

Series: Panther

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

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** 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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Tel: 86 512 6807 9998



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

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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 _{dc}	3-5	V _{dc}
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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**Description: MiMo LTE, MiMo WiFi, GNSS
Vehicle Mount Antenna****Series: Panther****PART NUMBER: GPSMB50xx****ELECTRICAL SPECIFICATIONS**

Pulse P/N	GPSMB501	GPSMB502	GPSMB501C
Cable NO.	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
Cable length	17FT	17FT	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)
Cable Color	Black	White	Black
Assembly option	1. Assembly directly with nut 2. Magnetic mount base P/N:GPSMBMM		

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**Description: MiMo LTE, MiMo WiFi, GNSS
Vehicle Mount Antenna****Series: Panther****PART NUMBER: GPSMB50xx****MECHANICAL SPECIFICATIONS**

Plastic radome	ABS/PC Material UV Stabilized, UL-94HB
Color	GPSMB501:Black GPSMB501C: Black GPSMB502: White
Ingress Protection	IP67
Weight	GPSMB501:~1340 g GPSMB502: ~1340 g FPSMB501C: ~ 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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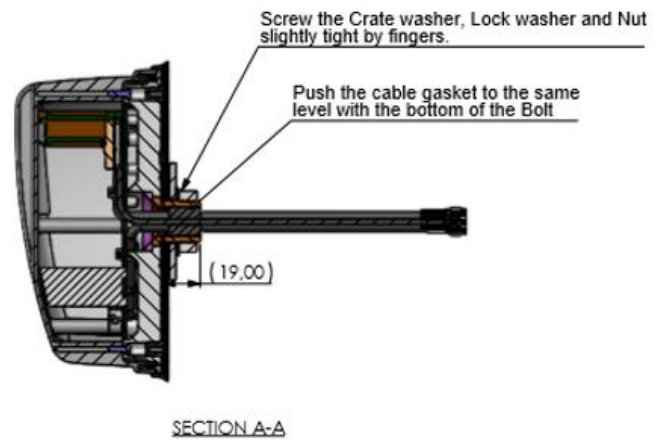
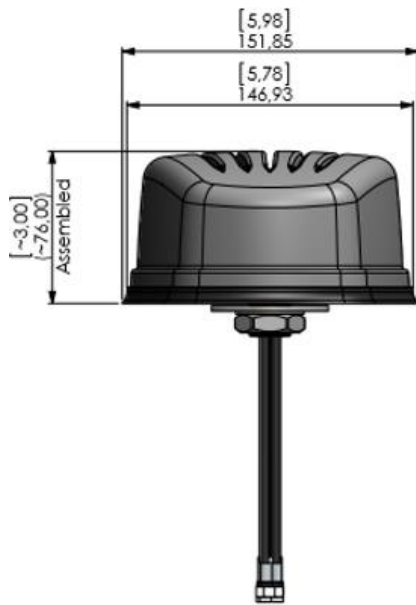
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MECHANICAL DRAWING



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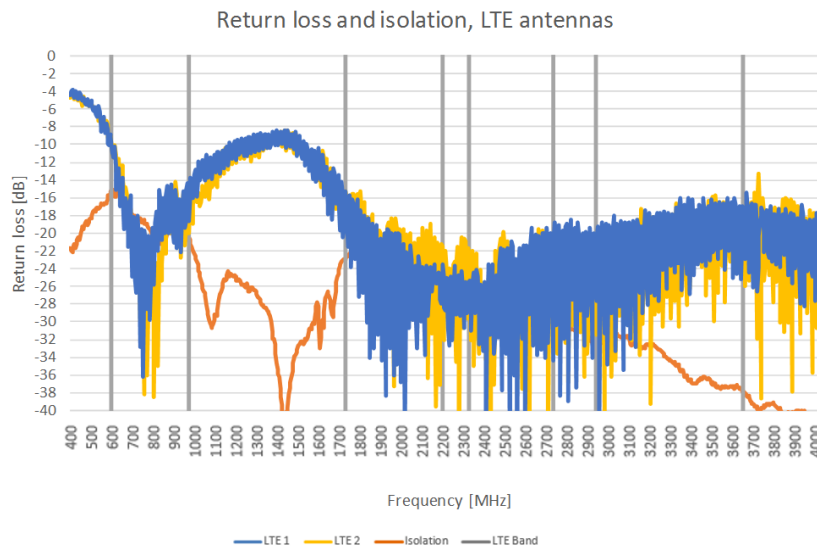
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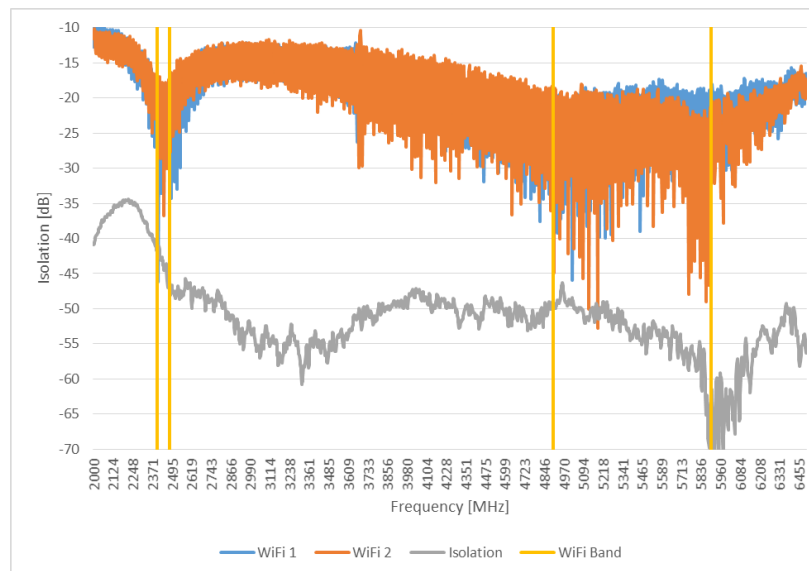
PART NUMBER: GPSMB50xx

CHARTS

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



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



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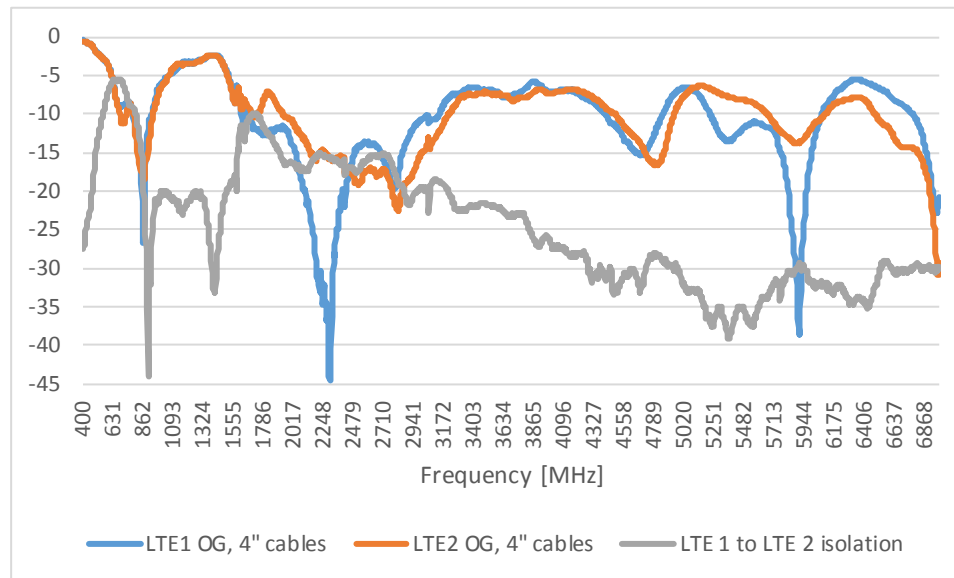
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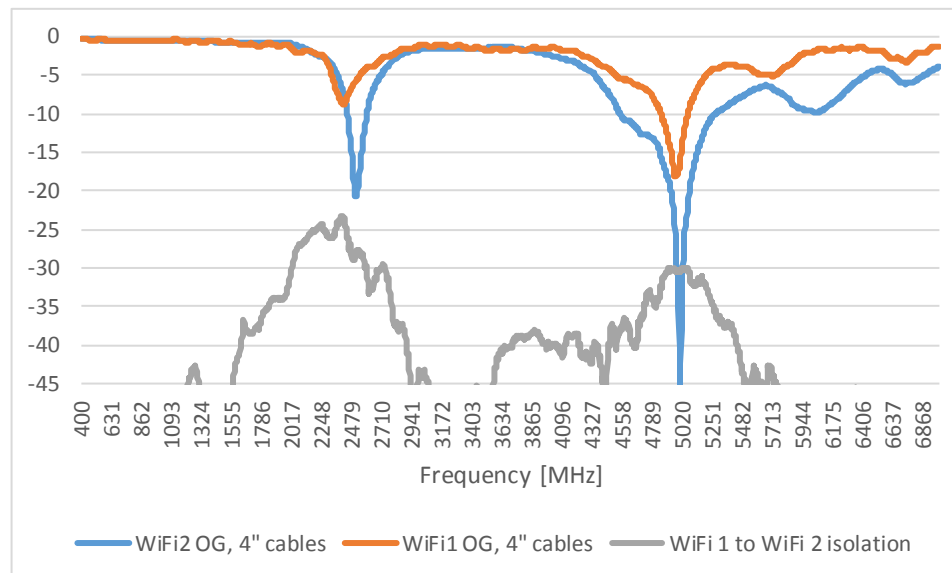
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CHARTS

