

Description: MiMo LTE, WiFi, GNSS Vehicle Mount Antenna

Series: Panther

PART NUMBER: GPSMB401, GPSMB402, GPSMB401R, GPSMB402R



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

All dimensions are in mm / inches

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For more information:

Pulse Worldwide Headquarters
12220 World Trade Drive
San Diego, CA 92128
USA
Tel:1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
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Europe Headquarters
Pulse GmbH & Do, KG
Zeppelinstrasse 15
Herrenberg, Germany
Tel: 49 7032 7806 0

Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998



Description: MiMo LTE, WiFi, GNSS Vehicle Mount Antenna

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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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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 ± 1.5 dB
Gain* (WiFi antenna, >4900MHz)	5 dBi ± 2 dB
Isolation LTE to LTE**	15 dB or better
GNSS antenna RHCP gain	1 dBic ± 2 dB
LNA gain	30 dB ± 2 dB
Noise Figure	2.5 (cascade) dB
Current	9 mA ± 2 mA
Vdc	3-5Vdc
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

Connector type(s)	SMA (LTE and GPS) /SMA-RP (WiFi)
Cable type(s)	RG-58 (LTE and WiFi) / RG-174 (GPS)
Length	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

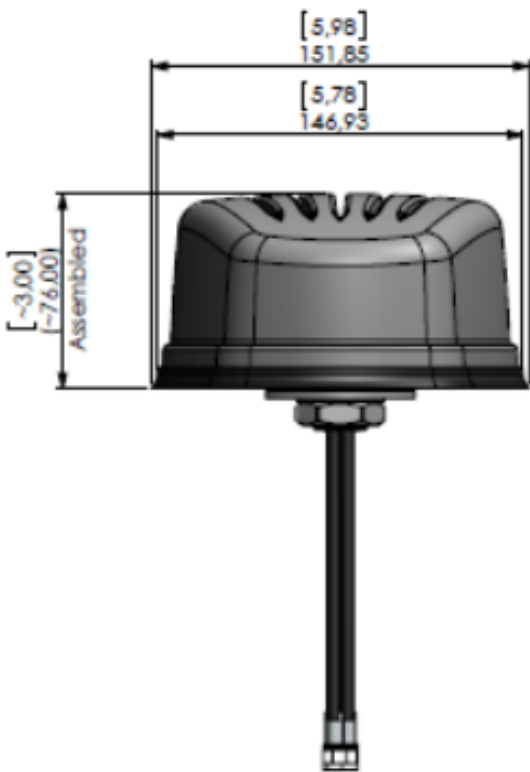
NO	T SN IN STAND	TEST DESCRIPTION	REFER STANDARD	TEST REPORT NO	RESULT(PASS/FAIL)
1	12.2.3	Cooling test	EN 50155	DD20170919002	PASS
2	12.2.4	Dry heat test			
3	12.2.5	Damp heat test, cyclic			
4	12.2.6	Supply overvoltages	EN 50155	W01714200900E	PASS
5	12.2.7	Surges, electrostatic discharge and transient 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	12.2.11	Vibration	EN 61373		
		Shock, and bump test	EN 61373		
10	12.2.12	Watertightness test	EN 50155		
11	12.2.14	Low temperature storage test	EN 50155	TC 18 02 000528	HL1&HL2
12	/	fire & smoke	EN 45545-2 R15&R16		
			EN 45545-2 R15&R16	TC.18.04.001633	HL1&HL2&HL3

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MECHANICAL DRAWING



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TEST SETUP



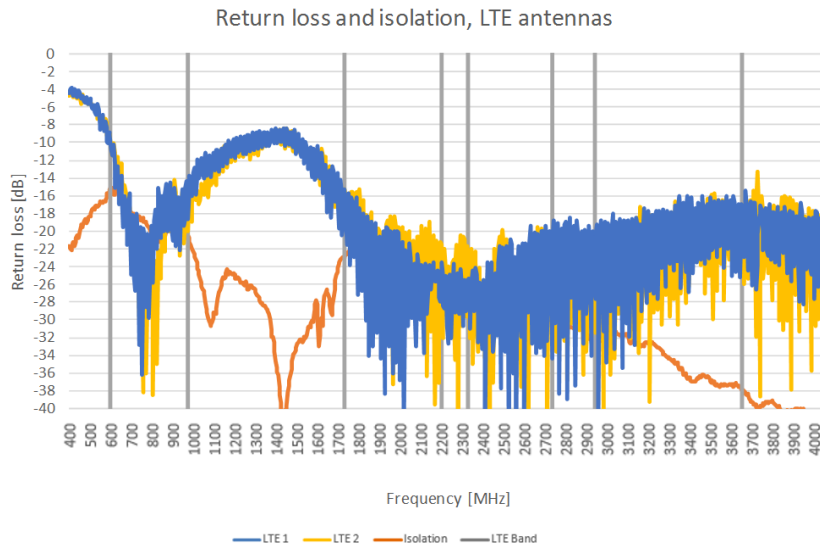
For VSWR, test in free space with 17ft cables



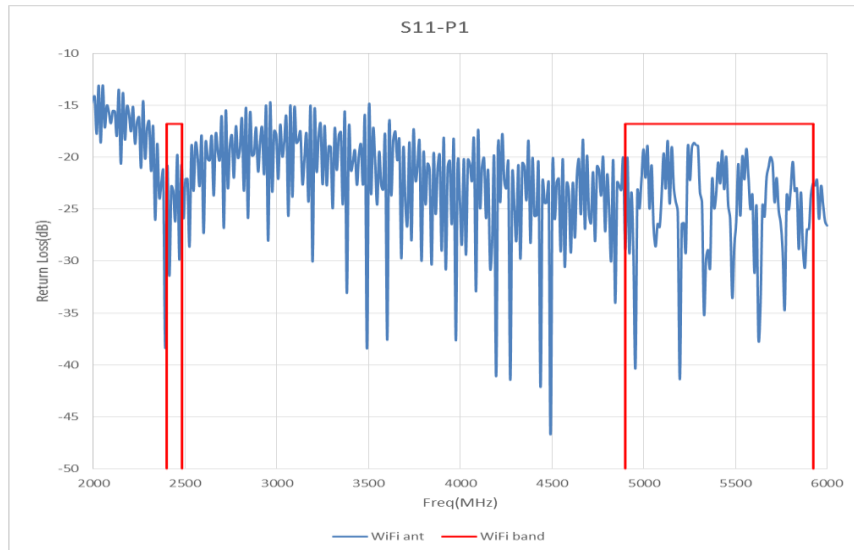
For radiation performance, test on 2ft GND plane with 4inch cables

