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(19) **United States**

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(43) **Pub. Date: Nov. 6, 2008**

MILANO et al.

(54) **WIRELESS AREA NETWORK COMPLIANT SYSTEM AND METHOD USING A PHASE ARRAY ANTENNA**

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(21) Appl. No.: **12/111,984**

(22) Filed: **Apr. 30, 2008**

(30) **Foreign Application Priority Data**

May 2, 2007 (IL) ..... IL 182936

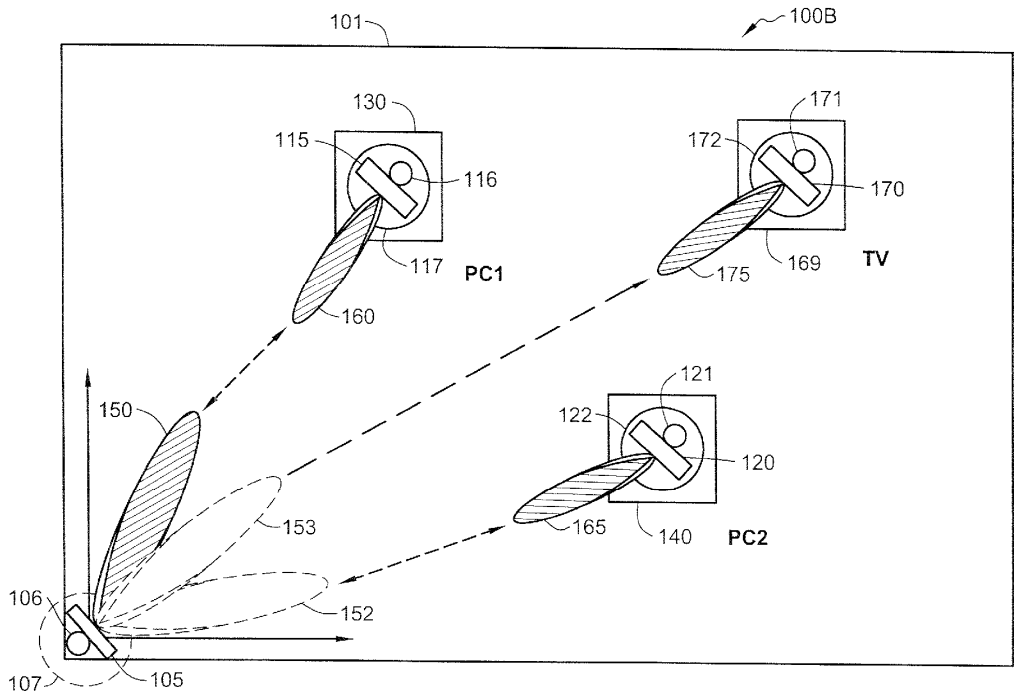
Publication Classification

(51) **Int. Cl.**
H01Q 3/00 (2006.01)

(52) **U.S. Cl.** **342/374**; 342/368

(57) **ABSTRACT**

A wireless area network communication system comprising at least one phased array antenna frame, a phased array antenna circuit connected to the at least one phased array antenna frame wherein said phased array circuit and said at least one phased array antenna frame are adapted to transmit and receive wireless area network compliant signals from or to wireless area network devices.



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(43) **Pub. Date: Nov. 6, 2008**

Chang et al.

(54) **BROADBAND DIELECTRIC RESONATOR ANTENNA EMBEDDING MOAT AND DESIGN METHOD THEREOF**

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(21) Appl. No.: **11/950,289**

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

(30) **Foreign Application Priority Data**

May 2, 2007 (TW) TW96115557

Publication Classification

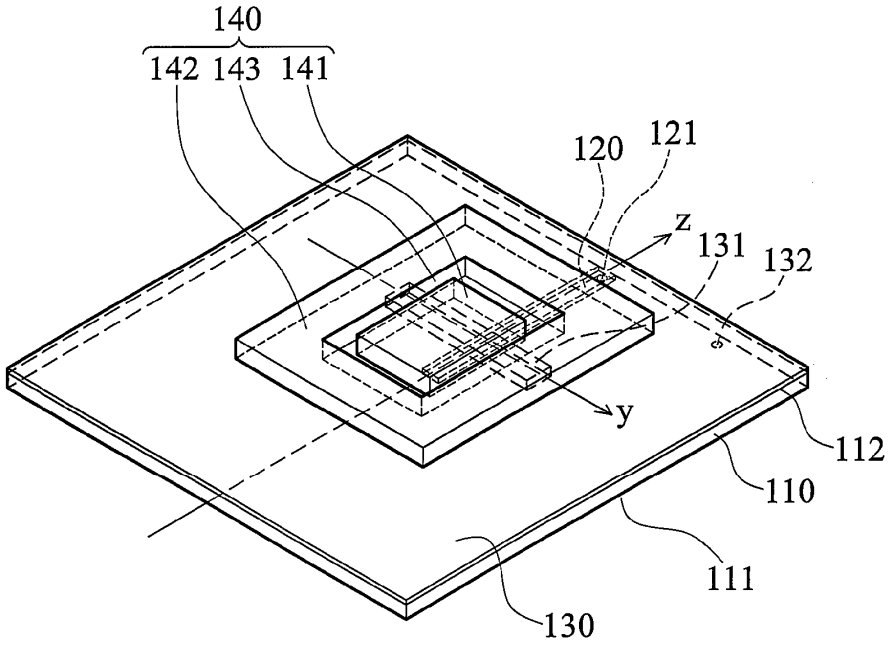
(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01Q 1/38 (2006.01)

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

(57) **ABSTRACT**

An antenna is provided comprising a substrate, a feed conductor, a ground layer and a resonator body. The substrate comprises a first surface and a second surface. The feed conductor is formed on the first surface. The ground layer is formed on the second surface comprising an opening. The resonator body comprises a first resonator structure and a second resonator structure. The first resonator structure is disposed on the ground layer. The second resonator structure is disposed on the ground layer surrounding the first resonator structure, wherein a groove is formed between the first and the second resonator structures.

100



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(19) **United States**

(12) **Patent Application Publication**

Su et al.

(10) **Pub. No.: US 2008/0272964 A1**

(43) **Pub. Date: Nov. 6, 2008**

(54) **ANTENNA RADIATOR ASSEMBLY AND RADIO COMMUNICATIONS ASSEMBLY**

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(21) Appl. No.: **10/596,526**

(22) PCT Filed: **Dec. 7, 2004**

(86) PCT No.: **PCT/US04/40928**

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

(30) **Foreign Application Priority Data**

Dec. 18, 2003 (CH) 200310123225.8

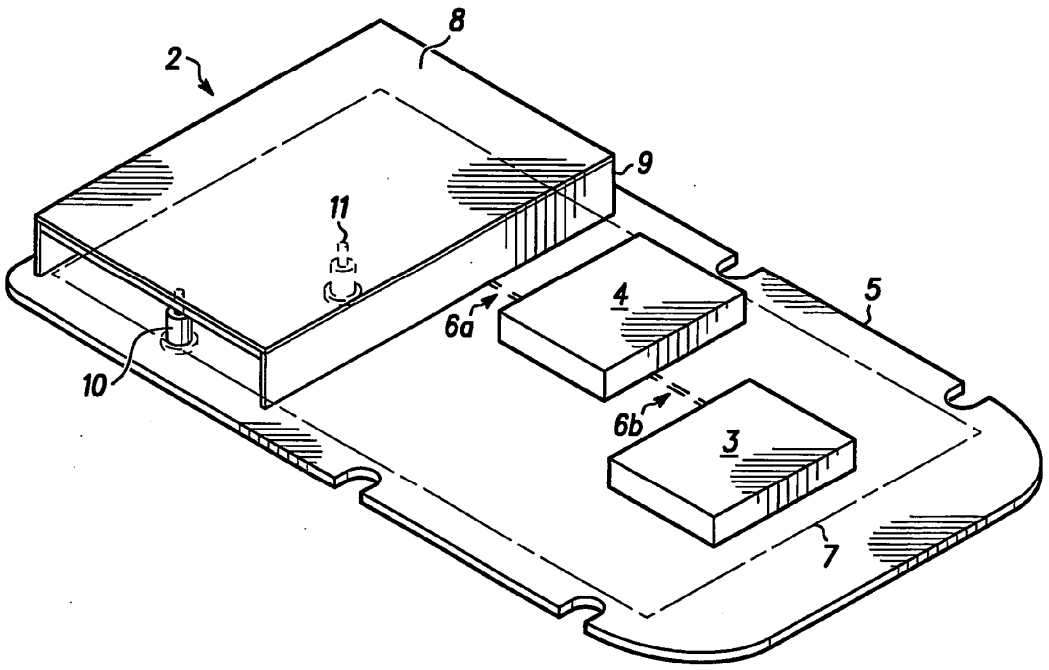
Publication Classification

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

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

(57) **ABSTRACT**

An antenna radiator assembly (**2**) and radio communications assembly (**1**) comprising a circuit board (**5**) formed from dielectric layers dielectric layers (**21**, **22**) supporting electrical conductors. The electrical conductors include a feed point conductive trace (**23**) and conductive sheets (**7**, **24**) comprising a ground plane. An antenna radiator element (**8**) is spaced from the circuit board (**5**) and when viewed in plan view there is an overlapping area (**25**) where most of a surface area of the antenna radiator element (**8**) overlaps a surface area of the circuit board (**26**) thereby forming a sandwiched dielectric region (**25**). A feed point connector (**11**) couples the antenna radiator element (**8**) to the feed point conductive trace (**23**) and a ground connector (**10**) couples the antenna radiator element (**8**) to the ground plane. The circuit board dielectric layers (**21**, **22**) in the sandwiched dielectric region (**25**) are disposed between the antenna radiator element (**8**) and the ground plane.



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(19) United States

(12) Patent Application Publication

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HSIA et al.

(54) **COMBINATION OF PORTABLE COMPUTER AND ANTENNA**

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(21) Appl. No.: **11/743,762**

(22) Filed: **May 3, 2007**

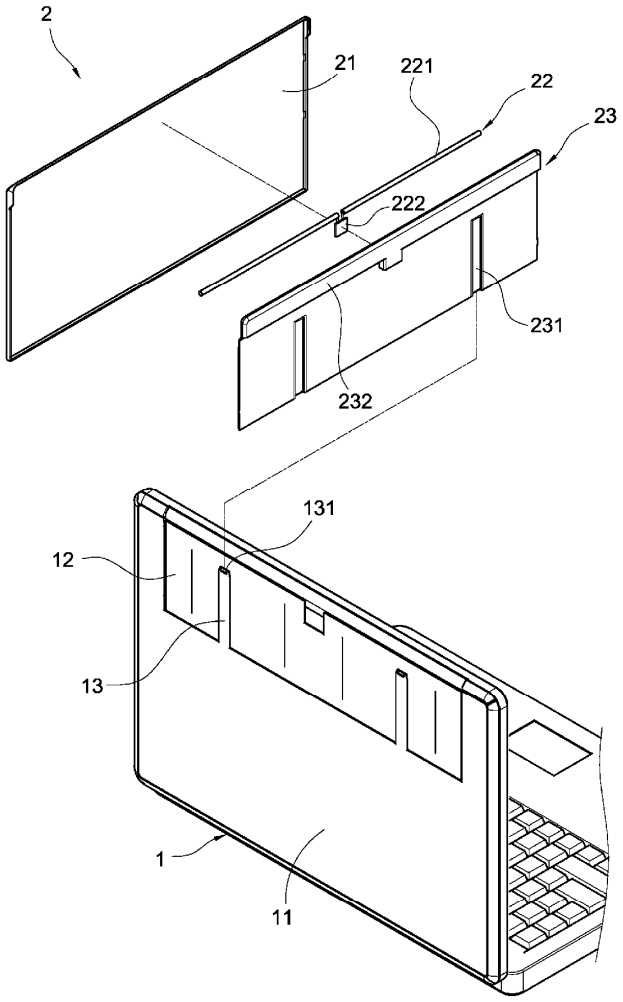
Publication Classification

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

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

(57) **ABSTRACT**

A combination of a portable computer and an antenna includes a portable computer and an antenna. The antenna is mounted on the casing of the portable computer. The outer surface of the casing of the portable computer has a recessed region. The recessed region is provided with a plurality of protruding stripes therein. The antenna is composed of an outer plate, an antenna device and a sliding plate. The mounting surface of the sliding plate is provided with a plurality of sliding troughs each of which is combined with the corresponding protruding strip, so that the sliding plate can slide with respect to the portable computer. Via this sliding action, the user can adjust the position of the antenna, so that the portable computer can receive the wireless signals.



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(19) **United States**

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(43) **Pub. Date: Nov. 6, 2008**

Qi et al.

(54) **MOBILE WIRELESS COMMUNICATIONS DEVICE COMPRISING MULTI-FREQUENCY BAND ANTENNA AND RELATED METHODS**

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(21) Appl. No.: **12/173,087**

(22) Filed: **Jul. 15, 2008**

Related U.S. Application Data

(63) Continuation of application No. 11/769,844, filed on Jun. 28, 2007, which is a continuation of application No. 11/422,158, filed on Jun. 5, 2006, now Pat. No. 7,271,772, which is a continuation of application No. 11/042,693, filed on Jan. 25, 2005, now Pat. No. 7,068,230.

(60) Provisional application No. 60/576,159, filed on Jun. 2, 2004, provisional application No. 60/576,637, filed on Jun. 3, 2004.

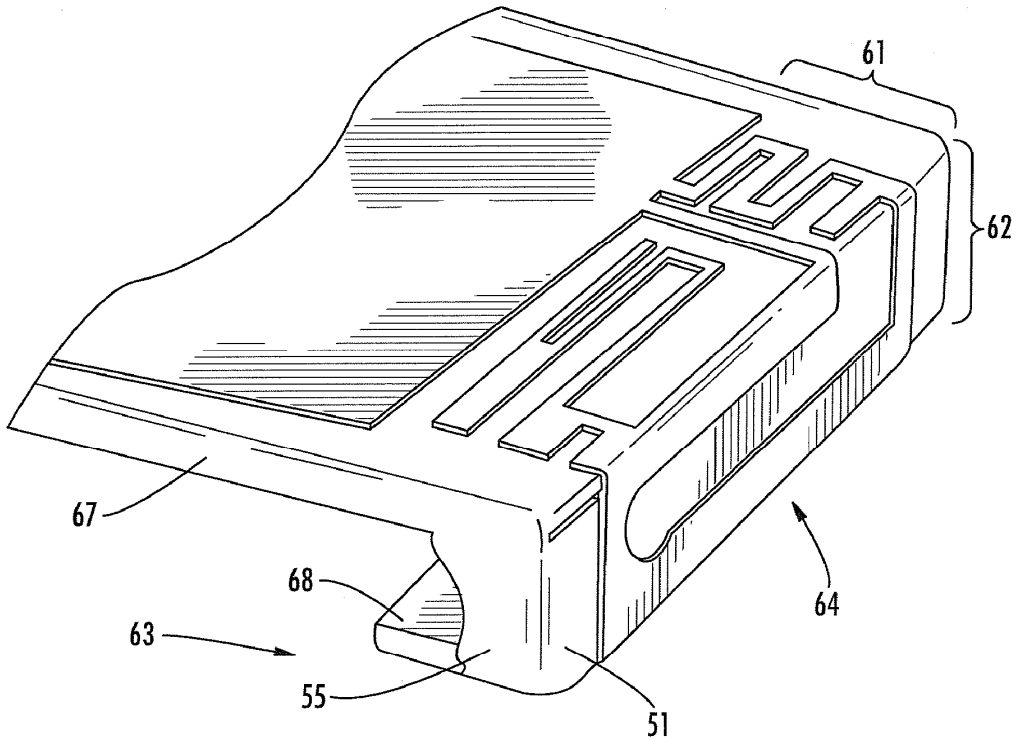
Publication Classification

(51) **Int. Cl.**
H01Q 1/24 (2006.01)
H01Q 11/12 (2006.01)

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

(57) **ABSTRACT**

A mobile wireless communications device may include a housing and a multi-frequency band antenna carried within the housing. The multi-frequency band antenna may include a main loop conductor having a gap therein defining first and second ends of the main loop conductor, a first branch conductor having a first end connected adjacent the first end of the main loop conductor and having a second end defining a first feed point, and a second branch conductor having a first end connected adjacent the second end of the main loop conductor and a second end defining a second feed point. The antenna may further include a tuning branch conductor having a first end connected to the main loop conductor between the respective first ends of the first and second branches.



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(19) **United States**

(12) **Patent Application Publication**

Hsieh et al.

(10) **Pub. No.: US 2008/0272967 A1**

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(54) **WIRELESS TRANSMISSION DEVICE WITH A BUILT-IN ANTENNA AND A CONNECTOR**

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(21) Appl. No.: **12/219,151**

(22) Filed: **Jul. 17, 2008**

Related U.S. Application Data

(62) Division of application No. 11/445,327, filed on Jun. 2, 2006.

(30) **Foreign Application Priority Data**

Jun. 2, 2005 (TW) 94209164
Aug. 30, 2005 (TW) 94214878

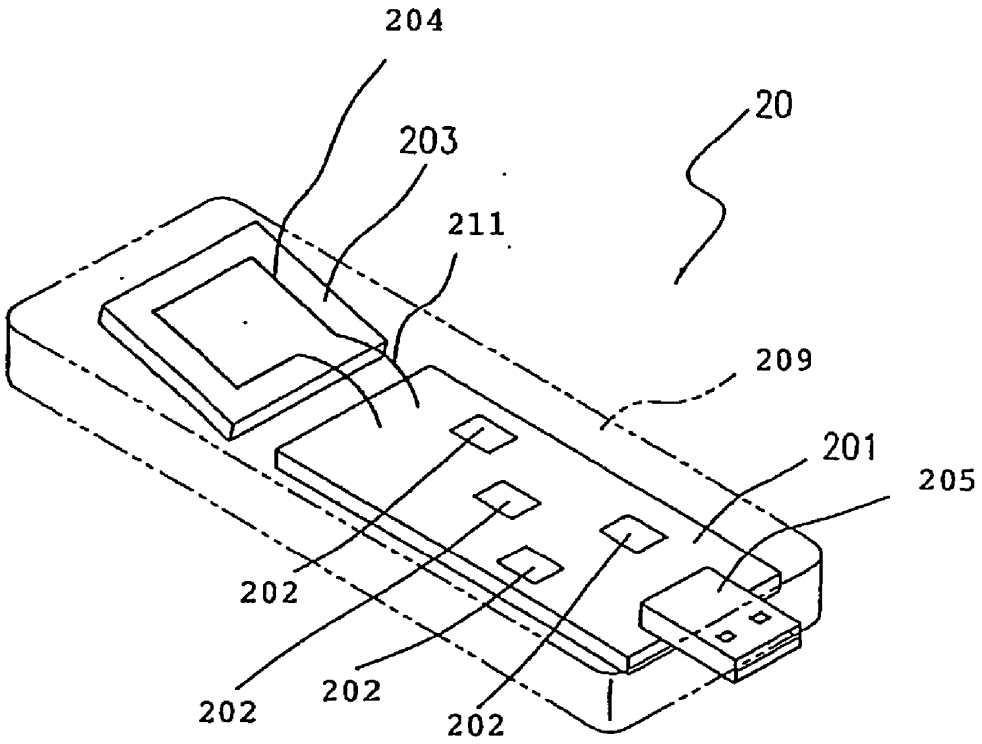
Publication Classification

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

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

(57) **ABSTRACT**

The invention provides a wireless transmission device, including a first circuit board, a second circuit board and a third circuit board. The first circuit board at least disposes more than one electronic elements. The second circuit board has an antenna, and the antenna is electrically connected to the first circuit board. The second circuit board is arranged at a predetermined angle to the first circuit board to enhance the receiving ability. The third circuit board is connected to the first circuit board and disposes a USB connector electrically connected to the first circuit board so that the change in form of the device can be easily made.



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(19) United States

(12) Patent Application Publication

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(43) Pub. Date: Nov. 6, 2008

Tengler et al.

(54) **ANTENNA DEVICE HAVING A NON-ELECTRICAL ENGAGEMENT DURING PRE-LOCK**

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(21) Appl. No.: **11/742,902**

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

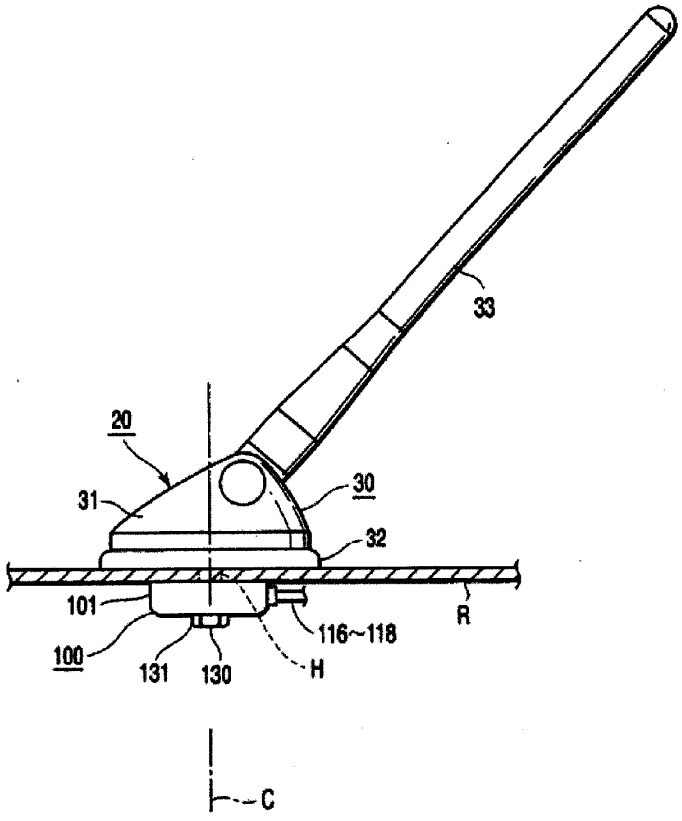
Publication Classification

(51) **Int. Cl.**
H01Q 1/32 (2006.01)
H01R 13/642 (2006.01)

(52) **U.S. Cl.** **343/715**; 439/374

(57) **ABSTRACT**

An antenna device has an antenna main body, a fixing member and a bolt. The antenna main body comprises an antenna element, female connectors provided at a first connector, a female screw section, and an engagement claw inserted into an antenna mount hole to make engagement with a lower side face of a roof panel. A fixing member comprises cables, male connectors provided at a second connector, the male connectors being provided to make mechanical engagement with female connectors without an electrical connection, and being connected to the cable, and a male screw section helically fitted to a female screw section, thereby tightening the female connectors, the male connectors, and a roof panel with one another. A bolt may be mounted between the male and female connectors to allow electrical connection therebetween.



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(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0272971 A1**

(43) **Pub. Date: Nov. 6, 2008**

KANNO

(54) **WIDEBAND SLOT ANTENNA**

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(21) Appl. No.: **12/176,856**

(22) Filed: **Jul. 21, 2008**

Related U.S. Application Data

(63) Continuation of application No. PCT/JP2008/050108, filed on Jan. 9, 2008.

