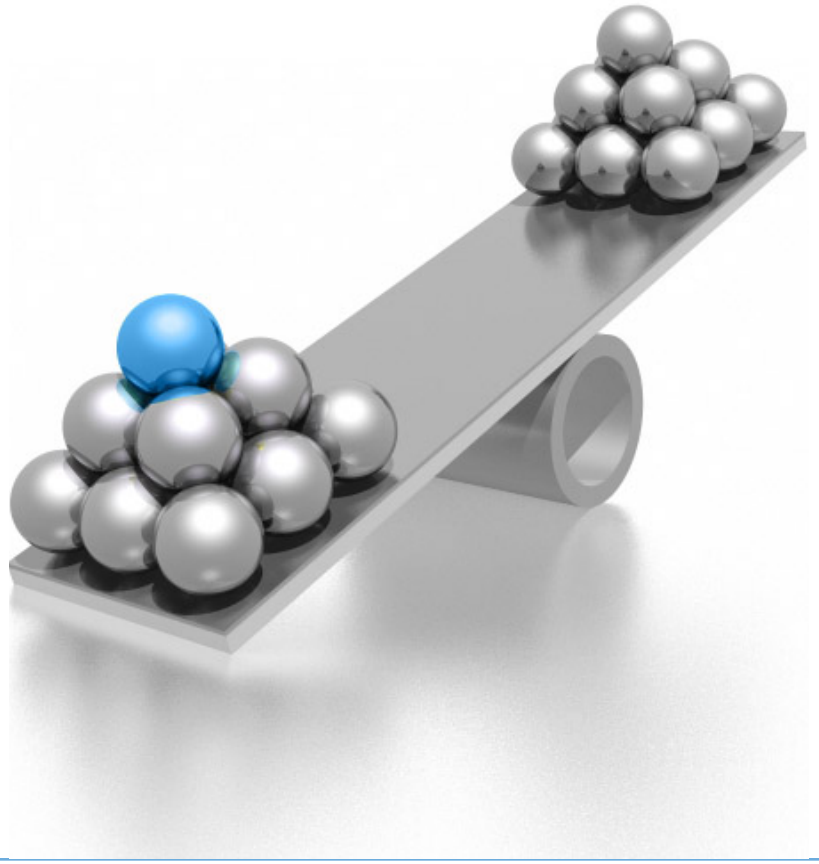
ICEBERG
CAPITAL PARTNERS

Patent Acquisition Opportunity

Strictly confidential
April 2015

ICEBERG
CAPITAL PARTNERS

Table of Contents



ICEBERG CAPITAL PARTNERS

Executive Summary

Portfolio overview

- The patent offering from Mediatek comprises 11 US patents across 10 families, including foreign filings in China, Japan, Taiwan and Germany.
- There are 3 Key Patents with EoU in this portfolio.
- The technologies in this portfolio relate to Dual SIM mobile handsets, GPS receivers, SSD memory devices, and test equipment
- Notable forward citing companies include Apple, Cisco, Qualcomm, Softbank, SanDisk, Fraunhoffer, Intellectual Ventures, Samsung, Sony, and Nokia.
- The earliest priority date in the portfolio is 1st November 1995.

Encumbrances

- No licenses.
- No buyer restrictions.

Transaction Profile

- ICEBERG Role: Sell-side adviser.
- Price expectation:
  US $250k per patent family, for families 2, 3, 8
  US $150k per patent family, for all other families
- Grantback license required.
- Indication of interest requested to be submitted by: 19th June 2015.

Appendix

- Evidence of Use analysis suggesting infringement by TDK Corporation, Rhode & Schwarz, and Novotel.

ICEBERG CAPITAL PARTNERS

Seller Information

MediaTek is a pioneering fabless semiconductor company, and a market leader in cutting-edge systems on a chip for wireless communications, HDTV, DVD and Blu-ray. MediaTek created the world's first octa-core smartphone platform with LTE and our CorePilot technology released the full power of multi-core mobile processors. MediaTek is headquartered in Taiwan and has offices worldwide.

Location: Taiwan

Source: http://www.mediatek.com/en/about/company-overview/

> "On December 11, 2014, MediaTek was named 'Outstanding Asia Pacific Semiconductor Company Award' for the third consecutive year (and for the fourth time in total) at the 20th annual Global Semiconductor Alliance (GSA) Awards Dinner. Voted by industry peers, MediaTek was recognized as the leader in the semiconductor industry, demonstrating excellence through our products, vision, strategy, execution, and future initiatives."

Source:
http://www.mediatek.com/en/news-events/mediatek-news/mediatek-named-semiconductor-company-of-the-year-at-2014-gsa-awards/

ICEBERG CAPITAL PARTNERS

Key Patents

US 6128223 – Relates to semiconductor memory device construction and has EoU against SSD memory modules.

US 6449485 – Relates to GNSS (Global Navigation Satellite System) positioning determination for mobile devices.

US 8374139 – Relates to primary advanced preamble – specifically for OFDMA based systems and has EoU against test equipment using the same.

ICEBERG CAPITAL PARTNERS

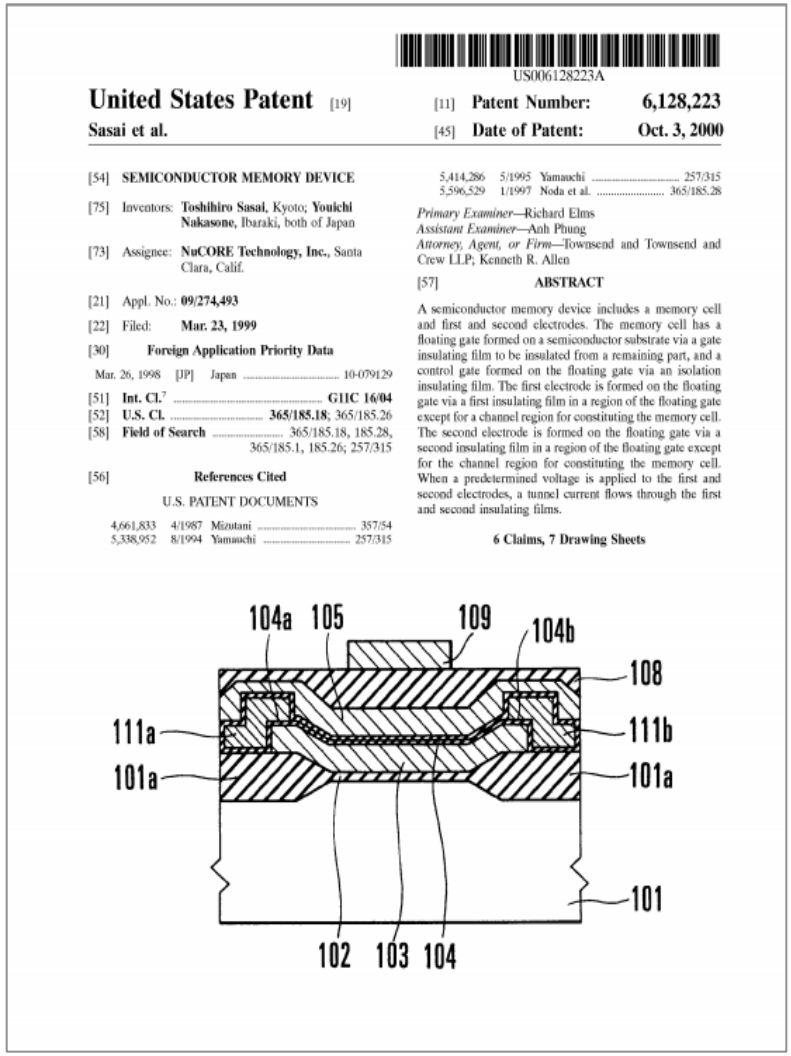
Patent List

Family	US Patent	US	JP	CN	TW	DE	EP	Priority	Title
1	6295138	●	●					02/03/1998	Electronic image sensing apparatus
2	**6128223***	●	●					**26/03/1998**	**Semiconductor memory device**
3	**6449485***	●						**22/01/1999**	**Technique for mobile wireless device location**
4	5737028	●	●					01/11/1995	Previous channel listing with cursor controlled user interface for television video displays
5	8463277	●		●	●	●		09/06/2008	Method for allocating paging resource to a mobile station having multiple subscriber identities and resource allocating apparatus thereof
5	8738018	●		●	●	●		09/06/2008	Communication method for a mobile station communicating with a communication network, and associated mobile station
6	8200192#	●		●	●			23/04/2008	Methods for performing pin verification by mobile station with subscriber identity cards and systems utilizing the same
7	8195234#	●		●	●			22/09/2008	Methods for sharing mobility status between subscriber identity cards and systems utilizing the same
8	**8374139***	●	●	●	●		●	**27/03/2009**	**Low latency synchronization scheme for wireless ofdma systems**
9	8411654	●			●			25/11/2009	Autonomous wireless communication system and method of use
10	8175621#	●		●	●			27/02/2008	Methods for providing multiple wireless communication services with reduced paging collisions and communication apparatuses utilizing the same

*** Key Patents** – See Appendix 1 **# Patents with indicative use** – See Appendix 2

ICEBERG CAPITAL PARTNERS

US 6128233 – Bibliographic information



US006128223A

United States Patent [19]
Sasai et al.

[11] **Patent Number: 6,128,223**
[45] **Date of Patent: Oct. 3, 2000**

[54] **SEMICONDUCTOR MEMORY DEVICE**

[75] Inventors: **Toshihiro Sasai**, Kyoto; **Youichi Nakasone**, Ibaraki, both of Japan

[73] Assignee: **NuCORE Technology, Inc.**, Santa Clara, Calif.

