GNSS + GPS L5 Chip Ant

ACR1004GC

Request Samples | Check Inventory

10 x 4 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = 1

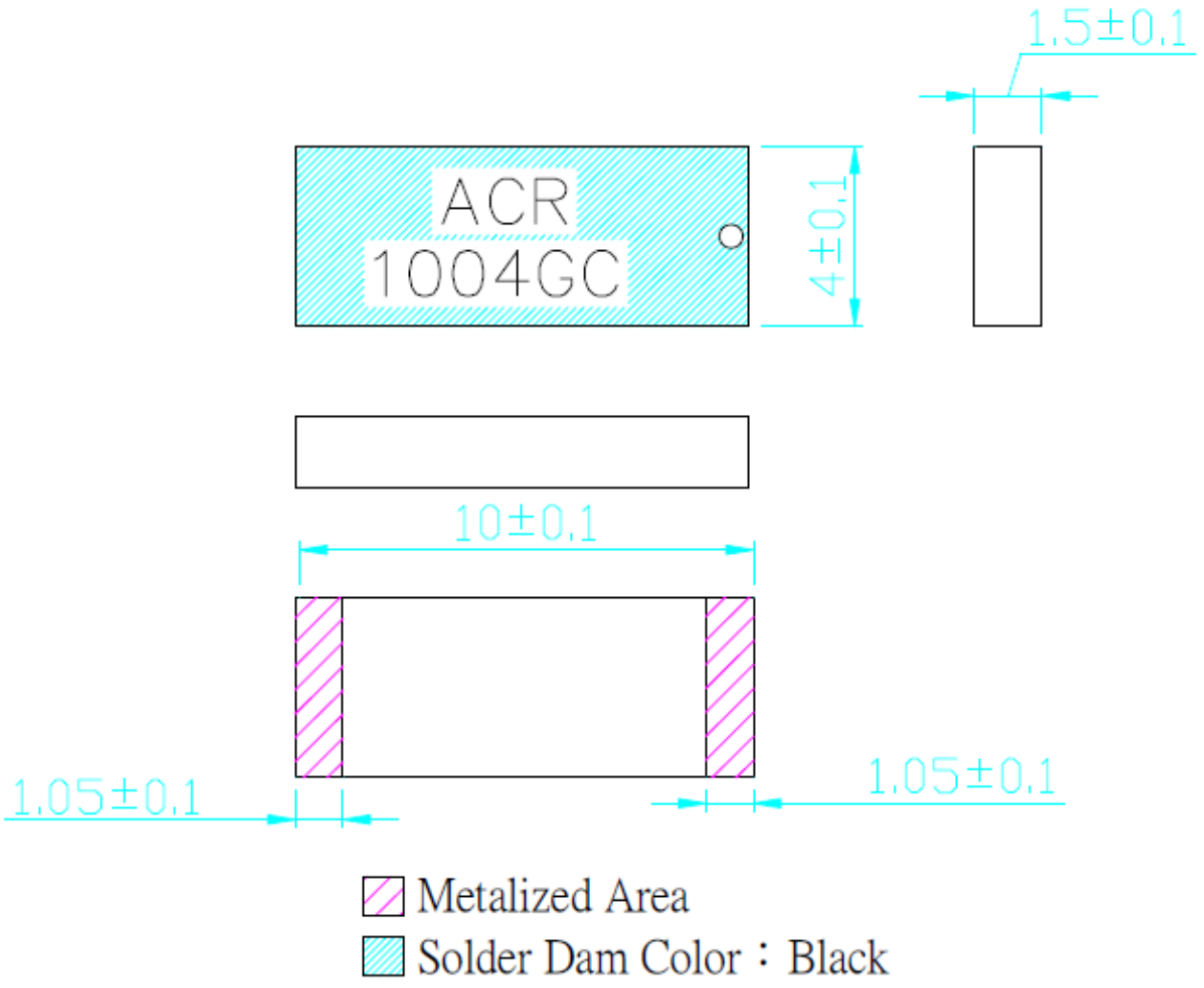
Features

- Compact & Low-Profile Loop Antenna
- Centimeter Level Accuracy
- Multiband – Upper band GNSS + GPS L5
- L1 Peak Gain of 2.85 dBi
- L5 Peak Gain of 1.91 dBi
- Linear Polarization
- High Efficiency up to 80%

Applications

- IoT
- M2M
- Automotive
- Tracking
- Fleet Management
- Smart Agriculture
- Smart City

Product Dimensions



Unit : mm

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Electrical Specification

Parameter	Specification			Unit
	Min	Typ	Max	
Operating Frequency	1166		1186	MHz
	1561		1610	
Impedance		50		Ω
Return Loss			-12	dB
Peak Gain (1166 to 1186 MHz)			1.9	dBi
Peak Gain (1561 to 1610 MHz)			2.8	
Polarization		Linear		
Azimuth Pattern		Omni-directional		

Mechanical Specification

Parameter	Specification
Antenna Dimension	10 x 4 x 1.5 mm
Mounting Type	Surface Mount

Environmental Specification

Parameter	Specification
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Relative Humidity	Up to 95%
Pb Free	Yes
RoHS/RoHS II Compliant	Yes

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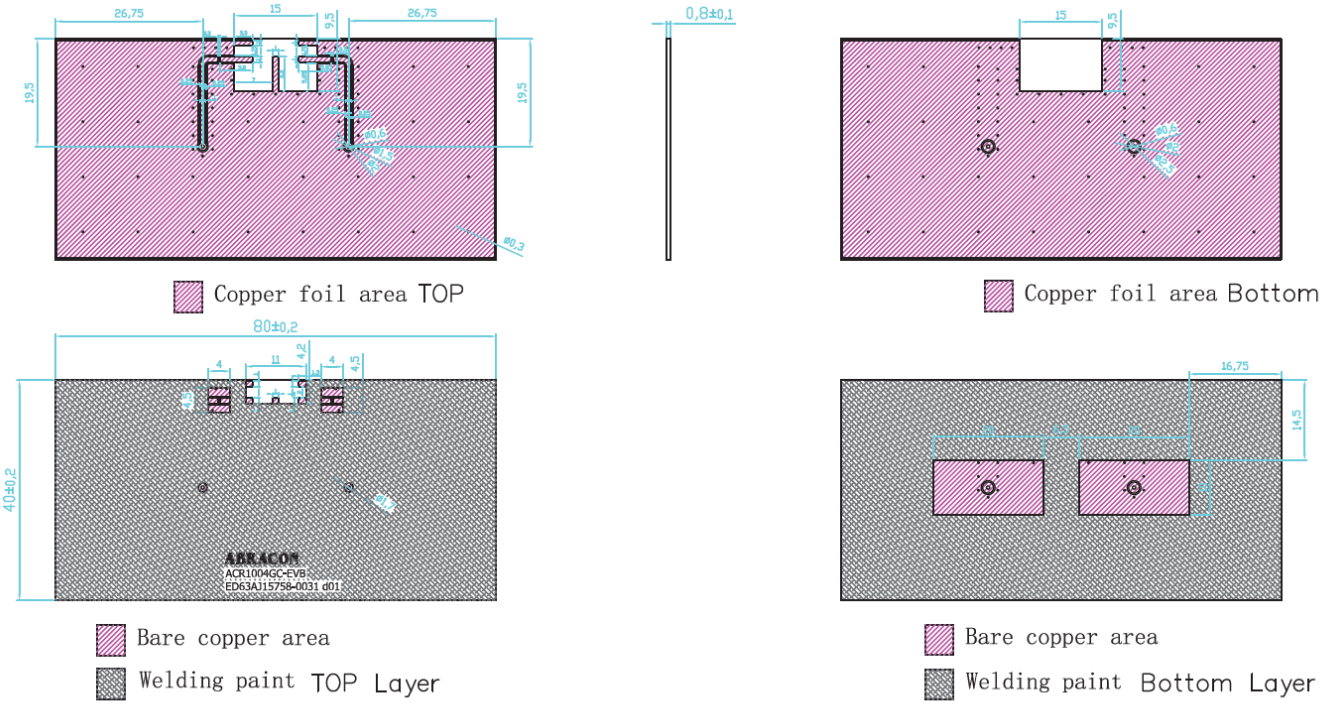
Evaluation Board Dimensions



