



US 20070257842A1

(19) **United States**

(12) **Patent Application Publication**
Tseng

(10) **Pub. No.: US 2007/0257842 A1**

(43) **Pub. Date: Nov. 8, 2007**

(54) **COUPLED-FED ANTENNA DEVICE**

(57) **ABSTRACT**

(75) Inventor: **Wen Jen Tseng**, Kaohsiung City (TW)

Correspondence Address:
TROXELL LAW OFFICE PLLC
SUITE 1404
5205 LEESBURG PIKE
FALLS CHURCH, VA 22041 (US)

(73) Assignee: **Air2U Inc.**

(21) Appl. No.: **11/415,249**

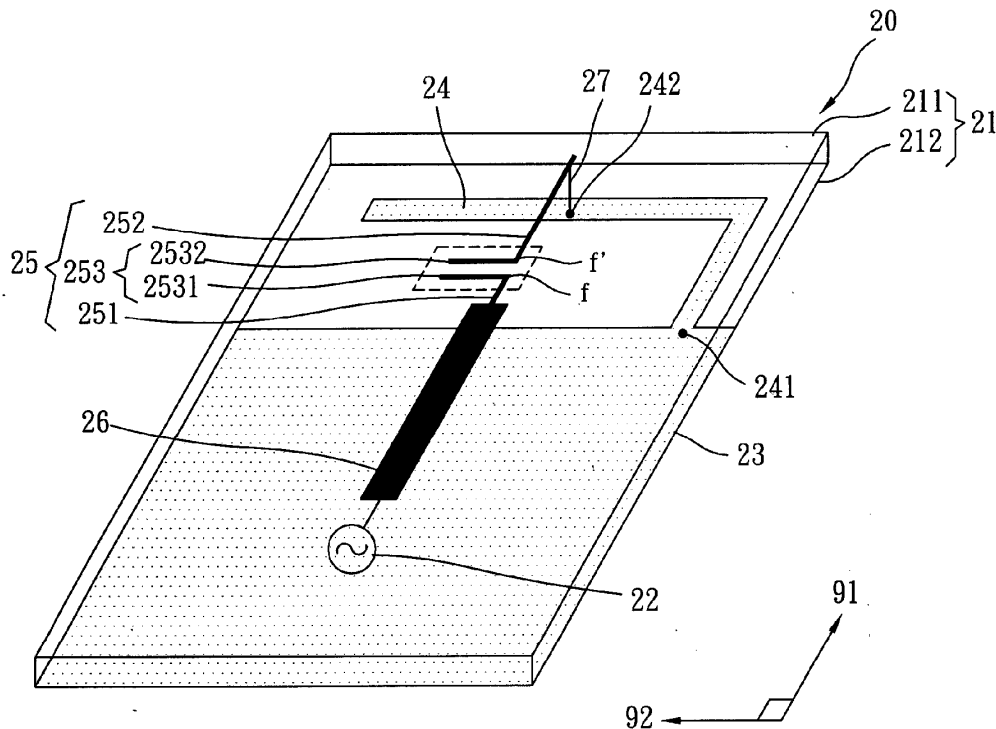
(22) Filed: **May 2, 2006**

Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** **343/700 MS; 343/702**

A coupled-fed antenna device comprising a substrate, a signal source, a ground plane, a radiation conductor, and a coupling feedline is disclosed. The substrate has at least a first surface and a second surface, and the signal source is disposed on the first surface. The ground plane is electrically grounded and covers at least partial area on the second surface of substrate. The radiation conductor is disposed on the second surface of substrate and connected to the ground plane. The coupling feedline consists of a first feedline connected to the signal source and a second feedline connected to the radiation conductor. The real part of the antenna input impedance may be adjusted by shifting the attachment point between the second feedline and radiation conductor. The first feedline and the second feedline are coupled together by a coupling element. The imaginary part of the antenna input impedance may be adjusted by changing the input impedance of an open stub of the coupling element.





US 20070257843A1

(19) **United States**

(12) **Patent Application Publication**
Gooshchin

(10) **Pub. No.: US 2007/0257843 A1**

(43) **Pub. Date: Nov. 8, 2007**

(54) **MICROSTRIP ANTENNA HAVING A
HEXAGONAL PATCH AND A METHOD OF
RADIATING ELECTROMAGNETIC ENERGY
OVER A WIDE PREDETERMINED
FREQUENCY RANGE**

Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
(52) **U.S. Cl.** **343/700 MS**

(76) **Inventor: Dmitry Gooshchin, Tel-Aviv (IL)**

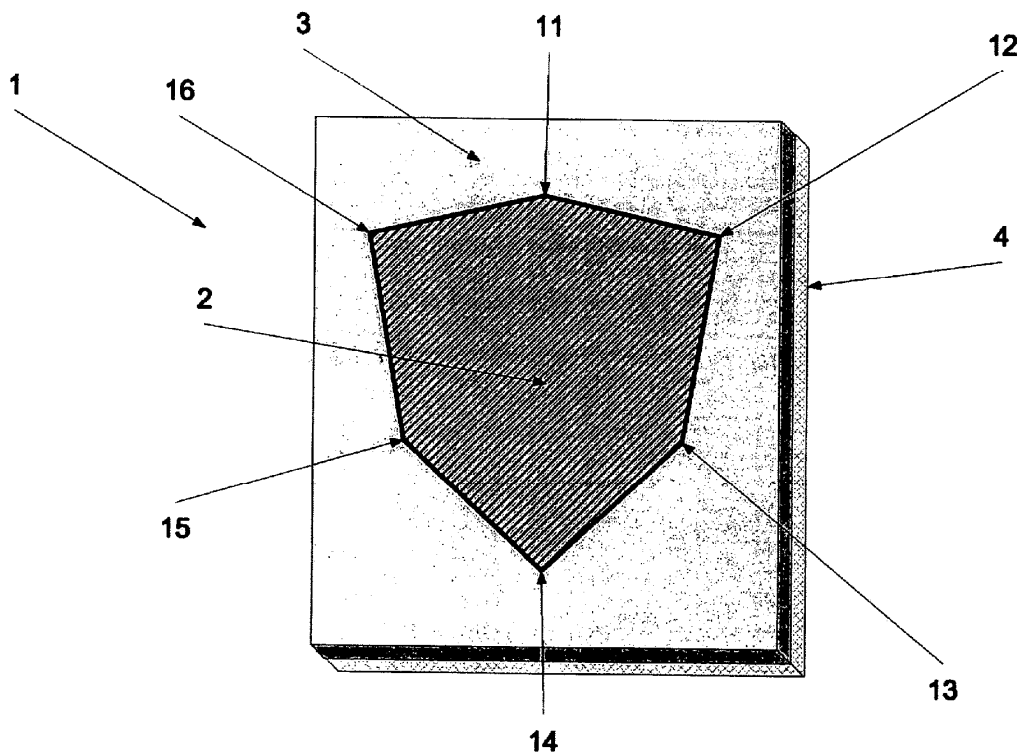
(57) **ABSTRACT**

Correspondence Address:
Martin D. Moynihan
PRTSI, Inc.
P.O. Box 16446
Arlington, VA 22215 (US)

An electrically conductive hexagonal patch element for a patch antenna. The hexagonal patch element comprising a hexagonal shape with a first angle and a second angle opposite the first angle, a third angle and a fourth angle opposite the third angle, a fifth angle and a sixth angle opposite the fifth angle, the first, third, and fifth angles each measuring approximately 150 degrees and the second, fourth, and sixth angles each measuring approximately 90 degrees, wherein the first angle is positioned in between the fourth angle and the sixth angle.

(21) **Appl. No.: 11/429,126**

(22) **Filed: May 8, 2006**





US 20070257844A1

(19) **United States**

(12) **Patent Application Publication**
Chang et al.

(10) **Pub. No.: US 2007/0257844 A1**

(43) **Pub. Date: Nov. 8, 2007**

(54) **CIRCULARLY POLARIZED ANTENNA**

Publication Classification

(75) Inventors: **The-Nan Chang**, Taipei City (TW); **Chun-Ming Lin**, Taipei City (TW)

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** **343/700 MS**

(57) **ABSTRACT**

Correspondence Address:
BACON & THOMAS, PLLC
625 SLATERS LANE, FOURTH FLOOR
ALEXANDRIA, VA 22314

The present invention relates to a circularly polarized antenna and, more particularly, to a compact circularly polarized antenna for transmitting and receiving a circularly polarized signal. The circularly polarized antenna comprises a substrate having an upper surface and a lower surface; a signal distributor; an antenna for transmitting and receiving the circularly polarized signal; and a plurality of support units. The upper surface of the substrate comprises a plurality of slots. One end of each slot overlaps with the respective ends of the other slots at a central region. The lower surface of the substrate comprises a coupling unit being electrically connected with the signal distributor, and the center of the coupling unit corresponds to the central region.

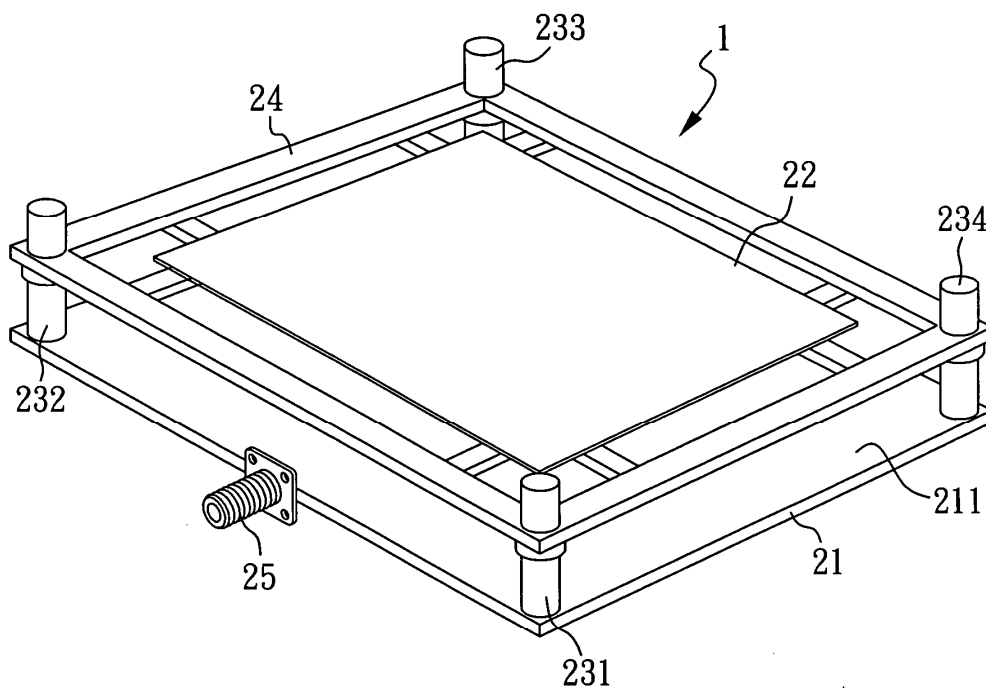
(73) Assignee: **Tatung Company**, Taipei City (TW)

(21) Appl. No.: **11/493,017**

(22) Filed: **Jul. 24, 2006**

(30) **Foreign Application Priority Data**

May 4, 2006 (TW) 095115866





US 20070257845A1

(19) **United States**

(12) **Patent Application Publication**
Wong

(10) **Pub. No.: US 2007/0257845 A1**

(43) **Pub. Date: Nov. 8, 2007**

(54) **COMPACT POLARIZATION-SENSITIVE AND PHASE-SENSITIVE ANTENNA WITH DIRECTIONALITY AND MULTI-FREQUENCY RESONANCES**

Related U.S. Application Data

(60) Provisional application No. 60/744,142, filed on Apr. 3, 2006.

Publication Classification

(75) Inventor: **Alfred Y. Wong**, Panorama City, CA (US)

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 1/24 (2006.01)
(52) **U.S. Cl.** **343/700 MS; 343/702**

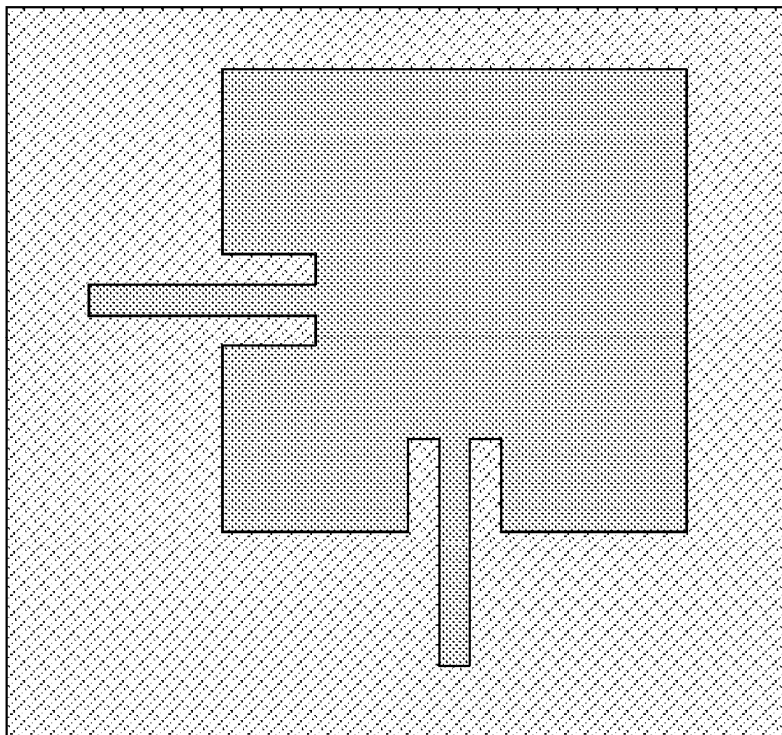
Correspondence Address:
NOVAK DRUCE DELUCA & QUIGG, LLP
1300 EYE STREET NW
SUITE 1000 WEST TOWER
WASHINGTON, DC 20005 (US)

(57) **ABSTRACT**
A modulation system that can be used alone or in conjunction with current modulation techniques for data transmission in portable phones. The system consists of two orthogonal antennas of opposite polarization in which signals can be individually received and processed. A phase delay signal combination system allows combining the signals received on the two paths to allow selective reception of various polarizations. The rate of change between these two antennas will be different for each data signal, allowing a large increase in the number of users.

(73) Assignee: **NONLINEAR ION DYNAMICS, LLC**, Panorama City, CA (US)

(21) Appl. No.: **11/696,040**

(22) Filed: **Apr. 3, 2007**





US 20070257846A1

(19) **United States**

(12) **Patent Application Publication**
Wen et al.

(10) **Pub. No.: US 2007/0257846 A1**

(43) **Pub. Date: Nov. 8, 2007**

(54) **ANTENNA WITH MULTIPLE-BAND PATCH AND SLOT STRUCTURES**

(52) **U.S. Cl. 343/700 MS**

(76) Inventors: **Geyi Wen**, Waterloo (CA); **Krystyna Bandurska**, Waterloo (CA); **Perry Jarmuszewski**, Waterloo (CA)

(57) **ABSTRACT**

Correspondence Address:

JOSEPH M. SAUER
JONES DAY REAVIS & POGUE
NORTH POINT, 901 LAKESIDE AVENUE
CLEVELAND, OH 44114 (US)

A multiple-band antenna having a plurality of operating frequency bands is provided. The antenna includes a plurality of structures configured for operation in respective ones of the plurality of operating frequency bands, and a plurality of structures configured for operation in more than one of the plurality of operating frequency bands. In one embodiment, a multiple-band antenna has first, second, and third operating frequency bands, and comprises a first patch structure associated with the first operating frequency band, a second patch structure connected to the first patch structure and associated with the second operating frequency band and the third operating frequency band, a first slot structure disposed between a first portion of the first patch structure and the second patch structure and associated with the first operating frequency band and the second operating frequency band, a second slot structure disposed between a second portion of the first patch structure and the second patch structure and associated with the second operating frequency band, and a third slot structure disposed between a third portion of the first patch structure and the second patch structure and associated with the first operating frequency band and the third operating frequency band.

(21) Appl. No.: **11/777,448**

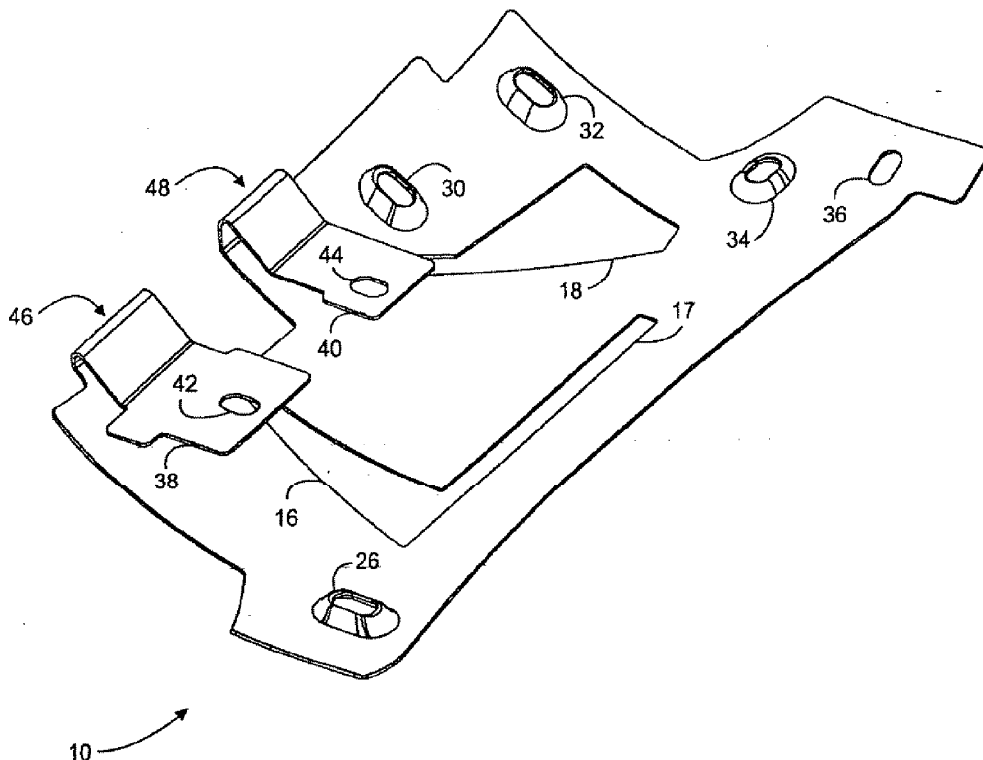
(22) Filed: **Jul. 13, 2007**

Related U.S. Application Data

(63) Continuation of application No. 11/344,753, filed on Feb. 1, 2006, now Pat. No. 7,256,741, which is a continuation of application No. 10/844,685, filed on May 13, 2004, now Pat. No. 7,023,387.

Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)





US 20070257847A1

(19) **United States**

(12) **Patent Application Publication**
Su et al.

(10) **Pub. No.: US 2007/0257847 A1**

(43) **Pub. Date: Nov. 8, 2007**

(54) **MULTI-BAND ANTENNA ASSEMBLY**

Publication Classification

(75) Inventors: **Wen-Fong Su, Tu-Cheng (TW); Yao-Shien Huang, Tu-Cheng (TW)**

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** **343/700 MS**

(57) **ABSTRACT**

Correspondence Address:
WEI TE CHUNG
FOXCONN INTERNATIONAL, INC.
1650 MEMOREX DRIVE
SANTA CLARA, CA 95050

A multi-band antenna assembly, comprising: a first antenna used for wireless local area network and comprising a first radiating element comprising a high frequency radiating portion and a low frequency radiating portion, and a first grounding element adapted for assembling said first antenna on an electric device; a second antenna used for wireless wide area network and comprising a second radiating element comprising a high frequency radiating portion and a low frequency radiating portion, and a second grounding element adapted for assembling said second antenna on an electric device; wherein said first antenna and said second antenna independent from each other; said grounding elements of said two antennas comprising two main bodies substantially aligned with each other, said first and second radiating elements of said first antenna and said second antenna locating on the same side of said first and second grounding elements, said low frequency radiating portions of said first antenna and said second antenna extend more than directions.

(73) Assignee: **HON HAI PRECISION IND. CO., LTD.**

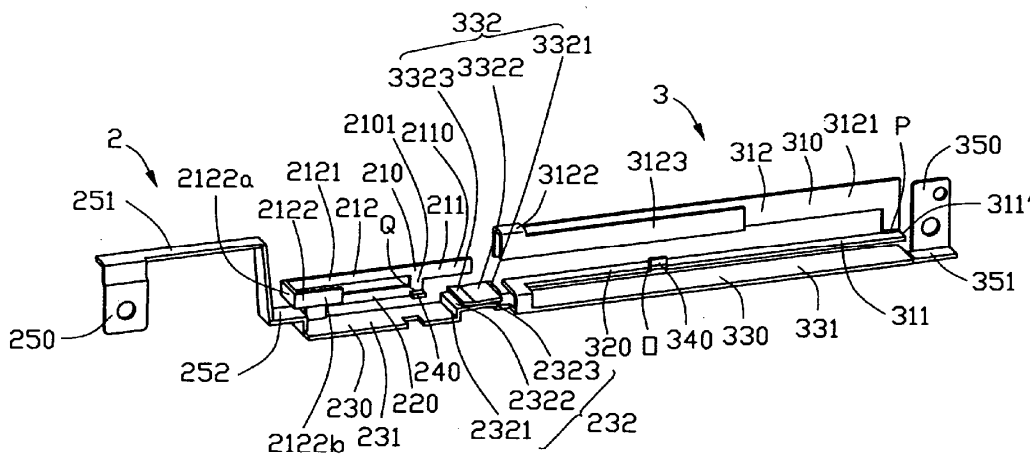
(21) Appl. No.: **11/799,514**

(22) Filed: **May 1, 2007**

(30) **Foreign Application Priority Data**

May 2, 2006 (TW) 95207457

1





US 20070257850A1

(19) **United States**

(12) **Patent Application Publication**
Onaka et al.

(10) **Pub. No.: US 2007/0257850 A1**

(43) **Pub. Date: Nov. 8, 2007**

(54) **ANTENNA STRUCTURE AND RADIO COMMUNICATION APPARATUS INCLUDING THE SAME**

Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** **343/702; 343/700 MS**

(76) Inventors: **Kengo Onaka**, Yokohama-shi (JP); **Jin Sato**, Yokohama-shi (JP); **Masahiro Izawa**, Sagamihara-shi (JP)

(57) **ABSTRACT**

An antenna structure including a dielectric base member provided in a non-ground region of a circuit board and a feed radiation electrode provided on the dielectric base member. An outer side surface of the dielectric base member along an edge of one end of the circuit board defines a side surface. A feed electrode is provided in the non-ground region of the circuit board or outside the circuit board such that the feed electrode is disposed along side surfaces of the dielectric base member. One end of the feed radiation electrode defines a feed end connected to the feed electrode, and the other end of the feed radiation electrode defines an open end. The feed radiation electrode has a configuration in which a current path extending from the feed end to the open end has a loop shape so as to be provided on at least the side surface and an upper surface of the dielectric base member. A feed radiation electrode portion formed on the side surface of the dielectric base member 6 forms a capacitance between the feed radiation electrode portion and the feed electrode for improving antenna characteristics.

Correspondence Address:
DICKSTEIN SHAPIRO LLP
1177 AVENUE OF THE AMERICAS (6TH AVENUE)
NEW YORK, NY 10036-2714 (US)

(21) Appl. No.: **11/778,148**

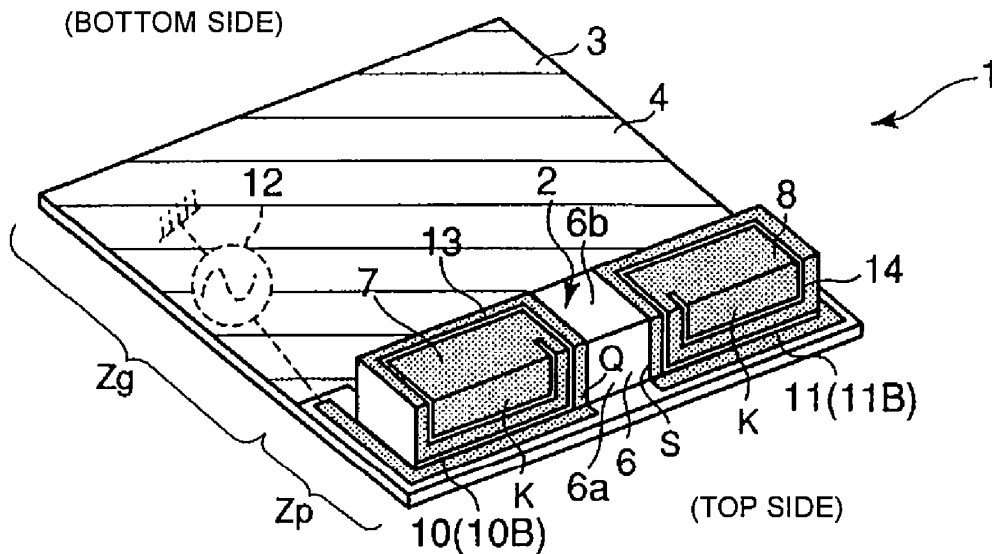
(22) Filed: **Jul. 16, 2007**

Related U.S. Application Data

(63) Continuation of application No. PCT/JP05/23639, filed on Dec. 22, 2005.

(30) **Foreign Application Priority Data**

Jan. 8, 2005 (JP) 2005-010589





US 20070257851A1

(19) **United States**

(12) **Patent Application Publication**
Balzovsky et al.

(10) **Pub. No.: US 2007/0257851 A1**

(43) **Pub. Date: Nov. 8, 2007**

(54) **SMALL ULTRA WIDEBAND ANTENNA
HAVING UNIDIRECTIONAL RADIATION
PATTERN**

(30) **Foreign Application Priority Data**

Jan. 19, 2005 (KR)..... 10-2005-0005078
Oct. 26, 2005 (KR)..... 10-2005-0101159

(75) Inventors: **Eygeny V. Balzovsky**, Tomsk (RU);
Yuri I. Buyanov, Tomsk (RU);
Yong-jin Kim, Seoul (KR); **Vladimir I.
Koshelev**, Tomsk (RU); **Do-Hoon
Kwon**, Seoul (KR); **Seong-soo Lee**,
Suwon-si (KR)

Publication Classification

(51) **Int. Cl.**
H01Q 21/00 (2006.01)
(52) **U.S. Cl.** **343/726**

(57) **ABSTRACT**

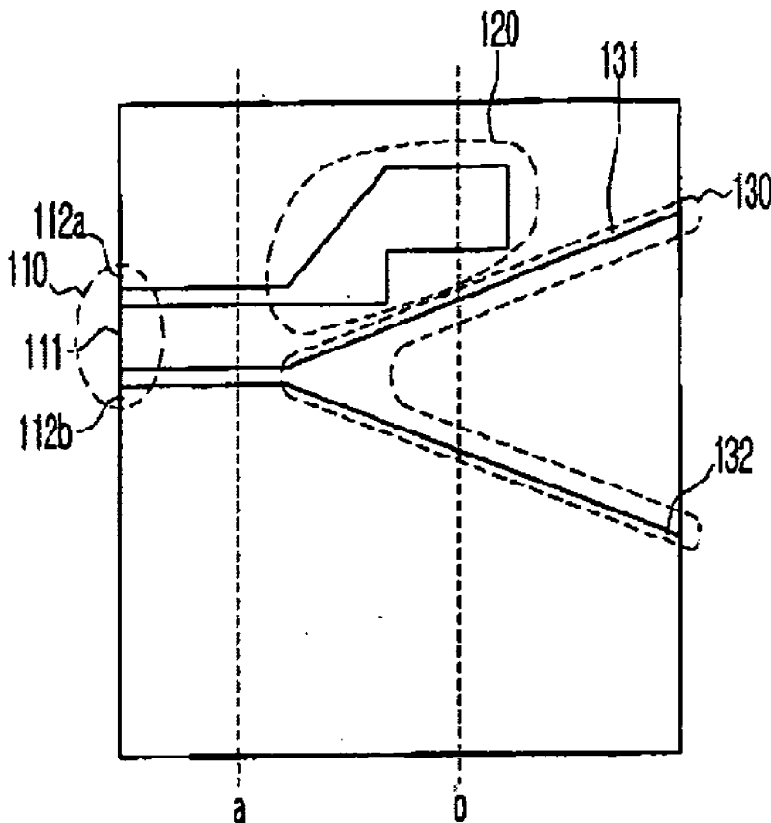
A small ultra wideband (UWB) antenna designed to have a unidirectional radiation pattern is disclosed. The UWB antenna includes a substrate; a power feeding part, provided on an upper surface of the substrate, for receiving a supply of an external electromagnetic energy; a dipole radiator excited by the electromagnetic energy fed through the power feeding part and radiating electromagnetic waves in one and the other directions of the substrate; and an active loop radiator excited by the electromagnetic energy fed through the power feeding part, respectively enhancing and canceling the electromagnetic fields produced in one or the other directions of the substrate by the dipole radiator.

Correspondence Address:
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037 (US)

(73) Assignee: **SAMSUNG ELECTRONICS CO.,
LTD.**

(21) Appl. No.: **11/334,567**

(22) Filed: **Jan. 19, 2006**





US 20070260294A1

(19) **United States**

(12) **Patent Application Publication**
Schulman et al.

(10) **Pub. No.: US 2007/0260294 A1**

(43) **Pub. Date: Nov. 8, 2007**

(54) **ANTENNA ON CERAMIC CASE**

Publication Classification

(75) Inventors: **Joseph H. Schulman**, Santa Clarita, CA (US); **Howard H. Stover**, Pasadena, CA (US); **Brian J. Lasater**, Wenatchee, WA (US)

(51) **Int. Cl.**
A61N 1/00 (2006.01)
(52) **U.S. Cl.** **607/60**

(57) **ABSTRACT**

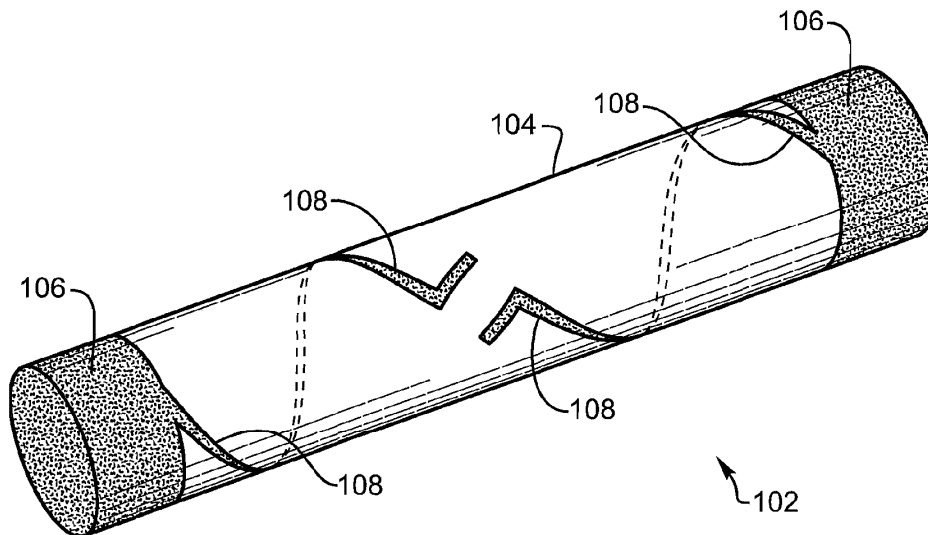
The invention is an antenna for use with an implantable microdevice, such as a microstimulator or microsensor, having a dipole antenna that is formed by ceramic processes on the inner or outer surface of the ceramic case of the microdevice. The antenna receives data transmitted from an external device, and transmits data to an external device. A dipole antenna may be formed from two radiating elements separated by an insulating material. A tuning circuit comprising capacitors and/or inductors is used to obtain resonance in the dipole antenna. In a preferred embodiment, the antenna is formed of a biocompatible material by applying a metal-containing paste to the ceramic case of the microdevice and thermally processing it.

Correspondence Address:
ALFRED E. MANN FOUNDATION FOR SCIENTIFIC RESEARCH
PO BOX 905
SANTA CLARITA, CA 91380 (US)

(73) Assignee: **Alfred E. Mann Foundation for Scientific Research**, Santa Clarita, CA (US)

(21) Appl. No.: **11/381,979**

(22) Filed: **May 5, 2006**





US 20070262902A1

(19) **United States**

(12) **Patent Application Publication**
Iwata et al.

(10) **Pub. No.: US 2007/0262902 A1**

(43) **Pub. Date: Nov. 15, 2007**

(54) **FLAT ANTENNA APPARATUS**

(21) Appl. No.: **11/590,743**

(22) Filed: **Nov. 1, 2006**

(75) Inventors: **Hideki Iwata**, Shinagawa (JP);
Masahiro Yanagi, Shinagawa (JP);
Shigemi Kurashima, Shinagawa (JP);
Takashi Yuba, Shinagawa (JP);
Masahiro Kaneko, Shinagawa (JP);
Yuriko Segawa, Shinagawa (JP);
Takashi Arita, Shinagawa (JP)

(30) **Foreign Application Priority Data**

May 10, 2006 (JP) 2006-131699

Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

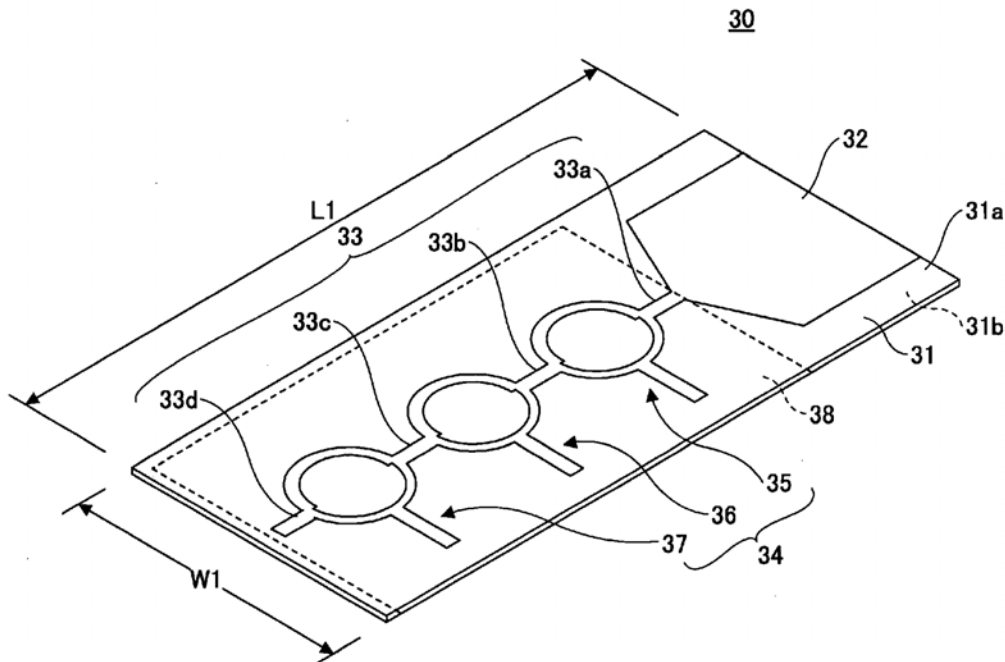
(52) **U.S. Cl.** **343/700 MS**

(57) **ABSTRACT**

Correspondence Address:
STAAS & HALSEY LLP
SUITE 700, 1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

A UWB flat antenna apparatus is disclosed. The UWB flat antenna apparatus includes an antenna element pattern, a ground pattern, and a multiple-stage filter including plural filter elements. Therein, the filter elements are electrically connected in series and are stacked, and the multiple-stage filter and the ground pattern are stacked.

