# MIMO-3-V2-14

**ANTENNAS** | MIMO-3-V2-14

## 5 - IN - 1 TRANSPORTATION & AUTOMOTIVE ANTENNA

### 4X4 LTE (MIMO) & GPS/GLONASS

410-470; 690-960; 1710-2700 & 3400-3800 MHz

6.2 dBi 21 dBi

Increase x Mb/s

Omni-Directional

Machine to Machine

IP 68

-40°C to +80°C

UL 94 HB

2x2 MIMO

GPS included

Chemical Protection

450 MHz

- **5-in-1 high performance multi frequency 2G/3G/4G/LTE antenna (5G Ready)**
- **4 x MiMo LTE & GPS / GLONASS**
- **Ultra-Wideband, includes 450MHz and 3.5GHz CBRS Bands**
- **Robust and water resistant (IP68) antenna**
- **Ideal for transportation & marine use**
- **Multi mounting options for easy installation**

APPLICATION AREAS

Urban

Rural/Farm

Marine

Transportation

### Product Overview

The MIMO-3-V2-14 consists of a 5-in-1 antenna system within a single housing, providing 4x Cellular and a GPS/GLONASS. This antenna is specifically designed for the transportation and marine industry. The 4x Cellular MIMO antennas (for 2G/3G/4G) covers the contemporary 690MHz to 2700MHz bands, as well as the new emerging LTE and 5G spectrum for 450MHz and 3.5GHz CBRS bands, which is becoming popular across the various international cellular network operators for LTE. This antenna, due to its wide band capabilities, can be used across different operators and technologies and is ready for future cellular technologies such as 5G up to 3.8GHz. The fifth antenna is a high-performance active GPS/GLONASS system operating down to -40 degrees. The antenna exceeds the performance of most competitors due to the attention to the 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 important for this type of antenna, especially for the transportation and marine market. Main applications are for commercial/industrial vehicles, marine, M2M and other IoT systems using a wide range of radio technologies, while remaining futureproof over the wide frequency band offered by this antenna.

### Features

- Ultra-wideband 410MHz to 470MHz, 690MHz to 2700MHz and 3400MHz to 3800MHz bands
- Cleverly designed decorrelated antennas give superior MIMO performance in cellular bands
- Above features maintained from 698MHz to 5800MHz in relevant bands and the 450MHz band
- Careful mechanical design provides ruggedness, corrosion, water, dust resistance (IP68)
- Ground plane independent: The MIMO-3 is designed with an internal ground plane, making this antenna suitable for implementation on all surface types

### Application Areas

- Transport broadband, automation and telemetry for Busses, Utility, Trucking & Public Safety vehicles
- Industrial factory automation, robotic machinery and other M2M systems telemetry
- Farming & Agricultural automation such as M2M & IoT
- Mining Vehicles & Machinery communications, telemetry and automation (M2M & IoT)



**Revised:** January 2020

**Regulatory Compliance:** RoHS 2011/65/EU Compliant | ISO 9001:2015
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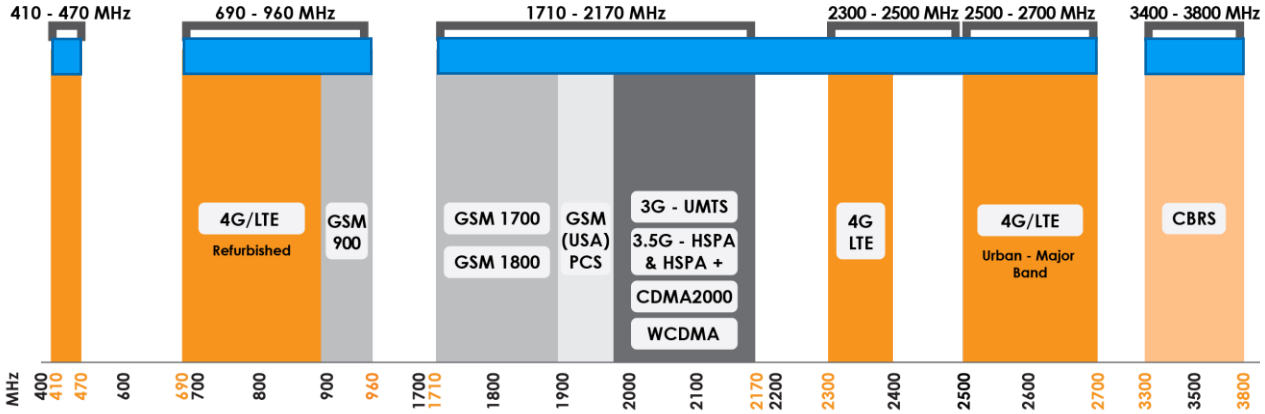
## Frequency Bands – Cellular