[21] Appl. No.: **09/274,493**

[22] Filed: **Mar. 23, 1999**

[30] **Foreign Application Priority Data**

Mar. 26, 1998 [JP] Japan 10-079129

[51] **Int. Cl.**[7] **G11C 16/04**
[52] **U.S. Cl.** **365/185.18**; 365/185.26
[58] **Field of Search** 365/185.18, 185.28, 365/185.1, 185.26; 257/315

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,661,833	4/1987	Mizutani	357/54
5,338,952	8/1994	Yamauchi	257/315
5,414,286	5/1995	Yamauchi	257/315
5,596,529	1/1997	Noda et al.	365/185.28

Primary Examiner—Richard Elms
Assistant Examiner—Anh Phung
Attorney, Agent, or Firm—Townsend and Townsend and Crew LLP; Kenneth R. Allen

[57] **ABSTRACT**

A semiconductor memory device includes a memory cell and first and second electrodes. The memory cell has a floating gate formed on a semiconductor substrate via a gate insulating film to be insulated from a remaining part, and a control gate formed on the floating gate via an isolation insulating film. The first electrode is formed on the floating gate via a first insulating film in a region of the floating gate except for a channel region for constituting the memory cell. The second electrode is formed on the floating gate via a second insulating film in a region of the floating gate except for the channel region for constituting the memory cell. When a predetermined voltage is applied to the first and second electrodes, a tunnel current flows through the first and second insulating films.

6 Claims, 7 Drawing Sheets

Patent of Interest:

US6128233
(Priority date: March 26, 1998)

Semiconductor memory device

Exemplary Market Applications:

Technology disclosed have applications in the following sectors:

- In manufacturing of SSD devices
- In manufacturing of various types of semiconductor based memory devices.

ICEBERG CAPITAL PARTNERS

US 6128233 – Claim 1

1. A semiconductor memory device comprising:

a memory cell having a floating gate formed on a semiconductor substrate via a gate insulating film to be insulated from a remaining part, a control gate formed on the floating gate via an isolation insulating film;

a first electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over a channel region, the first electrode being insulated from the floating gate via a first insulating film; and

a second electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over the channel region, the second electrode being insulated from the floating gate via a second insulating film,

wherein when a predetermined voltage is applied to said first and second electrodes, a tunnel current flows through the first and second insulating films.

US 6128233 – EoU Summary

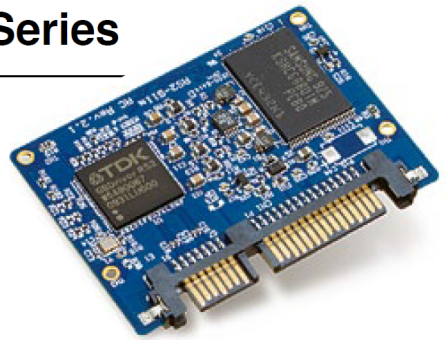
SHG2A Series	
Key claim(s)	1 (independent claim)
Mapped product	Chart has been made with respect to SHG2A Series SSD devices
Source	Product information available at: http://product.tdk.com/en/techjournal/archives/vol01_ssd/TDK_TJ_SSD_E_0127.pdf
Publication date	January 2012
Details of product / company	**TDK Corporation** formerly TDK Electronics Co., Ltd is a Japanese multinational electronics company that manufactures electronic materials, electronic components, and recording and data-storage media. Operations in the USA began in 1965 with a New York City office, and European operations began in 1970 with an office in Frankfurt, West Germany. It's division in america is known as TDK corporation of Americas It's revenue is US$10.55 billion (2011) with almost 90,000 employee worldwide. It has several sales offices in USA.

US 6128233 – SHG2A Series: Overview

TECH JOURNAL

Half Slim SSD With Serial ATA 3 Gbps SHG2A Series

SHG2A series



SMART Storage Solution for Industrial Application

More and more notebook computers nowadays are using SSD (Solid State Drives) instead of HDD (Hard Disk Drives) for storage. This trend has in fact started with industrial equipment, where it has progressed even further. SSDs are storage devices that make use of flash memory. Unlike HDDs, there are no mechanical or moving parts, which makes SSDs ideal for machine tools and other equipment subject to high levels of vibrations and shocks. However, the design of memory management and control in SSDs requires a high degree of technical sophistication. Because the number of times flash memory can be programmed (erased) has a limit, the performance of the memory controller chip has a significant bearing on SSD endurance and performance. The GBDriver (GreenByte Driver) series of memory controllers from TDK have been evolving through 10 years track records in the industrial equipment sector where high reliability is required. TDK SSDs using advanced GBDriver are increasingly found not only in industrial equipment but also in a wide range of other Green IT infrastructure applications including Smart Grid and Cloud Computing.

Source: http://product.tdk.com/en/techjournal/archives/vol01_ssd/TDK_TJ_SSD_E_0127.pdf

ICEBERG CAPITAL PARTNERS

US 6128233 – Claim 1 vs. SHG2A Series (TDK Corporation)

Claim	SHG2A Series

1. A semiconductor memory device comprising:

a memory cell having a floating gate formed on a semiconductor substrate via a gate insulating film to be insulated from a remaining part, a control gate formed on the floating gate via an isolation insulating film;

a first electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over a channel region, the first electrode being insulated from the floating gate via a first insulating film; and

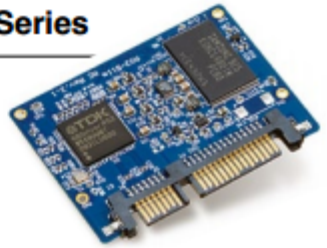
a second electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over the channel region, the second electrode being insulated from the floating gate via a second insulating film,

wherein when a predetermined voltage is applied to said first and second electrodes, a tunnel current flows through the first and second insulating films.

TECH JOURNAL

Half Slim SSD With Serial ATA 3 Gbps SHG2A Series

SHG2A series



SMART Storage Solution for Industrial Application

☐ **Specifications**

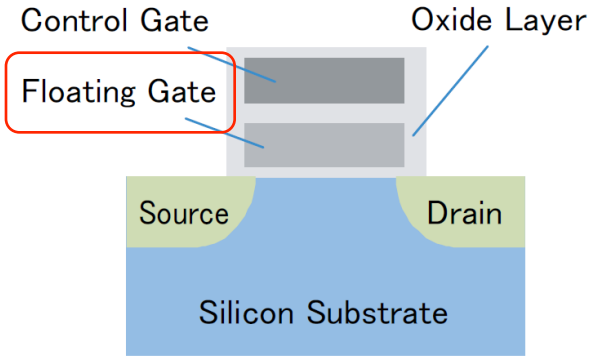
Product Name	Serial ATA 3Gbps interface Half slim SSD (Solid State Drive) RS2 series	
Product No.	SHG2A series	
Data Capacity	1 GB / 2 GB / 4 GB / 8 GB / 16 GB	32 GB
Size	Half slim type SSD SATA	Half slim type SSD SATA
Memory Type	SLC NAND type flash memory	MLC NAND type flash memory

Researcher's Comment: SHG2A Series is an SSD with various storage capacity. (1GB/2GB/4GB/8GB/16GB/32/GB**)**

Source: http://product.tdk.com/en/techjournal/archives/vol01_ssd/TDK_TJ_SSD_E_0127.pdf

ICEBERG CAPITAL PARTNERS

US 6128233 – Claim 1 vs. SHG2A Series (TDK Corporation)

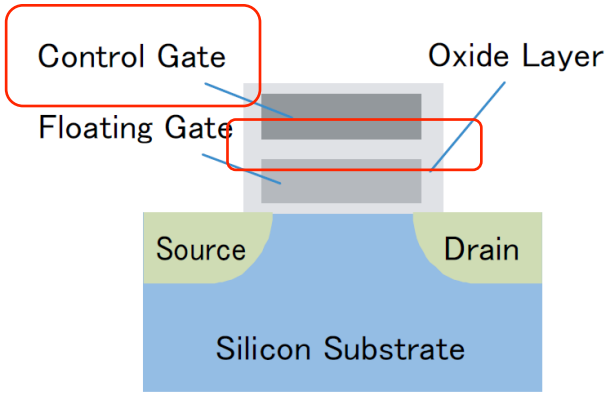
Claim	SHG2A Series
1. A semiconductor memory device comprising: **a memory cell having a floating gate formed on a semiconductor substrate via a gate insulating film to be insulated from a remaining part,** a control gate formed on the floating gate via an isolation insulating film; a first electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over a channel region, the first electrode being insulated from the floating gate via a first insulating film; and a second electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over the channel region, the second electrode being insulated from the floating gate via a second insulating film, wherein when a predetermined voltage is applied to said first and second electrodes, a tunnel current flows through the first and second insulating films.	 《Flash Memory》 memory is read. Because the floating gate is covered by the insulating layer, the accumulated charge, and thereby the data written to the cell, is retained also when the power supply is interrupted. Therefore this kind of memory is called "nonvolatile." To increase storage capacity, the threshold voltage can be divided into several levels. A cell that stores only 1 bit (2 levels) is called a SLC (Single Level Cell), while a cell that stores 2 bits (4 levels) or more is called a MLC (Multi Level Cell).

