



PAN62311DM Black



PAN62312DM White

All dimensions are in mm / inches

Issue: 1718P

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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

Features:

- Supports 2xMIMO Cellular LTE 698-960/1695-2170/2300-2700/2900-3600MHz
- Supports 3xMIMO WiFi and DSRC 2400-2500MHz/4900-5925MHz
- Supports Beidou, GPS, Galileo, GLONASS, Active Satellite Antenna
- 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

Preliminary



Description: 2xMiMo LTE, 3xMiMo WiFi,
GNSS Vehicle Mount Antenna

Series: Panther

PART NUMBER: PAN62311DM, PAN62312DM

Frequency (2XLTE)	698 - 960 / 1695 – 2170 / 2300 - 2700 / 2900 – 3600	MHz
Frequency (3XWiFi&DSRC)	2400 – 2500/ 4900 – 5925	MHz
Frequency (1XGNSS)	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 **	25 or better	dB
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
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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MECHANICAL SPECIFICATIONS

Plastic radome	ABS/PC Material UV Stabilized, UL-94H
Color	PAN62311DM: Black PAN62312DM: White
Ingress Protection	IP67
Weight	~1540 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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MECHANICAL DRAWING

Pulse P/N	PAN62311DM	PAN62312DM
Cable NO.	6	6
Operating Bands	2-LTE + 3-WiFi + 1-GPS/GNSS	2-LTE + 3-WiFi + 1-GPS/GNSS
Cable length	17FT	17FT
Connector	LTE: SMA(M), WiFi: RP SMA(M), GPS: SMA(M)	LTE: SMA(M), WiFi: RP SMA(M), GPS: SMA(M)
Cable Color	Black	White
Assembly option	1. Assembly directly with nut 2. Magnetic mount base P/N:GPSMBMM	

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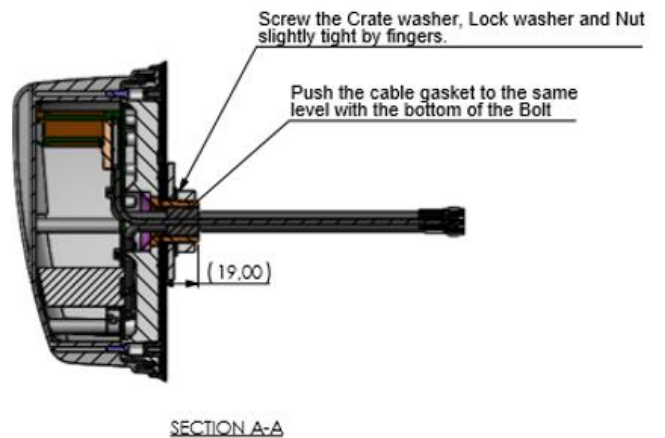
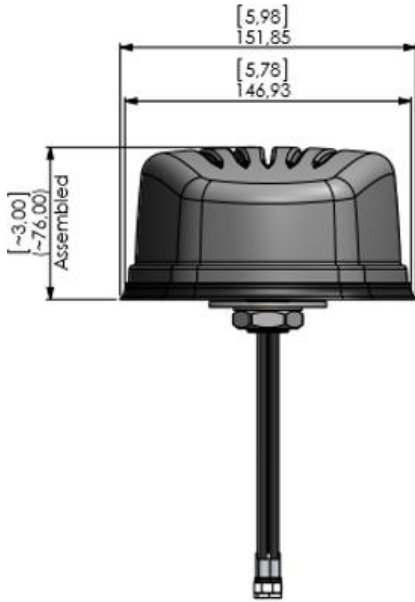
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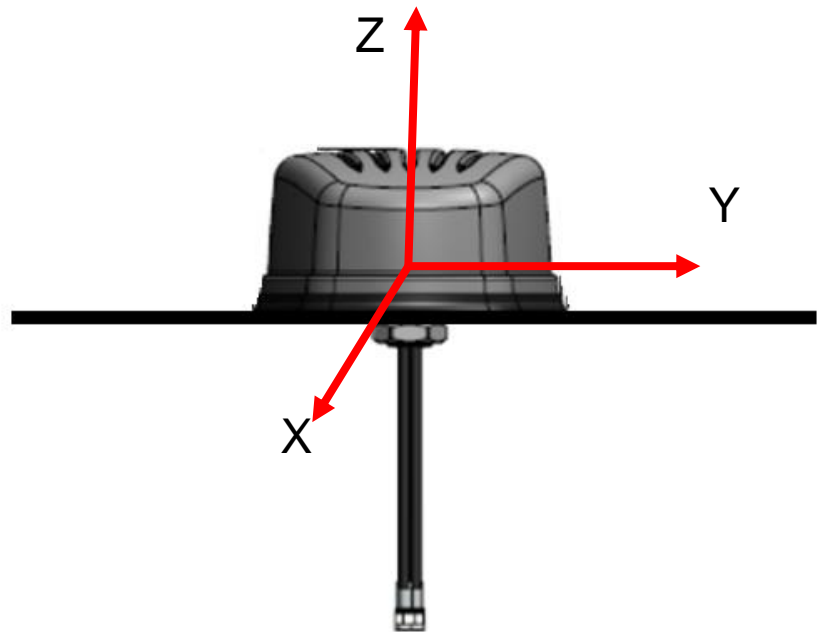
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TEST SETUP

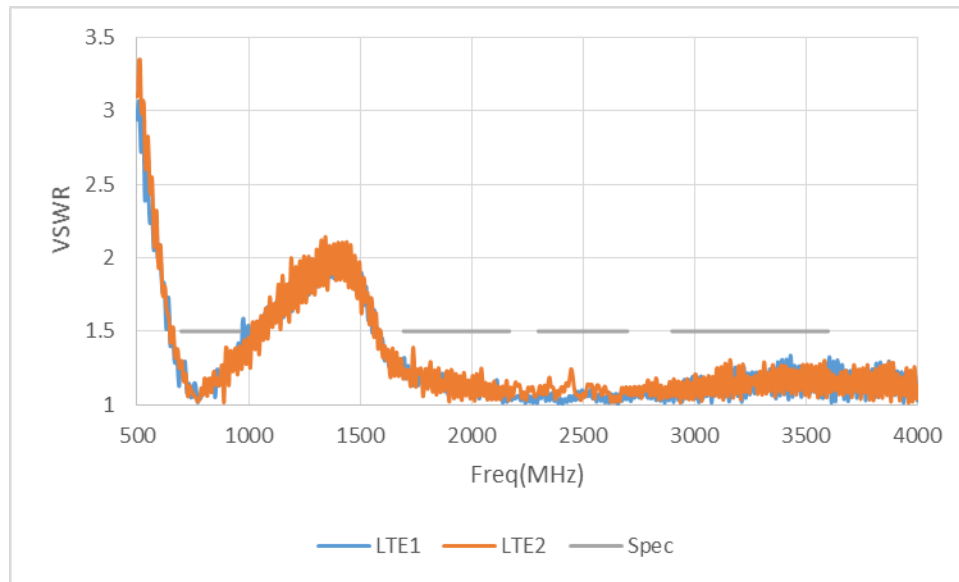


For VSWR, test in free space with 17ft cables

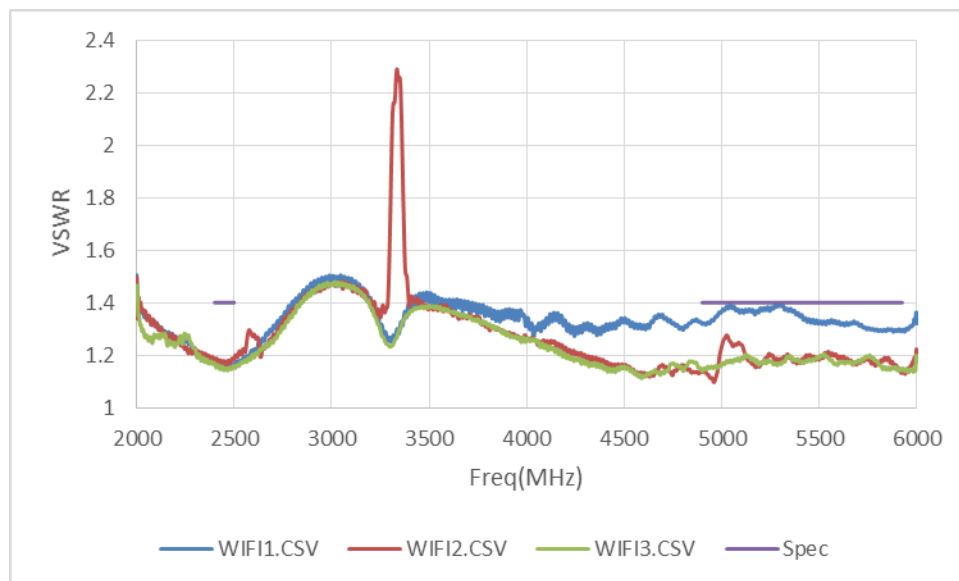
For radiation performance, test on 2ft GND plane with 4inch cables

