

# GPS + Iridium Multiband Ceramic Patch Antenna



APARM2504-C2GR



25.1 x 25.1 x 4.0 mm  
RoHS/RoHS II Compliant  
MSL = Not Applicable

## Features

- GPS (L1) + Iridium multiband patch antenna
- Low VSWR of 1.8
- Gain of 2 dBi (GPS L1) and 3 dBi (Iridium)

## Applications

- IoT
- Handheld devices
- Telematics
- Transportation
- Remote Monitoring
- Satellite telephony
- Tracking
- Fleet and asset monitoring

## Electrical Specifications

Parameters	GPS	Iridium	Units	Notes
Operating Frequency	1575.42 ± 1.023	1610 ~ 1625	MHz	
Center Frequency	1586 ± 3		MHz	
Bandwidth	44		MHz	Min. @ RL : -10 dB
VSWR	1.8			Max.
Gain	2.0	3.0	dBi	Typ. @Zenith
Impedance	50		Ω	

Note: The above-mentioned values apply only for the standard ground plane size of 65.0 x 50.9 mm.

## Environmental Specifications

Parameters	Specification	Notes
Operating Temperature	-40°C to +105°C	
Storage Temperature	-40°C to +105°C	
Relative Humidity	0 ~ 95 %	
Frequency Temperature Coefficient (Tf)	-40°C to +105°C	0 ± 20 ppm / °C
Soldering Feed Pin Temperature	+290°C	Max. for 3 second

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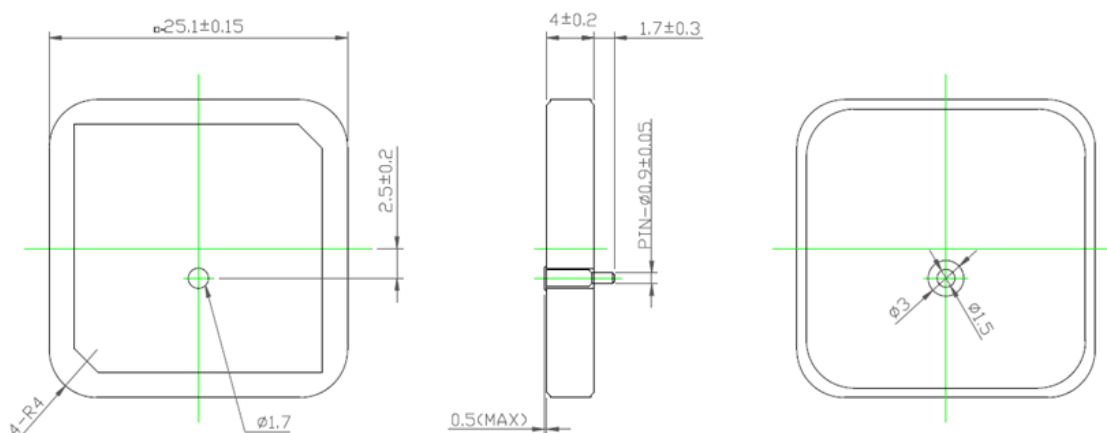


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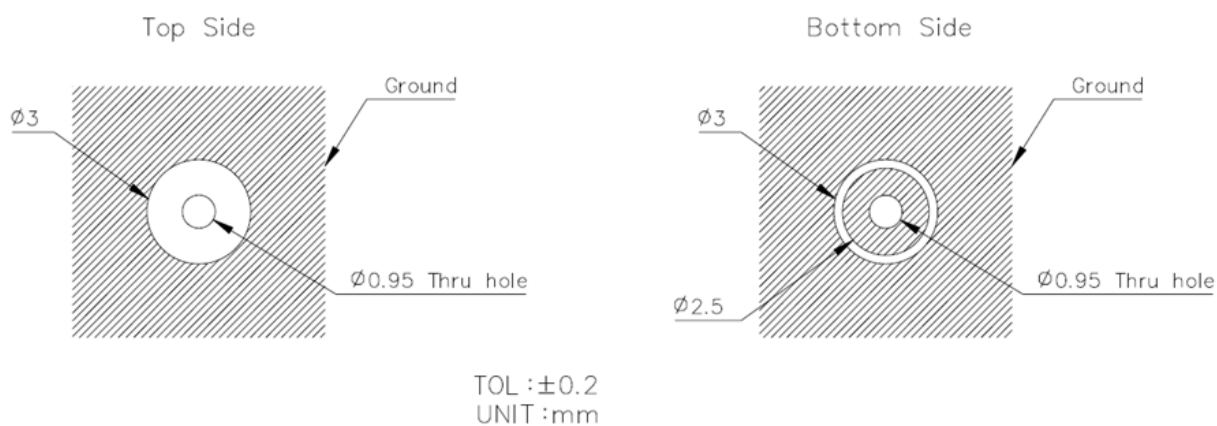
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## Product Dimensions



