

## TECHNICAL DATA SHEET

**Description:** 40404+50508 GNSS & L2L5  
Stack Patch Antenna

**PART NUMBER:** ANT4050BS0WTGN25S

### Features:

- Size : Stack 40x40x4+50x50x8mm
- High radiation efficiency
- Combining GNSS and L5L2 bands
- Pin-solder process
- RoHS compliant



### Applications:

- GPS system
- Navigation device
- Telematics box
- Fleet management

All dimensions are in mm / inches

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### ELECTRICAL SPECIFICATIONS

**Working Frequency**

L5 : 1176 MHz  
L2 : 1227 MHz  
GNSS-Beidou : 1561 MHz  
GNSS-GPS : 1575 MHz  
GNSS-Glonass : 1602 MHz

**Gain(Peak)**

L5 : 1.4 dBic  
L2 : 1.1 dBic  
GNSS-Beidou : 4.7 dBic  
GNSS-GPS : 5.4 dBic  
GNSS-Glonass : 4.5 dBic

**Gain(Average)**

L5 : -2.55 dB  
L2 : -3.45 dB  
GNSS-Beidou : -0.80 dB  
GNSS-GPS : -0.52 dB  
GNSS-Glonass : -1.53 dB

**Polarization**

RHCP

**Axis Ratio**

L5  $\leq$  4 dB  
L2  $\leq$  4 dB  
GNSS  $\leq$  3 dB

**Impedance**

50  $\Omega$

**Operating Temperature**

-40°C ~ 85°C

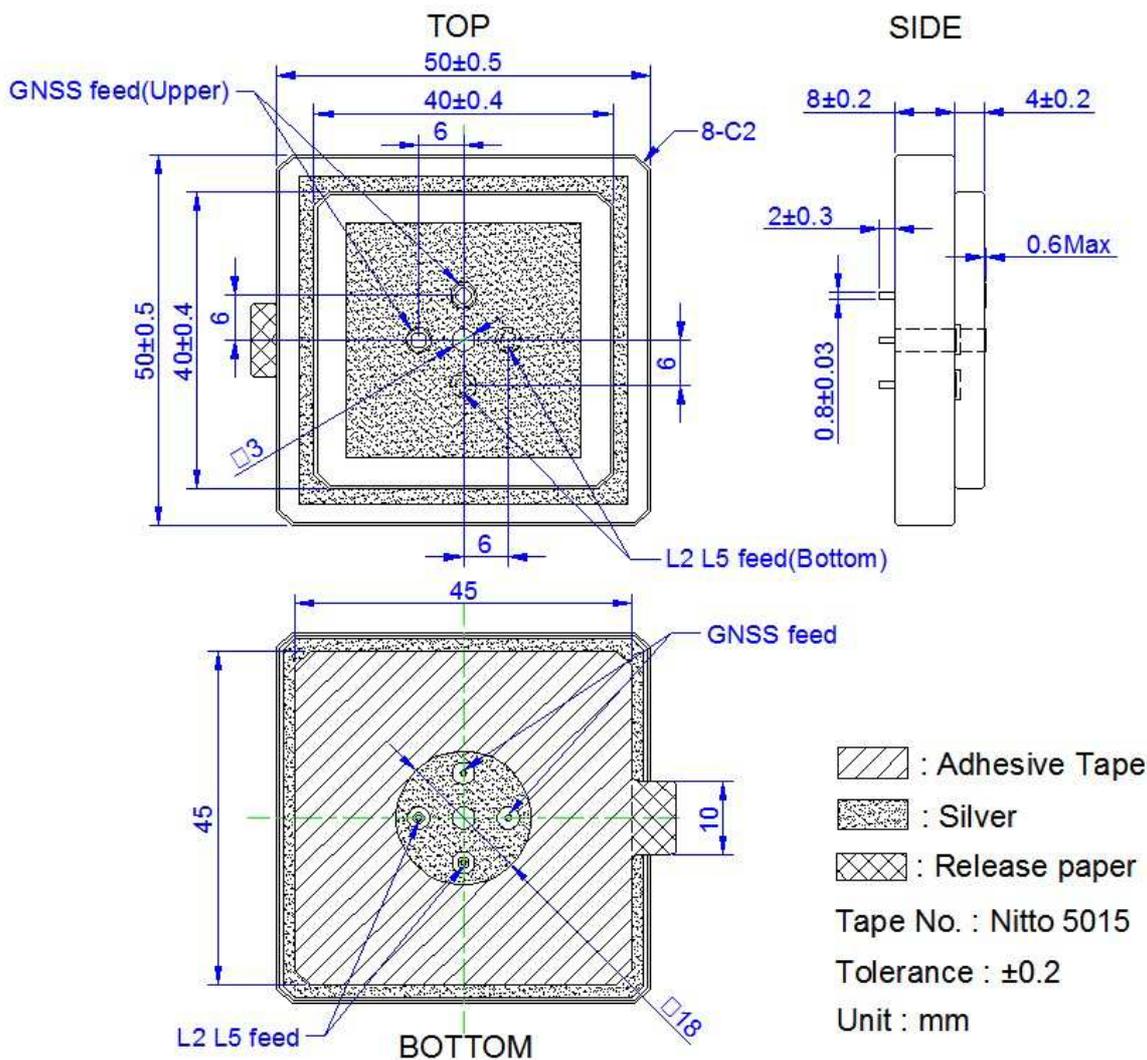
**NOTE**

1. Based on 70×70 mm<sup>2</sup> square ground plane and with 3dB Hybrid Coupler.
2. Centre frequency will be offset to working frequency while changes of customer's housing and ground plane.

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**MECHANICAL DRAWING**



Position	Dimension	Working Band	Feed
Upper	40x40x4 mm	GNSS (1561 + 1575 + 1602MHz)	Dual Feed
Bottom	50x50x8 mm	L5 & L2 (1176 + 1227MHz)	Dual Feed

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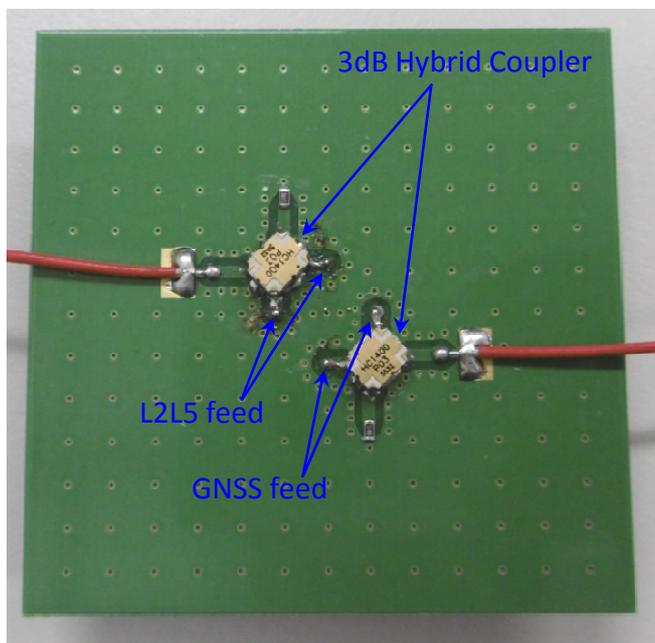
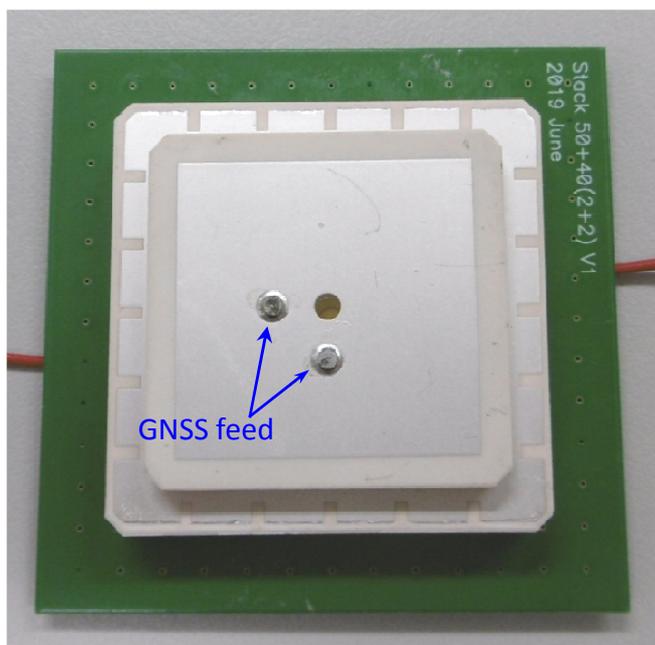
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**REFERENCE DESIGN OF EVALUATION BOARD**