Researcher's Comment: The memory cell comprises a floating gate as shown above which is formed on the silicon substrate via an insulating film (oxide layer)

Source: http://product.tdk.com/en/techjournal/archives/vol01_ssd/TDK_TJ_SSD_E_0127.pdf (page 2)

ICEBERG CAPITAL PARTNERS

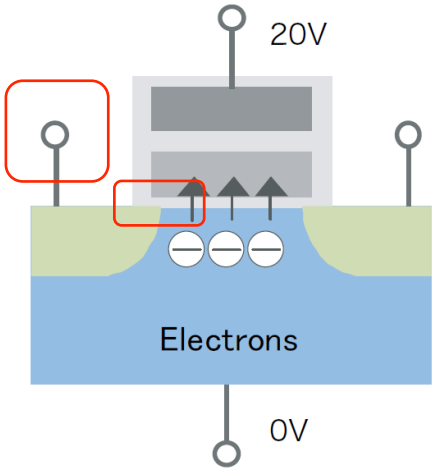
US 6128233 – Claim 1 vs. SHG2A Series (TDK Corporation)

Claim	SHG2A Series
1. A semiconductor memory device comprising: a memory cell having a floating gate formed on a semiconductor substrate via a gate insulating film to be insulated from a remaining part, **a control gate formed on the floating gate via an isolation insulating film;** a first electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over a channel region, the first electrode being insulated from the floating gate via a first insulating film; and a second electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over the channel region, the second electrode being insulated from the floating gate via a second insulating film, wherein when a predetermined voltage is applied to said first and second electrodes, a tunnel current flows through the first and second insulating films.	 《Flash Memory》

Researcher's Comment: The control gate is formed on the floating gate via an insulating film. (another layer of silicon di oxide)

Source: http://product.tdk.com/en/techjournal/archives/vol01_ssd/TDK_TJ_SSD_E_0127.pdf (page 2)

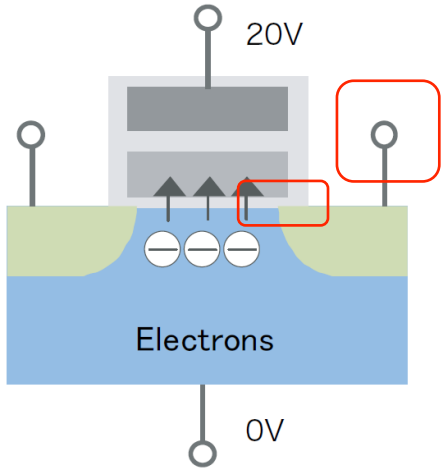
US 6128233 – Claim 1 vs. SHG2A Series (TDK Corporation)

Claim	SHG2A Series
1. A semiconductor memory device comprising: a memory cell having a floating gate formed on a semiconductor substrate via a gate insulating film to be insulated from a remaining part, a control gate formed on the floating gate via an isolation insulating film; **a first electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over a channel region, the first electrode being insulated from the floating gate via a first insulating film;** and a second electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over the channel region, the second electrode being insulated from the floating gate via a second insulating film, wherein when a predetermined voltage is applied to said first and second electrodes, a tunnel current flows through the first and second insulating films.	

Researcher's Comment: The above cell comprises an electrode over the substrate (colored in sky) it overlaps few part of floating gate via an insulating film(the overlap area is other than the extended part (extended over the channel region)

Source: http://product.tdk.com/en/techjournal/archives/vol01_ssd/TDK_TJ_SSD_E_0127.pdf

US 6128233 – Claim 1 vs. SHG2A Series (TDK Corporation)

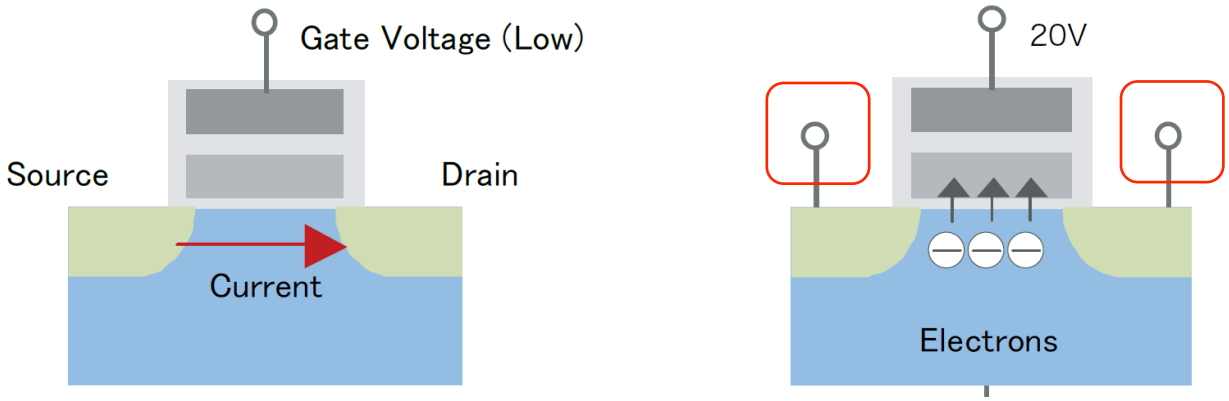
Claim	SHG2A Series
1. A semiconductor memory device comprising: a memory cell having a floating gate formed on a semiconductor substrate via a gate insulating film to be insulated from a remaining part, a control gate formed on the floating gate via an isolation insulating film; a first electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over a channel region, the first electrode being insulated from the floating gate via a first insulating film; and **a second electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over the channel region, the second electrode being insulated from the floating gate via a second insulating film,** wherein when a predetermined voltage is applied to said first and second electrodes, a tunnel current flows through the first and second insulating films.	

Researcher's Comment: The above cell comprises another electrode over the substrate (colored in sky) it overlaps few part of floating gate via an insulating film(the overlap area is other than the extended part (extended over the channel region)

Source: http://product.tdk.com/en/techjournal/archives/vol01_ssd/TDK_TJ_SSD_E_0127.pdf

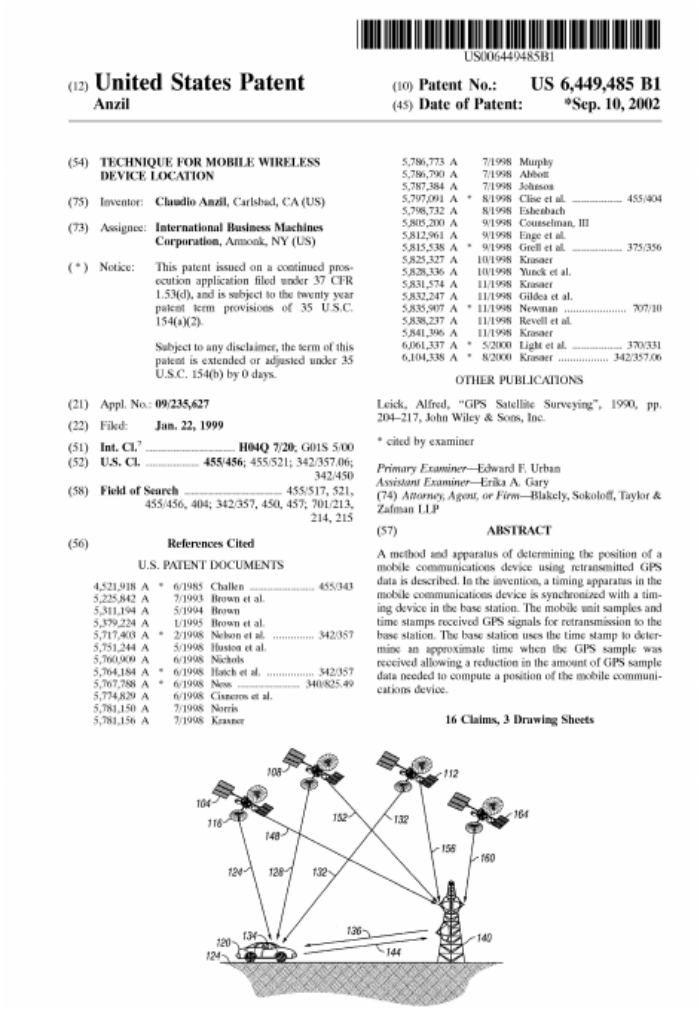
ICEBERG CAPITAL PARTNERS

US 6128233 – Claim 1 vs. SHG2A Series (TDK Corporation)

Claim	SHG2A Series
1. A semiconductor memory device comprising: a memory cell having a floating gate formed on a semiconductor substrate via a gate insulating film to be insulated from a remaining part, a control gate formed on the floating gate via an isolation insulating film; a first electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over a channel region, the first electrode being insulated from the floating gate via a first insulating film; and a second electrode over the substrate, formed to overlap a region of the floating gate other than regions of the floating gate extending over the channel region, the second electrode being insulated from the floating gate via a second insulating film, **wherein when a predetermined voltage is applied to said first and second electrodes, a tunnel current flows through the first and second insulating films.**	 layer. Because the floating gate is normally completely covered by the oxide layer, it acts as an insulator. But when a voltage is applied to the upper control gate, a so-called tunnel current (by a process known as Fowler-Nordheim Tunneling) flows through the insulating layer, causing an electric charge to accumulate at the floating gate. This is the write operation of the flash memory. **Researcher's Comment:** when the voltages are applied to the respective electrodes a tunnel current flows as shown above. Although only gate electorde is shown to be connected to 20 volt, likewise remaining electrodes are also conncted to particular voltages. Source: http://product.tdk.com/en/techjournal/archives/vol01_ssd/TDK_TJ_SSD_E_0127.pdf

ICEBERG CAPITAL PARTNERS

US 6449485 – Bibliographic information



US006449485B1

(12) **United States Patent**
Anzil

(10) **Patent No.: US 6,449,485 B1**
(45) **Date of Patent: *Sep. 10, 2002**

(54) **TECHNIQUE FOR MOBILE WIRELESS DEVICE LOCATION**

(75) Inventor: **Claudio Anzil**, Carlsbad, CA (US)

(73) Assignee: **International Business Machines Corporation**, Armonk, NY (US)

(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/235,627**

(22) Filed: **Jan. 22, 1999**

(51) **Int. Cl.**[7] **H04Q 7/20**; G01S 5/00

(52) **U.S. Cl.** **455/456**; 455/521; 342/357.06; 342/450

(58) **Field of Search** 455/517, 521, 455/456, 404; 342/357, 450, 457; 701/213, 214, 215