(30) **Foreign Application Priority Data**

Jan. 11, 2007 (JP) 2007-003002

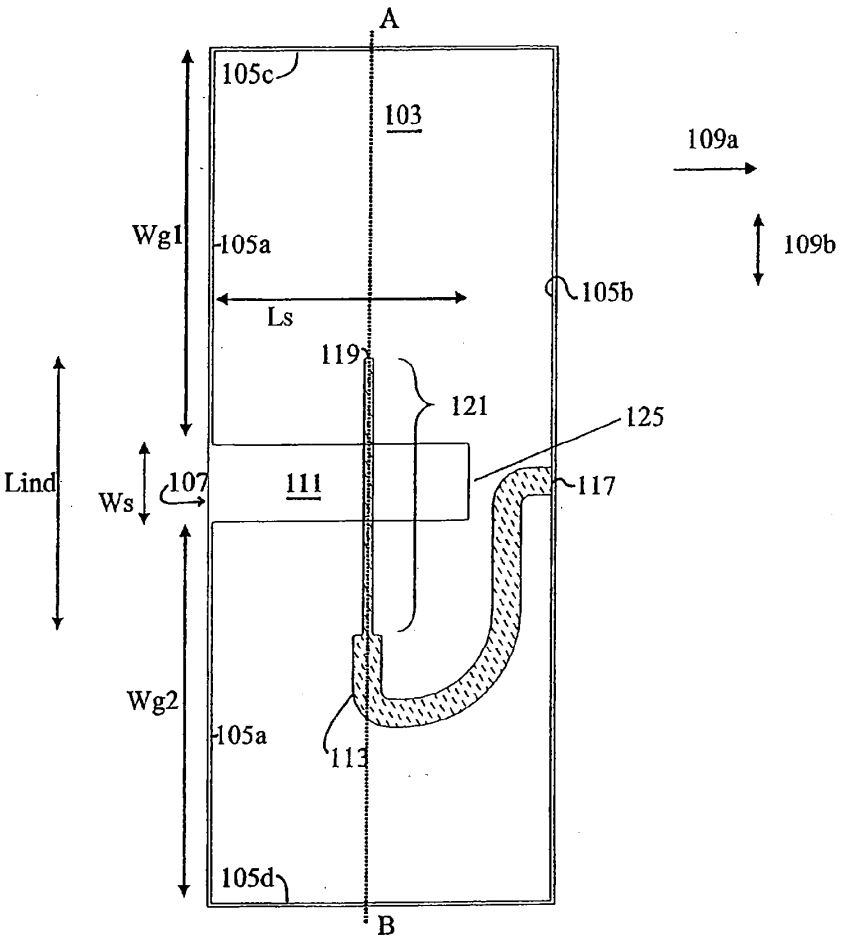
Publication Classification

(51) **Int. Cl.**
H01Q 13/10 (2006.01)
H01Q 9/04 (2006.01)

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

(57) **ABSTRACT**

A wideband slot antenna according to the present invention is a ¼ effective wavelength slot antenna in which a ground conductor **103** having a finite area is allowed to function as a dipole at lower frequencies. An inductive region **123** is provided within an feed line **113** in a region intersecting a slot **111**, and an antenna feed point **117** for connection to an external unbalanced feed circuit is provided at a position which satisfies high impedance conditions for an unbalanced ground conductor current.



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(19) **United States**

(12) **Patent Application Publication**

KANNO et al.

(10) **Pub. No.: US 2008/0272972 A1**

(43) **Pub. Date: Nov. 6, 2008**

(54) **VARIABLE SLOT ANTENNA AND DRIVING METHOD THEREOF**

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(73) Assignees: **Matsushita Electric Industrial Co., Ltd.**, Osaka (JP); **Okuda & Associates**, Osaka (JP)

(21) Appl. No.: **12/179,059**

(22) Filed: **Jul. 24, 2008**

Related U.S. Application Data

(63) Continuation of application No. PCT/JP2007/060550, filed on May 23, 2007.

(30) **Foreign Application Priority Data**

May 25, 2006 (JP) 2006-144799

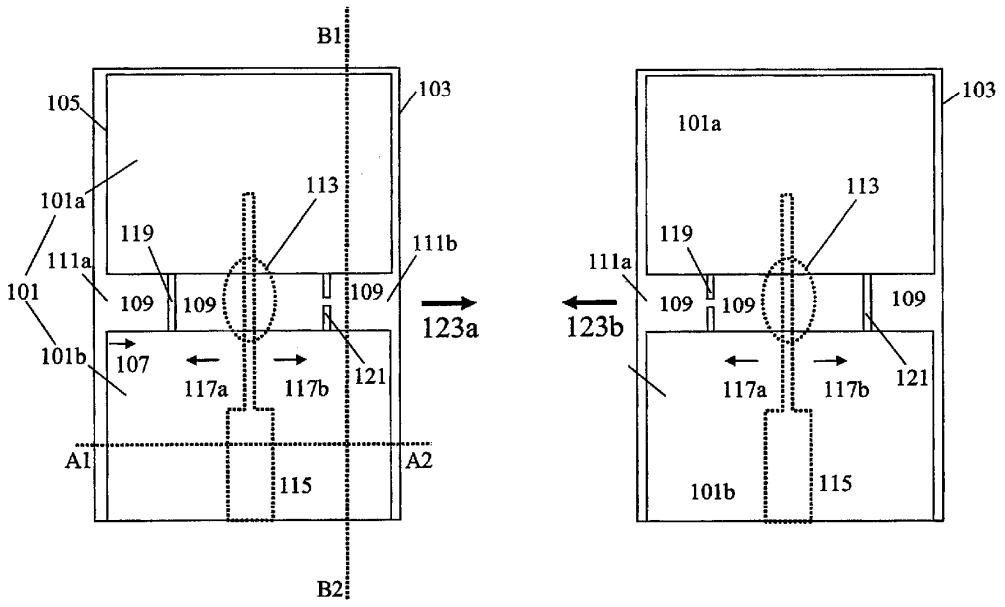
Publication Classification

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

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

(57) **ABSTRACT**

A variable slot antenna includes: ground conductors **101***a* and **101***b*, which are divided by a slot region **109** both of whose both ends are open ends **111***a* and **111***b*; a feed line **115** for feeding power to the slot region **109**; a first selective conduction path **119** connecting between the ground conductors **101***a* and **101***b* in a direction of the open end **111***a* as viewed from a feeding site **113**; and a second selective conduction path **121** connecting between the ground conductors **101***a* and **101***b* in a direction of the open end **111***b* as viewed from the feeding site **113**. In a first driving state, the first selective conduction path **119** is allowed to conduct and the second selective conduction path **121** is left open, so that a main beam is emitted in a direction **123***a* of the second selective conduction path **121** as viewed from the feeding site **113**. In another driving state, the selective conduction paths are controlled differently so that the main beam direction is switched to a direction **123***b*.



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(19) **United States**

(12) **Patent Application Publication**

Stutzke

(10) **Pub. No.: US 2008/0272973 A1**

(43) **Pub. Date: Nov. 6, 2008**

(54) **DUAL BAND SLOT ARRAY ANTENNA ABOVE GROUND PLANE**

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(21) Appl. No.: **11/742,926**

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

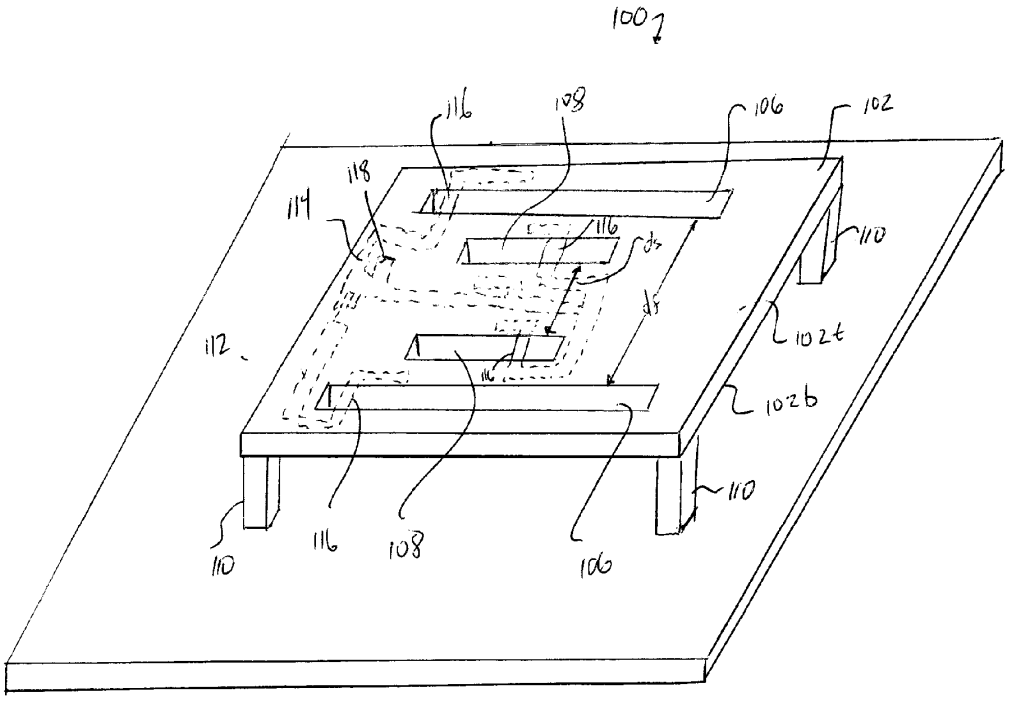
Publication Classification

(51) **Int. Cl.**
H01Q 13/10 (2006.01)
H01Q 1/50 (2006.01)

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

(57) **ABSTRACT**

A multiple frequency directional antenna is provided. The antenna includes a radiating array aligned over a ground plane. The radiating array has at least two first elongated slots and two second elongated slots. The slots have different lengths to provide different operating frequencies. On the radiating array opposite the slots is a microstrip impedance matching and diplexing feed network. Radio frequency power is supplied to the antenna via the feed network.



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(19) **United States**

(12) **Patent Application Publication**

Chang

(10) **Pub. No.: US 2008/0272974 A1**

(43) **Pub. Date: Nov. 6, 2008**

(54) **MULTIBAND PLANAR ANTENNA AND ELECTRICAL APPARATUS USING THE SAME**

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(73) Assignee: **CLEVO CO.**, Sunchung (TW)

(21) Appl. No.: **12/149,548**

(22) Filed: **May 5, 2008**

(30) **Foreign Application Priority Data**

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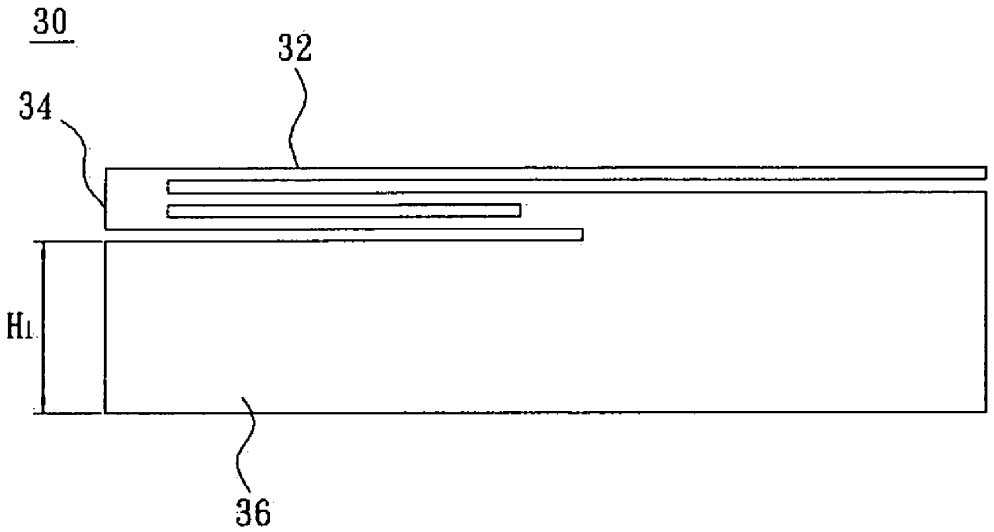
Publication Classification

(51) **Int. Cl.**
H01Q 13/10 (2006.01)
H01Q 9/04 (2006.01)

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

(57) **ABSTRACT**

A multi-band planar antenna including a metal plate, a first radiation portion, a second radiation portion, and a grounding portion is provided. The plate includes a first and a second edge. The first radiation portion is configured on the upper of the plate by a first slot, and the first slot extends to the inner of the plate from the first edge. The second radiation portion is configured on the upper side of the plate adjacent to the second edge by a second slot and a third slot adjacent to the first radiation portion. The second slot extends to the inner of the metal plate from the second edge. The third slot is formed between the first and the second slot. The grounding portion is formed on the lower of the metal plate. The first and the second radiation portion transmit and receive the low-band and high-band of RF signal respectively.



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(19) **United States**

(12) **Patent Application Publication**

WEBB

(10) **Pub. No.: US 2008/0272975 A1**

(43) **Pub. Date: Nov. 6, 2008**

(54) **MULTI-FEED DIPOLE ANTENNA AND METHOD**

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(21) Appl. No.: **12/034,898**

(22) Filed: **Feb. 21, 2008**

Related U.S. Application Data

(60) Provisional application No. 60/890,840, filed on Feb. 21, 2007.

Publication Classification

(51) **Int. Cl.**
H01Q 9/16 (2006.01)
H01P 11/00 (2006.01)

(52) **U.S. Cl.** **343/792**; 29/600

(57) **ABSTRACT**

A multi-feed dipole antenna and method. Provides a volumetrically efficient antenna with wide radiation pattern bandwidth and wide impedance bandwidth that are relatively independent. Driving the antenna at multiple locations provides for a half wavelength dipole antenna with a wider frequency range than any other known fat dipole of similar volume. The apparatus is constructed from brass or any other suitable metal without requiring dielectric loading and without requiring direct coupling on the outside of the tubes. The apparatus utilizes a parasitic center tube with two end tubes that are driven by a collinearly mounted metal rod that is driven from the midpoint. Insulators hold the parasitic tube to the end tubes. The parasitic tube allows for induced currents to flow on the surface of the tube which allow for operation of the dipole over a wide frequency range.

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Kitamori et al.

(54) **ANTENNA DEVICE, ARRAY ANTENNA, MULTI-SECTOR ANTENNA, HIGH-FREQUENCY WAVE TRANSCEIVER**

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(73) Assignee: **Murata Manufacturing, Co., Ltd.**

(21) Appl. No.: **12/177,935**

(22) Filed: **Jul. 23, 2008**

Related U.S. Application Data

(63) Continuation of application No. PCT/JP2007/052958, filed on Feb. 19, 2007.

(30) **Foreign Application Priority Data**

Feb. 23, 2006 (JP) JP-2006-046749

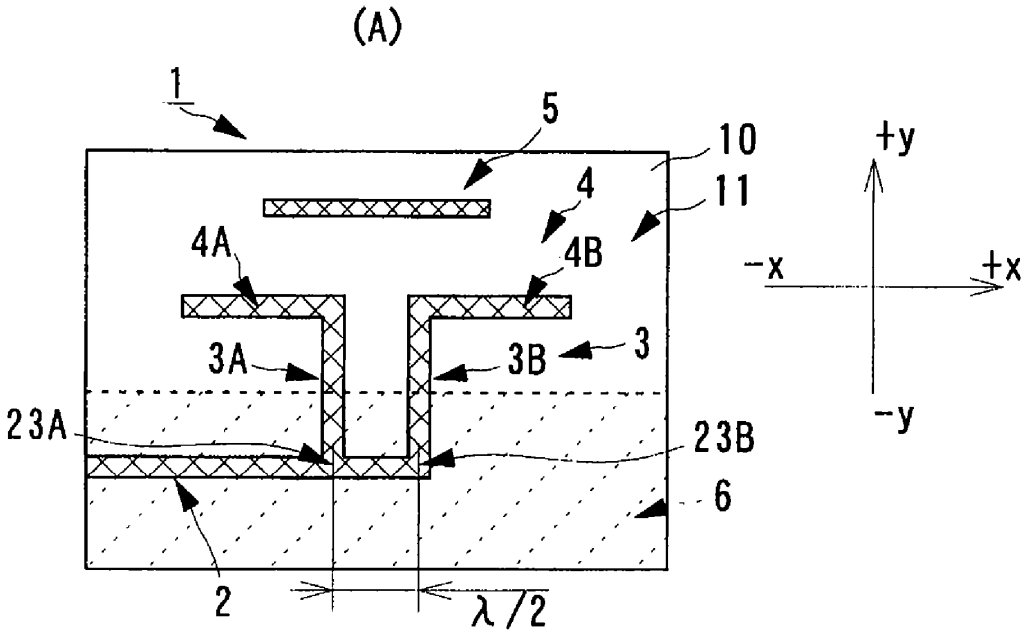
Publication Classification

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

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

(57) **ABSTRACT**

An antenna device having a feeder electrode that extends linearly on a top surface of a dielectric substrate. A balanced electrode having two balanced transmission electrodes vertical to the extending direction of the feeder electrode and extending in parallel. The two balanced transmission electrodes are connected to the feeder electrode and separated by an interval of ½ of a wavelength of a transmission/reception signal. A radiation electrode having a first electrode connected to the one of the two balanced transmission electrodes and a second electrode connected to the other of the two balanced transmission electrodes and is positioned parallel to the feeder electrode. A waveguide electrode is formed at a position separated from the radiation electrode by a predetermined interval and in parallel to the radiation electrode. A ground electrode is formed at an area of a back surface of the dielectric substrate corresponding to an area including a portion where the feeder electrode is positioned. By connecting the two balanced electrodes to the feeder electrode at an interval of ½ of a wavelength in this manner, this branch portion has a signal branching function and a balun function at the same time.



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(19) **United States**

(12) **Patent Application Publication**

Gaucher et al.

(10) **Pub. No.: US 2008/0272977 A1**

(43) **Pub. Date: Nov. 6, 2008**

(54) **APPARATUS AND METHODS FOR CONSTRUCTING ANTENNAS USING VIAS AS RADIATING ELEMENTS FORMED IN A SUBSTRATE**

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(21) Appl. No.: **12/176,975**

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Related U.S. Application Data

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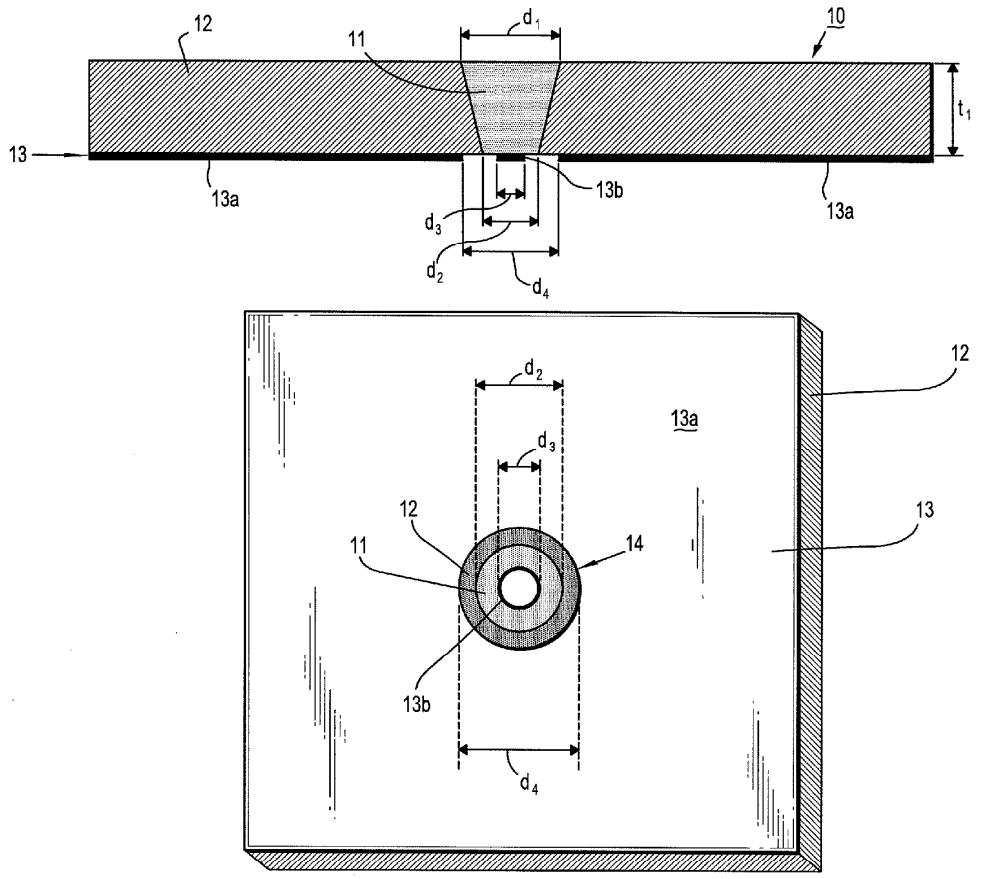
Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 1/50 (2006.01)

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

(57) **ABSTRACT**

Antennas are provided which are constructed using one or more conductive via stubs as radiating elements formed in a substrate. The antennas can be integrally packaged with IC chips (e.g., IC transceivers, receivers, transmitters, etc.) to build integrated wireless or RF (radio frequency) communications systems.



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(19) **United States**

(12) **Patent Application Publication**

Kubokawa et al.

(10) **Pub. No.: US 2008/0272978 A1**

(43) **Pub. Date: Nov. 6, 2008**

(54) **ANTENNA COVER AND ANTENNA APPARATUS**

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(21) Appl. No.: **12/146,358**

(22) Filed: **Jun. 25, 2008**

Related U.S. Application Data

(62) Division of application No. 11/629,761, filed on Dec. 15, 2006, filed as application No. PCT/JP2005/010972 on Jun. 15, 2005.

(30) **Foreign Application Priority Data**

Jun. 16, 2004 (JP) 2004178562
Jun. 23, 2004 (JP) 2004185554
Jun. 23, 2004 (JP) 2004185555

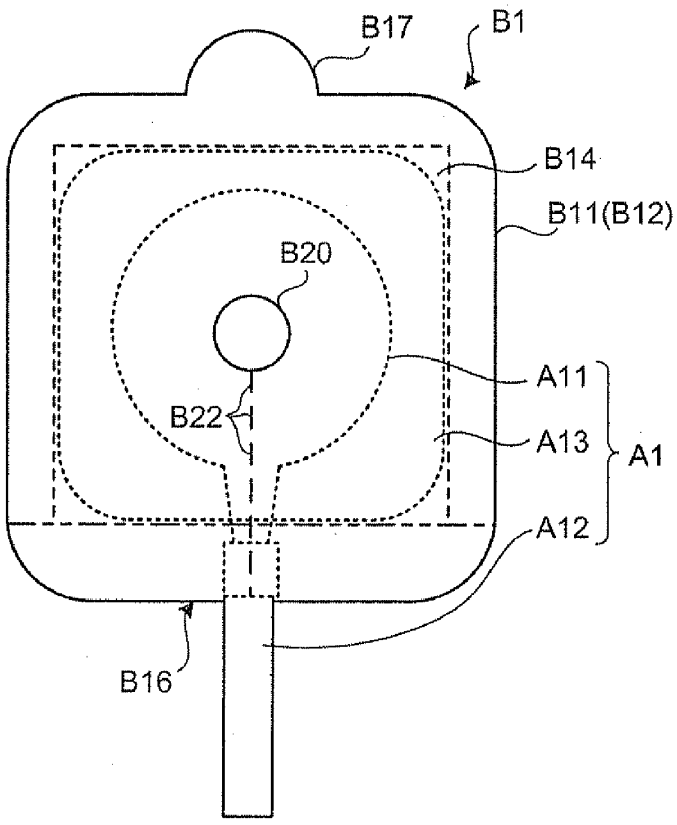
Publication Classification

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

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

(57) **ABSTRACT**

After a receiving antenna (A1) is inserted from a slot (B16) into a housing portion (B14) formed between cover members (B11, B12), the slot (B16) is pasted so as to secure the receiving antenna (A1). The receiving antenna (A1) is thus housed. Further, a tab (B17) which extends from one side of a pasted edge portion, holes (B20, B21) that penetrate opposing surfaces of the cover members (B11, B12), and perforated lines (B22, B23) running from the slot (B16) to the holes (B20, B21), respectively, are provided. Therefore, the receiving antenna (A1) can be easily attached to the antenna cover (B1) and to an outer surface of a subject (1), and the receiving antenna (A1) can be easily removed from the antenna cover (B1) and from the outer surface of the subject (1).



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(19) **United States**

(12) **Patent Application Publication**

Adel et al.

