US 20100026439A1

(19) **United States**

(12) **Patent Application Publication**

Qing et al.

(10) **Pub. No.: US 2010/0026439 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **ANTENNA FOR NEAR FIELD AND FAR FIELD RADIO FREQUENCY IDENTIFICATION**

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(21) Appl. No.: **12/375,846**

(22) PCT Filed: **Aug. 1, 2006**

(86) PCT No.: **PCT/SG2006/000216**

§ 371 (c)(1),
(2), (4) Date: **Jul. 27, 2009**

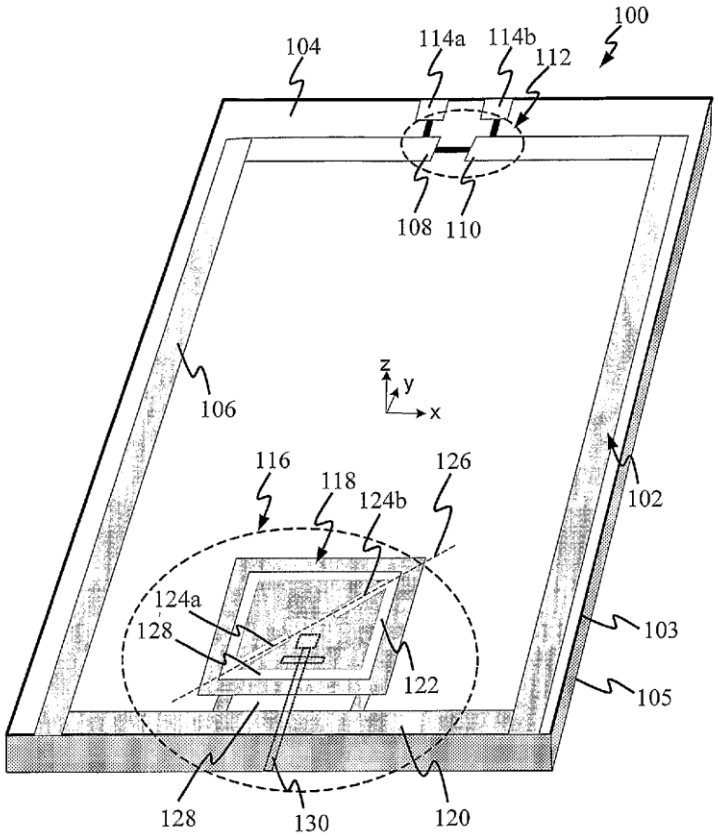
Publication Classification

(51) **Int. Cl.**
H01F 38/14 (2006.01)

(52) **U.S. Cl.** **336/200**

(57) **ABSTRACT**

In accordance with an embodiment of the invention, there is disclosed an antenna for radio frequency identification. The antenna comprises a first radiating element for operating a first mode of radio frequency identification using a first current. The antenna further comprises a second radiating element for operating a second mode of radio frequency identification using a second current. Specifically, at least one of a portion of the first radiating element forms a portion of the second radiating element and a portion of the second radiating element forms a portion of the first radiating element. When the first radiating element is excited by the first current, the first radiating element generates a first field for providing the first mode of radio frequency identification, and when the second radiating element is excited by the second current, the second radiating element generates a second field for providing the second mode of radio frequency identification.



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(19) **United States**

(12) **Patent Application Publication**

Tang

(10) **Pub. No.: US 2010/0026580 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **PIFA ANTENNA DESIGN METHOD**

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(21) Appl. No.: **12/219,980**

(22) Filed: **Jul. 31, 2008**

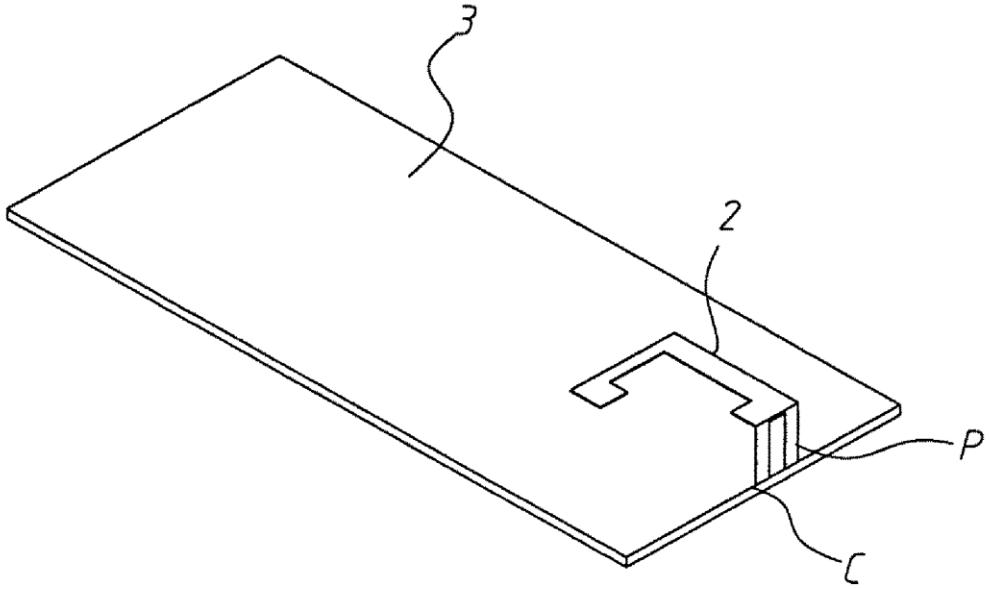
Publication Classification

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

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

(57) **ABSTRACT**

A planar inverted-F antenna design method for designing a planar inverted-F antenna having excellent hearing aid compatibility is disclosed to include the step of setting the position of the feed leg and short-circuit leg for planar inverted-F antenna to be within 10 cm from the center of one short side of the circuit board along the direction of the corresponding short side of the circuit board, and the step of designing the shape of the planar inverted-F antenna.



US 20100026581A1

(19) **United States**

(12) **Patent Application Publication**

Chen et al.

(10) **Pub. No.: US 2010/0026581 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **DIGITAL TV ANTENNA**

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(21) Appl. No.: **12/254,120**

(22) Filed: **Oct. 20, 2008**

(30) **Foreign Application Priority Data**

Jul. 31, 2008 (TW) 97129120

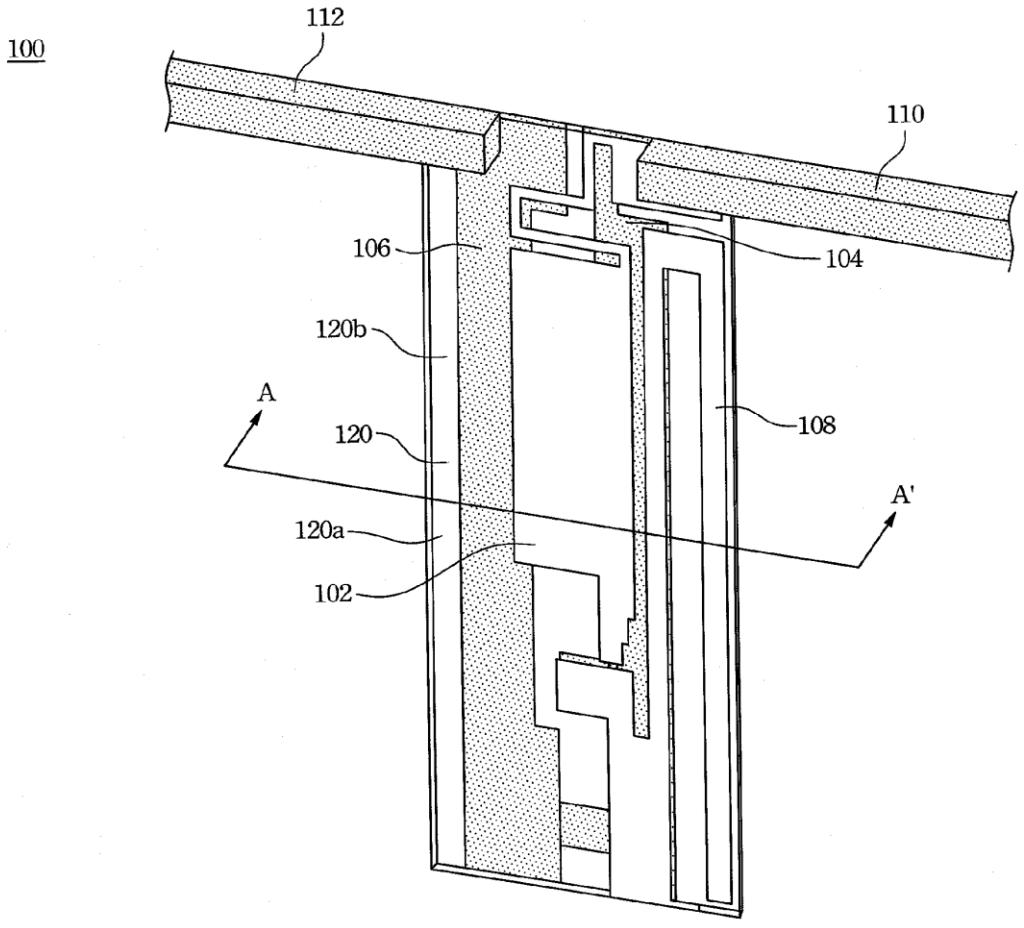
Publication Classification

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

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

(57) **ABSTRACT**

A digital TV antenna includes a grounding plane, a first radiation conductor, a second radiation conductor and a third radiation conductor. The grounding plane and the first radiation conductor are located in the first surface of a substrate. The second radiation conductor and the third radiation conductor are located in the second surface opposite to the first surface. Partial second radiation conductor covers the first radiation conductor to form an overlapping region. Partial third radiation conductor covers the first radiation conductor to form an overlapping region.



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(19) **United States**

(12) **Patent Application Publication**

Nakabayashi et al.

(10) **Pub. No.: US 2010/0026584 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **MICROSTRIP ARRAY ANTENNA**

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(21) Appl. No.: **12/462,112**

(22) Filed: **Jul. 29, 2009**

(30) **Foreign Application Priority Data**

Jul. 31, 2008 (JP) 2008-198297

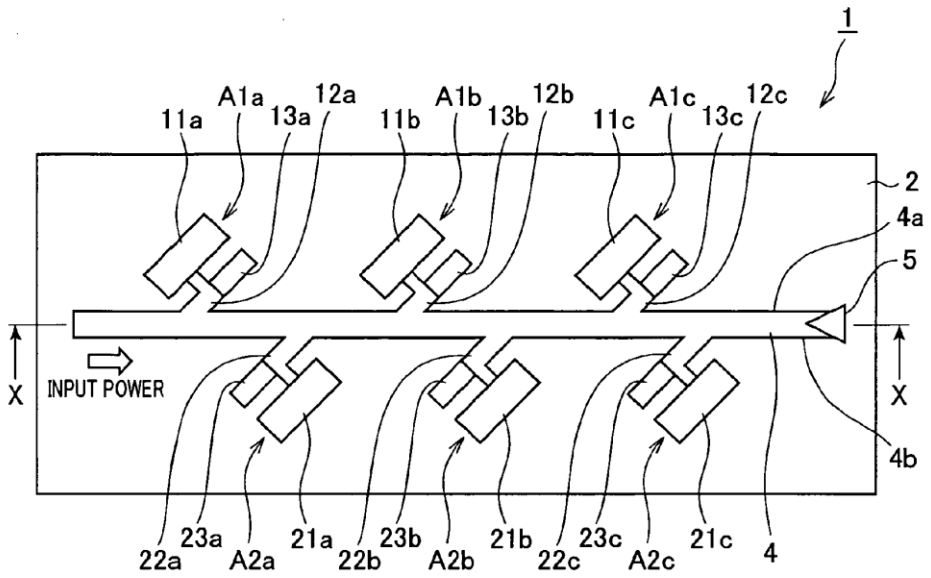
Publication Classification

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

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

(57) **ABSTRACT**

The microstrip array antenna includes a dielectric substrate formed with a conductive ground plate at a back surface thereof, and strip conductors formed on a front surface of the dielectric substrate. The strip conductors includes a linear main feeding strip line, and a plurality of array elements connected to the main feeding strip line, the array elements being disposed at least one of both sides of the main feeding strip line at a predetermined interval along a longitudinal direction of the main feeding strip line. Each of the array elements includes a sub-feeding strip line connected to the main feeding strip line, a rectangular radiating antenna element connected to a terminal end of the sub-feeding strip line, and a stub connected to the sub-feeding strip line. The stub is disposed between the main feeding strip line and the radiating antenna element.



