Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12188346	NARENDRA ET AL.
	Examiner	**Art Unit**
	Toan N Pham	2612

ORIGINAL		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
340	572.1	G 0 8 B 13 / 14 (2006.01.01)	

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
340	10.1				
235	380				
710	301				

☐ 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	1		17												
2	2		18												
3	3		19												
4	4		20												
5	5		21												
6	6		22												
7	7		23												
8	8														
9	9														
10	10														
	11														
11	12														
12	13														
13	14														
14	15														
15	16														

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	15	
/Toan N Pham/ Primary Examiner.Art Unit 2612	04/19/2011	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1, 4

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12188346	NARENDRA ET AL.
	Examiner	**Art Unit**
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✓	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	08/13/2010								
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	23	÷								

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12188346	NARENDRA ET AL.
	Examiner	**Art Unit**
	Toan N Pham	2612

✓	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								
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	1	÷	✓							
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	22	÷	N							
	23	÷	N							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12188346	NARENDRA ET AL.
	Examiner	Art Unit
	Toan N Pham	2612

SEARCHED			
Class	Subclass	Date	Examiner
340	572.1, 572.8, 10.1, 10.51	9/24/10	TNP
235	492, 379, 380, 493	9/24/10	TNP
705	1	9/24/10	TNP

SEARCH NOTES		
Search Notes	Date	Examiner
EAST	8/10/10, 8/13/10, 9/24/10	TNP

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12188346	NARENDRA ET AL.
	Examiner	Art Unit
	Toan N Pham	2612

SEARCHED			
Class	Subclass	Date	Examiner
340	572.1, 572.8, 10.1, 10.51	9/24/10	TNP
235	492, 379, 380, 493	9/24/10	TNP
705	1	9/24/10	TNP
710	100, 301	4/19/11	TNP

SEARCH NOTES		
Search Notes	Date	Examiner
EAST	8/10/10, 8/13/10, 9/24/10	TNP
EAST UPDATE SEARCH	4/18/11, 4/19/11	TNP

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
340	572.1, 10.1	4/19/11	TNP
235	380	4/19/11	TNP
710	301	4/19/11	TNP

EAST Search History

EAST Search History (Prior Art)

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L4	16	3 and inductive	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/09/24 13:30
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L7	5	235/493.ccls. and ((memory sd) adj2 card) and contactless and communication and magnetic and core and coil	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/09/24 14:03
L8	0	705/1.ccls. and ((memory sd) adj2 card) and contactless and communication and magnetic and core and coil	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/09/24 14:03

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S2	8	memory with card with coil with (magnetic adj2 core)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/08/10 10:58
S3	2400	mobile with payment with device	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/08/13 16:19
S4	309	S3 and (memory adj2 card)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/08/13 16:19
S5	3	S4 and (magnetic adj2 core)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/08/13 16:20
S6	180	S4 and magnetic	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/08/13 16:20
S7	133	S6 and secure and digital	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/08/13 16:20
S8	25	S7 and antenna and coil	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/08/13 16:21
S9	10	((memory sd) adj2 card) with magnetic with core with coil	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/09/24 10:39

S10	0	340/572.8.ccls. and ((memory sd) adj2 card) and contactless and communication and magnetic and core and coil	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/09/24 10:44
S11	0	340/572.1.ccls. and ((memory sd) adj2 card) and contactless and communication and magnetic and core and coil	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/09/24 10:44
S12	1	340/10.1.ccls. and ((memory sd) adj2 card) and contactless and communication and magnetic and core and coil	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/09/24 10:44
S13	1	340/10.51.ccls. and ((memory sd) adj2 card) and contactless and communication and magnetic and core and coil	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/09/24 10:44
S14	12	235/492.ccls. and ((memory sd) adj2 card) and contactless and communication and magnetic and core and coil	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2010/09/24 10:44

EAST Search History (Interference)

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EAST Search History

EAST Search History (Prior Art)

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S26	7	rfid with card with power with host	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/04/19 08:51
S27	4	710/100.ccls. and rfid and card and power and antenna and communication	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/04/19 08:55
S28	4	710/301.ccls. and rfid and card and power and antenna and communication	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/04/19 08:56
S29	1144	rfid and card and power and antenna and communication and memory and contactless	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/04/19 08:58
S30	71	S29 and sd	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/04/19 08:58
S31	24	memory with card with inductive with coil	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/04/19 10:22

EAST Search History (Interference)

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4/19/11 1:43:29 PM

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US007961101B2

(12) **United States Patent**
Narendra et al.

(10) **Patent No.: US 7,961,101 B2**
(45) **Date of Patent: Jun. 14, 2011**

(54) **SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT**

(75) Inventors: **Siva G. Narendra**, Portland, OR (US); **Prabhakar Tadepalli**, Karnatake (IN); **Saurav Chakraborty**, West Bengal (IN)

(73) Assignee: **Tyfone, Inc.**, Portland, OR (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 252 days.

(21) Appl. No.: **12/188,346**

(22) Filed: **Aug. 8, 2008**

(65) **Prior Publication Data**

US 2010/0033307 A1 Feb. 11, 2010

(51) **Int. Cl.**
G08B 13/14 (2006.01)

(52) **U.S. Cl.** **340/572.1**; 340/10.1; 235/380; 710/301

(58) **Field of Classification Search** 340/572.1, 340/572.8, 10.1, 10.51; 235/492, 379, 380, 235/493; 705/1; 710/100, 301
See application file for complete search history.

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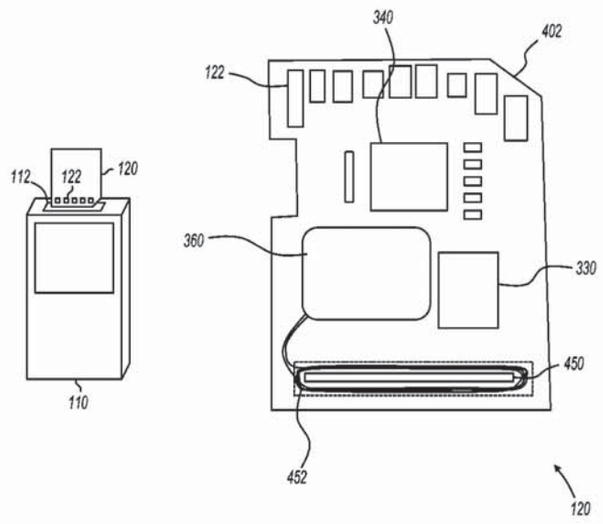
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Primary Examiner — Toan N Pham
(74) *Attorney, Agent, or Firm* — LeMoine Patent Services, PLLC; Dana B. LeMoine

(57) **ABSTRACT**

A memory card compatible RFID card includes a smartcard controller that receives power from a host device. The RFID card also includes a small inductive device capable of inductive coupling with an RFID reader. The small inductive device is small enough to fit in the form factor of a memory card. Commands may be sent to the RFID card to keep the RFID card powered.

15 Claims, 13 Drawing Sheets



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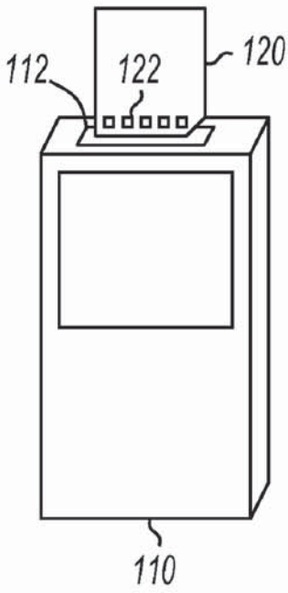

112
122
120
110

FIG. 1

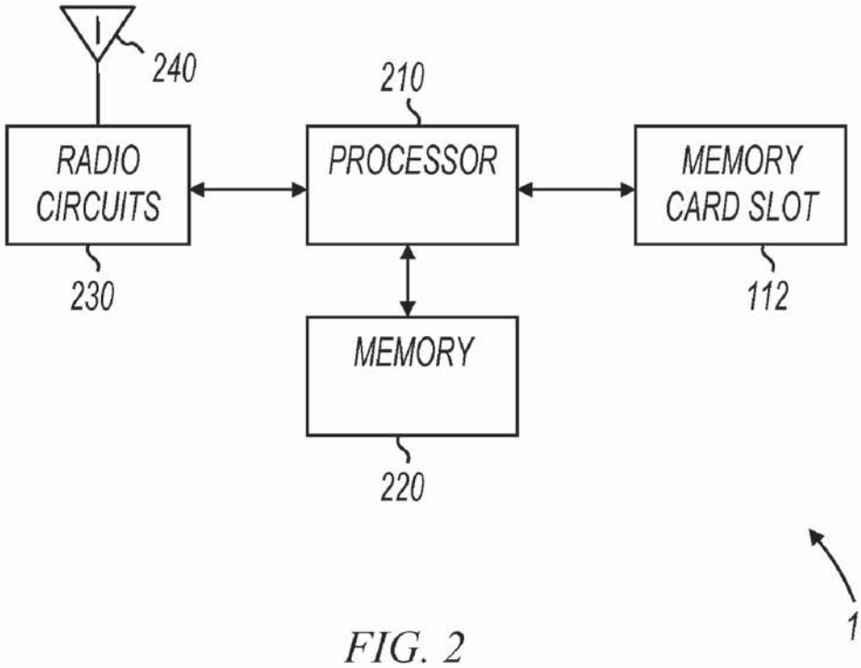

240
210
RADIO CIRCUITS
PROCESSOR
MEMORY CARD SLOT
230
112
MEMORY
220
110

FIG. 2

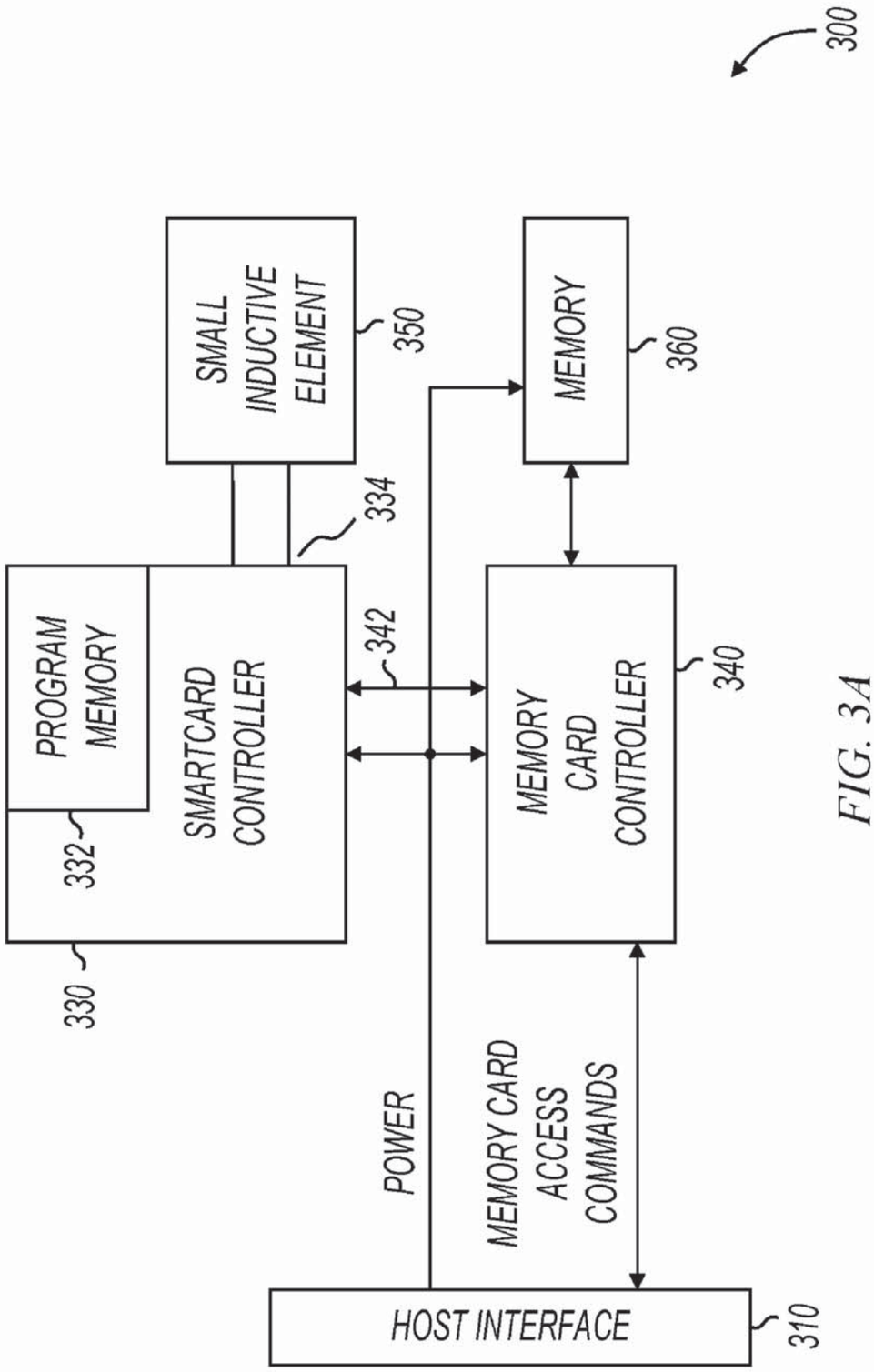

300
SMALL INDUCTIVE ELEMENT
350
MEMORY
360
334
PROGRAM MEMORY
332
SMARTCARD CONTROLLER
342
MEMORY CARD CONTROLLER
340
330
POWER
MEMORY CARD ACCESS COMMANDS
HOST INTERFACE
310

FIG. 3A

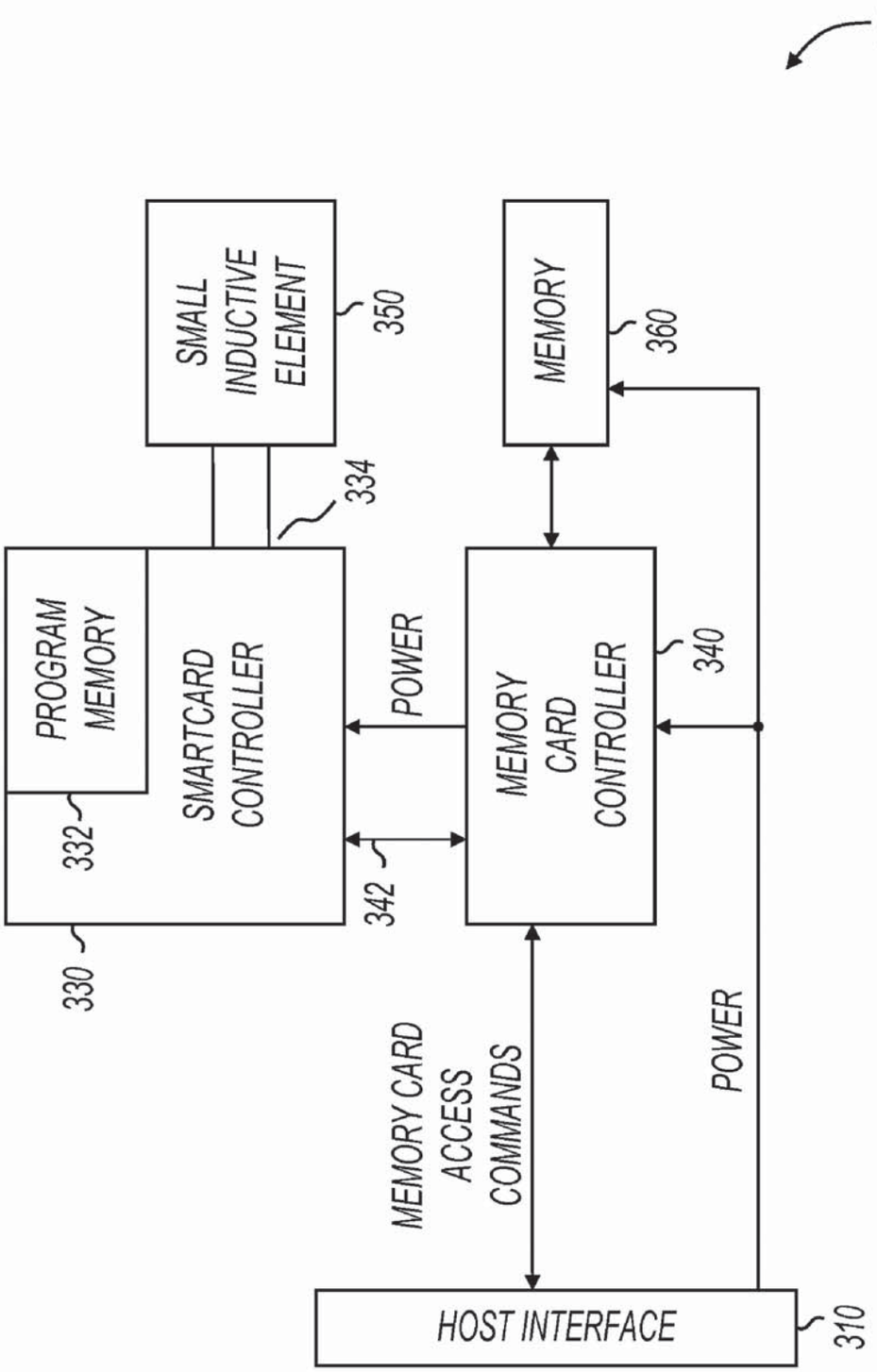

302
SMALL INDUCTIVE ELEMENT
350
MEMORY
360
334
PROGRAM MEMORY
SMARTCARD CONTROLLER
332
330
POWER
342
MEMORY CARD CONTROLLER
340
MEMORY CARD ACCESS COMMANDS
POWER
HOST INTERFACE
310

FIG. 3B

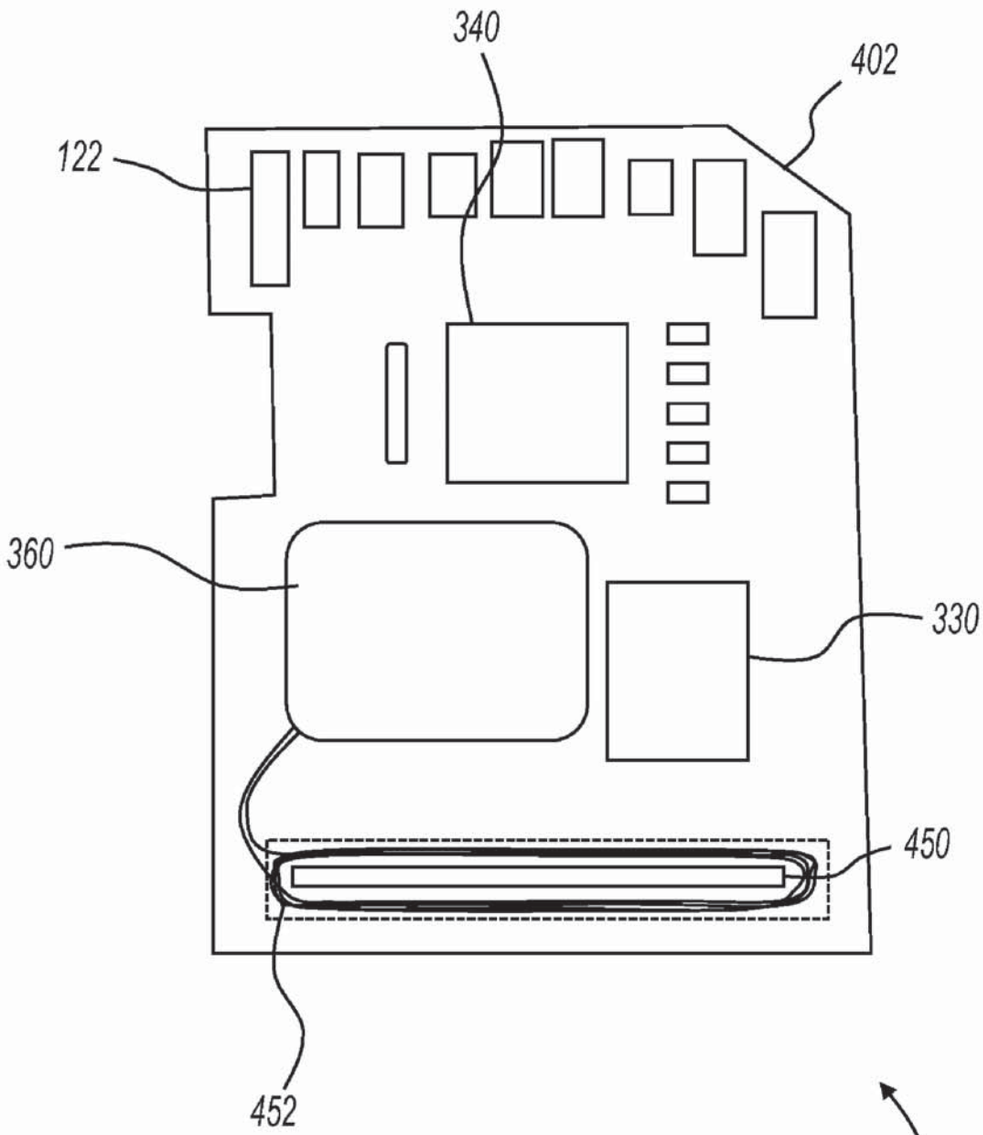


FIG. 4

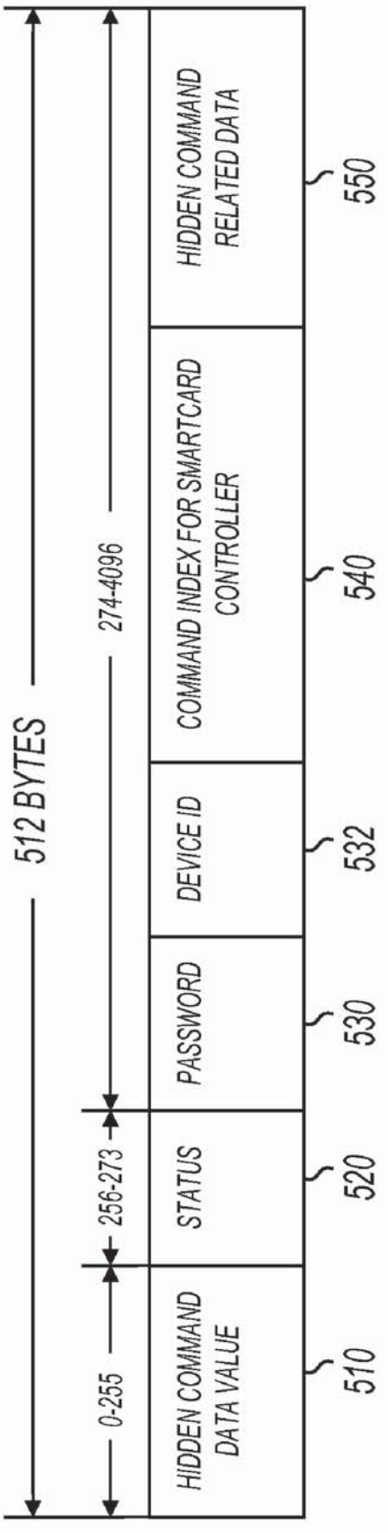

512 BYTES
0-255
256-273
274-4096
HIDDEN COMMAND DATA VALUE
STATUS
PASSWORD
DEVICE ID
COMMAND INDEX FOR SMARTCARD CONTROLLER
HIDDEN COMMAND RELATED DATA
510
520
530
532
540
550

FIG. 5

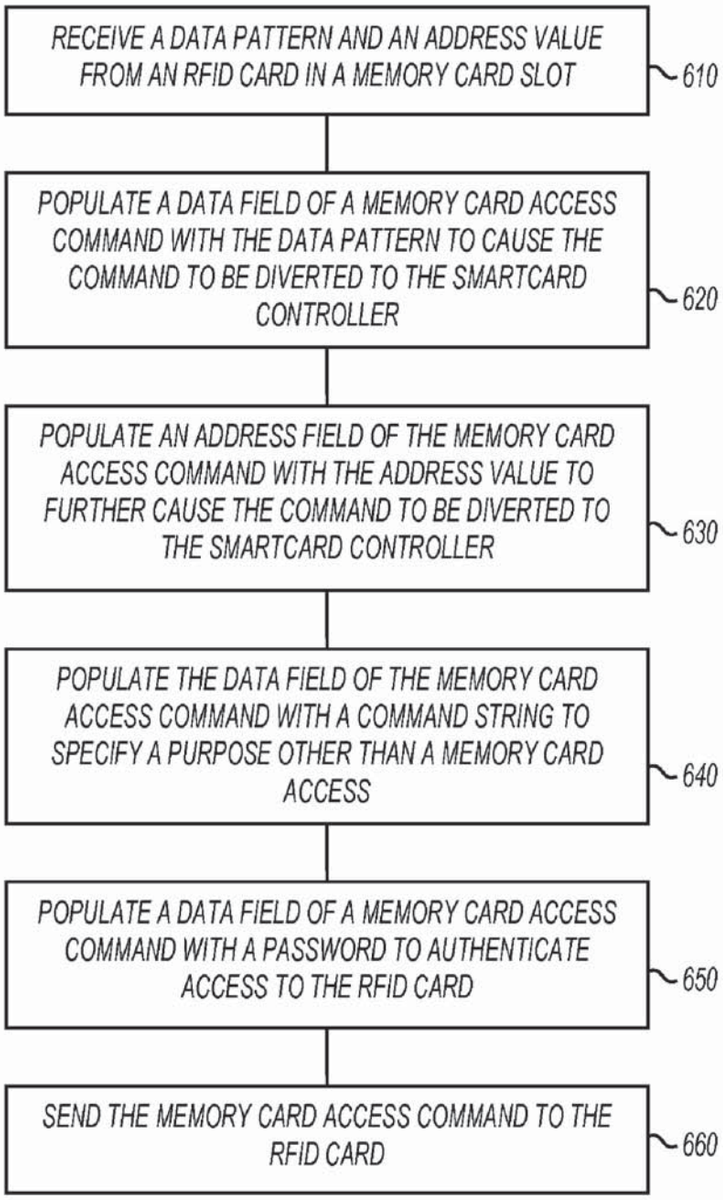

RECEIVE A DATA PATTERN AND AN ADDRESS VALUE FROM AN RFID CARD IN A MEMORY CARD SLOT
610
POPULATE A DATA FIELD OF A MEMORY CARD ACCESS COMMAND WITH THE DATA PATTERN TO CAUSE THE COMMAND TO BE DIVERTED TO THE SMARTCARD CONTROLLER
620
POPULATE AN ADDRESS FIELD OF THE MEMORY CARD ACCESS COMMAND WITH THE ADDRESS VALUE TO FURTHER CAUSE THE COMMAND TO BE DIVERTED TO THE SMARTCARD CONTROLLER
630
POPULATE THE DATA FIELD OF THE MEMORY CARD ACCESS COMMAND WITH A COMMAND STRING TO SPECIFY A PURPOSE OTHER THAN A MEMORY CARD ACCESS
640
POPULATE A DATA FIELD OF A MEMORY CARD ACCESS COMMAND WITH A PASSWORD TO AUTHENTICATE ACCESS TO THE RFID CARD
650
SEND THE MEMORY CARD ACCESS COMMAND TO THE RFID CARD
660
600

FIG. 6

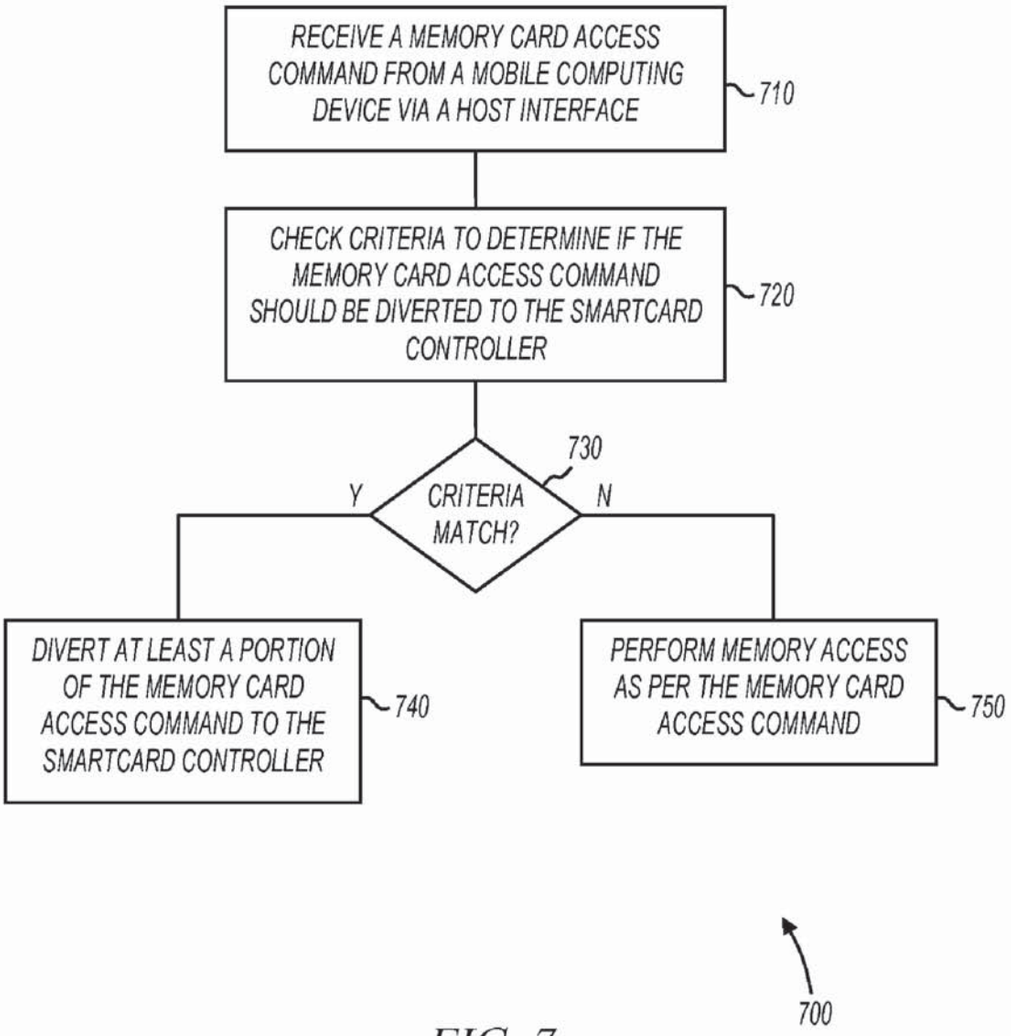

RECEIVE A MEMORY CARD ACCESS COMMAND FROM A MOBILE COMPUTING DEVICE VIA A HOST INTERFACE
710
CHECK CRITERIA TO DETERMINE IF THE MEMORY CARD ACCESS COMMAND SHOULD BE DIVERTED TO THE SMARTCARD CONTROLLER
720
730
CRITERIA MATCH?
Y
N
DIVERT AT LEAST A PORTION OF THE MEMORY CARD ACCESS COMMAND TO THE SMARTCARD CONTROLLER
740
PERFORM MEMORY ACCESS AS PER THE MEMORY CARD ACCESS COMMAND
750
700

FIG. 7

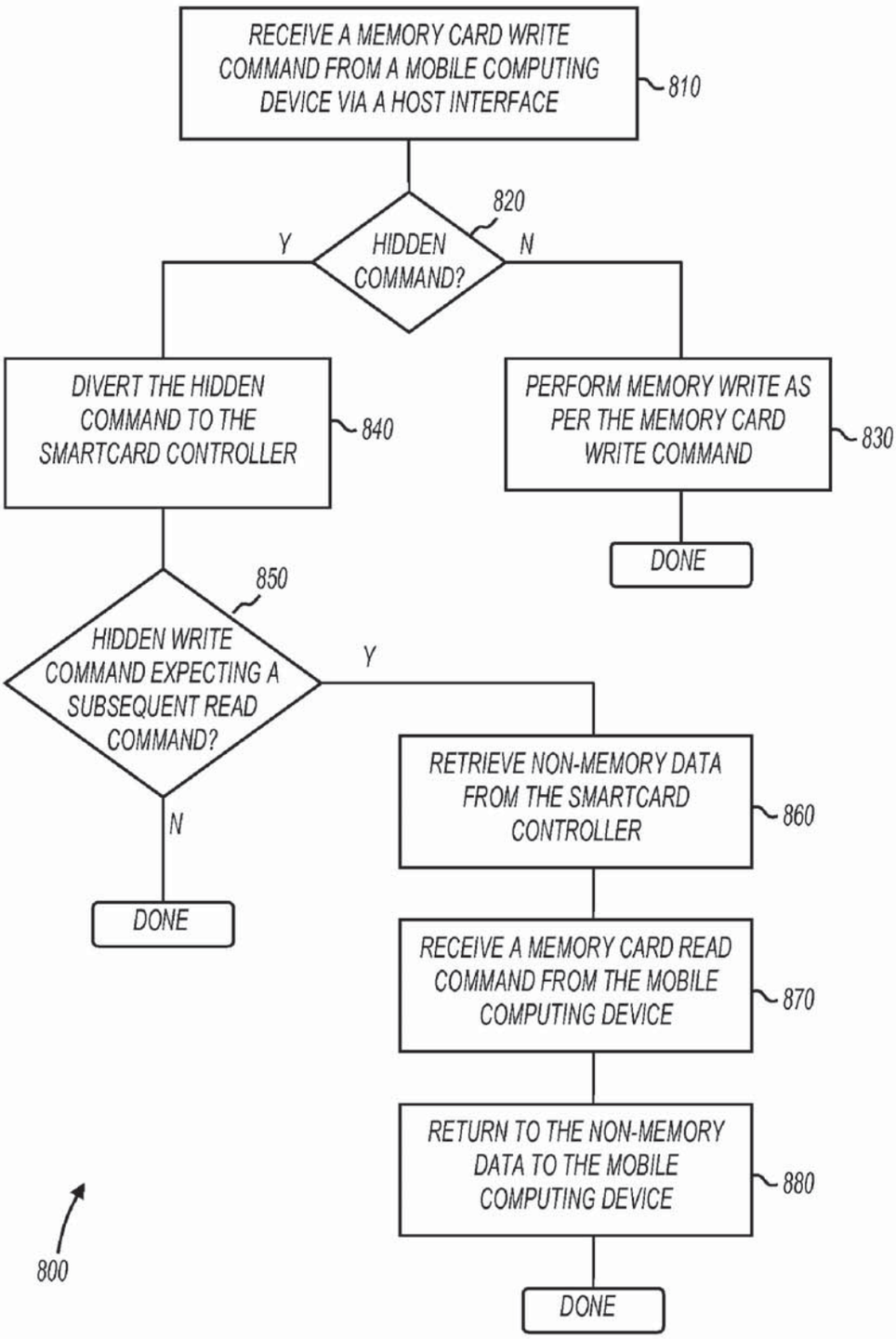

RECEIVE A MEMORY CARD WRITE COMMAND FROM A MOBILE COMPUTING DEVICE VIA A HOST INTERFACE
810
820
HIDDEN COMMAND?
Y
N
DIVERT THE HIDDEN COMMAND TO THE SMARTCARD CONTROLLER
840
PERFORM MEMORY WRITE AS PER THE MEMORY CARD WRITE COMMAND
830
DONE
850
HIDDEN WRITE COMMAND EXPECTING A SUBSEQUENT READ COMMAND?
Y
N
DONE
RETRIEVE NON-MEMORY DATA FROM THE SMARTCARD CONTROLLER
860
RECEIVE A MEMORY CARD READ COMMAND FROM THE MOBILE COMPUTING DEVICE
870
RETURN TO THE NON-MEMORY DATA TO THE MOBILE COMPUTING DEVICE
880
DONE
800

FIG. 8

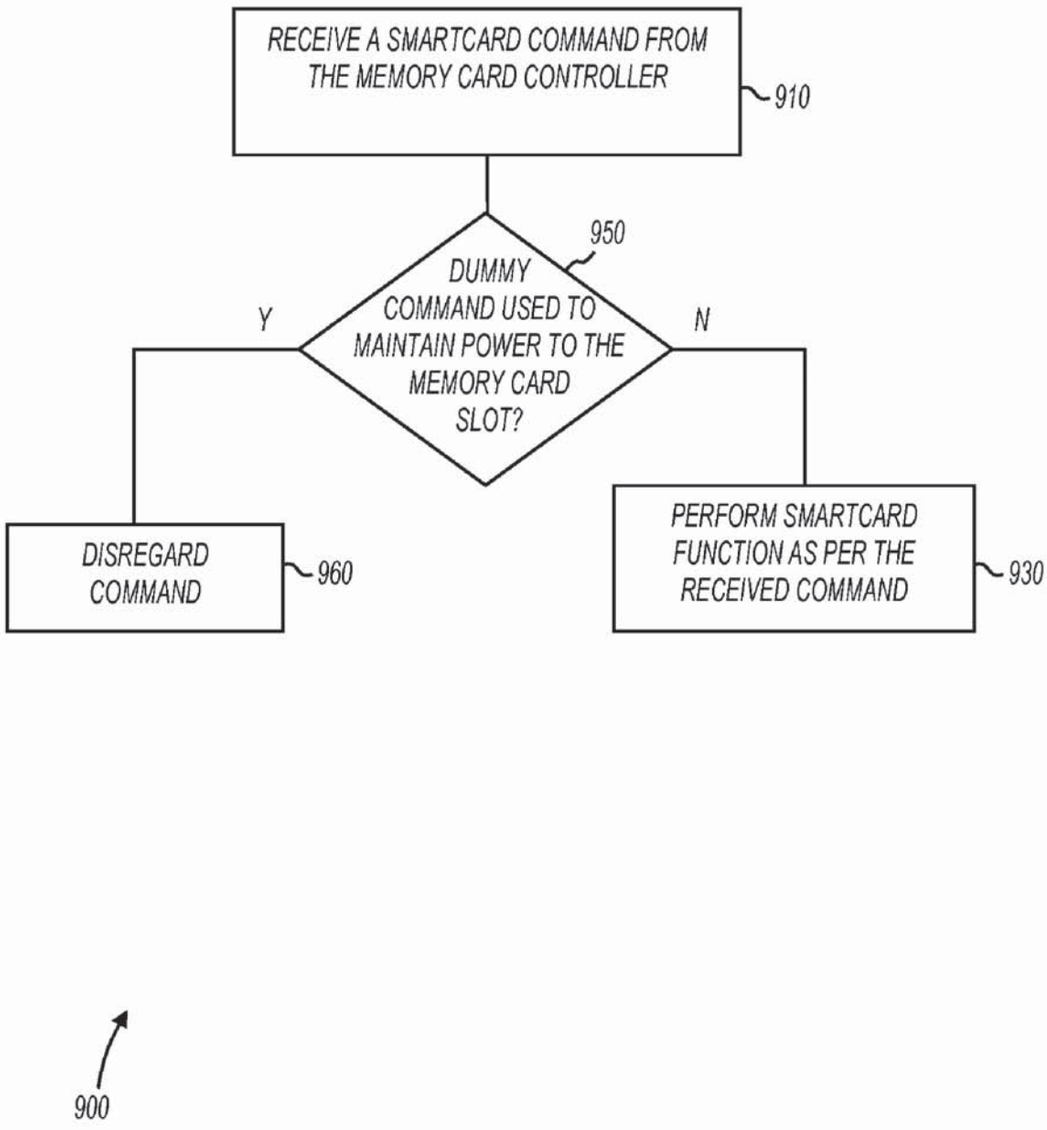

RECEIVE A SMARTCARD COMMAND FROM THE MEMORY CARD CONTROLLER
910
950
DUMMY COMMAND USED TO MAINTAIN POWER TO THE MEMORY CARD SLOT?
Y
N
DISREGARD COMMAND
960
PERFORM SMARTCARD FUNCTION AS PER THE RECEIVED COMMAND
930
900