(10) **Pub. No.: US 2008/0272980 A1**

(43) **Pub. Date: Nov. 6, 2008**

(54) **DOUBLE SPIRAL ANTENNA**

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(21) Appl. No.: **11/884,691**

(22) PCT Filed: **Feb. 14, 2006**

(86) PCT No.: **PCT/EP2006/001335**

§ 371 (c)(1),
(2), (4) Date: **Jun. 2, 2008**

(30) **Foreign Application Priority Data**

Feb. 22, 2005 (DE) 10 2005 008 063.4

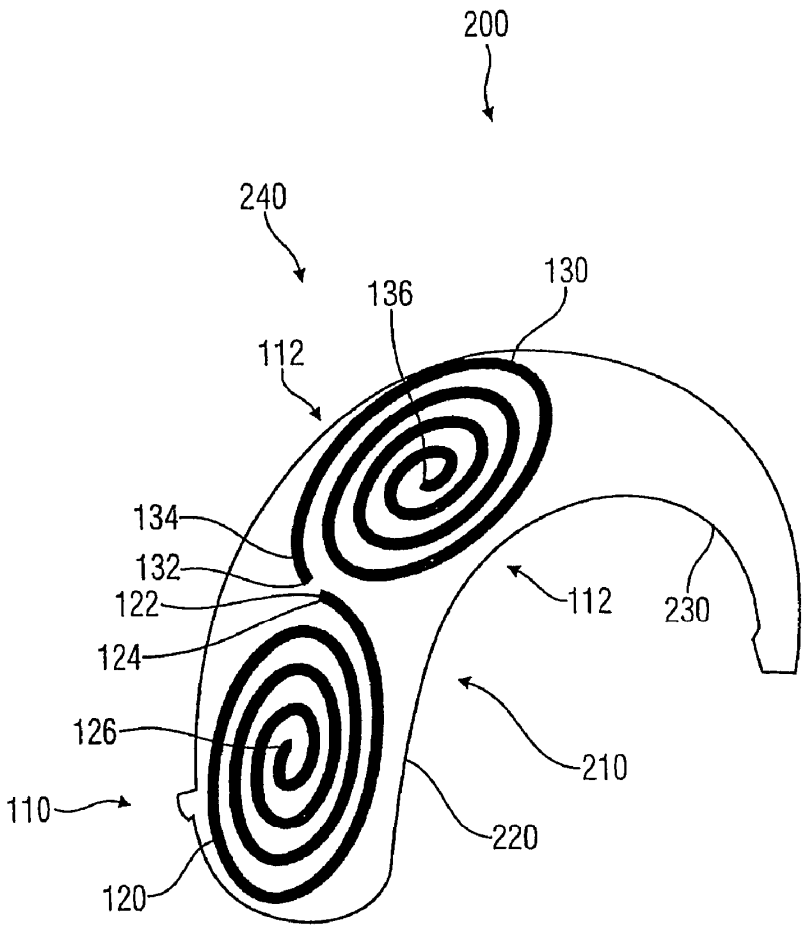
Publication Classification

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

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

(57) **ABSTRACT**

An antenna comprises a first antenna element, which has a first helix, and a second antenna element, which has a second helix. The first and the second antenna elements each have a feed point at an outer end of the corresponding helix and an open end at an inner end of the corresponding helix. A symmetrical helix antenna according to the invention can be integrated in a comparatively simple manner in an existing system, for example in a hearing aid. By integrating the antenna in a plastic housing, the antenna cannot be seen at all from the outside. The antenna is comparatively small in relation to conventional antennas.



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(19) **United States**

(12) **Patent Application Publication**

Gagne et al.

(10) **Pub. No.: US 2008/0272981 A1**

(43) **Pub. Date: Nov. 6, 2008**

(54) **LOW PROFILE HELICAL PLANAR RADIO ANTENNA WITH PLURAL CONDUCTORS**

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(21) Appl. No.: **11/915,639**

(22) PCT Filed: **May 24, 2006**

(86) PCT No.: **PCT/US2006/019912**

§ 371 (c)(1),
(2), (4) Date: **Jun. 23, 2008**

Related U.S. Application Data

(60) Provisional application No. 60/684,952, filed on May 27, 2005.

Publication Classification

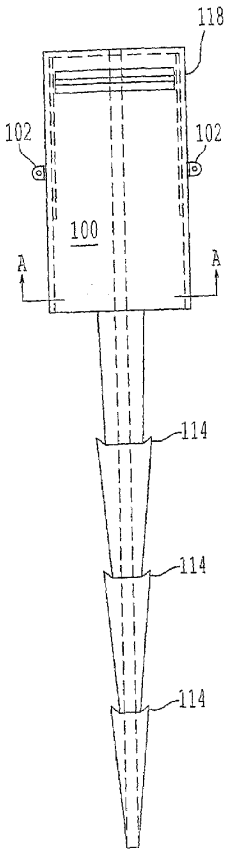
(51) **Int. Cl.**

H01Q 1/36	(2006.01)
H01Q 9/04	(2006.01)
H01P 11/00	(2006.01)

(52) **U.S. Cl.** ..... **343/895**; 343/700 MS; 29/600

(57) **ABSTRACT**

A low profile, compact planar antenna having an approximately flat, dual helical or helix shape is affixed to a supporting substrate. The resonant frequency of the device is determined by parameters including and not limited to length, width, and pitch angle of the helix. An additional helical element is added to induce a second resonant frequency and increase bandwidth. The antenna has an omni-directional radiation pattern, is highly efficient, and is provided in a compact profile suitable for use in a small battery operated device, such as water, gas or electricity meters as well as industrial sensors and security devices.



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(19) **United States**

(12) **Patent Application Publication**

Xu et al.

(10) **Pub. No.: US 2008/0278374 A1**

(43) **Pub. Date: Nov. 13, 2008**

(54) **METHOD FOR DYNAMICALLY SELECTING ANTENNA ARRAY ARCHITECTURE**

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(21) Appl. No.: **11/913,775**

(22) PCT Filed: **Apr. 26, 2006**

(86) PCT No.: **PCT/CN06/00793**

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(2), (4) Date: **Apr. 10, 2008**

(30) **Foreign Application Priority Data**

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Publication Classification

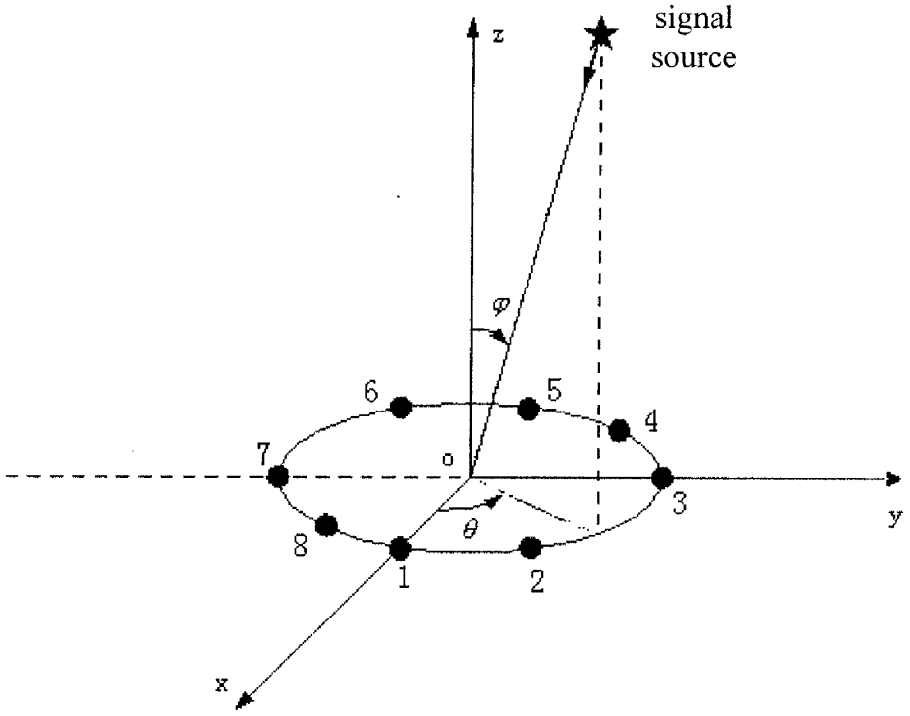
(51) **Int. Cl.**

H01Q 25/00	(2006.01)
H04B 1/06	(2006.01)
H01Q 21/29	(2006.01)

(52) **U.S. Cl.** **342/378**; 342/383

(57) **ABSTRACT**

The present invention discloses a method for dynamically selecting antenna array architecture, deciding a basic antenna array, determining a number of required array elements, selecting determined number of array elements from all the array elements in the basic antenna array to form an antenna array architecture and receiving and detecting signals with the current antenna array architecture, the method further including: determining whether transmission time intervals and/or slot positions of received signals change, if so, re-selecting the determined number of array elements from all the array elements in the basic antenna array to form a new antenna array architecture and receiving and detecting signals with the new antenna array architecture, otherwise, continuing to determine. According to this method, not only the realization is simple but also that each array elements in the antenna array can receive arriving signals more reasonably so that the reliability of the antenna array to receive signals is improved.



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(19) **United States**

(12) **Patent Application Publication**

Schillmeier et al.

(10) **Pub. No.: US 2008/0278375 A1**

(43) **Pub. Date: Nov. 13, 2008**

(54) **EMBEDDED PLANAR ANTENNA WITH PERTAINING TUNING METHOD**

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(21) Appl. No.: **11/547,495**

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

(86) PCT No.: **PCT/EP2005/003184**

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

(30) **Foreign Application Priority Data**

Apr. 1, 2004 (DE) 10 2004 016 158.5

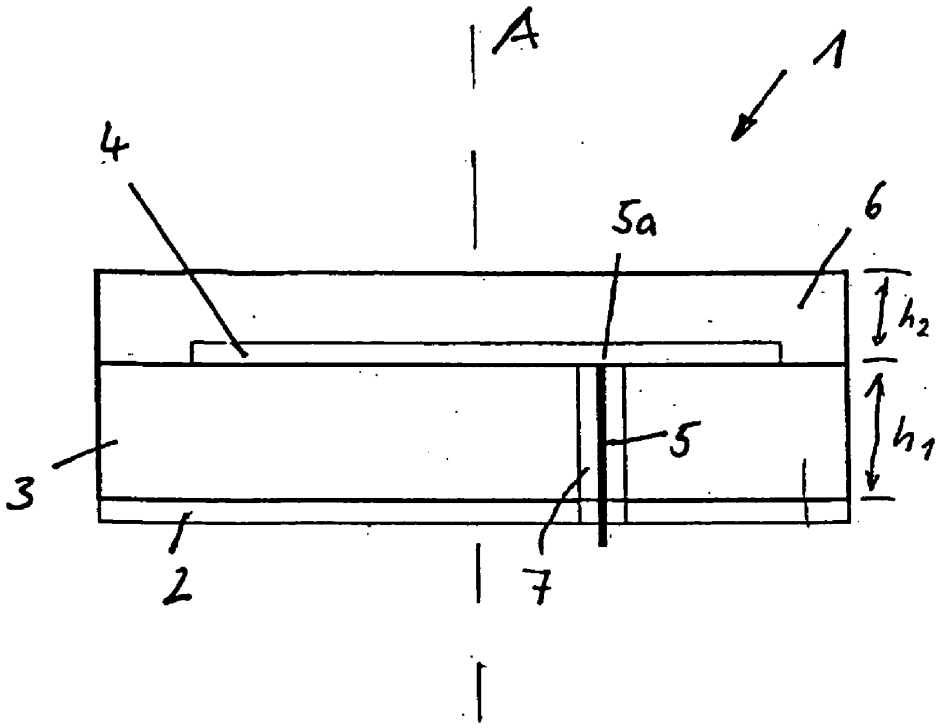
Publication Classification

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

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

(57) **ABSTRACT**

A patch antenna comprising an electrically conductive ground plane; a first dielectric substrate layer arranged on said ground plane and having a first relative permittivity; at least one electrically conductive effective area arranged on the first dielectric substrate layer and electrically connected to one end of an electrically conductive feed line; at least one second dielectric substrate layer arranged on the effective area and having a second relative permittivity; whereby the second relative permittivity is larger or equal the first relative permittivity.



US 20080278376A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0278376 A1

(43) Pub. Date: Nov. 13, 2008

Lee

(54) METHOD AND APPARATUS FOR BEAM STEERING ARRAY ANTENNA WITH MODIFIED RADIATING PATCHES

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(21) Appl. No.: **11/745,330**

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

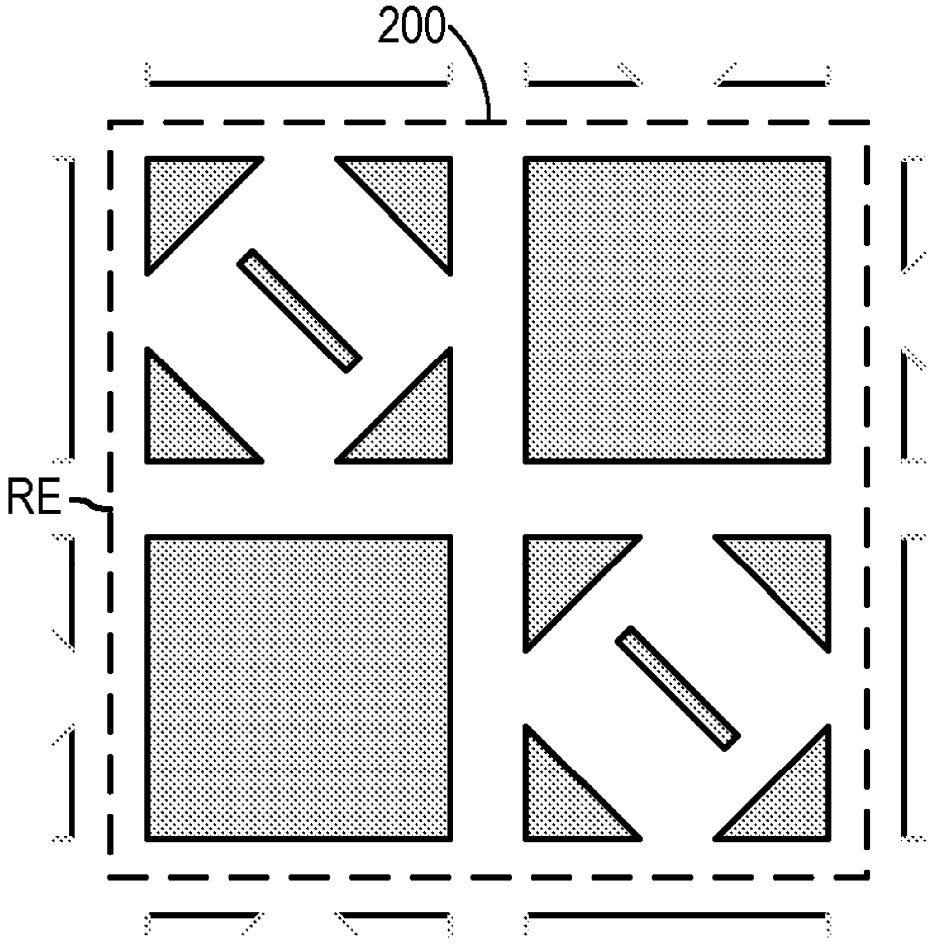
Publication Classification

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

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

(57) **ABSTRACT**

An antenna provides a first radiating element in an array of radiating elements. The first radiating element is configured to receive a first standing wave power from a first feed line and to receive a second standing wave power from a second feed line. The first feed line is approximately orthogonal to the second feed line. The radiating element is further configured to reject at least one polarization. A phase shifter is coupled to the first radiating element.



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(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0278377 A1**

(43) **Pub. Date: Nov. 13, 2008**

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(54) **MULTI-BAND ANTENNA**

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(21) Appl. No.: **11/757,478**

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

Related U.S. Application Data

(60) Provisional application No. 60/916,863, filed on May 9, 2007.

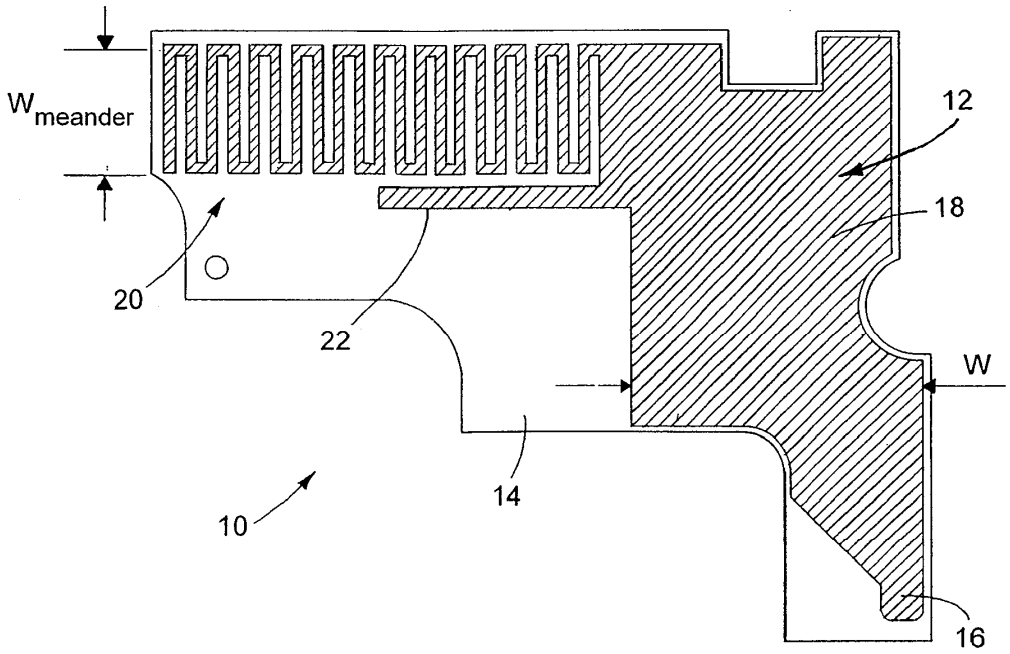
Publication Classification

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

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

(57) **ABSTRACT**

A monopole antenna having multiple resonances includes a feed point; a meander element; and an electrically conductive element that couples the feed point to the meander element, the electrically conductive element including at least a portion with a width that is greater than the width of the meander element.



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(19) **United States**

(12) **Patent Application Publication**

Chang et al.

(10) **Pub. No.: US 2008/0278378 A1**

(43) **Pub. Date: Nov. 13, 2008**

(54) **WIDEBAND DIELECTRIC RESONATOR ANTENNA**

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(21) Appl. No.: **11/826,935**

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

(30) **Foreign Application Priority Data**

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Publication Classification

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

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

(57) **ABSTRACT**

An antenna comprises a substrate, a feed conductor, a ground layer, a resonator and a short-circuited element. The substrate comprises a first surface and a second surface. The feed conductor is formed on the first surface. The ground layer is formed on the second surface, comprising an aperture. The resonator is disposed on the ground layer, comprising a body and a notch, the notch is formed on a first side of the body, wherein the first side is perpendicular to the ground layer. The short-circuited element is disposed on the first side connecting the ground layer.

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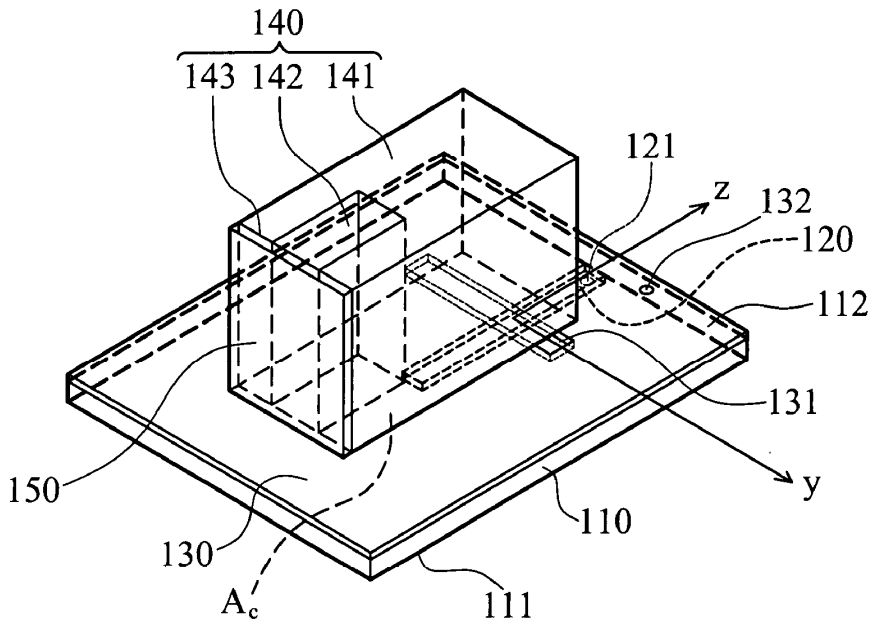

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(12) **Patent Application Publication**

Wang et al.

(10) **Pub. No.: US 2008/0278379 A1**

(43) **Pub. Date: Nov. 13, 2008**

(54) **ANTENNA**

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(21) Appl. No.: **11/886,358**

(22) PCT Filed: **Mar. 30, 2005**

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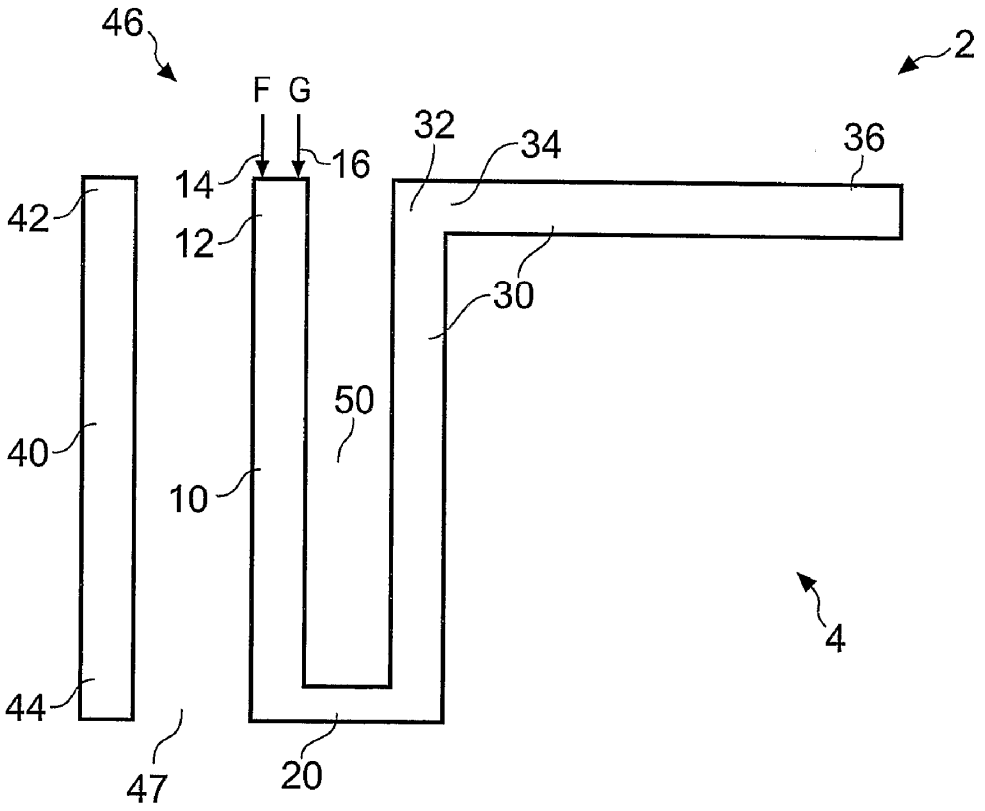
Publication Classification

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

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

(57) **ABSTRACT**

An antenna having a first resonant mode and a second resonant mode and including an antenna element, the antenna element including a first portion; a second portion; and at least one bend between the first portion and the second portion, wherein a first part of the first portion opposes a second part of the second portion across a narrow gap and, in use, a maximum of current density for the second resonant mode is at or adjacent each of the first part of the first portion and the second part of the second portion.



