. (New) The method of claim 76, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

78. (New) The method of claim 73, wherein the method further comprises facilitating provision of the RFID transponder data to the mobile communication device.

79. (New) The method of claim 78, wherein said facilitating of the provisioning of the RFID transponder data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID transponder data in the format employed by the RFID reader.

80. (New) The method of claim 73, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

81. (New) A mobile communication device capable of RFID communication and voice call communication, the mobile communication device comprising:

communication circuitry configured to output voice call signals in a first radio frequency range and to output first RFID transponder data in a second radio frequency range;

a storage medium storing first data and instructions for the communication circuitry to:

monitor for proximal presence of one or more RFID readers external to the mobile communication device; and

output a voice call signal for transmission over a wireless network; and

output the first RFID transponder data as RFID transponder signals in a format employed by a proximal RFID reader, in response to detection by the mobile communication device of the proximal presence of the one or more RFID readers external to the mobile communication device.

82. (New) The device of claim 81, wherein said first RFID transponder data comprises a selected one of a security key and an identifier.

83. (New) The device of claim 82, wherein said first RFID transponder data comprises a security key, and said security key comprises a door key.

84. (New) The device of claim 83, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

85. (New) The device of claim 82, wherein said first RFID transponder data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

86. (New) The device of claim 81, wherein the instructions are further designed to facilitate the user in selecting the first RFID transponder data from a plurality of RFID transponder data.

87. (New) The device of claim 81, wherein the instructions are further designed to facilitate provision of the first RFID transponder data to the mobile communication device.

88. (New) The device of claim 87, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first RFID transponder data in the form of a radio frequency signal.

89. (New) The device of claim 81, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

90. (New) The device of claim 81, wherein the first data includes information identifying a user.

91. (New) The device of claim 81, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

92. (New) A mobile communication device capable of radio frequency identifier RFID communication and voice call communication, the mobile communication device comprising:

communication circuitry configured to transmit a voice call signal in a first operational state and a RFID transponder signal in a second operational state;

a storage medium storing first data and instructions for the communication circuitry to selectively (a) monitor for proximal presence of a proximal RFID reader, and on detection of the proximal RFID reader, output RFID transponder data as an RFID signal in a format employed by the proximal RFID reader, and (b) transmit a voice call signal to another user of another communication device at least in part over a wireless network.

93. (New) The device of claim 92, wherein said instructions are further designed to sense for a probing radio frequency signal of the proximal RFID reader.

94. (New) The device of claim 92, wherein said RFID transponder data comprises a security key.

95. (New) The device of claim 94, wherein said security key comprises a door key.

96. (New) The device of claim 95, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

97. (New) The device of claim 92, wherein the instructions are further designed to facilitate provision of the RFID transponder data to the mobile communication device.

98. (New) The device of claim 97, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the RFID transponder data in the form of a radio frequency signal.

99. (New) The device of claim 92, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

REMARKS

It is respectfully requested that, prior to the examination, the Examiner enter the above amendments. Claims 1-60 are cancelled. Claims 61-99 have been added. No new matter has been added. Support for the new claims can be found throughout the Specification and claims as orignally filed. Claims 61-99 are pending.

Consideration of the application, as amended, is respectfully requested.

If the Examiner has any questions concerning the present paper, the Examiner is kindly requested to contact the undersigned at (503) 796-2446. If any fees are due in connection with filing this paper, the Commissioner is authorized to charge Deposit Account No. 500393.

Respectfully submitted,

Date: January 25, 2013

By: /Ryan C. Fox-Lee/
Ryan C. Fox-Lee
Reg. No.: 65,369

EXHIBIT

B

In the Claims:

1-60. (Cancelled)

61. (Currently Amended) A method for ~~emulating radio frequency identification (RFID) signals from a mobile communication device~~ operating a mobile communication device comprising:

- ~~receiving, by the mobile communication device,~~ receiving a radio frequency identification (RFID) probing signal from an RFID reader external to the mobile communication device~~, an RFID probing signal~~;
- executing, on processing circuitry in the mobile communication device, instructions stored in a memory in the mobile communication device, the instructions configured to cause the mobile communication device to:
  - ~~determining, by the mobile communication device,~~ determine ~~whether~~ if the mobile communication device is in an operational space of the RFID reader based on the RFID probing signal; and
  - if the mobile communication device is in the operational space of the RFID reader, ~~outputting, by the mobile communication device~~ output an RFID signal responsive to the RFID probing signal.

62. (Currently Amended) The method of claim 61, wherein the ~~mobile communication device is configured~~ instructions are further configured to cause the mobile communication device to process voice call signals ~~and the RFID signals~~.

63. (Previously Presented) The method of claim 61, wherein the RFID signal includes RFID data comprising a selected one of a security key and an identifier.

64. (Previously Presented) The method of claim 63, wherein the security key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

65. (Previously Presented) The method of claim 63, wherein the identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

66. (Previously Presented) The method of claim 63, wherein the method further comprises facilitating a user in selecting the RFID data from a plurality of the RFID data using the mobile communication device.

67. (Previously Presented) The method of claim 63, wherein the method further comprises facilitating provision of the RFID data to the mobile communication device.

68. (Previously Presented) The method of claim 67, wherein facilitating provisioning of the RFID data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID data.

69-71. Cancelled.

72. (Currently Amended) The method of claim 61, wherein the mobile communication device is ~~a selected~~ one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

73. (Currently Amended) A method for ~~emulating radio frequency identification (RFID) signals from a mobile communication device~~ operating a mobile communication device comprising:

- executing, on processing circuitry in the mobile communication device, instructions stored in a memory in the mobile communication device, the instructions configured to cause the mobile communication device to:
  - ~~monitoring, by the mobile communication device,~~ monitor for a proximal presence of [[an] a radio frequency identification (RFID) reader external to the mobile communication device, the monitoring comprising determining whether

the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader;

- ~~outputting, by the mobile communication device~~ output an RFID signal upon ~~the mobile communication device determining~~ determining that the mobile communication device is within the proximal presence of the RFID reader; and
- ~~outputting, by the mobile communication device,~~ output a voice call signal for transmission at least in part over a wireless network.

74. Cancelled.

75. (Previously Presented) The method of claim 73, wherein the RFID signal includes RFID data comprising a security key.

76. (Previously Presented) The method of claim 75, wherein the security key comprises a door key.

77. (Previously Presented) The method of claim 76, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

78. (Currently Amended) The method of claim 73, wherein the ~~method further comprises facilitating~~ instructions are further configured to cause the mobile communication device to facilitate provision of the RFID data to the mobile communication device.

79. (Previously Presented) The method of claim 78, wherein facilitating provisioning of the RFID data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID.

80. (Previously Presented) The method of claim 73, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

81. (Currently Amended) A mobile communication device comprising:

- communication circuitry configured to output voice call signals in a first radio frequency range and output radio frequency identification (RFID) signals in a second radio frequency range;
- processing circuitry; and
- a storage medium including instructions, which, when executed by the processing circuitry cause the mobile communication device ~~for the communication circuitry~~ to:
  - monitor for a proximal presence of an RFID reader external to the mobile communication device via the communication circuitry, the monitoring comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader;
  - output a voice call signal for transmission over a wireless network via the communication circuitry; and
  - output an RFID signal via the communication circuitry in response to detection of the proximal presence of [[an]]the RFID reader external to the mobile communication device.

82. (Previously Presented) The mobile communication device of claim 81, wherein the RFID signal includes RFID data comprising a selected one of a security key and an identifier.

83. (Previously Presented) The mobile communication device of claim 82, wherein the security key comprises a door key.

84. (Previously Presented) The mobile communication device of claim 83, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

85. (Previously Presented) The mobile communication device of claim 82, wherein the identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

86. (Currently Amended) The mobile communication device of claim 82, wherein the instructions are further ~~designed~~ configured to cause the mobile communication device to facilitate a user in selecting the RFID data from a plurality of RFID data.

87. (Currently Amended) The mobile communication device of claim 82, wherein the instructions are further ~~designed~~ configured to cause the mobile communication device to facilitate provision of the RFID data to the mobile communication device.

88. (Currently Amended) The mobile communication device of claim 87, wherein the instructions are further ~~designed~~ configured to cause the mobile communication device to include provisioning of at least a signaling attribute associated with the RFID data in the form of a radio frequency signal.

89. Cancelled.

90. (Previously Presented) The mobile communication device of claim 82, wherein the RFID data includes information identifying a user.

91. (Previously Presented) The mobile communication device of claim 81, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

92. (Currently Amended) A mobile communication device comprising:

- communication circuitry configured to transmit voice call signals;
- processing circuitry; and

- ~~a control system configured to cause the communication circuitry to~~ a memory storing instructions, which, when executed by the processing circuitry cause the mobile communication device to:
  - monitor for a proximal presence of an RFID reader external to the mobile communication device via the communication circuitry, the monitoring comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader;
  - on detection of the proximal RFID reader, output an RFID signal via the communication circuitry; and
  - transmit a voice call signal to another mobile communication device via the communication circuitry at least in part over a wireless network.

93. Cancelled.

94. (Previously Presented) The mobile communication device of claim 92, wherein the RFID signal includes RFID data comprising a security key.

95. (Previously Presented) The mobile communication device of claim 94, wherein the security key comprises a door key.

96. (Previously Presented) The mobile communication device of claim 95, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

97. (Currently Amended) The mobile communication device of claim 92, wherein the ~~control system is~~ instructions are further configured to cause the mobile communication device to facilitate provision of RFID data to the mobile communication device.

98. (Currently Amended) The mobile communication device of claim 97, wherein the ~~control system is~~ instructions are further configured to cause the mobile communication device to

include provisioning of at least a signaling attribute associated with the outputting of the RFID data in the form of a radio frequency signal.

99. (Previously Presented) The mobile communication device of claim 92, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

EXHIBIT

C

ROGER G. STEWART
3 Ski Drive, Hillsborough, New Jersey 08844
phone 908-369-3536, mobile phone 408-464-3066, fax 908-369-3536
EM: r.stewart@sourland.com

Summary

Expert technical and business knowledge of solid state devices & circuits, Flat Panel Displays and RFID. Patent expert. Executive level experience at three successful start-up companies.

Professional Experience

2006-present President of Sourland Mountain Associates, Hillsborough, NJ

- Technical & patent consulting in flat panel displays, semiconductors, and RFID.
- Experience in drafting thousands of patent claims and conducting hundreds of detailed patent evaluations.
- Patent litigation experience includes Markman hearings, depositions, expert reports, and testifying as an expert technical witness in three international patent trials. My technical opinion has prevailed with the Judge and/or Jury in all of the five patents on which I have offered an opinion to the court. (A detailed list of litigation experience is available upon request.)
- Extensive experience in writing successful technical and government proposals.

2005-2006 VP of Engineering, Applied Wireless ID, Morgan Hill, CA

- Responsible for patents, developing advanced reader architectures based on international standards, and integrating these architectures into monolithic chips.
- Led industry-wide role in developing international standards for RFID tags & readers. Elected as a Founding Member of the EPCglobal Architectural Review Committee.

2003-2005 Founder, Chief Technology Officer, Member Board of Directors, Intelleflex Corporation, San Jose, CA

- Responsible for engineering, product development, and manufacturing of high-performance RFID tags with associated flexible and signage displays.

1999 - 2002 VP of Engineering, Chief Technology Officer -- Alien Technology Corporation, Morgan Hill, CA

- Managed three technical Directors with regular participation in meetings of the Board of Directors. Directed IC design, IC foundry relationships, trademarks, licensing agreements, patents, and other legal matters.
- Rapidly developed five state-of-the-art mixed-signal custom IC chips for Alien's flexible displays, signage displays, and RFID products. Assembled a world class IC development team within 6 months and rapidly completed all five chips - including Alien's first RFID chip - each one working with first silicon.
- Represented Alien in the international RFID standards setting process including presentations to US Government, Universities, Venture Capitalist meetings, and other companies. Led the MIT Auto ID Center's effort to develop a new, low-cost RFID tag specification based on Alien's design, that was subsequently adopted in June'01 by all three RFID international standards-setting organizations.
- Expanded Alien's patent portfolio from only 4 patents in 1999 to 79 patents by the end of 2002.

1981 - 1999 Laboratory Director -- Sarnoff Corporation, Princeton NJ

- As Director of the Solid State Display Laboratory my responsibilities included funding and managing a 6 M$ annual budget for 20-30 persons in the field of Active Matrix LCDs, Active Matrix OLEDs, video walls, electronic signage, and other flat panel display devices.
- Successfully negotiated numerous patent licensing and technology development contracts including several multi-million dollar agreements in France, Korea, and Japan.
- Founded Sarnoff "spin-out" corporation, SARIF Corporation, Inc., with initial funding of 10 M$.
- Developed the first polysilicon AMLCDs in 1986 and the world's first self-scanned amorphous silicon AMLCDs (SASID) in 1995.

< 1981 Before 1981, pioneered development of semiconductor memories and non-volatile memory products.

- Designed and transferred into high-volume commercial production a CMOS microprocessor, two CMOS ROM chips, three CMOS static RAM chips, two EEPROM chips, and a 256 MHz ultra-high-speed shift register chip.
- Patents currently used in over 85% of all DRAM and RAM manufactured worldwide. Patent 4,344,005 "Power Gated Decoding" and Patent 4,558,240 "Multi Mode Amplifier" have generated over $100M in royalties for the Harris Semiconductor Corporation.

Awards

- Author of 94 papers and published presentations.
- Holds 110 Issued USA Patents, 22 published USA patent applications, and 60 foreign patents.
- Elected in 1997 as a Fellow of the Institute of Electrical and Electronic Engineers ("IEEE")
- Elected in 2010 as a Fellow of the Society of Information Display ("SID")
- Received numerous awards, including the "David Sarnoff Award for Outstanding Technical Achievement" - the highest award offer made by either RCA or Sarnoff - for founding a new display company called "SARIF Inc." in 1994.
- Taught courses on solid state circuits and flat panel display technology for Boeing, RCA, the IEEE, the Society of Information Display, and the University of California.
- Chairman of the 1977 IEEE SOS Workshop, VLSI Workshop Committee 1984-1986, the ISSCC Committee from 1986-1989, Member or Chairman of the AMLCD Technical Program Sub-Committee for SID from 1989 to the present.
- Founding member of the RFID Standards Working Group at MIT in 2002.
- Elected as a Founding Member of the EPCglobal Architectural Review Committee in 2004.

Education

BS-EE	John Hopkins University, Baltimore, Md.
MS-EE	Lehigh University, Bethlehem, Pa.

Patents and Publications

Lists of patents and publications are attached below.

Patent List

1. 3,947,727 Protection circuit for insulated-gate field-effect transistors
2. 3,967,295 Input transient protection for integrated circuit element
3. 3,999,205 Rectifier structure for a semiconductor integrated circuit device
4. 4,037,114 Tri-state logic circuit
5. 4,039,858 Transition detector
6. 4,044,341 Memory array
7. 4,045,688 Power-on reset circuit
8. 4,061,962 Current mirror amplifier augmentation of regulator transistor current flow
9. 4,063,225 Memory cell and array
10. 4,075,690 Write enhancement circuit
11. 4,080,539 Level shift circuit
12. 4,107,556 Sense circuit employing complementary field effect transistors
13. 4,185,319 Non-volatile memory device
14. 4,208,730 Precharge circuit for memory array
15. 4,216,390 Level shift circuit
16. 4,236,199 Regulated high voltage power supply
17. 4,239,994 Asymmetrically precharged sense amplifier
18. 4,281,400 Circuit for reducing the loading effect of an insulated-gate field-effect transistor (IGFET) on a signal source
19. 4,329,600 Overload protection circuit for output driver
20. 4,337,522 Memory circuit with means for compensating for inversion of stored data
21. 4,339,809 Noise protection circuits
22. 4,344,005 Power gated decoding
23. 4,354,255 Random access memory with volatile and non-volatile storage
24. 4,386,284 Pulse generating circuit using current source
25. 4,398,102 Gated parallel decoder
26. 4,405,996 Precharge with power conservation
27. 4,419,741 Read only memory (ROM) having high density memory array with on pitch decoder circuitry
28. 4,423,432 Apparatus for decoding multiple input lines
29. 4,434,381 Sense amplifiers
30. 4,442,447 Electrically alterable nonvolatile floating gate memory device
31. 4,450,562 Two level parity error correction system
32. 4,464,754 Memory system with redundancy for error avoidance
33. 4,464,755 Memory system with error detection and correction
34. 4,472,805 Memory system with error storage
35. 4,513,397 Electrically alterable, nonvolatile floating gate memory device
36. 4,527,081 Overshoot pre-driven semi-asynchronous driver
37. 4,558,240 Multi mode amplifier
38. 4,577,215 Dual word line, electrically alterable, nonvolatile floating gate memory device
39. 4,589,008 Apparatus for electrically joining the ends of substantially parallel semiconductor lines
40. 4,608,591 Electrically alterable programmable nonvolatile floating gate memory device
41. 4,612,466 High-speed output driver
42. 4,618,876 Electrically alterable, nonvolatile floating gate memory device
43. 4,738,514 Crystal variation compensation circuit for liquid crystal displays

44. 4,742,346 System for applying grey scale codes to the pixels of a display device

45. 4,760,557 Radiation hard memory cell circuit with high inverter impedance ratio

46. 4,766,430 Display device drive circuit

47. 4,828,365 Multicolor filter for producing purer white across a display device

48. 4,833,644 Memory cell circuit having radiation hardness

49. 4,872,002 Integrated matrix display circuitry

50. 4,903,094 Memory cell structure having radiation hardness

51. 4,926,236 Multilayer interconnect and method of forming same

52. 4,933,904 Dense EPROM having serially coupled floating gate transistors

53. 4,947,221 Memory cell for a dense EPROM

54. 4,963,860 Integrated matrix display circuitry

55. 4,965,646 Thin film transistor and crossover structure for liquid crystal displays

56. 4,968,119 High-density liquid-crystal active dot-matrix display structure

57. 4,989,061 Radiation hard memory cell structure with drain shielding

58. 5,076,667 High speed signal and power supply bussing for liquid crystal displays

59. 5,093,581 Circuitry for generating pulses of variable widths from binary input data

60. 5,105,187 Shift register for active matrix display devices

61. 5,122,676 Variable pulse width generator including a timer vernier

62. 5,122,792 Electronic time vernier circuit

63. 5,148,058 Logic circuits as for amorphous silicon self-scanned matrix arrays

64. 5,175,446 Demultiplexer including a three-state gate

65. 5,302,966 Active matrix electroluminescent display and method of operation

66. 5,337,068 Field-sequential display system utilizing a backlit LCD pixel array and method for forming an image

67. 5,587,329 Method for fabricating a switching transistor having a capacitive network proximate a drift region

68. 5,654,731 Shielded pixel structure for liquid crystal displays

69. 5,736,752 Active matrix electroluminescent display pixel element having a field shield means between the pixel and the switch

70. 5,932,892 High-voltage transistor

71. 5,952,789 Active matrix organic light emitting diode (AMOLED) display pixel structure and data load/illuminate circuit therefore

72. 6,229,506 Active matrix light emitting diode pixel structure and concomitant method

73. 6,307,322 Thin-film transistor circuitry with reduced sensitivity to variance in transistor threshold voltage

74. 6,348,906 Line Scanning Circuit for Dual-Mode Display

75. 6,370,019 Sealing of large Area Display Structures

76. 6,414,661 Method and Apparatus for Calibrating Display Devices and Automatically Compensating for Loss in their Efficiency over time

77. 6,417,825 Analog active matrix emissive display

78. 6,476,783 Contrast enhancement for an electronic display device by using a black matrix and lens array on outer surface of display

79. 6,606,247 Multi-feature-size electronic structures

80. 6,618,030 Active matrix light emitting diode pixel structure and concomitant method

81. 6,683,663 Web fabrication of devices

82. 6,816,380 Electronic devices with small functional elements supported on a carrier
83. 6,825,836 Bus arrangement for a driver of a matrix display
84. 6,863,219 Apparatuses and methods for forming electronic assemblies
85. 6,897,855 Tiled electronic display structure
86. 6,927,085 Web fabrication of devices
87. 6,933,848 System and method for disabling data on radio frequency identification tags
88. 6,942,155 Integrated circuits with persistent data storage
89. 6,952,157 System and method for concurrently addressing multiple RFID tags from a single reader
90. 6,980,184 Display devices and integrated circuits
91. 6,985,361 Electronic devices with small functional elements supported on a carrier
92. 6,988,667 Methods and apparatuses to identify devices
93. 7,172,910 Web fabrication of devices
94. 7,173,528 System & method for disabling data on RFID tags
95. 7,193,504 Methods & apparatus for identification
96. 7,221,258 Hierarchical electronic watermarks & method ...
97. 7,260,882 Methods for making electronic devices w small ...
98. 7,262,686 Methods & apparatus to identify devices
99. 7,333,001 Secure personal documents & method of use
100. 7,364,084 Persistent data storage
101. 7,377,445 Persistent data storage
102. (9 new patents)

Published Patent Applications

2004-0008123 System & method for tracking medical devices
2004-0246280 Image degradation correction in novel LCDs
2005-0078104 Tiled electronic display structure
2005-0081908 Method and apparatus for generation of electrical power from solar energy
2005-0121526 Battery activation circuit
2006-0087407 Master tags
2006-0208898 Compact omnidirectional RF system
2006-0208958 Compact omnidirectional RF system
2006-0250220 Accurate persistent nodes
2006-0250251 Semi-transparent RFID tags
2006-0255131 Smart tag activation
2006-0265181 Battery monitor
2007-0013484 Methods & apparatus for identification
2007-0018793 Ramped interrogation power levels
2007-0018828 System & method for disabling data on RFID tags
2007-0118309 Battery monitor
2007-0206701 RFID reader with digital waveform encoding ...
2007-0206704 RFID reader with adaptive carrier cancellation
2007-0206705 RFID reader with adjustable filtering & adaptive backscatter processing
2007-0247884 Attribute Cache memory
2007-0256291 Methods for making electronic devices w small ...
2007-0262851 Methods & apparatus to identify devices
2007-0279194 Methods & apparatus for identification
2008-0055223 Pixel circuits & method for driving pixels
2008-0062090 Pixel circuits & method for driving pixels
2008-0062091 Pixel circuits & method for driving pixels

2008-0065662 Compressed tag codes & mapping

List of Publications & Published Presentations

1. **"Compatible MOS - Bipolar Processing"**
   R. Gallagher, R.G. Stewart, Westinghouse MOS Symposium, 1968.

2. **"X-Band Integrated Diode Phase Shifters"**
   R.G. Stewart, M. Giuliano, G-MTT International Microwave Symposium, 1968 Detroit, Mich.

3. **"A Proposed Method for Rapid Determination of Doping Profiles in Semiconductor Layers"**
   D. Leenov, R. G Stewart, Proceedings of IEEE - Special Issue on Electronic Scanning, November, 1968.

4. **"EMP Hardened CMOS Circuits"**
   D. Hampel, R.G. Stewart, J. Parks, 1974 Government Microcircuit Applications Conference (GOMAC), June 25-27, 1974, Boulder, CO.

5. **"EMP Hardened CMOS Circuits"**
   R.G. Stewart, D. Hampel, IEEE Conference on Nuclear and Space Radiation Effects, July 15-18, 1974, Fort Collins, CO.

6. **"EMP Hardened CMOS Circuits"**
   R.G. Stewart, D. Hampel, IEEE Transactions on Nuclear Science, NS-21, December, 1974, pp 332-339.

7. **"256 x 4 Bit CMOS/SOS RAM Array"**
   W. Gehweiler, R.G. Stewart, 1976 SOS Technology Workshop, August 11-13, 1976, Stanford University, CA.

8. **"CMOS, MNOS and SOS Memory Cells"**
   R.G. Stewart, Tutorial Conference on Semiconductor Memories and Magnetic Bubble Devices, Fairleigh Dickinson University, January 12-13, 1977, Teaneck, NJ.

9. **"High Density CMOS ROM Arrays"**
   R.G. Stewart, 1977 IEEE International Solid-State Circuits Conference Digest of Technical Papers, Philadelphia, PA, Feb 16-18, 1977. pp 20-21

10. **"20MHz CMOS-on-Sapphire COSMAC Microprocessor"**
    G.R. Briggs ... R.G. Stewart, RCA Engineer, Vol. 22, No. 5, February/March, 1977, pp. 71-75.

11. **"High Density CMOS ROM Arrays"**
    R.G. Stewart, Invited Paper at Semiconductor Memories, Lehigh Valley Semiconductor Symposium, Bethlehem, PA, 5/13/1977

12. **"20 MHz CMOS-on-Sapphire COSMAC Microprocessor"**
    G. Briggs ... R.G. Stewart, 1977 IEEE SOS Technology Workshop. September 28-30, 1977; Vail, CO.

13. **"High Density CMOS ROM Arrays"**
    R. G. Stewart, Special Issue of IEEE Journal of Solid State Circuits, Oct., 1977.

14. **"A CMOS/SOS Electrically Alterable Read Only Memory"**
    R.G. Stewart, 1978 SOS Workshop -- Abstracts, June 1978.

15. **"40 MHz CMOS-on-Sapphire Microprocessor"**
    G.R. Briggs ... R.G. Stewart, IEEE Trans. Electron Devices, ED-25, No. 8, pp 952-959, August 1978.

16. **"Very High Density CMOS/SOS Static Memory Cells"**
    A.G.F. Dingwall, R.G. Stewart, B. Leung, 1978 IEEE SOS Technology Workshop, October 4-6, 1978; Vail, CO.

17. **"A CMOS/SOS Electrically Alterable Road Only Memory"**
    R.G. Stewart, 1978 IEEE SOS Technology Workshop, October 4-6, 1978; Vail, CO.

18. **"High-Density Buried Contact, CMOS/SOS Static RAM's"**
    A.G.F. Dingwall, R.G. Stewart ... IEDM Technical Digest, pp 193-196, December 4-6, 1978.

19. **"A CMOS/SOS Electrically Alterable Road Only Memory"**
    R.G. Stewart, IEDM Technical Digest, pp. 344-347, December 4-6, 1978.

20. **"16K CMOS/SOS Asychronous Static RAM"**
R.G. Stewart, A.G.F. Dingwall, 1979, IEEE ISSCC Digest of Technical Papers, pp 104-105, February 14-16, 1979.

21. **"16K CMOS/SOS Asynchronous Static RAM"**
A.G.F Dingwall, R.G Stewart, IEEE Journal of Solid State Circuits SC-14, No. 5, pp 867-871, October 1979.

22. **"CMOS/SOS EAROM Memory Arrays"**
R.G. Stewart, IEEE Journal of Solid State Circuits, SC-14, No. 5, pp. 860-864, October 1979.

23. **"Digital MOS Integrated Circuits"**
R.G.Stewart -- published one chapter in a book edited by M.I. Elmasry, published by IEEE Press, 1980

24. **'High-Speed CMOS/SOS Serial Memories"**
R.G.Stewart, S. Detta 1980 IEEE SOS Technology Workshop, October 1980, Snowmass, CO.

25. **"High-Density ROM Arrays"**
R.G. Stewart 1980 IEEE SOS Technology Workshop, October 1980, Snowmass, CO.

26. **"Advanced High Speed CMOS Circuit Techniques"**
R.G Stewart, IEEE Solid State Circuits & Technology Committee Workshop, May 29, 1981

27. **"A 40NS CMOS E^2PROM"**
R.Stewart, D.Plus 1982 IEEE ISSCC Digest of Technical Papers, Feb 10-12, 1982, San Francisco, CA.

28. **"A 40NS CMOS E^2PROM"**
R.G. Stewart, D. Plus, IEEE Journal of Solid State Circuits, SC-17 No. 5, October 1982.

29. **"Memory with Built-In Error Correction"**
I.T. Wacyk, R.G. Stewart 1982 Government Microcircuit Applications Conference (GOMAC), Nov 1-4, 1982, Orlando, FL

30. **"I/O Transient Protection"**
R.G.Stewart IEEE CMOS Latchup Workshop, March 15, 1983, New York, NY,

31. **"A Shielded Substrate Injector MOS (SSIMOS) EEPROM Cell"**
R.G.Stewart, A.C. Ipri, L. Faraone, J. Cartwright, K. Schlesier, IEDM, December 9-12, 1984.

32. **"A Maximum Density Floating Gate EPROM Cell and Array Organization"**
R. Stewart, A. Ipri ... 7th IEEE Non-Volatile Semiconductor Memory Workshop, March 11-13, 1985 San Diego, CA.

33. **"A New High-Density Low-Voltage SSIMOS EEPROM Cell"**
A.C. Ipri, R.G. Stewart ... IEEE Trans. on Electron Devices, Vol. Ed.-32, No. 4, April 1985.

34. **"A High Density EPROM Cell and Array"**
R.G. Stewart, et al. 1986 ULSI Symposium, May 28-30, 1986, San Jose, CA.,

35. **"Low Temperature Fabrication Of Polysilicon Active Matrix Liquid Crystal Display'**
A. Ipri, R.G. Stewart, July 1986.

36. **"Sapphire Photocurrent Sources and Their Impact on RAM Upset"**
G.J. Brucker, J. Herbert and R.G. Stewart, 23rd Annual Conference on Nuclear & Space Radiation Effects, July 21-23, 1986.

37. **"A New High Density EPROM Cell and Array"**
R.Stewart, A. Ipri ... Presented at the 1986 Symposium on VLSI Technology, San Diego, CA, December, 1986

38. **"Low Temperature Fabrication of Polysilicon Active Matrix LC Displays"**
A.C. Ipri, R.G. Stewart, EuroDisplay, London, UK - September 15-17, 1987.

39. **"Polycrystalline-Silicon LCDs with High-Speed Integrated Scanners"**
B.W. Faughnan, R.G. Stewart ... Proceedings of the SID, Vol. 29/4, 1988

40. **"Polycrystalline Silicon Liquid LCDs with High Speed Integrated Scanners"**
RG Stewart, et.al. SID Internation Symposium Digest of Tech.Papers, Volume XIX, May 24-26, 1988.

41. **"A 600-650°C Polysilicon CMOS Process for Fabricating Fully Scanned AMLCDs"**
A.C. Ipri, R.G. Stewart, G.Kaganowicz, B.Faughnan and J.Valachovic Proceedings of the SID, pp 167-171, Vol. 29/2, 1988.

42. **"Polysilicon Active-Matrix Liquid Crystal Displays for Cockpit Applications"**
B.W. Faughnan, R.G. Stewart ..., January 1989.

43. **"Display System Optics II"**
B.W. Faughnan, R.G. Stewart ..., Proceedings of SPIE - Intl Society for Optical Engineering March 30-31, 1989 - Orlando, FL

44. **"Design of Scanned Polysilicon Displays"**
R.G. Stewart, Workshop on Polysilicon Thin-Film Transistors and Related Material Aspects for Large Area Microelectronics, Fitzwilliam College, Cambridge, UK, July 12-13, 1989.

45. **"A 5"X9" Polysilicon Gray-Scale Color Head Down Display Chip"**
S. Lee, R.Stewart, A.Ipri and S.Lipp, Published in 1990 IEEE ISSCC Digest of Technical Papers, # 13.5, Feb, 13-16, 1990

46. **"Avionic Gray-Scale Color Head Down Display,"**
D.Jose, S.N.Lee, R.Stewart, A.Ipri, S. Lipp at the 1990 SPIE Symposium of Aerospace Sensing, #1289-17, April 17-20, 1990

47. **"Novel Large Area Color LCD Backlight System"**
D. L. Jose, R.G. Stewart and W. R. Roach, IEEE - Naecon 90, Dayton, Ohio - May 21-25, 1990.

48. **"A 9V Polysilicon LCD with Integrated Gray-Scale Drivers"**
R.G Stewart, S.N Lee ... SID Digest Of Technical Papers, Volume XXI - May 15-17, 1990.

49. **"Flat Panel Displays"**
Roger G. Stewart, IEEE/AESS, Dayton Chapter Symposium, The Cockpit of the 21st Century -- Will High Tech Payoff? - November 28, 1990, Dayton, Ohio

50. **"Self-Scanned Active-Matrix Liquid-Crystal Displays"**
R.G. Stewart, Society of Information Displays Digest of Technical Papers Volume XXII, May 6-10, 1991.

51. **"Single-Crystal Silicon Transmissive AMLCD"**
J.P.Salerno ... R.G. Stewart SID Digest of Technical Papers, Volume XXIII, pp 63-66, May 17-22, 1992 Boston, MA.

52. **"Poly-SI TFT Devices.and Their Application to LCDs"**
A.H. Firester, R.G.Stewart, W. R. Roach, Japan Display 1992, Proceedings of the 12 Int. Display Research Conference, pp 557-560 October 12-14, 1992 Hiroshima, Japan.

53. **"Design And Operation Of Poly-Si Circuits On Glass"**
R.G. Stewart, Lehigh University Workshop on Flat Panel Display Technology October 21-22, 1993 Bethleham, PA.

54. **"High-Resolution Active-Matrix Electroluminescent Display"**
R.Khormaei, ... R.G.Stewart, Society of Information Displays Digest of Technical Papers pp 137-139 June 14-16, 1994 San Jose, CA. Best Paper Award

55. **"Application of SOI to Flat Panel Displays"**
G.Dolny, A.Ipri, R.G.Stewart, 1994 International SOI Symposium October 1994 Nantucket, MA. Best Paper Award

56. **"A High-Density 1280x1024 Transferred-Silicon AMLCD"**
F.Cuomo ... R.G.Stewart, Society of Information Displays Digest of Technical Papers pp 77-80, May 23-25, 1995 Orlando, FL.

57. **"Circuit Design for a-Si AMLCDs with Integrated Drivers"**
R.G Stewart, et al. Society of Information Displays Digest of Technical Papers pp 89-92, May 23-25, 1995 Orlando, FL.

58. **"A 1280x1024 Active-Matrix EL Display"**
R.Khormaei ... R.G Stewart, Society of Information Displays Digest of Tech Papers pp 891-893 5/23-2595, 1995 Orlando, FL.

59. **"Design of a High-Density, Gray Scale, 1280x1024 Active Matrix EL (AMEL) Display on SOI"**
F.L.Hsueh, ... R.Stewart, Asia Display '95 (IDRC) pp 283-286 October 16-18, 1995 Hamamatsu, Japan.

60. **"Active-Matrix LCDs"**
Roger G.Stewart, SID Seminar Lecture Notes May 13, 1996, Vol 1 M5:pp 1-35, San Diego, CA.

61. **"A 2000 lpi Active-Matrix EL Display"**
Larry Arbuthnot ... R.G Stewart, Society of Information Display Digest of Technical Papers pp 374-377 May 14-16, 1996, San Diago, CA.

62. **"Why AMEL?"**
M.Robert Miller ... R.G. Stewart, Society of Information Display Digest of Technical Papers pp 378-381 May 14-16, 1996, San Diago, CA.

63. **"aSi Self-Scanned 2.2-in. EDTV Projection LC Light Valve"**
H.Lebrun ... R.G.Stewart, Society of Information Display Digest of Tech Papers pp 677-680 May 14-16, 1996, San Diago, CA.

64. **"FPD Fundamentals"**
R.G.Stewart, SID Display Works '97 -- FPD Fundamentals January 31, 1997 San Jose, CA.

65. **"SASID - Selfscanned Amorphous Silicon Displays"**
R.G.Stewart 1997 International Workshop on Active-Matrix LCDs Invited Paper AM-1, September 11, 1997 Tokyo, Japan

66. **"Reliability and Lifetime of SASID Displays"**
R.G.Stewart IDW'97 Invited Paper, November 19-21, 1997 Nagoya, Japan

67. **"Design of Improved Pixel for a Polysilicon Active-Matrix Organic LED Display"**
R.M.A.Dawson, ... R.G.Stewart, Society of Information Display Digest of Technical Papers pp11-14 May 17-22, 1998, Anaheim, CA.

68. **"The Impact of Transient Response of Organic Light Emitting Diodes on Design of Active Matrix OLED Displays"**
R.M.A.Dawson ... R.G.Stewart, International Electron Device Meeting (IEDM'98) Paper 32.6.1, pp 875-878, December 5-9,1998, San Francisco, CA.

69. **"Flat Panel Display Technology"**
Roger G. Stewart & Michael Kane, SID Display Works '99 -- Seminar Notes pp 85-154, Feb 5, 1999 San Jose, CA.

70. **"Self-Scanned Amorphous Silicon AMLCDs""**
Roger G. Stewart, Information Display, pp 12-16, Vol 15, #3, March, 1999

71. **"Modular Displays for Megapixel Applications"**
D.L.Matthies ... R.G.Stewart, SPIE Conference, April 5-9, 1999, Orlando, Florida.

72. **"A Polysilicon Active Matrix Organic Light Emitting Diode Display with Integrated Drivers"**
R. Dawson ... R.G.Stewart, Society of Information Display Digest of Technical Papers, May 17-21, 1999, San Jose, CA.

73. **"New Electronic Display Technologies"**
R.G.Stewart Invited Tutorial Lecture at the 7th Color Imaging Conference, November 1999, Scottsdale, Arizona

74. **"NanoBlock ICs and Smart Cereal Boxes"**
R.G.Stewart, 58th Device Research Conference, pg 101, June 19-21, 2000, Denver, Colorado

75. **"Flexible Displays with Fully Integrated Electronics"**
R.G.Stewart, Invited 20th International Display Research Conference, pp 415-415, Sept 25-28, 2000, Palm Beach, Florida

76. **"Incorporation of High Performance Si-based Devices on Flexible Substrates using Self-Orienting Fluidic Transport"**
R.Stewart, Presentation FP-MoA7 at American Vacuum Society 47th International Symposium, pg #19, October 2-6, 2000, Boston, Massachusetts

77. **"Ultra-Low-Power AMLCDs"**
R.G.Stewart, Invited Paper 18.1 at the 2001 SID International Symposium Digest of Technical Papers, Vol #32, pg 264-267, June 5-7, 2001, San Jose, California

78. **"The Third Wave of the Computer Revolution, RFID, & Direct Computer-to-Computer Communications"**
R.G.Stewart Invited Presentation at Xerox PARC Lecture Series, July 26th, 2001

79. **"Low-Cost Flexible Displays"**
R.G.Stewart presented 1/14/02 at Flexible Microelectronics Manufacturing Workshop in Phoenix, Arizona, sponsored by USDC & Army Research Laboratories

80. **"Nano-Technology Applications: RFID Tags & Displays"**
R.G.Stewart, Paper Presented 3/8/02 at NanoVentures 2002 in Austin, Texas

81. **"Flexible Electronic Devices & Displays"**
R.G.Stewart, J.Tu, E.Boling Invited Paper 2.3 presented 4/2/02 at Materials Research Society Conference, San Francisco, CA

82. **"Rugged Low-Cost Display Systems"**
R.G.Stewart et.al. Paper #4712-40, presented 4/4/02 at Cockpit Displays IX: Displays for Defense Applications, Published in SPIE - The International Society for Optical Engineering, Proceedings of SPIE Vol. #4712, pg 350-356

83. **"Intellectual Property and the Chief Technology Officer"**
R.G.Stewart presented on 4/30/02 at Intellectual Property Society in Palo Alto, California

84. **"Plastic Film Displays with NanoBlock IC Drivers Integrated by Fluidic Self Assembly Process"**
Jeff Jacobsen ... R.G.Stewart, Invited Paper 18.2 at the 2002 SID International Symposium Digest of Technical Papers, Vol #33-2, ISSN-0002-966X, pg 726-729, May 21-23, 2002 Boston, Mass.

85. **"Pursuing the Deal: Negotiating Intellectual Property Agreements"**
R.G.Stewart presented 9/24/02 at Global Alliance & Technology Acquisition Summit in Seattle, Washington

86. **"EPCglobal and the Search for RFID Standards"**
R.G.Stewart presentation on 10/6/04 at International RFID IP Conference in San Francisco, California

87. **"Key Public Domain Patents"**
R.G.Stewart presentation on 10/7/04 at International RFID IP Conference in San Francisco, California

88. **"RFID Patent Update"**
Invited presentation on 4/10/05 at RFID Journal Live Conference in Chicago, Illinois

89. **"Electronic Labels"**
R.Stewart presentation on 10/4/06 at the Intelligent Printing & Packaging Conference Cherry Hill, New Jersey, USA

90. **"RFID Patents"**
Invited presentation on 2/20/07 as part of the RFID Investor's Conference at the RFID Smart Labels USA 2007 sponsored by IDTechEx in Boston, Mass., USA

91. **"On Being an Expert Witness"**
Invited paper presented at the IP Society Meeting on May 10, 2007 in Santa Cruz, California, subsequently web-published by the IP Society

92. **"Introduction to Reflective Displays"**
Invited paper presented on 10/23/07 at the Society for Information Display Applications Conference in San Francisco, CA

93. **"Active Matrix OLED Pixel Design"**
Roger G. Stewart, Invited Paper at 2010 SID International Symposium Digest of Technical Papers Vol. #41-2, pg 790-793, May 27, 2010, Seattle, Washington

94. **"A Fast 2-Transistor Current-Mode AMOLED Pixel"**
Roger G. Stewart, published in the Journal of the SID, Vol. 19/7 2011, pp 503-512

EXHIBIT

D

US006771981B1

(12) **United States Patent**
Zalewski et al.

(10) **Patent No.: US 6,771,981 B1**
(45) **Date of Patent: Aug. 3, 2004**

(54) **ELECTRONIC DEVICE COVER WITH EMBEDDED RADIO FREQUENCY (RF) TRANSPONDER AND METHODS OF USING SAME**

(75) Inventors: **Thomas W. Zalewski**, Irving, TX (US); **Michael C Pennington**, Forney, TX (US); **Randall C. Roberts**, Double Oaks, TX (US); **Steven A. Shaw**, Irving, TX (US)

(73) Assignee: **Nokia Mobile Phones Ltd.**, Espoo (FI)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 508 days.

(21) Appl. No.: **09/675,618**

(22) Filed: **Sep. 29, 2000**

Related U.S. Application Data

(60) Provisional application No. 60/222,475, filed on Aug. 2, 2000.

(51) **Int. Cl.**[7] **H04B 1/38**; H04M 1/00

(52) **U.S. Cl.** **455/557**; 455/407; 455/558; 455/552.1; 455/575.1; 342/31

(58) **Field of Search** 455/405, 406, 455/407, 408, 412.1, 466, 557, 558, 92, 95, 575.8, 115.4, 100, 552.1; 342/51; 235/380; 705/41

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,713,148	A	* 1/1973	Cardullo et al.	342/42
4,189,712	A	2/1980	Lemelson	
4,823,928	A	4/1989	Speas	
4,880,097	A	11/1989	Speas	
5,023,936	A	6/1991	Szczutkowski et al.	
5,053,774	A	10/1991	Schuermann et al.	
5,077,832	A	12/1991	Szczutkowski et al.	
5,138,650	A	8/1992	Stahl et al.	
5,220,593	A	* 6/1993	Zicker et al.	455/407
5,353,328	A	* 10/1994	Jokimies	455/558
5,359,182	A	* 10/1994	Schilling	235/380
5,382,952	A	1/1995	Miller	
5,453,747	A	9/1995	D'hont et al.	
5,488,376	A	1/1996	Hurta et al.	
5,489,773	A	2/1996	Kumar	
5,528,222	A	6/1996	Moskowitz et al.	
5,602,919	A	2/1997	Hurta et al.	
5,604,485	A	2/1997	Lauro et al.	
5,614,892	A	3/1997	Ward, II et al.	

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

EP	0940783	9/1999
WO	WO 96/11452	4/1996
WO	WO 96/27170	9/1996
WO	WO 97/12414	4/1997
WO	WO 97/24698	7/1997
WO	WO 97/32423	9/1997
WO	WO 97/44912	11/1997
WO	WO 98/28831	7/1998
WO	WO 99/09525	2/1999

(List continued on next page.)

OTHER PUBLICATIONS

"Mobil Speedpass Warning Card"; User Manual.
"A Whitepaper"; BiStatix Technology; Motorola Inc.—Worldwide Smardcard Solutions Division.

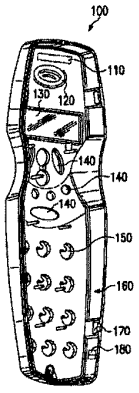
(List continued on next page.)

Primary Examiner—Quochien B. Vuong
Assistant Examiner—Simon Nguyen
(74) *Attorney, Agent, or Firm*—Steven A. Shaw

(57) **ABSTRACT**

A changeable cover for an electronic device and method of using same in a payment system is provided. The cover has a transponder responsive to interrogation by an electric field. The cover provides an electronic identification number and other information in response to the interrogation signal. Also provided is a system for making payments, comprising at least one mobile station (**4**) which has an associated cover (**100**) for providing local data transfer. The system also comprises at least one point of sale terminal or the like, which has a second transceiver for providing data transfer.

15 Claims, 7 Drawing Sheets



U.S. PATENT DOCUMENTS

5,710,886	A		1/1998	Christensen et al.	
5,719,918	A		2/1998	Serbetciouglu et al.	
5,727,153	A		3/1998	Powell	
5,729,697	A		3/1998	Schkolnick et al.	
5,748,737	A	*	5/1998	Daggar	705/41
5,768,370	A		6/1998	Maatta et al.	
5,787,174	A		7/1998	Tuttle	
5,805,676	A		9/1998	Martino	
5,819,234	A		10/1998	Slavin et al.	
5,845,259	A		12/1998	West et al.	
5,848,152	A		12/1998	Slipy et al.	
5,850,599	A		12/1998	Seiderman	
5,887,266	A		3/1999	Heinonen et al.	
5,909,176	A		6/1999	Schrott et al.	
5,933,086	A		8/1999	Tischendorf et al.	
5,942,985	A		8/1999	Chin	
5,943,624	A		8/1999	Fox et al.	
5,969,691	A		10/1999	Myers	
5,987,438	A		11/1999	Nakano et al.	
6,041,305	A		3/2000	Sakurai	
6,058,304	A		5/2000	Callaghan et al.	
6,073,840	A		6/2000	Marion	
6,075,971	A		6/2000	Williams et al.	
6,078,806	A		6/2000	Heinonen et al.	
6,078,820	A		6/2000	Wells et al.	
6,107,920	A		8/2000	Eberhardt et al.	
6,107,934	A		8/2000	Andreou et al.	
6,169,890	B1	*	1/2001	Vatanen	455/406
6,232,870	B1		5/2001	Garber et al.	

FOREIGN PATENT DOCUMENTS

WO	WO 99/53457	10/1999
WO	WO 00/10144	2/2000
WO	WO 00/16285	3/2000
WO	WO 00/21032	4/2000
WO	WO 00/26838	5/2000
WO	WO 00/26856	5/2000
WO	WO 00/34931	6/2000
WO	WO 00/38340	6/2000
WO	WO 00/74406	12/2000
WO	WO 01/03040	1/2001

OTHER PUBLICATIONS

"C–Stores Advance Technology"; E–Payments 2000; pp 12A & 13A; Jun. 1999.

"From Present to Future. Or: Why the SkiData ticket technology is a secure future investment."; SkiData AG–EventAccess–Ticket Technologies; Jul. 13, 2000; pp 1,2; http://www.skidata.com/English/Event/Tickets.asp.

"From Selling to Charging. Or: How to integrate technological highlights with SkiData components."; SkiData AG–Access Components–From selling to charging; Jul. 13, 2000; pp 1,2; http://www.skidata.com/English Components/KevDetector.asp.

"RFID: The retail revolution"; Checkpoint Systems—RFID Products; Jul. 21, 2000; pp 1 of 1; http://www.checkpoint-systems.com/rfid/products.html.

Mancy, K.; "High–tech tags mean days of bar codes may be numbered"; WSSD: BiStatix: News Articles; Nov. 3, 2000; pp 1,2; USA Today; Mar. 31, 1999; http://www.motorola-.com/GSS/SSTG/smartcard/3 6 bst news usa 3 31 99.html.

* cited by examiner

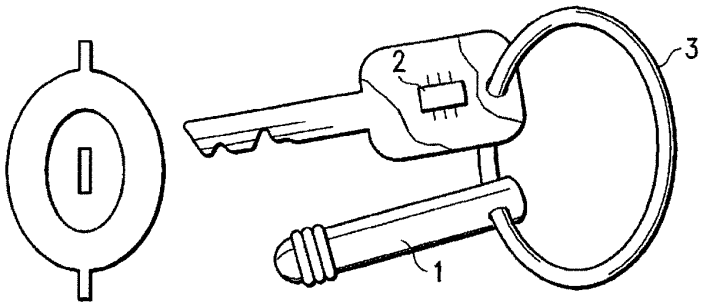


FIG. 1
(PRIOR ART)

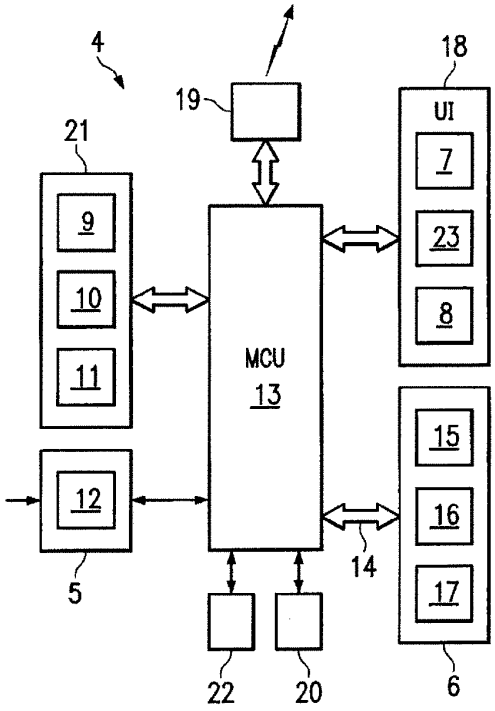


FIG. 2A

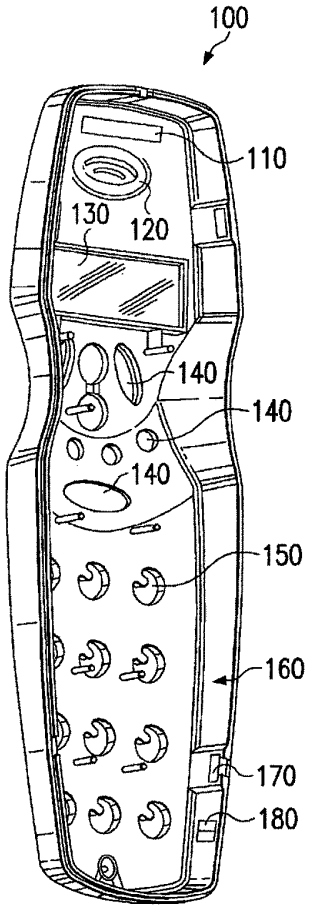


FIG. 2B

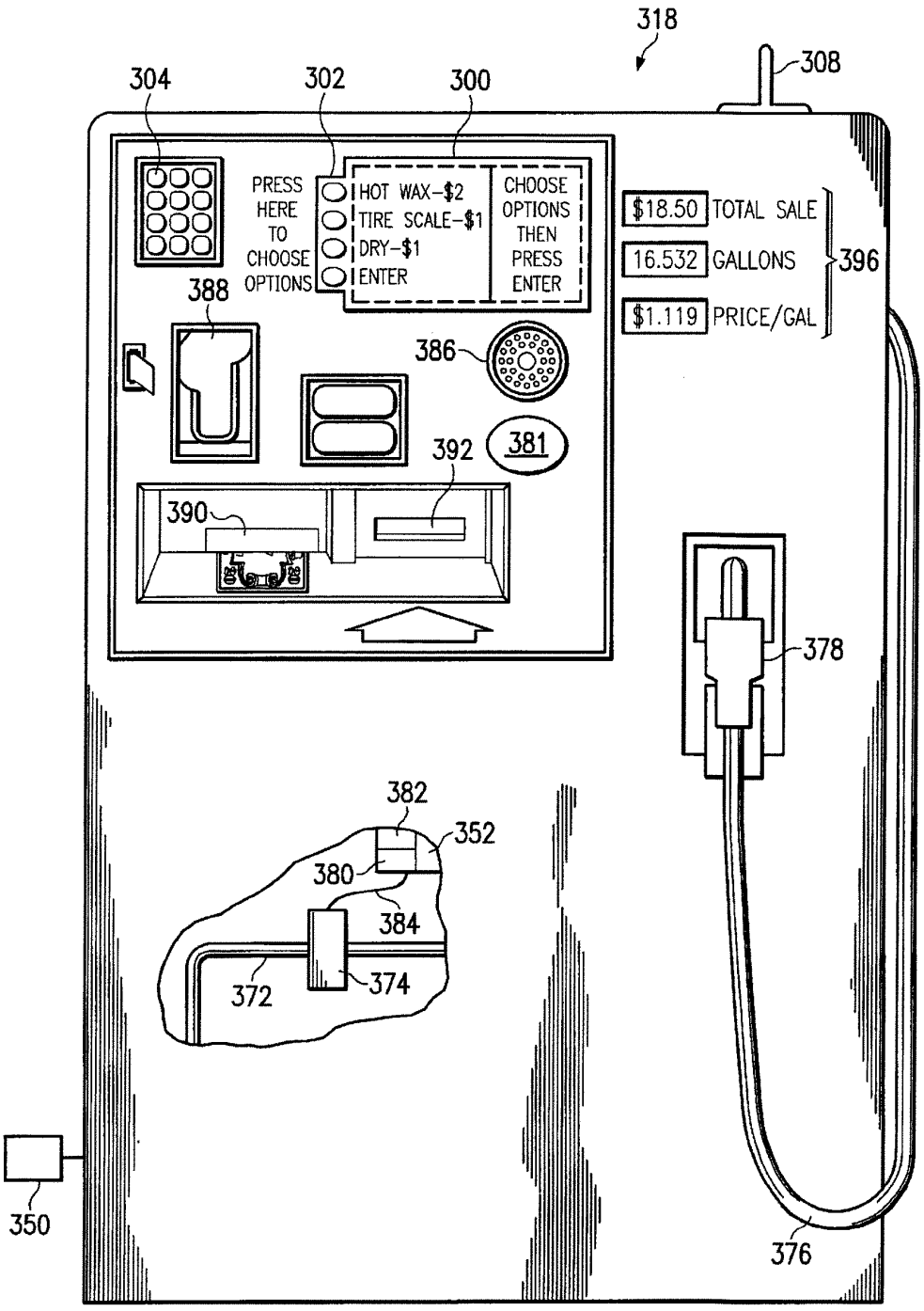


FIG. 3
(PRIOR ART)

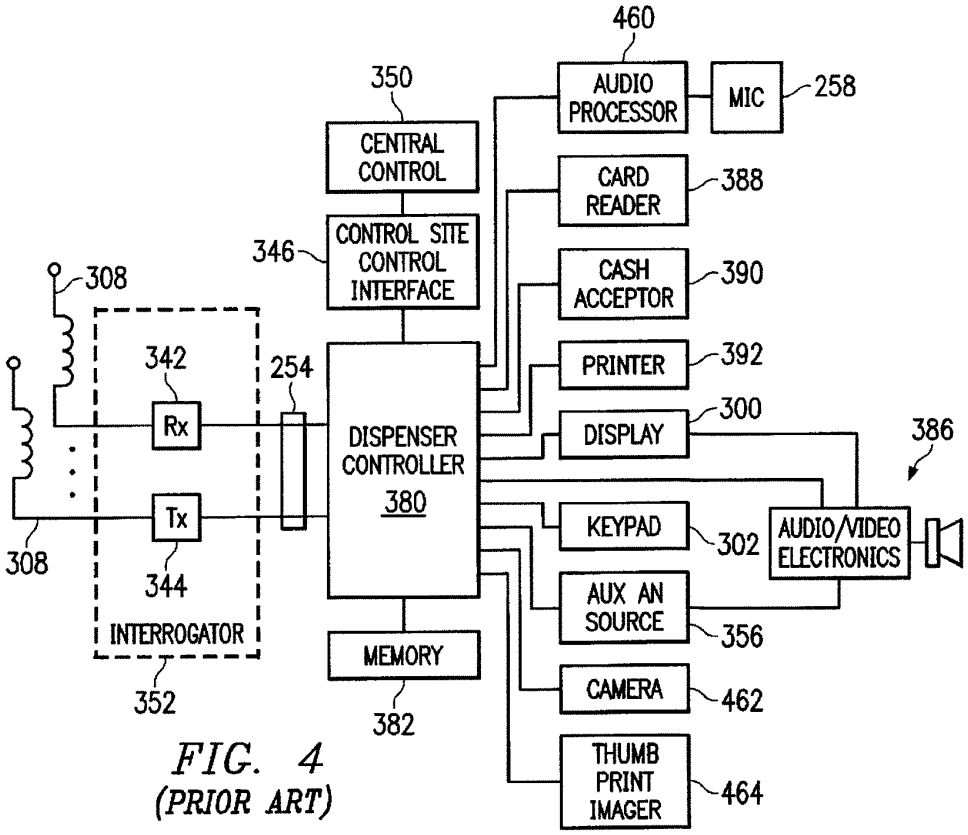


FIG. 4
(PRIOR ART)

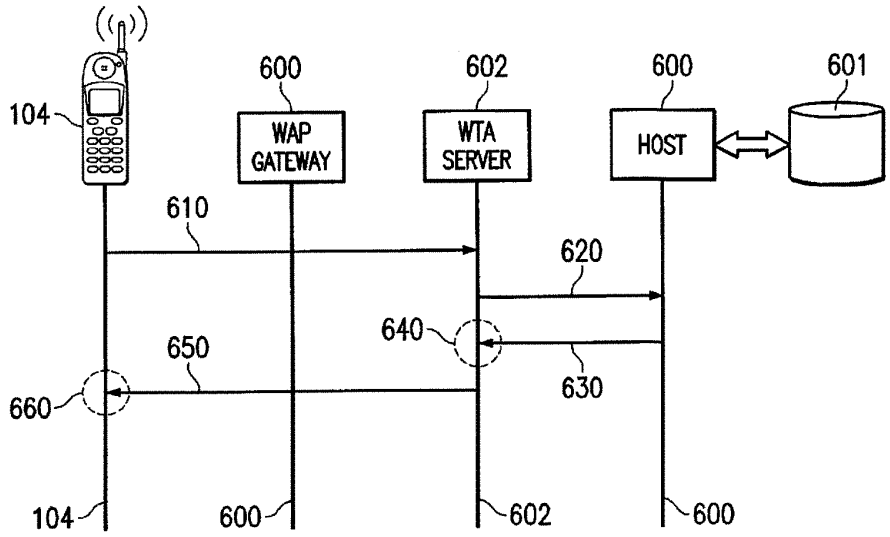


FIG. 6

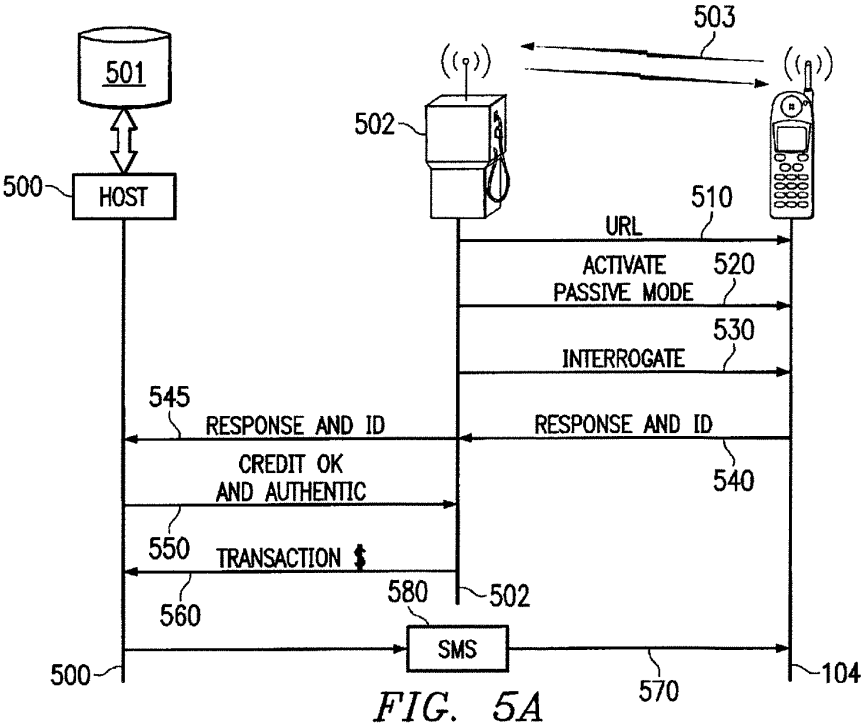

501
500
HOST
502
503
510
URL
ACTIVATE PASSIVE MODE
520
530
INTERROGATE
545
RESPONSE AND ID
RESPONSE AND ID
540
CREDIT OK AND AUTHENTIC
550
TRANSACTION
560
580
502
SMS
500
570
104

FIG. 5A

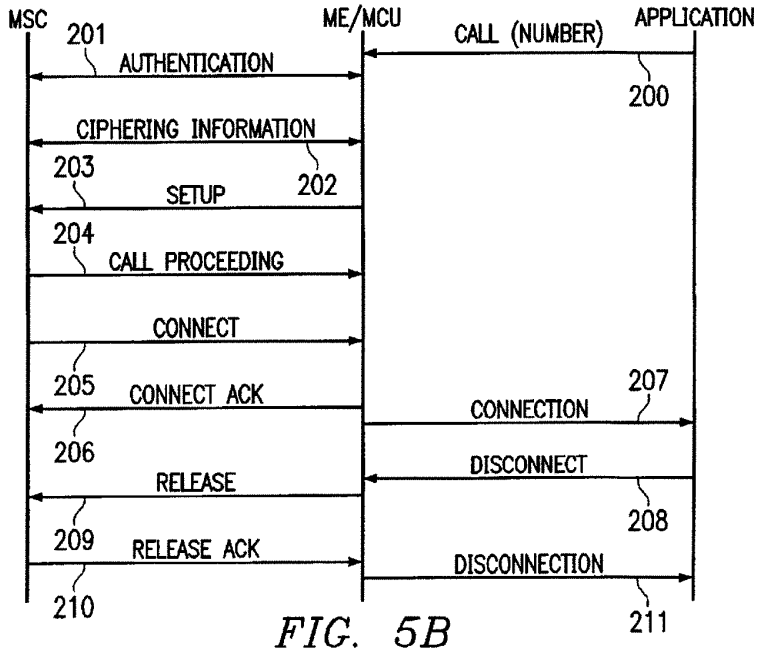

MSC
201
AUTHENTICATION
ME/MCU
CALL (NUMBER)
APPLICATION
200
CIPHERING INFORMATION
202
203
SETUP
204
CALL PROCEEDING
CONNECT
205
CONNECT ACK
207
CONNECTION
206
RELEASE
DISCONNECT
208
209
RELEASE ACK
DISCONNECTION
210
211

FIG. 5B

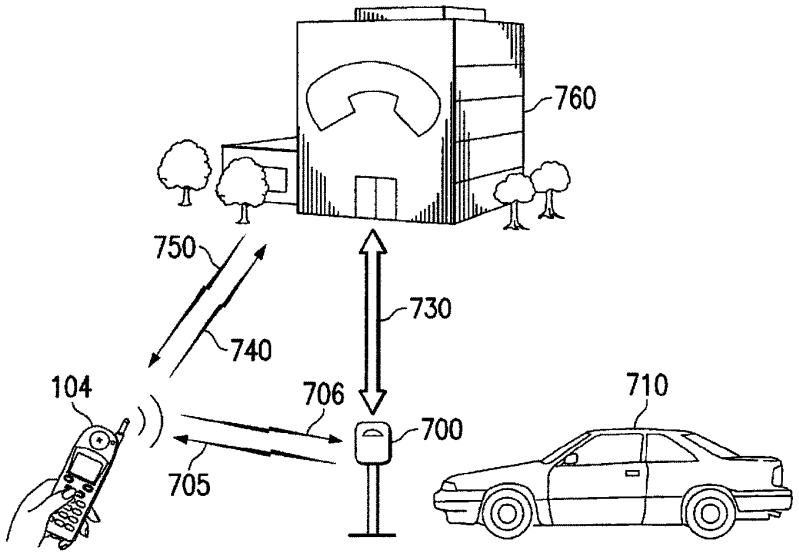

760
750
740
730
104
706
700
710
705

FIG. 7

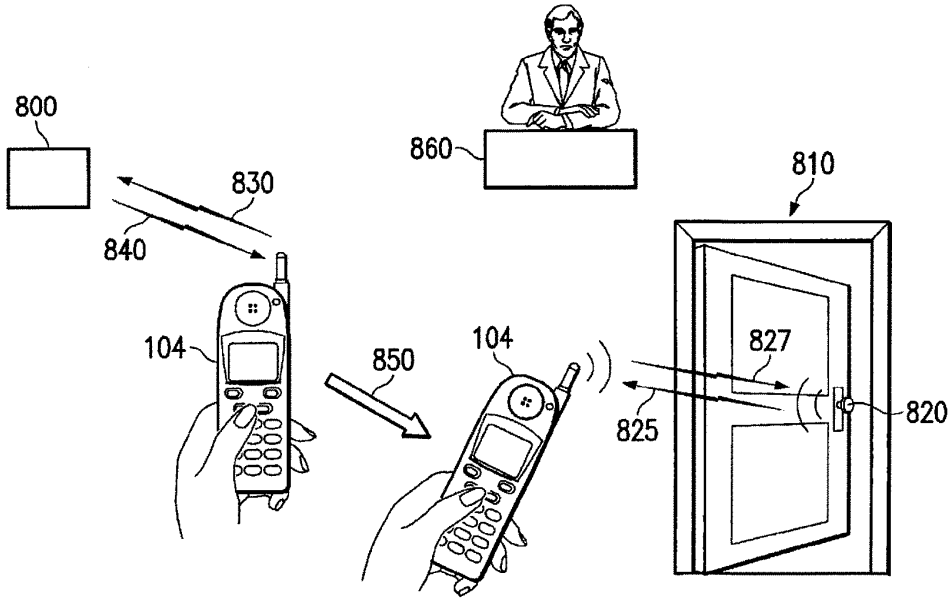

800
860
830
840
810
104
850
104
827
825
820

FIG. 8

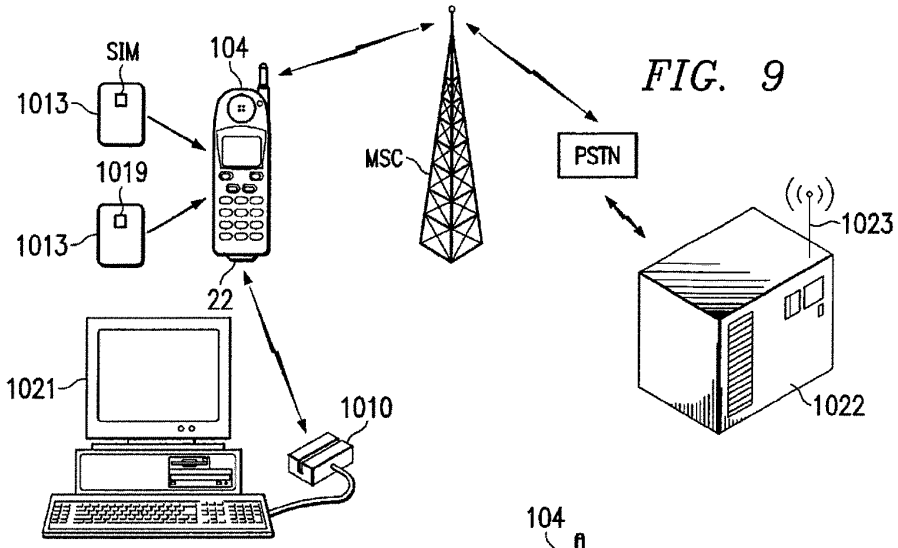


FIG. 9

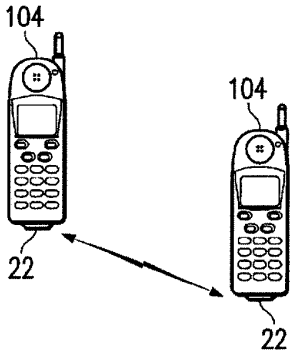


FIG. 10

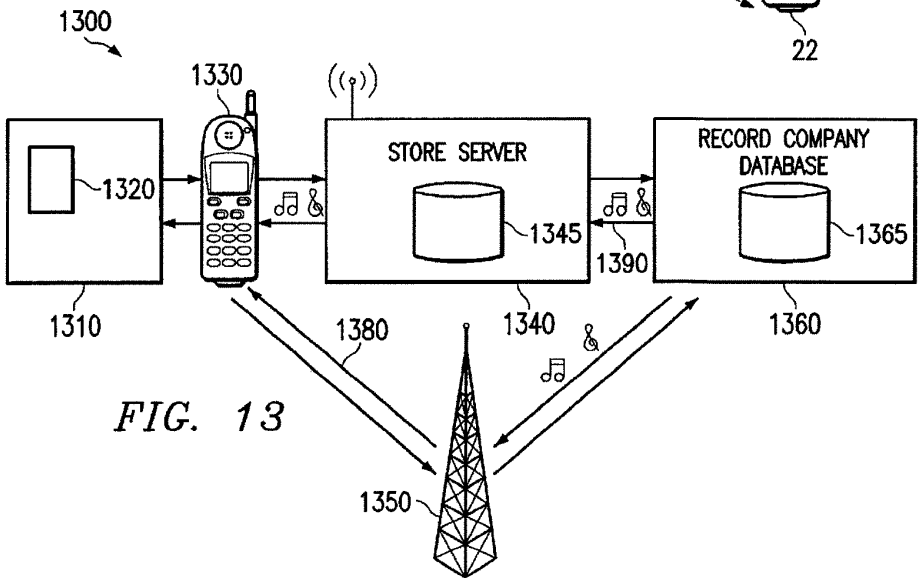


FIG. 13

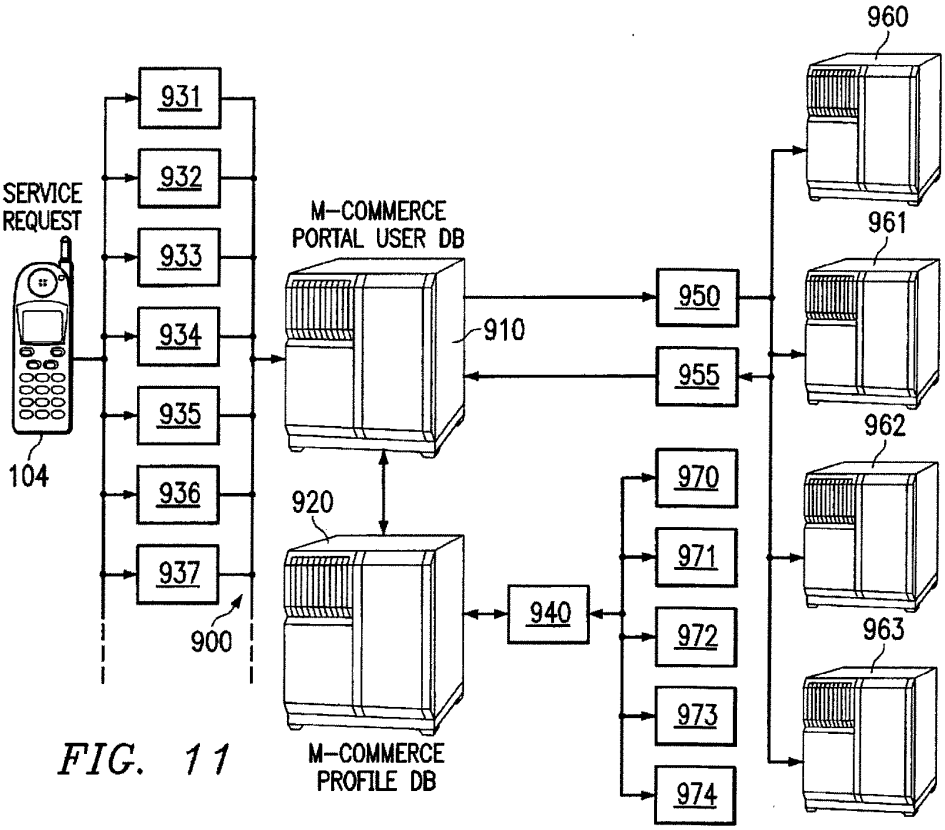

960
931
932
933
934
935
936
937
SERVICE REQUEST
104
900
M-COMMERCE PORTAL USER DB
910
950
955
961
962
963
920
940
970
971
972
973
974
M-COMMERCE PROFILE DB

FIG. 11

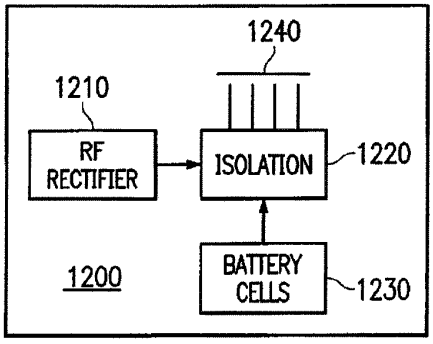

1240
1210
RF RECTIFIER
ISOLATION
1220
1200
BATTERY CELLS
1230

FIG. 12

ELECTRONIC DEVICE COVER WITH EMBEDDED RADIO FREQUENCY (RF) TRANSPONDER AND METHODS OF USING SAME

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority under 35 U.S.C. 1.19 to Provisional Application No. 60/222,475 filed on Aug. 2, 2000. This application is related to U.S. Ser. No. 09/092,828 filed on Jun. 5, 1998; U.S. Pat No. 6,418,326 which is a continuation of U.S. Ser. No. 09/074,864 filed on May 8, 1998, now U.S. Pat. No. 6,078,806 granted on Jun. 20, 2000; which is a continuation of U.S. Ser. No. 08/597,845 filed on Feb. 7, 1996, now U.S. Pat. No. 5,887,266 granted on Mar. 23, 1999, all entitled METHOD FOR USING APPLICATIONS IN A MOBILE STATION, A MOBILE STATION AND A SYSTEM FOR EFFECTING PAYMENTS, issued to Heinonen et al., claiming priority date of Feb. 15, 1995 based on a Finnish application. Additionally, this invention is related to the inventions described in U.S. patent application Ser. No. 08/800,591, filed on Feb. 18, 1997, entitled ELECTRONIC DEVICE WITH HOUSING SUPPLEMENT, and U.S. patent application Ser. No. 09/829,764, filed an Apr. 10, 2001, entitled REMOVABLE HOUSING COVER FOR A PORTABLE RADIO COMMUNICATION DEVICE. This invention is related to U.S. Pat. No. 5,768,370 granted on Jun. 16, 1998 entitled USER CHANGEABLE COSMETIC PHONE INTERFACE. Said patents and patent applications are commonly assigned to assignee of the present invention and are incorporated herein by reference.

FIELD OF THE INVENTION

This invention relates generally to mobile station accessories and more particularly to an electronic device cover with embedded transponder and methods using same.

BACKGROUND OF THE INVENTION

There are prior art mobile stations in which the control card includes a subscriber identification unit, such as the SIM (Subscriber Identity Module) used in GSM (Global System for Mobile Communications) standard based systems. The SIM comprises a control unit CPU (Central Processing Unit), program memory ROM (Read Only Memory), data memory suited for long-term storage EEPROM (Electrically Erasable Programmable Read Only Memory) and operation memory suited for saving data during use RAM (Random Access Memory). For using the mobile station, a PIN (Personal Identification Number) number saved on the SIM must be given, generally when the mobile phone is switched on. Other user-specific information, such as telephone numbers, messages, etc. can also be saved in the data memory of the SIM.

There are now also mobile phones which have a data connector for connecting an external data processing unit, such as a portable computer. Thus the mobile phone can be used as a means for data transfer between the portable computer and some other data processing equipment through a radio communication network. In this way it is possible to establish a connection e.g. to the user's bank for checking the balance and effecting payments. However, an arrangement of this kind is not very practical, because a separate cable is needed between the computer and the mobile phone. In addition, the computer must be available for establishing e.g. a bank connection.

Wireless systems, so called smart cards or payment cards, are also known, the said cards being mostly used in payment applications, such as making payments in buses and public telephones. Smart cards like this generally include a central processing unit, a program memory and a data memory. The internal operation of the card in use is controlled by the CPU in accordance with the program code stored in the program memory. The data memory is used for saving information relating to the intended use of the smart card, such as its value in money. For performing the payment transaction, the card also contains means for data transfer, such as a transmitter/receiver based on electromagnetic induction. A disadvantage of smart cards of this kind is, e.g., the fact that several different cards may be needed for different kinds of payment, and so the user must carry a large number of cards. In addition, when the amount of money loaded in the card has been consumed, one needs to buy a new card or load a new amount of money in the card at a sales outlet offering a loading service.

The Japanese patent application JP 4 083 447 presents a mobile phone to which it is possible to add more properties by means of a separate memory card. An application like this is preferably arranged for a certain use, such as for increasing the saving capacity or the telephone number memory. Applications like this are based on a method in which the central processing unit of the mobile phone reads the data saved in the applications (memory cards) and operates in a predetermined way required by the data. A disadvantage of this method is the fact that the functions needed for performing different operations of the applications must be programmed to the central processing unit CPU in advance, whereby the development of new applications also requires changes in the programs of the central processing unit.

The international patent application WO 91/12698 presents a mobile phone to which it is possible to add properties by means of a separate add-in card, such as a smart card. In this way it is possible to restrict the use of the phone by preventing foreign calls, long-distance calls or calls to service numbers, for example. The information about call restrictions is saved on an add-in card which the user has to install in the mobile phone when it is being used. Thus the main use of this method is to prevent the use of some properties of the mobile station.

Automatic identification and data capture technologies are increasingly being used to identify and track items. Radio Frequency IDentification (RFID) transponders, also known as tags or tokens, provide a means of obtaining data without direct contact such as is needed with magnetic strip or bar code technology. Such transponder devices have been around for some time. U.S. Pat. No. 3,713,148 issued to Cardullo et al. on Jan. 23, 1973, and incorporated herein by reference, describes a transponder which includes a changeable or writable memory. An RFID system consists of a transponder, (also referred to as tag or token), with a unique electronic serial number and a reader device also referred to as an interrogator. The tags are self-contained in hermetically sealed capsules or laminates requiring no external power since they get power by rectifying the energy in a field created by the interrogator and storing the energy in capacitive-type circuitry. Nevertheless, some transponders may be powered with small batteries. RFID tags come in a variety of embodiments from a thin, flat and flexible form-factor (thin type) to small capsules (cylindrical type). An example of a thin form-factor is described in U.S. Pat. No. 5,528,222 issued to Moskowitz et al on Jun. 18, 1996. Although the term "radio frequency" is used, other parts of the electromagnetic spectrum may be used to create the

energy field. UHF, microwave and millimeter wave sources may be used by the interrogator depending on the distance between the interrogator and the transponder and material to be penetrated. Commercial examples of RFID transponders are the Texas Instruments' Registration and Information Systems (TIRIS) line of transponders available from Texas Instruments (Dallas, Tex.; www.ti.com).

Transponders such as those from Texas Instruments and others may be embedded in keyfobs, cards or other such items. Gas companies are using keyfob or keychain transponders to identify consumers when they buy gas at the pump and charge it to their gas account (e.g. see http://www.mobil.com/speedpass/). The transponders interact with a fueling system such as provided by Gilbarco Inc.—also know as Marconi Commerce Systems, 7300 West Friendly Avenue, (Greensboro, N.C.; http://www.marconicommerce.com). The fueling system is described in U.S. Pat. No. 6,073,840 issued to Kenneth O. Marion and assigned to Gilbarco Inc., said disclosure is hereby incorporated by reference. Use of keyfobs adds another thing for a consumer to carry and worry about losing. For example, if one leaves the keyfob with another, such as valet parking attendant, it is possible for the attendant to use the keyfob to fill-up many cars while the owner is having dinner or other activities.

There is also a need to allow consumers to collect coupons from other transactions at different establishments. For instance, consumer may wish to collect coupons from mail inserts, newspapers, and newspapers and redeem these hard-copy coupons. The use of hard copy coupons is time consuming and troublesome for the consumer.

Furthermore, use of transponders in the form of keyfobs on keyrings have a problem when stored near certain keys which transmit their own codes. Many automobiles are now being manufactured with a microprocessor embedded in the key which sends a signal to a security system coupled to the ignition system. Without the correct code transmitted by the key, the automobile won't start. But, the keyfob transponder interferes with the coded signal and thus the automobile will not start because the security system can not read the code from the processor in the key. For example, user information regarding the model year 2000 Jeep includes warnings about RFID transponders on the same key ring as the ignition key. FIG. **1** shows a typical transponder to be used on a key ring **3**. Transponder **1** is a typical transponder in the form of a keyfob as described above, **2** is a key with embedded processor manufactured to interact with the security system of an automobile. The security system will only allow engine to start if a correct code is transmitted to the security system from the processor embedded in the key. Transponder **1** interferes with the reception of this coded signal.

Additionally, the transponder on a key ring is inconvenient when the consumer is at a drive-through window and must turn off the car in order to access the keyfob on the key ring. Thus, there is a need to have a transponder located away from the key ring associated with the key to the ignition system of an automobile.

In another example of identification systems, some grocery stores are now providing for self-check, wherein the buyer scans their own groceries using bar codes. Additionally, many stores are saving money by not pricing each item but use bar code scanning and shelve area pricing as a means to convey price information. However, sometimes an item may have been moved from its proper location and a means is needed to verify a price. Symbol technologies, Inc. (Holtsview, N.Y.; http://www.symbol.com) offers a Portable Shopping System. When a shopper enters the store, they are issued a scanner with which they can scan items to determine price and maintain a running total of their purchases. However, the shopper must still go to checkout and present hard copy coupons which the consumer had to clip, sort, file, and redeem at checkout. At checkout the coupons are also scanned individually, which leads to delays and lines. The consumer must also provide cash, credit or debit card to pay for the goods. Thus there is a need for a device which a consumer can carry with them which captures, stores and download coupons, provides a way to keep track of their purchases, and provides a means for automatic payment.

In another example of automated shopping, U.S. Pat. No. 5,729,607 issued to Schkolnick et al. on Mar. 17, 1998 and assigned to International Business Machines describes an intelligent shopping cart. Groceries may be labeled with thin transponders. The transponders on the groceries identify the items and their price. The use of the transponders allows a customer to use a cart as described in the Schkolnick patent or pass through an energy field created by an interrogator and the groceries purchased will automatically be identified and the amount totaled. However, the consumer must still open a wallet and fumble with cash or debit/credit cards. Thus, there is a need to have a payment system associated with an item which a consumer can wear or hang on their person to facilitate automatic payment.

U.S. Pat. No. 6,078,806 granted on Jun. 20, 2000, entitled METHOD FOR USING APPLICATIONS IN A MOBILE STATION, A MOBILE STATION AND A SYSTEM FOR EFFECTING PAYMENTS assigned to the same assignee as the present application provides a method of affecting payments using a mobile station or Personal Trusted Device (PTD).

Thus, for the above reasons, there is a need to have one means of electronic identification and payment which the consumer can carry. Furthermore, there is a need to provide a system in which consumers may earn, store and redeem coupons in a single device.

SUMMARY OF THE INVENTION

In order to eliminate the aforementioned disadvantages and to raise the standard of technology in this field, a new method for using applications in a Personal Trusted Device (PTD) also referred to as mobile radio communication unit comprising mobile station and a changeable cover with intelligence has been invented, as well as a new mobile station with changeable cover as application module and a new system for effecting payments, collecting incentives and other equivalents. The changeable cover provides a means for local data transfer.

The invention is based on the idea that the mobile station can be complemented with applications which have a first mode of operation and a second mode of operation. An application in the first mode of operation does not do anything actively, but stays in the background, passive. In the passive mode, the changeable cover with intelligence may still function to provide for a system of payment. In the second mode of operation, the application is active and can, e.g., control the central processing unit of the mobile station. When in the second mode of operation, the application can also use peripheral equipment which are generally known components of a mobile station, such as a display, keypad, status indicators and data ports, which the application has requested when switching to the second mode of operation.

Applications used in the method of the invention can preferably be of three different types, depending on the

situation in which the application can switch to the second mode of operation: 1) The so-called power-up type, hereby the application switches to the second mode of operation as soon as possible after the mobile station is switched on and/or a new cover in attached, 2) The menu type, in which the user can select the application he wants to be active, e.g. from a menu shown on the display of the mobile station, and 3) Automatic type, in which the application switches to a second mode of operation when a certain condition, defined for the application, has been satisfied. For example, an application of the third operation mode can become active in the GSM system, when the mobile station receives a specific SMS (Short Message Services) message. SMS messages are typically used to transfer short text messages between mobile stations. The automatic type can also be selected from a menu. A menu option can also be used in a situation in which several power-up type applications have been connected to the mobile station, and one of the said applications can switch to the second mode of operation. The method of the invention is characterized in that the application has a first mode of operation and a second mode of operation, whereby the application is passive in the first mode of operation, and in the second mode of operation the application controls the central unit of the mobile station. The mobile station in accordance with the invention is characterized in that it also comprises means for setting the application in a first mode of operation, in which the application is passive, means for setting the application in a second mode of operation, in which the application is active, and means for controlling the central unit of the mobile station when the application is in the said second mode of operation. Remarkable advantages are achieved by this invention compared to the prior art solutions. By means of this invention, the range of possible uses for a mobile station may be substantially increased. Besides the normal phone and data services, the mobile stations related to the invention can also be used e.g. as a credit card and/or as a cash card, instead of traditional plastic cards. By means of a mobile station equipped with a suitable application module the user can make payments in a shop using his/her credit account (credit card application) or pay directly from his/her bank account (cash card application), and thus no real cash is needed. Typical for both credit card and cash card type of applications is that money or its equivalent, in electric form, is stored in a central computer (also referred as a money server) which the mobile station contacts when making a payment. The money server is typically located in a bank's premises. If wanted, it is possible for the application to check the credit limit or the balance of the bank account before the payment is accepted. It is also possible to store money or its equivalent to an "electric money purse" in the mobile station or in the application module, i.e. cover, itself. In that case it preferably is not necessary to check the credit limit or balance of the bank account from the money server before the payment can be accepted, i.e. it is not necessary to contact the money server for making a payment. The information of how much money there is stored in the "electric money purse" can be read from the memory of the mobile station or the application module, from which electric money is subtracted when a payment is made. These kind of applications, where the money is stored in the mobile station or in the application module itself, are also referred as payment applications.

Additional features and advantages of the invention will be readily apparent from the specification and from the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an illustration of key ring with an RFID fob transponder and an ignition key having a processor which emits an RF signal.

FIG. **2**A is block diagram of a mobile station in accordance with the invention.

FIG. **2**B is an illustration of an electronic device cover in accordance with the invention.

FIG. **3** is an illustration of a fueling dispenser.

FIG. **4** is a block diagram showing the dispenser electronics of the dispenser shown in FIG. **3**.

FIG. **5** is a step diagram showing a transaction system in accordance with the invention.

FIG. **5**B shows the path of the telephone call between the application and a mobile services switching center (MSC) in a mobile radio communication network as a simplified diagram.

FIG. **6** is a step diagram showing a receipt of transaction information via Wireless Application Protocol.

FIG. **7** shows the use of a method for the remote payment of parking in accordance with the invention.

FIG. **8** shows the use of a method for hotel room access in accordance with the invention.

FIG. **9** shows the use of a method in accordance with the invention in connection with a Point of Sale (POS) terminal.

FIG. **10** shows the communication between two mobile stations in accordance with the invention.

FIG. **11** shows a business model for M-Commerce in accordance with the invention.

FIG. **12** is a block diagram of a battery with isolation circuitry in accordance with an embodiment of the invention.

FIG. **13** is a block diagram showing an purchase preview system for music purchase in accordance with an embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIG. **2**A, a mobile station **4**, also referred to as a "Personal Trusted Device" (PTD), comprises master control unit MCU **13**, user interface UI **18**, high-frequency part **19**, low-frequency part **21**, power unit **5**, a means for data transfer **22** which can be IR or other equivalents in the electromagnetic spectrum, and application module connection unit **6**. The operation of the mobile station **4** is controlled by MCU **13**, which has a program code stored in advance for performing different operations. Mobile station **4** may also comprise Personal Information Management (PIM) capabilities, such as calendar, to-do list, and financial management programs.

The user interface **18** comprises components which are known from prior art mobile phones, namely a display **7**, a keypad **8** and status indicators **23**. MCU **13** produces various, situation-specific messages, operation instructions, menus etc. on the display **7**. Using the keypad **8**, the user can enter different kind of information to the mobile station **4**, such as the identification number and telephone number, and select operations from the menus. Status indicators **23** can preferably be used to indicate the internal modes of operation of the mobile station **4**. The display may also be in the form of glasses worn by the user implemented using LCD screen(s) or the display may be Virtual Retinal Display such as is provided by MicroVision (Seattle, Wash.) and described in U.S. Pat. Nos. 5,596,339; 5,659,327; 5,701,132; 5,982,555; and 6,008,781 assigned to University of Washington.

The radio frequency component **19** is a known component of mobile phones, which is used to transmit and receive calls

and messages using radio frequencies in a radio communication network, such as a GSM network, e.g. through a mobile services switching center MSC.

The low-frequency part **21** preferably comprises a microphone **9**, a headphone **10** and a buzzer **11** or the like.

The operation power for the mobile station **4** is supplied by a battery **12**, which is charged when required. Power unit **5** monitors the charge status and charging procedure of the battery **12**, among other things. Power unit **5** sends the information to central unit MCU **13** when the charge status of the battery **12** falls below a predetermined value, whereby MCU **13** announces this preferably by sounding buzzer **11** and/or showing a message on the display **7**.

A module card may be coupled to the module card connector located in the mobile station **4**. Module card may contain,among other things, a subscriber identity module (SIM) for user identification and memory for storage of logic and data. This memory may be volatile such as RAM and non-volatile memory such as EEPROM, flash or the like.

Application module connection unit **6** is located in mobile station **4** as shown in FIG. **2**A. Other module cards can also be connected to application module connection unit **6** of the exemplary embodiment, whereby they are preferably connected to their own module card connectors. From application module connection unit **6** to the central processing unit of mobile station **4** (MCU), there is application module bus **14**, by means of which the application modules connected to application module connection unit **6** communicate with MCU **4**. AT commands, known e.g. from modems, can be used for the transfer of data and commands.

In addition to the application module bus **14**, there is a separate control and data line from each application module connector **15, 16, 17**, of the application module connection unit **6**. Thus it is possible to use a structure based on the standard series ISO 7816 in the control and data line. The standard series ISO 7816 includes the voltage levels and timing diagrams, according to which the application modules are connected to the control and data line.

For each application module, application module connecting unit **6** has a connector, through which application module bus **14** is led to the application module, More than one application module may be connected to the same module card **13**. The second application module on the module card **13** can be a SIM module, for example.

The mobile station **4** also comprises a first means of data transfer, such as an infra red IR transmitter/receiver **22** or other equivalent frequencies in the electromagnetic spectrum. The first means of data transfer can be used to transfer data, with relatively short distances, between the mobile station **4** and a cash register (payment terminal), fuel dispenser as shown in FIG. **3** or, e.g., between two different mobile stations **4**. The a first means of data transfer may also serve as a bar-code reader to read and transfer coded data in the form of bar-codes into memory. The first means of data transfer may also include a data connector **20**, which can be used to couple a computer to the mobile station **4** or may also be used to couple a cover for mobile station **4** as is shown in FIG. **2**B. Mobile station **4** may comprise a housing for elements listed above wherein the housing may be coupled to a removal cover.

FIG. **2**B a detailed view of a removable cover in accordance with an embodiment of the present invention. An embodiment of the present invention is for use with mobile station **4** but may also be used in conjunction with other devices such as an MP3 player for example.

Removable mobile station cover with intelligence called SmartCover™ accessory or hereinafter cover **100**, comprises an RFID transponder **110**, grill opening **120** for speaker of mobile station, transparent element **130** through which to view display of mobile station, plurality of function key through-openings **140**, plurality of alpha numerical key through-openings **150**, external wall element **160**, catch projection **170**, cover to phone interface contacts **180**. Signals such as serial input/output data, read/write signal and other controls signals use these contacts to provide an interface between mobile station **4** and cover **100** through data connector **20**.

RFID transponder **110** may be a cylindrical or wedge type transponder attached to cover or it may be thin type embedded in the material of cover **100**. Cover **100** may also comprise non-volatile memory to store logic and data. The transponder is read by way of a reader also known as an interrogator. Data codes are encoded into the transponder and sent to the reader in response to an interrogation signal. The pattern of circuits may also be produce in a design using conducting ink and the like.

Cover **100** may also be used to transfer optical signals using optical relays currently in the art. Other equivalents for EM energy sensors, optical devices such as Dense Wave Multiple Access (DWMA) and Surface Acoustical wave (SAW) devices may also be created using methods for ink jet printing and self-creating structures such as surfactant-templated silica mesophase structures created using techniques currently under development by Jefferey Brinker et al. at Sandia Corporation (Albuquerque, N.Mex.) and other companies. Attention is directed to U.S. Pat. Nos. 5,057,296; 5,098,684; 5,858,457; 5,911,858; 5,949,071; 6,027,706; 6,037,612; 6,054,111; 6,057,377; and 6,090,545—all incorporated herein by reference.

Covers **100** are changeable and thus allow the device on which cover is attached to become an electronic key for e-commerce or mobile (m-commerce) applications such as secure area access, commodity purchasing and the like.

As was described in FIGS. **2**A and **2**B, contacts **180** allow for electrical signal coupling between an electronic device, such as mobile station **4** in FIG. **2**A, and the cover **100**. This allows the cover to share memory with the electronic device. In the case of a mobile station, interfacing with the mobile station allows for uploading/downloading of data from wireless networks. Thus "Digital Money" or other equivalents such as digital coupons and the like can be loaded into the phone for use in an exchange using the RFID transponder equipped cover **100**. The transponder may also send a coded signal to the registers of MCU to instruct the mobile station to change to passive mode or even power down. This is useful in situations where mobile station use is not allowed or may be unsafe. An example would be in a fueling situation as will be described below. Another example would be on an aircraft where use of a mobile station will interfere with the aircraft instruments.

Additionally, a interrogator may be installed as part of the security system of a motor vehicle. A reader with directional interrogation may interrogate the driver side of a motor vehicle in which the motor is running and the gear is in drive. Thus the mobile station of the driver is disabled while driver is operating the motor vehicle.

Unlike Bluetooth (www.bluetooth.com), which requires acceptance of the standard, infrastructure, device design and development; RFID system infrastructures already exist for many commercial and consumer applications. Covers **100** may be sold as accessories for electronic devices and would

be inexpensive—thus disposable and interchangeable. In an example of an embodiment of the present invention, the mobile station with cover **104** may replace the existing RFID tag, which may be in the form of an electronic badge, keyfob tag, smartcard or the like. Since many people carry mobile stations wherever they go and many wear the mobile station on their person, the mobile station with cover **104** provides a means for data transfer in an electronic payment system as described in U.S. Pat. No. 6,078,806.

The covers **100** may also be preloaded with content such as electronic cash, coupons, icons, animation, ring tones and the like. For example, Disney may provide a cover which has their copyrighted characters preloaded into memory. This is a secure way in which copyrighted material may be distributed. Internet download, distribution by disc or other such methods may result in abuse by the user of Disney copyrighted material—i.e. user may download the software to their system and than share the disc with someone else resulting in Disney losing royalty revenue.

Purchase of Fuel

Current RFID transponder systems for cash-less transactions such as the keyfob are "One Way" transactions. The keyfob transponder only validates the user but does not provide any means of feedback or interaction to the user. The keyfob does not have any user interface, limiting the transaction to an "authentication only" process for purchase or access. Currently, a transaction takes place by user placing RFID keyfob in proximity of reader panel for start of transaction and validation. Any remaining transaction interface is done via the RFID reader at the Point of Sale (POS). By incorporating the RFID tag and mobile station into one device (mobile station and cover) **104**, feedback to the user is now possible through the mobile station's user interface (display and keypad). Follow up with the customer after the transaction is also possible. The POS station may provide a paper receipt. However, by using a mobile station with cover **104**, an electronic receipt may be provided. Additional security may be provided by use of the PIN number already used to access the user's mobile station.

In the environment of fuel dispensing systems, signs at the dispensers and in cellular telephone user manuals provide warnings against using a cell phone near fueling and other potentially explosive areas. Unlike Bluetooth which requires active use of the phone (www.bluetooth.com), RFID type transponders are responsive to energy transmitted from installed devices at the pumps. The fuel dispenser described below and in U.S. Pat. No. 6,073,840, assigned to Gilbarco is designed for use around fuel. Therefore, a passive mode of a mobile station as provided in is necessary around fueling areas. The interrogator of the fueling dispenser described below can place the mobile station into passive mode.

FIG. **3** is an illustration of a fuel dispenser manufactured by Gilbarco, Inc—aka Marconi—(Greensboro, N.C.) and described in U.S. Pat. No. 6,073,840. Fuel dispenser **318** provides a fuel delivery path from an underground storage tank to a vehicle. The delivery path includes fuel delivery line **372** having fuel metering device **374**. Fuel delivery line **372** communicates with fuel delivery hose **376** outside of the dispenser **318** and delivery nozzle **378**. Nozzle **378** provides manual control of fuel delivery.

Fuel dispenser **318** also includes dispenser control system **380** having one or more controllers and associated memory **382**. Dispenser control system **380** may receive volume data from the metering device **374** through cabling **384** as well as provide control of fuel delivery. Dispenser control system **380** may provide audible signals to an audio module and speaker **386** in order to provide various beeps, tones and audible messages to a customer. These messages may include warnings, instructions and advertising.

Dispenser **318** is preferably equipped with a payment acceptor, such as a transponder interrogator area **381**, card reader **388** or cash acceptor **390**, along with a receipt printer **392**. There may be other interrogators such as overhead or embedded in the pavement. With these options, the dispenser control system **380** may interrogate a transponder passed near transponder interrogator area **381**, read data from the magnetic strip of a card inserted in the card reader **388** or receive cash from a customer and communicate such information to a central control system **350** such as the G-site controller sold by Gilbarco Inc., (Greensboro, N.C.). The interrogators located overhead may be used to change the mode of the phone to passive mode for safety reasons.

In addition to placing the phone in passive mode, the interrogators may also provide a signal to operate isolation circuitry which will prevent current from flowing from battery to electronic device—thus further reducing chances of a spark. FIG. **12** is a block diagram of a battery with isolation circuitry in accordance with an embodiment of the present invention. Battery circuitry **1200** comprises energy collection rectifier **1210**, which may be similar to the RFID circuitry but does not transmit. Energy collection block **1210** is coupled to isolation circuitry **1220** which is disposed between power supply **1230** and contacts **1240**. Current is normally provided to electronic device from power supply via contacts **1240**. However, when battery is within the area in which the RF energy is transmitted from interrogator, the energy is collected by **1210** and supplies isolation block **1220** with a signal which is used by isolation block **1220** to prevent current from flowing. Isolation block may be transistors with leads from energy rectifier supplying voltage to gate of said transistors creating a depletion region between source and drain thus preventing current flow. The power supply may be a plurality of battery cells for storing power in the multiple way which is known in the art.

Transponder interrogator area is coupled to interrogator electronics **352**. Central control system **350** typically communicates with a remote network, such as a card verification authority, to ascertain whether a transaction proposed to be charged to or debited from an account associated with the card inserted in the card reader **88** is authorized. Dispenser **318** will include one or more types of displays, preferably one or more alpha-numeric displays **396** together with a high-resolution graphics display **300**. Graphics display **300** will generally have associated key pad **302** adjacent to the display or integrated with the display to provide a touch interface. Dispenser may include an additional, auxiliary key pad **304** associated with the card reader **388** for entering secret codes or personal identification numbers (PIN's). Notably, the displays **396, 300** and key pads **302, 304** may be integrated into a single device and/or touch interface. Dispenser control system **380** is preferably comparable to the microprocessor-based control systems used in CRIND (card reader in dispenser) and TRIND (tag or transponder reader in dispenser) type units sold by Gilbarco Inc. under the trademark THE ADVANTAGE. As noted, the dispenser control system **380** may include or be associated with dispenser communication electronics referred to as interrogator electronics **352** for providing remote unidirectional or bidirectional communications between a transponder either and the dispenser. Although the preferred communications method includes radio frequencies in the microwave range, these communications may include other RF, infrared, acoustic or other known remote communication methods

acceptable for use in a fueling environment. Additionally, the dispenser **318** may include one or more antennas **308** associated with the dispenser interrogator **352**.

FIG. **4** shows a basic schematic overview of the dispenser electronics available from Gilbarco, Inc. cited above wherein a dispenser control system **380** includes a controller associated with the memory **382** to interface with the central control system **350** through an interface **146**. The dispenser control system **380** provides a graphical user interface with key pad **302** and display **300**. Audio/video electronics **386** is adapted to interface with the dispenser control system **380** and/or an auxiliary audio/video source **356** to provide advertising, merchandising and multimedia presentations to a customer in addition to basic transaction functions. The graphical user interface provided by the dispenser allows customers to purchase goods and services other than fuel at the dispenser. The customer may purchase a car wash and/or order food from the QSR while fueling the vehicle. Preferably, the customer is provided a video menu at the display **300** to facilitate selection of the various services, goods and food available for purchase. The RFID interrogator **352**, card reader **388** and cash acceptor **390** allow the customer to pay for any of the services, goods or food ordered at the dispenser while the printer **392** will provide a written record of the transaction. The dispenser control system **380** is operatively associated with a dispenser interrogator **352**, which has a receiver **342** and a transmitter **344**. The receiver and transmitter typically associate with one or more antennas **308** to provide remote communications with a transponder. The dispenser control system **80** communicates with the central control system **350** in the backroom **326**.

Currently, consumer drives up to fuel island, exits vehicle, places RFID keyfob up to fuel dispenser's RFID transponder interrogator window **381**. Consumer is validated and gas purchase is authorized. After fuel dispensing is complete, consumer may receive receipt generated at printer **392**, consumer then enters vehicle and drives away.

In one embodiment of the invention, cover **100** as a means of data transfer in passive mode and mobile station **4** are passed inside a EM field created by reader/interrogator. As is known in the art, the interrogator may transmit at a first frequency and the transponder may reply at a second frequency. The signals are modulated in order that encoded data may be transferred between reader/interrogator and transponder. The modulation scheme may be pulse-width, phase-amplitude or the like which are known in the art. Cover with mobile station combination **104** comes within this field. Cover **100** then responds to provide reader/interrogator with information such as electronic identification mobile station phone number and the like. The reader/interrogator may also send a code to a register of MCU instructing phone to go to passive mode. Since information regarding user's mobile station phone number may be provided to the reader/interrogator, user's mobile station may receive a Short Message Service (SMS) message at some point after RFID validation when customer is safely away from the fueling area. Active use of mobile station is not necessary because SMS messages may be receive by a server of a service provider while mobile station is in passive mode and send SMS minutes or hours after customer leaves gas station and mobile station is back in active mode. The message may thank customer for shopping with the fuel vendor and offering some incentive to visit their convenience store at a later date (i.e. "Digital Cash" or other equivalents offering complimentary coffee, soda or discount on some item if visited within a certain time period). Additionally, the incentive can be a cross-promotion with another company offering "Digital Cash" to be redeem while shopping for groceries for example. This encourages consumer to visit fuel vendor convenience store or other associated store even without the need to purchase gasoline. Cover and mobile station combination **104** allows vendor to reach out and touch customer at some point after transaction has been completed.

The SMS message can also be parsed and information provided for entry into Personal Information Management (PIM) applications running on mobile station. For example, the message may be parsed for amount of sale, date, and expense category for entry into an financial application to track expenses.

FIG. **5A** is an illustration of example of a system for purchase transactions in accordance with an embodiment of the invention. The system comprises, host **500** coupled to database **501**, transaction kiosk **502** (e.g. gas dispenser), mobile station with cover **104**. Host may be gas company authorization server or a server located at a company which provides transaction approval services or the like.

The following is an example only. Modifications and substitutions by one skilled in the art after reading the specifications including the claims are deemed to be within the spirit and scope of the invention. Although separate steps are described, some steps may be combined depending on the specifications of the interrogator and RFID tag in cover **100**. The transaction starts **503** when mobile station with cover **104** is within the EM field created by interrogator **352** in kiosk **502**. Interrogator electronics in kiosk **502** may provide mobile station with cover **104** with a URL of the transaction provider for later download of transaction information and other such communication via the internet (step **510**). In the case of a fueling transaction, interrogator in kiosk **502** (fuel dispenser) sends a signal through contacts **180** in cover **100** (FIG. 2B) to data connector **20** writing to registers in MCU **13** (FIG. 2A). The signal may command the mobile station to switch to passive mode (step **520**). The interrogator requests ID at step **530**. Cover **100** responses with ID (step **540**). The response and ID information is sent to host **500** at step **545**. Host **500** looks up ID in database **501** and if OK sends transaction approval to kiosk **502**. A hardcopy receipt may be provided. A SMS message is sent through wireless bearer service provider **580** in step **570**.

As described above the SMS message may be parsed for information which may be downloaded into a Personal Information Management (PIM) system. The SMS message may also be specially formatted as is provided for in U.S. Pat. No. 6,078,820 issued to Well et al. on Jun. 20, 2000 and assigned to assignee of the present invention and is hereby incorporated by reference. The formatted data will provide data identifiers which the software applications available to mobile station **4** may use to read the data. The following is an example of such a message:

```
//
APP;ID982
,error:<description>
,TITLE:GAS
,MSG:ACME
,DATE:040900
,TIME:1230
,AMOUNT:2100
```

The parsing system provided by U.S. Pat. No. 6,078,820 is an example of one parsing system there are others which are known in the art.

An embodiment of the present invention my also use Wireless Application Protocol WAP. Information on WAP

can be found at http://www.wapforum.org. WAP is bearer independent, therefore WAP applications can operate on the widest number of air interfaces. The WAP specification defines a protocol stack that can operate on high latency, low bandwidth networks such as SMS. WAP specifies a mark-up language which is a version of Extensible Markup Language (XML). XML allows the use of Metadata in web documents. Metadata is information about information. Therefore, data may be tagged by using Wireless Mark-up Language (WML) and the content (i.e. receipt) pushed—sent to mobile station and cover **104**—or pull—requested from mobile station with cover **104**.

FIG. **6** is an illustration of how an embodiment of the present invention will operate in a WAP environment. It is an examplar only, modifications and substitutions are still within the spirit and scope of the invention. Mobile station with cover **104** sends the host server's URL to Wireless Telephony Application (WTA) server **602** through WAP gateway **600** (step **610**). WTA requests content from host **600** (step **620**). Host **600** looks up transaction in database **601**. Host **600** replies with the tagged content to WTA server at step **630**. At this point, WTA may apply an XSL style sheet to the data at **640** and send the parse data to mobile with cover **104** at step **650**. At point **660**, WTA may access mobile station with cover's **104** application and load the data into a database.

The "Digital Cash" may also be used like gift certificates for a commodity or entertainment (i.e. Starbucks Coffee, movie theatre tickets, etc). By implementing the SmartCover cover as a "Digital Cash" gift certificate (possibly with vendor's logo on the cover—Starbucks, AMC, General Cinema, etc), the mobile station's user interface can be utilized to indicate number of visits, amount of "Digital Cash" remaining or to communicate some post-transaction SMS advertisement or additional "Digital Cash" collection opportunity. The certificate may also be in the form of an SMS or another type e-mail as birthday or other type gift.

Currently, a gift certificate with predetermined cash value is purchased and utilized by purchaser or given to someone for their use at the vendor location or retail chain where the certificate is accepted. At a future date, the certificate is submitted for credit towards a commodity purchase or admittance to a show. Value remaining on certificate may be refunded in the form of cash if the amount remaining cannot be refunded in the form of another gift certificate representing the remaining amount. The problem is that gift certificates must be carried, reducing likelihood of spontaneous purchases with the vendor where the certificate is accepted. Also, in many instances, remaining certificate value from a transaction is refunded to customer in the form of cash, which might not be utilized at the vendor's place of business.

In accordance with the present invention, cover gift certificate has a greater chance of always being with the customer as it is part of the customer's mobile station. Vendor advertisement is possible through the design/cover, resulting in free advertisement. Since the "Digital Cash" value of cover is stored electronically, the remaining "Digital Cash" value from a transaction can be recorded either in the cover's RFID programmable tag, mobile station **4** memory or on the RFID reader host network, increasing the likelihood of all of the "Digital Cash" value being spent with that vendor. Once the "Digital Cash" value of the cover is expended, the cover may be discarded or additional cash value can be programmed back into the cover by visiting vendor's place of business or vendor/promotor's website as is provided for in U.S. Pat. No. 6,078,806.

Virtual ATM and Food Shopping

As in the fueling example, addition of mobile station allows the cover to become a reusable and secure cash card or act as a debit card and a means of local data transfer as shown in U.S. Pat. No. 6,078,806 hereby incorporated by reference and portions reproduced below.

When the "Digital Cash" has run out or more is needed, the electric money purse of the mobile station needs reloading. There are several methods to do that. One method, close to the approach with real money and ATM (Automatic Teller Machine) machines, would be to walk to the nearest "Digital Cash ATM" to download more money from the account. This is not very handy, because it will take some time before these kind of "Digital Cash ATM" machines are widely available. The present invention offers a much more convenient way to do the reloading of "Digital Cash".

Using the SMS service, it is possible to download more "Digital Cash" from the bank account to the mobile station. The mobile station sends a request to send more "Digital Cash", e.g. as a SMS message, to the money server responsible for the user's account. As a response, suppose the account has balance, the money server sends "Digital Cash" to the mobile station, where it is stored to the memory. SMS is used as an example only other services may also be used, e.g. Wireless Application Protocol (WAP) as used in the fueling example above.

In accordance with the present invention, cover **100** has contact points **180** (in FIG. 2B) connecting mobile station **4** platform to the RFID tag in the cover **100**. "Digital Cash" value can now be loaded into the cover via mobile station **4** and WAP. For instance, a maximum amount of "Digital Cash" (say $100.00 at a time) could be transferred Over-the-Air via WAP from an account (bank or wireless carrier account). The liability is now limited to $100.00. Furthermore, mobile station **4** may require a PIN to authorize any RFID cash-less transaction, making this a more secure method of payment than a credit card, a safer method than carrying cash and more convenient than a traditional cash card or debit card as this cover "Digital Cash" value can be added to via the mobile phone at any time. The mobile station and cover combination now becomes an electronic wallet where cash value may be transferred wirelessly, eliminating the need to locate a ATM machine to obtain cash for small cash purchases such as fast food.

FIG. **5B** shows a simplified diagram of a telephone call between the APPLICATION running on mobile station with cover **104** and the Mobile Services Switching Center MSC, which is part of a mobile services network. At step **200**, the application sends the telephone number to be called to the MCU of the mobile station **104**, which sends to the Mobile Switching Center MSC the identification data and other data needed for establishing a connection (steps **201**, **202** and **203**). The switching center MSC transmits information of the progress of the call (step **204**) and the state of the connection (step **205**) to the mobile station **104**, after which the mobile station **104** sends acknowledgment of connection to the MSC (step **206**) and to the application **18** (step **207**). For closing the connection, the application **18** sends a close connection command to the MCU of the mobile station **1** (step **208**), which sends a close connection request to the Mobile Services Switching Center (step **209**). The MSC sends a connection closed acknowledgment to the MCU of the mobile station **104** (step **210**). Finally, the MCU of the mobile station **104** sends to the application information of the closing of the connection (step **211**).

In the previous exemplary embodiment of the invention the money was stored in an account, finally located in a

money server in a bank. Therefore it was necessary to update the balance in the mobile station and in the bank. In another embodiment of this invention the electric money is stored to the mobile station **4** or cover **100**. When that kind of electric money (also referred to as "Digital Cash or transaction credit value information") is used, e.g. for paying parking fees or phone bills, the corresponding amount of money is cut down from the electric money purse of the mobile station **104**. The "Digital Cash" can be stored e.g. as a code word in mobile stations memory. No link between the payment terminal **1021** (FIG. **10**) and the money server **1022** is required at the moment when the payment is made.

When the "Digital Cash" has run out or more is needed, the electric money purse of the mobile station needs reloading. There are several methods to do that. One method, close to the approach with real money and ATM (Automatic Teller Machine) machines, would be to walk to the nearest "Digital Cash ATM" to download more money from the account. This is not very handy, because it will take some time before these kind of "Digital Cash ATM" machines are widely available. The present invention offers a much more convenient way to do the reloading of "Digital Cash".

Using the SMS service, it is possible to download more "Digital Cash" from the bank account to the mobile station, using a method close to the one described in the previous embodiment of the invention concerning balance inquiry. The mobile station sends a request to send more "Digital Cash", e.g. as a SMS message, to the money server responsible for the user's account. As a response, suppose the account has balance, the money server sends "Digital Cash" to the mobile station, where it is stored to the memory.

The network, where the mobile station in accordance with the invention is used is not limited to GSM only, GSM is a good example of a system that offers required data transfer possibilities. Particularly the SMS messages available in GSM network are handy, because the normal phone/data channel is not effected when transferring SMS messages.

In addition to payment applications, the method of the invention can also be used for other kinds of applications. For example gathering and presenting other information, such as timetables, stock prices, exchange rates, etc. Each of the previous examples can be implemented in a separate application module, or the wanted functions and applications can be combined to a multi-functional application module for the mobile station.

Grocery Shopping

Many people use coupons when they shop for groceries and other items. This requires the consumer to clip the coupons from magazines, newspapers, boxes of item previously purchase and the like. Currently bar codes are being used to encode information regarding products, bar codes may also be used in print advertising to condense a lot of information into a small space. As shown in FIG. **2A**, mobile station **4** also comprises a first means of data transfer, such as an optical or infra red IR transmitter/receiver **22**. Other equivalent frequencies in the electromagnetic spectrum may also be used. Transmitter/receiver **22** may be used to transfer the data encoded in the bar codes to the memory of the mobile station **4** or cover **100**. Thus, consumer/users now may store coupons in memory of mobile station **4** or cover **100** as a form of "Digital Cash," and user interface **18** may be used to keep track of the coupons stored in memory. When consumer/user goes to the store, the same phone may be used to scan items purchased, keep track of total bill, and validate the coupons. When the consumer checks out, the "Digital Cash" may automatically be redeemed at Point of Sale and electronic coupons for items purchased may be validated and electronically transferred to clearing house or other such means for coupon handling as is known in the art. As described above, information regarding the transaction may be automatically enter in a PIM application provided mobile station **4** has PIM capabilities.

Parking Meters

FIG. **7** shows the use of a method to pay for parking meter time. Car **710** parks in front of parking meter **700**. Parking meter **700** comprises sonar, IR or other means to determine that an automobile is parked in the space for which the meter **700** collects parking fees. Parking meter **700** also comprises means for communication with central site **760**, and RFID interrogator for communication with mobile station and cover **104**. Means of communication to central site may be by point to point wireless connection, wireless LAN or through a central civic bus. Such as bus which is being installed in several cities ties traffic lights, traffic flow information and the like to a central site.

The method begins when user wishes to park automobile **710** next to parking meter **700**. User places mobile station **104** close to parking meter **700**. Interrogation signal **705** reads ID information stored in cover **100** and provides mobile station **4** with information such as rates and location of central site **760** through cover **100** and contacts **180**. Cover provides ID by return signal **706**. User enters parking time desired and transmits the information to central site **760** via SMS or the like **740**. Central site **760** then authorizes parking meter for desired time through communication means **730**. Timing information may be maintained at central site **760**, parking meter **700** or the like. A SMS or the like **750** may be sent to mobile station **104** informing user of expiration of parking time and user may respond with additional digital cash being transferred to parking authority through another SMS or the like **740** to central site **760**

Automatic Hotel/Car Rental Registration

FIG. **8** shows the use of a method for hotel room access in accordance with the invention. User may use mobile station **104** to send request for room SMS or the like **830** to a central reservation site **800** to reserve a hotel room. Central reservation site **800** may send return SMS or the like **840** comprising with room number, ID code, directions and other information. User may then proceed **850** directly to room bypassing desk clerk **860**. User then may place mobile station **104** close to door lock **820** which comprises an interrogator. Lock interrogates **825** cover **100** and cover responds **827** with code received from central reservation site **800**. Thus door **810** is unlocked.

Car reservation system is similar. Central rental cars systems at airports are becoming common. For example, at Dallas/Fort Worth airport (DFW) all rental car agencies are now in the same facility. The keys are kept with the cars and to prevent stealing of cars individuals leaving with cars must pass through gate and show their contract to a guard. With a mobile station with cover **104**, the keys may be locked in the car. User requests reservation and as was described above received the ID code to unlock the car and get to the car keys. Thus, only authorized renters are allowed access to the interior of the car and the keys. Future car systems may use the mobile station with cover as a key to the operation of a car; thus, doing away with physical keys.

Fast Food Restaurants

Many fast food restaurants do not accept credit cards. This is due to percentage of the transaction which the fast food restaurants are required to pay for credit cards services. This results in lost sales from prospects that do not have any cash on hand. Time at POS for cash transaction is another problem. Cash transactions require correct change be given

to customer and that cash exchanging hands is inspected for authenticity. This adds to the total transaction time and limits speed at which customer can be processed. Cash transactions are also vulnerable to shrinkage at the POS.

To solve this problem, the fast food vendor may have a Point of Sale (POS) private wireless system (PSID) which would allow customers to have wireless phone access on their system for reduced airtime fee. The mobile station with cover **104** would log onto the PSID and register the customer. At that point the customer receives a SMS or WAP push message welcoming that customer, listing the number of recent visits and asking if the most recent menu choices would like to be purchased. This allows for menu choice to be made before customer ever approaches the counter. Thus reducing waiting in line time is reduced. The customer would then approach the counter where his/her meal would be waiting for payment which requires simply swiping the mobile station over the POS RFID reader. The cash amount in the cover is correctly adjusted by the POS reader. In the case where the cover is used as a debit card, the correct amount is debited from the corresponding account.

FIG. **9** shows the use of a mobile station with cover **104** and application cards **1013** with microprocessor **1019**. Mobile station **104** is in contact with Mobile Switching Center (MSC) with is in turn in contact with a Point of Sale (POS) terminal **1022** through Public Switch Telephone Network (PSTN). POS terminal **1022** may comprise means for local data transfer **1023**. Mobile station **104** may also exchange data with a PC like terminal **1021** connected to a communications network such as the internet. Data exchange may be via means for data transfer **22** on mobile station **104** and means for data transfer **1010** coupled to PC terminal **1021**.

Payments and transfer of coupons in form of "Digital Cash" and other digital codes may be transferred between two mobile stations. FIG. **10** shows an application in which two mobile stations **104** do communicate with each other by means for data transfer **22**. It is possible to transfer digital data such as video and/or speech.

FIG. **11** shows an M-commerce model **900** for use of a mobile station with a changeable cover in accordance with an embodiment of the invention. Consumer using mobile station with cover **104** may shop at a variety of promotion channels **93**X. These may include a home improvement store **931**, video rental store **932**, fast food restaurant **933**, coffee house **934**, grocery store **935**, electronics store **936**, book store **937**, or the like . . . . A central portal database **910** may be maintained wherein service requests from mobile station with cover **104** are processed. The portal may request charge authorization **950** from a plurality of credit account issuers or authorizers **96**x. They may comprise Visa, MasterCard, American Express, First Data, and the like. The credit issues **96**x authorizes the charge and sends notice of authorization **955** to portal **910**. Charges may also be charged to the user's phone bill. A profile database **920** may also be maintained. This database may collect marketing, purchasing habits and other data regarding the consumer of the mobile station so that services suitable to the consumer may be offered by wireless service providers **97**x. Examples of such providers are VoiceStream, AT&T, Verizon, Sprint, SBC Wireless, and the like. Data mining is made easier by use of a database separate from the central portal database, since consumers who choose maximum privacy can be excluded from the profile database and access to portal database limited to transaction authorization only.

Music Preview

Music stores currently provide listen kiosk where you can listen to selections of music media. However, the drawback to the system is one is limited to the selection of music playing at the listening station kiosk. An embodiment of the invention provides a solution. FIG. **13** is an illustration of a system wherein a consumers may download samples of music which they may wish to purchase. The label on the box storing the media **1310** with the music may have an RFID tag **1320** on it which has an identification number or a bar code written on the label. The media may be CD or DVD or the like. A reader in a mobile station **1330** would interrogate the RFID tag or read the bar code. The mobile station establishes a connection with the record company's server **1360** with =database **1365** through wireless access point **1350**. The identification number associated with the product is provided to the server. The server finds the identification number and sample files related to the identification number provided. The samples are then downloaded **1380** to the mobile station **1330** through wireless access point **1350**. The sample files may be MPEG-1 Layer 3 (MP3), MPEG-2 Advanced Audio Coding (AAC) or the like.

An alternative system would be that the music store has a local wireless system as was described above in section regarding fast food. The sample files of music offered for sale at the store may be store in database **1345** of store server **1340**. The identification number is provided to the server **1340** and database **1345** is searched for identification number and the associated sample files. Once located, the samples are transmitted **1370** to mobile station **1330**.

This invention has been described relative to specific embodiments. Modifications that become apparent to persons of ordinary skill in the art only after reading this document are deemed within the spirit and scope of the invention. Applicant's use of the term "plurality" shall be defined as one or more.

What is claimed is:

1. A removal non-planar external cover module for a mobile device comprising:

a main face, having an upper surface which is exposed when said removal non-planar cover is removably attached to said mobile device;

a plurality of wall elements joining said main face at its edge wherein said main face and at least portions of said wall elements define a receivable cavity for receiving said mobile devices; and

transponder having data and circuitry responsive to an interrogation signal to communicate the data with a remote station via wireless communication.

2. The module of claim **1** further comprising:

a memory for storing digital data.

3. The module of claim **2**, wherein memory is preloaded with digital data representing digital cash.

4. The module of claim **2** further comprising:

an interface with a portable radio communication device, wherein digital data representing digital cash may be added to the memory be received by the portable radio communication device and transferred to the memory via the interface.

5. The cover of claim **1**, wherein the transponder is a Radio Frequency IDentification (RFID) transponder.

6. The cover of claim **1**, wherein the transponder is a Surface Acoustic Wave (SAW) transponder.

7. The cover of claim **1**, wherein the transponder is a Dense Wave Multiple Access (DWMA) device.

8. A portable radio communication device comprising:

a removal non-planar external cover comprising:

a main face, having an upper surface which is exposed when the removal non-planar cover is removably attached to the portable radio communication device;

a plurality of wall elements joining the main face at its edge wherein the main face and at least portions of the wall elements define a receivable cavity for receiving the portable radio communication device;

a transponder embedded in the removable non-planar cover, the transponder having data and circuitry responsive to an interrogation signal to communicate the data with a remote station via wireless communication.

9. The portable radio communication device of claim 8 further comprising:

a memory for storing digital data.

10. The portable radio communication device of claim 9 further comprising:

an interface electronically coupling the removable non-planar cover with the portable radio communication device, wherein digital data representing digital cash may be added to the memory be received by the portable radio communication device and transferred to the memory via the connector.

11. The portable radio communication device of claim 9 further comprising:

an interface electronically coupling the removable non-planar cover with the portable radio communication device, wherein the data in the transponder may be modified by data received by the portable communication device.

12. The portable radio communication device of claim 11 wherein the update data may be in the form of a SMS message received by the portable communication device.

13. The portable radio communication device of claim 9, wherein the transponder is a Radio Frequency IDentification (RFID) transponder.

14. The portable radio communication device of claim 9, wherein the transponder is a Surface Acoustic Wave (SAW) transponder.

15. The portable radio communication device of claim 9, wherein the transponder is a Dense Wave Multiple Access (DWMA) device.

* * * * *

EXHIBIT

G

US006837427B2

(12) **United States Patent**
Overhultz et al.

(10) **Patent No.: US 6,837,427 B2**
(45) **Date of Patent: Jan. 4, 2005**

(54) **ADVERTISING COMPLIANCE MONITORING SYSTEM**

(75) Inventors: **Gary L. Overhultz**, River Forest, IL (US); **Robert W. Mead**, Chicago, IL (US)

(73) Assignee: **Goliath Solutions, LLC.**, Chicago, IL (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 118 days.

(21) Appl. No.: **10/158,416**

(22) Filed: **May 30, 2002**

(65) **Prior Publication Data**

US 2003/0097302 A1 May 22, 2003

Related U.S. Application Data

(60) Provisional application No. 60/332,149, filed on Nov. 21, 2001.

(51) **Int. Cl.**[7] **G06K 5/10**

(52) **U.S. Cl.** **235/382**; 235/383; 235/451; 235/375; 235/376

(58) **Field of Search** 235/382–384, 235/451, 375, 376; 705/5, 20, 23

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,168,263 A * 12/1992 Drucker 340/571
5,201,060 A 4/1993 Haruyama et al.
5,235,326 A * 8/1993 Beigel et al. 340/10.41
5,252,979 A 10/1993 Nysen
5,448,226 A 9/1995 Failing, Jr. et al.

(List continued on next page.)

OTHER PUBLICATIONS

Article re: "Mobilocity Inc.", Issue No. 60, Aug. 9, 2001—M–Business Insights (15 pgs.).
Article re: http://www.frontlinetoday.com, "What will they think of next?," Nov. 11, 2001 (4 pgs.).
Article re: http://www.frontlinetoday.com, "Find your stuff," Nov. 11, 2001 (4 pgs.).

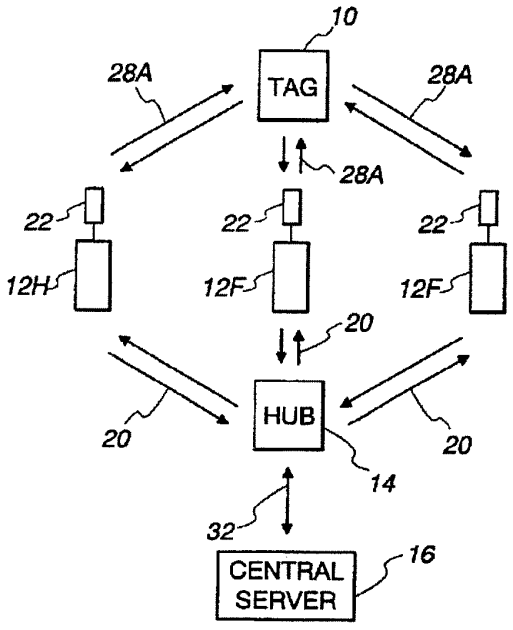
(List continued on next page.)

Primary Examiner—Steven S. Paik
(74) *Attorney, Agent, or Firm*—Jones Day

(57) **ABSTRACT**

An advertising compliance monitoring system is provided that includes a tag affixed to a sign or marketing material or shopper ID card, the tag communicating with a reader on a periodic basis. The tag includes a memory for storing tag data, a transmitter and a receiver. The tag uses sleep modes to conserve power. The tag transmits tag data to a reader in response to an interrogation request, or automatically on a periodic basis. The tag data includes an identification number used to identify the tag associated with a particular sign, price, marketing material or shopper, status data (e.g., delivered, displayed), and time and date information. This data is processed by a central server to determine compliance with and/or exposure to a particular advertising program.

43 Claims, 4 Drawing Sheets



U.S. PATENT DOCUMENTS

5,583,819	A		12/1996	Roesner et al.
5,583,850	A		12/1996	Snodgrass et al.
5,640,683	A		6/1997	Evans et al. 455/45
5,745,036	A		4/1998	Clare
5,774,876	A		6/1998	Woolley et al.
5,776,278	A		7/1998	Tuttle et al.
5,894,266	A		4/1999	Wood, Jr. et al.
5,910,776	A		6/1999	Black
5,920,261	A		7/1999	Hughes et al.
5,936,527	A		8/1999	Isaacman et al.
5,949,335	A		9/1999	Maynard
5,955,951	A		9/1999	Wischerop et al.
5,959,568	A		9/1999	Woolley
5,963,134	A		10/1999	Bowers et al.
5,964,656	A		10/1999	Lawler, Jr. et al.
5,974,368	A		10/1999	Schepps et al.
6,002,344	A		12/1999	Bandy et al.
6,005,482	A		12/1999	Moran et al.
6,013,949	A		1/2000	Tuttle
6,025,780	A		2/2000	Bowers et al.
6,037,879	A		3/2000	Tuttle
6,043,746	A		3/2000	Sorrells
6,045,652	A		4/2000	Tuttle et al.
6,061,614	A		5/2000	Carrender et al.
6,070,156	A		5/2000	Hartsell, Jr. et al.
6,078,888	A	*	6/2000	Johnson, Jr. 705/1
6,084,530	A		7/2000	Pidwerbetsky et al.
6,091,319	A		7/2000	Black et al.
6,097,301	A		8/2000	Tuttle
6,100,790	A		8/2000	Evans et al. 340/325.54
6,104,279	A		8/2000	Maletsky
6,107,917	A		8/2000	Carrender et al.
6,109,568	A		8/2000	Gilbert et al.
6,121,878	A		9/2000	Brady et al.
6,121,880	A		9/2000	Scott et al.
6,127,917	A		10/2000	Tuttle
6,127,928	A		10/2000	Isaacman et al.
6,133,836	A		10/2000	Smith
6,137,403	A		10/2000	Desrochers et al.
6,148,291	A		11/2000	Radican
6,150,921	A		11/2000	Werb et al.
6,150,934	A		11/2000	Stiglic
6,150,948	A		11/2000	Watkins
6,169,483	B1		1/2001	Ghaffari et al.
6,177,861	B1		1/2001	MacLellan et al.
6,195,005	B1		2/2001	Maloney
6,195,006	B1		2/2001	Bowers et al.
6,198,392	B1		3/2001	Hahn et al.
6,204,764	B1		3/2001	Maloney
6,212,401	B1		4/2001	Ackley
6,215,403	B1		4/2001	Chan et al.
6,220,516	B1		4/2001	Tuttle et al.
6,229,445	B1		5/2001	Wack
6,232,870	B1		5/2001	Garber et al.
6,236,315	B1		5/2001	Helms et al.
6,246,882	B1		6/2001	Lachance
6,249,227	B1		6/2001	Brady et al.
6,253,190	B1	*	6/2001	Sutherland 705/20
6,260,049	B1		7/2001	Fitzgerald et al.
6,262,662	B1		7/2001	Back et al.
6,265,962	B1		7/2001	Black et al.
6,265,963	B1		7/2001	Wood, Jr.
6,269,342	B1	*	7/2001	Brick et al. 705/20
6,272,457	B1		8/2001	Ford et al.
6,298,591	B1		10/2001	Healy
6,304,856	B1		10/2001	Soga et al.
6,308,177	B1		10/2001	Israni et al.
6,308,446	B1		10/2001	Healy
6,312,106	B1		11/2001	Walker
6,369,712	B2		4/2002	Letkomiller et al.
6,405,102	B1		6/2002	Swartz et al.
6,577,238	B1		6/2003	Whitesmith et al.
6,580,358	B1		6/2003	Nysen
6,650,230	B1		11/2003	Evans et al. 340/10.4
2001/0000430	A1		4/2001	Smith et al.
2001/0001553	A1		5/2001	Hahn et al.
2001/0004236	A1		6/2001	Letkomiller et al.
2001/0054959	A1		12/2001	Horn et al.
2002/0140546	A1		10/2002	Tuttle
2002/0143668	A1		10/2002	Goodwin, III
2002/0149468	A1		10/2002	Carrender et al.
2002/0149480	A1		10/2002	Shanks et al.
2002/0149481	A1		10/2002	Shanks et al.
2002/0149482	A1		10/2002	Shanks et al.
2002/0149483	A1		10/2002	Shanks et al.

