

TECHNICAL DATA SHEET

Description: MiMo LTE, WiFi, GNSS Vehicle

Mount Antenna

PART NUMBER: GPSMB401, GPSMB402,GPSMB401R,

GPSMB402R





All dimensions are in mm / inches

Features:

- Supports MIMO Cellular LTE 698-960/1695-2170/2300-2700/2900-3600MHz
- Supports WiFi and DSRC 2400-2500MHz/4900-5925MHz
- Supports Beidou, GPS, Galileo, GLONASS
- Direct Mount and optional Magnetic Mount features
- See GPSMBMM for magnetic mount details

Applications:

- Telematics
- Location based services
- First Responders(Police, Ambulance, Fire)
- Government
- Energy(Utility Vehicles)
- Fleet Management
- Railroad

Issue: 1823

In the effort to improve our products, we reserve the right to make changes judged to be necessary. CONFIDENTIAL AND PROPRIETARY INFORMATION

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This document covers all product variants of the following product family

| Model No. | Color | Remark |
|-----------|-------|---|
| GPSMB401 | Black | |
| GPSMB402 | White | |
| GPSMB401R | Black | Compliant with EN 50155, EN 61373, EN45545-2, railroad application. |
| GPSMB402R | White | Compliant with EN 50155, EN 61373, EN45545-2, railroad application. |

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ROHS

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ELECTRICAL SPECIFICATIONS

Frequency (LTE) 698-960/1695-2170/2300-

2700/2900-3600 MHz

Frequency (WiFi & DSRC) 2400-2500/4900-5925 MHz

Frequency (Beidou, GPS, Galileo, Glonass) 1561.098±2.046/

1575.42±1.023/

1602.5625±4MHz

Nominal Impedance 50 Ω

VSWR** (LTE) <1.5

VSWR** (WiFi & DSRC) <1.4

Gain* (LTE antenna, <2170MHz) 4 dBi ± 2.5 dB

Gain* (LTE antenna, >2170MHz) 5 dBi ± 2 dB

Gain* (WiFi antenna, <2500MHz)
4.5 dBi \pm 1.5 dB

Gain* (WiFi antenna, >4900MHz) 5 dBi \pm 2 dB

Isolation LTE to LTE**

15 dB or better

GNSS antenna RHCP gain 1 dBic ± 2 dB

LNA gain $30 \text{ dB} \pm 2 \text{ dB}$

Noise Figure 2.5 (cascade) dB

Current $9 \text{ mA} \pm 2 \text{ mA}$

Vdc 3-5Vdc

LNA and filter attenuation

@ 824 MHz 70 dB

@960 MHz 65 dB

@1710 MHz 60 dB

@2170 MHz 65 dB

^{**}In free space with 17ft cables



^{*}Measured on 2ft GND plane and with 4 inch cables



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ELECTRICAL SPECIFICATIONS

Connector type(s)
Cable type(s)
Length

SMA (LTE and GPS) /SMA-RP (WiFi) RG-58 (LTE and WiFi) / RG-174 (GPS) 17 Feet



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MECHANICAL SPECIFICATIONS

Plastic radome for GPSMB401/GPSMB402 ABS/PC Material UV

Stabilized, UL-94HB

for GPSMB401R/GPSMB402R PC material, EN45545

R6 HL3 compliant

Color Black, White

Ingress Protection IP67

Weight ~1340 g

Fixing system Roof mounting (Also

Magnet mounting accessory available,

GPSMBMM)

Recommended fastening torque 1518ft-lb (20-25Nm).

ENVIRONMENTAL SPECIFICATIONS

Operating temperature MIL-STD 810G -40/+85° C

Humidity 95%RH @ +25°C for 12h and 55°C for 12h

Vibration MIL-STD 810G, section 514.6, 5-500 Hz, 60min/axis

Thermal Shocks MIL-STD 810G, section 503.5, -40 to +85°C, 3 cycles

Drop Test Minimum of one drop per axis – 4, 1 meter drops





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Tests for railroad certification per EN50155, EN61373, EN45545-2

