US 20080001280A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2008/0001280 A1

Kusumoto et al. (43) Pub. Date: Jan. 3, 2008

(54) **IC CHIP, ANTENNA, AND MANUFACTURING METHOD OF THE IC CHIP AND THE ANTENNA**

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(21) Appl. No.: **11/667,072**

(22) PCT Filed: **Nov. 4, 2005**

(86) PCT No.: **PCT/JP05/20664**

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(2), (4) Date: **May 4, 2007**

(30) **Foreign Application Priority Data**

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Publication Classification

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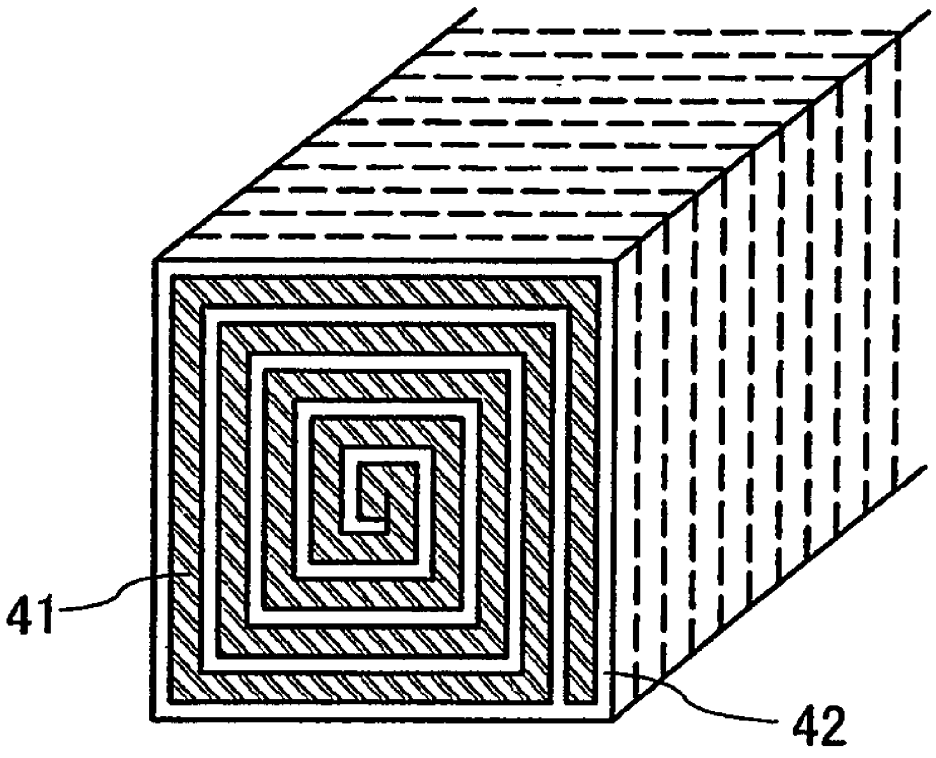
H01Q 9/16	(2006.01)
H01L 21/60	(2006.01)
H01L 23/48	(2006.01)
H01Q 17/00	(2006.01)

(52) **U.S. Cl.** **257/692**; 29/601; 343/866; 438/106; 257/E23; 257/E21

(57) **ABSTRACT**

An antenna used for an ID chip or the like is disclosed with planarized antenna unevenness and an IC chip having such the antenna with a flat surface is disclosed. Manufacturing an integrated circuit mounted with an antenna is facilitated. A laminated body formed by stacking a conductive film **11**, a resin film **13**, an integrated circuit **12**, and a resin film **14** are rolled so that the resin film **14** is outside. Then, the laminated body is integrated in a roll form by softening the resin films **13, 14** by applying heat. By slicing the rolled laminated body along with the direction in which the rolled conductive film **31** appears in the cross section, an IC chip with antenna formed by the rolled conductive film **11** is formed.



US 20080001822A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0001822 A1**

Vesterinen (43) **Pub. Date: Jan. 3, 2008**

(54) **ANTENNA COMPONENT AND ASSEMBLY**

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(21) Appl. No.: **11/478,457**

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

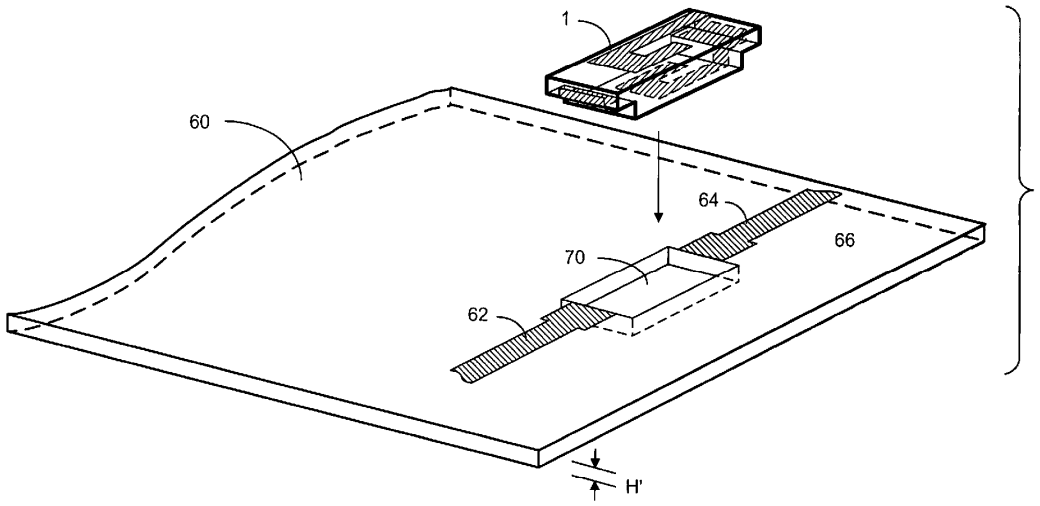
Publication Classification

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

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

(57) **ABSTRACT**

A radio antenna is designed for use on a circuit board having a slot. The antenna is shaped such that one radiator segment is located in the slot while the other segment is located outside the slot. As such, the total thickness of the circuit board and the disposed antenna can be reduced. The antenna can be a chip antenna having a support block for disposing the radiator segments on opposite sides of the support block. The support block can have steps so that one or more different radiator segments can be disposed on the step surfaces, and the circuit board has a plurality of electrically conductive strips separately connected to the radiator segments on the step surfaces to provide grounding and feed to the antenna.



US 20080001823A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2008/0001823 A1

Jung et al. (43) Pub. Date: Jan. 3, 2008

(54) ANTENNA CAPABLE OF MICRO-TUNING AND MACRO TUNING FOR WIRELESS TERMINAL

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(21) Appl. No.: **11/606,146**

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

(30) **Foreign Application Priority Data**

Jul. 3, 2006 (KR) 10-2006-0062027

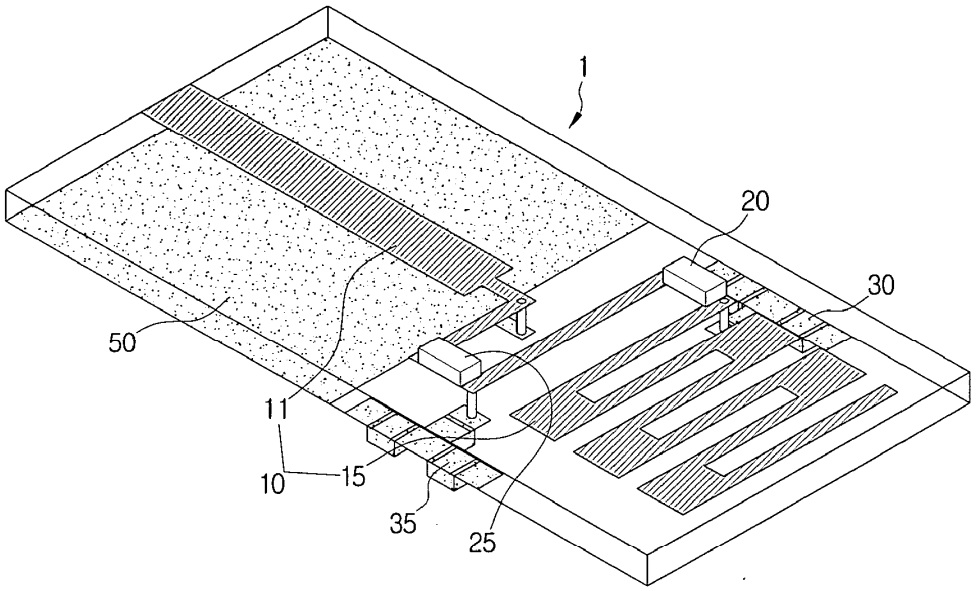
Publication Classification

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

(52) **U.S. Cl.** ..... **343/700 MS**; 343/702; 343/895

(57) **ABSTRACT**

Disclosed is an antenna capable of micro-tuning and macro-tuning for a wireless terminal, comprising: a radiator radiating electromagnetic waves; a ground connected to the radiator; at least one switching element positioned at a lengthwise region of the radiator, for shorting or opening the region of the radiator; and a voltage controlling element positioned at the radiator between the switching element and the ground, for controlling the extent of a voltage potential applied across the radiator. In accordance with the present invention, the antenna is capable of the macro-tuning between the service bands and micro-tuning for channel control within the service bands. Furthermore, the size of the antenna is significantly reduced and the antenna is installed on a circuit board in a patch type, thereby simplifying a work process.



US 20080001824A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0001824 A1**

Castaneda et al. (43) **Pub. Date: Jan. 3, 2008**

(54) **PLANAR INVERTED-F ANTENNA**

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(21) Appl. No.: **11/679,659**

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

Related U.S. Application Data

(60) Provisional application No. 60/781,739, filed on Mar. 14, 2006.

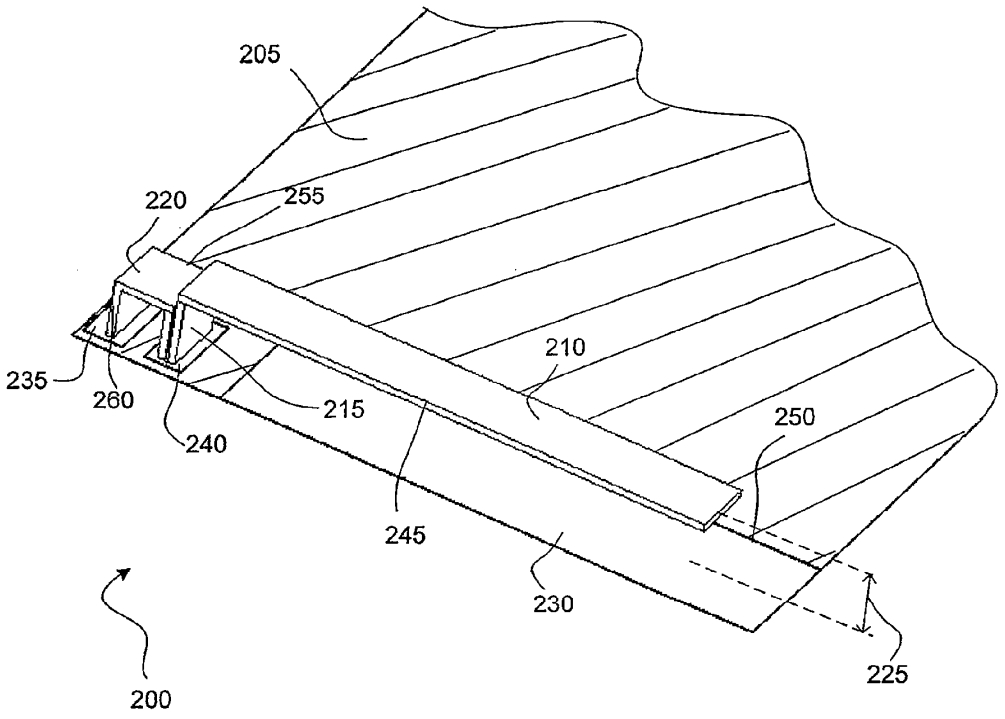
Publication Classification

(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01Q 1/38 (2006.01)

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

(57) **ABSTRACT**

A low profile Planar Inverted-F Antenna (PIFA) comprises a radiating strip, an inductive tuning portion, a vertical feed portion, and a retracted ground plane. The radiating strip is approximately parallel to the ground plane and is suspended above the ground plane by the feed element at a certain distance. Further, the radiating strip, in part or entirely, overhangs the ground plane. In this way, the radiating strip may be suspended very close to the ground plane, but yet exhibits a large bandwidth.



US 20080001826A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0001826 A1**

Su et al. (43) **Pub. Date: Jan. 3, 2008**

(54) **MULTI-BAND ANTENNA**

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(21) Appl. No.: **11/824,784**

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

(30) **Foreign Application Priority Data**

Jul. 3, 2006 (TW) 9524096

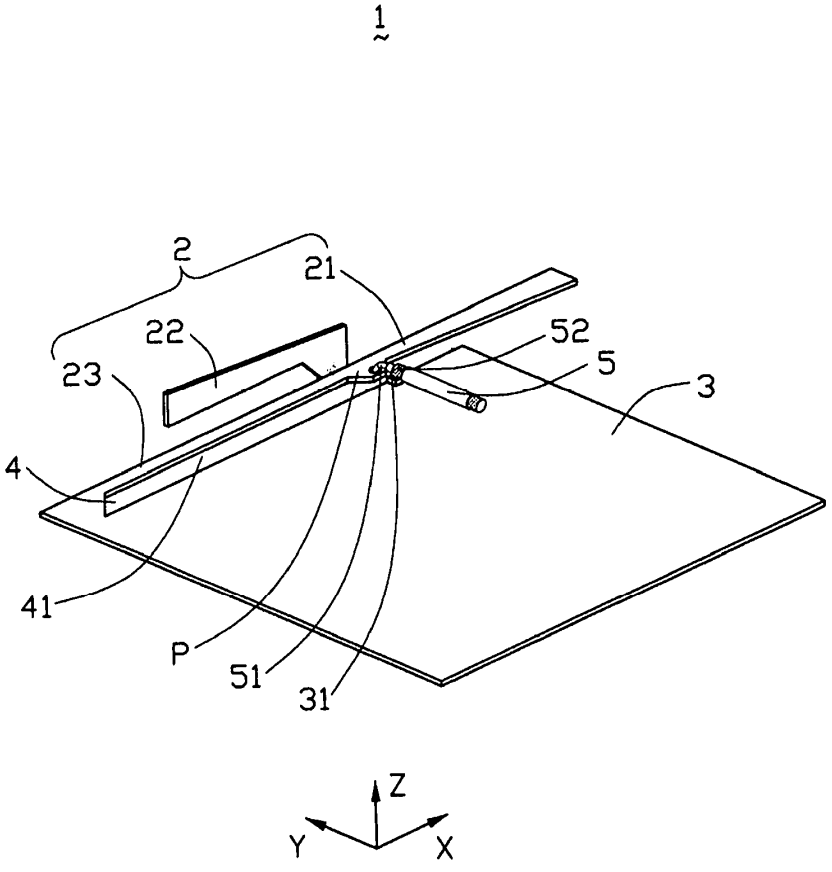
Publication Classification

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

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

(57) **ABSTRACT**

A multi-band antenna, made by an integral plate and comprises a radiating element, a grounding element, a slit formed as part of the plate, and a feeding line; wherein horizontal conductive portion of said plate are separated from each other with said slit between them and serve as the radiating element and the ground element respectively; the feeding line, comprising an inner conductor connected with the radiating element and an outer conductor connected with the grounding element; wherein said radiating element comprising at least two radiating portions defining at least one radiating arm with gradually increasing width, and at least two radiating portion cooperatively acting to achieve a Ultra Wide Band antenna.



US 20080001828A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2008/0001828 A1

Black et al. (43) Pub. Date: Jan. 3, 2008

(54) DUAL AUTODIPLEXING ANTENNA

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(21) Appl. No.: **11/428,027**

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

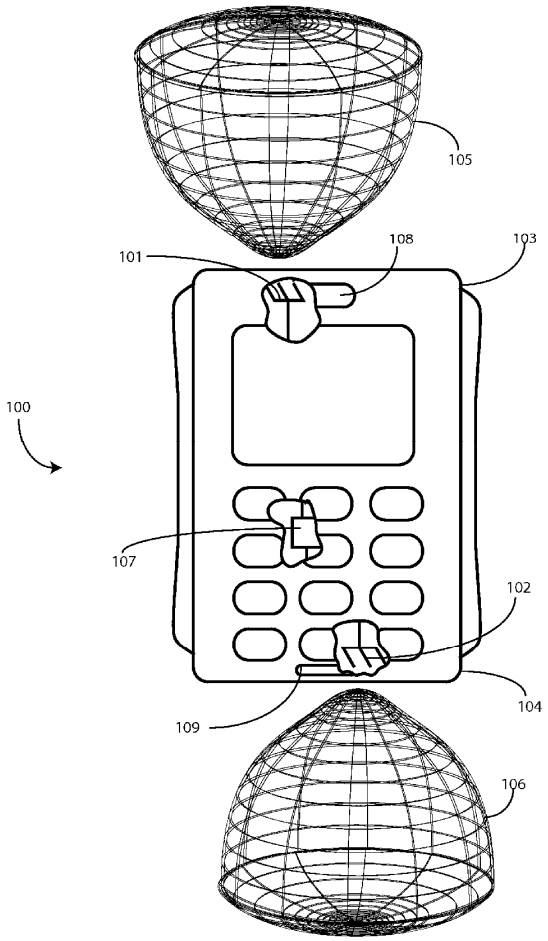
Publication Classification

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

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

(57) **ABSTRACT**

A dual autodiplexing antenna (**300**) redirects power flow (**303**) from an unloaded antenna to a loaded antenna, thereby improving communication performance under loaded conditions. The dual autodiplexing antenna (**300**) includes a first antenna (**101**) disposed at a first end (**103**) of a portable two-way communication device (**100**). A second antenna (**102**) is disposed at the distal end (**104**) of the portable two-way communication device (**100**). The first antenna (**101**) and second antenna (**102**) are coupled to a transceiver (**107**) by a first transmission line matching circuit (**201**) and a second transmission line matching circuit (**202**), respectively. In one embodiment, the first antenna (**101**) is configured to primarily operate in a first bandwidth, while the second antenna (**102**) is configured to primarily operate in a second bandwidth. When one of the first antenna (**101**) or second antenna (**102**) is loaded, power flow (**303**) is redirected to the lesser loaded antenna.



US 20080001829A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2008/0001829 A1

Rahola et al. (43) Pub. Date: Jan. 3, 2008

(54) MECHANICALLY TUNABLE ANTENNA FOR COMMUNICATION DEVICES

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(21) Appl. No.: **11/478,839**

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

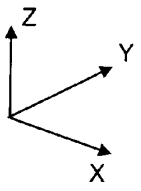
Publication Classification

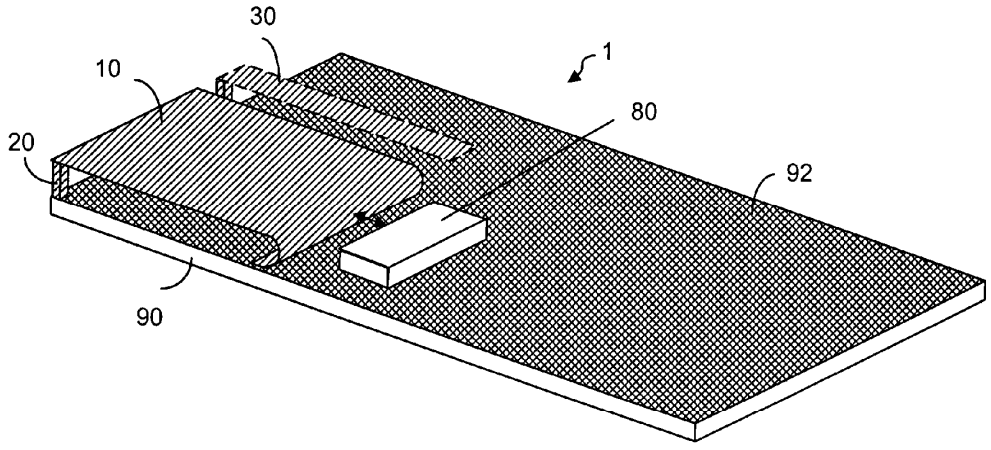
(51) **Int. Cl.**
H01Q 1/24 (2006.01)

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

(57) **ABSTRACT**

A radio antenna assembly for use in a communication device has an antenna element disposed adjacent to a ground plane to form a physical relationship with the ground plane. A mechanical device is used to change the physical relationship for changing the operating impedance of the antenna element or shifting the frequency band of the antenna assembly. The physical relationship can be changed by mechanically changing the shape of the antenna element. When the antenna element comprises a first radiating element and a second radiating element disposed at a lateral distance from the first radiating element, the physical relationship can be changed by changing the distance. When a physical object is disposed between the antenna element and the ground plane, the physical relationship can be changed by moving or twisting the physical object. The object can be electrically conducting, dielectric or magnetic.





US 20080001831A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2008/0001831 A1

Park et al. (43) Pub. Date: Jan. 3, 2008

(54) MOBILE TERMINAL AND MOBILE TERMINAL ANTENNA FOR REDUCING ELECTROMAGNETIC WAVES RADIATED TOWARDS HUMAN BODY

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(21) Appl. No.: **11/634,865**

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

(30) **Foreign Application Priority Data**

Jun. 30, 2006 (KR) 10-2006-0060440

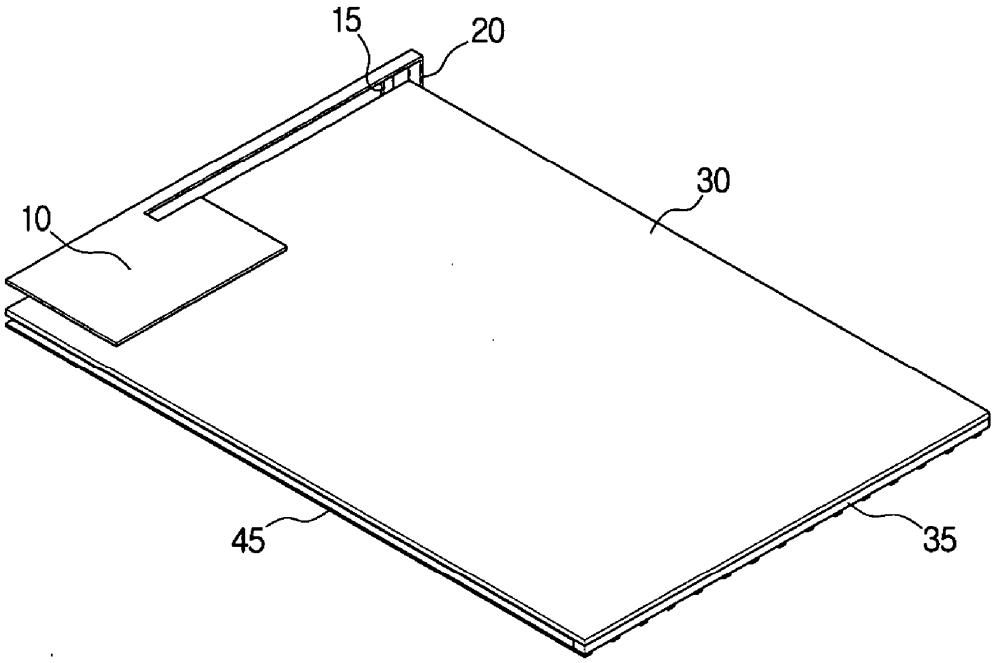
Publication Classification

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

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

(57) **ABSTRACT**

A mobile terminal and a mobile terminal antenna reduce the intensity of electromagnetic waves radiated in the direction of a human body. The mobile terminal antenna includes a radiator, which radiates electromagnetic waves; a ground which is connected with the radiator, and a radiation preventer which has a metallic bar on one side of the ground in parallel with the ground at an interval. Accordingly, the electromagnetic radiation exposure to the human body can be reduced by altering the radiation emission pattern, while the performance of the antenna can be simultaneously enhanced.



