

ANTENNAS | HELI-51 SERIES

CIRCULAR POLARISED, UNI-DIRECTIONAL MINE/TUNNEL ANTENNA

5000 – 6000 MHz, 14 dBi



5000 – 6000 MHz	14 dBi	Increase X Mb/s	Uni-Directional	Machine to Machine	Internet of Things
5.0 – 6.0 GHz	2x2 MIMO Possible with RHC & LHC combined	Chemical Protection	IP 69K	-40°C to +80°C	Fire Resistant

- Circular Polarised HELI antenna provides enhanced signal propagation and connection stability within a tunnel
- Left-hand Circular (LHC) & Right-hand Circular (RHC) polarised
- Uni-directional – radiates in one direction in a tunnel
- Ruggedized & water ingress protected (IP69K)
- Ideal for Mining & Tunnel M2M and IoT deployments

APPLICATION AREAS

Mining

Tunnelling

Product Overview

The HELI-51 adds to our current HELI antenna range for mining and tunnelling deployment. The HELI-51 is a 5 GHz Wi-Fi antenna, radiating in a single direction (i.e., Uni-directional). This makes them ideal for the coverage of 5GHz Wi-Fi bands in mining and other type of tunnels. The HELI-51 was specifically designed for vehicle/equipment mounting, making it ideal for deployment within the tunnel to provide telemetry and mining automation.

The antenna comes standard in both Left-Hand Circular (LHC) and Right-Hand Circular (RHC) polarised to provide optimal decorrelation within a MIMO deployment. The polarisation diversity of the antenna enhances MIMO performance and RF reliability within a mining tunnel. The circular polarisation allows the Wi-Fi frequency to propagate around tunnel bends in a non-line of sight scenario. This provides improved performance with enhanced link stability and reliability.

Features

- Circular polarised, left-hand and right-hand circular polarised
- Two 5 GHz Wi-Fi ports for 2x2 MIMO deployments
- Uni-Directional – Radiates in a single direction in a tunnel
- Rugged mechanical design for harsh environments (IK10)
- Water and dust ingress protected (IP69K)

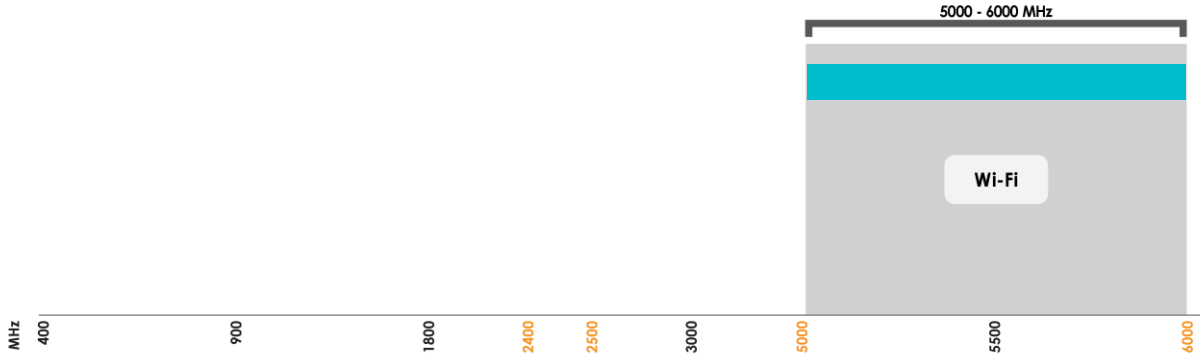
Application Area

- Mining vehicles & machinery communications, telemetry, and automation (M2M & IoT)
- Industrial factory automation, robotic machinery and other M2M systems telemetry
- Creating complete underground in tunnel connection for vehicle tracking and personnel safety




Frequency Band

The HELI-51 is a uni-directional antenna that works from 5000 – 6000 MHz



 Indicates the Wi-Fi bands on which HELI-51 works

Antenna Overview

	
Ports	2
SISO / MIMO	MIMO
Frequency Bands	5000-6000 MHz
Polarisation	LHCP & RHCP (Radiation direction as per technical drawing)
Peak Gain	14 dBi
Coax Cable Type	RG-141
Coax Cable Length	400mm
Connector Type	N-Type (M)

**The coax cable & connector are factory mounted to the antenna*

Electrical Specifications

Frequency bands:	5000 – 6000 MHz
Gain (max):	14 dBi
VSWR:	<2:1 Across 90% of the band
Feed power handling:	10 W
Input impedance:	50 Ohm (nominal)
Polarisation:	Linear Vertical
Coax cable loss:	1.47 dB /m @ 6 GHz
DC short:	Yes

