Product Overview

The MIMO-1 incorporates five antennas in a single rugged low profile antenna housing. Two LTE/4G/3G antennas covering all cellular bands and also achieves MIMO data speed increases since the two antennas provide space and pattern diversity. Similarly two dual band Wi-Fi antennas give blistering speeds at both 2.4 and 5 GHz and full MIMO advantage. The fifth antenna is a high performance active GPS/GLONASS module operating down to -40 degrees.

The antenna exceeds the performance of most competitors due to the care of attention to radiation patterns of all radiators. An excellent compromise between omnidirectionality, pattern diversity and good radiation at low (horizontal) angles is achieved. Main applications are for industrial vehicles, M2M and other IoT using a range of radio technologies.

Features

- Advanced antenna engineering with exceptional radiation pattern and gain
- Cleverly designed decorrelated antennas give superior MIMO performance in Wi-Fi and cellular bands
- Above features maintained from 698MHz to 5800MHz in relevant bands
- Careful mechanical design provides ruggedness, water and corrosion resistance

Application areas

- 4G to Wi-Fi internet on busses, trains etc
- Linking public vehicles to data networks
- Trucks, tractors and other industrial vehicles for control and communications
- M2M to ATMs, vending machines, modems, smart meters, industrial inclosures
- Asset tracking (containers etc)
Frequency bands - Cellular

The MIMO-1 works across the following LTE bands: 1-21, 23-28, 30, 33-41

VSWR: PORT 1 - Cellular Antenna

Gain: MIMO-1 Cellular Antenna [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 MIMO-1 delivers superior performance across all bands with a VSWR of 3:1 or better.

* Measured on a 40cm x 40cm ground plane

Gain* in dBi

6.2 dBi is the peak gain across all bands from 698 - 2700 MHz

Gain @ different bands: 1.8dBi @ 698-960MHz
Gain @ different bands: 4.5dBi @ 1710-2700MHz

*Measured on a 40cm x 40cm ground plane
Radiation Patterns - Cellular

Port 1:

Azimuth 690 - 960:

Azimuth 2300 - 2400:

Azimuth 2400 - 2500:

Azimuth 2500 - 2700:
Radiation Patterns - Cellular

Port 2:

Azimuth 690 - 960:

Azimuth 2300 - 2400:

Azimuth 2500 - 2700:

Azimuth 1710 - 2200:

Azimuth 2400 - 2500:

Radiation Patterns - Cellular

Port 2:

Azimuth 690 - 960:

Azimuth 2300 - 2400:

Azimuth 2500 - 2700:

Azimuth 1710 - 2200:

Azimuth 2400 - 2500:
Frequency bands - Wi-Fi

The MIMO-1 works on the 2400 - 2500 MHz and 5000 - 5800 MHz bands.

**Antenna Performance Plots - Wi-Fi**

**VSWR: PORT 1 - Wi-Fi Antenna**

**VSWR: PORT 2 - Wi-Fi Antenna**

**Gain: MIMO-1 Wi-Fi Antenna (excluding cable loss)**

**Gain in dBi**

3.3 dBi is the peak gain across band from 2400 - 2500 MHz
3.3 dBi is the peak gain across band from 5000 - 5800 MHz

* Measured on a 40cm x 40cm ground plane

**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 3.0:1 or better.

The MIMO-1 delivers superior performance across all bands:

- < 2:1 @2400 - 2500 MHz
- < 3:1 @5000 - 5800 MHz

* Measured with 1m low loss cable
* Measured on a 40cm x 40cm ground plane
Radiation Patterns - Wi-Fi

Port 1:

Azimuth 2400 - 2500:

Azimuth 5400 - 5800:

Port 2:

Azimuth 2400 - 2500:

Azimuth 5400 - 5800:
Radiation Patterns - GPS

XY Plane:

XZ Plane:

YZ Plane:
Cable Configuration

- **Antenna**
- **Foam Seal**
- **M18 Star Washer**
- **M18 Nut**
- **Cable Protection Sleeve**