OTHER PUBLICATIONS

Article re: http://www.frontlinetoday.com, "Getting organzied on RFID," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #10 Printronix," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #9 PeopleSoft/Vantive," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #8 Hand Held Products, a Welch Allyn Affiliate," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #7 PSC," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #6 Texas Instruments," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #5 Lucent Technologies/Agere Systems," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #4 Intermec," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #2 Zebra Technologies," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #1 Symbol Technologies," Nov. 11, 2001 (2 pgs.).

Article re: http://www.emetro.ca/Computers/Software/Bar_Code/, Nov. 11, 2001 (6 pgs.).

Article re: http://www.webcrawler.com/business/supplies_and_services/bar_codes/general_suppliers/, Nov. 11, 2001 (4 pgs.).

Article re: http://www.iop.co.uk/pakex2001.htm, Nov. 11, 2001 (8 pgs.).

Article re: http://www.emetro.ca/Computers/Software/Bar_Code/, Nov. 11, 2001 (16 pgs.).

Article re: Frontline Solutions Website, May 2001 (4 pgs.).

Article re: Speeding Through Store Checkout Lines, May 16, 2001 (2 pgs.).

Article re: (BW) (NJ–Checkpoint–Systems)(CKP) Checkpoint Systems Brings RFID Technology to Access Control Market With new Line of Readers and Cards, Oct. 1, 2001 (2 pgs.).

Article re: Logistics: The No–Gap Procurement Process, Nov. 11, 2001 (pp. 44–45).

Press Release from Transponder News re: "Motorola announces BiStatix 125KHz RFID tag," Mar. 2, 1999 (2 pgs.).

Press Release from Transponder News re: "RFID and home delivery boxes could revolutionize home laundry," May 2, 2000 (2 pgs.).

* cited by examiner

Fig. 1

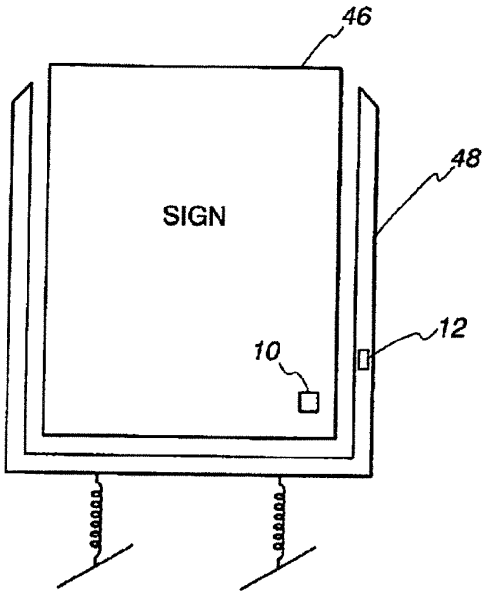


Fig. 2

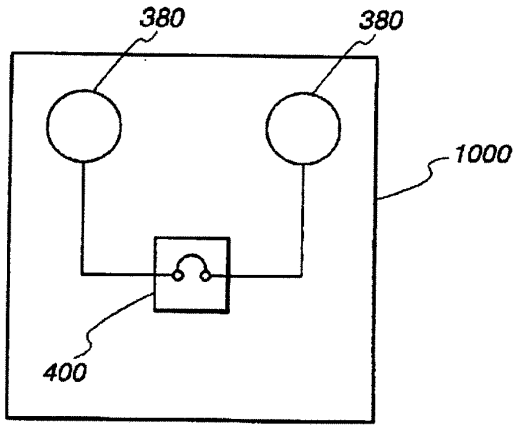


Fig. 3

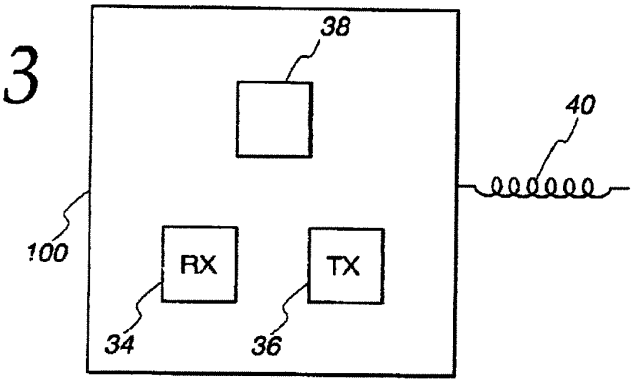


Fig. 4

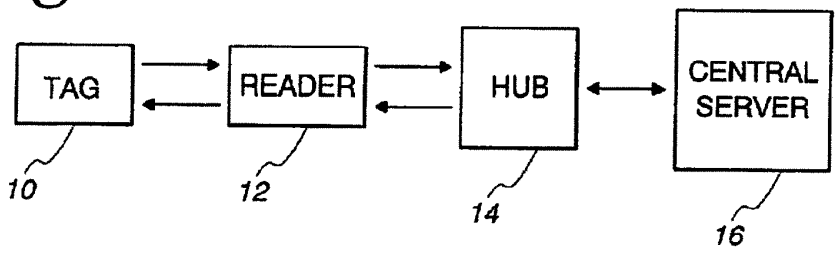


Fig. 5

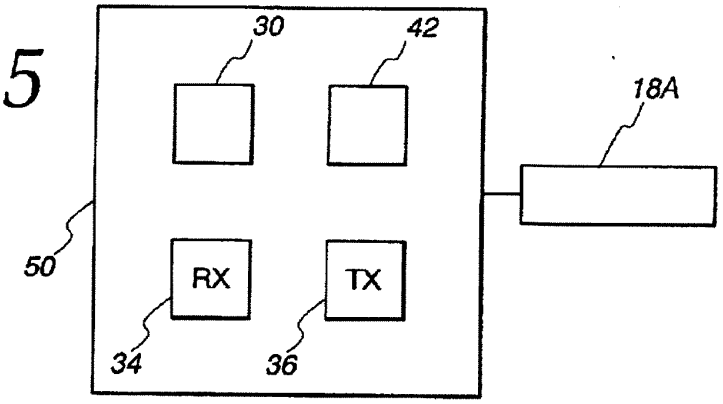


Fig. 6

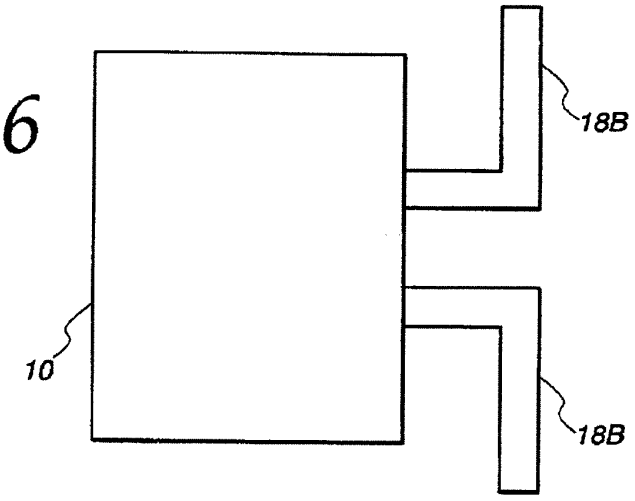


Fig. 7

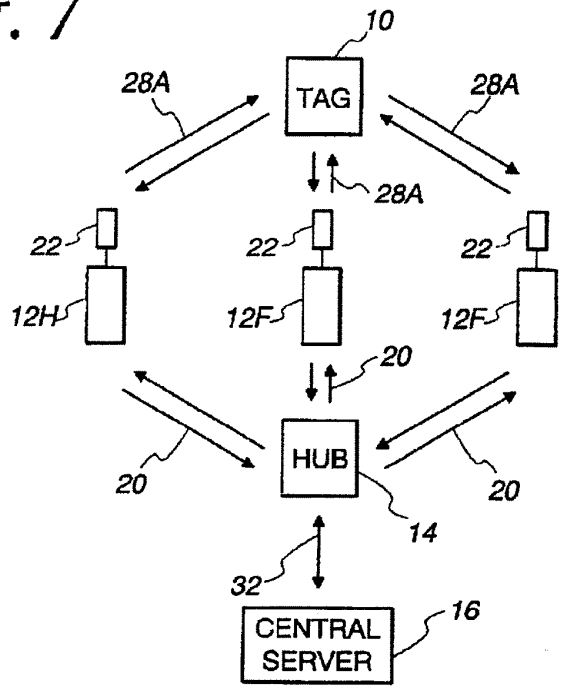

10
TAG
28A
28A
28A
22
22
22
12H
12F
12F
20
20
20
HUB
14
32
CENTRAL SERVER
16

Fig. 8

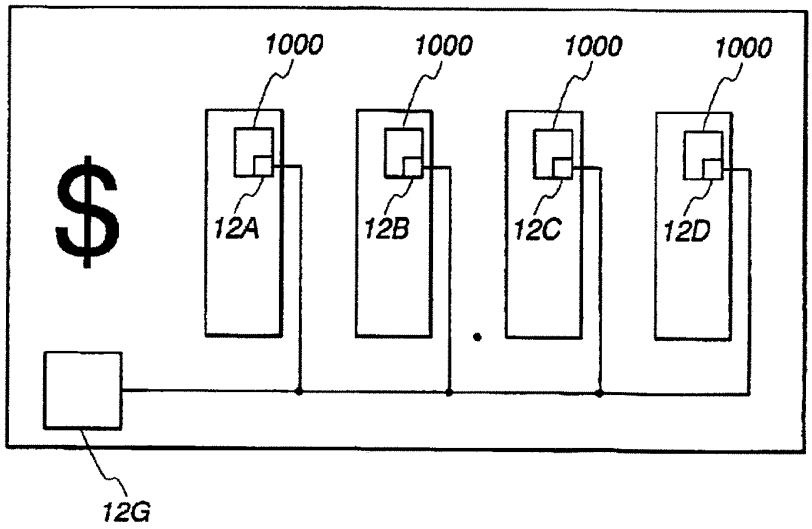

1000
1000
1000
1000
$
12A
12B
12C
12D
12G

Fig. 9

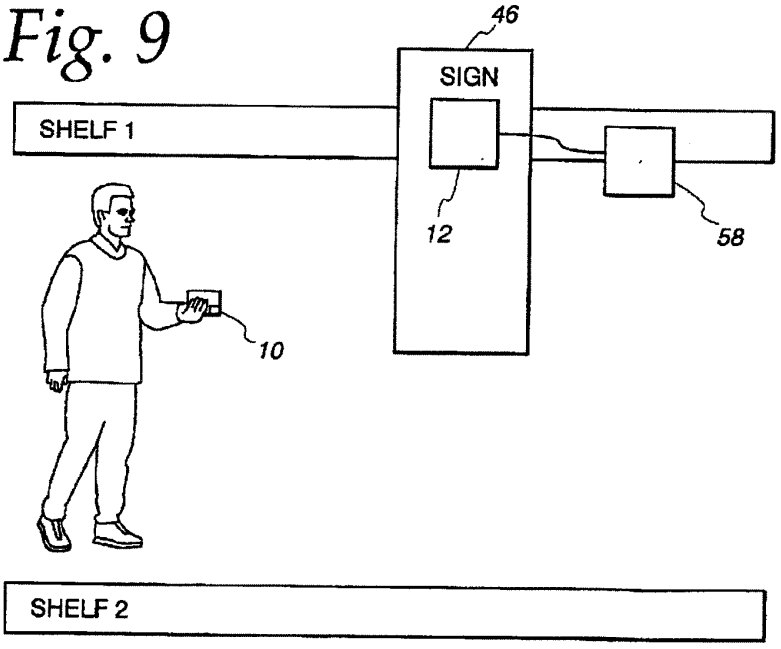
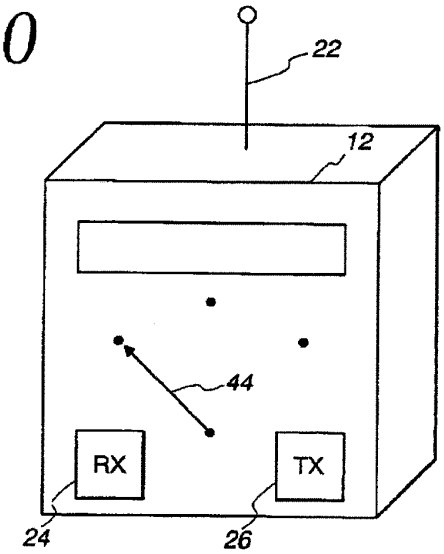


Fig. 10



ADVERTISING COMPLIANCE MONITORING SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION

This application claims the benefit of U.S. Provisional Application Ser. No. 60/332,149, filed on Nov. 21, 2001, which is assigned to the assignee of the present application. The applicants are claiming priority to this provisional application, making the effective filing date of this application Nov. 21, 2001.

FIELD OF THE INVENTION

The present invention relates to a system and method of monitoring compliance with a Point of Purchase (POP) advertising program that displays one or more advertising signs or marketing materials, and more particularly to the monitoring of and exposure to advertising signs or marketing materials displayed at gas stations, convenience stores, grocery stores, mass merchandising outlets, drug stores, specialty retail outlets (e.g., pet stores, record stores, book stores), consumer electronics stores, etc.

BACKGROUND OF THE INVENTION

It is desirable to monitor retailer compliance with advertising programs. Advertising that is not displayed has no value to a company. However, non-compliance with an advertising program is difficult to detect in a timely manner.

In the past, the primary way to collect information about whether retail outlets were complying with an advertising program was to rely on site surveys. These surveys were typically performed by manufacturer sales representatives, store delivery personnel, or independent survey companies. However, site surveys are generally expensive, incomplete, and untimely.

The direct costs associated with site surveys are substantial. Independent survey companies charge significant fees for travel time, as well as for data collection/tabulation. Consequently, information is typically available for only a subset or sample of the thousands or tens-of-thousands of stores targeted for a particular advertising program.

To save money, some companies request that delivery personnel and/or sales representatives compile compliance information while they are at a retail store for other purposes. The diversion of these personnel from doing their ordinary tasks (such as restocking or selling) can be substantial. Moreover, these personnel have little compliance training or Quality Assurance skills to ensure reporting consistency or accuracy. In addition, such visits are not of sufficient frequency to ascertain exactly when compliance with a particular advertising program began or ended.

Furthermore, compliance survey reports (whether by professionals or company personnel) usually lag the survey date. This delay prevents a timely rectification for non-complying stores. In particular, if an advertising program is designed to run for two weeks, it is important to know within a day of when the program was supposed to start which retail sites are out of compliance so the sites can be made compliant in a timely manner. The size of the staff and expense required to visit all advertising sites within 48 hours is prohibitive. Therefore, surveys or visits to a subset of sites are the only practical way to monitor compliance. However, for the reasons stated above, surveys are only sufficient for general or strategic conclusions, and are incapable of improving tactical POP compliance in a timely manner.

Visits to a subset of sites do not yield sufficient information for full-compliance advertising goals.

Companies, such as petroleum companies and consumer packaged goods companies, spend millions of dollars to run a given POP program. Retail performance varies greatly. However, it is common for more than 50% of retail sites, presumed to be participating, to be out of compliance. The present invention provides an efficient system for quickly identifying every non-complying site by using tags (e.g., wireless RFID tags) on each advertising sign or marketing material. The system also provides companies with information about when a POP program is running, what advertising is and is not being displayed, and when new signs will be produced and shipped to retail outlets. The system can monitor other merchandizing conditions besides signage, such as the presence or absence of display racks or containers, the presence of promotional hardware, or the presence of certain items to be sold under certain conditions. It can also monitor and report specific pricing associated with particular signs or marketing materials. The system can also monitor and report exposure of particular shoppers to marketing materials that are being monitored by the system. The system will therefore allow companies to monitor and remedy compliance problems during an advertising program, which will improve overall compliance and increase the effectiveness of the advertising program. It will also allow fee-based marketing programs that are conditional upon certain retail conditions being present at a particular time to be executed with more precision, reliability, and verifiability. Furthermore, it will allow the flow of specific shopper traffic within a store to be monitored and analyzed. In addition, the system will allow subsequent marketing programs, such as coupons or direct mail, to be tailored to or made conditional on shopper interests, shopping patterns, or prior exposure to marketing materials.

Therefore, it is desirable to provide an advertising or marketing material compliance monitoring system that provides compliance monitoring in a timely and cost effective manner.

It is also desirable to provide an advertising compliance monitoring system that makes determining compliance easy.

It is desirable to provide a wireless compliance monitoring system that uses active tags that conserve battery power.

It is also desirable to provide a wireless compliance monitoring system that uses passive tags to determine the specific location (within a narrow range) of selected marketing materials and/or version of selected marketing materials.

It is also desirable to provide a wireless compliance monitoring system that uses contact technology (such as EEPROM, optical, notch, or magnetic ink) to determine the specific location (within a very narrow range) and/or version of selected marketing materials.

It is desirable to provide a compliance monitoring system that uses passive tags that are small and light, making it easier to secure to advertising signs.

It is also desirable to transmit data from sign locations to a central collection point at individual retail sites using wireless technology for ease of installation at retail sites.

It is also desirable to provide a switch on the reader for switching a tag between different power conservation modes, such as OFF, sleep mode, or continuous monitoring mode.

It is desirable to transmit data from each retail site to a central storage/processing location to report individual and

aggregate retailer execution of and consumer exposure to specific and aggregated marketing programs.

Thus, a need exists for an advertising compliance monitoring system that provides versatility and flexibility by providing a tag, associated with a specific sign, that communicates tag data to an external reader. The present invention provides a way to quickly and positively identify each tag, determine the status of each sign (e.g., delivered, displayed), monitor compliance with a marketing program, monitor customer exposure to a marketing program, and analyze tag data relating to the display of and exposure to advertising signs, marketing materials, pricing information, marketing program merchandise, and supporting hardware.

SUMMARY OF THE INVENTION

The present invention overcomes the disadvantages of the prior art by providing a system for monitoring compliance with an advertising program. In one embodiment, the system includes a tag, associated with a sign or shopper identification card, for communicating with a reader on a periodic basis. In one embodiment, the tag comprises an active tag, a passive tag or a contact tag. Active and passive tags each include a memory for storing tag data, a transmitter and a receiver. In the active tag embodiment, the tag uses sleep modes to conserve power. The tag transmits tag data to a reader in response to an interrogation signal, or automatically on a periodic basis. The tag data includes any or all of the following: an identification number used to identify the tag associated with a particular sign and/or marketing material, site location data (e.g., which retail site and/or location within a retail site where the marketing material should be displayed), and time and date information. This data is processed by a central server to determine compliance with a particular advertising program.

In one embodiment, the reader associated with a given location at the retail site communicates with one or more tags to detect their presence and obtain their tag data. A hub communicates with each reader and stores the tag data for all reader locations at a given retail site. The hub communicates with a central server to convey information such as displayed signage, featured price, marketing materials, and/or shopper exposure to marketing materials at that site. A central server stores and analyzes tag data from all sites to determine whether each retail outlet is in compliance with a specific advertising program (e.g., to determine if each sign is being displayed at the time and location specified by the program). The central server can also report which shopper identification cards have been proximate to a given reader.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features of the present invention will be more fully disclosed when taken in conjunction with the following Detailed Description of the Invention in which like numerals represent like elements and in which:

FIG. **1** shows one embodiment of an advertising compliance monitoring system including a sign having a tag affixed thereto, and sign hardware supporting the sign and having a reader affixed thereto.

FIG. **2** represents a serial EEPROM contact tag according to one embodiment of the present invention.

FIG. **3** represents a passive RFID tag, including a coil antenna, according to one embodiment of the present invention.

FIG. **4** shows one embodiment of an advertising compliance monitoring system including a tag, a reader, a hub, and a central server.

FIG. **5** represents an active RFID tag, including a monopole antenna, according to one embodiment of the present invention.

FIG. **6** represents an RFID tag, including a dipole antenna, according to one embodiment of the present invention.

FIG. **7** shows one embodiment of an advertising compliance monitoring system including a tag, a reader and antenna, a hub, and a central server.

FIG. **8** shows a price reporting embodiment of the invention.

FIG. **9** shows a consumer exposure monitoring embodiment of the invention, the system including an advertising sign, a reader, a customer card with an embedded tag and a display device.

FIG. **10** shows a hand-held or permanent (fixed) reader including a switch for switching the tag between different power conservation modes.

DETAILED DESCRIPTION OF THE INVENTION

The claimed system determines whether a particular sign is actually being displayed, so that the advertising benefit of the sign can be realized in a cost-effective manner. As used herein, "sign" is defined as including marketing materials, displays, pricing information, coupon dispensers, signage, display racks, floor or counter mats, containers, promotional hardware, shopper identification cards, and/or items to be sold under certain conditions (e.g., seasonal promotions, products, or displays).

Referring to FIG. **1**, the system includes a tag **10** associated with a particular sign **46**, and a tag reader **12** for determining whether the sign **46** is actually being displayed. The reader **12** is generally mounted on sign hardware **48**. There are several types of tags **10**. Active RFID tags **50** allow one reader **12** to determine whether all the signs in a certain defined area (e.g., on the property of a retail outlet) are being displayed; passive RFID tags **100** require a reader **12** for each sign/tag combination; and contact tags **1000** transmit stored data in response to an interrogation signal from a reader **12** that directly contacts the tag **1000**.

Some advertising programs require the placement of advertising material within a general area (e.g., a display need only be placed in a department or aisle of a store). Active RFID tags, which contain a battery to permit their data contents to be transmitted over larger distances (e.g., several meters) can be used to monitor compliance with such advertising programs.

Some advertising programs require the placement of advertising material within a certain radius (e.g., a few inches) of a specific location (e.g., signs affixed to product displays or advertisements on a checkout counter near a cash register). Passive RFID tags can be used to monitor compliance with such advertising programs.

Some advertising programs require the placement of advertising material in very precise location (e.g., a particular sign must be placed in a certain holder **48**). Contact tags can be used to monitor compliance with such advertising programs. In one embodiment, contact tags comprise Serial Electronically Erasable Programmable Read Only Memory (Serial EEPROM) chips that store tag data. There are several types of Serial EEPROM chips, but most chips include two or three contacts (i.e., a 2-wire or 3-wire interface). Usually, the 3-wire devices have three data transfer wires and an addition wire. The 3-wire interfaces include Serial Peripheral Interface (SPI) and Microwire, which is a trademark of

National Semiconductor. The 2-wire devices, called I^2C or IIC, have only two wires. I^2C is a trademark of Philips. FIG. **2** illustrates one embodiment of a 2-wire serial EEPROM chip (contact tag) **1000**. The contact tag **1000** includes two contacts **380** and an EEPROM chip **400**. In alternative embodiments, the number of contacts **380** may be decreased to one, or increased to three or more.

Referring to FIG. **4**, the tag **10** stores identification data, status data, and time and date information. By reading this data, the reader **12** can convey the data to a hub **14**, which can determine when a sign or marketing material is first displayed, and how long it is displayed. A hub **14** can send the data to a central server **16** that allows advertisers to verify whether their advertisements or promotional materials are actually being displayed.

In one embodiment, the tag **10** is activated manually by a portable reader, either before shipment of the marketing material or at the retail outlet. In another embodiment, the tag **10** is activated at the factory, before the marketing material is shipped.

In one embodiment, the tag is a passive tag **100**, as shown in FIG. **3**. Passive tags rely on inductive (magnetic) coupling or capacitive coupling. To communicate with a passive tag **100**, the reader must be in close proximity to the tag to allow communication between the tag and the reader. A passive tag is not self-powered, it has no battery. Communication is achieved, for example, by inductively coupling the reader and the tag. This allows the reader to provide the tag with a signal that includes the power necessary for the tag to respond to the reader and transmit its tag data. Passive tags **100** are generally smaller than active tags **10**. Passive tags are generally read by a reader **12** that is mounted on the sign hardware **48**, see FIG. **1**. The reader **12** can detect the presence of a sign **46** that includes a passive tag when the sign is inserted into the sign hardware **48** or is proximal to a reader **12** that has been installed at the intended display location. As shown in the embodiment of FIG. **3**, the passive tag **100** includes a receiver **34**, a transmitter **36**, a memory **38**, and a coil antenna **40**.

Active tags allow one reader **12** positioned at a central location to read one or more tags associated with one or more signs or marketing materials displayed at the retail outlet. In order to conserve power in active tags, these tags use a "sleeping" routine wherein the tag only periodically "wakes-up" to a search mode to look for interrogation signals from a reader. Upon detection of a transmission that is likely an interrogation signal, the tag fully awakens to an interrogation mode, verifies that the interrogation signal is valid, and responds to the valid interrogation signal by, for example, transmitting tag data to the reader **12**. The tag also may be programmed to wake-up periodically and transmit its data on an autonomous basis, without being interrogated by a reader **12**.

The present invention provides a means of determining compliance with an advertising program by affixing RFID tags on signs or marketing materials to be displayed at various locations at a retail outlet. The system can be used with an existing customer service call center to increase retailer compliance with Point of Purchase (POP) advertising programs. The system also provides an efficient and accurate way to perform compliance analysis, which assesses the degree to which retailers comply with each POP advertising program and the marketing value associated with a given advertising program.

Referring again to FIG. **4**, the present system includes four main components: a tag **10**, a transceiver (reader) **12**, a hub **14**, and a central server **16**. A small tag **10** is affixed to a sign **46**, either at the time of production or before delivery to a retail outlet. As used herein, affixed is defined as: mounted, integrally formed, adhered, fastened, etc. The tags will enable each sign to be encoded with information about when and where the signs or marketing materials should be displayed according to a given POP program. The reader **12** will periodically read data from the tags within range of the reader. Alternatively, the reader could manually read the tags at the command of a user (e.g., compliance inspector). In one embodiment, the readers **12** communicate with a hub **14** that would generally be located at the retail outlet. The hub **14** is connected to the central server **16** via a communications link (e.g., a telephone line). The central server **16** will receive the details of each POP program, including participating sites and desired display locations at each site. The central server **16** will also upload data from each hub for compliance analysis.

When signs or marketing materials arrive at their destination, the tags **10** associated with each sign can be read and registered as "delivered" by a transceiver, such as reader **12**. The transceiver can read the presence of the signs or marketing materials even before they are unpacked. The signs or marketing materials will remain in storage until the beginning of the marketing program. In one embodiment, the hub **14** includes a display for announcing the beginning of a program, and instructing the retail outlet to install the signs or marketing materials in their respective locations. The hub **14** also receives and interprets tag data and provides command signals to the reader **12**.

The reader **12** can be located on the sign or marketing material hardware **48** (e.g., frame) into which the sign or marketing material is placed. The reader will detect the presence of the tag **10** and register that the sign or marketing material **46** is "displayed". In one embodiment, each tag **10** has a transmission range of about seven feet. Thus, several signs or marketing materials can be tracked at a given retail site by one reader. Signs or marketing materials may be displayed close together, for example, at a gas station grind strip, on a pump topper, and adjacent several pump hose "squawkers" (small signs attached to a gas pump hose). Because each sign **46** is uniquely tagged, a single reader **12** centrally located on the pump can register and report the status of all signage or promotion materials associated with that pump. Moreover, seven feet of separation is generally sufficient to distinguish signs or marketing materials associated with one pump from the signs or marketing materials of an adjacent pump.

Given a short RFID transmission range, only those signs or marketing materials unpacked and placed into display hardware **48** will be registered as "displayed". Repeated polling (taking several reads every 24 hours) will establish continued compliance with a given POP program. When a single reader detects the presence of several signs or marketing materials that are intended for different locations (or no signs at all), the central server **16** will determine that the signs have either not yet been received, have not been unpacked, or are being stored in a central location and not being displayed. This information will allow a customer service representative (CSR) to call the retail outlet and investigate the non-compliance in a timely manner.

In one embodiment, each reader **12** includes a small RF transmitter **26** having a transmission range of 1,000 feet. Each reader will store the tag data from all the tags located within range of the reader. Each reader will also indicate the absence of any tags. The hub **14** will periodically poll the reader to upload the tag data. The reader will communicate

with the hub **14** by selecting an interference-free RF channel from among several frequencies.

The readers can be permanently attached to and shipped with display hardware **48**, or made available for permanent installation on an after-market basis. A percentage of signs or marketing materials, such as freezer static cling advertisements, do not require display hardware. For these signs, a reader **12** having an adhesive backing can be positioned within a short distance (e.g., seven feet) of the tag **10**. In one embodiment, the readers **12** will be battery operated, which avoids the need for expensive or intrusive wiring.

In addition to triggering and collecting polling information every few hours, the hub **14** will serve as a storage device for current and prior readings for each display location at a given retail site. In one embodiment, at a prescribed time (e.g., 2 A.M.), the hub **14** will test the local telephone line for availability, and place a toll-free call to the central server **16**. Once a connection is established, the server will receive the tag data, reset the hub registers, and send any updated program information to the hub.

The central server **16** will aggregate the tag data for all retail sites, and report all locations not complying with a prescribed POP program for the current 24-hour period. Details about specific sites out of compliance, including contact name and telephone number, will be available to a call center. Customer service representatives will use all available information about the non-complying site to ascertain what is preventing POP execution in a timely manner, and attempt to remedy the non-compliance. Several different POP programs can be monitored and reported at any particular time.

In one embodiment, data from the system can be integrated with Point Of Sale (POS) scanner data to assess the impact (or commercial success) of a given program, and how such success relates to advertising compliance. The system can also be used to compare the effectiveness of one POP program versus another program, or a predetermined target or standard.

Typically, a dozen or more POP programs are executed at each retail site over the course of a year. Improving advertising compliance could greatly increase product/service revenues.

In addition, companies that sponsor POP programs often offer payments to retailers for their participation in such programs, with such payment conditional upon display of certain marketing materials. Improving knowledge of specific participation levels and dates could greatly improve the effectiveness and efficiency of POP programs.

The present invention can be used at retail outlets including: gas stations, convenience stores, grocery stores, mass merchandising outlets, drug stores, specialty retail outlets (e.g., pet stores, record stores, book stores), consumer electronics stores, etc.

A tag, such as an RFID tag or contact tag, could also be used by the sign and marketing material manufacturers to improve shipping operations (by, for example, tracking shipments, or verifying the contents of a carton of marketing material prior to shipment).

Illustrated in FIG. **4** is a block diagram of one embodiment of the advertising compliance monitoring system which includes a tag **10**, a reader **12**, a hub **14**, and a central server **16**. In one embodiment, the tag is an active RFID tag **50** (the tag is self-powered by a battery). In another embodiment, the tag is a passive RFID tag **100** (the tag is not self-powered, but receives energy electromagnetically from an external signal supplied by a reader). In the active tag embodiment, the active tag **50** includes a microprocessor (having a memory) **30**, a receiver **34**, a transmitter **36**, a battery **42**, and an antenna **18**, as shown in FIG. **5**. Signals are transmitted from and received by the tag **50** through the antenna **18**. As used herein, microprocessor is defined as any processor, microcontroller, or custom IC, such as a FPGA, ASIC, etc.

To conserve battery power in active tags **50**, these tags use a "sleeping" routine wherein the tag only periodically "wakes-up" to a search mode to look for interrogation signals from a reader. Upon detection of a transmission that is likely an interrogation signal, the tag fully awakens to an interrogation mode, verifies that the interrogation signal is valid, and responds to the valid interrogation signal by, for example, transmitting tag data to the reader. The tag also may be programmed to wake-up periodically and transmit its data on an autonomous basis, without being interrogated by a reader.

The tag **10** may be affixed either to a sign or to marketing material associated with a given marketing program. In one embodiment, the tag **10** is affixed to an advertising sign or marketing materials to be displayed, either when the sign or marketing material is produced or before delivery of the sign or marketing material to a retail outlet. The tags include an internal clock and a memory. The tags store: tag data, including an identification number, when the tag is delivered and displayed, and advertising information regarding when and where the sign or marketing material associated with the tag should be displayed according to a given advertising program.

The reader **12** will periodically read the tag data from the tag(s) within range of the reader **12**. Alternatively, the reader **12** could manually read tag data from the tag(s) at the command of a user (e.g., compliance inspector). Once the tag data is received by the reader **12**, it will be stored in memory. The reader **12** communicates with the hub **14** via a communication link **20**. The hub is physically displaced from the reader **12**, and is generally located in the retail outlet. The hub communicates with the central server via a communication link (e.g., a telephone line). The central server **16** is physically displaced from the hub **14**, and is generally located hundreds or thousands of miles away from the hub. The central server **16** receives the details of each advertising program, including a list of participating sites and desired display locations at each site. The central server **16** will periodically upload tag data from each hub and perform compliance analysis for each advertising or POP program.

The reader **12** is designed to operate interactively with the tag **10**. The reader **12** may be a hand-held unit or a fixedly mounted unit. Typically, the reader **12** is affixed to signage hardware **48**. The reader **12** will periodically transmit a command signal for interrogating any tags within range of the reader. When a sign **46** is displayed in the signage hardware **48**, the reader **12** will detect the tag **10** associated with the sign after the next command signal transmission. In response to the command signal, the tag **10** will transmit its tag identification number, any status data (e.g., delivered, displayed), and the time and date corresponding to the status. For example, if the sign was "displayed" at 6:30 p.m., on Jan. 25, 2002, the tag will transmit: status—displayed, time—6:30 p.m., date—Jan. 25, 2002. This tag data will be stored by the reader **12**. Alternatively, the tag **10** need not store status data. The hub **14** can determine when a given reader **12** first reported the presence of the tag **10**. Alternately, the hub **14** need not store the status data. The

central server **16** can determine when a given reader **12** first reported the presence of a tag **10**.

FIG. **10** illustrates one embodiment of a hand-held or permanent (fixed) reader **12** that includes a switch **44** for switching the tag **10** between different power conservation modes, such as OFF (e.g., no monitoring), sleep mode (e.g., POP compliance monitoring), or continuous monitoring mode (e.g., consumer exposure monitoring). The reader **12** further includes an antenna **22**, a receiver **24**, and a transmitter **26**. The antenna **22** is configured to receive signals from and transmit signals to the tag antenna **18**. The reader **12** interacts with each tag **10** via a communication channel. Likewise, the reader **12** interacts with the hub **14** and/or the central server **16** via another communication channel. The communication channels may include an Ethernet link, Internet link, wire link, wireless link, microwave link, satellite link, optical link, cable link, RF link, LAN link, or other communication link.

The tag data obtained from individual tags **10** may be uploaded through the reader **12** to the hub **14** to the central server **16**, which may include a database of all tag data. This data is then analyzed to determine which retail outlets are out of compliance with specific advertising programs.

In one embodiment, the tag antenna **18** is a monopole antenna **18A**, as shown in FIG. **5**. The monopole antenna **18A** is a tunable antenna that achieves the same RF signal capability as a dipole configuration, but is smaller in size. Thus, the monopole antenna **18A** enables the manufacture of a smaller tag having less mass. In one embodiment, the antenna **18A** is made of standard bus wire.

FIG. **6** illustrates the tag antenna **18** as a dipole antenna **18B**, having arms extending in a dipole fashion and connected to the electronics of the tag **10**. In one embodiment, the antenna **18**, along with the tag electronics, are encapsulated in an epoxy, such as Stycast®, and then affixed to the sign **46**, as shown in FIG. **1**.

FIG. **7** illustrates one embodiment of the advertising compliance monitoring system, including a portable or hand-held reader **12H** that is used for, inter alia, initially programming a tag **10** after a sign is made, before it is shipped, or after it is received by a retail outlet. In one embodiment, the tag **10** can also be reprogrammed so that tags on signs to be discarded can be remounted on different signs that are going to be deployed. Hand-held readers **12H** are generally battery powered and include a keypad/keyboard, touch screen, or other input device known in the art, an LCD display for user interaction and data display, and sufficient memory to retain tag data from multiple tags before that data is uploaded to the hub **14**.

Also shown in FIG. **7** are a multitude of fixed readers **12F**, each having an associated antenna **22**. The hub **14** is a separate component that is in communication with readers **12H**, **12F** through a communication channel **20**. The hub **14** communicates to the central server **16** via a communication channel **32**. As used herein, the term "communication channel" includes communication via an Ethernet link, Internet link, wire link, wireless link, microwave link, satellite link, optical link, cable link, RF link, LAN link, RS-232 serial link, telephone lines, or other communication link.

As shown in FIG. **7**, data from the hub **14** is transferred to the central server **16**. In one embodiment, the information from the hub **14** is transmitted across a communication channel **32**, such as the Internet, to the central server **16**. The central server **16** may be a personal computer, web server, or other computer with appropriate software to run and maintain a database of tag data. The central server may be accessed from a remote computer via, for example, the Internet. The reader **12**, the hub **14**, and the central server **16** may be, for example, two or more separate units, one computer partitioned into different virtual machines, or one virtual machine, acting as two of the components, that is connected to a second computer or processor acting as the third component.

Some advertisements contain a featured price that may change independently of the sign or display with which it is associated. In such cases, the tag **10** can be used to report such featured pricing information, in addition to sign and/or display information (such as "delivered", "displayed", etc.). In one embodiment, contact tags **1000** are used to monitor the value of each digit in a featured price (e.g., $32.89 would be read by using 4 or more plastic loose-leaf or spiral bound digits, each having a contact tag **1000** associated therewith). A single reader **12** is used to monitor all the digits and report the entire price as a single data field. Other components of a featured price that could be monitored include qualifying information about the conditions of the price (e.g., "per pack", "per carton", "2 liter bottle", "limit one per customer", or "buy one, get one free") and/or the brand being featured, such as "Winston", "Salem", "Coke", or "Bud Light".

One embodiment of the invention used for price reporting is shown in FIG. **8**. In this embodiment, each digit of the price includes a contact tag **1000**. Individual readers **12A–12D** are disposed on the digit holders such that each tag **1000** (disposed on a respective digit) makes contact with one of the respective readers **12A–12D**. In this way, each digit of the price is monitored by one of the individual readers **12A–12D**. In one embodiment, the individual readers **12A–12D** each include a battery and a data management module, in addition to the contact reading and storage circuitry. The output of the individual readers **12A–12D** is fed to a single group reader **12G**, which communicates with the hub **14** and/or the central server **16**. The data management module takes a data stream from the tag, converts that data stream into a standard data stream, such as an RS-232 data stream, and communicates the tag data to the reader **12**, which relays the data to the hub **14** and/or the central server **16**. The contact reading and storage circuitry allows each reader **12A–12D** to read data from a respective contact tag **1000** and store that data.

In one embodiment, each reader **12** has the same back-end (i.e., transmitter and receiver components for communicating a specific data stream to the hub and/or central server) and several interchangeable front-ends (i.e., different data management modules for receiving data streams from different types of tags, such as passive, active and contact tags). The data streams from different types of tags may be different. Therefore, the interchangeable front-ends allow a reader **12** to communicate which different types of tags. The specific data stream sent to the hub and/or central server may be a standard data stream, such as an RS-232 data stream.

A contact tag reader includes a small set of contacts for stimulating a contact tag and receiving its data. In one embodiment, the contact tag reader is battery operated, and uses sleep modes to conserve power, as discussed below.

In another embodiment, the contact tags are implemented using optical, notch, or magnetic ink technologies. Magnetic ink technology can be used to monitor pricing information. In one embodiment, magnetic ink similar to that used to process checks is placed on pricing elements (e.g., plastic loose-leaf or spiral bound digits for displaying a featured price) and read by a contact reader that can distinguish patterns of magnetic field intensity.

In one embodiment, infrared or laser scanners are used to read pricing information. Such a scanner can detect patterns of light and dark printing on pricing elements based on the variation in light reflected back to the scanner. In another embodiment, a bar code scanner is used to read pricing information.

In a further embodiment, notch technology is used to read pricing information. For example, each pricing element (e.g., a plastic or cardboard card) may include a series of positional depressions (or the absence of them) along the perimeter of the pricing element or inconspicuous holes. In one embodiment, the presence or absence of a notch or hole in a given position is converted to a data stream via a series of two-position contacts on the price holder. When a hole or notch is encountered, the two opposing contacts physically touch each other, which creates a closed circuit. This closed circuit is detectable by a contact reader connected to the two contacts.

In one embodiment of the compliance monitoring system, the tags **10** store sign information (e.g., display status, identification data, time and date information, etc.). In another embodiment, the tags **10** store only a tag identifier, which may comprise a 32-bit unique identification number. This identifier is associated with extensive descriptive information stored on the central server **16**. This descriptive information corresponds to the specific advertising material associated with the tag **10**. In one embodiment, the tag identifier and the descriptive information are synchronized when the tag **10** is assigned and affixed to a particular sign **46**. If a tag **10** is re-used (i.e., associated with a different sign) its unique tag identifier is reassigned to the descriptive information on the central server **16** corresponding to the new sign associated with the tag **10**.

Some retailers may expect payment for placing hubs, readers, and tags within their stores for purposes of monitoring their compliance with advertising programs. Therefore, in one embodiment, the readers **12** are used for consumer exposure monitoring. In this embodiment, the system may be used in conjunction with a retailer's frequent shopper or loyalty program to inform the retailers and manufacturers about the advertisements having the most appeal to shoppers (e.g., which advertisements shoppers closely investigated for a predetermined amount of time). In this embodiment, frequent or loyal shoppers are issued shopper identification cards having unique RFID tags for storing information about the shoppers. As a shopper proceeds through a store, if the shopper closely investigates a particular advertisement having an RFID tag, the shopper could flash his/her RFID card in the vicinity of the sign (i.e., move the card near the sign) to trigger data transfer to the reader. In another embodiment, the card's proximity to the sign could trigger data transfer to the reader (e.g., the card could be read in a shopper's purse). Information about which signs and the number of signs flashed by each customer (or the number of signs the shopper investigated such that card data was transferred to one or more readers) is reported to the retailer and/or to manufacturers. This consumer exposure information is used to help improve the value of a retailer's frequent shopper program, and/or is integrated with purchase information to provide additional and/or personalized incentives to the frequent shoppers. In another embodiment, information about which advertisements interested consumers during shopping could be used to focus subsequent advertising material, such as direct mail. These embodiments would enable more effective and more relevant marketing programs for both manufacturers and retailers.

FIG. **9** illustrates use of the invention to monitor customer exposure to a particular advertising promotion in a store having two shelves. The customer is shown carrying a shopper identification card having a tag **10** (e.g., an active or passive tag) embedded in it. A reader **12** is associated with a sign **46** and reads the presence of the tag **10** when the customer card is adjacent the sign **46**. The shopper may flash his/her card in the vicinity of the sign, and/or the reader may acquire the tag **10** when the card is within range of the reader **12**. When the consumer card has been read, a confirming light or message is displayed by a display device **58** disposed on or adjacent the sign **46**.

In FIG. **1**, a sign **46** having a tag **10** affixed thereto is illustrated. The sign **46** is supported by sign or marketing material hardware **48**, which has a reader **12** affixed thereto. In one embodiment, the reader **12** communicates with the tags **10** over a wireless RF link (e.g., **28A**) operating at a frequency of about 13.56 MHz (which is an example of a frequency used to read passive RFID tags). The reader **12** and the tags **10** can communicate over any wireless link (e.g., **28A**) and use any suitable frequency band. The Industrial, Scientific, and Medical (ISM) frequency band is 902–928 MHz. The ISM frequency band is primarily intended for unlicensed transmitters, which have been certified under Part 15 of the Federal Communications Commission Code (47 C.R.F. §15). Many devices such as cordless phones and wireless LANs share the ISM frequency band and the claimed system is designed to coexist and operate robustly among these other devices. Other frequency ranges can be used without departing from the invention. For example, the reader **12** and the tags **10** can communicate at a low frequency (e.g., about 125–134 KHz).

To minimize signal interference, the frequency of the forward link channel (i.e., reader to tag) is varied among several of the available RF channels in the ISM frequency band in a pseudo-random manner (frequency hopping). Each forward link command is transmitted on a frequency different than the previous command in a pseudo-random manner to avoid continuous interference from other devices operating in this frequency band. Frequency hopping also allows the system to transmit the maximum signal radiation (+36 dBM) under 47 C.R.F. §15.

The active tags **50** provide several features, including: a unique tag identifier for identifying a specific tag and determining the status of the sign associated with the tag (e.g., delivered, displayed); the ability to transmit tag data autonomously to a reader; and the ability to archive tag data taken since the last upload to the reader **12**.

As shown in FIG. **5**, the tag microprocessor **30** communicates with the RF transmitter **36**. The RF transmitter **36** is in communication with tag antenna **18A**. The tag **50** is supplied with power by a battery **42**.

The active tag **50** has several modes of operation. The typical mode is the deep sleep mode where the tag is generally inactive (no clock is running; however, an RC watchdog timer is running, which uses very little power). The tag **50** spends most of its time in this low-power mode. The tag periodically partially awakens to a lucid sleep mode (when the watchdog timer times out), initiates a low-speed clock, determines if it is time to enter a search mode by examining a search mode counter and, if it is not time, adjusts the search mode counter (e.g., decrements the counter by one), and returns to the deep sleep mode.

Otherwise, if it is time, the tag **50** enters the search mode, which continues to use the low-speed clock. The tag first determines if it is time to check for interrogation signals,

referred to as forward link packets (FLPs), from a remote reader **12**. If the tag detects what appears to be an interrogation signal, it awakens completely to an interrogation mode. Otherwise, the tag continues in search mode and determines if it is time to perform an autonomous transmission (AT) by examining an AT counter. If it is not time for an AT, the tag adjusts the AT counter by one (e.g., decrements the counter by one) and returns to the deep sleep mode. Otherwise, the tag awakens to interrogation mode, initiates the high-speed clock, and performs an AT (i.e., it transmits the most recently stored sensor data to any reader **12** operating in the surveillance mode).

In the interrogation mode, the tag **50** initiates a high-speed clock, reads at least a portion of the forward link transmission to see if it is a valid interrogation signal intended for this tag **50**, and if it is, responds to the interrogation signal. Otherwise, if the transmission is not a valid interrogation signal, the tag waits a programmable period of time for a valid interrogation signal. If no valid interrogation signal is detected within that time, the tag turns OFF the high-speed clock and again enters the deep sleep mode. Otherwise, the tag responds to the valid interrogation signal on a return link channel assigned by the reader **12**. Alternatively, the tag **50** transmits its responses to each interrogation signal on each of the return link channels, sequentially.

The various active tag modes include the lucid sleep mode, the search mode, the interrogation mode and the deep sleep mode, and the timing of these modes, according to one embodiment of the invention. The tag **50** spends most of its time in one of the sleep modes. While in the deep sleep mode, the tag **50** uses very little power to help conserve battery life. The tag **50** periodically awakens to the search mode to look for the likely presence of forward link packets (FLPs), and/or to determine if it is time for an autonomous transmission (AT), and then goes back to the deep sleep mode if no likely FLPs are detected and it is not time for an AT.

In the deep sleep mode, the tag's microprocessor **30** is in a static, dormant state with its internal clock oscillator(s) shut down. Only the RC watchdog timer is running. The tag microprocessor **30** can not execute any programs or control any external IO pins in the deep sleep mode. The tag **50** sleeps in this mode most of its life in an effort to conserve battery power. During the deep sleep mode, because the clock oscillator(s) are OFF, a deep sleep counter is adjusted (incremented or decremented) periodically by an internal R/C oscillator. An internal watchdog timer (WDT) monitors the deep sleep counter and when the deep sleep counter, for example, contains a NULL value (all zeros), the WDT wakes up the microprocessor **30** (i.e., the WDT initiates the low-speed clock so that the tag **50** can enter the lucid sleep mode).

In the lucid sleep mode, the tag **50** wakes up enough to determine if it is time to enter the search mode by determining if an internal search mode counter, for example, contains a NULL value (all zeros). Lucid sleep mode requires only a minimal amount of processing and a small amount of power since it is only using the low-speed clock. If it is not time to enter the search mode, the microprocessor **30** adjusts (e.g., decrements) the search mode counter and then reverts back to the deep sleep mode. In summary, during lucid sleep mode, the low-speed clock oscillator is turned ON, thus producing a low-speed clock signal (e.g., 37 KHz), a search mode counter is adjusted, the search mode is entered if the counter contains all zeros, and if not, the low-speed clock oscillator is turned OFF, and deep sleep mode is resumed.

In the search mode, the tag **50** continues to use the low-speed clock (e.g., 37 KHz) to execute instructions that include: determining if it is time to read the sensors, searching for transmissions likely to be forward link packets (FLPs) from a reader **12**, and determining if it is time for an autonomous transmission (AT). The microprocessor **30** determines if it is time to read the sensors by examining a sensor counter. If it is time to read the sensors, the microprocessor **30** reads and stores data from each sensor sequentially, as described below. Otherwise, the tag **50** searches for the presence of FLPs by performing pre-discrimination. If pre-discrimination indicates that the transmission is likely a FLP, the tag enters the interrogation mode. Otherwise, the microprocessor **30** determines if it is time to perform an autonomous transmission (AT) by examining an AT counter. If it is not time for an AT, the microprocessor **30** adjusts the counter (e.g., decrements the counter) and returns to the deep sleep mode. Otherwise, the microprocessor **30** awakens to interrogation mode, initiates a high-speed clock, and performs an AT (e.g., it transmits the most recently stored sensor data to a reader **12**).

In the interrogation mode, the tag **50** initiates the high-speed clock, reads at least a portion of the forward link packet (FLP), and determines if the FLP is valid. Error detection is accomplished by transmitting error detection bits, such as parity bits, a checksum, or a Cyclical Redundancy Check (CRC), in each FLP. The tag **50** then checks the error detection bits to make sure the transmission is a valid FLP. The tag also checks to insure that the FLP includes data bits and error detection bits (e.g., a CRC), and checks to make sure the total number of bites is indicative of a valid FLP. If the tag **50** detects an error in the FLP (e.g., CRC is not valid), the bad FLP is disregarded and/or the tag **50** requests that the FLP be retransmitted.

In one embodiment, the microprocessor **30** first examines a beginning portion of the FLP and, if that portion indicates that the transmission appears to be a valid FLP, turns on the transmitter **36**, and then reads the rest of the FLP to check that the CRC is valid. If the FLP contains a valid CRC, the tag **50** responds to the FLP. Otherwise, if the FLP is determined to be invalid, the microprocessor **30** continues searching for a valid FLP for a predetermined period of time. The period of time the tag **50** continues searching for FLPs is a programmable feature of the tag **50**. If no valid interrogation signal is detected within that time, the microprocessor **30** turns OFF the high-speed clock and again enters the deep sleep mode. Otherwise, the tag responds to the valid interrogation signal.

Each tag may include one or more of the following features:

A unique tag identification number—this number specifically identifies a particular tag **10**. The tag identification number is typically the tag serial number. This number is programmed into the tag **10** at the factory or during installation (via, for example, a hand-held reader **12H**).

A sign or marketing material model number—the sign or marketing material model identifies the type of sign or marketing material, and when and where it should be displayed pursuant to a particular advertising program. This number may also be programmed into the tag **10** at the factory or during installation (via, for example, a hand-held reader **12H**).

Tag history data—the tag **50** includes a RAM memory that records history data, such as when and where a sign or marketing material is displayed, when the sign or marketing material is removed, etc. The history tag data is recorded

with a time and date stamp that indicates when the data was recorded. This data may be uploaded from the tag **50** to the reader **12**, and transferred to the central server **16**.

Write-in capability—the tag **50** allows users to write user defined data into the tag memory, including where the sign is being displayed, what type of sign is associated with the tag, etc. This data may be password protected such that only authorized users can write data to the tag **50**.

Autonomous transmit (AT)—the tag **50** may be programmed to self-awaken at preset intervals, transmit the tag data to a reader, and go back to sleep without external activation. The tag **50** may be pre-programmed from the factory with a default wake-up interval (e.g., 2.5 seconds); however, the user can change the wake-up interval.

Radio frequency operation—in one embodiment, the claimed system operates at 2.45 GHz, or in the ISM frequency band (902–928 MHz), or at 13.56 MHz, or at a low frequency (e.g., about 125–134 KHz).

Communications—the tag **10** is able to communicate with fixed readers **12F**, or hand-held readers **12H**.

Data display—tag data is displayed by the hub so retail personnel can monitor the status of each sign and receive messages from the central server **16**.

Power—the active tags **50** are powered by a battery **42**.

Tag life—given current battery capabilities, total tag life is greater than about 2 years, during normal operating conditions, which is greater than the average life of the sign associated with the tag.

Turn-OFF function—the tag **50** can be activated by a hand-held reader prior to shipment to a retail outlet, which prevents the tag **50** from being ON during storage of the sign. This extends the battery life of the tag **50**.

Reader range—for a fixed reader **12F**, the reader range is up to and including about 7 feet. This tags associated with signs in adjacent areas within the retail outlet to be differentiated or grouped on the basis of their location. The reader range can be extended to cover between 10–50 meters, effectively covering an entire retail outlet. Hand-held readers **12H** can monitor tags up to about 50 meters from the reader antenna **22** (and can operate while the user is in a vehicle moving up to about 73 kilometers per hour).

The reader **12** transmits signals to the tag **50** in the forward link. Readers **12** periodically transmit an RF signal to one or more of the tags **50**. Forward link signals are also know as Forward Link Packets (FLPs).

The tag **50** transmits signals to the reader **12** in the return link. A tag **50** generally transmits a response (e.g., tag data) to a reader **12** via the return link in response to a FLP. Return link signals are also know as Return Link Packets (RLPs).

The tag data stored on the central server **16** may be accessed via a local area network (LAN) or the Internet. Tag data may be forwarded to a call center for display on a customer service representative's screen. Using this data, the CSR can call the non-complying retail outlet and try to ascertain the reason for non-compliance with an advertising program and attempt to remedy the situation in a timely manner.

The reader **12**, in one embodiment, initiates RF communication with one or more of the tags **10**. In one embodiment, the reader **12** is affixed to the signage hardware **48** that is positioned at various locations near the retail outlet (e.g., on a fuel island, on a pump topper, on an external kiosk, on a pump approach, on building signs, on checkout registers, etc.). The reader **12** will communicate with each tag **10** to determine if the corresponding sign is being displayed, and gather data, including when the sign was first displayed, when it is removed, etc. The reader **12** may also obtain the tag history data, which includes all tag data since the last time the tag data was uploaded to the reader. The history data is sent from the reader **12** to the hub **14** and then to the central server **16** by a communication channel **32**, comprising one or more of an Ethernet link, Internet link, wire link, wireless link, microwave link, satellite link, optical link, cable link, RF link, LAN link, or other appropriate communication link.

Portable or hand-held readers **12H** communicate with the tags **10** and gathers tag data, including history data. Hand-held readers **12H** may be used in conjunction with manual inspections, or surveys, to determine if marketing material has been displayed pursuant to a specific program. These readers **12H** decrease the time and cost of surveys by reading all the tags at a specific retail outlet, within a small amount of time, without requiring the user to even exit his car. The hand-held readers **12H** provide an "on-site read" of all the tags at a specific location or site.

Referring again to FIG. **7**, the process of acquiring tag data will be described. In the interrogation mode, a reader **12** can acquire sensor and other data from a specific tag **10** only when that specific tag **10** is being addressed. In one embodiment, the tag **10** can be addressed by: (1) a unique ID (e.g., tag serial number); or (2) a temporary ID assigned by the reader **12** during a tag interrogation. Tag acquisition is described in more detail hereinafter.

Generally, once the tag data has been uploaded to the reader **12**, the tag **50** is instructed to go into a sleep mode (e.g., deep sleep mode) for a programmable period of time. Alternatively, the tag **50** may be programmed to return to a sleep mode once the tag is out of range of the reader **12** for a predetermined period of time. Entering the deep sleep mode completes the tag interrogation session. Thereafter, a new interrogation session can begin.

Preferably, the tag **50** is cost effective, uses low power, and complies with FCC Part 15 (47 C.R.F. §15). The maximum allowable power (in free space) without spectrum spreading is −1 dBM. The return link (i.e., tag to reader) has the capability of transmitting on any one of several available radio frequency channels. This provides the active tag **50** with a means for avoiding signals from interfering devices. In one embodiment, the tag **50** responds to FLPs on each of the different return link channels, sequentially. In another embodiment, the reader **12** monitors the return link channels and commands the tag **50** to transmit on the channel having the least amount of interference. For autonomous transmission (AT), the tag **50** has the option of transmitting return link packets (RLPs) on any or all of the return link channels.

In one embodiment, there are four return link channels. These channels are used to transmit data from the tag **50** to the reader **12** and/or from the reader **12** to the hub **14**. The return link packets (RLPs) are transmitted on each of the channels, sequentially. For example, if the tag **50** responds to a reader **12** with its serial number on channel **1**, the tag **50** will then respond to the next reader command on channel **2**. If the reader **12** receives bad data from the tag, it will disregard that data and command the tag **50** to retransmit the data. The tag **50** will then retransmit the data on channel **3**. If the reader **12** determines that the received data is again corrupt, it will command the tag **50** to retransmit the data. In one embodiment, retransmission of data will continue until the data has been sent five times (once on each channel, e.g., on channel **1, 2, 3, 4**, and **1**—the first channel is tried twice). If the reader **12** still does not receive good data, it will cease

transmitting to that particular tag **50** for a predetermined period of time.

Alternatively, the reader **12** can monitor the four return link channels, and determine which channel has the lowest received signal strength (RSS), which indicates the channel having the least amount of noise and/or interference. Thus, the channel having the lowest RSS has the least signal interference. Therefore, after the reader **12** determines which channel has the lowest RSS, it sends two bits in a forward link packet (FLP) that correspond to the return link channel having the lowest RSS and instructs the tag **50** to transmit return link packets on that channel. The duration of interfering signals can be expected to be on the order of several seconds. Therefore, the reader **12** checks for clear return link channels every several seconds. The reader **12** tunes itself to receive tag signals on the indicated return link channel and transmits a NULL command (all zeros). The NULL command is broadcast to prevent any other tag from responding while the reader **12** monitors the RSS level. The lowest RSS channel becomes the channel to which a specific tag **50** will be commanded to respond, until another channel has been determined to have the lowest RSS. Again, the lowest RSS channel is selected because that channel is open, and not interfering with other transmissions. Each reader **12** has a received signal strength (RSS) indicator, which tells the reader **12** that a tag **50** is attempting to respond. The reader **12** investigates the received signal strength on its incoming return link channels. The reader **12** then sends a forward link packet instructing the tag **50** to respond on the channel having the lowest RSS and monitors that channel for tag transmissions. Likewise, the hub **14** can monitor the four return link channels, determine which channel has the lowest received signal strength (RSS), and instruct the reader **12** to transmit return link packets on that channel.

During forward link communication, packets are sent from the central sever **16** to the hub **14**, from the hub **14** to the reader **12**, or from the reader **12** to the tag **50**. During return link communication, packets are sent from the tag **50** to the reader **12**, from the reader **12** to the hub **14**, or from the hub **14** to the central sever **16**. The tag data is communicated in this fashion from one device to the next (see FIG. **4**). Not all of the devices illustrated are required in the system. For instance, data can be communicated directly from the reader **12** to the central server **16**.

Under 47 C.R.F. §15, using spread spectrum transmission (i.e., frequency hopping), the maximum allowable power that can be radiated in free space is +36 dBM (without using spread spectrum transmission, the maximum allowable power in free space is −1 dBM). In the forward link, the amount of power transmitted is measured near the tag. Some attenuation may result from transmission through the sign, and additional attenuation may occur due to interference from other signs, cars and/or structures.

Fifty forward link channels were selected in part due to FCC Part 15 (47 C.R.F. §15), which specifies 50 channels as the minimum; however, it is apparent that more than 50 channels could be used in this spread-spectrum system.

It is possible that two tags **50** will awaken at the same time and both be within range of the reader antenna **22**. If this occurs, interference may result since both tags **50** may be responding to the same message on the same return link channel. To identify and communicate with one tag out of many tags that may be within range, the reader **12** uses an algorithm, as described below, and/or transmits to a specific tag **50** by transmitting that tag's unique tag serial number or functional ID number.

The tag **50** includes a microprocessor **30** that controls the operation of the tag **50**. In one embodiment, the microprocessor **30** includes two internal oscillators, internal RAM, internal ROM, and other standard features. To maximize battery life, two oscillators are desirable because they allow for two different clock speeds. Having two clocks allows a designer to minimize use of the high-speed clock (thus, conserving battery power). The two oscillators could also be externally supplied to the microprocessor.

The tag microprocessor **30** periodically awakens from the deep sleep mode to the lucid sleep mode. In the lucid sleep mode, the microprocessor initiates the low-speed clock and determines if it is time to enter the search mode by examining a search mode counter. The counter will either indicate that it is time to enter the search mode (e.g., the counter contains all zeros) or it will indicate some other value. If it is not time to enter the search mode, the microprocessor adjusts the search mode counter (e.g., decrements the counter) and returns to the deep sleep mode.

Otherwise, the microprocessor enters the search mode, and continues using the low-speed clock. The microprocessor determines if it is time to perform pre-discrimination, where the microprocessor determines whether a transmission is likely a forward link packet (FLP). If the microprocessor determines that the transmission is likely a FLP, it enters the interrogation mode. Otherwise, the microprocessor determines if it is time to perform an autonomous transmission (AT) by examining an AT counter. If it is not time for an AT, the microprocessor adjusts the AT counter (e.g., decrements the counter) and returns to the deep sleep mode. Otherwise, the microprocessor **30** awakens to the interrogation mode, initiates the high-speed clock, and performs an AT (i.e., it transmits the most recently stored sensor data to a reader **12**).

A EEPROM can be used for storing tag history data. History data is periodically written from the microprocessor RAM to the EEPROM. The EEPROM is a non-volatile memory; therefore, it does not need power to maintain its information, and can be turned off to conserve battery power.

In the interrogation mode, the tag **50** can receive and transmit data. Upon entering the interrogation mode, the microprocessor initiates the high-speed clock, examines at least a portion of the FLP and, if that portion indicates that the transmission appears to be a valid FLP, turns ON the tag transmitter, and then reads the rest of the FLP to determine whether the CRC is valid. If the FLP contains a valid CRC, the tag **50** responds to the FLP. In one embodiment, the tag transmitter is designed to transmit on several distinct channels. Only one of the channels is normally used during any individual RLP transmission. Upon completion of the interrogation mode, the microprocessor turns OFF the tag components and resumes the deep sleep mode.

In summary, in the search mode, the tag **50** performs pre-discrimination to determine whether a transmission is likely a FLP from a reader **12**. If the microprocessor **30** determines that the transmission is likely a FLP, it enters the interrogation mode. Otherwise, the tag **50** again enters the deep sleep mode for a predetermined period of time. In the interrogation mode, the transmission is verified as a valid FLP and the requested tag data stored in the tag **50** is transmitted to the reader **12**.

The return link channel to be used for transmission by the tag **50** may be determined in a number of ways. The tag may select the return link channel sequentially (i.e., use a different return link channel for each RLP). Alternatively, the reader **12** may instruct the tag **50** to use a specific channel.

One way to determine the best return link channel to use is to have the reader **12** send a NULL command, which causes the tags **50** not to transmit. This allows the reader **12** to determine the received signal strength (RSS) on each of the four return link channels. Thereafter, the reader **12** instructs the tag **50** to send its response back on the return link channel having the lowest signal strength (i.e., the least amount of noise/interference).

In one embodiment, the tag periodically awakens from the deep sleep mode to the lucid sleep mode to determine if it is time to enter the search mode by sampling a search mode counter for a NULL value (all zeros). If the counter contains all zeros, the tag **50** enters the search mode. In the search mode, the tag **50** tests for the likely presence of a forward link packet. If a transmission is likely a FLP, the tag **50** enters the interrogation mode where it verifies that the FLP is valid, and if so, responds thereto. The process of reading valid FLPs continues until the interrogation is complete. The tag **50** then returns to the deep sleep mode.

When no tags **50** are within range of the reader **12**, there obviously will be no response to a reader interrogation. When a tag **50** comes into view of the reader **12**, however, one way to detect and identify a specific tag **50** is by using an appropriate algorithm to identify one tag out of many. Such algorithms are known in the art. The algorithm may identify a tag by an identification number (such as the tag serial number). Another way to identify a specific tag **50** is by using a temporary ID number (valid for only one interrogation session). Identification by temporary ID may be used in instances where fast acquisition of tag data is required.

In one embodiment, a tag **50** can be identified by its factory encoded serial number (which is unique to each tag), or a temporary ID number (which is a short number that identifies the tag only during a particular interrogation session). In another embodiment, the reader **12** sends an interrogation signal and monitors the received signal strength (RSS) level on the return link channels to determine if any tags **50** are within range. If the level of the RSS indicates that one (and only one) tag is within range of the reader, an interrogation signal is sent requesting tag data.

Referring to FIG. **7**, the hub **14** receives data from the readers **12H** and **12F** and issues commands to the readers. This data is transmitted over a communication channel **20**, such as a wireless link. This data is transmitted to the central server **16** over another communication channel **32**, such as a telephone line. In one embodiment, a temporary ID is assigned to a particular tag **50** so that a reader **12** can discriminate signals from that tag **50** from signals from other tags. Once the temporary ID has been assigned, the tag **50** will respond only to commands that specifically identify that specific temporary ID. The tag **50** will remain acquired while in range of FLPs from the reader **12**. Once the tag **50** is out of range, it will go to sleep after a predetermined period of time. Alternatively, the reader **12** will typically command the tag **50** to enter the deep sleep mode once the interrogation mode is complete.

Once a tag **50** has been specifically identified (acquired), the reader **12** interrogates the tag **50** by sending command signals that request tag data. Tag data may include the tag identification number, sign status (delivered, displayed), and time and date information. This data is received by reader **12**, transferred to the hub **14** and periodically sent to the central server **16**.

In one embodiment, the tag **50** and the reader **12** perform their receive/transmit functions according to a specific command/response protocol. Once the reader **12** has successfully obtained all the requested tag data, it generally issues a command signal placing the tag **50** into the deep sleep mode. In one embodiment, the deep sleep mode is designed to last long enough to ensure that the tag does not reawaken while other tags are being interrogated. Even if the tag were to reawaken, an erroneous double read of the same tag can be avoided by correlating the tag data from a specific tag with that tag's serial number. Generally, once the initial tag **50** is placed into the deep sleep mode, the system will then read the next tag **50**, which may be on an adjacent sign.

The tag **50** is in the deep sleep mode for a predetermined period of time. The tag **50** then wakens to the lucid sleep mode for a few milliseconds to determine if it is time to enter the search mode (by examining a counter) and, if it is not time, the tag **50** resumes the deep sleep mode. At some point, the tag **50** enters the search mode (using a low-speed clock). If a transmission is received that is likely a FLP, the tag enters the interrogation mode (using a high-speed clock) where the FLP is read and validated. However, if a transmission is not likely a FLP, the tag **50** remains in the search mode and determines if it is time to perform an autonomous transmission (AT) and, if not, transitions back to the deep sleep mode for a programmable period of time.

The tag data from a tag **10** can be accessed via the central server **16**, which typically includes a keyboard for data input by a user and a display for data output to a user. The display provides tag data to a user. This data is archived in the central server **16**. The central server **16** also provides a LAN or Web interface to the system for providing the tag data to a remote user (such as a CSR) and for allowing the remote user to analyze the tag data, or enter user defined data, such as the retail outlet where the sign is being displayed, the compliance history of the retail outlet, etc.

Although the embodiment illustrated in FIG. **7** shows the central server **16** in communication with the hub **14**, these components may be a single unit or, alternatively, separated by a large distance. The arrangement of components is driven by the implementation in which these components will be used rather than by any requirements of the system.

In addition, the reader **12**, the hub **14**, and the central server **16** may be two or more separate units, and data may be transmitted between these units using a request/response protocol (where, for example, the central server requests data from the hub) or using a push protocol (where, for example, the hub periodically transmits data to the central server **16** without such data being requested by the central server **16**).

In the normal mode of operation, the system uses a wireless protocol having a command/response architecture. The reader **12** transmits Forward Link Packets (FLPs) at periodic intervals and listens for Return Link Packets (RLPs) from a tag **50** at specified times between the FLPs. The tag **50** wakes up periodically and remains on long enough so that it does not miss a FLP from the reader **12**.

The deep sleep mode uses a watchdog timer (WDT) to determine when to wake up. During the deep sleep mode, the microprocessor is not running and all clocks are stopped. Thus, only a minimum amount of power is consumed in the deep sleep mode. When the WDT times out, the microprocessor is started in its low-speed clock mode (referred to as lucid sleep mode), where the tag determines if it is time to enter the search mode. The lucid sleep mode and search mode can be combined into a single mode.

In the search mode, the tag **50** uses a low-speed clock and searches for transmissions likely to be FLPs. Upon detection

of a transmission indicative of a FLP, the tag enters the interrogation mode, initiates a high-speed clock, verifies the presence of a valid FLP, and responds thereto. The sleep modes used in the communication protocol conserve battery power because the tag **50** is only turned ON in response to a valid FLP.

A novel advertising compliance system has been disclosed that includes a tag **10** that is affixed to a sign **46**. The active tag **50** includes a microprocessor **30** for storing tag data and communicating with the reader **12**. The tag **50** periodically awakens to search for likely FLPs. If one is detected, the tag further awakens, verifies that the transmission is a valid FLP, and if so, responds to the FLP command. When the tag **50** receives a valid command from a reader **12**, it sends responsive data via one or more RLPs. Typically, the reader **12** first interrogates the tag **50** for its serial number (or assigns a temporary ID). The reader **12** then requests the tag data stored in the tag memory. The tag **50** then transmits responsive RLPs to the reader **12**. Upon completion of the interrogation mode, the tag **50** resumes the deep sleep mode.

In one embodiment, the system includes an RFID tag that transmits parameters regarding intended location, content, sponsor, purpose, etc. The RFID signal to the reader contains some or all of the following information:

- Unique 32-bit tag identifier (may be written to tag at time of marketing material production or shipping, or pre-programmed by tag manufacturer)
- Product number using "Stub" format:
  - POP sponsor (4 characters)
  - Promotion number (5 characters)
  - Start date (3 characters)
  - Category (3 characters)
  - Subcategory (2 characters)
  - Sign type (3 characters)
  - Sign placement (3 characters)
  - Expiration date (3 characters)
  - Price point (4 characters)
  - "Per"/disclaimer conditions (3 characters)
- Date produced (3 characters)
- Sign producer ID (3 characters)
- Retail outlet ID (5 characters)

In one embodiment, the system includes an outdoor reader that receives tag data and transmits tag data, reader ID & battery status information. Such a reader may be mounted in a tamper-proof package that is securely mountable to sign hardware (e.g., plastic, painted/plated steel, or bare/anodized aluminum). The reader is removable by authorized personnel for remote repair. In another embodiment, the reader is mounted in a tamper-proof package that is securely mountable to glass or painted/plated/anodized metal.

In one embodiment, when the reader is polled by the hub, the reader reads and transmits information from the RFID tag.

In one embodiment, the RDIF data may include some or all of the following information:

- Transponder ID (6 characters, alpha-numeric)
- Battery status (1 character, alpha-numeric)
- Trouble-light status (1 character, alpha-numeric)
- RFID asset tag information (110 characters, alpha-numeric)

In one embodiment, the system includes an indoor reader that receives tag data and transmits tag data, reader ID and battery status information. Such a reader may be mounted in a tamper-proof package that is securely mountable to sign hardware (e.g., plastic, painted/plated steel, or bare/anodized aluminum). The reader is removable by authorized personnel for remote repair. In another embodiment, the reader is mounted in a tamper-proof package that is securely mountable to glass or painted/plated/anodized metal.

In one embodiment, the system includes a hub that polls readers, displays problem conditions/solutions, polls local phone line, logs into central server, reports signage information and trouble conditions. Such a hub may be movable, with rubber "feet" for stability.

In one embodiment, the hub may include some or all of the following features:

- Auto boot program in power-up/restarts
- Remote versioning/upgrades & POP administration
- Non-volatile RAM for program & data storage
- "Register" the number of transceivers and ID/frequencies/location of each
- Seek and register interference-free frequency for each transponder
- Turn on a trouble light for a specific reader when signal is weak, repeated interference occurs on all channels, no signal, or the wrong sign is placed in sign hardware
- Ignore certain/all readers when instructed by host
- Keep track of time
- "Poll" each reader, and store its asset information periodically (e.g., every 4 hours)
- Compare current vs. prior asset register
- Store 2 toll-free phone numbers
- Test status of phone line, dial number, if unsuccessful dial alternate number
- Perform modem "handshake" with central server
- Hub data to central server may include some or all of the following:
  - Time stamp
  - Hub ID
  - Changes or additions to transceiver locations
  - Number of transceiver signals expected
  - Number of transceivers reporting
  - "Checksum" stamp from last hub/server connection
  - Current RFID asset information for each transceiver
  - Trouble-light status for each transceiver
  - POP program information for next 24 hours
  - Hub program updates
  - New "checksum" stamp from hub/server connection

In one embodiment, the system includes a central server that coordinates hub polling, consolidates POP program information, collects and reports signage configuration for each retail site. The central server, in one embodiment, administers POP programs for all registered signage and provide status reports for all sites and programs, with feeds to call center customer service representatives.

In one embodiment, the system includes an RFID writer that writes data to RFID tags to be affixed to signage during the packing/shipping process. The RFID writer may comprise a hand-held reader **12**. The data written to the tags may include parameters for a specific POP program (from the central server) and/or the locations participating in the program. The RFID writer may also register assets to the central server and/or an invoicing/billing system.

While particular embodiments of the invention have been shown and described in detail, it will be obvious to those skilled in the art that changes and modifications of the present invention, in its various embodiments, may be made without departing from the spirit and scope of the invention. Other elements, steps, methods and techniques that are insubstantially different from those described herein are also

within the scope of the invention. Thus, the scope of the invention should not be limited by the particular embodiments described herein but should be defined by the appended claims and equivalents thereof.

What is claimed is:

1. An RF system for remotely monitoring, without human intervention, compliance with an advertising program comprising signs to be located at a plurality of different facilities by determining the presence of one or more advertising signs at a plurality of predetermined locations, with at least one sign at each facility in the program, comprising:

a tag associated with each advertising sign, the sign being displayed for advertising purposes, and the tag being adapted for RF communication;

at least one RF reader at each facility for receiving tag data from each tag within range of the reader and without transferring data to the tag, where the received tag data indicates the identity of and presence of the tag and its-corresponding sign of the tag in a particular one of the predetermined locations at a facility in the program; and

a hub for directly or indirectly receiving tag data from each tag at the facility and for transmitting the tag data to a remotely located computer that receives and analyzes the tag data from the plurality of different facilities to determine the identity of each sign and whether each sign is timely and properly located in each facility and thereby which advertising signs and facilities are in compliance with the advertising program.

2. The system of claim **1**, wherein the computer determines whether the sign is in a specific location in accordance with the specific advertising program.

3. The system of claim **1**, the sign is selected from the group consisting of marketing materials, displays, coupon dispensers, signage, display racks, floor mats, counter mats, containers, promotional hardware, seasonal promotions, and products.

4. The system of claim **1**, wherein the tag includes a memory for storing tag data, a transmitter and a receiver.

5. The system of claim **1**, wherein the tag is a passive tag.

6. The system of claim **1**, wherein the passive tag is used to determine the specific location of the sign.

7. The system of claim **1**, wherein the contact tag determines the specific location of the sign.

8. The system of claim **1**, wherein the tag autonomously transmits tag data on a periodic basis.

9. The system of claim **1**, wherein the computer communicates with the reader via a wireless link.

10. The system of claim **1**, wherein the reader communicates with the tag via an RF link.

11. The system of claim **1**, wherein each reader includes a data management module capable of reading tag data from different types of tags.

12. The system of claim **11**, wherein the data management module converts tag data into a standard data stream and transmits the standard data stream to the computer.

13. The system of claim **1**, wherein the reader includes a data management module that is interchangeable.

14. The system of claim **13**, wherein each interchangeable data management module is adapted for receiving tag data from a specific type of tag.

15. The system of claim **1**, wherein:

the tag data includes sign identification data; and

the computer uses the sign identification data to determine whether the sign is in compliance with the advertising program.

16. The system of claim **1**, wherein the tag detects whether the sign is present in a specific location in accordance with the specific advertising program and sends a signal to the reader.

17. The system of claim **1**, wherein the tag is a passive tag that receives energy from a close proximity external source.

18. The system of claim **1**, wherein the sign includes sign identification indicia.

19. The system of claim **18**, wherein the sign identification indicia is selected from the group consisting of magnetic ink, and notch indicia.

20. The system of claim **18**, wherein the sign identification indicia is stored in a EEPROM chip.

21. The system of claim **1**, wherein the tag data includes tag identification data.

22. The system of claim **1**, wherein the tag data includes status, time and date information.

23. The system of claim **1**, wherein the computer determines whether the sign is in a specific location during predetermined time periods in accordance with the advertising program.

24. An RF system for remotely monitoring, without human intervention, compliance with an advertising program comprising signs to be located at a plurality of different facilities by determining the presence of one or more advertising signs at a plurality of predetermined locations, with at least one sign at each facility in the program, comprising:

a tag associated with each advertising sign, the sign being displayed for advertising purposes, and the tag being adapted for RF communication;

at least one RF reader at each facility for receiving tag data from each tag within range of the reader, where the received tag data indicates the identity of and presence of the tag and corresponding sign of the tag in a particular one of the predetermined locations at a facility in the program;

a hub for directly or indirectly receiving tag data from each tag at the facility and for transmitting the tag data to a remotely located computer that receives and analyzes the tag data from the plurality of different facilities to determine the identity of each sign and whether each sign is timely and properly located in each facility and thereby which advertising signs and facilities are in compliance with the advertising programs; and

wherein the tag includes a microcontroller and a power source, the tag awakening periodically to send the tag data to the reader.

25. The system of claim **24**, wherein the contact tag determines whether the sign is present via physical contact with the sign.

26. An RF system for remotely monitoring, without human intervention, compliance with an advertising program comprising signs to be located at a plurality of different facilities by determining the presence of one or more advertising signs at a plurality of predetermined locations, with at least one sign at each facility in the program, comprising:

a tag associated with each advertising sign, the sign being displayed for advertising purposes, and the tag being adapted for RF communication;

at least one RF reader at each facility for receiving tag data from each tag within range of the reader, where the received tag data indicates the identity of and presence of the tag and corresponding sign of the tag in a particular one of the predetermined locations at a facility in the program;

a hub for directly or indirectly receiving tag data from each tag at the facility and for transmitting the tag data

to a remotely located computer that receives and analyzes the tag data from the plurality of different facilities to determine the identity of each sign and whether each sign is timely and properly located in each facility and thereby which advertising signs and facilities are in compliance with the advertising programs; and

wherein the tag is an active tag that uses sleep modes to conserve power.

27. An RF system for remotely monitoring, without human intervention, compliance with an advertising program comprising signs to be located at a plurality of different facilities by determining the presence of one or more advertising signs at a plurality of predetermined locations, with at least one sign at each facility in the program, comprising:

a tag associated with each advertising sign, the sign being displayed for advertising purposes, and the tag being adapted for RF communication;

at least one RF reader at each facility for receiving tag data from each tag within range of the reader, where the received tag data indicates the identity of and presence of the tag and corresponding sign of the tag in a particular one of the predetermined locations at a facility in the program;

a hub for directly or indirectly receiving tag data from each tag at the facility and for transmitting the tag data to a remotely located computer that receives and analyzes the tag data from the plurality of different facilities to determine the identity of each sign and whether each sign is timely and properly located in each facility and thereby which advertising signs and facilities are in compliance with the advertising programs; and

wherein the reader includes a switch for switching the reader between different power conservation modes.

28. An RF system for remotely monitoring, without human intervention, compliance with an advertising program comprising signs to be located at a plurality of different facilities by determining the presence of one or more advertising signs at a plurality of predetermined locations, with at least one sign at each facility in the program, comprising:

a tag associated with each advertising sign, the sign being displayed for advertising purposes, and the tag being adapted for RF communication;

at least one RF reader at each facility for receiving tag data from each tag within range of the reader, where the received tag data indicates the identity of and presence of the tag and corresponding sign of the tag in a particular one of the predetermined locations at a facility in the program;

a hub for directly or indirectly receiving tag data from each tag at the facility and for transmitting the tag data to a remotely located computer that receives and analyzes the tag data from the plurality of different facilities to determine the identity of each sign and whether each sign is timely and properly located in each facility and thereby which advertising signs and facilities are in compliance with the advertising programs; and

wherein the reader periodically awakens to detect the tag data transmitted by the tag.

29. A method of remotely monitoring, without human intervention, compliance with an advertising program by determining the presence of a plurality of advertising signs at predetermined locations at a number of separate facilities where the signs are to be placed, comprising:

associating an RF capable tag with each sign, the tag storing a tag identifier;

using an RF reader at each facility to receive tag data from each tag within range of the reader;

determining from the received tag data identity of and presence of the tag and corresponding advertising sign of the tag in a particular location at one of the facilities in the program;

locating a hub for directly or indirectly receiving tag data from the tag;

receiving and analyzing the tag data from each hub at a location remote from at least one facility to determine the identity of each sign and whether each sign is timely and properly located and the facility where the tag is located and thereby whether each sign and each facility are in compliance with the advertising program; and

fixedly placing the reader within a predetermined distance from the sign or the expected location of the sign.

30. A method of remotely monitoring, without human intervention, compliance with an advertising program by determining the presence of a plurality of advertising signs at predetermined locations at a number of separate facilities where the signs are to be placed, comprising:

associating an RF capable tag with each sign, the tag storing a tag identifier;

using an RF reader at each facility to receive tag data from each tag within range of the reader;

determining from the received tag data identity of and presence of the tag and corresponding advertising sign of the tag in a particular location at one of the facilities in the program;

locating a hub for directly or indirectly receiving tag data from the tag;

receiving and analyzing the tag data from each hub at a location remote from at least one facility to determine the identity of each sign and whether each sign is timely and properly located and the facility where the tag is located and thereby whether each sign and each facility are in compliance with the advertising program;

causing the reader to enter a sleep mode to conserve power; and

awaking the reader periodically to look for a transmission from the tag.

31. A method of remotely monitoring, without human intervention, compliance with an advertising program by determining the presence of a plurality of advertising signs at predetermined locations at a number of separate facilities where the signs are to be placed, comprising:

associating an RF capable tag with each sign, the tag storing a tag identifier;

using an RF reader at each facility to receive tag data from each tag within range of the reader;

determining from the received tag data identity of and presence of the tag and corresponding advertising sign of the tag in a particular location at one of the facilities in the program;

locating a hub for directly or indirectly receiving tag data from the tag;

receiving and analyzing the tag data from each hub at a location remote from at least one facility to determine the identity of each sign and whether each sign is timely and properly located and the facility where the tag is located and thereby whether each sign and each facility are in compliance with the advertising program;

causing the tag to enter a sleep mode to conserve power; and

awakening the tag periodically to transmit tag data.

32. The method of claim 31, wherein the tag data includes tag identification data.

33. A method of remotely monitoring, without human intervention, compliance with an advertising program by determining the presence of a plurality of advertising signs at predetermined locations at a number of separate facilities where the signs are to be placed, comprising:

associating an RF capable tag with each sign, the tag storing a tag identifier;

using an RF reader at each facility to receive tag data from each tag within range of the reader;

determining from the received tag data identity of and presence of the tag and corresponding advertising sign of the tag in a particular location at one of the facilities in the program;

locating a hub for directly or indirectly receiving tag data from the tag;

receiving and analyzing the tag data from each hub at a location remote from at least one facility to determine the identity of each sign and whether each sign is timely and properly located and the facility where the tag is located and thereby whether each sign and each facility are in compliance with the advertising program;

mounting the reader in a fixed location with respect to the sign;

receiving signals from the tag within a predetermined range; and

generating an alert signal if no signals are received from the tag for a specified period, the alert signal indicating that the sign has been moved from the specified location.

34. A system for remotely monitoring compliance with an advertising program without human intervention by determining the presence of a plurality of signs at a predetermined location at a plurality of facilities, comprising:

RF means for wirelessly sending data associated with a sign being displayed for advertising purposes;

receiving means located remotely from the signs for receiving the sir data without transferring data to the RF means; and

analyzing means for directly or indirectly receiving the sign data and analyzing the sign data to determine the identity of the signs and whether the signs are timely and properly located at the various facilities and thereby in compliance with the advertising program.

35. A system for remotely monitoring compliance with an advertising program without human intervention by determining the presence of a plurality of signs at a predetermined location at a plurality of facilities, comprising:

RF means for wirelessly sending data associated with a sign being displayed for advertising purposes;

receiving means located remotely from the signs for receiving the sir data without transferring data to the RF means; and

analyzing means for directly or indirectly receiving the sign data and analyzing the sign data to determine the identity of the signs and whether the signs are timely and properly located at the various facilities and thereby in compliance with the advertising program; and

wherein the sign data includes an identification number.

36. A system for remotely monitoring compliance with an advertising program without human intervention by determining the presence of a plurality of signs at a predetermined location at a plurality of facilities, comprising:

RF means for wirelessly sending data associated with a sign being displayed for advertising purposes;

receiving means located remotely from the signs for receiving the sir data without transferring data to the RF means; and

analyzing means for directly or indirectly receiving the sign data and analyzing the sign data to determine the identity of the signs and whether the signs are timely and properly located at the various facilities and thereby in compliance with the advertising program;

the RF means is a contact tag;

the receiving means is a reader; and

the analyzing means is a computer.

37. A method of remotely monitoring, without human intervention, compliance with an advertising program by determining the presence of a plurality of advertising signs at predetermined locations at a number of separate facilities where the signs are to be placed, comprising:

associating an RF capable tag with each sign, the tag storing a tag identifier;

using an RF reader at each facility to receive tag data from each tag within range of the reader and without transferring data to the tag;

determining from the received tag data identity of and presence of the tag and corresponding advertising sign of the tag in a particular location at one of the facilities in the program;

locating a hub for directly or indirectly receiving tag data from the tag; and

receiving and analyzing the tag data from each hub at a location remote from at least one facility to determine the identity of each sign and whether each sign is timely and properly located and the facility where the tag is located and thereby whether each sign and each facility are in compliance with the advertising program.

38. The method of claim 37 wherein a computer remotely located from all facilities in the program receives and analyzes the tag data.

39. The method of claim 37, further comprising detecting whether the sign is moved from the specified location.

40. The method of claim 37, further including selecting the tag from the group consisting of a contact tag, a passive tag, and an active tag.

41. The method of claim 37, further comprising:

grouping a plurality of signs in a predetermined area of a store;

associating a tag with each sign; and

using at least one reader to receive signals from each of the tags.

42. The method of claim 41, further including locating the reader above the group of signs.

43. The method of claim 37, further including generating a signal when the tag is moved from a predetermined location.

* * * * *

Electronic Patent Application Fee Transmittal

Application Number:	13750970
Filing Date:	25-Jan-2013
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Filer:	Matthew J. Selby/Fran LaFrankie
Attorney Docket Number:	2039-006

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($)
Extension - 3 months with $0 paid	2253	1	700	700
Miscellaneous:				
			Total in USD ($)	**700**

Electronic Acknowledgement Receipt	
EFS ID:	24925598
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	27820
Filer:	Matthew J. Selby/Fran LaFrankie
Filer Authorized By:	Matthew J. Selby
Attorney Docket Number:	2039-006
Receipt Date:	16-FEB-2016
Filing Date:	25-JAN-2013
Time Stamp:	16:27:18
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$700
RAM confirmation Number	3573
Deposit Account	501732
Authorized User	SELBY, MATTHEW
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 CFR 1.19 (Document supply fees)

Charge any Additional Fees required under 37 CFR 1.20 (Post Issuance fees)

Charge any Additional Fees required under 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		2039-006_Response_02-16-16.pdf	8604282 c595ffa315a048f8f7437c52f9f2f592bb35170c	yes	125

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	8
	Applicant Arguments/Remarks Made in an Amendment	9	125

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30594 62e2e60224ce7d3131ec36a846fde420d4c7d4a4	no	2

Warnings:

Information:

Total Files Size (in bytes):	8634876

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.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13750970
Filing Date	2013-01-25
First Named Inventor	Peter Zatloukal
Art Unit	2887
Examiner Name	Daniel I. Walsh
Attorney Docket Number	2039-006

U.S.PATENTS Remove

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

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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

FOREIGN PATENT DOCUMENTS Remove

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

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

NON-PATENT LITERATURE DOCUMENTS Remove

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

	1	Non-final Office Action for U.S. Patent Application No. 14/097,152, mailed October 28, 2015, 9 pages	

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

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

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	/Matthew Selby/	Date (YYYY-MM-DD)	2016-01-28
Name/Print	Matthew J. Selby	Registration Number	70765

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 record s.

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 Acknowledgement Receipt	
EFS ID:	24758890
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	27820
Filer:	Benjamin Withrow/Ross Trevor
Filer Authorized By:	Benjamin Withrow
Attorney Docket Number:	2039-006
Receipt Date:	28-JAN-2016
Filing Date:	25-JAN-2013
Time Stamp:	19:15:01
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	Information Disclosure Statement (IDS) Form (SB08)	2039-006_IDS_11-17-15.pdf	612167 8579aca202869d3f8e2a237d023fd059aa87c2c2	no	4
Warnings:					
Information:					

A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.

2	Other Reference-Patent/App/Search documents	14097152_OA_10-28-15.pdf	331162 ef75918047778eedb757ba1edcc13cd31b4f71a1	no	9

Warnings:

Information:

Total Files Size (in bytes):	943329

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,970	01/25/2013	Peter Zatloukal	2039-006	8778

27820 7590 11/17/2015

WITHROW & TERRANOVA, P.L.L.C.
2530 Meridian Parkway
Suite 300
Durham, NC 27713

EXAMINER
WALSH, DANIEL I

ART UNIT	PAPER NUMBER
2887	

NOTIFICATION DATE	DELIVERY MODE
11/17/2015	ELECTRONIC

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

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

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@wt-ip.com

Applicant-Initiated Interview Summary	**Application No.** 13/750,970	**Applicant(s)** ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	**Art Unit** 2887	

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

(1) *DANIEL WALSH*. (3)_____.

(2) *Matthew Selby*. (4)_____.

Date of Interview: *12 November 2015*.

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

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

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

Claim(s) discussed: *61*.

Identification of prior art discussed: *Zalewski et al. of record*.

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

Examiner Walsh and Matthew Selby discussed proposed amendments but no agreement to specific claim language was made.

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

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

☐ Attachment

/DANIEL WALSH/ Primary Examiner, Art Unit 2887	

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

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

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

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

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

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

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

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

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

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

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

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

Examiner to Check for Accuracy

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

Doc Code: M865 or FAI.REQ.INTV

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

Applicant Initiated Interview Request Form

Application No.: 13/750,970 First Named Applicant: Zatloukal
Examiner: Daniel Walsh Art Unit: 2887 Status of Application: Non Final Action Mailed

Tentative Participants:
(1) Matthew Selby (2) Eric Halber
(3) (4)

Proposed Date of Interview: 11/06/2015 **Proposed Time:** 2 30 (AM/PM)

Type of Interview Requested:
(1) [✓] Telephonic (2) [ ] Personal (3) [ ] Video Conference

Exhibit To Be Shown or Demonstrated: [ ] YES [✓] NO
If yes, provide brief description:

Issues To Be Discussed

Issues (Rej., Obj., etc)	Claims/ Fig. #s	Prior Art	Discussed	Agreed	Not Agreed
(1) Rej.	1	Zalewski	[ ]	[ ]	[ ]
(2)			[ ]	[ ]	[ ]
(3)			[ ]	[ ]	[ ]
(4)			[ ]	[ ]	[ ]

[ ] Continuation Sheet Attached [✓] Proposed Amendment or Arguments Attached
Brief Description of Arguments to be Presented: Proposed amendments to be discussed

An interview was conducted on the above-identified application on

NOTE: This form should be completed and filed by applicant in advance of the interview (see MPEP § 713.01). If this form is signed by a registered practitioner not of record, the Office will accept this as an indication that he or she is authorized to conduct an interview on behalf of the principal (37 CFR 1.32(a)(3)) pursuant to 37 CFR 1.34. This is not a power of attorney to any above named practitioner. See the Instruction Sheet for this form, which is incorporated by reference. By signing this form, applicant or practitioner is certifying that he or she has read the Instruction Sheet. After the interview is conducted, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible. This application will not be delayed from issue because of applicant's failure to submit a written record of this interview.

Matthew Selby
Applicant/Applicant's Representative Signature

Examiner/SPE Signature

Matthew Selby
Typed/Printed Name of Applicant or Representative

70,765
Registration Number, if applicable

This collection of information is required by 37 CFR 1.133. 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 24 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.

Proposed Amendments to claim 61:

61. A method ~~for emulating radio frequency identification (RFID) signals from a mobile communication device~~ comprising:

receiving, by ~~the~~ a mobile communication device, from an RFID reader external to the mobile communication device, an RFID probing signal;

determining, by processing circuitry in the mobile communication device, whether the mobile communication device is in an operational space of the RFID reader based on the RFID probing signal; and

if the mobile communication device is in the operational space of the RFID reader, outputting, by the mobile communication device an RFID signal responsive to the RFID probing signal.

RECEIVED
CENTRAL FAX CENTER
OCT 21 2015

FAX

Date:	10/21/2015
Pages including cover sheet:	4

To:	5712738300@rcfax.com
Phone	
Fax Number	*+15712738300*

From:	Steven Terranova
	Withrow
	2530 Meridian Parkway, Suil
	Durham
	NC 27713
Phone	*+1 (919) 349-4286*
Fax Number	*(877) 812-1249*

NOTE:	
{CLEAR}	

Send and receive faxes with RingCentral, www.ringcentral.com RingCentral

PAGE 1/4 * RCVD AT 10/21/2015 2:19:14 PM [Eastern Daylight Time] * SVR:W-PTOFAX-001/9 * DNIS:2738300 * CSID:FLaFrankle@wt-ip.com * DURATION (mm-ss):02-23

RECEIVED
CENTRAL FAX CENTER
OCT 2 1 2015

Withrow & Terranova

Professional Limited Liability Company

Attorneys At Law
Registered Patent Attorneys

A High Technology Patent Practice

FACSIMILE TRANSMITTAL SHEET

TO: Examiner Daniel Walsh	FROM: Matthew J. Selby
COMPANY: USPTO – Art Unit 2887	DATE: 10/21/2015
FAX NUMBER: 571-273-8300	TOTAL NO. OF PAGES INCLUDING COVER: 3
PHONE NUMBER: 571-272-2409	SENDER'S REFERENCE NUMBER: 2039-006
RE: Applicant Initiated Interview Request	YOUR REFERENCE NUMBER: 13/750,970

☐ URGENT ☐ FOR REVIEW ☐ PLEASE COMMENT ☐ PLEASE REPLY ☐ ORIGINAL TO FOLLOW

NOTES/COMMENTS:

Please find attached the following item(s):

1) Applicant Initiated Interview Request Form

NOTE: The information contained in this transmission is privileged and confidential and intended ONLY for the individual or entity named above. If you should receive this transmission in error, please notify our office and return to the below address via the U.S. Postal Service.

2530 MERIDIAN PARKWAY, SUITE 300
DURHAM, NC 27713
PH: (919) 238-2300
FAX: (877) 812-1249

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,970	01/25/2013	Peter Zatloukal	2039-006	8778

27820 7590 08/14/2015

WITHROW & TERRANOVA, P.L.L.C.
2530 Meridian Parkway
Suite 300
Durham, NC 27713

EXAMINER
WALSH, DANIEL I

ART UNIT	PAPER NUMBER
2887	

NOTIFICATION DATE	DELIVERY MODE
08/14/2015	ELECTRONIC

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

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

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@wt-ip.com

Office Action Summary	Application No. 13/750,970	Applicant(s) ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	AIA (First Inventor to File) Status No

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

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on 1-21-15.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

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

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

Disposition of Claims*

5)☒ Claim(s) 61-68,72,73,75-88,90-92 and 94-99 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) 61-68,72,73,75-88,90-92 and 94-99 is/are rejected.

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

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

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

Application Papers

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

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

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

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

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

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date 1-26-15.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

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

Claim Rejections - 35 USC § 112

1. The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 61-68, 72-73, and 75-80 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: what is emulated and how it is emulated, as the claims do not recite what one is emulating with such as the primary cellular phone antenna used for voice communications of the phone. For purposes of Examination, the Examiner will interpreted the mobile device emulates RFID signals (of a card) because the phone (mobile device) is a different piece of hardware than a keycard, for example, and it therefore emulates keycard RFID signals. The claim does not require the emulation to use shared elements of the phone (such as the phone antenna) for example, and further, "emulating" can be interpreted as meaning to match, surpass, copy, imitate, etc.

3. Appropriate clarification/request is provided.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 61-64 are rejected under pre-AIA 35 U.S.C. 102b as being anticipated by Zalewski et al. (US 6771981).

Re claim 61, Zalewski et al. teaches receiving by the mobile communicating device, from an RFID reader external to the mobile communication device, an RFID interrogation/read/proving signal (FIG. 8 which teaches the door lock interrogates cover 100 and cover 100 responds with the code to unlock the door). Zalewski et al. teaches that the mobile communication device determines whether it is in range of the RDIF reader based on the RFID probing signal because if it receives the signal, it determines it is in the range and responds (if it is in the operational space the mobile communication device outputs data such as to transmit the code to unlock the door. The cover can be embedded into the mobile device (col 8, lines 15+). Thus, the Examiner notes that the mobile communications device is interpreted as the phone with the embedded RFID transponder. Thus, when the mobile device (phone with embedded RFID) receives an instruction for RFID, this is interpreted as the device determining it's in an operational space, since it receives the interrogation signal which it responds to. Emulating a signal is interpreted as the phone emulating a signal such that is normally output by a card/keycard. Emulating has not been specifically clarified in the claim and therefore the cover

of the phone outputting RFID is interpreted as emulating RFID signals from a mobile communication device, as such signal normally come from a card itself, not a device (phone). Further, "emulating" can be interpreted as meaning to match, surpass, copy, imitate, etc., which is taught by the prior art as well. The probing is interpreted as the reader signal, which is also taught as being done periodically.

Re claim 62, as the mobile communications device is a phone it can process voice call signals and RFID signals (as discussed above).

Re claim 63, 840 include room number, id code, etc. interpreted as a key and an identifier.

Re claim 64, the limitations have been discussed above.

Claim Rejections - 35 USC § 103

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

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

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

103(c) and potential pre-AIA 35 U.S.C. 102(e), (f) or (g) prior art under pre-AIA 35 U.S.C. 103(a).

2. Claims 65-68, 72, 73, 75-88, 90-92, and 94-99 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Zalewski et al. (US 6771981).

Re claim 65, FIG. 5A+ teaches that the cover can be used for credit transactions. Therefore it would have been obvious to include a credit card identifier or functionally equivalent identifier for such transactions to be processed.

Re claim 66, the use selects the transponder data based on the desired application/usage.

Re claim 67, FIG. 5A+ teaches providing the data to the mobile device, such as by giving the identifier to the phone.

Re claim 68, a signaling attribute is interpreted to include the data. Further, it would have been obvious to include signaling attribute in order for the data to be compatible with reading standards.

Re claims 72, a phone has been discussed above.

Re claims 73, 75-88, 90-92, and 94-99, the limitations have been discussed above. Though silent to explicitly monitoring for RFID signals (control system) the Examiner notes that tags can be active or passive, as known in the art. Therefore, it would have been obvious to one of ordinary skill in the art to monitor for a first RFID signal such as by merely waiting for the interrogation signal to be received. The mobile device is determining whether it's in an operational space based upon whether or not it has received a signal and subsequently responded to it. The Examiner notes that also active and passive tags have expected benefits (increased distance, reduced reader complexity, etc. for example) or low cost, reduced tag complexity, etc.,

respectively. Therefore, the use of either an active or passive tag is an obvious expedient given their expected results. Therefore, both active and passive tags can be interpreted to monitor by determining if they are in an operational space via their response to an interrogation signal, for example.

Re claims 81 and 92, though silent to explicitly reciting a storage medium/control system, the Examiner notes that the cover is functionally equivalent in that monitors (such as described above) and therefore the hardware/software associated with the cover would have been interpreted as a control system/storage medium since it would have been obvious to have stored data/system elements as part of the device in order to monitor/function as recited. Software and /or hardware for controlling an RFID signal response is known in the art.

3. Claims 73, 75-88, 90-92, and 94-99 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Zalewski et al., as discussed above, in view of Overhultz et al. (US 6837427).

The teachings of Zalewski et al. have been discussed above.

Zalewski et al. is silent to monitoring.

Overhultz et al. teaches such limitations (col 5, lines 20+).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the teachings. Overhultz et al. teaches both passive and active tags can monitor by determining if they are in the presence of an RFID reader because of their response to the interrogation/probing signals.

One would have been motivated to do this for efficiency, for reduction in reader complexity, for increased distance, etc., as in the case for active tags, or for the benefits associated with passive tags such as cost/complexity/power/size constraints.

Re claim 75-77 the limitations have been discussed above.

Re claim 78, the tag data is provided to the device as it is communicated from the device.

Re claim 79, it would have been obvious to have a signaling attribute so that the tag data is proper (for example, compatible with the hotel door)

Re claim 80, a phone is discussed above.

Re claim 81-99, the limitations have been discussed above. The probing is interpreted as the interrogator signal. The use of a storage medium/control system is an obvious expedient to control and execute the functionality of the device (software/ hardware, for example).

Claim Rejections - 35 USC § 103

4. Claims 61-63, 66-68, 72-73, 78-82, 86-88, 90-92, 97-99 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Albanese (US 20040111360) in view of Overhultz et al., as discussed above.

Albanese teaches emulating RFID with a cell phone to allow for selection of various RFIDs (paragraph [0062] +).

Albanese is silent to receiving a probing signal and determining it's in an operation space of the RFID reader based on the probing signal and outputting in response to being in the operational space. However, the Examiner notes that it would have been obvious to one of ordinary skill in the art that a tag responds when interrogated to communicate.

Nonetheless, Overhultz et al. teaches such limitations as discussed above, applied to both passive and active tags.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the teachings in order to communicate data to a reader.

Re claim 62, as a phone, voice call signals are also processed.

Re claim 63, an identifier has been discussed above via the selection of various RFIDs.

Re claim 66, selection has been discussed above for convenience.

Re claim 67, such limitations are taught above by the providing the RFID data to the phone (putting data there).

Re claim 68, a signaling attribute is interpreted to include the data or alternatively it would have been obvious in order to have compatibility between system elements (reader and RFID signal).

Re claim 72, the limitations have been discussed above.

RE claim 73, the limitations have been discussed above, wherein the selection of a passive or active RFID tag is obvious to one of ordinary skill in the art, wherein a tag can be interpreted as monitoring by being activated.

Re claims 78-80, the limitations have been discussed above.

Re claim 81, the limitations have been discussed above. Re the limitation so storage medium, the Examiner notes it would have been obvious to have a storage medium (memory) in order to have instructions controlling operation of the device.

Re claim 82, the limitations have been discussed above.

Re claims 86-88, the limitations have been discussed above.

Re claim 90, the information is interpreted as idenrifyign a user, such as is conventiaonl for a card for a transaction.

Re claim 91, the limitations have been discussed above.

Re claim 92, the limitations have been discussed above. Though silent to control circuitry, the Examiner notes it would have been obvious to have circuitry to control operation of the device. Monitoring for presence can be interpreted as the state before transmission of RFID data and the activation of the RFID being sent.

Re claims 97-98 the limitations have been discussed above wherein a signal attribute can be the data itself, or alternatively it would have been obvious to have signaled attribute to ensure compatibility between the readers.

Re claim 99. A phone has been discussed above.

5. Claims 64-65, 75-77, 83-85, and 94-96 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Albanese/ Overhultz et al., as discussed above, in view of Zalewski et al., as discussed above.

Re claim 64, the teachings of Albanese/ Overhultz et al. have been discussed above but are silent to a key.

Zalewski et al. teaches such limitations as discussed above.

At the time the invention was made, it would have been obvious to combine the teachings for security, versatility, etc. as expected results of RFID technology.

Re claim 65, FIG. 5A+ teaches that the cover can be used for credit transactions. Therefore it would have been obvious to combine the teachings to include a credit card identifier or functionally equivalent identifier for such transactions to be processed.

Re claims 75-77 the limitations have been discussed above.

Re claims 83-85, the limitations have been discussed above.

Re claims 94-96, the limitations have been discussed above.

Response to Arguments

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

The Examiner notes that the phone with embedded RFID is interpreted together as the mobile device. Re claim 61, the Examiner note that the only mention of emulating, is in the preamble itself which merely is a statement of effect that does not result in a manipulative difference between the claimed invention and the prior art. Further, since "emulating" from a mobile device has not been specifically recited in the claim, the prior art structure of a phone with embedded transponder in the cover is interpreted as reading on emulating RFID signals from a mobile communications device.

In response to the Applicants arguments regarding the "monitoring" comprising "determining" if the device is in the operational space of the reader, the Examiner notes that such limitations are taught via the RFID responding to interrogation signals, wherein upon receipt of the signal, the RFID responds and thus this is how the device can determine it's in the operations space. The Examiner notes that if the Applicant wishes to claim that the determination is not merely the response to the interrogation signal being received, that such limitations should be recited in the claims themselves to overcome the prior art interpretation.

The Examiner also notes that whether or not a tag is active/passive does not appear to change that a tag responds to a received signal, which can reads on determining whether it's in the operating space.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL WALSH whose telephone number is (571)272-2409. The examiner can normally be reached on M-F 9am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Paik can be reached on 571-272-2404. 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.

/DANIEL WALSH/
Primary Examiner, Art Unit 2887

Notice of References Cited	Application/Control No. 13/750,970	Applicant(s)/Patent Under Reexamination ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	Page 1 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,335,276 A	08-1994	Thompson et al.	380/266
*	B	US-2004/0111360 A1	06-2004	Albanese, David	705/038
*	C	US-6,837,427 B2	01-2005	Overhultz et al.	235/382
*	D	US-6,892,052 B2	05-2005	Kotola et al.	455/41.2
*	E	US-2006/0052055 A1	03-2006	Rowse et al.	455/041.1
*	F	US-2006/0229113 A1	10-2006	Rowse, Graham	455/574
*	G	US-2007/0274242 A1	11-2007	Lamacraft et al.	370/310
*	H	US-2008/0011833 A1	01-2008	Saarisalo, Mikko	235/382
*	I	US-2008/0018433 A1	01-2008	Pitt-Pladdy, Glen	340/10.4
*	J	US-2009/0291634 A1	11-2009	Saarisalo, Mikko	455/41.1
*	K	US-2010/0281261 A1	11-2010	Razzell, Charles	713/171
*	L	US-2012/0284194 A1	11-2012	Liu et al.	705/66
*	M	US-8,393,546 B1	03-2013	Yen et al.	235/487

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Notice of References Cited	Application/Control No. 13/750,970	Applicant(s)/Patent Under Reexamination ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	Page 2 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2013/0337770 A1	12-2013	Huque et al.	455/410
*	B	US-2014/0145823 A1	05-2014	Aase, Halvor	340/5.61
*	C	US-2015/0208245 A1	07-2015	Robinton et al.	455/411
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
ticle			

SEARCH NOTES		
Search Notes	Date	Examiner
EAST search attached	10-30-13	dw
class 235 455 340 keyword search	10-30-13	dw
reviewed parent searches/actions	10-30-13	dw
reviewd 14097152 14097141 and related apps	3-24-14	dw
Reviewed search	7-14-14	dw
EAST search attached	8-10-15	dw

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

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

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

Application Number	13750970
Filing Date	2013-01-25
First Named Inventor	Peter Zatloukal
Art Unit	2887
Examiner Name	Daniel I. Walsh
Attorney Docket Number	2039-006

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	5335276		1994-08-02	Thompson et al.	
	2	6892052	B2	2005-05-10	Kotola et al.	
	3	7274909	B2	2007-09-25	Perttilä et al.	

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20110021246	A1	2011-01-27	Rofougaran	
	2	20140162721	A1	2014-06-12	Zatloukal et al.	
	3	20140167914	A1	2014-06-19	Zatloukal et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DW/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

	4	20020052193	A1	2002-05-02	Chetty	
	5	20020187779	A1	2002-12-12	Freeny, JR.	
	6	20060238297	A1	2006-10-26	Tang et al.	
	7	20070018832	A1	2007-01-25	Beigel et al.	
	8	20080171579	A1	2008-07-17	Grubek	

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

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	0074406	WO	A1	2000-12-07	DUHS, Henry		☐
	2	2004114239	WO	A2	2004-12-29	WILDSEED LTD.		☐
	3	2004114239	WO	A3	2004-12-29	WILDSEED LTD.		☐

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

NON-PATENT LITERATURE DOCUMENTS Remove

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DW/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Non-Final Office Action for U.S. Patent Application No. 10/560,262, mailed March 4, 2009, 5 pages	☐
	2	Final Office Action for U.S. Patent Application No. 10/560,262, mailed August 17, 2009, 6 pages	☐
	3	Advisory Action for U.S. Patent Application No. 10/560,262, mailed November 13, 2009, 3 pages	☐
	4	Non-Final Office Action for U.S. Patent Application No. 10/560,262, mailed December 24, 2009, 6 pages	☐
	5	Final Office Action for U.S. Patent Application No. 10/560,262, mailed June 22, 2010, 14 pages	☐
	6	Notice of Non-Compliant Amendment (37 CFR 1.121) and Advisory Action for U.S. Patent Application No. 10/560,262, mailed September 8, 2010, 5 pages	☐
	7	Advisory Action for U.S. Patent Application No. 10/560,262, mailed October 13, 2010, 3 pages	☐
	8	Non-Final Office Action for U.S. Patent Application No. 10/560,262, mailed March 31, 2011, 12 pages	☐
	9	Notice of Allowance for U.S. Patent Application No. 10/560,262, mailed November 1, 2011, 13 pages	☐
	10	Non-Final Office Action for U.S. Patent Application No. 13/363,202, mailed July 16, 2012, 5 pages	☐

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DW/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

	11	Notice of Allowance for U.S. Patent Application No. 13/363,202, mailed November 27, 2012, 8 pages	☐
	12	Non-Final Office Action for U.S. Patent Application No. 14/097,141, mailed March 14, 2014, 10 pages	☐
	13	Final Office Action for U.S. Patent Application No. 14/097,141, mailed September 16, 2014, 12 pages	☐
	14	Non-Final Office Action for U.S. Patent Application No. 14/097,152, mailed March 31, 2014, 11 pages	☐
	15	Final Office Action for U.S. Patent Application No. 14/097,152, mailed July 21, 2014, 12 pages	☐

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

EXAMINER SIGNATURE

Examiner Signature	/DANIEL WALSH/	Date Considered	08/10/2015

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

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

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DW/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13750970
Filing Date	2013-01-25
First Named Inventor	Peter Zatloukal
Art Unit	2887
Examiner Name	Daniel I. Walsh
Attorney Docket Number	2039-006

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	/Matthew Selby/	Date (YYYY-MM-DD)	2015-01-26
Name/Print	Matthew J. Selby	Registration Number	70765

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.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DW/

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 record s.

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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DW/

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	"6837427".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/10 09:43
L3	0	13/750,970 and joint.clm.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/10 09:50
L7	51	(phone or telephone) with emulat$3 near3 (rfid or transponder or "radio frequency")	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/10 10:10
L8	113	(phone or telephone) with emulat$3 near3 (rfid or transponder or "radio frequency" or nfc or "near field")	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/10 10:25
L9	62	8 not 7	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/10 10:25
L10	42	(phone or pda or telephone or mobile or portable) with emulat$3 with (RFID or transponder or "radio frequency" or nfc) same (responsive or "in response" or detect$3)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/10 11:21
L11	72	pitt-pladdy	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/10 11:25
L12	72	"pitt-pladdy"	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/10 11:26
L13	0	"6771981".pn. and periodically	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/10 12:40
L14	0	"6771981".pn. and wake	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/10 12:41

L15	1	"6771981".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/10 12:41
L16	11	("20020052193" | "20020187779" | "20060238297" | "20070018832" | "20080171579" | "20110021246" | "20140162721" | "20140167914" | "5335276" | "6892052" | "7274909").PN.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/10 13:00
S1	71	(phone or pda) with emulat$3 with (RFID or transponder or "radio frequency")	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/07 13:06
S2	3	(phone or pda) with emulat$3 with (RFID or transponder or "radio frequency") and hotel	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/07 15:12
S3	14	(phone or pda or telephone or mobile or portable) with emulat$3 with (RFID or transponder or "radio frequency" or nfc) and hotel with (key or open)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/07 15:18
S4	1	"6771981".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/08/07 18:11

8/ 10/ 2015 1:36:15 PM

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	**Art Unit**
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013	03/24/2014	07/14/2014	08/10/2015					
	1	-	-	-	-					
	2	-	-	-	-					
	3	-	-	-	-					
	4	-	-	-	-					
	5	-	-	-	-					
	6	-	-	-	-					
	7	-	-	-	-					
	8	-	-	-	-					
	9	-	-	-	-					
	10	-	-	-	-					
	11	-	-	-	-					
	12	-	-	-	-					
	13	-	-	-	-					
	14	-	-	-	-					
	15	-	-	-	-					
	16	-	-	-	-					
	17	-	-	-	-					
	18	-	-	-	-					
	19	-	-	-	-					
	20	-	-	-	-					
	21	-	-	-	-					
	22	-	-	-	-					
	23	-	-	-	-					
	24	-	-	-	-					
	25	-	-	-	-					
	26	-	-	-	-					
	27	-	-	-	-					
	28	-	-	-	-					
	29	-	-	-	-					
	30	-	-	-	-					
	31	-	-	-	-					
	32	-	-	-	-					
	33	-	-	-	-					
	34	-	-	-	-					
	35	-	-	-	-					
	36	-	-	-	-					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013	03/24/2014	07/14/2014	08/10/2015					
	37	-	-	-	-					
	38	-	-	-	-					
	39	-	-	-	-					
	40	-	-	-	-					
	41	-	-	-	-					
	42	-	-	-	-					
	43	-	-	-	-					
	44	-	-	-	-					
	45	-	-	-	-					
	46	-	-	-	-					
	47	-	-	-	-					
	48	-	-	-	-					
	49	-	-	-	-					
	50	-	-	-	-					
	51	-	-	-	-					
	52	-	-	-	-					
	53	-	-	-	-					
	54	-	-	-	-					
	55	-	-	-	-					
	56	-	-	-	-					
	57	-	-	-	-					
	58	-	-	-	-					
	59	-	-	-	-					
	60	-	-	-	-					
	61	✓	✓	✓	✓					
	62	✓	✓	✓	✓					
	63	✓	✓	✓	✓					
	64	✓	✓	✓	✓					
	65	✓	✓	✓	✓					
	66	✓	✓	✓	✓					
	67	✓	✓	✓	✓					
	68	✓	✓	✓	✓					
	69	✓	✓	✓	-					
	70	✓	✓	✓	-					
	71	✓	✓	✓	-					
	72	✓	✓	✓	✓					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	**Art Unit**
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013	03/24/2014	07/14/2014	08/10/2015					
	73	✓	✓	✓	✓					
	74	✓	✓	✓	-					
	75	✓	✓	✓	✓					
	76	✓	✓	✓	✓					
	77	✓	✓	✓	✓					
	78	✓	✓	✓	✓					
	79	✓	✓	✓	✓					
	80	✓	✓	✓	✓					
	81	✓	✓	✓	✓					
	82	✓	✓	✓	✓					
	83	✓	✓	✓	✓					
	84	✓	✓	✓	✓					
	85	✓	✓	✓	✓					
	86	✓	✓	✓	✓					
	87	✓	✓	✓	✓					
	88	✓	✓	✓	✓					
	89	✓	✓	✓	-					
	90	✓	✓	✓	✓					
	91	✓	✓	✓	✓					
	92	✓	✓	✓	✓					
	93	✓	✓	✓	-					
	94	✓	✓	✓	✓					
	95	✓	✓	✓	✓					
	96	✓	✓	✓	✓					
	97	✓	✓	✓	✓					
	98	✓	✓	✓	✓					
	99	✓	✓	✓	✓					

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

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

Application Number	13750970
Filing Date	2013-01-25
First Named Inventor	Peter Zatloukal
Art Unit	2887
Examiner Name	Daniel I. Walsh
Attorney Docket Number	2039-006

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	5335276		1994-08-02	Thompson et al.	
	2	6892052	B2	2005-05-10	Kotola et al.	
	3	7274909	B2	2007-09-25	Perttilä et al.	

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20110021246	A1	2011-01-27	Rofougaran	
	2	20140162721	A1	2014-06-12	Zatloukal et al.	
	3	20140167914	A1	2014-06-19	Zatloukal et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

	4	20020052193	A1	2002-05-02	Chetty	
	5	20020187779	A1	2002-12-12	Freeny, JR.	
	6	20060238297	A1	2006-10-26	Tang et al.	
	7	20070018832	A1	2007-01-25	Beigel et al.	
	8	20080171579	A1	2008-07-17	Grubek	

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

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	0074406	WO	A1	2000-12-07	DUHS, Henry		☐
	2	2004114239	WO	A2	2004-12-29	WILDSEED LTD.		☐
	3	2004114239	WO	A3	2004-12-29	WILDSEED LTD.		☐

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

NON-PATENT LITERATURE DOCUMENTS Remove

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

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.	T5
	1	Non-Final Office Action for U.S. Patent Application No. 10/560,262, mailed March 4, 2009, 5 pages	☐
	2	Final Office Action for U.S. Patent Application No. 10/560,262, mailed August 17, 2009, 6 pages	☐
	3	Advisory Action for U.S. Patent Application No. 10/560,262, mailed November 13, 2009, 3 pages	☐
	4	Non-Final Office Action for U.S. Patent Application No. 10/560,262, mailed December 24, 2009, 6 pages	☐
	5	Final Office Action for U.S. Patent Application No. 10/560,262, mailed June 22, 2010, 14 pages	☐
	6	Notice of Non-Compliant Amendment (37 CFR 1.121) and Advisory Action for U.S. Patent Application No. 10/560,262, mailed September 8, 2010, 5 pages	☐
	7	Advisory Action for U.S. Patent Application No. 10/560,262, mailed October 13, 2010, 3 pages	☐
	8	Non-Final Office Action for U.S. Patent Application No. 10/560,262, mailed March 31, 2011, 12 pages	☐
	9	Notice of Allowance for U.S. Patent Application No. 10/560,262, mailed November 1, 2011, 13 pages	☐
	10	Non-Final Office Action for U.S. Patent Application No. 13/363,202, mailed July 16, 2012, 5 pages	☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

	11	Notice of Allowance for U.S. Patent Application No. 13/363,202, mailed November 27, 2012, 8 pages	☐
	12	Non-Final Office Action for U.S. Patent Application No. 14/097,141, mailed March 14, 2014, 10 pages	☐
	13	Final Office Action for U.S. Patent Application No. 14/097,141, mailed September 16, 2014, 12 pages	☐
	14	Non-Final Office Action for U.S. Patent Application No. 14/097,152, mailed March 31, 2014, 11 pages	☐
	15	Final Office Action for U.S. Patent Application No. 14/097,152, mailed July 21, 2014, 12 pages	☐

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

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13750970
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	2887
	Examiner Name	Daniel I. Walsh
	Attorney Docket Number	2039-006

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	/Matthew Selby/	Date (YYYY-MM-DD)	2015-01-26
Name/Print	Matthew J. Selby	Registration Number	70765

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 record s.

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.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
7 December 2000 (07.12.2000)

PCT

(10) International Publication Number
WO 00/74406 A1

(51) International Patent Classification[7]: H04Q 7/22, G07C 9/00

(21) International Application Number: PCT/SE00/01084

(22) International Filing Date: 26 May 2000 (26.05.2000)

(25) Filing Language: Swedish

(26) Publication Language: English

(30) Priority Data:
9901891-3 26 May 1999 (26.05.1999) SE
9902469-7 29 June 1999 (29.06.1999) SE

(71) Applicant and
(72) Inventor: **DUHS, Henry** [SE/SE]; Ängsvägen 23, S-181 41 Lidingö (SE).

(74) Agents: **BERGLUND, Stefan** et al.; Bjerkéns Patentbyrå KB, Östermalmsgatan 58, S-114 50 Stockholm (SE).

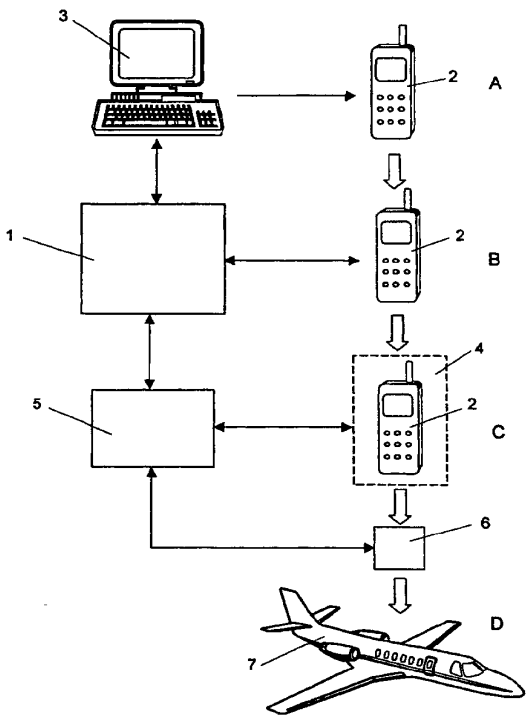
(81) Designated States *(national)*: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*

[Continued on next page]

(54) Title: MOBILE COMMUNICATION UNIT COMPRISING A RFID-CIRCUIT FOR EXECUTING A SERVICE



(57) Abstract: The present invention relates to an arrangement for providing a service. The arrangement comprises an ordering unit (1) which is arranged to receive an order of service and issue a proof, related to the authority of the service, to an orderer, a checking unit (6) which is arranged to check said proof in connection with the use of the service and a mobile communication unit (2) which is arranged to be carried by the orderer. Said mobile communication unit (2) comprises an RFID-circuit (Radio Frequency Identification) (8) having a unique RFID-code. A unique ID for the orderer is transmitted and stored in said mobile communication unit (2) in connection with the ordering of said service, whereafter the checking unit (6) is arranged to read said unique ID and RFID-code in the mobile communication unit in order to check the authority of the orderer to the ordered service in connection with the use of the service.

WO 00/74406 A1

— *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

MOBILE COMMUNICATION UNIT COMPRISING A RFID-CIRCUIT FOR EXECUTING A SERVICE

TECHNICAL FIELD OF THE INVENTION AND PRIOR ART

The present invention relates to an arrangement for providing a service, wherein the arrangement comprises an ordering unit which is arranged to receive an order of a service and issue a proof, related to the authority of the service, to an orderer, a checking unit which is arranged to check said proof in connection with the use of the service and a mobile communication unit which is arranged to be carried by the orderer.

In connection with ordering of services of different kind as, for example, ordering of different kinds of travels or different kinds of events such as concerts, theatres and movies, the handling of tickets requires a lot of time and is relatively costly for the seller and often an inconvenience to an orderer, which has to collect the tickets a time period before the event starts. For persons, which travel a lot, for example, when on duty, the booking of flights and the handling of flight tickets is relatively inflexible. Furthermore, it is required that the person in question must arrive at the airport in good time in order to be able to check in and, if necessary, collect his ticket. A great problem for the airline companies is that persons travelling when on duty often book several departures at different departure times for being certain to obtain a suitable flight, for example, after a meeting which does not have a predetermined end time. This is a great problem for the airline companies, which are forced to decline other passengers because a flight is apparently fully booked. Because of this, the airline companies loose a lot of money. Usually, the airline companies hereby over-book the departures

in order to secure that the plane does not depart with too many vacant seats. This over-booking implies problem both for the passengers and the airline companies.

Most persons, especially they which are travelling when on duty, usually carry a mobile communication unit, in form of a cellular telephone, in order to be connectable during theirs travels.

SUMMARY OF THE INVENTION

The object of the present invention is to provide an arrangement of the initially mentioned kind, which allows a flexible ordering of services and an uncomplicated checking in connection with the use of the service in order to check the authority of an orderer to the service. Furthermore, the arrangement aims at replacement of tickets in physical form.

This object is achieved by the initially mentioned arrangement, which is characterised in that said mobile communication unit comprises an RFID-circuit (Radio Frequency Identification) having a unique RFID-code and that a unique ID for the orderer is transmitted and stored in said mobile communication unit in connection with the ordering of said service, whereafter the checking unit is arranged to read said unique ID and RFID-code in the mobile communication unit in order to check the authority of the orderer to the ordered service in connection with the use of the service. Not only newly manufactured but also existent such mobile communication units, which preferably are a cellular telephone, may be provided with such an RFID-circuit having a unique RFID-code. Such an orderer having such a mobile communication unit receives in connection with the ordering of a service a unique ID, which is transmitted and stored in the mobile communication unit, for example, in the SIM-card of a cellular telephone. By such a unique ID stored in the mobile communication unit, the unit may have substantially the same function as a conventional ticket of paper to the ordered service.

When the orderer will use the service, the checking unit senses said unique ID and RFID-code in the mobile communication unit in order to check if the orderer has authority to said service. This checking may be performed completely mechanically when the orderer with the cellular telephone passes the checking unit. Hereby, the checking unit may control, for example, an automatically openable gate, which only opens if said ID and RFID-code in the cellular telephone of the orderer are correct. The orderer obtains after the passage through the gate access to the ordered service. Alternatively, a signal arrangement may be connected to the checking unit, which signal arrangement indicates by a light or sound signal the authority of the orderer. For in certain cases increase the checking level, the arrangement may be completed with a unique PIN-code for the orderer. This PIN-code may in a suitable way be stored in the mobile communication unit as well as at an entry to the ordered service.

According to a preferred embodiment of present invention, said RFID-circuit is comprised by a battery of the mobile communication unit. Such a battery having an RFID-circuit may be provided in existent mobile communication units instead of the ordinary battery. The existent mobile communication unit, for example, cellular telephones, may thereby in a simple way be equipped with such an RFID-circuit. Preferably, newly manufactured mobile communication units may also be provided with such a battery. Alternatively, said RFID-circuit may be comprised by a master board in the mobile communication unit. In connection with manufacturing of a mobile communication unit, an RFID-circuit may be comprised by the master board of the mobile communication unit. To provide an RFID-circuit in the master board of an already existing mobile communication unit is also possible. Another alternative is that said RFID-circuit comprises by an SIM-card (Subscriber Identification Module) in the mobile communication unit. Preferably, said RFID-circuit is comprised by a microchip. Such a microchip may in a simple

manner be comprised by the above-mentioned parts of the mobile communication unit. Services, which i.a. may be provided to an orderer, having such a carried mobile communication unit, are, for example, accesses to lifts in ski slopes, accesses to roads having duties and accesses to taking part in sporting events having many competitors such as marathon and skiing races, wherein RFID already is used today.

According to another preferred embodiment of the present invention, said unique ID is transmitted to the mobile communication unit by a cable connection. If said service is ordered by a computer, via Internet, an IR-connection or a cable connection may be established between the computer and the cellular telephone in order to transmit said unique ID from the selling unit, via the computer, to the mobile communication unit. Hereby, the RFID-code of the mobile communication unit also may be transmitted to the computer of the ordering unit to be stored there together with said unique ID. If the service instead is ordered at a selling place, one may there transmit said unique ID by one of said connections to the mobile communication unit. Preferably, the RFID-code of the mobile communication unit is, at the same time, stored in the computer of the selling place together with said ID. According to a further alternative, said unique ID is transmitted to the mobile communication unit via its communication system, which, for example, may be a GSM-system of a cellular telephone. Hereby, the service may be ordered by the mobile communication unit, whereafter the ordering unit transmits said unique ID to the mobile communication unit via its communication system and reversibly receives information concerning the RFID-code of the communication unit.

According to another preferred embodiment of the present invention, the checking unit is arranged to check said ID when the orderer passes a checking area intended thereto. Such a checking area may be a passage or the like which the orderer

will pass for being able to use the service. The passage may lead to an electrically controlled gate or the like which automatically is opened if the checking unit senses an ID or an RFID-code in the mobile communication unit, which authorise to said service. Consequently, an authorised orderer for the service carrying a mobile communication unit may walk through said checking area and passes through the gate without the need to take out and show a valid ticket in physical form for the service, which is necessary by, for example, bar codes or IR-technique which may not be hidden in order to function.