US 20080001833A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0001833 A1**

Kaneoya (43) **Pub. Date: Jan. 3, 2008**

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

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(21) Appl. No.: **11/820,130**

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

(30) **Foreign Application Priority Data**

Jun. 28, 2006 (JP) 2006-178830

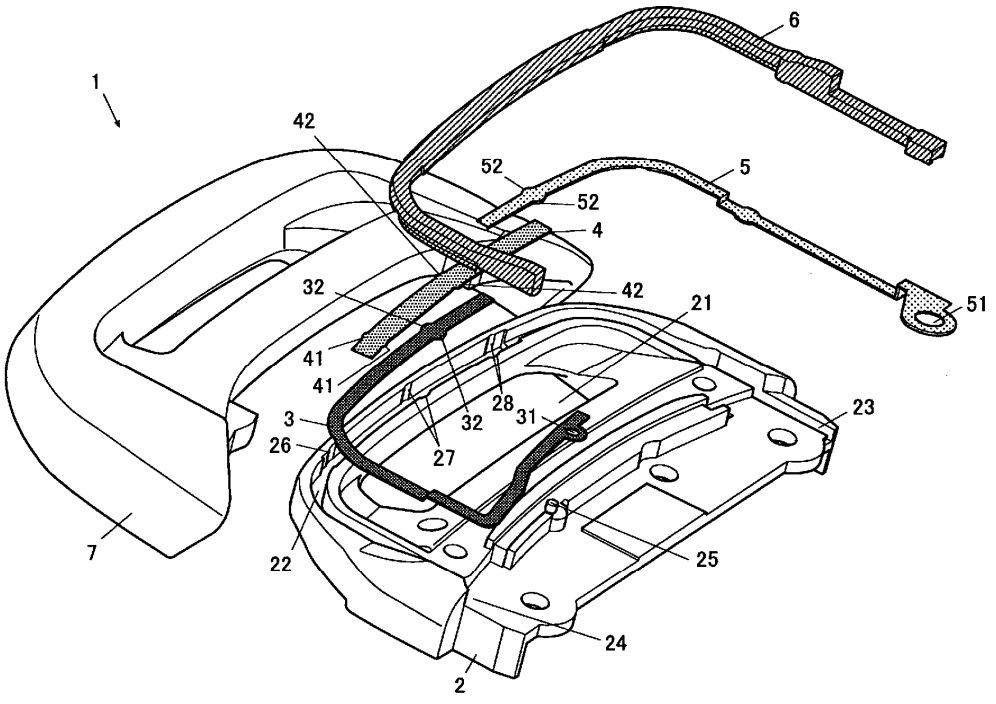
Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 1/22 (2006.01)

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

(57) **ABSTRACT**

A dual-band antenna with little limitation on the mounting space, which allows two antenna elements coping with different frequency bands to be laid out at a narrow space, and a portable wireless device having the same are provided. A band-like first antenna element, a sheet-like dielectric element, and a band-like second antenna element are fitted in a groove of a support member. The end portion of the second antenna element overlaps with the end portion of the first antenna element, and the dielectric element is sandwiched therebetween. The sandwiched dielectric element constitutes a capacitor, and first antenna element, the capacitor and the second antenna element are connected in series. The other end portion of the second antenna element is connected to a circuit in a bottom casing, and power is supplied through the other end portion thereof.



US 20080001834A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2008/0001834 A1

Yegin et al. (43) Pub. Date: Jan. 3, 2008

(54) VEHICLE MIRROR HOUSING ANTENNA ASSEMBLY

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(21) Appl. No.: **11/374,303**

(22) Filed: **Jan. 12, 2007**

Related U.S. Application Data

(63) Continuation of application No. 10/903,041, filed on Jul. 30, 2004, now Pat. No. 7,248,225.

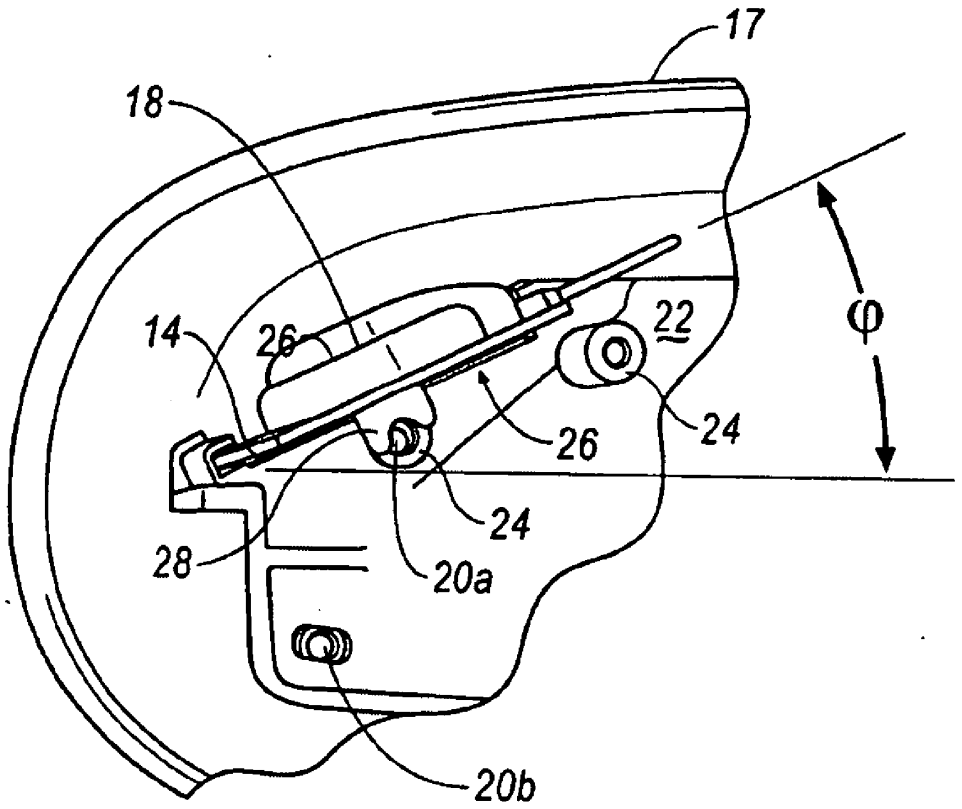
Publication Classification

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

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

(57) **ABSTRACT**

An antenna assembly is disclosed. The antenna assembly includes an externally-located vehicular mirror housing and an antenna assembly. The externally-located vehicular mirror housing includes a cable exit passage. The antenna assembly includes at least one antenna element mounted on a circuit board. The antenna assembly is located within the externally-located vehicular mirror housing. The cable exit passage passes an antenna cable extending from the circuit board and into the vehicle cabin.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0001836 A1**

Guthrie (43) **Pub. Date: Jan. 3, 2008**

(54) **SLOT ANTENNA**

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(73) Assignee: **TWISTHINK, L.L.C.**, Holland, MI (US)

(21) Appl. No.: **11/752,553**

(22) Filed: **May 23, 2007**

Related U.S. Application Data

(60) Provisional application No. 60/803,042, filed on May 24, 2006.

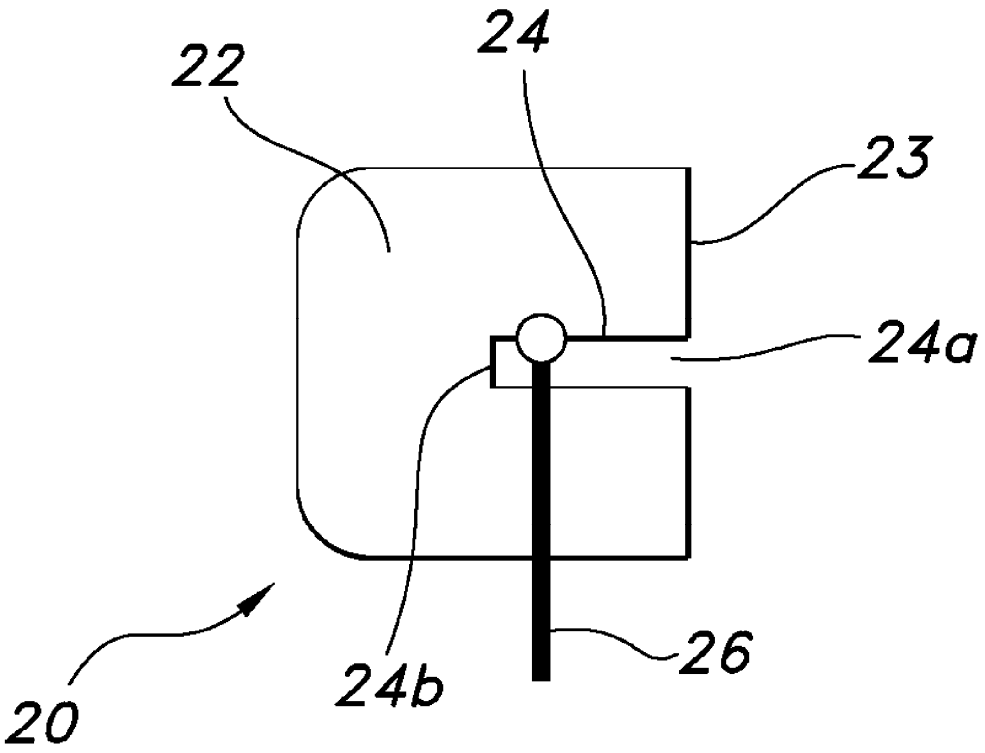
Publication Classification

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

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

(57) **ABSTRACT**

The specification discloses a slot antenna in which the slot opens through an edge of the conductor. Preferably, the slot is nonlinear (e.g. a zigzag shape) enabling a compact configuration in which a relatively long slot is configured in a relatively small conductor.



US 20080001837A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0001837 A1**

Liu (43) **Pub. Date: Jan. 3, 2008**

(54) **PORTABLE COMMUNICATION DEVICE WITH SLOT-COUPLED ANTENNA MODULE**

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(21) Appl. No.: **11/802,027**

(22) Filed: **May 18, 2007**

(30) **Foreign Application Priority Data**

Jul. 3, 2006 (TW) 095124188

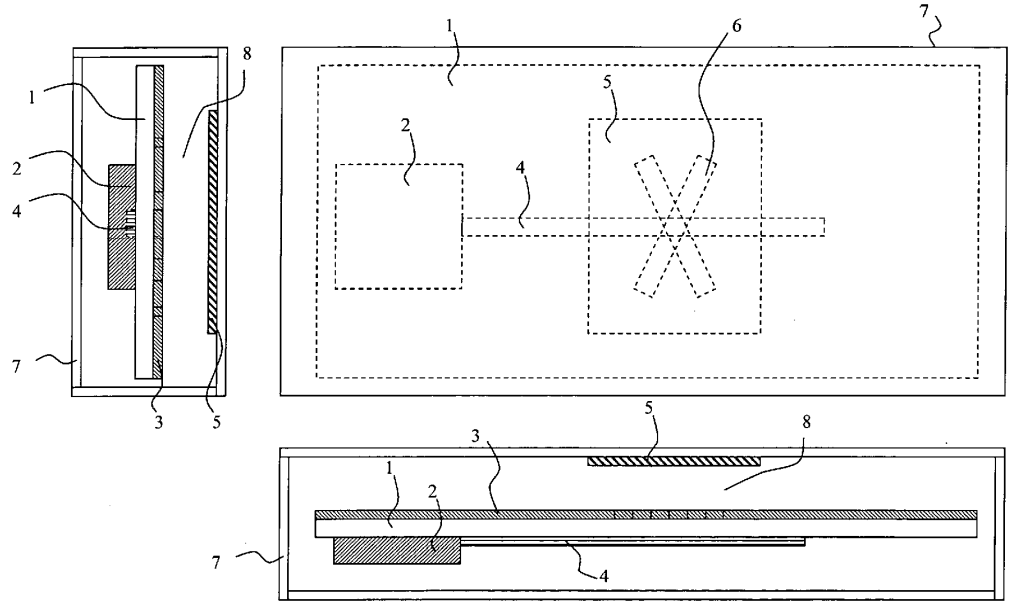
Publication Classification

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

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

(57) **ABSTRACT**

The present invention discloses a portable communication device with slot-coupled antenna module the slot-coupled antenna module comprises: a dielectric substrate, radio module, ground plane, air substrate, and patch radiator. The radio module contains a feed line and stub that are coupled on the surface of the dielectric substrate and extending along the long side of the dielectric substrate in parallel. The ground plane with slot-coupled structure is coupled on the other surface of the dielectric substrate, the feed line and stub pass through the intersect portion of the coupled slots. The air gap is therefore formed between the ground plane and the patch radiator, and the patch radiator is substantially parallel with the ground plane and locating substantially on the position of the coupled slots.



US 20080001838A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0001838 A1**

Huang et al. (43) **Pub. Date: Jan. 3, 2008**

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

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(73) Assignee: **TATUNG COMPANY**, Taipei (TW)

(21) Appl. No.: **11/557,500**

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

(30) **Foreign Application Priority Data**

Jun. 29, 2006 (TW) 95123484

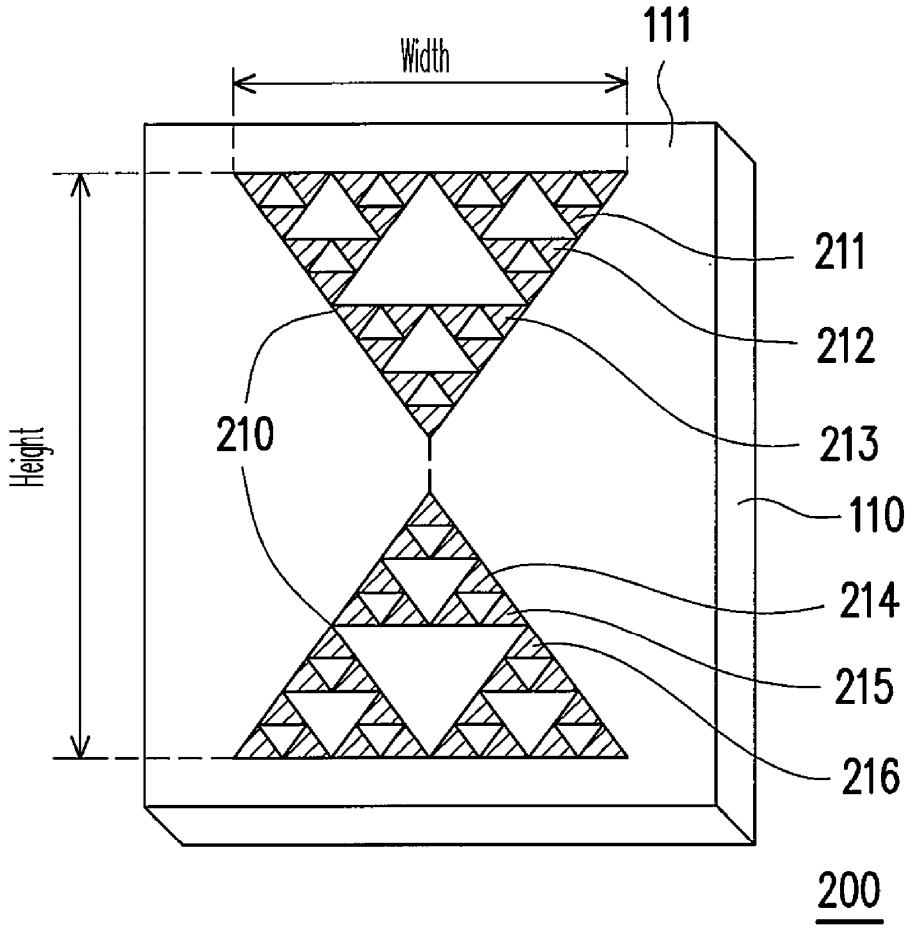
Publication Classification

(51) **Int. Cl.**
H01Q 9/28 (2006.01)

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

(57) **ABSTRACT**

A planar antenna for a radio frequency identification tag which receives or transmits an electromagnetic signal is provided. The planar antenna comprises a dielectric slab and a fractal dipole antenna. The height of the fractal dipole antenna is 0.3 to 0.7 times of the half wavelength of the electromagnetic signal, and the width of the fractal dipole antenna is 0.7 to 1.1 times of the half wavelength of the electromagnetic signal. The planar antenna achieves miniaturization and a good matching by utilizing the optimal size of the fractal dipole antenna.



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(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2008/0001839 A1

Wei et al. (43) Pub. Date: Jan. 3, 2008

(54) MULTI-FREQUENCY ANTENNA AND RELATED MOBILE DEVICE

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

(21) Appl. No.: **11/724,182**

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

(30) **Foreign Application Priority Data**

Jun. 30, 2006 (TW) 095123987

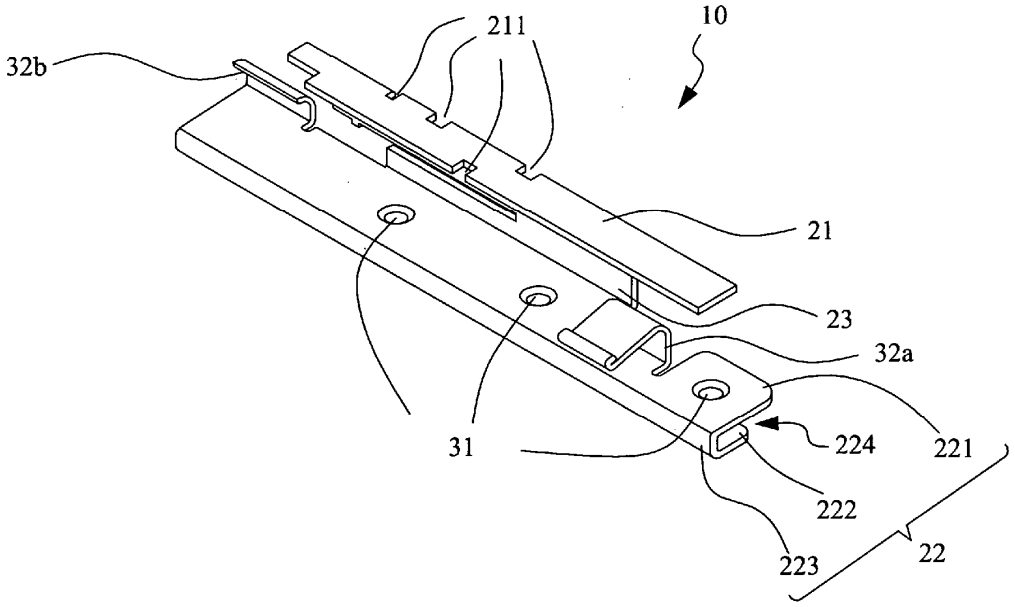
Publication Classification

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

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

(57) **ABSTRACT**

A multi-frequency antenna is disclosed. The multi-frequency antenna is positioned on a mobile device for transmitting wireless signals. The multi-frequency antenna comprises a radiating element, a grounding element and a connecting element. The connecting element is connected to the radiating element and the grounding element. The grounding element has a substantially U-shape structure so that it is capable of clipping with an edge of the mobile device.



US 20080001840A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0001840 A1**

Wong et al. (43) **Pub. Date: Jan. 3, 2008**

(54) **STACKED LOOP ANTENNA**

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(21) Appl. No.: **11/476,387**

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

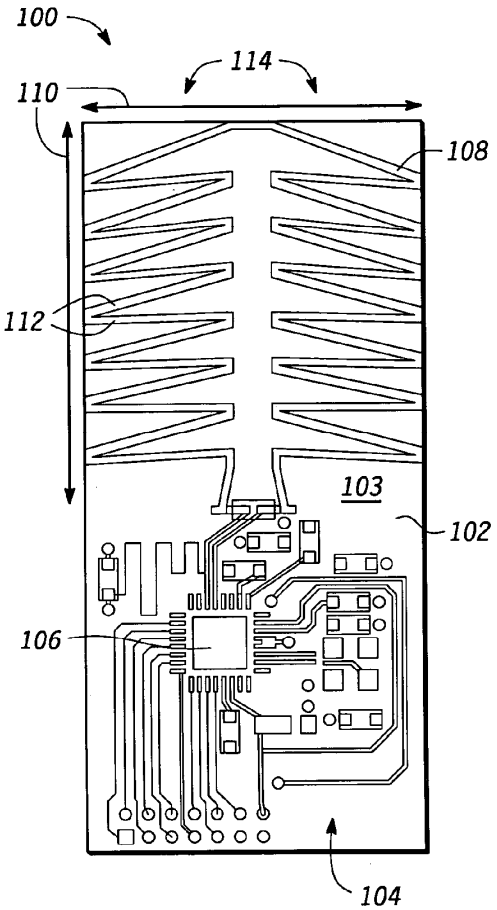
Publication Classification

(51) **Int. Cl.**
H01Q 21/00 (2006.01)
H01Q 11/12 (2006.01)

(52) **U.S. Cl.** **343/867**; 343/742

(57) **ABSTRACT**

A small transceiver device and antenna system has an insulating layer with first and second surfaces. A transmit loop element having transmit loop segments is formed on the first surface. The transmit loop segments are disposed in a transmit zigzag configuration. A receive loop element having receive loop segments is formed on the second surface. The receive loop segments are disposed in a receive zigzag configuration. Each receive loop segment in the receive zigzag configuration is skewed with respect to a closest transmit loop segment disposed in the transmit zigzag configuration. The transmit loop segments can be grouped in two or more transmit zigzag configurations, and the receive loop segments can be grouped in two or more receive zigzag configurations.



US 20080001842A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2008/0001842 A1

Shigihara et al. (43) Pub. Date: Jan. 3, 2008

(54) ANTENNA APPARATUS FOR TRANSPONDER

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(21) Appl. No.: **11/809,051**

(22) Filed: **May 30, 2007**

(30) **Foreign Application Priority Data**

Jun. 30, 2006 (JP) 2006-181930

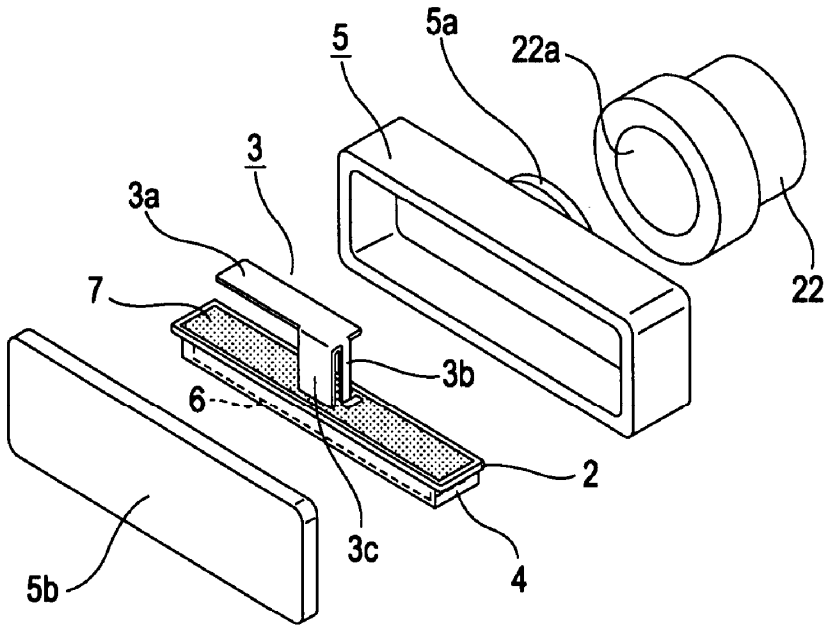
Publication Classification

(51) **Int. Cl.**
H01Q 1/42 (2006.01)

(52) **U.S. Cl.** **343/872**

(57) **ABSTRACT**

An antenna apparatus is mounted at a wheel rim as a transponder of a system for monitoring a tire pressure or the like, and attached at an end portion of an air valve. The apparatus includes a circuit board having an electronic circuit portion and a grounding conductor layer, a sheet-metal inverse-F type antenna element, a sheet-metal shield case conducting to the grounding conductor layer to cover the electronic circuit portion, and a resin case for accommodating these components. One side surface extending in a longitudinal direction of a space defined between the circuit board and the radiating conductor of the antenna element faces one of sidewalls of a tire, and the other side surface thereof faces a wall surface of the wheel rim with a distance interposed therebetween, the distance being about one-fourth of a wavelength of a radio wave to be used.