**Ground Plane Size: 70x70 mm<sup>2</sup>**

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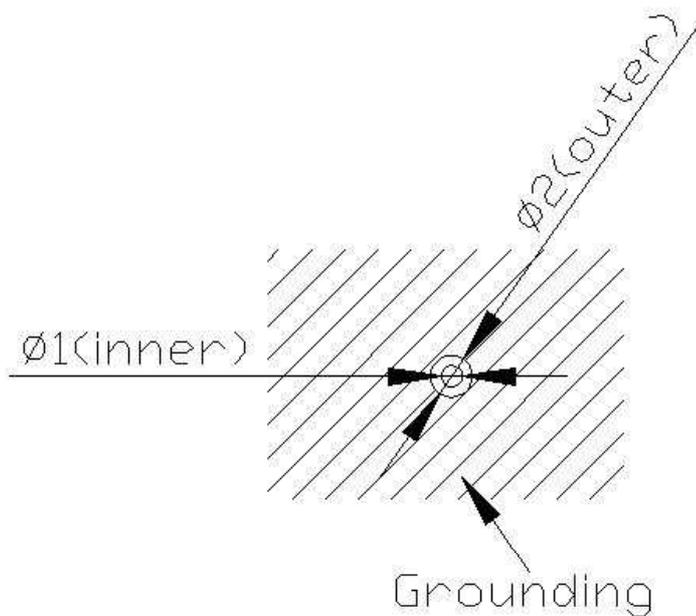
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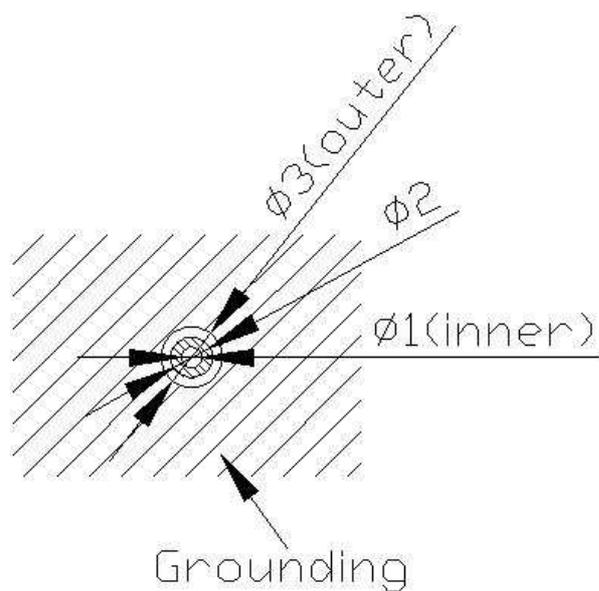
**PART NUMBER:** ANT4050BS0WTGN25S

**FOOTPRINT**

**Top Layer**



**Bottom Layer**



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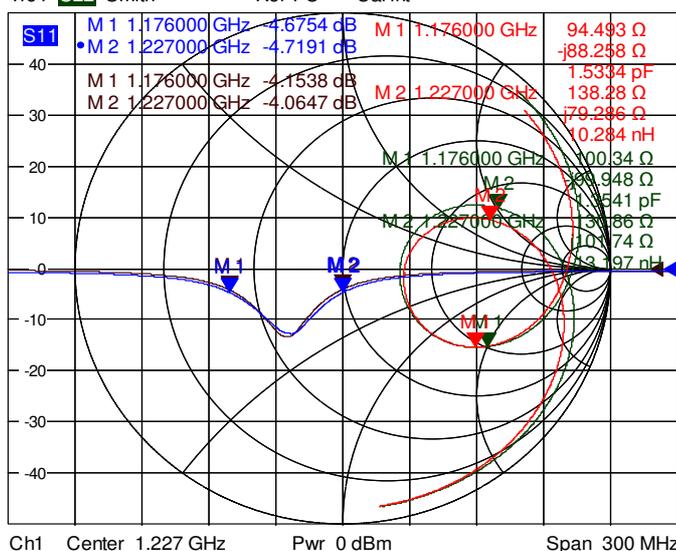
**Description: 40404+50508 GNSS & L2L5  
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**PART NUMBER: ANT4050BS0WTGN25S**

