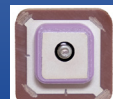


# GPS L1+L2+L5 Stacked Patch Antenna



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 dimension, 25x25x8mm
- 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

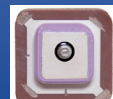
## Applications

- 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	

# GPS L1+L2+L5 Stacked Patch Antenna

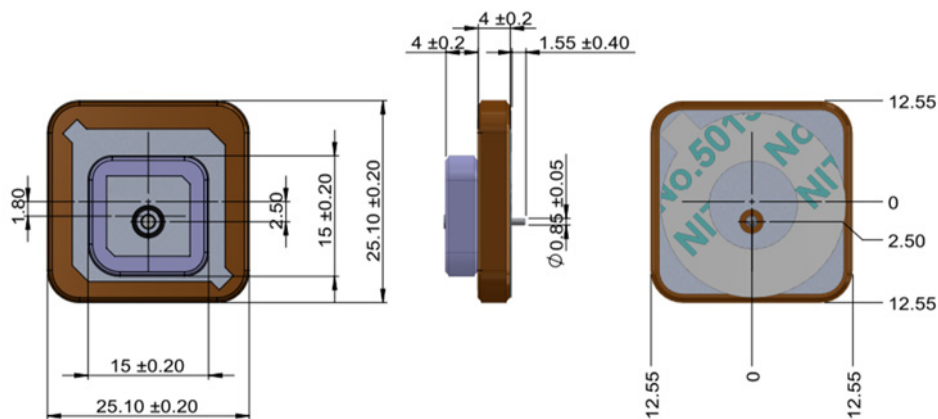


APARM2508S-SGL2L5



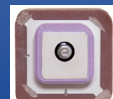
25.0 x 25.0 x 8.0 mm  
RoHS/RoHS II Compliant  
MSL = NA

