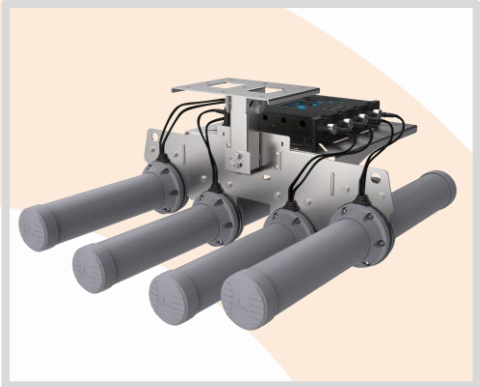
HELI-42

POYNTING
BEYOND A CONNECTED LIFE

ANTENNAS | HELI-42 SERIES

CIRCULAR POLARISED, BI-DIRECTIONAL MINE/TUNNEL WI-FI ANTENNA

2400 – 2500 MHz, 9.5dBi; 5000 – 6000 MHz, 13dBi



2400 – 2500 MHz
5000 – 6000 MHz

2.4 GHz: 9.5 dBi
5 GHz: 13dBi

Increase
X Mb/s

Bi-Directional

Machine to
Machine

Internet of
Things

2.4 – 2.5 GHz
5.0 – 6.0 GHz

4x4 MIMO
Possible with
RHC & LHC
combined

Chemical
Protection

IP 65

-40°C to +80°C

Fire Resistant

APPLICATION AREAS

Mining

Tunnelling

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

Product Overview

The HELI-42 forms part of the Mini-HELI antenna series. These antennas are only mini in size relative to their bigger brothers, the HELI-3, HELI-4 & HELI-8, but offer medium to high gain, which makes these antennas ideal for mining tunnels where IoT/M2M connectivity is deployed and can also be used for coverage into the stopes.

The HELI-42 is a dual-band 2.4 GHz and 5 GHz Wi-Fi antenna, radiating in both directions (i.e., bi-directional). This makes them ideal for the coverage of both Wi-Fi bands in mining and other type of tunnels. These antennas are typically used for the deployment of IoT within the tunnel to provide telemetry and mining automation. These antennas are available in both Left-hand Circular (LHC) & Right-Hand Circular (RHC) polarised antenna elements to provide optimal decorrelation within a 4x4 MIMO or even 8x8 MIMO deployment when using the BRKT-46, resulting in optimum performance. The antenna decorrelation is due to the polarisation difference and spatial diversity, between the two antenna elements, which enhances MIMO performance and RF reliability within a mining tunnel. The dual-band Wi-Fi connection propagates around tunnel bends in a Non-Line of Sight scenario and provides immunity to many Wi-Fi signal disrupting objects such as trains and drilling machinery which appear to obscure the tunnel.

Features

- Eight port 2.4 GHz and 5 GHz Wi-Fi antenna
- This antenna is especially designed for mining and other types of tunnels where rapid extension of network is required
- Bi-directional – radiates in both directions in a tunnel
- Left & Right-hand Circular Polarised

Application Areas

- Supplementing fibre/leaky feeder cable “Hotspots” to areas to enhance mobility or extend networks to inaccessible areas
- Underground telemetry and automation
- Creating of complete underground in tunnel wide data networks and internet/ LTE connectivity
- Seamless connection to personnel using cellular phones, smart devices and tablets

Revised: March 2022

Regulatory Compliance: RoHS 2011/65/EU Compliant | ISO 9001:2015
Document version: TS-HELI-0042-V1 REV 1.0
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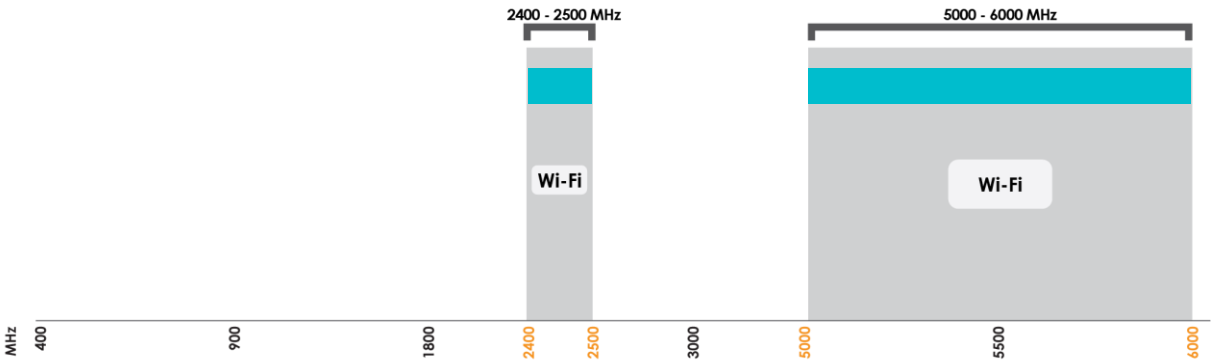
Frequency Bands