Return Loss and isolation, LTE antennas*



Return Loss and isolation, WiFi antennas*



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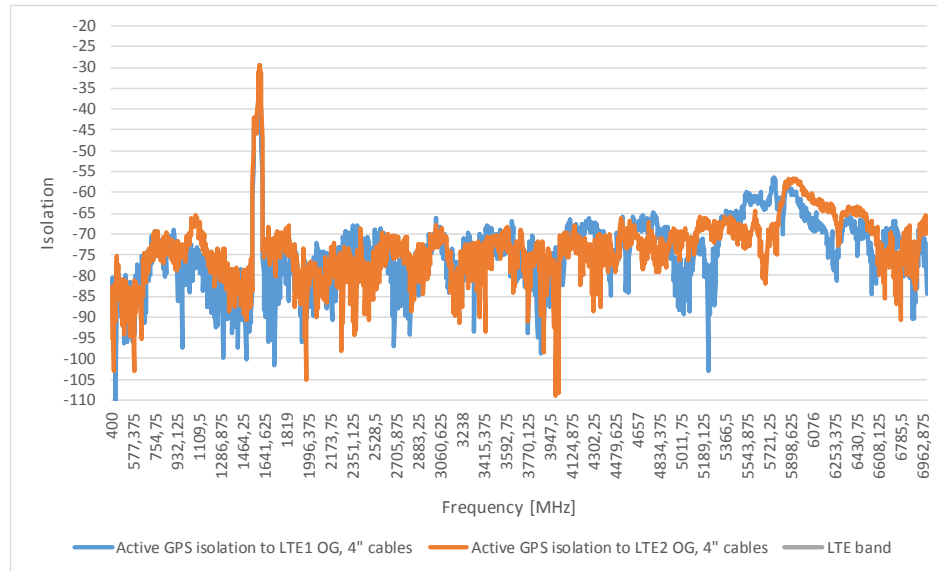
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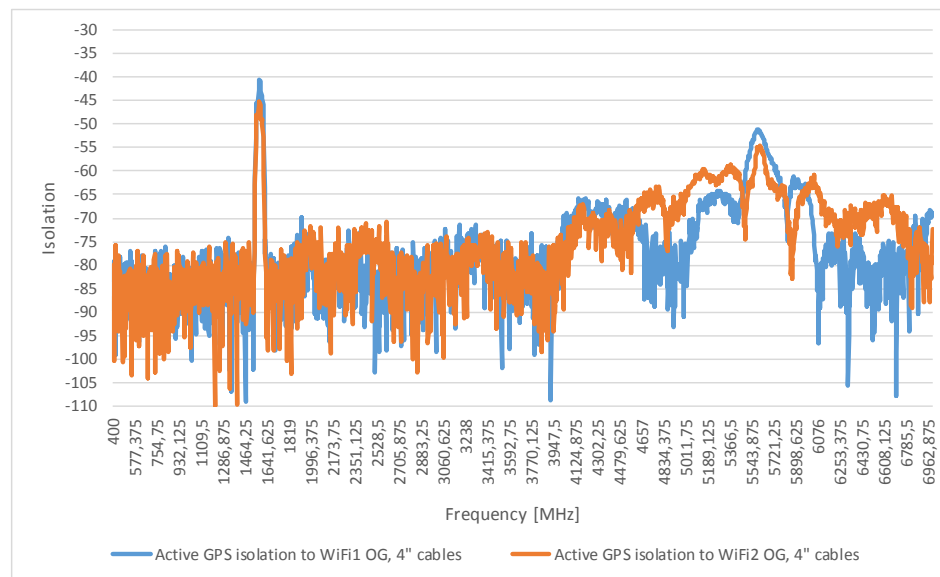
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CHARTS

GPS isolation to LTE 1 and LTE 2 antenna*



GPS isolation to WiFi 1 and WiFi 2 antenna*



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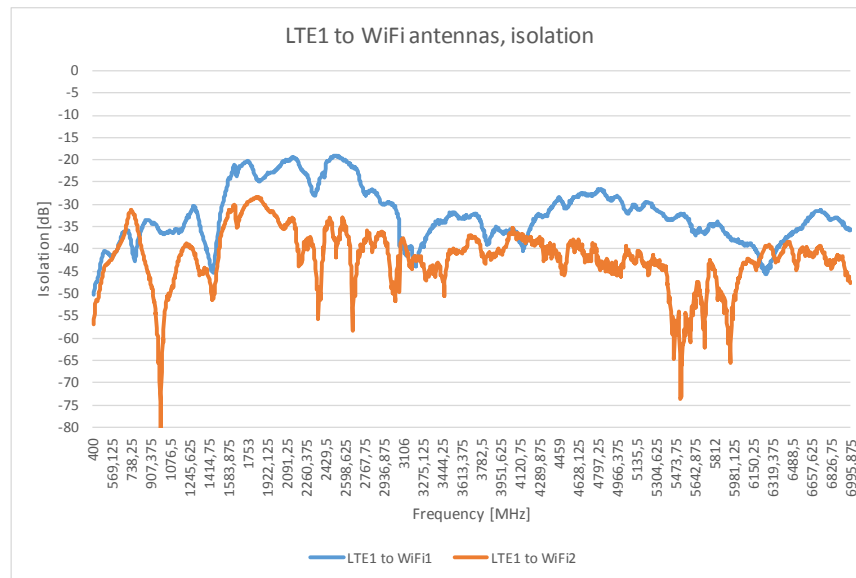
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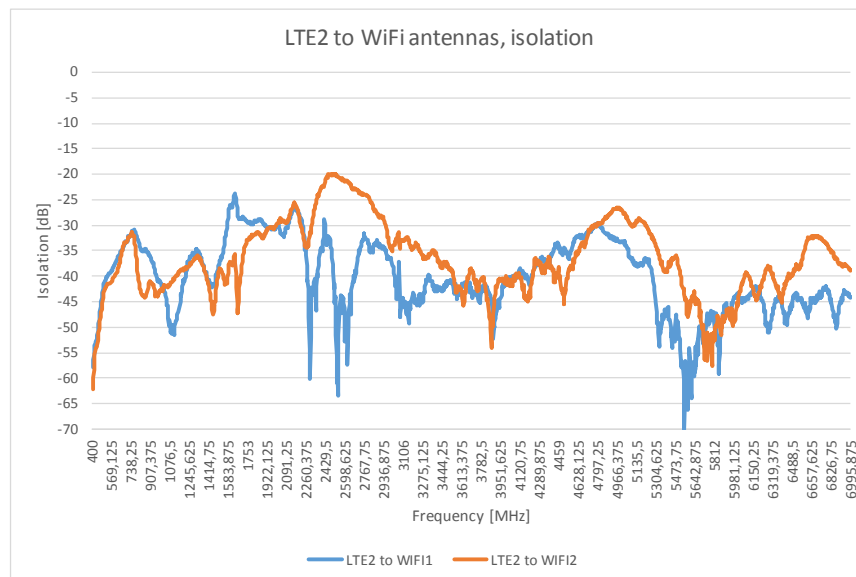
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CHARTS

