



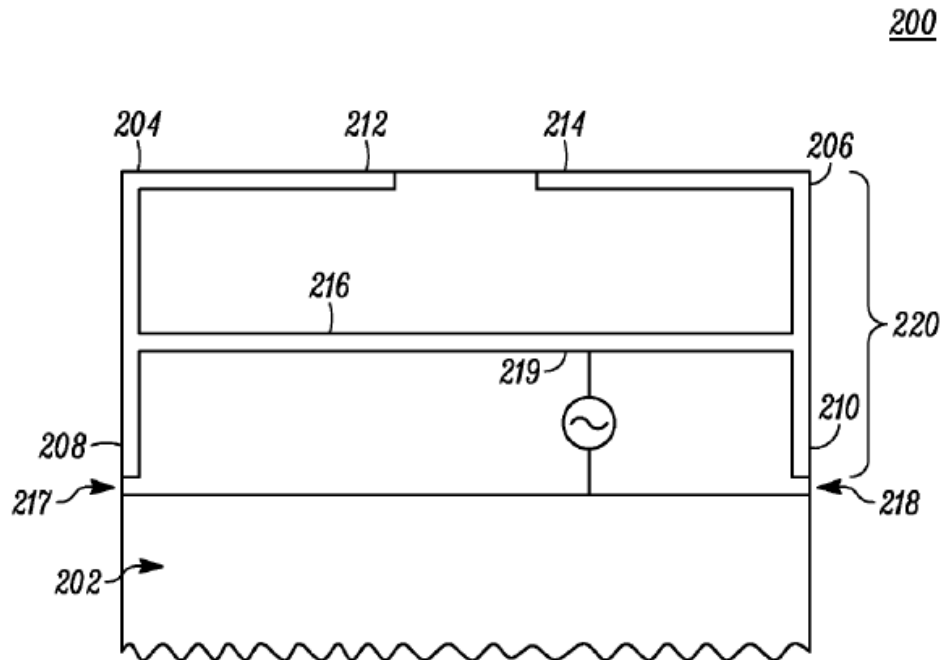
US 20080158064A1

(19) **United States**(12) **Patent Application Publication****Ponce De Leon et al.**(10) **Pub. No.: US 2008/0158064 A1**(43) **Pub. Date: Jul. 3, 2008**(54) **APERTURE COUPLED MULTIBAND
INVERTED-F ANTENNA AND DEVICE USING
SAME**(21) Appl. No.: **11/618,100**(22) Filed: **Dec. 29, 2006**(75) Inventors: **Lorenzo A. Ponce De Leon**, Lake
Worth, FL (US); **Jacob Marvin**,
Plantation, FL (US); **Naveed**
Mirza, Boynton Beach, FL (US)**Publication Classification**(51) **Int. Cl.**
H01Q 9/04 (2006.01)(52) **U.S. Cl.** **343/700 MS**

Correspondence Address:

MOTOROLA, INC
1303 EAST ALGONQUIN ROAD, IL01/3RD
SCHAUMBURG, IL 60196(73) Assignee: **MOTOROLA, INC.**, Schaumburg,
IL (US)(57) **ABSTRACT**

An antenna structure (200) includes a counterpoise ground plane (202) with a pair of opposing inverted-F elements (204, 206). Each of the F elements has a closed end (208, 210) that is impedance-coupled to the ground plane. A conductive cross member (216) coupled the closed ends together, and a feed point (218) is located on the cross member.



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(19) **United States**(12) **Patent Application Publication**

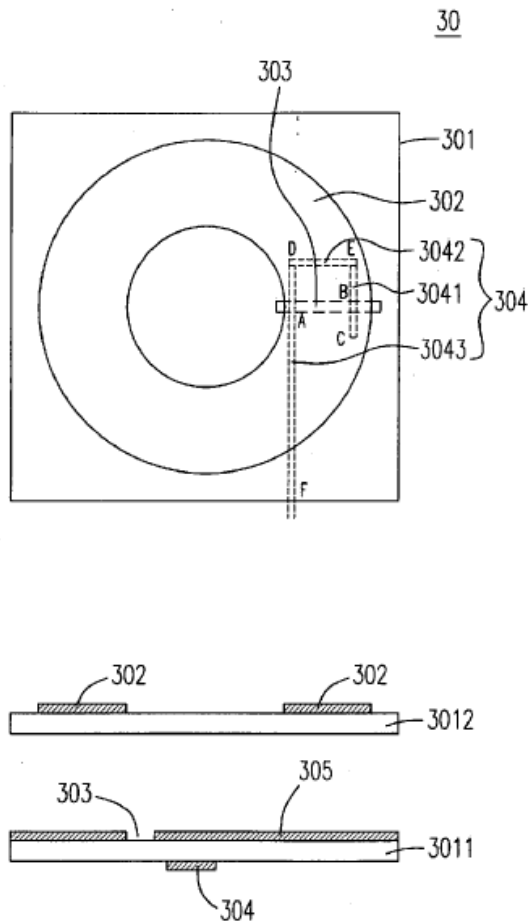
Yu et al.

(10) **Pub. No.: US 2008/0158066 A1**(43) **Pub. Date: Jul. 3, 2008**(54) **APERTURE COUPLED MICROSTRIP ANTENNA**(75) Inventors: **Ming-Ju Yu, Cuishan Shiang (TW);
Hsin-Chung Li, Cuishan Shiang
(TW)**Correspondence Address:
**Haverstock & Owens LLP
162 North Wolfe Road
Sunnyvale, CA 94086**(73) Assignee: **Delta Networks, Inc.**(21) Appl. No.: **11/880,254**(22) Filed: **Jul. 20, 2007**(30) **Foreign Application Priority Data**

Dec. 29, 2006 (TW) 095150089

Publication Classification(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 9/04 (2006.01)(52) **U.S. Cl.** **343/700 MS**(57) **ABSTRACT**

An microstrip antenna is provided. A microstrip antenna includes a first substrate with a first surface and a second surface paralleled to each other, a metal ground plane with an aperture deposited on the first surface and exposed parts of the first substrate via the aperture and a metal feed line deposited on the second surface, the metal feed line has at least two intersections with the aperture on a horizontal projection plane, in order to feed a signal received or transmitted by the microstrip antenna.



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US 20080158067A1

(19) **United States**(12) **Patent Application Publication**
MEI(10) **Pub. No.: US 2008/0158067 A1**(43) **Pub. Date: Jul. 3, 2008**(54) **PRINTED ANTENNA****Publication Classification**(75) Inventor: **CHIA-HAO MEI**, Tu-Cheng (TW)(51) **Int. Cl.**
H01Q 1/00 (2006.01)(52) **U.S. CL.** **343/700 MS**

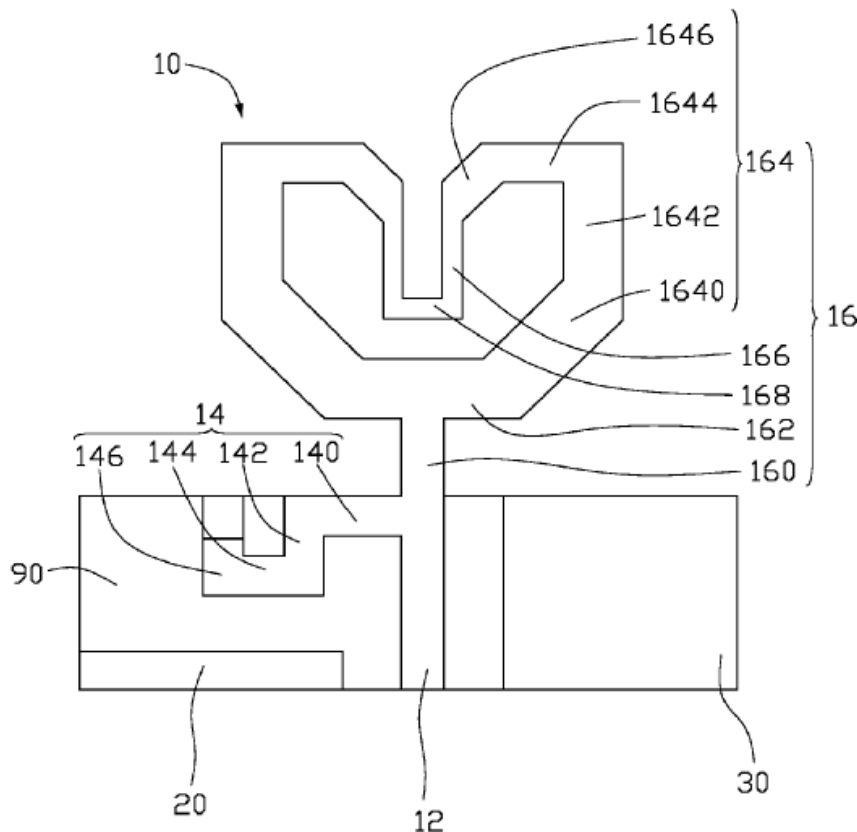
Correspondence Address:

PCE INDUSTRY, INC.
ATT. CHENG-JU CHIANG
458 E. LAMBERT ROAD
FULLERTON, CA 92835(57) **ABSTRACT**(73) Assignee: **HON HAI PRECISION**
INDUSTRY CO., LTD., Tu-Cheng
(TW)

A printed antenna (10) disposed on a substrate (90) includes a feeding portion (12), an antenna body (16), a first grounded portion (20), a second grounded portion (30), and a matching portion (14). The feeding portion feeds electromagnetic signals. The antenna body electronically connected to the feeding portion transmits and receives electromagnetic signals, and includes a first radiation portion (162), a pair of second radiation portions (164), and a pair of third radiation portions (166). The first radiation portion, the second radiation portions co-form a "D" shape with an indentation in a straight side of the "D" shape which extends into a middle of the "D" shape. The first grounded portion and the second grounded portion are respectively disposed on opposite sides of the feeding portion. The matching portion is disposed on one side of the feeding portion, and located adjacent to the first grounded portion.

(21) Appl. No.: **11/944,419**(22) Filed: **Nov. 22, 2007**(30) **Foreign Application Priority Data**

Dec. 29, 2006 (CN) 200610064631.5



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(19) **United States**

(12) **Patent Application Publication**

Huang et al.

(10) Pub. No.: US 2008/0158068 A1

(43) **Pub. Date:** **Jul. 3, 2008**

(54) **PLANAR ANTENNA**

(75) Inventors: **Chi-Cheng Huang**, Taoyuan County (TW); **Chia-Bin Yang**, Taoyuan County (TW)

Correspondence Address:
VOLPE AND KOENIG, P.C.
UNITED PLAZA, SUITE 1600, 30 SOUTH 17TH
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PHILADELPHIA, PA 19103

(73) Assignee: **DELTA NETWORKS, INC.,**
Taoyuan County (TW)

(21) Appl. No.: 11/945,711

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

(30) Foreign Application Priority Data

Jan. 2, 2007 (TW) 96100122

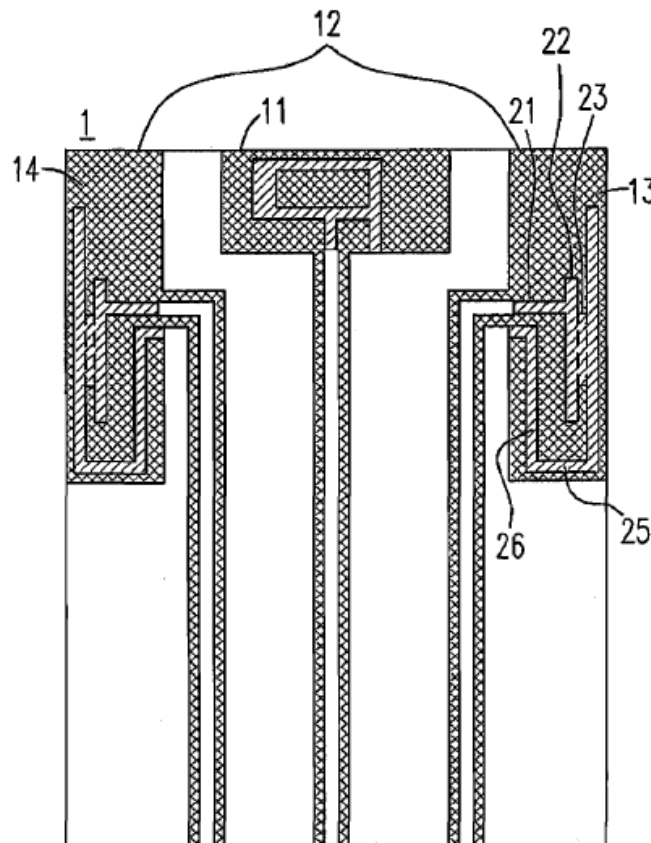
Publication Classification

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

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

(57) **ABSTRACT**

The present invention provides a wireless transmit/receive unit, comprising a feeding connecting line, a first radiating line, a second radiating line, a third radiating line and a fourth radiating line, wherein the third radiating line is longer than the first radiating line and the first radiating line is longer than the second radiating line that provides different current paths for getting a broader bandwidth. The first, second and third radiating lines are connected parallel for enhancing an antenna pattern being perpendicular thereto, and form a series capacity between the first and the third radiating lines. The fourth radiating line vertically connects between the third radiating line and a grounding line for forming a grounding capacity. The printed antenna can be reduced in size by the effect of the two capacities. The wireless transmit/receive unit can provide a better isolation with others by the direction enforced pattern and the reduced size.



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US 20080158069A1

(19) **United States**(12) **Patent Application Publication****Mateus Mendes et al.**(10) **Pub. No.: US 2008/0158069 A1**(43) **Pub. Date: Jul. 3, 2008**

(54) **INTEGRATED TUNABLE MICRO-ANTENNA
WITH SMALL ELECTRICAL DIMENSIONS
AND MANUFACTURING METHOD
THEREOF**

(75) Inventors: **Paulo Mateus Mendes, Braga**
(PT); **Jose Higino Gomes Correia,**
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(73) Assignee: **UNIVERSIDADE DO MINHO,**
Braga (PT)

(21) Appl. No.: **11/966,111**

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

Related U.S. Application Data

(63) Continuation of application No. PCT/IB2006/052190,
filed on Jun. 29, 2006.

(30) Foreign Application Priority Data

Jun. 29, 2005 (PT) 103299

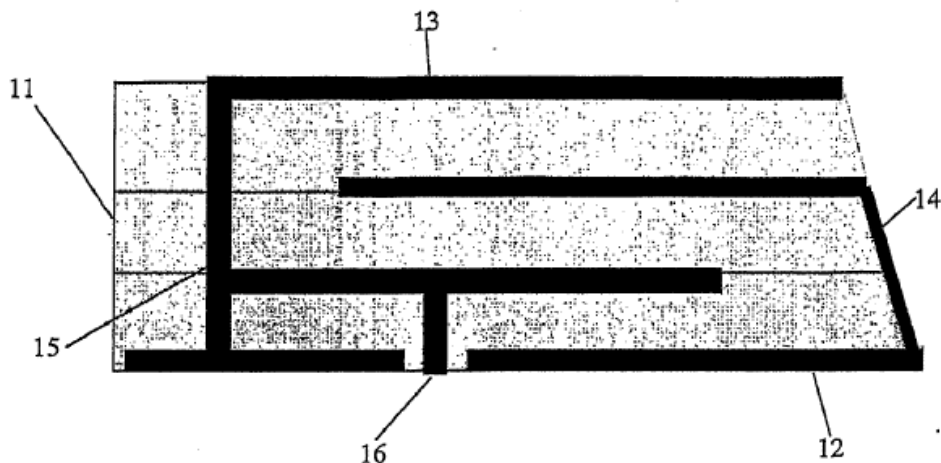
Publication Classification

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

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

(57) ABSTRACT

The present invention describes a tunable micro-antenna of reduced electrical dimensions. This antenna consists of the agglutination of several substrate layers (11), identical or distinct, with electrical, thermal and mechanical properties compatible with the manufacturing processes of integrated circuits. These layers are interleaved with metallic sheets (12) that are interconnected by metallized walls or vias, in such a way that they form a radiating structure (15) and a ground plane (14). The radiating structure includes slots in one or more levels, therefore allowing a greater reduction of the antennas' electrical length. These slots may include switches, used to render the antenna tunable. Since the entire manufacturing method is compatible with the wafer level packaging technology, the micro-antenna is easily integrable in micro-systems requiring wireless communication



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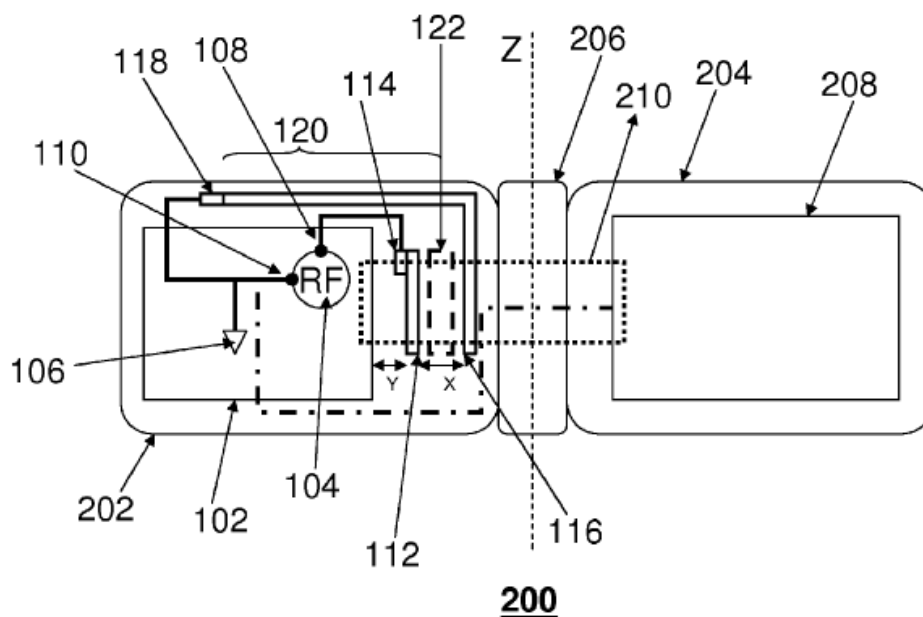


US 20080158070A1

(19) **United States**(12) **Patent Application Publication**
Chenoweth(10) **Pub. No.: US 2008/0158070 A1**(43) **Pub. Date: Jul. 3, 2008**(54) **LOW INTERFERENCE INTERNAL ANTENNA
SYSTEM FOR WIRELESS DEVICES**(52) **U.S. CL. 343/702**(75) **Inventor: John P. Chenoweth, Coral Springs,
FL (US)**(57) **ABSTRACT**

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A wireless communications antenna system (100) includes a main circuit element (102) having a feed device (104) with an active port (108) and a grounding port (110), where the grounding port is coupled to a grounding device (106) of the main circuit element, a generally planar antenna element (112) having a feeding portion (114) coupled to the active port of the feed device, where the antenna element is electrically ungrounded, and a generally planar secondary circuit element (116) having a grounding portion (118) coupled to the grounding device. The secondary circuit element is positioned in proximity to the antenna element and the antenna element and the secondary circuit element are generally parallel and separated by a gap (X). Further, at least a portion of the secondary circuit element at least partially overlaps the antenna element.

