GPS L1+L2+L5 Stacked Patch Antenna

APARM2508S-SGL2L5

25.0 x 25.0 x 8.0 mm
RoHS/RoHS II Compliant
MSL = NA

Features

- Dual stacked patch for GPS L1 , L2 and L5
- Compact in dimnesion, 25x25x8m
- Low VSWR of 1.8
- RHCP polarization
- Gain of 3.8 dBi (L1), -0.3 dBi (L2), -0.5 dBi (L5)
- Wide Operating Temperature, -40˚C to 105˚C

Applications

- GPS L1, L2 and L5 applications
- IoT
- M2M
- Remote technology monitoring
- Geofencing
- Navigation
- Surveying and mapping systems
- Logistics
- Precision transportation
- UAVs and Robotics
- Marine
- Autonomous Vehicles
- Agriculture

Electrical Specifications

Parameters	Description	Notes
Operating Frequency	L1: 1575.42 ± 1.023 MHz L2: 1227.60 ± 10 MHz L5: 1176.45 ± 12 MHz	
VSWR	1.8	@ Center Frequency
Gain at Zenith	L1: 3.8 dBi typ. L2: -0.3 dBi typ. L5: -0.5 dBi typ.	
Polarization	RHCP	
Impedance	50 Ω	
Frequency Temperature Coefficient	-40˚C to 105˚C	0 ± 20ppm/˚C
Operating Temperature	-40˚C to 105˚C	
Ground Plane Size	70 x 70 mm	

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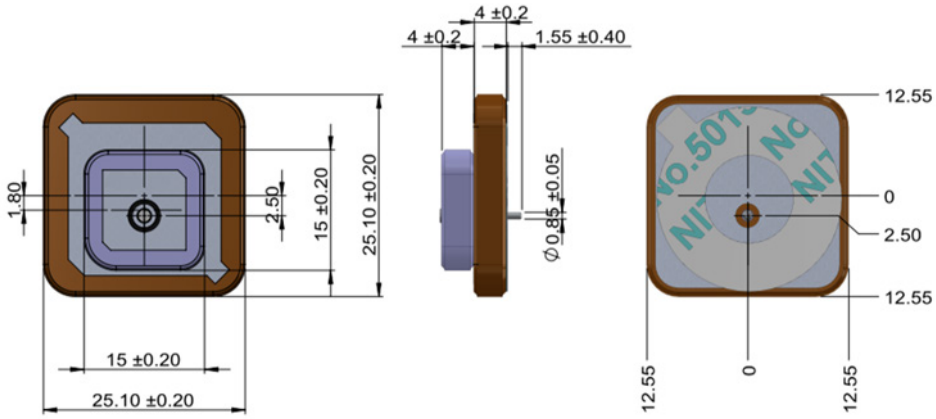
MSL = NA

Product Dimensions



Unit : mm

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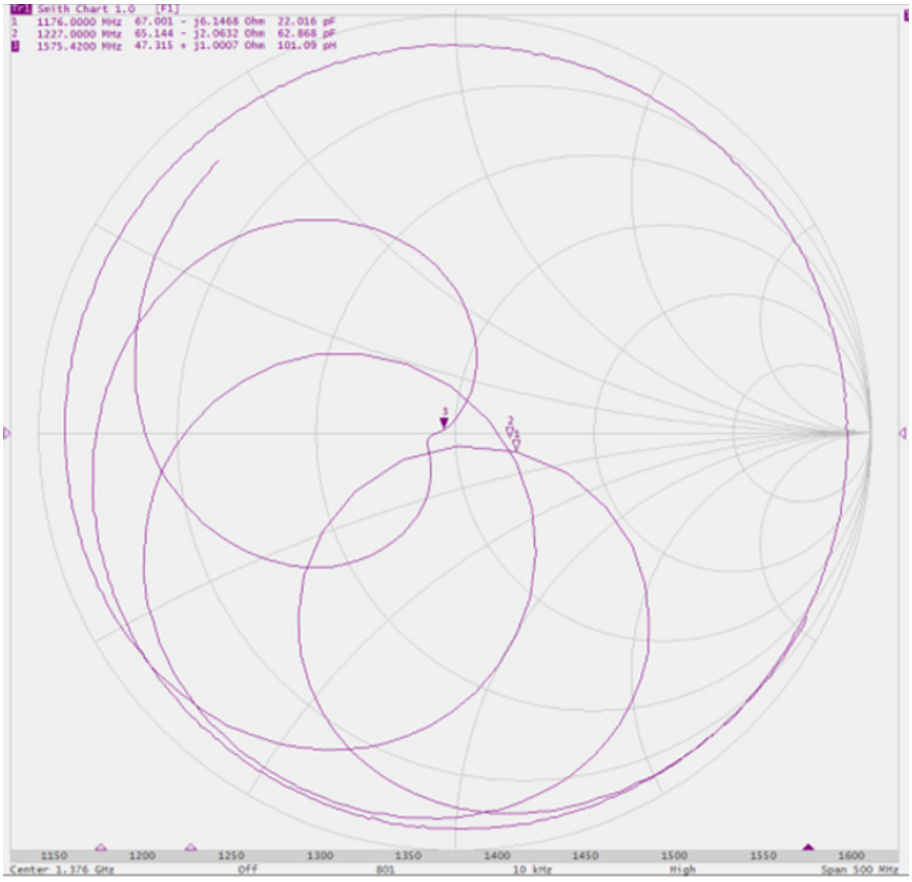
Impedance Characteristics