US 20080005889A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0005889 A1**

Chen et al. (43) **Pub. Date: Jan. 10, 2008**

(54) **FLEXIBLE ANTENNA APPARATUS AND A MANUFACTURING METHOD THEREOF**

(76) Inventors: **Bin-Hung Chen**, Hsinchu (TW); **Chih-Ming Chen**, Hsinchu (TW)

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(21) Appl. No.: **11/648,597**

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

Related U.S. Application Data

(62) Division of application No. 11/199,079, filed on Aug. 9, 2005, now Pat. No. 7,256,742.

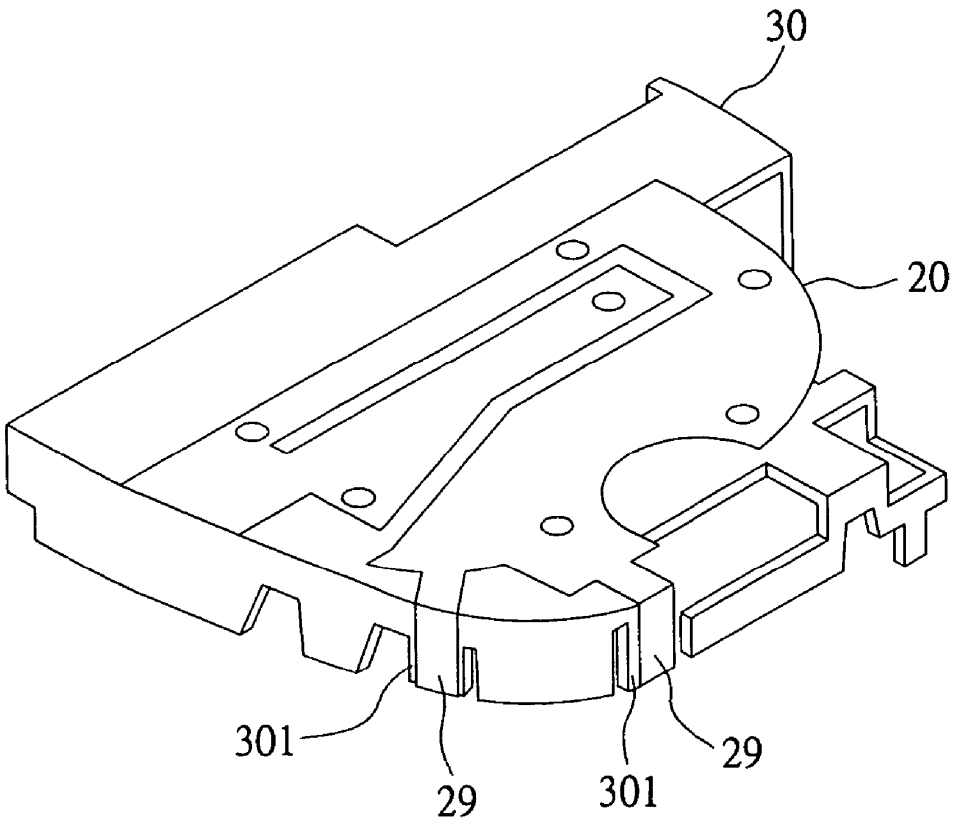
Publication Classification

(51) **Int. Cl.**
H01P 11/00 (2006.01)
H01Q 13/00 (2006.01)

(52) **U.S. Cl.** **29/600**; 156/60

(57) **ABSTRACT**

A flexible antenna apparatus and a manufacturing method thereof are provided for wireless communication devices. The flexible antenna has a metal layer with an adhesive layer pasted onto the back surface of the metal layer, so that it can be directly pasted onto the housing of the wireless communication device. On another side of the metal layer, there is a transparent protective layer and the metal layer reserves a zone without the transparent protective layer for electrically coupling to the electrical substrate of the wireless communication device. The present flexible antenna apparatus reduces the developing time and cost of the device and the manufacturing process more convenient. The flexible antenna apparatus is suitable for all wireless communication devices and increases the flexibility of the manufacturing process by adding a holder having at least one plastic pin, or a pin.



US 20080007456A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0007456 A1**

Chen et al. (43) **Pub. Date: Jan. 10, 2008**

(54) **ANTENNA STRUCTURE AND MEDIUM COMPONENT FOR USE IN PLANAR INVERTED-F ANTENNA**

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(21) Appl. No.: **11/648,588**

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

(30) **Foreign Application Priority Data**

Jan. 4, 2006 (TW)..... 095200180

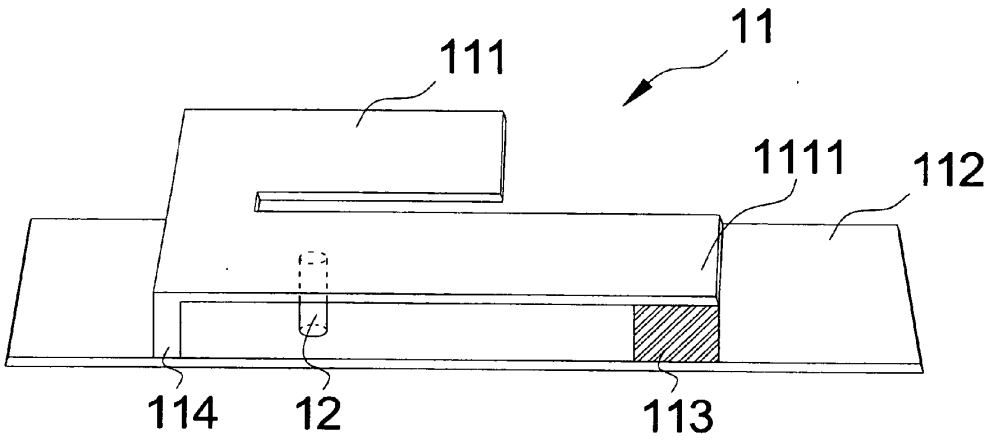
Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 9/06 (2006.01)

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

(57) **ABSTRACT**

An antenna structure and a medium component for use in a planar inverted-F antenna are disclosed. The antenna structure comprises a radiation component, a ground component and a medium component. A space is between the radiation component and the ground component for generating resonance effects to transmit and to receive electromagnetic waves. The medium component is set into the space which is between the radiation component and the ground component for fastening the space, but also has insulation and waterproof functions. The efficacy for the antenna structure transmitting and receiving electromagnetic waves can be ensured.



US 20080007457A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0007457 A1**

Copeland et al. (43) **Pub. Date: Jan. 10, 2008**

(54) **RFID NEAR FIELD LINEAR ANTENNA**

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(21) Appl. No.: **11/666,806**

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

(86) PCT No.: **PCT/US05/39587**

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

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.

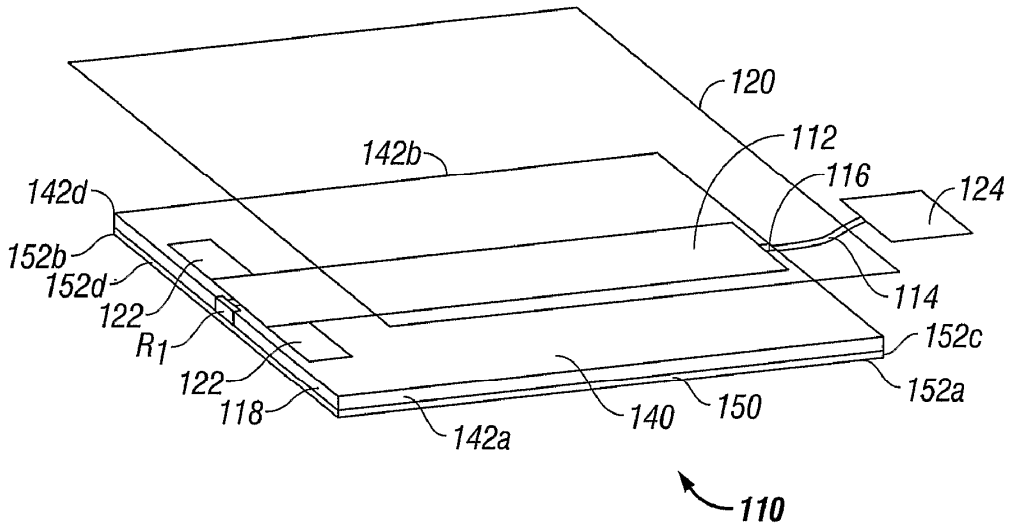
Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 9/06 (2006.01)

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

(57) **ABSTRACT**

A near field linear element microstrip antenna is disclosed which is configured to read an RFID label such that a localized electric E field emitted by the antenna at an operating wavelength resides substantially within a zone defined by the near field. The localized E field directs a current distribution along an effective length of the antenna corresponding to a half-wave to a full-wave structure.



US 20080007458A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0007458 A1**

Tseng et al. (43) **Pub. Date: Jan. 10, 2008**

(54) **ANTENNA**

(75) Inventors: **Kuan-Hsueh Tseng**, Taipei (TW); **Yi-Ling Chiu**, Taipei (TW); **Chia-Tien Li**, Taipei (TW)

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(21) Appl. No.: **11/674,055**

(22) Filed: **Feb. 12, 2007**

(30) **Foreign Application Priority Data**

Jul. 4, 2006 (TW) TW95124300

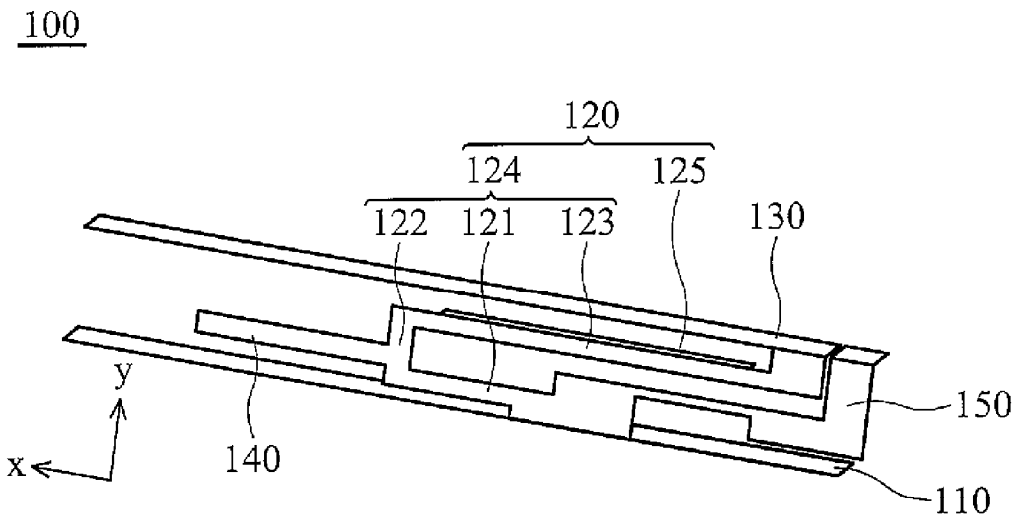
Publication Classification

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

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

(57) **ABSTRACT**

An antenna comprises a ground element, a transmission element, a conductive element and a coupling element. The conductive element connects the ground element and the transmission element. The coupling element extends from the conductive element substantially parallel to the transmission element, wherein the coupling element is located on a first plane, the transmission element is located on a second plane, and the second plane is parallel to the first plane.



US 20080007459A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0007459 A1**

Koskiniemi et al. (43) **Pub. Date: Jan. 10, 2008**

(54) **ANTENNA COMPONENT AND METHODS**

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(21) Appl. No.: **11/801,894**

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

Related U.S. Application Data

(63) Continuation of application No. PCT/FI05/50382, filed on Oct. 27, 2005.

(30) **Foreign Application Priority Data**

Nov. 11, 2004 (FI)..... 20041455

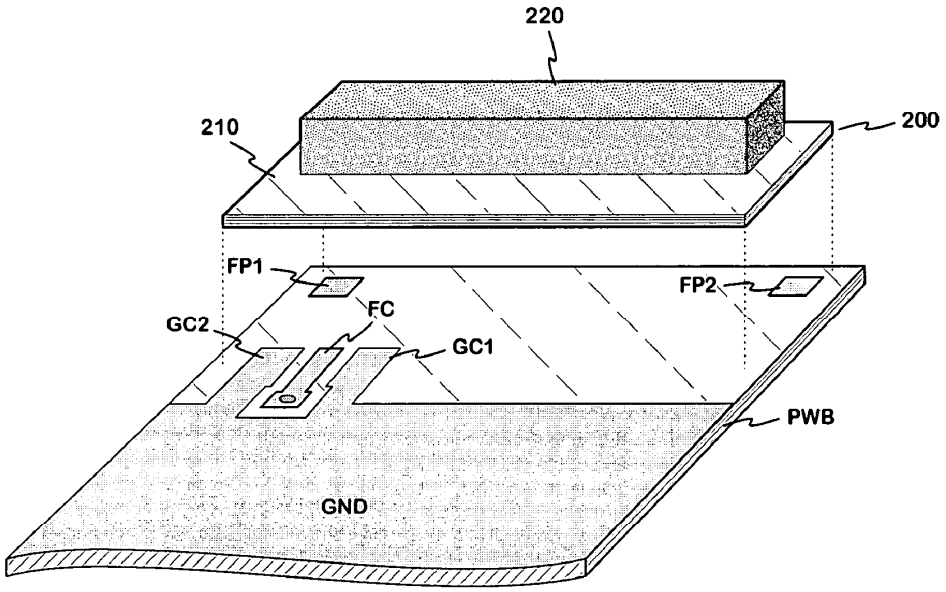
Publication Classification

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

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

(57) **ABSTRACT**

An antenna component suited for small-sized radio devices for forming a dielectric antenna. A small auxiliary circuit board (**210**) is used for the matching of the antenna, the matching being based on a conductor pattern on it. A substrate chip (**220**), on the surface of which the radiator is, and the auxiliary board are fastened to each other, whereby the radiator is electrically connected to said conductor pattern. The radiator, its substrate and the auxiliary board form a unitary, solid antenna component (**200**), which is mounted on the circuit board (PWB) of the radio device. The antenna with its feed and matching circuits can be designed and tested as a whole of its own, in which case the reproducibility is good. In the design of the circuit board of the radio device, the antenna needs to be taken into account only by reserving a space for the antenna component on the circuit board.



US 20080007460A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0007460 A1**

Ke et al. (43) **Pub. Date: Jan. 10, 2008**

(54) **MULTI-BAND ANTENNA**

(75) Inventors: **Yun-Long Ke**, Tu-Cheng (TW); **Chen-Ta Hung**, Tu-Cheng (TW); **Lung-Sheng Tai**, Tu-Cheng (TW); **YaoO-Shien Huang**, Tu-Cheng (TW); **Po-Kang Ku**, Tu-Cheng (TW)

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

(21) Appl. No.: **11/824,783**

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

(30) **Foreign Application Priority Data**

Jul. 10, 2006 (TW) 95125031

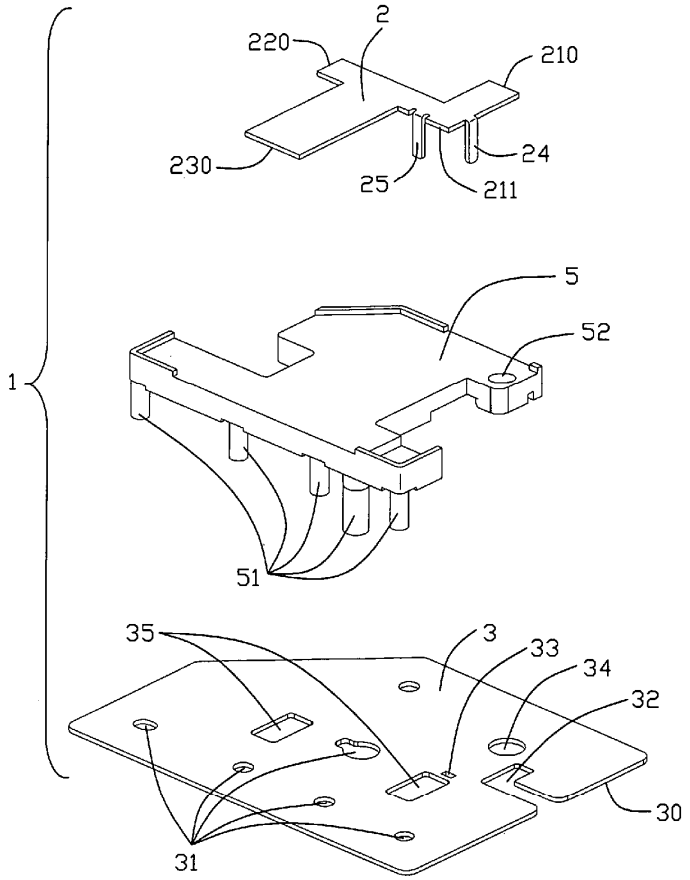
Publication Classification

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

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

(57) **ABSTRACT**

A multi-band antenna includes a radiating element comprising a first metal patch, a second metal patch extending along a direction different from the first metal patch, a grounding element parallel to the radiating element with a certain distance, a resonant cavity produced by said certain distance between separated the radiating element and the grounding element, a first pad downward extending from an edge of the first metal patch to form a feeding pad, and a second pad downward extending from an edge of the second metal patch to form a grounding pad; wherein the edge from which the first pad extending is bordering the edge of the second metal patch with the second pad.



US 20080007461A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0007461 A1**

Su et al. (43) **Pub. Date: Jan. 10, 2008**

(54) **MULTI-BAND ANTENNA**

(75) Inventors: **Wen-Fong Su**, Tu-Cheng (TW); **Chen-Ta Hung**, Tu-Cheng (TW); **Shu-Yean Wang**, Tu-Cheng (TW)

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

(21) Appl. No.: **11/825,891**

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

(30) **Foreign Application Priority Data**

Jul. 10, 2006 (TW) 95125030

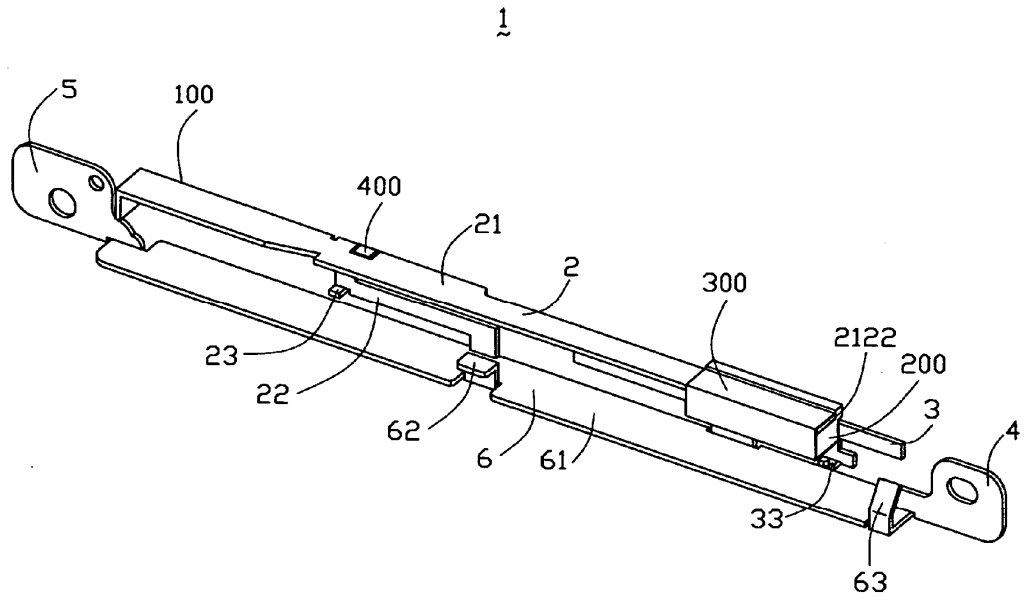
Publication Classification

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

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

(57) **ABSTRACT**

A multi-band antenna includes a radiating element having at least two frequency bands and comprising a gap on one side edge thereof, a grounding element coupling and being perpendicular to said radiating element, and a reactance assembled to said radiating element and received in said gap.



US 20080007463A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0007463 A1**

Chen (43) **Pub. Date: Jan. 10, 2008**

(54) **FREQUENCY ADJUSTABLE ANTENNA APPARATUS AND A MANUFACTURING METHOD THEREOF**

(76) Inventor: **Chih-Ming Chen**, Hsinchu (TW)

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(21) Appl. No.: **11/480,945**

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

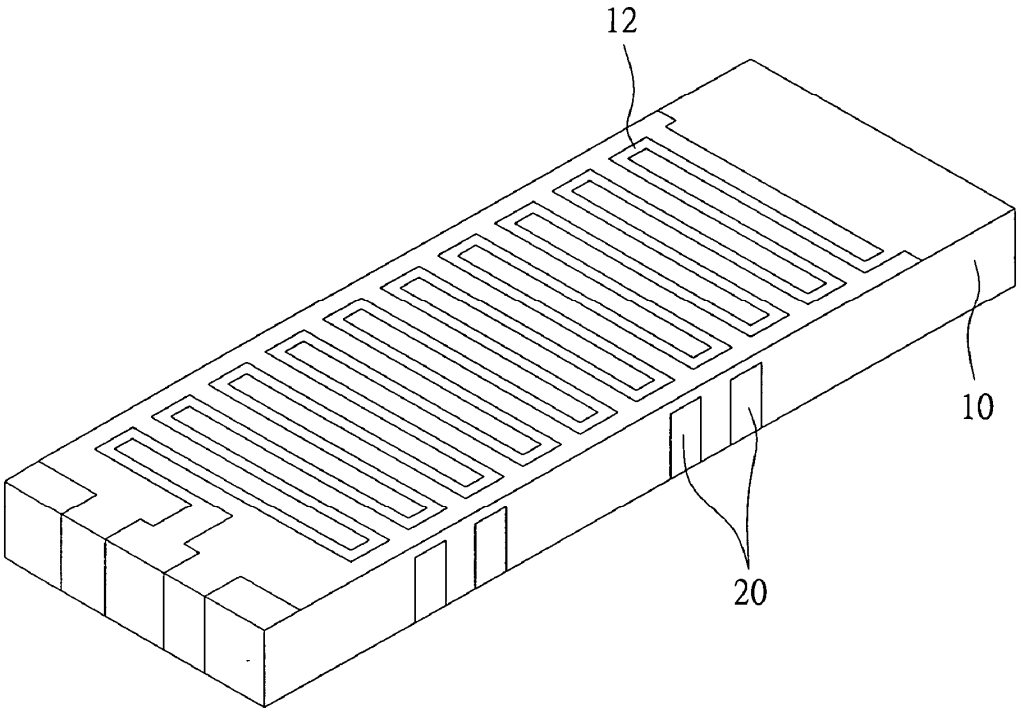
Publication Classification

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

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

(57) **ABSTRACT**

A frequency adjustable antenna apparatus and a manufacturing method thereof are disclosed. The antenna apparatus includes a plurality of antenna paths and the length of the antenna path is changed via the soldering pads. Therefore, the receiving frequency of the antenna can be changed. The frequency adjustable antenna apparatus includes a body, a first path, at least one second path and a printed circuit board. The first path is located on an upper surface of the body and extends to a lower surface. The second path is located on the lower surface. The printed circuit board includes at least one soldering pad. When the lower surface of the body is pasted on the printed circuit board, the first path is connected with the second path via the soldering pads. Thereby, the length of the first path is changed to adjust the frequency of the antenna apparatus.