## Product Dimensions



Unit : mm

# GPS L1+L2+L5 Stacked Patch Antenna

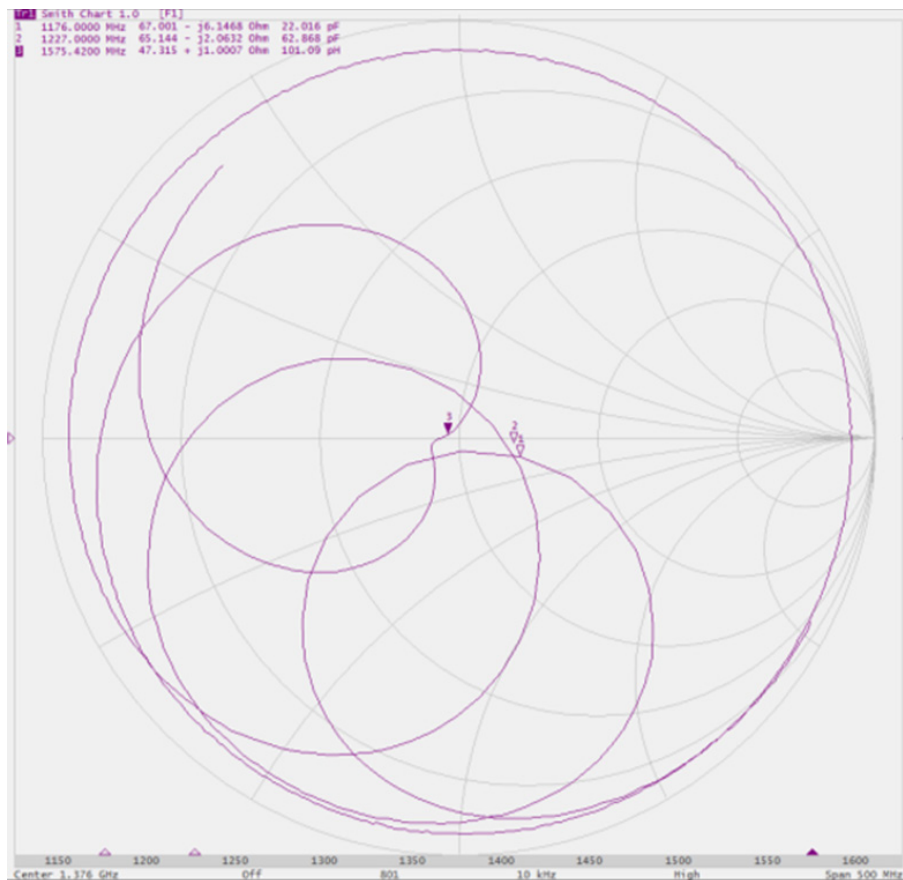


APARM2508S-SGL2L5



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

## Impedance Characteristics



# GPS L1+L2+L5 Stacked Patch Antenna

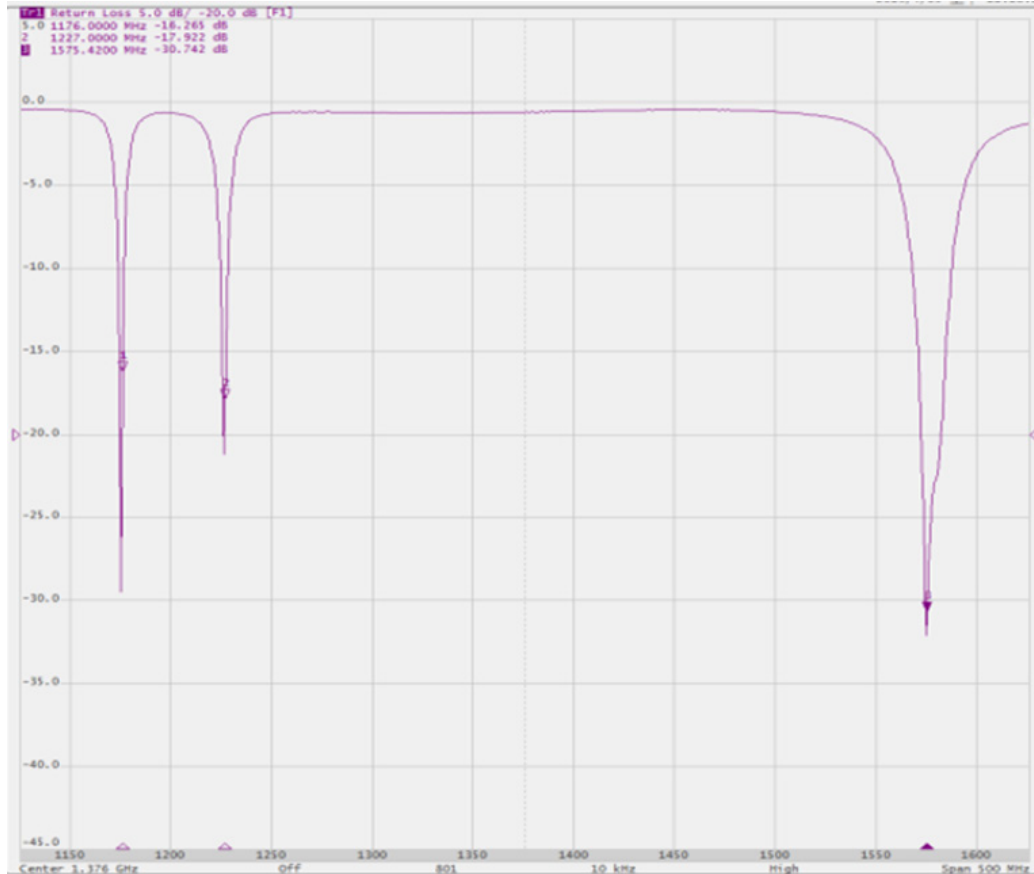


APARM2508S-SGL2L5

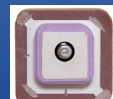


25.0 x 25.0 x 8.0 mm  
RoHS/RoHS II Compliant  
MSL = NA

Return Loss: S11



# GPS L1+L2+L5 Stacked Patch Antenna

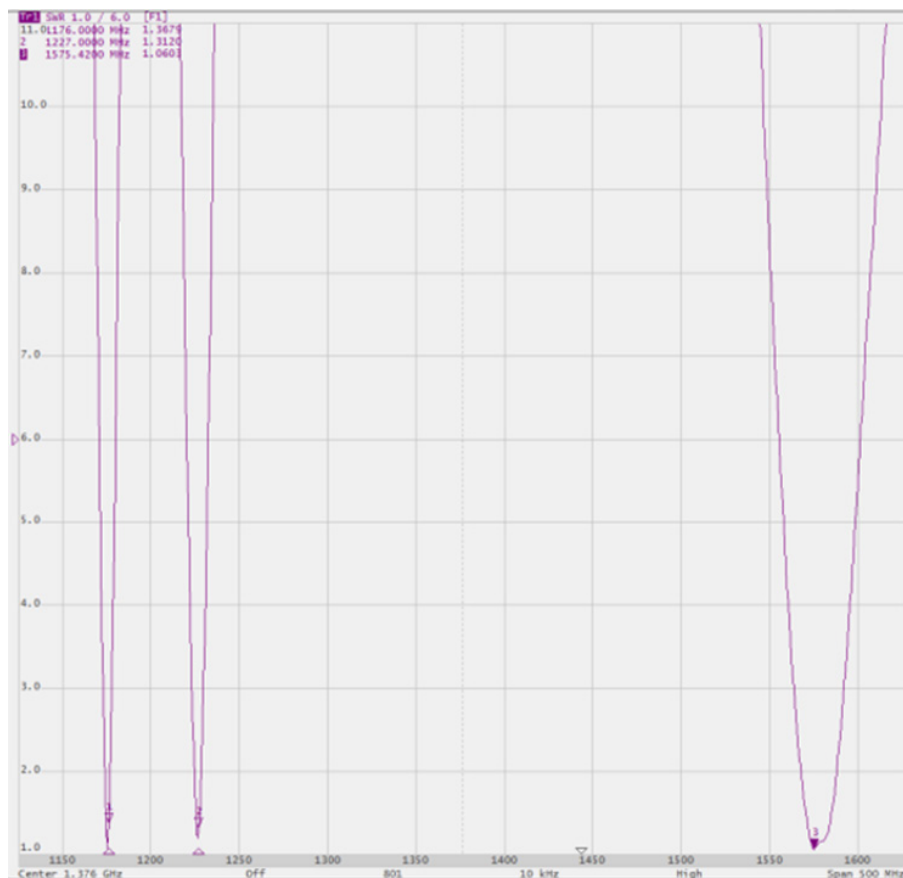


APARM2508S-SGL2L5



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

