

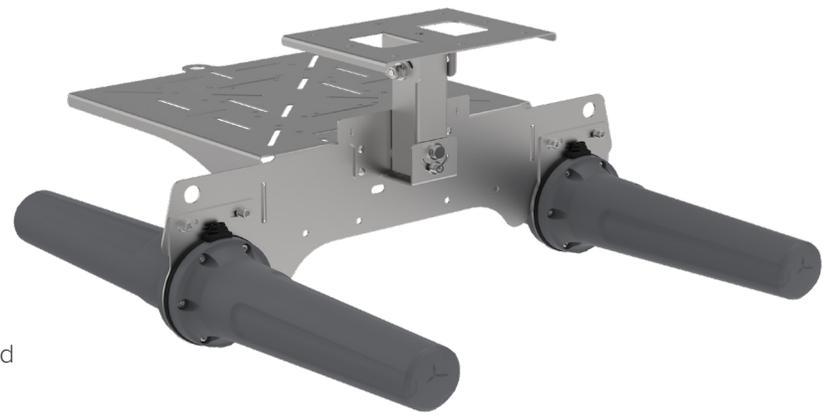
RCP-2450-9-13-NM

Circular Polarized, Bi-directional Mine/Tunnel Antenna

Rajant's RCP-2450-9-13-NM wideband circular polarized antenna achieves bi-directional coverage using both 2.4 and 5 GHz mesh links in underground mining and tunnels. Circular polarization delivers significantly greater signal propagation and quality around obstructions, surface variations, and bends when compared to linear or omni antennas. These antennas typically achieve distances over a kilometer underground with throughput exceeding 50Mbps using 2.4 and 5 GHz. Ideally suited for autonomous and tele-remote applications, or underground transportation such as rail.

Bi-directional Mine/Tunnel Antenna Features

- Circular polarized antenna provides enhanced signal propagation and connection stability within a tunnel
- Four port 2.4 GHz and 5 GHz Wi-Fi antenna
- Frequency Range: 2400-2500 MHz and 5000-6000 MHz
- Left-hand Circular (LHC) and Right-Hand Circular (RHC) polarized
- Bi-directional – radiates in two directions in a tunnel
- IP 65 Rated – Ruggedized, water and dust ingress protected
- Ideal for Mining & Tunnel M2M and IoT deployments
- Temperature Range (Operating): -40°C to +80°C
- Quad Port 2x2 MIMO



Dual Frequency 2.4/5 GHz 9/13 dBi Bi-Directional Mine and Tunnel Antenna System

Ideal for the Deployment of IIoT and Autonomous Applications Underground and in Tunnels

The RCP-2450-9-13-NM is a dual-band 2.4 GHz and 5 GHz Wi-Fi antenna, radiating in both directions (i.e. bi-directional). This makes it ideal for the directional transmission of both 2.4 and 5 GHz mesh links in underground mining as well as various other types of tunnels. These antennas are ideal for the deployment of autonomous and semi-autonomous applications underground and the deployment of IIoT within any tunnel to provide video, telemetry, and mine automation.

RCP-2450-9-13-NM antennas are available in both Left-hand Circular (LHC) & Right-Hand Circular (RHC) polarized antenna elements to provide optimal decorrelation within a MIMO deployment. The decorrelation is due to the polarization difference and spatial diversity between the two antenna elements which enhances MIMO performance and RF reliability within a mining tunnel.

Model	Description
RCP-2450-9-13-NM	Circular Polarized, Bi-directional Mine/Tunnel Antenna, Dual-band Wi-Fi, 2400 - 2500 MHz 9 dBi; 5000 - 6000 MHz, 13 dBi, Quad Port 2X2 MIMO, 60cm pigtail.
Part Numbers	75-100157-001, 75-100157-004, 75-100157-006
Wireless	
Frequency Bands	2400 MHz - 2500 MHz, 5000 MHz - 6000 MHz
Max Gain	9 dBi @ 2400 MHz - 2500 MHz, 13 dBi @ 5000 MHz - 6000 MHz
VSWR	< 1.5:1 (Over 100% of the Bands)

