

## ANTENNAS | HELI-3IS

# 2400 – 2500 MHZ HIGH GAIN MINE/TUNNEL ANTENNA



APPLICATION AREAS

- **Circular polarised helical antenna**
- **Wi-Fi compatible**
- **Uni-directional**
- **Ruggedised**
- **Future proof**

## Product Overview

This high gain directional antenna compliments our Wi-Fi MinePoynt tunnel and mine antennas. The combination of MinePoynt beam antennas for long distance thru-tunnel links with this directional antenna, exploits Poynting's fifteen years' experience in designing and manufacturing antennas for underground mining data networks. This antenna is also suitable for oil/gas chemical environments where IS equipment is required. The A-HELI-0003 IS is an Intrinsically Safe antenna with high resistivity non static radome. This antenna is also suitable for oil/gas chemical environments where IS equipment is required. A-HELI-0003IS is a directional antenna whilst the closely related A-HELI-0008 fires in both directions (Bi – Directional). This antenna gives you a low cost network infrastructure for current voice and data needs in mines and tunnels.

## Features

- Proven antenna performance giving maximum range in all directions
- Ideal where the other devices used polarisation could change
- High gain over the 2400 MHz Wi-Fi band
- Versatile installation mounting options
- Lightweight

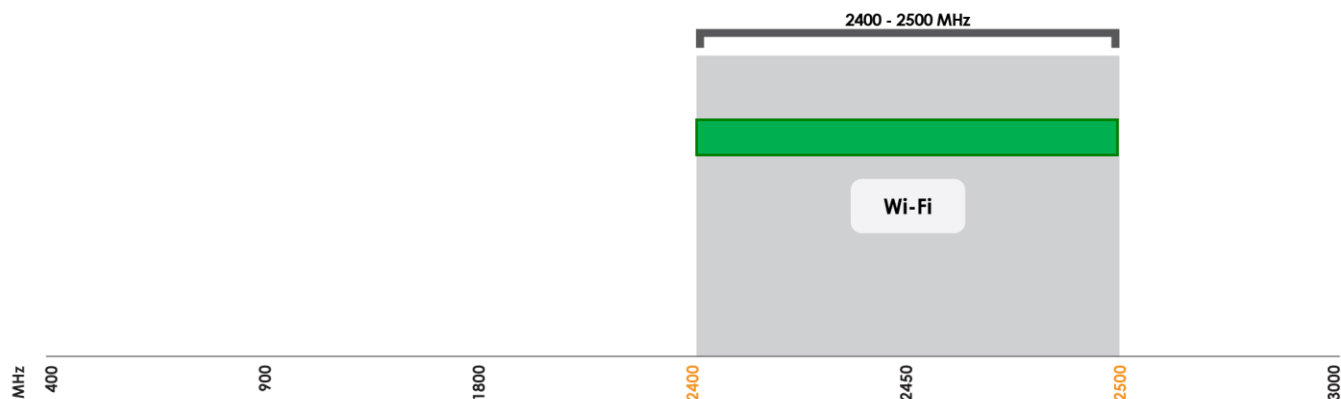
## Application Areas

- Supplementing fibre/cable networks by providing wireless "Hotspots" to areas to enhance mobility or extend networks to inaccessible areas such as mines and tunnels
- Underground telemetry
- Creation of complete in tunnel/mine wide data networks and or internet connectivity
- Seamless connection to personnel using VOIP phones, smart devices and tablets




### Frequency Bands

The HELI-3IS is a wide-band antenna that works from 2400 – 2500 MHz



 Indicates the WIFI bands on which HELI-3IS works

### Antenna Overview

|                   |                                                                                   |
|-------------------|-----------------------------------------------------------------------------------|
|                   |  |
| Ports             | 1                                                                                 |
| SISO / MIMO       | SISO                                                                              |
| Frequency Bands   | 2400 - 2500 MHz                                                                   |
| Peak Gain         | 17.5 dBi                                                                          |
| Coax Cable Type   | N/A                                                                               |
| Coax Cable Length | N/A                                                                               |
| Connector Type    | N-type(f)                                                                         |

## Electrical Specifications

|                      |                    |
|----------------------|--------------------|
| Frequency bands:     | 2400-2500 MHz      |
| Gain (max):          | 18.5 dBi           |
| VSWR:                | <1.3:1             |
| Feed power handling: | 30 W               |
| Input impedance:     | 50 Ohm (nominal)   |
| Polarisation:        | Left-Hand Circular |
| DC short:            | No                 |