According to another preferred embodiment of the present invention, the ordering unit transmits information related to the ordered service to the orderer by the mobile communication unit before said service is used. Since the ordering unit is connectable to the mobile communication unit of the orderer, the ordering unit may inform about possible delays and thereby about new times for the ordered service or inform about other information which may be of interest to the orderer.

According to another preferred embodiment of the present invention, the ordering unit locates the positions of each of the orderer by the communication system of the mobile communication units at least a time period before said service is intended to be used, wherein an automatically cancellation is performed of orderers having such a position that a use of the ordered service is made impossible. Hereby, the GSM-system of a cellular telephone may, for example, be used in order to identify and calculate the number of orderers in advanced, which are not going to use the service, wherein ordered services may be transferred to other orderers. Thereby, a flexible arrangement is obtained which results in, for example, that fully booked events also in the practice may be full.

According to another preferred embodiment of the present invention, said ordered service is a flight and said ID is a PNR

(Passenger Number Record). Especially, the airline companies will make great economic profits by abolishing the tickets in paper form. Furthermore, the passengers are given the advantage of going on board the plane without the need to pick up and show a ticket. Another advantage for the passenger is that they are allowed to check in by the cellular telephone before they arrive at the airport. Hereby, the passenger receives information about his reserved seat of the aeroplane, which information preferably is stored in the cellular telephone. Thereby, the time, which the passenger must spend at the airport, may be further reduced.

According to another preferred embodiment of the invention, a luggage accompanying the orderer comprises an RFID-circuit having an RFID-code, which corresponds to that of the mobile communication unit of the orderer. This is of particular advantage, if said service concerns a flight. In this manner, the delivering of the luggage is facilitated when it already, at the arrival at the airport, may be provided with a microchip having an RFID-code. Furthermore, the checking of the luggage and the transport to a correct place of destination is simplified by such an RFID-code.

According to another preferred embodiment of the invention, the mobile communication unit comprises an RFID-reader. By such an RFID-reader, the mobile communication unit may be used for several different kinds of services. A carrier of the mobile communication unit may, for example, in connection with parking of a vehicle by the RFID-reader of the mobile communication unit, read an RFID-code in a microchip located at a suitable place of the parking place, in question. At the same time, a measuring of the parking time starts. When the carrier of the mobile communication unit returns to the parking place and the RFID-code is read a second time, the measuring of the parking time is finished. Hereby, an account may automatically debit the carrier of the mobile communication unit for the used parking

time. This will result in great profits for the parking companies in that the staff and the parking equipment essentially may be reduced.

BRIEF DESCRIPTION OF THE DRAWINGS

In the following, preferred embodiments of the invention are described as examples with reference to the attached drawings, in which:

Fig 1	shows schematically an arrangement according to a first embodiment of the invention,
Fig. 2	shows schematically an arrangement according to a second embodiment of the arrangement,
Fig. 3a-c	shows different alternative in order to provide an RFID-circuit in a cellular telephone.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

Fig. 1 shows schematically an arrangement for ordering of a service in form of a flight. The arrangement comprises an ordering unit 1. The ordering unit 1 is arranged to receive orderings of flights and to issue a unique PNR (Passenger Number Records) for each passenger and travel. Such an ordering unit 1 may comprise an existent ticket booking system on the market. Furthermore, the ordering unit 1 comprises a computer unit which issues unique PNR and stores necessary information concerning the orderer of the flight. Many passengers carrying a cellular telephone 2 on the flight and especially passengers travelling when on duty having almost all a carried cellular telephone 2 in order to be connectable. The arrangement intends to use the carried cellular telephone 2 of the passengers as an "electronic" flight ticket. The handling of the flight tickets in physical form thereby becomes unnecessary and an airline company may thereby make great savings. In

order to make such a use of the cellular telephones 2 possible, they are equipped with a microchip which comprises an RFID-circuit (Radio Frequency Identification) having a unique RFID-code. Such RFID-circuits are used in several different field of applications i.e. in order to mark and identify animals.

In order to book a flight, an orderer may use a computer 3, which, via Internet, is connectable to the ordering unit 1. Such a computer connection is shown in Fig 1 and the cellular telephone 2 is here located in a position A. After the orderer has performed his ordering and delivered necessary information to the ordering unit 1, the ordering unit 1 transmits a unique ID to the computer 1 in form of a PNR. Hereby, the orderer connects his computer 1, for example via a cable connection or an IR-connection, to the cellular telephone 2 such that said unique PNR may be transmitted to the cellular telephone 2 and be stored in for example its SIM-card. At the same time, the ordering unit 1 obtains information about the unique RFID-code of the cellular telephone 2.

Thereafter, the cellular telephone 2 of the orderer is shown in a position B in Fig 1, which symbolises the cellular telephone 2 after the service is ordered but before the service is used by the orderer. During this time period, the ordering unit 1 may transmit information to the cellular telephone 2, which is related to the ordered flight. Such information may concern delays and information about new times of departure. Furthermore, an orderer located in a tax-free shop may obtain information about particular offers in tax-free shops by the cellular telephone 2. Hereby, the tax-free shop may comprise an RFID-reader, at for example the entry of the shop, which identifies the cellular telephone 2 whereafter said information is transmitted. The orderer has also the possibility to check in shortly before the arrival at the airport by his cellular telephone 2. Thereby, the orderer obtains information about his seat reserved in the aeroplane. This information is stored in the cellular telephone 2.

A further advantage of the arrangement is that the ordering unit 1 at least a time period before the time of departure of the aeroplane, in question, may locate the positions of the orderers by the GSM-system of the cellular telephones 2. Thereby, an automatic cancellation may be performed of orderers, which distance to the airport is so great that they cannot arrive at the airport before the time of departure of the aeroplane, in question. Thereby, these ordered seats may be transferred to others.

After arrival at the airport, the orderer leaves a possibly accompanied luggage on a place intended thereto. Advantageously, this luggage has in advanced been provided with a microchip with the unique RFID-code of the cellular telephone 2. Thereby, the checking of the luggage is facilitated and the transport to a correct destination. This involves great profits for parties concerned. The passengers save time by a reduced queue time and the staff of the airport may be essentially reduced. Possibly, the passenger must hereafter pass through an examination of passport and a safety control, in a customary way, where also said technique may be used for checking of authority etc.

Thereafter, the passenger and the carried cellular telephone 2, in position C, are arranged to pass through a checking area 4. The checking area 4 is supervised by a checking unit 5. The checking unit 5 activates, during the passage of the passenger through the checking area 4, the RFID-circuit comprised by the cellular telephone 2 such that its stored RFID-code may be identified and it reads, at the same time, the PNR stored in the cellular telephone 2. Thereafter, the checking unit 5 compares said identified RFID-code and PNR with that stored in the computer of the ordering unit 1. If these codes correspond to each other, the checking unit 5 opens, preferably automatically, a gate 6 such that the orderer carrying the cellular telephone 2 may pass and take his reserved seat in an aeroplane 7, which

occurs in position D. The orderer has obtained information about the reserved seat in the aeroplane at the checking in and this information is preferably stored in the cellular telephone 2. A further advantage of such a cellular telephone 2 is that the orderer may have information in his own language in the cellular telephone 2. Preferably, the language information is stored in a PNR-file.

Fig 2 shows an alternative arrangement in order to provide a flight. The arrangement shown in Fig 2 differs, from that shown in Fig 1, concerning the procedure for ordering of the flight. The flight is here ordered by the cellular telephone 2 of the orderer in position A. After the ordering is received, the ordering unit 1 transmits, via the GSM-system of the cellular telephone, a unique PNR, which is stored in the SIM-card of the cellular telephone 2. At the same time, the ordering unit 1 obtains information about the unique RFID-code of the cellular telephone. In addition to this, the arrangement in Fig 2 is identical to that in Fig 1.

Figs 3a-c show schematically alternative possibilities of providing an RFID-circuit in a cellular telephone 2. Fig. 3a shows a cellular telephone 2 and a battery 7 comprising an RFID-circuit 8. Such a battery 7 allows, in a simple manner, equipment of existent cellular telephones 2 with an RFID-circuit 8, which occurs by replacement of the existent battery in the cellular telephone by one having an RFID-circuit 8.

Fig 3b shows a view through a cellular telephone 2, wherein the master board 9 of the cellular telephone 2 is shown. During manufacturing of cellular telephones, a microchip having an RFID-circuit 8 may hereby be comprised by the master board 9.

Fig 3c shows a SIM-card 10 (Subscriber Identification Module) for a cellular telephone 2. The SIM-card 10 comprises here a

microchip with an RFID-circuit 8 and an antenna 11 intended thereto.

The present invention is not in any way restricted to the described embodiments but may be varied freely within the scopes of the claims. The invention is, for example, applicable in connection with ordering of a number of different kinds of services, as travellers with other means of convenience than aviation and different events, for example, in form of concerts, theatres, movies and in connection with the use of ski lifts, local government means of transport, and parking places etc. A problem with conventional cellular telephones is that a stolen one in a simple manner may be decoded such that it again is useable. A cellular telephone comprising a unique RFID-code is not decodeable. Thereby, the present invention also make the use of stolen cellular telephones more difficult.

Claims

1. An arrangement for providing a service, wherein the arrangement comprises an ordering unit (1), which is arranged to receive an order of a service and issue a proof, related to the authority of the service, to an orderer, a checking unit (6), which is arranged to check said proof in connection with the use of the service, and a mobile communication unit (2) which is arranged to be carried by the orderer, characterised in that said mobile communication unit (2) comprises an RFID-circuit (Radio Frequency Identification) (8) having a unique RFID-code and that a unique ID for the orderer is transmitted and stored in said mobile communication unit (2) in connection with the ordering of said service, whereafter the checking unit (6) is arranged to read said unique ID and RFID-code in the mobile communication unit in order to check the authority of the orderer to the ordered service in connection with the use of the service.

2. An arrangement according to claim 1, characterised in that said RFID-circuit (8) is comprised in a battery (7) of the mobile communication unit.

3. An arrangement according to claim 1, characterised in that said RFID-circuit (8) is comprised by the master board (9) of the mobile communication unit.

4. An arrangement according to claim 1, characterised in that said RFID-circuit (8) is comprised by the SIM-card (10) of the mobile communication unit.

5. An arrangement according to any one of the preceding claims, characterised in that said RFID-circuit (8) is comprised by a microchip.

6. An arrangement according to any one of the preceding claims, characterised in that said unique ID is transmitted to the mobile communication unit (2) by an IR-connection.

7. An arrangement according to any one of the preceding claims 1 to 5, characterised in that said unique ID is transmitted to the mobile communication unit (2) by a cable connection.

8. An arrangement according to any one of the preceding claims 1 to 5, characterised in that said unique ID is transmitted to the mobile communication unit (2) by its communication system.

9. An arrangement according to any one of the preceding claims, characterised in that the checking unit (5) is arranged to check said ID when the orderer passes a checking area intended thereto.

10. An arrangement according to any one of the preceding claims, characterised in that the ordering unit (1) transmits information related to the ordered service to the orderer by the mobile communication unit (2) before said service is used.

11. An arrangement according to any one of the preceding claims, characterised in that the ordering unit (1) locates the positions of each of the orderer by the communication system of the mobile communication units (2) at least a time period before said service is intended to be used, wherein an automatic cancellation is performed for orderers having such a position that a use of the ordered service is made impossible.

12. An arrangement according to any one of the preceding claims, characterised in that said ordered service is a flight and that said ID is a PNR (passenger number record).

13. An arrangement according to claim 12, characterised in that the orderer is allowed to check in by the mobile communication unit (2) before arrival at the airport.

14. An arrangement according to any one of the preceding claims, characterised in that a luggage accompanying the orderer comprises an RFID-circuit with an RFID-code, which corresponds to that of the mobile communication unit (2) of the orderer.

15. An arrangement according to any one of the preceding claims, characterised in that the mobile communication unit (2) comprises an RFID-reader.

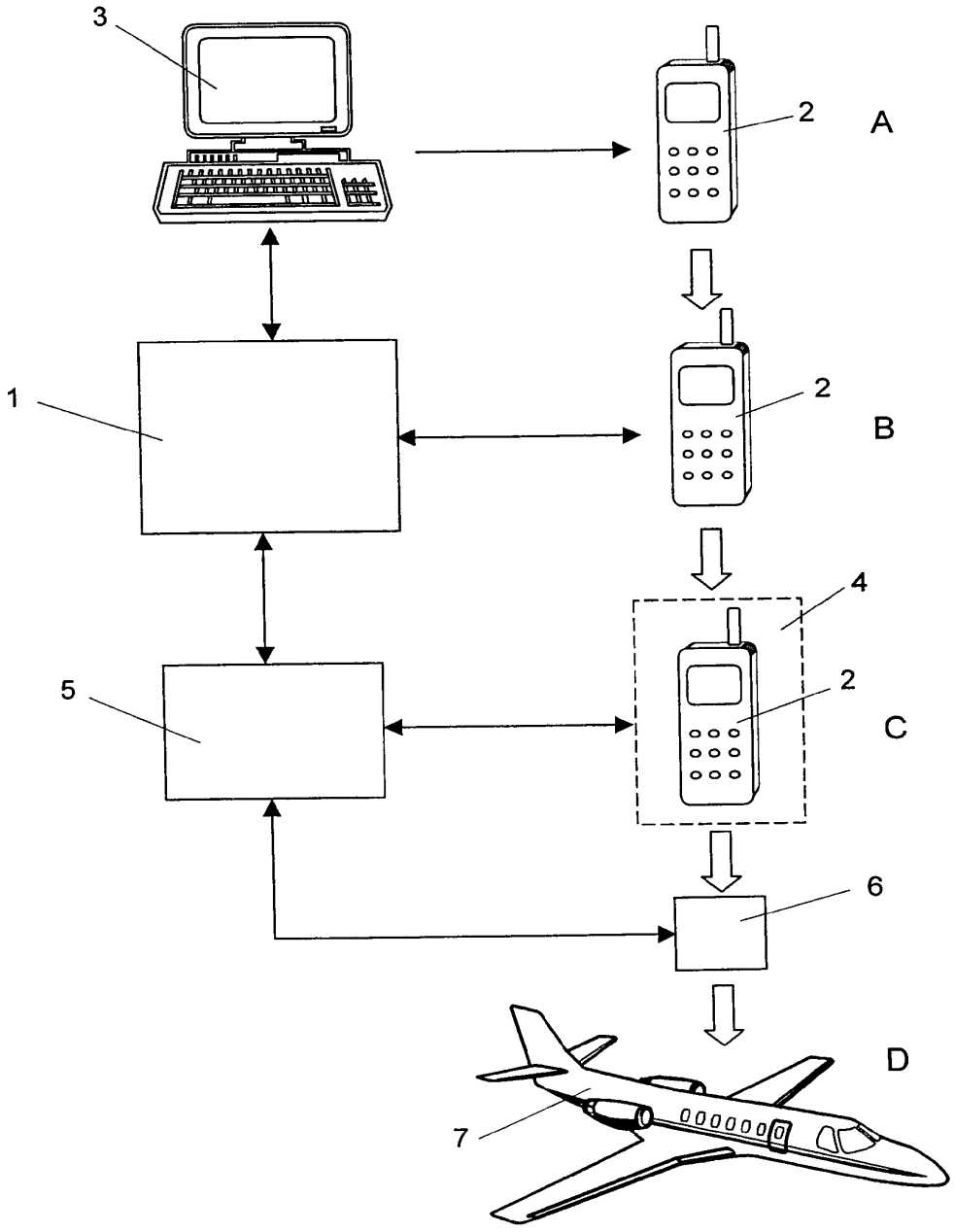


Fig 1

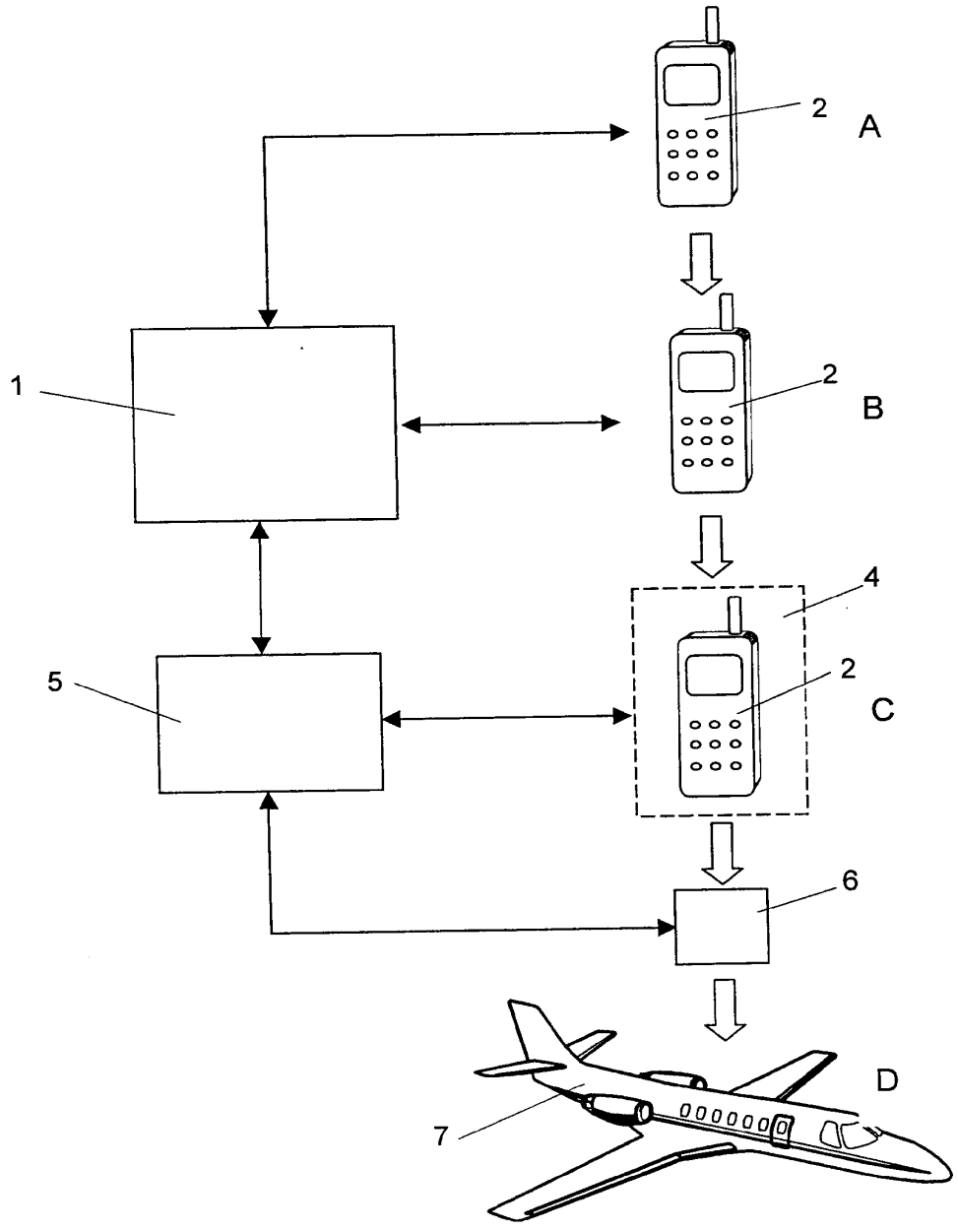


Fig 2

3/3

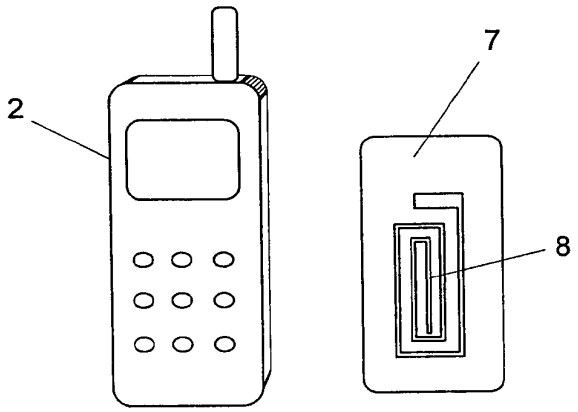


Fig 3a

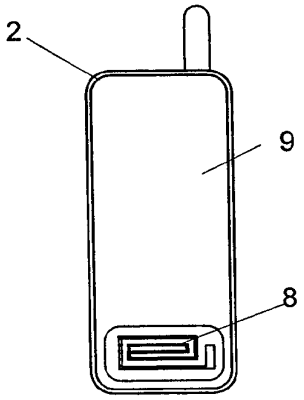


Fig 3b

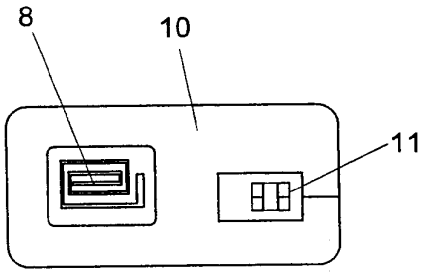


Fig 3c

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 00/01084

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04Q 7/22, G07C 9/00
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)

IPC7: H04Q, G07C

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

SE,DK,FI,NO classes as above

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9838600 A1 (MICRON COMMUNICATIONS, INC.), 3 Sept 1998 (03.09.98), page 25, line 21 - page 30, line 9; page 5, line 14 - line 17, figure 2, claims 12-16	1-14
Y	--	15
Y	WO 9816070 A1 (AMTECH CORPORATION), 16 April 1998 (16.04.98), page 1, line 22 - page 2, line 3; page 3, line 14 - page 4, line 12, abstract	15
	--	
A	US 5740369 A (TOORU YOKOZAWA ET AL), 14 April 1998 (14.04.98)	1-14
	--	

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"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)
"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
"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
"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
"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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
9 November 2000	14 -11- 2000
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Tomas Gustafsson/Els Telephone No. +46 8 782 25 00

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 00/01084

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9917230 A1 (SCHLASBERG, JOHAN), 8 April 1999 (08.04.99), page 5, line 30 - line 34; page 17, line 13 - line 18, figure 1, abstract -- US 5631947 A (ALAN D. WITTSTEIN ET AL), 20 May 1997 (20.05.97) -- --------	1-14 1-14

Form PCT/ISA/210 (continuation of second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE00/01084

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see next page

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

Unity discussion

Claims 1-14 is dealing with a RFID-circuit comprised in a mobile device for identification purposes. The claimed invention in claim 1 is industrially applicable but is not considered to be new and is not considered to involve an inventive step and claim 15 is dependent of claim 1. The claimed invention in claim 15 is considered to describe an invention not comprised in the thought of the invention in claim 1-14. Claim 15 deals with a RFID reader incorporated into the mobile device. Claim 15 is therefore considered to lack unity a posteriori.

WO	9838600	A1	03/09/98	AU	6434798 A	18/09/98
				EP	1012793 A	28/06/00
				US	5914671 A	22/06/99
WO	9816070	A1	16/04/98	EP	0953256 A	03/11/99
				US	6078251 A	20/06/00
US	5740369	A	14/04/98	JP	8008859 A	12/01/96
				JP	8018523 A	19/01/96
WO	9917230	A1	08/04/99	AU	8250098 A	23/04/99
				EP	1016006 A	05/07/00
				SE	0001064 A	26/05/00
US	5631947	A	20/05/97	AU	1550992 A	06/10/92
				CA	2105570 A	05/09/92
				EP	0576552 A	05/01/94
				WO	9216078 A	17/09/92

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
29 December 2004 (29.12.2004)

PCT

(10) International Publication Number
WO 2004/114239 A2

(51) International Patent Classification[7]: G08B

(21) International Application Number:
PCT/US2004/018397

(22) International Filing Date: 10 June 2004 (10.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/478,245 13 June 2003 (13.06.2003) US

(71) Applicant *(for all designated States except US)*: **WILDSEED LTD.** [US/US]; 10210 NE Points Drive, Suite 300, Kirkland, WA 98033 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **ZATLOUKAL, Peter** [US/US]; 218 Main Street #480, Kirkland, WA 98033 (US). **ENGSTROM, Eric, G.** [US/US]; 12415 Holmes Pt. Dr. NE, Kirkland, WA 98033 (US). **SMITH, Cindy, M.** [CA/US]; 218 Main Street #673, Kirkland, WA 98033 (US).

(74) Agents: **AUYEUNG, Aloysius** et al.; Schwabe, Williamson & Wyatt, P.C., Pacwest Center, Stes. 1600-1900, 1211 SW Fifth Avenue, Portland, OR 97204-3795 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

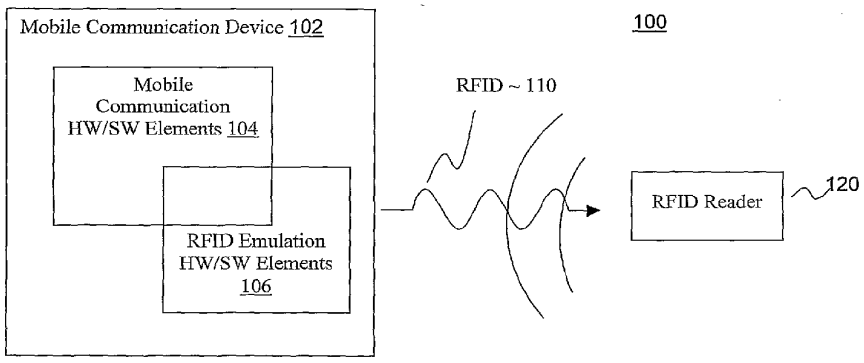
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:
— *of inventorship (Rule 4.17(iv)) for US only*

Published:
— *without international search report and to be republished upon receipt of that report*

[Continued on next page]

(54) Title: EMULATED RADIO FREQUENCY IDENTIFICATION



(57) Abstract: A mobile communication device is equipped with hardware and/or software components to enable the device to output a data in a form of a radio frequency signal, emulating outputting of the data by either an active or a passive RFID transponder. The data may be a security key or an identifier. Emulation of an active RFID transponder includes facilitating selection of the data and instruction to output by a user. Emulation of a passive RFID transponder includes detecting for proximal presence of a RFID reader. Either case, provision of the data to the mobile communication device may include provision of associated signal attribute(s).

WO 2004/114239 A2

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

EMULATED RADIO FREQUENCY IDENTIFICATION

RELATED APPLICATION

This application is a non-provisional application of provisional application number 60/478,245, titled "Radio Frequency Identification Using Mobile Communication Device", filed on June 13, 2003, and claims priority to said provisional application.

FIELD OF THE INVENTION

The present invention relates to the fields of security, communication, and data processing. More specifically, the present invention is related to an emulated radio frequency data input method.

BACKGROUND OF THE INVENTION

It wasn't that long ago, even residents in medium size cities still feel secured enough to leave their homes unlocked and/or their garages open. In general, one can access one's place of employment, including parking facilities as well as one's office without identification or access keys.

In the world of commerce, things were also simpler. One typically may shop and consume goods and services, at relatively low prices, without having to be affiliated with any programs or entities.

However, the world has become a lot more complex in recent years. Virtually, all properties of any value, premises, including one's home, have to be secured, even for relatively small towns and cities. One can hardly shop and consume any goods and services, without having signed up with some promotional frequent "usage" programs or becoming affiliated with the commercial entities. The employment of affinity marketing has reached a point even neighboring grocery chains employ them, and not just airlines, hotels, or wholesale discount retailers.

As a result, it is not uncommon to find a person having to carry a number of physical keys and access/identification cards/tags to gain access to secured premises, such as one's home, office, parking garage, and so forth. Additionally, the

person is likely to carry a number of remote security control devices, such as a key with remote control for gaining access to his/her vehicle, a garage door opener for gaining access to the person's garage at home, and so forth. The person is also likely to carry a number of affinity identification cards with member identifiers identifying the person as being affiliated with certain co-op or frequent patronage programs, such as wholesale discount retailers, airline or hotel frequent traveler program, and so forth, that entitle the person to certain benefits, such as discounts or rewards.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references denote similar elements, and in which:

Figure 1 illustrates an overview of the present invention, in accordance with one embodiment;

Figure 2 illustrates a method view of the present invention, in accordance with one embodiment;

Figure 3 illustrates the relevant hardware elements of the device of **Fig. 1** in further details, in accordance with one embodiment;

Figure 4 illustrates the transceiver of **Fig. 3** in further details, in accordance with another embodiment;

Figures 5a-5b illustrate the exploded views of two embodiments of the mobile communication device of **Fig. 1**;

Figures 5c-5d illustrate an exploded view of another embodiment of the mobile communication device of **Fig. 1**;

Figure 6a-6h illustrate a number of example screens of an end user interface, suitable for use to practice the present invention, in accordance with one embodiment; and

Figure 7 illustrates the operational flow of the relevant aspects of the software in support of the RFID feature of the present invention, in accordance with one embodiment.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

Embodiments of the present invention includes an emulated RFID method, more specifically, an emulated RFID method, using a mobile communication device, including the device itself, and certain hardware and/or software embodied therein for the practice of the emulated RFID method.

In the following description, various aspects of the illustrative embodiments of the present invention will be described. However, alternate embodiments may be practiced with only some or all aspects of the illustrative embodiments of the present invention. For purposes of explanation, specific numbers, materials and configurations are set forth in order to provide a thorough understanding of the present invention. However, alternate embodiments may be practiced without the specific details. In other instances, well-known features are omitted or simplified in order not to obscure the essence of the illustrative embodiments of the present invention.

Terminology

Parts of the description will be presented in data processing terms, such as data, selection, retrieval, generation, and so forth, consistent with the manner commonly employed by those skilled in the art to convey the substance of their work to others skilled in the art. As well understood by those skilled in the art, these quantities take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, and otherwise manipulated through electrical and/or optical components of a processor and its subsystems.

Part of the descriptions will employ various abbreviations, including but are not limited to:

CDROM	Compact Disc Read Only Memory
DDRAM	Dynamic Direct Random Access Memory
DVD	Digital Versatile Disc
EEPROM	Electrically Eraseable Programmable Read-Only-

	Memory
HTTP	HyperText Transmission Protocol
SDRAM	Static Direct Random Access Memory
SMS	Small Messaging Service

The term "number" as used in this application to describe a data, including both its usage in the specification and the claims, typically refers to numeric data, as the word "number" is conventionally used in mathematics. However, in certain contexts, the "number" may also include alphabet or special characters, as the term is conventionally understood by those skilled in the art in those contexts. For examples, a driver's license number, a passport number, an employee number, or a student ID number, as each of these terms is conventionally used, often includes one or more alphabets or special characters, even though they are referred to as "numbers". The term accordingly is to be given the meaning that is consistent with the context under which the term is used.

Section Headings, Order of Descriptions and Embodiments

Section headings are merely employed to improve readability, and they are not to be construed to restrict or narrow the present invention.

Various operations will be described as multiple discrete steps in turn, in a manner that is most helpful in understanding the present invention, however, the order of description should not be construed as to imply that these operations are necessarily order dependent. In particular, these operations need not be performed in the order of presentation.

The phrase "in one embodiment" is used repeatedly. The phrase generally does not refer to the same embodiment, however, it may. The terms "comprising", "having" and "including" are synonymous, unless the context dictates otherwise.

Overview

Refer now to **Figure 1**, wherein a block diagram illustrating an overview of the present invention **100**, in accordance with one embodiment, is shown. As illustrated, for the embodiment, mobile communication device **102** is equipped with hardware and/or software elements **104** to perform its primary function, which is to facilitate a user of device **102** to engage in communication with another user of another communication device (not shown). In various embodiments, the communication may be audio (such as phone calls), textual (such as messaging) and/or visual (such as airtexting using light sources). Additionally, for the embodiment, mobile communication device **102** is equipped with hardware and/or software elements **106** to facilitate provision or transfer of a key/identifier in a form a radio frequency signal **110**, which may be read e.g. by a radio frequency identifier (RFID) reader **120**. In turn, the provision of RFID **110** may be responded to by a system (not shown) with which RFID reader **120** is a part or coupled to.

As depicted in **Fig. 1**, blocks **104** and **106** "intersect" with one another. The "intersection" represents the fact that in preferred embodiments of the present invention, substantial portions of the hardware and/or software elements employed to provide a RFID, are the same elements employed to facilitate the primary function of device **102**, i.e. to facilitate a user in communicating with another user of another communication device.

In other words, illustrative embodiments of the present invention advantageously leverage on existing elements of mobile communication device **102**, and supplement them, to enable mobile communication device **102** to be able to provide a RFID, emulating a RFID transponder, as well as facilitating user communication.

As will be described in more detail below, in preferred embodiments, mobile communication device **102** is equipped to provide RFID, emulating an active and/or a passive RFID transponder.

Further, RFID **110** may be any keys and/or identifiers, including but not limited to security keys, such as garage door "keys", exterior or interior door keys, or identifiers, such as, employee numbers, driver's license numbers, social security

numbers, credit card numbers (optionally, including expiration dates), affinity program member identifiers, and so forth.

Continue to refer to **Fig. 1**, except for the present invention incorporated therein, mobile communication device **102** represents a broad range of mobile communication devices known in the art, including but are not limited to wireless mobile phones and personal digital assistants equipped with communication capability.

The term "wireless mobile phone" as used herein, including the specification and the claims, refers to the class of telephony devices equipped to facilitate a user in communicating with another user of another communication device, notwithstanding the user's movement around different geographic areas, so long the wireless mobile phone is in contact with a base/service station of a wireless network service provider. The term includes the analog as well as the digital subclasses. Communication may be voice and/or data, audio, textual and/or visual. The other user/communication device may be mobile or land line based.

RFID reader **120** represents a broad range of such devices known in the art or to be designed. Currently, most RFID readers **120** employ proprietary formats/protocols. That is, RFID readers **120** of different manufacturers tend to employ different frequencies, amplitudes, and/or keying schemes (which may be frequency shifting keying (FSK), amplitude shifting keying (ASK) or phase shifting keying (PSK)).

Various embodiments of the methods of the present inventions, including elements **106**, in particular, added elements, will be described in turn below.

Method

Figure 2 illustrates a method view of the present invention, in accordance with one embodiment. As illustrated, device **102** is first provided with the RFIDs, block **202**. The RFIDs may be provided in any one of a number of known or to be designed manners, including but are not limited to

- manual entry, using a keypad of device **102**,

- read into device **102**, from an access/identification card, using a magnetic or optical card reader of device **102**,

- downloaded into device **102**, from a coupled computing device, through a serial/parallel port of device **102** or through a network interface of device **102** using SMS or HTTP messages.

Typically, provision of a RFID will include the manner the RFID is to be outputted, i.e. signaled. As alluded to earlier, the manner it is to be signaled is dependent on the format/protocol employed by the intended RFID reader **120**. For examples, for a garage door key, the format/protocol employed by RFID reader **120** of the garage opener system, and for an affinity program member identifier, the format/protocol employed by RFID reader **120** of the point-of-sale system of the entity offering the affinity program.

Alternatively, a default signaling format/protocol, such as an industry standard, the most popular proprietary format/protocol, or a selected proprietary format/protocol may be assumed instead, when one is not provided.

During operation, in response to a user instruction, typically after the user has selected the RFID to be outputted from a number of RFIDs stored in device **102**, block **203**, device **102** outputs the selected RFID as instructed, emulating an active RFID transponder, block **204**.

For the embodiment, one RFID, e.g. an access key/identifier (such as an employee number), may also be selected/designated as a default RFID, the output of which may be emulated in a passive manner. That is, the selected/designated default RFID will be outputted automatically, whenever device **102** is within the proximal presence, or more specifically, the operational space, of an intended RFID reader **120**.

Accordingly, device **102** monitors for probing signals of an intended RFID reader **120** (or a type of RFID readers **120**), to determine whether device **102** is within the operational space of such a RFID reader **120**, block **205**. On so determining, device **102** outputs the designated RFID automatically, emulating a passive RFID transponder, block **206**.

A Hardware/Software Implementation

Figure 3 illustrates the relevant elements of device **102**, in accordance with one embodiment. As illustrated, for the embodiment, device **102** includes processor **302**, memory **304**, persistent store **306**, transceiver **308**, and a number of other components **310**, coupled to each other via bus **312**.

Persistent store **306** and memory **304** are employed to store permanent and working copies of a software implementation of the operating logic **320** of device **102**, including the supplemental RFID feature **322**. In various embodiments, persistent store **306** may be an EEPROM (or like kind variants, such as a Flash Memory, a Memory Stick), a magnetic or optical disk drive, a CDROM, a DVD drive and so forth. Memory **304** may be any SDRAM, DDRAM or other high speed volatile as way as non-volatile storage devices known in the art.

Processor **302** is employed to execute operating logic **320**, including RFID feature **322**. As will be readily apparent from the description to follow, operating logic **320** may be implemented in any one of a number of suitable system programming languages, including but not limited to high level languages that may be compiled into executable instructions supported by processor **302**. Processor **302** may be any one of a number of processors designed or to be designed for mobile devices.

Except for transceivers **308**, RFID feature **322** and the manner the various elements of **Fig. 3** are used to practice the present invention, the other illustrated elements are known in the art, and accordingly will not be further described. One embodiment of transceiver **308** will be described referencing **Fig. 4**, and one embodiment of RFID feature **322** will be described, referencing **Fig. 6-7**.

As described earlier, processor **302**, memory **304**, persistent store **306** and bus **312** may be shared elements of device **102**, also employed to implement the primary communication function of device **102**. However, in alternate embodiments, dedicated elements may be employed for some or all of these elements instead.

In one embodiment, device **102** is a wireless mobile telephone, an exploded view of which is illustrated in **Fig. 5a**. Wireless mobile phone **500**, in addition to the earlier described elements, also includes display **506**, control buttons **504**, keypad

502, antenna **508**, body **512** and cover **514**. Body **512** is substantially rectangular in shape. Further, body **512** is palm-sized or smaller.

For the embodiment, cover **514** includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance phone **500**. Phone **500** includes complementary electronic component interface **516** in support of such personalization, customization and/or enhancement.

Cover **514** may form a part of housing **512**, i.e. a required element to complete phone **500**, or it may be an accessory to be adorned by phone **500**, i.e. not a required element to complete phone **500**.

In another embodiment, device **102** is a PDA, an exploded view of which, is illustrated in **Fig. 5b**. PDA **502**, in addition to the earlier described elements, also includes display **524**, control buttons **522**, antenna **526**, body **532**, and cover **534**. Body **530** is also substantially rectangular in shape, as well as palm-sized or smaller.

Similarly, for the embodiment, cover **534** includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance PDA **520**. PDA **520** includes complementary electronic component interface **536** in support of such personalization, customization and/or enhancement.

Cover **534** may form a part of housing **532**, i.e. a required element to complete PDA **520**, or it may be an accessory to be adorned by PDA **520**, i.e. not a required element to complete PDA **520**.

Figure 5c-5d illustrate yet another embodiment of device **102**, another wireless mobile telephone, an exploded view of which is illustrated. Wireless mobile phone **540** is similarly constituted as the earlier described embodiments, including body **542** and cover **544**. However, body **542** has a substantially boomerang or banana shape. Body **542** is also typically palm-sized or smaller.

For the embodiment, cover **544** also includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance phone **540**. Phone **540** includes complementary electronic component interface (not shown) in support of such personalization, customization and/or enhancement.

Cover **544** may form a part of housing **542**, i.e. a required element to complete phone **540**, or it may be an accessory to be adorned by phone **540**, i.e. not a required element to complete phone **540**.

In all or selected one(s) of these embodiments, some or all elements **106** in support of the RFID feature of the present invention may be provided through embedded electronic components of the housing/accessory covers.

Smart covers are the subject matters of subject matter of co-pending U.S. Application, number 10/087,098, filed March 1, 2002, entitled "Personalizing Electronic Devices and Smart Covering", and U.S. Application, number <insert>, filed May 2, 2003, entitled "Personalization of Mobile Electronic Devices and Smart Accessory Cover", which specifications are hereby fully incorporated by reference.

While all three embodiments of **Fig. 5a-5d** have been illustrated with smart covers and external antennas. In alternate embodiments, the present invention may be practiced without smart covers and/or external antennas. The present invention may be practiced with conventional covers, without embedded intelligence and/or internal antennas.

Transceiver

Figure 4 illustrates transceiver **308** of **Fig. 3** in further details, in accordance with one embodiment. As illustrated, for the embodiment, transceiver **308** includes a joint radio frequency (RF) transmit/receive (TX/RX) section **402**, separate signal processing sections **408** and **410** for a range of higher frequencies and a range of low frequencies, switch **404** and splitter **406**. The elements are coupled to each other as shown.

For the embodiment, joint RF TX/RX **402** includes in particular, switch **420**, filters **412** and **422**, low noise amplifier **424** and power amplifier **414**, coupled to one another as shown. Switch **420** is employed to switch between transmitting and receiving RF signals. Filters **412** and **422**, low noise amplifier **424** and power amplifier **414** are employed to perform their conventional filtering and amplification functions on the transmit and receive signals.

For transmission, switch **404** switches between the output of high frequency signal processing **410** and the output of low frequency signal processing **408** to the transmit path of Joint RF TX/RX **402**.

For reception, splitter **406** splits the output of the receive path of Joint RF TX/RX **402** and provides the receive signal to high frequency signal processing **410** as well as low frequency signal processing **408**.

For the embodiment, high frequency signal processing **410** performs up and down conversions of the transmit and receive signals of the primary communication function of mobile communication device **102**, e.g. the transmit and receive signals of a voice call. In one embodiment, the transmit and receive signals are transmitted and received in the GHz ranges.

Low frequency signal processing **408**, on the other hand, performs up and down conversions of the transmit and receive signals of the RFID feature, e.g. the output signal of a RFID to emulate either an active or a passive transponder, and the received probing signal of a RFID reader. In one embodiment, the transmit and receive signals are transmitted and received in the MHz ranges.

Up and down conversions, filtering, amplifications, and so forth, in and of themselves, except for the manner they are being used to provide RFIDs using a mobile communication device, are known in the art, accordingly, will not be further described.

RFID Feature

Figures 6-7 illustrate selected portions of an example end user interface, and the operational flow of the relevant aspects of RFID feature **322** respectively, in accordance with one embodiment. **Figure 6** comprises **Fig. 6a-6h**.

As illustrated in **Fig. 6a**, for the embodiment, the user interface includes screen **602** having selectable text display "RFID" **604**, with which a user may interact to launch the RFID function (by selecting text display **604**, using e.g. control keys **504**).

As illustrated in **Fig. 6b**, for the embodiment, the user interface further includes screen **612** enumerating a list of RFIDs **614** stored in device **102**. List **614** may be displayed for example, among other situations, in response to a user's

selection of text display **604** of screen **602**. A user may select one of the RFIDs, and instruct device **102** to output the selected RFID in a form of an appropriate radio frequency signal, emulating provision of the RFID by an active RFID transponder, using e.g. a "send/call" key of device **102**.

Screen **612** also includes selectable "option" button **616**, with which a user may interact to display a list of RFID management options, using e.g. control keys **504**.

As illustrated in **Fig. 6c**, for the embodiment, the user interface further includes screen **622** enumerating a list of RFID management options **624**, such as "add", "edit" or "delete" RFIDs. List **624** may be displayed for example, among other situations, in response to a user's selection of "option" **616** of screen **612**.

As illustrated in **Fig. 6d**, for the embodiment, the user interface further includes screen **632** displaying field **634**, through which a user may enter/edit a RFID name. Field **634** may be displayed for example, among other situations, in response to a user's selection of "add" or "edit" of screen **622**.

As illustrated in **Fig. 6e**, for the embodiment, the user interface further includes screen **642** displaying field **644**, through which a user may enter/edit a RFID. Field **644** may be displayed for example, among other situations, in response to a user indicating completion of entry of a RFID name using screen **632**.

As illustrated in **Fig. 6f**, for the embodiment, the user interface further includes screen **652** displaying a list of RFID types **654**, with which a user may select and associate with a RFID. List **654** may be displayed for example, among other situations, in response to a user indicating completion of entry of a RFID, using screen **642**, thereby allowing the user to associate a RFID reader type with the entered RFID.

Each RFID reader type is assumed to have a deterministic RFID signaling format/protocol. Accordingly, by selecting the RFID reader type, the user is effectively selecting or specifying the RFID signaling format/protocol. In alternate embodiment, a user may be requested to select the RFID signaling format/protocol explicitly, as opposed to implicitly, in the illustrated embodiment.

As illustrated in **Fig. 6g**, for the embodiment, the user interface further includes screen **662** displaying a request **664** to confirm whether a RFID is to be

selected or designated as the default RFID to be used for emulation of passive transponders. Request **664** may be displayed for example, among other situations, in response to a user selecting a RFID reader type, using screen **652**, thereby allowing the user to (implicitly) associate a RFID format/protocol with the entered RFID.

As illustrated in **Fig. 6f**, for the embodiment, the user interface further includes screen **672** displaying a RFID and its details, including but not limited the intended RFID reader type, whether to be designated as the default RFID for use in emulating passive RFID. Request **674** may be displayed for example, among other situations, in response to a user selecting the "edit" option, using screen **622**, or on completion of designating a RFID as the default RFID for emulating passive transponders, using screen **662**

Operationally, as illustrated in **Fig. 7**, upon receipt of a request to launch the RFID function, support logic of the RFID feature **322** is loaded and given execution control, block **702**. Thereafter, support logic **322** waits for user inputs, block **704**.

On receipt of a user input/request, support logic **322** determines the nature of the input/request, block **706**, taking into the context, i.e. the portion of the user interface being displayed, and with which the user just interacted in submitting the input/request.

As illustrated, on determining that the user has requested a current display list to be scrolled (e.g. RFID list **614** of screen **612**), support logic **322** causes the list to be scrolled as requested. Thereafter, support logic **322** returns to block **708** and waits for further input.

Similarly, on determining that the user has requested a selected RFID to be sent (emulating output of the RFID by an active RFID transponder), support logic **322** causes the RFID to be outputted in a form of an appropriate RF signal (in accordance with the associated intended RFID reader type). Thereafter, support logic **322** again returns to block **710** and waits for further input.

On determining that the user has requested a list of options to be displayed (e.g. selection of "option" **616** of screen **612**), support logic **322** causes the list of options to be displayed as requested. Thereafter, support logic **322** returns to block **712** and waits for further input.

On determining that the user has requested to add a RFID (e.g. selection of "Add" of screen **622**), support logic **322** facilitates addition of a RFID (e.g. successively guiding user entry of a RFID using screens **632-662**. Thereafter, support logic **322** returns to block **714** and waits for further input.

These are a few examples of user inputs/requests support logic **322** may support. The present invention contemplates other user inputs/requests may also be supported, and handled accordingly, block **716.**

Conclusion and Epilogue

Thus, it can be seen from the above descriptions, a novel emulated RFID input method, using a mobile communication device, has been described. The present invention advantageously improved the ease of use for a user to provide data captured in a device to another system, especially for data captured in e.g. a mobile device.

While the present invention has been described in terms of the earlier described embodiments, those skilled in the art will recognize that the invention is not limited to the embodiments described. The present invention can be practiced with modification and alteration within the spirit and scope of the appended claims. Thus, the description is to be regarded as illustrative instead of restrictive on the present invention.

CLAIMS

What is claimed is:

1. A method for providing a radio frequency identification (RFID) comprising:

facilitating a user in providing an instruction to a mobile communication device to output a first data in a form of a first radio frequency signal to emulate output of the first data by an active RFID transponder, the mobile communication device being also equipped to facilitate a user in communicating with a user of another communication device, with the communication being facilitated at least in part over a wireless network; and

in response, outputting the first data in the form of a radio frequency signal, emulating output of the first data by an active RFID transponder as instructed by the user.

2. The method of claim 1, wherein said first data comprises a selected one of a security key and an identifier.

3. The method of claim 2, wherein said first data comprises a security key, and said security key comprises a door key.

4. The method of claim 3, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

5. The method of claim 2, wherein said first data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

6. The method of claim 1, wherein the method further comprises facilitating the user in selecting the first data from a plurality of data using the mobile communication device.

7. The method of claim 1, wherein the method further comprises facilitating provision of the first data to the mobile communication device.

8. The method of claim 7, wherein said facilitating of the provisioning of the data to the mobile communication device, including facilitating provision of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

9. The method of claim 1, wherein the method further comprises

detecting for proximal presence of a RFID reader by the mobile communication device; and

on detection, outputting a second data in a form of a second radio frequency signal, using the mobile communication device, emulating output of the second data by a passive RFID transponder.

10. The method of claim 9, wherein said detecting comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

11. The method of claim 9, wherein said first and second data are the same data.

12. The method of claim 1, wherein the mobile communication device is a selected one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

13. A method for providing a radio frequency identifier (RFID), comprising:

detecting for proximal presence of a RFID reader by a mobile communication device, the mobile communication device being also equipped to facilitate a user in communicating with a user of another communication device, with the communication being facilitated at least in part over a wireless network; and

on detection, outputting a data in a form of a radio frequency signal, using the mobile communication device, emulating output of the data by a passive RFID transponder.

14. The method of claim 13, wherein said detecting comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

15. The method of claim 13, wherein said data comprises a security key.

16. The method of claim 15, wherein said security key comprises a door key.

17. The method of claim 16, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

18. The method of claim 13, wherein the method further comprises facilitating provision of the data to the mobile communication device.

19. The method of claim 18, wherein said facilitating of the provisioning of the data to the mobile communication device, including facilitating provision of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

20. The method of claim 13, wherein the mobile communication device is a selected of a wireless mobile phone and a personal digital assistant equipped with communication capability.

21. A mobile communication device comprising:

a transmitter to transmit a radio frequency signal;

a storage medium to store a first data and instructions to operate the transmitter to selectively (a) output the first data in a form of a radio frequency signal, in response to a user instruction, emulating output of the first data by an active radio

frequency identifier (RFID) transponder, and (b) facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a processor coupled to the transmitter and the storage to execute the instructions.

22. The device of claim 21, wherein said first data comprises a selected one of a security key and an identifier.

23. The device of claim 22, wherein said first data comprises a security key, and said security key comprises a door key.

24. The device of claim 23, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

25. The device of claim 22, wherein said first data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

26. The device of claim 21, wherein the instructions are further designed to facilitate the user in selecting the first data from a plurality of data, and instructing said output.

27. The device of claim 21, wherein the instructions are further designed to facilitate provision of the first data to the mobile communication device.

28. The device of claim 27, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first data in the form of a radio frequency signal.

29. The device of claim 21, wherein the instructions are further designed to detect for proximal presence of a RFID reader; and

on detection, outputting a second data in a form of a second radio frequency signal, emulating output of the second data by a passive RFID transponder.

30. The device of claim 29, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

31. The device of claim 29, wherein said first and second data are the same data.

32. The device of claim 21, wherein the mobile communication device is a selected of a wireless mobile phone and a personal digital assistant equipped with communication capability.

33. A mobile communication device comprising:

a transmitter to transmit a radio frequency signal;

a storage medium to store a first data and instructions to operate the transmitter to selectively (a) detect for proximal presence of a radio frequency identifier (RFID) reader, and on detection, output a data in a form of a radio frequency signal, emulating output of the data by a passive RFID transponder, and (b) facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a processor coupled to the transmitter and the storage to execute the instructions.

34. The device of claim 33, wherein said instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

35. The device of claim 33, wherein said data comprises a security key.

36. The device of claim 35, wherein said security key comprises a door key.

37. The device of claim 36, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

38. The device of claim 33, wherein the instructions are further designed to facilitate provision of the data to the mobile communication device.

39. The device of claim 38, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

40. The device of claim 33, wherein the mobile communication device is a selected of a wireless mobile phone and a personal digital assistant equipped with communication capability.

41. A cover comprising:

a body designed to be mated with a mobile communication device equipped to facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a storage medium embedded in said body, to store a selected one of a plurality of instructions and one or more locations to obtain all or a part of said instructions, the instructions being designed to operate a transmitter of the mobile communication device to output a first data in a form of a radio frequency signal, in response to a user instruction, emulating output of the first data by an active radio frequency identifier (RFID) transponder, using the mobile communication device.

42. The cover of claim 41, wherein said first data comprises a selected one of a security key and an identifier.

43. The cover of claim 42, wherein said first data comprises a security key, and said security key comprises a door key.

44. The cover of claim 43, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

45. The cover of claim 42, wherein said first data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

46. The cover of claim 41, wherein the instructions are further designed to facilitate the user in selecting the first data from a plurality of data, and instructing said output.

47. The cover of claim 41, wherein the instructions are further designed to facilitate provision of the first data to the mobile communication device.

48. The cover of claim 47, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first data in the form of a radio frequency signal.

49. The cover of claim 41, wherein the instructions are further designed to
detect for proximal presence of a RFID reader; and
on detection, outputting a second data in a form of a second radio frequency signal, emulating output of the second data by a passive RFID transponder.

50. The cover of claim 49, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

51. The cover of claim 49, wherein said first and second data are the same data.

52. The cover of claim 41, wherein the cover is an accessory cover to be adorned by the mobile communication device.

53. A cover comprising:

a body designed to be mated with a mobile communication device equipped to facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a storage medium embedded in said body, to store a selected one of a plurality of instructions and one or more locations to obtain all or a part of said instructions, the instructions being designed to operate the transmitter to detect for proximal presence of a radio frequency identifier (RFID) reader, and on detection, output a data in a form of a radio frequency signal, emulating output of the data by a passive RFID transponder, using the mobile communication device.

54. The cover of claim 53, wherein said instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

55. The cover of claim 53, wherein said data comprises a security key.

56. The cover of claim 55, wherein said security key comprises a door key.

57. The cover of claim 56, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

58. The cover of claim 53, wherein the instructions are further designed to facilitate provision of the data to the mobile communication device.

59. The cover of claim 58, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

60. The cover of claim 53, wherein the cover is an accessory cover to be adorned by the mobile communication device.

100
Mobile Communication Device 102
Mobile Communication HW/SW Elements 104
RFID Emulation HW/SW Elements 106
RFID ~ 110
RFID Reader
120

Figure 1

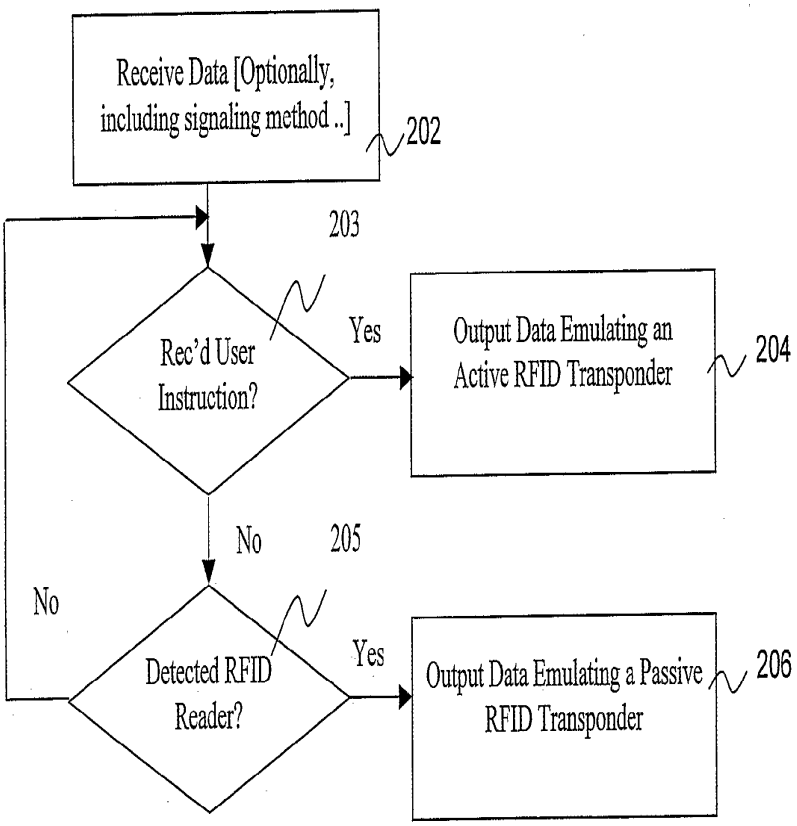

Receive Data [Optionally, including signaling method ..]
202
203
Rec'd User Instruction?
Yes
Output Data Emulating an Active RFID Transponder
204
No
205
No
Detected RFID Reader?
Yes
Output Data Emulating a Passive RFID Transponder
206

Figure 2

300
304
Memory
Operating Logic
320
RFID Feature
322
302
Proc
312
Persistent Store
- Operating Logic &
Data
306
Other Components
E.G. Keyboard, Display
Transceiver
308
310

Figure 3

Legend:
F = Filter
LA = Low Noise Amplifier
PA = Power Amplifier
SP=Splitter
SW = Switch

Figure 4

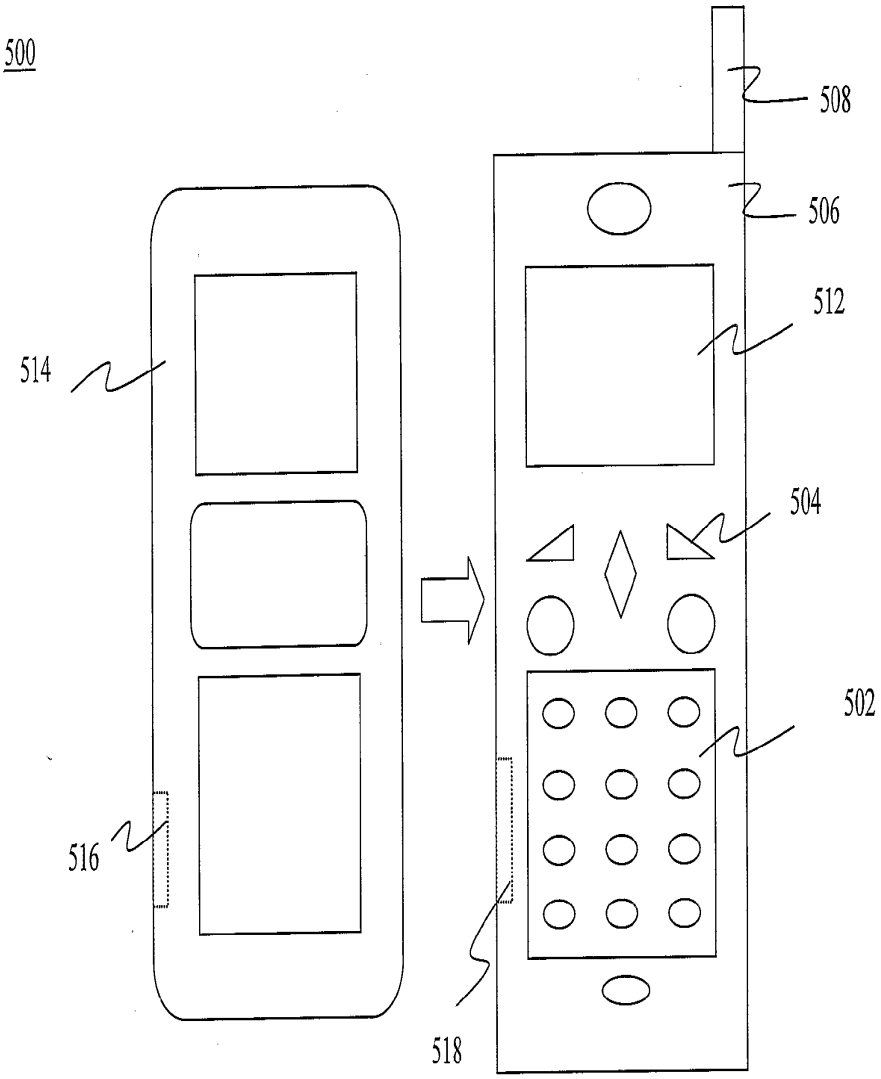


Figure 5a

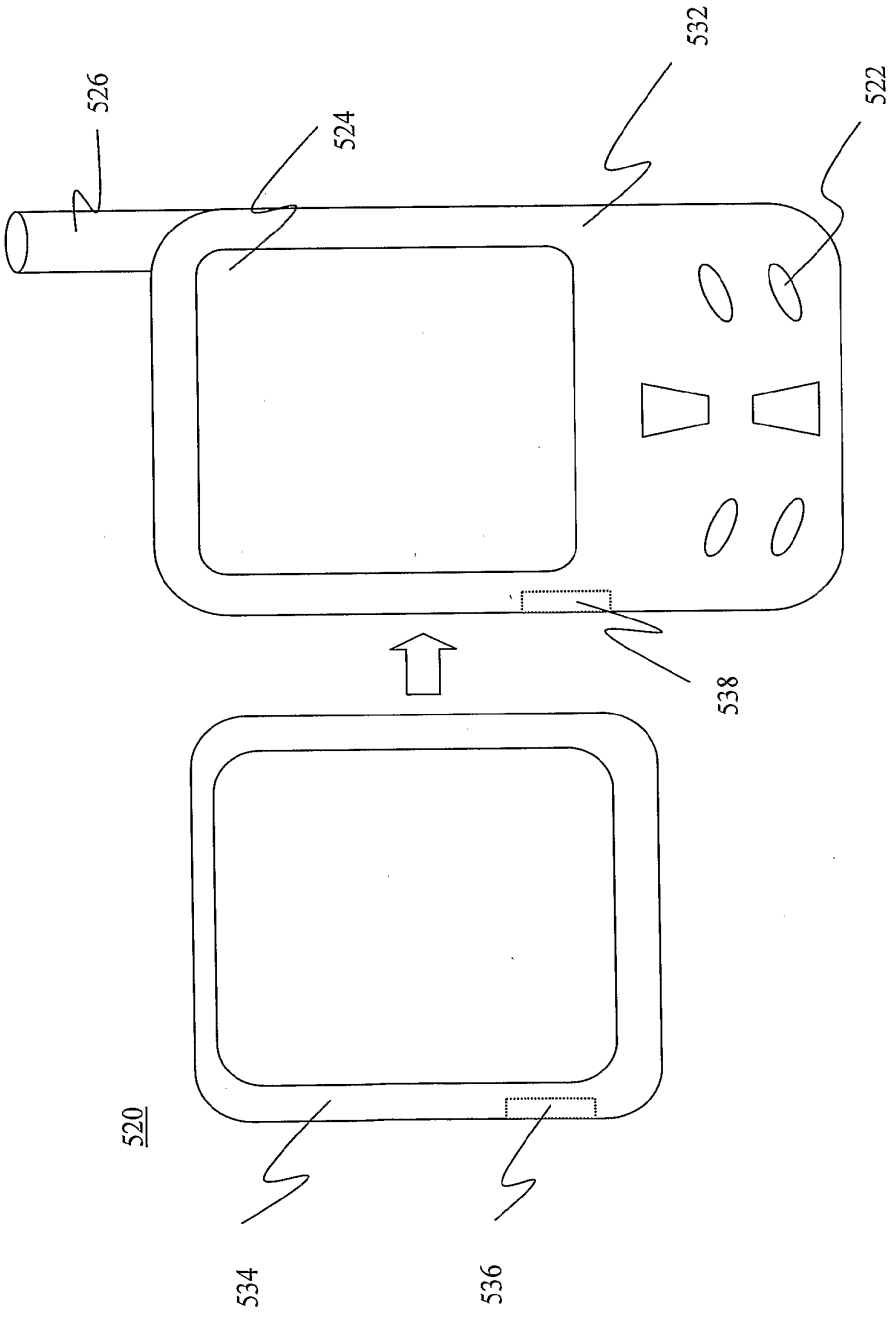


Figure 5b

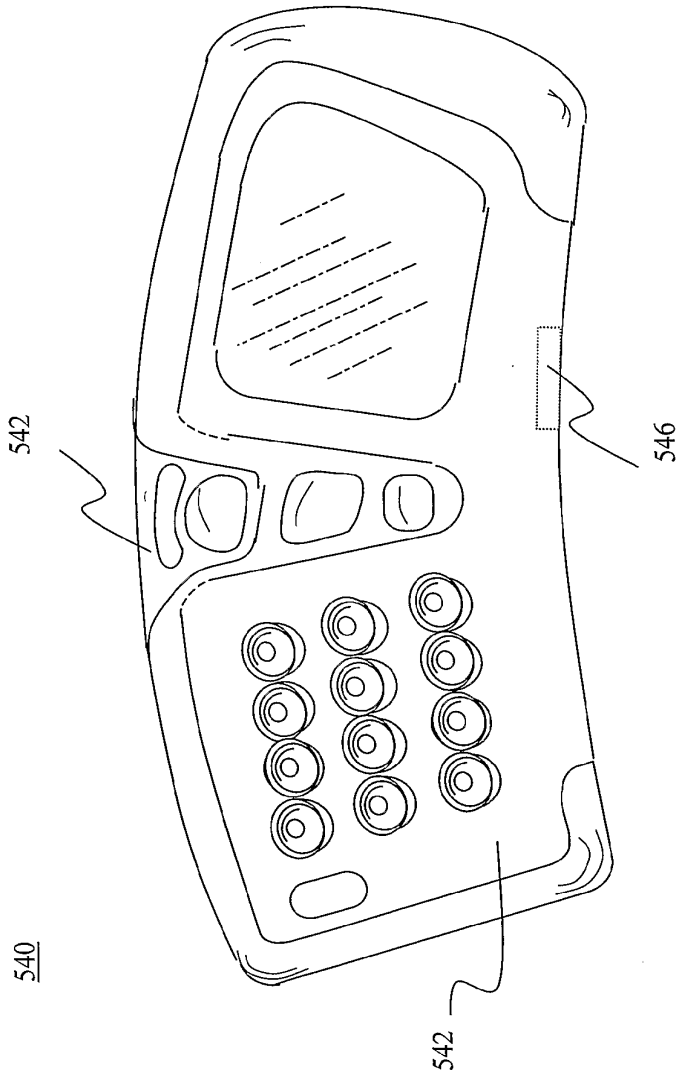


Figure 5c

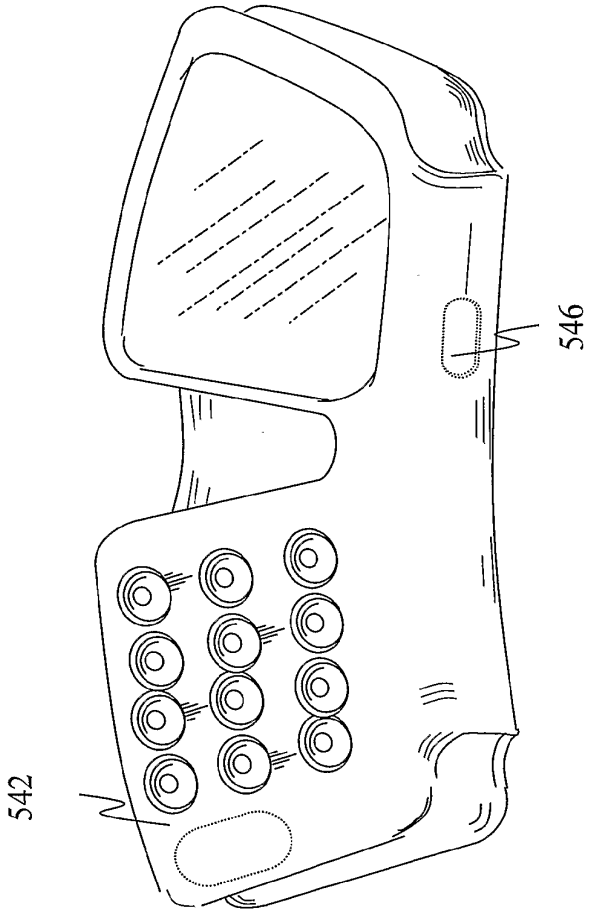


Figure 5d

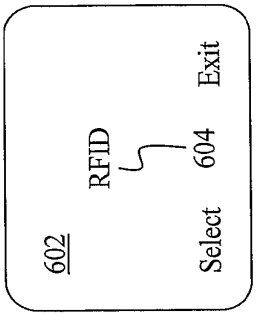


Figure 6a

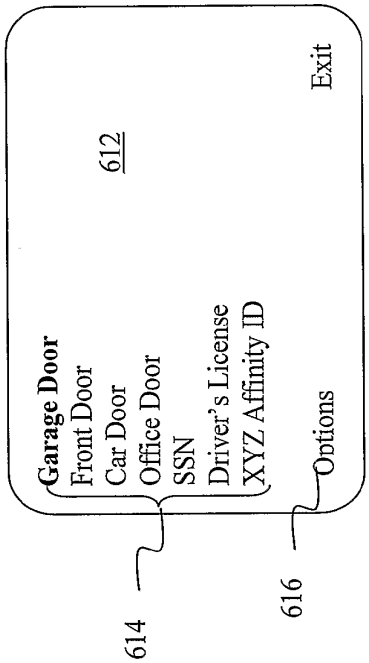


Figure 6b

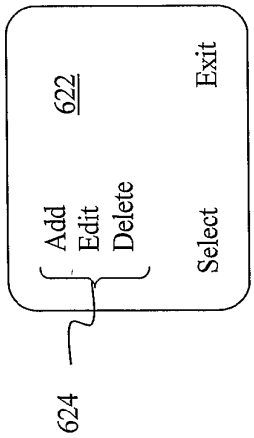


Figure 6c

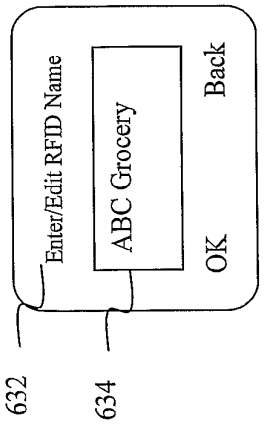


Figure 6d

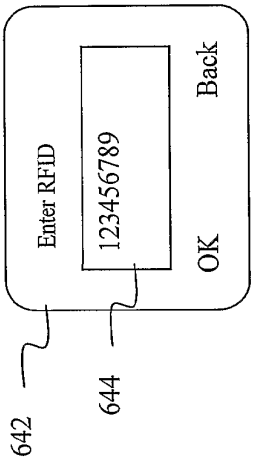


Figure 6e

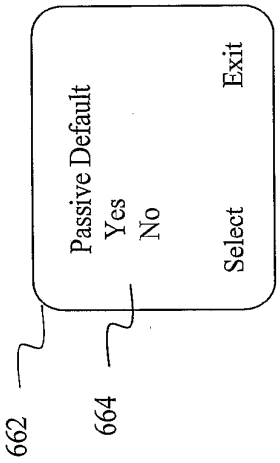


Figure 6g

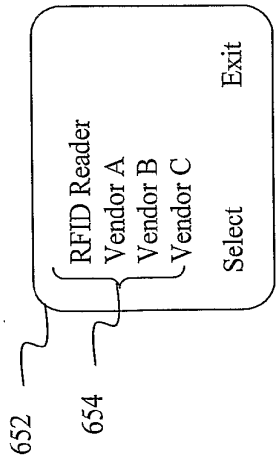


Figure 6f

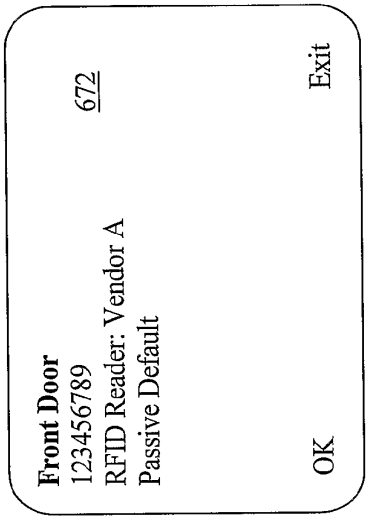

Front Door
123456789
672
RFID Reader: Vendor A
Passive Default
OK
Exit

Figure 6h

RFID
702
List created RFID, and Options
704
706
No
Input?
Yes
Determine Nature of Input
Scroll
"Send"
Option
Add
Scroll as requested
Output RFID in a form of RF Signal
Display Options
Provide Input Field or Select List to facilitate input of RFID name, RFID, RFID Reader, Passive Emulation etc.
Others
708
710
712
714
Handle as appropriate
716

Figure 7

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
29 December 2004 (29.12.2004)

PCT

(10) International Publication Number
WO 2004/114239 A3

(51) International Patent Classification[7]: G06K 7/10

(21) International Application Number:
PCT/US2004/018397

(22) International Filing Date: 10 June 2004 (10.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/478,245 13 June 2003 (13.06.2003) US

(71) Applicant *(for all designated States except US)*: **WILDSEED LTD.** [US/US]; 10210 NE Points Drive, Suite 300, Kirkland, WA 98033 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **ZATLOUKAL, Peter** [US/US]; 218 Main Street #480, Kirkland, WA 98033 (US). **ENGSTROM, Eric, G.** [US/US]; 12415 Holmes Pt. Dr. NE, Kirkland, WA 98033 (US). **SMITH, Cindy, M.** [CA/US]; 218 Main Street #673, Kirkland, WA 98033 (US).

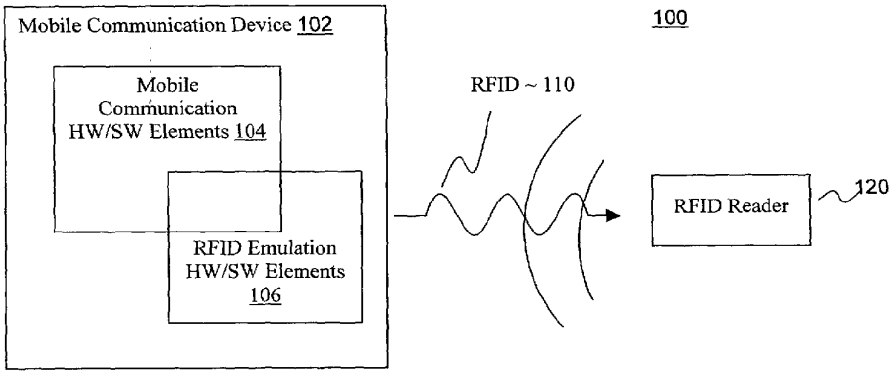
(74) Agents: **AUYEUNG, Aloysius** et al.; Schwabe, Williamson & Wyatt, P.C., Pacwest Center, Stes. 1600-1900, 1211 SW Fifth Avenue, Portland, OR 97204-3795 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: EMULATED RADIO FREQUENCY IDENTIFICATION



(57) Abstract: A mobile communication device (102) is equipped with hardware and/or software components (104) to enable the device to output a data in a form of a radio frequency signal (110), emulating outputting of the data by either an active or a passive RFID transponder (204, 206). The data may be a security key or an identifier. Emulation of an active RFID transponder (204) includes facilitating selection of the data and instruction to output by a user. Emulation of a passive RFID transponder (206) includes detecting for proximal presence of a RFID reader (120). Either case, provision of the data to the mobile communication device may include provision of associated signal attribute(s).

WO 2004/114239 A3

Declaration under Rule 4.17:
— *of inventorship (Rule 4.17(iv)) for US only*

Published:
— *with international search report*

(88) Date of publication of the international search report:
6 May 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/18397

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : G06K 7/10
US CL : 235/472.02
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)
U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 6,421,347 B1 (BORGSTAHL ET AL) 16 JUL 2002 (16.07.2002), SEE ENTIRE DOCUMENT	1, 6-8, 12, 21, 26-28, 32, 41, 46-48, 52 --- 2-5, 9-11, 13-20, 22-25, 29-31, 33-40, 42-45, 49-51, 53-60
Y	US 5,473,318 A (MARTEL) 05 DEC 1995 (05.12.1995), SEE ENTIRE DOCUMENT	2-4, 15-17, 22-24, 35-37, 42-44, 55-57
Y	US 6,476,708 B1 (JOHNSON) 05 NOV 2002 (05.11.2002), SEE ENTIRE DOCUMENT	9-11, 13-14, 18-20, 29-31, 33-34, 38-40, 49-51, 53-54, 58-60

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"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)

"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

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
09 November 2004 (09.11.2004)	15 FEB 2005
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. (703) 305-3230	Authorized officer UYEN-CHAU N. LE Telephone No. 571-272-2397

Form PCT/ISA/210 (second sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/18397

Continuation of B. FIELDS SEARCHED Item 1:
235/472.02, 375, 376, 383, 385
340/825.72

Form PCT/ISA/210 (extra sheet) (January 2004)

Electronic Acknowledgement Receipt

EFS ID:	21308090
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	27820
Filer:	Benjamin Withrow/Warren Perkins
Filer Authorized By:	Benjamin Withrow
Attorney Docket Number:	2039-006
Receipt Date:	26-JAN-2015
Filing Date:	25-JAN-2013
Time Stamp:	14:54:29
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	Transmittal Letter	2039-006_IDS-Cover-Letter_01-21-15.pdf	19694 a9d717c1b5afba6aa699e863674796c2de6eb6cc	no	2
Warnings:					
Information:					

2	Information Disclosure Statement (IDS) Form (SB08)	2039-006_IDS_07-22-14.pdf	613009 a99dedba3f8dc749d52415660f9de43d3fe10e5f	no	6
Warnings:					
Information:					
3	Foreign Reference	WO0074406A1.pdf	879155 e171b4ceb634431142f6012d6a12ec55af3a8e49	no	24
Warnings:					
Information:					
4	Foreign Reference	WO2004114239A2.pdf	1272328 4b65bcfacfb62b3cb803181096576023344 9b239	no	37
Warnings:					
Information:					
5	Foreign Reference	WO2004114239A3.pdf	138456 30a914047ce87a5f49486ad22842918fe8ce5cd9	no	4
Warnings:					
Information:					
6	Other Reference-Patent/App/Search documents	10560262_OA_03-04-09.pdf	181203 d27865bc6d823142dc7a5d0a2ffe664a25d98516	no	5
Warnings:					
Information:					
7	Other Reference-Patent/App/Search documents	10560262_OAF_08-17-09.pdf	218703 10ec5b326a7ff1dacedcc46fabe2236e4da39a65	no	6
Warnings:					
Information:					
8	Other Reference-Patent/App/Search documents	10560262_Advisory-Action_11-13-09.pdf	127703 45f06f644e6cd339d9cf27cf12e8dc9ae08c833e	no	3
Warnings:					
Information:					
9	Other Reference-Patent/App/Search documents	10560262_OA_12-24-09.pdf	216657 72712f27dcf7e9dd5735546903d248e84287bc59	no	6
Warnings:					
Information:					
10	Other Reference-Patent/App/Search documents	10560262_OAF_06-22-10.pdf	571966 2ac2a3035aa3f5e6fc6fd8684bdf3306f7ef08b2	no	14
Warnings:					
Information:					

11	Other Reference-Patent/App/Search documents	10560262_Notice_Advisory-Action_09-08-10.pdf	208671 3c80d2a90a5313f17c35d50b08cd9a9b4ba6f1c4	no	5
Warnings:					
Information:					
12	Other Reference-Patent/App/Search documents	10560262_Advisory-Action_10-13-10.pdf	145721 7202656c1c72bc07e1bdccf3c7e061426f28bac6	no	3
Warnings:					
Information:					
13	Other Reference-Patent/App/Search documents	10560262_OA_03-31-11.pdf	448926 3674abe6f0bab0f6547f3d9f630dde127521fc7c	no	12
Warnings:					
Information:					
14	Other Reference-Patent/App/Search documents	10560262_NOA_11-01-11.pdf	604432 3d822e4ed1d9474706a284a1ef2f148c224d9973	no	13
Warnings:					
Information:					
15	Other Reference-Patent/App/Search documents	13363202_OA_07-16-12.pdf	193140 8aef1136a004541de74e446ae8b8fff1d96aef02	no	5
Warnings:					
Information:					
16	Other Reference-Patent/App/Search documents	13363202_NOA_11-27-12.pdf	429266 3ed3e0c53763e4906178036897fa36697956f3c1	no	8
Warnings:					
Information:					
17	Other Reference-Patent/App/Search documents	2039-007_OA_03-14-14.pdf	2200300 83bea4470e82f55599808cda58179879d1aa70e8	no	10
Warnings:					
Information:					
18	Other Reference-Patent/App/Search documents	14097141_2039-007_OAF_09-16-14.pdf	1220663 babec36866bc87a5a4a76638767ac551a0149cc6	no	12
Warnings:					
Information:					
19	Other Reference-Patent/App/Search documents	2039-008_OA_03-31-14.pdf	2365652 5e31f44b7dee23a2433d30c482ddd8abec61f131	no	11
Warnings:					
Information:					

20	Other Reference-Patent/App/Search documents	2039-008_OAF_07-21-14.pdf	1134851 b9a8fd4ac5a774d131c11f0035021f072f1eaa84	no	12
Warnings:					
Information:					
			Total Files Size (in bytes):	13190496	

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application: Peter Zatloukal et al. Examiner: Daniel I. Walsh
Serial No.: 13/750,970 Art Unit: 2887
Filed: 01-25-2013
Attorney Docket No. 2039-006
For: **EMULATED RADIO FREQUENCY IDENTIFICATION**

Mail Stop IDS
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

In accordance with 37 C.F.R. § 1.56, counsel wishes to make of record additional items of information for the Examiner's consideration in connection with this patent application. Inclusion herein of any particular item of information is not to be construed as an admission that same is prior art.

Please consider the following related U.S. patent applications:

- U.S. Patent Application No. 14/097,141, filed December 4, 2013
- U.S. Patent Application No. 14/097,152, filed December 4, 2013

Any future publications and/or patents issuing from the above list of related U.S. patent applications, including U.S. continuation or divisional patent applications, may be material to the patentability of the claims of this patent application.

The Director is hereby authorized to charge any fees that may be required, or credit any overpayment, to Deposit Account No. 50-1732.

Respectfully submitted,

WITHROW & TERRANOVA, P.L.L.C.

By: /Matthew Selby/

Matthew J. Selby
Registration No. 70,765
100 Regency Forest Drive, Suite 160
Cary, NC 27518
Telephone: (919) 238-2300

Date: January 26, 2015
Attorney Docket: 2039-006

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	13/750,970	Filing Date	2013-01-25	Docket Number (if applicable)	2039-006	Art Unit	2887
First Named Inventor	Peter Zatloukal			Examiner Name	Daniel I. Walsh		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 501732

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/Matthew Selby/	Date (YYYY-MM-DD)	2015-01-21
Name	Matthew Selby	Registration Number	70765

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

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:

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Peter Zatloukal et al.
Serial No. 13/750,970
Filed: 01/25/2013
Attorney Docket No. 2039-006
For: **EMULATED RADIO FREQUENCY IDENTIFICATION**

Examiner: Daniel I. Walsh
Art Unit: 2887

Mail Stop AF
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

RESPONSE TO THE FINAL OFFICE ACTION MAILED JULY 22, 2014

In response to the Final Office Action mailed July 22, 2014, Applicant offers the following amendments and remarks. Applicant concurrently files a Request for Continued Examination and encloses a payment in the amount of $600 + $1,500 to cover the fees associated with a five-month Extension of Time; and Applicant requests that this be considered a petition for a five-month Extension of Time. If any additional fees are required in association with this response, the Director is hereby authorized to charge them to Deposit Account 50-1732, and to consider this a petition therefor.

Amendments to the Claims are reflected in the Listing of Claims beginning on page 2 of this Response.

Remarks begin on page 9 of this Response.

In the Claims:

1-60. (Cancelled)

61. (Currently Amended) A method for ~~providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication~~ emulating radio frequency identification (RFID) signals from a mobile communication device~~, the method~~ comprising:

receiving, by the mobile communication device, from an RFID reader external to the mobile communication device, an ~~instruction to output first~~ RFID probing signal ~~transponder data in a format compatible with said RFID reader~~;

~~switching the mobile communication device from a first state to a second state upon reception of said instruction, the mobile communication device being configured to output voice call signals in the first state and to output the first RFID transponder data in the format compatible with said RFID reader in the second state; and~~

determining, by the mobile communication device, whether the mobile communication device is in an operational space of the RFID reader based on the RFID probing signal; and

if the mobile communication device is in the operational space of the RFID reader, outputting, by the mobile communication device ~~in the second state, the first~~ an RFID signal responsive to the RFID probing signal ~~transponder data in the format compatible with said RFID reader;~~.

62. (Currently Amended) The method of claim 61, wherein ~~said~~ the mobile communication device ~~comprises a first signal processing unit configured to process the~~ is configured to process voice call signals and ~~a second signal processing unit configured to process~~ the RFID signals~~, said switching comprising coupling the second signal processing unit to a transmission path~~.

63. (Currently Amended) The method of claim 61, wherein ~~said~~ the RFID signal includes ~~first~~ RFID ~~transponder~~ data ~~comprises~~ comprising a selected one of a security key and an identifier.

64. (Currently Amended) The method of claim 63, wherein ~~said~~ the security key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

65. (Currently Amended) The method of claim [[61]] 63, wherein ~~said~~ the ~~first RFID transponder data comprises an identifier, and said~~ identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

66. (Currently Amended) The method of claim [[61]] 63, wherein the method further comprises facilitating a user in selecting the ~~first~~ RFID ~~transponder~~ data from a plurality of the RFID ~~transponder~~ data using the mobile communication device.

67. (Currently Amended) The method of claim [[61]] 63, wherein the method further comprises facilitating provision of the ~~first~~ RFID ~~transponder~~ data to the mobile communication device.

68. (Currently Amended) The method of claim 67, wherein ~~said~~ facilitating ~~of the~~ provisioning of the RFID ~~transponder~~ data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID ~~transponder~~ data ~~in the format compatible with said RFID reader~~.

69-71. Cancelled.

72. (Previously Presented) The method of claim 61, wherein the mobile communication device is a selected one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

73. (Currently Amended) A method for ~~providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call~~

~~communication~~ emulating radio frequency identification (RFID) signals from a mobile communication device~~, the method~~ comprising:

monitoring, by the mobile communication device, for a proximal presence of ~~a proximal~~ an RFID reader external to ~~said~~ the mobile communication device, the monitoring comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader; ~~by said mobile communication device, the mobile communication device having communication circuitry configured to:~~

outputting, by the mobile communication device ~~output, in a first state,~~ an RFID signal ~~transponder data in a format compatible with said RFID reader~~ upon the mobile communication device determining the proximal presence of ~~said~~the RFID reader[[,]]; and

outputting, by the mobile communication device, ~~the communication circuitry being also configured to output, in a second state,~~ a voice call signal for transmission at least in part over a wireless network~~; and~~

~~on detection of said RFID reader, outputting, by a transceiver, the RFID transponder data in the format compatible with said RFID reader as a radio frequency signal~~.

74. Cancelled.

75. (Currently Amended) The method of claim 73, wherein the RFID signal ~~said data comprise[[s]]~~ includes RFID data comprising a security key.

76. (Currently Amended) The method of claim 75, wherein ~~said~~ the security key comprises a door key.

77. (Currently Amended) The method of claim 76, wherein ~~said~~ the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

78. (Currently Amended) The method of claim 73, wherein the method further comprises facilitating provision of the RFID ~~transponder~~ data to the mobile communication device.

79. (Currently Amended) The method of claim 78, wherein ~~said~~ facilitating ~~of the~~ provisioning of the RFID ~~transponder~~ data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID ~~transponder~~ data ~~in the format compatible with the RFID reader~~.

80. (Previously Presented) The method of claim 73, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

81. (Currently Amended) A mobile communication device ~~capable of RFID communication and voice call communication, the mobile communication device~~ comprising:

communication circuitry configured to output voice call signals in a first radio frequency range and [[to]] output ~~first~~ radio frequency identification (RFID) ~~transponder data~~ signals in a second radio frequency range;

a ~~joint~~ storage medium ~~storing the first RFID transponder data and storing~~ including instructions for the communication circuitry to:

- monitor for a proximal presence of ~~one or more~~an RFID reader[[s]] external to the mobile communication device, the monitoring comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader; ~~and~~
- output ~~the~~ a voice call signal for transmission over a wireless network; and
- output an ~~the first~~ RFID signal ~~transponder data as RFID transponder signals in a format employed by a proximal RFID reader~~ [[,]] in response to detection ~~by the mobile communication device~~ of the proximal presence of ~~the one or more~~ an RFID ~~readers~~ reader external to the mobile communication device.

82. (Currently Amended) The mobile communication device of claim 81, wherein ~~said first~~ the RFID ~~transponder data~~ signal includes RFID data comprising ~~comprises~~ a selected one of a security key and an identifier.

83. (Currently Amended) The mobile communication device of claim 82, wherein ~~said first RFID transponder data comprises the security key, and said~~ the security key comprises a door key.

84. (Currently Amended) The mobile communication device of claim 83, wherein ~~said~~ the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

85. (Currently Amended) The mobile communication device of claim 82, wherein ~~said first RFID transponder data comprises the identifier, and said~~ the identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

86. (Currently Amended) The mobile communication device of claim [[81]]82, wherein the instructions are further designed to facilitate a user in selecting the ~~first~~ RFID ~~transponder~~ data from a plurality of RFID ~~transponder~~ data.

87. (Currently Amended) The mobile communication device of claim [[81]]82, wherein the instructions are further designed to facilitate provision of the ~~first~~ RFID ~~transponder~~ data to the mobile communication device.

88. (Currently Amended) The mobile communication device of claim 87, wherein the instructions are further designed to include ~~with said facilitating,~~ provisioning of at least a signaling attribute associated with ~~the outputting of~~ the ~~first~~ RFID ~~transponder~~ data in the form of a radio frequency signal.

89. Cancelled.

90. (Currently Amended) The mobile communication device of claim [[81]]82, wherein the ~~first~~ RFID ~~transponder~~ data includes information identifying a user.

91. (Currently Amended) The mobile communication device of claim 81, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

92. (Currently Amended) A mobile communication device ~~capable of radio frequency identifier (RFID) communication and voice call communication, the mobile communication device~~ comprising:

communication circuitry configured to transmit [[a]] voice call signals ~~in a first operational state~~ and [[a]] RFID ~~transponder~~ signals ~~in a second operational state~~;

~~a storage medium storing first data and instructions for the communication circuitry to selectively~~ a control system configured to cause the communication circuitry to:

[[(a)]] monitor for a proximal presence of ~~a proximal~~ an RFID reader external to the mobile communication device, the monitoring comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader; ~~and~~

on detection of the proximal RFID reader, output an RFID signal; and ~~transponder data as an RFID signal in a format employed by the proximal RFID reader,~~

[[(b)]] transmit [[the]] a voice call signal to another mobile communication device at least in part over a wireless network.

93. Cancelled.

94. (Currently Amended) The mobile communication device of claim 92, wherein ~~said~~ the RFID signal ~~transponder data comprises~~ includes RFID data comprising a security key.

95. (Currently Amended) The mobile communication device of claim 94, wherein ~~said~~ the security key comprises a door key.

96. (Currently Amended) The mobile communication device of claim 95, wherein ~~said~~ the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

97. (Currently Amended) The mobile communication device of claim 92, wherein ~~the instructions are further designed~~ the control system is further configured to facilitate provision of ~~the~~ RFID ~~transponder~~ data to the mobile communication device.

98. (Currently Amended) The mobile communication device of claim 97, wherein ~~the instructions are further designed~~ the control system is further configured to include ~~with said facilitating,~~ provisioning of at least a signaling attribute associated with the outputting of the RFID ~~transponder~~ data in the form of a radio frequency signal.

99. (Currently Amended) The mobile communication device of claim 92, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

REMARKS

Applicant has carefully reviewed the Final Office Action mailed July 22, 2014, (hereinafter "Office Action"), and respectfully request reconsideration of the subject application, particularly in view of the above amendments and the following remarks.

Status of the Claims

Claims 61-99 were previously pending. No claims are added herein. Claims 69-71, 74, 89, and 93 are cancelled herein. Claims 61-68, 73, 75-79, 81-88, 90-92, and 94-99 are amended herein. Accordingly, claims 61-68, 72, 73, 75-88, 90-92, and 94-99 remain pending.

Rejection Under 35 U.S.C. § 103(a) – Zalewski

Claims 61-70, and 72-99 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,771,981 B1 to Zalewski et al. (hereinafter "Zalewski." Applicant respectfully traverses. Claims 61, 73, 81, and 92 are independent claims.

When determining whether a claim is obvious, an Examiner must make "a searching comparison of the claimed invention—*including all its limitations*—with the teaching of the prior art." *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis added). Thus, "obviousness requires a suggestion of all limitations in a claim." *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)). Moreover, as the Supreme Court recently stated, "*there must be some articulated reasoning* with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418, 82 U.S.P.Q.2d (BNA) 1385, 1396 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (emphasis added)).

Claim 61 has been amended to require determining, by a mobile communication device, whether the mobile communication device is in an operational space of an RFID reader based on an RFID probing signal received from the RFID reader. To support these amendments, Applicant respectfully refers the Patent Office to paragraphs [0041] and [0042] of Applicant's specification. Zalewski completely fails to describe at least these features. As discussed in Applicant's response to the Office Action mailed April 01, 2014, Zalewski describes a mobile station with a changeable cover. The changeable cover includes a radio frequency identification (RFID) transponder. As discussed throughout Zalewski, the RFID transponder "is responsive to

interrogation by an electric field." In other words, and as discussed in the declaration of Roger Stewart filed along with the present response, "the RFID transponder described in Zalewski is a passive type RFID transponder that does not include a power source."

In contrast to Zalewski, which attaches a passive RFID transponder to a mobile station via a changeable cover, claim 61 is primarily concerned with *emulating* an RFID transponder by a mobile communication device. In order to emulate the functionality of an RFID transponder, the mobile communication device must determine whether it is in the operational space of an intended RFID reader before communicating therewith. As will be appreciated by those of ordinary skill in the art and detailed in the declaration by Roger Stewart filed along with the present response, the operational space of an RFID reader refers to "the area surrounding an RFID reader in which a conventional RFID transponder will respond to an RFID probing signal from the RFID reader." This operational space may be different for different types of RFID signals, but is important to consider due to the security implications discussed below. Absent this step of determining whether the mobile device is in the operational space of the RFID reader, the mobile communication device may unintentionally communicate with an RFID reader that is not proximal to the device, thereby compromising the security of the RFID exchange. That is, since a great deal of the security involved with RFID technology is based on proximity, this must be taken into account by the mobile communication device when emulating such functionality. More specifically, as will be appreciated by those of ordinary skill in the art and detailed in the declaration by Roger Stewart filed along with the present response, due to the sensitivity thereof, "active communications circuitry may detect RFID probing signals meant for conventional RFID transponders outside of the intended operating space of the RFID reader generating the RFID probing signals in certain circumstances." If a mobile communication device were to respond to these probing signals, it could pose a large security risk and inadvertently overload and shut down the operation of nearby readers. For example, responding to an RFID probing signal outside of the operational space of an RFID reader could lead to a user to unintentionally unlock a door or make a mobile payment with their mobile communication device. Accordingly, it is important for a mobile communication device to determine whether it is in the operational space of an RFID reader before responding thereto in order to provide an adequate level of security.

As will be appreciated by those of ordinary skill in the art and detailed in the declaration by Roger Stewart filed along with the present response, the passive RFID transponder used in Zalewski will either obtain sufficient energy from a nearby electric field to power on or it will remain off. In other words, there is no determination of whether the RFID transponder in Zalewski is in the operational space of an RFID reader (or an interrogating electric field), because the passive nature of the RFID transponder (specifically, the fact that it does not include a power source) ensures that the RFID transponder will not turn on unless it obtains enough energy from a nearby electric field (which coincides with the operational space of an RFID reader). If the RFID transponder receives sufficient energy from a nearby electric field to power on, it will respond absent any determination regarding whether or not the device is within the operational space of a reader. Indeed, Zalewski provides absolutely no guidance regarding how the RFID transponder and/or mobile station could or should determine if they are in the operational space of an RFID reader, as they do not need to and are not equipped to perform such a task. Accordingly, claim 61 is allowable, and such action is respectfully requested at this time.

Independent claims 73, 81, and 92 have been amended to include features similar to those of claim 61. Accordingly, claims 73, 81, and 92 are allowable for at least the same reasons as claim 1, and such action is respectfully requested.

Dependent claims 62-68, 72, 75-80, 82-88, 90, 91, and 94-99 are patentable for at least the same reasons as their base claims, as well as on their own merits. Accordingly, Applicant respectfully submits that the current rejection should be withdrawn.

Rejection Under 35 U.S.C. § 103(a) – Zalewski and Overhultz

Claims 69-99 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Zalewski in view of U.S. Patent No. 6,837,427 to Overhultz et al. (hereinafter "Overhultz"). Applicant respectfully traverses. The standards for obviousness are set forth above.

Independent claims 73, 81, and 92 are patentable over Zalewski for the reasons stated above. As discussed in detail in the declaration by Roger Stewart filed along with the present response, Overhultz does not remedy the deficiencies of Zalewski. Specifically, Overhultz describes an advertising compliance system that utilizes RFID tags to determine compliance with an advertising campaign at a storefront. According to Overhultz, RFID tags are placed on advertising materials and identified by one or more RFID readers to determine if the advertising

materials have been properly displayed. The RFID tags described in Overhultz may be passive RFID tags or active RFID tags. In the case of the passive RFID tags described in Overhultz, communication is achieved by inductively coupling the reader and the tag.[1] In the case of the active RFID tags described in Overhultz, the tags are responsive to an "interrogation signal" from an RFID reader.[2] When an active tag in Overhultz receives an interrogation signal, it verifies the validity of the interrogation signal then responds. Notably, nothing in Overhultz describes the feature of determining whether a device is in an operational space of an RFID reader based on an RFID probing signal received from the RFID reader. While Overhultz does describe verifying the validity of an interrogation signal, this is not equivalent to determining if a device is in the operational space of an RFID reader. Specifically, while Overhultz is concerned with determining if a received RF signal is in fact an interrogation signal, claim 61 is concerned with whether or not an RFID probing signal was sent from an RFID reader with an operational space in which the mobile communication device is currently located. In the case of the passive RFID tags described in Overhultz, these tags will only power on and thus respond to an interrogation signal when they are in the operational space of an RFID reader as discussed above, and thus have no need to make a determination regarding whether or not such a tag is within the operational space of an RFID reader. With respect to the active RFID tags described in Overhultz, these tags will respond to a received interrogation signal that is determined to be valid completely independent of where they are located with respect to the RFID reader so long as they receive a valid interrogation signal. In other words, as detailed in the declaration of Roger Stewart filed along with the present response, "if the active RFID tags described in Overhultz receive an interrogation signal, they will respond thereto without any determination regarding whether or not they are in the operational space of the reader that sent the signal." In either case, Overhultz completely fails to describe determining whether or not a device is within the operational space of an RFID reader. Accordingly, claim 61 is allowable, and such action is respectfully requested at this time.

Dependent claims 72, 75-80, 82-88, 90, 91, and 94-99 are patentable for the same reasons as their base claims, as well as on their own merits. Applicant respectfully submits that this rejection should be withdrawn.

---

[1] *Overhultz*, column 5, lines 21-40.
[2] *Id.* at column 5, lines 40-54.

Rejection in Copending U.S. Case - Chetty & Gangi

In copending U.S. Patent Application No. 14/097,141, the Patent Office cited U.S. Patent Application Publication No. 2002/0052193 A1 to Chetty (hereinafter "Chetty") along with U.S. Patent Application Publication No. 2008/0059374 A1 to Gangi (hereinafter "Gangi") to reject one or more of the claims. In an effort to expedite prosecution, Applicant will now address Chetty and Gangi as they relate to the current claims. Similar to Zalewski and Overhultz discussed above and as detailed in the declaration by Roger Stewart filed along with the present response, neither Chetty nor Gangi, either alone or in combination, describe determining, by a mobile communication device, whether the mobile communication device is in an operational space of an RFID reader based on an RFID probing signal received from the RFID reader. While Chetty refers to a "portable unit" capable of storing and providing "remote codes," Chetty does not describe that these remote codes could or should be communicated via RFID signals. In fact, Chetty completely fails to describe a scheme in which an RFID reader (or any other device) requests a remote code from the portable unit, upon which time the portable unit provides the remote code. In other words, as discussed in the declaration of Roger Stewart filed along with the present response, "Chetty does not describe an interrogation/response operating scheme to exchange data at all," instead merely describing a unilateral initiation of communication from the portable unit to an external device such as a garage door. Accordingly, there is absolutely no reason for the portable unit in Chetty to determine if it is in the operational space of an RFID reader (or any other device for that matter), because Chetty does not even contemplate receiving an RFID probing signal (or any other interrogation signal) to which the portable unit should respond.

Gangi similarly fails to describe the aforementioned features of claim 61. Instead, Gangi describes a "wallet consolidator" that may store and provide various information such as magnetic stripe information and barcode information to, for example, a point of sale terminal. While Gangi does discuss using a communications mechanism to provide stored information to a point of sale terminal, Gangi does not specifically describe the use of RFID at all. As discussed in the declaration of Roger Stewart filed along with the present response, "Gangi does not describe an interrogation/response operating scheme to exchange data," instead merely describing a unilateral initiation of communication from the wallet consolidator to a point of sale terminal. Accordingly, there is no reason for the wallet consolidator in Gangi to determine if it is

the operational space of an RFID reader (or any other device for that matter), because Gangi does not even contemplate receiving an RFID probing signal (or any other interrogation signal) to which the wallet consolidator should respond.

Even the combination of Chetty and Gangi fails to describe at least the aforementioned features of claim 61. Specifically, since neither Chetty nor Gangi describe determining, by a mobile communication device, whether the mobile communication device is in an operational space of an RFID reader based on an RFID probing signal received from the RFID reader, the combination fails to describe each and every feature of the claim. Accordingly, claim 61 is allowable, and such action is respectfully requested at this time.

Independent claims 73, 81, and 92 include features similar to those of claim 61. Accordingly, claims 73, 81, and 92 are allowable for at least the same reasons as claim 61, and such action is respectfully requested.

Dependent claims 62-68, 72, 75-80, 82-88, 90, 91, and 94-99 are patentable for at least the same reasons as their base claims, as well as on their own merits. Accordingly, Applicant respectfully submits that the current rejection should be withdrawn.

Conclusion

The present application is now in condition for allowance and such action is respectfully requested. The Examiner is encouraged to contact Applicant's representative regarding any remaining issues in an effort to expedite allowance and issuance of the present application.

Respectfully submitted,

WITHROW & TERRANOVA, P.L.L.C.

By: /Matthew Selby/

Matthew J. Selby
Registration No. 70,765
100 Regency Forest Drive, Suite 160
Cary, NC 27518
Telephone: (919) 238-2300

Date: January 21, 2015
Attorney Docket: 2039-006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Zatloukal et al.
Serial No. 13/750,970
Filed: 01/25/2013
Attorney Docket No. 2039-006
For: **EMULATED RADIO FREQUENCY IDENTIFICATION**

Examiner: Daniel Walsh
Art Unit: 2887

Mail Stop AF
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

DECLARATION UNDER 37 C.F.R. § 1.132

I, Roger Stewart, hereby declare that:

1. I have read the Patent Application and the currently pending claims enclosed herein as Exhibit A ("Application as Filed") and Exhibit B ("Current Claims") and am familiar with the subject matter thereof.

2. I have over 37 years of industry experience working with radio frequency identification (RFID) technologies, am a named inventor on 45 patents and/or patent applications in the RFID technology area, and have authored 15 published papers relating to RFID technology, as described in my resume, which is enclosed herein as Exhibit C ("Stewart Resume"). I hold a Masters Degree in Electrical Engineering. Most of my engineering career has involved RFID technologies; including developing the non-volatile memory and building the world's first high-volume RFID chips at Alien Technology Corporation in Morgan Hill, CA. I also have significant experience working with and understanding patent applications in my work managing hundreds of patent applications for RCA Laboratories, the Sarnoff Corporation, Alien Technology Corporation, Intelleflex, AWID, and others. Further, I have been providing patent consulting services and expertise on a full-time basis since 2006 in my current role as President of Sourland Mountain Associates LLC.

3. Upon reading the Application as Filed, I understand the term "operational space" used in the Application as Filed to refer to the "area" or "range" surrounding an RFID reader in which a conventional passive RFID transponder can respond successfully to an RFID probing signal from the

RFID reader. Conventional passive RFID transponders do not include a power source and are therefore intrinsically insensitive to anything but the very strongest and nearby reader signals. In contrast, an RFID probing signal intended for a passive RFID transponder may be detected by an active receiver well outside of the reader's operational space -- typically at distances more than a 1000 times further away from the reader than a passive tag. A conventional passive RFID transponder cannot respond to an RFID probing signal outside of the reader's operational space because there is insufficient energy in the reader's electric field to power the conventional passive RFID transponder at distances more than a few feet away. In contrast, an active receiver can often detect such reader signals several miles away.

Therefore all conventional RFID transponders -- whether passive or active -- respond to any RFID probing signal that they can receive, without any regard for whether the tag is within the reader's operational space or not. More sensitive active tag receivers that are outside the intended operating space of the RFID reader will often detect RFID probing signals that were meant for conventional RFID transponders within the operational space, and therefore trigger unwanted RFID tag responses.

4. I have read and understand U.S. Patent No. 6,771,981 B1 to Zalewski et al., enclosed herein as Exhibit D ("Zalewski"). It is my opinion that the RFID transponder described in Zalewski is a passive type RFID transponder without any internal power source. Accordingly, the RFID transponder described in Zalewski must obtain sufficient energy from a nearby electric field in order to power itself and communicate with an RFID reader. The passive RFID transponder described in Zalewski may receive sufficient energy to power itself only when it is in the operational space of an RFID reader, but not when outside of the operational space thereof.

5. It is my opinion that Zalewski does not describe the feature of *"determining, by a mobile communication device, whether the mobile communication device is in an operational space of an RFID reader based on an RFID probing signal received from the RFID reader"*. Zalewski describes attaching a passive RFID transponder to a mobile station via a changeable cover. Because this passive RFID transponder does not include a power source, it must be powered by an external electric field of a sufficient magnitude, which is present inside of the operational space of an RFID reader but not outside the operational space thereof. Because the passive RFID transponder described in Zalewski only powers on within the operational space of an RFID reader, it does not need to, and indeed does not, determine whether it is in the operational space of an RFID reader.

6. I have read and understand U.S. Patent Application Publication No. 2008/0059374 A1 to Gangi, enclosed herein as Exhibit E ("Gangi"), which has been cited in copending U.S. Patent Application No. 14/097,141. It is my opinion that Gangi does not describe the feature of "*determining, by a mobile communication device, whether the mobile communication device is in an operational space of an RFID reader based on an RFID probing signal received from the RFID reader*". Gangi does not describe using RFID at all. Further, Gangi does not describe an interrogation/response operating scheme to exchange data. Because Gangi does not even describe an interrogation/response operating scheme to exchange data, there is no need for Gangi to describe determining if a device is in an operational space of an RFID reader (or any other interrogation device) before responding.

7. I have read and understand U.S. Patent Application Publication No. 2002/0052193 A1 to Chetty, enclosed herein as Exhibit F ("Chetty"), which has been cited in co-pending U.S. Patent Application No. 14/097,141. It is my opinion that Chetty does not describe the features of "*determining, by a mobile communication device, whether the mobile communication device is in an operational space of an RFID reader based on an RFID probing signal received from the RFID reader*". While Chetty describes the use of "remote codes," there is nothing in Chetty to indicate that these "remote codes" are RFID signals. Specifically, Chetty does not describe an interrogation/response operating scheme to exchange data at all, let alone doing so via an RFID reader and/or RFID probing signal. Because Chetty does not even describe an interrogation/response operating scheme to exchange data, there is no need for Chetty to describe determining if a device is in an operational space of an RFID reader (or any other interrogation device) before responding.

8. I have read and understand U.S. Patent No. 6,837,427 B2 to Overhultz et al., enclosed herein as Exhibit G ("Overhultz"). It is my opinion that Overhultz does not describe the features of "*determining, by a mobile communication device, whether the mobile communication device is in an operational space of an RFID reader based on an RFID probing signal received from the RFID reader*". While Overhultz describes both passive and active RFID tags, in the case of the passive RFID tags, these tags make no determination regarding whether or not they are in the operational space of an RFID reader as discussed above. With regard to the active RFID tags, while Overhultz does describe these tags responding to an interrogation signal, it does not describe these tags "*determining if they are in the operational space of an RFID reader*" before responding to an interrogation signal.

Rather, if the active RFID tags described in Overhultz receive an interrogation signal, they will respond thereto without any determination regarding whether or not they are in the operational space of the reader that sent the signal.

9. I hereby declare that all declarations 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.

Roger G. Stewart

Roger G. Stewart

January 21, 2015

Date

EXHIBIT

A

EMULATED RADIO FREQUENCY IDENTIFICATION

RELATED APPLICATION

This application is a non-provisional application of provisional application number 60/478,245, titled "Radio Frequency Identification Using Mobile Communication Device", filed on June 13, 2003, and claims priority to said provisional application.

FIELD OF THE INVENTION

The present invention relates to the fields of security, communication, and data processing. More specifically, the present invention is related to an emulated radio frequency data input method.

BACKGROUND OF THE INVENTION

It wasn't that long ago, even residents in medium size cities still feel secured enough to leave their homes unlocked and/or their garages open. In general, one can access one's place of employment, including parking facilities as well as one's office without identification or access keys.

In the world of commerce, things were also simpler. One typically may shop and consume goods and services, at relatively low prices, without having to be affiliated with any programs or entities.

However, the world has become a lot more complex in recent years. Virtually, all properties of any value, premises, including one's home, have to be secured, even for relatively small towns and cities. One can hardly shop and consume any goods and services, without having signed up with some promotional frequent "usage" programs or becoming affiliated with the commercial entities. The employment of affinity marketing has reached a point even neighboring grocery chains employ them, and not just airlines, hotels, or wholesale discount retailers.

As a result, it is not uncommon to find a person having to carry a number of physical keys and access/identification cards/tags to gain access to secured premises, such as one's home, office, parking garage, and so forth. Additionally, the

person is likely to carry a number of remote security control devices, such as a key with remote control for gaining access to his/her vehicle, a garage door opener for gaining access to the person's garage at home, and so forth. The person is also likely to carry a number of affinity identification cards with member identifiers identifying the person as being affiliated with certain co-op or frequent patronage programs, such as wholesale discount retailers, airline or hotel frequent traveler program, and so forth, that entitle the person to certain benefits, such as discounts or rewards.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references denote similar elements, and in which:

Figure 1 illustrates an overview of the present invention, in accordance with one embodiment;

Figure 2 illustrates a method view of the present invention, in accordance with one embodiment;

Figure 3 illustrates the relevant hardware elements of the device of **Fig. 1** in further details, in accordance with one embodiment;

Figure 4 illustrates the transceiver of **Fig. 3** in further details, in accordance with another embodiment;

Figures 5a-5b illustrate the exploded views of two embodiments of the mobile communication device of **Fig. 1**;

Figures 5c-5d illustrate an exploded view of another embodiment of the mobile communication device of **Fig. 1**;

Figure 6a-6h illustrate a number of example screens of an end user interface, suitable for use to practice the present invention, in accordance with one embodiment; and

Figure 7 illustrates the operational flow of the relevant aspects of the software in support of the RFID feature of the present invention, in accordance with one embodiment.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

Embodiments of the present invention includes an emulated RFID method, more specifically, an emulated RFID method, using a mobile communication device, including the device itself, and certain hardware and/or software embodied therein for the practice of the emulated RFID method.

In the following description, various aspects of the illustrative embodiments of the present invention will be described. However, alternate embodiments may be practiced with only some or all aspects of the illustrative embodiments of the present invention. For purposes of explanation, specific numbers, materials and configurations are set forth in order to provide a thorough understanding of the present invention. However, alternate embodiments may be practiced without the specific details. In other instances, well-known features are omitted or simplified in order not to obscure the essence of the illustrative embodiments of the present invention.

Terminology

Parts of the description will be presented in data processing terms, such as data, selection, retrieval, generation, and so forth, consistent with the manner commonly employed by those skilled in the art to convey the substance of their work to others skilled in the art. As well understood by those skilled in the art, these quantities take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, and otherwise manipulated through electrical and/or optical components of a processor and its subsystems.

Part of the descriptions will employ various abbreviations, including but are not limited to:

CDROM	Compact Disc Read Only Memory
DDRAM	Dynamic Direct Random Access Memory
DVD	Digital Versatile Disc
EEPROM	Electrically Eraseable Programmable Read-Only-

	Memory
HTTP	HyperText Transmission Protocol
SDRAM	Static Direct Random Access Memory
SMS	Small Messaging Service

The term "number" as used in this application to describe a data, including both its usage in the specification and the claims, typically refers to numeric data, as the word "number" is conventionally used in mathematics. However, in certain contexts, the "number" may also include alphabet or special characters, as the term is conventionally understood by those skilled in the art in those contexts. For examples, a driver's license number, a passport number, an employee number, or a student ID number, as each of these terms is conventionally used, often includes one or more alphabets or special characters, even though they are referred to as "numbers". The term accordingly is to be given the meaning that is consistent with the context under which the term is used.

Section Headings, Order of Descriptions and Embodiments

Section headings are merely employed to improve readability, and they are not to be construed to restrict or narrow the present invention.

Various operations will be described as multiple discrete steps in turn, in a manner that is most helpful in understanding the present invention, however, the order of description should not be construed as to imply that these operations are necessarily order dependent. In particular, these operations need not be performed in the order of presentation.

The phrase "in one embodiment" is used repeatedly. The phrase generally does not refer to the same embodiment, however, it may. The terms "comprising", "having" and "including" are synonymous, unless the context dictates otherwise.

Overview

Refer now to **Figure 1**, wherein a block diagram illustrating an overview of the present invention **100**, in accordance with one embodiment, is shown. As illustrated, for the embodiment, mobile communication device **102** is equipped with hardware and/or software elements **104** to perform its primary function, which is to facilitate a user of device **102** to engage in communication with another user of another communication device (not shown). In various embodiments, the communication may be audio (such as phone calls), textual (such as messaging) and/or visual (such as airtexting using light sources). Additionally, for the embodiment, mobile communication device **102** is equipped with hardware and/or software elements **106** to facilitate provision or transfer of a key/identifier in a form a radio frequency signal **110**, which may be read e.g. by a radio frequency identifier (RFID) reader **120**. In turn, the provision of RFID **110** may be responded to by a system (not shown) with which RFID reader **120** is a part or coupled to.

As depicted in **Fig. 1**, blocks **104** and **106** "intersect" with one another. The "intersection" represents the fact that in preferred embodiments of the present invention, substantial portions of the hardware and/or software elements employed to provide a RFID, are the same elements employed to facilitate the primary function of device **102**, i.e. to facilitate a user in communicating with another user of another communication device.

In other words, illustrative embodiments of the present invention advantageously leverage on existing elements of mobile communication device **102**, and supplement them, to enable mobile communication device **102** to be able to provide a RFID, emulating a RFID transponder, as well as facilitating user communication.

As will be described in more detail below, in preferred embodiments, mobile communication device **102** is equipped to provide RFID, emulating an active and/or a passive RFID transponder.

Further, RFID **110** may be any keys and/or identifiers, including but not limited to security keys, such as garage door "keys", exterior or interior door keys, or identifiers, such as, employee numbers, driver's license numbers, social security

numbers, credit card numbers (optionally, including expiration dates), affinity program member identifiers, and so forth.

Continue to refer to **Fig. 1**, except for the present invention incorporated therein, mobile communication device **102** represents a broad range of mobile communication devices known in the art, including but are not limited to wireless mobile phones and personal digital assistants equipped with communication capability.

The term "wireless mobile phone" as used herein, including the specification and the claims, refers to the class of telephony devices equipped to facilitate a user in communicating with another user of another communication device, notwithstanding the user's movement around different geographic areas, so long the wireless mobile phone is in contact with a base/service station of a wireless network service provider. The term includes the analog as well as the digital subclasses. Communication may be voice and/or data, audio, textual and/or visual. The other user/communication device may be mobile or land line based.

RFID reader **120** represents a broad range of such devices known in the art or to be designed. Currently, most RFID readers **120** employ proprietary formats/protocols. That is, RFID readers **120** of different manufacturers tend to employ different frequencies, amplitudes, and/or keying schemes (which may be frequency shifting keying (FSK), amplitude shifting keying (ASK) or phase shifting keying (PSK)).

Various embodiments of the methods of the present inventions, including elements **106**, in particular, added elements, will be described in turn below.

Method

Figure 2 illustrates a method view of the present invention, in accordance with one embodiment. As illustrated, device **102** is first provided with the RFIDs, block **202**. The RFIDs may be provided in any one of a number of known or to be designed manners, including but are not limited to

- manual entry, using a keypad of device **102**,

- read into device **102**, from an access/identification card, using a magnetic or optical card reader of device **102**,

- downloaded into device **102**, from a coupled computing device, through a serial/parallel port of device **102** or through a network interface of device **102** using SMS or HTTP messages.

Typically, provision of a RFID will include the manner the RFID is to be outputted, i.e. signaled. As alluded to earlier, the manner it is to be signaled is dependent on the format/protocol employed by the intended RFID reader **120**. For examples, for a garage door key, the format/protocol employed by RFID reader **120** of the garage opener system, and for an affinity program member identifier, the format/protocol employed by RFID reader **120** of the point-of-sale system of the entity offering the affinity program.

Alternatively, a default signaling format/protocol, such as an industry standard, the most popular proprietary format/protocol, or a selected proprietary format/protocol may be assumed instead, when one is not provided.

During operation, in response to a user instruction, typically after the user has selected the RFID to be outputted from a number of RFIDs stored in device **102**, block **203**, device **102** outputs the selected RFID as instructed, emulating an active RFID transponder, block **204**.

For the embodiment, one RFID, e.g. an access key/identifier (such as an employee number), may also be selected/designated as a default RFID, the output of which may be emulated in a passive manner. That is, the selected/designated default RFID will be outputted automatically, whenever device **102** is within the proximal presence, or more specifically, the operational space, of an intended RFID reader **120**.

Accordingly, device **102** monitors for probing signals of an intended RFID reader **120** (or a type of RFID readers **120**), to determine whether device **102** is within the operational space of such a RFID reader **120**, block **205**. On so determining, device **102** outputs the designated RFID automatically, emulating a passive RFID transponder, block **206**.

A Hardware/Software Implementation

Figure 3 illustrates the relevant elements of device **102**, in accordance with one embodiment. As illustrated, for the embodiment, device **102** includes processor **302**, memory **304**, persistent store **306**, transceiver **308**, and a number of other components **310**, coupled to each other via bus **312**.

Persistent store **306** and memory **304** are employed to store permanent and working copies of a software implementation of the operating logic **320** of device **102**, including the supplemental RFID feature **322**. In various embodiments, persistent store **306** may be an EEPROM (or like kind variants, such as a Flash Memory, a Memory Stick), a magnetic or optical disk drive, a CDROM, a DVD drive and so forth. Memory **304** may be any SDRAM, DDRAM or other high speed volatile as way as non-volatile storage devices known in the art.

Processor **302** is employed to execute operating logic **320**, including RFID feature **322**. As will be readily apparent from the description to follow, operating logic **320** may be implemented in any one of a number of suitable system programming languages, including but not limited to high level languages that may be compiled into executable instructions supported by processor **302**. Processor **302** may be any one of a number of processors designed or to be designed for mobile devices.

Except for transceivers **308**, RFID feature **322** and the manner the various elements of **Fig. 3** are used to practice the present invention, the other illustrated elements are known in the art, and accordingly will not be further described. One embodiment of transceiver **308** will be described referencing **Fig. 4**, and one embodiment of RFID feature **322** will be described, referencing **Fig. 6-7**.

As described earlier, processor **302**, memory **304**, persistent store **306** and bus **312** may be shared elements of device **102**, also employed to implement the primary communication function of device **102**. However, in alternate embodiments, dedicated elements may be employed for some or all of these elements instead.

In one embodiment, device **102** is a wireless mobile telephone, an exploded view of which is illustrated in **Fig. 5a**. Wireless mobile phone **500**, in addition to the earlier described elements, also includes display **506**, control buttons **504**, keypad

502, antenna **508**, body **512** and cover **514**. Body **512** is substantially rectangular in shape. Further, body **512** is palm-sized or smaller.

For the embodiment, cover **514** includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance phone **500**. Phone **500** includes complementary electronic component interface **516** in support of such personalization, customization and/or enhancement.

Cover **514** may form a part of housing **512**, i.e. a required element to complete phone **500**, or it may be an accessory to be adorned by phone **500**, i.e. not a required element to complete phone **500**.

In another embodiment, device **102** is a PDA, an exploded view of which, is illustrated in **Fig. 5b**. PDA **502**, in addition to the earlier described elements, also includes display **524**, control buttons **522**, antenna **526**, body **532**, and cover **534**. Body **530** is also substantially rectangular in shape, as well as palm-sized or smaller.

Similarly, for the embodiment, cover **534** includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance PDA **520**. PDA **520** includes complementary electronic component interface **536** in support of such personalization, customization and/or enhancement.

Cover **534** may form a part of housing **532**, i.e. a required element to complete PDA **520**, or it may be an accessory to be adorned by PDA **520**, i.e. not a required element to complete PDA **520**.

Figure 5c-5d illustrate yet another embodiment of device **102**, another wireless mobile telephone, an exploded view of which is illustrated. Wireless mobile phone **540** is similarly constituted as the earlier described embodiments, including body **542** and cover **544**. However, body **542** has a substantially boomerang or banana shape. Body **542** is also typically palm-sized or smaller.

For the embodiment, cover **544** also includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance phone **540**. Phone **540** includes complementary electronic component interface (not shown) in support of such personalization, customization and/or enhancement.

Cover **544** may form a part of housing **542**, i.e. a required element to complete phone **540**, or it may be an accessory to be adorned by phone **540**, i.e. not a required element to complete phone **540**.

In all or selected one(s) of these embodiments, some or all elements **106** in support of the RFID feature of the present invention may be provided through embedded electronic components of the housing/accessory covers.

Smart covers are the subject matters of subject matter of co-pending U.S. Application, number 10/087,098, filed March 1, 2002, entitled "Personalizing Electronic Devices and Smart Covering", and U.S. Application, number <insert>, filed May 2, 2003, entitled "Personalization of Mobile Electronic Devices and Smart Accessory Cover", which specifications are hereby fully incorporated by reference.

While all three embodiments of **Fig. 5a-5d** have been illustrated with smart covers and external antennas. In alternate embodiments, the present invention may be practiced without smart covers and/or external antennas. The present invention may be practiced with conventional covers, without embedded intelligence and/or internal antennas.

Transceiver

Figure 4 illustrates transceiver **308** of **Fig. 3** in further details, in accordance with one embodiment. As illustrated, for the embodiment, transceiver **308** includes a joint radio frequency (RF) transmit/receive (TX/RX) section **402**, separate signal processing sections **408** and **410** for a range of higher frequencies and a range of low frequencies, switch **404** and splitter **406**. The elements are coupled to each other as shown.

For the embodiment, joint RF TX/RX **402** includes in particular, switch **420**, filters **412** and **422**, low noise amplifier **424** and power amplifier **414**, coupled to one another as shown. Switch **420** is employed to switch between transmitting and receiving RF signals. Filters **412** and **422**, low noise amplifier **424** and power amplifier **414** are employed to perform their conventional filtering and amplification functions on the transmit and receive signals.

For transmission, switch **404** switches between the output of high frequency signal processing **410** and the output of low frequency signal processing **408** to the transmit path of Joint RF TX/RX **402**.

For reception, splitter **406** splits the output of the receive path of Joint RF TX/RX **402** and provides the receive signal to high frequency signal processing **410** as well as low frequency signal processing **408**.

For the embodiment, high frequency signal processing **410** performs up and down conversions of the transmit and receive signals of the primary communication function of mobile communication device **102**, e.g. the transmit and receive signals of a voice call. In one embodiment, the transmit and receive signals are transmitted and received in the GHz ranges.

Low frequency signal processing **408**, on the other hand, performs up and down conversions of the transmit and receive signals of the RFID feature, e.g. the output signal of a RFID to emulate either an active or a passive transponder, and the received probing signal of a RFID reader. In one embodiment, the transmit and receive signals are transmitted and received in the MHz ranges.

Up and down conversions, filtering, amplifications, and so forth, in and of themselves, except for the manner they are being used to provide RFIDs using a mobile communication device, are known in the art, accordingly, will not be further described.

RFID Feature

Figures 6-7 illustrate selected portions of an example end user interface, and the operational flow of the relevant aspects of RFID feature **322** respectively, in accordance with one embodiment. **Figure 6** comprises **Fig. 6a-6h**.

As illustrated in **Fig. 6a**, for the embodiment, the user interface includes screen **602** having selectable text display "RFID" **604**, with which a user may interact to launch the RFID function (by selecting text display **604**, using e.g. control keys **504**).

As illustrated in **Fig. 6b**, for the embodiment, the user interface further includes screen **612** enumerating a list of RFIDs **614** stored in device **102**. List **614** may be displayed for example, among other situations, in response to a user's

selection of text display **604** of screen **602**. A user may select one of the RFIDs, and instruct device **102** to output the selected RFID in a form of an appropriate radio frequency signal, emulating provision of the RFID by an active RFID transponder, using e.g. a "send/call" key of device **102**.

Screen **612** also includes selectable "option" button **616**, with which a user may interact to display a list of RFID management options, using e.g. control keys **504**.

As illustrated in **Fig. 6c**, for the embodiment, the user interface further includes screen **622** enumerating a list of RFID management options **624**, such as "add", "edit" or "delete" RFIDs. List **624** may be displayed for example, among other situations, in response to a user's selection of "option" **616** of screen **612**.

As illustrated in **Fig. 6d**, for the embodiment, the user interface further includes screen **632** displaying field **634**, through which a user may enter/edit a RFID name. Field **634** may be displayed for example, among other situations, in response to a user's selection of "add" or "edit" of screen **622**.

As illustrated in **Fig. 6e**, for the embodiment, the user interface further includes screen **642** displaying field **644**, through which a user may enter/edit a RFID. Field **644** may be displayed for example, among other situations, in response to a user indicating completion of entry of a RFID name using screen **632**.

As illustrated in **Fig. 6f**, for the embodiment, the user interface further includes screen **652** displaying a list of RFID types **654**, with which a user may select and associate with a RFID. List **654** may be displayed for example, among other situations, in response to a user indicating completion of entry of a RFID, using screen **642**, thereby allowing the user to associate a RFID reader type with the entered RFID.

Each RFID reader type is assumed to have a deterministic RFID signaling format/protocol. Accordingly, by selecting the RFID reader type, the user is effectively selecting or specifying the RFID signaling format/protocol. In alternate embodiment, a user may be requested to select the RFID signaling format/protocol explicitly, as opposed to implicitly, in the illustrated embodiment.

As illustrated in **Fig. 6g**, for the embodiment, the user interface further includes screen **662** displaying a request **664** to confirm whether a RFID is to be

selected or designated as the default RFID to be used for emulation of passive transponders. Request **664** may be displayed for example, among other situations, in response to a user selecting a RFID reader type, using screen **652**, thereby allowing the user to (implicitly) associate a RFID format/protocol with the entered RFID.

As illustrated in **Fig. 6f**, for the embodiment, the user interface further includes screen **672** displaying a RFID and its details, including but not limited the intended RFID reader type, whether to be designated as the default RFID for use in emulating passive RFID. Request **674** may be displayed for example, among other situations, in response to a user selecting the "edit" option, using screen **622**, or on completion of designating a RFID as the default RFID for emulating passive transponders, using screen **662**

Operationally, as illustrated in **Fig. 7**, upon receipt of a request to launch the RFID function, support logic of the RFID feature **322** is loaded and given execution control, block **702**. Thereafter, support logic **322** waits for user inputs, block **704**.

On receipt of a user input/request, support logic **322** determines the nature of the input/request, block **706**, taking into the context, i.e. the portion of the user interface being displayed, and with which the user just interacted in submitting the input/request.

As illustrated, on determining that the user has requested a current display list to be scrolled (e.g. RFID list **614** of screen **612**), support logic **322** causes the list to be scrolled as requested. Thereafter, support logic **322** returns to block **708** and waits for further input.

Similarly, on determining that the user has requested a selected RFID to be sent (emulating output of the RFID by an active RFID transponder), support logic **322** causes the RFID to be outputted in a form of an appropriate RF signal (in accordance with the associated intended RFID reader type). Thereafter, support logic **322** again returns to block **710** and waits for further input.

On determining that the user has requested a list of options to be displayed (e.g. selection of "option" **616** of screen **612**), support logic **322** causes the list of options to be displayed as requested. Thereafter, support logic **322** returns to block **712** and waits for further input.

On determining that the user has requested to add a RFID (e.g. selection of "Add" of screen **622**), support logic **322** facilitates addition of a RFID (e.g. successively guiding user entry of a RFID using screens **632-662**. Thereafter, support logic **322** returns to block **714** and waits for further input.

These are a few examples of user inputs/requests support logic **322** may support. The present invention contemplates other user inputs/requests may also be supported, and handled accordingly, block **716.**

Conclusion and Epilogue

Thus, it can be seen from the above descriptions, a novel emulated RFID input method, using a mobile communication device, has been described. The present invention advantageously improved the ease of use for a user to provide data captured in a device to another system, especially for data captured in e.g. a mobile device.

While the present invention has been described in terms of the earlier described embodiments, those skilled in the art will recognize that the invention is not limited to the embodiments described. The present invention can be practiced with modification and alteration within the spirit and scope of the appended claims. Thus, the description is to be regarded as illustrative instead of restrictive on the present invention.

CLAIMS

What is claimed is:

1. A method for providing a radio frequency identification (RFID) comprising:

facilitating a user in providing an instruction to a mobile communication device to output a first data in a form of a first radio frequency signal to emulate output of the first data by an active RFID transponder, the mobile communication device being also equipped to facilitate a user in communicating with a user of another communication device, with the communication being facilitated at least in part over a wireless network; and

in response, outputting the first data in the form of a radio frequency signal, emulating output of the first data by an active RFID transponder as instructed by the user.

2. The method of claim 1, wherein said first data comprises a selected one of a security key and an identifier.

3. The method of claim 2, wherein said first data comprises a security key, and said security key comprises a door key.

4. The method of claim 3, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

5. The method of claim 2, wherein said first data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

6. The method of claim 1, wherein the method further comprises facilitating the user in selecting the first data from a plurality of data using the mobile communication device.