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(19) **United States**

(12) **Patent Application Publication**

PAN

(10) **Pub. No.: US 2010/0026585 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **MULTIBAND ANTENNA**

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(21) Appl. No.: **12/503,735**

(22) Filed: **Jul. 15, 2009**

(30) **Foreign Application Priority Data**

Jul. 30, 2008 (CN) 200810303208.5

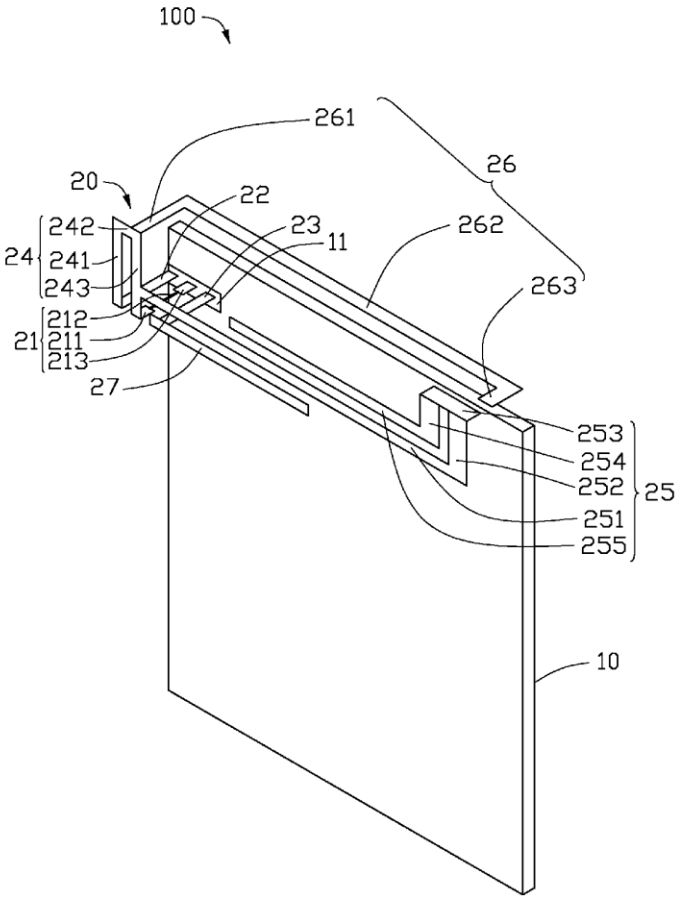
Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 5/00 (2006.01)

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

(57) **ABSTRACT**

A multiband antenna includes a base board, a feed member, a first grounding connector, a second grounding connector, a first radio member, a second radio member, a third radio member and a fourth radio member. The feed member, the first grounding connector and the second grounding connector are all electronically connected to the base board. The first radio member is electronically connected to the feed member and the first grounding connector. The second radio member is electronically connected to the first radio member. The third radio member is electronically connected to the first radio member. The fourth radio member is electronically connected to the second grounding connector. In use, the multiband antenna sends/receives wireless signals in different working frequencies by the radio members.



US 20100026586A1

(19) **United States**

(12) **Patent Application Publication**

Kuramoto et al.

(10) **Pub. No.: US 2010/0026586 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **PLANAR ANTENNA, AND COMMUNICATION DEVICE AND CARD-TYPE TERMINAL USING THE ANTENNA**

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(21) Appl. No.: **12/528,141**

(22) PCT Filed: **Mar. 11, 2008**

(86) PCT No.: **PCT/JP2008/054358**

§ 371 (c)(1),
(2), (4) Date: **Aug. 21, 2009**

(30) **Foreign Application Priority Data**

Mar. 12, 2007 (JP) 2007-061900

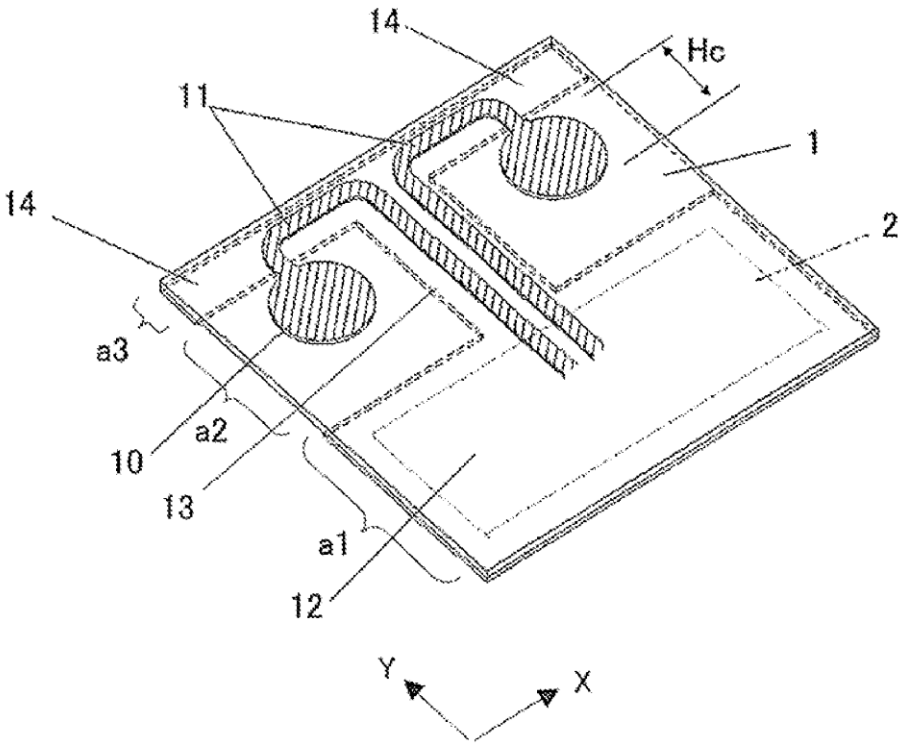
Publication Classification

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

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

(57) **ABSTRACT**

There are provided a planar antenna that reduces interactions between an antenna section and a peripheral circuit section on each other's electric operations in an apparatus in which an antenna and a peripheral circuit are arranged together on a printed circuit board, and a communication device and a card-type terminal that use the planar antenna. The planar antenna has the antenna section and the peripheral circuit section which are arranged on the printed circuit board. The planar antenna includes: on one surface of the printed circuit board, a plate element that constitutes the antenna section, a microstrip line that is connected with the plate element and feeds electricity from a peripheral circuit to the plate element, and a peripheral circuit mounting area in which the peripheral circuit section is arranged; and, on the other surface of the printed circuit board, a first ground portion that constitutes a ground-side conductor of the peripheral circuit section, and a second ground portion that constitutes a ground-side conductor of the microstrip line. The second ground portion is arranged on the printed circuit board other than the first ground portion. The connection between the plate element and the microstrip line is located on the side of the second ground portion away from the first ground portion.



US 20100026588A1

(19) **United States**

(12) **Patent Application Publication**

MURAYAMA et al.

(10) **Pub. No.: US 2010/0026588 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **ANTENNA STRUCTURE AND WIRELESS COMMUNICATION DEVICE HAVING THE SAME**

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(21) Appl. No.: **12/581,235**

(22) Filed: **Oct. 19, 2009**

Related U.S. Application Data

(63) Continuation of application No. PCT/JP2008/057015, filed on Apr. 9, 2008.

(30) **Foreign Application Priority Data**

May 2, 2007 (JP) 2007-121817

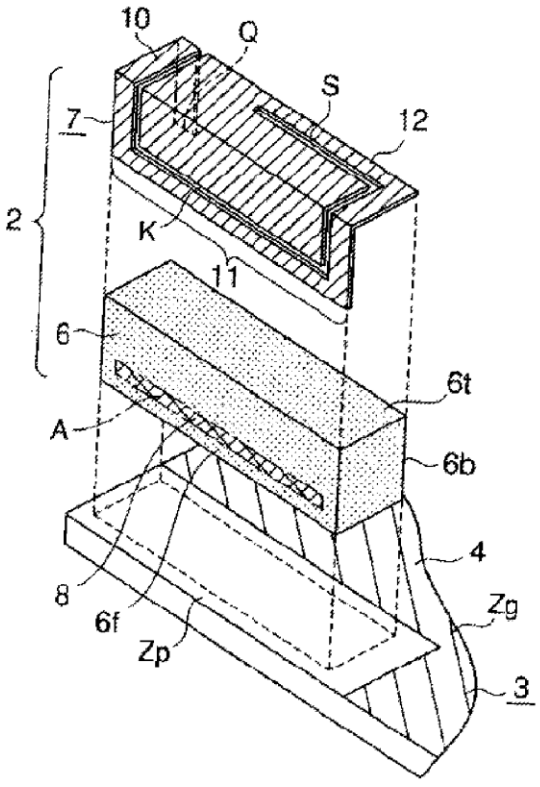
Publication Classification

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

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

(57) **ABSTRACT**

An antenna element has a dielectric base, at least a portion of which is arranged in a non-ground region of a substrate. A feeding radiation electrode has an intermediate path that is connected to a feeding portion and that is arranged to extend in a perimeter direction of the dielectric base on a side surface of the dielectric base adjacent to the non-ground region and spaced away from a ground region. The feeding radiation electrode has an open end side path that is arranged to extend along a loop path from the termination of the intermediate path and an open end of the extended distal end is arranged parallel or substantially parallel to and spaced apart from the intermediate path. A dielectric material having a high dielectric constant, which increases the capacitance between the intermediate path and the open end, is located in a region including the spaced region between the intermediate path and parallel or substantially parallel open end.



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(19) **United States**

(12) **Patent Application Publication**

Dou et al.