FIG. 9

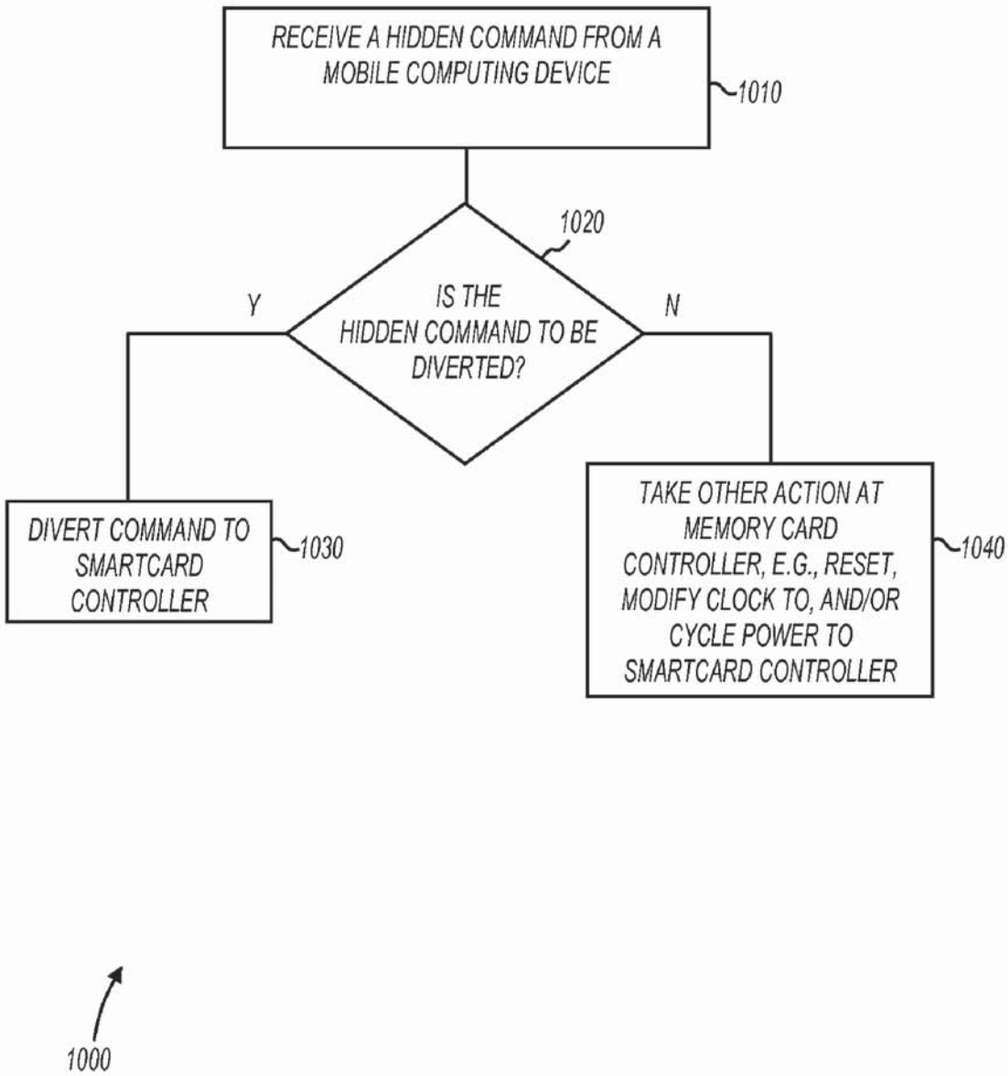

RECEIVE A HIDDEN COMMAND FROM A MOBILE COMPUTING DEVICE
1010
1020
IS THE HIDDEN COMMAND TO BE DIVERTED?
Y
N
DIVERT COMMAND TO SMARTCARD CONTROLLER
1030
TAKE OTHER ACTION AT MEMORY CARD CONTROLLER, E.G., RESET, MODIFY CLOCK TO, AND/OR CYCLE POWER TO SMARTCARD CONTROLLER
1040
1000

FIG. 10

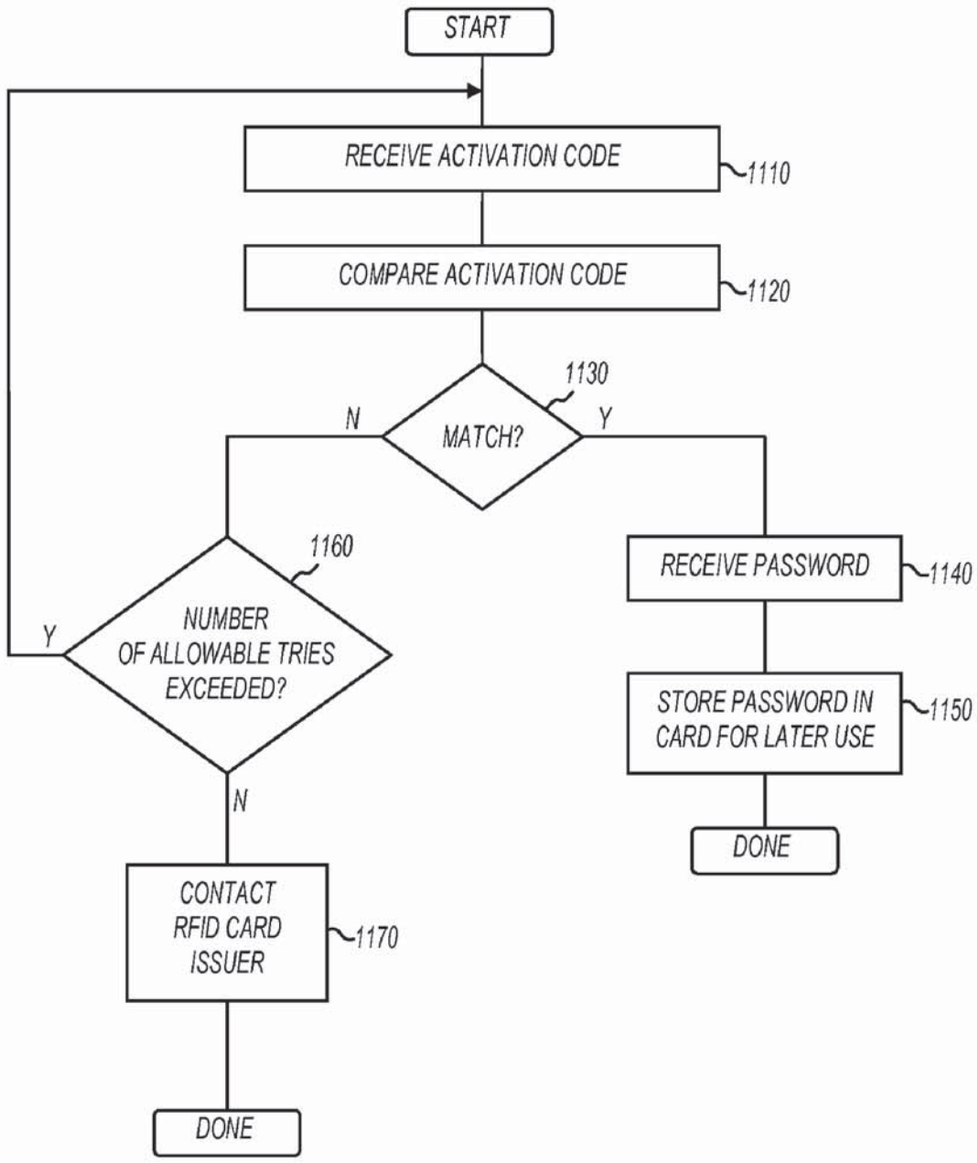

START
RECEIVE ACTIVATION CODE
1110
COMPARE ACTIVATION CODE
1120
1130
MATCH?
N
Y
1160
NUMBER OF ALLOWABLE TRIES EXCEEDED?
Y
N
RECEIVE PASSWORD
1140
STORE PASSWORD IN CARD FOR LATER USE
1150
DONE
CONTACT RFID CARD ISSUER
1170
DONE
1100

FIG. 11

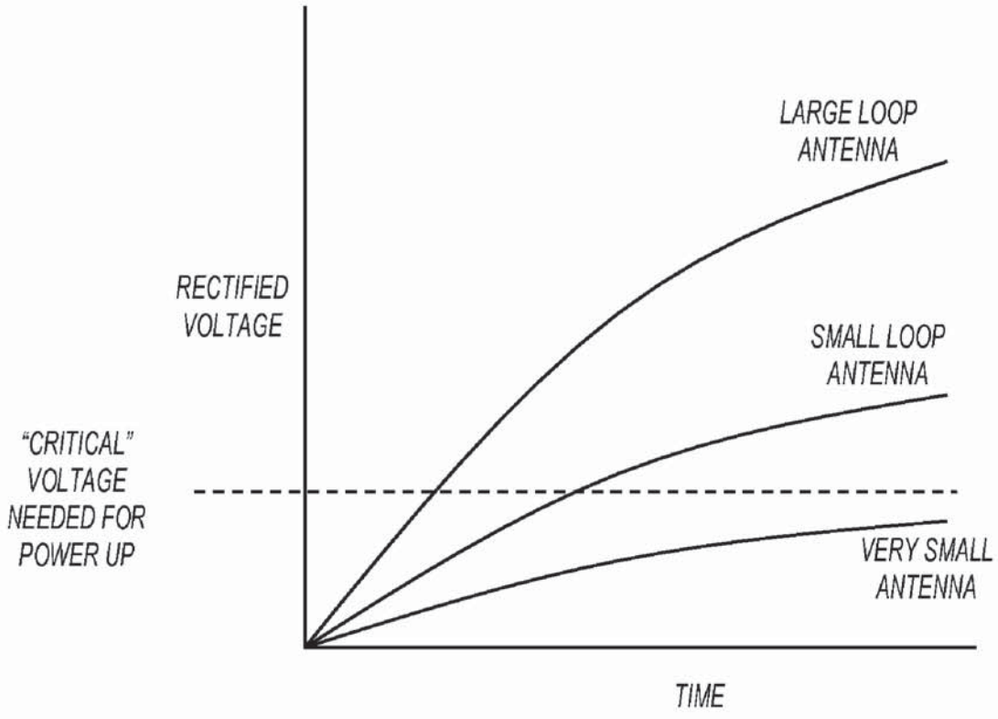


FIG. 12
(PRIOR ART)

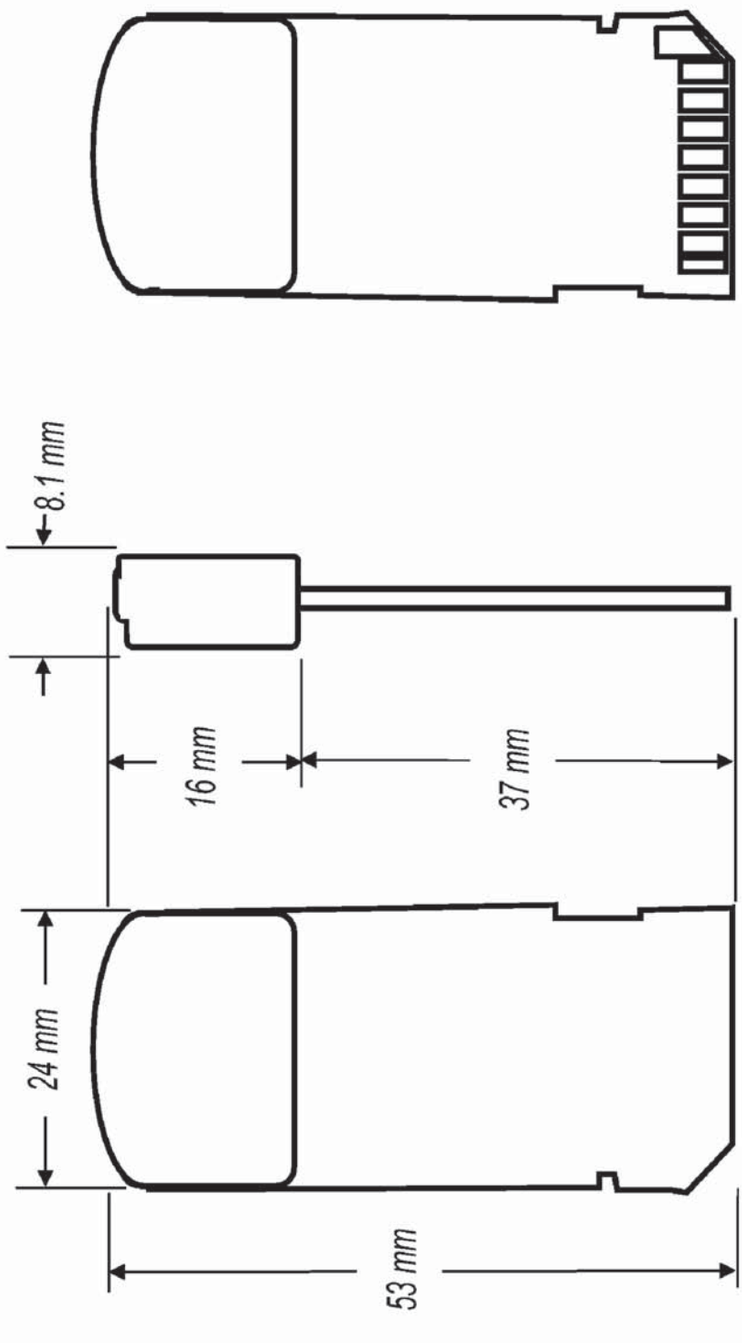


FIG. 13
(PRIOR ART)

SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT

FIELD

The present invention relates generally to contactless communications devices, and more specifically to small radio frequency identification (RFID) cards.

BACKGROUND

RFID "tags" can be separated into two broad categories: active tags and passive tags. Active tags are characterized by a local power source such as a battery. Active tags generally transmit information by broadcasting on an RF carrier frequency of choice using a locally generated RF carrier. Active tags are typically used to transmit over long distances, often referred to as "far field communications" (FFC). Antennas used with active RFID tags tend to be large to allow for the communications over long distances.

Passive tags are not powered. Passive tags derive the energy needed to power the tag from an interrogating RF field, and use that energy to transmit response codes by modulating the impedance that the antenna presents to the interrogating field, thereby modulating the signal reflected back to the reader antenna. Passive tags are typically used to transmit over short distances, often referred to as "near field communications" (NFC). For example, passive tags operating at 13.56 MHz are typically designed to communicate with RFID readers a few centimeters away.

Passive tags are typically connected to "loop antennas." One example of a loop antenna is shown in U.S. Pat. No. 6,568,600, issued to Carpier et al. on May 27, 2003 (the '600 patent). The device described in the '600 patent is recognizable as a "credit card sized" passive RFID card (more specifically, a card that conforms to ISO 7816 size requirements). The loop antenna is necessarily large because passive tags are powered using energy received by the antenna from signals transmitted by the RFID reader.

FIG. **12** shows a power supply voltage developed over time by rectifying a voltage induced in a loop antenna in the presence of an interrogating RF field. Once the power supply voltage reaches a critical value, the tag is powered up and can operate. As the antenna size is reduced, it takes longer for the power supply voltage to reach the critical value, and the tag operation may not meet response time specifications. Below a certain antenna size, the power supply voltage may never reach the critical value, and the tag may never power up.

Antenna design for RFID applications is described in a Microchip Technology, Inc. application note entitled "Antenna Circuit Design for RFID Applications" by Youbok Lee, Ph.D., published in 2003 (no month given). Dr. Lee's application note describes in great detail how to determine size requirements for a passive RFID tag antenna to operate at 13.56 MHz. On page 5 of the application note, Dr. Lee shows that the optimum radius of the loop antenna coil is equal to 1.414 times the required read range. This analysis confirms that for a read range on the order of a few centimeters, a credit card sized loop antenna can be made near optimal.

Passive tags are seeing widespread use in many applications. For example, mobile device manufacturers are embedding passive RFID tags in mobile devices for NFC applications. Example mobile applications include, but are not limited to, ticketing and mobile payments. U.S. Pat. No. 7,333,062 issued to Leizerovich et al. on Feb. 19, 2008 (the '062 patent) shows a mobile phone with an integrated loop antenna for an NFC device. As shown in the '062 patent, the mobile phone provides the real estate necessary to implement a loop antenna at 13.56 MHz.

There have been attempts to implement passive tags in smaller mobile devices. These attempts have met with limited success due in part to the size of the loop antenna. For example, FIG. **13** shows an RFID tag implementation in a secure digital (SD) memory card manufactured by Wireless Dynamics, Inc. of Calgary, Alberta Canada. Card 1300 includes an antenna, but the SD card is significantly oversized as a result. Also for example, U.S. Patent Application Publication No.: US 2006/0124755 A1 shows a memory card having a passive tag, but the card must be inserted into a slot to access a loop antenna on a different device. In this implementation, mobile device real estate is still relied upon for loop antenna implementation. It can be seen, therefore, that the size of antennas are proving to be a barrier to further miniaturization of passive RFID tags.

A need exists for a small footprint RFID tag that does not rely on an external device to house an antenna. A need also exists for a memory card compatible RFID tag that is compatible with standard memory card slots on mobile devices.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** shows a mobile computing device and a small RFID card compatible with a memory card slot;

FIG. **2** shows a block diagram of a mobile computing device;

FIGS. **3**A-**3**B show block diagrams of memory card compatible RFID cards with integrated inductive elements;

FIG. **4** shows a photograph of a memory card compatible RFID card with an integrated inductive element;

FIG. **5** shows a data portion of a memory card write command;

FIG. **6**-**11** show flowcharts of methods in accordance with various embodiments of the present invention;

FIG. **12** shows a power supply voltage developed over time by rectifying a voltage induced in a loop antenna in the presence of an interrogating RF field; and

FIG. **13** shows a prior art RFID tag implementation in a secure digital (SD) memory card.

DESCRIPTION OF EMBODIMENTS

In the following detailed description, reference is made to the accompanying drawings that show, by way of illustration, various embodiments of an invention. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention. It is to be understood that the various embodiments of the invention, although different, are not necessarily mutually exclusive. For example, a particular feature, structure, or characteristic described in connection with one embodiment may be implemented within other embodiments without departing from the spirit and scope of the invention. In addition, it is to be understood that the location or arrangement of individual elements within each disclosed embodiment may be modified without departing from the spirit and scope of the invention. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the present invention is defined only by the appended claims, appropriately interpreted, along with the full range of equivalents to which the claims are entitled. In the drawings, like numerals refer to the same or similar functionality throughout the several views.

FIG. **1** shows a mobile computing device and a small RFID card compatible with a memory card slot. Mobile computing

device **110** is shown as a mobile phone in FIG. **1**, but this is not a limitation of the present invention. For example, mobile computing device **110** may be a personal digital assistant (PDA), a smartphone, a mobile phone, a handheld computer, a desktop computer, or any other device capable of operating as described herein.

Mobile computing device **110** includes memory card slot **112**. Memory card slot **112** is a slot capable of accepting RFID card **120**. For example, memory card slot **112** may have physical dimensions compatible with RFID card **120**, and may have a communications interface that operates using a protocol compatible with RFID card **120**. In some embodiments of the present invention, memory card slot **112** is a memory card slot designed to accept and communicate with memory cards. As used herein, the term "memory card slot" refers to any add-on slot capable of accepting a card having memory accessible by a mobile computing device such as that shown in FIG. **1**. For example, a memory card slot may be compatible with an industry standard communications protocol, or may be compatible with a widely accepted communications protocol that is not necessarily formally documented as an industry standard. Examples include slots that are compatible with the Multimedia Memory Card (MMC) protocol, Memory Stick DUO protocol, secure digital (SD) protocol, and Smart Media protocol. The foregoing list is meant to be exemplary, and not exhaustive. Memory card slot **112** may be compatible with many memory card slot protocols other than those explicitly listed above without departing from the scope of the invention.

RFID card **120** includes electrical contacts **122** as part of a host interface that communicates with memory card slot **112**. For example, electrical contacts **122** may provide connectivity compliant with a communications protocol for memory cards. RFID card **120** includes RFID functionality, and may also include memory accessible by mobile computing device **110**. For example, in some embodiments, RFID card **120** includes a smartcard controller and an inductive element capable of interacting with an NFC reader (e.g., an ISO 14443 compliant interface). In other embodiments, RFID card **120** does not include memory accessible by mobile computing device **110**. RFID card **120** may include functionality beyond memory and RFID.

In various embodiments of the present invention, the RFID functionality in RFID card **120** is accessed by mobile computing device **110** using memory card access commands already defined for use in memory card slot **112**. Accordingly, the various embodiments of the present invention enable the implementation of RFID functions beyond memory accesses without defining new commands. In some embodiments, new commands for the RFID card are embedded inside the data bits subsequent to memory card read/write commands. RFID card **120** then decides if the incoming data bits are meant for regular read/write memory functions or for RFID functions. In other words, functions in addition to standard memory card functions may be accessed through commands "hidden" in the data stream that can be exchanged using existing memory card access commands and functions. According to the various embodiments of the invention, both existing memory card functions and RFID functions may be implemented without requiring changes in how the host protocol is built.

The combination of mobile computing device **110** and RFID card **120** may be used for any purpose. For example, in some embodiments, RFID card **120** may interact with a point-of-sale payment device to effect mobile payments. Also for example, in some embodiments, RFID card **120** may be used in wave-and-pay ticketing in mass transit environments, such as MIFARE.

FIG. **2** shows a block diagram of a mobile computing device. Mobile computing device **110** includes antenna **240**, radio circuits **230**, processor **210**, memory **220**, and memory card slot **112**. In some embodiments, mobile computing device **110** is a mobile phone, or includes mobile phone functionality. For example, antenna **240** and radio circuits **230** may be utilized to communicate with a cellular telephone network. Further, in some embodiments, mobile computing device **110** is a wireless local area network (WLAN) or wireless wide area network (WWAN) device. For example, antenna **240** and radio circuits **230** may be utilized to communicate with a wireless access point. In some embodiments, antenna **240** and radio circuits **230** are omitted, and mobile computing device **110** does not utilize wireless connectivity.

Processor **210** represents a processor capable of communicating with the other blocks shown in mobile computing device **110**. For example, processor **210** may be a microprocessor, a digital signal processor (DSP), a microcontroller, or the like. Further, processor **210** may be formed from state machines or other sequential logic. In operation, processor **210** may read instructions from memory **220** and perform actions in response thereto. For example, processor **210** may execute program instructions that influence communications between mobile computing device **110** and a device coupled to memory card slot **112**.

Memory card slot **112** is described above with reference to FIG. **1**. Memory card slot **112** includes circuitry compatible with RFID card **120**. Mobile computing device **110** may communicate with RFID card **120** by using a standard set of memory card access commands. For example, processor **210** may use memory card write commands to write to memory in RFID card **120**, and may use memory card read commands to read from memory in RFID card **120**.

Mobile computing device **110** may access the RFID functionality in RFID card **120** using "hidden" commands embedded in memory card access commands. For example, a memory card write command may include a unique data string to identify the memory card write command as a command to be diverted for purposes other than a memory write. In addition, the sector address provided with the memory card write command may be set to a particular address value to further identify the memory card write command as a command to be diverted. In addition to specific address/data values to identify the memory card access command as a command to be diverted for a purpose other than a memory access, the memory access command may include data bits to further specify the type and function of hidden command. Example formats of hidden commands are described further below. In some embodiments, a read command is issued right after a write command to enable data flow from the non-memory card functions to the host, where the write command's data had the hidden commands. The combination of a memory card write command and a memory card read command can be used in this manner to form a hidden read command.

In some embodiments, memory card slot **112** is powered down after periods of inactivity to save power. For example, memory card slot **112** may be powered up when processor **210** issues a memory card write or read command, but may then be powered down to save power. When memory card slot **112** is powered down, any device coupled to the memory card slot is also powered down. For example, if RFID card **120** (FIG. **1**) is coupled to the memory card slot, then RFID card **120** is powered down when memory card slot **112** is powered down.

In various embodiments of the present invention, processor **210** executes software resident in memory **220** to maintain power to memory card slot **112** (and to RFID card **120**). For

example, periodic hidden commands may be sent to RFID card **120** for the purpose of keeping power applied while RFID card **120** is expected to be providing RFID functionality. Also for example, a hidden command may be sent to RFID card **120** for the purpose of cycling power to a smartcard controller resident on the card. These hidden commands are described further below with respect to later figures.

FIG. **3**A shows a block diagram of a memory card compatible RFID card with an integrated inductive element. RFID card **300** represents possible embodiments of RFID card **120** (FIG. **1**). RFID card **300** includes host interface **310**, memory card controller **340**, memory **360**, smartcard controller **340**, program memory **332**, and small inductive element **350**. RFID card **300** is capable of communicating with a memory card slot in a mobile computing device. Further, RFID card **300** does not require memory card slots to implement extended input/output functions. For example, and not by way of limitation, in SD embodiments, RFID card **300** is operable in any SD memory card slot, and does not require a secure digital input output (SDIO) memory card slot.

Host interface **310** includes electrical contacts to interface with a memory card slot. For example, host interface **310** includes contacts such as contacts **122** (FIG. **1**). Also for example, in some embodiments, host interface **310** includes recessed electrical contacts. Host interface **310** may also include circuitry such as drivers, receivers, terminations, and the like.

In embodiments represented by FIG. **3**A, memory card controller **340** communicates with the mobile device using memory card access commands. Memory card controller **340** also communicates with memory **360**. Memory card controller **340** determines whether each command should result in a memory operation with memory **360**, whether a hidden command should be diverted to smartcard controller **330**, or whether memory card controller **340** should take action in response to a hidden command. In some embodiments, memory card controller **340** executes instructions that are stored in an internal memory or stored in memory **360**. In some embodiments, memory card controller **340** includes special purpose hardware useful to determine whether a command should be diverted. In other embodiments, memory card controller **340** may be a microcontroller identical in all respects to a controller found in memory cards, except for the program that it executes.

Memory **360** may be any type of volatile or non-volatile memory. For example, memory **360** may be volatile memory such as static random access memory (SRAM) or dynamic random access memory (DRAM). Also for example, memory **360** may be nonvolatile memory such as NOR FLASH memory or NAND FLASH memory. In various embodiments of the present invention, memory **360** represents memory that is accessed by a mobile computing device using memory card access commands defined for that purpose.

When RFID card **300** is communicating with a memory card slot in a mobile computing device, the mobile computing device may send a memory card access command in order to access memory **360**. Also for example, the mobile computing device may send a memory card access command that contains a hidden command. Memory card controller **340** detects the presence of the hidden command, and diverts all or a portion of the memory access command to smartcard controller **330** using communication bus **342**. Communication bus **342** may have any number of conductors and may take any form. For example, communication bus **342** may be a serial port, a parallel port, or may include multiple data conductors, multiple address conductors, and/or conductors to carry control signals such as clock signals. In some embodiments, memory card controller **340** takes one or more actions in response to a hidden command. For example, memory card controller **340** may modify clock signals in response to a hidden command.

Memory card controller **340** can detect the hidden command in many ways. For example, in some embodiments, the memory card access command may include a specific address value or a specific data value. Memory card controller **340** detects commands that include one or both of the specific address value or specific data value and routes the command appropriately. The specific address value and specific data value used for this purpose are referred to herein as the hidden command address value and the hidden command data value.

In some embodiments, memory card controller **340** detects the presence of hidden commands based only on the hidden command address value. In these embodiments, memory card controller **340** checks the address value included in a memory card access command, and diverts the command (or takes some other action) if it matches the hidden command address value. In some embodiments, memory card controller **340** detects the presence of hidden commands based only on the hidden command data value. In these embodiments, memory card controller **340** checks a data value included in the memory card access command, and diverts the command if it matches the hidden command data value. In still further embodiments, memory card controller **340** detects the presence of hidden commands based on both the hidden command address value and the hidden command data value. In these embodiments, memory card controller **340** diverts the command only if both the memory card access address and data match the hidden command address value and data value, respectively.

The hidden command address value and hidden command data value may be specified in many ways. For example, all RFID cards may be issued with fixed values. In these embodiments, each time the RFID functions are accessed, the same hidden command address and/or data value is included in the memory card access command. Also for example, different RFID cards may be issued with unique values. In these embodiments, each RFID card may provide these values to a mobile computing device when queried. Also for example, hidden command address and/or data values may be specified by the mobile computing device. In still further embodiments, hidden command address and data values may be dynamic. The hidden command address and data values may change each time power is applied or on a periodic basis.

Smartcard controller **330** receives hidden commands diverted by memory card controller **340**. Smartcard controller **330** further interprets the hidden commands and performs actions in response thereto. Smartcard controller **330** executes instructions stored in program memory **332**. In some embodiments, program memory **332** is embedded in smartcard controller **330**, and in other embodiments, program memory **332** is part of memory **360**.

Smartcard controller **330** is a dual interface smartcard controller with one of the interfaces including RFID functionality. In some embodiments, smartcard controller **330** is compatible with passive RFID tag readers in NFC applications. For example, smartcard controller **330** may be a device capable of implementing all or part of the ISO 14443 standard for contactless NFC devices. Also for example, smartcard controller **330** may be a dual interface smartcard controller capable of implementing both ISO 7816 and ISO 14443 standards for contact/contactless requirements. The "SmartMX" family of controllers available from NXP of The Netherlands are examples of suitable dual interface smartcard controllers. These controllers provide RFID functionality at 13.56 MHz.

The various embodiments of the present invention operate at 13.56 MHz, but are not limited to operation at this frequency. In some embodiments, smartcard controller interoperates with MIFARE systems for ticketing applications.

Smartcard controller **330** receives power from the host interface. By not receiving power from the interrogating RF field, the necessity of a loop antenna for power generation is negated. Smartcard controller **330** includes antenna port **334**. Antenna port **334** is coupled to small inductive element **350**.

Small inductive element **350** includes a coil wound around a magnetic core. The coil is too small to draw power from the interrogating RF field, but this is not necessary since smartcard controller **330** is powered by the host device through host interface **310**. Small inductive element **350** interacts with an antenna in an RFID reader similar to the way that primary and secondary coils in a transformer interact. The RFID reader has a coil resonant at 13.56 MHz functioning as the primary coil of a transformer. Small inductive element **350** functions as the secondary coil of the transformer. Accordingly, the transmitter "sees" the impedance of the secondary coil (small inductive element **350**). Smartcard controller **334** is able to modulate reflected RF signals using circuitry to modify the impedance at the antenna port **334**.

Small inductive element **350** can be made very small. For example, in some embodiments, RFID card **120** is a miniSD card, and small inductive element **350** is small enough to be completely contained in the miniSD form factor. A specific embodiment of a small inductive element in a memory card form factor is described below with reference to FIG. **4**.

In various embodiments of the invention, memory card controller **340** and smartcard controller **330** are implemented in many different ways. For example, in some embodiments, the various components are implemented in hardware. In these embodiments, the various components may be implemented as separate integrated circuits, or in a combined integrated circuit. Also for example, in some embodiments, the various components may be implemented in software, or in a combination of hardware and software. In some embodiments, RFID card **300** may include a microprocessor, and the components may be implemented as software modules running on the microprocessor. In other embodiments, RFID card **300** may include multiple processors, and the components may be implemented as software modules distributed across the multiple processors.

FIG. **3**B shows a block diagram of a memory card compatible RFID card with an integrated inductive element. RFID card **302** represents possible embodiments of RFID card **120** (FIG. **1**). RFID card **302** includes host interface **310**, memory card controller **340**, memory **360**, smartcard controller **340**, program memory **332**, and small inductive element **350**, all of which are described above with reference to FIG. **3**A. RFID card **302** is capable of communicating with a memory card slot in a mobile computing device. Further, RFID card **302** does not require memory card slots to implement extended input/output functions. For example, and not by way of limitation, in SD embodiments, RFID card **302** is operable in any SD memory card slot, and does not require a secure digital input output (SDIO) memory card slot.

In embodiments represented by FIG. **3**B, smartcard controller **330** receives power from memory controller **340**. In these embodiments, memory controller **340** has direct control over the power provided to smartcard controller **330**. Memory controller **340** may apply and/or remove power from smartcard controller **330** in response to commands received over the host interface. For example, memory controller **340** may receive a hidden command to reset smartcard controller **330** by causing a reboot through a power cycle.

FIG. **4** shows a photograph of a memory card compatible RFID card with an integrated inductive element. RFID card **120** is shown in an SD card form factor, although this is not a limitation of the present invention. RFID card **120** includes electrical contacts **122**, memory card controller **340**, smartcard controller **330**, memory **360**, magnetic core **450**, and coil **452**, all affixed to circuit board **402**.

Magnetic core **450** and coil **452** implement small inductive element **350** (FIG. **3**). As can be seen in the photograph, the small inductive element fits entirely within the memory card form factor. The small inductive element does not provide power generation for smartcard controller **330**, and so does not need to be made large for that purpose.

FIG. **5** shows a data portion of a memory card write command. Included are hidden command data value **510**, status field **520**, password field **530**, device ID **532**, command index **540**, and hidden command related data **550**. In the example of FIG. **5**, the data portion is 512 bytes in length, although this is not a limitation of the present invention. Any amount of data may be included in the write command, and each field shown in FIG. **5** may be any length.

In the example of FIG. **5**, the hidden command data value is 256 bits long, IS although any length may be used without departing from the scope of the present invention. In some embodiments, hidden command data value **510** is used to identify a memory write command as a hidden command. When a write command is received having data in the first 256 bits that match the hidden command data value, the command is identified as one to be diverted to the smartcard controller. As described above, a hidden command address value may be used in conjunction with, or instead of, a hidden command data value to identify the memory write command as a hidden command.

The remaining fields have significance when the memory write is a hidden command. For example, if the first 256 bits do not match the hidden command data value (or if the write address does not match the hidden command address value, or both) then the remaining bits in the data field are to be treated as data in a normal memory write command. In contrast, when the memory write is a hidden command, the remaining fields are used to further interpret the hidden command.

Memory card controller **340** (FIGS. **3**, **4**) inspect the hidden command data value **510**, status field **520**, and possibly password field **530** and device ID **532**. In some embodiments, if the command is identified as a hidden command, memory card controller **340** forwards the password **530**, command index **540**, and related data **550** to smartcard controller **330**. In other embodiments, memory card controller **340** may directly take actions based on the hidden command.

Status field **520** may include any information relating to the status of the hidden command. For example, status field **520** may include one more bits to signify to memory card controller **340** whether the host (mobile computing device) is expecting the smartcard controller to return data in response to the hidden command. For example, when status field **520** signifies a write, memory card controller **340** forwards the password device ID, command index, and related data without expecting to return any data to the host. Also for example, when status field **520** signifies a read, memory card controller **340** forwards the password, device ID, command index, and related data with the expectation that smartcard controller **330** will provide data to be sent to the host in response to a memory card read command. The combination of a memory card write command followed shortly thereafter by a memory card read command may be used to provide "read" function-

ality to the smartcard controller. Read operations from the smartcard controller are described further below with reference to FIG. **8**.

Password field **530** includes a password to allow smartcard controller **330** to authenticate the host to the token. In some embodiments, every hidden command includes a password. Each time the password, device ID, command index, and related data is diverted to the smartcard controller, the password is checked to authenticate the host to the token.

Device ID **532** uniquely identifies the host (mobile computing device). The device ID may be checked by the smartcard controller to ensure that the token is inserted in the host to which it is authenticated. Some embodiments of the present invention enforce a unique host/card pairing using the device ID, and other embodiments allow smartcard controller functions to be accessed by any host.

Command index **540** identifies the type of hidden command. The number of possible hidden commands is limited only by the number of bits allocated thereto. Any number of bits may be allocated to command index **540** without departing from the scope of the present invention. Hidden command related data **550** may be utilized differently for each type of hidden command. Any number of bits may be used for hidden command related data **550**.

The data shown in FIG. **5** is provided as an example, and the data field of a memory card access command may include more or fewer data fields than those shown in FIG. **5**. The present invention is not limited by the number or content of the fields in a memory card access command.

FIG. **6** shows a flowchart in accordance with various embodiments of the present invention. In some embodiments, method **600** may be used by a mobile computing device to communicate with an RFID card in a memory card slot. In some embodiments, method **600**, or portions thereof, is performed by a mobile computing device with a memory card slot, and in other embodiments, method **600**, or portions thereof, is performed by software. The various actions in method **600** may be performed in the order presented, in a different order, or simultaneously. Further, in some embodiments, some actions listed in FIG. **6** are omitted from method **600**.

Method **600** begins at **610** in which a data pattern and an address value are received from an RFID card in a memory card slot. The data pattern corresponds to the hidden command data value, and the address value corresponds to the hidden command address value. In some embodiments, the mobile device only receives the data value and in other embodiments, the mobile device only receives the address value. In some embodiments, the actions of **610** may occur once when the RFID card is first inserted in the memory card slot. The mobile computing device may then use the address and data values each time it creates a hidden command. In other embodiments, the actions of **610** may occur each time the RFID card is inserted in the memory slot. In still further embodiments, the actions of **610** may occur periodically. Each time the actions **610** occur, the data pattern may be the same or different, and the address value may be the same or different.

At **620**, a data field of a memory card access command is populated with the data pattern to cause the command to be diverted to a smartcard controller on the RFID card. For example, the data pattern may be written to the data field as the hidden command data value **510** (FIG. **5**).

At **630**, an address field of the memory card access command is populated with the address value to further cause the command to be diverted to the smartcard controller. In some embodiments, only one of **620** or **630** is utilized. In these embodiments, the presence of a hidden command is signified by the data pattern alone, or the address value alone.

At **640**, the data field of the memory card access command is populated with a command string to specify a purpose other than a memory card access. For example, the command string may be written to the data field as the command index **540** for the smart card controller. This command may be used for any purpose. For example, one or more hidden commands may have as a sole purpose keeping power IS provided to the memory card slot so that the RFID card continues to receive power.

At **650**, the data field of a memory card access command is populated with a password to authenticate access to the RFID card coupled to the memory card slot. In some embodiments, a password is included in the data field for every hidden command. In other embodiments, a password is only included at the beginning of an exchange.

At **660**, the memory card access command is sent to the RFID card coupled to the memory card slot. For example, a mobile computing device (**110**, FIGS. **1**, **2**) may send the memory card access command to an RFID card (**120**, FIGS. **1**, **3**, **4**) in a memory card slot (**112**, FIGS. **1**, **2**). The RFID card includes a memory card controller (**340**, FIG. **3**) to divert the command (or take some other action) based on the data fields populated in method **600**.

FIG. **7** shows a flowchart in accordance with various embodiments of the present invention. In some embodiments, method **700** may be used by an RFID card in a memory card slot. In some embodiments, method **700**, or portions thereof, is performed by a memory card controller within a memory card compatible RFID card, and in other embodiments, method **700**, or portions thereof, is performed by software. The various actions in method **700** may be performed in the order presented, in a different order, or simultaneously. Further, in some embodiments, some actions listed in FIG. **7** are omitted from method **700**.

Method **700** begins at **710** in which a memory card access command is received from a mobile computing device via a host interface. The actions of **710** correspond to an RFID card in a memory card slot of a mobile computing device receiving a memory card access command.

At **720**, the memory card controller checks criteria in the memory card access command to determine if the memory card access command should be diverted to a smartcard controller resident on the RFID card. The criteria may be one or both of a hidden command data value, a hidden command address value, or both. If there is a criteria match at **730**, then a hidden command is present, and at least a portion of the memory card access command is diverted at **740**. If there is not a criteria match, then no hidden command is present, and a memory access is performed at **750**.