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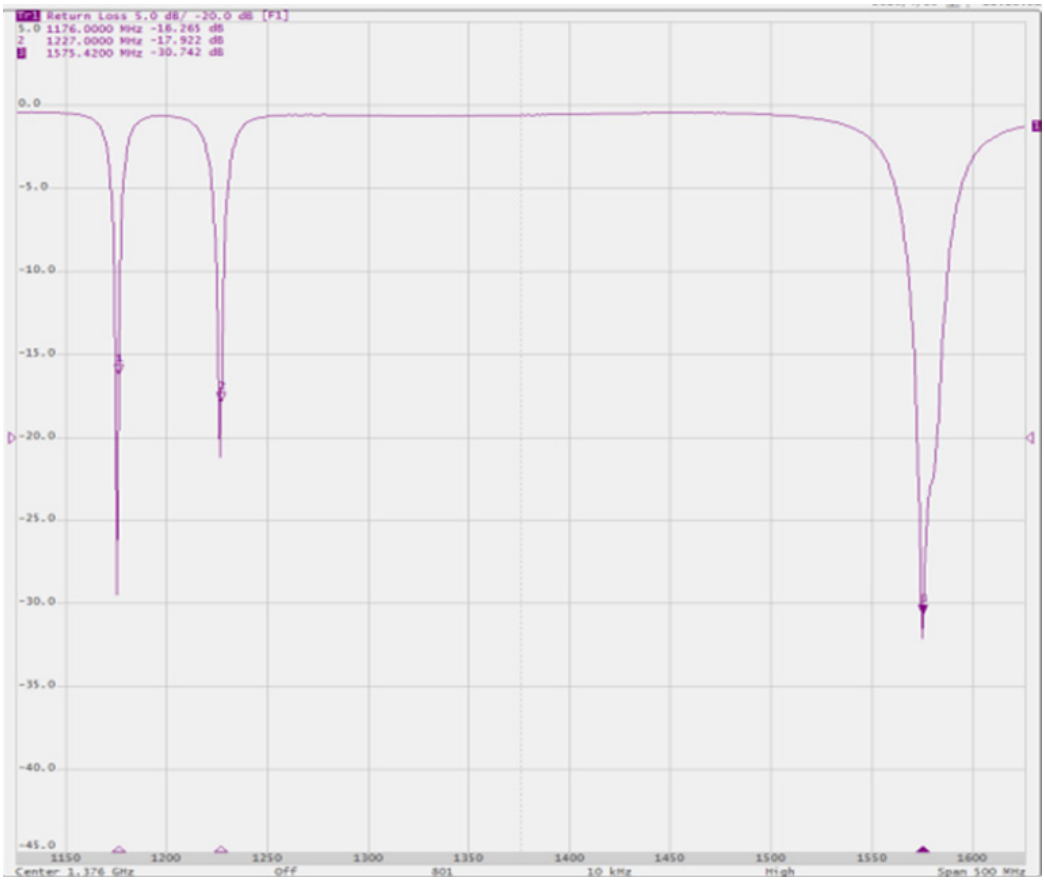
MSL = NA

Return Loss: S11



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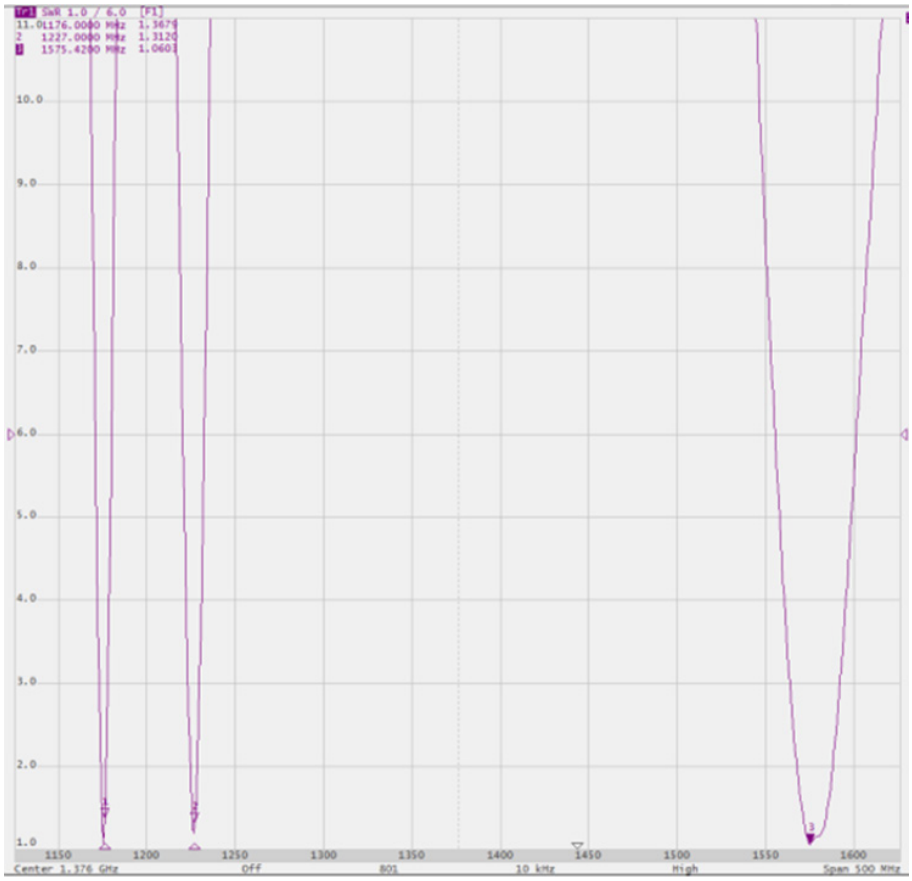
MSL = NA