(10) **Pub. No.: US 2010/0026589 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **ANTENNA DESIGN FOR AN ATTACHED ACCESSORY**

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(21) Appl. No.: **11/831,280**

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

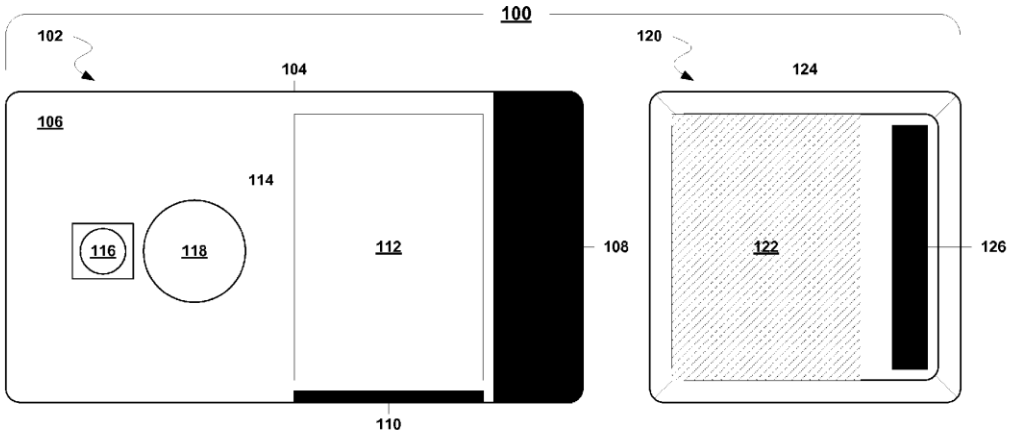
Publication Classification

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

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

(57) **ABSTRACT**

Various embodiments are directed to antenna designs that may improve the performance of a mobile computing device. Some embodiments are directed to a mobile computing device assembly comprising accessory incorporating a supplemental antenna designed to be adjacent to at least one internal antenna of a mobile computing device when the accessory is attached to the mobile computing device. The supplemental antenna and the internal antenna may cooperatively form an antenna system for the mobile computing device resulting in improved performance. In various implementations, the use of the supplemental antenna in conjunction with the internal antenna may enhance antenna performance and/or increase antenna efficiency. Other embodiments are described and claimed.



US 20100026590A1

(19) **United States**

(12) **Patent Application Publication**

Chiang et al.

(10) **Pub. No.: US 2010/0026590 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **THIN FILM MULTI-BAND ANTENNA**

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(21) Appl. No.: **12/102,160**

(22) Filed: **Apr. 14, 2008**

Related U.S. Application Data

(63) Continuation-in-part of application No. 10/900,766, filed on Jul. 28, 2004, now Pat. No. 7,388,549.

Publication Classification

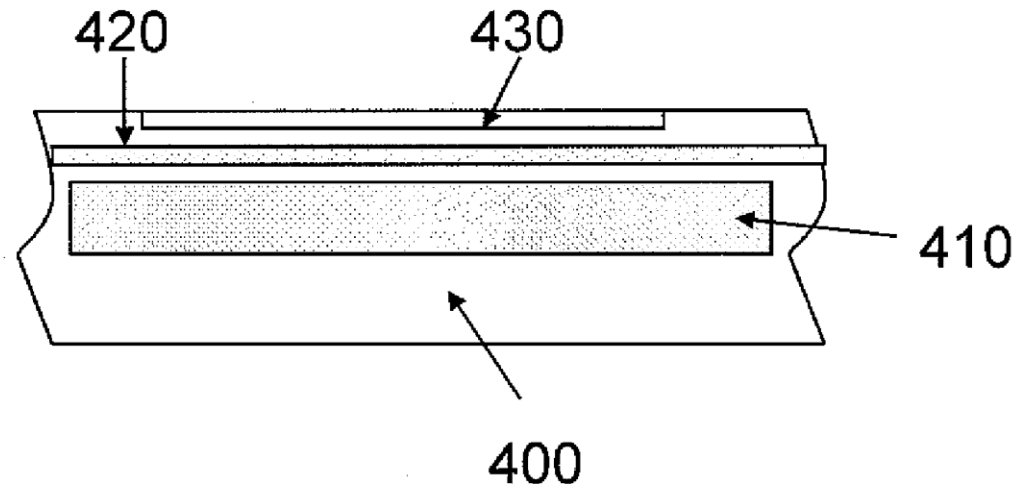
(51) **Int. Cl.**

H01Q 1/22	(2006.01)
H01Q 1/36	(2006.01)
H01Q 1/32	(2006.01)
H01Q 9/16	(2006.01)
H01Q 1/52	(2006.01)

(52) **U.S. Cl.** ..... **343/702**; 343/700 MS; 343/713; 343/793; 343/841; 977/742; 977/932

(57) **ABSTRACT**

The present invention discloses a multi-band antenna, especially a fractal antenna which allows a convenient reception of a signal for communication. The multi-band behavior is obtained by a set of geometry patterns of the same basic elements. The materials of the antenna may be formed by a chemical solution or a sputtering vacuum deposition process. An additional passivation layer can be added to protect the conducting layer of the antenna. Materials for this passivation layer are made, for instance, of oxide, or any other polymeric material, polymer, or resin coating on the structure.



US 20100026591A1

(19) **United States**

(12) **Patent Application Publication**

Lee et al.

(10) **Pub. No.: US 2010/0026591 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **ANTENNA DEVICE**

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(21) Appl. No.: **12/222,131**

(22) Filed: **Aug. 4, 2008**

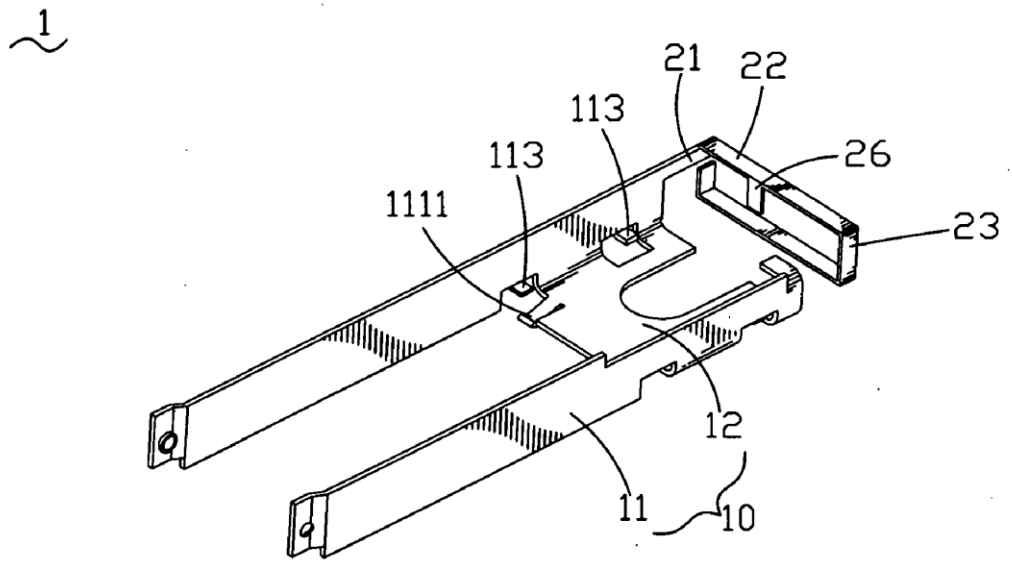
Publication Classification

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

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

(57) **ABSTRACT**

An antenna device includes a supporting body and an antenna. The supporting body has two arms and a connecting portion disposed between and connecting the two arms. The antenna has a grounding portion extending from one end of one of the arms. A free end of the grounding portion perpendicularly extends toward the other arm to form a first radiating strip, and a second radiating strip, a third radiating strip and a fourth radiating strip are respectively integrally formed in turn. The first, second, third and fourth radiating strips together define substantially a rectangular shape. A feed-in portion extends from the first radiating strip. The grounding portion connects the supporting body functioning as a ground of the antenna, which increases the area of the grounding for the antenna and enhances the performance of signal transmitting and receiving of the antenna device.



US 20100026592A1

(19) **United States**

(12) **Patent Application Publication**

Chen et al.

(10) **Pub. No.: US 2010/0026592 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **ANTENNA MODULE AND AN ELECTRONIC DEVICE HAVING THE ANTENNA MODULE**

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(21) Appl. No.: **12/453,013**

(22) Filed: **Apr. 28, 2009**

(30) **Foreign Application Priority Data**

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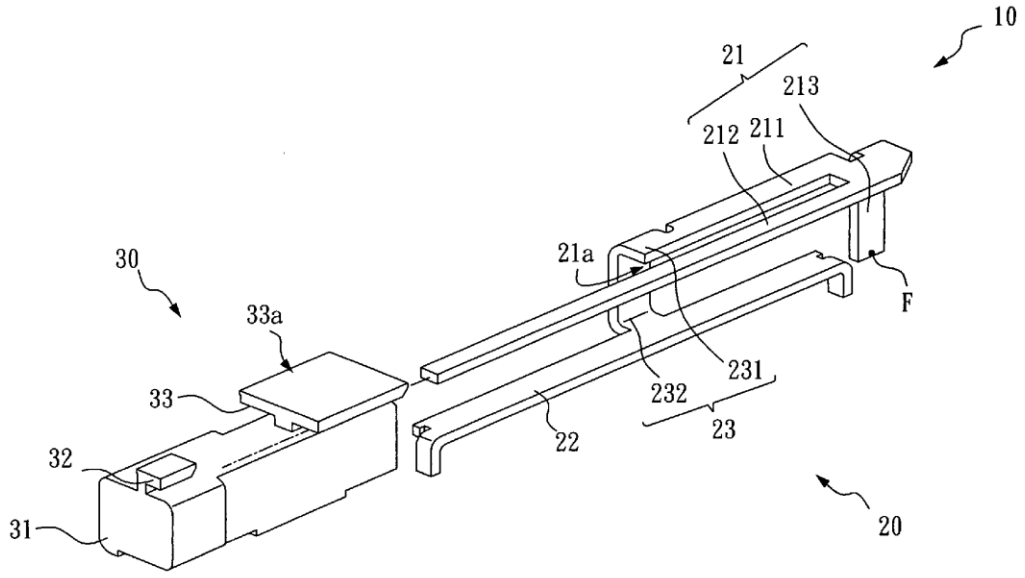
Publication Classification

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

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

(57) **ABSTRACT**

An antenna module for wireless signal transmission of an electronic device is disclosed. The antenna module comprises an antenna body and a fixing part. The antenna body comprises a radiating element, a grounding element, a connecting element, and a feeding point. The radiating element has a first radiating area and a second radiating area. The connecting element has a first end and a second end. The first end is connected with the first radiating area of the radiating element and the second end is connected with the grounding element. The feeding point is disposed on the radiating element and is used to feed a signal. The fixing part comprises a main body and a first clip portion. The main body is used to match the shape of the antenna body. The first clip portion is used to clip and fix the antenna body.



US 20100026593A1

(19) **United States**

(12) **Patent Application Publication**

Chang et al.

