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(19) **United States**

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(43) **Pub. Date: Jun. 5, 2008**

Qin et al.

(54) **PLANAR ANTENNA**

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(21) Appl. No.: **11/625,289**

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

(30) **Foreign Application Priority Data**

Dec. 1, 2006 (TW) 95144722

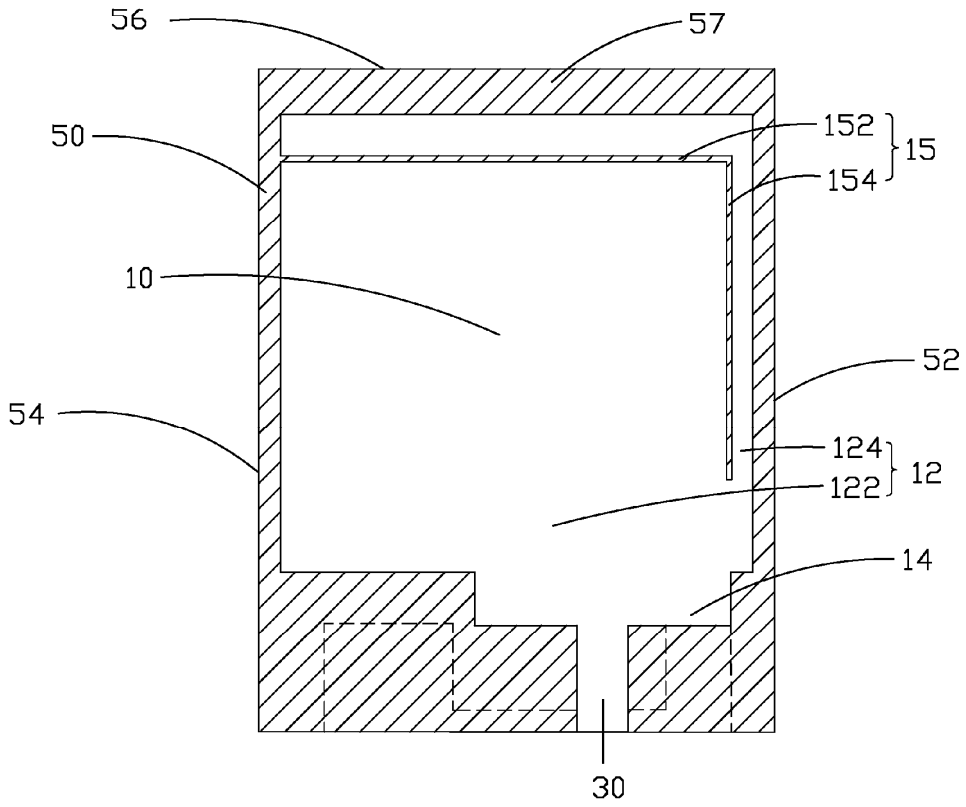
Publication Classification

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

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

(57) **ABSTRACT**

A planar antenna disposed on a substrate (**50**) including a first surface (**57**) and a second surface (**58**). The planar antenna includes a radiating body (**10**) for transmitting and receiving radio frequency (RF) signals, a feeding portion (**30**) for feeding signals, and a metallic ground plane (**50**). The radiating body includes an angled gap (**15**) formed therein. The feeding portion is electrically connected to the radiating body. The radiating body and the feeding portion are laid on the first surface of the substrate. The ground plane is laid on the second surface of the substrate.



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(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0129603 A1**

(43) **Pub. Date: Jun. 5, 2008**

Wei

(54) **MULTI-FREQUENCY ANTENNA**

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(21) Appl. No.: **11/770,728**

(22) Filed: **Jun. 28, 2007**

(30) **Foreign Application Priority Data**

Dec. 4, 2006 (TW) 095145044

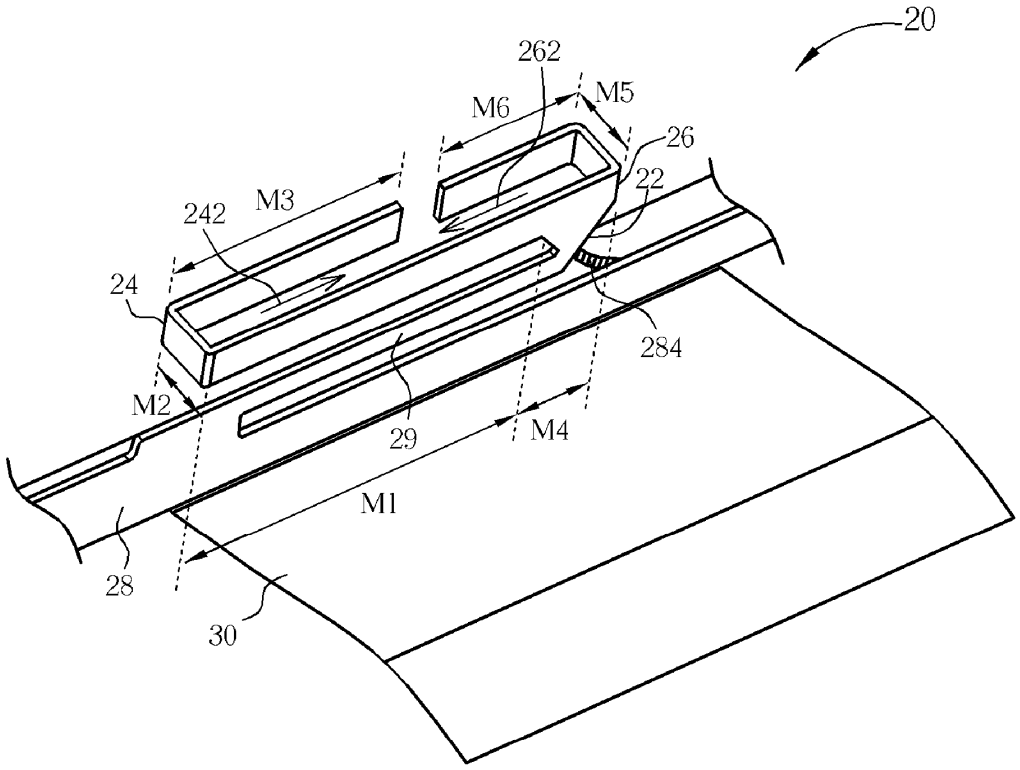
Publication Classification

(51) **Int. Cl.**
H01Q 1/36 (2006.01)
H01Q 5/00 (2006.01)

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

(57) **ABSTRACT**

A multi-frequency antenna includes a feeding element, a first U-shaped radiator, a second U-shaped radiator, a grounding element and a coupling element. The first U-shaped radiator is coupled to the feeding element and forms a first gap toward the feeding element. The second U-shaped radiator is coupled to the feeding element and forms a second gap toward the first U-shaped radiator. The grounding element is coupled to a ground end. The coupling element is coupled between the feeding element and the grounding element.



US 20080129605A1

(19) **United States**

(12) **Patent Application Publication**

SAKURAI et al.

(10) **Pub. No.: US 2008/0129605 A1**

(43) **Pub. Date: Jun. 5, 2008**

(54) **ANTENNA DEVICE INCLUDING SURFACE-MOUNTED ELEMENT**

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(21) Appl. No.: **11/949,866**

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

(30) **Foreign Application Priority Data**

Dec. 4, 2006 (JP) 2006-326854
Jun. 28, 2007 (JP) 2007-170761

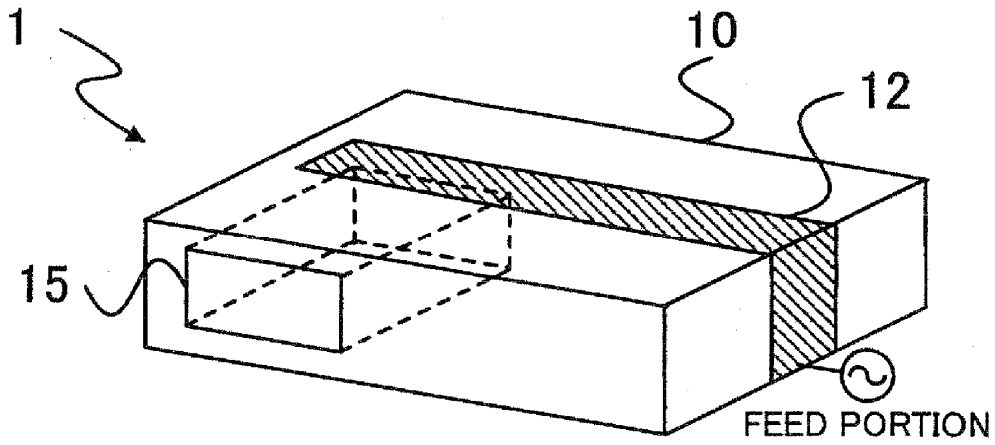
Publication Classification

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

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

(57) **ABSTRACT**

An antenna device having a first material base and a second material base is provided. The first material base is three-dimensionally formed by first dielectric material. The first material base forms an opening inside, and has an antenna element arranged on a surface of the first material base. The second material base is formed by second dielectric material of relative permittivity higher than relative permittivity of the first dielectric material. The second material base is arranged in the opening of the first material base.



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(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0129606 A1

(43) Pub. Date: Jun. 5, 2008

Yanagisawa et al.

(54) ANTENNA AND SEMICONDUCTOR DEVICE HAVING THE SAME

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(21) Appl. No.: **11/979,990**

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

(30) **Foreign Application Priority Data**

Nov. 30, 2006 (JP) 2006-324370

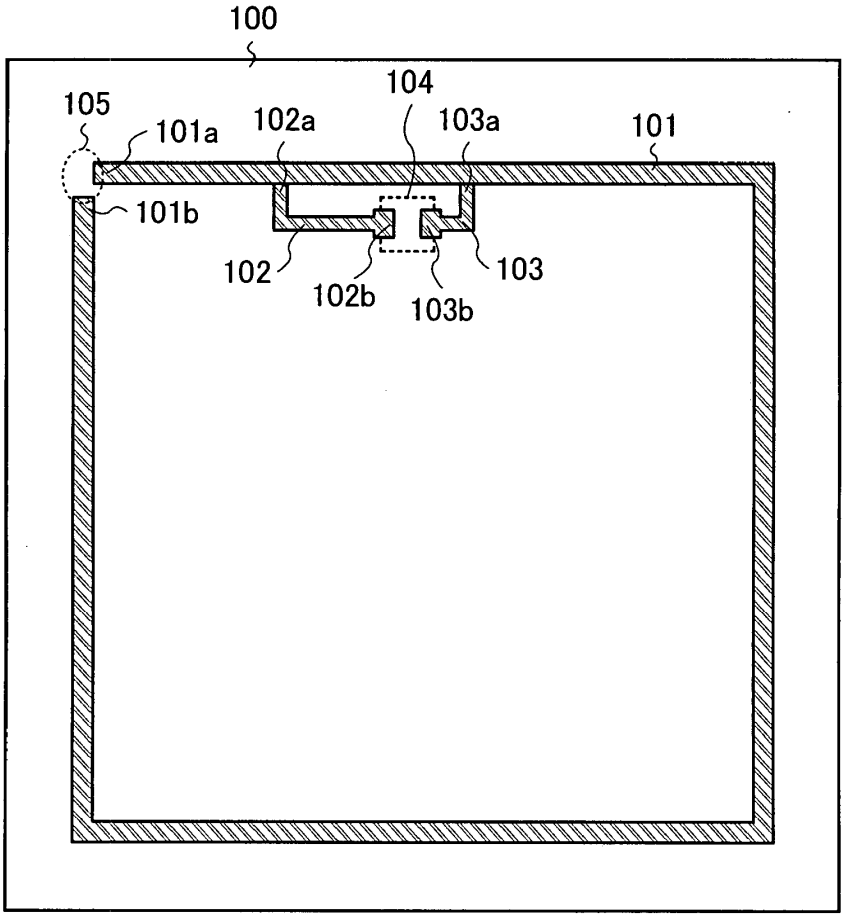
Publication Classification

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

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

(57) **ABSTRACT**

An antenna capable of receiving circularly polarized waves and performing impedance matching between the antenna and an IC (integrated circuit) of a semiconductor device, and a semiconductor device having such an antenna. The antenna has a first conductor pattern with a loop configuration having a cut section, a second conductor pattern, a third conductor pattern, and a feeding section. A first end portion of the second conductor pattern and a first end portion of the third conductor pattern are connected to the first conductor pattern. A second end portion of the second conductor pattern and a second end portion of the third conductor pattern are connected to the feeding section. The total length of the second conductor pattern is longer than the total length of the third conductor pattern, and the second conductor pattern is placed closer to the cut section than the third conductor pattern is.



US 20080129611A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0129611 A1**

(43) **Pub. Date: Jun. 5, 2008**

Jiang

(54) **ANTENNA MODULE AND ELECTRONIC DEVICE USING THE SAME**

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(21) Appl. No.: **11/945,303**

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

(30) **Foreign Application Priority Data**

Dec. 4, 2006 (TW) 95145026

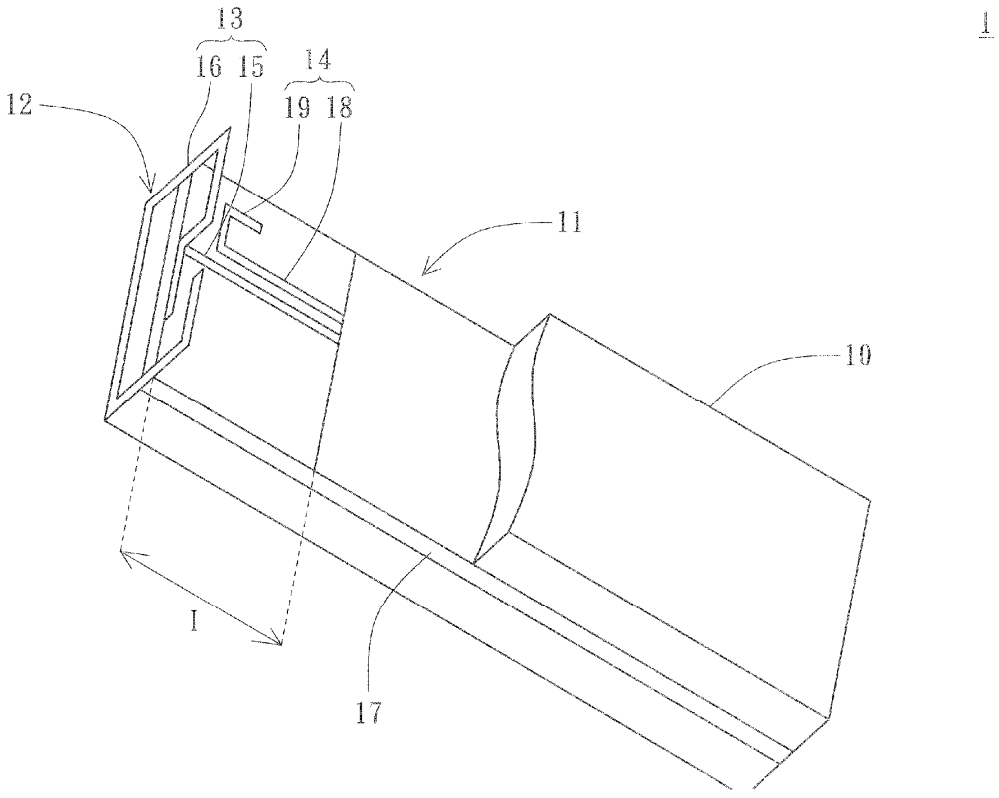
Publication Classification

(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01Q 1/22 (2006.01)

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

(57) **ABSTRACT**

An antenna module and an electronic device using the same are provided. The antenna module includes an antenna component and a parasitic element. The antenna component includes a feeding portion used for being electrically connected to a circuit board of the electronic device. The parasitic element is disposed adjacent to the feeding portion of the antenna component and substantially parallel to the feeding portion, wherein the parasitic element is coupled with the electromagnetic field of the feeding portion for causing a resonance in the antenna component, such that the antenna component produces a signal having multiple frequency bands.



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(19) **United States**

(12) **Patent Application Publication**

Wang et al.

(10) **Pub. No.: US 2008/0129612 A1**

(43) **Pub. Date: Jun. 5, 2008**

(54) **ANTENNA FOR MOBILE COMMUNICATION TERMINALS**

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(21) Appl. No.: **12/004,991**

(22) Filed: **Dec. 21, 2007**

Related U.S. Application Data

(63) Continuation of application No. 11/019,412, filed on Dec. 21, 2004, now Pat. No. 7,339,528.

(30) **Foreign Application Priority Data**

Dec. 24, 2003 (GB) 0330052.2

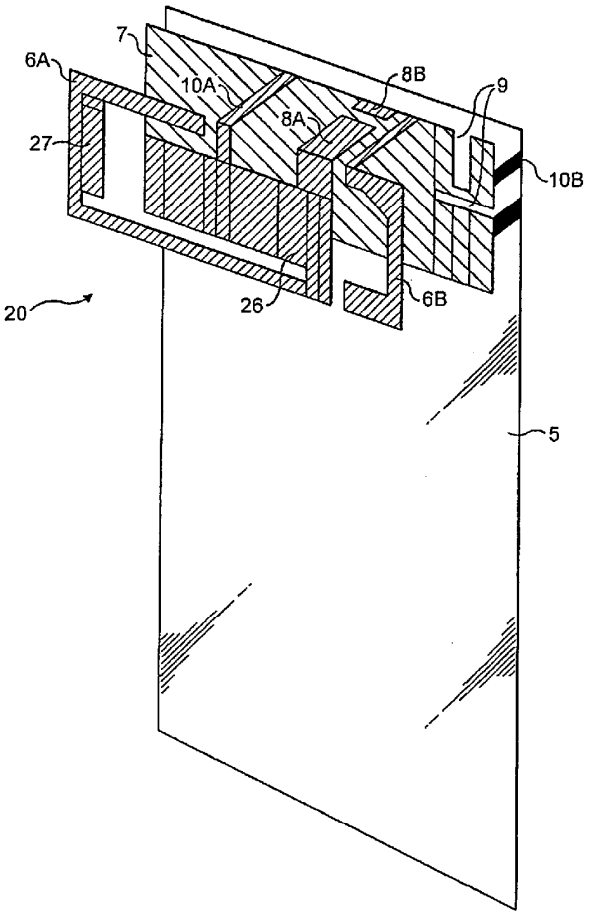
Publication Classification

(51) **Int. Cl.**
H01Q 1/48 (2006.01)
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** **343/702**; 343/848

(57) **ABSTRACT**

An antenna comprising: a first substantially planar ground plate; a first substantially planar resonator positioned in a plane substantially parallel to the first ground plate; a second substantially planar ground plate positioned in a plane substantially parallel to the first ground plate; two or more connectors for electrically connecting the second ground plate to ground; and one or more connectors for electrically connecting the first resonator to the second ground plate; wherein the first resonator and the second ground plate are connected to at least one of receiver means and transmitter means by antenna feeding means.



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(19) United States

(12) Patent Application Publication

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(43) Pub. Date: Jun. 5, 2008

Li et al.