CHARTS

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



Return Loss in free space, WiFi antenna**



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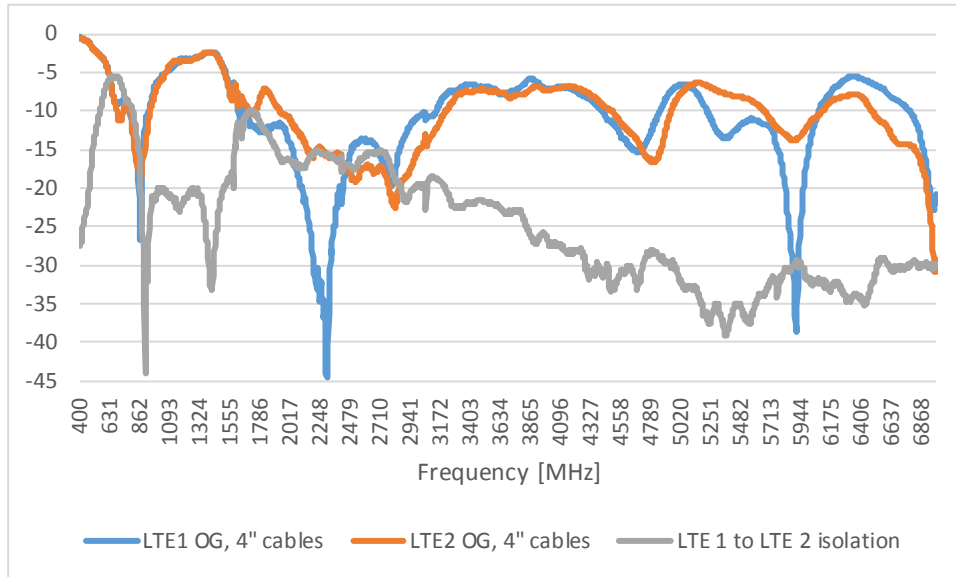
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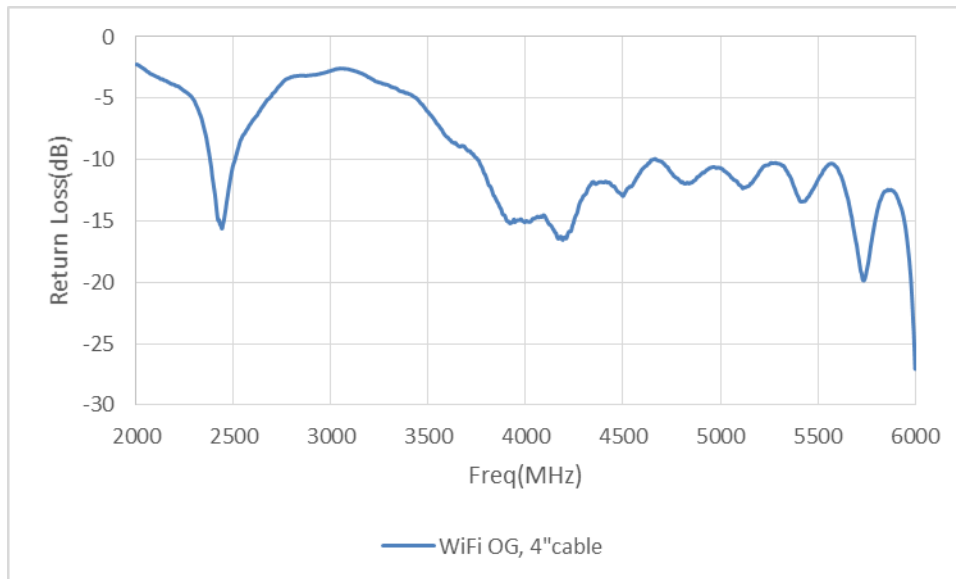
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CHARTS