(73) **Assignee: MOTOROLA, INC.,
SCHAUMBURG, IL (US)**(21) **Appl. No.: 11/618,126**(22) **Filed: Dec. 29, 2006****Publication Classification**(51) **Int. Cl. H01Q 1/24 (2006.01)**

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US 20080158071A1

(19) **United States**

(12) **Patent Application Publication**

Kebel et al.

(10) **Pub. No.: US 2008/0158071 A1**

(43) **Pub. Date: Jul. 3, 2008**

(54) **WALL ELEMENT WITH AN ANTENNA DEVICE**

(75) Inventors: **Robert Kebel**, Stade (DE);
Wolfgang Kuerner, Tübingen (DE); **Ruedy Gysemberg**, Hamburg (DE)

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(73) Assignee: **Airbus Deutschland GmbH**, Hamburg (DE)

(21) Appl. No.: **11/998,869**

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

Related U.S. Application Data

(60) Provisional application No. 60/872,215, filed on Dec. 1, 2006.

(30) **Foreign Application Priority Data**

Dec. 1, 2006 (DE) 10 2006 056 890.7

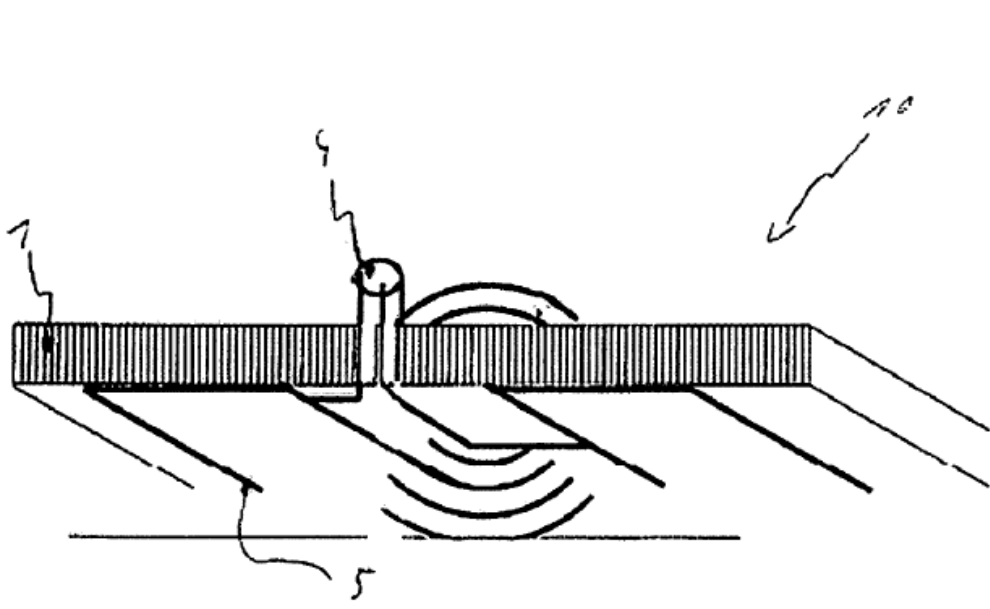
Publication Classification

(51) **Int. Cl.**
H01Q 1/28 (2006.01)

(52) **U.S. Cl.** **343/705**

(57) **ABSTRACT**

A wall element for emitting high-frequency radiation for an aircraft comprises an antenna device. The antenna device is adapted for emitting high frequency radiation. Furthermore, the antenna device is integrated in the wall element.



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(19) **United States**

(12) **Patent Application Publication**
Villarroel et al.

(10) **Pub. No.: US 2008/0158074 A1**

(43) **Pub. Date:** **Jul. 3, 2008**

(54) **MULTI-BAND STRIP ANTENNA**

Related U.S. Application Data

(75) Inventors: **Wladimiro Villarroel**, Ypsilanti, MI (US); **Nuttawit Surittikul**, Bangkok (TH); **Qian Li**, Ann Arbor, MI (US); **Kwan-ho Lee**, Ann Arbor, MI (US)

(60) Provisional application No. 60/877,455, filed on Dec. 28, 2006.

Publication Classification

(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 1/32 (2006.01)
H01Q 9/04 (2006.01)

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

(57) **ABSTRACT**

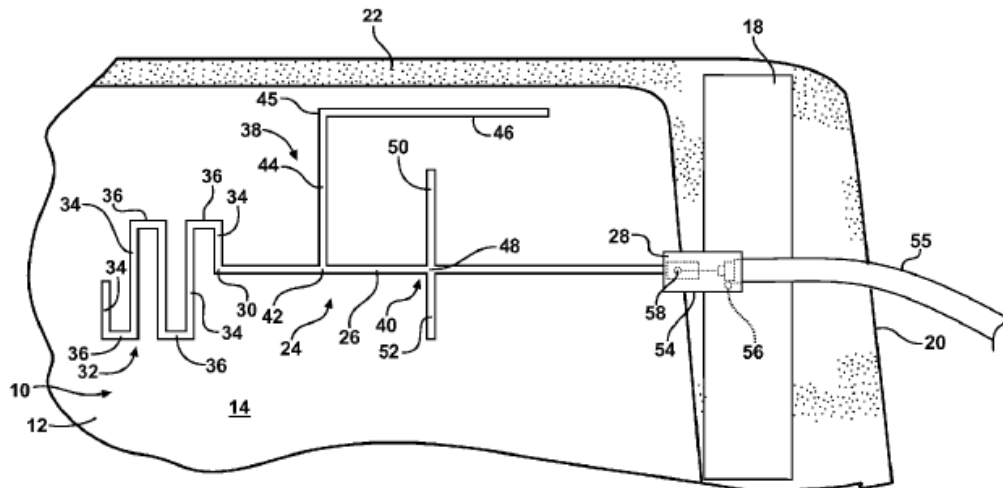
A multi-band antenna includes a non-conductive pane, a ground plane disposed on the non-conductive pane, and a radiating strip for operating in a plurality of frequency bands. The radiating strip includes an elongated portion and a meander line portion extending away from an end of the elongated portion. The radiating strip also includes a pair of tuning stubs extending from the elongated portion.

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BLOOMFIELD HILLS, MI 48304-5151

(73) Assignee: **AGC Automotive Americas R&D, Inc., Ypsilanti, MI (US)**

(21) Appl. No.: 11/965,089

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



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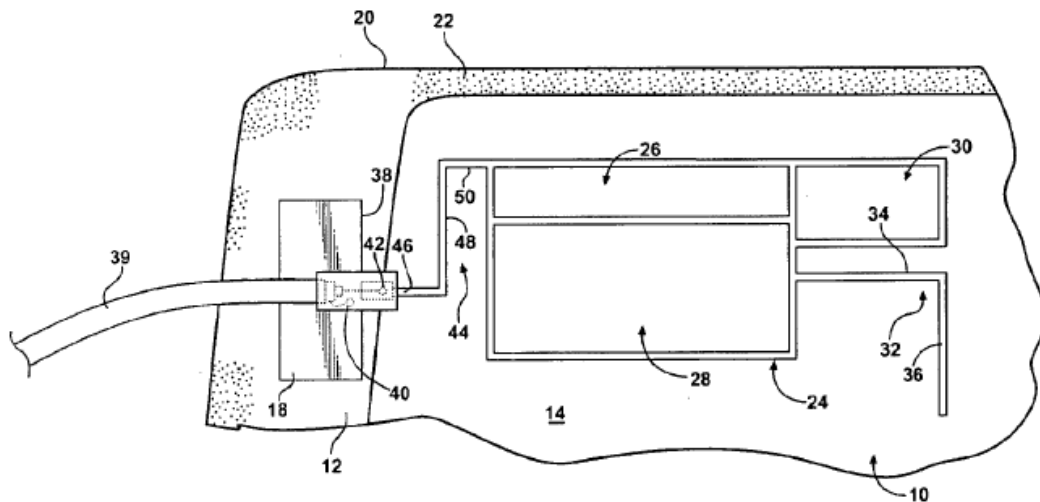
US 20080158075A1

(19) **United States**(12) **Patent Application Publication**
Villarroel et al.(10) **Pub. No.: US 2008/0158075 A1**(43) **Pub. Date: Jul. 3, 2008**(54) **MULTI-BAND LOOP ANTENNA****Related U.S. Application Data**(75) Inventors: **Wladimiro Villarroel**, Ypsilanti, MI (US); **Nuttawit Surittikul**, Bangkok (TH); **Qian Li**, Ann Arbor, MI (US); **Kwan-ho Lee**, Ann Arbor, MI (US)

(60) Provisional application No. 60/877,548, filed on Dec. 28, 2006.

Publication Classification(51) **Int. Cl.**
H01Q 1/32 (2006.01)
H01Q 7/00 (2006.01)
(52) **U.S. Cl.** **343/713; 343/742**Correspondence Address:
HOWARD & HOWARD ATTORNEYS, P.C.
THE PINEHURST OFFICE CENTER, SUITE
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BLOOMFIELD HILLS, MI 48304-5151(57) **ABSTRACT**

An antenna includes a non-conductive pane, a ground plane disposed on the non-conductive pane, and a radiating strip disposed on the non-conductive pane for operating in a plurality of frequency bands. The radiating strip defines a plurality of loops. A portion of a periphery of one of the loops coincides with at least a portion of a periphery of another of the loops. The radiating strip also includes at least one branch extending away from the periphery of one of the loops to allow tuning and shifting of the resonant frequencies of the antenna.

(73) Assignee: **AGC AUTOMOTIVE AMERICAS R&D, INC.**, Ypsilanti, MI (US)(21) Appl. No.: **11/965,125**(22) Filed: **Dec. 27, 2007**

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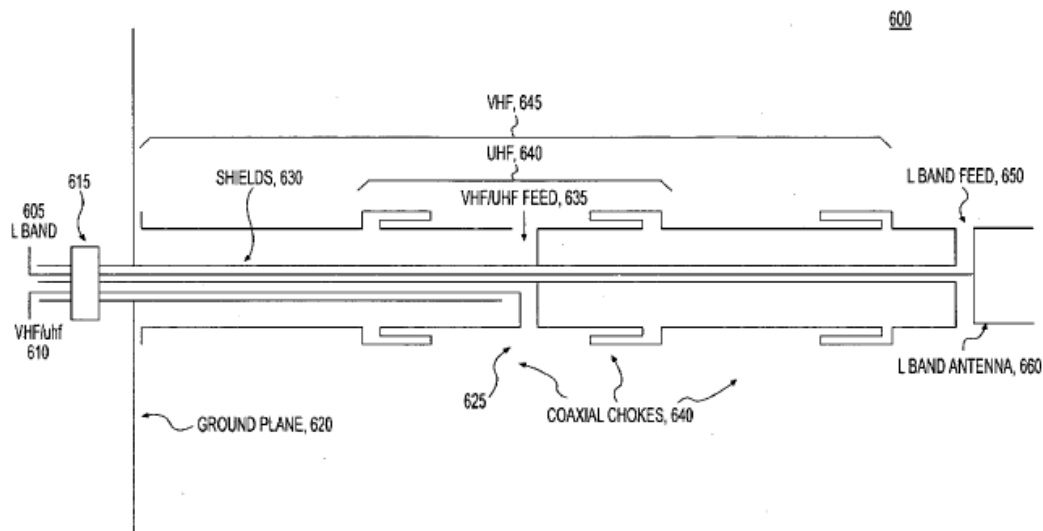
US 20080158083A1

(19) **United States**(12) **Patent Application Publication**
Apostolos(10) **Pub. No.: US 2008/0158083 A1**(43) **Pub. Date: Jul. 3, 2008**(54) **VEHICULAR MULTIBAND ANTENNA****Publication Classification**(76) Inventor: **John T. Apostolos**, Lyndeborough,
NH (US)(51) **Int. Cl.**
H01Q 9/04 (2006.01)

Correspondence Address:

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2020 K Street, N.W., Intellectual Property Depart-
ment
WASHINGTON, DC 20006(52) **U.S. Cl.** 343/791(21) Appl. No.: **11/783,824**(22) Filed: **Apr. 12, 2007****Related U.S. Application Data**(63) Continuation-in-part of application No. 11/641,045,
filed on Dec. 19, 2006.(57) **ABSTRACT**

A coaxial antenna is implemented that combines a VHF and UHF antenna on a common radiating element. The antenna may further include a satellite antenna that, together with the VHF/UHF antenna fits into a whip antenna footprint. The antenna incorporates chokes that may be implemented using meanderline techniques.



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US 20080158086A1

(19) **United States**(12) **Patent Application Publication**
Yamagajo et al.(10) **Pub. No.: US 2008/0158086 A1**(43) **Pub. Date: Jul. 3, 2008**(54) **PLANAR ANTENNA****Publication Classification**(75) Inventors: **Takashi Yamagajo**, Kawasaki (JP);
Toru Maniwa, Kawasaki (JP);
Andrey Andrenko, Kawasaki (JP)(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 9/16 (2006.01)
(52) **U.S. Cl.** **343/795; 343/700 MS**

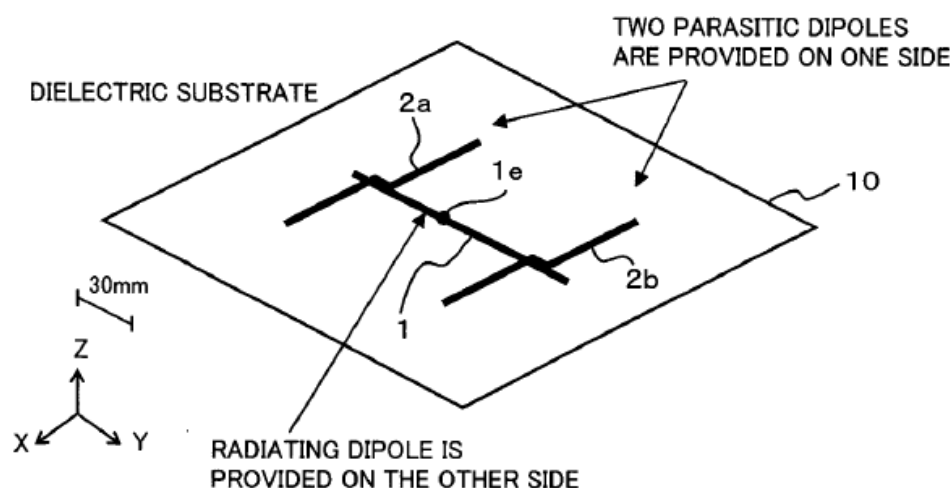
Correspondence Address:

BINGHAM MCCUTCHEN LLP**2020 K Street, N.W., Intellectual Property Department****WASHINGTON, DC 20006**(57) **ABSTRACT**

The planar antenna includes: a linear radiating antenna element to which electric power is to be supplied; and multiple linear parasitic antenna elements to which electric power is not to be supplied. The parasitic antenna elements are disposed at a position at which the radiating antenna element and the parasitic antenna elements cross each other without contact. The parasitic antenna elements lying in a direction in which the radiating antenna element and the parasitic antenna elements cross each other, and each of the crossing portions of said plural parasitic antenna elements, which portions cross said radiating antenna element, are bent in such a manner that the crossing portions of the parasitic antenna elements are in parallel with the radiating antenna element. Thus, it is possible to provide a planar antenna which can obtain a good circularly polarized wave with a simple construction. In addition, the planar antenna can be downsized.