CHARTS

VSWR of LTE antenna



VSWR of WiFi antenna



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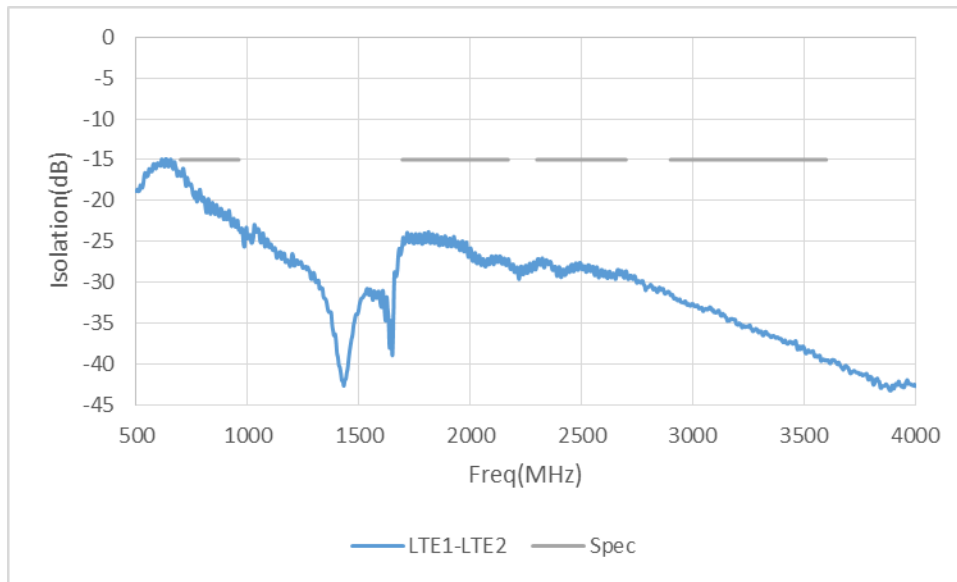
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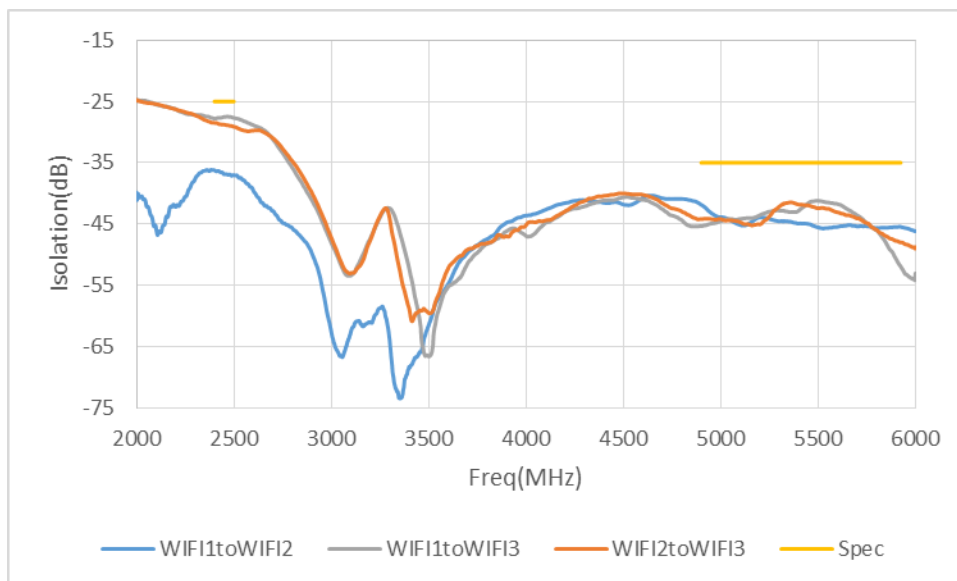
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Isolation of LTE antenna



Isolation of WiFi antenna



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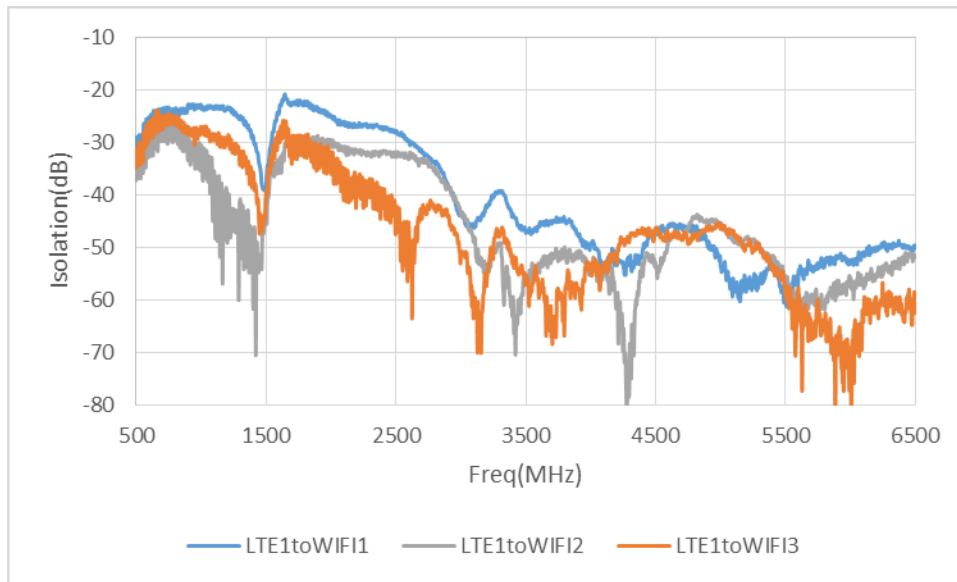
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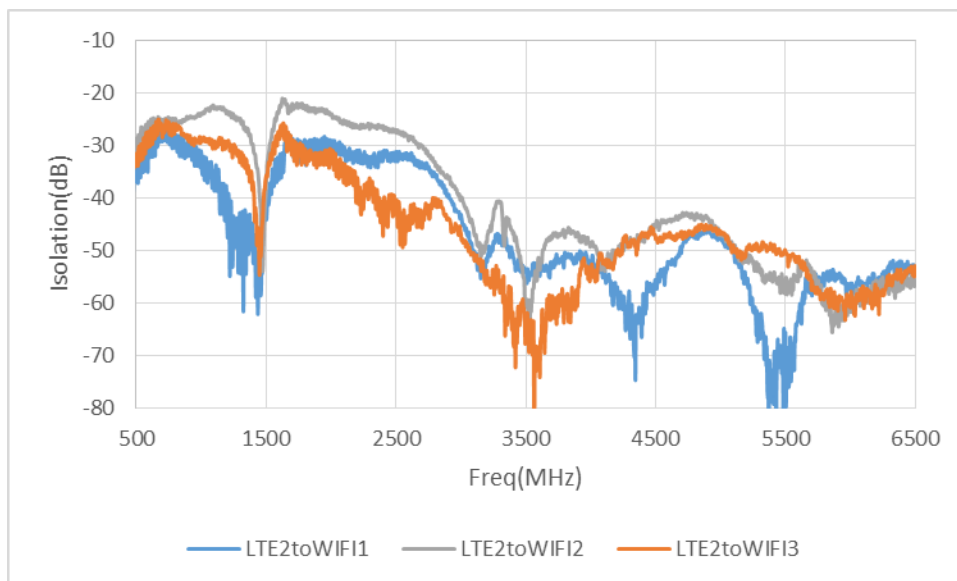
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Isolation of LTE1 antenna to WiFi antenna



Isolation of LTE2 antenna to WiFi antenna



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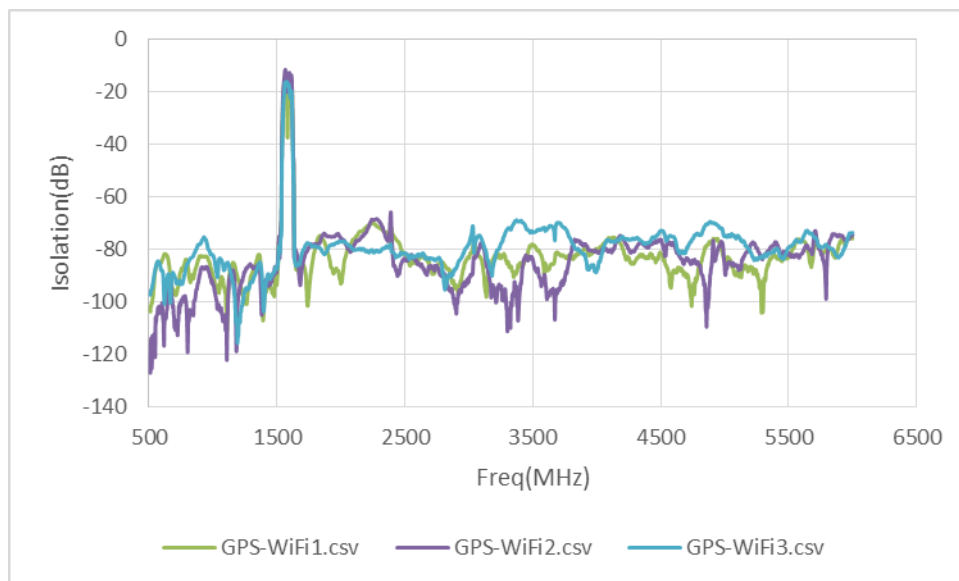
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Isolation of GNSS antenna to LTE antenna



Isolation of GNSS antenna to WiFi antenna



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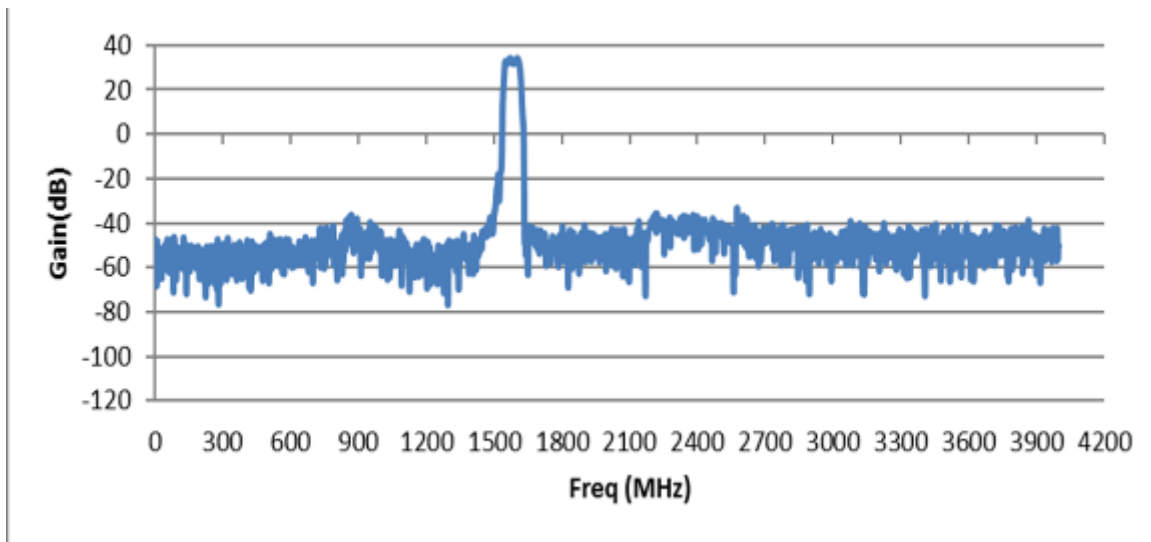
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GNSS LNA performance



