

## ANTENNAS | PUCK-7 SERIES

# 4-IN-1 TRANSPORTATION & IOT/M2M ANTENNA

617 – 4200 MHz, 2X2 LTE (MIMO), 6 dBi; 2400 – 7200 MHz, 2X2 Wi-Fi (MIMO), 7.5 dBi



- 4-in-1 LTE high performance multi frequency antenna
- 2G/3G/4G/LTE/5G antenna
- LTE (2X2 MIMO) and Dual-band Wi-Fi (2X2 MIMO)
- Wideband – covers wide frequency band, incl. 3.5 GHz CBRS band
- Robust, vandal resistant and waterproof (IP69K)
- Ideal for transportation, marine and IoT/M2M use
- Ultra-versatile mounting options for easy installation



APPLICATION AREAS

## Product Overview

Poynting's new PUCK range offers a small profile antenna for use in the IoT/M2M, Smart Meter, Smart Utilities, Transportation, Marine and the Agricultural/Farming markets. The PUCK-7 consists of a 4-in-1 antenna system within a single housing, featuring 2x2 MIMO LTE and 2x2 MIMO Wi-Fi (Dual-band 2.4GHz & 5GHz). The 2x Cellular MIMO antennas (for 2G/3G/4G) cover the 617MHz to 4200MHz band, this includes the most popular international LTE bands. The antenna provides two separate dual-band Wi-Fi antennas offering concurrent 2.4GHz and 5GHz bands, capable of 802.11n and 802.11ac/ax with 2x2 MIMO. The PUCK exceeds the performance of many competitors due to the attention to design of this high-performance antenna. The radiation patterns of all radiating elements provide an excellent balance between omnidirectionality, pattern diversity and good radiation abilities at the desired elevation, which is often overlooked in such a small size antenna. Despite its small size, this antenna provides excellent performance especially at the higher frequency bands, where performance is critical for LTE throughput and connection stability. This antenna is designed so that both the LTE ports are connected to the router/device to ensure the best performance. Please see other derivatives of the PUCK range that are more suitable for a SISO application.

## Features

- Small & Low-profile (Ø100mm x h 36mm)
- Careful mechanical design provides ruggedness, corrosion, water and dust resistance (IP69K)
- Fire Resistant
- UV Stable Enclosure
- 5G Ready – includes the 3.2 GHz to 3.8 GHz CBRS Band
- Easy installation; multi-implementation options available:
  - Spigot Mount
  - Magnetic Mount
  - Adhesive Tape Mount
  - Bracket Mount

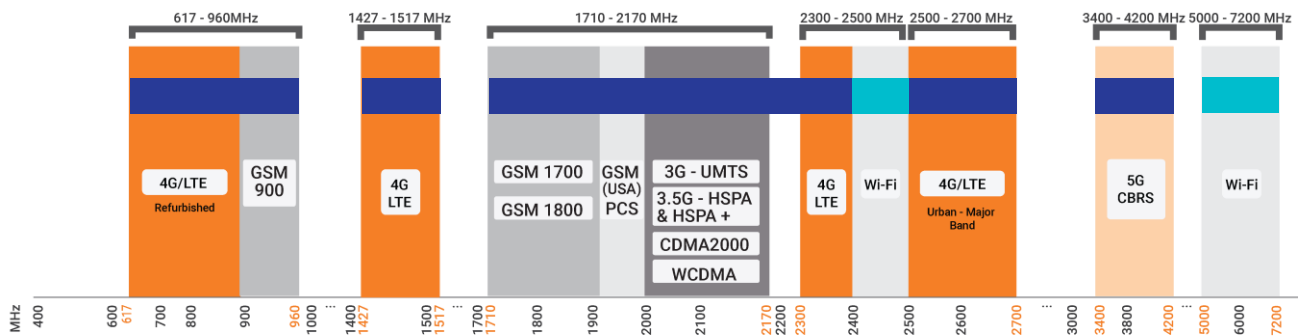
## Application Areas

- Smart utilities: Smart power, Gas & Water Metering
- Smart Buildings: Climate control, access control, security, irrigation
- Industrial factory automation, robotic machinery and other M2M systems
- Digital Signage
- Warehouses & Logistic systems
- Transport (Busses, Utility & Public Safety)
- Mining Vehicles & Machinery communications, telemetry and automation (M2M & IoT)
- Agricultural machinery
- Marine: small boats, yachts near to coastlines or inner waters