VSWR



# GPS L1+L2+L5 Stacked Patch Antenna



APARM2508S-SGL2L5



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

Test Set Up Image



# GPS L1+L2+L5 Stacked Patch Antenna

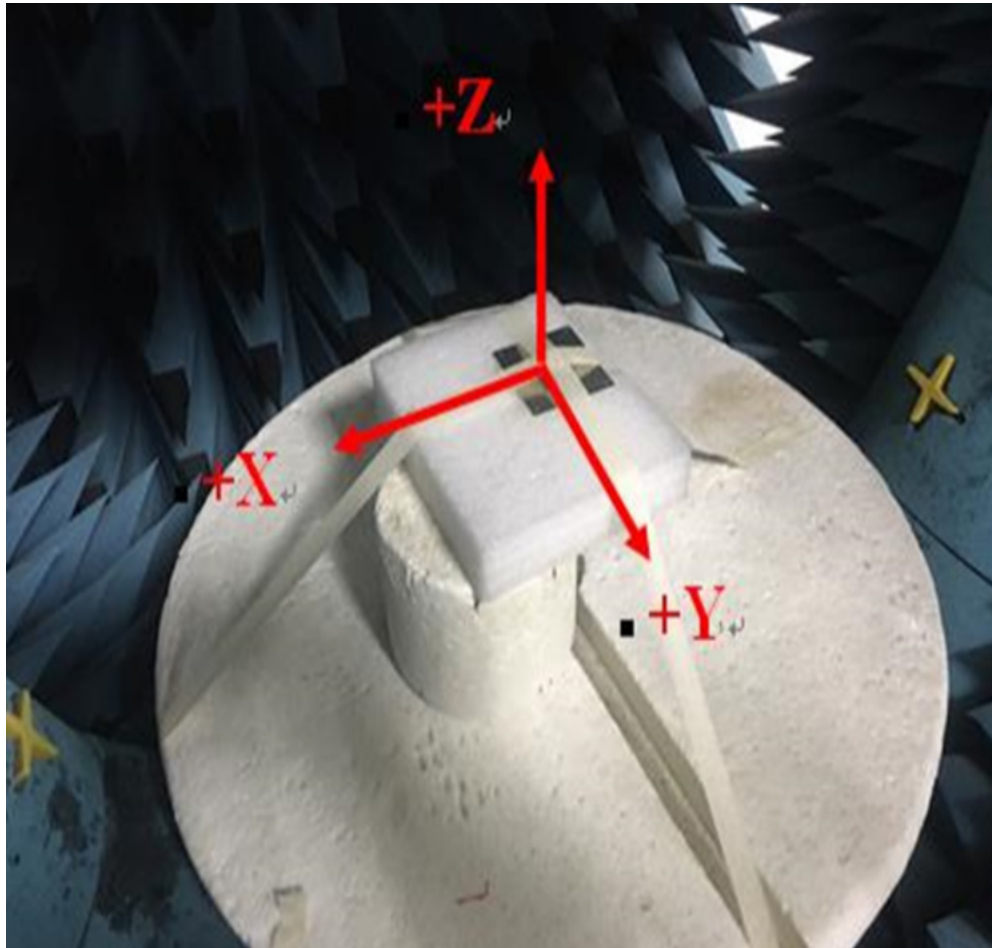


APARM2508S-SGL2L5

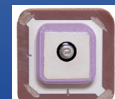


25.0 x 25.0 x 8.0 mm  
RoHS/RoHS II Compliant  
MSL = NA

## Radiation Pattern Measurement



# GPS L1+L2+L5 Stacked Patch Antenna



APARM2508S-SGL2L5

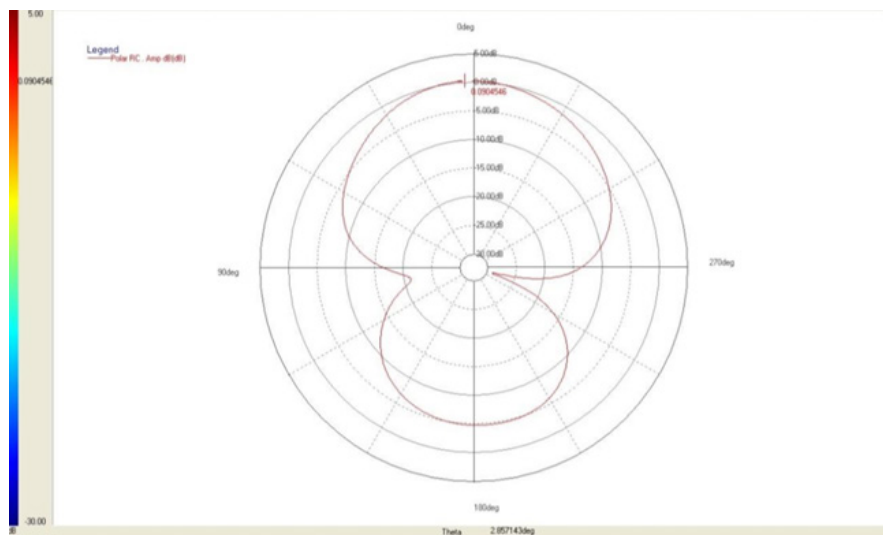


25.0 x 25.0 x 8.0 mm  
RoHS/RoHS II Compliant  
MSL = NA

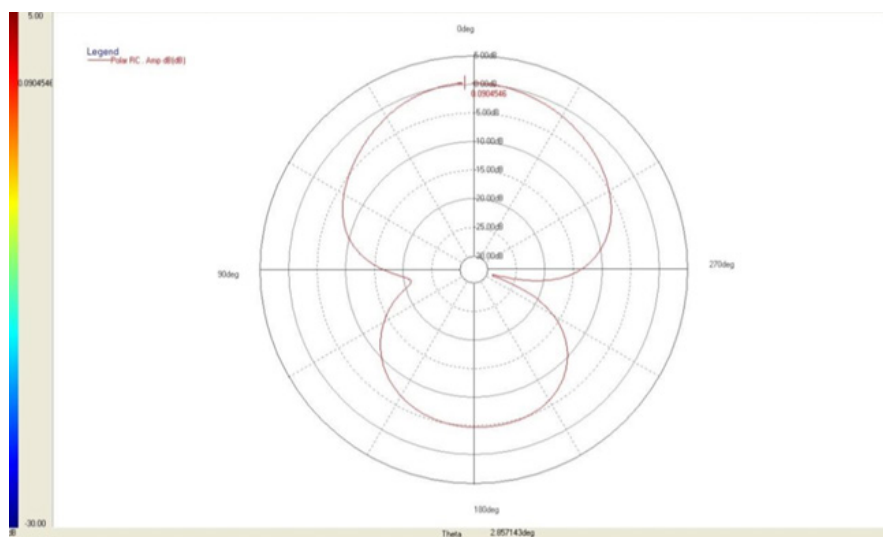