**RETURN LOSS**

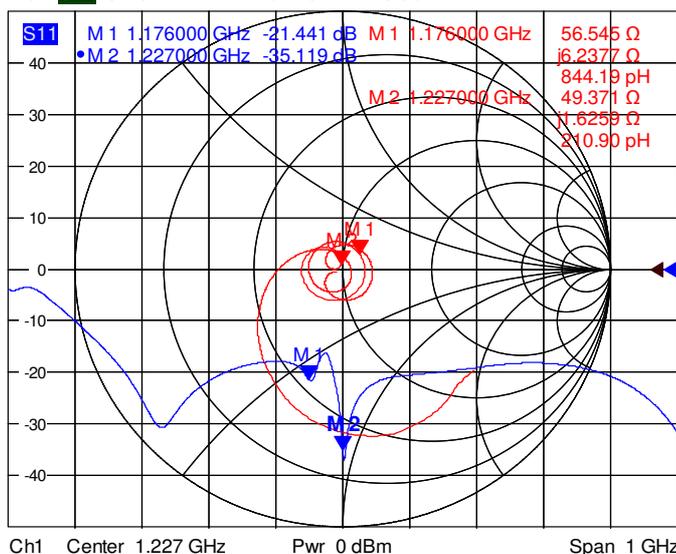
**L5 L2**

Trc1 **S11** dB Mag 10 dB / Ref 0 dB Cal int 1 of 1 (Max)  
 Trc2 **S11** Smith Ref 1 U Cal int  
 Trc3 **S22** dB Mag 10 dB / Ref 0 dB Cal int  
 Trc4 **S22** Smith Ref 1 U Cal int



**L5 L2 (with 3dB Hybrid Coupler)**

Trc1 **S11** dB Mag 10 dB / Ref 0 dB Cal int 1 of 1 (Max)  
 Trc2 **S11** Smith Ref 1 U Cal int  
 Trc3 **S22** dB Mag 10 dB / Ref 0 dB Invisible  
 Trc4 **S22** Smith Ref 1 U Invisible



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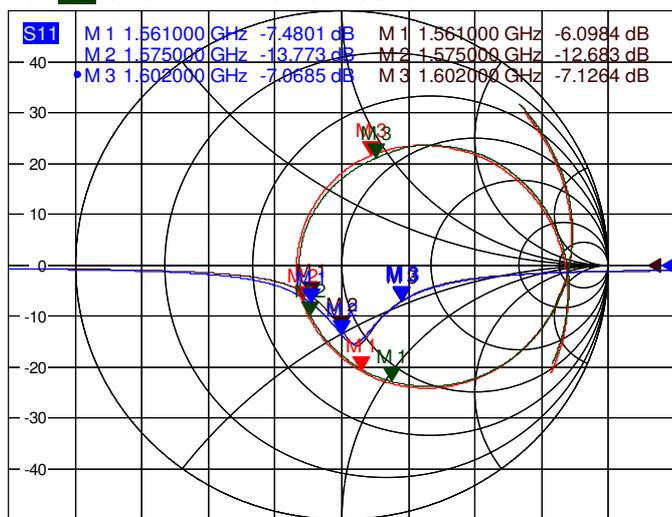
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**RETURN LOSS**

**GNSS**

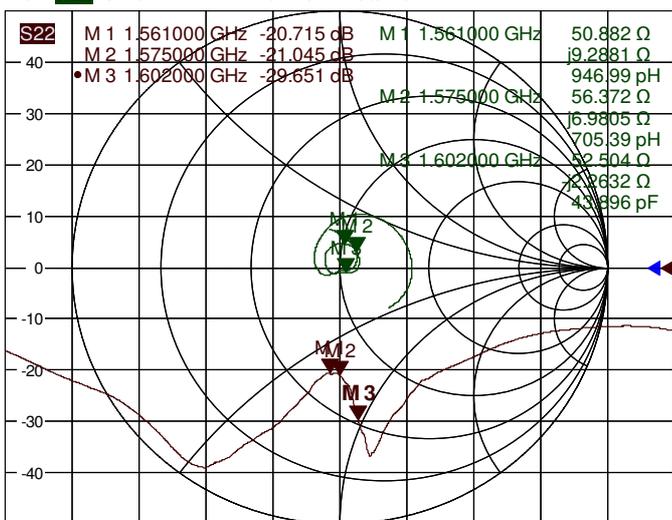
Trc1 **S11** dB Mag 10 dB / Ref 0 dB Cal int 1  
 Trc2 **S11** Smith Ref 1 U Cal int  
 Trc3 **S22** dB Mag 10 dB / Ref 0 dB Cal int  
 Trc4 **S22** Smith Ref 1 U Cal int