## Frequency Bands



The PUCK-7 is an omni-directional antenna that works from 617 – 960 MHz | 1427 – 1517 MHz | 1710 – 2700 MHz | 3400 – 4200 MHz | and the following Wi-Fi frequency bands | 2400 – 2500 MHz | and | 5000 – 7200 MHz |



Indicates the LTE bands on which PUCK-7 works

Indicates the WI-FI bands on which PUCK-7 works

## Antenna Overview

		
Ports	1 & 2	3 & 4
SISO / MIMO	2x2 MIMO	2x2 MIMO
Frequency Bands	617 MHz - 4200 MHz	2.4 - 2.5 & 5-7.2 GHz
Peak Gain	6 dBi	7.5 dBi
Coax Cable Type	RTK-031	RTK-031
Coax Cable Length	2m	2m
Connector Type	SMA (M)	SMA (M) (RP-SMA Adapter included)

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

## Electrical Specifications – Cellular

Frequency Bands:	617 – 960 MHz 1427 – 1517 MHz 1710 – 2700 MHz 3400 – 4200 MHz
Gain (Max) Port 1 & 2:	0 dBi @ 617-960 MHz 1 dBi @ 1427-1527 MHz 5 dBi @ 1710-2700 MHz 6 dBi @ 3400-4200 MHz
VSWR Port 1 & 2:	≤2.5:1 Across 85% of the bands
Feed Power Handling:	10 W
Input Impedance:	50 Ohm (nominal)
Polarisation:	Linear Vertical
Coax Cable Loss:	0.56 dB/m @ 900 MHz 0.71 dB/m @ 1500 MHz 0.785 dB/m @ 1800 MHz 1.2 dB/m @ 3000 MHz
DC Short:	Yes

## Electrical Specifications – Wi-Fi

Frequency:	2400-2500 MHz 5000–7200 MHz
Gain (Max) Port 1 & 2:	5dBi @ 2400-2500 MHz 7.5dBi @ 5000–7200 MHz
VSWR Port 1 & 2:	≤2:1 over 90% of the band
Feed power handling:	10 W
Nominal input impedance:	50 Ohm (nominal)
Polarisation:	Linear Vertical
Coax Cable Loss:	0.91 dB/m @ 2400 MHz 1.65 dB/m @ 5800 MHz
Path to Ground:	Yes

## Product Box Contents

Antenna:	A-PUCK-0007-V1-01
Mounting Bracket:	Ø20 Threaded Spigots (Up to 60mm clamping thickness), Adhesive Surface Mounting & Magnetic Mount
Adapters:	2x RP-SMA(M) To SMA (F)

## Ordering Information

Commercial name:	PUCK-7
Order product code:	A-PUCK-0007-V1-01
EAN number:	6009710920497
EU Homologation Number:	E1*10R06/01*9551*00

## Mechanical Specifications

Product Dimensions	Ø99.3 mm x 36 mm
Packaged Dimensions:	150 mm x 150mm x 120mm
Weight:	0.476kg
Packaged Weight:	0.607kg
Radome material:	PC+ABS (Halogen free)
Radome colour:	Black
Mounting Type:	Ø20 Threaded Spigot, Pole, Wall, Surface and Magnetic mount

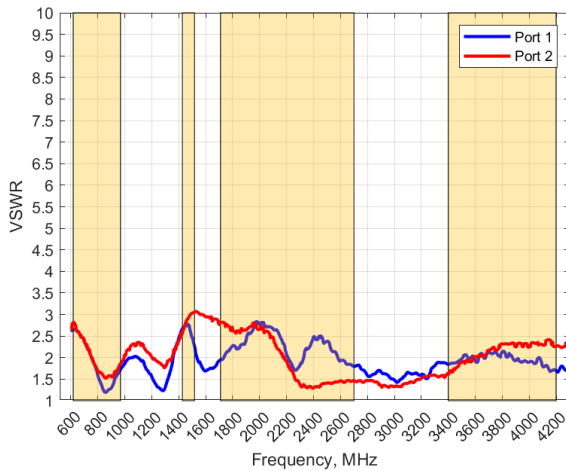
## Environmental Specifications, Certification & Approvals

Wind Survival:	≤220 km/h
Temperature Range (Operating):	-40°C to +80°C
Environmental Conditions:	Outdoor/Indoor
Water Ingress Protection Ratio/Standard:	IP69K
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: Cellular Antenna