7. The method of claim 1, wherein the method further comprises facilitating provision of the first data to the mobile communication device.

8. The method of claim 7, wherein said facilitating of the provisioning of the data to the mobile communication device, including facilitating provision of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

9. The method of claim 1, wherein the method further comprises

detecting for proximal presence of a RFID reader by the mobile communication device; and

on detection, outputting a second data in a form of a second radio frequency signal, using the mobile communication device, emulating output of the second data by a passive RFID transponder.

10. The method of claim 9, wherein said detecting comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

11. The method of claim 9, wherein said first and second data are the same data.

12. The method of claim 1, wherein the mobile communication device is a selected one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

13. A method for providing a radio frequency identifier (RFID), comprising:

detecting for proximal presence of a RFID reader by a mobile communication device, the mobile communication device being also equipped to facilitate a user in communicating with a user of another communication device, with the communication being facilitated at least in part over a wireless network; and

on detection, outputting a data in a form of a radio frequency signal, using the mobile communication device, emulating output of the data by a passive RFID transponder.

14. The method of claim 13, wherein said detecting comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

15. The method of claim 13, wherein said data comprises a security key.

16. The method of claim 15, wherein said security key comprises a door key.

17. The method of claim 16, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

18. The method of claim 13, wherein the method further comprises facilitating provision of the data to the mobile communication device..

19. The method of claim 18, wherein said facilitating of the provisioning of the data to the mobile communication device, including facilitating provision of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

20. The method of claim 13, wherein the mobile communication device is a selected of a wireless mobile phone and a personal digital assistant equipped with communication capability.

21. A mobile communication device comprising:

a transmitter to transmit a radio frequency signal;

a storage medium to store a first data and instructions to operate the transmitter to selectively (a) output the first data in a form of a radio frequency signal, in response to a user instruction, emulating output of the first data by an active radio

frequency identifier (RFID) transponder, and (b) facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a processor coupled to the transmitter and the storage to execute the instructions.

22. The device of claim 21, wherein said first data comprises a selected one of a security key and an identifier.

23. The device of claim 22, wherein said first data comprises a security key, and said security key comprises a door key.

24. The device of claim 23, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

25. The device of claim 22, wherein said first data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

26. The device of claim 21, wherein the instructions are further designed to facilitate the user in selecting the first data from a plurality of data, and instructing said output.

27. The device of claim 21, wherein the instructions are further designed to facilitate provision of the first data to the mobile communication device.

28. The device of claim 27, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first data in the form of a radio frequency signal.

29. The device of claim 21, wherein the instructions are further designed to detect for proximal presence of a RFID reader; and

on detection, outputting a second data in a form of a second radio frequency signal, emulating output of the second data by a passive RFID transponder.

30. The device of claim 29, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

31. The device of claim 29, wherein said first and second data are the same data.

32. The device of claim 21, wherein the mobile communication device is a selected of a wireless mobile phone and a personal digital assistant equipped with communication capability.

33. A mobile communication device comprising:

a transmitter to transmit a radio frequency signal;

a storage medium to store a first data and instructions to operate the transmitter to selectively (a) detect for proximal presence of a radio frequency identifier (RFID) reader, and on detection, output a data in a form of a radio frequency signal, emulating output of the data by a passive RFID transponder, and (b) facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a processor coupled to the transmitter and the storage to execute the instructions.

34. The device of claim 33, wherein said instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

35. The device of claim 33, wherein said data comprises a security key.

36. The device of claim 35, wherein said security key comprises a door key.

37. The device of claim 36, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

38. The device of claim 33, wherein the instructions are further designed to facilitate provision of the data to the mobile communication device.

39. The device of claim 38, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

40. The device of claim 33, wherein the mobile communication device is a selected of a wireless mobile phone and a personal digital assistant equipped with communication capability.

41. A cover comprising:

a body designed to be mated with a mobile communication device equipped to facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a storage medium embedded in said body, to store a selected one of a plurality of instructions and one or more locations to obtain all or a part of said instructions, the instructions being designed to operate a transmitter of the mobile communication device to output a first data in a form of a radio frequency signal, in response to a user instruction, emulating output of the first data by an active radio frequency identifier (RFID) transponder, using the mobile communication device.

42. The cover of claim 41, wherein said first data comprises a selected one of a security key and an identifier.

43. The cover of claim 42, wherein said first data comprises a security key, and said security key comprises a door key.

44. The cover of claim 43, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

45. The cover of claim 42, wherein said first data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

46. The cover of claim 41, wherein the instructions are further designed to facilitate the user in selecting the first data from a plurality of data, and instructing said output.

47. The cover of claim 41, wherein the instructions are further designed to facilitate provision of the first data to the mobile communication device.

48. The cover of claim 47, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first data in the form of a radio frequency signal.

49. The cover of claim 41, wherein the instructions are further designed to
detect for proximal presence of a RFID reader; and
on detection, outputting a second data in a form of a second radio frequency signal, emulating output of the second data by a passive RFID transponder.

50. The cover of claim 49, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

51. The cover of claim 49, wherein said first and second data are the same data.

52. The cover of claim 41, wherein the cover is an accessory cover to be adorned by the mobile communication device.

53. A cover comprising:

a body designed to be mated with a mobile communication device equipped to facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a storage medium embedded in said body, to store a selected one of a plurality of instructions and one or more locations to obtain all or a part of said instructions, the instructions being designed to operate the transmitter to detect for proximal presence of a radio frequency identifier (RFID) reader, and on detection, output a data in a form of a radio frequency signal, emulating output of the data by a passive RFID transponder, using the mobile communication device.

54. The cover of claim 53, wherein said instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

55. The cover of claim 53, wherein said data comprises a security key.

56. The cover of claim 55, wherein said security key comprises a door key.

57. The cover of claim 56, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

58. The cover of claim 53, wherein the instructions are further designed to facilitate provision of the data to the mobile communication device.

59. The cover of claim 58, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

60. The cover of claim 53, wherein the cover is an accessory cover to be adorned by the mobile communication device.

ABSTRACT OF THE DISCLOSURE

A mobile communication device is equipped with hardware and/or software components to enable the device to output a data in a form of a radio frequency signal, emulating outputting of the data by either an active or a passive RFID transponder. The data may be a security key or an identifier. Emulation of an active RFID transponder includes facilitating selection of the data and instruction to output by a user. Emulation of a passive RFID transponder includes detecting for proximal presence of a RFID reader. Either case, provision of the data to the mobile communication device may include provision of associated signal attribute(s).

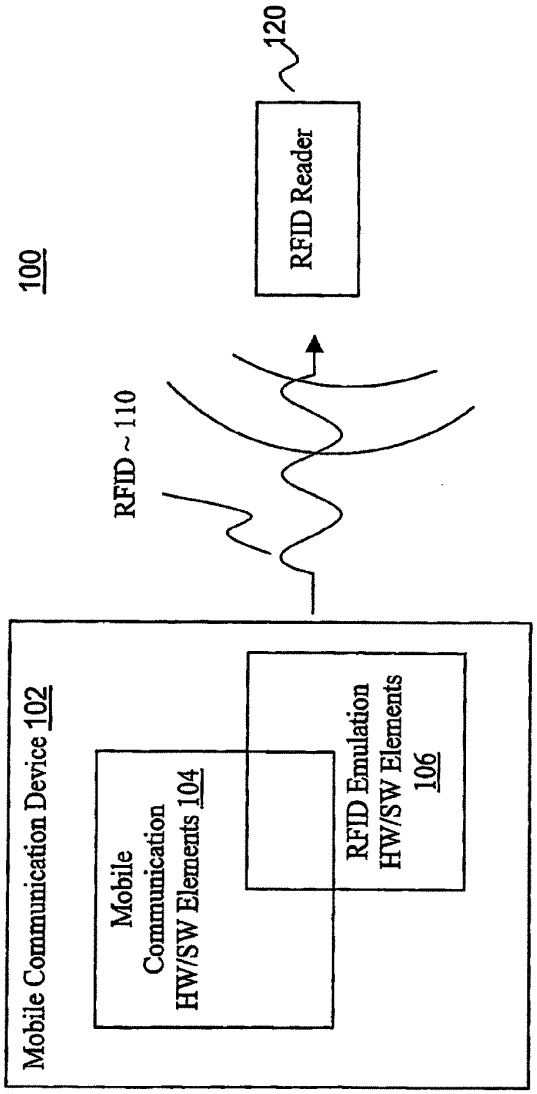

100
120
RFID Reader
RFID ~ 110
Mobile Communication Device 102
Mobile Communication HW/SW Elements 104
RFID Emulation HW/SW Elements 106

Figure 1

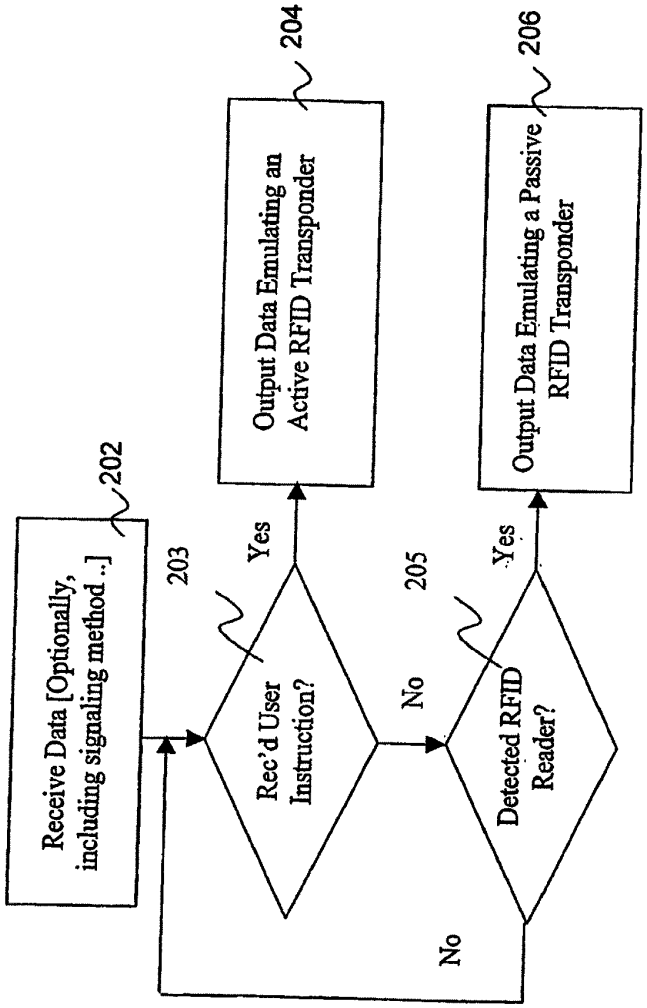

Receive Data [Optionally, including signaling method ..]
202
Rec'd User Instruction?
203
Yes
Output Data Emulating an Active RFID Transponder
204
No
Detected RFID Reader?
205
Yes
Output Data Emulating a Passive RFID Transponder
206
No

Figure 2

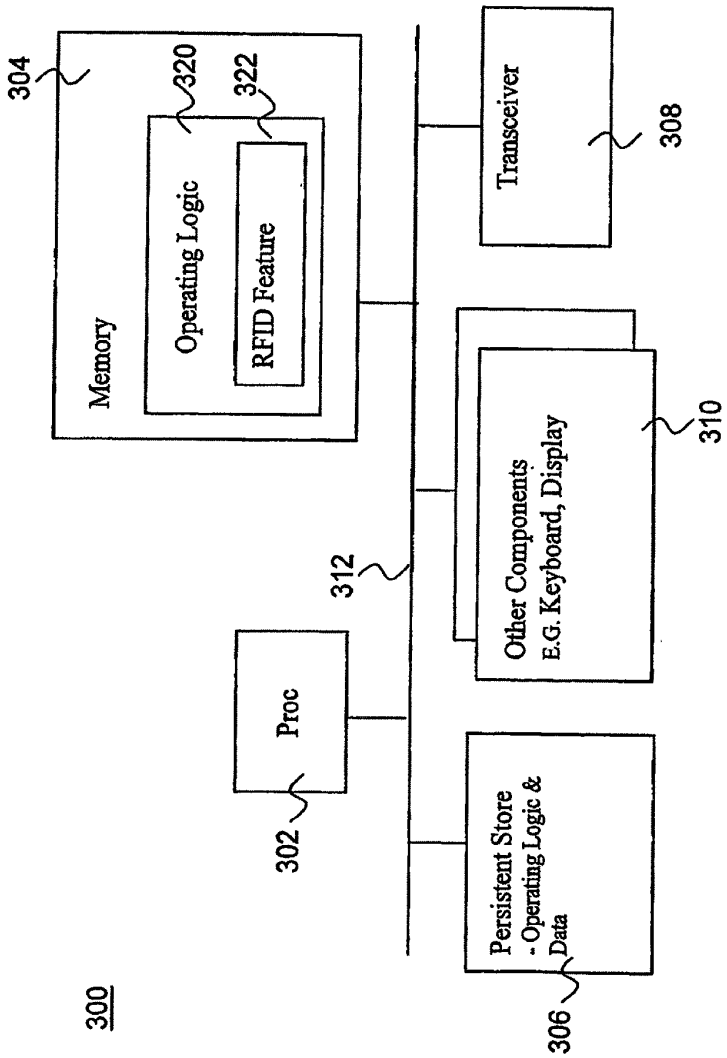

300
304
Memory
320
Operating Logic
322
RFID Feature
Transceiver
308
312
Other Components
E.G. Keyboard, Display
310
Proc
302
Persistent Store
- Operating Logic &
Data
306

Figure 3

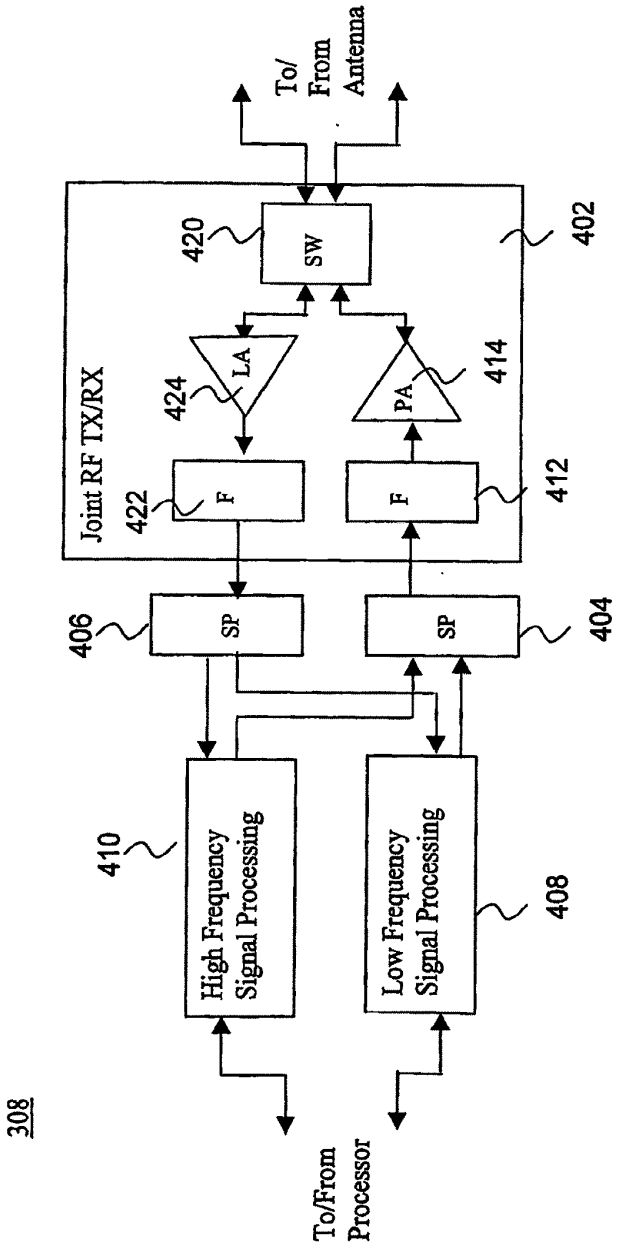

308
To/From Processor
High Frequency Signal Processing
Low Frequency Signal Processing
410
408
SP
SP
406
404
Joint RF TX/RX
F
F
422
412
LA
PA
424
414
SW
420
402
To/ From Antenna
Legend:
F = Filter
LA = Low Noise Amplifier
PA = Power Amplifier
SP=Splitter
SW = Switch

Figure 4

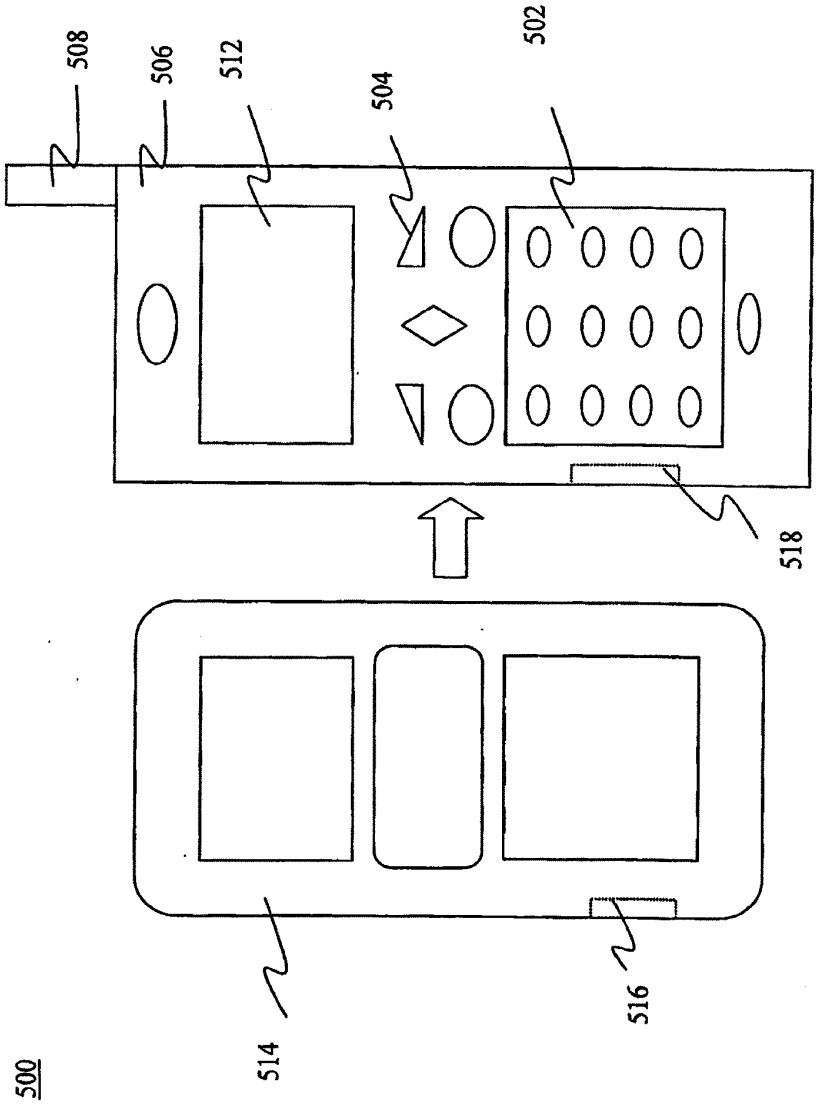


Figure 5a

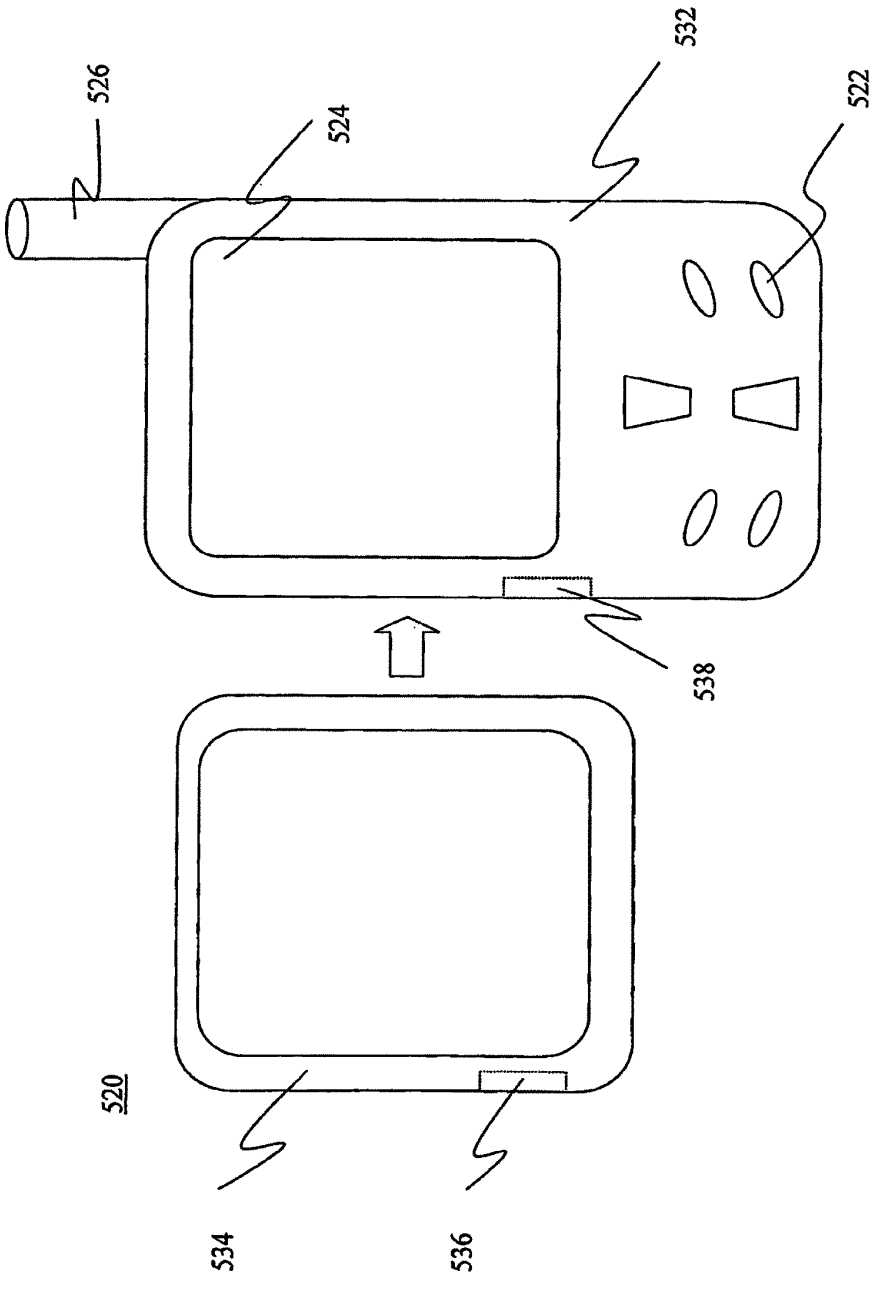


Figure 5b

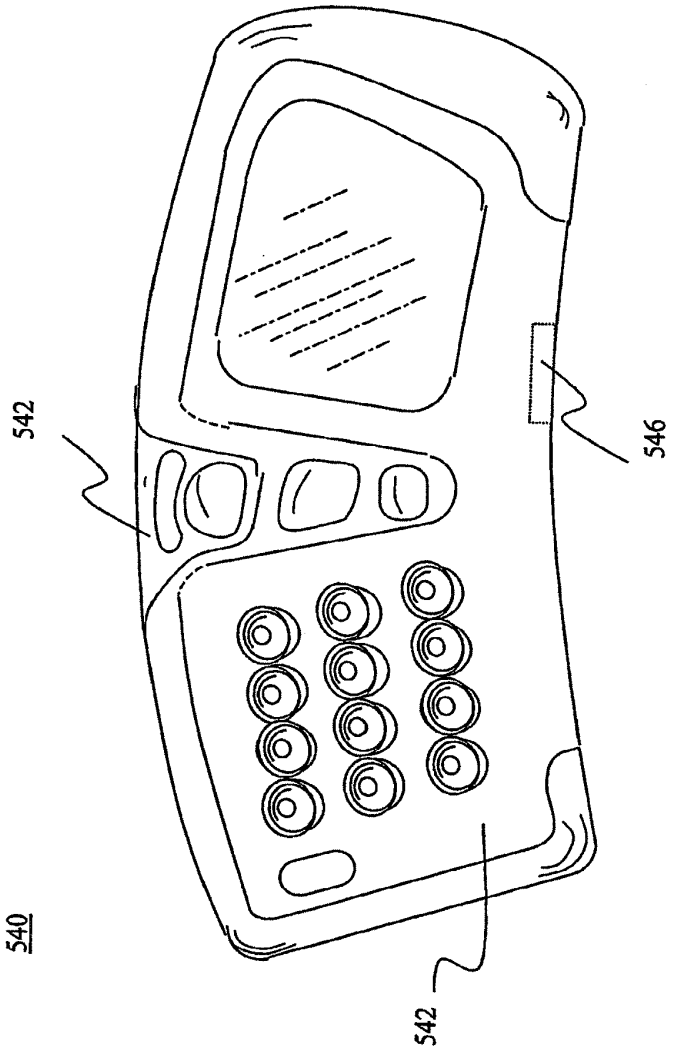


Figure 5c

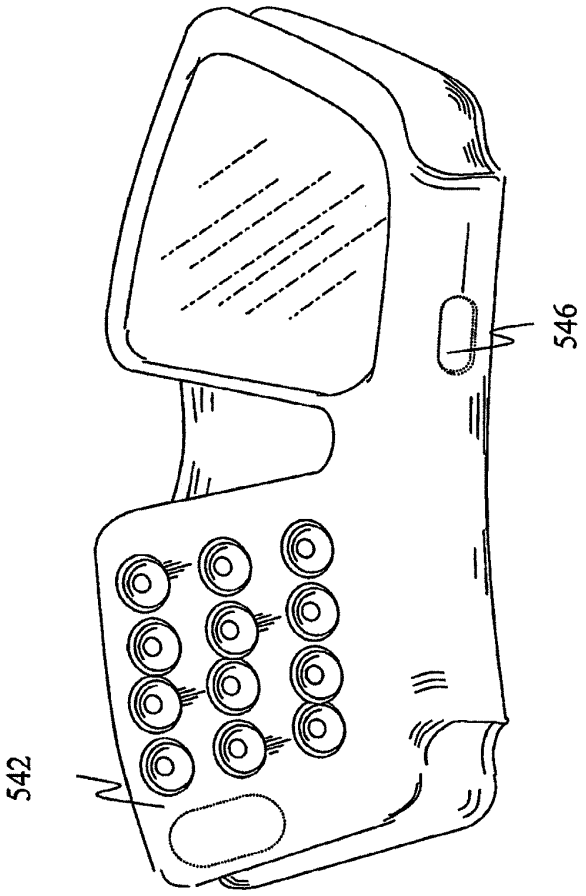


Figure 5d

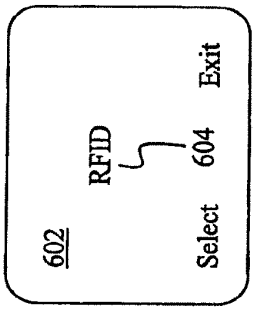


Figure 6a

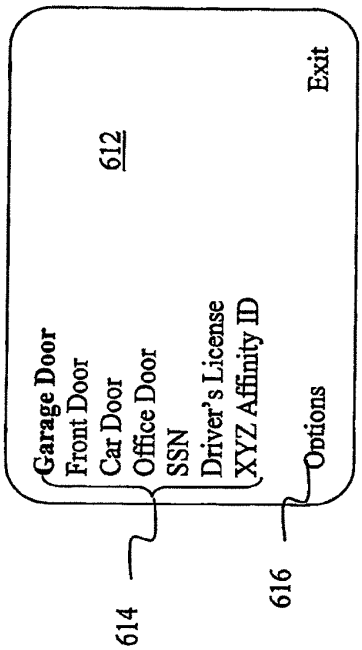


Figure 6b

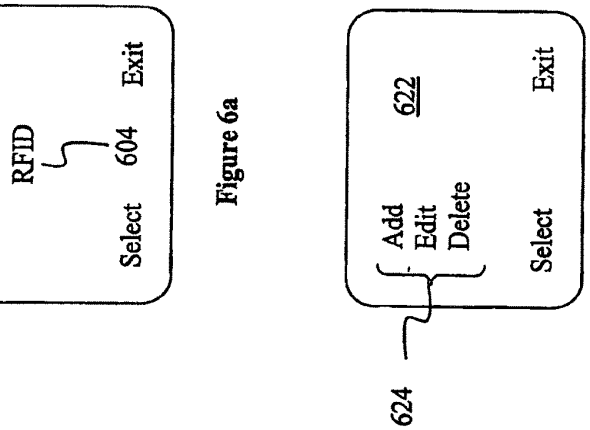


Figure 6c

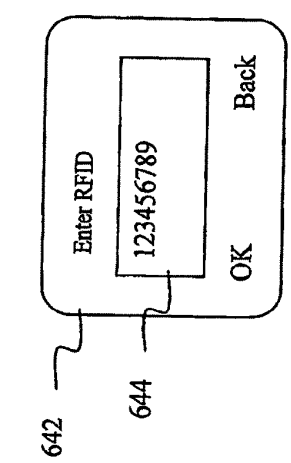


Figure 6e

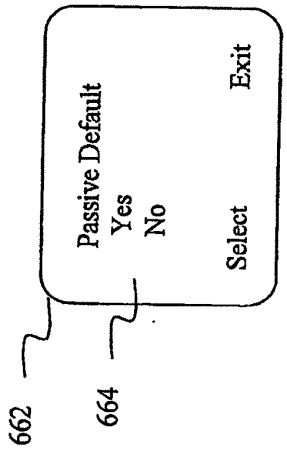


Figure 6g

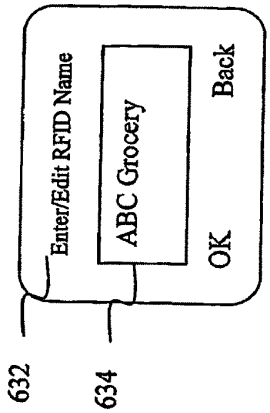


Figure 6d

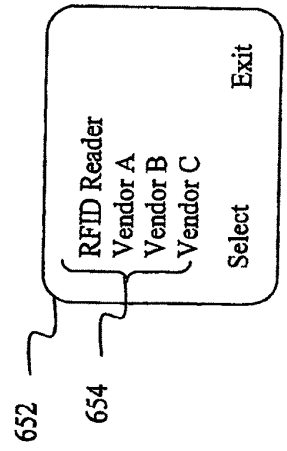


Figure 6f

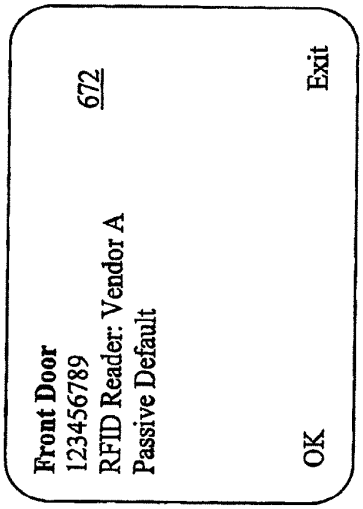

Front Door
123456789
RFID Reader: Vendor A
Passive Default
672
OK
Exit

Figure 6h

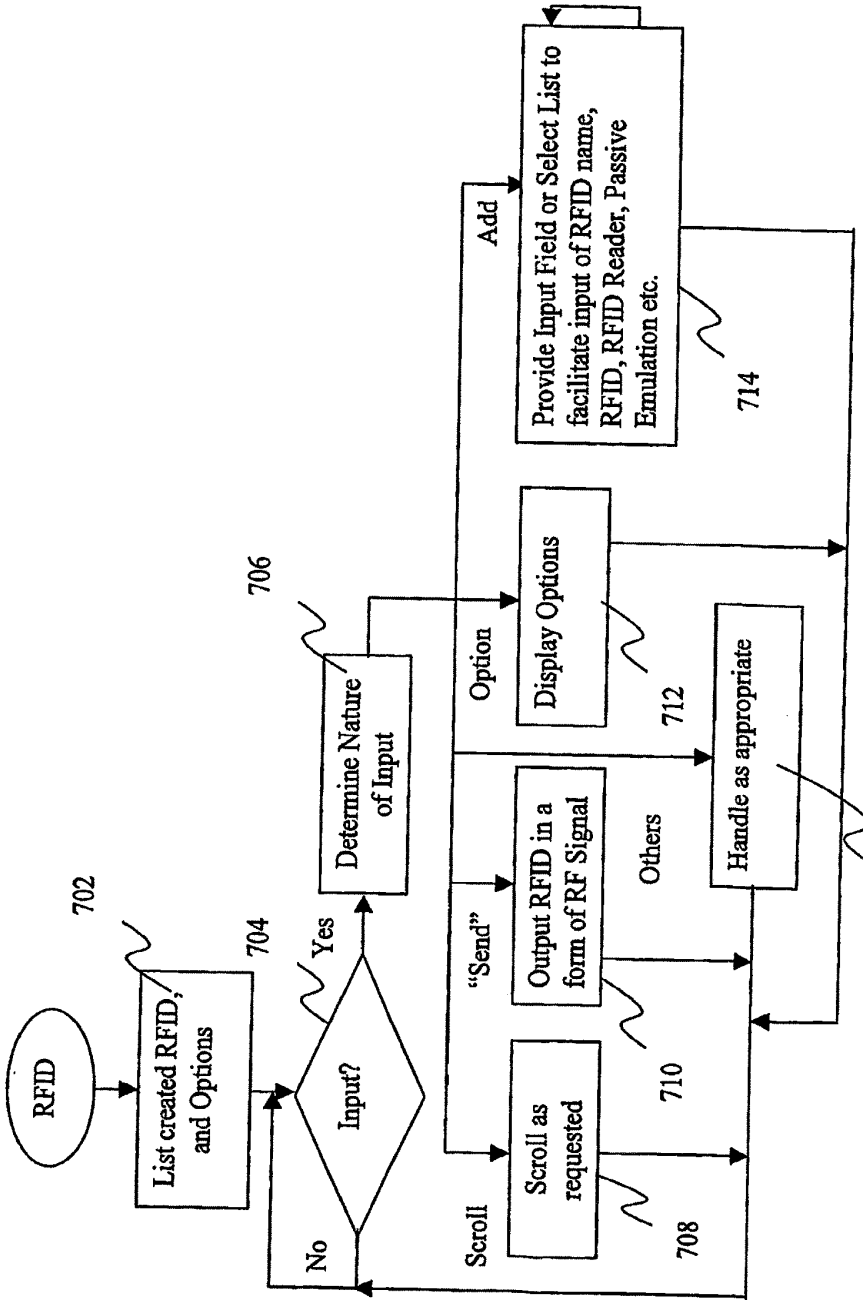

RFID
List created RFID, and Options
Input?
Yes
No
Determine Nature of Input
Option
Add
Display Options
Provide Input Field or Select List to facilitate input of RFID name, RFID, RFID Reader, Passive Emulation etc.
"Send"
Output RFID in a form of RF Signal
Scroll
Scroll as requested
Others
Handle as appropriate
702
704
706
708
710
712
714
716

Figure 7

Attorney Docket No.: 120083-187945 Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application for:	Examiner: Unassigned
Zatloukal et al.	Art Group: Unassigned
Application No.: Unassigned	Confirmation No: Unassigned
Filed: January 25, 2013	
For: EMULATED RADIO FREQUENCY IDENTIFICATION	

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

PRELIMINARY AMENDMENT

Sir:

Applicant respectfully requests that, prior to the examination of the above-referenced application, the Examiner enter the following amendments and consider the following remarks.

Amendments to the Specification begin on page **2** of this paper
Amendments to the Claims begin on page **3** of this paper.
Remarks/Arguments begin on page **9** of this paper.

AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph starting on page 1, line 4 with the following re-written paragraph:

This application is a continuation of U.S. Patent Application 13/363,202, filed January 31, 2012 and entitled "Emulated Radio Frequency Identification," which is a continuation of U.S. Patent Application 10/560,262, filed December 9, 2005 and entitled "Emulated Radio Frequency Identification," which was the National Stage of International Application No. PCT/US04/18397, filed June 10, 2004 and entitled "Emulated Radio Frequency Identification," which itself ~~non-provisional application~~claims the benefit of U.S. Provisional Application No. ~~provisional application number~~ 60/478,245, entitled "Radio Frequency Identification Using Mobile Communication Device"[[,]] and filed [[on]] June 13, 2003~~, and claims priority to said provisional application~~.

AMENDMENTS TO THE CLAIMS

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

Listing of Claims

1-60. (Cancelled)

61. (New) A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising:

receiving, by the mobile communication device, from an RFID reader external to the mobile device, an instruction to output first RFID transponder data in a format compatible with said RFID reader;

switching the mobile communication device from a first state to a second state upon reception of said instruction, the mobile communication device being configured to output voice call signals in the first state and to output the first RFID transponder data in the format compatible with said RFID reader in the second state; and

outputting, by the mobile communication device in the second state, the first RFID transponder data in the format compatible with said RFID reader.

62. (New) The method of claim 61, wherein said mobile communication device comprises a first signal processing unit configured to process voice call signals and a second signal processing unit configured to process RFID signals, said switching comprising coupling the second signal processing unit to a transmission path.

63. (New) The method of claim 61, wherein said first RFID transponder data comprises a selected one of a security key and an identifier.

64. (New) The method of claim 63, wherein said security key comprises a selected one of a

garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

65. (New) The method of claim 61, wherein said first RFID transponder data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

66. (New) . The method of claim 61, wherein the method further comprises facilitating the user in selecting the first RFID transponder data from a plurality of RFID transponder data using the mobile communication device.

67. (New) The method of claim 61, wherein the method further comprises facilitating provision of the first RFID transponder data to the mobile communication device.

68. (New) The method of claim 67, wherein said facilitating of the provisioning of the RFID transponder data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID transponder data in the format compatible with said RFID reader.

69. (New) The method of claim 61, wherein the method further comprises:

monitoring for proximal presence of the RFID reader by the mobile communication device; and

on detection of the RFID reader by the mobile communication device, outputting, by the mobile communication device in the second state, the first RFID transponder data in the format compatible with said RFID reader, and

wherein the mobile communication device emulates an RFID transponder of a passive type.

70. (New) The method of claim 69, wherein said monitoring comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

71. (New) The method of claim 69, wherein said sensing is performed at regular intervals.

72. (New) The method of claim 61, wherein the mobile communication device is a selected one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

73. (New) A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising:

monitoring for a proximal presence of a proximal RFID reader external to said mobile communication device by said mobile communication device, the mobile communication device having communication circuitry configured to output, in a first state, RFID transponder data in a format compatible with said RFID reader upon the mobile communication device determining the proximal presence of said RFID reader, and the communication circuitry being also configured to output, in a second state, a voice call signal for transmission at least in part over a wireless network; and

on detection of said RFID reader, outputting, by the transceiver, the RFID transponder data in a format compatible with said RFID reader as a radio frequency signal.

74. (New) The method of claim 73, wherein said monitoring comprises sensing for a first probing signal from said RFID reader and sensing for a second probing signal from a different RFID reader.

75. (New) The method of claim 73, wherein said data comprises a security key.

76. (New) The method of claim 75, wherein said security key comprises a door key.

77. (New) The method of claim 76, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

78. (New) The method of claim 73, wherein the method further comprises facilitating provision of the RFID transponder data to the mobile communication device.

79. (New) The method of claim 78, wherein said facilitating of the provisioning of the RFID transponder data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID transponder data in the format employed by the RFID reader.

80. (New) The method of claim 73, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

81. (New) A mobile communication device capable of RFID communication and voice call communication, the mobile communication device comprising:

communication circuitry configured to output voice call signals in a first radio frequency range and to output first RFID transponder data in a second radio frequency range;

a storage medium storing first data and instructions for the communication circuitry to:

monitor for proximal presence of one or more RFID readers external to the mobile communication device; and

output a voice call signal for transmission over a wireless network; and

output the first RFID transponder data as RFID transponder signals in a format employed by a proximal RFID reader, in response to detection by the mobile communication device of the proximal presence of the one or more RFID readers external to the mobile communication device.

82. (New) The device of claim 81, wherein said first RFID transponder data comprises a selected one of a security key and an identifier.

83. (New) The device of claim 82, wherein said first RFID transponder data comprises a security key, and said security key comprises a door key.

84. (New) The device of claim 83, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

85. (New) The device of claim 82, wherein said first RFID transponder data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

86. (New) The device of claim 81, wherein the instructions are further designed to facilitate the user in selecting the first RFID transponder data from a plurality of RFID transponder data.

87. (New) The device of claim 81, wherein the instructions are further designed to facilitate provision of the first RFID transponder data to the mobile communication device.

88. (New) The device of claim 87, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first RFID transponder data in the form of a radio frequency signal.

89. (New) The device of claim 81, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

90. (New) The device of claim 81, wherein the first data includes information identifying a user.

91. (New) The device of claim 81, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

92. (New) A mobile communication device capable of radio frequency identifier RFID communication and voice call communication, the mobile communication device comprising:

communication circuitry configured to transmit a voice call signal in a first operational state and a RFID transponder signal in a second operational state;

a storage medium storing first data and instructions for the communication circuitry to selectively (a) monitor for proximal presence of a proximal RFID reader, and on detection of the proximal RFID reader, output RFID transponder data as an RFID signal in a format employed by the proximal RFID reader, and (b) transmit a voice call signal to another user of another communication device at least in part over a wireless network.

93. (New) The device of claim 92, wherein said instructions are further designed to sense for a probing radio frequency signal of the proximal RFID reader.

94. (New) The device of claim 92, wherein said RFID transponder data comprises a security key.

95. (New) The device of claim 94, wherein said security key comprises a door key.

96. (New) The device of claim 95, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

97. (New) The device of claim 92, wherein the instructions are further designed to facilitate provision of the RFID transponder data to the mobile communication device.

98. (New) The device of claim 97, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the RFID transponder data in the form of a radio frequency signal.

99. (New) The device of claim 92, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

REMARKS

It is respectfully requested that, prior to the examination, the Examiner enter the above amendments. Claims 1-60 are cancelled. Claims 61-99 have been added. No new matter has been added. Support for the new claims can be found throughout the Specification and claims as orignally filed. Claims 61-99 are pending.

Consideration of the application, as amended, is respectfully requested.

If the Examiner has any questions concerning the present paper, the Examiner is kindly requested to contact the undersigned at (503) 796-2446. If any fees are due in connection with filing this paper, the Commissioner is authorized to charge Deposit Account No. 500393.

Respectfully submitted,

Date: January 25, 2013

By: /Ryan C. Fox-Lee/
Ryan C. Fox-Lee
Reg. No.: 65,369

EXHIBIT

B

1-60. (Cancelled)

61. A method for emulating radio frequency identification (RFID) signals from a mobile communication device comprising:

receiving, by the mobile communication device, from an RFID reader external to the mobile communication device, an RFID probing signal;

determining, by the mobile communication device, whether the mobile communication device is in an operational space of the RFID reader based on the RFID probing signal; and

if the mobile communication device is in the operational space of the RFID reader, outputting, by the mobile communication device an RFID signal responsive to the RFID probing signal.

62. The method of claim 61, wherein the mobile communication device is configured to process voice call signals and the RFID signals.

63. The method of claim 61, wherein the RFID signal includes RFID data comprising a selected one of a security key and an identifier.

64. The method of claim 63, wherein the security key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

65. The method of claim 63, wherein the identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

66. The method of claim 63, wherein the method further comprises facilitating a user in selecting the RFID data from a plurality of the RFID data using the mobile communication device.

67. The method of claim 63, wherein the method further comprises facilitating provision of the RFID data to the mobile communication device.

68. The method of claim 67, wherein facilitating provisioning of the RFID data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID data.

69-71. Cancelled.

72. The method of claim 61, wherein the mobile communication device is a selected one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

73. A method for emulating radio frequency identification (RFID) signals from a mobile communication device comprising:

monitoring, by the mobile communication device, for a proximal presence of an RFID reader external to the mobile communication device, the monitoring comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader;

outputting, by the mobile communication device an RFID signal upon the mobile communication device determining the proximal presence of the RFID reader; and

outputting, by the mobile communication device, a voice call signal for transmission at least in part over a wireless network.

74. Cancelled.

75. The method of claim 73, wherein the RFID signal includes RFID data comprising a security key.

76. The method of claim 75, wherein the security key comprises a door key.

77. The method of claim 76, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

78. The method of claim 73, wherein the method further comprises facilitating provision of the RFID data to the mobile communication device.

79. The method of claim 78, wherein facilitating provisioning of the RFID data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID data.

80. The method of claim 73, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

81. A mobile communication device comprising:

communication circuitry configured to output voice call signals in a first radio frequency range and output radio frequency identification (RFID) signals in a second radio frequency range;

a storage medium including instructions for the communication circuitry to:

- monitor for a proximal presence of an RFID reader external to the mobile communication device, the monitoring comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader;
- output a voice call signal for transmission over a wireless network; and
- output an RFID signal in response to detection of the proximal presence of an RFID reader external to the mobile communication device.

82. The mobile communication device of claim 81, wherein the RFID signal includes RFID data comprising a selected one of a security key and an identifier.

83. The mobile communication device of claim 82, wherein the security key comprises a door key.

84. The mobile communication device of claim 83, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

85. The mobile communication device of claim 82, wherein the identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

86. The mobile communication device of claim 82, wherein the instructions are further designed to facilitate a user in selecting the RFID data from a plurality of RFID data.

87. The mobile communication device of claim 82, wherein the instructions are further designed to facilitate provision of the RFID data to the mobile communication device.

88. The mobile communication device of claim 87, wherein the instructions are further designed to include provisioning of at least a signaling attribute associated with the RFID data in the form of a radio frequency signal.

89. Cancelled.

90. The mobile communication device of claim 82, wherein the RFID data includes information identifying a user.

91. The mobile communication device of claim 81, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

92. A mobile communication device comprising:
communication circuitry configured to transmit voice call signals and RFID signals;
a control system configured to cause the communication circuitry to:

monitor for a proximal presence of an RFID reader external to the mobile communication device, the monitoring comprising determining whether the mobile communication device is in an operational space of the RFID reader based on an RFID probing signal received from the RFID reader;

on detection of the proximal RFID reader, output an RFID signal; and

transmit a voice call signal to another mobile communication device at least in part over a wireless network.

93. Cancelled.

94. The mobile communication device of claim 92, wherein the RFID signal includes RFID data comprising a security key.

95. The mobile communication device of claim 94, wherein the security key comprises a door key.

96. The mobile communication device of claim 95, wherein the door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

97. The mobile communication device of claim 92, wherein the control system is further configured to facilitate provision of RFID data to the mobile communication device.

98. The mobile communication device of claim 97, wherein the control system is further configured to include provisioning of at least a signaling attribute associated with the outputting of the RFID data in the form of a radio frequency signal.

99. The mobile communication device of claim 92, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

EXHIBIT

C

ROGER G. STEWART
3 Ski Drive, Hillsborough, New Jersey 08844
phone 908-369-3536, mobile phone 408-464-3066, fax 908-369-3536
EM: r.stewart@sourland.com

Summary

Expert technical and business knowledge of solid state devices & circuits, Flat Panel Displays and RFID. Patent expert. Executive level experience at three successful start-up companies.

Professional Experience

2006-present President of Sourland Mountain Associates, Hillsborough, NJ

- Technical & patent consulting in flat panel displays, semiconductors, and RFID.
- Experience in drafting thousands of patent claims and conducting hundreds of detailed patent evaluations.
- Patent litigation experience includes Markman hearings, depositions, expert reports, and testifying as an expert technical witness in three international patent trials. My technical opinion has prevailed with the Judge and/or Jury in all of the five patents on which I have offered an opinion to the court. (A detailed list of litigation experience is available upon request.)
- Extensive experience in writing successful technical and government proposals.

2005-2006 VP of Engineering, Applied Wireless ID, Morgan Hill, CA

- Responsible for patents, developing advanced reader architectures based on international standards, and integrating these architectures into monolithic chips.
- Led industry-wide role in developing international standards for RFID tags & readers. Elected as a Founding Member of the EPCglobal Architectural Review Committee.

2003-2005 Founder, Chief Technology Officer, Member Board of Directors, Intelleflex Corporation, San Jose, CA

- Responsible for engineering, product development, and manufacturing of high-performance RFID tags with associated flexible and signage displays.

1999 - 2002 VP of Engineering, Chief Technology Officer -- Alien Technology Corporation, Morgan Hill, CA

- Managed three technical Directors with regular participation in meetings of the Board of Directors. Directed IC design, IC foundry relationships, trademarks, licensing agreements, patents, and other legal matters.
- Rapidly developed five state-of-the-art mixed-signal custom IC chips for Alien's flexible displays, signage displays, and RFID products. Assembled a world class IC development team within 6 months and rapidly completed all five chips - including Alien's first RFID chip - each one working with first silicon.
- Represented Alien in the international RFID standards setting process including presentations to US Government, Universities, Venture Capitalist meetings, and other companies. Led the MIT Auto ID Center's effort to develop a new, low-cost RFID tag specification based on Alien's design, that was subsequently adopted in June'01 by all three RFID international standards-setting organizations.
- Expanded Alien's patent portfolio from only 4 patents in 1999 to 79 patents by the end of 2002.

1981 - 1999 Laboratory Director -- Sarnoff Corporation, Princeton NJ

- As Director of the Solid State Display Laboratory my responsibilities included funding and managing a 6 M$ annual budget for 20-30 persons in the field of Active Matrix LCDs, Active Matrix OLEDs, video walls, electronic signage, and other flat panel display devices.
- Successfully negotiated numerous patent licensing and technology development contracts including several multi-million dollar agreements in France, Korea, and Japan.
- Founded Sarnoff "spin-out" corporation, SARIF Corporation, Inc., with initial funding of 10 M$.
- Developed the first polysilicon AMLCDs in 1986 and the world's first self-scanned amorphous silicon AMLCDs (SASID) in 1995.

< 1981 Before 1981, pioneered development of semiconductor memories and non-volatile memory products.

- Designed and transferred into high-volume commercial production a CMOS microprocessor, two CMOS ROM chips, three CMOS static RAM chips, two EEPROM chips, and a 256 MHz ultra-high-speed shift register chip.
- Patents currently used in over 85% of all DRAM and RAM manufactured worldwide. Patent 4,344,005 "Power Gated Decoding" and Patent 4,558,240 "Multi Mode Amplifier" have generated over $100M in royalties for the Harris Semiconductor Corporation.

Awards

- Author of 94 papers and published presentations.
- Holds 110 Issued USA Patents, 22 published USA patent applications, and 60 foreign patents.
- Elected in 1997 as a Fellow of the Institute of Electrical and Electronic Engineers ("IEEE")
- Elected in 2010 as a Fellow of the Society of Information Display ("SID")
- Received numerous awards, including the "David Sarnoff Award for Outstanding Technical Achievement" - the highest award offer made by either RCA or Sarnoff - for founding a new display company called "SARIF Inc." in 1994.
- Taught courses on solid state circuits and flat panel display technology for Boeing, RCA, the IEEE, the Society of Information Display, and the University of California.
- Chairman of the 1977 IEEE SOS Workshop, VLSI Workshop Committee 1984-1986, the ISSCC Committee from 1986-1989, Member or Chairman of the AMLCD Technical Program Sub-Committee for SID from 1989 to the present.
- Founding member of the RFID Standards Working Group at MIT in 2002.
- Elected as a Founding Member of the EPCglobal Architectural Review Committee in 2004.

Education

BS-EE	John Hopkins University, Baltimore, Md.
MS-EE	Lehigh University, Bethlehem, Pa.

Patents and Publications

Lists of patents and publications are attached below.

Patent List

1. 3,947,727 Protection circuit for insulated-gate field-effect transistors
2. 3,967,295 Input transient protection for integrated circuit element
3. 3,999,205 Rectifier structure for a semiconductor integrated circuit device
4. 4,037,114 Tri-state logic circuit
5. 4,039,858 Transition detector
6. 4,044,341 Memory array
7. 4,045,688 Power-on reset circuit
8. 4,061,962 Current mirror amplifier augmentation of regulator transistor current flow
9. 4,063,225 Memory cell and array
10. 4,075,690 Write enhancement circuit
11. 4,080,539 Level shift circuit
12. 4,107,556 Sense circuit employing complementary field effect transistors
13. 4,185,319 Non-volatile memory device
14. 4,208,730 Precharge circuit for memory array
15. 4,216,390 Level shift circuit
16. 4,236,199 Regulated high voltage power supply
17. 4,239,994 Asymmetrically precharged sense amplifier
18. 4,281,400 Circuit for reducing the loading effect of an insulated-gate field-effect transistor (IGFET) on a signal source
19. 4,329,600 Overload protection circuit for output driver
20. 4,337,522 Memory circuit with means for compensating for inversion of stored data
21. 4,339,809 Noise protection circuits
22. 4,344,005 Power gated decoding
23. 4,354,255 Random access memory with volatile and non-volatile storage
24. 4,386,284 Pulse generating circuit using current source
25. 4,398,102 Gated parallel decoder
26. 4,405,996 Precharge with power conservation
27. 4,419,741 Read only memory (ROM) having high density memory array with on pitch decoder circuitry
28. 4,423,432 Apparatus for decoding multiple input lines
29. 4,434,381 Sense amplifiers
30. 4,442,447 Electrically alterable nonvolatile floating gate memory device
31. 4,450,562 Two level parity error correction system
32. 4,464,754 Memory system with redundancy for error avoidance
33. 4,464,755 Memory system with error detection and correction
34. 4,472,805 Memory system with error storage
35. 4,513,397 Electrically alterable, nonvolatile floating gate memory device
36. 4,527,081 Overshoot pre-driven semi-asynchronous driver
37. 4,558,240 Multi mode amplifier
38. 4,577,215 Dual word line, electrically alterable, nonvolatile floating gate memory device
39. 4,589,008 Apparatus for electrically joining the ends of substantially parallel semiconductor lines
40. 4,608,591 Electrically alterable programmable nonvolatile floating gate memory device
41. 4,612,466 High-speed output driver
42. 4,618,876 Electrically alterable, nonvolatile floating gate memory device
43. 4,738,514 Crystal variation compensation circuit for liquid crystal displays

44. 4,742,346 System for applying grey scale codes to the pixels of a display device

45. 4,760,557 Radiation hard memory cell circuit with high inverter impedance ratio

46. 4,766,430 Display device drive circuit

47. 4,828,365 Multicolor filter for producing purer white across a display device

48. 4,833,644 Memory cell circuit having radiation hardness

49. 4,872,002 Integrated matrix display circuitry

50. 4,903,094 Memory cell structure having radiation hardness

51. 4,926,236 Multilayer interconnect and method of forming same

52. 4,933,904 Dense EPROM having serially coupled floating gate transistors

53. 4,947,221 Memory cell for a dense EPROM

54. 4,963,860 Integrated matrix display circuitry

55. 4,965,646 Thin film transistor and crossover structure for liquid crystal displays

56. 4,968,119 High-density liquid-crystal active dot-matrix display structure

57. 4,989,061 Radiation hard memory cell structure with drain shielding

58. 5,076,667 High speed signal and power supply bussing for liquid crystal displays

59. 5,093,581 Circuitry for generating pulses of variable widths from binary input data

60. 5,105,187 Shift register for active matrix display devices

61. 5,122,676 Variable pulse width generator including a timer vernier

62. 5,122,792 Electronic time vernier circuit

63. 5,148,058 Logic circuits as for amorphous silicon self-scanned matrix arrays

64. 5,175,446 Demultiplexer including a three-state gate

65. 5,302,966 Active matrix electroluminescent display and method of operation

66. 5,337,068 Field-sequential display system utilizing a backlit LCD pixel array and method for forming an image

67. 5,587,329 Method for fabricating a switching transistor having a capacitive network proximate a drift region

68. 5,654,731 Shielded pixel structure for liquid crystal displays

69. 5,736,752 Active matrix electroluminescent display pixel element having a field shield means between the pixel and the switch

70. 5,932,892 High-voltage transistor

71. 5,952,789 Active matrix organic light emitting diode (AMOLED) display pixel structure and data load/illuminate circuit therefore

72. 6,229,506 Active matrix light emitting diode pixel structure and concomitant method

73. 6,307,322 Thin-film transistor circuitry with reduced sensitivity to variance in transistor threshold voltage

74. 6,348,906 Line Scanning Circuit for Dual-Mode Display

75. 6,370,019 Sealing of large Area Display Structures

76. 6,414,661 Method and Apparatus for Calibrating Display Devices and Automatically Compensating for Loss in their Efficiency over time

77. 6,417,825 Analog active matrix emissive display

78. 6,476,783 Contrast enhancement for an electronic display device by using a black matrix and lens array on outer surface of display

79. 6,606,247 Multi-feature-size electronic structures

80. 6,618,030 Active matrix light emitting diode pixel structure and concomitant method

81. 6,683,663 Web fabrication of devices

82. 6,816,380 Electronic devices with small functional elements supported on a carrier
83. 6,825,836 Bus arrangement for a driver of a matrix display
84. 6,863,219 Apparatuses and methods for forming electronic assemblies
85. 6,897,855 Tiled electronic display structure
86. 6,927,085 Web fabrication of devices
87. 6,933,848 System and method for disabling data on radio frequency identification tags
88. 6,942,155 Integrated circuits with persistent data storage
89. 6,952,157 System and method for concurrently addressing multiple RFID tags from a single reader
90. 6,980,184 Display devices and integrated circuits
91. 6,985,361 Electronic devices with small functional elements supported on a carrier
92. 6,988,667 Methods and apparatuses to identify devices
93. 7,172,910 Web fabrication of devices
94. 7,173,528 System & method for disabling data on RFID tags
95. 7,193,504 Methods & apparatus for identification
96. 7,221,258 Hierarchical electronic watermarks & method ...
97. 7,260,882 Methods for making electronic devices w small ...
98. 7,262,686 Methods & apparatus to identify devices
99. 7,333,001 Secure personal documents & method of use
100. 7,364,084 Persistent data storage
101. 7,377,445 Persistent data storage
102. (9 new patents)

Published Patent Applications

2004-0008123 System & method for tracking medical devices
2004-0246280 Image degradation correction in novel LCDs
2005-0078104 Tiled electronic display structure
2005-0081908 Method and apparatus for generation of electrical power from solar energy
2005-0121526 Battery activation circuit
2006-0087407 Master tags
2006-0208898 Compact omnidirectional RF system
2006-0208958 Compact omnidirectional RF system
2006-0250220 Accurate persistent nodes
2006-0250251 Semi-transparent RFID tags
2006-0255131 Smart tag activation
2006-0265181 Battery monitor
2007-0013484 Methods & apparatus for identification
2007-0018793 Ramped interrogation power levels
2007-0018828 System & method for disabling data on RFID tags
2007-0118309 Battery monitor
2007-0206701 RFID reader with digital waveform encoding ...
2007-0206704 RFID reader with adaptive carrier cancellation
2007-0206705 RFID reader with adjustable filtering & adaptive backscatter processing
2007-0247884 Attribute Cache memory
2007-0256291 Methods for making electronic devices w small ...
2007-0262851 Methods & apparatus to identify devices
2007-0279194 Methods & apparatus for identification
2008-0055223 Pixel circuits & method for driving pixels
2008-0062090 Pixel circuits & method for driving pixels
2008-0062091 Pixel circuits & method for driving pixels

2008-0065662 Compressed tag codes & mapping

List of Publications & Published Presentations

1. **"Compatible MOS - Bipolar Processing"**
   R. Gallagher, R.G. Stewart, Westinghouse MOS Symposium, 1968.

2. **"X-Band Integrated Diode Phase Shifters"**
   R.G. Stewart, M. Giuliano, G-MTT International Microwave Symposium, 1968 Detroit, Mich.

3. **"A Proposed Method for Rapid Determination of Doping Profiles in Semiconductor Layers"**
   D. Leenov, R. G Stewart, Proceedings of IEEE - Special Issue on Electronic Scanning, November, 1968.

4. **"EMP Hardened CMOS Circuits"**
   D. Hampel, R.G. Stewart, J. Parks, 1974 Government Microcircuit Applications Conference (GOMAC), June 25-27, 1974, Boulder, CO.

5. **"EMP Hardened CMOS Circuits"**
   R.G. Stewart, D. Hampel, IEEE Conference on Nuclear and Space Radiation Effects, July 15-18, 1974, Fort Collins, CO.

6. **"EMP Hardened CMOS Circuits"**
   R.G. Stewart, D. Hampel, IEEE Transactions on Nuclear Science, NS-21, December, 1974, pp 332-339.

7. **"256 x 4 Bit CMOS/SOS RAM Array"**
   W. Gehweiler, R.G. Stewart, 1976 SOS Technology Workshop, August 11-13, 1976, Stanford University, CA.

8. **"CMOS, MNOS and SOS Memory Cells"**
   R.G. Stewart, Tutorial Conference on Semiconductor Memories and Magnetic Bubble Devices, Fairleigh Dickinson University, January 12-13, 1977, Teaneck, NJ.

9. **"High Density CMOS ROM Arrays"**
   R.G. Stewart, 1977 IEEE International Solid-State Circuits Conference Digest of Technical Papers, Philadelphia, PA, Feb 16-18, 1977. pp 20-21

10. **"20MHz CMOS-on-Sapphire COSMAC Microprocessor"**
    G.R. Briggs ... R.G. Stewart, RCA Engineer, Vol. 22, No. 5, February/March, 1977, pp. 71-75.

11. **"High Density CMOS ROM Arrays"**
    R.G. Stewart, Invited Paper at Semiconductor Memories, Lehigh Valley Semiconductor Symposium, Bethlehem, PA, 5/13/1977

12. **"20 MHz CMOS-on-Sapphire COSMAC Microprocessor"**
    G. Briggs ... R.G. Stewart, 1977 IEEE SOS Technology Workshop. September 28-30, 1977; Vail, CO.

13. **"High Density CMOS ROM Arrays"**
    R. G. Stewart, Special Issue of IEEE Journal of Solid State Circuits, Oct., 1977.

14. **"A CMOS/SOS Electrically Alterable Read Only Memory"**
    R.G. Stewart, 1978 SOS Workshop -- Abstracts, June 1978.

15. **"40 MHz CMOS-on-Sapphire Microprocessor"**
    G.R. Briggs ... R.G. Stewart, IEEE Trans. Electron Devices, ED-25, No. 8, pp 952-959, August 1978.

16. **"Very High Density CMOS/SOS Static Memory Cells"**
    A.G.F. Dingwall, R.G. Stewart, B. Leung, 1978 IEEE SOS Technology Workshop, October 4-6, 1978; Vail, CO.

17. **"A CMOS/SOS Electrically Alterable Road Only Memory"**
    R.G. Stewart, 1978 IEEE SOS Technology Workshop, October 4-6, 1978; Vail, CO.

18. **"High-Density Buried Contact, CMOS/SOS Static RAM's"**
    A.G.F. Dingwall, R.G. Stewart ... IEDM Technical Digest, pp 193-196, December 4-6, 1978.

19. **"A CMOS/SOS Electrically Alterable Road Only Memory"**
    R.G. Stewart, IEDM Technical Digest, pp. 344-347, December 4-6, 1978.

20. **"16K CMOS/SOS Asychronous Static RAM"**
R.G. Stewart, A.G.F. Dingwall, 1979, IEEE ISSCC Digest of Technical Papers, pp 104-105, February 14-16, 1979.

21. **"16K CMOS/SOS Asynchronous Static RAM"**
A.G.F Dingwall, R.G Stewart, IEEE Journal of Solid State Circuits SC-14, No. 5, pp 867-871, October 1979.

22. **"CMOS/SOS EAROM Memory Arrays"**
R.G. Stewart, IEEE Journal of Solid State Circuits, SC-14, No. 5, pp. 860-864, October 1979.

23. **"Digital MOS Integrated Circuits"**
R.G.Stewart -- published one chapter in a book edited by M.I. Elmasry, published by IEEE Press, 1980

24. **'High-Speed CMOS/SOS Serial Memories"**
R.G.Stewart, S. Detta 1980 IEEE SOS Technology Workshop, October 1980, Snowmass, CO.

25. **"High-Density ROM Arrays"**
R.G. Stewart 1980 IEEE SOS Technology Workshop, October 1980, Snowmass, CO.

26. **"Advanced High Speed CMOS Circuit Techniques"**
R.G Stewart, IEEE Solid State Circuits & Technology Committee Workshop, May 29, 1981

27. **"A 40NS CMOS E^2PROM"**
R.Stewart, D.Plus 1982 IEEE ISSCC Digest of Technical Papers, Feb 10-12, 1982, San Francisco, CA.

28. **"A 40NS CMOS E^2PROM"**
R.G. Stewart, D. Plus, IEEE Journal of Solid State Circuits, SC-17 No. 5, October 1982.

29. **"Memory with Built-In Error Correction"**
I.T. Wacyk, R.G. Stewart 1982 Government Microcircuit Applications Conference (GOMAC), Nov 1-4, 1982, Orlando, FL

30. **"I/O Transient Protection"**
R.G.Stewart IEEE CMOS Latchup Workshop, March 15, 1983, New York, NY,

31. **"A Shielded Substrate Injector MOS (SSIMOS) EEPROM Cell"**
R.G.Stewart, A.C. Ipri, L. Faraone, J. Cartwright, K. Schlesier, IEDM, December 9-12, 1984.

32. **"A Maximum Density Floating Gate EPROM Cell and Array Organization"**
R. Stewart, A. Ipri ... 7th IEEE Non-Volatile Semiconductor Memory Workshop, March 11-13, 1985 San Diego, CA.

33. **"A New High-Density Low-Voltage SSIMOS EEPROM Cell"**
A.C. Ipri, R.G. Stewart ... IEEE Trans. on Electron Devices, Vol. Ed.-32, No. 4, April 1985.

34. **"A High Density EPROM Cell and Array"**
R.G. Stewart, et al. 1986 ULSI Symposium, May 28-30, 1986, San Jose, CA.,

35. **"Low Temperature Fabrication Of Polysilicon Active Matrix Liquid Crystal Display'**
A. Ipri, R.G. Stewart, July 1986.

36. **"Sapphire Photocurrent Sources and Their Impact on RAM Upset"**
G.J. Brucker, J. Herbert and R.G. Stewart, 23rd Annual Conference on Nuclear & Space Radiation Effects, July 21-23, 1986.

37. **"A New High Density EPROM Cell and Array"**
R.Stewart, A. Ipri ... Presented at the 1986 Symposium on VLSI Technology, San Diego, CA, December, 1986

38. **"Low Temperature Fabrication of Polysilicon Active Matrix LC Displays"**
A.C. Ipri, R.G. Stewart, EuroDisplay, London, UK - September 15-17, 1987.

39. **"Polycrystalline-Silicon LCDs with High-Speed Integrated Scanners"**
B.W. Faughnan, R.G. Stewart ... Proceedings of the SID, Vol. 29/4, 1988

40. **"Polycrystalline Silicon Liquid LCDs with High Speed Integrated Scanners"**
RG Stewart, et.al. SID Internation Symposium Digest of Tech.Papers, Volume XIX, May 24-26, 1988.

41. **"A 600-650°C Polysilicon CMOS Process for Fabricating Fully Scanned AMLCDs"**
A.C. Ipri, R.G. Stewart, G.Kaganowicz, B.Faughnan and J.Valachovic Proceedings of the SID, pp 167-171, Vol. 29/2, 1988.

42. **"Polysilicon Active-Matrix Liquid Crystal Displays for Cockpit Applications"**
B.W. Faughnan, R.G. Stewart ..., January 1989.

43. **"Display System Optics II"**
B.W. Faughnan, R.G. Stewart ..., Proceedings of SPIE - Intl Society for Optical Engineering March 30-31, 1989 - Orlando, FL

44. **"Design of Scanned Polysilicon Displays"**
R.G. Stewart, Workshop on Polysilicon Thin-Film Transistors and Related Material Aspects for Large Area Microelectronics, Fitzwilliam College, Cambridge, UK, July 12-13, 1989.

45. **"A 5"X9" Polysilicon Gray-Scale Color Head Down Display Chip"**
S. Lee, R.Stewart, A.Ipri and S.Lipp, Published in 1990 IEEE ISSCC Digest of Technical Papers, # 13.5, Feb, 13-16, 1990

46. **"Avionic Gray-Scale Color Head Down Display,"**
D.Jose, S.N.Lee, R.Stewart, A.Ipri, S. Lipp at the 1990 SPIE Symposium of Aerospace Sensing, #1289-17, April 17-20, 1990

47. **"Novel Large Area Color LCD Backlight System"**
D. L. Jose, R.G. Stewart and W. R. Roach, IEEE - Naecon 90, Dayton, Ohio - May 21-25, 1990.

48. **"A 9V Polysilicon LCD with Integrated Gray-Scale Drivers"**
R.G Stewart, S.N Lee ... SID Digest Of Technical Papers, Volume XXI - May 15-17, 1990.

49. **"Flat Panel Displays"**
Roger G. Stewart, IEEE/AESS, Dayton Chapter Symposium, The Cockpit of the 21st Century -- Will High Tech Payoff? - November 28, 1990, Dayton, Ohio

50. **"Self-Scanned Active-Matrix Liquid-Crystal Displays"**
R.G. Stewart, Society of Information Displays Digest of Technical Papers Volume XXII, May 6-10, 1991.

51. **"Single-Crystal Silicon Transmissive AMLCD"**
J.P.Salerno ... R.G. Stewart SID Digest of Technical Papers, Volume XXIII, pp 63-66, May 17-22, 1992 Boston, MA.

52. **"Poly-SI TFT Devices.and Their Application to LCDs"**
A.H. Firester, R.G.Stewart, W. R. Roach, Japan Display 1992, Proceedings of the 12 Int. Display Research Conference, pp 557-560 October 12-14, 1992 Hiroshima, Japan.

53. **"Design And Operation Of Poly-Si Circuits On Glass"**
R.G. Stewart, Lehigh University Workshop on Flat Panel Display Technology October 21-22, 1993 Bethleham, PA.

54. **"High-Resolution Active-Matrix Electroluminescent Display"**
R.Khormaei, ... R.G.Stewart, Society of Information Displays Digest of Technical Papers pp 137-139 June 14-16, 1994 San Jose, CA. Best Paper Award

55. **"Application of SOI to Flat Panel Displays"**
G.Dolny, A.Ipri, R.G.Stewart, 1994 International SOI Symposium October 1994 Nantucket, MA. Best Paper Award

56. **"A High-Density 1280x1024 Transferred-Silicon AMLCD"**
F.Cuomo ... R.G.Stewart, Society of Information Displays Digest of Technical Papers pp 77-80, May 23-25, 1995 Orlando, FL.

57. **"Circuit Design for a-Si AMLCDs with Integrated Drivers"**
R.G Stewart, et al. Society of Information Displays Digest of Technical Papers pp 89-92, May 23-25, 1995 Orlando, FL.

58. **"A 1280x1024 Active-Matrix EL Display"**
R.Khormaei ... R.G Stewart, Society of Information Displays Digest of Tech Papers pp 891-893 5/23-2595, 1995 Orlando, FL.

59. **"Design of a High-Density, Gray Scale, 1280x1024 Active Matrix EL (AMEL) Display on SOI"**
F.L.Hsueh, ... R.Stewart, Asia Display '95 (IDRC) pp 283-286 October 16-18, 1995 Hamamatsu, Japan.

60. **"Active-Matrix LCDs"**
Roger G.Stewart, SID Seminar Lecture Notes May 13, 1996, Vol 1 M5:pp 1-35, San Diego, CA.

61. **"A 2000 lpi Active-Matrix EL Display"**
Larry Arbuthnot ... R.G Stewart, Society of Information Display Digest of Technical Papers pp 374-377 May 14-16, 1996, San Diago, CA.

62. **"Why AMEL?"**
M.Robert Miller ... R.G. Stewart, Society of Information Display Digest of Technical Papers pp 378-381 May 14-16, 1996, San Diago, CA.

63. **"aSi Self-Scanned 2.2-in. EDTV Projection LC Light Valve"**
H.Lebrun ... R.G.Stewart, Society of Information Display Digest of Tech Papers pp 677-680 May 14-16, 1996, San Diago, CA.

64. **"FPD Fundamentals"**
R.G.Stewart, SID Display Works '97 -- FPD Fundamentals January 31, 1997 San Jose, CA.

65. **"SASID - Selfscanned Amorphous Silicon Displays"**
R.G.Stewart 1997 International Workshop on Active-Matrix LCDs Invited Paper AM-1, September 11, 1997 Tokyo, Japan

66. **"Reliability and Lifetime of SASID Displays"**
R.G.Stewart IDW'97 Invited Paper, November 19-21, 1997 Nagoya, Japan

67. **"Design of Improved Pixel for a Polysilicon Active-Matrix Organic LED Display"**
R.M.A.Dawson, ... R.G.Stewart, Society of Information Display Digest of Technical Papers pp11-14 May 17-22, 1998, Anaheim, CA.

68. **"The Impact of Transient Response of Organic Light Emitting Diodes on Design of Active Matrix OLED Displays"**
R.M.A.Dawson ... R.G.Stewart, International Electron Device Meeting (IEDM'98) Paper 32.6.1, pp 875-878, December 5-9,1998, San Francisco, CA.

69. **"Flat Panel Display Technology"**
Roger G. Stewart & Michael Kane, SID Display Works '99 -- Seminar Notes pp 85-154, Feb 5, 1999 San Jose, CA.

70. **"Self-Scanned Amorphous Silicon AMLCDs""**
Roger G. Stewart, Information Display, pp 12-16, Vol 15, #3, March, 1999

71. **"Modular Displays for Megapixel Applications"**
D.L.Matthies ... R.G.Stewart, SPIE Conference, April 5-9, 1999, Orlando, Florida.

72. **"A Polysilicon Active Matrix Organic Light Emitting Diode Display with Integrated Drivers"**
R. Dawson ... R.G.Stewart, Society of Information Display Digest of Technical Papers, May 17-21, 1999, San Jose, CA.

73. **"New Electronic Display Technologies"**
R.G.Stewart Invited Tutorial Lecture at the 7th Color Imaging Conference, November 1999, Scottsdale, Arizona

74. **"NanoBlock ICs and Smart Cereal Boxes"**
R.G.Stewart, 58th Device Research Conference, pg 101, June 19-21, 2000, Denver, Colorado

75. **"Flexible Displays with Fully Integrated Electronics"**
R.G.Stewart, Invited 20th International Display Research Conference, pp 415-415, Sept 25-28, 2000, Palm Beach, Florida

76. **"Incorporation of High Performance Si-based Devices on Flexible Substrates using Self-Orienting Fluidic Transport"**
R.Stewart, Presentation FP-MoA7 at American Vacuum Society 47th International Symposium, pg #19, October 2-6, 2000, Boston, Massachusetts

77. **"Ultra-Low-Power AMLCDs"**
R.G.Stewart, Invited Paper 18.1 at the 2001 SID International Symposium Digest of Technical Papers, Vol #32, pg 264-267, June 5-7, 2001, San Jose, California

78. **"The Third Wave of the Computer Revolution, RFID, & Direct Computer-to-Computer Communications"**
R.G.Stewart Invited Presentation at Xerox PARC Lecture Series, July 26th, 2001

79. **"Low-Cost Flexible Displays"**
R.G.Stewart presented 1/14/02 at Flexible Microelectronics Manufacturing Workshop in Phoenix, Arizona, sponsored by USDC & Army Research Laboratories

80. **"Nano-Technology Applications: RFID Tags & Displays"**
R.G.Stewart, Paper Presented 3/8/02 at NanoVentures 2002 in Austin, Texas

81. **"Flexible Electronic Devices & Displays"**
R.G.Stewart, J.Tu, E.Boling Invited Paper 2.3 presented 4/2/02 at Materials Research Society Conference, San Francisco, CA

82. **"Rugged Low-Cost Display Systems"**
R.G.Stewart et.al. Paper #4712-40, presented 4/4/02 at Cockpit Displays IX: Displays for Defense Applications, Published in SPIE - The International Society for Optical Engineering, Proceedings of SPIE Vol. #4712, pg 350-356

83. **"Intellectual Property and the Chief Technology Officer"**
R.G.Stewart presented on 4/30/02 at Intellectual Property Society in Palo Alto, California

84. **"Plastic Film Displays with NanoBlock IC Drivers Integrated by Fluidic Self Assembly Process"**
Jeff Jacobsen ... R.G.Stewart, Invited Paper 18.2 at the 2002 SID International Symposium Digest of Technical Papers, Vol #33-2, ISSN-0002-966X, pg 726-729, May 21-23, 2002 Boston, Mass.

85. **"Pursuing the Deal: Negotiating Intellectual Property Agreements"**
R.G.Stewart presented 9/24/02 at Global Alliance & Technology Acquisition Summit in Seattle, Washington

86. **"EPCglobal and the Search for RFID Standards"**
R.G.Stewart presentation on 10/6/04 at International RFID IP Conference in San Francisco, California

87. **"Key Public Domain Patents"**
R.G.Stewart presentation on 10/7/04 at International RFID IP Conference in San Francisco, California

88. **"RFID Patent Update"**
Invited presentation on 4/10/05 at RFID Journal Live Conference in Chicago, Illinois

89. **"Electronic Labels"**
R.Stewart presentation on 10/4/06 at the Intelligent Printing & Packaging Conference Cherry Hill, New Jersey, USA

90. **"RFID Patents"**
Invited presentation on 2/20/07 as part of the RFID Investor's Conference at the RFID Smart Labels USA 2007 sponsored by IDTechEx in Boston, Mass., USA

91. **"On Being an Expert Witness"**
Invited paper presented at the IP Society Meeting on May 10, 2007 in Santa Cruz, California, subsequently web-published by the IP Society

92. **"Introduction to Reflective Displays"**
Invited paper presented on 10/23/07 at the Society for Information Display Applications Conference in San Francisco, CA

93. **"Active Matrix OLED Pixel Design"**
Roger G. Stewart, Invited Paper at 2010 SID International Symposium Digest of Technical Papers Vol. #41-2, pg 790-793, May 27, 2010, Seattle, Washington

94. **"A Fast 2-Transistor Current-Mode AMOLED Pixel"**
Roger G. Stewart, published in the Journal of the SID, Vol. 19/7 2011, pp 503-512

EXHIBIT

D

US006771981B1

(12) **United States Patent**
Zalewski et al.

(10) **Patent No.: US 6,771,981 B1**
(45) **Date of Patent: Aug. 3, 2004**

(54) **ELECTRONIC DEVICE COVER WITH EMBEDDED RADIO FREQUENCY (RF) TRANSPONDER AND METHODS OF USING SAME**

(75) Inventors: **Thomas W. Zalewski**, Irving, TX (US); **Michael C Pennington**, Forney, TX (US); **Randall C. Roberts**, Double Oaks, TX (US); **Steven A. Shaw**, Irving, TX (US)

(73) Assignee: **Nokia Mobile Phones Ltd.**, Espoo (FI)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 508 days.

(21) Appl. No.: **09/675,618**

(22) Filed: **Sep. 29, 2000**

Related U.S. Application Data

(60) Provisional application No. 60/222,475, filed on Aug. 2, 2000.

(51) **Int. Cl.**[7] **H04B 1/38**; H04M 1/00

(52) **U.S. Cl.** **455/557**; 455/407; 455/558; 455/552.1; 455/575.1; 342/31

(58) **Field of Search** 455/405, 406, 455/407, 408, 412.1, 466, 557, 558, 92, 95, 575.8, 115.4, 100, 552.1; 342/51; 235/380; 705/41

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,713,148	A	* 1/1973	Cardullo et al.	342/42
4,189,712	A	2/1980	Lemelson	
4,823,928	A	4/1989	Speas	
4,880,097	A	11/1989	Speas	
5,023,936	A	6/1991	Szczutkowski et al.	
5,053,774	A	10/1991	Schuermann et al.	
5,077,832	A	12/1991	Szczutkowski et al.	
5,138,650	A	8/1992	Stahl et al.	
5,220,593	A	* 6/1993	Zicker et al.	455/407
5,353,328	A	* 10/1994	Jokimies	455/558
5,359,182	A	* 10/1994	Schilling	235/380
5,382,952	A	1/1995	Miller	
5,453,747	A	9/1995	D'hont et al.	
5,488,376	A	1/1996	Hurta et al.	
5,489,773	A	2/1996	Kumar	
5,528,222	A	6/1996	Moskowitz et al.	
5,602,919	A	2/1997	Hurta et al.	
5,604,485	A	2/1997	Lauro et al.	
5,614,892	A	3/1997	Ward, II et al.	

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

EP	0940783	9/1999
WO	WO 96/11452	4/1996
WO	WO 96/27170	9/1996
WO	WO 97/12414	4/1997
WO	WO 97/24698	7/1997
WO	WO 97/32423	9/1997
WO	WO 97/44912	11/1997
WO	WO 98/28831	7/1998
WO	WO 99/09525	2/1999

(List continued on next page.)

OTHER PUBLICATIONS

"Mobil Speedpass Warning Card"; User Manual.
"A Whitepaper"; BiStatix Technology; Motorola Inc.—Worldwide Smardcard Solutions Division.

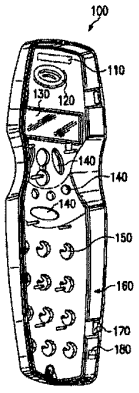
(List continued on next page.)

Primary Examiner—Quochien B. Vuong
Assistant Examiner—Simon Nguyen
(74) *Attorney, Agent, or Firm*—Steven A. Shaw

(57) **ABSTRACT**

A changeable cover for an electronic device and method of using same in a payment system is provided. The cover has a transponder responsive to interrogation by an electric field. The cover provides an electronic identification number and other information in response to the interrogation signal. Also provided is a system for making payments, comprising at least one mobile station (**4**) which has an associated cover (**100**) for providing local data transfer. The system also comprises at least one point of sale terminal or the like, which has a second transceiver for providing data transfer.

15 Claims, 7 Drawing Sheets



U.S. PATENT DOCUMENTS

5,710,886	A		1/1998	Christensen et al.	
5,719,918	A		2/1998	Serbetciouglu et al.	
5,727,153	A		3/1998	Powell	
5,729,697	A		3/1998	Schkolnick et al.	
5,748,737	A	*	5/1998	Daggar	705/41
5,768,370	A		6/1998	Maatta et al.	
5,787,174	A		7/1998	Tuttle	
5,805,676	A		9/1998	Martino	
5,819,234	A		10/1998	Slavin et al.	
5,845,259	A		12/1998	West et al.	
5,848,152	A		12/1998	Slipy et al.	
5,850,599	A		12/1998	Seiderman	
5,887,266	A		3/1999	Heinonen et al.	
5,909,176	A		6/1999	Schrott et al.	
5,933,086	A		8/1999	Tischendorf et al.	
5,942,985	A		8/1999	Chin	
5,943,624	A		8/1999	Fox et al.	
5,969,691	A		10/1999	Myers	
5,987,438	A		11/1999	Nakano et al.	
6,041,305	A		3/2000	Sakurai	
6,058,304	A		5/2000	Callaghan et al.	
6,073,840	A		6/2000	Marion	
6,075,971	A		6/2000	Williams et al.	
6,078,806	A		6/2000	Heinonen et al.	
6,078,820	A		6/2000	Wells et al.	
6,107,920	A		8/2000	Eberhardt et al.	
6,107,934	A		8/2000	Andreou et al.	
6,169,890	B1	*	1/2001	Vatanen	455/406
6,232,870	B1		5/2001	Garber et al.	

FOREIGN PATENT DOCUMENTS

WO	WO 99/53457	10/1999
WO	WO 00/10144	2/2000
WO	WO 00/16285	3/2000
WO	WO 00/21032	4/2000
WO	WO 00/26838	5/2000
WO	WO 00/26856	5/2000
WO	WO 00/34931	6/2000
WO	WO 00/38340	6/2000
WO	WO 00/74406	12/2000
WO	WO 01/03040	1/2001

OTHER PUBLICATIONS

"C–Stores Advance Technology"; E–Payments 2000; pp 12A & 13A; Jun. 1999.

"From Present to Future. Or: Why the SkiData ticket technology is a secure future investment."; SkiData AG–EventAccess–Ticket Technologies; Jul. 13, 2000; pp 1,2; http://www.skidata.com/English/Event/Tickets.asp.

"From Selling to Charging. Or: How to integrate technological highlights with SkiData components."; SkiData AG–Access Components–From selling to charging; Jul. 13, 2000; pp 1,2; http://www.skidata.com/English Components/KevDetector.asp.

"RFID: The retail revolution"; Checkpoint Systems—RFID Products; Jul. 21, 2000; pp 1 of 1; http://www.checkpoint-systems.com/rfid/products.html.

Mancy, K.; "High–tech tags mean days of bar codes may be numbered"; WSSD: BiStatix: News Articles; Nov. 3, 2000; pp 1,2; USA Today; Mar. 31, 1999; http://www.motorola-.com/GSS/SSTG/smartcard/3 6 bst news usa 3 31 99.html.

* cited by examiner

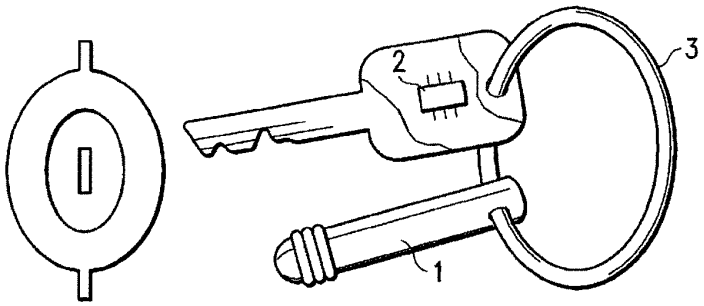


FIG. 1
(PRIOR ART)

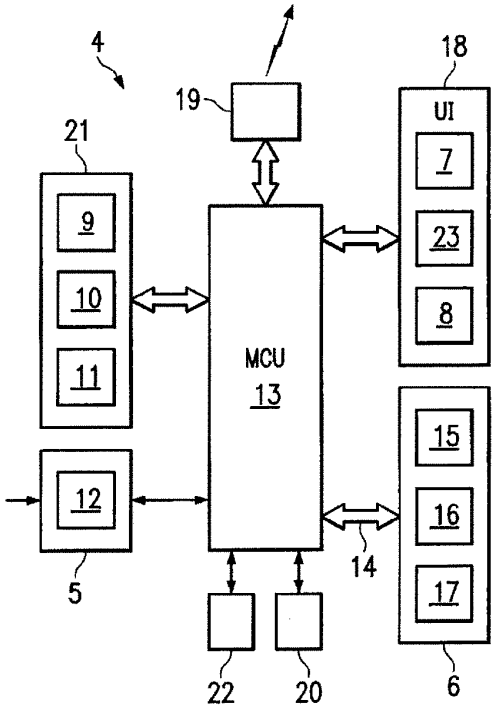


FIG. 2A

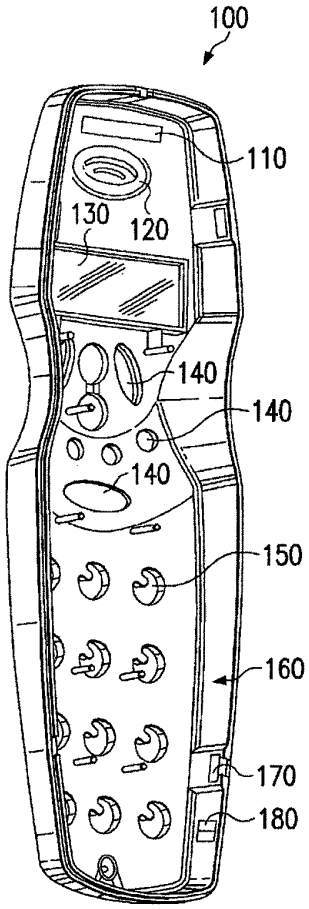


FIG. 2B

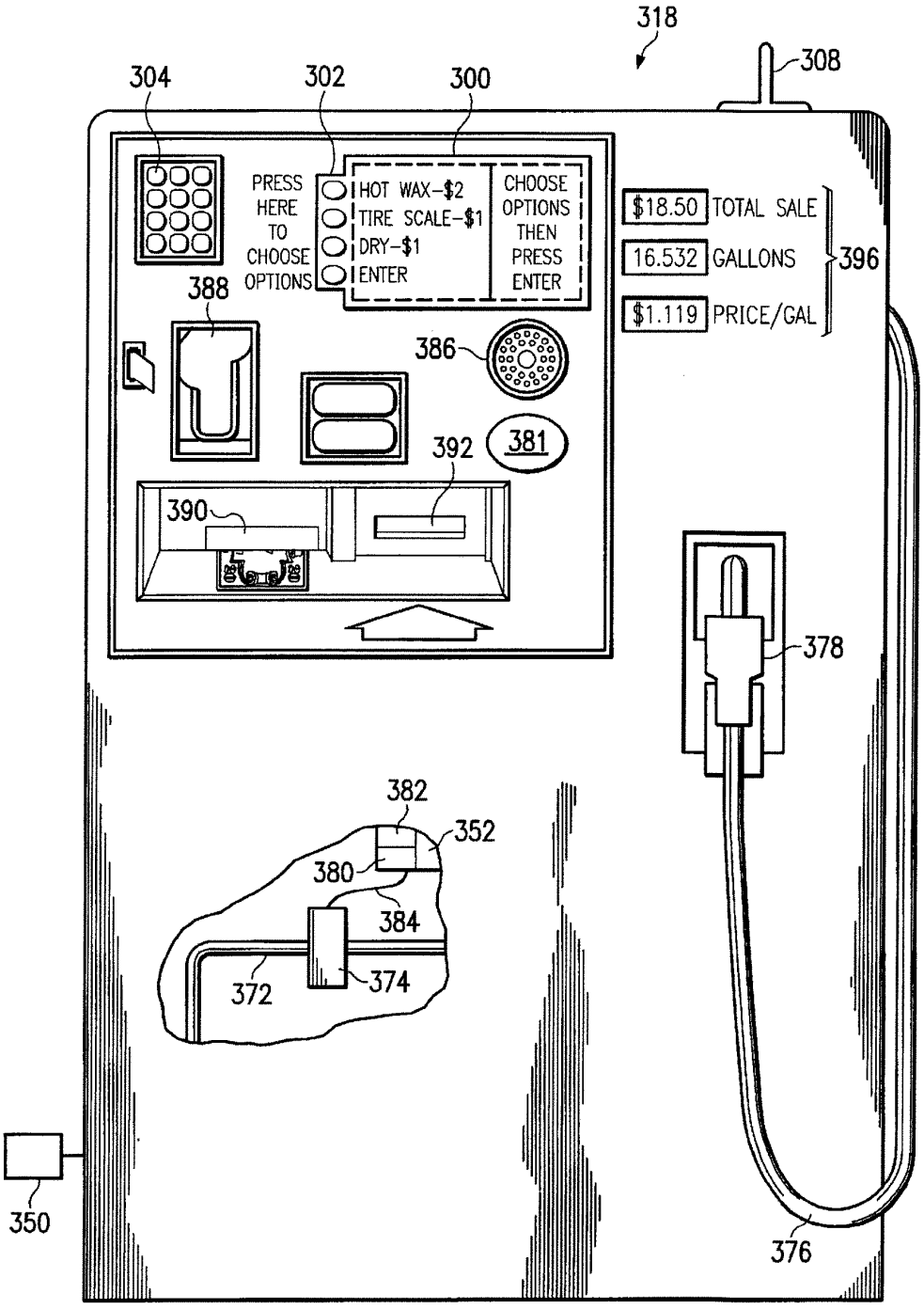


FIG. 3
(PRIOR ART)

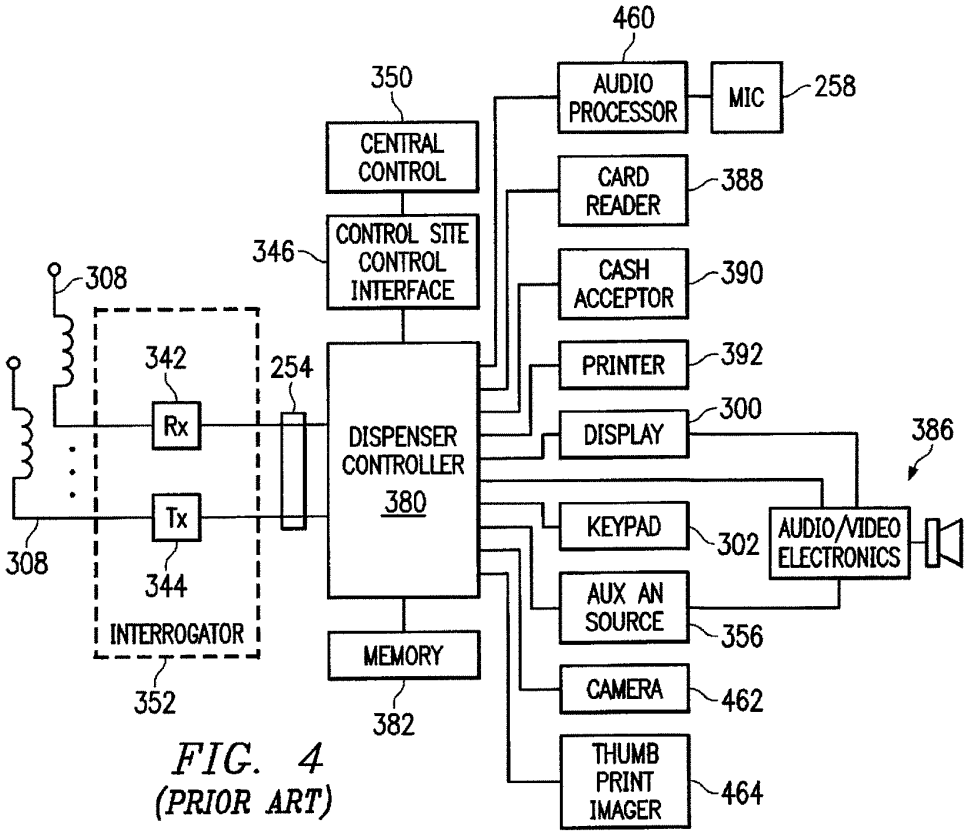


FIG. 4
(PRIOR ART)

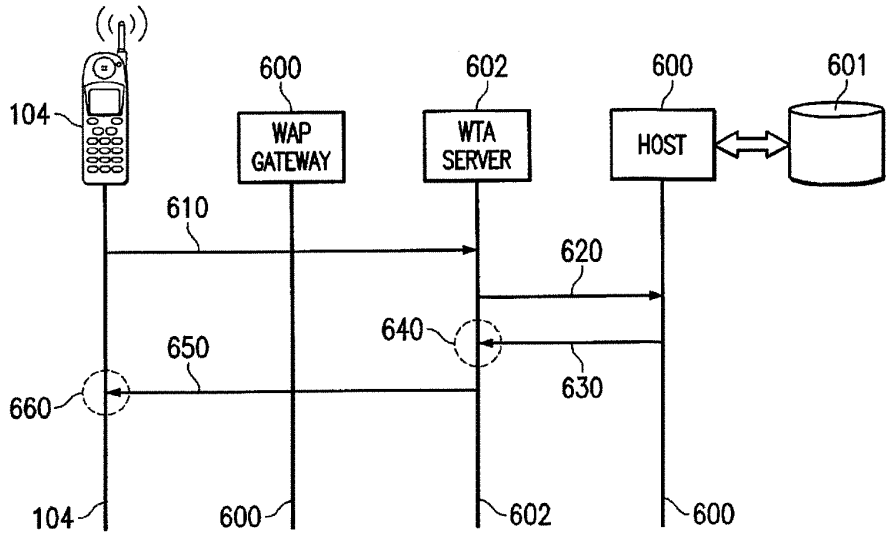


FIG. 6

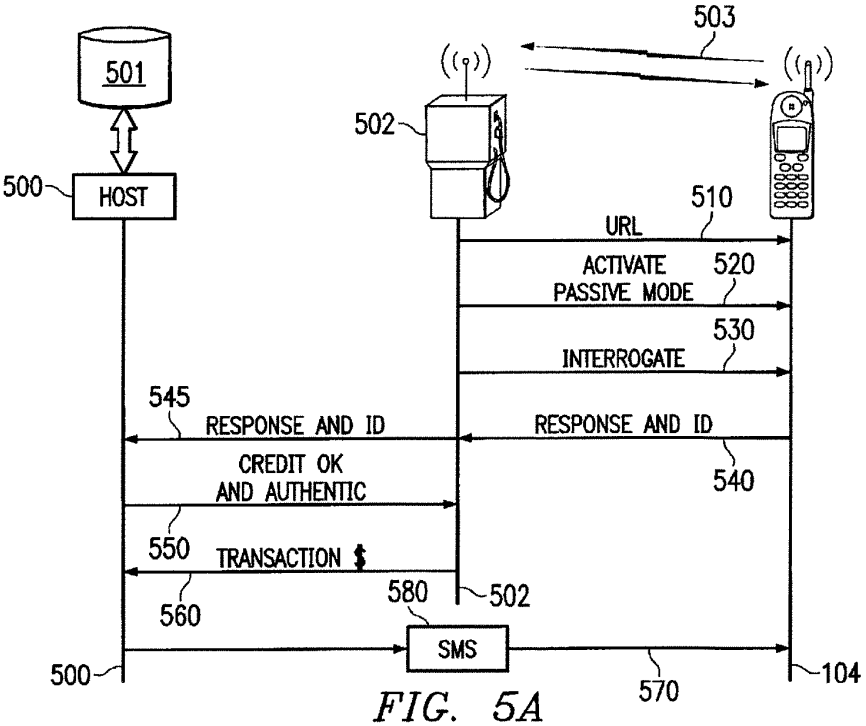

501
500
HOST
502
503
510
URL
ACTIVATE PASSIVE MODE
520
530
INTERROGATE
545
RESPONSE AND ID
RESPONSE AND ID
540
CREDIT OK AND AUTHENTIC
550
TRANSACTION
560
580
502
SMS
500
570
104

FIG. 5A

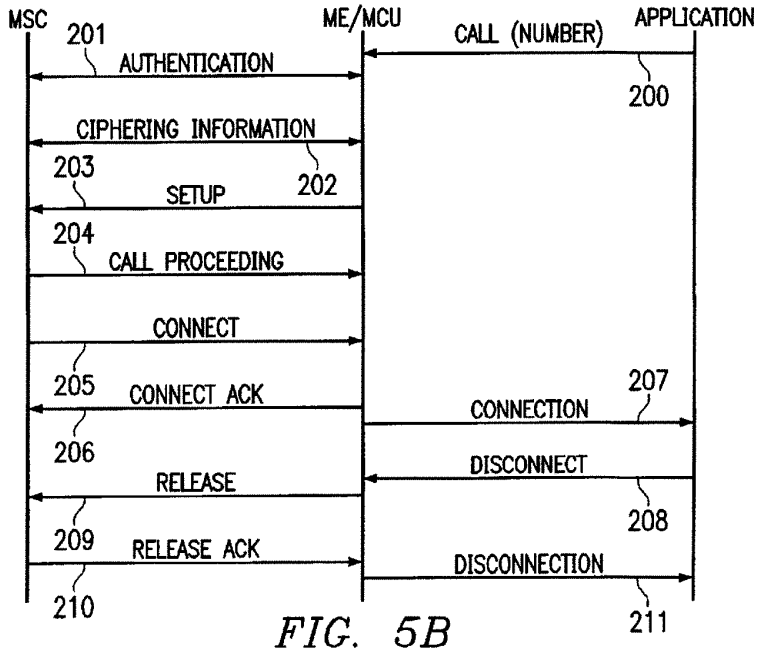

MSC
201
AUTHENTICATION
ME/MCU
CALL (NUMBER)
APPLICATION
200
CIPHERING INFORMATION
202
203
SETUP
204
CALL PROCEEDING
CONNECT
205
CONNECT ACK
207
CONNECTION
206
RELEASE
DISCONNECT
208
209
RELEASE ACK
DISCONNECTION
210
211

FIG. 5B

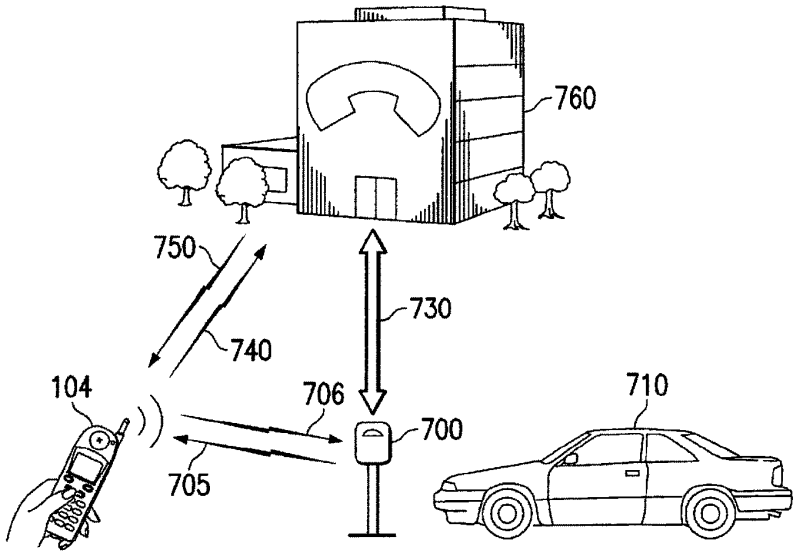

760
750
740
730
104
706
700
710
705

FIG. 7

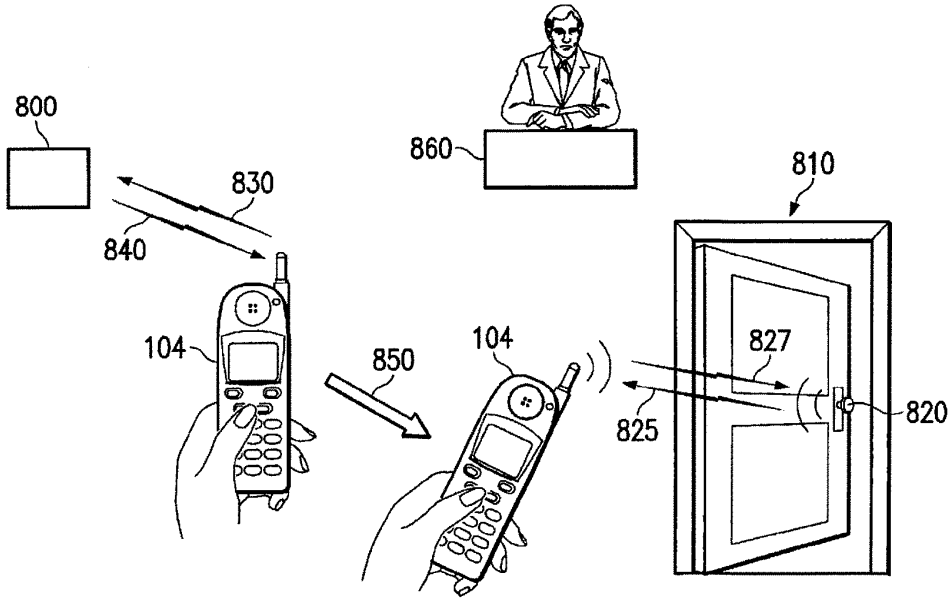

800
860
830
840
810
104
850
104
827
825
820

FIG. 8

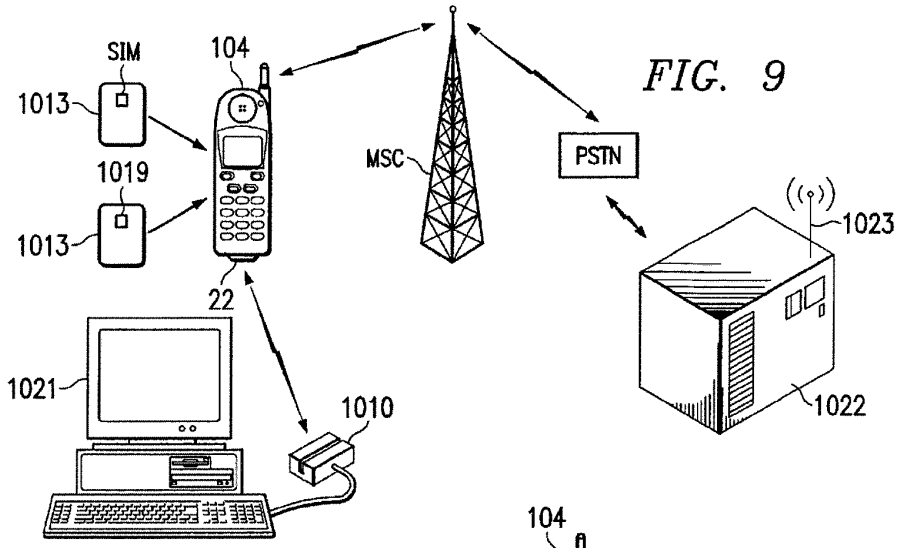


FIG. 9

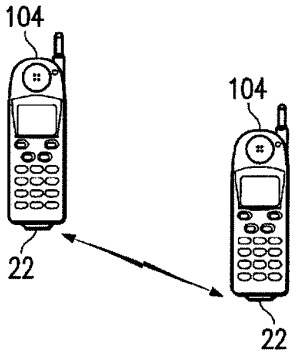


FIG. 10

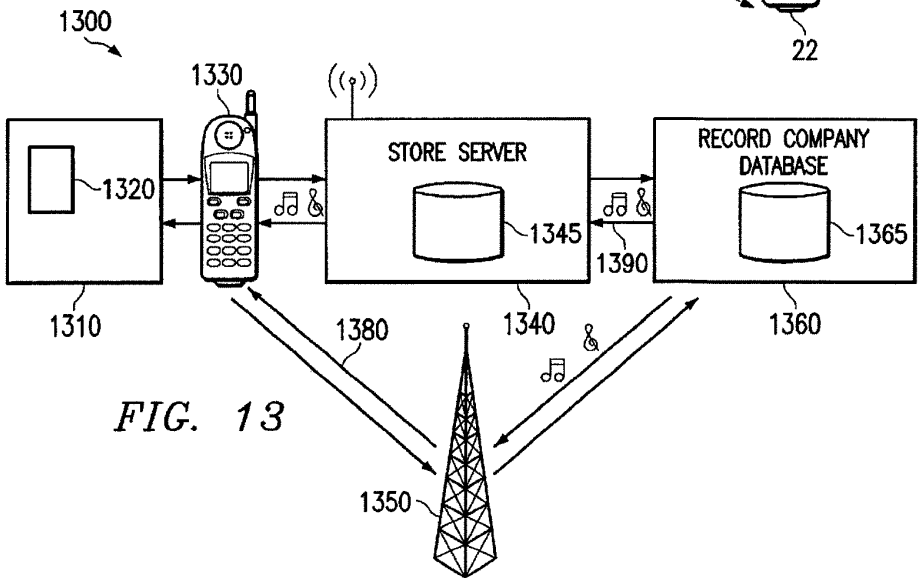


FIG. 13

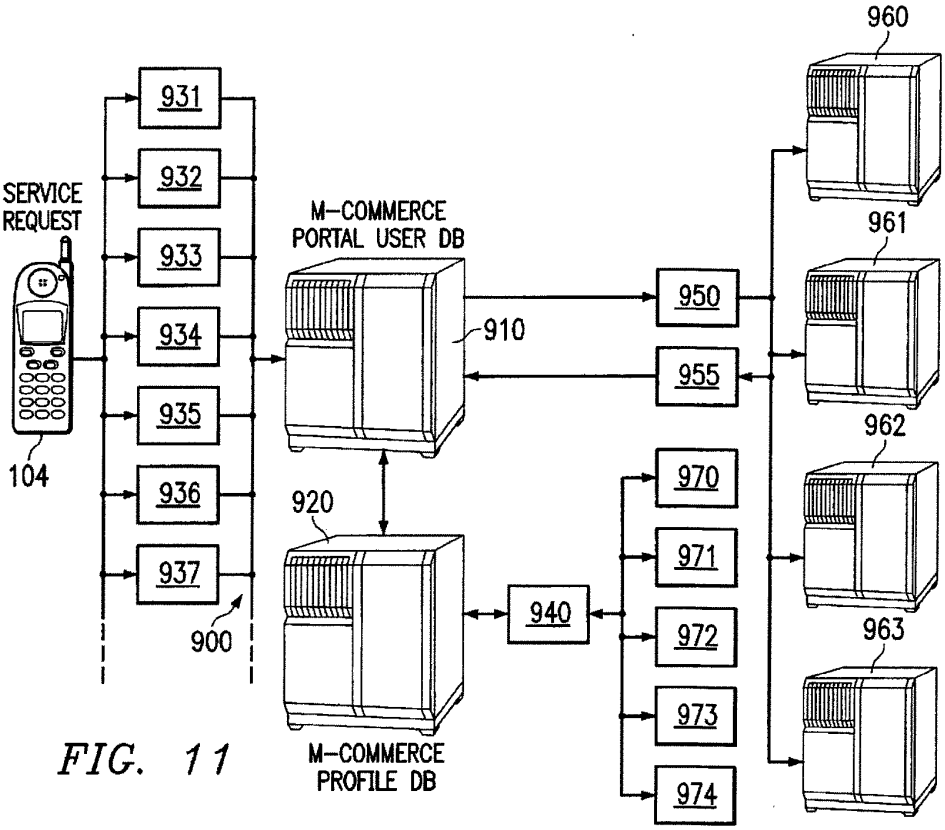

960
931
932
933
934
935
936
937
SERVICE REQUEST
104
900
M-COMMERCE PORTAL USER DB
910
950
955
961
962
963
920
940
970
971
972
973
974
M-COMMERCE PROFILE DB

FIG. 11

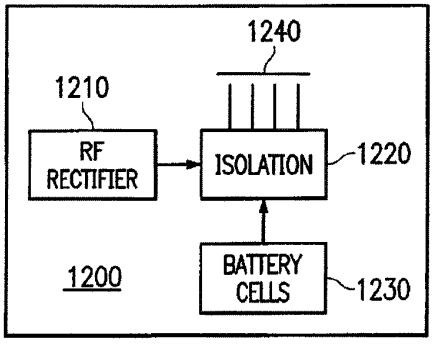

1240
1210
RF RECTIFIER
ISOLATION
1220
1200
BATTERY CELLS
1230

FIG. 12

ELECTRONIC DEVICE COVER WITH EMBEDDED RADIO FREQUENCY (RF) TRANSPONDER AND METHODS OF USING SAME

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority under 35 U.S.C. 1.19 to Provisional Application No. 60/222,475 filed on Aug. 2, 2000. This application is related to U.S. Ser. No. 09/092,828 filed on Jun. 5, 1998; U.S. Pat No. 6,418,326 which is a continuation of U.S. Ser. No. 09/074,864 filed on May 8, 1998, now U.S. Pat. No. 6,078,806 granted on Jun. 20, 2000; which is a continuation of U.S. Ser. No. 08/597,845 filed on Feb. 7, 1996, now U.S. Pat. No. 5,887,266 granted on Mar. 23, 1999, all entitled METHOD FOR USING APPLICATIONS IN A MOBILE STATION, A MOBILE STATION AND A SYSTEM FOR EFFECTING PAYMENTS, issued to Heinonen et al., claiming priority date of Feb. 15, 1995 based on a Finnish application. Additionally, this invention is related to the inventions described in U.S. patent application Ser. No. 08/800,591, filed on Feb. 18, 1997, entitled ELECTRONIC DEVICE WITH HOUSING SUPPLEMENT, and U.S. patent application Ser. No. 09/829,764, filed an Apr. 10, 2001, entitled REMOVABLE HOUSING COVER FOR A PORTABLE RADIO COMMUNICATION DEVICE. This invention is related to U.S. Pat. No. 5,768,370 granted on Jun. 16, 1998 entitled USER CHANGEABLE COSMETIC PHONE INTERFACE. Said patents and patent applications are commonly assigned to assignee of the present invention and are incorporated herein by reference.

FIELD OF THE INVENTION

This invention relates generally to mobile station accessories and more particularly to an electronic device cover with embedded transponder and methods using same.

BACKGROUND OF THE INVENTION

There are prior art mobile stations in which the control card includes a subscriber identification unit, such as the SIM (Subscriber Identity Module) used in GSM (Global System for Mobile Communications) standard based systems. The SIM comprises a control unit CPU (Central Processing Unit), program memory ROM (Read Only Memory), data memory suited for long-term storage EEPROM (Electrically Erasable Programmable Read Only Memory) and operation memory suited for saving data during use RAM (Random Access Memory). For using the mobile station, a PIN (Personal Identification Number) number saved on the SIM must be given, generally when the mobile phone is switched on. Other user-specific information, such as telephone numbers, messages, etc. can also be saved in the data memory of the SIM.

There are now also mobile phones which have a data connector for connecting an external data processing unit, such as a portable computer. Thus the mobile phone can be used as a means for data transfer between the portable computer and some other data processing equipment through a radio communication network. In this way it is possible to establish a connection e.g. to the user's bank for checking the balance and effecting payments. However, an arrangement of this kind is not very practical, because a separate cable is needed between the computer and the mobile phone. In addition, the computer must be available for establishing e.g. a bank connection.

Wireless systems, so called smart cards or payment cards, are also known, the said cards being mostly used in payment applications, such as making payments in buses and public telephones. Smart cards like this generally include a central processing unit, a program memory and a data memory. The internal operation of the card in use is controlled by the CPU in accordance with the program code stored in the program memory. The data memory is used for saving information relating to the intended use of the smart card, such as its value in money. For performing the payment transaction, the card also contains means for data transfer, such as a transmitter/receiver based on electromagnetic induction. A disadvantage of smart cards of this kind is, e.g., the fact that several different cards may be needed for different kinds of payment, and so the user must carry a large number of cards. In addition, when the amount of money loaded in the card has been consumed, one needs to buy a new card or load a new amount of money in the card at a sales outlet offering a loading service.

The Japanese patent application JP 4 083 447 presents a mobile phone to which it is possible to add more properties by means of a separate memory card. An application like this is preferably arranged for a certain use, such as for increasing the saving capacity or the telephone number memory. Applications like this are based on a method in which the central processing unit of the mobile phone reads the data saved in the applications (memory cards) and operates in a predetermined way required by the data. A disadvantage of this method is the fact that the functions needed for performing different operations of the applications must be programmed to the central processing unit CPU in advance, whereby the development of new applications also requires changes in the programs of the central processing unit.

The international patent application WO 91/12698 presents a mobile phone to which it is possible to add properties by means of a separate add-in card, such as a smart card. In this way it is possible to restrict the use of the phone by preventing foreign calls, long-distance calls or calls to service numbers, for example. The information about call restrictions is saved on an add-in card which the user has to install in the mobile phone when it is being used. Thus the main use of this method is to prevent the use of some properties of the mobile station.

Automatic identification and data capture technologies are increasingly being used to identify and track items. Radio Frequency IDentification (RFID) transponders, also known as tags or tokens, provide a means of obtaining data without direct contact such as is needed with magnetic strip or bar code technology. Such transponder devices have been around for some time. U.S. Pat. No. 3,713,148 issued to Cardullo et al. on Jan. 23, 1973, and incorporated herein by reference, describes a transponder which includes a changeable or writable memory. An RFID system consists of a transponder, (also referred to as tag or token), with a unique electronic serial number and a reader device also referred to as an interrogator. The tags are self-contained in hermetically sealed capsules or laminates requiring no external power since they get power by rectifying the energy in a field created by the interrogator and storing the energy in capacitive-type circuitry. Nevertheless, some transponders may be powered with small batteries. RFID tags come in a variety of embodiments from a thin, flat and flexible form-factor (thin type) to small capsules (cylindrical type). An example of a thin form-factor is described in U.S. Pat. No. 5,528,222 issued to Moskowitz et al on Jun. 18, 1996. Although the term "radio frequency" is used, other parts of the electromagnetic spectrum may be used to create the

energy field. UHF, microwave and millimeter wave sources may be used by the interrogator depending on the distance between the interrogator and the transponder and material to be penetrated. Commercial examples of RFID transponders are the Texas Instruments' Registration and Information Systems (TIRIS) line of transponders available from Texas Instruments (Dallas, Tex.; www.ti.com).

Transponders such as those from Texas Instruments and others may be embedded in keyfobs, cards or other such items. Gas companies are using keyfob or keychain transponders to identify consumers when they buy gas at the pump and charge it to their gas account (e.g. see http://www.mobil.com/speedpass/). The transponders interact with a fueling system such as provided by Gilbarco Inc.—also know as Marconi Commerce Systems, 7300 West Friendly Avenue, (Greensboro, N.C.; http://www.marconicommerce.com). The fueling system is described in U.S. Pat. No. 6,073,840 issued to Kenneth O. Marion and assigned to Gilbarco Inc., said disclosure is hereby incorporated by reference. Use of keyfobs adds another thing for a consumer to carry and worry about losing. For example, if one leaves the keyfob with another, such as valet parking attendant, it is possible for the attendant to use the keyfob to fill-up many cars while the owner is having dinner or other activities.

There is also a need to allow consumers to collect coupons from other transactions at different establishments. For instance, consumer may wish to collect coupons from mail inserts, newspapers, and newspapers and redeem these hard-copy coupons. The use of hard copy coupons is time consuming and troublesome for the consumer.

Furthermore, use of transponders in the form of keyfobs on keyrings have a problem when stored near certain keys which transmit their own codes. Many automobiles are now being manufactured with a microprocessor embedded in the key which sends a signal to a security system coupled to the ignition system. Without the correct code transmitted by the key, the automobile won't start. But, the keyfob transponder interferes with the coded signal and thus the automobile will not start because the security system can not read the code from the processor in the key. For example, user information regarding the model year 2000 Jeep includes warnings about RFID transponders on the same key ring as the ignition key. FIG. **1** shows a typical transponder to be used on a key ring **3**. Transponder **1** is a typical transponder in the form of a keyfob as described above, **2** is a key with embedded processor manufactured to interact with the security system of an automobile. The security system will only allow engine to start if a correct code is transmitted to the security system from the processor embedded in the key. Transponder **1** interferes with the reception of this coded signal.

Additionally, the transponder on a key ring is inconvenient when the consumer is at a drive-through window and must turn off the car in order to access the keyfob on the key ring. Thus, there is a need to have a transponder located away from the key ring associated with the key to the ignition system of an automobile.

In another example of identification systems, some grocery stores are now providing for self-check, wherein the buyer scans their own groceries using bar codes. Additionally, many stores are saving money by not pricing each item but use bar code scanning and shelve area pricing as a means to convey price information. However, sometimes an item may have been moved from its proper location and a means is needed to verify a price. Symbol technologies, Inc. (Holtsview, N.Y.; http://www.symbol.com) offers a Portable Shopping System. When a shopper enters the store, they are issued a scanner with which they can scan items to determine price and maintain a running total of their purchases. However, the shopper must still go to checkout and present hard copy coupons which the consumer had to clip, sort, file, and redeem at checkout. At checkout the coupons are also scanned individually, which leads to delays and lines. The consumer must also provide cash, credit or debit card to pay for the goods. Thus there is a need for a device which a consumer can carry with them which captures, stores and download coupons, provides a way to keep track of their purchases, and provides a means for automatic payment.

In another example of automated shopping, U.S. Pat. No. 5,729,607 issued to Schkolnick et al. on Mar. 17, 1998 and assigned to International Business Machines describes an intelligent shopping cart. Groceries may be labeled with thin transponders. The transponders on the groceries identify the items and their price. The use of the transponders allows a customer to use a cart as described in the Schkolnick patent or pass through an energy field created by an interrogator and the groceries purchased will automatically be identified and the amount totaled. However, the consumer must still open a wallet and fumble with cash or debit/credit cards. Thus, there is a need to have a payment system associated with an item which a consumer can wear or hang on their person to facilitate automatic payment.

U.S. Pat. No. 6,078,806 granted on Jun. 20, 2000, entitled METHOD FOR USING APPLICATIONS IN A MOBILE STATION, A MOBILE STATION AND A SYSTEM FOR EFFECTING PAYMENTS assigned to the same assignee as the present application provides a method of affecting payments using a mobile station or Personal Trusted Device (PTD).

Thus, for the above reasons, there is a need to have one means of electronic identification and payment which the consumer can carry. Furthermore, there is a need to provide a system in which consumers may earn, store and redeem coupons in a single device.

SUMMARY OF THE INVENTION

In order to eliminate the aforementioned disadvantages and to raise the standard of technology in this field, a new method for using applications in a Personal Trusted Device (PTD) also referred to as mobile radio communication unit comprising mobile station and a changeable cover with intelligence has been invented, as well as a new mobile station with changeable cover as application module and a new system for effecting payments, collecting incentives and other equivalents. The changeable cover provides a means for local data transfer.

The invention is based on the idea that the mobile station can be complemented with applications which have a first mode of operation and a second mode of operation. An application in the first mode of operation does not do anything actively, but stays in the background, passive. In the passive mode, the changeable cover with intelligence may still function to provide for a system of payment. In the second mode of operation, the application is active and can, e.g., control the central processing unit of the mobile station. When in the second mode of operation, the application can also use peripheral equipment which are generally known components of a mobile station, such as a display, keypad, status indicators and data ports, which the application has requested when switching to the second mode of operation.

Applications used in the method of the invention can preferably be of three different types, depending on the

situation in which the application can switch to the second mode of operation: 1) The so-called power-up type, hereby the application switches to the second mode of operation as soon as possible after the mobile station is switched on and/or a new cover in attached, 2) The menu type, in which the user can select the application he wants to be active, e.g. from a menu shown on the display of the mobile station, and 3) Automatic type, in which the application switches to a second mode of operation when a certain condition, defined for the application, has been satisfied. For example, an application of the third operation mode can become active in the GSM system, when the mobile station receives a specific SMS (Short Message Services) message. SMS messages are typically used to transfer short text messages between mobile stations. The automatic type can also be selected from a menu. A menu option can also be used in a situation in which several power-up type applications have been connected to the mobile station, and one of the said applications can switch to the second mode of operation. The method of the invention is characterized in that the application has a first mode of operation and a second mode of operation, whereby the application is passive in the first mode of operation, and in the second mode of operation the application controls the central unit of the mobile station. The mobile station in accordance with the invention is characterized in that it also comprises means for setting the application in a first mode of operation, in which the application is passive, means for setting the application in a second mode of operation, in which the application is active, and means for controlling the central unit of the mobile station when the application is in the said second mode of operation. Remarkable advantages are achieved by this invention compared to the prior art solutions. By means of this invention, the range of possible uses for a mobile station may be substantially increased. Besides the normal phone and data services, the mobile stations related to the invention can also be used e.g. as a credit card and/or as a cash card, instead of traditional plastic cards. By means of a mobile station equipped with a suitable application module the user can make payments in a shop using his/her credit account (credit card application) or pay directly from his/her bank account (cash card application), and thus no real cash is needed. Typical for both credit card and cash card type of applications is that money or its equivalent, in electric form, is stored in a central computer (also referred as a money server) which the mobile station contacts when making a payment. The money server is typically located in a bank's premises. If wanted, it is possible for the application to check the credit limit or the balance of the bank account before the payment is accepted. It is also possible to store money or its equivalent to an "electric money purse" in the mobile station or in the application module, i.e. cover, itself. In that case it preferably is not necessary to check the credit limit or balance of the bank account from the money server before the payment can be accepted, i.e. it is not necessary to contact the money server for making a payment. The information of how much money there is stored in the "electric money purse" can be read from the memory of the mobile station or the application module, from which electric money is subtracted when a payment is made. These kind of applications, where the money is stored in the mobile station or in the application module itself, are also referred as payment applications.

Additional features and advantages of the invention will be readily apparent from the specification and from the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an illustration of key ring with an RFID fob transponder and an ignition key having a processor which emits an RF signal.

FIG. **2**A is block diagram of a mobile station in accordance with the invention.

FIG. **2**B is an illustration of an electronic device cover in accordance with the invention.

FIG. **3** is an illustration of a fueling dispenser.

FIG. **4** is a block diagram showing the dispenser electronics of the dispenser shown in FIG. **3**.

FIG. **5** is a step diagram showing a transaction system in accordance with the invention.

FIG. **5**B shows the path of the telephone call between the application and a mobile services switching center (MSC) in a mobile radio communication network as a simplified diagram.

FIG. **6** is a step diagram showing a receipt of transaction information via Wireless Application Protocol.

FIG. **7** shows the use of a method for the remote payment of parking in accordance with the invention.

FIG. **8** shows the use of a method for hotel room access in accordance with the invention.

FIG. **9** shows the use of a method in accordance with the invention in connection with a Point of Sale (POS) terminal.

FIG. **10** shows the communication between two mobile stations in accordance with the invention.

FIG. **11** shows a business model for M-Commerce in accordance with the invention.

FIG. **12** is a block diagram of a battery with isolation circuitry in accordance with an embodiment of the invention.

FIG. **13** is a block diagram showing an purchase preview system for music purchase in accordance with an embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIG. **2**A, a mobile station **4**, also referred to as a "Personal Trusted Device" (PTD), comprises master control unit MCU **13**, user interface UI **18**, high-frequency part **19**, low-frequency part **21**, power unit **5**, a means for data transfer **22** which can be IR or other equivalents in the electromagnetic spectrum, and application module connection unit **6**. The operation of the mobile station **4** is controlled by MCU **13**, which has a program code stored in advance for performing different operations. Mobile station **4** may also comprise Personal Information Management (PIM) capabilities, such as calendar, to-do list, and financial management programs.

The user interface **18** comprises components which are known from prior art mobile phones, namely a display **7**, a keypad **8** and status indicators **23**. MCU **13** produces various, situation-specific messages, operation instructions, menus etc. on the display **7**. Using the keypad **8**, the user can enter different kind of information to the mobile station **4**, such as the identification number and telephone number, and select operations from the menus. Status indicators **23** can preferably be used to indicate the internal modes of operation of the mobile station **4**. The display may also be in the form of glasses worn by the user implemented using LCD screen(s) or the display may be Virtual Retinal Display such as is provided by MicroVision (Seattle, Wash.) and described in U.S. Pat. Nos. 5,596,339; 5,659,327; 5,701,132; 5,982,555; and 6,008,781 assigned to University of Washington.

The radio frequency component **19** is a known component of mobile phones, which is used to transmit and receive calls

and messages using radio frequencies in a radio communication network, such as a GSM network, e.g. through a mobile services switching center MSC.

The low-frequency part **21** preferably comprises a microphone **9**, a headphone **10** and a buzzer **11** or the like.

The operation power for the mobile station **4** is supplied by a battery **12**, which is charged when required. Power unit **5** monitors the charge status and charging procedure of the battery **12**, among other things. Power unit **5** sends the information to central unit MCU **13** when the charge status of the battery **12** falls below a predetermined value, whereby MCU **13** announces this preferably by sounding buzzer **11** and/or showing a message on the display **7**.

A module card may be coupled to the module card connector located in the mobile station **4**. Module card may contain,among other things, a subscriber identity module (SIM) for user identification and memory for storage of logic and data. This memory may be volatile such as RAM and non-volatile memory such as EEPROM, flash or the like.

Application module connection unit **6** is located in mobile station **4** as shown in FIG. **2**A. Other module cards can also be connected to application module connection unit **6** of the exemplary embodiment, whereby they are preferably connected to their own module card connectors. From application module connection unit **6** to the central processing unit of mobile station **4** (MCU), there is application module bus **14**, by means of which the application modules connected to application module connection unit **6** communicate with MCU **4**. AT commands, known e.g. from modems, can be used for the transfer of data and commands.

In addition to the application module bus **14**, there is a separate control and data line from each application module connector **15, 16, 17**, of the application module connection unit **6**. Thus it is possible to use a structure based on the standard series ISO 7816 in the control and data line. The standard series ISO 7816 includes the voltage levels and timing diagrams, according to which the application modules are connected to the control and data line.

For each application module, application module connecting unit **6** has a connector, through which application module bus **14** is led to the application module, More than one application module may be connected to the same module card **13**. The second application module on the module card **13** can be a SIM module, for example.

The mobile station **4** also comprises a first means of data transfer, such as an infra red IR transmitter/receiver **22** or other equivalent frequencies in the electromagnetic spectrum. The first means of data transfer can be used to transfer data, with relatively short distances, between the mobile station **4** and a cash register (payment terminal), fuel dispenser as shown in FIG. **3** or, e.g., between two different mobile stations **4**. The a first means of data transfer may also serve as a bar-code reader to read and transfer coded data in the form of bar-codes into memory. The first means of data transfer may also include a data connector **20**, which can be used to couple a computer to the mobile station **4** or may also be used to couple a cover for mobile station **4** as is shown in FIG. **2**B. Mobile station **4** may comprise a housing for elements listed above wherein the housing may be coupled to a removal cover.

FIG. **2**B a detailed view of a removable cover in accordance with an embodiment of the present invention. An embodiment of the present invention is for use with mobile station **4** but may also be used in conjunction with other devices such as an MP3 player for example.

Removable mobile station cover with intelligence called SmartCover™ accessory or hereinafter cover **100**, comprises an RFID transponder **110**, grill opening **120** for speaker of mobile station, transparent element **130** through which to view display of mobile station, plurality of function key through-openings **140**, plurality of alpha numerical key through-openings **150**, external wall element **160**, catch projection **170**, cover to phone interface contacts **180**. Signals such as serial input/output data, read/write signal and other controls signals use these contacts to provide an interface between mobile station **4** and cover **100** through data connector **20**.

RFID transponder **110** may be a cylindrical or wedge type transponder attached to cover or it may be thin type embedded in the material of cover **100**. Cover **100** may also comprise non-volatile memory to store logic and data. The transponder is read by way of a reader also known as an interrogator. Data codes are encoded into the transponder and sent to the reader in response to an interrogation signal. The pattern of circuits may also be produce in a design using conducting ink and the like.