## Radiation Pattern

Gain : 1176 MHz

XZ-Plane 1176 MHz



YZ-Plane 1176 MHz

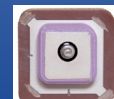


1176 MHz	Peak Gain
XZ-Plane	0.09
YZ-Plane	0.07

(Unit : dBi)



# GPS L1+L2+L5 Stacked Patch Antenna



APARM2508S-SGL2L5

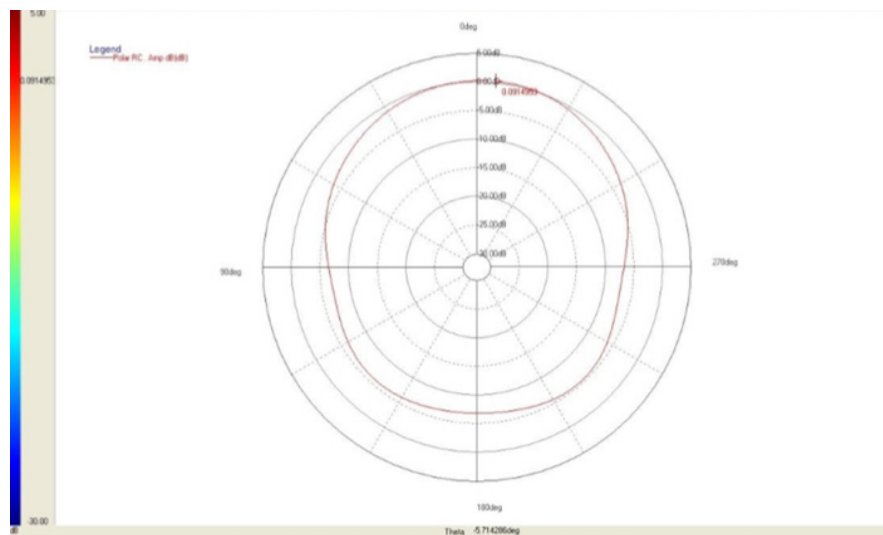


25.0 x 25.0 x 8.0 mm  
RoHS/RoHS II Compliant  
MSL = NA

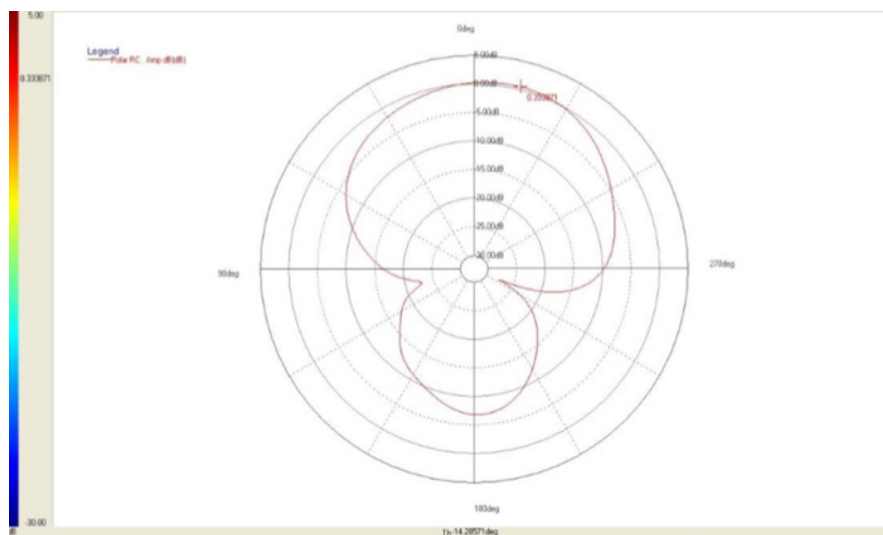
## Radiation Pattern

Gain : 1227 MHz

XZ-Plane 1227 MHz



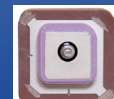
YZ-Plane 1227 MHz



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

(Unit : dBi)