Return Loss and isolation, LTE antennas*

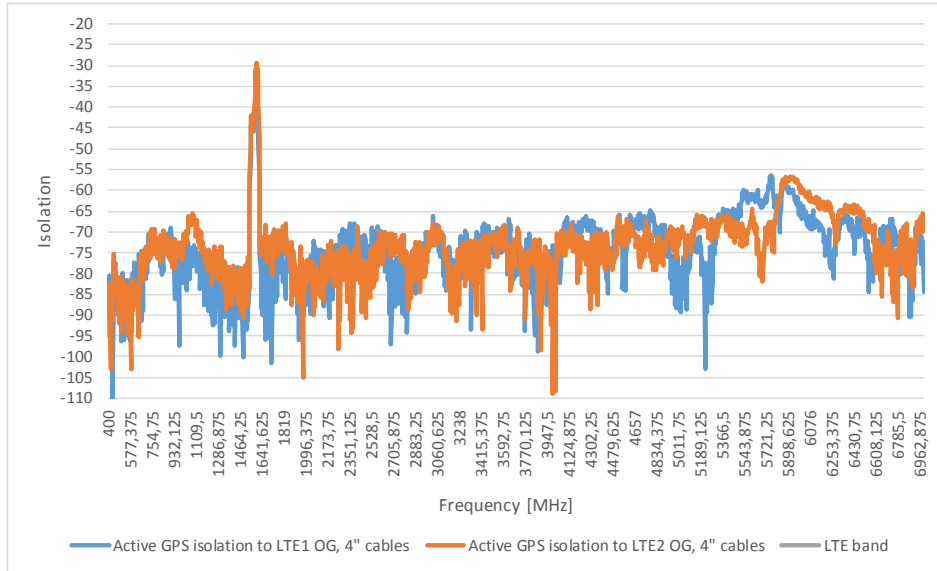


Return Loss, WiFi antenna*

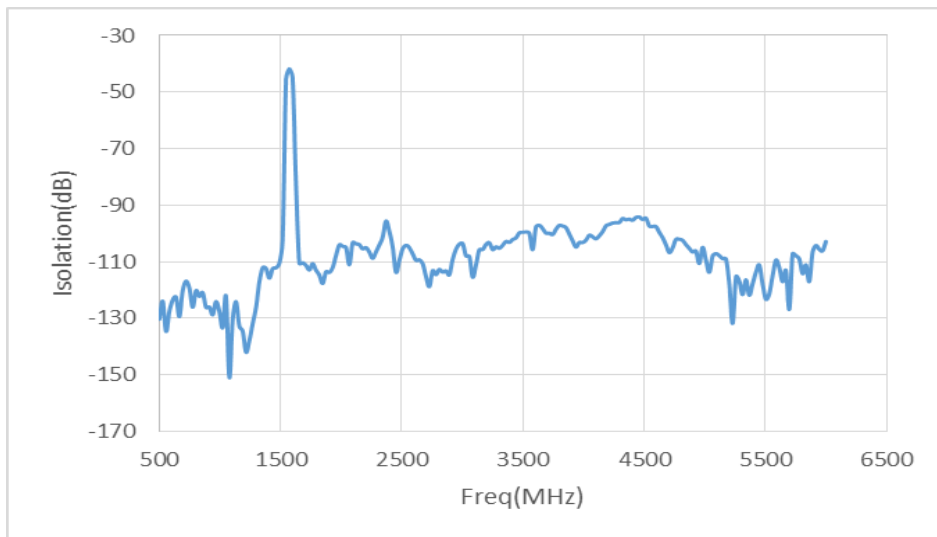


CHARTS

GPS isolation to LTE 1 and LTE 2 antenna*



GPS isolation to WiFi antenna*



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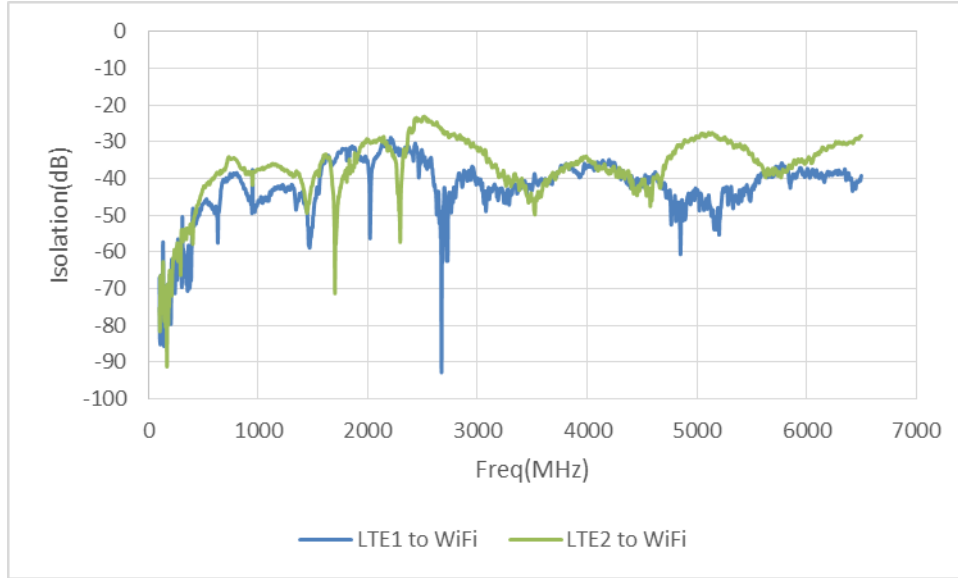
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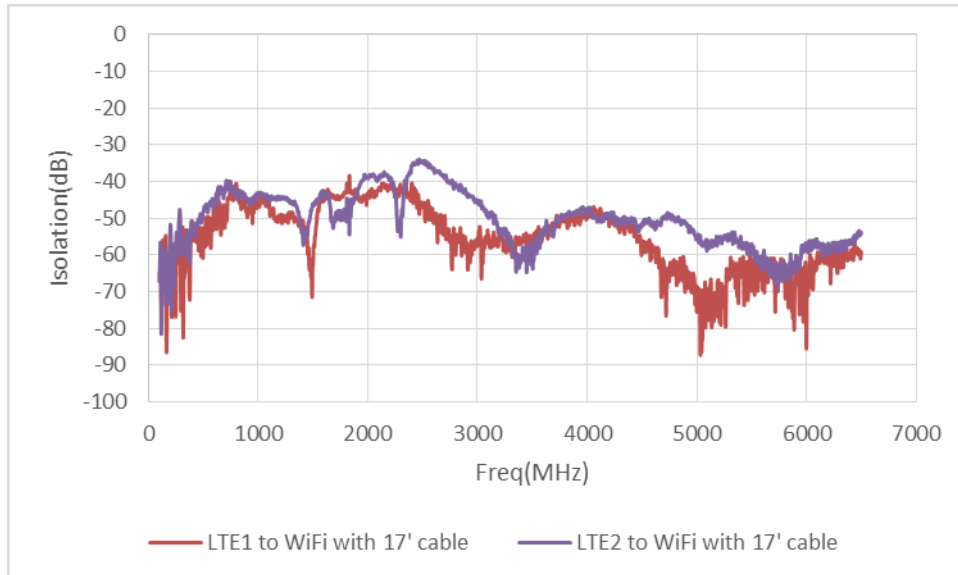
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CHARTS

Isolation characteristics, WiFi to LTE 1 and LTE 2*



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



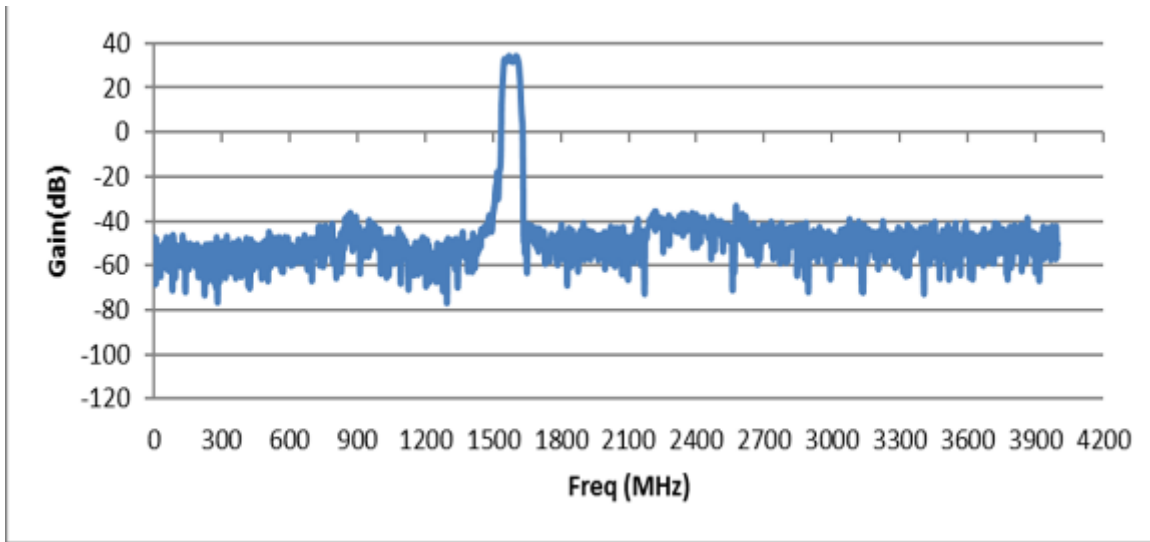
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GNSS LNA performance