The HELI-42 is a Wi-Fi/ISM antenna that works from | 2400 – 2500 MHz | & | 5000 – 6000 MHz |



Indicates the WI-FI bands on which HELI-42 works

Antenna Derivitives

Product Order Code (SKU)	A-HELI-0042-V1-01	A-HELI-0042-V1-02
Ports	4	4
SISO / MIMO	4x4 MIMO	4x4 MIMO
Coax Cable Type	RG 58	RG 58
Coax Cable Length	350 mm	350 mm
Connector Type	N-Type (M)	N-Type (M)
Included Mounting Bracket	A-BRKT-046-V2-01	A-BRKT-046-V2-01 and A-BRKT-047-V2-01
EAN	6009710924112	6009710924136

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

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Electrical Specifications

Frequency bands:	2400 – 2500 MHz 5000 – 6000 MHz
Gain (max):	2.4 GHz: 9.5 dBi 5 GHz: 13 dBi
VSWR:	<1.5:1
Feed power handling:	30 W
Input impedance:	50 Ohm (nominal)
Polarisation:	Circular Polarised (LHC or RHC)
Coax cable loss:	0.97 dB/m @ 2.4 GHz 2.0 dB/m @ 5.8 GHz
DC short:	N/A

Product Box Contents

Antenna:	2 x A-HELI-0019-V2-01-RH 2 x A-HELI-0019-V2-01-LH
Mounting bracket:	A-BRKT-046-V2-01

Mechanical Specifications

Product dimensions	575 mm x 680 mm x 327 mm
Packaged dimensions:	TBC
Weight:	TBC
Packaged weight:	TBC
Radome material:	ABS & PVC
Radome colour:	Grey
Mounting Type:	Ceiling Mounted

Environmental Specifications, Certification & Approvals

Wind Survival:	≤120 km/h
Temperature Range (Operating):	-40°C to +80°C
Environmental Conditions:	Outdoor/Indoor
Water ingress protection ratio/standard:	IP 65
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 08
Product Safety & Environmental:	Complies with CE and RoHS standards

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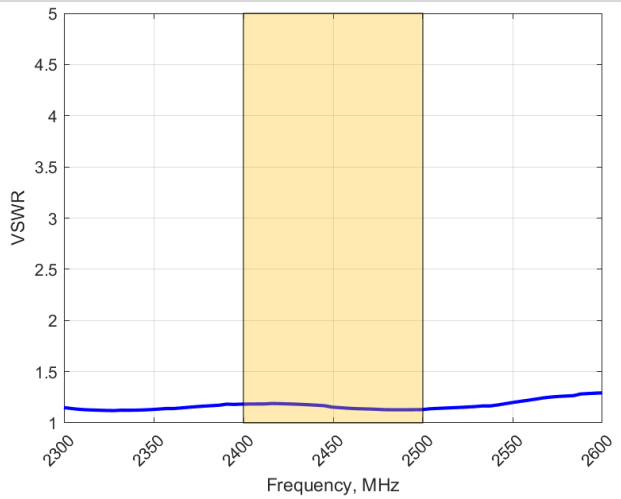
Antenna Performance Plots