US 20080007464A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0007464 A1**

Hsu (43) **Pub. Date: Jan. 10, 2008**

(54) **MULTI-FUNCTION ANTENNA APPARATUS**

(76) Inventor: **Cho-Kang Hsu**, Hsinchu (TW)

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(21) Appl. No.: **11/480,947**

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

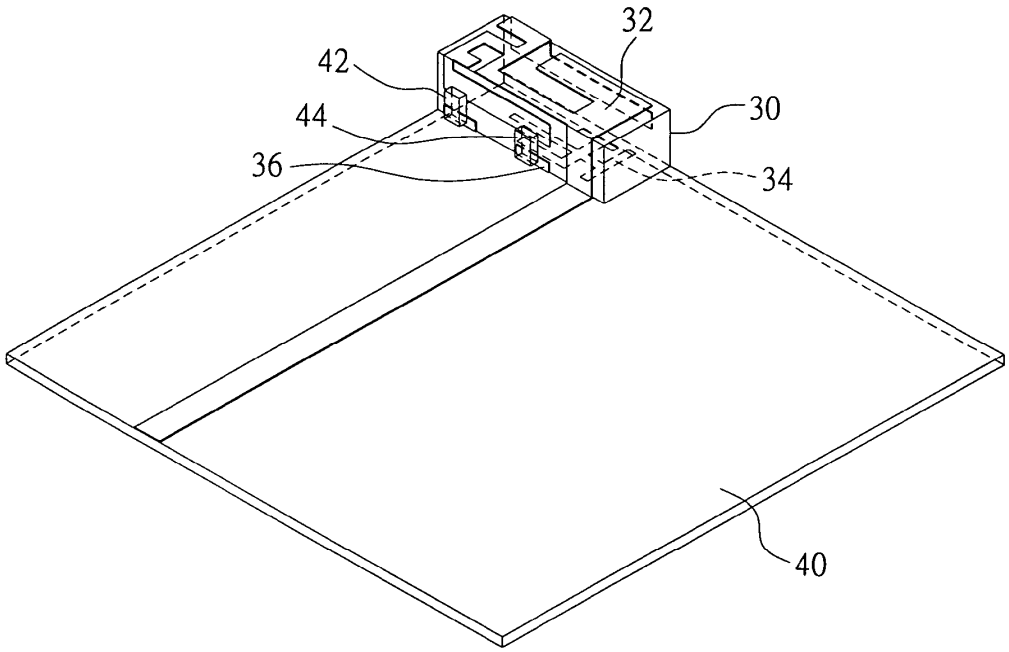
Publication Classification

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

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

(57) **ABSTRACT**

A multi-function antenna apparatus utilizes a design having a plurality of paths and can be applied to both a substrate having a grounding layer and a substrate without a grounding layer. The multi-function antenna apparatus includes a body, a main path, a grounding path and a matching-resistance path. The main path is located on an upper surface of the body. The grounding path is located on a lower surface of the body. The matching-resistance path is located on a side surface of the body. The multi-function antenna apparatus of the present invention modifies the matching resistance of the multi-function antenna apparatus by adjusting the capacitance of the capacitor and the inductance of the inductor.



US 20080007465A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0007465 A1**

Gaucher et al. (43) **Pub. Date: Jan. 10, 2008**

(54) **EMBEDDED MULTI-MODE ANTENNA ARCHITECTURES FOR WIRELESS DEVICES**

(76) Inventors: **Brian P. Gaucher**, Brookfield, CT (US); **Duixian Liu**, Scarsdale, NY (US); **Thomas R. Hildner**, Cary, NC (US)

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(21) Appl. No.: **11/482,571**

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

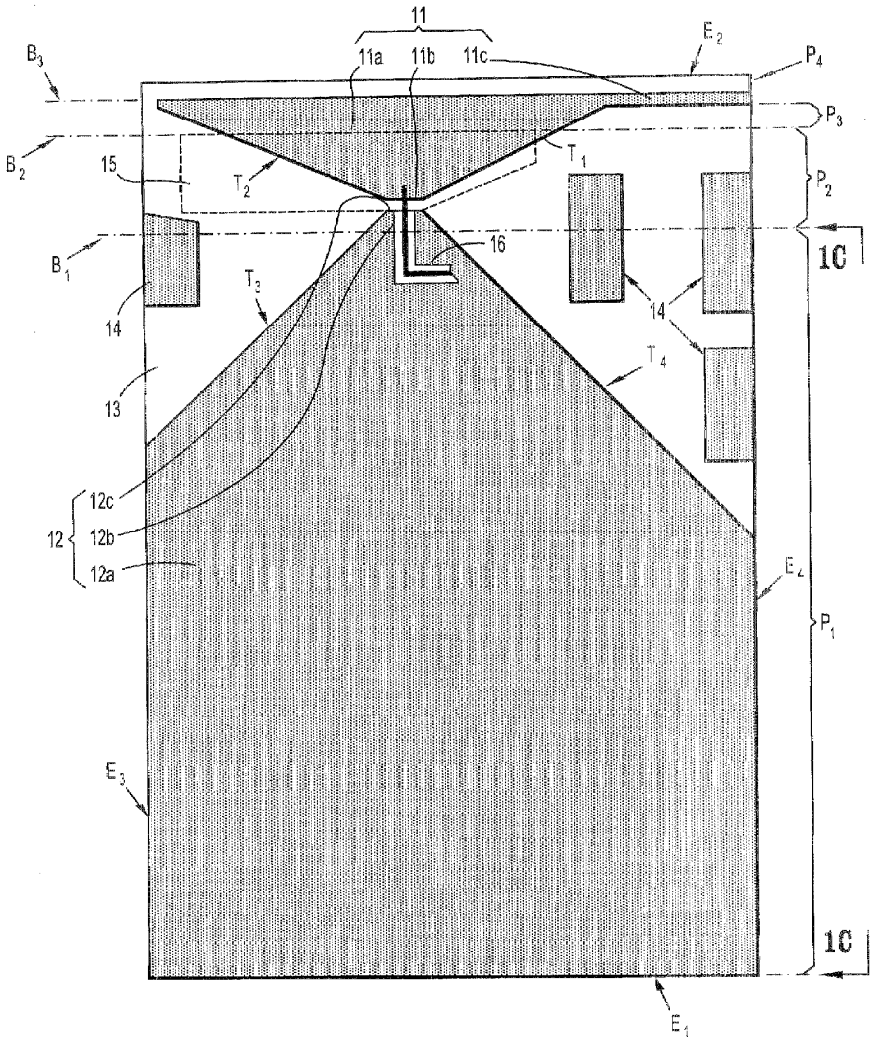
Publication Classification

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

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

(57) **ABSTRACT**

Low-profile, compact embedded multi-mode antenna designs are provided for use with computing devices, such as laptop computers, which enable ease of integration within computing devices with limited space, while providing suitable antenna characteristics (e.g., impedance matching and radiation efficiency) over an operating bandwidth of about 0.8 GHz to about 11 GHz.



US 20080007467A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2008/0007467 A1

Seo (43) Pub. Date: Jan. 10, 2008

(54) ANTENNA AND MOBILE TERMINAL USING THE SAME

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(73) Assignee: LG Electronics Inc.

(21) Appl. No.: 11/774,161

(22) Filed: Jul. 6, 2007

(30) Foreign Application Priority Data

Jul. 7, 2006 (KR) 10-2006-0063805

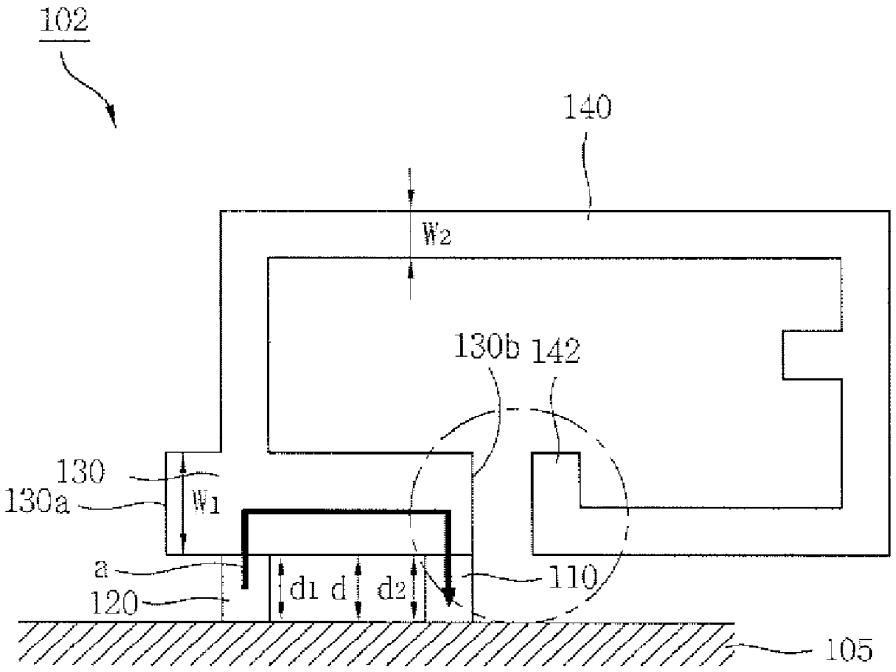
Publication Classification

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

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

(57) ABSTRACT

An antenna and a mobile terminal using the same is provided. The mobile terminal according to an aspect of the present invention includes a shielding unit and an antenna comprising a feed unit and a ground unit formed over the shielding unit, a first pattern connected to a top surface of the feed unit and the ground unit and isolated from the shielding unit, and a second pattern connected to a first end of the first pattern and having an open end formed close to a portion of the first pattern second end connected to the ground unit. The first pattern has a high frequency band characteristic, and the second pattern has a low frequency band characteristic.



US 20080007469A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0007469 A1**

Hung et al. (43) **Pub. Date: Jan. 10, 2008**

(54) **MULTI-BAND ANTENNA**

(75) Inventors: **Chen-Ta Hung**, Tu-Cheng (TW); **Shang-Jen Chen**, Tu-Cheng (TW); **Hsien-Sheng Tseng**, Tu-Cheng (TW)

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

(21) Appl. No.: **11/825,889**

(22) Filed: **Jul. 9, 2007**

(30) **Foreign Application Priority Data**

Jul. 7, 2006 (CN) 200610086343.X

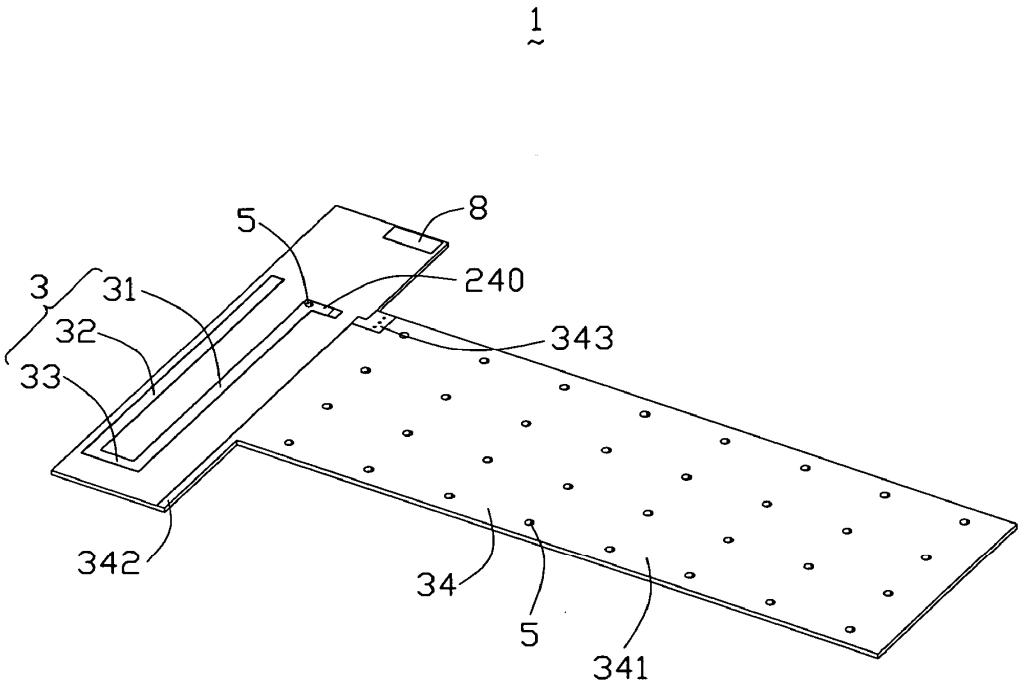
Publication Classification

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

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

(57) **ABSTRACT**

A multi-band antenna used in a portable electrical device can operate in WWAN. The multi-band antenna includes a PCB, a first antenna body, and a second antenna body. The PCB has a first surface and an opposite second surface and defines a through hole extending from the first surface to the second surface. The first antenna body is formed on the first surface of the PCB comprising a first radiating element and a first grounding element. The second antenna body is formed on the second surface of the PCB. The second antenna body comprises a second radiating element, a second grounding element, and a connecting element connecting the second radiating element and the second grounding element. The first radiating element and the second radiating element electrically connect with each other via the through hole of the PCB. A feeding line has an inner conductor electrically connecting to the first radiating element and an outer conductor electrically connecting to the first grounding element.



US 20080007476A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0007476 A1**

Lee (43) **Pub. Date: Jan. 10, 2008**

(54) **DUAL RADIATING TYPE INNER ANTENNA FOR MOBILE COMMUNICATION TERMINAL**

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(21) Appl. No.: **11/706,852**

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

(30) **Foreign Application Priority Data**

Jul. 10, 2006 (KR) 2006-0064632

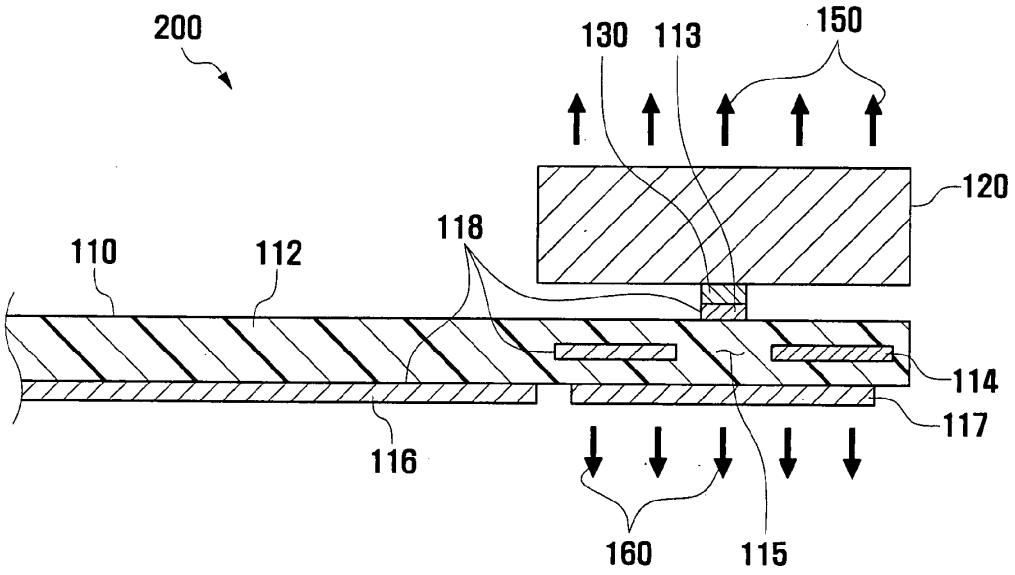
Publication Classification

(51) **Int. Cl.**
H01Q 23/00 (2006.01)

(52) **U.S. Cl.** **343/850**

(57) **ABSTRACT**

The dual radiating type inner antenna includes a Printed Circuit Board (PCB), a first radiation plate disposed at an upper part of the PCB, a power supply unit connecting the PCB and the first radiation plate to supply a current to the first radiation plate, a power supply pad, a floating patch, and a second radiation plate. Current supplied to the power supply pad is radiated as first electromagnetic waves through the first radiation plate after passing through the power supply unit; and is radiated as second electromagnetic waves through the second radiation plate after being coupled through the slot of the floating patch to the power supply pad. Therefore, the inner antenna simultaneously radiates electromagnetic waves of different frequency bands, so that a usable frequency bandwidth can be expanded and the gain of the antenna can be increased. Accordingly, the inner antenna can maintain a stable antenna performance by solving a deterioration problem caused by a frequency shift due to an effect of a human body.



US 20080007478A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2008/0007478 A1

Jung et al. (43) Pub. Date: Jan. 10, 2008

(54) MULTIBAND ANTENNA WITH REMOVED COUPLING

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(21) Appl. No.: **11/606,981**

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

(30) **Foreign Application Priority Data**

Jul. 4, 2006 (KR) 10-2006-0062612

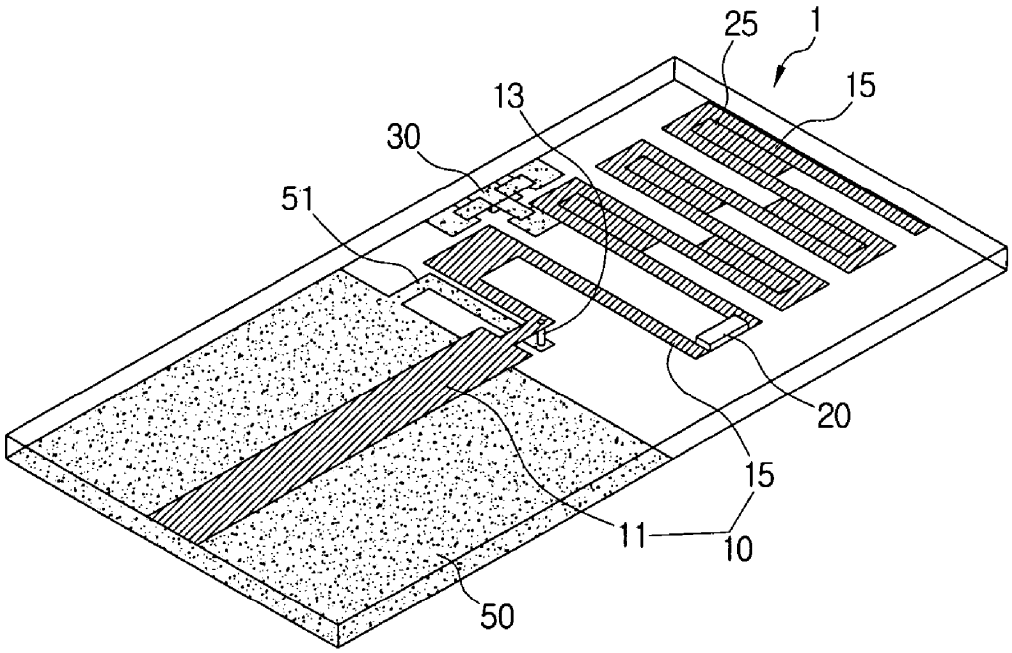
Publication Classification

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

(52) **U.S. Cl.** **343/895**; 343/702

(57) **ABSTRACT**

A multiband antenna with removed coupling includes a radiator formed as a meander line bent zigzag several times and having a gap filling part in at least one area between neighboring meander lines. The gap filling part interconnects the neighboring meander lines. The multiband antenna further includes a ground connected with the radiator and at least one switch element mounted in an area along the longitudinal direction of the radiator and configured to alternately short or open an area of the radiator. Accordingly, two different resonance frequencies can be tuned using the single antenna, and the antenna efficiency can be enhanced by removing the coupling between the resonant frequencies that are tuned through the gap filling.



US 20080010810A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0010810 A1**

POZZOBON et al. (43) **Pub. Date: Jan. 17, 2008**

(54) **CODED ANTENNA**

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(21) Appl. No.: **11/774,057**

(22) Filed: **Jul. 6, 2007**

Related U.S. Application Data

(62) Division of application No. 10/900,178, filed on Jul. 28, 2004, now Pat. No. 7,242,367.

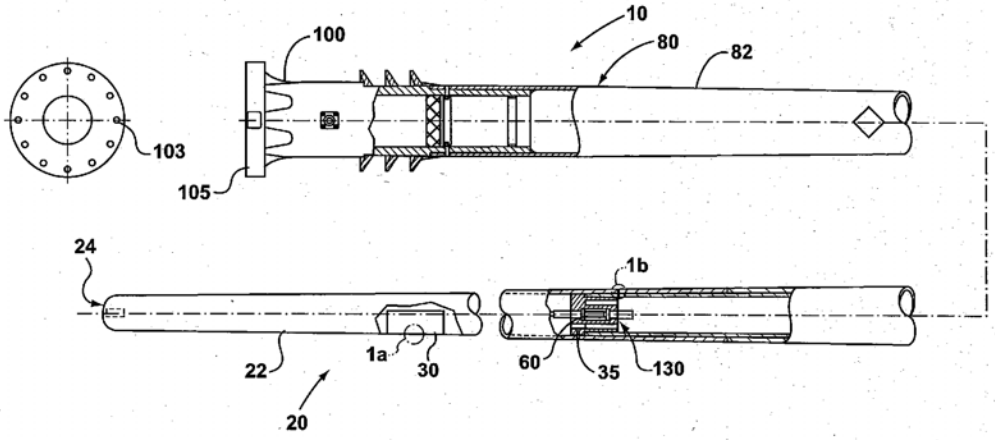
Publication Classification

(51) **Int. Cl.**
H01Q 1/36 (2006.01)
H01F 7/06 (2006.01)

(52) **U.S. Cl.** **29/600**; 29/605; 29/606

(57) **ABSTRACT**

A method of producing a whip antenna by tapering a length of aluminium tube and applying high velocity plasma to the aluminium tube. A ribbon conductor is also wound with a plurality of selected number of turns along the aluminium tube. A polymer coating is also applied to the antenna.



US 20080012769A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0012769 A1**

Cheng (43) **Pub. Date: Jan. 17, 2008**

(54) **DUAL BAND FLAT ANTENNA**

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(21) Appl. No.: **11/485,871**

(22) Filed: **Jul. 13, 2006**

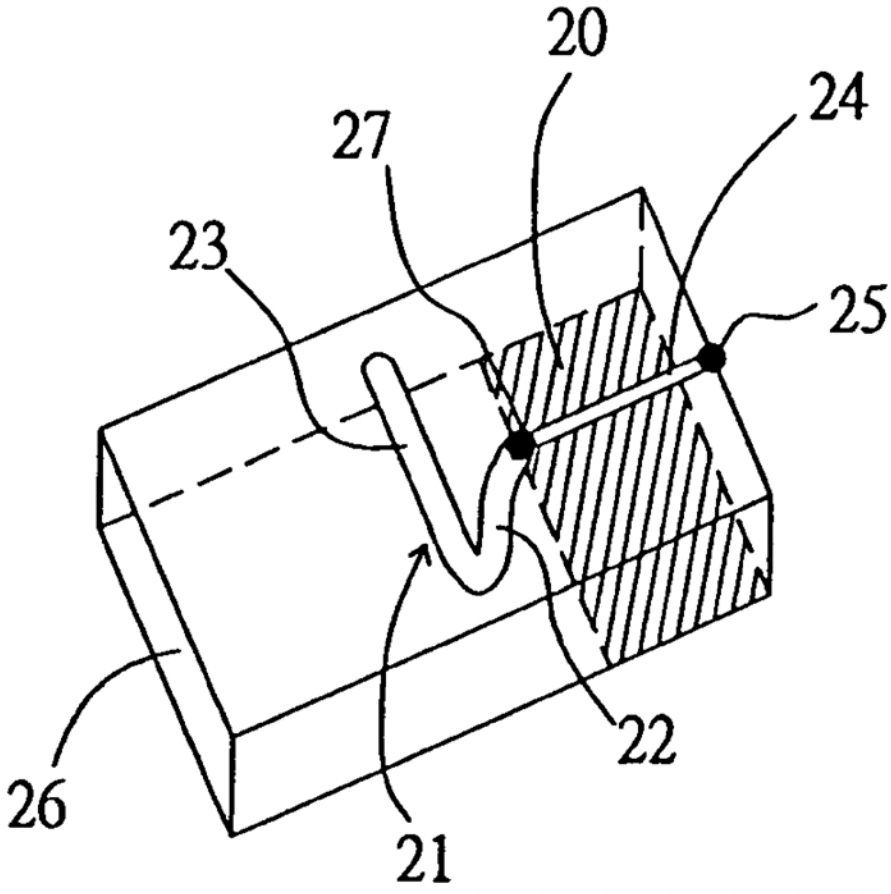
Publication Classification

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

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

(57) **ABSTRACT**

The present invention provides a dual band and dual mode flat antenna. The antenna structure comprises a substrate; a ground member configured on the substrate; a hook radiator having a first portion radiator and a second portion radiator configured on the substrate, wherein the second portion radiator being connected to a first end of said first portion radiator; and a feed line connected to the second end of the first portion radiator of the hook radiator.