(73) Assignee: **FUJITSU LIMITED**(21) Appl. No.: **11/819,626**(22) Filed: **Jun. 28, 2007**(30) **Foreign Application Priority Data**

Jul. 28, 2006 (JP) 2006-206437



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US 20080158088A1

(19) **United States**(12) **Patent Application Publication**
MAI et al.(10) **Pub. No.: US 2008/0158088 A1**(43) **Pub. Date: Jul. 3, 2008**(54) **ANTENNA FOR GPS**(30) **Foreign Application Priority Data**(75) Inventors: **Ching-Chia MAI**, Kaohsiung (TW); **Cheng-Han LEE**, Kaohsiung (TW); **Chi-Yueh WANG**, Kaohsiung (TW); **Boon-Tiong CHUA**, Kaohsiung (TW)

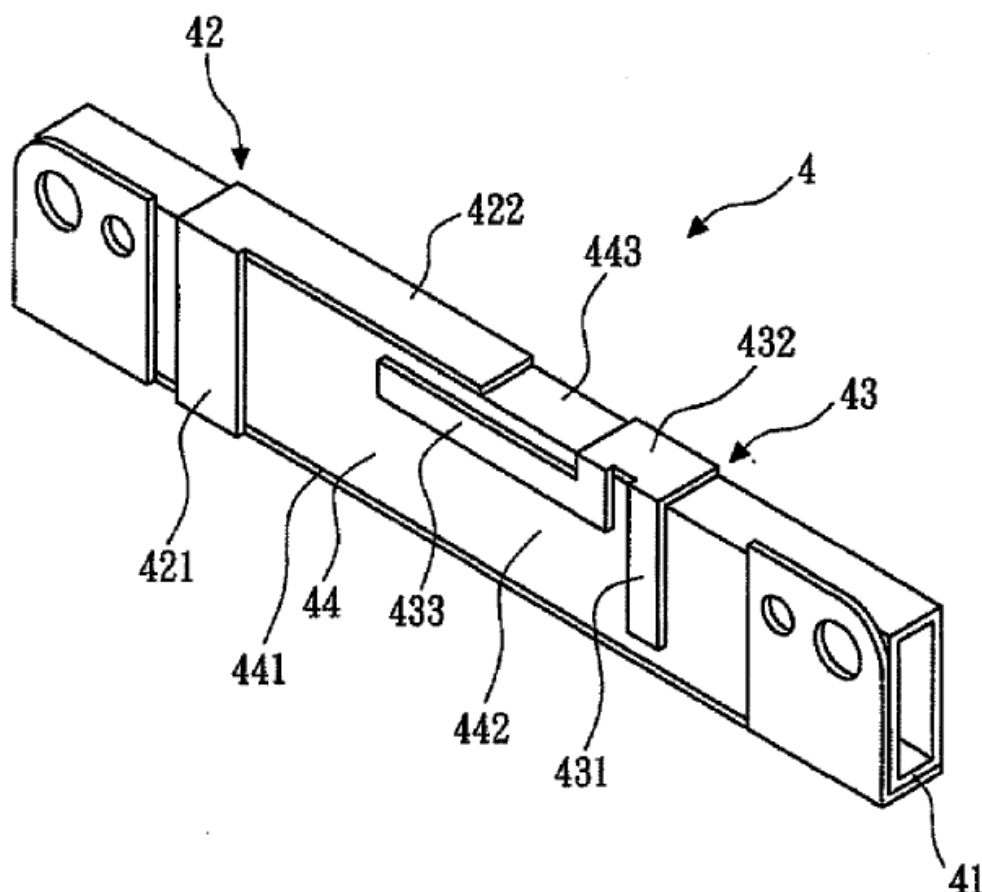
Dec. 28, 2006 (TW) 095149568

Publication Classification(51) **Int. Cl.**
H01Q 19/10 (2006.01)(52) **U.S. Cl.** 343/834(57) **ABSTRACT**

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RESTON, VA 20190

This invention relates to an antenna for GPS. The antenna of the invention comprises a ground metal plate, a parasitic metal plate, a radiation metal plate and at least one supporting element. The parasitic metal plate is disposed above the ground metal plate and connects to the ground metal plate. The radiation metal plate is an independent metal plate and is disposed above the ground metal plate. The parasitic metal plate cooperates with the radiation metal plate to induce a resonance mode. The supporting element is disposed on the ground metal plate and is used to support the radiation metal plate. Whereby, the problems of large size and limited receiving angle of signal according to a conventional circular polarization antenna for GPS could be improved.

(73) Assignee: **YAGEO CORPORATION**,
Kaohsiung (TW)(21) Appl. No.: **11/849,393**(22) Filed: **Sep. 4, 2007**

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US 20080165061A1

(19) **United States**(12) **Patent Application Publication**
Lin et al.(10) **Pub. No.: US 2008/0165061 A1**(43) **Pub. Date: Jul. 10, 2008**(54) **CIRCULARLY POLARIZED ANTENNA**(30) **Foreign Application Priority Data**(75) Inventors: **Shih-Chieh Lin**, Kaohsiung Hsien
(TW); **Hua-Ming Chen**, Kaohsiung
City (TW); **Yang-Kai Wang**,
Kaohsiung Hsien (TW)

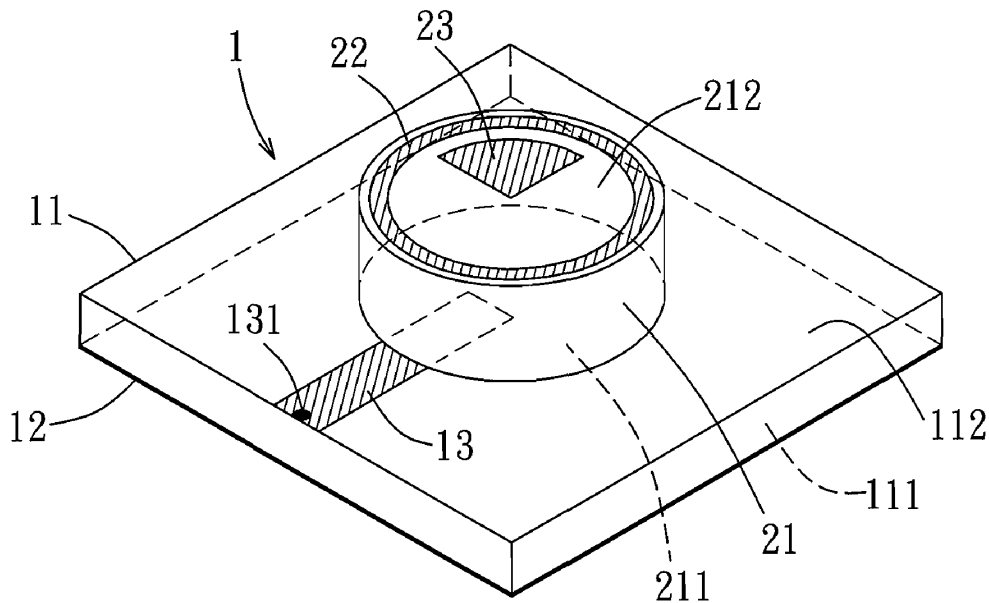
Jan. 5, 2007 (TW) 096100444

Publication Classification(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 9/04 (2006.01)(52) **U.S. Cl.** **343/700 MS**(57) **ABSTRACT**

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DARBY & DARBY P.C.**P.O. BOX 770, Church Street Station**
New York, NY 10008-0770(73) Assignee: **ADVANCED CONNECTION**
TECHNOLOGY INC., Taipei
Hsien (TW)(21) Appl. No.: **11/968,276**(22) Filed: **Jan. 2, 2008**

A circularly polarized antenna includes first and second dielectric substrates, a grounding element, a feeding element, a coupling element, and a close-loop radiating element. The grounding element is formed on a first surface of the first dielectric substrate. The feeding element is formed on a second surface of the first dielectric substrate. The second dielectric substrate is disposed on the second surface of the first dielectric substrate and overlaps the feeding element. The coupling element is formed on the second dielectric substrate. The close-loop radiating element is formed on the second dielectric substrate.



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US 20080165063A1

(19) **United States**(12) **Patent Application Publication****Schlub et al.**(10) **Pub. No.: US 2008/0165063 A1**(43) **Pub. Date: Jul. 10, 2008**(54) **HANDHELD ELECTRONIC DEVICES WITH ISOLATED ANTENNAS**(52) **U.S. CL. 343/702; 343/700 MS**

(76) Inventors: **Robert W. Schlub**, Campbell, CA (US); **Robert J. Hill**, Salinas, CA (US); **Juan Zavala**, Watsonville, CA (US); **Ruben Caballero**, San Jose, CA (US)

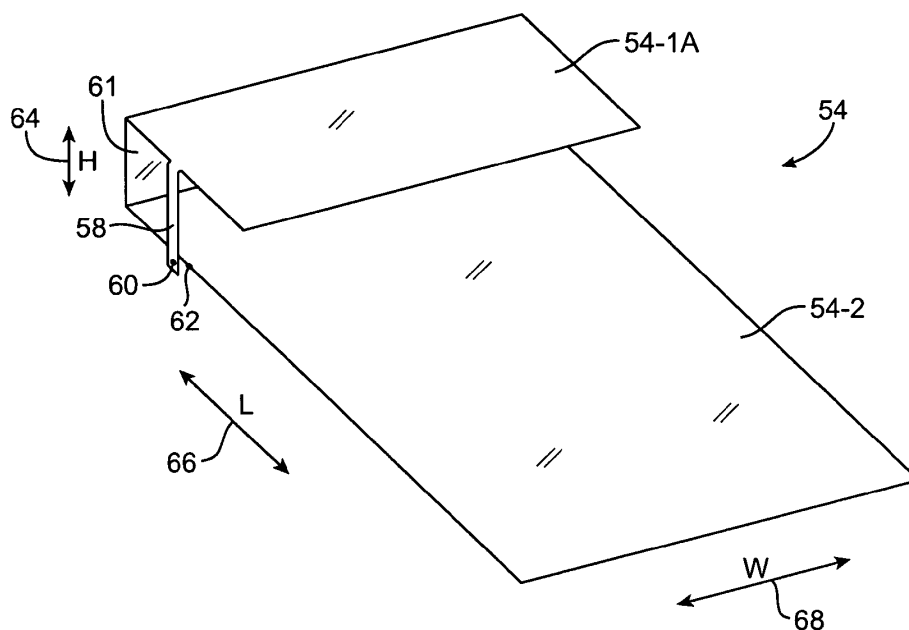
Correspondence Address:

G. VICTOR TREYZ**870 MARKET STREET, FLOOD BUILDING,
SUITE 984
SAN FRANCISCO, CA 94102**(21) Appl. No.: **11/650,071**(22) Filed: **Jan. 4, 2007****Publication Classification**

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

(57) **ABSTRACT**

Handheld electronic devices are provided that contain wireless communications circuitry having at least first and second antennas. An antenna isolation element reduces signal interference between the antennas, so that the antennas may be used in close proximity to each other. A planar ground element may be used as a ground by the first and second antennas. The first antenna may be formed using a hybrid planar-inverted-F and slot arrangement in which a planar resonating element is located above a rectangular slot in the planar ground element. The second antenna may be formed from an L-shaped strip. The planar resonating element of the first antenna may have first and second arms. The first arm may resonate at a common frequency with the second antenna and may serve as the isolation element. The second arm may resonate at approximately the same frequency as the slot portion of the hybrid antenna.



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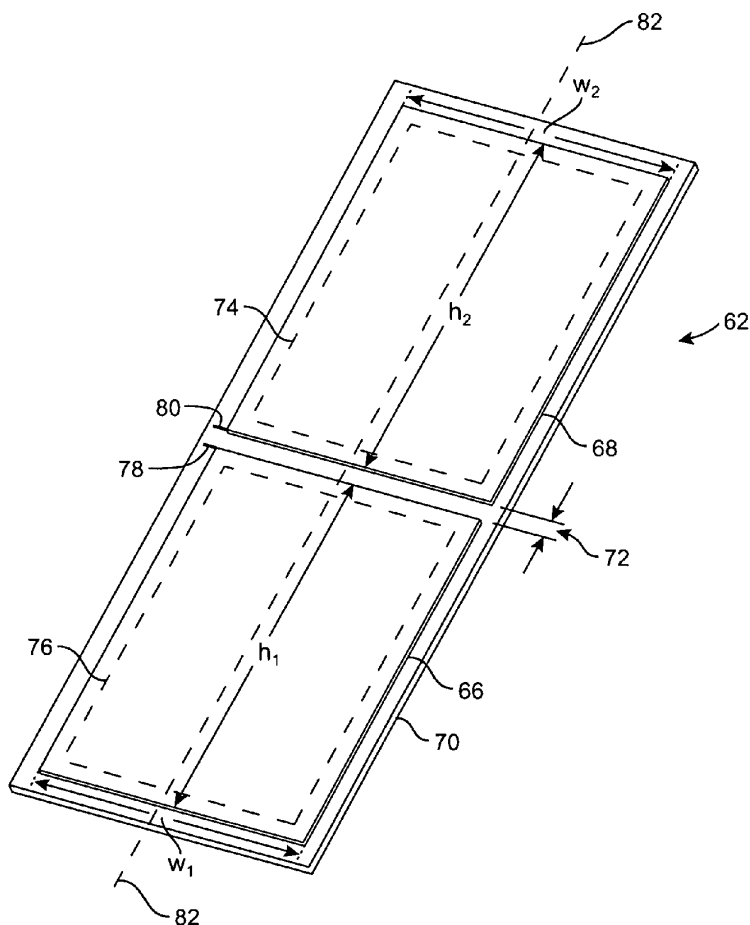
US 20080165064A1

(19) **United States**(12) **Patent Application Publication****Hill et al.**(10) **Pub. No.: US 2008/0165064 A1**(43) **Pub. Date: Jul. 10, 2008**(54) **BROADBAND ANTENNA FOR HANDHELD DEVICES**(52) **U.S. CL. 343/702; 343/700 MS**(76) Inventors: **Robert J. Hill**, Salinas, CA (US);
Ruben Caballero, San Jose, CA (US)(57) **ABSTRACT**

Correspondence Address:

G. VICTOR TREYZ**870 MARKET STREET, FLOOD BUILDING,
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Broadband antennas and handheld electronic devices with broadband antennas are provided. A handheld electronic device has integrated circuits, a display, and a battery mounted within a housing. The housing has a planar inner surface. A broadband antenna for the handheld electronic device has a ground element and a resonating element. The ground element and resonating element may have the same shape and may have the same size. The ground element and resonating element may lie in a common plane and be separated by a gap that lies in the common plane. The plane in which the ground element and resonating element lie may be parallel to the planar inner surface of the housing. Electronic components such as the integrated circuits, display, and battery can be mounted in the handheld device so that they do not overlap the gap between the ground element and the resonating element.

(21) Appl. No.: **11/650,072**(22) Filed: **Jan. 4, 2007****Publication Classification**(51) **Int. Cl.**
H01Q 1/24 (2006.01)
H01Q 9/04 (2006.01)

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US 20080165065A1

(19) **United States**(12) **Patent Application Publication****Hill et al.**(10) **Pub. No.: US 2008/0165065 A1**(43) **Pub. Date: Jul. 10, 2008**(54) **ANTENNAS FOR HANDHELD ELECTRONIC DEVICES****Publication Classification**(51) **Int. Cl.****H01Q 1/24** (2006.01)**H01Q 1/38** (2006.01)**H01Q 9/04** (2006.01)(52) **U.S. Cl. 343/702; 343/700 MS**

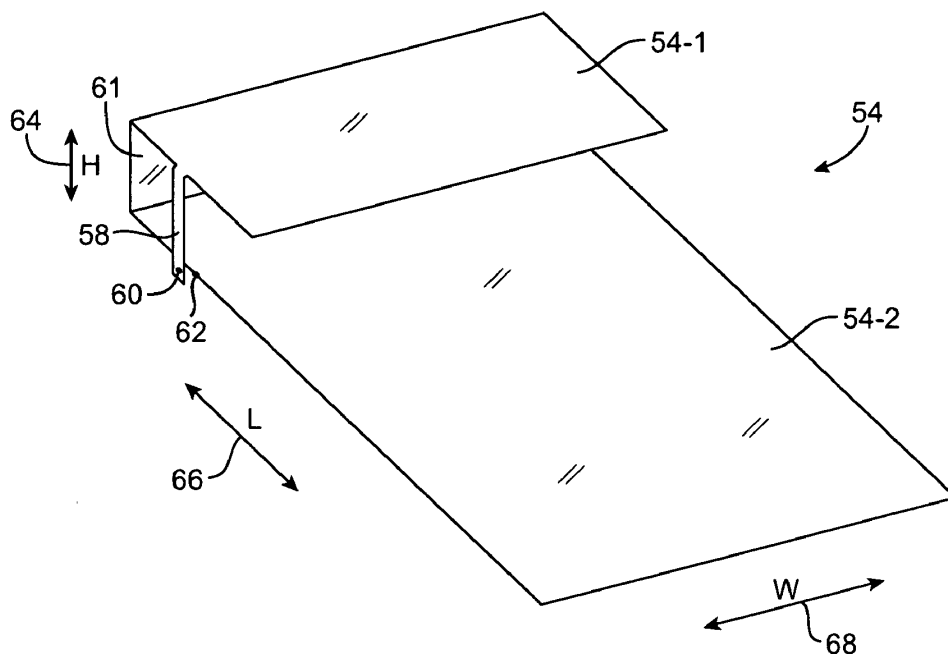
(57)

ABSTRACT

Handheld electronic devices are provided that contain wireless communications circuitry having at least one antenna. The antenna may have a planar ground element and a planar resonating element. The planar ground element may have a rectangular shape that matches a rectangular housing shape for a handheld electronic device. A dielectric-filled slot may be formed in one end of the planar ground element. The planar resonating element may be located above the slot. The antenna may be a hybrid antenna that contains both a slot antenna structure formed from the slot and a planar inverted-F structure formed from the planar resonating element and the planar ground element. The antenna may be fed using a single transmission line or two transmission lines. With two transmission lines, one transmission line may be associated with the slot antenna structure and one transmission line may be associated with the planar inverted-F antenna structure.