Unit : mm

## Layout Dimensions



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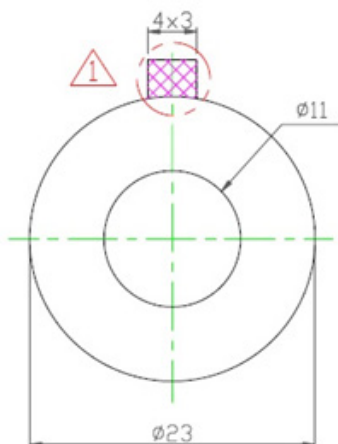


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## Tape Dimensions



1. NITTO : NO.5015

2. Double-coated adhesive tape for industrial use

3. Thickness : 0.12mm

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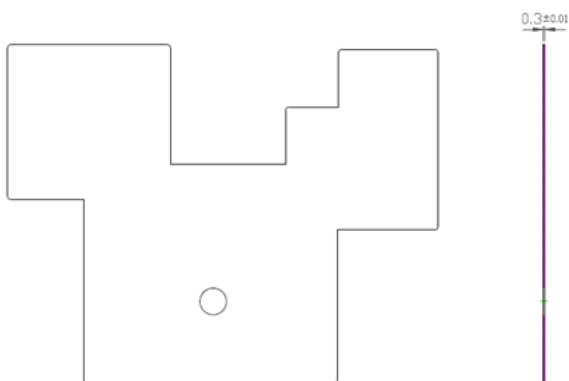


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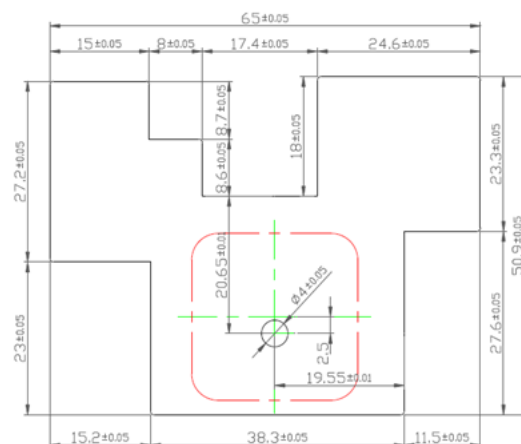