| NO | T SN IN STAND | TEST DESCRIPTION | REFER STANDARD | TEST REPORT NO | RESULT(PASS/FAIL) |
|---------|---------------|--|-----------------------|-----------------|-------------------|
| 1 | 12.2.3 | Cooling test | | | |
| 2 | 12.2.4 | Dry heat test | EN 50155 | DD20170919002 | PASS |
| 3 | 12.2.5 | Damp heat test, cyclic | | | |
| 4 | 12.2.6 | Supply overvoltages | EN 50155 | W01714200900E | PASS |
| 5 | 12.2.7 | Surges, electrostatic discharge and transient burst susceptibility tests | EN 50155 | E1710056-01E | PASS |
| 6 | 12.2.8 | Radio interference | | | |
| 7 | 12.2.9 | Insulation test | EN 50155 | E17110014-01E | PASS |
| 8 | 12.2.10 | Salt mist test | EN 50155 | DD20170919002 | PASS |
| 9 12.2. | 12 2 11 | Vibration | EN 61373 | | |
| | 12.2.11 | Shock, and bump test | EN 61373 | | |
| 10 | 12.2.12 | Watertightness test | EN 50155 | | |
| 11 | 12.2.14 | Low temperature storge test | EN 50155 | | |
| 12 | / | fire & smoke | EN 45545-2 R15&R16 | TC 18 02 000528 | HL1&HL2 |
| | | ine a sinone | EN 45545-2 R15&R16 | TC.18.04.001633 | HL1&HL2&HL3 |





TECHNICAL DATA SHEET

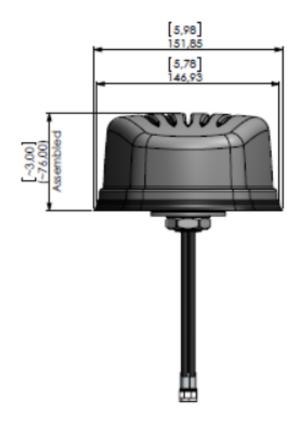
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MECHANICAL DRAWING









TECHNICAL DATA SHEET

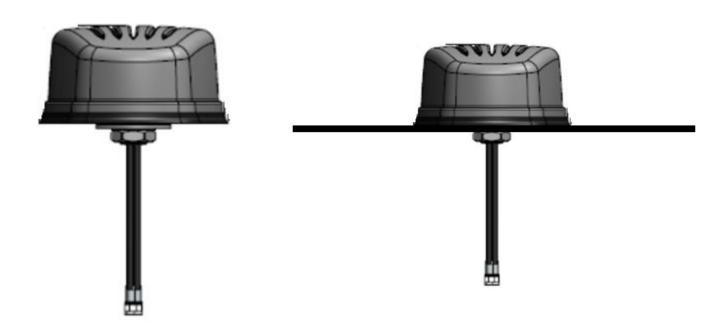
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TEST SETUP



For VSWR, test in free space with 17ft cables

For radiation performance, test on 2ft GND plane with 4inch cables



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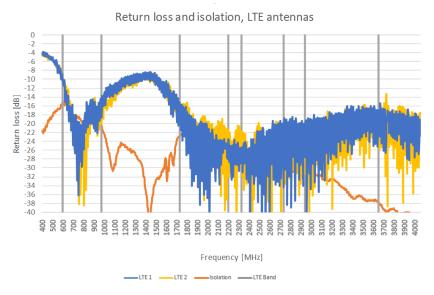
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CHARTS

Return Loss and isolation in free space, LTE antennas**



Return Loss in free space, WiFi antenna**







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Description: MiMo LTE, WiFi, GNSS Vehicle

