

**Description: MiMo LTE, GNSS Vehicle Mount Antenna**

**Series: Panther**

**PART NUMBER: GPSMB301**



All dimensions are in mm / inches

**Features:**

- Supports LTE 698-960/1695-2170/2300-2700/2900-3600MHz(MIMO)
- Supports Beidou, GPS, Galileo, GLONASS
- Direct Mount and optional Magnetic Mount features
- See GPSMBMM for magnetic mount details

**Applications:**

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

Issue: 1637

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Europe Headquarters  
Pulse GmbH & Do, KG  
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Herrenberg, Germany  
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99 Huo Ju Road(#29 Bldg,4<sup>th</sup> Phase  
Suzhou New District  
Jiangsu Province, Suzhou 215009 PR China  
Tel: 86 512 6807 9998



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**ELECTRICAL SPECIFICATIONS**

Frequency (LTE)	698 – 960 /1695 -2170 / 2300 – 2700 / 2900 - 3600	MHz
Frequency (Beidou, GPS, Galileo, Glonass)	1561.098 ± 2.046/ 1575.42 ± 1.023/ 1602.5625 ± 4	MHz
Nominal Impedance	50	Ω
VSWR (LTE)	< 1.5	
Gain* (LTE antenna, < 2170 MHz)	6	dBi ± 1 dB
Gain* (LTE antenna, > 2170 MHz)	5.5	dBi ± 1 dB
Isolation LTE to LTE**	15 or better	dB
GNSS antenna RHCP gain	1	dBic ± 2dB
LNA gain	30	dB ± 2 dB
Noise Figure	2.5 (cascade)	dB
Current	8	mA ± 2 mA
V <sub>dc</sub>	3-5	V <sub>dc</sub>
LNA and filter attenuation		
	@ 824 MHz	70 dB
	@ 960 MHz	65 dB
	@ 1710 MHz	60 dB
	@ 2170 MHz	65 dB
Connector type	SMA	
Cable type(s)	RG-58 (LTE) / RG-174 (GPS)	
Length	17	Feet

\*Measured on 2ft GND plane and with 4 inch cables

\*\*In free space with 17ft cables

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Antenna****Series: Panther****PART NUMBER: GPSMB301****MECHANICAL SPECIFICATIONS**

Plastic radome	ABS/PC Material UV Stabilized, UL-94HB
Color	Black
Ingress Protection	IP67
Weight	~940 g
Mounting	Direct or Magnetic options

**ENVIRONMENTAL SPECIFICATIONS**

Operating temperature	-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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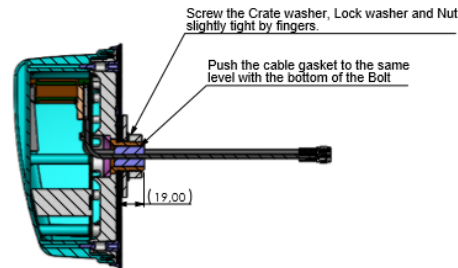
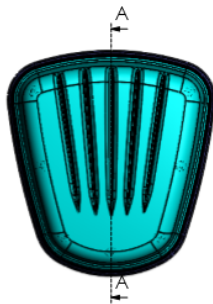
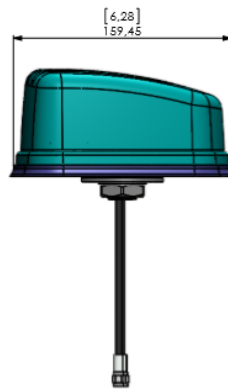
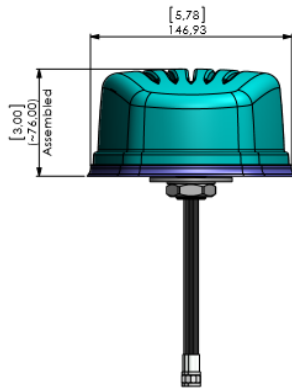
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## MECHANICAL DRAWING



Tolerances of linear dimensions (MEDIUM ISO 2768-m)	
Dimension	Tolerance
0,5 - 3	±0,1
3 - 6	±0,1
6 - 30	±0,2
30 - 120	±0,3
120 - 400	±0,5
400 - 1000	±0,8
1000 - 2000	±1,2
2000 - 4000	±2

Tolerances of angular dimensions (MEDIUM ISO 2768-m)	
Dimension of chamfer side (millimeter)	Tolerance
up to 10	±1°
10 - 30	±0°30'
30 - 120	±0°20'
120 - 400	±0°15'
over 400	±0°12'

Tolerances of radii and chamfers (MEDIUM ISO 2768-m)	
Radius, chamfer height	Tolerance
0,5 - 3	±0,2
3 - 6	±0,5
over 6	±1

For more details see ISO 2768-m  
Tolerances apply to the  
www.pulse.com

No riveting craters allowed to use.

Functional Characteristics by:  
Process capability studies required, total 0 pcs.  
Process capability studies required and ongoing statistical process control required, total 0 pcs.

Please follow Pulse limits of hazardous substances (RoHS, halogens) in the document Pulse Hazardous Substances (HS) Limits and Vendor Supply Qualification Material Composition (QCM-344-0002)

MSD	Application
P01	Cable Tie around GPS updated.
A	A-Release.

