

Description: 3G/GPRS/GSM + GNSS IP67

Series: Outdoor Multi Band

PART NUMBER: W4165XXX

### Features:

- 3G antenna:
  - 824-960/1710-2170MHz
- Active GNSS antenna:
  - Beidou, GPS, Galileo, Glonass
  - LNA Gain 30dB
  - Pre and post LNA filtering
- RoHS Compliant
- Diameter 100mm
- IP67
- Cable and connector options shown on page 2.

### Applications:

- Vehicular use
- Utility boxes
- Smart metering
- Navigation, Fleet Management, Tracking



All dimensions are in mm / inches

Issue: 1718

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

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For more information:

Pulse Worldwide Headquarters  
15255 Innovation Drive #100  
San Diego, CA 92128  
USA  
Tel: 1-858-674-8100

Pulse/Larsen Antennas  
18110 SE 34<sup>th</sup> St Bldg 2 Suite 250  
Vancouver, WA 98683  
USA  
Tel: 1-360-944-7551

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,4<sup>th</sup> Phase  
Suzhou New District  
Jiangsu Province, Suzhou 215009 PR China  
Tel: 86 512 6807 9998



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This document covers all product variants of the following product family

Antennas	GSM Cable			GPS Cable		
	Cable Type	Cable Length	Connector	Cable Type	Cable Length	Connector
W4165	RG-174 Black	4000mm/157.5"/13.2'	SMA Male	RG-174 Black	4000mm/157.5"/13.2'	SMA Male
W4165AI		1524mm/60"/5'	TNC Male		1524mm/60"/5'	RP-TNC Male
W4165SMA5		1524mm/60"/5'	SMA Male		1524mm/60"/5'	SMA Male
W4165RPSMA10		3048mm/120"/10'	RP-SMA Male		3048mm/120"/10'	RP-SMA Male

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**ELECTRICAL SPECIFICATIONS**

Frequency (GSM)	824-960/1710-2170 MHz	
Frequency (Beidou,GPS,Galileo,Glonass)	1561.098±2.046/ 1575.42±1.023/ 1602.5625±4MHz	
Nominal Impedance	50 Ω	
VSWR** (GSM)	< 2:1	
Average Peak Gain* (GSM antenna, Low band, typical)	4 dB	
Average Peak Gain* (GSM antenna, High band, typical)	4.5 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	
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 diameter 500mm GND plane and with 5 inch cables

\*\* Measured on diameter 500mm GND plane and with 10 feet cables

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## MECHANICAL SPECIFICATIONS

Antenna Color / Material	Black
Connector type	As requested
Cable type	RG-174, Black
Cable length	As requested
Fixing system	Direct Mount
	P.S. requires a 3/4" (19mm) hole in the mounting surface.
Connector retention	30 N
Strain relief	30 N, applied to cable along axis and perpendicular to cable entry

## ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-40 ~ 85° C
Storage Temperature	-40 ~ 85° C
Ingress Protection	IP67
Wind-loading	160 km/h
RoHS Compliant	Yes