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(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0278380 A1

(43) Pub. Date: Nov. 13, 2008

MIYOSHI

(54) ANTENNA UNIT COMPRISING FIRST AND SECOND ANTENNA PATTERNS

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(21) Appl. No.: **12/114,069**

(22) Filed: **May 2, 2008**

(30) **Foreign Application Priority Data**

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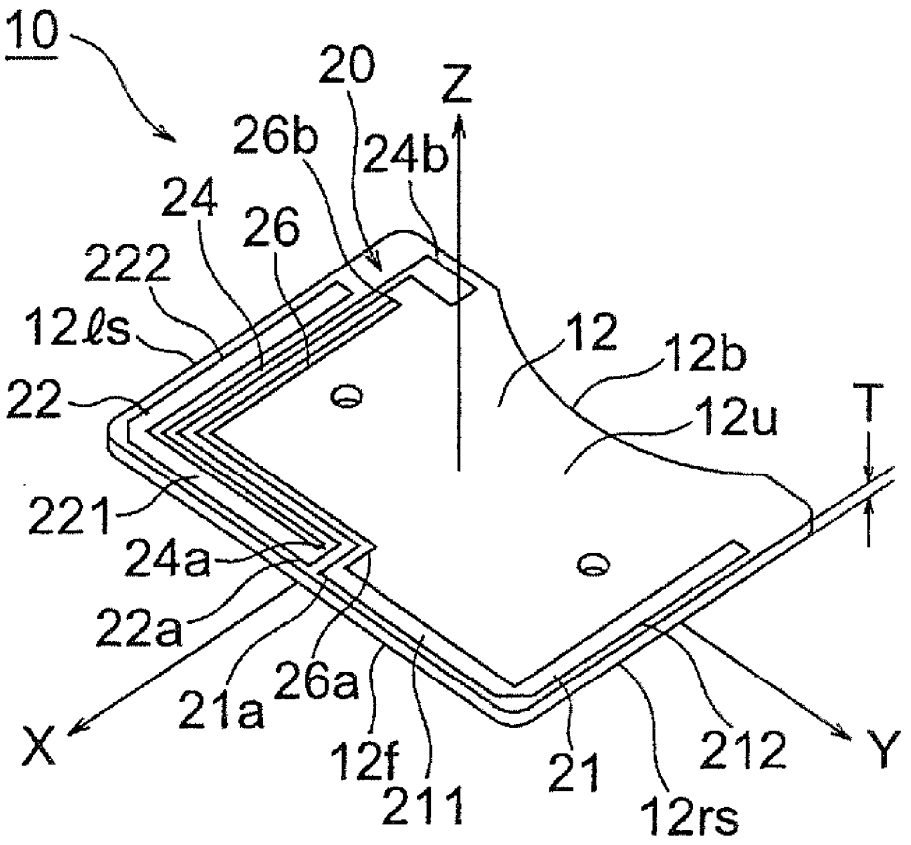
Publication Classification

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

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

(57) **ABSTRACT**

An antenna unit includes a board having first and second surfaces opposite to each other, a first antenna pattern, formed on the first surface of the board, for transmitting and receiving a first radio wave having a first frequency band, and a second antenna pattern, formed on the second surface of the board, for transmitting and receiving a second radio wave having a second frequency band different from the first frequency band. The first antenna pattern and the second antenna pattern are disposed so as to be opposed to each other through the board with they electrically disconnected.



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(19) **United States**

(12) **Patent Application Publication**

Hung et al.

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(43) **Pub. Date: Nov. 13, 2008**

(54) **MULTI-BAND ANTENNA**

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(21) Appl. No.: **12/151,438**

(22) Filed: **May 7, 2008**

(30) **Foreign Application Priority Data**

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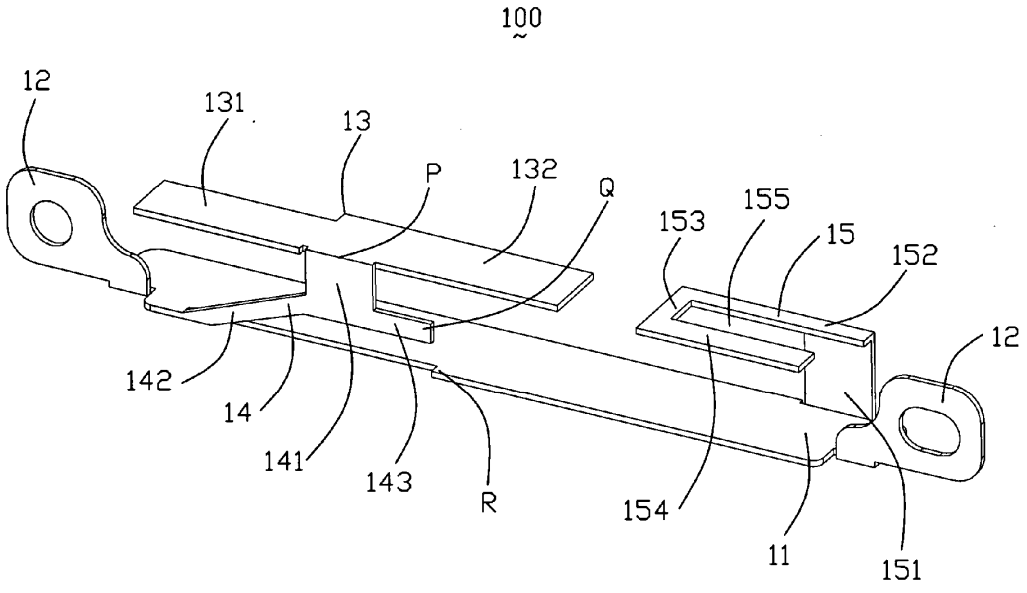
Publication Classification

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

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

(57) **ABSTRACT**

Provided herewith a multi-band antenna comprising a grounding element lying in a first plane and comprising two longitudinal sides, a radiating element spaced apart from the grounding element and comprising a first radiating arm having a first length and a second radiating arm having a second length being about equal to the first length, a connecting element lying in a second plane and electrically connecting the grounding element and the radiating element; a feeding line comprising an inner conductor for feeding signal and an outer conductor electrically connecting to the grounding element; and a coupling radiating element extending vertically from the grounding element and comprising a first radiating portion lying in a third plane and a second radiating portion being perpendicular to the third plane.



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(19) **United States**

(12) **Patent Application Publication**

Shimasaki et al.

(10) **Pub. No.: US 2008/0278384 A1**

(43) **Pub. Date: Nov. 13, 2008**

(54) **ELECTRONIC APPARATUS WITH ANTENNAS**

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(21) Appl. No.: **12/115,876**

(22) Filed: **May 6, 2008**

(30) **Foreign Application Priority Data**

May 10, 2007 (JP) 2007-125829

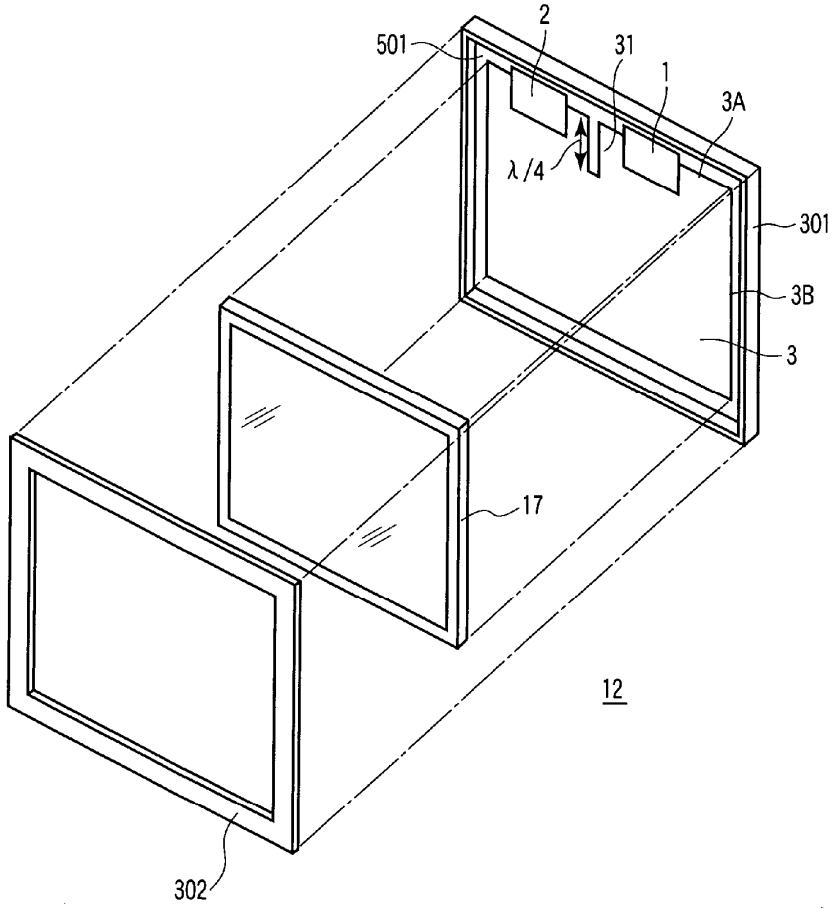
Publication Classification

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

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

(57) **ABSTRACT**

According to one embodiment, an electronic apparatus includes a housing in which an electrically conductive layer is formed on an inner surface of the housing, a flat-panel display which is accommodated in the housing, a first antenna which is disposed on the conductive layer, a part of the first antenna being located more on an outer peripheral side than a side of the conductive layer, and a second antenna which is disposed on the conductive layer, a part of the second antenna being located more on the outer peripheral side than the side of the conductive layer. The conductive layer includes a notch which is formed in a predetermined position of a side of the conductive layer, which is located between the first antenna and the second antenna, the notch having a length of ¼ of a wavelength corresponding to a resonance frequency of the first antenna.



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(19) **United States**

(12) **Patent Application Publication**

Su et al.

(10) **Pub. No.: US 2008/0278389 A1**

(43) **Pub. Date: Nov. 13, 2008**

(54) **MULTI-BAND ANTENNA**

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(21) Appl. No.: **11/798,195**

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

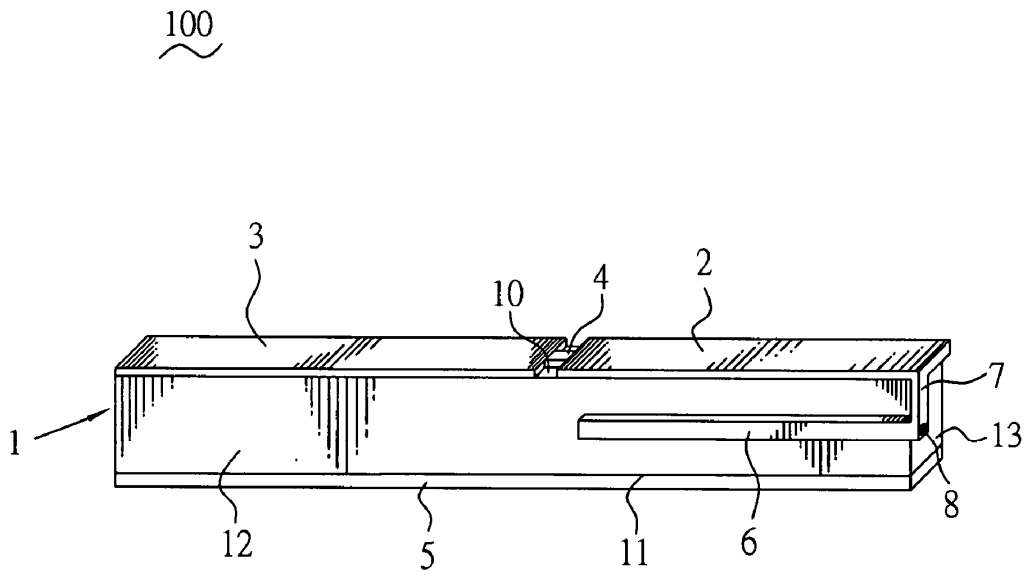
Publication Classification

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

(52) **U.S. Cl.** **343/722**

(57) **ABSTRACT**

A multi-band antenna is arranged on a housing with a first surface, a second surface opposite to the first surface, and a third surface connecting the first and second surfaces, which has a first radiating conductor and a parasitic element formed as an elongated shape and arranged on the first surface. A trap circuit connects the first radiating conductor and the parasitic element. A ground portion is arranged on the second surface. A second radiating conductor is arranged on the third surface and spaced from the first radiating conductor and the ground portion, which is formed as an elongated shape. A feeding conductor with a feeding point connects the first and second radiating conductors. The multi-band antenna obtains a low frequency band through the cooperation of the first radiating, the parasitic element and the trap circuit, and a high frequency band through the second radiating conductor and the parasitic element.



US 20080278390A1

(19) **United States**

(12) **Patent Application Publication**

Massey et al.

(10) **Pub. No.: US 2008/0278390 A1**

(43) **Pub. Date: Nov. 13, 2008**

(54) **ULTRA WIDE BAND NOTCH ANTENNA ASSEMBLY FOR RF COMMUNICATION EQUIPMENT**

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(21) Appl. No.: **12/159,959**

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

(86) PCT No.: **PCT/IB06/55018**

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(2), (4) Date: **Jul. 29, 2008**

(30) **Foreign Application Priority Data**

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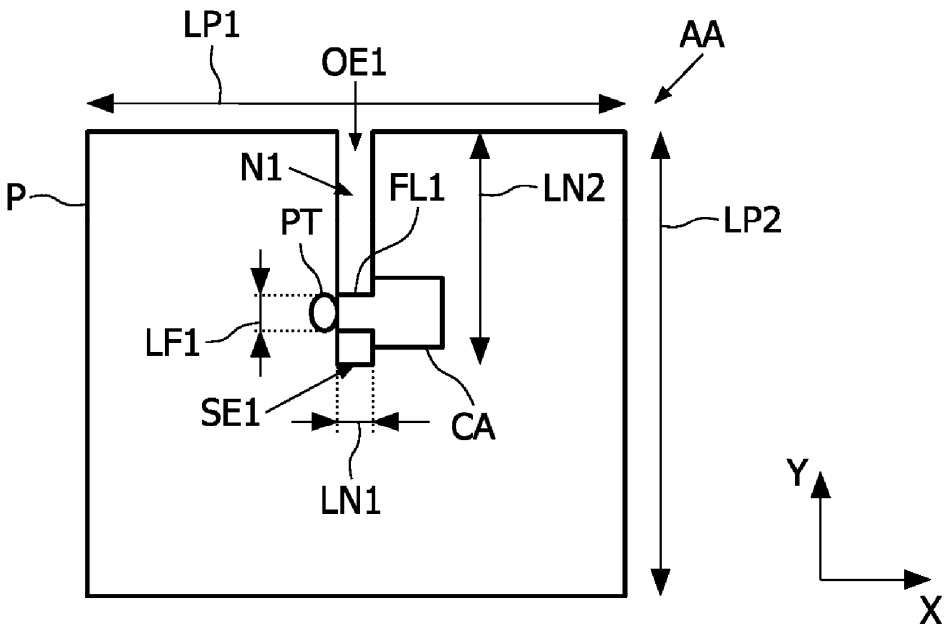
Publication Classification

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

(52) **U.S. Cl.** ..... **343/722**; 343/700 MS

(57) **ABSTRACT**

Abstract: A planar antenna assembly (AA) for an RF communication module, comprises i) a conductive plate having a first linear side of a first length and in which is defined a first notch (N1) of a first width and a first electrical length, equal to a quarter of a wavelength corresponding to a chosen frequency of a working frequency band, and comprises a straight part having an open end (OE1) found on the first side, and a shortened end (SE1), and ii) a first feed line (FL1) defined above the conductive plate and across the first notch (N1) and arranged to be coupled to this first notch (N1) to enable wideband operation. The first length of the first side is equal to half this wavelength. Moreover, the first notch open end (OE1) is present approximately in the middle of the first side. Moreover, the first width of the first notch (N1) is chosen such that the proportion of energy stored in the fields associated with the first notch (N1) is low compared with the result of the chosen frequency times the power radiated from the currents propagating around the first notch.



US 20080278391A1

(19) **United States**

(12) **Patent Application Publication**

Mayer

(10) **Pub. No.: US 2008/0278391 A1**

(43) **Pub. Date: Nov. 13, 2008**

(54) **DUAL-BAND ANTENNA**

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(21) Appl. No.: **11/745,385**

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

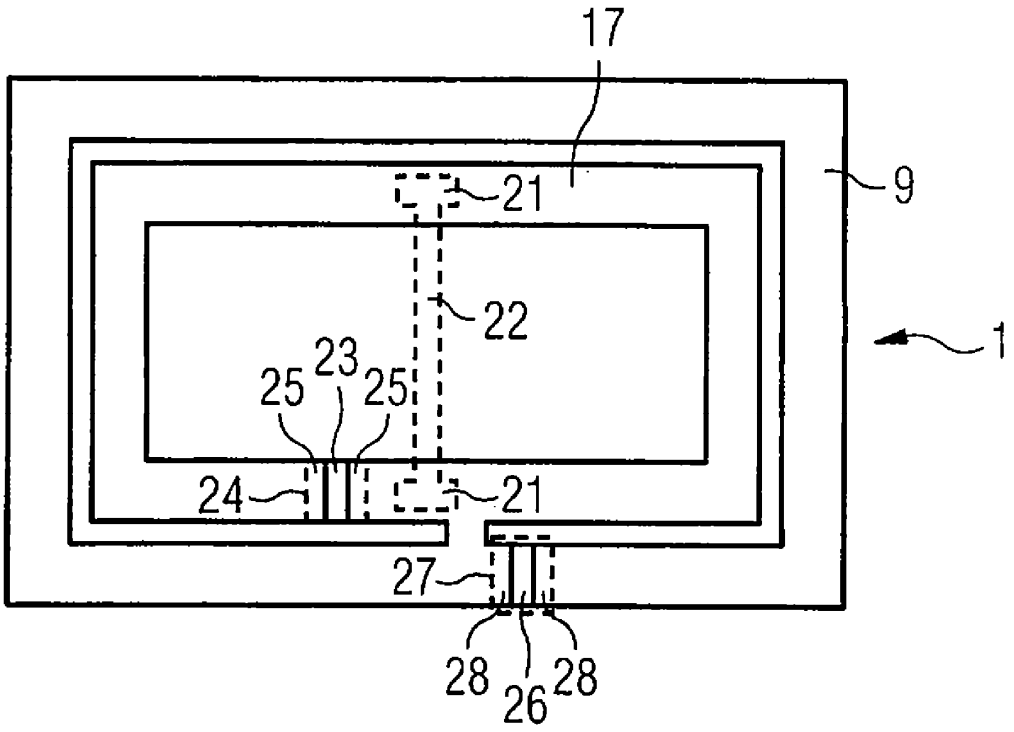
Publication Classification

(51) **Int. Cl.**
H01Q 21/24 (2006.01)

(52) **U.S. Cl.** **343/725**

(57) **ABSTRACT**

Dual-band antenna including a shorted loop slot antenna and a spiral antenna.



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(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0278392 A1**

(43) **Pub. Date: Nov. 13, 2008**

Chu et al.

(54) **EXTREMELY MINIATURIZED DIGITAL ANTENNA HAVING SWITCHABLE MULTIPLE BANDWIDTHS**

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(21) Appl. No.: **11/746,151**

(22) Filed: **May 9, 2007**

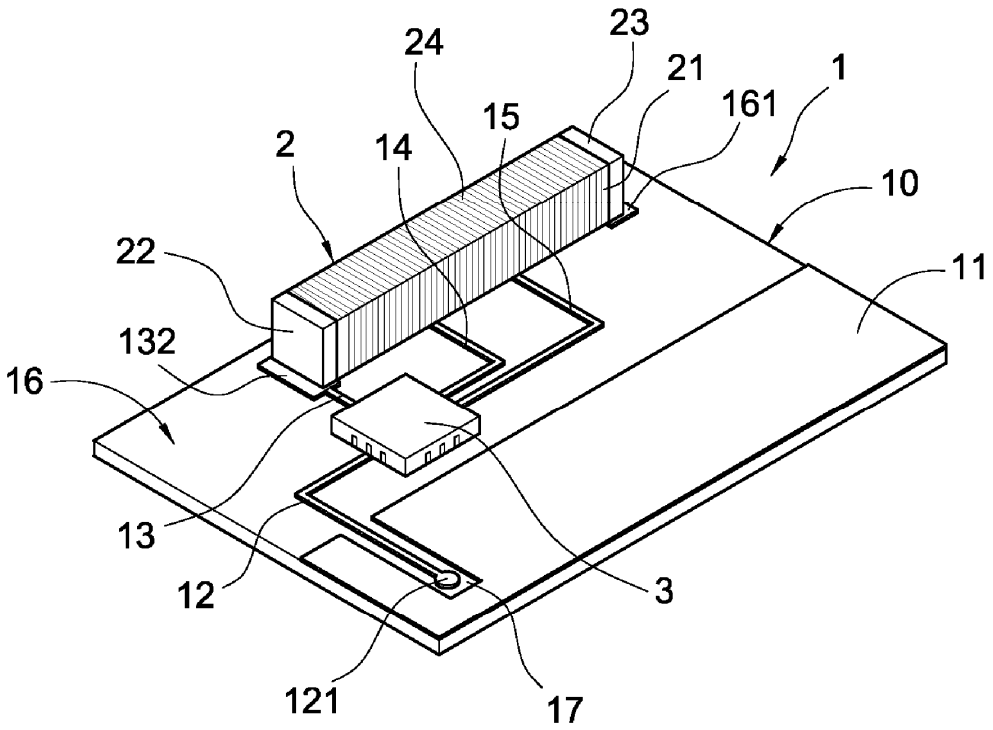
Publication Classification

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

(52) **U.S. Cl.** ..... **343/745**; 343/700 MS

(57) **ABSTRACT**

An extremely miniaturized digital TV signal reception antenna built in a mobile device includes a substrate, an antenna unit and a switch unit. The substrate is provided with a plate having a grounding metallic surface and a first clearance surface. A second clearance surface is provided on the same side of the grounding metallic surface with a metallic microstrip line for electrically connecting to an output end of the switch unit. Input ends of the switch unit are electrically connected with a plurality of leads of the first clearance surface. The other ends of the plurality of leads are electrically connected with the antenna unit. Finally, when a tuner of a portable digital television switches the channels, signals of the switched channel are simultaneously output to the switch unit. According to the frequency of that channel, the switch unit automatically switches to a suitable range of bandwidth for receiving the digital TV signals, thereby performing the reception of the digital TV signals.



US 20080278398A1

(19) **United States**

(12) **Patent Application Publication**

TSAI et al.

(10) **Pub. No.: US 2008/0278398 A1**

(43) **Pub. Date: Nov. 13, 2008**

(54) **ANTENNA DEVICE WITH A PARASITIC COUPLER**

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(21) Appl. No.: **11/867,153**

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

(30) **Foreign Application Priority Data**

May 7, 2007 (TW) 096116107

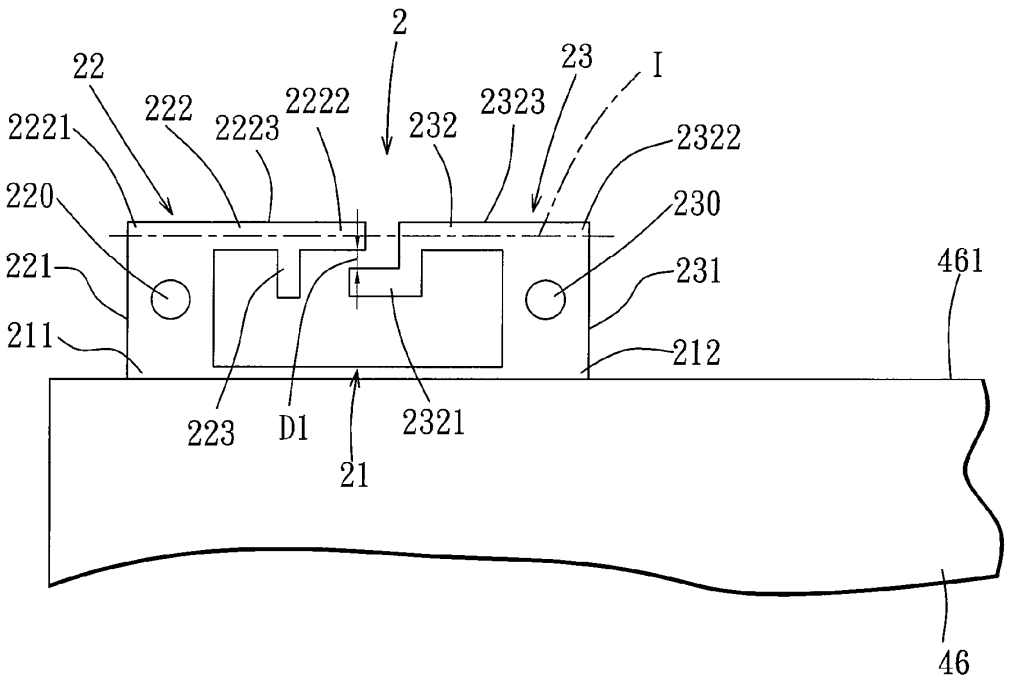
Publication Classification

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

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

(57) **ABSTRACT**

An antenna device includes an antenna, a parasitic coupler, and a conductive strip. The antenna is operable within a first frequency bandwidth. The parasitic coupler is spaced apart from said antenna, and is electromagnetically coupled to the antenna so as to be operable within a second frequency bandwidth. The conductive strip is connected to the grounding elements of the antenna and the parasitic coupler.