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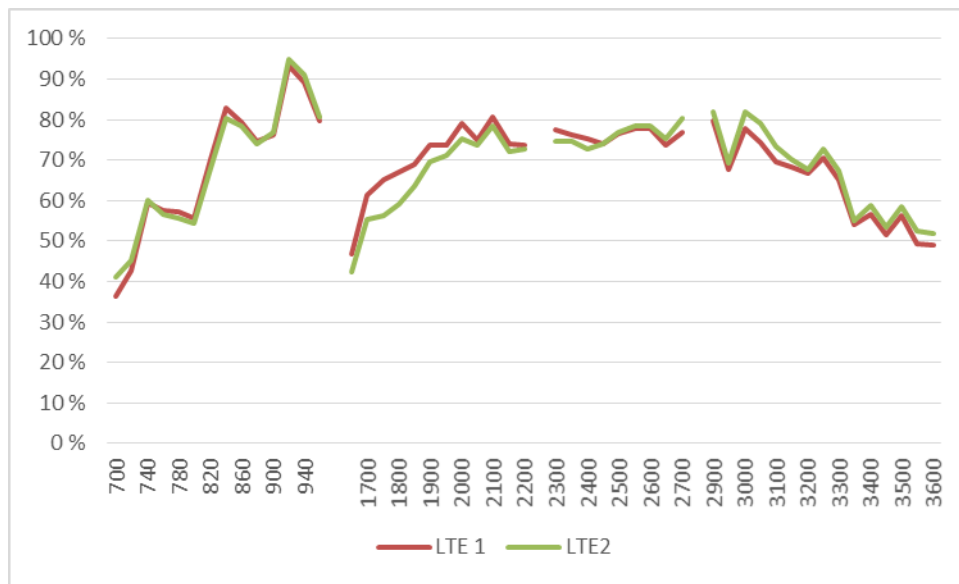
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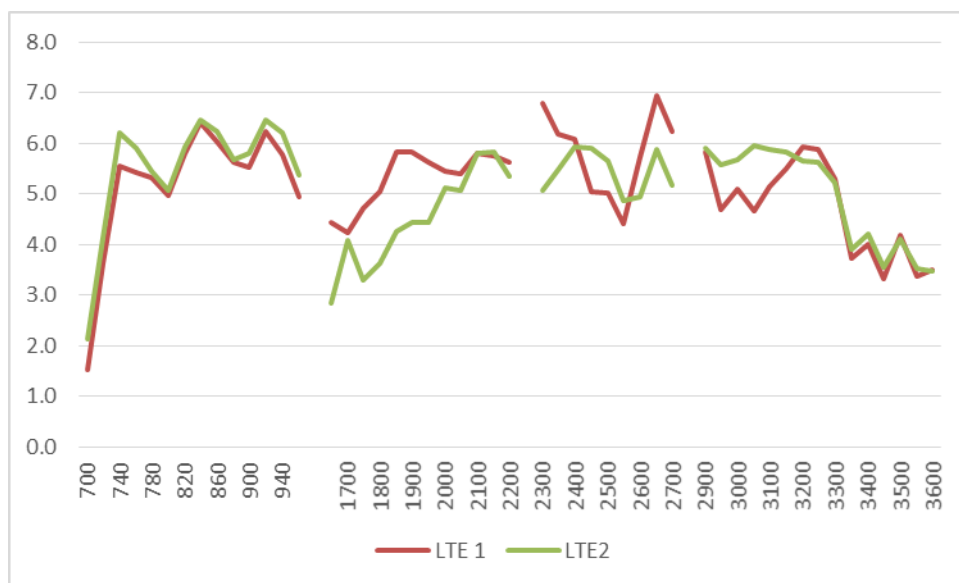


CHARTS

LTE antenna total efficiency on ground plane**



Maximum 3D gain, LTE antenna on ground plane**



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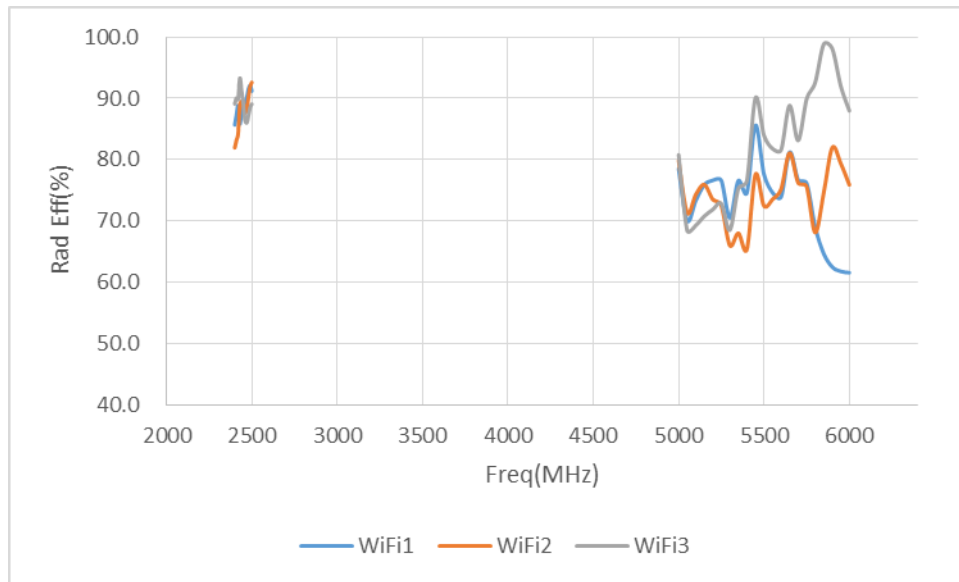
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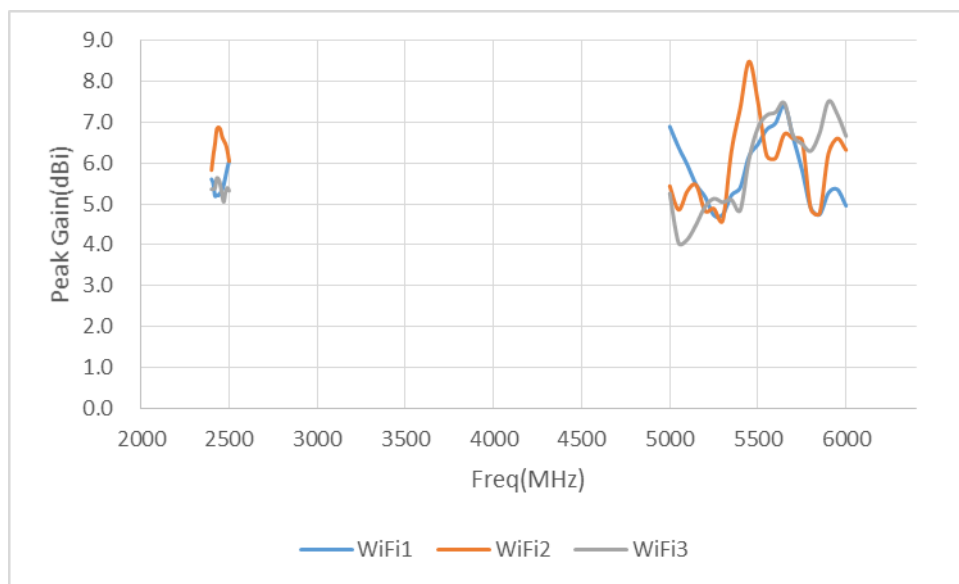
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WiFi antenna total efficiency on ground plane**



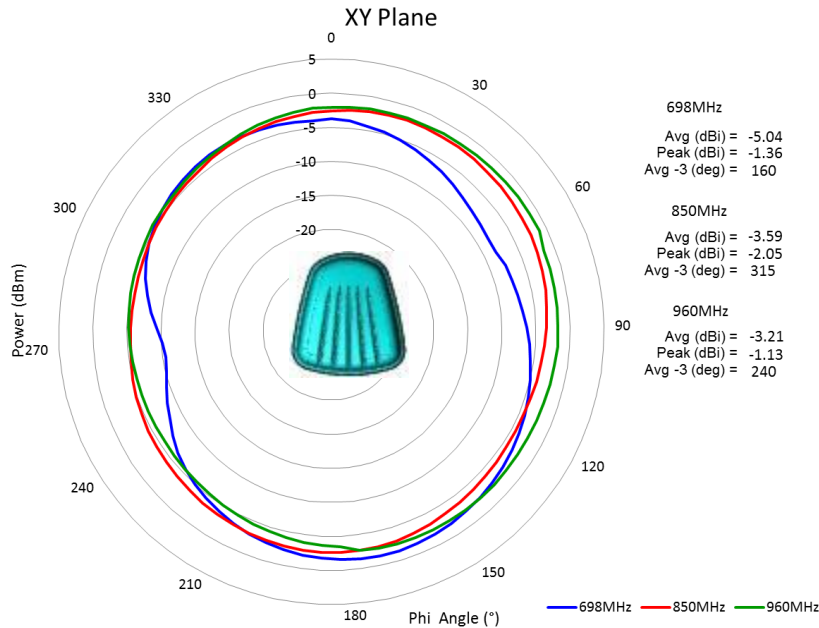
Maximum 3D gain, WiFi antenna on ground plane**



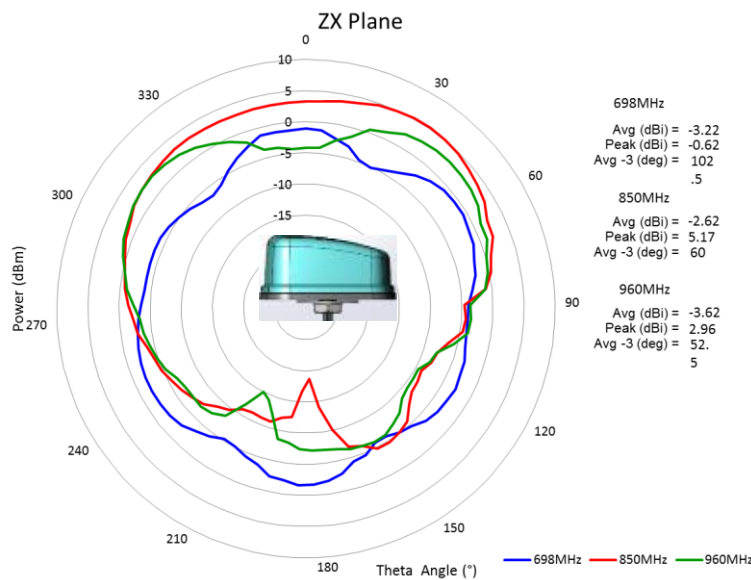
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CHARTS