Unit : mm

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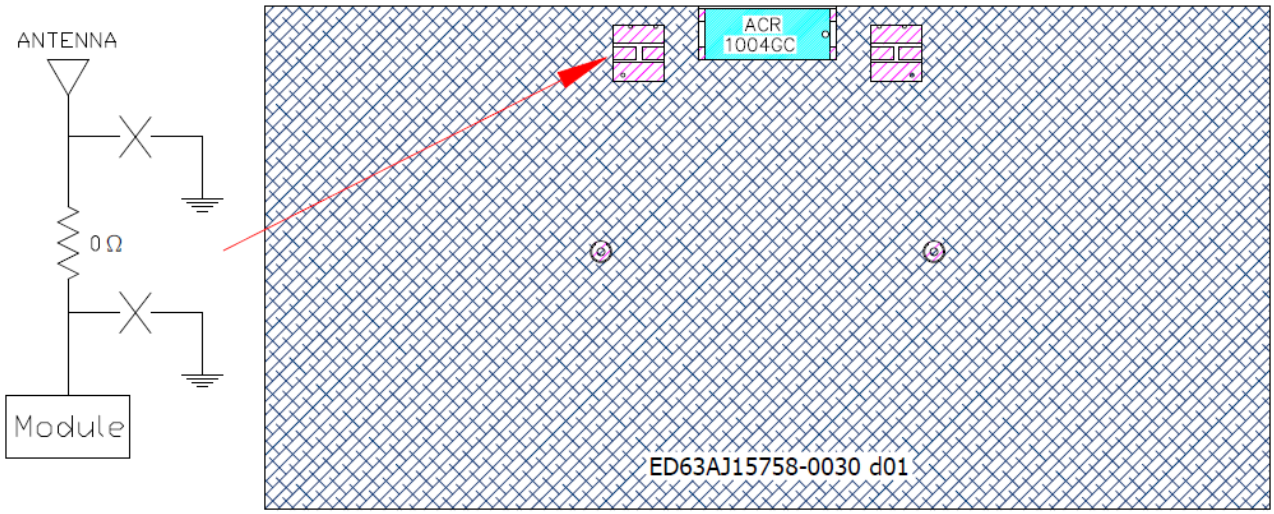
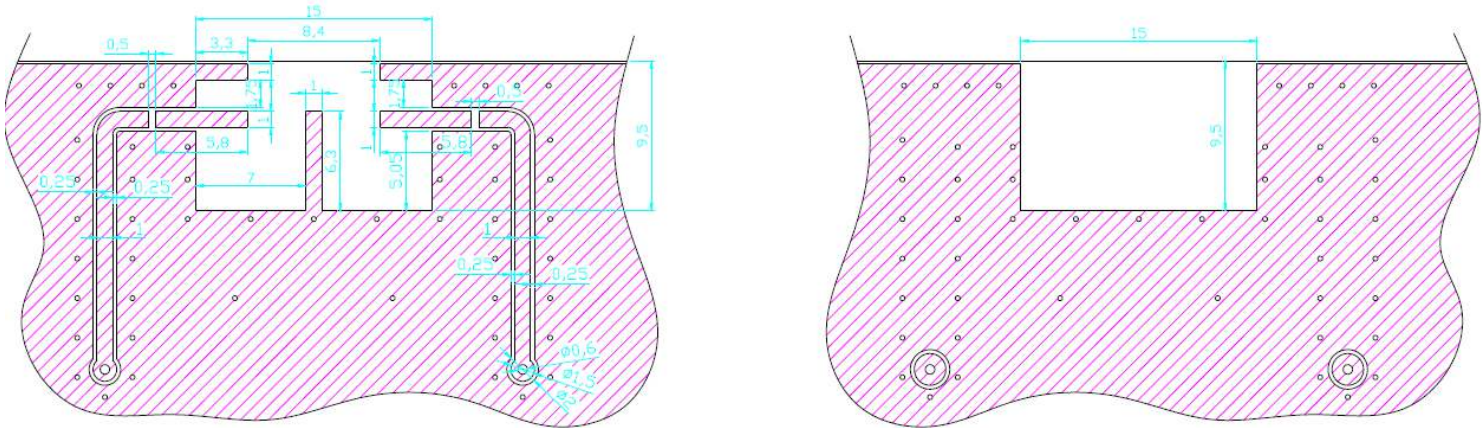
Evaluation Board with Matching Circuit



Recommended Layout



Unit

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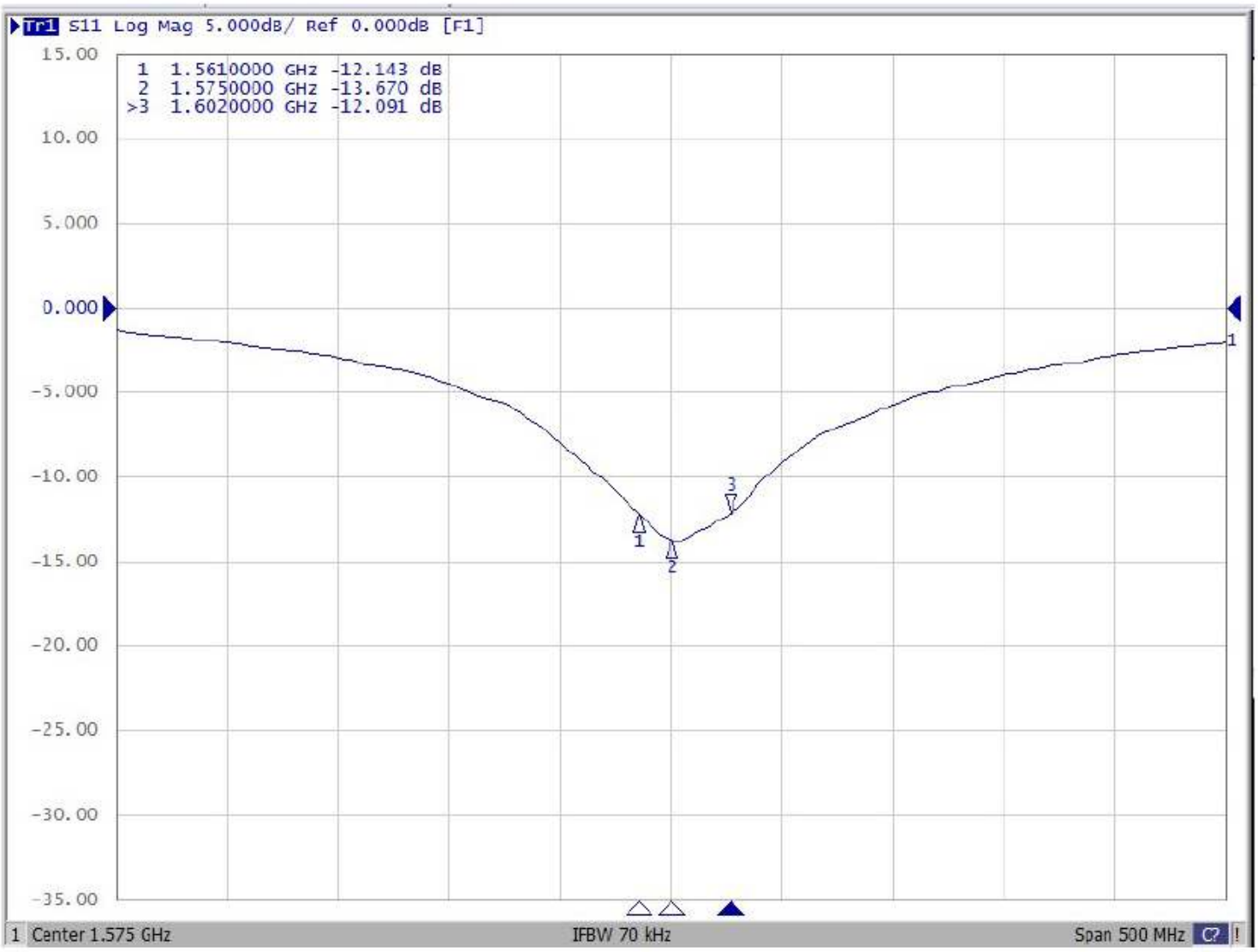
MSL Level = 1