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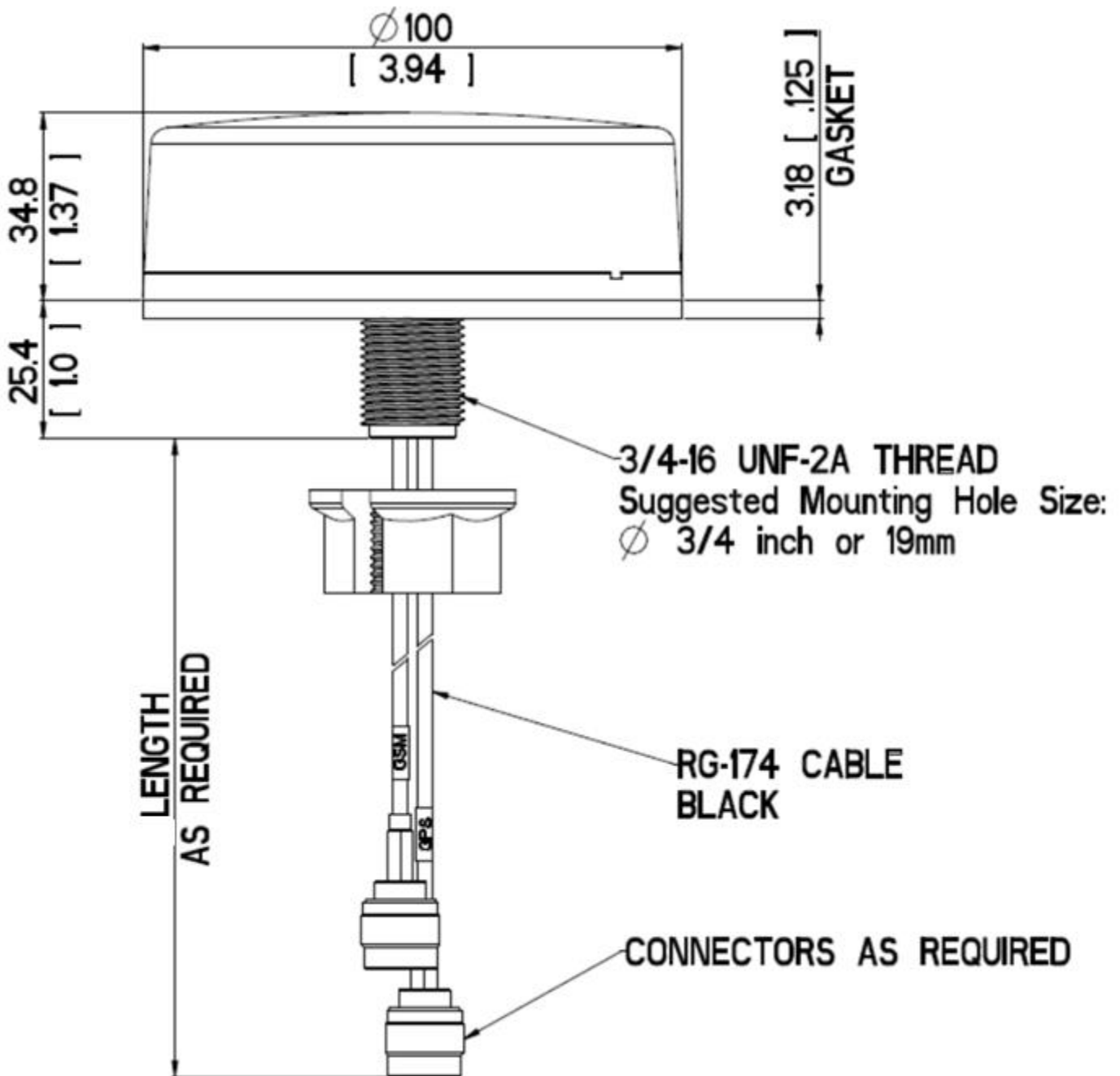
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MECHANICAL DRAWING



