

## Description: MiMo LTE, MiMo WiFi, GNSS Vehicle Mount Antenna

Series: Panther

**PART NUMBER: GPSMB50XX**



### Features:

- Supports MIMO Cellular LTE 698-960/1695-2170/2300-2700/2900-3600MHz
- Supports MIMO 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
- **GPSMB501/GPSMB501C/GPSMB501D** Black and **GPSMB502** White

### Applications:

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

All dimensions are in mm / inches

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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±4	MHz
Nominal Impedance	50	Ω
VSWR (LTE)	< 1.5	
VSWR (WiFi&DSRC)	< 1.4	
Gain* (LTE antenna, < 2170 MHz)	4	dBi ± 2.5 dB
Gain* (LTE antenna, > 2170 MHz)	5	dBi ± 2 dB
Gain* (WiFi antenna, < 2500 MHz)	4.5	dBi ± 1.5 dB
Gain* (WiFi antenna, > 4900 MHz)	5	dBi ± 2 dB
Isolation LTE to LTE **	15 or better	dB
Isolation WiFi to WiFi **	40 or better	dB
GNSS antenna RHCP gain	1	dBic ± 2 dB
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

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

\*\*In free space with 17ft cables

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**ELECTRICAL SPECIFICATIONS**

Pulse P/N	GPSMB501	GPSMB502	GPSMB501C	GPSMB501D
Cable NO.	5	5	5	5
Operating Bands	2-LTE + 2-WiFi + 1-GPS/GNSS	2-LTE + 2-WiFi + 1-GPS/GNSS	2-LTE + 2-WiFi + 1-GPS/GNSS	2-LTE + 2-WiFi + 1-GPS/GNSS
Cable length	17FT	17FT	10FT	10FT
Connector	LTE: SMA(M), WiFi: RPSMA(M), GPS: SMA(M)	LTE: SMA(M), WiFi: RPSMA(M), GPS: SMA(M)	LTE: SMA(M), WiFi: RPSMA(M), GPS: SMA(M)	LTE: SMB(M), WiFi: SMB(M), GPS: SMB(M)
Cable Color	Black	White	Black	Black
Assembly option	1. Assembly directly with nut 2. Magnetic mount base P/N:GPSMBMM			

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**MECHANICAL SPECIFICATIONS**

Plastic radome	ABS/PC Material UV Stabilized, UL-94HB
Color	GPSMB501:Black GPSMB501C: Black GPSMB501D: Black GPSMB502: White
Ingress Protection	IP67
Weight	GPSMB501:~1340 g GPSMB502: ~1340 g GPSMB501C: ~1320 g GPSMB501D: ~1320 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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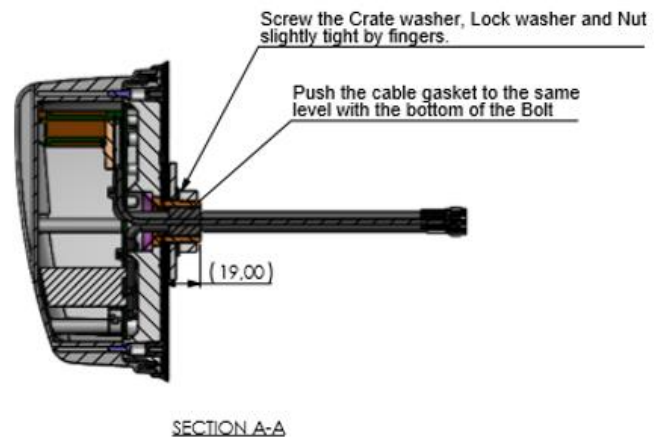
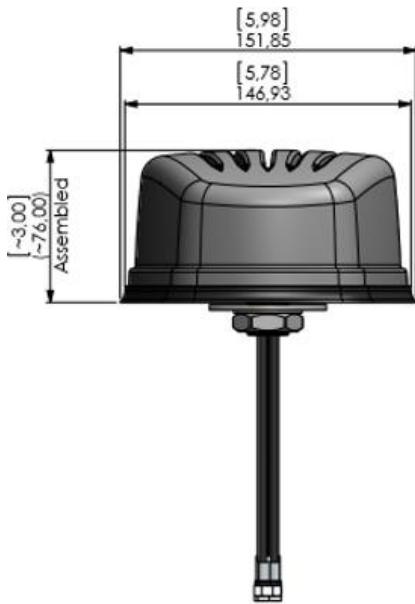
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**MECHANICAL DRAWING**



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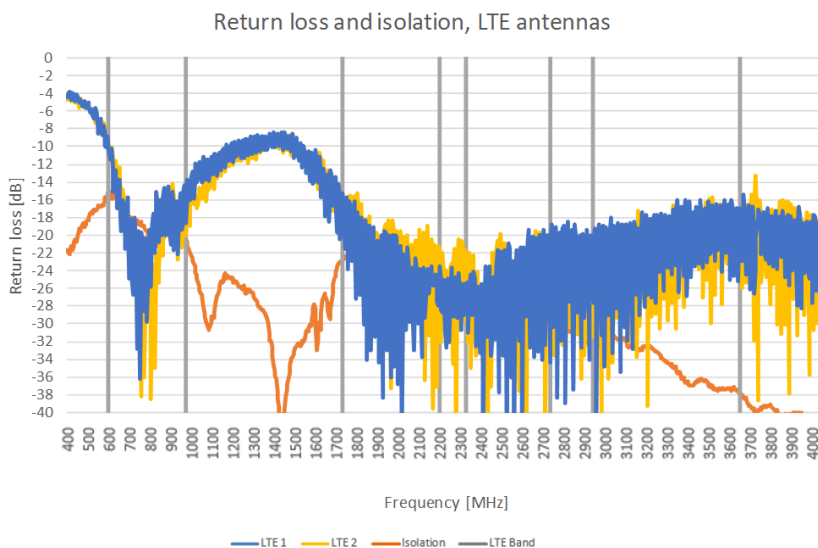
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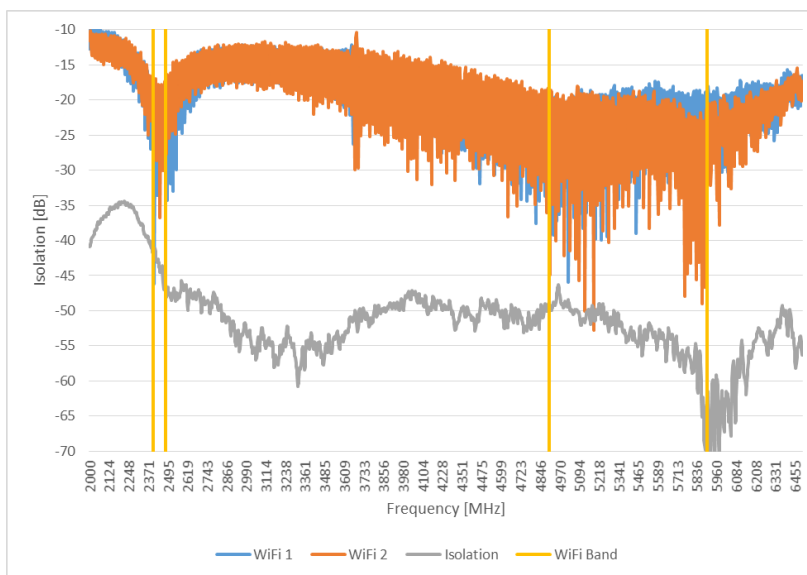
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**CHARTS**