US 20080278401A1

(19) **United States**

(12) **Patent Application Publication**

YU

(10) **Pub. No.: US 2008/0278401 A1**

(43) **Pub. Date: Nov. 13, 2008**

(54) **ANTENNA STRUCTURE FOR A NOTEBOOK**

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(21) Appl. No.: **11/746,678**

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

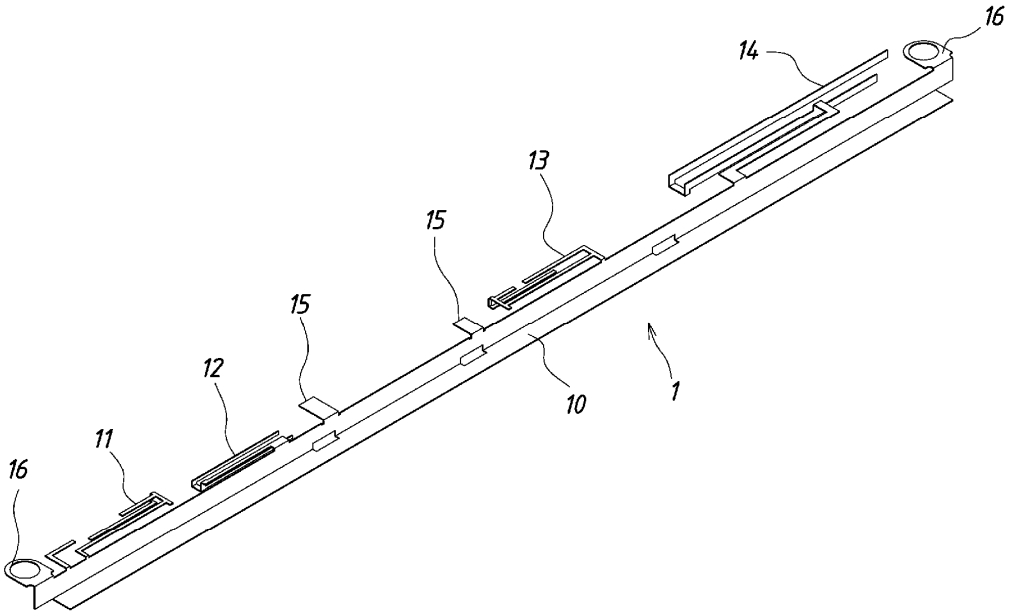
Publication Classification

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

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

(57) **ABSTRACT**

An antenna structure for a notebook with four radiation members, the antenna structure has an elongate supporting rack having thereon a first radiation member, a second radiation member, a third radiation member and a fourth radiation member; each radiation member is planar, and is integrally connected with the supporting rack. Thereby, when the notebook uses a plurality of antennas, the costs of mold developing and time for processing can be reduced, and in designing, the space of the antenna will not waste by having the structure, and a better effect in function can be obtained.



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(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0278405 A1

(43) Pub. Date: Nov. 13, 2008

Montgomery et al.

(54) MULTIMODE ANTENNA STRUCTURE

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(21) Appl. No.: **12/099,320**

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

Related U.S. Application Data

(63) Continuation-in-part of application No. 11/769,565, filed on Jun. 27, 2007.

(60) Provisional application No. 60/925,394, filed on Apr. 20, 2007, provisional application No. 60/916,655, filed on May 8, 2007.

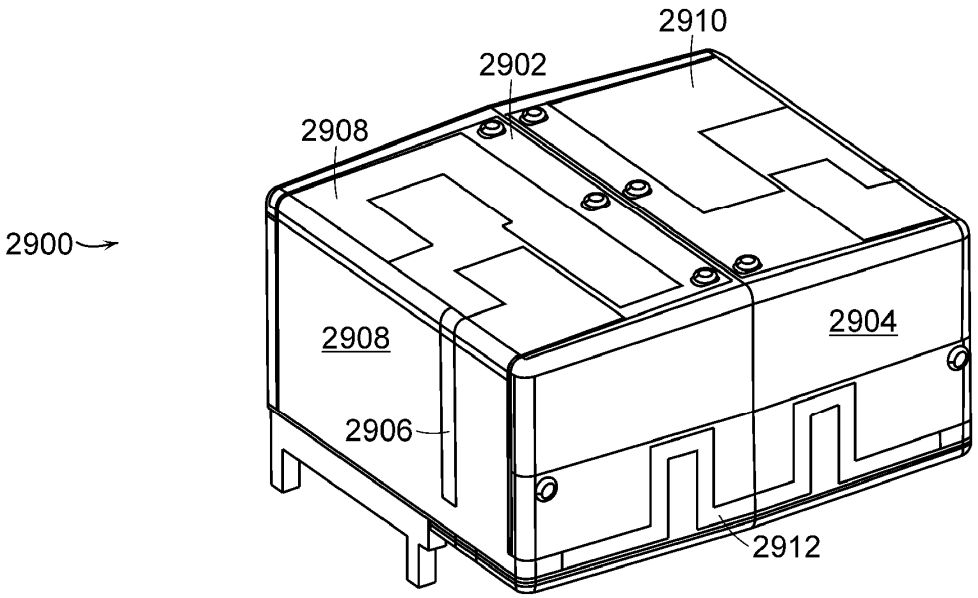
Publication Classification

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

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

(57) **ABSTRACT**

One or more embodiments are directed to a multimode antenna structure for transmitting and receiving electromagnetic signals in a communications device. The communications device includes circuitry for processing signals communicated to and from the antenna structure. The antenna structure is configured for optimal operation in a given frequency range. The antenna structure includes a plurality of antenna ports operatively coupled to the circuitry, and a plurality of antenna elements, each operatively coupled to a different one of the antenna ports. Each of the plurality of antenna elements is configured to have an electrical length selected to provide optimal operation within the given frequency range. The antenna structure also includes one or more connecting elements electrically connecting the antenna elements such that electrical currents on one antenna element flow to a connected neighboring antenna element and generally bypass the antenna port coupled to the neighboring antenna element. The electrical currents flowing through the one antenna element and the neighboring antenna element are generally equal in magnitude, such that an antenna mode excited by one antenna port is generally electrically isolated from a mode excited by another antenna port at a given desired signal frequency range without the use of a decoupling network connected to the antenna ports, and the antenna structure generates diverse antenna patterns.



US 20080278407A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0278407 A1

(43) Pub. Date: Nov. 13, 2008

Marrocco et al.

(54) **WIDEBAND MULTIFUNCTION ANTENNA OPERATING IN THE HF RANGE, PARTICULARLY FOR NAVAL INSTALLATIONS**

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(21) Appl. No.: **11/914,634**

(22) PCT Filed: **May 18, 2006**

(86) PCT No.: **PCT/IB2006/051583**

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(2), (4) Date: **Nov. 16, 2007**

(30) **Foreign Application Priority Data**

May 19, 2005 (IT) TO2005A000344

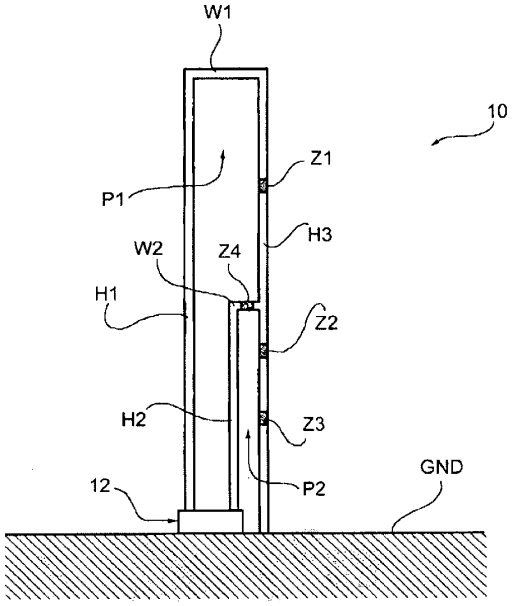
Publication Classification

(51) **Int. Cl.**
H01Q 9/42 (2006.01)

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

(57) **ABSTRACT**

A linear antenna for operation in the HF frequency range, particularly for naval communications is disclosed, comprising a radiating arrangement (H1, H2, H3, W1, W2), adapted to be operatively associated with a ground conductor (**20**) and at least one electrical impedance device (Z1-Z4), characterized in that it includes: a plurality of wire radiating elements with a predominantly vertical extension, forming a first and a second conducting branch (H1, H2) adapted to be operatively coupled to a feed circuit, and a return conducting branch (H3) adapted to be operatively coupled to a ground conductor (**20**); and a plurality of wire radiating elements with a predominantly transverse extension, forming connecting conducting branches (W1, W2) for connecting the conducting branches (H1, H2) adapted to be coupled to the feed circuit (**12**), to the conducting branch (**113**) adapted to be coupled to the ground conductor (**20**), the radiating elements being positioned in such a way as to form, in a plane in which the antenna lies, two nested closed paths (P1, P2) between the feed circuit (**12**) and the ground conductor (**20**), having at least one radiating element in common, and—a plurality of electrical impedance devices (Z1-Z4) interposed along the conducting branches (H1, H2, H3, W1, W2) and adapted to impede the flow of current within corresponding predetermined frequency ranges in such a way as to establish selectively, according to the operating frequency, a plurality of different current paths along the conducting branches (H1, H2, H3, W1, W2), corresponding to a plurality of different electrical and/or geometrical configurations of the antenna (**10**).



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(19) **United States**

(12) **Patent Application Publication**

Rikuta et al.

(10) **Pub. No.: US 2008/0284653 A1**

(43) **Pub. Date: Nov. 20, 2008**

(54) **WIDE BAND ANTENNA COMMON TO A PLURALITY OF FREQUENCIES**

(75) Inventors: **Yuko Rikuta**, Koganei-shi (JP); **Ryuji Kohno**, Koganei-shi (JP)

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(21) Appl. No.: **10/570,999**

(22) PCT Filed: **Sep. 9, 2004**

(86) PCT No.: **PCT/JP04/13161**

§ 371 (c)(1),
(2), (4) Date: **Aug. 7, 2008**

(30) **Foreign Application Priority Data**

Sep. 9, 2003 (JP) 2003-317339

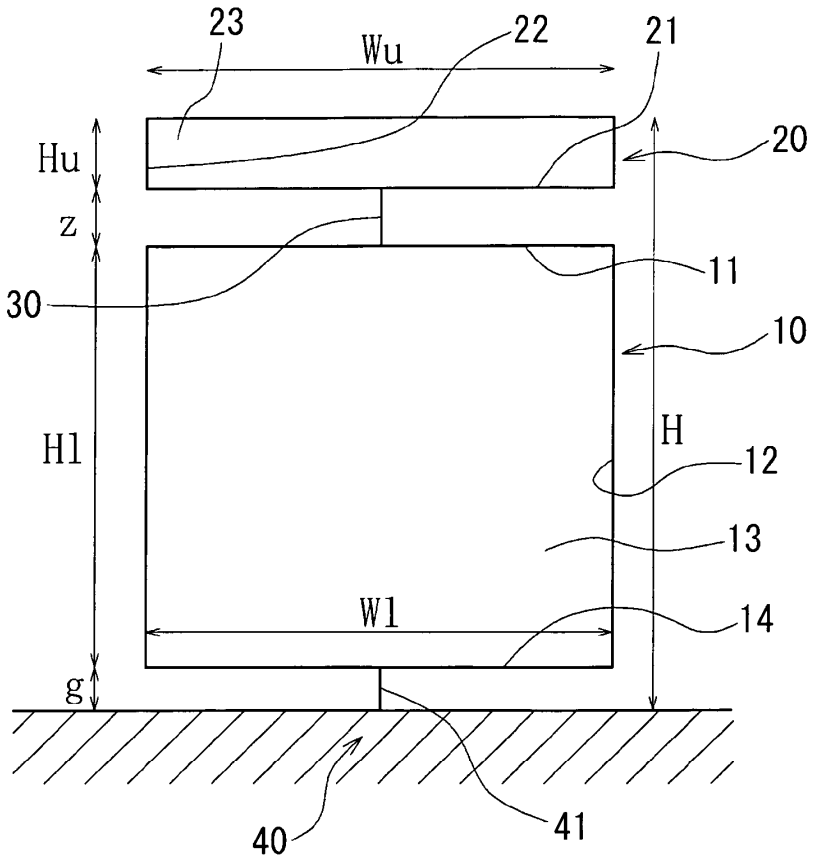
Publication Classification

(51) **Int. Cl.**
H01Q 9/30 (2006.01)
H01Q 9/16 (2006.01)

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

(57) **ABSTRACT**

An antenna common to a plurality of frequencies in which a wide band of a UWB system can be covered while suppressing interference with other systems. The antenna comprises a plurality of element part conductors, coupling conductors for coupling them electrically, and a feeder for coupling one element part conductor electrically with a feeder part capable of feeding to that element part conductor, wherein respective element part conductors are concatenated sequentially by the coupling conductors. The element part conductor has a shape substantially symmetric to a line connecting the coupling conductors or the parts coupled with the feeder. Each coupling conductor is arranged substantially linearly and the plane part of each planar conductor is arranged substantially vertically.



US 20080284655A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0284655 A1

(43) Pub. Date: Nov. 20, 2008

Alamouti et al.

(54) MM-WAVE SCANNING ANTENNA

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(21) Appl. No.: **11/803,918**

(22) Filed: **May 16, 2007**

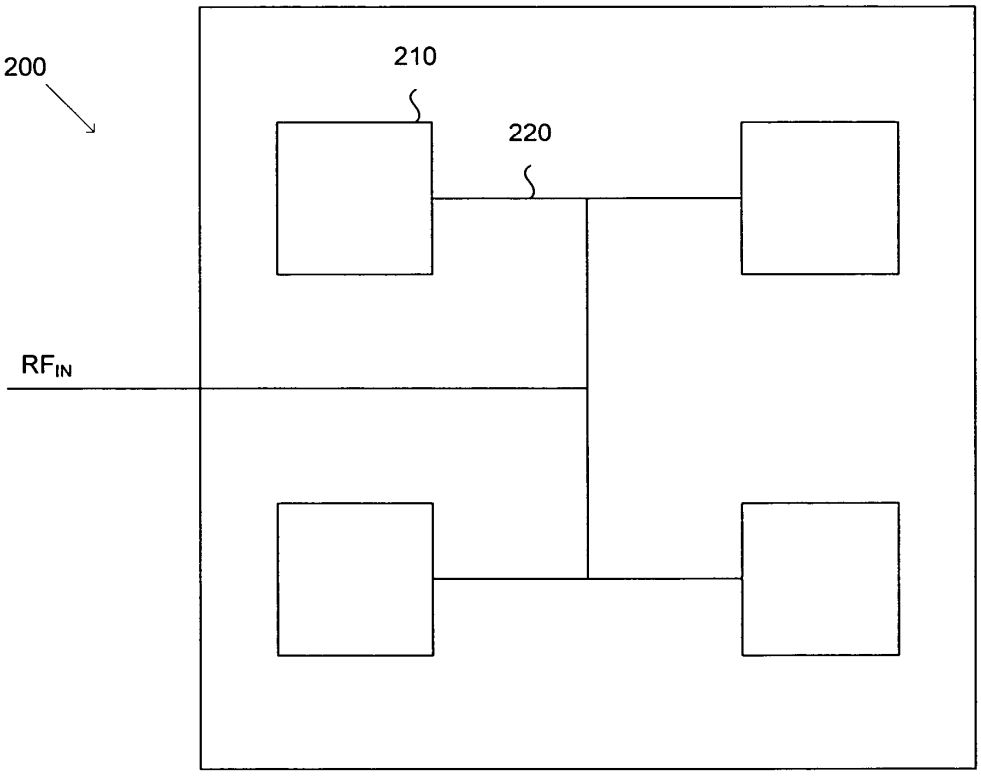
Publication Classification

(51) **Int. Cl.**
H01Q 21/29 (2006.01)
H01Q 1/38 (2006.01)

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

(57) **ABSTRACT**

In general, in one aspect, the disclosure describes a semiconductor antenna having a plurality of antenna elements and a switching network formed in the same semiconductor die. The switching network is to control activation of the antenna elements.



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(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0284656 A1

(43) Pub. Date: Nov. 20, 2008

Petropoulos

(54) RADIO FREQUENCY IDENTIFICATION (RFID) ANTENNA ASSEMBLIES WITH FOLDED PATCH-ANTENNA STRUCTURES

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(21) Appl. No.: **11/830,503**

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

Related U.S. Application Data

(60) Provisional application No. 60/930,553, filed on May 17, 2007.

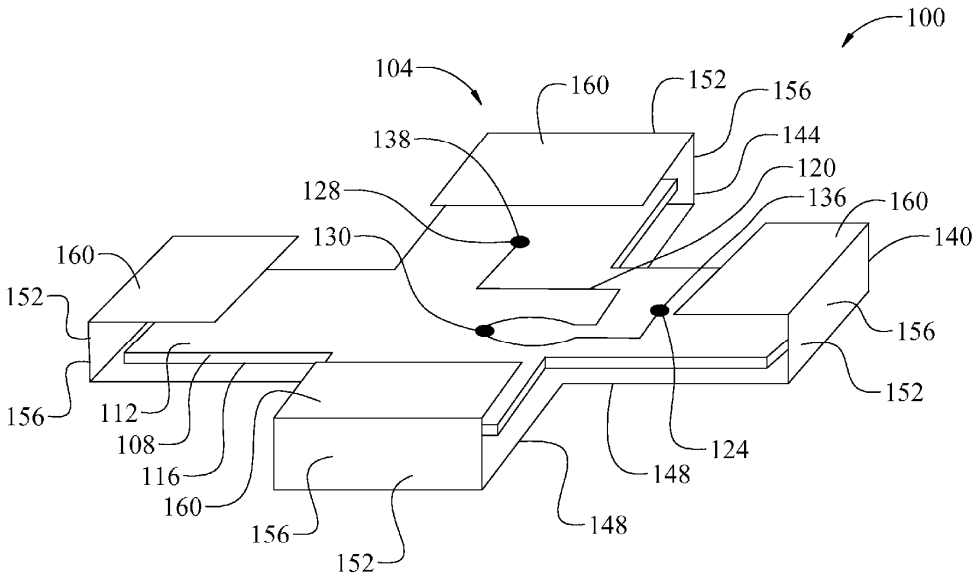
Publication Classification

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

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

(57) **ABSTRACT**

Exemplary embodiments are provided of RFID antenna assemblies having folded patch-antenna structures and that are configured with circular polarization or dual linear polarization. An antenna assembly may generally include two folded patch-antenna structures oriented generally perpendicularly to each other. Each folded patch may create a linear polarization wave. When each folded patch is fed independently, the antenna assembly radiates two independent waves that are perpendicularly polarized to each other, therefore providing a dual polarized antenna. In other embodiments, the antenna assembly may include two folded patch-antenna structures again oriented generally perpendicularly to each other. By feeding each folded patch with a 90-degree phase delay between them, a circular polarization wave is radiated. A power divider network may be used to feed the two folded patches with the 90-degree phase delay. The two folded patches may be integrated so as to form a cavity or housing for a printed circuit board.



US 20080284657A1

(19) **United States**

(12) **Patent Application Publication**

Rudant

(10) **Pub. No.: US 2008/0284657 A1**

(43) **Pub. Date: Nov. 20, 2008**

(54) **MEANDERED ANTENNA**

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(21) Appl. No.: **11/920,834**

(22) PCT Filed: **May 30, 2006**

(86) PCT No.: **PCT/FR2006/050492**

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(2), (4) Date: **Feb. 20, 2008**

(30) **Foreign Application Priority Data**

Jun. 2, 2005 (FR) 05 51484

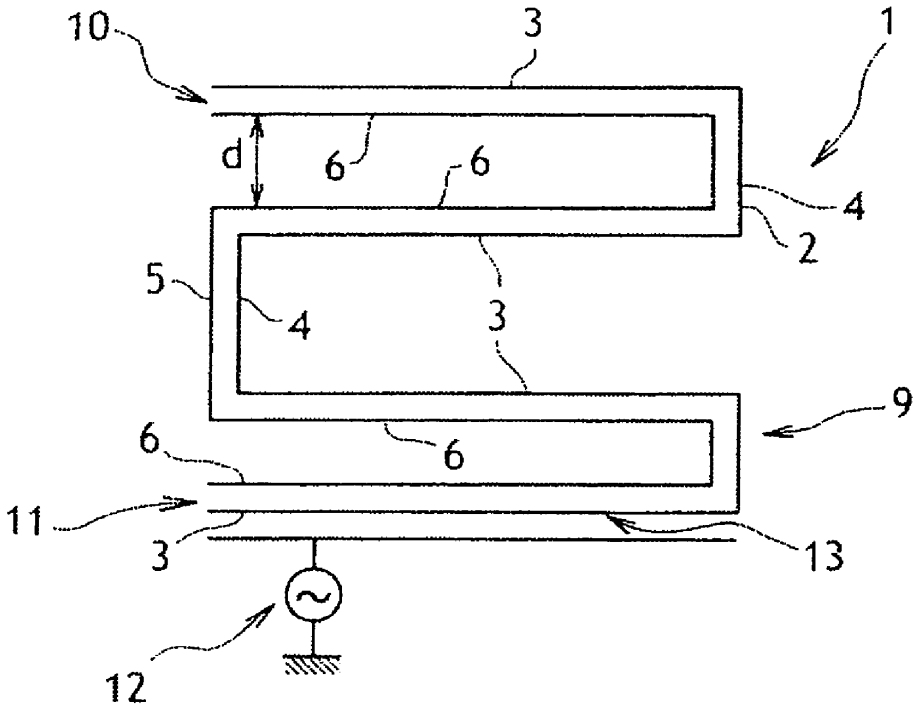
Publication Classification

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

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

(57) **ABSTRACT**

The invention concerns a meandered antennae comprising: a first meandered conductive element including a plurality of arms, two consecutive arms forming a meander; a second conductive elements forming with the first conductive elements a radiating two-wired line, the second conductive element including a plurality of arms engaged each between two consecutive arms of the first conductive element. The antenna is characterized in that it is designed to operate without ground element, in particular without ground plane.



US 20080284660A1

(19) **United States**

(12) **Patent Application Publication**

Hozouri

(10) **Pub. No.: US 2008/0284660 A1**

(43) **Pub. Date: Nov. 20, 2008**

(54) **PLANAR ANTENNA**

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(73) Assignee: **X-ETHER, INC.**, Santa Clara, CA (US)

(21) Appl. No.: **12/144,765**

(22) Filed: **Jun. 24, 2008**

Related U.S. Application Data

(60) Provisional application No. 60/948,420, filed on Jul. 6, 2007.

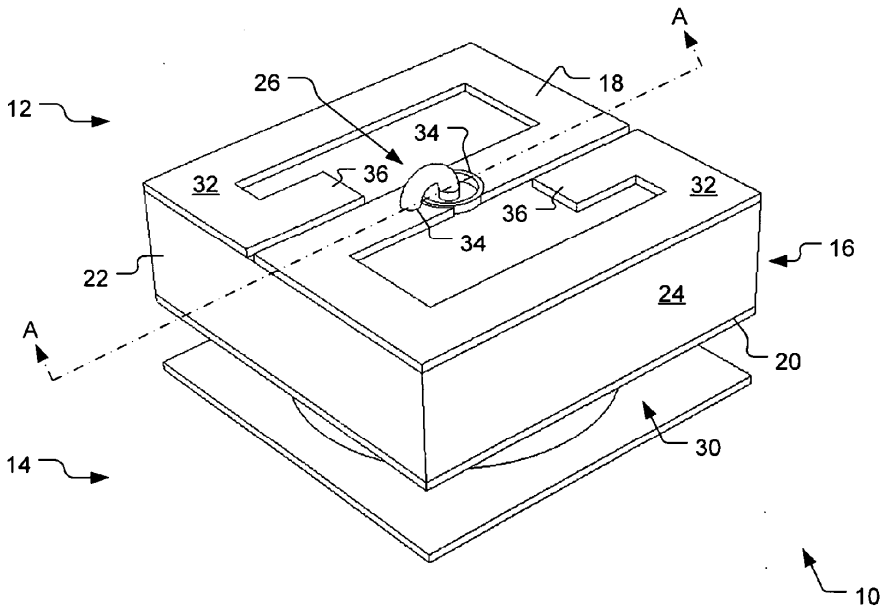
Publication Classification

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

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

(57) **ABSTRACT**

A planar antenna having top and bottom nominally planar conductors that are oriented substantially planarly parallel and form an antenna interior region. The top conductor includes two radiating conductors each having an inner end and a distal end. A feed extends from outside of the planar antenna, through the antenna interior region, and to the top conductor. The feed includes a balun and has a first feed conductor that connects to the inner end of the first radiating conductor and a second feed conductor that connects to the inner end of the second radiating conductor.