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## Test Fixture Dimension



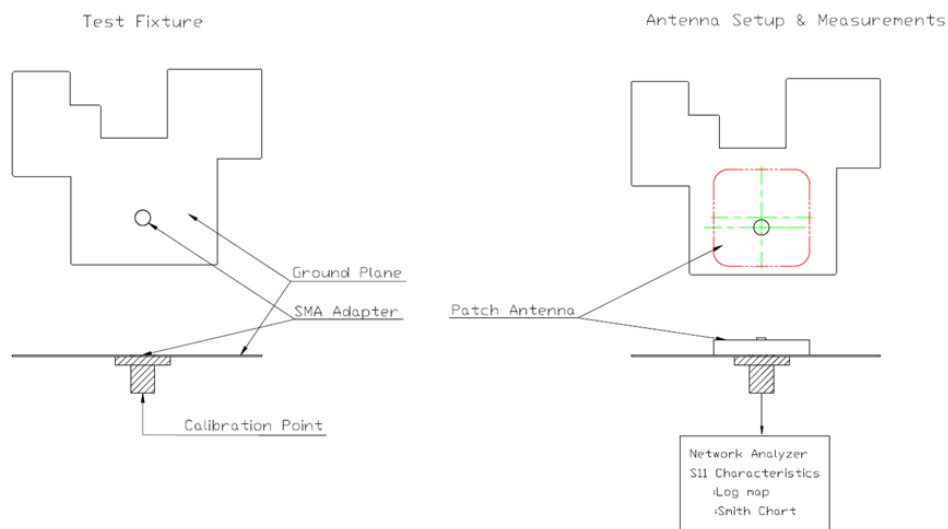
Bottom side



Top side

Unit : mm

## Test Fixture Set-up and Measurement



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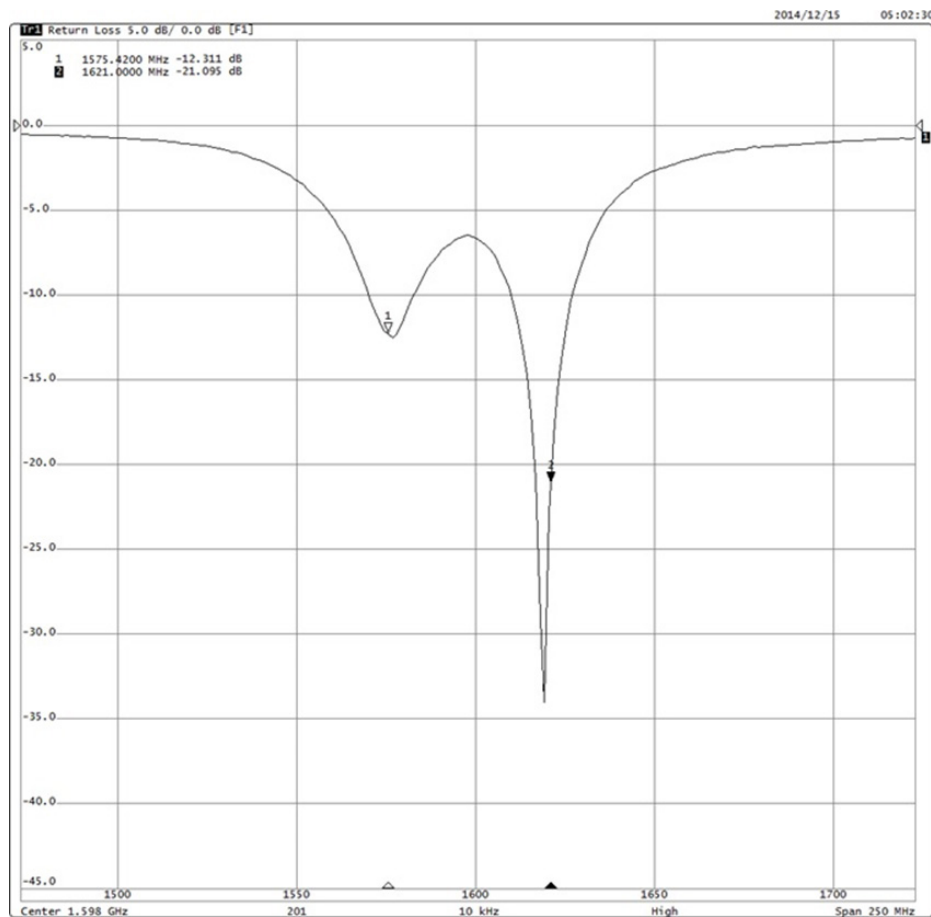