Pulse Finland Oy  
Pulse &  
Pulse Composite Finland  
Tel: +358 207 733 600  
Fax: +358 207 733 201  
www.pulseelectronics.com/antennas

Product: GPSMB301  
Item Name: Antenna Assembly

Sheet number:	2/2
General tolerance:	
Customer number:	
Date:	12.03.2015
Drawn:	
Check:	
Appr:	
Scale:	1:2 (A2)
Document number:	GPSMB301
Part Version:	
Document Version:	A
Issue:	A 18.09.2015 Jarko
Mod:	P11 02.07.2015 Jarko
Date:	
Name:	

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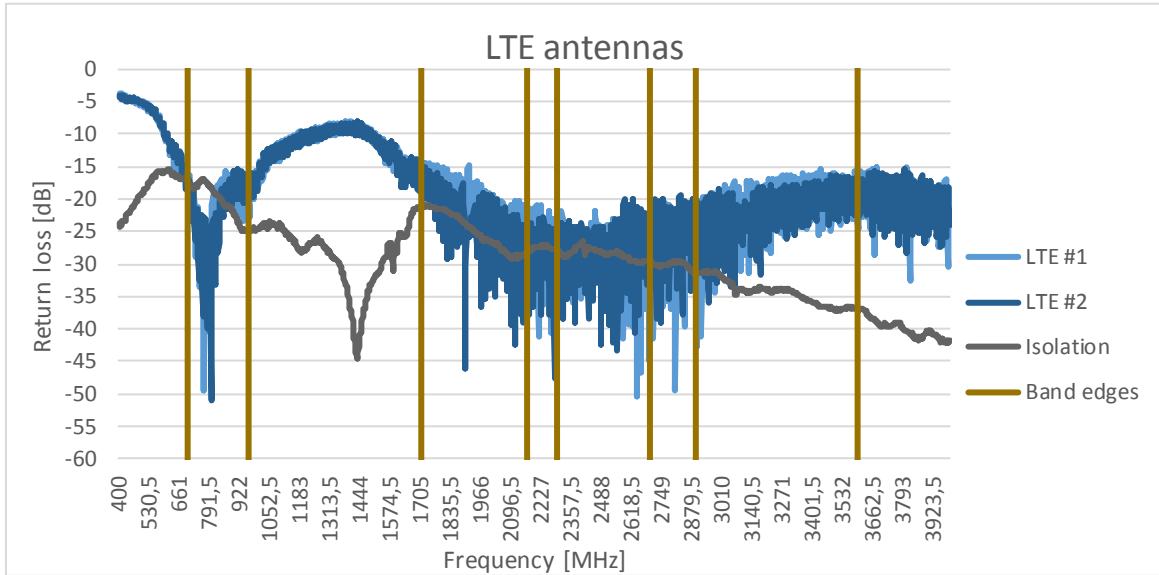
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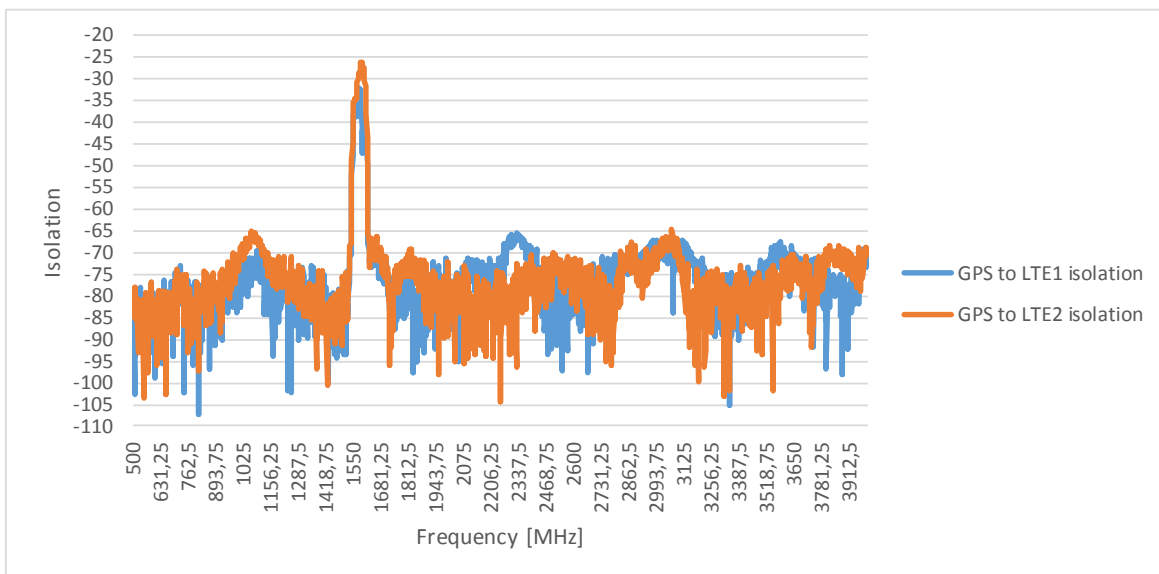
PART NUMBER: GPSMB301