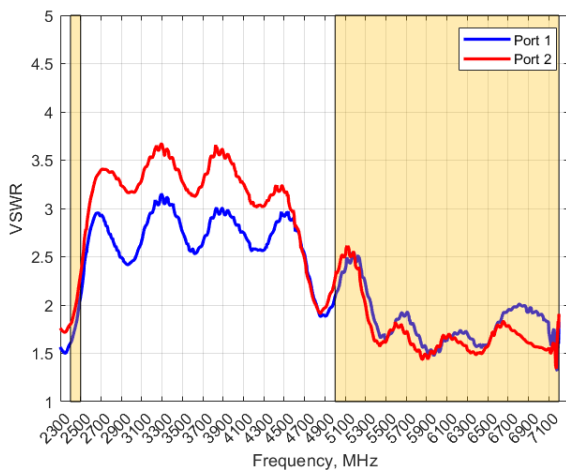
#### Voltage Standing Wave Ratio (VSWR)\*

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 PUCK-7 delivers superior performance across all bands with a VSWR of  $\leq 2.5:1$  across 85% of the bands.

*\*Measured with 2m low loss cable, 650 x 650 mm ground plane, and unused ports terminated with 50Ω load.*

### VSWR: Wi-Fi Antenna



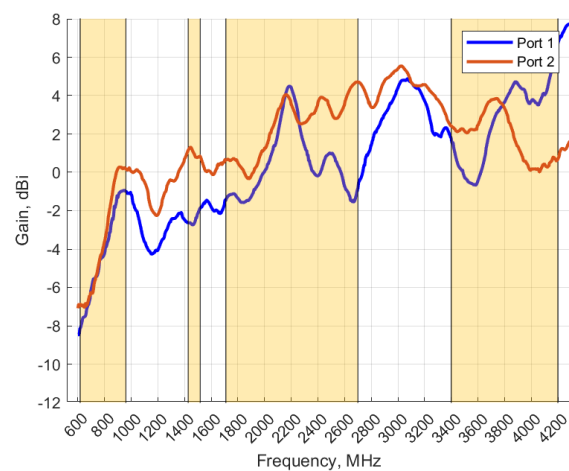
#### Voltage Standing Wave Ratio (VSWR)\*

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 PUCK-7 delivers superior performance across all bands with a VSWR of  $\leq 2:1$  across 90% of the bands.

*\*Measured with 2m low loss cable, 650 x 650 mm ground plane, and unused ports terminated with 50Ω load.*

### GAIN (Excluding Cable Loss): Cellular Antenna



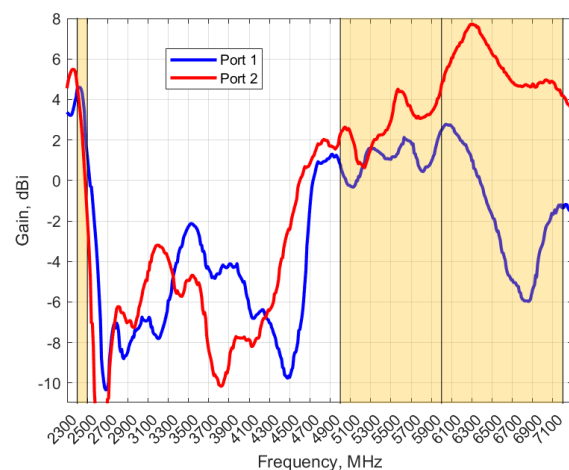
#### Gain\* in dBi

6 dBi is the peak gain across all bands from 617 – 4200 MHz

Gain @ 617 – 960 MHz:	0 dBi
Gain @ 1427 – 1517 MHz:	1 dBi
Gain @ 1710 – 2700 MHz:	5 dBi
Gain @ 3400 – 4200 MHz:	6 dBi