Cover **100** may also be used to transfer optical signals using optical relays currently in the art. Other equivalents for EM energy sensors, optical devices such as Dense Wave Multiple Access (DWMA) and Surface Acoustical wave (SAW) devices may also be created using methods for ink jet printing and self-creating structures such as surfactant-templated silica mesophase structures created using techniques currently under development by Jefferey Brinker et al. at Sandia Corporation (Albuquerque, N.Mex.) and other companies. Attention is directed to U.S. Pat. Nos. 5,057,296; 5,098,684; 5,858,457; 5,911,858; 5,949,071; 6,027,706; 6,037,612; 6,054,111; 6,057,377; and 6,090,545—all incorporated herein by reference.

Covers **100** are changeable and thus allow the device on which cover is attached to become an electronic key for e-commerce or mobile (m-commerce) applications such as secure area access, commodity purchasing and the like.

As was described in FIGS. **2**A and **2**B, contacts **180** allow for electrical signal coupling between an electronic device, such as mobile station **4** in FIG. **2**A, and the cover **100**. This allows the cover to share memory with the electronic device. In the case of a mobile station, interfacing with the mobile station allows for uploading/downloading of data from wireless networks. Thus "Digital Money" or other equivalents such as digital coupons and the like can be loaded into the phone for use in an exchange using the RFID transponder equipped cover **100**. The transponder may also send a coded signal to the registers of MCU to instruct the mobile station to change to passive mode or even power down. This is useful in situations where mobile station use is not allowed or may be unsafe. An example would be in a fueling situation as will be described below. Another example would be on an aircraft where use of a mobile station will interfere with the aircraft instruments.

Additionally, a interrogator may be installed as part of the security system of a motor vehicle. A reader with directional interrogation may interrogate the driver side of a motor vehicle in which the motor is running and the gear is in drive. Thus the mobile station of the driver is disabled while driver is operating the motor vehicle.

Unlike Bluetooth (www.bluetooth.com), which requires acceptance of the standard, infrastructure, device design and development; RFID system infrastructures already exist for many commercial and consumer applications. Covers **100** may be sold as accessories for electronic devices and would

be inexpensive—thus disposable and interchangeable. In an example of an embodiment of the present invention, the mobile station with cover **104** may replace the existing RFID tag, which may be in the form of an electronic badge, keyfob tag, smartcard or the like. Since many people carry mobile stations wherever they go and many wear the mobile station on their person, the mobile station with cover **104** provides a means for data transfer in an electronic payment system as described in U.S. Pat. No. 6,078,806.

The covers **100** may also be preloaded with content such as electronic cash, coupons, icons, animation, ring tones and the like. For example, Disney may provide a cover which has their copyrighted characters preloaded into memory. This is a secure way in which copyrighted material may be distributed. Internet download, distribution by disc or other such methods may result in abuse by the user of Disney copyrighted material—i.e. user may download the software to their system and than share the disc with someone else resulting in Disney losing royalty revenue.

Purchase of Fuel

Current RFID transponder systems for cash-less transactions such as the keyfob are "One Way" transactions. The keyfob transponder only validates the user but does not provide any means of feedback or interaction to the user. The keyfob does not have any user interface, limiting the transaction to an "authentication only" process for purchase or access. Currently, a transaction takes place by user placing RFID keyfob in proximity of reader panel for start of transaction and validation. Any remaining transaction interface is done via the RFID reader at the Point of Sale (POS). By incorporating the RFID tag and mobile station into one device (mobile station and cover) **104**, feedback to the user is now possible through the mobile station's user interface (display and keypad). Follow up with the customer after the transaction is also possible. The POS station may provide a paper receipt. However, by using a mobile station with cover **104**, an electronic receipt may be provided. Additional security may be provided by use of the PIN number already used to access the user's mobile station.

In the environment of fuel dispensing systems, signs at the dispensers and in cellular telephone user manuals provide warnings against using a cell phone near fueling and other potentially explosive areas. Unlike Bluetooth which requires active use of the phone (www.bluetooth.com), RFID type transponders are responsive to energy transmitted from installed devices at the pumps. The fuel dispenser described below and in U.S. Pat. No. 6,073,840, assigned to Gilbarco is designed for use around fuel. Therefore, a passive mode of a mobile station as provided in is necessary around fueling areas. The interrogator of the fueling dispenser described below can place the mobile station into passive mode.

FIG. **3** is an illustration of a fuel dispenser manufactured by Gilbarco, Inc—aka Marconi—(Greensboro, N.C.) and described in U.S. Pat. No. 6,073,840. Fuel dispenser **318** provides a fuel delivery path from an underground storage tank to a vehicle. The delivery path includes fuel delivery line **372** having fuel metering device **374**. Fuel delivery line **372** communicates with fuel delivery hose **376** outside of the dispenser **318** and delivery nozzle **378**. Nozzle **378** provides manual control of fuel delivery.

Fuel dispenser **318** also includes dispenser control system **380** having one or more controllers and associated memory **382**. Dispenser control system **380** may receive volume data from the metering device **374** through cabling **384** as well as provide control of fuel delivery. Dispenser control system **380** may provide audible signals to an audio module and speaker **386** in order to provide various beeps, tones and audible messages to a customer. These messages may include warnings, instructions and advertising.

Dispenser **318** is preferably equipped with a payment acceptor, such as a transponder interrogator area **381**, card reader **388** or cash acceptor **390**, along with a receipt printer **392**. There may be other interrogators such as overhead or embedded in the pavement. With these options, the dispenser control system **380** may interrogate a transponder passed near transponder interrogator area **381**, read data from the magnetic strip of a card inserted in the card reader **388** or receive cash from a customer and communicate such information to a central control system **350** such as the G-site controller sold by Gilbarco Inc., (Greensboro, N.C.). The interrogators located overhead may be used to change the mode of the phone to passive mode for safety reasons.

In addition to placing the phone in passive mode, the interrogators may also provide a signal to operate isolation circuitry which will prevent current from flowing from battery to electronic device—thus further reducing chances of a spark. FIG. **12** is a block diagram of a battery with isolation circuitry in accordance with an embodiment of the present invention. Battery circuitry **1200** comprises energy collection rectifier **1210**, which may be similar to the RFID circuitry but does not transmit. Energy collection block **1210** is coupled to isolation circuitry **1220** which is disposed between power supply **1230** and contacts **1240**. Current is normally provided to electronic device from power supply via contacts **1240**. However, when battery is within the area in which the RF energy is transmitted from interrogator, the energy is collected by **1210** and supplies isolation block **1220** with a signal which is used by isolation block **1220** to prevent current from flowing. Isolation block may be transistors with leads from energy rectifier supplying voltage to gate of said transistors creating a depletion region between source and drain thus preventing current flow. The power supply may be a plurality of battery cells for storing power in the multiple way which is known in the art.

Transponder interrogator area is coupled to interrogator electronics **352**. Central control system **350** typically communicates with a remote network, such as a card verification authority, to ascertain whether a transaction proposed to be charged to or debited from an account associated with the card inserted in the card reader **88** is authorized. Dispenser **318** will include one or more types of displays, preferably one or more alpha-numeric displays **396** together with a high-resolution graphics display **300**. Graphics display **300** will generally have associated key pad **302** adjacent to the display or integrated with the display to provide a touch interface. Dispenser may include an additional, auxiliary key pad **304** associated with the card reader **388** for entering secret codes or personal identification numbers (PIN's). Notably, the displays **396, 300** and key pads **302, 304** may be integrated into a single device and/or touch interface. Dispenser control system **380** is preferably comparable to the microprocessor-based control systems used in CRIND (card reader in dispenser) and TRIND (tag or transponder reader in dispenser) type units sold by Gilbarco Inc. under the trademark THE ADVANTAGE. As noted, the dispenser control system **380** may include or be associated with dispenser communication electronics referred to as interrogator electronics **352** for providing remote unidirectional or bidirectional communications between a transponder either and the dispenser. Although the preferred communications method includes radio frequencies in the microwave range, these communications may include other RF, infrared, acoustic or other known remote communication methods

acceptable for use in a fueling environment. Additionally, the dispenser **318** may include one or more antennas **308** associated with the dispenser interrogator **352**.

FIG. **4** shows a basic schematic overview of the dispenser electronics available from Gilbarco, Inc. cited above wherein a dispenser control system **380** includes a controller associated with the memory **382** to interface with the central control system **350** through an interface **146**. The dispenser control system **380** provides a graphical user interface with key pad **302** and display **300**. Audio/video electronics **386** is adapted to interface with the dispenser control system **380** and/or an auxiliary audio/video source **356** to provide advertising, merchandising and multimedia presentations to a customer in addition to basic transaction functions. The graphical user interface provided by the dispenser allows customers to purchase goods and services other than fuel at the dispenser. The customer may purchase a car wash and/or order food from the QSR while fueling the vehicle. Preferably, the customer is provided a video menu at the display **300** to facilitate selection of the various services, goods and food available for purchase. The RFID interrogator **352**, card reader **388** and cash acceptor **390** allow the customer to pay for any of the services, goods or food ordered at the dispenser while the printer **392** will provide a written record of the transaction. The dispenser control system **380** is operatively associated with a dispenser interrogator **352**, which has a receiver **342** and a transmitter **344**. The receiver and transmitter typically associate with one or more antennas **308** to provide remote communications with a transponder. The dispenser control system **80** communicates with the central control system **350** in the backroom **326**.

Currently, consumer drives up to fuel island, exits vehicle, places RFID keyfob up to fuel dispenser's RFID transponder interrogator window **381**. Consumer is validated and gas purchase is authorized. After fuel dispensing is complete, consumer may receive receipt generated at printer **392**, consumer then enters vehicle and drives away.

In one embodiment of the invention, cover **100** as a means of data transfer in passive mode and mobile station **4** are passed inside a EM field created by reader/interrogator. As is known in the art, the interrogator may transmit at a first frequency and the transponder may reply at a second frequency. The signals are modulated in order that encoded data may be transferred between reader/interrogator and transponder. The modulation scheme may be pulse-width, phase-amplitude or the like which are known in the art. Cover with mobile station combination **104** comes within this field. Cover **100** then responds to provide reader/interrogator with information such as electronic identification mobile station phone number and the like. The reader/interrogator may also send a code to a register of MCU instructing phone to go to passive mode. Since information regarding user's mobile station phone number may be provided to the reader/interrogator, user's mobile station may receive a Short Message Service (SMS) message at some point after RFID validation when customer is safely away from the fueling area. Active use of mobile station is not necessary because SMS messages may be receive by a server of a service provider while mobile station is in passive mode and send SMS minutes or hours after customer leaves gas station and mobile station is back in active mode. The message may thank customer for shopping with the fuel vendor and offering some incentive to visit their convenience store at a later date (i.e. "Digital Cash" or other equivalents offering complimentary coffee, soda or discount on some item if visited within a certain time period). Additionally, the incentive can be a cross-promotion with another company offering "Digital Cash" to be redeem while shopping for groceries for example. This encourages consumer to visit fuel vendor convenience store or other associated store even without the need to purchase gasoline. Cover and mobile station combination **104** allows vendor to reach out and touch customer at some point after transaction has been completed.

The SMS message can also be parsed and information provided for entry into Personal Information Management (PIM) applications running on mobile station. For example, the message may be parsed for amount of sale, date, and expense category for entry into an financial application to track expenses.

FIG. **5A** is an illustration of example of a system for purchase transactions in accordance with an embodiment of the invention. The system comprises, host **500** coupled to database **501**, transaction kiosk **502** (e.g. gas dispenser), mobile station with cover **104**. Host may be gas company authorization server or a server located at a company which provides transaction approval services or the like.

The following is an example only. Modifications and substitutions by one skilled in the art after reading the specifications including the claims are deemed to be within the spirit and scope of the invention. Although separate steps are described, some steps may be combined depending on the specifications of the interrogator and RFID tag in cover **100**. The transaction starts **503** when mobile station with cover **104** is within the EM field created by interrogator **352** in kiosk **502**. Interrogator electronics in kiosk **502** may provide mobile station with cover **104** with a URL of the transaction provider for later download of transaction information and other such communication via the internet (step **510**). In the case of a fueling transaction, interrogator in kiosk **502** (fuel dispenser) sends a signal through contacts **180** in cover **100** (FIG. 2B) to data connector **20** writing to registers in MCU **13** (FIG. 2A). The signal may command the mobile station to switch to passive mode (step **520**). The interrogator requests ID at step **530**. Cover **100** responses with ID (step **540**). The response and ID information is sent to host **500** at step **545**. Host **500** looks up ID in database **501** and if OK sends transaction approval to kiosk **502**. A hardcopy receipt may be provided. A SMS message is sent through wireless bearer service provider **580** in step **570**.

As described above the SMS message may be parsed for information which may be downloaded into a Personal Information Management (PIM) system. The SMS message may also be specially formatted as is provided for in U.S. Pat. No. 6,078,820 issued to Well et al. on Jun. 20, 2000 and assigned to assignee of the present invention and is hereby incorporated by reference. The formatted data will provide data identifiers which the software applications available to mobile station **4** may use to read the data. The following is an example of such a message:

```
//
APP;ID982
,error:<description>
,TITLE:GAS
,MSG:ACME
,DATE:040900
,TIME:1230
,AMOUNT:2100
```

The parsing system provided by U.S. Pat. No. 6,078,820 is an example of one parsing system there are others which are known in the art.

An embodiment of the present invention my also use Wireless Application Protocol WAP. Information on WAP

can be found at http://www.wapforum.org. WAP is bearer independent, therefore WAP applications can operate on the widest number of air interfaces. The WAP specification defines a protocol stack that can operate on high latency, low bandwidth networks such as SMS. WAP specifies a mark-up language which is a version of Extensible Markup Language (XML). XML allows the use of Metadata in web documents. Metadata is information about information. Therefore, data may be tagged by using Wireless Mark-up Language (WML) and the content (i.e. receipt) pushed—sent to mobile station and cover **104**—or pull—requested from mobile station with cover **104**.

FIG. **6** is an illustration of how an embodiment of the present invention will operate in a WAP environment. It is an examplar only, modifications and substitutions are still within the spirit and scope of the invention. Mobile station with cover **104** sends the host server's URL to Wireless Telephony Application (WTA) server **602** through WAP gateway **600** (step **610**). WTA requests content from host **600** (step **620**). Host **600** looks up transaction in database **601**. Host **600** replies with the tagged content to WTA server at step **630**. At this point, WTA may apply an XSL style sheet to the data at **640** and send the parse data to mobile with cover **104** at step **650**. At point **660**, WTA may access mobile station with cover's **104** application and load the data into a database.

The "Digital Cash" may also be used like gift certificates for a commodity or entertainment (i.e. Starbucks Coffee, movie theatre tickets, etc). By implementing the SmartCover cover as a "Digital Cash" gift certificate (possibly with vendor's logo on the cover—Starbucks, AMC, General Cinema, etc), the mobile station's user interface can be utilized to indicate number of visits, amount of "Digital Cash" remaining or to communicate some post-transaction SMS advertisement or additional "Digital Cash" collection opportunity. The certificate may also be in the form of an SMS or another type e-mail as birthday or other type gift.

Currently, a gift certificate with predetermined cash value is purchased and utilized by purchaser or given to someone for their use at the vendor location or retail chain where the certificate is accepted. At a future date, the certificate is submitted for credit towards a commodity purchase or admittance to a show. Value remaining on certificate may be refunded in the form of cash if the amount remaining cannot be refunded in the form of another gift certificate representing the remaining amount. The problem is that gift certificates must be carried, reducing likelihood of spontaneous purchases with the vendor where the certificate is accepted. Also, in many instances, remaining certificate value from a transaction is refunded to customer in the form of cash, which might not be utilized at the vendor's place of business.

In accordance with the present invention, cover gift certificate has a greater chance of always being with the customer as it is part of the customer's mobile station. Vendor advertisement is possible through the design/cover, resulting in free advertisement. Since the "Digital Cash" value of cover is stored electronically, the remaining "Digital Cash" value from a transaction can be recorded either in the cover's RFID programmable tag, mobile station **4** memory or on the RFID reader host network, increasing the likelihood of all of the "Digital Cash" value being spent with that vendor. Once the "Digital Cash" value of the cover is expended, the cover may be discarded or additional cash value can be programmed back into the cover by visiting vendor's place of business or vendor/promotor's website as is provided for in U.S. Pat. No. 6,078,806.

Virtual ATM and Food Shopping

As in the fueling example, addition of mobile station allows the cover to become a reusable and secure cash card or act as a debit card and a means of local data transfer as shown in U.S. Pat. No. 6,078,806 hereby incorporated by reference and portions reproduced below.

When the "Digital Cash" has run out or more is needed, the electric money purse of the mobile station needs reloading. There are several methods to do that. One method, close to the approach with real money and ATM (Automatic Teller Machine) machines, would be to walk to the nearest "Digital Cash ATM" to download more money from the account. This is not very handy, because it will take some time before these kind of "Digital Cash ATM" machines are widely available. The present invention offers a much more convenient way to do the reloading of "Digital Cash".

Using the SMS service, it is possible to download more "Digital Cash" from the bank account to the mobile station. The mobile station sends a request to send more "Digital Cash", e.g. as a SMS message, to the money server responsible for the user's account. As a response, suppose the account has balance, the money server sends "Digital Cash" to the mobile station, where it is stored to the memory. SMS is used as an example only other services may also be used, e.g. Wireless Application Protocol (WAP) as used in the fueling example above.

In accordance with the present invention, cover **100** has contact points **180** (in FIG. 2B) connecting mobile station **4** platform to the RFID tag in the cover **100**. "Digital Cash" value can now be loaded into the cover via mobile station **4** and WAP. For instance, a maximum amount of "Digital Cash" (say $100.00 at a time) could be transferred Over-the-Air via WAP from an account (bank or wireless carrier account). The liability is now limited to $100.00. Furthermore, mobile station **4** may require a PIN to authorize any RFID cash-less transaction, making this a more secure method of payment than a credit card, a safer method than carrying cash and more convenient than a traditional cash card or debit card as this cover "Digital Cash" value can be added to via the mobile phone at any time. The mobile station and cover combination now becomes an electronic wallet where cash value may be transferred wirelessly, eliminating the need to locate a ATM machine to obtain cash for small cash purchases such as fast food.

FIG. **5B** shows a simplified diagram of a telephone call between the APPLICATION running on mobile station with cover **104** and the Mobile Services Switching Center MSC, which is part of a mobile services network. At step **200**, the application sends the telephone number to be called to the MCU of the mobile station **104**, which sends to the Mobile Switching Center MSC the identification data and other data needed for establishing a connection (steps **201**, **202** and **203**). The switching center MSC transmits information of the progress of the call (step **204**) and the state of the connection (step **205**) to the mobile station **104**, after which the mobile station **104** sends acknowledgment of connection to the MSC (step **206**) and to the application **18** (step **207**). For closing the connection, the application **18** sends a close connection command to the MCU of the mobile station **1** (step **208**), which sends a close connection request to the Mobile Services Switching Center (step **209**). The MSC sends a connection closed acknowledgment to the MCU of the mobile station **104** (step **210**). Finally, the MCU of the mobile station **104** sends to the application information of the closing of the connection (step **211**).

In the previous exemplary embodiment of the invention the money was stored in an account, finally located in a

money server in a bank. Therefore it was necessary to update the balance in the mobile station and in the bank. In another embodiment of this invention the electric money is stored to the mobile station **4** or cover **100**. When that kind of electric money (also referred to as "Digital Cash or transaction credit value information") is used, e.g. for paying parking fees or phone bills, the corresponding amount of money is cut down from the electric money purse of the mobile station **104**. The "Digital Cash" can be stored e.g. as a code word in mobile stations memory. No link between the payment terminal **1021** (FIG. **10**) and the money server **1022** is required at the moment when the payment is made.

When the "Digital Cash" has run out or more is needed, the electric money purse of the mobile station needs reloading. There are several methods to do that. One method, close to the approach with real money and ATM (Automatic Teller Machine) machines, would be to walk to the nearest "Digital Cash ATM" to download more money from the account. This is not very handy, because it will take some time before these kind of "Digital Cash ATM" machines are widely available. The present invention offers a much more convenient way to do the reloading of "Digital Cash".

Using the SMS service, it is possible to download more "Digital Cash" from the bank account to the mobile station, using a method close to the one described in the previous embodiment of the invention concerning balance inquiry. The mobile station sends a request to send more "Digital Cash", e.g. as a SMS message, to the money server responsible for the user's account. As a response, suppose the account has balance, the money server sends "Digital Cash" to the mobile station, where it is stored to the memory.

The network, where the mobile station in accordance with the invention is used is not limited to GSM only, GSM is a good example of a system that offers required data transfer possibilities. Particularly the SMS messages available in GSM network are handy, because the normal phone/data channel is not effected when transferring SMS messages.

In addition to payment applications, the method of the invention can also be used for other kinds of applications. For example gathering and presenting other information, such as timetables, stock prices, exchange rates, etc. Each of the previous examples can be implemented in a separate application module, or the wanted functions and applications can be combined to a multi-functional application module for the mobile station.

Grocery Shopping

Many people use coupons when they shop for groceries and other items. This requires the consumer to clip the coupons from magazines, newspapers, boxes of item previously purchase and the like. Currently bar codes are being used to encode information regarding products, bar codes may also be used in print advertising to condense a lot of information into a small space. As shown in FIG. **2A**, mobile station **4** also comprises a first means of data transfer, such as an optical or infra red IR transmitter/receiver **22**. Other equivalent frequencies in the electromagnetic spectrum may also be used. Transmitter/receiver **22** may be used to transfer the data encoded in the bar codes to the memory of the mobile station **4** or cover **100**. Thus, consumer/users now may store coupons in memory of mobile station **4** or cover **100** as a form of "Digital Cash," and user interface **18** may be used to keep track of the coupons stored in memory. When consumer/user goes to the store, the same phone may be used to scan items purchased, keep track of total bill, and validate the coupons. When the consumer checks out, the "Digital Cash" may automatically be redeemed at Point of Sale and electronic coupons for items purchased may be validated and electronically transferred to clearing house or other such means for coupon handling as is known in the art. As described above, information regarding the transaction may be automatically enter in a PIM application provided mobile station **4** has PIM capabilities.

Parking Meters

FIG. **7** shows the use of a method to pay for parking meter time. Car **710** parks in front of parking meter **700**. Parking meter **700** comprises sonar, IR or other means to determine that an automobile is parked in the space for which the meter **700** collects parking fees. Parking meter **700** also comprises means for communication with central site **760**, and RFID interrogator for communication with mobile station and cover **104**. Means of communication to central site may be by point to point wireless connection, wireless LAN or through a central civic bus. Such as bus which is being installed in several cities ties traffic lights, traffic flow information and the like to a central site.

The method begins when user wishes to park automobile **710** next to parking meter **700**. User places mobile station **104** close to parking meter **700**. Interrogation signal **705** reads ID information stored in cover **100** and provides mobile station **4** with information such as rates and location of central site **760** through cover **100** and contacts **180**. Cover provides ID by return signal **706**. User enters parking time desired and transmits the information to central site **760** via SMS or the like **740**. Central site **760** then authorizes parking meter for desired time through communication means **730**. Timing information may be maintained at central site **760**, parking meter **700** or the like. A SMS or the like **750** may be sent to mobile station **104** informing user of expiration of parking time and user may respond with additional digital cash being transferred to parking authority through another SMS or the like **740** to central site **760**

Automatic Hotel/Car Rental Registration

FIG. **8** shows the use of a method for hotel room access in accordance with the invention. User may use mobile station **104** to send request for room SMS or the like **830** to a central reservation site **800** to reserve a hotel room. Central reservation site **800** may send return SMS or the like **840** comprising with room number, ID code, directions and other information. User may then proceed **850** directly to room bypassing desk clerk **860**. User then may place mobile station **104** close to door lock **820** which comprises an interrogator. Lock interrogates **825** cover **100** and cover responds **827** with code received from central reservation site **800**. Thus door **810** is unlocked.

Car reservation system is similar. Central rental cars systems at airports are becoming common. For example, at Dallas/Fort Worth airport (DFW) all rental car agencies are now in the same facility. The keys are kept with the cars and to prevent stealing of cars individuals leaving with cars must pass through gate and show their contract to a guard. With a mobile station with cover **104**, the keys may be locked in the car. User requests reservation and as was described above received the ID code to unlock the car and get to the car keys. Thus, only authorized renters are allowed access to the interior of the car and the keys. Future car systems may use the mobile station with cover as a key to the operation of a car; thus, doing away with physical keys.

Fast Food Restaurants

Many fast food restaurants do not accept credit cards. This is due to percentage of the transaction which the fast food restaurants are required to pay for credit cards services. This results in lost sales from prospects that do not have any cash on hand. Time at POS for cash transaction is another problem. Cash transactions require correct change be given

to customer and that cash exchanging hands is inspected for authenticity. This adds to the total transaction time and limits speed at which customer can be processed. Cash transactions are also vulnerable to shrinkage at the POS.

To solve this problem, the fast food vendor may have a Point of Sale (POS) private wireless system (PSID) which would allow customers to have wireless phone access on their system for reduced airtime fee. The mobile station with cover **104** would log onto the PSID and register the customer. At that point the customer receives a SMS or WAP push message welcoming that customer, listing the number of recent visits and asking if the most recent menu choices would like to be purchased. This allows for menu choice to be made before customer ever approaches the counter. Thus reducing waiting in line time is reduced. The customer would then approach the counter where his/her meal would be waiting for payment which requires simply swiping the mobile station over the POS RFID reader. The cash amount in the cover is correctly adjusted by the POS reader. In the case where the cover is used as a debit card, the correct amount is debited from the corresponding account.

FIG. **9** shows the use of a mobile station with cover **104** and application cards **1013** with microprocessor **1019**. Mobile station **104** is in contact with Mobile Switching Center (MSC) with is in turn in contact with a Point of Sale (POS) terminal **1022** through Public Switch Telephone Network (PSTN). POS terminal **1022** may comprise means for local data transfer **1023**. Mobile station **104** may also exchange data with a PC like terminal **1021** connected to a communications network such as the internet. Data exchange may be via means for data transfer **22** on mobile station **104** and means for data transfer **1010** coupled to PC terminal **1021**.

Payments and transfer of coupons in form of "Digital Cash" and other digital codes may be transferred between two mobile stations. FIG. **10** shows an application in which two mobile stations **104** do communicate with each other by means for data transfer **22**. It is possible to transfer digital data such as video and/or speech.

FIG. **11** shows an M-commerce model **900** for use of a mobile station with a changeable cover in accordance with an embodiment of the invention. Consumer using mobile station with cover **104** may shop at a variety of promotion channels **93**X. These may include a home improvement store **931**, video rental store **932**, fast food restaurant **933**, coffee house **934**, grocery store **935**, electronics store **936**, book store **937**, or the like . . . . A central portal database **910** may be maintained wherein service requests from mobile station with cover **104** are processed. The portal may request charge authorization **950** from a plurality of credit account issuers or authorizers **96**x. They may comprise Visa, MasterCard, American Express, First Data, and the like. The credit issues **96**x authorizes the charge and sends notice of authorization **955** to portal **910**. Charges may also be charged to the user's phone bill. A profile database **920** may also be maintained. This database may collect marketing, purchasing habits and other data regarding the consumer of the mobile station so that services suitable to the consumer may be offered by wireless service providers **97**x. Examples of such providers are VoiceStream, AT&T, Verizon, Sprint, SBC Wireless, and the like. Data mining is made easier by use of a database separate from the central portal database, since consumers who choose maximum privacy can be excluded from the profile database and access to portal database limited to transaction authorization only.

Music Preview

Music stores currently provide listen kiosk where you can listen to selections of music media. However, the drawback to the system is one is limited to the selection of music playing at the listening station kiosk. An embodiment of the invention provides a solution. FIG. **13** is an illustration of a system wherein a consumers may download samples of music which they may wish to purchase. The label on the box storing the media **1310** with the music may have an RFID tag **1320** on it which has an identification number or a bar code written on the label. The media may be CD or DVD or the like. A reader in a mobile station **1330** would interrogate the RFID tag or read the bar code. The mobile station establishes a connection with the record company's server **1360** with =database **1365** through wireless access point **1350**. The identification number associated with the product is provided to the server. The server finds the identification number and sample files related to the identification number provided. The samples are then downloaded **1380** to the mobile station **1330** through wireless access point **1350**. The sample files may be MPEG-1 Layer 3 (MP3), MPEG-2 Advanced Audio Coding (AAC) or the like.

An alternative system would be that the music store has a local wireless system as was described above in section regarding fast food. The sample files of music offered for sale at the store may be store in database **1345** of store server **1340**. The identification number is provided to the server **1340** and database **1345** is searched for identification number and the associated sample files. Once located, the samples are transmitted **1370** to mobile station **1330**.

This invention has been described relative to specific embodiments. Modifications that become apparent to persons of ordinary skill in the art only after reading this document are deemed within the spirit and scope of the invention. Applicant's use of the term "plurality" shall be defined as one or more.

What is claimed is:

1. A removal non-planar external cover module for a mobile device comprising:

a main face, having an upper surface which is exposed when said removal non-planar cover is removably attached to said mobile device;

a plurality of wall elements joining said main face at its edge wherein said main face and at least portions of said wall elements define a receivable cavity for receiving said mobile devices; and

transponder having data and circuitry responsive to an interrogation signal to communicate the data with a remote station via wireless communication.

2. The module of claim **1** further comprising:

a memory for storing digital data.

3. The module of claim **2**, wherein memory is preloaded with digital data representing digital cash.

4. The module of claim **2** further comprising:

an interface with a portable radio communication device, wherein digital data representing digital cash may be added to the memory be received by the portable radio communication device and transferred to the memory via the interface.

5. The cover of claim **1**, wherein the transponder is a Radio Frequency IDentification (RFID) transponder.

6. The cover of claim **1**, wherein the transponder is a Surface Acoustic Wave (SAW) transponder.

7. The cover of claim **1**, wherein the transponder is a Dense Wave Multiple Access (DWMA) device.

8. A portable radio communication device comprising:

a removal non-planar external cover comprising:

a main face, having an upper surface which is exposed when the removal non-planar cover is removably attached to the portable radio communication device;

a plurality of wall elements joining the main face at its edge wherein the main face and at least portions of the wall elements define a receivable cavity for receiving the portable radio communication device;

a transponder embedded in the removable non-planar cover, the transponder having data and circuitry responsive to an interrogation signal to communicate the data with a remote station via wireless communication.

9. The portable radio communication device of claim 8 further comprising:

a memory for storing digital data.

10. The portable radio communication device of claim 9 further comprising:

an interface electronically coupling the removable non-planar cover with the portable radio communication device, wherein digital data representing digital cash may be added to the memory be received by the portable radio communication device and transferred to the memory via the connector.

11. The portable radio communication device of claim 9 further comprising:

an interface electronically coupling the removable non-planar cover with the portable radio communication device, wherein the data in the transponder may be modified by data received by the portable communication device.

12. The portable radio communication device of claim 11 wherein the update data may be in the form of a SMS message received by the portable communication device.

13. The portable radio communication device of claim 9, wherein the transponder is a Radio Frequency IDentification (RFID) transponder.

14. The portable radio communication device of claim 9, wherein the transponder is a Surface Acoustic Wave (SAW) transponder.

15. The portable radio communication device of claim 9, wherein the transponder is a Dense Wave Multiple Access (DWMA) device.

* * * * *

EXHIBIT

E

US 20080059374A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0059374 A1**

Gangi (43) **Pub. Date: Mar. 6, 2008**

(54) **WALLET CONSOLIDATOR AND RELATED METHODS OF PROCESSING A TRANSACTION USING A WALLET CONSOLIDATOR**

(75) Inventor: **Frank J. Gangi**, Frisco, TX (US)

Correspondence Address:
BRACEWELL & GIULIANI LLP
P.O. BOX 61389
HOUSTON, TX 77208-1389 (US)

(73) Assignee: **E-Micro Corporation**, Frisco, TX (US)

(21) Appl. No.: **11/931,479**

(22) Filed: **Oct. 31, 2007**

Related U.S. Application Data

(60) Division of application No. 09/923,617, filed on Aug. 6, 2001, which is a continuation of application No. 09/618,407, filed on Jul. 18, 2000, now Pat. No. 6,293,462, which is a continuation of application No. 09/087,193, filed on May 29, 1998, now Pat. No. 6,131,811.

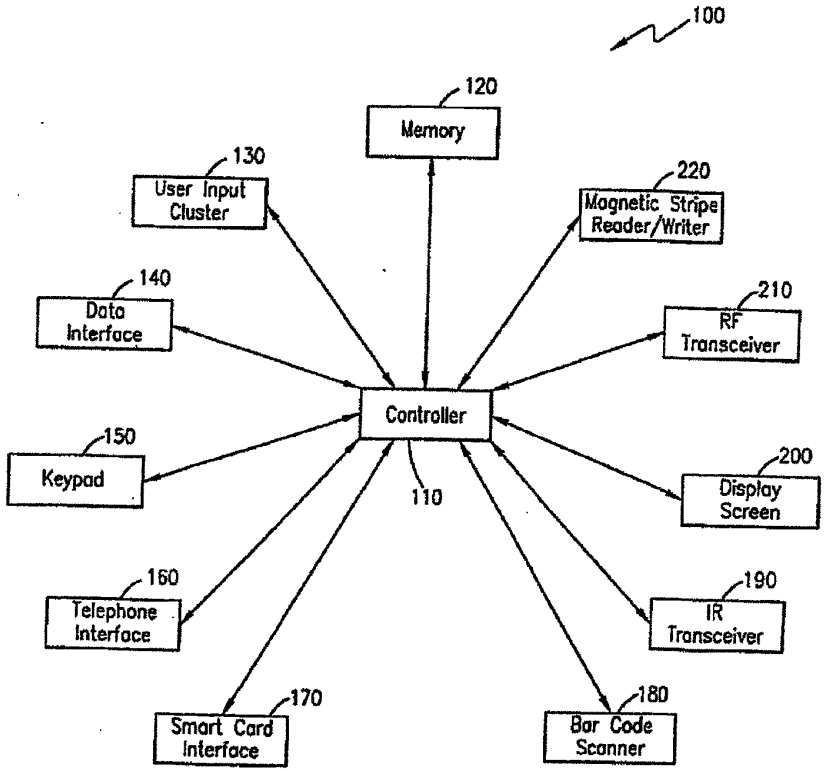
Publication Classification

(51) **Int. Cl.**
G06Q 40/00 (2006.01)

(52) **U.S. Cl.** **705/41**

(57) **ABSTRACT**

A wallet consolidator to process a transaction and related methods, are provided. An embodiment of a wallet consolidator can include a controller to control operation of the wallet consolidator, and an input device connected to the controller and positioned to receive a copy of information. The input device, for example, can include a magnetic stripe reader/writer for reading and writing magnetic stripes, a bar code scanner for scanning bar codes, or a keypad, among others, to input user selections and commands. An embodiment of a wallet consolidator can also include a memory for storing information provided to the wallet consolidator, and an output device connected to the controller and positioned to communicate at least a portion of the information stored in the memory device to a computer device, e.g., point-of-sale terminal, dumb terminal, and/or database, located at a point-of-sale, to process a transaction. The output device can include a wireline communications interface, a wireless communications interface, a radio frequency (RF) interface, or an infrared (IR) interface, among others.



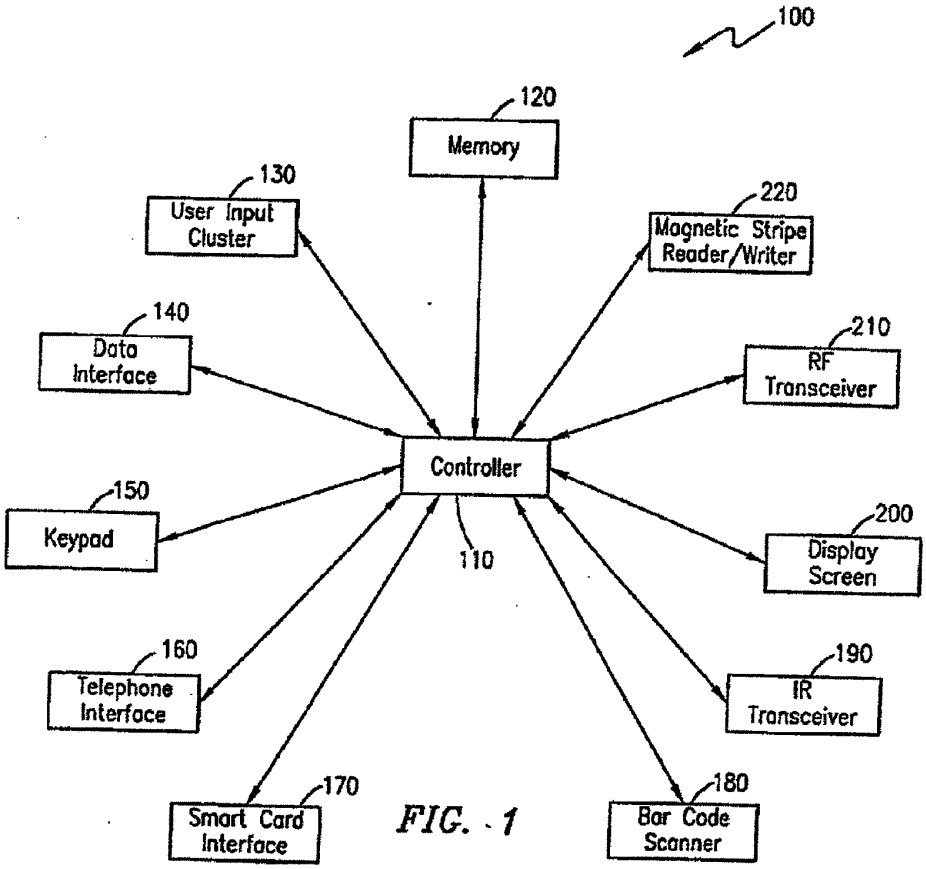

100
120
Memory
130
User Input Cluster
220
Magnetic Stripe Reader/Writer
140
Data Interface
210
RF Transceiver
Controller
150
Keypad
110
200
Display Screen
160
Telephone Interface
190
IR Transceiver
170
Smart Card Interface
180
Bar Code Scanner

FIG. 1

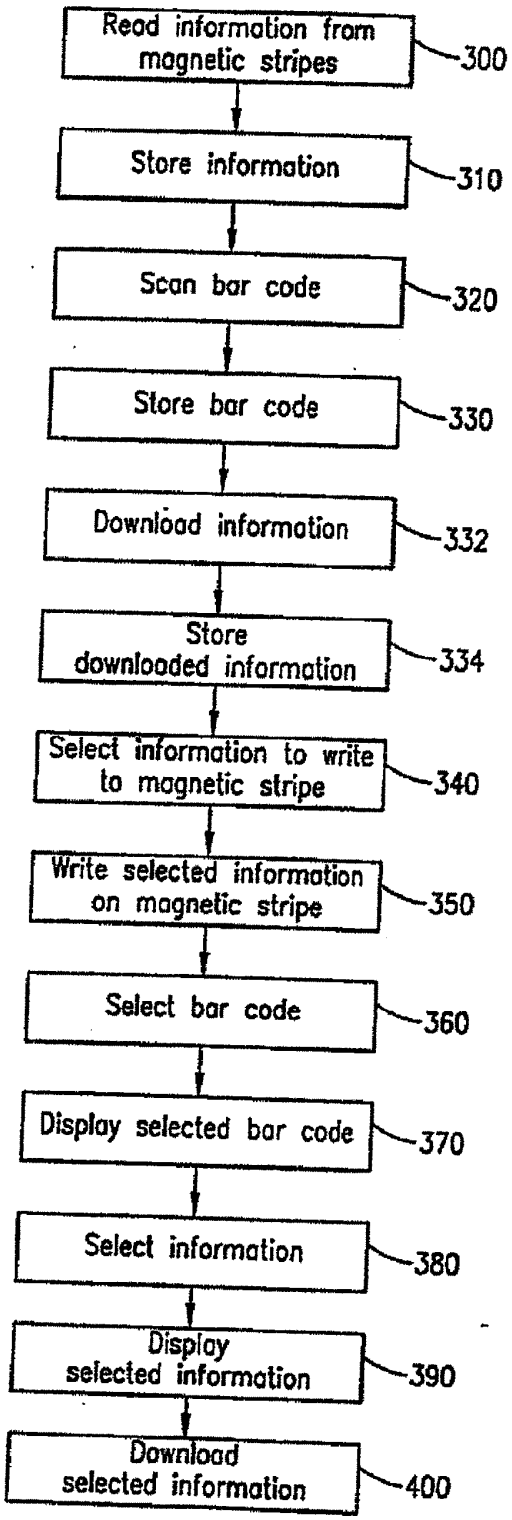

Read information from magnetic stripes
300
Store information
310
Scan bar code
320
Store bar code
330
Download information
332
Store downlooded information
334
Select information to write to magnetic stripe
340
Write selected information on magnetic stripe
350
Select bar code
360
Display selected bar code
370
Select information
380
Display selected information
390
Download selected information
400

FIG. 2

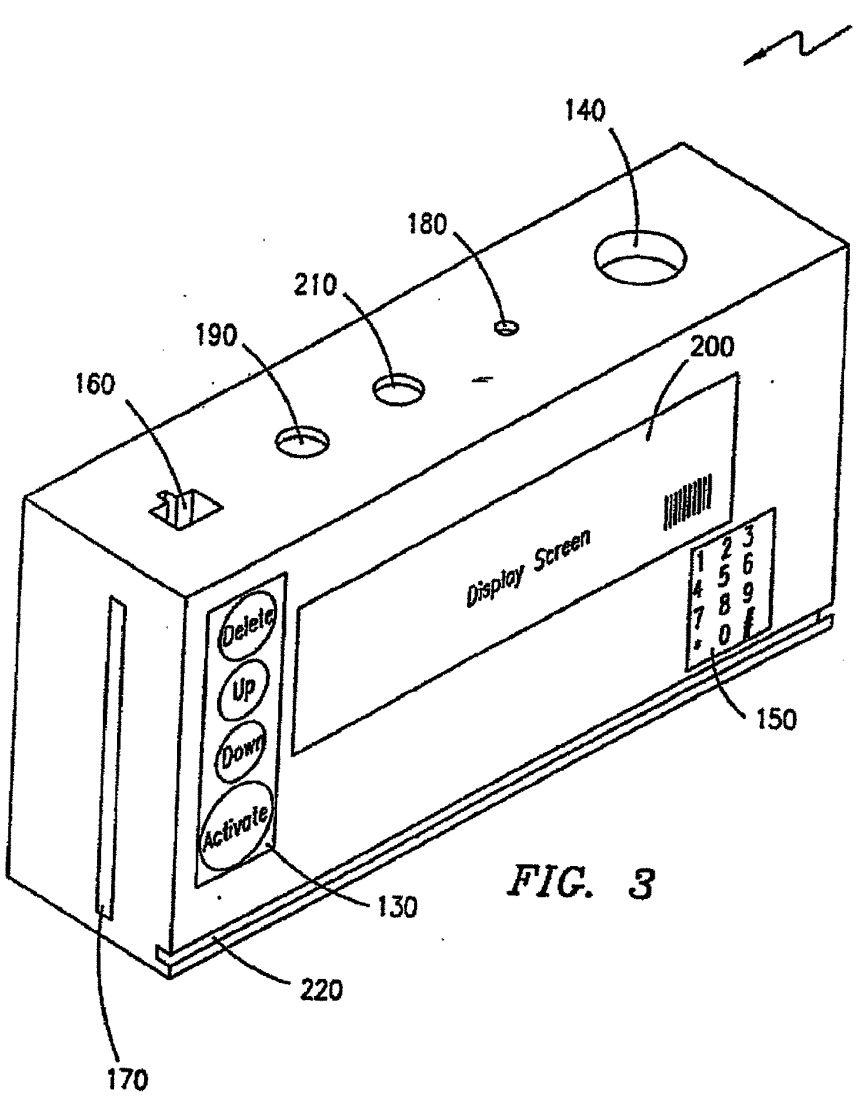

100
140
180
210
190
160
200
Display Screen
1 2 3
4 5 6
7 8 9
* 0 #
Delete
Up
Down
Activate
150
130
220
170

FIG. 3

WALLET CONSOLIDATOR AND RELATED METHODS OF PROCESSING A TRANSACTION USING A WALLET CONSOLIDATOR

RELATED APPLICATIONS

[0001] This application is a divisional of and claims priority to and the benefit of U.S. patent application Ser. No. 09/923,617, filed Aug. 6, 2001, titled "Wallet Consolidator and Related Methods of Processing a Transaction Using a Wallet Consolidator," which is a continuation of U.S. patent application Ser. No. 09/618,407, filed Jul. 18, 2600, titled "Wallet Consolidator," now U.S. Pat. No. 6,293,462, which is a continuation of U.S. patent application Ser. No. 09/087,193, filed May 29, 1998, titled "Wallet Consolidator," now U.S. Pat. No. 6,131,811, each incorporated herein by reference in their entireties.

BACKGROUND OF THE INVENTION

[0002] 1. Field of The Invention

[0003] The present invention pertains in general to the use of electronic smart cards for the storage of information pertaining to electronic commerce and consumer identification, and in particular, but not by way of limitation, to a method and apparatus for the warehousing and retrieval of information pertaining to credit cards, debit cards, identification cards and other selected data.

[0004] 2. Description of Related Art

[0005] In today's electronic commerce there has been a proliferation in the use of various types of credit, debit, identification and other types of authorization cards. For example, an average individual is likely to carry a driver's license, several credit and/or debit cards, an identification card for access to a health club, an identification card to gain access to a place of employment and an access card to gain entry into a parking garage, among others. Furthermore, with advances in electronic commerce, smart cards are likely to replace paper and coin money resulting in an additional card for consumers to carry. Each of these cards typically incorporates a magnetic stripe or bar code to facilitate easy recognition of the card and to store various types of data. Although the use of these cards allow for easy and efficient electronic commerce, the number of such cards quickly becomes cumbersome and many individuals find carrying the large number of cards inconvenient.

[0006] Attempts have been made to use a single smart card to hold the various information contained on several cards. These attempts, however, involve the downloading of information from the smart card provider and do not allow a smart card user to control the contents of the device by adding additional information from newly issued cards or removing information from discontinued cards.

[0007] It would be advantageous, therefore, to devise a method and apparatus for consolidating the various cards, and other types of information, which individuals typically carry in a wallet or purse. It would further be advantageous if such a method and apparatus stored the information in a central location and facilitated the use of a single multi-purpose card. It would still further be advantageous if such a method and apparatus allowed the user of the method and apparatus the ability to control the stored information.

SUMMARY OF THE INVENTION

[0008] In view of the foregoing, embodiments of the present invention advantageously provide a wireless device or apparatus, also known as a wallet consolidator, capable of warehousing digitized information stored on the cards including identification information, some or all of which to be delivered to a computer device and possibly a portion to the device operator located with the computer device. According to an embodiment of the present invention, a wallet consolidator can include, for example, a controller to control operation of the wallet consolidator, at least one input device connected to the controller of the wallet consolidator to receive a copy of identification information stored on at least one card, memory connected to the controller to store the information received by the input device, and an output device connected to the controller and positioned to transmit at least a portion of the information stored in the memory device to computer device, erg., point-of-sale terminal, dumb terminal, and/or database, located at a point-of-sale, which is positioned to process a point-of-sale transaction effectuated pursuant to the at least a portion of the information.

[0009] According to an embodiment of the wallet consolidator, in its most generalized configuration, the input device can include, but is not limited to, one or more of the following: a magnetic stripe card reader, a bar code reader, a keypad, a touch screen, a smart card reader, a kiosk, a memory card, a telephony interface, a wireless interface, a wireline communications interface, a wireless communications interface, an infrared (IR) interface, and a radio frequency (RF) interface. The memory device can include, but is not limited to, one or more of the following: semiconductor memory, a smart card (contact, contactless, or hybrid), a memory card (portable flash memory), random access memory (RAM), magnetic memory, or a hard disk magnetic tape, an optical memory device, and an optical disc. The output device can include, but is not limited to, one or more of the following: a data interface, a telephony interface, a wireless interface, a wireline communications interface, a wireless communications interface, a radio frequency (RA) interface, an infrared (IR) interface, and a display configured for displaying scanable bar codes.

[0010] To store information in the wallet consolidator, for example, or alternatively in a smart card interfaced to the wallet consolidator, information can be read from magnetic stripes on various types of cards such as, but not limited to, credit, debit and identification cards. A bar code scanner allows a bar code to be scanned from a card and stored in memory. Additionally, images of the cards including, but not limited to, signatures, portraits can be downloaded, and with sufficient memory, stored for future use. A user can retrieve information using the input device for use in an, e.g., point-of-sale transaction. The stored images can be retrieved and displayed on a display screen including a bar code which can be scanned by a bar code scanner.

[0011] According to another embodiment of a wallet consolidator, the wallet consolidator can include an input device positioned to receive information stored on at least one card, a memory device connected to the input device to store the information received by the input device, and an output device connected to the memory device and positioned to transmit at least a portion of the information stored in the

memory device to a point-of-sale terminal located at a point-of-sale. The point-of-sale terminal can be positioned to process a transaction responsive to the at least a portion of the information. The information can include, for example, account identification information pertaining to at least one of the following: one or more credit cards, one or more debit cards, one or more identification cards, one or more electronic coupons, or one or more food stamp accounts. Accordingly, the at least one card can include one or more credit cards, one or more debit cards, one or more identification cards, one or more electronic coupons, or one or more food stamp identification cards. The information can also include driver's license data taken from, for example, a driver's license card. Further, the information can include a digitized image of the at least one card, to thereby provide further functionality. Advantageously, the output device can include a wireless output device such as, for example, a wireless interface, a wireless communications interface, or a radio frequency (RE) interface, to thereby enhance personal mobility.

[0012] Another embodiment of the present invention can include a wallet consolidator including a controller positioned to control operation of the wallet consolidator, an input device in communication with the controller and positioned to receive a copy of identification information stored on at least one card, a memory device in communication with the controller and positioned to store the identification information received by the input device, and an output device in communication with the controller and positioned to transmit at least a portion of the identification information stored in the memory device to a point-of-sale terminal located at a point-of-sale. The point-of-sale terminal can be positioned to process a point-of-sale transaction responsive to the at least a portion of the identification information. According to an embodiment of the wallet consolidator, the information can include personal identification information contained on the at least one card, and the output device can include a wireless output device such as, for example, a wireless interface, a wireless communications interface, or a radio frequency (RF) interface, to thereby enhance personal mobility.

[0013] According to another embodiment of a wallet consolidator, the wallet consolidator can include an input device positioned to receive information stored on at least one card, a memory device connected to the input device to store the information received by the input device, and a wireless output device connected to the memory device and positioned to transmit at least a portion of the information stored in the memory device to a point-of-sale terminal located at a point-of-sale. The point-of-sale terminal can be positioned to process a transaction responsive to the at least a portion of the information.

[0014] According to another embodiment of a wallet consolidator, the wallet consolidator can include an input device positioned to receive information stored on at least one card, a memory device connected to the input device to store the information received by the input device, and an output device connected to the memory device and positioned to effectuate communication of at least a portion of the information stored in the memory device to a point-of-sale terminal located at a point-of-sale when the point-of-sale terminal is positioned to receive the at least a portion of the information from the wallet consolidator for use in a point-of-sale transaction. The output device can include a wireless output device such as, for example, a wireless interface, a wireless communications interface, or a radio frequency (RE) interface.

[0015] According to another embodiment of a wallet consolidator, the wallet consolidator can include a controller position to control operation of the wallet consolidator, an input device in communication with the controller and positioned to receive information contained on at least one card, a memory device in communication with the controller and positioned to store the information received by the input device, and a wireless output device in communication with the controller and positioned to interface with a point-of-sale terminal located at a point-of-sale to provide at least a portion of the information stored in the memory device to the point-of-sale terminal. The point-of-sale terminal can be positioned to enable a transaction responsive to receiving the at least a portion of the information.

[0016] According to another embodiment of a wallet consolidator, the wallet consolidator can include a controller positioned to control operation of the wallet consolidator, an input device in communication with the controller and positioned to receive information contained on at least one card, a memory device in communication with the controller and positioned to store the information received by the input device, and a wireless output device in communication with the controller. The wireless output device is adapted to be positioned to interface or to effectuate communication with a point-of-sale terminal located at a point-of-sale to provide at least a portion of the information stored in the memory device to the point-of-sale terminal when the wallet consolidator is positioned adjacent the point-of-sale terminal to thereby enable a transaction responsive to receiving the at least a portion of the information.

[0017] Embodiments of the present invention also include a method for processing a transaction using a wallet consolidator. For example, such a method can include the steps of receiving information stored on at least one of a plurality of cards, storing the received information in a memory device, and transmitting at least a portion of the stored information to a point-of-sale terminal positioned at a point-of-sale and positioned to process a respective point-of-sale transaction responsive to the at least a portion of the information.

[0018] According to another embodiment of a method for processing a transaction using a wallet consolidator, the method can include receiving information stored on at least one of a plurality of cards, storing the received information in a memory device, positioning a wallet consolidator adjacent a point of sale terminal positioned at a point of sale, and communicating at least a portion of the stored information to the point-of-sale terminal for use in a point-of-sale transaction responsive to the at least a portion of the information.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] So that the manner in which the features and advantages of the invention, as well as others which will become apparent, may be understood in more detail, a more particular description of the invention briefly summarized above may be had by reference to the embodiments thereof which are illustrated in the appended drawings, which form a part of this specification. It is to be noted, however, that the

drawings illustrate only various embodiments of the invention and are therefore not to be considered limiting of the invention's scope as it may include other effective embodiments as well.

[0020] FIG. 1 is a functional block diagram of the wallet consolidator;

[0021] FIG. 2 is a flow diagram of a preferred method for consolidating card information using the wallet consolidator described in FIG. 1; and

[0022] FIG. 3 is a perspective view of a wallet consolidator consistent with a preferred embodiment of the present invention.

DETAILED DESCRIPTION

[0023] The present invention will now be described more fully hereinafter with reference to the accompanying drawings which illustrate preferred embodiments of the invention. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout, the prime notation, if used, indicates similar elements in alternative embodiments.

[0024] Referring now to FIG. 1, there is illustrated a functional block diagram of a wallet consolidator shown generally at **100**. The functional components of the wallet consolidator **100** include a controller **110**, a memory **120**, a user input cluster **130**, a data interface **140**, a keypad **150**, a telephone interface **160**, a smart card interface **170**, a bar code scanner **180**, an infrared (IR) transceiver **190**, a display screen **200**, a radio frequency (RF) transceiver **210** and a magnetic stripe reader/writer **220**.

[0025] The controller **110**, controls the overall operation of the wallet consolidator **100** including the coordination of the various functional blocks. The magnetic stripe reader/writer **220** is used to read and write information from and to magnetic stripes used on credit cards, debit cards and identification cards among others. Information read from the magnetic stripes by the magnetic stripe reader/writer **220** is stored in the memory **120** of the wallet consolidator **100**. In an alternative embodiment, the information is stored in a memory located within a smart card which is commonly known in the industry. In situations where the information from the magnetic stripe is stored in the memory of the smart card, the information is written into the memory of the smart card using the smart card interface **170**. The smart card interface **170** effectuates reading and writing from and to the smart card.

[0026] A keypad **150** can be used as a user input for inputting information or indicating selections and actions to the wallet consolidator **100**. In an embodiment of the present invention, the keypad **150** is a numeric keypad, however; in an alternative embodiment the keypad **150** is an alphanumeric keypad. The user input cluster **130** provides an additional user input for communicating selections and actions to the wallet consolidator **100**. While it is understood that the user input cluster **130** can have any number of input buttons, a preferred configuration includes an up and a down button for moving through options provided to the user on the display screen **200**, a delete button for removing items from the display screen, and an activate button for making a selection and/or enabling an action by the wallet consolidator **100**.

[0027] The bar code scanner **180** allows a user to scan a bar code on the face of identification, credit, debit and other types of cards and to store the bar code in the memory **120** of the wallet consolidator, or alternatively, in the memory of the smart card. In either event, the user can select the bar code for display on the display screen **200** such that the bar code, as displayed on the display screen **200**, is readable by a bar code scanner.

[0028] In addition to displaying items stored in the memory **120** of the wallet consolidator **100**, or alternatively the memory of the smart card, the display screen **200** is used for programming and/or otherwise controlling operation of the wallet consolidator **100**+For example, the display screen **200**, in conjunction with the keypad **150** and/or the user input cluster **130**, can be used by the user to input a passcode to gain access to the wallet consolidator **100**. In an alternative embodiment, the keypad **150** is effectuated using a touch sensitive display screen **200**.

[0029] After gaining access to the wallet consolidator **100**, the controller **110** displays a menu of functions on the display screen **200** and the user makes a selection by either using the user input cluster **130** to scroll through and select an option or directly selecting an option using the keypad **150**. The types of options include, but are not limited to, selecting a card to add or delete, duplicating information, transferring data, moving cash or accessing various types of information such as electronic coupons, identification information or medical records among others. Based on the selected option, the wallet consolidator **100**, via the display screen **200** traverses an action tree which instructs the user on the use of the wallet consolidator **100**.

[0030] The data interface **140** and telephone interface **160** can effectuate communication between the wallet consolidator **100** and various computing devices such as, but not limited to, point-of-sale terminals, dumb terminals and databases. The data interface **140** uses a serial data port, a parallel data port or any other data communication technique. In a similar fashion, the telephone interface **160** allows communication via a wireline or wireless telecommunication network. Furthermore, the infrared transceiver **190** and the radio frequency transceiver **210** can effectuate wireless communication between the wallet consolidator **100** and various computing devices such as, but not limited to, point-of-sale terminals, dumb terminals and databases, collectively point-of-service or point-of-transaction terminals, which are equipped with a similar infrared transceiver or radio frequency transceiver.

[0031] The wallet consolidator **100** allows an individual to swipe their credit, debit, identification or other type cards through the magnet stripe reader/writer **220** and store the information contained in the magnetic stripe in the memory **120** of the wallet consolidator **100**, or alternatively in the memory of the smart card. The wallet consolidator **100** also allows an individual to scan a bar code on a card using the bar code scanner **180** and store the bar code in the wallet consolidator **100**, or alternatively in the memory of the smart card Furthermore, the individual can download the image of the cards, or other cards which do not have a magnetic stripe

and, with sufficient memory, store a digitized image in the memory **120** of the wallet consolidator **100**, or alternatively in the memory of the smart card. Additionally, other types of information can be stored in either the memory **120** of the wallet consolidator **100** or the memory of the smart card. Among other types of information, items such as electronic coupons or food stamp balances can be stored and then redeemed during a point-of-sale transaction. Communication with various computing devices such as, but not limited to, point-of-sale terminals, dumb terminals and databases, can be effectuated using the telephone interface **160**, the radio frequency transceiver **210**, the infrared transceiver **190** or the display screen **200**.

[0032] Referring additionally now to FIG. **2**, there is illustrated a flow diagram of a preferred method for consolidating card information using the wallet consolidator **100** described in FIG. **1**. Information stored on magnetic stripes is entered into the wallet consolidator **100** by swiping the subject identification, credit, debit or other type of card through the magnetic stripe reader/writer **220** to read the information from the magnetic stripe of the subject card (step **300**). Alternatively, the information can be entered into the wallet consolidator **100** via the data interface **140**, the keypad **150**, the telephone interface **160**, the infrared transceiver **190** or the radio frequency transceiver **210**. The entered information is stored in the memory **120** of the wallet consolidator **100**, or alternatively in the memory of the smart card (step **310**).

[0033] Similarly, bar codes from the cards are scanned (step **320**) and the bar codes are stored in the memory **120** of the wallet consolidator **100**, or alternatively, in the memory of the smart card (step **330**). Alternatively, the information can be entered into the wallet consolidator **100** via the data interface **140**, the keypad **150**, the telephone interface **160**, the infrared transceiver **190** or the radio frequency transceiver **210**. (**0032**] Still further, other information such as electronic coupons or images such as portraits and signatures, are downloaded into the wallet consolidator **100** (step **332**) and stored in the memory **120** of the wallet consolidator **100**, or alternatively, in the memory of the smart card (step **334**). The information can be downloaded into the wallet consolidator **100** via the data interface **140**, the keypad **150**, the telephone interface **160**, the infrared transceiver **190** or the radio frequency transceiver **210**.

[0034] To retrieve magnetic stripe information from the wallet consolidator **100**, the user selects the desired information using either the user input cluster **130** or the keypad **150** (step **340**). Once the information has been selected, the information can be written onto a magnetic strip of the smart card or other multi-use card (step **350**). Alternatively, the information which was selected can be communicated to various computing devices such as, but not limited to, point-of-sale terminals, dumb terminals and databases via the data interface **140**, the telephone interface **160**, the infrared transceiver **190** or the radio frequency transceiver **210**.

[0035] Similarly, the user selects a desired bar code using either the user input cluster **130** or the keypad **150** (step **360**) and the selected image is displayed on the display screen **200** (step **370**). Alternatively, the information which was selected can be communicated to various computing devices such as, but not limited to, point-of-sale terminals, dumb terminals, and databases, etc., via the data interface **140**, the telephone interface **160**, the infrared transceiver **190** or the radio frequency transceiver **210**.

[0036] Still further, the user can select stored information, including downloaded information (step **380**), and display the selected information (step **390**) or download the selected information (step **400**) to various computing devices such as, but not limited to, point-of-sale terminals, dumb terminals and databases via the data interface **140**, the telephone interface **160**, the infrared transceiver **190** or the radio frequency transceiver **210**.

[0037] Referring now to FIG. **3**, there is illustrated a perspective view of a wallet consolidator **100**. The wallet consolidator, shown generally at **100**, includes the controller **110** which is located internally and not shown, the memory **120** also located internally and not shown, the user input cluster **130**, the data interface **140**, the keypad **150**, the telephone interface **160**, the smart card interface **170**, the bar code scanner **180**, the infrared transceiver **190**, the display screen **200**, the radio frequency transceiver **210**, and the magnetic stripe reader/writer **220**.

[0038] This application is related to to U.S. patent application Ser. No. _____, filed _____, titled "Wallet Consolidator and Related Methods of Processing a Transaction Using a Wallet Consolidator"; U.S. patent application Ser. No. 09/923,617, filed Aug. 6, 2001, titled "Wallet Consolidator and Related Methods of Processing a Transaction Using a Wallet Consolidator"; U.S. patent application Ser. No. 09/618,407, filed Jul. 18, 2000, titled "Wallet Consolidator," now U.S. Pat. No. 6,293,462; and U.S. patent application Ser. No. 09/087,193, filed May 29, 1998, titled "Wallet Consolidator," now U.S. Pat. No. 6,131,811, each incorporated herein by reference in their entireties.

[0039] In the drawings and specification, there have been disclosed a typical preferred embodiment of the invention, and although specific terms are employed, the terms are used in a descriptive sense only and not for purposes of limitation. The invention has been described in considerable detail with specific reference to these illustrated embodiments. It will be apparent, however, that various modifications and changes can be made within the spirit and scope of the invention as described in the foregoing specification and as defined in the appended claims.

That claimed is:

1. A wallet consolidator, comprising:

an input device positioned to receive information stored on at least one card;

a memory device connected to the input device to store the information received by the input device; and

an output device connected to the memory device and positioned to effectuate communication of at least a portion of the information stored in the memory device to a point-of-sale terminal located at a point-of-sale when the point-of-sale terminal is positioned to receive the at least a portion of the information from the wallet consolidator for use in a point-of-sale transaction.

2. A wallet consolidator as defined in claim 1, wherein the information comprises account identification information pertaining to at least one of the following: one or more credit

cards, one or more debit cards, one or more identification cards, one or more electronic coupons, or one or more food stamp accounts.

3. A wallet consolidator as defined in claim 1, wherein the at least one card includes a driver's license card.

4. A wallet consolidator as defined in claim 1, wherein the received information includes a digitized image of the at least one card.

5. A wallet consolidator as defined in claim 1, wherein the received information includes a digitized image.

6. A wallet consolidator as defined in claim 1, wherein the output device comprises at least one of the following: a wireless interface, a wireless communications interface, or a radio frequency (RF) interface.

7. A wallet consolidator, comprising:

an input device positioned to receive information stored on at least one card;

a memory device connected to the input device to store the information received by the input device; and

a wireless output device connected to the memory device and positioned to effectuate communication of at least a portion of the information stored in the memory device to a point-of-sale terminal located at a point-of-sale when the point-of-sale terminal is positioned to receive the at least a portion of the information from the wallet consolidator for use in a point-of-sale transaction.

8. A wallet consolidator as defined in claim 7, wherein the information comprises account identification information pertaining to at least one of the following: one or more credit cards, one or more debit cards, one or more identification cards, one or more electronic coupons, or one or more food stamp accounts.

9. A wallet consolidator as defined in claim 7, wherein the at least one card includes a driver's license card.

10. A wallet consolidator as defined in claim 7, wherein the received information includes a digitized image of the at least one card.

11. A wallet consolidator as defined in claim 7, wherein the received information includes a digitized image.

12. A wallet consolidator as defined in claim 7, wherein the output device comprises at least one of the following: a wireless interface, a wireless communications interface, or a radio frequency (RF) interface.

13. A wallet consolidator, comprising:

a controller positioned to control operation of the wallet consolidator;

an input device in communication with the controller and positioned to receive information contained on at least one card;

a memory device in communication with the controller and positioned to store the information received by the input device; and

a wireless output device in communication with the controller and adapted to be positioned to interface with a point-of-sale terminal located at a point-of-sale to provide at least a portion of the information stored in the memory device to the point-of-sale terminal when the wallet consolidator is positioned adjacent the point-of-sale terminal to enable a transaction responsive to receiving the at least a portion of the information.

14. A wallet consolidator as defined in claim 13, wherein the information comprises personal identification information.

15. A wallet consolidator as defined in claim 13,

wherein the information comprises account identification information pertaining to at least one of the following: one or more credit cards, one or more debit cards, one or more identification cards, one or more electronic coupons, or one or more food stamp accounts; and

wherein the wireless output device is a wireless radio frequency (RF) communication device.

16. A wallet consolidator as defined in claim 13,

wherein the information comprises personal identification information pertaining to at least one of the following: one or more credit cards, one or more debit cards, one or more identification cards, one or more electronic coupons, or one or more food stamp accounts; and

wherein the wireless output device is a wireless radio frequency (RF) communication device.

17. A wallet consolidator, comprising:

an input device positioned to receive information stored on at least one card;

a memory device connected to the input device to store the information received by the input device; and

an output device connected to the memory device and positioned to transmit at least a portion of the information stored in the memory device to a point-of-sale terminal located at a point-of-sale, the point-of-sale terminal positioned to process a transaction responsive to the at least a portion of the information.

18. A wallet consolidator as defined in claim 17, wherein the at least one card is a smart card, and wherein the smart card is adapted to receive a portion of the information stored in the memory device.

19. A wallet consolidator as defined in claim 17,

wherein the information comprises account identification information pertaining to at least one of the following: one or more credit cards, one or more debit cards, one or more identification cards, one or more electronic coupons, or one or more food stamp accounts; and

wherein the output device is a wireless radio frequency (RF) communication device.

20. A wallet consolidator as defined in claim 17,

wherein the information comprises personal identification information pertaining to at least one of the following: one or more credit cards, one or more debit cards, one or more identification cards, one or more electronic coupons, or one or more food stamp accounts; and

wherein the output device is a wireless radio frequency (RE) communication device.

21. A method for processing a transaction using a wallet consolidator, the method comprising the steps of:

receiving information stored on at least one of a plurality of cards;

storing the received information in a memory device;

positioning a wallet consolidator adjacent a point of sale terminal positioned at a point of sale; and

communicating at least a portion of the stored information to the point-of-sale terminal for use in a point-of-sale transaction responsive to the at least a portion of the information.

22. A method as defined in claim 21,

wherein the information comprises information pertaining to at least one of the following: one or more credit cards, one or more debit cards, one or more personal identification cards, one or more electronic coupons, or one or more food stamp accounts; and

wherein the method further comprises the step of providing a user an option to select a card to add or delete, duplicate information, transfer data, move cash, or access or amend information including at least one of the following: an electronic coupon, personal identification information, or a medical record.

23. A method as defined in claim 21,

wherein the step of receiving is performed via an input device comprising at least one of the following: a touch screen, a smart card reader, a kiosk, a memory card, or a radio frequency (RE) interface; and

wherein the method further comprises the step of receiving a passcode from a user prior to allowing the user to gain access to the wallet consolidator.

24. A method as defined in claim 21, wherein the step of communicating is performed via an output device comprising at least one of the following: a wireless communications interface or a radio frequency IRF) interface.

25. A method as defined in claim 21,

wherein the step of communicating comprises transmitting at least a portion of the stored information to a computing device selected from the group of: a dumb terminal and a database; and

wherein the received information includes a digitized image.

* * * * *

EXHIBIT

F

US 20020052193A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2002/0052193 A1**

Chetty (43) **Pub. Date: May 2, 2002**

(54) **UNIVERSAL PORTABLE UNIT**

(76) Inventor: **Vijay Raghavan Chetty**, Santa Monica, CA (US)

Correspondence Address:
BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025 (US)

(21) Appl. No.: **09/829,858**

(22) Filed: **Apr. 9, 2001**

Related U.S. Application Data

(63) Non-provisional of provisional application No. 60/244,847, filed on Oct. 31, 2000.

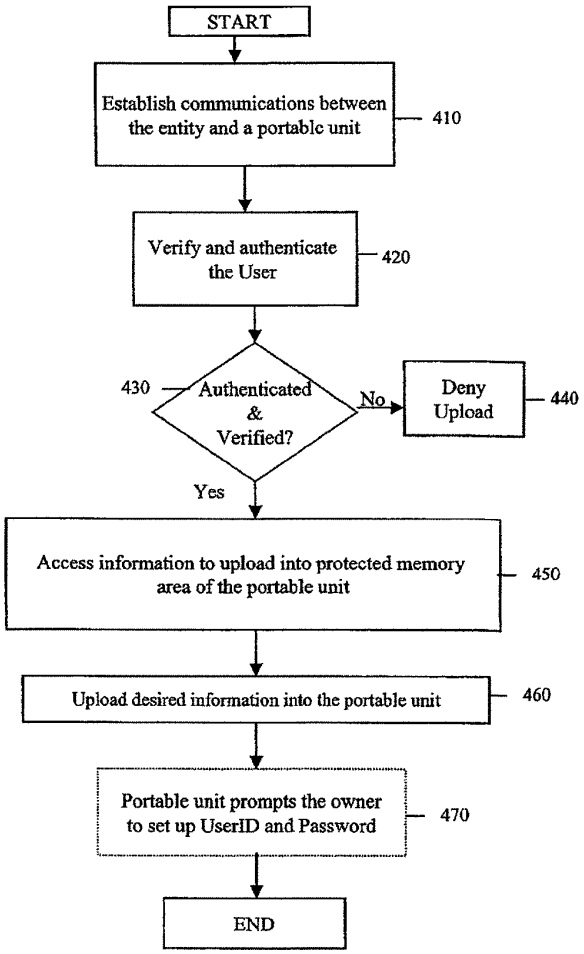
Publication Classification

(51) **Int. Cl.**[7] **H04M 11/10**

(52) **U.S. Cl.** **455/412**; 455/411; 455/410; 455/550

(57) **ABSTRACT**

In general, a portable unit and method are described for storing user information for subsequent recovering. For one embodiment, the portable unit comprises a casing, an antenna and logic employed within the casing. The logic may comprise a wireless transceiver coupled to the antenna, a processing unit coupled to the wireless transceiver, and a remote transceiver coupled to a plurality of device drivers and a memory unit. The memory unit is configured to store remote codes, user identification information and user transaction information.



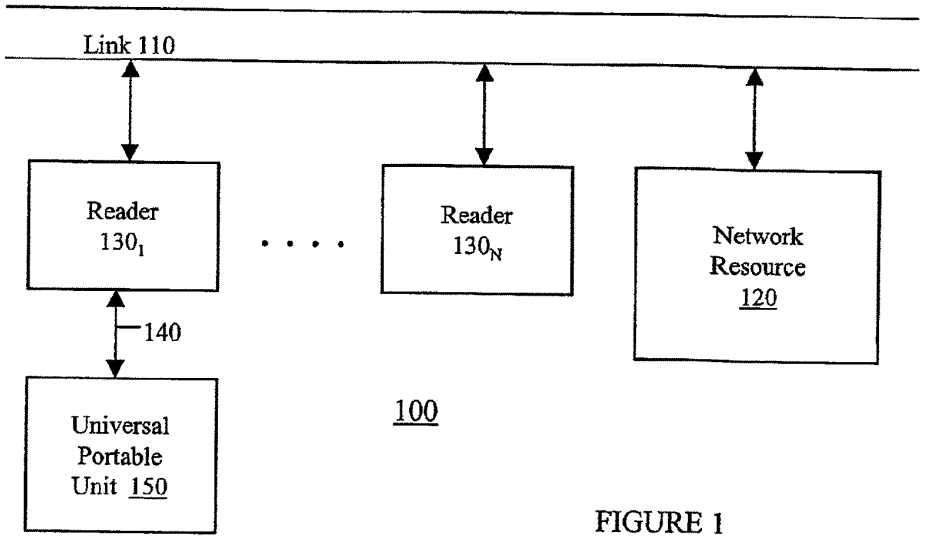
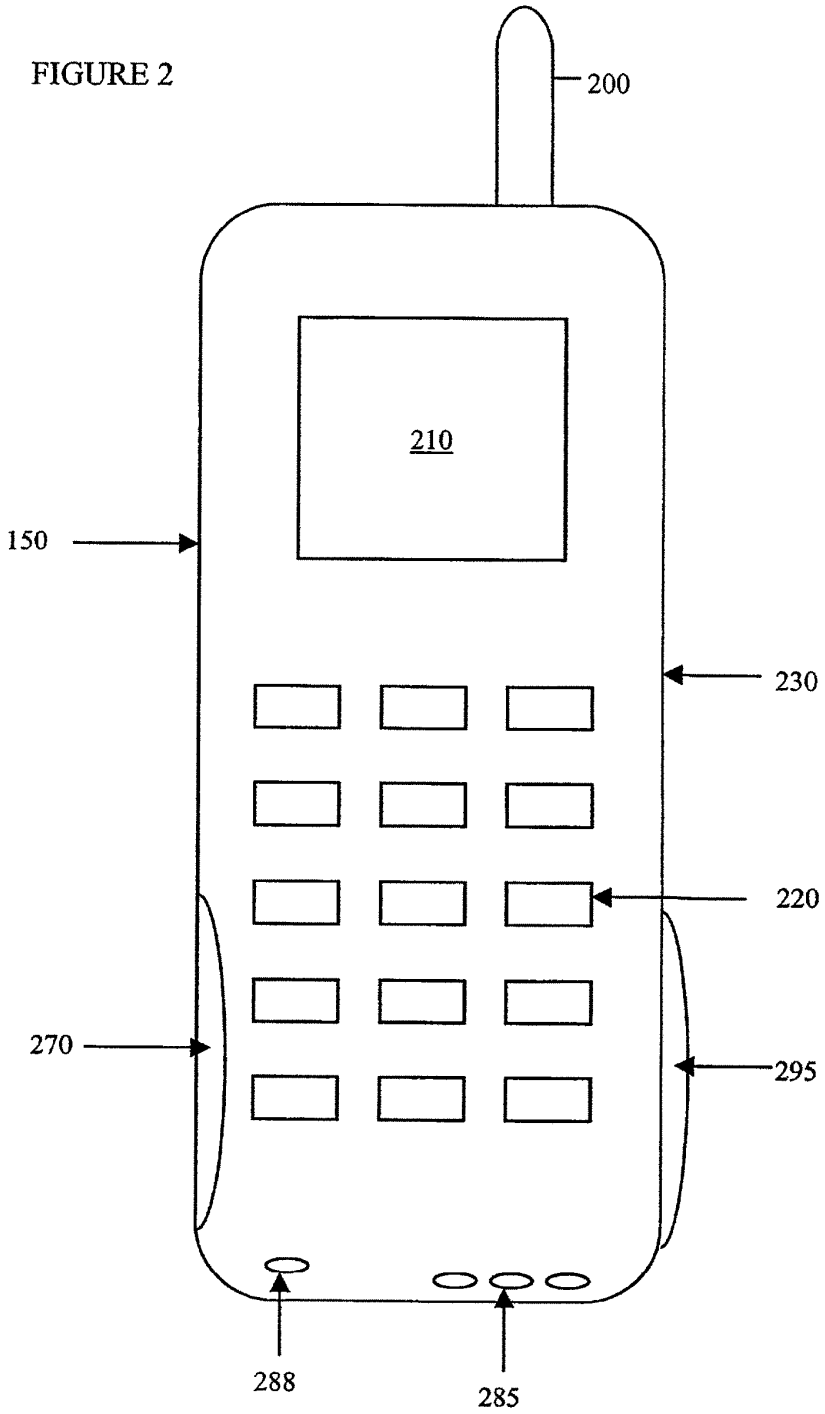

Link 110
Reader
130$_1$
Reader
130$_N$
Network
Resource
120
140
Universal
Portable
Unit 150
100

FIGURE 1

FIGURE 2



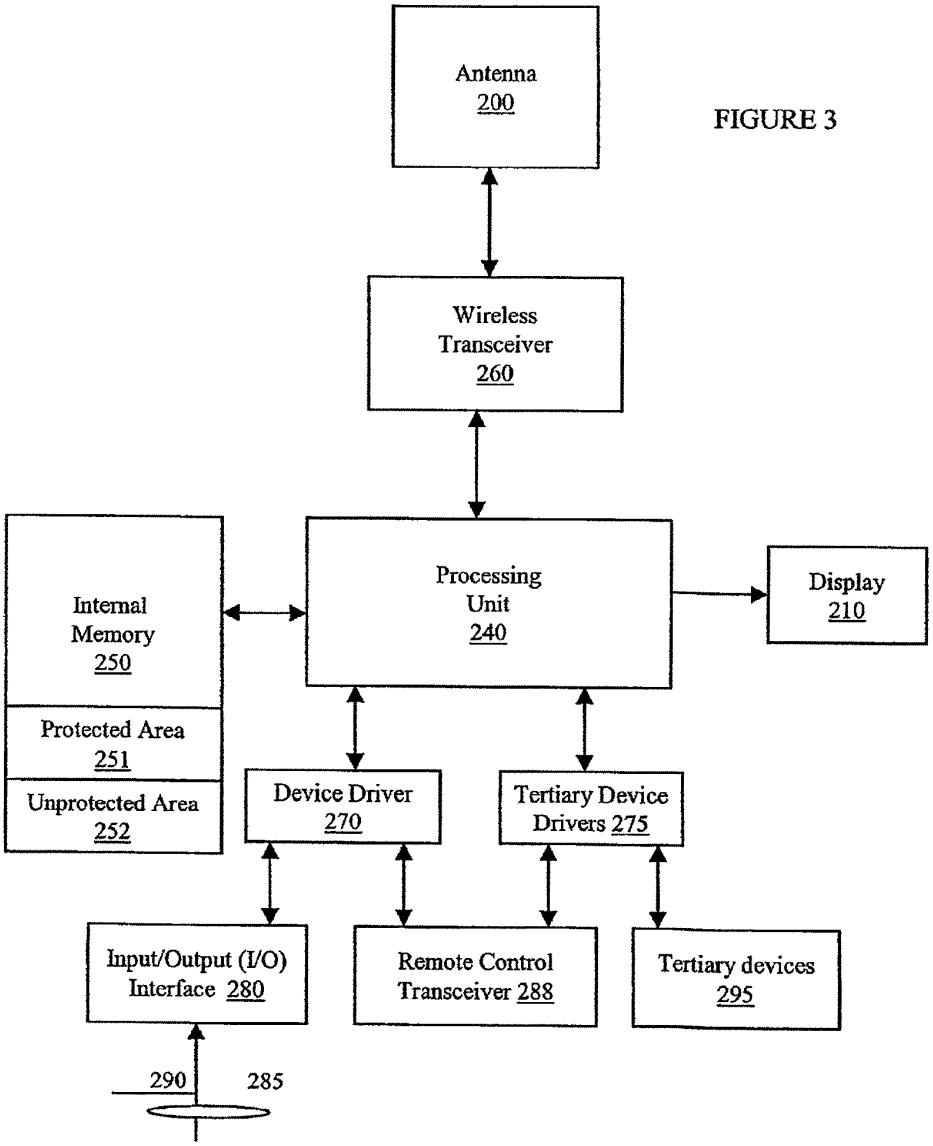

Antenna
200
Wireless
Transceiver
260
Internal
Memory
250
Protected Area
251
Unprotected Area
252
Processing
Unit
240
Display
210
Device Driver
270
Tertiary Device
Drivers 275
Input/Output (I/O)
Interface 280
Remote Control
Transceiver 288
Tertiary devices
295
290
285

FIGURE 3

FIGURE 4

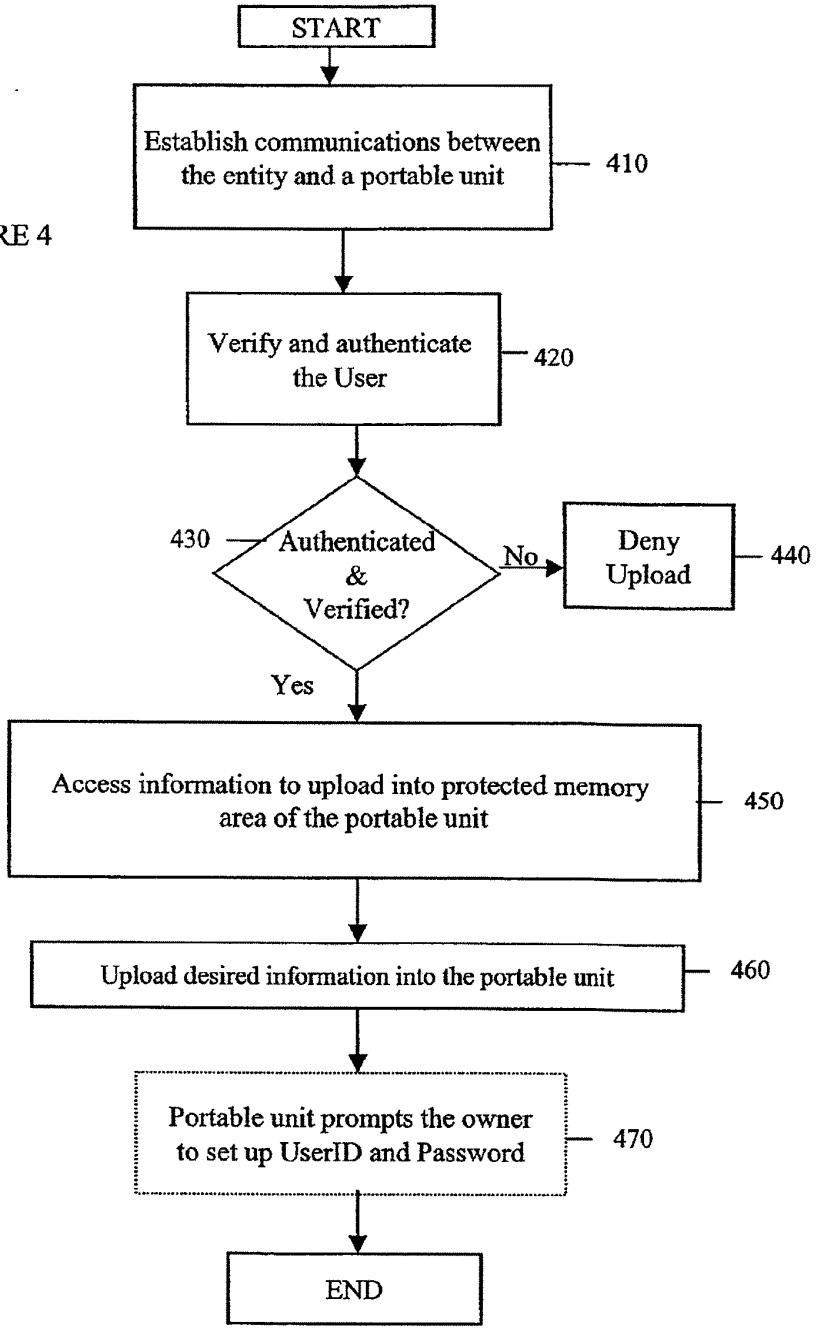

START
Establish communications between the entity and a portable unit
410
Verify and authenticate the User
420
430
Authenticated & Verified?
No
Deny Upload
440
Yes
Access information to upload into protected memory area of the portable unit
450
Upload desired information into the portable unit
460
Portable unit prompts the owner to set up UserID and Password
470
END

FIGURE 5

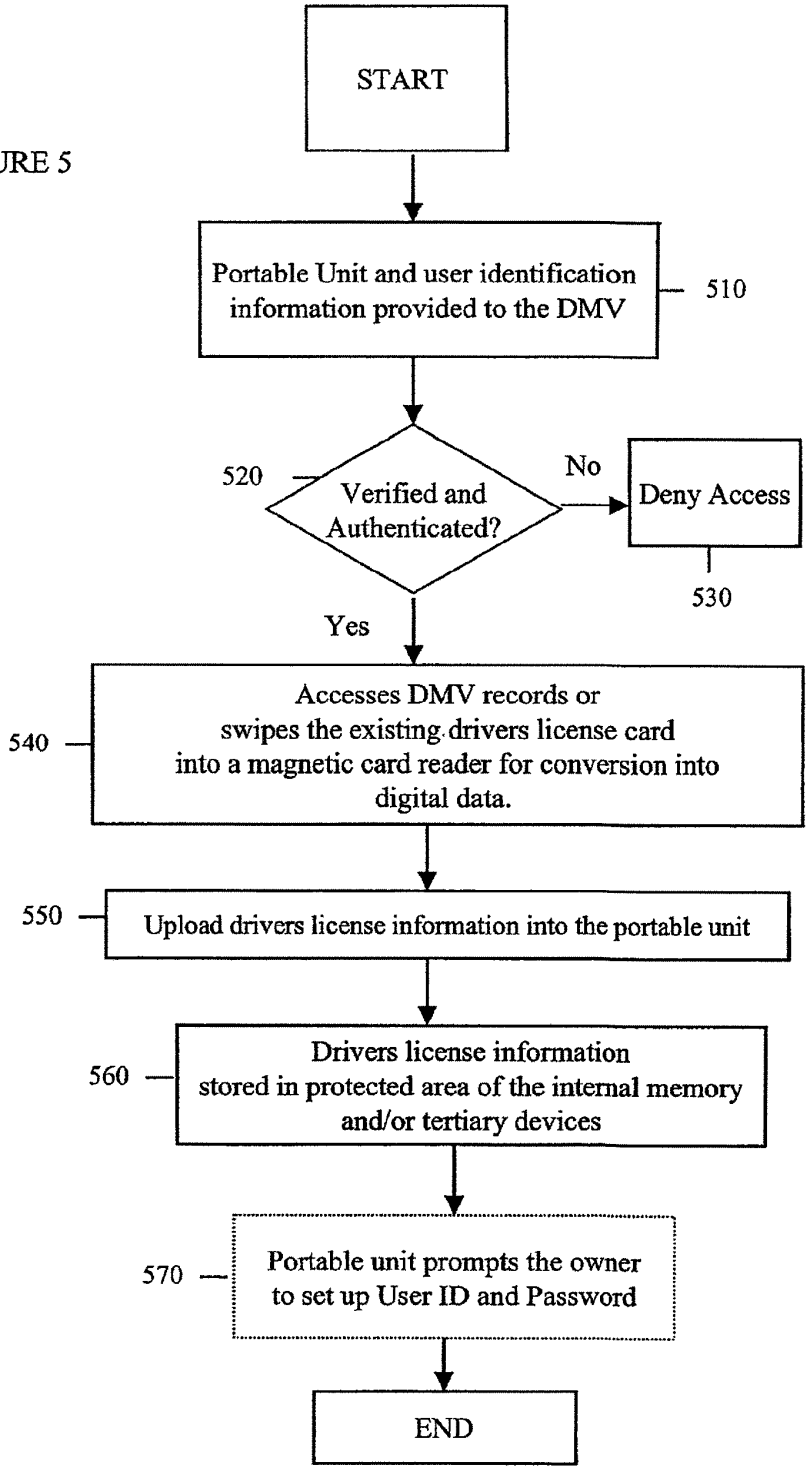

START
Portable Unit and user identification information provided to the DMV
510
520
Verified and Authenticated?
No
Deny Access
530
Yes
540
Accesses DMV records or swipes the existing drivers license card into a magnetic card reader for conversion into digital data.
550
Upload drivers license information into the portable unit
560
Drivers license information stored in protected area of the internal memory and/or tertiary devices
570
Portable unit prompts the owner to set up User ID and Password
END

FIGURE 6

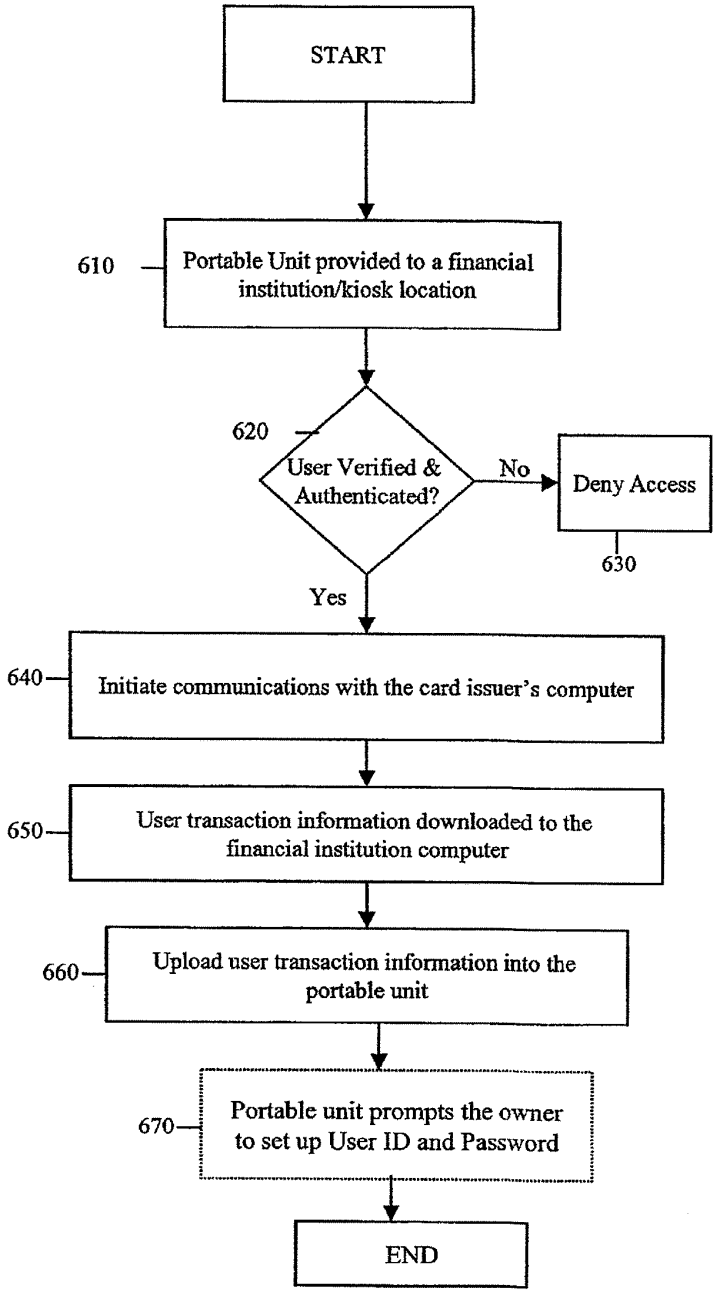
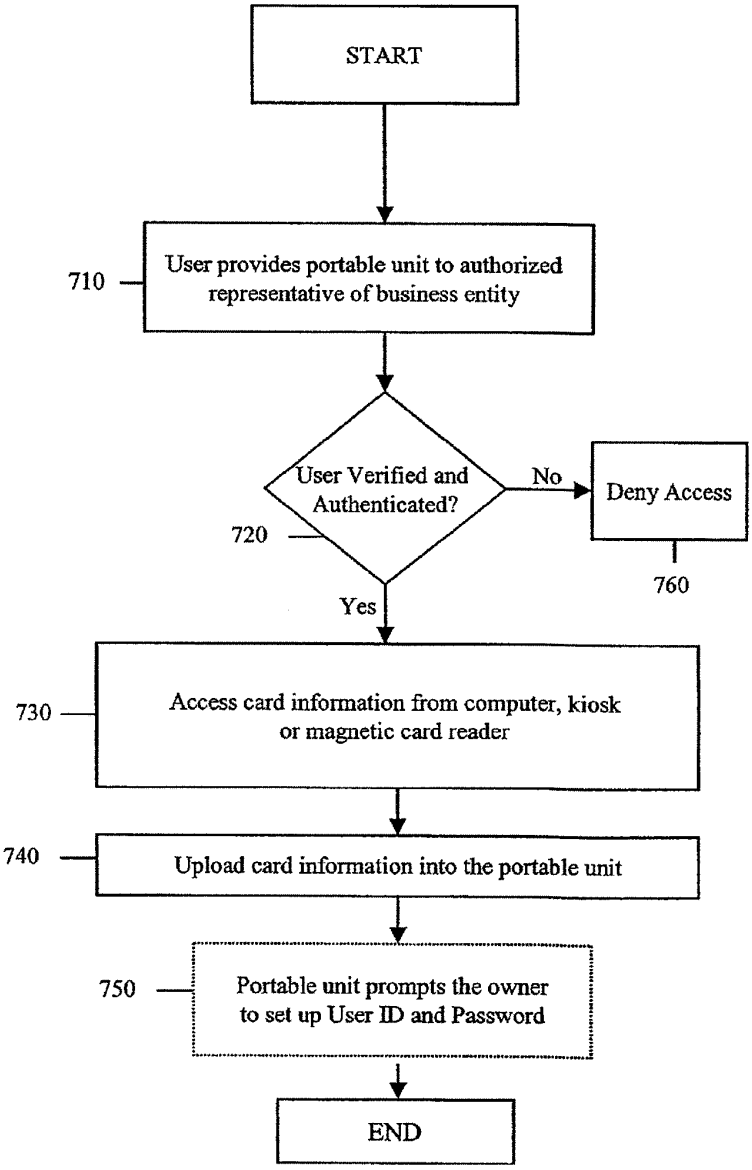

START
610
Portable Unit provided to a financial institution/kiosk location
620
User Verified & Authenticated?
No
Deny Access
630
Yes
640
Initiate communications with the card issuer's computer
650
User transaction information downloaded to the financial institution computer
660
Upload user transaction information into the portable unit
670
Portable unit prompts the owner to set up User ID and Password
END

FIGURE 7


START
710
User provides portable unit to authorized representative of business entity
User Verified and Authenticated?
720
No
Deny Access
760
Yes
730
Access card information from computer, kiosk or magnetic card reader
740
Upload card information into the portable unit
750
Portable unit prompts the owner to set up User ID and Password
END

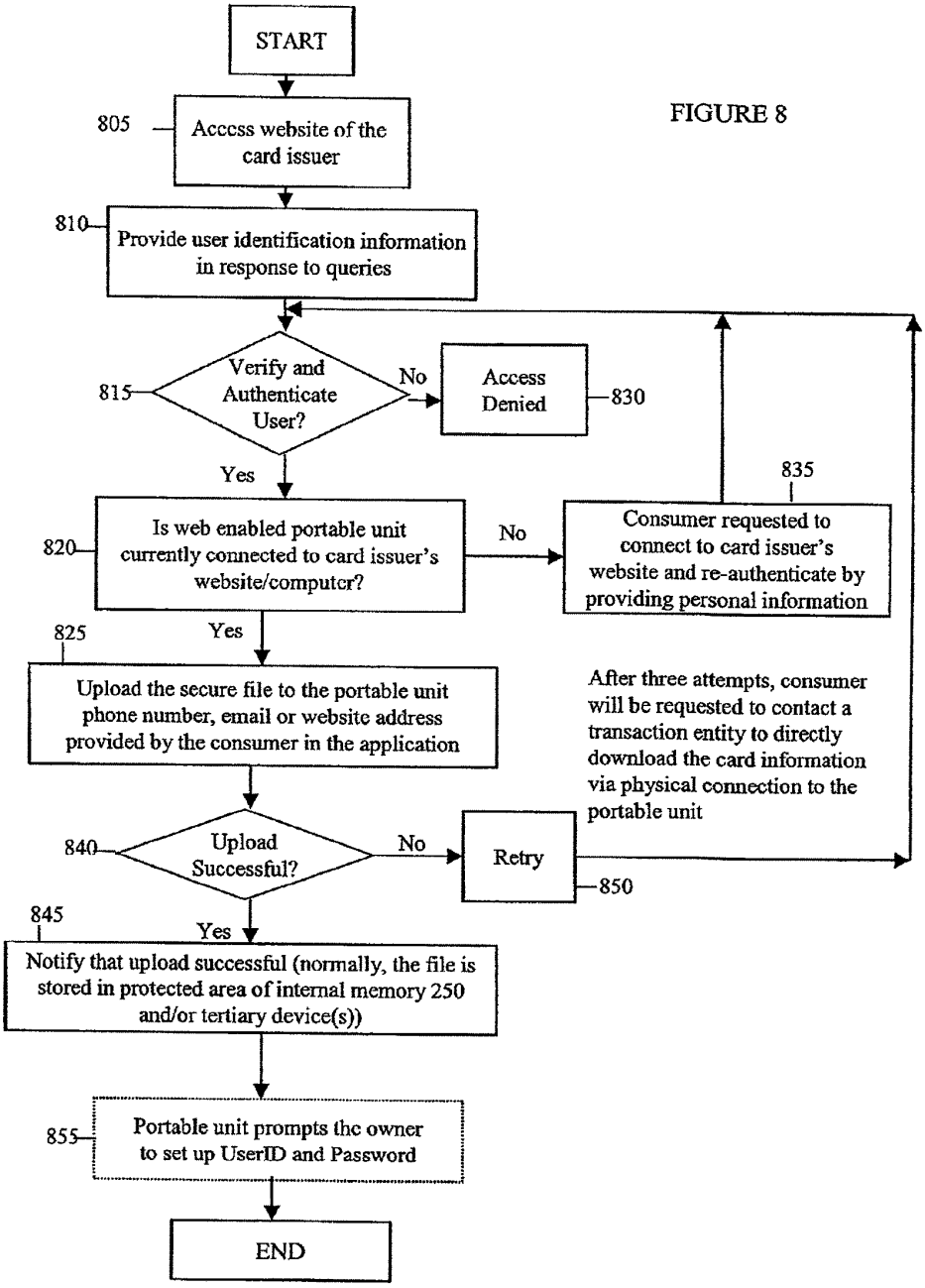

START
805
Access website of the card issuer
810
Provide user identification information in response to queries
815
Verify and Authenticate User?
No
Access Denied
830
Yes
835
820
Is web enabled portable unit currently connected to card issuer's website/computer?
No
Consumer requested to connect to card issuer's website and re-authenticate by providing personal information
825
Yes
Upload the secure file to the portable unit phone number, email or website address provided by the consumer in the application
After three attempts, consumer will be requested to contact a transaction entity to directly download the card information via physical connection to the portable unit
840
Upload Successful?
No
Retry
850
845
Yes
Notify that upload successful (normally, the file is stored in protected area of internal memory 250 and/or tertiary device(s))
855
Portable unit prompts the owner to set up UserID and Password
END

FIGURE 8

FIGURE 9

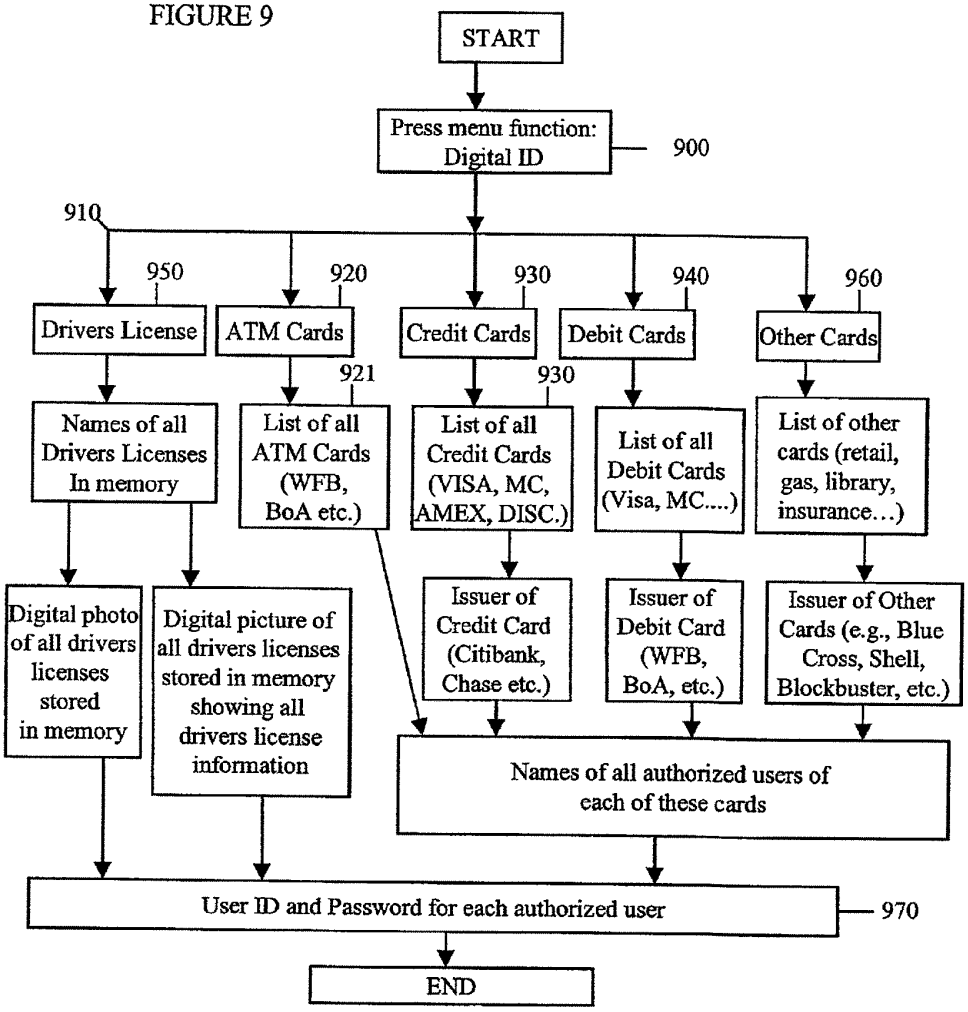

START
Press menu function: Digital ID
900
910
950
920
930
940
960
Drivers License
ATM Cards
Credit Cards
Debit Cards
Other Cards
921
930
Names of all Drivers Licenses In memory
List of all ATM Cards (WFB, BoA etc.)
List of all Credit Cards (VISA, MC, AMEX, DISC.)
List of all Debit Cards (Visa, MC....)
List of other cards (retail, gas, library, insurance...)
Digital photo of all drivers licenses stored in memory
Digital picture of all drivers licenses stored in memory showing all drivers license information
Issuer of Credit Card (Citibank, Chase etc.)
Issuer of Debit Card (WFB, BoA, etc.)
Issuer of Other Cards (e.g., Blue Cross, Shell, Blockbuster, etc.)
Names of all authorized users of each of these cards
User ID and Password for each authorized user
970
END

FIGURE 10

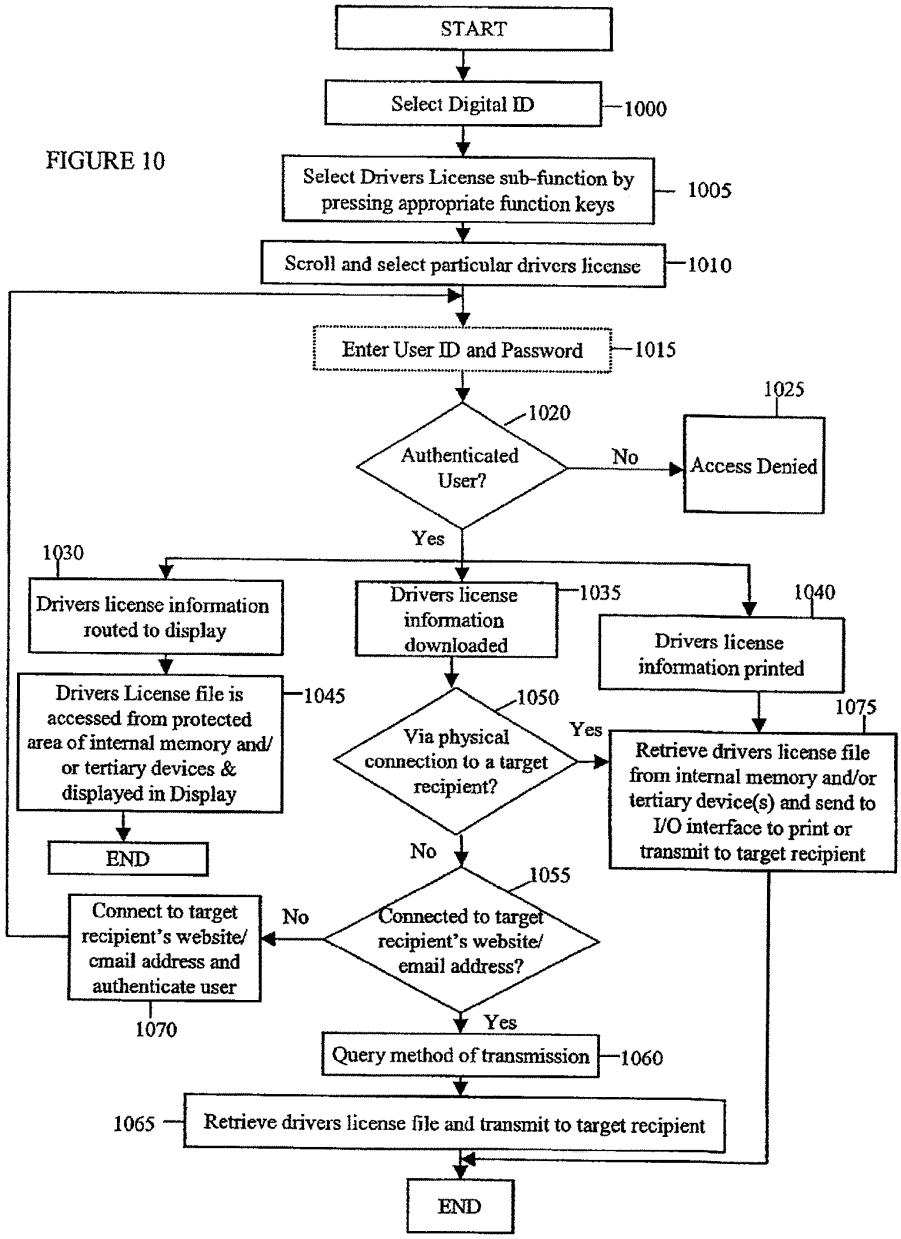

START
Select Digital ID
1000
Select Drivers License sub-function by pressing appropriate function keys
1005
Scroll and select particular drivers license
1010
Enter User ID and Password
1015
1020
Authenticated User?
No
1025
Access Denied
Yes
1030
Drivers license information routed to display
Drivers license information downloaded
1035
1040
Drivers license information printed
Drivers License file is accessed from protected area of internal memory and/ or tertiary devices & displayed in Display
1045
1050
Via physical connection to a target recipient?
Yes
1075
Retrieve drivers license file from internal memory and/or tertiary device(s) and send to I/O interface to print or transmit to target recipient
END
No
1055
Connect to target recipient's website/ email address and authenticate user
No
Connected to target recipient's website/ email address?
1070
Yes
Query method of transmission
1060
1065
Retrieve drivers license file and transmit to target recipient
END

FIGURE 11

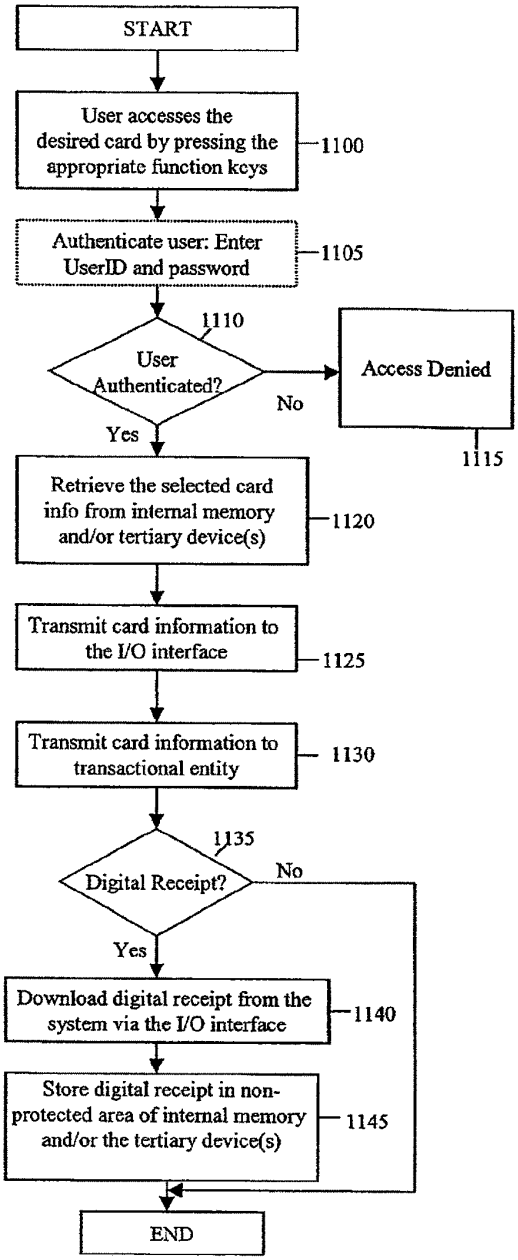

START
User accesses the desired card by pressing the appropriate function keys
1100
Authenticate user: Enter UserID and password
1105
1110
User Authenticated?
No
Access Denied
1115
Yes
Retrieve the selected card info from internal memory and/or tertiary device(s)
1120
Transmit card information to the I/O interface
1125
Transmit card information to transactional entity
1130
1135
Digital Receipt?
No
Yes
Download digital receipt from the system via the I/O interface
1140
Store digital receipt in non-protected area of internal memory and/or the tertiary device(s)
1145
END

FIGURE 12

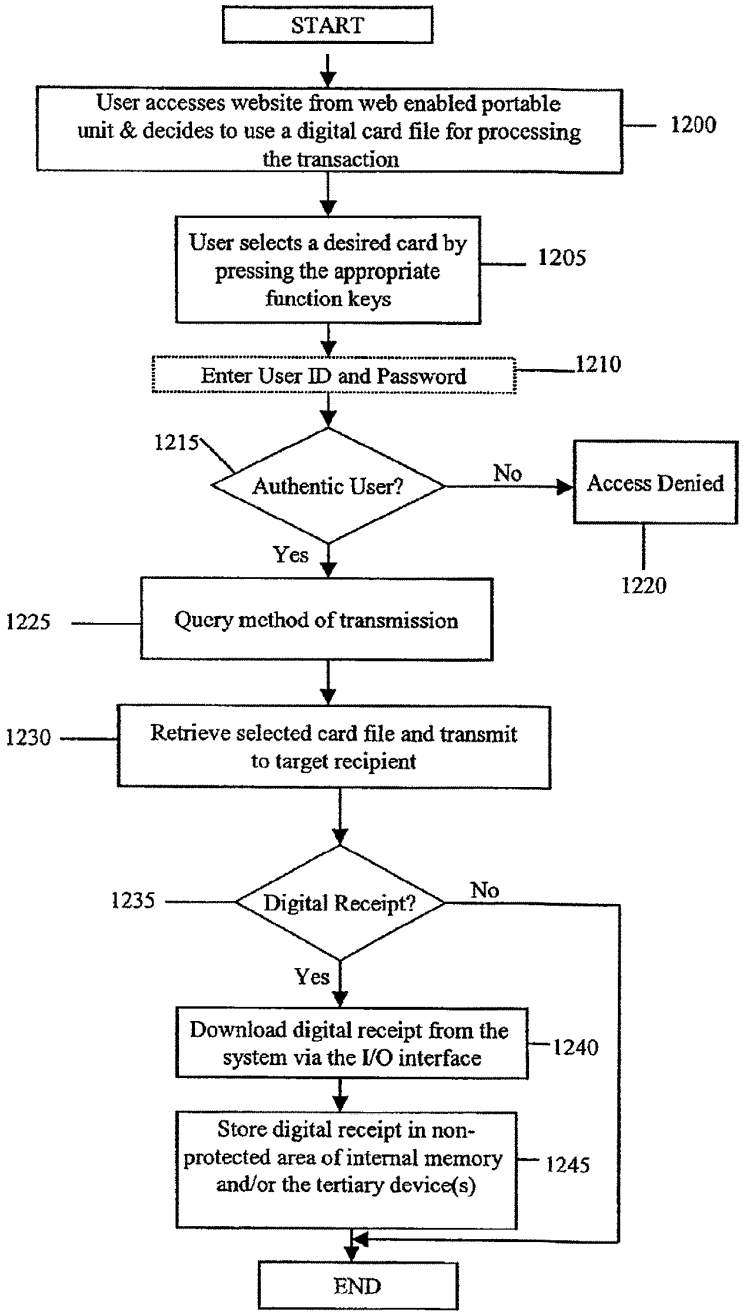

START
User accesses website from web enabled portable unit & decides to use a digital card file for processing the transaction
1200
User selects a desired card by pressing the appropriate function keys
1205
Enter User ID and Password
1210
1215
Authentic User?
No
Access Denied
1220
Yes
1225
Query method of transmission
1230
Retrieve selected card file and transmit to target recipient
1235
Digital Receipt?
No
Yes
Download digital receipt from the system via the I/O interface
1240
Store digital receipt in non-protected area of internal memory and/or the tertiary device(s)
1245
END

FIGURE 13

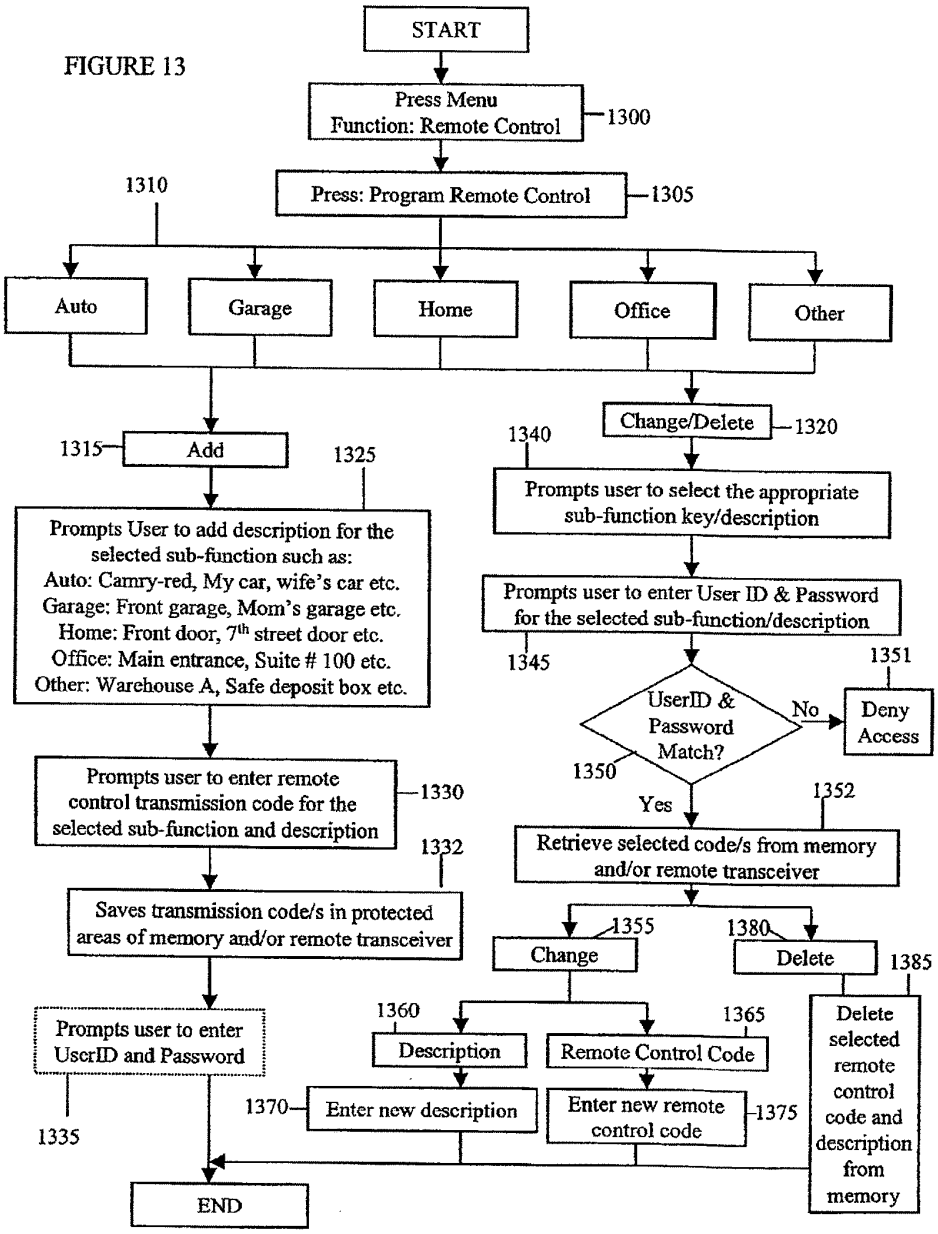
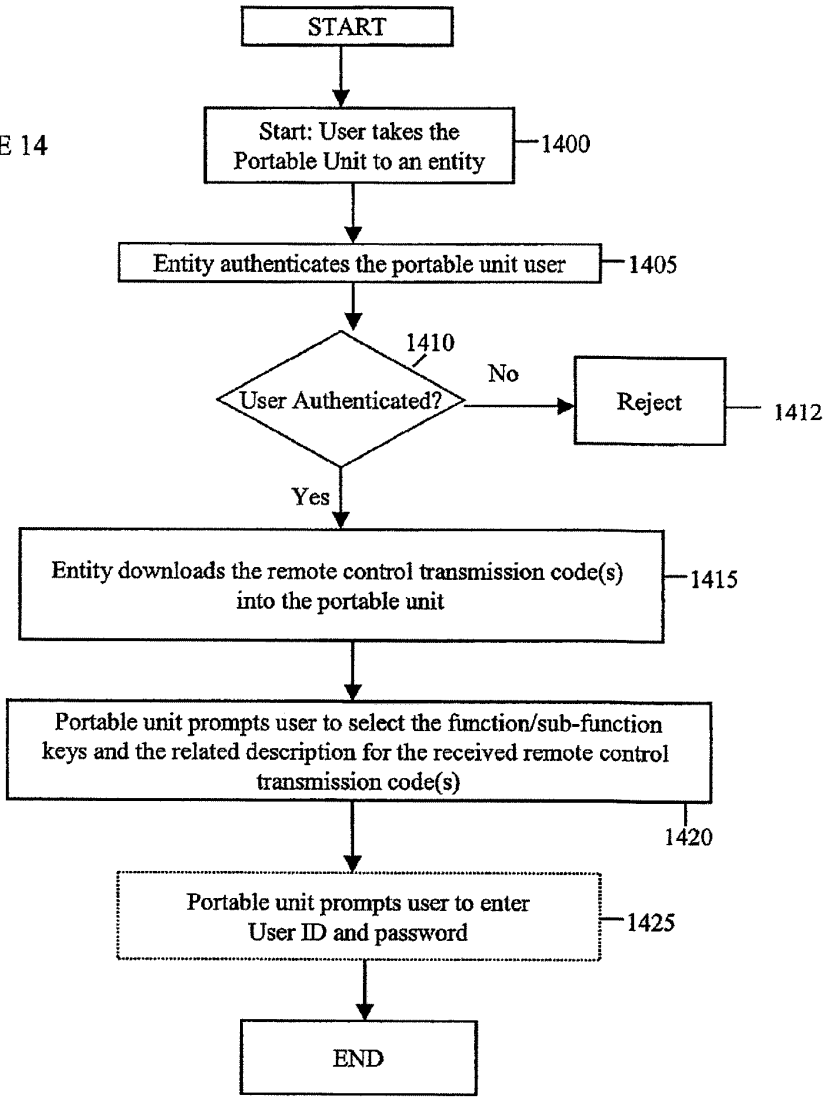

START
Press Menu Function: Remote Control
1300
Press: Program Remote Control
1305
1310
Auto
Garage
Home
Office
Other
Add
1315
1325
Prompts User to add description for the selected sub-function such as:
Auto: Camry-red, My car, wife's car etc.
Garage: Front garage, Mom's garage etc.
Home: Front door, 7th street door etc.
Office: Main entrance, Suite # 100 etc.
Other: Warehouse A, Safe deposit box etc.
Prompts user to enter remote control transmission code for the selected sub-function and description
1330
1332
Saves transmission code/s in protected areas of memory and/or remote transceiver
Prompts user to enter UserID and Password
1335
END
Change/Delete
1320
1340
Prompts user to select the appropriate sub-function key/description
Prompts user to enter User ID & Password for the selected sub-function/description
1345
UserID & Password Match?
1350
No
Deny Access
1351
Yes
1352
Retrieve selected code/s from memory and/or remote transceiver
Change
1355
Delete
1380
1385
Delete selected remote control code and description from memory
1360
Description
1365
Remote Control Code
1370
Enter new description
Enter new remote control code
1375

FIGURE 14


START
Start: User takes the Portable Unit to an entity
1400
Entity authenticates the portable unit user
1405
1410
User Authenticated?
No
Reject
1412
Yes
Entity downloads the remote control transmission code(s) into the portable unit
1415
Portable unit prompts user to select the function/sub-function keys and the related description for the received remote control transmission code(s)
1420
Portable unit prompts user to enter User ID and password
1425
END

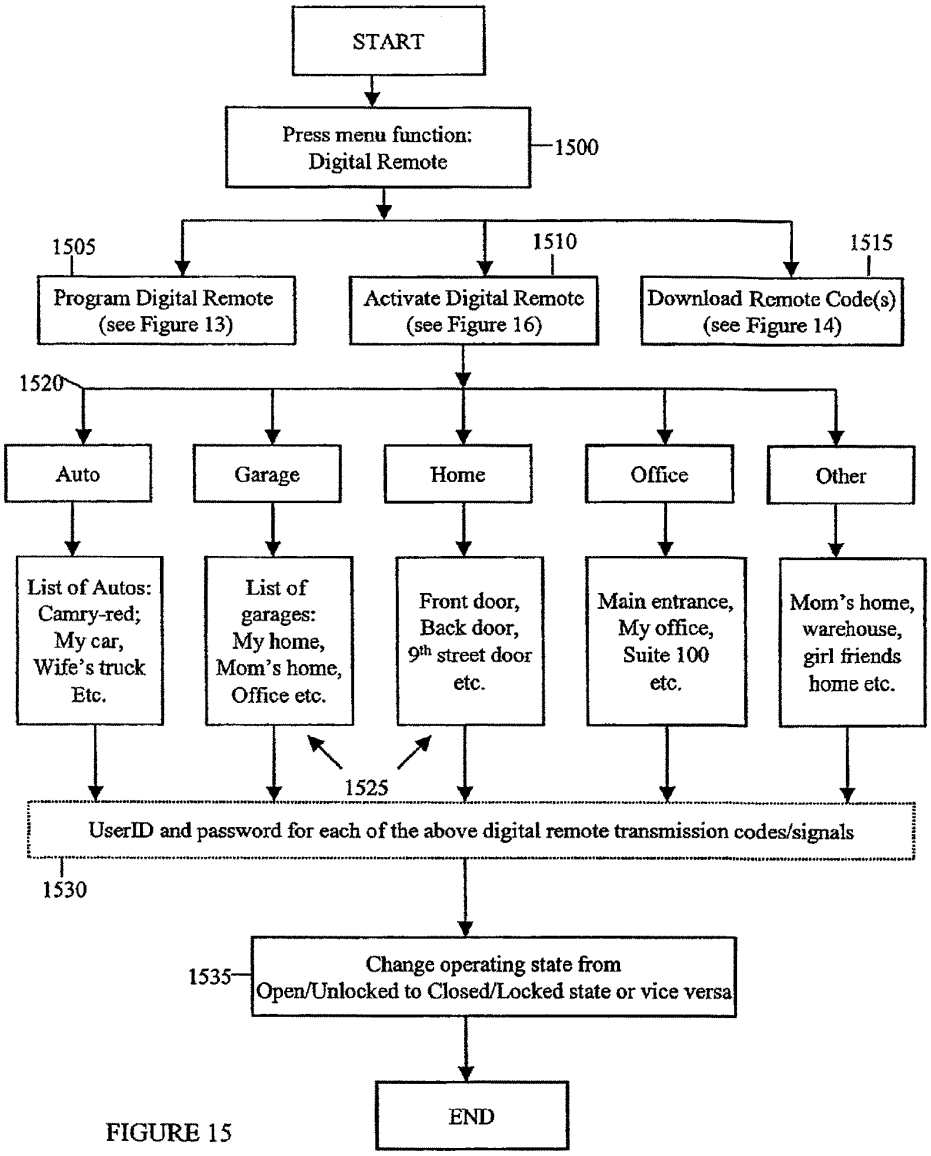

START
Press menu function: Digital Remote
1500
1505
1510
1515
Program Digital Remote (see Figure 13)
Activate Digital Remote (see Figure 16)
Download Remote Code(s) (see Figure 14)
1520
Auto
Garage
Home
Office
Other
List of Autos: Camry-red; My car, Wife's truck Etc.
List of garages: My home, Mom's home, Office etc.
Front door, Back door, 9th street door etc.
Main entrance, My office, Suite 100 etc.
Mom's home, warehouse, girl friends home etc.
1525
UserID and password for each of the above digital remote transmission codes/signals
1530
1535
Change operating state from Open/Unlocked to Closed/Locked state or vice versa
END

FIGURE 15

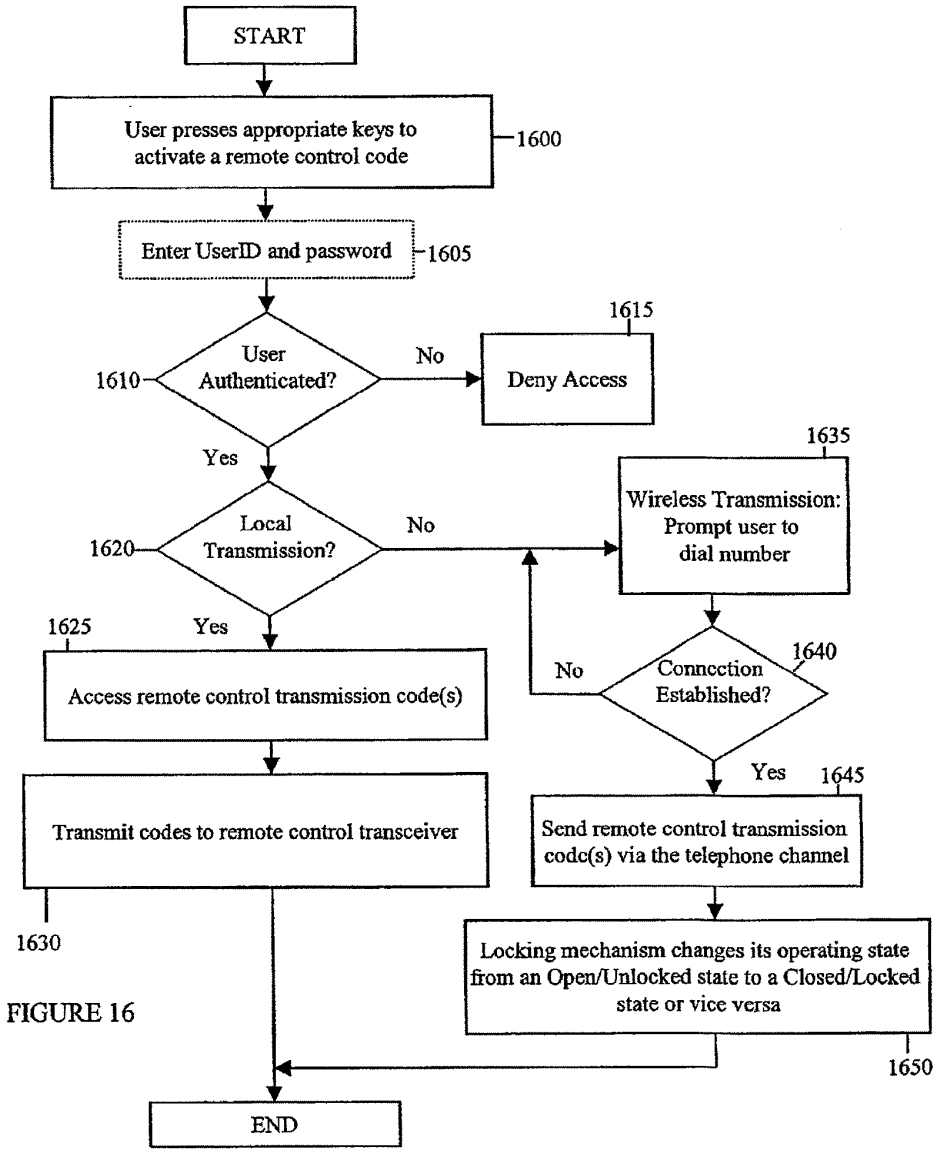

START
User presses appropriate keys to activate a remote control code
1600
Enter UserID and password
1605
User Authenticated?
1610
No
Deny Access
1615
Yes
Local Transmission?
1620
No
Wireless Transmission: Prompt user to dial number
1635
Yes
1625
Access remote control transmission code(s)
Connection Established?
1640
No
Yes
1645
Transmit codes to remote control transceiver
1630
Send remote control transmission code(s) via the telephone channel
Locking mechanism changes its operating state from an Open/Unlocked state to a Closed/Locked state or vice versa
1650
END

FIGURE 16

UNIVERSAL PORTABLE UNIT

[0001] This application claims the benefit of priority on U.S. Provisional Application No. 60/244,847.