The MIMO-3-V2-14 is suitable for the following Cellular frequency bands | 410-470 MHz | 690-960 MHz | 1710-2170 MHz | 2300-2500 MHz | 2500-2700 MHz | 3400-3800 MHz |




**Indicates the frequency bands which MIMO-3-V2-14 supports**

## Antenna Overview

| | LTE | GPS |
|---|---|---|
| Ports | 1-4 | 5 |
| SISO / MIMO | 4x4 MIMO | N/A |
| Frequency Bands | 410 MHz - 3800 MHz | 1575.42 MHz/1600 MHz |
| Peak Gain | 6.2 dBi | 21 dBi |
| Coax Cable Type | Twin HDF-195 | RTK-031 |
| Coax Cable Length | 2m | 2m |
| Connector Type | SMA Male | SMA Male |



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## Electrical Specifications - Cellular

| | |
|---|---|
| **Frequency bands:** | 410-470 MHz<br>690-960 MHz<br>1710-2700 MHz<br>3400-3800 MHz |
| **Gain (max) Port 1-4:** | 6.2 dBi |
| **VSWR Port 1-4:** | ≤2.5:1 |
| **Feed power handling:** | 10 W |
| **Input impedance:** | 50 Ohm (nominal) |
| **Polarisation:** | Linear Vertical |
| **Coax cable loss:** | 0.36 dB/m @ 900 MHz<br>0.48 dB/m @ 1500MHz<br>0.51 dB/m @ 1800MHz<br>0.6 dB/m @ 3000 MHz |
| **Path to Ground:** | Yes |

## GPS/Glonass Antenna Electrical Specifications

| | |
|---|---|
| **Frequency Range (GPS):** | 1575.42MHz/1600MHz |
| **Gain (Max):** | 21+/-2dBi |
| **VSWR:** | ≤1.5:1 |
| **DC Voltage:** | 2.7-3.3 V |
| **DC Current:** | 5-15mA |
| **Noise Figure:** | ≤1.5 dB |
| **Nominal Impedance:** | 50 Ω |
| **Polarisation:** | RHCP |
| **Filter Out Band Attenuation:** | 12dB Min f0+50MHz,<br>16dBi Min f0-50MHz |
| **Cable:** | RTK-031 |
| **Connector:** | SMA male |
| **Voltage:** | 2.7 - 3.3V |
| **Max. Power-W:** | 50 |

## Coax Cable & Connector Type -Cellular

| | |
|---|---|
| **Cable length:** | 2m ±5% |
| **Coax cable type:** | Twin HDF 195 |
| **Connector type:** | SMA (Male) |

## Coax Cable & Connector Type - GPS

| | |
|---|---|
| **Cable length:** | 2m ±5% |
| **Coax cable type:** | RTK-031 |
| **Connector type:** | SMA (Male) |

***The coax cables & connectors are factory mounted to the antenna***

## Product Box Contents

| | |
|---|---|
| **Antenna:** | A-MIMO-0003-V2-14 |
| **Mounting bracket:** | Threaded Spigots (Up to 60mm clamping thickness), Adhesive Surface Mounting & Optional Magnetic Mount |
| **Adapters:** | RPSMA(m) To SMA (f) |

