US 20070205900A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0205900 A1**

Pretorius (43) **Pub. Date: Sep. 6, 2007**

(54) **RFID TAG WITH ANTENNA AND SENSE CONDUCTOR**

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(21) Appl. No.: **11/681,087**

(22) Filed: **Mar. 1, 2007**

(30) **Foreign Application Priority Data**

Mar. 3, 2006 (ZA) 2006/01841

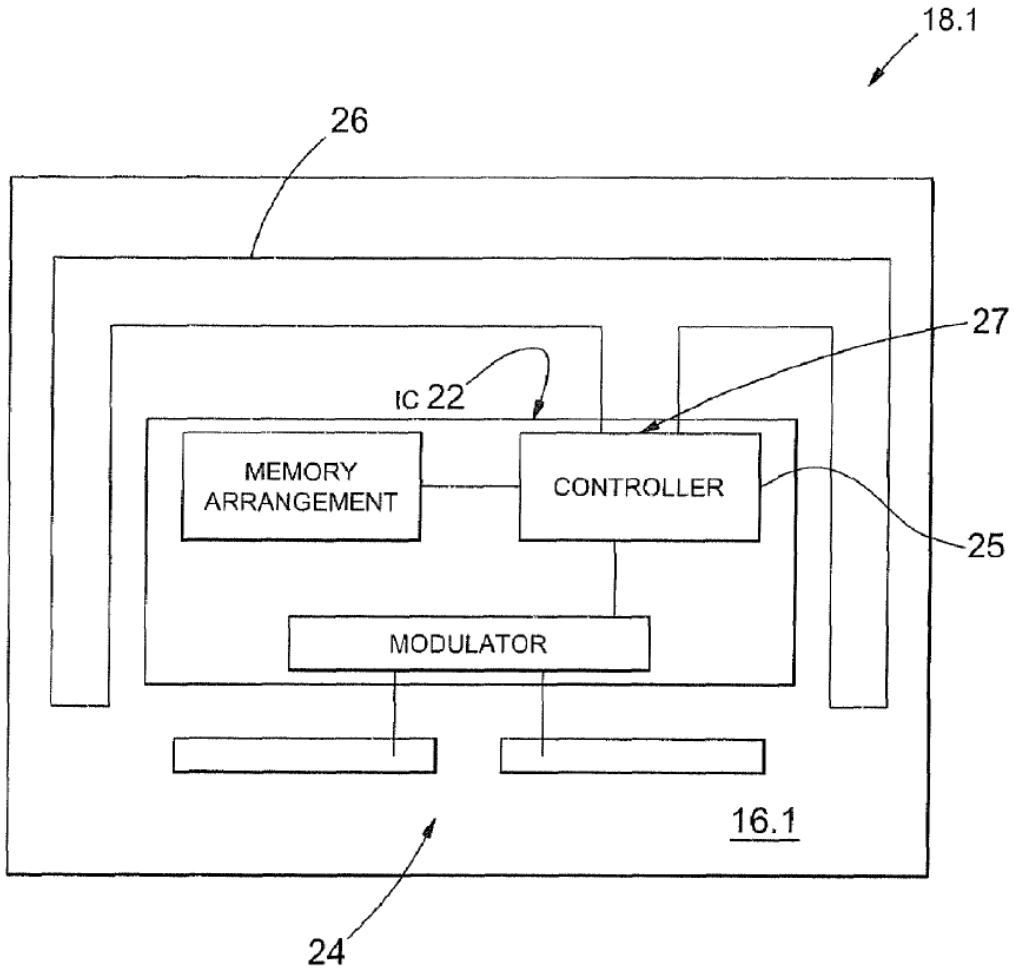
Publication Classification

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

(52) **U.S. Cl.** **340/572.8**

(57) **ABSTRACT**

A radio frequency identification (RFID) system and more particularly a tag comprising a transponder forming parts of such a system. The tag preferably includes a substrate; a transponder mounted on the substrate; the transponder comprising electronic circuitry and an antenna connected to the circuitry; a sense element on the substrate which is sensitive to damage to the substrate and which is connected to a sense input of the circuitry; the antenna comprising a metal layer and the sense element a layer of conductive ink.



US 20070205945A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0205945 A1**

Tatarnikov et al. (43) **Pub. Date: Sep. 6, 2007**

(54) **PATCH ANTENNA WITH COMB SUBSTRATE**

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(21) Appl. No.: **11/280,424**

(22) Filed: **Nov. 16, 2005**

Related U.S. Application Data

(60) Provisional application No. 60/644,948, filed on Jan. 19, 2005.

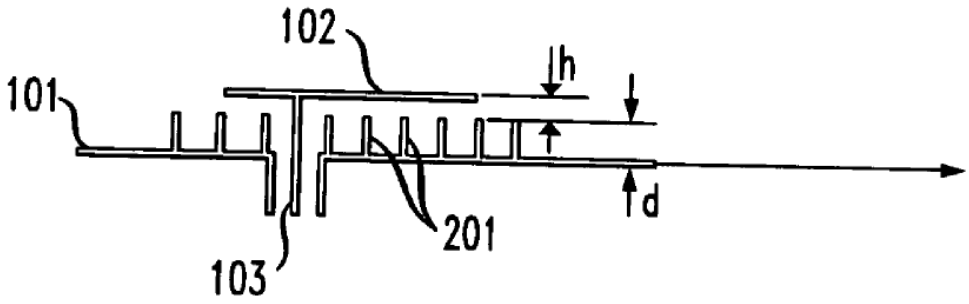
Publication Classification

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

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

(57) **ABSTRACT**

A patch antenna having a plurality of structures, referred to herein as comb structures, is disclosed that results in an antenna having a reduced overall patch size and weight as well as a broader the angular response pattern of the antenna. In a first embodiment, comb structures are attached to one of the surface of the patch or the surface of the ground plane. In a second embodiment, the comb structures are attached to both the patch and the ground plane in a manner such that the structures interleave with each other. The structures may be pins or ribs that are electrically connected to the ground plane and/or the patch, or may be any other suitable configuration depending upon the polarization of the signal to be transmitted or received.



US 20070205947A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0205947 A1**

Boyle (43) **Pub. Date: Sep. 6, 2007**

(54) **MULTI-BAND COMPACT PIFA ANTENNA WITH MEANDERED SLOT (S)**

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(21) Appl. No.: **11/547,738**

(22) PCT Filed: **Apr. 1, 2005**

(86) PCT No.: **PCT/IB05/51096**

§ 371(c)(1),
(2), (4) Date: **Oct. 6, 2006**

(30) **Foreign Application Priority Data**

Apr. 6, 2004 (GB) 0407901.8

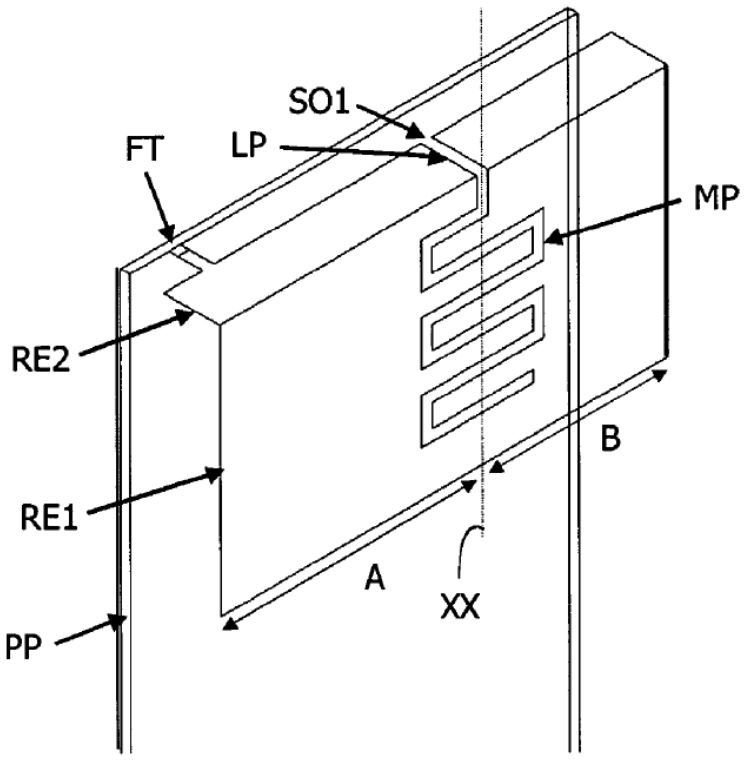
Publication Classification

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

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

(57) **ABSTRACT**

A planar antenna assembly comprises a Planar Inverted F Antenna mounted on a printed circuit board (PP) and comprising i) a radiating element (RE**1**, RE**2**) comprising first (RE**1**) and second (RE**2**) parts approximately perpendicular one to the other and being respectively located in a first plan facing and parallel to a ground plane mounted on a face of the printed circuit board (PP) and in a second plane perpendicular to said ground plane, ii) a feed tab (FT) extending from said second part (RE**2**) to said printed circuit board (PP), and iii) a main slot (SO**1**) having a chosen length and comprising a linear part (LP) defined in the second part (RE**2**) at a chosen location between lateral sides of the radiating element (RE**1**, RE**2**) and a meandered part (MP) extending the linear part (LP) into the first part (RE**1**). The second part (RE**2**) is arranged such that without the main slot (SO**1**) high and low frequency bands are equally capacitive and inductive respectively, and the length of the main slot (SO**1**) is such that it is electrically quarter-wave long at approximately the geometric mean of the low and high frequency bands.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0205948 A1**

Lee et al. (43) **Pub. Date: Sep. 6, 2007**

(54) **MULTIBAND ANTENNA USING WHIP HAVING INDEPENDENT POWER FEEDING IN WIRELESS TELECOMMUNICATION TERMINAL**

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(21) Appl. No.: **10/594,928**

(22) PCT Filed: **Mar. 31, 2004**

(86) PCT No.: **PCT/KR04/00749**

§ 371(c)(1),
(2), (4) Date: **Sep. 29, 2006**

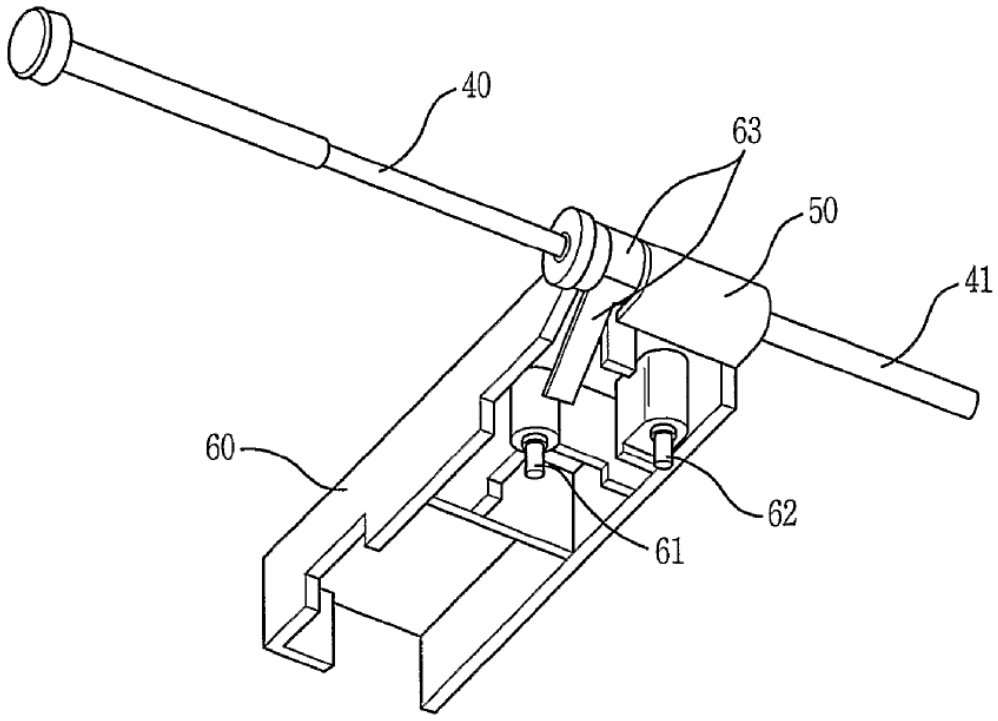
Publication Classification

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

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

(57) **ABSTRACT**

Provided is a multi-band antenna using a whip having independent power feeding in a wireless telecommunication terminal. The multi-band antenna of a wireless telecommunication terminal includes a first feed point for feeding an electric signal provided from an electric signal provider; a second feed point for feeding an electric signal provided from the electric signal provider; a plurality of radiators for radiating the electric signal fed from the first feed point into an electromagnetic wave signal; and a whip radiator for radiating the electric signal fed from the second feed point into an electromagnetic wave signal in order to increase the radiant efficiency of the electromagnetic wave signal radiated from a plurality of radiator and extend a bandwidth.