# GPS L1+L2+L5 Stacked Patch Antenna



APARM2508S-SGL2L5

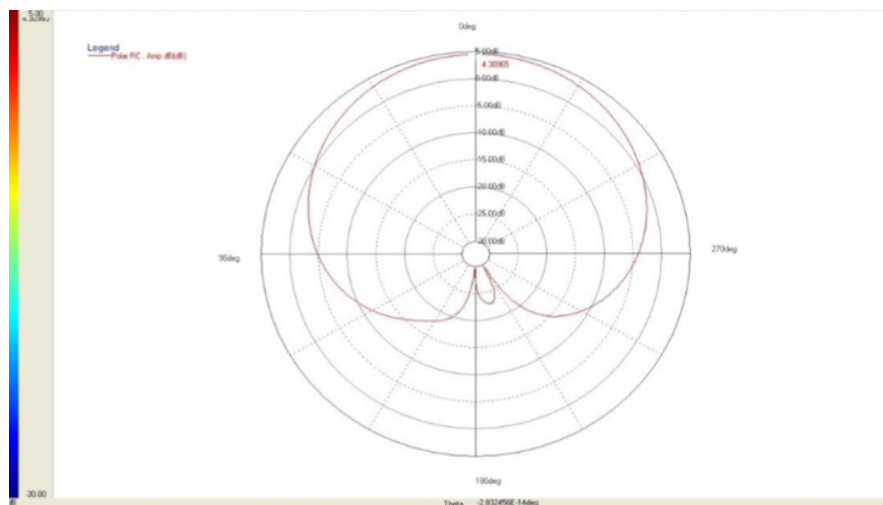


25.0 x 25.0 x 8.0 mm  
RoHS/RoHS II Compliant  
MSL = NA

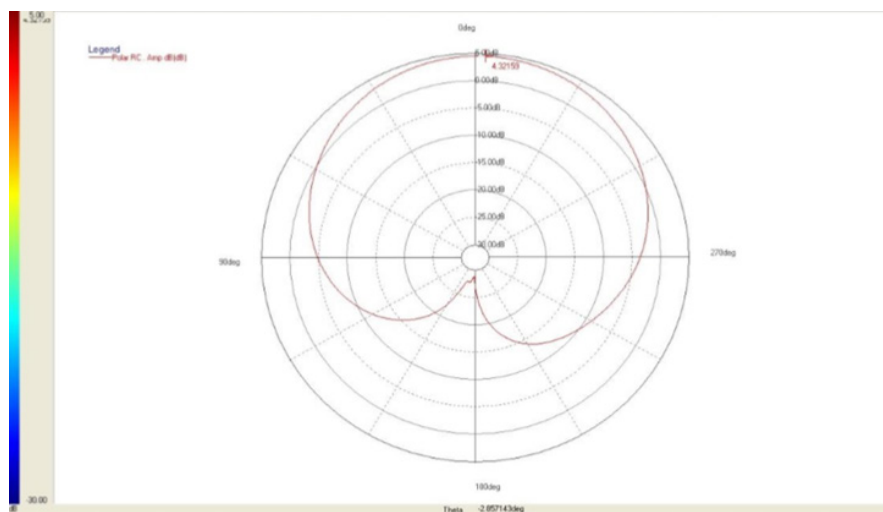
## Radiation Pattern

Gain : 1575.42 MHz

XZ-Plane 1575.42 MHz



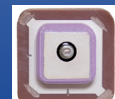
YZ-Plane 1575.42 MHz



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

(Unit : dBi)

# GPS L1+L2+L5 Stacked Patch Antenna

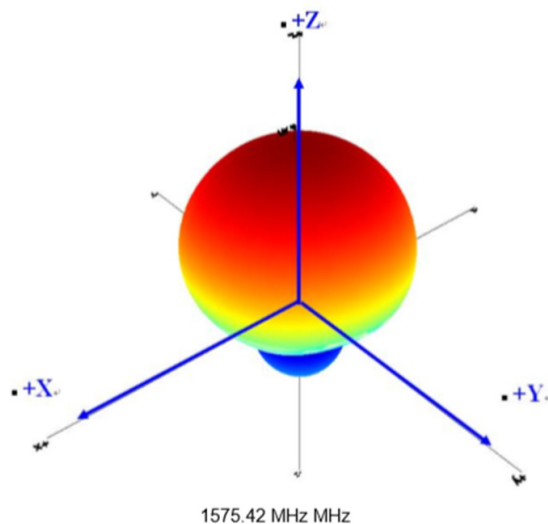
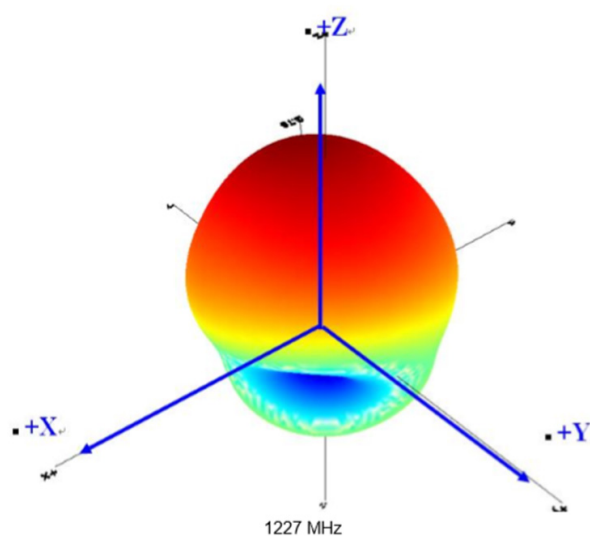
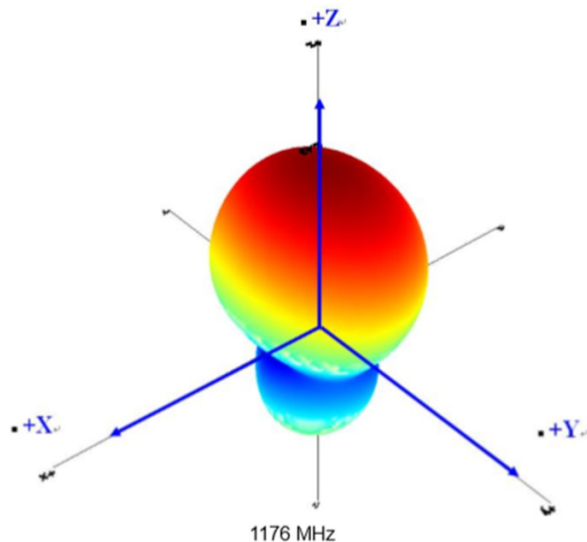