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## Return Loss



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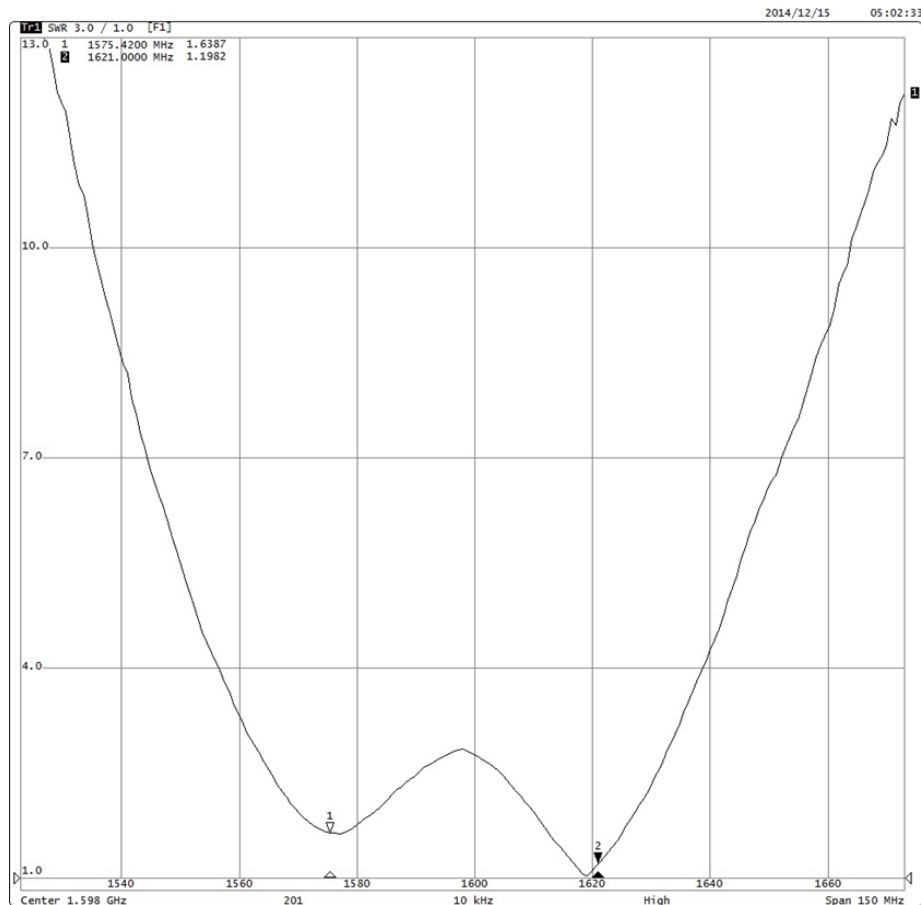


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VSWR



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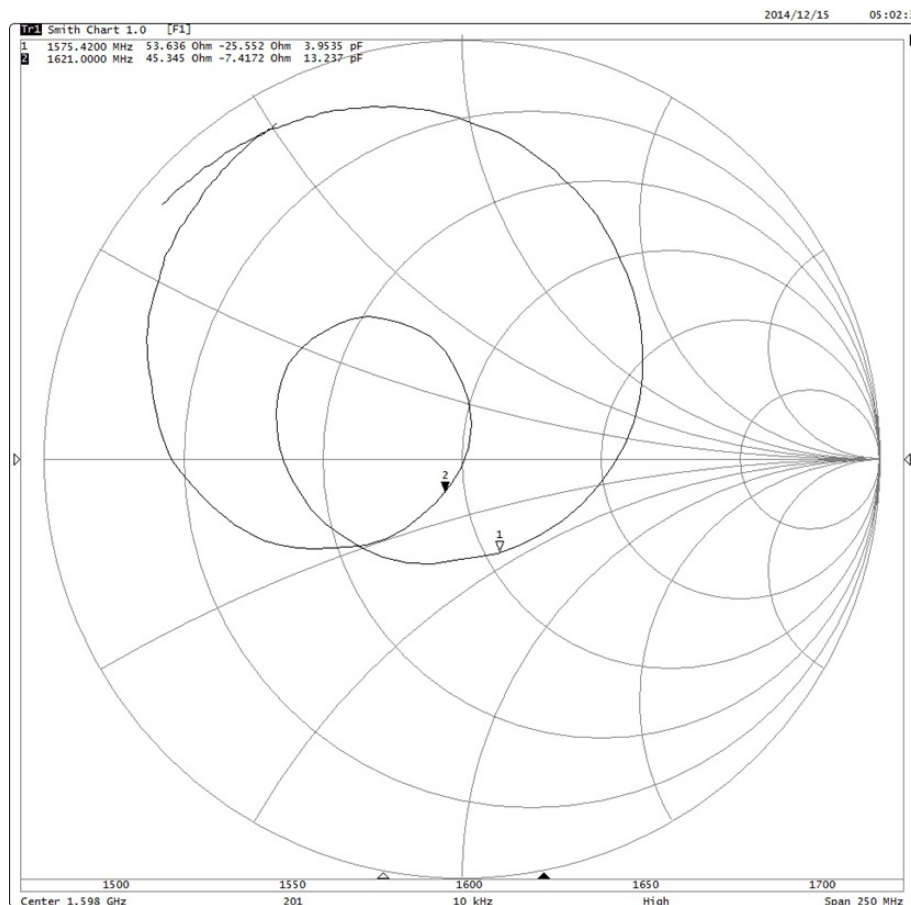