US 20070210964A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0210964 A1**

Tsai et al. (43) **Pub. Date: Sep. 13, 2007**

(54) **ANTENNA INCLUDING LOOP AND SINGLE-POLE ANTENNA MEMBERS INTERCONNECTED BY AN INDUCTOR**

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(21) Appl. No.: **11/442,368**

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

(30) **Foreign Application Priority Data**

Mar. 10, 2006 (TW)..... 095108115

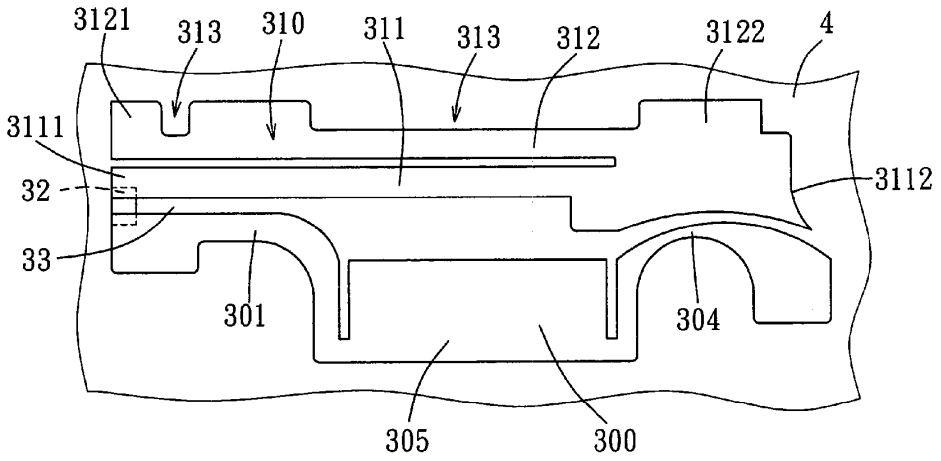
Publication Classification

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

(52) **U.S. Cl.** ..... **343/700 MS**; 343/770; 343/866

(57) **ABSTRACT**

An antenna includes loop and single-pole antenna members, and an inductor. The single-pole antenna member is spaced apart from the loop antenna member. The inductor has a first inductor terminal coupled to the loop antenna member, and a second inductor terminal coupled to the single pole antenna member. A desired resonance frequency of the antenna can be achieved by simply adjusting the inductance of the inductor.



US 20070210965A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2007/0210965 A1

Takada et al. (43) Pub. Date: Sep. 13, 2007

(54) PLANAR ANTENNA

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(21) Appl. No.: **11/683,591**

(22) Filed: **Mar. 8, 2007**

(30) **Foreign Application Priority Data**

Mar. 10, 2006 (JP) 2006-066602

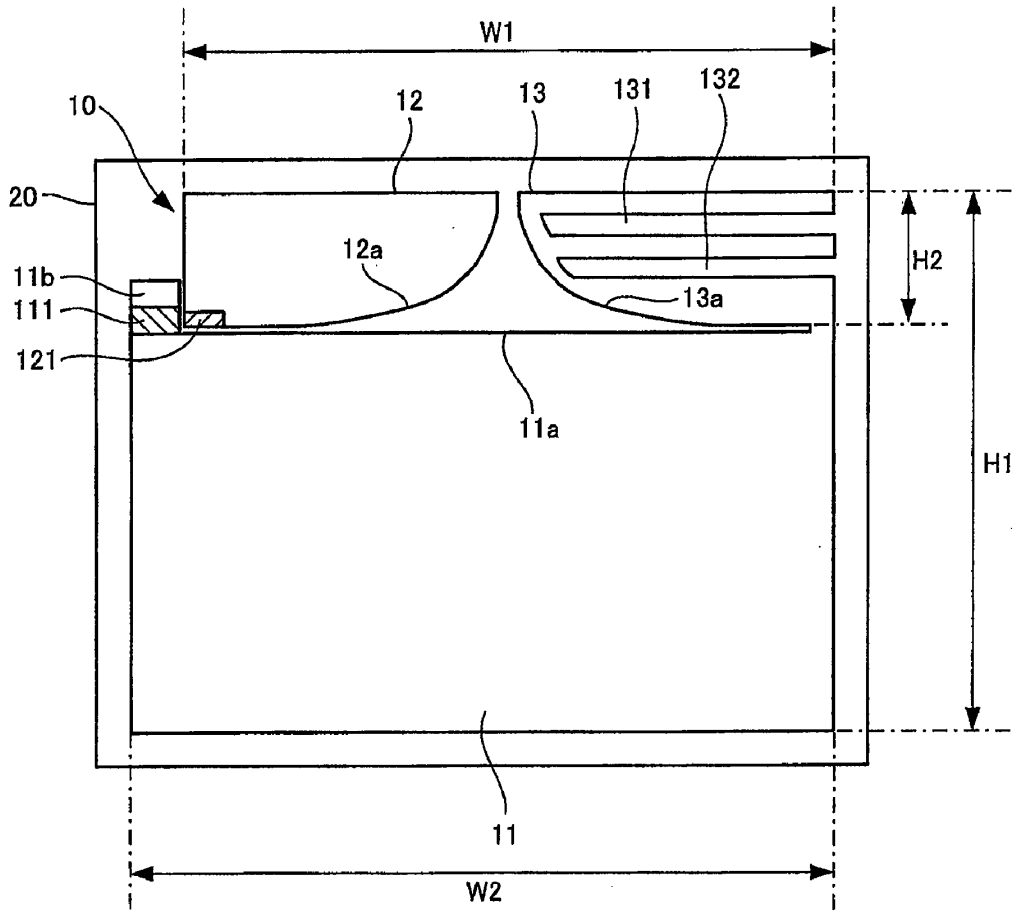
Publication Classification

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

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

(57) **ABSTRACT**

A planar antenna includes a ground plane having a ground point. A main radiating element has a feeding point positioned adjacent to the ground point. The main radiating element is positioned adjacent to a contact side of the ground plane such that a space is formed there between. A parasitic element is positioned adjacent to the contact side such that a space is formed there between. The main radiating element has a shape such that the space between the main radiating element and the contact side becomes larger as the main radiating element becomes closer to the parasitic element and the parasitic element has a shape such that the space between the parasitic element and the contact side becomes larger as the parasitic element becomes closer to the main radiating element. Additionally, the parasitic element may have a slit formed therein.



US 20070210969A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2007/0210969 A1

Vance (43) Pub. Date: Sep. 13, 2007

(54) MULTI-FREQUENCY BAND ANTENNA DEVICE FOR RADIO COMMUNICATION TERMINAL

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(21) Appl. No.: **11/498,043**

(22) Filed: **Aug. 3, 2006**

Related U.S. Application Data

(60) Provisional application No. 60/779,427, filed on Mar. 7, 2006.

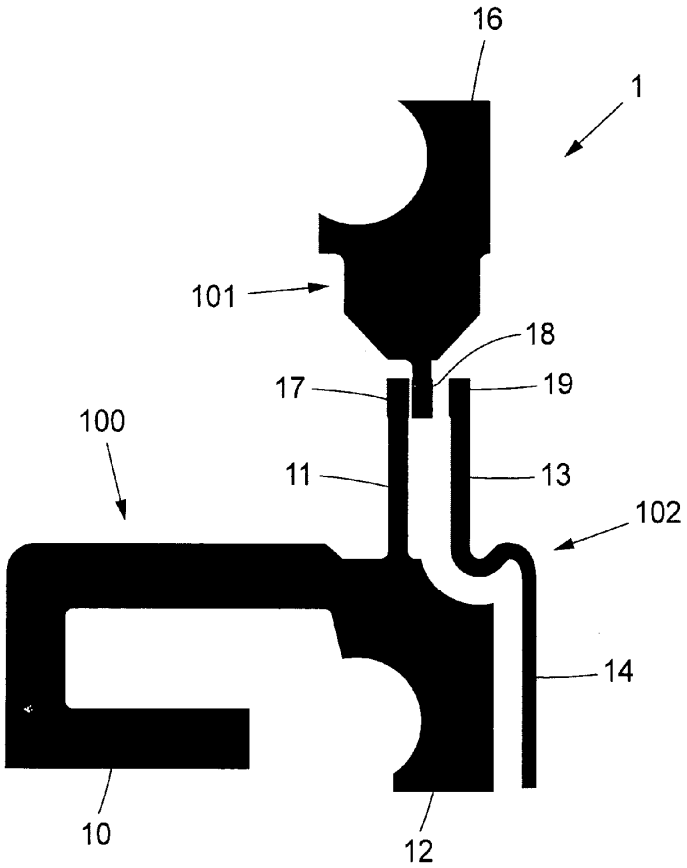
Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)
H01Q 1/38 (2006.01)

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

(57) **ABSTRACT**

A multi-band radio antenna device for a radio communication terminal includes an integral feed and ground structure electrically connected to a first radiating antenna element and a second radiating antenna element. The first radiating antenna element includes a first continuous trace of conductive material, wherein the first continuous trace has a first branch tuned to radiate at first frequencies in a first frequency band, and a second branch, which is tuned to radiate in a second frequency band at second frequencies approximately equal to or greater than two times the first frequencies. The said second radiating antenna element has a second continuous trace of conductive material, wherein the second continuous trace has a third branch capacitively coupled to the second branch. Such an antenna device is suitable for built-in antennas, at the same time having a wide high-frequency band bandwidth, which enables the antenna to be operable at a number of frequency bands.