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

### GAIN (Excluding Cable Loss): Wi-Fi Antenna



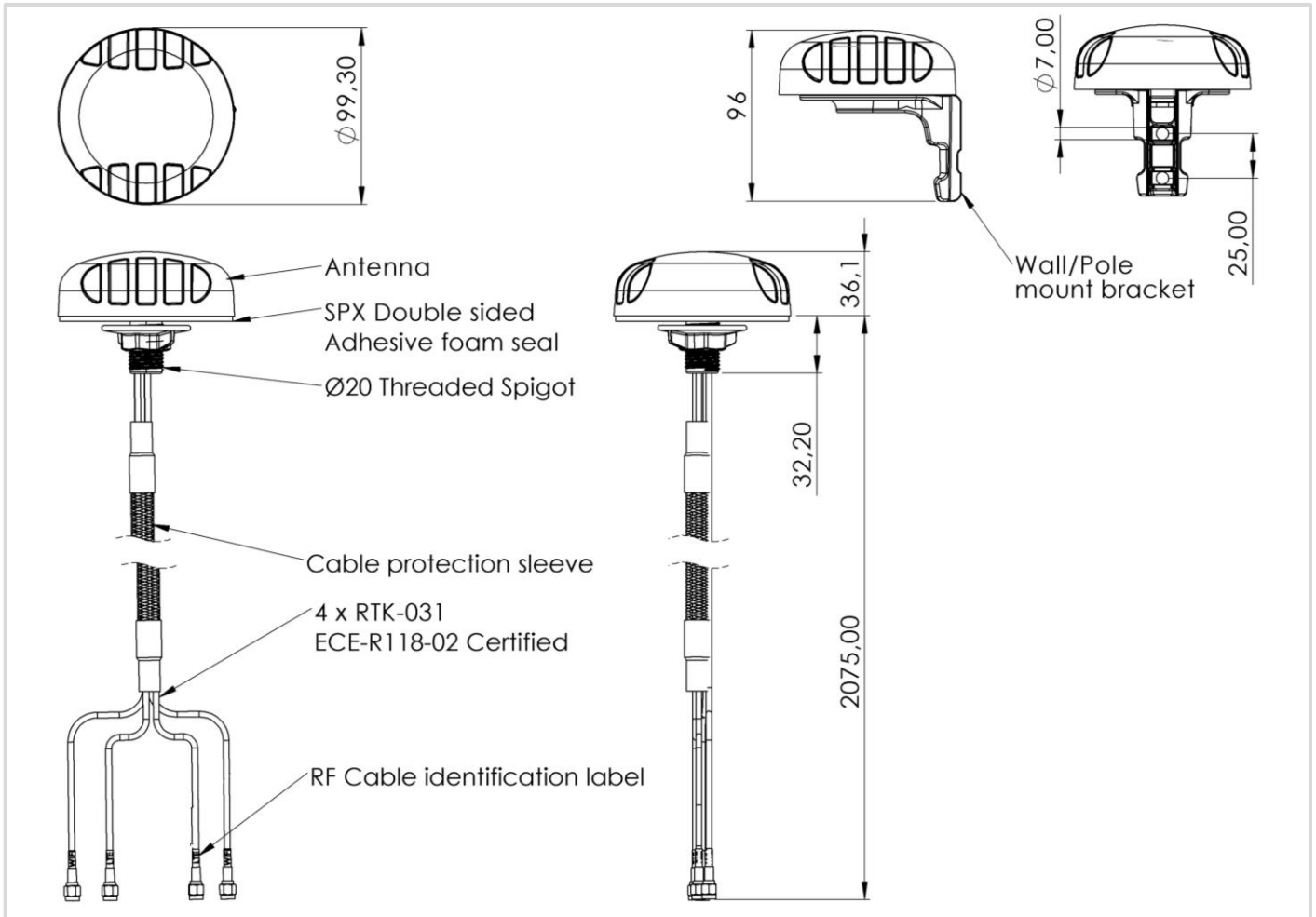
#### Gain\* in dBi

7.5 dBi is the peak gain across all bands from 2400 – 2500 MHz & 5000 – 7200 MHz

Gain @ 2400 – 2500 MHz:	5 dBi
Gain @ 5000 – 7200 MHz:	7.5 dBi

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

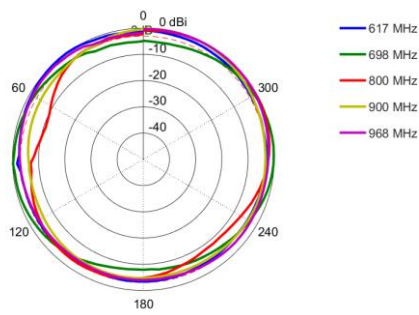
Technical Drawings



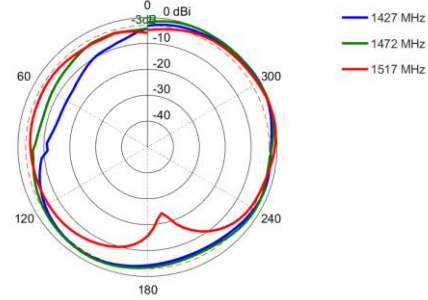


## Radiation Patterns - Cellular

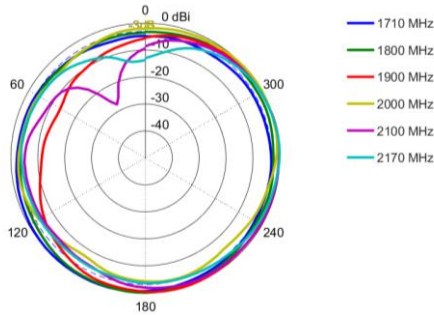
**Azimuth: 617 – 968 MHz**



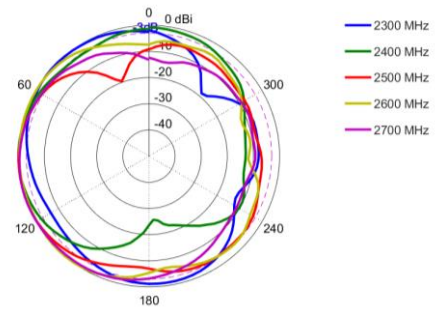
**Azimuth: 1427 – 1517 MHz**



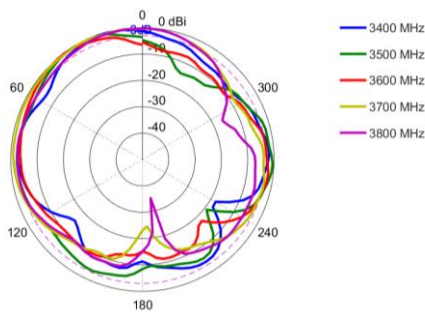
**Azimuth: 1710 – 2170 MHz**



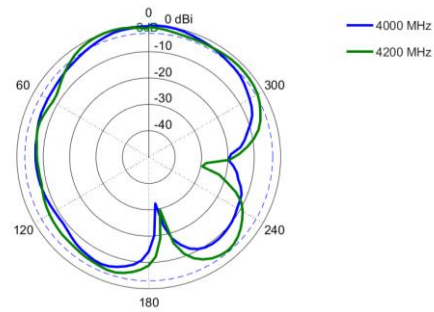
**Azimuth: 2300 – 2700 MHz**



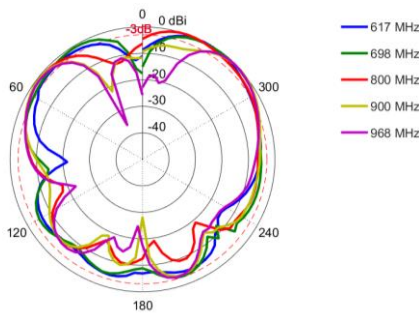