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## Impedance Characteristics



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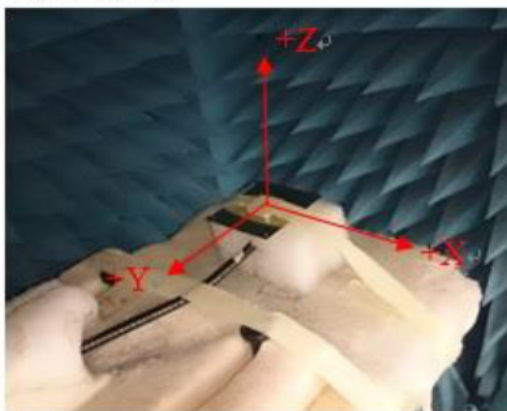


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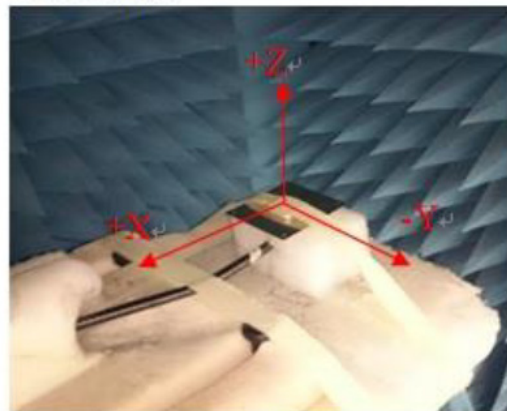
## Radiation Pattern