LTE1 antenna X-Y plane radiation pattern at LTE low band**



LTE1 antenna Z-X plane radiation pattern at LTE low band**



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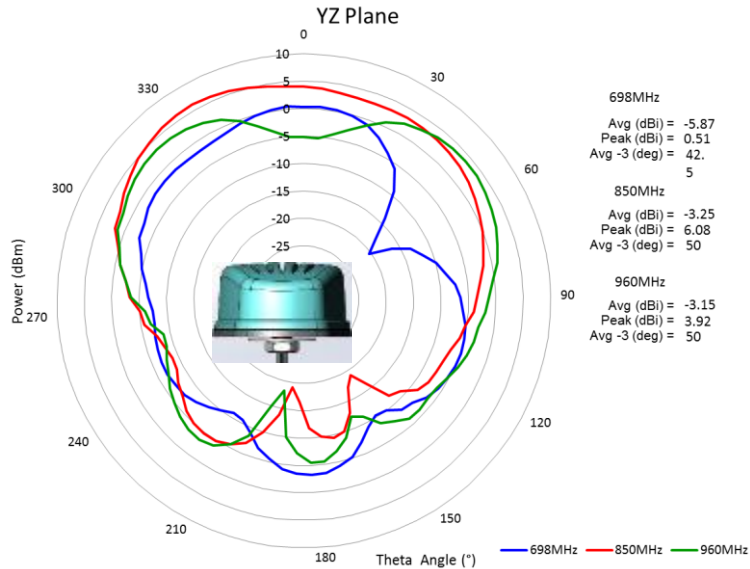
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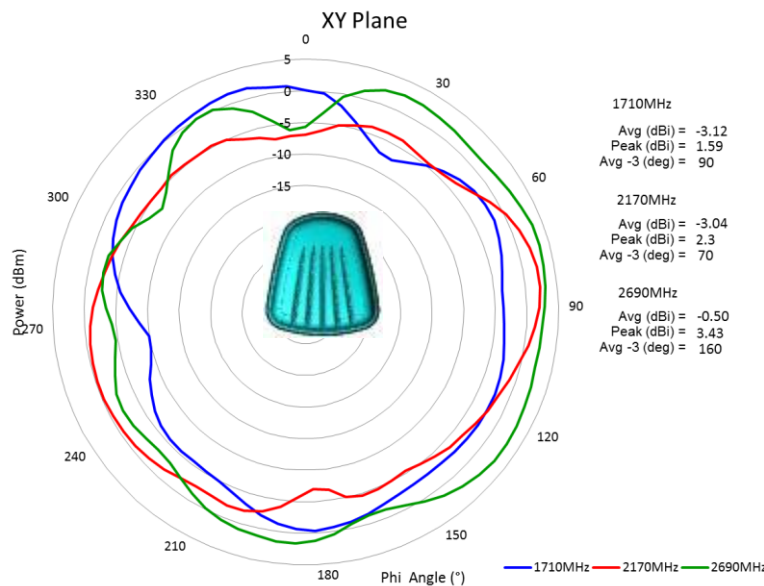
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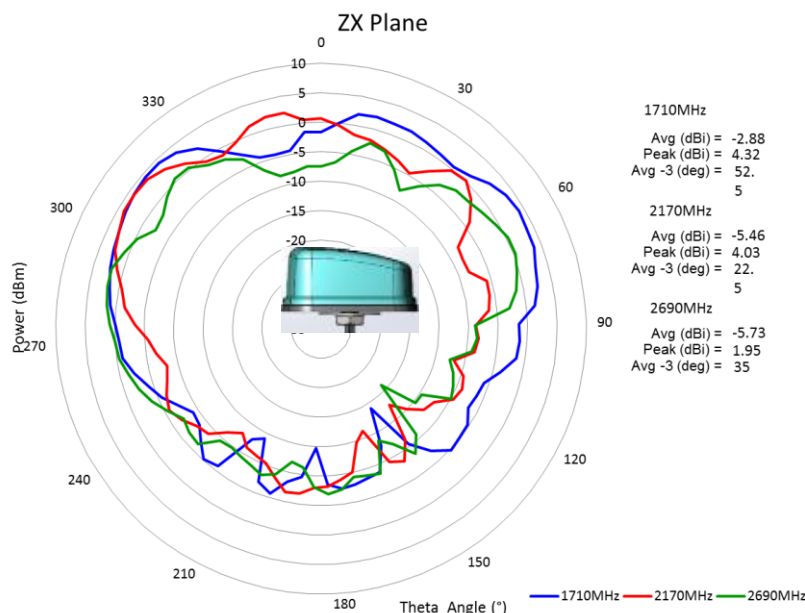


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LTE1 antenna X-Y plane radiation pattern at LTE high band**



LTE1 antenna Z-X plane radiation pattern at LTE high band**



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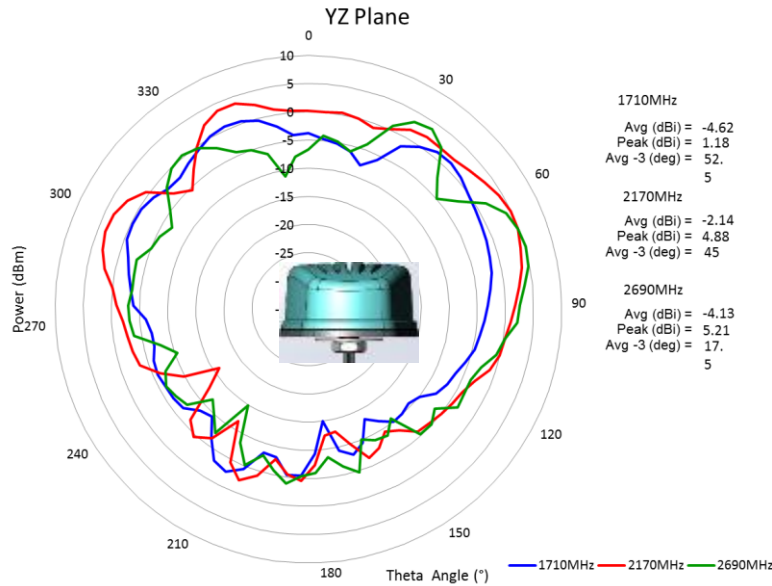
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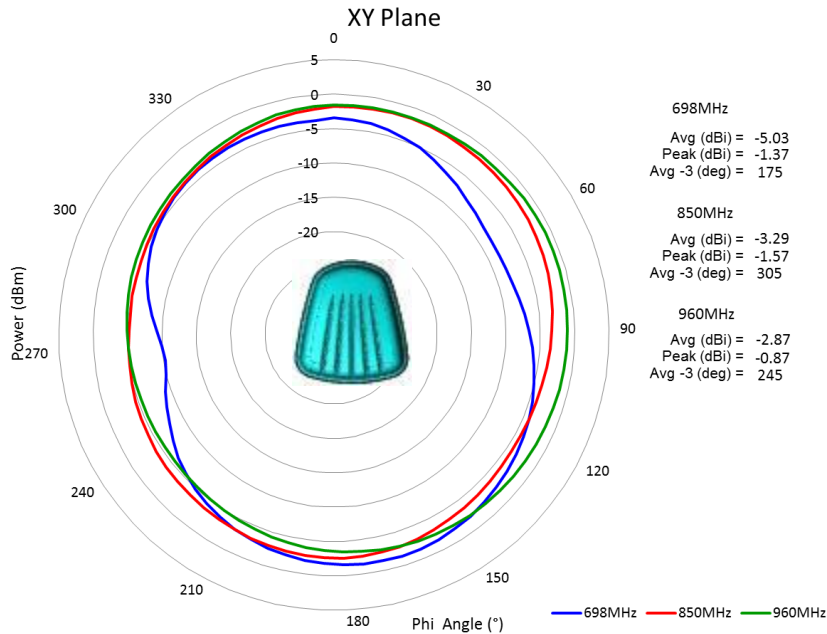
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LTE1 antenna Y-Z plane radiation pattern at LTE high band**

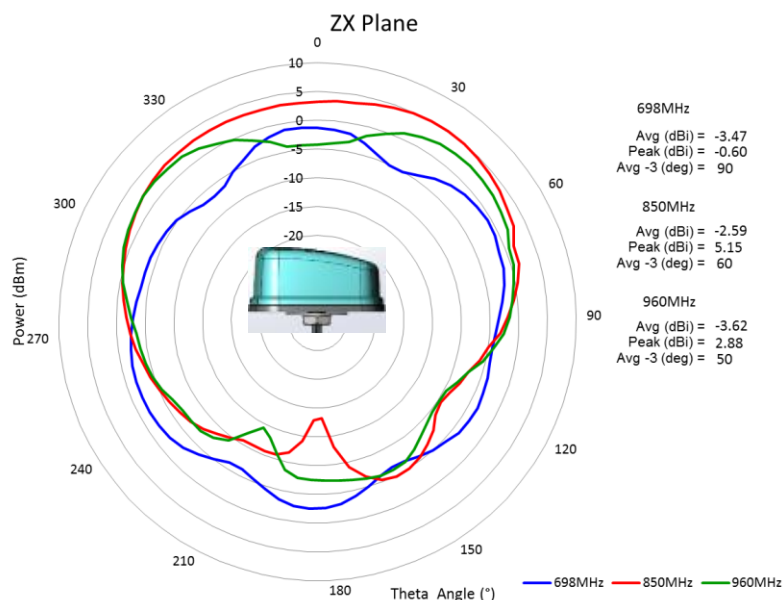


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LTE2 antenna X-Y plane radiation pattern at LTE low band**