(76) Inventors: **Robert J. Hill**, Salinas, CA (US);
Robert W. Schlub, Campbell, CA (US); **Juan Zavala**, Watsonville, CA (US); **Ruben Caballero**, San Jose, CA (US)

Correspondence Address:

G. VICTOR TREYZ**870 MARKET STREET, FLOOD BUILDING,****SUITE 984****SAN FRANCISCO, CA 94102**(21) Appl. No.: **11/650,187**(22) Filed: **Jan. 4, 2007**

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US 20080165073A1

(19) **United States**

(12) **Patent Application Publication**

Chou

(10) **Pub. No.: US 2008/0165073 A1**

(43) **Pub. Date: Jul. 10, 2008**

(54) **OMNI-DIRECTIONAL HIGH GAIN DIPOLE ANTENNA**

(30) **Foreign Application Priority Data**

Jan. 10, 2007 (TW) 096200512

(75) Inventor: **Keng-Hung Chou**, Taipei County (TW)

Publication Classification

(51) **Int. Cl.**
H01Q 1/36 (2006.01)
H01Q 9/16 (2006.01)

(52) **U.S. Cl.** **343/793; 343/895**

Correspondence Address:

STEVENS & SHOWALTER LLP
7019 CORPORATE WAY
DAYTON, OH 45459-4238

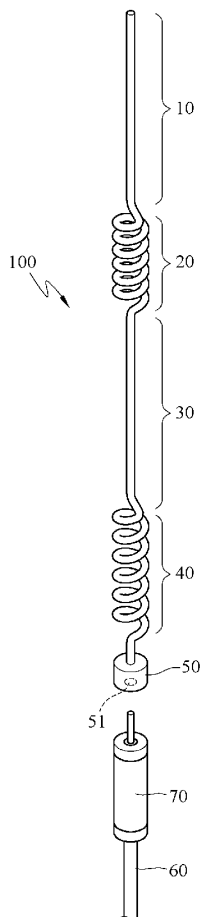
(57) **ABSTRACT**

An omni-directional high gain dipole antenna includes a first rod antenna portion, a first helical antenna portion, a second rod antenna portion, a second helical antenna portion, and an impedance matching portion. The helical antenna portions having different helical pitches are serially-connected to the rod antenna portions, so as to prolong an antenna array distance of the dipole antenna. The serially-connected impedance matching portion adjusts a line impedance value of the dipole antenna, so as to enhance a radiation field pattern gain of the dipole antenna.

(73) Assignee: **SMARTANT TELECOM CO., LTD.**, Hsinchu County (TW)

(21) Appl. No.: **11/971,742**

(22) Filed: **Jan. 9, 2008**



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US 20080165077A1

(19) **United States**

(12) **Patent Application Publication**
Hauck

(10) **Pub. No.: US 2008/0165077 A1**

(43) **Pub. Date: Jul. 10, 2008**

(54) **WIDEBAND SEGMENTED DIPOLE
ANTENNA**

(21) Appl. No.: **11/650,616**

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

(75) Inventor: **Bryan L. Hauck**, West Warwick, RI
(US)

Publication Classification

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

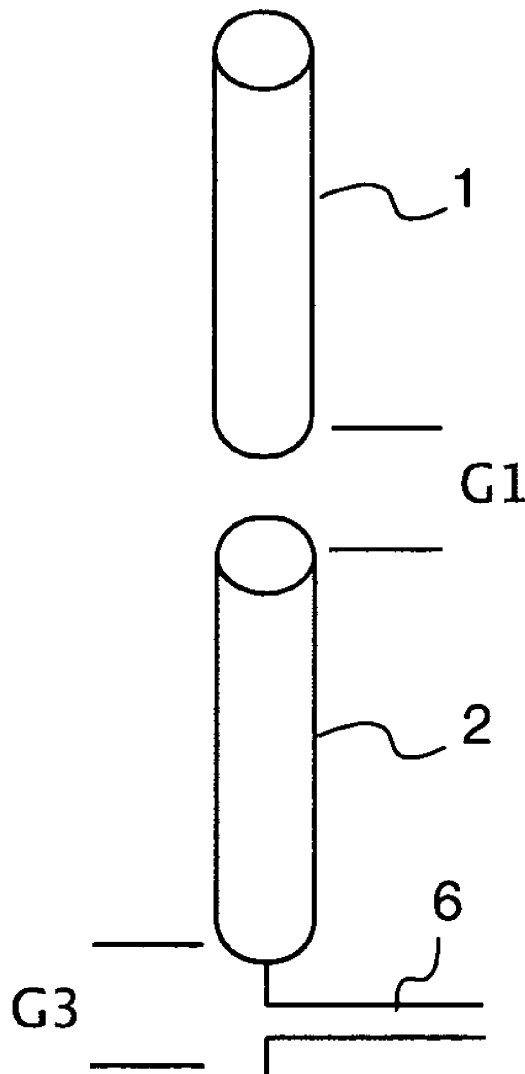
(52) **U.S. Cl.** **343/900**

(57) **ABSTRACT**

Correspondence Address:
MAURICE M. LYNCH
429 CHURCH AVENUE
WARWICK, RI 02885

A wideband antenna comprised of two or more conductive segments that are parasitically coupled.

(73) Assignee: **Applied Radar Inc.**



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US 20080165284A1

(19) **United States**

(12) **Patent Application Publication**
YANG et al.

(10) **Pub. No.: US 2008/0165284 A1**

(43) **Pub. Date: Jul. 10, 2008**

(54) **ANTENNA MEMBER AND DIGITAL TV
RECEIVER USING SAME**

(30) **Foreign Application Priority Data**

Jan. 5, 2007 (TW) 096100533

(75) Inventors: **WEN-PIN YANG**, Hsinchu (TW);
FAN-HSI KUNG, Hsinchu (TW)

Publication Classification

Correspondence Address:
PCE INDUSTRY, INC.
ATT. CHENG-JU CHIANG
458 E. LAMBERT ROAD
FULLERTON, CA 92835

(51) **Int. Cl.**
H04N 3/27 (2006.01)
H04N 5/50 (2006.01)

(52) **U.S. Cl.** **348/554**; 348/731; 348/E03.049;
348/E05.097

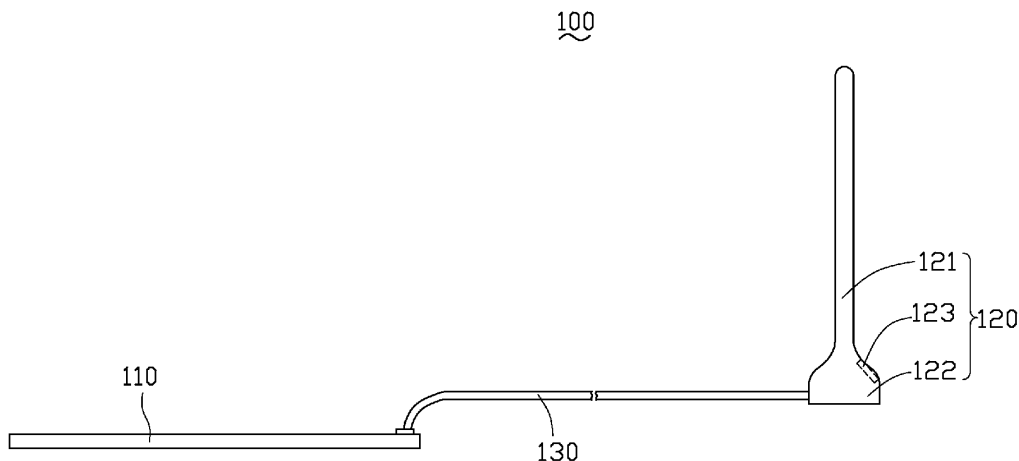
(73) Assignee: **FITIPOWER INTEGRATED
TECHNOLOGY, INC.**, Hsinchu
(TW)

(57) **ABSTRACT**

(21) Appl. No.: **11/937,346**

An antenna member (120) includes a main body (122), a receiver (121) extending from the main body configured for receiving TV signals, an infrared receiver (123) arranged in the main body configured for receiving remote control signals sent out from a remote device.

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



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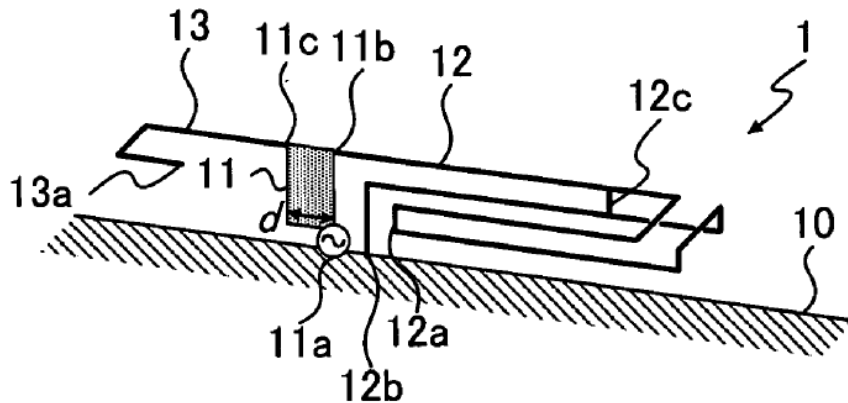
US 20080169981A1

(19) **United States**(12) **Patent Application Publication****Hotta et al.**(10) **Pub. No.: US 2008/0169981 A1**(43) **Pub. Date: Jul. 17, 2008**(54) **ANTENNA DEVICE OPERABLE IN
MULTIPLE FREQUENCY BANDS****Publication Classification**(51) **Int. Cl.**
H01Q 1/38 (2006.01)(52) **U.S. Cl.** **343/700 MS**(75) **Inventors:** **Hiroyuki Hotta**, Tokyo (JP);
Satoshi Mizoguchi, Tokyo (JP);
Koichi Sato, Tokyo (JP)**Correspondence Address:**
FRISHAUF, HOLTZ, GOODMAN & CHICK, PC
220 Fifth Avenue, 16TH Floor
NEW YORK, NY 10001-7708(73) **Assignee:** **KABUSHIKI KAISHA**
TOSHIBA, Tokyo (JP)(21) **Appl. No.:** **11/724,499**(22) **Filed:** **Mar. 15, 2007**(30) **Foreign Application Priority Data**

Jan. 16, 2007 (JP) 2007-7104

(57) **ABSTRACT**

There is provided an antenna device of a radio apparatus, including a fed partial element, a folded partial element and an open-ended partial element. The fed partial element is formed to be extended from a fed portion to a first branch portion where the folded partial element branches off. The folded partial element has a grounded end and has a forward path and a backward path short-circuited to each other. The folded partial element and a path on the fed partial element from the fed portion to the first branch portion have a summed length of about a half wavelength of a first frequency. The open-ended partial element branches off at a second branch portion. The open-ended partial element and a path on the fed partial element from the fed portion to the second branch portion have a summed length of about a one-fourth wavelength of a second frequency.



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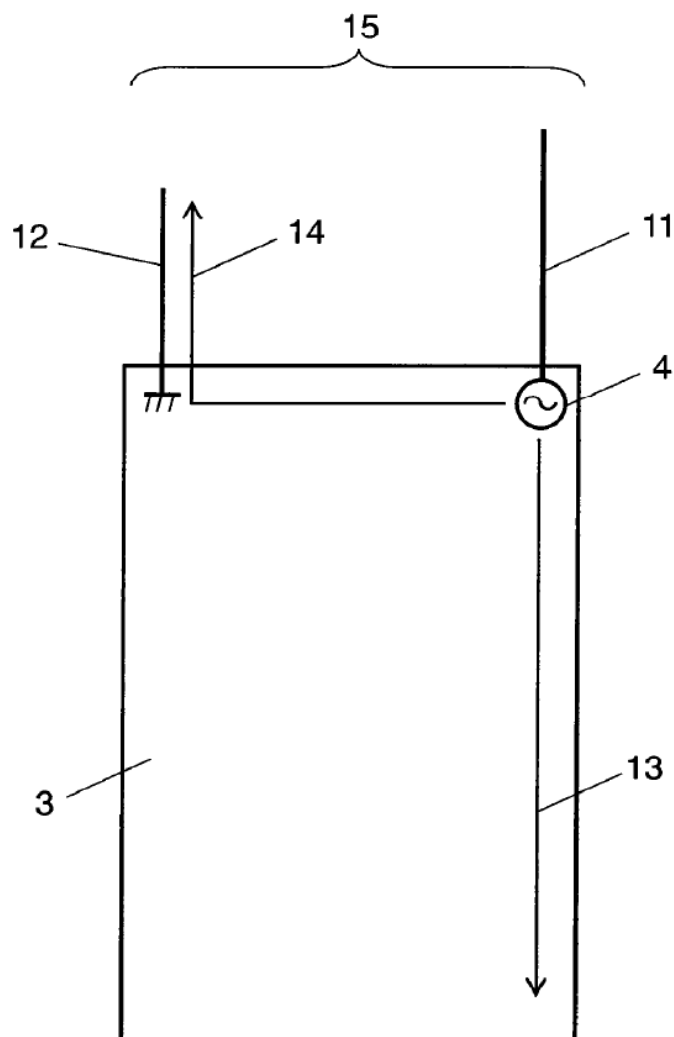
US 20080169984A1

(19) **United States**(12) **Patent Application Publication**
Takagi(10) **Pub. No.: US 2008/0169984 A1**(43) **Pub. Date: Jul. 17, 2008**(54) **ANTENNA****Publication Classification**(76) Inventor: **Naoyuki Takagi, Shiga (JP)**(51) **Int. Cl.**
H01Q 9/04 (2006.01)Correspondence Address:
MCDERMOTT WILL & EMERY LLP
600 13TH STREET, NW
WASHINGTON, DC 20005-3096(52) **U.S. Cl.** **343/700 MS**(57) **ABSTRACT**(21) Appl. No.: **11/954,916**

An antenna including a rectangular ground plane, a feed point disposed in a vicinity of a corner of the ground plane, an antenna element coupled to the feed point, and a parasitic element coupled to the ground plane. In this antenna, the shortest length from the feed point to a distant narrow side of the ground plane and a shortest length from the feed point to a tip of the parasitic element via the ground plane have substantially the same electrical length. Such a configuration can correspond to a small and thin size and reduce SAR easily.

(22) Filed: **Dec. 12, 2007**(30) **Foreign Application Priority Data**

Jan. 15, 2007 (JP) 2007-005620



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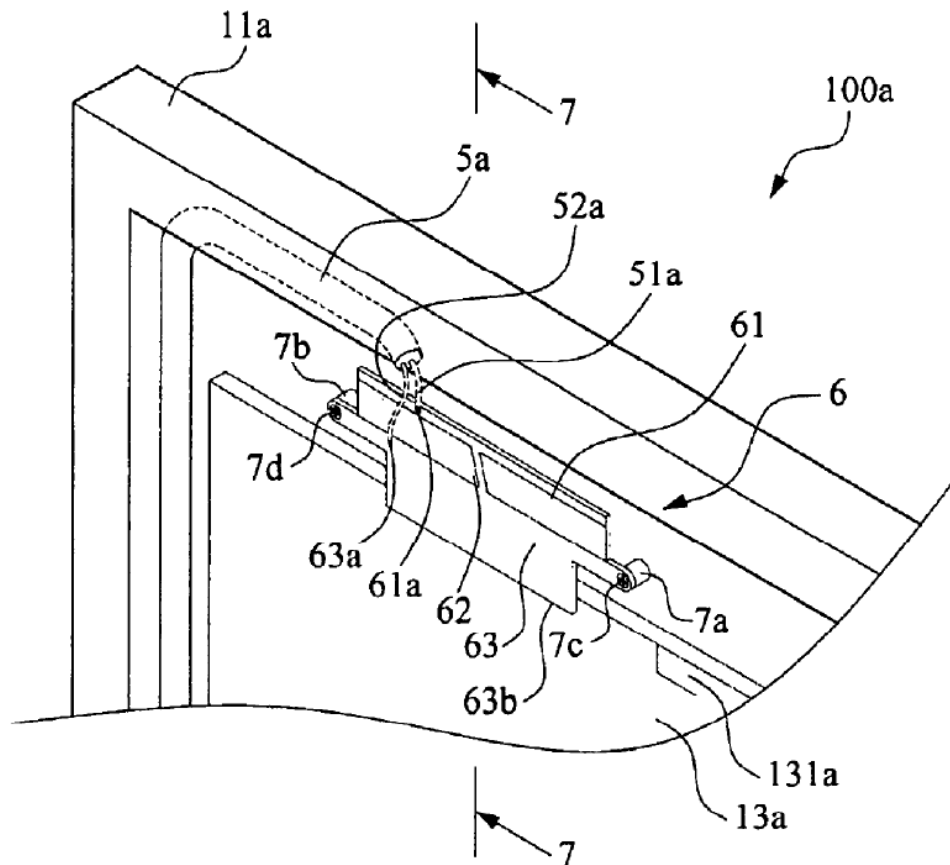
US 20080169986A1

(19) **United States**(12) **Patent Application Publication**
Cheng et al.(10) **Pub. No.: US 2008/0169986 A1**(43) **Pub. Date: Jul. 17, 2008**(54) **ANTENNA DEVICE WITH GROUND PLANE
COUPLED TO CONDUCTIVE PORTION OF
AN ELECTRONIC DEVICE****Publication Classification**(51) **Int. Cl.**
H01Q 1/22

(2006.01)

(52) **U.S. Cl. 343/702**(76) **Inventors:** **Yu-Chiang Cheng**, Taipei City
(TW); **Ping-Cheng Chang**,
Chaozhou Town (TW); **Cheng-Zing**
Chou, Xinying City (TW)**Correspondence Address:**
ROSENBERG, KLEIN & LEE
3458 ELLICOTT CENTER DRIVE-SUITE 101
ELLICOTT CITY, MD 21043(21) **Appl. No.: 11/878,674**(22) **Filed: Jul. 26, 2007****Related U.S. Application Data**(63) **Continuation-in-part of application No. 11/651,981,**
filed on Jan. 11, 2007.**ABSTRACT**

Disclosed is an antenna device arranged inside a display module of an electronic device with a conductive portion. The antenna device includes an antenna element with a ground plane and a signal feeding end for transceiving a wireless signal, an antenna signal feeding line coupled to the signal feeding end of the antenna element for feeding the wireless signal transceived by the antenna element. At least one mounting element for fixing the antenna element onto the casing and forcing the ground plane of the antenna electrically contacting with the conductive portion of the casing, so that the conductive portion serves as an extended ground for the ground plane of the antenna element;



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(19) **United States**

(12) **Patent Application Publication**
Li et al.