**Azimuth: 3400 – 3800 MHz**



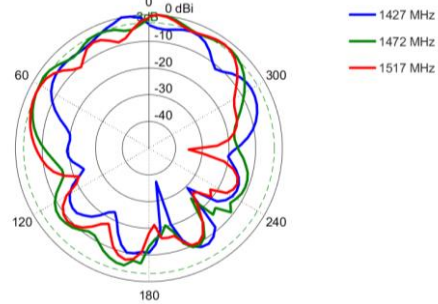
**Azimuth: 4000 – 4200 MHz**



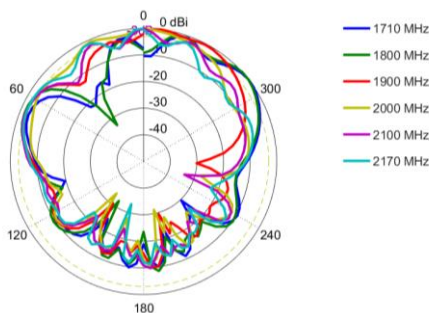
**Elevation 1: 617 – 968 MHz**



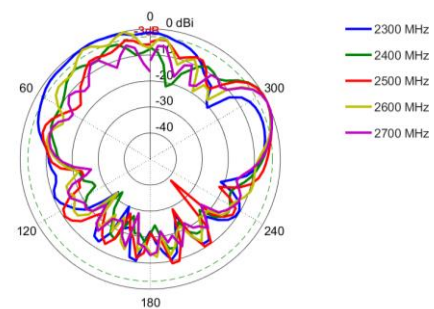
**Elevation 1: 1427 – 1517 MHz**



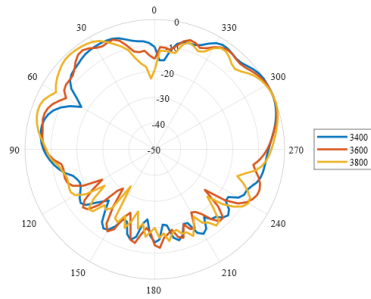
**Elevation 1: 1710 – 2170 MHz**



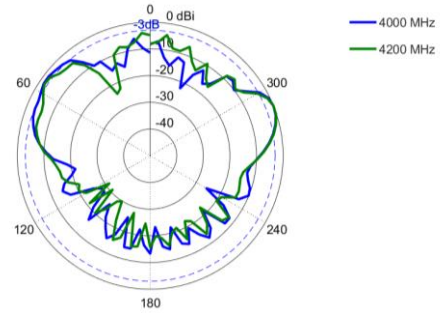
**Elevation 1: 2300 – 2700 MHz**



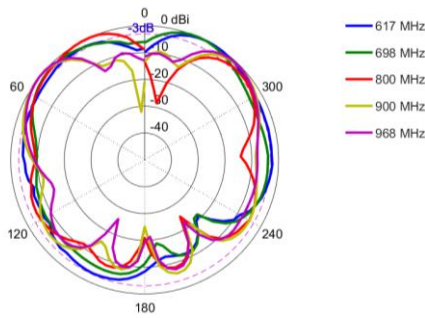
**Elevation 1: 3400 – 3800 MHz**



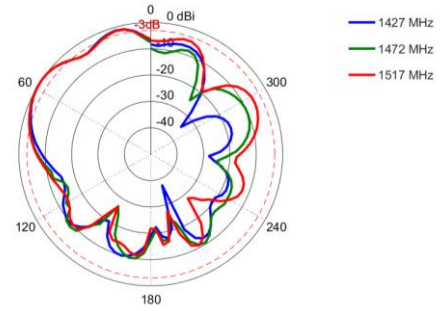
**Elevation 1: 4000 – 4200 MHz**



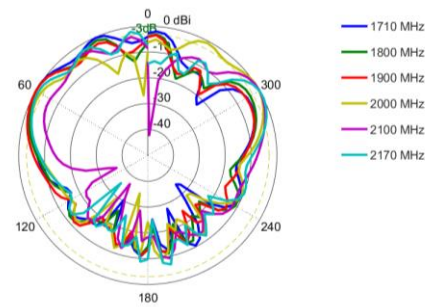
**Elevation 2: 617 – 968 MHz**



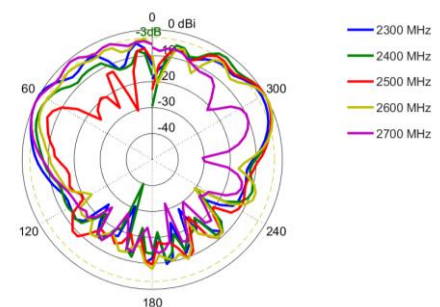
**Elevation 2: 1427 – 1517 MHz**



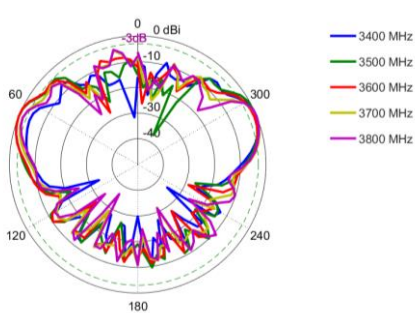
**Elevation 2: 1710 – 2170 MHz**



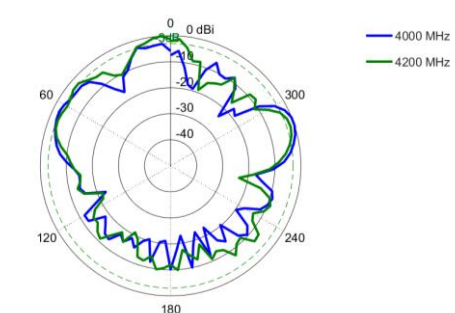