LTE2 antenna Z-X plane radiation pattern at LTE low band**



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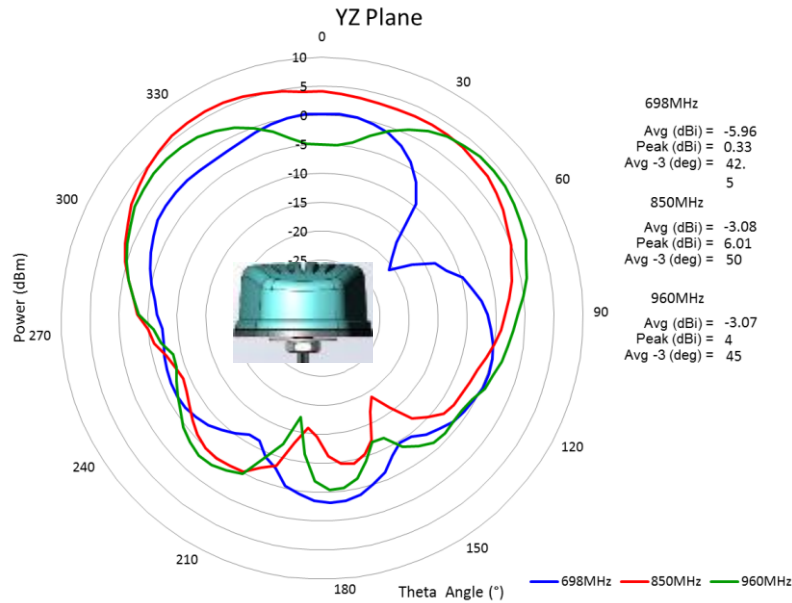
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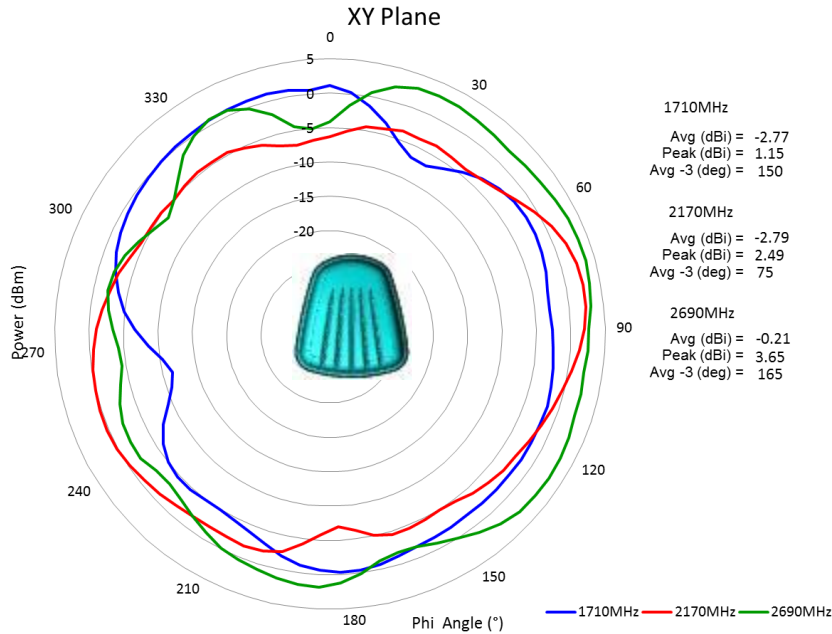
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LTE2 antenna Y-Z plane radiation pattern at LTE low band**

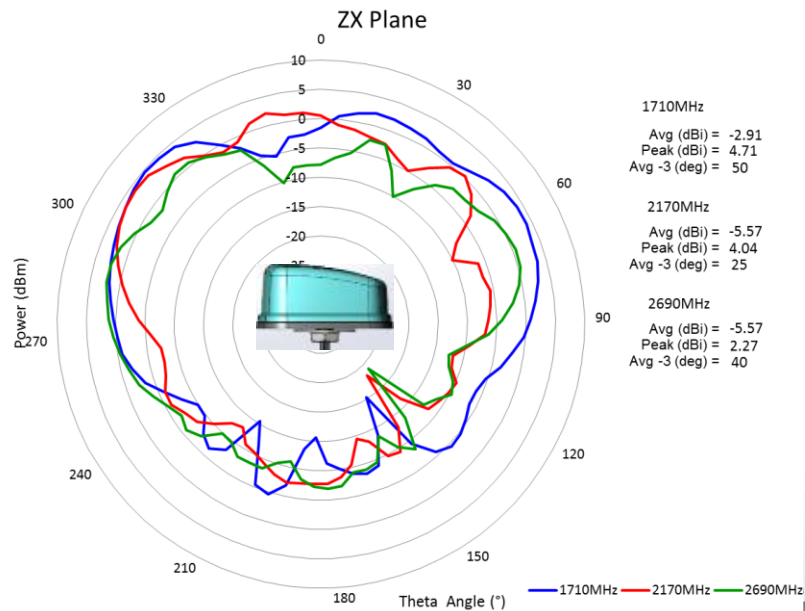


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LTE2 antenna X-Y plane radiation pattern at LTE high band**



LTE2 antenna Z-X plane radiation pattern at LTE high band**



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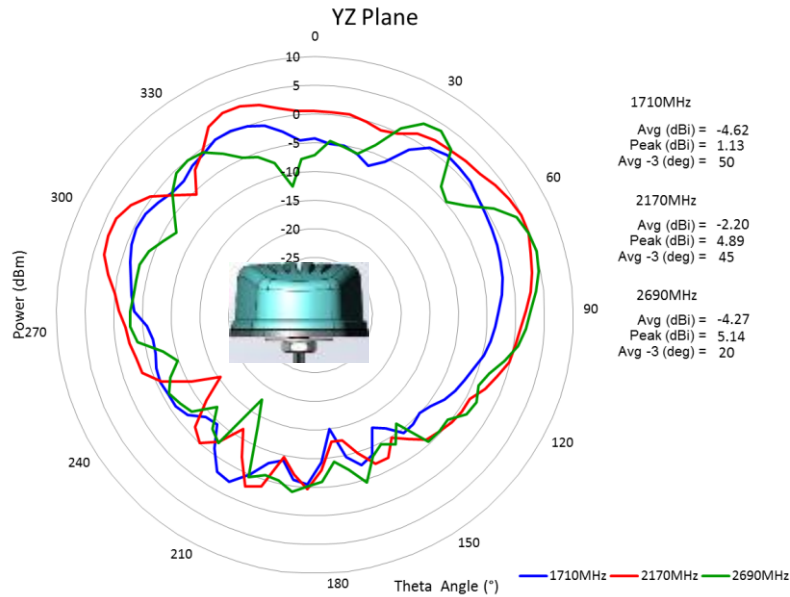
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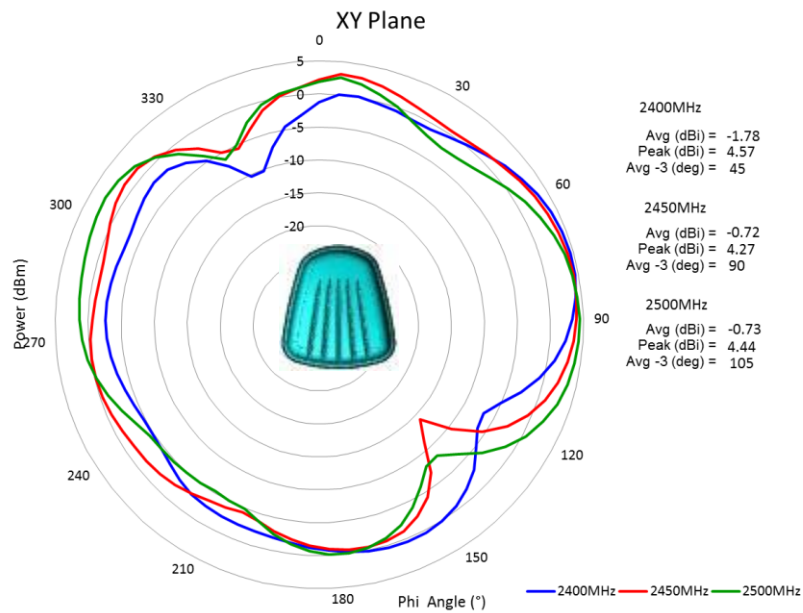
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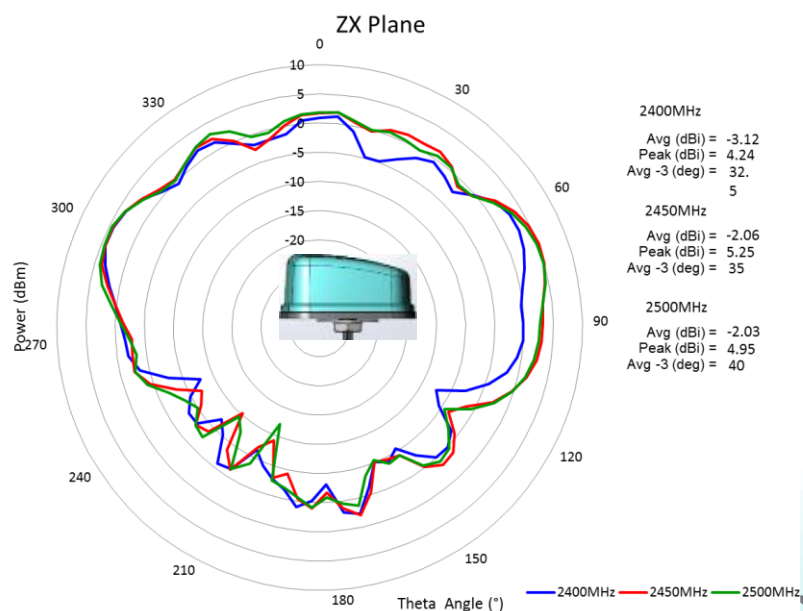


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WiFi1 antenna X-Y plane radiation pattern at WiFi low band**



WiFi1 antenna Z-X plane radiation pattern at WiFi low band**



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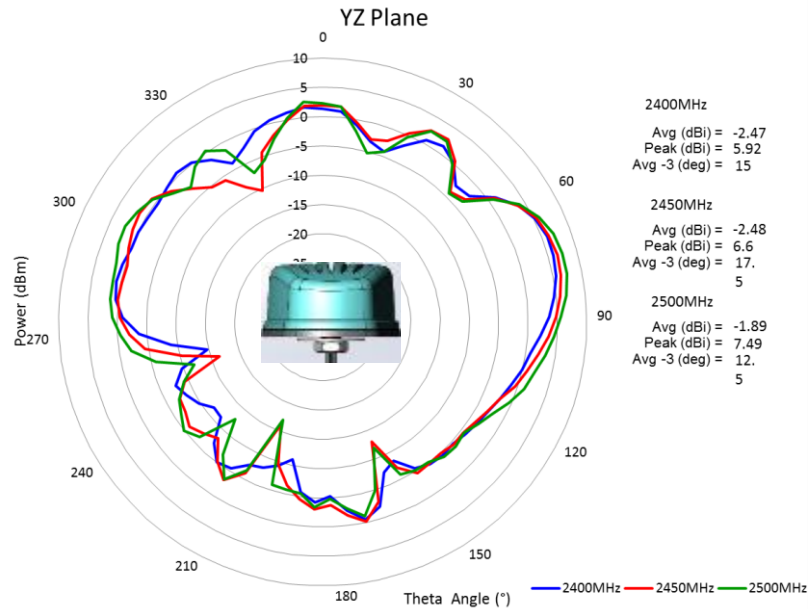
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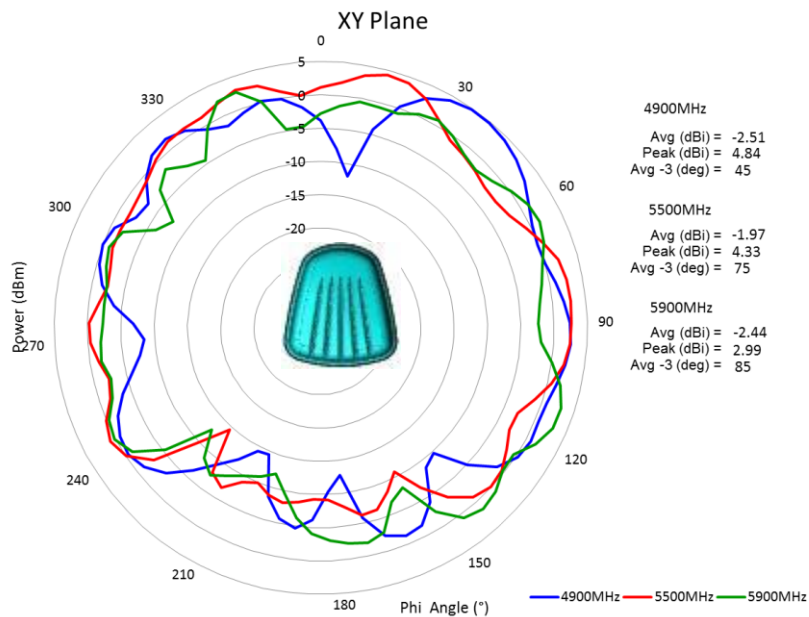
CHARTS