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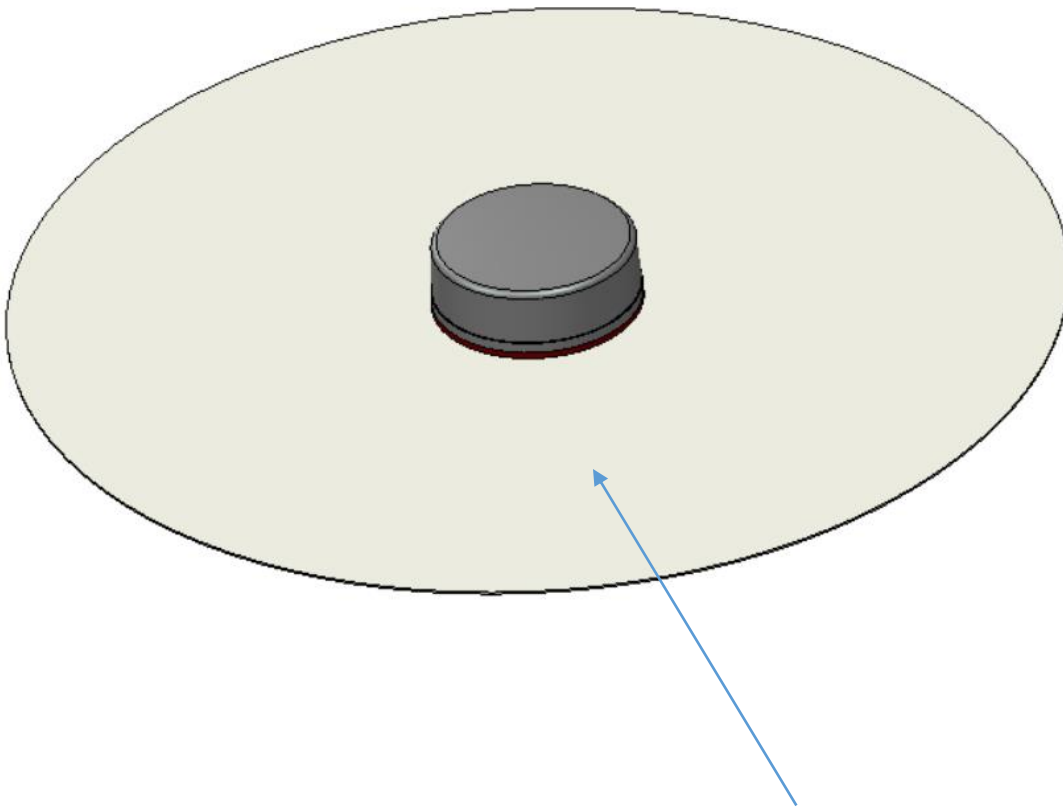
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TEST SETUP