Product Box Contents

Antenna:	A-HELI-0051-V1-01
Mounting bracket:	Adhesive Foam & Optional Magnetic Kit

Ordering Information

Commercial name:	HELI-51
Order product code:	A-HELI-0051-V1-01
EAN number:	6009710926697

Mechanical Specifications

Product dimensions	254 mm x 128 mm x 150 mm
Packaged dimensions:	305 mm x 215 mm x 225 mm
Weight:	0.82 Kg
Packaged weight:	1.30 Kg
Radome material:	UV Stable ASA
Radome colour:	Black
Mounting Type:	Adhesive Surface Mount and Optional Magnetic Mount Options

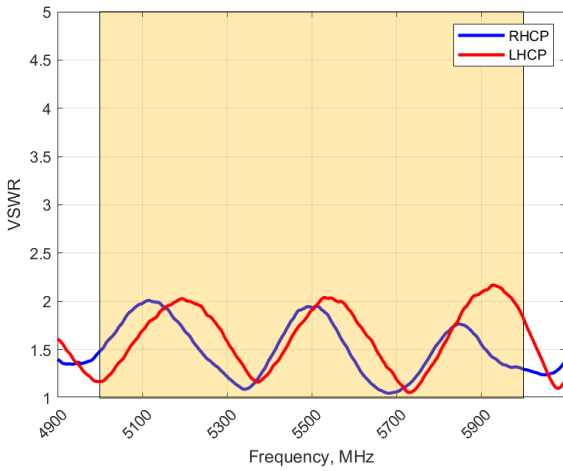
Environmental Specifications, Certification & Approvals

Wind Survival:	≤220 km/h
Temperature Range (Operating):	-40°C to +80°C
Environmental Conditions:	Outdoor/Indoor
Water ingress protection ratio/standard:	IP 69K
Salt Spray:	MIL-STD 810G/ASTM B117
Operating Relative Humidity:	Up to 98%
Storage Humidity:	5% to 95% - non-condensing
Storage Temperature:	-40°C to +80°C
Enclosure Flammability Rating:	UL 94-HB
Impact resistance:	IK 10
Product Safety & Environmental:	Complies with CE and RoHS standards

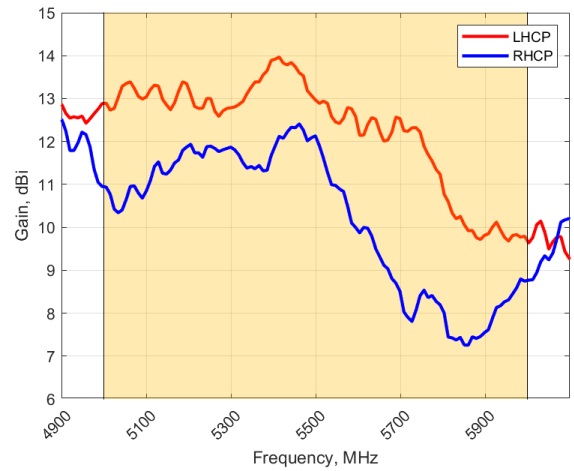


Antenna Performance Plots

VSWR



GAIN (EXCLUDING CABLE LOSS)



Voltage Standing Wave Ratio (VSWR)*

VSWR is a measure of how efficiently radio-frequency power is transmitted from a power source, through a transmission line, into a load. In an ideal system, 100% of the energy is transmitted which corresponds to a VSWR of 1:1.

The HELI-51 delivers superior performance across all bands with a VSWR of 2:1 or better across 90% of the bands.