VSWR: 2400 – 2500 MHz



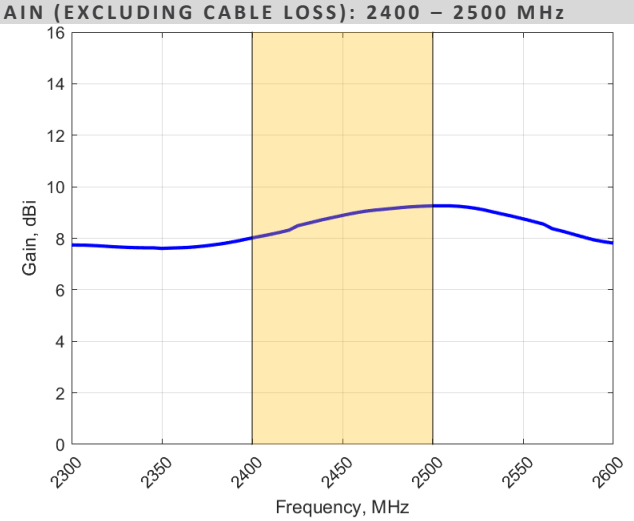
Voltage Standing Wave Ratio (VSWR)*

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-42 delivers superior performance across the band with a VSWR of <1.5:1.

**VSWR measured with 350mm low loss cable.*

GAIN (EXCLUDING CABLE LOSS): 2400 – 2500 MHz

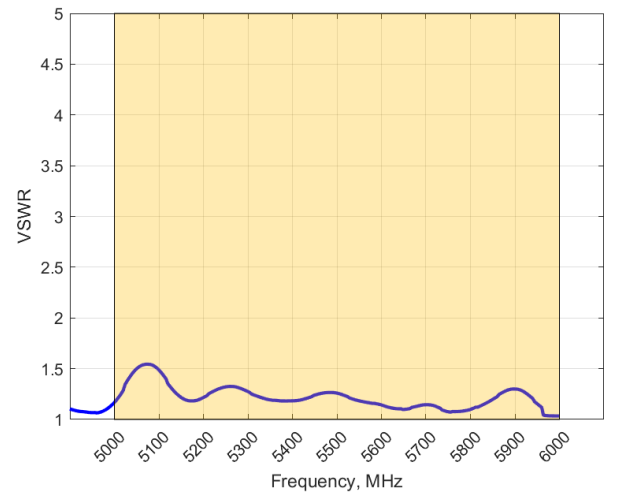


Gain⁺ in dBi

9.5 dBi is the peak gain across from 2400 – 2500 MHz

⁺Antenna gain measured with polarisation aligned standard antenna

VSWR: 5000 – 6000 MHz



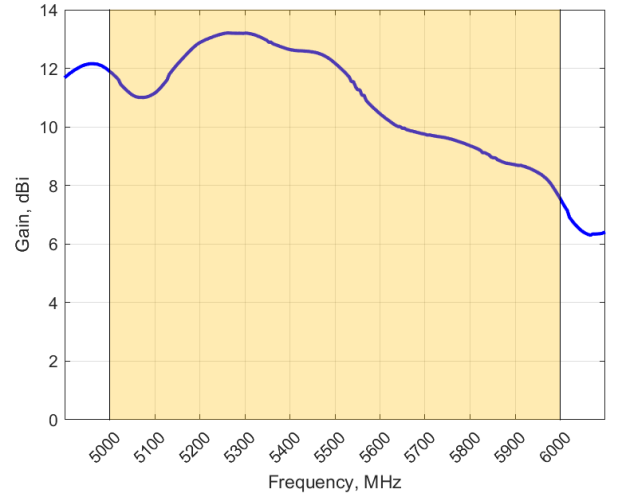
Voltage Standing Wave Ratio (VSWR)*

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-42 delivers superior performance across the band with a VSWR of 1.5:1 or better.