(10) Pub. No.: US 2008/0169989 A1

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

(54) **MULTI-BAND ANTENNA**

Related U.S. Application Data

(75) Inventors: **Qian Li**, Ann Arbor, MI (US); **Wladimiro Villarroel**, Ypsilanti, MI (US); **Nuttawit Surittikul**, Bangkok (TH); **Masaru Shiina**, Kanagawa (JP); **Kwan-ho Lee**, Ann Arbor, MI (US)

(60) Provisional application No. 60/884,945, filed on Jan. 15, 2007.

Publication Classification

(51) **Int. Cl.**
H01Q 1/32 (2006.01)
H01Q 13/10 (2006.01)
H01Q 9/16 (2006.01)

(52) **U.S. Cl.** 343/713; 343/767; 343/793

(57) **ABSTRACT**

An antenna is integrated with a window of a vehicle primarily for operating in multiple cellular telephone frequency bands. The antenna includes a conductive area formed of conductive material defining a slot. The slot is dimensioned such that edges adjacent the slot radiate primarily in a first frequency band. The antenna also includes a conductive strip formed of conductive material extending from the conductive area. The conductive strip is dimensioned to radiate primarily in a second frequency band.

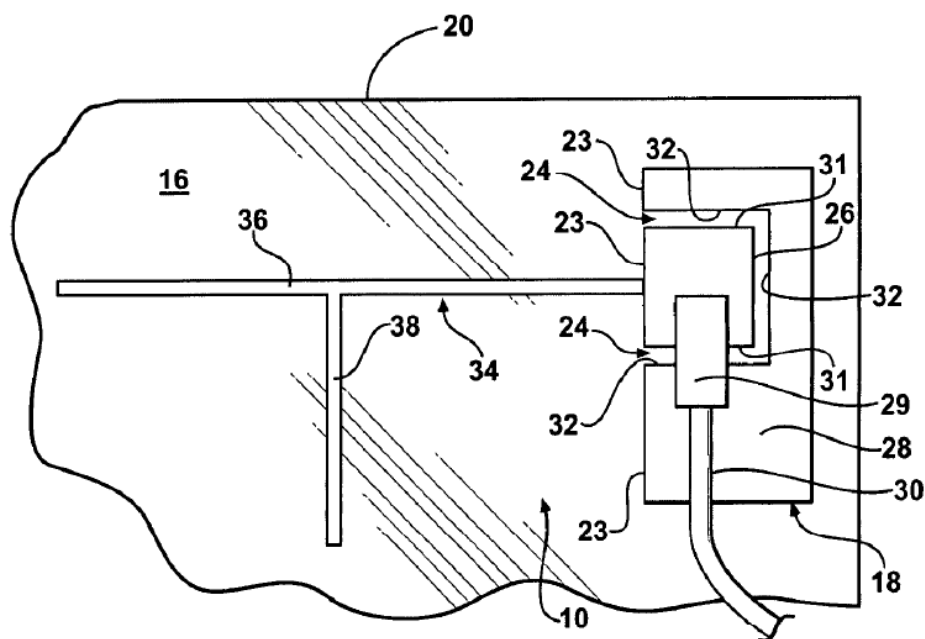
Correspondence Address:

**HOWARD & HOWARD ATTORNEYS, P.C.
THE PINEHURST OFFICE CENTER, SUITE
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BLOOMFIELD HILLS, MI 48304-5151**

(73) Assignee: **AGC AUTOMOTIVE
AMERICAS R&D, INC.,**
Ypsilanti, MI (US)

(21) Appl. No.: 11/874,733

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



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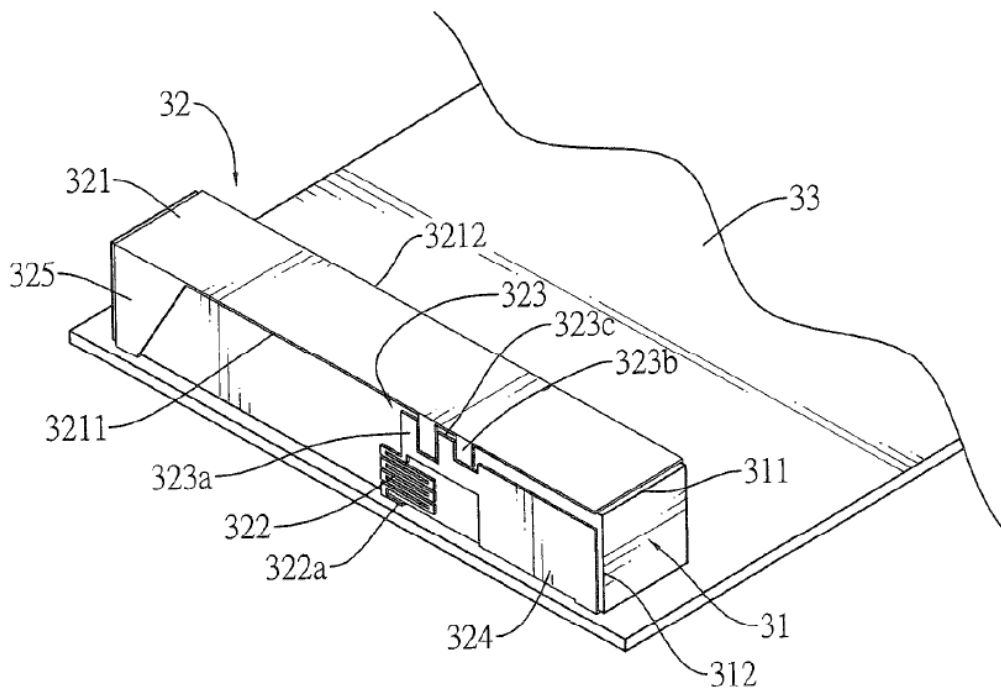
US 20080174496A1

(19) **United States**(12) **Patent Application Publication**
HSU et al.(10) **Pub. No.: US 2008/0174496 A1**(43) **Pub. Date: Jul. 24, 2008**(54) **WIDE BAND ANTENNA****Publication Classification**(76) Inventors: **Cheng-Hsuan HSU**, Hsin-Tien City (TW); **Sheng-Chih Lin**, Hsin-Tien City (TW); **Tsung-Wen Chiu**, Hsin-Tien City (TW); **Fu-Ren Hsiao**, Hsin-Tien City (TW)(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 9/04 (2006.01)(52) **U.S. Cl.** **343/700 MS**(57) **ABSTRACT**Correspondence Address:
Rabin & Berdo, P. C.
Suite 500, 1101 14th Street
Washington, DC 20005

A wide band antenna has a ground plane, a dielectric member and a radiating patch. The dielectric member is mounted on the ground plane. The radiating patch is held by the dielectric member, is mounted on the ground plane and has a main conductor, a feeding conductor, a coupling conductor, an extension conductor and a shorting conductor. The main conductor has a first resonant mode. The extension conductor has a second resonant mode. The coupling conductor is capable of feeding high frequency signals into the main conductor and the extension conductor by capacitive coupling effect. With the main conductor, the extension conductor and the coupling conductor, the size of the wide band antenna is effectively reduced.

(21) Appl. No.: **12/014,269**(22) Filed: **Jan. 15, 2008**(30) **Foreign Application Priority Data**

Jan. 19, 2007 (TW) 096102098



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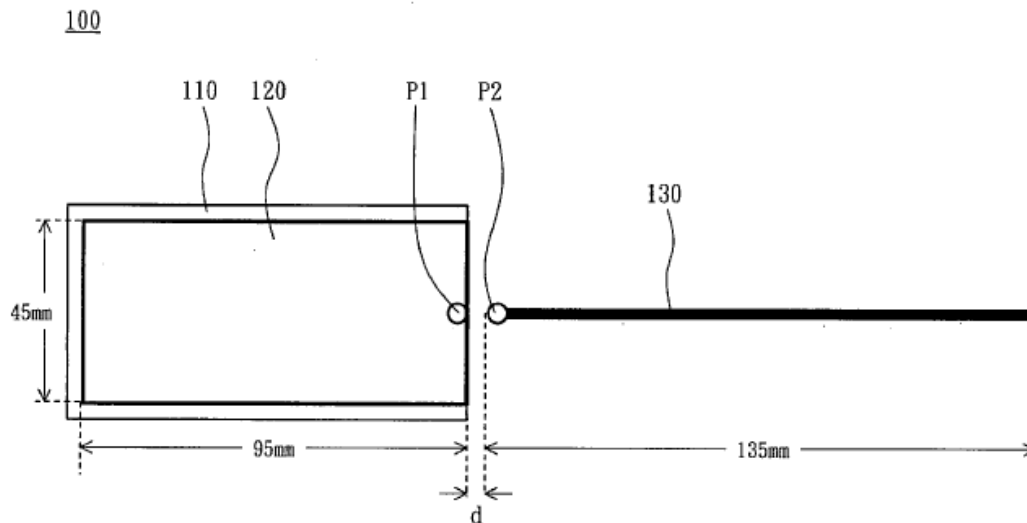
US 20080174499A1

(19) **United States**(12) **Patent Application Publication****Su et al.**(10) **Pub. No.: US 2008/0174499 A1**(43) **Pub. Date: Jul. 24, 2008**(54) **DIPOLE ANTENNA AND ELECTRONIC APPARATUS USING THE SAME**(75) Inventors: **Saou-Wen Su**, Taipei (TW);
Ter-Ming Tang, Taipei (TW);
Horng-Ming Tai, Taipei (TW)Correspondence Address:
BACON & THOMAS, PLLC
625 SLATERS LANE, FOURTH FLOOR
ALEXANDRIA, VA 22314(73) Assignee: **LITE-ON TECHNOLOGY CORPORATION**, Taipei (TW)(21) Appl. No.: **12/003,693**(22) Filed: **Dec. 31, 2007**(30) **Foreign Application Priority Data**

Jan. 18, 2007 (TW) 96101964

Publication Classification(51) **Int. Cl.**
H01Q 9/16 (2006.01)
H01Q 1/24 (2006.01)(52) **U.S. Cl.** **343/702; 343/795**(57) **ABSTRACT**

A dipole antenna includes a substrate, a radiating metal plate and a radiating metal line. The radiating metal plate is disposed on the substrate and has a first signal feeding point near a lateral side of the substrate. The radiating metal line has a second signal feeding point near the first signal feeding point.



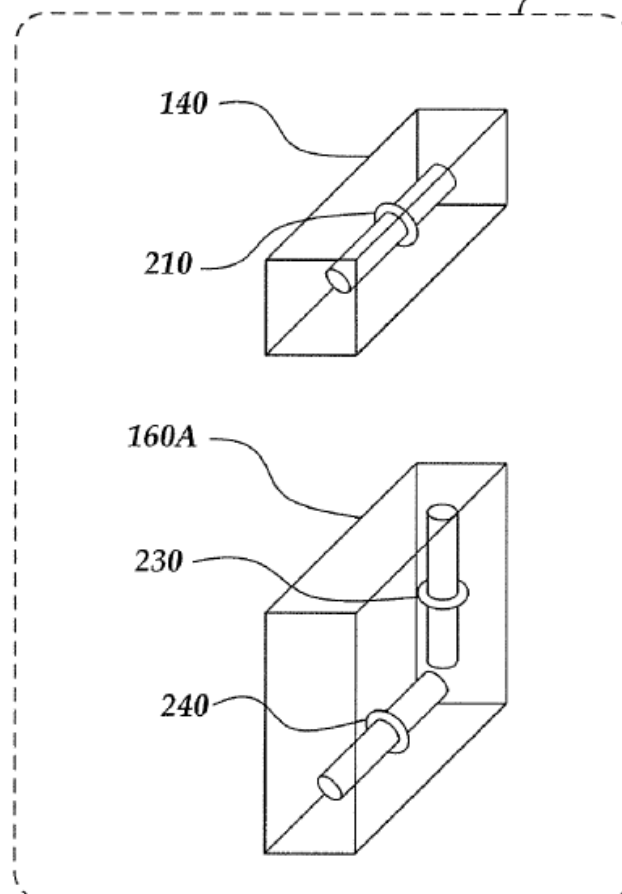
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US 20080174500A1

(19) **United States**(12) **Patent Application Publication**
Turner(10) **Pub. No.: US 2008/0174500 A1**(43) **Pub. Date: Jul. 24, 2008**(54) **MAGNETIC COMMUNICATION LINK WITH
DIVERSITY ANTENNAS****Publication Classification**(75) Inventor: **James Turner**, Snohomish, WA
(US)(51) **Int. Cl.**
H01Q 3/00 (2006.01)
H01Q 9/00 (2006.01)
G01R 29/08 (2006.01)
(52) **U.S. Cl.** **343/703; 343/757; 343/745**

Correspondence Address:

MERCHANT & GOULD (MICROSOFT)
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903(73) Assignee: **Microsoft Corporation**, Redmond,
WA (US)(21) Appl. No.: **11/626,262**(22) Filed: **Jan. 23, 2007****200**

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US 20080174501A1

(19) **United States**(12) **Patent Application Publication****Licul et al.**(10) **Pub. No.: US 2008/0174501 A1**(43) **Pub. Date: Jul. 24, 2008**(54) **METHOD AND APPARATUS FOR
QUADRIFILAR ANTENNA WITH OPEN
CIRCUIT ELEMENT TERMINATIONS**(76) Inventors: **Stanislav Licul**, Damascus, MD
(US); **Jeremy Marks**, Atlanta, GA
(US); **Warren L. Stutzman**,
Dublin, VA (US)

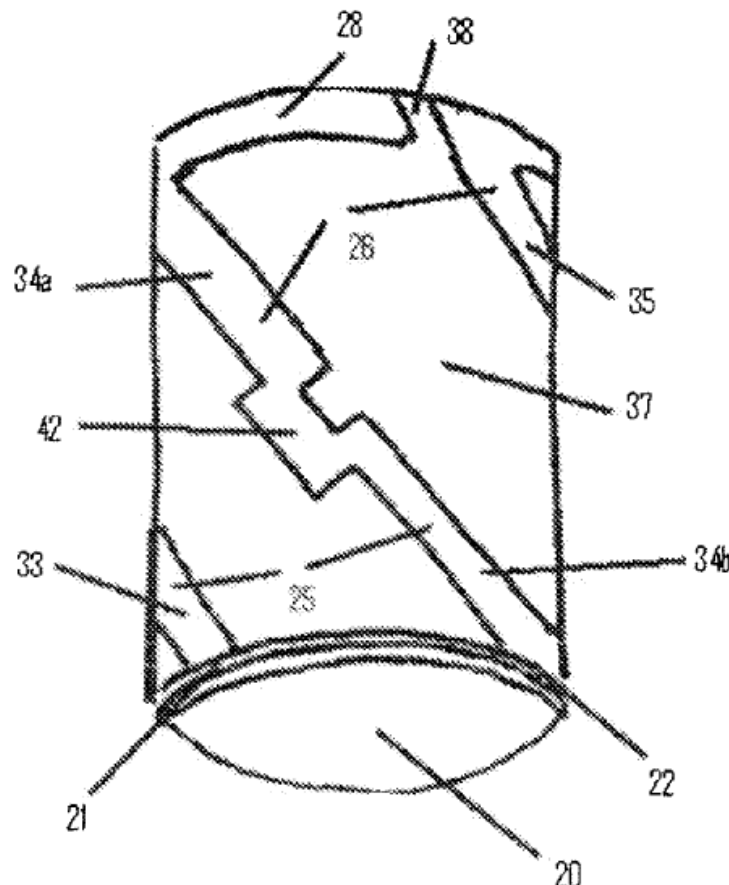
Correspondence Address:

**WHITHAM, CURTIS & CHRISTOFFERSON &
COOK, P.C.****11491 SUNSET HILLS ROAD, SUITE 340
RESTON, VA 20190**(21) Appl. No.: **11/952,461**(22) Filed: **Dec. 7, 2007****Related U.S. Application Data**(60) Provisional application No. 60/869,242, filed on Dec.
8, 2006.**Publication Classification**(51) **Int. Cl.****H01Q 1/36** (2006.01)**G01R 29/08** (2006.01)**H01Q 21/00** (2006.01)(52) **U.S. Cl.** **343/703; 343/895; 343/893**

(57)

ABSTRACT

A quadrifilar antenna having helical windings is fed by a phase shift feed network, each winding having an open circuit termination element, the phase shift feeding network having forward directional phase shift paths from a feed input to phase shift feed output ports, and having a first reverse directional transmission path from one or more of the phase shift feed output ports back to a first isolation port, and a second reverse directional transmission path from another one or more of the phase shift feed output ports back to a second isolation port, the first and second isolation ports isolated from the forward directional phase shift paths, and a differential termination impedance, floating from ground, connected the first and second isolation ports. Optionally, the differential termination impedance is frequency selective.