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,521,918	A *	6/1985	Challen	455/343
5,225,842	A	7/1993	Brown et al.	
5,311,194	A	5/1994	Brown	
5,379,224	A	1/1995	Brown et al.	
5,717,403	A *	2/1998	Nelson et al.	342/357
5,751,244	A	5/1998	Huston et al.	
5,760,909	A	6/1998	Nichols	
5,764,184	A *	6/1998	Hatch et al.	342/357
5,767,788	A *	6/1998	Ness	340/825.49
5,774,829	A	6/1998	Cisneros et al.	
5,781,150	A	7/1998	Norris	
5,781,156	A	7/1998	Krasner	
5,786,773	A	7/1998	Murphy	
5,786,790	A	7/1998	Abbott	
5,787,384	A	7/1998	Johnson	
5,797,091	A *	8/1998	Clise et al.	455/404
5,798,732	A	8/1998	Eshenbach	
5,805,200	A	9/1998	Counselman, III	
5,812,961	A	9/1998	Enge et al.	
5,815,538	A *	9/1998	Grell et al.	375/356
5,825,327	A	10/1998	Krasner	
5,828,336	A	10/1998	Yunck et al.	
5,831,574	A	11/1998	Krasner	
5,832,247	A	11/1998	Gildea et al.	
5,835,907	A *	11/1998	Newman	707/10
5,838,237	A	11/1998	Revell et al.	
5,841,396	A	11/1998	Krasner	
6,061,337	A *	5/2000	Light et al.	370/331
6,104,338	A *	8/2000	Krasner	342/357.06

OTHER PUBLICATIONS

Leick, Alfred, "GPS Satellite Surveying", 1990, pp. 204–217, John Wiley & Sons, Inc.

* cited by examiner

Primary Examiner—Edward F. Urban
Assistant Examiner—Erika A. Gary
(74) *Attorney, Agent, or Firm*—Blakely, Sokoloff, Taylor & Zafman LLP

(57) **ABSTRACT**

A method and apparatus of determining the position of a mobile communications device using retransmitted GPS data is described. In the invention, a timing apparatus in the mobile communications device is synchronized with a timing device in the base station. The mobile unit samples and time stamps received GPS signals for retransmission to the base station. The base station uses the time stamp to determine an approximate time when the GPS sample was received allowing a reduction in the amount of GPS sample data needed to compute a position of the mobile communications device.

16 Claims, 3 Drawing Sheets

Patent of Interest:

US6449485
(Priority date: Jan 22, 1999)

Technique for mobile wireless device location

Exemplary Market Applications:

Technology disclosed have applications in the following sectors:

- In finding the location of any device containing GPS receiver.
- In mobile phones,PDAs and other standalone GPS handheld device

ICEBERG CAPITAL PARTNERS

US 6449485 – Claim 8

8. A method of determining a position of a mobile transmitting unit comprising the acts of:

synchronizing a timing apparatus with a timing signal received from a base station;

receiving and taking a plurality of samples of a GPS signal from at least one GPS satellite for periodic determination of the position of the mobile transmitting unit;

associating each sample of the received GPS signal with a corresponding time stamp, the corresponding time stamp based on the timing apparatus and indicating when the sample of GPS data was received; and

transmitting the plurality of samples of the GPS signal each with the corresponding time stamp to a base station for correlation with the data at the base station, the data at said base station being retrieved from a memory of the base station which data was received at the base station at the same time.

US 6449485 – EoU Summary

Novatel GNSS Receiver(OEMV Firmwire)	
Key claim(s)	8 (independent claim)
Mapped product	Chart has been made with respect to Novatel GNSS Receiver
Source	Product information available at: http://www.novatel.com/assets/Documents/Manuals/om-20000094.pdf http://www.novatel.com/assets/Documents/Manuals/om-20000093.pdf
Publication date	May 2010
Details of product / company	NovAtel America Inc. is a leading provider of precise GPS systems (global positioning systems), augmentation components, GPS tracking devices, and GPS navigation. It claims to have provided most comprehensive Global Navigational Satellite System. It is headquarterd in Sweden and has sales office in Houston ,TX USA.

US 6449485 – Novatel GNSS Receiver (OEMV Firmwire) : Overview

NOVATEL GNSS Receiver is a sophisticated GPS receiver used for position calculation based on several GPS measurement techniques. It generates and accepts different types of logs and command based on the measurement taken from satellites.

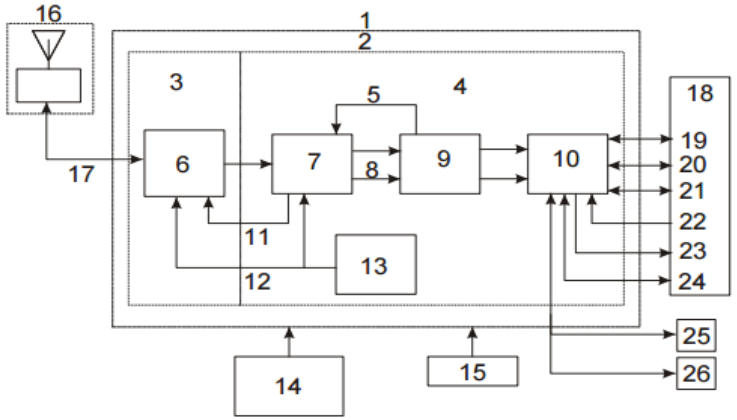


Figure 12: GNSS Receiver System Functional Diagram

Reference	Description	Reference	Description
1	Enclosure	14	LNA Power (only active antennas)
2	OEMV Card	15	Power Supply
3	RF Section	16	GNSS Antenna and LNA
4	Digital Section	17	RF, Coaxial Cable and Power
5	Controls	18	Data and Signal Processing
6	RF-IF Sections	19	COM1
7	Signal Processor	20	COM2
8	Clock	21	COM3

Continued on Page 35

1.2.1 OEMV-1 Card

The OEMV-1 is a compact, low-power, single frequency L1 GPS card with integrated L-band (OmniSTAR/CDGPS). In addition to the functionality given in *Section 1.1.1* on *page 24*, the OEMV-1 offers:

- 1 Controller Area Network (CAN) Bus port (without transceiver), 1 USB 1.1 communication port and 2 LV-TTL communication ports
- Integrated L-band (OmniSTAR VBS and CDGPS)
- AdVance RTK 20 cm (RT-20®) positioning capability for GPS-only. For more on RTK positioning, refer to information available through the *Support* page of the NovAtel Web site at www.novatel.com.
- Auxiliary strobe signals for status and synchronization
- Software load compatibility with other OEMV family products
- Optional Application Program Interface (API) software for loading a custom application

Source:http://www.novatel.com/assets/Documents/Manuals/om-20000093.pdf

ICEBERG CAPITAL PARTNERS

US 6449485 – Claim 8 vs. Novatel GNSS Receiver (OEMV Firmwire)

Claim	Novatel GNSS Receiver(OEMV Firmwire)

8. A method of determining a position of a mobile transmitting unit comprising the acts of:

synchronizing a timing apparatus with a timing signal received from a base station;

receiving and taking a plurality of samples of a GPS signal from at least one GPS satellite for periodic determination of the position of the mobile transmitting unit;

associating each sample of the received GPS signal with a corresponding time stamp, the corresponding time stamp based on the timing apparatus and indicating when the sample of GPS data was received; and

transmitting the plurality of samples of the GPS signal each with the corresponding time stamp to a base station for correlation with the data at the base station, the data at said base station being retrieved from a memory of the base station which data was received at the base station at the same time.

Message Frame Header		Data	Bits
Word 1	–	Message frame preamble for synchronization	8
	–	Frame/message type ID	6
	–	Base station ID	10
	–	Parity	6
Word 2	–	Modified z-count (time tag)	13
	–	Sequence number	3
	–	Length of message frame	5
	–	Base health	3
	–	Parity	6

The time is continuously monitored and the receiver clock is corrected if an offset of more than 50 ns is detected.

Researcher's Comment: A base station typically sends a message frame preamble for time synchronization with the receiver and the receiver's clock is adjusted based thereon. The receiver is a GPS based receiver which is used for position calculation.

Source: http://www.novatel.com/assets/Documents/Manuals/om-20000094.pdf

ICEBERG CAPITAL PARTNERS

US 6449485 – Claim 8 vs. Novatel GNSS Receiver (OEMV Firmwire)

Claim	Novatel GNSS Receiver(OEMV Firmwire)
8. A method of determining a position of a mobile transmitting unit comprising the acts of: synchronizing a timing apparatus with a timing signal received from a base station; **receiving and taking a plurality of samples of a GPS signal from at least one GPS satellite for periodic determination of the position of the mobile transmitting unit;** associating each sample of the received GPS signal with a corresponding time stamp, the corresponding time stamp based on the timing apparatus and indicating when the sample of GPS data was received; and transmitting the plurality of samples of the GPS signal each with the corresponding time stamp to a base station for correlation with the data at the base station, the data at said base station being retrieved from a memory of the base station which data was received at the base station at the same time.	The data in synchronous logs (for example, RANGE, BESTPOS, TIME) are based on a periodic measurement of satellite pseudoranges. The time stamp on these logs is the receiver estimate of GPS time at the time of the measurement. When setting time in external equipment, a small synchronous log with a high baud rate will be accurate to a fraction of a second. A synchronous log with trigger ONTIME 1 can be used in conjunction with the 1PPS signal to provide relative accuracy better than 250 ns. When a GPS position is computed, there are four unknowns being solved: latitude, longitude, height and receiver clock offset (often just called time). The solutions for each of the four unknowns are correlated to satellite positions in a complex way. Since satellites are above the antenna (none are below it) there is a geometric bias. Therefore geometric biases are present in the solutions and affect the computation of height. These biases are called DOPs (Dilution Of Precision). Smaller biases are

Researcher's Comment: Satellite pseudorange measurement is essentially measurement taken from atleast 4 satellites for calculating position of a GPS receiver. GPS measurements are taken periodically for periodic position measurement.