Ch1 Center 1.575 GHz Pwr 0 dBm Span 300 MHz

**GNSS (with 3dB Hybrid Coupler)**

Trc1 **S11** dB Mag 10 dB / Ref 0 dB Invisible 1 of 1 (Max)  
 Trc2 **S11** Smith Ref 1 U Invisible  
 Trc3 **S22** dB Mag 10 dB / Ref 0 dB Cal int  
 Trc4 **S22** Smith Ref 1 U Cal int



Ch1 Center 1.575 GHz Pwr 0 dBm Span 1 GHz

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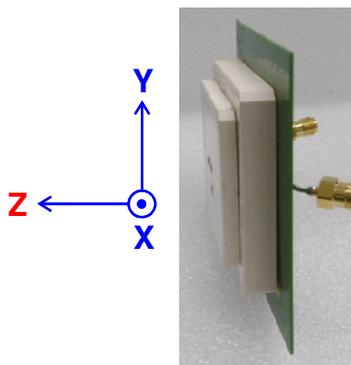
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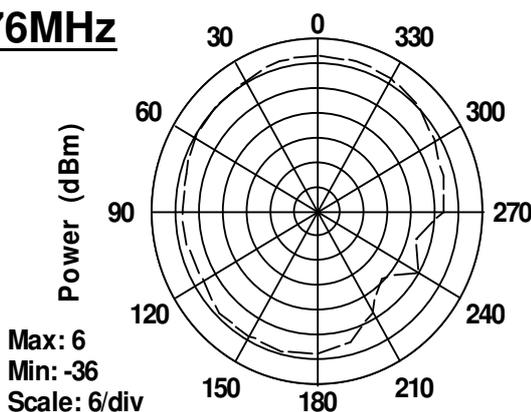
**PART NUMBER:** ANT4050BS0WTGN25S