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



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



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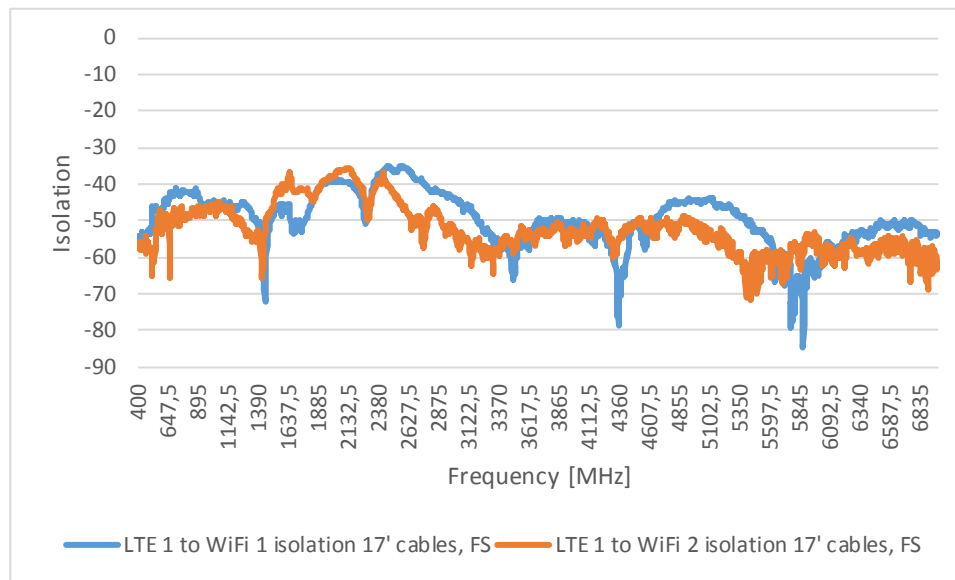
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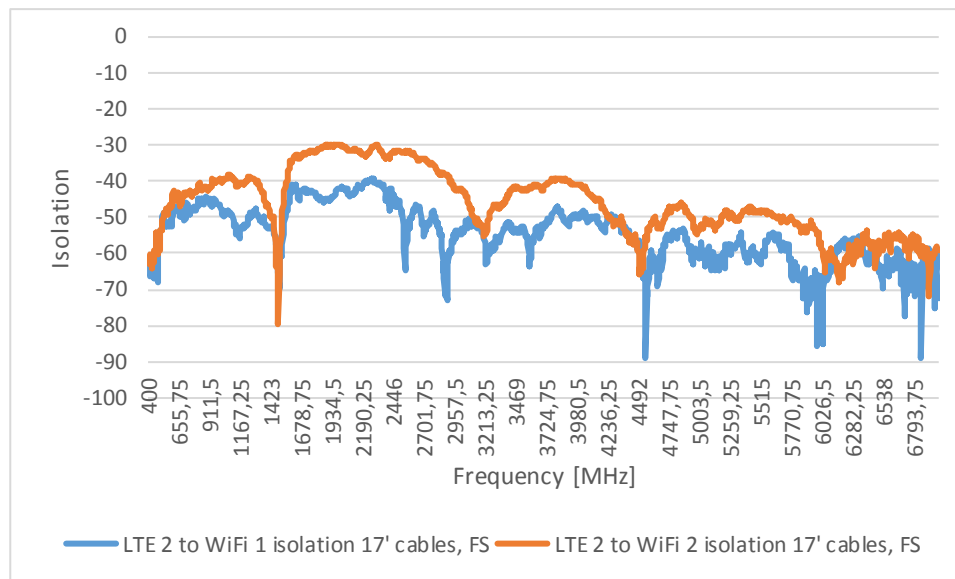
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CHARTS

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



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



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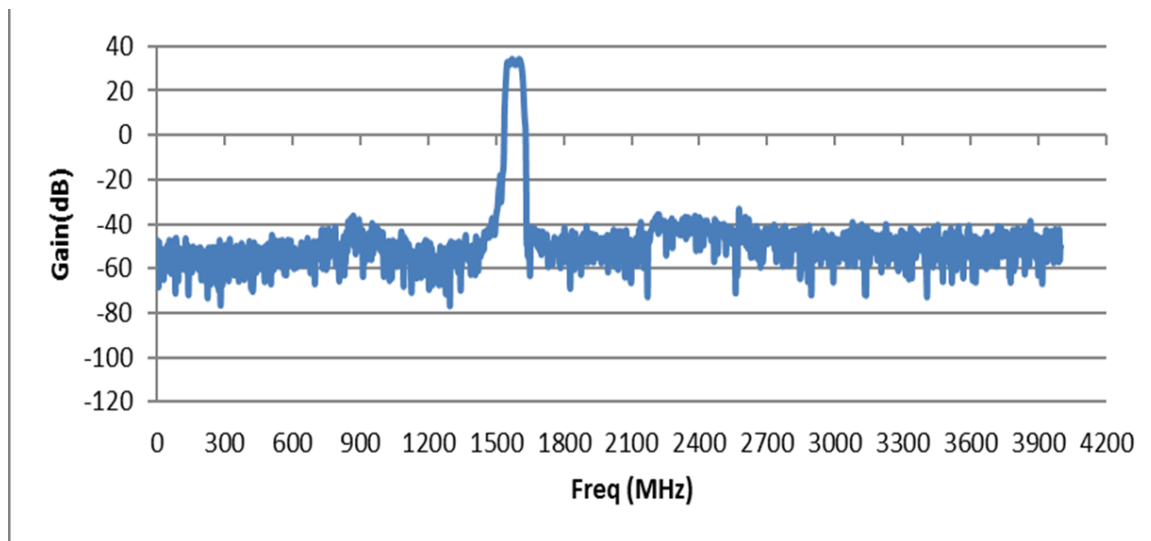
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PART NUMBER: GPSMB50xx