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



**Return Loss and isolation in free space, WiFi antennas\*\***



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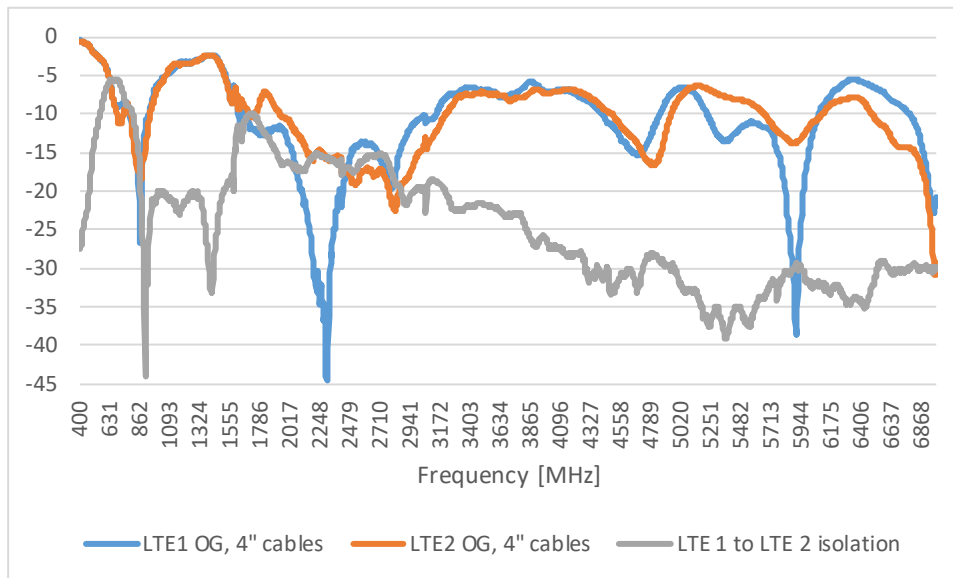
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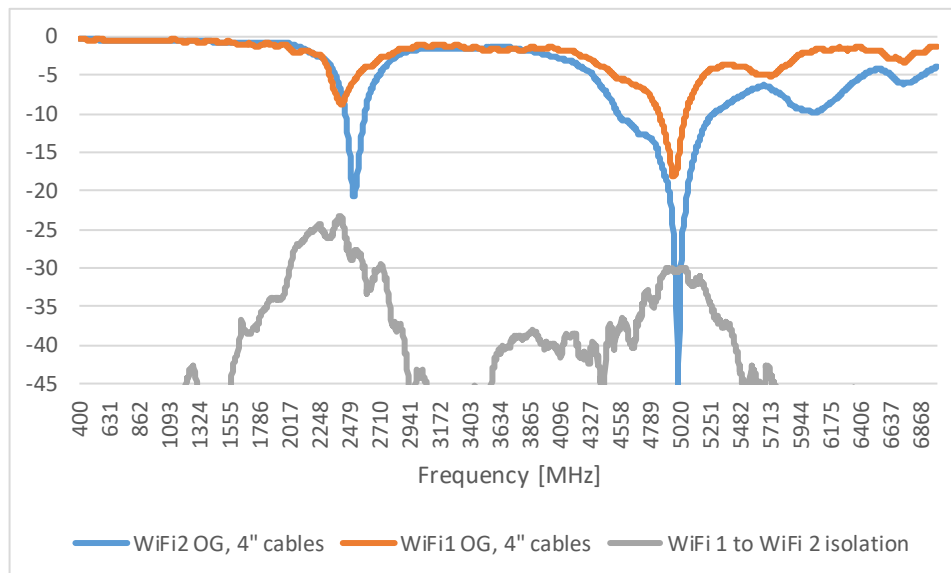
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**Return Loss and isolation, LTE antennas\***



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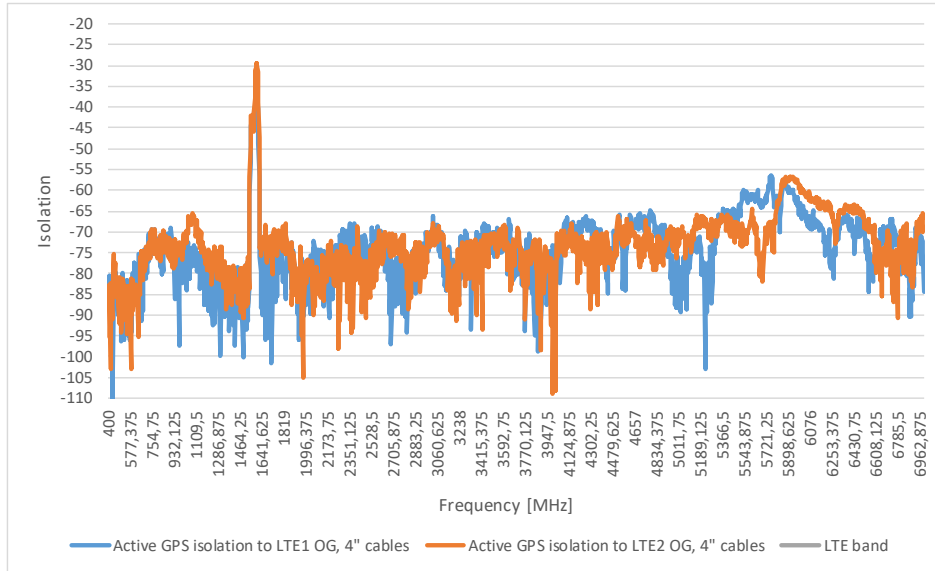
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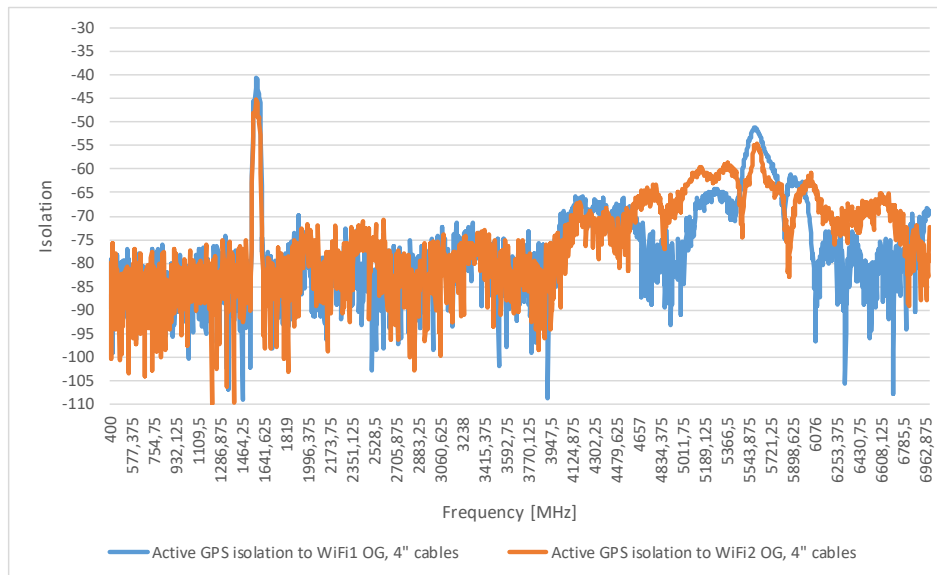
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**CHARTS**