## Ordering Information

| | |
|---|---|
| **Commercial name:** | MIMO-3-V2-14 |
| **Order product code:** | A-MIMO-0003-V2-14 |
| **EAN number:** | 6009710920596 |

## Mechanical Specifications

| | |
|---|---|
| **Product dimensions** | 253 mm x 128 mm x 144 mm |
| **Packaged dimensions:** | 265 mm x 211 mm x 204 mm |
| **Weight:** | 1.36 kg |
| **Packaged weight:** | 1.46 kg |
| **Radome material:** | UV Stable SAN Marine ASA |
| **Radome colour:** | Brilliant White, Pantone P 179-1 C |
| **Mounting Type:** | Spigot, Surface with Magnetic mount option |

## 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 68 |
| **Salt Spray:** | MIL-STD 810F/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, ECE-R118.02 Certified cables |
| **Impact resistance:** | IK 10 |
| **Product Safety & Environmental:** | Complies with CE and RoHS standards |



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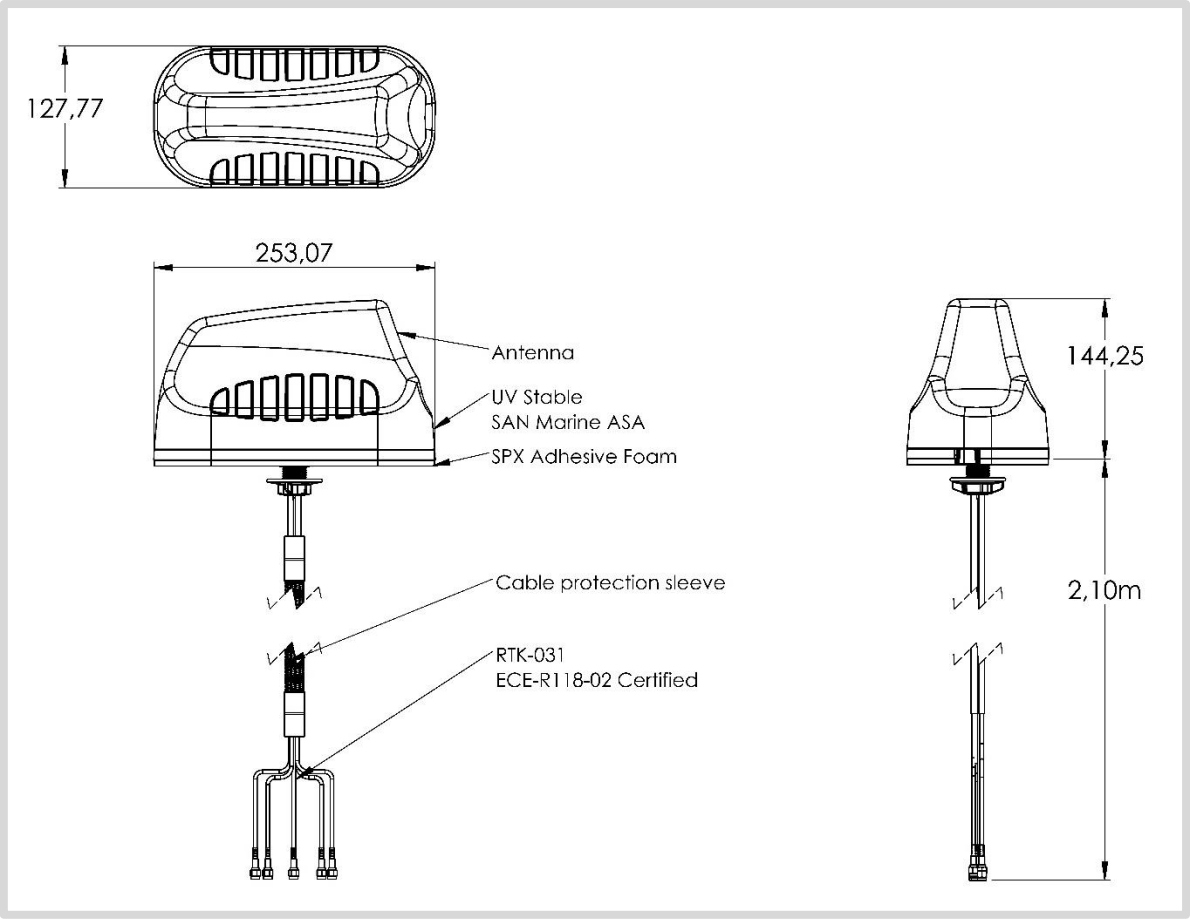
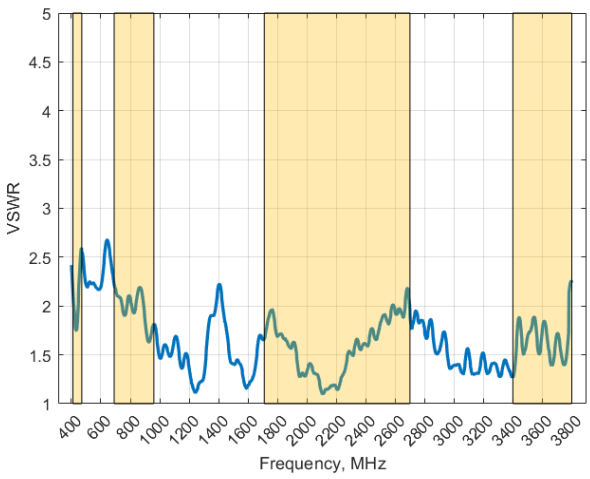
## Technical Drawings