FIG. **8** shows a flowchart in accordance with various embodiments of the present invention. In some embodiments, method **800** may be used by an RFID card in a memory card slot. In some embodiments, method **800**, or portions thereof, is performed by a memory card controller within an RFID card, and in other embodiments, method **800**, or portions thereof, is performed by software. The various actions in method **800** may be performed in the order presented, in a different order, or simultaneously. Further, in some embodiments, some actions listed in FIG. **8** are omitted from method **800**.

Method **800** begins at **810** in which a memory card write command is received from a mobile computing device via a host interface. If the memory card write command is determined to be a hidden command, processing continues with **840**; otherwise, a memory write is performed at **830**.

At **840**, the hidden command is diverted to a smartcard controller. If the hidden command is determined to be a "read" at **850**, processing continues at **860**; otherwise, the hidden command processing is done. At **860**, the memory card controller retrieves non-memory data from the smartcard controller, and at **870**, a memory card read command is received from the mobile computing device. At **880**, the non-memory data is returned to the mobile computing device.

Method **800** demonstrates how a mobile computing device can perform a read from a smartcard controller in a memory card compatible RFID card. The mobile computing device issues a memory card write command with a hidden command having a status field designating a read, and then the mobile computing device issues a memory card read command. The processing in the card receives the hidden command, identifies it as a read, and then returns data to the mobile computing device in response to a subsequent memory card read command.

FIG. **9** shows a flowchart in accordance with various embodiments of the present invention. In some embodiments, method **900** may be used by an RFID card in a memory card slot. In some embodiments, method **900**, or portions thereof, is performed by a smartcard controller within an RFID card, and in other embodiments, method **900**, or portions thereof, is performed by software. The various actions in method **900** may be performed in the order presented, in a different order, or simultaneously. Further, in some embodiments, some actions listed in FIG. **9** are omitted from method **900**.

Method **900** begins at **910** in which a smartcard controller receives a command from the memory card controller. This command corresponds to a hidden command received by the memory card controller. At **950**, the smartcard controller determines whether the command is a "dummy" command used solely for the purpose of maintaining power to the memory card slot. If no, then the smartcard function specified in the command is performed at **930**. If yes, then the command is disregarded at **960**.

Method **900** allows a memory card compatible RFID card in a memory card slot to remain powered during periods when the memory card slot in the host device would otherwise remove power to save energy. This is a coordinated effort between software building hidden commands in a memory card access command, the memory card controller diverting the hidden command to the smartcard controller, and the smartcard controller disregarding the command. According to embodiments represented by FIG. **3**A, providing power to the RFID card also provides power the smartcard controller, thereby allowing the use of a small inductive device such as those shown in FIGS. **3** and **4**.

FIG. **10** shows a flowchart in accordance with various embodiments of the present invention. In some embodiments, method **1000** may be used by an RFID card in a memory card slot. In some embodiments, method **1000**, or portions thereof, is performed by a memory card controller within an RFID card, and in other embodiments, method **1000**, or portions thereof, is performed by software. The various actions in method **1000** may be performed in the order presented, in a different order, or simultaneously. Further, in some embodiments, some actions listed in FIG. **10** are omitted from method **1000**.

Method **1000** begins at **1010** in which a memory card controller receives a hidden command from a mobile computing device. If at **1020**, the memory card controller determines that the hidden command is to be diverted to the smartcard controller, then the command is diverted at **1030**. If the command is not to be diverted, then the memory card controller does not divert the command; however, the memory card controller may take other actions at **1040** based on the hidden command. For example, the memory card controller may modify a clock signal provided to the smartcard controller. Also for example, the memory card controller may assert a reset signal to the smartcard controller. Still for example, the memory card controller may cycle power to the smartcard controller. The memory card controller is able to cycle power to the smartcard controller in embodiments represented by FIG. **3**B.

Cycling power to the smartcard controller may be a coordinated effort between the hosting computing device and the memory card controller in the RFID card. For example, power to the memory card slot may be maintained by supplying dummy hidden commands to the RFID card as described above with reference to FIG. **9**. While power is maintained to the memory card slot, hidden commands may be used to cause the memory card controller to cycle power to the smartcard controller.

FIG. **11** shows a method authenticating a mobile computing device to one or more functions in a memory card compatible RFID card. Method **1100** begins at block **1110** in which an activation code is received at an RFID card from a mobile computing device. At **1120**, the received activation code is compared to a code stored in the RFID card. If the activation code matches, the RFID card receives a password from the mobile computing device at **1140**, and stores the password in the RFID card for later use at **1150**. If the activation code does not match, the RFID card determines whether a number of allowable tries has been exceeded at **1160**. If the number of allowable tries has been exceeded, the RFID card issuer is contacted at **1170**, and if the number of allowable tries has not been exceeded, the method repeats until either the activation code matches or the number of allowable tries has been exceeded.

Method **1100** may be performed when an RFID card is issued to a user. For example, the RFID card may be a mobile payment card issued by a financial institution. The user may be provided an activation code to "activate" the RFID card. When the user successfully enters the activation code, the user is prompted for a password, and that password is stored for use in future hidden commands.

In some embodiments, multiple non-memory functions in an RFID card are authenticated using method **1100**. For example, each of multiple non-memory functions may have stored activation codes, and each is activated separately. Each of the separately activated functions may have a different password, or the multiple functions may share a password.

Although the present invention has been described in conjunction with certain embodiments, it is to be understood that modifications and variations may be resorted to without departing from the spirit and scope of the invention as those skilled in the art readily understand. Such modifications and variations are considered to be within the scope of the invention and the appended claims.

What is claimed is:

1. A card comprising:

a memory card slot interface;

a memory card controller coupled to the memory card slot interface;

a contactless communications device coupled to the memory card controller, the contactless communications device having an antenna port;

a power delivery mechanism to deliver power to the contactless communications device from the memory card slot interface;

a magnetic core; and

a coil wound about the magnetic core, the coil being coupled to the antenna port of the contactless communications device.

2. The card of claim **1** wherein the contactless communications device is designed to comply with ISO 14443.

3. The card of claim **1** wherein the contactless communications device is designed to interoperate with MIFARE.

4. The card of claim **1** wherein the card conforms to size requirements of a standard memory card.

5. The card of claim **4** wherein the card conforms to memory card size requirements of one of: Secure Digital (SD) cards, mini SD cards, and micro SD cards.

6. The card of claim **1** further comprising a circuit board to which the memory card controller, the contactless communications device, and the magnetic core and coil are affixed.

7. The card of claim **1** wherein the contactless communications device is operable to reflect signals received at substantially 13.56 MHz.

8. The card of claim **7** wherein the contactless communications device is operable to reflect a received signal by modifying the impedance of an internal circuit coupled to the antenna port.

9. The card of claim **1** further comprising nonvolatile memory coupled to the memory card controller.

10. A radio frequency identification (RFID) memory card comprising:

a memory card controller to communicate with a host;

an RFID device having an antenna port; and

an inductive element coupled to the antenna port, wherein the inductive element is too small to provide sufficient energy to power the RFID device;

wherein the RFID device is coupled to receive power from the host.

11. The RFID memory card of claim **10** wherein the RFID device is designed to comply with ISO 14443.

12. The RFID memory card of claim **10** wherein the RFID device is designed to interoperate with MIFARE.

13. The RFID memory card of claim **10** wherein the card conforms to memory card size requirements of one of: Secure Digital (SD) cards, mini SD cards, and micro SD cards.

14. The RFID memory card of claim **10** further comprising a circuit board to which the memory card controller, the RFID device, and the inductive element are affixed.

15. The RFID memory card of claim **10** wherein the RFID device is operable to reflect signals received at substantially 13.56 MHz.

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**** CONTINUING DATA **************************

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

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TITLE

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1		115_022US1_Specification_08_08_08.pdf	133920 9ce355559e61cd799e277a890bbcaf8367391012	yes	26
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	Specification		1	21	
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2	Drawings-only black and white line drawings	115_022US1_Drawings_08_08_08.pdf	193090 d5a956db896b31a165f0b43ad223ad62ff841037	no	13
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3	Application Data Sheet	115_022US1_ADS_08_08_08.pdf	48000 5ad0034e2ab96a3ebb4c3c1c735ed08616b65443	no	5
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4	Information Disclosure Statement Letter	115_022US1_IDS_Communication_08_08_08.pdf	88075 706850838fa1e21ca947ab1e2542df0b9c16a58a	no	2
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5	Information Disclosure Statement (IDS) Filed (SB/08)	115_022US1_IDS_1449_08_08_08.pdf	123665 8e7c986327b263a9fb9b9d2b961f5df190bc0c53	no	1
Warnings:					
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6	NPL Documents	115_022US1_Ref_Lee.pdf	1692829 bf1901b8189e23281b63c68b4d98bce63ba655ea	no	50
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7	Fee Worksheet (PTO-06)	fee-info.pdf	8484 f3d11b85212899c3a2556d2e68349e1641af13d9	no	2
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UNITED STATES PATENT APPLICATION

SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT

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SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT

Field

The present invention relates generally to contactless communications devices, and more specifically to small radio frequency identification (RFID) cards.

Background

RFID "tags" can be separated into two broad categories: active tags and passive tags. Active tags are characterized by a local power source such as a battery. Active tags generally transmit information by broadcasting on an RF carrier frequency of choice using a locally generated RF carrier. Active tags are typically used to transmit over long distances, often referred to as "far field communications" (FFC). Antennas used with active RFID tags tend to be large to allow for the communications over long distances.

Passive tags are not powered. Passive tags derive the energy needed to power the tag from an interrogating RF field, and use that energy to transmit response codes by modulating the impedance that the antenna presents to the interrogating field, thereby modulating the signal reflected back to the reader antenna. Passive tags are typically used to transmit over short distances, often referred to as "near field communications" (NFC). For example, passive tags operating at 13.56 MHz are typically designed to communicate with RFID readers a few centimeters away.

Passive tags are typically connected to "loop antennas." One example of a loop antenna is shown in U.S. Patent No. 6,568,600, issued to Carpier et al. on May 27, 2003 (the '600 patent). The device described in the '600 patent is recognizable as a "credit card sized" passive RFID card (more specifically, a card that conforms to ISO 7816 size requirements). The loop antenna is necessarily large because passive tags are powered using energy received by the antenna from signals transmitted by the RFID reader.

Figure 12 shows a power supply voltage developed over time by rectifying a voltage induced in a loop antenna in the presence of an interrogating RF field. Once the power supply voltage reaches a critical value, the tag is powered up and can operate. As the antenna size is reduced, it takes longer for the power supply voltage to reach the critical value, and the tag operation may not meet response time specifications. Below a certain antenna size, the power supply voltage may never reach the critical value, and the tag may never power up.

Antenna design for RFID applications is described in a Microchip Technology, Inc. application note entitled "Antenna Circuit Design for RFID Applications" by Youbok Lee, Ph.D., published in 2003 (no month given). Dr. Lee's application note describes in great detail how to determine size requirements for a passive RFID tag antenna to operate at 13.56 MHz. On page 5 of the application note, Dr. Lee shows that the optimum radius of the loop antenna coil is equal to 1.414 times the required read range. This analysis confirms that for a read range on the order of a few centimeters, a credit card sized loop antenna can be made near optimal.

Passive tags are seeing widespread use in many applications. For example, mobile device manufacturers are embedding passive RFID tags in mobile devices for NFC applications. Example mobile applications include, but are not limited to, ticketing and mobile payments. U.S. Patent No. 7,333,062 issued to Leizerovich et al. on February 19, 2008 (the '062 patent) shows a mobile phone with an integrated loop antenna for an NFC device. As shown in the '062 patent, the mobile phone provides the real estate necessary to implement a loop antenna at 13.56 MHz.

There have been attempts to implement passive tags in smaller mobile devices. These attempts have met with limited success due in part to the size of the loop antenna. For example, Figure 13 shows an RFID tag implementation in a secure digital (SD) memory card manufactured by Wireless Dynamics, Inc. of Calgary, Alberta Canada. Card 1300 includes an antenna, but the SD card is significantly oversized as a result. Also for example, U.S. Patent Application Publication No.: US 2006/0124755 A1 shows a memory card having a passive tag,

but the card must be inserted into a slot to access a loop antenna on a different device. In this implementation, mobile device real estate is still relied upon for loop antenna implementation. It can be seen, therefore, that the size of antennas are proving to be a barrier to further miniaturization of passive RFID tags.

A need exists for a small footprint RFID tag that does not rely on an external device to house an antenna. A need also exists for a memory card compatible RFID tag that is compatible with standard memory card slots on mobile devices.

Brief Description of the Drawings

Figure 1 shows a mobile computing device and a small RFID card compatible with a memory card slot;

Figure 2 shows a block diagram of a mobile computing device;

Figures 3A-3B show block diagrams of memory card compatible RFID cards with integrated inductive elements;

Figure 4 shows a photograph of a memory card compatible RFID card with an integrated inductive element;

Figure 5 shows a data portion of a memory card write command;

Figure 6-11 show flowcharts of methods in accordance with various embodiments of the present invention;

Figure 12 shows a power supply voltage developed over time by rectifying a voltage induced in a loop antenna in the presence of an interrogating RF field; and

Figure 13 shows a prior art RFID tag implementation in a secure digital (SD) memory card.

Description of Embodiments

In the following detailed description, reference is made to the accompanying drawings that show, by way of illustration, various embodiments of an invention. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention. It is to be understood that the various embodiments of the invention, although different, are not necessarily mutually exclusive. For

example, a particular feature, structure, or characteristic described in connection with one embodiment may be implemented within other embodiments without departing from the spirit and scope of the invention. In addition, it is to be understood that the location or arrangement of individual elements within each disclosed embodiment may be modified without departing from the spirit and scope of the invention. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the present invention is defined only by the appended claims, appropriately interpreted, along with the full range of equivalents to which the claims are entitled. In the drawings, like numerals refer to the same or similar functionality throughout the several views.

Figure 1 shows a mobile computing device and a small RFID card compatible with a memory card slot. Mobile computing device 110 is shown as a mobile phone in Figure 1, but this is not a limitation of the present invention. For example, mobile computing device 110 may be a personal digital assistant (PDA), a smartphone, a mobile phone, a handheld computer, a desktop computer, or any other device capable of operating as described herein.

Mobile computing device 110 includes memory card slot 112. Memory card slot 112 is a slot capable of accepting RFID card 120. For example, memory card slot 112 may have physical dimensions compatible with RFID card 120, and may have a communications interface that operates using a protocol compatible with RFID card 120. In some embodiments of the present invention, memory card slot 112 is a memory card slot designed to accept and communicate with memory cards. As used herein, the term "memory card slot" refers to any add-on slot capable of accepting a card having memory accessible by a mobile computing device such as that shown in Figure 1. For example, a memory card slot may be compatible with an industry standard communications protocol, or may be compatible with a widely accepted communications protocol that is not necessarily formally documented as an industry standard. Examples include slots that are compatible with the Multimedia Memory Card (MMC) protocol, Memory Stick DUO protocol, secure digital (SD) protocol, and Smart Media protocol. The foregoing list is meant to be

exemplary, and not exhaustive. Memory card slot 112 may be compatible with many memory card slot protocols other than those explicitly listed above without departing from the scope of the invention.

RFID card 120 includes electrical contacts 122 as part of a host interface that communicates with memory card slot 112. For example, electrical contacts 122 may provide connectivity compliant with a communications protocol for memory cards. RFID card 120 includes RFID functionality, and may also include memory accessible by mobile computing device 110. For example, in some embodiments, RFID card 120 includes a smartcard controller and an inductive element capable of interacting with an NFC reader (e.g., an ISO 14443 compliant interface). In other embodiments, RFID card 120 does not include memory accessible by mobile computing device 110. RFID card 120 may include functionality beyond memory and RFID.

In various embodiments of the present invention, the RFID functionality in RFID card 120 is accessed by mobile computing device 110 using memory card access commands already defined for use in memory card slot 112. Accordingly, the various embodiments of the present invention enable the implementation of RFID functions beyond memory accesses without defining new commands. In some embodiments, new commands for the RFID card are embedded inside the data bits subsequent to memory card read/write commands. RFID card 120 then decides if the incoming data bits are meant for regular read/write memory functions or for RFID functions. In other words, functions in addition to standard memory card functions may be accessed through commands "hidden" in the data stream that can be exchanged using existing memory card access commands and functions. According to the various embodiments of the invention, both existing memory card functions and RFID functions may be implemented without requiring changes in how the host protocol is built.

The combination of mobile computing device 110 and RFID card 120 may be used for any purpose. For example, in some embodiments, RFID card 120 may interact with a point-of-sale payment device to effect mobile payments. Also for

example, in some embodiments, RFID card 120 may be used in wave-and-pay ticketing in mass transit environments, such as MIFARE.

Figure 2 shows a block diagram of a mobile computing device. Mobile computing device 110 includes antenna 240, radio circuits 230, processor 210, memory 220, and memory card slot 112. In some embodiments, mobile computing device 110 is a mobile phone, or includes mobile phone functionality. For example, antenna 240 and radio circuits 230 may be utilized to communicate with a cellular telephone network. Further, in some embodiments, mobile computing device 110 is a wireless local area network (WLAN) or wireless wide area network (WWAN) device. For example, antenna 240 and radio circuits 230 may be utilized to communicate with a wireless access point. In some embodiments, antenna 240 and radio circuits 230 are omitted, and mobile computing device 110 does not utilize wireless connectivity.

Processor 210 represents a processor capable of communicating with the other blocks shown in mobile computing device 110. For example, processor 210 may be a microprocessor, a digital signal processor (DSP), a microcontroller, or the like. Further, processor 210 may be formed from state machines or other sequential logic. In operation, processor 210 may read instructions from memory 220 and perform actions in response thereto. For example, processor 210 may execute program instructions that influence communications between mobile computing device 110 and a device coupled to memory card slot 112.

Memory card slot 112 is described above with reference to Figure 1. Memory card slot 112 includes circuitry compatible with RFID card 120. Mobile computing device 110 may communicate with RFID card 120 by using a standard set of memory card access commands. For example, processor 210 may use memory card write commands to write to memory in RFID card 120, and may use memory card read commands to read from memory in RFID card 120.

Mobile computing device 110 may access the RFID functionality in RFID card 120 using "hidden" commands embedded in memory card access commands. For example, a memory card write command may include a unique data string to

identify the memory card write command as a command to be diverted for purposes other than a memory write. In addition, the sector address provided with the memory card write command may be set to a particular address value to further identify the memory card write command as a command to be diverted. In addition to specific address/data values to identify the memory card access command as a command to be diverted for a purpose other than a memory access, the memory access command may include data bits to further specify the type and function of hidden command. Example formats of hidden commands are described further below. In some embodiments, a read command is issued right after a write command to enable data flow from the non-memory card functions to the host, where the write command's data had the hidden commands. The combination of a memory card write command and a memory card read command can be used in this manner to form a hidden read command.

In some embodiments, memory card slot 112 is powered down after periods of inactivity to save power. For example, memory card slot 112 may be powered up when processor 210 issues a memory card write or read command, but may then be powered down to save power. When memory card slot 112 is powered down, any device coupled to the memory card slot is also powered down. For example, if RFID card 120 (Figure 1) is coupled to the memory card slot, then RFID card 120 is powered down when memory card slot 112 is powered down.

In various embodiments of the present invention, processor 210 executes software resident in memory 220 to maintain power to memory card slot 112 (and to RFID card 120). For example, periodic hidden commands may be sent to RFID card 120 for the purpose of keeping power applied while RFID card 120 is expected to be providing RFID functionality. Also for example, a hidden command may be sent to RFID card 120 for the purpose of cycling power to a smartcard controller resident on the card. These hidden commands are described further below with respect to later figures.

Figure 3A shows a block diagram of a memory card compatible RFID card with an integrated inductive element. RFID card 300 represents possible

embodiments of RFID card 120 (Figure 1). RFID card 300 includes host interface 310, memory card controller 340, memory 360, smartcard controller 340, program memory 332, and small inductive element 350. RFID card 300 is capable of communicating with a memory card slot in a mobile computing device. Further, RFID card 300 does not require memory card slots to implement extended input/output functions. For example, and not by way of limitation, in SD embodiments, RFID card 300 is operable in any SD memory card slot, and does not require a secure digital input output (SDIO) memory card slot.

Host interface 310 includes electrical contacts to interface with a memory card slot. For example, host interface 310 includes contacts such as contacts 122 (Figure 1). Also for example, in some embodiments, host interface 310 includes recessed electrical contacts. Host interface 310 may also include circuitry such as drivers, receivers, terminations, and the like.

In embodiments represented by Figure 3A, memory card controller 340 communicates with the mobile device using memory card access commands. Memory card controller 340 also communicates with memory 360. Memory card controller 340 determines whether each command should result in a memory operation with memory 360, whether a hidden command should be diverted to smartcard controller 330, or whether memory card controller 340 should take action in response to a hidden command. In some embodiments, memory card controller 340 executes instructions that are stored in an internal memory or stored in memory 360. In some embodiments, memory card controller 340 includes special purpose hardware useful to determine whether a command should be diverted. In other embodiments, memory card controller 340 may be a microcontroller identical in all respects to a controller found in memory cards, except for the program that it executes.

Memory 360 may be any type of volatile or non-volatile memory. For example, memory 360 may be volatile memory such as static random access memory (SRAM) or dynamic random access memory (DRAM). Also for example, memory 360 may be nonvolatile memory such as NOR FLASH memory or NAND

FLASH memory. In various embodiments of the present invention, memory 360 represents memory that is accessed by a mobile computing device using memory card access commands defined for that purpose.

When RFID card 300 is communicating with a memory card slot in a mobile computing device, the mobile computing device may send a memory card access command in order to access memory 360. Also for example, the mobile computing device may send a memory card access command that contains a hidden command. Memory card controller 340 detects the presence of the hidden command, and diverts all or a portion of the memory access command to smartcard controller 330 using communication bus 342. Communication bus 342 may have any number of conductors and may take any form. For example, communication bus 342 may be a serial port, a parallel port, or may include multiple data conductors, multiple address conductors, and/or conductors to carry control signals such as clock signals. In some embodiments, memory card controller 340 takes one or more actions in response to a hidden command. For example, memory card controller 340 may modify clock signals in response to a hidden command.

Memory card controller 340 can detect the hidden command in many ways. For example, in some embodiments, the memory card access command may include a specific address value or a specific data value. Memory card controller 340 detects commands that include one or both of the specific address value or specific data value and routes the command appropriately. The specific address value and specific data value used for this purpose are referred to herein as the hidden command address value and the hidden command data value.

In some embodiments, memory card controller 340 detects the presence of hidden commands based only on the hidden command address value. In these embodiments, memory card controller 340 checks the address value included in a memory card access command, and diverts the command (or takes some other action) if it matches the hidden command address value. In some embodiments, memory card controller 340 detects the presence of hidden commands based only on the hidden command data value. In these embodiments, memory card controller

340 checks a data value included in the memory card access command, and diverts the command if it matches the hidden command data value. In still further embodiments, memory card controller 340 detects the presence of hidden commands based on both the hidden command address value and the hidden command data value. In these embodiments, memory card controller 340 diverts the command only if both the memory card access address and data match the hidden command address value and data value, respectively.

The hidden command address value and hidden command data value may be specified in many ways. For example, all RFID cards may be issued with fixed values. In these embodiments, each time the RFID functions are accessed, the same hidden command address and/or data value is included in the memory card access command. Also for example, different RFID cards may be issued with unique values. In these embodiments, each RFID card may provide these values to a mobile computing device when queried. Also for example, hidden command address and/or data values may be specified by the mobile computing device. In still further embodiments, hidden command address and data values may be dynamic. The hidden command address and data values may change each time power is applied or on a periodic basis.

Smartcard controller 330 receives hidden commands diverted by memory card controller 340. Smartcard controller 330 further interprets the hidden commands and performs actions in response thereto. Smartcard controller 330 executes instructions stored in program memory 332. In some embodiments, program memory 332 is embedded in smartcard controller 330, and in other embodiments, program memory 332 is part of memory 360.

Smartcard controller 330 is a dual interface smartcard controller with one of the interfaces including RFID functionality. In some embodiments, smartcard controller 330 is compatible with passive RFID tag readers in NFC applications. For example, smartcard controller 330 may be a device capable of implementing all or part of the ISO 14443 standard for contactless NFC devices. Also for example, smartcard controller 330 may be a dual interface smartcard controller capable of

implementing both ISO 7816 and ISO 14443 standards for contact/contactless requirements. The "SmartMX" family of controllers available from NXP of The Netherlands are examples of suitable dual interface smartcard controllers. These controllers provide RFID functionality at 13.56 MHz. The various embodiments of the present invention operate at 13.56 MHz, but are not limited to operation at this frequency. In some embodiments, smartcard controller interoperates with MIFARE systems for ticketing applications.

Smartcard controller 330 receives power from the host interface. By not receiving power from the interrogating RF field, the necessity of a loop antenna for power generation is negated. Smartcard controller 330 includes antenna port 334. Antenna port 334 is coupled to small inductive element 350.

Small inductive element 350 includes a coil wound around a magnetic core. The coil is too small to draw power from the interrogating RF field, but this is not necessary since smartcard controller 330 is powered by the host device through host interface 310. Small inductive element 350 interacts with an antenna in an RFID reader similar to the way that primary and secondary coils in a transformer interact. The RFID reader has a coil resonant at 13.56 MHz functioning as the primary coil of a transformer. Small inductive element 350 functions as the secondary coil of the transformer. Accordingly, the transmitter "sees" the impedance of the secondary coil (small inductive element 350). Smartcard controller 334 is able to modulate reflected RF signals using circuitry to modify the impedance at the antenna port 334.

Small inductive element 350 can be made very small. For example, in some embodiments, RFID card 120 is a miniSD card, and small inductive element 350 is small enough to be completely contained in the miniSD form factor. A specific embodiment of a small inductive element in a memory card form factor is described below with reference to Figure 4.

In various embodiments of the invention, memory card controller 340 and smartcard controller 330 are implemented in many different ways. For example, in some embodiments, the various components are implemented in hardware. In these

embodiments, the various components may be implemented as separate integrated circuits, or in a combined integrated circuit. Also for example, in some embodiments, the various components may be implemented in software, or in a combination of hardware and software. In some embodiments, RFID card 300 may include a microprocessor, and the components may be implemented as software modules running on the microprocessor. In other embodiments, RFID card 300 may include multiple processors, and the components may be implemented as software modules distributed across the multiple processors.

Figure 3B shows a block diagram of a memory card compatible RFID card with an integrated inductive element. RFID card 302 represents possible embodiments of RFID card 120 (Figure 1). RFID card 302 includes host interface 310, memory card controller 340, memory 360, smartcard controller 340, program memory 332, and small inductive element 350, all of which are described above with reference to Figure 3A. RFID card 302 is capable of communicating with a memory card slot in a mobile computing device. Further, RFID card 302 does not require memory card slots to implement extended input/output functions. For example, and not by way of limitation, in SD embodiments, RFID card 302 is operable in any SD memory card slot, and does not require a secure digital input output (SDIO) memory card slot.

In embodiments represented by Figure 3B, smartcard controller 330 receives power from memory controller 340. In these embodiments, memory controller 340 has direct control over the power provided to smartcard controller 330. Memory controller 340 may apply and/or remove power from smartcard controller 330 in response to commands received over the host interface. For example, memory controller 340 may receive a hidden command to reset smartcard controller 330 by causing a reboot through a power cycle.

Figure 4 shows a photograph of a memory card compatible RFID card with an integrated inductive element. RFID card 120 is shown in an SD card form factor, although this is not a limitation of the present invention. RFID card 120 includes

electrical contacts 122, memory card controller 340, smartcard controller 330, memory 360, magnetic core 450, and coil 452, all affixed to circuit board 402.

Magnetic core 450 and coil 452 implement small inductive element 350 (Figure 3). As can be seen in the photograph, the small inductive element fits entirely within the memory card form factor. The small inductive element does not provide power generation for smartcard controller 330, and so does not need to be made large for that purpose.

Figure 5 shows a data portion of a memory card write command. Included are hidden command data value 510, status field 520, password field 530, device ID 532, command index 540, and hidden command related data 550. In the example of Figure 5, the data portion is 512 bytes in length, although this is not a limitation of the present invention. Any amount of data may be included in the write command, and each field shown in Figure 5 may be any length.

In the example of Figure 5, the hidden command data value is 256 bits long, although any length may be used without departing from the scope of the present invention. In some embodiments, hidden command data value 510 is used to identify a memory write command as a hidden command. When a write command is received having data in the first 256 bits that match the hidden command data value, the command is identified as one to be diverted to the smartcard controller. As described above, a hidden command address value may be used in conjunction with, or instead of, a hidden command data value to identify the memory write command as a hidden command.

The remaining fields have significance when the memory write is a hidden command. For example, if the first 256 bits do not match the hidden command data value (or if the write address does not match the hidden command address value, or both) then the remaining bits in the data field are to be treated as data in a normal memory write command. In contrast, when the memory write is a hidden command, the remaining fields are used to further interpret the hidden command.

Memory card controller 340 (Figures 3, 4) inspect the hidden command data value 510, status field 520, and possibly password field 530 and device ID 532. In

some embodiments, if the command is identified as a hidden command, memory card controller 340 forwards the password 530, command index 540, and related data 550 to smartcard controller 330. In other embodiments, memory card controller 340 may directly take actions based on the hidden command.

Status field 520 may include any information relating to the status of the hidden command. For example, status field 520 may include one more bits to signify to memory card controller 340 whether the host (mobile computing device) is expecting the smartcard controller to return data in response to the hidden command. For example, when status field 520 signifies a write, memory card controller 340 forwards the password device ID, command index, and related data without expecting to return any data to the host. Also for example, when status field 520 signifies a read, memory card controller 340 forwards the password, device ID, command index, and related data with the expectation that smartcard controller 330 will provide data to be sent to the host in response to a memory card read command. The combination of a memory card write command followed shortly thereafter by a memory card read command may be used to provide "read" functionality to the smartcard controller. Read operations from the smartcard controller are described further below with reference to Figure 8.

Password field 530 includes a password to allow smartcard controller 330 to authenticate the host to the token. In some embodiments, every hidden command includes a password. Each time the password, device ID, command index, and related data is diverted to the smartcard controller, the password is checked to authenticate the host to the token.

Device ID 532 uniquely identifies the host (mobile computing device). The device ID may be checked by the smartcard controller to ensure that the token is inserted in the host to which it is authenticated. Some embodiments of the present invention enforce a unique host/card pairing using the device ID, and other embodiments allow smartcard controller functions to be accessed by any host.

Command index 540 identifies the type of hidden command. The number of possible hidden commands is limited only by the number of bits allocated thereto.

Any number of bits may be allocated to command index 540 without departing from the scope of the present invention. Hidden command related data 550 may be utilized differently for each type of hidden command. Any number of bits may be used for hidden command related data 550.

The data shown in Figure 5 is provided as an example, and the data field of a memory card access command may include more or fewer data fields than those shown in Figure 5. The present invention is not limited by the number or content of the fields in a memory card access command.

Figure 6 shows a flowchart in accordance with various embodiments of the present invention. In some embodiments, method 600 may be used by a mobile computing device to communicate with an RFID card in a memory card slot. In some embodiments, method 600, or portions thereof, is performed by a mobile computing device with a memory card slot, and in other embodiments, method 600, or portions thereof, is performed by software. The various actions in method 600 may be performed in the order presented, in a different order, or simultaneously. Further, in some embodiments, some actions listed in Figure 6 are omitted from method 600.

Method 600 begins at 610 in which a data pattern and an address value are received from an RFID card in a memory card slot. The data pattern corresponds to the hidden command data value, and the address value corresponds to the hidden command address value. In some embodiments, the mobile device only receives the data value and in other embodiments, the mobile device only receives the address value. In some embodiments, the actions of 610 may occur once when the RFID card is first inserted in the memory card slot. The mobile computing device may then use the address and data values each time it creates a hidden command. In other embodiments, the actions of 610 may occur each time the RFID card is inserted in the memory slot. In still further embodiments, the actions of 610 may occur periodically. Each time the actions 610 occur, the data pattern may be the same or different, and the address value may be the same or different.

At 620, a data field of a memory card access command is populated with the data pattern to cause the command to be diverted to a smartcard controller on the RFID card. For example, the data pattern may be written to the data field as the hidden command data value 510 (Figure 5).

At 630, an address field of the memory card access command is populated with the address value to further cause the command to be diverted to the smartcard controller. In some embodiments, only one of 620 or 630 is utilized. In these embodiments, the presence of a hidden command is signified by the data pattern alone, or the address value alone.

At 640, the data field of the memory card access command is populated with a command string to specify a purpose other than a memory card access. For example, the command string may be written to the data field as the command index 540 for the smart card controller. This command may be used for any purpose. For example, one or more hidden commands may have as a sole purpose keeping power provided to the memory card slot so that the RFID card continues to receive power.

At 650, the data field of a memory card access command is populated with a password to authenticate access to the RFID card coupled to the memory card slot. In some embodiments, a password is included in the data field for every hidden command. In other embodiments, a password is only included at the beginning of an exchange.

At 660, the memory card access command is sent to the RFID card coupled to the memory card slot. For example, a mobile computing device (110, Figures 1, 2) may send the memory card access command to an RFID card (120, Figures 1, 3, 4) in a memory card slot (112, Figures 1, 2). The RFID card includes a memory card controller (340, Figure 3) to divert the command (or take some other action) based on the data fields populated in method 600.

Figure 7 shows a flowchart in accordance with various embodiments of the present invention. In some embodiments, method 700 may be used by an RFID card in a memory card slot. In some embodiments, method 700, or portions thereof, is performed by a memory card controller within a memory card compatible RFID

card, and in other embodiments, method 700, or portions thereof, is performed by software. The various actions in method 700 may be performed in the order presented, in a different order, or simultaneously. Further, in some embodiments, some actions listed in Figure 7 are omitted from method 700.

Method 700 begins at 710 in which a memory card access command is received from a mobile computing device via a host interface. The actions of 710 correspond to an RFID card in a memory card slot of a mobile computing device receiving a memory card access command.

At 720, the memory card controller checks criteria in the memory card access command to determine if the memory card access command should be diverted to a smartcard controller resident on the RFID card. The criteria may be one or both of a hidden command data value, a hidden command address value, or both. If there is a criteria match at 730, then a hidden command is present, and at least a portion of the memory card access command is diverted at 740. If there is not a criteria match, then no hidden command is present, and a memory access is performed at 750.

Figure 8 shows a flowchart in accordance with various embodiments of the present invention. In some embodiments, method 800 may be used by an RFID card in a memory card slot. In some embodiments, method 800, or portions thereof, is performed by a memory card controller within an RFID card, and in other embodiments, method 800, or portions thereof, is performed by software. The various actions in method 800 may be performed in the order presented, in a different order, or simultaneously. Further, in some embodiments, some actions listed in Figure 8 are omitted from method 800.

Method 800 begins at 810 in which a memory card write command is received from a mobile computing device via a host interface. If the memory card write command is determined to be a hidden command, processing continues with 840; otherwise, a memory write is performed at 830.

At 840, the hidden command is diverted to a smartcard controller. If the hidden command is determined to be a "read" at 850, processing continues at 860;

otherwise, the hidden command processing is done. At 860, the memory card controller retrieves non-memory data from the smartcard controller, and at 870, a memory card read command is received from the mobile computing device. At 880, the non-memory data is returned to the mobile computing device.

Method 800 demonstrates how a mobile computing device can perform a read from a smartcard controller in a memory card compatible RFID card. The mobile computing device issues a memory card write command with a hidden command having a status field designating a read, and then the mobile computing device issues a memory card read command. The processing in the card receives the hidden command, identifies it as a read, and then returns data to the mobile computing device in response to a subsequent memory card read command.

Figure 9 shows a flowchart in accordance with various embodiments of the present invention. In some embodiments, method 900 may be used by an RFID card in a memory card slot. In some embodiments, method 900, or portions thereof, is performed by a smartcard controller within an RFID card, and in other embodiments, method 900, or portions thereof, is performed by software. The various actions in method 900 may be performed in the order presented, in a different order, or simultaneously. Further, in some embodiments, some actions listed in Figure 9 are omitted from method 900.

Method 900 begins at 910 in which a smartcard controller receives a command from the memory card controller. This command corresponds to a hidden command received by the memory card controller. At 950, the smartcard controller determines whether the command is a "dummy" command used solely for the purpose of maintaining power to the memory card slot. If no, then the smartcard function specified in the command is performed at 930. If yes, then the command is disregarded at 960.

Method 900 allows a memory card compatible RFID card in a memory card slot to remain powered during periods when the memory card slot in the host device would otherwise remove power to save energy. This is a coordinated effort between software building hidden commands in a memory card access command, the

memory card controller diverting the hidden command to the smartcard controller, and the smartcard controller disregarding the command. According to embodiments represented by Figure 3A, providing power to the RFID card also provides power the smartcard controller, thereby allowing the use of a small inductive device such as those shown in Figures 3 and 4.

Figure 10 shows a flowchart in accordance with various embodiments of the present invention. In some embodiments, method 1000 may be used by an RFID card in a memory card slot. In some embodiments, method 1000, or portions thereof, is performed by a memory card controller within an RFID card, and in other embodiments, method 1000, or portions thereof, is performed by software. The various actions in method 1000 may be performed in the order presented, in a different order, or simultaneously. Further, in some embodiments, some actions listed in Figure 10 are omitted from method 1000.

Method 1000 begins at 1010 in which a memory card controller receives a hidden command from a mobile computing device. If at 1020, the memory card controller determines that the hidden command is to be diverted to the smartcard controller, then the command is diverted at 1030. If the command is not to be diverted, then the memory card controller does not divert the command; however, the memory card controller may take other actions at 1040 based on the hidden command. For example, the memory card controller may modify a clock signal provided to the smartcard controller. Also for example, the memory card controller may assert a reset signal to the smartcard controller. Still for example, the memory card controller may cycle power to the smartcard controller. The memory card controller is able to cycle power to the smartcard controller in embodiments represented by Figure 3B.

Cycling power to the smartcard controller may be a coordinated effort between the hosting computing device and the memory card controller in the RFID card. For example, power to the memory card slot may be maintained by supplying dummy hidden commands to the RFID card as described above with reference to Figure 9. While power is maintained to the memory card slot, hidden commands

may be used to cause the memory card controller to cycle power to the smartcard controller.

Figure 11 shows a method authenticating a mobile computing device to one or more functions in a memory card compatible RFID card. Method 1100 begins at block 1110 in which an activation code is received at an RFID card from a mobile computing device. At 1120, the received activation code is compared to a code stored in the RFID card. If the activation code matches, the RFID card receives a password from the mobile computing device at 1140, and stores the password in the RFID card for later use at 1150. If the activation code does not match, the RFID card determines whether a number of allowable tries has been exceeded at 1160. If the number of allowable tries has been exceeded, the RFID card issuer is contacted at 1170, and if the number of allowable tries has not been exceeded, the method repeats until either the activation code matches or the number of allowable tries has been exceeded.

Method 1100 may be performed when an RFID card is issued to a user. For example, the RFID card may be a mobile payment card issued by a financial institution. The user may be provided an activation code to "activate" the RFID card. When the user successfully enters the activation code, the user is prompted for a password, and that password is stored for use in future hidden commands.

In some embodiments, multiple non-memory functions in an RFID card are authenticated using method 1100. For example, each of multiple non-memory functions may have stored activation codes, and each is activated separately. Each of the separately activated functions may have a different password, or the multiple functions may share a password.