(10) **Pub. No.: US 2010/0026593 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **BROADBAND ANTENNA AND AN ELECTRONIC DEVICE HAVING THE BROADBAND ANTENNA**

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

(21) Appl. No.: **12/453,089**

(22) Filed: **Apr. 29, 2009**

(30) **Foreign Application Priority Data**

Aug. 4, 2008 (TW) 097129566

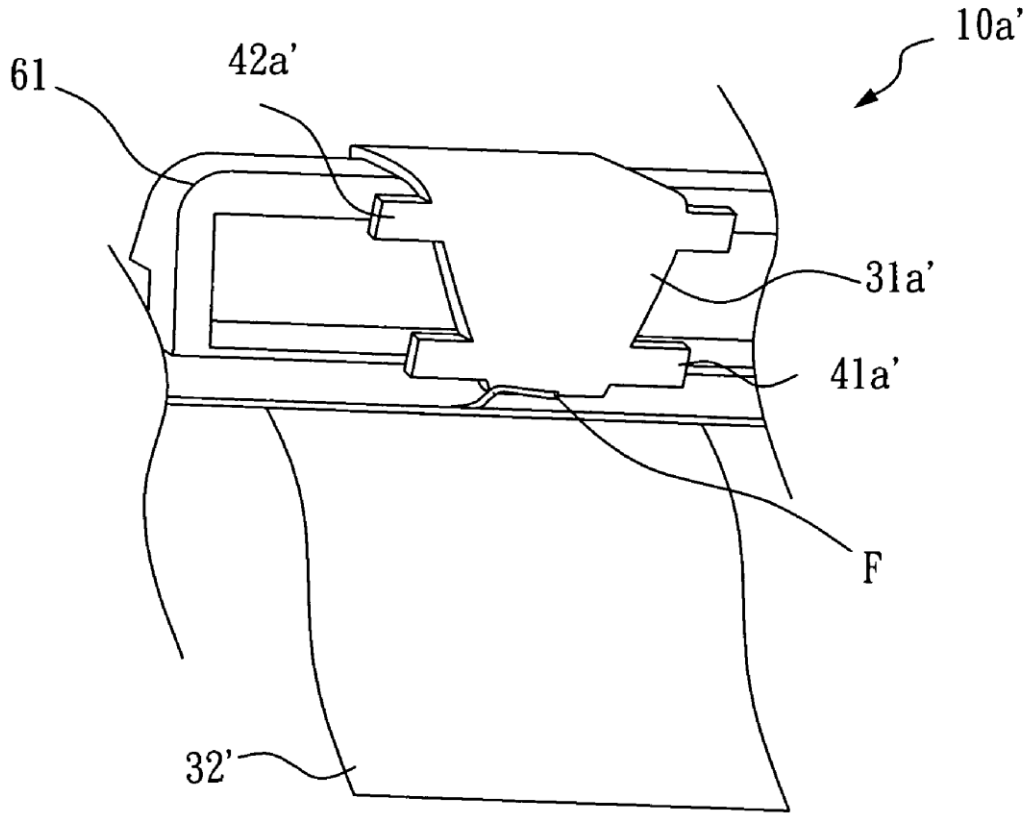
Publication Classification

(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01Q 1/24 (2006.01)
H01Q 5/00 (2006.01)

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

(57) **ABSTRACT**

A broadband antenna for wireless signal transmission of an electronic device is disclosed. The broadband antenna has a radiation area, a ground area, a feeding point, a first tuning bar, and a second tuning bar. The feeding point is disposed on the radiation area and is used for feeding a signal. The first tuning bar is used for adjusting a high frequency bandwidth of the broadband antenna. The second tuning bar is used for adjusting a low frequency bandwidth of the broadband antenna. The length of the first tuning bar is less than the length of the second tuning bar.



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(19) **United States**

(12) **Patent Application Publication**

YANG et al.

(10) **Pub. No.: US 2010/0026594 A1**

(43) **Pub. Date: Feb. 4, 2010**

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

(75) Inventors: **CHIH-YUAN YANG**, Tu-Cheng (TW); **PO-WEI KUO**, Tu-Cheng (TW); **SUO-BING SU**, Tu-Cheng (TW)

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(73) Assignee: **HON HAI PRECISION INDUSTRY CO., LTD.**, Taipei Hsien (TW)

(21) Appl. No.: **12/489,411**

(22) Filed: **Jun. 22, 2009**

(30) **Foreign Application Priority Data**

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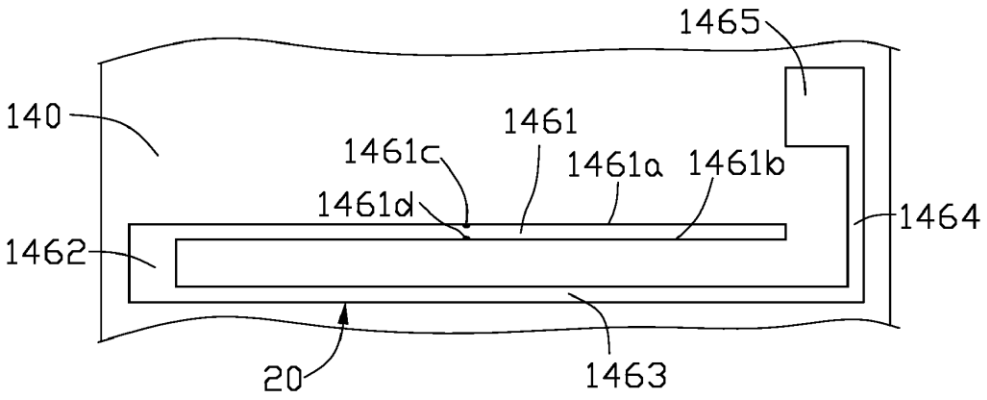
Publication Classification

(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 includes a metallic sheet defining a first slot, a second slot, a third slot parallel to the first slot, a fourth slot parallel to the second slot, and a fifth slot parallel to the third slot. The second slot perpendicularly connects the first slot to the third slot and has a length smaller than that of the fourth slot. The third slot has a length greater than that of the first slot. The fourth slot extends perpendicularly from a side of the third slot away from the second slot. The fifth slot extends perpendicularly from an end of the fourth slot away from the third slot. The metallic sheet includes a first longitudinal side and a second longitudinal side opposite to the first longitudinal side. A feeding point is formed on the first longitudinal side and a grounding point is formed on the second longitudinal side.



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(19) **United States**

(12) **Patent Application Publication**

Kondo et al.

(10) **Pub. No.: US 2010/0026595 A1**

(43) **Pub. Date: Feb. 4, 2010**

(54) **ANTENNA DEVICE AND MOBILE WIRELESS TERMINAL**

(76) Inventors: **Hisashi Kondo**, Tokyo (JP); **Nobuya Harano**, Shizuoka (JP)

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(21) Appl. No.: **12/515,916**

(22) PCT Filed: **Nov. 5, 2007**

(86) PCT No.: **PCT/JP2007/071853**

§ 371 (c)(1),
(2), (4) Date: **May 21, 2009**

(30) **Foreign Application Priority Data**

Nov. 27, 2006 (JP) 2006-317911

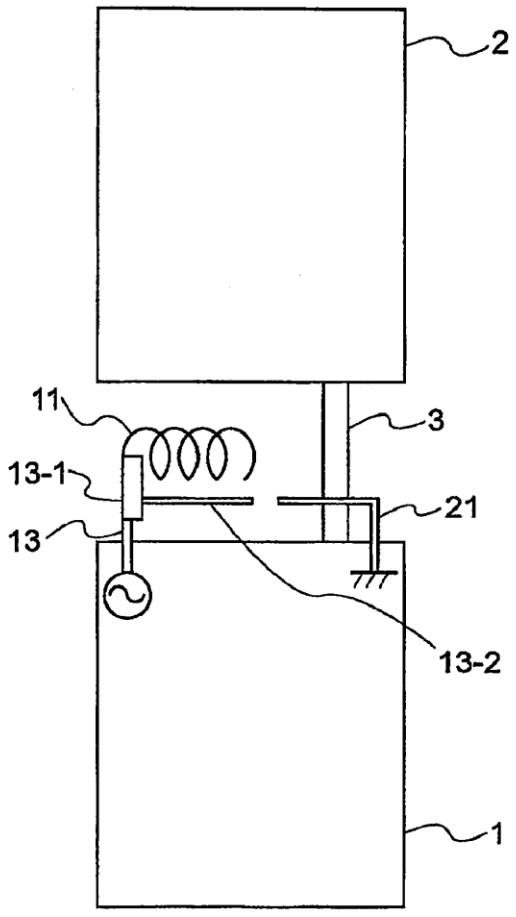
Publication Classification

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

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

(57) **ABSTRACT**

In an antenna device having a coil element **11** composed of metallic wire that is connected to a power feeding point by causing one end portion to be coupled to a caulking portion **13-1** of a power feeding plate **13** connected to the power feeding point on a circuit board **1**, a plate element section **13-2** is constructed using a part of the power feeding plate **13** when an antenna element whose element length is different from that of the coil element **11** is added. This makes it possible to obtain the antenna device that can achieve a wider bandwidth while restraining the number of parts and a cost from being increased.



US 20100026602A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2010/0026602 A1**

(43) **Pub. Date: Feb. 4, 2010**

Hotta et al.

(54) **ANTENNA DEVICE AND ELECTRONIC EQUIPMENT**

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(21) Appl. No.: **12/415,513**

(22) Filed: **Mar. 31, 2009**

(30) **Foreign Application Priority Data**

Jul. 29, 2008 (JP) 2008-195529

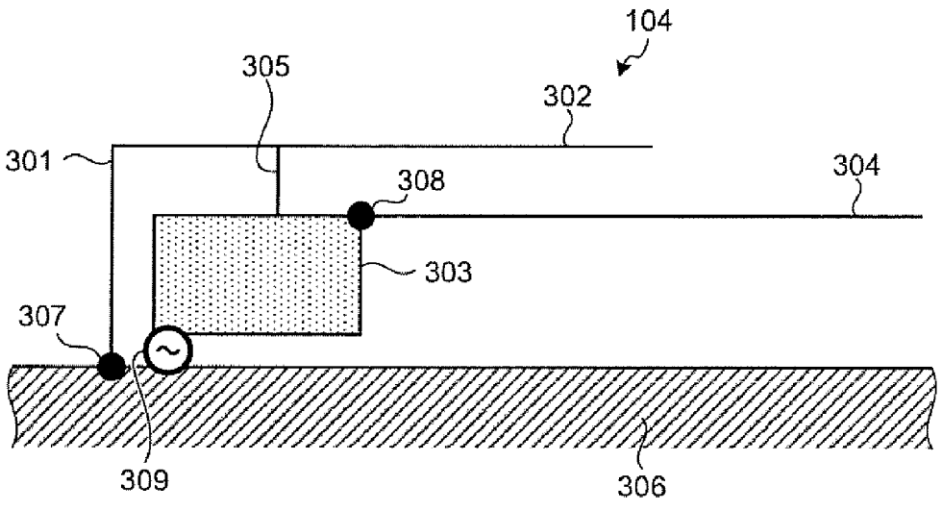
Publication Classification

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

(52) **U.S. Cl.** ..... **343/843**; 343/700 MS

(57) **ABSTRACT**

According to one embodiment, an antenna device includes a short circuit path, a first open-ended element, a feed side element, a second open-ended element, and a short circuit element. One end of the short circuit path is connected to a ground point near a feed point. The first open-ended element extends from another end of the short circuit path. The feed side element extends from near the feed point in a direction in which the first open-ended element extends with an edge close to ground. The second open-ended element extends from near an end of the feed side element in the direction in which the first open-ended element extends. The short circuit element connects between an end of the first open-ended element and a point on an edge of the feed side element opposite the edge close to the ground or a point on the second open-ended element.



US 20100033380A1

(19) **United States**

(12) **Patent Application Publication**

Pascolini et al.