(54) **CIRCULARLY POLARIZED DIELECTRIC ANTENNA**

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(21) Appl. No.: **11/566,327**

(22) Filed: **Dec. 4, 2006**

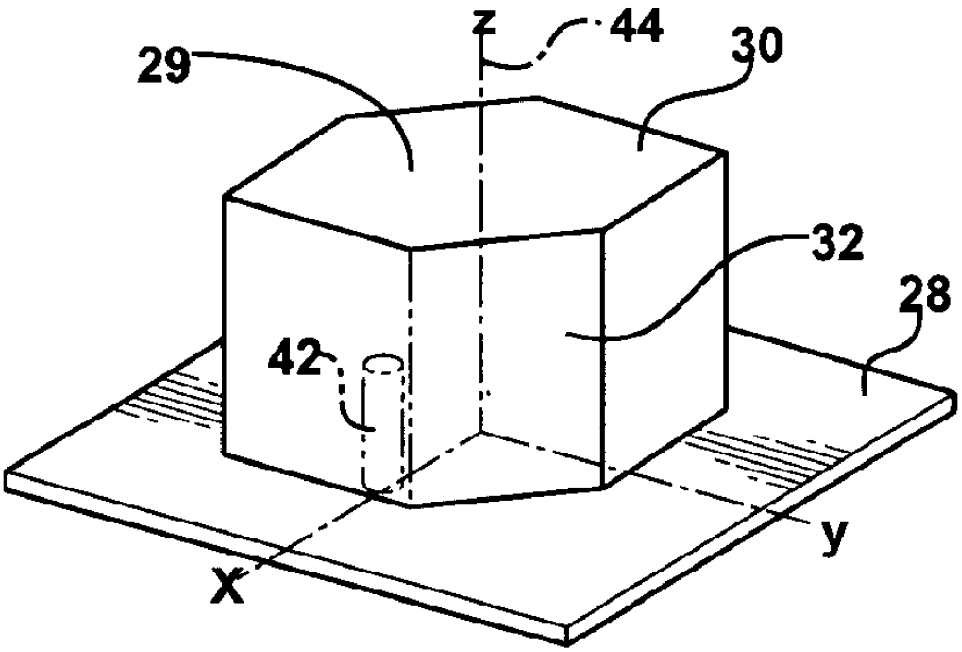
Publication Classification

(51) **Int. Cl.**
H01Q 1/40 (2006.01)
H01Q 1/38 (2006.01)
H01Q 1/27 (2006.01)

(52) **U.S. Cl.** ..... **343/713**; 343/873; 343/700 MS

(57) **ABSTRACT**

An antenna for radiating an electromagnetic field includes a ground plane, a feeding probe, and a dielectric layer. The dielectric layer is disposed on the ground plane and has a radiating surface. The feeding probe electrically is embedded in the dielectric layer, and the feeding probe excites the dielectric layer such that the electromagnetic field radiates from the radiating surface and achieves circular polarization radiation.



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(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0129617 A1

(43) Pub. Date: Jun. 5, 2008

Li et al.

(54) **WIDEBAND DIELECTRIC ANTENNA**

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(21) Appl. No.: **11/566,341**

(22) Filed: **Dec. 4, 2006**

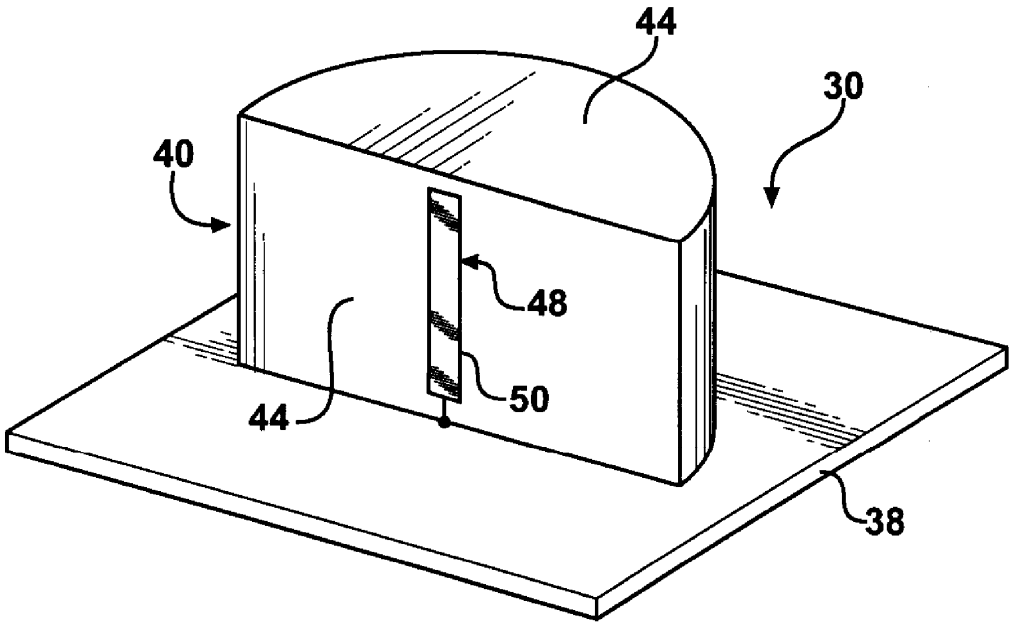
Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 1/32 (2006.01)

(52) **U.S. Cl.** ..... **343/713**; 343/700 MS

(57) **ABSTRACT**

An antenna for radiating an electromagnetic field includes a ground plane and a dielectric layer disposed on the ground plane. The dielectric layer has at least one exposed surface that radiates the electromagnetic field. The antenna includes at least one feeding element, such as a feeding strip or a feeding wire, that is disposed on one of the exposed surfaces of the dielectric layer. The feeding element electrically excites the dielectric layer. As such, the electromagnetic field radiates from the exposed surface and achieves a desired polarization radiation. Any exposed surface may radiate. Specifically, when multiple feeding elements are used, the exposed surface may radiate right hand circular polarization, left had circular polarization, and/or linear polarization.



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(19) **United States**

(12) **Patent Application Publication**

Svensson et al.

(10) **Pub. No.: US 2008/0129625 A1**

(43) **Pub. Date: Jun. 5, 2008**

(54) **LOW PROFILE ANTENNA**

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(21) Appl. No.: **11/573,604**

(22) PCT Filed: **Jul. 13, 2004**

(86) PCT No.: **PCT/SE2004/001130**

§ 371 (c)(1),
(2), (4) Date: **Feb. 12, 2007**

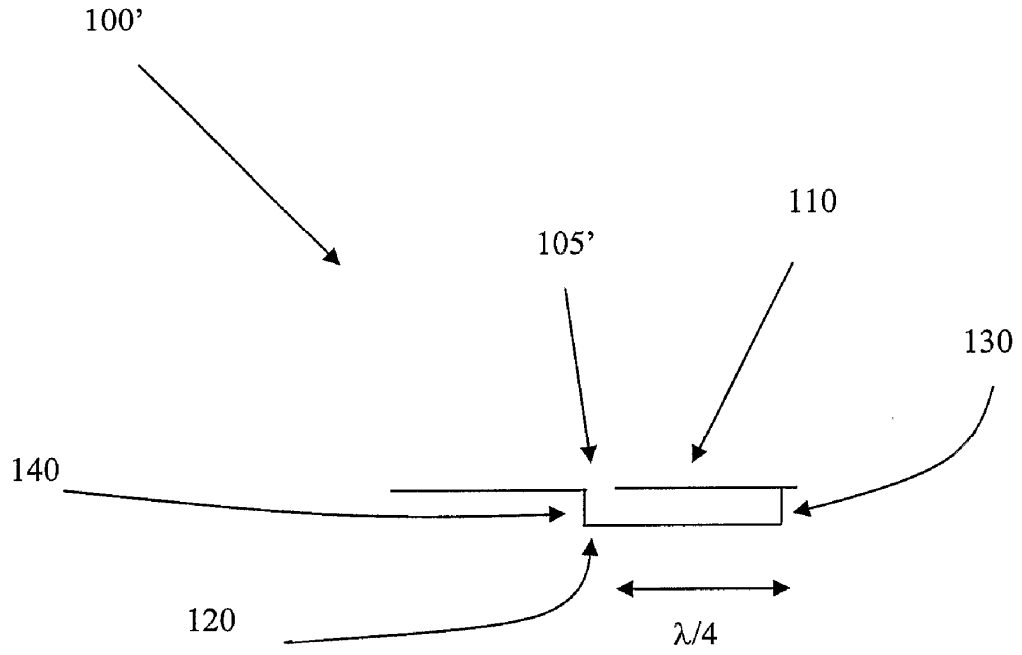
Publication Classification

(51) **Int. Cl.**
H01Q 13/18 (2006.01)

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

(57) **ABSTRACT**

The invention discloses an antenna (**100**, **100'**, **400**, **500**) comprising walls in a conducting material: first (**110**, **410**, **510**) and second (**120**, **420**, **520**) main walls, a first end wall (**130**, **530**) and a first and a second side wall. The first (**110**, **510**) and second (**120**, **520**) main walls extend in parallel to each other, and are joined by the first end wall (**130**, **530**). The side walls also join the first and second main walls, so that a cavity with only one opening (**105**, **205**, **505**) is formed, a rectangular aperture which can be brought to radiate by a feed connection (**207**). Suitably, the antenna can also comprise a second end wall (**140**, **540**) which extends from the second main wall (**120**) towards the first main wall (**110**), with the length of extension of the first main wall being such that the second end wall and the first main wall do not meet.



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(19) **United States**

(12) **Patent Application Publication**

Wu et al.

(10) **Pub. No.: US 2008/0129626 A1**

(43) **Pub. Date: Jun. 5, 2008**

(54) **ANTENNA STRUCTURE WITH ANTENNA RADOME AND METHOD FOR RISING GAIN THEREOF**

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(21) Appl. No.: **11/931,251**

(22) Filed: **Oct. 31, 2007**

Related U.S. Application Data

(63) Continuation-in-part of application No. 11/606,893, filed on Dec. 1, 2006.

Publication Classification

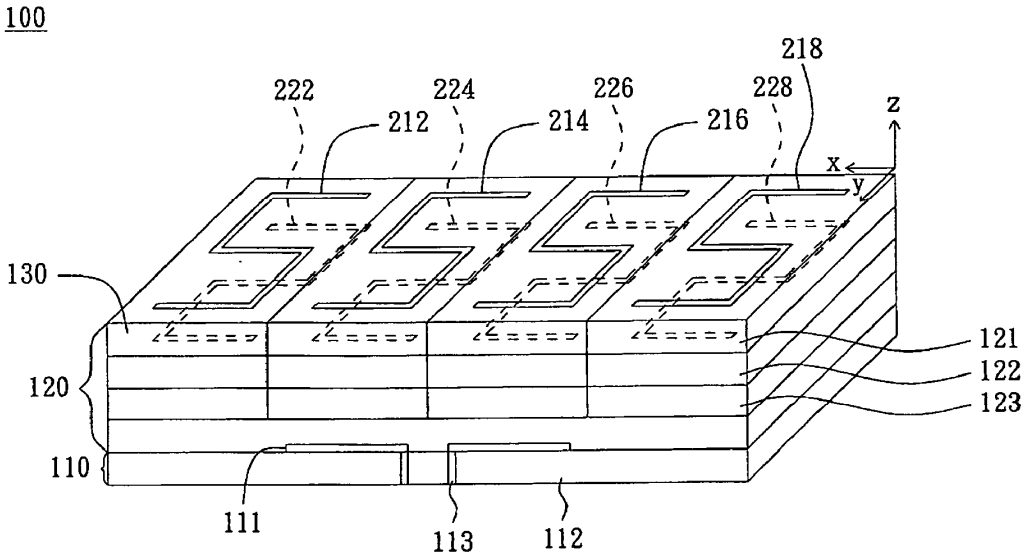
(51) **Int. Cl.**

H01Q 1/42	(2006.01)
H01Q 1/38	(2006.01)
H01Q 13/10	(2006.01)

(52) **U.S. Cl.** ..... **343/767**; 343/700 MS; 343/872

(57) **ABSTRACT**

An antenna structure includes a radiating element and an antenna radome. The antenna radome has at least one dielectric layer, which has an upper surface having many S-shaped metal patterns and a lower surface having many inverse S-shaped metal patterns corresponding to the S-shaped metal patterns. The S-shaped metal patterns are respectively coupled to the corresponding inverse S-shaped metal patterns to converge radiating beams outputted from the radiating element.



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(19) **United States**

(12) **Patent Application Publication**

Soler Castany et al.

(10) **Pub. No.: US 2008/0129627 A1**

(43) **Pub. Date: Jun. 5, 2008**

(54) **NOTCHED-FED ANTENNA**

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(21) Appl. No.: **11/796,368**

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

Related U.S. Application Data

(63) Continuation of application No. 11/033,788, filed on Jan. 12, 2005, now Pat. No. 7,342,553, which is a continuation of application No. PCT/EP02/07837, filed on Jul. 15, 2002.

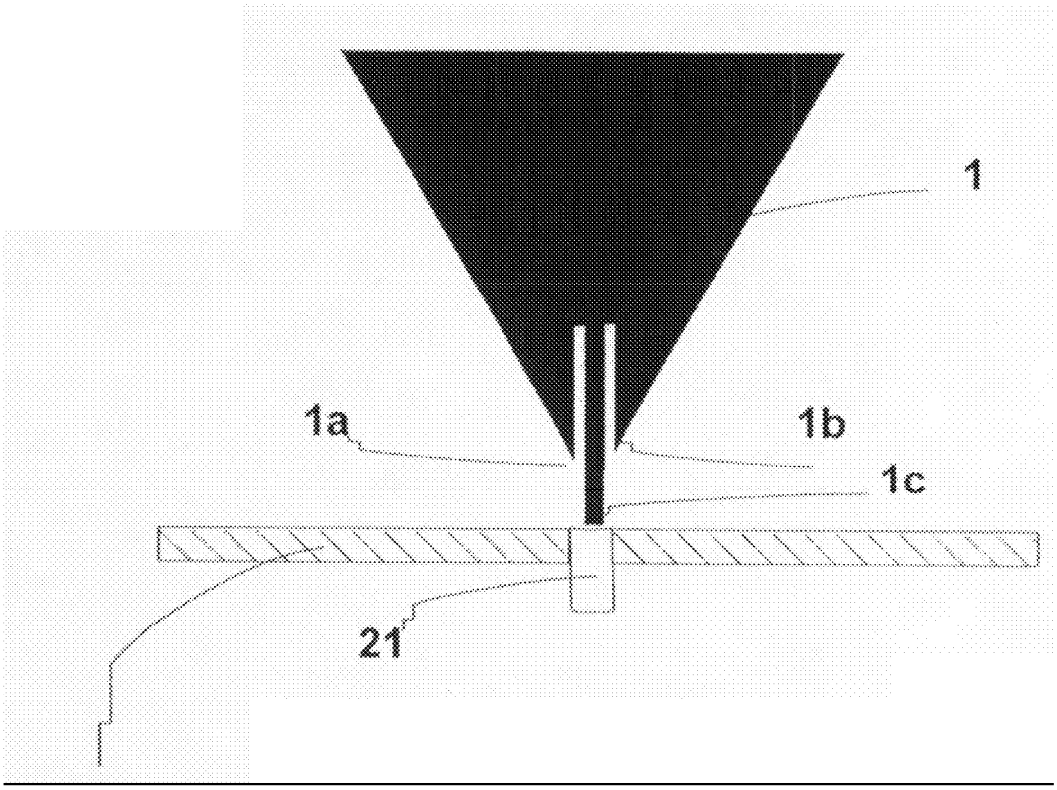
Publication Classification

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

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

(57) **ABSTRACT**

A monopole or dipole antenna includes a radiating element having at least one notch. The at least one notch intersects at least at one point on an edge of the radiating element wherein the intersecting point is located at a distance to a feeding point. The distance being shorter than half a length of a longest edge of the radiating element. A maximum width of the at least one notch is narrower than a half of a longest length of the at least one notch.



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(19) **United States**

(12) **Patent Application Publication**

Rosengren et al.

(10) **Pub. No.: US 2008/0129628 A1**

(43) **Pub. Date: Jun. 5, 2008**

(54) **WIDEBAND ANTENNA FOR MOBILE DEVICES**

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(21) Appl. No.: **11/565,906**

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

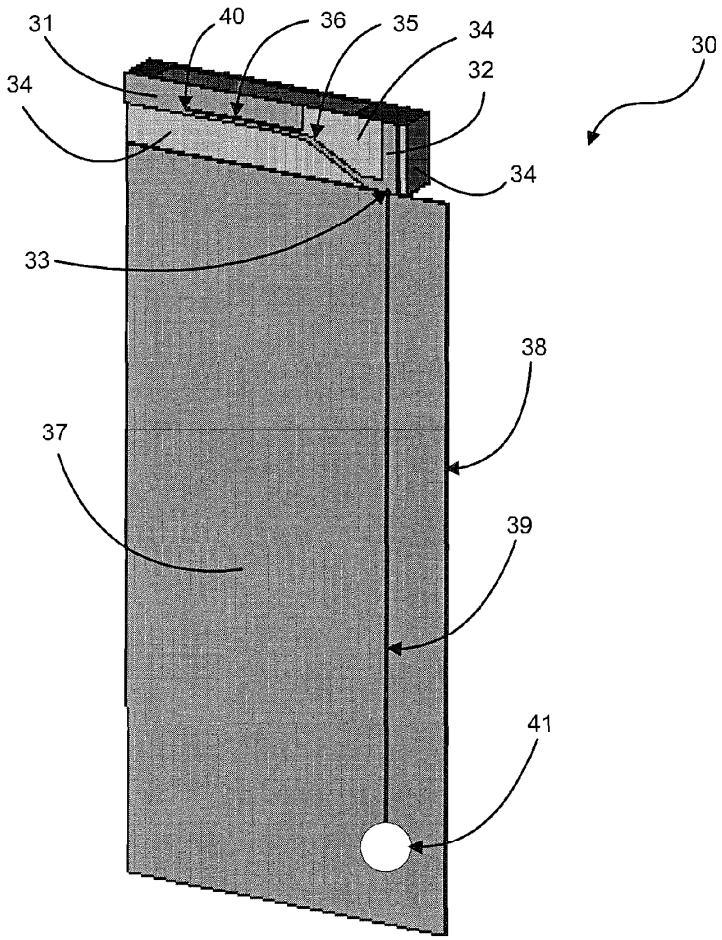
Publication Classification

(51) **Int. Cl.**
H01Q 15/08 (2006.01)

(52) **U.S. Cl.** **343/785**

(57) **ABSTRACT**

A dielectric based antenna provides for relatively wide band communications. In this regard, the dielectric based antenna may provide communications across a variety of mobile telephone communication types and frequencies, such as GSM850, EGSM900, DCS1800, PCS1900, and UMTS. In one embodiment, the dielectric based antenna includes a dielectric element and at least first and second antenna elements. The dielectric element may be configured into a volumetric shape from a material with a relatively high permittivity. The first and second antenna elements are respectively wrapped about first and second portions of the dielectric element and may provide for respective first and second frequency bands of the dielectric based antenna. An antenna feed port couples the dielectric based antenna to a communication module via an antenna feed such that radio signals may be transmitted and/or received through the dielectric based antenna.



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(19) **United States**

(12) **Patent Application Publication**

Baliarda et al.

(10) **Pub. No.: US 2008/0129630 A1**

(43) **Pub. Date: Jun. 5, 2008**

(54) **COUPLED MULTIBAND ANTENNAS**

(76) Inventors: **Carles Puente Baliarda**, San Cugat del Valles (Barcelona) (ES); **Jaume Anguera Pros**, Vinaros (Castellon) (ES); **Jordi Soler Castany**, Mataro (Barcelona) (ES); **Antonio Condes Martinez**, Esplugues de Llobregat (Barcelona) (ES)

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(21) Appl. No.: **11/950,835**

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

Related U.S. Application Data

(63) Continuation of application No. 11/075,980, filed on Mar. 9, 2005, now Pat. No. 7,315,289, which is a continuation of application No. PCT/EP02/11355, filed on Sep. 10, 2002.