Source: http://www.novatel.com/assets/Documents/Manuals/om-20000094.pdf

ICEBERG CAPITAL PARTNERS

US 6449485 – Claim 8 vs. Novatel GNSS Receiver (OEMV Firmwire)

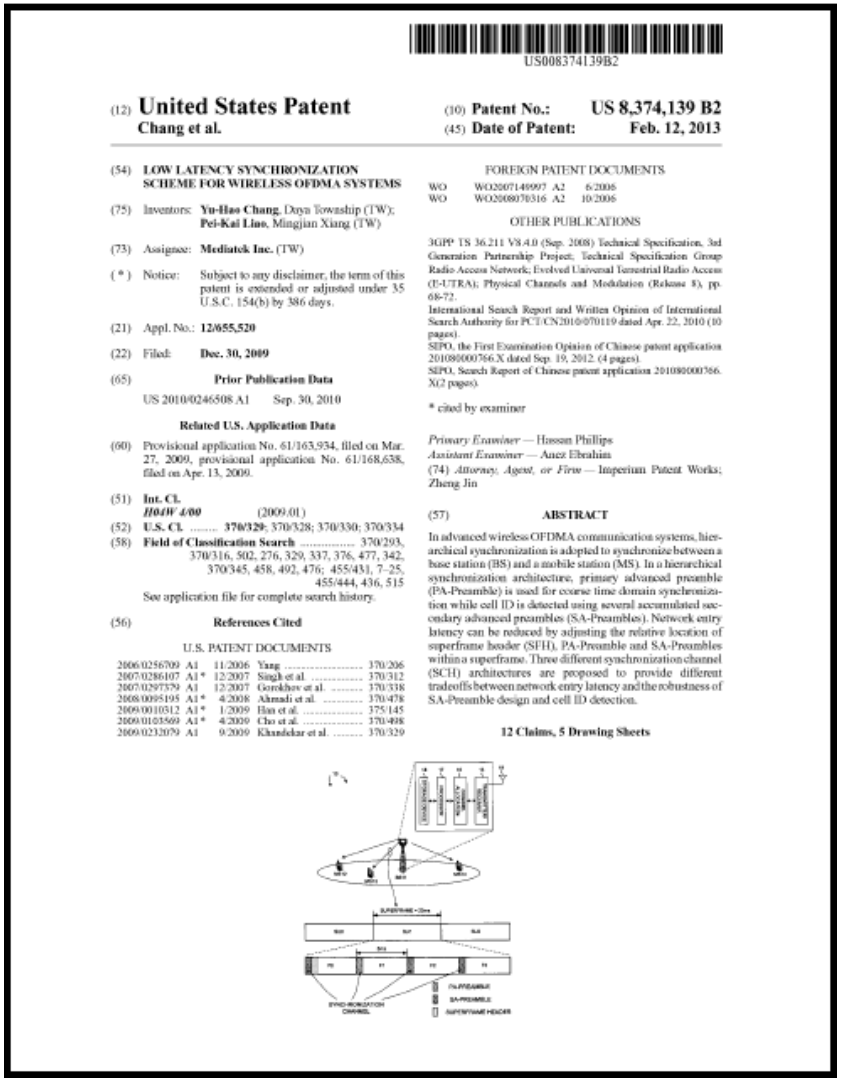
Claim	Novatel GNSS Receiver(OEMV Firmwire)
8. A method of determining a position of a mobile transmitting unit comprising the acts of: synchronizing a timing apparatus with a timing signal received from a base station; receiving and taking a plurality of samples of a GPS signal from at least one GPS satellite for periodic determination of the position of the mobile transmitting unit; **associating each sample of the received GPS signal with a corresponding time stamp, the corresponding time stamp based on the timing apparatus and indicating when the sample of GPS data was received; and** transmitting the plurality of samples of the GPS signal each with the corresponding time stamp to a base station for correlation with the data at the base station, the data at said base station being retrieved from a memory of the base station which data was received at the base station at the same time.	The data in synchronous logs (for example, RANGE, BESTPOS, TIME) are based on a periodic measurement of satellite pseudoranges. The time stamp on these logs is the receiver estimate of GPS time at the time of the measurement. When setting time in external equipment, a small synchronous log with a high baud rate will be accurate to a fraction of a second. A synchronous log with trigger ONTIME 1 can be used in conjunction with the 1PPS signal to provide relative accuracy better than 250 ns. All NovAtel format messages generated by the OEMV family receivers have a GPS time stamp in their header. GPS time is referenced to UTC with zero point defined as midnight on the night of January 5 1980. The time stamp consists of the number of weeks since that zero point and the number of seconds since the last week number change (0 to 604,799). GPS time differs from UTC time since leap seconds are occasionally inserted into UTC but GPS time is continuous. In addition a small error (less than 1 microsecond) can exist in synchronization between UTC and GPS time. The TIME log reports both GPS and UTC time and the offset between the two. **Researcher's Comment:** The GPS measurement taken by satellites are correlated with the time of measurement (when GPS measurement data was received). Each GPS sample (measurement) is associated with a time stamp. Source: http://www.novatel.com/assets/Documents/Manuals/om-20000094.pdf

ICEBERG CAPITAL PARTNERS

US 6449485 – Claim 8 vs. Novatel GNSS Receiver (OEMV Firmwire)

Claim	Novatel GNSS Receiver(OEMV Firmwire)
8. A method of determining a position of a mobile transmitting unit comprising the acts of: synchronizing a timing apparatus with a timing signal received from a base station; receiving and taking a plurality of samples of a GPS signal from at least one GPS satellite for periodic determination of the position of the mobile transmitting unit; associating each sample of the received GPS signal with a corresponding time stamp, the corresponding time stamp based on the timing apparatus and indicating when the sample of GPS data was received; and **transmitting the plurality of samples of the GPS signal each with the corresponding time stamp to a base station for correlation with the data at the base station, the data at said base station being retrieved from a memory of the base station which data was received at the base station at the same time.**	Also, the principal of DGPS positioning assumes that there are common errors at the base and rover stations. These errors include: atmospheric errors, satellite clock and ephemeris errors. Typically, in a differential GPS survey, a receiver occupies a survey control marker at a known location referred to as the base station. The base station collects GPS data and computes a position. This position is then compared against the published coordinates. The difference between these two positions in the way of range errors to the satellites are your differential corrections. Usually, these corrections are then passed to your rover unit(s) for use in computing the rover's differentially corrected positions. However, the further apart the base and rover receivers are, the less their errors are in common. Thus, the differential corrections computed at your base are less applicable at your rover's location at large distances. **Researcher's Comment:** The receiver generate the header which contains GPS coordinates (published coordinates) with time stamp. The generated message is sent to base station**.** The base station also collects GPS data on its own(stored in its memory) and compare both to make corrections in measurement caused by different factors. Source: http://www.novatel.com/assets/Documents/Manuals/om-20000094.pdf

US 8374139 – Bibliographic information



US008374139B2

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

(10) **Patent No.: US 8,374,139 B2**
(45) **Date of Patent: Feb. 12, 2013**

(54) **LOW LATENCY SYNCHRONIZATION SCHEME FOR WIRELESS OFDMA SYSTEMS**

(75) Inventors: **Yu-Hao Chang**, Daya Township (TW); **Pei-Kai Liao**, Mingjian Xiang (TW)

(73) Assignee: **Mediatek Inc.** (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 386 days.

(21) Appl. No.: **12/655,520**

(22) Filed: **Dec. 30, 2009**

(65) **Prior Publication Data**

US 2010/0246508 A1 Sep. 30, 2010

Related U.S. Application Data

(60) Provisional application No. 61/163,934, filed on Mar. 27, 2009, provisional application No. 61/168,638, filed on Apr. 13, 2009.

(51) **Int. Cl.**
H04W 4/00 (2009.01)

(52) **U.S. Cl.** **370/329**; 370/328; 370/330; 370/334

(58) **Field of Classification Search** 370/293, 370/316, 502, 276, 329, 337, 376, 477, 342, 370/345, 458, 492, 476; 455/431, 7–25, 455/444, 436, 515
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2006/0256709	A1	11/2006	Yang	370/206
2007/0286107	A1 *	12/2007	Singh et al.	370/312
2007/0297379	A1	12/2007	Gorokhov et al.	370/338
2008/0095195	A1 *	4/2008	Ahmadi et al.	370/478
2009/0010312	A1 *	1/2009	Han et al.	375/145
2009/0103569	A1 *	4/2009	Cho et al.	370/498
2009/0232079	A1	9/2009	Khandekar et al.	370/329

FOREIGN PATENT DOCUMENTS

WO	WO2007146997 A2	6/2006
WO	WO2008070316 A2	10/2006

OTHER PUBLICATIONS

3GPP TS 36.211 V8.4.0 (Sep. 2008) Technical Specification, 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation (Release 8), pp. 68-72.
International Search Report and Written Opinion of International Search Authority for PCT/CN2010/070119 dated Apr. 22, 2010 (10 pages).
SIPO, the First Examination Opinion of Chinese patent application 201080000766.X dated Sep. 19, 2012. (4 pages).
SIPO, Search Report of Chinese patent application 201080000766.X(2 pages).