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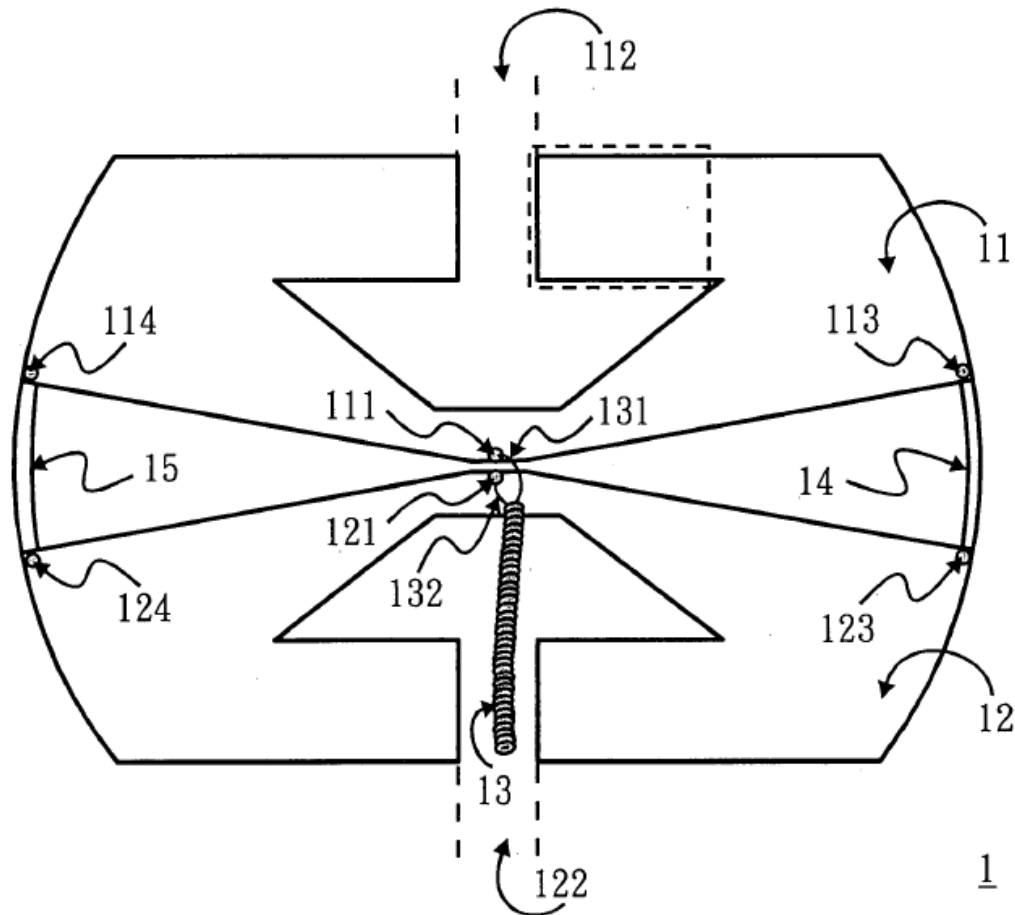
US 20080174505A1

(19) **United States**(12) **Patent Application Publication****Wong et al.**(10) **Pub. No.: US 2008/0174505 A1**(43) **Pub. Date: Jul. 24, 2008**(54) **ULTRA-WIDEBAND SHORTED DIPOLE ANTENNA**(75) Inventors: **Kin-Lu Wong**, Kaohsiung (TW);
Wei-Yu Li, Yilan (TW); **Saou-Wen Su**, Taipei (TW)Correspondence Address:
BACON & THOMAS, PLLC
625 SLATERS LANE, FOURTH FLOOR
ALEXANDRIA, VA 22314(73) Assignees: **NATIONAL SUN YAT-SEN UNIVERSITY**, Kaohsiung (TW);
LITE-ON TECHNOLOGY CORPORATION, Taipei (TW)(21) Appl. No.: **12/007,919**(22) Filed: **Jan. 17, 2008**(30) **Foreign Application Priority Data**

Jan. 18, 2007 (TW) 96101962

Publication Classification(51) **Int. Cl.**
H01Q 9/28 (2006.01)(52) **U.S. Cl.** **343/795**(57) **ABSTRACT**

An ultra-wideband shorted dipole antenna includes a coaxial cable line and first and second open-loop radiating metal plates with substantially the same shape. The coaxial cable line has a central conducting wire and an outer grounder sheath. The first and second open-loop radiating metal plates are symmetrically disposed on two sides of the antenna to form two arms of the antenna and are electrically connected to each other. Each of the first and second open-loop radiating metal plates has a signal feeding point electrically connected to the central conducting wire or the outer grounder sheath of the coaxial cable line.



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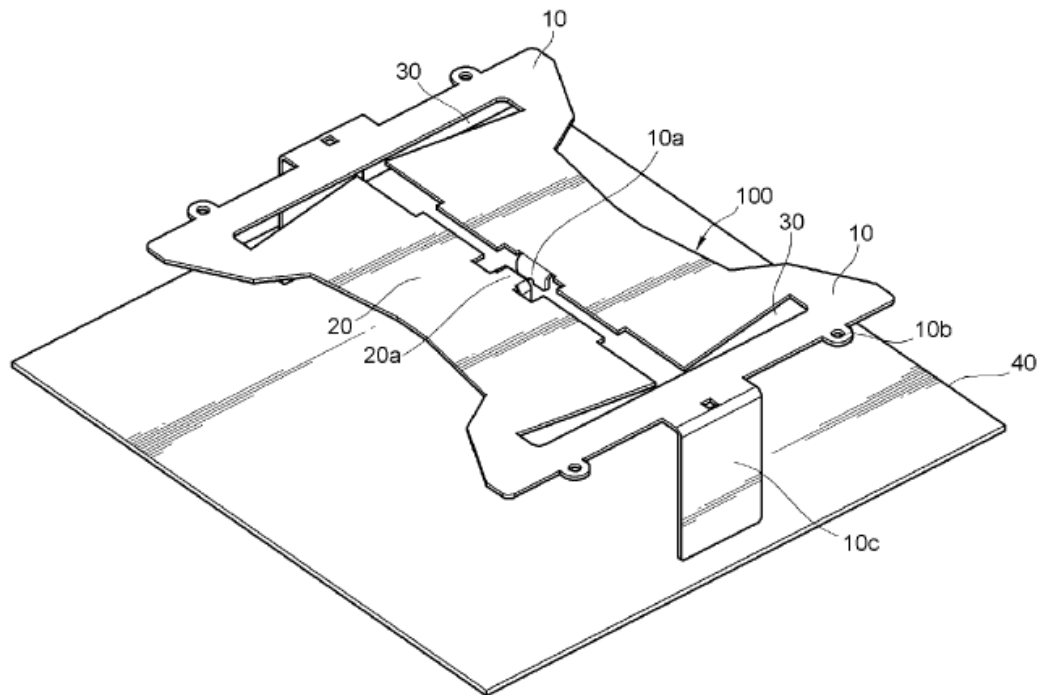
US 20080174506A1

(19) **United States**(12) **Patent Application Publication**
Jeng et al.(10) **Pub. No.: US 2008/0174506 A1**(43) **Pub. Date: Jul. 24, 2008**(54) **DIPOLE ARRAY DIRECTIONAL ANTENNA****Publication Classification**(75) Inventors: **Jr-Ren Jeng**, Taipei City (TW);
Mu-Kun Hsueh, Kaohsiung City
(TW)(51) **Int. Cl.**
H01Q 9/16 (2006.01)
H01Q 1/50 (2006.01)
H01Q 19/10 (2006.01)Correspondence Address:
WORKMAN NYDEGGER
60 EAST SOUTH TEMPLE, 1000 EAGLE GATE
TOWER
SALT LAKE CITY, UT 84111(52) **U.S. CL.** **343/822; 343/818**(73) Assignee: **SmartAnt Telecom Co., Ltd.**,
Jhudong Township (TW)(57) **ABSTRACT**(21) Appl. No.: **12/016,148**

A dipole array directional antenna is integrally formed. The antenna includes two radiation portions, having a signal feed-in part and a ground signal feed-in part there-between, in which the signal feed-in part receives a feed-in signal, and each radiation portion radiates a radio-frequency (RF) signal corresponding to the feed-in signal; a ground portion, formed at an area adjacent to the ground signal feed-in part, and electrically coupled to the radiation portions; and two slots, respectively opened between each radiation portion and the ground portion, for matching a line impedance of the dipole array directional antenna.

(22) Filed: **Jan. 17, 2008**(30) **Foreign Application Priority Data**

Jan. 19, 2007 (TW) 096201137



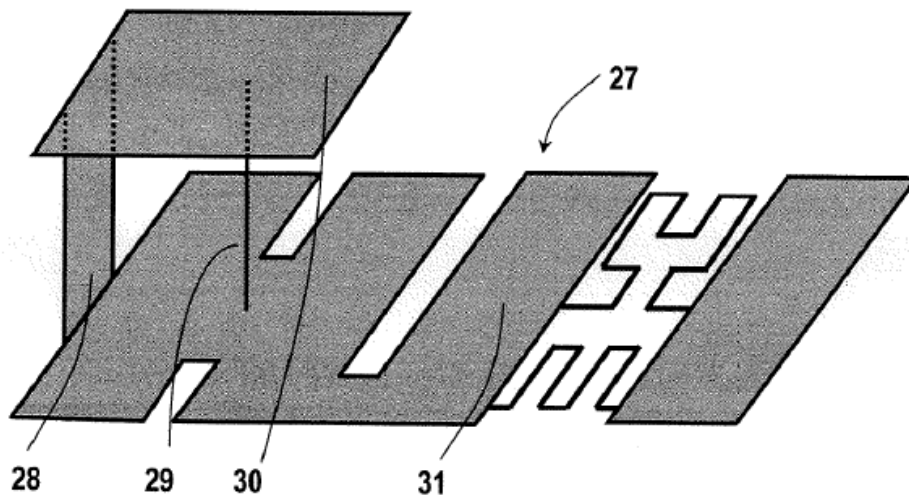
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US 20080174507A1

(19) **United States**(12) **Patent Application Publication****Illera et al.**(10) **Pub. No.: US 2008/0174507 A1**(43) **Pub. Date: Jul. 24, 2008**(54) **MULTILEVEL AND SPACE-FILLING
GROUND-PLANES FOR MINIATURE AND
MULTIBAND ANTENNAS**(76) Inventors: **Ramiro Quintero Illera**, Barcelona
(ES); **Carles Puente Baliarda**,
Barcelona (ES)Correspondence Address:
WINSTEAD PC
P.O. BOX 50784
DALLAS, TX 75201(21) Appl. No.: **12/033,446**(22) Filed: **Feb. 19, 2008****Related U.S. Application Data**(63) Continuation of application No. 10/797,732, filed on
Mar. 10, 2004, now Pat. No. 7,362,283, which is a
continuation of application No. PCT/EP01/10589,
filed on Sep. 13, 2001.**Publication Classification**(51) **Int. Cl.**
H01Q 1/48 (2006.01)
H01Q 9/04 (2006.01)(52) **U.S. Cl.** **343/846; 343/700 MS**(57) **ABSTRACT**

An antenna system includes one or more conductive elements acting as radiating elements, and a multilevel or space-filling ground-plane, wherein said ground-plane has a particular geometry which affects the operating characteristics of the antenna. The return loss, bandwidth, gain, radiation efficiency, and frequency performance can be controlled through multilevel and space-filling ground-plane design. Also, said ground-plane can be reduced compared to those of antennas with solid ground-planes.



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US 20080174511A1

(19) **United States**(12) **Patent Application Publication****KIM et al.**(10) **Pub. No.: US 2008/0174511 A1**(43) **Pub. Date: Jul. 24, 2008**

(54) **PCB AND EMBEDDED ANTENNA FOR
MOBILE COMMUNICATION TERMINAL
HAVING DOUBLE FEED POINTS USING THE
SAME**

(75) Inventors: **Chi Sun KIM**, Seongnam-si (KR);
Chang Won Jang, Suwon-si (KR)

Correspondence Address:
THE FARRELL LAW FIRM, P.C.
**333 EARLE OVINGTON BOULEVARD, SUITE
701**
UNIONDALE, NY 11553

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

(21) Appl. No.: **11/935,231**

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

(30) **Foreign Application Priority Data**

Nov. 6, 2006 (KR) 2006-0108975

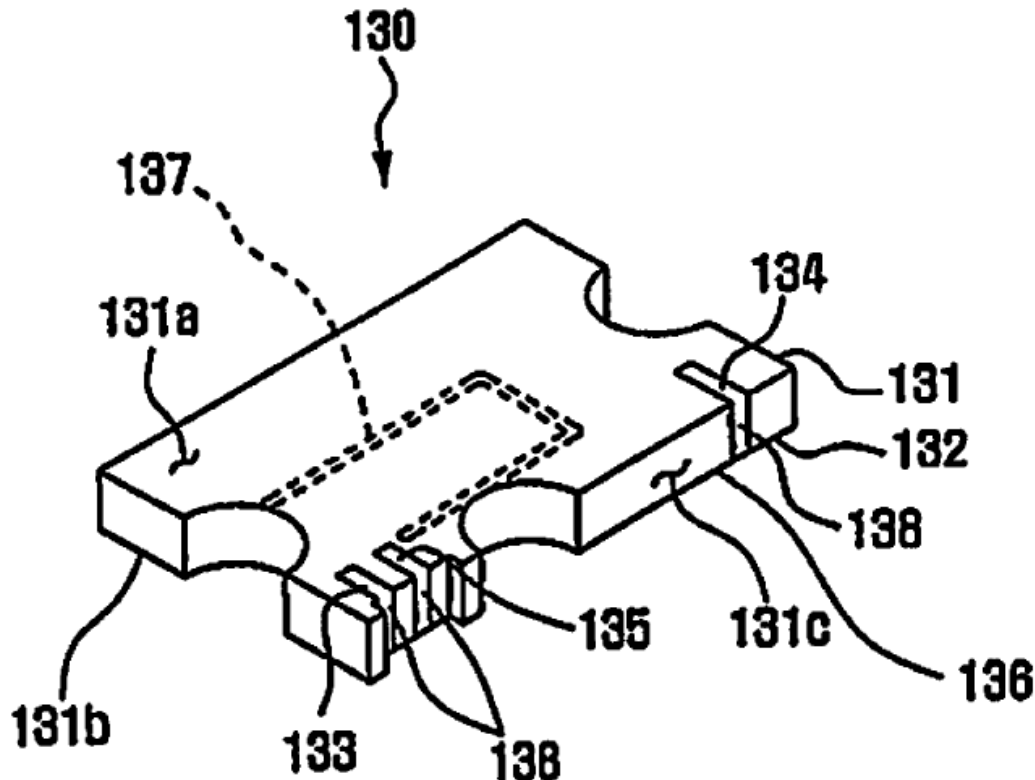
Publication Classification

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

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

(57) **ABSTRACT**

A Printed Circuit Board (PCB) and an embedded antenna for a mobile communication terminal having double feed points using the same are provided. The embedded antenna includes a PCB having an emission carrier. The emission carrier includes first and second feed points connected to a feed wiring layer of the PCB, as well as an emission pattern to which the feed points are connected. The feed wiring layer supplies a current to one of the feed points, and has a connection wiring for supplying a current from the feed point to the other feed point. Through overlapping between a first resonance spot created by the first feed point, and a second resonance spot, which branches off from the first feed point and connects to the PCB, the frequency bandwidth can be expanded, which accommodates any frequency shift minimizes deterioration resulting from the influence of human bodies, and maintains stable antenna characteristics.