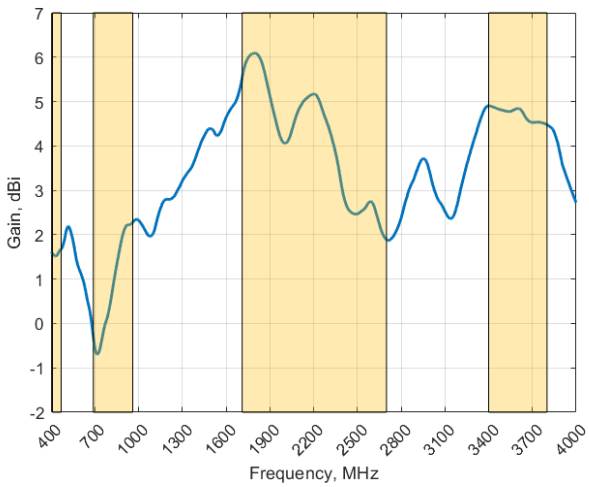



## Antenna Performance Plots

### VSWR: Cellular Antenna




### Gain: 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 MIMO-3-V2-14 delivers superior performance across all bands with a VSWR of ≤2.5:1

*Measured with 2m low loss cable and 650 x 650mm ground plane

**Gain in dBi***

6.2 dBi is the peak gain across all bands from 410-470, 690-960 1710-2700 & 3400-3800 MHz



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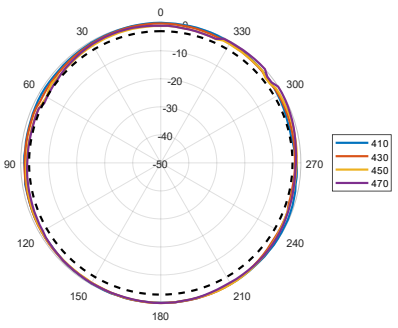
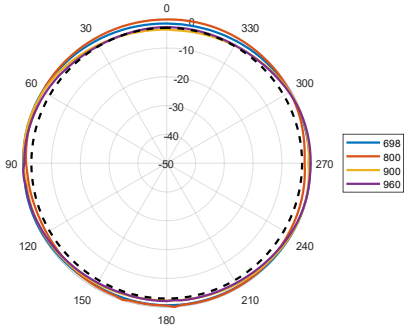
## Radiation Patterns – Cellular