Return Loss

Upper band GNSS + GPS L1:



Frequency (MHz)	S11 (dB)
1561	-12.14
1575	-13.67
1602	-12.09

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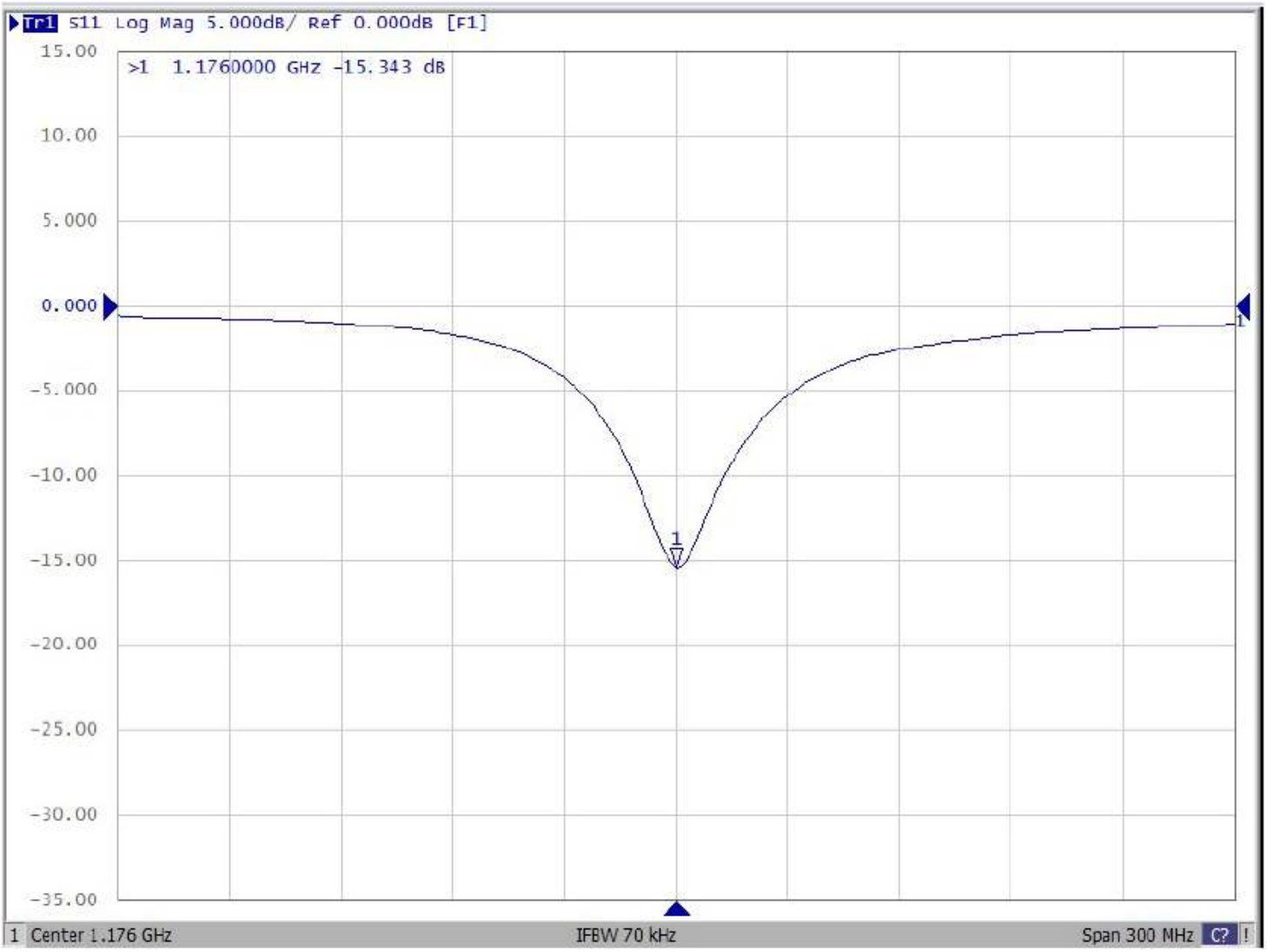
GPS L5:



Frequency (MHz)	S11 (dB)
1176	-15.34

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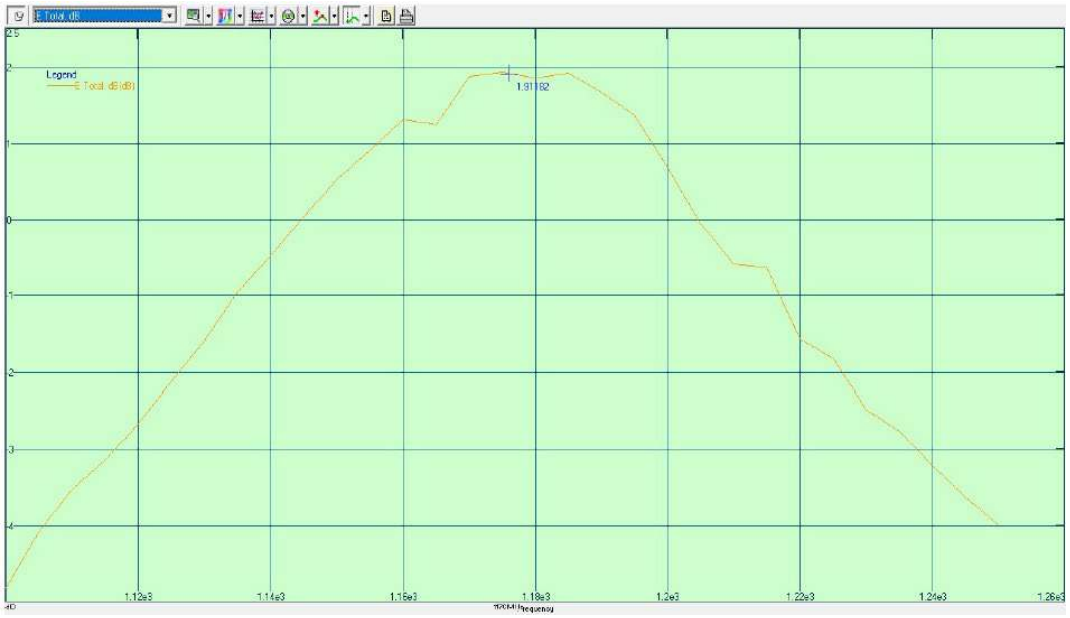
MSL Level = 1

Peak Gain

Upper band GNSS + GPS L1:

GPS L5:



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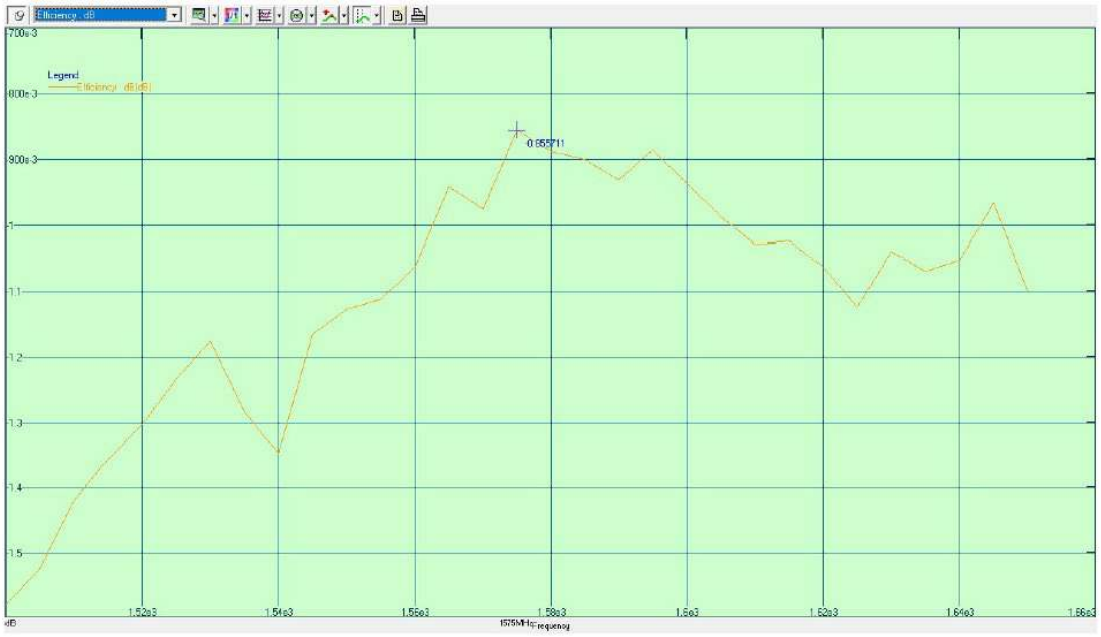
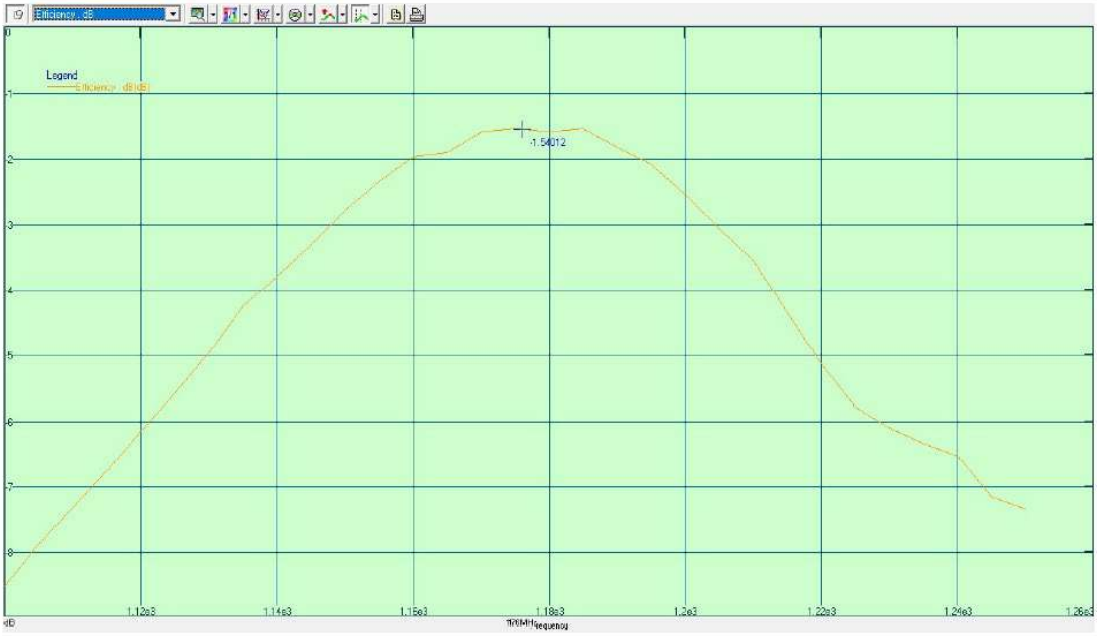
Average Gain

Upper band GNSS + GPS L1:



GPS L5:



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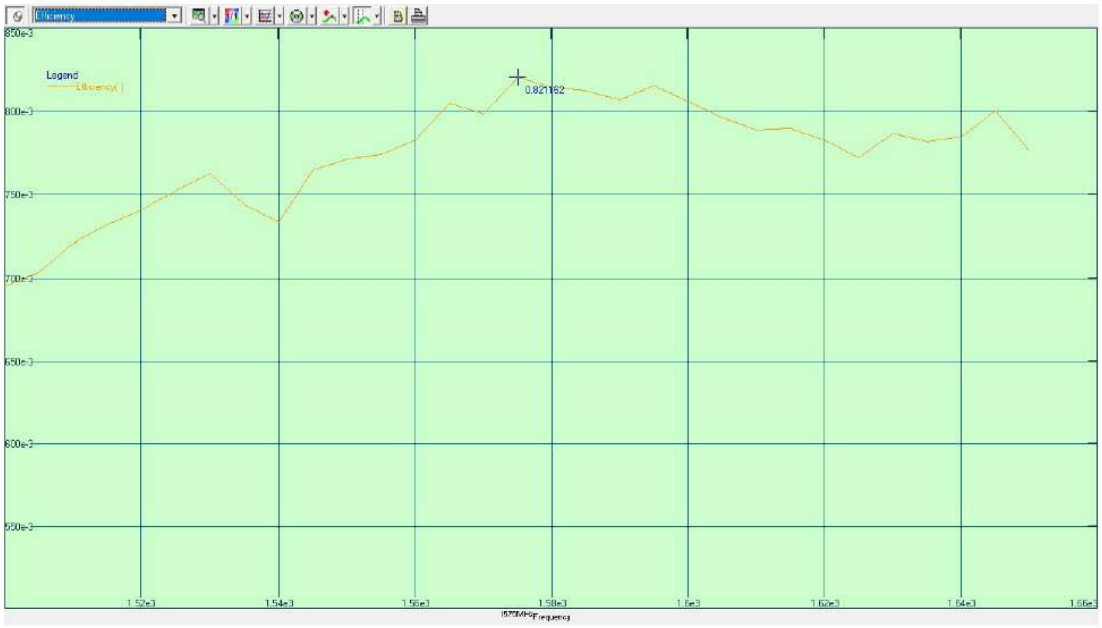
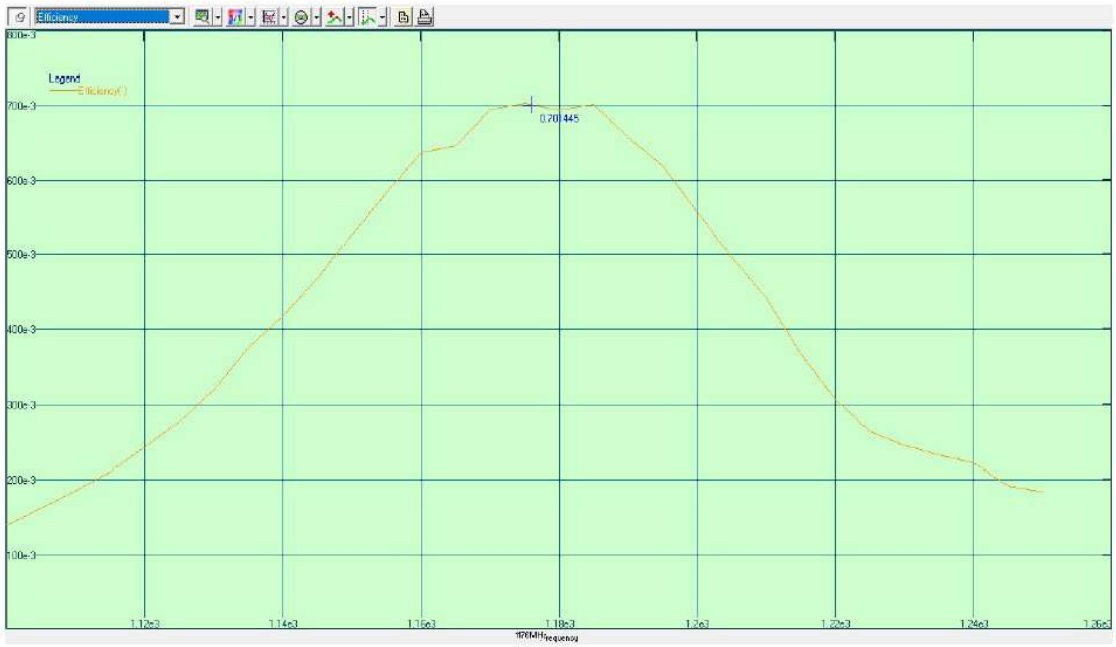
MSL Level = 1