(73) Assignee: **FUJITSU COMPONENT LIMITED**, Tokyo (JP)





US 20070262903A1

(19) **United States**

(12) **Patent Application Publication**
YAMADA et al.

(10) **Pub. No.: US 2007/0262903 A1**

(43) **Pub. Date: Nov. 15, 2007**

(54) **ANTENNA APPARATUS AND ARTICLE MANAGEMENT SYSTEM**

(30) **Foreign Application Priority Data**

May 12, 2006 (JP) P2006-134545

(75) Inventors: **Akiko YAMADA**, Yokohama-shi (JP); **Shuichi Sekine**, Yokohama-shi (JP)

Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** **343/700 MS; 343/795**

Correspondence Address:
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

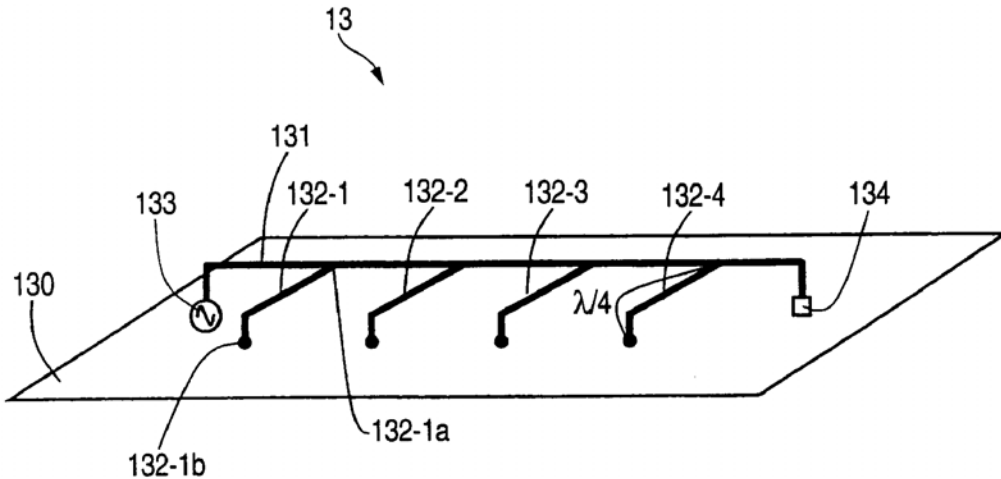
(57) **ABSTRACT**

According to an aspect of the invention, there is provide an antenna apparatus including: a conductive element including one end connected to a ground plane via a terminating resistor and the other end to which a power is supplied; and at least one branch conductive element branching from the conductive element and having a tip end which is short-circuited to the ground plane, and an element length of the branch conductive element being approximately a quarter wavelength of an operation frequency.

(73) Assignee: **KABUSHIKI KAISHA TOSHIBA**, Tokyo (JP)

(21) Appl. No.: **11/747,474**

(22) Filed: **May 11, 2007**





US 20070262904A1

(19) **United States**

(12) **Patent Application Publication**
Tinsley et al.

(10) **Pub. No.: US 2007/0262904 A1**

(43) **Pub. Date: Nov. 15, 2007**

(54) **ANTENNA SYSTEM USING
COMPLEMENTARY METAL OXIDE
SEMICONDUCTOR TECHNIQUES**

Related U.S. Application Data

(63) Continuation of application No. 11/095,326, filed on Mar. 30, 2005, now Pat. No. 7,256,740.

(75) Inventors: **Keith R. Tinsley**, Beaverton, OR (US);
Seong-Youp Suh, San Jose, CA (US)

Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01L 21/30 (2006.01)
(52) **U.S. Cl.** **343/700 MS; 438/761; 257/E21**

Correspondence Address:

KACVINSKY LLC
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402 (US)

(57) **ABSTRACT**

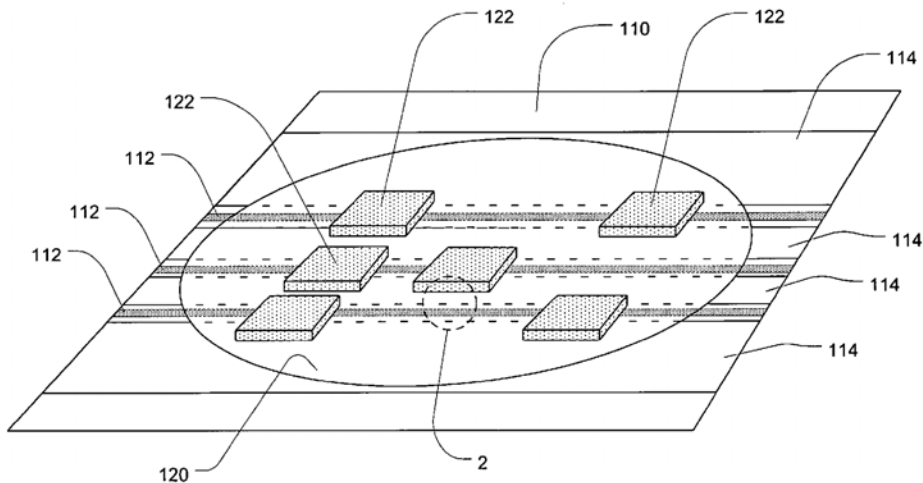
Apparatus, system, and method are described for a complementary metal oxide semiconductor (CMOS) integrated circuit device having a first metal layer that includes a radiating element and a second metal layer that includes a first conductor coupled to the radiating element. The first conductor and the radiating element are mutually coupled to form an antenna to wirelessly communicate a signal.

(73) Assignee: **INTEL CORPORATION**, Santa Clara, CA (US)

(21) Appl. No.: **11/782,445**

(22) Filed: **Jul. 24, 2007**

100





US 20070262905A1

(19) **United States**

(12) **Patent Application Publication**
Iio

(10) **Pub. No.: US 2007/0262905 A1**

(43) **Pub. Date: Nov. 15, 2007**

(54) **ANTENNA AND RECEIVER**

Publication Classification

(75) **Inventor: Ken'ichi Iio, Nishinomiya-City (JP)**

(51) **Int. Cl. H01Q 1/38 (2006.01)**

(52) **U.S. Cl. 343/700 MS; 343/846**

(57) **ABSTRACT**

Correspondence Address:
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

It is an object of the present invention to provide an antenna capable of reducing a backside gain while keeping the sensitivity of overall antenna to a certain level. Particularly, in the case of an antenna subject to a circularly polarized wave, it is an object of the invention to provide an antenna capable of reducing the sensitivity of a left-handed circularly polarized wave more than ever before as well as keeping the sensitivity of a right-handed circularly polarized wave to a certain level.

(73) **Assignee: Furuno Electric Co., Ltd.**

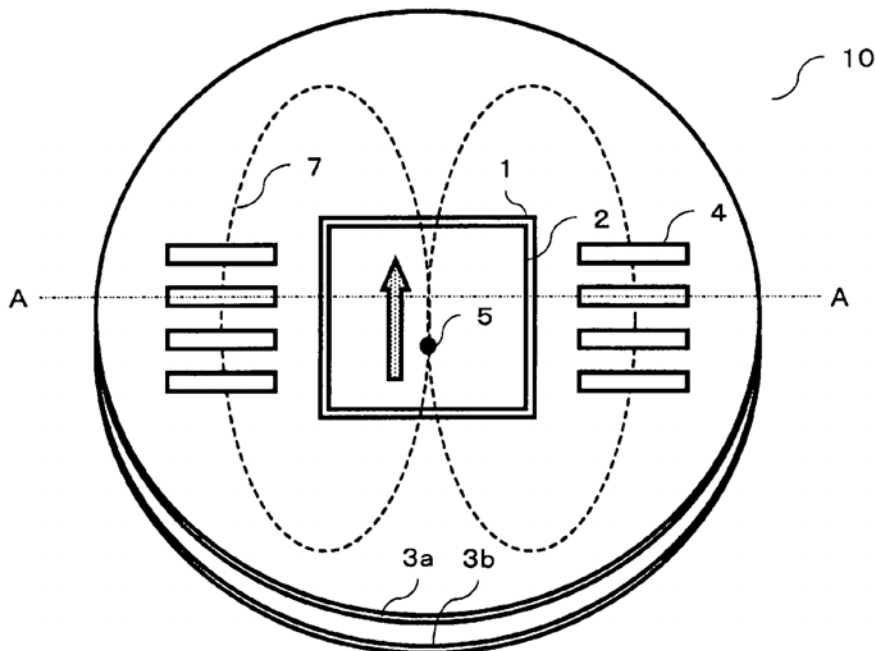
The antenna of the invention is characterized by including a plurality of ground conductors, a radiation conductor provided via a dielectric on a part of the above-mentioned ground conductor, and characterized in that notch is formed on at least one of the above-mentioned ground conductors and that the notch is formed outside of the area opposite to the above-mentioned radiation conductor.

(21) **Appl. No.: 11/798,267**

(22) **Filed: May 11, 2007**

(30) **Foreign Application Priority Data**

May 12, 2006 (JP) TOKUGAN2006133539





US 20070262906A1

(19) **United States**

(12) **Patent Application Publication**
Haim et al.

(10) **Pub. No.: US 2007/0262906 A1**

(43) **Pub. Date: Nov. 15, 2007**

(54) **CAPACITIVE GROUND ANTENNA**

Publication Classification

(76) Inventors: **Yona Haim**, Tiberias (IL); **Snir Azulay**, Tiberias (IL)

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

Correspondence Address:
ABELMAN, FRAYNE & SCHWAB
666 THIRD AVENUE, 10TH FLOOR
NEW YORK, NY 10017

(52) **U.S. Cl.** **343/700 MS; 343/702**

(21) Appl. No.: **11/803,184**

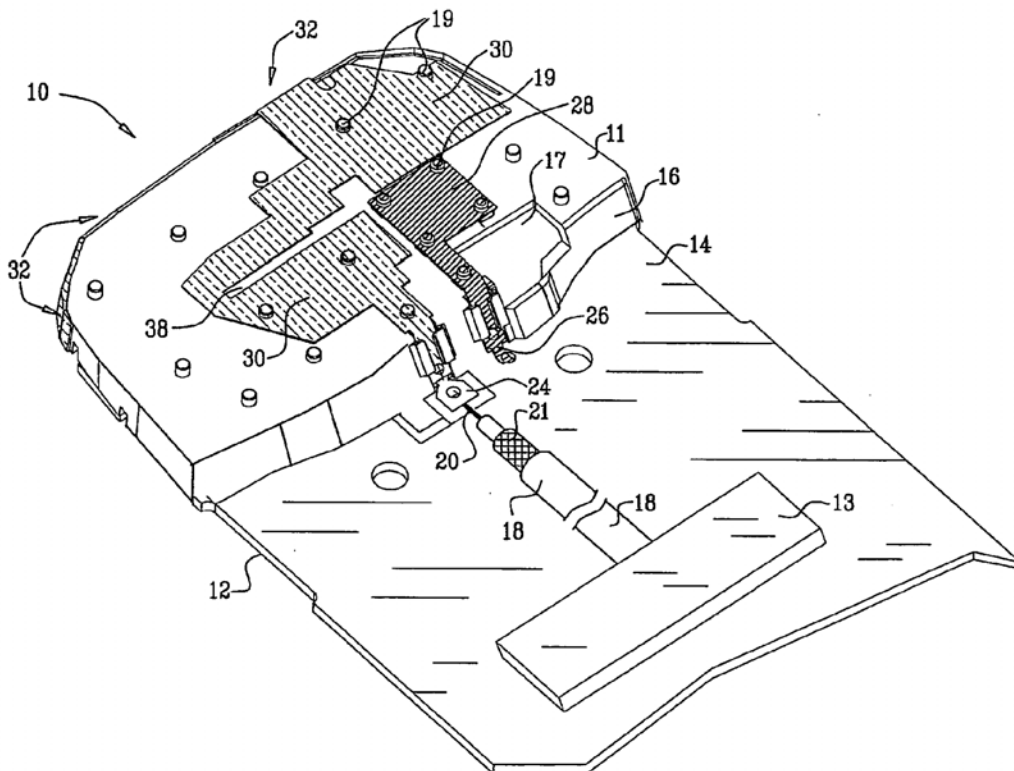
(57) **ABSTRACT**

(22) Filed: **May 10, 2007**

An antenna, including a ground plane and a conductor having a feed post configured to galvanically connect to circuitry operative in a band of frequencies. The antenna further includes a conductive plate galvanically connected to the ground plane and capacitively coupled to a region of the conductor so as to cause the conductor to resonate in the band of frequencies.

Related U.S. Application Data

(60) Provisional application No. 60/799,956, filed on May 11, 2006.





US 20070262907A1

(19) **United States**

(12) **Patent Application Publication**
Ju

(10) **Pub. No.: US 2007/0262907 A1**

(43) **Pub. Date: Nov. 15, 2007**

(54) **ANTENNA AND ITS IMPROVED FRAMEWORK FOR SOLDERING ELECTRIC WIRE**

(52) **U.S. Cl. 343/702; 343/906**

(75) **Inventor: Ted Ju, Keelung (TW)**

(57) **ABSTRACT**

Correspondence Address:
TROXELL LAW OFFICE PLLC
ONE SKYLINE PLACE
SUITE 1404
5205 LEESBURG PIKE
FALLS CHURCH, VA 22041 (US)

Antenna and its improved framework for soldering electric wire is disclosed, comprising: an antenna comprising a radiator, a grounding electrode and a connection portion which connects the radiator and the grounding electrode and which is provided with a slit, and a soldering zone provided on the radiator and the grounding electrode of the respective side of the slit to couple with an electric wire; and an anti-soldering material provided on the soldering zone. Compared with the conventional prior art, the antenna and its improved framework for soldering electric wire provided with anti-soldering material in the soldering zone of the antenna can accurately position the solder to avoid uncontrolled diffusion of solder, reduce satisfactory soldering, and increase signal transmission stability to render the operation simple and easy.

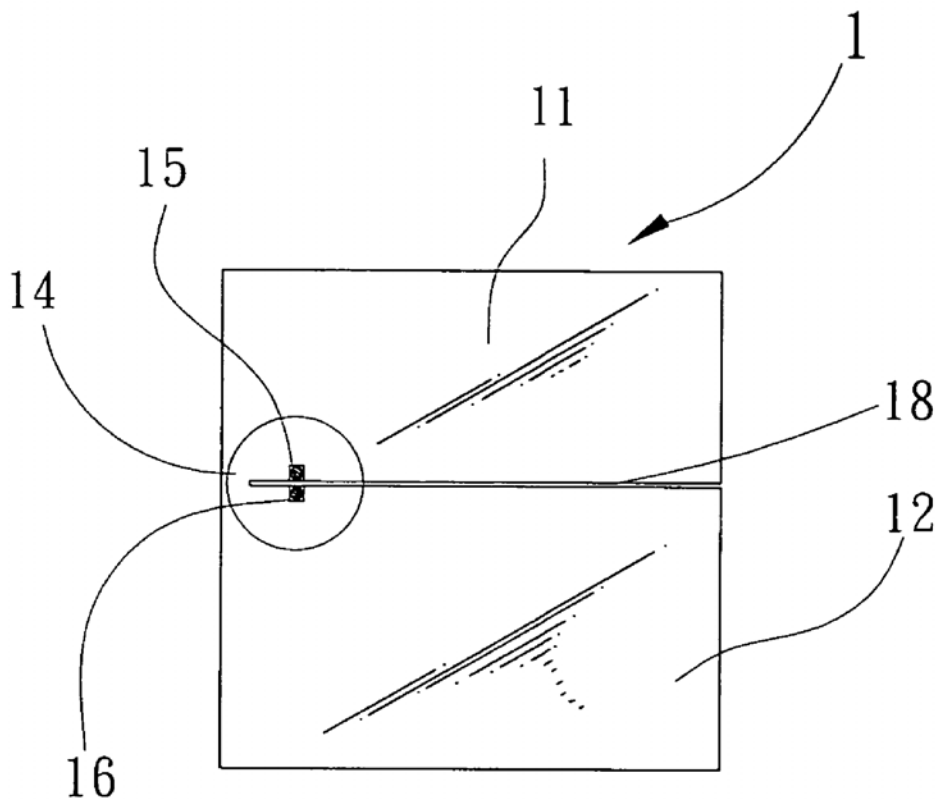
(73) **Assignee: LOTES Co., Ltd.**

(21) **Appl. No.: 11/430,839**

(22) **Filed: May 10, 2006**

Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)





US 20070262908A1

(19) **United States**

(12) **Patent Application Publication**
YU

(10) **Pub. No.: US 2007/0262908 A1**

(43) **Pub. Date: Nov. 15, 2007**

(54) **WIRELESS SIGNAL RECEPTOR ANTENNA AND METHOD INSTALLATION THEREOF**

(30) **Foreign Application Priority Data**

May 15, 2006 (TW) 095117159

(75) Inventor: **Hui-Hsiang YU**, Sindian City (TW)

Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** 343/702

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412 MAIN STREET, 7TH FLOOR
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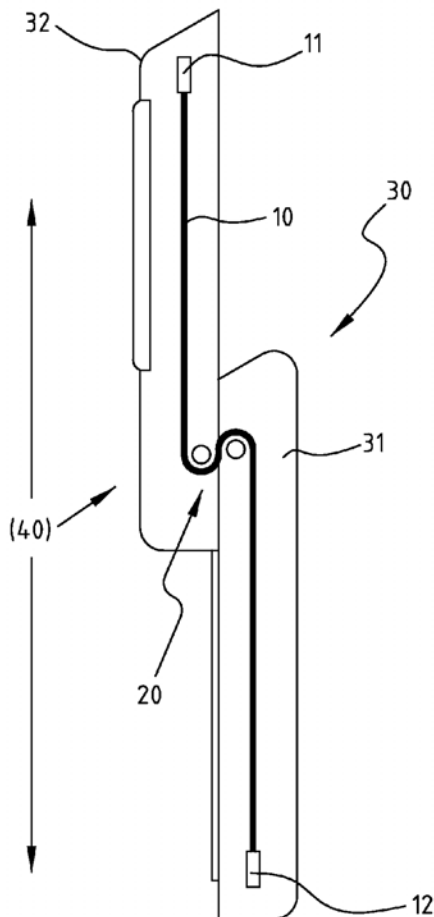
(57) **ABSTRACT**

The present invention provides an installation method of a wireless signal receptor antenna and a structure with a wireless signal receptor. The structure includes a flexible antenna and a device to move the antenna from a first configuration to a second configuration. The first configuration is collapsed and movable, and the second configuration has the antenna extended. The antenna can be in the first collapsed and movable mode, when placed inside the apparatus. The invention allows the antenna to be placed inside a small apparatus and to receive quality signals.