Although the present invention has been described in conjunction with certain embodiments, it is to be understood that modifications and variations may be resorted to without departing from the spirit and scope of the invention as those skilled in the art readily understand. Such modifications and variations are considered to be within the scope of the invention and the appended claims.

What is claimed is:

1. A card comprising:

a memory card slot interface;

a memory card controller coupled to the memory card slot interface;

a contactless communications device coupled to the memory card controller, the contactless communications device having an antenna port;

a power delivery mechanism to deliver power to the contactless communications device from the memory card slot interface;

a magnetic core; and

a coil wound about the magnetic core, the coil being coupled to the antenna port of the contactless communications device.

2. The card of claim 1 wherein the contactless communications device is designed to comply with ISO 14443.

3. The card of claim 1 wherein the contactless communications device is designed to interoperate with MIFARE.

4. The card of claim 1 wherein the card conforms to size requirements of a standard memory card.

5. The card of claim 4 wherein the card conforms to memory card size requirements of one of: Secure Digital (SD) cards, mini SD cards, and micro SD cards.

6. The card of claim 1 further comprising a circuit board to which the memory card controller, the contactless communications device, and the magnetic core and coil are affixed.

7. The card of claim 1 wherein the contactless communications device is

operable to reflect signals received at substantially 13.56 MHz.

8. The card of claim 7 wherein the contactless communications device is operable to reflect a received signal by modifying the impedance of an internal circuit coupled to the antenna port.

9. The card of claim 1 further comprising nonvolatile memory coupled to the memory card controller.

10. A radio frequency identification (RFID) memory card comprising:

a memory card controller to communicate with a host;

an RFID device having an antenna port; and

an inductive element coupled to the antenna port, wherein the inductive element is too small to provide sufficient energy to power the RFID device.

11. The RFID memory card of claim 10 wherein the RFID device is coupled to receive power from the host.

12. The RFID memory card of claim 10 wherein the RFID device is designed to comply with ISO 14443.

13. The RFID memory card of claim 10 wherein the RFID device is designed to interoperate with MIFARE.

14. The RFID memory card of claim 10 wherein the card conforms to memory card size requirements of one of: Secure Digital (SD) cards, mini SD cards, and micro SD cards.

15. The RFID memory card of claim 10 further comprising a circuit board to which the memory card controller, the RFID device, and the inductive element are

affixed.

16. The RFID memory card of claim 10 wherein the RFID device is operable to reflect signals received at substantially 13.56 MHz.

17. A mobile payment device comprising:

a magnetic core having a coil wound thereabout to inductively couple with an interrogating radio frequency field transmitted by a mobile payment reader;

a dual interface smartcard controller having an antenna port coupled to the coil, the dual interface smartcard controller further coupled to receive power from other than the antenna port;

a memory card controller coupled to communicate with the dual interface smartcard controller; and

a memory card compatible circuit board upon which the magnetic core, the dual interface smartcard, and the memory card controller are mounted.

18. The mobile payment device of claim 17 further comprising metallic contacts compatible with a memory card slot in a host device.

19. The mobile payment device of claim 18 wherein the dual interface smartcard controller is coupled to the metallic contacts to receive power from the host device.

20. The mobile payment device of claim 17 wherein the dual interface smartcard controller is coupled to receive power from the memory card controller.

21. The mobile payment device of claim 17 wherein the mobile payment device conforms to memory card size requirements of one of: Secure Digital (SD) cards, mini SD cards, and micro SD cards.

22. The mobile payment device of claim 21 further comprising nonvolatile

memory coupled to the memory card controller.

23. The mobile payment device of claim 17 wherein the dual interface smartcard controller is operable to reflect signals received at substantially 13.56 MHz.

Abstract of Disclosure

A memory card compatible RFID card includes a smartcard controller that receives power from a host device. The RFID card also includes a small inductive device capable of inductive coupling with an RFID reader. The small inductive device is small enough to fit in the form factor of a memory card. Commands may be sent to the RFID card to keep the RFID card powered.

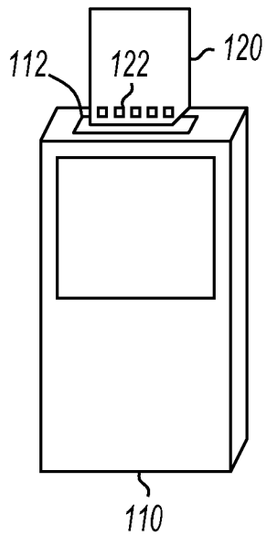

112
122
120
110

FIG. 1

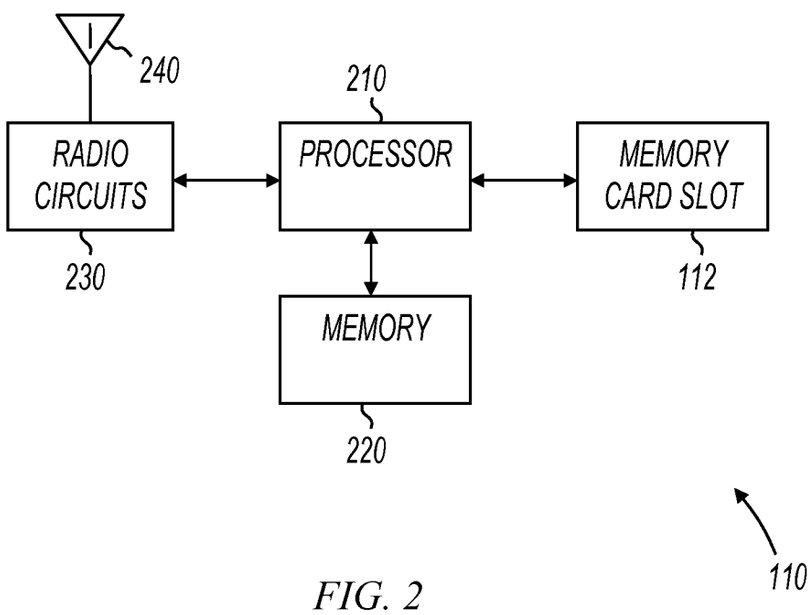

240
210
RADIO CIRCUITS
PROCESSOR
MEMORY CARD SLOT
230
112
MEMORY
220
110

FIG. 2

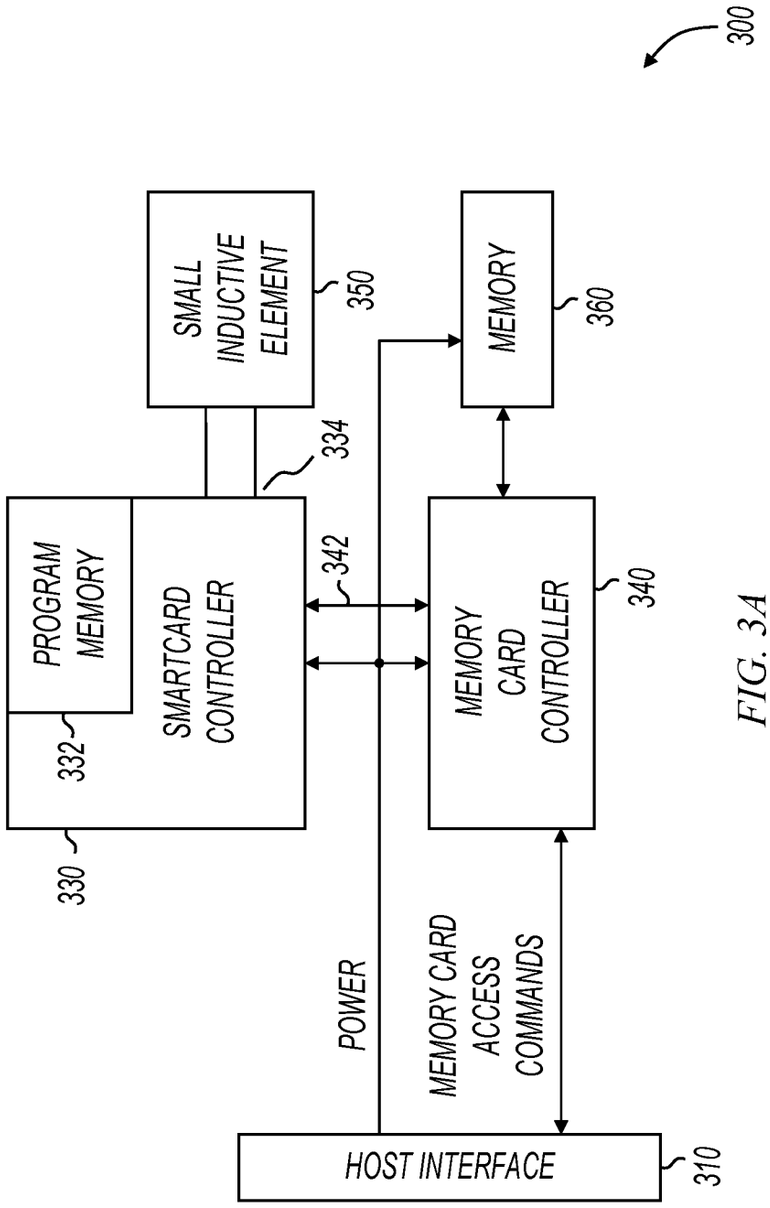

300
SMALL INDUCTIVE ELEMENT
350
MEMORY
360
334
PROGRAM MEMORY
332
SMARTCARD CONTROLLER
330
342
MEMORY CARD CONTROLLER
340
POWER
MEMORY CARD ACCESS COMMANDS
HOST INTERFACE
310

FIG. 3A

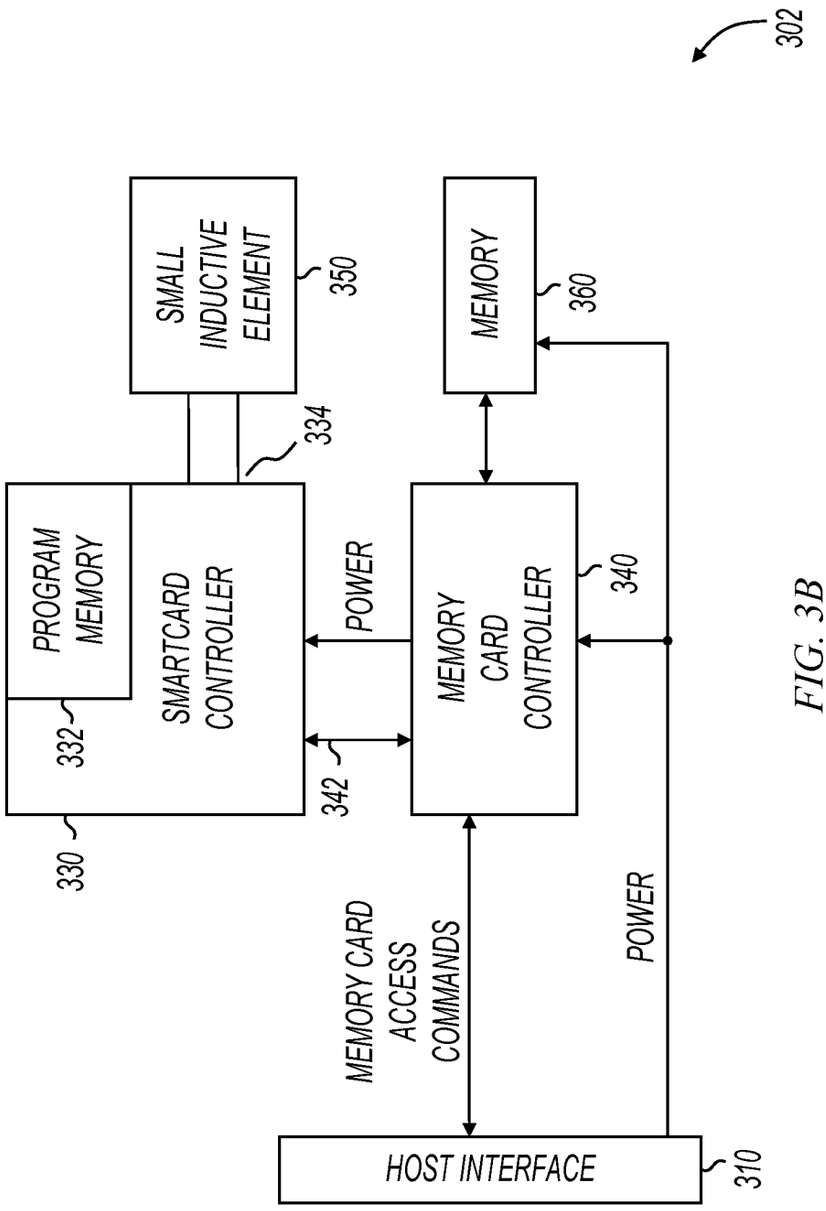

302
SMALL INDUCTIVE ELEMENT
350
MEMORY
360
334
PROGRAM MEMORY
SMARTCARD CONTROLLER
POWER
MEMORY CARD CONTROLLER
340
332
342
330
MEMORY CARD ACCESS COMMANDS
POWER
HOST INTERFACE
310

FIG. 3B

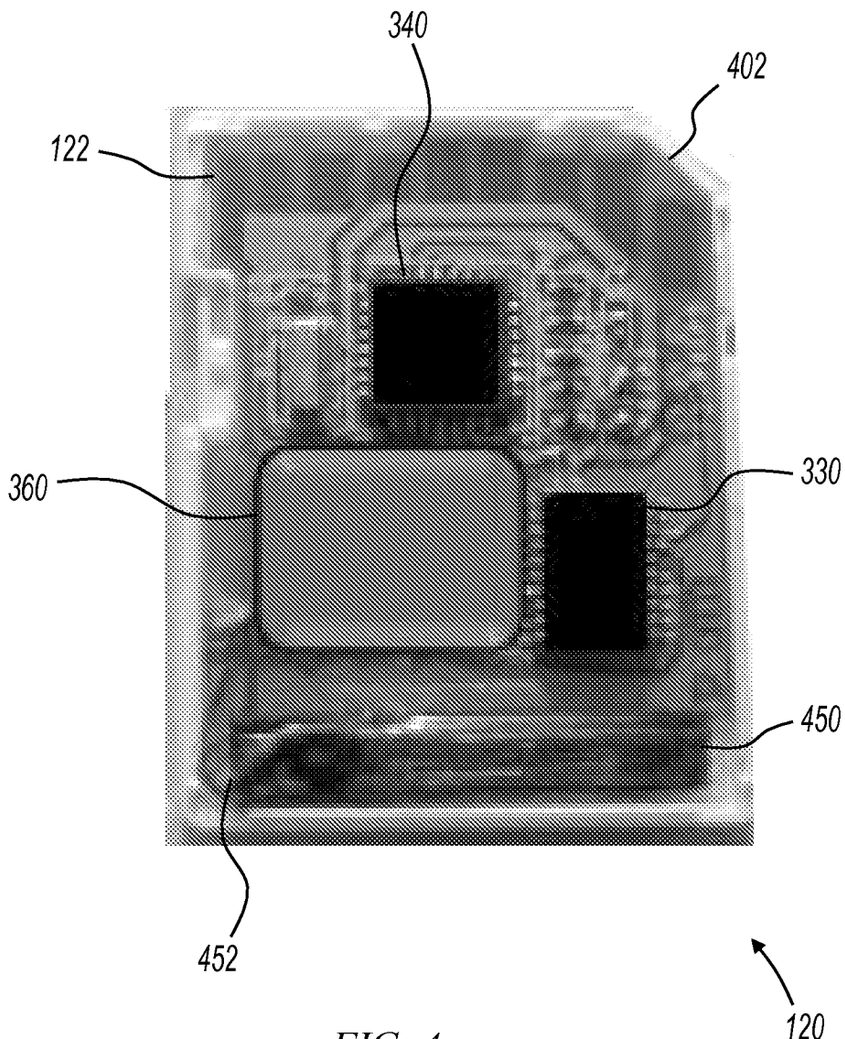


FIG. 4

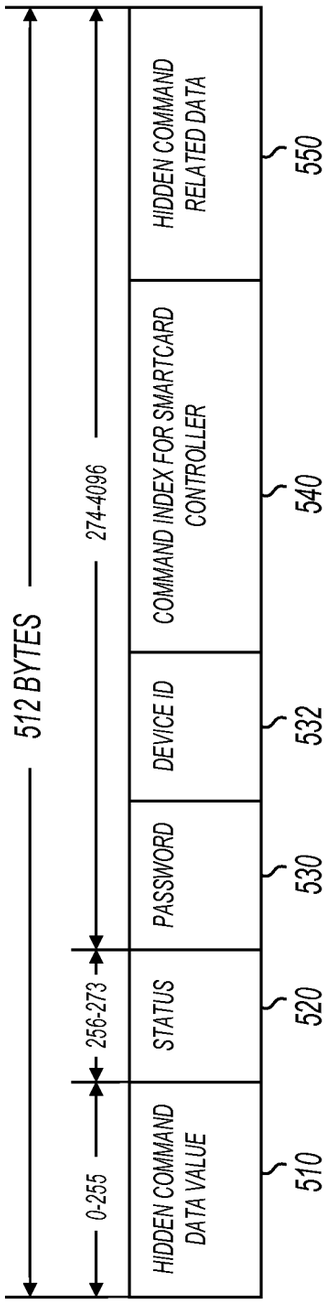

512 BYTES
274-4096
256-273
0-255
HIDDEN COMMAND DATA VALUE
510
STATUS
520
PASSWORD
530
DEVICE ID
532
COMMAND INDEX FOR SMARTCARD CONTROLLER
540
HIDDEN COMMAND RELATED DATA
550

FIG. 5

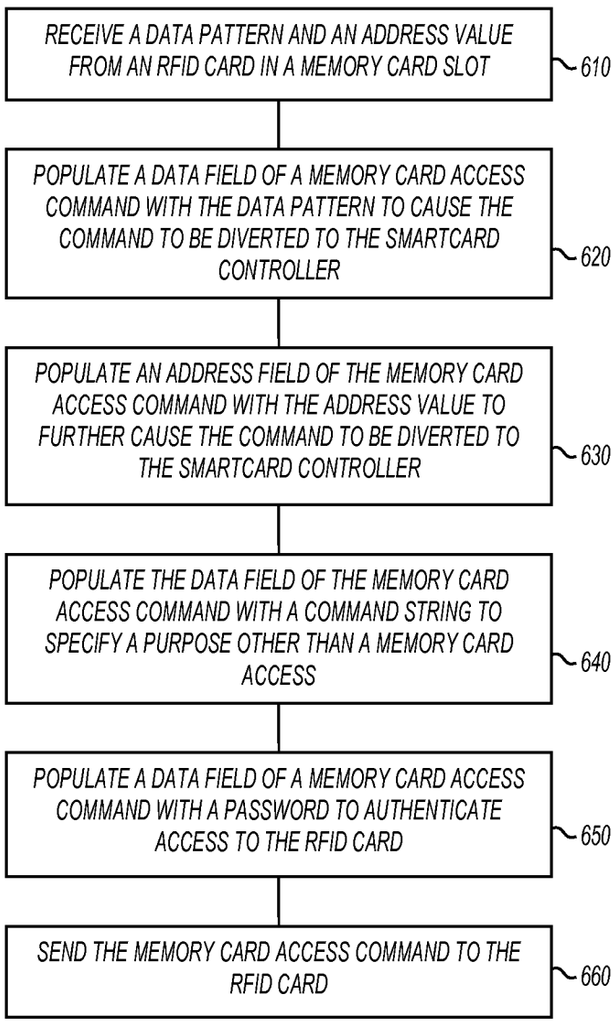

RECEIVE A DATA PATTERN AND AN ADDRESS VALUE FROM AN RFID CARD IN A MEMORY CARD SLOT
610
POPULATE A DATA FIELD OF A MEMORY CARD ACCESS COMMAND WITH THE DATA PATTERN TO CAUSE THE COMMAND TO BE DIVERTED TO THE SMARTCARD CONTROLLER
620
POPULATE AN ADDRESS FIELD OF THE MEMORY CARD ACCESS COMMAND WITH THE ADDRESS VALUE TO FURTHER CAUSE THE COMMAND TO BE DIVERTED TO THE SMARTCARD CONTROLLER
630
POPULATE THE DATA FIELD OF THE MEMORY CARD ACCESS COMMAND WITH A COMMAND STRING TO SPECIFY A PURPOSE OTHER THAN A MEMORY CARD ACCESS
640
POPULATE A DATA FIELD OF A MEMORY CARD ACCESS COMMAND WITH A PASSWORD TO AUTHENTICATE ACCESS TO THE RFID CARD
650
SEND THE MEMORY CARD ACCESS COMMAND TO THE RFID CARD
660
600

FIG. 6

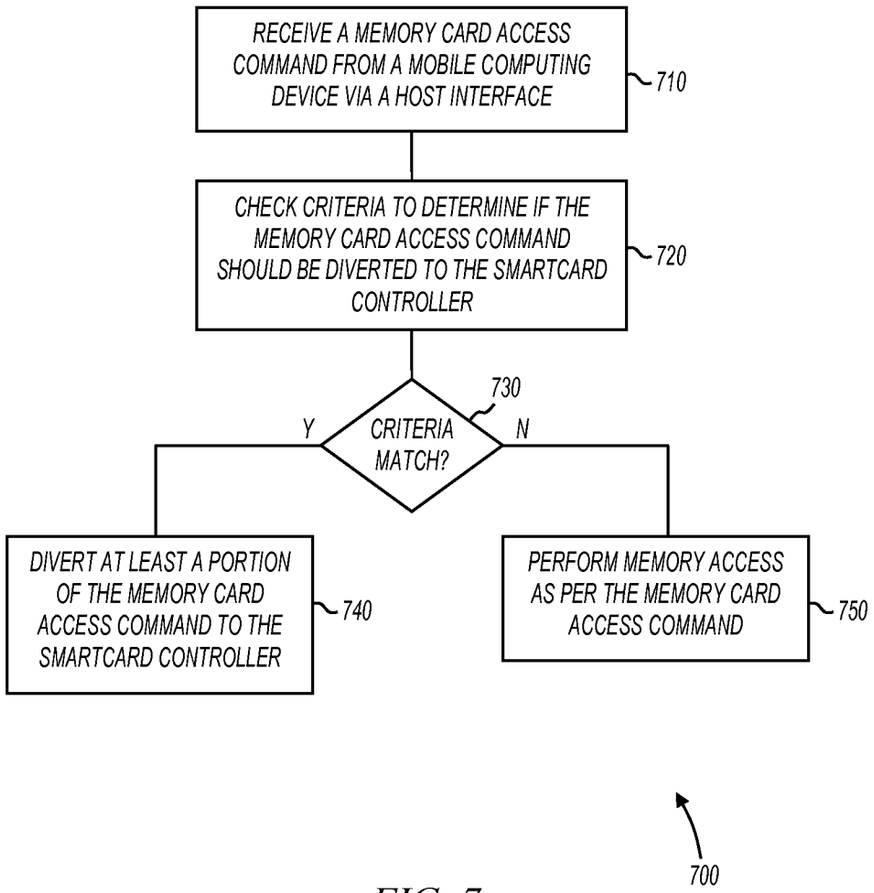

RECEIVE A MEMORY CARD ACCESS COMMAND FROM A MOBILE COMPUTING DEVICE VIA A HOST INTERFACE
710
CHECK CRITERIA TO DETERMINE IF THE MEMORY CARD ACCESS COMMAND SHOULD BE DIVERTED TO THE SMARTCARD CONTROLLER
720
730
CRITERIA MATCH?
Y
N
DIVERT AT LEAST A PORTION OF THE MEMORY CARD ACCESS COMMAND TO THE SMARTCARD CONTROLLER
740
PERFORM MEMORY ACCESS AS PER THE MEMORY CARD ACCESS COMMAND
750
700

FIG. 7

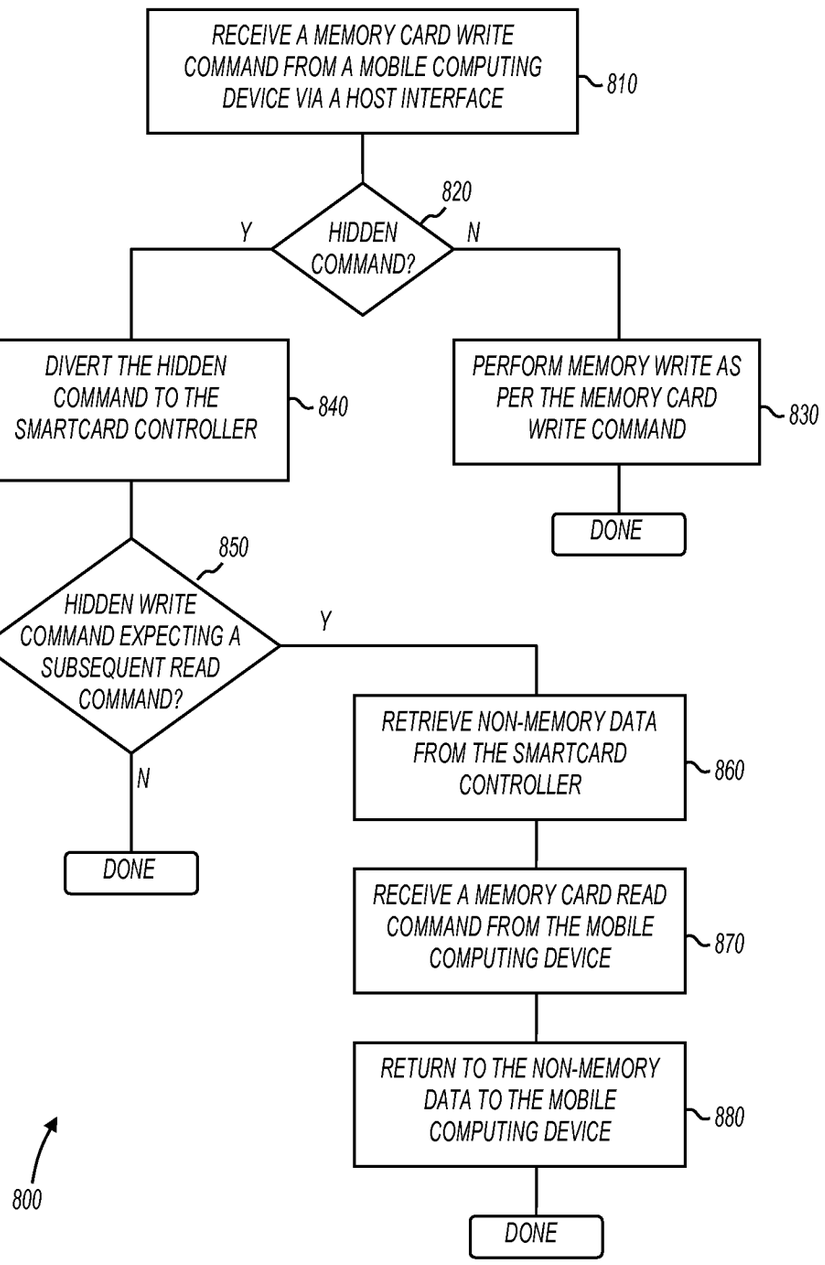

RECEIVE A MEMORY CARD WRITE COMMAND FROM A MOBILE COMPUTING DEVICE VIA A HOST INTERFACE
810
820
HIDDEN COMMAND?
Y
N
DIVERT THE HIDDEN COMMAND TO THE SMARTCARD CONTROLLER
840
PERFORM MEMORY WRITE AS PER THE MEMORY CARD WRITE COMMAND
830
DONE
850
HIDDEN WRITE COMMAND EXPECTING A SUBSEQUENT READ COMMAND?
Y
N
DONE
RETRIEVE NON-MEMORY DATA FROM THE SMARTCARD CONTROLLER
860
RECEIVE A MEMORY CARD READ COMMAND FROM THE MOBILE COMPUTING DEVICE
870
RETURN TO THE NON-MEMORY DATA TO THE MOBILE COMPUTING DEVICE
880
DONE
800

FIG. 8

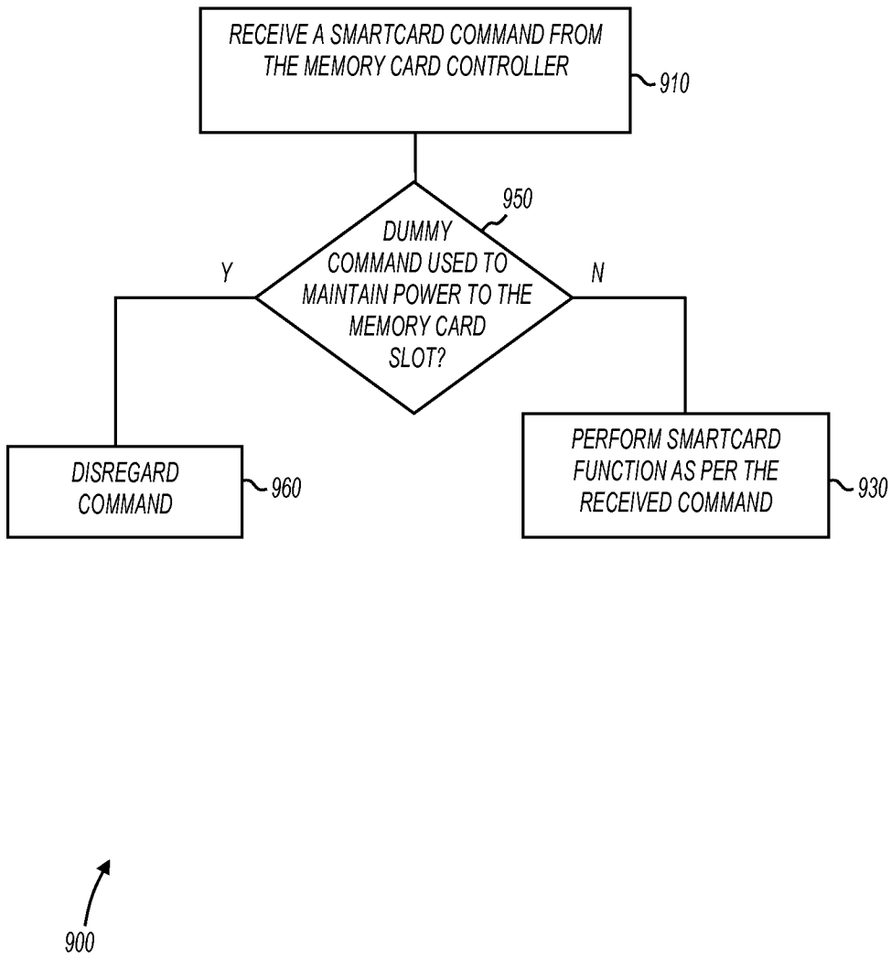

RECEIVE A SMARTCARD COMMAND FROM THE MEMORY CARD CONTROLLER
910
950
DUMMY COMMAND USED TO MAINTAIN POWER TO THE MEMORY CARD SLOT?
Y
N
DISREGARD COMMAND
960
PERFORM SMARTCARD FUNCTION AS PER THE RECEIVED COMMAND
930
900

FIG. 9

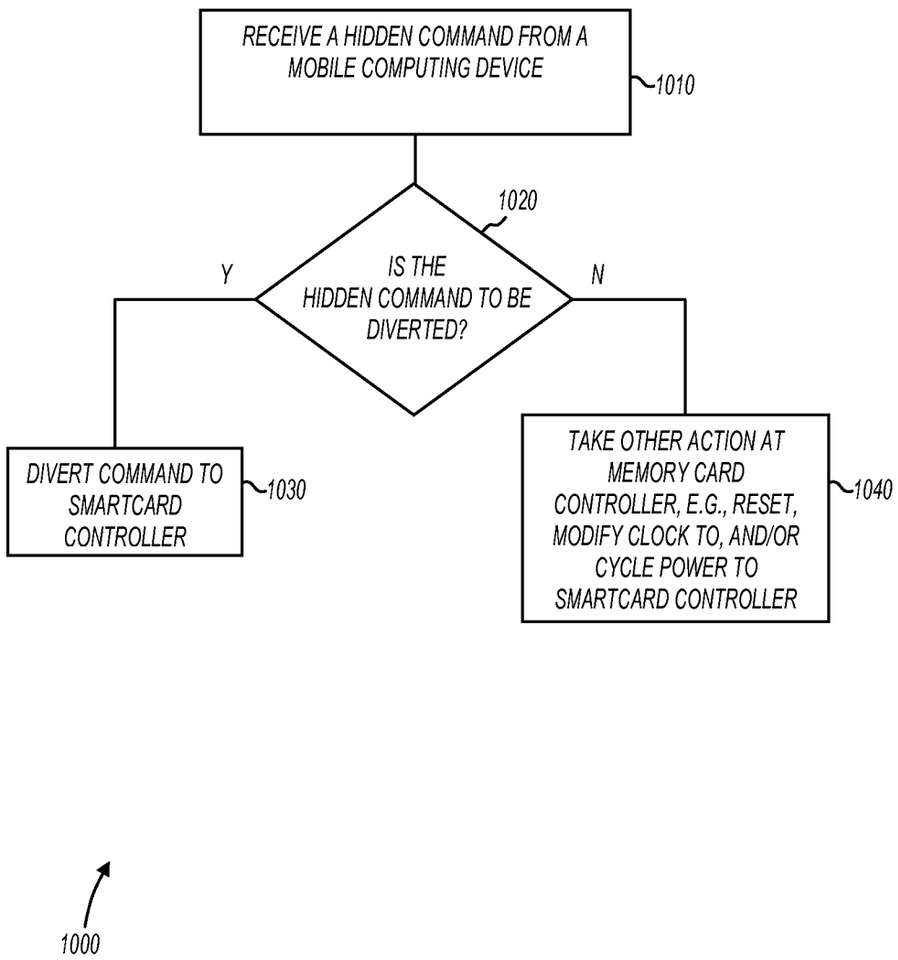

RECEIVE A HIDDEN COMMAND FROM A MOBILE COMPUTING DEVICE
1010
1020
IS THE HIDDEN COMMAND TO BE DIVERTED?
Y
N
DIVERT COMMAND TO SMARTCARD CONTROLLER
1030
TAKE OTHER ACTION AT MEMORY CARD CONTROLLER, E.G., RESET, MODIFY CLOCK TO, AND/OR CYCLE POWER TO SMARTCARD CONTROLLER
1040
1000

FIG. 10

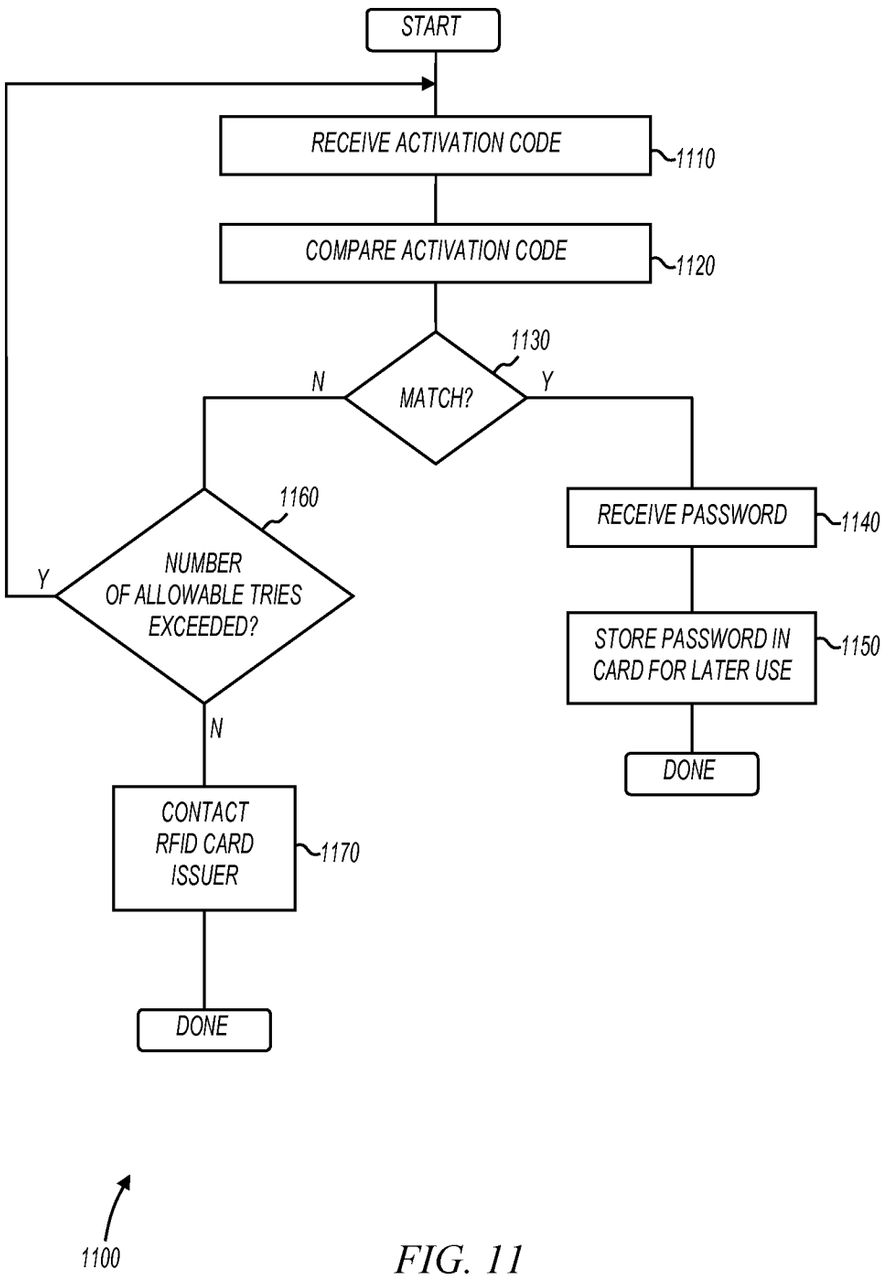

START
RECEIVE ACTIVATION CODE
1110
COMPARE ACTIVATION CODE
1120
1130
MATCH?
N
Y
1160
NUMBER OF ALLOWABLE TRIES EXCEEDED?
Y
N
RECEIVE PASSWORD
1140
STORE PASSWORD IN CARD FOR LATER USE
1150
DONE
CONTACT RFID CARD ISSUER
1170
DONE
1100

FIG. 11

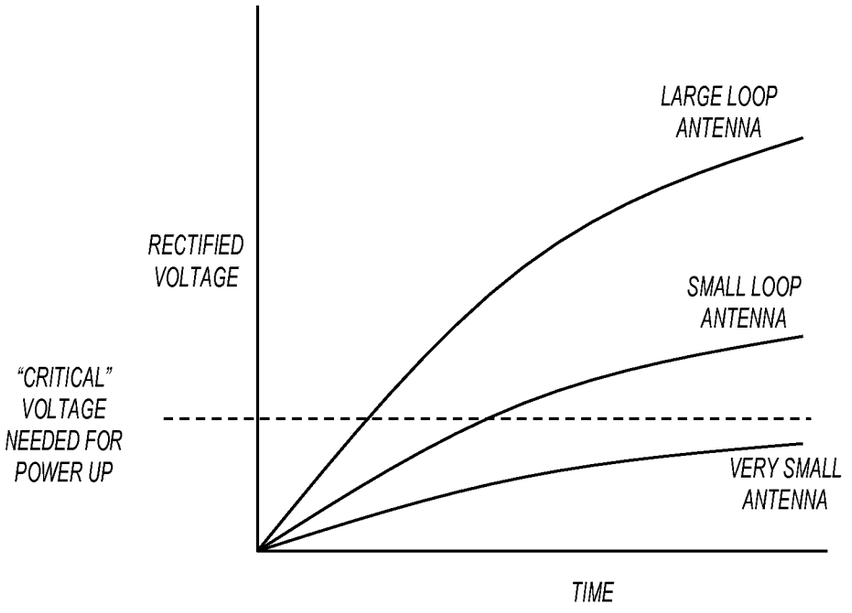


FIG. 12
(PRIOR ART)

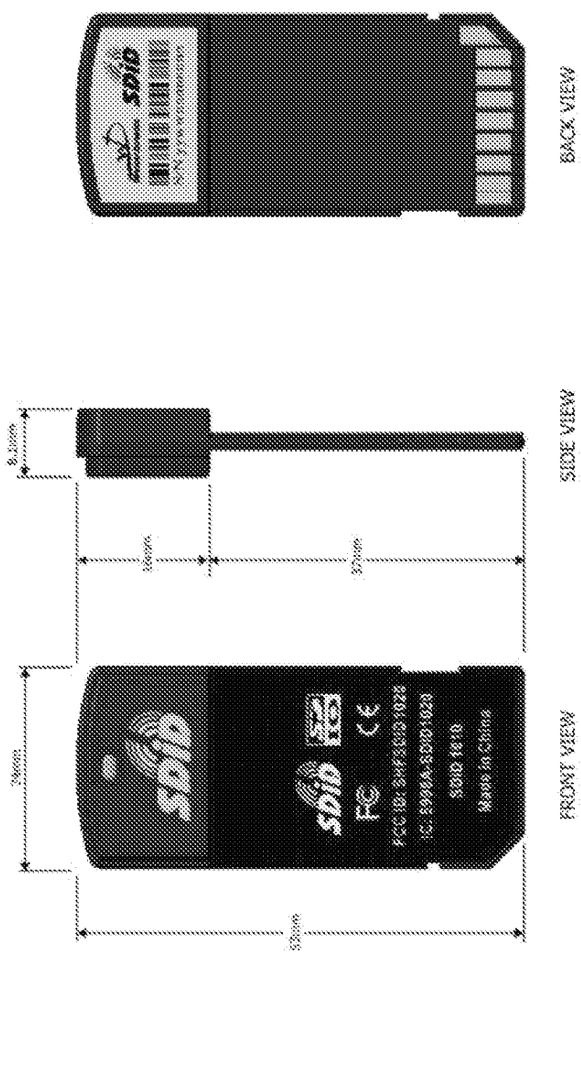


FIG. 13
(PRIOR ART)

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	115.022US1
	Application Number	
Title of Invention	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT	

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.)