VSWR



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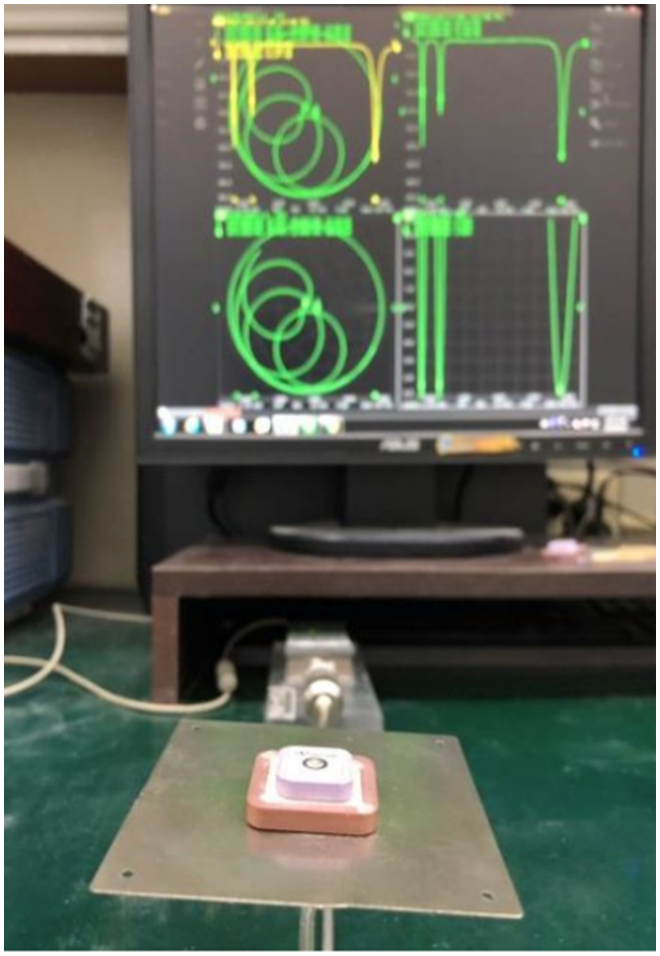
Test Set Up Image



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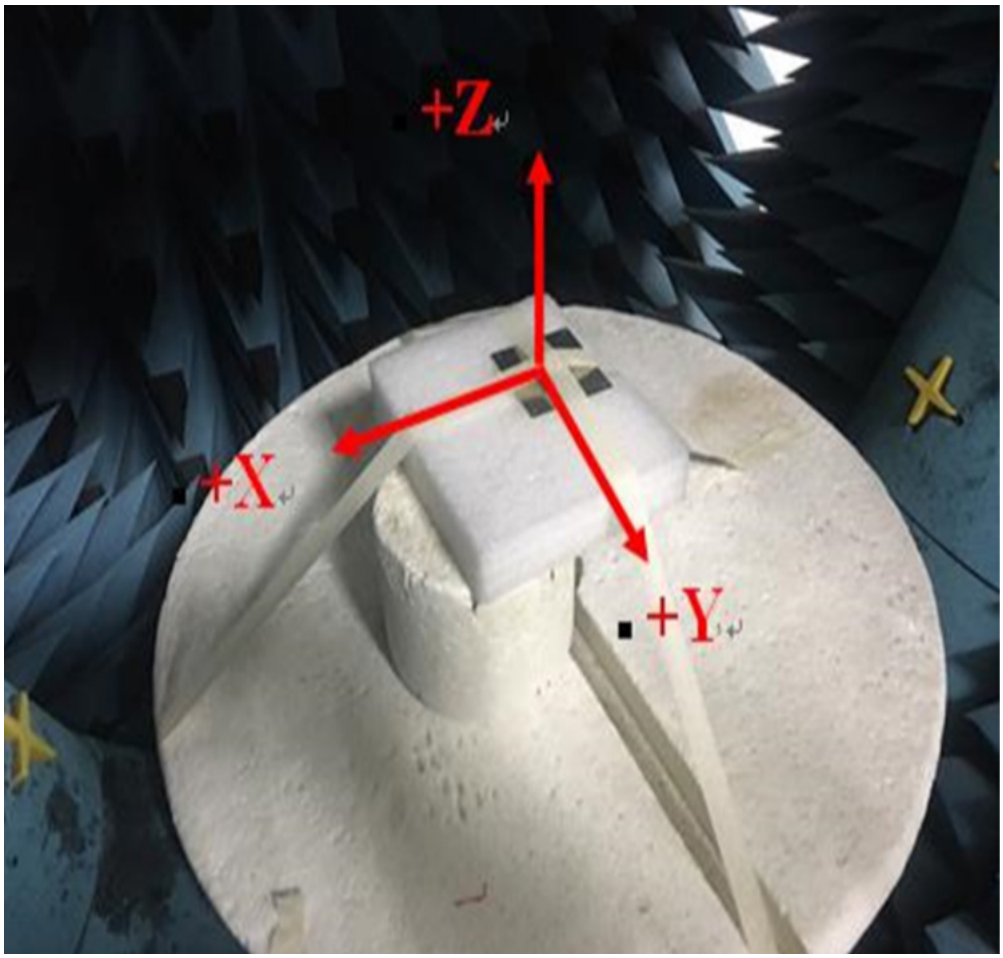
Radiation Pattern Measurement