WiFi1 antenna Y-Z plane radiation pattern at WiFi low band**

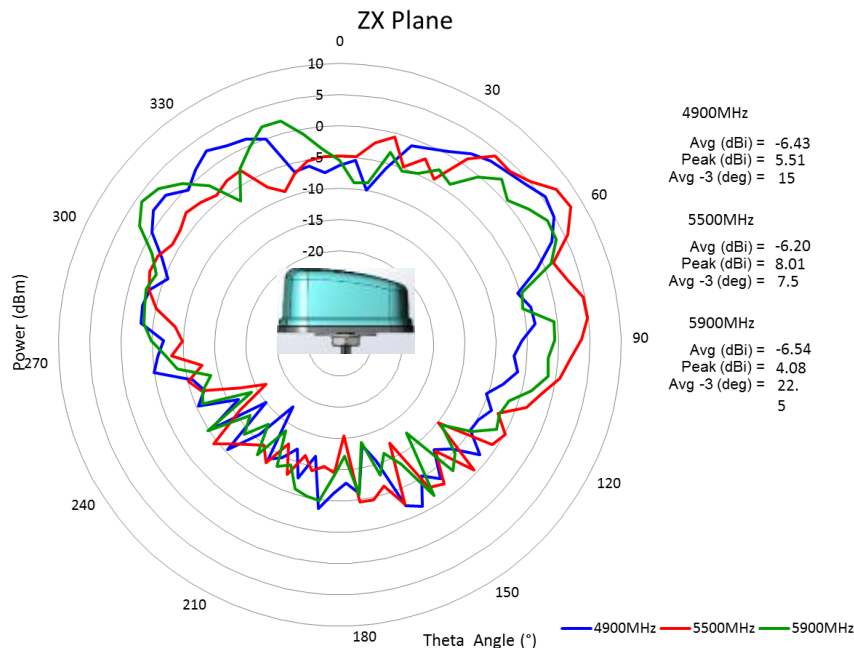


CHARTS

WiFi1 antenna X-Y plane radiation pattern at WiFi high band**



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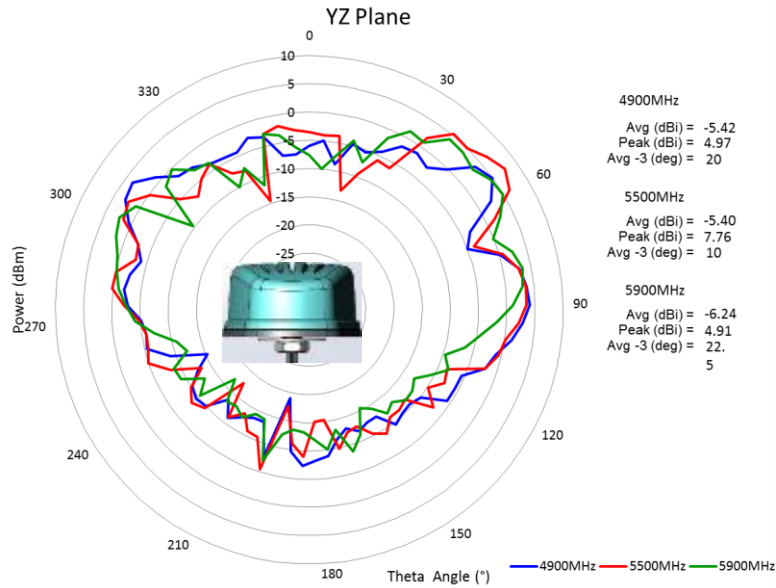
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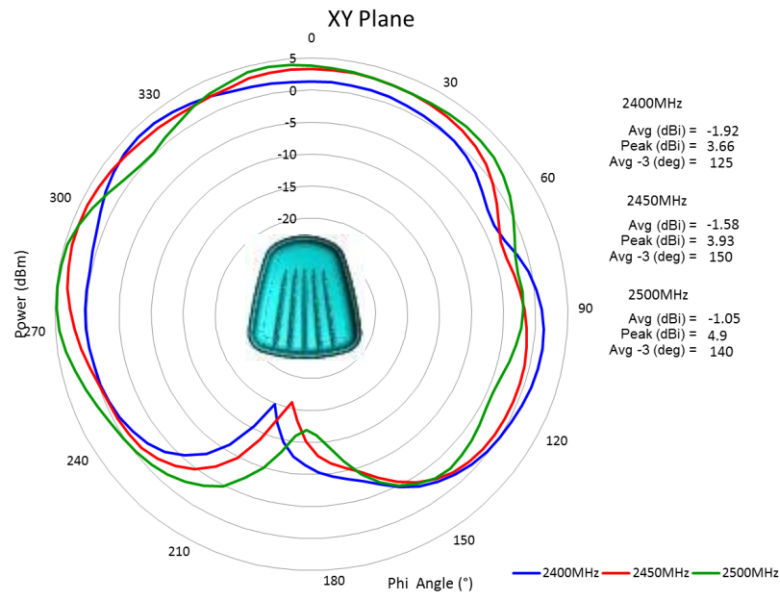
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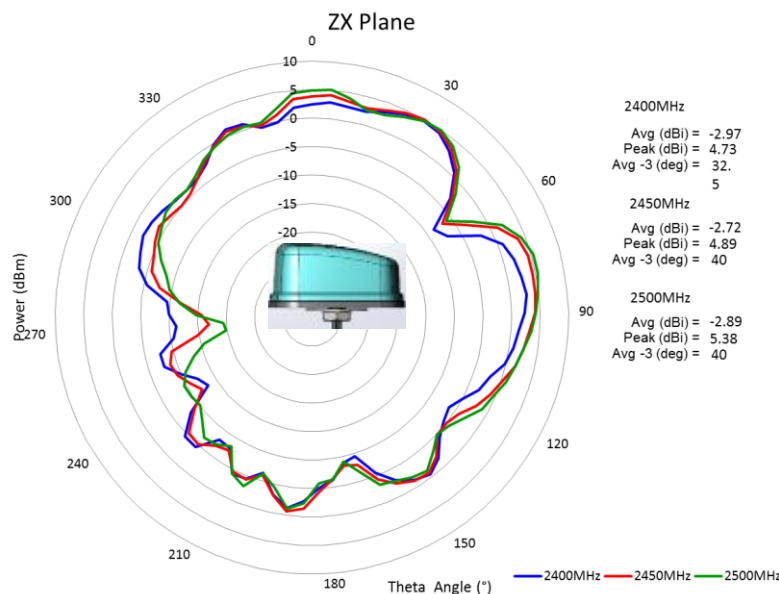


CHARTS

WiFi2 antenna X-Y plane radiation pattern at WiFi low band**



WiFi2 antenna Z-X plane radiation pattern at WiFi low band**



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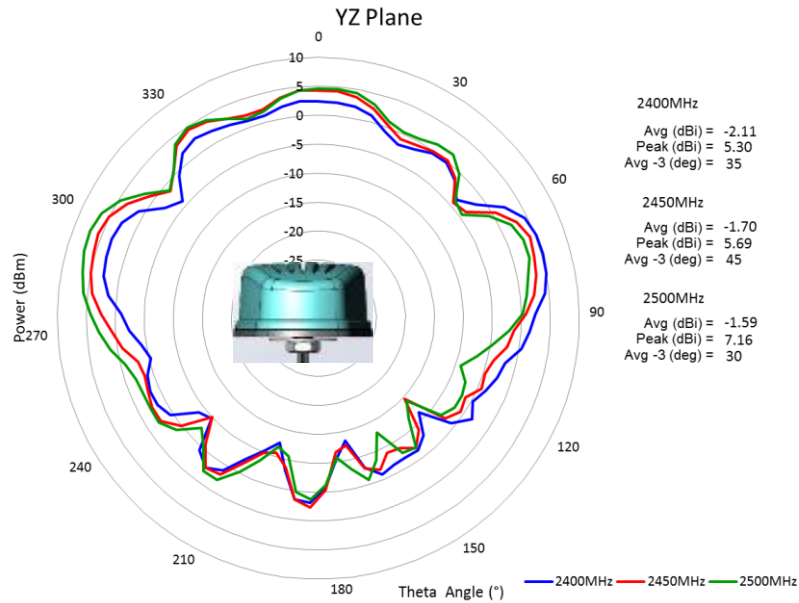
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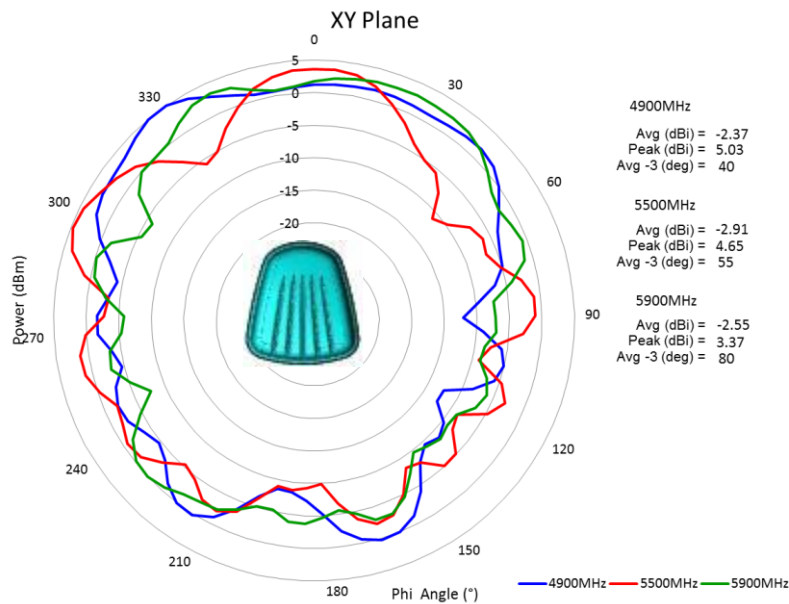
CHARTS