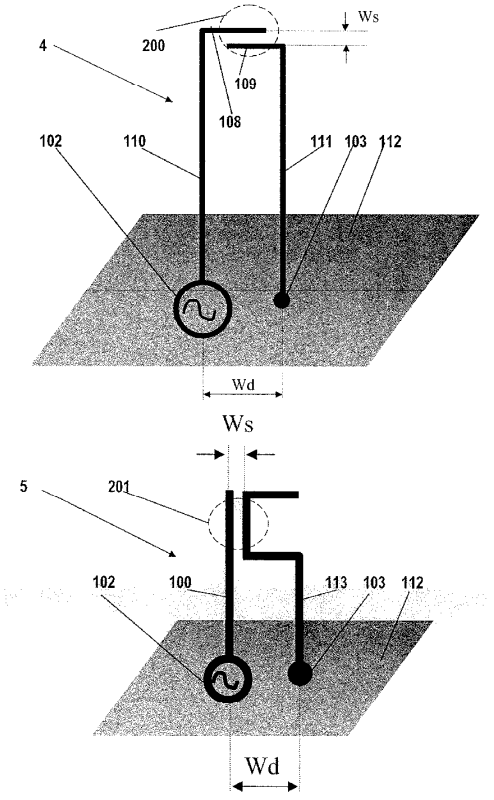
Publication Classification

(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01Q 1/40 (2006.01)
H01Q 9/16 (2006.01)

(52) **U.S. Cl.** ..... **343/793**; 343/700 MS; 343/873

(57) **ABSTRACT**

The present invention consists of an antenna comprising at least two radiating structures, said radiating structures taking the form of two arms, said arms being made of or limited by a conductor, superconductor or semiconductor material, said two arms being coupled to each other through a region on first and second superconducting arms such that the combined structure of the coupled two-arms forms a small antenna with a broadband behavior, a multiband behavior or a combination of both effects. According to the present invention, the coupling between the two radiating arms is obtained by means of the shape and spatial arrangement of said two arms, in which at least one portion on each arm is placed in close proximity to each other (for instance, at a distance smaller than a tenth of the longest free-space operating wavelength) to allow electromagnetic fields in one arm being transferred to the other through said specific close proximity regions. Said proximity regions are located at a distance from the feeding port of the antenna (for instance a distance larger than 1/40 of the free-space longest operating wavelength) and specifically exclude said feeding port of the antenna.



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(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0129632 A1

(43) Pub. Date: Jun. 5, 2008

MOON et al.

(54) ANTENNA HAVING ADDITIONAL GROUND

(75) Inventors: **Young-min MOON**, Seoul (KR); **Young-eil KIM**, Suwon-si (KR); **Se-hyun PARK**, Suwon-si (KR); **Kyeong-sik MIN**, Suwon-si (KR)

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(73) Assignee: **SAMSUNG ELECTRONICS CO., LTD.**, Suwon-si (KR)

(21) Appl. No.: **11/741,784**

(22) Filed: **Apr. 30, 2007**

(30) **Foreign Application Priority Data**

Dec. 5, 2006 (KR) 10-2006-0122156

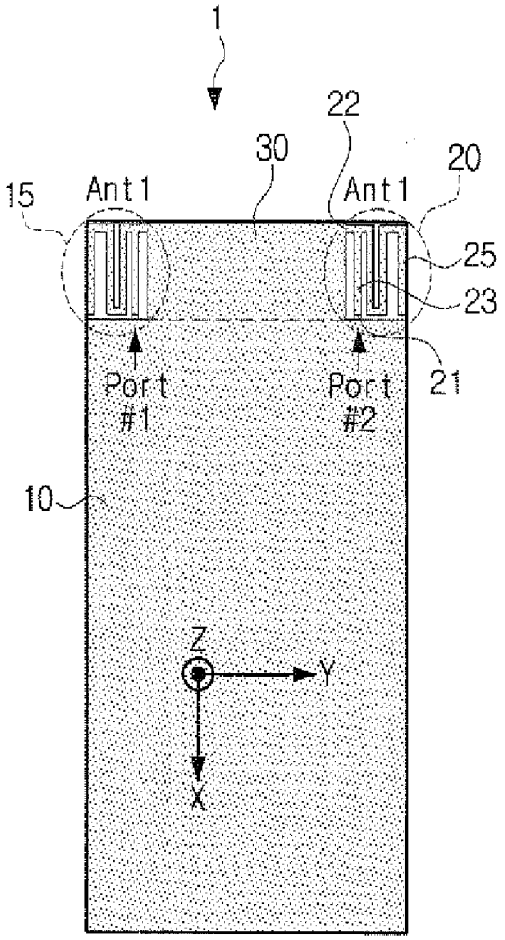
Publication Classification

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

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

(57) **ABSTRACT**

An antenna having an additional ground, includes a first ground which is formed in one side of a substrate; a plurality of antenna elements which are formed symmetrically with respect to each other and spaced apart from one end of the first ground; and a second ground which is interposed between the plurality of the antenna elements and integrally formed with the first ground. Accordingly, the deterioration of the antenna characteristics can be minimized even after the arrangement of the antenna elements with the ground, and the antenna can be miniaturized and easily fabricated in a two-dimensional structure. Furthermore, the electromagnetic wave interference can be minimized between the antenna elements.



US 20080129633A1

(19) **United States**

(12) **Patent Application Publication**

NORO et al.

(10) **Pub. No.: US 2008/0129633 A1**

(43) **Pub. Date: Jun. 5, 2008**

(54) **ANTENNA UNIT AND FEEDING COMPONENT**

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(21) Appl. No.: **11/960,362**

(22) Filed: **Dec. 19, 2007**

Related U.S. Application Data

(62) Division of application No. 11/320,081, filed on Dec. 28, 2005, now Pat. No. 7,348,925.

(30) **Foreign Application Priority Data**

Mar. 28, 2005 (JP) 2005-91304

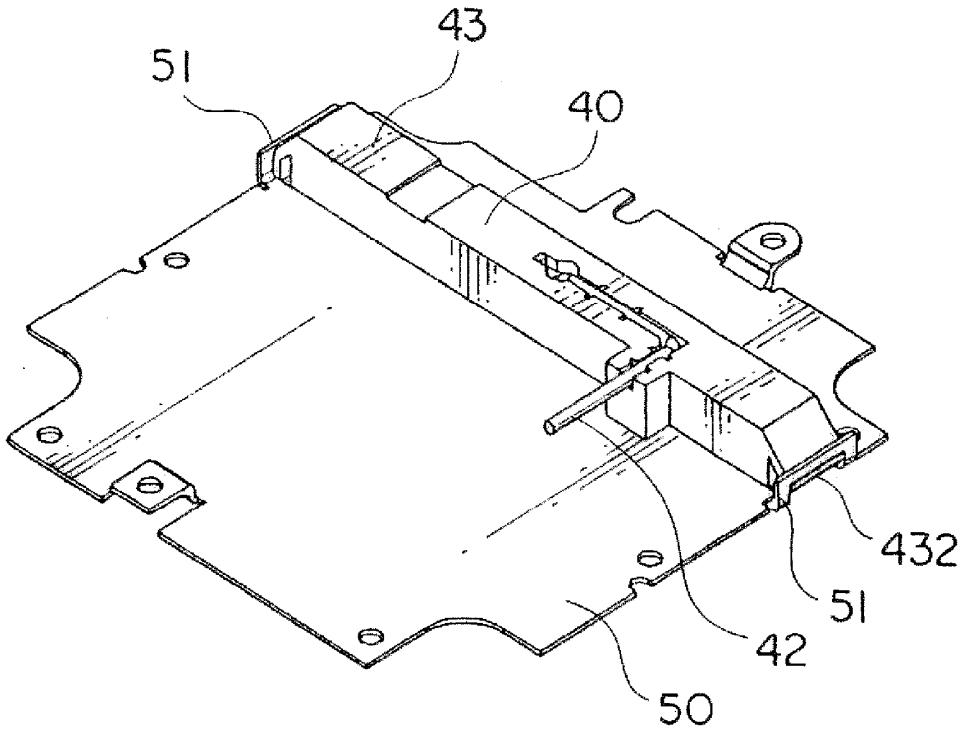
Publication Classification

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

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

(57) **ABSTRACT**

An antenna unit includes a feeding component **40** and a metal plate **50** on which the feeding component **40** is mounted. The feeding component **40** has an attaching member **43** made of resin to support a feeding line against the metal plate. The metal plate **50** has a pair of cut and raised parts **51** at both ends thereof while the attaching member **43** has a pair of locking hooks **432** at both ends thereof. The locking hooks are partly inserted into the cut and raised parts and thereby the feeding component is attached to the metal plate without projecting any parts of the attaching member from a rear surface of the metal plate.



US 20080129637A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0129637 A1**

(43) **Pub. Date: Jun. 5, 2008**

CHI et al.

(54) **DUAL-BAND LOOP ANTENNA**

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(21) Appl. No.: **11/564,893**

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

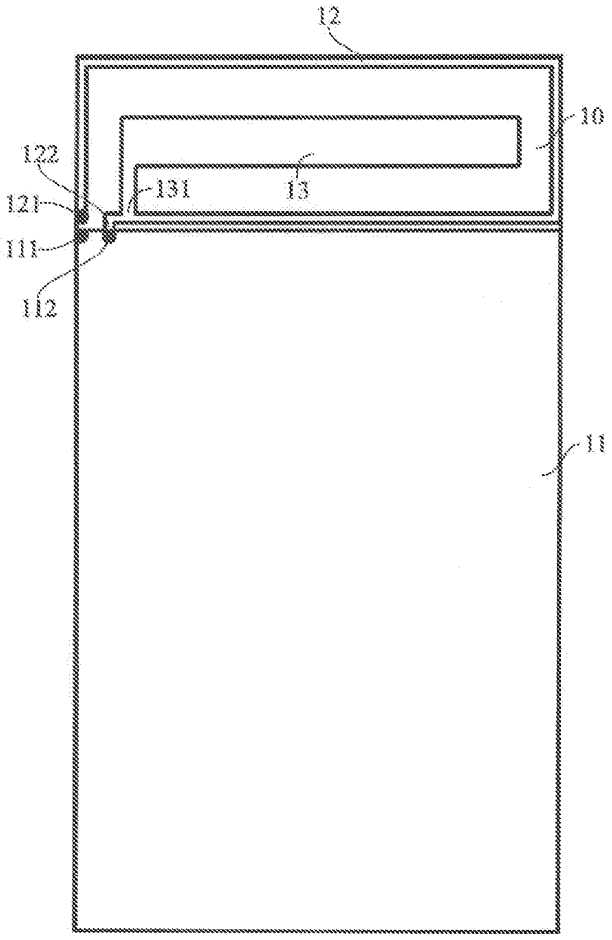
Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 7/00 (2006.01)

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

(57) **ABSTRACT**

A dual-band loop antenna comprising: a grounding plane, a radiation metallic loop and a radiation metallic plate, the shape of the grounding plane is generally rectangular having a grounding point and a shorting point; the radiation metallic loop has a feeding end and a shorting end, the shorting end is electrically connected to the shorting point on the grounding plane; while the radiation metallic plate is encircled by the radiation metallic loop, and one terminal point of the radiation metallic plate is electrically connected to the vicinity of the shorting end of the radiation metallic loop. The embodiments of antennas of the present invention suit designing of antennas for mobile phones using the bands of GSM (890~960 MHz)/DCS (1710~1880 MHz).



US 20080129638A1

(19) **United States**

(12) **Patent Application Publication**

ONG

(10) **Pub. No.: US 2008/0129638 A1**

(43) **Pub. Date: Jun. 5, 2008**

(54) **COMPOSITE STRUCTURE FOR AN ANTENNA AND A SHELL**

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(21) Appl. No.: **11/874,193**

(22) Filed: **Oct. 17, 2007**

(30) **Foreign Application Priority Data**

Nov. 30, 2006 (TW) 095221173

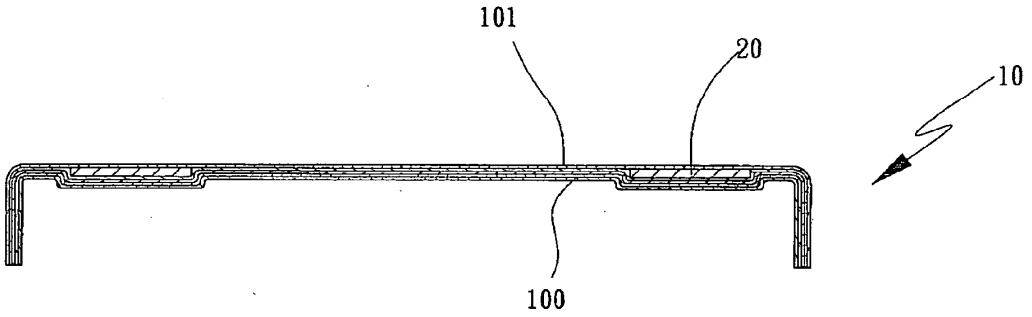
Publication Classification

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

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

(57) **ABSTRACT**

A composite structure for an antenna and a shell, wherein the antenna mode is pre-set on the surface of the shell of the computer or the electric appliances before the shell is formed. The main layers are preimpregnated with resin and then are subjected to integral forming process, so that the antenna is laminated on shell to improve the stability of the whole structure. Further, on the shell surface can be disposed a plurality of antenna modes. And since the shell is a main layer which naturally can acts as a conductive shield to improve the function and efficiency of the antenna mode.



US 20080129639A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0129639 A1**

(43) **Pub. Date: Jun. 5, 2008**

Mitsugi

(54) **MULTI-BAND ANTENNA, CIRCUIT BOARD AND COMMUNICATION DEVICE**

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(21) Appl. No.: **11/596,284**

(22) PCT Filed: **May 10, 2005**

(86) PCT No.: **PCT/JP05/08830**

§ 371 (c)(1),
(2), (4) Date: **Aug. 22, 2007**

(30) **Foreign Application Priority Data**

May 12, 2004 (JP) 2004-142558

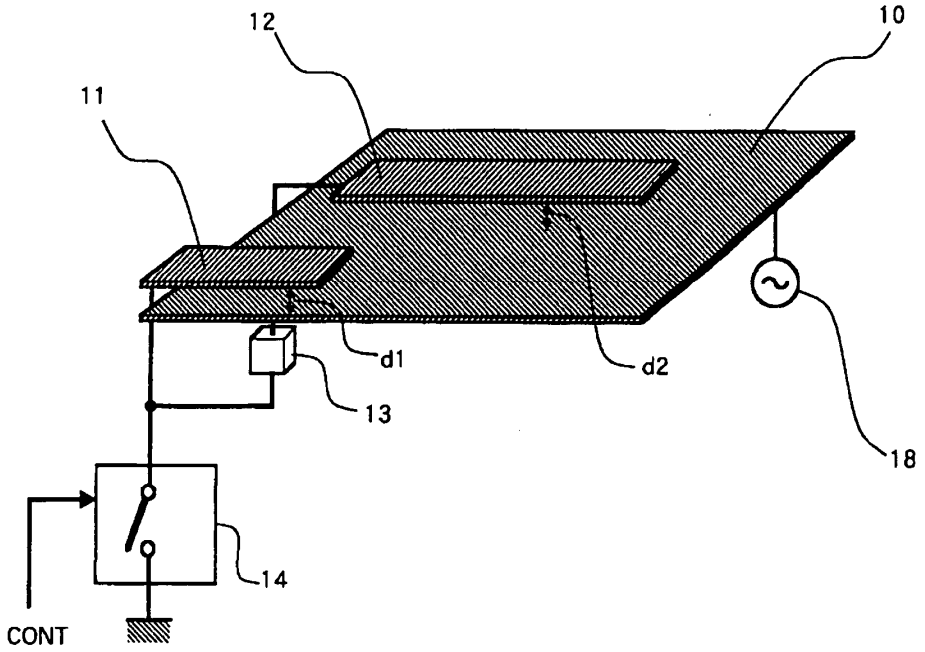
Publication Classification

(51) **Int. Cl.**
H01Q 3/24 (2006.01)
H01Q 9/04 (2006.01)

(52) **U.S. Cl.** ..... **343/876**; 343/700 MS

(57) **ABSTRACT**

There is provided a small multi-band antenna that is capable of supporting multiple bands. A first sub-element (**11**) is disposed at a region where strength of electric field becomes relatively large while power is being fed on a main element (**10**) capable of irradiating a high-frequency signal of a plurality of frequency bands, and a second sub-element (**12**) is disposed at a region in which strength of electric field becomes relatively small while power is being fed on the main element (**10**). Then, the first and second sub-elements (**11**) and (**12**) are operated as passive reflective elements by putting one end portions of the first and second sub-elements (**11**) and (**12**) into an electrically open state by inputting a control signal of a first level to a switching mechanism (**14**), and are operated as electrically short-circuit elements that couple in high frequency with the main element (**10**) by grounding one end portions directly or via a predetermined resonance circuit by inputting the control signal of a second level. Thus, the high-frequency signal irradiated from the main element (**10**) is switched to any one of the plurality of frequency bands.



US 20080129644A1

(19) **United States**

(12) **Patent Application Publication**

SEO et al.

(10) **Pub. No.: US 2008/0129644 A1**

(43) **Pub. Date: Jun. 5, 2008**

(54) **BUILT-IN TYPE ANTENNA APPARATUS FOR MOBILE TERMINAL**

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(73) Assignee: **Samsung Electronics Co., LTD.**, Suwon-city (KR)

(21) Appl. No.: **11/773,563**

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

(30) **Foreign Application Priority Data**

Dec. 5, 2006 (KR) 122431/2006

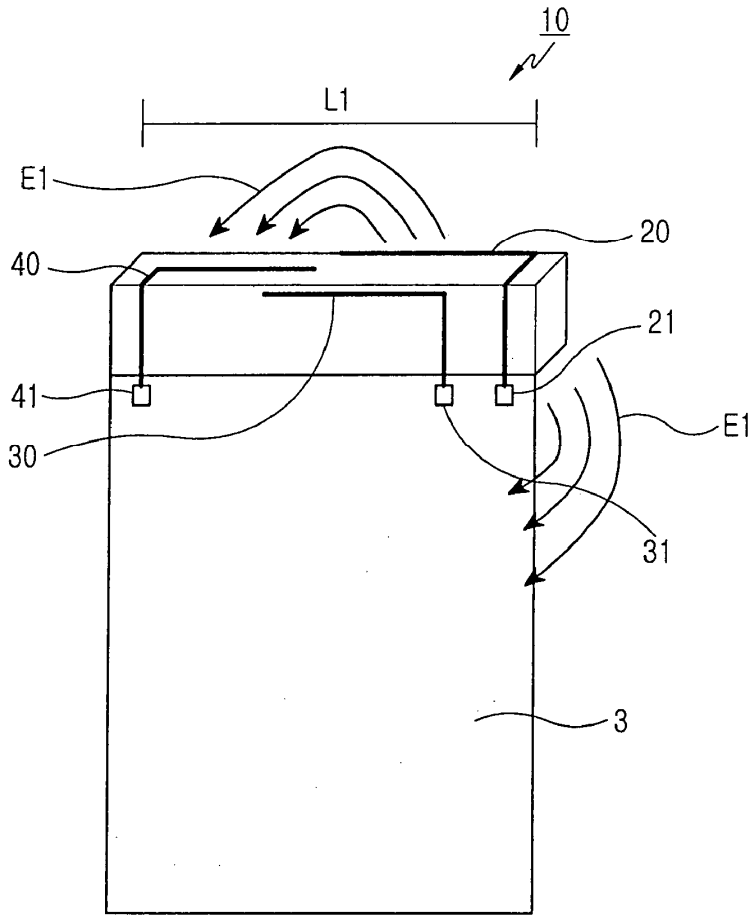
Publication Classification

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

(52) **U.S. Cl.** **343/893**

(57) **ABSTRACT**

A built-in antenna apparatus for a mobile terminal is provided. The built-in antenna apparatus includes a first planar antenna having a first feeding point for providing a first radiation pattern, a second planar antenna having a second feeding point for providing a second radiation pattern, the second planar antenna being located adjacent to the first planar antenna, and a ground stub having a ground point for providing a ground pattern, the ground stub placed a distance apart from the first and the second planar antennas.