1. FIELD

[0002] The present invention relates to the field of communications. In particular, this invention relates to a universal portable unit that provides digital identification and remote locking and unlocking functionality.

2. GENERAL BACKGROUND

[0003] In today's electronic world, individuals tend to carry a number of credit, debit and identification cards in their possession. For instance, many individuals commonly carry a drivers license or state identification cards, an automated teller machine (ATM) card, a membership card, a credit/debit card and an insurance card. Similarly, these individuals also carry a number of keys to open and close their home and office doors and carry remote controls in their possession to open and close their garage door and/or activate automobile theft control mechanisms. Clearly, it would be advantageous to eliminate the need for carrying all these cards, keys and remote controls in favor of consolidating these operations into a portable communication device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] The features and advantages of the present invention will become apparent from the following detailed description of the present invention in which:

[0005] **FIG. 1** is a first exemplary embodiment of a network in accordance with the invention.

[0006] **FIG. 2** is an exemplary embodiment of a portable unit of **FIG. 1**.

[0007] **FIG. 3** is an exemplary embodiment of the general architecture of internal logic and the flow of information within the portable unit of **FIG. 2**.

[0008] **FIG. 4** is an exemplary embodiment of a process for uploading user information from an entity into a portable unit.

[0009] **FIG. 5** is an exemplary embodiment of a process for uploading drivers license information to a portable unit.

[0010] **FIG. 6** is an exemplary embodiment of the process of uploading ATM/credit/debit card information via a link between the portable unit and a computer at an authorized financial institution or kiosk location.

[0011] **FIG. 7** is an exemplary embodiment of the process of uploading credit, debit and other identification cards issued by a business entity such as an authorized department store, library or gym into the portable unit of **FIG. 3**.

[0012] **FIG. 8** is an exemplary embodiment of the process of uploading card information remotely via wireless, satellite, Internet or another link type into the portable unit of **FIG. 3**.

[0013] **FIG. 9** is an exemplary embodiment of a digital ID menu function and sub-features that will be added to the portable unit of **FIG. 3**.

[0014] **FIG. 10** is an exemplary embodiment of the process by which a user accesses and utilizes a digital drivers license already downloaded and stored in the portable unit of **FIG. 3**.

[0015] **FIG. 11** is an exemplary embodiment of the process of accessing and utilizing the digital ATM, credit and debit cards for various Point-of-Sale (POS) transactions.

[0016] **FIG. 12** is an exemplary embodiment of a user accessing and utilizing the digital card information stored in the portable unit for processing a wireless transaction over the Internet.

[0017] **FIG. 13** is an exemplary embodiment of the programmability of the remote control transmission codes into the portable unit.

[0018] **FIG. 14** is an exemplary embodiment of the process of uploading remote control transmission codes/signals into the portable unit via a link.

[0019] **FIG. 15** is an exemplary embodiment of a digital remote menu function and sub-features employed by the portable unit of **FIG. 3**.

[0020] **FIG. 16** is an exemplary embodiment of the process by which a user accesses and utilizes the remote control code/signal already downloaded and stored in the portable unit of **FIG. 3** for opening/closing various remote control locking mechanisms.

DETAILED DESCRIPTION

[0021] An exemplary embodiment of the invention relates to a universal portable unit and technique for downloading, storing, accessing and utilizing information for identification, commercial transactions and/or remote locking controls. This information may include, but is not limited or restricted to drivers license information, ATM, credit/debit card numbers and expiration dates, membership numbers, departmental store account numbers and the like. Herein, well-known circuits are not set forth in detail in order to avoid unnecessarily obscuring the invention.

[0022] In the following description, certain terminology is used to describe features of the invention. For example, a "processing unit" includes hardware controlled at least in part by software to perform certain operations. The software is executable code configured as an operating system, an application, or a downloadable applet, for instance. Examples of a processing unit include a digital signal processor, a general microprocessor, a micro-controller, a state machine, an application specific integrated circuit and the like. A "link" is broadly defined as one or more information-carrying mediums to establish a communication pathway. For instance, the information-carrying medium may support wireless communications (e.g., infrared "IR", laser, radio frequency "RF", cellular, satellite, etc.) or communications over physical medium such as electrical wire, optical fiber, cable, bus traces and the like.

[0023] In addition, the term "information" is defined as data (e.g., audio, video or text), address, and/or control. One type of information is denoted as "user information," namely information related to identification of the user or transactions involving the user. User information includes, but is not limited or restricted to "user identification information" and/or "user transaction information". For instance,

user identification information includes drivers license data (name, address, age, date of birth, picture, drivers license number, biometrics data, expiration date, etc.), social security number, passport information, birth certificate data, corporate identification badge, school or library identification data, building access card, insurance card, frequent flier card and the like. User transaction information includes credit/debit/ATM card information such as the name on the card, picture of the card holder, card number, expiration date, and the like. For clarity, the user information stored or illustrated by a card (e.g., drivers license, social security, credit/debit/ATM card, membership card, insurance card, library card, state or student ID, retail store card, service station card, etc.) is referred to as "card information".

[0024] For transmission, the user information may be transmitted as a file (e.g., any selected grouping of information). The file may be a successive transfer of information packets, a stream of information, and the like.

[0025] Referring to **FIG. 1**, a first exemplary embodiment of a network **100** in accordance with the invention is illustrated. The network **100** comprises a link **110** based on a physical medium. Herein, the link **110** may be part of a wired or wireless backbone that includes a network resource **120**. The network resource **120** is a server or other device capable of storing a database of all styles, models and various kinds of software, hardware and other features built into universal portable units from different manufacturers. The network **100** may further include one or more readers $\mathbf{130}_1$-$\mathbf{130}_N$ ("N" representing a positive whole number, $N \geqq 1$) that support communications with one or more universal portable units **150** (hereinafter referred to as a "portable unit"). For this embodiment, the portable unit **150** communicates with the reader $\mathbf{130}_1$ via a link **140**.

[0026] The portable unit **150** includes any electronic device that comprises a processing unit (e.g., a processor, micro controller, state machine, etc.) and operates to provide user information and/or remote control key functionality as described below. The portable unit may be produced in a variety of form factors such as a mobile computer (e.g., a laptop computer, a hand-held inclusive of a personal digital assistant such as a PALM PILOT®, etc.), communications equipment (e.g., cellular telephone, mobile telephone, etc) or any other portable electronic device, for example.

[0027] The reader $\mathbf{130}_x$ ("x"=1, . . . or N) is a device that provides bi-directional communications between one or more portable units, computers, networks or the wired backbone. An example of a reader includes a small, portable docking station and/or another portable unit suitably adapted to interface with the portable unit **150** and to read user information. This would allow authorized personnel (e.g., local police, governmental official, merchant, etc.) to retrieve the user information from the portable unit.

[0028] The reader may have a physical connection to the wired backbone (e.g., link **110**) as illustrated by reader $\mathbf{130}_1$ or a wireless connection back to the wired backbone as illustrated by reader $\mathbf{130}_N$. The wired and/or wireless mode of operation may provide local area network (LAN) or wide area network (WAN) connectivity. The link **110** may be adapted for any network type, including Ethernet, token ring, asynchronous transfer mode and the like.

[0029] Referring now to **FIG. 2**, an exemplary embodiment of the portable unit **150** of **FIG. 1** is shown. For illustrative purposes, the portable unit **150** comprises an antenna **200**, a display **210** and an alphanumeric keypad **220** integrated with a casing **230**. More specifically, the antenna **200** enables the reception of incoming information and the transmission of outgoing information. The display **210** may be a flat panel display such as a liquid crystal display for instance. While the display **210** may be used as an output device in one embodiment, it is contemplated that the display **210** may be used as an input/output device such as a touch screen display, thereby eliminating the need for the alphanumeric keypad **220**. The casing **230** is made of an inflexible material such as hardened plastic. The casing **230** provides a barrier to protect logic placed therein from damage and contaminants.

[0030] **FIG. 3** is an exemplary embodiment of the general architecture of internal logic and the flow of information within the portable unit of **FIG. 2**. For this embodiment, the portable unit **150** includes some or all of the following logic: antenna **200**, a processing unit **240**, an internal memory **250**, a wireless transceiver **260**, device driver **270**, one or more optional tertiary device drivers **275**, an input/output (I/O) interface **280** with one or more corresponding I/O ports **285**, remote control transceiver **288**, and tertiary devices **295** such as single inline module (SIM) cards or memory sticks for instance.

[0031] Coupled to the processing unit **240**, the internal memory **250** may be implemented as non-volatile memory (e.g., flash, battery-backed random access memory "RAM", any type of read-only memory such as ROM, PROM, EPROM, etc.). Of course, in lieu of or in addition to non-volatile memory, the internal memory **250** may be implemented with volatile memory (e.g., dynamic RAM).

[0032] In one embodiment, the internal memory **250** is segmented into protected and non-protected areas **251** and **252**. The non-protected area **252** may be configured to contain (i) transaction confirmations such as credit or debit card receipts and (ii) card information having a lower level of security (e.g., library card numbers, gym membership data, etc.). The non-protected area **252** may also be loaded with software that enables the processing unit **240** to packetize and depacketize data upon receipt or transmission over the wireless transceiver **260**, the I/O interface **280** and/or the remote control transceiver **288**. The protected area **251** may be configured to contain (i) user information (e.g., drivers license data, social security number, ATM/credit/debit card numbers and expiration dates etc.), and/or (ii) security features (e.g., remote control codes, user identification "UserID", password, digital signatures, digital certificates, etc.). The manner of delivering and/or retrieving user identification information or security features to/from the portable unit **150** is a design choice (e.g., using encryption, password control, etc.). The digital signatures and certificates may be used to protect the integrity and verify the authenticity of information stored within the internal memory **250** or information downloaded by the portable unit **150** via the antenna **200**/wireless transceiver **260**, the I/O interface **280** and/or the remote control transceiver **288**.

[0033] If tertiary devices **295** and tertiary device drivers **275** are employed within the portable unit **150**, memory associated with the tertiary devices **295** may be similarly segmented into protected and non-protected areas. Different types of information can be stored in these areas as described

above. The use of tertiary devices **295** provides greater flexibility for use of the same user information or security features in more than one portable unit.

[**0034**] The wireless transceiver **260** is coupled to the processing unit **240** and the antenna **200**. In cooperation with the processing unit **240**, the wireless transceiver **260** controls the assembly/packetization of data packets transmitted and received over the antenna **200** as well as any encoding and decoding operations. Normally, this is accomplished by controlling the modulated frequency at the antenna **200**. Thus, the portable unit **150** is capable of supporting Code Division Multiple Access (CDMA), Global System for Mobile Communications (GSM) and other types of wireless communication protocols.

[**0035**] As shown in **FIG. 3**, the I/O interface **280** provides one or more I/O ports **285** to establish communications with a destination device via a link having one end coupled to the I/O port **285** and another end coupled to the destination device. For example, in one embodiment, the I/O interface **280** includes an I/O port **285** that enables information to be transmitted to and/or received from a peripheral. The I/O port **285** may be configured as a serial port, a parallel port, a Universal Serial Bus (USB) port and the like. When a destination device, such as a printer for example, is coupled to the I/O interface **280** via a link **290**, the user is able to print out receipts, confirmations and the like. Other types of destination devices that may be coupled to the I/O interface **280** include a facsimile machine, another reader, another portable unit, computer, network, Point-of-Sale (POS) system, ATM, modem (for wired web access), or any other peripheral configured appropriately.

[**0036**] In one embodiment of the invention, the remote control transceiver **288** may be coupled to the device driver **270** and/or tertiary device drivers **275**. The remote control transceiver **288**, which can be configured with memory for programmability, is capable of processing a variety of transmission formats such as any modulated signal, light pulses, or digital packet transmissions, for example.

[**0037**] Referring back to **FIGS. 1 and 2**, the reader $\mathbf{130}_1$ may be an ATM, POS system or another portable unit adapted to receive or obtain information stored internally within the casing **230** of the portable unit **150** or stored externally from the casing **230**. The reader $\mathbf{130}_1$ includes either an interface to connect to an I/O port of the I/O interface **280** or a wireless receiver to communicate with the wireless transceiver **260** of the portable unit **150**.

[**0038**] Referring back to **FIG. 3**, the processing unit **240** executes software responsible for (i) initializing, maintaining and controlling the display **210**, the internal memory **250**, the wireless transceiver **260**, the remote control transceiver **288**, the device driver **270** and/or the tertiary device drivers **275**; (ii) executing all the standard and proprietary communication protocols needed for performing various portable unit functions; (iii) maintaining all the state information required by any communication protocols; (iv) transmitting, receiving, packetizing or depacketizing data; and (v) storage and maintenance of secure information (e.g., certain user information, security features, etc.) and/or non-secure information (e.g., transaction confirmations and information with low level security).

[**0039**] For example, software running on the processing unit **240** is coded to coordinate communications between the device driver **270**, tertiary device drivers **275** and the wireless transceiver **260** for transmitting/receiving information and maintaining any kind of signaling between them. Likewise, additional software may be used to generate various menus, which allows the user to select and activate or inactivate various features of the portable unit **150**.

[**0040**] As an additional example, the processing unit **240** may execute software that is responsible for handling cryptographic (e.g., encryption, decryption, etc.) and other security-based operations. These operations maintain secure transactions and secure storage through verification of data integrity and authentication of the user.

[**0041**] As another example, the processing unit **240** may execute software that is responsible for electronic mail (e-mail) and web processing. All the communication protocol processing and transaction processing required for email/web access and electronic commerce is performed by the processing unit **240**, including addressing all the security requirements while performing transactions online.

[**0042**] Yet another example, the processing unit **240** may execute software that is responsible for sending and receiving secure and insecure digital files. This allows authenticated users of the portable unit **150** to receive files from providers (e.g., financial institutions or their web sites, etc.). This also allows for transferring files from the portable unit **150** via I/O interface **280** and/or wireless transceiver **260** to the various POS systems and ATMs, for processing user transactions.

[**0043**] Yet even another example, the processing unit **240** may execute software that is responsible for establishing wireless communications with an electrical or electromechanical locking mechanism. These communications may be used to upload a code to lock/unlock the locking mechanism. The code may be one or more digital signals, one or more analog signals modulated within a selected frequency range, optical signals (e.g., series of infrared pulses or laser) and the like. It is optional that the communications involve the exchange of cryptographic materials such as keys, digital signatures and/or digital certificates. The code may be stored within (i) protected areas **251** of internal memory **250**, (ii) tertiary devices **295**, (iii) the remote control transceiver **288** or (iv) any combination thereof.

[**0044**] As a further example, the software running on the processing unit **240** is responsible for receiving, programming, storing, accessing and utilizing unique remote control code(s). The software controls the digital remote menu functions and controls the accessing and retrieval of stored remote control code(s). The software is also responsible for accessing the appropriate remote code(s) from protected areas of internal memory **250** and/or tertiary devices **295** and sending those code(s) to the remote control transceiver **288** via the device driver **270** and/or tertiary device drivers **275**. When the remote control transceiver **288** within the portable unit **150** releases the appropriate code(s), the remote control locking mechanism, whether built into an automobile, home, office or garage door, will lock/unlock.

[**0045**] It is contemplated that the electrical or electromechanical remote locking mechanisms built into the home, office or garage door may have suitable connectivity to telephone lines or electrical lines. This may enable the remote control transceiver **288** in the portable unit **150** to

transmit the remote code(s) via wireless and/or land based telephone lines to the locking mechanism. Thus, control of the locking mechanism may be performed remotely.

[0046] Various peripheral systems may be placed in communication with the portable unit, including but not limited or restricted to POS, ATM or locking mechanisms. These peripheral systems will also be loaded with application software, system software and/or communication software that is required to communicate with the portable unit and its applications.

[0047] The processes described in FIGS. **4-16** below, when implemented in software, are programs (applications, applets, routines or sub-routines) that perform tasks. The programs can be stored in machine-readable medium. The "machine readable medium" may include any medium that can store or transfer information. Examples of machine readable medium include an electronic circuit, a semiconductor memory device, a read only memory (ROM), a flash memory, an erasable programmable ROM (EPROM), a floppy diskette, a compact disk (CD-ROM), an optical disk, a hard disk or a fiber optic medium.

[0048] Referring now to **FIG. 4**, an exemplary embodiment of a process for uploading information into a portable unit from an entity is shown. In general, the "entity," as referred to herein, may be a governmental agency, a financial institution, a commercial enterprise, a non-profit enterprise, a kiosk and the like. The user of the portable unit establishes communications with the entity (block **410**). For example, the user may physically take the portable unit along with his or her identification (e.g., drivers license, credit card, etc.) to an office/kiosk of the entity. An authentication agent (e.g., an employee of the entity, kiosk computer itself, etc.) verifies and authenticates the user of the portable unit (block **420**). Such verification and authentication may be accomplished through any identification process (e.g., handwritten signature verification with accompanying identification such as a drivers license, social security number or mother's maiden name, password entry, biometrics, digital signature/certificates, etc.).

[0049] If the information maintained or accessible by the entity does not match the information provided by the user, the requested upload is denied and is not conducted (blocks **430** and **440**). However, if the information matches the maintained information, the authentication agent accesses the desired information and uploads the information for storage in protected, non-volatile memory of the portable unit (blocks **450** and **460**). It is contemplated, however, that the uploaded information may be stored in the internal memory and/or in the tertiary devices. The user of the portable unit is not allowed to make any changes to any uploaded information. Instead, the portable unit prompts the user to optionally set up a UserID and password for subsequent access attempts (block **470**).

[0050] Referring now to **FIG. 5**, an exemplary embodiment of a process for uploading user information from an entity, specifically drivers license information from the Department of Motor Vehicles "DMV" to a portable unit is shown. The owner of the portable unit establishes communications with the entity by physically delivering the portable unit along with his or her current drivers license to a clerk at the DMV (block **510**). The DMV clerk verifies and authenticates the user of the portable unit (block **520**).

[0051] If the DMV records match the user identification information provided by the user, an authorized DMV clerk accesses the DMV records and uploads the complete drivers license information into protected memory. The "protected memory" includes protected area of the internal memory and/or protected area of tertiary devices of the portable unit (blocks **540**, **550** and **560**). Herein, the downloaded drivers license information includes a digital picture of the user, digital picture of the drivers license, a drivers license number, user name, age, date of birth, address, sex, height, weight, color of hair, indication of corrective lenses or any combination thereof.

[0052] In order to prevent unauthorized access to the drivers license information, the portable unit may prompt the user to set up a UserID and password for accessing the drivers license information (block **570**). The prevention of unauthorized access using the UserID and password is an optional feature exercised by the user as represented by dashed lines.

[0053] In general, the entity's computer/s that are authorized to download digital user information into a portable unit would be configured with appropriate software and procedures. The portable unit will also be loaded with appropriate software for receiving, processing and storing information from the entity.

[0054] It should be appreciated that a number of other techniques and processes can be easily devised by people skilled in the art for downloading/uploading card information into the portable unit. For example, there are a number of magnetic card readers with different designs and technologies currently available in the market place that can read card information contained in the magnetic strip of these cards. The card may be swiped into the magnetic card reader and the captured information can be converted into a digital format and uploaded into the portable unit. Another example includes placement of the card information into the memory chip of the smart cards that can be read by a smart card reader and converted to digital data and downloaded into the portable unit.

[0055] Yet another example for uploading card information into the portable unit is through an independent processing agent that receives cards containing the user information such as drivers license, ATM, credit, debit cards and the like. The independent processing agent may be an independent company, manufacturer, wholesaler, distributor, retailer and/or the service provider for the portable unit. The consumer may provide the cards to the independent processing agent at the time of purchase of the portable unit or at the time of signing up with a service provider or at any subsequent time. The cards may be received either from the consumer or directly from the card issuers or a combination thereof. Thereafter, the card information is converted into digital format and uploaded into the internal memory unit and/or tertiary devices of the portable unit.

[0056] Referring now to **FIG. 6**, an exemplary embodiment of the process of uploading ATM/credit/debit card information via a link between the portable unit and a computer at an authorized financial institution is shown. The user physically takes the portable unit to an authorized financial institution (block **610**). An authorized representative at the financial institution verifies and authenticates the

user of the portable unit (blocks **620** and **630**). This may be accomplished through identification processes as described above.

[**0057**] If the user is verified, then the authorized representative will initiate communications with the card issuer's computer and/or a representative at the card issuer via any communication link such as the Internet, telephone, facsimile machine and the like (block **640**). Thereafter, the card information is downloaded to a computer controlled by the financial institution (block **650**). This would enable the financial institution to upload the card information into the portable unit or memory associated therewith (block **660**).

[**0058**] As an illustrative example, a financial institution issued a credit card to John Doe and John Doe wishes to download the credit card information into his portable unit. John Doe takes his portable unit and his credit card to his bank. An authorized bank representative verifies and authenticates John Doe's identify. Thereafter, upon successful verification, the bank's computer and/or an authorized bank representative communicates with the financial institution's computer and/or an authorized representative from the financial institution and provides appropriate identification and credit card information for John Doe. If the information regarding John Doe provided by the bank matches the information locally accessible by the financial institution's computer, the financial institution will release and upload John Doe's credit card information to a designated bank's computer. Now, the bank can upload the credit card information into John Doe's portable unit. All ATM, credit and debit card information received by the portable unit from any financial institution computer will be stored in secure, protected and non-volatile memory.

[**0059**] The user of the portable unit will not be allowed to make any changes to any card information received from the financial institution and stored in the internal memory and/or tertiary devices of the portable unit. As an optional feature, the portable unit may prompt the user to set up a UserID and password for card information associated with each card stored in internal memory and/or tertiary devices (block **670**). Although not shown, it is contemplated that the upload process may be prevented if the UserID and password are not set up in a timely manner.

[**0060**] Referring now to **FIG. 7**, an exemplary embodiment of the process of uploading card information for cards issued by a business entity is shown. The upload is performed by physical connectivity between the portable unit and the issuer's computer. The user provides the portable unit to an authorized representative of a business entity. The "business entity," as generally referred to herein, may be a commercial enterprise as described above such as a retail store, a department store, a library, a school, a gym, a kiosk and the like (block **710**). An authorized representative at the business entity that honors the card verifies and authenticates the user of the portable unit (block **720**). If the user is verified, then the authorized representative uploads the card information to the internal memory and/or tertiary devices of the portable unit (blocks **730** and **740**). Otherwise, the upload process may be prevented (block **760**). Thereafter, a UserID and password may be optionally established (block **750**).

[**0061**] Occasionally, the issuer may have to communicate via Internet, satellite etc. with the card issuer's central computer and/or a representative at the actual card issuer's central office and download the card information from the issuer's central computer to the computer at the location of the business entity. The business entity can then upload the card information to the portable unit either to the internal memory and/or the tertiary devices.

[**0062**] As an alternative embodiment, although not shown, the card information may be recovered from a magnetic card reader that can read and capture information encoded into the magnetic strip of a card. The captured information can be converted into digital format and downloaded into the portable unit. Similarly, card information contained in a memory chip of a smart card can be read by a smart card reader and converted to digital data and downloaded into the portable unit.

[**0063**] Referring to **FIG. 8**, an exemplary embodiment of the process of uploading card information (e.g., drivers license information, ATM/credit/debit card numbers and expiration dates, store credit card number, etc.) remotely via wireless, satellite, Internet or another link type is shown. The user accesses the website of the card issuer from a web-enabled portable unit or a Plain Old Telephone System (POTS) telephone (block **805**). When the user dials into the card issuer's website, the user may be prompted to provide identification information such as mothers maiden name, social security, unique portable unit identifier, phone number of the portable unit, and the like (block **810**). The process of matching the provided identification information with pre-stored information or any other process for verifying and authenticating the user and their portable unit prior to uploading a digital card file (e.g., digitized information normally placed on the face of or stored in a ATM, credit or debit card and also referred to as card information) remotely via wireless, Internet or any other communication pathway may be performed.

[**0064**] For example, the user may have provided his/her mother's maiden name, social security number, phone number/web address of the portable unit, user's primary electronic mail (e-mail) address, unique portable unit identifier. This information may be included in the application submitted for obtaining the original paper, plastic, digital and/or smart card. This personal information is already stored in databases accessible by the issuer.

[**0065**] If the personal information provided by the user at the time of downloading the digital card file matches with the information submitted with the application (which has already been processed and approved by the card issuer), then the card issuer authenticates the user and his or her portable unit and starts the uploading process remotely via Internet, satellite, etc. (block **815**). The digital card file will be uploaded either to the portable unit user's primary e-mail address or Internet website address (generally referred to as "Internet Protocol (IP) address") or directly to their portable unit as selected (blocks **820** and **825**). Otherwise, access is denied (block **830**).

[**0066**] The portable unit is loaded with software that enables the user to upload the digital card file from the issuer's website and/or e-mail to his or her portable unit. The digital card file to be downloaded via Internet, wireless etc. may be encrypted and may include some or all of the personal information such as the phone number of the portable unit, e-mail address, and unique portable unit

identifier. This personal information ensures that the digital card file is being transmitted to an authorized recipient. Otherwise, a request is issued to connect to the card issuer's website and begin re-authentication (block **835**).

[**0067**] Once the uploading is successful and complete, the portable unit will automatically notify the card issuer's computer (blocks **840** and **845**). If the upload is not successful, the portable unit will initiate the upload process again and after three attempts, the card issuer's computer may prompt the portable unit user to visit a physical branch or location to upload the digital card file via direct connectivity to a computer at the branch/location (block **850**). If the digital card file is uploaded to an e-mail or website address, the program may be written to allow uploading to the portable unit from the e-mail or website address only a certain number of times and then automatically destroy the file after uploading a specified number of times as requested by the user. This will ensure that the digital card file may not be stolen, copied or downloaded from the e-mail or website address into unauthorized portable units.

[**0068**] Once the digital card file is downloaded into the portable unit, the processing unit programs the information received and stores it either in the internal memory and/or in the tertiary devices. As an option, the portable unit may prompt the user to set up his or her UserID and password for each digital card file received and stored in the portable unit (block **855**).

[**0069**] Just as issuing multiple cards having the same card number and expiration date but different names (e.g., same corporate name and card number but different employee names), digital card files can be uploaded to multiple portable units. The same process described above may be used for uploading into each portable unit either remotely or via direct link to a computer at an entity.

[**0070**] Now that the digital card file is uploaded into the portable unit, the user needs to access and utilize the digital card information stored in the portable unit for identification and other commercial transactions. **FIG. 9** illustrates the various menu functions and features to be built into the portable unit for accessing and utilizing the digital identification, digital cards, digital remote control keys and the like. It is contemplated that these menu functions and features may also be set up as additional function keys, new buttons, etc.

[**0071**] In particular, **FIG. 9** illustrates an exemplary embodiment of a process for digital ID menu function **900** and sub-features added to the portable unit. Various features and choices are provided under each new sub-function. When the user presses the menu and selects a particular function or feature, the selected function or feature is activated. Each function/feature may have further sub-functions and sub-features. For example, various sub-functions **910** under digital cards include ATM **920**, credit cards **930**, debit cards **940**, drivers license **950** and other cards **960**. Under each sub-function, the user may be given various choices such as the ATM sub-function **920** featuring a list of all ATM cards **921** owned by the user. The user can scroll down the appropriate ATM card and activate that digital card file by inputting the UserID and/or password. The activation enables the card information to be downloaded from the portable unit or shown on its display. Similarly, the credit card sub-function **930** provides a listing of all credit cards owned by the user. Under each of these sub-functions, further choices may be available to the user.

[**0072**] Referring still to **FIG. 9**, the user may have further choices as to the payee such as John Doe (husband), Jane Doe (wife), John Doe, Jr. (son) and the like. Multiple digital cards with the same number but different names may be stored in the portable unit. This accommodates for the situation when the same portable unit may be used by husband, wife and children at different times. Note that each of these digital cards may be protected by their own unique UserID and password so that a child using the portable unit cannot access/use his or her father's card that may have a higher credit limit without his/her father's authorization (block **970**).

[**0073**] **FIG. 10** illustrates an exemplary embodiment of the process by which a user accesses and utilizes a digital card file such as a digital drivers license already downloaded and stored in the portable unit. When the user scrolls down and presses the appropriate function key to select the "Digital ID", the portable unit will display the various sub-functions such as digital drivers license, digital social security, and the like (block **1000**). When the user selects the sub-function digital drivers license (block **1005**), the names associated with all digital drivers licenses stored in the portable unit will be displayed. The user scrolls down to select the appropriate digital drivers license name, selects the particular drivers license and optionally enters the UserID and password (blocks **1010** and **1015**). If the UserID and password for the selected digital drivers license name matches information prestored in the portable unit (block **1020**), the portable unit accesses the digital drivers license information stored either in internal memory and/or tertiary devices. This information is routed to either the display, wireless transceiver/antenna or the I/O interface, per user's request. Otherwise, access is denied (block **1025**).

[**0074**] When the user selects a particular digital drivers license name, the portable unit may give several choices, including Display, Upload, or Print (blocks **1030**, **1035** and **1040**). If the user selects "Display", it is contemplated that the information pertaining to a portion or entire digital drivers license may be accessed from internal memory and/or tertiary devices for display (block **1045**). This information includes one or more of the following: (i) a digital picture, (ii) drivers license number, (iii) name, (iv) address, (v) date of birth, (vi) sex, (vii) hair color, (viii) eye color, (ix) height, (x) weight, (xi) expiration date, and/or (xii) a designation of corrective lenses. The information may be displayed in just one screen or separately in multiple screens depending on the size of the screen, size of fonts in the display, size of the memory and the like. It is further contemplated that the user may be able to control the size, font and clarity of the display by displaying all information in one or multiple screens (such as the digital picture in one screen and the drivers license information in another screen).

[**0075**] If the user chooses "Download", the user is provided with options for downloading the drivers license information from portable unit. These options include (i) physical connectivity (block **1050**) (ii) electronic mail (e-mail) or website address (block **1055**). For instance, if the user chooses to upload the digital drivers license information via e-mail or website, the portable unit queries the user for further information such as e-mail and/or website address,

method of transmission (e.g., satellite, Internet, etc.) as shown in block **1060**. The selected information to be downloaded is routed to the I/O interface **280** or wireless transceiver **260** and transmitted via antenna **200** to the appropriate e-mail, Internet or website address via the method of transmission selected by the user (block **1065**). This will enable the user to send a copy of their digital drivers license to a third party and facilitate various personal and commercial transactions. Otherwise, a connection is made and the authentication and operation selection repeats (block **1070**).

[**0076**] As an example, in the event that an entity (e.g., an authorized law enforcement agency personnel) wants access to a digital drivers license stored in the portable unit, the user may display the entire digital drivers license on the display of the portable unit. Alternatively, another portable unit/computer with suitable physical connectivity to the portable unit may be adapted to read the digital drivers license from the portable unit. Yet, another alternative approach is to upload the digital drivers license as a read only file for purposes of storing/printing as a data file only. It is contemplated, however, that the system architecture and/or software of the portable unit may be configured to prevent a digital drivers license or any other user information to be uploaded from one portable unit to another unless the other unit is a portable reader $\mathbf{130}_{\mathbf{X}}$ in possession of an authorized entity (e.g., card issuer, agent of the issuer, law enforcement, etc.).

[**0077**] If the user chooses the "Print" option, then the digital drivers license is sent to the I/O interface and can be printed directly from the portable unit (if a printer is built into the portable unit) or through an external printer (blocks **1040** and **1075**).

[**0078**] Referring now to **FIG. 11**, an exemplary embodiment of the process of accessing and utilizing card information associated with an ATM, credit and debit cards for various transactions is shown. Of course, the digital card file(s) pertaining to the ATM, credit and debit cards have been previously downloaded and stored in protected areas of internal memory and/or tertiary devices as read only file(s). The user scrolls down the menu function and selects the function titled, "Digital Cards" and scrolls down the various choices and selects an appropriate digital card (ATM, credit or debit card) for a transaction (block **1100**).

[**0079**] The portable unit prompts the user to optionally enter the appropriate UserID and password for the selected digital card as represented by dashed lines (block **1105**). If the UserID and/or password entered by the user does not match with the user information stored in internal memory and/or tertiary device(s), the portable unit will reject access and perhaps display "Access Denied" on its display (blocks **110** and **1115**). If the UserID and password matches the user information stored in memory, the portable unit will access the appropriate read-only digital card file from internal memory and/or tertiary device(s) and transmit the card information to the I/O interface (blocks **1110**, **1120** and **1125**).

[**0080**] A suitable connectivity between a transactional entity and the I/O interface of the portable unit is configured to enable proper communication between the transactional entity and the portable unit. The "transactional entity," as referred to herein, may be an ATM of a financial institution, a POS system, a computer at an entity, a portable computer, another portable unit configured as a reader, a kiosk and the like. The card information (e.g., name of the card, card number, full name on the card, expiration date, etc.) that is necessary for processing the transaction will be transmitted to the transactional entity via the I/O interface (block **1130**). It is contemplated that the transactional entity will be set up with appropriate software/hardware to receive the ATM, credit or debit card information digitally via the I/O interface of the portable unit in addition to receiving the card information via the magnetic/smart card reader.

[**0081**] Once the ATM, credit or debit card information is transmitted to the transactional entity, the transactional entity will process and complete the transaction the same way it is processed currently in the market place. In today's transactions, the magnetic card reader reads the information contained in the magnetic strip of the plastic cards and the transactional entity processes and completes the transaction. Similarly, the portable unit will transmit/release all the necessary card information to the transactional entity digitally via the I/O interface or through wireless communication techniques, and the transactional entity will process and complete the transaction.

[**0082**] A physical copy of the receipt may be downloaded by the transactional entity to the portable unit, showing the final debited or credited amount. In one embodiment, this may be accomplished by the transactional entity initiating a query to the portable unit to determine if the user requests a digital receipt (block **1135**). If the user responds "Yes" by pressing the appropriate key, then a digital receipt of the transaction may be downloaded from the transactional entity to the portable unit for storage in non-protected area of the internal memory or tertiary device(s) as shown in blocks **1140** and **1145**).

[**0083**] Referring to **FIG. 12**, an exemplary embodiment of a process for a user accessing and utilizing the card information stored in the portable unit for processing a wireless transaction over the Internet/satellite is shown. Herein, using the portable unit, the user accesses a website and scrolls through the website, processes a transaction (such as buying an item from the website etc.) and decides to use a digital card stored in the portable unit for processing the transaction (block **1200**). The user scrolls down the function keys and selects a digital card (block **1205**) and optionally enters the UserID and password as represented by dashed lines (block **1210**). If the UserID and password are incorrect, the portable unit rejects the transaction and perhaps displays "Access Denied" (blocks **1215** and **1220**).

[**0084**] If the UserID and password matches with the information stored in the portable unit, the portable unit queries the user for further information such as method of transmission (e.g., satellite, Internet, etc.) as shown in block **1225**. The selected information to be downloaded is routed to the I/O interface or wireless transceiver and transmitted via an antenna to the appropriate e-mail, Internet or website address via the method of transmission selected by the user (block **1230**).

[**0085**] A physical copy of the receipt may be downloaded by the target recipient to the portable unit, showing the final debited or credited amount. In one embodiment, this may be accomplished by the target recipient initiating a query to the portable unit to determine if the user requests a digital receipt (block **1235**). If the user responds "Yes" by pressing the appropriate key, then a digital receipt of the transaction

may be downloaded from the target recipient to the portable unit for storage in non-protected area of the internal memory or tertiary device(s) as shown in blocks **1240** and **1245**.

[**0086**] Referring now to **FIG. 13**, an exemplary embodiment of a process for a user programming the remote control code(s) into the portable unit is shown. When the user presses the menu function "remote control" and chooses the "program" option, the portable unit displays a list of controllable items such as auto, garage, home, office or other categories (blocks **1300**, **1305**, **1310**). For each selected choice, the user is provided additional choices such as "add" or "change/delete" (blocks **1315** and **1320**).

[**0087**] For example, if the user chooses a controllable item and "add", the portable unit prompts the user to add an alphanumeric description for the selected item (block **1325**). The portable unit then prompts the user to enter the appropriate remote control transmission code for opening/closing the selected item (block **1330**). The portable unit saves the remote control transmission code/s in protected areas of memory and/or remote transceiver (block **1332**). The user then enters the UserID and password, if desired (block **1335**).

[**0088**] It is appreciated that there are numerous types of electromechanical garage door openers with different kinds of technologies based on different data delivery techniques. A simple and commonly used garage door opener is based on matching codes/frequencies between the remote control and locking mechanism. It is contemplated that the portable unit will be loaded with proper software/hardware that will convert the digital remote control code(s) into appropriate transmission formats necessary for communication with the locking mechanism.

[**0089**] **FIG. 13** further shows the process of changing/deleting remote control codes and descriptions already stored in the portable unit. When the user selects the remote control code or description to be changed/deleted by pressing the appropriate function and sub-function keys, the portable unit prompts the user to enter the UserID and password (blocks **1340** and **1345**). If the UserID and password matches the information stored in the protected areas of the internal memory and/or tertiary device(s), the portable unit allows the user to delete or change the existing remote control transmission code and/or description (blocks **1350** to **1385**).

[**0090**] Referring now to **FIG. 14**, an exemplary embodiment of a process of downloading remote control code(s) from an entity's computer or other electronic equipment is shown. As shown, in one embodiment, the user provides the portable unit to the entity (block **1400**). The entity authenticates the portable unit user by verifying appropriate documents such as drivers license (block **1405**). If the user is authenticated, then the entity downloads a remote control transmission code(s) from a computer or other electronic equipment (e.g., programmable universal remote) of the entity into the portable unit (blocks **1410** and **1415**). As described above, normally, the remote control transmission code(s) may be stored in internal memory or tertiary device(s) of the portable unit. The portable unit prompts the user to enter a description for each remote control transmission code(s) just received into the portable unit (block **1420**). The user then enters a UserID and password, if desired (block **1425**).

[**0091**] It is contemplated that the portable unit is loaded with software/hardware for receiving, programming, storing, accessing and utilizing the remote control code(s) into protected areas of the internal memory, tertiary devices and/or remote control transceiver. It is also contemplated that the entity's computer and/or other electronic equipment will also be set up with appropriate software/hardware for uploading the remote control transmission code(s) into the portable unit.

[**0092**] **FIG. 15** illustrates the various menu functions and features that will be added to the portable unit for accessing and utilizing the remote control transmission code(s). These menu functions may be associated with a selected menu shown on the display or may be provided through the implementation of additional function keys and buttons on the portable unit.

[**0093**] In particular, an exemplary embodiment of a digital remote menu function and sub-features added to the portable unit is shown. Various features and choices are provided under each new sub-function. When the user presses the menu and selects a particular function or feature, the selected function or feature is entered or activated (blocks **1500**, **1505**, **1510** and **1515**). Each function or feature may have further sub-functions and sub-features (blocks **1520**). For example, the user may be given various choices under the sub-function "activate digital remote" such as Auto, Garage, Home, Office and/or Other, for example (blocks **1510** and **1520**). Under each sub-function, the user may be given various choices such as a list of all autos whose remote control transmission code(s) are stored in the portable unit (blocks **1525**). When the user enters the appropriate UserID and password for the selected sub-function and choice, the selected remote control code is activated (blocks **1530** and **1535**).

[**0094**] Referring now to **FIG. 16**, an exemplary embodiment of the process of accessing and utilizing a remote control transmission code for opening/closing a remotely operated locking mechanism is shown. Of course, the necessary remote control code(s) have been previously downloaded or programmed and stored in protected areas of internal memory, tertiary device(s) and/or remote control transceiver as read only file. The user scrolls down the menu function, selects the function titled, "digital remote" and presses the sub-function key(s) to activate the appropriate remote control code (block **1600**).

[**0095**] The portable unit optionally prompts the user to enter the appropriate UserID and password for the selected digital remote control transmission code (block **1605**). If the UserID and password entered by the user does not match with the user information stored in internal memory and/or tertiary device(s), the portable unit will reject access and perhaps display an alphanumeric message to denote that access is denied (blocks **1610** and **1615**). If the UserID and password matches with the stored user information, the portable unit prompts the user whether to transmit the selected remote codes locally or via wireless (block **1620**). If the user chooses "local transmission", the portable unit accesses the appropriate read-only, digital remote transmission control code(s) either from internal memory and/or tertiary device(s) and transmits the code(s) to the remote control transceiver (blocks **1625** and **1630**). Of course, if the remote control transmission code(s) is stored within the

remote control transceiver, the software will authorize the remote control transceiver to release the remote control transmission code(s). When the remote control transceiver releases the appropriate remote control transmission code(s), the locking mechanism (whether built into an automobile door/window, home/office door, garage door etc.) will transfer from an open/unlocked state to a closed/locked state or alternatively from the closed/locked state to the open/unlocked state.

[0096] If the user chooses "wireless transmission," the portable unit will prompt the user to dial the telephone number that has connectivity to the locking mechanism (block **1635**). If a suitable telephone connection is established, the processing unit will access the selected remote control transmission code(s) from internal memory, tertiary device(s) or the remote control transceiver and send the remote control transmission code(s) via the wireless transceiver and antenna to the locking mechanism via the established telephone channel (blocks **1640** and **1645**). The locking mechanism transfers from an open/unlocked state to a closed/locked state or alternatively from the closed/locked state to the open/unlocked state upon receipt of the appropriate remote control transmission code(s) as shown in block **1650**.

[0097] It is contemplated that the remote control transmission code(s) stored as digital data will be converted to the appropriate transmission formats such as RF, IR, laser and the like, either by hardware and/or software loaded in the portable unit (e.g., the remote control transceiver). It is possible that the remote control transceiver may be configured to internally store all the remote control transmission code(s) rather than store it in the internal memory or tertiary device(s) of the portable unit. It should be appreciated that a number of other techniques, processes and configurations can be easily devised by people skilled in the art for downloading, programming, storing, accessing and utilizing these remote control transmission code(s) into the portable unit for operating various locking mechanisms.

[0098] While certain exemplary embodiments have been described and shown in the accompanying drawings, it is to be understood that such embodiments are merely illustrative of and not restrictive on the broad invention, and that this invention not be limited to the specific constructions and arrangements shown and described, since various other modifications may occur to those ordinarily skilled in the art.

What is claimed is:

1. A portable unit comprising:

a casing;

an antenna; and

logic employed within the casing, the logic including

a wireless transceiver coupled to the antenna,

a processing unit coupled to the wireless transceiver, and

a memory unit including user identification information and user transaction information.

2. The portable unit of claim 1, wherein the memory unit includes a protected memory area to store the user information and a non-protected memory area to store transaction confirmations and card information having a low level of security.

3. The portable unit of claim 1, wherein the user identification information includes at least one of a drivers license data and a social security number.

4. The portable unit of claim 3, wherein the user transaction information includes card information including a credit card number and expiration date.

5. The portable unit of claim 1, wherein the logic further including a display coupled to the processing unit to display at least the user identification information.

6. The portable unit of claim 1, wherein the logic further including an input/output (I/O) interface having at least one I/O port accessible through the casing and a device driver in communication with both the processing unit and the I/O interface.

7. The portable unit of claim 6, wherein the logic further including a tertiary device and a tertiary device driver in communication with both the processing unit and the tertiary device.

8. The portable unit of claim 5 further comprising an alphanumeric key pad included within the casing, the alphanumeric key pad is configured to provide input data to the processing unit.

9. The portable unit of claim 7 further comprising a remote control transceiver in communication with both the device driver and the tertiary device driver, the remote control transceiver to transmit a remote control transmission code for opening/closing a selected item.

10. The portable unit of claim 9, wherein the selected item includes an electromechanical lock.

11. A method for transmitting information between a portable unit and an entity, comprising:

establishing communications by the entity with the portable unit;

verifying and authenticating a user of the portable unit; and

uploading user information into the portable unit if the user is verified and authenticated.

12. The method of claim 11, wherein the verifying and authenticating of the user includes receiving downloaded user identification information from the portable unit.

13. The method of claim 12, wherein the user identification information includes biometrics.

14. The method of claim 11, wherein the verifying and authenticating of the user includes receiving for review user identification information printed on a separate document.

15. The method of claim 11, wherein the uploading of the user information includes accessing records stored on a computer of the entity and uploading the user information into the portable unit via an input/output (I/O) port of the portable unit.

16. The method of claim 11, wherein the uploading of the user information includes swiping a magnetic stripped card into a magnetic card reader, converting information stored within the magnetic stripped card into digital information and uploading the digital information into the portable unit via an input/output (I/O) port of the portable unit.

17. The method of claim 11, wherein the uploading of the user information further includes swiping a smart card into a smart card reader, converting information stored within the chip of the smart card into digital information and uploading

the digital information into the portable unit via an input/output (I/O) port of the portable unit.

18. The method of claim 15, wherein the uploading of the user information further includes transferring the information into a protected memory area of an internal memory within the portable unit.

19. The method of claim 15, wherein the uploading of the user information further includes transferring the information into a protected memory area of a tertiary device within the portable unit.

20. The method of claim 11 further comprising prompting user of the portable unit to set up at least one of a user identification and a password after completion of the uploading of the information.

21. The method of claim 11 further comprising denying access to the information if the user is unable to be verified and authenticated.

22. The method of claim 11, wherein the entity is one of a financial institution, a governmental agency, a commercial enterprise, a non-profit enterprise and a kiosk.

23. The method of claim 11, wherein the establishing of communications includes establishing an internet connection with a web site of the entity.

24. The method of claim 23, wherein the uploading of the user information includes uploading a file to an electronic mail address or web site accessible by the portable unit.

25. The method of claim 11, wherein the uploading of the user information occurs over the wireless telephone link.

26. The method of claim 11 further comprising uploading of remote codes into the portable unit, if the user is verified and authenticated, includes accessing the remote codes stored on a computer of an entity and uploading the remote codes into the portable unit via an input/output (I/O) port of the portable unit.

27. The method of claim 26, wherein the uploading of the remote codes includes accessing the remote codes stored on a computer of an entity and uploading the remote codes into the portable unit via an input/output (I/O) port of the portable unit.

28. The method of claim 26, wherein the uploading of the remote codes includes uploading the remote codes from a universal programmable remote control.

29. The method of claim 26, wherein the uploading of the remote codes includes manually inputting the remote codes into the portable unit using the keypad.

30. The method of claim 26, wherein the remote codes include a transmission format including at least one of digital signals, one or more analog signals modulated within a selected frequency range, series of infrared pulses, radio frequency, optical signals and laser.

31. The method of claim 26, wherein the uploading of the remote codes includes transferring the remote codes into a protected memory area of an internal memory within the portable unit.

32. The method of claim 26, wherein the uploading of the remote codes further includes transferring the remote codes into a remote control transceiver within the portable unit.

33. A software program embodied in a machine readable medium and executed by a processing unit within a portable unit, comprising:

a first program for displaying a menu on a display of the portable unit to allow selection of one of a plurality of function keys associated with different function categories;

a second program for displaying a listing of menu categories for user information, including card information, stored within the portable unit so that, if a digital identification function is selected, the menu categories including drivers license and credit card will be displayed; and

a third program for displaying a listing of menu categories for adding, changing or deleting remote control transmission codes, stored within the portable unit, for locking and unlocking selected items, if a remote control function is selected.

34. The software program of claim 33, further comprising a fourth program to prompt the user for entering at least one of a user identification and a password and authenticating the user.

35. The software program of claim 33, wherein the second program, when signaled, displays a listing of all names of drivers having drivers license information stored within the portable unit, if the user has been authenticated.

36. The software program of claim 35, wherein the second program further displays a listing of all names of drivers having drivers license information stored within the portable unit.

37. The software program of claim 35, wherein the second program further displays drivers license information, including a digital picture, of any driver selected.

38. The software program of claim 33, wherein the second program further displays a listing of all user information, including ATM, debit and credit cards stored within the portable unit, if the user has been authenticated.

39. The software program of claim 33, wherein the second program further allows user information to be uploaded to internal memory of the portable unit, if the user has been authenticated.

40. The software program of claim 33, further comprising a fourth program for retrieving and transmitting user information, including card information, and for allowing user information to be downloaded to tertiary devices of the portable unit if the user has been authenticated.

41. The software program of claim 40, wherein the fourth program prevents user information from being uploaded from an unauthorized entity.

42. The software program of claim 40, wherein the fourth program further prevents user information from being uploaded from another portable unit.

43. The software program of claim 40, wherein the fourth program further allows user information to be retrieved from internal memory of the portable unit and transmitted to a targeted transactional entity via the I/O interface of the portable unit, if the user has been authenticated.

44. The software program of claim 40, wherein the fourth program further allows user information to be retrieved from tertiary devices of the portable unit and transmitted to a targeted transactional entity via the I/O interface of the portable unit, if the user has been authenticated.

45. The software program of claim 33, further comprising a fourth program allowing the user information to be printed by a printer coupled to the portable unit, if the user has been authenticated.

46. The software program of claim 45, wherein the fourth program further allows a digital receipt and confirmation of transactions to be downloaded into unprotected areas of memory within the portable unit.

47. The software program of claim 33, wherein the selected items include a locking mechanism associated with one of an automobile, a residence or an office.

48. The software program of claim 33, wherein the third program to convert the original format of the transmission code to digital format and transfer the reformatted code to protected area of internal memory.

49. The software program of claim 33, wherein the third program to determine if the remote control transmission codes are to be transmitted locally over a remote control transceiver of the portable unit or remotely over a wireless telephone channel to be established between the portable unit and the locking mechanism of the selected item.

50. A software program embodied in a machine readable medium and executed by a processing unit within a transactional entity for receiving user transaction information from the portable unit.

51. The method of claim 50, wherein the receiving user transaction information includes wireless methods of communication.

52. The software program of claim 50, wherein the software program allows the uploading of a digital receipt and confirmation of transactions into a portable unit.

53. A cellular phone comprising:

a casing;

an antenna; and

logic employed within the casing, the logic including a wireless transceiver coupled to the antenna, a processing unit coupled to the wireless transceiver, a memory unit coupled to the processing unit, a plurality of software drivers in communications with the processing unit, the plurality of software drivers include a device driver and a tertiary device driver, a tertiary device in communication with the tertiary device driver, an input/output interface in communication with the device driver, and a remote control transceiver in communication with the plurality of software drivers.

54. A method for accessing user information downloaded into a portable unit, comprising:

selecting a key of the portable unit to access user identification information;

selecting a function to display user identification information; and

accessing the user identification information from a protected area of memory internal to the portable unit.

55. The method of claim 54, wherein the accessing of the user identification information includes accessing a protected area of memory within a tertiary device contained within the portable unit.

56. The method of claim 55, wherein the user identification information includes a drivers license name, a drivers license number and a digital picture.

57. The method of claim 54 further comprising:

selecting a function to download the user identification information.

58. The method of claim 54 further comprising:

entering an Internet Protocol (IP) address as a destination address for receipt of the downloaded user identification information.

59. The method of claim 54 further comprising:

selecting a function to download the user identification information to a printer in communication with the portable unit.

60. A method for accessing user information downloaded into a portable unit, comprising:

selecting a key of the portable unit to access user transaction information;

selecting a function to retrieve the user transaction information from memory within the portable unit; and

transmitting the user transaction information to an input/output interface of the portable unit for transmission to a targeted transactional entity.

61. The method of claim 60, wherein the user transaction information includes a credit card number and expiration date.

62. A cellular phone comprising:

a casing;

an antenna; and

logic employed within the casing, the logic including

a processing unit,

a memory unit coupled to the processing unit, and

a remote control transceiver to transmit a remote control transmission code for opening/closing a selected item.

63. The cellular phone of claim 62, wherein the logic further including a device driver in communication with the processing unit and the remote control transceiver, the device driver to control transmission of information to and from the remote control transceiver.

64. The cellular phone of claim 62, wherein the logic further including (i) a tertiary device and (ii) a tertiary device driver in communication with the processing unit, the tertiary device and the remote control transceiver.

65. The cellular phone of claim 64, wherein the remote control transceiver is in communication with both the device driver and the tertiary device driver, the remote control transceiver to transmit a remote control transmission code for opening/closing a selected item.

* * * * *

EXHIBIT

G

US006837427B2

(12) **United States Patent**
Overhultz et al.

(10) **Patent No.: US 6,837,427 B2**
(45) **Date of Patent: Jan. 4, 2005**

(54) **ADVERTISING COMPLIANCE MONITORING SYSTEM**

(75) Inventors: **Gary L. Overhultz**, River Forest, IL (US); **Robert W. Mead**, Chicago, IL (US)

(73) Assignee: **Goliath Solutions, LLC.**, Chicago, IL (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 118 days.

(21) Appl. No.: **10/158,416**

(22) Filed: **May 30, 2002**

(65) **Prior Publication Data**

US 2003/0097302 A1 May 22, 2003

Related U.S. Application Data

(60) Provisional application No. 60/332,149, filed on Nov. 21, 2001.

(51) **Int. Cl.**[7] **G06K 5/10**

(52) **U.S. Cl.** **235/382**; 235/383; 235/451; 235/375; 235/376

(58) **Field of Search** 235/382–384, 235/451, 375, 376; 705/5, 20, 23

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,168,263 A * 12/1992 Drucker 340/571
5,201,060 A 4/1993 Haruyama et al.
5,235,326 A * 8/1993 Beigel et al. 340/10.41
5,252,979 A 10/1993 Nysen
5,448,226 A 9/1995 Failing, Jr. et al.

(List continued on next page.)

OTHER PUBLICATIONS

Article re: "Mobilocity Inc.", Issue No. 60, Aug. 9, 2001—M–Business Insights (15 pgs.).
Article re: http://www.frontlinetoday.com, "What will they think of next?," Nov. 11, 2001 (4 pgs.).
Article re: http://www.frontlinetoday.com, "Find your stuff," Nov. 11, 2001 (4 pgs.).

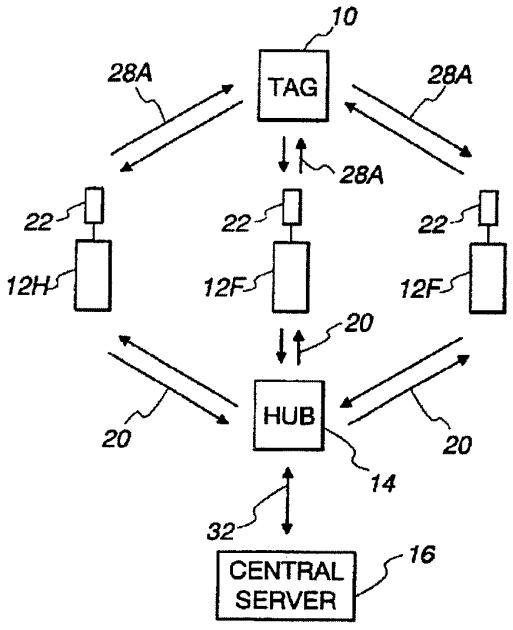
(List continued on next page.)

Primary Examiner—Steven S. Paik
(74) *Attorney, Agent, or Firm*—Jones Day

(57) **ABSTRACT**

An advertising compliance monitoring system is provided that includes a tag affixed to a sign or marketing material or shopper ID card, the tag communicating with a reader on a periodic basis. The tag includes a memory for storing tag data, a transmitter and a receiver. The tag uses sleep modes to conserve power. The tag transmits tag data to a reader in response to an interrogation request, or automatically on a periodic basis. The tag data includes an identification number used to identify the tag associated with a particular sign, price, marketing material or shopper, status data (e.g., delivered, displayed), and time and date information. This data is processed by a central server to determine compliance with and/or exposure to a particular advertising program.

43 Claims, 4 Drawing Sheets



U.S. PATENT DOCUMENTS

5,583,819	A		12/1996	Roesner et al.
5,583,850	A		12/1996	Snodgrass et al.
5,640,683	A		6/1997	Evans et al. 455/45
5,745,036	A		4/1998	Clare
5,774,876	A		6/1998	Woolley et al.
5,776,278	A		7/1998	Tuttle et al.
5,894,266	A		4/1999	Wood, Jr. et al.
5,910,776	A		6/1999	Black
5,920,261	A		7/1999	Hughes et al.
5,936,527	A		8/1999	Isaacman et al.
5,949,335	A		9/1999	Maynard
5,955,951	A		9/1999	Wischerop et al.
5,959,568	A		9/1999	Woolley
5,963,134	A		10/1999	Bowers et al.
5,964,656	A		10/1999	Lawler, Jr. et al.
5,974,368	A		10/1999	Schepps et al.
6,002,344	A		12/1999	Bandy et al.
6,005,482	A		12/1999	Moran et al.
6,013,949	A		1/2000	Tuttle
6,025,780	A		2/2000	Bowers et al.
6,037,879	A		3/2000	Tuttle
6,043,746	A		3/2000	Sorrells
6,045,652	A		4/2000	Tuttle et al.
6,061,614	A		5/2000	Carrender et al.
6,070,156	A		5/2000	Hartsell, Jr. et al.
6,078,888	A	*	6/2000	Johnson, Jr. 705/1
6,084,530	A		7/2000	Pidwerbetsky et al.
6,091,319	A		7/2000	Black et al.
6,097,301	A		8/2000	Tuttle
6,100,790	A		8/2000	Evans et al. 340/325.54
6,104,279	A		8/2000	Maletsky
6,107,917	A		8/2000	Carrender et al.
6,109,568	A		8/2000	Gilbert et al.
6,121,878	A		9/2000	Brady et al.
6,121,880	A		9/2000	Scott et al.
6,127,917	A		10/2000	Tuttle
6,127,928	A		10/2000	Isaacman et al.
6,133,836	A		10/2000	Smith
6,137,403	A		10/2000	Desrochers et al.
6,148,291	A		11/2000	Radican
6,150,921	A		11/2000	Werb et al.
6,150,934	A		11/2000	Stiglic
6,150,948	A		11/2000	Watkins
6,169,483	B1		1/2001	Ghaffari et al.
6,177,861	B1		1/2001	MacLellan et al.
6,195,005	B1		2/2001	Maloney
6,195,006	B1		2/2001	Bowers et al.
6,198,392	B1		3/2001	Hahn et al.
6,204,764	B1		3/2001	Maloney
6,212,401	B1		4/2001	Ackley
6,215,403	B1		4/2001	Chan et al.
6,220,516	B1		4/2001	Tuttle et al.
6,229,445	B1		5/2001	Wack
6,232,870	B1		5/2001	Garber et al.
6,236,315	B1		5/2001	Helms et al.
6,246,882	B1		6/2001	Lachance
6,249,227	B1		6/2001	Brady et al.
6,253,190	B1	*	6/2001	Sutherland 705/20
6,260,049	B1		7/2001	Fitzgerald et al.
6,262,662	B1		7/2001	Back et al.
6,265,962	B1		7/2001	Black et al.
6,265,963	B1		7/2001	Wood, Jr.
6,269,342	B1	*	7/2001	Brick et al. 705/20
6,272,457	B1		8/2001	Ford et al.
6,298,591	B1		10/2001	Healy
6,304,856	B1		10/2001	Soga et al.
6,308,177	B1		10/2001	Israni et al.
6,308,446	B1		10/2001	Healy
6,312,106	B1		11/2001	Walker
6,369,712	B2		4/2002	Letkomiller et al.
6,405,102	B1		6/2002	Swartz et al.
6,577,238	B1		6/2003	Whitesmith et al.
6,580,358	B1		6/2003	Nysen
6,650,230	B1		11/2003	Evans et al. 340/10.4
2001/0000430	A1		4/2001	Smith et al.
2001/0001553	A1		5/2001	Hahn et al.
2001/0004236	A1		6/2001	Letkomiller et al.
2001/0054959	A1		12/2001	Horn et al.
2002/0140546	A1		10/2002	Tuttle
2002/0143668	A1		10/2002	Goodwin, III
2002/0149468	A1		10/2002	Carrender et al.
2002/0149480	A1		10/2002	Shanks et al.
2002/0149481	A1		10/2002	Shanks et al.
2002/0149482	A1		10/2002	Shanks et al.
2002/0149483	A1		10/2002	Shanks et al.

OTHER PUBLICATIONS

Article re: http://www.frontlinetoday.com, "Getting organzied on RFID," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #10 Printronix," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #9 PeopleSoft/Vantive," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #8 Hand Held Products, a Welch Allyn Affiliate," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #7 PSC," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #6 Texas Instruments," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #5 Lucent Technologies/Agere Systems," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #4 Intermec," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #2 Zebra Technologies," Nov. 11, 2001 (2 pgs.).

Article re: http://www.frontlinetoday.com, "Top 100 Companies: #1 Symbol Technologies," Nov. 11, 2001 (2 pgs.).

Article re: http://www.emetro.ca/Computers/Software/Bar_Code/, Nov. 11, 2001 (6 pgs.).

Article re: http://www.webcrawler.com/business/supplies_and_services/bar_codes/general_suppliers/, Nov. 11, 2001 (4 pgs.).

Article re: http://www.iop.co.uk/pakex2001.htm, Nov. 11, 2001 (8 pgs.).

Article re: http://www.emetro.ca/Computers/Software/Bar_Code/, Nov. 11, 2001 (16 pgs.).

Article re: Frontline Solutions Website, May 2001 (4 pgs.).

Article re: Speeding Through Store Checkout Lines, May 16, 2001 (2 pgs.).

Article re: (BW) (NJ–Checkpoint–Systems)(CKP) Checkpoint Systems Brings RFID Technology to Access Control Market With new Line of Readers and Cards, Oct. 1, 2001 (2 pgs.).

Article re: Logistics: The No–Gap Procurement Process, Nov. 11, 2001 (pp. 44–45).

Press Release from Transponder News re: "Motorola announces BiStatix 125KHz RFID tag," Mar. 2, 1999 (2 pgs.).

Press Release from Transponder News re: "RFID and home delivery boxes could revolutionize home laundry," May 2, 2000 (2 pgs.).

* cited by examiner

Fig. 1

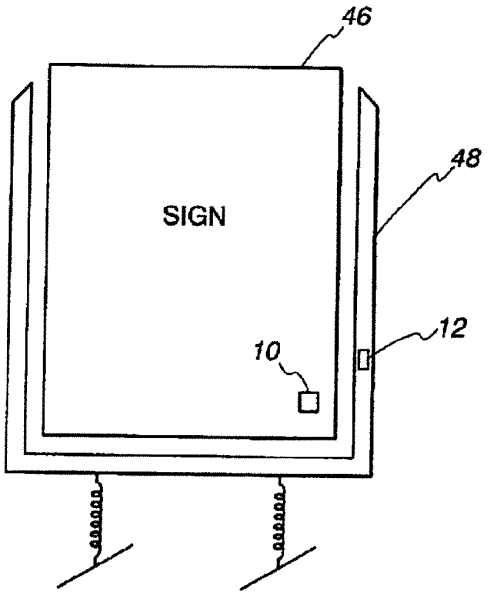


Fig. 2

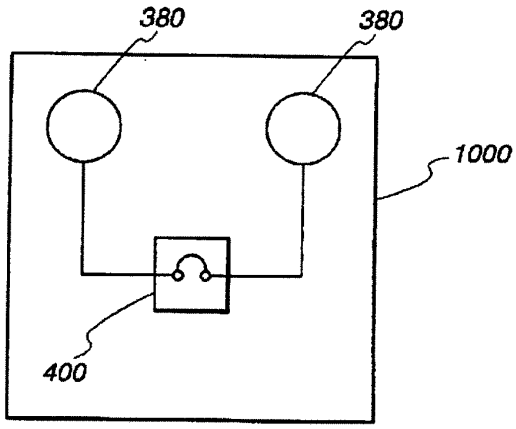


Fig. 3

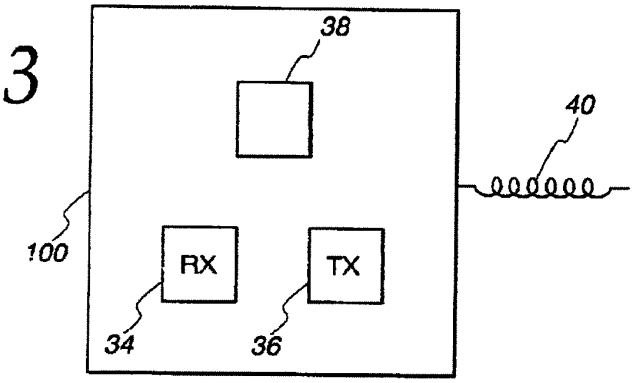


Fig. 4

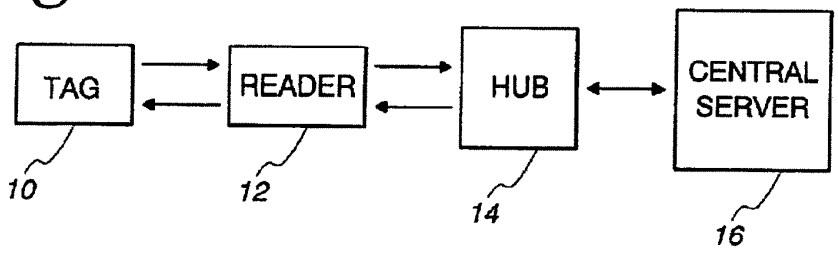


Fig. 5

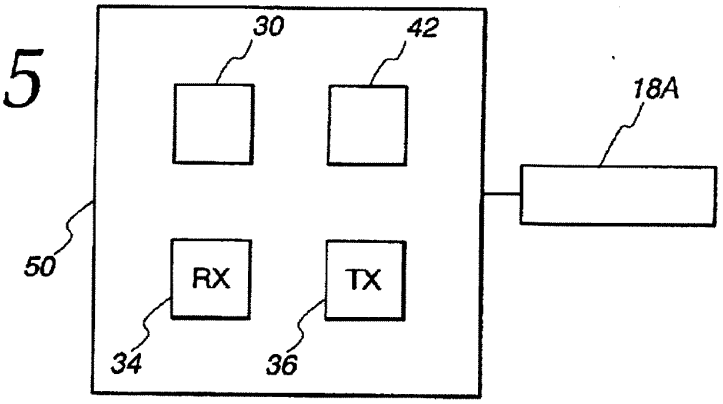


Fig. 6

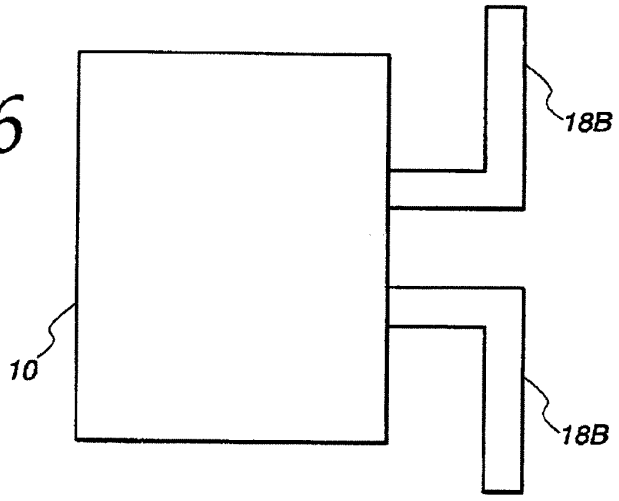


Fig. 7

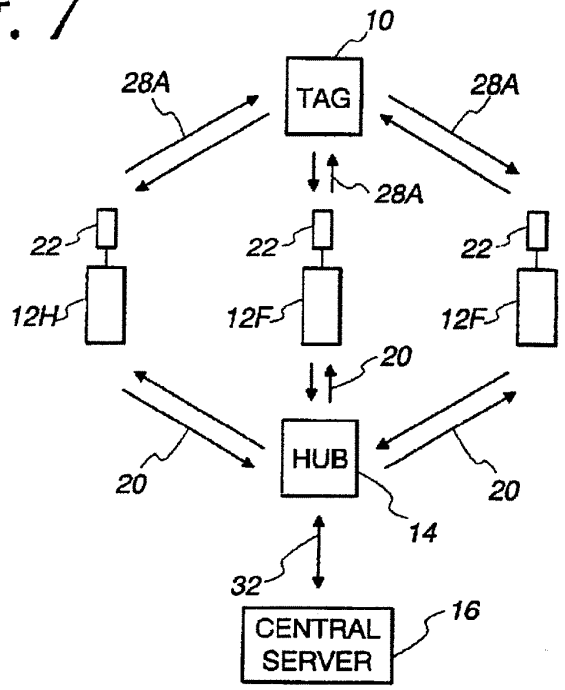

10
TAG
28A
28A
28A
22
22
22
12H
12F
12F
20
20
20
HUB
14
32
CENTRAL SERVER
16

Fig. 8

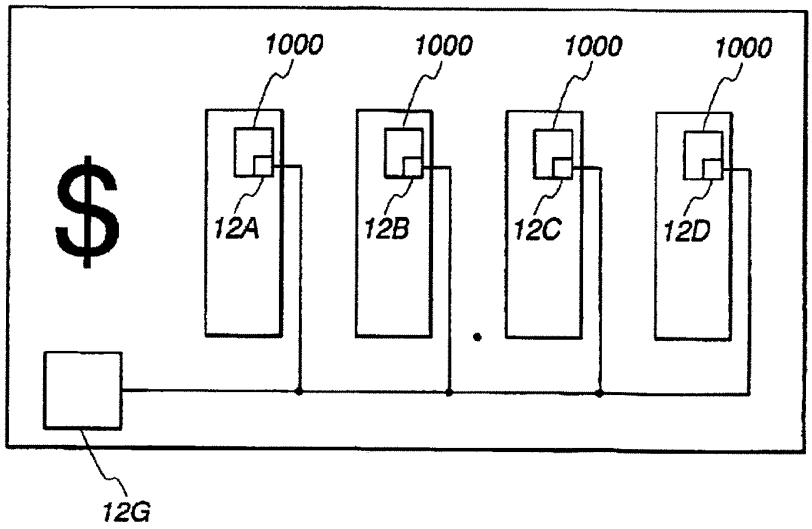

1000
1000
1000
1000
$
12A
12B
12C
12D
12G

Fig. 9

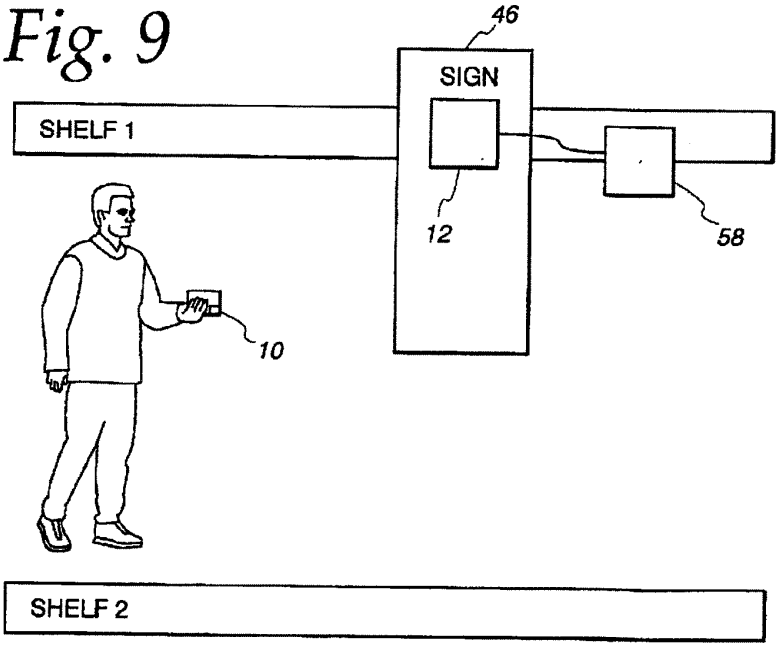
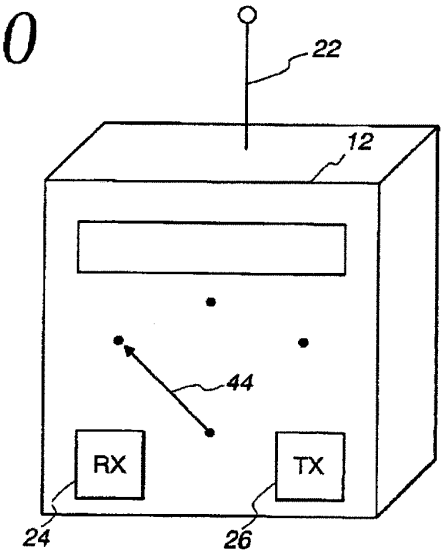


Fig. 10



ADVERTISING COMPLIANCE MONITORING SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION

This application claims the benefit of U.S. Provisional Application Ser. No. 60/332,149, filed on Nov. 21, 2001, which is assigned to the assignee of the present application. The applicants are claiming priority to this provisional application, making the effective filing date of this application Nov. 21, 2001.

FIELD OF THE INVENTION

The present invention relates to a system and method of monitoring compliance with a Point of Purchase (POP) advertising program that displays one or more advertising signs or marketing materials, and more particularly to the monitoring of and exposure to advertising signs or marketing materials displayed at gas stations, convenience stores, grocery stores, mass merchandising outlets, drug stores, specialty retail outlets (e.g., pet stores, record stores, book stores), consumer electronics stores, etc.

BACKGROUND OF THE INVENTION

It is desirable to monitor retailer compliance with advertising programs. Advertising that is not displayed has no value to a company. However, non-compliance with an advertising program is difficult to detect in a timely manner.

In the past, the primary way to collect information about whether retail outlets were complying with an advertising program was to rely on site surveys. These surveys were typically performed by manufacturer sales representatives, store delivery personnel, or independent survey companies. However, site surveys are generally expensive, incomplete, and untimely.

The direct costs associated with site surveys are substantial. Independent survey companies charge significant fees for travel time, as well as for data collection/tabulation. Consequently, information is typically available for only a subset or sample of the thousands or tens-of-thousands of stores targeted for a particular advertising program.

To save money, some companies request that delivery personnel and/or sales representatives compile compliance information while they are at a retail store for other purposes. The diversion of these personnel from doing their ordinary tasks (such as restocking or selling) can be substantial. Moreover, these personnel have little compliance training or Quality Assurance skills to ensure reporting consistency or accuracy. In addition, such visits are not of sufficient frequency to ascertain exactly when compliance with a particular advertising program began or ended.

Furthermore, compliance survey reports (whether by professionals or company personnel) usually lag the survey date. This delay prevents a timely rectification for non-complying stores. In particular, if an advertising program is designed to run for two weeks, it is important to know within a day of when the program was supposed to start which retail sites are out of compliance so the sites can be made compliant in a timely manner. The size of the staff and expense required to visit all advertising sites within 48 hours is prohibitive. Therefore, surveys or visits to a subset of sites are the only practical way to monitor compliance. However, for the reasons stated above, surveys are only sufficient for general or strategic conclusions, and are incapable of improving tactical POP compliance in a timely manner.

Visits to a subset of sites do not yield sufficient information for full-compliance advertising goals.

Companies, such as petroleum companies and consumer packaged goods companies, spend millions of dollars to run a given POP program. Retail performance varies greatly. However, it is common for more than 50% of retail sites, presumed to be participating, to be out of compliance. The present invention provides an efficient system for quickly identifying every non-complying site by using tags (e.g., wireless RFID tags) on each advertising sign or marketing material. The system also provides companies with information about when a POP program is running, what advertising is and is not being displayed, and when new signs will be produced and shipped to retail outlets. The system can monitor other merchandizing conditions besides signage, such as the presence or absence of display racks or containers, the presence of promotional hardware, or the presence of certain items to be sold under certain conditions. It can also monitor and report specific pricing associated with particular signs or marketing materials. The system can also monitor and report exposure of particular shoppers to marketing materials that are being monitored by the system. The system will therefore allow companies to monitor and remedy compliance problems during an advertising program, which will improve overall compliance and increase the effectiveness of the advertising program. It will also allow fee-based marketing programs that are conditional upon certain retail conditions being present at a particular time to be executed with more precision, reliability, and verifiability. Furthermore, it will allow the flow of specific shopper traffic within a store to be monitored and analyzed. In addition, the system will allow subsequent marketing programs, such as coupons or direct mail, to be tailored to or made conditional on shopper interests, shopping patterns, or prior exposure to marketing materials.

Therefore, it is desirable to provide an advertising or marketing material compliance monitoring system that provides compliance monitoring in a timely and cost effective manner.

It is also desirable to provide an advertising compliance monitoring system that makes determining compliance easy.

It is desirable to provide a wireless compliance monitoring system that uses active tags that conserve battery power.

It is also desirable to provide a wireless compliance monitoring system that uses passive tags to determine the specific location (within a narrow range) of selected marketing materials and/or version of selected marketing materials.

It is also desirable to provide a wireless compliance monitoring system that uses contact technology (such as EEPROM, optical, notch, or magnetic ink) to determine the specific location (within a very narrow range) and/or version of selected marketing materials.

It is desirable to provide a compliance monitoring system that uses passive tags that are small and light, making it easier to secure to advertising signs.

It is also desirable to transmit data from sign locations to a central collection point at individual retail sites using wireless technology for ease of installation at retail sites.

It is also desirable to provide a switch on the reader for switching a tag between different power conservation modes, such as OFF, sleep mode, or continuous monitoring mode.

It is desirable to transmit data from each retail site to a central storage/processing location to report individual and

aggregate retailer execution of and consumer exposure to specific and aggregated marketing programs.

Thus, a need exists for an advertising compliance monitoring system that provides versatility and flexibility by providing a tag, associated with a specific sign, that communicates tag data to an external reader. The present invention provides a way to quickly and positively identify each tag, determine the status of each sign (e.g., delivered, displayed), monitor compliance with a marketing program, monitor customer exposure to a marketing program, and analyze tag data relating to the display of and exposure to advertising signs, marketing materials, pricing information, marketing program merchandise, and supporting hardware.

SUMMARY OF THE INVENTION

The present invention overcomes the disadvantages of the prior art by providing a system for monitoring compliance with an advertising program. In one embodiment, the system includes a tag, associated with a sign or shopper identification card, for communicating with a reader on a periodic basis. In one embodiment, the tag comprises an active tag, a passive tag or a contact tag. Active and passive tags each include a memory for storing tag data, a transmitter and a receiver. In the active tag embodiment, the tag uses sleep modes to conserve power. The tag transmits tag data to a reader in response to an interrogation signal, or automatically on a periodic basis. The tag data includes any or all of the following: an identification number used to identify the tag associated with a particular sign and/or marketing material, site location data (e.g., which retail site and/or location within a retail site where the marketing material should be displayed), and time and date information. This data is processed by a central server to determine compliance with a particular advertising program.

In one embodiment, the reader associated with a given location at the retail site communicates with one or more tags to detect their presence and obtain their tag data. A hub communicates with each reader and stores the tag data for all reader locations at a given retail site. The hub communicates with a central server to convey information such as displayed signage, featured price, marketing materials, and/or shopper exposure to marketing materials at that site. A central server stores and analyzes tag data from all sites to determine whether each retail outlet is in compliance with a specific advertising program (e.g., to determine if each sign is being displayed at the time and location specified by the program). The central server can also report which shopper identification cards have been proximate to a given reader.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features of the present invention will be more fully disclosed when taken in conjunction with the following Detailed Description of the Invention in which like numerals represent like elements and in which:

FIG. **1** shows one embodiment of an advertising compliance monitoring system including a sign having a tag affixed thereto, and sign hardware supporting the sign and having a reader affixed thereto.

FIG. **2** represents a serial EEPROM contact tag according to one embodiment of the present invention.

FIG. **3** represents a passive RFID tag, including a coil antenna, according to one embodiment of the present invention.

FIG. **4** shows one embodiment of an advertising compliance monitoring system including a tag, a reader, a hub, and a central server.

FIG. **5** represents an active RFID tag, including a monopole antenna, according to one embodiment of the present invention.

FIG. **6** represents an RFID tag, including a dipole antenna, according to one embodiment of the present invention.

FIG. **7** shows one embodiment of an advertising compliance monitoring system including a tag, a reader and antenna, a hub, and a central server.

FIG. **8** shows a price reporting embodiment of the invention.

FIG. **9** shows a consumer exposure monitoring embodiment of the invention, the system including an advertising sign, a reader, a customer card with an embedded tag and a display device.

FIG. **10** shows a hand-held or permanent (fixed) reader including a switch for switching the tag between different power conservation modes.

DETAILED DESCRIPTION OF THE INVENTION

The claimed system determines whether a particular sign is actually being displayed, so that the advertising benefit of the sign can be realized in a cost-effective manner. As used herein, "sign" is defined as including marketing materials, displays, pricing information, coupon dispensers, signage, display racks, floor or counter mats, containers, promotional hardware, shopper identification cards, and/or items to be sold under certain conditions (e.g., seasonal promotions, products, or displays).

Referring to FIG. **1**, the system includes a tag **10** associated with a particular sign **46**, and a tag reader **12** for determining whether the sign **46** is actually being displayed. The reader **12** is generally mounted on sign hardware **48**. There are several types of tags **10**. Active RFID tags **50** allow one reader **12** to determine whether all the signs in a certain defined area (e.g., on the property of a retail outlet) are being displayed; passive RFID tags **100** require a reader **12** for each sign/tag combination; and contact tags **1000** transmit stored data in response to an interrogation signal from a reader **12** that directly contacts the tag **1000**.

Some advertising programs require the placement of advertising material within a general area (e.g., a display need only be placed in a department or aisle of a store). Active RFID tags, which contain a battery to permit their data contents to be transmitted over larger distances (e.g., several meters) can be used to monitor compliance with such advertising programs.

Some advertising programs require the placement of advertising material within a certain radius (e.g., a few inches) of a specific location (e.g., signs affixed to product displays or advertisements on a checkout counter near a cash register). Passive RFID tags can be used to monitor compliance with such advertising programs.

Some advertising programs require the placement of advertising material in very precise location (e.g., a particular sign must be placed in a certain holder **48**). Contact tags can be used to monitor compliance with such advertising programs. In one embodiment, contact tags comprise Serial Electronically Erasable Programmable Read Only Memory (Serial EEPROM) chips that store tag data. There are several types of Serial EEPROM chips, but most chips include two or three contacts (i.e., a 2-wire or 3-wire interface). Usually, the 3-wire devices have three data transfer wires and an addition wire. The 3-wire interfaces include Serial Peripheral Interface (SPI) and Microwire, which is a trademark of

National Semiconductor. The 2-wire devices, called I^2C or IIC, have only two wires. I^2C is a trademark of Philips. FIG. **2** illustrates one embodiment of a 2-wire serial EEPROM chip (contact tag) **1000**. The contact tag **1000** includes two contacts **380** and an EEPROM chip **400**. In alternative embodiments, the number of contacts **380** may be decreased to one, or increased to three or more.

Referring to FIG. **4**, the tag **10** stores identification data, status data, and time and date information. By reading this data, the reader **12** can convey the data to a hub **14**, which can determine when a sign or marketing material is first displayed, and how long it is displayed. A hub **14** can send the data to a central server **16** that allows advertisers to verify whether their advertisements or promotional materials are actually being displayed.

In one embodiment, the tag **10** is activated manually by a portable reader, either before shipment of the marketing material or at the retail outlet. In another embodiment, the tag **10** is activated at the factory, before the marketing material is shipped.

In one embodiment, the tag is a passive tag **100**, as shown in FIG. **3**. Passive tags rely on inductive (magnetic) coupling or capacitive coupling. To communicate with a passive tag **100**, the reader must be in close proximity to the tag to allow communication between the tag and the reader. A passive tag is not self-powered, it has no battery. Communication is achieved, for example, by inductively coupling the reader and the tag. This allows the reader to provide the tag with a signal that includes the power necessary for the tag to respond to the reader and transmit its tag data. Passive tags **100** are generally smaller than active tags **10**. Passive tags are generally read by a reader **12** that is mounted on the sign hardware **48**, see FIG. **1**. The reader **12** can detect the presence of a sign **46** that includes a passive tag when the sign is inserted into the sign hardware **48** or is proximal to a reader **12** that has been installed at the intended display location. As shown in the embodiment of FIG. **3**, the passive tag **100** includes a receiver **34**, a transmitter **36**, a memory **38**, and a coil antenna **40**.

Active tags allow one reader **12** positioned at a central location to read one or more tags associated with one or more signs or marketing materials displayed at the retail outlet. In order to conserve power in active tags, these tags use a "sleeping" routine wherein the tag only periodically "wakes-up" to a search mode to look for interrogation signals from a reader. Upon detection of a transmission that is likely an interrogation signal, the tag fully awakens to an interrogation mode, verifies that the interrogation signal is valid, and responds to the valid interrogation signal by, for example, transmitting tag data to the reader **12**. The tag also may be programmed to wake-up periodically and transmit its data on an autonomous basis, without being interrogated by a reader **12**.

The present invention provides a means of determining compliance with an advertising program by affixing RFID tags on signs or marketing materials to be displayed at various locations at a retail outlet. The system can be used with an existing customer service call center to increase retailer compliance with Point of Purchase (POP) advertising programs. The system also provides an efficient and accurate way to perform compliance analysis, which assesses the degree to which retailers comply with each POP advertising program and the marketing value associated with a given advertising program.

Referring again to FIG. **4**, the present system includes four main components: a tag **10**, a transceiver (reader) **12**, a hub **14**, and a central server **16**. A small tag **10** is affixed to a sign **46**, either at the time of production or before delivery to a retail outlet. As used herein, affixed is defined as: mounted, integrally formed, adhered, fastened, etc. The tags will enable each sign to be encoded with information about when and where the signs or marketing materials should be displayed according to a given POP program. The reader **12** will periodically read data from the tags within range of the reader. Alternatively, the reader could manually read the tags at the command of a user (e.g., compliance inspector). In one embodiment, the readers **12** communicate with a hub **14** that would generally be located at the retail outlet. The hub **14** is connected to the central server **16** via a communications link (e.g., a telephone line). The central server **16** will receive the details of each POP program, including participating sites and desired display locations at each site. The central server **16** will also upload data from each hub for compliance analysis.

When signs or marketing materials arrive at their destination, the tags **10** associated with each sign can be read and registered as "delivered" by a transceiver, such as reader **12**. The transceiver can read the presence of the signs or marketing materials even before they are unpacked. The signs or marketing materials will remain in storage until the beginning of the marketing program. In one embodiment, the hub **14** includes a display for announcing the beginning of a program, and instructing the retail outlet to install the signs or marketing materials in their respective locations. The hub **14** also receives and interprets tag data and provides command signals to the reader **12**.

The reader **12** can be located on the sign or marketing material hardware **48** (e.g., frame) into which the sign or marketing material is placed. The reader will detect the presence of the tag **10** and register that the sign or marketing material **46** is "displayed". In one embodiment, each tag **10** has a transmission range of about seven feet. Thus, several signs or marketing materials can be tracked at a given retail site by one reader. Signs or marketing materials may be displayed close together, for example, at a gas station grind strip, on a pump topper, and adjacent several pump hose "squawkers" (small signs attached to a gas pump hose). Because each sign **46** is uniquely tagged, a single reader **12** centrally located on the pump can register and report the status of all signage or promotion materials associated with that pump. Moreover, seven feet of separation is generally sufficient to distinguish signs or marketing materials associated with one pump from the signs or marketing materials of an adjacent pump.

Given a short RFID transmission range, only those signs or marketing materials unpacked and placed into display hardware **48** will be registered as "displayed". Repeated polling (taking several reads every 24 hours) will establish continued compliance with a given POP program. When a single reader detects the presence of several signs or marketing materials that are intended for different locations (or no signs at all), the central server **16** will determine that the signs have either not yet been received, have not been unpacked, or are being stored in a central location and not being displayed. This information will allow a customer service representative (CSR) to call the retail outlet and investigate the non-compliance in a timely manner.

In one embodiment, each reader **12** includes a small RF transmitter **26** having a transmission range of 1,000 feet. Each reader will store the tag data from all the tags located within range of the reader. Each reader will also indicate the absence of any tags. The hub **14** will periodically poll the reader to upload the tag data. The reader will communicate

with the hub **14** by selecting an interference-free RF channel from among several frequencies.

The readers can be permanently attached to and shipped with display hardware **48**, or made available for permanent installation on an after-market basis. A percentage of signs or marketing materials, such as freezer static cling advertisements, do not require display hardware. For these signs, a reader **12** having an adhesive backing can be positioned within a short distance (e.g., seven feet) of the tag **10**. In one embodiment, the readers **12** will be battery operated, which avoids the need for expensive or intrusive wiring.

In addition to triggering and collecting polling information every few hours, the hub **14** will serve as a storage device for current and prior readings for each display location at a given retail site. In one embodiment, at a prescribed time (e.g., 2 A.M.), the hub **14** will test the local telephone line for availability, and place a toll-free call to the central server **16**. Once a connection is established, the server will receive the tag data, reset the hub registers, and send any updated program information to the hub.

The central server **16** will aggregate the tag data for all retail sites, and report all locations not complying with a prescribed POP program for the current 24-hour period. Details about specific sites out of compliance, including contact name and telephone number, will be available to a call center. Customer service representatives will use all available information about the non-complying site to ascertain what is preventing POP execution in a timely manner, and attempt to remedy the non-compliance. Several different POP programs can be monitored and reported at any particular time.

In one embodiment, data from the system can be integrated with Point Of Sale (POS) scanner data to assess the impact (or commercial success) of a given program, and how such success relates to advertising compliance. The system can also be used to compare the effectiveness of one POP program versus another program, or a predetermined target or standard.

Typically, a dozen or more POP programs are executed at each retail site over the course of a year. Improving advertising compliance could greatly increase product/service revenues.

In addition, companies that sponsor POP programs often offer payments to retailers for their participation in such programs, with such payment conditional upon display of certain marketing materials. Improving knowledge of specific participation levels and dates could greatly improve the effectiveness and efficiency of POP programs.

The present invention can be used at retail outlets including: gas stations, convenience stores, grocery stores, mass merchandising outlets, drug stores, specialty retail outlets (e.g., pet stores, record stores, book stores), consumer electronics stores, etc.

A tag, such as an RFID tag or contact tag, could also be used by the sign and marketing material manufacturers to improve shipping operations (by, for example, tracking shipments, or verifying the contents of a carton of marketing material prior to shipment).

Illustrated in FIG. **4** is a block diagram of one embodiment of the advertising compliance monitoring system which includes a tag **10**, a reader **12**, a hub **14**, and a central server **16**. In one embodiment, the tag is an active RFID tag **50** (the tag is self-powered by a battery). In another embodiment, the tag is a passive RFID tag **100** (the tag is not self-powered, but receives energy electromagnetically from an external signal supplied by a reader). In the active tag embodiment, the active tag **50** includes a microprocessor (having a memory) **30**, a receiver **34**, a transmitter **36**, a battery **42**, and an antenna **18**, as shown in FIG. **5**. Signals are transmitted from and received by the tag **50** through the antenna **18**. As used herein, microprocessor is defined as any processor, microcontroller, or custom IC, such as a FPGA, ASIC, etc.

To conserve battery power in active tags **50**, these tags use a "sleeping" routine wherein the tag only periodically "wakes-up" to a search mode to look for interrogation signals from a reader. Upon detection of a transmission that is likely an interrogation signal, the tag fully awakens to an interrogation mode, verifies that the interrogation signal is valid, and responds to the valid interrogation signal by, for example, transmitting tag data to the reader. The tag also may be programmed to wake-up periodically and transmit its data on an autonomous basis, without being interrogated by a reader.

The tag **10** may be affixed either to a sign or to marketing material associated with a given marketing program. In one embodiment, the tag **10** is affixed to an advertising sign or marketing materials to be displayed, either when the sign or marketing material is produced or before delivery of the sign or marketing material to a retail outlet. The tags include an internal clock and a memory. The tags store: tag data, including an identification number, when the tag is delivered and displayed, and advertising information regarding when and where the sign or marketing material associated with the tag should be displayed according to a given advertising program.

The reader **12** will periodically read the tag data from the tag(s) within range of the reader **12**. Alternatively, the reader **12** could manually read tag data from the tag(s) at the command of a user (e.g., compliance inspector). Once the tag data is received by the reader **12**, it will be stored in memory. The reader **12** communicates with the hub **14** via a communication link **20**. The hub is physically displaced from the reader **12**, and is generally located in the retail outlet. The hub communicates with the central server via a communication link (e.g., a telephone line). The central server **16** is physically displaced from the hub **14**, and is generally located hundreds or thousands of miles away from the hub. The central server **16** receives the details of each advertising program, including a list of participating sites and desired display locations at each site. The central server **16** will periodically upload tag data from each hub and perform compliance analysis for each advertising or POP program.

The reader **12** is designed to operate interactively with the tag **10**. The reader **12** may be a hand-held unit or a fixedly mounted unit. Typically, the reader **12** is affixed to signage hardware **48**. The reader **12** will periodically transmit a command signal for interrogating any tags within range of the reader. When a sign **46** is displayed in the signage hardware **48**, the reader **12** will detect the tag **10** associated with the sign after the next command signal transmission. In response to the command signal, the tag **10** will transmit its tag identification number, any status data (e.g., delivered, displayed), and the time and date corresponding to the status. For example, if the sign was "displayed" at 6:30 p.m., on Jan. 25, 2002, the tag will transmit: status—displayed, time—6:30 p.m., date—Jan. 25, 2002. This tag data will be stored by the reader **12**. Alternatively, the tag **10** need not store status data. The hub **14** can determine when a given reader **12** first reported the presence of the tag **10**. Alternately, the hub **14** need not store the status data. The

central server **16** can determine when a given reader **12** first reported the presence of a tag **10**.

FIG. **10** illustrates one embodiment of a hand-held or permanent (fixed) reader **12** that includes a switch **44** for switching the tag **10** between different power conservation modes, such as OFF (e.g., no monitoring), sleep mode (e.g., POP compliance monitoring), or continuous monitoring mode (e.g., consumer exposure monitoring). The reader **12** further includes an antenna **22**, a receiver **24**, and a transmitter **26**. The antenna **22** is configured to receive signals from and transmit signals to the tag antenna **18**. The reader **12** interacts with each tag **10** via a communication channel. Likewise, the reader **12** interacts with the hub **14** and/or the central server **16** via another communication channel. The communication channels may include an Ethernet link, Internet link, wire link, wireless link, microwave link, satellite link, optical link, cable link, RF link, LAN link, or other communication link.

The tag data obtained from individual tags **10** may be uploaded through the reader **12** to the hub **14** to the central server **16**, which may include a database of all tag data. This data is then analyzed to determine which retail outlets are out of compliance with specific advertising programs.

In one embodiment, the tag antenna **18** is a monopole antenna **18A**, as shown in FIG. **5**. The monopole antenna **18A** is a tunable antenna that achieves the same RF signal capability as a dipole configuration, but is smaller in size. Thus, the monopole antenna **18A** enables the manufacture of a smaller tag having less mass. In one embodiment, the antenna **18A** is made of standard bus wire.

FIG. **6** illustrates the tag antenna **18** as a dipole antenna **18B**, having arms extending in a dipole fashion and connected to the electronics of the tag **10**. In one embodiment, the antenna **18**, along with the tag electronics, are encapsulated in an epoxy, such as Stycast®, and then affixed to the sign **46**, as shown in FIG. **1**.

FIG. **7** illustrates one embodiment of the advertising compliance monitoring system, including a portable or hand-held reader **12H** that is used for, inter alia, initially programming a tag **10** after a sign is made, before it is shipped, or after it is received by a retail outlet. In one embodiment, the tag **10** can also be reprogrammed so that tags on signs to be discarded can be remounted on different signs that are going to be deployed. Hand-held readers **12H** are generally battery powered and include a keypad/keyboard, touch screen, or other input device known in the art, an LCD display for user interaction and data display, and sufficient memory to retain tag data from multiple tags before that data is uploaded to the hub **14**.

Also shown in FIG. **7** are a multitude of fixed readers **12F**, each having an associated antenna **22**. The hub **14** is a separate component that is in communication with readers **12H**, **12F** through a communication channel **20**. The hub **14** communicates to the central server **16** via a communication channel **32**. As used herein, the term "communication channel" includes communication via an Ethernet link, Internet link, wire link, wireless link, microwave link, satellite link, optical link, cable link, RF link, LAN link, RS-232 serial link, telephone lines, or other communication link.

As shown in FIG. **7**, data from the hub **14** is transferred to the central server **16**. In one embodiment, the information from the hub **14** is transmitted across a communication channel **32**, such as the Internet, to the central server **16**. The central server **16** may be a personal computer, web server, or other computer with appropriate software to run and maintain a database of tag data. The central server may be accessed from a remote computer via, for example, the Internet. The reader **12**, the hub **14**, and the central server **16** may be, for example, two or more separate units, one computer partitioned into different virtual machines, or one virtual machine, acting as two of the components, that is connected to a second computer or processor acting as the third component.

Some advertisements contain a featured price that may change independently of the sign or display with which it is associated. In such cases, the tag **10** can be used to report such featured pricing information, in addition to sign and/or display information (such as "delivered", "displayed", etc.). In one embodiment, contact tags **1000** are used to monitor the value of each digit in a featured price (e.g., $32.89 would be read by using 4 or more plastic loose-leaf or spiral bound digits, each having a contact tag **1000** associated therewith). A single reader **12** is used to monitor all the digits and report the entire price as a single data field. Other components of a featured price that could be monitored include qualifying information about the conditions of the price (e.g., "per pack", "per carton", "2 liter bottle", "limit one per customer", or "buy one, get one free") and/or the brand being featured, such as "Winston", "Salem", "Coke", or "Bud Light".

One embodiment of the invention used for price reporting is shown in FIG. **8**. In this embodiment, each digit of the price includes a contact tag **1000**. Individual readers **12A–12D** are disposed on the digit holders such that each tag **1000** (disposed on a respective digit) makes contact with one of the respective readers **12A–12D**. In this way, each digit of the price is monitored by one of the individual readers **12A–12D**. In one embodiment, the individual readers **12A–12D** each include a battery and a data management module, in addition to the contact reading and storage circuitry. The output of the individual readers **12A–12D** is fed to a single group reader **12G**, which communicates with the hub **14** and/or the central server **16**. The data management module takes a data stream from the tag, converts that data stream into a standard data stream, such as an RS-232 data stream, and communicates the tag data to the reader **12**, which relays the data to the hub **14** and/or the central server **16**. The contact reading and storage circuitry allows each reader **12A–12D** to read data from a respective contact tag **1000** and store that data.

In one embodiment, each reader **12** has the same back-end (i.e., transmitter and receiver components for communicating a specific data stream to the hub and/or central server) and several interchangeable front-ends (i.e., different data management modules for receiving data streams from different types of tags, such as passive, active and contact tags). The data streams from different types of tags may be different. Therefore, the interchangeable front-ends allow a reader **12** to communicate which different types of tags. The specific data stream sent to the hub and/or central server may be a standard data stream, such as an RS-232 data stream.

A contact tag reader includes a small set of contacts for stimulating a contact tag and receiving its data. In one embodiment, the contact tag reader is battery operated, and uses sleep modes to conserve power, as discussed below.

In another embodiment, the contact tags are implemented using optical, notch, or magnetic ink technologies. Magnetic ink technology can be used to monitor pricing information. In one embodiment, magnetic ink similar to that used to process checks is placed on pricing elements (e.g., plastic loose-leaf or spiral bound digits for displaying a featured price) and read by a contact reader that can distinguish patterns of magnetic field intensity.

In one embodiment, infrared or laser scanners are used to read pricing information. Such a scanner can detect patterns of light and dark printing on pricing elements based on the variation in light reflected back to the scanner. In another embodiment, a bar code scanner is used to read pricing information.

In a further embodiment, notch technology is used to read pricing information. For example, each pricing element (e.g., a plastic or cardboard card) may include a series of positional depressions (or the absence of them) along the perimeter of the pricing element or inconspicuous holes. In one embodiment, the presence or absence of a notch or hole in a given position is converted to a data stream via a series of two-position contacts on the price holder. When a hole or notch is encountered, the two opposing contacts physically touch each other, which creates a closed circuit. This closed circuit is detectable by a contact reader connected to the two contacts.

In one embodiment of the compliance monitoring system, the tags **10** store sign information (e.g., display status, identification data, time and date information, etc.). In another embodiment, the tags **10** store only a tag identifier, which may comprise a 32-bit unique identification number. This identifier is associated with extensive descriptive information stored on the central server **16**. This descriptive information corresponds to the specific advertising material associated with the tag **10**. In one embodiment, the tag identifier and the descriptive information are synchronized when the tag **10** is assigned and affixed to a particular sign **46**. If a tag **10** is re-used (i.e., associated with a different sign) its unique tag identifier is reassigned to the descriptive information on the central server **16** corresponding to the new sign associated with the tag **10**.

Some retailers may expect payment for placing hubs, readers, and tags within their stores for purposes of monitoring their compliance with advertising programs. Therefore, in one embodiment, the readers **12** are used for consumer exposure monitoring. In this embodiment, the system may be used in conjunction with a retailer's frequent shopper or loyalty program to inform the retailers and manufacturers about the advertisements having the most appeal to shoppers (e.g., which advertisements shoppers closely investigated for a predetermined amount of time). In this embodiment, frequent or loyal shoppers are issued shopper identification cards having unique RFID tags for storing information about the shoppers. As a shopper proceeds through a store, if the shopper closely investigates a particular advertisement having an RFID tag, the shopper could flash his/her RFID card in the vicinity of the sign (i.e., move the card near the sign) to trigger data transfer to the reader. In another embodiment, the card's proximity to the sign could trigger data transfer to the reader (e.g., the card could be read in a shopper's purse). Information about which signs and the number of signs flashed by each customer (or the number of signs the shopper investigated such that card data was transferred to one or more readers) is reported to the retailer and/or to manufacturers. This consumer exposure information is used to help improve the value of a retailer's frequent shopper program, and/or is integrated with purchase information to provide additional and/or personalized incentives to the frequent shoppers. In another embodiment, information about which advertisements interested consumers during shopping could be used to focus subsequent advertising material, such as direct mail. These embodiments would enable more effective and more relevant marketing programs for both manufacturers and retailers.

FIG. **9** illustrates use of the invention to monitor customer exposure to a particular advertising promotion in a store having two shelves. The customer is shown carrying a shopper identification card having a tag **10** (e.g., an active or passive tag) embedded in it. A reader **12** is associated with a sign **46** and reads the presence of the tag **10** when the customer card is adjacent the sign **46**. The shopper may flash his/her card in the vicinity of the sign, and/or the reader may acquire the tag **10** when the card is within range of the reader **12**. When the consumer card has been read, a confirming light or message is displayed by a display device **58** disposed on or adjacent the sign **46**.

In FIG. **1**, a sign **46** having a tag **10** affixed thereto is illustrated. The sign **46** is supported by sign or marketing material hardware **48**, which has a reader **12** affixed thereto. In one embodiment, the reader **12** communicates with the tags **10** over a wireless RF link (e.g., **28A**) operating at a frequency of about 13.56 MHz (which is an example of a frequency used to read passive RFID tags). The reader **12** and the tags **10** can communicate over any wireless link (e.g., **28A**) and use any suitable frequency band. The Industrial, Scientific, and Medical (ISM) frequency band is 902–928 MHz. The ISM frequency band is primarily intended for unlicensed transmitters, which have been certified under Part 15 of the Federal Communications Commission Code (47 C.R.F. §15). Many devices such as cordless phones and wireless LANs share the ISM frequency band and the claimed system is designed to coexist and operate robustly among these other devices. Other frequency ranges can be used without departing from the invention. For example, the reader **12** and the tags **10** can communicate at a low frequency (e.g., about 125–134 KHz).

To minimize signal interference, the frequency of the forward link channel (i.e., reader to tag) is varied among several of the available RF channels in the ISM frequency band in a pseudo-random manner (frequency hopping). Each forward link command is transmitted on a frequency different than the previous command in a pseudo-random manner to avoid continuous interference from other devices operating in this frequency band. Frequency hopping also allows the system to transmit the maximum signal radiation (+36 dBM) under 47 C.R.F. §15.

The active tags **50** provide several features, including: a unique tag identifier for identifying a specific tag and determining the status of the sign associated with the tag (e.g., delivered, displayed); the ability to transmit tag data autonomously to a reader; and the ability to archive tag data taken since the last upload to the reader **12**.

As shown in FIG. **5**, the tag microprocessor **30** communicates with the RF transmitter **36**. The RF transmitter **36** is in communication with tag antenna **18A**. The tag **50** is supplied with power by a battery **42**.

The active tag **50** has several modes of operation. The typical mode is the deep sleep mode where the tag is generally inactive (no clock is running; however, an RC watchdog timer is running, which uses very little power). The tag **50** spends most of its time in this low-power mode. The tag periodically partially awakens to a lucid sleep mode (when the watchdog timer times out), initiates a low-speed clock, determines if it is time to enter a search mode by examining a search mode counter and, if it is not time, adjusts the search mode counter (e.g., decrements the counter by one), and returns to the deep sleep mode.

Otherwise, if it is time, the tag **50** enters the search mode, which continues to use the low-speed clock. The tag first determines if it is time to check for interrogation signals,

referred to as forward link packets (FLPs), from a remote reader **12**. If the tag detects what appears to be an interrogation signal, it awakens completely to an interrogation mode. Otherwise, the tag continues in search mode and determines if it is time to perform an autonomous transmission (AT) by examining an AT counter. If it is not time for an AT, the tag adjusts the AT counter by one (e.g., decrements the counter by one) and returns to the deep sleep mode. Otherwise, the tag awakens to interrogation mode, initiates the high-speed clock, and performs an AT (i.e., it transmits the most recently stored sensor data to any reader **12** operating in the surveillance mode).

In the interrogation mode, the tag **50** initiates a high-speed clock, reads at least a portion of the forward link transmission to see if it is a valid interrogation signal intended for this tag **50**, and if it is, responds to the interrogation signal. Otherwise, if the transmission is not a valid interrogation signal, the tag waits a programmable period of time for a valid interrogation signal. If no valid interrogation signal is detected within that time, the tag turns OFF the high-speed clock and again enters the deep sleep mode. Otherwise, the tag responds to the valid interrogation signal on a return link channel assigned by the reader **12**. Alternatively, the tag **50** transmits its responses to each interrogation signal on each of the return link channels, sequentially.

The various active tag modes include the lucid sleep mode, the search mode, the interrogation mode and the deep sleep mode, and the timing of these modes, according to one embodiment of the invention. The tag **50** spends most of its time in one of the sleep modes. While in the deep sleep mode, the tag **50** uses very little power to help conserve battery life. The tag **50** periodically awakens to the search mode to look for the likely presence of forward link packets (FLPs), and/or to determine if it is time for an autonomous transmission (AT), and then goes back to the deep sleep mode if no likely FLPs are detected and it is not time for an AT.

In the deep sleep mode, the tag's microprocessor **30** is in a static, dormant state with its internal clock oscillator(s) shut down. Only the RC watchdog timer is running. The tag microprocessor **30** can not execute any programs or control any external IO pins in the deep sleep mode. The tag **50** sleeps in this mode most of its life in an effort to conserve battery power. During the deep sleep mode, because the clock oscillator(s) are OFF, a deep sleep counter is adjusted (incremented or decremented) periodically by an internal R/C oscillator. An internal watchdog timer (WDT) monitors the deep sleep counter and when the deep sleep counter, for example, contains a NULL value (all zeros), the WDT wakes up the microprocessor **30** (i.e., the WDT initiates the low-speed clock so that the tag **50** can enter the lucid sleep mode).

In the lucid sleep mode, the tag **50** wakes up enough to determine if it is time to enter the search mode by determining if an internal search mode counter, for example, contains a NULL value (all zeros). Lucid sleep mode requires only a minimal amount of processing and a small amount of power since it is only using the low-speed clock. If it is not time to enter the search mode, the microprocessor **30** adjusts (e.g., decrements) the search mode counter and then reverts back to the deep sleep mode. In summary, during lucid sleep mode, the low-speed clock oscillator is turned ON, thus producing a low-speed clock signal (e.g., 37 KHz), a search mode counter is adjusted, the search mode is entered if the counter contains all zeros, and if not, the low-speed clock oscillator is turned OFF, and deep sleep mode is resumed.

In the search mode, the tag **50** continues to use the low-speed clock (e.g., 37 KHz) to execute instructions that include: determining if it is time to read the sensors, searching for transmissions likely to be forward link packets (FLPs) from a reader **12**, and determining if it is time for an autonomous transmission (AT). The microprocessor **30** determines if it is time to read the sensors by examining a sensor counter. If it is time to read the sensors, the microprocessor **30** reads and stores data from each sensor sequentially, as described below. Otherwise, the tag **50** searches for the presence of FLPs by performing pre-discrimination. If pre-discrimination indicates that the transmission is likely a FLP, the tag enters the interrogation mode. Otherwise, the microprocessor **30** determines if it is time to perform an autonomous transmission (AT) by examining an AT counter. If it is not time for an AT, the microprocessor **30** adjusts the counter (e.g., decrements the counter) and returns to the deep sleep mode. Otherwise, the microprocessor **30** awakens to interrogation mode, initiates a high-speed clock, and performs an AT (e.g., it transmits the most recently stored sensor data to a reader **12**).

In the interrogation mode, the tag **50** initiates the high-speed clock, reads at least a portion of the forward link packet (FLP), and determines if the FLP is valid. Error detection is accomplished by transmitting error detection bits, such as parity bits, a checksum, or a Cyclical Redundancy Check (CRC), in each FLP. The tag **50** then checks the error detection bits to make sure the transmission is a valid FLP. The tag also checks to insure that the FLP includes data bits and error detection bits (e.g., a CRC), and checks to make sure the total number of bites is indicative of a valid FLP. If the tag **50** detects an error in the FLP (e.g., CRC is not valid), the bad FLP is disregarded and/or the tag **50** requests that the FLP be retransmitted.

In one embodiment, the microprocessor **30** first examines a beginning portion of the FLP and, if that portion indicates that the transmission appears to be a valid FLP, turns on the transmitter **36**, and then reads the rest of the FLP to check that the CRC is valid. If the FLP contains a valid CRC, the tag **50** responds to the FLP. Otherwise, if the FLP is determined to be invalid, the microprocessor **30** continues searching for a valid FLP for a predetermined period of time. The period of time the tag **50** continues searching for FLPs is a programmable feature of the tag **50**. If no valid interrogation signal is detected within that time, the microprocessor **30** turns OFF the high-speed clock and again enters the deep sleep mode. Otherwise, the tag responds to the valid interrogation signal.

Each tag may include one or more of the following features:

A unique tag identification number—this number specifically identifies a particular tag **10**. The tag identification number is typically the tag serial number. This number is programmed into the tag **10** at the factory or during installation (via, for example, a hand-held reader **12H**).

A sign or marketing material model number—the sign or marketing material model identifies the type of sign or marketing material, and when and where it should be displayed pursuant to a particular advertising program. This number may also be programmed into the tag **10** at the factory or during installation (via, for example, a hand-held reader **12H**).

Tag history data—the tag **50** includes a RAM memory that records history data, such as when and where a sign or marketing material is displayed, when the sign or marketing material is removed, etc. The history tag data is recorded

with a time and date stamp that indicates when the data was recorded. This data may be uploaded from the tag **50** to the reader **12**, and transferred to the central server **16**.

Write-in capability—the tag **50** allows users to write user defined data into the tag memory, including where the sign is being displayed, what type of sign is associated with the tag, etc. This data may be password protected such that only authorized users can write data to the tag **50**.

Autonomous transmit (AT)—the tag **50** may be programmed to self-awaken at preset intervals, transmit the tag data to a reader, and go back to sleep without external activation. The tag **50** may be pre-programmed from the factory with a default wake-up interval (e.g., 2.5 seconds); however, the user can change the wake-up interval.

Radio frequency operation—in one embodiment, the claimed system operates at 2.45 GHz, or in the ISM frequency band (902–928 MHz), or at 13.56 MHz, or at a low frequency (e.g., about 125–134 KHz).

Communications—the tag **10** is able to communicate with fixed readers **12F**, or hand-held readers **12H**.

Data display—tag data is displayed by the hub so retail personnel can monitor the status of each sign and receive messages from the central server **16**.

Power—the active tags **50** are powered by a battery **42**.

Tag life—given current battery capabilities, total tag life is greater than about 2 years, during normal operating conditions, which is greater than the average life of the sign associated with the tag.

Turn-OFF function—the tag **50** can be activated by a hand-held reader prior to shipment to a retail outlet, which prevents the tag **50** from being ON during storage of the sign. This extends the battery life of the tag **50**.

Reader range—for a fixed reader **12F**, the reader range is up to and including about 7 feet. This tags associated with signs in adjacent areas within the retail outlet to be differentiated or grouped on the basis of their location. The reader range can be extended to cover between 10–50 meters, effectively covering an entire retail outlet. Hand-held readers **12H** can monitor tags up to about 50 meters from the reader antenna **22** (and can operate while the user is in a vehicle moving up to about 73 kilometers per hour).

The reader **12** transmits signals to the tag **50** in the forward link. Readers **12** periodically transmit an RF signal to one or more of the tags **50**. Forward link signals are also know as Forward Link Packets (FLPs).

The tag **50** transmits signals to the reader **12** in the return link. A tag **50** generally transmits a response (e.g., tag data) to a reader **12** via the return link in response to a FLP. Return link signals are also know as Return Link Packets (RLPs).

The tag data stored on the central server **16** may be accessed via a local area network (LAN) or the Internet. Tag data may be forwarded to a call center for display on a customer service representative's screen. Using this data, the CSR can call the non-complying retail outlet and try to ascertain the reason for non-compliance with an advertising program and attempt to remedy the situation in a timely manner.

The reader **12**, in one embodiment, initiates RF communication with one or more of the tags **10**. In one embodiment, the reader **12** is affixed to the signage hardware **48** that is positioned at various locations near the retail outlet (e.g., on a fuel island, on a pump topper, on an external kiosk, on a pump approach, on building signs, on checkout registers, etc.). The reader **12** will communicate with each tag **10** to determine if the corresponding sign is being displayed, and gather data, including when the sign was first displayed, when it is removed, etc. The reader **12** may also obtain the tag history data, which includes all tag data since the last time the tag data was uploaded to the reader. The history data is sent from the reader **12** to the hub **14** and then to the central server **16** by a communication channel **32**, comprising one or more of an Ethernet link, Internet link, wire link, wireless link, microwave link, satellite link, optical link, cable link, RF link, LAN link, or other appropriate communication link.

Portable or hand-held readers **12H** communicate with the tags **10** and gathers tag data, including history data. Hand-held readers **12H** may be used in conjunction with manual inspections, or surveys, to determine if marketing material has been displayed pursuant to a specific program. These readers **12H** decrease the time and cost of surveys by reading all the tags at a specific retail outlet, within a small amount of time, without requiring the user to even exit his car. The hand-held readers **12H** provide an "on-site read" of all the tags at a specific location or site.

Referring again to FIG. **7**, the process of acquiring tag data will be described. In the interrogation mode, a reader **12** can acquire sensor and other data from a specific tag **10** only when that specific tag **10** is being addressed. In one embodiment, the tag **10** can be addressed by: (1) a unique ID (e.g., tag serial number); or (2) a temporary ID assigned by the reader **12** during a tag interrogation. Tag acquisition is described in more detail hereinafter.

Generally, once the tag data has been uploaded to the reader **12**, the tag **50** is instructed to go into a sleep mode (e.g., deep sleep mode) for a programmable period of time. Alternatively, the tag **50** may be programmed to return to a sleep mode once the tag is out of range of the reader **12** for a predetermined period of time. Entering the deep sleep mode completes the tag interrogation session. Thereafter, a new interrogation session can begin.

Preferably, the tag **50** is cost effective, uses low power, and complies with FCC Part 15 (47 C.R.F. §15). The maximum allowable power (in free space) without spectrum spreading is −1 dBM. The return link (i.e., tag to reader) has the capability of transmitting on any one of several available radio frequency channels. This provides the active tag **50** with a means for avoiding signals from interfering devices. In one embodiment, the tag **50** responds to FLPs on each of the different return link channels, sequentially. In another embodiment, the reader **12** monitors the return link channels and commands the tag **50** to transmit on the channel having the least amount of interference. For autonomous transmission (AT), the tag **50** has the option of transmitting return link packets (RLPs) on any or all of the return link channels.

In one embodiment, there are four return link channels. These channels are used to transmit data from the tag **50** to the reader **12** and/or from the reader **12** to the hub **14**. The return link packets (RLPs) are transmitted on each of the channels, sequentially. For example, if the tag **50** responds to a reader **12** with its serial number on channel **1**, the tag **50** will then respond to the next reader command on channel **2**. If the reader **12** receives bad data from the tag, it will disregard that data and command the tag **50** to retransmit the data. The tag **50** will then retransmit the data on channel **3**. If the reader **12** determines that the received data is again corrupt, it will command the tag **50** to retransmit the data. In one embodiment, retransmission of data will continue until the data has been sent five times (once on each channel, e.g., on channel **1, 2, 3, 4**, and **1**—the first channel is tried twice). If the reader **12** still does not receive good data, it will cease

transmitting to that particular tag **50** for a predetermined period of time.

Alternatively, the reader **12** can monitor the four return link channels, and determine which channel has the lowest received signal strength (RSS), which indicates the channel having the least amount of noise and/or interference. Thus, the channel having the lowest RSS has the least signal interference. Therefore, after the reader **12** determines which channel has the lowest RSS, it sends two bits in a forward link packet (FLP) that correspond to the return link channel having the lowest RSS and instructs the tag **50** to transmit return link packets on that channel. The duration of interfering signals can be expected to be on the order of several seconds. Therefore, the reader **12** checks for clear return link channels every several seconds. The reader **12** tunes itself to receive tag signals on the indicated return link channel and transmits a NULL command (all zeros). The NULL command is broadcast to prevent any other tag from responding while the reader **12** monitors the RSS level. The lowest RSS channel becomes the channel to which a specific tag **50** will be commanded to respond, until another channel has been determined to have the lowest RSS. Again, the lowest RSS channel is selected because that channel is open, and not interfering with other transmissions. Each reader **12** has a received signal strength (RSS) indicator, which tells the reader **12** that a tag **50** is attempting to respond. The reader **12** investigates the received signal strength on its incoming return link channels. The reader **12** then sends a forward link packet instructing the tag **50** to respond on the channel having the lowest RSS and monitors that channel for tag transmissions. Likewise, the hub **14** can monitor the four return link channels, determine which channel has the lowest received signal strength (RSS), and instruct the reader **12** to transmit return link packets on that channel.

During forward link communication, packets are sent from the central sever **16** to the hub **14**, from the hub **14** to the reader **12**, or from the reader **12** to the tag **50**. During return link communication, packets are sent from the tag **50** to the reader **12**, from the reader **12** to the hub **14**, or from the hub **14** to the central sever **16**. The tag data is communicated in this fashion from one device to the next (see FIG. **4**). Not all of the devices illustrated are required in the system. For instance, data can be communicated directly from the reader **12** to the central server **16**.

Under 47 C.R.F. §15, using spread spectrum transmission (i.e., frequency hopping), the maximum allowable power that can be radiated in free space is +36 dBM (without using spread spectrum transmission, the maximum allowable power in free space is −1 dBM). In the forward link, the amount of power transmitted is measured near the tag. Some attenuation may result from transmission through the sign, and additional attenuation may occur due to interference from other signs, cars and/or structures.

Fifty forward link channels were selected in part due to FCC Part 15 (47 C.R.F. §15), which specifies 50 channels as the minimum; however, it is apparent that more than 50 channels could be used in this spread-spectrum system.

It is possible that two tags **50** will awaken at the same time and both be within range of the reader antenna **22**. If this occurs, interference may result since both tags **50** may be responding to the same message on the same return link channel. To identify and communicate with one tag out of many tags that may be within range, the reader **12** uses an algorithm, as described below, and/or transmits to a specific tag **50** by transmitting that tag's unique tag serial number or functional ID number.

The tag **50** includes a microprocessor **30** that controls the operation of the tag **50**. In one embodiment, the microprocessor **30** includes two internal oscillators, internal RAM, internal ROM, and other standard features. To maximize battery life, two oscillators are desirable because they allow for two different clock speeds. Having two clocks allows a designer to minimize use of the high-speed clock (thus, conserving battery power). The two oscillators could also be externally supplied to the microprocessor.

The tag microprocessor **30** periodically awakens from the deep sleep mode to the lucid sleep mode. In the lucid sleep mode, the microprocessor initiates the low-speed clock and determines if it is time to enter the search mode by examining a search mode counter. The counter will either indicate that it is time to enter the search mode (e.g., the counter contains all zeros) or it will indicate some other value. If it is not time to enter the search mode, the microprocessor adjusts the search mode counter (e.g., decrements the counter) and returns to the deep sleep mode.

Otherwise, the microprocessor enters the search mode, and continues using the low-speed clock. The microprocessor determines if it is time to perform pre-discrimination, where the microprocessor determines whether a transmission is likely a forward link packet (FLP). If the microprocessor determines that the transmission is likely a FLP, it enters the interrogation mode. Otherwise, the microprocessor determines if it is time to perform an autonomous transmission (AT) by examining an AT counter. If it is not time for an AT, the microprocessor adjusts the AT counter (e.g., decrements the counter) and returns to the deep sleep mode. Otherwise, the microprocessor **30** awakens to the interrogation mode, initiates the high-speed clock, and performs an AT (i.e., it transmits the most recently stored sensor data to a reader **12**).

A EEPROM can be used for storing tag history data. History data is periodically written from the microprocessor RAM to the EEPROM. The EEPROM is a non-volatile memory; therefore, it does not need power to maintain its information, and can be turned off to conserve battery power.

In the interrogation mode, the tag **50** can receive and transmit data. Upon entering the interrogation mode, the microprocessor initiates the high-speed clock, examines at least a portion of the FLP and, if that portion indicates that the transmission appears to be a valid FLP, turns ON the tag transmitter, and then reads the rest of the FLP to determine whether the CRC is valid. If the FLP contains a valid CRC, the tag **50** responds to the FLP. In one embodiment, the tag transmitter is designed to transmit on several distinct channels. Only one of the channels is normally used during any individual RLP transmission. Upon completion of the interrogation mode, the microprocessor turns OFF the tag components and resumes the deep sleep mode.

In summary, in the search mode, the tag **50** performs pre-discrimination to determine whether a transmission is likely a FLP from a reader **12**. If the microprocessor **30** determines that the transmission is likely a FLP, it enters the interrogation mode. Otherwise, the tag **50** again enters the deep sleep mode for a predetermined period of time. In the interrogation mode, the transmission is verified as a valid FLP and the requested tag data stored in the tag **50** is transmitted to the reader **12**.

The return link channel to be used for transmission by the tag **50** may be determined in a number of ways. The tag may select the return link channel sequentially (i.e., use a different return link channel for each RLP). Alternatively, the reader **12** may instruct the tag **50** to use a specific channel.

One way to determine the best return link channel to use is to have the reader **12** send a NULL command, which causes the tags **50** not to transmit. This allows the reader **12** to determine the received signal strength (RSS) on each of the four return link channels. Thereafter, the reader **12** instructs the tag **50** to send its response back on the return link channel having the lowest signal strength (i.e., the least amount of noise/interference).

In one embodiment, the tag periodically awakens from the deep sleep mode to the lucid sleep mode to determine if it is time to enter the search mode by sampling a search mode counter for a NULL value (all zeros). If the counter contains all zeros, the tag **50** enters the search mode. In the search mode, the tag **50** tests for the likely presence of a forward link packet. If a transmission is likely a FLP, the tag **50** enters the interrogation mode where it verifies that the FLP is valid, and if so, responds thereto. The process of reading valid FLPs continues until the interrogation is complete. The tag **50** then returns to the deep sleep mode.

When no tags **50** are within range of the reader **12**, there obviously will be no response to a reader interrogation. When a tag **50** comes into view of the reader **12**, however, one way to detect and identify a specific tag **50** is by using an appropriate algorithm to identify one tag out of many. Such algorithms are known in the art. The algorithm may identify a tag by an identification number (such as the tag serial number). Another way to identify a specific tag **50** is by using a temporary ID number (valid for only one interrogation session). Identification by temporary ID may be used in instances where fast acquisition of tag data is required.

In one embodiment, a tag **50** can be identified by its factory encoded serial number (which is unique to each tag), or a temporary ID number (which is a short number that identifies the tag only during a particular interrogation session). In another embodiment, the reader **12** sends an interrogation signal and monitors the received signal strength (RSS) level on the return link channels to determine if any tags **50** are within range. If the level of the RSS indicates that one (and only one) tag is within range of the reader, an interrogation signal is sent requesting tag data.

Referring to FIG. **7**, the hub **14** receives data from the readers **12H** and **12F** and issues commands to the readers. This data is transmitted over a communication channel **20**, such as a wireless link. This data is transmitted to the central server **16** over another communication channel **32**, such as a telephone line. In one embodiment, a temporary ID is assigned to a particular tag **50** so that a reader **12** can discriminate signals from that tag **50** from signals from other tags. Once the temporary ID has been assigned, the tag **50** will respond only to commands that specifically identify that specific temporary ID. The tag **50** will remain acquired while in range of FLPs from the reader **12**. Once the tag **50** is out of range, it will go to sleep after a predetermined period of time. Alternatively, the reader **12** will typically command the tag **50** to enter the deep sleep mode once the interrogation mode is complete.

Once a tag **50** has been specifically identified (acquired), the reader **12** interrogates the tag **50** by sending command signals that request tag data. Tag data may include the tag identification number, sign status (delivered, displayed), and time and date information. This data is received by reader **12**, transferred to the hub **14** and periodically sent to the central server **16**.

In one embodiment, the tag **50** and the reader **12** perform their receive/transmit functions according to a specific command/response protocol. Once the reader **12** has successfully obtained all the requested tag data, it generally issues a command signal placing the tag **50** into the deep sleep mode. In one embodiment, the deep sleep mode is designed to last long enough to ensure that the tag does not reawaken while other tags are being interrogated. Even if the tag were to reawaken, an erroneous double read of the same tag can be avoided by correlating the tag data from a specific tag with that tag's serial number. Generally, once the initial tag **50** is placed into the deep sleep mode, the system will then read the next tag **50**, which may be on an adjacent sign.

The tag **50** is in the deep sleep mode for a predetermined period of time. The tag **50** then wakens to the lucid sleep mode for a few milliseconds to determine if it is time to enter the search mode (by examining a counter) and, if it is not time, the tag **50** resumes the deep sleep mode. At some point, the tag **50** enters the search mode (using a low-speed clock). If a transmission is received that is likely a FLP, the tag enters the interrogation mode (using a high-speed clock) where the FLP is read and validated. However, if a transmission is not likely a FLP, the tag **50** remains in the search mode and determines if it is time to perform an autonomous transmission (AT) and, if not, transitions back to the deep sleep mode for a programmable period of time.

The tag data from a tag **10** can be accessed via the central server **16**, which typically includes a keyboard for data input by a user and a display for data output to a user. The display provides tag data to a user. This data is archived in the central server **16**. The central server **16** also provides a LAN or Web interface to the system for providing the tag data to a remote user (such as a CSR) and for allowing the remote user to analyze the tag data, or enter user defined data, such as the retail outlet where the sign is being displayed, the compliance history of the retail outlet, etc.

Although the embodiment illustrated in FIG. **7** shows the central server **16** in communication with the hub **14**, these components may be a single unit or, alternatively, separated by a large distance. The arrangement of components is driven by the implementation in which these components will be used rather than by any requirements of the system.

In addition, the reader **12**, the hub **14**, and the central server **16** may be two or more separate units, and data may be transmitted between these units using a request/response protocol (where, for example, the central server requests data from the hub) or using a push protocol (where, for example, the hub periodically transmits data to the central server **16** without such data being requested by the central server **16**).

In the normal mode of operation, the system uses a wireless protocol having a command/response architecture. The reader **12** transmits Forward Link Packets (FLPs) at periodic intervals and listens for Return Link Packets (RLPs) from a tag **50** at specified times between the FLPs. The tag **50** wakes up periodically and remains on long enough so that it does not miss a FLP from the reader **12**.

The deep sleep mode uses a watchdog timer (WDT) to determine when to wake up. During the deep sleep mode, the microprocessor is not running and all clocks are stopped. Thus, only a minimum amount of power is consumed in the deep sleep mode. When the WDT times out, the microprocessor is started in its low-speed clock mode (referred to as lucid sleep mode), where the tag determines if it is time to enter the search mode. The lucid sleep mode and search mode can be combined into a single mode.

In the search mode, the tag **50** uses a low-speed clock and searches for transmissions likely to be FLPs. Upon detection

of a transmission indicative of a FLP, the tag enters the interrogation mode, initiates a high-speed clock, verifies the presence of a valid FLP, and responds thereto. The sleep modes used in the communication protocol conserve battery power because the tag **50** is only turned ON in response to a valid FLP.

A novel advertising compliance system has been disclosed that includes a tag **10** that is affixed to a sign **46**. The active tag **50** includes a microprocessor **30** for storing tag data and communicating with the reader **12**. The tag **50** periodically awakens to search for likely FLPs. If one is detected, the tag further awakens, verifies that the transmission is a valid FLP, and if so, responds to the FLP command. When the tag **50** receives a valid command from a reader **12**, it sends responsive data via one or more RLPs. Typically, the reader **12** first interrogates the tag **50** for its serial number (or assigns a temporary ID). The reader **12** then requests the tag data stored in the tag memory. The tag **50** then transmits responsive RLPs to the reader **12**. Upon completion of the interrogation mode, the tag **50** resumes the deep sleep mode.