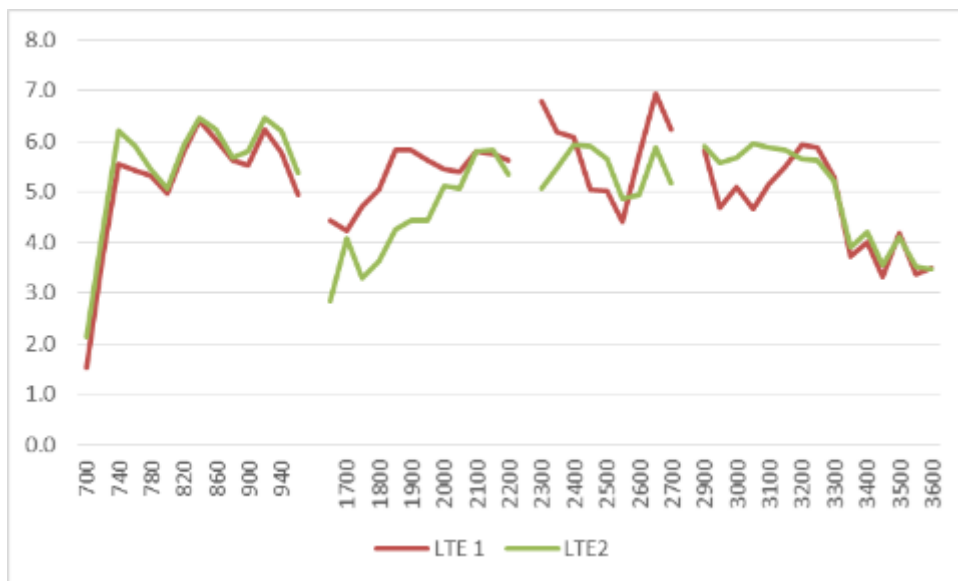


CHARTS

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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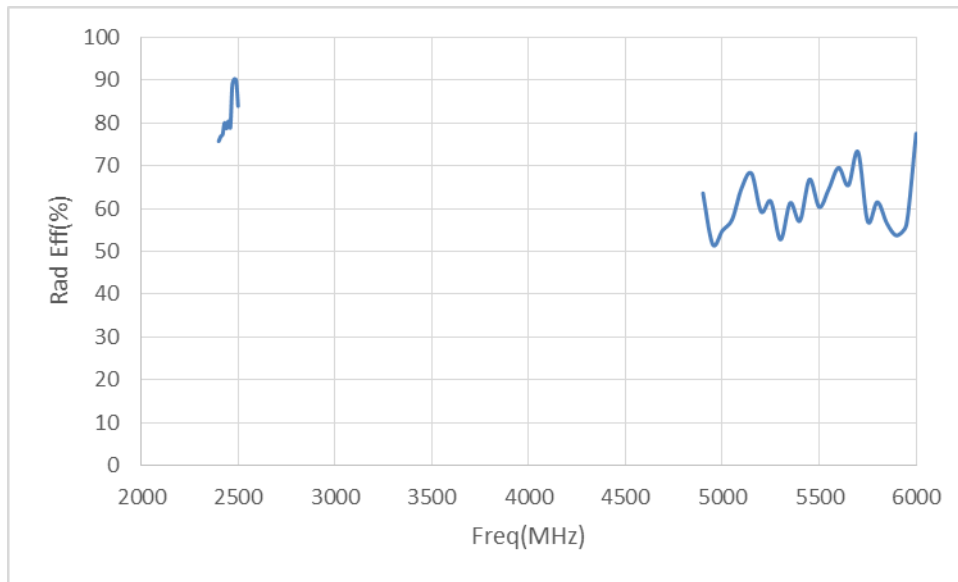
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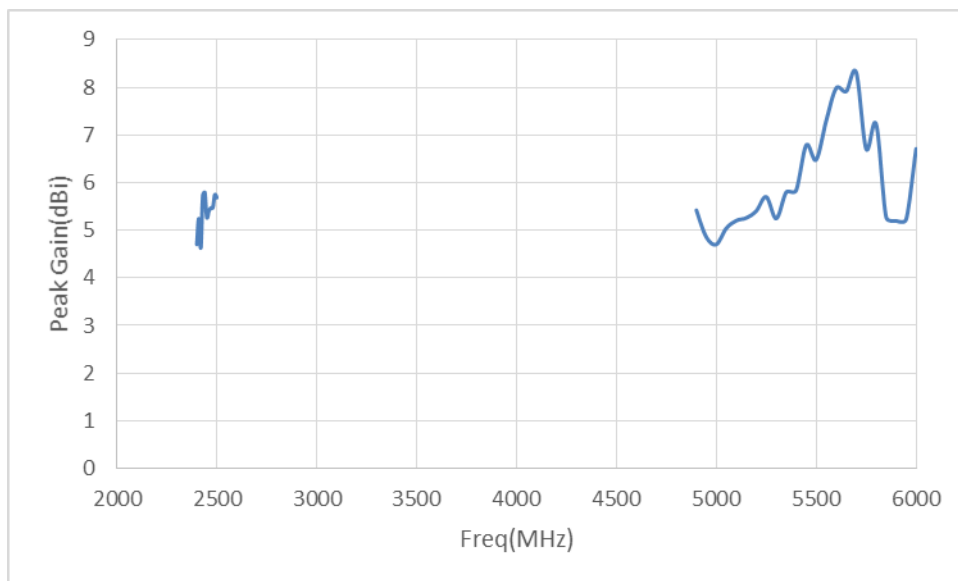
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CHARTS

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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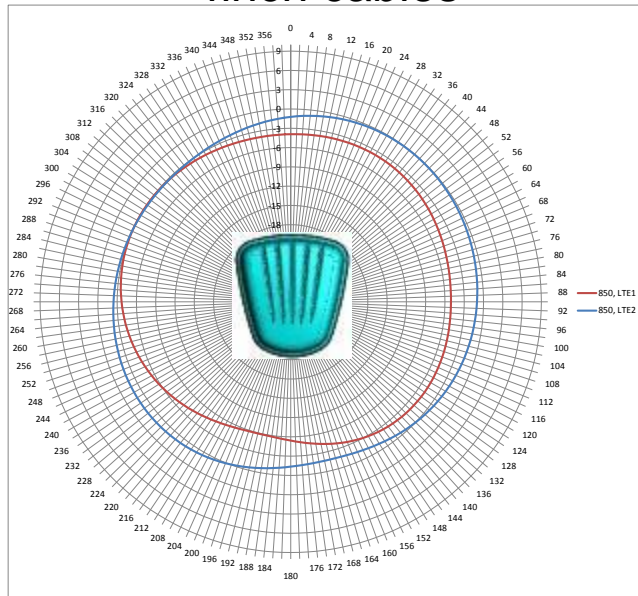
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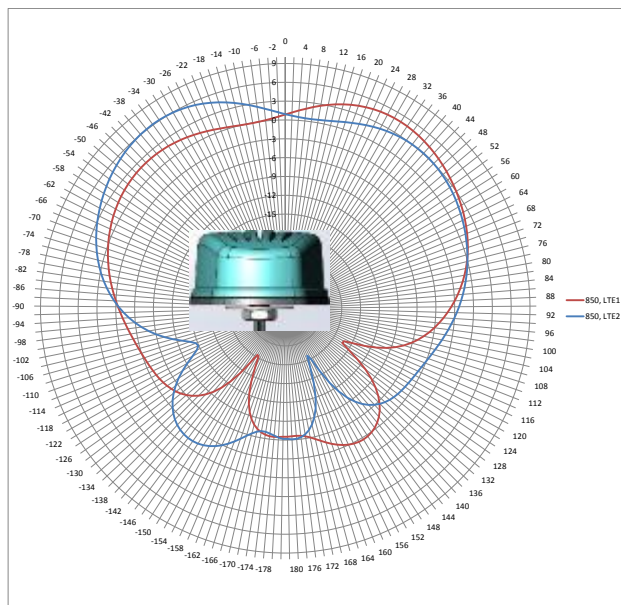
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CHARTS