US 20080136597A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0136597 A1

(43) Pub. Date: Jun. 12, 2008

CHOI et al.

(54) **RFID SENSOR TAG ANTENNA USING COUPLING FEEDING METHOD**

(75) Inventors: **Won Kyu CHOI**, Daejeon-city (KR); **Hae Won Son**, Daejeon-city (KR); **Jae-Young Jung**, Daejeon-city (KR); **Junho Yeo**, Daejeon-city (KR); **Gil Young Choi**, Daejeon-city (KR); **Cheol Sig Pyo**, Daejeon-city (KR)

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(21) Appl. No.: **11/936,022**

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

(30) **Foreign Application Priority Data**

Dec. 8, 2006 (KR) 10-2006-0125036

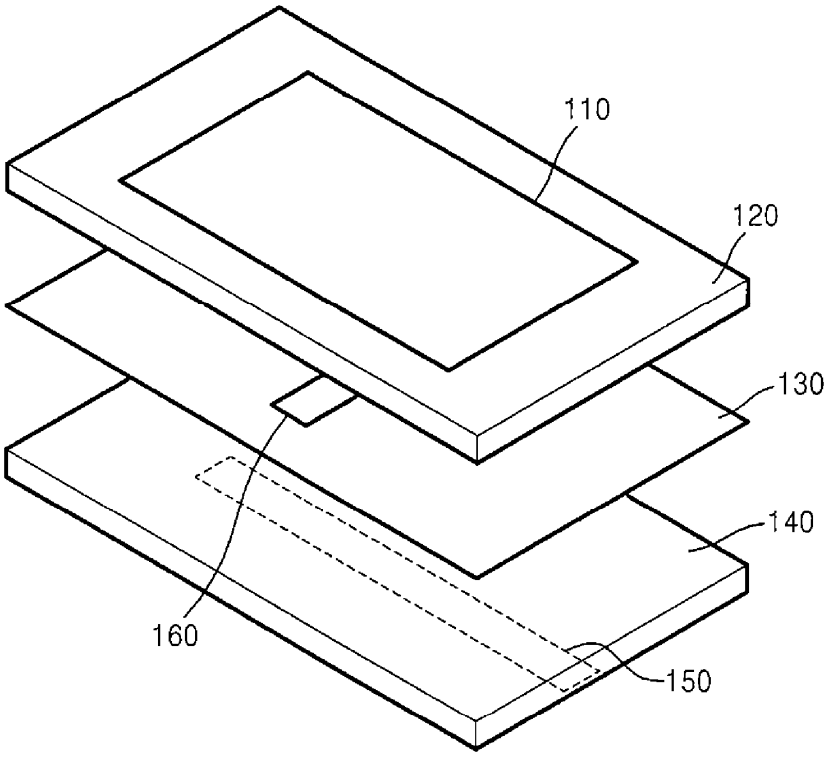
Publication Classification

(51) **Int. Cl.**
H04B 7/00 (2006.01)

(52) **U.S. Cl.** **340/10.1**

(57) **ABSTRACT**

Provided is a radio frequency identification (RFID) sensor tag antenna using an aperture coupling feeding method, including: a radiation patch for determining a resonance frequency of the RFID sensor tag antenna, which is disposed in an uppermost portion of the RFID sensor tag antenna; a first dielectric layer disposed on a bottom surface of the radiation patch and interposed between the radiation patch and a ground layer disposed to be parallel with the radiation patch; and a slot formed in a side of the ground layer and coupling RF signals to the RFID sensor tag antenna. Thus, the RFID sensor tag antenna can separately adjust resistance and reactance components of input impedance. As a result, the RFID sensor tag antenna can be matched with an RFID sensor tag board without an additional matching circuit.



US 20080136711A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0136711 A1

(43) Pub. Date: Jun. 12, 2008

Lai et al.

(54) MULTI-FREQUENCY ANTENNA

(75) Inventors: **Ying-Jiunn Lai**, Taipei Hsien (TW); **Jiunn-Ming Huang**, Taipei Hsien (TW); **Kuan-Hsueh Tseng**, Taipei Hsien (TW)

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(21) Appl. No.: **11/853,020**

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

(30) **Foreign Application Priority Data**

Dec. 7, 2006 (TW) 95145782

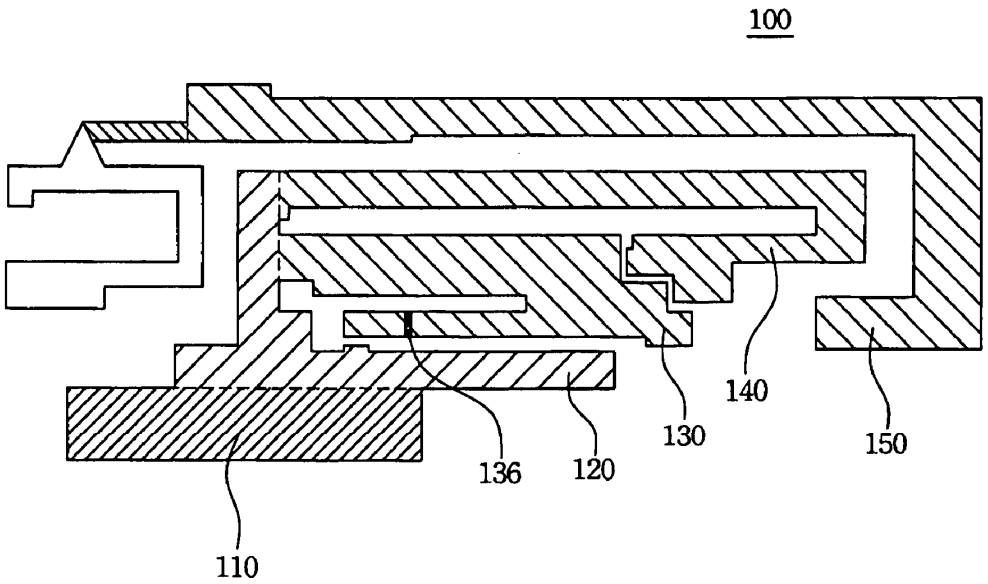
Publication Classification

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

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

(57) **ABSTRACT**

A multi-frequency antenna for receiving a first frequency and second frequency signals comprises a grounding element, a first conductive member, a first radiation member, and a second radiation member. The first conductive member connects to the grounding element. The first radiation member and the second radiation member connect to the first conductive member separately. The multi-frequency antenna further comprises a parasitic structure. The parasitic structure structurally encircles the second radiation member and the encirclement is a partial encirclement. Moreover, the parasitic structure connects to the grounding element.



US 20080136712A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0136712 A1

(43) Pub. Date: Jun. 12, 2008

SUZUKI

(54) **ANTENNA DEVICE HAVING GOOD SYMMETRY OF DIRECTIONAL CHARACTERISTICS**

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(21) Appl. No.: **11/943,524**

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

(30) **Foreign Application Priority Data**

Dec. 12, 2006 (JP) 2006-334886

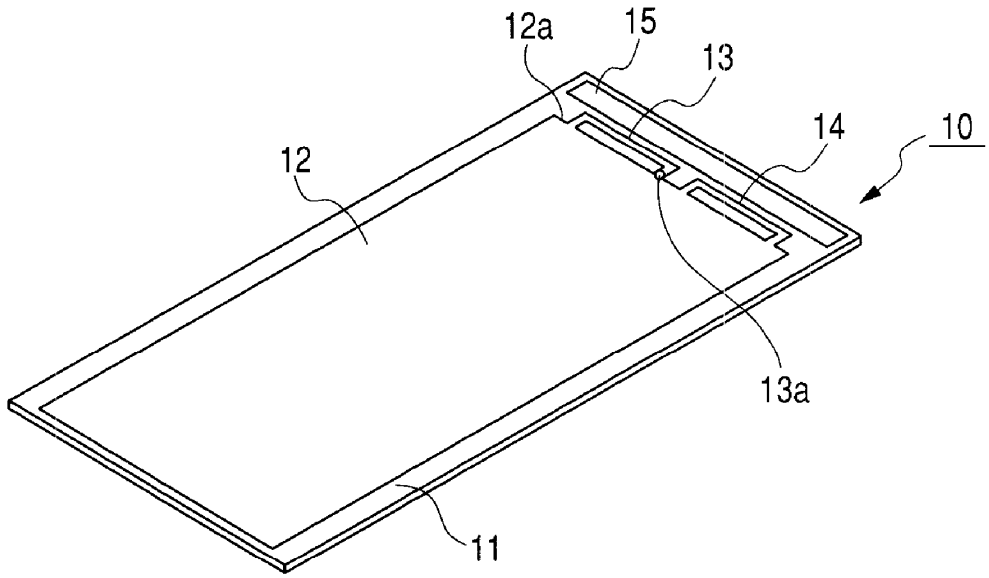
Publication Classification

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

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

(57) **ABSTRACT**

An antenna device suitable for short distance wireless communication is provided which can have a good symmetry of directional characteristics and increase a gain at both end sides in a longitudinal direction of a ground pattern. An antenna device is formed by patterning a metal conductor on a printed substrate. The antenna device is provided with a ground pattern of a rectangular shape, a power feed element arranged adjacent to one short side portion of the ground pattern, a correction pattern that projects from the short side portion and is located lateral to the power feed element, and a parasitic radiation element extending along the short side portion at a separation position facing the short side portion of the ground pattern through the power feed element and the correction pattern. An electrical length of the parasitic radiation element is set to be approximately ½ of a resonant length. When power is feed, the power feed element is excited to radiate electric waves.



US 20080136726A1

(19) **United States**

(12) **Patent Application Publication**

Hsu et al.

(10) **Pub. No.: US 2008/0136726 A1**

(43) **Pub. Date: Jun. 12, 2008**

(54) **ANTENNA**

(75) Inventors: **Chen-Hsuan Hsu**, Hsin-Tien City (TW); **Po-Sheng Chen**, Hsin-Tien City (TW); **Fu-Ren Hsiao**, Hsin-Tien City (TW); **Tsung-Wen Chiu**, Hsin-Tien City (TW)

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(21) Appl. No.: **11/999,115**

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

(30) **Foreign Application Priority Data**

Dec. 8, 2006 (TW) 095221693

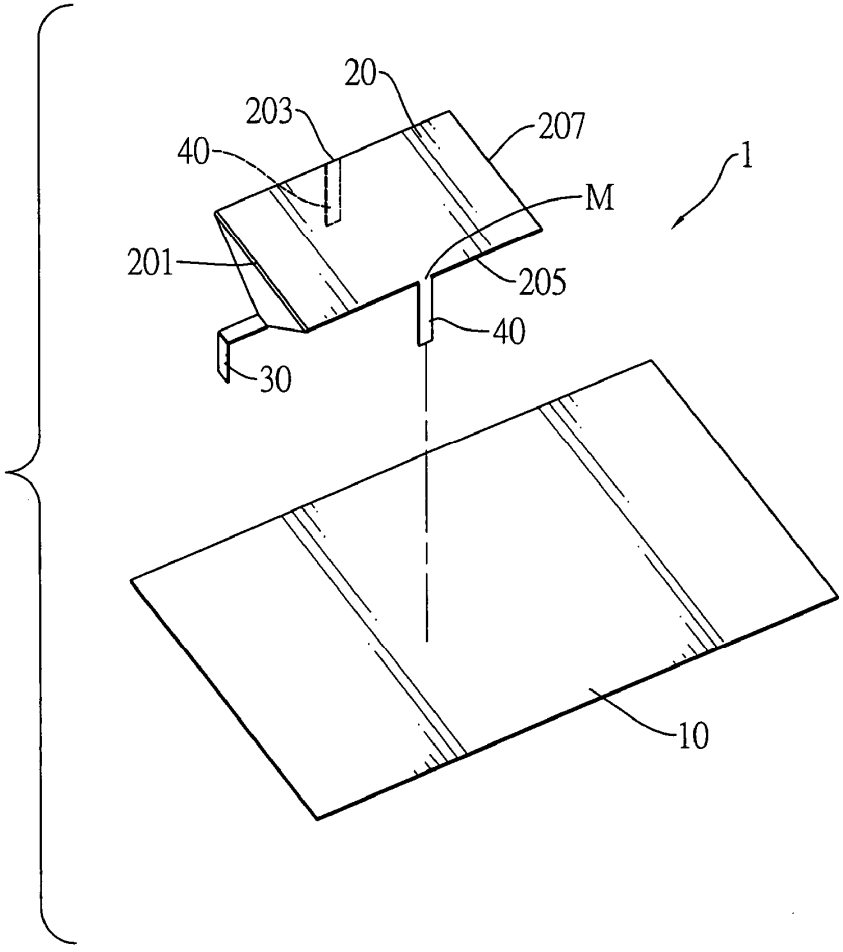
Publication Classification

(51) **Int. Cl.**
H01Q 1/48 (2006.01)
H01Q 9/04 (2006.01)

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

(57) **ABSTRACT**

An antenna has a ground plane, a radiating member, a signal-feeding member and two grounding supports. The radiating member is suspended over and separated from the ground plane and has two opposite non-radiating edges. Each non-radiating edge has a middle section. Each grounding support is connected perpendicularly to the middle section of one non-radiating edge of the radiating member and the ground plane. The grounding supports connected between the radiating member and the ground plane excellently improve the combination of the radiating member and the ground plane to prevent the antenna from inadvertently disassembling.



US 20080136727A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2008/0136727 A1

Bit-Babik et al. (43) Pub. Date: Jun. 12, 2008

(54) **COMMUNICATION DEVICE WITH A WIDEBAND ANTENNA**

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(21) Appl. No.: **11/567,430**

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

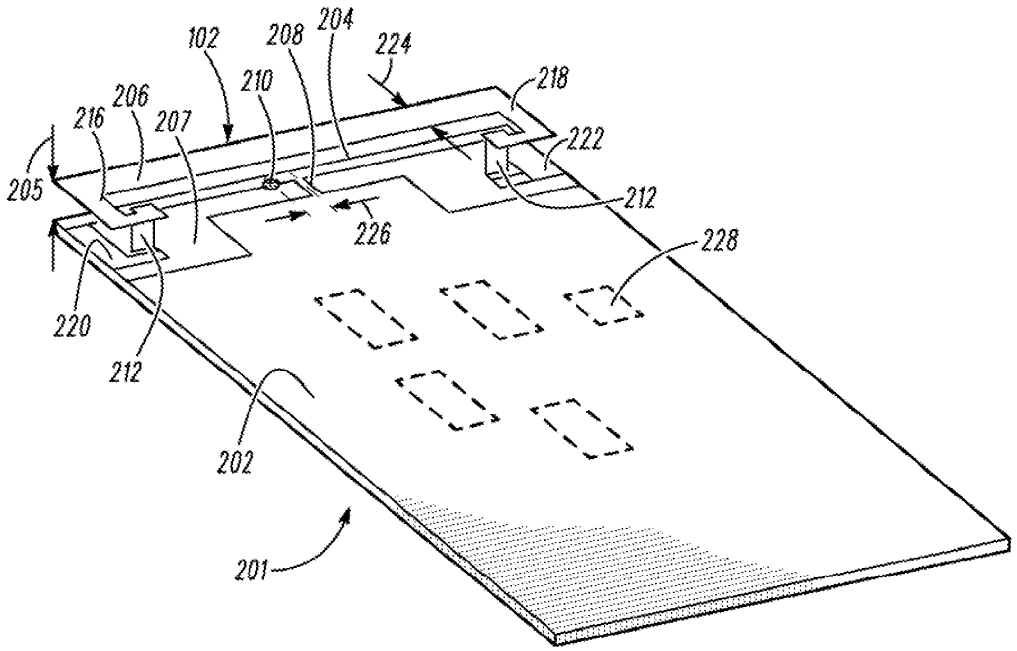
Publication Classification

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

(52) **U.S. Cl.** **343/848**; 343/846

(57) **ABSTRACT**

An apparatus is disclosed for a communication device (**100**) with a wideband antenna (**102**) supporting at least two common and one differential resonant modes. An apparatus that incorporates teachings of the present invention may include, for example, the communication device having an antenna (**102**) that includes a ground structure (**202**), a first elongated conductor (**204**) spaced from the ground structure, a second elongated conductor (**206**) separated from the first elongated conductor, third and fourth conductors (**212**) each coupled to the first and second elongated conductors forming a gap (**205**), a ground conductor (**208**) coupling the ground structure to one among the first and second elongated conductors, and a signal feed conductor (**210**) coupling to one among the first and second elongated conductors spaced from the ground conductor. Additional embodiments are disclosed. A −10 dB bandwidth of at least 0.5 can be realized using electrical non-congruence.



200

US 20080136730A1

(19) **United States**

(12) **Patent Application Publication**

Chen

(10) **Pub. No.: US 2008/0136730 A1**

(43) **Pub. Date: Jun. 12, 2008**

(54) **ANTENNAS FOR ULTRA-WIDEBAND APPLICATIONS**

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

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(73) Assignee: **Agency for Science, Technology and Research**, Singapore (SG)

(21) Appl. No.: **11/791,300**

(22) PCT Filed: **Nov. 22, 2004**

(86) PCT No.: **PCT/SG2004/000381**

§ 371 (c)(1),
(2), (4) Date: **Dec. 18, 2007**

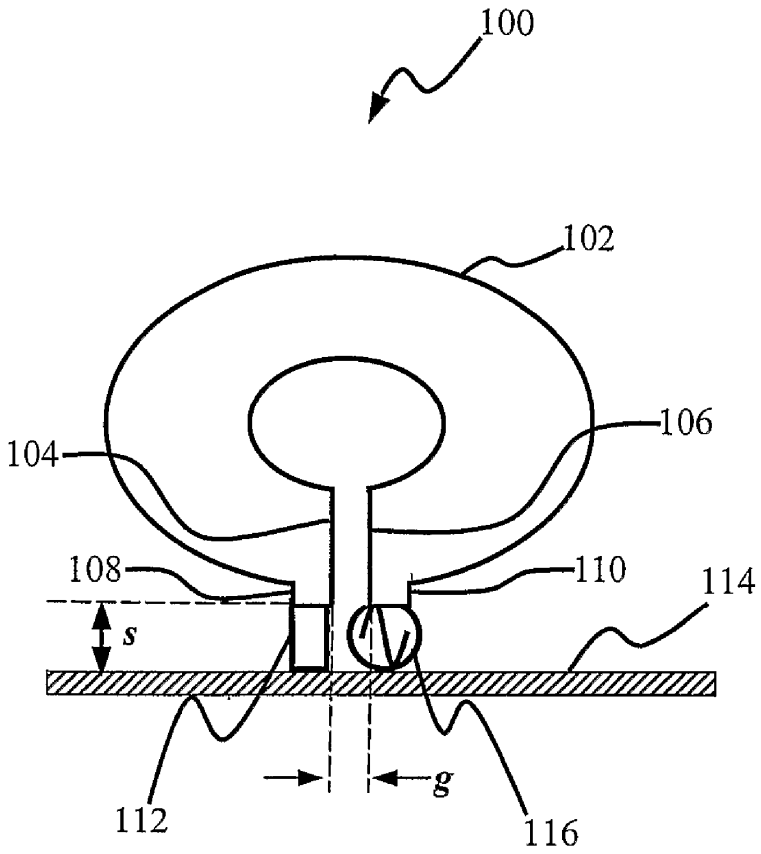
Publication Classification

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

(52) **U.S. Cl.** **343/867**; 343/866

(57) **ABSTRACT**

An antenna comprising a radiating element for transmitting and receiving communication signals is disclosed. A load and a feed are connectable to the radiating element and that the feed is spaced apart from the load. The radiating element is a planar loop having two free ends to which the load and the feed are connected. The load has two distal terminals, one of which is connected to one of the two free ends and the other is provided for connecting to one of grounding and another radiating element.



