

WB-Core™ ULTRA Antenna (600-1400MHz)

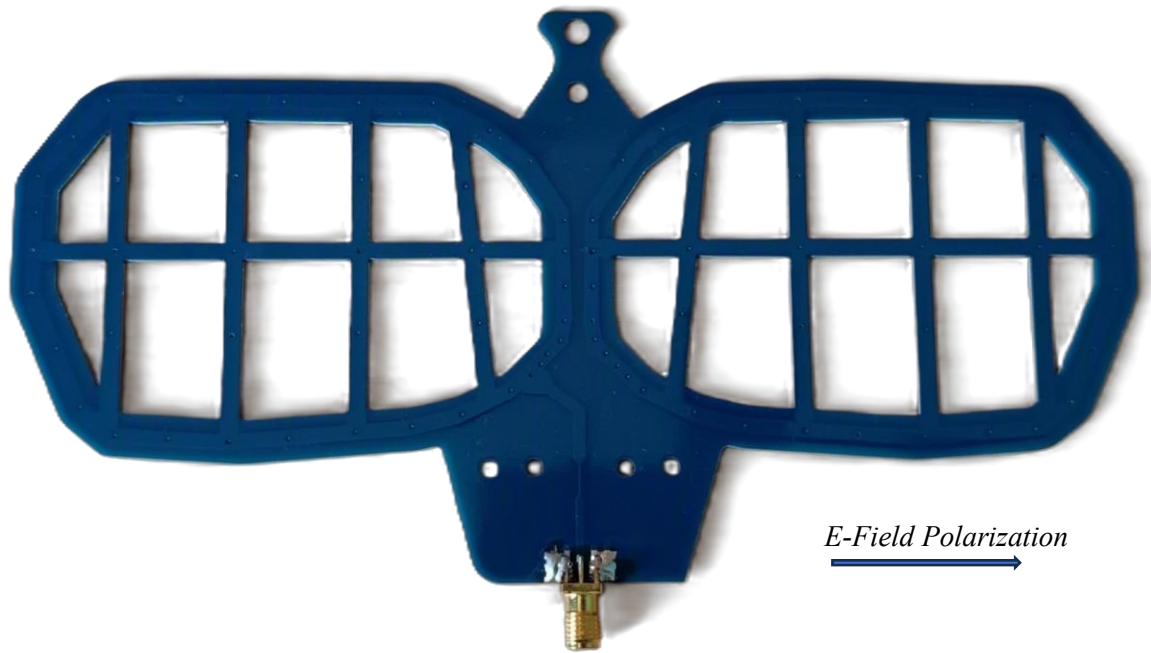


Figure 1 Antenna view

600-1400MHz Linear Polarized Antenna for Ultra-, Wideband FHSS Systems

General information

WB-Core F6L Omnidirectional Antenna is a high-efficiency, ultra-wideband RF solution designed for seamless integration into diverse wireless ecosystems. Featuring a standard **50 Ohm** impedance and optimized for **80% of bandwidth**, this compact antenna delivers consistent 360-degree radiation coverage, eliminating the need for multiple single-band antennas. Engineered on a high-precision substrate it ensures minimal insertion loss and reliable heat dissipation up to its maximum power threshold. Its wide frequency spectrum makes it an ideal multi-protocol asset for next-generation commercial, industrial, and unmanned systems.

Its lightweight, compact design simplifies integration into space- and weight-constrained systems.

Because it is a full-size rather than electrically shortened antenna, it provides higher gain and improved efficiency.

The radiation pattern is similar to that of a dipole maintained over a wider frequency range.

The wide operating bandwidth enables frequency switching throughout this range and across the antenna's additional usable bands (see the documented frequency response), making it suitable for frequency-hopping and pseudo-random frequency-agile systems.

The antenna has low wind loading and supports a variety of mounting options.