**VSWR measured with 350mm low loss cable.*

GAIN (EXCLUDING CABLE LOSS): 5000 – 6000 MHz



Gain⁺ in dBi

13 dBi is the peak gain from 5000 – 6000 MHz

⁺Antenna gain measured with polarisation aligned standard antenna

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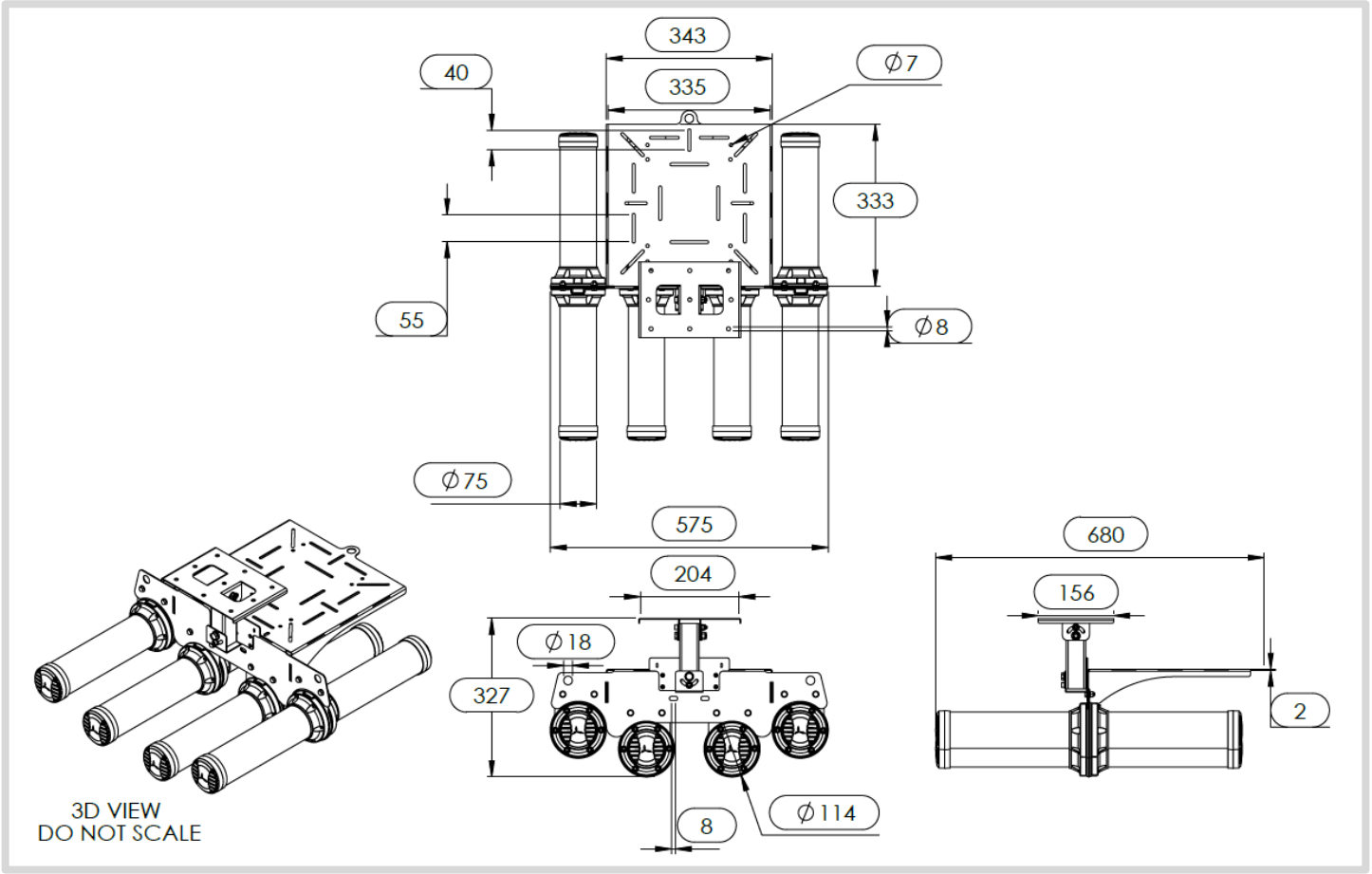
Technical Drawings