**GPS isolation to LTE 1 and LTE 2 antenna\***



**GPS isolation to WiFi 1 and WiFi 2 antenna\***



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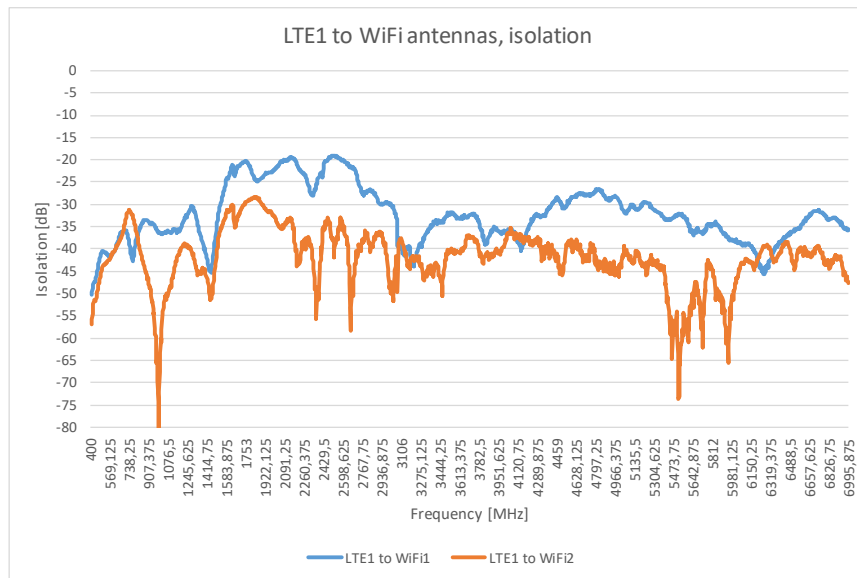
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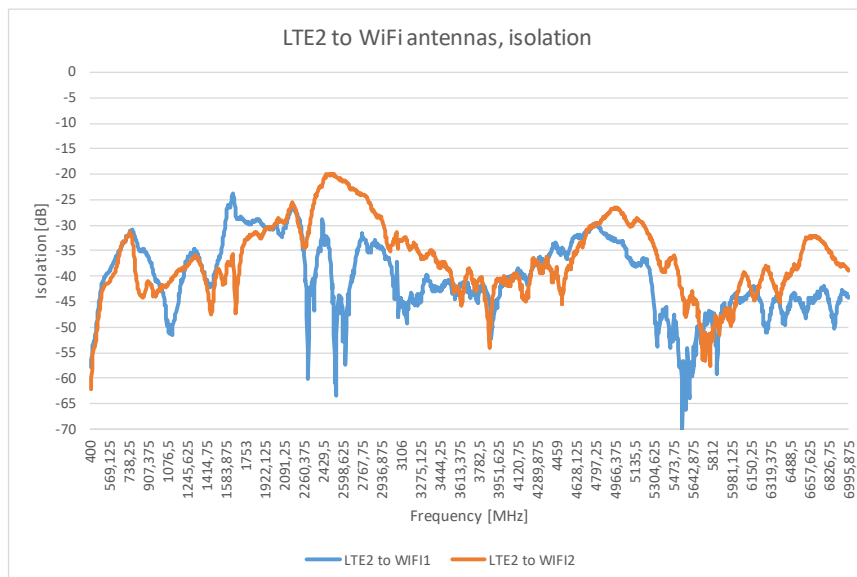
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**CHARTS**

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



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



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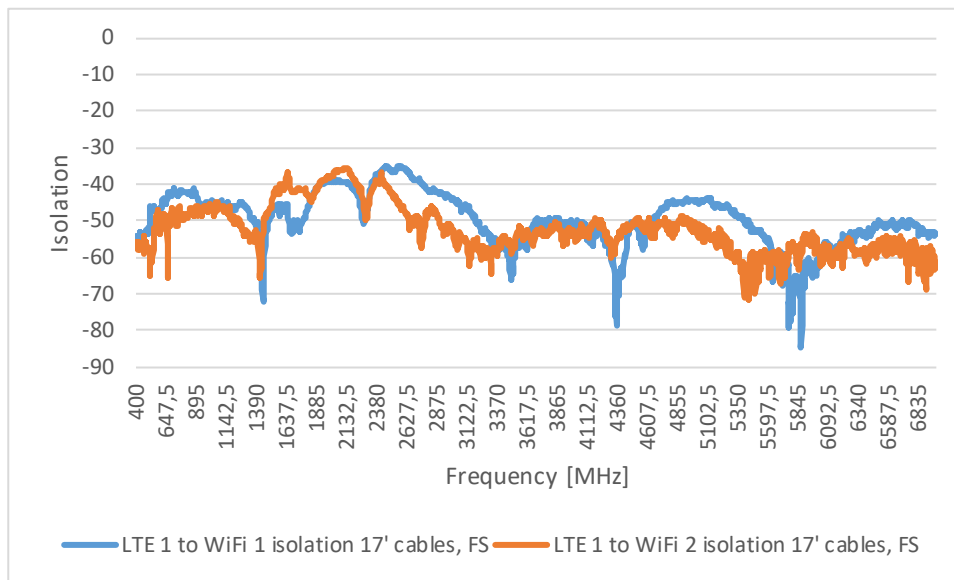
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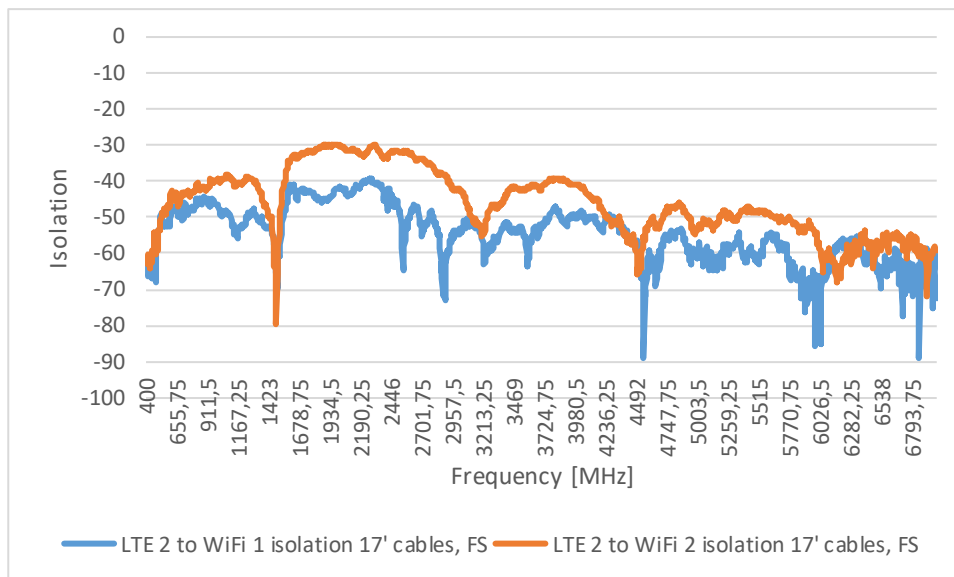
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**CHARTS**

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



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



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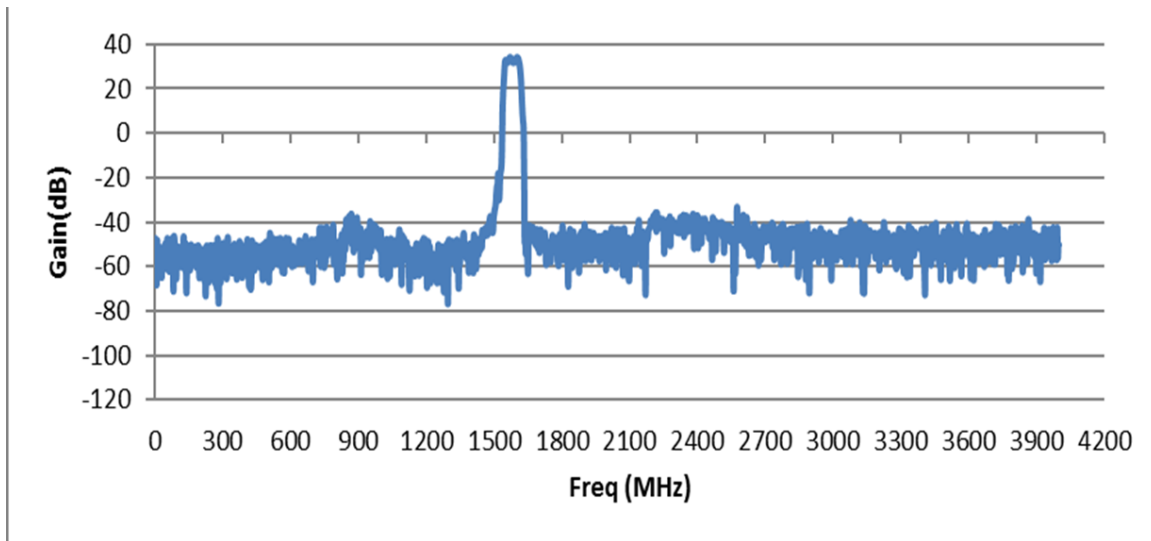
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**CHARTS**