Applicant Information:

Applicant 1

Applicant Authority	◉ Inventor	○ Legal Representative under 35 U.S.C. 117	○ Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
	Siva	G.	Narendra	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Portland	State/Province	OR	Country of Residence [i]	

Citizenship under 37 CFR 1.41(b) [i]	IN

Mailing Address of Applicant:

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Address 2	

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Postal Code	97223	Country [i]	US

Applicant 2

Applicant Authority	◉ Inventor	○ Legal Representative under 35 U.S.C. 117	○ Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
	Saurav		Chakraborty	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

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Citizenship under 37 CFR 1.41(b) [i]	IN

Mailing Address of Applicant:

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City	West Bengal	State/Province	
Postal Code	712203	Country [i]	IN

Applicant 3

Applicant Authority	◉ Inventor	○ Legal Representative under 35 U.S.C. 117	○ Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
	Prabhakar		Tadepalli	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Bangalore	Country Of Residence [i]	IN

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	115.022US1
	Application Number	
Title of Invention	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT	

Citizenship under 37 CFR 1.41(b)	IN		
Mailing Address of Applicant:			
Address 1	Villa #A186, Prestige Ozone		
Address 2	Varthur Whitefiled Road		
City	Bangalore	**State/Province**	
Postal Code	560066	**Country**	IN

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.**

Name 1	Dana	Name 2	LeMoine
Address 1	c/o Intellevate		
Address 2	P.O Box 52050		
City	Minneapolis	State/Province	MN
Country	US	Postal Code	55402
Phone Number	952-473-8800	Fax Number	612-677-3572
Email Address	dlemoine@lemoinepatent.com	Add Email	Remove Email

Application Information:

Title of the Invention	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT		
Attorney Docket Number	115.022US1	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)	13	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:

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	115.022US1
	Application Number	
Title of Invention	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT	

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).
Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.

Please Select One:	○ Customer Number	◉ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix	Remove
	Dana	B.	LeMoine		

Registration Number	40062

Additional Representative Information blocks may be generated within this form by selecting the **Add** button.

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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(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim 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]	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			◉ Yes ○ No

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Assignee Information:

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

Assignee 1

If the Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	115.022US1
	Application Number	
Title of Invention	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT	

Mailing Address Information:			
Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
Phone Number		Fax Number	
Email Address			
Additional Assignee Data may be generated within this form by selecting the **Add** button.			

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.					
Signature	/Dana B. LeMoine/			Date (YYYY-MM-DD)	2008-08-08
First Name	Dana	Last Name	LeMoine	Registration Number	40062

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

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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

Applicant:	Siva G. Narendra et al.	Examiner:	Unknown
Serial No.:	Unknown	Group Art Unit:	Unknown
Filed:	Unknown	Docket:	115.022US1
Title:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT		

INFORMATION DISCLOSURE STATEMENT

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

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq*., the referenced materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Information Disclosure Statement be entered and the documents listed on the attached Form 1449 be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the 1449 form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. §1.97(b), it is believed that no fee or statement is required with the Information Disclosure Statement. The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Pursuant to 37 C.F.R. 1.98(a)(2), Applicant believes that copies of cited U.S. Patents and Published Applications are no longer required to be provided to the Office. Notification of this change was provided in the United States Patent and Trademark Office OG Notices dated October 12, 2004. Thus, Applicant has not included copies of any US Patents or Published Applications cited with this submission. Should the Office require copies to be provided,

Applicant respectfully requests that notice of such requirement be directed to Applicant's below-signed representative. Applicant acknowledges the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. 1.98(a)(2).

Respectfully submitted,

SIVA G. NARENDRA ET AL.

By their Representatives,

LeMoine Patent Services
c/o Intellevate
P.O. Box 52050
Minneapolis, MN 55402
Telephone Number: 952-473-8800

Date August 8, 2008 By /Dana B. LeMoine/
Dana B. LeMoine
Reg. No. 40062

PTO/SB/08a(04-07)
Approved for use through 7/31/2006. OMB 0651-0031
US Patent & Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

	Complete if Known
Application Number	Unknown
Filing Date	Even Date Herewith
First Named Inventor	Narendra, Siva
Art Unit	Unknown
Examiner Name	Unknown

Sheet	1	of	1	Attorney Docket No: 115.022US1

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Filing Date If Appropriate
		US-US2006/0124755A1	06/15/2006	ITO, TAKAFUMI	10/28/2005
		US-6568600	05/27/2003	CARPIER, ROLAND et al.	09/18/2000
		US-US2006/0027655A1	02/09/2006	SMETS, PATRICK et al.	07/15/2005
		US-6712277	03/30/2004	SPENCER, ANDREW M.	12/05/2001
		US-US2001/0006902A1	07/05/2001	ITO, TAKAFUMI	12/28/2000
		US-US2005/0224589A1	12/13/2005	PARK, YOUND S., et al.	04/05/2005
		US-7333062	02/19/2008	LEIZEROVICH, GUSTAVO D., et al.	09/15/2005

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of cited Document	T[2]

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No [1]	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, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
		LEE, YOUBOK "Anntenna Circuit Design For RFID Applications", LEE, YOUBOK; "Anntenna Circuit Design For RFID Applications", Microchip, AN710, 2003 Microchip Technology Inc., 50 pages, (2003),	

EXAMINER **DATE CONSIDERED**

Substitute Disclosure Statement Form (PTO-1449)
* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

Other Prior Art

According to the information contained in form PTO-1449 or PTO-892, there are one or more other prior art/non-patent literature documents missing from the original file history record obtained from the United States Patent and Trademark Office. Upon your request we will attempt to obtain these documents from alternative resources. Please note that additional charges will apply for this service.

This page is not part of the official USPTO record. It has been determined that content identified on this document is missing from the original file history record.

Electronic Patent Application Fee Transmittal	
Application Number:	
Filing Date:	
Title of Invention:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT
First Named Inventor/Applicant Name:	Siva G. Narendra
Filer:	Dana B. LeMoine/Jennifer Kathman
Attorney Docket Number:	115.022US1
Filed as Large Entity	

Utility Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	310	310
Utility Search Fee	1111	1	510	510
Utility Examination Fee	1311	1	210	210
Pages:				
Claims:				
Claims in excess of 20	1202	3	50	150
Miscellaneous-Filing:				
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1180**

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
12/188,346	08/08/2008	Siva G. Narendra	115.022US1

CONFIRMATION NO. 4860

Dana LeMoine
c/o Intellevate
P.O. Box 52050
Minneapolis, MN 55402

FORMALITIES LETTER

OC000000031702740

Date Mailed: 08/25/2008

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 and pay any fees required 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 $**310** to complete the basic filing fee for a non-small entity. If appropriate, applicant may make a written assertion of entitlement to small entity status and pay the small entity filing fee (37 CFR 1.27).*
- The oath or declaration is missing.
  A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
  Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.

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:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
  - The drawings submitted to the Office are not electronically reproducible because portions of figures 4,13 are missing and/or blurry.

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 $**150** as a non-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.
- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of $**130** for a non-small entity, must be submitted with the missing items identified in this notice.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is $**1310** for a non-small entity
- $**310** Statutory basic filing fee.
- $**130** Surcharge.
- The application search fee has not been paid. Applicant must submit $**510** to complete the search fee.
- The application examination fee has not been paid. Applicant must submit $**210** to complete the examination fee for a non-small entity.
- Total additional claim fee(s) for this application is $**150**
  - $**150** for **3** total claims over 20.

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.

/mkoroma/

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	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
12/188,346	08/08/2008	2612	0.00	115.022US1	23	3

CONFIRMATION NO. 4860

Dana LeMoine
c/o Intellevate
P.O. Box 52050
Minneapolis, MN 55402

FILING RECEIPT



Date Mailed: 08/25/2008

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**

Applicant(s)

Siva G. Narendra, Portland, OR;
Saurav Chakraborty, West Bengal, INDIA;
Prabhakar Tadepalli, Bangalore, INDIA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 08/21/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/188,346**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

Title

SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT

Preliminary Class

340

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).

Electronic Acknowledgement Receipt	
EFS ID:	4179562
Application Number:	12188346
International Application Number:	
Confirmation Number:	4860
Title of Invention:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT
First Named Inventor/Applicant Name:	Siva G. Narendra
Correspondence Address:	Dana LeMoine c/o Intellevate P.O. Box 52050 - Minneapolis MN 55402 US 952-473-8800 dlemoine@lemoinepatent.com
Filer:	Dana B. LeMoine/Jennifer Kathman
Filer Authorized By:	Dana B. LeMoine
Attorney Docket Number:	115.022US1
Receipt Date:	27-OCT-2008
Filing Date:	08-AUG-2008
Time Stamp:	13:28:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1376

RAM confirmation Number	7771
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Oath or Declaration filed	155_022US1_Executed_Declaration_10_27_08.pdf	232279 aa6a81ed3ced1f157211146d51a4bb845bc42607	no	3
Warnings:					
Information:					
2	Drawings-only black and white line drawings	115_022us1_2_Replacement_Drawings_10_27_08.pdf	24686 418b7f59489a0ac2c591b0f6e6ea8029870e581f	no	2
Warnings:					
Information:					
3	Fee Worksheet (PTO-06)	fee-info.pdf	38236 cc03e7f193a3bbd1145570f176626e4c2d1bfa72	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	295201		

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 Application

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare that my residence, post office address and citizenship are as stated below next to my name; and that I verily believe I am the original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled: **SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT**, the specification of which was filed on August 8, 2008 as application serial no. 12/188,346.

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

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with 37 C.F.R. § 1.56 (attached hereto). I also acknowledge my duty to disclose all information known to be material to patentability which became available between a filing date of a prior application and the national or PCT international filing date in the event this is a Continuation-In-Part application in accordance with 37 C.F.R. § 1.63(e).

I hereby claim foreign priority benefits under 35 U.S.C. §119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

No such claim for priority is being made at this time.

I hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below:

No such claim for priority is being made at this time.

I hereby claim the benefit under 35 U.S.C. § 120 or 365(c) of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose material information as defined in 37 C.F.R. § 1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

No such claim for priority is being made at this time.

I hereby appoint the following attorney(s) and/or patent agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith:

Dana LeMoine **Reg. No. 40,062**

I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/organization who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct LeMoine Patent Services to the contrary.

Please direct all correspondence in this case to **LeMoine Patent Services** at the address indicated below:

LeMoine Patent Services
c/o Intellevate
P.O. Box 52050
Minneapolis, MN 55402
Telephone Number: 952-473-8800

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.

FULL NAME OF JOINT INVENTOR NUMBER 1: **Siva G. Narendra**
Citizenship: **India** Residence: **Portland, OR**
Post Office Address: 7180 SW 84th Ave
Portland, OR 97223

Signature: Siva G. Narendra Date: Sep 4, 2008

FULL NAME OF JOINT INVENTOR NUMBER 2: **Prabhakar Tadepalli**
Citizenship: **United States of America** Residence: **Bangalore, Karnataka**
Post Office Address: Villa #A186, Prestige Ozone
Varthur Whitefiled Road
Bangalore, Karnataka 560066

Signature: Prabhakar Tadepalli Date: September 4, 2008

FULL NAME OF JOINT INVENTOR NUMBER 3: **Saurav Chakraborty**
Citizenship: **India** Residence: **West Bengal, India**
Post Office Address: Sristi Apartment (Block-B)
Flat No. D-119, 89 G.T. Road (W)
Mallickpara, Srirampure, Hooghly
West Bengal, India 712203

Signature: Saurav Chakraborty Date: Sept. 04, 2008

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application:

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

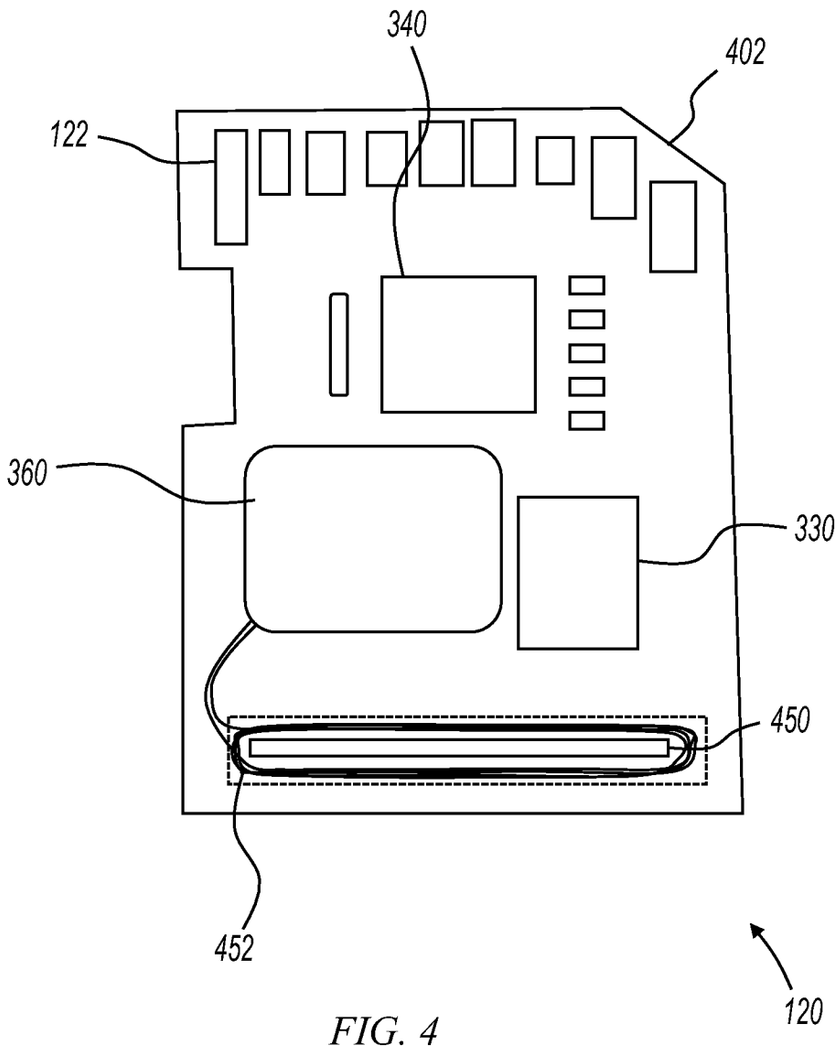


FIG. 4

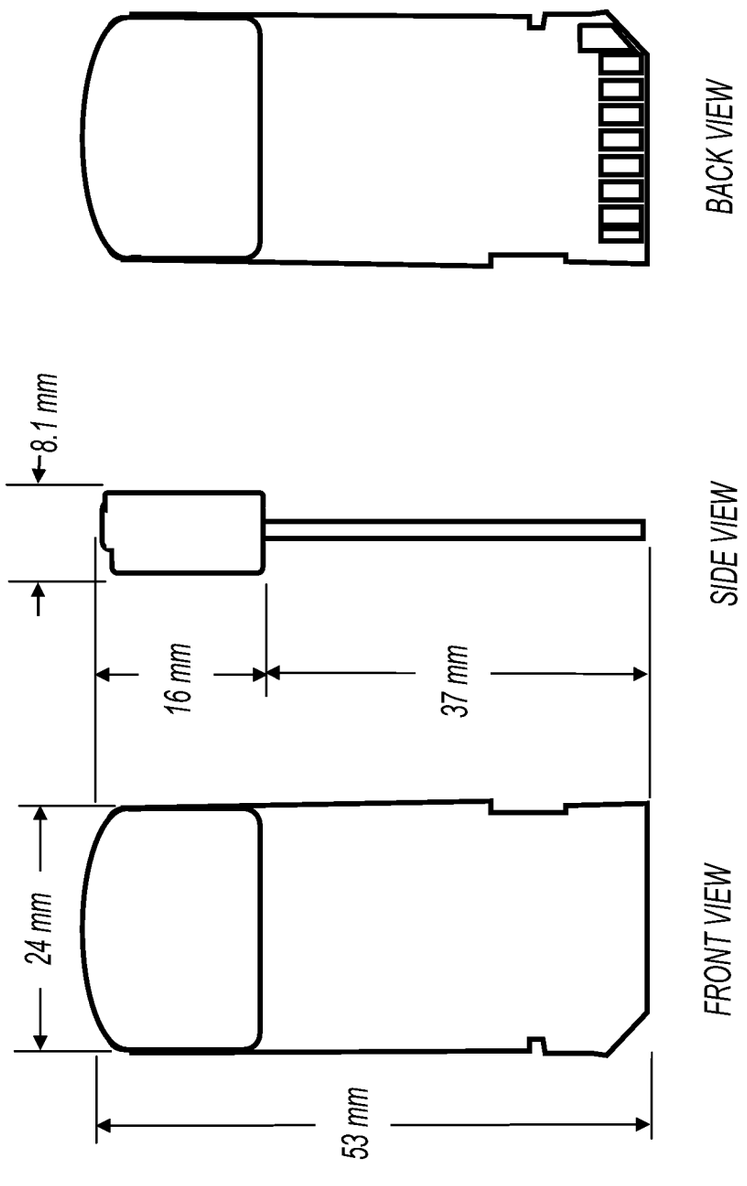


FIG. 13
(PRIOR ART)

Electronic Patent Application Fee Transmittal

Application Number:	12188346
Filing Date:	08-Aug-2008
Title of Invention:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT
First Named Inventor/Applicant Name:	Siva G. Narendra
Filer:	Dana B. LeMoine/Jennifer Kathman
Attorney Docket Number:	115.022US1

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	330	330
Utility Search Fee	1111	1	540	540
Utility Examination Fee	1311	1	220	220
Pages:				
Claims:				
Claims in excess of 20	1202	3	52	156
Miscellaneous-Filing:				
Late filing fee for oath or declaration	1051	1	130	130

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1376**

File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 2008-10-31

Document Title - USPTO Communication Re: Change of Address

This page is not part of the official USPTO record. It has been determined that content identified on this document is missing from the original file history record.

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
12/188,346	08/08/2008	2612	1376	115.022US1	23	3

CONFIRMATION NO. 4860

LeMoine Patent Services
c/o Intellevate
P.O. Box 52050
Minneapolis, MN 55402

UPDATED FILING RECEIPT

OC00000032894076

Date Mailed: 11/03/2008

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**

Applicant(s)

Siva G. Narendra, Portland, OR;
Saurav Chakraborty, West Bengal, INDIA;
Prabhakar Tadepalli, Bangalore, INDIA;

Power of Attorney:
Dana LeMoine--40062

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 08/21/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/188,346**

Projected Publication Date: 02/11/2010

Non-Publication Request: No

Early Publication Request: No

Title

SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT

Preliminary Class

340

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).

Electronic Acknowledgement Receipt	
EFS ID:	6031691
Application Number:	12188346
International Application Number:	
Confirmation Number:	4860
Title of Invention:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT
First Named Inventor/Applicant Name:	Siva G. Narendra
Correspondence Address:	LeMoine Patent Services c/o Intellevate P.O. Box 52050 - Minneapolis MN 55402 US 952-473-8800 dlemoine@lemoinepatent.com
Filer:	Dana B. LeMoine/Jenny Kathman
Filer Authorized By:	Dana B. LeMoine
Attorney Docket Number:	115.022US1
Receipt Date:	08-SEP-2009
Filing Date:	08-AUG-2008
Time Stamp:	17:38:12
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	115_022US1_IDS_Communication_09_08_09.pdf	86466 6587113334132053 32a53190c4f45ea058d963c4	no	2
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Filed (SB/08)	115_022US1_IDS_1449_09_08_09.pdf	127849 7c94b653b190a04a69e64ebdf34a1c6c6d076b65	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	REF_WO28121566A1.pdf	1069175 ec40a819da16109592c44bcc52271ba8d570cb1e	no	29
Warnings:					
Information:					
		Total Files Size (in bytes):	1283490		

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

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Siva G. Narendra et al.	Examiner:	Unknown
Serial No.:	12/188,346	Group Art Unit:	2612
Filed:	August 8, 2008	Docket:	115.022US1
Title:	Small RFID Card with Integrated Inductive Element		

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

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

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq*., the referenced materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Supplemental Information Disclosure Statement be entered and the documents listed on the attached Form 1449 be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the 1449 form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. §1.97(b), it is believed that no fee or statement is required with the Supplemental Information Disclosure Statement. The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Pursuant to 37 C.F.R. 1.98(a)(2), Applicant believes that copies of cited U.S. Patents and Published Applications are no longer required to be provided to the Office. Notification of this change was provided in the United States Patent and Trademark Office OG Notices dated October 12, 2004. Thus, Applicant has not included copies of any US Patents or Published

Applications cited with this submission. Should the Office require copies to be provided, Applicant respectfully requests that notice of such requirement be directed to Applicant's below-signed representative. Applicant acknowledges the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. 1.98(a)(2).

Respectfully submitted,

SIVA G. NARENDRA ET AL.

By their Representatives,

LeMoine Patent Services, PLLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN
Telephone Number: 952-473-8800

Date September 8, 2009 By /Dana B.LeMoine/
Dana B. LeMoine
Reg. No. 40062

PTO/SB/08a(04-07)
Approved for use through 7/31/2006. OMB 0651-0031
US Patent & Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

	Complete if Known
Application Number	12/188,346
Filing Date	August 8, 2008
First Named Inventor	Siva G. Narendra et al.
Art Unit	2612
Examiner Name	Unknown

Sheet	1	of	1

Attorney Docket No: 115.022US1

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Filing Date If Appropriate
		US-20050022002A1	01/27/2005	Poisner, D. I.	06/25/2004
		US-20040064612A1	04/01/2004	Pinto, Y. et al.	09/26/2002
		US-20080244208A1	10/02/2008	Narendra, S. G., et al.	08/24/2007
		US-20080279381A1	11/13/2008	Narendra, S. G., et al.	08/24/2007
		US-20090152361A1	06/18/2009	Narendra, S. et al.	12/14/2007
		US-20090199283A1	08/06/2009	Jain, Deepak	09/12/2008
		US-20090108063A1	04/30/2009	Jain, Deepak et al.	11/17/2008
		US-20090070861A1	03/12/2009	Jain, Deepak	09/12/2008
		US-20090070691A1	03/12/2009	Jain, Deepak	09/05/2008
		US-20090070272A1	03/12/2009	Jain, Deepak	09/11/2008
		US-20090069052A1	03/12/2009	Jain, Deepak et al.	09/12/2008
		US-20090069051A1	03/12/2009	Jain, Deepak et al.	03/12/2009
		US-20090069050A1	03/12/2009	Jain, Deepak et al.	09/12/2008
		US-20090069049A1	03/12/2009	Jain, Deepak	09/05/2008
		US-20090065572A1	03/12/2009	Jain, Deepak	09/08/2008
		US-20090065571A1	03/12/2009	Jain, Deepak	09/05/2008

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of cited Document	T[2]
		WO-2008/121566	10/09/2008	NARENDRA, S. , et al.	

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No [1]	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, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]

EXAMINER **DATE CONSIDERED**

Substitute Disclosure Statement Form (PTO-1449)

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

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
12/188,346	08/08/2008	Siva G. Narendra	115.022US1

CONFIRMATION NO. 4860

LeMoine Patent Services
c/o Intellevate
P.O. Box 52050
Minneapolis, MN 55402

PUBLICATION NOTICE

OC000000040074752

Title:SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT

Publication No.US-2010-0033307-A1
Publication Date:02/11/2010

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
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/188,346	08/08/2008	Siva G. Narendra	115.022US1	4860

7590 08/16/2010

LeMoine Patent Services
c/o Intellevate
P.O. Box 52050
Minneapolis, MN 55402

EXAMINER	
PHAM, TOAN NGOC	
ART UNIT	**PAPER NUMBER**
2612	

MAIL DATE	DELIVERY MODE
08/16/2010	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.	Applicant(s)	
	12/188,346	NARENDRA ET AL.	
	Examiner	Art Unit	
	Toan N. Pham	2612	

-- 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 *1* 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 _____.

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

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

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

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

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

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

8)☒ Claim(s) *1-23* are subject to restriction and/or election requirement.

Application Papers

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

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

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

Priority under 35 U.S.C. § 119

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

a)☐ All b)☐ Some * c)☐ None of:

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

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

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

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

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-16, drawn to a memory card, classified in class 340, subclass 572.1.

II. Claims 17-23, drawn to mobile payment device, classified in class 235, subclass 493.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the memory card contains memory for non-contact communication is a generic invention and having additional function is merely separate or different than the generic invention. The subcombination has separate utility such as providing mobile payment through interrogation with the memory card.

The examiner has required restriction between combination and subcombination inventions. Where applicant elects a subcombination, and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all

the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

(a) the inventions have acquired a separate status in the art in view of their different classification;

(b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;

(c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);

(d) the prior art applicable to one invention would not likely be applicable to another invention;

(e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected invention**.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan N. Pham whose telephone number is (571) 272-2967. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin C. Lee can be reached on (571) 272-2963. 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.

/Toan N Pham/
Primary Examiner, Art Unit 2612
8/13/10

Electronic Acknowledgement Receipt	
EFS ID:	8433635
Application Number:	12188346
International Application Number:	
Confirmation Number:	4860
Title of Invention:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT
First Named Inventor/Applicant Name:	Siva G. Narendra
Correspondence Address:	LeMoine Patent Services c/o Intellevate P.O. Box 52050 - Minneapolis MN 55402 US 952-473-8800 dlemoine@lemoinepatent.com
Filer:	Dana B. LeMoine/Keith Lodermeier
Filer Authorized By:	Dana B. LeMoine
Attorney Docket Number:	115.022US1
Receipt Date:	16-SEP-2010
Filing Date:	08-AUG-2008
Time Stamp:	17:22:40
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	Response to Election / Restriction Filed	115_022us1_RR_Resp_9-16-10.pdf	187873 eac98e472dff39239f4fb732caa90e414d19cd92	no	1
Warnings:					
Information:					
		Total Files Size (in bytes):	187873		

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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

Applicant:	Siva Narendra et al.	Examiner: Pham, Toan Ngoc
Serial No.:	12/188,346	Group Art Unit: 2612
Filed:	August 8, 2008	Docket No.: 115.022US1
Title:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT	

RESPONSE TO RESTRICTION REQUIREMENT

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

In response to the Restriction Requirement mailed August 16, 2010, Applicants hereby elect, without traverse, Group I (claims 1-16).

Respectfully submitted,

SIVA G. NARENDRA ET AL.

By their Representatives,
LeMoine Patent Services, PLLC
Phone Number: (952) 473-8800

Date September 16, 2010 By /Dana B. LeMoine/
Dana B. LeMoine
Reg. No. 40,062

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.
12/188,346	08/08/2008	Siva G. Narendra	115.022US1	4860

7590 09/30/2010

LeMoine Patent Services
c/o Intellevate
P.O. Box 52050
Minneapolis, MN 55402

EXAMINER	
PHAM, TOAN NGOC	
ART UNIT	PAPER NUMBER
2612	

MAIL DATE	DELIVERY MODE
09/30/2010	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.	Applicant(s)	
	12/188,346	NARENDRA ET AL.	
	Examiner	Art Unit	
	Toan N. Pham	2612	

-- 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 _____.

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

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

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *17-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

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

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

Application Papers

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

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

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

Priority under 35 U.S.C. § 119

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

a)☐ All b)☐ Some * c)☐ None of:

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

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

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

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse, Group I (claims 1-16) of the restriction requirement in the reply filed on 09/16/2010 is acknowledged.

Claim Rejections - 35 USC § 103

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

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

Claims 1, 2, 4-12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (2005/0224589) in view of Nakagawa et al. (US 5,574,273).

Regarding claims 1 and 10: Park discloses a SD memory card comprising the memory card slot interface; a memory card controller (133) coupled to the memory card slot interface; a contactless communications device (110) coupled to the memory card controller, the contactless communications device having an antenna port (110); a power delivery mechanism (VDD) to deliver power to the contactless communications device from the memory card slot interface (Fig. 1, [0031-0036]). Park discloses the antenna (110) for wireless communication [0034]; however, Park does not disclose a magnetic core and coil. Nakagawa discloses a contactless memory card comprises a

magnetic core (12, 312) and a coil (11, 311) wound about the magnetic core (col. 7, lines 4-27; col. 10, lines 30-42). At the time of the invention, it would have been obvious to one of ordinary skill in the art to utilize the magnetic couplings as taught by Nakagawa to provide the non-contact or contracless communication or data transfer.

Regarding claims 2 and 12: Park discloses the contactless communications device is designed to comply with ISO 14443 [0047-0049].

Regarding claim 4: Park discloses the card conforms to size requirements of a standard memory card (Fig. 1) [0030].

Regarding claims 5 and 14: Park discloses the card conforms to memory card size requirements of Secure Digital (SD) cards [0031].

Regarding claims 6 and 15: Park and Nakagawa discloses the card further comprising a circuit board to which the memory card controller, the contactless communications device, and the magnetic core and coil are affixed (Fig. 1).

Regarding claims 7 and 16: Neither Park nor Nakagawa discloses the operable signals received at 13.56MHz; however, it is merely a matter of design choice for utilizing a certain frequency that is reliable and without interference.

Regarding claim 8: Park does not disclose the impedance of the circuit. Nakagawa discloses the electromagnetic coupling through the utilization of the coil (col. 7, lines 4-38; col. 10, lines 30-64); thus, the impedance is obviously being utilized.

Regarding claim 9: Park discloses the non-volatile memory (ROM, 136) coupled to the memory card controller (Fig. 1).

Regarding claim 11: Park discloses the RFID device is coupled to receive power from the host [0036].

Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 2005/0224589) in view of Nakagawa et al. (US 5,574,273) as applied to claim 1 above, and further in view of Corda (WO 2009/147548 A2).

Regarding claims 3 and 13: Park in view of Nakagawa does not disclose the contactless communications device is designed to interoperate with MIFARE. Corda discloses the method involves analyzing whether security level of a secure memory device (6) e.g. smart card is assigned to the near field communication (NFC) applications, and storing the NFC application in the memory portion (6A) by applying data write steps in compliance with MIFARE standard (abstract). At the time of the invention, it would have been obvious to utilize the MIFARE standards as taught by Corda to provide a more secure data storage.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jain et al. (US 2009/0108063) is cited to show the SD card wirelessly communicating radio frequency signals.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan N. Pham whose telephone number is (571) 272-2967. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin C. Lee can be reached on (571) 272-2963. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Toan N Pham/
Primary Examiner, Art Unit 2612
9/24/10

Notice of References Cited	Application/Control No. 12/188,346	Applicant(s)/Patent Under Reexamination NARENDRA ET AL.	
	Examiner Toan N. Pham	Art Unit 2612	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2005/0224589	10-2005	Park et al.	235/492
*	B	US-5,574,273	11-1996	Nakagawa et al.	235/492
*	C	US-2009/0108063	04-2009	Jain et al.	235/380
	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	WO 2009147548 A2	12-2009	World Intellect	CORDA A	
	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.

PTO/SB/08a(04-07)
Approved for use through 7/31/2006. OMB 0651-0031
US Patent & Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

	Complete if Known
Application Number	~~Unknown~~ 12/188,346
Filing Date	Even Date Herewith
First Named Inventor	Narendra, Siva
Art Unit	~~Unknown~~ 2612
Examiner Name	~~Unknown~~ Toan Pham

Sheet	1	of	1	Attorney Docket No: 115.022US1

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Filing Date If Appropriate
		US-US2006/0124755A1	06/15/2006	ITO, TAKAFUMI	10/28/2005
		US-6568600	05/27/2003	CARPIER, ROLAND et al.	09/18/2000
		US-US2006/0027655A1	02/09/2006	SMETS, PATRICK et al.	07/15/2005
		US-6712277	03/30/2004	SPENCER, ANDREW M.	12/05/2001
		US-US2001/0006902A1	07/05/2001	ITO, TAKAFUMI	12/28/2000
		US-US2005/0224589A1	12/13/2005	PARK, YOUND S., et al.	04/05/2005
		US-7333062	02/19/2008	LEIZEROVICH, GUSTAVO D., et al.	09/15/2005

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of cited Document	T[2]

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No [1]	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, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
		LEE, YOUBOK "Anntenna Circuit Design For RFID Applications", LEE, YOUBOK; "Anntenna Circuit Design For RFID Applications", Microchip, AN710, 2003 Microchip Technology Inc., 50 pages, (2003),	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /TP/

EXAMINER /Toan Pham/ **DATE CONSIDERED** 09/24/2010

Substitute Disclosure Statement Form (PTO-1449)
* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

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First Named Inventor	Narendra, Siva
Art Unit	~~Unknown~~ 2612
Examiner Name	~~Unknown~~ Toan Pham

Sheet	1	of	1	Attorney Docket No: 115.022US1

US PATENT DOCUMENTS

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		US-US2006/0124755A1	06/15/2006	ITO, TAKAFUMI	10/28/2005
		US-6568600	05/27/2003	CARPIER, ROLAND et al.	09/18/2000
		US-US2006/0027655A1	02/09/2006	SMETS, PATRICK et al.	07/15/2005
		US-6712277	03/30/2004	SPENCER, ANDREW M.	12/05/2001
		US-US2001/0006902A1	07/05/2001	ITO, TAKAFUMI	12/28/2000
		US-US2005/0224589A1	12/13/2005	PARK, YOUND S., et al.	04/05/2005
		US-7333062	02/19/2008	LEIZEROVICH, GUSTAVO D., et al.	09/15/2005

Change(s) applied to document,
/B.H.H./
5/3/2011

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of cited Document	T[2]

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No [1]	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, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
		LEE, YOUBOK "Anntenna Circuit Design For RFID Applications", LEE, YOUBOK; "Anntenna Circuit Design For RFID Applications", Microchip, AN710, 2003 Microchip Technology Inc., 50 pages, (2003),	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /TP/

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known	
Application Number	12/188,346
Filing Date	August 8, 2008
First Named Inventor	Siva G. Narendra et al.
Art Unit	2612
Examiner Name	~~Unknown~~ Toan Pham

Sheet	1	of	1

Attorney Docket No: 115.022US1

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Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Filing Date If Appropriate
		US-20050022002A1	01/27/2005	Poisner, D. I.	06/25/2004
		US-20040064612A1	04/01/2004	Pinto, Y. et al.	09/26/2002
		US-20080244208A1	10/02/2008	Narendra, S. G., et al.	08/24/2007
		US-20080279381A1	11/13/2008	Narendra, S. G., et al.	08/24/2007
		US-20090152361A1	06/18/2009	Narendra, S. et al.	12/14/2007
		US-20090199283A1	08/06/2009	Jain, Deepak	09/12/2008
		US-20090108063A1	04/30/2009	Jain, Deepak et al.	11/17/2008
		US-20090070861A1	03/12/2009	Jain, Deepak	09/12/2008
		US-20090070691A1	03/12/2009	Jain, Deepak	09/05/2008
		US-20090070272A1	03/12/2009	Jain, Deepak	09/11/2008
		US-20090069052A1	03/12/2009	Jain, Deepak et al.	09/12/2008
		US-20090069051A1	03/12/2009	Jain, Deepak et al.	03/12/2009
		US-20090069050A1	03/12/2009	Jain, Deepak et al.	09/12/2008
		US-20090069049A1	03/12/2009	Jain, Deepak	09/05/2008
		US-20090065572A1	03/12/2009	Jain, Deepak	09/08/2008
		US-20090065571A1	03/12/2009	Jain, Deepak	09/05/2008

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of cited Document	T[2]
		WO-2008/121566	10/09/2008	NARENDRA, S. , et al.	

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No [1]	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, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /TP/

EXAMINER /Toan Pham/ **DATE CONSIDERED** 09/24/2010

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Electronic Acknowledgement Receipt	
EFS ID:	9555368
Application Number:	12188346
International Application Number:	
Confirmation Number:	4860
Title of Invention:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT
First Named Inventor/Applicant Name:	Siva G. Narendra
Correspondence Address:	LeMoine Patent Services c/o Intellevate P.O. Box 52050 - Minneapolis MN 55402 US 952-473-8800 dlemoine@lemoinepatent.com
Filer:	Dana B. LeMoine
Filer Authorized By:	
Attorney Docket Number:	115.022US1
Receipt Date:	28-FEB-2011
Filing Date:	08-AUG-2008
Time Stamp:	21:02:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$490

RAM confirmation Number	9338
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		115_022us1_oar1.pdf	108994 9477286b305901d48154536f8d2c808b57b64b47	yes	7

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	4
	Applicant Arguments/Remarks Made in an Amendment	5	7

Warnings:

Information:

2	Fee Worksheet (PTO-875)	fee-info.pdf	30585 1603983b84f8fdc218738656e7c15ba82b4aa2dd	no	2

Warnings:

Information:

Total Files Size (in bytes):	139579

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<u>New Applications Under 35 U.S.C. 111</u>
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<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>
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Siva G. Narendra et al.	Examiner: Pham, Toan Ngoc
Serial No.:	12/188,346	Group Art Unit: 2612
Filed:	August 8, 2008	Docket No.: 115.022US1
Title:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT	

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

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

Applicant has reviewed the Office Action mailed on September 30, 2010. Please amend the above-identified patent application as follows.

IN THE CLAIMS

Please amend the claims as follows:

1. (Original) A card comprising:

a memory card slot interface;

a memory card controller coupled to the memory card slot interface;

a contactless communications device coupled to the memory card controller, the contactless communications device having an antenna port;

a power delivery mechanism to deliver power to the contactless communications device from the memory card slot interface;

a magnetic core; and

a coil wound about the magnetic core, the coil being coupled to the antenna port of the contactless communications device.