CHARTS

GNSS LNA performance



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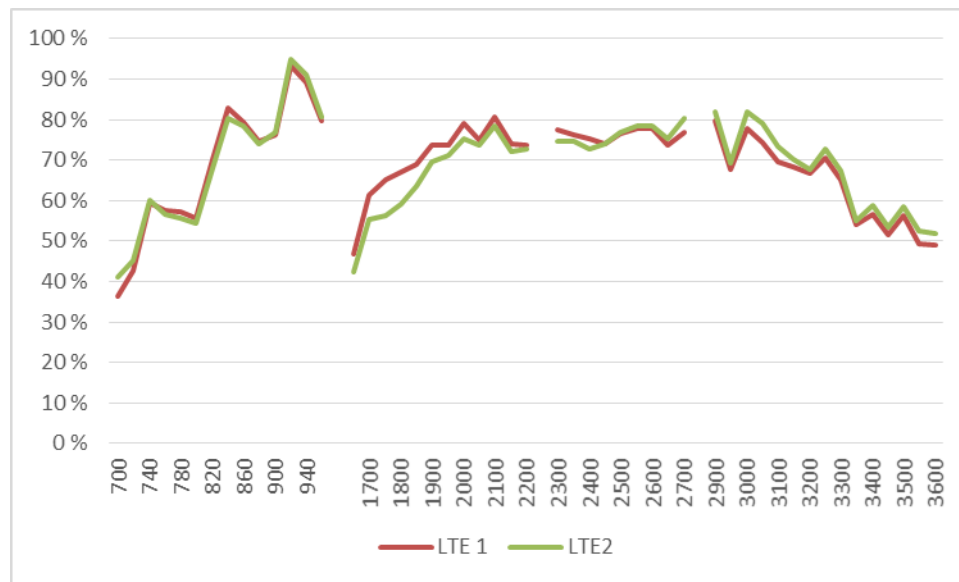
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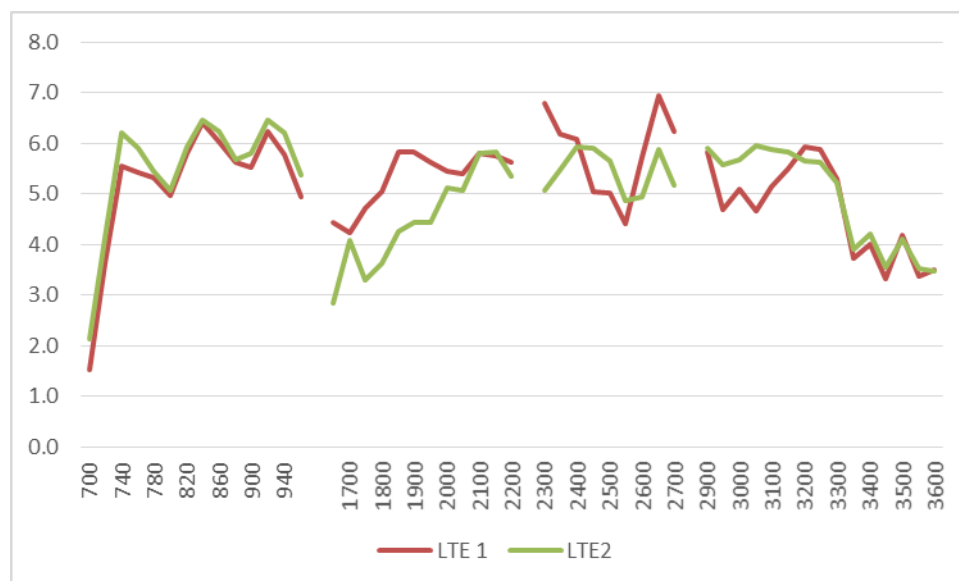
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CHARTS

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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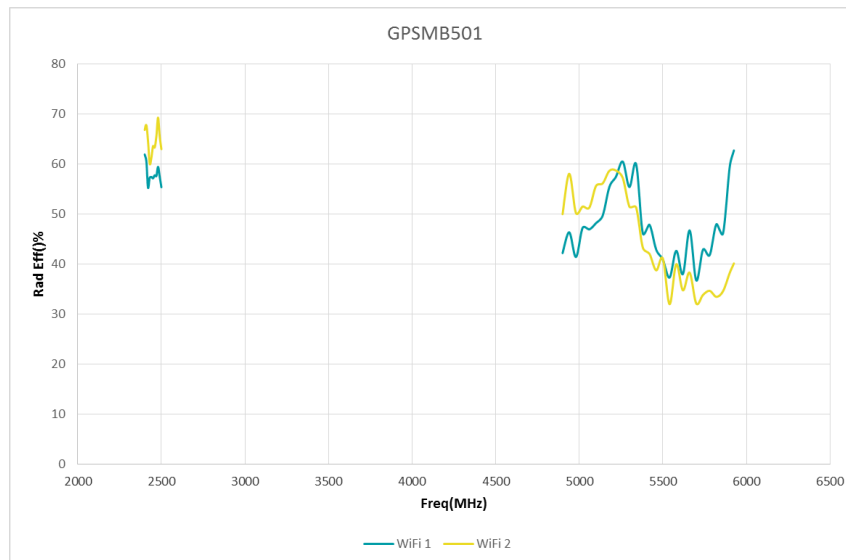
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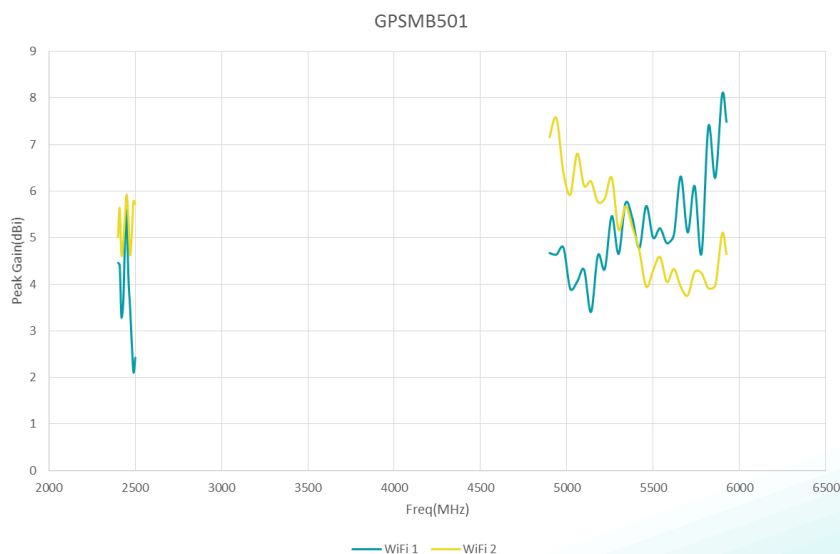
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CHARTS

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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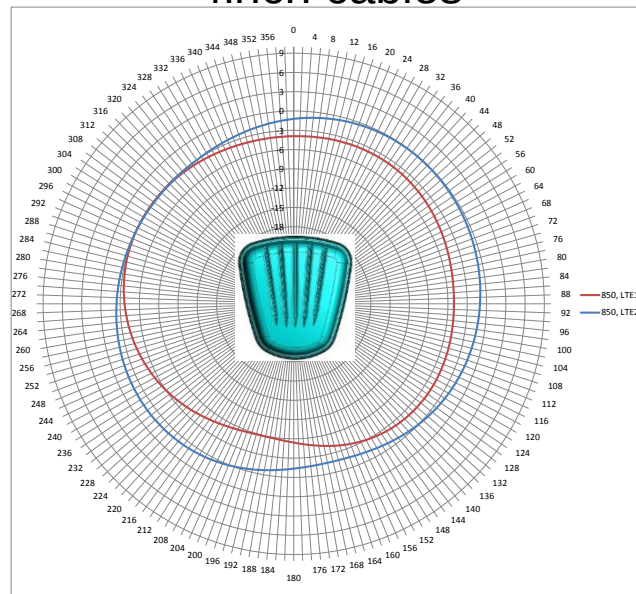
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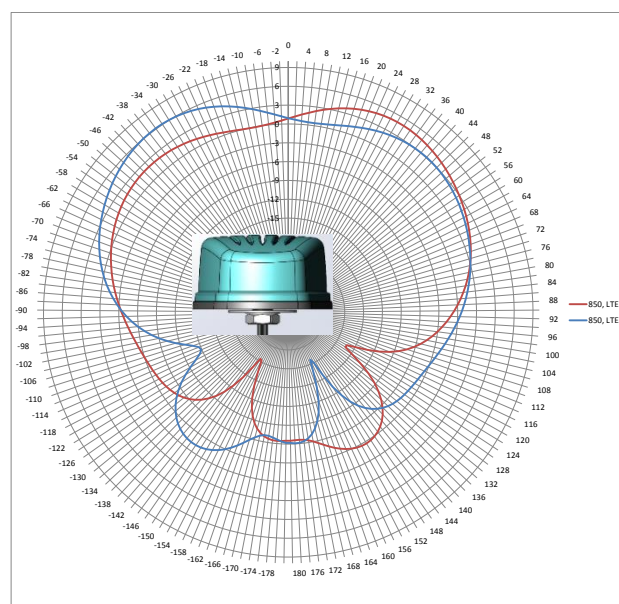
PART NUMBER: GPSMB50xx