## Coax Cable & Connector Type

|                  |                               |
|------------------|-------------------------------|
| Cable length:    | Up to 15m HDF 195 (extension) |
| Coax cable type: | N/A                           |
| Connector type:  | N-type(f)                     |

*\*The coax cable & connector is factory mounted to the antenna*

## Product Box Contents

|                   |                                    |
|-------------------|------------------------------------|
| Antenna:          | A-HELI-0003IS                      |
| Mounting bracket: | Two 6mm eyebolts for ceiling mount |

## Ordering Information

|                     |               |
|---------------------|---------------|
| Commercial name:    | HELI-3IS      |
| Order product code: | A-HELI-0003IS |
| EAN number:         | 0707273468727 |

## Mechanical Specifications

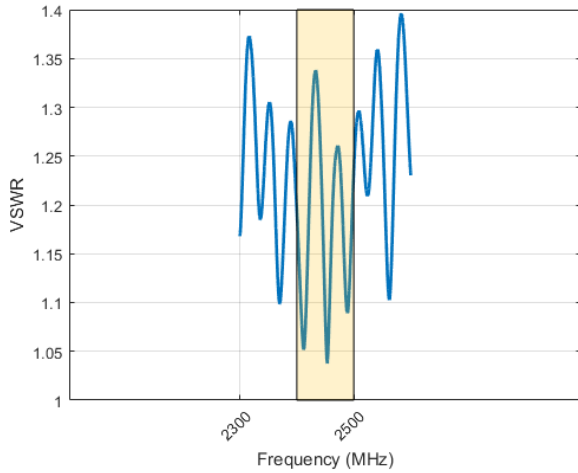
|                      |                                |
|----------------------|--------------------------------|
| Product dimensions   | 1050 mm x 150 mm x 120 mm      |
| Packaged dimensions: | 1060 mm x 160 mm x 160 mm      |
| Weight:              | 2.35 kg                        |
| Packaged weight:     | 2.6 kg                         |
| Radome material:     | PVC                            |
| Radome colour:       | PANTONE 447 C<br>RAL 000 25 00 |
| Mounting Type:       | Ceiling Mount                  |

## Environmental Specifications, Certification & Approvals

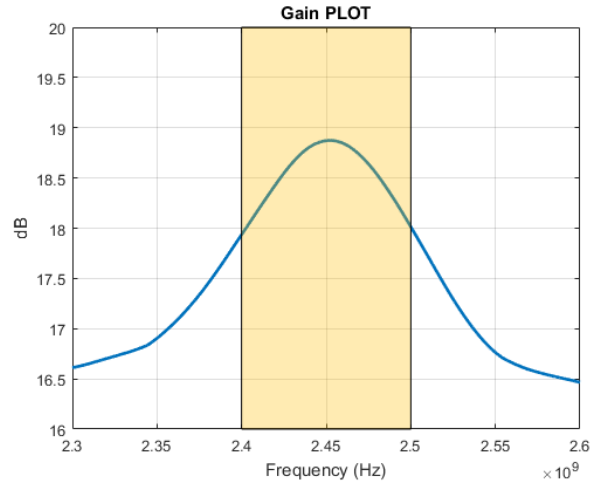
|                                          |                                     |
|------------------------------------------|-------------------------------------|
| Wind Survival:                           | <120 km/h                           |
| Temperature Range (Operating):           | -40°C to +70°C                      |
| Environmental Conditions:                | Outdoor/Indoor                      |
| Water ingress protection ratio/standard: | IP 65                               |
| Salt Spray:                              | MIL-STD 810F /ASTM B117             |
| Operating Relative Humidity:             | Up to 98%                           |
| Storage Humidity:                        | 5% to 95% - non-condensing          |
| Storage Temperature:                     | -20°C to +70°C                      |
| Enclosure Flammability Rating:           | UL 94-HB                            |
| Impact resistance:                       | IK 08                               |
| 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-3IS delivers superior performance across all bands with a VSWR of 1.3:1 or better across 90% of the bands.