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(19) **United States**

(12) **Patent Application Publication**

Manholm et al.

(10) **Pub. No.: US 2008/0136734 A1**

(43) **Pub. Date: Jun. 12, 2008**

(54) **TRIPLE POLARIZED PATCH ANTENNA**

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(21) Appl. No.: **11/722,910**

(22) PCT Filed: **Dec. 27, 2004**

(86) PCT No.: **PCT/SE2004/002010**

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(2), (4) Date: **Jun. 27, 2007**

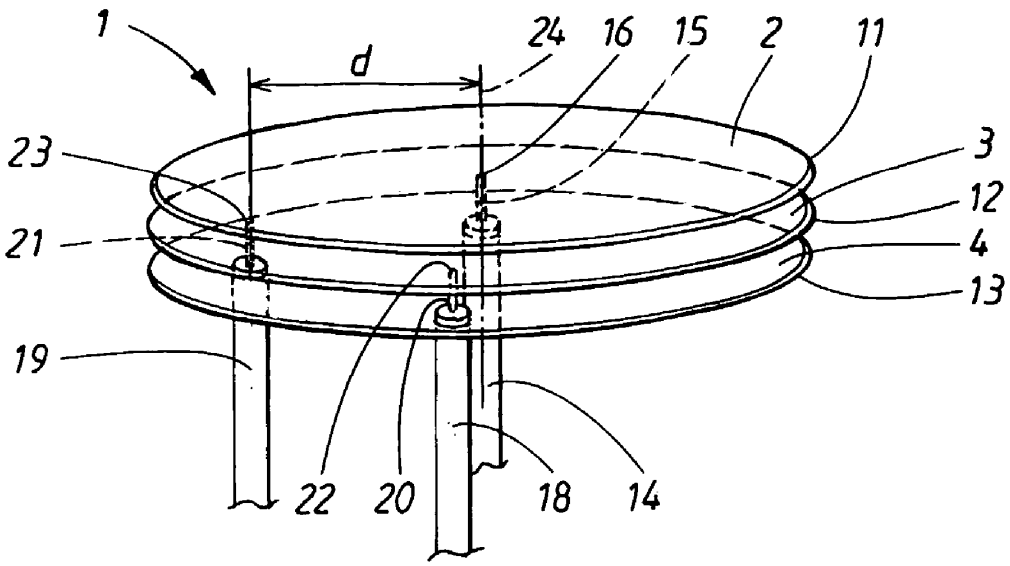
Publication Classification

(51) **Int. Cl.**
H01Q 21/00 (2006.01)
H01Q 9/04 (2006.01)

(52) **U.S. Cl.** ..... **343/893**; 343/700 MS

(57) **ABSTRACT**

An antenna arrangement for a Multiple Input Multiple Output (MIMO) radio system, the antenna arrangement transmitting and receiving in three essentially uncorrelated polarizations. The arrangement includes three parallel, stacked patches separated by first and second slots. A first feeding line feeds the first patch, and at least a second and third feeding line feed the second patch. In a first operating mode, the first feeding line generates a first constant E-field in the first slot between the edges of the first and second patches. In a second operating mode, the second feeding line contributes to a second, sinusoidally varying E-field in the second slot between the edges of the second and third patches. In a third operating mode, the third feeding line contributes to a third, sinusoidally varying E-field in the second slot between the edges of the second and third patches.



US 20080136739A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0136739 A1

(43) Pub. Date: Jun. 12, 2008

Wong et al.

(54) **DIGITAL TELEVISION RECEIVING ANTENNA FOR PLUG-AND-PLAY DEVICE**

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(21) Appl. No.: **11/688,241**

(22) Filed: **Mar. 19, 2007**

(30) **Foreign Application Priority Data**

Dec. 6, 2006 (TW) 095145467

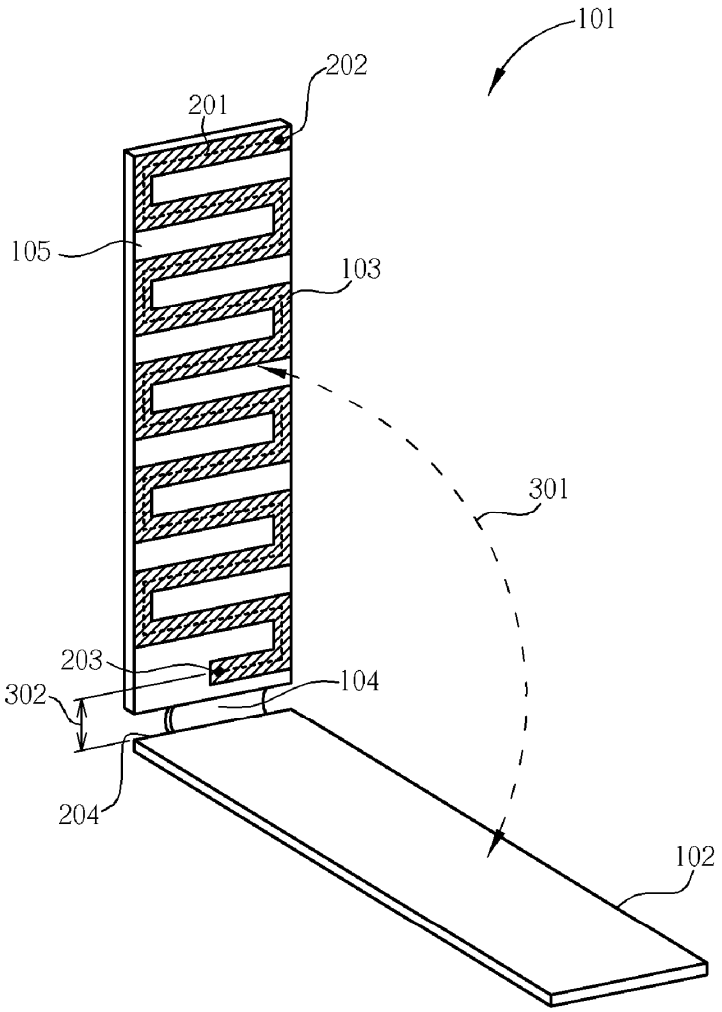
Publication Classification

(51) **Int. Cl.**
H01Q 9/30 (2006.01)

(52) **U.S. Cl.** **343/900**

(57) **ABSTRACT**

The present invention provides a digital television receiving antenna for a plug-and-play device. The digital television receiving antenna includes a first conducting portion; and a second conducting portion, coupled to the first conducting portion and having a resonance path, wherein the second conducting portion is position-adjustable relatively to the first conducting portion, and an effective length of the resonance path is greater than a straight-line distance between two end points of the resonance path.



US 20080143535A1

(19) **United States**

(12) **Patent Application Publication**

Fischer

(10) **Pub. No.: US 2008/0143535 A1**

(43) **Pub. Date: Jun. 19, 2008**

(54) **ANTENNA FOR A BACKSCATTER-BASED RFID TRANSPONDER**

(76) Inventor: **Martin Fischer**, Pfedelbach (DE)

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(21) Appl. No.: **11/945,257**

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

Related U.S. Application Data

(60) Provisional application No. 60/860,792, filed on Nov. 24, 2006.

(30) **Foreign Application Priority Data**

Nov. 25, 2006 (DE) ..... DE 102006055744

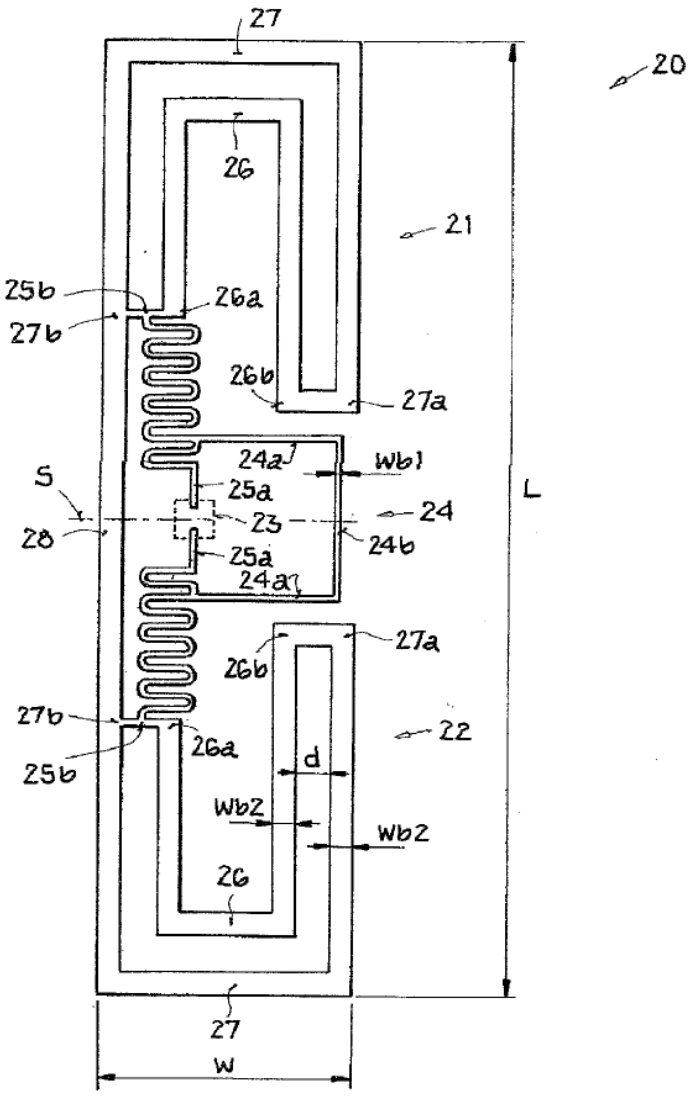
Publication Classification

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

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

(57) **ABSTRACT**

An antenna for a backscatter-based RFID transponder is provided that has an integrated receive circuit having a capacitive input impedance for receiving a radio signal spectrally located in an operating frequency range. The antenna includes two antenna branches that extend outward from a connecting region in which the antenna branches can be connected to the integrated receive circuit, and a yoke-shaped first trace segment that is designed to connect the two antenna branches together. Each antenna branch can have a U-shaped second trace segment connected to the connecting region, and a U-shaped third trace segment connected to the second trace segment and extending parallel to the second trace segment. The invention further relates to a backscatter-based RFID transponder with such an antenna.



US 20080143602A1

(19) **United States**

(12) **Patent Application Publication**

Mak et al.

(10) **Pub. No.: US 2008/0143602 A1**

(43) **Pub. Date: Jun. 19, 2008**

(54) **MINIATURIZED ORTHOGONAL ANTENNA SYSTEM**

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(21) Appl. No.: **11/612,315**

(22) Filed: **Dec. 18, 2006**

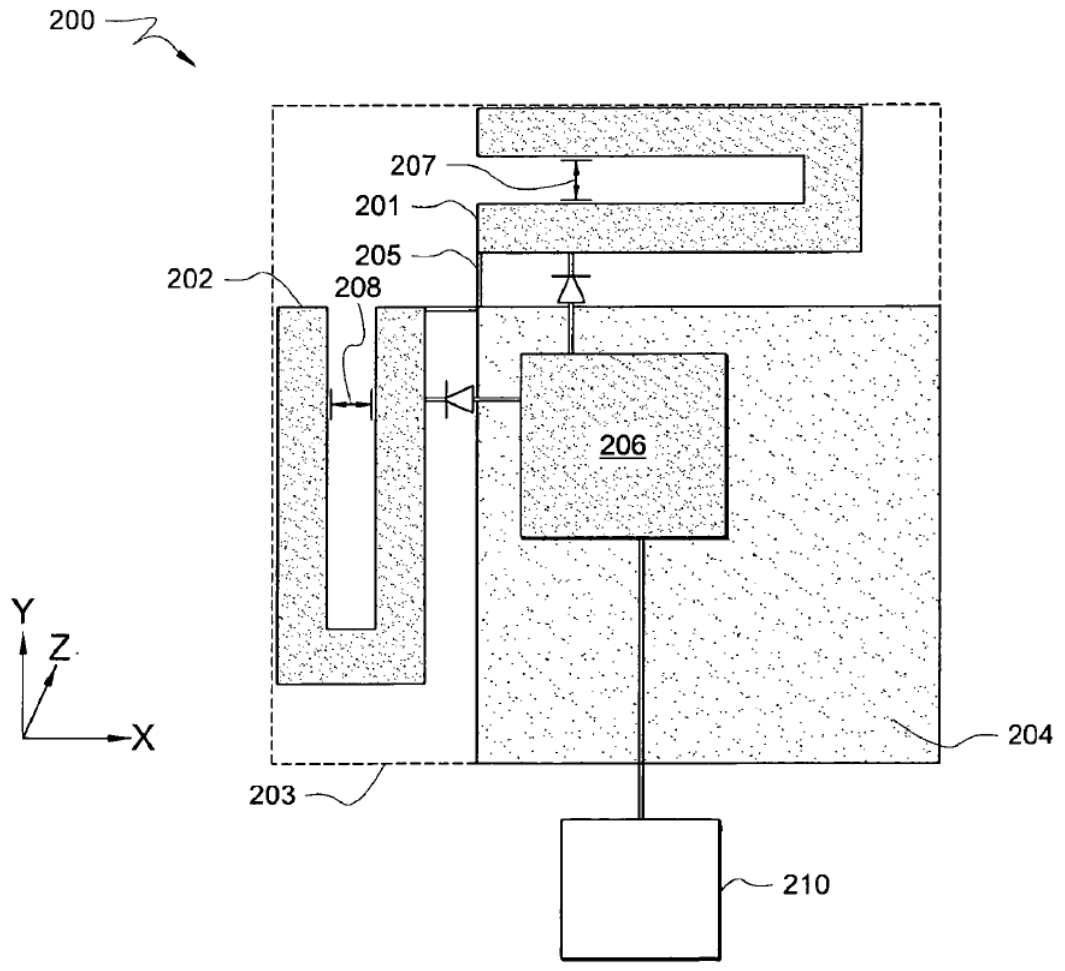
Publication Classification

(51) **Int. Cl.**
H01Q 3/12 (2006.01)
H01Q 9/04 (2006.01)

(52) **U.S. Cl.** ..... **342/374**; 343/700 MS

(57) **ABSTRACT**

A system for providing multiple antenna patterns comprises a first antenna element, a second antenna element, wherein the first and second antenna elements are coplanar and arranged orthogonally with respect to each other in the plane, and a feed circuit in communication with a signal feed line alternately connecting the signal feed line to each of the first and second antenna elements.



US 20080143607A1

(19) **United States**

(12) **Patent Application Publication**

JUNG et al.

(10) **Pub. No.: US 2008/0143607 A1**

(43) **Pub. Date: Jun. 19, 2008**

(54) **CONCURRENT MODE ANTENNA SYSTEM**

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(21) Appl. No.: **11/744,258**

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

(30) **Foreign Application Priority Data**

Dec. 18, 2006 (KR) 10-2006-0129583

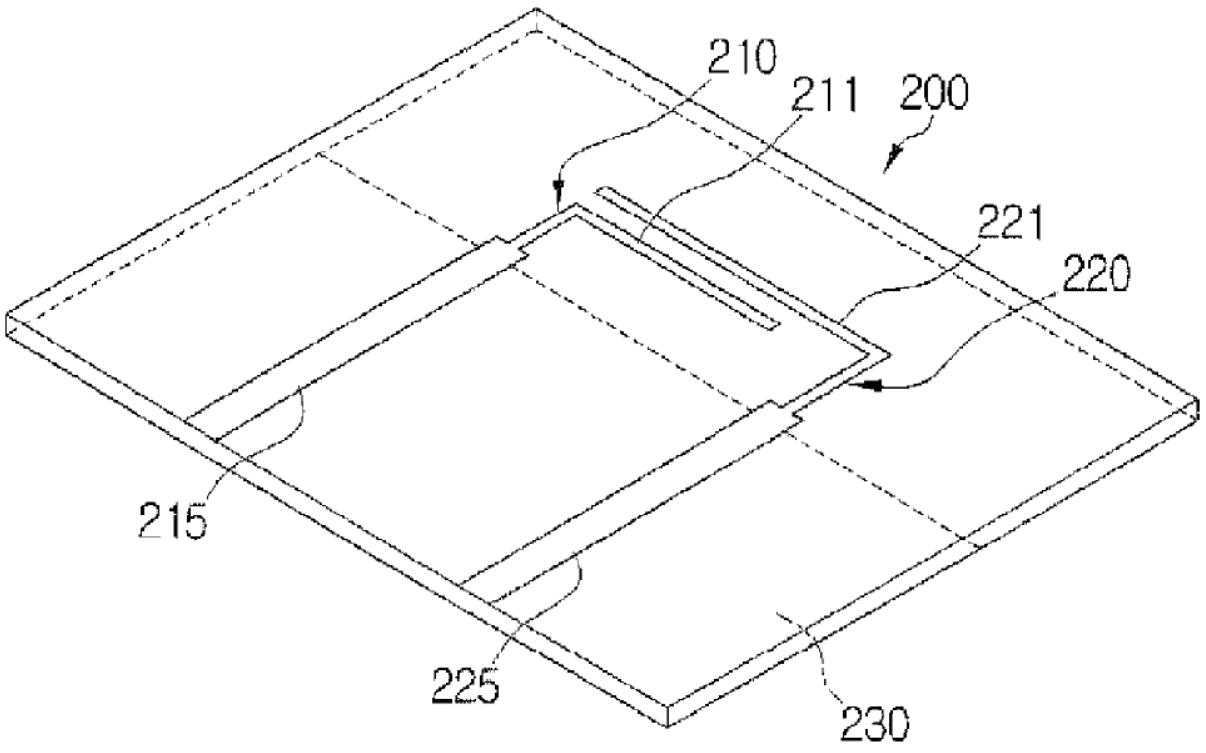
Publication Classification

(51) **Int. Cl.**
H01Q 21/00 (2006.01)
H01Q 1/38 (2006.01)

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

(57) **ABSTRACT**

A concurrent mode antenna system includes an antenna which generates a plurality of operating frequencies that are available at a same time, the antenna comprising a plurality of feed points; and a signal processing circuit which is connected to the feed points and processes radio signals transmitted and received by the antenna. Accordingly, the antenna system can not only provide various wireless services corresponding to the respective operating frequency bands on the single antenna but also miniaturize the antenna system. Furthermore, the antenna system can achieve the insertion loss prevention, the simplified structure, and the lower cost.



US 20080143608A1

(19) **United States**

(12) **Patent Application Publication**

WATANABE et al.