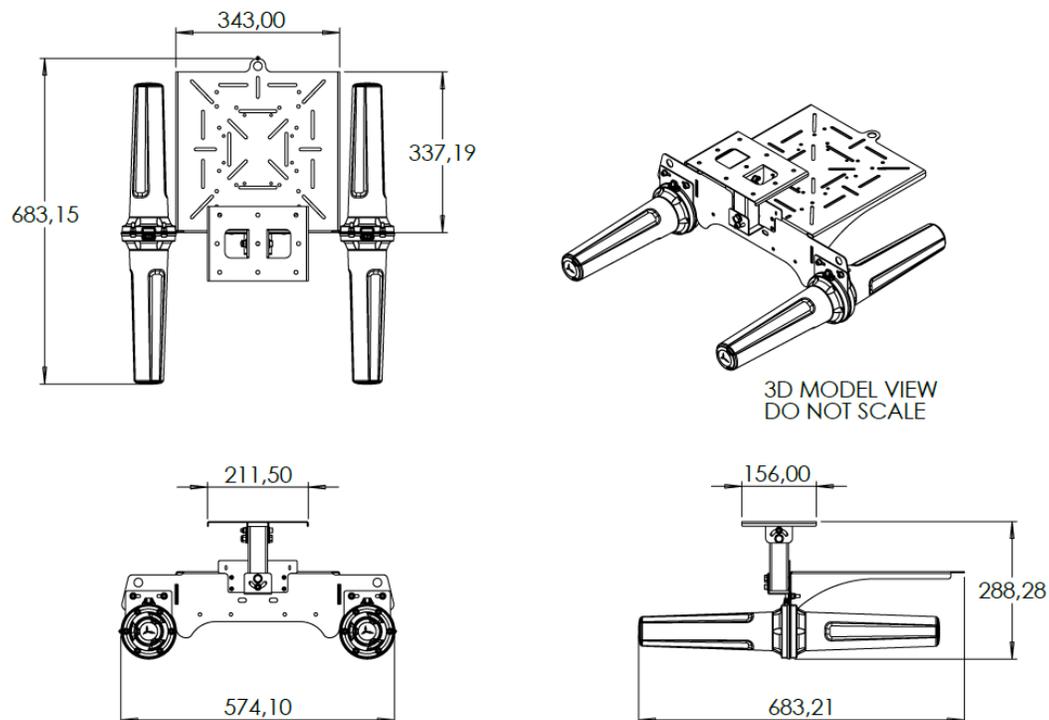
Power

Feed Power Handling	30 W
Input Impedance	50 Ohm (nominal)

Physical

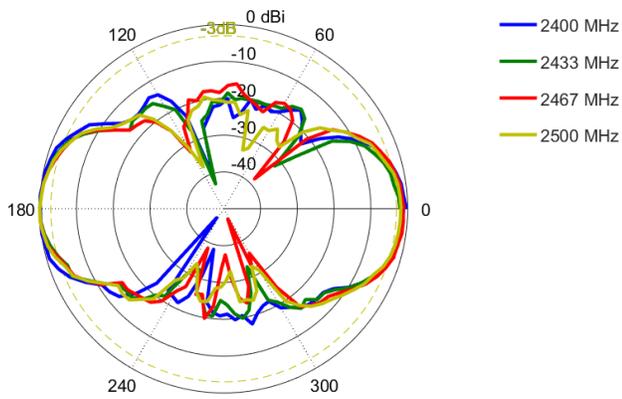
Dimensions	L 68.4cm (27") x W 57.5cm (22.6") x H 28.9cm (11.3")
Weight	5.6kg (12.35 lbs)
Polarization	Circular Polarized (LHC and RHC)
Coax Cable Loss	0.821 dB/m @ 2.4 GHz 1.42 dB/m @ 5.8 GHz
Material	UV Stable ASA
Color	Grey
Mounting Type	Ceiling Mounted, swivel bracket OR roof bolt attachment
Environment	Outdoor/Indoor, ≤120 km/h Wind Survival, IP 65 Water Ingress Protection Ratio/Standard, MIL-STD 810F/ASTM B117 Salt Spray, IK 08 Impact Resistance, UL 94-HB Enclosure Flammability Rating, Up to 98% Operating Relative Humidity
Compliance	CE and RoHS standards