CHARTS

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



Horizontal plot



Vertical plot front view

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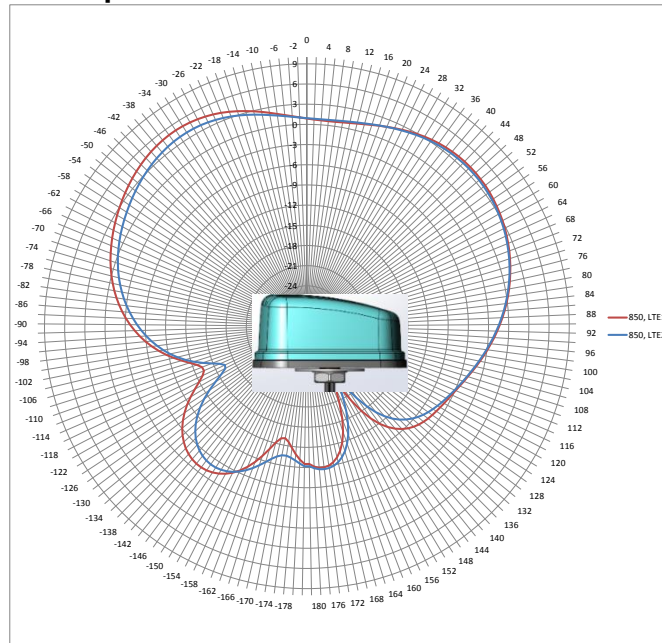
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Description: MiMo LTE, MiMo WiFi, GNSS
Vehicle Mount Antenna

PART NUMBER: GPSMB50xx

CHARTS

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



Vertical plot side view

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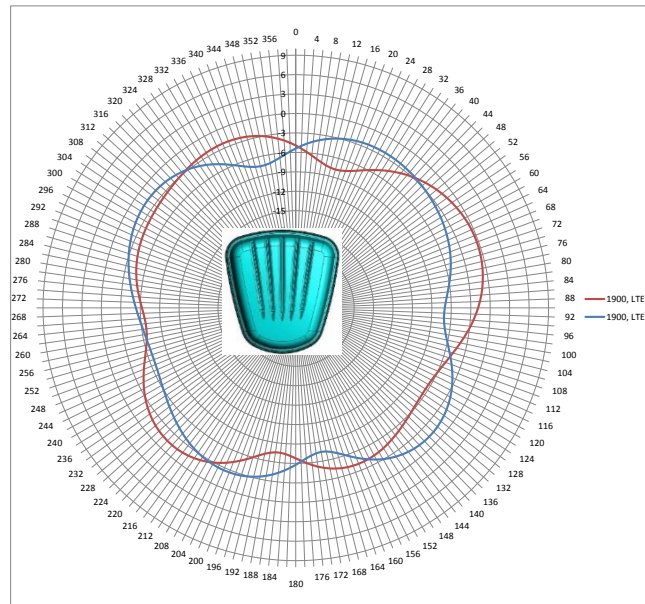
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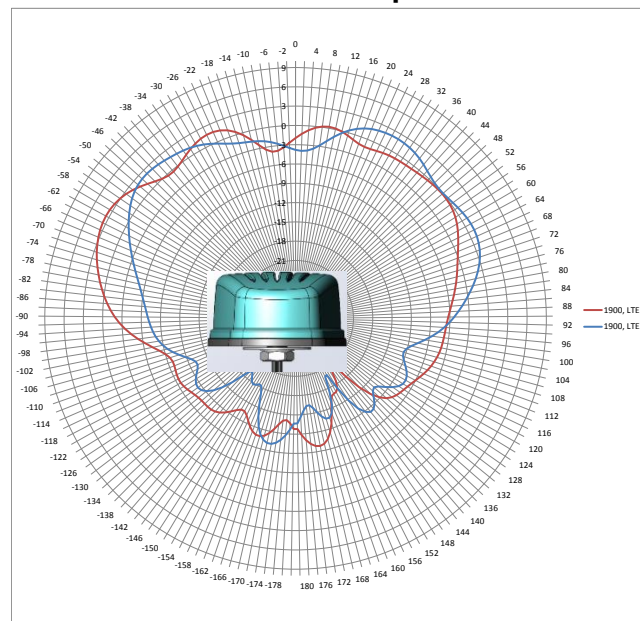
PART NUMBER: GPSMB50xx

CHARTS

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



Horizontal plot



Vertical plot front view

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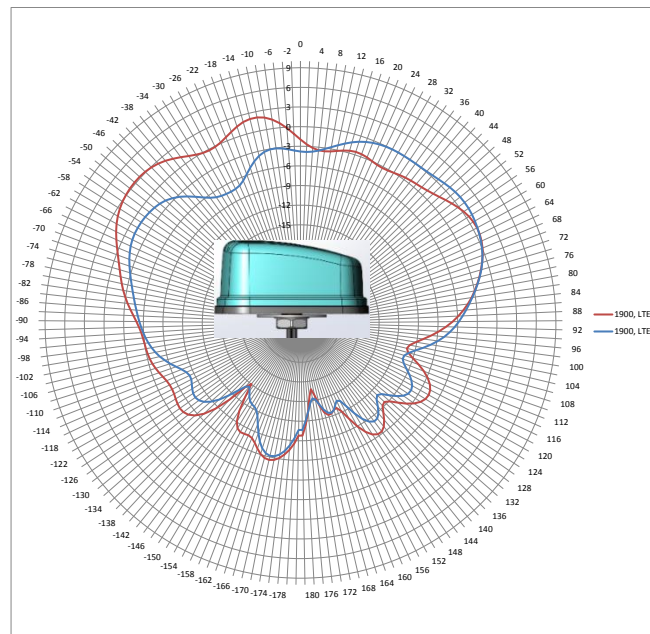
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CHARTS

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



Vertical plot side view

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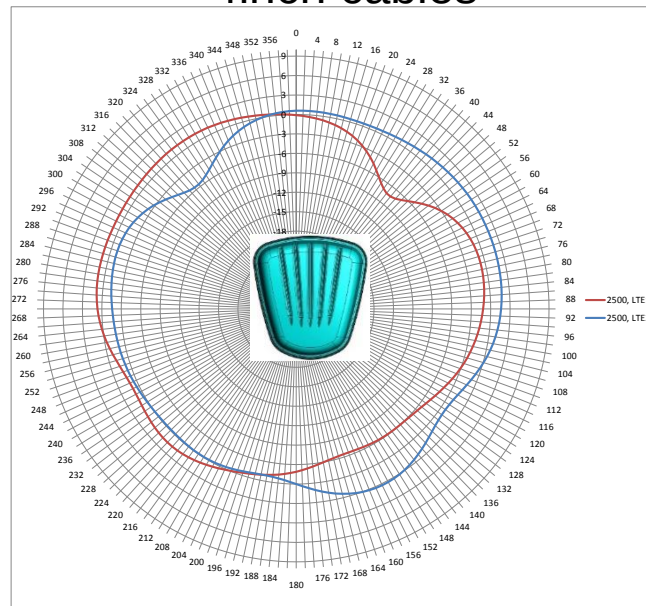
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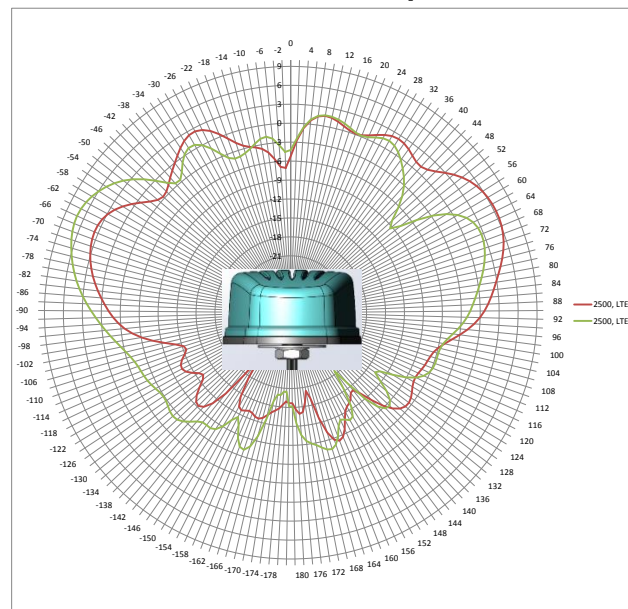
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CHARTS