**GNSS LNA performance**



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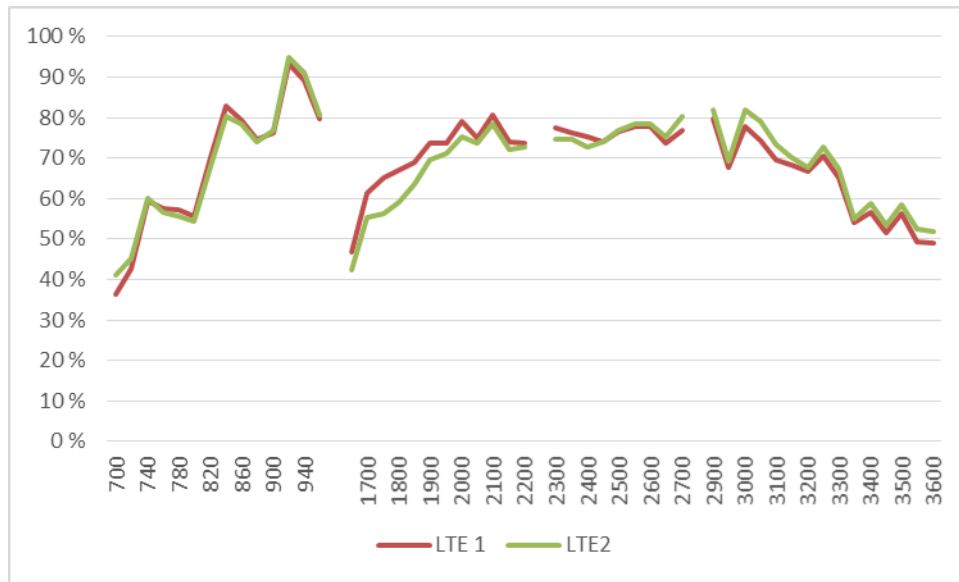
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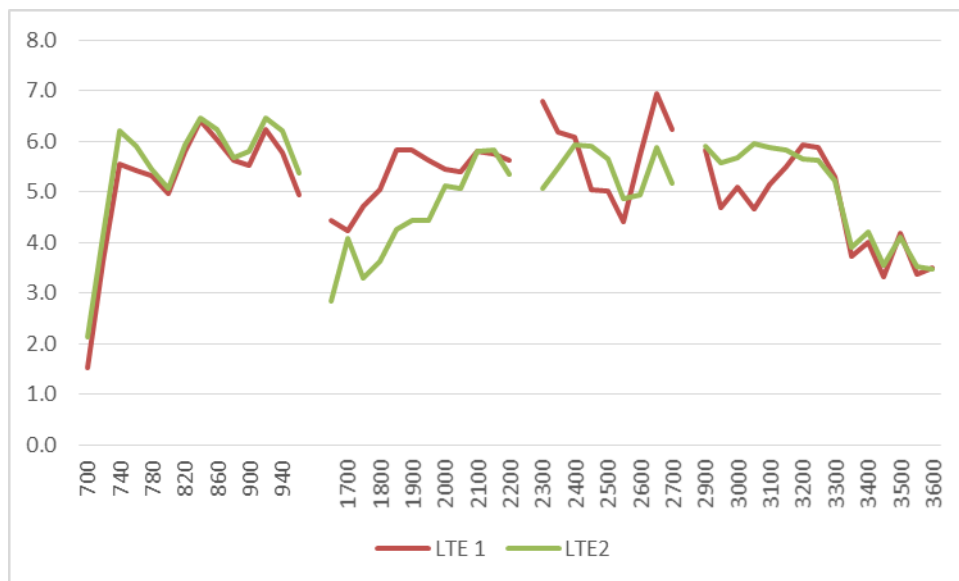
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**CHARTS**

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



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



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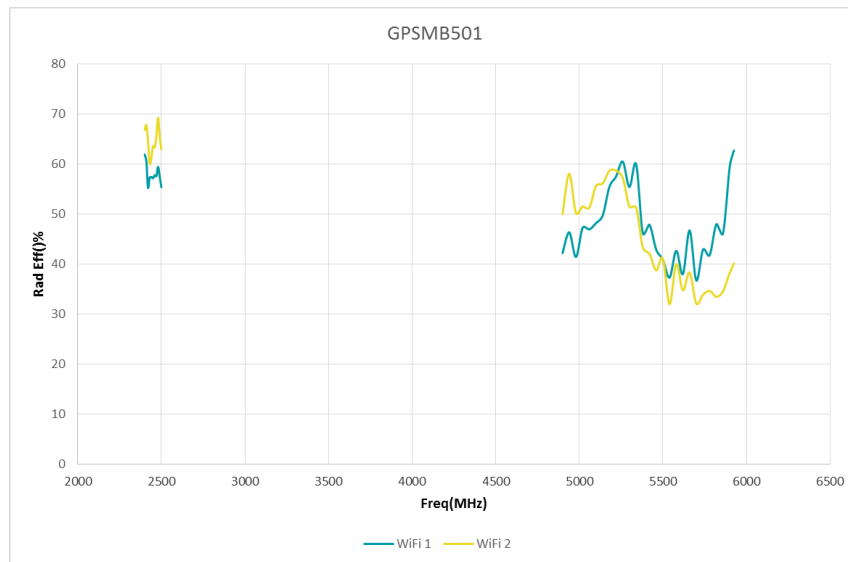
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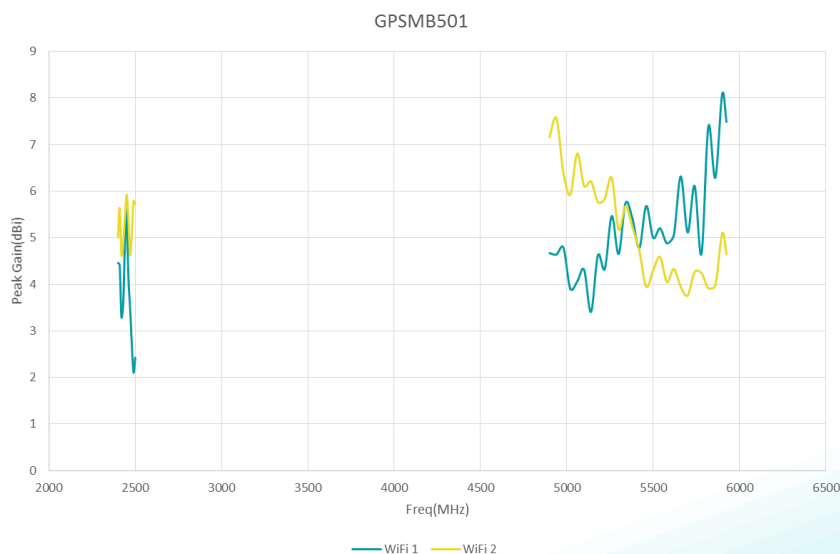
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**CHARTS**

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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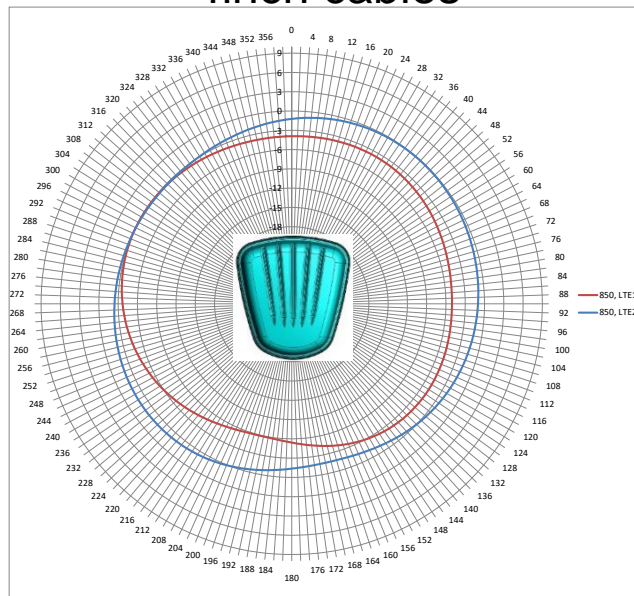
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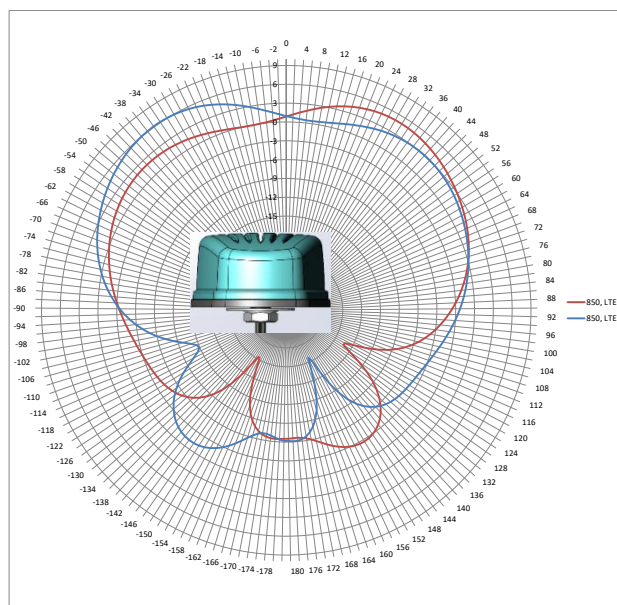
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**CHARTS**