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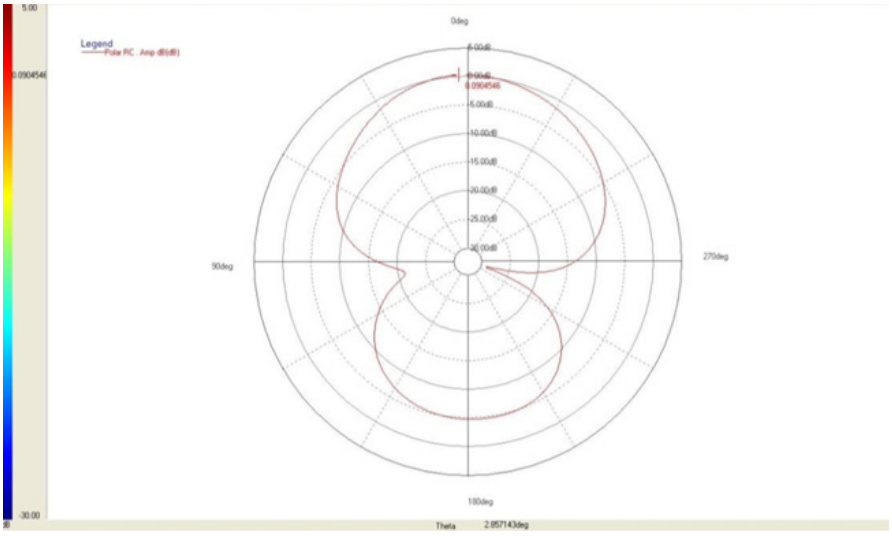
MSL = NA

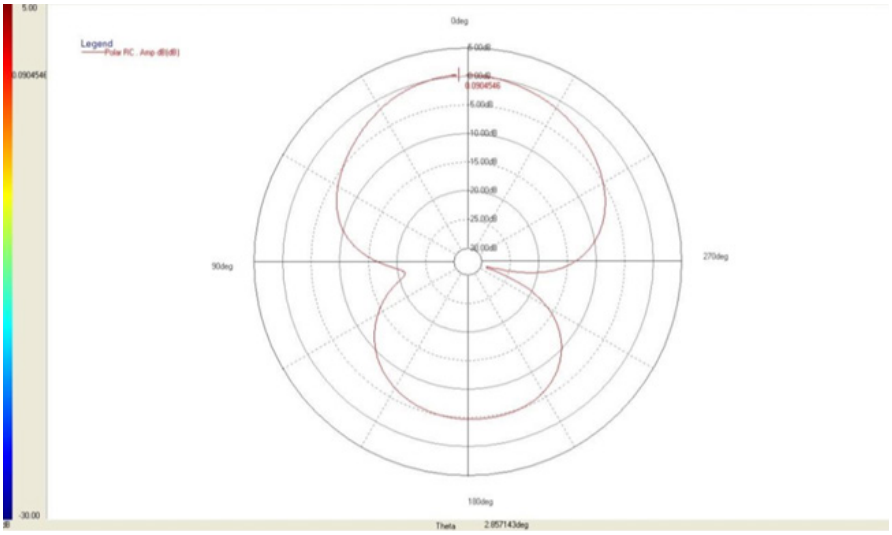
Radiation Pattern

Gain : 1176 MHz

XZ-Plane 1176 MHz



YZ-Plane 1176 MHz



1176 MHz	Peak Gain
XZ-Plane	0.09
YZ-Plane	0.07

(Unit : dBic)

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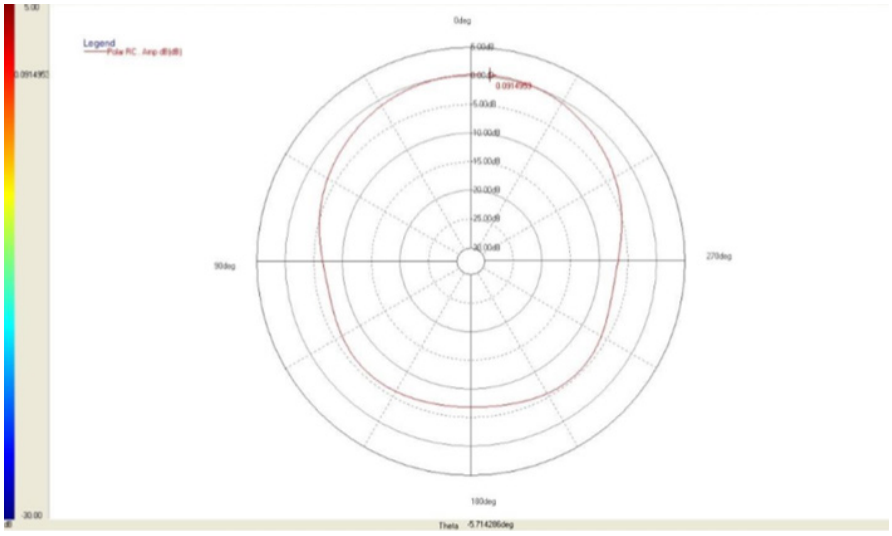
MSL = NA