WiFi2 antenna Y-Z plane radiation pattern at WiFi low band**

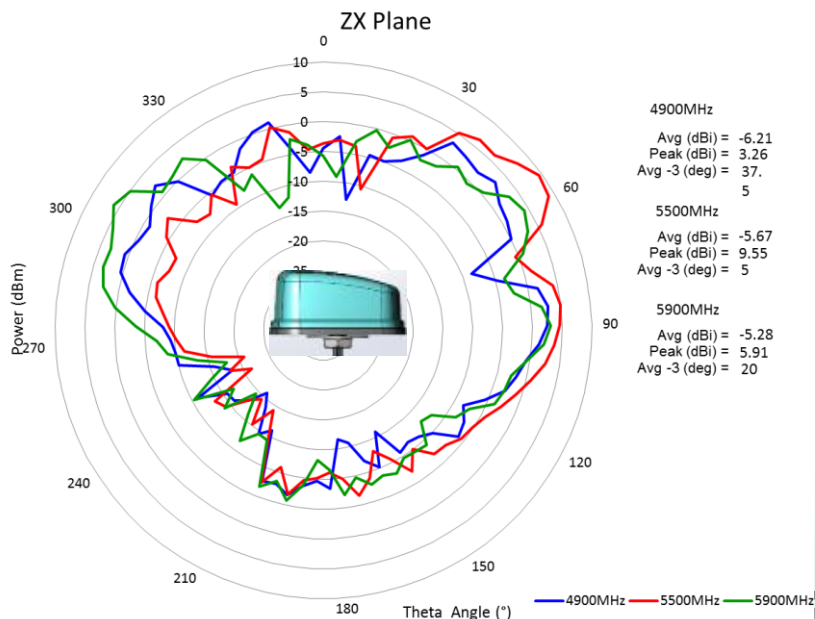


CHARTS

WiFi2 antenna X-Y plane radiation pattern at WiFi high band**



WiFi2 antenna Z-X plane radiation pattern at WiFi high band**



Issue: 1718P

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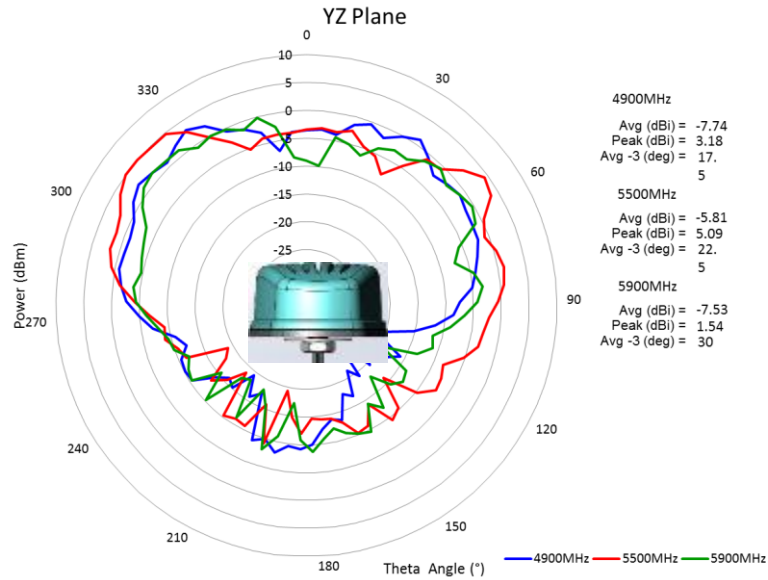
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Preliminary

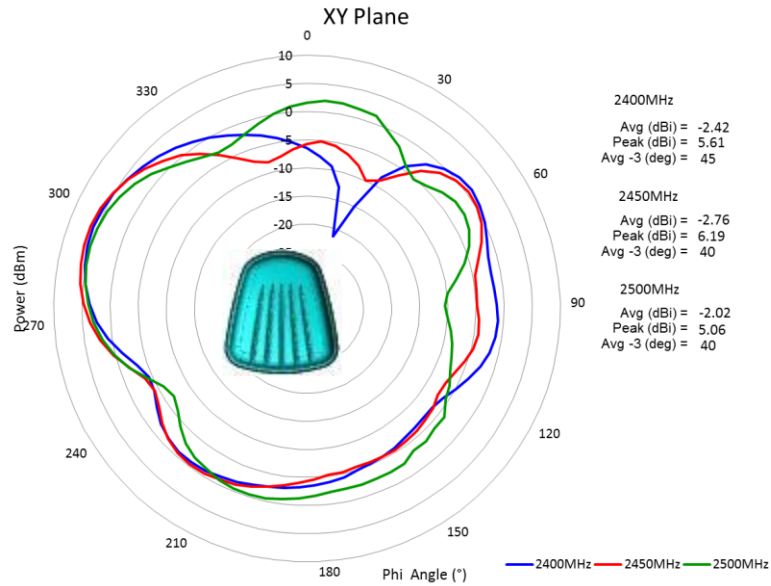
CHARTS

WiFi2 antenna Y-Z plane radiation pattern at WiFi high band**

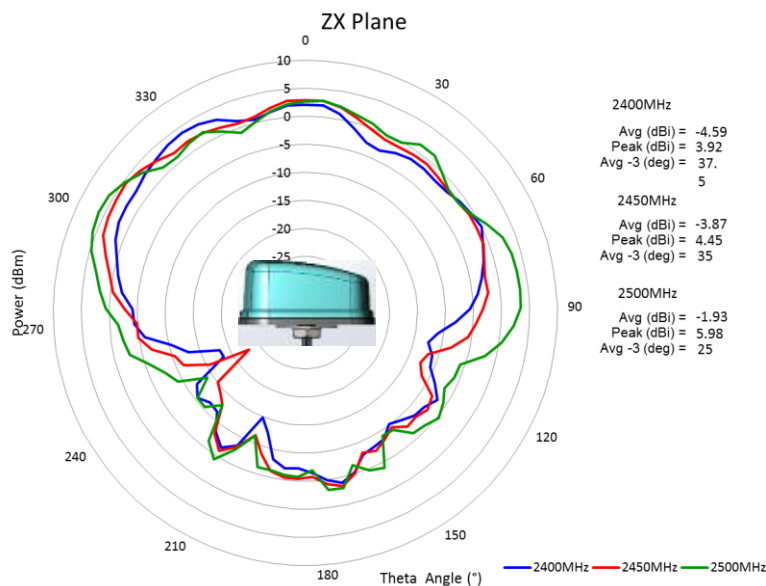


CHARTS

WiFi3 antenna X-Y plane radiation pattern at WiFi low band**



WiFi3 antenna Z-X plane radiation pattern at WiFi low band**



Preliminary

Issue: 1718P

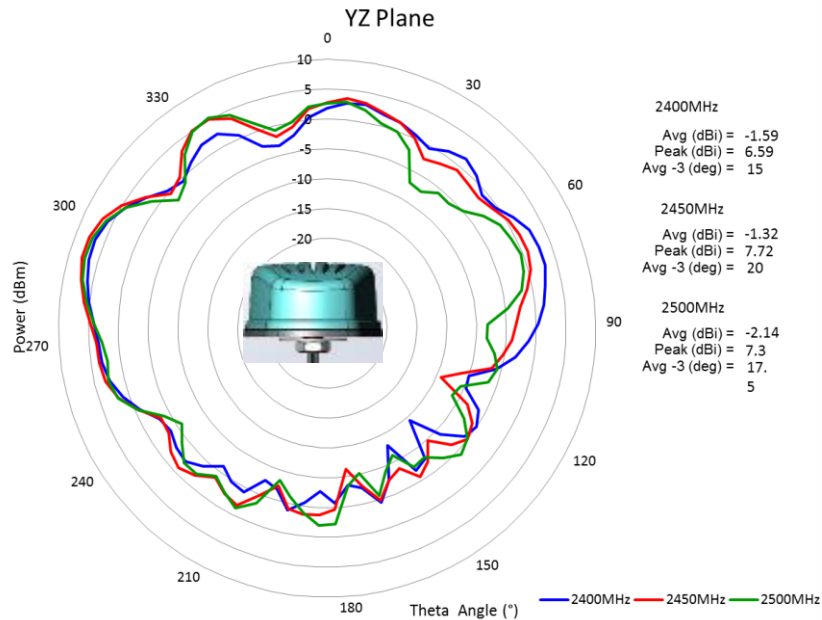
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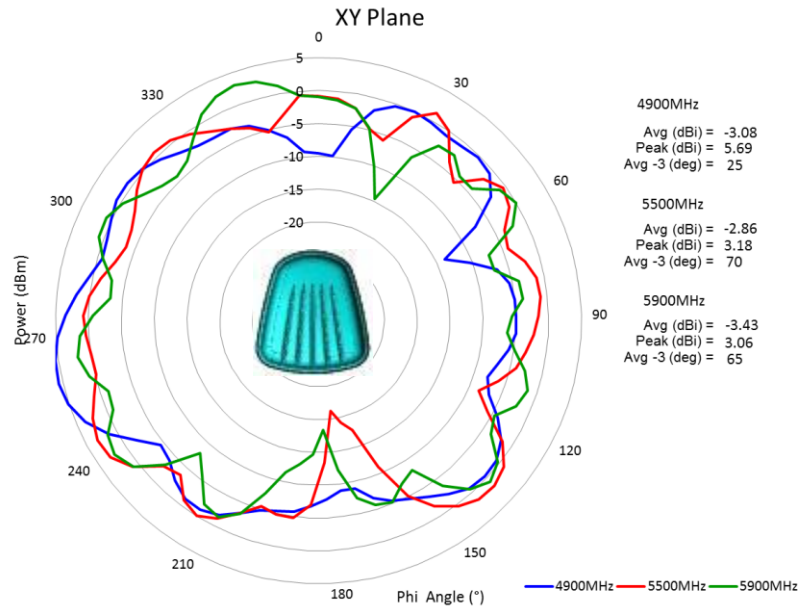
CHARTS