* cited by examiner

Primary Examiner — Hassan Phillips
Assistant Examiner — Anez Ebrahim
(74) *Attorney, Agent, or Firm* — Imperium Patent Works; Zheng Jin

(57) **ABSTRACT**

In advanced wireless OFDMA communication systems, hierarchical synchronization is adopted to synchronize between a base station (BS) and a mobile station (MS). In a hierarchical synchronization architecture, primary advanced preamble (PA-Preamble) is used for coarse time domain synchronization while cell ID is detected using several accumulated secondary advanced preambles (SA-Preambles). Network entry latency can be reduced by adjusting the relative location of superframe header (SFH), PA-Preamble and SA-Preambles within a superframe. Three different synchronization channel (SCH) architectures are proposed to provide different tradeoffs between network entry latency and the robustness of SA-Preamble design and cell ID detection.

12 Claims, 5 Drawing Sheets

Patent of Interest:

US8374139
(Priority date: March 27, 2009)

Low latency synchronization scheme for wireless

OFDMA systems

Exemplary Market Applications:

Technology disclosed have applications in the following sectors:

- The method of preamble allocation scheme for providing robust cell ID detection with reduced network entry latency for various network environments, in OFDMA communication system.

ICEBERG CAPITAL PARTNERS

US 8374139 – Claim 1

1. A method for downlink synchronization in a cellular orthogonal frequency division multiple access (OFDMA) system, the method comprising:

allocating a primary advanced preamble (PA Preamble) in a second frame in an OFDM superframe having four frames including a first, the second, a third and a fourth frame along time domain, wherein the PA Preamble is allocated in a first OFDM symbol along time domain in the second frame;

allocating one or more secondary advanced preambles (SA Preambles) within the superframe, wherein the one or more SA Preambles are allocated in a corresponding first OFDM symbol along time domain in the first, the third, or the fourth frames; and

transmitting the OFDM superframe by a base station, wherein the OFDM superframe further comprises a superframe header (SFH) that is located in the first frame of the OFDM superframe along time domain, and wherein the PA Preamble is allocated after the SFH such that the mobile station takes less than a superframe length to decode the SFH after decoding the PA Preamble and the SA Preambles for complete cell-ID information.

US 8374139 – EoU Summary

Rohde & Schwarz's Signal and Spectrum Analyzers	
Key claim(s)	1, 6, 11 (independent claims)
Mapped product	Chart has been made with respect to Rohde & Schwarz's Signal and Spectrum Analyzers.
Source	Product information available at: http://cdn.rohde-schwarz.com/pws/dl_downloads/dl_application/application_notes/1ma173/1MA173_0e_carrier_aggregation_for_IEEE_80216m.pdf http://cdn.rohde-schwarz.com/pws/dl_downloads/dl_application/application_notes/1ma167/1MA167_3e_IEEE_80216m_technology.pdf http://www.rohde-schwarz.pl/file_13650/wimax
Publication date	Not earlier than 2010
Details of product / company	Rohde & Schwarz GmbH & Co KG is an international electronics group specialized in the fields of electronic test equipment, broadcasting, radiomonitoring and radiolocation, and radiocommunication. The company provides products for the wireless communications, broadcasting and electronics industry, aerospace and defense, homeland security and critical infrastructures

US 8374139 – Rohde & Schwarz: Overview

Rohde & Schwarz in brief

For more than 80 years, Rohde & Schwarz has stood for quality, precision and innovation in all fields of wireless communications. The company is strategically based on five pillars: test and measurement, broadcast and media, secure communications, cybersecurity, radiomonitoring and radiolocation. Thanks to this strategy, the company can address diverse market segments, including wireless communications, the broadcasting and electronics industry, aerospace and defense, homeland security and critical infrastructures.

The electronics group is among the world market leaders in its established business fields. Rohde & Schwarz is the world's leading manufacturer of wireless communications and EMC test and measurement equipment, as well as of broadcasting and T&M equipment for digital terrestrial television. The Executive Board is made up of Manfred Fleischmann (Chairman), Christian Leicher and Peter Riedel.

As an independent, family-owned company, Rohde & Schwarz generates its growth from its own resources. Since the company does not have to think in quarters, it can plan for the long term. On June 30, 2014, Rohde & Schwarz had approximately 9800 employees with about 5900 working in Germany. The company achieved a net revenue of EUR 1.75 billion in the 2013/2014 fiscal year (July to June).

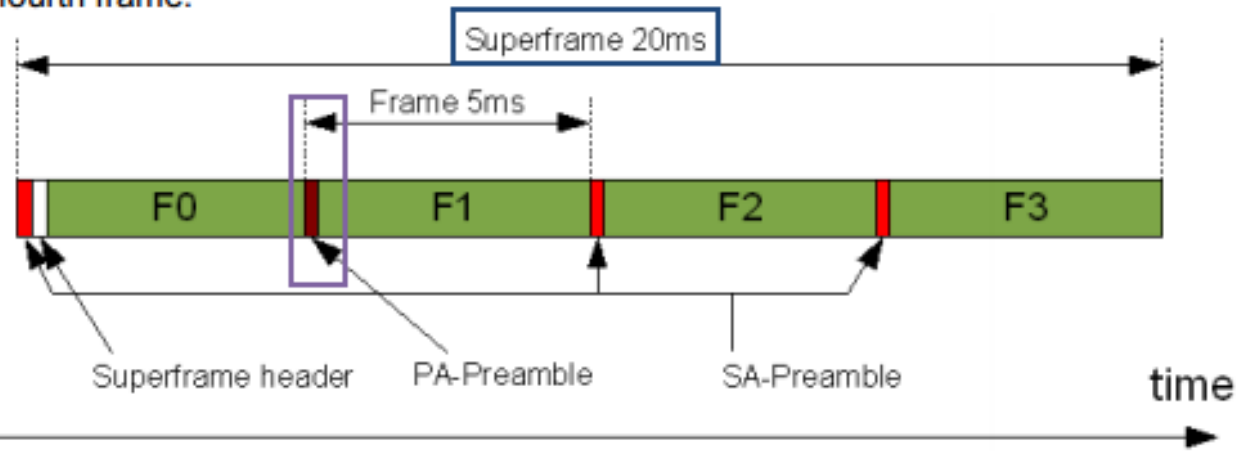
Source: http://www.rohde-schwarz.com/en/about/company-profile/company-profile/company-profile_229412.html

US 8374139 – Claim 1 vs. Rohde & Schwarz's Signal and Spectrum Analyzers

Claim	Signal and Spectrum Analyzers
1. A method for **downlink synchronization** in a cellular **orthogonal frequency division multiple access (OFDMA)** system, the method comprising: allocating a primary advanced preamble (PA Preamble) in a second frame in an OFDM superframe having four frames including a first, the second, a third and a fourth frame along time domain, wherein the PA Preamble is allocated in a first OFDM symbol along time domain in the second frame; allocating one or more secondary advanced preambles (SA Preambles) within the superframe, wherein the one or more SA Preambles are allocated in a corresponding first OFDM symbol along time domain in the first, the third, or the fourth frames; and Continue…	**3.2.7.1 DL control channels** For reducing the Overhead, 802.16m introduced control mechanisms with different transmission intervals in the time domain for the DL. **Products:** R&S®SMU200A R&S®SMBV100A R&S®AMU200A R&S®FSQ R&S®FSG R&S®FSV R&S®FSL Rohde&Schwarz provides leading test solutions for IEEE802.16-2009. These include the R&S®SMU200A and R&S®AMU200A signal generators and fading simulators offering a unique two-path concept and the high-performance R&S®FSQ and R&S®FSV signal and spectrum analyzers. Featuring a MIMO base station emulator for IP application **Researcher's Comments:** The disclosure states the products using downlink (DL) synchronization (control mechanism) in a cellular orthogonal frequency division multiple access system (802.16m). Source1: http://cdn.rohde-schwarz.com/pws/dl_downloads/dl_application/application_notes/1ma167/1MA167_3e_IEEE_80216m_technology.pdf Source2: http://cdn.rohde-schwarz.com/pws/dl_downloads/dl_application/application_notes/1ma173/1MA173_0e_carrier_aggregation_for_IEEE_80216m.pdf Source3: http://www.rohde-schwarz.pl/file_13650/wimax

ICEBERG CAPITAL PARTNERS

US 8374139 – Claim 1 vs. Rohde & Schwarz's Signal and Spectrum Analyzers

Claim	Signal and Spectrum Analyzers
1. A method for downlink synchronization in a cellular orthogonal frequency division multiple access (OFDMA) system, the method comprising: allocating a **primary advanced preamble (PA Preamble)** in a **second frame** in an **OFDM superframe having four frames including a first, the second, a third and a fourth frame along time domain**, wherein the **PA Preamble** is allocated in **a first OFDM symbol along time domain in the second frame**; allocating one or more secondary advanced preambles (SA Preambles) within the superframe, wherein the one or more SA Preambles are allocated in a corresponding first OFDM symbol along time domain in the first, the third, or the fourth frames; and Continue…	The distribution of the primary and secondary Preamble inside of a superframe is shown in the picture below. The primary advanced Preamble is transmitted with the second frame, while the secondary advanced preamble is transmitted in the first, third and fourth frame.  ***Figure 21: distribution of the preambles in a superframe***