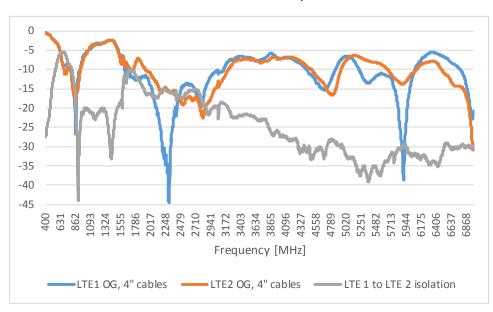
Mount Antenna

PART NUMBER: GPSMB401, GPSMB402,GPSMB401R,

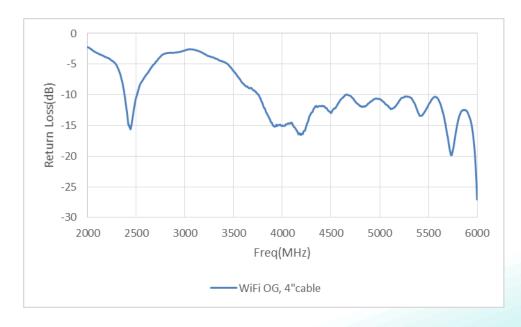
GPSMB402R

CHARTS

Return Loss and isolation, LTE antennas*



Return Loss, WiFi antenna*







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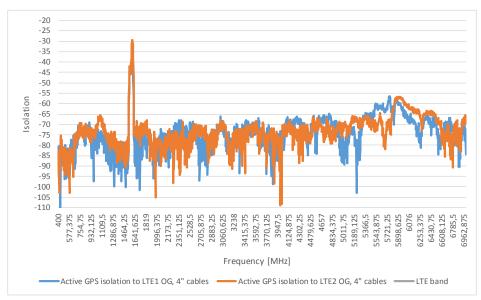
Mount Antenna

PART NUMBER: GPSMB401, GPSMB402,GPSMB401R,

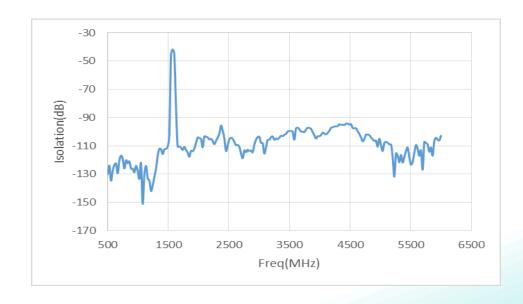
GPSMB402R

CHARTS

GPS isolation to LTE 1 and LTE 2 antenna*



GPS isolation to WiFi antenna*





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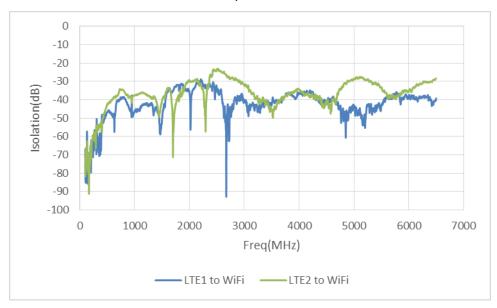
Mount Antenna

PART NUMBER: GPSMB401, GPSMB402,GPSMB401R,

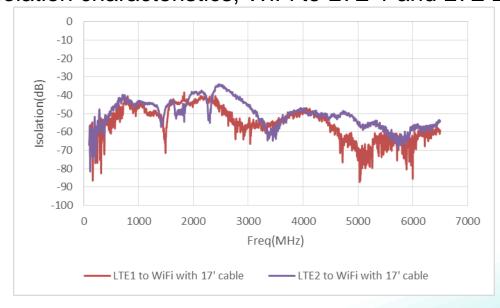
GPSMB402R

CHARTS

Isolation characteristics, WiFi to LTE 1 and LTE 2*



Isolation characteristics, WiFi to LTE 1 and LTE 2**





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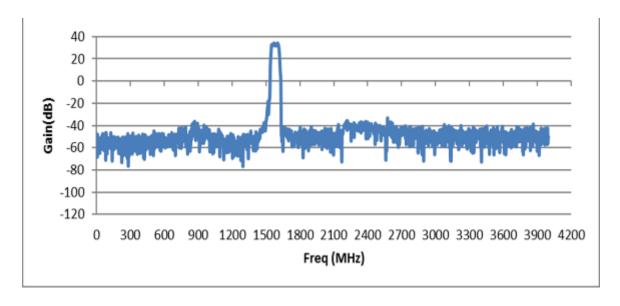
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CHARTS

GNSS LNA performance





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CHARTS

LTE antenna total efficiency with 2ft metal plate and 4inch cables



Maximum 3D gain, LTE antenna with 2ft metal plate and 4inch cables









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Description: MiMo LTE, WiFi, GNSS Vehicle