CHARTS

Return loss and isolation in free space, LTE antennas\*\*



GNSS isolation to LTE 1 and LTE 2 antenna\*



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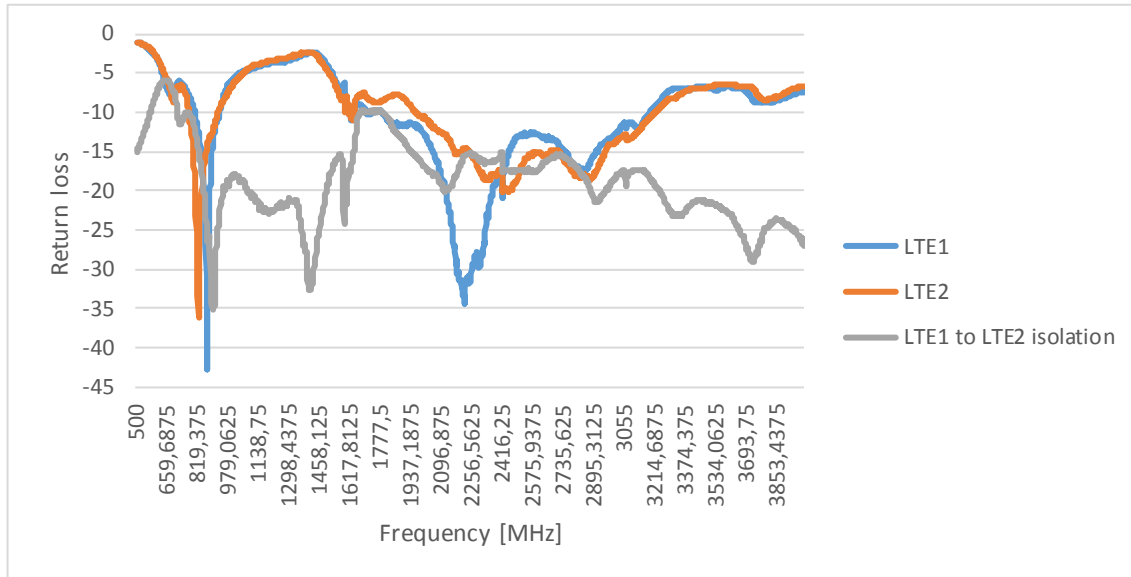
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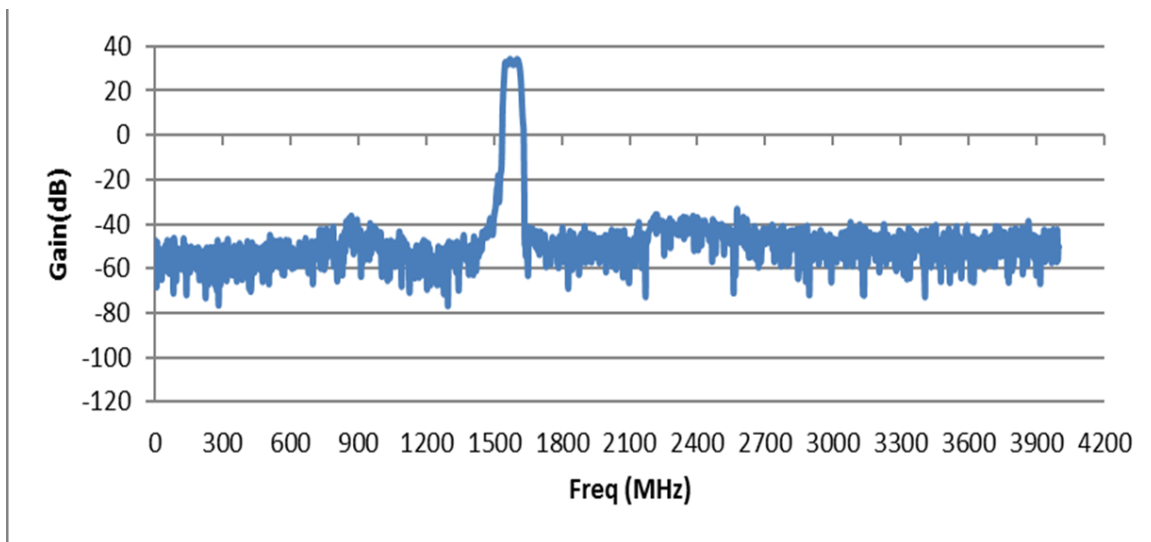
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CHARTS