(10) **Pub. No.: US 2008/0143608 A1**

(43) **Pub. Date: Jun. 19, 2008**

(54) **ANTENNA-INTEGRATED MODULE**

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(21) Appl. No.: **11/944,278**

(22) Filed: **Nov. 21, 2007**

(30) **Foreign Application Priority Data**

Dec. 13, 2006 (JP) 2006-335856

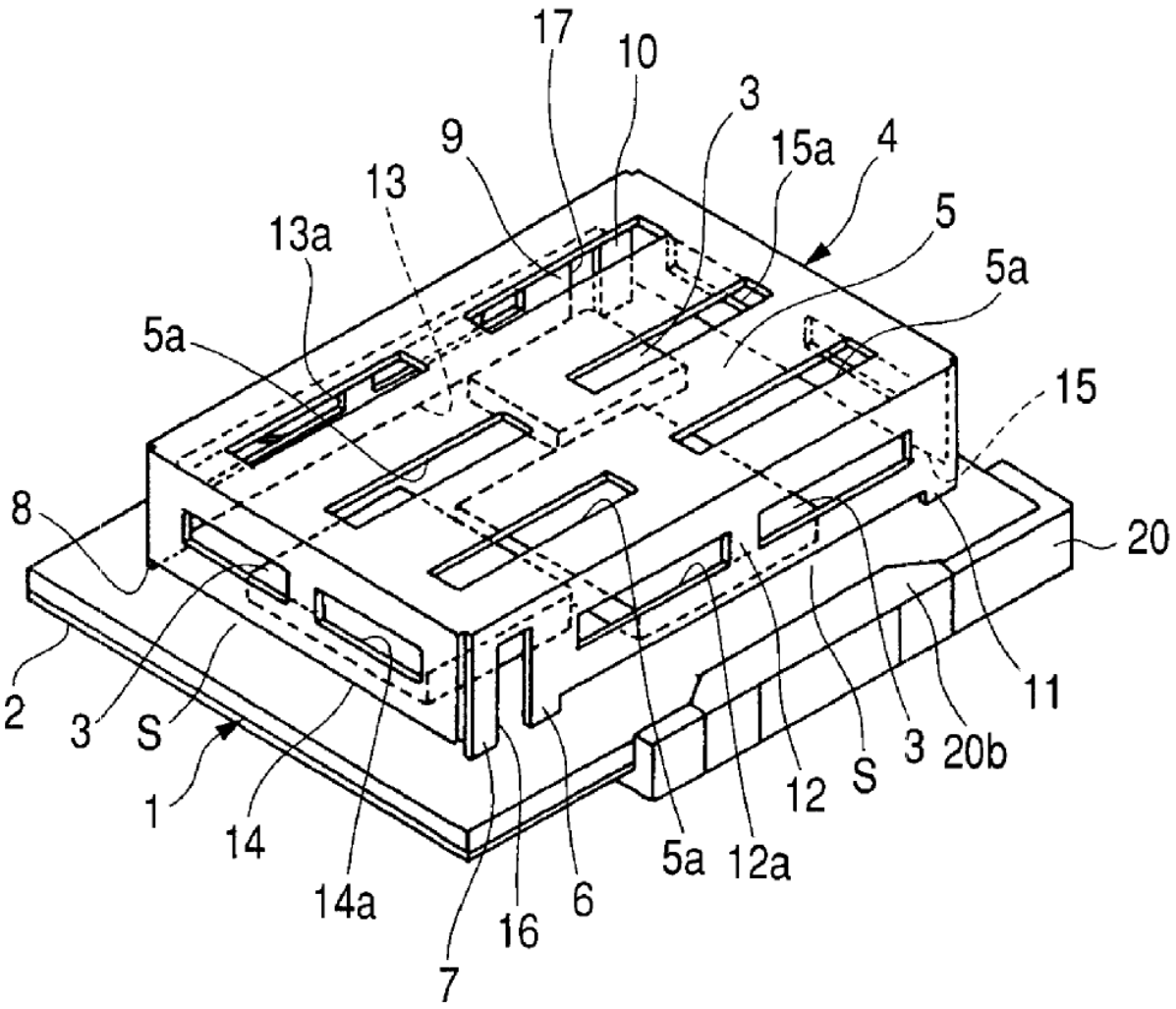
Publication Classification

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

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

(57) **ABSTRACT**

The present invention provides an antenna-integrated module capable of decreasing the size thereof, facilitating prevention of arbitrary alternation to the circuit, effectively performing a reflow process, and being manufactured at low cost. Circuit elements **3** are mounted on a circuit board **1** with a wiring pattern and a ground conductive layer **2** and a sheet-metal covering antenna element **4** mounted on the circuit board **1** covers the circuit elements **3**. The covering antenna element **4** includes a rectangular top plate **5** with openings **5***a*, a power feeding leg piece **6** connected to a feeding line of the wiring pattern, short-circuited leg pieces **7** and **8** connected to the ground conductive layer **2**, support leg pieces **9** to **11** electrically opened, side plates **12** to **15** with openings **12***a* to **15***a* and the pieces **6** to **11** are soldered on the circuit board **1**.



US 20080143611A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0143611 A1**

(43) **Pub. Date: Jun. 19, 2008**

Wang

(54) **ANTENNA FOR PORTABLE ELECTRONIC DEVICE WIRELESS COMMUNICATIONS ADAPTER**

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(21) Appl. No.: **11/639,905**

(22) Filed: **Dec. 15, 2006**

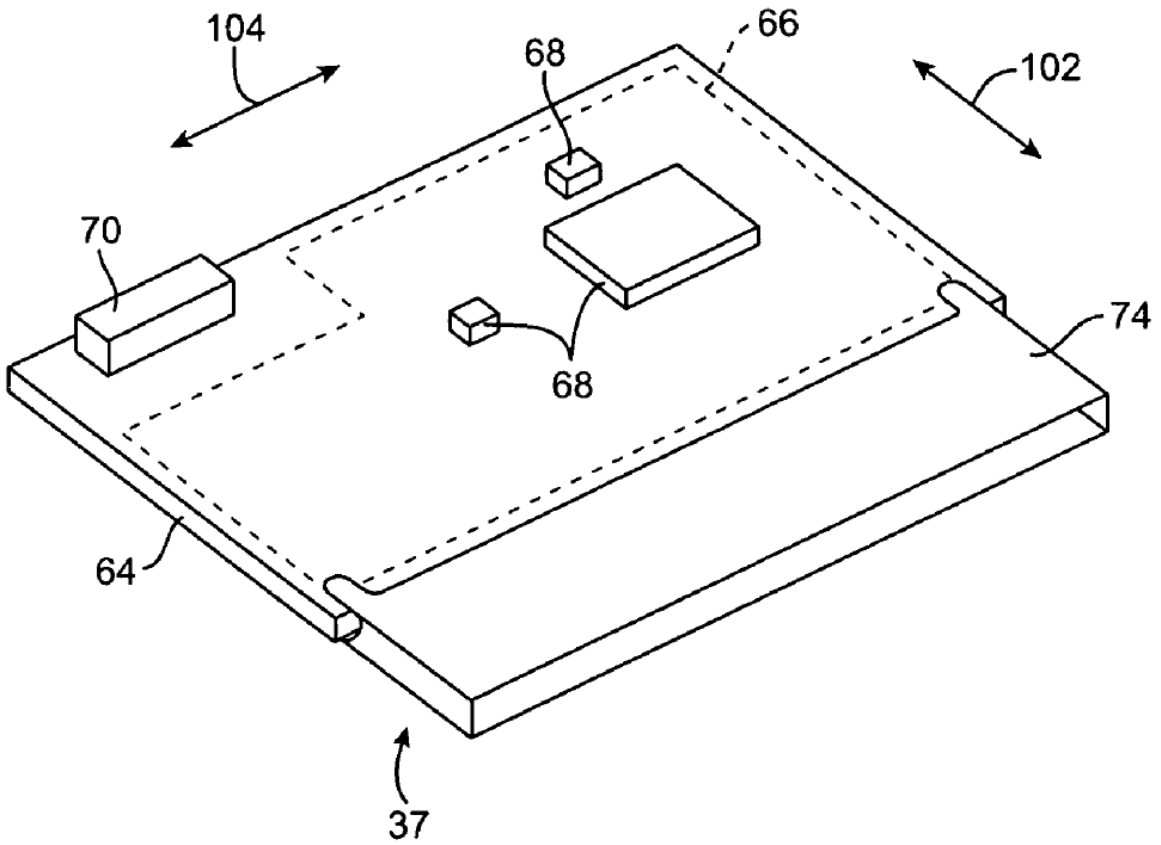
Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)
H01Q 1/52 (2006.01)

(52) **U.S. Cl.** **343/702**; 343/841

(57) **ABSTRACT**

Antennas are provided for portable electronic devices. A portable electronic device may have a port that receives a wireless communications adapter. The adapter may be used to provide wireless functionality for the portable electronic device. The adapter may contain a chip antenna that serves as an antenna resonating element. A printed circuit board within the adapter may contain conductor that has been patterned to form a ground plane for the antenna. The portable electronic device may have a conductive structure such as a housing portion. The conductive structure of the portable electronic device serves as a parasitic antenna element that improves antenna efficiency. The portable electronic device may be a handheld electronic device with music player functionality that communicates with a compact portable wireless device in a piece of sports equipment.



US 20080143612A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0143612 A1**

(43) **Pub. Date: Jun. 19, 2008**

IWAI et al.

(54) **ANTENNA APPARATUS PROVIDED WITH ANTENNA ELEMENT EXCITED THROUGH MULTIPLE FEEDING POINTS**

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(21) Appl. No.: **11/951,141**

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

(30) **Foreign Application Priority Data**

Dec. 5, 2006 (JP) P2006-328194

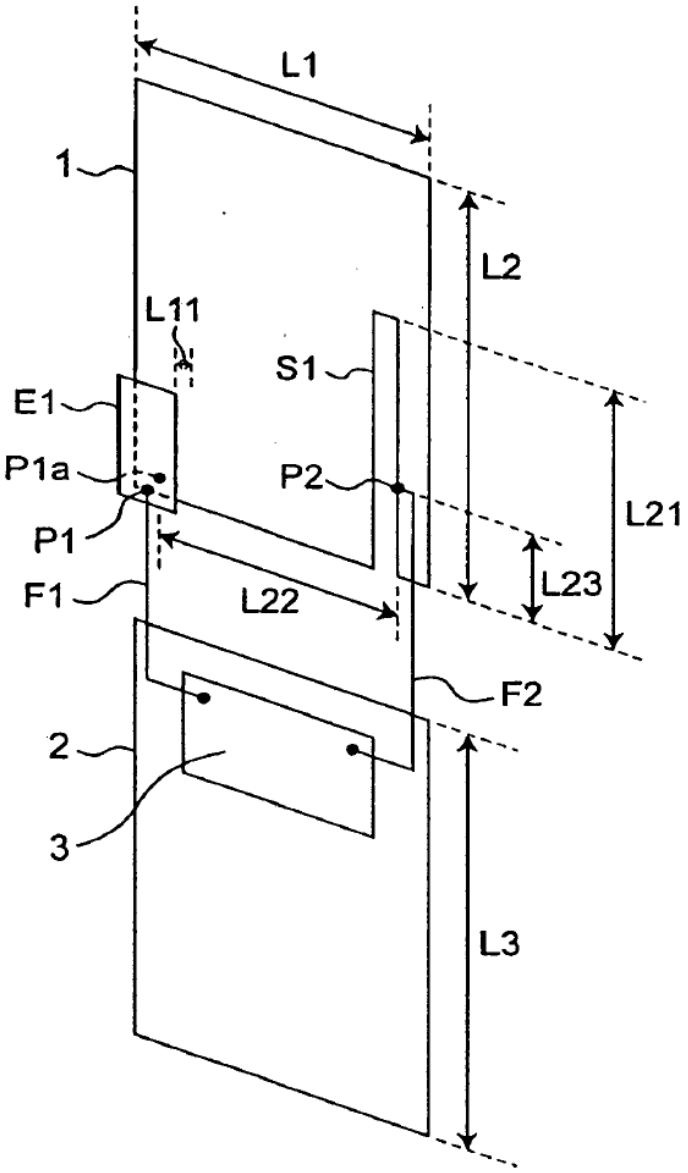
Publication Classification

(51) **Int. Cl.**
H01Q 13/10 (2006.01)
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** **343/702**; 343/767

(57) **ABSTRACT**

An antenna apparatus includes an antenna element having at least one slit, a first feeding point provided at a position on the antenna element, and a second feeding point provided along the slit. The antenna element is excited as an electric current antenna through the first feeding point, and at the same time, the slit is excited as a magnetic current antenna through the second feeding point.



US 20080143613A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0143613 A1

(43) Pub. Date: Jun. 19, 2008

IWAI et al.

(54) **ANTENNA APPARATUS PROVIDED WITH ELECTROMAGNETIC COUPLING ADJUSTER AND ANTENNA ELEMENT EXCITED THROUGH MULTIPLE FEEDING POINTS**

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(21) Appl. No.: **11/951,153**

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

(30) **Foreign Application Priority Data**

Dec. 5, 2006 (JP) 2006-328198

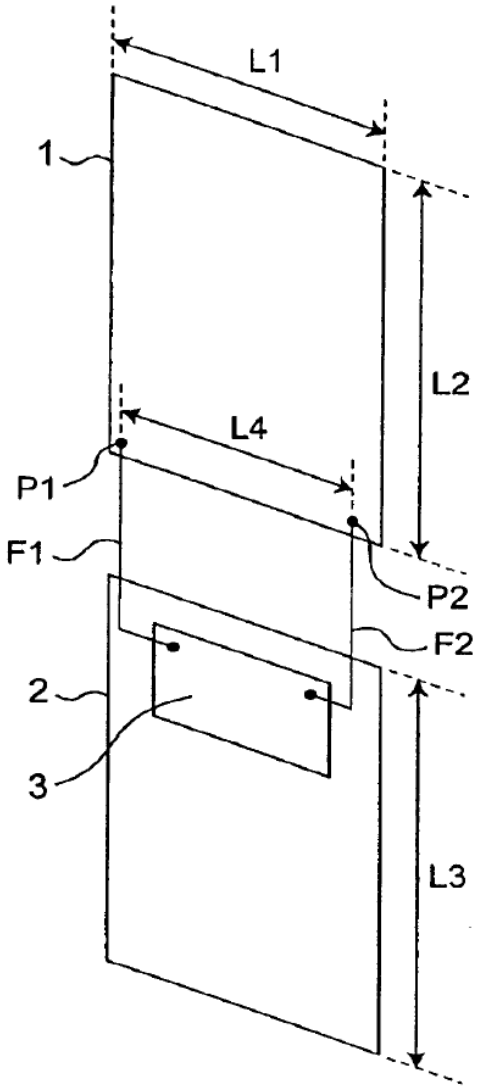
Publication Classification

(51) **Int. Cl.**
H01P 5/18 (2006.01)
H01Q 1/24 (2006.01)

(52) **U.S. Cl.** **343/702**; 333/111

(57) **ABSTRACT**

An antenna apparatus includes a first feeding point and a second feeding point provided at respective positions on an antenna element. The antenna element is excited through the first and second feeding points simultaneously so as to operate as a first antenna portion and a second antenna portion simultaneously, the first antenna portion and the second antenna portion correspond to the first and second feeding points, respectively. The antenna element further includes, between the first and second feeding points, an electromagnetic coupling adjuster for making an amount of isolation between the first and second antenna portions.



US 20080143615A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0143615 A1**

(43) **Pub. Date: Jun. 19, 2008**

PARK et al.

(54) **ANTENNA FEED LINE FOR PORTABLE TERMINAL**

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(21) Appl. No.: **11/956,590**

(22) Filed: **Dec. 14, 2007**

(30) **Foreign Application Priority Data**

Dec. 14, 2006 (KR) 127696/2006

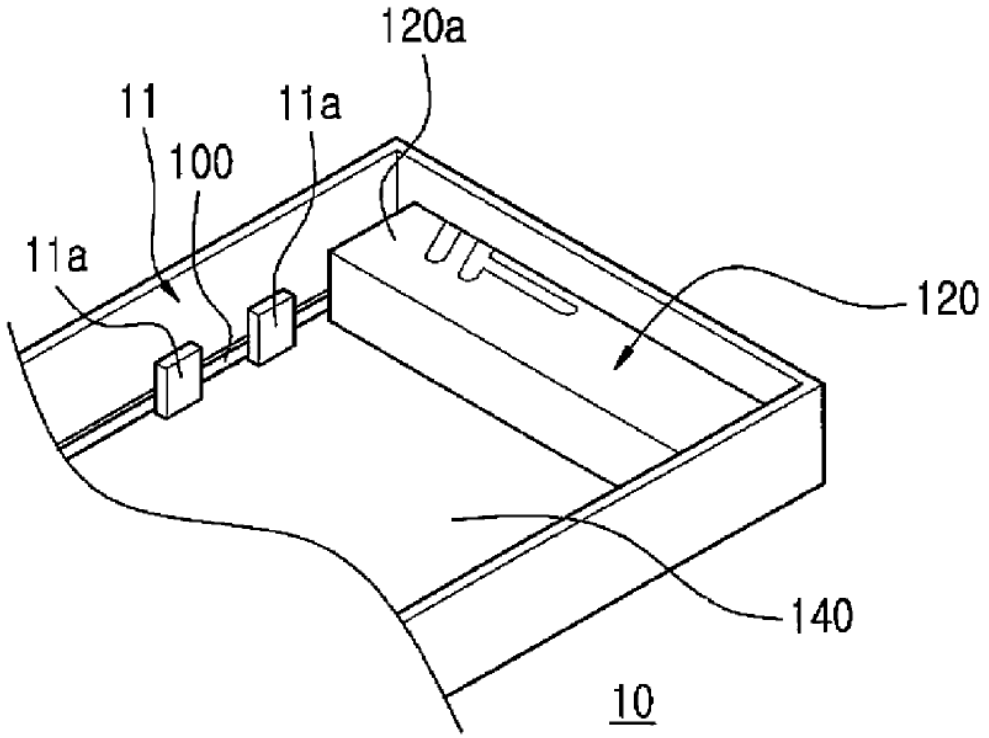
Publication Classification

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

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

(57) **ABSTRACT**

An antenna feed line for a portable terminal is provided that includes first films in which shielding lines are formed lengthwise and a second film disposed between the first films and having at least one pair of signal lines formed lengthwise. The antenna feed line is a flexible printed circuit having a layered structure of the first films and the second film, while the signal lines are shielded by the shielding lines. Use of the antenna feed line allows a stable connection to be maintained in spite of external shock, and signal loss during transmission/reception can be reduced. Moreover, the antenna feed line can be easily fixed inside the portable terminal.



US 20080143616A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0143616 A1**

(43) **Pub. Date: Jun. 19, 2008**

Tu et al.

(54) **INTERNAL ANTENNA AND MOTHERBOARD ARCHITECTURE**

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(73) Assignee: **PALM, INC.**, Sunnyvale, CA (US)

(21) Appl. No.: **12/038,901**

(22) Filed: **Feb. 28, 2008**

Related U.S. Application Data

(63) Continuation of application No. 11/355,159, filed on Feb. 14, 2006, now Pat. No. 7,362,275.

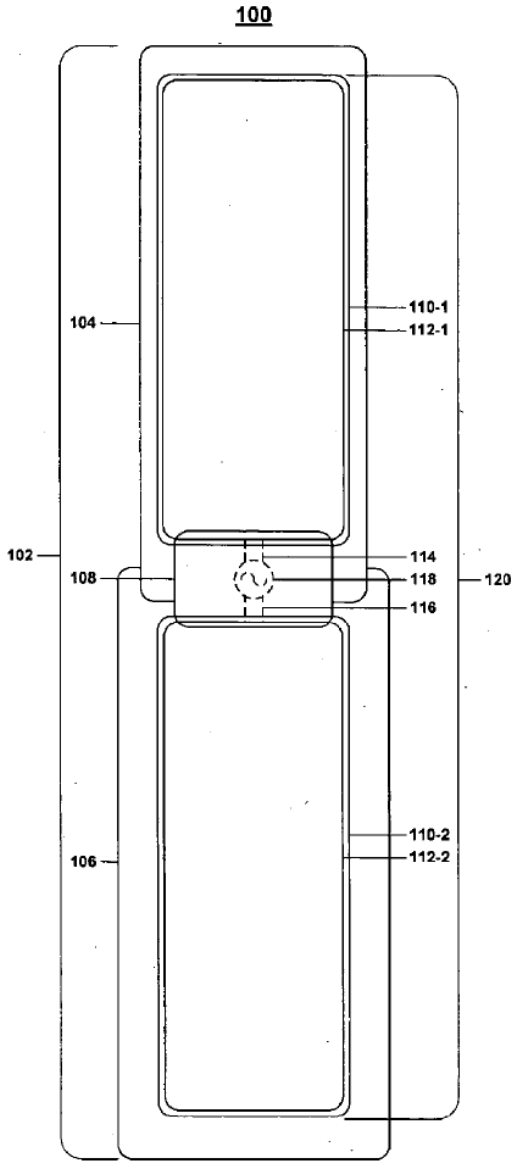
Publication Classification

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

(52) **U.S. Cl.** **343/702**; 343/872

(57) **ABSTRACT**

Various embodiments of an internal antenna and motherboard architecture are described. In one embodiment, a wireless device may include a housing enclosing a first motherboard and a second motherboard. The ground plane of the first motherboard may be coupled to the ground plane of the second motherboard within the housing. The first motherboard and the second motherboard may act as an internal antenna system for the wireless device. Other embodiments are described and claimed.