2. (Original) The card of claim 1 wherein the contactless communications device is designed to comply with ISO 14443.

3. (Original) The card of claim 1 wherein the contactless communications device is designed to interoperate with MIFARE.

4. (Original) The card of claim 1 wherein the card conforms to size requirements of a standard memory card.

5. (Original) The card of claim 4 wherein the card conforms to memory card size requirements of one of: Secure Digital (SD) cards, mini SD cards, and micro SD cards.

6. (Original) The card of claim 1 further comprising a circuit board to which the memory card controller, the contactless communications device, and the magnetic core and coil are affixed.

7. (Original) The card of claim 1 wherein the contactless communications device is operable to reflect signals received at substantially 13.56 MHz.

8. (Original) The card of claim 7 wherein the contactless communications device is operable to reflect a received signal by modifying the impedance of an internal circuit coupled to the antenna port.

9. (Original) The card of claim 1 further comprising nonvolatile memory coupled to the memory card controller.

10. (Currently Amended) A radio frequency identification (RFID) memory card comprising:

a memory card controller to communicate with a host;

an RFID device having an antenna port; and

an inductive element coupled to the antenna port, wherein the inductive element is too small to provide sufficient energy to power the RFID device[[.]];

wherein the RFID device is coupled to receive power from the host.

11. (Canceled)

12. (Original) The RFID memory card of claim 10 wherein the RFID device is designed to comply with ISO 14443.

13. (Original) The RFID memory card of claim 10 wherein the RFID device is designed to interoperate with MIFARE.

14. (Original) The RFID memory card of claim 10 wherein the card conforms to memory card size requirements of one of: Secure Digital (SD) cards, mini SD cards, and micro SD cards.

15. (Original) The RFID memory card of claim 10 further comprising a circuit board to which the memory card controller, the RFID device, and the inductive element are affixed.

16. (Original) The RFID memory card of claim 10 wherein the RFID device is operable to reflect signals received at substantially 13.56 MHz.

17-23. (Canceled)

REMARKS

Applicants have reviewed and considered the Office Action mailed on September 30, 2010, and the references cited therewith. Claim 1 has been amended, claims 17-23 are canceled, and no claims are added; as a result, claims 1-16 are now pending in this application.

35 USC § 103 Rejection of the Claims

Claims 1, 2, 4-12, and 14-16 were rejected under 35 USC § 103(a) as being unpatentable over Park et al. (U.S. Publication No. 2005/0224589) in view of Nakagawa et al. (U.S. Patent No. 5,574,273). Claims 3 and 13 were rejected under 35 USC § 103(a) as being unpatentable over Park et al. (U.S. Publication No. 2005/0224589) in view of Nakagawa et al. (U.S. Patent No. 5,574,273) and further in view of Corda (WO 2009/147548 A2).

The Park Reference

The Park reference describes an SD memory card for "extension of function." See the Title and Abstract. Park discloses a contactless IC card (e.g., PICC standardized in ISO/IEC-14443) that "obtains a power source through inductive coupling." See [0006]-[0007]. Park then goes on to describe SD memory card embodiments with ISO/IEC-14443 functionality. See for example [0047]-[0049]. Park does not describe any of the circuits providing ISO/IEC-14443 functionality as receiving power from anything other than inductive coupling.

Independent Claim 1

Applicants traverse the rejection of claim 1 on the basis that a *prima facie* case of obviousness has not been presented because the applied references fail to teach all the claim limitations. Claim 1 recites, among other things, "a contactless communications device coupled to the memory card controller, the contactless communications device having an antenna port" and "a power delivery mechanism to deliver power to the contactless communications device from the memory card slot interface". The office action alleges that Park teaches "a power delivery mechanism to deliver power to the contactless communications device from the memory card slot interface" at (Fig. 1, [0031-0036]). Applicants respectfully disagree.

Paragraph [0031] of Park discloses an SD memory card that uses "communications protocols of a contactless IC card". As discussed above, Park describes contactless IC cards as "obtain[ing] a power source through inductive coupling." See [0006]-[0007]. Paragraph [0036] describes the SD card being "connected to signal pins DAT0 through DAT3, GND, VDD, and CLK so as to be connected to a host device;" however, Park fails to teach that the power supply (VDD) provided by the host is used to "deliver power to the contactless communications device" as required by claim 1. In contrast, the only delivery of power to contactless devices described by Park is inductive coupling.

Applicants respectfully submit that the cited references, taken alone or in combination, fail to teach the subject matter of claim 1, including for example, "a power delivery mechanism to deliver power to the contactless communications device from the memory card slot interface". Accordingly, applicants respectfully request that the rejection of claim 1 be withdrawn.

Dependent Claims 2-9

Dependent claims 2-9 depend from claim 1, and are believed to be in condition for allowance at least by virtue of dependency.

Independent Claim 10

Independent claim 10 has been amended to include the limitations of claim 11, and claim 11 has been canceled. Applicants traverse the rejection of claim 11 as filed (claim 10 as amended) on the basis that a *prima facie* case of obviousness has not been presented because the applied references fail to teach all the claim limitations. Claim 11 as filed (claim 10 as amended) recites, among other things, "a memory card controller to communicate with a host" and "an RFID device having an antenna port ... wherein the RFID device is coupled to receive power from the host". The office action alleges that Park teaches "the RFID device is coupled to receive power from the host" at [0036]. Applicants respectfully disagree.

As discussed above, Park describes contactless IC cards as "obtain[ing] a power source through inductive coupling." See [0006]-[0007]. Paragraph [0036] describes the SD card being "connected to signal pins DAT0 through DAT3, GND, VDD, and CLK so as to be connected to a host device;" however, Park fails to teach that "the RFID device is coupled to receive power

[VDD] from the host" as required by claim 10. In contrast, the only delivery of power to contactless devices described by Park is inductive coupling.

Applicants respectfully submit that the cited references, taken alone or in combination, fail to teach the subject matter of claim 11 as filed (claim 10 as amended), including for example, "wherein the RFID device is coupled to receive power from the host". Accordingly, applicants respectfully request that the rejection of claim 11 as filed (claim 10 as amended) be withdrawn.

Dependent Claims 12-16

Dependent claims 12-16 depend from claim 10, and are believed to be in condition for allowance at least by virtue of dependency.

Conclusion

Applicants respectfully submit that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (952-473-8800) to facilitate prosecution of this application.

Respectfully submitted,

SIVA G. NARENDRA ET AL.

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Date February 28, 2011 By /Dana B. LeMoine/
Dana B. LeMoine
Reg. No. 40,062

Electronic Patent Application Fee Transmittal	
Application Number:	12188346
Filing Date:	08-Aug-2008
Title of Invention:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT
First Named Inventor/Applicant Name:	Siva G. Narendra
Filer:	Dana B. LeMoine
Attorney Docket Number:	115.022US1
Filed as Large Entity	

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 2 months with $0 paid	1252	1	490	490

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
		Total in USD ($)		**490**

File History Content Report

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Document Date - 2011-02-28

Document Title - Extension of Time

This page is not part of the official USPTO record. It has been determined that content identified on this document is missing from the original file history record.

Electronic Acknowledgement Receipt	
EFS ID:	9569140
Application Number:	12188346
International Application Number:	
Confirmation Number:	4860
Title of Invention:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT
First Named Inventor/Applicant Name:	Siva G. Narendra
Correspondence Address:	LeMoine Patent Services c/o Intellevate P.O. Box 52050 - Minneapolis MN 55402 US 952-473-8800 dlemoine@lemoinepatent.com
Filer:	Dana B. LeMoine/Christine Hartness
Filer Authorized By:	Dana B. LeMoine
Attorney Docket Number:	115.022US1
Receipt Date:	02-MAR-2011
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Time Stamp:	16:03:12
Application Type:	Utility under 35 USC 111(a)

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RAM confirmation Number	2678
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Filed (SB/08)	115_022US1_IDS.pdf	99086 83431def20d5b1045f585d8d3da33826c4840fe8	no	19
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Information:					
This is not an USPTO supplied IDS fillable form					
2	Foreign Reference	115_022US1_ref1.pdf	10093926 dbdc84c3f02968170ba9f149e10bbfe9b7f83e57	no	7
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3	Foreign Reference	115_022US1_ref2.pdf	691826 5b01c755811d40cbd1c887749b75cf37a8c722bc	no	5
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15	Foreign Reference	115_022US1_ref15.pdf	20839969 a028dd0220faab503518235ff986dd75b5a2085b	no	33
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17	Foreign Reference	115_022US1_ref17.pdf	555551 f8507d6c0d6cdac02eef4ccb375a1562d3f56591	no	62
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20	Foreign Reference	115_022US1_ref13.pdf	2015576 6a59e710ac659838dfd8633ae0acdc62b2509ed5	no	17
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38	NPL Documents	115_022US1_ref37.pdf	17334601 223be1c1552a9150de761a9363f89698c46cd176	no	13
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45	NPL Documents	115_022US1_ref44.pdf	634500 3f6181637f7db38a948856ff65934e47863270bd	no	10
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46	Fee Worksheet (PTO-875)	fee-info.pdf	30294 95acf4a2ff2e4e71e39f199d94c1f4d22b2e2d9c	no	2
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		Total Files Size (in bytes):	188416834		

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<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12188346
	Filing Date	2008-08-08
	First Named Inventor	Siva G. Narendra
	Art Unit	2612
	Examiner Name	Toan Ngoc Pham
	Attorney Docket Number	115.022US1

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	/Dana B. LeMoine/	Date (YYYY-MM-DD)	2011-03-02
Name/Print	Dana B. LeMoine	Registration Number	40062

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

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

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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.

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	12188346
Filing Date	2008-08-08
First Named Inventor	Siva G. Narendra
Art Unit	2612
Examiner Name	Toan Ngoc Pham
Attorney Docket Number	115.022US1

U.S.PATENTS

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	4701601		1987-10-20	Francini, et al.	
	2	4786791		1988-11-22	Hodama, Takuo	
	3	4791283		1988-12-13	Burkhardt, Norman S.	
	4	5585787		1996-12-17	Wallerstein, Robert S.	
	5	5700037		1997-12-23	Keller, et al.	
	6	5710421		1998-01-20	Kokubu, et al.	
	7	5834756		1998-11-10	Gutman, et al.	
	8	5909491		1999-06-01	Luo, Tie	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2008-08-08
	First Named Inventor	Siva G. Narendra
	Art Unit	2612
	Examiner Name	Toan Ngoc Pham
	Attorney Docket Number	115.022US1

	9	5952641		1999-09-14	Korshun, Yvan	
	10	5955961		1999-09-21	Wallerstein, Robert S.	
	11	6016476		2000-01-18	Maes, et al.	
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NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	International Preliminary Report and Written Opinion on Patentability received for PCT Application No. PCT/ US2005/019988, issued on December 04, 2006, 9 Pages.	☐
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 115.004WO1	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2005/019988	International filing date *(day/month/year)* 03 June 2005 (03.06.2005)	Priority date *(day/month/year)* 03 June 2004 (03.06.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant TYFONE, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 9 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☒	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☒	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 04 December 2006 (04.12.2006)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Athina Nickitas-Etienne e-mail: pt04@wipo.int

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PATENT COOPERATION TREATY

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

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FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2005/019988	03.06.2005	03.06.2004

International Patent Classification (IPC) or both national classification and IPC
G07F19/00, G07F7/10

Applicant
TYFONE, INC.

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

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 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 usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, 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 three 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.

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Rachkov, V

Telephone No. +31 70 340-4953

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2005/019988

Box No. I Basis of the 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 the 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:

Box No. II Priority

1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:

   ☒ paid additional fees.

   ☐ paid additional fees under protest.

   ☐ not paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

   see separate sheet

4. Consequently, this report has been established in respect of the following parts of the international application:

   ☒ all parts.

   ☐ the parts relating to claims Nos.

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)	Yes:	Claims	3, 5-11, 13-16, 18-20
	No:	Claims	1,2,4, 17
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-20
Industrial applicability (IA)	Yes:	Claims	1-20
	No:	Claims	

2. Citations and explanations

   see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Reference is made to the following documents:

D1: US-A-6 016 476 (MAES ET AL) 18 January 2000 (2000-01-18),

D4: EP-A-1 291 748 (ALCATEL) 12 March 2003 (2003-03-12),

D5: WO 03/077473 A (BEAMTRUST A/S; ANDERSSON, STEN; KAARLE, PETER; KAPNOULA, ANNA; ELGAARD) 18 September 2003 (2003-09-18),

D7: WO 2004/012352 A (WAY SYSTEMS, INC; GOLDTHWAITE, SCOTT; GRAYLIN, WILLIAM) 5 February 2004 (2004-02-05).

Re Item IV

Lack of unity of invention

This Authority considers that there are 2 (groups of) inventions covered by the claims indicated as follows:

1. Claims 1-11directed to a portable transaction device comprising means for secondary authentication and software for changing the value of a pre-paid card;

2. Claims 12-20 directed to a portable transaction device and a transaction system comprising a cellular telephone used in financial transactions involving communication with other entities.

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

Document D1 which is considered to be the closest prior art discloses a portable transaction device (fig. 1) comprising:

-memory to hold information regarding a financial card (col. 10, lines 43-48);

-a reprogrammable financial card (col. 5, lines 25-35 and fig. 1);

-a slot to interface with the reprogrammable card (col. 5, lines 25-35 and fig. 1);

-software to generate single use transaction numbers (col. 6, lines 47-55 and col 12, line 30 - col. 13, line 5);

-means for interacting with a user to provide authentication to the portable transaction device (col. 5, lines 54-67 and col. 10, lines 49-65);

-a financial transaction system comprising a reprogrammable financial card and a

cellular telephone having an interface to communicate with the reprogrammable card and including software to request a change in value of a financial account (col. 14, lines 1-16, col. 13, lines 39-50, fig. 3 and fig. 1).

The special technical features of the inventions within the meaning of Rule 13.2 and the corresponding problems are therefore defined as follows:

1. Claims 1-11: The special technical features of the first invention (independent claims 1 and 5) are wireless interface for interacting with a secondary wireless device to provide a second authentication factor and software to request a change in value of a prepaid card. The problems to be solved are respectively to provide reliable authentication of the user and to provide means for implementing financial card processing.

Note: There is no difference between the subject matter of claims 1, 2 and 4 and the teaching of document D1. The special technical feature of the group of claims 1-4 (a wireless interface for interacting with a secondary wireless device) is therefore identified based on the subject matter of dependent claim 3.

2. Claims 12-20: The special technical features of the second invention (independent claims 12 and 17) are a portable transaction device comprising a cellular phone and a value transfer component to operatively interface to another portable transaction device to refresh value in a stored value card and a financial transaction system comprising a cellular phone including software to request a change in value of a financial account. The problem to be solved is to provide support for financial transactions involving communication with other entities.

As the special technical features are not identical, and neither the objective problems underlying the subjects of the claimed inventions, nor their solutions defined by the said special technical features allow for a technical relationship to be established between the said inventions, the special technical features cannot be held to be corresponding. Therefore, the 2 groups of claims are not linked by common or corresponding special technical features and define 2 different inventions not linked by a single general inventive concept.

The application, hence does not meet the requirements of Unity of invention as defined in rules 13.1 and 13.2 PCT.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The present application does not meet the criteria of Article 33(1) PCT for the following reasons:

1 Document D1 (US6016476) discloses a portable transaction device (fig. 1) comprising:
-memory to hold information regarding a financial card (col. 10, lines 43-48);
-a slot to interface with a reprogrammable card (col. 5, lines 25-35 and fig. 1);
-software to generate single use transaction numbers (col. 6, lines 47-55 and col 12, line 30 - col. 13, line 5);
-a biometric scanner in order to combine biometric information with one or more additional authentication factors to secure financial transactions (col.5, lines 54-67 and col. 10, lines 49-65); and
-controls to allow a user to select one of a plurality of financial cards with which to program the transaction stripe of the card (col. 10, lines 29-48).
Thus, the subject-matter of claims 1, 2 and 4 is not new in the sense of Article 33(2) PCT.

2 Furthermore, the portable transaction device disclosed in document D1 comprises means for interacting with a user to provide a first authentication factor (col. 5, lines 54-67 and col. 10, lines 49-65).
The subject-matter of claim 5 therefore differs from this known portable transaction device in that it comprises :
-means for interacting with a secondary wireless device to provide a second authentication factor; and
-software to request a change in value of a prepaid card.
The present invention may therefore be regarded as solving the following two unrelated problems:
-provide reliable authentication of the user; and
-provide means for implementing financial card processing.
A solution to the first problem consisting in providing means for interacting with a secondary wireless device in order to allow secondary authentication is known from the prior art (see document D4, abstract, fig. 1, col. 11, lines 20-24 and lines 34-40) and applying this known solution to the portable transaction device disclosed in document D1, in order to solve the problem posed, would be obvious to the person

skilled in the art.
With regard to the second problem, given that the portable transaction device disclosed in document D1 is employable with calling cards (col. 11, lines 52-57) which are the most common example of a prepaid card, the possibility to provide software means for changing the value of such cards would be obvious to the skilled person.
Thus, the subject matter of claim 5 does not involve an inventive step in the sense of Article 33(3)PCT.

3 Document D5 (WO03077473) discloses (comparing to claim 12) a portable transaction device comprising a user authentication component to allow a user to authenticate to the portable transaction device (p. 4, lines 14-21 and p. 22, lines 5-14 and p. 24, lines 9-10); a cellular telephone component (p. 6, lines 1-9 and lines 19-28); and a value transfer component to operatively interface to another portable transaction device to refresh the value in a card (in D5 this is the value of the received electronic cheques stored in the second SIM card, see p. 4, lines 23-28, p. 13, line 26 - p. 14, line 2, p. 15, lines 2-5 and p. 27, lines 7-15). Even if the second SIM card defined in document D5 is not considered as being equivalent to a "stored value card" (the term "stored value card" being interpreted as "a card storing given amount and used to make payments or withdraw cash"), providing payment functionality through the second cart in order to simplify the use of the amount stored in the card, would be immediately obvious to the person skilled in the art.

Note: According to D5 the second card is already used to make cash withdrawals, see p. 27, lines 7-15, thus the only distinguishing feature of a stored value card in comparison to the second card is its use for making payments.

The use of a card with a portable transaction device in order to make payments is well known from the prior art (see for example document D7, p. 12, lines 3-16, fig. 1 and fig. 3).
Thus, the subject matter of claim 12 does not involve an inventive step in the sense of Article 33(3)PCT.

4 Furthermore (comparing to claim 17), the financial card defined in document D5 is reprogrammable (p. 7, lines 3-27), the cellular telephone has an interface to communicate with the reprogrammable card (implicit in document D5, since the financial card is the SIM card of the cellular telephone, p. 6, lines 19, 28), and the cellular telephone includes a software component to request a change in value of a

financial account (p. 13, lines 5-18).
Thus, the subject-matter of claim 17 is not new in the sense of Article 33(2) PCT.

5 The features defined in dependent claims 3, 6-11, 13-16 and 18-20 relate to implementation details and/or represent straightforward possibilities which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill. None of these additional features in combination with the features of any claim to which the above-mentioned dependent claims refer, meets the requirements of the PCT with respect to inventive step (Article 33(3)PCT).

Re Item VII
Certain defects in the international application

Apparatus claims 1 and 5 have been drafted as separate independent claims, although they relate to much the same subject matter. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.
The same applies to apparatus claims 12 and 17.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/019988

A. CLASSIFICATION OF SUBJECT MATTER
G07F19/00 G07F7/10

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)
G06K G06F G07F

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 016 476 A (MAES ET AL) 18 January 2000 (2000-01-18) column 2, line 21 - column 4, line 22 column 4, line 65 - column 15, line 25 figures ----	1-11
Y	US 2003/220876 A1 (BURGER TODD O ET AL) 27 November 2003 (2003-11-27) page 5, paragraph 93 - page 22, paragraph 313 figures 1-11 ----	1-11
Y	US 2003/080183 A1 (RAJASEKARAN SANGUTHEVAR ET AL) 1 May 2003 (2003-05-01) page 1, paragraph 2 - page 3, paragraph 19 page 3, paragraph 35 - page 4, paragraph 41 figures 4,5 ----	1-11
	-/--	

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in 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 document 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
2 December 2005	16 DEC 2005

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Rachkov, V

Form PCT/ISA/210 (second sheet) (January 2004)

Samsung Exhibit 1009
Page 180 of 309

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2005/019988

Box II Observations where certain claims were found unsearchable (Continuation of item 2 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 III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. [X] 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.

[X] No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11

A portable transaction device comprising means for secondary authentication and software for changing the value of a pre-paid card

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2. claims: 12-20

A portable transaction device and a transaction system comprising a cellular telephone used in financial transactions involving communication with other entities

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/019988

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 291 748 A (ALCATEL) 12 March 2003 (2003-03-12) abstract column 2, paragraph 6 - column 4, paragraph 13 figure 1	3,5
X	WO 03/077473 A (BEAMTRUST A/S; ANDERSSON, STEN; KAARLE, PETER; KAPNOULA, ANNA; ELGAARD) 18 September 2003 (2003-09-18) page 6, line 1 - page 15, line 5 page 21, line 20 - page 27, line 20 figures 1,2	12-20
X	EP 1 178 450 A (VAZVAN, BEHRUZ) 6 February 2002 (2002-02-06) column 6, paragraph 15 - column 10, paragraph 24 figures	12-20
X	WO 2004/012352 A (WAY SYSTEMS, INC; GOLDTHWAITE, SCOTT; GRAYLIN, WILLIAM) 5 February 2004 (2004-02-05) page 2, line 29 - page 5, line 27 page 9, line 12 - page 12, line 31 figures 1,3,4	12-20
X	US 2004/077372 A1 (HALPERN JOHN W) 22 April 2004 (2004-04-22) abstract page 3, paragraph 37 - page 4, paragraph 53	17-20

Form PCT/ISA/210 (continuation of second sheet) (January 2004)

Samsung Exhibit 1009
Page 183 of 309

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US2005/019988

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6016476 A	18-01-2000	CZ 20000470 A3	17-03-2004
		DE 69828291 D1	27-01-2005
		EP 1004099 A1	31-05-2000
		WO 9908238 A1	18-02-1999
		HU 0004470 A2	28-05-2001
		IL 130068 A	12-01-2003
		JP 3476189 B2	10-12-2003
		JP 2001512876 T	28-08-2001
		PL 338353 A1	23-10-2000
US 2003220876 A1	27-11-2003	NONE	
US 2003080183 A1	01-05-2003	WO 03038719 A1	08-05-2003
EP 1291748 A	12-03-2003	US 2003048174 A1	13-03-2003
WO 03077473 A	18-09-2003	AU 2003218626 A1	22-09-2003
		CN 1653751 A	10-08-2005
		EP 1483866 A1	08-12-2004
		US 2005182710 A1	18-08-2005
EP 1178450 A	06-02-2002	NONE	
WO 2004012352 A	05-02-2004	AU 2003256717 A1	16-02-2004
US 2004077372 A1	22-04-2004	WO 02071311 A2	12-09-2002
		EP 1366616 A2	03-12-2003

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 115.003WO1	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2005/022993	International filing date *(day/month/year)* 03 June 2005 (03.06.2005)	Priority date *(day/month/year)* 03 June 2004 (03.06.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant TYFONE, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 04 December 2006 (04.12.2006)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Philippe Becamel e-mail: pt12@wipo.int

Form PCT/IB/373 (January 2004)

15/12/05 PU12

PATENT COOPERATION TREATY

REC'D 19 OCT 2005
WIPO PCT

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

15/12

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)* see form PCT/ISA/210 (second sheet)	
Applicant's or agent's file reference see form PCT/ISA/220	**FOR FURTHER ACTION** See paragraph 2 below
International application No. PCT/US2005/022993	International filing date *(day/month/year)* 03.06.2005
Priority date *(day/month/year)* 03.06.2004	
International Patent Classification (IPC) or both national classification and IPC G07F19/00, G07F7/10	
Applicant TYFONE, INC.	

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

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 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 usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed 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 three 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:

European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized Officer

Rachkov, V

Telephone No. +31 70 340-4953

Form (PCT/ISA/237) (Cover Sheet) (January 2004)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2005/022993

Box No. I Basis of the 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 the 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/US2005/022993

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)	Yes:	Claims	3, 5-20
	No:	Claims	1,2,4
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-20
Industrial applicability (IA)	Yes:	Claims	1-20
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following documents:
D1: US-A-6 016 476 (MAES ET AL) 18 January 2000 (2000-01-18)
D2: EP-A-1 291 748 (ALCATEL) 12 March 2003 (2003-03-12)

2 The present application does not meet the criteria of Article 33(1) PCT for the following reasons:

2.1 Document D1 discloses (comparing to claim 1) a portable transaction device (fig. 1) having a biometric scanner (col. 5, lines 54-60) and a transaction stripe that may be operatively engaged with a point of sale stripe reader (col. 5, lines 25-35, col. 6, lines 28-41 and fig. 1), where the portable transaction device is configured to combine biometric information with one or more additional authentication factors to secure financial transactions (col. 5, lines 54-67 and col. 10, lines 49-65).
Furthermore, the portable transaction device disclosed in document D1 comprises (comparing to claim 2) a transaction stripe which may be selectively inserted into and removed from the portable transaction device (col. 5, lines 25-35 and fig. 1) and (comparing to claim 4) controls to allow a user to select one of a plurality of financial cards with which to program the transaction stripe (col. 10, lines 29-48).
Thus, the subject-matter of claims 1, 2 and 4 is not new in the sense of Article 33(2) PCT.

2.2 The subject-matter of claims 3, 8 and 15 differs from the portable transaction device disclosed in document D1 (see 2.1) in that it comprises :
-wireless interface for interacting with a secondary wireless device to provide a second authentication factor.
The present invention may therefore be regarded as solving the problem of providing reliable authentication of the user.
Faced with this problem the person skilled in the art would seek teaching and thus would consider document D2 which discloses a solution consisting in providing a

wireless interface for interacting with a secondary wireless device in order to allow secondary authentication (abstract, fig. 1, col. 11, lines 20-24 and lines 34-40). Given this information the person skilled in the art would adapt the portable transaction device disclosed in document D1 according to the solution disclosed in document D2, in order to solve the problem posed, thus arriving without the exercise of inventive skill (Article 33(3)PCT) at the subject matter of claims 3, 8 and 15.

2.3 The features defined in dependent claims 5-7, 9-14 and 16-20, relate to implementation details and/or represent straightforward possibilities which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill. None of these additional features in combination with the features of any claim to which the above-mentioned dependent claims refer, meets the requirements of the PCT with respect to inventive step (Article 33(3)PCT).

Re Item VII

Certain defects in the international application

Apparatus claims 1, 8 and 15 have been drafted as separate independent claims, although they relate to much the same subject matter. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/022993

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G07F19/00 G07F7/10

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06K G06F G07F

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

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 6 016 476 A (MAES ET AL) 18 January 2000 (2000-01-18) column 2, line 21 - column 4, line 22 column 4, line 65 - column 15, line 25 figures	1,2,4 3,5-20
Y	EP 1 291 748 A (ALCATEL) 12 March 2003 (2003-03-12) abstract column 2, paragraph 6 - column 4, paragraph 13 figure 1	3,5-20
X A	US 2003/220876 A1 (BURGER TODD O ET AL) 27 November 2003 (2003-11-27) page 5, paragraph 93 - page 22, paragraph 313 figures 1-11	1,2,4 3,5-20

-/--

[X] Further documents are listed in the continuation of box C. [X] Patent family members are listed in 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 document 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
12 October 2005	21/10/2005

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Rachkov, V

Form PCT/ISA/210 (second sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/022993

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/080183 A1 (RAJASEKARAN SANGUTHEVAR ET AL) 1 May 2003 (2003-05-01) page 1, paragraph 2 - page 3, paragraph 19 page 3, paragraph 35 - page 4, paragraph 41 figures 4,5	5-7
A	EP 1 161 060 A (NTT DOCOMO, INC) 5 December 2001 (2001-12-05) column 3, paragraph 7 - column 6, paragraph 23 figures 1-3	1,11-14, 17-19

Form PCT/ISA/210 (continuation of second sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US2005/022993

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 6016476	A	18-01-2000	CZ	20000470 A3	17-03-2004
			DE	69828291 D1	27-01-2005
			EP	1004099 A1	31-05-2000
			WO	9908238 A1	18-02-1999
			HU	0004470 A2	28-05-2001
			IL	130068 A	12-01-2003
			JP	3476189 B2	10-12-2003
			JP	2001512876 T	28-08-2001
			PL	338353 A1	23-10-2000
EP 1291748	A	12-03-2003	US	2003048174 A1	13-03-2003
US 2003220876	A1	27-11-2003	NONE		
US 2003080183	A1	01-05-2003	WO	03038719 A1	08-05-2003
EP 1161060	A	05-12-2001	AU	771857 B2	01-04-2004
			AU	1732901 A	18-06-2001
			BR	0009958 A	27-04-2004
			CA	2356371 A1	14-06-2001
			CN	1340267 A	13-03-2002
			CN	1620175 A	25-05-2005
			HU	0200051 A2	29-04-2002
			WO	0143404 A1	14-06-2001
			NO	20013734 A	30-07-2001
			PL	349257 A1	01-07-2002
			TW	479187 B	11-03-2002
			US	6910624 B1	28-06-2005

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 115.001WO1	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2006/006361	International filing date *(day/month/year)* 21 February 2006 (21.02.2006)	Priority date *(day/month/year)* 22 February 2005 (22.02.2005)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant TYFONE, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 8 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 28 August 2007 (28.08.2007)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Dorothée Mülhausen e-mail: pt01.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)* see form PCT/ISA/210 (second sheet)	
Applicant's or agent's file reference see form PCT/ISA/220	**FOR FURTHER ACTION** See paragraph 2 below
International application No. PCT/US2006/006361	International filing date *(day/month/year)* 21.02.2006
Priority date *(day/month/year)* 22.02.2005	
International Patent Classification (IPC) or both national classification and IPC INV. G06K19/073	
Applicant TYFONE, INC.	

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

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 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 usually 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:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Beatty, John Telephone No. +49 89 2399-7562

Form (PCT/ISA/237) (Cover Sheet) (April 2005)

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. 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:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic 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:

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)	Yes:	Claims	1-8,11-14,18-20
	No:	Claims	9,10,15-17
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-20
Industrial applicability (IA)	Yes:	Claims	1-20
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Documents

Reference is made to the following documents:

D1: GB-A-2 316 908 (JOHN COWLING) 11 March 1998 (1998-03-11)
D2: US 2004/087339 A1 (GOLDTHWAITE SCOTT ET AL) 6 May 2004 (2004-05-06)
D3: US-B1-6 721 196 (GRASSL THOMAS) 13 April 2004 (2004-04-13)
D4: WO 96/26500 A (PEEK, GARRY) 29 August 1996 (1996-08-29)

2. Article 6 PCT

The subject-matter of claim 1 defines a memory card in part through its compatibility with a memory card slot in a mobile phone. However, the memory card slot in the mobile phone is not defined by any technical feature. Therefore, this feature of the memory card is unclear. For the purposes of the search, this feature has therefore been considered as being a standard card wherein the mobile phone has a standard card interface.

3. Article 33(2) PCT

3.1 Independent Claim 9

The subject-matter of independent claim 9 is not new for the following reasons.

The document D4 discloses (the references in parentheses applying to this document):

An apparatus (figure 1) comprising:

means for communicating through a memory card slot in an electronic device (standard magcard reader in combination with a personal computer; figure 5; page

7, lines 4-24);
means for producing at least one time-varying magnetic field to represent financial transaction data (page 7, lines 11-14; page 6, lines 7-16); and
means for storing the financial transaction data (personal computer; page 7 last paragraph).

3.2 Independent Claim 15

The subject-matter of independent claim 15 is not new for the following reasons.

The document D4 discloses (the references in parentheses applying to this document):

An electronic transaction card comprising:

a memory card slot transaction interface (magnetic stripe; figures 3 and 5; page 7, lines 4-17); and
circuitry for producing a time-varying magnetic field compatible with a magnetic card reader (figure 5; page 7, lines 4-17).

3.3 Dependent Claim 10

The subject-matter of dependent claim 10 is not new since personal computers may at any time comprise software to be installed upon them.

3.4 Dependent Claims 16-17

The subject-matter of dependent claims 16-17 is not new over D4. See D4, page 7, line 4 - page 10, line 18.

4. Article 33(3) PCT

4.1 Independent Claim 1

The document D1 discloses a memory card (figure 1; page 2, paragraph 2 - page 5, paragraph 4) compatible with a memory card slot (page 4, paragraph 3), the memory card including non-volatile memory accessible by a device (ROM (12);

page 2, paragraph 2), a point-of -sale interface to communicate with a point-of-sale terminal (magnetic stripe; page 2, paragraph 4), and second non-volatile memory to hold financial transaction data (1 Mb Flash ROM (14); page 2, paragraph 4).

Thus, the memory card claimed differs from that of D1 in that:

i) The memory card is accessible by a mobile phone via the memory card slot being in a mobile phone; and
ii) the second memory is volatile memory as opposed to non-volatile memory.

The two features do not appear to combine to solve any particular problem but rather are directed at two separate respective problems namely:

i) How to enable a mobile phone to read data from a card.
ii) How to ensure financial transaction data is accessed rapidly.

With respect to problem i), the use of memory card slots is known in mobile phones (see D2, Abstract) and therefore the skilled person when presented with the task of enabling a mobile phone to read data from the card of D1 would consider it a normal design choice to provide the mobile phone with an appropriate card reader.

With respect to problem ii), the skilled person would be aware of that the contents of a Random Access Memory (RAM), which is volatile memory, can be accessed rapidly by storing said data in a volatile memory. He would be aware that a semiconductor memory chip for a smart card may comprise both volatile and non-volatile memory (see D3, abstract) and would therefore store data in either a volatile or non-volatile memory according to design choice in order to provide the desired function.

Thus, the skilled person would arrive at the subject-matter of claim 1 without making an inventive step.

4.2 Dependent Claims 2-8,11-14,18-20

The skilled person when starting from D1 as the closest prior art and with

knowledge of the documents D2-D4 would solve the respective problem posed without making an inventive step. See the relevant citations in the International Search Report.

80150·001W01

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
LEMOINE PATENT SERVICES
Attn. Lemoine, Dana B.
PortfolioIP
P.O. Box 52050
Minneapolis MN 55402
ETATS-UNIS D'AMERIQUE

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)

Applicant's or agent's file reference 115.001WO1	Date of mailing *(day/month/year)* 22/09/2006
	FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/US2006/006361	International filing date *(day/month/year)* 21/02/2006
Applicant TYFONE, INC.	

1. [x] 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, Fascimile No.: (41-22) 338.82.70

   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 International Searching Authority European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Roger Thomas

INTELLEWIP
SEP 26 2006
RECEIVED

Form PCT/ISA/220 (October 2005) *(See notes on accompanying sheet)*

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims,description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume I/A, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

Samsung Exhibit 1009
Page 203 of 309

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
115.001WO1		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US2006/006361	21/02/2006	22/02/2005
Applicant		
TYFONE, INC.		

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.

[X] 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:
      [X] the international application in the language in which it was filed
      [ ] a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. [ ] 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**,
   [X] 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**,
   [X] 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
      [X] as suggested by the applicant
      [ ] as selected by this Authority, because the applicant failed to suggest a figure
      [ ] as selected by this Authority, because this figure better characterizes the invention
   b. [ ] none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/006361

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06K19/073

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)
G06Q G06K G07C

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 316 908 A (JOHN * COWLING) 11 March 1998 (1998-03-11) page 2, paragraph 2 - page 5, paragraph 4; figure 1	1
Y		2-8, 11-14, 19,20
A	US 2004/087339 A1 (GOLDTHWAITE SCOTT ET AL) 6 May 2004 (2004-05-06) abstract	1-8, 15-20
A	US 6 721 196 B1 (GRASSL THOMAS) 13 April 2004 (2004-04-13) abstract	1-8,19, 20

-/--

[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 document 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
11 September 2006	22/09/2006

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Beatty, John

1

Form PCT/ISA/210 (second sheet) (April 2005)

Samsung Exhibit 1009
Page 205 of 309

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/006361

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96/26500 A (PEEK, GARRY) 29 August 1996 (1996-08-29) page 6, line 7 - page 10, line 18	9,10,15, 17
Y	the whole document	2-8, 11-14, 19,20

1

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2006/006361

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2316908 A	11-03-1998	NONE	
US 2004087339 A1	06-05-2004	AU 2003288963 A1	07-06-2004
		EP 1563697 A2	17-08-2005
		WO 2004043048 A2	21-05-2004
US 6721196 B1	13-04-2004	AT 239296 T	15-05-2003
		AU 5683500 A	31-01-2001
		BR 0011868 A	09-04-2002
		CA 2377175 A1	04-01-2001
		CN 1358315 A	10-07-2002
		DE 19928733 A1	04-01-2001
		WO 0101418 A1	04-01-2001
		EP 1198797 A1	24-04-2002
		ES 2193968 T3	16-11-2003
		JP 2003503834 T	28-01-2003
WO 9626500 A	29-08-1996	AU 4498296 A	11-09-1996

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2006/006361	21.02.2006	22.02.2005

International Patent Classification (IPC) or both national classification and IPC
INV. G06K19/073

Applicant
TYFONE, INC.

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

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 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 usually 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:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Beatty, John Telephone No. +49 89 2399-7562

Form (PCT/ISA/237) (Cover Sheet) (April 2005)

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. 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:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic 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:

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)	Yes:	Claims	1-8,11-14,18-20
	No:	Claims	9,10,15-17
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-20
Industrial applicability (IA)	Yes:	Claims	1-20
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Documents

Reference is made to the following documents:

D1: GB-A-2 316 908 (JOHN COWLING) 11 March 1998 (1998-03-11)
D2: US 2004/087339 A1 (GOLDTHWAITE SCOTT ET AL) 6 May 2004 (2004-05-06)
D3: US-B1-6 721 196 (GRASSL THOMAS) 13 April 2004 (2004-04-13)
D4: WO 96/26500 A (PEEK, GARRY) 29 August 1996 (1996-08-29)

2. Article 6 PCT

The subject-matter of claim 1 defines a memory card in part through its compatibility with a memory card slot in a mobile phone. However, the memory card slot in the mobile phone is not defined by any technical feature. Therefore, this feature of the memory card is unclear. For the purposes of the search, this feature has therefore been considered as being a standard card wherein the mobile phone has a standard card interface.

3. Article 33(2) PCT

3.1 Independent Claim 9

The subject-matter of independent claim 9 is not new for the following reasons.

The document D4 discloses (the references in parentheses applying to this document):

An apparatus (figure 1) comprising:

means for communicating through a memory card slot in an electronic device (standard magcard reader in combination with a personal computer; figure 5; page

7, lines 4-24);
means for producing at least one time-varying magnetic field to represent financial transaction data (page 7, lines 11-14; page 6, lines 7-16); and
means for storing the financial transaction data (personal computer; page 7 last paragraph).

3.2 Independent Claim 15

The subject-matter of independent claim 15 is not new for the following reasons.

The document D4 discloses (the references in parentheses applying to this document):

An electronic transaction card comprising:

a memory card slot transaction interface (magnetic stripe; figures 3 and 5; page 7, lines 4-17); and
circuitry for producing a time-varying magnetic field compatible with a magnetic card reader (figure 5; page 7, lines 4-17).