Efficiency

Upper band GNSS + GPS L1:



GPS L5:



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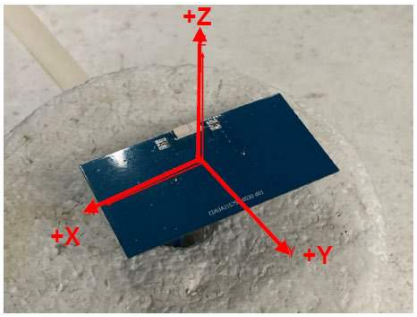
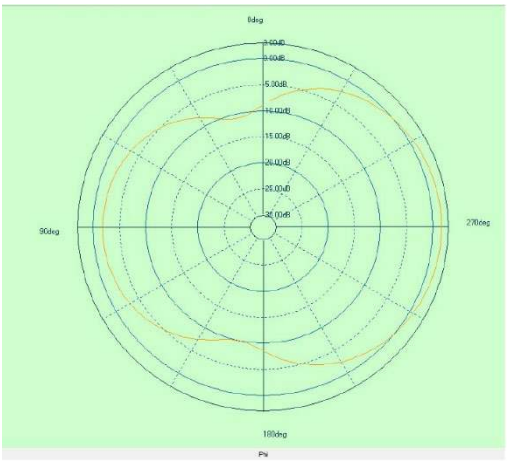
MSL Level = 1

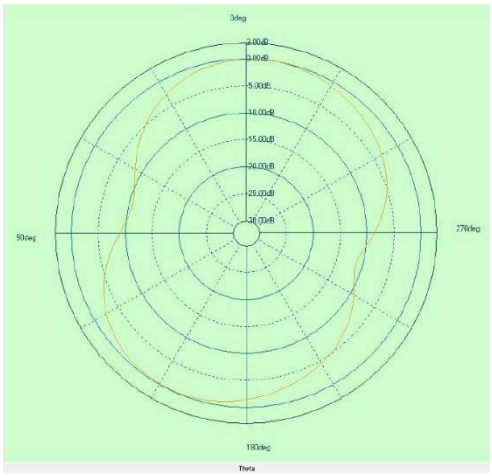
Radiation Characteristics- 2D



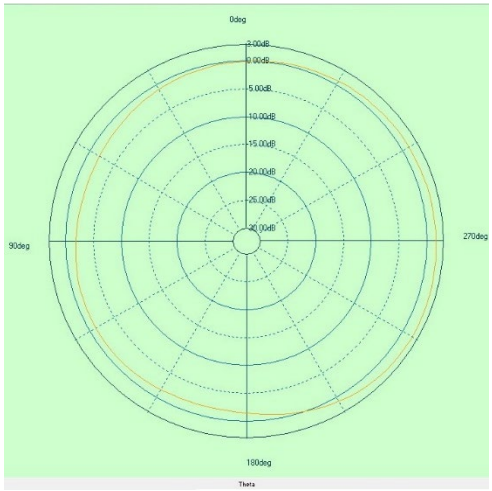
1176 MHz



XY-Plane



XZ-Plane



YZ-Plane

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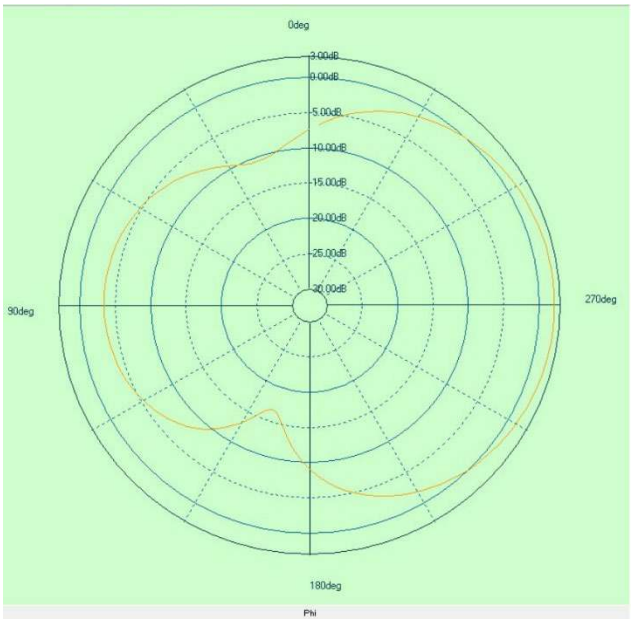
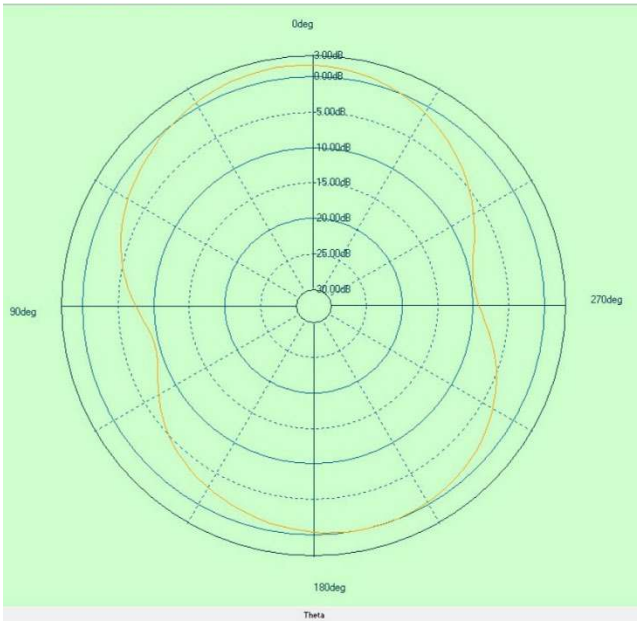
MSL Level = 1