US 20070210973A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2007/0210973 A1

Tanaka et al. (43) Pub. Date: Sep. 13, 2007

(54) MICROSTRIP ANTENNA AND CLOTHED ATTACHED WITH THE SAME

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(21) Appl. No.: **10/577,238**

(22) PCT Filed: **Oct. 27, 2003**

(86) PCT No.: **PCT/JP03/13763**

§ 371(c)(1),
(2), (4) Date: **Dec. 22, 2006**

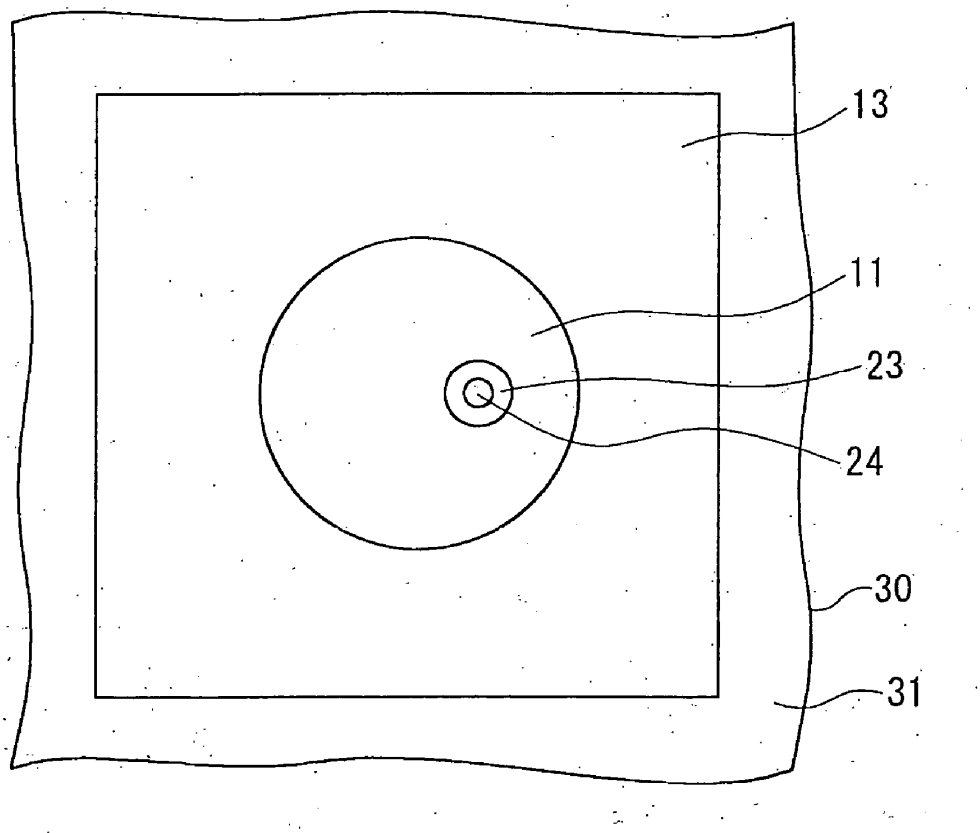
Publication Classification

(51) **Int. Cl.**
H01Q 13/08 (2006.01)

(52) **U.S. Cl.** ..... **343/720**; 343/700 MS

(57) **ABSTRACT**

In a microstrip antenna equipped with a nearly flat plate-like radiating conductor, a nearly flat plate-like ground conductor having larger area than the radiating conductor, and a dielectric substrate set between the radiating conductor and the ground conductor, and one terminal of a feeding cable is connected to the radiating conductor, and the other terminal is connected to the ground conductor, the radiating conductor and the ground conductor are composed of nearly cloth-like substances having flexibility and conductivity, and also the dielectric substrate is composed of a nearly cloth-like substance having flexibility and insulation property, and the connection of the terminal of the feeding cable to the radiating conductor or the ground conductor is composed of by soldering through a conductive medium.



US 20070210976A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2007/0210976 A1

Luk et al. (43) Pub. Date: Sep. 13, 2007

(54) COMPLEMENTARY WIDEBAND ANTENNA

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(21) Appl. No.: **11/373,518**

(22) Filed: **Mar. 10, 2006**

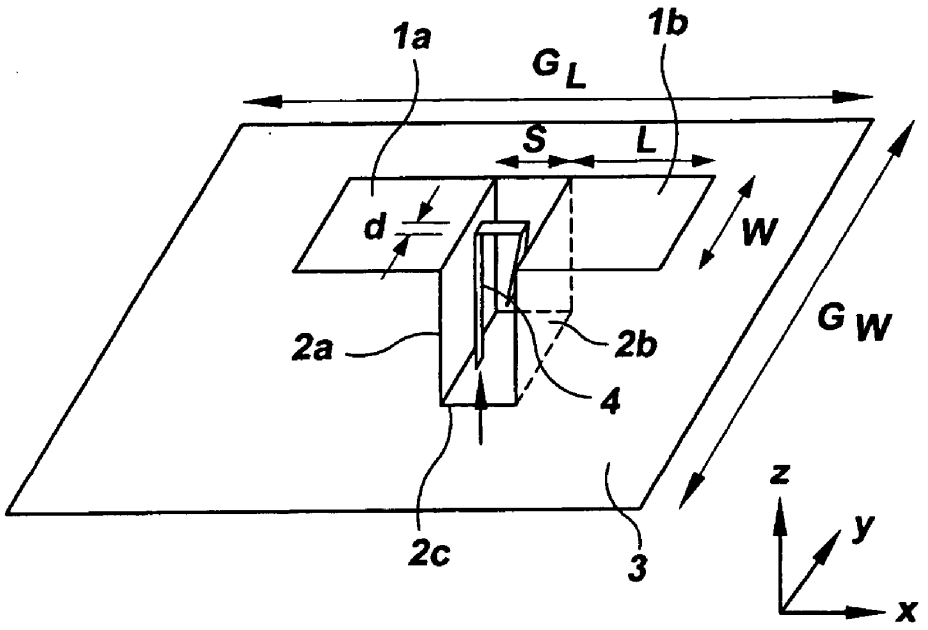
Publication Classification

(51) **Int. Cl.**
H01Q 9/16 (2006.01)
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** ..... **343/793**; 343/700 MS

(57) **ABSTRACT**

A complementary wideband antenna includes a planar dipole formed of two dipole sections and a shorted patch antenna located between the dipole sections, the dipole sections being spaced above a ground plane. A variety of different feed probe designs can be used to excite the antenna. The complementary wideband antenna has electrical characteristics including low back radiation, low cross polarization, a symmetrical radiation pattern, and is stable in gain and radiation pattern shape over the frequency bandwidth.



US 20070216578A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0216578 A1**

Ai et al. (43) **Pub. Date: Sep. 20, 2007**

(54) **HIGH GAIN BROADBAND PLANAR ANTENNA**

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(21) Appl. No.: **11/378,434**

(22) Filed: **Mar. 20, 2006**

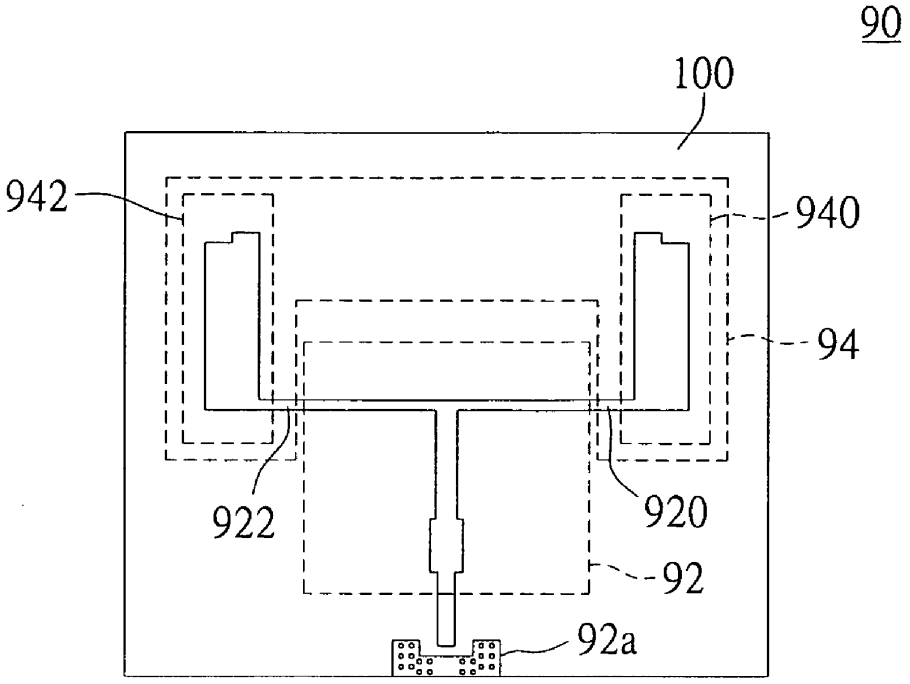
Publication Classification

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

(52) **U.S. Cl.** ..... **343/700 MS**; 343/850

(57) **ABSTRACT**

A high gain broadband planar antenna is provided for overcoming conventional antenna structure that cannot be applied to a high gain broadband. The antenna includes a microwave substrate having a first surface and a second surface, a first symmetric radiation unit having a first radiation part and a second radiation part disposed on the first surface, a second symmetric radiation unit having a third radiation part and a fourth radiation part disposed on the second surface, and at least one connecting unit connected to the microwave substrate and a reflector. An end terminal of each first radiation part, second radiation part, third radiation part and fourth radiation part adopts a step structure design. The planar antenna of the present invention can achieve a high gain broadband effect.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0216581 A1**

Cheng et al. (43) **Pub. Date: Sep. 20, 2007**

(54) **ANTENNA DEVICE WITH ION-IMPLANTED RESONANT PATTERN**

(76) Inventors: **Yu-Chiang Cheng**, Taipei City (TW); **Ping-Cheng Chang**, Chaozhou Town (TW); **Cheng-Zing Chou**, Xinying City (TW)

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(21) Appl. No.: **11/404,812**

(22) Filed: **Apr. 17, 2006**

(30) **Foreign Application Priority Data**

Mar. 14, 2006 (TW)..... 95108651

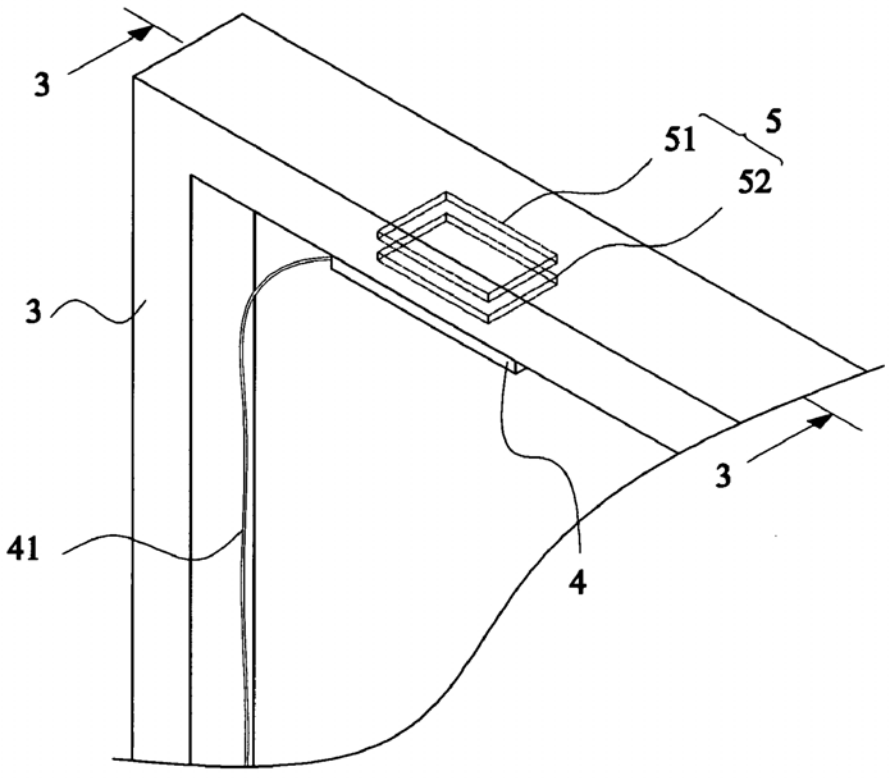
Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)
H01Q 1/38 (2006.01)

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

(57) **ABSTRACT**

Disclosed is an antenna device having a substrate, an antenna element for transceiving a wireless signal, an antenna signal feeding line for feeding the wireless signal, and an ion-implanted resonant pattern, which includes a first coupling pattern implanted in the substrate by an Ion-implantation process and a second coupling pattern formed at a position corresponding to the first coupling pattern with a predetermined distance therebetween, formed at an adjacent position with respect to the antenna element. As the antenna element transceives the wireless signal of the predetermined radiation frequency and generates an induction voltage, the first coupling pattern and the second coupling pattern each generates a coupled induction voltage and a capacitance therebetween, hence forming a resonance with the antenna element.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0216582 A1**

Cheng et al. (43) **Pub. Date: Sep. 20, 2007**

(54) **ANTENNA DEVICE WITH ION-IMPLANTED ANTENNA PATTERN**

(76) Inventors: **Yu-Chiang Cheng**, Taipei City (TW); **Ping-Cheng Chang**, Chaozhou Town (TW); **Cheng-Zing Chou**, Xinying City (TW)

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(21) Appl. No.: **11/404,814**