3.3 Dependent Claim 10

The subject-matter of dependent claim 10 is not new since personal computers may at any time comprise software to be installed upon them.

3.4 Dependent Claims 16-17

The subject-matter of dependent claims 16-17 is not new over D4. See D4, page 7, line 4 - page 10, line 18.

4. Article 33(3) PCT

4.1 Independent Claim 1

The document D1 discloses a memory card (figure 1; page 2, paragraph 2 - page 5, paragraph 4) compatible with a memory card slot (page 4, paragraph 3), the memory card including non-volatile memory accessible by a device (ROM (12);

page 2, paragraph 2), a point-of -sale interface to communicate with a point-of-sale terminal (magnetic stripe; page 2, paragraph 4), and second non-volatile memory to hold financial transaction data (1 Mb Flash ROM (14); page 2, paragraph 4).

Thus, the memory card claimed differs from that of D1 in that:

i) The memory card is accessible by a mobile phone via the memory card slot being in a mobile phone; and
ii) the second memory is volatile memory as opposed to non-volatile memory.

The two features do not appear to combine to solve any particular problem but rather are directed at two separate respective problems namely:

i) How to enable a mobile phone to read data from a card.
ii) How to ensure financial transaction data is accessed rapidly.

With respect to problem i), the use of memory card slots is known in mobile phones (see D2, Abstract) and therefore the skilled person when presented with the task of enabling a mobile phone to read data from the card of D1 would consider it a normal design choice to provide the mobile phone with an appropriate card reader.

With respect to problem ii), the skilled person would be aware of that the contents of a Random Access Memory (RAM), which is volatile memory, can be accessed rapidly by storing said data in a volatile memory. He would be aware that a semiconductor memory chip for a smart card may comprise both volatile and non-volatile memory (see D3, abstract) and would therefore store data in either a volatile or non-volatile memory according to design choice in order to provide the desired function.

Thus, the skilled person would arrive at the subject-matter of claim 1 without making an inventive step.

4.2 Dependent Claims 2-8,11-14,18-20

The skilled person when starting from D1 as the closest prior art and with

knowledge of the documents D2-D4 would solve the respective problem posed without making an inventive step. See the relevant citations in the International Search Report.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 115.002WO1	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2006/013603	International filing date *(day/month/year)* 07 April 2006 (07.04.2006)	Priority date *(day/month/year)* 07 April 2005 (07.04.2005)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant TYFONE, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 09 October 2007 (09.10.2007)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Beate Giffo-Schmitt e-mail: pt03.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2006/013603	07.04.2006	07.04.2005

International Patent Classification (IPC) or both national classification and IPC
INV. G07F7/10 G07F7/08 G06K19/077

Applicant
TYFONE, INC.

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

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 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 usually 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:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Mülthaler, E Telephone No. +49 89 2399-7625

Form (PCT/ISA/237) (Cover Sheet) (April 2005)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2006/013603

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. 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:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic 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:

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)	Yes:	Claims	
	No:	Claims	1-25
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-25
Industrial applicability (IA)	Yes:	Claims	1-25
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item VIII

Certain observations on the international application

The application contains more than one independent claim in the same category without meeting one of the following points: (a) a plurality of interrelated products (such as a plug and a socket), (b) different uses of a product, or (c) alternative solutions to a particular problem which cannot be covered by a single claim. None of this applies to the present application. Independent claims 1, 9, 15 and 20 are all apparatus/system claims disclosing the same subject-matter.

Moreover, the set of claims should be formulated concisely. A diversity of wording for defining one and the same invention should be avoided in order not to render the claims inconsistent with each other and thus unclear.

Consequently, in the present case, it is appropriate to use only one independent claim, namely one for an apparatus/system.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1: WO 98/12674 A (WAVE HOLDINGS LIMITED; WHITE, MARTIN, DAVID; FIELD, JOHN, DESMOND) 26 March 1998 (1998-03-26)

D2: EP-A-1 117 068 (C. MEDIA CO. LTD; ITOCHU CORPORATION) 18 July 2001 (2001-07-18)

D3: EP-A-1 014 290 (NOKIA CORPORATION; NOKIA MOBILE PHONES LTD) 28 June 2000 (2000-06-28)

D4: US-B1-6 189 786 (ITOU SHINJU ET AL) 20 February 2001 (2001-02-20)

D5: WO 00/14678 A (IC TV INTERACTIVE CYBER TELEVISION INC; COMBALUZIER, PIERRE, MICHEL) 16 March 2000 (2000-03-16)

The present application does not meet the criteria of Article 33(1) PCT, because the

subject-matter of claims 1, 9, 15 and 20 is not new in the sense of Article 33(2) PCT.

1. Independent claim 1:
The document D1 discloses (the references in parentheses applying to this document):
An apparatus (fig. 1) comprising:
- a body portion having a contour to receive an intelligent electronic device (fig. 1: ref. 14 and fig. 8b);
- a first interface to provide communication with the electronic device (fig. 1: ref. 14 and fig. 8b) and;
- a second interface to provide communication with an electronic transaction card (fig. 1: ref.25 and figure 5)

Therefore, the subject-matter of independent claim 1 is **not new (Article 33(2) PCT)**.

2. Independent claim 9:
Document D2 discloses (the references in parentheses applying to this document):
A sleeve to provide communication between a handheld intelligent electronic device and an electronic transaction card (figure 12c: ref. J1), the sleeve comprising:
- an add-on slot to receive the electronic transaction card (fig. 12c: ref. 85); and
- an interface to communicate with the handheld intelligent electronic device (fig. 12c: ref. D1)

Therefore, the subject-matter of independent claim 9 is **not new (Article 33(2) PCT)**.

3. Independent claims 15 and 20:
The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claims 15 and 20 which are also considered not new.

4. Dependent claims:
Dependent do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, see documents D1-D5 and the corresponding passages cited in the search report.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/013603

A. CLASSIFICATION OF SUBJECT MATTER
INV. G07F7/10 G07F7/08 G06K19/077

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)
G07F G06K

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98/12674 A (WAVE HOLDINGS LIMITED; WHITE, MARTIN, DAVID; FIELD, JOHN, DESMOND) 26 March 1998 (1998-03-26) abstract; claims 1,8; figures 1,2,4,5,7,8 page 4, line 64 - page 6, line 120 page 7, line 133 - page 9, line 164 page 11, line 203 - line 206 page 18, line 344 - page 20, line 397	1-25
X	EP 1 117 068 A (C. MEDIA CO. LTD; ITOCHU CORPORATION) 18 July 2001 (2001-07-18) column 19, line 19 - line 49; figure 12c	1-25
X	EP 1 014 290 A (NOKIA CORPORATION; NOKIA MOBILE PHONES LTD) 28 June 2000 (2000-06-28) abstract; claims 1,4,5,8; figure 6	1

-/--

[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 document 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
22 August 2006	01/09/2006

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax. (+31-70) 340-3016	Mülthaler, E

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/013603

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 189 786 B1 (ITOU SHINJU ET AL) 20 February 2001 (2001-02-20) the whole document	1
X	WO 00/14678 A (IC TV INTERACTIVE CYBER TELEVISION INC; COMBALUZIER, PIERRE, MICHEL) 16 March 2000 (2000-03-16) the whole document	9,15
Y	EP 1 189 465 A (SONY DEUTSCHLAND GMBH) 20 March 2002 (2002-03-20) the whole document	1-25
Y	DE 100 54 890 A1 (SCHNEIDER, BERND) 25 April 2002 (2002-04-25) the whole document	1-25
Y	US 2002/130187 A1 (BERG JON N ET AL) 19 September 2002 (2002-09-19) the whole document	1-25
Y	EP 0 818 757 A (AT&T CORP) 14 January 1998 (1998-01-14) abstract; figures 2-5 column 4, line 14 - column 5, line 12	1-25
A	US 6 250 557 B1 (FORSLUND PÄR ET AL) 26 June 2001 (2001-06-26) column 2, line 39 - line 47 column 3, line 19 - line 34 column 3, line 56 - column 4, line 22	1-25
A	DE 36 32 294 A1 (SIEMENS AG) 7 April 1988 (1988-04-07) the whole document	1

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2006/013603

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9812674 A	26-03-1998	AU 728907 B2	18-01-2001
		AU 4311397 A	14-04-1998
		BR 9711514 A	18-01-2000
		CA 2266373 A1	26-03-1998
		CN 1238055 A	08-12-1999
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		JP 2001500652 T	16-01-2001
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		US 7051933 B1	30-05-2006
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		US 6705529 B1	16-03-2004
US 6189786 B1	20-02-2001	NONE	
WO 0014678 A	16-03-2000	AU 5367699 A	27-03-2000
EP 1189465 A	20-03-2002	NONE	
DE 10054890 A1	25-04-2002	NONE	
US 2002130187 A1	19-09-2002	AT 247313 T	15-08-2003
		AU 1491901 A	23-04-2001
		DE 60004556 D1	18-09-2003
		DE 60004556 T2	17-06-2004
		EP 1226558 A1	31-07-2002
		FR 2799860 A1	20-04-2001
		WO 0127885 A1	19-04-2001
		US 6394343 B1	28-05-2002
EP 0818757 A	14-01-1998	CA 2207519 A1	12-01-1998
		JP 10136086 A	22-05-1998
		US 5787154 A	28-07-1998
US 6250557 B1	26-06-2001	AU 766103 B2	09-10-2003
		AU 5767299 A	14-03-2000
		BR 9913470 A	05-06-2001
		CN 1313977 A	19-09-2001
		EE 200100109 A	17-06-2002
		EP 1105852 A1	13-06-2001
		HK 1041084 A1	08-10-2004
		JP 2004500607 T	08-01-2004
		WO 0011624 A1	02-03-2000
DE 3632294 A1	07-04-1988	NONE	

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 115.012WO1	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2006/027847	International filing date *(day/month/year)* 18 July 2006 (18.07.2006)	Priority date *(day/month/year)* 18 July 2005 (18.07.2005)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant TYFONE, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 10 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☒	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☒	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☒	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 22 January 2008 (22.01.2008)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Yoshiko Kuwahara e-mail: pt07.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2006/027847	18.07.2006	18.07.2005

International Patent Classification (IPC) or both national classification and IPC
INV. G06K19/06 G06K19/07

Applicant
TYFONE, INC.

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

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 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 usually 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 notifed 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:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Berger, Christian Telephone No. +49 89 2399-2689

Form (PCT/ISA/237) (Cover Sheet) (April 2005)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2006/027847

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. 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:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic 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:

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of

☐ the entire international application

☒ claims Nos. 13-23

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international search *(specify)*:

☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. are so unclear that no meaningful opinion could be formed *(specify)*:

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed *(specify)*:

☒ no international search report has been established for the whole application or for said claims Nos. 13-23

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

- ☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.
- ☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.
- ☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rules 13*ter*.1(a) or (b).

☐ a meaningful opinion could not be formed without the tables related to the sequence listings; the applicant did not, within the prescribed time limit, furnish such tables in electronic form complying with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions, and such tables were not available to the International Searching Authority in a form and manner acceptable to it.

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in electronic form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See Supplemental Box for further details

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has, within the applicable time limit:

   ☐ paid additional fees

   ☐ paid additional fees under protest and, where applicable, the protest fee

   ☐ paid additional fees under protest but the applicable protest fee was not paid

   ☒ not paid additional fees

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

   see separate sheet

4. Consequently, this report has been established in respect of the following parts of the international application:

   ☐ all parts.

   ☒ the parts relating to claims Nos. 1-12

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)	Yes:	Claims	1-12
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-12
Industrial applicability (IA)	Yes:	Claims	1-12
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item IV.

The separate inventions/groups of inventions are:

Claims 1 - 12:
Independent apparatus claim 1 claims an electronic stripe card comprising a conductive path with two portions in sufficient distance to each other in order to allow the first portion to mimic a magnetic track without interference from a magnetic field from the second portion.
Independent apparatus claim 4 claims an electronic stripe card comprising two layers and a conductive path alternating between the two layers wherein the two path portions on the respective layers are in sufficient distance to each other in order to avoid magnetic interference.
The claims concern the problem of how to provide a magnetic track mimic using less material.

Claims 13 - 23:
Independent apparatus claim 13 claims an electronic stripe card having two conductive paths, each path to mimic a track in a magnetic card, further having a swipe sensor and an interleaved track driver circuit.
Independent method claim 19 claims a method comprising the step of detecting a swipe by swipe sensor and the step of interleaved driving first and second conductive paths to mimic a respective magnetic track.
Both claims concern the problem of how to save power in the reading mode and how to eliminate cross talk between two tracks.

They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

Document WO2005/027030 (24.03.2005) shows in its figures 1 - 3 a magnetic stripe card having a conductive path for mimicking a magnetic track (cf. fig. 3A). Hence, the common features of the independent claims are known from the prior art. The remaining features of independent claims 1 and 4 on one hand and of independent claims 13 and 19 on the other hand concern mutually exclusive objective problems (cf. above claim analysis) and

their solutions (Rule 13.2 PCT).

Re Item V.

1 Reference is made to the following document:

D1 : WO 2005/027030 A (HUMAN TECHNOLOGIES INC [JP]; KUROKAWA FUJIO [JP]; HIGUCHI TSUYOSHI [JP) 24 March 2005 (2005-03-24)

2 INDEPENDENT CLAIM 1

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of claim 1 does not involve an inventive step in the sense of Article 33(3)PCT.

2.1.1 Document D1, which is considered to represent the most relevant state of the art to the subject matter of claim 1, discloses (the references in parentheses applying to this document) an electronic stripe card (1) comprising
a conductive path having first portions oriented to carry current in a "z" direction (cf. fig. 5: 133(13)) and having second portions oriented to carry current in a "-z" direction (135(13)),
wherein the first and second portions are separated (cf. fig. 5).

2.1.2 The subject-matter of independent claim 1 differs from the disclosure of D1 in that D1 does not explicitly state in its English abstract (the rest of the document being provided in Japanese) that the first and second portions are separated by a sufficient distance to allow a magnetic field created by the first portions to mimic a magnetic track without interference from a magnetic field created by the second portions.

2.1.3 Figures 3B, 4B and 5B of D1, however, provide a strong hint to the skilled person by the shown magnetic field lines that the distance between the upper

and the lower portion should be large enough in order avoid interference of the magnetic field of the upper portion by the lower portion, thereby arriving at the subject-matter of claim 1.

2.1.4 Therefore, the subject-matter of claim 1 does not involve an inventive step (Article 33(3) PCT).

3 INDEPENDENT CLAIM 4

3.1.1 Document D1, which is considered to represent the most relevant state of the art to the subject matter of claim 1, discloses (the references in parentheses applying to this document) an electronic stripe card (1) comprising
a top metal layer (cf. fig. 5: 133(13)) and a bottom metal layer (135(13)) without magnetic material therebetween, and
a conductive path alternating between the top metal layer and the bottom metal layer (cf. fig. 5A: the conductive path can be interpreted as alternating).

3.1.2 The subject-matter of independent claim 1 differs from the disclosure of D1 in that D1 does not explicitly state in its English abstract that the conductive path on the top metal layer is remote from the conductive path on the bottom metal layer to reduce magnetic flux interference.

3.1.3 For the same reasons as given in above paragraph 2.1.3 for claim 1 the subject-matter of claim 4 does not involve an inventive step (Article 33(3) PCT).

4 DEPENDENT CLAIMS 2, 3, 5 - 12

Dependent claims 2, 3 and 5 - 12 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(3) PCT).

Re Item VII.

5 Claims 2 and 3 are obviously erroneously dependent on claim 4 instead of being dependent on claim 1.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/027847

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06K19/06 G06K19/07

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)
G06K

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

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	WO 2005/027030 A (HUMAN TECHNOLOGIES INC [JP]; KUROKAWA FUJIO [JP]; HIGUCHI TSUYOSHI [JP) 24 March 2005 (2005-03-24) abstract figures 1-5,7,10,11	1-5 6-12
Y	WO 96/26500 A (PEEK GARRY [NZ]) 29 August 1996 (1996-08-29) page 1, line 20 - page 3, line 16 page 5, line 16 - page 10, line 11 claims 1,3 figures 2-4	6-12
A	US 6 039 260 A (EISELE RAYMUND [DE]) 21 March 2000 (2000-03-21) the whole document	1-12

-/--

[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 document 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
1 February 2007	29/03/2007

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Berger, Christian

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/027847

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 2004/095169 A2 (OSTERWEIL JOSEF [US]; SHADMON MOSHE [US]) 4 November 2004 (2004-11-04) abstract paragraph [0042] - paragraph [0056] figures	1-12

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/027847

Box II Observations where certain claims were found unsearchable (Continuation of item 2 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 III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

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.:

1-12

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-12

Independent apparatus claim 1 claims an electronic stripe card comprising a conductive path with two portions in sufficient distance to each other in order to allow the first portion to mimic a magnetic track without interference from a magnetic field from the second portion.
Independent apparatus claim 4 claims an electronic stripe card comprising two layers and a conductive path alternating between the two layers wherein the two path portions on the respective layers are in sufficient distance to each other in order to avoid magnetic interference.
The claims concern the problem of how to provide a magnetic track mimic using less material.

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2. claims: 13-23

Independent apparatus claim 13 claims an electronic stripe card having two conductive paths, each path to mimic a track in a magnetic card, further having a swipe sensor and an interleaved track driver circuit.
Independent method claim 19 claims a method comprising the step of detecting a swipe by swipe sensor and the step of interleaved driving first and second conductive paths to mimic a respective magnetic track.
Both claims concern the problem of how to save power in the reading mode and how to eliminate cross talk between two tracks.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2006/027847

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2005027030 A	24-03-2005	NONE	
WO 9626500 A	29-08-1996	AU 4498296 A	11-09-1996
US 6039260 A	21-03-2000	NONE	
WO 2004095169 A2	04-11-2004	NONE	

Form PCT/ISA/210 (patent family annex) (April 2005)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 115.019WO1	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2008/057588	International filing date *(day/month/year)* 20 March 2008 (20.03.2008)	Priority date *(day/month/year)* 30 March 2007 (30.03.2007)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant TYFONE, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 06 October 2009 (06.10.2009)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Nora Lindner e-mail: pt11.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
DANA LEMOINE
LEMOINE PATENT SERVICES
C/O INTELLEVATE
900 SECOND AVE SOUTH, SUITE 1700
MINNEAPOLIS, MN 55402

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	07 AUG 2008
Applicant's or agent's file reference 115.019WO1	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 08/57588	20 March 2008 (20.03.2008)	30 March 2007 (30.03.2007)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - G06F 12/00 (2008.04)
USPC - 711/103

Applicant TYFONE, INC.

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
- [X] 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	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	31 July 2008 (31.07.2008)	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (April 2007)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 08/57588

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

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

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:

   a. type of material

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing

      ☐ contained in the international application as filed

      ☐ filed together with the international application in electronic form

      ☐ furnished subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) 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.

5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 08/57588

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	None	YES
	Claims	1-26	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-26	NO
Industrial applicability (IA)	Claims	1-26	YES
	Claims	None	NO

2 Citations and explanations:

Claims 1-26 lack novelty under PCT article 33(2) as being anticipated by US 2005/0022002 A1 to Poisner.

As to claim 1, Poisner discloses a method comprising: receiving a memory access command, the memory access command including an address field and a data field (see para [0050]); comparing at least a portion of the data field to a predetermined data value to determine if there is a match ('the data field may contain one or more bits indicating whether the command is a protected command' see para [0050]-[0051]); if there is not a match, performing a memory access according to the memory access command (' If not, the command is determined to be directed to non-protected configuration space, and processing continues in FIG. 3B at point "B" of the flow chart' see Fig 3B, para [0049]); and if there is a match, diverting the memory access command for further interpretation (' If the command is determined to be a protected command, processing may continue in FIG. 3B at point "A" of the flow chart' see Fig 3B, para [0051]).

As to claim 2, Poisner discloses a method further comprising comparing the address field with a predetermined address value to determine if there is an address match, and diverting the memory access command only when there is also an address match ('After the command is detected by interface logic and the destination address of the command is decoded, it may be determined at block 310 whether the destination address is in a range of addresses designated as the configuration space' see Fig 3A, para [0047]).

As to claim 3, Poisner discloses a method wherein diverting the memory access command comprises passing at least some of the data field to a non-memory controller component for further interpretation (' Configuration "space" is a conceptual term that refers to the range(s) of addresses that are reserved for implementation in logic circuit 120 for various activities, with accesses that are targeted to any address within the configuration space being redirected to various portions of logic circuit 120 rather than to memory 140 or to input-output devices' see para [0011], para [0049]).

As to claim 4, Poisner discloses a method further comprising reading a password from the data field to authenticate access to the non-memory controller component ('The fifth, sixth, and seventh blocks (0400-06FF) may be used to hold one or more cryptographic keys, which may be used during protected processing for encrypting, decrypting, and/or validating data' see para [0041]).

As to claim 5, Poisner discloses an article having a machine readable medium with instructions stored thereon that when accessed result in a machine (see para [0008]): comparing data received with a memory write command to a predetermined data value to determine whether the memory write command should be interpreted as a memory write command or whether the memory write command should be interpreted as a command other than a memory write command ('Read or write commands to at least a portion of the addresses in the configuration space are redirected to configuration registers in logic circuit 120. In some embodiments, another portion of the addresses in the configuration space are used for commands that trigger some type of action within the logic circuit 120 rather than being used to store data in, or read data from, a register' see para [0011]).

As to claim 6, Poisner discloses an article wherein the instructions, when accessed, further result in the machine forwarding the memory write command to a memory controller component when the memory write command should be interpreted as a memory write command. (see para [0011]-[0013]).

As to claim 7, Poisner discloses an article wherein the instructions, when accessed, further result in the machine forwarding the memory write command to a non-memory controller component when the memory write command should be interpreted as a command other than a memory write command ('Configuration space may be implemented with addresses that would otherwise be part of memory address space or input-output (I/O) address space. Read or write commands to at least a portion of the addresses in the configuration space are redirected to configuration registers in logic circuit 120' see abstract, para [0010]-[0012]).

As to claim 8, Poisner discloses an article having a machine readable medium with instructions stored thereon (see para [0008]) that when accessed result in a machine: comparing an address field received with a memory write command to a predetermined address value to determine whether the memory write command should be interpreted as a memory write command or whether the memory write command should be interpreted as a command other than a memory write command ('the address itself may be sufficient to indicate whether the command is a protected command' see Fig 3A-3B, para [0049]-[0051]).

--(Continued in Supplemental Box)--

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 08/57588

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Box V. 2. Citations and explanations:

As to claim 9, Poisner discloses a method comprising populating fields in a memory write command to be sent to a memory card interface (interface logic) by populating at least a first portion of a data field with a data pattern to identify the memory write command as a command to be diverted for purposes other than a memory write ('the data field may contain one or more bits indicating whether the command is a protected command,' see para [0047], para [0050]).

As to claim 10, Poisner discloses a method further comprising prior to populating the fields, receiving a copy of the data pattern from a device coupled to the memory card interface ('placing predetermined data on the data lines' see para [0010]).

As to claim 11, Poisner discloses a method further comprising populating an address field with an address value to further identify the memory write command as a command to be diverted for purposes other than a memory write ('placing a predetermined address on the address lines' see para [0010]).

As to claim 12, Poisner discloses a method further comprising populating a second portion of the data field with a command index to specify a purpose other than a memory write ('For example, a command may set or clear a hardware flag, initiate a microcode sequence, or cause some other event to happen' see para [0053]).

As to claim 13, Poisner discloses a method further comprising populating a second portion of the data field with a password to authenticate access to a device coupled to the memory card interface ('The fifth, sixth, and seventh blocks (0400-06FF) may be used to hold one or more cryptographic keys, which may be used during protected processing for encrypting, decrypting, and/or validating data' see para [0041]).

As to claim 14, Poisner discloses a method further comprising: issuing the memory write command to a device coupled to the memory card interface followed by issuing a memory read command to the device coupled to the memory card interface ('in response to the address being directed to configuration space, determine which of the following actions is associated with that particular address and perform that action' see para [0018]).

As to claim 15, Poisner discloses an article having a machine readable medium with instructions stored thereon (see para [0008]) that when accessed result in a mobile computing device: accessing a non-memory control function in a device coupled to a memory card interface (interface logic) of the mobile computing device by populating a data field of a memory card write command with a data pattern to identify the memory card write command as a command to be diverted for a purpose other than a memory write ('the data field may contain one or more bits indicating whether the command is a protected command,' see para [0047], para [0050]).

As to claim 16, Poisner discloses an article wherein the instructions, when accessed, further result in the mobile computing device populating the data field with a password to authenticate access to the device coupled to the memory card interface ('The fifth, sixth, and seventh blocks (0400-06FF) may be used to hold one or more cryptographic keys, which may be used during protected processing for encrypting, decrypting, and/or validating data' see para [0041]).

As to claim 17, Poisner discloses an article wherein the instructions, when accessed, further result in the mobile computing device populating the data field with a command index to specify a purpose other than a memory write ('For example, a command may set or clear a hardware flag, initiate a microcode sequence, or cause some other event to happen' see para [0053]).

As to claim 18, Poisner discloses a memory card compatible device (see para [0008]) comprising: a host interface to receive memory write commands ('interface logic' see para [0047]); non-memory controller component coupled to the host interface to interpret data included within the memory write commands as non-memory related commands ('it may be determined at block 310 whether the destination address is in a range of addresses designated as the configuration space. If not, processing may proceed at block 315 in a manner labeled in FIG. 3A as "normal processing", which may be any processing not involving the configuration space' see para [0047]).

As to claim 19, Poisner discloses a memory card compatible device further comprising: non-volatile memory; a memory controller component coupled to the non-volatile memory; and a memory command routing component coupled to the host interface and the non-memory controller component, the memory command routing component including logic to determine whether to route a memory write command to the memory controller or the non-memory controller based on the data included within the memory write command ('placing predetermined data on the data lines' see para [0008], para [0010]).

As to claim 20, Poisner discloses a device comprising: a host interface compatible with a memory card interface of a mobile computing device ('computing devices', see Fig 1, para [0010], 'interface logic' see para [0047]); and a memory command routing component to interpret memory card write commands to determine whether the memory card write command should be diverted for a purpose other than a memory write based on at least a portion of the data to be written, wherein the memory command routing component is coupled to receive the memory card write command from the host interface ('After the command is detected by interface logic and the destination address of the command is decoded, it may be determined at block 310 whether the destination address is in a range of addresses designated as the configuration space', 'the data field may contain one or more bits indicating whether the command is a protected command' see para [0047]-[0050]).

--(Continued in Supplemental Box)--

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 08/57588

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:
Box V, 2. Citations and explanations:

As to claim 21, Poisner discloses a device further comprising: a memory controller component coupled to receive memory write commands from the memory command routing component (see para [0013]).

As to claim 22, Poisner discloses a device further comprising: a non-memory controller component coupled to receive diverted memory write commands from the memory command routing component ('Configuration "space" is a conceptual term that refers to the range(s) of addresses that are reserved for implementation in logic circuit 120 for various activities, with accesses that are targeted to any address within the configuration space being redirected to various portions of logic circuit 120 rather than to memory 140 or to input-output devices' see para [0011]).

As to claim 23, Poisner discloses a device comprising: a host interface compatible with a memory card interface of a mobile computing device (see para [0047]); and a memory command routing component to interpret memory card write commands to determine whether the memory card write command should be diverted for a purpose other than a memory write based on at least a portion of an address to be written, wherein the memory command routing component is coupled to receive the memory card write command from the host interface ('After the command is detected by interface logic and the destination address of the command is decoded, it may be determined at block 310 whether the destination address is in a range of addresses designated as the configuration space', 'the address itself may be sufficient to indicate whether the command is a protected command' see para [0047]-[0050]).

As to claim 24, Poisner discloses a method comprising: receiving, at a non-memory control component in a memory card compatible device, an activation code in a data field of a memory write command ; comparing the activation code to a known value to detect a match ('Microcode that initiates a command over processor bus 130 may identify the command as a protected command in various ways, including but not limited to:.. placing predetermined data on the data lines' see para [0008], para [0010]); and if there is a match, requesting a password to be used in subsequent authentications to the non-memory control component in a memory card compatible device ('The fifth, sixth, and seventh blocks (0400-06FF) may be used to hold one or more cryptographic keys, which may be used during protected processing for encrypting, decrypting, and/or validating data' see para [0041]).

As to claim 25, Poisner discloses a method further comprising receiving non-memory related commands hidden in the data field of memory write commands, wherein the non- memory related commands include the password ('cryptographic keys' see para [0041], para [0048]-[0050]).

As to claim 26, Poisner discloses a method further comprising receiving a plurality of activation codes, wherein each of the plurality of activation codes corresponds to the activation of a different non-memory control component in the memory card compatible device (' The fifth, sixth, and seventh blocks (0400-06FF) may be used to hold one or more cryptographic keys, which may be used during protected processing for encrypting, decrypting, and/or validating data. In one embodiment, this entire space may be implemented as read-only registers that hold a single embedded key, but other embodiments may implement this space in other ways' see para [0041]).

Claims 1-26 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 08/57588

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 12/00 (2008.04)
USPC - 711/103
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)
USPC: 711/103

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 711/100,103,159,203

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST(USPT,PGPB,EPAB,JPAB); DialogPRO; WIPO, EPO, CITESEER, Google patents, Google scholar Search Terms Used: memory card, Smart Media card, Memory Stick, PC card, Compact Flash card, Multi Media card, Secure Digital card, data field, address field, access command, write command, command, hidden, concealed, conceal, hide

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/0022002 A1 (POISNER) 27 January 2005 (27.01.2005) entire document especially Fig 3A-3B, abstract, para [0008]-[0013], para [0041], para [0047]-[0053].	1-26
A	US 2004/0064612 A1 (PINTO et al.) 01 April 2004 (01.04.2004) entire document	1-26

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

* 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
30 July 2008 (30.07.2008)	07 AUG 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2007)

P80150.028US1

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: DANA LEMOINE
LEMOINE PATENT SERVICES, PLLC
C/O CPA GLOBAL
P.O. BOX 52050
MINNEAPOLIS, MN 55402

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)

Applicant's or agent's file reference 115024WO1	Date of mailing *(day/month/year)*
	FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/US2010/025014	International filing date *(day/month/year)* 23 February 2010
Applicant TYFONE, INC.	

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

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

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

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

   For more detailed instructions, see 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. 571-273-3201	Authorized officer: Blaine R. Copenheaver Telephone No. 571-272-7774

Form PCT/ISA/220 (January 2004)

(See notes on accompanying sheet)

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APR 19 2010
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PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: DANA LEMOINE
LEMOINE PATENT SERVICES, PLLC
C/O CPA GLOBAL
P.O. BOX 52050
MINNEAPOLIS, MN 55402

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)

Applicant's or agent's file reference 115024WO1	Date of mailing *(day/month/year)* 15 APR 2010 **FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US2010/025014	International filing date *(day/month/year)* 23 February 2010
Applicant TYFONE, INC.	

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

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

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

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

   For more detailed instructions, see 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. 571-273-3201	Authorized officer: Blaine R. Copenheaver Telephone No. 571-272-7774

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 115024WO1	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2010/025014	International filing date *(day/month/year)* 23 February 2010	(Earliest) Priority Date *(day/month/year)* 24 February 2009
Applicant TYFONE, INC.		

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

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

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

1. **Basis of the report**

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

   ☒ the international application in the language in which it was filed.

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

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

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

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

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

4. With regard to the **title**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   ☒ the text is approved as submitted by the applicant.

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

6. With regard to the **drawings**,

   a. the figure of the **drawings** to be published with the abstract is Figure No. 4

   ☐ as suggested by the applicant.

   ☒ as selected by this Authority, because the applicant failed to suggest a figure.

   ☐ as selected by this Authority, because this figure better characterizes the invention.

   b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2010/025014

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06K 19/077 (2010.01)
USPC - 257/679
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - B42D 15/00; G06K 19/07, 19/077 (2010.01)
USPC - 235/380, 488, 492; 257/531, 679; 361/737

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/0168339 A1 (ARAI et al) 04 August 2005 (04.08.2005) entire document	1-23
A	US 2001/0002035 A1 (KAYANAKIS) 31 May 2001 (31.05.2001) entire document	1-23
A	US 6,588,660 B1 (BUESCHER et al) 08 July 2003 (08.07.2003) entire document	1-23
A	US 2007/0257797 A1 (RANCIEN et al) 08 November 2007 (08.11.2007) entire document	1-23

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

* 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
04 April 2010	15 APR 2010
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: DANA LEMOINE
LEMOINE PATENT SERVICES, PLLC
C/O CPA GLOBAL
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	15 APR 2010

Applicant's or agent's file reference	FOR FURTHER ACTION
115024WO1	See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2010/025014	23 February 2010	24 February 2009

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - G06K 19/077 (2010.01)
USPC - 257/679

Applicant TYFONE, INC.

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

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 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	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	04 April 2010	Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2009)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2010/025014

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

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

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

      ☐ on paper

      ☐ in electronic form

   b. (time)

      ☐ in the international application as filed

      ☐ together with the international application in electronic form

      ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2010/025014

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	8-23	YES
	Claims	1-7	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-23	NO
Industrial applicability (IA)	Claims	1-23	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-7 lack novelty under PCT Article 33(2) as being anticipated by Arai et al. (hereafter Arai).

Referring to claim 1, Arai discloses an inductive element (Para. [0082] - electromagnetic induction type and a non-contact type ID label using a coiled antenna) comprising: a bottom surface (10); and a plurality of layers (11, 15, 16, 24; Figs. 1A-3B) substantially parallel to the bottom surface (Figs. 1A-3B), the plurality of layers including a combination of electrically conductive material (18, 22 and 56 are all conductive) and electrically insulating material (27, 55 and 58 are all insulating) such that when bonded together the plurality of layers form at least one conductive coil (11, 13) having a field coupling surface area substantially perpendicular to the bottom surface (Paras. [0082] and [0088]; Figs. 1A-3B).

Referring to claim 2, Arai discloses the inductive element of claim 1, further comprising bonding areas on the bottom surface (Para. [0086]).

Referring to claim 3, Aral discloses the inductive element of claim 1, further wherein the plurality of layers include magnetic material forming a magnetic core within the at least one conductive coil (Para. [0088] – In the present embodiment mode, the antenna structure using an electromagnetic induction type is employed. However, any of an electromagnetic coupling type using mutual induction of a coil due to an AC magnetic field).

Referring to claim 4, Arai discloses a multilayer inductive coupling element (Para. [0082] - electromagnetic induction type and a non-contact type ID label using a coiled antenna) comprising: a lower layer (11) having at least one conductive surface trace with trace ends (12; Paras. [0073] and [0074]); at least one intermediate layer having conductive through-traces (21) at locations to electrically contact the trace ends on the lower layer (Figs. 4A-7C); and an upper layer having at least one conductive surface trace (21b) aligned to electrically contact the conductive through-traces (21c) to form a conductive coil (11, 12 and 13) having at least one turn (Figs. 1A-3B).

Referring to claim 5, Arai discloses the multilayer inductive coupling element of claim 4, further wherein the at least one intermediate layer (28) comprises magnetic material (Cl. 14 – filler is nickel, which is magnetic) positioned between the through traces (Fig. 2B).

Referring to claim 6, Arai discloses the multilayer inductive coupling element of claim 4, further wherein the lower layer (11) includes magnetic material (Cl. 12 – antenna is Ni, Fe or Co, all of which are magnetic; Cl. 14 – filler is nickel, which is magnetic) positioned beyond the trace ends (12; Fig. 2B).

Referring to claim 7, Arai discloses the multilayer inductive coupling element of claim 4, further comprising a bottom layer (28) beneath the lower layer (11; Fig. 2B), the bottom layer including magnetic material (Cl. 14 – filler is nickel, which is magnetic) to be positioned beneath the at least one conductive trace (12) in the lower layer (Fig. 2B).

Claims 8-23 lack an inventive step under PCT Article 33(3) as being obvious over Aral et al. (hereafter Arai).

Referring to claim 8, Arai discloses an electronic device comprising: a circuit board (Para. [0016]); a contactless communications device affixed to the circuit board (Para. [0008]), the contactless communications device having an antenna port (11, 12); and an inductive element affixed to the circuit board and electrically coupled to the antenna port, the inductive element having a conductive coil with a field coupling surface area substantially perpendicular to the circuit board (Para. [0082] - electromagnetic induction type and a non-contact type ID label using a coiled antenna), but fails to explicitly disclose of the circuit board comprising a memory card slot interface. Arai does, however, teach that the circuit board comprises a memory (Para. [0002]). Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a memory card slot interface on the circuit board of Arai, since the separating of parts which were once integral involves only routine skill in the art. The motivation being to allow the user the ability to separate the memory from the device for security and/or use in other applications.

Referring to claim 9, Arai discloses the electronic device of claim 8, further wherein the inductive element comprises a multilayer surface-mount inductor (11, 12 and 13; Para. [0082] - electromagnetic induction type and a non-contact type ID label using a coiled antenna; Figs. 1A-9B).

Referring to claim 10, Arai discloses the electronic device of claim 9, further wherein the multilayer surface-mount inductor (11, 12 and 13) is formed with layers substantially parallel to the circuit board (Figs. 1A-3B).

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2010/025014

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Referring to claim 11, Arai discloses the electronic device of claim 9, further wherein the multilayer surface-mount inductor (11, 12 and 13) is formed with layers substantially perpendicular to the circuit board (Figs. 4A-7C, where 11, 12 and 13 extend perpendicularly from 10).

Referring to claims 12-14, Arai discloses the electronic device of claim 8, but fails to explicitly disclose [Cl. 12] wherein the memory card slot interface comprises a Secure Digital (SD) compatible interface; [Cl. 13] wherein the memory card slot interface comprises a micro Secure Digital (SD) compatible interface; or [Cl. 14] wherein the memory card slot interface comprises a mini Secure Digital (SD) compatible interface. Arai does, however, teach that the circuit board comprises a memory (Para. [0002]). Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a memory card slot interface on the circuit board of Arai, and [Cl. 12] wherein the memory card slot interface comprises a Secure Digital (SD) compatible interface; [Cl. 13] wherein the memory card slot interface comprises a micro Secure Digital (SD) compatible interface; or [Cl. 14] wherein the memory card slot interface comprises a mini Secure Digital (SD) compatible interface, since the separating of parts which were once integral involves only routine skill in the art, and since Secure Digital (SD), micro Secure Digital (SD), and mini Secure Digital (SD) compatible interfaces are well-known in the art. The motivation being to allow the user the ability to separate the memory from the device for security and/or use in other applications.

Referring to claim 15, Arai discloses an apparatus comprising: a substrate having at least one surface (10), an inner edge (right edge of 10 in Fig. 2B), and an outer edge opposite (left edge of 10 in Fig. 2B) the inner edge; electrical contacts (11, 12) on the at least one surface (surface of 10) and situated along the inner edge (Figs. 1A-6B); and a conductive coil (11, 12 and 13) situated along the outer edge (Figs. 1A-6B), the conductive coil having a field coupling surface area substantially perpendicular to the at least one surface (Figs. 4A-7C, where 11, 12 and 13 extend perpendicularly from 10), but fails to explicitly disclose of said substrate comprising a memory card compatible substrate. Arai does, however, teach that the circuit board comprises a memory (Para. [0002]). Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a memory card slot interface on the circuit board of Arai, since the separating of parts which were once integral involves only routine skill in the art. The motivation being to allow the user the ability to separate the memory from the device for security and/or use in other applications.

Referring to claim 16, Arai discloses the apparatus of claim 15 wherein: the at least one surface includes a top surface (surface of 10 facing 28 in Fig. 2B) and a bottom surface (surface of 10 visible in Fig. 2B) substantially parallel to each other; and the electrical contacts (11, 12) are on the top surface, and the conductive coil (11, 12 and 13) is on the top surface (Fig. 6A).