Key Features & Benefits

- Ultra-Wideband Performance: Seamlessly operates across the 600–1400 MHz range to cover UHF, Sub-1GHz 5G, and L-band frequencies within
 - ✓ Fractional bandwidth: 80%
- 360° Omnidirectional Coverage
 - ✓ Maintains stable signal propagation regardless of device orientation, crucial for mobile and airborne platforms
- High-Precision Feedline Architecture
 - ✓ Utilizes an optimized coplanar/microstrip feedline structure to deliver a perfect 50 Ohm impedance match
- Small size and weight, robust, low wind-resistance

WB-Core™ ULTRA 600 -1400MHz

Specification

- Input impedance: 50 ohms
- Dimensions (without connector): 18 x 9.5 x 0.2 cm
- Fractional bandwidth: 80% (Ultra-Wideband class)
- Operating frequency bands.
 - Gain higher than -4dBi: from 500 – 1400 MHz
 - S11 better than -8 dB (VSWR: 2.3): 600MHz – 1380MHz (RX mode)
 - S11 better than -12 dB (VSWR: 1.6): 650MHz – 1300MHz (TX mode)
- Gain: up to 3 dBi
- Radiation pattern type: toroidal, linear polarization
- Connector types: SMA or u.fl as option

Typical electrical characteristics (T=25 °C)

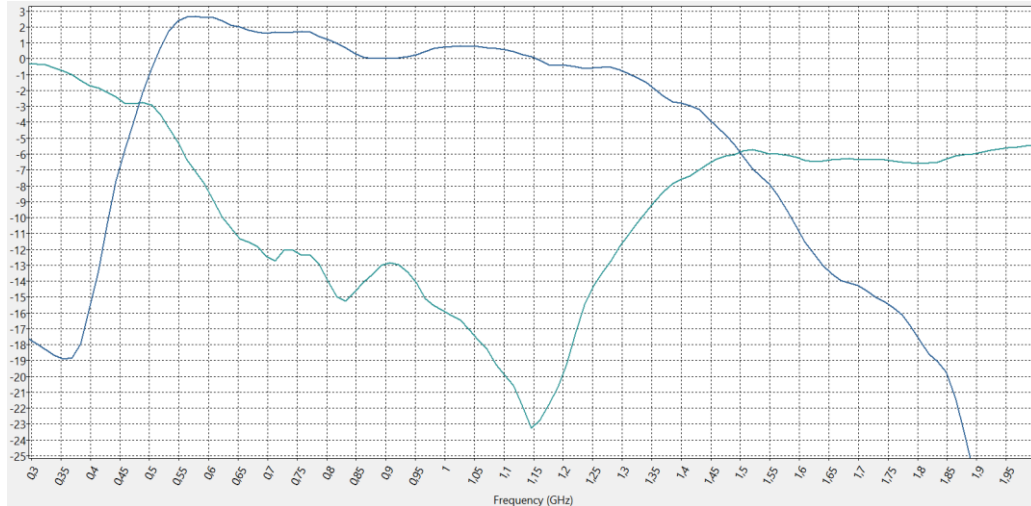


Figure 1 Antenna Matching (S11 – 50 Ohm) (gray) and Gain (0°/0°) (blue) vs Frequency (up to 2000 MHz), dB(i)