(22) Filed: **Apr. 17, 2006**

(30) **Foreign Application Priority Data**

Mar. 14, 2006 (TW)..... 95108648

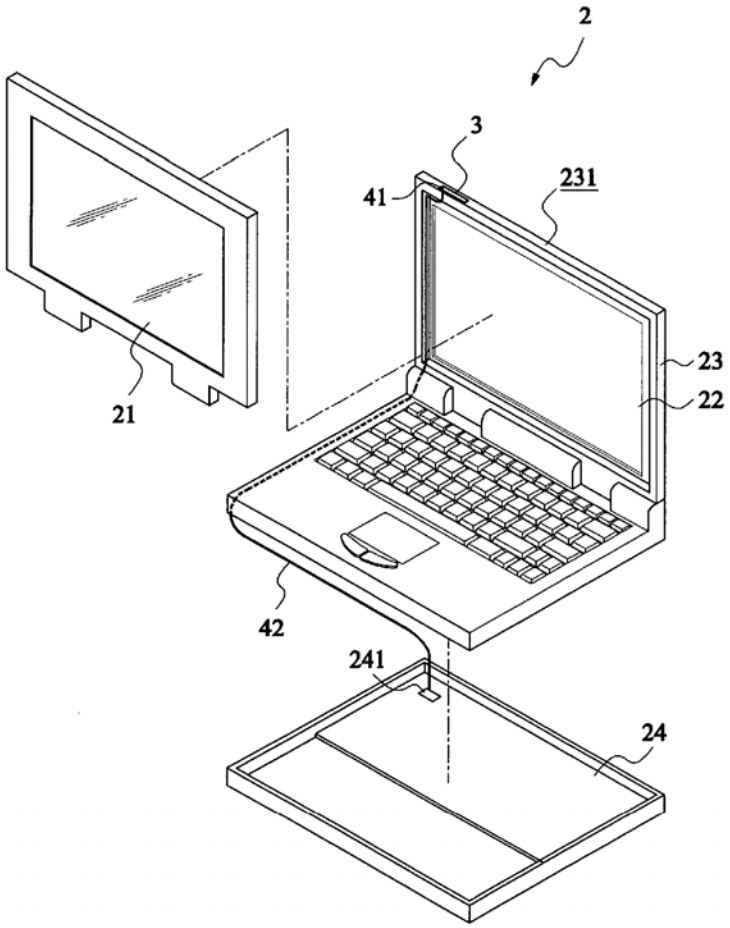
Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)
H01Q 1/38 (2006.01)

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

(57) **ABSTRACT**

Disclosed is an antenna device for transceiving a wireless signal with an ion-implanted antenna pattern implanted inside a casing of an electronic device. The ion-implanted antenna pattern is connected to an antenna module of a motherboard of the electronic device in order to feed the wireless signal transceived by the ion-implanted antenna pattern, while the connection could be either by an antenna signal feeding line connected to the ion-implanted antenna pattern and the antenna module, or by an antenna coupling element coupled with the ion-implanted antenna pattern and connected to an antenna signal feeding line.



US 20070216589A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0216589 A1**

Li et al. (43) **Pub. Date: Sep. 20, 2007**

(54) **MULTIPLE-LAYER PATCH ANTENNA**

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(73) Assignee: **AGC Automotive Americas R&D**

(21) Appl. No.: **11/377,752**

(22) Filed: **Mar. 16, 2006**

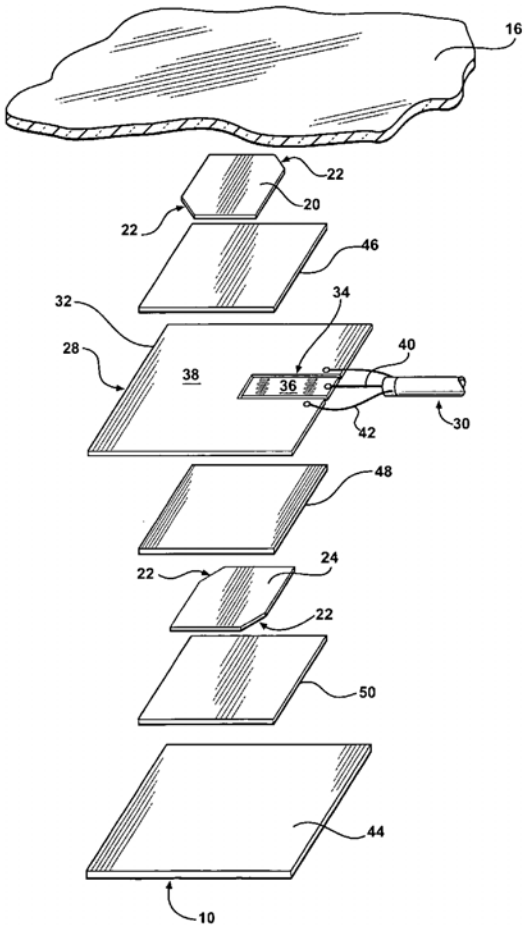
Publication Classification

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

(52) **U.S. Cl.** **343/713**; 343/711

(57) **ABSTRACT**

A patch antenna for receiving and/or transmitting circularly polarized RF signals includes a first radiating layer and a second radiating layer disposed substantially parallel to each other. Each radiating layer defines a pair of perturbation features. A ground plane layer is disposed underneath the radiating layers. The antenna also includes a feed line layer implemented as a coplanar wave guide and disposed between the radiating layers. The feed line layer allows for connection of a single transmission line to the antenna and for electromagnetically connecting the radiating layers to the transmission line. Dielectric layers separate the radiating layers, feed line layer, and ground plane layer.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0216590 A1**

Montgomery et al. (43) **Pub. Date: Sep. 20, 2007**

(54) **MULTIBAND TUNABLE ANTENNA**

(76) Inventors: **Mark T. Montgomery**, Melbourne Beach, FL (US); **Frank M. Caimi**, Vero Beach, FL (US); **Paul Tornatta**, Melbourne, FL (US)

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(21) Appl. No.: **11/627,357**

(22) Filed: **Jan. 25, 2007**

Related U.S. Application Data

(60) Provisional application No. 60/762,196, filed on Jan. 25, 2006.

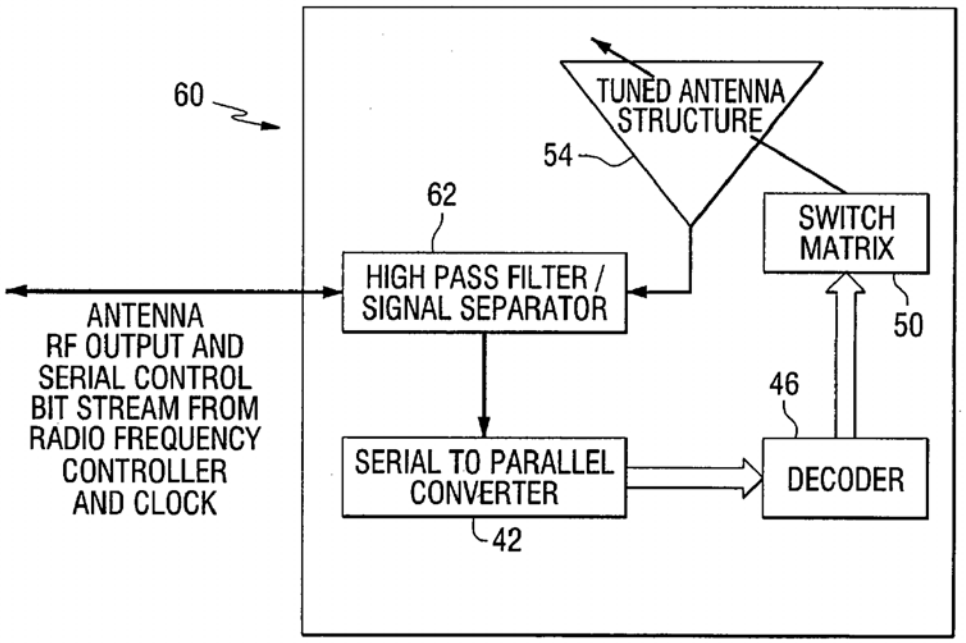
Publication Classification

(51) **Int. Cl.**
H01Q 9/00 (2006.01)

(52) **U.S. Cl.** **343/745**

(57) **ABSTRACT**

One embodiment of the invention relates to an antenna providing a tunable resonant frequency within a low frequency band and further providing a high resonant frequency, the antenna comprises a first radiating structure of a first effective electrical length, a second radiating structure of a second effective electrical length having a fractional integer relationship to a wavelength related to the high resonant frequency and a variable reactance element connecting the first and the second radiating structures, wherein varying a reactance of the variable reactance element tunes the antenna within the low frequency band.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0216593 A1**

Forster et al. (43) **Pub. Date: Sep. 20, 2007**

(54) **ENERGY SOURCE COMMUNICATION EMPLOYING SLOT ANTENNA**

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(21) Appl. No.: **11/751,529**

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

Related U.S. Application Data

(63) Continuation of application No. 11/515,154, filed on Aug. 31, 2006, which is a continuation of application No. 10/422,609, filed on Apr. 24, 2003, now Pat. No. 7,123,204.

(60) Provisional application No. 60/375,258, filed on Apr. 24, 2002.

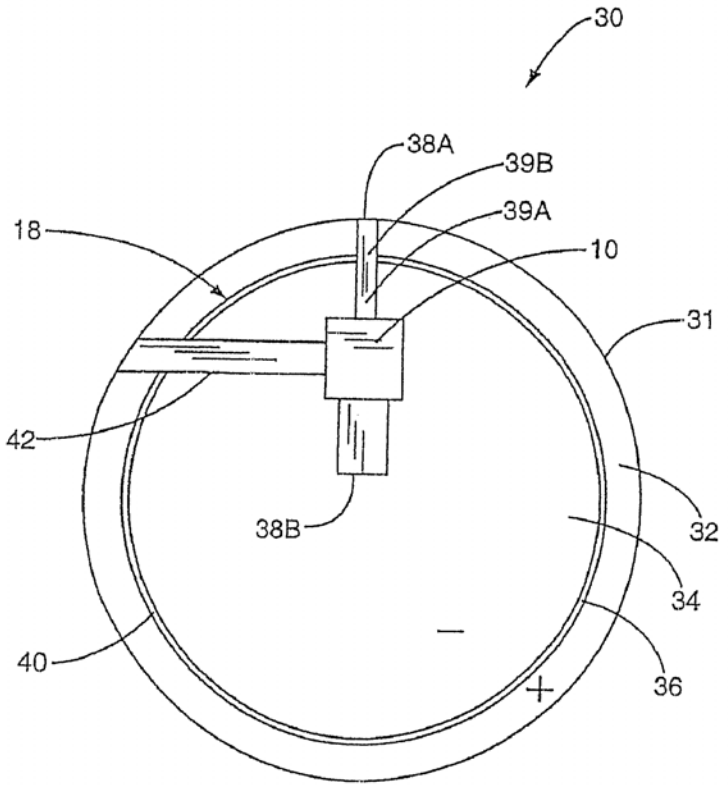
Publication Classification

(51) **Int. Cl.**
H01Q 13/10 (2006.01)

(52) **U.S. Cl.** **343/767**

(57) **ABSTRACT**

The invention relates to a wireless communication device that is coupled to an energy source, such as a battery, capacitor, or solar cell. The wireless communication device is coupled to a slot in the energy source to form a slot antenna for wireless communication. The slot antenna receives communication signals from an interrogation reader or other communication device. The wireless communication device may be attached to a device or container for purposes such as communicating information regarding identification, manufacturing, tracking, and the like. The wireless communication device may also be coupled to the energy source for power.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0216594 A1**

Uno et al. (43) **Pub. Date: Sep. 20, 2007**

(54) **ANTENNA ASSEMBLY AND MULTIBEAM ANTENNA ASSEMBLY**

(75) Inventors: **Hiroyuki Uno**, Ishikawa (JP); **Yutaka Saito**, Ishikawa (JP); **Genichiro Ohta**, Kanagawa (JP); **Yoshio Koyanagi**, Kanagawa (JP)