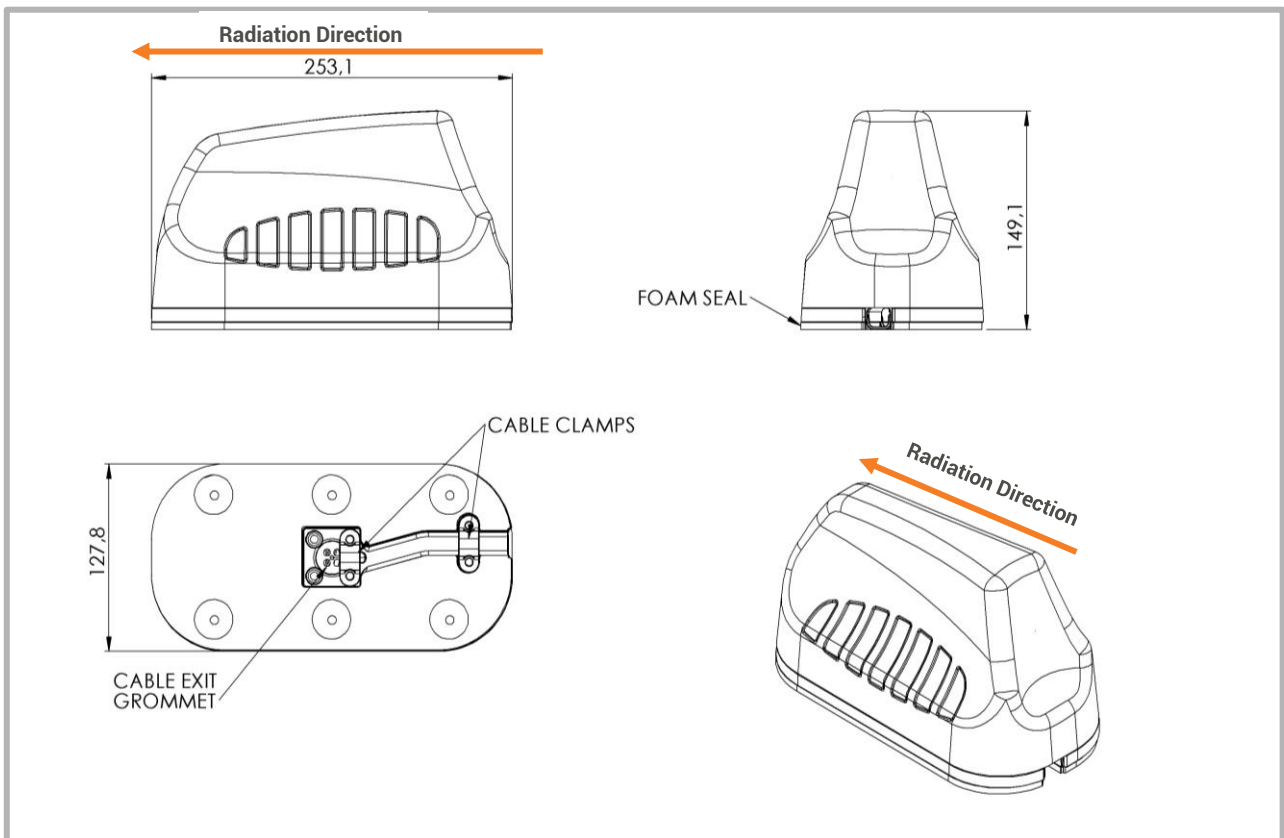
*VSWR measured at the port.

Gain* in dBi

14 dBi is the peak gain from 5000 – 6000 MHz

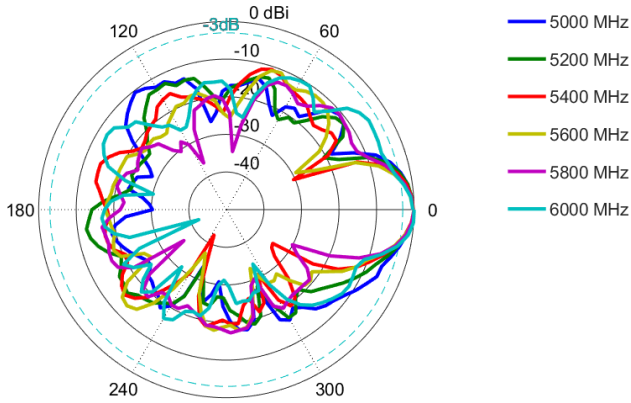
*Antenna gain measured with polarisation aligned standard antenna