Return loss and isolation, LTE antennas\*



GNSS LNA performance



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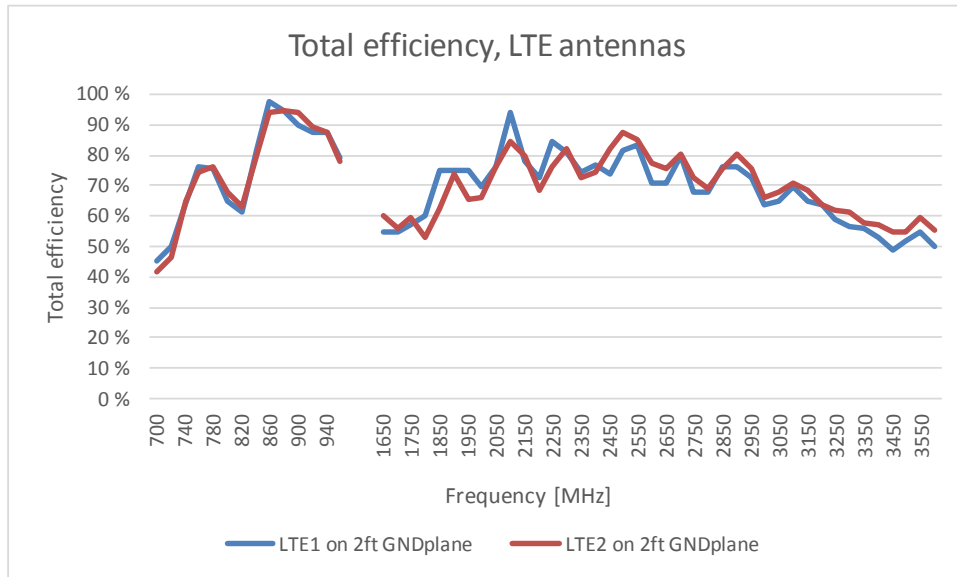
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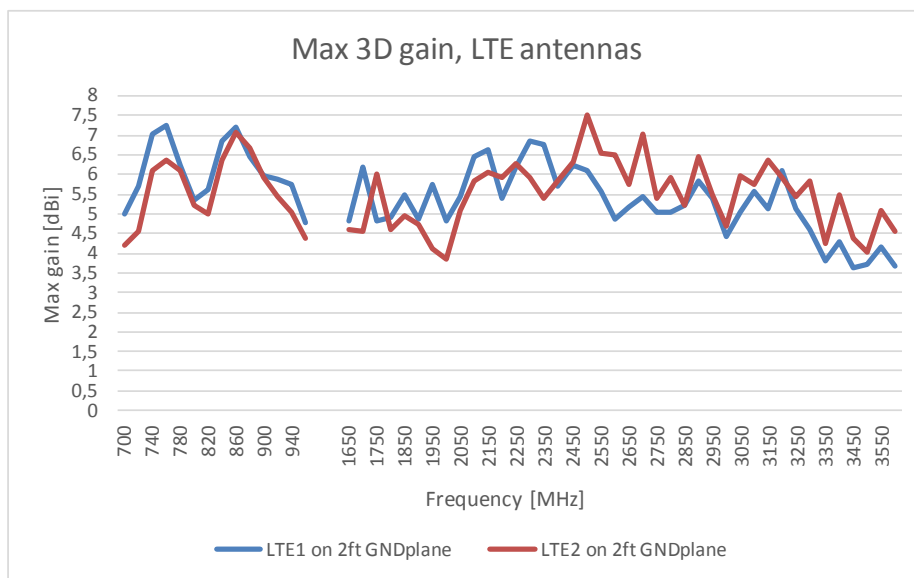
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**CHARTS**

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



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



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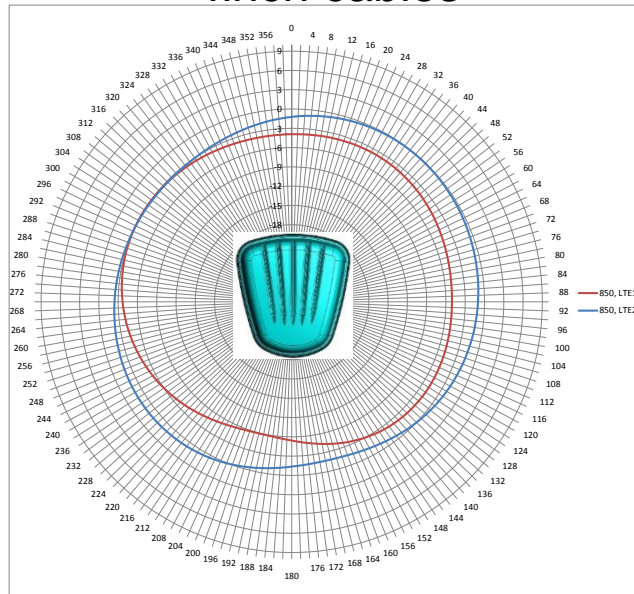
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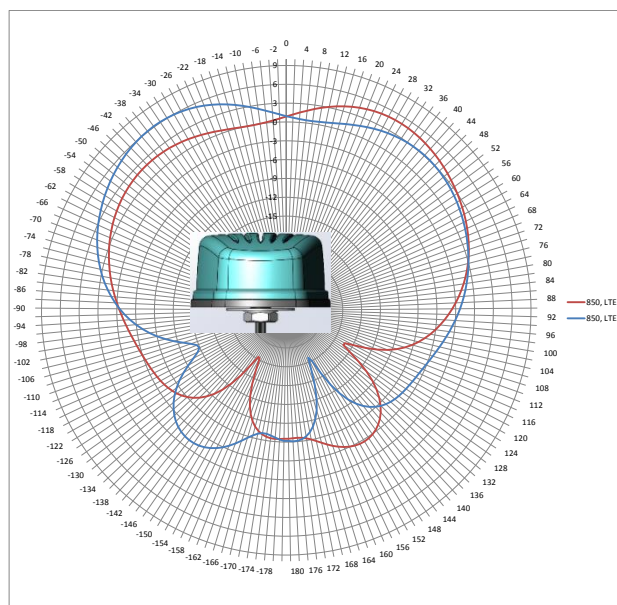
**PART NUMBER: GPSMB301**