**RADIATION PATTERN**

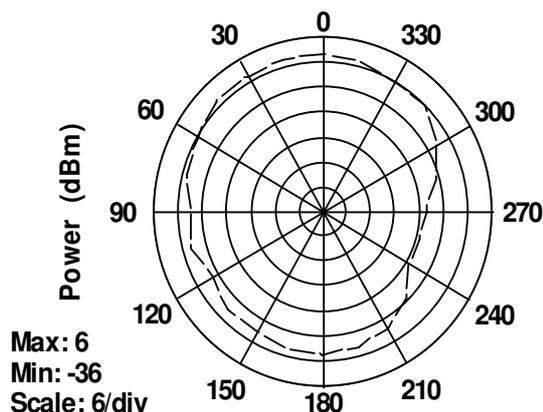


Evaluation board and XYZ direction

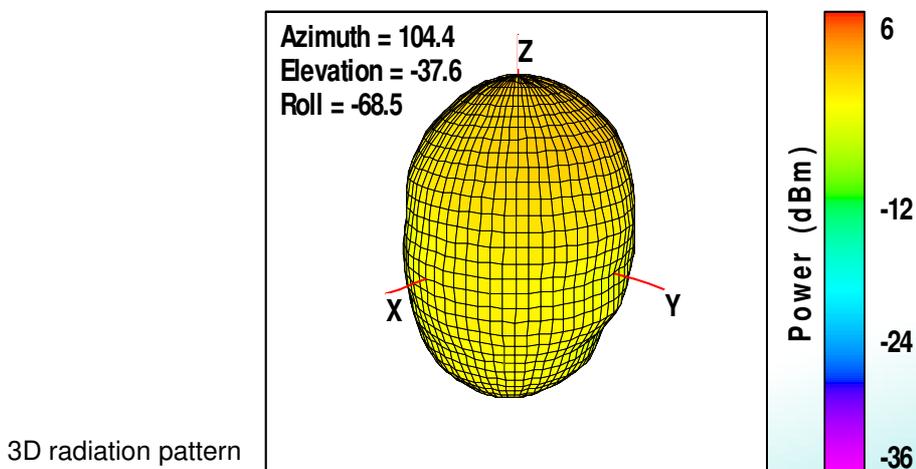
**L5 – 1176MHz**



2D x-z plane pattern



2D y-z plane pattern



3D radiation pattern

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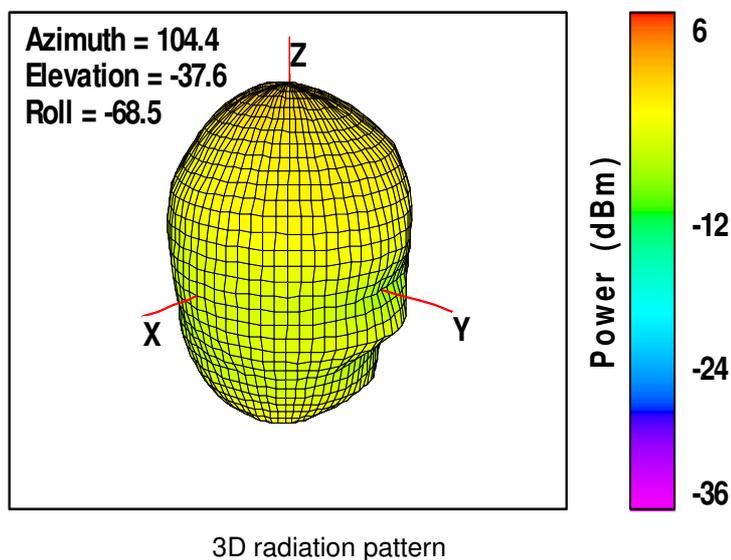
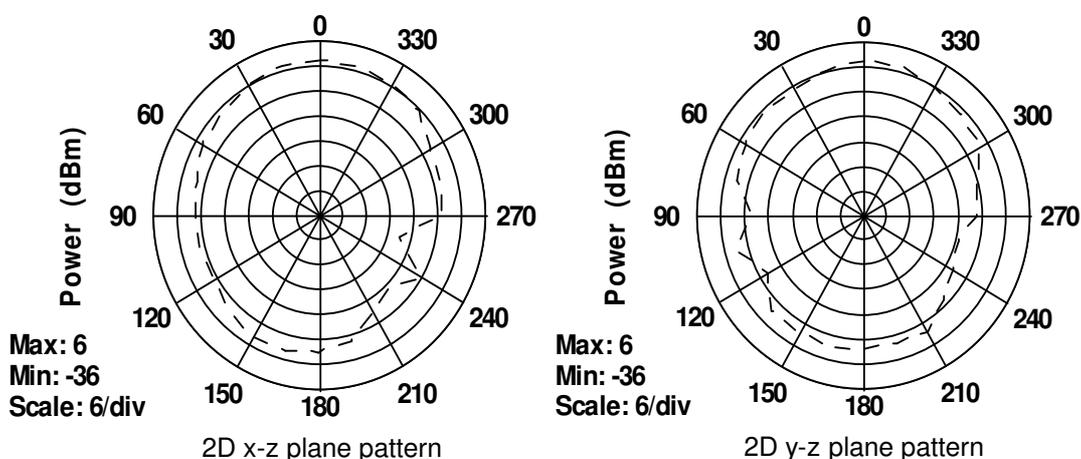
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**RADIATION PATTERN**