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



**Horizontal plot**



**Vertical plot front view**

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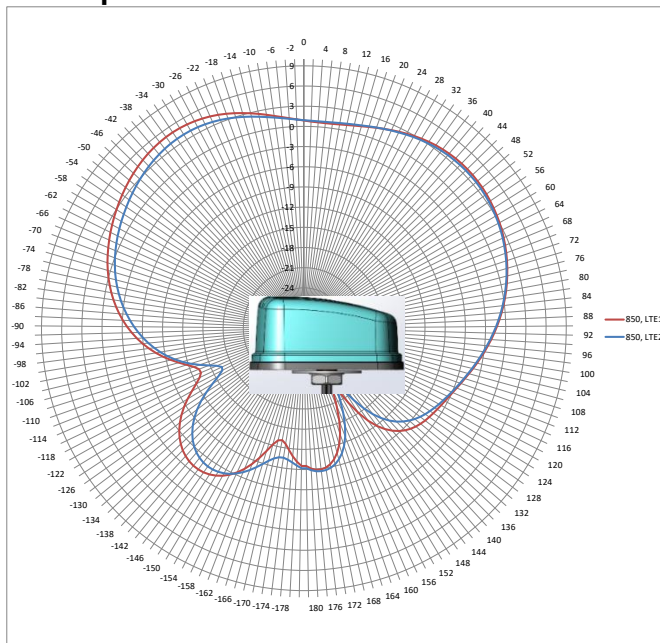
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**CHARTS**

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



Vertical plot side view

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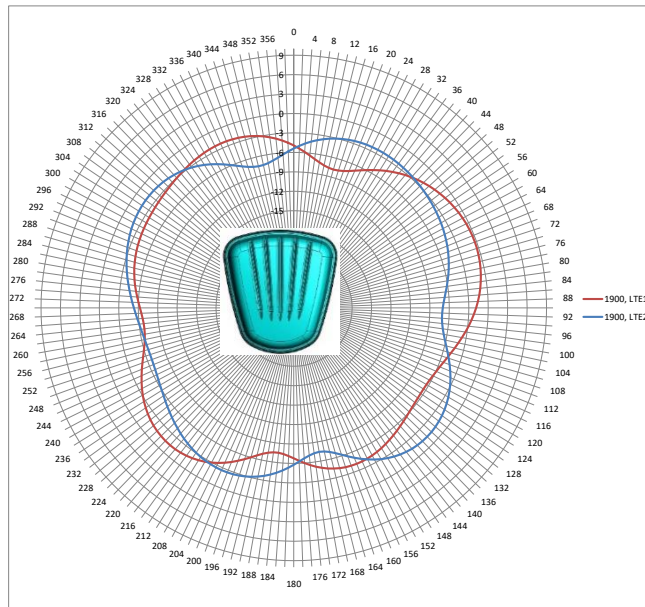
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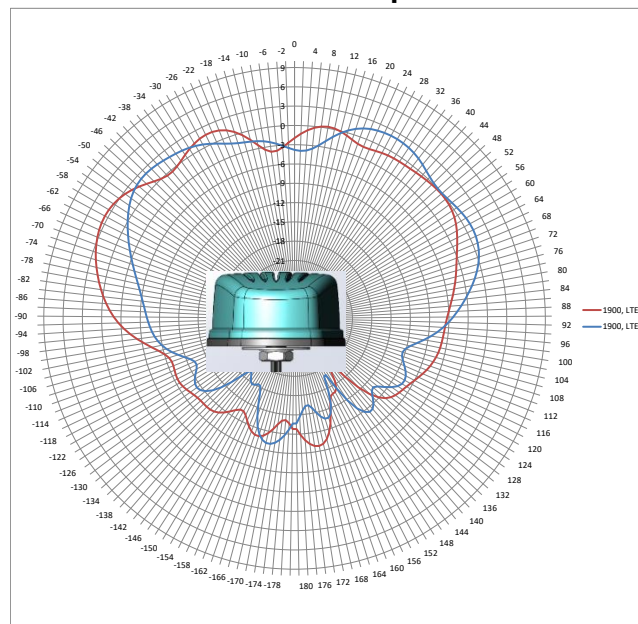
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**CHARTS**

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



**Horizontal plot**



**Vertical plot front view**

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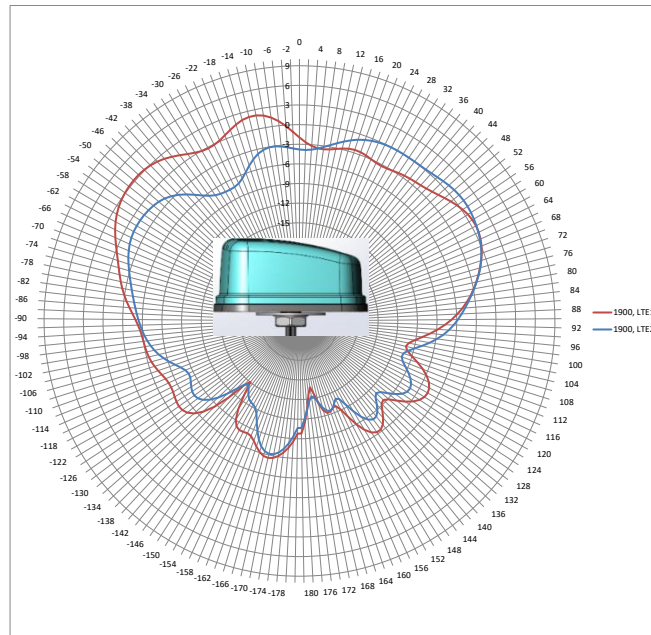
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**CHARTS**

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



Vertical plot side view

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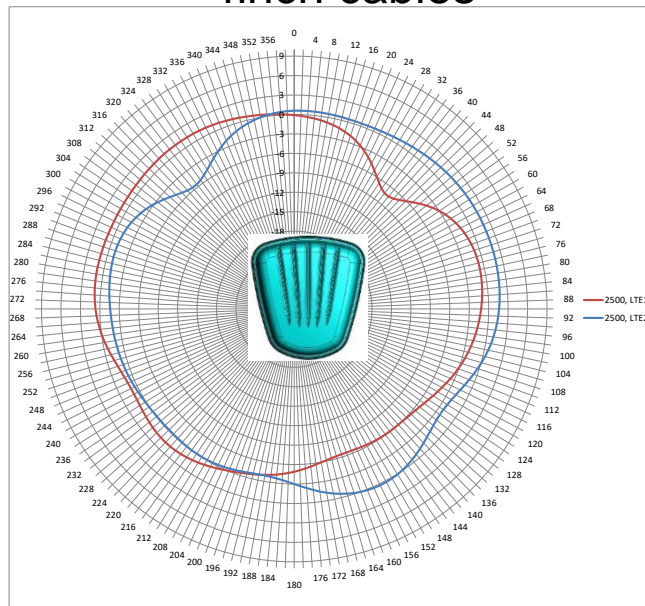
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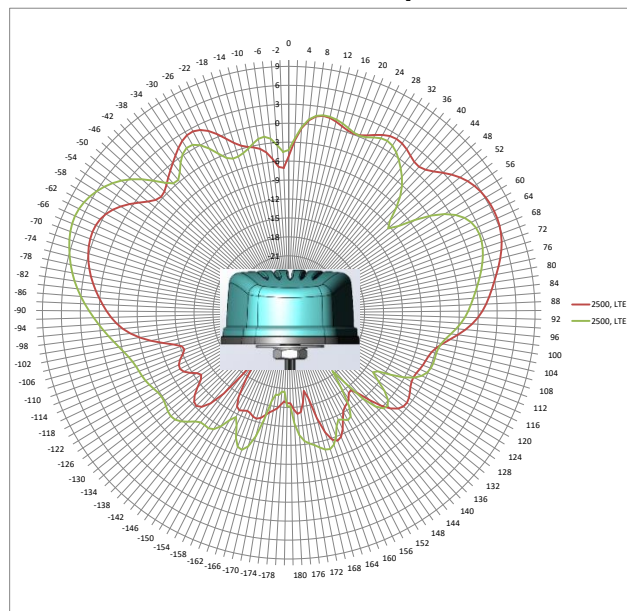
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**CHARTS**