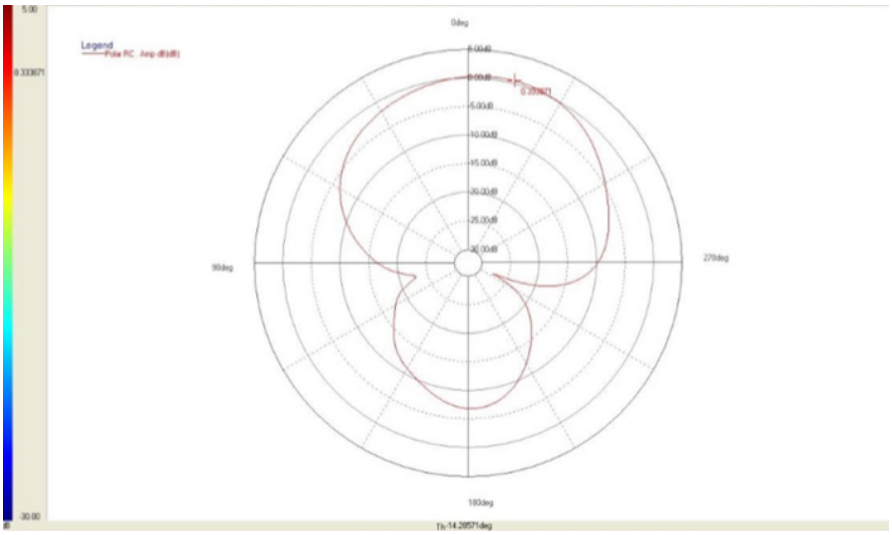
Radiation Pattern

Gain : 1227 MHz

XZ-Plane 1227 MHz



YZ-Plane 1227 MHz



1227 MHz	Peak Gain
XZ-Plane	0.09
YZ-Plane	0.33

(Unit : dBic)

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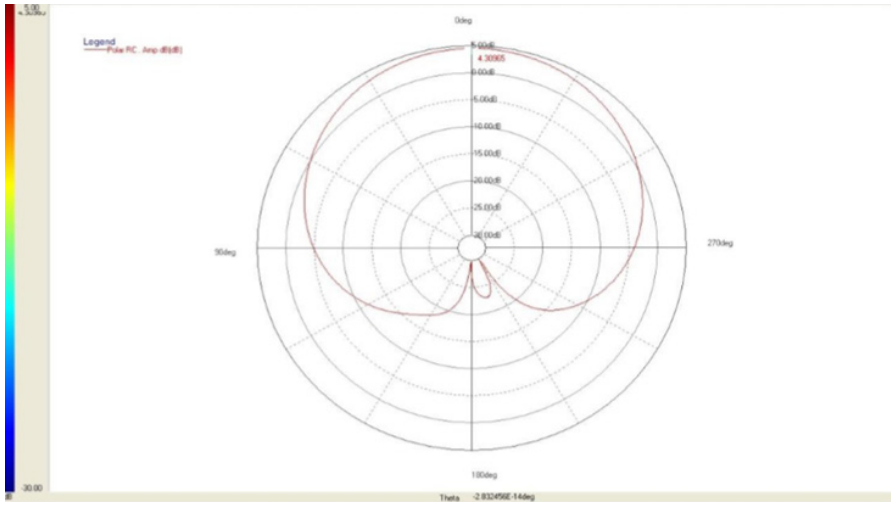
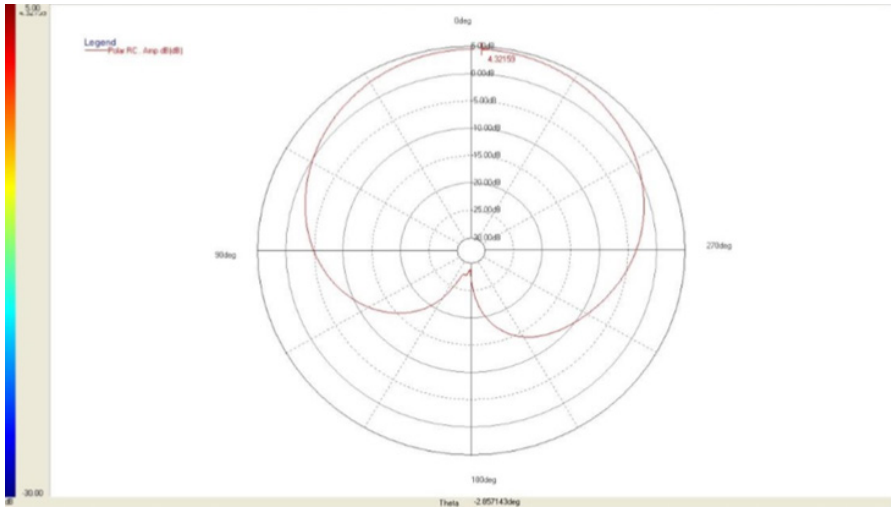
Radiation Pattern

Gain : 1575.42 MHz

XZ-Plane 1575.42 MHz



YZ-Plane 1575.42 MHz



1575.42 MHz	Peak Gain
XZ-Plane	4.30
YZ-Plane	4.32

(Unit : dBic)