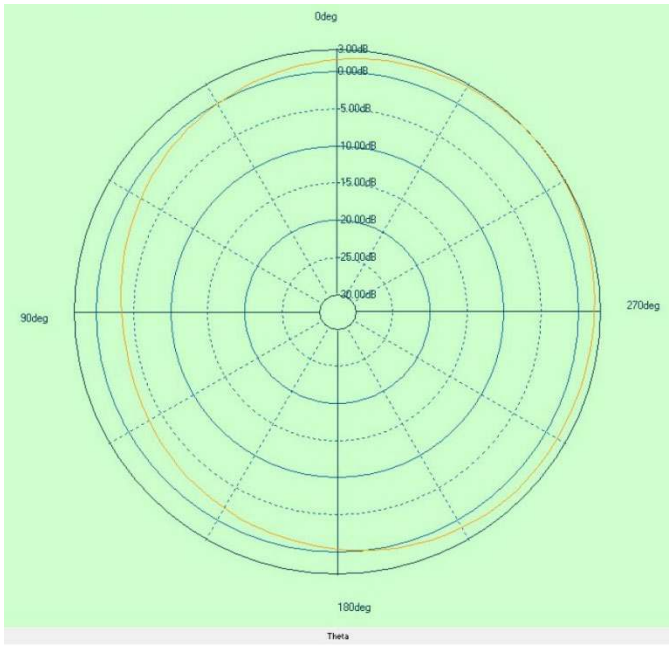
1561 MHz



XY-Plane



XZ-Plane



YZ-Plane

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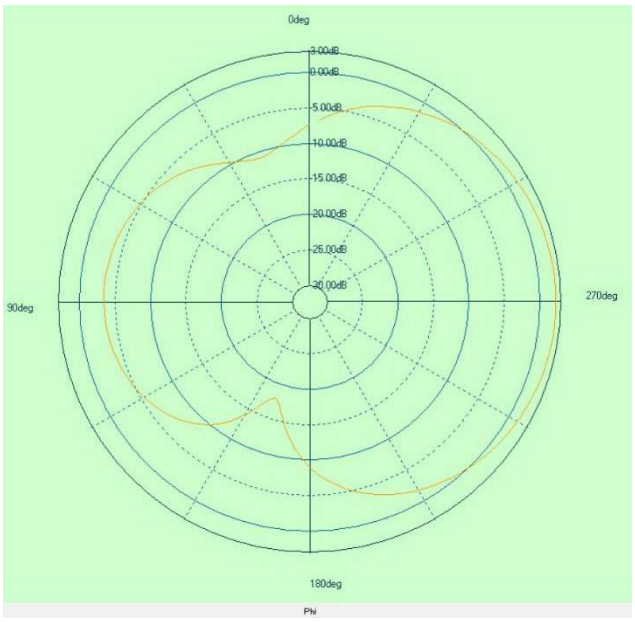
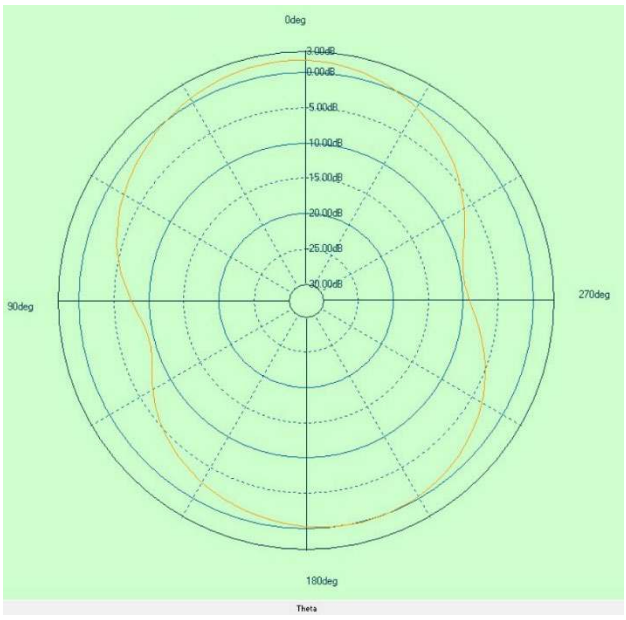
MSL Level = 1

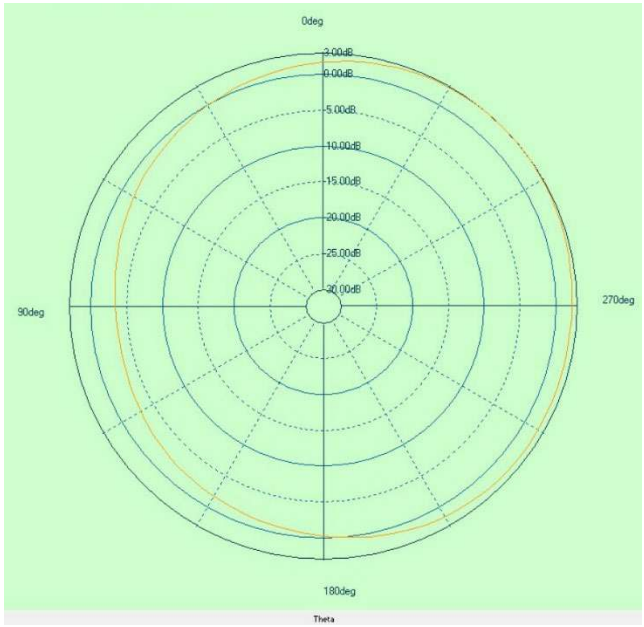
1575 MHz



XY-Plane



XZ-Plane



YZ-Plane

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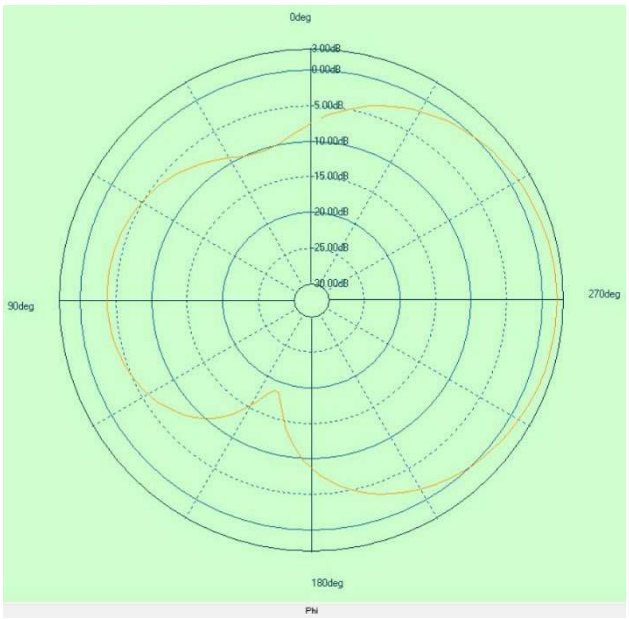
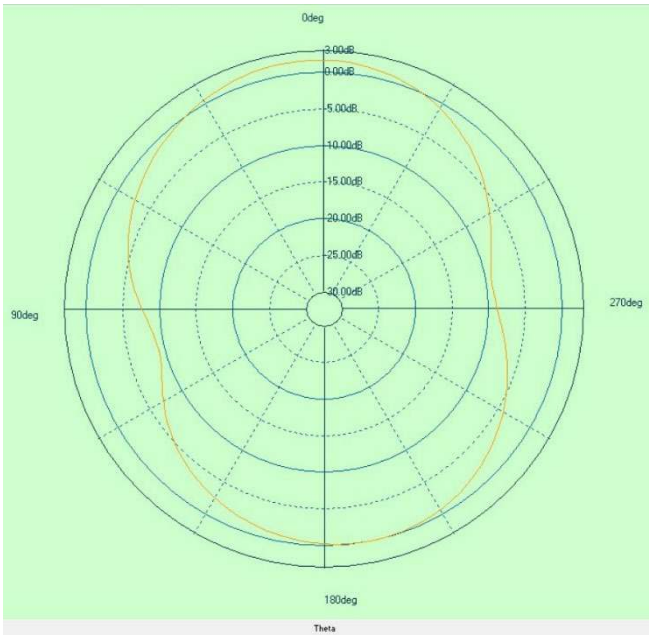
MSL Level = 1