(10) **Pub. No.: US 2010/0033380 A1**

(43) **Pub. Date: Feb. 11, 2010**

(54) **MULTI-BAND LOW PROFILE ANTENNA WITH LOW BAND DIFFERENTIAL MODE**

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(21) Appl. No.: **12/185,986**

(22) Filed: **Aug. 5, 2008**

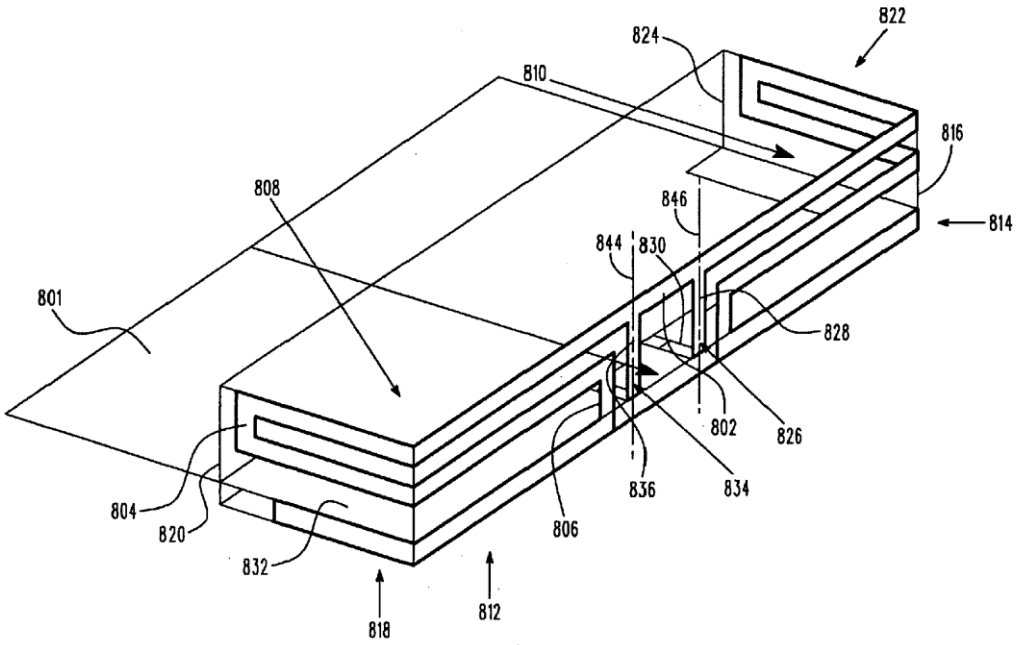
Publication Classification

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

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

(57) **ABSTRACT**

An antenna assembly includes a ground plane and an element coupled to the ground plane. The element has a center point, a first element portion extending away from the center point on a first side of the center point for a first distance in a first direction, bending at a first approximately 180 degree bend, extending towards the center point for a second distance in a second direction, bending at a second approximately 180 degree bend, and extending away from the center point for a third distance in the first direction. The element also has a second element portion provided on a second side of the center point opposite the first element portion on the first side of the center point, the second element portion being substantially a mirror image of the first element portion. The element also includes a ground leg located on the first side of the center point a first distance from the center point, extending substantially perpendicular to the first and second element portions, and coupling the element to the ground plane and a feed leg located on the second side of the center point a second distance from the center point, the feed leg extending substantially parallel to the ground leg.



US 20100033381A1

(19) **United States**

(12) **Patent Application Publication**

LIU et al.

(10) **Pub. No.: US 2010/0033381 A1**

(43) **Pub. Date: Feb. 11, 2010**

(54) **DUAL-BAND ANTENNA**

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(21) Appl. No.: **12/251,550**

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

(30) **Foreign Application Priority Data**

Aug. 11, 2008 (CN) 200810303644.2

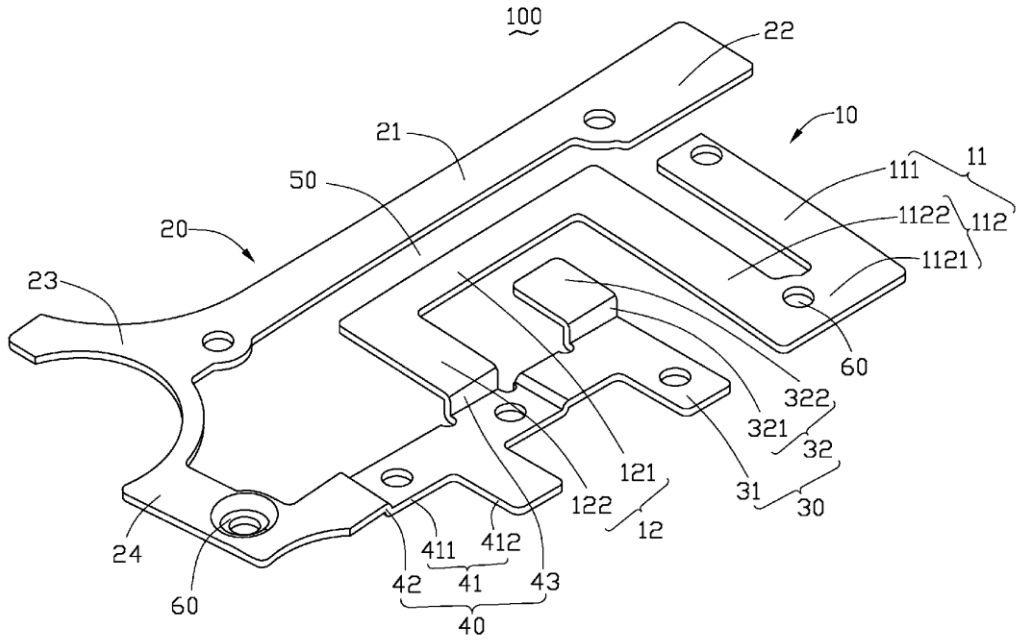
Publication Classification

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

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

(57) **ABSTRACT**

An dual-band antenna (**100**) used in a portable electronic device includes a first antenna unit (**10**) configured for receiving and/or sending wireless signals in low frequency bands, a second antenna unit (**20**) configured for receiving and/or sending wireless signals in high frequency bands; a feed unit (**30**) and a grounding unit (**40**). The first antenna unit, the second antenna unit and the feed unit are all connected to the grounding unit. A portion of the first antenna unit is positioned between the second antenna unit and the grounding unit. The first antenna unit and the second antenna unit are respectively positioned in different parallel planes.



US 20100033385A1

(19) **United States**

(12) **Patent Application Publication**

Chang et al.

(10) **Pub. No.: US 2010/0033385 A1**

(43) **Pub. Date: Feb. 11, 2010**

(54) **MULTI-FREQUENCY ANTENNA AND ELECTRONIC DEVICE HAVING THE MULTI-FREQUENCY ANTENNA**

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(21) Appl. No.: **12/453,462**

(22) Filed: **May 12, 2009**

(30) **Foreign Application Priority Data**

Aug. 7, 2008 (TW) 097130091

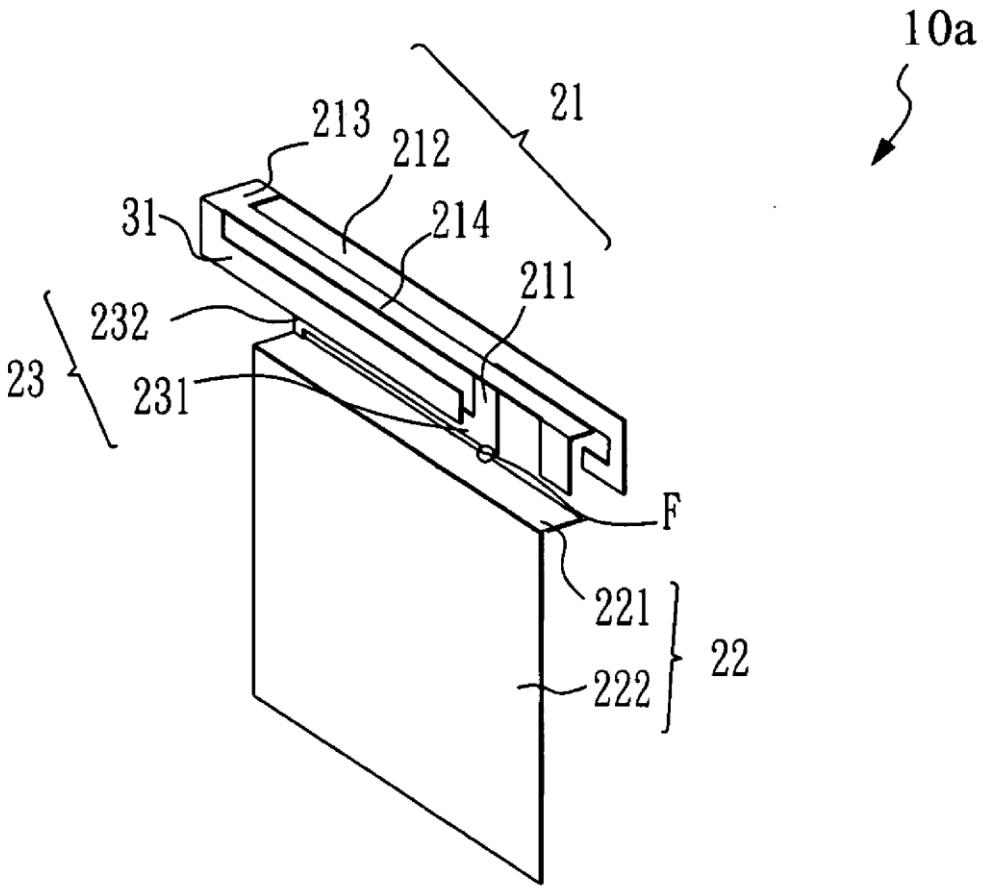
Publication Classification

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

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

(57) **ABSTRACT**

A multi-frequency antenna for wireless signal transmission of an electronic device is disclosed. The multi-frequency antenna has a radiating element, a grounding element, a feeding point, and a tuning bar. The radiating element comprises a first radiation area, a second radiation area, a third radiation area, and a fourth radiation area, wherein the third radiation area is perpendicularly connected to the second radiation area and the fourth radiation area substantially. The grounding element is used for grounding the multi-frequency antenna. The feeding point is disposed on the radiation area to feed an electric signal. The tuning bar is connected to the radiating element to adjust an operating band of the multi-frequency antenna.



US 20100039327A1

(19) **United States**

(12) **Patent Application Publication**

YANG et al.

(10) **Pub. No.: US 2010/0039327 A1**

(43) **Pub. Date: Feb. 18, 2010**

(54) **DIGITAL TELEVISION ANTENNA**

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(21) Appl. No.: **12/190,400**

(22) Filed: **Aug. 12, 2008**

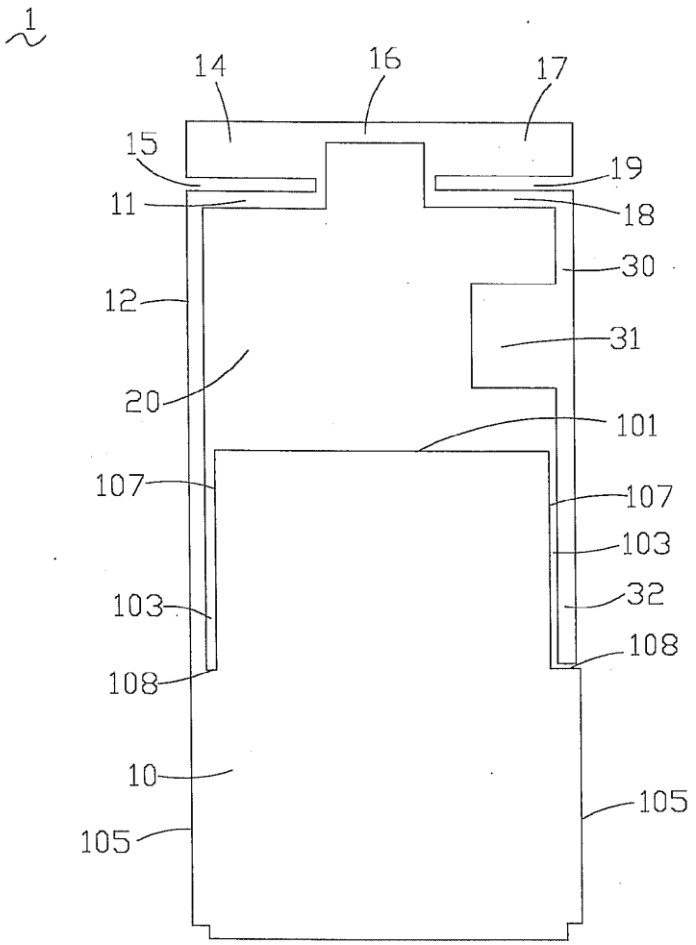
Publication Classification

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

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

(57) **ABSTRACT**

A digital television antenna includes a ground plane, a first receiving portion, a second receiving portion, a linking portion, a first connecting strip, a longitudinal receiving strip, a second connecting strip, a feed-in portion and a coupling portion. The grounding plane, the longitudinal receiving strip, the first connecting strip, the first receiving portion, the linking portion, the second receiving portion, the second connecting strip and the feed-in portion compose a unit which can receive a frequency range between 470 and 650 MHZ wireless signal, and the coupling portion couples with the unit to receive a frequency range between 650 and 890 MHZ wireless signal. Therefore, the digital television antenna can receive the 474-858 MHZ range wireless signal which is used in the digital television field.