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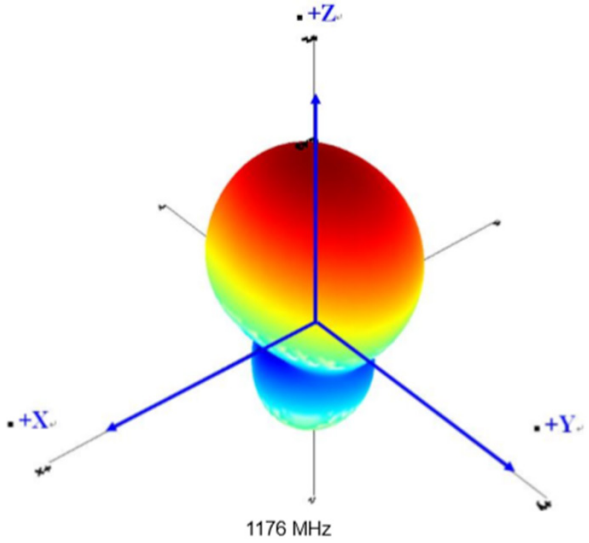
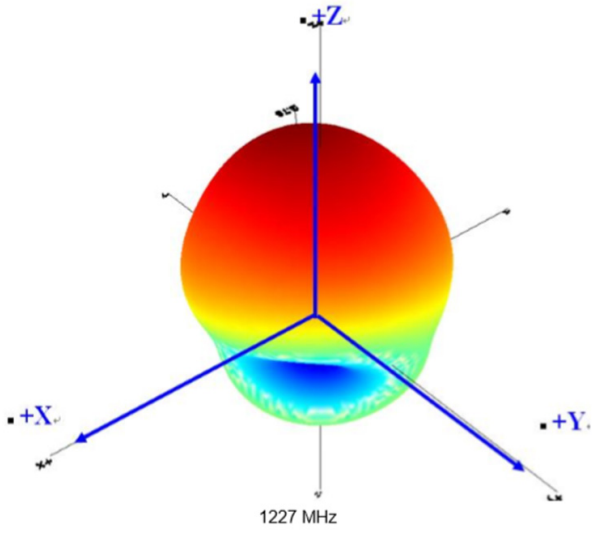
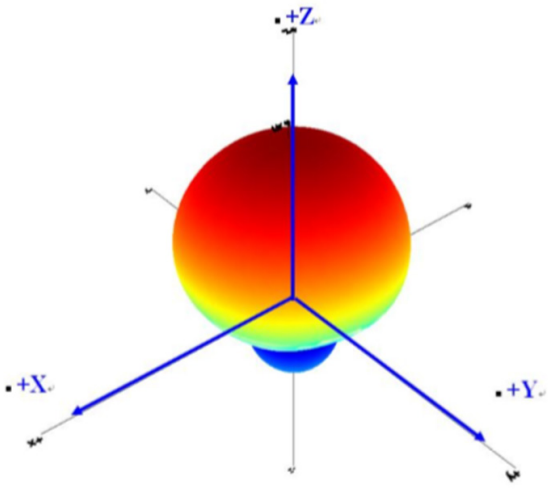
3D Radiation Pattern



1176 MHz



1227 MHz



1575.42 MHz MHz

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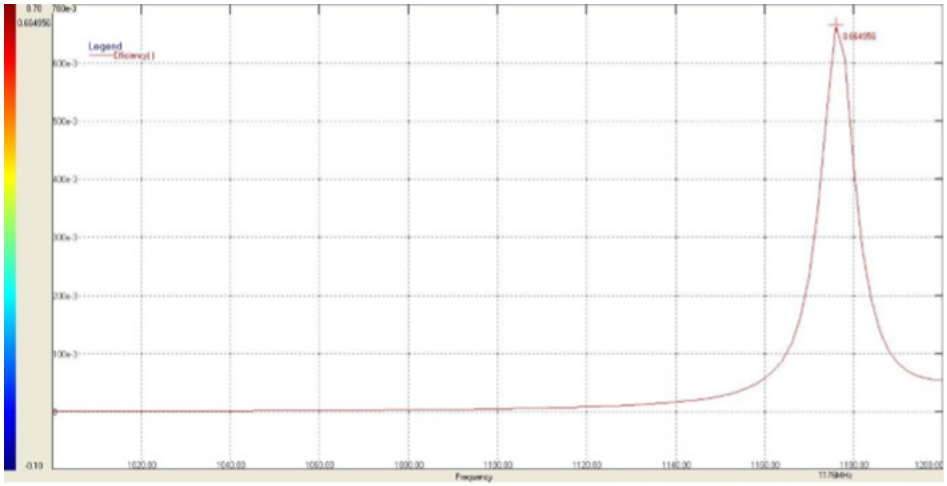
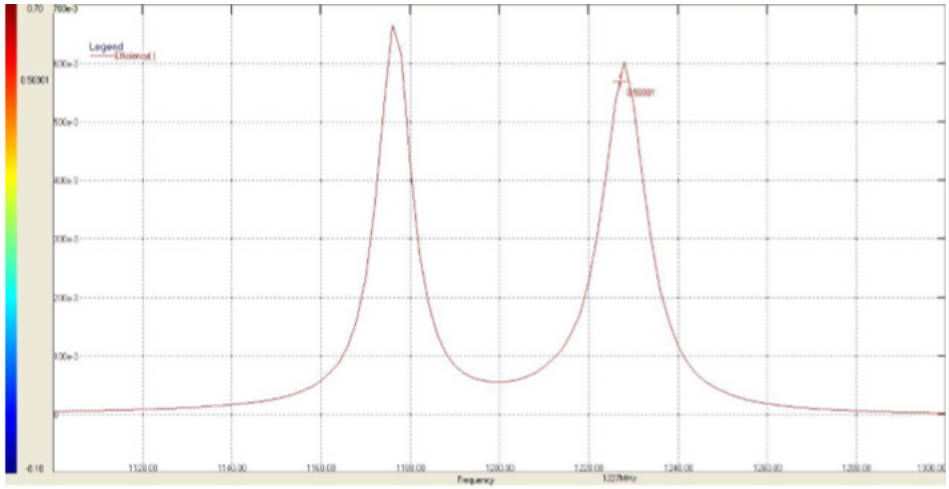
Efficiency and Gain