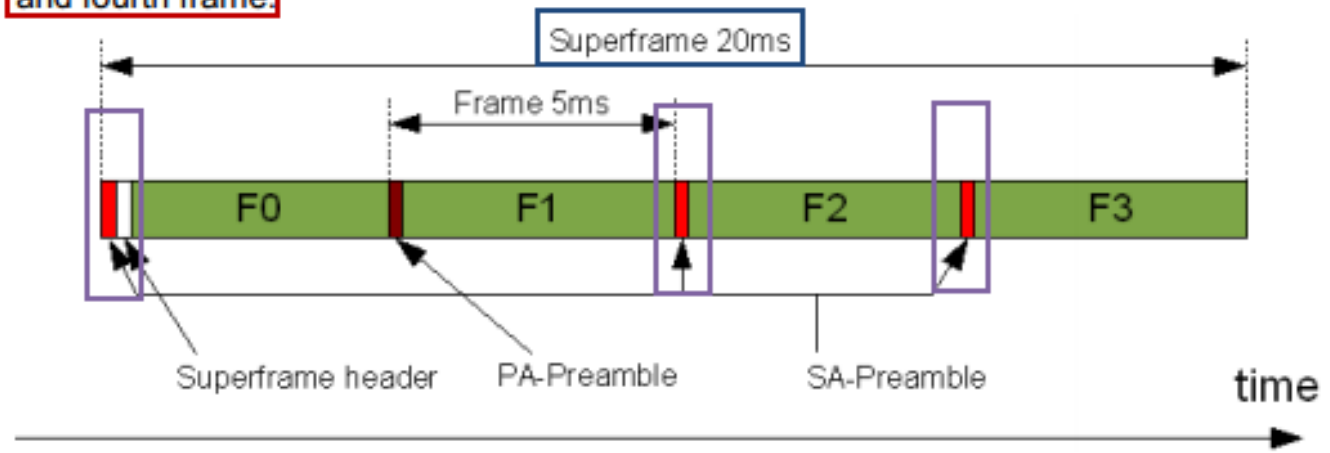
Source: http://cdn.rohde-schwarz.com/pws/dl_downloads/dl_application/application_notes/1ma167/1MA167_3e_IEEE_80216m_technology.pdf

ICEBERG CAPITAL PARTNERS

US 8374139 – Claim 1 vs. Rohde & Schwarz's Signal and Spectrum Analyzers

Claim	Signal and Spectrum Analyzers
1. A method for downlink synchronization in a cellular orthogonal frequency division multiple access (OFDMA) system, the method comprising: allocating a **primary advanced preamble (PA Preamble)** in a **second frame** in an **OFDM superframe having four frames including a first, the second, a third and a fourth frame along time domain**, wherein the **PA Preamble** is allocated in **a first OFDM symbol along time domain in the second frame**; allocating one or more secondary advanced preambles (SA Preambles) within the superframe, wherein the one or more SA Preambles are allocated in a corresponding first OFDM symbol along time domain in the first, the third, or the fourth frames; and Continue…	**Researcher's Comment:** It can be easily seen from the disclosure that, the primary advanced preamble (PA-Preamble) is allocated in a second frame (F1), in an OFDM superframe having four frames including a first, the second, a third and a fourth frame along the time domain (Superframe), where the PA Preamble is allocated in a first OFDM symbol along the time domain in the second frame. Source: http://cdn.rohde-schwarz.com/pws/dl_downloads/dl_application/application_notes/1ma167/1MA167_3e_IEEE_80216m_technology.pdf

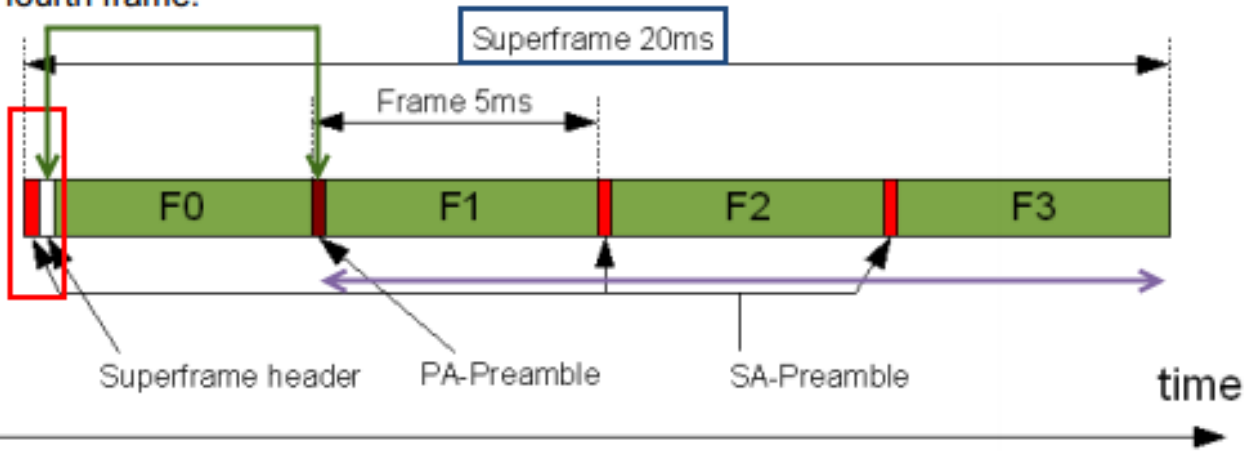
US 8374139 – Claim 1 vs. Rohde & Schwarz's Signal and Spectrum Analyzers

Claim	Signal and Spectrum Analyzers
1. A method for downlink synchronization in a cellular orthogonal frequency division multiple access (OFDMA) system, the method comprising: allocating a primary advanced preamble (PA Preamble) in a second frame in an OFDM superframe having four frames including a first, the second, a third and a fourth frame along time domain, wherein the PA Preamble is allocated in a first OFDM symbol along time domain in the second frame; allocating one or more **secondary advanced preambles (SA Preambles)** within the **superframe**, wherein the one or more **SA Preambles** are allocated in a corresponding **first OFDM symbol along time domain** in the **first, the third, or the fourth frames**; and Continue…	The distribution of the primary and secondary Preamble inside of a superframe is shown in the picture below. The primary advanced Preamble is transmitted with the second frame, while the secondary advanced preamble is transmitted in the first, third and fourth frame.  ***Figure 21: distribution of the preambles in a superframe***

Source: http://cdn.rohde-schwarz.com/pws/dl_downloads/dl_application/application_notes/1ma167/1MA167_3e_IEEE_80216m_technology.pdf

ICEBERG CAPITAL PARTNERS

US 8374139 – Claim 1 vs. Rohde & Schwarz's Signal and Spectrum Analyzers

Claim	Signal and Spectrum Analyzers
… transmitting the **OFDM superframe** by a base station, wherein the **OFDM superframe** further comprises a **superframe header (SFH) that is located in the first frame of the OFDM superframe along time domain**, and wherein the **PA Preamble is allocated after the SFH** such that the **mobile station takes less than a superframe length to decode the SFH after decoding the PA Preamble and the SA Preambles for complete cell-ID information**	The distribution of the primary and secondary Preamble inside of a superframe is shown in the picture below. The primary advanced Preamble is transmitted with the second frame, while the secondary advanced preamble is transmitted in the first, third and fourth frame.  ***Figure 21: distribution of the preambles in a superframe***

Source: http://cdn.rohde-schwarz.com/pws/dl_downloads/dl_application/application_notes/1ma167/1MA167_3e_IEEE_80216m_technology.pdf

ICEBERG CAPITAL PARTNERS

US 8374139 – Claim 1 vs. Rohde & Schwarz's Signal and Spectrum Analyzers

Claim	Signal and Spectrum Analyzers

… transmitting the **OFDM superframe** by a base station, wherein the **OFDM superframe** further comprises a **superframe header (SFH) that is located in the first frame of the OFDM superframe along time domain**, and wherein the **PA Preamble is allocated after the SFH** such that the **mobile station takes less than a superframe length to decode the SFH after decoding the PA Preamble and the SA Preambles for complete cell-ID information**

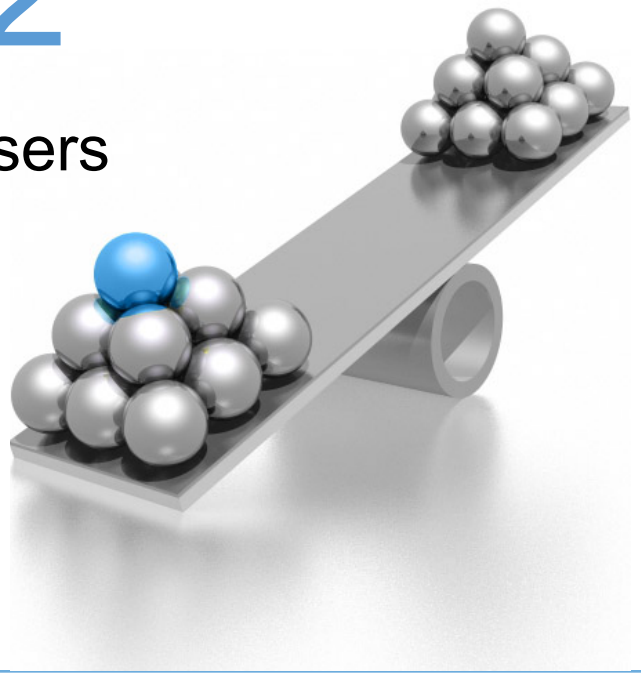
PA-PREAMBLE	Primary Advanced Preamble	Used for initial acquisition, superframe synchronization contains information like: Advanced BS Type, Section ID, BW, carrier configuration
SA-PREAMBLE	Secondary Advanced Preamble	Used for fine synchronization, cell / sector identification contains information like: channel estimation
SFH	Superframe Header	Contains essential system parameters and system configuration info. The SFH contains the P-SFH and the S-SFH. Located in first AAI subframe within a superframe

Researcher's Comments: It can be observed from the disclosure that, the OFDM superframe comprises a superframe header (SFH) that is located in the first frame of the OFDM superframe along the time domain, and where the PA Preamble is allocated after the SFH such that the mobile station takes less than a superframe length (15ms) to decode the SFH after decoding the PA Preamble and the SA Preambles for complete cell-ID information.