US 20100039328A1

(19) **United States**

(12) **Patent Application Publication**

Chiu et al.

(10) **Pub. No.: US 2010/0039328 A1**

(43) **Pub. Date: Feb. 18, 2010**

(54) **ANNULAR ANTENNA**

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(21) Appl. No.: **12/246,016**

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

(30) **Foreign Application Priority Data**

Aug. 15, 2008 (TW) 097131261

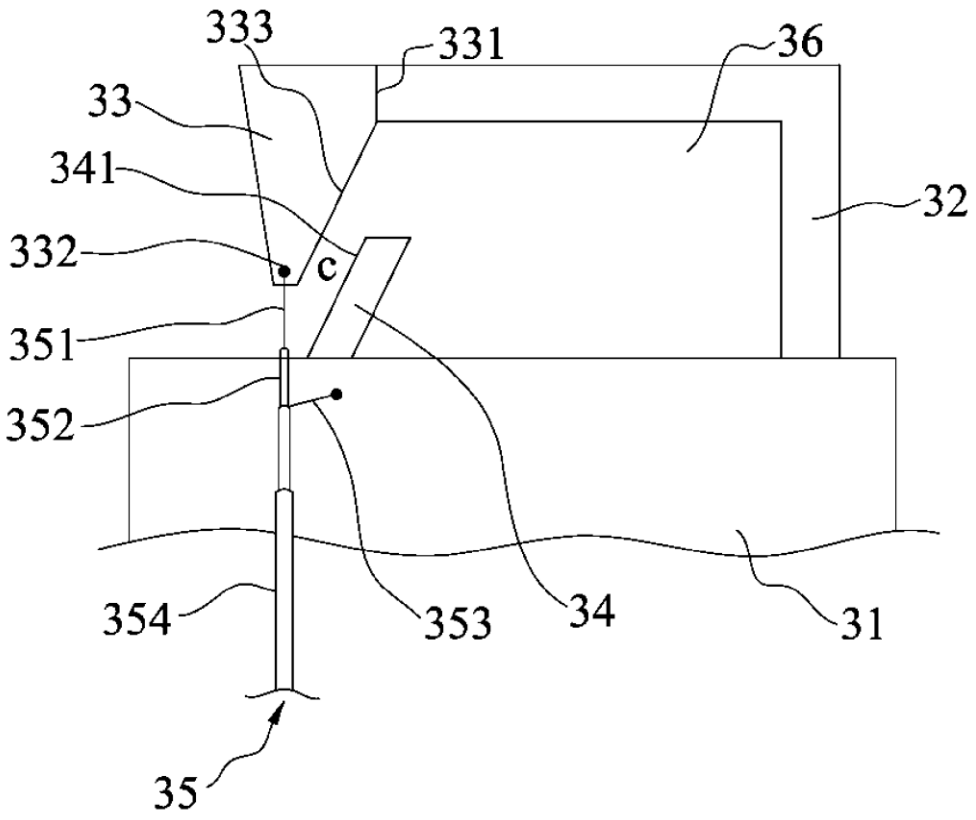
Publication Classification

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

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

(57) **ABSTRACT**

An annular antenna is composed of a ground plane, a short-circuit conductor, a radiation conductor and a parasitic conductor. The radiation conductor has a connection member and a feeder member. Two ends of the short-circuit member are respectively connected to the ground plane and connection member. The feeder member is close to the ground plane and has a notch. The short-circuit conductor and radiation conductor run along the ground plane defining an in-annular area. The radiation conductor has a first coupling edge beside the in-annular area. The parasitic conductor is inside the in-annular area with one end coupled to the ground plane and a second coupling edge along the first coupling edge. The first and second coupling edges have a gap therebetween. The radiation and parasitic conductors respectively excite low-frequency and high-frequency resonant modes. The annular antenna covers multiple frequency bands, has UWB features and simplified structure and favors mass-production.



US 20100039329A1

(19) **United States**

(12) **Patent Application Publication**

Chen et al.

(10) **Pub. No.: US 2010/0039329 A1**

(43) **Pub. Date: Feb. 18, 2010**

(54) **WIDE-BAND ANTENNA AND MANUFACTURING METHOD THEREOF**

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(21) Appl. No.: **12/469,221**

(22) Filed: **May 20, 2009**

(30) **Foreign Application Priority Data**

Aug. 12, 2008 (TW) 97130719
Oct. 28, 2008 (TW) 97141360

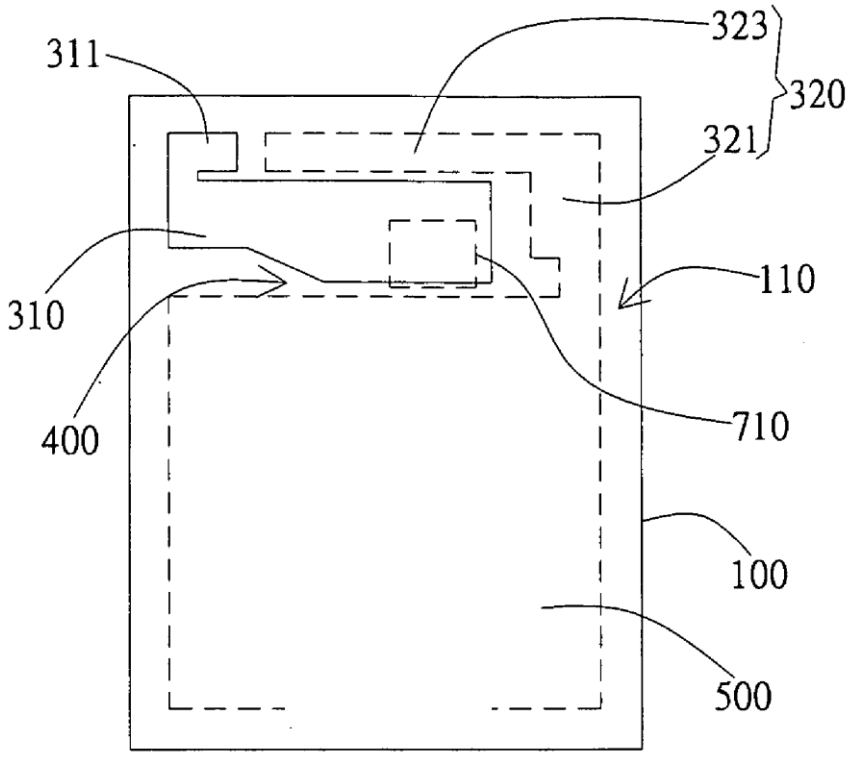
Publication Classification

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

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

(57) **ABSTRACT**

A wide-band antenna and a manufacturing method thereof are provided. The wide-band antenna includes a substrate, a first radiator, a second radiator, a grounding portion, and a signal feeding portion. The first radiator is disposed on a first surface of the substrate while the second radiator is disposed on the first surface or a second surface opposite to the first surface. The first radiator and the second radiator are spaced apart by a predetermined distance. The grounding portion is disposed on the substrate to couple with the second radiator. The signal feeding portion has a coupling unit disposed on the second surface and at least partially overlapping the first radiator. The signal feeding portion is coupled with the grounding portion and feeds signals to excite the first radiator to form a first band mode through coupling effect by the coupling unit. The first radiator feeds signals to excite the second radiator to form a second band mode by coupling effect.



US 20100039330A1

(19) **United States**

(12) **Patent Application Publication**

CHIEN et al.

(10) **Pub. No.: US 2010/0039330 A1**

(43) **Pub. Date: Feb. 18, 2010**

(54) **DUAL-BAND ANTENNA**

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(21) Appl. No.: **12/540,774**

(22) Filed: **Aug. 13, 2009**

(30) **Foreign Application Priority Data**

Aug. 15, 2008 (TW) 097131113

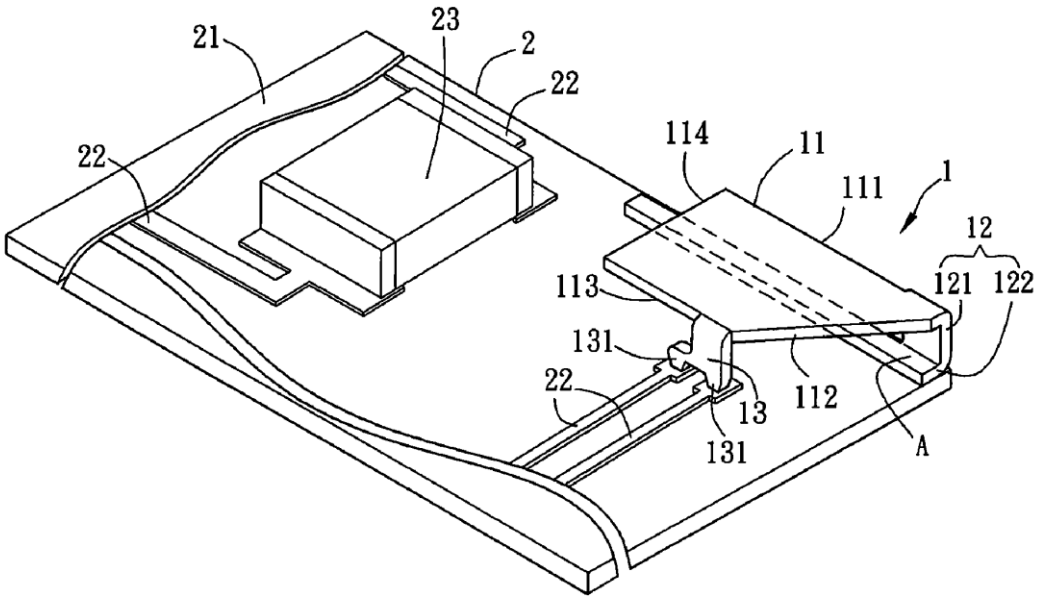
Publication Classification

(51) **Int. Cl.**
H01Q 5/00 (2006.01)
H01Q 1/38 (2006.01)

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

(57) **ABSTRACT**

A dual-band antenna is disposed on a substrate having an antenna-mounted surface. The dual-band antenna includes a first radiating unit, a second radiating unit, and a feeding terminal. The first radiating unit is disposed opposite to the antenna-mounted surface of the substrate, and at least has a first side, a second side and, a third side. The first side is opposite to the third side, and the length of the first side is not equal to that of the third side. The second side is connected to the first side and the third side. The second radiating unit is connected to the first side of the first radiating unit. The feeding terminal is connected to the third side of the first radiating unit and the antenna-mounted surface of the substrate.