**CHARTS**

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



Horizontal plot



Vertical plot front view

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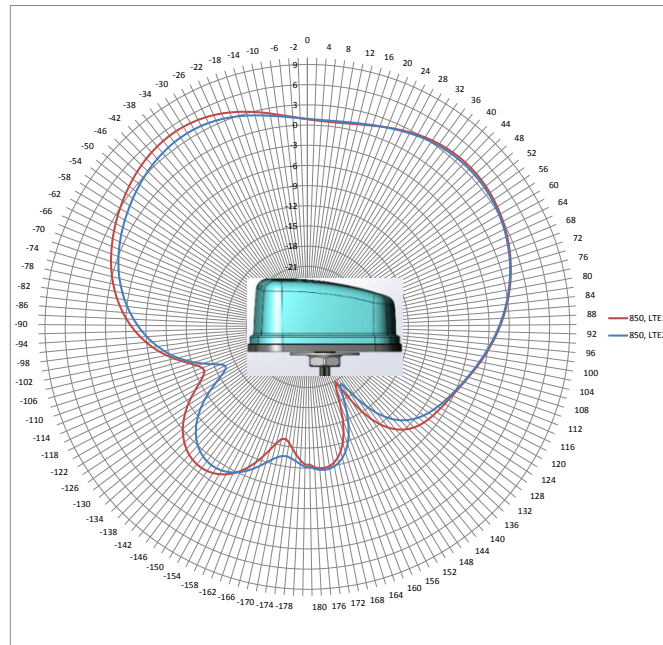
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PART NUMBER: GPSMB301

CHARTS

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



Vertical plot side view

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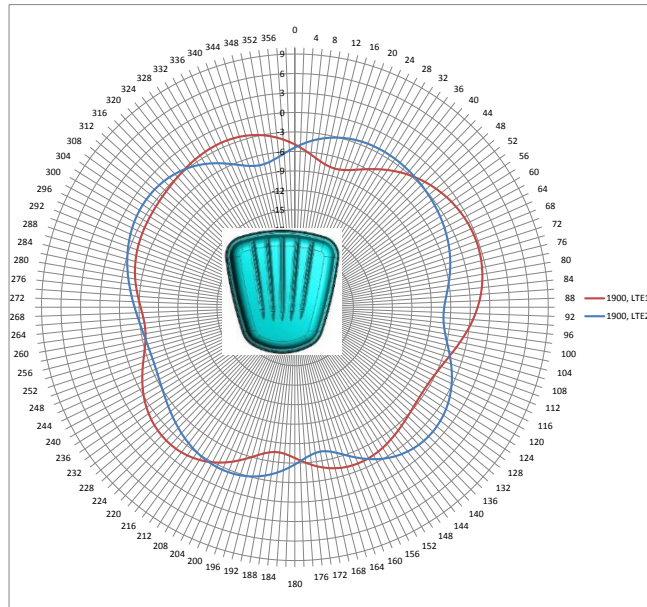
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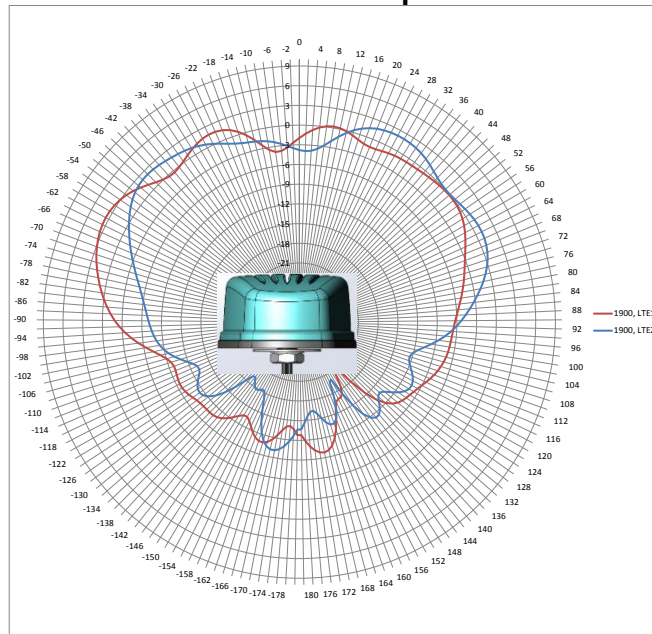
**PART NUMBER: GPSMB301**

**CHARTS**

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



Horizontal plot



Vertical plot front view

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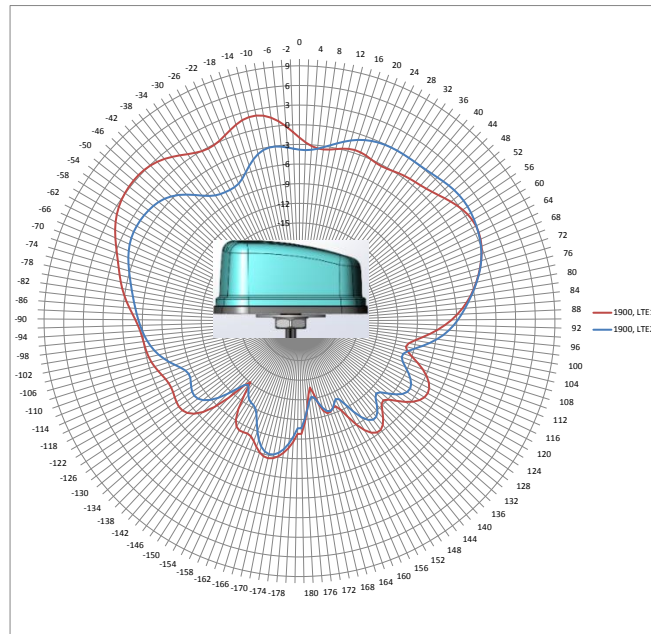
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**CHARTS**