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



Horizontal plot



Vertical plot front view

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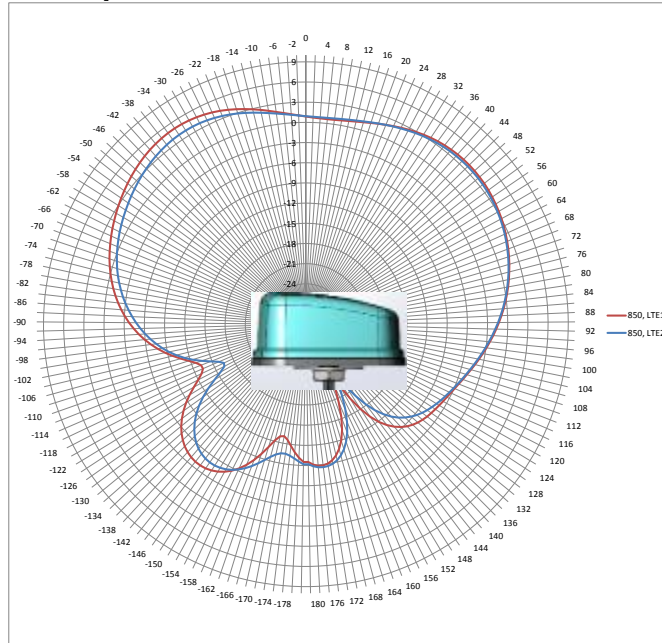
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LTE antenna radiation pattern at 850MHz with 2ft metal plate and



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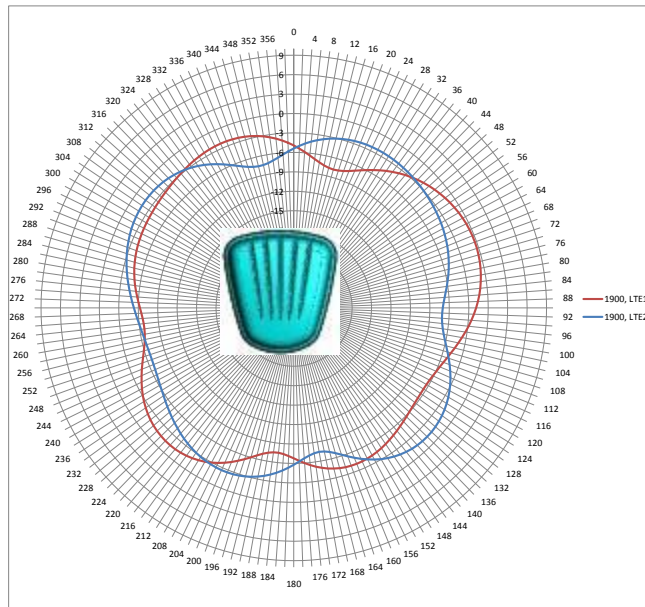
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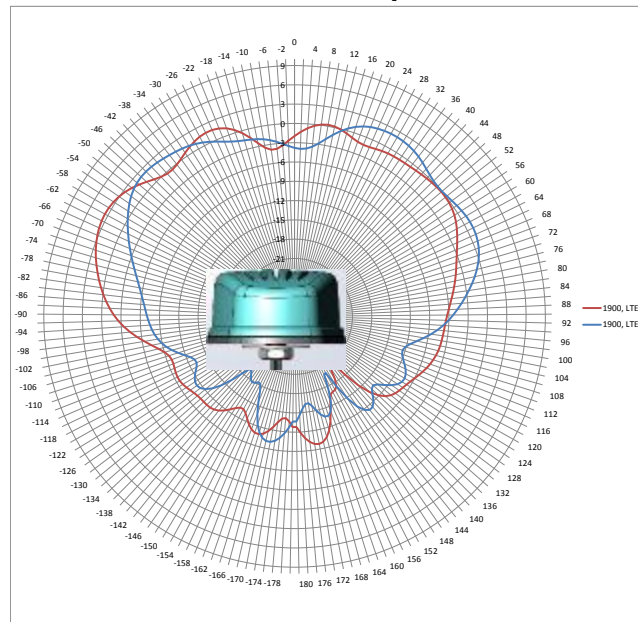
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CHARTS

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



Horizontal plot



Vertical plot front view

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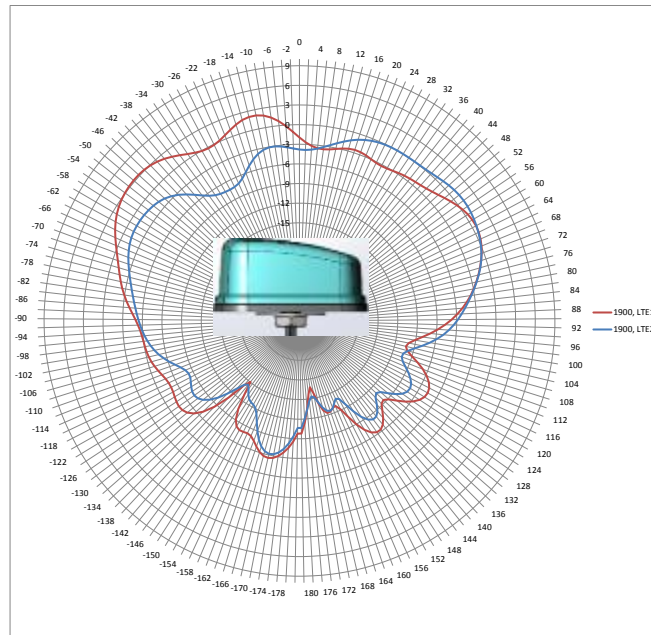
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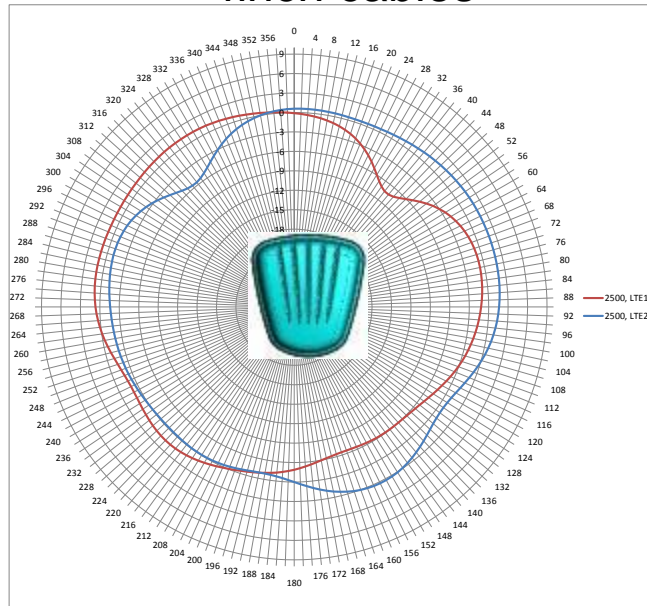
LTE antenna radiation pattern at 1900MHz with 2ft metal plate and 4inch cables