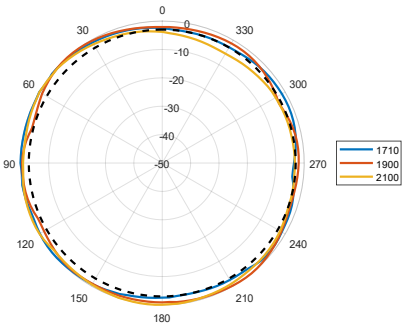
Azimuth (Top View): 410–470 MHz



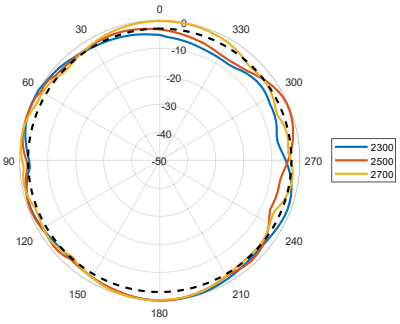

Azimuth (Top View): 690–960 MHz



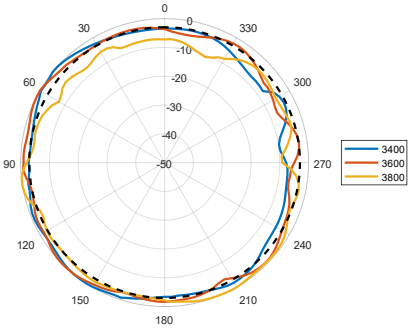

Azimuth (Top View): 1710–2100 MHz



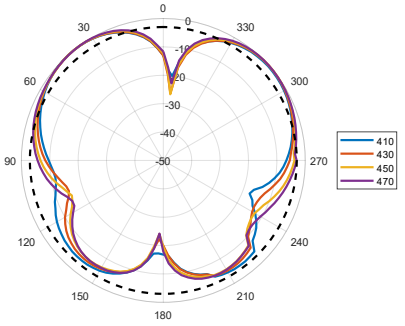

Azimuth (Top View): 2300–2700 MHz



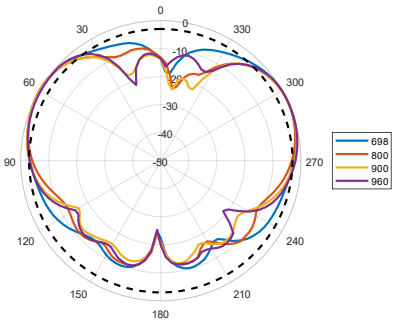

Azimuth (Top View): 3400–3800 MHz



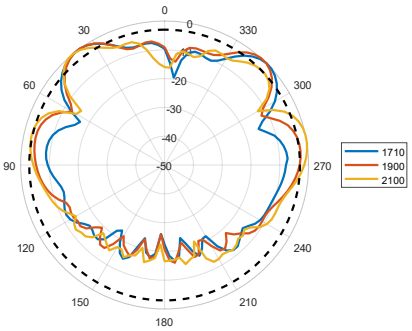

Elevation1 (Side View): 410–470 MHz



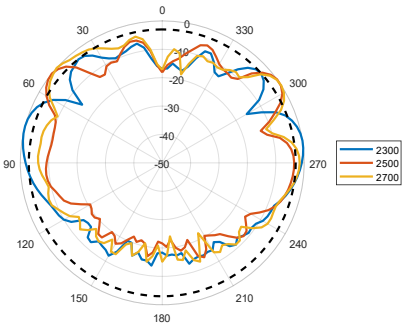

Elevation1 (Side View): 690–960 MHz