**Elevation 2: 2300 – 2700 MHz**



**Elevation 2: 3400 – 3800 MHz**

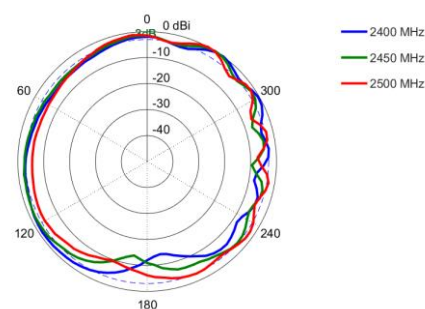


**Elevation 2: 4000 – 4200 MHz**

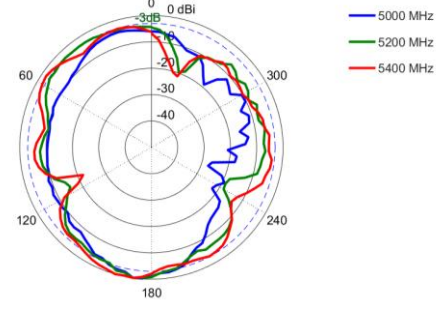


## Radiation Patterns – Wi-Fi

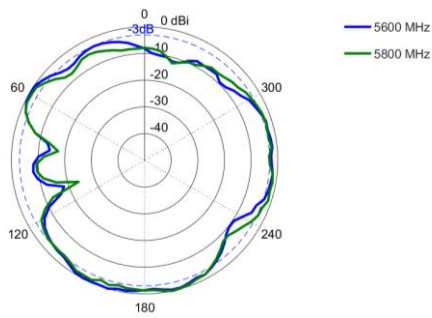
**Azimuth: 2400 – 2500 MHz**



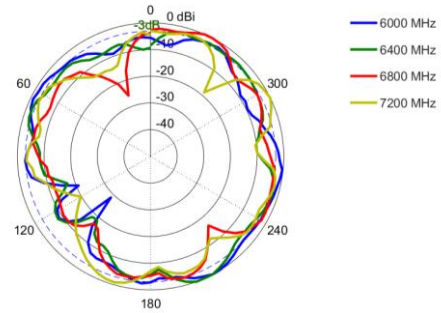
**Azimuth: 5000 – 5400 MHz**



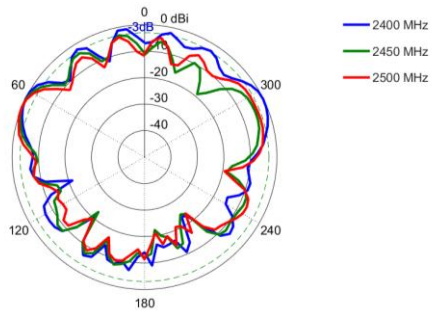
**Azimuth: 5600 – 5800 MHz**



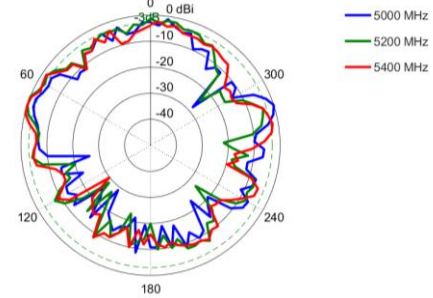
**Azimuth: 6300 – 7200 MHz**



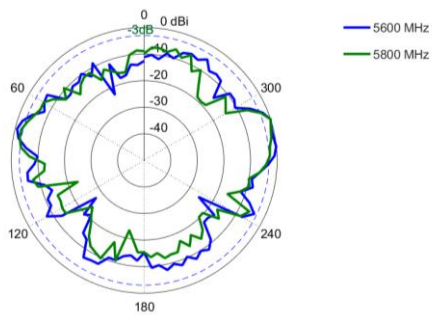
**Elevation 1: 2400 – 2500 MHz**



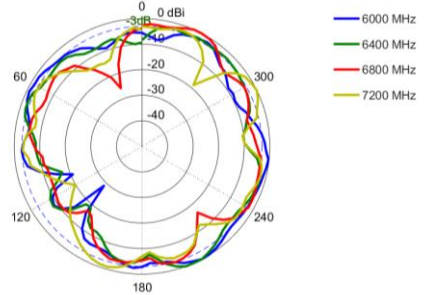
**Elevation 1: 5000 – 5400 MHz**



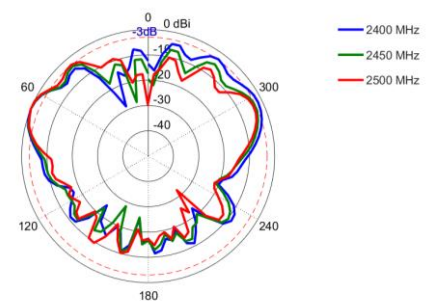
**Elevation 1: 5600 – 5800 MHz**



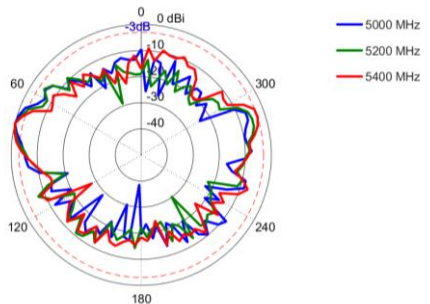
**Elevation 1: 6000 – 7200 MHz**



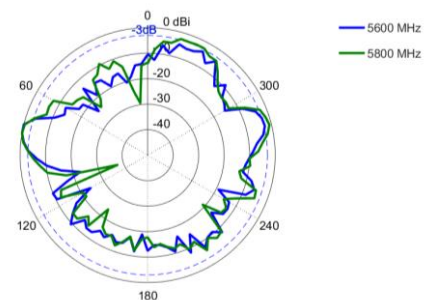