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(21) Appl. No.: **11/574,816**

(22) PCT Filed: **Jul. 21, 2005**

(86) PCT No.: **PCT/JP05/13380**

§ 371(c)(1),
(2), (4) Date: **Mar. 7, 2007**

(30) **Foreign Application Priority Data**

Sep. 14, 2004 (JP) 2004-266604

Publication Classification

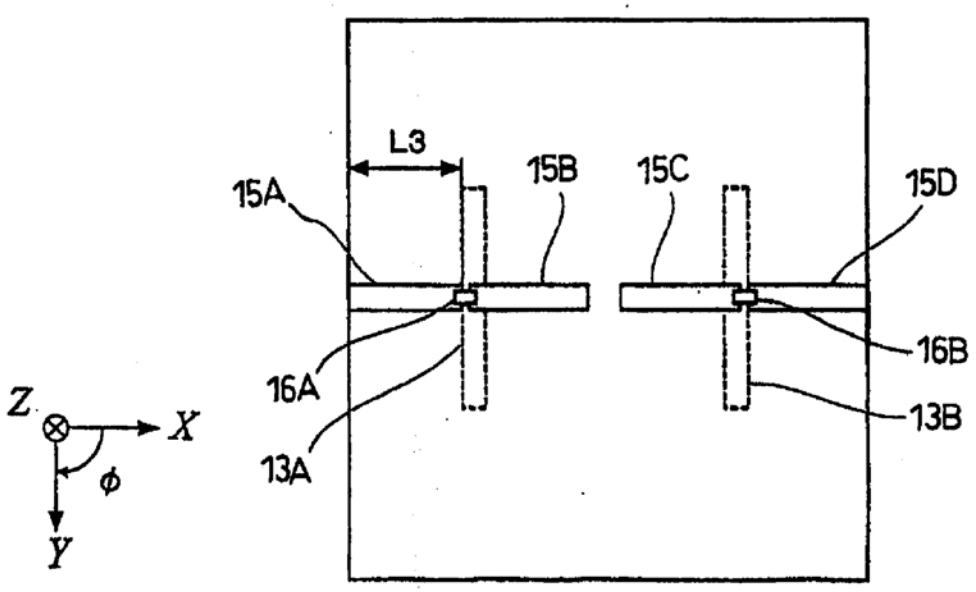
(51) **Int. Cl.**
H01Q 13/10 (2006.01)
H01Q 3/24 (2006.01)

(52) **U.S. Cl.** **343/770**; 343/876

(57) **ABSTRACT**

Provided is an antenna which has a small-sized planar constitution as can be easily mounted on a small-sized radio device and which can form a principal beam having a vertical polarization in directions of low and high elevation angles.

On the surface of a substrate **11**, slot elements **13**A and **13**B having a length of about one half wavelength are arranged in parallel at a predetermined distance d**1**, and a reflecting plate **14** is arranged at a predetermined distance h from the mounting face of the slot elements **13**A and **13**B. On the back of the substrate **11**, parasitic elements **15**A to **15**D are made of a copper foil pattern and are arrayed to intersect the slot elements **13**A and **13**B at right angles. A switching element **16**A is connected with the parasitic elements **15**A and **15**B, and a switching element **16**B is connected with the parasitic elements **15**C and **15**D.



US 20070216595A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0216595 A1**

Hashiyama et al. (43) **Pub. Date: Sep. 20, 2007**

(54) **DIELECTRIC-LOADED ANTENNA**

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(21) Appl. No.: **10/569,399**

(22) PCT Filed: **Aug. 25, 2004**

(86) PCT No.: **PCT/JP04/12187**

§ 371(c)(1),
(2), (4) Date: **Nov. 10, 2006**

(30) **Foreign Application Priority Data**

Aug. 25, 2003 (JP) 2003-208706

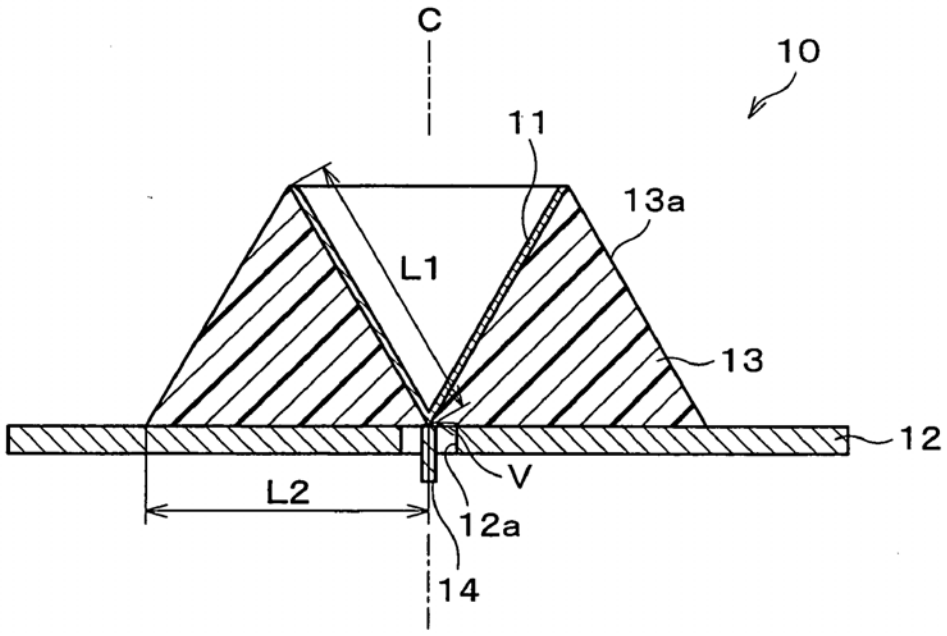
Publication Classification

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

(52) **U.S. Cl.** **343/848**

(57) **ABSTRACT**

A mono-conical antenna serving as a dielectric-loaded antenna includes: (i) a electricity supply electrode, which has a conical surface; (ii) an earth electrode, which has a flat surface that is so positioned as to face an apex of the conical surface; and (iii) a dielectric member, which is provided between the conical surface and the flat surface. The dielectric member has an outer circumferential surface which has such a slope that extends from a side of the conical surface to a side of the flat surface. This allows the dielectric-loaded antenna to have a small size, and to handle a wider frequency band in which the maximum value of the VSWR is restrained to be small.



US 20070216596A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0216596 A1**

Lewis et al. (43) **Pub. Date: Sep. 20, 2007**

(54) **ANTENNA WITH PARTIALLY SPHERICAL DIELECTRIC LENSES**

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(21) Appl. No.: **10/594,085**

(22) PCT Filed: **Mar. 29, 2005**

(86) PCT No.: **PCT/GB05/01224**

§ 371(c)(1),
(2), (4) Date: **Sep. 25, 2006**

(30) **Foreign Application Priority Data**

Mar. 26, 2004 (GB) 0406814.4

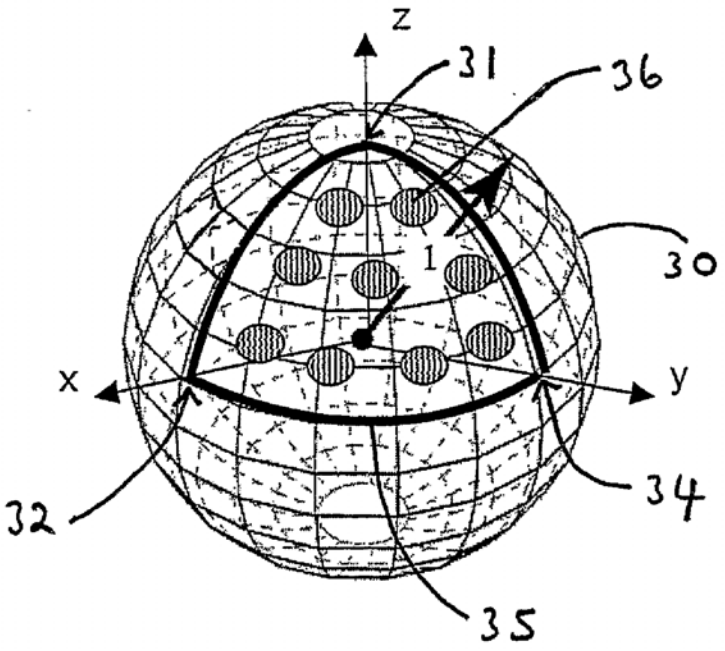
Publication Classification

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

(52) **U.S. Cl.** **343/848**

(57) **ABSTRACT**

An antenna is provided comprising a first group of part-spherical dielectric lenses supported on a first portion of a conducting ground place arranged to reflect signals emerging from the lens, each of the lenses having a number of associated switchably selectable antenna feed elements arranged around the periphery of at least one sector of the lens for injecting signals into and/or receiving signals propagated by the lens, wherein each lens and the associated feed elements of the first group has a different orientation and may be operated to provide coverage in respect of a different region. The antenna also comprises a second group of one or more spherical or part-spherical dielectric lenses and associated switchably selectable antenna feed elements, oriented and operable to provide coverage to a region other than that covered by lenses of the first group. The first portion of the ground plane may be substantially annular and arranged to surround a well-like region of the antenna in which the second group of one or more lenses may be accommodated.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0216597 A1**

Fujimoto et al. (43) **Pub. Date: Sep. 20, 2007**

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(21) Appl. No.: **11/723,540**

(22) Filed: **Mar. 20, 2007**

(30) **Foreign Application Priority Data**

Mar. 20, 2006 (JP) 2006-076637

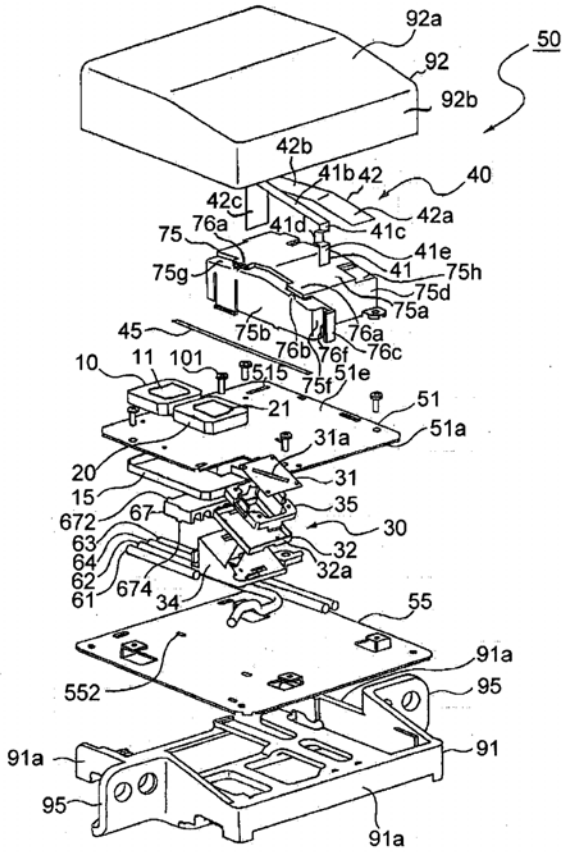
Publication Classification

(51) **Int. Cl.**
H01Q 21/00 (2006.01)

(52) **U.S. Cl.** **343/853**; 343/878

(57) **ABSTRACT**

An antenna apparatus includes a feed element, a passive element provided so as to be distanced from the feed element, a cable connected to the feed element, a main circuit board to which the feed element and the passive element are mounted, an antenna holder having a holder main surface on which the main circuit board with the feed element and the passive element is held, a first feed element provided surface formed on the holder main surface of the antenna holder in order to hold the feed element and a first passive element provided surface formed on the holder main surface of the antenna holder in order to hold the passive element.



US 20070216598A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0216598 A1**

FABREGA-SANCHEZ et al. (43) **Pub. Date: Sep. 20, 2007**

(54) **MULTIPLE BAND CAPACITIVELY-LOADED LOOP ANTENNA**

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(21) Appl. No.: **11/674,564**

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

Related U.S. Application Data

(63) Continuation-in-part of application No. 11/248,665, filed on Oct. 12, 2005.