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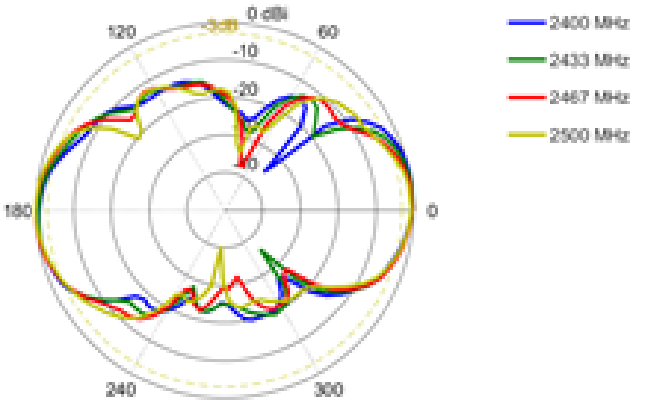
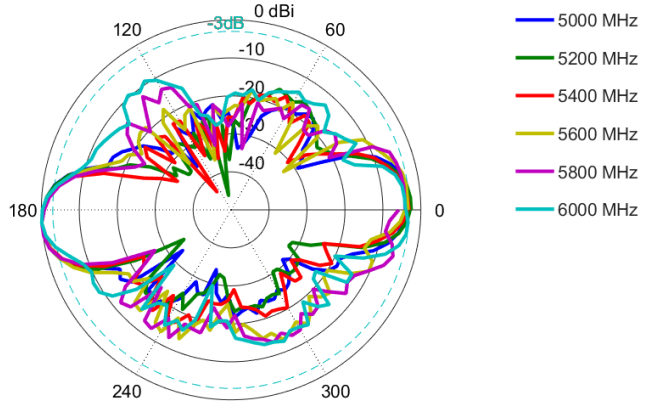
Radiation Patterns

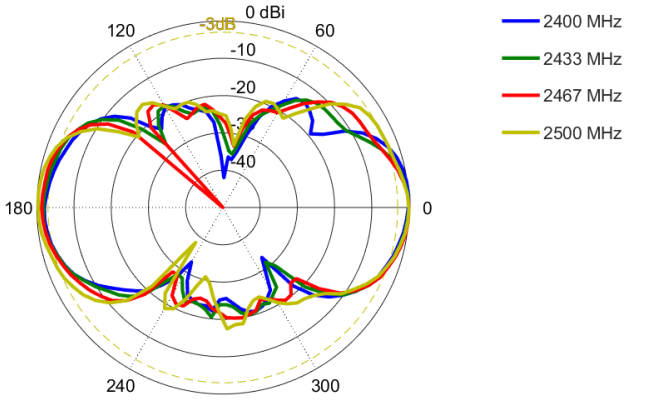
Azimuth: 2400 – 2500 MHz



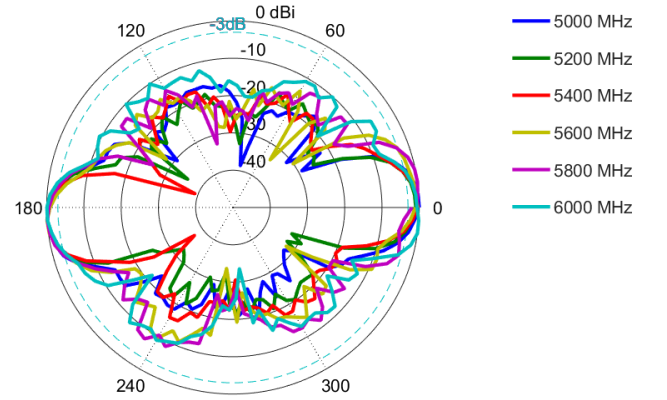
Azimuth: 5000 – 6000 MHz



Elevation: 2400 – 2500 MHz



Elevation: 5000 – 6000 MHz



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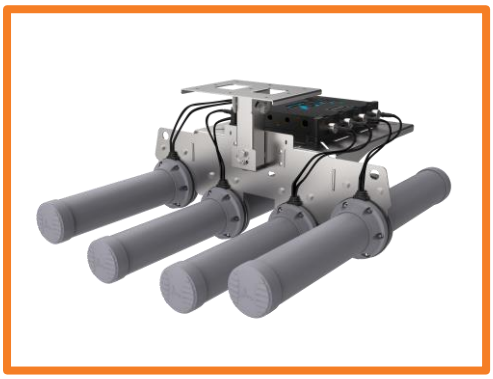
Mounting Options



Ceiling Mount

Mining Tunnel Roof Mount Bracket for 4x Mini-HELI Antennas.

This option uses A-BRKT-046-V2-01.

Roof Bolt Mounting

This optional 20mm roof bolt mounting bracket attachment is used in conjunction with BRKT-46 for mounting to standard mine roof bolts.

This option uses A-BRKT-047-V2-01.

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Additional Accessories

See accessories technical specifications on www.poynting.tech

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