US 20080143625A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0143625 A1**

Mizushima et al. (43) **Pub. Date: Jun. 19, 2008**

(54) **ANTENNA SHEET AND MANUFACTURING METHOD THEREFOR**

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(21) Appl. No.: **11/950,019**

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

(30) **Foreign Application Priority Data**

Dec. 18, 2006 (JP) 2006-339690

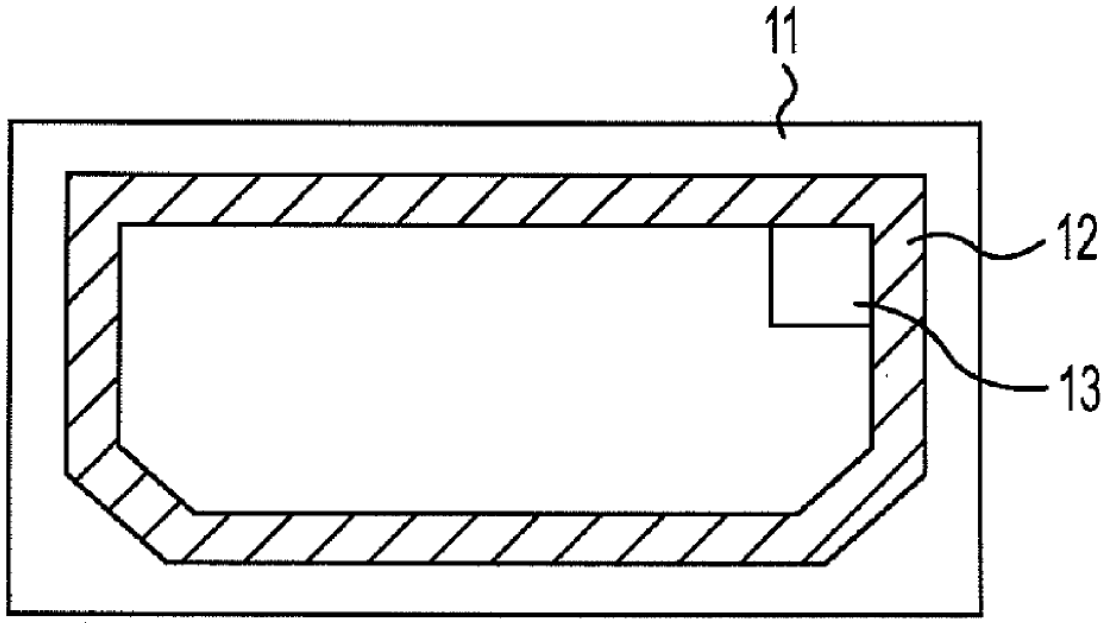
Publication Classification

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

(52) **U.S. Cl.** **343/787**; 29/600; 977/773

(57) **ABSTRACT**

An antenna sheet includes a magnetic sheet composed of a resin matrix and an Fe-based amorphous alloy contained in the resin matrix, and an antenna pattern disposed directly on the magnetic sheet, the antenna pattern being composed of nanoparticles. The antenna sheet can be manufactured by forming the antenna pattern directly on the magnetic sheet using a material containing nanoparticles, and then by sintering the nanoparticles by subjecting the magnetic sheet having the antenna pattern to heat treatment.



US 20080143627A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0143627 A1

(43) Pub. Date: Jun. 19, 2008

Ohba et al.

(54) **ANTENNA DEVICE ADAPTED FOR PORTABLE RADIO APPARATUS**

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

(21) Appl. No.: **11/973,807**

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

(30) **Foreign Application Priority Data**

Dec. 15, 2006 (JP) 2006-338273

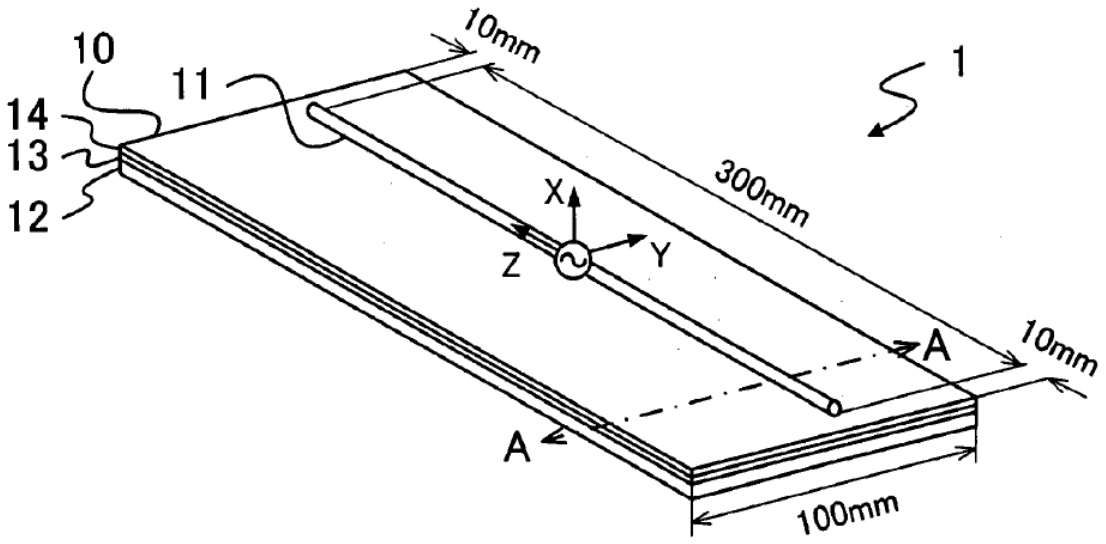
Publication Classification

(51) **Int. Cl.**
H01Q 19/09 (2006.01)

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

(57) **ABSTRACT**

An antenna device includes a printed circuit board and an antenna element. The printed circuit board has a face a portion of which is formed by a conductive layer overlaid with a magnetic material layer made of anisotropic magnetic material. The magnetic material layer is arranged in such a way that a hard magnetization axis of the anisotropic magnetic material is directed almost parallel to the face. The antenna element is arranged almost parallel to the printed circuit board on a side of the face. The antenna element is arranged in such a way that an antenna current distributed on the antenna element if the antenna element is excited is directed almost perpendicular to the hard magnetization axis.



US 20080143631A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0143631 A1**

(43) **Pub. Date: Jun. 19, 2008**

Autti

(54) **ANTENNA FOR A PORTABLE DEVICE**

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(73) Assignee: **Nokia Corporation**

(21) Appl. No.: **11/641,561**

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

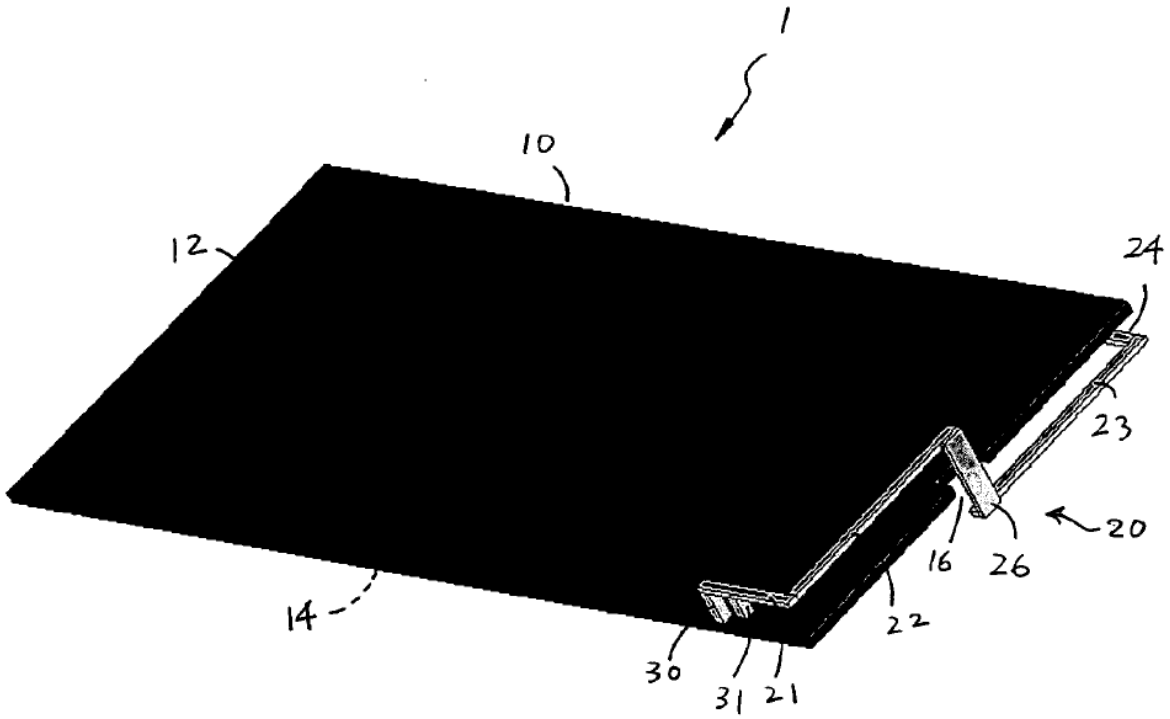
Publication Classification

(51) **Int. Cl.**
H01Q 1/48 (2006.01)
H01P 11/00 (2006.01)

(52) **U.S. Cl.** **343/845**; 29/600

(57) **ABSTRACT**

A GPS antenna has two electrically connected L-sections disposed on opposite sides of a circuit board. The L-sections lie on two separate planes parallel to the circuit board surface. One L-section is connected to a feeding point located at one edge area of the circuit board and the other L-section is connected to a grounding point located at an opposite edge area of the circuit board. Optionally, a second grounding point is connected to the antenna element adjacent to the feeding point for impedance matching purposes. The antenna is configured for use in an electronic device such as a mobile phone.



US 20080146183A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0146183 A1**

Gebara et al. (43) **Pub. Date: Jun. 19, 2008**

(54) **METHOD AND SYSTEM FOR ANTENNA INTERFERENCE CANCELLATION**

(75) Inventors: **Edward Gebara**, Atlanta, GA (US); **Joy Laskar**, Marietta, GA (US); **Emmanouil M. Tentzeris**, Atlanta, GA (US); **Andrew Joo Kim**, Atlanta, GA (US)

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(73) Assignee: **Quellan, Inc.**, Atlanta, GA (US)

(21) Appl. No.: **12/069,236**

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

Related U.S. Application Data

(63) Continuation of application No. 11/512,674, filed on Aug. 30, 2006, now Pat. No. 7,366,244, which is a continuation of application No. 10/991,009, filed on Nov. 17, 2004, now Pat. No. 7,123,676.

(60) Provisional application No. 60/520,592, filed on Nov. 17, 2003.

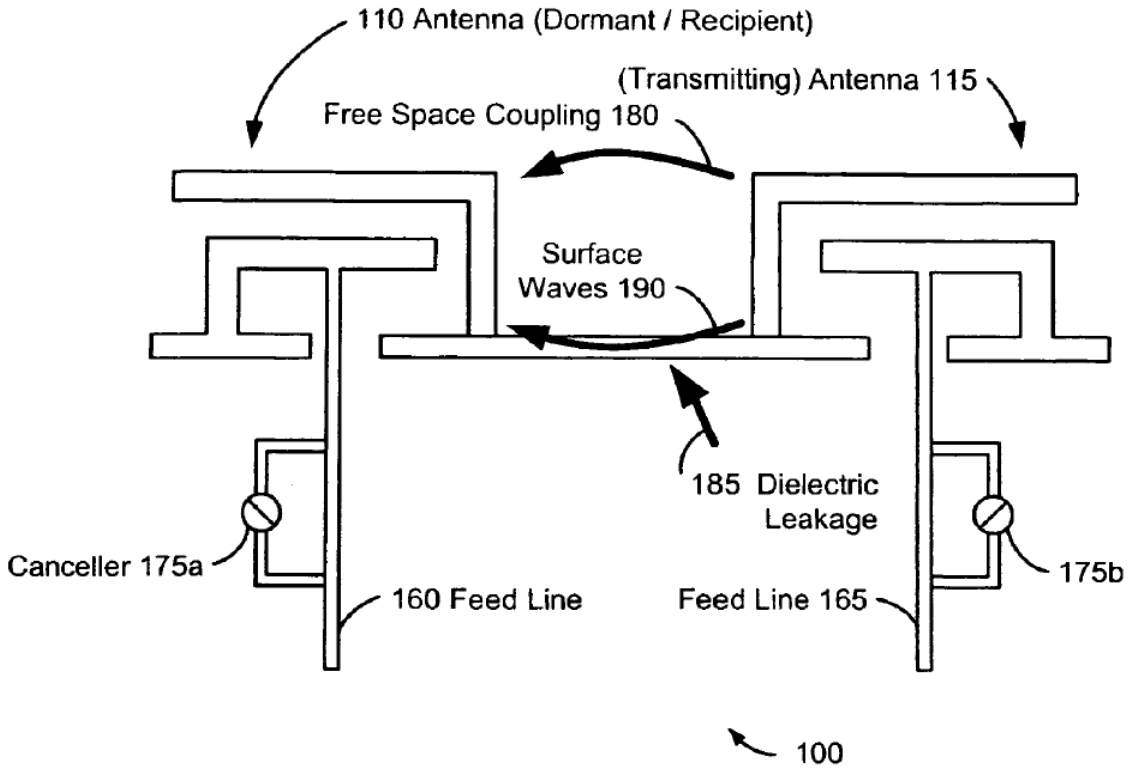
Publication Classification

(51) **Int. Cl.**
H04B 1/10 (2006.01)

(52) **U.S. Cl.** **455/295**

(57) **ABSTRACT**

A wireless communication system can comprise two or more antennas that interfere with one another via free space coupling, surface wave crosstalk, dielectric leakage, or other interference effect. The interference effect can produce an interference signal on one of the antennas. A cancellation device can suppress antenna interference by generating an estimate of the interference signal and subtracting the estimate from the interference signal. The cancellation device can generate the estimate based on sampling signals on an antenna that generates the interference or on an antenna that receives the interference. The cancellation device can comprise a model of the crosstalk effect. Transmitting test signals on the communication system can define or refine the model.



US 20080150807A1

(19) **United States**

(12) **Patent Application Publication**

Lin et al.

(10) **Pub. No.: US 2008/0150807 A1**

(43) **Pub. Date: Jun. 26, 2008**

(54) **MULTI-BAND ANTENNA**

(75) Inventors: **Ching-Chi Lin**, Taipei Hsien (TW); **Kai Shih**, Taipei Hsien (TW); **Yu-Yuan Wu**, Taipei Hsien (TW)

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(21) Appl. No.: **11/613,260**

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

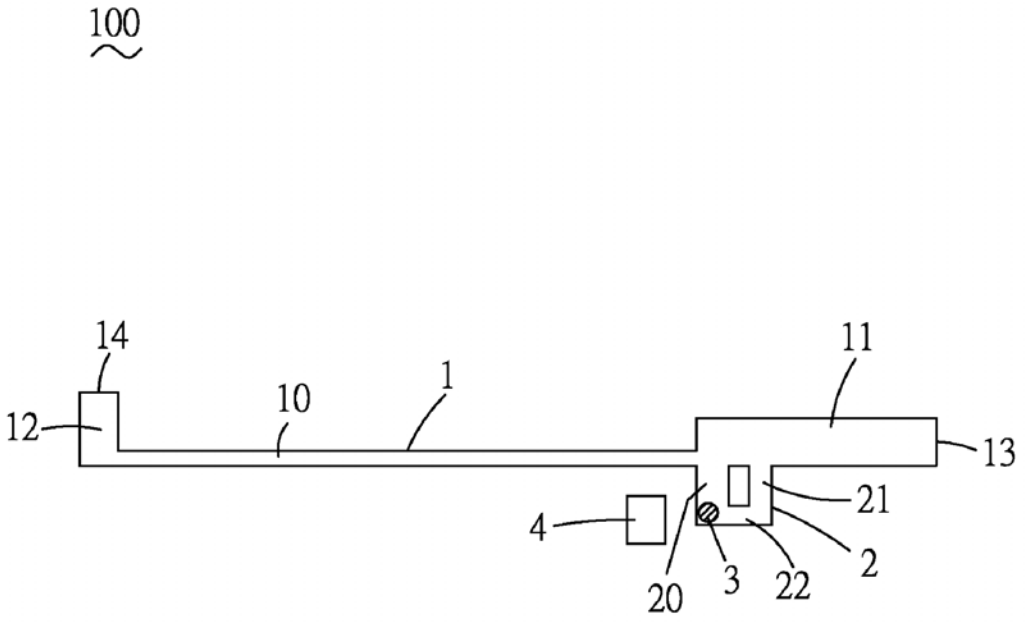
Publication Classification

(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01Q 1/24 (2006.01)
H01Q 1/38 (2006.01)

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

(57) **ABSTRACT**

A multi-band antenna configured in a portable electrical device capable of operating in a low frequency bandwidth and a high frequency bandwidth has an elongated radiating body and a feeding conductor connecting the elongated radiating body. The feeding conductor has opposite side arms respectively connecting the elongated radiating body and a connecting portion connecting the side arms. A feeding point is arranged at a corner where one of the side arms connects to the connecting portion. The elongated radiating body and the feeding conductor are located on different planes of the portable electronic device. According to the position where the feeding conductor connects to the elongated radiating body and the position where the feeding point is arranged at, the multi-band antenna has a preferred low frequency bandwidth and a preferred high frequency bandwidth. Therefore, the portable electrical device can operate at different wireless bandwidths.



US 20080150808A1

(19) **United States**

(12) **Patent Application Publication**

Asrani et al.

(10) **Pub. No.: US 2008/0150808 A1**

(43) **Pub. Date: Jun. 26, 2008**

(54) **SWITCHED CAPACITIVE PATCH FOR RADIO FREQUENCY ANTENNAS**

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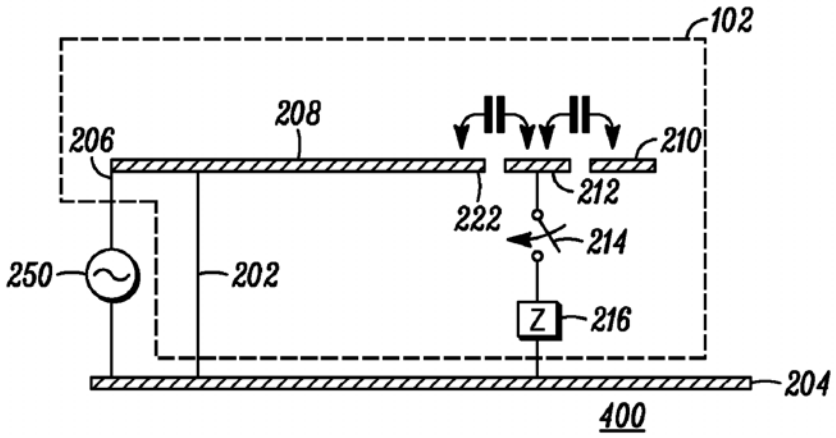
(52) **U.S. Cl.** ..... **343/702**; 343/700 MS; 343/860

(57) **ABSTRACT**

An antenna system (**102**) for receiving and transmitting radio frequency (RF) signals within a plurality of predetermined RF bands includes a ground leg (**202**), a feed leg (**206**), one or more capacitive patches (**212**) and one or more switching devices (**214**). The feed leg (**206**) is coupled to the ground leg (**202**) at one portion thereof. Each of the one or more switching devices (**214**) is associated with one capacitive patch (**212**) and selectably couples its associated capacitive patch (**212**) to a ground plane (**204**) in order to receive and transmit RF signals within an associated predetermined RF band.