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



**Horizontal plot**



**Vertical plot front view**

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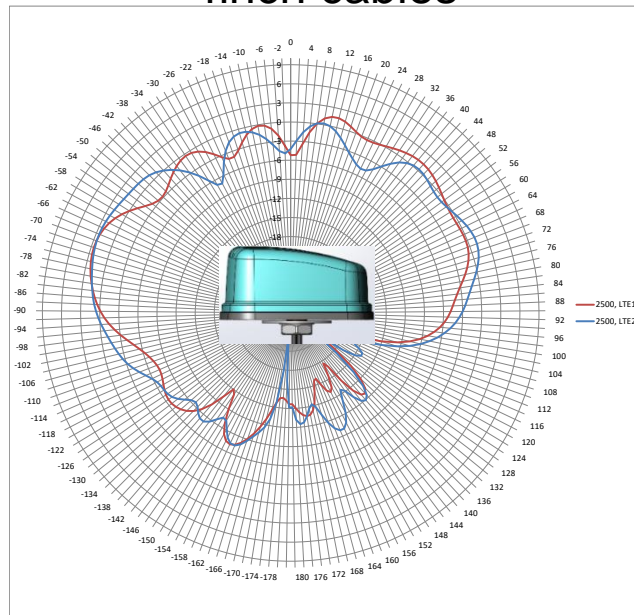
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**CHARTS**

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



Vertical plot side view

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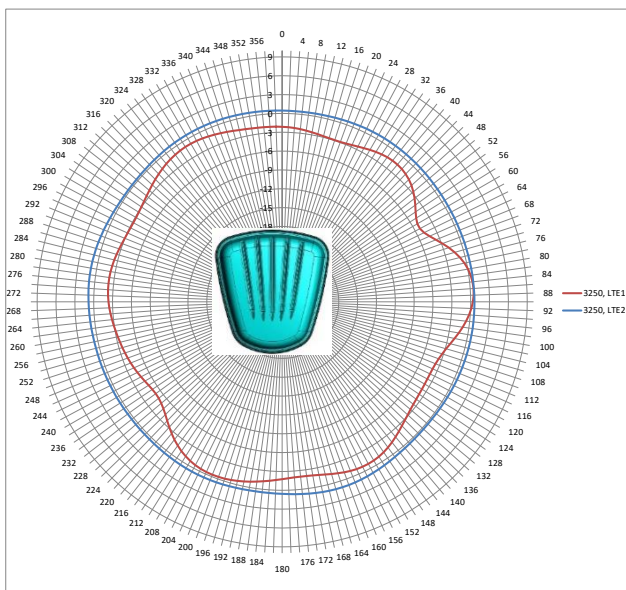
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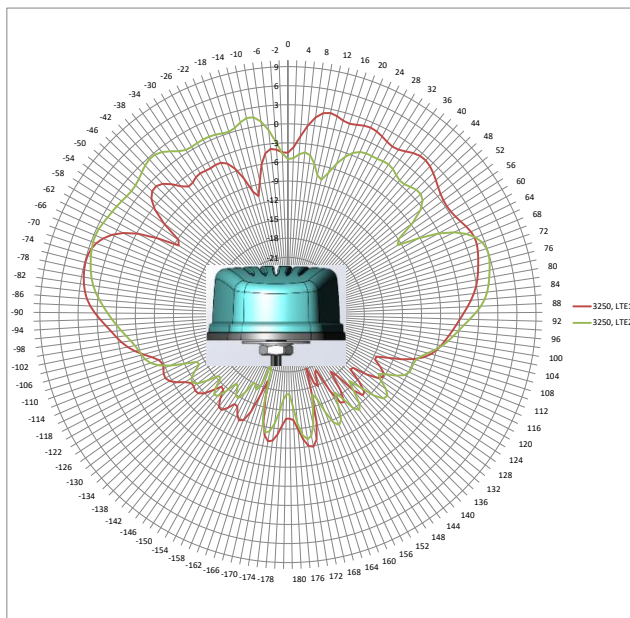
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**CHARTS**

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



Horizontal plot



Vertical plot front view

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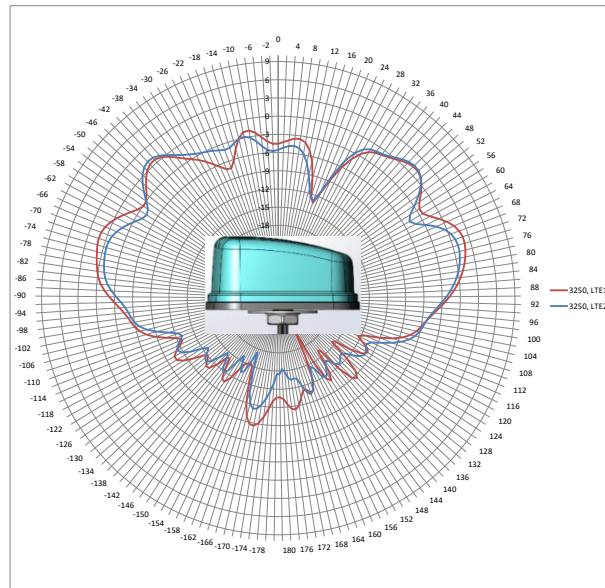
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**CHARTS**

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



Vertical plot side view

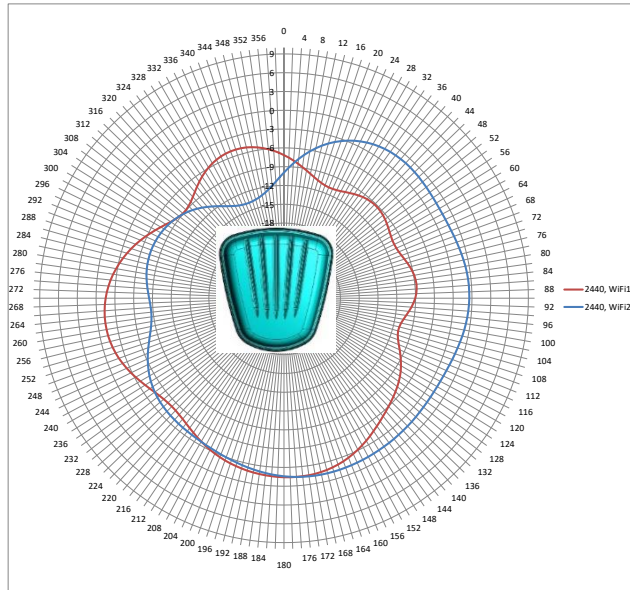
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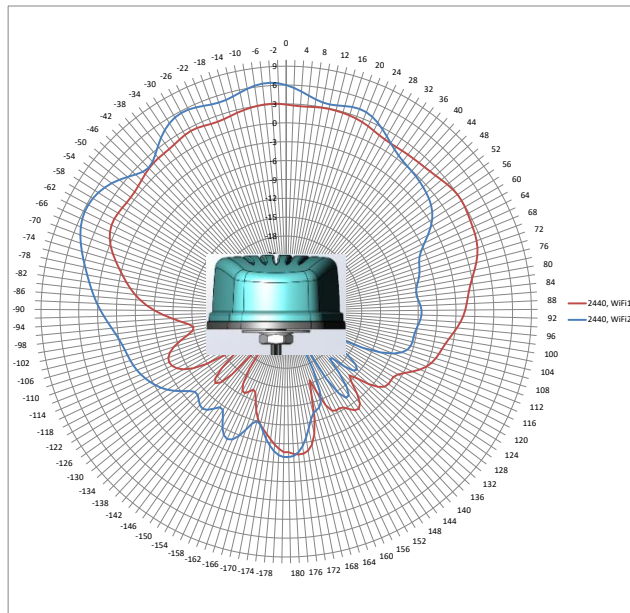
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**CHARTS**