**L2 – 1227MHz**



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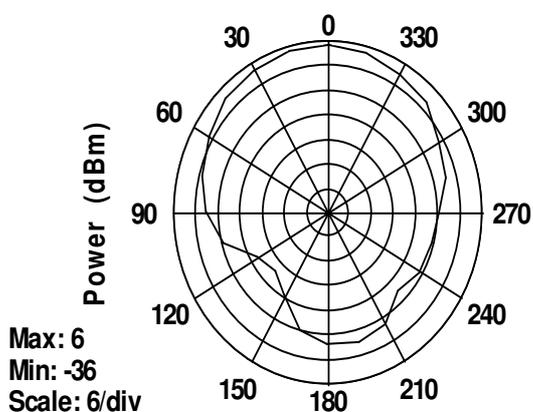
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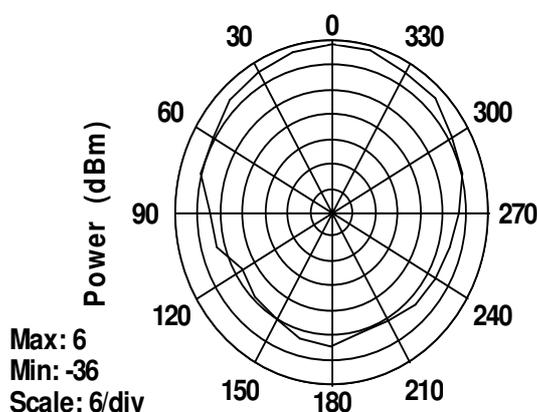
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**RADIATION PATTERN**

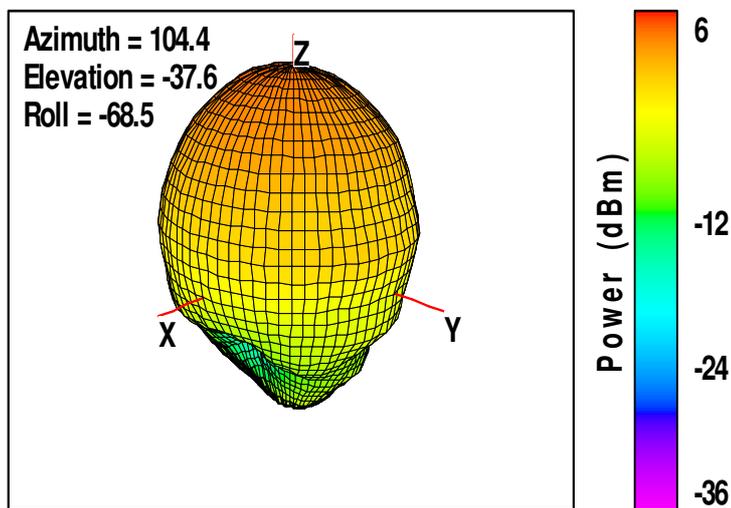
**GNSS – 1561MHz**



2D x-z plane pattern



2D y-z plane pattern



3D radiation pattern

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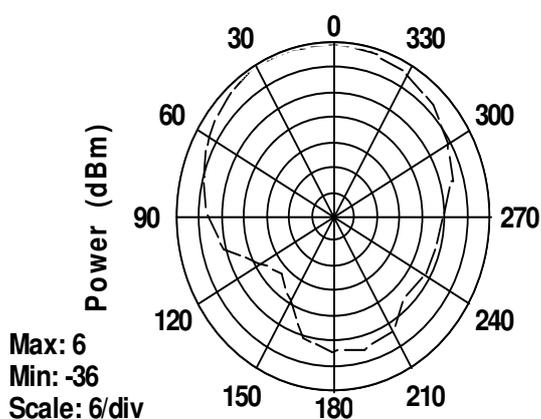
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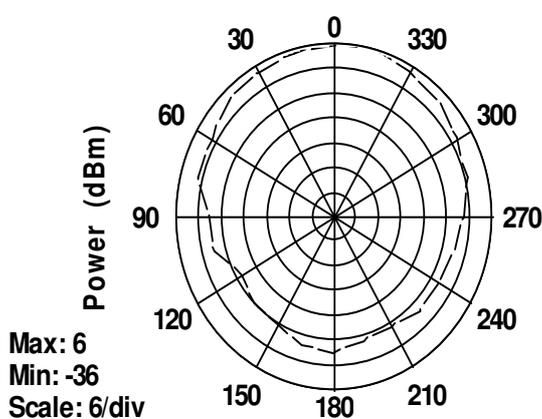
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**RADIATION PATTERN**

