

Compact Ultra Wideband Antenna

Background

Transmitting over more of the electromagnetic spectrum using only a single antenna features strongly in modern communication system requirements. There is a need to operate on many, or all, of the radio frequency spectrums used in modern civil and defence communication applications. They need to be: compact, conformal, lightweight and robust; having an omnidirectional radiation pattern, preferably over the entire impedance match bandwidth, and the potential to cover the ultra-wideband (UWB) frequency spectrums in the 20MHz – 6.0GHz region.

Technology

Two new forms of (UWB) antenna have been developed that are electrically small, lightweight, low-cost and compact and based on a simple novel antenna design. The UWB antennas have an omnidirectional radiation pattern over a large part of the frequency bandwidth with improved radiation efficiency. Both antennas can be physically scaled to operate in lower or higher frequency bands.

A significant feature of the design of the Compact UWB antennas is that their electrical feeder line is not physically connected to the “top-hat” radiator disk, and the feed is a coaxial-to-coaxial transmission line with aperture coupling to the outer antenna shell.

Applications

- Suitable for GPS, GSM, WLA, CNR, GPS, DF, EW, JTRS applications.
- Antennas suited for Wi-Fi; Wi-Max; Bluetooth; GPS; High Definition TV and DVD Video; Cell Phones; 3G; Digital Radio and others including Wi-PlADs incorporated in UWB chip-sets.
- Military and commercial Tx/Rx UWB antennas
- Direction finding Antenna Group

Benefits

- Frequency Range Ant.1: 2.1GHz–5.1GHz; Ant.2: 100MHz–6.0GHz
- Antenna #1 Radiation efficiency; >95% @ 2.1 GHz; >95% @ 3.5 GHz; >95% @ 5.1 GHz
- Antenna #1 is electrically small with 2cm diameter, 1.5cm high, weight 100g
- Tx/Rx Return Loss - Simultaneous, 40 W RMS, 100% duty cycle
- Peak Power Handling Capability up to 1.5 kW
- Polarisation - Linear, E-field Vertical
- Radiation pattern - Azimuth omni-direction 3dB; Elevation >50% power delivered within 10° of horizontal all frequencies
- Nominal Impedance – Antenna #1 & #2 = 50 Ω

Intellectual Property

Patent: GB/0909877.3 & GB/0909878.1

Licensing & Partnering Opportunity

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