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



**Horizontal plot**



**Vertical plot front view**

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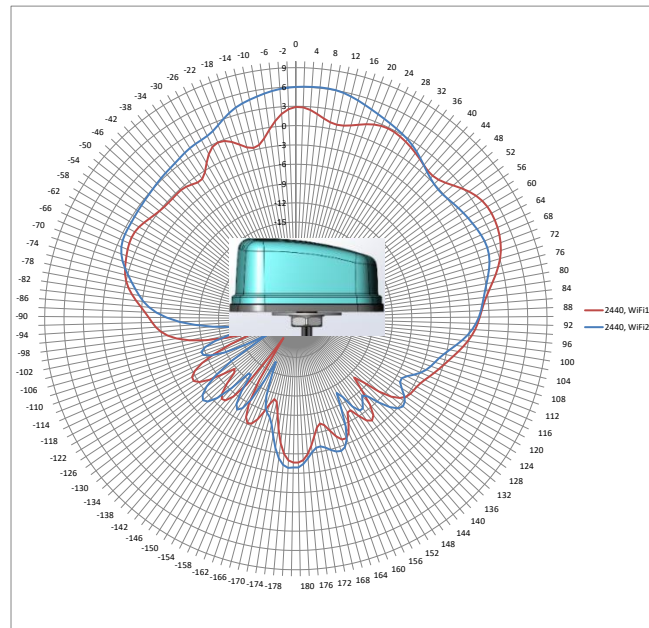
**Description: MiMo LTE, MiMo WiFi, GNSS  
Vehicle Mount Antenna**

**Series: Panther**

**PART NUMBER: GPSMB50XX**

**CHARTS**

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



Issue: 1942

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

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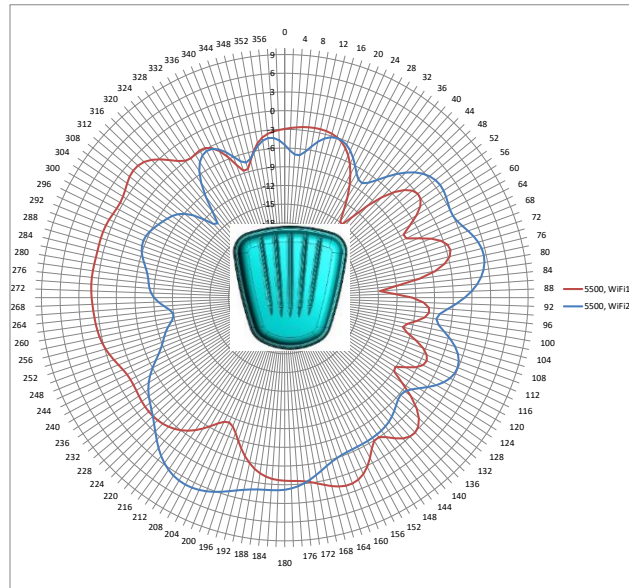
**Description: MiMo LTE, MiMo WiFi, GNSS  
Vehicle Mount Antenna**

**Series: Panther**

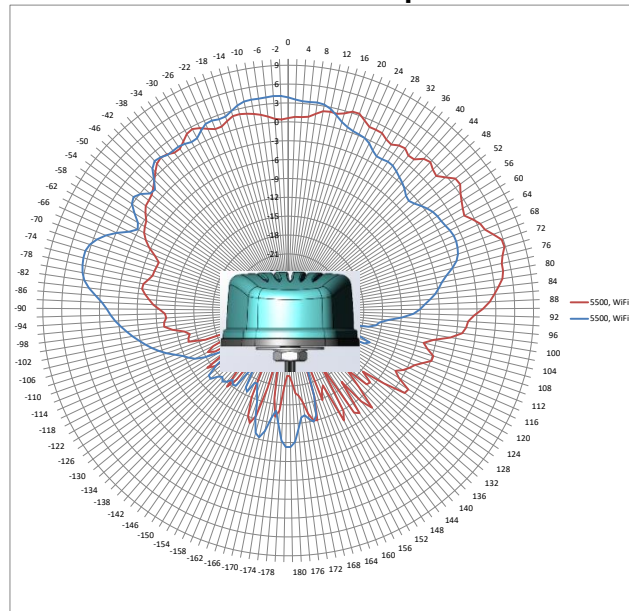
**PART NUMBER: GPSMB50XX**

**CHARTS**

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



**Horizontal plot**



**Vertical plot front view**

Issue: 1942

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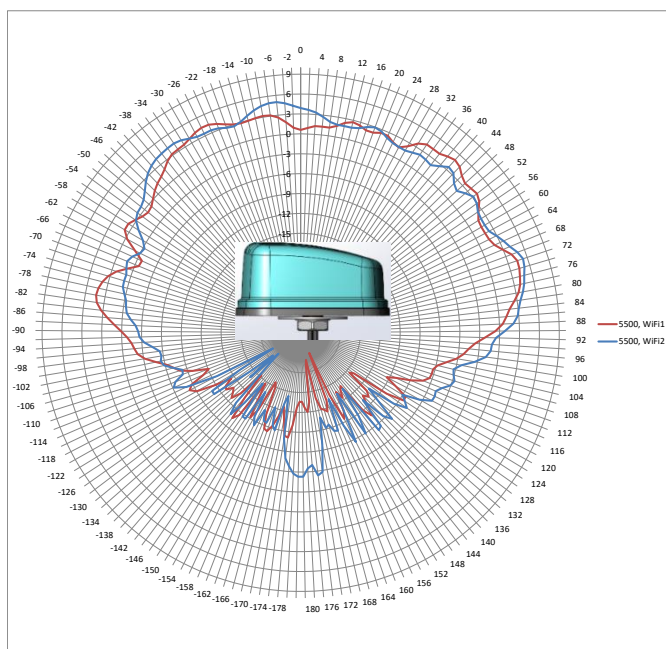
**Description: MiMo LTE, MiMo WiFi, GNSS  
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**CHARTS**