APARM2508S-SGL2L5



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

## 3D Radiation Pattern



# GPS L1+L2+L5 Stacked Patch Antenna

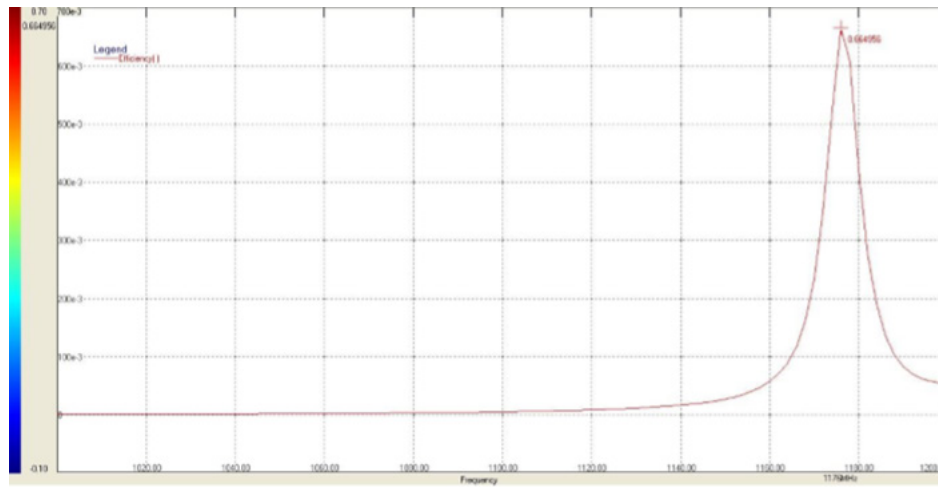


APARM2508S-SGL2L5

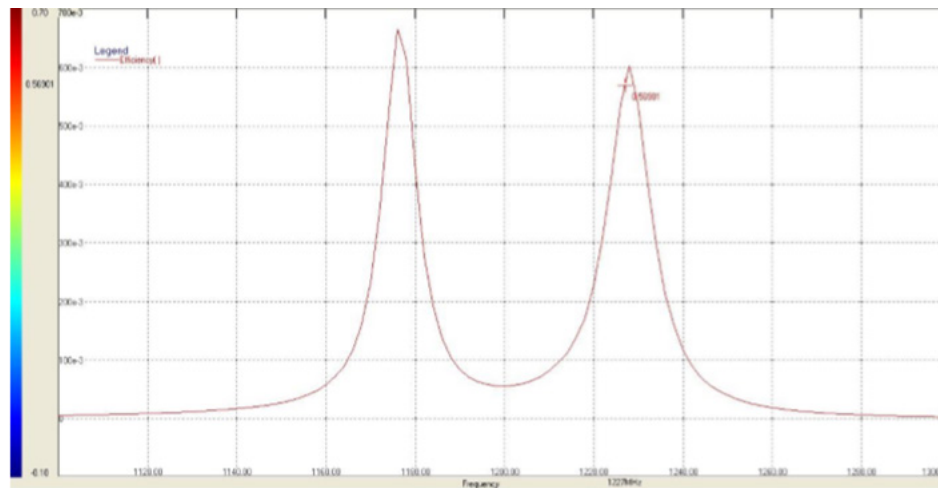


25.0 x 25.0 x 8.0 mm  
RoHS/RoHS II Compliant  
MSL = NA

## Efficiency and Gain

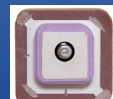


Efficiency : 66.49% @ 1176MHz



Efficiency : 56.9% @ 1227MHz