(73) Assignee: **WHA YU INDUSTRIAL Co., Ltd.**, Hsinchu City (TW)

(21) Appl. No.: **11/554,305**

(22) Filed: **Oct. 30, 2006**





US 20070262909A1

(19) **United States**

(12) **Patent Application Publication**
Chang et al.

(10) **Pub. No.: US 2007/0262909 A1**

(43) **Pub. Date: Nov. 15, 2007**

(54) **INVERTED-F ANTENNA AND MOBILE COMMUNICATION TERMINAL USING THE SAME**

(30) **Foreign Application Priority Data**

May 4, 2006 (KR) 10-2006-0040486

Publication Classification

(75) Inventors: **Ki Won Chang**, Gyunggi-Do (KR);
Duk Woo Lee, Gyunggi-Do (KR);
Jeong Sik Seo, Daejeon (KR)

(51) **Int. Cl.**
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** **343/702; 343/700 MS**

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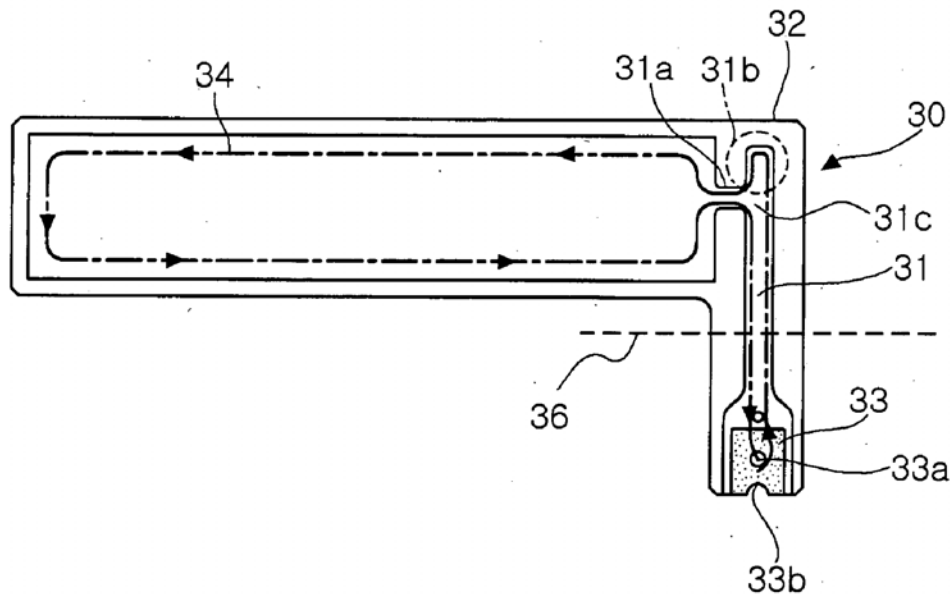
(57) **ABSTRACT**

An inverted-F antenna and a mobile communication terminal using the same. The antenna includes a flexible board and a radiation plate formed on the flexible board. The antenna further includes a signal line having a first end formed on the flexible board and connected to the radiation plate and a second end extending from the first end and provided as a connecting terminal for feeding and grounding. The mobile communication terminal includes an RF board, a ground plate formed on the RF board, a feed line formed on the RF board for supplying a signal, and the inverted-F antenna as described above.

(73) Assignee: **SAMSUNG ELECTRO-MECHANICS CO., LTD.**, GYUNGGI-DO (KR)

(21) Appl. No.: **11/797,536**

(22) Filed: **May 4, 2007**





US 20070262914A1

(19) **United States**

(12) **Patent Application Publication**
Chau

(10) **Pub. No.: US 2007/0262914 A1**

(43) **Pub. Date: Nov. 15, 2007**

(54) **LOW VISIBILITY, FIXED-TUNE, WIDE BAND AND FIELD-DIVERSE ANTENNA WITH DUAL POLARIZATION**

(75) Inventor: **Tam Hung Chau**, Berkeley, IL (US)

Correspondence Address:
HARNES, DICKEY, & PIERCE, P.L.C
7700 BONHOMME, STE 400
ST. LOUIS, MO 63105 (US)

(73) Assignee: **Antenex, Inc.**

(21) Appl. No.: **11/434,101**

(22) Filed: **May 15, 2006**

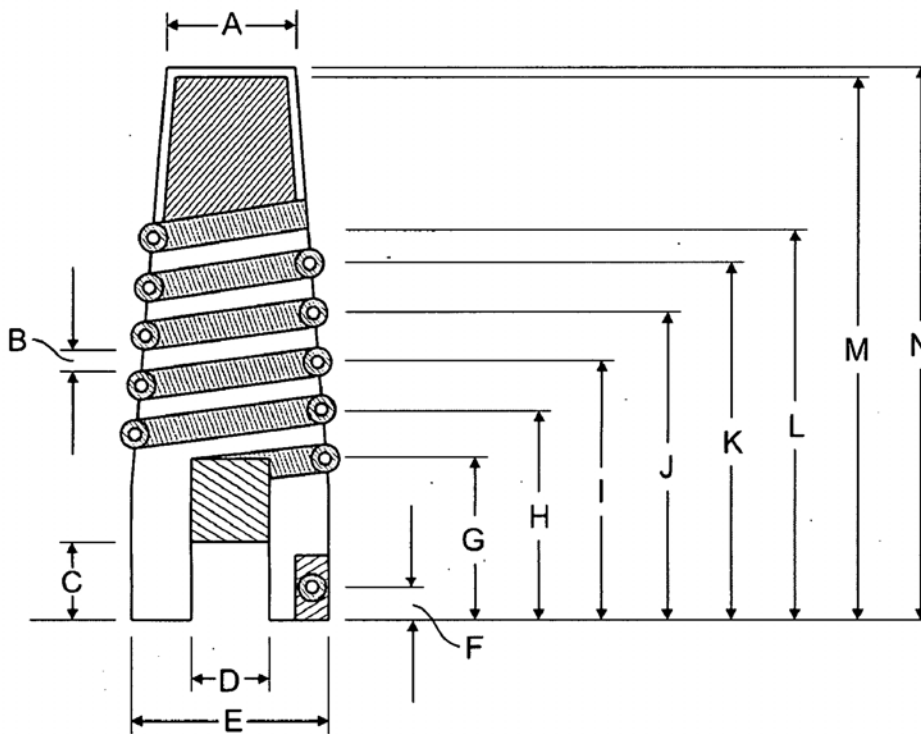
Publication Classification

(51) **Int. Cl.**
H01Q 1/36 (2006.01)

(52) **U.S. Cl.** **343/895**

(57) **ABSTRACT**

A low-visibility, fixed-tune, wideband, and field-diverse antenna provides cross-polarized fields enhancing signal communications but having helical antenna characteristics without severe circular polarization radiation thereby promoting a modern, futuristic, and disguise look for reliable communications. A generally flat, but helical, antenna is achieved in conjunction with a core substrate about which the antenna is wrapped, wound, or fixed. The core substrate, pitch or angle of the helix, length of the transmitting antenna, and copper traces thickness are chosen for a specific resonant frequency range. The length and width of the helix are chosen in order to dimension the helical antenna between its linear and circular polarization modes to thereby deliver field-diverse and cross-polarized transmission modes. In order to optimize the manufacturing process, holes may be created within the substrate. These holes are plated with conducting material so that conducting foil on opposite faces of the substrate may be electrically connected. The holes may be offset according to the pitch of the helix. Once the transmitting antenna has been fabricated upon the core substrate, the margin between the plated-through holes and the edge of the substrate may be separated by cutting, sawing, or stamping.





US 20070262915A1

(19) **United States**

(12) **Patent Application Publication**
Liu et al.

(10) **Pub. No.: US 2007/0262915 A1**

(43) **Pub. Date: Nov. 15, 2007**

(54) **ANTENNA DEVICE**

(30) **Foreign Application Priority Data**

(76) Inventors: **Kuo-Cheng Liu**, Xindian City (TW);
Chin-Hon Fan, Xindian City (TW);
Kun-Ting Lin, Xindian City (TW);
Ren-Peng Chen, Xindian City (TW)

Nov. 25, 2004 (TW)..... 93136269
Dec. 17, 2004 (CN)..... 200410102062.X

Publication Classification

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(51) **Int. Cl.**
H01Q 1/36 (2006.01)
(52) **U.S. Cl.** **343/895**

(21) Appl. No.: **11/826,763**

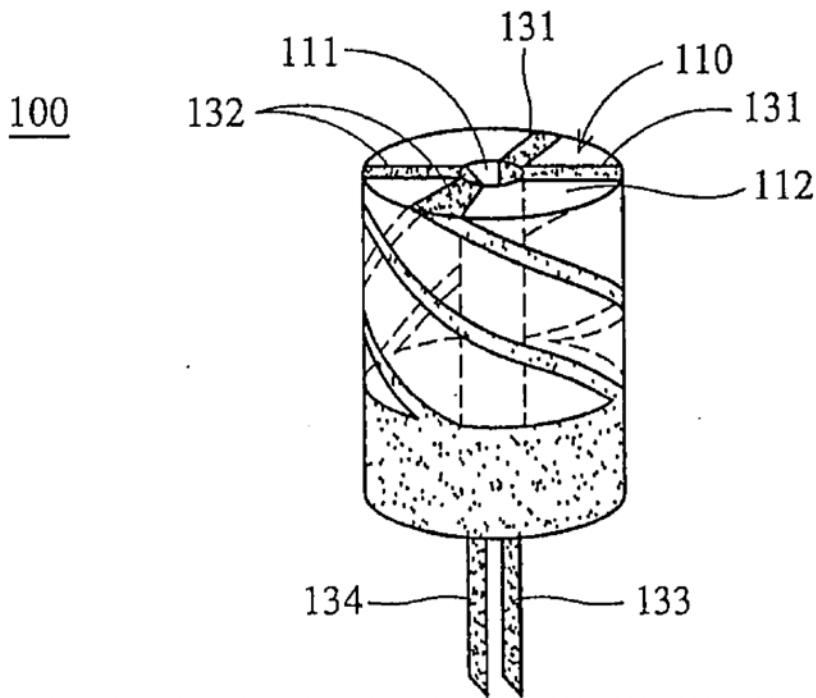
(57) **ABSTRACT**

(22) Filed: **Jul. 18, 2007**

Related U.S. Application Data

(63) Continuation of application No. 11/099,616, filed on
Apr. 6, 2005, now Pat. No. 7,253,787.

An antenna device has a dielectric body with a convex surface and a concave surface. The antenna device further has a flexible printed circuit board disposed on the convex surface.





US 20070268143A1

(19) **United States**

(12) **Patent Application Publication**
Copeland et al.

(10) **Pub. No.: US 2007/0268143 A1**

(43) **Pub. Date: Nov. 22, 2007**

(54) **RFID NEAR FIELD MEANDERLINE-LIKE MICROSTRIP ANTENNA**

Related U.S. Application Data

(60) Provisional application No. 60/624,402, filed on Nov. 2, 2004. Provisional application No. 60/659,380, filed on Mar. 7, 2005.

(75) Inventors: **Richard L. Copeland**, Lake Worth, FL (US); **Gary Mark Shafer**, Boca Raton, FL (US)

Publication Classification

(51) **Int. Cl.**
G08B 13/14 (2006.01)
(52) **U.S. Cl.** **340/572.7**

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(57) **ABSTRACT**

(73) Assignee: **Sensormatic Electronics Corporation**, Boca Raton, FL

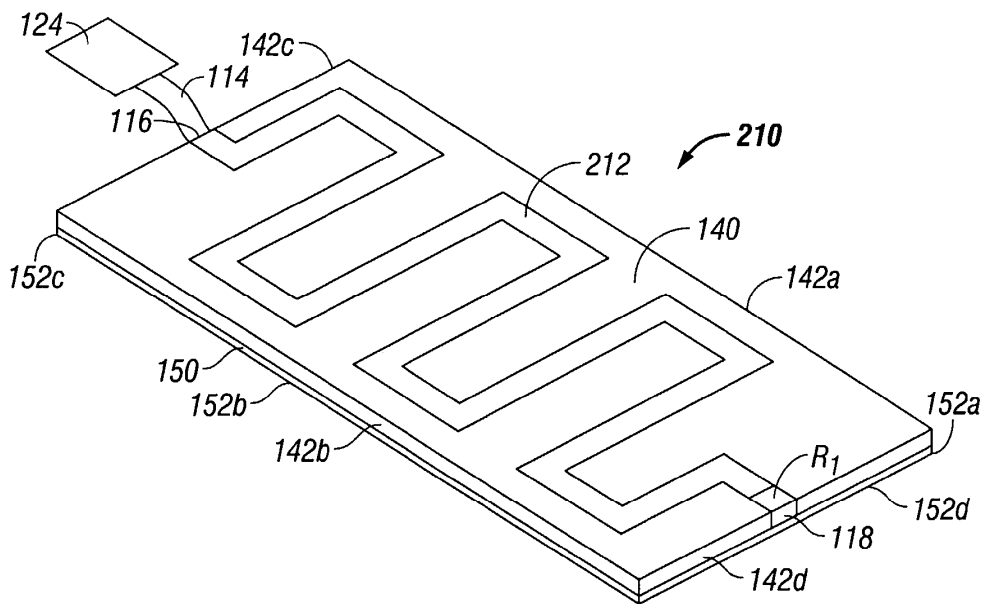
A near field meanderline like antenna assembly is disclosed which is configured to read an RFID label. The antenna is configured as a single and continuous conductor and is configured to extend from one end of a substrate forming a feed point to another end of a substrate forming a termination point. The termination point is connected to a ground through a resistor and the conductor is configured to direct current in two dimensions along the conductor. A localized E field directs a current distribution along an effective length of the antenna corresponding to a half-wave to a full-wave structure.

(21) Appl. No.: **11/666,789**

(22) PCT Filed: **Nov. 2, 2005**

(86) PCT No.: **PCT/US05/39594**

§ 371(c)(1),
(2), (4) Date: **Apr. 30, 2007**





US 20070268184A1

(19) **United States**

(12) **Patent Application Publication**

Lee

(10) **Pub. No.: US 2007/0268184 A1**

(43) **Pub. Date: Nov. 22, 2007**

(54) **METAL INVERTED F ANTENNA**

Publication Classification

(75) Inventor: **Chang-Jung Lee**, Longtan Township (TW)

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** **343/700 MS; 343/702**

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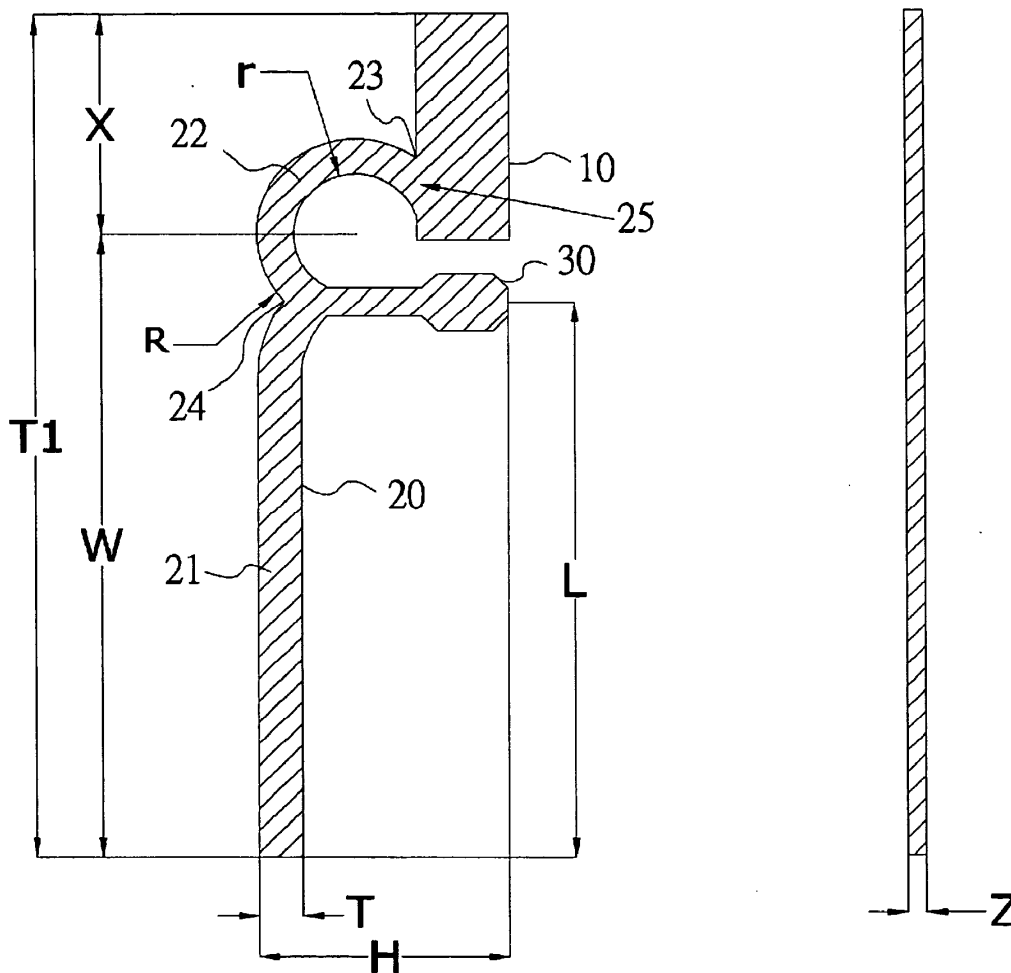
(57) **ABSTRACT**

The present invention discloses an antenna structure comprising a ground plane; a radiator having a curved shape portion and a rectangular portion connected to the ground plane via a first end of the curved shape portion and grounded by a ground point of the ground plane, the rectangular portion being connected to a second end of the curved shape portion; and a feed point connected to the second end of the curved shape portion of the radiator.