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(19) **United States**

(12) **Patent Application Publication**

He

(10) **Pub. No.: US 2008/0284661 A1**

(43) **Pub. Date: Nov. 20, 2008**

(54) **LOW COST ANTENNA DESIGN FOR WIRELESS COMMUNICATIONS**

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(21) Appl. No.: **12/152,726**

(22) Filed: **May 16, 2008**

Related U.S. Application Data

(60) Provisional application No. 60/930,738, filed on May 18, 2007.

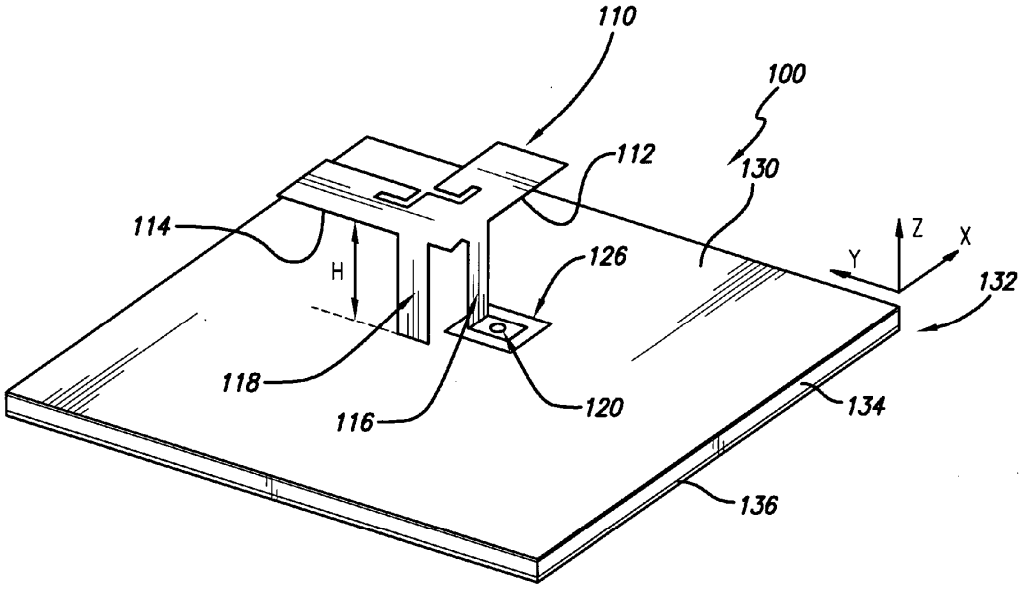
Publication Classification

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

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

(57) **ABSTRACT**

A low cost and multi-featured antenna is disclosed. The antenna employs a radiating element mounted to a ground plane and having first and second branches spaced above the ground plane forming a generally L shaped planar radiating structure. The antenna can be either linear or circular polarization, and can be either single band or dual band, and only one feeding port is needed to obtain circular polarization. The antenna can be easily applied to various frequency bands.



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(19) **United States**

(12) **Patent Application Publication**

Hilgers

(10) **Pub. No.: US 2008/0284666 A1**

(43) **Pub. Date: Nov. 20, 2008**

(54) **ANTENNA CONFIGURATION FOR RFID TAGS**

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(21) Appl. No.: **10/591,543**

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

(86) PCT No.: **PCT/IB05/50764**

§ 371 (c)(1),
(2), (4) Date: **Aug. 13, 2007**

(30) **Foreign Application Priority Data**

Mar. 5, 2004 (EP) 04100904.4

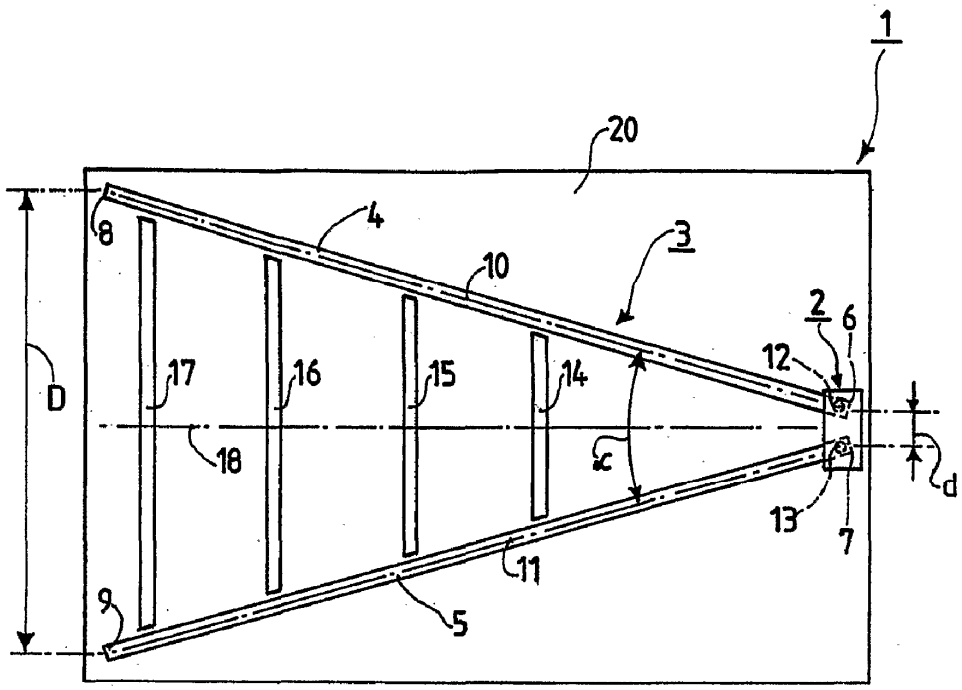
Publication Classification

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

(52) **U.S. Cl.** **343/735**

(57) **ABSTRACT**

In an antenna configuration (**3**) having a first antenna arm (**4**) and having a second antenna arm (**5**), the two longitudinal directions (**10**, **11**) of the two antenna arms (**4**, **5**) enclose an acute opening angle (α) with one another, wherein the acute opening angle (α) has a value of between 15° and 90° and preferably between 25° and 45°.



US 20080284667A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2008/0284667 A1

Mercer (43) Pub. Date: Nov. 20, 2008

(54) **MODIFICATION OF ANTENNA RADIATION PATTERN USING LOADING ELEMENTS**

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(21) Appl. No.: **11/804,482**

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

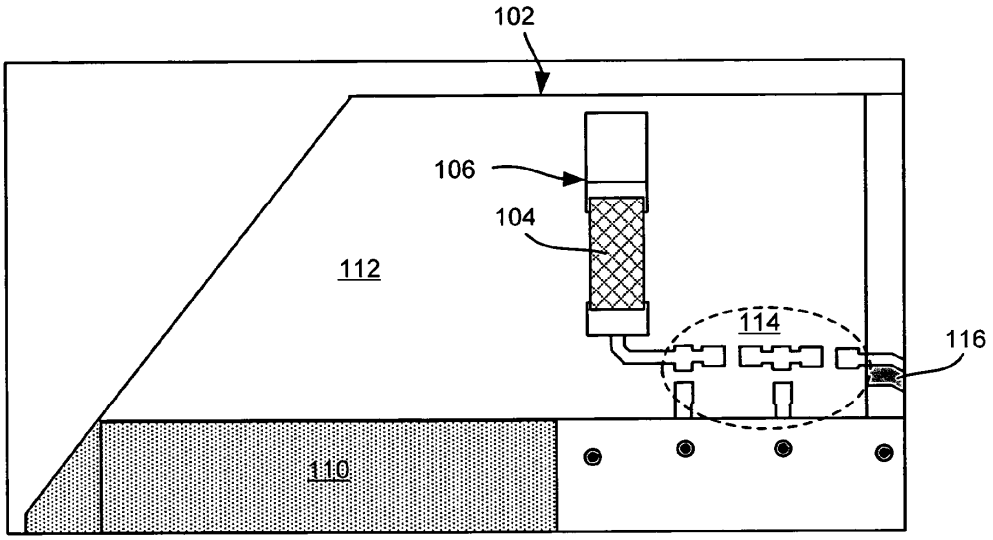
Publication Classification

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

(52) **U.S. Cl.** **343/749**

(57) **ABSTRACT**

Described is a technology by which an antenna circuit is modified by changing its loading element or elements to thereby provide a particular polar radiation/gain pattern. An antenna loading element is coupled to an antenna (e.g., a chip antenna of a mobile device, a printed copper monopole antenna, a meander line antenna, a Planar Inverted-F (type) Antenna (PIFA) or the like), and includes at least one segment that is not substantially parallel to the chip antenna. For example, in one implementation, the antenna element includes segments that are substantially orthogonal to a top-loaded chip antenna. The resulting antenna/antenna circuit modifies the polar radiation pattern, such that, for example, a mobile device can achieve more optimum gain when oriented for typical usage. One or more other segments may be bent to extend at another angle or angles to achieve a particular polar gain pattern.



US 20080284670A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0284670 A1

(43) Pub. Date: Nov. 20, 2008

KANNO et al.

(54) WIDE-BAND SLOT ANTENNA APPARATUS WITH STOP BAND

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(21) Appl. No.: **12/116,754**

(22) Filed: **May 7, 2008**

(30) **Foreign Application Priority Data**

May 8, 2007 (JP) 2007-123206

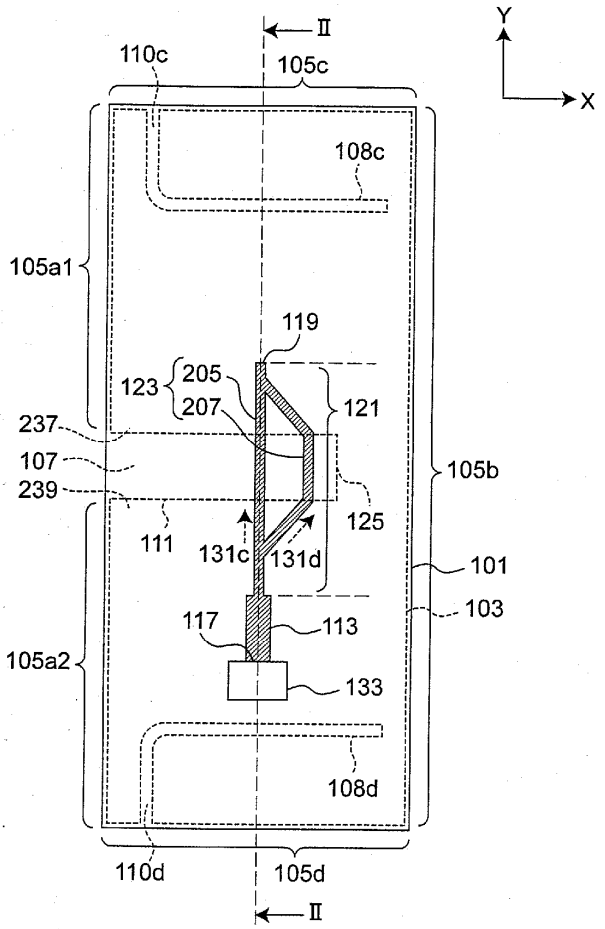
Publication Classification

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

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

(57) **ABSTRACT**

A slot antenna apparatus includes a grounding conductor having an outer edge including a first portion facing a radiation direction and a second portion other than the first portion, a one-end-open feed slot formed in the grounding conductor along the radiation direction such that an open end is provided at a center of the first portion, and a feed line including a strip conductor close to the grounding conductor and intersecting with the feed slot at at least a part thereof to feed a radio frequency signal to the feed slot. The slot antenna apparatus further comprises at least one one-end-open parasitic slot having an electrical length equivalent to one-quarter effective wavelength in a certain stop band, the parasitic slot having an open end at the second portion, and being formed in the grounding conductor so as not to intersect with the feed line.



US 20080284671A1

(19) **United States**

(12) **Patent Application Publication**

Kanno

(10) **Pub. No.: US 2008/0284671 A1**

(43) **Pub. Date: Nov. 20, 2008**

(54) **DIFFERENTIALLY-FED VARIABLE DIRECTIVITY SLOT ANTENNA**

(76) Inventor: **Hiroshi Kanno**, Osaka (JP)

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(21) Appl. No.: **12/147,091**

(22) Filed: **Jun. 26, 2008**

Related U.S. Application Data

(63) Continuation of application No. PCT/JP2007/072754, filed on Nov. 26, 2007.

(30) **Foreign Application Priority Data**

Nov. 30, 2006 (JP) 2006-323382

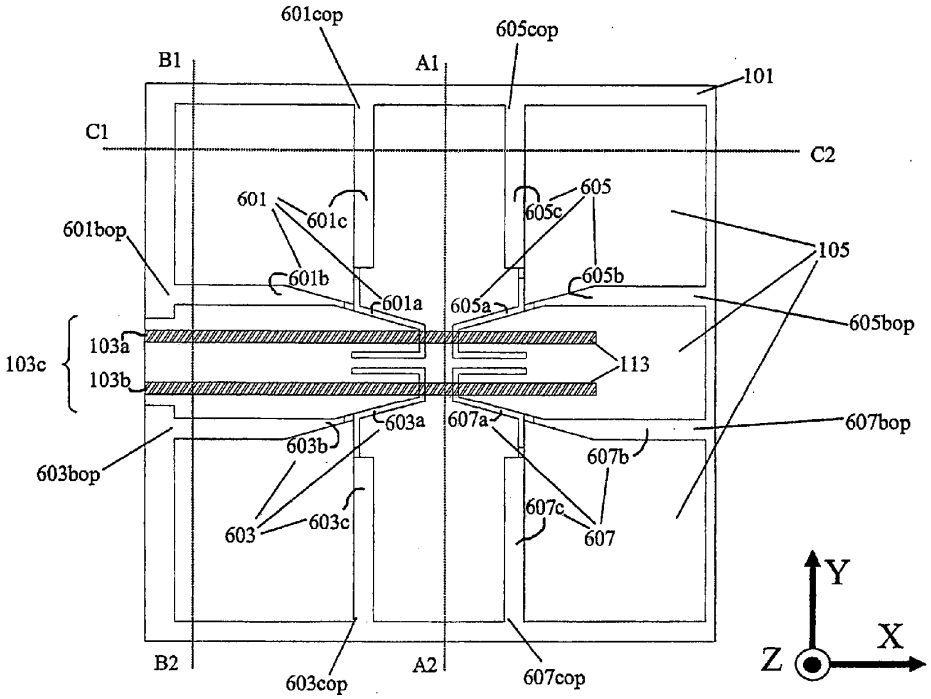
Publication Classification

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

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

(57) **ABSTRACT**

With a differential feed line **103***c*, open-ended slot resonators **601**, **603**, **605**, and **607** are allowed to operate in pair, a slot length of each slot resonator corresponding to a ¼ effective wavelength during operation. Slot resonators which are excited out-of-phase with an equal amplitude are allowed to appear within the circuitry. Thus, positioning condition of the open end points of the selective radiation portions **601***b*, **601***c*, **603***b*, **603***c*, **605***b*, and **607***b* in the respective slot resonators is dynamically switched.



US 20080284673A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0284673 A1

(43) Pub. Date: Nov. 20, 2008

DELGADO et al.

(54) **HYBRID ANTENNA INCLUDING SPIRAL ANTENNA AND PERIODIC ARRAY, AND ASSOCIATED METHODS**

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(21) Appl. No.: **11/748,788**

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

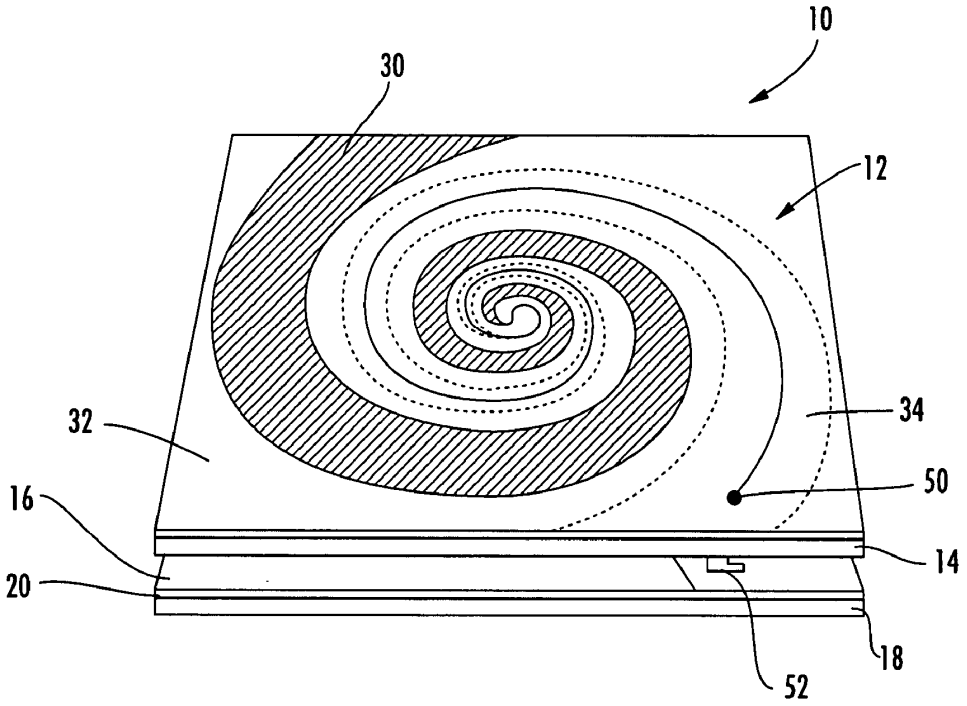
Publication Classification

(51) **Int. Cl.**
H01Q 1/36 (2006.01)
H01Q 1/38 (2006.01)
H01Q 9/04 (2006.01)

(52) **U.S. Cl.** ..... **343/895**; 29/600; 343/700 MS

(57) **ABSTRACT**

The hybrid antenna includes a spiral antenna, e.g. a log spiral antenna, and a patch array layer adjacent to the spiral antenna and including a passive periodic patch array of conductive patch elements. A conductive ground plane may be adjacent to the patch array layer, and a dielectric layer may be between the conductive ground plane and the patch array. The spiral antenna may include an upper antenna arm, a lower antenna arm and a dielectric sheet therebetween. Each of the upper and lower antenna arms may be a printed planar conductive trace that is wider at a distal end thereof with respect to a center of the log spiral antenna. The patch or periodic array layer operates in conjunction with the ground plane to couple energy into the spiral antenna and thereby improve low frequency antenna efficiency while maintaining electrically small dimensions.



US 20080286554A1

(19) **United States**

(12) **Patent Application Publication**

SCHWANKE et al.

(10) **Pub. No.: US 2008/0286554 A1**

(43) **Pub. Date: Nov. 20, 2008**

(54) **CERAMIC SUBSTRATE MATERIAL, METHOD FOR THE PRODUCTION AND USE THEREOF, AND ANTENNA OR ANTENNA ARRAY**

(76) Inventors: **Dieter SCHWANKE**, Hof (DE); **Achim Bittner**, Burgkundstadt (DE); **Ulrich Schmid**, Saarbruecken (DE); **Mirco Harnack**, Berg (DE)

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(21) Appl. No.: **12/045,149**

(22) Filed: **Mar. 10, 2008**

(30) **Foreign Application Priority Data**

May 4, 2007 (DE) 10 2007 020 888.1

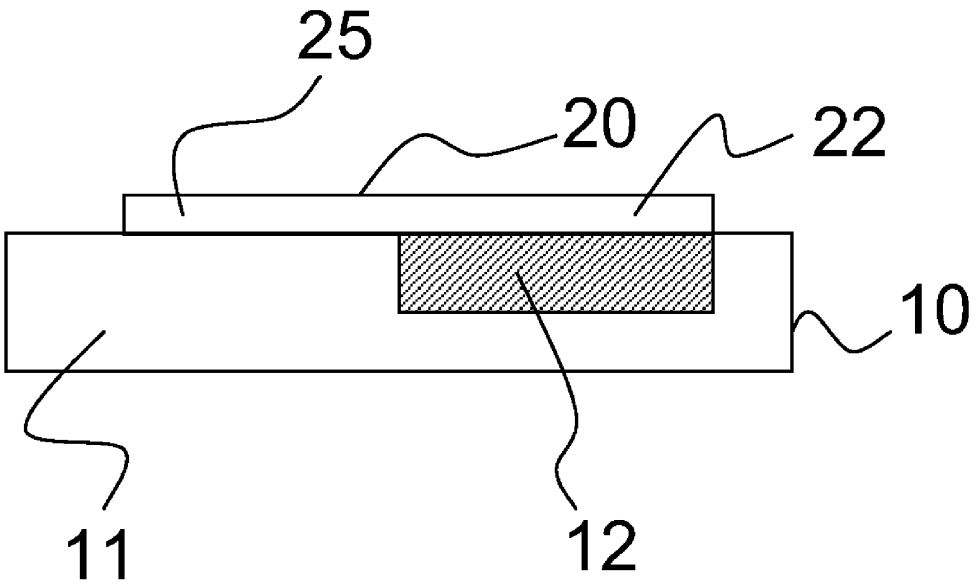
Publication Classification

(51) **Int. Cl.**
B32B 5/18 (2006.01)
C23F 1/00 (2006.01)

(52) **U.S. Cl.** **428/312.6**; 216/56; 216/41

(57) **ABSTRACT**

A method for producing a ceramic substrate material having a first layer and possibly a further layer is specified. The first layer comprises at least one first component made of a crystalline ceramic material and/or a glass material as a matrix and a second component made of a further crystalline ceramic material, which is provided in the matrix. An etching step is performed, mantle areas of the crystals and/or crystal agglomerates of the second component being etched selectively in the first layer to generate a cavity structure in the first layer. The present invention also relates to a corresponding ceramic substrate material, an antenna or an antenna array, and the use of the ceramic substrate material for an antenna or an antenna array.



US 20080287084A1

(19) **United States**

(12) **Patent Application Publication**

Krebs et al.

(10) **Pub. No.: US 2008/0287084 A1**

(43) **Pub. Date: Nov. 20, 2008**

(54) **ANTENNA DEVICE AND PORTABLE RADIO COMMUNICATION DEVICE COMPRISING SUCH ANTENNA DEVICE**

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(21) Appl. No.: **10/563,458**

(22) PCT Filed: **Jul. 9, 2004**

(86) PCT No.: **PCT/SE04/01123**

§ 371 (c)(1),
(2), (4) Date: **Oct. 16, 2006**

(30) **Foreign Application Priority Data**

Jul. 11, 2003 (SE) 0302054-2

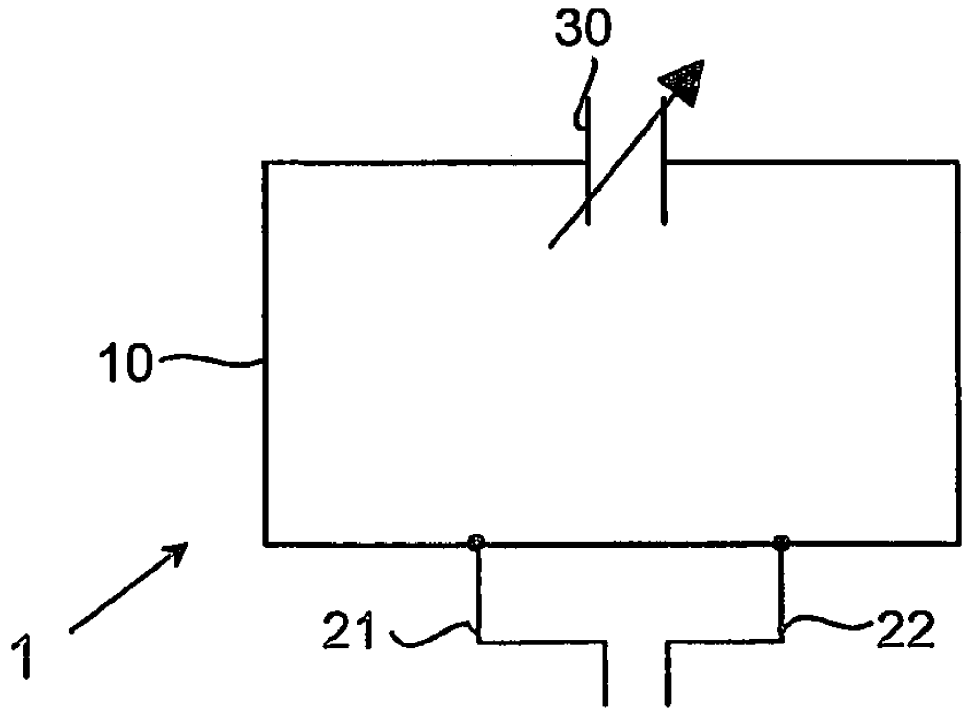
Publication Classification

(51) **Int. Cl.**
H04B 1/18 (2006.01)

(52) **U.S. Cl.** **455/271**

(57) **ABSTRACT**

An antenna device for a portable radio communication device adapted for receiving radio signals comprises an internal radiating element (**10**) comprising at least one feeding portion (**21**, **22**) connected to a receiver circuit (**40**). The radiating element (**10**) comprises an electrical impedance (**30**) that is controllable in dependence on the desired frequency range of the received signals, wherein the feeding portion (**21**, **22**) is connected to a feeding input (**40***a*, **40***b*) on the receiver circuit and the control input of the controllable electrical impedance (**30**) is connected to an output (**40***c*) on the receiver circuit (**40**) intended for the control of the VCO resonance frequency of the receiver circuit. In that way an antenna device can be provided inside the casing of a small sized portable radio communication device, which has good performance throughout a narrow sub-band of a frequency band having a relatively low frequency, wherein the narrow sub-band can be adjusted in frequency so as to cover the entire frequency band, such as the FM radio band.