**Elevation 2: 2400 – 2500 MHz**



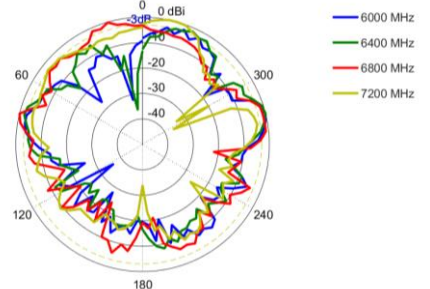
**Elevation 2: 5000 – 5400 MHz**



**Elevation 2: 5600 – 5800 MHz**



**Elevation 2: 6000 – 7200 MHz**



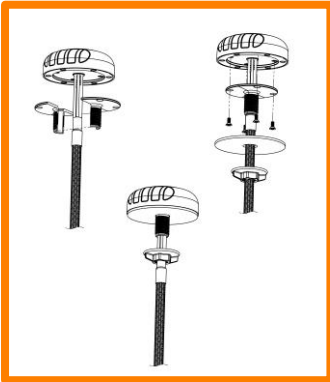


## Mounting Options

### Many Mounting Possibilities – included as standard

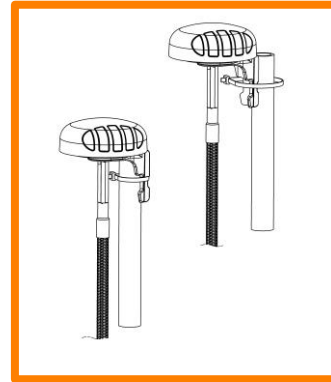
Poynting's new PUCK antenna range provides easy installation with the multiple mounting options. This includes as standard:

- Spigot Mount - two different lengths included (40mm & 80mm)
- Vertical Pole mount (inner & outer mounting for smaller and larger poles)
- Horizontal Pole Mount (e.g., marine rails)
- Magnetic Mount
- Surface Mount (Double Sided Tape)
- Wall Mount



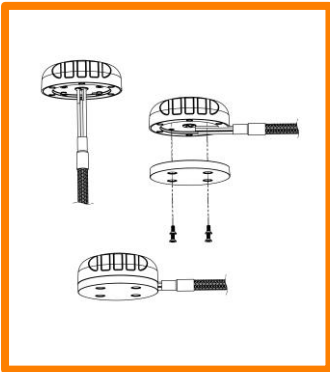
#### Spigot Mount

Removable 40mm & 80mm threaded spigot (included)



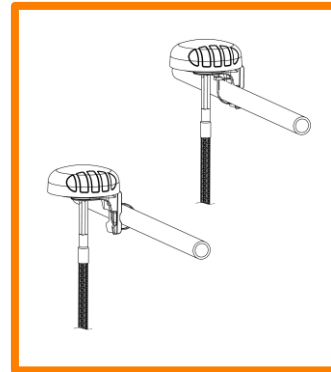