US 20080012770A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0012770 A1**

Hook et al. (43) **Pub. Date: Jan. 17, 2008**

(54) **PATCH ANTENNA**

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(21) Appl. No.: **11/569,011**

(22) PCT Filed: **Jun. 10, 2004**

(86) PCT No.: **PCT/SE04/00918**

§ 371(c)(1),
(2), (4) Date: **Nov. 13, 2006**

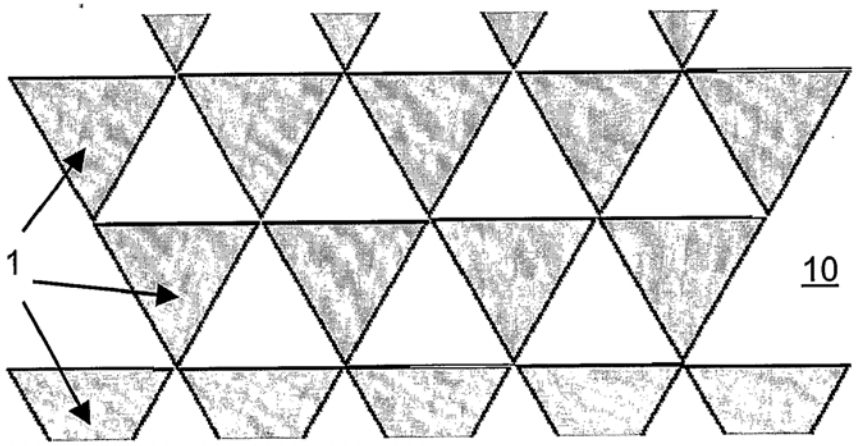
Publication Classification

(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01P 11/00 (2006.01)
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** ..... **343/700 MS**; 29/600

(57) **ABSTRACT**

A self-complementary patch antenna is disclosed. A hexagonal lattice (**10**) consisting of triangular conducting patches (**1**) is formed together with at least one dielectric layer onto a ground-plane. Each triangular patch is then fed by means of three RF signal probes in a symmetrical configuration positioned near each corner of the triangle, whereby an arbitrary lobe-steering and polarisation state can be established by selection of amplitude and phase for each RF signal probe.



US 20080012772A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0012772 A1**

Ogawa et al. (43) **Pub. Date: Jan. 17, 2008**

(54) **CIRCULAR POLARIZED WAVE ANTENNA AND METHOD FOR DESIGNING SAME**

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(21) Appl. No.: **11/806,664**

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

(30) **Foreign Application Priority Data**

Jul. 11, 2006 (JP) 2006-190135

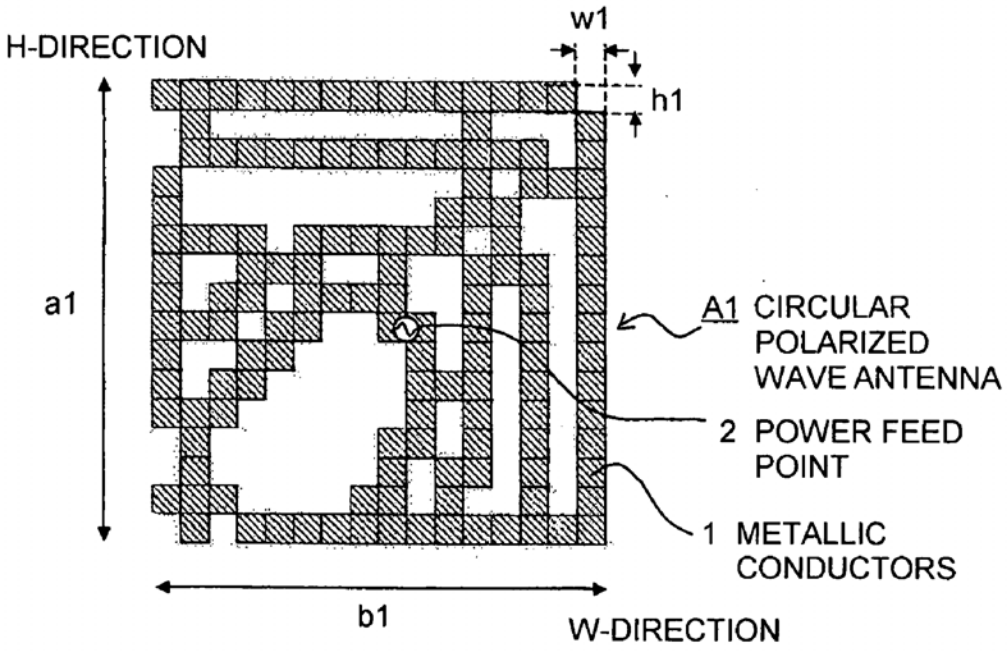
Publication Classification

(51) **Int. Cl.**
H01Q 19/02 (2006.01)
H01Q 9/04 (2006.01)

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

(57) **ABSTRACT**

A group of metallic conductors **1** are prepared and a power feed point **2** is formed at one of the metallic conductors to provide a circular polarized wave antenna. The circular polarized wave antenna is designed such that an absolute value of a sum of projections of an electric current induced on the metallic conductors in x-axis and an absolute value of a sum of projection of the electric current in y-axis that is spatially orthogonal to the x-axis are approximately equal to each other, and an absolute value of a difference between an argument of the sum of the projections in the x-axis and an argument of the sum of the projection in the y-axis is approximately 90°.



US 20080012773A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0012773 A1**

Andrenko et al. (43) **Pub. Date: Jan. 17, 2008**

(54) **ANTENNA AND RFID TAG**

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(21) Appl. No.: **11/898,425**

(22) Filed: **Sep. 12, 2007**

Related U.S. Application Data

(63) Continuation of application No. PCT/JP2005/004549, filed on Mar. 15, 2005.

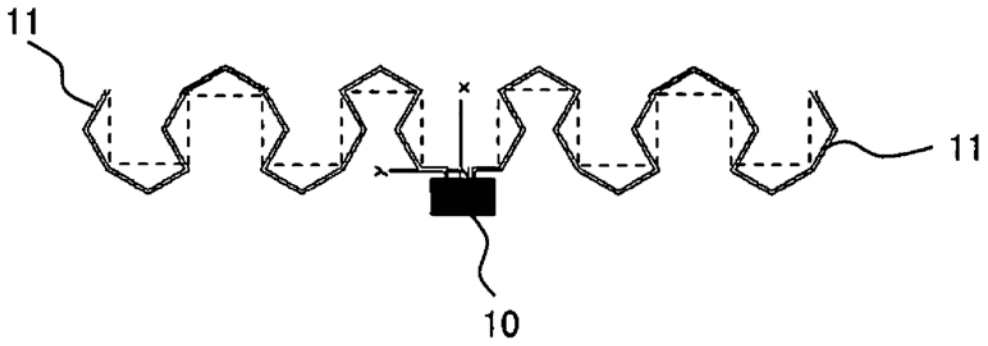
Publication Classification

(51) **Int. Cl.**
H01Q 1/36 (2006.01)
G08B 13/14 (2006.01)

(52) **U.S. Cl.** ..... **343/700 R**; 340/572.7

(57) **ABSTRACT**

An antenna line is configured with a conductor line that meanders in a shape where a plurality of lines of the same shape, which are bent only at an obtuse angle, are provided in sequence.



US 20080012774A1

(19) **United States**

(12) **Patent Application Publication**

Wang

(10) **Pub. No.: US 2008/0012774 A1**

(43) **Pub. Date: Jan. 17, 2008**

(54) **ANTENNA SYSTEM**

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(21) Appl. No.: **11/486,223**

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

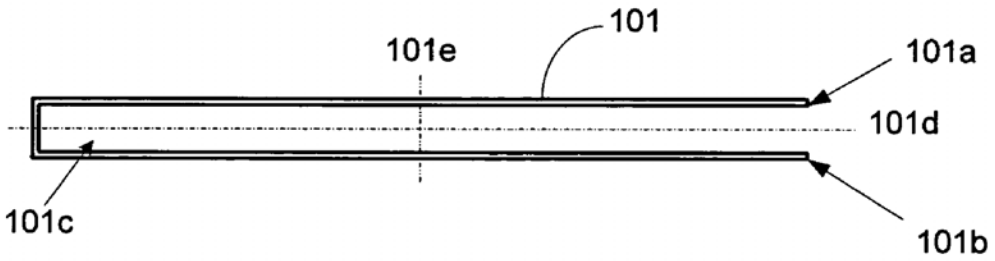
Publication Classification

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

(52) **U.S. Cl.** **343/702**; 343/741

(57) **ABSTRACT**

An antenna system includes a dielectrically-loaded loop element electromagnetically coupled to a planar element. The antenna system exhibits uniform, broadband radiation and reception patterns.



US 20080012775A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0012775 A1**

SHIH (43) **Pub. Date: Jan. 17, 2008**

(54) **ANTENNA DEVICE**

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(73) Assignee: **HON HAI PRECISION INDUSTRY CO., LTD.**, Tu-Cheng (TW)

(21) Appl. No.: **11/615,948**

(22) Filed: **Dec. 23, 2006**

(30) **Foreign Application Priority Data**

Jul. 14, 2006 (TW) 95125813

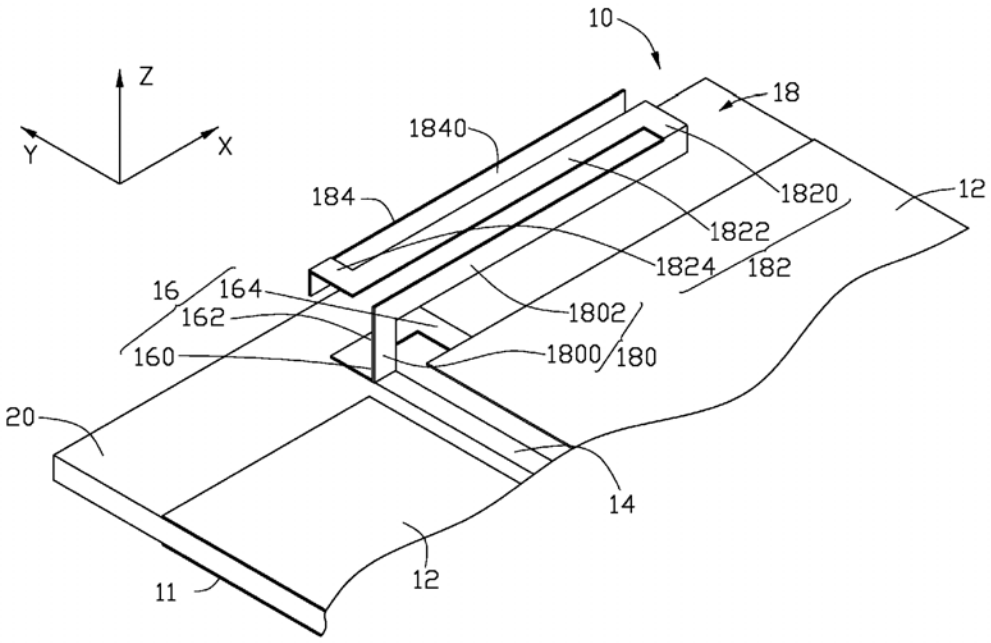
Publication Classification

(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 device disposed on a substrate includes a feed part, a body part, at least one ground plane, and a matching part. The feed part is for feeding electromagnetic signals. The body part for radiating and receiving the electromagnetic signals is electronically connected to the feed part. The body part includes a first radiation part located on a first plane, a second radiation part located on a second plane, and a third radiation part located on a third plane. The second radiation part is electronically connected between the first radiation part and the third radiation part. The ground plane for grounding is disposed on one surface of the substrate. The matching part for impedance matching includes one end electronically connected to one end of the body part and one end of the feed part, and another end electronically connected to the ground plane.



US 20080012777A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0012777 A1**

Lin et al. (43) **Pub. Date: Jan. 17, 2008**

(54) **INTEGRATED BROADBAND ANTENNA DEVICE WITH WIDE BAND FUNCTION**

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(73) Assignee: **Advanced Connectek Inc.**

(21) Appl. No.: **11/652,137**

(22) Filed: **Jan. 11, 2007**

(30) **Foreign Application Priority Data**

Jul. 14, 2006 (TW) 095125855

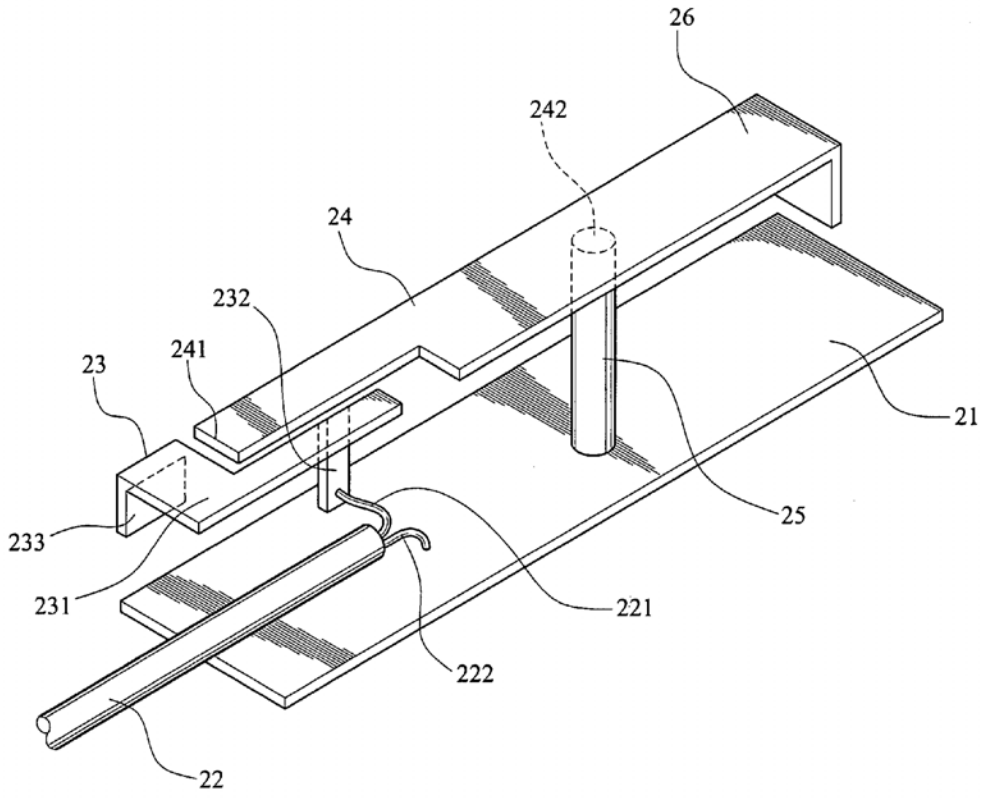
Publication Classification

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

(52) **U.S. Cl.** **343/729**

(57) **ABSTRACT**

An integrated broadband antenna device with wide band function is disclosed. The antenna device comprises a ground plate, a feeding wire, a first metal radiator, a second metal radiator, a ground metal radiator and a parasitic metal radiator. The first metal radiator is connected with the positive ends of signals of the feeding wire for transmitting electric signals and producing a high frequency mode. The first metal radiator is coupled to and energizes the second metal radiator and the parasitic metal radiator, and then the two metal radiator producing a low frequency mode and a second high frequency mode along with the ground metal radiator obtains a wider bandwidth. The broadband antenna device integrating various kinds of antennas is able to have a enough bandwidth to meet the requirements of AMPS (824~894 MHz), GSM (880~960 MHz), GPS (1575 MHz), DCS (1710~1880 MHz), PCS (1850~1990 MHz), UMTS (1920~2170 MHz) and Wi-Fi (2400~2500 MHz).



US 20080012786A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0012786 A1**

Yang (43) **Pub. Date: Jan. 17, 2008**

(54) **FLEXIBLE ANTENNA**

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(21) Appl. No.: **11/486,195**

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

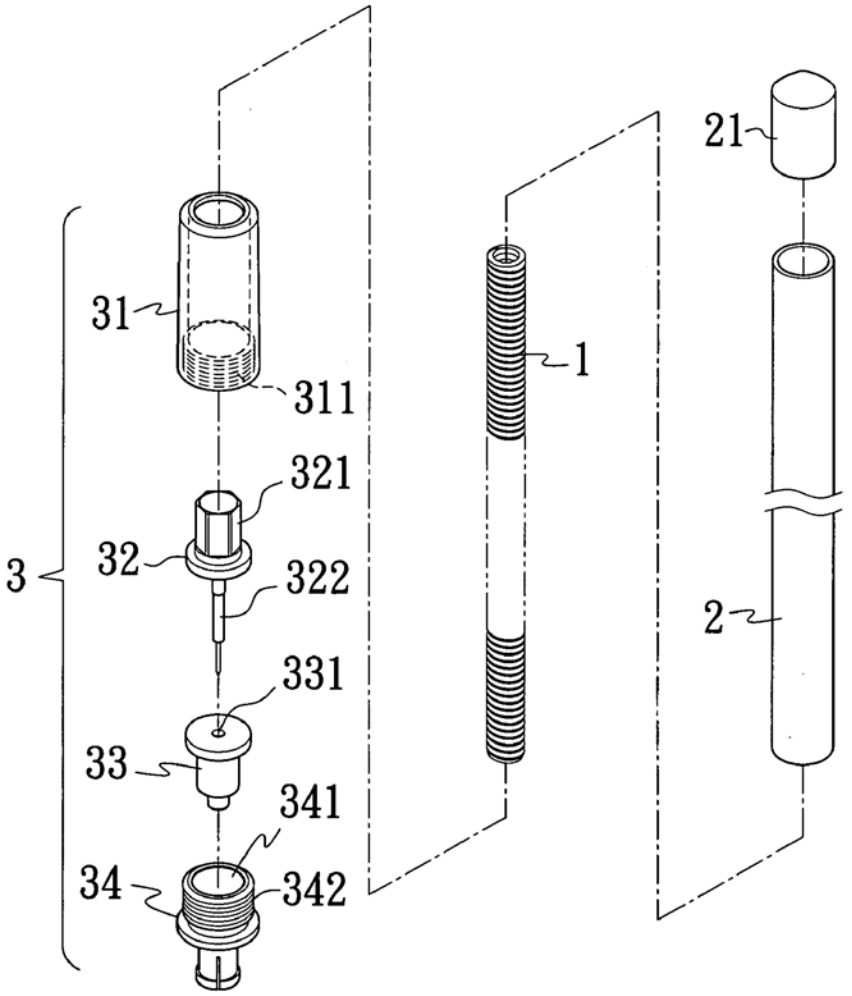
Publication Classification

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

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

(57) **ABSTRACT**

The present invention provides a structure of flexible antenna comprising a flexible metal tube, and an insulating tube. The flexible metal tube can sustain to an external force without damaging to form a corresponding curvy shape, wherein one end of the flexible metal tube can be connected to a predetermined electronic device via a signal connector. The insulating tube covers an external surface of the flexible metal tube in order to insolate electrical connection between the flexible metal tube and an external conductors. The property of the flexible antenna of the present invention can sustain to external pressure or force and be deformed into a desired shape. This flexible antenna can be deformed into various designed shapes in accordance with different environmental conditions in order to fit the various space restrictions.



US 20080012787A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0012787 A1**

Lamoureux et al. (43) **Pub. Date: Jan. 17, 2008**

(54) **PARASITIC ELEMENT FOR HELICAL ANTENNA**

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(21) Appl. No.: **11/819,337**

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

Related U.S. Application Data

(60) Provisional application No. 60/816,891, filed on Jun. 28, 2006.

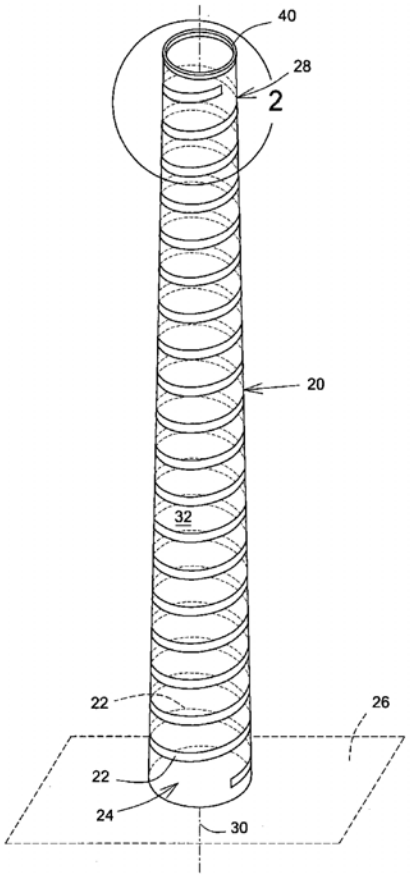
Publication Classification

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

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

(57) **ABSTRACT**

A parasitic element for a helical antenna having at least one helix conductor extending from a secured first longitudinal end of the antenna to an opposite free second longitudinal end thereof around an antenna major-axis. The parasitic element includes an electrically conductive ring located adjacent and spaced apart from the second end in a direction leading away from the first end with the ring axis being parallel to and substantially collinear with the antenna major-axis. The ring has an outer diameter substantially equal to the diameter of the helix conductor at the second end.



US 20080012994A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0012994 A1**

Onomatsu (43) **Pub. Date: Jan. 17, 2008**

(54) **TELEVISION BROADCAST SIGNAL RECEPTION APPARATUS AND ANTENNA APPARATUS**

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(73) Assignee: **Funai Electric Co., Ltd.**, Daito-shi (JP)

(21) Appl. No.: **11/730,861**

(22) Filed: **Apr. 4, 2007**

(30) **Foreign Application Priority Data**

Apr. 5, 2006 (JP) 2006-103943

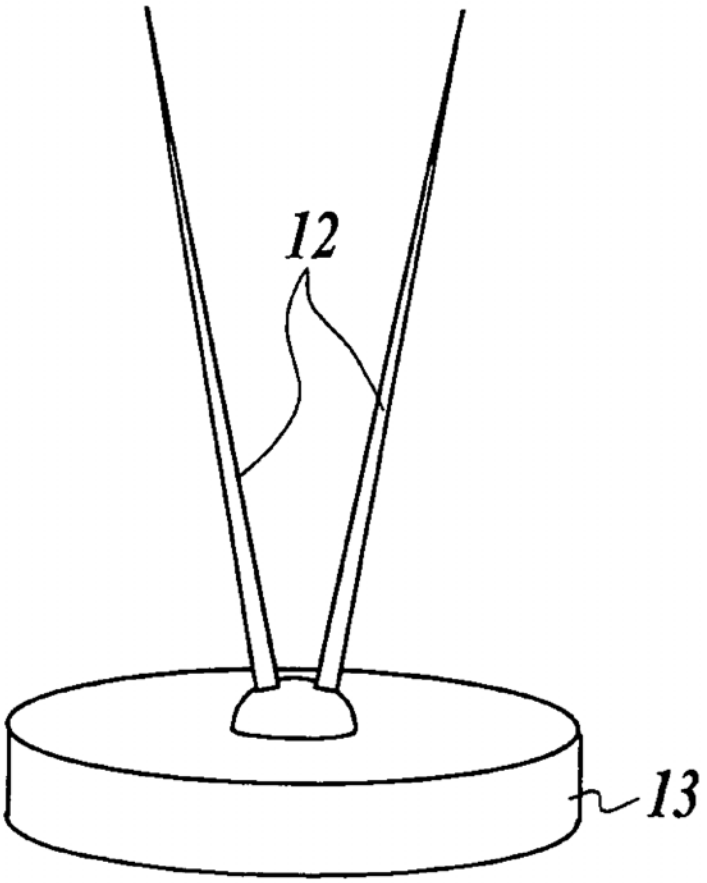
Publication Classification

(51) **Int. Cl.**
H04N 5/44 (2006.01)
H01Q 21/30 (2006.01)

(52) **U.S. Cl.** **348/725**; 343/876; 348/E05

(57) **ABSTRACT**

To the broadcast signal of the first frequency band, the control unit, makes the selection unit select the first antenna and makes the channel setting unit set the channel and the reception direction of the broadcast signal, and, to the broadcast signal of the second frequency band, makes the selection unit select the second antenna and makes the channel setting unit set the channel of the broadcast, to simplify the channel auto scan.