Efficiency：66.49%@1176MHz



Efficiency：56.9%@1227MHz

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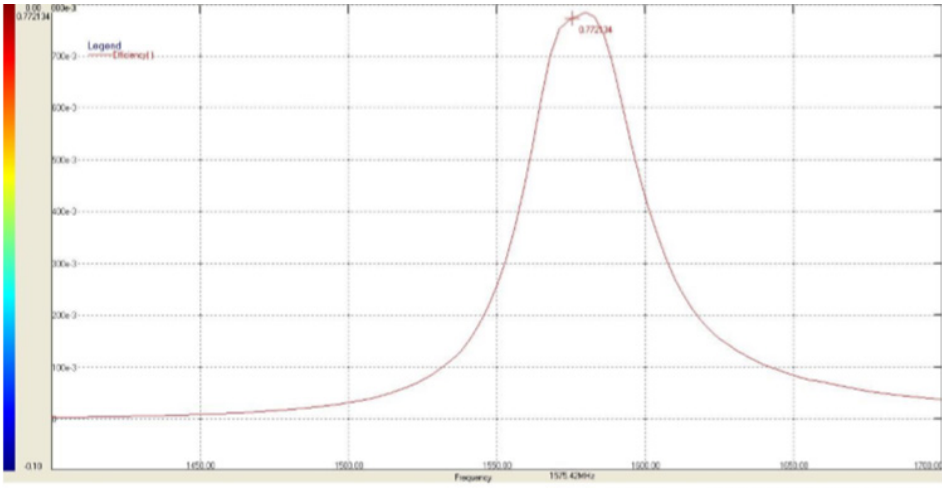
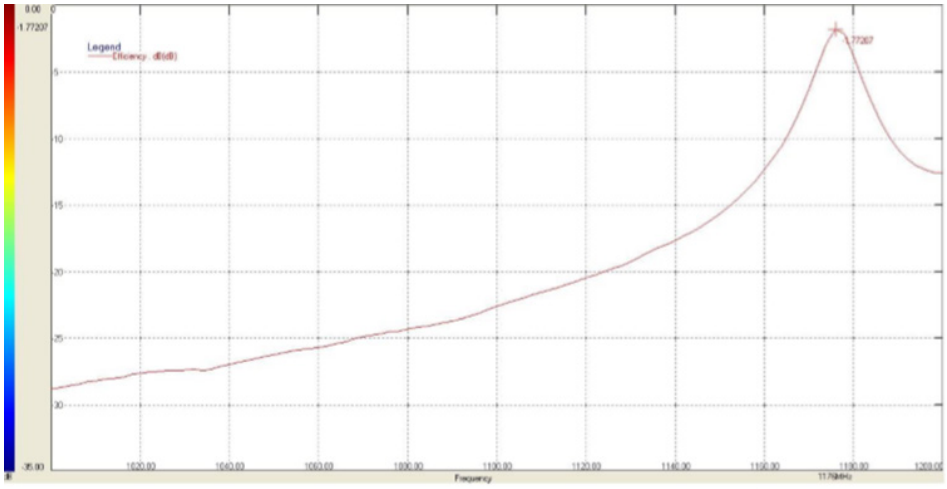


Efficiency 77.21%@1575.42MHz



Average Gain：-1.77 dBi @1176MHz

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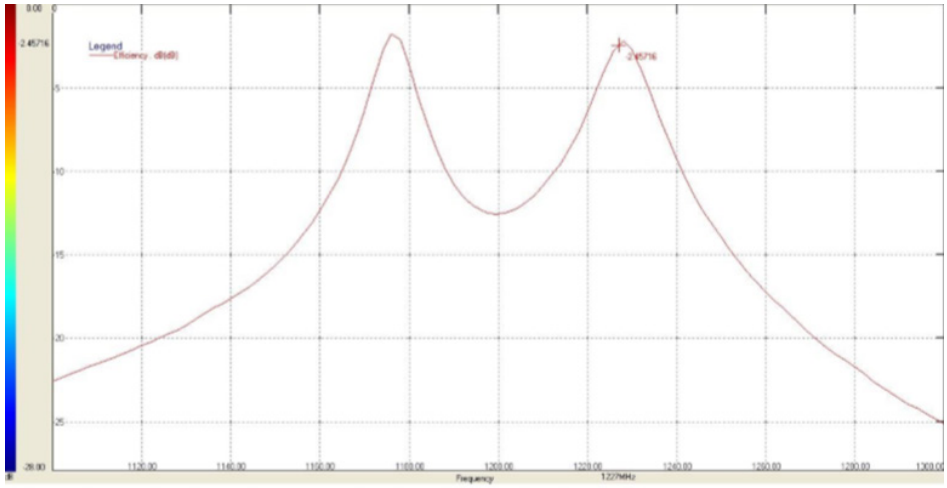
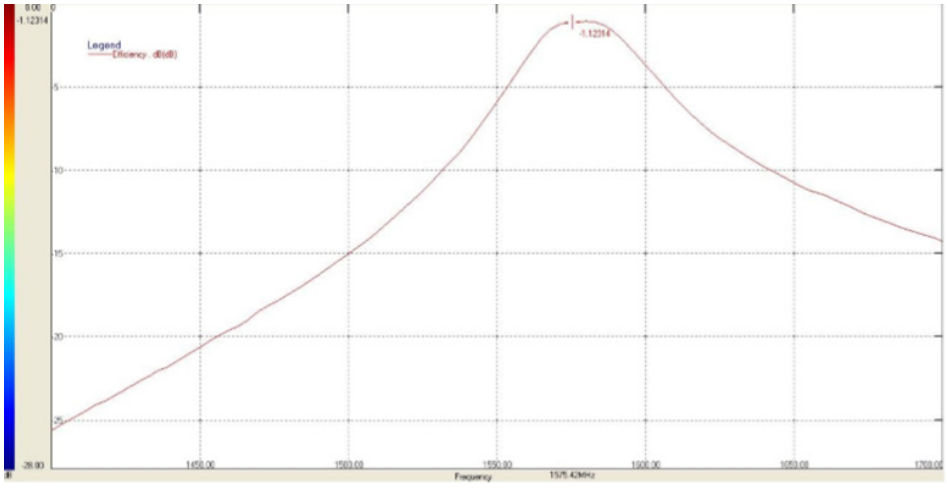
Efficiency and Gain