### Measurement Plane

XZ-Plane



YZ-Plane





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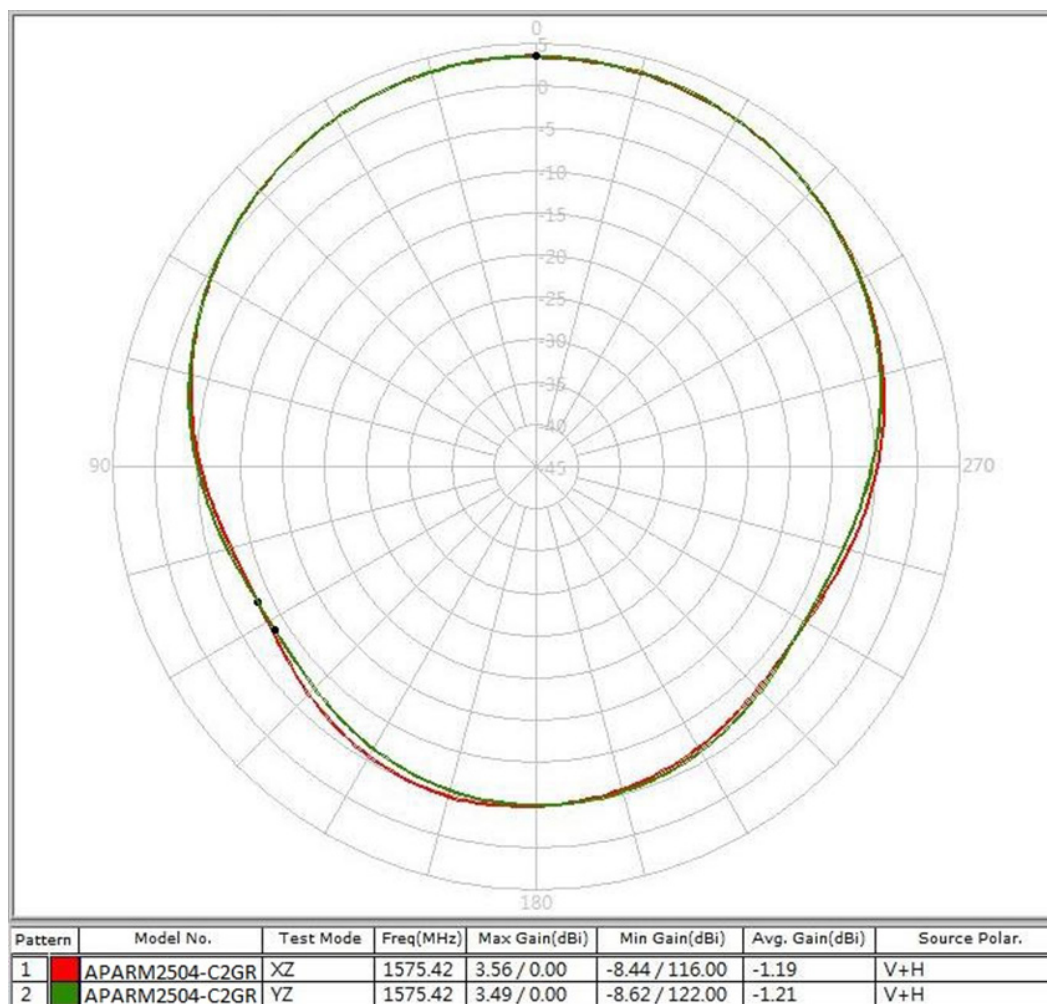
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## Radiation Pattern