Diameter: 500 mm ground pane

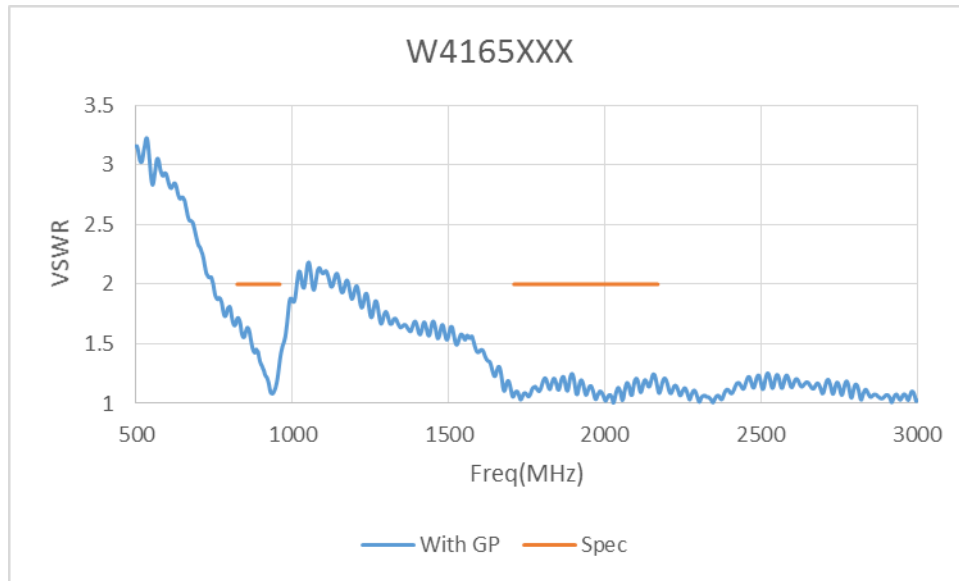
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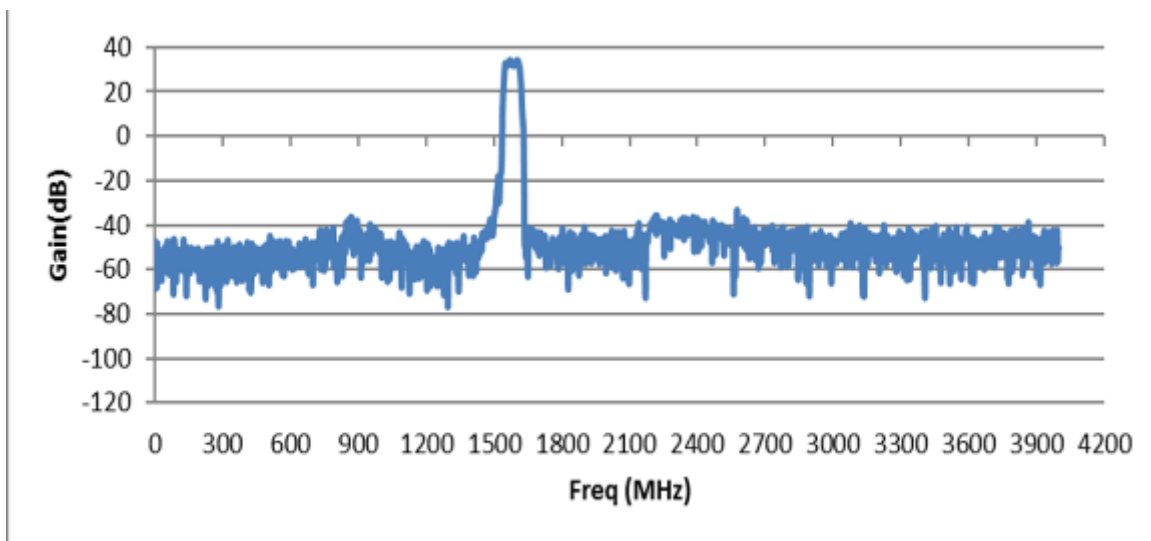
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CHARTS

VSWR\*



GNSS LNA performance



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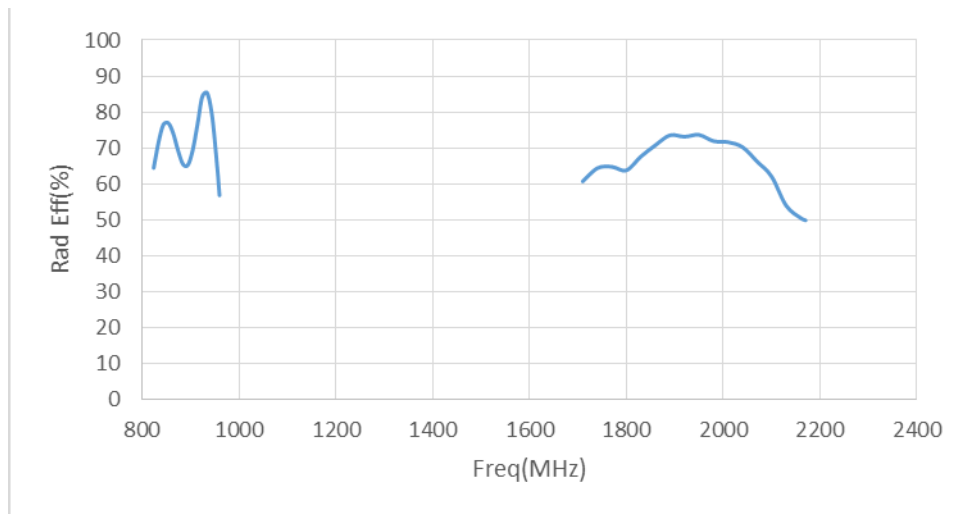
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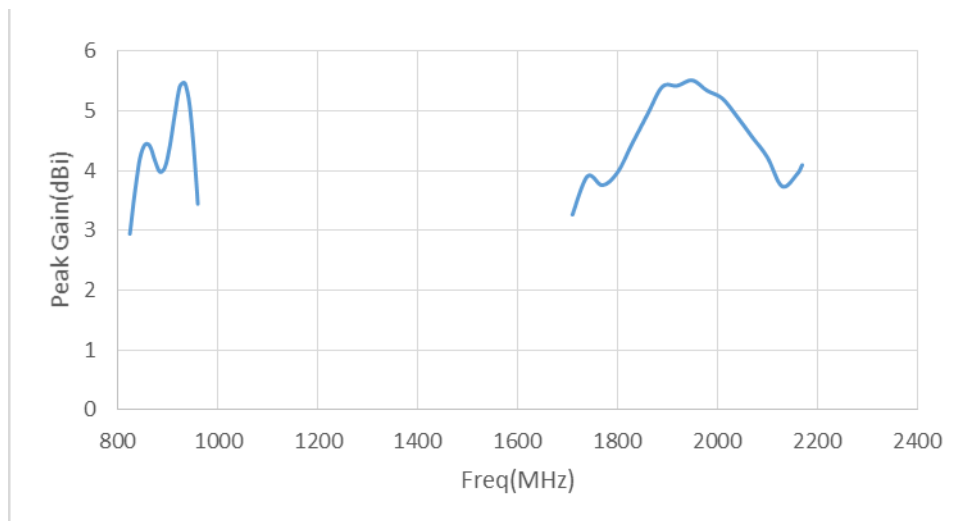
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CHARTS