Average Gain：-2.45 dBi @1227MHz



Average Gain：-1.12 dBi @1575.42MHz

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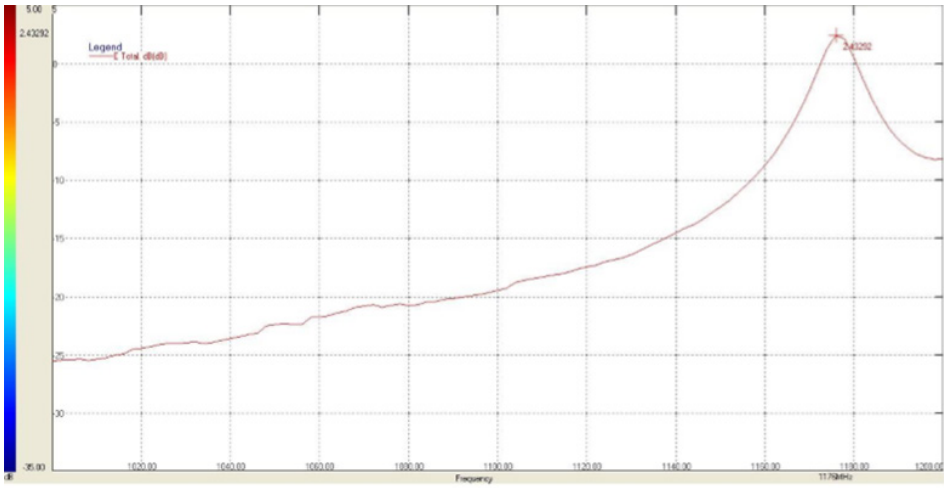
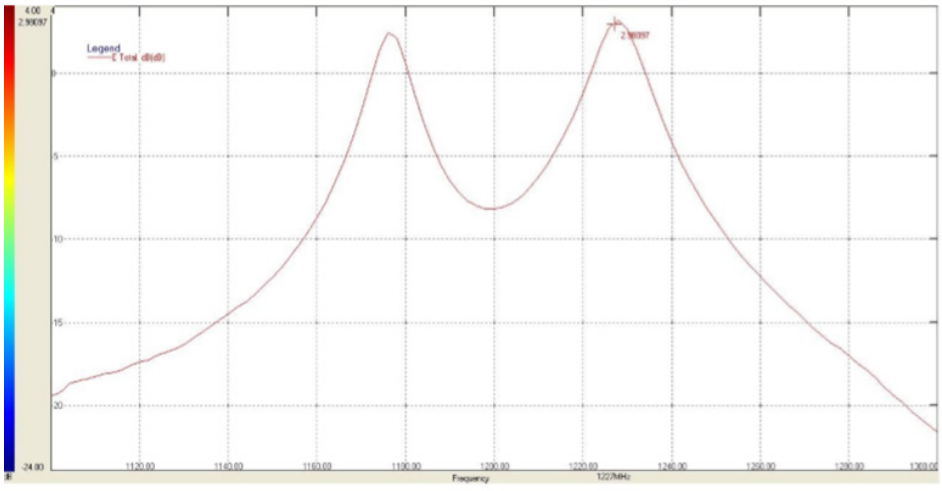
Efficiency and Gain



Peak Gain：2.43dBic @1176MHz



Peak Gain：2.98dBic@1227MHz

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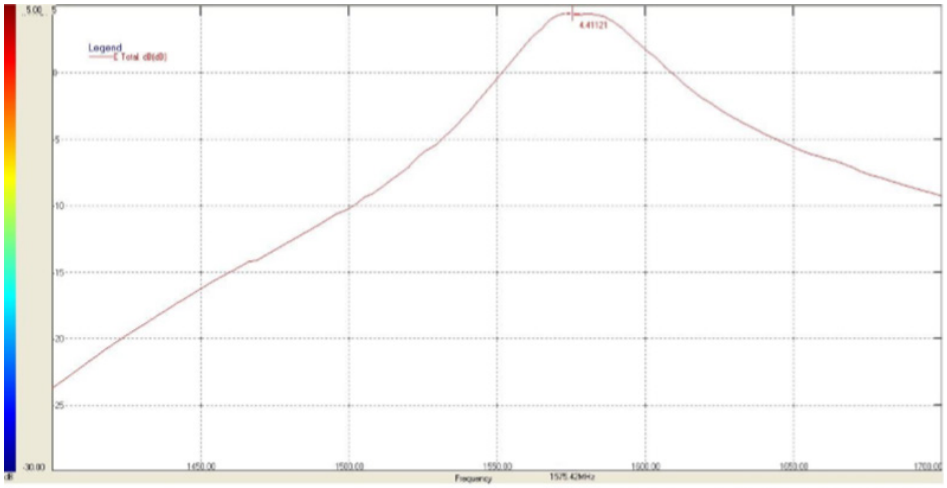
Efficiency and Gain



Peak Gain：4.41dBic@1575.42MHz

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MSL = NA

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 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 (5N) 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).