**Antenna Cable Connectors**

- **2G/3G/4G MiMo antenna cable:** Maroon Label
  - SMA (m) connector

- **GPS/Glonass antenna cable:** Blue Labels
  - SMA (m) connector

- **2.4/5GHz MiMo antenna cable:** Green Labels
  - SMA (m) connector
Electrical Specifications

**GSM/3G/LTE electrical specifications**

- **Frequency Band 1:** 698 - 960 MHz
- **Frequency Band 2:** 1710 - 2700 MHz
- **Gain (Max):** 6.2 dBi
- **VSWR:** < 2.5:1
- **Feed Power Handling:** 10 W
- **Input impedance:** 50 Ohm (nominal)
- **Polarisation:** Linear Vertical
- **Cable loss:** 0.8 dB/m @ 1000 MHz
- **2.6 dB/m @ 3000 MHz**
- **Cable:** 2 x 0.3 m EF_316_D ± 5%
- **Connector:** 2 x SMA male
- **DC Short:** Yes

**GPS/Glonas Antenna electrical specifications**

- **Frequency Range (GPS):** 1575.42 MHz/1600 MHz
- **Gain (Max):** 21+/−2 dBi
- **VSWR:** ≤ 1.5:1
- **DC Voltage:** 2.7 - 3.3 V
- **DC Current:** 5 - 15 mA
- **Noise Figure:** ≤ 1.5 dB
- **Nominal Impedance:** 50 Ω
- **Polarisation:** RHCP
- **Filter Out Of Band Attenuation:** 12 dB Min IO+50 MHz, 16 dB Min IO–50 MHz
- **Cable:** 0.3 m EF_316_D ± 5%
- **Connector:** SMA male
- **Voltage:** 2.7 - 3.3 V
- **Max. Power-W:** 50 W

**Wi-Fi electrical specifications**

- **Frequency:** 2400 - 2500 MHz, 5000 - 5800 MHz
- **Gain (Max):** 3.3 dBi (2dBi nominal)
- **VSWR:** < 2.1 @ 2.4-2.5 GHz, < 3.1 @ 5-5.8 GHz
- **Feed power handling:** 10 W
- **Nominal input impedance:** 50 Ohms
- **Polarisation:** Linear Vertical
- **Cable:** 0.3 m EF_316_D ± 5%
- **Connector:** 2 x SMA male

Environmental Specifications

- **Wind Survival:** 160 km/h
- **Temperature Range (Operating):** -40°C to +70°C
- **Environmental Conditions:** Outdoor/Indoor
- **Operating Relative Humidity:** Up to 98%
- **Storage Humidity:** 5% to 95% - non condensing
- **Storage Temperature:** -40°C to +70°C
- **Certification Approvals and Standards**
  - **Cable Flammability rating:** UL 94 V1
  - **Water Ingress Protection Ratio/Standard:** IP 65 (NEMA 4X)
  - **Impact resistance:** IK 10
  - **Salt Spray:** MIL-STD 810F/ASTM B117
  - **Product Safety:** Complies with UL, CE, EN, CSA and IEC

Mechanical Specifications

- **Product Dimensions (L x W x D):** 252 mm x 127 mm x 55 mm
- **Packaged Dimension:** 270 mm x 135 mm x 100 mm
- **Weight:** 600 g
- **Packaged Weight:** 917.4 g
- **Radome Material:** ABS (Halogen Free)
- **Base Material:** Passivated ADC12
- **Radome Colour:** Black
- **End Cap Colour:** Pantone - Black
  - RAL - Black

Certification Approvals and Standards

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Ordering Information

- **Commercial name:** MIMO-1
- **Order Product Code:** A-MIMO-0001
- **EAN number:** 0707273469052

Antenna Configuration Options

- **MIMO-0001-01:**
  - Two LTE/4G/3G antennas covering all cellular bands

- **MIMO-0001-02:**
  - Two LTE/4G/3G antennas covering all cellular bands and a third antenna is a high performance active GPS/GLONASS module.

- **MIMO-0001-03:**
  - Two dual band Wi-Fi antennas.

*For cable and connector options please see MIMO Cable assemblies

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