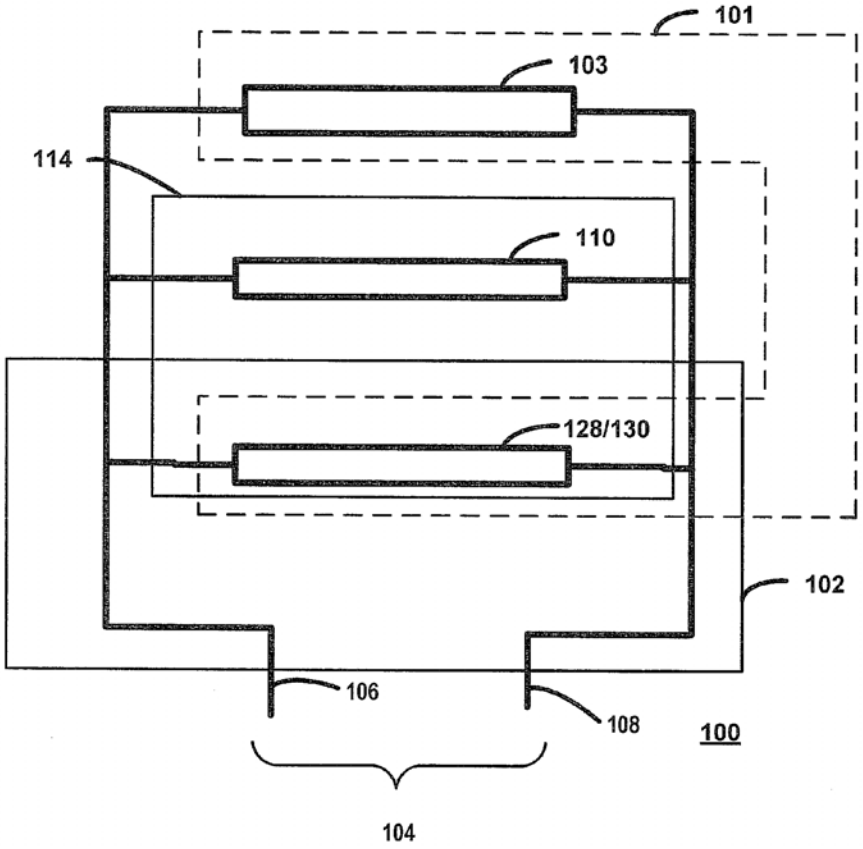
Publication Classification

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

(52) **U.S. Cl.** **343/866**; 343/795

(57) **ABSTRACT**

A multiple band capacitively-loaded magnetic dipole antenna includes a plurality of magnetic dipole radiators connected to a transformer loop where the magnetic dipole radiators include at least one capacitively-loaded magnetic dipole radiator. The transformer loop has a balanced feed interface and includes a side that provides a transformer interface of quasi loops formed by the plurality of magnetic dipole radiators. Each quasi loop has a configuration and length to maximize antenna performance within a different frequency band. The at least one capacitively-loaded magnetic dipole radiator may be formed with a meander line structure and may include an electric field bridge such as a dielectric gap, lumped element, circuit board surface-mounted, ferroelectric tunable, or a microelectromechanical system (MEMS) capacitor.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0222607 A1**

Ho et al. (43) **Pub. Date: Sep. 27, 2007**

(54) **COMPACT MICROSTRIP TRANSPONDER ANTENNA**

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(21) Appl. No.: **11/388,737**

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

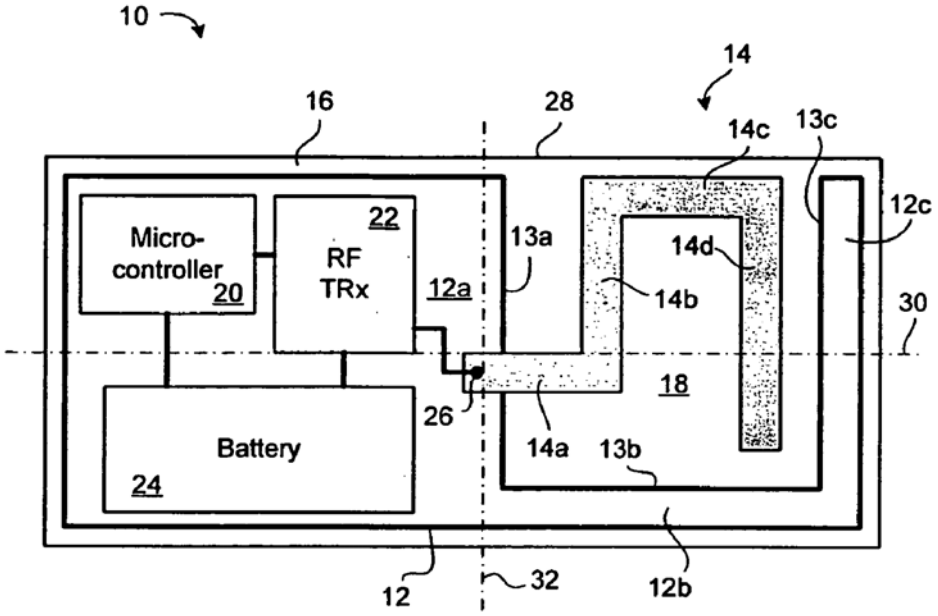
Publication Classification

(51) **Int. Cl.**
G08B 13/14 (2006.01)
G08G 1/065 (2006.01)

(52) **U.S. Cl.** **340/572.7**; 340/928

(57) **ABSTRACT**

A transponder formed on a circuit substrate having a longitudinal axis and a transverse axis. An antenna is disposed on one side of a transverse axis, extending in a longitudinal direction, and the remaining circuit components are disposed on the other side of the transverse axis. The remaining circuit components may include a controller, an RF transceiver, and a battery. A ground plane defines an antenna space within which the antenna is disposed.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0222682 A1**

Tsai et al. (43) **Pub. Date: Sep. 27, 2007**

(54) **ANTENNA**

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(73) Assignee: **WISTRON NEWEB CORP.**, Taipei Hsien (TW)

(21) Appl. No.: **11/593,071**

(22) Filed: **Nov. 6, 2006**

(30) **Foreign Application Priority Data**

Mar. 24, 2006 (TW) 095204999

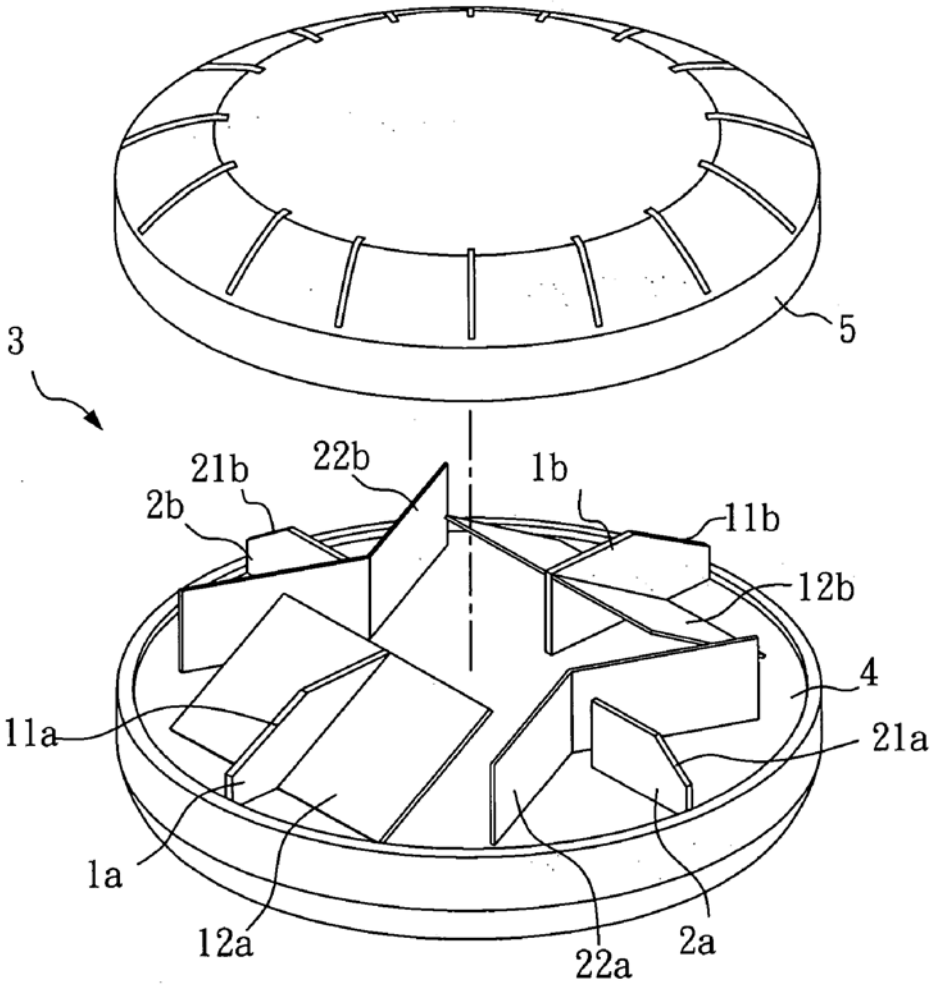
Publication Classification

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

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

(57) **ABSTRACT**

The present invention provides an antenna, which includes a substrate, at least one radiating element and at least one reflecting element. The at least one radiating element is placed on the substrate at an inclined angle, and the at least one reflecting element is also placed on the substrate. The signals reflected by the at least one reflecting element substantially form an omni-directional radiation pattern through aggregation of overlapping patterns.



US 20070222683A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0222683 A1**

Duzdar et al. (43) **Pub. Date: Sep. 27, 2007**

(54) **SINGLE-FEED MULTI-FREQUENCY MULTI-POLARIZATION ANTENNA**

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(21) Appl. No.: **11/633,923**

(22) Filed: **Dec. 5, 2006**

Related U.S. Application Data

(63) Continuation of application No. 11/145,878, filed on Jun. 6, 2005, now Pat. No. 7,164,385.

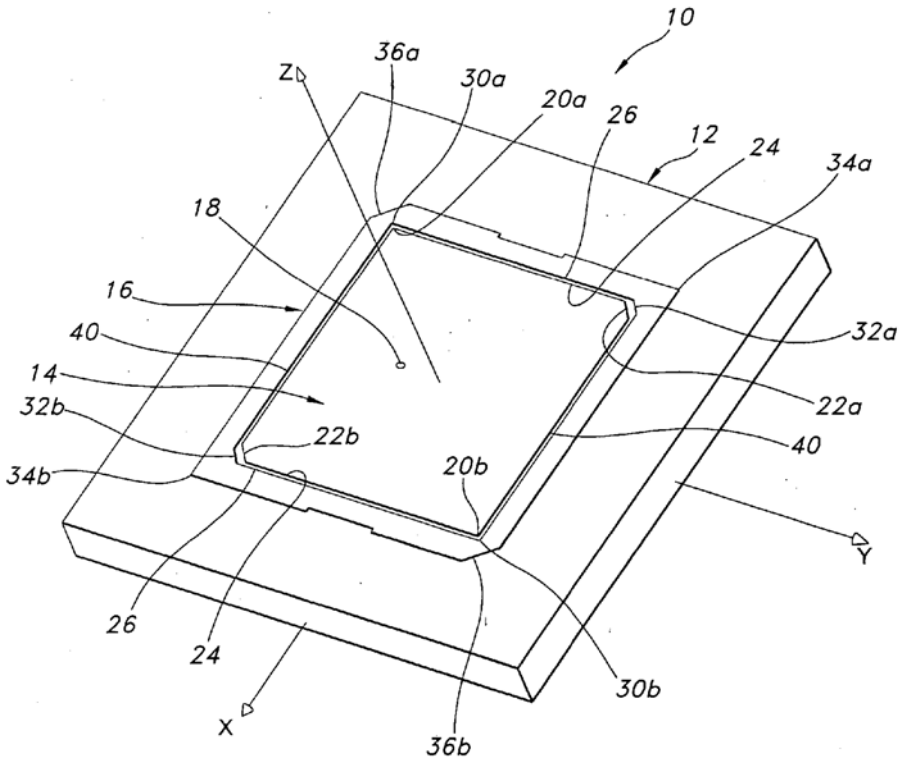
Publication Classification

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

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

(57) **ABSTRACT**

Various embodiments provide antennas capable of receiving both left-hand circularly polarized (LHCP) signals and right-hand circularly polarized (RHCP) signals, and outputting both signals on a single feed. In one exemplary embodiment, an antenna generally includes two substantially coplanar concentric patches. The inner patch is substantially square. The outer patch has inner and outer edges both of which are substantially square. The two patches do not physically contact one another. A single feed is connected to the inner patch. The inner patch receives the LHCP signal, and the two patches operate collectively together for receiving the RHCP signal.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0222684 A1**

Kwan (43) **Pub. Date: Sep. 27, 2007**

(54) **MULTIPLE LAYER ANTENNA FOR WIRELESS APPLICATIONS**

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(21) Appl. No.: **11/685,582**

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

Related U.S. Application Data

(60) Provisional application No. 60/784,547, filed on Mar. 21, 2006.