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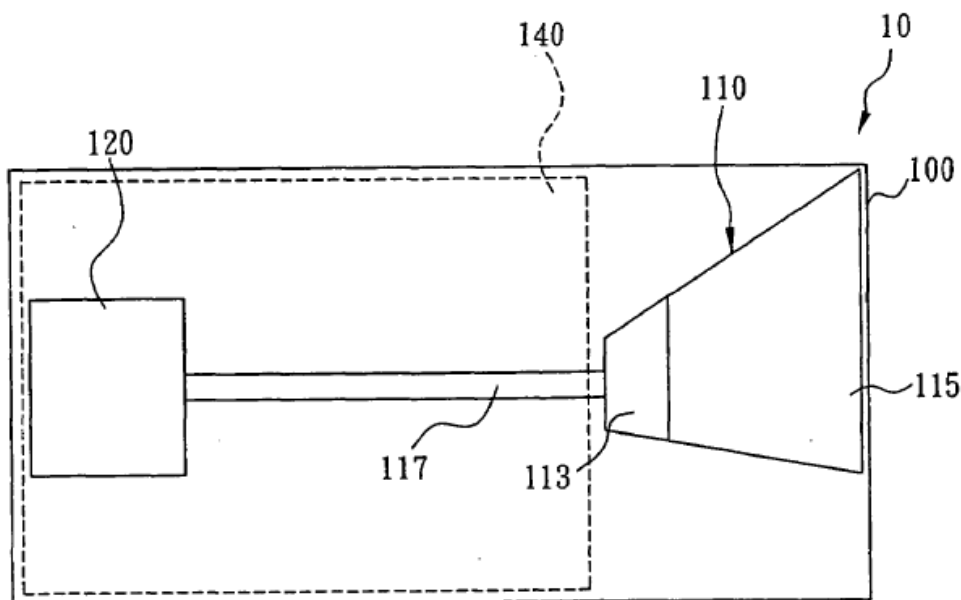
US 20080180326A1

(19) **United States**(12) **Patent Application Publication**
Chen(10) **Pub. No.: US 2008/0180326 A1**(43) **Pub. Date: Jul. 31, 2008**(54) **PENDULUM-SHAPED MICROSTRIP
ANTENNA STRUCTURE**(52) **U.S. CL. 343/700 MS**(75) **Inventor: Po-Chuan Chen, Hsinchu (TW)**(57) **ABSTRACT**

Correspondence Address:
WPAT, PC
7225 BEVERLY ST.
ANNANDALE, VA 22003

(73) **Assignee: Alpha Networks Inc., Hsinchu
(TW)**(21) **Appl. No.: 11/699,384**(22) **Filed: Jan. 30, 2007****Publication Classification**(51) **Int. Cl.**
H01Q 1/38 (2006.01)
H01Q 9/04 (2006.01)

The present invention discloses a pendulum-shaped microstrip antenna structure which is manufactured in form of a metal microstrip on a side of the printed circuit board and installed at a distal end of the printed circuit board, when the pendulum-shaped antenna is installed onto a printed circuit board of a wireless electronic product. The pendulum-shaped microstrip antenna structure includes a signal feeding portion and an antenna portion sequentially installed in the direction from the printed circuit board to its distal end, and the pendulum-shaped antenna is extended outward, so that a current transmitted from the pendulum-shaped antenna can be distributed uniformly onto the signal feeding portion and the antenna portion to achieve the effects of improving the bandwidth of the pendulum-shaped antenna, reducing the feeding inductance, and providing sufficient bandwidth for the antenna.



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US 20080180327A1

(19) **United States**(12) **Patent Application Publication****Lin et al.**(10) **Pub. No.: US 2008/0180327 A1**(43) **Pub. Date: Jul. 31, 2008**(54) **INTEGRATED MULTI-BAND ANTENNA**(52) **U.S. CL. 343/700 MS**

(76) Inventors: **Ching-chi Lin**, Tu-Cheng City (TW); **Kai Shih**, Tu-Cheng City (TW); **Yu-yuan Wu**, Tu-Cheng city (TW); **Jia-hung Su**, Tu-Cheng City (TW)

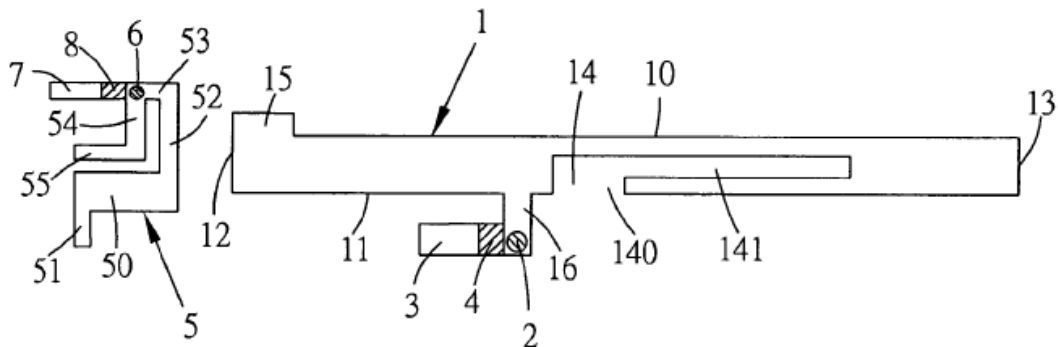
Correspondence Address:
ROSENBERG, KLEIN & LEE
3458 ELLICOTT CENTER DRIVE-SUITE 101
ELLICOTT CITY, MD 21043

(21) Appl. No.: **11/699,465**(22) Filed: **Jan. 30, 2007****Publication Classification**

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

(57) **ABSTRACT**

An integrated multi-band antenna has a first radiating element and a second radiating element. The first radiating element has a slot and a feeding conductor having a first feeding point. A first ground portion is arranged to close to the feeding conductor. The second radiating element has a first radiating segment, a second radiating segment extending from one end of the first radiating segment, a third, a fourth, a fifth and a sixth radiating segments connecting end to end in sequence wherein one end of the third radiating segment connects to the other end of the first radiating segment, and one end of the sixth radiating segment remains free. A second feeding point is arranged at the corner between the fourth and fifth radiating segments. A second ground portion is arranged to close to the corner. Operation of the integrated multi-band antenna can obtain various wireless communication bands.

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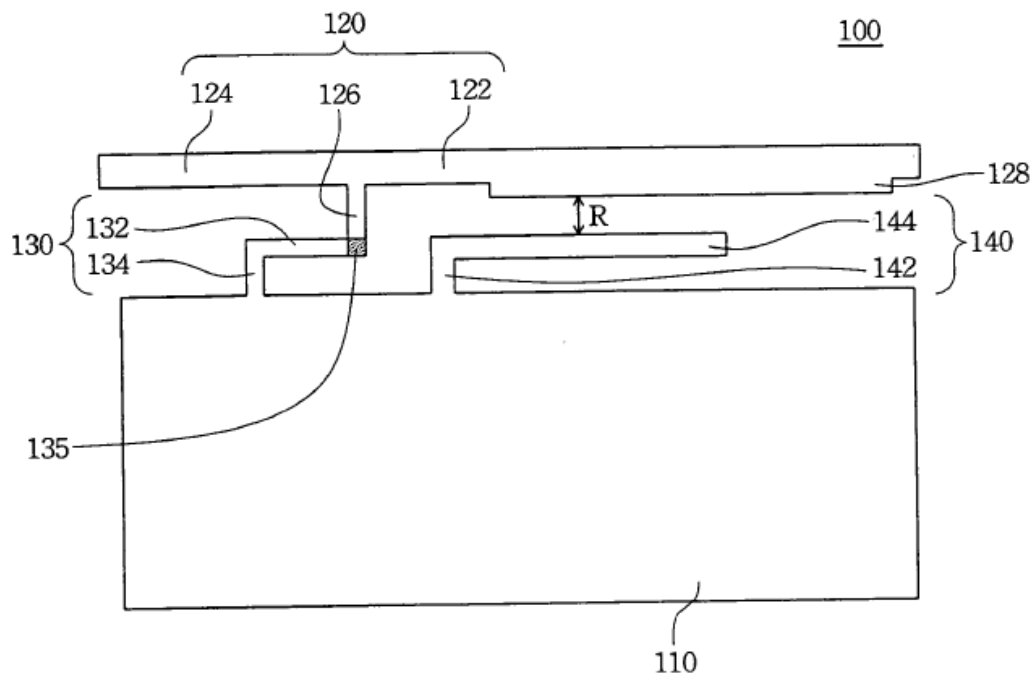
US 20080180330A1

(19) **United States**(12) **Patent Application Publication**
Wei-Shan et al.(10) **Pub. No.: US 2008/0180330 A1**(43) **Pub. Date: Jul. 31, 2008**(54) **MULTI-BAND ANTENNA****Publication Classification**(75) Inventors: **Chang Wei-Shan**, Taipei Hsien
(TW); **Wang Chih-Ming**, Taipei
Hsien (TW); **Cheng Pi-Hsi**, Taipei
Hsien (TW)(51) **Int. Cl.**
H01Q 9/04 (2006.01)(52) **U.S. Cl.** **343/700 MS**(57) **ABSTRACT**Correspondence Address:
Joe McKinney Muncy
PO Box 1364
Fairfax, VA 22038-1364

A multi-band antenna includes a ground, an asymmetric T-shaped radiation element, an inverted L-shaped conduction element, and a parasitic element. The asymmetric T-shaped radiation element has a first radiation part, a second radiation part, and a first conduction part. The length of the second radiation part is shorter than that of the first radiation part. The inverted L-shaped conduction element has a second conduction part and a third conduction part. The second conduction part is connected to the first conduction part, and arranged between the second radiation part and the ground. The parasitic element has a fourth conduction part and a third radiation part. The fourth conduction part is connected approximately perpendicular to the ground. The third radiation part is arranged between the first radiation part and the ground.

(73) Assignee: **Wistron NeWeb Corp.**(21) Appl. No.: **12/003,447**(22) Filed: **Dec. 26, 2007**(30) **Foreign Application Priority Data**

Jan. 25, 2007 (TW) 96201502



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US 20080180332A1

(19) **United States**(12) **Patent Application Publication**
NORO et al.(10) **Pub. No.: US 2008/0180332 A1**(43) **Pub. Date: Jul. 31, 2008**(54) **ANTENNA DEVICE****Publication Classification**(76) Inventors: **Junichi NORO**, Akita (JP); **Satoshi Kohno**, Akita (JP)(51) **Int. Cl.**
H01Q 1/32 (2006.01)
(52) **U.S. Cl.** **343/713**

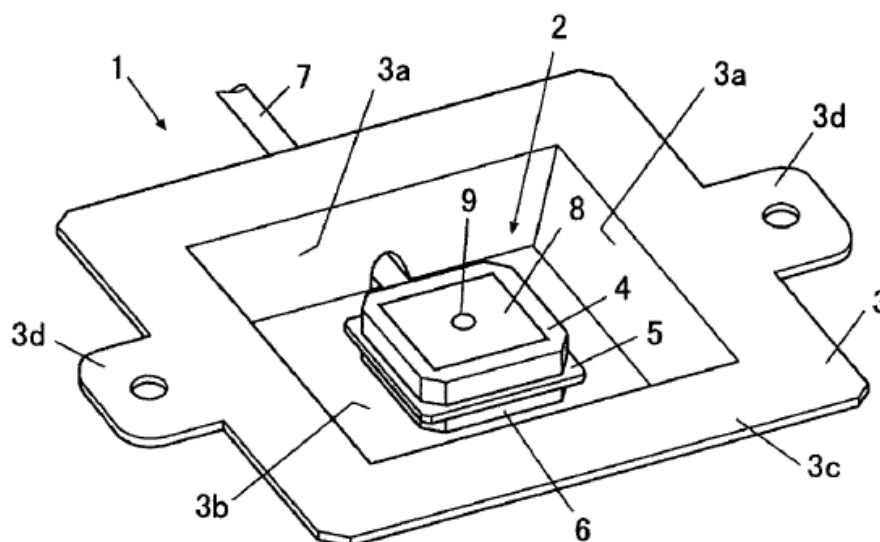
Correspondence Address:

WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.**11491 SUNSET HILLS ROAD, SUITE 340**
RESTON, VA 20190(57) **ABSTRACT**

An antenna device attachable to a bottom surface of a resin or glass body of a vehicle, the antenna device includes: an antenna element that has a receiver for receiving radio waves; a circuit board that has a circuit surface having a circuit formed thereon to amplify signals inputted from the antenna element; a shield cover that covers the circuit surface of the circuit board to shield the circuit from interference waves and that is grounded; a coaxial cable that is inserted into the shield cover, that supplies a driving power to the circuit formed on the circuit board, that connects the circuit to a GND, and that outputs signals from the circuit; and a metallic bracket that has a lateral wall surrounding a lateral side of the antenna element and a bottom wall supporting a bottom of the antenna element.

(21) Appl. No.: **11/954,326**(22) Filed: **Dec. 12, 2007**(30) **Foreign Application Priority Data**

Jan. 25, 2007 (JP) P2007-014800



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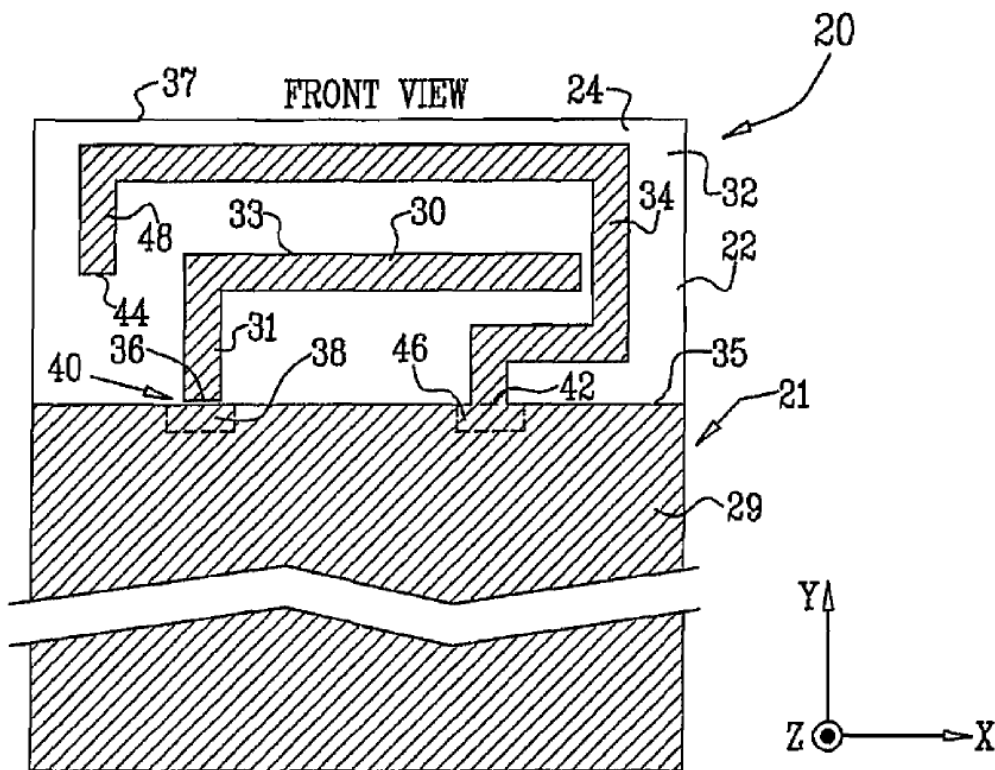
US 20080180333A1

(19) **United States**(12) **Patent Application Publication**
Martiskainen et al.(10) **Pub. No.: US 2008/0180333 A1**(43) **Pub. Date: Jul. 31, 2008**(54) **COMPACT ANTENNA****Related U.S. Application Data**(75) Inventors: **Matti Martiskainen**, Tiberias (IL);
Daniel Cho, Kyung Ki-Do (KR);
Steve Krupa, Cambridge (GB);
Snir Azulay, Tiberias (IL); **Yona Haim**, Tiberias (IL)

(60) Provisional application No. 60/859,629, filed on Nov. 16, 2006.

Publication Classification(51) **Int. Cl.**
H01Q 1/50 (2006.01)
H01P 11/00 (2006.01)
H01Q 9/04 (2006.01)
(52) **U.S. Cl.** **343/722; 29/600; 343/700 MS**Correspondence Address:
DARBY & DARBY P.C.
P.O. BOX 770, Church Street Station
New York, NY 10008-0770(57) **ABSTRACT**

An antenna, including a planar dielectric substrate and a conductive ground plane formed on the substrate. A conductive monopole is formed on the substrate and has an end point located in proximity to a feed region of the ground plane. A conductive coupling element is formed on the substrate and is coupled to the ground plane at a coupling region of the ground plane. The coupling element is folded around the monopole.

(73) Assignee: **Galtronics Ltd.**, Tiberias (IL)(21) Appl. No.: **11/940,959**(22) Filed: **Nov. 15, 2007**

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US 20080180339A1

(19) **United States**(12) **Patent Application Publication**
Yagi(10) **Pub. No.: US 2008/0180339 A1**(43) **Pub. Date: Jul. 31, 2008**(54) **PLANE CIRCULAR POLARIZATION
ANTENNA AND ELECTRONIC APPARATUS**(30) **Foreign Application Priority Data**

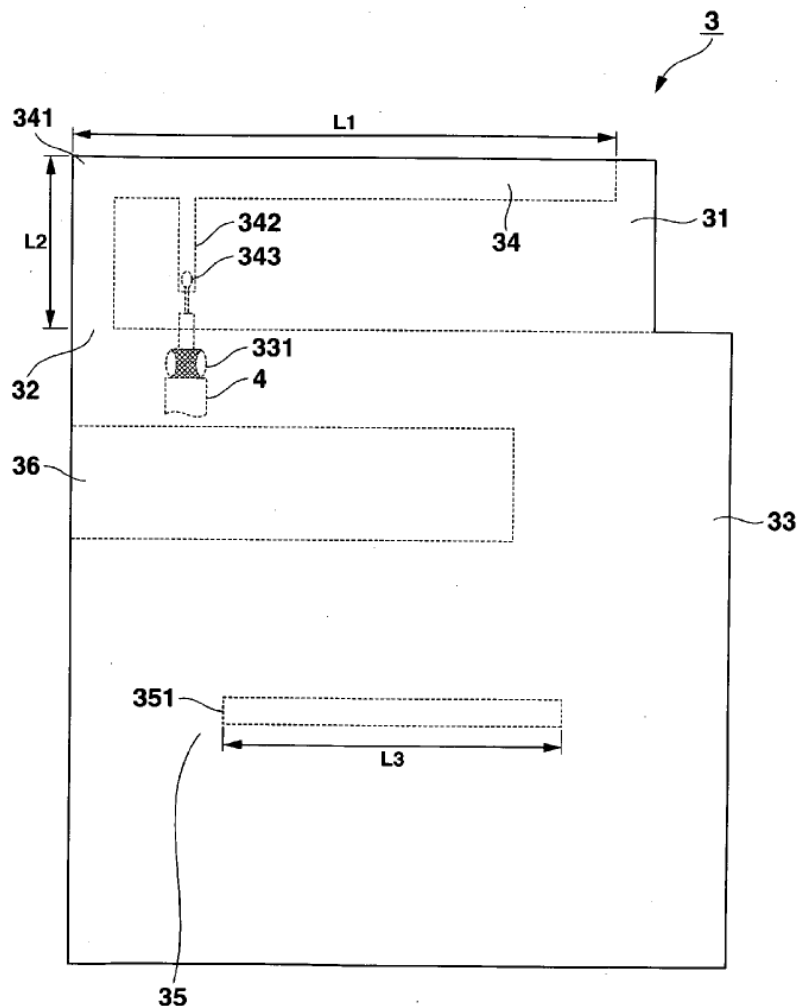
Jan. 31, 2007 (JP) 2007-021301

(75) **Inventor: Shigeru Yagi, Tokyo (JP)****Publication Classification**

Correspondence Address:

FRISHAUF, HOLTZ, GOODMAN & CHICK, PC
220 Fifth Avenue, 16TH Floor
NEW YORK, NY 10001-7708(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01Q 13/10 (2006.01)(52) **U.S. Cl.** 343/767; 343/700 MS(57) **ABSTRACT**(73) **Assignee: Casio Computer Co., Ltd., Tokyo (JP)**

According to an embodiment, a plane circular polarization antenna comprises a flat insulating substrate and a conductor provided on the flat insulating substrate. The conductor comprises an inverted F antenna including a feeding point, a ground portion, the ground portion including a slot antenna including a slot, and a short-circuiting portion provided in a part of an area between the inverted F antenna and the slot antenna.