US 20100039331A1

(19) **United States**

(12) **Patent Application Publication**

TAI

(10) **Pub. No.: US 2010/0039331 A1**

(43) **Pub. Date: Feb. 18, 2010**

(54) **LOW-PROFILE THREE-DIMENSIONAL ANTENNA**

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(21) Appl. No.: **12/543,233**

(22) Filed: **Aug. 18, 2009**

(30) **Foreign Application Priority Data**

Aug. 18, 2008 (TW) 97131448

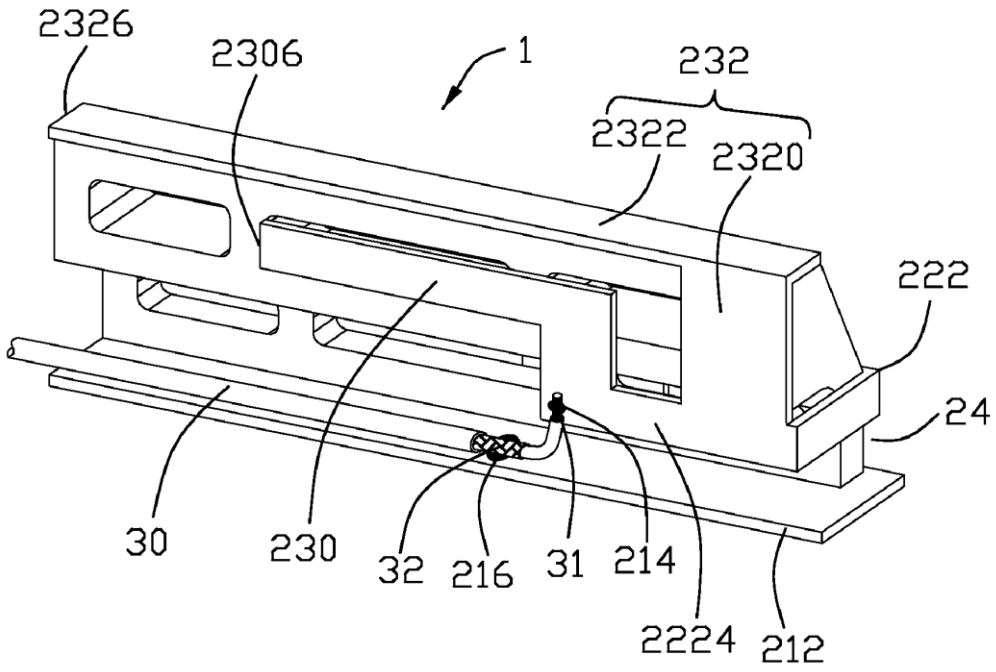
Publication Classification

(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01Q 5/00 (2006.01)

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

(57) **ABSTRACT**

A multi-band antenna includes a grounding element having a side edge, a connecting element, and a radiating element. The radiating element is electrically connected to the grounding element via the connecting element, and includes a first radiating portion and a second radiating portion respectively extending from the connecting element. The connecting element includes a folded connecting arm extending along three dimensions. A slot is formed between the connecting arm and the grounding element.



US 20100039344A1

(19) **United States**

(12) **Patent Application Publication**

CHANG

(10) **Pub. No.: US 2010/0039344 A1**

(43) **Pub. Date: Feb. 18, 2010**

(54) **TRIPLE-BAND ANTENNA**

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(21) Appl. No.: **12/401,727**

(22) Filed: **Mar. 11, 2009**

(30) **Foreign Application Priority Data**

Aug. 13, 2008 (CN) 200810303751.5

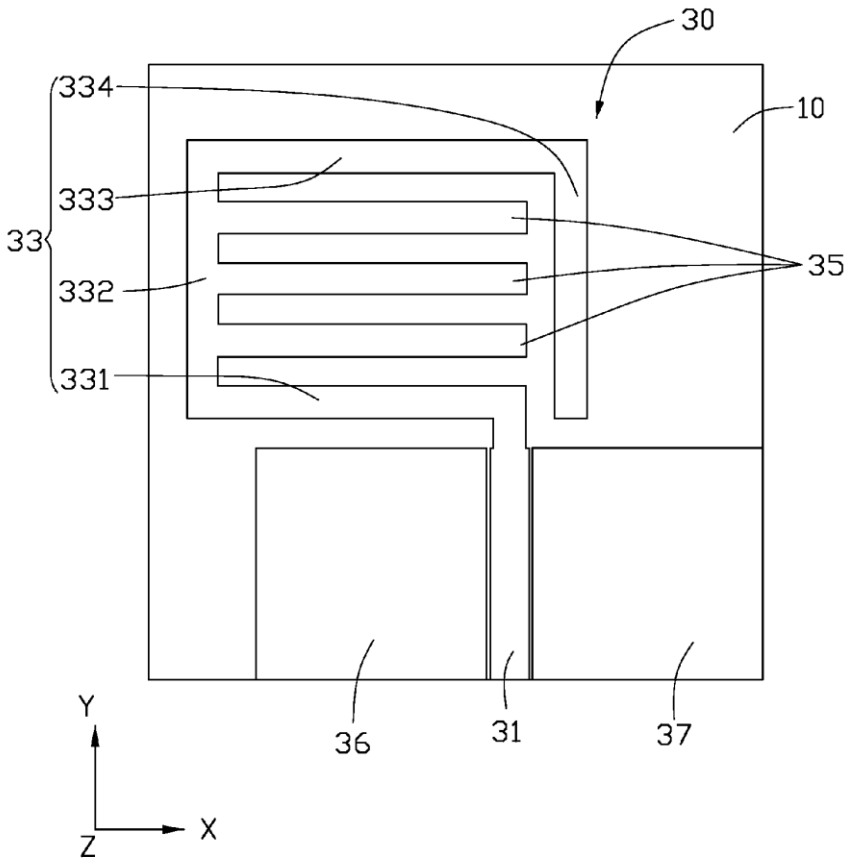
Publication Classification

(51) **Int. Cl.**
H01Q 5/00 (2006.01)
H01Q 1/48 (2006.01)
H01Q 1/38 (2006.01)

(52) **U.S. Cl.** ..... **343/845**; 343/700 MS; 343/772

(57) **ABSTRACT**

The disclosure discloses a triple-band antenna including a feed line, a first radiating body, a second radiating body and a grounding sheet. The first radiating body is a rectangular sheet. One end of the first radiating body is electrically connected with the end of the feed line. The second radiating body includes three parallel bar shape sheets extending from the first radiating body and surrounded by the first radiating body, and both share the feed line. The grounding sheet is disposed beside the feed line. The first radiating body and the second radiating body of the triple-band antenna generate three resonance frequencies according to the radio frequency received by the feed line to allow the triple-band antenna work under three different operating frequencies.



US 20100045534A1

(19) **United States**

(12) **Patent Application Publication**

Tsai et al.

(10) **Pub. No.: US 2010/0045534 A1**

(43) **Pub. Date: Feb. 25, 2010**

(54) **ANTENNA**

(75) Inventors: **Tiao-Hsing Tsai**, Yungho City (TW); **Chih-Wei Liao**, Su-ao Township (TW); **Chao-Hsu Wu**, Lu Chu Hsiang (TW)

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(21) Appl. No.: **12/348,613**

(22) Filed: **Jan. 5, 2009**

(30) **Foreign Application Priority Data**

Aug. 22, 2008 (TW) 097132206

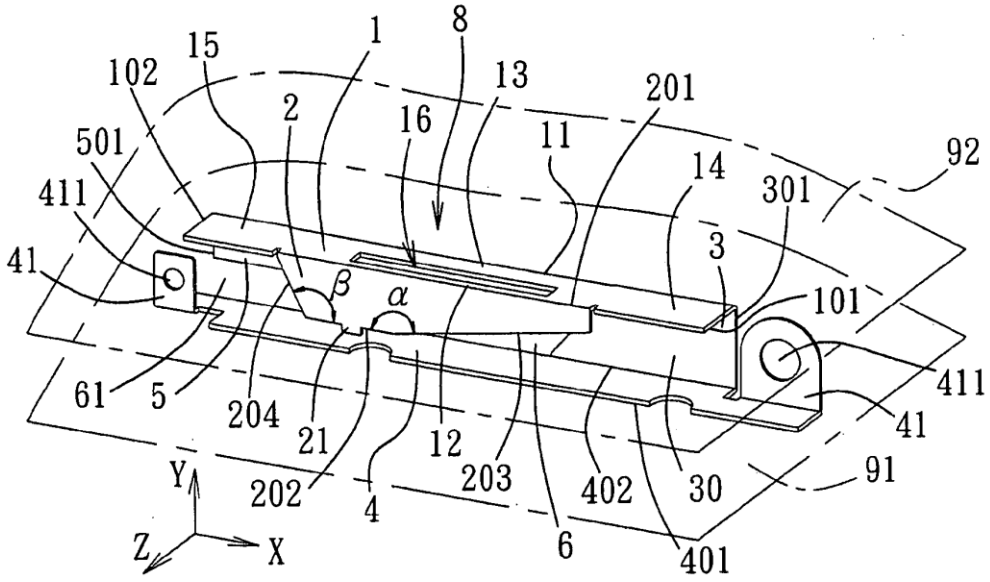
Publication Classification

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

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

(57) **ABSTRACT**

An antenna includes: a grounding element extending along a first plane; a radiating element having a first side and extending along a second plane substantially parallel to the first plane, the radiating element being aligned with the grounding element in a normal direction transverse to the first and second planes; a bridging element interconnecting the grounding and radiating elements; and a feeding element extending and tapered from the first side of the radiating element toward the grounding element.



US 20100045535A1

(19) **United States**

(12) **Patent Application Publication**

Lin et al.

(10) **Pub. No.: US 2010/0045535 A1**

(43) **Pub. Date: Feb. 25, 2010**

(54) **FLAT ANTENNA DEVICE**

(75) Inventors: **Chih-Hao Lin**, Taipei (TW); **Keng-Chih Lin**, Taipei (TW); **Yi-Cheng Lin**, Taipei (TW)

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(21) Appl. No.: **12/359,331**

(22) Filed: **Jan. 25, 2009**

(30) **Foreign Application Priority Data**

Aug. 25, 2008 (TW) 97132343

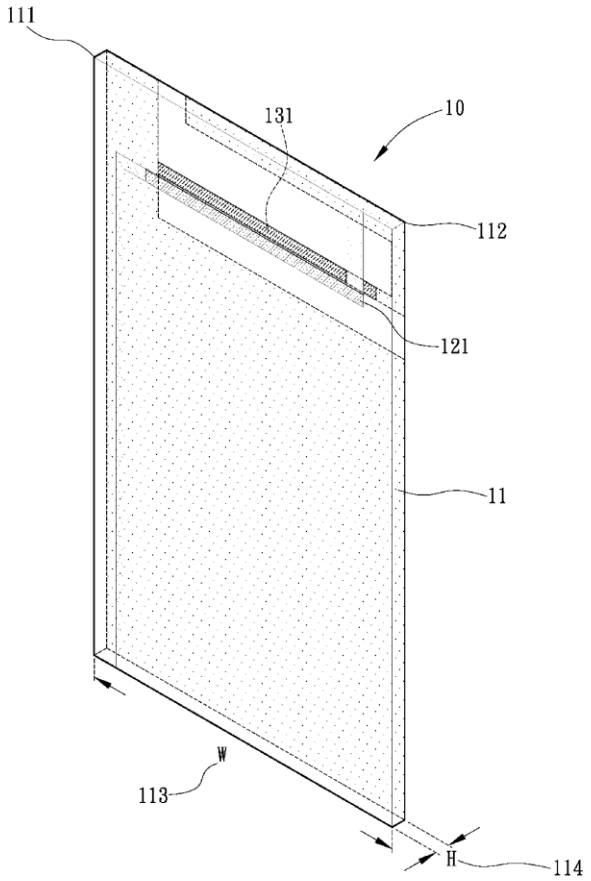
Publication Classification

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

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

(57) **ABSTRACT**

A flat antenna device is proposed, including a substrate having a first surface and a second surface, a first. antenna module disposed on the first surface and having a first coupling unit, and a second antenna module disposed on the second surface and having a second coupling unit. The first and second coupling units are parallel and coupled to one another so as to constitute a transmission line structure, allowing signals passing through the first coupling unit to be coupled and fed into the second coupling unit such that a first resonant signal and a second resonant signal of approximately 910 MHz and 1710 MHz are generated through the transmission line structure and a hook-shaped radiation unit of the second antenna module and a third resonant signal of approximately 2400 MHz is generated through an open electromagnetic coupling groove formed in the second module, thereby providing a compact and low-cost flat antenna device for use with six commonly used frequency bands of GSM, GPS, DCS, PCS, UMTS and WLAN IEEE-802.11b/g/n.