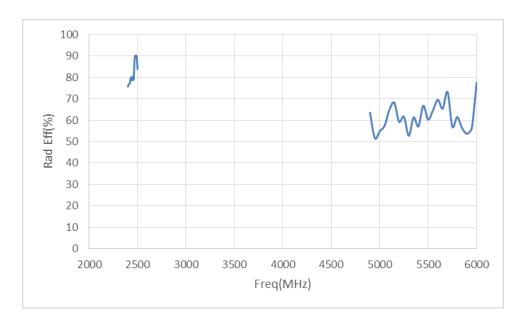
Mount Antenna

PART NUMBER: GPSMB401, GPSMB402,GPSMB401R,

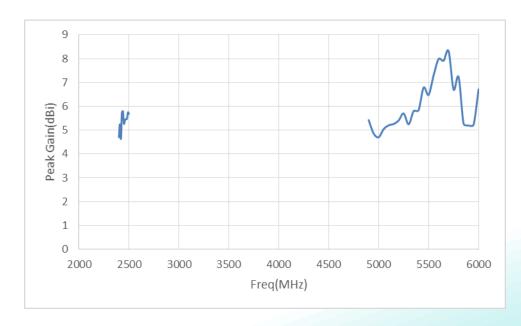
GPSMB402R

CHARTS

WiFi antenna total efficiency with 2ft metal plate and 4inch cables



Maximum 3D gain, WiFi antenna with 2ft metal plate and 4inch cables



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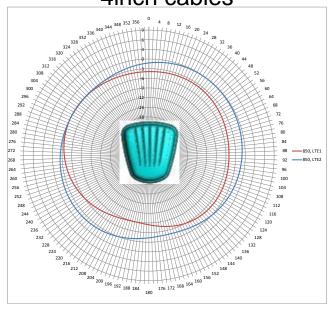
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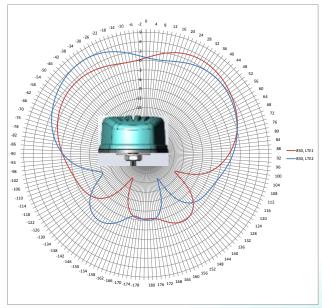
GPSMB402R

CHARTS

LTE antenna radiation pattern at 850MHz with 2ft metal plate and 4inch cables



Horizontal plot



Vertical plot front view



ROHS



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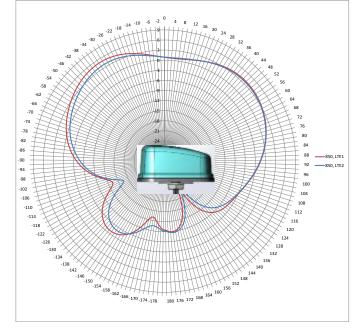
Mount Antenna

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CHARTS

LTE antenna radiation pattern at 850MHz with 2ft metal plate and







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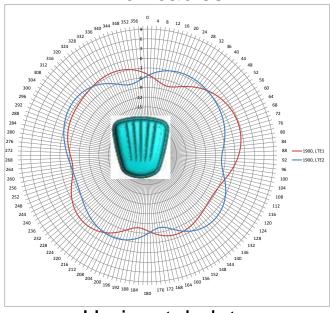
Mount Antenna

PART NUMBER: GPSMB401, GPSMB402,GPSMB401R,

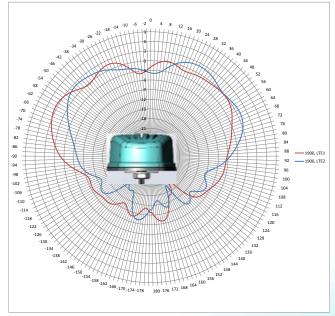
GPSMB402R

CHARTS

LTE antenna radiation pattern at 1900MHz with 2ft metal plate and 4inch cables



Horizontal plot



Vertical plot front view

Issue: 1823

ROHS



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Description: MiMo LTE, WiFi, GNSS Vehicle

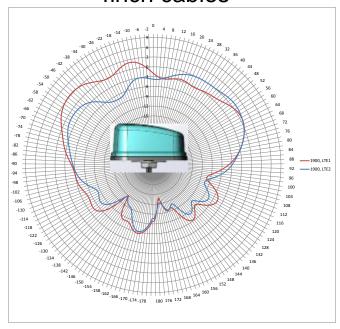
Mount Antenna

PART NUMBER: GPSMB401, GPSMB402,GPSMB401R,

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CHARTS

LTE antenna radiation pattern at 1900MHz with 2ft metal plate and 4inch cables



Vertical plot side view





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Description: MiMo LTE, WiFi, GNSS Vehicle

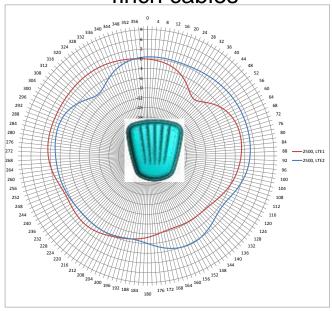
Mount Antenna

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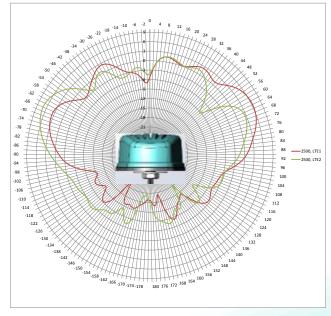
GPSMB402R