US 20080018537A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0018537 A1**

Tseng et al. (43) **Pub. Date: Jan. 24, 2008**

(54) **FLAT MINIATURIZED ANTENNA OF A WIRELESS COMMUNICATION DEVICE**

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(21) Appl. No.: **11/464,208**

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

(30) **Foreign Application Priority Data**

Jul. 20, 2006 (TW) 095126493

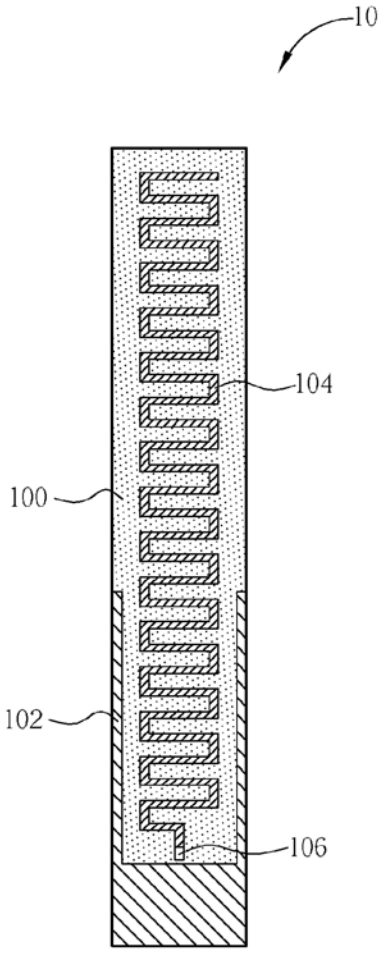
Publication Classification

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

(52) **U.S. Cl.** ..... **343/700 MS**; 343/702; 343/895

(57) **ABSTRACT**

A flat miniaturized antenna of a wireless communication device includes a baseboard, a sleeve conductor formed on the baseboard and coupled to system ground, a meander-shaped conductor formed inside the sleeve conductor and isolated from the sleeve conductor, having a wide end and a narrow end, a feed-in end formed on the wide end of meander-shaped conductor, for transmitting wireless signals to the wireless communication device, and a branch conductor coupled to the meander-shaped conductor.



US 20080018538A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0018538 A1**

Kushihi (43) **Pub. Date: Jan. 24, 2008**

(54) **SURFACE-MOUNT ANTENNA AND RADIO COMMUNICATION APPARATUS INCLUDING THE SAME**

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(73) Assignee: **MURATA MANUFACTURING CO., LTD.**, Koyota-fu (JP)

(21) Appl. No.: **11/575,012**

(22) PCT Filed: **Sep. 9, 2005**

(86) PCT No.: **PCT/JP05/16620**

§ 371(c)(1),
(2), (4) Date: **Mar. 9, 2007**

(30) **Foreign Application Priority Data**

Sep. 10, 2004 (JP) 2004-264174

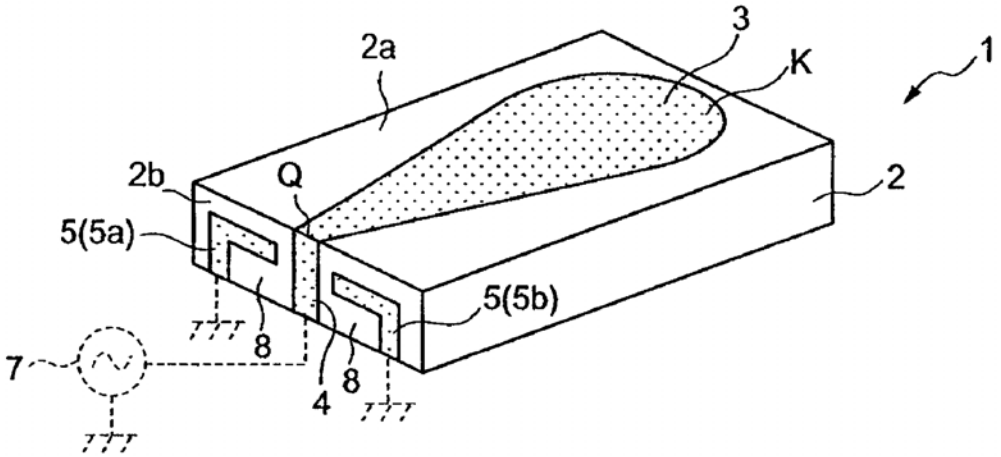
Publication Classification

(51) **Int. Cl.**
H01Q 9/04 (2006.01)

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

(57) **ABSTRACT**

A surface-mount antenna, in which a radiation electrode to be connected to a radio-communication high-frequency circuit to operate as an antenna is formed on a base member **2**. One end of the radiation electrode serves as a feeding portion for being connected to the radio-communication high-frequency circuit, and the other end of the radiation electrode is an open end. The radiation electrode includes a portion whose width is increased as it goes from the feeding portion toward the open end. The base member includes a band-like feeding electrode connected to the feeding portion of the radiation electrode to serve to connect the feeding portion to the high frequency circuit, and a ground electrode disposed on one side or both sides of the feeding electrode with a defined spacing between the feeding electrode and the ground electrode. The spacing between the ground electrode and the feeding electrode is set to be smaller than the width of the feeding electrode.



US 20080018539A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0018539 A1**

Jung et al. (43) **Pub. Date: Jan. 24, 2008**

(54) **MIMO ANTENNA OPERABLE IN MULTIBAND**

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(21) Appl. No.: **11/637,663**

(22) Filed: **Dec. 13, 2006**

(30) **Foreign Application Priority Data**

Jul. 20, 2006 (KR) 10-2006-0068208

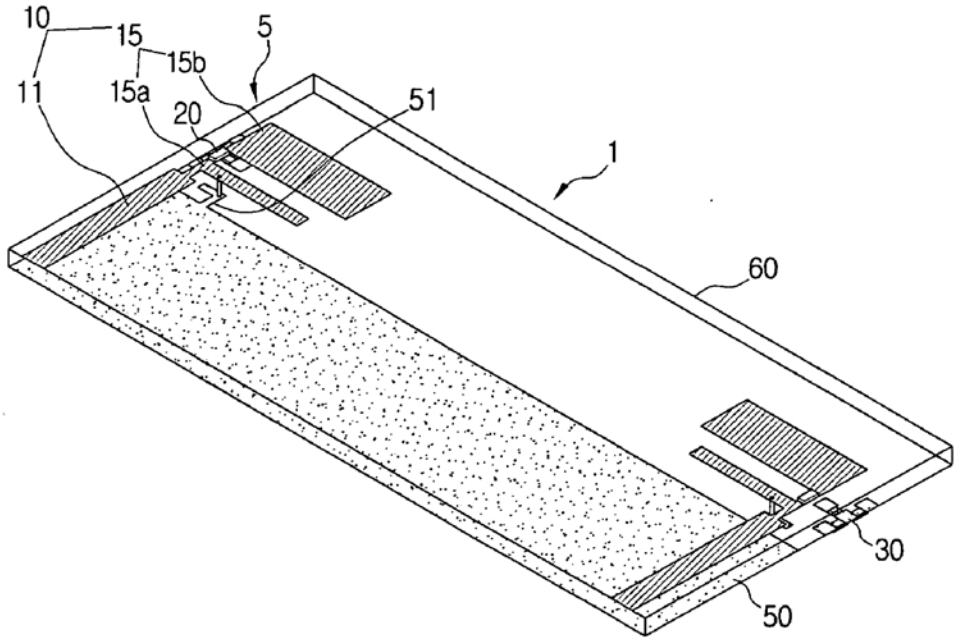
Publication Classification

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

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

(57) **ABSTRACT**

A multiple-input multiple-output (MIMO) antenna operable in a multiband includes a plurality of antenna elements each including a radiator radiating electromagnetic waves, a ground connected to the radiator, at least one switching element mounted in an area of lengthwise direction of the radiator and short-circuiting or opening the area of the radiator.



US 20080018540A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0018540 A1**

Hsueh (43) **Pub. Date: Jan. 24, 2008**

(54) **PORTABLE ANTENNA DEVICE**

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(21) Appl. No.: **11/491,509**

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

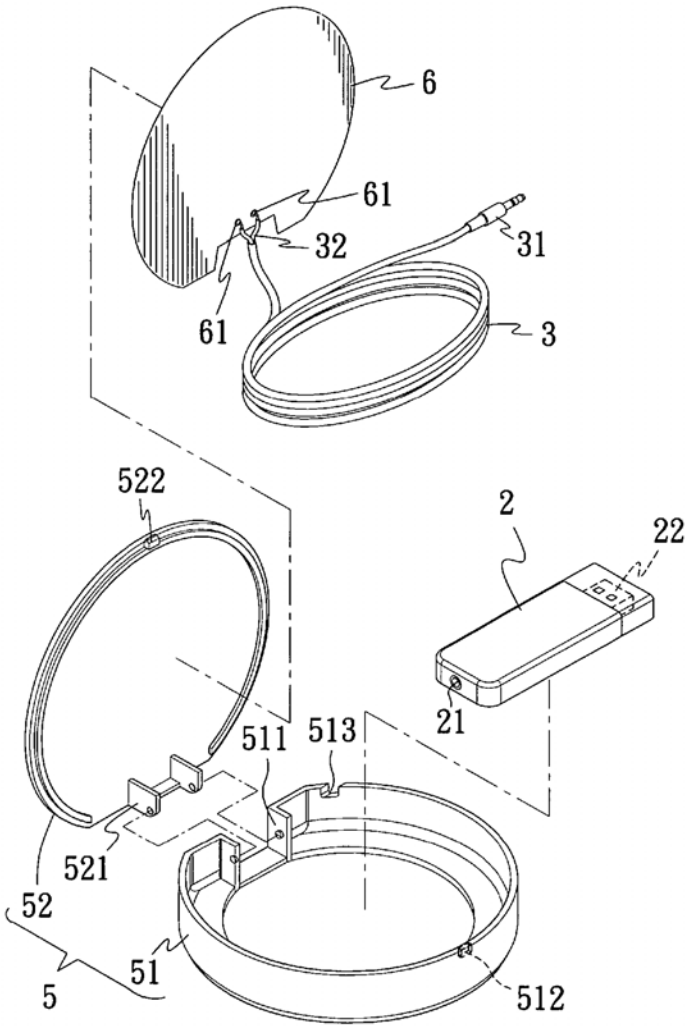
Publication Classification

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

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

(57) **ABSTRACT**

The present invention provides a portable antenna device comprising of an antenna, a digital box, a signal wire and a storage container. The antenna receives an analog signal and the digital box transfers the analog signal received from the antenna into a digital signal and transmits the digital signal to an electronic device. The signal wire transmits the analog signal received from the antenna to the digital box; and the storage container stores the digital box and the signal wire, wherein the antenna is located firmly within the storing container. The portable antenna device of the present invention can easily be carried around and be stored easily in a storage case with a modern designed appearance.



US 20080018541A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0018541 A1**

(43) **Pub. Date: Jan. 24, 2008**

Pang et al.

(54) **COVER ANTENNAS**

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(21) Appl. No.: **11/492,677**

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

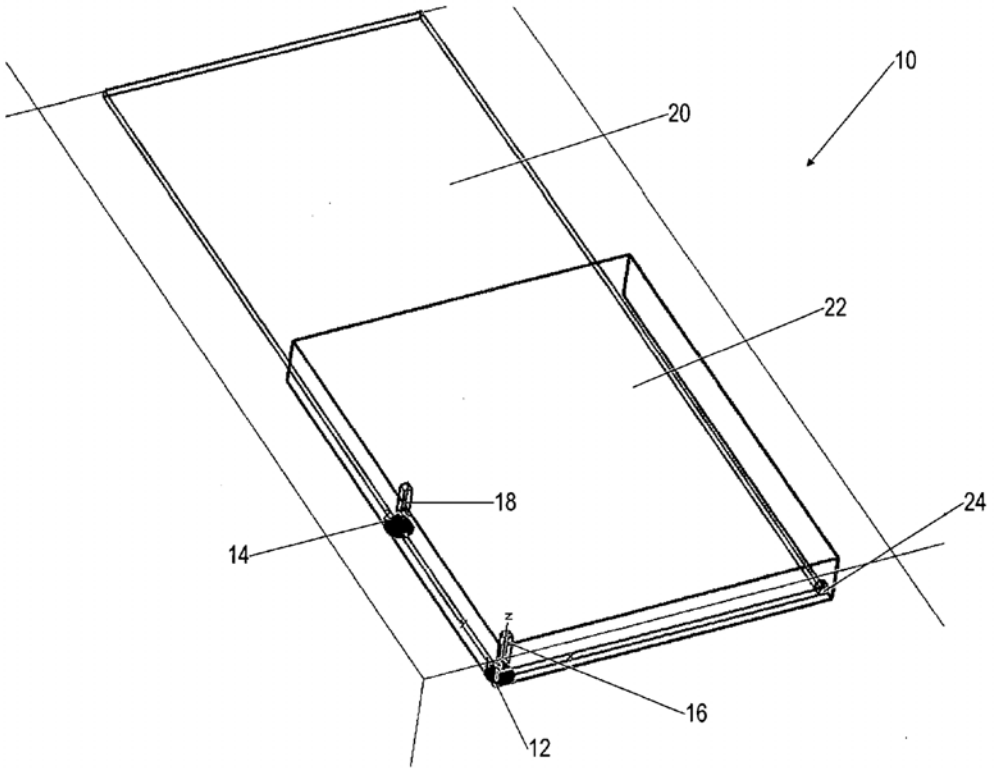
Publication Classification

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

(52) **U.S. Cl.** **343/702**; 343/860

(57) **ABSTRACT**

The specification and drawings present a new apparatus, method and software product for using a cover antenna (e.g., conductive, metallic, etc.) in an electronic device, with multiple coupled feeds (e.g., dual feed) to the antenna and with one or more switches and a matching circuit. Then it is possible to use a metal plate as a metal cover, e.g., for mobile devices, which will act as an antenna with multiple feedings for cellular and non-cellular radios.



US 20080018546A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0018546 A1**

Nakanishi et al. (43) **Pub. Date: Jan. 24, 2008**

(54) **ANTENNA APPARATUS**

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(21) Appl. No.: **11/630,379**

(22) PCT Filed: **Nov. 28, 2005**

(86) PCT No.: **PCT/JP05/21802**

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

(30) **Foreign Application Priority Data**

Nov. 30, 2004 (JP) 2004-345379

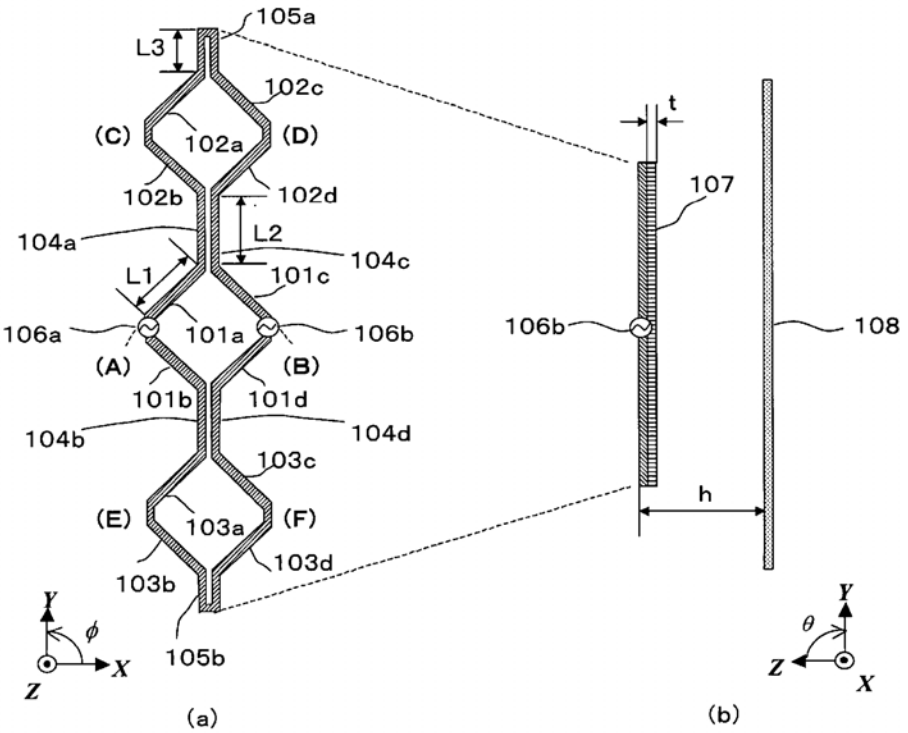
Publication Classification

(51) **Int. Cl.**
H01Q 11/06 (2006.01)

(52) **U.S. Cl.** **343/733**

(57) **ABSTRACT**

An antenna apparatus capable of main beam direction switching is provided that achieves high gain with a small, planar configuration. Rhombic antenna sections composed of linear elements **101***a* through **101***d*, **102***a* through **102***d*, and **103***a* through **103***d* are arranged in the same plane, and the rhombic antenna sections are connected by linear linking elements **104***a* through **104***d*. Linear detour elements **105***a* and **105***b* are connected to the pair of vertices of the rhombic antenna sections arranged at each end. Feed points **106***a* and **106***b* are provided at the other opposite two pairs of vertices of any of the rhombic antenna sections, and the opposite vertices of the other rhombic antenna sections are connected by linear elements. A plate reflector is arranged at a distance h from, and parallel to, the surface on which the rhombic antenna elements are arranged.



US 20080018547A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0018547 A1**

Iwasaki (43) **Pub. Date: Jan. 24, 2008**

(54) **CIRCULARLY POLARIZED LOOP ANTENNA**

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(21) Appl. No.: **11/630,843**

(22) PCT Filed: **Jun. 9, 2005**

(86) PCT No.: **PCT/JP05/10619**

§ 371(c)(1),
(2), (4) Date: **Dec. 21, 2006**

(30) **Foreign Application Priority Data**

Jun. 24, 2004 (JP) JP2004-186812

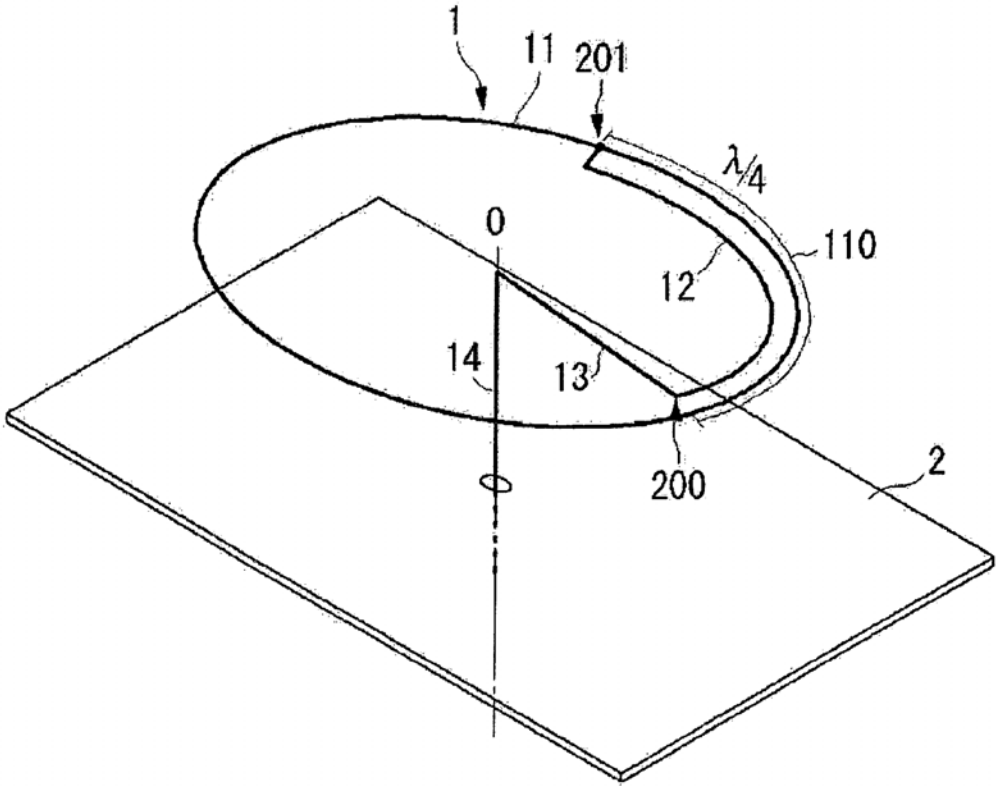
Publication Classification

(51) **Int. Cl.**
H01Q 11/12 (2006.01)

(52) **U.S. Cl.** **343/743**; 343/870

(57) **ABSTRACT**

An easy-to-fabricate and relatively strong circularly polarized loop antenna of a simple construction is built. A circularly polarized loop antenna **1** has a loop section **11,** which is made up of a loop-shaped conductor whose length is equal to 1 wavelength (λ) of the transmitted and received signals, and a coupling section **12,** made up of a conductor, is connected thereto at a prescribed point. The coupling section **12** is shaped such that it is connected to the loop section **11** at a connection point **201** at one end and extends along the loop section **11** throughout a length equal to λ/4. A reflective plate **2** is placed in a predetermined position in the vertical direction from the circumferential plane of the loop section **11,** in parallel to the circumferential plane. In addition, the other end of the loop section **11** is connected to external circuitry carrying out the processing of signals transmitted and received via a first feed conductor **13** and a second feed conductor **14** and operates as a feed point, **200**.



US 20080018548A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0018548 A1**

Maeda (43) **Pub. Date: Jan. 24, 2008**

(54) **ANTENNA DEVICE AND RADIO COMMUNICATION APPARATUS**

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(21) Appl. No.: **11/628,919**

(22) PCT Filed: **Apr. 15, 2005**

(86) PCT No.: **PCT/JP05/07344**

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

(30) **Foreign Application Priority Data**

Jun. 25, 2004 (JP) 2004-187408
Jul. 6, 2004 (JP) 2004-199883

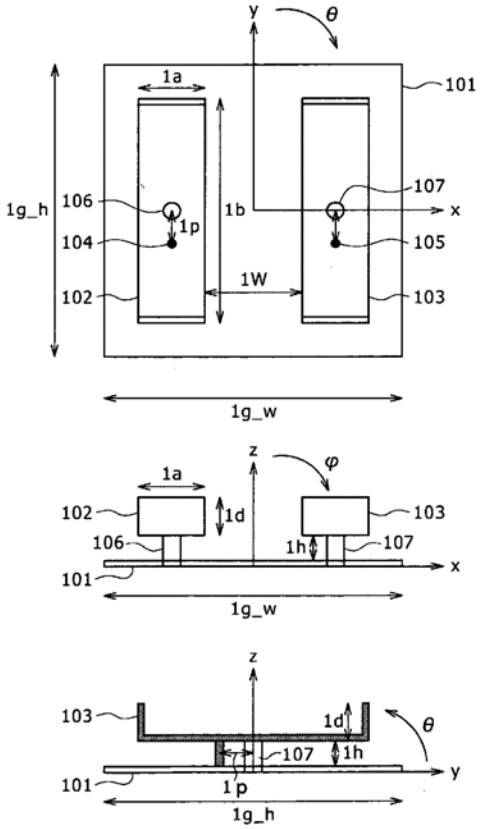
Publication Classification

(51) **Int. Cl.**
H01Q 9/26 (2006.01)

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

(57) **ABSTRACT**

An antenna device has a plane ground conductor plate, and two radiating conductors disposed on the upper side of the plane ground conductor plate in parallel to and adjacently to each other so as to be symmetrical with each other with reference to the center of the plane ground plate. The radiating plates are individually provided with respective feeder ports, and are operated independently from each other. End portions of the radiating conductors may be bent to be substantially perpendicular to the plane ground plate in a direction of achieving a maximum gain, whereby isolation between the feeder ports can be enhanced. With this antenna device, antenna directivity can be secured, a high antenna gain can be obtained, and the going-round of a current from a transmitting unit to a receiving unit can be suppressed favorably.