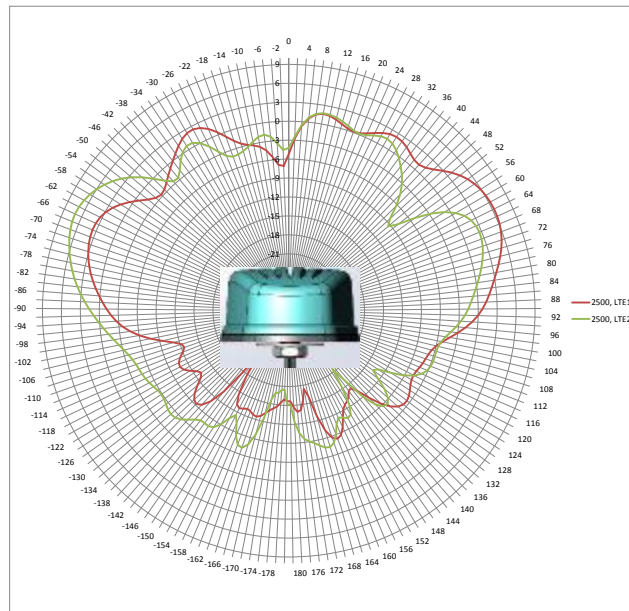
Vertical plot side view

CHARTS

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



Horizontal plot



Vertical plot front view

Issue: 1823

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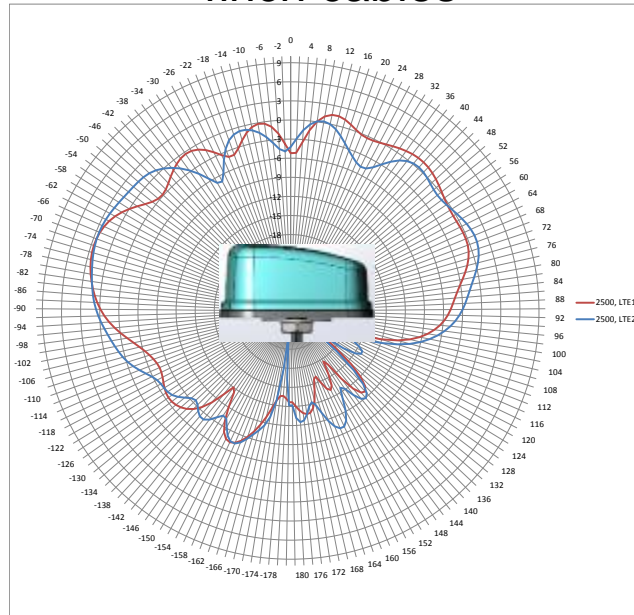
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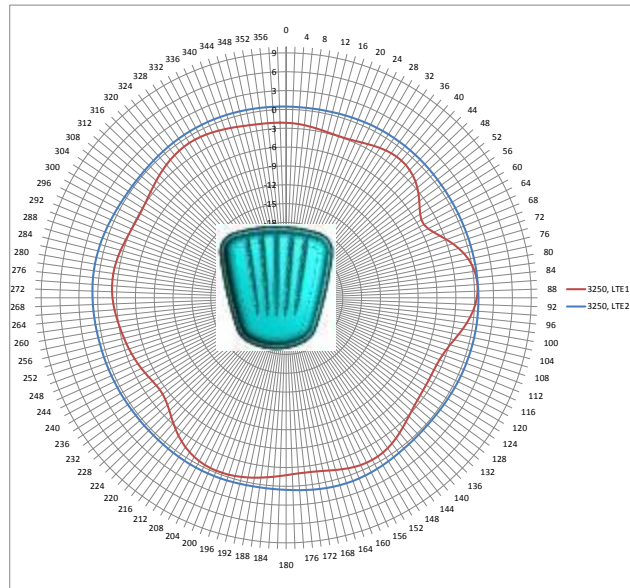
LTE antenna radiation pattern at 2500MHz with 2ft metal plate and 4inch cables



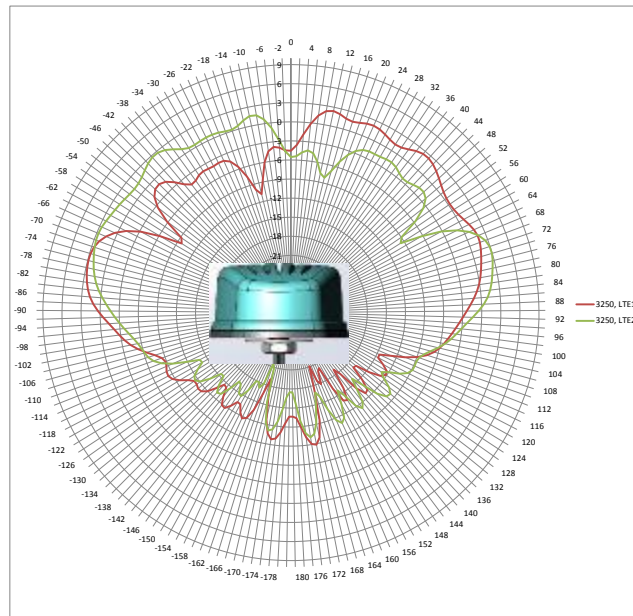
Vertical plot side view

CHARTS

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



Horizontal plot



Vertical plot front view

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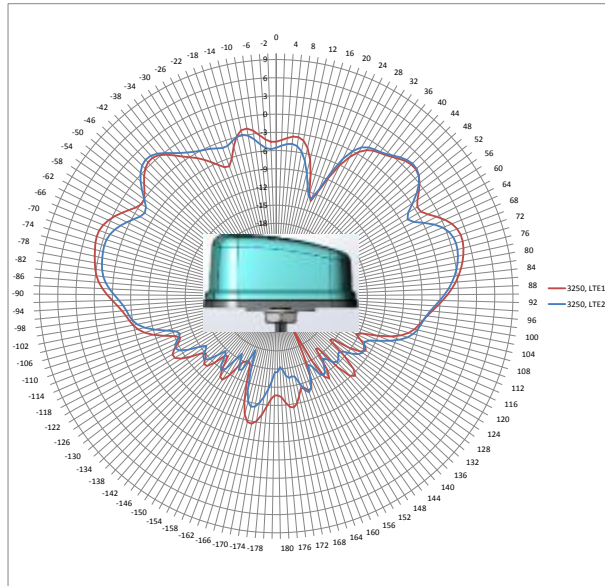
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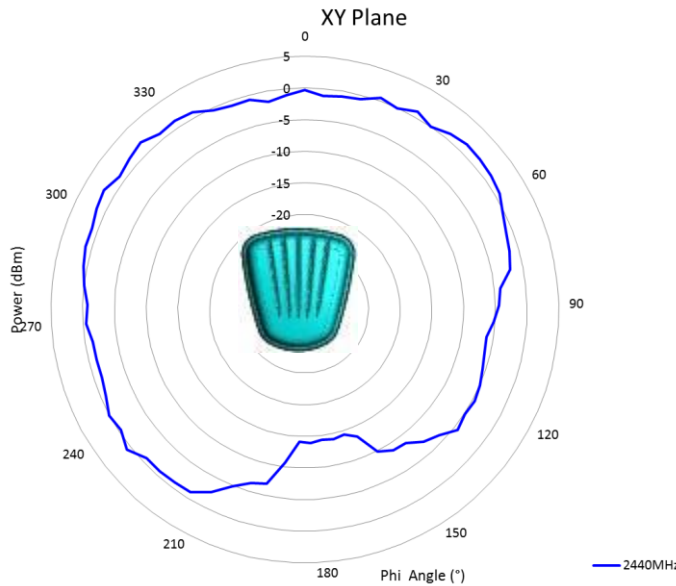
LTE antenna radiation pattern at 3250MHz with 2ft metal plate and 4inch cables