Technical Drawings

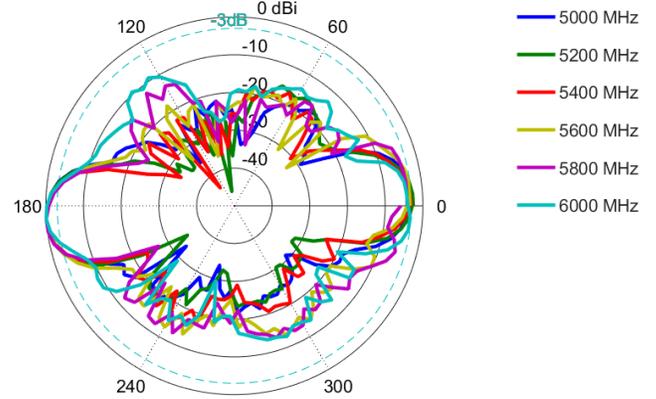


Radiation Patterns

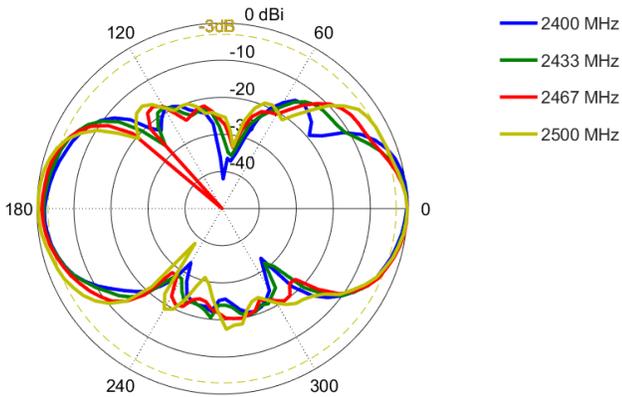
Azimuth: 2400 - 2500 MHz



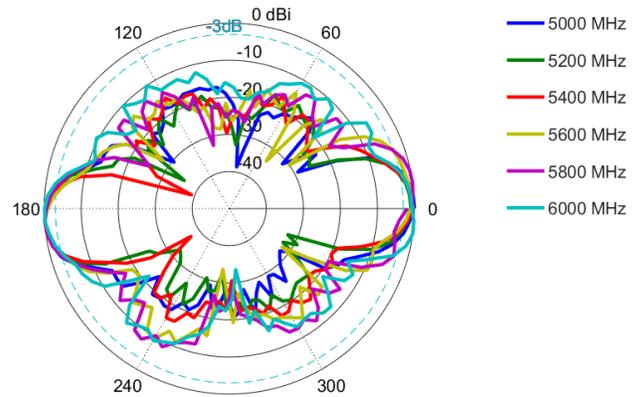
Azimuth: 5000 - 6000 MHz



Elevation: 2400 - 2500 MHz



Elevation: 5000 - 6000 MHz



Mounting Options



RAJANT part 75-100157-001, includes:

- Ceiling Mount, swivel bracket for FE1/ME5/ES1
- Multi-directional swivel bracket for mounting the antenna to a ceiling.



RAJANT part 75-100157-004, RCP-Mnt4x sold separately

- Optional Tunnel roof bolt mounting bracket for FE1/ME5/ES1
- This optional 20mm roof bolt mounting bracket attachment is used in conjunction with the base radio and antenna bracket for mounting to standard mine roof bolts.



RAJANT part 75-100157-006, includes:

- Mounting bracket for FE1/ME5/ES1
- 20mm roof bolt mounting bracket attachment for mounting to standard mine roof bolts.