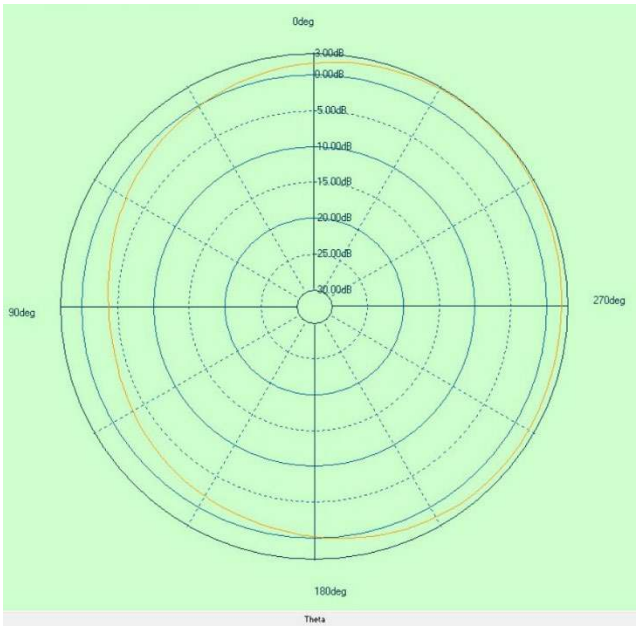
1602 MHz



XY-Plane



XZ-Plane



YZ-Plane

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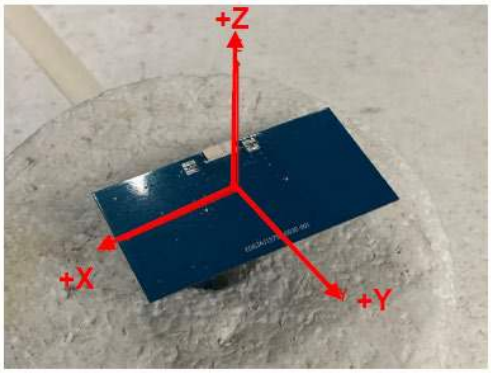
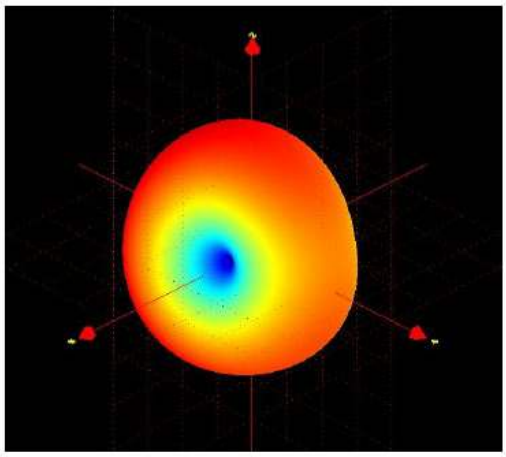
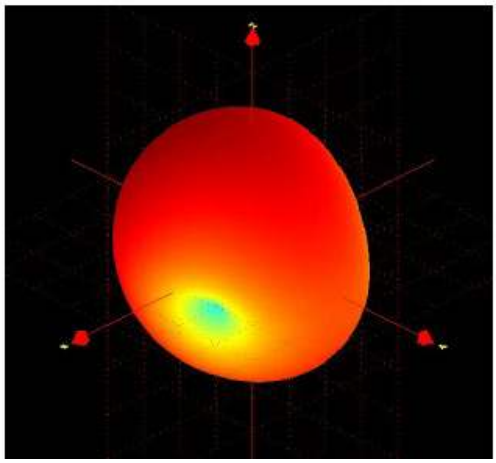
Radiation Characteristics- 3D



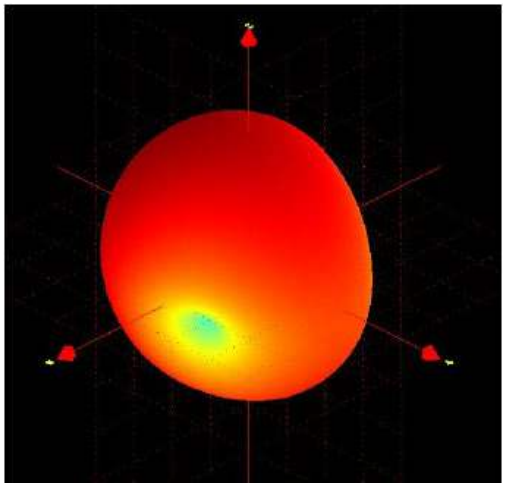
1176 MHz



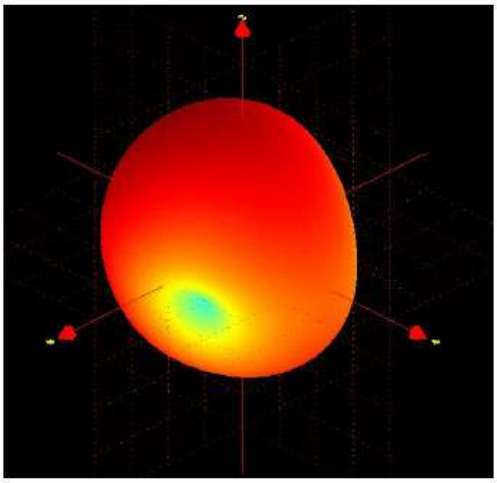
1561 MHz



1575 MHz



1602 MHz



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MSL Level = 1

Reliability Test Report

Test Condition	Test Exposure and Duration
Low Temperature test	Expose the specimen to -40°C for 16 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 +85°C for 16 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 +85°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 30 minutes, then +85°C for 30 minutes) for 5 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 comer, 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±5 °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 (5 N) of force for 5±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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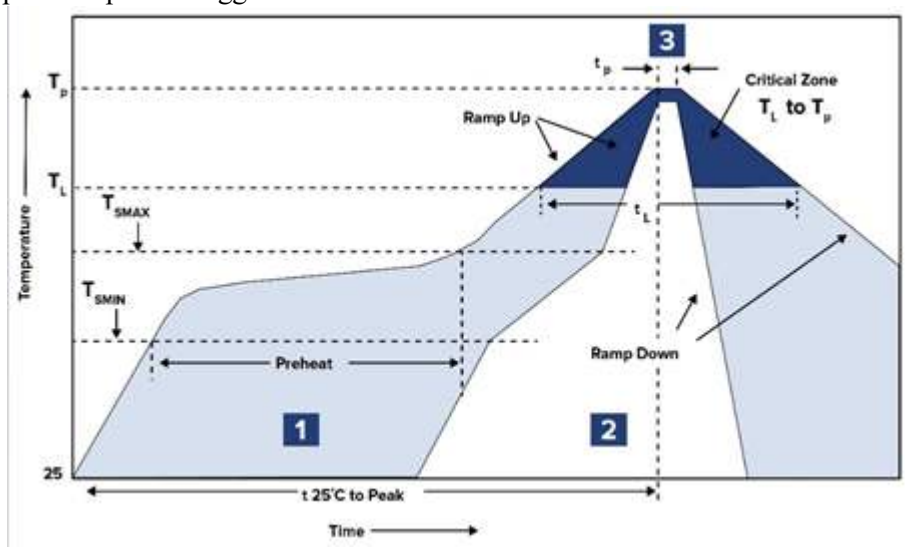
Reflow Profile

The chip antenna can be assembled using the following Pb-free assembly. According to the standard IPC/JEDEC J-STD-020C, the temperature profile suggested is as follows :



Zone	Description	Temperature	Times
1	Preheat	T_{SMIN} ~ T_{SMAX} 150°C ~ 200°C	60 ~ 120 sec
2	Ramp-Up	T_{SMAX} ~ T_P : 3 °C/s	
3	Reflow	T_L 217°C	30 ~ 100 sec
	Peak heat	T_P 260°C	5 to 10 sec
	Ramp-Down	6 °C/s	
Time from 25°C to Peak Temperature		8 minutes (max)	
Composition of solder paste		96.5Sn/3Ag/0.5Cu	
Solder Paste Model		SHENMAO PF606-P26	

Soldering with Iron

- Soldering Iron Temperature : 270±10 ℃
- Apply pre-heating at 120 ℃ for 2~3 min.
- Complete soldering for each terminal within 3 s .
    - If the soldering iron temperature exceeds 270±10 ℃ or 3 seconds, it can damage the component.