#### Vertical Pole Mount

Pole/Wall Mounting bracket (included)



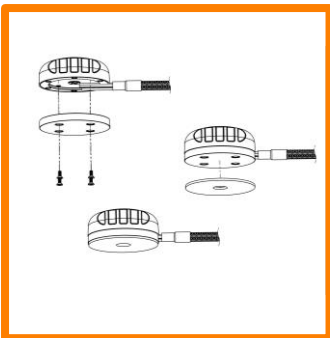
#### Magnetic Mount

Magnetic Base (included)  
For temporary and low mobility installations.



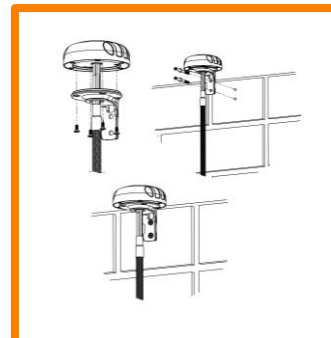
#### Horizontal Pole Mount

Pole/Wall Mounting bracket (included)



#### Surface Mount

Adhesive Surface Mounting (included) or can also be directly secured with longer M4 bolts (not included) to the female threaded inserts located in the antenna base



#### Wall Mount

Pole/Wall Mounting bracket (included)

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## Additional Accessories

See accessories technical specifications on [www.poynting.tech](http://www.poynting.tech)

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## CONTACT POYNTING

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