(73) Assignee: **Accton Technology Corporation**

(21) Appl. No.: **11/437,737**

(22) Filed: **May 22, 2006**





US 20070268185A1

(19) **United States**

(12) **Patent Application Publication**
Teshima et al.

(10) **Pub. No.: US 2007/0268185 A1**

(43) **Pub. Date: Nov. 22, 2007**

(54) **PLANAR ANTENNA**

Publication Classification

(75) Inventors: **Masao Teshima**, Kunitachi-shi (JP); **Hiroshi Shimasaki**, Hamura-shi (JP)

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** **343/700 MS**

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(57) **ABSTRACT**

A planar antenna includes first and second radiation elements. A first partial periphery of the first radiation element and a second partial periphery of the second radiation element face each other at a uniform gap equal to or less than a tenth of the length of the first partial periphery. The first radiation element includes a third partial periphery parallel to a straight line for connecting the both ends of the first partial periphery, a feeding point at a central portion of the first partial periphery, and a slit having an opened end and a closed end. A distance from the feeding point to the opened end along the slit through the closed end is longer than a sum of a half of the first partial periphery and a longer one of the other two partial peripheries.

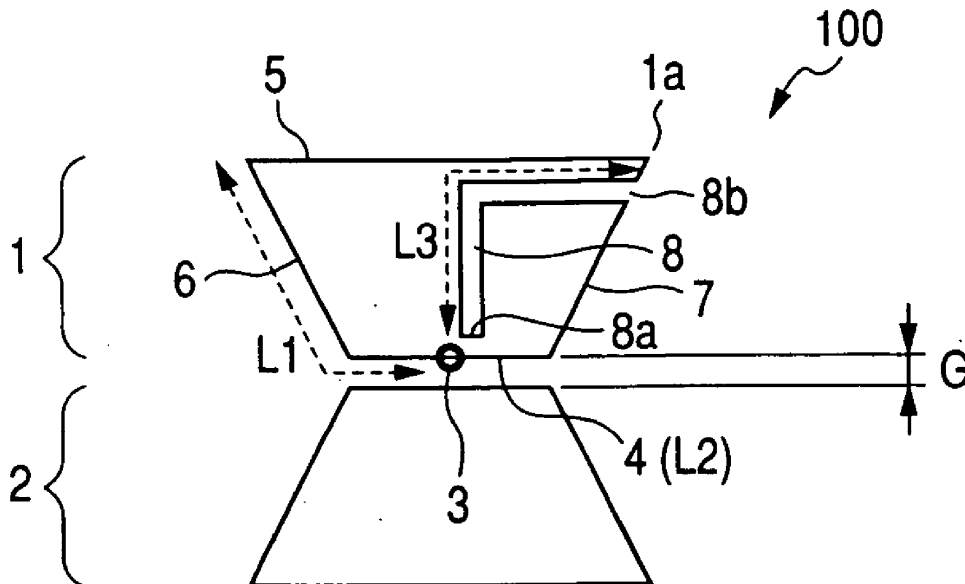
(73) Assignee: **KABUSHIKI KAISHA TOSHIBA**, Minato-Ku (JP)

(21) Appl. No.: **11/470,919**

(22) Filed: **Sep. 7, 2006**

(30) **Foreign Application Priority Data**

May 16, 2006 (JP) 2006-136977





US 20070268186A1

(19) **United States**

(12) **Patent Application Publication**
Liu

(10) **Pub. No.: US 2007/0268186 A1**

(43) **Pub. Date: Nov. 22, 2007**

(54) **ANTENNA**

Publication Classification

(76) Inventor: **Chih-Kai Liu**, Taipei Hsien (TW)

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

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(52) **U.S. Cl.** **343/700 MS**

(57) **ABSTRACT**

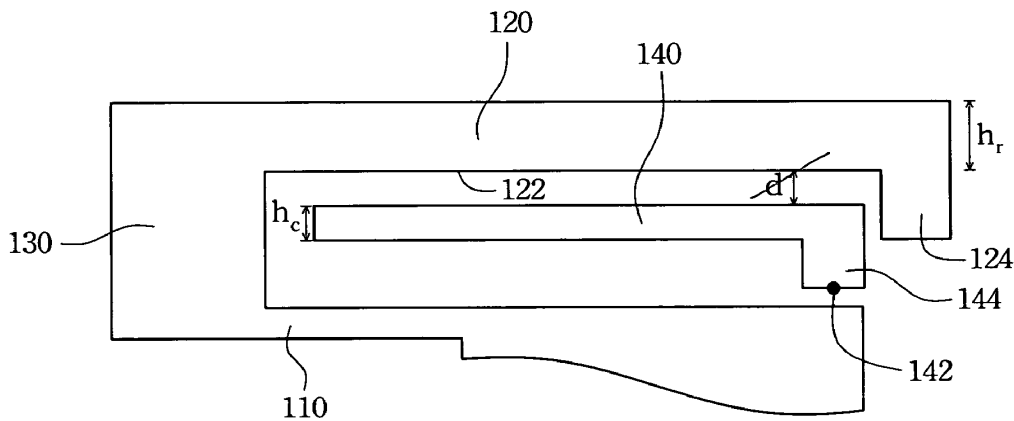
(21) Appl. No.: **11/524,913**

An antenna includes a grounding element, a radiating element, an interconnecting element and a conductive element. The interconnecting element connects the radiating element and the grounding element. The conductive element is disposed between the grounding element and the radiating element and apart from the grounding element and the radiating element. Moreover, the conductive element has a feed positioned thereon.

(22) Filed: **Sep. 22, 2006**

(30) **Foreign Application Priority Data**

May 18, 2006 (TW) 95117726





US 20070268187A1

(19) **United States**

(12) **Patent Application Publication**
Cheng

(10) **Pub. No.: US 2007/0268187 A1**

(43) **Pub. Date: Nov. 22, 2007**

(54) **INVERTED-F ANTENNA AND
MANUFACTURING METHOD THEREOF**

(30) **Foreign Application Priority Data**

May 19, 2006 (TW) 095117921

(75) Inventor: **Shih-Chieh Cheng**, Tainan County
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Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** **343/700 MS; 343/702**

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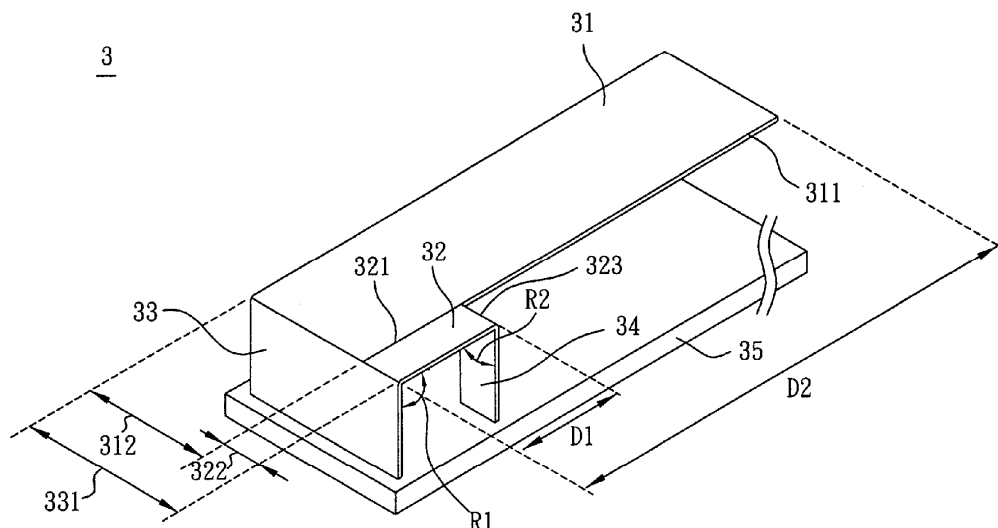
(57) **ABSTRACT**

An inverted-F antenna includes a first radiating portion, a second radiating portion, a grounding portion and a feeding portion. The first radiating portion is extended from one side of the grounding portion. The second radiating portion is extended from the side of the grounding portion, and has one side opposite to the side of the grounding portion. The feeding portion is extended from the side of the second radiating portion. In addition, a manufacturing method of the inverted-F antenna is disclosed.

(73) Assignee: **Arcadyan Technology Corporation**

(21) Appl. No.: **11/598,696**

(22) Filed: **Nov. 14, 2006**





US 20070268188A1

(19) **United States**

(12) **Patent Application Publication**
Guha et al.

(10) **Pub. No.: US 2007/0268188 A1**

(43) **Pub. Date: Nov. 22, 2007**

(54) **GROUND PLANE PATCH ANTENNA**

Related U.S. Application Data

(75) Inventors: **Debatosh Guha**, Kolkata (IN); **Yahia Mohamed Mostafa Antar**, Kingston (CA); **Joseph Fernand Paul Beland**, Gatineau (CA)

(60) Provisional application No. 60/745,696, filed on Apr. 26, 2006.

Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
(52) **U.S. Cl.** **343/700 MS**

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CLEVELAND, OH 44114-3108 (US)

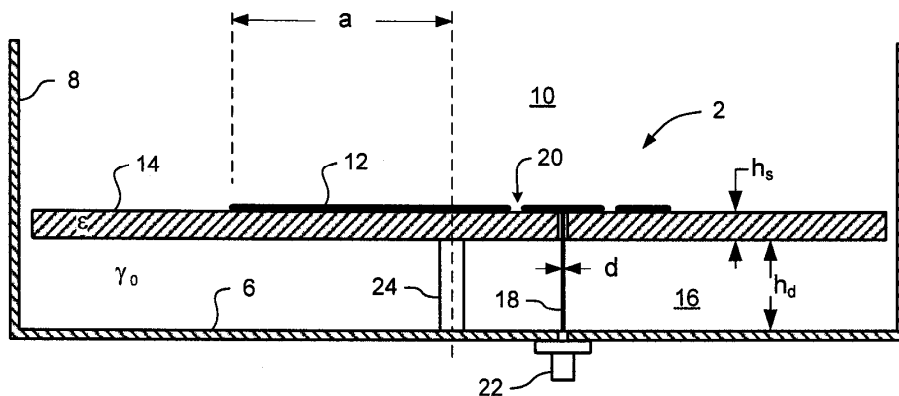
(57) **ABSTRACT**

A patch antenna includes a ground plane surrounded by a wall defining a cavity. A radiating element is disposed within the cavity substantially parallel to the ground plane and separated from the ground plane by a composite dielectric including an air gap. An excitation probe is electrically connected to the radiating element for exciting at least a dominant mode of the radiating element. The radiating element includes an annular slot surrounding the excitation probe and defining a capacitive load for compensating an inductance of the excitation probe.

(73) Assignee: **SPOTWAVE WIRELESS CANADA, INC.**, Kanata (CA)

(21) Appl. No.: **11/740,517**

(22) Filed: **Apr. 26, 2007**





US 20070268189A1

(19) **United States**

(12) **Patent Application Publication**
Kuramoto et al.

(10) **Pub. No.: US 2007/0268189 A1**

(43) **Pub. Date: Nov. 22, 2007**

(54) **FOLDABLE BROADBAND ANTENNA AND METHOD OF USING THE SAME**

Publication Classification

(75) Inventors: **Akio Kuramoto**, Tokyo (JP);
Takuji Mochizuki, Kanagawa (JP)

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** **343/700 MS**

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(57) **ABSTRACT**

The present invention provides a small, thin, and cheap foldable broadband antenna that is valid in a wide band and, moreover, can be manufactured at low cost, and a method of using the same. A foldable broadband antenna includes: a plate conductor having a rectangular outer shape and in which a slit is formed from a long side so as to be orthogonal to a longitudinal direction; a side conductor provided perpendicularly from a side parallel with the slit in the plate conductor; and a back conductor disposed in parallel with the plate conductor from an end of the side conductor toward the slit. In the plate conductor, a coaxial external conductor of a coaxial cable is connected to the side opposite to the side conductor with the slit therebetween, and a coaxial central conductor of the coaxial cable is electrically connected to the same side as that of the side conductor.

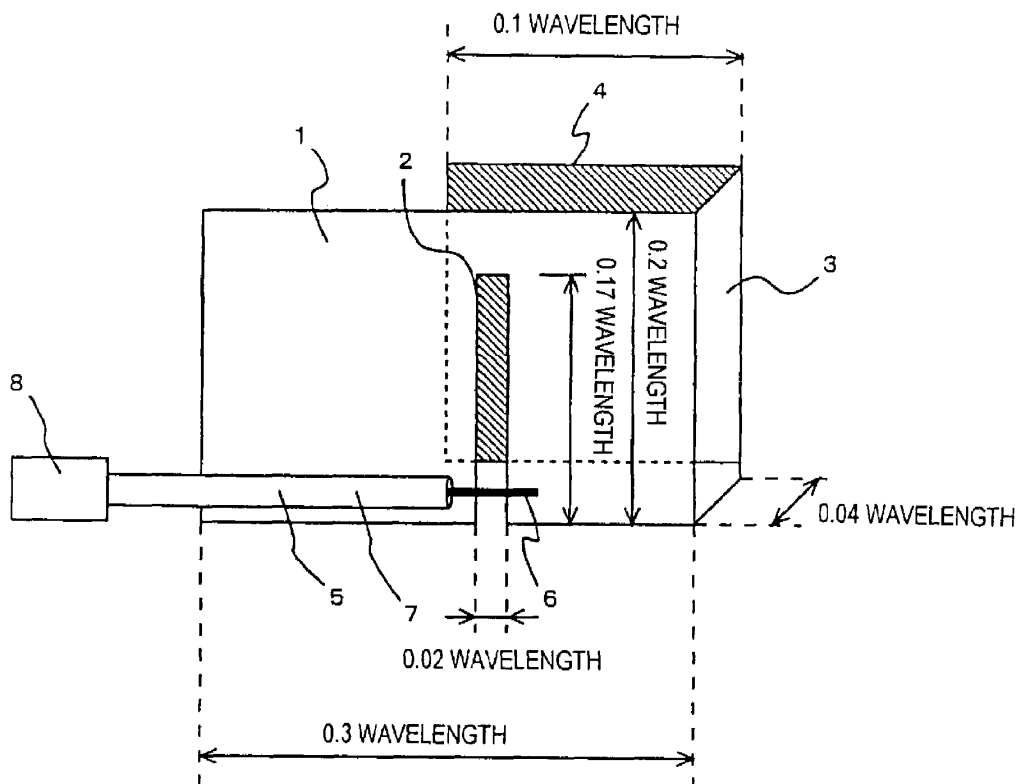
(73) Assignees: **NEC CORPORATION**, Tokyo (JP); **NEC ELECTRONICS CORPORATION**, Kanagawa (JP)

(21) Appl. No.: **11/745,071**

(22) Filed: **May 7, 2007**

(30) **Foreign Application Priority Data**

May 17, 2006 (JP) 2006-138061





US 20070268190A1

(19) **United States**

(12) **Patent Application Publication**
Huynh

(10) **Pub. No.: US 2007/0268190 A1**

(43) **Pub. Date: Nov. 22, 2007**

(54) **MULTI-BAND ANTENNA FOR GSM, UMTS,
AND WIFI APPLICATIONS**

Publication Classification

(75) Inventor: **Minh-Chau Huynh**, Morrisville,
NC (US)

(51) **Int. Cl.**
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** **343/702; 343/700 MS**

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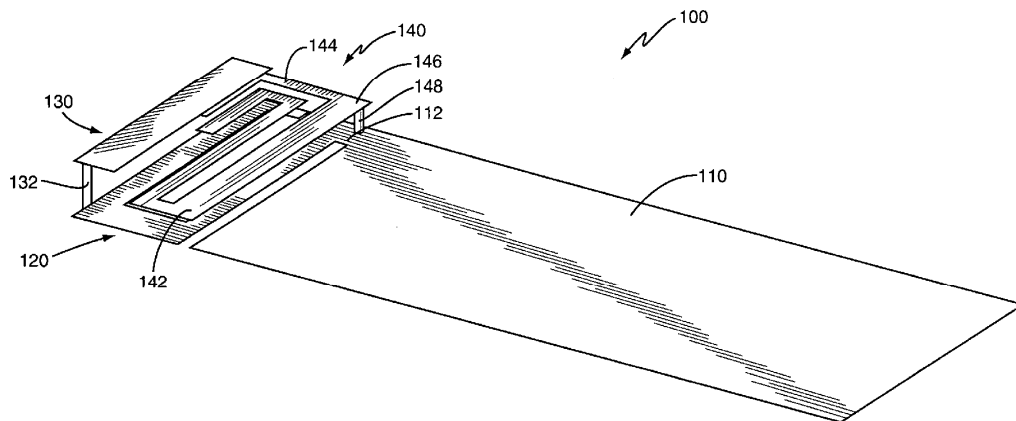
(57) **ABSTRACT**

(73) Assignee: **Sony Ericsson Mobile
Communications AB**

The multi-band antenna described herein includes multiple antenna elements that collectively resonate in multiple different frequency bands. One exemplary antenna includes first and second vertically spaced antenna elements that connect to a ground plane. A feed antenna element positioned between the first and second antenna elements connects to an antenna feed. The electromagnetic coupling produced by the arrangement of these antenna elements produces multiple resonant frequencies, and therefore, defines multiple operating frequency bands of the multi-band antenna.

(21) Appl. No.: **11/435,535**

(22) Filed: **May 17, 2006**





US 20070268191A1

(19) **United States**

(12) **Patent Application Publication**
Ishizuka et al.