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



Horizontal plot



Vertical plot front view

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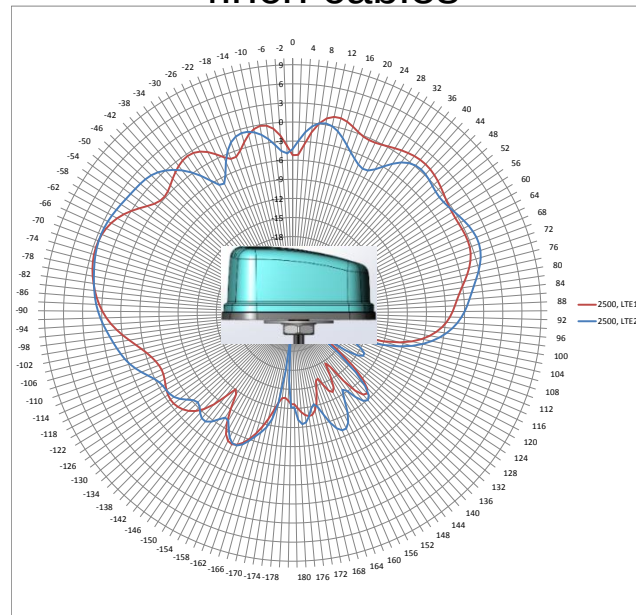
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Vehicle Mount Antenna**

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CHARTS

LTE antenna radiation pattern at 2500MHz with 2ft metal plate and
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Vertical plot side view

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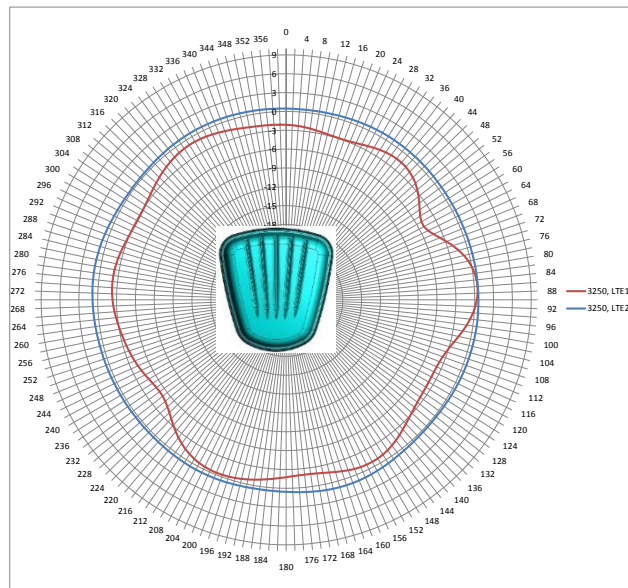
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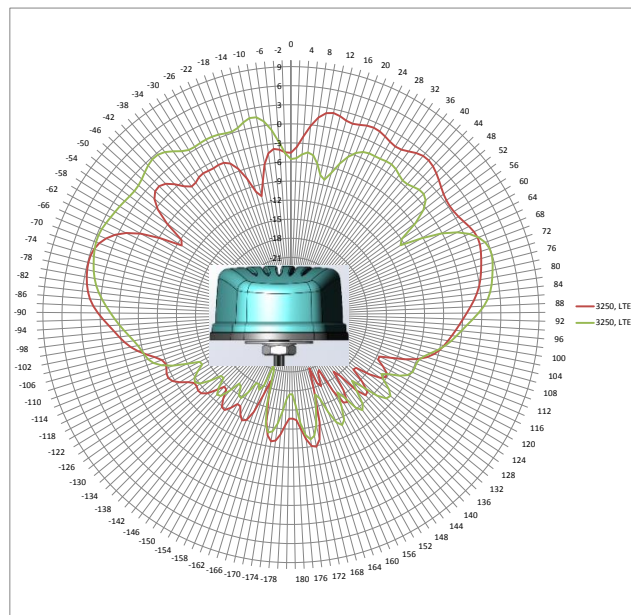
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CHARTS

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



Horizontal plot



Vertical plot front view

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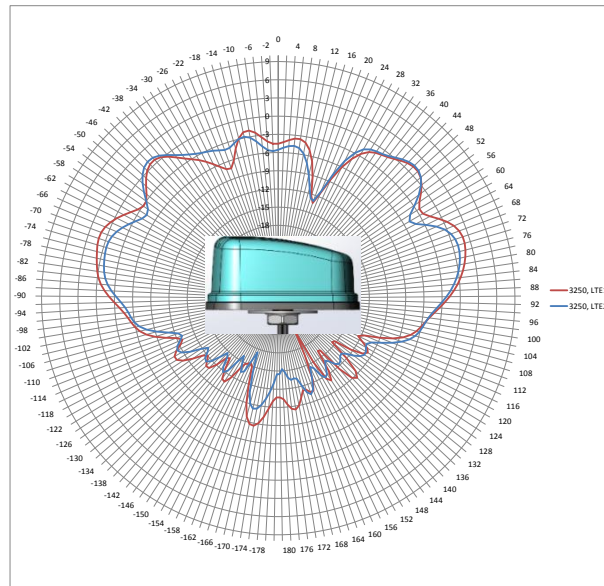
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Series: Panther

PART NUMBER: GPSMB50xx

CHARTS

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



Vertical plot side view

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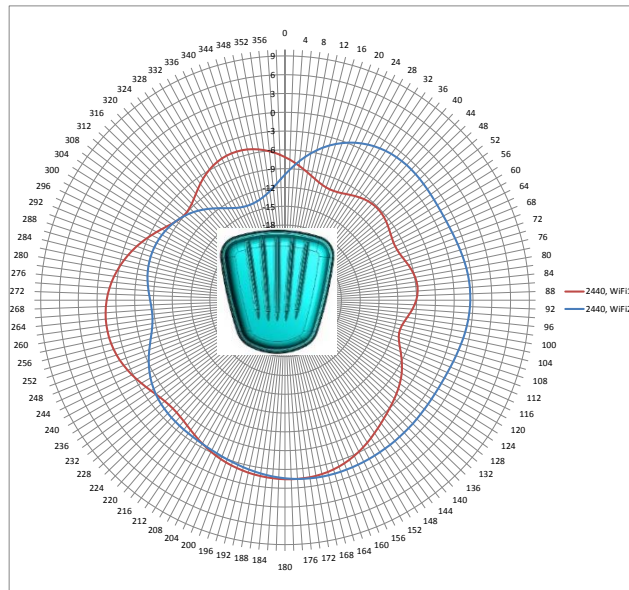
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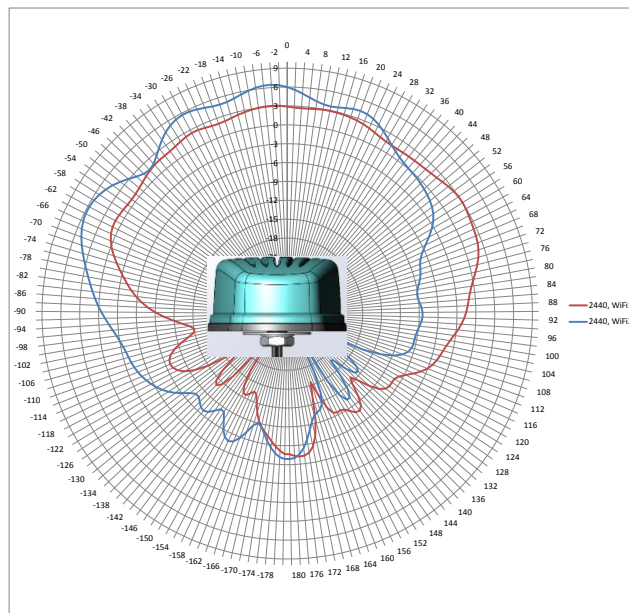
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CHARTS