(21) **Appl. No.: 12/011,952**(22) **Filed: Jan. 30, 2008**

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US 20080180342A1

(19) **United States**(12) **Patent Application Publication**
Kerselaers(10) **Pub. No.: US 2008/0180342 A1**(43) **Pub. Date: Jul. 31, 2008**(54) **WIRELESS LINK MODULE COMPRISING
TWO ANTENNAS**(30) **Foreign Application Priority Data**

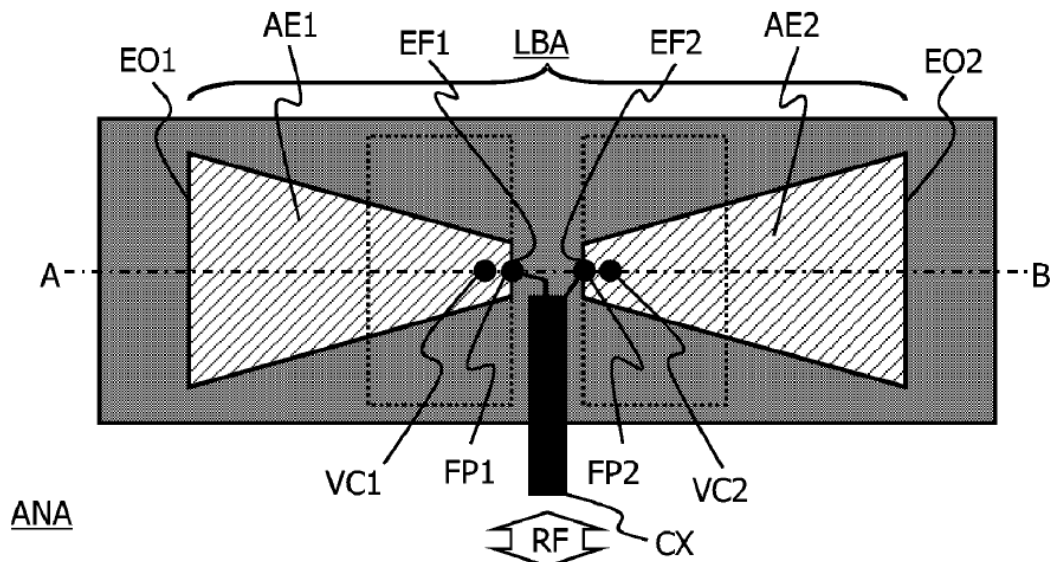
Apr. 25, 2005 (EP) 05103313.2

(75) Inventor: **Anthony Kerselaers, Herstelt (BE)****Publication Classification**

Correspondence Address:

**PHILIPS INTELLECTUAL PROPERTY &
STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510**(51) **Int. Cl.**
H01Q 5/00 (2006.01)
H01Q 9/28 (2006.01)(52) **U.S. Cl. 343/795**(73) Assignee: **KONINKLIJKE PHILIPS
ELECTRONICS, N.V.,
EINDHOVEN (NL)**(57) **ABSTRACT**(21) Appl. No.: **11/912,311**(22) PCT Filed: **Apr. 19, 2006**(86) PCT No.: **PCT/IB06/51204**§ 371 (c)(1),
(2), (4) Date:**Oct. 23, 2007**

A wireless link module comprises a lower band antenna (LBA) and a higher band antenna (HBA). Each of these antennas comprises an antenna element (AE) with a feeding end (FE) and an open end (OE). The respective antenna elements (AE1, AE3) are substantially capacitively coupled. In addition, the respective antenna elements (AE1, AE3) are electrically coupled at the respective feeding ends (FE1, FE3) via an antenna coupling short (VC1).



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US 20080180343A1

(19) **United States**(12) **Patent Application Publication**
Lin(10) **Pub. No.: US 2008/0180343 A1**(43) **Pub. Date: Jul. 31, 2008**(54) **MULTI-BROAD BAND ANTENNA AND
ELECTRONIC DEVICE THEREOF****Publication Classification**(51) **Int. Cl.**
H01Q 9/04 (2006.01)
H01Q 1/52 (2006.01)
(52) **U.S. Cl.** **343/841; 343/700 MS**(57) **ABSTRACT**

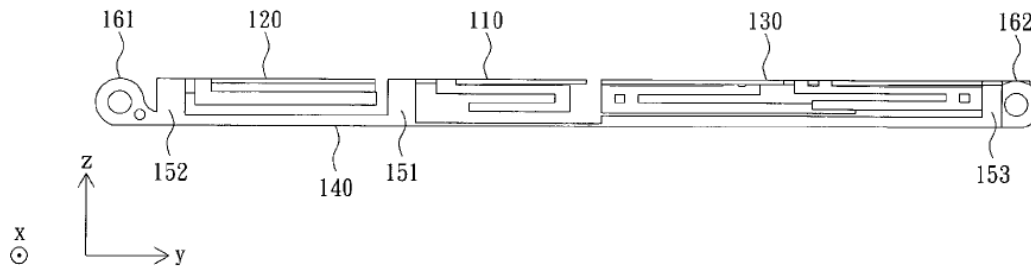
A multi-broad band antenna including a first radiating body, a second radiating body, a third radiating body, a grounding plate and many short-circuit elements is provided. The first radiating body excites a first resonant mode, such that the multi-broad band antenna has a high frequency wide bandwidth. The second radiating body excites a second resonant mode, such that the multi-broad band antenna has a middle frequency wide bandwidth. The third radiating body excites a third resonant mode, such that the multi-broad band antenna has a low frequency wide bandwidth. A number of short-circuit elements connect the first radiating body, the second radiating body and the third radiating body to the grounding plate respectively. The radiation patterns of the first resonant mode, the second resonant mode and the third resonant mode do not disturb each other.

(75) Inventor: **Hui Lin, Taoyuan 338 (TW)**

Correspondence Address:

RABIN & Berdo, PC
1101 14TH STREET, NW, SUITE 500
WASHINGTON, DC 20005(73) Assignee: **Quanta Computer Inc., Tao Yuan
Shien (TW)**(21) Appl. No.: **11/892,730**(22) Filed: **Aug. 27, 2007**(30) **Foreign Application Priority Data**

Jan. 30, 2007 (TW) 096103427

100 The multi-broad band antenna

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US 20080180344A1

(19) **United States**

(12) **Patent Application Publication**
YING

(10) **Pub. No.: US 2008/0180344 A1**

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

(54) **ANTENNA FOR A PEN-SHAPED MOBILE PHONE**

Publication Classification

(75) Inventor: **Zhinong YING, Lund (SE)**

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

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

Correspondence Address:

HARRITY SNYDER, L.L.P.
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FAIRFAX, VA 22030

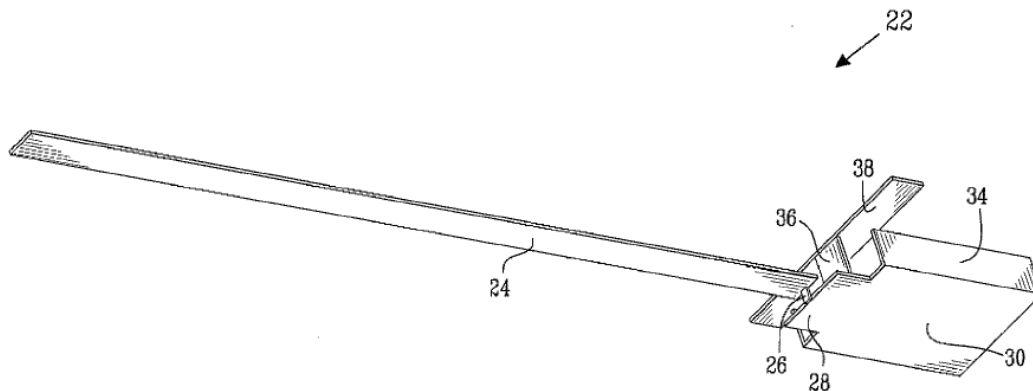
(57) **ABSTRACT**

(73) Assignee: **SONY ERICSSON MOBILE COMMUNICATIONS AB, Lund (SE)**

The present invention relates to an antenna arrangement for a thin elongated portable communication device as well as to a thin elongated portable communication device including such an antenna arrangement. The antenna arrangement may include a thin elongated ground plane, and a flat monopole radiating antenna element, the flat monopole radiating antenna element having a three-dimensional extension, being provided spaced from the ground plane along a longitudinal axis of the ground plane and encircling more than half of the longitudinal axis of the ground plane.

(21) Appl. No.: **11/627,471**

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



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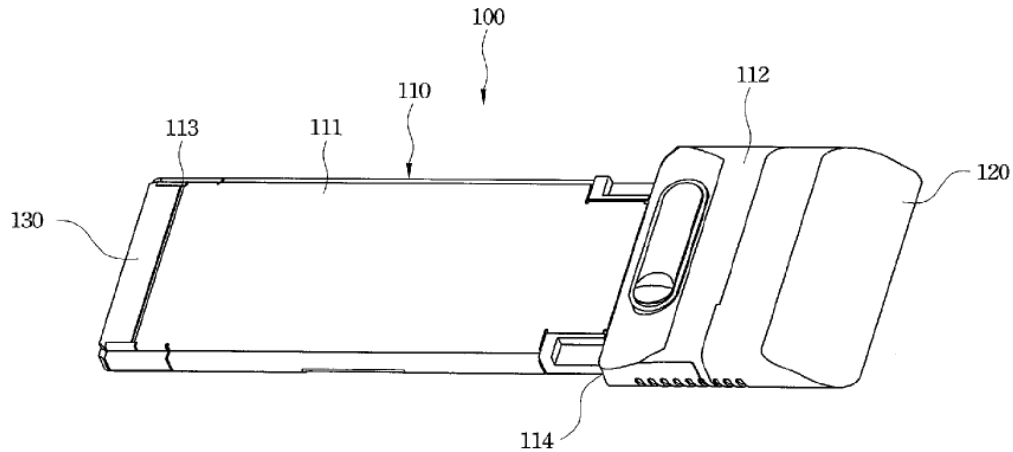
US 20080180348A1

(19) **United States**(12) **Patent Application Publication**
Hsu(10) **Pub. No.: US 2008/0180348 A1**(43) **Pub. Date: Jul. 31, 2008**(54) **WIRELESS CARD AND ADJUSTABLE
ANTENNA OF THE SAME****Publication Classification**(75) **Inventor: Gary Hsu, Linkou Township (TW)**(51) **Int. Cl.**
H01Q 1/42 (2006.01)
H01Q 1/40 (2006.01)
(52) **U.S. Cl.** **343/873**

Correspondence Address:

**THOMAS, KAYDEN, HORSTEMEYER & RIS-
LEY, LLP**
600 GALLERIA PARKWAY, S.E., STE 1500
ATLANTA, GA 30339-5994(57) **ABSTRACT**(73) **Assignee: BANDRICH INC., Sindian City
(TW)**

A wireless card includes a body, a circuit device and an adjustable antenna assembly. The body includes an insertion portion and an outer portion. The outer portion is connected to an end of the insertion portion. The circuit device is mounted inside the body. The adjustable antenna is adjustably mounted in the outer portion and includes an antenna module. The antenna module includes an inner base, an antenna, at least two molding supporting members and an outer casing. The antenna is attached to the inner base and connected electrically to the circuit device. The molding supporting members are formed on the inner base. The outer casing encapsulates the inner base with the antenna with embedded molding.

(21) **Appl. No.: 11/669,475**(22) **Filed: Jan. 31, 2007**

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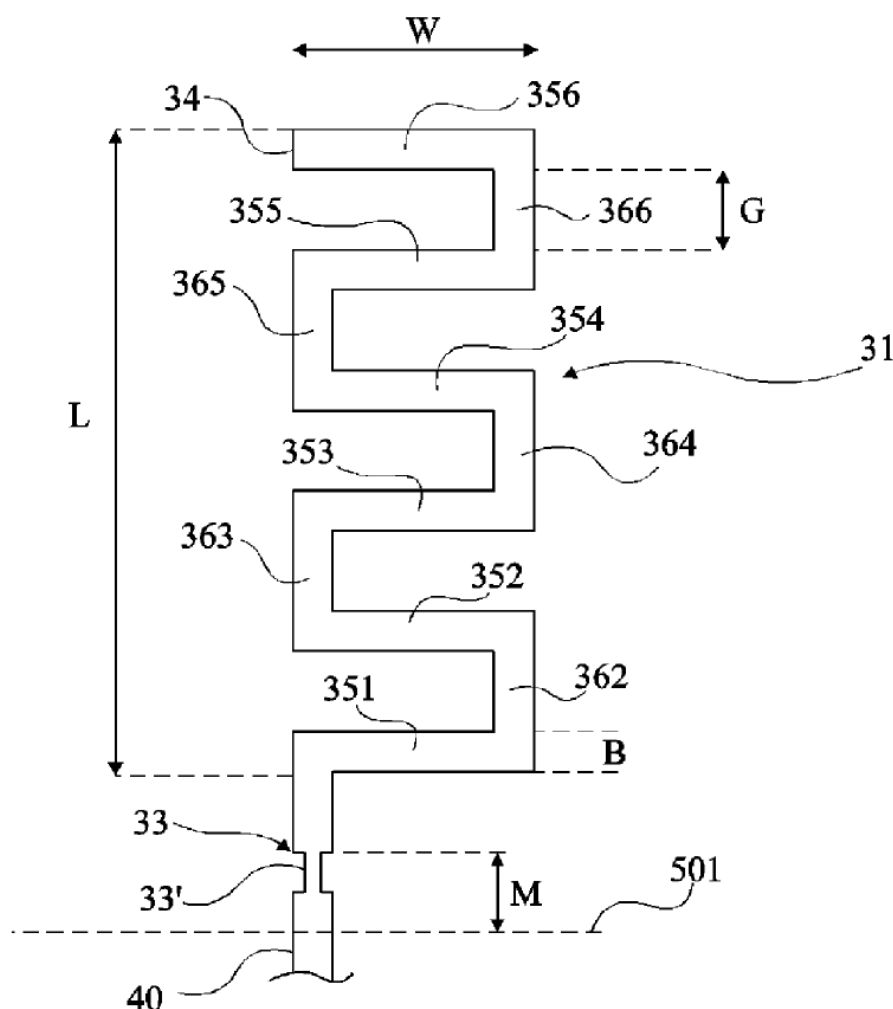
US 20080180350A1

(19) **United States**(12) **Patent Application Publication****Bonnet et al.**(10) **Pub. No.: US 2008/0180350 A1**(43) **Pub. Date: Jul. 31, 2008**(54) **BROADBAND ANTENNA**(30) **Foreign Application Priority Data**(75) Inventors: **Benoit Bonnet**, Tours (FR);
Francois Dupont, Tours (FR)

Jan. 31, 2007 (FR) FR 07/52990

Publication ClassificationCorrespondence Address:
STMicroelectronics Inc.
c/o WOLF, GREENFIELD & SACKS, P.C.
600 Atlantic Avenue
BOSTON, MA 02210-2206(51) **Int. Cl.**
H01Q 1/36 (2006.01)(52) **U.S. Cl.** **343/895**(57) **ABSTRACT**

An antenna including a planar conductive track, which follows, from a first end intended to be connected to a radiofrequency transceiver circuit to a second free end, a serpentine-shaped pattern having at least three primary parallel sections of the same length, connected, except for a first one and for a last one, by their respective ends to one of the ends of a preceding section and of a next section by secondary rectilinear sections having the same length, perpendicular to the primary sections.

(73) Assignee: **STMicroelectronics S.A.**,
Montrouge (FR)(21) Appl. No.: **12/021,656**(22) Filed: **Jan. 29, 2008**

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