Note: All temperature measurement points are on top surface of the component. If the temperature goes over the recommend, it will cause surface peeling or damage to the com

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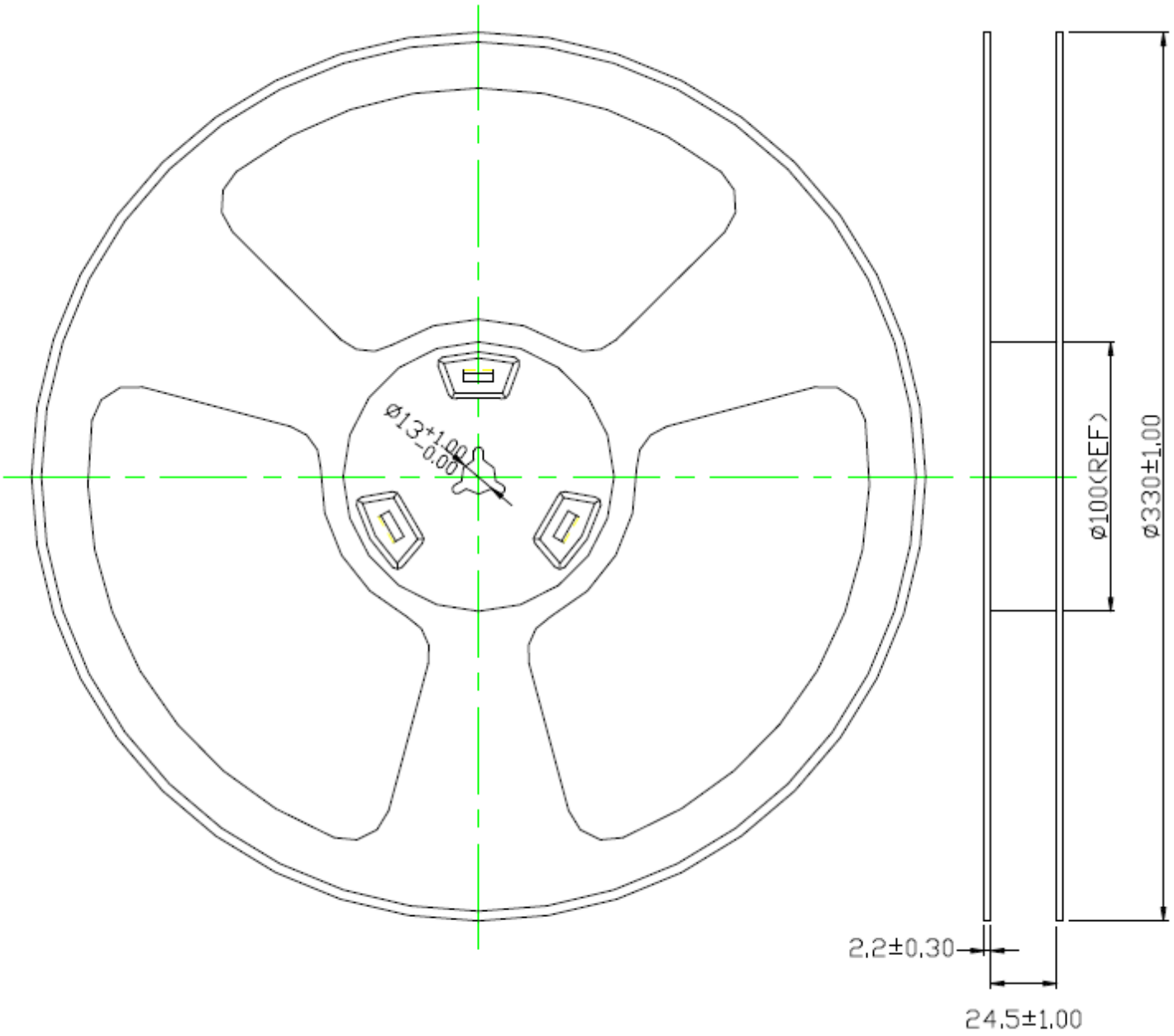
MSL Level = 1

Packaging

Packaging type : Tape & Reel
Number of pieces per tape: 2000 pcs



Unit: mm

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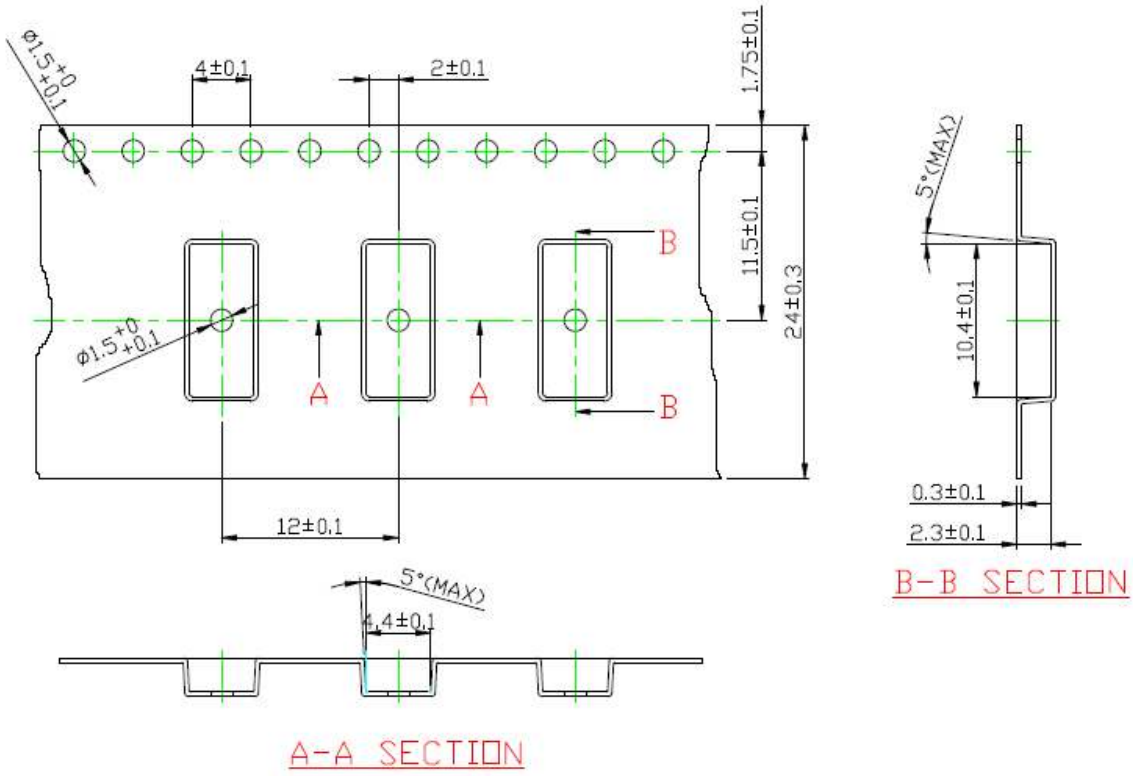
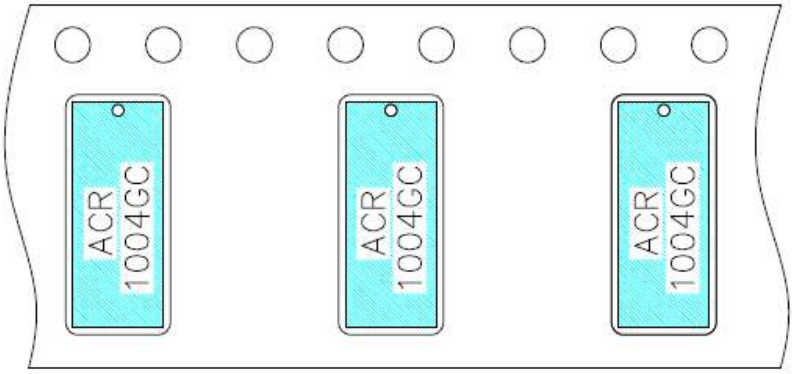
Tape Dimensions:





Unit: mm

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