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



Horizontal plot



Vertical plot front view

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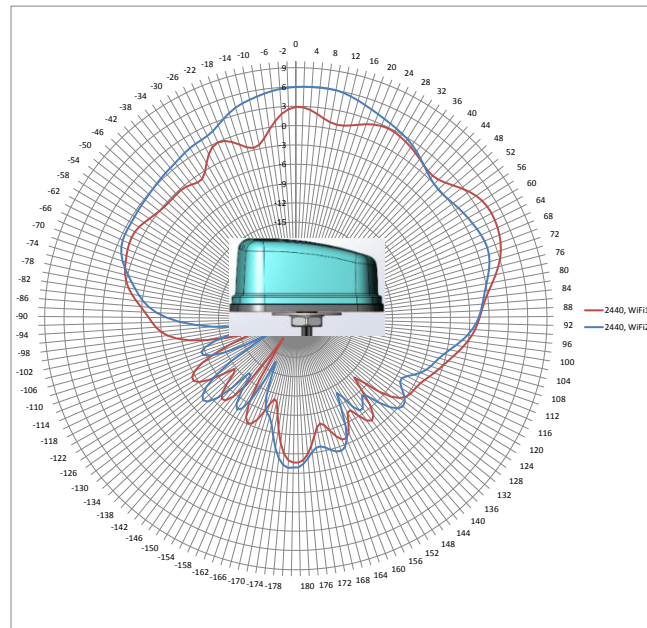
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CHARTS

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



Vertical plot side view

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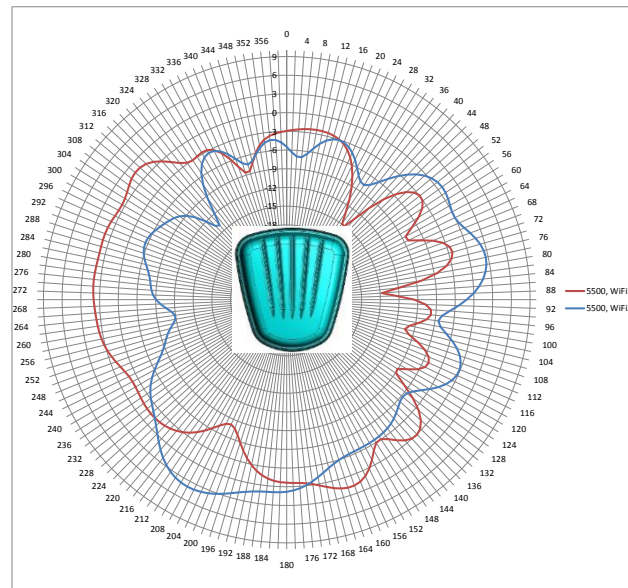
Description: MiMo LTE, MiMo WiFi, GNSS Vehicle Mount Antenna

Series: Panther

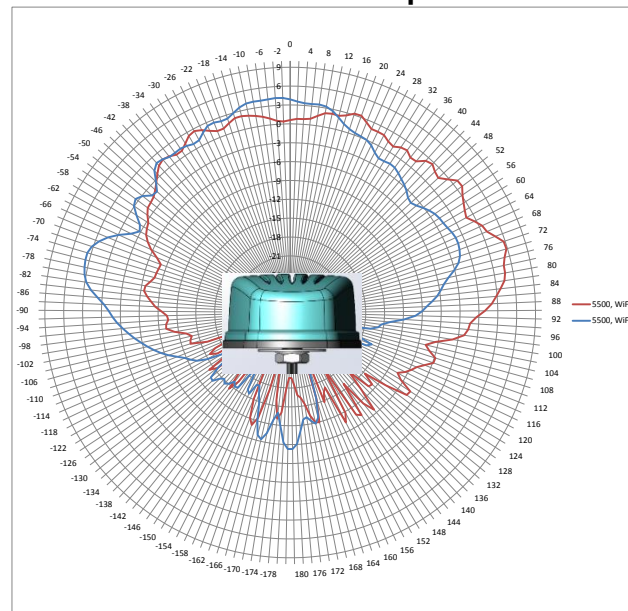
PART NUMBER: GPSMB50xx

CHARTS

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



Horizontal plot



Vertical plot front view

Issue: 1711

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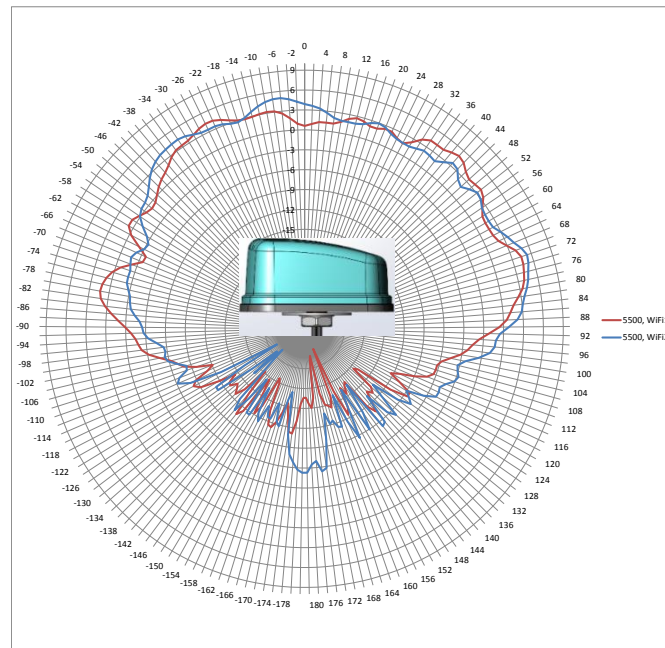
**Description: MiMo LTE, MiMo WiFi, GNSS
Vehicle Mount Antenna**