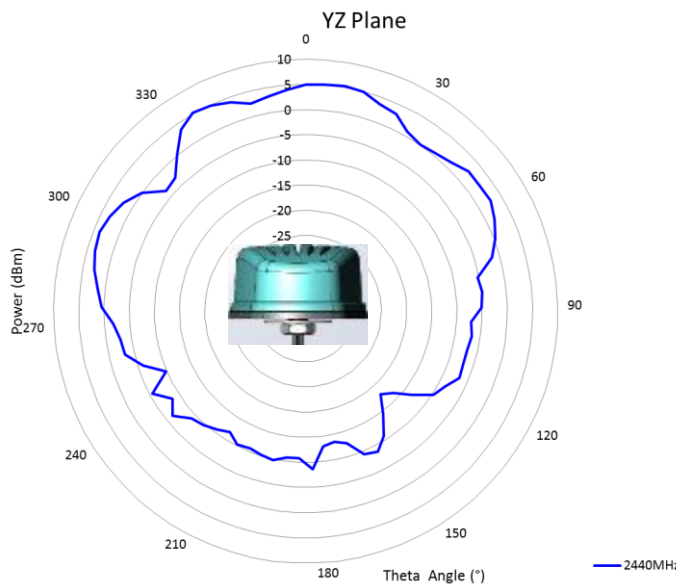
Vertical plot side view

CHARTS

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



Horizontal plot



Vertical plot front view

Issue: 1823

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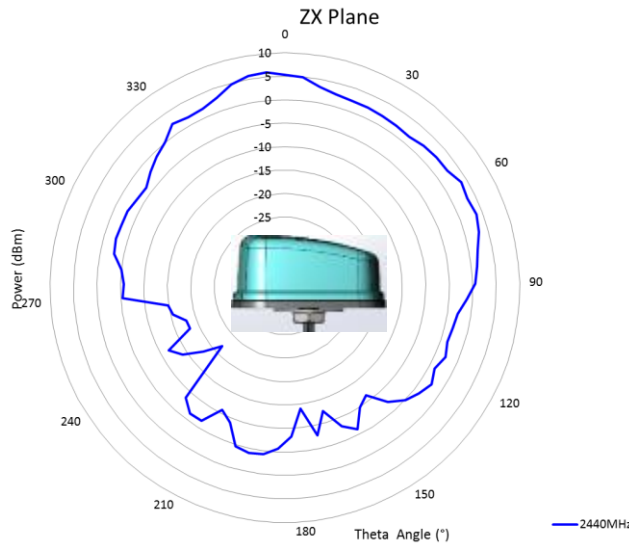
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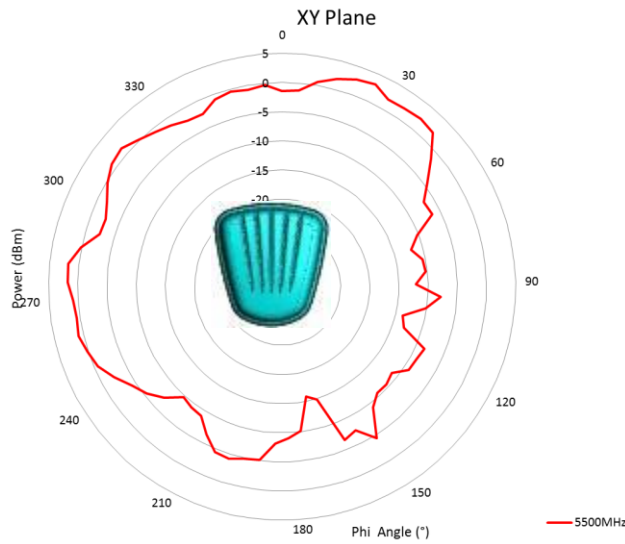
WiFi antenna radiation pattern at 2440MHz with 2ft metal plate and 4inch cables



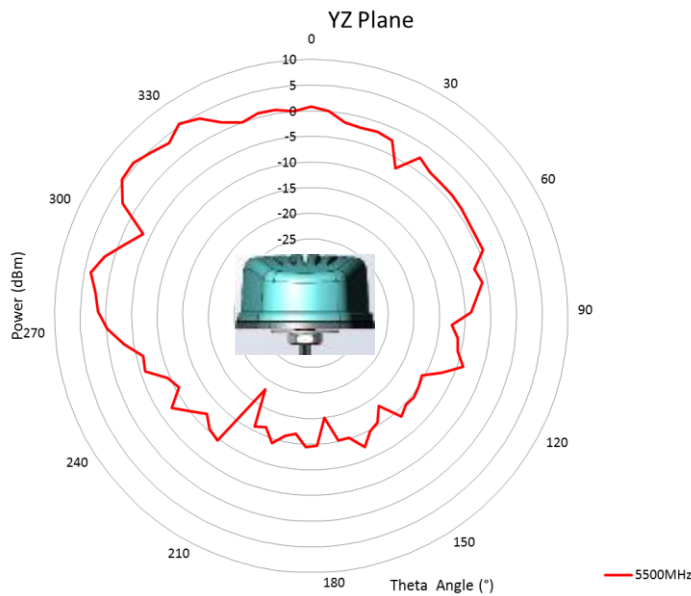
Vertical plot side view

CHARTS

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



Horizontal plot



Vertical plot front view

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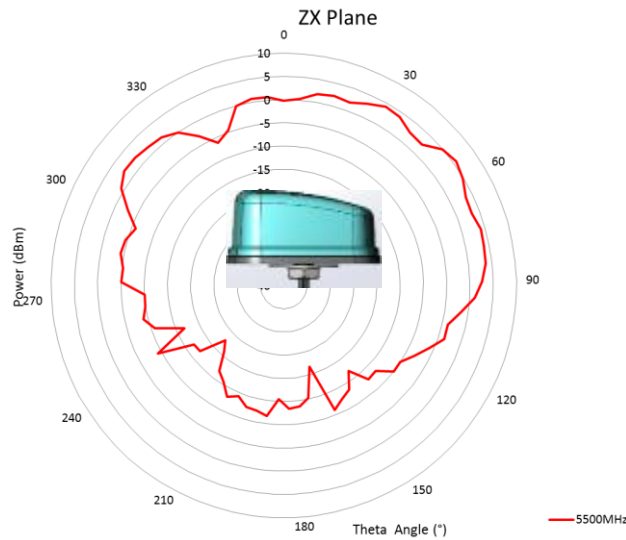
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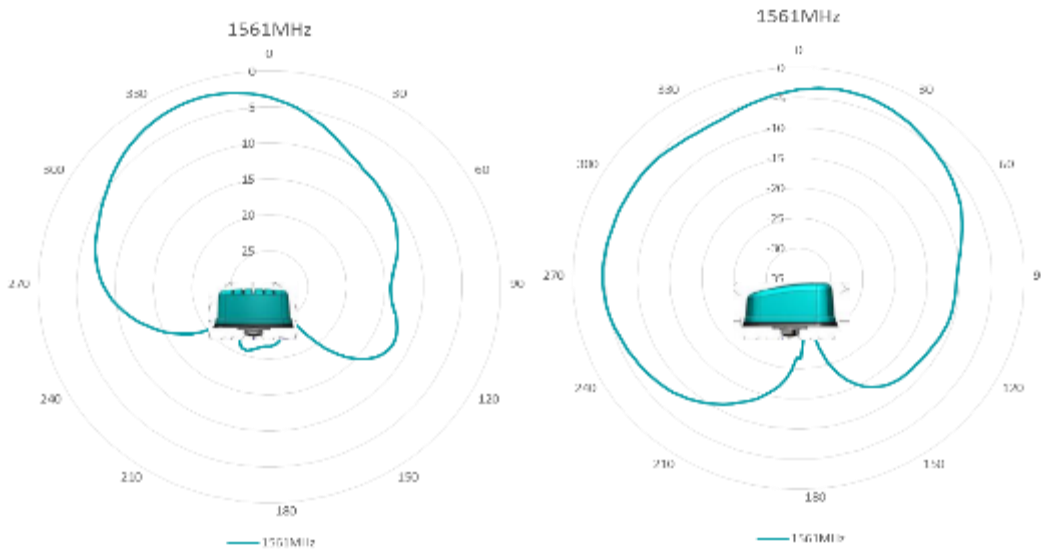
WiFi antenna radiation pattern at 5500MHz with 2ft metal plate and 4inch cables