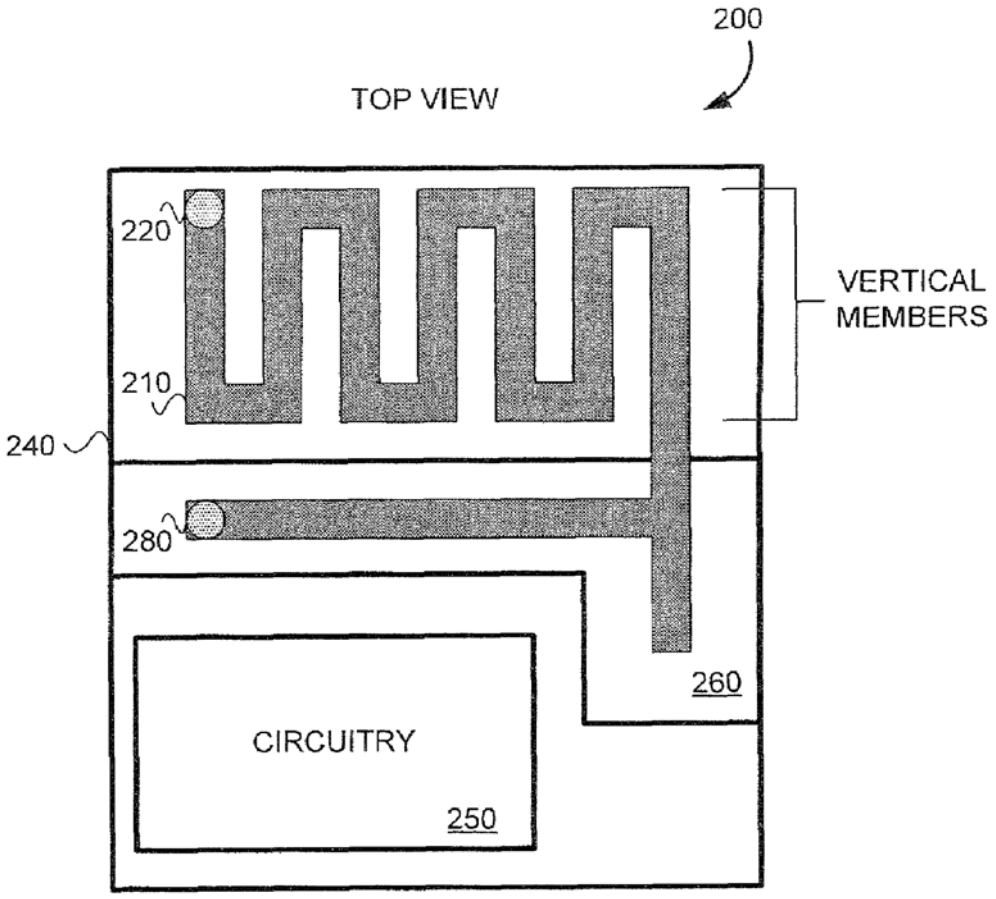
Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 1/36 (2006.01)

(52) **U.S. Cl.** ..... **343/700 MS**; 343/895

(57) **ABSTRACT**

System and method for a multi-layer antenna is shown and described. A multi-layer antenna includes a plurality of antenna layers that are stacked and aligned to minimize an antenna footprint without degrading electrical performance. This reduced antenna footprint allows system designer the ability to reduce the overall size of wireless communication devices incorporating the multi-layer antenna.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0222685 A1**

Kuo (43) **Pub. Date: Sep. 27, 2007**

(54) **ANTENNA ARCHITECTURE AND WIRELESS TRACKING DEVICE USING THE SAME**

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(21) Appl. No.: **11/727,224**

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

(30) **Foreign Application Priority Data**

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Feb. 5, 2007 (TW) 096104002

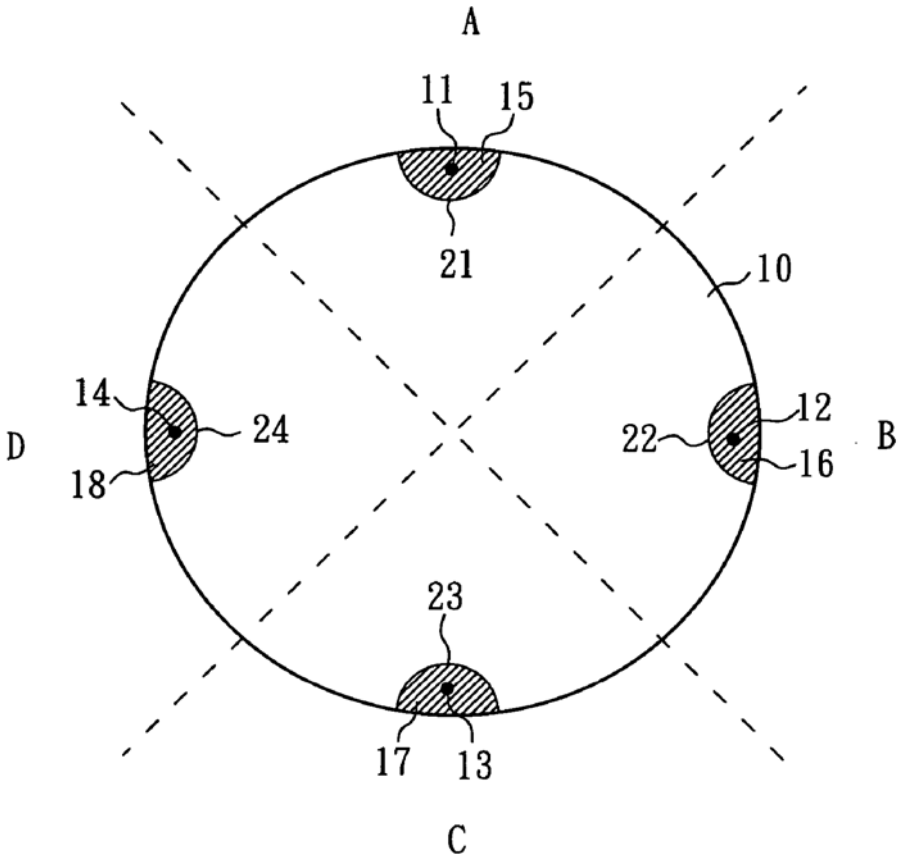
Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 1/48 (2006.01)

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

(57) **ABSTRACT**

An antenna architecture comprises a base and a plurality of micro antennas. The base comprises of a plurality of reflectors disposed adjacent to edges of the base. The plurality of micro antennas are disposed on the base adjacent to corresponding plurality of reflectors respectively for receiving wireless communication signals within a designated area. Further, the invention provides a wireless tracking device comprises antenna architecture, a converter, a wireless receiver module and a processor. The antenna architecture comprises of a plurality of micro antennas for receiving wireless communication signals within a designated area. The converter is coupled to the micro antennas for processing received signals. The wireless receiver module is coupled to the converter for converting received wireless communication signals into digital data. The processor is coupled to the wireless receiver module for generating position data corresponding to the wireless communication signals according to the digital data.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0222688 A1**

Sugiyama (43) **Pub. Date: Sep. 27, 2007**

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(73) Assignee: **FUJITSU LIMITED**, Kawasaki (JP)

(21) Appl. No.: **11/475,002**

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

(30) **Foreign Application Priority Data**

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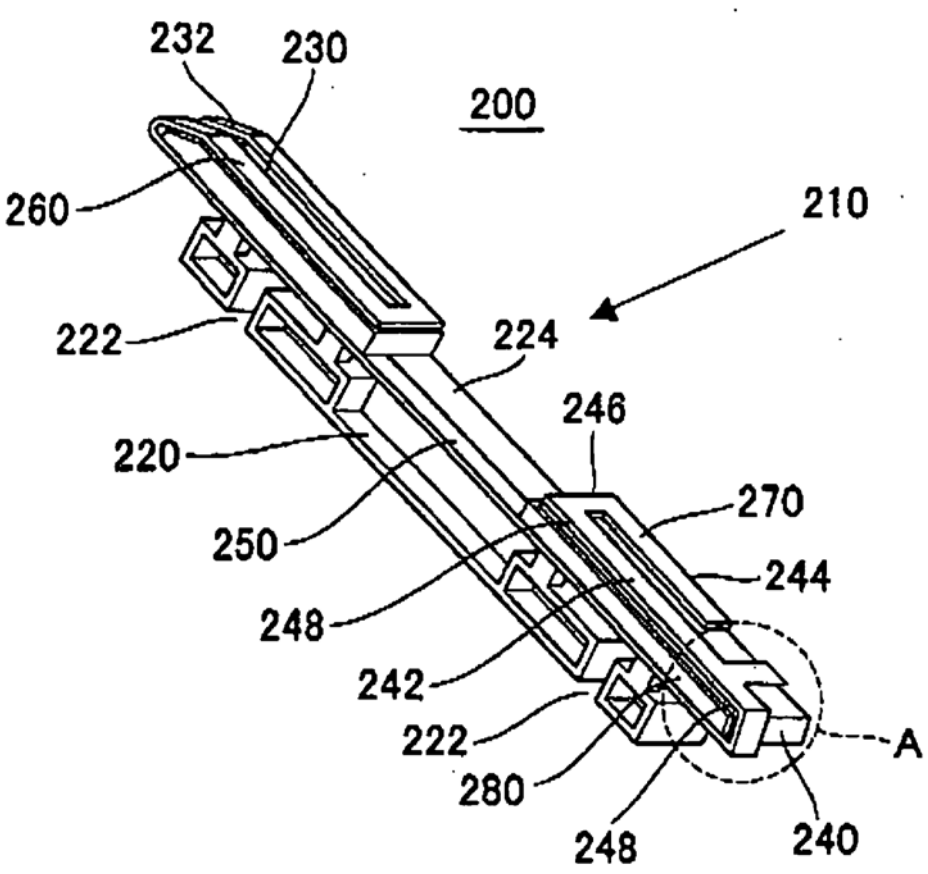
Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)
H01Q 1/38 (2006.01)

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

(57) **ABSTRACT**

An antenna that provides three resonance frequencies includes a dielectric, and an electrically conductive antenna element arranged on a dielectric, the antenna element branches into three parts and being connected to a single feeding point, and at least two of the three parts being electromagnetically coupled with each other.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0222689 A1**

Aoyama et al. (43) **Pub. Date: Sep. 27, 2007**

(54) **CHIP ANTENNA, AN ANTENNA DEVICE, AND A COMMUNICATION EQUIPMENT**

(75) Inventors: **Hiroyuki Aoyama**, Saitama (JP); **Masayuki Gonda**, Saitama (JP); **Sigeo Fujii**, Saitama (JP); **Shuuichi Takano**, Tottori (JP)