GPS : 1575.42 MHz



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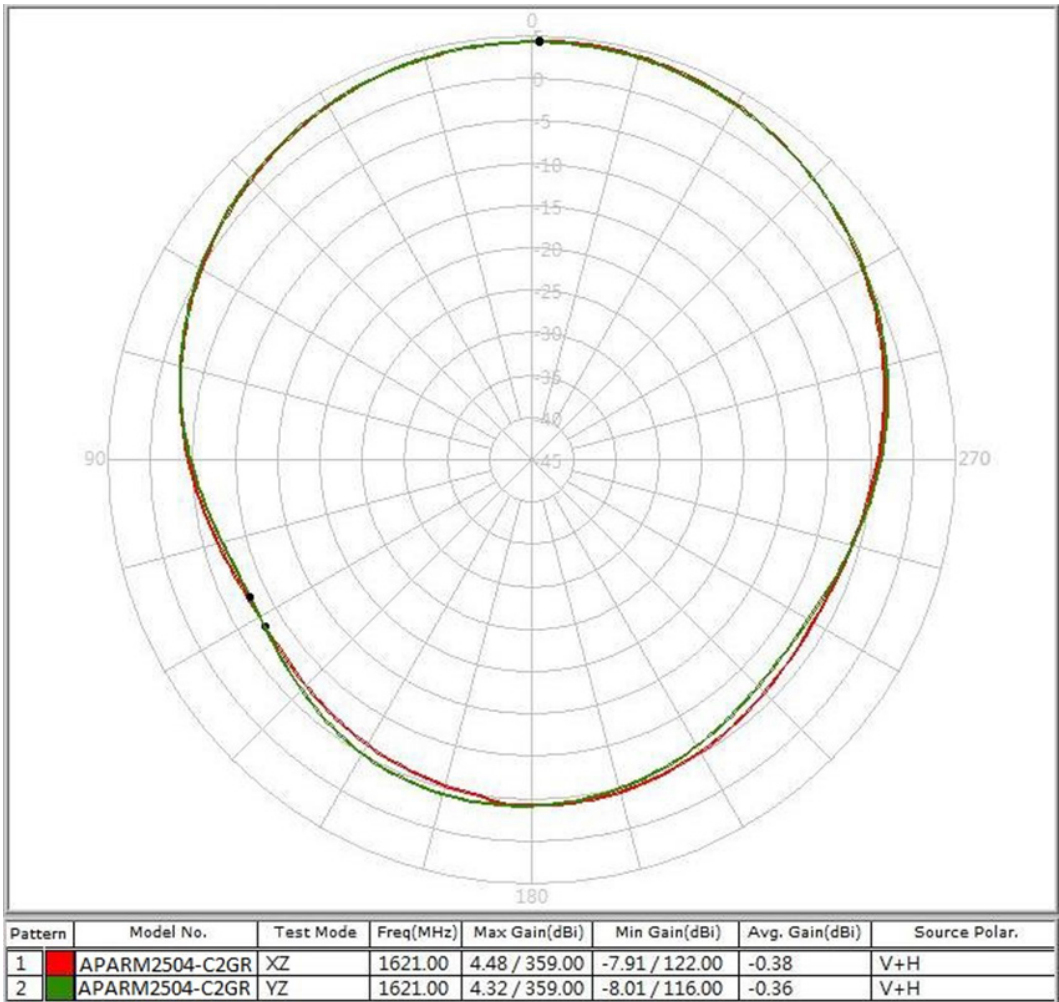
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## Radiation Pattern

Iridium : 1621 MHz



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## Reliability Test

Test Condition	Test Exposure and Duration
Low Temperature test	Expose the specimen to -40°C for 400 hours and then to normal temperature/ humidity for 24 hours or more. After this test, examine its appearance and functions.
High-temperature test	Expose the specimen to +105°C for 400 hours and then to normal temperature / humidity for 24 hours or more. After this test, examine its appearance and functions.
High-temperature/ high-humidity test	Subject the object to the environmental conditions of +60°C and 90-95% relative humidity for 96 hours, then expose it to normal temperature/humidity for 24 hours or more. After this test, examine its appearance and functions.
Thermal shock test	Subject the object to cyclic temperature change (-40°C for 2 hours, then +85°C for 2 hours) for 100 cycles, then expose to normal temperature/ humidity for 24 hours or more.
Sinusoidal vibration test	Subject the object to vibrations of 5 to 200 to 5Hz swept in 10 minutes, 4.5G at maximum (2 mm amplitude), in X and Y directions for two hours each and in Z direction for four hours. After this test, examine its appearance functions.
Vibration test in packaged condition	Subject the object, which is packaged as illustrated, to vibrations of 15 to 60 to 15Hz swept in 6 minutes, 4G at maximum (2mm amplitude at maximum), applied in X, Y and Z directions for two hours each, i.e. six hours in total. After this test, examine its appearance and functions.
Free fall test in packaged condition	Drop the object, which is packaged as illustrated, to a concrete surface from the height of 90 cm, on one corner, three edges and six faces once each, i.e. 10 times in total. After this test, examine its appearance and functions.
Soldering heat resistance test	After the lead pins of the unit are soaked in solder bath at $260 \pm 5^\circ\text{C}$ for 10 seconds. After this test, examine its appearance and functions.
Adhesion test	The device is subjected to be soldered on test PCB. Then apply 0.5 Kg (5N) of force for $5 \pm 1$ second in the direction of parallel to the substrate (the soldering should be done by reflow and be conducted with care so that the soldering is uniform and free of defect by stress such as heat shock).

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## Packaging

Each carton holds pieces of antennas and is of dimension 330 x 280 x 254 mm.

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