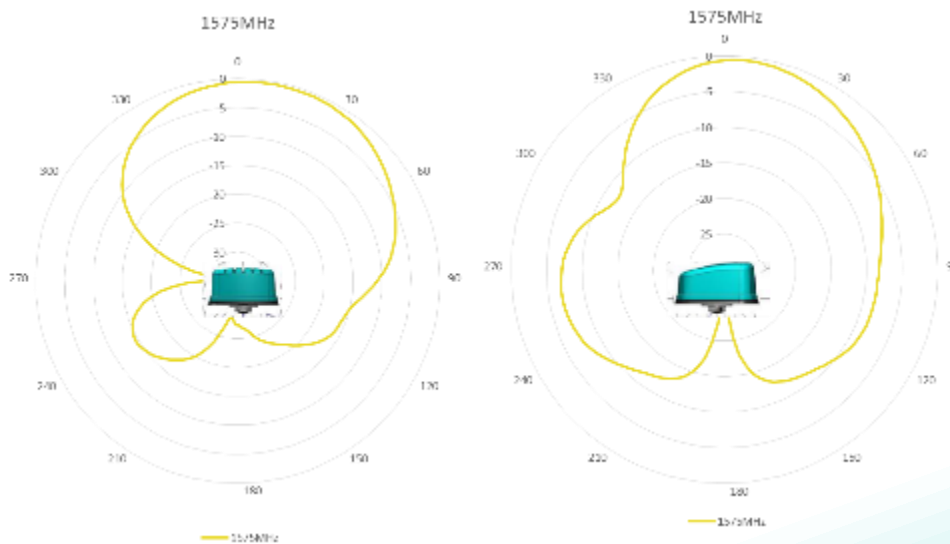
Vertical plot side view

CHARTS

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



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



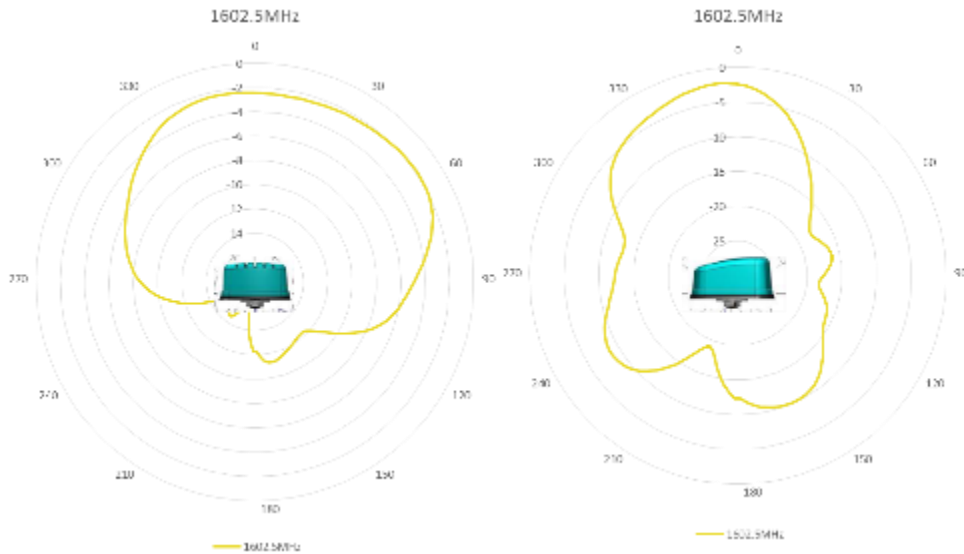
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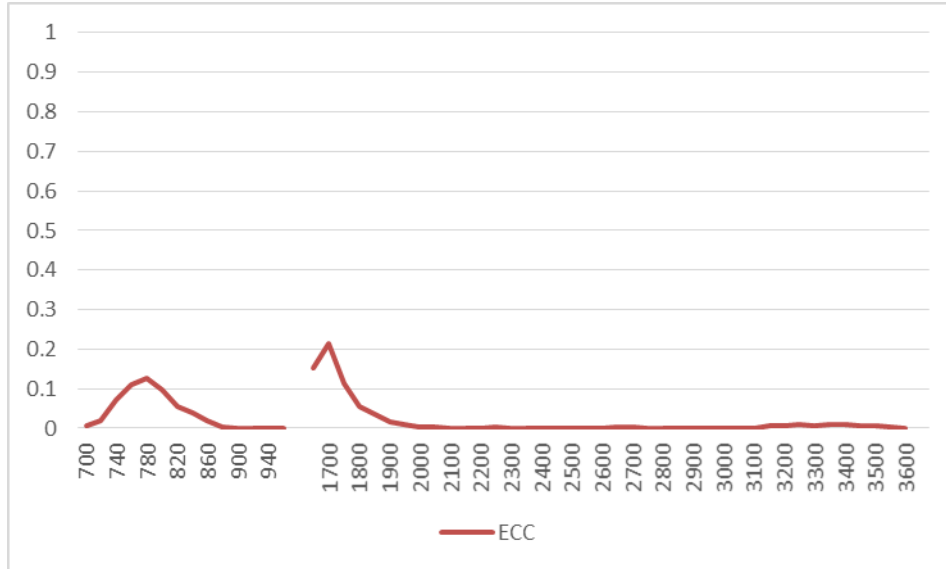
CHARTS

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



CHARTS

Envelope correlation coefficient – LTE 1 to LTE 2



Description: MiMo LTE, WiFi, GNSS Vehicle
Mount Antenna

Series: Panther

PART NUMBER: GPSMB401, GPSMB402, GPSMB401R,
GPSMB402R

PACKAGING

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