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



Vertical plot side view

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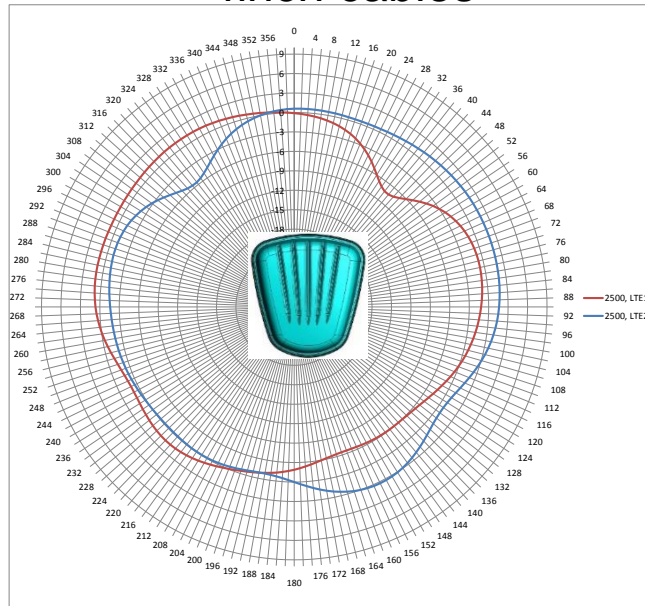
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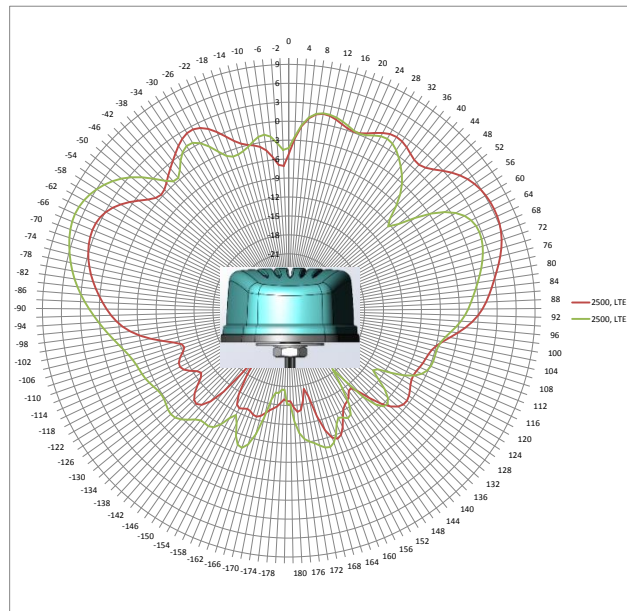
**PART NUMBER: GPSMB301**

**CHARTS**

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



**Horizontal plot**



**Vertical plot front view**

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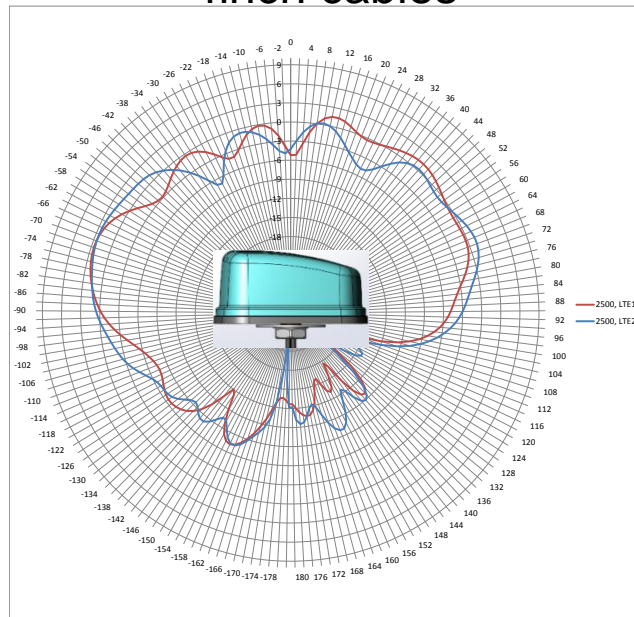
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Antenna**