CHARTS

LTE antenna radiation pattern at 2500MHz with 2ft metal plate and 4inch cables



Horizontal plot



Vertical plot front view







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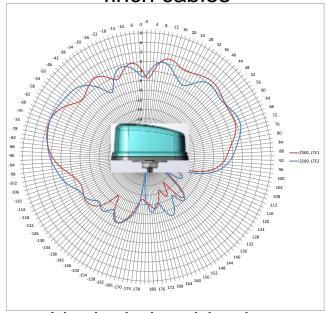
Mount Antenna

PART NUMBER: GPSMB401, GPSMB402,GPSMB401R,

GPSMB402R

CHARTS

LTE antenna radiation pattern at 2500MHz with 2ft metal plate and 4inch cables



Vertical plot side view





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Description: MiMo LTE, WiFi, GNSS Vehicle

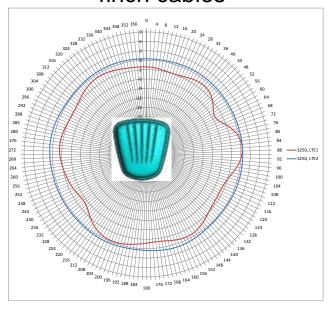
Mount Antenna

PART NUMBER: GPSMB401, GPSMB402,GPSMB401R,

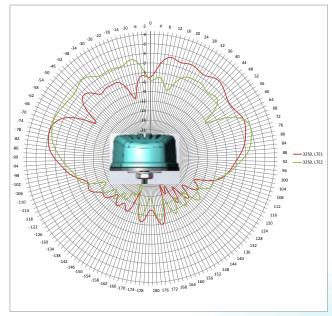
GPSMB402R

CHARTS

LTE antenna radiation pattern at 3250MHz with 2ft metal plate and 4inch cables



Horizontal plot



Vertical plot front view







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Description: MiMo LTE, WiFi, GNSS Vehicle

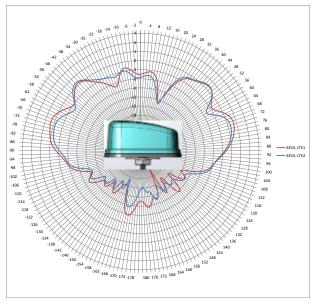
Mount Antenna

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CHARTS

LTE antenna radiation pattern at 3250MHz with 2ft metal plate and 4inch cables



Vertical plot side view





TECHNICAL DATA SHEET

Description: MiMo LTE, WiFi, GNSS Vehicle

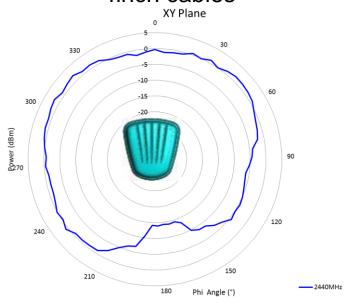
Mount Antenna

PART NUMBER: GPSMB401, GPSMB402,GPSMB401R,

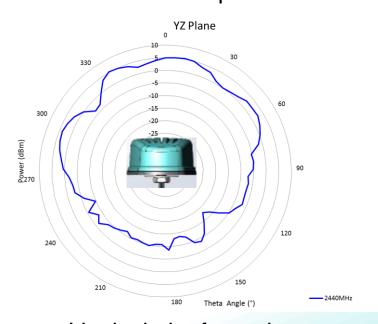
GPSMB402R

CHARTS

WiFi antenna radiation pattern at 2440MHz with 2ft metal plate and 4inch cables



Horizontal plot



Vertical plot front view

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ROHS



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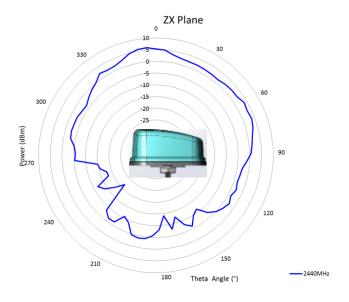
Mount Antenna

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CHARTS

WiFi antenna radiation pattern at 2440MHz with 2ft metal plate and 4inch cables



Vertical plot side view





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Description: MiMo LTE, WiFi, GNSS Vehicle