# GPS L1+L2+L5 Stacked Patch Antenna

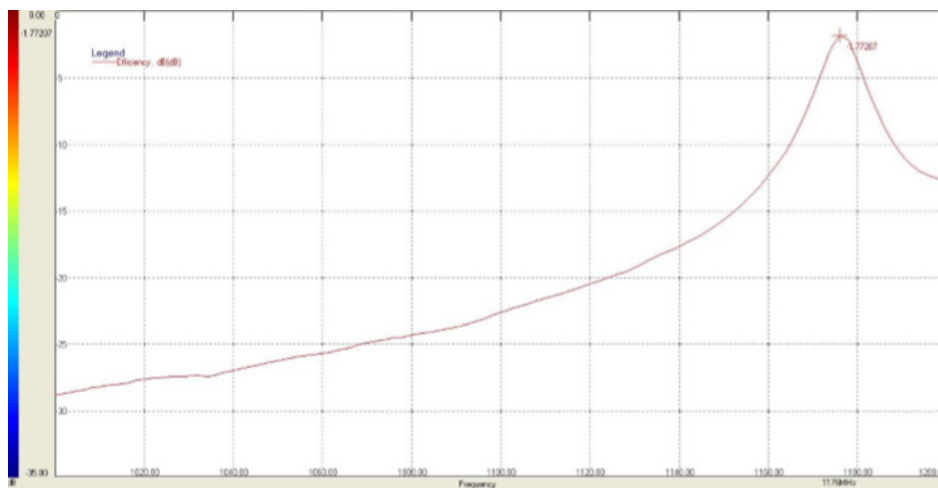
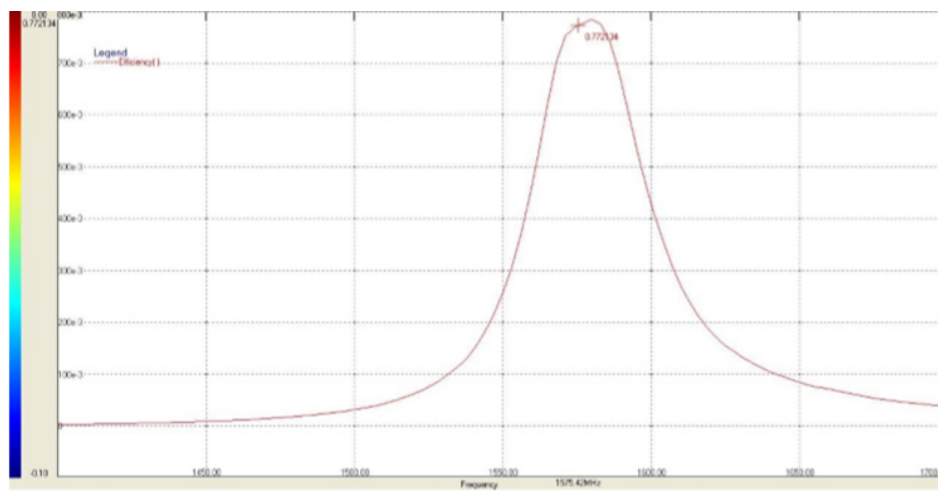


APARM2508S-SGL2L5

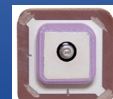


25.0 x 25.0 x 8.0 mm  
RoHS/RoHS II Compliant  
MSL = NA

## Efficiency and Gain



# GPS L1+L2+L5 Stacked Patch Antenna

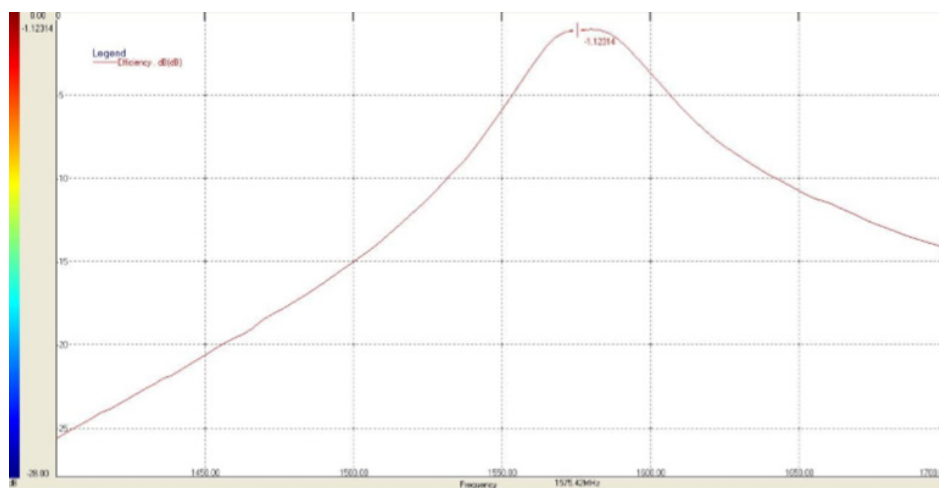
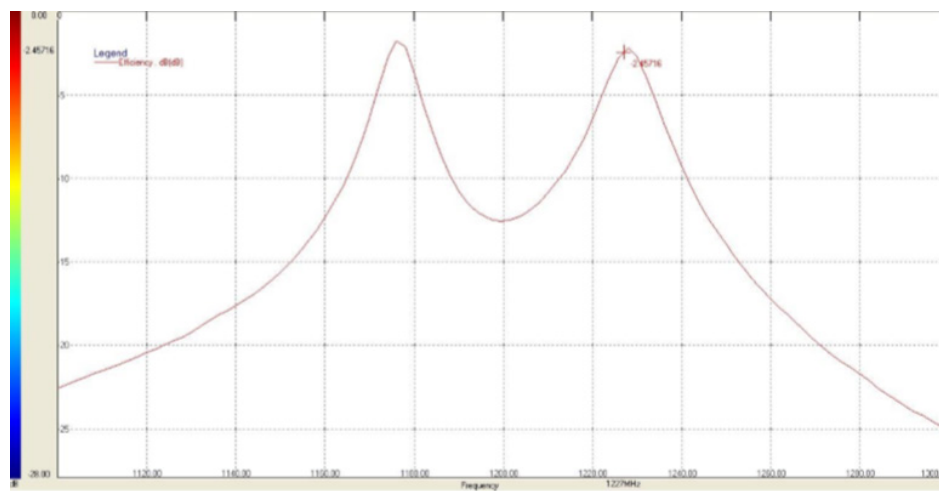


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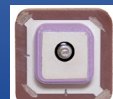