**Series: Panther**

**PART NUMBER: GPSMB301**

**CHARTS**

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



Vertical plot side view

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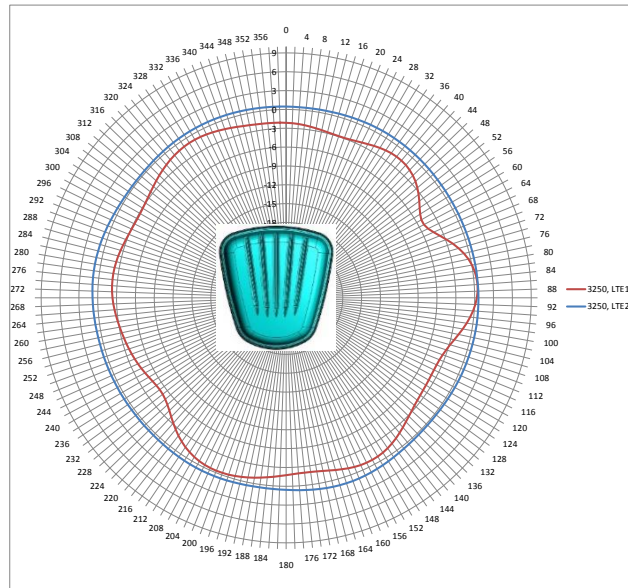
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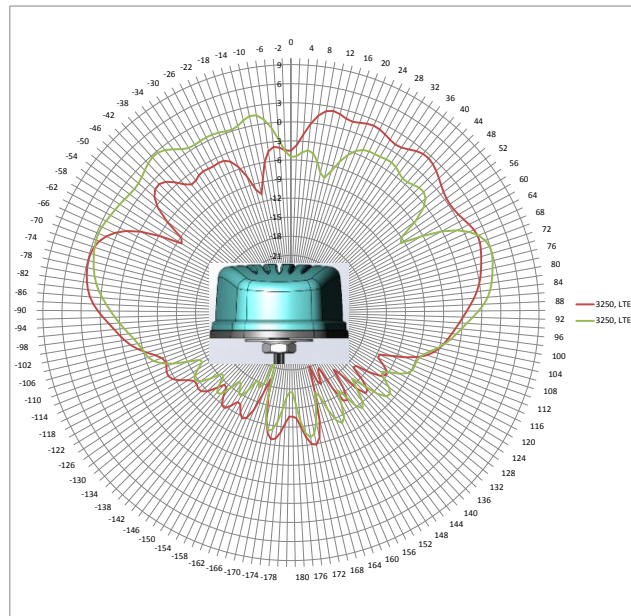
**PART NUMBER: GPSMB301**

**CHARTS**

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



Horizontal plot



Vertical plot front view

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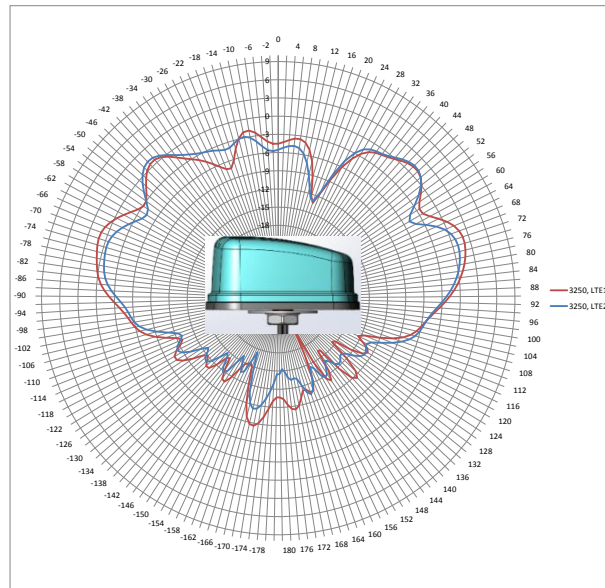
**Description: MiMo LTE, GNSS Vehicle Mount Antenna**

**Series: Panther**

**PART NUMBER: GPSMB301**

**CHARTS**

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



Vertical plot side view

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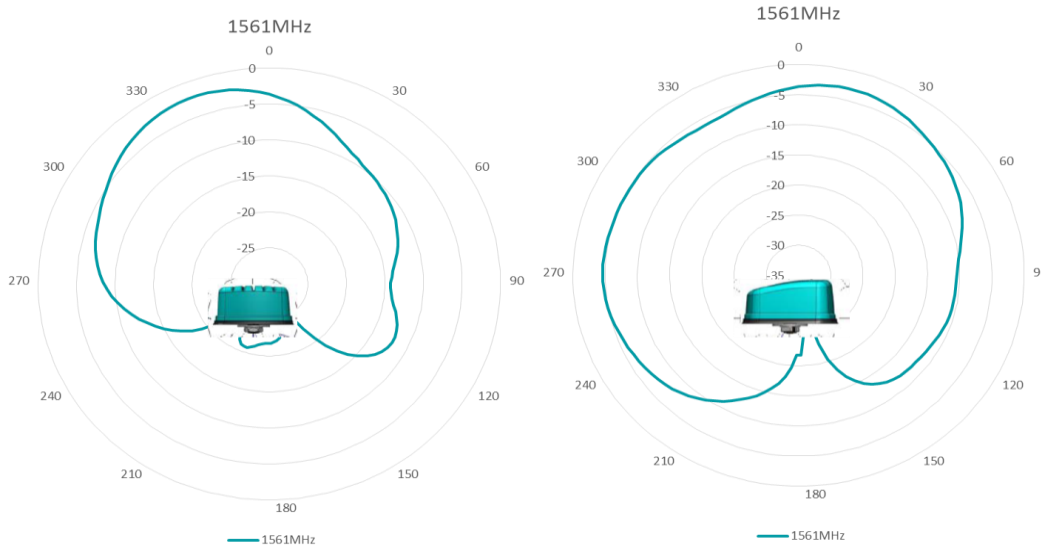
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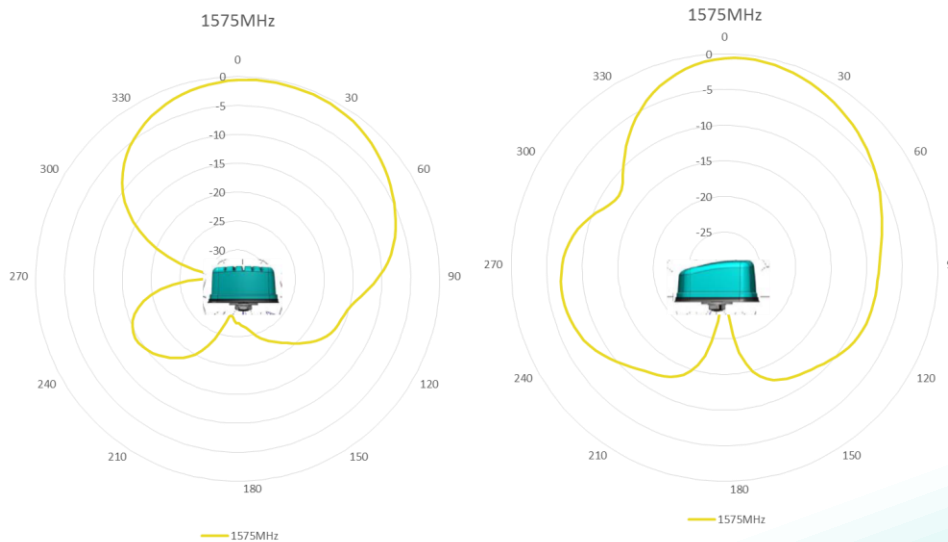
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**CHARTS**