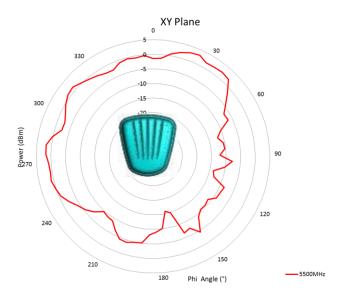
Mount Antenna

PART NUMBER: GPSMB401, GPSMB402,GPSMB401R,

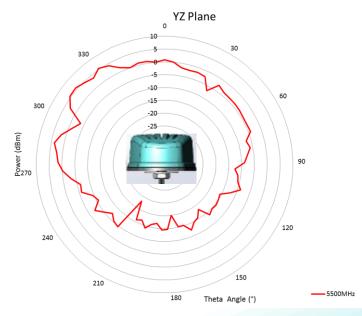
GPSMB402R

CHARTS

WiFi antenna radiation pattern at 5500MHz with 2ft metal plate and 4inch cables



Horizontal plot



Vertical plot front view



ROHS



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Description: MiMo LTE, WiFi, GNSS Vehicle

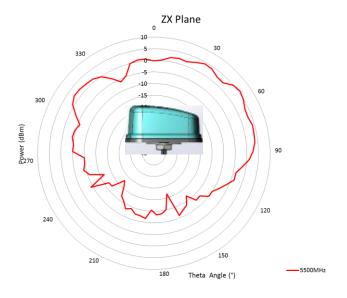
Mount Antenna

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CHARTS

WiFi antenna radiation pattern at 5500MHz with 2ft metal plate and 4inch cables



Vertical plot side view





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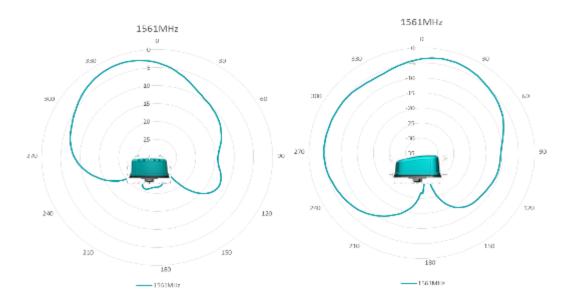
Mount Antenna

PART NUMBER: GPSMB401, GPSMB402,GPSMB401R,

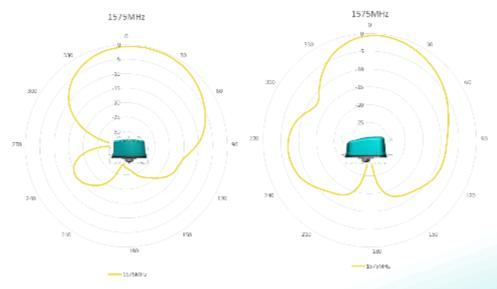
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CHARTS

BD2 RHCP patterns, measured with 4inch cables in free space



GPS & Galileo RHCP patterns, measured with 4inch cables in free space







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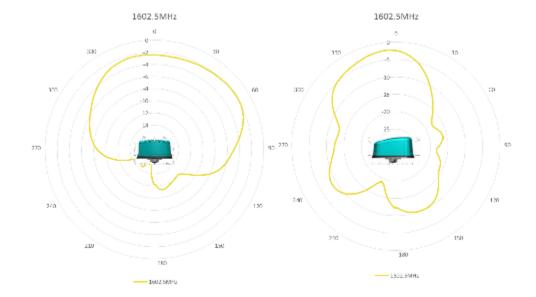
Mount Antenna

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CHARTS

GLONASS RHCP patterns, measured with 4inch cables in free space









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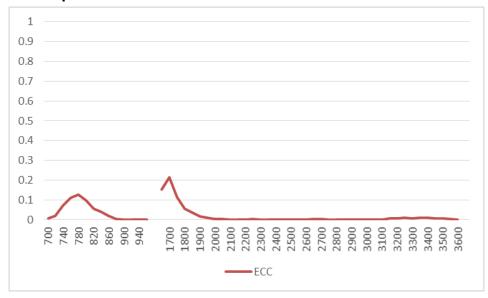
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CHARTS

Envelope correlation coefficient – LTE 1 to LTE 2







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PACKAGING

One antenna pack in one PE bag, 6 pcs antennas in one box

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Pulse:

GPSMB401 GPSMB402