Source: http://cdn.rohde-schwarz.com/pws/dl_downloads/dl_application/application_notes/1ma167/1MA167_3e_IEEE_80216m_technology.pdf

Appendix 2

Technology and potential users



ICEBERG CAPITAL PARTNERS

Technology areas and potential users - US8200192, US8175621 and US8195234

Technology Area: Wireless Communication

Market: Dual subscriber identity module (SIM) Mobile Phones and Devices

Main Players: Sony, Nokia, BLU

(i) Sony Xperia E Dual:

Convenient call handling with a dual SIM mobile

The dual SIM cards are perfect when you want to separate work from play – and handle your calls in a cost-efficient way. You switch between SIM cards anytime with a simple touch. Or make the switch happen automatically: just preset which SIM card to use at specific times of the day.

Source: http://www.sonymobile.com/us/products/phones/xperia-e-dual/

(ii) Sony Xperia Tipo Dual:

Made for 2 SIM cards

Switch between SIM cards anytime with a simple press on the dedicated hardware key. Perfect when you, for example, want to keep your work and leisure time apart. Or make it happen automatically – set which SIM card to use at specific times of the day. You can also customize each SIM card separately with different ringtones and notifications.

Source: http://www.sonymobile.com/us/products/phones/xperia-tipo-dual/

Technology areas and potential users - US8200192, US8175621 and US8195234

(iii) BLU Diva X:

Source: http://www.bluproducts.com/images/pdfguides/divax.pdf

ICEBERG CAPITAL PARTNERS

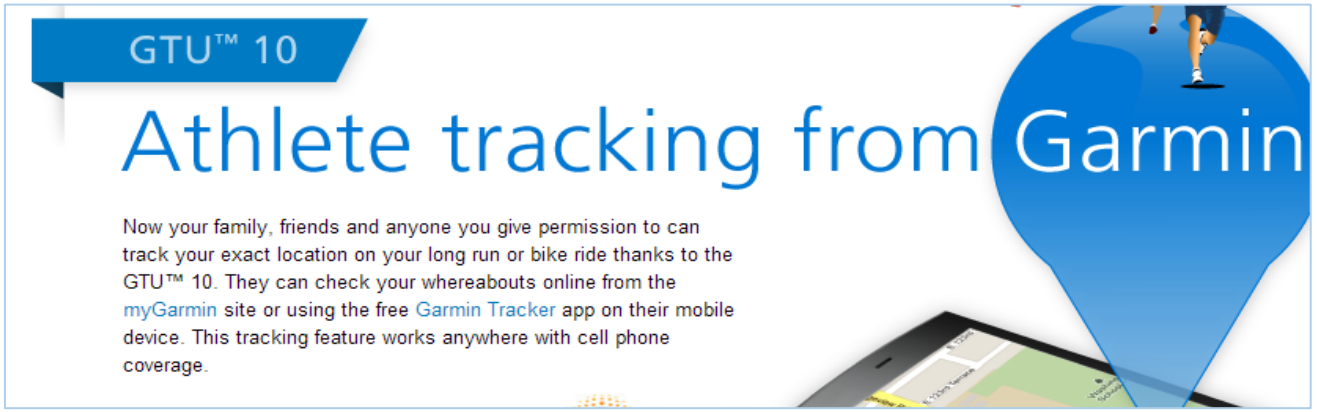
Technology areas and potential users – US6449485

Technology Area: GPS based navigation

Market: Mobile Communications Device Tracking and populating traffic data on maps

Main Players: Garmin, TomTom, Android-based smartphones used to populate traffic data on Google Maps

(i) Garmin GTU 10:



Source: http://www8.garmin.com/followme/

ICEBERG CAPITAL PARTNERS

(ii) TomTom LIVE QuickGPSfix:

A quick start with TomTom LIVE QuickGPSfix™

Your TomTom device uses the signals of at least 4 satellites to to pinpoint your location. To start navigating, it needs to know exactly where each satellite is. Stop waiting! Start navigating faster with LIVE QuickGPSfix™. No need to connect to your home computer, your TomTom LIVE device will automatically download the latest satellite position data as soon as it's available.

This smart service speeds up the time it takes to fix your GPS position, helping you to get a GPS signal within 30 seconds - even when it's is weak or partially blocked.

Source: http://www.tomtom.com/en_us/services/live/quickgpsfix/

(iii) Garmin Live Traffic:

Where does the traffic data come from?

Traffic alerts come from a traffic data collection system that analyzes traffic flow data collected from more than 2 billion observation points every month:

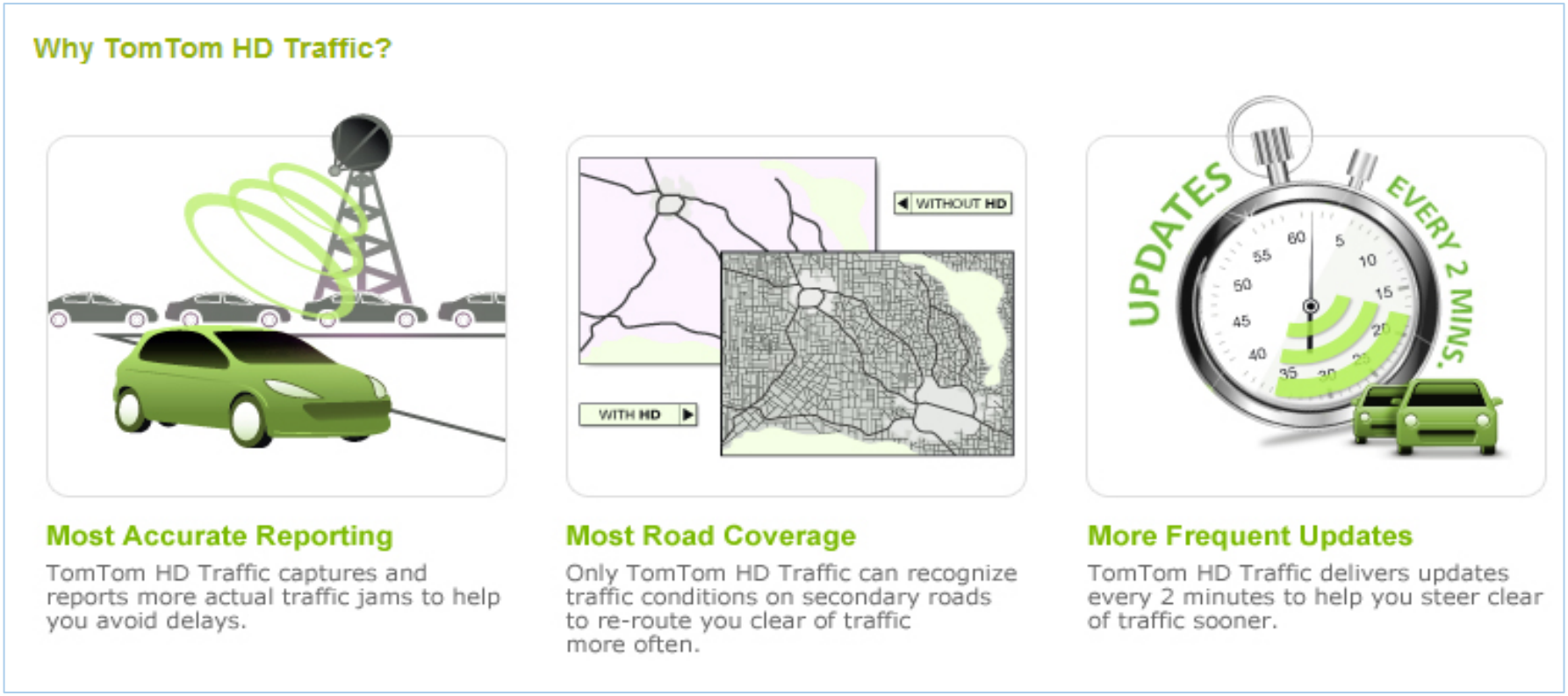
- data from millions of Garmin device owners
- data from millions of cellular phone owners
- incident reports
- radio feeds of live information
- news stations
- historical traffic data from NAVTEQ Traffic Supply
- historical traffic data from Garmin device owners
- fixed traffic sensors on major roads giving extremely accurate traffic reports

Traffic data collected from more observation points, more often, helps your navigator find efficient driving routes for you.

Source: https://www8.garmin.com/traffic/

Technology areas and potential users – US6449485

(iii) TomTom HD Traffic:



Source: http://www.tomtom.com/en_us/services/live/quickgpsfix/

If the portfolio is of interest or you require further information, please contact your ICEBERG relationship manager.

ICEBERG Capital Partners Limited
35 Berkeley Square
Mayfair, London
England
W1J 5BF
UK

P. +44 (0)207 887 6377
F. +44 (0)207 681 2137
E. enquiries@iceberg-cap.com
W. www.iceberg-cap.com

Disclaimer and Notice:

The information in this document is provided in confidence for the sole purpose of supporting the independent evaluation of the enclosed patent portfolio by potential buyers. Any discussion of the use or potential use of the patent portfolio is for illustrative purposes only. This document, the offer of the portfolio for sale, and any materials or information exchanged during the sales process — whether in this document or otherwise — are not, are not intended to be, and should not be construed as being, notice of infringement, any form of accusation of infringement, or any opinion regarding the actual use of the patent portfolio.

No assurances, representations or warranties pertaining to the patent portfolio or its validity are provided or implied herein, and the information in this document is not legal advice, analysis or a legal opinion. Potential purchasers must rely on their own evaluation, examination and due diligence of the patent portfolio, as this document is solely attributable to ICEBERG Capital Partners Limited and does not necessarily represent the views or opinions of the seller.

This document and any other materials or information provided by ICEBERG Capital Partners Limited related to the portfolio are copyrighted, and are intended for use by the receiving party solely for its use in participating in the sales process and in determining whether to purchase the portfolio. Any distribution of such materials or information outside of the receiving party's organisation without ICEBERG Capital Partners Limited permission is strictly prohibited.