In one embodiment, the system includes an RFID tag that transmits parameters regarding intended location, content, sponsor, purpose, etc. The RFID signal to the reader contains some or all of the following information:

- Unique 32-bit tag identifier (may be written to tag at time of marketing material production or shipping, or pre-programmed by tag manufacturer)
- Product number using "Stub" format:
  - POP sponsor (4 characters)
  - Promotion number (5 characters)
  - Start date (3 characters)
  - Category (3 characters)
  - Subcategory (2 characters)
  - Sign type (3 characters)
  - Sign placement (3 characters)
  - Expiration date (3 characters)
  - Price point (4 characters)
  - "Per"/disclaimer conditions (3 characters)
- Date produced (3 characters)
- Sign producer ID (3 characters)
- Retail outlet ID (5 characters)

In one embodiment, the system includes an outdoor reader that receives tag data and transmits tag data, reader ID & battery status information. Such a reader may be mounted in a tamper-proof package that is securely mountable to sign hardware (e.g., plastic, painted/plated steel, or bare/anodized aluminum). The reader is removable by authorized personnel for remote repair. In another embodiment, the reader is mounted in a tamper-proof package that is securely mountable to glass or painted/plated/anodized metal.

In one embodiment, when the reader is polled by the hub, the reader reads and transmits information from the RFID tag.

In one embodiment, the RDIF data may include some or all of the following information:

- Transponder ID (6 characters, alpha-numeric)
- Battery status (1 character, alpha-numeric)
- Trouble-light status (1 character, alpha-numeric)
- RFID asset tag information (110 characters, alpha-numeric)

In one embodiment, the system includes an indoor reader that receives tag data and transmits tag data, reader ID and battery status information. Such a reader may be mounted in a tamper-proof package that is securely mountable to sign hardware (e.g., plastic, painted/plated steel, or bare/anodized aluminum). The reader is removable by authorized personnel for remote repair. In another embodiment, the reader is mounted in a tamper-proof package that is securely mountable to glass or painted/plated/anodized metal.

In one embodiment, the system includes a hub that polls readers, displays problem conditions/solutions, polls local phone line, logs into central server, reports signage information and trouble conditions. Such a hub may be movable, with rubber "feet" for stability.

In one embodiment, the hub may include some or all of the following features:

- Auto boot program in power-up/restarts
- Remote versioning/upgrades & POP administration
- Non-volatile RAM for program & data storage
- "Register" the number of transceivers and ID/frequencies/location of each
- Seek and register interference-free frequency for each transponder
- Turn on a trouble light for a specific reader when signal is weak, repeated interference occurs on all channels, no signal, or the wrong sign is placed in sign hardware
- Ignore certain/all readers when instructed by host
- Keep track of time
- "Poll" each reader, and store its asset information periodically (e.g., every 4 hours)
- Compare current vs. prior asset register
- Store 2 toll-free phone numbers
- Test status of phone line, dial number, if unsuccessful dial alternate number
- Perform modem "handshake" with central server
- Hub data to central server may include some or all of the following:
  - Time stamp
  - Hub ID
  - Changes or additions to transceiver locations
  - Number of transceiver signals expected
  - Number of transceivers reporting
  - "Checksum" stamp from last hub/server connection
  - Current RFID asset information for each transceiver
  - Trouble-light status for each transceiver
  - POP program information for next 24 hours
  - Hub program updates
  - New "checksum" stamp from hub/server connection

In one embodiment, the system includes a central server that coordinates hub polling, consolidates POP program information, collects and reports signage configuration for each retail site. The central server, in one embodiment, administers POP programs for all registered signage and provide status reports for all sites and programs, with feeds to call center customer service representatives.

In one embodiment, the system includes an RFID writer that writes data to RFID tags to be affixed to signage during the packing/shipping process. The RFID writer may comprise a hand-held reader **12**. The data written to the tags may include parameters for a specific POP program (from the central server) and/or the locations participating in the program. The RFID writer may also register assets to the central server and/or an invoicing/billing system.

While particular embodiments of the invention have been shown and described in detail, it will be obvious to those skilled in the art that changes and modifications of the present invention, in its various embodiments, may be made without departing from the spirit and scope of the invention. Other elements, steps, methods and techniques that are insubstantially different from those described herein are also

within the scope of the invention. Thus, the scope of the invention should not be limited by the particular embodiments described herein but should be defined by the appended claims and equivalents thereof.

What is claimed is:

1. An RF system for remotely monitoring, without human intervention, compliance with an advertising program comprising signs to be located at a plurality of different facilities by determining the presence of one or more advertising signs at a plurality of predetermined locations, with at least one sign at each facility in the program, comprising:

a tag associated with each advertising sign, the sign being displayed for advertising purposes, and the tag being adapted for RF communication;

at least one RF reader at each facility for receiving tag data from each tag within range of the reader and without transferring data to the tag, where the received tag data indicates the identity of and presence of the tag and its-corresponding sign of the tag in a particular one of the predetermined locations at a facility in the program; and

a hub for directly or indirectly receiving tag data from each tag at the facility and for transmitting the tag data to a remotely located computer that receives and analyzes the tag data from the plurality of different facilities to determine the identity of each sign and whether each sign is timely and properly located in each facility and thereby which advertising signs and facilities are in compliance with the advertising program.

2. The system of claim **1**, wherein the computer determines whether the sign is in a specific location in accordance with the specific advertising program.

3. The system of claim **1**, the sign is selected from the group consisting of marketing materials, displays, coupon dispensers, signage, display racks, floor mats, counter mats, containers, promotional hardware, seasonal promotions, and products.

4. The system of claim **1**, wherein the tag includes a memory for storing tag data, a transmitter and a receiver.

5. The system of claim **1**, wherein the tag is a passive tag.

6. The system of claim **1**, wherein the passive tag is used to determine the specific location of the sign.

7. The system of claim **1**, wherein the contact tag determines the specific location of the sign.

8. The system of claim **1**, wherein the tag autonomously transmits tag data on a periodic basis.

9. The system of claim **1**, wherein the computer communicates with the reader via a wireless link.

10. The system of claim **1**, wherein the reader communicates with the tag via an RF link.

11. The system of claim **1**, wherein each reader includes a data management module capable of reading tag data from different types of tags.

12. The system of claim **11**, wherein the data management module converts tag data into a standard data stream and transmits the standard data stream to the computer.

13. The system of claim **1**, wherein the reader includes a data management module that is interchangeable.

14. The system of claim **13**, wherein each interchangeable data management module is adapted for receiving tag data from a specific type of tag.

15. The system of claim **1**, wherein:

the tag data includes sign identification data; and

the computer uses the sign identification data to determine whether the sign is in compliance with the advertising program.

16. The system of claim **1**, wherein the tag detects whether the sign is present in a specific location in accordance with the specific advertising program and sends a signal to the reader.

17. The system of claim **1**, wherein the tag is a passive tag that receives energy from a close proximity external source.

18. The system of claim **1**, wherein the sign includes sign identification indicia.

19. The system of claim **18**, wherein the sign identification indicia is selected from the group consisting of magnetic ink, and notch indicia.

20. The system of claim **18**, wherein the sign identification indicia is stored in a EEPROM chip.

21. The system of claim **1**, wherein the tag data includes tag identification data.

22. The system of claim **1**, wherein the tag data includes status, time and date information.

23. The system of claim **1**, wherein the computer determines whether the sign is in a specific location during predetermined time periods in accordance with the advertising program.

24. An RF system for remotely monitoring, without human intervention, compliance with an advertising program comprising signs to be located at a plurality of different facilities by determining the presence of one or more advertising signs at a plurality of predetermined locations, with at least one sign at each facility in the program, comprising:

a tag associated with each advertising sign, the sign being displayed for advertising purposes, and the tag being adapted for RF communication;

at least one RF reader at each facility for receiving tag data from each tag within range of the reader, where the received tag data indicates the identity of and presence of the tag and corresponding sign of the tag in a particular one of the predetermined locations at a facility in the program;

a hub for directly or indirectly receiving tag data from each tag at the facility and for transmitting the tag data to a remotely located computer that receives and analyzes the tag data from the plurality of different facilities to determine the identity of each sign and whether each sign is timely and properly located in each facility and thereby which advertising signs and facilities are in compliance with the advertising programs; and

wherein the tag includes a microcontroller and a power source, the tag awakening periodically to send the tag data to the reader.

25. The system of claim **24**, wherein the contact tag determines whether the sign is present via physical contact with the sign.

26. An RF system for remotely monitoring, without human intervention, compliance with an advertising program comprising signs to be located at a plurality of different facilities by determining the presence of one or more advertising signs at a plurality of predetermined locations, with at least one sign at each facility in the program, comprising:

a tag associated with each advertising sign, the sign being displayed for advertising purposes, and the tag being adapted for RF communication;

at least one RF reader at each facility for receiving tag data from each tag within range of the reader, where the received tag data indicates the identity of and presence of the tag and corresponding sign of the tag in a particular one of the predetermined locations at a facility in the program;

a hub for directly or indirectly receiving tag data from each tag at the facility and for transmitting the tag data

to a remotely located computer that receives and analyzes the tag data from the plurality of different facilities to determine the identity of each sign and whether each sign is timely and properly located in each facility and thereby which advertising signs and facilities are in compliance with the advertising programs; and

wherein the tag is an active tag that uses sleep modes to conserve power.

27. An RF system for remotely monitoring, without human intervention, compliance with an advertising program comprising signs to be located at a plurality of different facilities by determining the presence of one or more advertising signs at a plurality of predetermined locations, with at least one sign at each facility in the program, comprising:

a tag associated with each advertising sign, the sign being displayed for advertising purposes, and the tag being adapted for RF communication;

at least one RF reader at each facility for receiving tag data from each tag within range of the reader, where the received tag data indicates the identity of and presence of the tag and corresponding sign of the tag in a particular one of the predetermined locations at a facility in the program;

a hub for directly or indirectly receiving tag data from each tag at the facility and for transmitting the tag data to a remotely located computer that receives and analyzes the tag data from the plurality of different facilities to determine the identity of each sign and whether each sign is timely and properly located in each facility and thereby which advertising signs and facilities are in compliance with the advertising programs; and

wherein the reader includes a switch for switching the reader between different power conservation modes.

28. An RF system for remotely monitoring, without human intervention, compliance with an advertising program comprising signs to be located at a plurality of different facilities by determining the presence of one or more advertising signs at a plurality of predetermined locations, with at least one sign at each facility in the program, comprising:

a tag associated with each advertising sign, the sign being displayed for advertising purposes, and the tag being adapted for RF communication;

at least one RF reader at each facility for receiving tag data from each tag within range of the reader, where the received tag data indicates the identity of and presence of the tag and corresponding sign of the tag in a particular one of the predetermined locations at a facility in the program;

a hub for directly or indirectly receiving tag data from each tag at the facility and for transmitting the tag data to a remotely located computer that receives and analyzes the tag data from the plurality of different facilities to determine the identity of each sign and whether each sign is timely and properly located in each facility and thereby which advertising signs and facilities are in compliance with the advertising programs; and

wherein the reader periodically awakens to detect the tag data transmitted by the tag.

29. A method of remotely monitoring, without human intervention, compliance with an advertising program by determining the presence of a plurality of advertising signs at predetermined locations at a number of separate facilities where the signs are to be placed, comprising:

associating an RF capable tag with each sign, the tag storing a tag identifier;

using an RF reader at each facility to receive tag data from each tag within range of the reader;

determining from the received tag data identity of and presence of the tag and corresponding advertising sign of the tag in a particular location at one of the facilities in the program;

locating a hub for directly or indirectly receiving tag data from the tag;

receiving and analyzing the tag data from each hub at a location remote from at least one facility to determine the identity of each sign and whether each sign is timely and properly located and the facility where the tag is located and thereby whether each sign and each facility are in compliance with the advertising program; and

fixedly placing the reader within a predetermined distance from the sign or the expected location of the sign.

30. A method of remotely monitoring, without human intervention, compliance with an advertising program by determining the presence of a plurality of advertising signs at predetermined locations at a number of separate facilities where the signs are to be placed, comprising:

associating an RF capable tag with each sign, the tag storing a tag identifier;

using an RF reader at each facility to receive tag data from each tag within range of the reader;

determining from the received tag data identity of and presence of the tag and corresponding advertising sign of the tag in a particular location at one of the facilities in the program;

locating a hub for directly or indirectly receiving tag data from the tag;

receiving and analyzing the tag data from each hub at a location remote from at least one facility to determine the identity of each sign and whether each sign is timely and properly located and the facility where the tag is located and thereby whether each sign and each facility are in compliance with the advertising program;

causing the reader to enter a sleep mode to conserve power; and

awaking the reader periodically to look for a transmission from the tag.

31. A method of remotely monitoring, without human intervention, compliance with an advertising program by determining the presence of a plurality of advertising signs at predetermined locations at a number of separate facilities where the signs are to be placed, comprising:

associating an RF capable tag with each sign, the tag storing a tag identifier;

using an RF reader at each facility to receive tag data from each tag within range of the reader;

determining from the received tag data identity of and presence of the tag and corresponding advertising sign of the tag in a particular location at one of the facilities in the program;

locating a hub for directly or indirectly receiving tag data from the tag;

receiving and analyzing the tag data from each hub at a location remote from at least one facility to determine the identity of each sign and whether each sign is timely and properly located and the facility where the tag is located and thereby whether each sign and each facility are in compliance with the advertising program;

causing the tag to enter a sleep mode to conserve power; and

awakening the tag periodically to transmit tag data.

32. The method of claim 31, wherein the tag data includes tag identification data.

33. A method of remotely monitoring, without human intervention, compliance with an advertising program by determining the presence of a plurality of advertising signs at predetermined locations at a number of separate facilities where the signs are to be placed, comprising:

associating an RF capable tag with each sign, the tag storing a tag identifier;

using an RF reader at each facility to receive tag data from each tag within range of the reader;

determining from the received tag data identity of and presence of the tag and corresponding advertising sign of the tag in a particular location at one of the facilities in the program;

locating a hub for directly or indirectly receiving tag data from the tag;

receiving and analyzing the tag data from each hub at a location remote from at least one facility to determine the identity of each sign and whether each sign is timely and properly located and the facility where the tag is located and thereby whether each sign and each facility are in compliance with the advertising program;

mounting the reader in a fixed location with respect to the sign;

receiving signals from the tag within a predetermined range; and

generating an alert signal if no signals are received from the tag for a specified period, the alert signal indicating that the sign has been moved from the specified location.

34. A system for remotely monitoring compliance with an advertising program without human intervention by determining the presence of a plurality of signs at a predetermined location at a plurality of facilities, comprising:

RF means for wirelessly sending data associated with a sign being displayed for advertising purposes;

receiving means located remotely from the signs for receiving the sir data without transferring data to the RF means; and

analyzing means for directly or indirectly receiving the sign data and analyzing the sign data to determine the identity of the signs and whether the signs are timely and properly located at the various facilities and thereby in compliance with the advertising program.

35. A system for remotely monitoring compliance with an advertising program without human intervention by determining the presence of a plurality of signs at a predetermined location at a plurality of facilities, comprising:

RF means for wirelessly sending data associated with a sign being displayed for advertising purposes;

receiving means located remotely from the signs for receiving the sir data without transferring data to the RF means; and

analyzing means for directly or indirectly receiving the sign data and analyzing the sign data to determine the identity of the signs and whether the signs are timely and properly located at the various facilities and thereby in compliance with the advertising program; and

wherein the sign data includes an identification number.

36. A system for remotely monitoring compliance with an advertising program without human intervention by determining the presence of a plurality of signs at a predetermined location at a plurality of facilities, comprising:

RF means for wirelessly sending data associated with a sign being displayed for advertising purposes;

receiving means located remotely from the signs for receiving the sir data without transferring data to the RF means; and

analyzing means for directly or indirectly receiving the sign data and analyzing the sign data to determine the identity of the signs and whether the signs are timely and properly located at the various facilities and thereby in compliance with the advertising program;

the RF means is a contact tag;

the receiving means is a reader; and

the analyzing means is a computer.

37. A method of remotely monitoring, without human intervention, compliance with an advertising program by determining the presence of a plurality of advertising signs at predetermined locations at a number of separate facilities where the signs are to be placed, comprising:

associating an RF capable tag with each sign, the tag storing a tag identifier;

using an RF reader at each facility to receive tag data from each tag within range of the reader and without transferring data to the tag;

determining from the received tag data identity of and presence of the tag and corresponding advertising sign of the tag in a particular location at one of the facilities in the program;

locating a hub for directly or indirectly receiving tag data from the tag; and

receiving and analyzing the tag data from each hub at a location remote from at least one facility to determine the identity of each sign and whether each sign is timely and properly located and the facility where the tag is located and thereby whether each sign and each facility are in compliance with the advertising program.

38. The method of claim 37 wherein a computer remotely located from all facilities in the program receives and analyzes the tag data.

39. The method of claim 37, further comprising detecting whether the sign is moved from the specified location.

40. The method of claim 37, further including selecting the tag from the group consisting of a contact tag, a passive tag, and an active tag.

41. The method of claim 37, further comprising:

grouping a plurality of signs in a predetermined area of a store;

associating a tag with each sign; and

using at least one reader to receive signals from each of the tags.

42. The method of claim 41, further including locating the reader above the group of signs.

43. The method of claim 37, further including generating a signal when the tag is moved from a predetermined location.

* * * * *

Electronic Patent Application Fee Transmittal

Application Number:	13750970
Filing Date:	25-Jan-2013
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Filer:	Benjamin Withrow/Fran LaFrankie
Attorney Docket Number:	2039-006

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($)
Extension - 5 months with $0 paid	2255	1	1500	1500
Miscellaneous:				
Request for Continued Examination	2801	1	600	600
		Total in USD ($)		**2100**

Electronic Acknowledgement Receipt	
EFS ID:	21270614
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	27820
Filer:	Benjamin Withrow/Fran LaFrankie
Filer Authorized By:	Benjamin Withrow
Attorney Docket Number:	2039-006
Receipt Date:	21-JAN-2015
Filing Date:	25-JAN-2013
Time Stamp:	17:30:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$2100
RAM confirmation Number	4129
Deposit Account	501732
Authorized User	SELBY, MATTHEW
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

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

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

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

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	2039-006_RCE.pdf	697593 c53acd19c0b2e73473ceddb94a1573639f54c982	no	3
Warnings:					
Information:					
2		2039-006_Response_RCE_01-21-15.pdf	10810557 1922b4d6504ef268b63479598d40827eca5dbb60	yes	164

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment Submitted/Entered with Filing of CPA/RCE	1	1
Claims	2	8
Applicant Arguments/Remarks Made in an Amendment	9	164

Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32646 684c768f27649a4eca3a289aa5b600af2e538e22	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	11540796		

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.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/750,970	Filing Date 01/25/2013	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

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

APPLICATION AS AMENDED – PART II

AMENDMENT	01/21/2015	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 33	Minus	** 39	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 4	Minus	***4	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/LAJUAN HICKSON/

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,970	01/25/2013	Peter Zatloukal	2039-006	8778

27820 7590 07/22/2014

WITHROW & TERRANOVA, P.L.L.C.
100 REGENCY FOREST DRIVE
SUITE 160
CARY, NC 27518

EXAMINER	
WALSH, DANIEL I	
ART UNIT	**PAPER NUMBER**
2887	

NOTIFICATION DATE	DELIVERY MODE
07/22/2014	ELECTRONIC

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

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

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@wt-ip.com

Office Action Summary	Application No. 13/750,970	Applicant(s) ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	AIA (First Inventor to File) Status No

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

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on 7-1-14.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

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

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

Disposition of Claims*

5)☒ Claim(s) 61-99 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) 61-99 is/are rejected.

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

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

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

Application Papers

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

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

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

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

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

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

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

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

Claim Rejections - 35 USC § 103

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

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

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

4. Claims 61-68, 69-70, and 72-99 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Zalewski et al. (US 6771981).

Re claim 61, Zalewski et al. teaches receiving by the mobile communicating device, from an RFID reader external to the mobile device, an instruction to output first RFID transponder data in a format compatible with said RFID reader and outputting the RFID transponder data (FIG. 8 which teaches the door lock interrogates cover 100 and cover 100 responds with the code to unlock the door).

Though silent to switching from a first state to a second state wherein the first state the device is configured to output voice call signals and in the second state to output the first RFID transponder data, the Examiner notes that it would have been obvious to switch modes such that the phone is used to open the doors as opposed to voice calls, based on the needs of the user, especially as it appears that the functional use of the device changes from a phone to use as a key, for example. Simply put, the claims do not require that the first and second states are exclusive of each other. Therefore, when the phone is enabled and then when used as an RFID transponder, this is interpreted as first and second states and switching from one (use) to another. The cover can be embedded into the mobile device (col 8, lines 15+). Thus, the Examiner notes that the mobile communications device is interpreted as the phone with the embedded RFID transponder. Thus the change of state can be interpreted as using the mobile device (phone with embedded RFID) in different states. Thus when the mobile device (phone with embedded RFID) receives an instruction for RFID, this is interpreted as switching states (from phone/phone ready state to RFID communicative state). Further, col 10, line 15+ teach the interrogator putting the phone into a passive mode (switch from phone to a tag, such as at fueling or when determined by an application).

Re claim 62, as voice and transponder data are at different frequencies/standards it would have been obvious to switch transmission paths for separate communications. Separating or integration of processing units is a mere issue of separation/integration of parts, which is within the ordinary skill in the art as the general limitations are taught by the prior art.

Re claim 63, 840 include room number, id code, etc. interpreted as a key and an identifier.

Re claim 64, the limitations have been discussed above.

Re claim 65, FIG. 5A+ teaches that the cover can be used for credit transactions. Therefore it would have been obvious to include a credit card identifier or functionally equivalent identifier for such transactions to be processed.

Re claim 66, the use selects the transponder data based on the desired application/usage.

Re claim 67, FIG. 5A+ teaches providing the data to the mobile device, such as by giving the identifier to the phone.

Re claim 68, a signaling attribute is interpreted to include the data.

Re claims 69, 70, 72-99, though silent to explicitly monitoring for RFID signals the Examiner notes that tags can be active or passive, as known in the art. Therefore, it would have been obvious to one of ordinary skill in the art to monitor for a first RFID signal (such as for an active tag) for the expected benefits of active tags (increased distance, for example). Alternatively, a passive RFID tag that is woken up by an interrogation signal can be interpreted as monitoring (waiting for a signal). Further, the use of "joint" storage medium is sufficiently broad to read upon a storage medium that is shared or common and thus without specifying limitations is still read on the claimed limitations.

5. Claims 69-99 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Zalewski et al., as discussed above, in view of Overhultz et al. (US 6837427).

The teachings of Zalewski et al. have been discussed above.

Zalewski et al. is silent to monitoring.

Overhultz et al. teaches such limitations (col 5, liens 40+).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the teachings.

One would have been motivated to do this for efficiency, for reduction in reader complexity, for increased distance, etc.

Re claims 70-71, the limitations have been discussed above wherein the probing is the interrogation signal waking up the mobile device (phone), which is done periodically.

Re claim 72, FIG. 8 shows a wireless mobile phone.

Re claim 73, the limitations have been discussed above.

Re claim 74, probing signals can be monitored from a plurality of readers.

Re claim 75-77 the limitations have been discussed above.

Re claim 78, the tag data is provided to the device as it is communicated from the device.

Re claim 79, it would have been obvious to have a signaling attribute so that the tag data is proper (for example, compatible with the hotel door)

Re claim 80, a phone is discussed above.

Re claim 81-99, the limitations have been discussed above. The probing is interpreted as the interrogator signal.

Additional Remarks

Response to Arguments

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

The Examiner notes that the phone with embedded RFID is interpreted together as the mobile device. The mobile device can change state from a phone operable type state to an RFID state upon receipt of a communication. The claims do not recite exclusivity of the states, either, and thus changing modes (operation) can read on such limitations. Additionally, col 10, line 15+ teach the interrogator putting the phone into a passive mode (switch from phone to a tag). This turns off the phone and switches to RFID only, for example. Further, the Examiner notes that a first state can be a (phone ready) state and the second state can be the RFID state. Further, the Examiner note that a "joint" storage medium is sufficiently broad to be read upon by the prior art.

Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL WALSH whose telephone number is (571)272-2409. The examiner can normally be reached on M-F 9am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Paik can be reached on 571-272-2404. 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.

/DANIEL WALSH/
Primary Examiner, Art Unit 2887

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013	03/24/2014	07/14/2014						
	1	-	-	-						
	2	-	-	-						
	3	-	-	-						
	4	-	-	-						
	5	-	-	-						
	6	-	-	-						
	7	-	-	-						
	8	-	-	-						
	9	-	-	-						
	10	-	-	-						
	11	-	-	-						
	12	-	-	-						
	13	-	-	-						
	14	-	-	-						
	15	-	-	-						
	16	-	-	-						
	17	-	-	-						
	18	-	-	-						
	19	-	-	-						
	20	-	-	-						
	21	-	-	-						
	22	-	-	-						
	23	-	-	-						
	24	-	-	-						
	25	-	-	-						
	26	-	-	-						
	27	-	-	-						
	28	-	-	-						
	29	-	-	-						
	30	-	-	-						
	31	-	-	-						
	32	-	-	-						
	33	-	-	-						
	34	-	-	-						
	35	-	-	-						
	36	-	-	-						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013	03/24/2014	07/14/2014						
	37	-	-	-						
	38	-	-	-						
	39	-	-	-						
	40	-	-	-						
	41	-	-	-						
	42	-	-	-						
	43	-	-	-						
	44	-	-	-						
	45	-	-	-						
	46	-	-	-						
	47	-	-	-						
	48	-	-	-						
	49	-	-	-						
	50	-	-	-						
	51	-	-	-						
	52	-	-	-						
	53	-	-	-						
	54	-	-	-						
	55	-	-	-						
	56	-	-	-						
	57	-	-	-						
	58	-	-	-						
	59	-	-	-						
	60	-	-	-						
	61	✓	✓	✓						
	62	✓	✓	✓						
	63	✓	✓	✓						
	64	✓	✓	✓						
	65	✓	✓	✓						
	66	✓	✓	✓						
	67	✓	✓	✓						
	68	✓	✓	✓						
	69	✓	✓	✓						
	70	✓	✓	✓						
	71	✓	✓	✓						
	72	✓	✓	✓						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013	03/24/2014	07/14/2014						
	73	✓	✓	✓						
	74	✓	✓	✓						
	75	✓	✓	✓						
	76	✓	✓	✓						
	77	✓	✓	✓						
	78	✓	✓	✓						
	79	✓	✓	✓						
	80	✓	✓	✓						
	81	✓	✓	✓						
	82	✓	✓	✓						
	83	✓	✓	✓						
	84	✓	✓	✓						
	85	✓	✓	✓						
	86	✓	✓	✓						
	87	✓	✓	✓						
	88	✓	✓	✓						
	89	✓	✓	✓						
	90	✓	✓	✓						
	91	✓	✓	✓						
	92	✓	✓	✓						
	93	✓	✓	✓						
	94	✓	✓	✓						
	95	✓	✓	✓						
	96	✓	✓	✓						
	97	✓	✓	✓						
	98	✓	✓	✓						
	99	✓	✓	✓						

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
ticle			

SEARCH NOTES		
Search Notes	Date	Examiner
EAST search attached	10-30-13	dw
class 235 455 340 keyword search	10-30-13	dw
reviewed parent searches/actions	10-30-13	dw
reviewd 14097152 14097141 and related apps	3-24-14	dw
Reviewed search	7-14-14	dw

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,970	01/25/2013	Peter Zatloukal	2039-006	8778

27820 7590 07/03/2014

WITHROW & TERRANOVA, P.L.L.C.
100 REGENCY FOREST DRIVE
SUITE 160
CARY, NC 27518

EXAMINER	
WALSH, DANIEL I	
ART UNIT	**PAPER NUMBER**
2887	

NOTIFICATION DATE	DELIVERY MODE
07/03/2014	ELECTRONIC

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

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

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@wt-ip.com

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	13/750,970	ZATLOUKAL ET AL.	
	Examiner	Art Unit	
	DANIEL WALSH	2887	

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

(1) *DANIEL WALSH*. (3)_____.

(2) *Eric Halber*. (4)_____.

Date of Interview: *20 May 2014*.

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

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

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

Claim(s) discussed: *N/A*.

Identification of prior art discussed: *N/A*.

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

Eric Halber and Examiner Walsh discussed the Office Action and potential claim amendments. No agreement on specific claim language was made. .

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

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

☐ Attachment

/DANIEL WALSH/ Primary Examiner, Art Unit 2887	

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

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

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

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

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

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

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

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

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

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

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

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

Examiner to Check for Accuracy

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Peter Zatloukal et al. Examiner: Daniel J. Walsh
Serial No. 13/750,970 Art Unit: 2887
Filed: 01/25/2013
Attorney Docket No. 2039-006
For: **EMULATED RADIO FREQUENCY IDENTIFICATION**

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

RESPONSE TO THE OFFICE ACTION MAILED APRIL 1, 2014

In response to the Non-Final Office Action mailed April 1, 2014, Applicants offer the following amendments and remarks. If any fees are required in association with this response, the Director is hereby authorized to charge them to Deposit Account 50-1732, and to consider this a petition therefor.

Amendments to the Claims are reflected in the Listing of Claims beginning on page 2 of this Response.

Remarks begin on page 9 of this Response.

In the Claims:

1-60. (Cancelled)

61. (Previously Presented) A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising:

receiving, by the mobile communication device, from an RFID reader external to the mobile device, an instruction to output first RFID transponder data in a format compatible with said RFID reader;

switching the mobile communication device from a first state to a second state upon reception of said instruction, the mobile communication device being configured to output voice call signals in the first state and to output the first RFID transponder data in the format compatible with said RFID reader in the second state; and

outputting, by the mobile communication device in the second state, the first RFID transponder data in the format compatible with said RFID reader.

62. (Currently Amended) The method of claim 61, wherein said mobile communication device comprises a first signal processing unit configured to process the voice call signals and a second signal processing unit configured to process RFID signals, said switching comprising coupling the second signal processing unit to a transmission path.

63. (Previously Presented) The method of claim 61, wherein said first RFID transponder data comprises a selected one of a security key and an identifier.

64. (Previously Presented) The method of claim 63, wherein said security key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

65. (Previously Presented) The method of claim 61, wherein said first RFID transponder data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

66. (Currently Amended) The method of claim 61, wherein the method further comprises facilitating [[the]] a user in selecting the first RFID transponder data from a plurality of RFID transponder data using the mobile communication device.

67. (Previously Presented) The method of claim 61, wherein the method further comprises facilitating provision of the first RFID transponder data to the mobile communication device.

68. (Previously Presented) The method of claim 67, wherein said facilitating of the provisioning of the RFID transponder data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID transponder data in the format compatible with said RFID reader.

69. (Previously Presented) The method of claim 61, wherein the method further comprises:

monitoring for proximal presence of the RFID reader by the mobile communication device; and

on detection of the RFID reader by the mobile communication device, outputting, by the mobile communication device in the second state, the first RFID transponder data in the format compatible with said RFID reader, and

wherein the mobile communication device emulates an RFID transponder of a passive type.

70. (Previously Presented) The method of claim 69, wherein said monitoring comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

71. (Currently Amended) The method of claim [[69]] 70, wherein said sensing is performed at regular intervals.

72. (Previously Presented) The method of claim 61, wherein the mobile communication device is a selected one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

73. (Currently Amended) A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising:

monitoring for a proximal presence of a proximal RFID reader external to said mobile communication device by said mobile communication device, the mobile communication device having communication circuitry configured to output, in a first state, RFID transponder data in a format compatible with said RFID reader upon the mobile communication device determining the proximal presence of said RFID reader, and the communication circuitry being also configured to output, in a second state, a voice call signal for transmission at least in part over a wireless network; and

on detection of said RFID reader, outputting, by ~~the~~ a transceiver, the RFID transponder data in [[a]] the format compatible with said RFID reader as a radio frequency signal.

74. (Previously Presented) The method of claim 73, wherein said monitoring comprises sensing for a first probing signal from said RFID reader and sensing for a second probing signal from a different RFID reader.

75. (Previously Presented) The method of claim 73, wherein said data comprises a security key.

76. (Previously Presented) The method of claim 75, wherein said security key comprises a door key.

77. (Previously Presented) The method of claim 76, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

78. (Previously Presented) The method of claim 73, wherein the method further comprises facilitating provision of the RFID transponder data to the mobile communication device.

79. (Currently Amended) The method of claim 78, wherein said facilitating of the provisioning of the RFID transponder data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID transponder data in the format ~~employed by~~ compatible with the RFID reader.

80. (Previously Presented) The method of claim 73, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

81. (Currently Amended) A mobile communication device capable of RFID communication and voice call communication, the mobile communication device comprising:

communication circuitry configured to output voice call signals in a first radio frequency range and to output first RFID transponder data in a second radio frequency range;

a joint storage medium storing the first RFID transponder data and storing instructions for the communication circuitry to:

- monitor for proximal presence of one or more RFID readers external to the mobile communication device; and
- output [[a]] the voice call signal for transmission over a wireless network; and
- output the first RFID transponder data as RFID transponder signals in a format employed by a proximal RFID reader, in response to detection by the mobile communication device of the proximal presence of the one or more RFID readers external to the mobile communication device.

82. (Previously Presented) The device of claim 81, wherein said first RFID transponder data comprises a selected one of a security key and an identifier.

83. (Currently Amended) The device of claim 82, wherein said first RFID transponder data comprises [[a]] the security key, and said security key comprises a door key.

84. (Previously Presented) The device of claim 83, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

85. (Currently Amended) The device of claim 82, wherein said first RFID transponder data comprises [[an]] the identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

86. (Currently Amended) The device of claim 81, wherein the instructions are further designed to facilitate ~~the~~ a user in selecting the first RFID transponder data from a plurality of RFID transponder data.

87. (Previously Presented) The device of claim 81, wherein the instructions are further designed to facilitate provision of the first RFID transponder data to the mobile communication device.

88. (Previously Presented) The device of claim 87, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first RFID transponder data in the form of a radio frequency signal.

89. (Previously Presented) The device of claim 81, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

90. (Currently Amended) The device of claim 81, wherein the first RFID transponder data includes information identifying a user.

91. (Previously Presented) The device of claim 81, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

92. (Currently Amended) A mobile communication device capable of radio frequency identifier (RFID) communication and voice call communication, the mobile communication device comprising:

communication circuitry configured to transmit a voice call signal in a first operational state and a RFID transponder signal in a second operational state;

a storage medium storing first data and instructions for the communication circuitry to selectively

(a) monitor for proximal presence of a proximal RFID reader, and on detection of the proximal RFID reader, output RFID transponder data as an RFID signal in a format employed by the proximal RFID reader, and

(b) transmit [[a]] the voice call signal to ~~another user of~~ another mobile communication device at least in part over a wireless network.

93. (Previously Presented) The device of claim 92, wherein said instructions are further designed to sense for a probing radio frequency signal of the proximal RFID reader.

94. (Previously Presented) The device of claim 92, wherein said RFID transponder data comprises a security key.

95. (Previously Presented) The device of claim 94, wherein said security key comprises a door key.

96. (Previously Presented) The device of claim 95, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

97. (Previously Presented) The device of claim 92, wherein the instructions are further designed to facilitate provision of the RFID transponder data to the mobile communication device.

98. (Previously Presented) The device of claim 97, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the RFID transponder data in the form of a radio frequency signal.

99. (Previously Presented) The device of claim 92, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

REMARKS

Applicants have carefully reviewed the Non-Final Office Action mailed April 1, 2014 (hereinafter "Office Action"), and respectfully request reconsideration of the subject application, particularly in view of the above amendments and the following remarks.

Status of the Claims

Claims 61-89 were previously pending. Claims 1-60 were previously cancelled, and claims 61-99 were added by preliminary amendment. Claims 62, 66, 71, 73, 79, 81, 83, 85, 86, 90, and 92 are hereby amended to clarify the claims. No new matter has been added. No claims have been added or cancelled herein. Accordingly, claims 61-99 remain pending.

Interview Summary

Applicants thank Examiner Walsh for the courtesies extended during the telephonic interview conducted on May 20, 2014 (hereinafter "Interview"). During the Interview, the undersigned and the Examiner discussed proposed claims in view of cited art. No agreement was reached regarding the allowance of the claims.

During the interview, Examiner Walsh mentioned the term "joint storage memory" of amended claim 1, in the context of the term "shared memory" of Zalewski. Examiner suggested using the term "shared memory." At this time, Applicants decline to use the term "shared memory."

The term "joint storage memory" in claim 81 indicates that this joint storage memory is used as described in claim 81. Also see the term "joint RF TX/RX" 402 in Figure 4 of the present application, indicating that this joint RF TX/RX is used for RFID in low frequencies (see element 408) and is used for signals of a voice call in high frequencies (see element 410). Thus, Applicants are using the term "joint" in a consistent fashion in the specification and the claims.

Discussion of Zalewski

U.S. Patent No. 6,771,981 B1 to Zalewski et al. (hereinafter "Zalewski.") is the primary reference used for rejections. Thus, as a preliminary matter, Zalewski is discussed in detail for the convenience of the examiner.

Zalewski has the primary goal of physically separating an RFID keyfob transponder (element 1) from a car key with embedded processor (element 2) on a key ring (element 3). As discussed in Zalewski, when the RFID keyfob transponder (1) is in close proximity to the car key with embedded processor (2), the RFID keyfob transponder (1) causes interference, and may prevent a car associated with the car key with embedded processor (2) from starting. See Figure 1 of Zalewski:

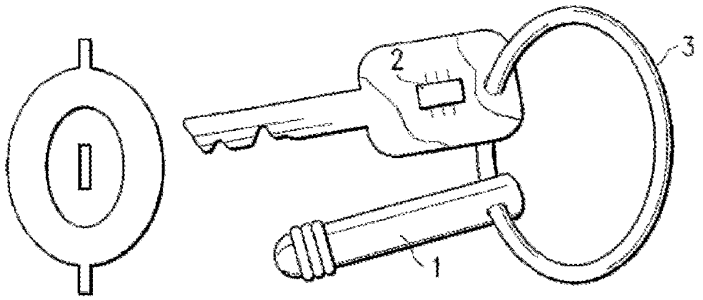


FIG. 1
(PRIOR ART)

FIGURE 1 OF ZALEWSKI

Zalewski solves this prior art interference problem by physically moving the RFID transponder away from the car key. Specifically, Zalewski puts an RFID transponder (element 110) on a changeable cover (element 100) for a mobile station (element 4), as shown in Figure 2B:

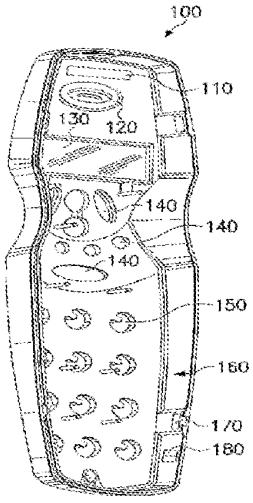


FIG. 2B

FIGURE 2B OF ZALEWSKI

In general, each changeable cover (100) has a unique RFID transponder (110). Thus, a first changeable cover (100) may have a first RFID transponder that acts as a door key. A second (and distinct) changeable cover (100) may have a second RFID transponder that acts as a credit card. For example, Zalewski at column 8, lines 36-39, *"[c]overs 100 are changeable* and thus allow the device on which cover is attached to become an electronic key for e-commerce or mobile (m-commerce) applications such as secure area access, commodity purchasing and the like." (Emphasis added.) In other words, each changeable cover (100) is suited for a specific application, and thus different changeable covers (100) must be physically swapped for different applications.

Importantly, this means that Zalewski does not teach or suggest switching a mobile communication device from a first state in which the mobile communication device is configured to output voice call signals to a second state in which the mobile communication device is configured to output RFID transponder data upon reception of an instruction to output RFID transponder data from an RFID reader external to the mobile communication device, because the RFID tag in Zalewski is separate from the mobile communication device. In fact, Zalewski teaches away from these features, because the primary functionality of the RFID tag and the mobile device are independent of one another.

Rejection Under 35 U.S.C. § 103(a) – Zalewski

Claims 61-70, and 72-99 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,771,981 B1 to Zalewski et al. (hereinafter "Zalewski.") Applicants respectfully traverse. Claims 61, 73, 81, and 92 are independent claims.

When determining whether a claim is obvious, an Examiner must make "a searching comparison of the claimed invention—*including all its limitations*—with the teaching of the prior art." *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis added). Thus, "obviousness requires a suggestion of all limitations in a claim." *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)). Moreover, as the Supreme Court recently stated, "*there must be some articulated reasoning* with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418, 82 U.S.P.Q.2d (BNA) 1385, 1396 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (emphasis added)).

Claim 61 requires switching a mobile communication device from a first state in which the mobile communication device is configured to output voice call signals to a second state in which the mobile communication device is configured to output RFID transponder data upon reception of an instruction to output RFID transponder data from an RFID reader external to the mobile communication device. Zalewski fails to describe these features. As a non-limiting example of the aforementioned features, Figure 4 of the Specification illustrates a transceiver (element 308) with at least two states. See Figure 4 below.

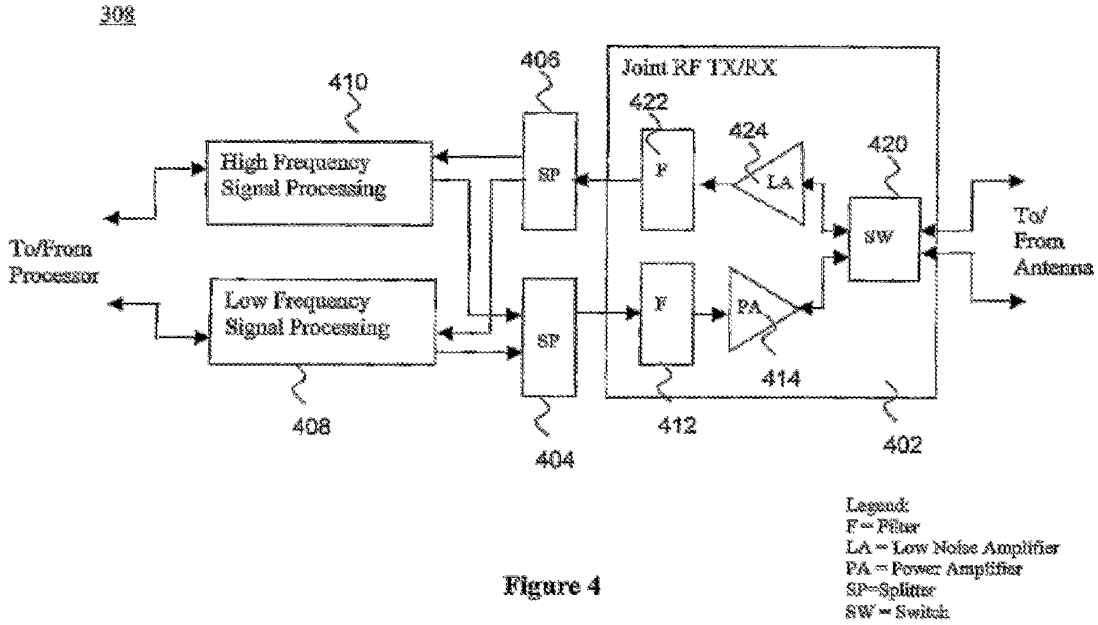


Figure 4

FIGURE 4 OF SPECIFICATION

In a first state, transceiver (308) uses high frequency signal processing (element 410) to process "the transmit and receive signals of a voice call." See 7:13 to 7:14 of U.S. Patent 8,127,984 (the base patent for the present application). In a second state (or mode), transceiver (308) uses low frequency processing (element 408) to process "the transmit and receive signals of the RFID feature…"

In the Office Action mailed April 1, 2014, the Patent Office asserted that "it would have been obvious to switch modes such that the phone is used to open the doors as opposed to voice phone calls, based on the needs of the user, especially as it appears that the functional use of the

device changes from a phone to use as a key, for example." Applicants respectfully disagree. Figure 2B of Zalewski illustrates a changeable cover (100) including an RFID transponder (110). Although the RFID transponder (110) may use a mobile station (4) for one or more enhanced features, the basic functionality of the RFID transponder (110) is substantially independent of any mobile station (4). That is, the RFID transponder (110) described in Zalewski functions independently and continually, regardless of a state change of a mobile station (4) to which it is attached. Accordingly, Applicants respectfully submit that there is nothing in Zalewski to obviate switching modes of a mobile communication device such that the mobile communication device is configured to output voice call signals in a first state and output RFID transponder data in a second state, because Zalewski provides absolutely no rationale for why such a state change should occur.

First, Zalewski does not explicitly teach or suggest changing states (or modes) of a mobile communication device as described in claim 61. That is, Zalewski does not describe a mobile communication device operating in a first state in which the mobile communication device is configured to output voice call signals and a second state in which the mobile communication device is configured to output RFID transponder data. In fact, Zalewski cannot describe switching states of a mobile communication device as described, since Zalewski does not describe a mobile communication device capable of providing RFID transponder data. Instead, Zalewski describes a mobile station (4) capable of producing voice call signals and a separate changeable cover (100) capable of providing RFID transponder data. Because the voice call signals and the RFID transponder data are provided from separate equipment in Zalewski, a state change to output one signal or the other is unnecessary and even nonsensical in this context.

In light of the discussion above, it is clear that Zalewski further fails to provide any rationale as to why changing states (or modes) should occur. Specifically, because Zalewski describes an RFID transponder (110) that functions regardless of whether it is attached to a mobile station (4), Zalewski provides absolutely no reasoning as to why a state (or mode) change between a first state in which a mobile communication device is configured to output voice call signals and a second state in which the mobile communication device is configured to output RFID transponder data is necessary or desirable. Accordingly, one of ordinary skill in the art would not find it obvious to perform such a state change in light of Zalewski. In fact, Applicants

respectfully assert that Zalewski teaches away from performing a state change as described in claim 61, because Zalewski describes independent equipment for performing each function.

During the interview conducted May 20, 2014, Examiner Walsh suggested clarifying that the first and second states are exclusive of each other. Applicants respectfully submit that the disclosed invention emulates an RFID transponder by using a hardware or software portion to switch from a first state (such as using the joint RF TX/RX of Figure 4 to transmit signals of a voice call) to a second state (such as using the joint RF TX/RX of Figure 4 to transmit RFID data). The joint RF TX/RX of Figure 4 cannot simultaneously operate in both of these states. Thus, one of ordinary skill in the art reading the specification and claims would readily understand that the first state is exclusive of the second state, and the second state is exclusive of the first state. Since Zalewski does not describe the aforementioned features, claim 1 is allowable.

Independent claims 73 and 92 are patentable for reasons similar to those discussed above. Additionally, with respect to claim 81, claim 81 requires a joint storage medium storing RFID transponder data and storing instructions for communication circuitry for the communication circuitry to output a voice call and output the RFID transponder data. This "joint storage medium" is illustrated in one embodiment of Figure 1 by the intersection (overlap) of mobile communications HW/SW elements (element 104) with RFID emulation HW/SW elements (element 106).

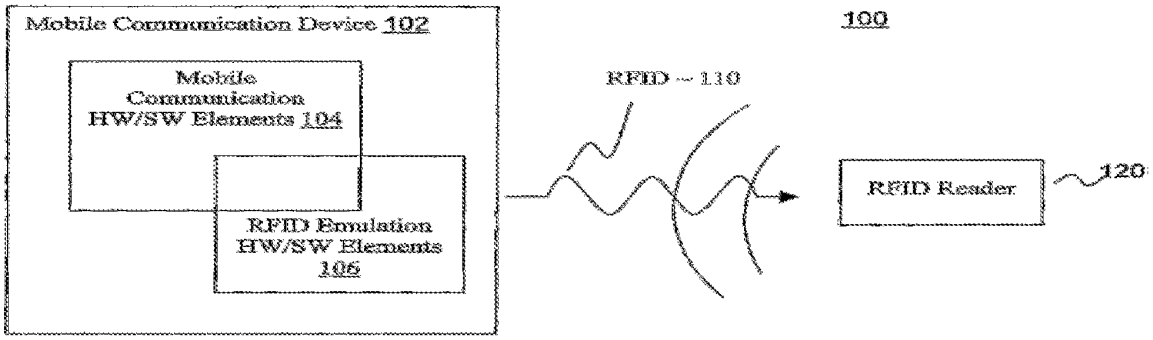


Figure 1

FIGURE 1 OF SPECIFICATION

The term "joint" clarifies that the "joint storage medium" in claim 81 is a hardware element

that is used both for mobile communication (e.g. phone calls) and for RFID emulation. In other words, the joint storage medium is "employed to provide a RFID" and is "employed to facilitate the primary function of device 102, i.e. to facilitate a user in communicating with another user of another communication device," as stated at column 3, lines 42-49 of the Applicants' Specification. For the convenience of the Examiner, citations to the Specification refer to U.S. Patent 8,127,984 (the base patent for the present application).

Alternatively, in a different embodiment, the intersection or overlap of Figure 1 may be a joint RF TX/RX (transmitter/receiver or transceiver) as shown in the joint RF TX/RX (element 402) of Figure 4.

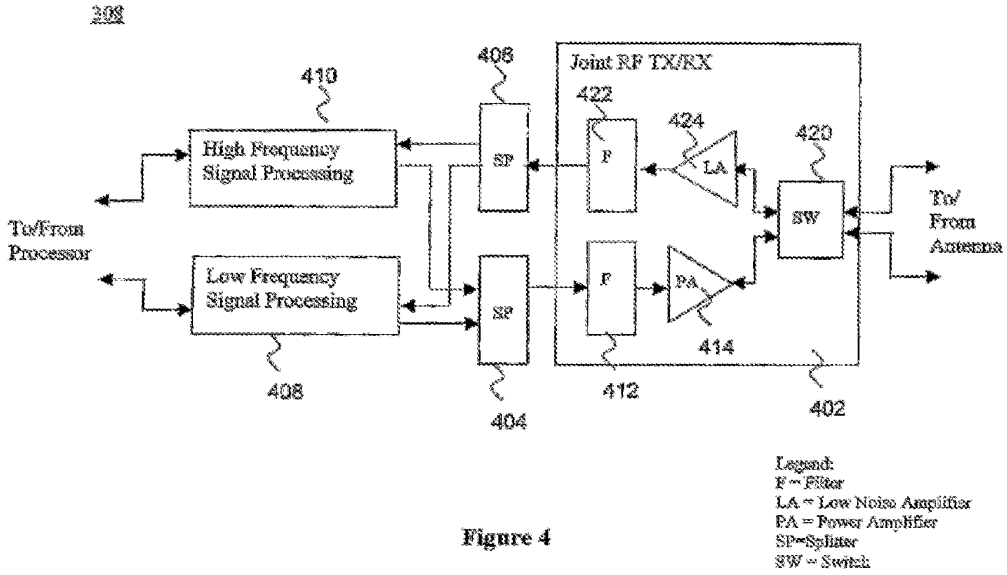


Figure 4

FIGURE 4 OF SPECIFICATION

In claim 81, the joint storage medium is used for storing the data and instructions listed for outputting a voice call signal and for outputting the first RFID transponder data.

In contrast to claim 81, Zalewski merely discloses "shared memory." Applicants respectfully submit that the Zalewski term "shared memory" must be interpreted in context, and does not disclose the "joint storage medium" of claim 81. Specifically, Zalewski, at 8:40-56, states:

> As was described in FIGS. 2A and 2B, contacts 180 allow for electrical signal coupling between an electronic device, such as mobile station 4 in FIG. 2A, and the cover 100. This allows **the cover to share**

> **memory with the electronic device**. In the case of a mobile station, interfacing with the mobile station allows for uploading/downloading of data from wireless networks. Thus "Digital Money" or other equivalents such as digital coupons and the like can be loaded into the phone for use in an exchange using the RFID transponder equipped cover 100. **The transponder may also send a coded signal to the registers of MCU to instruct the mobile station to change to passive mode or even power down.** This is useful in situations where mobile station use is not allowed or may be unsafe. An example would be in a fueling situation as will be described below. Another example would be on an aircraft where use of a mobile station will interfere with the aircraft instruments. (Emphasis added.)

In Zalewski, the term "shared memory" means that the mobile station (phone) is used to obtain data from a wireless network, and then this data is transferred to the changeable cover (100) by electrical signal coupling. The RFID memory of the RFID transponder in Zalewski is distinct and independent from the mobile station memory of the mobile station.

This distinctness of the memories in Zalewski is emphasized by the fact that the RFID transponder of Zalewski can "send a coded signal to the registers of MCU to instruct the mobile station to change to passive mode or even power down. This is useful in situations where mobile station use is not allowed or may be unsafe. An example would be in a fueling situation as will be described below." Thus, Zalewski uses a distinct transponder memory during operation (so that Zalewski can power down the mobile station for safety). Accordingly, the "joint storage medium" of claim 81 is not disclosed by the "shared memory" at 8:42 of Zalewski. Claim 81 is therefore allowable, and such action is respectfully requested.

Dependent claims 62-70, 72, 74-80, 82-91, and 93-99 are patentable for at least the same reasons as their base claims, as well as on their own merits. Accordingly, Applicants respectfully submit that the current rejection should be withdrawn.

Rejection Under 35 U.S.C. § 103(a) – Zalewski and Overhultz

Claims 61-99 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Zalewski in view of U.S. Patent 6,837,427 to Overhultz et al. (hereinafter "Overhultz"). Applicants respectfully traverse. Claims 61, 73, 81, and 92 are independent claims.

When determining whether a claim is obvious, an Examiner must make "a searching comparison of the claimed invention—*including all its limitations*—with the teaching of the prior art." *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis added). Thus,

"obviousness requires a suggestion of all limitations in a claim." *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)). Moreover, as the Supreme Court recently stated, "*there must be some articulated reasoning* with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418, 82 U.S.P.Q.2d (BNA) 1385, 1396 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (emphasis added)).

Independent claims 61, 73, 81, and 92 are patentable over Zalewski for the reasons stated above. Overhultz does not remedy the deficiencies of Zalewski. Thus, these independent claims are patentable over the combination of Zalewski and Overhultz.

Dependent claims 62-72, 74-80, 82-91, and 93-99 are patentable for the same reasons as their base claims, as well as on their own merits. Applicants respectfully submit that this rejection should be withdrawn.

Conclusion

The present application is now in condition for allowance and such action is respectfully requested. The Examiner is encouraged to contact Applicants' representative regarding any remaining issues in an effort to expedite allowance and issuance of the present application.

Respectfully submitted,

WITHROW & TERRANOVA, P.L.L.C.

By: /Matthew Selby/

Matthew J. Selby
Registration No. 70,765
100 Regency Forest Drive, Suite 160
Cary, NC 27518
Telephone: (919) 238-2300

Date: July 1, 2014
Attorney Docket: 2039-006

Electronic Acknowledgement Receipt

EFS ID:	19470492
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	27820
Filer:	Benjamin Withrow/Fran LaFrankie
Filer Authorized By:	Benjamin Withrow
Attorney Docket Number:	2039-006
Receipt Date:	01-JUL-2014
Filing Date:	25-JAN-2013
Time Stamp:	16:53:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2039-006_Response_07-01-14.pdf	484009 820170c3b53948d9daa1da9626d25283cba07f46	yes	17

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	8
	Applicant Arguments/Remarks Made in an Amendment	9	17
Warnings:			
Information:			
	Total Files Size (in bytes):	484009	

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.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/750,970	Filing Date 01/25/2013	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

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

APPLICATION AS AMENDED – PART II

AMENDMENT	07/01/2014	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 39	Minus	** 39	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 4	Minus	***4	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/BURNELL L. ROSS/

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/750,970	01/25/2013	Peter Zatloukal	120083-187945

CONFIRMATION NO. 8778

27820
WITHROW & TERRANOVA, P.L.L.C.
100 REGENCY FOREST DRIVE
SUITE 160
CARY, NC 27518

POA ACCEPTANCE LETTER

OC000000068899729

Date Mailed: 06/13/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/03/2014.

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

/ttkim/

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/750,970	01/25/2013	Peter Zatloukal	120083-187945

CONFIRMATION NO. 8778

25943
Schwabe Williamson & Wyatt
PACWEST CENTER, SUITE 1900
1211 SW FIFTH AVENUE
PORTLAND, OR 97204

POWER OF ATTORNEY NOTICE

OC000000068899720

Date Mailed: 06/13/2014

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/03/2014.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/ttkim/

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

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 11/30/2014. 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 displays a valid OMB control number

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
13/750,970	January 25, 2013

(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: 27820

OR

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

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

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

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):

Varia Holdings 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)	
Name	Michael Jemal		
Title	President, Varia Holdings LLC		

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

☐ Total of forms are submitted.

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

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

Electronic Acknowledgement Receipt	
EFS ID:	19201975
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	25943
Filer:	Benjamin Withrow/Ashley Edwards
Filer Authorized By:	Benjamin Withrow
Attorney Docket Number:	120083-187945
Receipt Date:	03-JUN-2014
Filing Date:	25-JAN-2013
Time Stamp:	18:13:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73.	2039-006_Statement_Under_3-73c.PDF	124140 e3c57ed16d632261b3635dca13d6083595464567	no	3

Warnings:
Information:

2	Power of Attorney	2039-006_Executed_POA.pdf	2734756 d2eaba0744707844fc2797df8f2e562f7682ea6a	no	1

Warnings:	
Information:	
Total Files Size (in bytes):	2858896

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.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office;U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of1995, no persons arerequired to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Peter Zatloukal

Application No./Patent No.: 13/750,970 Filed/Issue Date: January 25, 2013

Titled: EMULATED RADIO FREQUENCY IDENTIFICATION

Varia Holdings LLC, a limited liability company

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

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

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

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

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

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

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

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

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Peter Zatloukal To: WILDSEED LTD.

The document was recorded in the United States Patent and Trademark Office at
Reel 015680, Frame 0311, or for which a copy thereof is attached.

2. From: WILDSEED LTD. To: WILDSEED LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 021316, Frame 0357, or for which a copy thereof is attached.

This collection of information is required by37 CFR3.73(b). The information is required toobtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentialityis governed by35 U.S.C. 122and 37 CFR1.11 and1.14. Thiscollection is estimated to take 12 minutes to complete, including gathering, preparing, and submittingthe 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 tothe 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.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. 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 displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: WILDSEED LLC To: VARIA MOBIL LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 021316, Frame 0405, or for which a copy thereof is attached.

4. From: VARIA MOBIL LLC To: VARIA HOLDINGS LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 021316, Frame 0437, or for which a copy thereof is attached.

5. From: VARIA HOLDINGS LLC To: VARIA LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 021330, Frame 0233, or for which a copy thereof is attached.

6. From: VARIA LLC To: VARIA HOLDINGS LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 023928, Frame 0756, or for which a copy thereof is attached.

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

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

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

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

/Ed Garcia-Otero/	June 3, 2014
Signature	Date
Ed Garcia-Otero	56,609
Printed or Typed Name	Title or Registration Number

[Page 2 of 2]

Privacy Act Statement

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the informationin 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 InternationalApplication 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, arecord may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from thissystem 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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,970	01/25/2013	Peter Zatloukal	120083-187945	8778

25943 7590 04/01/2014

Schwabe Williamson & Wyatt
PACWEST CENTER, SUITE 1900
1211 SW FIFTH AVENUE
PORTLAND, OR 97204

EXAMINER	
WALSH, DANIEL I	
ART UNIT	**PAPER NUMBER**
2887	

MAIL DATE	DELIVERY MODE
04/01/2014	PAPER

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

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

Office Action Summary	Application No. 13/750,970	Applicant(s) ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	AIA (First Inventor to File) Status No

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

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on *1-30-14*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

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

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

Disposition of Claims*

5)☒ Claim(s) *61-99* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *61-99* is/are rejected.

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

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

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

Application Papers

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

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

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

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

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

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

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

Claim Rejections - 35 USC § 103

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

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

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

4. Claims 61-68, 69-70, and 72-99 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Zalewski et al. (US 6771981).

Re claim 61, Zalewski et al. teaches receiving by the mobile communicating device, from an RFID reader external to the mobile device, an instruction to output first RFID transponder data in a format compatible with said RFID reader and outputting the RFID transponder data (FIG. 8 which teaches the door lock interrogates cover 100 and cover 100 responds with the code to unlock the door).

Though silent to switching from a first state to a second state wherein the first state the device is configured to output voice call signals and in the second state to output the first RFID transponder data, the Examiner notes that it would have been obvious to switch modes such that the phone is used to open the doors as opposed to voice calls, based on the needs of the user, especially as it appears that the functional use of the device changes from a phone to use as a key, for example.

Re claim 62, as voice and transponder data are at different frequencies/standards it would have been obvious to switch transmission paths for separate communications. Separating or integration of processing units is a mere issue of separation/integration of parts, which is within the ordinary skill in the art as the general limitations are taught by the prior art.

Re claim 63, 840 include room number, id code, etc. interpreted as a key and an identifier.

Re claim 64, the limitations have been discussed above.

Re claim 65, FIG. 5A+ teaches that the cover can be used for credit transactions. Therefore it would have been obvious to include a credit card identifier or functionally equivalent identifier for such transactions to be processed.

Re claim 66, the use selects the transponder data based on the desired application/usage.

Re claim 67, FIG. 5A+ teaches providing the data to the mobile device, such as by giving the identifier to the phone.

Re claim 68, a signaling attribute is interpreted to include the data.

Re claims 69, 70, 72-99, though silent to explicitly monitoring for RFID signals the Examiner notes that tags can be active or passive, as known in the art. Therefore, it would have been obvious to one of ordinary skill in the art to monitor for a first RFID signal (such as for an active tag) for the expected benefits of active tags (increased distance, for example). Alternatively, a passive RFID tag that is woken up by an interrogation signal can be interpreted as monitoring (waiting for a signal).

5. Claims 69-99 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Zalewski et al., as discussed above, in view of Overhultz et al. (US 6837427).

The teachings of Zalewski et al. have been discussed above.

Zalewski et al. is silent to monitoring.

Overhultz et al. teaches such limitations (col 5, liens 40+).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the teachings.

One would have been motivated to do this for efficiency, for reduction in reader complexity, for increased distance, etc.

Re claims 70-71, the limitations have been discussed above wherein the probing is the interrogation signal waking up the mobile device (phone), which is done periodically.

Re claim 72, FIG. 8 shows a wireless mobile phone.

Re claim 73, the limitations have been discussed above.

Re claim 74, probing signals can be monitored from a plurality of readers.

Re claim 75-77 the limitations have been discussed above.

Re claim 78, the tag data is provided to the device as it is communicated from the device.

Re claim 79, it would have been obvios to have a signaling attribute so that the tag data is proper (for example, compatible with the hotel door)

Re claim 80, a phone is discussed above.

Re claim 81-99, the limitations have been discussed above. The probing is interpreted as the interrogator signal.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL WALSH whose telephone number is (571)272-2409. The examiner can normally be reached on M-F 9am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Paik can be reached on 571-272-2404. 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.

/DANIEL WALSH/
Primary Examiner, Art Unit 2887

Notice of References Cited	Application/Control No. 13/750,970	Applicant(s)/Patent Under Reexamination ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	Page 1 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,590,038 A	12-1996	Pitroda, Satyan G.	705/41
*	B	US-6,112,984 A	09-2000	Snavely, John D.	235/379
*	C	US-6,434,395 B1	08-2002	Lubin et al.	455/466
*	D	US-2002/0171534 A1	11-2002	ASHWIN, TERRENCE KEITH	340/10.3
*	E	US-2003/0155416 A1	08-2003	Macklin et al.	235/380
*	F	US-2004/0030601 A1	02-2004	Pond et al.	705/16
*	G	US-2004/0077313 A1	04-2004	Oba et al.	455/041.2
*	H	US-2004/0067778 A1	04-2004	Sata et al.	455/566
*	I	US-2004/0127256 A1	07-2004	Goldthwaite et al.	455/558
*	J	US-6,771,981 B1	08-2004	Zalewski et al.	455/557
*	K	US-2004/0255138 A1	12-2004	Nakae, Masayuki	713/193
*	L	US-6,837,427 B2	01-2005	Overhultz et al.	235/382
*	M	US-2005/0040951 A1	02-2005	Zalewski et al.	340/572.1

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Notice of References Cited	Application/Control No. 13/750,970	Applicant(s)/Patent Under Reexamination ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	Page 2 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2005/0085226 A1	04-2005	Zalewski et al.	455/426.1
*	B	US-2005/0171898 A1	08-2005	Bishop et al.	705/039
*	C	US-2006/0111053 A1	05-2006	Wu et al.	455/090.3
*	D	US-2006/0237528 A1	10-2006	Bishop et al.	235/380
*	E	US-7,155,411 B1	12-2006	Blinn et al.	705/40
*	F	US-2007/0138299 A1	06-2007	Mitra, Twisampati	235/492
*	G	US-2007/0262134 A1	11-2007	Humphrey et al.	235/379
*	H	US-2008/0027815 A1	01-2008	Johnson et al.	705/17
*	I	US-2008/0057876 A1	03-2008	Hsia et al.	455/69
*	J	US-2008/0059374 A1	03-2008	Gangi, Frank J.	705/041
*	K	US-2008/0078831 A1	04-2008	JOHNSON et al.	235/380
*	L	US-2008/0143487 A1	06-2008	Hulvey, Robert William	340/10.34
*	M	US-2009/0221232 A1	09-2009	Estevez et al.	455/41.1

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Notice of References Cited	Application/Control No. 13/750,970	Applicant(s)/Patent Under Reexamination ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	Page 3 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2009/0243810 A1	10-2009	Pendlebury et al.	340/10.4
*	B	US-2010/0001838 A1	01-2010	Miodownik et al.	340/10.1
*	C	US-2010/0026454 A1	02-2010	Rowse et al.	340/10.1
*	D	US-2010/0217707 A1	08-2010	Phillips, Simon	705/41
*	E	US-2012/0133483 A1	05-2012	Zatloukal et al.	340/5.7
*	F	US-2012/0150601 A1	06-2012	Fisher, Michelle	705/14.23
*	G	US-8,260,199 B2	09-2012	Kowalski, Jacek	455/41.1
*	H	US-8,321,346 B2	11-2012	Celi et al.	705/43
*	I	US-2013/0178159 A1	07-2013	Xie et al.	455/41.1
*	J	US-8,618,913 B1	12-2013	Bailey et al.	340/10.1
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L3	1	"6771981".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/24 16:43
L4	1	"6837427".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/24 16:54
S1	85	("20020081987" | "20020123325" | "20020160775" | "20030069048" | "20030114186" | "20030158785" | "20040069852" | "20040077352" | "20040087273" | "20040093274" | "20040127256" | "20040171373" | "20040204038" | "20040248616" | "20040263319" | "20050127156" | "20050184856" | "20060003772" | "20060017544" | "20060022802" | "20060044111" | "20060052055" | "20060097848" | "20060111053" | "20060116127" | "20060237528" | "20060280149" | "20070030124" | "20070032261" | "20070037605" | "20070060212" | "20070066278" | "20070120679" | "20070159330" | "20070178935" | "20070197261" | "20070263595" | "20070274242" | "20070286171" | "20070293202" | "20080018433" | "20080057876" | "20080146167" | "20090058652" | "20090090783" | "20090143013" | "20090170519" | "20090209283" | "20090221232" | "20090243810" | "20090291634" | "20100026454" | "20100137024" | "20100158077" | "20100239079" | "20110021246" | "20120133483" | "4119800" | "5448620" | "5473318" | "5530702" | "5793843" | "5957995" | "6026308" | "6032054" | "6164551" | "6167128" | "6314281" | "6359866" | "6421347" | "6434395" | "6476708" | "6771981" | "7110792" | "7245997" | "7280810" | "7283044" | "7324476" | "7375616" | "7440743" | "7502615" | "7605701" | "8127984" | "8381974" | "8519847").PN.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 11:13
S2	74	(RFID or transponder or "radio frequency") with (emulat$4) with card with credit	US-PGPUB; USPAT; EPO;	OR	ON	2014/03/10 13:50

			JPO			
S3	8	(RFID or transponder or "radio frequency") with (emulat$4) with card with credit same (telephone or phone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:46
S4	170	(RFID or transponder or "radio frequency") with (pick$4 or choos$4 or select$4) with (list$3) same (telephone or phone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:48
S5	24	(RFID or transponder or "radio frequency") with (pick$4 or choos$4 or select$4) with (list$3) with (card or account)same (telephone or phone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:48
S6	24	(telephone or phone or voice) same (RFID or transponder or "radio frequency") with (pick$4 or choos$4 or select$4) with (list$3) with (card or account)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:52
S7	395	(telephone or phone or voice) same (RFID or transponder or "radio frequency") with (pick$4 or choos$4 or select$4 or list$3) with (card or account or name)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:52
S8	106	S7 and ("235"/$.ccls. "340"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:52
S9	170	S7 and ("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 14:52
S10	372	(telephone or phone or voice) same (RFID or transponder or "radio frequency") same (pick$4 or choos$4 or select$4 or list$3) with (card or account or name) with (screen or display$3)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 15:16
S11	84	S10 and ("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 15:16
S12	3621	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone) same (select$4 or pick$4 or choos$4 or list$4) with (card or account or payment) same (select$4 or pick$4 or choos$3) near3 (account or payment)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 15:50
S13	152	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone) same (select$4 or pick$4 or choos$4 or list$4) with (card or account or payment) same (select$4 or pick$4 or choos$3) near3 (account or payment) same (rfid or transponder or "radio frequency" or fob)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/10 15:51

S14	877	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone) same (select$4 or pick$4 or choos$4 or list$4) with (card or account or payment or credit or account or payment) same (rfid or transponder or "radio frequency" or fob or nfc or "near field")	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 11:16
S15	547	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone) same (select$4 or pick$4 or choos$4 or list$4) with (card or account or payment or credit or account or payment or name) same (rfid or transponder or "radio frequency" or fob or nfc or "near field") same (payment or transaction)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 11:18
S16	187	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone) with (select$4 or pick$4 or choos$4 or list$4) with (card or account or payment or credit) same (rfid or transponder or "radio frequency" or fob or nfc or "near field") same (payment or transaction)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 11:42
S17	1	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone) with (select$4 or pick$4 or choos$4 or list$4) with (card or account or payment or credit or name) with list$3 same (rfid or transponder or "radio frequency" or fob or nfc or "near field") same (emulat$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 11:50
S18	0	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone or mobile) with (select$4 or pick$4 or choos$4 or list$4) near5 (card or account or payment or credit or name) with (multiple or plurality or list$3) same (rfid or transponder or "radio frequency" or fob or nfc or "near field") same (emulat$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 11:52
S19	19	("705"/$.ccls. "455"/$.ccls. "235"/$.ccls. "340"/$.ccls.) and (pda or telephone or voice or phone or mobile) with (activat$4 or emulat$4 or select$4 or pick$4 or choos$4 or list$4) with (card or account or payment or credit or name or key or entry or entrance or garage or office or car or automobile or key or door ro license or ssn or "social security") with (multiple or plurality or list$3) same (rfid or transponder or "radio frequency" or fob or nfc or "near field") same (emulat$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 11:55
S20	1	"20030208438".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:09
S21	162	10/340,352	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:11
S22	0	"screen shot 1100" and berardi.in.	US-	OR	ON	2014/03/11

			PGPUB; USPAT; EPO; JPO			12:14
S23	8	"screen shot 1100" and bishop.in.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:14
S24	798	(phone or telephone or mobile) with (nfc or rfid or "radio frequency" or transponder or tag) with (select$4 or pick$4 or choos$4 or emulat$4) with (account or card or name or key or credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:17
S25	563	S24 and ("340"/$.ccls. "455"/$.ccls. "235"/$.ccls. "705"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:18
S26	188	(phone or telephone or mobile) near3 (nfc or rfid or "radio frequency" or transponder) with (select$4 or pick$4 or choos$4 or emulat$4) with (account or card or name or key or credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:28
S27	147	S26 and ("340"/$.ccls. "455"/$.ccls. "235"/$.ccls. "705"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:28
S28	599	(phone or telephone or mobile) with (nfc or rfid or "radio frequency" or transponder) with (select$4 or pick$4 or choos$4 or emulat$4 or display$3) near4 (account or card or name or key or credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:36
S29	403	S28 and ("340"/$.ccls. "455"/$.ccls. "235"/$.ccls. "705"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:37
S30	68836	(phone or telephone or mobile) with (nfc or rfid or "radio frequency" or transponder)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:42
S31	47532	(phone or telephone or voice) with (nfc or rfid or "radio frequency" or transponder)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:42
S32	1726	(phone or telephone or voice) with (nfc or rfid or "radio frequency" or transponder) same (display$4 or screen$4) with (account or name or card or key or door)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:43
S33	2364	(phone or telephone or voice) with (nfc or rfid or "radio frequency" or transponder) same (display$4 or screen$4 or select$4 or emulat$4) with (account or name or card or key or door)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:43
S34	1342	S33 and ("340"/$.ccls. "455"/$.ccls.	US-	OR	ON	2014/03/11

		"235"/$.ccls. "705"/$.ccls.)	PGPUB; USPAT; EPO; JPO			12:43
S35	160	(phone or telephone or voice) with (nfc or rfid or "radio frequency" or transponder) same (display$4 or screen$4 or select$4) with (account or name or card or key or door) with (emulat$4 or mimic$4 or function$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:44
S36	115	S35 and ("340"/$.ccls. "455"/$.ccls. "235"/$.ccls. "705"/$.ccls.)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 12:44
S37	3408	electronic adj wallet	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 14:47
S38	41	S37 and default adj account	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 14:47
S39	5	wallet with (select$4 or pick$3) near3 (default) adj (card or credit or account)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 14:54
S40	223	(select$4 or pick$3) near3 (default) adj (card or credit or account)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 14:54
S41	51	pitroda.in. and default	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:04
S42	4	pitroda.in. and default adj account	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:04
S43	42	(digital or electronic) adj wallet and (set$4 or select$4 or pick$4) with (default) adj (card or account)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:05
S44	133	(set$4 or select$4 or pick$4) with (default) adj (card or account) same (mobile or portable or handheld)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:12
S45	142	(set$4 or select$4 or pick$4) with (default) adj (card or account) same (mobile or portable or handheld or phone or rfid or smartcard)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:15

S46	3	(predetermined adj interval) same (electronic adj wallet or digital adj wallet)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:32
S47	29	(interval) same (electronic adj wallet or digital adj wallet)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:32
S48	18	(interval) near3 time same (electronic adj wallet or digital adj wallet)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:33
S49	0	14/097,141	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:34
S50	59	wallet with (communicat$4 or transmit$4 or send$4) with predetermin$5	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:44
S51	22	wallet with (communicat$4 or transmit$4 or send$4) with predetermin$5 near3 (tim$3 or interval)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:47
S52	22	wallet with (communicat$4 or transmit$4 or send$4) with predetermin$5 near3 (times or intervals)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 15:55
S53	788	RFID with predetermined adj (time or interval)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:13
S54	6	RFID with predetermined adj (time or interval) same (credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:13
S55	1402	(\wallet or rfid or smartcard or tag) with (time or interval) same (credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:15
S56	1402	(wallet or rfid or smartcard or tag) with (time or interval) same (credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:15
S57	0	(wallet or rfid or smartcard or tag) with (time or interval) adj predetermined same (credit or debit) with (repeat$4 or retry$3)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:18

S58	1	(wallet or rfid or smartcard or tag) with (time or interval) adj predetermined same (credit or debit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:18
S59	283	rfid with tag with (signal$4 or output$4) with (predetermined) near3 (time or interval or timing)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:30
S60	182	rfid with tag with (signal$4 or output$4) with (predetermined) near3 (time or interval or timing) with (transmit$4 or send$3)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:33
S61	10	rfid with tag with (signal$4 or output$4) with (predetermined) near3 (time) adj interval with (transmit$4 or send$3)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:43
S62	19	rfid with (signal$4 or output$4) with (predetermined) near3 (time) adj interval with (transmit$4 or send$3)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:44
S63	177	("radio frequency" or rfid) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) near3 (time) adj interval	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:46
S64	1	("radio frequency" or rfid) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) near3 (time) adj interval same (account or card or credit)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:57
S65	40	("radio frequency" or rfid) with (tag or emualt$4) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) near3 (time) adj interval	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 17:58
S66	0	("radio frequency" or rfid) with (credit or debit) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) near3 (time) adj interval	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 18:03
S67	0	("radio frequency" or rfid) with (credit or debit or account) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) near3 (time) adj interval	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 18:03
S68	1	("radio frequency" or rfid or transponder) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) near3 (time) adj interval same (credit or debit or account)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 18:04
S69	0	("radio frequency" or rfid or transponder) with (signal$4 or output$4 or send$4 or transmit$4) with (predetermined) adj (time) adj interval same (credit or debit or account)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 18:04

S70	0	"83231346".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 23:41
S71	307429	celi, jr.in.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 23:41
S72	51	"celi, jr".in.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 23:42
S73	3	RFID with (credit or debit) with account same (periodic or predetermined) near3 time adj interval with (communicat$3 or transmit$4 or send$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 23:50
S74	4	(fob or transponder or RFID or "radio frequency") with (credit or debit or account) same (periodic or predetermined) near3 time adj interval with (communicat$3 or transmit$4 or send$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/03/11 23:53

3/24/2014 5:23:17 PM
C:\Users\dwalsh1\Documents\EAST\Workspaces\East Searches\13750970_3.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
EAST search attached	10-30-13	dw
class 235 455 340 keyword search	10-30-13	dw
reviewed parent searches/actions	10-30-13	dw
reviewd 14097152 14097141 and related apps	3-24-14	dw

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

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013	03/24/2014							
	1	-	-							
	2	-	-							
	3	-	-							
	4	-	-							
	5	-	-							
	6	-	-							
	7	-	-							
	8	-	-							
	9	-	-							
	10	-	-							
	11	-	-							
	12	-	-							
	13	-	-							
	14	-	-							
	15	-	-							
	16	-	-							
	17	-	-							
	18	-	-							
	19	-	-							
	20	-	-							
	21	-	-							
	22	-	-							
	23	-	-							
	24	-	-							
	25	-	-							
	26	-	-							
	27	-	-							
	28	-	-							
	29	-	-							
	30	-	-							
	31	-	-							
	32	-	-							
	33	-	-							
	34	-	-							
	35	-	-							
	36	-	-							

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013	03/24/2014							
	37	-	-							
	38	-	-							
	39	-	-							
	40	-	-							
	41	-	-							
	42	-	-							
	43	-	-							
	44	-	-							
	45	-	-							
	46	-	-							
	47	-	-							
	48	-	-							
	49	-	-							
	50	-	-							
	51	-	-							
	52	-	-							
	53	-	-							
	54	-	-							
	55	-	-							
	56	-	-							
	57	-	-							
	58	-	-							
	59	-	-							
	60	-	-							
	61	✓	✓							
	62	✓	✓							
	63	✓	✓							
	64	✓	✓							
	65	✓	✓							
	66	✓	✓							
	67	✓	✓							
	68	✓	✓							
	69	✓	✓							
	70	✓	✓							
	71	✓	✓							
	72	✓	✓							

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013	03/24/2014							
	73	✓	✓							
	74	✓	✓							
	75	✓	✓							
	76	✓	✓							
	77	✓	✓							
	78	✓	✓							
	79	✓	✓							
	80	✓	✓							
	81	✓	✓							
	82	✓	✓							
	83	✓	✓							
	84	✓	✓							
	85	✓	✓							
	86	✓	✓							
	87	✓	✓							
	88	✓	✓							
	89	✓	✓							
	90	✓	✓							
	91	✓	✓							
	92	✓	✓							
	93	✓	✓							
	94	✓	✓							
	95	✓	✓							
	96	✓	✓							
	97	✓	✓							
	98	✓	✓							
	99	✓	✓							

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	13750970
Filing Date	25-Jan-2013
First Named Inventor	Peter Zatloukal
Attorney Docket Number	120083-187945
Title of Invention	EMULATED RADIO FREQUENCY IDENTIFICATION

☒ 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
Varia Holdings 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)

8127984

8381974

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 65369 ○ 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	/Ryan C. Fox-Lee/
Name	Ryan C. Fox-Lee

*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:	13750970
Filing Date:	25-Jan-2013
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Filer:	Ryan C. Fox-Lee/Enoy Lawless
Attorney Docket Number:	120083-187945

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Statutory or Terminal Disclaimer	1814	1	160	160
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($)
Miscellaneous:				
			Total in USD ($)	**160**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 13750970

Filing Date: 25-Jan-2013

Applicant/Patent under Reexamination: Zatloukal et al.

Electronic Terminal Disclaimer filed on January 30, 2014

☒ 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:	18075497
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	25943
Filer:	Ryan C. Fox-Lee/Enoy Lawless
Filer Authorized By:	Ryan C. Fox-Lee
Attorney Docket Number:	120083-187945
Receipt Date:	30-JAN-2014
Filing Date:	25-JAN-2013
Time Stamp:	19:12:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$160
RAM confirmation Number	5623
Deposit Account	500393
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

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

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

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

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Electronic Terminal Disclaimer-Filed	eTerminal-Disclaimer.pdf	33605 bea13047054835ab7195b29d96aef209be13b1e7	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30231 1cb60e0681ee66d41fe051cefe0aefa33419b78d	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	63836		

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Peter Zatloukal

Application No.: 13/750,970

Filed: January 25, 2013

For: EMULATED RADIO FREQUENCY IDENTIFICATION

Examiner: Daniel I. Walsh

Group Art Unit: 2887

Confirmation No.: 8778

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

RESPONSE

To the Commissioner of Patents:

This communication is submitted in response to the non-final Office Action (the "Action") mailed November 1, 2013. Reconsideration of the above-identified application is respectfully requested in view of the following remarks.

The listing of claims begins on page **2** of this paper.

Remarks/Arguments begin on page **9** of this paper.

Listing of the Claims:

1-60. (Cancelled)

61. (Previously Presented) A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising:
receiving, by the mobile communication device, from an RFID reader external to the mobile device, an instruction to output first RFID transponder data in a format compatible with said RFID reader;
switching the mobile communication device from a first state to a second state upon reception of said instruction, the mobile communication device being configured to output voice call signals in the first state and to output the first RFID transponder data in the format compatible with said RFID reader in the second state; and
outputting, by the mobile communication device in the second state, the first RFID transponder data in the format compatible with said RFID reader.

62. (Previously Presented) The method of claim 61, wherein said mobile communication device comprises a first signal processing unit configured to process voice call signals and a second signal processing unit configured to process RFID signals, said switching comprising coupling the second signal processing unit to a transmission path.

63. (Previously Presented) The method of claim 61, wherein said first RFID transponder data comprises a selected one of a security key and an identifier.

64. (Previously Presented) The method of claim 63, wherein said security key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

65. (Previously Presented) The method of claim 61, wherein said first RFID transponder data comprises an identifier, and said identifier comprises a selected one of a social security

number, a driver's license number, an affinity program account number, and a credit card number.

66. (Previously Presented) . The method of claim 61, wherein the method further comprises facilitating the user in selecting the first RFID transponder data from a plurality of RFID transponder data using the mobile communication device.

67. (Previously Presented) The method of claim 61, wherein the method further comprises facilitating provision of the first RFID transponder data to the mobile communication device.

68. (Previously Presented) The method of claim 67, wherein said facilitating of the provisioning of the RFID transponder data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID transponder data in the format compatible with said RFID reader.

69. (Previously Presented) The method of claim 61, wherein the method further comprises:
monitoring for proximal presence of the RFID reader by the mobile communication device; and
on detection of the RFID reader by the mobile communication device, outputting, by the mobile communication device in the second state, the first RFID transponder data in the format compatible with said RFID reader, and
wherein the mobile communication device emulates an RFID transponder of a passive type.

70. (Previously Presented) The method of claim 69, wherein said monitoring comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

71. (Previously Presented) The method of claim 69, wherein said sensing is performed at regular intervals.

72. (Previously Presented) The method of claim 61, wherein the mobile communication device is a selected one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

73. (Previously Presented) A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising:
monitoring for a proximal presence of a proximal RFID reader external to said mobile communication device by said mobile communication device, the mobile communication device having communication circuitry configured to output, in a first state, RFID transponder data in a format compatible with said RFID reader upon the mobile communication device determining the proximal presence of said RFID reader, and the communication circuitry being also configured to output, in a second state, a voice call signal for transmission at least in part over a wireless network; and
on detection of said RFID reader, outputting, by the transceiver, the RFID transponder data in a format compatible with said RFID reader as a radio frequency signal.

74. (Previously Presented) The method of claim 73, wherein said monitoring comprises sensing for a first probing signal from said RFID reader and sensing for a second probing signal from a different RFID reader.

75. (Previously Presented) The method of claim 73, wherein said data comprises a security key.

76. (Previously Presented) The method of claim 75, wherein said security key comprises a door key.

77. (Previously Presented) The method of claim 76, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

78. (Previously Presented) The method of claim 73, wherein the method further comprises facilitating provision of the RFID transponder data to the mobile communication device.

79. (Previously Presented) The method of claim 78, wherein said facilitating of the provisioning of the RFID transponder data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID transponder data in the format employed by the RFID reader.

80. (Previously Presented) The method of claim 73, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

81. (Previously Presented) A mobile communication device capable of RFID communication and voice call communication, the mobile communication device comprising:
communication circuitry configured to output voice call signals in a first radio frequency range and to output first RFID transponder data in a second radio frequency range;
a storage medium storing first data and instructions for the communication circuitry to:
monitor for proximal presence of one or more RFID readers external to the mobile communication device; and
output a voice call signal for transmission over a wireless network; and
output the first RFID transponder data as RFID transponder signals in a format employed by a proximal RFID reader, in response to detection by the mobile communication device of the proximal presence of the one or more RFID readers external to the mobile communication device.

82. (Previously Presented) The device of claim 81, wherein said first RFID transponder data comprises a selected one of a security key and an identifier.

83. (Previously Presented) The device of claim 82, wherein said first RFID transponder data comprises a security key, and said security key comprises a door key.

84. (Previously Presented) The device of claim 83, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

85. (Previously Presented) The device of claim 82, wherein said first RFID transponder data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

86. (Previously Presented) The device of claim 81, wherein the instructions are further designed to facilitate the user in selecting the first RFID transponder data from a plurality of RFID transponder data.

87. (Previously Presented) The device of claim 81, wherein the instructions are further designed to facilitate provision of the first RFID transponder data to the mobile communication device.

88. (Previously Presented) The device of claim 87, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first RFID transponder data in the form of a radio frequency signal.

89. (Previously Presented) The device of claim 81, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

90. (Previously Presented) The device of claim 81, wherein the first data includes information identifying a user.

91. (Previously Presented) The device of claim 81, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

92. (Previously Presented) A mobile communication device capable of radio frequency identifier RFID communication and voice call communication, the mobile communication device comprising:
communication circuitry configured to transmit a voice call signal in a first operational state and a RFID transponder signal in a second operational state;
a storage medium storing first data and instructions for the communication circuitry to selectively (a) monitor for proximal presence of a proximal RFID reader, and on detection of the proximal RFID reader, output RFID transponder data as an RFID signal in a format employed by the proximal RFID reader, and (b) transmit a voice call signal to another user of another communication device at least in part over a wireless network.

93. (Previously Presented) The device of claim 92, wherein said instructions are further designed to sense for a probing radio frequency signal of the proximal RFID reader.

94. (Previously Presented) The device of claim 92, wherein said RFID transponder data comprises a security key.

95. (Previously Presented) The device of claim 94, wherein said security key comprises a door key.

96. (Previously Presented) The device of claim 95, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

97. (Previously Presented) The device of claim 92, wherein the instructions are further designed to facilitate provision of the RFID transponder data to the mobile communication device.

98. (Previously Presented) The device of claim 97, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the RFID transponder data in the form of a radio frequency signal.

99. (Previously Presented) The device of claim 92, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

REMARKS

This paper is responsive to the non-final Office Action mailed November 1, 2013 ("the Action"). Claims 60-99 were pending before submission of this paper. Claims 60-99 were rejected in the Action.

In the Action, various claims were rejected on the ground of nonstatutory double patenting as allegedly being unpatentable over two issued patents. Specifically, claims 61-99 were rejected over claims 1-39 of U.S. Pat. No. 8,127,984 ("the '984 patent"), and claims 61-63, 66, 68-70, 73-75, 79, 81-83, 86-89, and 91 were rejected over claims 1-19 of U.S. Pat. No. 8,381,974 ("the '974 patent").

In response, it is not necessarily agreed that the pending claims are unpatentable over claims of the '984 patent and the '974 patent. However, in the interest of expediting prosecution, a terminal disclaimer is provided herewith over the '984 patent and the '974 patent.

It is respectfully submitted that with the filing of this terminal disclaimer, the rejections of the claims on the ground of nonstatutory double patenting should be moot. As no other rejections were made to the claims, it is respectfully submitted that pending claims 60-99 are in condition for allowance. A Notice of Allowance allowing claims 60-99 is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, it is believed that the applicable rejections have been overcome and all claims remaining in the application are presently in condition for allowance. Accordingly, favorable consideration and a Notice of Allowance are earnestly solicited. The Examiner is invited to telephone the undersigned representative at (503) 796-2466 if the Examiner believes that an interview might be useful for any reason.

It is not believed that extensions of time are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a) and the Commissioner is authorized to charge the Deposit Account of Schwabe, Williamson and Wyatt, P.C., No. 50-0393.

Respectfully submitted,
SCHWABE, WILLIAMSON & WYATT, P.C.

Date: January 30, 2014

By: /Ryan C. Fox-Lee/
Ryan C. Fox-Lee
Reg. No.: 65,369

Schwabe, Williamson & Wyatt, P.C.
Pacwest Center, Suite 1600
1211 SW Fifth Avenue
Portland, Oregon 97204
Telephone: (503)222-9981

RCF/ijc

Electronic Acknowledgement Receipt	
EFS ID:	18075563
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	25943
Filer:	Ryan C. Fox-Lee/Enoy Lawless
Filer Authorized By:	Ryan C. Fox-Lee
Attorney Docket Number:	120083-187945
Receipt Date:	30-JAN-2014
Filing Date:	25-JAN-2013
Time Stamp:	19:15:18
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		P064C2_RESPONSE.pdf	120777 49ee7b1c543189d42d8c3deebda6126c26925298	yes	10

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	8
	Applicant Arguments/Remarks Made in an Amendment	9	10
Warnings:			
Information:			
	Total Files Size (in bytes):	120777	

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.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/750,970	Filing Date 01/25/2013	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

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

APPLICATION AS AMENDED – PART II

AMENDMENT	01/30/2014	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 39	Minus	** 39	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 4	Minus	***4	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/LINDA HUMES/

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/750,970	01/25/2013	Peter Zatloukal	120083-187945	8778

25943 7590 11/01/2013

Schwabe Williamson & Wyatt
PACWEST CENTER, SUITE 1900
1211 SW FIFTH AVENUE
PORTLAND, OR 97204

EXAMINER	
WALSH, DANIEL I	
ART UNIT	**PAPER NUMBER**
2887	

MAIL DATE	DELIVERY MODE
11/01/2013	PAPER

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

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

Office Action Summary	Application No. 13/750,970	Applicant(s) ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	AIA (First Inventor to File) Status No

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

Period for Reply

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

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

Status

1)☐ Responsive to communication(s) filed on _____.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

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

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

Disposition of Claims

5)☒ Claim(s) 61-99 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) 61-99 is/are rejected.

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

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

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

Application Papers

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

11)☒ The drawing(s) filed on 1-25-13 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

Certified copies:

a)☐ All b)☐ Some * c)☐ None of the:

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

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

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

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 1-25-13.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

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

Double Patenting

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

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

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit http://www.uspto.gov/forms/. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

3. Claims 61-99 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-39 of U.S. Patent No. 8127984. Although the claims at issue are not identical, they are not patentably distinct from each other because they are obvious variants.

4. Claim 61 of the instant Application recites "A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising: receiving, by the mobile communication device, from an RFID reader external to the mobile device, an instruction to output first RFID transponder data in a format compatible with said RFID reader; switching the mobile communication device from a first state to a second state upon reception of said instruction, the mobile communication device being configured to output voice call signals in the first state and to output the first RFID transponder data in the format compatible with said RFID reader in the second state; and outputting, by the mobile communication device in the second state, the first RFID transponder data in the format compatible with said RFID reader" wherein claim 1 of the '984 Patent recites "A method for providing a radio frequency identification (RFID) from a switchable mobile communications device capable of RFID communication and voice call communication, the method comprising: receiving, by the mobile communications device, from

an RFID reader external to the mobile device, an instruction to transmit first RFID transponder data in a format compatible with said RFID reader; switching a transceiver of the mobile communications device from a first state to a second state upon reception of said instruction, the transceiver configured to output voice call signals in the first state and to output RFID transponder signals in the second state; and outputting the first data by the transceiver in the second state, the transceiver outputting the first data as an RFID transponder signal in the format compatible with said RFID reader". Claim 73 of the instant Application recites "A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising: monitoring for a proximal presence of a proximal RFID reader external to said mobile communication device by said mobile communication device, the mobile communication device having communication circuitry configured to output, in a first state, RFID transponder data in a format compatible with said RFID reader upon the mobile communication device determining the proximal presence of said RFID reader, and the communication circuitry being also configured to output, in a second state, a voice call signal for transmission at least in part over a wireless network; and on detection of said RFID reader, outputting, by the transceiver, the RFID transponder data in a format compatible with said RFID reader as a radio frequency signal" whereas claim 13 of the '984 Patent recites "A method for providing a radio frequency identifier (RFID), from a switchable mobile communications device capable of RFID communication and voice call communication, the method comprising: monitoring for proximal presence of a proximal RFID reader external to said mobile communication device by said mobile communication device, the mobile communication device having a transceiver configured, to output, in a first state, RFID

transponder data in a format compatible with said RFID reader upon the mobile communications device determining proximal presence of one or more RFID readers, the transceiver being also configured to output, in a second state, a voice call signal for transmission at least in part over a wireless network; and on detection of the RFID reader, outputting, by the transceiver, the RFID transponder data as a radio frequency signal, said data being output in said format employed by the RFID reader". Claim 81 of the instant Application recites "A mobile communication device capable of RFID communication and voice call communication, the mobile communication device comprising: communication circuitry configured to output voice call signals in a first radio frequency range and to output first RFID transponder data in a second radio frequency range; a storage medium storing first data and instructions for the communication circuitry to: monitor for proximal presence of one or more RFID readers external to the mobile communication device; and output a voice call signal for transmission over a wireless network; and output the first RFID transponder data as RFID transponder signals in a format employed by a proximal RFID reader, in response to detection by the mobile communication device of the proximal presence of the one or more RFID readers external to the mobile communication device" wherein claim 21 of the '984 Patent recites "A switchable mobile communication device capable of RFID communication and voice call communication, the mobile communication device comprising: a transmitter configured to transmit a radio frequency signal, the transmitter comprising a first signal processing section and a second signal processing section, the first signal processing section configured to output voice call signals in a first radio frequency range and the second signal processing section configured to output RFID transponder signals in a second radio frequency range; a storage medium to store a first data and instructions to: monitor

for proximal presence of one or more RFID readers external to the mobile communication device; and operate the transmitter to switch between the first and second signal processing sections to selectively: (a) output first RFID transponder data as said RFID transponder signals in a format employed by a proximal RFID reader, in response to detection by the mobile communication device of the proximal RFID reader, and (b) output a voice call signal for transmission over a wireless network; and a processor coupled to the transmitter and the storage to execute the instructions". Claim 92 of the instant Application recites "A mobile communication device capable of radio frequency identifier RFD communication and voice call communication, the mobile communication device comprising: communication circuitry configured to transmit a voice call signal in a first operational state and a RFID transponder signal in a second operational state; a storage medium storing first data and instructions for the communication circuitry to selectively (a) monitor for proximal presence of a proximal RFID reader, and on detection of the proximal RFID reader, output RFID transponder data as an RFID signal in a format employed by the proximal RFID reader, and (b) transmit a voice call signal to another user of another communication device at least in part over a wireless network" wherein claim 32 of the '984 Patent recites "A switchable mobile communication device capable of radio frequency identifier RFID communication and voice call communication, the mobile communication device comprising: a transmitter configured to transmit a voice call signal in a first operational state and a RFID transponder signal in a second operational state; a storage medium to store a first data and instructions to switch the transmitter between the first and second operational states to selectively (a) monitor for proximal presence of a proximal RFID reader, and on detection of the proximal RFID reader, output RFID transponder data as an RFID

signal in a format employed by the RFID reader, and (b) transmit a voice call signal to another user of another communication device at least in part over a wireless network; and a processor coupled to the transmitter and the storage to execute the instructions".

5. Claims (61-63 and 66, 68, and 69-70), (73-75, and 79), and (81-83, 86-89 and 91) are rejected on the ground of nonstatutory double patenting as being unpatentable over claims (1-7), (8-10, and 11), (12-14, 15-18, and 19) of U.S. Patent No. 8381974 Although the claims at issue are not identical, they are not patentably distinct from each other because they are obvious variants.

6. For example, claim 61 of the instant Application recites "A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising: receiving, by the mobile communication device, from an RFID reader external to the mobile device, an instruction to output first RFID transponder data in a format compatible with said RFID reader; switching the mobile communication device from a first state to a second state upon reception of said instruction, the mobile communication device being configured to output voice call signals in the first state and to output the first RFID transponder data in the format compatible with said RFID reader in the second state; and outputting, by the mobile communication device in the second state, the first RFID transponder data in the format compatible with said RFID reader" whereas claim 1 of the '974 Patent recites "1. A method for providing a radio frequency identification (RFID) from a switchable mobile communications device capable of RFID communication and voice call communication, the method comprising: receiving, by the mobile communications device, an instruction to transmit first RFID transponder data; switching a transceiver of the

mobile communications device from a first state to a second state upon reception of said instruction, the transceiver configured to output voice call signals in the first state and to output RFID transponder signals in the second state; and outputting the first RFID transponder data, by the transceiver as an RFID transponder signal". Claim 73 of the instant Application recites "A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising: monitoring for a proximal presence of a proximal RFID reader external to said mobile communication device by said mobile communication device, the mobile communication device having communication circuitry configured to output, in a first state, RFID transponder data in a format compatible with said RFID reader upon the mobile communication device determining the proximal presence of said RFID reader, and the communication circuitry being also configured to output, in a second state, a voice call signal for transmission at least in part over a wireless network; and on detection of said RFID reader, outputting, by the transceiver, the RFID transponder data in a format compatible with said RFID reader as a radio frequency signal" whereas claim 8 of the '974 Patent recites A method for providing a radio frequency identifier (RFID), from a switchable mobile communications device capable of RFID communication and voice call communication, the method comprising: monitoring, by the mobile communication device, for proximal presence of a proximal RFID reader, the mobile communication device having a transceiver configured, to output, in a first state, RFID transponder data to be received by the proximal RFID reader upon the mobile communications device determining proximal presence of one or more RFID readers, the transceiver being also configured to output, in a second state, a voice call signal for transmission at least in part over a wireless network; and on

detection of the RFID reader, outputting, by the transceiver, the RFID transponder data as a radio frequency signal". Claim 81 of the instant Application recites "A mobile communication device capable of RFID communication and voice call communication, the mobile communication device comprising: communication circuitry configured to output voice call signals in a first radio frequency range and to output first RFID transponder data in a second radio frequency range; a storage medium storing first data and instructions for the communication circuitry to: monitor for proximal presence of one or more RFID readers external to the mobile communication device; and output a voice call signal for transmission over a wireless network; and output the first RFID transponder data as RFID transponder signals in a format employed by a proximal RFID reader, in response to detection by the mobile communication device of the proximal presence of the one or more RFID readers external to the mobile communication device" whereas claim 12 of the '974 Patent recites "A switchable mobile communication device capable of RFID communication and voice call communication, the mobile communication device comprising: a transmitter configured to transmit a radio frequency signal, the transmitter comprising a first signal processing section and a second signal processing section, the first signal processing section configured to output voice call signals in a first radio frequency range and the second signal processing section configured to output RFID transponder signals in a second radio frequency range; a storage medium to store a first data and instructions to: monitor for proximal presence of one or more RFID readers; and operate the transmitter to switch between the first and second signal processing sections to selectively: (a) output first RFID transponder data as said RFID transponder signals in response to detection by the mobile communication device of the proximal RFID reader, and (b) output a voice call signal for

transmission over a wireless network; and a processor coupled to the transmitter and the storage to execute the instructions".

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL WALSH whose telephone number is (571)272-2409. The examiner can normally be reached on M-F 9am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Paik can be reached on 571-272-2404. 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.

/DANIEL WALSH/
Primary Examiner, Art Unit 2887

Notice of References Cited	Application/Control No. 13/750,970	Applicant(s)/Patent Under Reexamination ZATLOUKAL ET AL.	
	Examiner DANIEL WALSH	Art Unit 2887	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2002/0081987 A1	06-2002	Yoshida et al.	455/277.1
*	B	US-2003/0114186 A1	06-2003	GOETZ, IAN	455/552
*	C	US-2004/0204038 A1	10-2004	Suzuki et al.	455/553.1
*	D	US-2009/0221232 A1	09-2009	Estevez et al.	455/41.1
*	E	US-2009/0291634 A1	11-2009	Saarisalo, Mikko	455/41.1
*	F	US-2011/0021246 A1	01-2011	Rofougaran, Ahmadreza (Reza)	455/552.1
*	G	US-8,127,984 B2	03-2012	Zatloukal et al.	235/380
*	H	US-8,381,974 B2	02-2013	Zatloukal et al.	235/380
*	I	US-8,519,847 B2	08-2013	Honkanen et al.	340/572.1
*	J	US-6,771,981	08-2004	Zalewski et al.	455/557
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

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	4119800		1978-10-10	Girardi	
	2	5448620		1995-09-05	Gershkovich et al.	
	3	5473318		1995-12-05	Martel	
	4	5530702		1996-06-25	Palmer et al.	
	5	5793843		1998-08-11	Morris	
	6	5957995		1999-09-28	Beckmann et al.	
	7	6026308		2000-02-15	Hsieh	
	8	6032054	A	2000-02-29	Schwinke	

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

Receipt date: 01/25/2013	Application Number	13750970 - GAU: 2887
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	9	6164551		2000-12-26	Altwasser	
	10	6167128		2000-12-26	Fuller et al.	
	11	6314281		2001-11-06	Chao et al.	
	12	6359866		2002-03-19	Svensson et al.	
	13	6421347		2002-07-16	Borgstahl et al.	
	14	6434395		2002-08-13	Lubin et al.	
	15	6476708		2002-11-05	Johnson	
	16	6771981		2004-08-03	Zalewski et al.	
	17	7110792		2006-09-19	Rosenberg	
	18	7245997		2007-07-17	Kitao et al.	
	19	7280810		2007-10-09	Feher	

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

Receipt date: 01/25/2013	Application Number	13750970 - GAU: 2887
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	20	7283044		2007-10-16	Bandy	
	21	7324476		2008-01-29	Agrawal et al.	
	22	7375616		2008-05-20	Rowse et al.	
	23	7440743		2008-10-21	Hara et al.	
	24	7502615		2009-03-10	Wilhoite et al.	
	25	7605701		2009-10-20	Lee	
	26	8127984	B2	2012-03-06	Zatloukai et al.	

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020123325	A2	2002-09-05	Cooper	
	2	20020160775		2002-10-31	Pecen et al.	

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

Receipt date: 01/25/2013	Application Number	13750970 - GAU: 2887
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	3	20030069048		2003-04-10	Liu et al.	
	4	20030158785		2003-08-21	Erca	
	5	20040069852		2004-04-15	Seppinen et al.	
	6	20040077352		2004-04-22	Mahany	
	7	20040087273		2004-05-06	Perttila et al.	
	8	20040093274		2004-05-13	Vanska et al.	
	9	20040127256		2004-07-01	Goldthwaite et al.	
	10	20040171373		2004-09-02	Suda et al	
	11	20040248616		2004-12-09	Pecen et al.	
	12	20040263319		2004-12-30	Huomo	
	13	20050127156		2005-06-16	Yoo et al.	

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

Receipt date: 01/25/2013	Application Number	13750970 - GAU: 2887
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	14	20050184856	A1	2005-08-25	Pourchot	
	15	20060003772		2006-01-05	Semper	
	16	20060017544		2006-01-26	Tanaka et al.	
	17	20060022802		2006-02-02	Bridgelall	
	18	20060044111		2006-03-02	Kollar et al.	
	19	20060052055		2006-03-09	Rowse et al.	
	20	20060097848		2006-05-11	Davidson et al.	
	21	20060111053		2006-05-25	Wu et al.	
	22	20060116127		2006-06-01	Wilhoite et al.	
	23	20060237528		2006-10-26	Bishop et al.	
	24	20060280149		2006-12-14	Kuhl et al.	

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

Receipt date: 01/25/2013	Application Number	13750970 - GAU: 2887
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	25	20070030124		2007-02-08	Lee	
	26	20070032261		2007-02-08	Boyer et al.	
	27	20070037605		2007-02-15	Logan	
	28	20070060212		2007-03-15	Shah	
	29	20070066278		2007-03-22	Hong	
	30	20070120679		2007-05-31	Shin et al.	
	31	20070159330		2007-07-12	Chakraborty et al.	
	32	20070178935		2007-08-02	Shim et al.	
	33	20070197261		2007-08-23	Humbel	
	34	20070263595		2007-11-15	Charrat	
	35	20070274242		2007-11-29	Lamacraft et a.	

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

Receipt date: 01/25/2013	Application Number	13750970 - GAU: 2887
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	36	20070286171		2007-12-13	Guan	
	37	20070293202		2007-12-20	Moshir et al	
	38	20080018433		2008-01-24	Pitt-Pladdy	
	39	20080057876		2008-03-06	Hsia et al.	
	40	20080146167		2008-06-19	Rofougaran	
	41	20090058652		2009-03-05	Hardy et al.	
	42	20090090783		2009-04-09	Killian et al.	
	43	20090143013	A1	2009-06-04	Hatano et al.	
	44	20090170519		2009-07-02	Wilhoite et al.	
	45	20090209283	A1	2009-08-20	Yang et al.	
	46	20090221232	A1	2009-09-03	Estevez et al.	

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

Receipt date: 01/25/2013	Application Number	13750970 - GAU: 2887
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	47	20090243810		2009-10-01	Pendlebury et al.	
	48	20090291634		2009-11-26	Saarisalo	
	49	20100026454		2010-02-04	Rowse et al.	
	50	20100137024		2010-06-03	Maguire	
	51	20100158077		2010-06-24	Mahany	
	52	20100239079		2010-09-23	Bao	
	53	20120133483	A1	2012-05-31	Zatloukal et al.	

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

FOREIGN PATENT DOCUMENTS Remove

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

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

NON-PATENT LITERATURE DOCUMENTS Remove

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

Receipt date: 01/25/2013	Application Number	13750970 - GAU: 2887
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	International Search Report and Written Opinion mailed February 15, 2005 for PCT Application No. PCT/US04/18397, 11 pages.	☐

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

EXAMINER SIGNATURE

Examiner Signature	/Daniel Walsh/	Date Considered	10/30/2013

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

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

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

Receipt date: 01/25/2013	Application Number	13750970 - GAU: 2887
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

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	/Ryan C. Fox-Lee/	Date (YYYY-MM-DD)	2013-01-25
Name/Print	Ryan C. Fox-Lee	Registration Number	65369

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.**

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

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 record s.

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.

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

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013								
	1	-								
	2	-								
	3	-								
	4	-								
	5	-								
	6	-								
	7	-								
	8	-								
	9	-								
	10	-								
	11	-								
	12	-								
	13	-								
	14	-								
	15	-								
	16	-								
	17	-								
	18	-								
	19	-								
	20	-								
	21	-								
	22	-								
	23	-								
	24	-								
	25	-								
	26	-								
	27	-								
	28	-								
	29	-								
	30	-								
	31	-								
	32	-								
	33	-								
	34	-								
	35	-								
	36	-								

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013								
	37	-								
	38	-								
	39	-								
	40	-								
	41	-								
	42	-								
	43	-								
	44	-								
	45	-								
	46	-								
	47	-								
	48	-								
	49	-								
	50	-								
	51	-								
	52	-								
	53	-								
	54	-								
	55	-								
	56	-								
	57	-								
	58	-								
	59	-								
	60	-								
	61	✓								
	62	✓								
	63	✓								
	64	✓								
	65	✓								
	66	✓								
	67	✓								
	68	✓								
	69	✓								
	70	✓								
	71	✓								
	72	✓								

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

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

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

CLAIM		DATE								
Final	Original	10/30/2013								
	73	✓								
	74	✓								
	75	✓								
	76	✓								
	77	✓								
	78	✓								
	79	✓								
	80	✓								
	81	✓								
	82	✓								
	83	✓								
	84	✓								
	85	✓								
	86	✓								
	87	✓								
	88	✓								
	89	✓								
	90	✓								
	91	✓								
	92	✓								
	93	✓								
	94	✓								
	95	✓								
	96	✓								
	97	✓								
	98	✓								
	99	✓								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	28487	(mobile or portable or handheld or phone or pda) same (rfid or "radio frequency" or transponder or radio or fob) same (call$3) with (phone or cellular or telephone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 11:50
L2	23226	(mobile or portable or handheld) same (rfid or "radio frequency" or transponder or radio or fob) same (call$3) with (phone or cellular or telephone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:04
L3	590	(mobile or portable or handheld) with (dual or switch or both) with (rfid or "radio frequency" or transponder or radio or fob) with (call$3) near3 (phone or cellular or telephone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:05
L4	211002	"455"/$.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:05
L5	1744	455/552.1.ccls. and (rfid or "radio frequency")	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:07
L6	40	455/552.1.ccls. and (rfid or "radio frequency") with (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:08
L7	2	455/552.1.ccls. and (rfid or "radio frequency") near3 read$4 with (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:25
L8	13	"455"/$.ccls. and (rfid or "radio frequency") near3 reader with (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:25
L9	0	"455"/$.ccls. and (rfid or "radio frequency") near3 tag with (output$4 or signal$4) with (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:38
L10	1	"6771981".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:38

L11	2	"455"/$.ccls. and (rfid or "radio frequency") near3 tag with (output$4 or signal$4) with (reader or interrogat$4) same (phone or telephone or cellular or voice) near3 (communicat$4 or call$3) with (switch$4 or dual or both or mode)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:39
L12	7	("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.) and (RFID or "radio frequency") near3 tag with (phone or telephone or voice) near3 call with (switch$3 or mode or state)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:44
L13	2	("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.) and (RFID or "radio frequency") near3 tag with (output$4 or signal$4) same (phone or telephone or voice) near3 call same (switch$3 or mode or state) with (rfid or "radio frequency") with (phone or telephone or voice)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:47
L14	7	("235"/$.ccls. "340"/$.ccls. "455"/$.ccls.) and (phone or telephone or mobile or handheld) with (switch$3 or chang$4 or mode or state) with (RFID or "radio frequency") near3 tag with (telephone or voice or phone) near3 call	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 12:51
L15	76	("20020160775" | "20030069048" | "20030158785" | "20040069852" | "20040077352" | "20040087273" | "20040093274" | "20040127256" | "20040171373" | "20040248616" | "20040263319" | "20050127156" | "20060003772" | "20060017544" | "20060022802" | "20060044111" | "20060052055" | "20060097848" | "20060111053" | "20060116127" | "20060237528" | "20060280149" | "20070030124" | "20070032261" | "20070037605" | "20070060212" | "20070066278" | "20070120679" | "20070159330" | "20070178935" | "20070197261" | "20070263595" | "20070274242" | "20070286171" | "20070293202" | "20080018433" | "20080057876" | "20080146167" | "20090058652" | "20090090783" | "20090170519" | "20090209283" | "20090221232" | "20090243810" | "20090291634" | "20100026454" | "20100137024" | "20100158077" | "20100239079" | "4119800" | "5448620" | "5473318" | "5530702" | "5793843" | "5957995" | "6026308" | "6164551" | "6167128" | "6314281" | "6359866" | "6421347" | "6434395" | "6476708" | "6771981" | "7110792" | "7245997" | "7280810" | "7283044" | "7324476" | "7375616" | "7440743" | "7502615" | "7605701").PN. OR ("8127984").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:08
L16	0	(phone or telephone or voice) near3 (call$3) with (rfid or "radio frequency") near3 (tag) near3 (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3(reader or interrogat$4)	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:23

L17	0	(phone or telephone or voice) near3 (call$3) with (rfid or "radio frequency") near3 (tag) near3 (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3(read$3 or interrogat$4)	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:24
L18	1	(phone or telephone or voice) near3 (call$3) with (rfid or "radio frequency") near3 (tag) with (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3(read$3 or interrogat$4) same (mobile or portable or handheld)	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:25
L19	0	(phone or telephone or voice) near5 (call$3) same (rfid or "radio frequency") near3 (tag) with (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3(read$3 or interrogat$4) same (mobile or portable or handheld) same (mode or state or configuration) with (switch$4 or chang$4 or first or second)	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/30 13:27
L20	44	(phone or telephone or voice) near3 (call$3 or communicat$4 or signal$4) same (rfid or "radio frequency") near3 (tag) with (signal$4 or output$4 or mimic$4 or emulat$4) same (rfid or "radio frequency") near3 (read$3 or interrogat$4) same (mobile or portable or handheld)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	ON	2013/10/30 13:30
L21	1	"6421347".pn.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	ON	2013/10/30 13:52
L22	1	"20020123325".pn.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	ON	2013/10/30 13:56
L23	1	"6078806".pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 14:18
L24	3	13/370,970	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 14:29
L25	1	13/750,970	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 14:29
L26	2	("8381974" "8127984").pn.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2013/10/30 14:29
L27	79	("20020123325" | "20020160775" | "20030069048" | "20030158785" |	US-PGPUB;	OR	ON	2013/10/30 15:52

		"20040069852" | "20040077352" | "20040087273" | "20040093274" | "20040127256" | "20040171373" | "20040248616" | "20040263319" | "20050127156" | "20050184856" | "20060003772" | "20060017544" | "20060022802" | "20060044111" | "20060052055" | "20060097848" | "20060111053" | "20060116127" | "20060237528" | "20060280149" | "20070030124" | "20070032261" | "20070037605" | "20070060212" | "20070066278" | "20070120679" | "20070159330" | "20070178935" | "20070197261" | "20070263595" | "20070274242" | "20070286171" | "20070293202" | "20080018433" | "20080057876" | "20080146167" | "20090058652" | "20090090783" | "20090143013" | "20090170519" | "20090209283" | "20090221232" | "20090243810" | "20090291634" | "20100026454" | "20100137024" | "20100158077" | "20100239079" | "20120133483" | "4119800" | "5448620" | "5473318" | "5530702" | "5793843" | "5957995" | "6026308" | "6032054" | "6164551" | "6167128" | "6314281" | "6359866" | "6421347" | "6434395" | "6476708" | "6771981" | "7110792" | "7245997" | "7280810" | "7283044" | "7324476" | "7375616" | "7440743" | "7502615" | "7605701" | "8127984").PN.	USPAT; EPO; JPO			

10/30/2013 3:53:05 PM
C:\Users\dwalsh1\Documents\EAST\Workspaces\East Searches\13750970.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13750970	ZATLOUKAL ET AL.
	Examiner	Art Unit
	DANIEL WALSH	2887

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
EAST search attached	10-30-13	dw
class 235 455 340 keyword search	10-30-13	dw
reviewed parent searches/actions	10-30-13	dw

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/750,970	01/25/2013	Peter Zatloukal	120083-187945

CONFIRMATION NO. 8778

25943
Schwabe Williamson & Wyatt
PACWEST CENTER, SUITE 1900
1211 SW FIFTH AVENUE
PORTLAND, OR 97204

PUBLICATION NOTICE

OC000000063256235

Title:EMULATED RADIO FREQUENCY IDENTIFICATION

Publication No.US-2013-0207777-A1
Publication Date:08/15/2013

NOTICE OF PUBLICATION OF APPLICATION

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

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

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

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

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/750,970	01/25/2013	2876	1770	120083-187945	39	4

CONFIRMATION NO. 8778

UPDATED FILING RECEIPT

25943
Schwabe Williamson & Wyatt
PACWEST CENTER, SUITE 1900
1211 SW FIFTH AVENUE
PORTLAND, OR 97204



Date Mailed: 05/09/2013

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

Inventor(s)

Peter Zatloukal, Kirkland, WA;
G. Eric Engstrom, Kirkland, WA;
Cindy M. Smith, Kirkland, WA;

Applicant(s)

Varia Holdings LLC, Brooklyn, NY

Assignment For Published Patent Application

VARIA HOLDINGS LLC, Brooklyn, NY

Power of Attorney: The patent practitioners associated with Customer Number 25943

Domestic Priority data as claimed by applicant

This application is a CON of 13/363,202 01/31/2012 PAT 8381974 *
which is a CON of 10/560,262 12/09/2005 PAT 8127984
which is a 371 of PCT/US04/18397 06/10/2004
(*)Data provided by applicant is not consistent with PTO records.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 02/26/2013
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/750,970**
Projected Publication Date: 08/15/2013

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

EMULATED RADIO FREQUENCY IDENTIFICATION

Preliminary Class

235

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

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

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

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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

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

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

NOT GRANTED

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

SelectUSA

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

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/750,970

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	39 minus 20 =	* 19	x 40 =	760	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4 minus 3 =	* 1	x 210 =	210			
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	1700		TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT A

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

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/750,970	01/25/2013	Peter Zatloukal	120083-187945

CONFIRMATION NO. 8778

25943
Schwabe Williamson & Wyatt
PACWEST CENTER, SUITE 1900
1211 SW FIFTH AVENUE
PORTLAND, OR 97204

POA ACCEPTANCE LETTER

OC000000060961072

Date Mailed: 05/09/2013

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/01/2013.

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

/ybedada/

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application for: Zatloukal et al. Application No.: 13/750,970 Filed: January 15, 2013 For: EMULATED RADIO FREQUENCY IDENTIFICATION	Examiner: Not Yet Assigned Art Group: 2876 Confirmation No. 8778

Mail Stop MISSING PARTS
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

RESPONSE TO NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION (FILING DATE GRANTED)

Attached for filing in the above-referenced patent application, in response to the Notice to File Missing Parts of Nonprovisional Application dated March 1, 2013, are the following:

(1) A copy of the signed Declaration from inventors; and

(2) Payment by Deposit Account in the amount of $1,770.00 (basic filing fee, surcharge, search fee, exam fee and excess claim fees); and

(3) Substitute Specification (marked-up and clean version) which will replace the originally filed specification. The substitute specification is in compliance with 37 CFR 1.52, 1.121(b)(3) and 1.125. No new matter has been included in the substitute specification. It is noted that, because the pending claims were submitted with proper spacing in the Preliminary Amendment filed January 25, 2013, it is not believed that a substitute set of claims is necessary.

The Commissioner is hereby authorized to charge shortages or credit overpayments to Deposit Account No. 500393.

Respectfully submitted,

SCHWABE, WILLIAMSON & WYATT, P.C.

Dated: May 1, 2013

/Ryan C. Fox-Lee/
Ryan C. Fox-Lee
Reg. No. 65,369

Pacwest Center, Suite 1600
1211 SW Fifth Avenue
Portland, Oregon 97204
Telephone: (503)222-9981

PTO/AIA/80 (07-12)
Approved for use through 11/30/2014. OMB 0651-0035
U.S. Patent and Trademark Office; U.S DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

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

I hereby appoint:

☑ Practitioners associated with Customer Number: 25943

OR

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

Name	Registration Number	Name	Registration Number

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

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

☑ The address associated with Customer Number: 25943

OR

☐	Firm or Individual Name		
	Address		
	City		
	Country		
	Telephone		Email

Assignee Name and Address: Varia Holdings LLC
956 East 8th Street
Brooklyn, New York 11230

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/SB/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

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

Signature		Date	4/3/13
Name	Michael Jerbal	Telephone	
Title	President		

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

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

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. 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 displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Varia Holdings LLC

Application No./Patent No.: 13/750,970 Filed/Issue Date: January 25, 2013

Titled: EMULATED RADIO FREQUENCY IDENTIFICATION

Varia Holdings LLC, a limited liability company

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

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

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

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

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

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

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

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

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Zatloukal et al. To: Wildseed Ltd.

The document was recorded in the United States Patent and Trademark Office at

Reel 015680, Frame 0311, or for which a copy thereof is attached.

2. From: Wildseed Ltd. To: Wildseed LLC

The document was recorded in the United States Patent and Trademark Office at

Reel 021316, Frame 0357, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**.

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

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. 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 displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: Wildseed LLC To: Varia Mobil LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 021316, Frame 0405, or for which a copy thereof is attached.

4. From: Varia Mobil LLC To: Varia Holdings LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 021316, Frame 0437, or for which a copy thereof is attached.

5. From: Varia Holdings LLC To: Varia LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 021330, Frame 0233, or for which a copy thereof is attached.

6. From: Varia LLC To: Varia Holdings LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 023928, Frame 0756, or for which a copy thereof is attached.

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

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

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

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

/Ryan C. Fox-Lee/	May 1, 2013
Signature	Date
Ryan C. Fox-Lee	Attorney - Reg. No. 65,369
Printed or Typed Name	Title or Registration Number

PTO/AIA/01 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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

Title of Invention	EMULATED RADIO FREQUENCY IDENTIFICATION

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 13/750,970 filed on January 25, 2013.

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: Peter Zatloukal Date (Optional) :

Signature:

Note: An application data sheet (PTO/AIA/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/SB/AIA01 form for each additional inventor.

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

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

PTO/AIA/01 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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

Title of Invention	EMULATED RADIO FREQUENCY IDENTIFICATION

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 13/750,970 filed on January 25, 2013.

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.

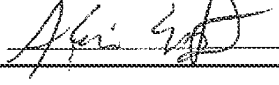
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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: G. Eric Engstrom Date (Optional): _____

Signature: 

Note: An application data sheet (PTO/AIA/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/SB/AIA01 form for each additional inventor.

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

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

PTO/AIA/01 (06-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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

Title of Invention	EMULATED RADIO FREQUENCY IDENTIFICATION

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 13/750,970 filed on January 25, 2013

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: Cindy M. Smith Date (Optional): _____

Signature: CMSmith

Note: An application data sheet (PTO/AIA/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/SB/AIA01 form for each additional inventor.

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

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

(Substitute Specification – Marked Up Copy)

EMULATED RADIO FREQUENCY IDENTIFICATION

RELATED APPLICATION

This application is a continuation of U.S. Patent Application 13/363,202, filed January 31, 2012 and entitled "Emulated Radio Frequency Identification," which is a continuation of U.S. Patent Application 10/560,262, filed December 9, 2005 and entitled "Emulated Radio Frequency Identification," which was the National Stage of International Application No. PCT/US04/18397, filed June 10, 2004 and entitled "Emulated Radio Frequency Identification," which itself ~~non-provisional application~~claims the benefit of U.S. Provisional Application No. ~~provisional application number~~ 60/478,245, entitled "Radio Frequency Identification Using Mobile Communication Device"[[,]] and filed [[on]] June 13, 2003~~, and claims priority to said provisional application~~.

FIELD OF THE INVENTION

The present invention relates to the fields of security, communication, and data processing. More specifically, the present invention is related to an emulated radio frequency data input method.

BACKGROUND OF THE INVENTION

It wasn't that long ago, even residents in medium size cities still feel secured enough to leave their homes unlocked and/or their garages open. In general, one can access one's place of

employment, including parking facilities as well as one's office without identification or access keys.

In the world of commerce, things were also simpler. One typically may shop and consume goods and services, at relatively low prices, without having to be affiliated with any programs or entities.

However, the world has become a lot more complex in recent years. Virtually, all properties of any value, premises, including one's home, have to be secured, even for relatively small towns and cities. One can hardly shop and consume any goods and services, without having signed up with some promotional frequent "usage" programs or becoming affiliated with the commercial entities. The employment of affinity marketing has reached a point even neighboring grocery chains employ them, and not just airlines, hotels, or wholesale discount retailers.

As a result, it is not uncommon to find a person having to carry a number of physical keys and access/identification cards/tags to gain access to secured premises, such as one's home, office, parking garage, and so forth. Additionally, the person is likely to carry a number of remote security control devices, such as a key with remote control for gaining access to his/her vehicle, a garage door opener for gaining access to the person's garage at home, and so forth. The person is also likely to carry a number of affinity identification cards with member identifiers identifying the person as being affiliated with certain co-op or frequent patronage programs, such as wholesale discount retailers, airline or hotel frequent traveler program, and so forth, that entitle the person to certain benefits, such as discounts or rewards.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references denote similar elements, and in which:

Figure 1 illustrates an overview of the present invention, in accordance with one embodiment;

Figure 2 illustrates a method view of the present invention, in accordance with one embodiment;

Figure 3 illustrates the relevant hardware elements of the device of **Fig. 1** in further details, in accordance with one embodiment;

Figure 4 illustrates the transceiver of **Fig. 3** in further details, in accordance with another embodiment;

Figures 5a-5b illustrate the exploded views of two embodiments of the mobile communication device of **Fig. 1**;

Figures 5c-5d illustrate an exploded view of another embodiment of the mobile communication device of **Fig. 1**;

Figure 6a-6h illustrate a number of example screens of an end user interface, suitable for use to practice the present invention, in accordance with one embodiment; and

Figure 7 illustrates the operational flow of the relevant aspects of the software in support of the RFD feature of the present invention, in accordance with one embodiment.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

Embodiments of the present invention includes an emulated RFID method, more specifically, an emulated RFID method, using a mobile communication device, including the device itself, and certain hardware and/or software embodied therein for the practice of the emulated RFID method.

In the following description, various aspects of the illustrative embodiments of the present invention will be described. However, alternate embodiments may be practiced with only some or all aspects of the illustrative embodiments of the present invention. For purposes of explanation, specific numbers, materials and configurations are set forth in order to provide a thorough understanding of the present invention. However, alternate embodiments may be practiced without the specific details. In other instances, well-known features are omitted or simplified in order not to obscure the essence of the illustrative embodiments of the present invention.

Terminology

Parts of the description will be presented in data processing terms, such as data, selection, retrieval, generation, and so forth, consistent with the manner commonly employed by those skilled in the art to convey the substance of their work to others skilled in the art. As well understood by those skilled in the art, these quantities take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, and otherwise manipulated through electrical and/or optical components of a processor and its subsystems.

Part of the descriptions will employ various abbreviations, including but are not limited to:

CDROM	Compact Disc Read Only Memory
DDRAM	Dynamic Direct Random Access Memory
DVD	Digital Versatile Disc
EEPROM	Electrically Eraseable Programmable Read-Only-Memory
HTTP	HyperText Transmission Protocol
SDRAM	Statis Direct Random Access Memory
SMS	Small Messaging Service

The term "number as used In this application to describe a data, including both its usage in the specification and the claims, typically refers to numeric data, as the word "number" is conventionally used in mathematics. However, in certain contexts, the "number" may also include alphabet or special characters, as the term is conventionally understood by those skilled in the art in those contexts. For examples, a drivers license number, a passport number, an employee number, or a student ID number, as each of these terms is conventionally used, often includes one or more alphabets or special characters, even though they are referred to as "numbers". The term accordingly is to be given the meaning that is consistent with the context under which the term is used.

Section Headings, Order of Descriptions and Embodiments

Section headings are merely employed to improve readability, and they are not to be construed to restrict or narrow the present invention.

Various operations will be described as multiple discrete steps in turn, in a manner that is most helpful in understanding the present invention, however, the order of description should not be construed as to imply that these operations are necessarily order dependent. In particular, these operations need not be performed in the order of presentation.

The phrase In one embodiment" is used repeatedly. The phrase generally does not refer to the same embodiment, however, it may, The terms "comprising", "having" and Including" are synonymous, unless the context dictates otherwise.

Overview

Refer now to **Figure 1**, wherein a block diagram illustrating an overview of the present invention **100**, in accordance with one embodiment, is shown. As illustrated, for the embodiment, mobile communication device **102** is equipped with hardware and/or software elements **104** to perform its primary function, which is to facilitate a user of device **102** to engage in communication with another user of another communication device (not shown). In various embodiments, the communication may be audio (such as phone calls), textual (such as messaging) and/or visual (such as airtexting using light sources). Additionally, for the embodiment, mobile communication device **102** is equipped with hardware and/or software elements **106** to facilitate provision or transfer of a key/identifier in a form a radio frequency signal **110**, which may be read e.g. by a radio frequency identifier (RFID) reader **120**. In turn, the provision of RFID **110** may be responded to by a system (not shown) with which RFID reader **120** is a part or coupled to.

As depicted in **Fig. 1**, blocks **104** and **106** "Intersect" with one another. The "intersection" represents the fact that in preferred embodiments of the present invention,

substantial portions of the hardware and/or software elements employed to provide a RFID, are the same elements employed to facilitate the primary function of device **102**, i.e. to facilitate a user in communicating with another user of another communication device.

In other words, Illustrative embodiments of the present invention advantageously leverage on existing elements of mobile communication device **102**, and supplement them, to enable mobile communication device **102** to be able to provide a RFID, emulating a RFID transponder, as well as facilitating user communication.

As will be described in more detail below, in preferred embodiments, mobile communication device **102** is equipped to provide RFID, emulating an active and/or a passive RFID transponder.

Further, RFID **110** may be any keys and/or identifiers, including but not limited to security keys, such as garage door "keys", exterior or interior door keys, or identifiers, such as, employee numbers, driver's license numbers, social security numbers, credit card numbers (optionally, including expiration dates), affinity program member identifiers, and so forth.

Continue to refer to **Fig. 1**, except for the present invention incorporated therein, mobile communication device **102** represents a broad range of mobile communication devices known in the art, including but are not limited to wireless mobile phones and personal digital assistants equipped with communication capability.

The term "wireless mobile phone" as used herein, including the specification and the claims, refers to the class of telephony devices equipped to facilitate a user in communicating with another user of another communication device, notwithstanding the user's movement around different geographic areas, so long the wireless mobile phone is In contact with a base/service station of a wireless network service provider. The term includes the analog as well

as the digital subclasses. Communication may be voice and/or data, audio, textual and/or visual. The other user/communication device may be mobile or land line based.

RFID reader **120** represents a broad range of such devices known in the art or to be designed. Currently, most RFID readers **120** employ proprietary formats/protocols. That is, RFID readers **120** of different manufacturers tend to employ different frequencies, amplitudes, and/or keying Schemes (which may be frequency shifting keying (FSK), amplitude shifting keying (ASK) or phase shifting keying (PSK)).