US 20080018549A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0018549 A1**

Suzuki et al. (43) **Pub. Date: Jan. 24, 2008**

(54) **ANTENNA DEVICE**

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(21) Appl. No.: **11/616,495**

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

(30) **Foreign Application Priority Data**

Jan. 31, 2006 (JP) P2006-23387

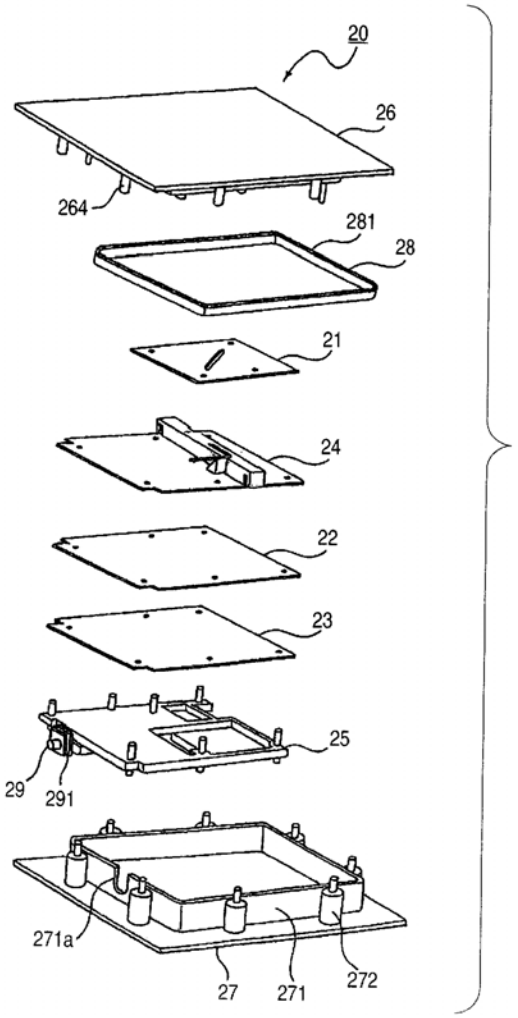
Publication Classification

(51) **Int. Cl.**
H01Q 1/52 (2006.01)

(52) **U.S. Cl.** **343/841**

(57) **ABSTRACT**

A circuit board has a first face and a second face opposite to the first face. An electronic component is mounted on the second face. An insulative sheet is disposed between the first face of the circuit board and an antenna and having an electromagnetic shielding property.



US 20080018551A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0018551 A1**

Cheng et al. (43) **Pub. Date: Jan. 24, 2008**

(54) **ANTENNA DEVICE WITH INSERT-MOLDED ANTENNA PATTERN**

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(21) Appl. No.: **11/878,667**

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

Related U.S. Application Data

(63) Continuation-in-part of application No. 11/404,814, filed on Apr. 17, 2006.

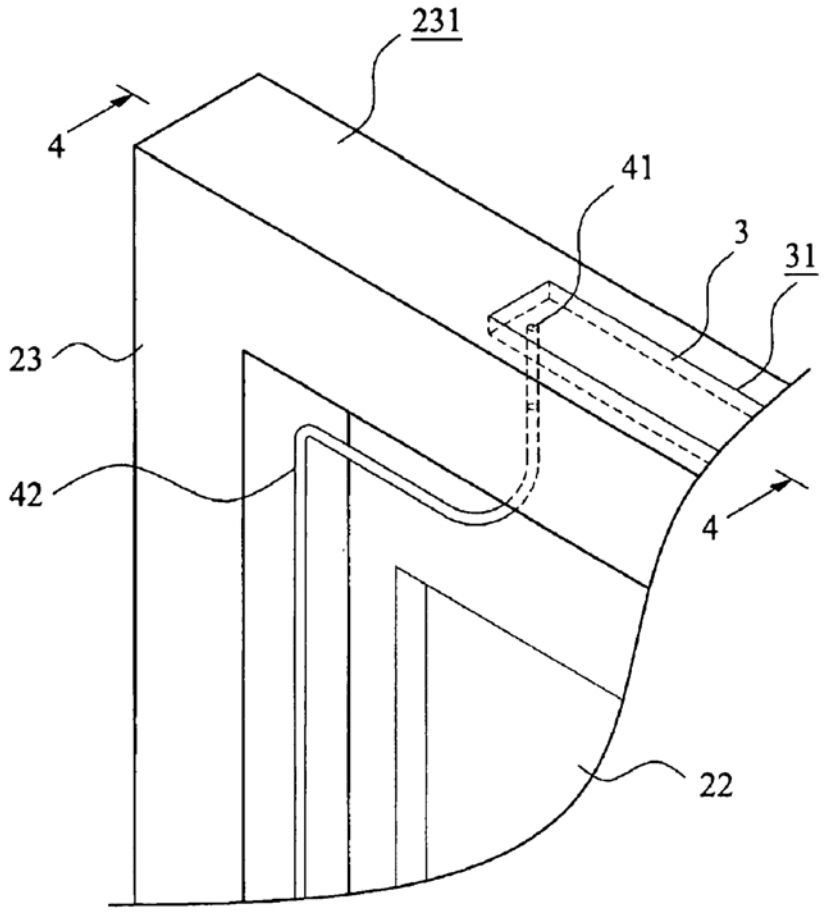
Publication Classification

(51) **Int. Cl.**
H01Q 1/40 (2006.01)

(52) **U.S. Cl.** **343/873**

(57) **ABSTRACT**

Disclosed is an antenna device for transceiving a wireless signal with an insert-molded antenna pattern embedded inside a casing of an electronic device. The insert-molded 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 insert-molded antenna pattern through an antenna signal feeding line connected to the insert-molded antenna pattern and the antenna module, or by an antenna coupling element coupled with the insert-molded antenna pattern.



US 20080024241A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0024241 A1**

Hata et al. (43) **Pub. Date: Jan. 31, 2008**

(54) **HIGH-FREQUENCY COUPLER, RF GUIDE, AND ANTENNA**

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(21) Appl. No.: **11/661,488**

(22) PCT Filed: **Apr. 7, 2005**

(86) PCT No.: **PCT/JP05/06842**

§ 371(c)(1),
(2), (4) Date: **Feb. 27, 2007**

(30) **Foreign Application Priority Data**

Aug. 27, 2004 (JP) 2004-247822

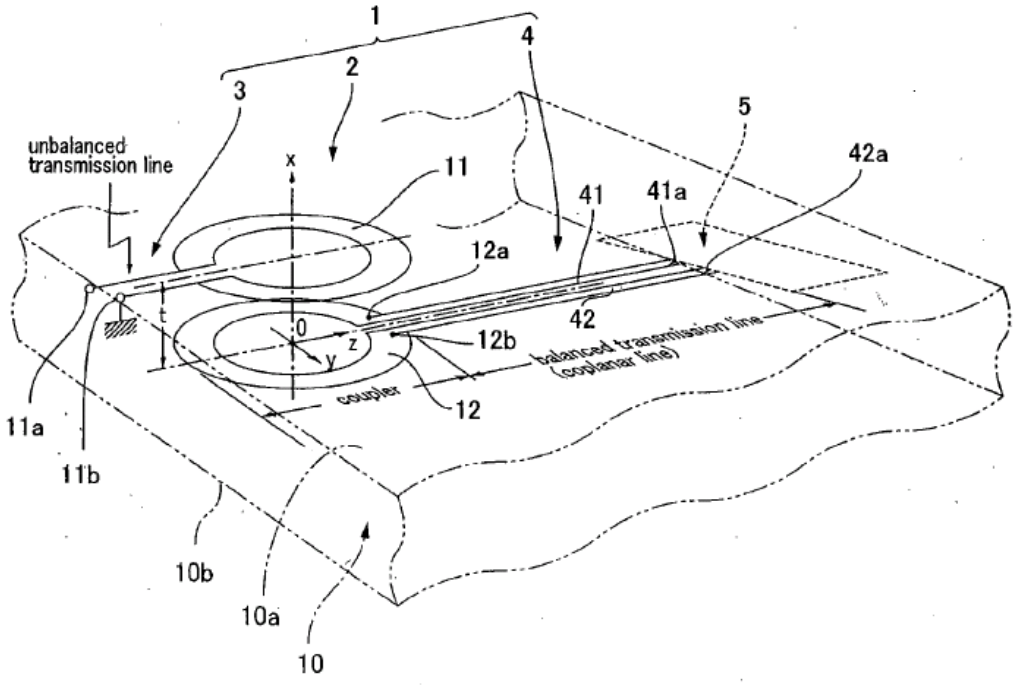
Publication Classification

(51) **Int. Cl.**
H01F 27/28 (2006.01)

(52) **U.S. Cl.** **333/26**

(57) **ABSTRACT**

A high frequency coupler (**2**) comprising first and second coupler patterns (**11, 12**) each having an annular shape broken at one location and formed, facing each other, on the front and rear surfaces of a circuit board (**10**) consisting of a dielectric and being t thick. The terminals (**11***a*, **11***b*) of the first coupler pattern (**11**) serve as unbalanced terminals, and the terminals (**12***a*, **12***b*) of the second coupler pattern (**12**) serve as unbalanced terminals from which coplanar lines (**41, 42**) are led out along the rear surface and connected with a balanced antenna (**5**). Since the first and second coupler patterns (**11, 12**) are kept in an electrostatic capacity coupling state as well as in a magnetic induction coupling state, the coupler high in transmission efficiency in a broad band can be realized.



US 20080024304A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0024304 A1**

Bergman et al. (43) **Pub. Date: Jan. 31, 2008**

(54) **DOOR WITH INTEGRAL ANTENNA**

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(21) Appl. No.: **11/492,330**

(22) Filed: **Jul. 25, 2006**

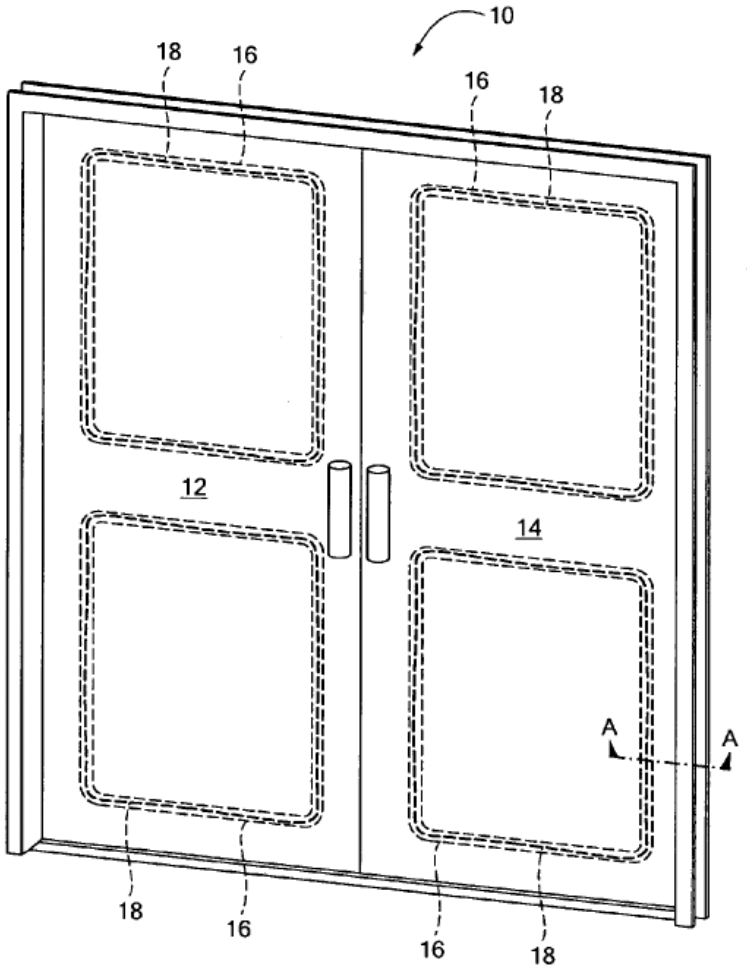
Publication Classification

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

(52) **U.S. Cl.** **340/572.7**; 340/572.8

(57) **ABSTRACT**

A door and method of constructing a door whereby antenna coils are routed through channels that are incorporated within the frame of the door, and completely or partially hidden from sight. The door includes channels and or troughs that are sized to retain at least a portion of the antenna therein. The door can be purchased with the antenna wires already embedded therein and hidden from sight and installed at a facility without the need to mount the antenna wires on a pedestal or dig up floors and/or walls to embed the antenna coils. Existing doors can be retrofitted to install the antenna wires. Such antennas may be used, for example, in an RFID marker system or a magneto-acoustic EAS marker system.



US 20080024305A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0024305 A1**

(43) **Pub. Date: Jan. 31, 2008**

DEAVOURS

(54) **PLANAR MICROSTRIP ANTENNA INTEGRATED INTO CONTAINER**

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(21) Appl. No.: **11/684,406**

(22) Filed: **Mar. 9, 2007**

Related U.S. Application Data

(60) Provisional application No. 60/820,744, filed on Jul. 28, 2006.

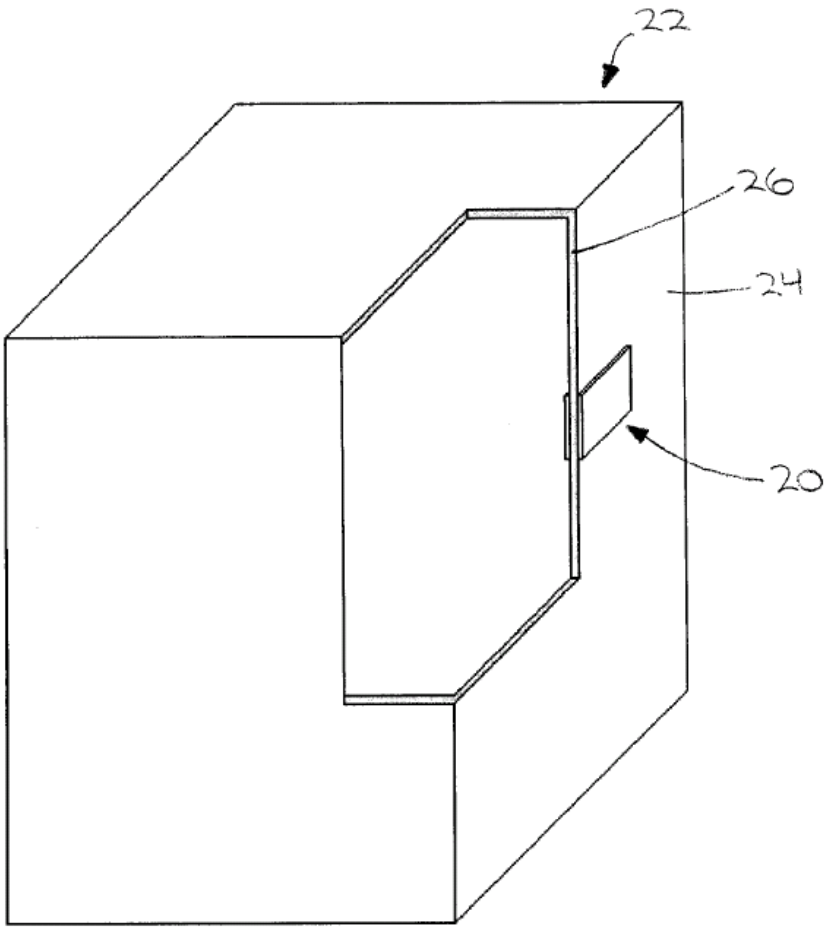
Publication Classification

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

(52) **U.S. Cl.** **340/572.7**; 340/572.8

(57) **ABSTRACT**

An RFID tag (**20**) associated with a container (**22**) having a container wall (**24**) constructed of a container material (**26**). The RFID tag (**20**) includes a microstrip antenna (**32**) associated with an exterior surface of the wall (**24**) of the container (**22**) and a ground plane (**30**) associated with an interior surface of the wall (**24**) of the container (**22**). The container material (**26**) is interposed between the microstrip antenna (**32**) and the ground plane (**30**) and acts as a dielectric substrate. The microstrip antenna (**32**) may be embedded below, substantially flush with, or affixed to the exterior surface. Similarly, the ground plane (**30**) may be embedded below, substantially flush with, or affixed to the interior surface. Use of the microstrip antenna (**32**) reduces or eliminates detuning, while locating the components below or flush with the surfaces of the container (**22**) protects them from damage.



US 20080024366A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0024366 A1**

Cheng (43) **Pub. Date: Jan. 31, 2008**

(54) **DUAL BAND FLAT ANTENNA**

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

(21) Appl. No.: **11/459,653**

(22) Filed: **Jul. 25, 2006**

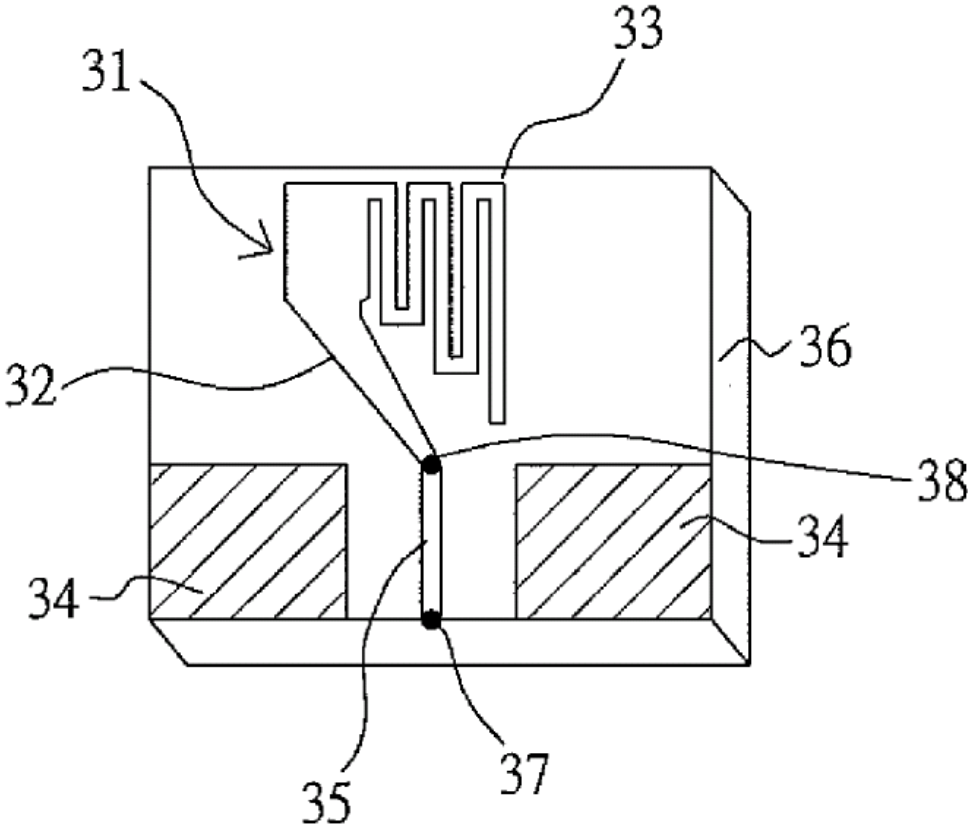
Publication Classification

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

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

(57) **ABSTRACT**

The present invention provides a dual band and dual mode flat antenna. The antenna structure comprises a substrate; a ground member configured on the substrate; an interdigital shape radiator having a first portion radiator and a second portion radiator configured on the substrate, wherein the second portion radiator being connected to a first end of said first portion radiator; and a feed line connected to the second end of the first portion radiator of the interdigital shape radiator.



US 20080024367A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0024367 A1**

Wong et al. (43) **Pub. Date: Jan. 31, 2008**

(54) **COMPACT DTV RECEIVING ANTENNA**

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(21) Appl. No.: **11/560,821**

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

(30) **Foreign Application Priority Data**

Jul. 28, 2006 (TW) 095127839

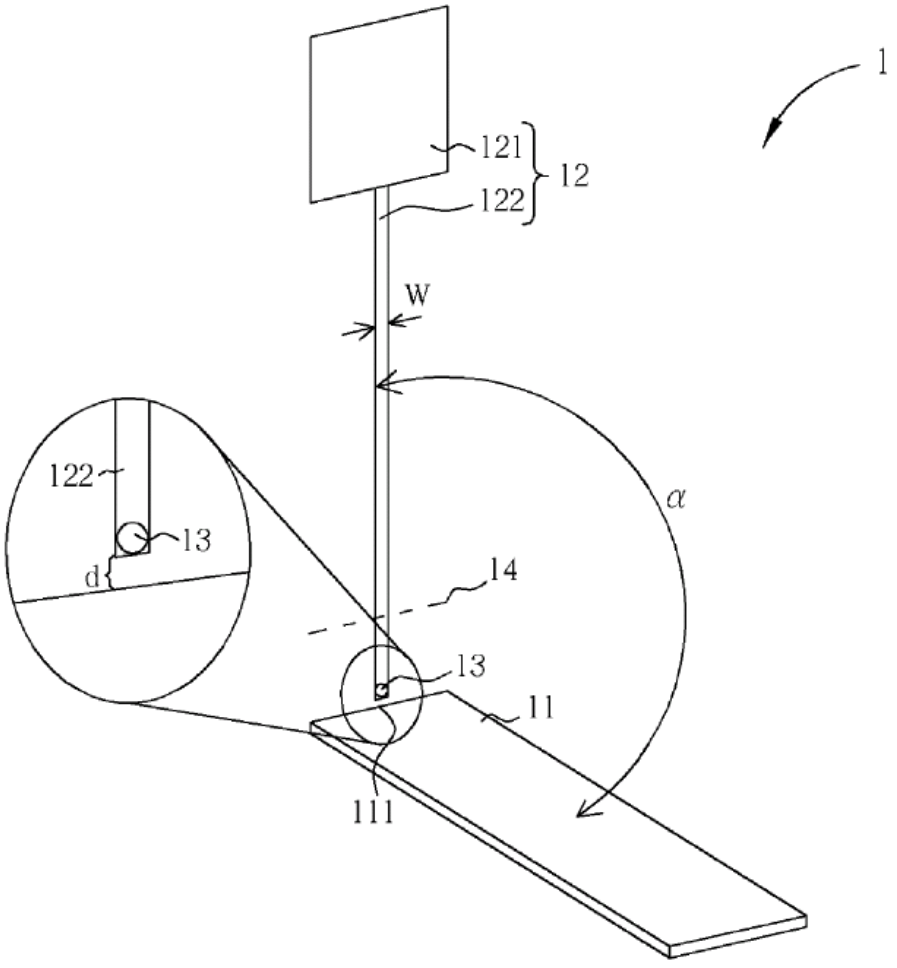
Publication Classification

(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01Q 9/28 (2006.01)

(52) **U.S. Cl.** ..... **343/700 MS**; 343/881; 343/795

(57) **ABSTRACT**

A digital television receiving antenna includes a first radiating element and a second radiating element electrically connected to the first radiating element. The second radiating element is foldable, and includes a wide radiating metal plate, and a narrow radiating metal strip, wherein one end of the narrow radiating metal strip is a feeding point insulated from the first radiating element with a predefined distance, and the other end of the narrow radiating metal strip is electrically connected to the wide radiating metal plate.