Referring to claim 17, Arai discloses the apparatus of claim 15 wherein: the at least one surface includes a top surface (surface of 10 visible in 2B) and a bottom surface (surface of 10 facing 28 in Fig. 2B) substantially parallel to each other; and the electrical contacts (11) are on the top surface, and the conductive coil (11, 12 and 13) is on the bottom surface (Fig. 5B).

Referring to claim 18, Arai discloses the apparatus of claim 15 wherein the conductive coil comprises a multilayer surface-mount inductor (11, 12 and 13; Para. [0082] - electromagnetic induction type and a non-contact type ID label using a coiled antenna; Figs. 1A-9B).

Referring to claim 19, Arai discloses the apparatus of claim 18, further wherein the multilayer surface-mount inductor (11, 12 and 13) is formed with layers substantially parallel to the circuit board (Figs. 1A-3B).

Referring to claim 20, Arai discloses the apparatus of claim 18, further wherein the multilayer surface-mount inductor (11, 12 and 13) is formed with layers substantially perpendicular to the circuit board (Figs. 4A-7C, where 11, 12 and 13 extend perpendicularly from 10).

Referring to claim 21, Arai discloses an apparatus comprising: a substrate having at least one surface (10), an inner edge (right edge of 10 in Fig. 2B), and an outer edge opposite (left edge of 10 in Fig. 2B) the inner edge; electrical contacts (11, 12) on the at least one surface (surface of 10) and situated along the inner edge (Figs. 1A-6B); and a three dimensional conductive coil (11, 12 and 13) situated along the outer edge (Figs. 1A-6B), but fails to explicitly disclose of said substrate comprising a memory card compatible substrate. Arai does, however, teach that the circuit board comprises a memory (Para. [0002]). Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a memory card slot interface on the circuit board of Arai, since the separating of parts which were once integral involves only routine skill in the art. The motivation being to allow the user the ability to separate the memory from the device for security and/or use in other applications.

Referring to claim 22, Arai discloses the apparatus of claim 21, but fails to explicitly disclose wherein the apparatus has a micro secure digital (microSD) form factor. Arai does, however, teach that the circuit board comprises a memory (Para. [0002]). Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a memory card slot interface on the circuit board of Arai, and wherein the apparatus has a micro secure digital (microSD) form factor, since the separating of parts which were once integral involves only routine skill in the art, and since micro Secure Digital (SD) compatible interfaces are well-known in the art. The motivation being to allow the user the ability to separate the memory from the device for security and/or use in other applications.

Referring to claim 23, Arai discloses the apparatus of claim 22, further wherein the three dimensional conductive coil (11, 12 and 13) has a field coupling surface area substantially perpendicular to the at least one surface of the memory card (Figs. 4A-7C, where 11, 12 and 13 extend perpendicularly from 10; Para. [0002] regarding functions as a memory and includes card).

Claims 1-23 meet the criteria set out in PCT Article 33(4) and thus have industrial applicability because the subject matter claimed can be made or used in industry.

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*.

In these Notes, "Article," "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Annex B).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, International Phase, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet or sheets containing a complete set of claims in replacement of all the claims previously filed must be submitted.

Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively in Arabic numerals (Section 205(a)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

Samsung Exhibit 1009
Page 255 of 309

SEQUENCE LISTINGS AND TABLES RELATED THERETO IN INTERNATIONAL APPLICATIONS FILED IN THE U.S. RECEIVING OFFICE

The Administrative Instructions (AIs) under the Patent Cooperation Treaty (PCT), in force as of **July 1, 2009**, contain important changes relating to the manner of filing, and applicable fees for, sequence listings and/or tables related thereto (sequence-related tables) in international applications. The complete text may be accessed at http://www.wipo.int/pct/en/texts/index.htm.

Effective July 1, 2009, Part 8 and Annex C-*bis* will no longer form part of the AIs. Part 8 was introduced in 2001 as a temporary solution to problems arising from the filing of very large sequence listings on paper and provided for a *sequence listing forming part of the international application* to be filed in electronic form on physical medium (*e.g.*, CD), together with the remainder of the application on paper. In 2002, Part 8 was expanded to include sequence-related tables and Annex C-*bis* was added to provide technical requirements. All applicants may now file complete international applications in electronic form, eliminating the need for these temporary provisions.

I. AIS PART 8 AND ANNEX C-*BIS* DELETED AS OF JULY 1, 2009

A) **Sequence-related tables cannot be filed as a separate part of the description or in text format.** They must be provided as an integral part of the international application either:
- in PDF format as part of an international application filed in electronic form via EFS-Web; or
- on paper as part of an international application filed on paper.

B) A ***sequence listing forming part of an international application*** may be provided either:
- in electronic form, as part of an international application filed in electronic form via EFS-Web, in
  - Annex C/ST.25 text format (preferred), or
  - PDF format; or
- on paper as part of an international application filed on paper.

C) **A *sequence listing not forming part of the international application* (for search under PCT Rule 13*ter*) in Annex C/ST.25 text format**
- is not required where the *sequence listing forming part of the international application* was filed in Annex C/ST.25 text format as part of an international application filed in electronic form via EFS-Web
- is required for search where the *sequence listing forming part of the international application* was filed in PDF
- is required for search on physical medium (*e.g.*, CD) where the *sequence listing forming part of the international application* was filed on paper as part of an international application filed on paper.

II. CALCULATION OF THE INTERNATIONAL FILING FEE AND FEE REDUCTION UNDER AI § 707

A) **A sequence-related table** must form an integral part of the international application and will incur FULL page fees with no upper limit.

B) A ***sequence listing forming part of an international application*** filed:
- via EFS-Web in Annex C/ST.25 text format will incur NO page fees;
- on paper or in PDF format will incur FULL page fees with no upper limit.

III. AVAILABILITY OF SEQUENCE LISTINGS SUBMITTED FOR SEARCH UNDER PCT RULE *13TER*

International Searching Authorities will be required to transmit to the International Bureau a copy of an Annex C/ST.25 text format sequence listing provided for search under PCT Rule 13*ter*. Any such sequence listing will be made available on PATENTSCOPE® (*sequence listings forming part of the international application* are already available).

IV. JULY 2009 REQUEST (PCT/RO/101)

The Request now has two options for the last sheet: one for paper filings; and one for EFS-Web filings. The July 2009 Request may be accessed at http://www.wipo.int/pct/en/forms/index.htm.

Electronic Patent Application Fee Transmittal	
Application Number:	12188346
Filing Date:	08-Aug-2008
Title of Invention:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT
First Named Inventor/Applicant Name:	Siva G. Narendra
Filer:	Dana B. LeMoine/Christine Hartness
Attorney Docket Number:	115.022US1
Filed as Large Entity	

Utility under 35 USC 111(a) Filing Fees

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

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

Transaction History Date 2011-04-25
Date information retrieved from USPTO Patent Application Information Retrieval (PAIR) system records at www.uspto.gov

Notice of Allowability	Application No.	Applicant(s)	
	12/188,346	NARENDRA ET AL.	
	Examiner	Art Unit	
	Toan N. Pham	2612	

-- 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 *amendment filed on 2/28/11*.

2. ☒ The allowed claim(s) is/are *1-10 and 12-16*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

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

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

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

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Toan N Pham/
Primary Examiner, Art Unit 2612
4/19/11

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

Application Number	12188346
Filing Date	2008-08-08
First Named Inventor	Siva G. Narendra
Art Unit	2612
Examiner Name	Toan Ngoc Pham
Attorney Docket Number	115.022US1

U.S.PATENTS						
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
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12188346 12188346 - GAU: 2612
	Filing Date	2008-08-08
	First Named Inventor	Siva G. Narendra
	Art Unit	2612
	Examiner Name	Toan Ngoc Pham
	Attorney Docket Number	115.022US1

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	Examiner Name	Toan Ngoc Pham
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If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code1	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Change(s) applied to document. /B.H.H./ 5/3/2011	27	20030115126	A1	2002-06-31	Pitroda, Satyan	
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	Application Number	12188346 12188346 - GAU: 2612
	Filing Date	2008-08-08
	First Named Inventor	Siva G. Narendra
	Art Unit	2612
	Examiner Name	Toan Ngoc Pham
	Attorney Docket Number	115.022US1

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	42	20050006462	A1	2005-01-13	Rouille, et al.	
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	Examiner Name	Toan Ngoc Pham
	Attorney Docket Number	115.022US1

Change(s) applied to document, /B.H.H./ 5/3/2011	35	20040087339	A1	2004-05-06	Goldthwaite ~~Scott~~, et al.	
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	42	20050006462	A1	2005-01-13	Rouille, et al.	
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	Examiner Name	Toan Ngoc Pham
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	58	20050127164	A1	2005-06-25	Wankmueller, John	
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	1	10054890	DE	A1	2002-04-25	Schneider, Bernd	English Abstract Only	☐
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	Attorney Docket Number	115.022US1

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	1	International Preliminary Report and Written Opinion on Patentability received for PCT Application No. PCT/ US2005/019988, issued on December 04, 2006, 9 Pages.	☐
	2	International Search Report received for PCT Application No. PCT/US2005/019988, mailed on December 16, 2005, 5 pages.	☐
	3	International Preliminary Report and Written Opinion received for the PCT Application No. PCT/US2005/022993, issued on December 04, 2006, 6 pages.	☐
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	Art Unit	2612
	Examiner Name	Toan Ngoc Pham
	Attorney Docket Number	115.022US1

	8	International Search Report received for the PCT Application No. PCT/US2006/013603, mailed on January 09, 2006, 3 pages.	☐
	9	International Preliminary Report and Written Opinion received for PCT Application No. PCT/US2006/027847, issued on January 22, 2008, 10 pages.	☐
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EXAMINER
PHAM, TOAN NGOC

ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 04/25/2011

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/188,346	08/08/2008	Siva G. Narendra	115.022US1	4860

TITLE OF INVENTION: SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	07/25/2011

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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/188,346	08/08/2008	Siva G. Narendra	115.022US1	4860

TITLE OF INVENTION: SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	07/25/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
PHAM, TOAN NGOC	2612	340-572100

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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/188,346	08/08/2008	Siva G. Narendra	115.022US1	4860

7590 04/25/2011

LeMoine Patent Services
c/o Intellevate
P.O. Box 52050
Minneapolis, MN 55402

EXAMINER
PHAM, TOAN NGOC

ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 04/25/2011

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

The Patent Term Adjustment to date is 252 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 252 day(s).

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

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

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

Privacy Act Statement

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

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

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

Electronic Acknowledgement Receipt	
EFS ID:	9994509
Application Number:	12188346
International Application Number:	
Confirmation Number:	4860
Title of Invention:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT
First Named Inventor/Applicant Name:	Siva G. Narendra
Correspondence Address:	LeMoine Patent Services c/o Intellevate P.O. Box 52050 - Minneapolis MN 55402 US 952-473-8800 dlemoine@lemoinepatent.com
Filer:	Dana B. LeMoine
Filer Authorized By:	
Attorney Docket Number:	115.022US1
Receipt Date:	02-MAY-2011
Filing Date:	08-AUG-2008
Time Stamp:	10:43:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1810

RAM confirmation Number	8495
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	115_022us1_Issue_Fee_Payment.pdf	1743737 9c1e4d4e8e457eee780503b6ff72dd5cdce0ef52	no	1
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	31814 b6ab109546bacb30536fdd3a24732b3d6b9b9943	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1775551		

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.

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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)

7590 04/25/2011

LeMoine Patent Services
c/o Intellevate
P.O. Box 52050
Minneapolis, MN 55402

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.
12/188,346	08/08/2008	Siva G. Narendra	115.022US1	4860

TITLE OF INVENTION: SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	07/25/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
PHAM, TOAN NGOC	2612	340-572100

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 LeMoine Patent Services, PLLC
2 Dana B. LeMoine
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: Tyfone, Inc.

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

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

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

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

5. **Change in Entity Status** (from status indicated above)
- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

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

Authorized Signature /Dana B. LeMoine/ Date May 2, 2011

Typed or printed name Dana B. LeMoine Registration No. 40062

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

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Electronic Patent Application Fee Transmittal

Application Number:	12188346
Filing Date:	08-Aug-2008
Title of Invention:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT
First Named Inventor/Applicant Name:	Siva G. Narendra
Filer:	Dana B. LeMoine
Attorney Docket Number:	115.022US1

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1510	1510
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1810**

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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.
12/188,346	06/14/2011	7961101	115.022US1	4860

7590 05/25/2011

LeMoine Patent Services
c/o Intellevate
P.O. Box 52050
Minneapolis, MN 55402

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 252 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):

Siva G. Narendra, Portland, OR;
Saurav Chakraborty, West Bengal, INDIA;
Prabhakar Tadepalli, Bangalore, INDIA;

Electronic Acknowledgement Receipt	
EFS ID:	11195053
Application Number:	12188346
International Application Number:	
Confirmation Number:	4860
Title of Invention:	SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT
First Named Inventor/Applicant Name:	Siva G. Narendra
Correspondence Address:	LeMoine Patent Services c/o Intellevate P.O. Box 52050 - Minneapolis MN 55402 US 952-473-8800 dlemoine@lemoinepatent.com
Filer:	Dana B. LeMoine
Filer Authorized By:	
Attorney Docket Number:	115.022US1
Receipt Date:	15-OCT-2011
Filing Date:	08-AUG-2008
Time Stamp:	11:49:31
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	Change of Address	115_022us1_SB123.pdf	204650 84d0ab8c910dc023571ce041e3585b1645daf76e	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	204650		

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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/123 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Patent

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Alexandria, VA 22313-1450

Patent Number	7961101
Issue Date	June 14, 2011
Application Number	12/188,346
Filing Date	August 8, 2008
First Named Inventor	Siva G. Narendra
Attorney Docket Number	115.022US1

Please change the Correspondence Address for the above-identified patent to:

☑ The address associated with Customer Number: 35781

OR

☐ **Firm *or* Individual Name**

Address

City | **State** | **ZIP**

Country

Telephone | **Email**

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This form will not affect any "fee address" provided for the above-identified patent. To change a "fee address" use the "Fee Address Indication Form" (PTO/SB/47).

I am the:

☐ Patentee.

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☑ Attorney or agent of record. Registration Number 40062.

Signature	/Dana B. LeMoine/
Typed or Printed Name	Dana B. LeMoine
Date	October 14, 2011
Telephone	952-473-8800

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 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: Mail Stop Post Issue, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Privacy Act Statement

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

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1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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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.

File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 2011-10-18

Document Title - USPTO Communication Re: Change of Address

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OPAP IAP5 OCT 24 2011 PATENT & TRADEMARK OFFICE

PTO/SB/123 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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CHANGE OF CORRESPONDENCE ADDRESS
Patent

Address to:
Mail Stop Post Issue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Patent Number	7961101
Issue Date	June 14, 2011
Application Number	12/188,346
Filing Date	August 8, 2008
First Named Inventor	Siva G. Narendra
Attorney Docket Number	115.022US1

Please change the Correspondence Address for the above-identified patent to:

☑ The address associated with Customer Number: 35781

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☐ **Firm *or* Individual Name**

Address

City	**State**	**ZIP**

Country

Telephone	**Email**

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I am the:

☐ Patentee.

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☑ Attorney or agent of record. Registration Number 40062.

Signature	/Dana B. LeMoine/
Typed or Printed Name	Dana B. LeMoine
Date	October 14, 2011
Telephone	952-473-8800

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 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: Mail Stop Post Issue, 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.

File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 2018-12-07

Document Title - Applicant Communication Re: Payment of Maintenance Fee, 8th Year, Large Entity

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506187130 08/04/2020

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT6233870

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	RELEASE OF SECURITY INTEREST

CONVEYING PARTY DATA

Name	Execution Date
RPX CORPORATION	07/27/2020

RECEIVING PARTY DATA

Name:	TYFONE, INC.
Street Address:	5331 SW MACADAM AVENUE
City:	PORTLAND
State/Country:	OREGON
Postal Code:	97239

PROPERTY NUMBERS Total: 109

Property Type	Number
Patent Number:	7581678
Patent Number:	7828214
Patent Number:	7954715
Patent Number:	7954716
Patent Number:	8091786
Patent Number:	8573494
Patent Number:	8408463
Patent Number:	8403219
Patent Number:	7954717
Patent Number:	8083145
Patent Number:	8474718
Patent Number:	8136732
Patent Number:	9004361
Patent Number:	9092708
Patent Number:	9202156
Patent Number:	9208423
Patent Number:	9251453
Patent Number:	9626611
Patent Number:	9715649
Patent Number:	10185909

Property Type	Number
Patent Number:	7805615
Patent Number:	8477940
Patent Number:	8189788
Patent Number:	7364092
Patent Number:	7991158
Application Number:	13104962
Patent Number:	9741027
Patent Number:	7961101
Patent Number:	8072331
Patent Number:	8410936
Patent Number:	8814053
Application Number:	12188382
Patent Number:	8231061
Patent Number:	8745709
Patent Number:	9055029
Patent Number:	9148405
Application Number:	14850297
Patent Number:	8451122
Patent Number:	8866614
Patent Number:	8937549
Patent Number:	9122965
Patent Number:	9117152
Patent Number:	9483722
Patent Number:	9489608
Patent Number:	9390359
Patent Number:	9904887
Patent Number:	8843062
Application Number:	14464888
Application Number:	13295902
Patent Number:	8949974
Application Number:	13591210
Patent Number:	9087184
Application Number:	13470163
Application Number:	13531342
Application Number:	14289884
Application Number:	13630342
Patent Number:	9077794
Patent Number:	9166281

Property Type	Number
Patent Number:	9281633
Patent Number:	9520684
Patent Number:	9195974
PCT Number:	US1423514
Application Number:	13802492
Patent Number:	9177310
Application Number:	13802510
Patent Number:	9230282
Patent Number:	9959532
Patent Number:	9959533
Patent Number:	9959534
Application Number:	13802523
Application Number:	13842871
Patent Number:	9143938
Patent Number:	9215592
Patent Number:	9319881
Patent Number:	9906365
PCT Number:	US1423533
Patent Number:	9781598
Application Number:	13843628
Patent Number:	9231945
Patent Number:	9436165
Patent Number:	9563892
Patent Number:	9659295
Patent Number:	9448543
Patent Number:	9576281
Patent Number:	9183371
Patent Number:	9154500
Application Number:	13844216
Application Number:	13844255
Application Number:	13844301
Application Number:	13844339
Application Number:	14741493
Application Number:	13842937
Application Number:	13843065
Patent Number:	9207650
Patent Number:	9113329
Application Number:	14047023

Property Type	Number
Application Number:	14047024
Patent Number:	9483723
Patent Number:	9715650
Patent Number:	9208424
Patent Number:	9159014
Application Number:	14105776
Application Number:	14244845
Patent Number:	9317723
Patent Number:	9373010
Patent Number:	9317796
Patent Number:	9495628
Application Number:	15290672
Application Number:	14044636

CORRESPONDENCE DATA

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ATTORNEY DOCKET NUMBER:	38636-00015
NAME OF SUBMITTER:	CHRISTOPHER D. ERICKSON
SIGNATURE:	/Christopher D. Erickson/
DATE SIGNED:	08/04/2020
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 5
source=Tyfone Form Release of Security Interest from RPX (for Tyfone) FINAL 20200727 (DA Sig)#page1.tif
source=Tyfone Form Release of Security Interest from RPX (for Tyfone) FINAL 20200727 (DA Sig)#page2.tif
source=Tyfone Form Release of Security Interest from RPX (for Tyfone) FINAL 20200727 (DA Sig)#page3.tif
source=Tyfone Form Release of Security Interest from RPX (for Tyfone) FINAL 20200727 (DA Sig)#page4.tif
source=Tyfone Form Release of Security Interest from RPX (for Tyfone) FINAL 20200727 (DA Sig)#page5.tif

RELEASE OF SECURITY INTEREST (TERMINATION STATEMENT)

This Release of Security Interest (this "Release"), dated and effective as of July 27, 2020 (the "Effective Date"), is made by RPX Corporation ("Lender") in favor of Tyfone, Inc. ("Borrower").

RECITALS

A. Pursuant to the Loan and Security Agreement dated May 15, 2015 (the "Loan and Security Agreement"), Borrower granted to Lender a security interest in the Patent Collateral (as defined in the Loan and Security Agreement).

B. Subsequent to the effective date of the Loan and Security Agreement, Lender recorded the Loan and Security Agreement with the United States Patent and Trademark Office ("USPTO") and with the State of Oregon, evidencing its security interest in the Patent Collateral, including but not limited to those patents and patent applications listed on Exhibit 1 to this Release.

C. Lender did not record the Loan and Security Agreement with any other authority of office other than ones mentioned in Recital B.

D. Borrower has fully paid the Obligations that were secured by the security interest in the Patent Collateral under the Loan and Security Agreement, and Lender desires to release fully its security interests in the Patent Collateral pursuant to this Release.

TERMS AND CONDITIONS

In consideration of the mutual promises and undertakings set forth herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and with the intention of being legally bound hereby, Lender hereby: (a) releases the security interest in the Patent Collateral; and (b) authorizes the recordation of this Release with the USPTO, the State of Oregon, and any other authority or office as may be necessary to effectuate this Release.

Lender agrees to cooperate with Borrower and to execute, acknowledge and deliver such further releases, termination statements, assignments and other assurances pursuant to this Release, as may be reasonably requested by Borrower in order to effectuate the complete release of Lender's security interest in the Patent Collateral.

IN WITNESS WHEREOF, Lender has executed this Release as of the Effective Date:

RPX Corporation

By: David Anderson

Name: David Anderson

Title: CFO

EXHIBIT 1

Title	App. No.	Pub. No.	Pat. No.	Issue Date
ELECTRONIC TRANSACTION CARD	11/063,291	20060186209	7581678	9/1/2009
MOBILE PHONE WITH ELECTRONIC TRANSACTION CARD	12/539,369	20090298540	7828214	11/9/2010
MOBILE DEVICE WITH TRANSACTION CARD IN ADD-ON SLOT	12/941,410	20110053644	7954715	6/7/2011
ELECTRONIC TRANSACTION CARD POWERED BY MOBILE DEVICE	12/962,937	20110073665	7954716	6/7/2011
ADD-ON CARD WITH SMARTCARD CIRCUITRY POWERED BY A MOBILE DEVICE	13/114,434	20110220726	8091786	1/10/2012
APPARATUS FOR SECURE FINANCIAL TRANSACTIONS	13/304,663	20120067964	8573494	11/5/2013
MOBILE DEVICE ADD-ON APPARATUS FOR FINANCIAL TRANSACTIONS	13/370,291	20120138675	8408463	4/2/2013
APPARATUS WITH SMARTCARD CIRCUITRY POWERED BY A MOBILE DEVICE	13/651,365	20130037611	8403219	3/26/2013
PROVISIONING ELECTRONIC TRANSACTION CARD IN MOBILE DEVICE	12/962,953	20110077052	7954717	6/7/2011
PROVISIONING AN ADD-ON APPARATUS WITH SMARTCARD CIRCUITY FOR ENABLING TRANSACTIONS	13/114,473	20110223972	8083145	12/27/2011
METHOD FOR PROVISIONING AN APPARATUS CONNECTED CONTACTLESS TO A MOBILE DEVICE	13/426,500	20120178433	8474718	7/2/2013
ELECTRONIC TRANSACTION CARD WITH CONTACTLESS INTERFACE	13/184,240	20110272469	8136732	3/20/2012
WEARABLE DEVICE TRANSACTION SYSTEM	13/592,323	20130168453	9004361	4/14/2015
WEARABLE DEVICE WITH TIME-VARYING MAGNETIC FIELD	14/680,684	20150213350	9092708	7/28/2015
MOBILE DEVICE WITH TIME-VARYING MAGNETIC FIELD	14/747,770	20150294208	9202156	12/1/2015
MOBILE DEVICE WITH TIME-VARYING MAGNETIC FIELD AND SINGLE TRANSACTION ACCOUNT NUMBERS	14/833,113	20150363684	9208423	12/8/2015
WEARABLE DEVICE WITH TIME-VARYING MAGNETIC FIELD AND SINGLE TRANSACTION ACCOUNT NUMBERS	14/866,998	20160019450	9251453	2/2/2016
PROVISIONING MOBILE DEVICE WITH TIME-VARYING MAGNETIC FIELD	14/929,297	20160055405	9626611	4/18/2017
DEVICE WITH CURRENT CARRYING CONDUCTOR TO PRODUCE TIME-VARYING MAGNETIC FIELD	14/948,325	20160086073	9715649	7/25/2017
WEARABLE DEVICE WITH CURRENT CARRYING CONDUCTOR TO PRODUCE TIME-VARYING MAGNETIC FIELD	15/658,208	20170323188	10185909	1/22/2019
ASYMMETRIC CRYPTOGRAPHY WITH USER AUTHENTICATION	11/182,520	20070016798	7805615	9/28/2010
SYMMETRIC CRYPTOGRAPHY WITH USER AUTHENTICATION	11/182,099	20070014407	8477940	7/2/2013
HYBRID SYMMETRIC/ASYMMETRIC CRYPTOGRAPHY WITH USER AUTHENTICATION	11/182,920	20070014408	8189788	5/29/2012
ELECTRONIC STRIPE CARDS	11/488,400	20070023532	7364092	4/29/2008
SECURE MESSAGING	11/895,637	20080279381	7991158	8/2/2011
MEMORY CARD HAVING ONE OR MORE SECURE ELEMENTS ACCESSED WITH HIDDEN COMMANDS	13/104,962	20110271044		
MEMORY CARD BASED CONTACTLESS DEVICES	12/002,317	20090152361	9741027	8/22/2017
SMALL RFID CARD WITH INTEGRATED INDUCTIVE ELEMENT	12/188,346	20100033307	7961101	6/14/2011
MOBILE PAYMENT DEVICE	13/081,775	20110180610	8072331	12/6/2011
CONTACTLESS CARD THAT RECEIVES POWER FROM HOST DEVICE	13/311,247	20120305653	8410936	4/2/2013

Title	App. No.	Pub. No.	Pat. No.	Issue Date
MOBILE PAYMENT DEVICE WITH SMALL INDUCTIVE DEVICE POWERED BY A HOST DEVICE	13/657,846	20130043317	8814053	8/26/2014
POWER NEGOTATION FOR SMALL RFID CARD	12/188,382	20100033310		
CONTACTLESS DEVICE WITH MINIATURIZED ANTENNA	12/710,560	20100213265	8231061	7/31/2012
MULTIFACTOR AUTHENTICATION SERVICE	13/036,774	20120222099	8745709	6/3/2014
TOKEN BASED MULTIFACTOR AUTHENTICATION	14/289,901	20140282859	9055029	6/9/2015
CLIENT DEVICE TOKEN BASED MULTIFACTOR AUTHENTICATION	14/608,073	20150143457	9148405	9/29/2015
SMARTCARD BASED MULTIFACTOR BANKING AUTHENTICATION	14/850,297	20150381613		
SMARTCARD PERFORMANCE ENHANCEMENT CIRCUITS AND SYSTEMS	13/038,341	20110171996	8451122	5/28/2013
ACTIVE CIRCUIT FOR RFID	13/871,849	20130233931	8866614	10/21/2014
ENHANCED INTEGRATED CIRCUIT WITH SMARTCARD CONTROLLER	14/460,647	20140353390	8937549	1/20/2015
13.56 MHZ ENHANCEMENT CIRCUIT FOR SMARTCARD CONTROLLER	14/517,495	20150034727	9122965	9/1/2015
13.56 MHZ ENHANCEMENT CIRCUIT FOR SMARTMX SMARTCARD CONTROLLER	14/517,567	20150034728	9117152	8/25/2015
AMPLIFIER AND TRANSMISSION SOLUTION FOR 13.56MHZ RADIO COUPLED TO SMARTCARD CONTROLLER	14/517,575	20150038194	9483722	11/1/2016
AMPLIFIER AND TRANSMISSION SOLUTION FOR 13.56MHZ RADIO COUPLED TO SMARTMX SMARTCARD CONTROLLER	14/517,585	20150038195	9489608	11/8/2016
MOBILE DEVICE WITH A CONTACTLESS SMARTCARD DEVICE AND ACTIVE LOAD MODULATION	14/542,440	20150069139	9390359	7/12/2016
COMPUTING DEVICE WITH NFC AND ACTIVE LOAD MODULATION	15/338,436	20170046609	9904887	2/27/2018
COUPLING AREA ENHANCEMENT APPARATUS, SYSTEM, AND METHOD	13/097,167	20120276963	8843062	9/23/2014
MOBILE DEVICE WITH COUPLING AREA ENHANCEMENT	14/464,888	20140354503		
MOBILE DEVICE POWER MANAGEMENT	13/295,902	20130122804		
MOBILE DEVICE WITH PASSWORD PROTECTED DESKTOP SCREEN	13/470,139	20130305351	8949974	2/3/2015
APPLICATION WITH DEVICE SPECIFIC USER INTERFACE	13/591,210	20130303084		
MOBILE DEVICE WITH DESKTOP SCREEN INDICATORS	13/591,213	20130305352	9087184	7/21/2015
INSTALLING APPLICATIONS TO PASSWORD PROTECTED DESKTOP SCREENS ON A MOBILE DEVICE	13/470,163	20130305240		
METHOD AND APPARATUS FOR SECURE CONSOLIDATION OF CLOUD SERVICES	13/531,342	20130347075		
SECURE ELEMENT APPARATUS WITH MEMORY	14/289,884	20140273970		
MOBILE DEVICE WITH REVEAL OF DYNAMIC CONTENT	13/630,342	20140095315		
LIGHTNING CONNECTOR ACCESSORY DEVICE	13/629,595	20140087789	9077794	7/7/2015
OFFSET PCB LIGHTNING CONNECTOR ACCESSORY DEVICE	14/729,268	20150270601	9166281	10/20/2015
MICROUSB ACCESSORY DEVICE WITH ANTENNA	14/843,336	20150380874	9281633	3/8/2016
MICROUSB LIGHTNING DEVICE WITH OFFSET CIRCUIT BOARD	15/053,806	20160181737	9520684	12/13/2016
DYNAMIC IDENTITY REPRESENTATION IN MOBILE DEVICES	14/044,636	20150095222		
REMOTE DEPOSIT CAPTURE COMPATIBLE CHECK IMAGE GENERATION	13/802,481	20140270461	9195974	11/24/2015
MOBILE REMOTE DEPOSIT CAPTURE	PCT/US14/23514	WO 2014/159412		
REMOTE DEPOSIT CAPTURE COMPATIBLE CHECK IMAGE GENERATION IN RESPONSE TO MOTION OF A MOBILE DEVICE	13/802,492	20140279480		
MOBILE DEVICE AND APPLICATION FOR REMOTE DEPOSIT OF CHECK IMAGES RECEIVED FROM PAYORS	13/802,498	20140270462	9177310	11/3/2015

Title	App. No.	Pub. No.	Pat. No.	Issue Date
MOBILE DEVICE AND APPLICATION FOR REMOTE DEPOSIT OF CHECK IMAGES SECURELY RECEIVED FROM PAYORS	13/802,510	20140279481		
REMOTE DEPOSIT CAPTURE SYSTEM WITH CHECK IMAGE GENERATION AND STORAGE	13/802,516	20140270463	9230282	1/5/2016
SECURE ELEMENT AUTHENTICATION FOR REMOTE DEPOSIT CAPTURE COMPATIBLE CHECK IMAGE GENERATION	14/979,974	20160110697	9959532	5/1/2018
SECURE ELEMENT AUTHENTICATION FOR REMOTE DEPOSIT OF CHECK IMAGES RECEIVED FROM PAYORS	14/982,904	20160117648	9959533	5/1/2018
REMOTE DEPOSIT CAPTURE SYSTEM WITH SECURE ELEMENT AUTHENTICATION FOR CHECK IMAGE GENERATION AND STORAGE	14/983,166	20160132848	9959534	5/1/2018
REMOTE DEPOSIT CAPTURE SYSTEM WITH CHECK IMAGE STORAGE	13/802,523	20140279482		
PERSONAL DIGITAL IDENTITY DEVICE	13/842,871	20140273959		
PERSONAL DIGITAL IDENTITY DEVICE RESPONSIVE TO USER INTERACTION	13/843,000	20140270173	9143938	9/22/2015
CONFIGURABLE PERSONAL DIGITAL IDENTITY DEVICE RESPONSIVE TO USER INTERACTION	13/843,091	20140281565	9215592	12/15/2015
PERSONAL DIGITAL IDENTITY DEVICE WITH FINGERPRINT SENSOR	13/843,402	20140273961	9319881	4/19/2016
PERSONAL DIGITAL IDENTITY DEVICE WITH FINGERPRINT SENSOR AND CHALLENGE-RESPONSE KEY	15/069,548	20160197727	9906365	2/27/2018
PERSONAL DIGITAL IDENTITY DEVICE	PCT/US14/23533	WO 2014/150535		
PERSONAL DIGITAL IDENTITY DEVICE WITH FINGERPRINT SENSOR RESPONSIVE TO USER INTERACTION	13/843,529	20140266601	9781598	10/3/2017
CONFIGURABLE PERSONAL DIGITAL IDENTITY DEVICE WITH FINGERPRINT SENSOR RESPONSIVE TO USER INTERACTION	13/843,628	20140266602		
PERSONAL DIGITAL IDENTITY DEVICE WITH MOTION SENSOR	13/843,694	20140281566	9231945	1/5/2016
PERSONAL DIGITAL IDENTITY DEVICE WITH MOTION SENSOR RESPONSIVE TO USER INTERACTION	13/843,831	20140266597	9436165	9/6/2016
PERSONAL DIGITAL IDENTITY CARD WITH MOTION SENSOR RESPONSIVE TO USER INTERACTION	15/237,624	20160358166	9563892	2/7/2017
PERSONAL DIGITAL IDENTITY DEVICE WITH NEAR FIELD AND NON NEAR FIELD RADIOS FOR ACCESS CONTROL	15/249,081	20160366591	9659295	5/23/2017
CONFIGURABLE PERSONAL DIGITAL IDENTITY DEVICE WITH MOTION SENSOR RESPONSIVE TO USER INTERACTION	13/843,988	20140266598	9448543	9/20/2016
CONFIGURABLE PERSONAL DIGITAL IDENTITY CARD WITH MOTION SENSOR RESPONSIVE TO USER INTERACTION	15/237,735	20160358148	9576281	2/21/2017
PERSONAL DIGITAL IDENTITY DEVICE WITH MICROPHONE	13/844,141	20140282987	9183371	11/10/2015
PERSONAL DIGITAL IDENTITY DEVICE WITH MICROPHONE RESPONSIVE TO USER INTERACTION	13/844,183	20140266605	9154500	10/6/2015
CONFIGURABLE PERSONAL DIGITAL IDENTITY DEVICE WITH MICROPHONE RESPONSIVE TO USER INTERACTION	13/844,216	20140266606		
PERSONAL DIGITAL IDENTITY DEVICE WITH IMAGER	13/844,255	20140270175		
PERSONAL DIGITAL IDENTITY DEVICE WITH IMAGER RESPONSIVE TO USER INTERACTION	13/844,301	20140266603		
CONFIGURABLE PERSONAL DIGITAL IDENTITY DEVICE WITH IMAGER RESPONSIVE TO USER INTERACTION	13/844,339	20140266599	9086689	7/21/2015
CONFIGURABLE PERSONAL DIGITAL IDENTITY DEVICE WITH AUTHENTICATION USING IMAGE RECEIVED OVER RADIO LINK	14/741,493	20150317468	9734319	8/15/2017
PERSONAL DIGITAL IDENTITY DEVICE WITH USER AUTHENTICATION FACTOR CAPTURED IN MOBILE DEVICE	13/842,937	20140273960		
PERSONAL DIGITAL IDENTITY DEVICE RESPONSIVE TO USER INTERACTION WITH USER AUTHENTICATION FACTOR CAPTURED IN MOBILE DEVICE	13/843,065	20140270174		

Title	App. No.	Pub. No.	Pat. No.	Issue Date
CONFIGURABLE PERSONAL DIGITAL IDENTITY DEVICE RESPONSIVE TO USER INTERACTION WITH USER AUTHENTICATION FACTOR CAPTURED IN MOBILE DEVICE	13/843,181	20140266596	9207650	12/8/2015
MOBILE DEVICE LEARNING MODE FOR SECURE IDENTIFICATION	14/083,208	20150140966	9113329	8/18/2015
LIGHT SEQUENCE OUT-OF-BAND BLUETOOTH PAIRING	14/047,023	20150098706		
AUDIO SEQUENCE OUT-OF-BAND BLUETOOTH PAIRING	14/047,024	20150099466		
PASSIVE CONTROL SECURE TRANSACTION CARD	14/047,005	20150097037	9483723	11/1/2016
DUAL COIL TRANSACTION CARD	15/337,675	20170046608	9715650	7/25/2017
ACTIVE CONTROL SECURE TRANSACTION CARD	14/047,006	20150097038	9208424	12/8/2015
ACTIVE CONTROL SECURE TRANSACTION CARD WITH TUNED COIL	14/047,007	20150097039	9159014	10/13/2015
URL MAPPING TO NON-HYPERLINKED CODE	14/105,776	20150172368		
PASSIVE RF TAG WITH MULTIPLE CONDUCTIVE COILS	14/244,845	20150286847		
PASSIVE RF TAG WITH POWER CYCLING	14/244,852	20150286848	9317723	4/19/2016
PASSIVE RFID TAG COIL ALIGNMENT AND COMMUNICATION	15/075,486	20160203348	9373010	6/21/2016
RF PROBE ALIGNMENT WITH PASSIVE TAG	14/244,853	20150286850	9317796	4/19/2016
PASSIVE RF TAG WITH ADIABATIC CIRCUITS	14/244,855	20150286918	9495628	11/15/2016
FINE GRAIN RECONFIGURABLE BUILDING BLOCK FOR IC PROTECTION AND OBFUSCATION	15/290,672	20180102908		

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY.DOCKET NO./TITLE	REQUEST ID
12/188,346	08/08/2008	Siva G. Narendra	115.022US1	176288

Acknowledgement of Change to Small Entity Status

The entity status change request below filed through Private PAIR on 10/14/2022 has been accepted.

CERTIFICATIONS:

Change of Entity Status:

X 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.

This portion must be completed by the signatory or signatories making the entity status change in accordance with 37 CFR 1.4(d)(4).

Signature:	/Usman Mughal/
Name:	Usman Mughal
Registration Number:	62887

File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 2022-11-25

Document Title - Applicant Communication Re: Payment of Maintenance Fee, 12th Year, Small Entity

This page is not part of the official USPTO record. It has been determined that content identified on this document is missing from the original file history record.

PTO/SB/06 (12-04)

08/08/08

12/3/2007

Approved for use through 7/31/2006. 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 12/188,346

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			N/A	310
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	510
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	210
(37 CFR 1.16(i))	23 minus 20 =	* 3	X 25=		OR	X 50=	150
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	X 105=			X 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 $260 ($130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			N/A			N/A	
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1180

APPLICATION AS AMENDED – PART II

		(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 ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
AMENDMENT A	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))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
AMENDMENT B	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))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

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

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

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PTO/SB/06 (07-06)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 12/188,346	Filing Date 08/08/2008	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☐		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			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 $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 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			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	02/28/2011	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 15	Minus	** 20	= 0	X $ =		OR	X $52=	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $ =		OR	X $220=	0
	☐ 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	**0**

AMENDMENT		(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 number found in the appropriate box in column 1.

Legal Instrument Examiner:
/LAWANDA MILTON/

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