**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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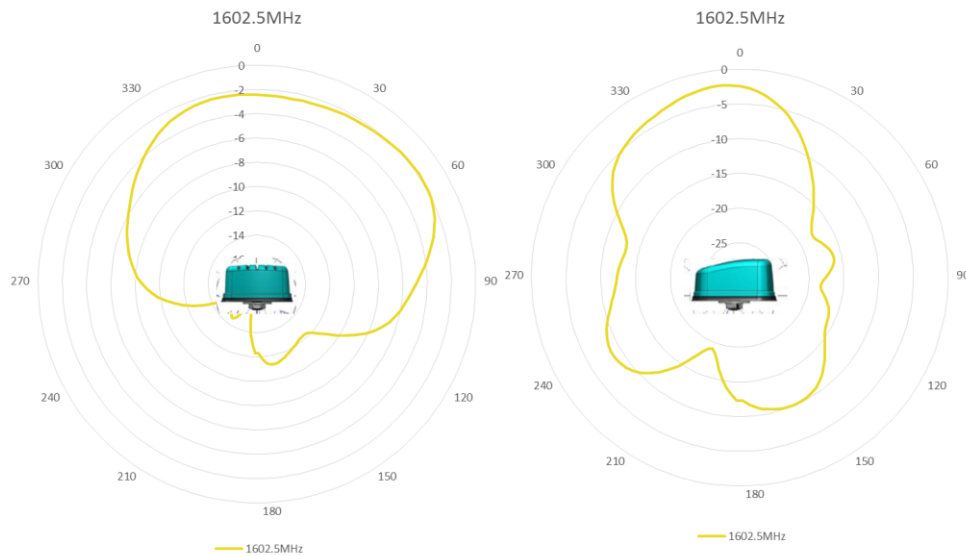
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**CHARTS**

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



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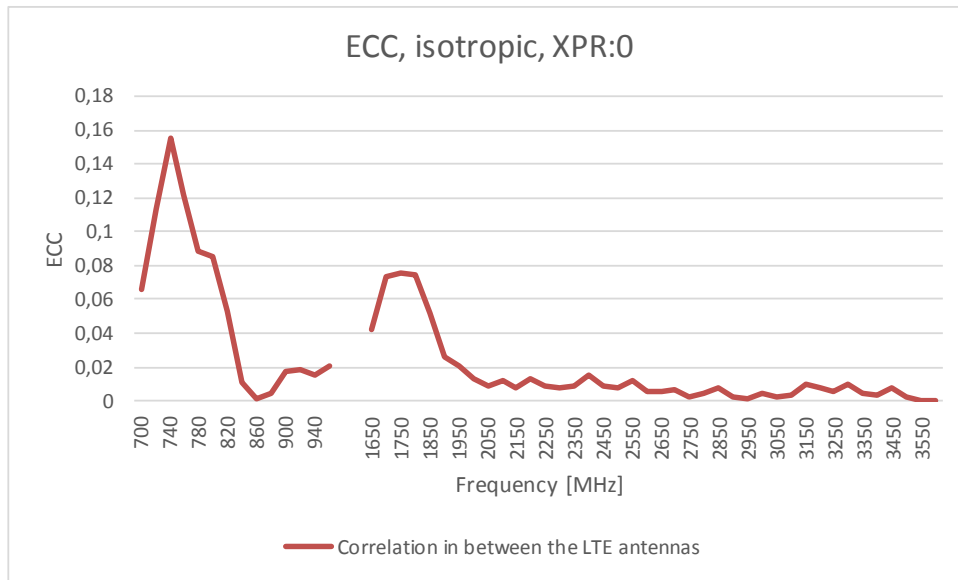
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**CHARTS**

**Envelope correlation coefficient - LTE 1 to LTE 2**



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## PACKAGING

One antenna pack in one PE bag, 6 antennae in one box