(10) **Pub. No.: US 2007/0268191 A1**

(43) **Pub. Date: Nov. 22, 2007**

(54) **ANTENNA AND WIRELESS COMMUNICATION DEVICE**

Publication Classification

(75) Inventors: **Kenichi Ishizuka**, Sagamihara-shi (JP);
Kazunari Kawahata, Machida-shi (JP)

(51) **Int. Cl.**
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** **343/702; 343/700 MS**

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MURATA MANUFACTURING COMPANY, LTD.
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SUITE 850
MCLEAN, VA 22102 (US)

(57) **ABSTRACT**

(73) Assignee: **MURATA MANUFACTURING CO., LTD.**, Nagaokakyo-shi, Kyoto-fu (JP)

An antenna and a wireless communication device are adapted to have a plurality of resonant frequencies changed simultaneously by a desired range at a low voltage. The antenna includes a first antenna section and a second antenna section. The first antenna section includes a feeding electrode, a frequency-changing circuit, and a radiating electrode, and the second antenna section includes the feeding electrode, a first reactance circuit, and an additional radiating electrode. The frequency-changing circuit has a circuit configuration in which the first reactance circuit and the second reactance circuit are connected. When a control voltage V_c is applied to a node P, the reactances of the first and second reactance circuits change in accordance with the magnitude of the control voltage V_c , so that a resonant frequency f_1 of the first antenna section and a resonant frequency f_2 of the second antenna section change simultaneously.

(21) Appl. No.: **11/829,653**

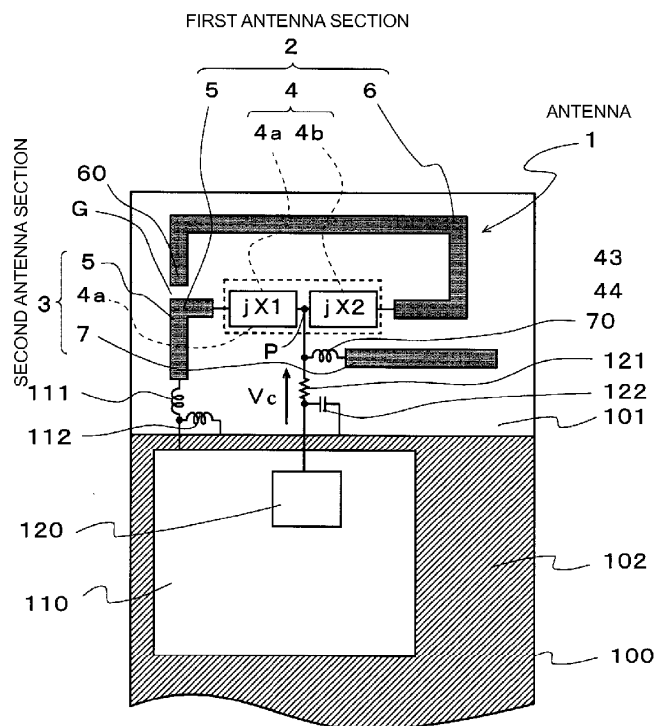
(22) Filed: **Jul. 27, 2007**

Related U.S. Application Data

(63) Continuation of application No. PCT/JP2005/022342, filed on Dec. 6, 2005.

(30) **Foreign Application Priority Data**

Jan. 27, 2005 (JP) 2005-020199
Aug. 23, 2005 (JP) 2005-241890





US 20070268194A1

(19) **United States**
 (12) **Patent Application Publication** (10) **Pub. No.: US 2007/0268194 A1**
Kai et al. (43) **Pub. Date: Nov. 22, 2007**

(54) TAG ANTENNA

Publication Classification

(75) Inventors: **Manabu Kai**, Kawasaki (JP); **Toru Maniwa**, Kawasaki (JP); **Takashi Yamagajo**, Kawasaki (JP)

(51) **Int. Cl.**
H01Q 9/16 (2006.01)
 (52) **U.S. Cl.** **343/793**

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 WASHINGTON, DC 20006 (US)

(57) **ABSTRACT**

A dipole part of a length shorter than half of an antenna resonance wavelength is placed so as to be rolled and enables a feeding part 11 to feed a chip. An inductance part 12 for adjusting the inductance of the antenna is provided so as to sandwich the feeding part 11. The inductance 12 is provided using an empty space of the inside of the rolled dipole part. By providing the inductance part 12, the inductance of the antenna can be adjusted so as to resonate at a predetermined frequency with the capacitance of the chip connected to the feeding part 11. At this time, although the radiation resistance of the antenna becomes extremely large according to calculations, it is actually almost the same as the resistance of the chip due to loss, and the power received by the antenna can be provided to the chip.

(73) Assignee: **FUJITSU LIMITED**

(21) Appl. No.: **11/812,184**

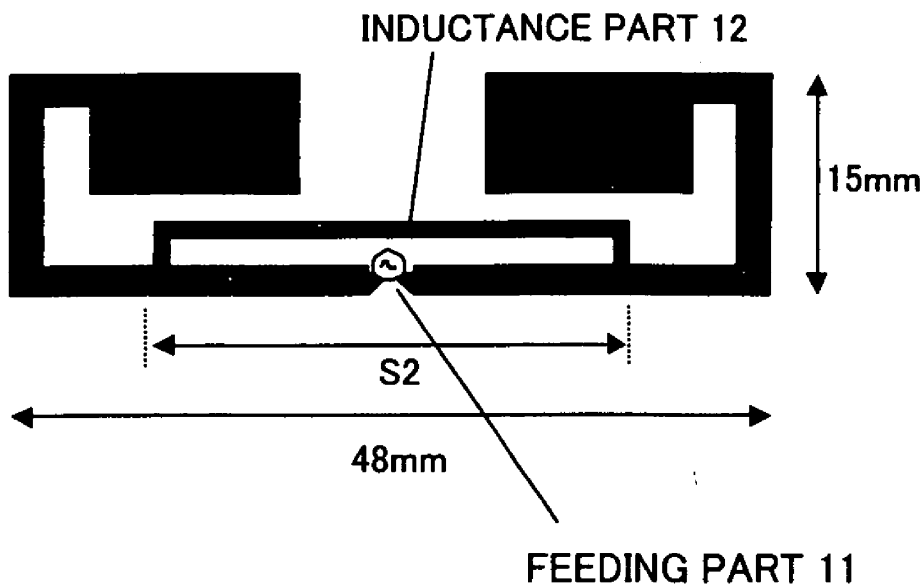
(22) Filed: **Jun. 15, 2007**

Related U.S. Application Data

(62) Division of application No. 11/313,814, filed on Dec. 22, 2005.

(30) **Foreign Application Priority Data**

Mar. 17, 2005 (JP) 2005-076492
 Oct. 17, 2005 (JP) 2005-302210





US 20070273527A1

(19) **United States**

(12) **Patent Application Publication**
Yamagajo et al.

(10) **Pub. No.: US 2007/0273527 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **RADIO FREQUENCY IDENTIFICATION TAG AND ANTENNA FOR RADIO FREQUENCY IDENTIFICATION TAG**

(30) **Foreign Application Priority Data**

May 24, 2006 (JP) 2006-144291

(75) Inventors: **Takashi Yamagajo**, Kawasaki (JP); **Toru Maniwa**, Kawasaki (JP); **Manabu Kai**, Kawasaki (JP)

Publication Classification

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

(52) **U.S. Cl.** 340/572.7

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WASHINGTON, DC 20006

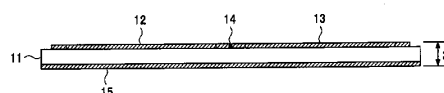
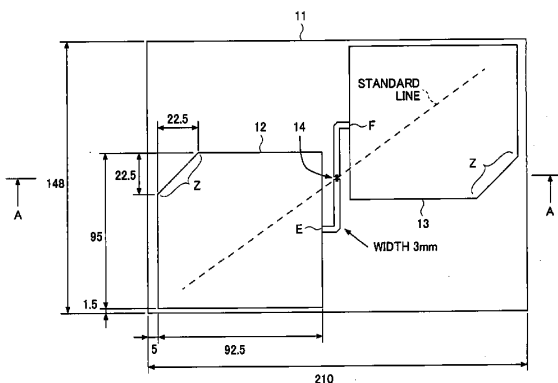
(57) **ABSTRACT**

An antenna for a radio frequency identification tag, includes a dielectric board; and a pair of conductive plates; wherein the pair of the conductive plates has a point symmetrical configuration with respect to a mounting position of a radio frequency identification tag integrated circuit. The pair of the conductive plates and the mounting position of the radio frequency identification tag integrated circuit may be arranged along a standard line on the surface of the dielectric board.

(73) Assignee: **FUJITSU LIMITED**

(21) Appl. No.: **11/527,331**

(22) Filed: **Sep. 27, 2006**





US 20070273528A1

(19) **United States**

(12) **Patent Application Publication**
Burkholder et al.

(10) **Pub. No.: US 2007/0273528 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **LOW PROFILE DISTRIBUTED ANTENNA**

Publication Classification

(76) Inventors: **Robert Burkholder**, Columbus, OH (US); **Walter D. Burnside**, Dublin, OH (US)

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

(52) **U.S. Cl.** **340/572.7**

Correspondence Address:

Howard Chen, Esq.
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Suite 1700, 55 Second Street
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(57) **ABSTRACT**

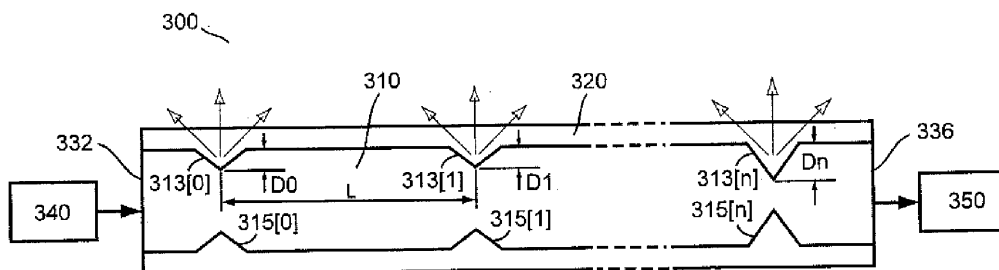
This invention provides low profile distributed antenna which comprises a first and second elongated continuous conductors being kept parallel to each other and forming a transmission line, a plurality of perturbation radiators on the first elongated continuous conductor, wherein a substantial amount of radio frequency energy transmitted by the transmission line radiates from the plurality of perturbation radiators, therefore, the transmission line serves as a low profile distributed antenna.

(21) Appl. No.: **11/690,562**

(22) Filed: **Mar. 23, 2007**

Related U.S. Application Data

(60) Provisional application No. 60/808,444, filed on May 25, 2006.





US 20070273587A1

(19) **United States**

(12) **Patent Application Publication**
Shr

(10) **Pub. No.: US 2007/0273587 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **MICRO-BELT ANTENNA**

Publication Classification

(76) Inventor: **Shiuan-Guang Shr, Taipei (TW)**

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** **343/700 MS**

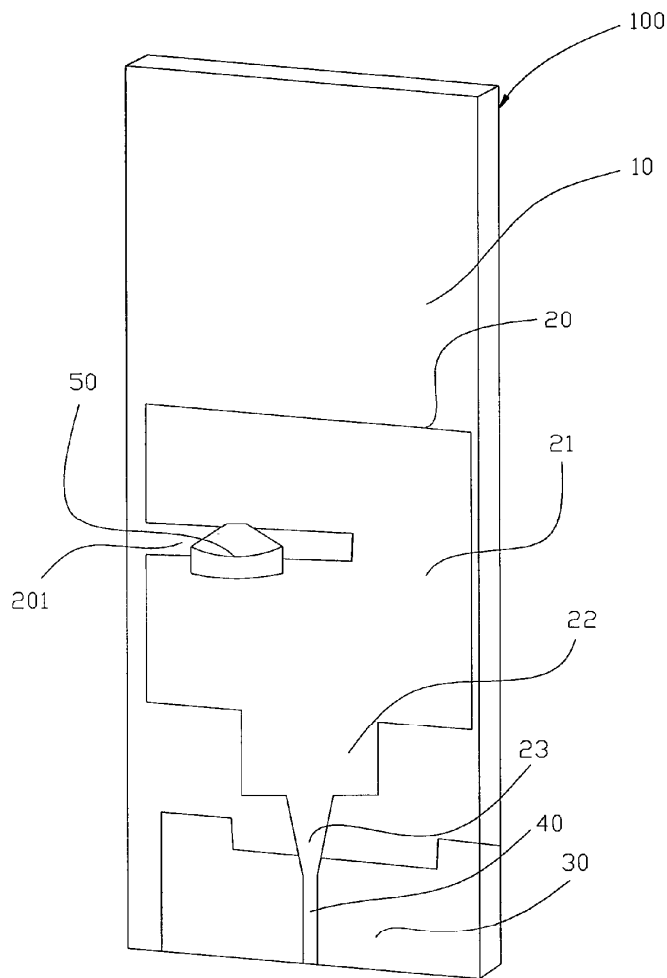
Correspondence Address:
ROSENBERG, KLEIN & LEE
3458 ELLICOTT CENTER DRIVE-SUITE 101
ELLICOTT CITY, MD 21043 (US)

(57) **ABSTRACT**

An antenna includes a dielectric substrate, a radiator, and a grounding board. A chink is formed at the radiator and the chink is loaded with a resistor. The antenna of the present invention has the following merits. The chink on the radiator increases the current path of the radiator so as to increase the frequency bandwidth of the antenna. The resistor loaded in the chink can improve balance the gain balance in the bandwidth.

(21) Appl. No.: **11/439,976**

(22) Filed: **May 25, 2006**





US 20070273588A1

(19) **United States**

(12) **Patent Application Publication**
Kim et al.

(10) **Pub. No.: US 2007/0273588 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **PATCH ANTENNA FOR LOCAL AREA COMMUNICATIONS**

(75) Inventors: **Yong-jin Kim**, Seongnam-si (KR);
Young-eil Kim, Suwon-si (KR);
Kang-wook Kim, Mokpo-si (KR)

Correspondence Address:
SUGHRUE MION, PLLC
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WASHINGTON, DC 20037

(73) Assignee: **SAMSUNG ELECTRONICS CO., LTD.**

(21) Appl. No.: **11/604,773**

(22) Filed: **Nov. 28, 2006**

(30) **Foreign Application Priority Data**

May 24, 2006 (KR) 10-2006-46366

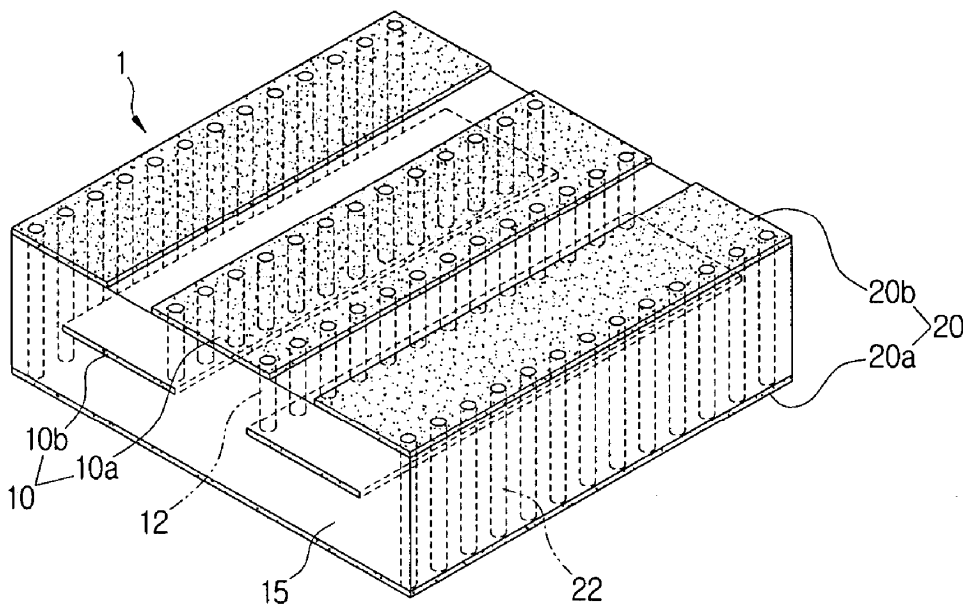
Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** **343/700 MS**

(57) **ABSTRACT**

A patch antenna includes a radiator part which includes at least one first radiator attached to an area of one surface of a dielectric, and at least one second radiator disposed within the dielectric and electrically connected to the first radiator; and a ground part which comprises at least one first ground disposed on other surface of the dielectric and at least one second ground disposed on the one surface of the dielectric, the first ground and the second ground electrically connected to each other. Accordingly, the size of the patch antenna is drastically reduced, and a wide bandwidth, high gain, and directionality are obtained.





US 20070273590A1

(19) **United States**

(12) **Patent Application Publication**

Lim et al.