Technical Drawings

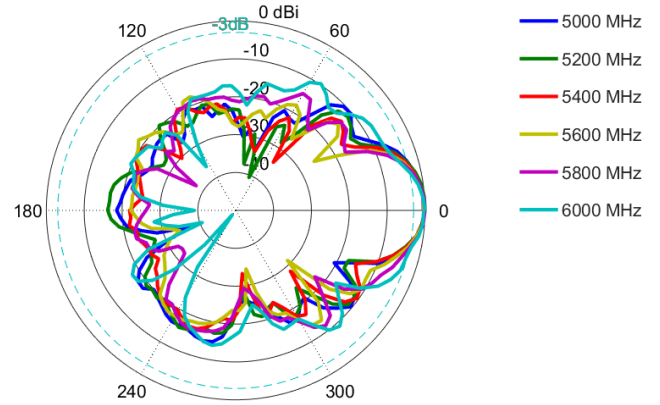


Radiation Patterns

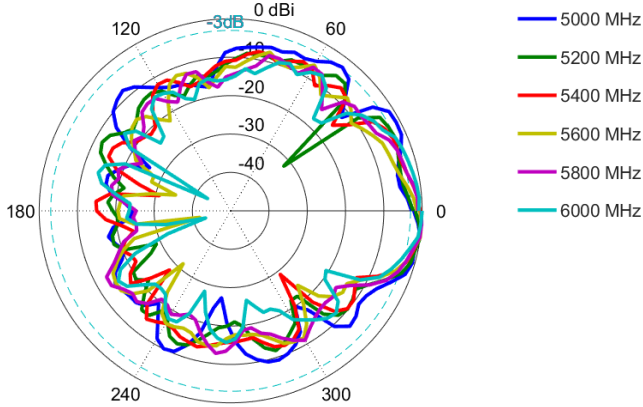
Azimuth (LHCP): 5000 – 6000 MHz



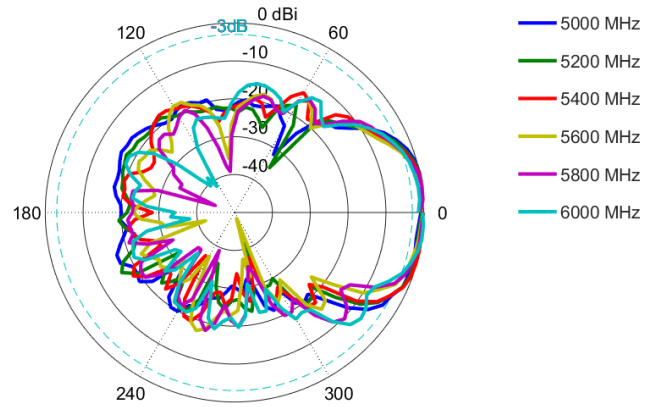
Azimuth (RHCP): 5000 – 6000 MHz



Elevation (LHCP): 5000 – 6000 MHz



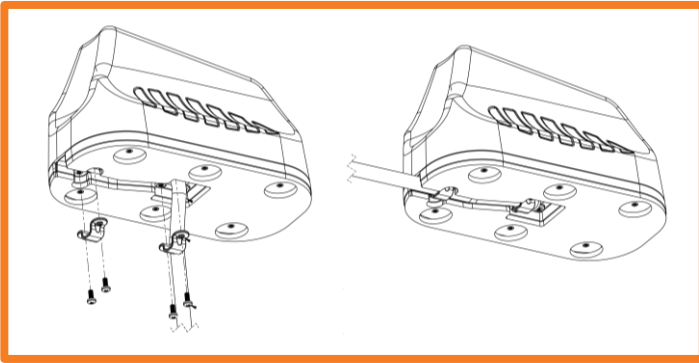
Elevation (RHCP): 5000 – 6000 MHz



Mounting Options

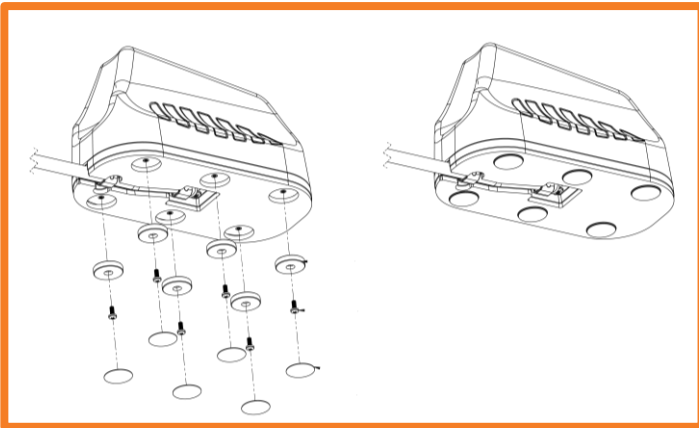
Surface Mount

Adhesive Surface Mounting



Magnetic Mount

Optional Magnetic Base Kit

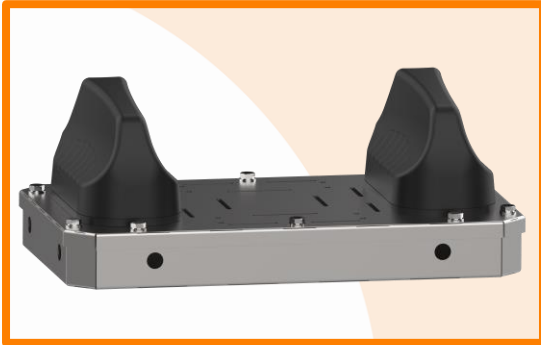


Additional Accessories



A-MBK-0001-V1.0

Optional Magnetic Base Kit



A-BRKT-061-V1-01

Optional 2 x Heli-0051 Mounting Bracket

See accessories technical specifications on www.poynting.tech

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