US 20080291026A1

(19) **United States**

(12) **Patent Application Publication**

Schwarze et al.

(10) **Pub. No.: US 2008/0291026 A1**

(43) **Pub. Date: Nov. 27, 2008**

(54) **RADIO FREQUENCY IDENTIFICATION DEVICES WITH SEPARATED ANTENNAS**

(76) Inventors: **Stephan Schwarze**, Austin, TX (US); **Cynthia C. Rubio-Ratton**, Austin, TX (US); **Kenneth L. Ratton**, Austin, TX (US)

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(21) Appl. No.: **11/752,810**

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

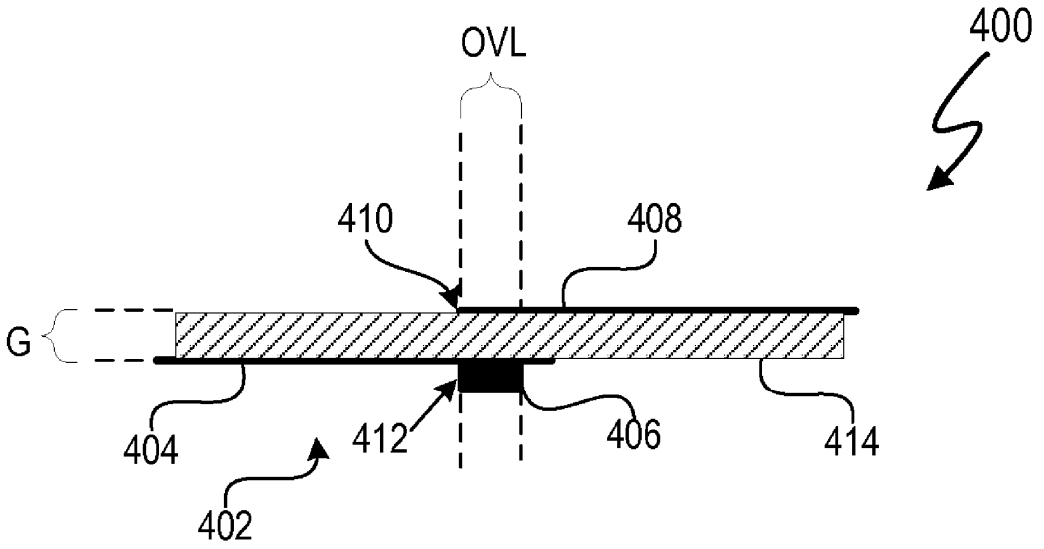
Publication Classification

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

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

(57) **ABSTRACT**

An RFID apparatus includes at least two antennas that are positioned to increase the maximum effective range of the RFID device. The RFID apparatus includes an RFID device, and the RFID device includes an antenna connected to a circuit having a transmitter. The second antenna is positioned relative to the RFID device to increase the MER of the RFID apparatus relative to conventional RFID devices while remaining separated (i.e. no direct physical contact) from the RFID device. In at least one embodiment, the second antenna is separated from the RFID device and positioned relative to the RFID device to induce a coupling of a signal to the RFID device. In at least one embodiment, the second antenna is positioned to overlay at least a portion of the circuit of the RFID device. In at least one embodiment, the RFID device is a passive-type RFID device.



US 20080291091A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0291091 A1

(43) Pub. Date: Nov. 27, 2008

Su et al.

(54) **DUAL BAND ANTENNA**

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

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(73) Assignee: **CHENG UEI PRECISION INDUSTRY CO., LTD.**, Taipei Hsien (TW)

(21) Appl. No.: **11/752,766**

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

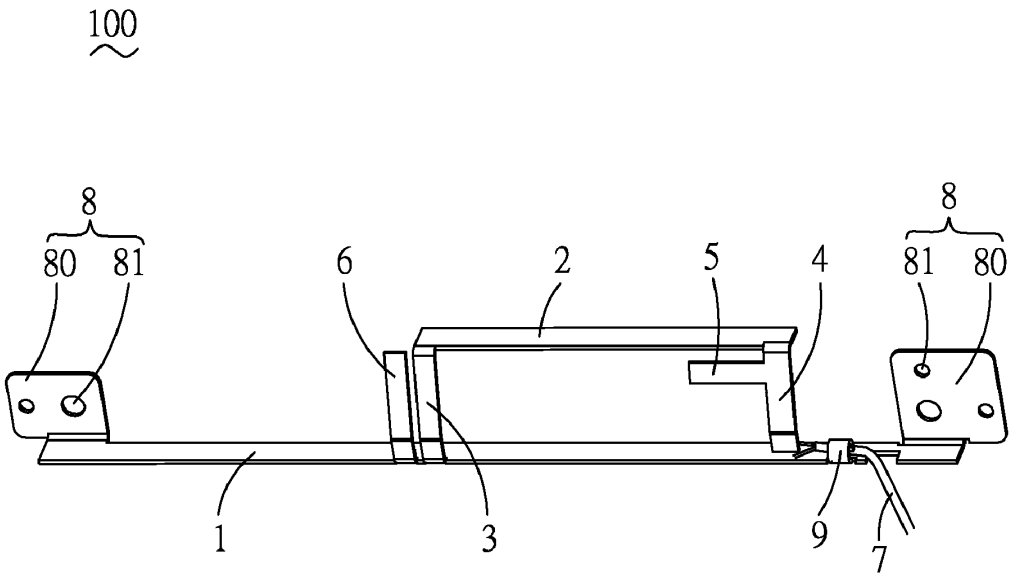
Publication Classification

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

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

(57) **ABSTRACT**

A dual band antenna has a ground portion, a first radiating conductor spaced from one side of the ground portion, a second radiating conductor connected between one end of the first radiating conductor and the ground portion, a third radiating conductor connected on the other end of the first radiating conductor, a fourth radiating conductor extended from the third radiating conductor, a parasitic element arranged to close to the second radiating conductor and connected to the ground portion and a feeding cable connected to the free end of the third radiating conductor. When the dual band antenna operates, the first, second and third radiating conductors obtain a first wireless location area network bandwidth covering 2.4 GHz to 2.5 GHz, and the third radiating conductor, the fourth radiating conductor and the parasitic element obtain a second wireless location area network bandwidth covering 4.9 GHz to 5.87 GHz.



US 20080291093A1

(19) **United States**

(12) **Patent Application Publication**

Deaett et al.

(10) **Pub. No.: US 2008/0291093 A1**

(43) **Pub. Date: Nov. 27, 2008**

(54) **NON-WOVEN TEXTILE MICROWAVE PATCH ANTENNAS AND COMPONENTS**

(76) Inventors: **Michael A. Deaett**, North Kingstown, RI (US); **William H. Weedon, III**, Warwick, RI (US); **Behnam Pourdeyhimi**, Cary, NC (US)

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(21) Appl. No.: **12/188,137**

(22) Filed: **Aug. 7, 2008**

Related U.S. Application Data

(62) Division of application No. 11/090,598, filed on Mar. 28, 2005.

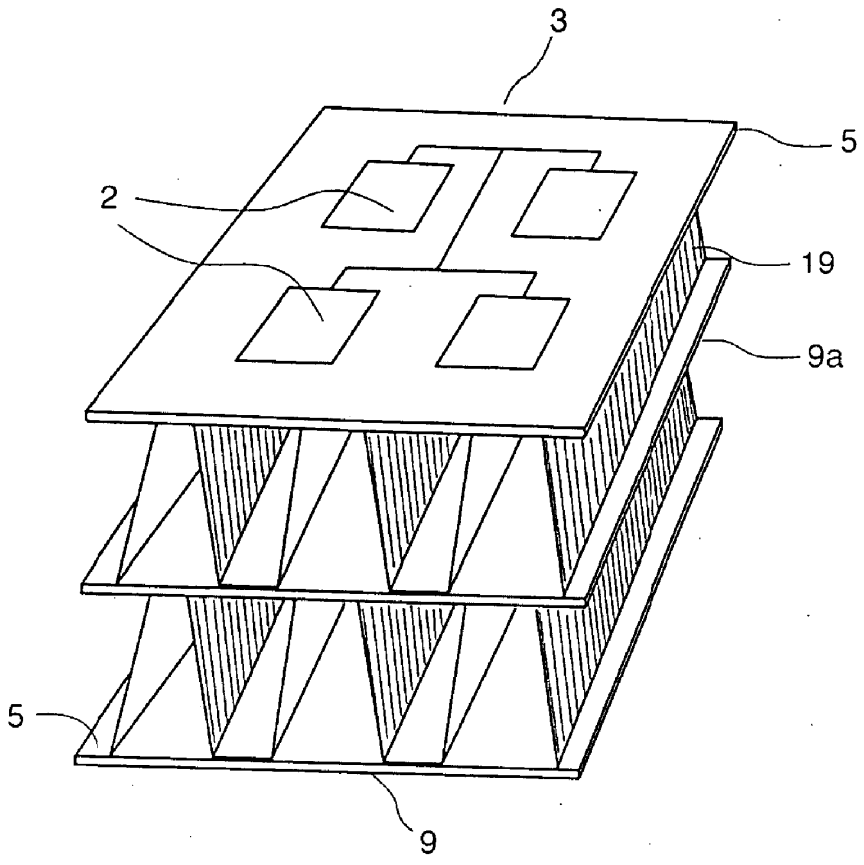
Publication Classification

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

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

(57) **ABSTRACT**

A microwave patch antenna comprising: a plurality of conductive antenna patterns; a plurality of groundplanes; a plurality of feed elements; a plurality of feed slots to allow feed elements to pass through the non-woven dielectric spacers; and a plurality of dielectric separator layers comprised of corrugated non-woven fabric as necessary to form a patch antenna construction.



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(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0291094 A1**

(43) **Pub. Date: Nov. 27, 2008**

Li et al.

(54) **DUAL BAND WLAN ANTENNA**

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(21) Appl. No.: **12/214,165**

(22) Filed: **Jun. 17, 2008**

Related U.S. Application Data

(63) Continuation of application No. 11/581,502, filed on Oct. 16, 2006, now Pat. No. 7,394,433, which is a continuation of application No. 11/519,979, filed on Sep. 12, 2006, now Pat. No. 7,423,597.

(60) Provisional application No. 60/771,634, filed on Feb. 9, 2006.

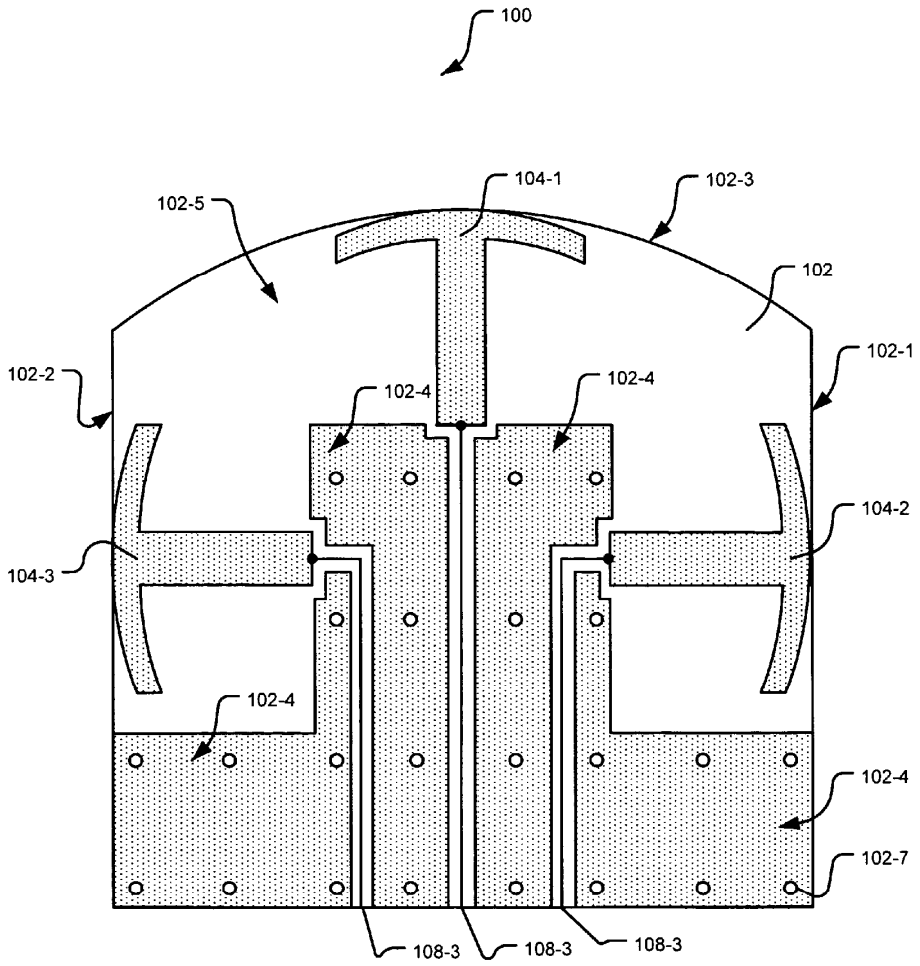
Publication Classification

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

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

(57) **ABSTRACT**

An antenna system includes first, second, and third antennas that are arranged on a substrate and that include an arc-shaped element having a concave side and a convex side, a conducting element that extends substantially radially from a center of the concave side, and a U-shaped element having a base portion with a center that communicates with the conducting element and two side portions that extend from ends of the base portion towards the concave side.



US 20080291095A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0291095 A1**

(43) **Pub. Date: Nov. 27, 2008**

Krishtul

(54) **THREE DIMENSIONAL ANTENNAS FORMED USING WET CONDUCTIVE MATERIALS AND METHODS FOR PRODUCTION**

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(21) Appl. No.: **11/570,420**

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

(86) PCT No.: **PCT/IL05/00611**

§ 371 (c)(1),
(2), (4) Date: **Apr. 13, 2007**

Related U.S. Application Data

(60) Provisional application No. 60/579,173, filed on Jun. 10, 2004, provisional application No. 60/631,968, filed on Nov. 29, 2004, provisional application No. 60/676,471, filed on Apr. 28, 2005.

Publication Classification

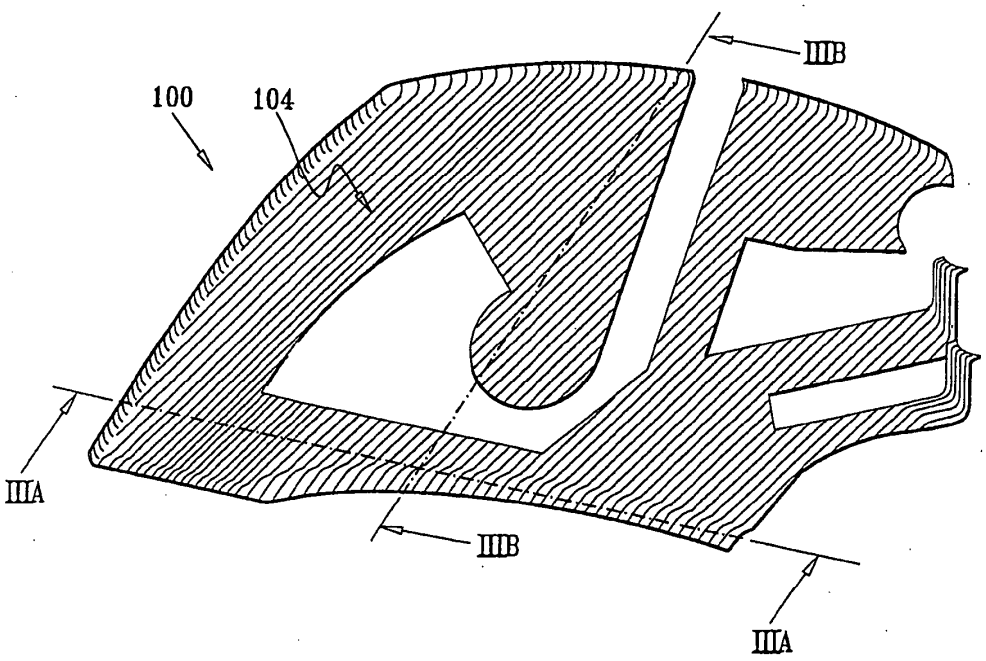
(51) **Int. Cl.**

H01Q 1/24	(2006.01)
H01P 11/00	(2006.01)
H01Q 9/04	(2006.01)

(52) **U.S. Cl.** ..... **343/702**; 29/600; 343/700 MS

(57) **ABSTRACT**

A method for manufacturing antennas including providing a substrate having at least one surface lying in three dimensions and applying a conductive coating to the at least one surface lying in three dimensions, thereby defining an antenna on the at least one surface and an antenna including a conductive coating applied to a three-dimensional surface of a substrate.



US 20080291097A1

(19) **United States**

(12) **Patent Application Publication**

Fukushima et al.

(10) **Pub. No.: US 2008/0291097 A1**

(43) **Pub. Date: Nov. 27, 2008**

(54) **ON-VEHICLE ANTENNA SYSTEM AND ELECTRONIC APPARATUS HAVING THE SAME**

(76) Inventors: **Susumu Fukushima**, Osaka (JP); **Akihiro Hoshiai**, Osaka (JP)

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(21) Appl. No.: **11/629,073**

(22) PCT Filed: **Apr. 3, 2006**

(86) PCT No.: **PCT/JP2006/307046**

§ 371 (c)(1),
(2), (4) Date: **Dec. 11, 2006**

(30) **Foreign Application Priority Data**

Apr. 4, 2005 (JP) 2005-107250

Oct. 7, 2005 (JP) 2005-294842

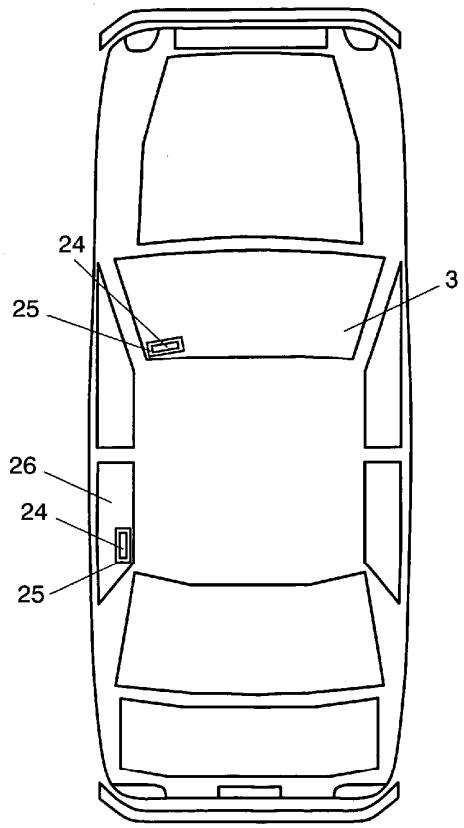
Publication Classification

(51) **Int. Cl.**
H01Q 1/32 (2006.01)
H01Q 9/04 (2006.01)

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

(57) **ABSTRACT**

An on-vehicle antenna system which offers a superior receiving performance, by suppressing reception of reflected/scattered waves coming from inside of the vehicle's cabin; these reflected/scattered waves being an adverse factor which deteriorates signal receiving performance of an antenna. The antenna system is installed at glass pane portion of a vehicle with direction (**12**) of the greatest radiation pattern (**11**) directed towards ahead (**14**) of the vehicle from boundary plane (**10**) containing power supply portion (**9**), while direction (**13**) of the smallest radiation pattern (**11**) towards behind (**15**) of the vehicle. The above-configured antenna system can suppress those waves reflected/scattered in the vehicle cabin from being received; as the result, it demonstrates improved characteristics.



US 20080291099A1

(19) **United States**

(12) **Patent Application Publication**

Qi et al.

(10) **Pub. No.: US 2008/0291099 A1**

(43) **Pub. Date: Nov. 27, 2008**

(54) **MOBILE WIRELESS COMMUNICATIONS DEVICE COMPRISING NON-PLANAR INTERNAL ANTENNA WITHOUT GROUND PLANE OVERLAP**

(75) Inventors: **Yihong Qi**, Waterloo (CA); **Ying Tong Man**, Kitchener (CA); **Parry Jarmuszewski**, Waterloo (CA)

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(73) Assignee: **Research In Motion Limited**, Waterloo (CA)

(21) Appl. No.: **12/169,049**

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

Related U.S. Application Data

(63) Continuation of application No. 11/769,825, filed on Jun. 28, 2007, now Pat. No. 7,403,165, which is a continuation of application No. 11/422,170, filed on Jun. 5, 2006, now Pat. No. 7,256,744, which is a continuation of application No. 11/042,890, filed on Jan. 25, 2005, now Pat. No. 7,091,911.

(60) Provisional application No. 60/576,159, filed on Jun. 2, 2004, provisional application No. 60/576,637, filed on Jun. 3, 2004.

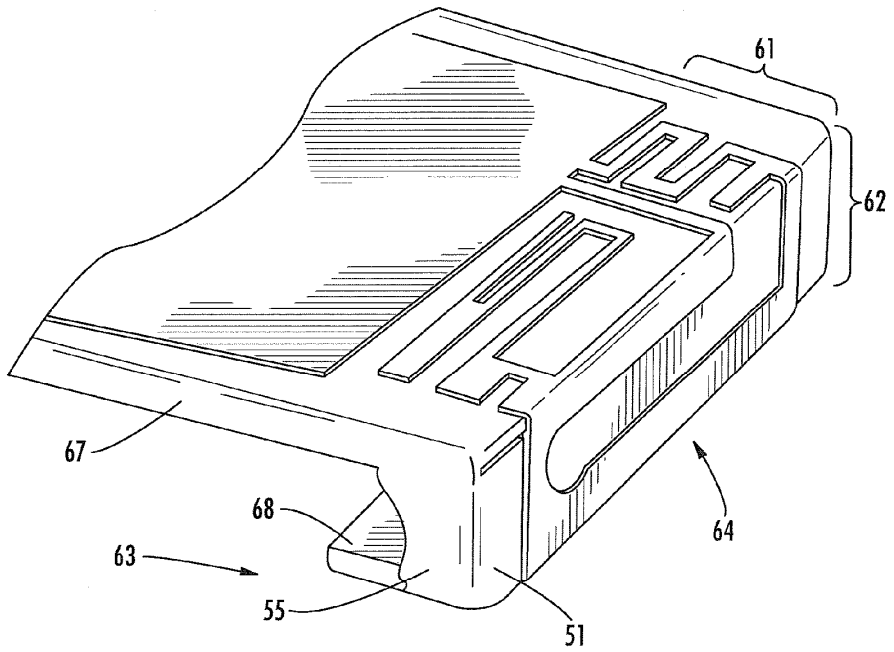
Publication Classification

(51) **Int. Cl.**
H01Q 11/12 (2006.01)
H01P 11/00 (2006.01)

(52) **U.S. Cl.** **343/741**; 29/600

(57) **ABSTRACT**

A mobile wireless communications device may include a housing, a main dielectric substrate carried by the housing, circuitry carried by the main dielectric substrate, and a ground plane conductor on the main dielectric substrate. The mobile wireless communications device may further include an L-shaped dielectric extension comprising a vertical portion extending outwardly from the main dielectric substrate and an overhang portion extending outwardly from the vertical portion and above an adjacent portion of the main dielectric layer. A main loop antenna conductor comprising at least one conductive trace may be relatively positioned on the overhang portion of the L-shaped dielectric extension so as not to overlap the ground plane conductor.