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Rosengren et al.

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(43) **Pub. Date: Jun. 26, 2008**

(54) **HOOP ANTENNA**

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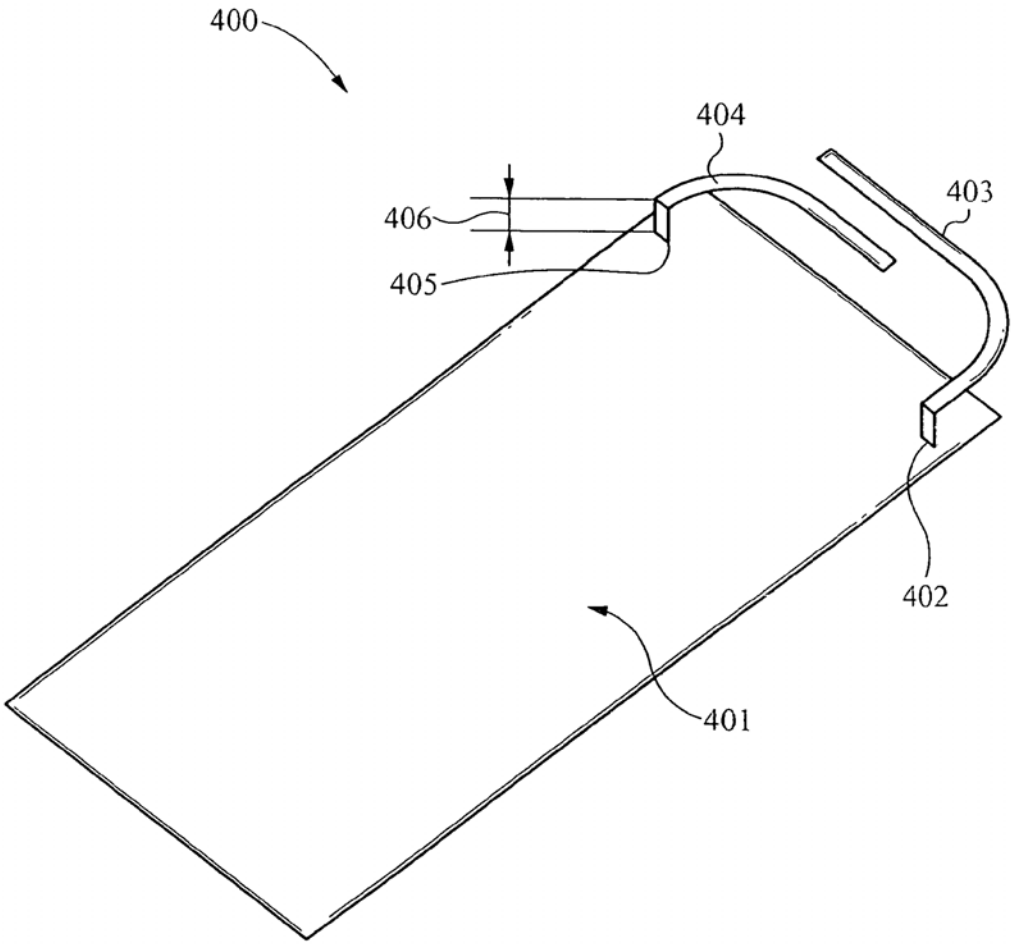
(52) **U.S. Cl.** ..... **343/702**; 343/700 MS

(57) **ABSTRACT**

An antenna for use in a relatively small confined space, such as a mobile phone, is provided. In one example, the antenna includes a feeding arm having an end coupled to a feeding contact; and a grounded arm having an end coupled to a ground contact, wherein the feeding arm and the grounded arm are bent to conform to the relatively small confined volume. The relatively small confined volume can be internal space of a mobile communication device. The mobile communication device can be a mobile phone, for example.



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(43) **Pub. Date: Jun. 26, 2008**

SUGIYAMA et al.

(54) **ANTENNA APPARATUS AND RADIO COMMUNICATING APPARATUS**

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(21) Appl. No.: **11/864,462**

(22) Filed: **Sep. 28, 2007**

(30) **Foreign Application Priority Data**

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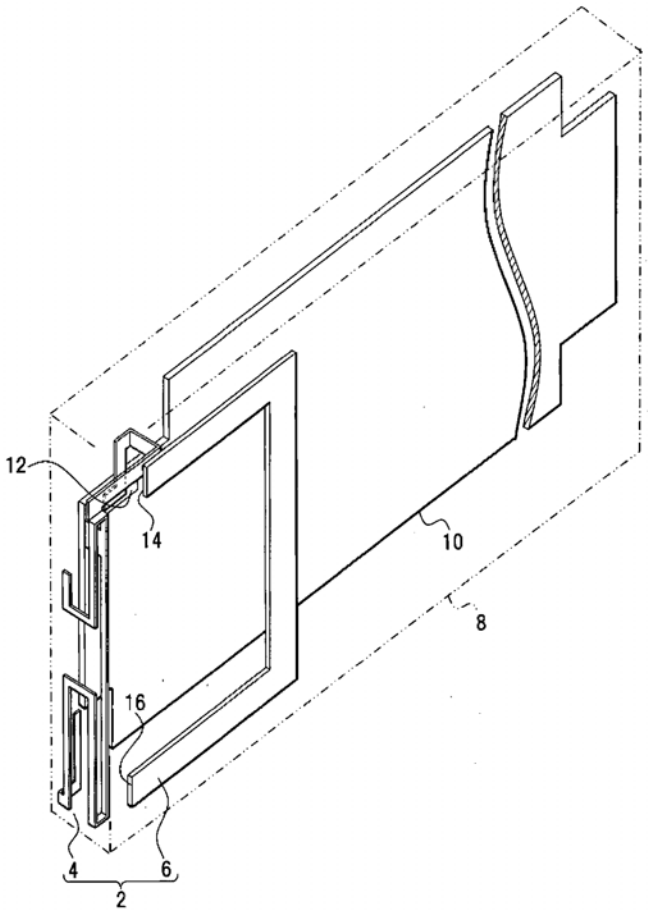
Publication Classification

(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01Q 1/22 (2006.01)

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

(57) **ABSTRACT**

The present invention relates to an antenna apparatus capable of multifrequency resonance and realizes downsizing and multifrequency resonance. The present invention relates to an antenna apparatus capable of multifrequency resonance or a radio communicating apparatus (e.g., portable phone) including the antenna apparatus; toward a feed element connected to and supplied with electricity from a feeding unit of a circuit substrate (printed circuit substrate), a non-feed element is disposed with over the circuit substrate or outside the circuit substrate; and the feed side or the open side of the feed element is electromagnetically coupled to the non-feed element to enable resonance in the frequency band of the non-feed element in addition to resonance in the frequency band of the feed element.



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(12) **Patent Application Publication**

Rahola et al.

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(43) **Pub. Date: Jun. 26, 2008**

(54) **ANTENNA FEED ARRANGEMENT**

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(21) Appl. No.: **11/645,117**

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Publication Classification

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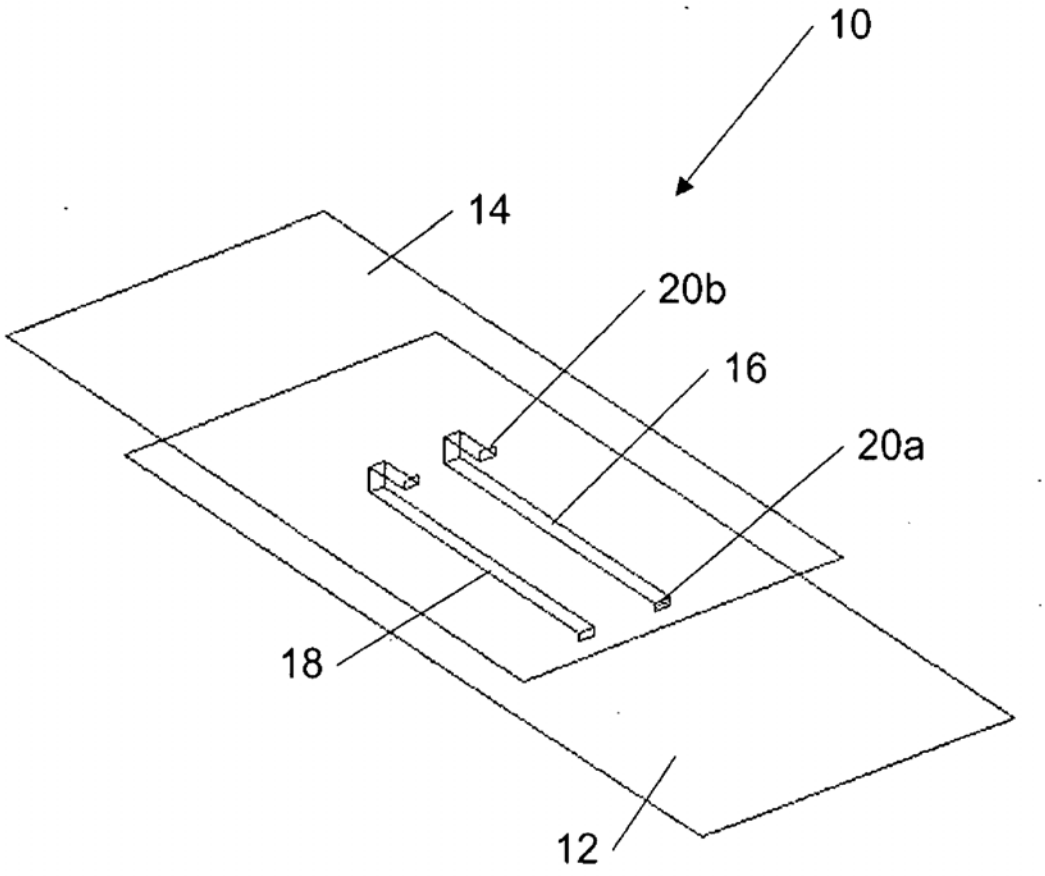
(52) **U.S. Cl.** **343/720**; 343/859

(57) **ABSTRACT**

The specification and drawings present a new apparatus and method for antenna arrangement by providing a feed arrangement through a flex connection for radiating elements of a first part and a second part (e.g., lower and upper parts, respectively) of a mobile terminal (e.g., a slide-type terminal), wherein the first and second parts are configured to move relative to each other during operation of the mobile terminal. For a slide-type terminal, the first and the second parts can be sliding relative to each other during said operation. This antenna arrangement can be used by any of the cellular or non-cellular wireless systems.



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(19) **United States**

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Mohammadian et al.

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(54) **COMPACT ANTENNAS FOR ULTRA WIDE BAND APPLICATIONS**

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(21) Appl. No.: **11/615,802**

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

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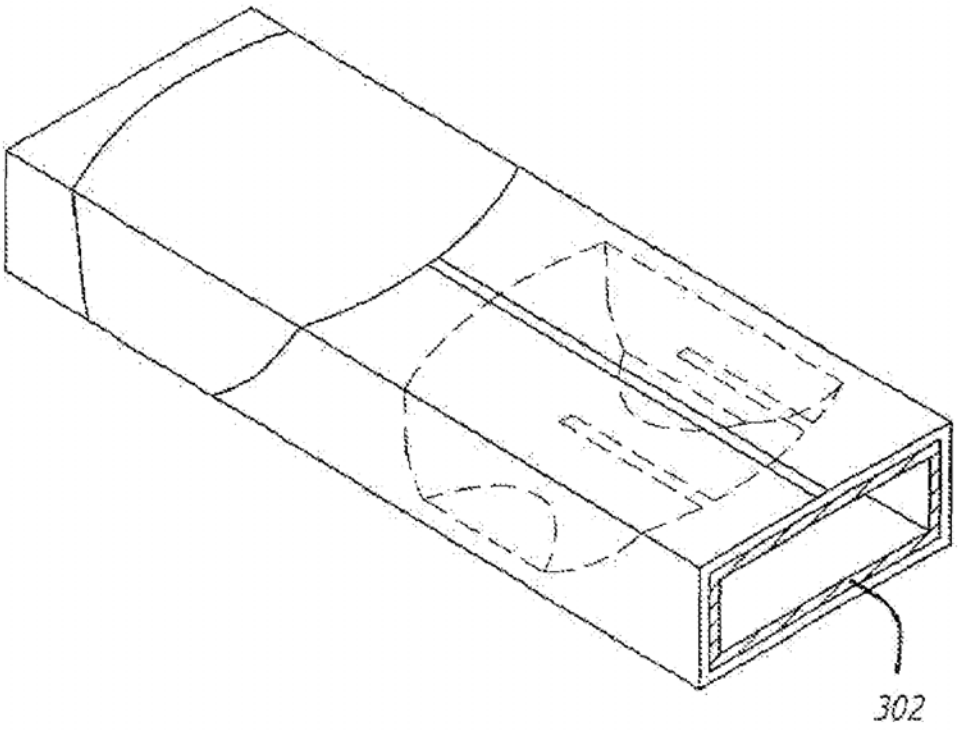
H01Q 1/38 (2006.01)

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

(57) **ABSTRACT**

Compact antennas for ultra wide band applications are disclosed. The compact antenna may be an elliptic dipole antenna with a poise and counterpoise both having an elliptical shape. A substrate may be used to support the poise and counterpoise with the substrate having a closed three-dimensional shape.



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Lin et al.

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(54) **MULTI-BAND ANTENNA**

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(21) Appl. No.: **11/613,248**

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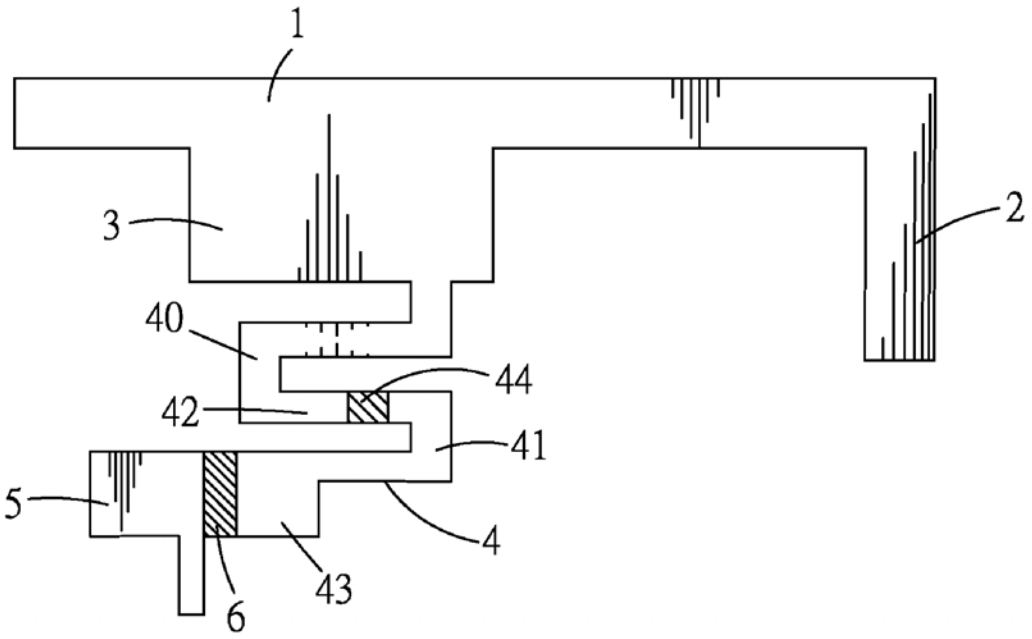
(52) **U.S. Cl.** ..... **343/860**; 343/700 MS

(57) **ABSTRACT**

A multi-band antenna adapted to a portable electrical device capable of operating in various wireless communication bands includes a first radiating conductor having opposite elongated sides, a second radiating conductor extending from one end of the first radiating conductor, a third radiating conductor arranging about a central area of the first radiating. Both the second radiating conductor and the third radiating conductor extend from the same elongated side of the first radiating conductor. A feeding body is curved and extended from the third radiating conductor. According to a position that the feeding body connecting to the third radiating conductor and designed the feeding body, operation of the multi-band antenna has a preferred range of a low frequency bandwidth and a high frequency harmonic bandwidth.



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(19) **United States**

(12) **Patent Application Publication**

Pan et al.

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(54) **MULTI-BAND TUNABLE FREQUENCY RECONFIGURABLE ANTENNAS USING HIGHER ORDER RESONANCES**

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(21) Appl. No.: **11/644,741**

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

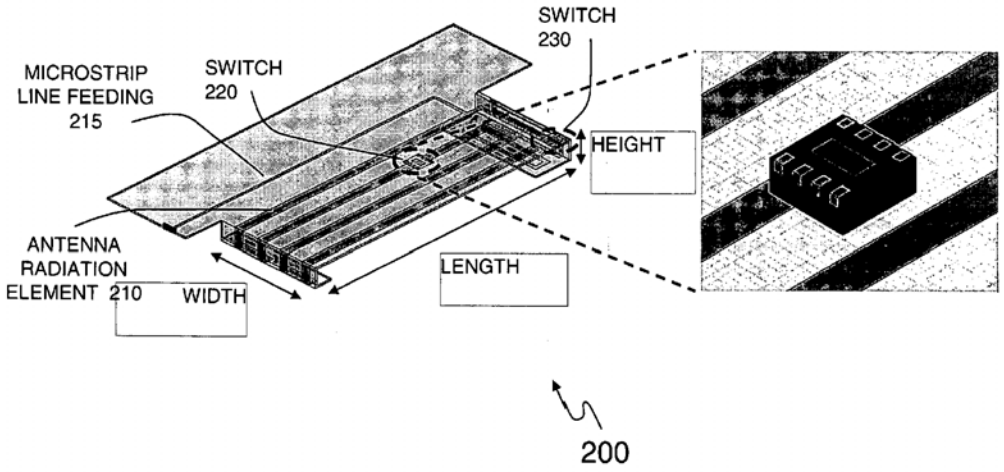
Publication Classification

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

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

(57) **ABSTRACT**

A wireless device using natural higher order harmonics on multi-band reconfigurable antenna designs where the antenna higher order resonance is used to build a multi-band to multi-band frequency reconfigurable antenna.



200

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(54) **ELECTRICAL CONNECTOR FOR CONNECTING ELECTRICALLY AN ANTENNA MODULE TO A GROUNDING PLATE**

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

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(52) **U.S. Cl.** **439/108**; 343/867

(57) **ABSTRACT**

An electrical connector includes a top plate, a first clamping plate extending integrally and downwardly from a first side of the top plate, and a second clamping plate extending integrally and downwardly from a second side of the top plate, and cooperating with the top plate and the first clamping plate to define a clamp for clamping a grounding plate. A connecting member extends integrally from the second side of the top plate and is connected electrically to a ground pattern provided on a circuit board of an antenna module.