GSM antenna total efficiency\*



Maximum 3D gain, GSM antenna\*



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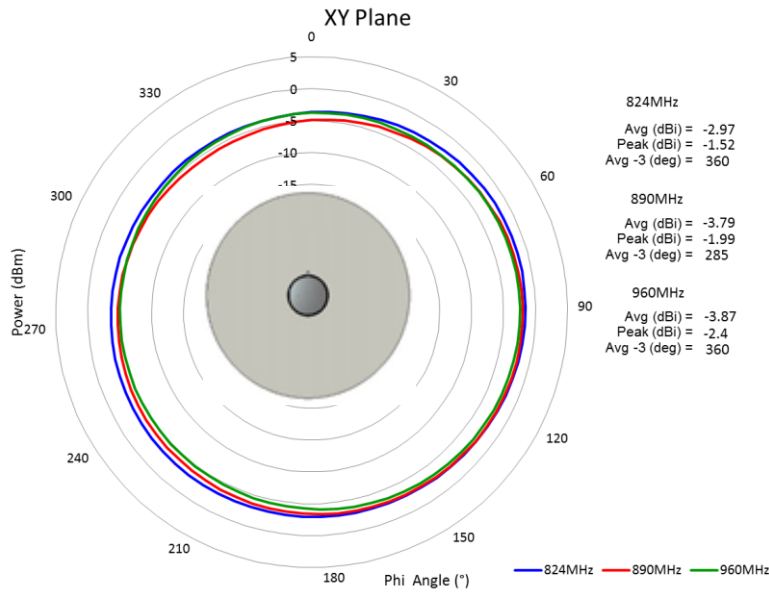
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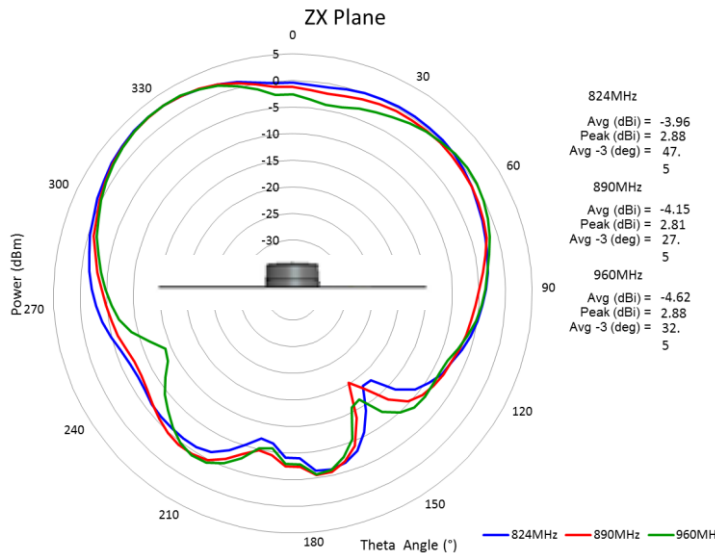