Various embodiments of the methods of the present inventions, including elements **106**, in particular, added elements, will be described in turn below.

Method

Figure 2 illustrates a method view of the present invention, in accordance with one embodiment. As illustrated, device **102** is first provided with the RFIDs, block **202**. The RFIDs may be provided in any one of a number of known or to be designed manners, including but are not limited to

- manual entry, using a keypad of device **102**,

- read into device **102**, from an access/identification card, using a magnetic or optical card reader of device **102**,

- downloaded Into device **102**, from a coupled computing device, through a serial/parallel port of device **102** or through a network interface of device **102** using SMS or HTTP messages.

Typically, provision of a RFID will include the manner the RFID is to be outputted, i.e. signaled. As alluded to earlier, the manner it is to be signaled is dependent on the

format/protocol employed by the Intended RFID reader **120**. For examples, for a garage door key, the format/protocol employed by RFID reader **120** of the garage opener system, and for an affinity program member identifier, the format/protocol employed by RFID reader **120** of the point-of-sale system of the entity offering the affinity program.

Alternatively, a default signaling format/protocol, such as an industry standard, the most popular proprietary format/protocol, or a selected proprietary format/protocol maybe assumed instead, when one is not provided.

During operation, in response to a user instruction, typically after the user has selected the RFID to be outputted from a number of RFIDs stored in device **102**, block **203**, device **102** outputs the selected RFID as instructed, emulating an active RFID transponder, block **204**.

For the embodiment, one RFID, e.g. an access key/identifier (such as an employee number), may also be selected/designated as a default RFID, the output of which may be emulated in a passive manner. That is, the selected/designated default RFID will be outputted automatically, whenever device **102** is within the proximal presence, or more specifically, the operational space, of an intended RFID reader **120**.

Accordingly, device **102** monitors for probing signals of an intended RFID reader **120** (or a type of RFID readers **120**), to determine whether device **102** is within the operational space of such a RFID reader **120**, block **205**. On so determining, device **102** outputs the designated RFID automatically, emulating a passive RFID transponder, block **206**.

A Hardware/Software Implementation

Figure 3 illustrates the relevant elements of device **102**, in accordance with one embodiment. As illustrated, for the embodiment, device **102** includes processor **302**, memory

304, persistent store **306**, transceiver **308**, and a number of other components **310**, coupled to each other via bus **312**.

Persistent store **306** and memory **304** are employed to store permanent and working copies of a software implementation of the operating logic **320** of device **102**, including the supplemental RFID feature **322**. In various embodiments, persistent store **306** may be an EEPROM (or like kind variants, such as a Flash Memory, a Memory Stick), a magnetic or optical disk drive, a CDROM, a DVD drive and so forth. Memory 304 may be any SORAM, DDRAM or other high speed volatile as way as non-volatile storage devices known in the art.

Processor **302** is employed to execute operating logic **320**, including RFID feature **322**. As will be readily apparent from the description to follow, operating logic **320** may be implemented in any one of a number of suitable system programming languages, including but not limited to high level languages that may be compiled into executable instructions supported by processor **302**. Processor **302** may be any one of a number of processors designed or to be designed for mobile devices.

Except for transceivers **308**, RHO feature **322** and the manner the various elements of **Fig. 3** are used to practice the present Invention, the other illustrated elements are known in the art, and accordingly will not be further described. One embodiment of transceiver **308** will be described referencing **Fig. 4**, and one embodiment of RFD feature **322** will be described, referencing **Fig. 6-7**.

As described earlier, processor **302**, memory **304**, persistent store **306** and bus **312** may be shared elements of device **102**, also employed to implement the primary communication function of device **102**. However, in alternate embodiments, dedicated elements may be employed for some or all of these elements instead.

In one embodiment, device **102** is a wireless mobile telephone, an exploded view of which is illustrated in **Fig. 5a**. Wireless mobile phone **500**, in addition to the earlier described elements, also includes display **506**, control buttons **504**, keypad **502**, antenna **508**, body **512** and cover **514**. Body **512** is substantially rectangular in shape. Further, body **512** is palm-sized or smaller.

For the embodiment, cover **514** includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance phone **500**. Phone **500** includes complementary electronic component interface **516** in support of such personalization, customization and/or enhancement.

Cover **514** may form a part of housing **512**, i.e. a required element to complete phone **500**, or it may be an accessory to be adorned by phone **500**, i.e. not a required element to complete phone **500**.

In another embodiment, device **102** is a PDA, an exploded view of which, is illustrated in **Fig. 5b**. PDA **502**, in addition to the earlier described elements, also includes display **524**, control buttons **522**, antenna **526**, body **532**, and cover **534**. Body **530** is also substantially rectangular in shape, as well as palm-sized or smaller.

Similarly, for the embodiment, cover **534** includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance PDA **520**. PDA **520** includes complementary electronic component interface **536** in support of such personalization, customization and/or enhancement.

Cover **534** may form a part of housing **532**, i.e. a required element to complete PDA **520**, or it may be an accessory to be adorned by PDA **520**, i.e. not a required element to complete PDA 520.

Figure 5c-5d illustrate yet another embodiment of device **102**, another wireless mobile telephone, an exploded view of which is illustrated. Wireless mobile phone **540** is similarly constituted as the earlier described embodiments, including body **542** and cover **544**. However, body **542** has a substantially boomerang or banana shape. Body **542**. is also typically palm-sized or smaller.

For the embodiment, cover **544** also includes embedded electronic components having instructions, data, and/or locations to obtain such Instructions and/or data to personalize, customize and/or enhance phone **540**. Phone **540** includes complementary electronic component interface (not shown) in support of such personalization, customization and/or enhancement.

Cover **544** may form a part of housing **542**, i.e. a required element to complete phone **540**, or it may be an accessory to be adorned by phone **540**, i.e. not a required element to complete phone **540**.

In all or selected one(s) of these embodiments, some or all elements **106** in support of the RFID feature of the present invention may be provided through embedded electronic components of the housing/accessory covers.

Smart covers are the subject matters of subject matter of co-pending U.S. Application, number 10/087,098, filed March 1, 2002, entitled "Personalizing Electronic Devices and Smart Covering", and U.S. Application, number <insert>, filed May 2, 2003, entitled "Personalization of Mobile Electronic Devices and Smart Accessory Cover", which specifications are hereby fully incorporated by reference.

While all three embodiments of **Fig. 5a-5d** have been illustrated with smart covers and external antennas. In alternate embodiments, the present invention may be practiced without

smart covers and/or external antennas. The present invention may be practiced with conventional covers, ,without embedded intelligence and/or internal antennas.

Transceiver

Figure 4 illustrates transceiver **308** of **Fig. 3** in further details, in accordance with one embodiment. As illustrated, for the embodiment, transceiver **308** includes a joint radio frequency (RF) transmit/receive (TX/RX) section **402**, separate signal processing sections **408** and **410** for a range of higher frequencies and a range of low frequencies, switch **404** and splitter **406**. The elements are coupled to each other as shown.

For the embodiment, joint RF TX/RX **402** includes in particular, switch **420**, filters **412** and **422**, low noise amplifier **424** and power amplifier **414**, coupled to one another as shown. Switch **420** is employed to switch between transmitting and receiving RF signals. Filters **412** and **422**, low noise amplifier **424** and power amplifier **414** are employed to perform their conventional filtering and amplification functions on the transmit and receive signals.

For transmission, switch **404** switches between the output of high frequency signal processing **410** and the output of low frequency signal processing **408** to the transmit path of Joint RF TX/RX **402**.

For reception, splitter 406 splits the output of the receive path of Joint RF TX/RX **402** and provides the receive signal to high frequency signal processing **410** as well as low frequency signal processing **406**.

For the embodiment, high frequency signal processing **410** performs up and down conversions of the transmit and receive signals of the primary communication function of mobile

communication device **102**, e.g. the transmit and receive signals of a voice call. In one embodiment, the transmit and receive signals are transmitted and received In the GHz ranges:

Low frequency signal processing **408**, on the other hand, performs up and down conversions of the transmit and receive signals of the RFID feature, e.g. the output signal of a RFID to emulate either an active or a passive transponder, and the received probing signal of a RFID reader. In one embodiment, the transmit and receive signals are transmitted and received in the MHz ranges.

Up and down conversions, filtering, amplifications, and so forth, in and of themselves, except for the manner they are being used to provide RFIDs using a mobile communication device, are known in the art, accordingly, will not be further described.

RFID Feature

Figures 6-7 illustrate selected portions of an example end user interface, and the operational flow of the relevant aspects of RFD feature **322** respectively, in accordance with one embodiment. **Figure 6** comprises **Fig. 6a-6h**.

As illustrated in **Fig. 6a**, for the embodiment, the user interface Includes screen **602** having selectable text display "RFID" **604**, with which a user may interact to launch the RFID function (by selecting text display **604**, using e.g. control keys **604**).

As illustrated in **Fig. 6b**, for the embodiment, the user interface further includes screen **612** enumerating a list of RFIDs **614** stored in device **102**. List **614** may be displayed for example, among other situations, in response to a user's selection of text display **604** of screen **602**. A user may select one of the RFIDs, and instruct device **102** to output the selected RFD in

a form of an appropriate radio frequency signal, emulating provision of the RFID by an active RFID transponder, using e.g. a "send/call" key of device **102**.

Screen **612** also includes selectable "option" button **616**, with which a user may interact to display a list of RFID management options, using e.g. control keys **504**.

As illustrated in **Fig. 6c**, for the embodiment, the user interface further includes screen **622** enumerating a list of RFID management options **624**, such as "add", "edit" or "delete" RFIDs. List **624** may be displayed for example, among other situations, in response to a users selection of "option" **616** of screen **612**.

As illustrated in **Fig. 6d**, for the embodiment, the user interface further includes screen **632** displaying field **634**, through which a user may enter/edit a RFID name. Field **634** may be displayed for example, among other situations, in response 'to a users selection of "add" or "edit" of screen **622**.

As illustrated in **Fig. 6e**, for the embodiment, the user interface further includes screen **642** displaying field **644**, through which a user may enter/edit a RFID. Field **644** may be displayed for example, among other situations, in response to a user indicating completion of entry of a RFID name using screen **632**.

As illustrated in **Fig. 6f**, for the embodiment, the user interface further includes screen **652** displaying a list of RFID types **654**, with which a user may select and associate with a RFID. List **654** may be displayed for example, among other situations, in response to a user indicating completion of entry of a RED, using screen **642**, thereby allowing the user to associate a RFID reader type with the entered RFID.

Each RFD reader type is assumed to have a deterministic RFID signaling format/protocol. Accordingly, by selecting the RFID reader type, the user is effectively selecting

or specifying the RFID signaling format/protocol. in alternate embodiment, a user may be requested to select the RFD signaling format/protocol explicitly, as opposed to implicitly, in the illustrated embodiment.

As illustrated in **Fig. 6g**, for the embodiment, the user interface further includes screen **662** displaying a request **664** to confirm whether a RFD is to be selected or designated as the default RFID to be used for emulation of passive transponders. Request **664** may be displayed for example, among other situations, in response to a user selecting a RFID reader type, using screen **652**, thereby allowing the user to (implicitly) associate a RFID format/protocol with the entered RFID.

As illustrated in **Fig. 6f**, for the embodiment, the user interface further includes screen **672** displaying a RFID and its details, including but not limited the intended RFID reader type, whether to be designated as the default RFID for use in emulating passive RFID. Request **674** may be displayed for example, among other situations, in response to a user selecting the "edit" option, using screen **622**, or on completion of designating a RFID as the default RFID for emulating Passive transponders, using screen **662**.

Operationally, as illustrated in **Fig. 7**, upon receipt of a request to launch the RFID function, support logic of the RFID feature **322** is loaded and given execution control, block **702**. Thereafter, support logic **322** waits for user inputs, block **704**.

On receipt of a user input/request, support logic **322** determines the nature of the input/request, block **706**, taking into the context, i.e. the portion of the user interface being displayed, and with which the user just interacted in submitting the input/request.

As illustrated, on determining that the user has requested a current display list to be scrolled (e.g. RFID list **614** of screen **612**), support logic **322** causes the list to be scrolled as requested. Thereafter, support logic **322** returns to block **708** and waits for further input.

Similarly, on determining that the user has requested a selected RFID to be sent (emulating output of the RFID by an active RFID transponder), support logic **322** causes the RFID to be outputted in a form of an appropriate RF signal (in accordance with the associated intended RFID reader type). Thereafter, support logic **322** again returns to block **710** and waits for further input.

On determining that the user has requested a list of options to be displayed (e.g. selection of "option" **616** of screen **612**), support logic **322** causes the list of options to be displayed as requested. Thereafter, support logic **322** return to block **712** and waits for further input.

On determining that the user has requested to add a RFID (e.g. selection of "Add" of screen **622**), support logic **322** facilitates addition of a RFID (e.g. successively guiding user entry of a RFID using screens **632-662**. Thereafter, support logic **322** returns to block **714** and waits for further input.

These are a few examples of user inputs/requests support logic **322** may support. The present invention contemplates other user inputs/requests may also be supported, and handled accordingly, block **716**.

Conclusion and Epilogue

Thus, it can be seen from the above descriptions, a novel emulated RFID input method, using a mobile communication device, has been described. The present invention advantageously improved the ease of use for a user to provide data captured in a device to

another system, especially for data captured in e.g. a mobile device.

While the present invention has been described in terms of the earlier described embodiments, those skilled in the art will. recognize that the invention is not limited to the embodiments described. The present invention can be practiced with modification and alteration within the spirit and scope of the appended claims. Thus, the description is to be regarded as illustrative instead of restrictive on the present invention.

ABSTRACT OF THE DISCLOSURE

A mobile communication device is equipped with hardware and/or software components to enable the device to output a data in a form of a radio frequency signal, emulating outputting of the data by either an active or a passive RFID transponder. The data may be a security key or an identifier. Emulation of an active RFID transponder includes facilitating selection of the data and instruction to output by a user. Emulation of a passive RFID transponder includes detecting for proximal presence of a RFID reader. Either case, provision of the data to the mobile communication device may include provision of associated signal attribute(s).

(Substitute Specification – Clean Copy)

EMULATED RADIO FREQUENCY IDENTIFICATION

RELATED APPLICATION

This application is a continuation of U.S. Patent Application 13/363,202, filed January 31, 2012 and entitled "Emulated Radio Frequency Identification," which is a continuation of U.S. Patent Application 10/560,262, filed December 9, 2005 and entitled "Emulated Radio Frequency Identification," which was the National Stage of International Application No. PCT/US04/18397, filed June 10, 2004 and entitled "Emulated Radio Frequency Identification," which itself claims the benefit of U.S. Provisional Application No. 60/478,245, entitled "Radio Frequency Identification Using Mobile Communication Device"[[,]] and filed [[on]] June 13, 2003.

FIELD OF THE INVENTION

The present invention relates to the fields of security, communication, and data processing. More specifically, the present invention is related to an emulated radio frequency data input method.

BACKGROUND OF THE INVENTION

It wasn't that long ago, even residents in medium size cities still feel secured enough to leave their homes unlocked and/or their garages open. In general, one can access one's place of

employment, including parking facilities as well as one's office without identification or access keys.

In the world of commerce, things were also simpler. One typically may shop and consume goods and services, at relatively low prices, without having to be affiliated with any programs or entities.

However, the world has become a lot more complex in recent years. Virtually, all properties of any value, premises, including one's home, have to be secured, even for relatively small towns and cities. One can hardly shop and consume any goods and services, without having signed up with some promotional frequent "usage" programs or becoming affiliated with the commercial entities. The employment of affinity marketing has reached a point even neighboring grocery chains employ them, and not just airlines, hotels, or wholesale discount retailers.

As a result, it is not uncommon to find a person having to carry a number of physical keys and access/identification cards/tags to gain access to secured premises, such as one's home, office, parking garage, and so forth. Additionally, the person is likely to carry a number of remote security control devices, such as a key with remote control for gaining access to his/her vehicle, a garage door opener for gaining access to the person's garage at home, and so forth. The person is also likely to carry a number of affinity identification cards with member identifiers identifying the person as being affiliated with certain co-op or frequent patronage programs, such as wholesale discount retailers, airline or hotel frequent traveler program, and so forth, that entitle the person to certain benefits, such as discounts or rewards.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references denote similar elements, and in which:

Figure 1 illustrates an overview of the present invention, in accordance with one embodiment;

Figure 2 illustrates a method view of the present invention, in accordance with one embodiment;

Figure 3 illustrates the relevant hardware elements of the device of **Fig. 1** in further details, in accordance with one embodiment;

Figure 4 illustrates the transceiver of **Fig. 3** in further details, in accordance with another embodiment;

Figures 5a-5b illustrate the exploded views of two embodiments of the mobile communication device of **Fig. 1**;

Figures 5c-5d illustrate an exploded view of another embodiment of the mobile communication device of **Fig. 1**;

Figure 6a-6h illustrate a number of example screens of an end user interface, suitable for use to practice the present invention, in accordance with one embodiment; and

Figure 7 illustrates the operational flow of the relevant aspects of the software in support of the RFD feature of the present invention, in accordance with one embodiment.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

Embodiments of the present invention includes an emulated RFID method, more specifically, an emulated RFID method, using a mobile communication device, including the device itself, and certain hardware and/or software embodied therein for the practice of the emulated RFID method.

In the following description, various aspects of the illustrative embodiments of the present invention will be described. However, alternate embodiments may be practiced with only some or all aspects of the illustrative embodiments of the present invention. For purposes of explanation, specific numbers, materials and configurations are set forth in order to provide a thorough understanding of the present invention. However, alternate embodiments may be practiced without the specific details. In other instances, well-known features are omitted or simplified in order not to obscure the essence of the illustrative embodiments of the present invention.

Terminology

Parts of the description will be presented in data processing terms, such as data, selection, retrieval, generation, and so forth, consistent with the manner commonly employed by those skilled in the art to convey the substance of their work to others skilled in the art. As well understood by those skilled in the art, these quantities take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, and otherwise manipulated through electrical and/or optical components of a processor and its subsystems.

Part of the descriptions will employ various abbreviations, including but are not limited to:

CDROM	Compact Disc Read Only Memory
DDRAM	Dynamic Direct Random Access Memory
DVD	Digital Versatile Disc
EEPROM	Electrically Eraseable Programmable Read-Only-Memory
HTTP	HyperText Transmission Protocol
SDRAM	Statis Direct Random Access Memory
SMS	Small Messaging Service

The term "number as used In this application to describe a data, including both its usage in the specification and the claims, typically refers to numeric data, as the word "number" is conventionally used in mathematics. However, in certain contexts, the "number" may also include alphabet or special characters, as the term is conventionally understood by those skilled in the art in those contexts. For examples, a drivers license number, a passport number, an employee number, or a student ID number, as each of these terms is conventionally used, often includes one or more alphabets or special characters, even though they are referred to as "numbers". The term accordingly is to be given the meaning that is consistent with the context under which the term is used.

Section Headings, Order of Descriptions and Embodiments

Section headings are merely employed to improve readability, and they are not to be construed to restrict or narrow the present invention.

Various operations will be described as multiple discrete steps in turn, in a manner that is most helpful in understanding the present invention, however, the order of description should not be construed as to imply that these operations are necessarily order dependent. In particular, these operations need not be performed in the order of presentation.

The phrase In one embodiment" is used repeatedly. The phrase generally does not refer to the same embodiment, however, it may, The terms "comprising", "having" and Including" are synonymous, unless the context dictates otherwise.

Overview

Refer now to **Figure 1**, wherein a block diagram illustrating an overview of the present invention **100**, in accordance with one embodiment, is shown. As illustrated, for the embodiment, mobile communication device **102** is equipped with hardware and/or software elements **104** to perform its primary function, which is to facilitate a user of device **102** to engage in communication with another user of another communication device (not shown). In various embodiments, the communication may be audio (such as phone calls), textual (such as messaging) and/or visual (such as airtexting using light sources). Additionally, for the embodiment, mobile communication device **102** is equipped with hardware and/or software elements **106** to facilitate provision or transfer of a key/identifier in a form a radio frequency signal **110**, which may be read e.g. by a radio frequency identifier (RFID) reader **120**. In turn, the provision of RFID **110** may be responded to by a system (not shown) with which RFID reader **120** is a part or coupled to.

As depicted in **Fig. 1**, blocks **104** and **106** "Intersect" with one another. The "intersection" represents the fact that in preferred embodiments of the present invention,

substantial portions of the hardware and/or software elements employed to provide a RFID, are the same elements employed to facilitate the primary function of device **102**, i.e. to facilitate a user in communicating with another user of another communication device.

In other words, Illustrative embodiments of the present invention advantageously leverage on existing elements of mobile communication device **102**, and supplement them, to enable mobile communication device **102** to be able to provide a RFID, emulating a RFID transponder, as well as facilitating user communication.

As will be described in more detail below, in preferred embodiments, mobile communication device **102** is equipped to provide RFID, emulating an active and/or a passive RFID transponder.

Further, RFID **110** may be any keys and/or identifiers, including but not limited to security keys, such as garage door "keys", exterior or interior door keys, or identifiers, such as, employee numbers, driver's license numbers, social security numbers, credit card numbers (optionally, including expiration dates), affinity program member identifiers, and so forth.

Continue to refer to **Fig. 1**, except for the present invention incorporated therein, mobile communication device **102** represents a broad range of mobile communication devices known in the art, including but are not limited to wireless mobile phones and personal digital assistants equipped with communication capability.

The term "wireless mobile phone" as used herein, including the specification and the claims, refers to the class of telephony devices equipped to facilitate a user in communicating with another user of another communication device, notwithstanding the user's movement around different geographic areas, so long the wireless mobile phone is In contact with a base/service station of a wireless network service provider. The term includes the analog as well

as the digital subclasses. Communication may be voice and/or data, audio, textual and/or visual. The other user/communication device may be mobile or land line based.

RFID reader **120** represents a broad range of such devices known in the art or to be designed. Currently, most RFID readers **120** employ proprietary formats/protocols. That is, RFID readers **120** of different manufacturers tend to employ different frequencies, amplitudes, and/or keying Schemes (which may be frequency shifting keying (FSK), amplitude shifting keying (ASK) or phase shifting keying (PSK)).

Various embodiments of the methods of the present inventions, including elements **106**, in particular, added elements, will be described in turn below.

Method

Figure 2 illustrates a method view of the present invention, in accordance with one embodiment. As illustrated, device **102** is first provided with the RFIDs, block **202**. The RFIDs may be provided in any one of a number of known or to be designed manners, including but are not limited to

- manual entry, using a keypad of device **102**,

- read into device **102**, from an access/identification card, using a magnetic or optical card reader of device **102**,

- downloaded Into device **102**, from a coupled computing device, through a serial/parallel port of device **102** or through a network interface of device **102** using SMS or HTTP messages.

Typically, provision of a RFID will include the manner the RFID is to be outputted, i.e. signaled. As alluded to earlier, the manner it is to be signaled is dependent on the

format/protocol employed by the Intended RFID reader **120**. For examples, for a garage door key, the format/protocol employed by RFID reader **120** of the garage opener system, and for an affinity program member identifier, the format/protocol employed by RFID reader **120** of the point-of-sale system of the entity offering the affinity program.

Alternatively, a default signaling format/protocol, such as an industry standard, the most popular proprietary format/protocol, or a selected proprietary format/protocol maybe assumed instead, when one is not provided.

During operation, in response to a user instruction, typically after the user has selected the RFID to be outputted from a number of RFIDs stored in device **102**, block **203**, device **102** outputs the selected RFID as instructed, emulating an active RFID transponder, block **204**.

For the embodiment, one RFID, e.g. an access key/identifier (such as an employee number), may also be selected/designated as a default RFID, the output of which may be emulated in a passive manner. That is, the selected/designated default RFID will be outputted automatically, whenever device **102** is within the proximal presence, or more specifically, the operational space, of an intended RFID reader **120**.

Accordingly, device **102** monitors for probing signals of an intended RFID reader **120** (or a type of RFID readers **120**), to determine whether device **102** is within the operational space of such a RFID reader **120**, block **205**. On so determining, device **102** outputs the designated RFID automatically, emulating a passive RFID transponder, block **206**.

A Hardware/Software Implementation

Figure 3 illustrates the relevant elements of device **102**, in accordance with one embodiment. As illustrated, for the embodiment, device **102** includes processor **302**, memory

304, persistent store **306**, transceiver **308**, and a number of other components **310**, coupled to each other via bus **312**.

Persistent store **306** and memory **304** are employed to store permanent and working copies of a software implementation of the operating logic **320** of device **102**, including the supplemental RFID feature **322**. In various embodiments, persistent store **306** may be an EEPROM (or like kind variants, such as a Flash Memory, a Memory Stick), a magnetic or optical disk drive, a CDROM, a DVD drive and so forth. Memory 304 may be any SORAM, DDRAM or other high speed volatile as way as non-volatile storage devices known in the art.

Processor **302** is employed to execute operating logic **320**, including RFID feature **322**. As will be readily apparent from the description to follow, operating logic **320** may be implemented in any one of a number of suitable system programming languages, including but not limited to high level languages that may be compiled into executable instructions supported by processor **302**. Processor **302** may be any one of a number of processors designed or to be designed for mobile devices.

Except for transceivers **308**, RHO feature **322** and the manner the various elements of **Fig. 3** are used to practice the present Invention, the other illustrated elements are known in the art, and accordingly will not be further described. One embodiment of transceiver **308** will be described referencing **Fig. 4**, and one embodiment of RFD feature **322** will be described, referencing **Fig. 6-7**.

As described earlier, processor **302**, memory **304**, persistent store **306** and bus **312** may be shared elements of device **102**, also employed to implement the primary communication function of device **102**. However, in alternate embodiments, dedicated elements may be employed for some or all of these elements instead.

In one embodiment, device **102** is a wireless mobile telephone, an exploded view of which is illustrated in **Fig. 5a**. Wireless mobile phone **500**, in addition to the earlier described elements, also includes display **506**, control buttons **504**, keypad **502**, antenna **508**, body **512** and cover **514**. Body **512** is substantially rectangular in shape. Further, body **512** is palm-sized or smaller.

For the embodiment, cover **514** includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance phone **500**. Phone **500** includes complementary electronic component interface **516** in support of such personalization, customization and/or enhancement.

Cover **514** may form a part of housing **512**, i.e. a required element to complete phone **500**, or it may be an accessory to be adorned by phone **500**, i.e. not a required element to complete phone **500**.

In another embodiment, device **102** is a PDA, an exploded view of which, is illustrated in **Fig. 5b**. PDA **502**, in addition to the earlier described elements, also includes display **524**, control buttons **522**, antenna **526**, body **532**, and cover **534**. Body **530** is also substantially rectangular in shape, as well as palm-sized or smaller.

Similarly, for the embodiment, cover **534** includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance PDA **520**. PDA **520** includes complementary electronic component interface **536** in support of such personalization, customization and/or enhancement.

Cover **534** may form a part of housing **532**, i.e. a required element to complete PDA **520**, or it may be an accessory to be adorned by PDA **520**, i.e. not a required element to complete PDA 520.

Figure 5c-5d illustrate yet another embodiment of device **102**, another wireless mobile telephone, an exploded view of which is illustrated. Wireless mobile phone **540** is similarly constituted as the earlier described embodiments, including body **542** and cover **544**. However, body **542** has a substantially boomerang or banana shape. Body **542**. is also typically palm-sized or smaller.

For the embodiment, cover **544** also includes embedded electronic components having instructions, data, and/or locations to obtain such Instructions and/or data to personalize, customize and/or enhance phone **540**. Phone **540** includes complementary electronic component interface (not shown) in support of such personalization, customization and/or enhancement.

Cover **544** may form a part of housing **542**, i.e. a required element to complete phone **540**, or it may be an accessory to be adorned by phone **540**, i.e. not a required element to complete phone **540**.

In all or selected one(s) of these embodiments, some or all elements **106** in support of the RFID feature of the present invention may be provided through embedded electronic components of the housing/accessory covers.

Smart covers are the subject matters of subject matter of co-pending U.S. Application, number 10/087,098, filed March 1, 2002, entitled "Personalizing Electronic Devices and Smart Covering", and U.S. Application, number <insert>, filed May 2, 2003, entitled "Personalization of Mobile Electronic Devices and Smart Accessory Cover", which specifications are hereby fully incorporated by reference.

While all three embodiments of **Fig. 5a-5d** have been illustrated with smart covers and external antennas. In alternate embodiments, the present invention may be practiced without

smart covers and/or external antennas. The present invention may be practiced with conventional covers, ,without embedded intelligence and/or internal antennas.

Transceiver

Figure 4 illustrates transceiver **308** of **Fig. 3** in further details, in accordance with one embodiment. As illustrated, for the embodiment, transceiver **308** includes a joint radio frequency (RF) transmit/receive (TX/RX) section **402**, separate signal processing sections **408** and **410** for a range of higher frequencies and a range of low frequencies, switch **404** and splitter **406**. The elements are coupled to each other as shown.

For the embodiment, joint RF TX/RX **402** includes in particular, switch **420**, filters **412** and **422**, low noise amplifier **424** and power amplifier **414**, coupled to one another as shown. Switch **420** is employed to switch between transmitting and receiving RF signals. Filters **412** and **422**, low noise amplifier **424** and power amplifier **414** are employed to perform their conventional filtering and amplification functions on the transmit and receive signals.

For transmission, switch **404** switches between the output of high frequency signal processing **410** and the output of low frequency signal processing **408** to the transmit path of Joint RF TX/RX **402**.

For reception, splitter 406 splits the output of the receive path of Joint RF TX/RX **402** and provides the receive signal to high frequency signal processing **410** as well as low frequency signal processing **406**.

For the embodiment, high frequency signal processing **410** performs up and down conversions of the transmit and receive signals of the primary communication function of mobile

communication device **102**, e.g. the transmit and receive signals of a voice call. In one embodiment, the transmit and receive signals are transmitted and received In the GHz ranges:

Low frequency signal processing **408**, on the other hand, performs up and down conversions of the transmit and receive signals of the RFID feature, e.g. the output signal of a RFID to emulate either an active or a passive transponder, and the received probing signal of a RFID reader. In one embodiment, the transmit and receive signals are transmitted and received in the MHz ranges.

Up and down conversions, filtering, amplifications, and so forth, in and of themselves, except for the manner they are being used to provide RFIDs using a mobile communication device, are known in the art, accordingly, will not be further described.

RFID Feature

Figures 6-7 illustrate selected portions of an example end user interface, and the operational flow of the relevant aspects of RFD feature **322** respectively, in accordance with one embodiment. **Figure 6** comprises **Fig. 6a-6h**.

As illustrated in **Fig. 6a**, for the embodiment, the user interface Includes screen **602** having selectable text display "RFID" **604**, with which a user may interact to launch the RFID function (by selecting text display **604**, using e.g. control keys **604**).

As illustrated in **Fig. 6b**, for the embodiment, the user interface further includes screen **612** enumerating a list of RFIDs **614** stored in device **102**. List **614** may be displayed for example, among other situations, in response to a user's selection of text display **604** of screen **602**. A user may select one of the RFIDs, and instruct device **102** to output the selected RFD in

a form of an appropriate radio frequency signal, emulating provision of the RFID by an active RFID transponder, using e.g. a "send/call" key of device **102**.

Screen **612** also includes selectable "option" button **616**, with which a user may interact to display a list of RFID management options, using e.g. control keys **504**.

As illustrated in **Fig. 6c**, for the embodiment, the user interface further includes screen **622** enumerating a list of RFID management options **624**, such as "add", "edit" or "delete" RFIDs. List **624** may be displayed for example, among other situations, in response to a users selection of "option" **616** of screen **612**.

As illustrated in **Fig. 6d**, for the embodiment, the user interface further includes screen **632** displaying field **634**, through which a user may enter/edit a RFID name. Field **634** may be displayed for example, among other situations, in response 'to a users selection of "add" or "edit" of screen **622**.

As illustrated in **Fig. 6e**, for the embodiment, the user interface further includes screen **642** displaying field **644**, through which a user may enter/edit a RFID. Field **644** may be displayed for example, among other situations, in response to a user indicating completion of entry of a RFID name using screen **632**.

As illustrated in **Fig. 6f**, for the embodiment, the user interface further includes screen **652** displaying a list of RFID types **654**, with which a user may select and associate with a RFID. List **654** may be displayed for example, among other situations, in response to a user indicating completion of entry of a RED, using screen **642**, thereby allowing the user to associate a RFID reader type with the entered RFID.

Each RFD reader type is assumed to have a deterministic RFID signaling format/protocol. Accordingly, by selecting the RFID reader type, the user is effectively selecting

or specifying the RFID signaling format/protocol. in alternate embodiment, a user may be requested to select the RFD signaling format/protocol explicitly, as opposed to implicitly, in the illustrated embodiment.

As illustrated in **Fig. 6g**, for the embodiment, the user interface further includes screen **662** displaying a request **664** to confirm whether a RFD is to be selected or designated as the default RFID to be used for emulation of passive transponders. Request **664** may be displayed for example, among other situations, in response to a user selecting a RFID reader type, using screen **652**, thereby allowing the user to (implicitly) associate a RFID format/protocol with the entered RFID.

As illustrated in **Fig. 6f**, for the embodiment, the user interface further includes screen **672** displaying a RFID and its details, including but not limited the intended RFID reader type, whether to be designated as the default RFID for use in emulating passive RFID. Request **674** may be displayed for example, among other situations, in response to a user selecting the "edit" option, using screen **622**, or on completion of designating a RFID as the default RFID for emulating Passive transponders, using screen **662**.

Operationally, as illustrated in **Fig. 7**, upon receipt of a request to launch the RFID function, support logic of the RFID feature **322** is loaded and given execution control, block **702**. Thereafter, support logic **322** waits for user inputs, block **704**.

On receipt of a user input/request, support logic **322** determines the nature of the input/request, block **706**, taking into the context, i.e. the portion of the user interface being displayed, and with which the user just interacted in submitting the input/request.

As illustrated, on determining that the user has requested a current display list to be scrolled (e.g. RFID list **614** of screen **612**), support logic **322** causes the list to be scrolled as requested. Thereafter, support logic **322** returns to block **708** and waits for further input.

Similarly, on determining that the user has requested a selected RFID to be sent (emulating output of the RFID by an active RFID transponder), support logic **322** causes the RFID to be outputted in a form of an appropriate RF signal (in accordance with the associated intended RFID reader type). Thereafter, support logic **322** again returns to block **710** and waits for further input.

On determining that the user has requested a list of options to be displayed (e.g. selection of "option" **616** of screen **612**), support logic **322** causes the list of options to be displayed as requested. Thereafter, support logic **322** return to block **712** and waits for further input.

On determining that the user has requested to add a RFID (e.g. selection of "Add" of screen **622**), support logic **322** facilitates addition of a RFID (e.g. successively guiding user entry of a RFID using screens **632-662**. Thereafter, support logic **322** returns to block **714** and waits for further input.

These are a few examples of user inputs/requests support logic **322** may support. The present invention contemplates other user inputs/requests may also be supported, and handled accordingly, block **716**.

Conclusion and Epilogue

Thus, it can be seen from the above descriptions, a novel emulated RFID input method, using a mobile communication device, has been described. The present invention advantageously improved the ease of use for a user to provide data captured in a device to

another system, especially for data captured in e.g. a mobile device.

While the present invention has been described in terms of the earlier described embodiments, those skilled in the art will. recognize that the invention is not limited to the embodiments described. The present invention can be practiced with modification and alteration within the spirit and scope of the appended claims. Thus, the description is to be regarded as illustrative instead of restrictive on the present invention.

ABSTRACT OF THE DISCLOSURE

A mobile communication device is equipped with hardware and/or software components to enable the device to output a data in a form of a radio frequency signal, emulating outputting of the data by either an active or a passive RFID transponder. The data may be a security key or an identifier. Emulation of an active RFID transponder includes facilitating selection of the data and instruction to output by a user. Emulation of a passive RFID transponder includes detecting for proximal presence of a RFID reader. Either case, provision of the data to the mobile communication device may include provision of associated signal attribute(s).

Electronic Patent Application Fee Transmittal

Application Number:	13750970
Filing Date:	25-Jan-2013
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Filer:	Ryan C. Fox-Lee/Enoy Lawless
Attorney Docket Number:	120083-187945

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Pages:				
Claims:				
Claims in excess of 20	2202	19	40	760
Independent Claims in Excess of 3	2201	1	210	210
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Late Filing Fee for Oath or Declaration	2051	1	70	70
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1770**

Electronic Acknowledgement Receipt	
EFS ID:	15665854
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	25943
Filer:	Ryan C. Fox-Lee/Enoy Lawless
Filer Authorized By:	Ryan C. Fox-Lee
Attorney Docket Number:	120083-187945
Receipt Date:	01-MAY-2013
Filing Date:	25-JAN-2013
Time Stamp:	19:57:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1770
RAM confirmation Number	6309
Deposit Account	500393
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees) Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees) Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		P064C2_revoc-poa-373c.pdf	239264 2e4864444727d06c28ee4621168c2ae12f5b222f	yes	3
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Power of Attorney		1	1	
	Assignee showing of ownership per 37 CFR 3.73.		2	3	
Warnings:					
Information:					
2	Applicant Response to Pre-Exam Formalities Notice	P064C2_response-ntfmp_05_01_13.pdf	63737 4aa3cf10ab1f43c21cbd12e3df77fc829ed493f9	no	2
Warnings:					
Information:					
3	Oath or Declaration filed	P064C2_signed_declarations.pdf	1645208 4ce38afca2e9c86f230903fa9115a48fef9f0793	no	3
Warnings:					
Information:					
4		P064C2_sub-spec-marked-up.pdf	105228 e6fe02b4320ef733cb97a88d76039c0d29f6e94a	yes	19
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Specification		1	18	
	Abstract		19	19	
Warnings:					
Information:					
5		P064C2_sub-spec-clean.pdf	104813 670336e282f95b2de1516aeba4e9c3ab9d989d11	yes	19

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	18
	Abstract	19	19

Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	40110 6e1a21a02f54867df1299ba8a85c35c16cc574d8	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2198360		

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

Electronic Acknowledgement Receipt	
EFS ID:	15665854
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	25943
Filer:	Ryan C. Fox-Lee/Enoy Lawless
Filer Authorized By:	Ryan C. Fox-Lee
Attorney Docket Number:	120083-187945
Receipt Date:	01-MAY-2013
Filing Date:	25-JAN-2013
Time Stamp:	19:57:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1770
RAM confirmation Number	6309
Deposit Account	500393
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees) Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees) Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		P064C2_revoc-poa-373c.pdf	239264 2e4864444727d06c28ee4621168c2ae12f5b222f	yes	3
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Power of Attorney		1	1	
	Assignee showing of ownership per 37 CFR 3.73.		2	3	
Warnings:					
Information:					
2	Applicant Response to Pre-Exam Formalities Notice	P064C2_response-ntfmp_05_01_13.pdf	63737 4aa3cf10ab1f43c21cbd12e3df77fc829ed493f9	no	2
Warnings:					
Information:					
3	Oath or Declaration filed	P064C2_signed_declarations.pdf	1645208 4ce38afca2e9c86f230903fa9115a48fef9f0793	no	3
Warnings:					
Information:					
4		P064C2_sub-spec-marked-up.pdf	105228 e6fe02b4320ef733cb97a88d76039c0d29f6e94a	yes	19
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Specification		1	18	
	Abstract		19	19	
Warnings:					
Information:					
5		P064C2_sub-spec-clean.pdf	104813 670336e282f95b2de1516aeba4e9c3ab9d989d11	yes	19

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	18
	Abstract	19	19

Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	40110 6e1a21a02f54867df1299ba8a85c35c16cc574d8	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2198360		

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.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/750,970

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	98		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	310		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	125		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	39 minus 20 =	* 19	x 31 =	589	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4 minus 3 =	* 1	x 125 =	125			
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	1247		TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT A

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

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/750,970	01/25/2013	2876	0.00	120083-187945	39	4

CONFIRMATION NO. 8778

25943
Schwabe Williamson & Wyatt
PACWEST CENTER, SUITE 1900
1211 SW FIFTH AVENUE
PORTLAND, OR 97204

FILING RECEIPT



Date Mailed: 03/01/2013

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

Inventor(s)

Peter Zatloukal, Kirkland, WA;
G. Eric Engstrom, Kirkland, WA;
Cindy M. Smith, Kirkland, WA;

Applicant(s)

Varia Holdings LLC, Brooklyn, NY

Assignment For Published Patent Application

VARIA HOLDINGS LLC, Brooklyn, NY

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 13/363,202 01/31/2012 PAT 8381974 *
which is a CON of 10/560,262 12/09/2005 PAT 8127984
which is a 371 of PCT/US04/18397 06/10/2004
(*)Data provided by applicant is not consistent with PTO records.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 02/26/2013
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/750,970**
Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

EMULATED RADIO FREQUENCY IDENTIFICATION

Preliminary Class

235

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

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

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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

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

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

NOT GRANTED

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

SelectUSA

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/750,970	01/25/2013	Peter Zatloukal	120083-187945

CONFIRMATION NO. 8778

25943
Schwabe Williamson & Wyatt
PACWEST CENTER, SUITE 1900
1211 SW FIFTH AVENUE
PORTLAND, OR 97204

FORMALITIES LETTER

OC000000059524149

Date Mailed: 03/01/2013

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
  *Applicant must submit $**98** to complete the basic filing fee for a small entity.*

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. The substitute specification must be submitted with markings and be accompanied by a clean version (without markings) as set forth in 37 CFR 1.125(c) and a statement that the substitute specification contains no new matter (see 37 CFR 1.125(b)). The specification, claims, and/or abstract page(s) submitted is not acceptable and cannot be scanned or properly stored because:
  - The line spacing on the specification, claims, and/or abstract is not 1½ or double spaced (see 37 CFR 1.52(b)).

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Additional claim fees of $ **714** as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

- A surcharge (for late submission of the basic filing fee, search fee, examination fee or inventor's oath or declaration) as set forth in 37 CFR 1.16(f) of $ **65** for a small entity in compliance with 37 CFR 1.27, must be submitted.

SUMMARY OF FEES DUE:

Total fee(s) required within **TWO MONTHS** from the date of this Notice is $ **1312** for a small entity
- $ **98** Statutory basic filing fee.
- $ **65** Surcharge.
- The application search fee has not been paid. Applicant must submit $ **310** to complete the search fee.
- The application examination fee has not been paid. Applicant must submit $ **125** to complete the examination fee for a small entity in compliance with 37 CFR 1.27.
- Total additional claim fee(s) for this application is $ **714**
  - $ **125** for **1** independent claims over 3.
  - $ **589** for **19** total claims over 20.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  All
  Applicant may submit the inventor's oath or declaration at any time before the Notice of Allowance and Fee(s) Due, PTOL-85, is mailed.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/bnguyen/

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application for:	Examiner: Unassigned
Zatloukal et al.	Art Group: Unassigned
Application No.: Unassigned	Confirmation No: Unassigned
Filed: January 25, 2013	
For: EMULATED RADIO FREQUENCY IDENTIFICATION	

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

PRELIMINARY AMENDMENT

Sir:

Applicant respectfully requests that, prior to the examination of the above-referenced application, the Examiner enter the following amendments and consider the following remarks.

Amendments to the Specification begin on page **2** of this paper

Amendments to the Claims begin on page **3** of this paper.

Remarks/Arguments begin on page **9** of this paper.

AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph starting on page 1, line 4 with the following re-written paragraph:

This application is a continuation of U.S. Patent Application 13/363,202, filed January 31, 2012 and entitled "Emulated Radio Frequency Identification," which is a continuation of U.S. Patent Application 10/560,262, filed December 9, 2005 and entitled "Emulated Radio Frequency Identification," which was the National Stage of International Application No. PCT/US04/18397, filed June 10, 2004 and entitled "Emulated Radio Frequency Identification," which itself ~~non-provisional application~~claims the benefit of U.S. Provisional Application No. ~~provisional application number~~ 60/478,245, entitled "Radio Frequency Identification Using Mobile Communication Device"[[,]] and filed [[on]] June 13, 2003~~, and claims priority to said provisional application~~.

AMENDMENTS TO THE CLAIMS

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

Listing of Claims

1-60. (Cancelled)

61. (New) A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising:

receiving, by the mobile communication device, from an RFID reader external to the mobile device, an instruction to output first RFID transponder data in a format compatible with said RFID reader;

switching the mobile communication device from a first state to a second state upon reception of said instruction, the mobile communication device being configured to output voice call signals in the first state and to output the first RFID transponder data in the format compatible with said RFID reader in the second state; and

outputting, by the mobile communication device in the second state, the first RFID transponder data in the format compatible with said RFID reader.

62. (New) The method of claim 61, wherein said mobile communication device comprises a first signal processing unit configured to process voice call signals and a second signal processing unit configured to process RFID signals, said switching comprising coupling the second signal processing unit to a transmission path.

63. (New) The method of claim 61, wherein said first RFID transponder data comprises a selected one of a security key and an identifier.

64. (New) The method of claim 63, wherein said security key comprises a selected one of a

garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

65. (New) The method of claim 61, wherein said first RFID transponder data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

66. (New) . The method of claim 61, wherein the method further comprises facilitating the user in selecting the first RFID transponder data from a plurality of RFID transponder data using the mobile communication device.

67. (New) The method of claim 61, wherein the method further comprises facilitating provision of the first RFID transponder data to the mobile communication device.

68. (New) The method of claim 67, wherein said facilitating of the provisioning of the RFID transponder data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID transponder data in the format compatible with said RFID reader.

69. (New) The method of claim 61, wherein the method further comprises:

monitoring for proximal presence of the RFID reader by the mobile communication device; and

on detection of the RFID reader by the mobile communication device, outputting, by the mobile communication device in the second state, the first RFID transponder data in the format compatible with said RFID reader, and

wherein the mobile communication device emulates an RFID transponder of a passive type.

70. (New) The method of claim 69, wherein said monitoring comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

71. (New) The method of claim 69, wherein said sensing is performed at regular intervals.

72. (New) The method of claim 61, wherein the mobile communication device is a selected one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

73. (New) A method for providing a radio frequency identification (RFID) from a mobile communication device capable of RFID communication and voice call communication, the method comprising:

monitoring for a proximal presence of a proximal RFID reader external to said mobile communication device by said mobile communication device, the mobile communication device having communication circuitry configured to output, in a first state, RFID transponder data in a format compatible with said RFID reader upon the mobile communication device determining the proximal presence of said RFID reader, and the communication circuitry being also configured to output, in a second state, a voice call signal for transmission at least in part over a wireless network; and

on detection of said RFID reader, outputting, by the transceiver, the RFID transponder data in a format compatible with said RFID reader as a radio frequency signal.

74. (New) The method of claim 73, wherein said monitoring comprises sensing for a first probing signal from said RFID reader and sensing for a second probing signal from a different RFID reader.

75. (New) The method of claim 73, wherein said data comprises a security key.

76. (New) The method of claim 75, wherein said security key comprises a door key.

77. (New) The method of claim 76, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

78. (New) The method of claim 73, wherein the method further comprises facilitating provision of the RFID transponder data to the mobile communication device.

79. (New) The method of claim 78, wherein said facilitating of the provisioning of the RFID transponder data to the mobile communication device includes facilitating provision of at least a signaling attribute associated with the outputting of the RFID transponder data in the format employed by the RFID reader.

80. (New) The method of claim 73, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

81. (New) A mobile communication device capable of RFID communication and voice call communication, the mobile communication device comprising:

communication circuitry configured to output voice call signals in a first radio frequency range and to output first RFID transponder data in a second radio frequency range;

a storage medium storing first data and instructions for the communication circuitry to:

monitor for proximal presence of one or more RFID readers external to the mobile communication device; and

output a voice call signal for transmission over a wireless network; and

output the first RFID transponder data as RFID transponder signals in a format employed by a proximal RFID reader, in response to detection by the mobile communication device of the proximal presence of the one or more RFID readers external to the mobile communication device.

82. (New) The device of claim 81, wherein said first RFID transponder data comprises a selected one of a security key and an identifier.

83. (New) The device of claim 82, wherein said first RFID transponder data comprises a security key, and said security key comprises a door key.

84. (New) The device of claim 83, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

85. (New) The device of claim 82, wherein said first RFID transponder data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

86. (New) The device of claim 81, wherein the instructions are further designed to facilitate the user in selecting the first RFID transponder data from a plurality of RFID transponder data.

87. (New) The device of claim 81, wherein the instructions are further designed to facilitate provision of the first RFID transponder data to the mobile communication device.

88. (New) The device of claim 87, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first RFID transponder data in the form of a radio frequency signal.

89. (New) The device of claim 81, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

90. (New) The device of claim 81, wherein the first data includes information identifying a user.

91. (New) The device of claim 81, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

92. (New) A mobile communication device capable of radio frequency identifier RFID communication and voice call communication, the mobile communication device comprising:

communication circuitry configured to transmit a voice call signal in a first operational state and a RFID transponder signal in a second operational state;

a storage medium storing first data and instructions for the communication circuitry to selectively (a) monitor for proximal presence of a proximal RFID reader, and on detection of the proximal RFID reader, output RFID transponder data as an RFID signal in a format employed by the proximal RFID reader, and (b) transmit a voice call signal to another user of another communication device at least in part over a wireless network.

93. (New) The device of claim 92, wherein said instructions are further designed to sense for a probing radio frequency signal of the proximal RFID reader.

94. (New) The device of claim 92, wherein said RFID transponder data comprises a security key.

95. (New) The device of claim 94, wherein said security key comprises a door key.

96. (New) The device of claim 95, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

97. (New) The device of claim 92, wherein the instructions are further designed to facilitate provision of the RFID transponder data to the mobile communication device.

98. (New) The device of claim 97, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the RFID transponder data in the form of a radio frequency signal.

99. (New) The device of claim 92, wherein the mobile communication device is one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

REMARKS

It is respectfully requested that, prior to the examination, the Examiner enter the above amendments. Claims 1-60 are cancelled. Claims 61-99 have been added. No new matter has been added. Support for the new claims can be found throughout the Specification and claims as orignally filed. Claims 61-99 are pending.

Consideration of the application, as amended, is respectfully requested.

If the Examiner has any questions concerning the present paper, the Examiner is kindly requested to contact the undersigned at (503) 796-2446. If any fees are due in connection with filing this paper, the Commissioner is authorized to charge Deposit Account No. 500393.

Respectfully submitted,

Date: January 25, 2013

By: /Ryan C. Fox-Lee/
Ryan C. Fox-Lee
Reg. No.: 65,369

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

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

Application Number	
Filing Date	2013-01-25
First Named Inventor	Peter Zatloukal
Art Unit	
Examiner Name	
Attorney Docket Number	120083-187945

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	4119800		1978-10-10	Girardi	
	2	5448620		1995-09-05	Gershkovich et al.	
	3	5473318		1995-12-05	Martel	
	4	5530702		1996-06-25	Palmer et al.	
	5	5793843		1998-08-11	Morris	
	6	5957995		1999-09-28	Beckmann et al.	
	7	6026308		2000-02-15	Hsieh	
	8	6032054	A	2000-02-29	Schwinke	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	9	6164551		2000-12-26	Altwasser	
	10	6167128		2000-12-26	Fuller et al.	
	11	6314281		2001-11-06	Chao et al.	
	12	6359866		2002-03-19	Svensson et al.	
	13	6421347		2002-07-16	Borgstahl et al.	
	14	6434395		2002-08-13	Lubin et al.	
	15	6476708		2002-11-05	Johnson	
	16	6771981		2004-08-03	Zalewski et al.	
	17	7110792		2006-09-19	Rosenberg	
	18	7245997		2007-07-17	Kitao et al.	
	19	7280810		2007-10-09	Feher	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	20	7283044		2007-10-16	Bandy	
	21	7324476		2008-01-29	Agrawal et al.	
	22	7375616		2008-05-20	Rowse et al.	
	23	7440743		2008-10-21	Hara et al.	
	24	7502615		2009-03-10	Wilhoite et al.	
	25	7605701		2009-10-20	Lee	
	26	8127984	B2	2012-03-06	Zatloukai et al.	

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020123325	A2	2002-09-05	Cooper	
	2	20020160775		2002-10-31	Pecen et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	3	20030069048		2003-04-10	Liu et al.	
	4	20030158785		2003-08-21	Erca	
	5	20040069852		2004-04-15	Seppinen et al.	
	6	20040077352		2004-04-22	Mahany	
	7	20040087273		2004-05-06	Perttila et al.	
	8	20040093274		2004-05-13	Vanska et al.	
	9	20040127256		2004-07-01	Goldthwaite et al.	
	10	20040171373		2004-09-02	Suda et al	
	11	20040248616		2004-12-09	Pecen et al.	
	12	20040263319		2004-12-30	Huomo	
	13	20050127156		2005-06-16	Yoo et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	14	20050184856	A1	2005-08-25	Pourchot	
	15	20060003772		2006-01-05	Semper	
	16	20060017544		2006-01-26	Tanaka et al.	
	17	20060022802		2006-02-02	Bridgelall	
	18	20060044111		2006-03-02	Kollar et al.	
	19	20060052055		2006-03-09	Rowse et al.	
	20	20060097848		2006-05-11	Davidson et al.	
	21	20060111053		2006-05-25	Wu et al.	
	22	20060116127		2006-06-01	Wilhoite et al.	
	23	20060237528		2006-10-26	Bishop et al.	
	24	20060280149		2006-12-14	Kuhl et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	25	20070030124		2007-02-08	Lee	
	26	20070032261		2007-02-08	Boyer et al.	
	27	20070037605		2007-02-15	Logan	
	28	20070060212		2007-03-15	Shah	
	29	20070066278		2007-03-22	Hong	
	30	20070120679		2007-05-31	Shin et al.	
	31	20070159330		2007-07-12	Chakraborty et al.	
	32	20070178935		2007-08-02	Shim et al.	
	33	20070197261		2007-08-23	Humbel	
	34	20070263595		2007-11-15	Charrat	
	35	20070274242		2007-11-29	Lamacraft et a.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	36	20070286171		2007-12-13	Guan	
	37	20070293202		2007-12-20	Moshir et al	
	38	20080018433		2008-01-24	Pitt-Pladdy	
	39	20080057876		2008-03-06	Hsia et al.	
	40	20080146167		2008-06-19	Rofougaran	
	41	20090058652		2009-03-05	Hardy et al.	
	42	20090090783		2009-04-09	Killian et al.	
	43	20090143013	A1	2009-06-04	Hatano et al.	
	44	20090170519		2009-07-02	Wilhoite et al.	
	45	20090209283	A1	2009-08-20	Yang et al.	
	46	20090221232	A1	2009-09-03	Estevez et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

	47	20090243810		2009-10-01	Pendlebury et al.	
	48	20090291634		2009-11-26	Saarisalo	
	49	20100026454		2010-02-04	Rowse et al.	
	50	20100137024		2010-06-03	Maguire	
	51	20100158077		2010-06-24	Mahany	
	52	20100239079		2010-09-23	Bao	
	53	20120133483	A1	2012-05-31	Zatloukal et al.	

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

FOREIGN PATENT DOCUMENTS Remove

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

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

NON-PATENT LITERATURE DOCUMENTS Remove

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	International Search Report and Written Opinion mailed February 15, 2005 for PCT Application No. PCT/US04/18397, 11 pages.	☐

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

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2013-01-25
	First Named Inventor	Peter Zatloukal
	Art Unit	
	Examiner Name	
	Attorney Docket Number	120083-187945

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	/Ryan C. Fox-Lee/	Date (YYYY-MM-DD)	2013-01-25
Name/Print	Ryan C. Fox-Lee	Registration Number	65369

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 record s.

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.

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
ALOYSIUS AUYEUNG
SCHWABE, WILLIAMSON & WYATT, PC
PACWEST CENTER, STES. 1600-1900
1211 SW FIFTH AVENUE
PORTLAND, OR 97204-3795

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)

	Date of mailing (*day/month/year*) 15 FEB 2005
Applicant's or agent's file reference 109909-137966	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US04/18397	International filing date (*day/month/year*) 10 June 2004 (10.06.2004)
Applicant WILDSEED, LTD	

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 22 740 14 35

   For more detailed instructions, see the notes on the accompanying sheet.

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 the 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 the applicant's 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**

   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 as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   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. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   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.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

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. (703) 305-3230	Authorized officer UYEN-CHAU N. LE Telephone No. 571-272-2397

Form PCT/ISA/220 (January 2004) (*See notes on accompanying sheet*)

RECEIVED
FEB 22 2005
Schwabe, Williamson & Wyatt

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 109909-137966	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US04/18397	International filing date (*day/month/year*) 10 June 2004 (10.06.2004)	(Earliest) Priority Date (*day/month/year*) 13 June 2003 (13.06.2003)
Applicant WILDSEED, LTD		

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 4 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, unless otherwise indicated under this item.
      ☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
   b. ☐ 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(b), 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.

Form PCT/ISA/210 (first sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/18397

Box IV TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

NEW ABSTRACT

A mobile communication device (102) is equipped with hardware and/or software components (104) to enable the device to output a data in form of a radio frequency signal (110), emulating outputting of the data by either an active or a passive RFID transponder (204, 206). The data may be a security key or an identifier. Emulation of an active RFID transponder (204) includes facilitating selection of the data and instruction to output by a user. Emulation of a passive RFID transponder (206) includes detecting for proximal presence of a RFID reader (120). Either case, provision of the data to the mobile communication device may include provision of associated signal attribute(s).

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/18397

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : G06K 7/10
US CL : 235/472.02
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)
U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 6,421,347 B1 (BORGSTAHL ET AL) 16 JUL 2002 (16.07.2002), SEE ENTIRE DOCUMENT	1, 6-8, 12, 21, 26-28, 32, 41, 46-48, 52 --- 2-5, 9-11, 13-20, 22-25, 29-31, 33-40, 42-45, 49-51, 53-60
Y	US 5,473,318 A (MARTEL) 05 DEC 1995 (05.12.1995), SEE ENTIRE DOCUMENT	2-4, 15-17, 22-24, 35-37, 42-44, 55-57
Y	US 6,476,708 B1 (JOHNSON) 05 NOV 2002 (05.11.2002), SEE ENTIRE DOCUMENT	9-11, 13-14, 18-20, 29-31, 33-34, 38-40, 49-51, 53-54, 58-60

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"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)

"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

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
09 November 2004 (09.11.2004)	15 FEB 2005
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. (703) 305-3230	Authorized officer UYEN-CHAU N. LE Telephone No. 571-272-2397

Form PCT/ISA/210 (second sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/18397

Continuation of B. FIELDS SEARCHED Item 1:
235/472.02, 375, 376, 383, 385
340/825.72

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
ALOYSIUS AUYEUNG
SCHWABE, WILLIAMSON & WYATT, PC
PACWEST CENTER, STES. 1600-1900
1211 SW FIFTH AVENUE
PORTLAND, OR 97204-3795

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing (*day/month/year*)	15 FEB 2005
Applicant's or agent's file reference 109909-137966	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date (*day/month/year*)	Priority date (*day/month/year*)
PCT/US04/18397	10 June 2004 (10.06.2004)	13 June 2003 (13.06.2003)

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

IPC(7): G06K 7/10 and US Cl.: 235/472.02

Applicant

WILDSEED, LTD

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

- [X] 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 43*bis*.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 66.1*bis*(*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. (703) 305-3230	Authorized officer UYEN-CHAU N. LE Telephone No. 571-272-2397

Form PCT/ISA/237 (cover sheet) (January 2004)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US04/18397

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, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto 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.

4. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US04/18397

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

1. Statement

Novelty (N)	Claims 2-5,9-11,13-20,22-25,29,30,33-40,42-45,49-51,53-60	YES
	Claims 1, 6-8, 12, 21, 26-28, 32, 41, 46-48, 52	NO
Inventive step (IS)	Claims NONE	YES
	Claims 1-60	NO
Industrial applicability (IA)	Claims 1-60	YES
	Claims NONE	NO

2. Citations and explanations:

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:
Claims 1, 6-8, 12, 21, 26-28, 32, 41, 46-48 and 52 lacks novelty under PCT Article 33(2) as being anticipated by Borgstahl et al (US 6,421,347).
Re claims 1, 21 and 41: Borgstahl et al discloses a communication device/peer 20 equipped to facilitate a user to communicate with another user of another device/peer 20 (col. 5, lines 12-13); the device/peer 20 comprising an antenna 36 (i.e., a transmitter) for transmitting radio signals 26 (fig. 2; col. 4, line 67 through col. 5, line 5); a storage medium/memory 42 for storing a first data (i.e., personalized data 52) and instructions (i.e., application data 54) to operate the transmitter/antenna 36 to selectively outputting the first data (fig. 2; col. 5, lines 10-20); a processor 40 coupled to the transmitter/antenna 36 and the storage/memory 42 to execute the instructions (fig. 2; col. 5, lines 5-10).
Re claims 6-8, 26-28 and 46-48: provision of the first data to the communication device/peer 20, the user selects the first data form a plurality of data and instructing to output the first data in the form of a radio frequency signal (col. 6, line 59 through col. 7, line 7).
Re claims 12 and 32: the communication device/peer 20 is a selected one of a wireless mobile phone and a personal digital assistant (PDA) (col. 5, lines 26-31).
Re claim 52: see figs. 12-14.

Claims 2-4, 22-24 and 42-44 lacks an inventive step under PCT Article 33(3) as being obvious over Borgstahl et al in view of Martel (US 5,473,318). The teachings of Borgstahl et al have been discussed above.
Re claims 2-4, 22-24 and 42-44: Borgstahl et al have been discussed above and further discloses the first data comprising an identifier (i.e., ID codes, PIN numbers, passwords) (col. 5, lines 12+), and the system is utilized to apply in a doorbell system (fig. 13; col. 12, lines 35-49). However, Borgstahl et al is silent with respect to the first data further comprises a security key, wherein the security key is a door key (i.e., a garage door key, an exterior/interior door key, and a motor vehicle door key), respectively.
Martel teaches upon receiving a unique identity code, which serves as a security key from a communication device/transmitter 110, the garage door opener 130 operates to open the garage door (fig. 1; col. 3, lines 11-20).
It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to incorporate the teachings of Martel into the system as taught by Borgstahl et al in order to provide Borgstahl et al with a universal system, which can be utilized for use in various applications. Furthermore, such modification would provide a time and labors consumption system in which the door is opened automatically upon verifying the user's security key and identifier via RF signals, thus the user does not have to concern about having a free hand to open the door manually via a key.

Claims 5, 25 and 45 lacks an inventive step under PCT Article 33(3) as being obvious over Borgstahl et al. The teachings of Borgstahl et al have been discussed above.
Re claims 5, 25 and 45: Borgstahl et al have been discussed above and further discloses the first data comprising an identifier (i.e., ID codes, PIN numbers, passwords) (col. 5, lines 12+), but is silent with respect to the identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.
It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to modify the ID

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

codes/PIN/passwords of Borgstahl et al to include a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number to provide Borgstahl et al with a more secure system due to the fact that a social security number, a driver's license number, an affinity program account number, and a credit card number are difficult to remember, thus preventing the identifier from being memorized/used by a fraudulent user.

Claims 9-11, 13-14, 18-20, 29-31, 33-34, 38-40, 49-54 and 58-60 lacks an inventive step under PCT Article 33(3) as being obvious over Borgstahl et al in view of Johnson (US 6,476,708). The teachings of Borgstahl et al have been discussed above.
Re claims 9-11, 13-14, 29-31, 33-34, and 49-54: Borgstahl et al have been discussed above and further discloses that a first communication device/peer 20 can determine whether a second communication device/peer 20 is physically proximate to the first communication device/peer 20, make a wireless connection and transmits data (col. 6, lines 1-3), but is silent with respect to a passive RF transponder.
Johnson teaches upon detecting a RF reader 12 (i.e., being activated by an excited signal 50 of the reader 12), the RFID device 14 including a passive RF circuit 36, which is now active, generates a RF signal 52 containing data associated with the RFID device 14 and transmits the signal 52 via an antenna 40 (figs. 1A & 1B; col. 4, lines 26-39).
It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to incorporate the teachings of Johnson into the system as taught by Borgstahl et al in order to provide Borgstahl et al with a compact system in which a battery space/compartment is not required (i.e., a passive RF transponder does not required a battery), and thus providing a feasible system in manufacturing. Furthermore, such modification would provide a user with a convenience system in which the user does not have to concern about loosing power during communication due to power failure of the battery.
Re claims 18-19, 38-39 and 58-59: see claims 7-8.
Re claims 20 and 40: see claims 12.
Re claim 60: see Borgstahl et al, figs. 12-14.

Claims 15-17, 35-37 and 55-57 lacks an inventive step under PCT Article 33(3) as being obvious over the prior art as applied in the immediately preceding paragraph and further in view of Martel. The teachings of Borgstahl et al as modified by Johnson have been discussed above.
Re claims 15-17, 35-37 and 55-57: Borgstahl et al/Johnson have been discussed above and further discloses the first data comprising an identifier (i.e., ID codes, PIN numbers, passwords) (col. 5, lines 12+), and the system is utilized to apply in a doorbell system (fig. 13; col. 12, lines 35-49). However, Borgstahl et al is silent with respect to the first data further comprises a security key, wherein the security key is a door key (i.e., a garage door key, an exterior/interior door key, and a motor vehicle door key), respectively.
Martel teaches upon receiving a unique identity code, which serves as a security key from a communication device/transmitter 110, the garage door opener 130 operates to open the garage door (fig. 1; col. 3, lines 11-20).
It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to incorporate the teachings of Martel into the system as taught by Borgstahl et al/Johnson in order to provide Borgstahl et al with a universal system, which can be utilized for use in various applications. Furthermore, such modification would provide a time and labors consumption system in which the door is opened automatically upon verifying the user's security key and identifier via RF signals, thus the user does not have to concern about having a free hand to open the door manually via a key.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

(i) the claim is unchanged;

(ii) the claim is cancelled;

(iii) the claim is new;

(iv) the claim replaces one or more claims as filed;

(v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."

2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."

3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." **or**
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."

4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under Article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/IPEA/401).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, Volume II.

Electronic Acknowledgement Receipt	
EFS ID:	14799691
Application Number:	13750970
International Application Number:	
Confirmation Number:	8778
Title of Invention:	EMULATED RADIO FREQUENCY IDENTIFICATION
First Named Inventor/Applicant Name:	Peter Zatloukal
Customer Number:	25943
Filer:	Ryan C. Fox-Lee/Enoy Lawless
Filer Authorized By:	Ryan C. Fox-Lee
Attorney Docket Number:	120083-187945
Receipt Date:	25-JAN-2013
Filing Date:	
Time Stamp:	20:35:21
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	Application Data Sheet	Varia_P064C2_ads_01_25_13.pdf	1882745 6b768162c114d724d644dfe930fd0b75a50147dd	no	6
Warnings:					
Information:					

2		Varia_P064C2_appl_01_25_13.pdf	1005826 620d6101e635521cff64925777259f1ecb685cac	yes	24
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Specification		1	15	
	Claims		16	23	
	Abstract		24	24	
Warnings:					
Information:					
3	Drawings-only black and white line drawings	Varia_P064C2_figs_01_25_13.pdf	141631 2f59750e0b0b471ba13e3190ef4c7c44848ab169	no	12
Warnings:					
Information:					
4		Varia_P064C2_prelim-amend_01_25_13.pdf	39444 65933c923e3b8536d0b57a7de5f13bfba3677756	yes	9
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Preliminary Amendment		1	1	
	Specification		2	2	
	Claims		3	8	
	Applicant Arguments/Remarks Made in an Amendment		9	9	
Warnings:					
Information:					
5	Information Disclosure Statement (IDS) Form (SB08)	Varia_P064C2_ids_01_25_13.pdf	616895 76d1f0ebec58cf2b9393cf541a3552e9f91fe4f0	no	11
Warnings:					
Information:					
6	Non Patent Literature	P064PCT_ISRWO_02_15_05.pdf	374926 4cfc301e3701e9a14ffc556a3674854d69270c7b	no	11
Warnings:					
Information:					

Total Files Size (in bytes):	4061467

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.

PTO/AIA/14 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	120083-187945
	Application Number	
Title of Invention	EMULATED RADIO FREQUENCY IDENTIFICATION	

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
	Peter		Zatloukal	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Kirkland	State/Province	WA	Country of Residence	US

Mailing Address of Inventor:

Address 1	218 Main Street #480		
Address 2			
City	Kirkland	State/Province	WA
Postal Code	98033	Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	G.	Eric	Engstrom	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Kirkland	State/Province	WA	Country of Residence	US

Mailing Address of Inventor:

Address 1	12415 Holmes Pt. Dr. NE		
Address 2			
City	Kirkland	State/Province	WA
Postal Code	98033	Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Cindy	M.	Smith	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

PTO/AIA/14 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	120083-187945
	Application Number	
Title of Invention	EMULATED RADIO FREQUENCY IDENTIFICATION	

City	Kirkland	State/Province	WA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	218 Main Street #673		
Address 2			
City	Kirklan	State/Province	WA
Postal Code	98033	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	25943		
Email Address	patent@schwabe.com	Add Email	Remove Email

Application Information:

Title of the Invention	EMULATED RADIO FREQUENCY IDENTIFICATION		
Attorney Docket Number	120083-187945	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	12	Suggested Figure for Publication (if any)	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

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

Representative Information:

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

PTO/AIA/14 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	120083-187945
	Application Number	
Title of Invention	EMULATED RADIO FREQUENCY IDENTIFICATION	

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	25943		

Domestic Benefit/National Stage Information:

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

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	13363202	2012-01-31
Prior Application Status	Patented		Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13363202	Continuation of	10560262	2005-12-09	8127984	2012-03-06

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
10560262	a 371 of international	PCT/US04/18397	2004-06-10
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
10560262	non provisional of	60478245	2003-06-13

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

Remove

Application Number	Country i	Filing Date (YYYY-MM-DD)	Priority Claimed
			○ Yes ◉ No

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Authorization to Permit Access:

PTO/AIA/14 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	120083-187945
	Application Number	
Title of Invention	EMULATED RADIO FREQUENCY IDENTIFICATION	

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

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

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

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Remove

◉	Assignee	○	Legal Representative under 35 U.S.C. 117
○	Person to whom the inventor is obligated to assign.	○	Person who shows sufficient proprietary interest

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :	
If the Assignee is an Organization check here. ☒	
Organization Name	Varia Holdings LLC

PTO/AIA/14 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	120083-187945
	Application Number	
Title of Invention	EMULATED RADIO FREQUENCY IDENTIFICATION	

Mailing Address Information:			
Address 1	956 East 8th Street		
Address 2			
City	Brooklyn	**State/Province**	NY
Country [i]	US	Postal Code	11230
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

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

Signature	/Ryan C. Fox-Lee/			Date (YYYY-MM-DD)	2013-01-25
First Name	Ryan C.	Last Name	Fox-Lee	Registration Number	65369

Additional Signature may be generated within this form by selecting the Add button. Add

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

Privacy Act Statement

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

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

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EMULATED RADIO FREQUENCY IDENTIFICATION

RELATED APPLICATION

This application is a non-provisional application of provisional application number 60/478,245, titled "Radio Frequency Identification Using Mobile Communication Device", filed on June 13, 2003, and claims priority to said provisional application.

FIELD OF THE INVENTION

The present invention relates to the fields of security, communication, and data processing. More specifically, the present invention is related to an emulated radio frequency data input method.

BACKGROUND OF THE INVENTION

It wasn't that long ago, even residents in medium size cities still feel secured enough to leave their homes unlocked and/or their garages open. In general, one can access one's place of employment, including parking facilities as well as one's office without identification or access keys.

In the world of commerce, things were also simpler. One typically may shop and consume goods and services, at relatively low prices, without having to be affiliated with any programs or entities.

However, the world has become a lot more complex in recent years. Virtually, all properties of any value, premises, including one's home, have to be secured, even for relatively small towns and cities. One can hardly shop and consume any goods and services, without having signed up with some promotional frequent "usage" programs or becoming affiliated with the commercial entities. The employment of affinity marketing has reached a point even neighboring grocery chains employ them, and not just airlines, hotels, or wholesale discount retailers.

As a result, it is not uncommon to find a person having to carry a number of physical keys and access/identification cards/tags to gain access to secured premises, such as one's home, office, parking garage, and so forth. Additionally, the

person is likely to carry a number of remote security control devices, such as a key with remote control for gaining access to his/her vehicle, a garage door opener for gaining access to the person's garage at home, and so forth. The person is also likely to carry a number of affinity identification cards with member identifiers identifying the person as being affiliated with certain co-op or frequent patronage programs, such as wholesale discount retailers, airline or hotel frequent traveler program, and so forth, that entitle the person to certain benefits, such as discounts or rewards.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references denote similar elements, and in which:

Figure 1 illustrates an overview of the present invention, in accordance with one embodiment;

Figure 2 illustrates a method view of the present invention, in accordance with one embodiment;

Figure 3 illustrates the relevant hardware elements of the device of **Fig. 1** in further details, in accordance with one embodiment;

Figure 4 illustrates the transceiver of **Fig. 3** in further details, in accordance with another embodiment;

Figures 5a-5b illustrate the exploded views of two embodiments of the mobile communication device of **Fig. 1**;

Figures 5c-5d illustrate an exploded view of another embodiment of the mobile communication device of **Fig. 1**;

Figure 6a-6h illustrate a number of example screens of an end user interface, suitable for use to practice the present invention, in accordance with one embodiment; and

Figure 7 illustrates the operational flow of the relevant aspects of the software in support of the RFID feature of the present invention, in accordance with one embodiment.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

Embodiments of the present invention includes an emulated RFID method, more specifically, an emulated RFID method, using a mobile communication device, including the device itself, and certain hardware and/or software embodied therein for the practice of the emulated RFID method.

In the following description, various aspects of the illustrative embodiments of the present invention will be described. However, alternate embodiments may be practiced with only some or all aspects of the illustrative embodiments of the present invention. For purposes of explanation, specific numbers, materials and configurations are set forth in order to provide a thorough understanding of the present invention. However, alternate embodiments may be practiced without the specific details. In other instances, well-known features are omitted or simplified in order not to obscure the essence of the illustrative embodiments of the present invention.

Terminology

Parts of the description will be presented in data processing terms, such as data, selection, retrieval, generation, and so forth, consistent with the manner commonly employed by those skilled in the art to convey the substance of their work to others skilled in the art. As well understood by those skilled in the art, these quantities take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, and otherwise manipulated through electrical and/or optical components of a processor and its subsystems.

Part of the descriptions will employ various abbreviations, including but are not limited to:

CDROM	Compact Disc Read Only Memory
DDRAM	Dynamic Direct Random Access Memory
DVD	Digital Versatile Disc
EEPROM	Electrically Eraseable Programmable Read-Only-

	Memory
HTTP	HyperText Transmission Protocol
SDRAM	Static Direct Random Access Memory
SMS	Small Messaging Service

The term "number" as used in this application to describe a data, including both its usage in the specification and the claims, typically refers to numeric data, as the word "number" is conventionally used in mathematics. However, in certain contexts, the "number" may also include alphabet or special characters, as the term is conventionally understood by those skilled in the art in those contexts. For examples, a driver's license number, a passport number, an employee number, or a student ID number, as each of these terms is conventionally used, often includes one or more alphabets or special characters, even though they are referred to as "numbers". The term accordingly is to be given the meaning that is consistent with the context under which the term is used.

Section Headings, Order of Descriptions and Embodiments

Section headings are merely employed to improve readability, and they are not to be construed to restrict or narrow the present invention.

Various operations will be described as multiple discrete steps in turn, in a manner that is most helpful in understanding the present invention, however, the order of description should not be construed as to imply that these operations are necessarily order dependent. In particular, these operations need not be performed in the order of presentation.

The phrase "in one embodiment" is used repeatedly. The phrase generally does not refer to the same embodiment, however, it may. The terms "comprising", "having" and "including" are synonymous, unless the context dictates otherwise.

Overview

Refer now to **Figure 1**, wherein a block diagram illustrating an overview of the present invention **100**, in accordance with one embodiment, is shown. As illustrated, for the embodiment, mobile communication device **102** is equipped with hardware and/or software elements **104** to perform its primary function, which is to facilitate a user of device **102** to engage in communication with another user of another communication device (not shown). In various embodiments, the communication may be audio (such as phone calls), textual (such as messaging) and/or visual (such as airtexting using light sources). Additionally, for the embodiment, mobile communication device **102** is equipped with hardware and/or software elements **106** to facilitate provision or transfer of a key/identifier in a form a radio frequency signal **110**, which may be read e.g. by a radio frequency identifier (RFID) reader **120**. In turn, the provision of RFID **110** may be responded to by a system (not shown) with which RFID reader **120** is a part or coupled to.

As depicted in **Fig. 1**, blocks **104** and **106** "intersect" with one another. The "intersection" represents the fact that in preferred embodiments of the present invention, substantial portions of the hardware and/or software elements employed to provide a RFID, are the same elements employed to facilitate the primary function of device **102**, i.e. to facilitate a user in communicating with another user of another communication device.

In other words, illustrative embodiments of the present invention advantageously leverage on existing elements of mobile communication device **102**, and supplement them, to enable mobile communication device **102** to be able to provide a RFID, emulating a RFID transponder, as well as facilitating user communication.

As will be described in more detail below, in preferred embodiments, mobile communication device **102** is equipped to provide RFID, emulating an active and/or a passive RFID transponder.

Further, RFID **110** may be any keys and/or identifiers, including but not limited to security keys, such as garage door "keys", exterior or interior door keys, or identifiers, such as, employee numbers, driver's license numbers, social security

numbers, credit card numbers (optionally, including expiration dates), affinity program member identifiers, and so forth.

Continue to refer to **Fig. 1**, except for the present invention incorporated therein, mobile communication device **102** represents a broad range of mobile communication devices known in the art, including but are not limited to wireless mobile phones and personal digital assistants equipped with communication capability.

The term "wireless mobile phone" as used herein, including the specification and the claims, refers to the class of telephony devices equipped to facilitate a user in communicating with another user of another communication device, notwithstanding the user's movement around different geographic areas, so long the wireless mobile phone is in contact with a base/service station of a wireless network service provider. The term includes the analog as well as the digital subclasses. Communication may be voice and/or data, audio, textual and/or visual. The other user/communication device may be mobile or land line based.

RFID reader **120** represents a broad range of such devices known in the art or to be designed. Currently, most RFID readers **120** employ proprietary formats/protocols. That is, RFID readers **120** of different manufacturers tend to employ different frequencies, amplitudes, and/or keying schemes (which may be frequency shifting keying (FSK), amplitude shifting keying (ASK) or phase shifting keying (PSK)).

Various embodiments of the methods of the present inventions, including elements **106**, in particular, added elements, will be described in turn below.

Method

Figure 2 illustrates a method view of the present invention, in accordance with one embodiment. As illustrated, device **102** is first provided with the RFIDs, block **202**. The RFIDs may be provided in any one of a number of known or to be designed manners, including but are not limited to

- manual entry, using a keypad of device **102**,

- read into device **102**, from an access/identification card, using a magnetic or optical card reader of device **102**,

- downloaded into device **102**, from a coupled computing device, through a serial/parallel port of device **102** or through a network interface of device **102** using SMS or HTTP messages.

Typically, provision of a RFID will include the manner the RFID is to be outputted, i.e. signaled. As alluded to earlier, the manner it is to be signaled is dependent on the format/protocol employed by the intended RFID reader **120**. For examples, for a garage door key, the format/protocol employed by RFID reader **120** of the garage opener system, and for an affinity program member identifier, the format/protocol employed by RFID reader **120** of the point-of-sale system of the entity offering the affinity program.

Alternatively, a default signaling format/protocol, such as an industry standard, the most popular proprietary format/protocol, or a selected proprietary format/protocol may be assumed instead, when one is not provided.

During operation, in response to a user instruction, typically after the user has selected the RFID to be outputted from a number of RFIDs stored in device **102**, block **203**, device **102** outputs the selected RFID as instructed, emulating an active RFID transponder, block **204**.

For the embodiment, one RFID, e.g. an access key/identifier (such as an employee number), may also be selected/designated as a default RFID, the output of which may be emulated in a passive manner. That is, the selected/designated default RFID will be outputted automatically, whenever device **102** is within the proximal presence, or more specifically, the operational space, of an intended RFID reader **120**.

Accordingly, device **102** monitors for probing signals of an intended RFID reader **120** (or a type of RFID readers **120**), to determine whether device **102** is within the operational space of such a RFID reader **120**, block **205**. On so determining, device **102** outputs the designated RFID automatically, emulating a passive RFID transponder, block **206**.

A Hardware/Software Implementation

Figure 3 illustrates the relevant elements of device **102**, in accordance with one embodiment. As illustrated, for the embodiment, device **102** includes processor **302**, memory **304**, persistent store **306**, transceiver **308**, and a number of other components **310**, coupled to each other via bus **312**.

Persistent store **306** and memory **304** are employed to store permanent and working copies of a software implementation of the operating logic **320** of device **102**, including the supplemental RFID feature **322**. In various embodiments, persistent store **306** may be an EEPROM (or like kind variants, such as a Flash Memory, a Memory Stick), a magnetic or optical disk drive, a CDROM, a DVD drive and so forth. Memory **304** may be any SDRAM, DDRAM or other high speed volatile as way as non-volatile storage devices known in the art.

Processor **302** is employed to execute operating logic **320**, including RFID feature **322**. As will be readily apparent from the description to follow, operating logic **320** may be implemented in any one of a number of suitable system programming languages, including but not limited to high level languages that may be compiled into executable instructions supported by processor **302**. Processor **302** may be any one of a number of processors designed or to be designed for mobile devices.

Except for transceivers **308**, RFID feature **322** and the manner the various elements of **Fig. 3** are used to practice the present invention, the other illustrated elements are known in the art, and accordingly will not be further described. One embodiment of transceiver **308** will be described referencing **Fig. 4**, and one embodiment of RFID feature **322** will be described, referencing **Fig. 6-7**.

As described earlier, processor **302**, memory **304**, persistent store **306** and bus **312** may be shared elements of device **102**, also employed to implement the primary communication function of device **102**. However, in alternate embodiments, dedicated elements may be employed for some or all of these elements instead.

In one embodiment, device **102** is a wireless mobile telephone, an exploded view of which is illustrated in **Fig. 5a**. Wireless mobile phone **500**, in addition to the earlier described elements, also includes display **506**, control buttons **504**, keypad

502, antenna **508**, body **512** and cover **514**. Body **512** is substantially rectangular in shape. Further, body **512** is palm-sized or smaller.

For the embodiment, cover **514** includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance phone **500**. Phone **500** includes complementary electronic component interface **516** in support of such personalization, customization and/or enhancement.

Cover **514** may form a part of housing **512**, i.e. a required element to complete phone **500**, or it may be an accessory to be adorned by phone **500**, i.e. not a required element to complete phone **500**.

In another embodiment, device **102** is a PDA, an exploded view of which, is illustrated in **Fig. 5b**. PDA **502**, in addition to the earlier described elements, also includes display **524**, control buttons **522**, antenna **526**, body **532**, and cover **534**. Body **530** is also substantially rectangular in shape, as well as palm-sized or smaller.

Similarly, for the embodiment, cover **534** includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance PDA **520**. PDA **520** includes complementary electronic component interface **536** in support of such personalization, customization and/or enhancement.

Cover **534** may form a part of housing **532**, i.e. a required element to complete PDA **520**, or it may be an accessory to be adorned by PDA **520**, i.e. not a required element to complete PDA **520**.

Figure 5c-5d illustrate yet another embodiment of device **102**, another wireless mobile telephone, an exploded view of which is illustrated. Wireless mobile phone **540** is similarly constituted as the earlier described embodiments, including body **542** and cover **544**. However, body **542** has a substantially boomerang or banana shape. Body **542** is also typically palm-sized or smaller.

For the embodiment, cover **544** also includes embedded electronic components having instructions, data, and/or locations to obtain such instructions and/or data to personalize, customize and/or enhance phone **540**. Phone **540** includes complementary electronic component interface (not shown) in support of such personalization, customization and/or enhancement.

Cover **544** may form a part of housing **542**, i.e. a required element to complete phone **540**, or it may be an accessory to be adorned by phone **540**, i.e. not a required element to complete phone **540**.

In all or selected one(s) of these embodiments, some or all elements **106** in support of the RFID feature of the present invention may be provided through embedded electronic components of the housing/accessory covers.

Smart covers are the subject matters of subject matter of co-pending U.S. Application, number 10/087,098, filed March 1, 2002, entitled "Personalizing Electronic Devices and Smart Covering", and U.S. Application, number <insert>, filed May 2, 2003, entitled "Personalization of Mobile Electronic Devices and Smart Accessory Cover", which specifications are hereby fully incorporated by reference.

While all three embodiments of **Fig. 5a-5d** have been illustrated with smart covers and external antennas. In alternate embodiments, the present invention may be practiced without smart covers and/or external antennas. The present invention may be practiced with conventional covers, without embedded intelligence and/or internal antennas.

Transceiver

Figure 4 illustrates transceiver **308** of **Fig. 3** in further details, in accordance with one embodiment. As illustrated, for the embodiment, transceiver **308** includes a joint radio frequency (RF) transmit/receive (TX/RX) section **402**, separate signal processing sections **408** and **410** for a range of higher frequencies and a range of low frequencies, switch **404** and splitter **406**. The elements are coupled to each other as shown.

For the embodiment, joint RF TX/RX **402** includes in particular, switch **420**, filters **412** and **422**, low noise amplifier **424** and power amplifier **414**, coupled to one another as shown. Switch **420** is employed to switch between transmitting and receiving RF signals. Filters **412** and **422**, low noise amplifier **424** and power amplifier **414** are employed to perform their conventional filtering and amplification functions on the transmit and receive signals.

For transmission, switch **404** switches between the output of high frequency signal processing **410** and the output of low frequency signal processing **408** to the transmit path of Joint RF TX/RX **402**.

For reception, splitter **406** splits the output of the receive path of Joint RF TX/RX **402** and provides the receive signal to high frequency signal processing **410** as well as low frequency signal processing **408**.

For the embodiment, high frequency signal processing **410** performs up and down conversions of the transmit and receive signals of the primary communication function of mobile communication device **102**, e.g. the transmit and receive signals of a voice call. In one embodiment, the transmit and receive signals are transmitted and received in the GHz ranges.

Low frequency signal processing **408**, on the other hand, performs up and down conversions of the transmit and receive signals of the RFID feature, e.g. the output signal of a RFID to emulate either an active or a passive transponder, and the received probing signal of a RFID reader. In one embodiment, the transmit and receive signals are transmitted and received in the MHz ranges.

Up and down conversions, filtering, amplifications, and so forth, in and of themselves, except for the manner they are being used to provide RFIDs using a mobile communication device, are known in the art, accordingly, will not be further described.

RFID Feature

Figures 6-7 illustrate selected portions of an example end user interface, and the operational flow of the relevant aspects of RFID feature **322** respectively, in accordance with one embodiment. **Figure 6** comprises **Fig. 6a-6h**.

As illustrated in **Fig. 6a**, for the embodiment, the user interface includes screen **602** having selectable text display "RFID" **604**, with which a user may interact to launch the RFID function (by selecting text display **604**, using e.g. control keys **504**).

As illustrated in **Fig. 6b**, for the embodiment, the user interface further includes screen **612** enumerating a list of RFIDs **614** stored in device **102**. List **614** may be displayed for example, among other situations, in response to a user's

selection of text display **604** of screen **602**. A user may select one of the RFIDs, and instruct device **102** to output the selected RFID in a form of an appropriate radio frequency signal, emulating provision of the RFID by an active RFID transponder, using e.g. a "send/call" key of device **102**.

Screen **612** also includes selectable "option" button **616**, with which a user may interact to display a list of RFID management options, using e.g. control keys **504**.

As illustrated in **Fig. 6c**, for the embodiment, the user interface further includes screen **622** enumerating a list of RFID management options **624**, such as "add", "edit" or "delete" RFIDs. List **624** may be displayed for example, among other situations, in response to a user's selection of "option" **616** of screen **612**.

As illustrated in **Fig. 6d**, for the embodiment, the user interface further includes screen **632** displaying field **634**, through which a user may enter/edit a RFID name. Field **634** may be displayed for example, among other situations, in response to a user's selection of "add" or "edit" of screen **622**.

As illustrated in **Fig. 6e**, for the embodiment, the user interface further includes screen **642** displaying field **644**, through which a user may enter/edit a RFID. Field **644** may be displayed for example, among other situations, in response to a user indicating completion of entry of a RFID name using screen **632**.

As illustrated in **Fig. 6f**, for the embodiment, the user interface further includes screen **652** displaying a list of RFID types **654**, with which a user may select and associate with a RFID. List **654** may be displayed for example, among other situations, in response to a user indicating completion of entry of a RFID, using screen **642**, thereby allowing the user to associate a RFID reader type with the entered RFID.

Each RFID reader type is assumed to have a deterministic RFID signaling format/protocol. Accordingly, by selecting the RFID reader type, the user is effectively selecting or specifying the RFID signaling format/protocol. In alternate embodiment, a user may be requested to select the RFID signaling format/protocol explicitly, as opposed to implicitly, in the illustrated embodiment.

As illustrated in **Fig. 6g**, for the embodiment, the user interface further includes screen **662** displaying a request **664** to confirm whether a RFID is to be

selected or designated as the default RFID to be used for emulation of passive transponders. Request **664** may be displayed for example, among other situations, in response to a user selecting a RFID reader type, using screen **652**, thereby allowing the user to (implicitly) associate a RFID format/protocol with the entered RFID.

As illustrated in **Fig. 6f**, for the embodiment, the user interface further includes screen **672** displaying a RFID and its details, including but not limited the intended RFID reader type, whether to be designated as the default RFID for use in emulating passive RFID. Request **674** may be displayed for example, among other situations, in response to a user selecting the "edit" option, using screen **622**, or on completion of designating a RFID as the default RFID for emulating passive transponders, using screen **662**

Operationally, as illustrated in **Fig. 7**, upon receipt of a request to launch the RFID function, support logic of the RFID feature **322** is loaded and given execution control, block **702**. Thereafter, support logic **322** waits for user inputs, block **704**.

On receipt of a user input/request, support logic **322** determines the nature of the input/request, block **706**, taking into the context, i.e. the portion of the user interface being displayed, and with which the user just interacted in submitting the input/request.

As illustrated, on determining that the user has requested a current display list to be scrolled (e.g. RFID list **614** of screen **612**), support logic **322** causes the list to be scrolled as requested. Thereafter, support logic **322** returns to block **708** and waits for further input.

Similarly, on determining that the user has requested a selected RFID to be sent (emulating output of the RFID by an active RFID transponder), support logic **322** causes the RFID to be outputted in a form of an appropriate RF signal (in accordance with the associated intended RFID reader type). Thereafter, support logic **322** again returns to block **710** and waits for further input.

On determining that the user has requested a list of options to be displayed (e.g. selection of "option" **616** of screen **612**), support logic **322** causes the list of options to be displayed as requested. Thereafter, support logic **322** returns to block **712** and waits for further input.

On determining that the user has requested to add a RFID (e.g. selection of "Add" of screen **622**), support logic **322** facilitates addition of a RFID (e.g. successively guiding user entry of a RFID using screens **632-662**. Thereafter, support logic **322** returns to block **714** and waits for further input.

These are a few examples of user inputs/requests support logic **322** may support. The present invention contemplates other user inputs/requests may also be supported, and handled accordingly, block **716.**

Conclusion and Epilogue

Thus, it can be seen from the above descriptions, a novel emulated RFID input method, using a mobile communication device, has been described. The present invention advantageously improved the ease of use for a user to provide data captured in a device to another system, especially for data captured in e.g. a mobile device.

While the present invention has been described in terms of the earlier described embodiments, those skilled in the art will recognize that the invention is not limited to the embodiments described. The present invention can be practiced with modification and alteration within the spirit and scope of the appended claims. Thus, the description is to be regarded as illustrative instead of restrictive on the present invention.

CLAIMS

What is claimed is:

1. A method for providing a radio frequency identification (RFID) comprising:

facilitating a user in providing an instruction to a mobile communication device to output a first data in a form of a first radio frequency signal to emulate output of the first data by an active RFID transponder, the mobile communication device being also equipped to facilitate a user in communicating with a user of another communication device, with the communication being facilitated at least in part over a wireless network; and

in response, outputting the first data in the form of a radio frequency signal, emulating output of the first data by an active RFID transponder as instructed by the user.

2. The method of claim 1, wherein said first data comprises a selected one of a security key and an identifier.

3. The method of claim 2, wherein said first data comprises a security key, and said security key comprises a door key.

4. The method of claim 3, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

5. The method of claim 2, wherein said first data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

6. The method of claim 1, wherein the method further comprises facilitating the user in selecting the first data from a plurality of data using the mobile communication device.

7. The method of claim 1, wherein the method further comprises facilitating provision of the first data to the mobile communication device.

8. The method of claim 7, wherein said facilitating of the provisioning of the data to the mobile communication device, including facilitating provision of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

9. The method of claim 1, wherein the method further comprises

detecting for proximal presence of a RFID reader by the mobile communication device; and

on detection, outputting a second data in a form of a second radio frequency signal, using the mobile communication device, emulating output of the second data by a passive RFID transponder.

10. The method of claim 9, wherein said detecting comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

11. The method of claim 9, wherein said first and second data are the same data.

12. The method of claim 1, wherein the mobile communication device is a selected one of a wireless mobile phone and a personal digital assistant equipped with communication capability.

13. A method for providing a radio frequency identifier (RFID), comprising:

detecting for proximal presence of a RFID reader by a mobile communication device, the mobile communication device being also equipped to facilitate a user in communicating with a user of another communication device, with the communication being facilitated at least in part over a wireless network; and

on detection, outputting a data in a form of a radio frequency signal, using the mobile communication device, emulating output of the data by a passive RFID transponder.

14. The method of claim 13, wherein said detecting comprises sensing for a probing radio frequency signal of the RFID reader by the mobile communication device.

15. The method of claim 13, wherein said data comprises a security key.

16. The method of claim 15, wherein said security key comprises a door key.

17. The method of claim 16, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

18. The method of claim 13, wherein the method further comprises facilitating provision of the data to the mobile communication device.

19. The method of claim 18, wherein said facilitating of the provisioning of the data to the mobile communication device, including facilitating provision of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

20. The method of claim 13, wherein the mobile communication device is a selected of a wireless mobile phone and a personal digital assistant equipped with communication capability.

21. A mobile communication device comprising:

a transmitter to transmit a radio frequency signal;

a storage medium to store a first data and instructions to operate the transmitter to selectively (a) output the first data in a form of a radio frequency signal, in response to a user instruction, emulating output of the first data by an active radio

frequency identifier (RFID) transponder, and (b) facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a processor coupled to the transmitter and the storage to execute the instructions.

22. The device of claim 21, wherein said first data comprises a selected one of a security key and an identifier.

23. The device of claim 22, wherein said first data comprises a security key, and said security key comprises a door key.

24. The device of claim 23, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

25. The device of claim 22, wherein said first data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

26. The device of claim 21, wherein the instructions are further designed to facilitate the user in selecting the first data from a plurality of data, and instructing said output.

27. The device of claim 21, wherein the instructions are further designed to facilitate provision of the first data to the mobile communication device.

28. The device of claim 27, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first data in the form of a radio frequency signal.

29. The device of claim 21, wherein the instructions are further designed to detect for proximal presence of a RFID reader; and

on detection, outputting a second data in a form of a second radio frequency signal, emulating output of the second data by a passive RFID transponder.

30. The device of claim 29, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

31. The device of claim 29, wherein said first and second data are the same data.

32. The device of claim 21, wherein the mobile communication device is a selected of a wireless mobile phone and a personal digital assistant equipped with communication capability.

33. A mobile communication device comprising:

a transmitter to transmit a radio frequency signal;

a storage medium to store a first data and instructions to operate the transmitter to selectively (a) detect for proximal presence of a radio frequency identifier (RFID) reader, and on detection, output a data in a form of a radio frequency signal, emulating output of the data by a passive RFID transponder, and (b) facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a processor coupled to the transmitter and the storage to execute the instructions.

34. The device of claim 33, wherein said instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

35. The device of claim 33, wherein said data comprises a security key.

36. The device of claim 35, wherein said security key comprises a door key.

37. The device of claim 36, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

38. The device of claim 33, wherein the instructions are further designed to facilitate provision of the data to the mobile communication device.

39. The device of claim 38, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

40. The device of claim 33, wherein the mobile communication device is a selected of a wireless mobile phone and a personal digital assistant equipped with communication capability.

41. A cover comprising:

a body designed to be mated with a mobile communication device equipped to facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a storage medium embedded in said body, to store a selected one of a plurality of instructions and one or more locations to obtain all or a part of said instructions, the instructions being designed to operate a transmitter of the mobile communication device to output a first data in a form of a radio frequency signal, in response to a user instruction, emulating output of the first data by an active radio frequency identifier (RFID) transponder, using the mobile communication device.

42. The cover of claim 41, wherein said first data comprises a selected one of a security key and an identifier.

43. The cover of claim 42, wherein said first data comprises a security key, and said security key comprises a door key.

44. The cover of claim 43, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

45. The cover of claim 42, wherein said first data comprises an identifier, and said identifier comprises a selected one of a social security number, a driver's license number, an affinity program account number, and a credit card number.

46. The cover of claim 41, wherein the instructions are further designed to facilitate the user in selecting the first data from a plurality of data, and instructing said output.

47. The cover of claim 41, wherein the instructions are further designed to facilitate provision of the first data to the mobile communication device.

48. The cover of claim 47, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the first data in the form of a radio frequency signal.

49. The cover of claim 41, wherein the instructions are further designed to
detect for proximal presence of a RFID reader; and
on detection, outputting a second data in a form of a second radio frequency signal, emulating output of the second data by a passive RFID transponder.

50. The cover of claim 49, wherein the instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

51. The cover of claim 49, wherein said first and second data are the same data.

52. The cover of claim 41, wherein the cover is an accessory cover to be adorned by the mobile communication device.

53. A cover comprising:

a body designed to be mated with a mobile communication device equipped to facilitate a user to communicate with another user of another communication device, with the communication being facilitated at least in part over a wireless network; and

a storage medium embedded in said body, to store a selected one of a plurality of instructions and one or more locations to obtain all or a part of said instructions, the instructions being designed to operate the transmitter to detect for proximal presence of a radio frequency identifier (RFID) reader, and on detection, output a data in a form of a radio frequency signal, emulating output of the data by a passive RFID transponder, using the mobile communication device.

54. The cover of claim 53, wherein said instructions are further designed to sense for a probing radio frequency signal of the RFID reader.

55. The cover of claim 53, wherein said data comprises a security key.

56. The cover of claim 55, wherein said security key comprises a door key.

57. The cover of claim 56, wherein said door key comprises a selected one of a garage door key, an exterior door key, an interior door key, and a motor vehicle door key.

58. The cover of claim 53, wherein the instructions are further designed to facilitate provision of the data to the mobile communication device.

59. The cover of claim 58, wherein the instructions are further designed to include with said facilitating, provisioning of at least a signaling attribute associated with the outputting of the data in the form of a radio frequency signal.

60. The cover of claim 53, wherein the cover is an accessory cover to be adorned by the mobile communication device.

ABSTRACT OF THE DISCLOSURE

A mobile communication device is equipped with hardware and/or software components to enable the device to output a data in a form of a radio frequency signal, emulating outputting of the data by either an active or a passive RFID transponder. The data may be a security key or an identifier. Emulation of an active RFID transponder includes facilitating selection of the data and instruction to output by a user. Emulation of a passive RFID transponder includes detecting for proximal presence of a RFID reader. Either case, provision of the data to the mobile communication device may include provision of associated signal attribute(s).

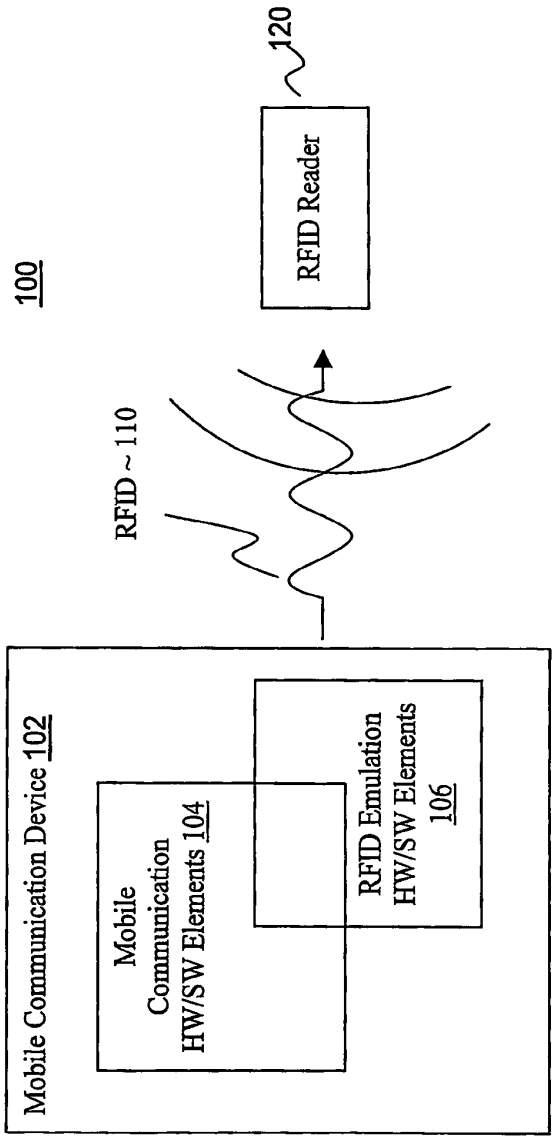

100
120
RFID Reader
RFID ~ 110
Mobile Communication Device 102
Mobile Communication HW/SW Elements 104
RFID Emulation HW/SW Elements 106

Figure 1

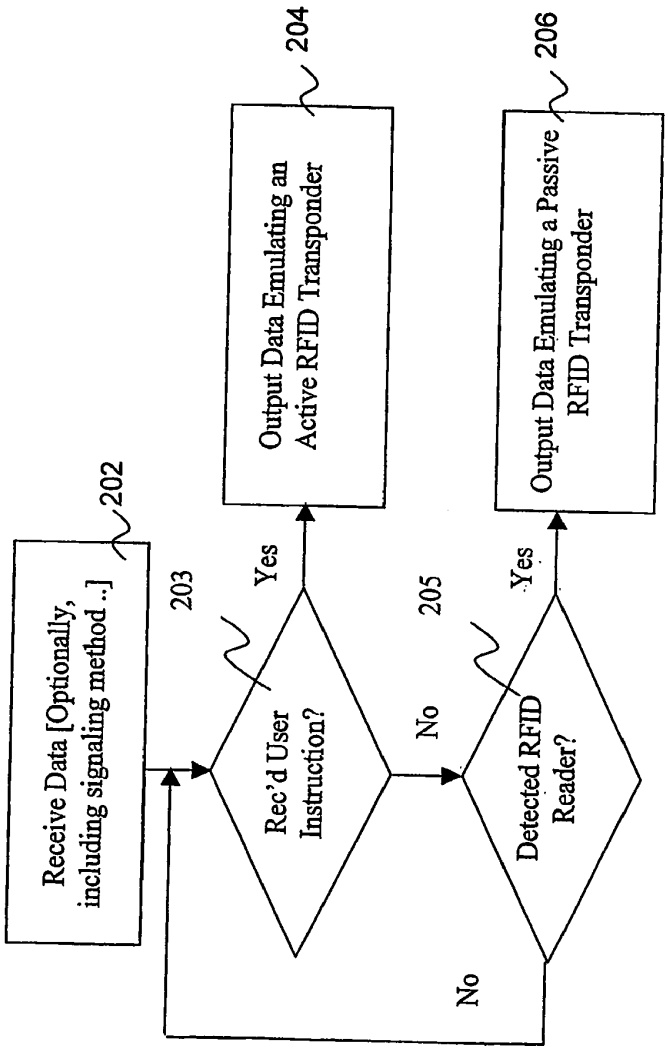

Receive Data [Optionally, including signaling method ..]
202
Rec'd User Instruction?
203
Yes
Output Data Emulating an Active RFID Transponder
204
No
Detected RFID Reader?
205
Yes
Output Data Emulating a Passive RFID Transponder
206
No

Figure 2

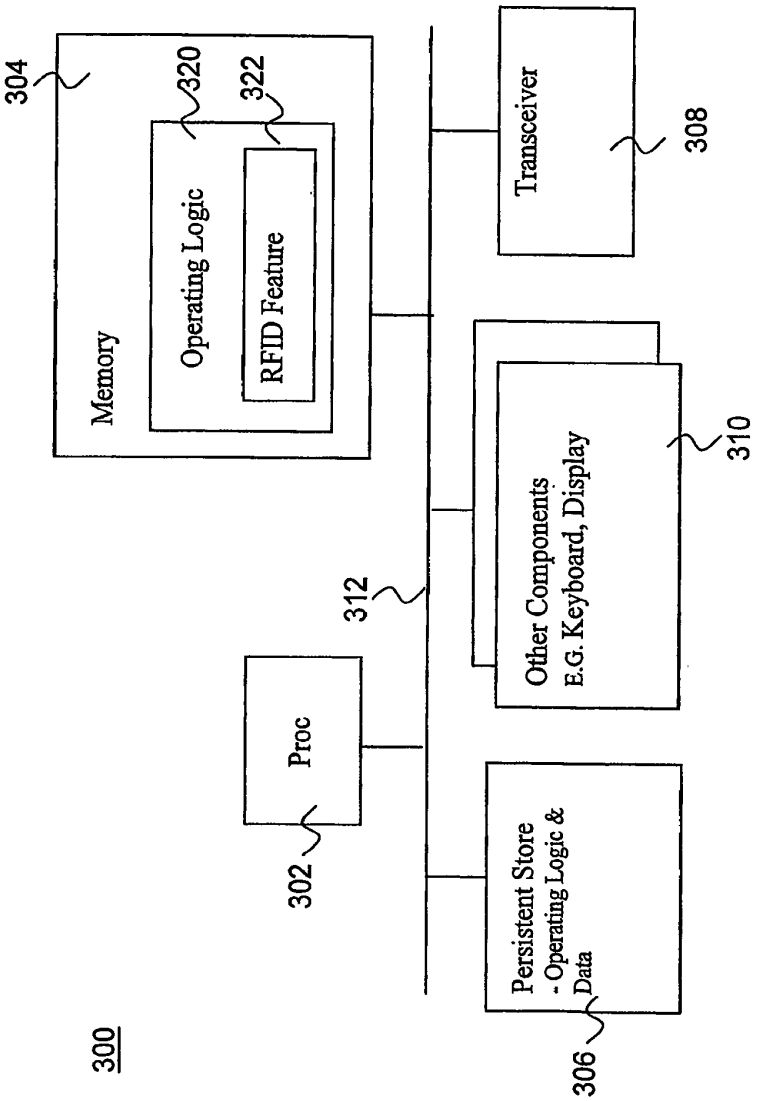

300
304
Memory
320
Operating Logic
322
RFID Feature
Transceiver
308
312
Other Components
E.G. Keyboard, Display
310
Proc
302
Persistent Store
- Operating Logic &
Data
306

Figure 3

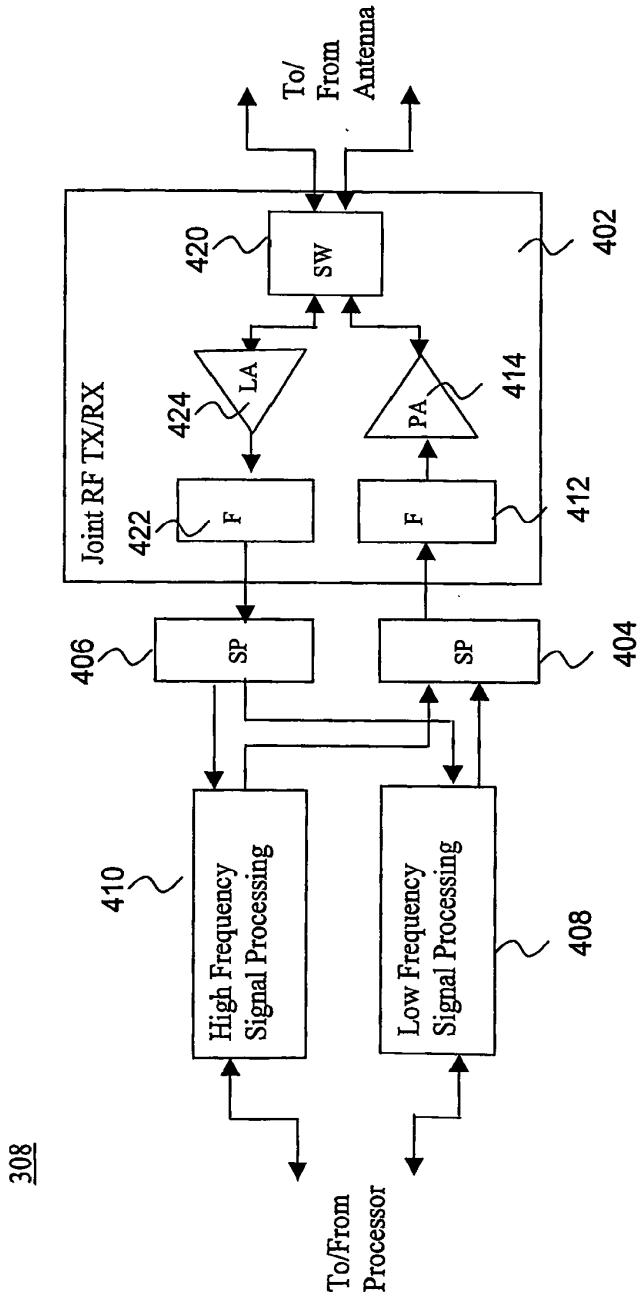

308
To/From Processor
High Frequency Signal Processing
Low Frequency Signal Processing
410
408
SP
SP
406
404
Joint RF TX/RX
F
F
422
412
LA
PA
424
414
SW
420
402
To/ From Antenna
Legend:
F = Filter
LA = Low Noise Amplifier
PA = Power Amplifier
SP=Splitter
SW = Switch

Figure 4

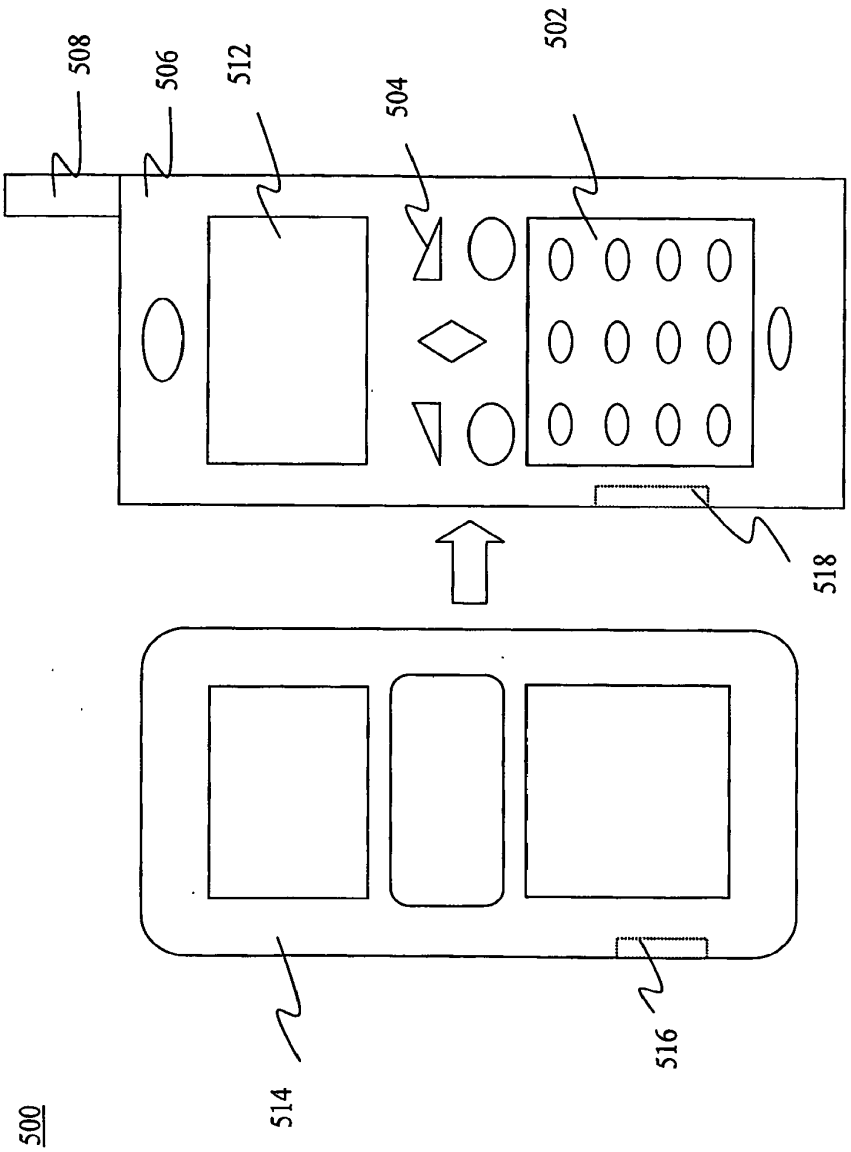


Figure 5a

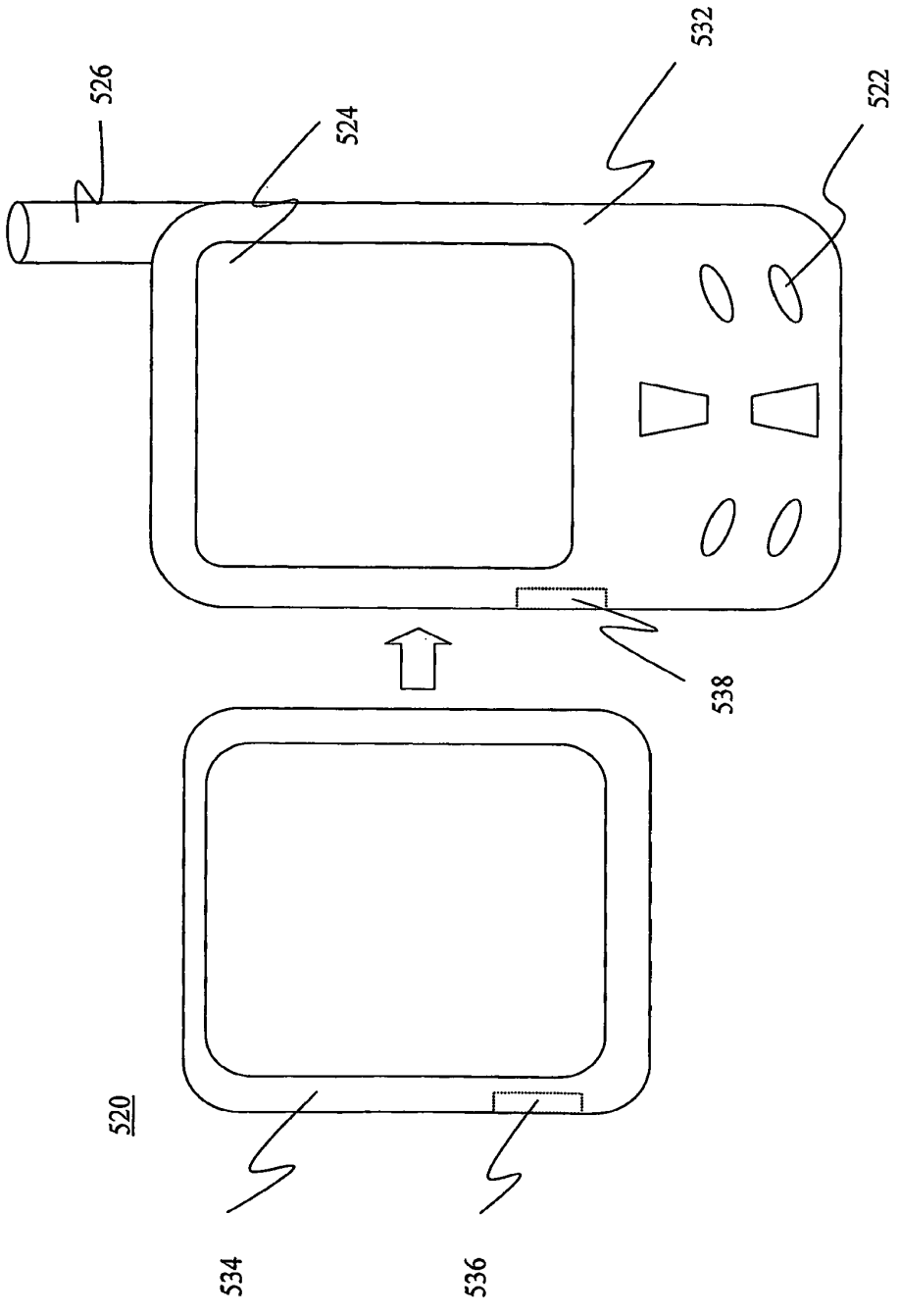


Figure 5b

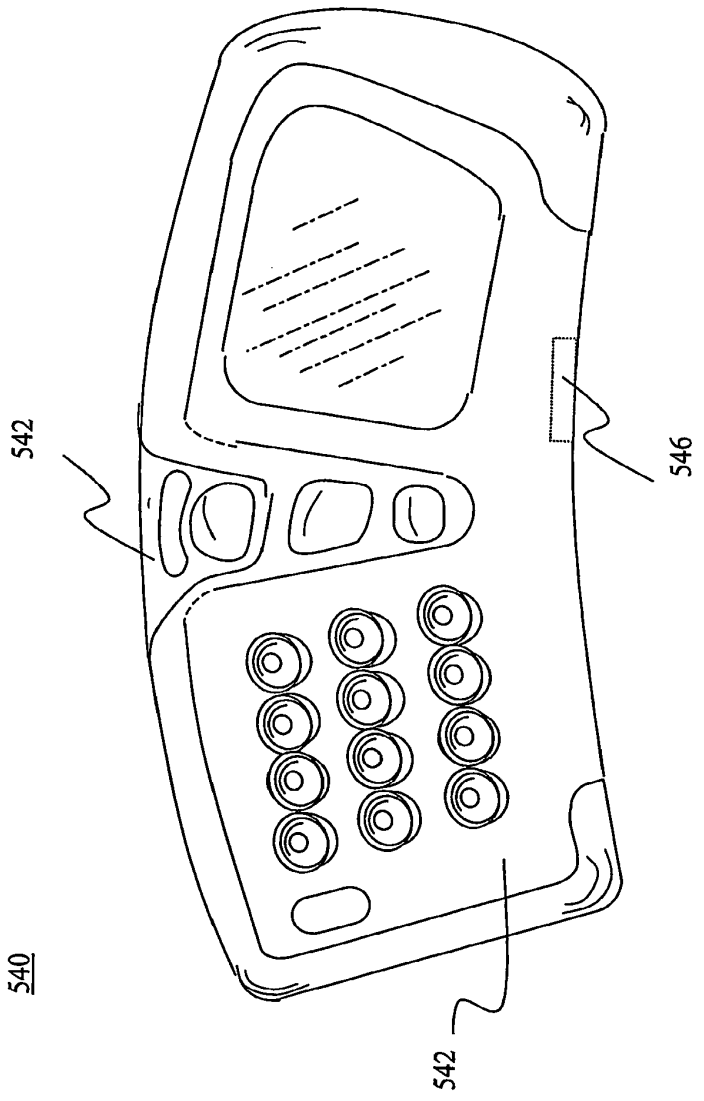


Figure 5c

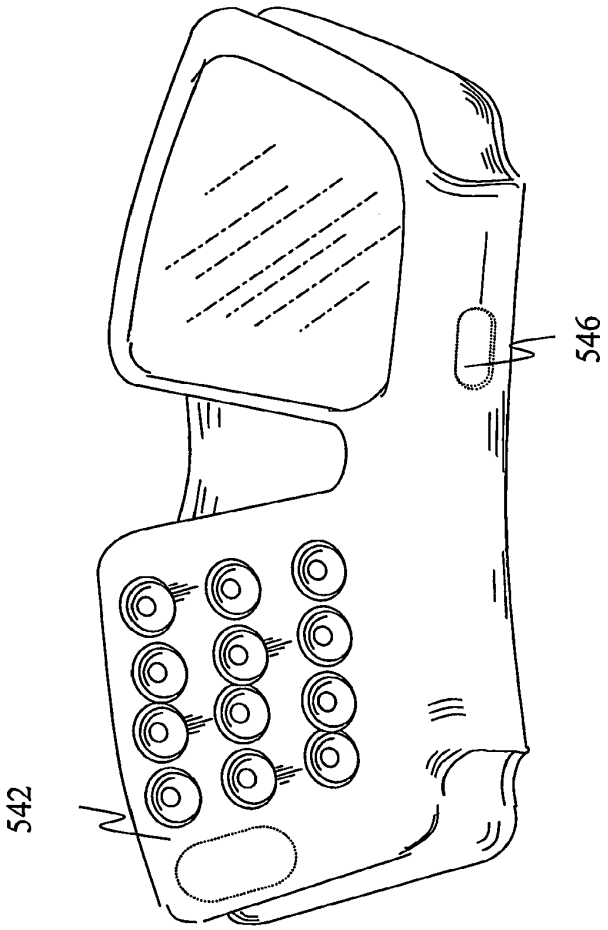


Figure 5d

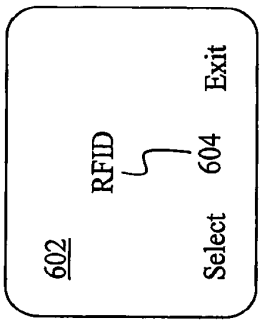


Figure 6a

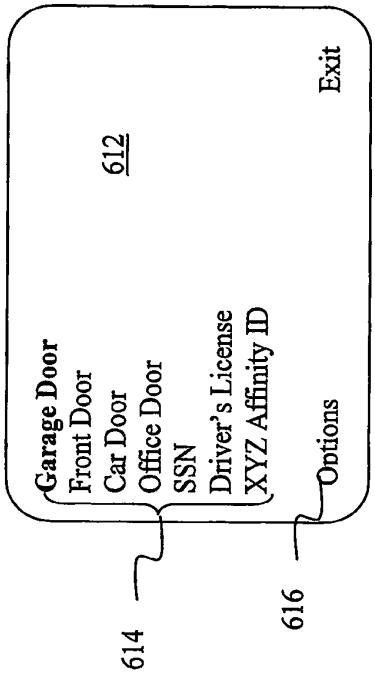


Figure 6b

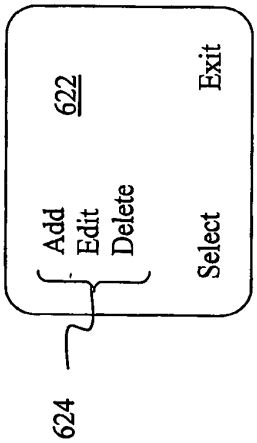


Figure 6c

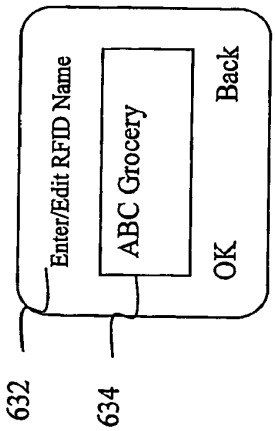


Figure 6d

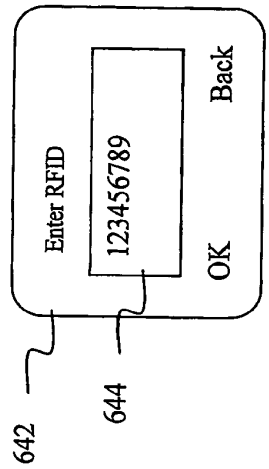


Figure 6e

Figure 6f

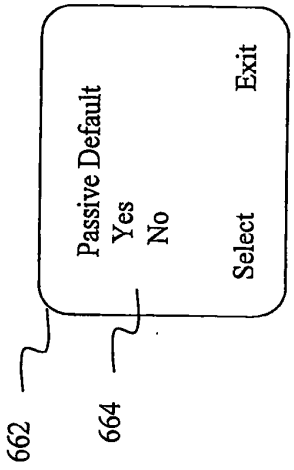


Figure 6g

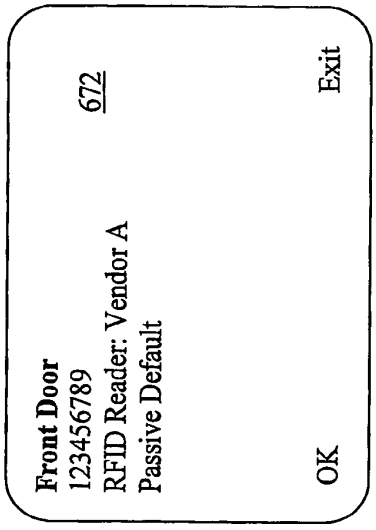

Front Door
123456789
672
RFID Reader: Vendor A
Passive Default
OK
Exit

Figure 6h

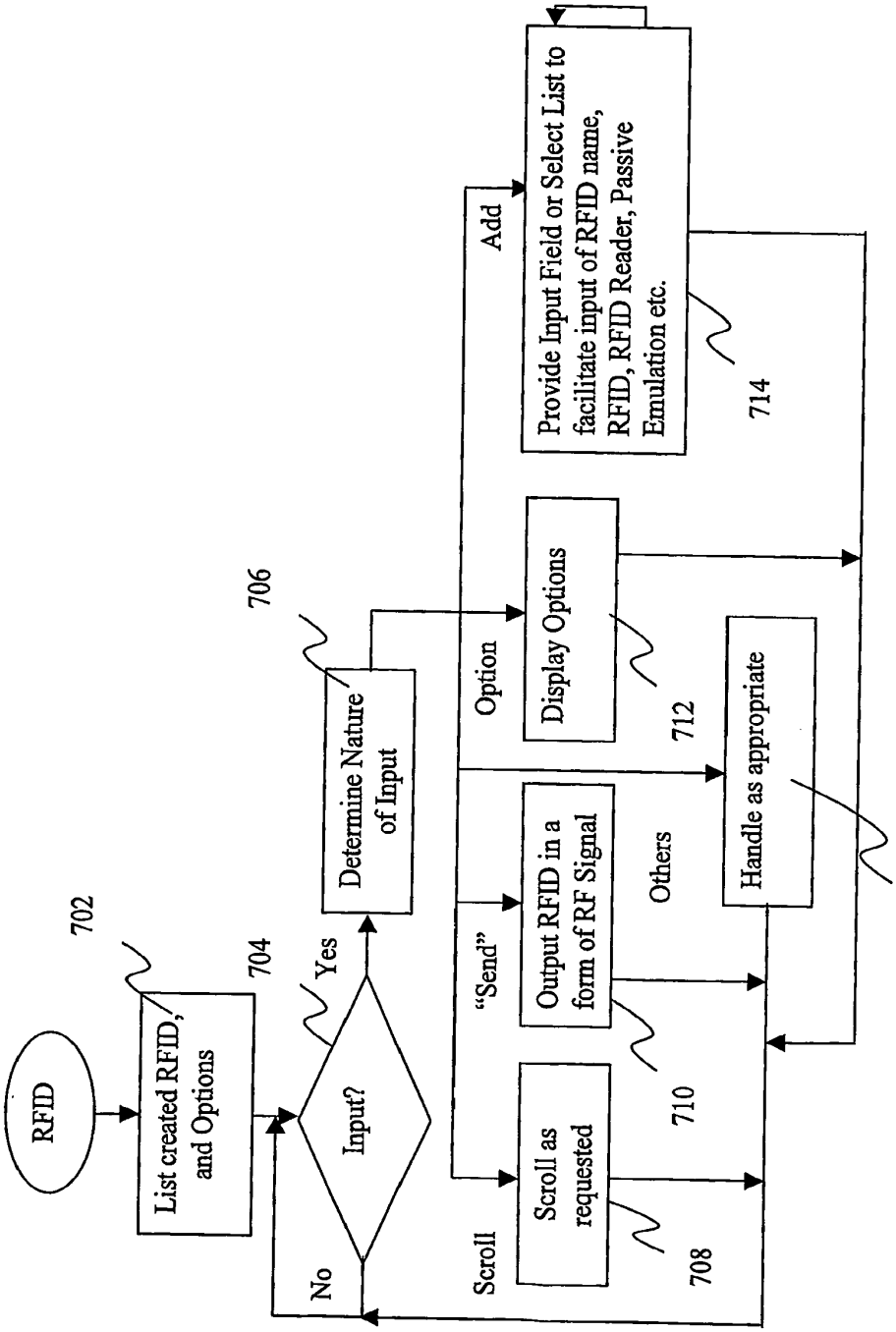

RFID
List created RFID, and Options
Input?
Yes
No
Determine Nature of Input
Option
Add
Display Options
Provide Input Field or Select List to facilitate input of RFID name, RFID, RFID Reader, Passive Emulation etc.
"Send"
Output RFID in a form of RF Signal
Scroll
Scroll as requested
Others
Handle as appropriate
702
704
706
708
710
712
714
716

Figure 7

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/750,970	Filing Date 01/25/2013	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☒ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	**195**
☒ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	**310**
☒ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	**125**
TOTAL CLAIMS (37 CFR 1.16(i))	39 minus 20 =	* 19	x $31 =	**589**
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4 minus 3 =	* 1	x $125 =	**125**
☐ 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	**1344**

APPLICATION AS AMENDED – PART II

AMENDMENT

01/25/2013	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 39	Minus	** 39	= 0	x $31 =	0
Independent (37 CFR 1.16(h))	* 4	Minus	*** 4	= 0	x $125 =	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

01/25/2013	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 39	Minus	** 39	= 0	x $31 =	0
Independent (37 CFR 1.16(h))	* 4	Minus	*** 4	= 0	x $125 =	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**

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LDRC
/GLORIA NORRIS/

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.