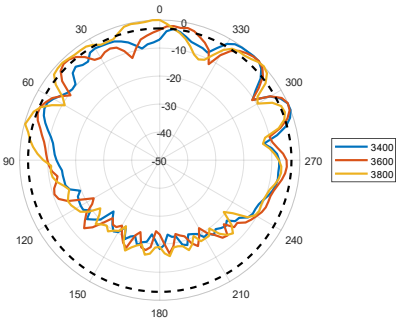

Elevation1 (Side View): 1710–2100 MHz



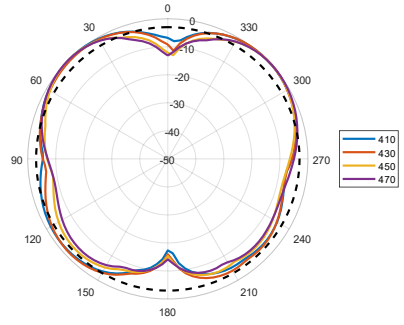

Elevation1 (Side View): 2300–2700 MHz



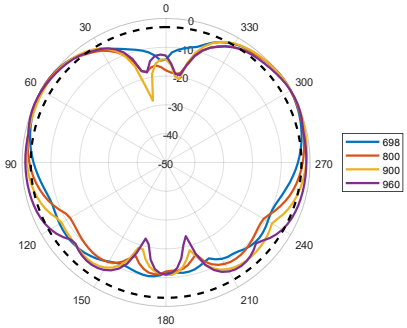

Elevation1 (Side View): 3400–3800 MHz




Elevation2 (Side View): 410–470 MHz




Elevation2 (Side View): 690–960 MHz



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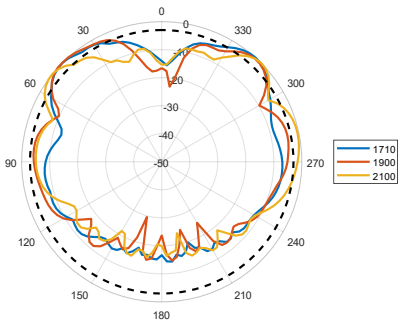
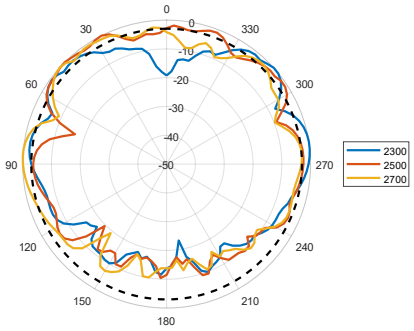
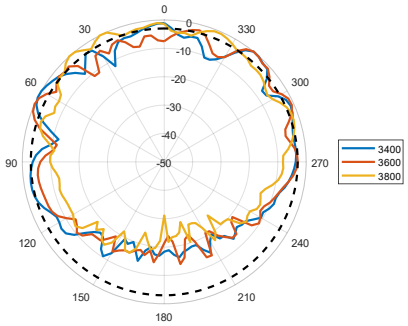
## Elevation2 (Side View): 1710–2100 MHz