CHARTS

GSM antenna Low band Radiation Pattern X-Y Plane\*



GSM antenna Low band Radiation Pattern Z-X Plane\*



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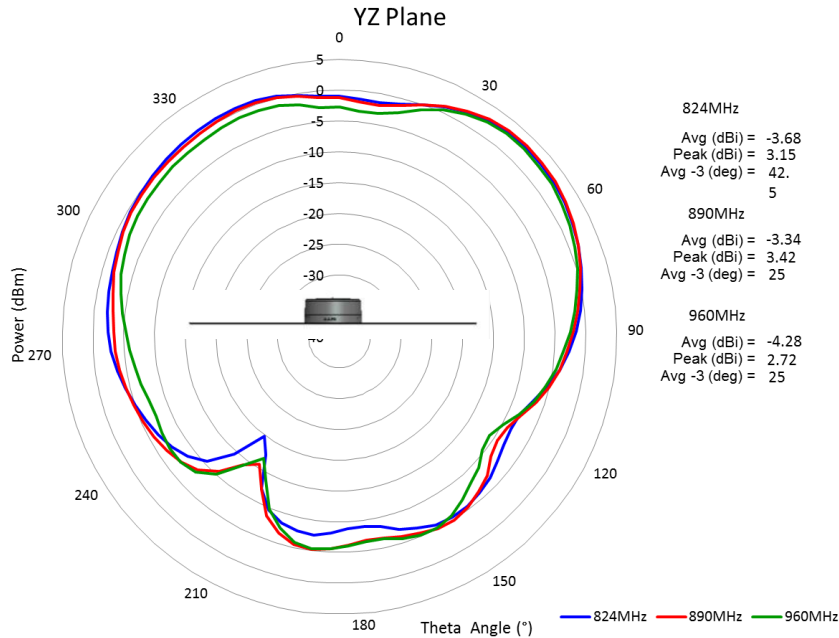
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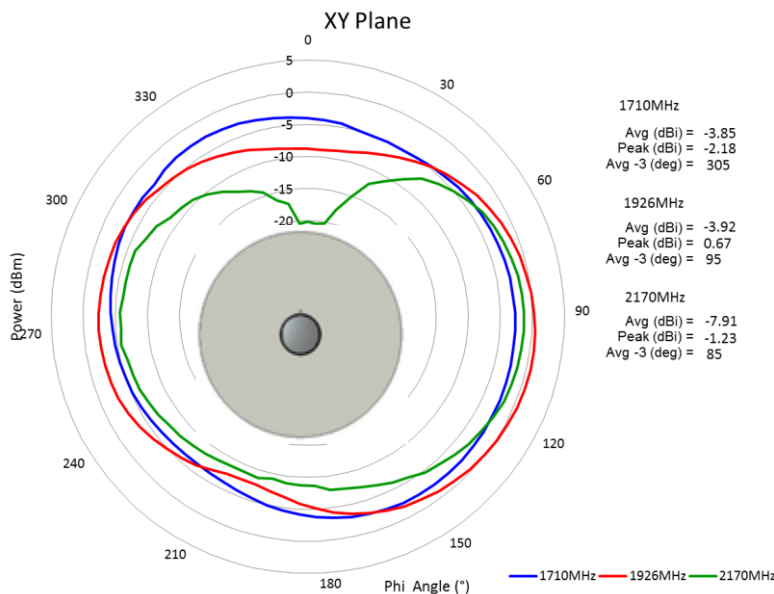
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CHARTS