US 20080291100A1

(19) **United States**

(12) **Patent Application Publication**

CHI et al.

(10) **Pub. No.: US 2008/0291100 A1**

(43) **Pub. Date: Nov. 27, 2008**

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

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(21) Appl. No.: **12/186,584**

(22) Filed: **Aug. 6, 2008**

Related U.S. Application Data

(63) Continuation-in-part of application No. 11/564,893, filed on Nov. 30, 2006.

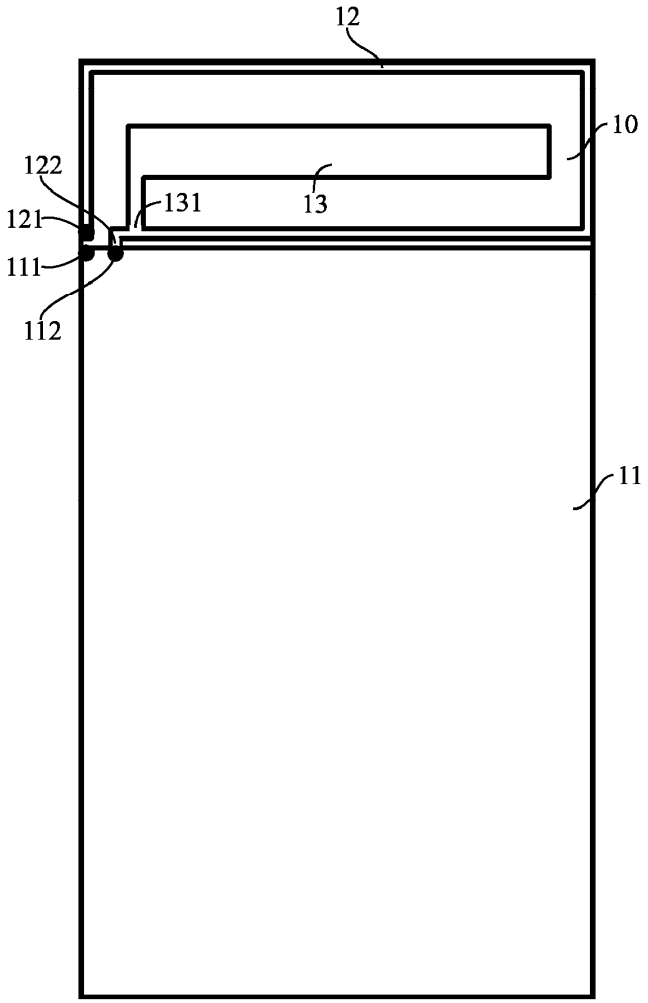
Publication Classification

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

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

(57) **ABSTRACT**

A dual-band loop antenna for using in a mobile phone for (890~960 MHz)/DCS(1710~1880 MHz) application is disclosed to include a ground plane in a substantially rectangular shape having a grounding point and a shorting point, a radiating metallic loop having a feeding end and a shorting end electrically connected to the shorting point of the ground plane and spaced from the feeding end at a predetermined distance, and a radiating metallic plate surrounded by the radiating metallic loop and having one end electrically connected to a vicinity around the shorting end of the radiating metallic loop and spaced from the shorting end of the radiating metallic loop at a distance less than 10 mm.



US 20080291103A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0291103 A1**

(43) **Pub. Date: Nov. 27, 2008**

BOLIN

(54) **COMPACT DIVERSITY ANTENNA ARRANGEMENT**

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(21) Appl. No.: **11/754,040**

(22) Filed: **May 25, 2007**

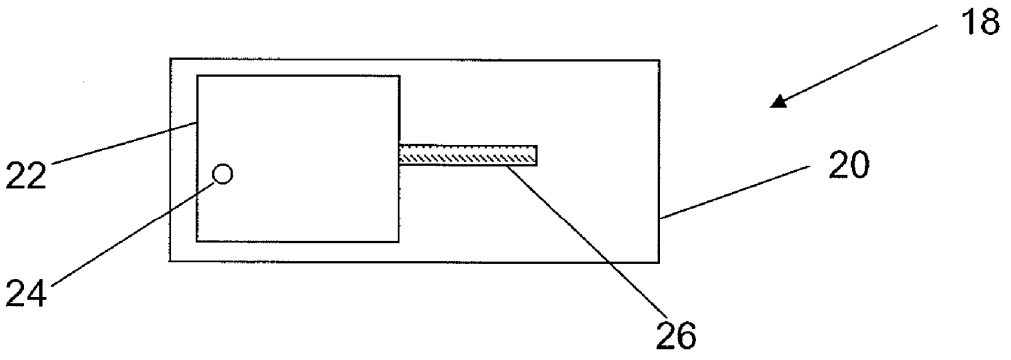
Publication Classification

(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01Q 13/10 (2006.01)
H01Q 9/16 (2006.01)

(52) **U.S. Cl.** ..... **343/767**; 343/700 MS; 343/793

(57) **ABSTRACT**

The present invention relates to an antenna arrangement for a portable communication device as well as to a portable communication device comprising such an antenna arrangement. The antenna arrangement includes a ground plane, a first radiating electrical antenna element provided in a plane arranged at a distance above and parallel with at least a part of the ground plane, where the first radiating electrical antenna element is dimensioned for resonating at least at one frequency, and a second radiating magnetic antenna element provided in the ground plane below the first antenna element and being dimensioned for resonating at the same frequency as the first radiating antenna element.



US 20080291104A1

(19) **United States**

(12) **Patent Application Publication**

Kanno et al.

(10) **Pub. No.: US 2008/0291104 A1**

(43) **Pub. Date: Nov. 27, 2008**

(54) **WIDE-BAND SLOT ANTENNA APPARATUS WITH CONSTANT BEAM WIDTH**

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(21) Appl. No.: **12/117,535**

(22) Filed: **May 8, 2008**

(30) **Foreign Application Priority Data**

May 8, 2007 (JP) 2007-123204

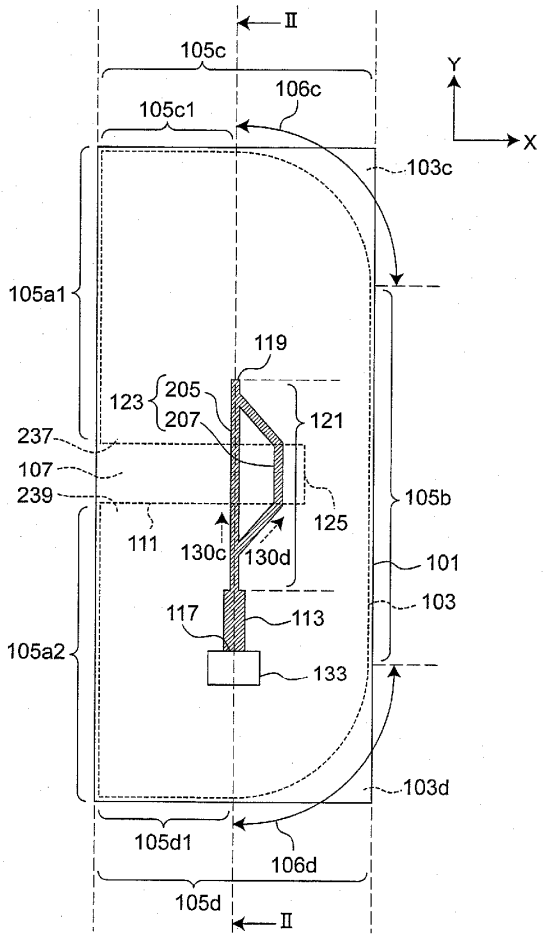
Publication Classification

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

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

(57) **ABSTRACT**

A slot antenna apparatus including: a grounding conductor having an outer edge including a first portion facing a radiation direction and a second portion other than the first portion, a one-end-open slot formed in the grounding conductor along the radiation direction such that an open end is provided at a center of the first portion, and a feed line including a strip conductor close to the grounding conductor and intersecting with the slot at least a part thereof to feed a radio frequency signal to the slot. The grounding conductor is formed to include at least one section at the second portion, the at least one section gradually approaches an axis passing through the slot and parallel to the radiation direction with increasing distance from the first portion.



US 20080291107A1

(19) **United States**

(12) **Patent Application Publication**

Tsai et al.

(10) **Pub. No.: US 2008/0291107 A1**

(43) **Pub. Date: Nov. 27, 2008**

(54) **ANTENNA STRUCTURE FOR INTEGRATED CIRCUIT DIE USING BOND WIRE**

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(21) Appl. No.: **11/753,749**

(22) Filed: **May 25, 2007**

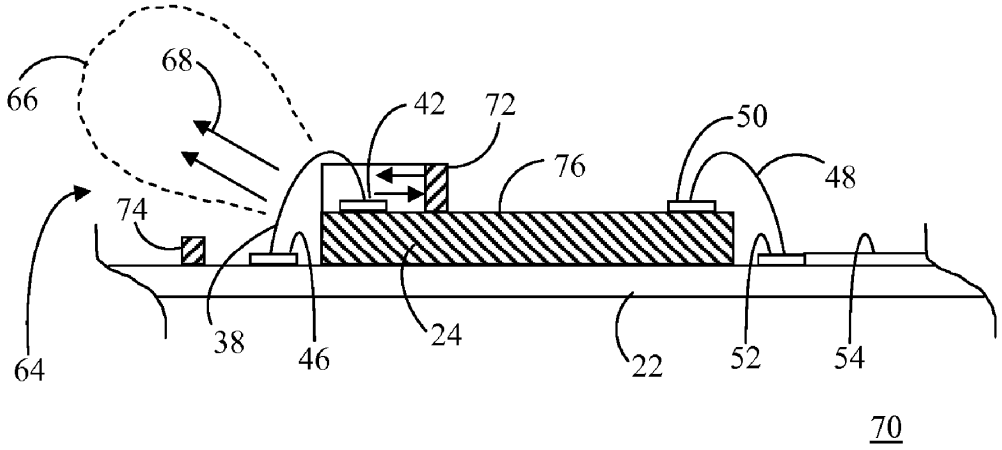
Publication Classification

(51) **Int. Cl.**
H01Q 9/26 (2006.01)
H01L 21/60 (2006.01)

(52) **U.S. Cl.** **343/803**; 438/106; 257/E21.506

(57) **ABSTRACT**

A device **20** includes a substrate **22** having an integrated circuit (IC) die **24** coupled thereto. A bond wire **28** interconnects a die bond pad **32** on the IC die **24** with an insulated bond pad **36**. Another bond wire **38** interconnects a die bond pad **42** on the IC die **24** with another insulated bond pad **46**. The bond wires **28** and **38** serve as radiating elements of a dipole antenna structure **64**. A reflector **72** and director **74** can be located on the substrate **22** and/or the IC die **24** to reflect and/or direct a radiation pattern **66** emitted by or received by the antenna structure **64**. A trace **82** can be interconnected between the insulated bond pads **36**, **46** to form a folded dipole antenna structure **84**.



US 20080291108A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0291108 A1

(43) Pub. Date: Nov. 27, 2008

Holly et al.

(54) **BROADBAND COMPOSITE DIPOLE ANTENNA ARRAYS FOR OPTICAL WAVE MIXING**

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(21) Appl. No.: **11/753,490**

(22) Filed: **May 24, 2007**

Publication Classification

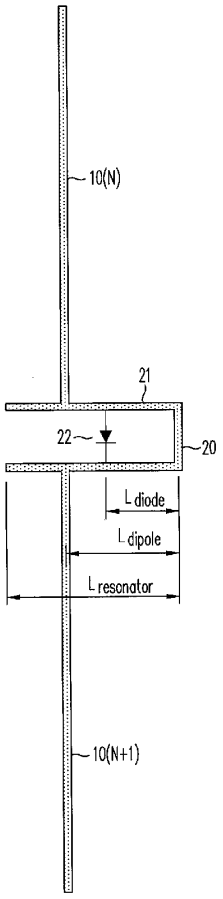
(51) **Int. Cl.**

H01Q 21/00	(2006.01)
H01Q 1/50	(2006.01)
H01Q 9/16	(2006.01)

(52) **U.S. Cl.** **343/814**; 343/793; 343/812

(57) **ABSTRACT**

A broadband composite dipole array (CDA) includes an array of macro dipoles on a non-conducting substrate adapted to receive radiation at two frequencies. Each macro dipole is an array of micro dipoles adapted to receive radiation at substantially the mean of the two frequencies. The micro-dipoles are coupled to each other by a parallel resonant circuit including a nonlinear element, wherein the minimum impedance of the circuit is a substantially short circuit at the difference frequency f1-f2, and the circuit has a substantially open circuit impedance in the range of frequencies from f1 to f2. The micro dipoles resonate efficiently at both frequencies f1 and f2 with low-loss. The nonlinear element in the resonant circuit generates a signal at the difference frequency which is the resonant frequency of the macro dipole antenna. A composite of macro dipole antennas couple electromagnetically via a cluster of micro-dipole elements to broaden the bandwidth over a range of frequencies from f1 to f2 at which the macro dipole antenna resonates.



US 20080291111A1

(19) **United States**

(12) **Patent Application Publication**

Bae et al.

(10) **Pub. No.: US 2008/0291111 A1**

(43) **Pub. Date: Nov. 27, 2008**

(54) **CAPACITIVE FEED ANTENNA**

(75) Inventors: **Charlie Bae**, Seoul (KR); **Haim Yona**, Tiberias (IL); **Snir Azulay**, Tiberias (IL); **Stefan Quantz**, Tianjin (CN); **Xiujuan Xu**, Tianjin (CN); **Xiao Da Tian**, Yin Hai Li Wuxi (CN)

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(21) Appl. No.: **10/573,350**

(22) PCT Filed: **Mar. 12, 2006**

(86) PCT No.: **PCT/IL2006/000322**

§ 371 (c)(1),
(2), (4) Date: **Jul. 29, 2008**

Related U.S. Application Data

(60) Provisional application No. 60/661,750, filed on Mar. 15, 2005, provisional application No. 60/749,364, filed on Dec. 9, 2005.

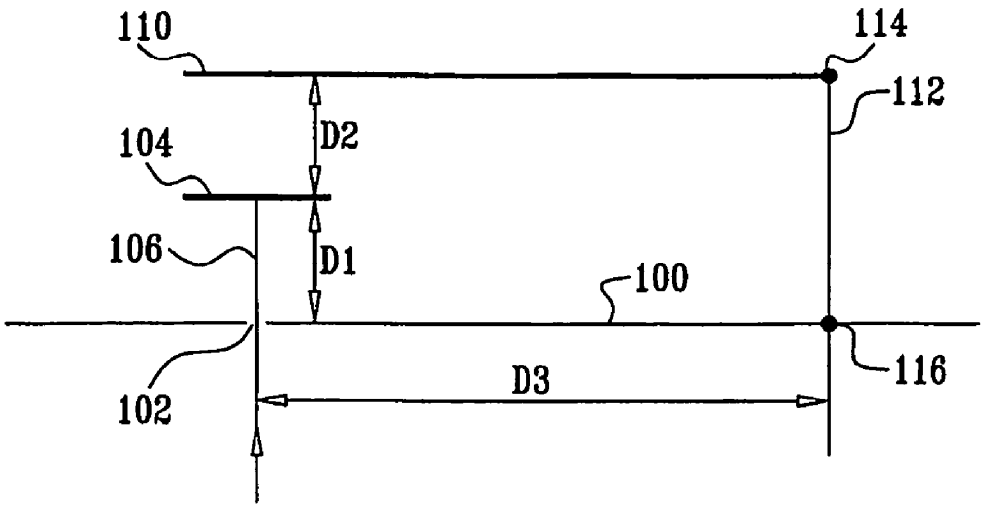
Publication Classification

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

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

(57) **ABSTRACT**

The present invention seeks to provide an antenna having multiple radiating bands, including a ground plane, a feed plate extending generally parallel to and being spaced from the ground plane by a first distance and having a feed connection extending between the feed plate and the ground plane, at least one radiating element extending generally parallel to and being spaced from the feed plate by a second distance and at least one galvanic connector connecting the at least one radiating element at a first location on the at least one radiating element to the ground plane at a first location on the ground plane, the first location on the ground plane being separated from the feed connection by a third distance, the first, second and third distances being selected to achieve desired impedance matching of the feed plate, and the feed plate feeding the at least one radiating element at a location corresponding to an impedance substantially greater than 50 Ohm at least one band.



US 20080291112A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0291112 A1

(43) Pub. Date: Nov. 27, 2008

Kubokawa et al.

(54) **ANTENNA COVER AND ANTENNA APPARATUS**

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(21) Appl. No.: **12/146,342**

(22) Filed: **Jun. 25, 2008**

Related U.S. Application Data

(62) Division of application No. 11/629,761, filed on Dec. 15, 2006, filed as application No. PCT/JP2005/010972 on Jun. 15, 2005.

(30) **Foreign Application Priority Data**

Jun. 16, 2004 (JP) 2004178562
Jun. 23, 2004 (JP) 2004185554
Jun. 23, 2004 (JP) 2004185555

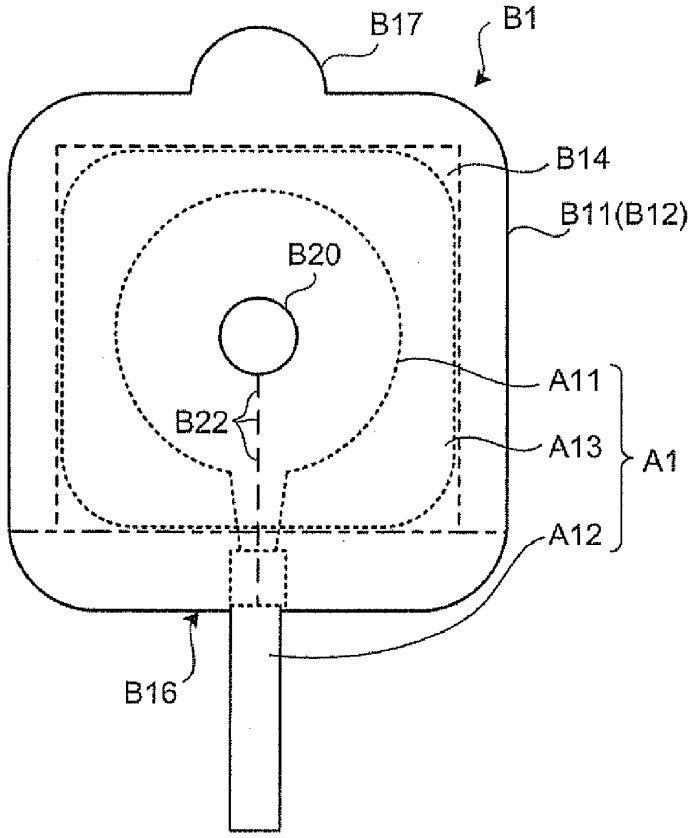
Publication Classification

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

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

(57) **ABSTRACT**

After a receiving antenna (A1) is inserted from a slot (B16) into a housing portion (B14) formed between cover members (B11, B12), the slot (B16) is pasted so as to secure the receiving antenna (A1). The receiving antenna (A1) is thus housed. Further, a tab (B17) which extends from one side of a pasted edge portion, holes (B20, B21) that penetrate opposing surfaces of the cover members (B11, B12), and perforated lines (B22, B23) running from the slot (B16) to the holes (B20, B21), respectively, are provided. Therefore, the receiving antenna (A1) can be easily attached to the antenna cover (B1) and to an outer surface of a subject (1), and the receiving antenna (A1) can be easily removed from the antenna cover (B1) and from the outer surface of the subject (1).



US 20080291345A1

(19) **United States**

(12) **Patent Application Publication**

Schneider

(10) **Pub. No.: US 2008/0291345 A1**

(43) **Pub. Date: Nov. 27, 2008**

(54) **PICTURE FRAME ANTENNA ASSEMBLIES**

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(73) Assignee: **ANTENNAS DIRECT, INC.**, Eureka, MO (US)

(21) Appl. No.: **12/126,593**

(22) Filed: **May 23, 2008**

Related U.S. Application Data

(60) Provisional application No. 60/931,448, filed on May 23, 2007.

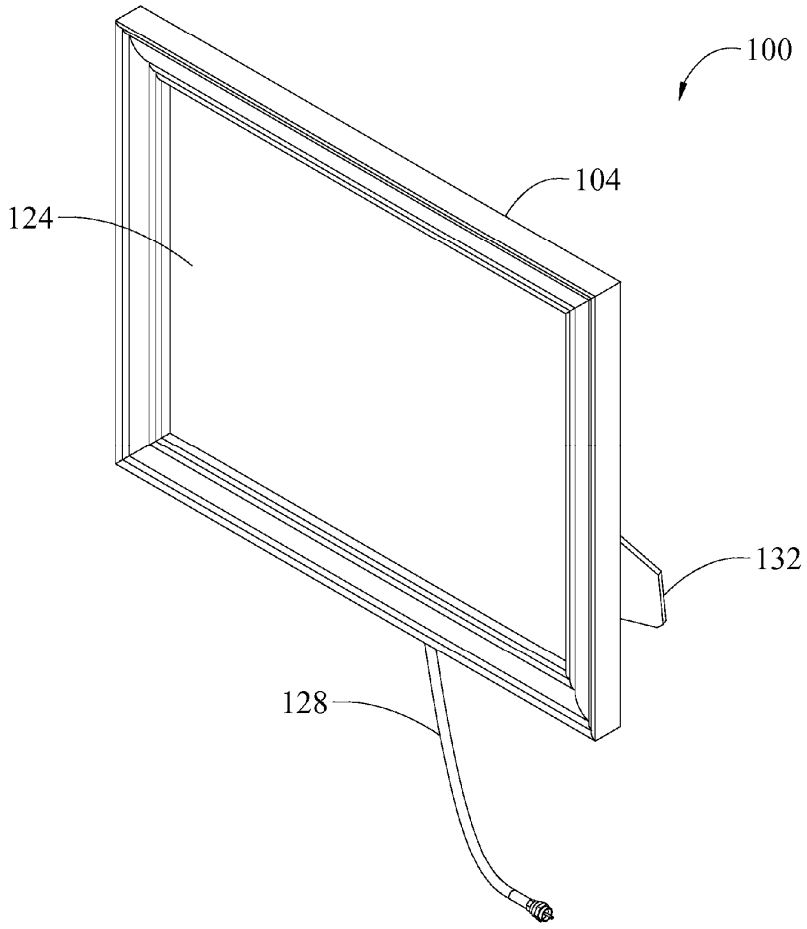
Publication Classification

(51) **Int. Cl.**
H04N 5/64 (2006.01)

(52) **U.S. Cl.** **348/836**; 348/E05.128

(57) **ABSTRACT**

According to various aspects of the present disclosure, exemplary embodiments are provided of picture frame antenna assemblies. In one exemplary embodiment, an assembly generally includes a backing defining at least one recess. A frame is removably attachable to the backing for holding a photograph therebetween. The frame has a generally annular shape with an opening through which a portion of the photograph is visible. At least one antenna element is disposed within the recess defined by the backing.



US 20080293455A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2008/0293455 A1

(43) Pub. Date: Nov. 27, 2008

Forster et al.

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

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(21) Appl. No.: **12/172,196**

(22) Filed: **Jul. 11, 2008**

Related U.S. Application Data

(63) Continuation of application No. 11/751,529, filed on May 21, 2007, now Pat. No. 7,414,589, which is a continuation of application No. 11/515,154, filed on Aug. 31, 2006, now Pat. No. 7,372,418, which is a continuation of application No. 10/422,609, filed on Apr. 24, 2003, now Pat. No. 7,123,204.

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

Publication Classification

(51) **Int. Cl.**
H04M 1/00 (2006.01)

(52) **U.S. Cl.** **455/572**

(57) **ABSTRACT**

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