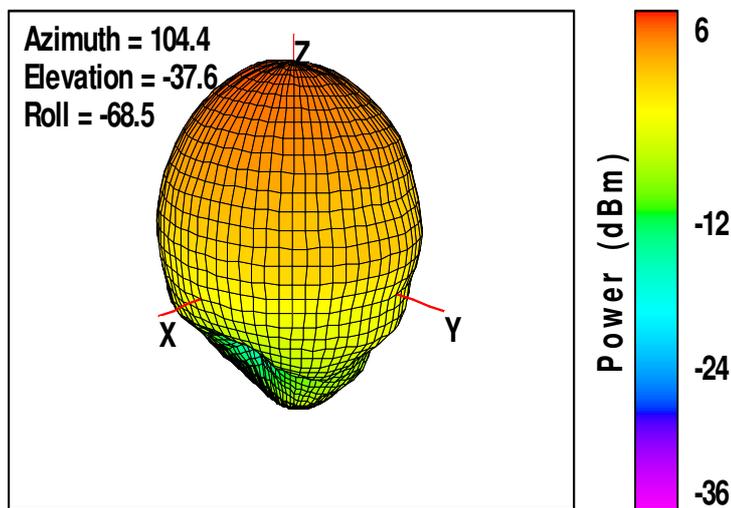
**GNSS – 1575MHz**



2D x-z plane pattern



2D y-z plane pattern



3D radiation pattern

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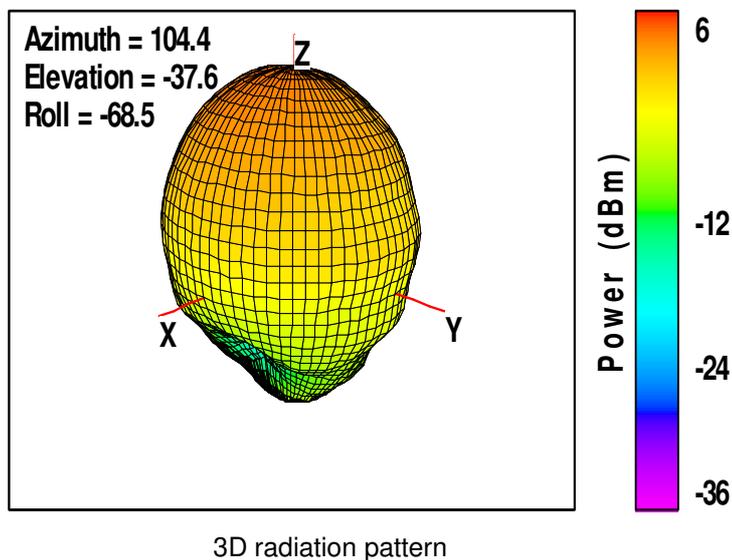
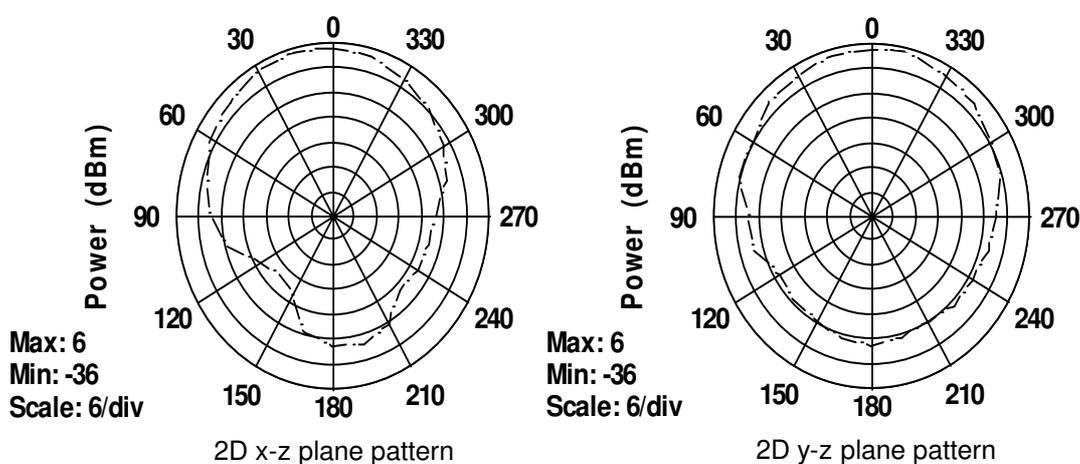
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**RADIATION PATTERN**

**GNSS – 1602MHz**



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**REVISION HISTORY**

Revision	Date	Description
Version 1	Nov. 16, 2020	- New issue

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