**Gain\* in dBi**

18.5 dBi is the peak gain across all bands from 2400 – 2500 MHz

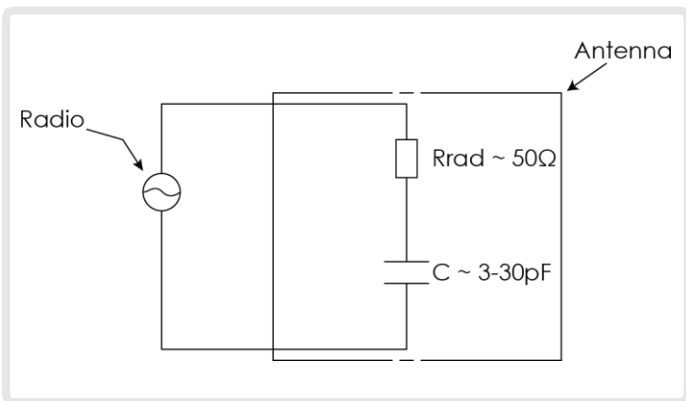
Gain @ 2400 – 2500 MHz: 18.5 dBi

*\*Antenna gain measured with polarisation aligned standard antenna*

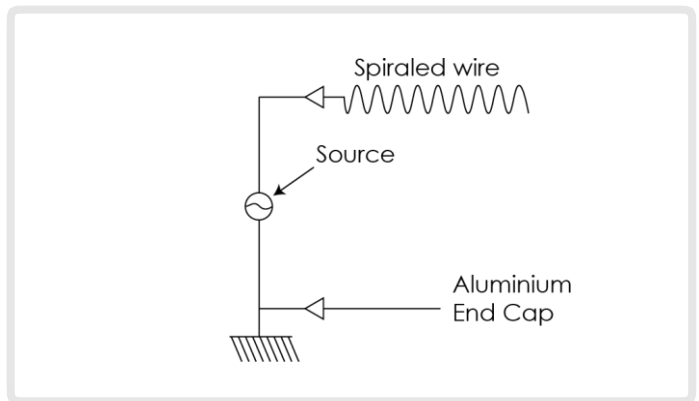
**Intrinsically Safe Electrical Diagram**

- Capacitance as measured between the inner spiral and the base plate 3-30 pF
- Frequency 2.4-2.5 GHz
- The A-HELI-0003 is a transducer that transforms the electrical currents and voltages received at its input terminals and radiates this energy in the form of an electromagnetic wave (and visa-versa)

**Equivalent circuit**



**Electrical schematic A-HELI-0003**

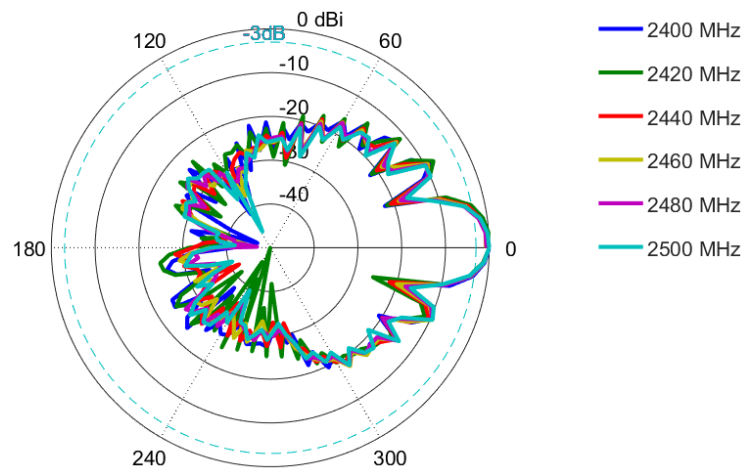


- Pmax = 87 mW
- Vmax = 2,95V
- Imax = 60mA

Surface resistivity: 1 mΩ/□ to 15Ω/□

## Radiation Patterns

Azimuth & Elevation: 2400 – 2500 MHz



## Contact Poynting

### Poynting Antennas (Pty) Ltd - Head Office

Unit 4, N1 Industrial Park  
Landmarks Avenue,  
Samrand, 0157  
South Africa

**Phone:** +27 (0) 12 657 0050

**E-mail:** sales@poynting.co.za

### Poynting Europe

Regus Business Center Neue Messe Riem  
Kronstadter Straße 4  
81677 München  
Germany

**Phone:** +49 89 208026538

**E-mail:** sales-europe@poynting.tech