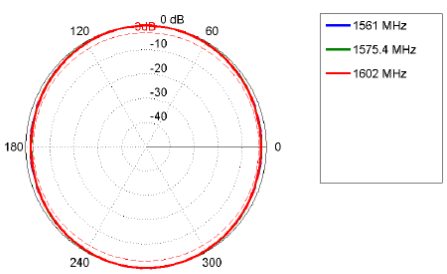

## Elevation2 (Side View): 2300–2700 MHz



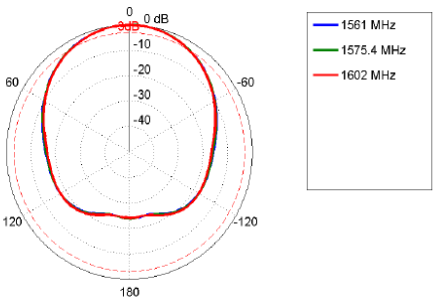

## Elevation2 (Side View): 3400-3800 MHz



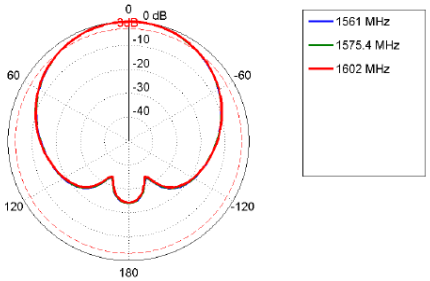

## XY Plane: 1561–1602 MHz




## XZ Plane: 1561–1602 MHz




## YZ Plane: 1561–1602 MHz



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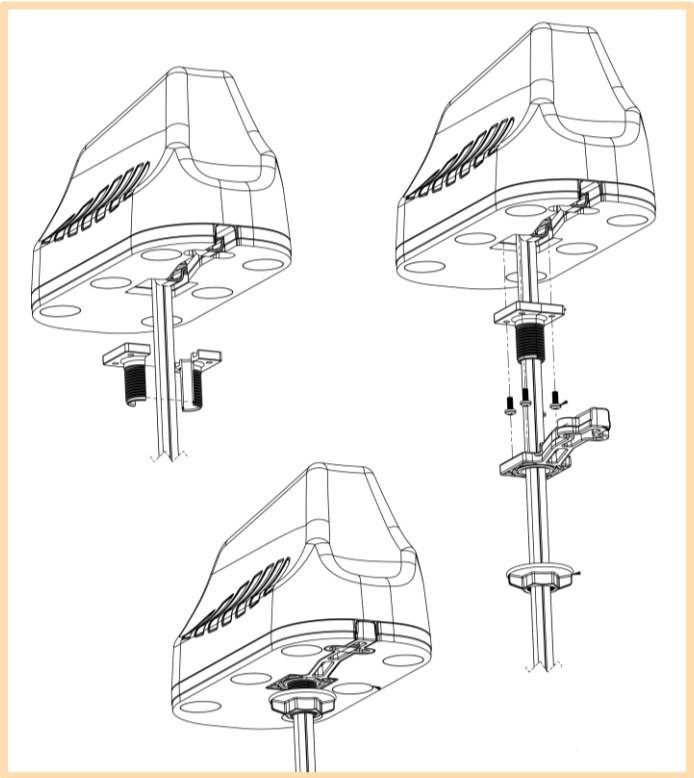
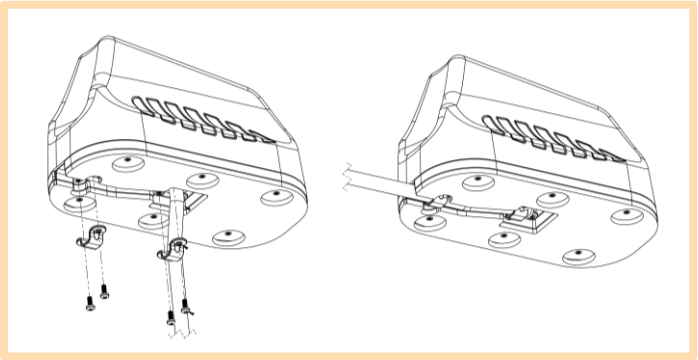
## Mounting Options



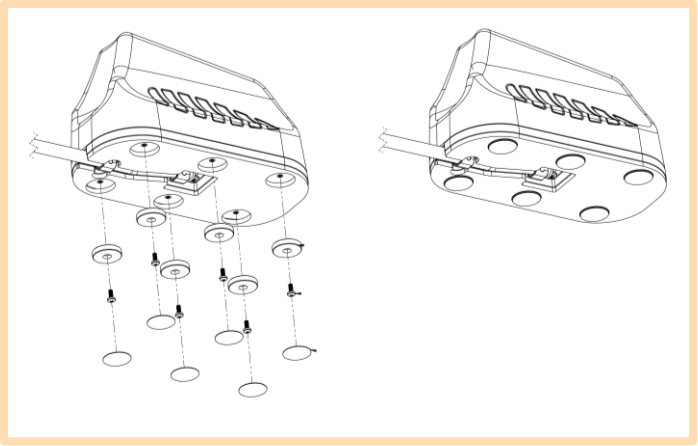
### Standard Spigot Mount

Threaded Spigot Mounting



### Surface Mount

Adhesive Surface Mounting



### Magnetic Mount

Optional Magnetic Base Kit



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## Additional Accessories

**A-MBK-0001-V1.0**

Magnetic Base Kit

**Various Cable Extensions Available**

## Contact Poynting

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