(10) **Pub. No.: US 2007/0273590 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **ANTENNA HAVING EXTENDED OPERATION FREQUENCY BANDWIDTH**

(22) Filed: **Nov. 8, 2006**

(75) Inventors: **Yohan Lim**, Anyang-si (KR); **Kihun Chang**, Seoul (KR); **Young Joong Yoon**, Seoul (KR); **Ick-Jae Yoon**, Seoul (KR); **Young-Eil Kim**, Suwon-si (KR); **Yongjin Kim**, Suwon-si (KR)

(30) **Foreign Application Priority Data**

May 26, 2006 (KR) 2006-47457

Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** **343/702**

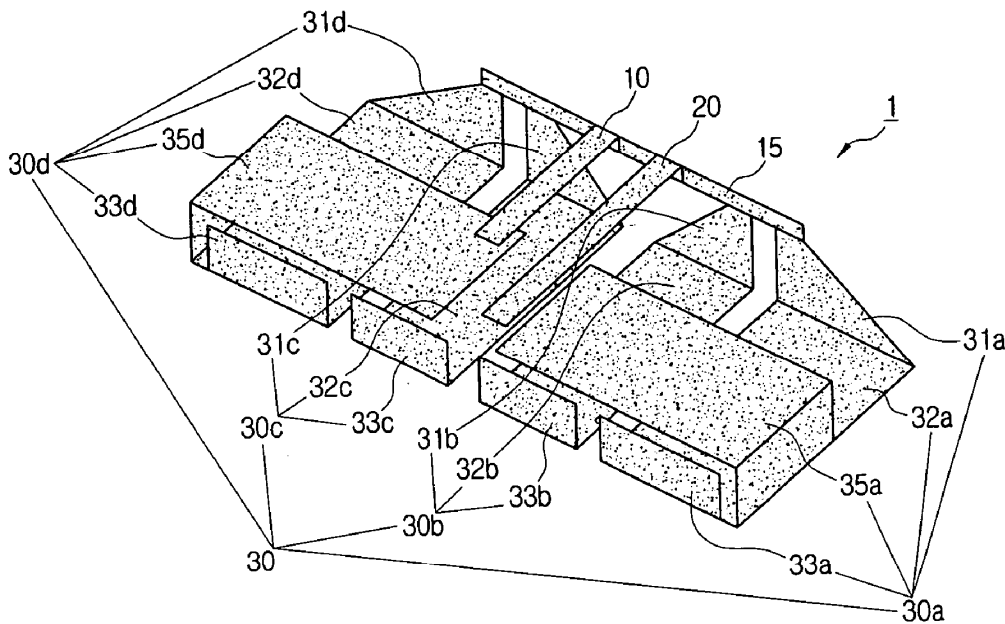
(57) **ABSTRACT**

An antenna having an extended operation frequency bandwidth that includes: a feed, and a plurality of radiators which are connected to the feed to receive current and divided at the feed. Accordingly, the RFID radio signals and the mobile communication radio signals can be transmitted and received via the single antenna because the frequency bandwidth is expanded. Therefore, the efficiency of the antenna can be improved and the mobile communication terminal can be miniaturized. Furthermore, since the antenna obtains the increased gain, the communication quality of the antenna can be enhanced and the power consumption can be reduced.

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(73) Assignees: **SAMSUNG ELECTRONICS CO., LTD.**; **INDUSTRY-ACADEMIC COOPERATION FOUNDATION, YONSEI UNIVERSITY**

(21) Appl. No.: **11/594,114**





US 20070273591A1

(19) **United States**

(12) **Patent Application Publication**
Kim et al.

(10) **Pub. No.: US 2007/0273591 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **BROADCASTING RECEIVING ANTENNA SYSTEM MOUNTED IN A WIRELESS TERMINAL**

(30) **Foreign Application Priority Data**

May 24, 2006 (KR) 2006-46365

(75) Inventors: **Yong-jin Kim**, Seongnam-si (KR);
Young-eil Kim, Suwon-si (KR);
Ick-jae Yoon, Seoul (KR)

Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** **343/702**

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WASHINGTON, DC 20037

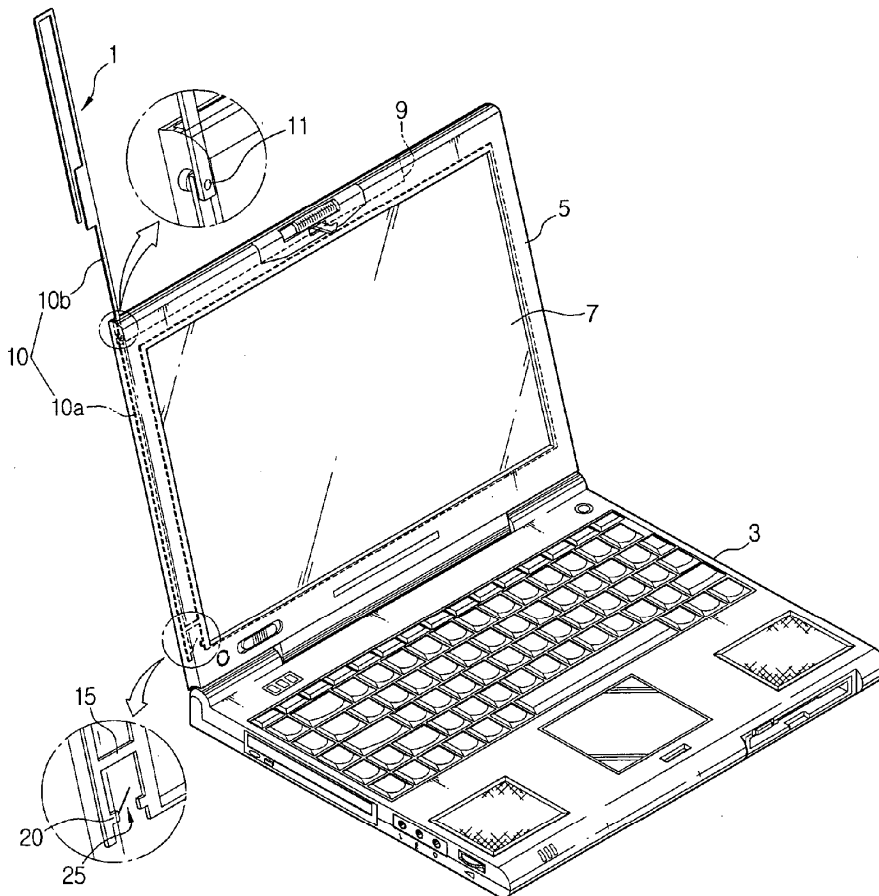
(57) **ABSTRACT**

A broadcast receiving antenna system mounted in a wireless terminal. The antenna is bendable, and functions as a PIFA antenna or a monopole whip antenna according to whether it is bent or not. Accordingly, since the length and the type of the antenna are adjustable according to the magnitude of the DMB or DVB-H signal, optimum broadcasting services can be provided and the length of the antenna can be shortened. Ultimately, Intenna-type antenna can be mounted.

(73) Assignees: **SAMSUNG ELECTRONICS CO., LTD.**, Suwon-si (KR);
Samsung Electro-Mechanics Co., LTD., Suwon-si (KR)

(21) Appl. No.: **11/637,031**

(22) Filed: **Dec. 12, 2006**





US 20070273592A1

(19) **United States**

(12) **Patent Application Publication**
Hong

(10) **Pub. No.: US 2007/0273592 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **ANTENNA STRUCTURE AND METHOD OF MANUFACTURING ANTENNA**

Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** **343/702**

(57) **ABSTRACT**

The present invention relates to an antenna structure in which an antenna pattern is formed on an inner surface of a case of a terminal device, and a method of manufacturing an antenna. In the present invention, an optimal antenna pattern is shaped in accordance with a frequency characteristic of a terminal device and the antenna pattern is directly printed on an inner surface of the terminal device through a vacuum evaporation or sputtering method. At this time, a mask member having the same shape as that of the antenna pattern is further provided. Alternatively, a transfer paper with the antenna pattern printed thereon may be attached to the inner surface of the terminal device. Therefore, even a complex antenna pattern can be easily implemented in the terminal device. Further, an optimal antenna characteristic can be obtained since the antenna is spaced apart from a printed circuit board by a predetermined distance.

(75) Inventor: **Bong Kuk Hong**, Osan City (KR)

Correspondence Address:
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PO BOX 747
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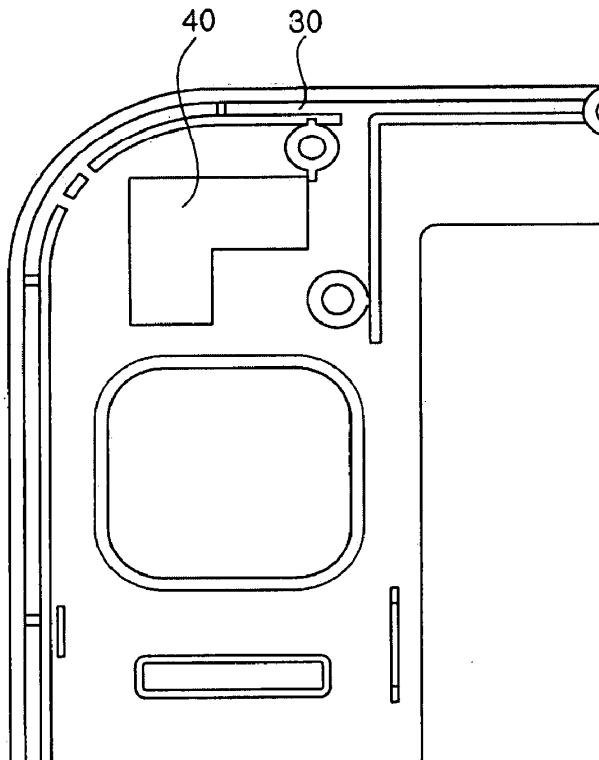
(73) Assignee: **LG Electronics Inc.**, Seoul (KR)

(21) Appl. No.: **11/798,266**

(22) Filed: **May 11, 2007**

(30) **Foreign Application Priority Data**

May 16, 2006 (KR) 10-2006-0043931





US 20070273593A1

(19) **United States**

(12) **Patent Application Publication**
Teshima et al.

(10) **Pub. No.: US 2007/0273593 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **ANTENNA DEVICE**

(30) **Foreign Application Priority Data**

(75) Inventors: **Masao Teshima**, Kunitachi-shi (JP); **Hiroshi Shimasaki**, Hamura-shi (JP)

May 26, 2006 (JP) 2006-146625

Publication Classification

Correspondence Address:
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MCLEAN, VA 22102

(51) **Int. Cl.**
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** **343/702; 343/700 MS**

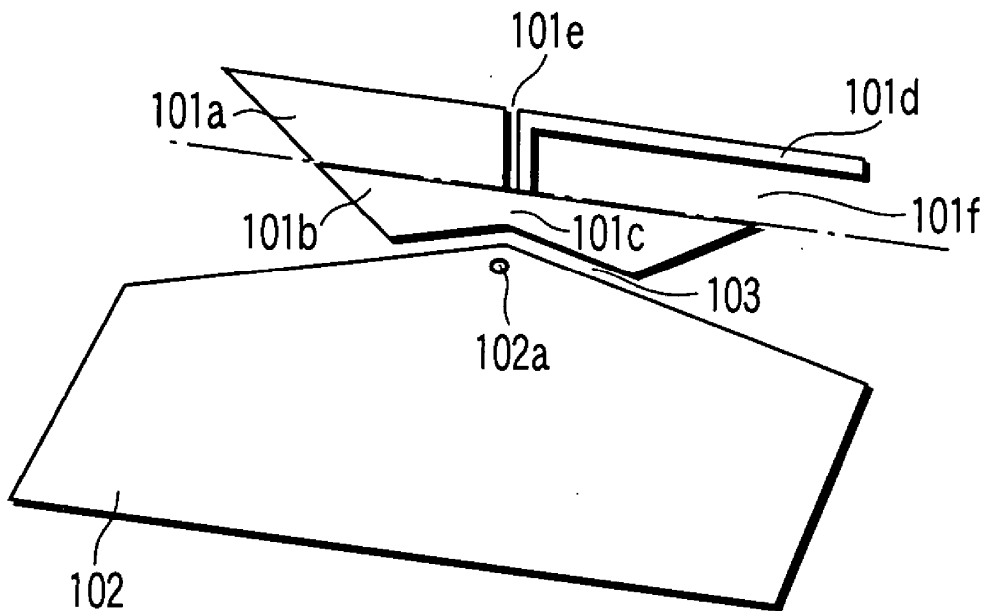
(57) **ABSTRACT**

An antenna device includes an element part for transmitting and receiving a radio signal. A grounding part is placed to form a certain gap to the element part. A power supply part is formed in the grounding part and element part, and connected with a communication cable for supplying power. A part of the element part is bent to the communication cable.

(73) Assignee: **KABUSHIKI KAISHA TOSHIBA**, Tokyo (JP)

(21) Appl. No.: **11/798,575**

(22) Filed: **May 15, 2007**





US 20070273595A1

(19) **United States**

(12) **Patent Application Publication**
Shimasaki et al.

(10) **Pub. No.: US 2007/0273595 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **INFORMATION EQUIPMENT WITH A PLURALITY OF RADIO COMMUNICATION ANTENNAS**

(22) Filed: **May 21, 2007**

(30) **Foreign Application Priority Data**

(75) Inventors: **Hiroshi Shimasaki**, Hamura-shi (JP); **Masao Teshima**, Kunitachi-shi (JP); **Satoshi Mizoguchi**, Ome-shi (JP); **Anwar Sathath**, Ome-shi (JP); **Toshiyuki Hirota**, Hino-shi (JP)

May 29, 2006 (JP) 2006-148799

Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** **343/702**

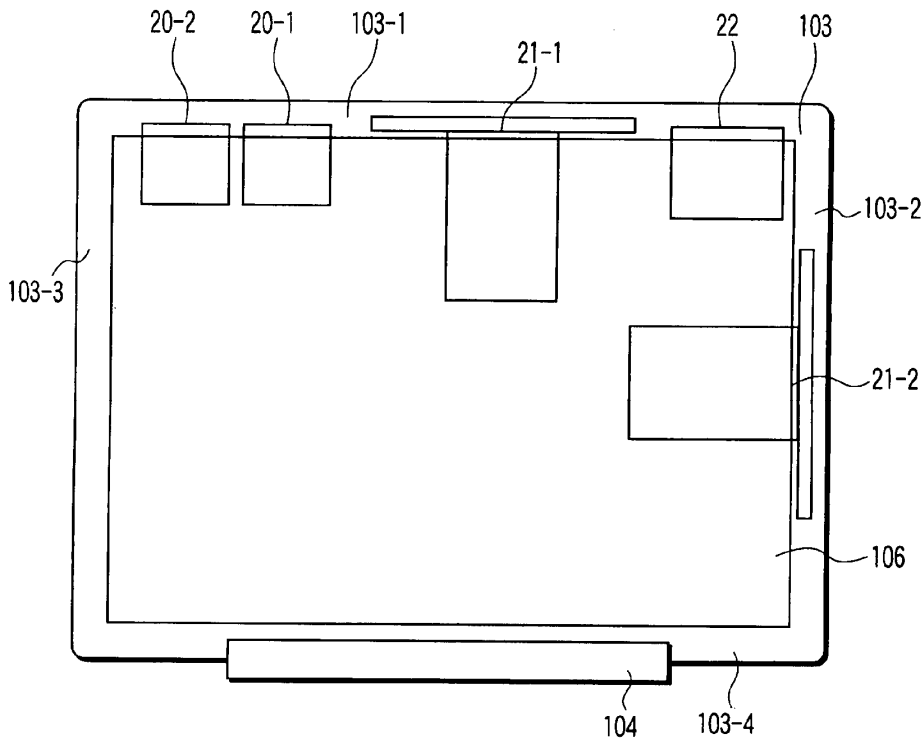
(57) **ABSTRACT**

Correspondence Address:
PILLSBURY WINTHROP SHAW PITTMAN, LLP
Eric S. Cherry - Docketing Supervisor
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MCLEAN, VA 22102

Information equipment according to an embodiment includes a display housing with a display unit, a first radio communication antenna disposed at an end part of the display housing, a second radio communication antenna using a frequency band adjacent to or overlapped with that of the first radio communication antenna, and a third radio communication antenna disposed at an end part between the first and the second radio communication antennas, and uses a frequency band not adjacent to nor overlapped with those of the first and the second radio communication antennas.

(73) Assignee: **KABUSHIKI KAISHA TOSHIBA**, Tokyo (JP)

(21) Appl. No.: **11/802,149**





US 20070273597A1

(19) **United States**

(12) **Patent Application Publication**
NODA

(10) **Pub. No.: US 2007/0273597 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **HIGH FREQUENCY WAVE GLASS ANTENNA FOR AN AUTOMOBILE**

Publication Classification

(75) Inventor: **Kazuyoshi NODA**, Chiyoda-ku (JP)

(51) **Int. Cl.**
H01Q 1/32 (2006.01)

(52) **U.S. Cl.** **343/713; 343/704**

(57) **ABSTRACT**

Correspondence Address:

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
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A rear window glass sheet 10 includes a plurality of heating wires 2 and a plurality of bus bars 5a and 5b for feeding the heating wires 2, the heating wires 2 and the bus bars form a defogger, the heating wires 2 extend in a horizontal direction of the rear window glass sheet 10, and an antenna conductor 6 is disposed in an upper blank region of the rear window glass sheet 10 except for a defogger region. When it is assumed that there is a line, which passes through the center of the antenna conductor 6 in a left-to-right direction of the antenna conductor or the center of gravity thereof, and which extends parallel to the heating wire at the highest position, is called an imaginary parallel line 11, an island-like conductor 1a is disposed in a region of the rear window glass sheet 10 between the imaginary parallel line 11 and the heating wire 2a at the highest position as viewed three-dimensionally.

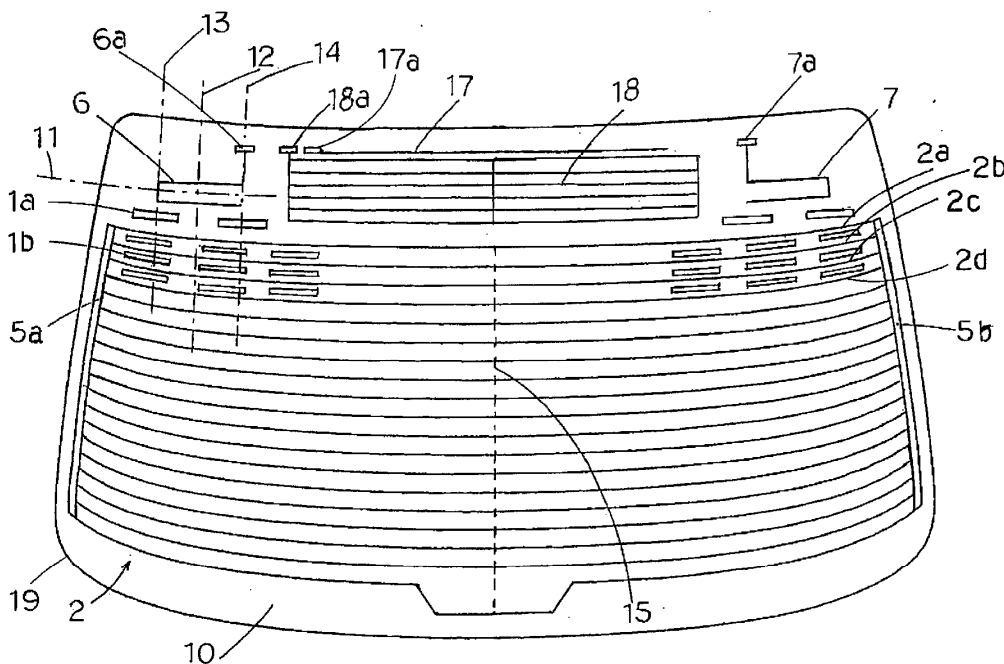
(73) Assignee: **Asahi Glass Company, Limited**, Chiyoda-ku (JP)

(21) Appl. No.: **11/752,016**

(22) Filed: **May 22, 2007**

(30) **Foreign Application Priority Data**

May 23, 2006 (JP) 2006-142845





US 20070273600A1

(19) **United States**

(12) **Patent Application Publication**
Tsujimura et al.