WiFi3 antenna Y-Z plane radiation pattern at WiFi low band**

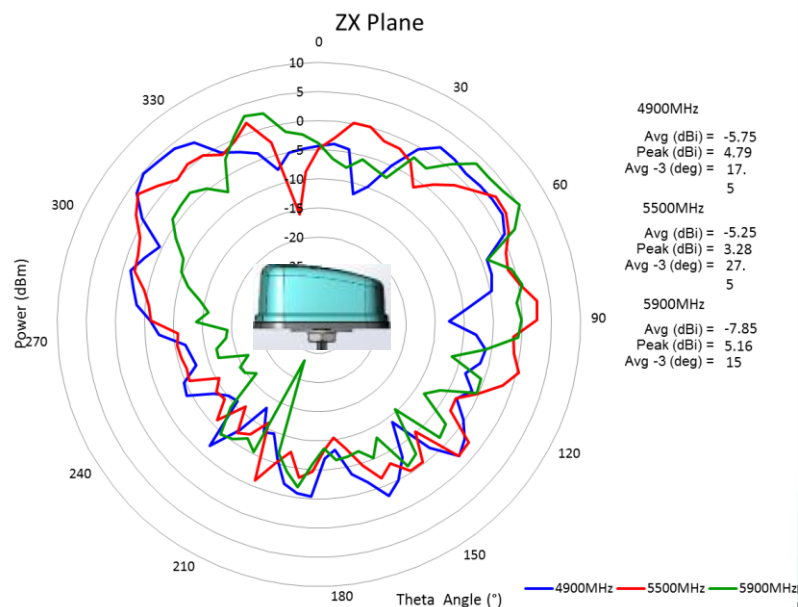


CHARTS

WiFi3 antenna X-Y plane radiation pattern at WiFi high band**



WiFi3 antenna Z-X plane radiation pattern at WiFi high band**



Issue: 1718P

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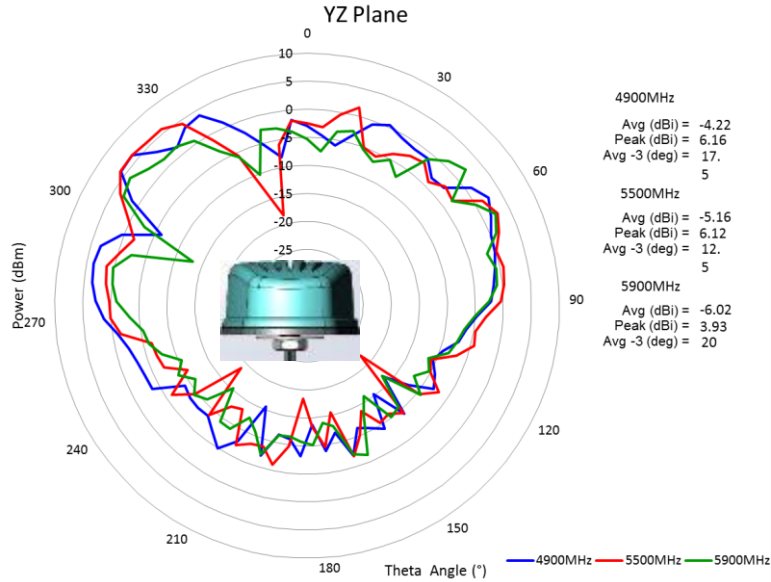
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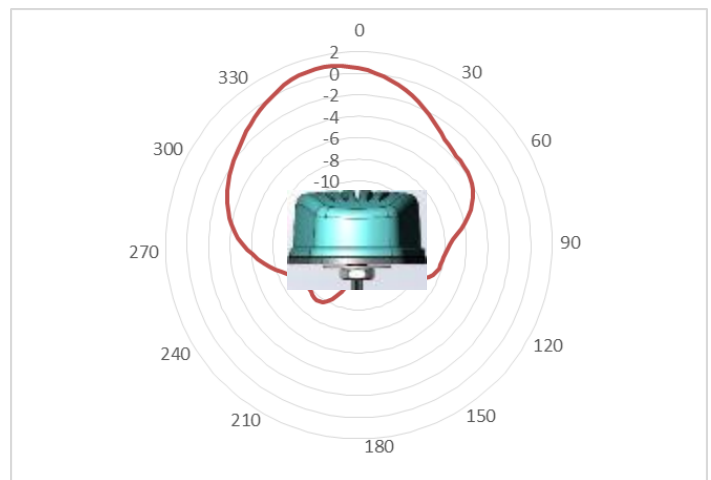
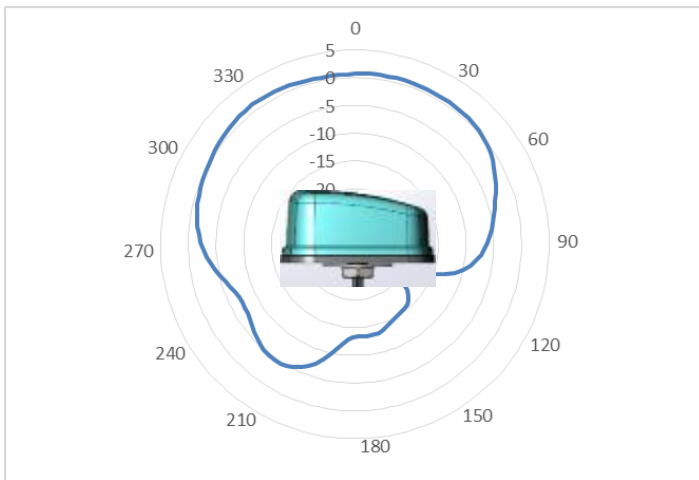
CHARTS

WiFi3 antenna Y-Z plane radiation pattern at WiFi high band**

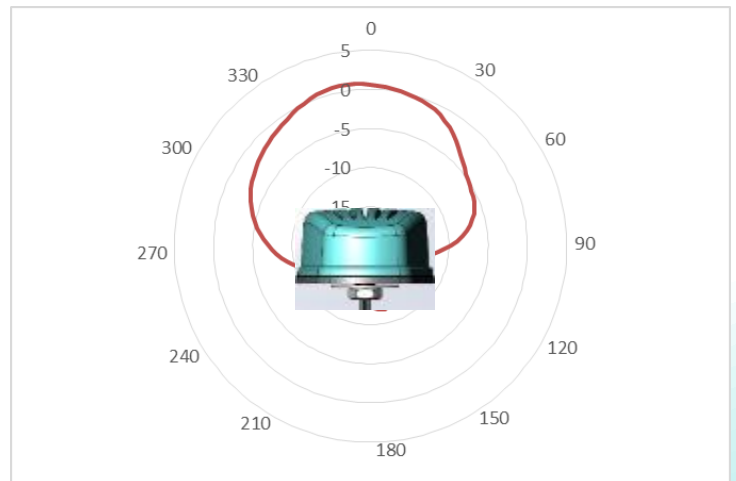
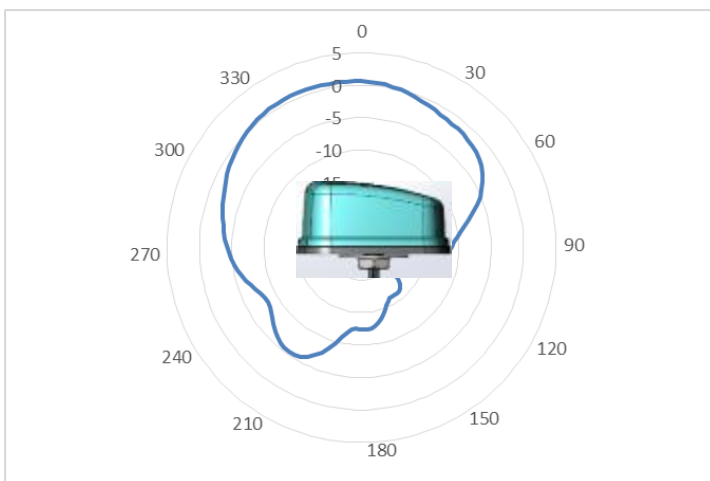


CHARTS

GNSS antenna, BD2 RHCP patterns, in free space*



GNSS antenna, GPS & Galileo RHCP patterns, in free space*



Preliminary

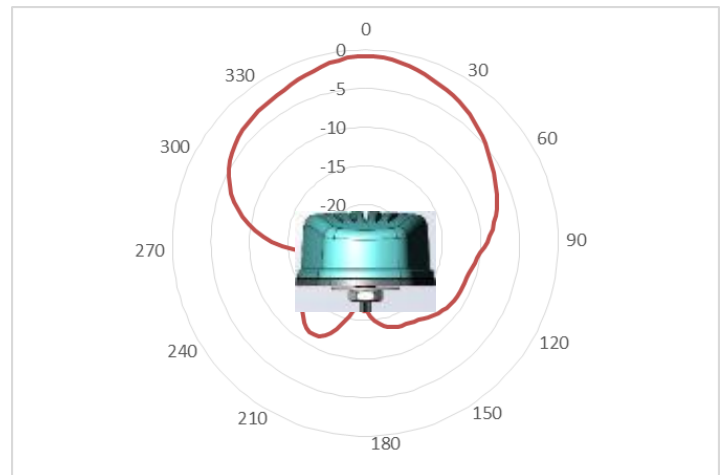
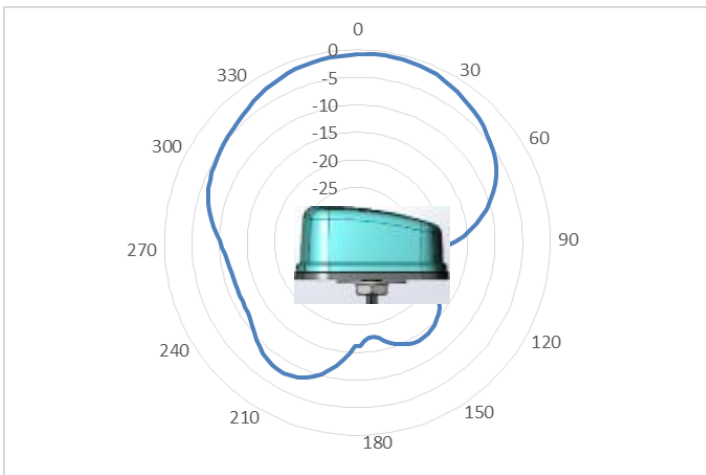
Description: 2xMiMo LTE, 3xMiMo WiFi,
GNSS Vehicle Mount Antenna

Series: Panther

PART NUMBER: PAN62311DM, PAN62312DM

CHARTS

GNSS antenna, GLONASS RHCP patterns, in free space*



Series: Panther

Description: 2xMiMo LTE, 3xMiMo WiFi,
GNSS Vehicle Mount Antenna

PART NUMBER: PAN62311DM, PAN62312DM

PACKAGING

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

Issue: 1718P

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Preliminary