GSM antenna Low band Radiation Pattern Y-Z Plane\*



GSM antenna High band Radiation Pattern X-Y Plane\*



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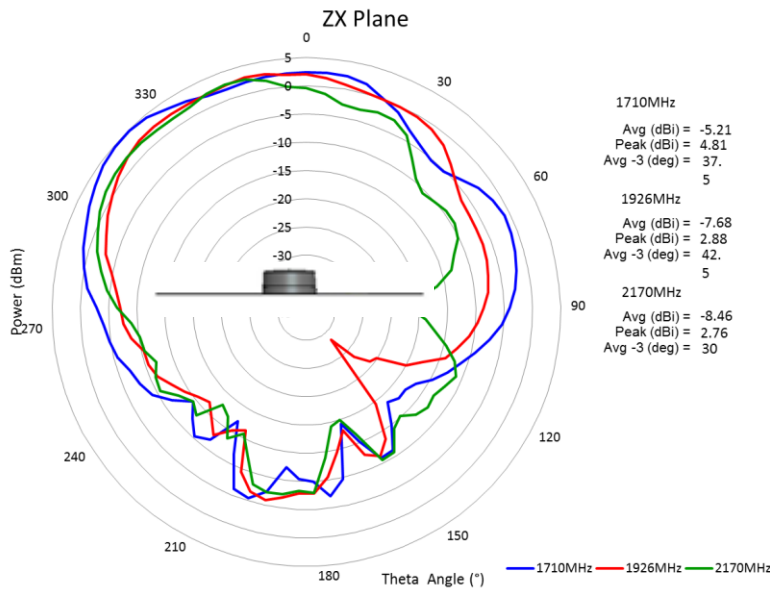
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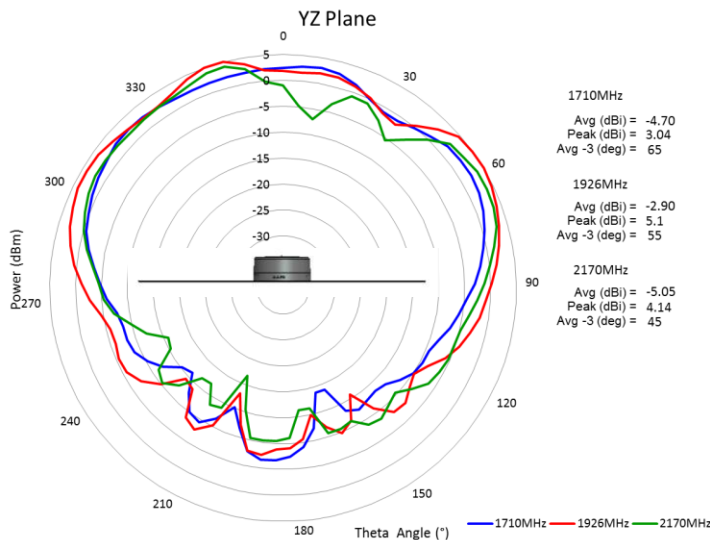
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CHARTS