25.0 x 25.0 x 8.0 mm  
RoHS/RoHS II Compliant  
MSL = NA

## Efficiency and Gain



# GPS L1+L2+L5 Stacked Patch Antenna

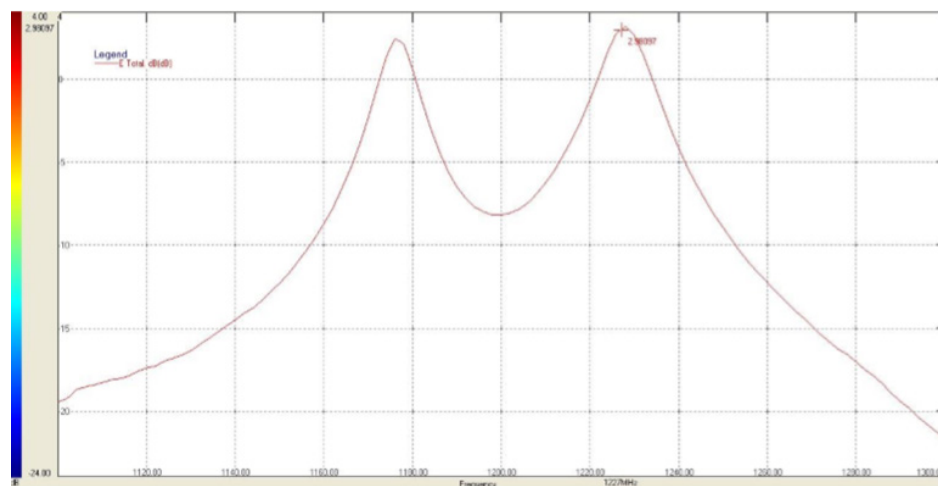
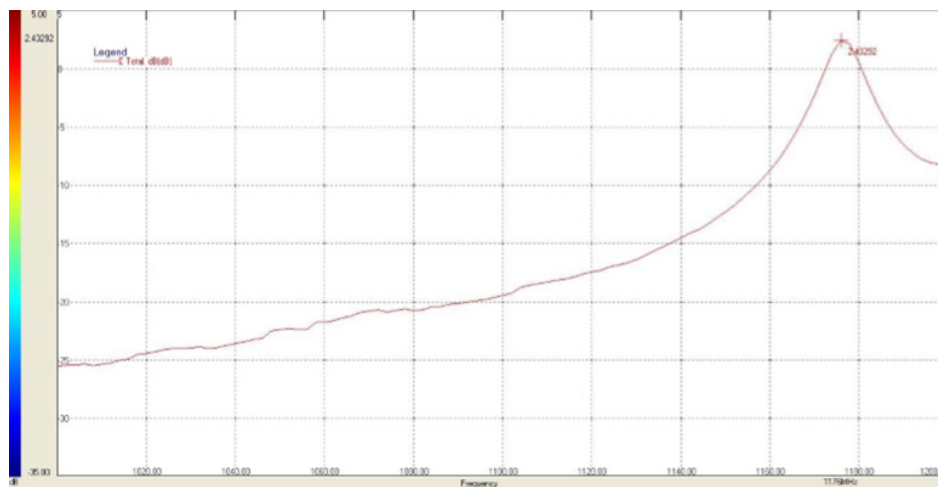


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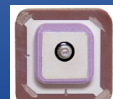


25.0 x 25.0 x 8.0 mm  
RoHS/RoHS II Compliant  
MSL = NA

## Efficiency and Gain



# GPS L1+L2+L5 Stacked Patch Antenna

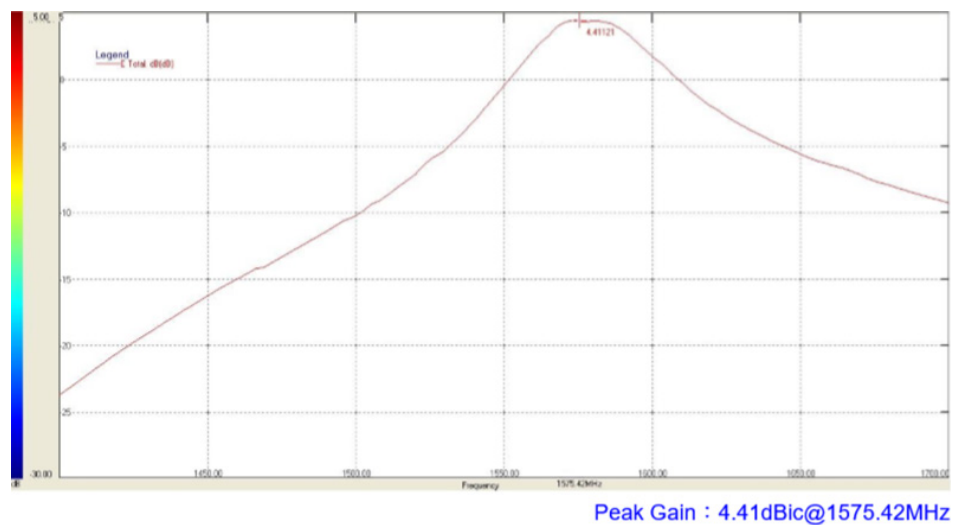


APARM2508S-SGL2L5



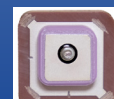
25.0 x 25.0 x 8.0 mm  
RoHS/RoHS II Compliant  
MSL = NA

## Efficiency and Gain





# GPS L1+L2+L5 Stacked Patch Antenna



APARM2508S-SGL2L5



25.0 x 25.0 x 8.0 mm  
RoHS/RoHS II Compliant  
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 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).

# GPS L1+L2+L5 Stacked Patch Antenna



APARM2508S-SGL2L5



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

## Packaging

Carton Dimensions: 330 x 280 x 254 mm  
700 pcs/Carton

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