Series: Panther

PART NUMBER: GPSMB50xx

CHARTS

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



Vertical plot side view

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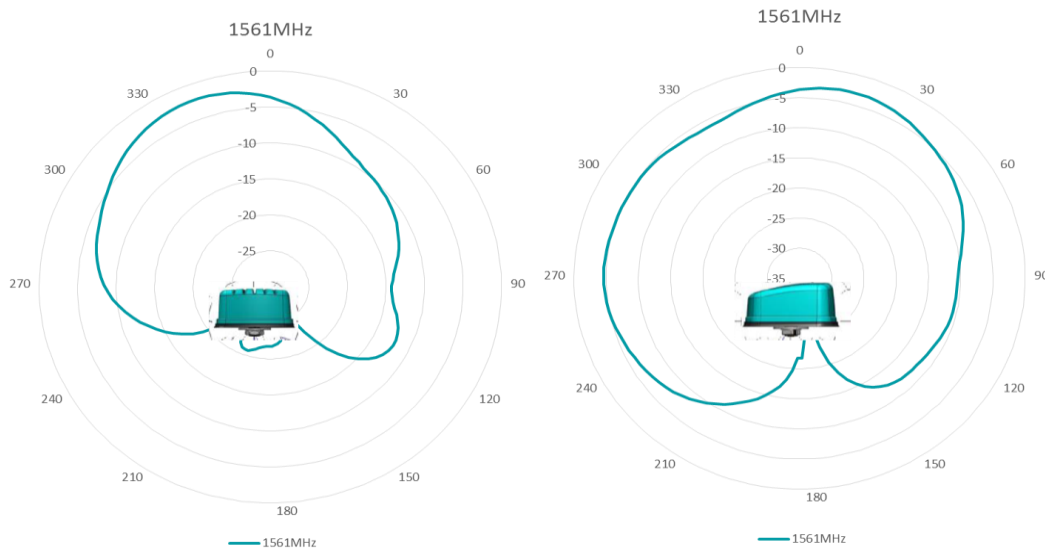
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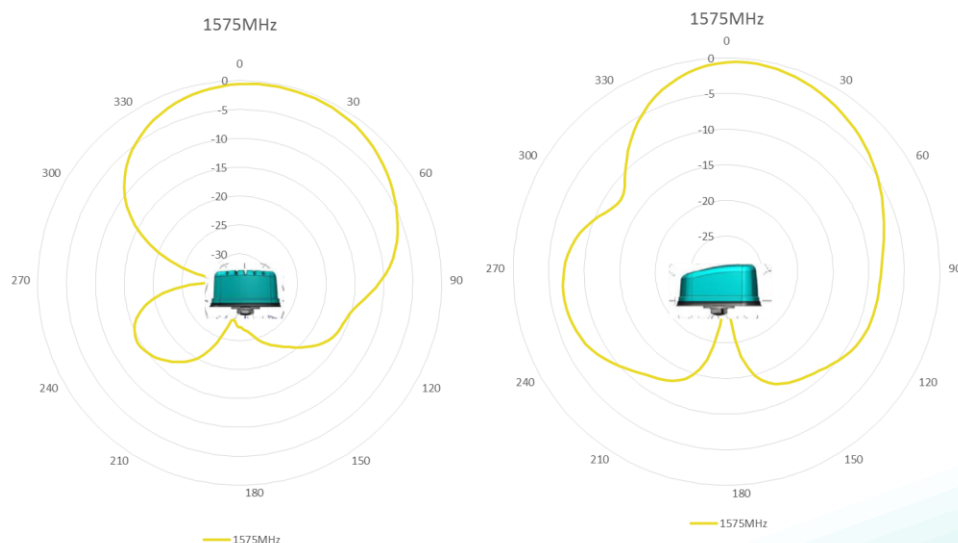
PART NUMBER: GPSMB50xx

CHARTS

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



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



Issue: 1711

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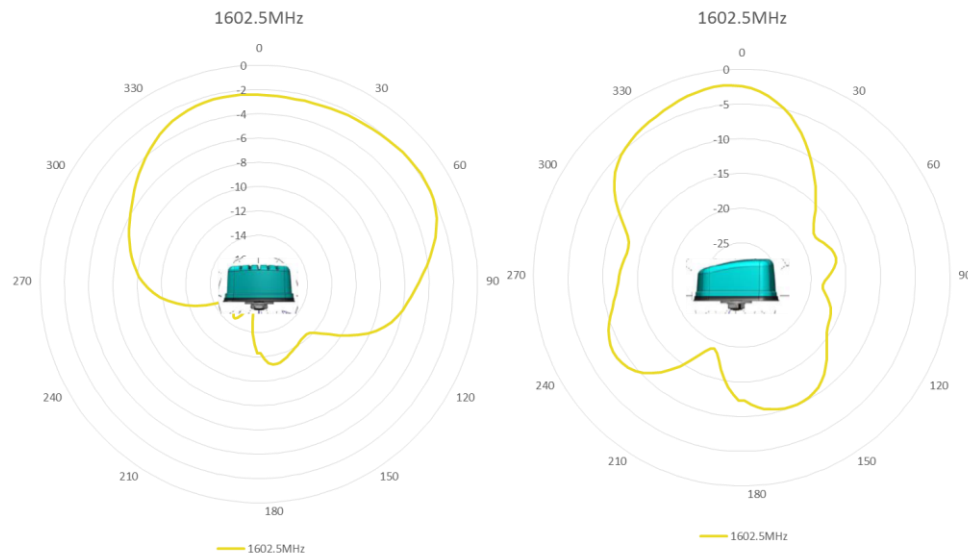
**Description: MiMo LTE, MiMo WiFi, GNSS
Vehicle Mount Antenna**

Series: Panther

PART NUMBER: GPSMB50xx

CHARTS

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



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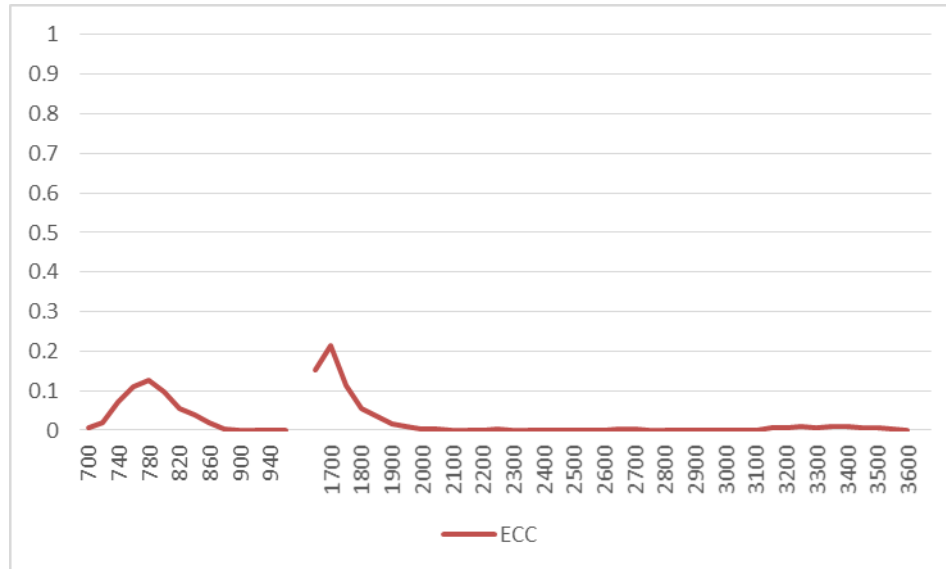
**Description: MiMo LTE, MiMo WiFi, GNSS
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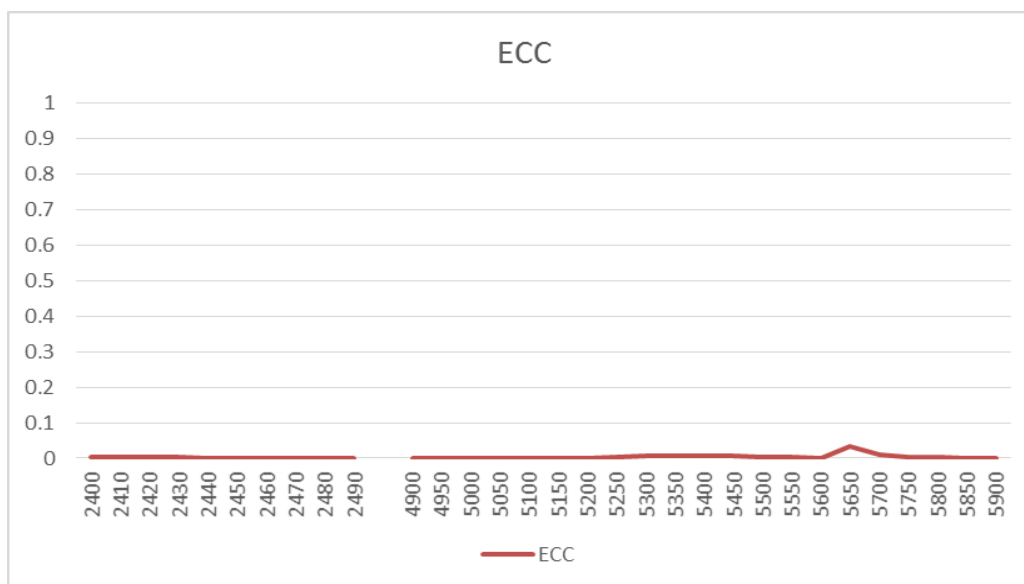
PART NUMBER: GPSMB50xx

CHARTS

Envelope correlation coefficient – LTE 1 to LTE 2



Envelope correlation coefficient – WiFi 1 to WiFi 2



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Series: Panther

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

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