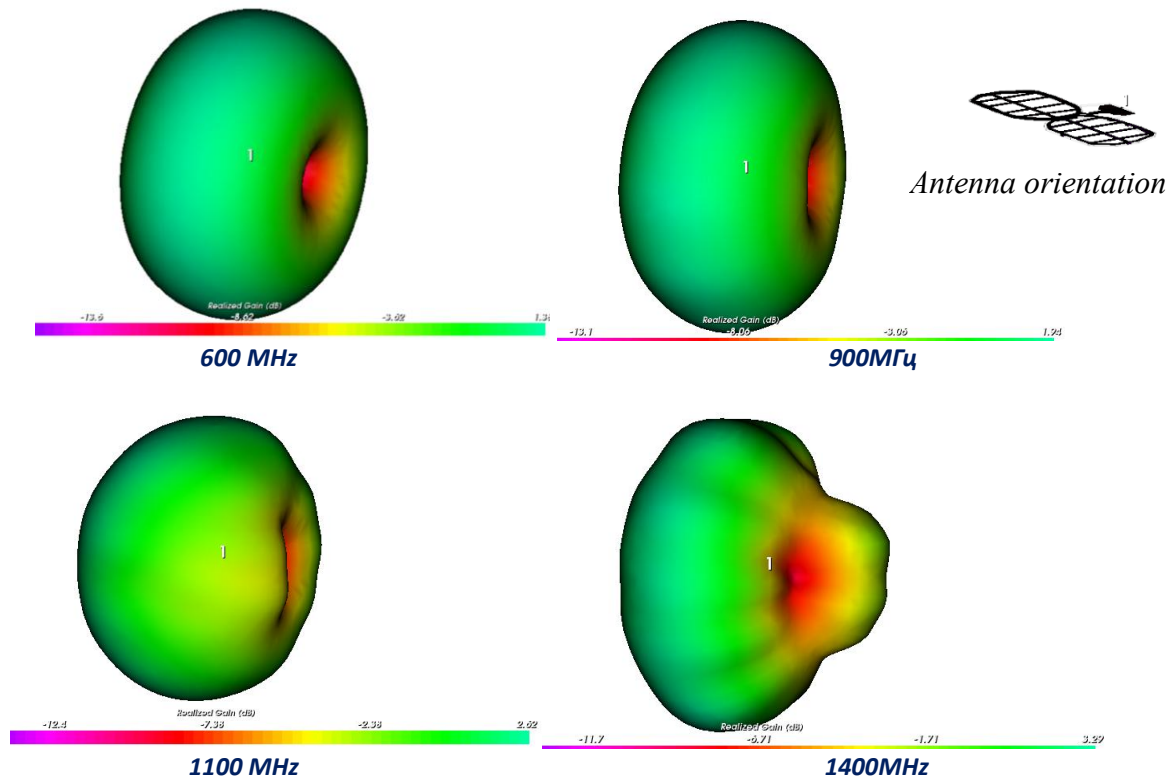


Figure 2 Radiation pattern in 3D

Target Applications & Protocol Support

Market Segment	Supported Protocols & Hardware	Frequency Range
Drones & FPV Systems	FPV VTX (1.2GHz / 1.3GHz) • TBS Crossfire • ELRS (868MHz / 915MHz) • UAV Telemetry Links	868 / 915 MHz • 1.2 / 1.3 GHz
Industrial IoT & Smart Cities	LoRaWAN Gateways • Helium Hotspots • Sigfox • Mioty • Smart Metering Infrastructure	868 MHz (EU) • 915 MHz (US)
Telecommunications	5G NR (n28, n71) • 4G LTE (Band 20, 28, 71) • Industrial Cellular Gateways	600 – 900 MHz
Professional Audio & Video	UHF Wireless Microphones • 1.4GHz In-Ear Monitoring (IEM) • Shure & Sennheiser Systems	600 – 700 MHz • 1.4 GHz
Navigation & Tracking	High-Precision GNSS (GPS L2/L5, Galileo E5/E6) • ADS-B Aircraft Tracking (1090MHz)	1090 MHz • 1176 – 1278 MHz

Equipment and assembly

1. Antenna with connector or for soldering
2. Documentation

Installation

- Secure the antenna using its mounting holes and suitable clamps or screws.
- Maintain a clearance of at least 5 cm from metal objects and at least 3 cm from large dielectric objects.
- If required, verify antenna performance with a vector network analyser or by monitoring the received signal level.

Cross-Selling & Accessory Recommendations

- **Coaxial Cables:** Low-loss RF cables (e.g., LMR-240 or LMR-400), as signal attenuation increases significantly past 1 GHz.
- **RF Adapters:** SMA, RP-SMA, and N-Type connectors to match different target devices (routers, VTXs, or base stations).
- **Surge Protectors:** Lightning protection units for permanent outdoor rooftop installations (highly relevant for LoRaWAN and ADS-B customers).
- **Filters:** Additional filtering is recommended for complex electro-magnetic environments and scenario

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