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(73) Assignee: **Hitachi Metals, Ltd.**, Tokyo (JP)

(21) Appl. No.: **11/690,231**

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

(30) **Foreign Application Priority Data**

Jun. 21, 2006 (JP) 2006-171428
Mar. 23, 2006 (JP) 2006-81063
Apr. 24, 2006 (JP) 2006-118661

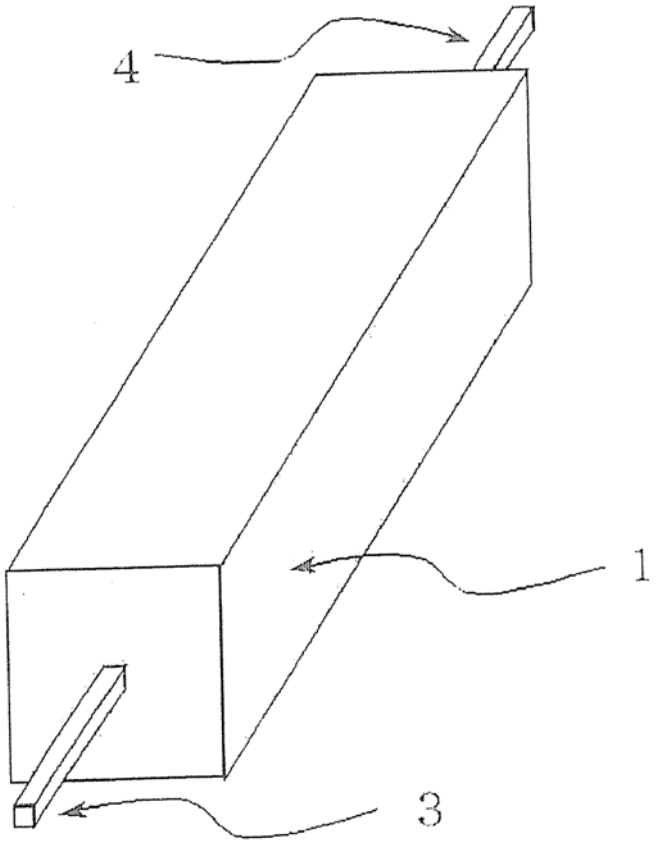
Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)
H01Q 1/00 (2006.01)

(52) **U.S. Cl.** **343/702**; 343/787

(57) **ABSTRACT**

The linear conductor **2** penetrates the magnetic base **1** along with the longitudinal direction of the magnetic base **1**. The linear conductor **2** has a straight shape. The straight shape conductor **2** is installed so that it is surrounded by outside planes of the magnetic base **1**, such as the side of a rectangular parallelepiped or a cylindrical peripheral face, and it penetrates both end sides of the magnetic base **1** in the longitudinal direction.



US 20070222694A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2007/0222694 A1

FUKUCHI (43) Pub. Date: Sep. 27, 2007

(54) ANTENNA FOR ULTRA WIDE BAND TELECOMMUNICATIONS

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(21) Appl. No.: 11/688,597

(22) Filed: Mar. 20, 2007

(30) Foreign Application Priority Data

Mar. 23, 2006 (JP) 2006-080711

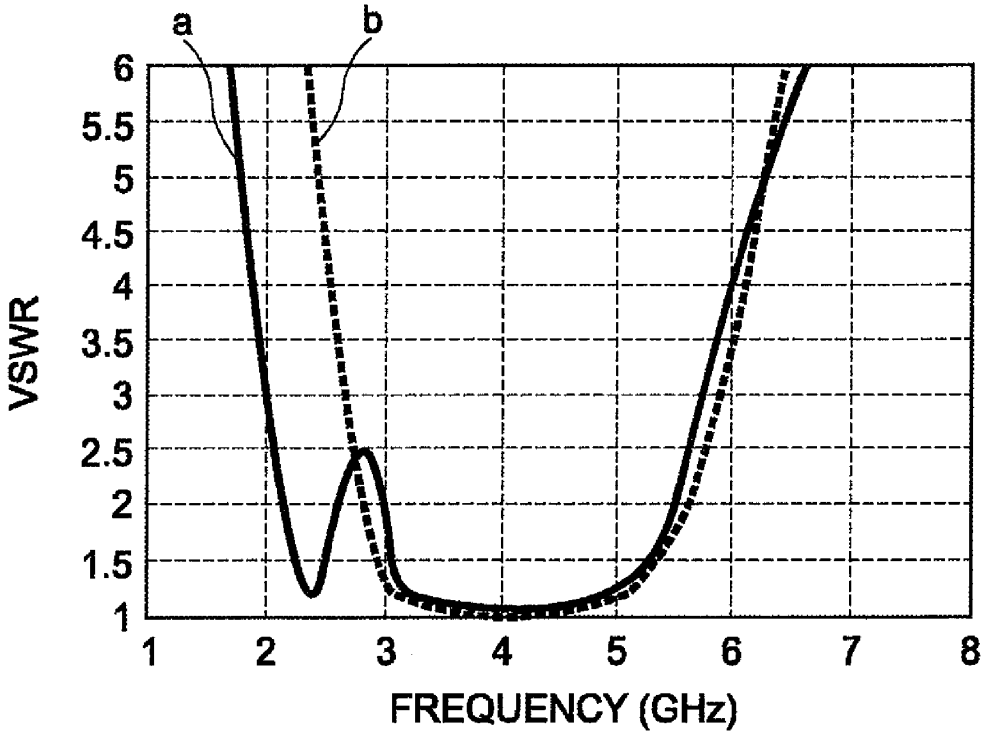
Publication Classification

(51) Int. Cl.
H01Q 13/10 (2006.01)

(52) U.S. Cl. 343/767; 343/770

(57) ABSTRACT

An antenna for an ultra wide band telecommunications, provided with a rectangular conductive plate where a bow tie slot is formed, an auxiliary element extended from said rectangular conductive plate above one of two vertical angle parts opposed at a center part of the bow tie slot, a feeding part formed at one of the vertical angle parts, and a grounding part formed at the other vertical angle part.



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(54) SYSTEMS AND METHODS FOR A CAPACITIVELY-LOADED LOOP ANTENNA

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Publication Classification

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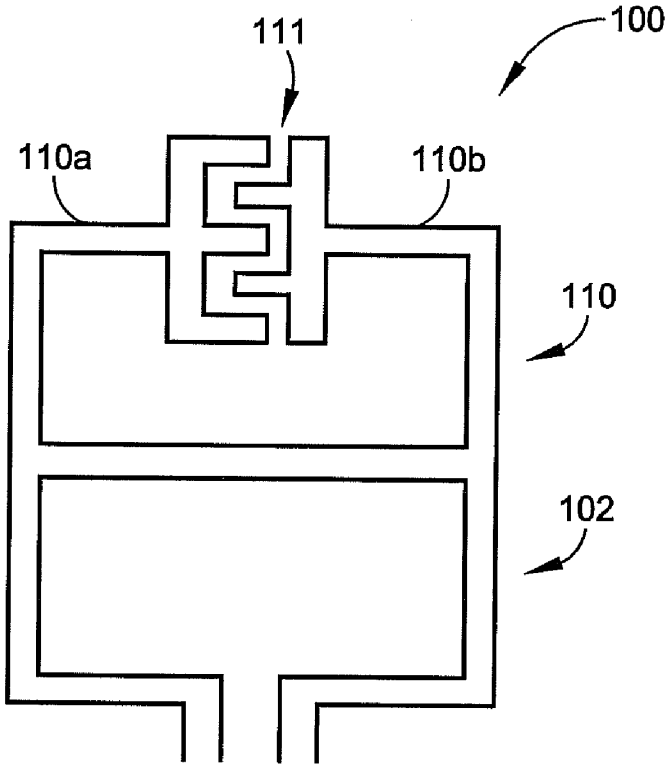
(57) **ABSTRACT**

A capacitively-loaded loop antenna and corresponding radiation method have been provided. The antenna comprises a transformer loop having a balanced feed interface and a capacitively-loaded loop radiator. In one aspect, the capacitively-loaded loop radiator is a balanced radiator. In another, the transformed loop and capacitively-loaded loop radiator are physically connected. That is, the transformer loop and the capacitively-loaded loop radiator have a portion shared by both of the loop perimeters. Alternately, the loops are physically independent of each other. In one aspect, the perimeters have a rectangular shape. Other shapes such as round or oval are also possible. In another aspect, the planes formed by the transformer and capacitively-loaded loop radiator can be coplanar or non-planar, while both loops are orthogonal to a common magnetic near-field generated by the transformed loop. The radiator has a capacitively-loaded side, or capacitively loaded perimeter section, depending on the shape of the perimeter.



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Modro (43) **Pub. Date: Sep. 27, 2007**

(54) **EMBEDDED ANTENNA**

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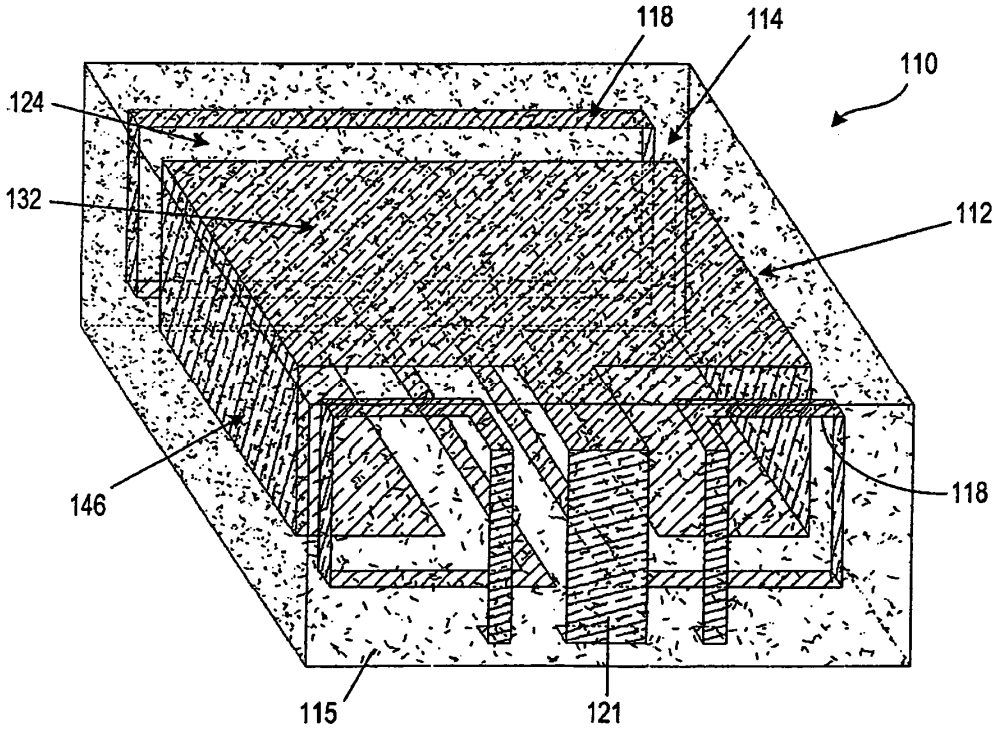
(57) **ABSTRACT**

An antenna comprising a resonant structure having a first portion disposed in a first plane, and a second portion disposed in a non-parallel plane. The resonant structure is embedded in a non-conductive or dielectric material and the second portion is formed from electrically conductive vias.



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(54) PLANER HELICAL ANTENNA

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H01Q 1/38 (2006.01)

(52) **U.S. Cl.** ..... **343/895**; 343/700 MS

(57) **ABSTRACT**

An antenna includes a substantially planer substrate and a helical winding. The substantially planer substrate includes a first surface and a second surface. The helical winding includes a first pattern, a second pattern, and a plurality of interconnections. The first pattern is affixed to the first surface and the second pattern is affixed to the second surface. Connection nodes of the first pattern are coupled to associated connection nodes of the second pattern by the plurality of interconnections.