US 20080024369A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0024369 A1**

Shinkai (43) **Pub. Date: Jan. 31, 2008**

(54) **CHIP ANTENNA**

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(21) Appl. No.: **11/661,339**

(22) PCT Filed: **Aug. 24, 2005**

(86) PCT No.: **PCT/JP05/15333**

§ 371(c)(1),
(2), (4) Date: **Sep. 17, 2007**

(30) **Foreign Application Priority Data**

Aug. 26, 2004 (JP) 2004-247471

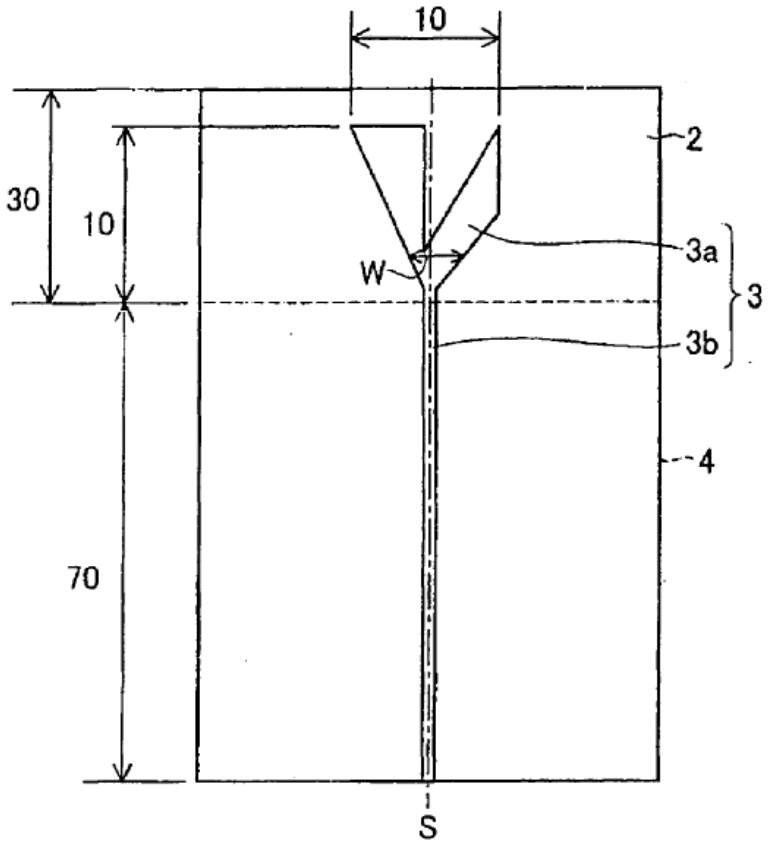
Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 5/01 (2006.01)
H01Q 9/04 (2006.01)

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

(57) **ABSTRACT**

A chip antenna according to the present invention includes a dielectric board, a power supplying conductor having a terminal part having a power supplying terminal and a conductor part that conducts to the terminal part, and a grounding electrode provided apart from the power supplying conductor, and the conductor part is inclined so that a width thereof becomes larger as it goes away from the terminal part, and distances from ends of the conductor part to the grounding electrode are asymmetric with respect to a center axis (S) of the conductor part. According to this, the chip antenna that is easy to manufacture, has a favorable antenna characteristic, and is applicable to a wide band can be provided.



US 20080024371A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0024371 A1**

SHIH (43) **Pub. Date: Jan. 31, 2008**

(54) **MONOPOLE ANTENNA**

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(21) Appl. No.: **11/615,010**

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

(30) **Foreign Application Priority Data**

Jul. 28, 2006 (TW) 95127769

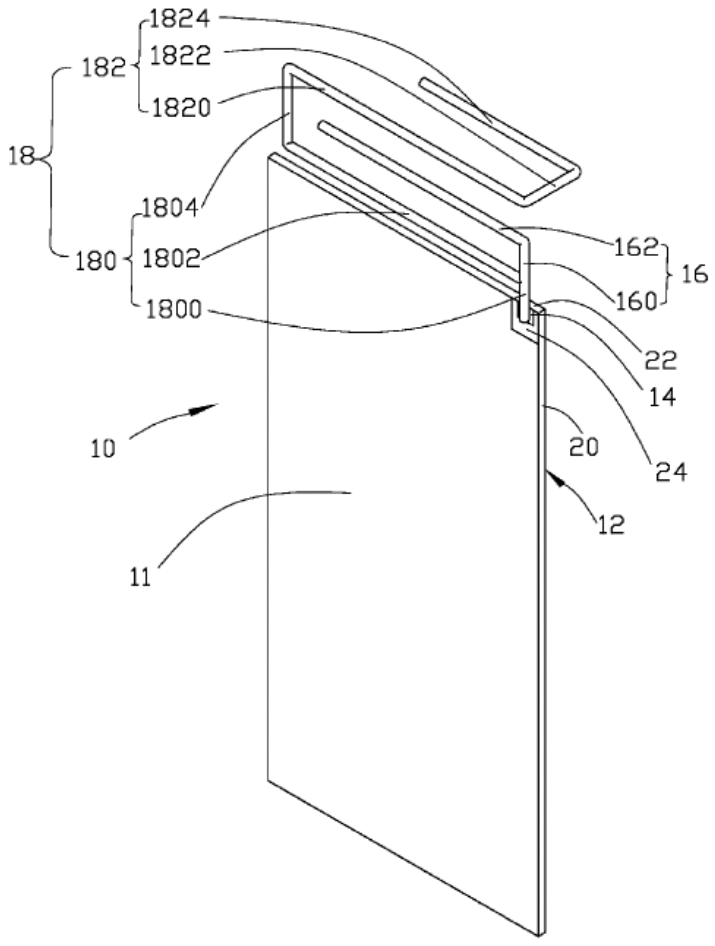
Publication Classification

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

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

(57) **ABSTRACT**

A monopole antenna (**10**) includes a feed wire (**14**), a radiation part (**18**), and a matching part (**16**). The feed wire is formed on a clear portion of a substrate for feeding electromagnetic signals. The radiation part is connected to the feed wire for radiating and receiving electromagnetic signals, and includes a first radiation part (**180**) and a second radiation part (**182**). The second radiation part is connected to the first radiation part, the first radiation part is formed on a first plane, and the second radiation part is formed on a second plane intersecting the first plane. The matching part is connected to the radiation part for impedance matching.



US 20080024372A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0024372 A1**

Yoon et al. (43) **Pub. Date: Jan. 31, 2008**

(54) **DUAL BAND ANTENNA UNIT FOR MOBILE DEVICE**

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(21) Appl. No.: **11/647,022**

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

(30) **Foreign Application Priority Data**

Jul. 28, 2006 (KR) 2006-0071218

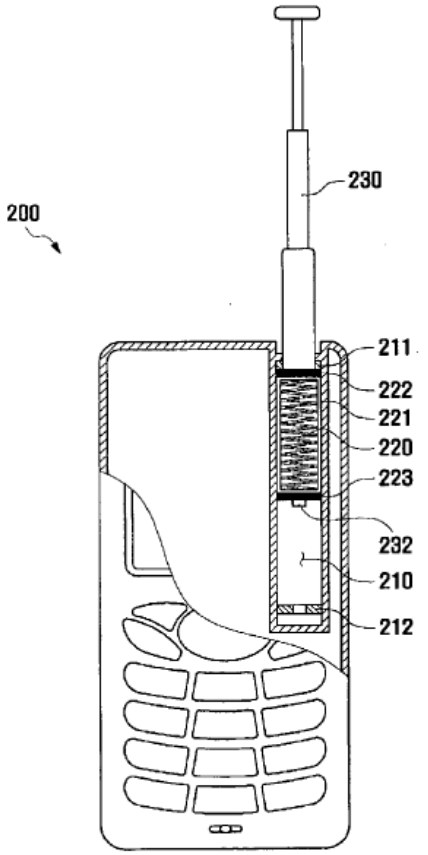
Publication Classification

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

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

(57) **ABSTRACT**

A dual band antenna unit for a mobile device may include an antenna receiving part, a first antenna part having a first contact point and a second contact point, a second antenna part, a first feed point and a second feed point. The second antenna part may be formed integrally with the first antenna part and may extend from the first antenna part. The second antenna part may be extractably and retractably mounted in the mobile device. The first antenna part and the second antenna part may have resonant frequencies of different frequency bands. When the second antenna part is extracted, the first contact point may contact the first feed point. When the second antenna part is retracted, the second contact point may contact the second feed point. The mobile device may operate in different frequency bands using a single antenna unit, thereby allowing freedom of internal design and meeting the demand for miniaturization.



US 20080024375A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0024375 A1**

MARTIN et al. (43) **Pub. Date: Jan. 31, 2008**

(54) **VIRTUAL FM ANTENNA**

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(21) Appl. No.: **11/773,928**

(22) Filed: **Jul. 5, 2007**

Related U.S. Application Data

(60) Provisional application No. 60/868,233, filed on Dec. 1, 2006, provisional application No. 60/825,359, filed on Sep. 12, 2006, provisional application No. 60/826,571, filed on Sep. 22, 2006, provisional application No. 60/820,711, filed on Jul. 28, 2006.

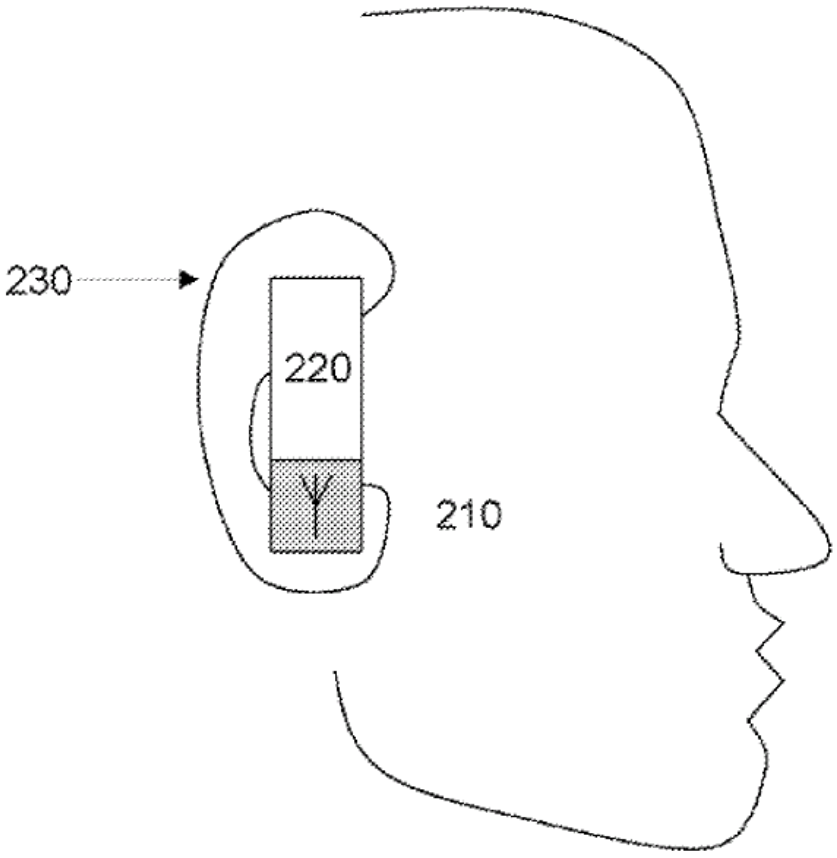
Publication Classification

(51) **Int. Cl.**
H01Q 1/12 (2006.01)

(52) **U.S. Cl.** **343/718**

(57) **ABSTRACT**

An apparatus and method for receiving wireless signals couples an antenna input of a receiver to a human body and receives a signal conducting from said body. Impedance matching circuitry lessens signal power loss at the antenna input. Parameters of the impedance matching circuitry can be adjusted based on a detected impedance, a detected signal strength, or the frequency of the signal.



US 20080024378A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0024378 A1**

Kanno et al. (43) **Pub. Date: Jan. 31, 2008**

(54) **DIFFERENTIAL-FEED SLOT ANTENNA**

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(21) Appl. No.: **11/905,001**

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

Related U.S. Application Data

(63) Continuation-in-part of application No. PCT/JP07/56215, filed on Mar. 26, 2007.

(30) **Foreign Application Priority Data**

Apr. 3, 2006 (JP) 2006-101741

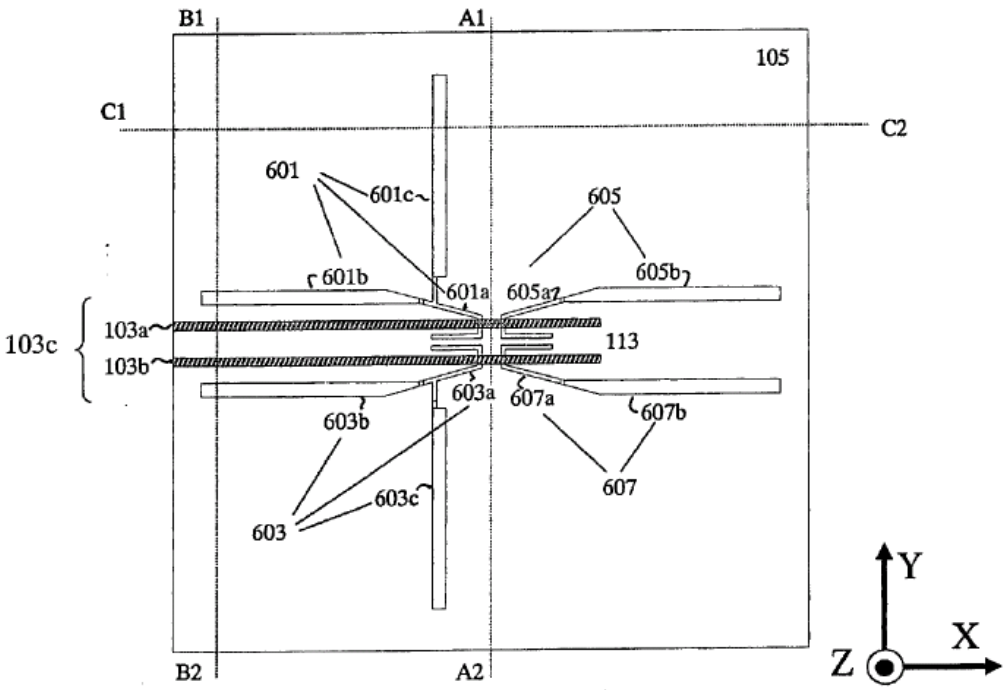
Publication Classification

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

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

(57) **ABSTRACT**

With a differential feed line **103***c*, slot resonators **601, 603, 605**, and **607** are allowed to operate in pair, a slot length of each resonator corresponding to a ½ effective wavelength during operation. Slot resonators which are excited out-of-phase with an equal amplitude are allowed to exist within the circuitry. Thus, positioning condition of selective radiation portions **601***b*, **601***c*, **603***b*, **603***c*, **605***b*, and **607***b* in the slot resonators is switched.



US 20080024381A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0024381 A1**

Vendik et al. (43) **Pub. Date: Jan. 31, 2008**

(54) **ANTENNA AND MOBILE TERMINAL**

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(21) Appl. No.: **11/747,100**

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

Related U.S. Application Data

(60) Provisional application No. 60/820,476, filed on Jul. 26, 2006.

(30) **Foreign Application Priority Data**

Dec. 28, 2006 (KR) 10-2006-0135938

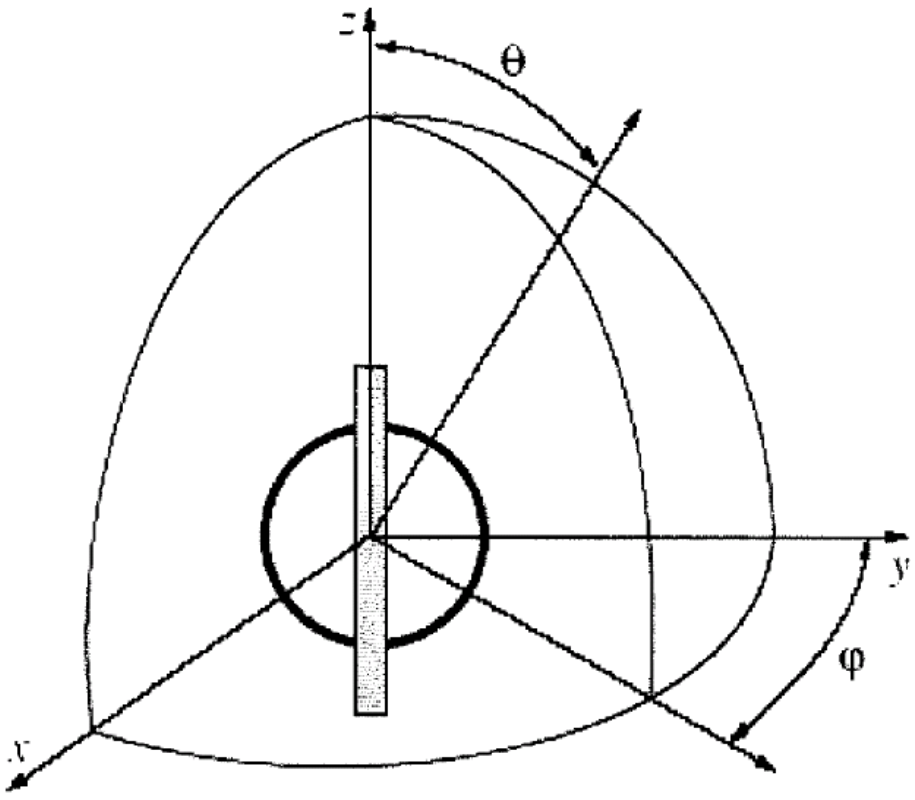
Publication Classification

(51) **Int. Cl.**
H01Q 1/50 (2006.01)
H01Q 9/16 (2006.01)

(52) **U.S. Cl.** **343/822**; 343/793

(57) **ABSTRACT**

Disclosed are an antenna and a mobile terminal comprising the antenna with the combination of a dipole and a loop.



US 20080024383A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0024383 A1**

Chiang (43) **Pub. Date: Jan. 31, 2008**

(54) **STACKED MONOPOLE ANTENNA FOR BROADBAND COMMUNICATION EQUIPMENT**

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(21) Appl. No.: **11/495,686**

(22) Filed: **Jul. 31, 2006**

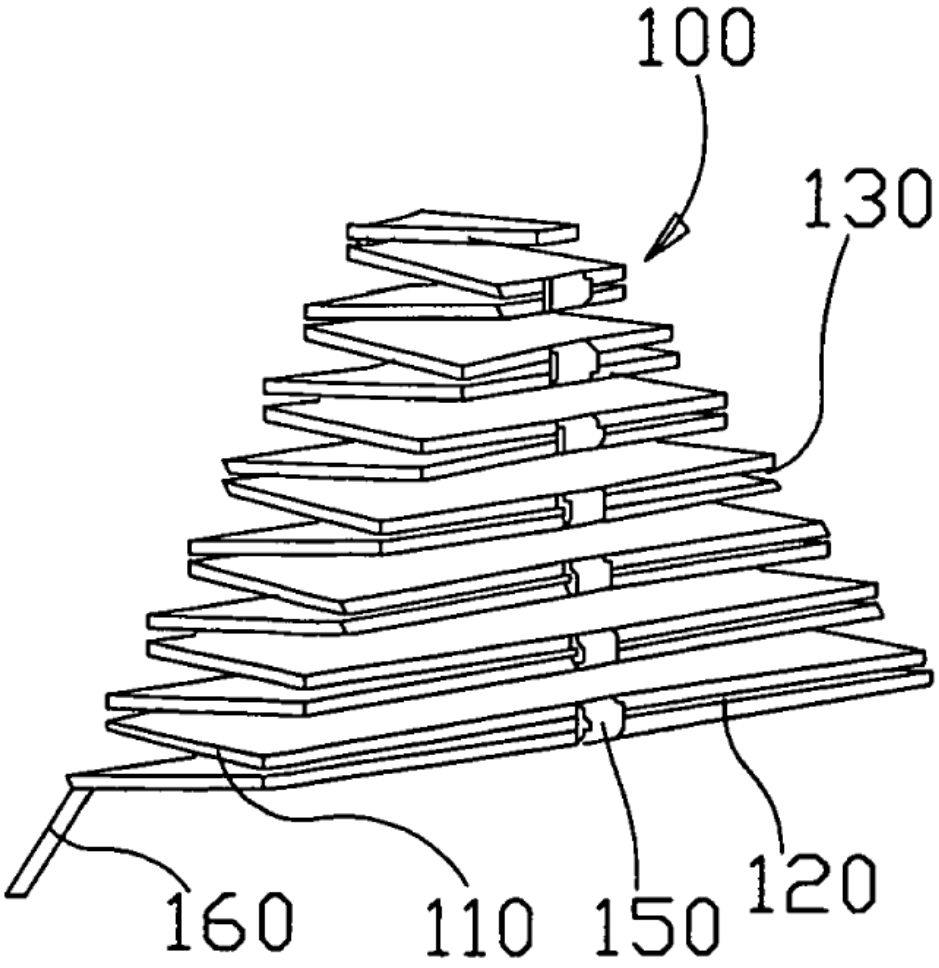
Publication Classification

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

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

(57) **ABSTRACT**

A stacked monopole antenna for broadband communication equipment, the antenna is provided with a plurality of component sheets arranged from bottom to top, a gap for adjusting impedance matching is provided between every two component sheets, and the component sheets form centrally thereof an integral connecting neck, a feed-in line is provided on the bottom of the antenna; the component sheets get its desired broad bandwidth by adjusting the height stacked by said component sheets.



US 20080024384A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0024384 A1**

Forster (43) **Pub. Date: Jan. 31, 2008**

(54) **WIRELESS COMMUNICATION DEVICE HAVING CONDUCTIVE ELEMENTS ANTENNA**

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(21) Appl. No.: **11/838,147**

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

Related U.S. Application Data

(63) Continuation of application No. 11/515,482, filed on Aug. 31, 2006.
Continuation of application No. 10/422,637, filed on Apr. 24, 2003, now Pat. No. 7,239,287.

(60) Provisional application No. 60/375,248, filed on Apr. 24, 2002.

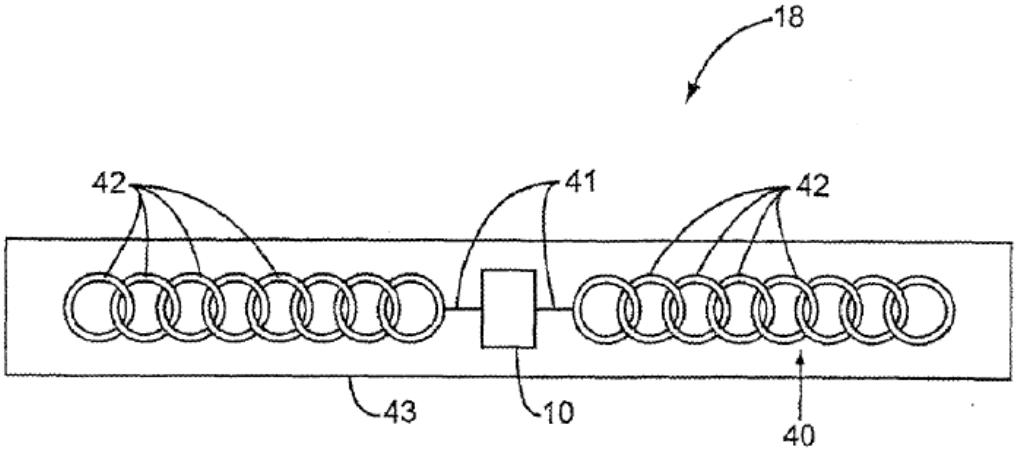
Publication Classification

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

(52) **U.S. Cl.** **343/896**

(57) **ABSTRACT**

An antenna coupled to a wireless communication device that is comprised of a series of conductive elements that form a conductor when placed under a force. The conductor is coupled to a wireless communication device to provide an antenna so that the wireless communication device is capable of communicating at an operating frequency defined by the length and construction of the conductor. The wireless communication device, through its communication using the conductor as an antenna, acts as an indicator of force to an interrogation reader when the wireless communication device is capable of communicating to the interrogation reader using the conductor as an antenna.



US 20080026705A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0026705 A1**

Asami (43) **Pub. Date: Jan. 31, 2008**

(54) **DIGITAL BROADCAST RECEIVING ANTENNA APPARATUS AND MOVABLE BODY INCORPORATING THE SAME**

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(21) Appl. No.: **11/631,739**

(22) PCT Filed: **Jul. 12, 2005**

(86) PCT No.: **PCT/JP05/12802**

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

(30) **Foreign Application Priority Data**

Jul. 15, 2004 (JP) 2004-209108

Publication Classification

(51) **Int. Cl.**
H04B 1/034 (2006.01)

(52) **U.S. Cl.** **455/99**

(57) **ABSTRACT**

A digital broadcast receiving antenna apparatus that, even when applied to a movable body, such as automobile or the like, can exhibit a high level of receiving characteristic. For this purpose, digital broadcast wave signals, which are received by four antennas, for example, disposed in rear quarter glasses and so tuned as to have nondirectivity, are in-phase combined by two in-phase combining circuits. The in-phase combined signals are then diversity combined by a diversity combining circuit constituting a receiver. In this way, a high level of receiving characteristic of digital broadcast waves can be obtained.