(10) **Pub. No.: US 2007/0273600 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **ANTENNA APPARATUS**

(30) **Foreign Application Priority Data**

(75) Inventors: **Akihiro Tsujimura**, Ome-shi (JP);
Koichi Sato, Fuchu-shi (JP);
Takashi Amano, Soka-shi (JP);
Hiroyuki Hotta, Ome-shi (JP)

May 26, 2006 (JP) 2006-147282

Publication Classification

(51) **Int. Cl.**
H01Q 1/00 (2006.01)

(52) **U.S. Cl.** **343/787**

Correspondence Address:
FRISHAUF, HOLTZ, GOODMAN & CHICK, PC
220 Fifth Avenue, 16TH Floor
NEW YORK, NY 10001-7708

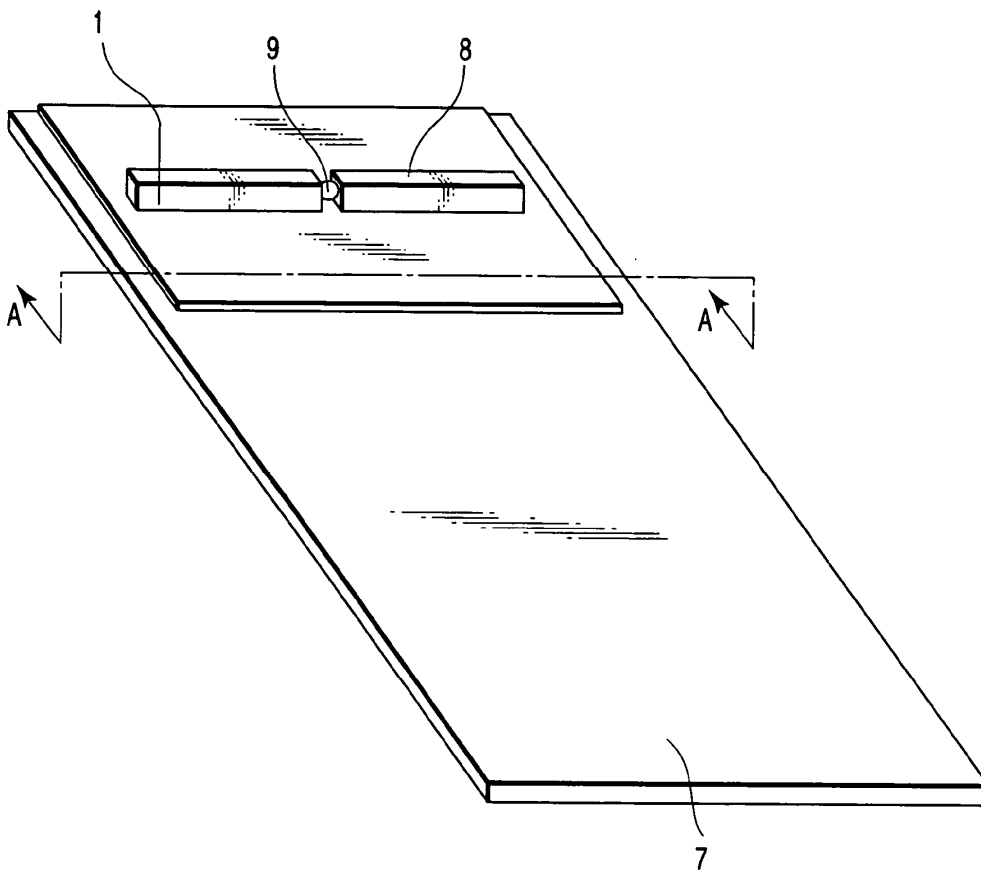
(57) **ABSTRACT**

(73) Assignee: **KABUSHIKI KAISHA**
TOSHIBA, Tokyo (JP)

A magnetic member is interposed and arranged between an antenna element and a printed circuit board, and an air member or a dielectric member is interposed between the antenna element and the magnetic member. The magnetic member is constituted of a nanogranular structure in which magnetic nanoparticles with ferromagnetism are three-dimensionally dispersed and arranged in an insulating matrix substrate.

(21) Appl. No.: **11/515,304**

(22) Filed: **Sep. 1, 2006**





US 20070273604A1

(19) **United States**

(12) **Patent Application Publication**
Wong et al.

(10) **Pub. No.: US 2007/0273604 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **ULTRA-WIDEBAND ANTENNA STRUCTURE**

(30) **Foreign Application Priority Data**

(75) Inventors: **Kin-Lu Wong**, Kaohsiung (TW);
Jui-Hung Chou, Taichung City
(TW); **Saou-Wen Su**, Taipei City
(TW)

May 29, 2006 (TW) 095119076

Publication Classification

(51) **Int. Cl.**
H01Q 1/48 (2006.01)

(52) **U.S. Cl.** **343/846**

(57) **ABSTRACT**

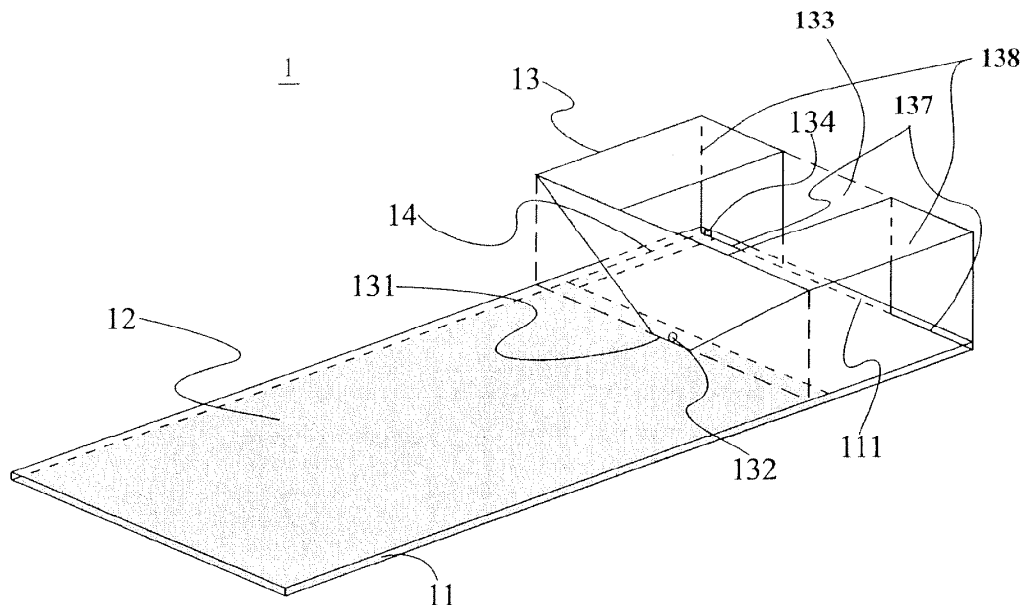
An ultra-wideband antenna structure is provided. The ultra-wideband antenna structure includes a substrate with an edge, a first surface and a second surface opposite to the first surface; a ground surface mounted on the first surface; a radiating element mounted on the second surface and near the edge, and being a bent metal piece; and a short-circuited metal unit mounted on the first surface having a first end and a second end, wherein the first end is electrically connected to the ground surface and the second end is electrically connected to the radiating element.

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LIVERMORE, CA 94550

(73) Assignees: **Lite-On Technology Corp.**, Taipei
City (TW); **National Sun Yat-Sen**
University, Kaohsiung (TW)

(21) Appl. No.: **11/675,588**

(22) Filed: **Feb. 15, 2007**





US 20070273605A1

(19) **United States**

(12) **Patent Application Publication**
Oberle

(10) **Pub. No.: US 2007/0273605 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **METHOD FOR FORMING RADIO
FREQUENCY ANTENNA**

Publication Classification

(75) Inventor: **Robert R. Oberle**, Macungie, PA (US)

(51) **Int. Cl.**
H01Q 7/00 (2006.01)

(52) **U.S. Cl.** **343/866**

Correspondence Address:
FLIESLER MEYER LLP
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SAN FRANCISCO, CA 94108 (US)

(57) **ABSTRACT**

(73) Assignee: **RCD TECHNOLOGY INC.**, Quaker-
town, PA (US)

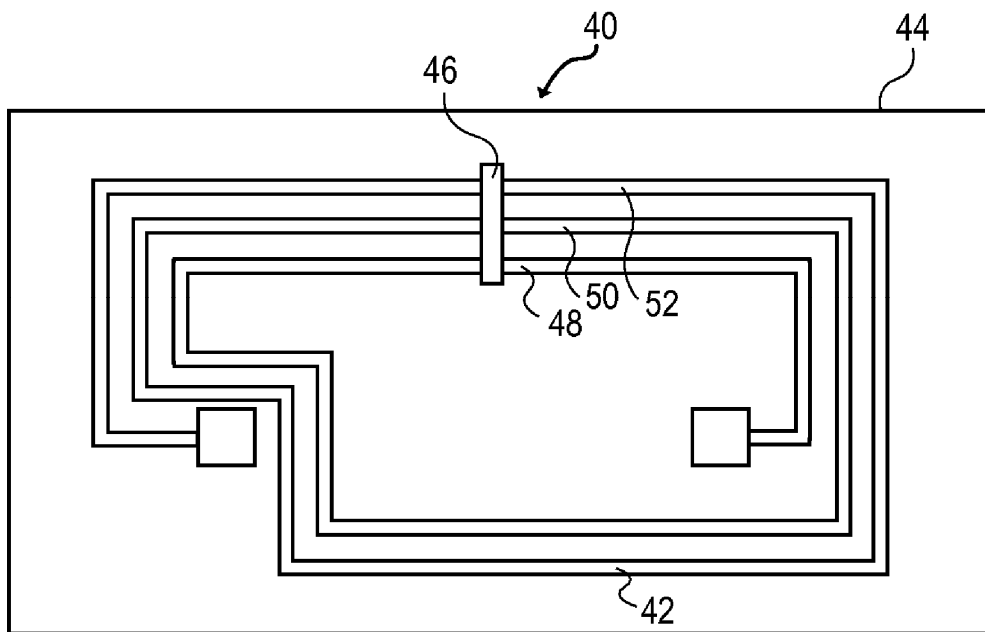
A metalized circuit suitable for application as a radio frequency antenna is produced by forming an antenna coil pattern on a flexible substrate. The antenna coil pattern is formed using a conductive ink which is patterned on the substrate. The conductive ink is cured and an electrical-short layer is formed across the coils of the conductive ink pattern. An insulating layer is formed over top of the electrical-short layer, a metal layer electroplated on top of the conductive layer, and then the electrical-short layer is removed. The use of the electrical-short layer during the electroplating allows for the voltage at the different points on the conductive ink layer to be relatively similar, so that a uniform electroplate layer is formed on top of the conductive ink layer. This results in a better quality radio frequency antenna at a reduced cost.

(21) Appl. No.: **11/837,162**

(22) Filed: **Aug. 10, 2007**

Related U.S. Application Data

(63) Continuation of application No. 10/925,229, filed on Aug. 24, 2004, now Pat. No. 7,268,740, which is a continuation-in-part of application No. 10/238,598, filed on Sep. 11, 2002, now Pat. No. 6,933,892, which is a continuation of application No. 09/524,505, filed on Mar. 13, 2000, now Pat. No. 6,476,775.





US 20070273606A1

(19) **United States**

(12) **Patent Application Publication**
Mak et al.

(10) **Pub. No.: US 2007/0273606 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **MULTI MODE ANTENNA SYSTEM**

Publication Classification

(75) Inventors: **Angus C.K. Mak**, Hong Kong (HK); **Corbett Rowell**, Hong Kong (HK)

(51) **Int. Cl.**
H01Q 3/24 (2006.01)

(52) **U.S. Cl.** **343/876**

(57) **ABSTRACT**

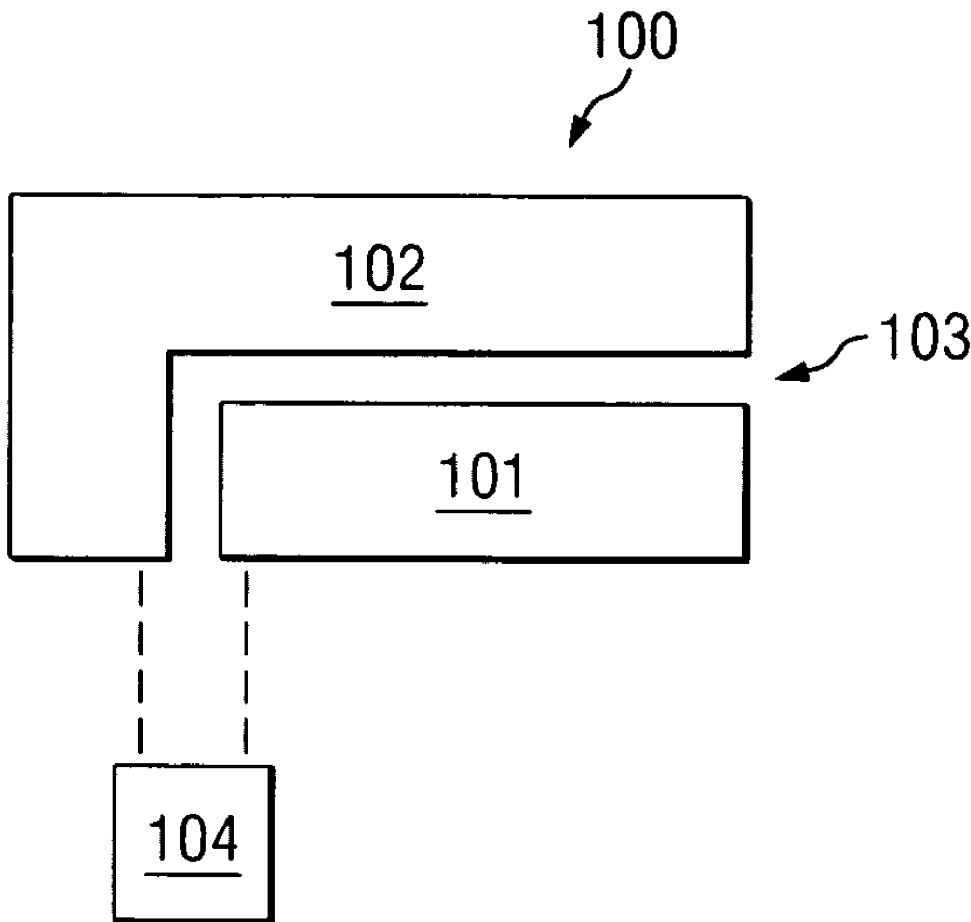
Correspondence Address:
FULBRIGHT & JAWORSKI L.L.P
2200 ROSS AVENUE, SUITE 2800
DALLAS, TX 75201-2784

An antenna system comprising a first antenna element, a second antenna element, the first and second elements defining at least in part a slot element, an active switching network in communication with one or both of the first and second antenna elements, the switching network operable to cause the antenna system to resonate in each of two modes: a first mode wherein the first element resonates at a first set of frequencies, and the first element and a second element resonate together at a second set of frequencies; and a second mode wherein the first element resonates at the first set of frequencies, and the slot element resonates at a third set of frequencies.

(73) Assignee: **Hong Kong Applied Science and Technology Research Institute Co., Ltd.**, Sha Tin (HK)

(21) Appl. No.: **11/441,823**

(22) Filed: **May 26, 2006**





US 20070273607A1

(19) **United States**

(12) **Patent Application Publication**
Chen

(10) **Pub. No.: US 2007/0273607 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **COMPACT MULTI-TIERED PLATE ANTENNA ARRAYS**

Publication Classification

(75) Inventor: **Zhining Chen**, Singapore (SG)

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(51) **Int. Cl.**
H01Q 21/00 (2006.01)
H01Q 1/36 (2006.01)
H01Q 1/48 (2006.01)
(52) **U.S. Cl.** **343/893**

(57) **ABSTRACT**

(73) Assignee: **AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH**, Singapore (SG)

An antenna array having a plurality of array elements is disclosed. The antenna array comprises a first array element (204A) having a first suspended radiator (207A) and a first ground conductor (206A), the first suspended radiator being displaced from the first ground conductor. The antenna also comprises a second array element (204B) being adjacent to the first array element, the second array element having a second suspended radiator (207B) and a second ground conductor (206B), wherein the second suspended radiator is displaced from the second ground conductor. In the antenna the first ground conductor is adjacent to and displaced from the second ground conductor and the first ground conductor is disposed on a first tier and the second ground conductor is disposed on a second tier to form an at least two-tiered ground conductor.

(21) Appl. No.: **10/598,408**

(22) PCT Filed: **Jan. 20, 2005**

(86) PCT No.: **PCT/SG05/00014**

§ 371(c)(1),
(2), (4) Date: **Jun. 5, 2007**

(30) **Foreign Application Priority Data**

Jan. 26, 2004 (SG)..... 200400539-3