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



Vertical plot side view

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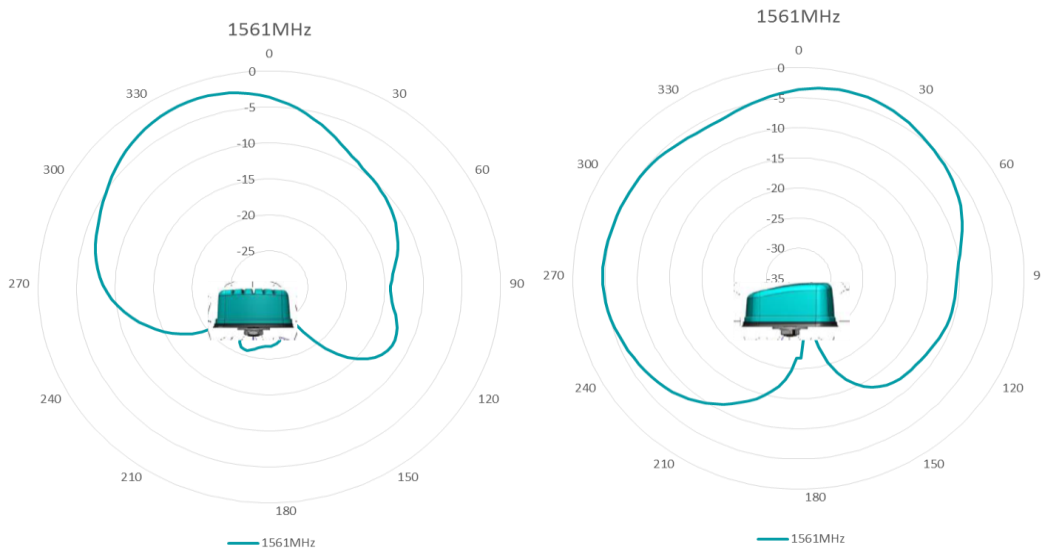
**Description: MiMo LTE, MiMo WiFi, GNSS  
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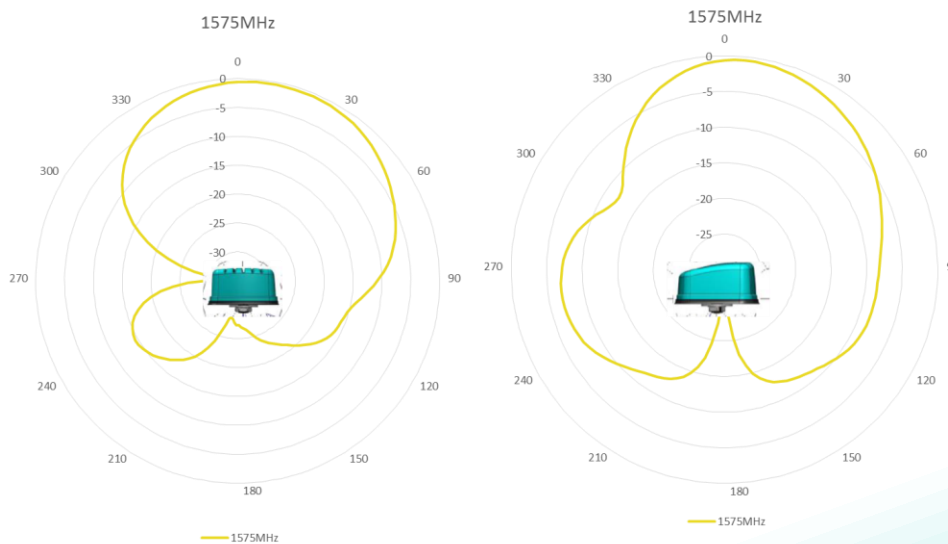
**PART NUMBER: GPSMB50XX**

**CHARTS**

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



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



Issue: 1942

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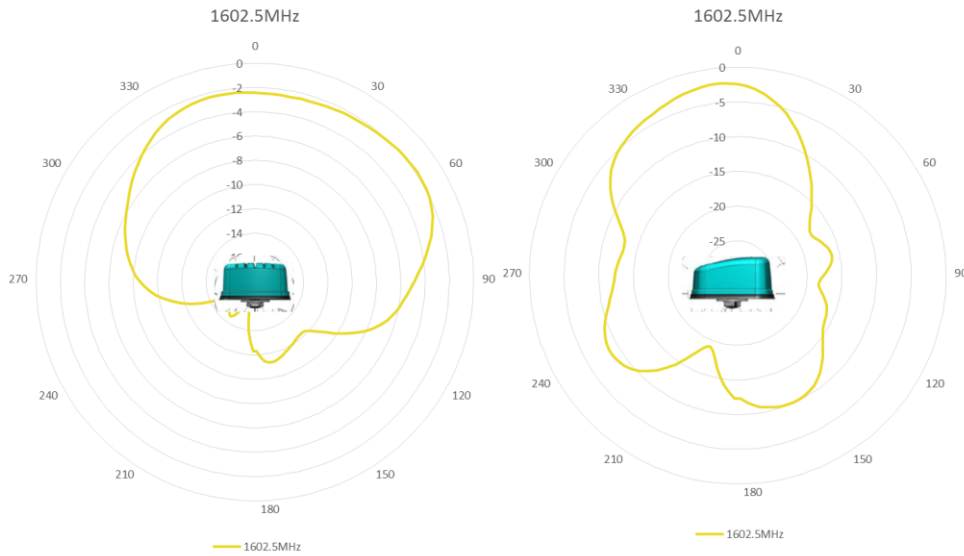
**Description: MiMo LTE, MiMo WiFi, GNSS  
Vehicle Mount Antenna**

**Series: Panther**

**PART NUMBER: GPSMB50XX**

**CHARTS**

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



Issue: 1942

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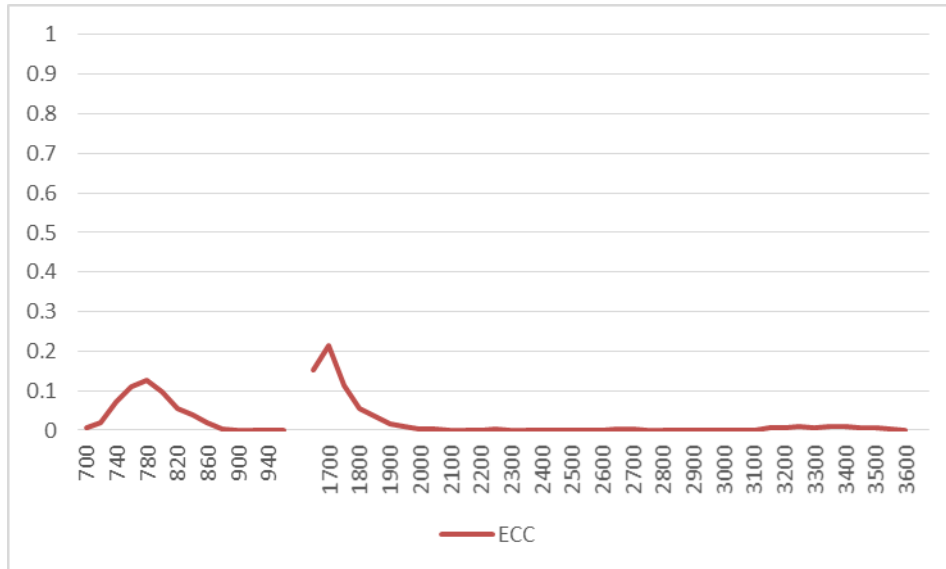
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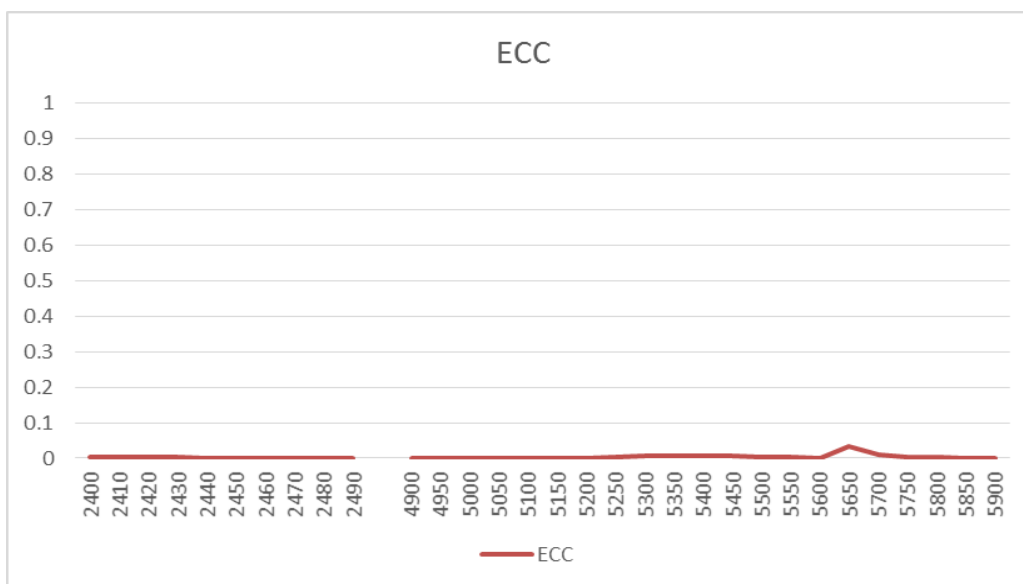
**PART NUMBER: GPSMB50XX**

**CHARTS**

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



**Envelope correlation coefficient – WiFi 1 to WiFi 2**



Issue: 1942

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**PACKAGING**

One antenna packed in one PE bag, 6 antennas packed in one box.