GSM antenna High band Radiation Pattern Z-X Plane\*



GSM antenna High band Radiation Pattern Y-Z Plane\*



Issue: 1718

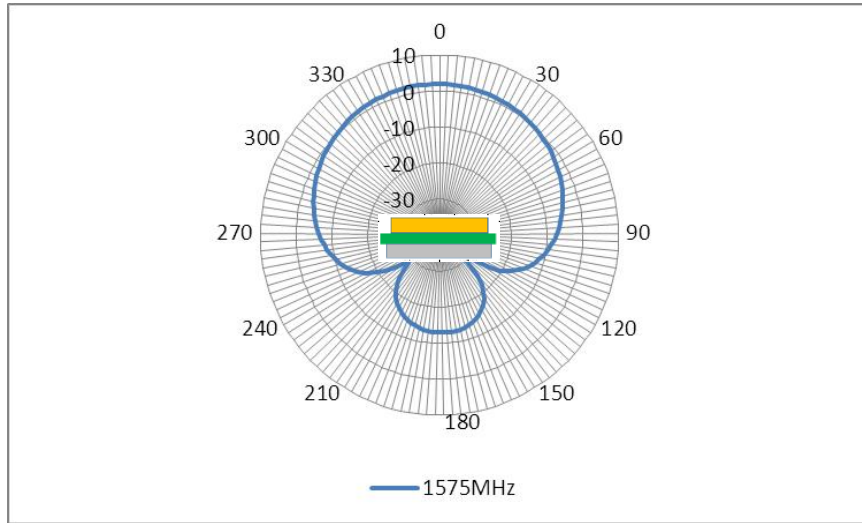
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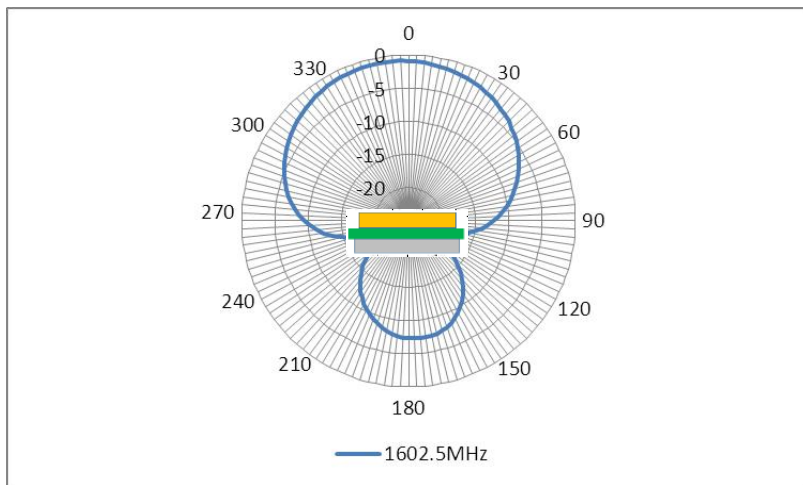
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CHARTS

RHCP Radiation Pattern (70mm x 70mm ground plane ) GPS & Galileo

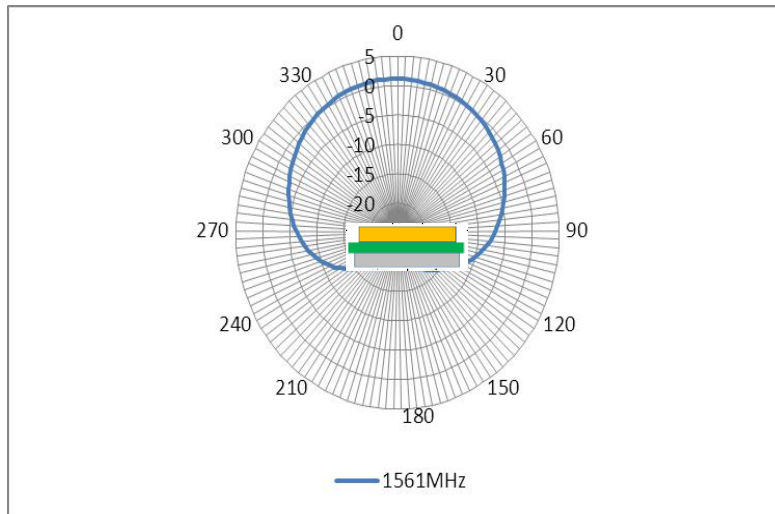


RHCP Radiation Pattern (70mm x 70mm ground plane ) GLONASS



CHARTS

RHCP Radiation Pattern (70mm x 70mm ground plane ) BD2



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## PACKAGING

1 antenna packed in a plastic bag

12 plastic bags of antennas packed in a carton

1 label on each carton with part number, description, date code.

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