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(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2010/0045556 A1**

(43) **Pub. Date: Feb. 25, 2010**

Wong et al.

(54) **MULTIBAND MONOPOLE SLOT ANTENNA**

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(21) Appl. No.: **12/269,924**

(22) Filed: **Nov. 13, 2008**

(30) **Foreign Application Priority Data**

Aug. 20, 2008 (TW) 097131769

Publication Classification

(51) **Int. Cl.**
H01Q 13/10 (2006.01)
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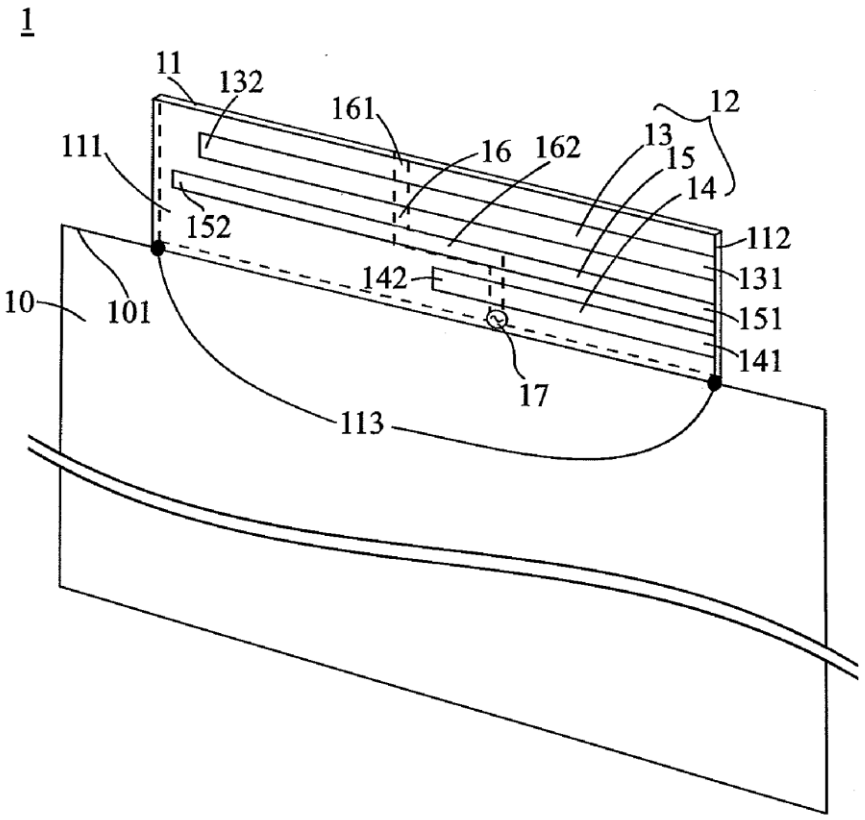
(52) **U.S. Cl.** ..... **343/767**; 343/700 MS

(57) **ABSTRACT**

The present invention discloses a multiband monopole slot antenna. The antenna comprises a ground plane, a dielectric substrate, a radiating portion, and a microstrip feedline. The dielectric substrate is connected to an edge of the ground plane and extends toward the opposite direction of the ground plane. The radiating portion is on the metal surface of the dielectric substrate and comprises a first monopole slot, a second monopole slot and a third monopole slot. The microstrip feedline is on the surface opposite to the metal surface of the dielectric substrate. A first end of the microstrip feedline is connected to a signal source, and a second end of the microstrip feedline is an open end. The microstrip feedline passes over the first, second, and third monopole slots. A section of the microstrip feedline which passes over the third monopole slot is parallel to the third monopole slot, and the microstrip feedline is generally of a step shape.



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(54) **ANTENNA**

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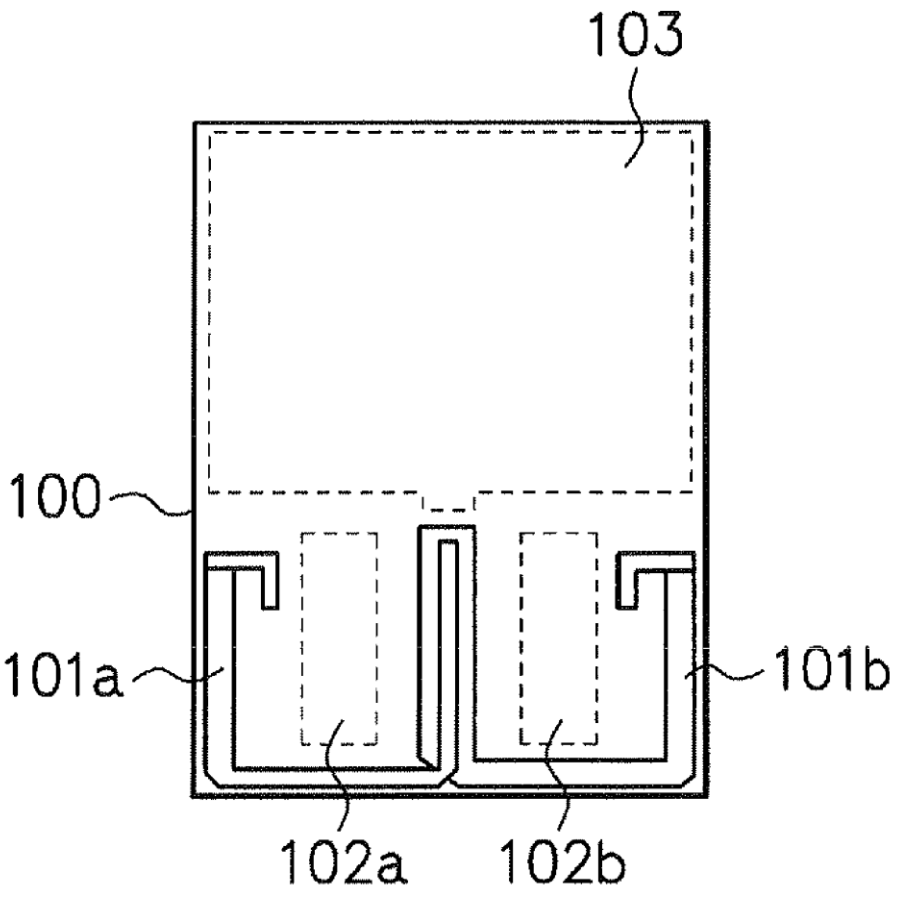
(57) **ABSTRACT**

An antenna includes a substrate made of a dielectric material, a first different dielectric constant region having a dielectric constant different from a dielectric constant of said substrate provided in said substrate, and a first antenna element provided on a front surface of said substrate.



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(54) **DUAL-BAND ANTENNA**

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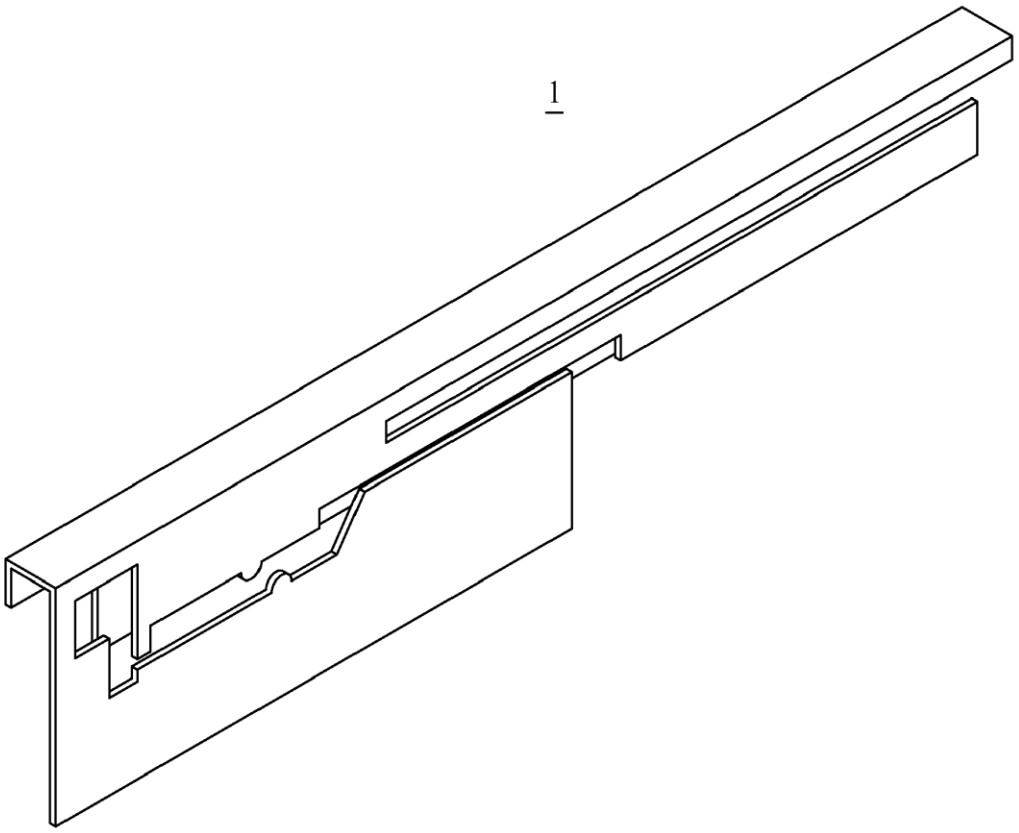
(57) **ABSTRACT**

The present invention discloses a dual-band antenna integrated with GSM wireless communication apparatuses, comprising: a first radiation unit; a first connecting portion; a second radiation unit; a second connecting portion; a grounding unit; a grounding extension unit; a signal feed-in terminal; and a signal grounding terminal. Therefore, the dual-band antenna integrated with GSM wireless communication apparatuses of the present invention has a broad effective operating band to significantly enhance the transceiving performance.



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(54) **ANTENNA DEVICE**

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H01Q 1/24	(2006.01)
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(57) **ABSTRACT**

Disclosed is a multi-band antenna device with a simplified design and fabrication method, which can be suitably mounted to a mobile phone, or the like. The disclosed antenna device includes a substrate, and an antenna element connected to a feed point of the substrate. The antenna element includes a right-left asymmetrical first antenna element, and a second antenna element mounted to the first antenna element, which are integrally formed, and is provided on the surface of a dielectric substance. The antenna device can be embedded in the terminal while obtaining a good VSWR value over a wide-band by the first antenna element. Also, in the antenna device, in a low frequency band which cannot be covered by the first antenna element, it is possible to obtain a good VSWR value by the second antenna element.