Multiband GNSS Dielectric Patch Antenna

APARM1504-SG3

15.0 x 15.0 x 4.0 mm
RoHS/RoHS II Compliant
MSL = N/A

Features

- Multiband GNSS patch with GPS/GLONASS/BeiDou/Galileo
- Low VSWR of 1.8
- RHCP polarization
- Compact 15.0 x 15.0 x 4.0 mm patch

Applications

- GPS/GLONASS/BeiDou/Galileo applications
- IoT
- M2M
- Remote technology monitoring
- Geofencing
- Navigation
- Surveying and mapping systems
- Logistics
- Automotive

Electrical Specifications

Parameters	Min.	Typ.	Max.	Units	Note
Frequency Range		GPS: 1575.42 ± 1.023 GLONASS: 1602 ± 5 BeiDou: 1561.098 ± 2.046		MHz	
VSWR			1.8		@CF
Polarization	RHCP				Right Hand Circular Polarization
Impedance		50		Ω	
Gain	GPS : - 4.5 GLONASS : 0.8 BeiDou : - 3.0			dBi	Zenith

* Ground Plane size: 46.35 × 41.57 mm
* Actual Electrical Value will depend on the size of ground plane in use

Environmental Characteristics

Parameters	Description
Operating Temperature	-40ºC to +105ºC
Storage Temperature	-40ºC to +105ºC
Frequency Temperature Coefficient	-40ºC to +105ºC (0 ± 20 ppm/ ºC)
Relative Humidity	0 ~ 95 %

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Phone: 512-371-6159 | Fax: 512-351-8858
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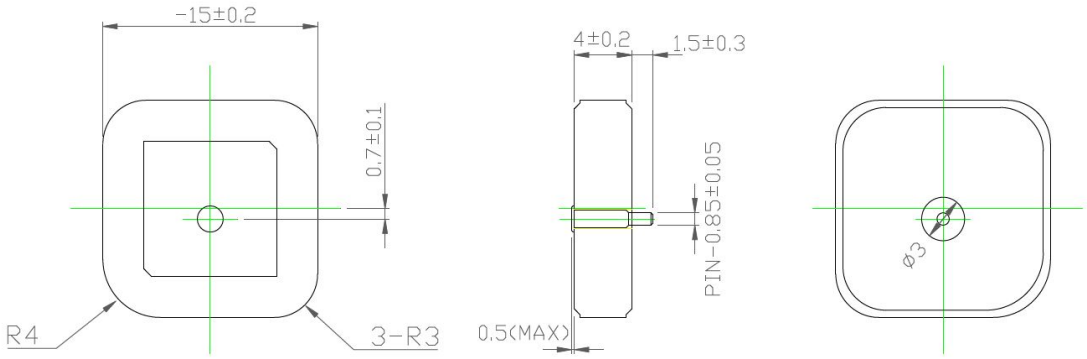
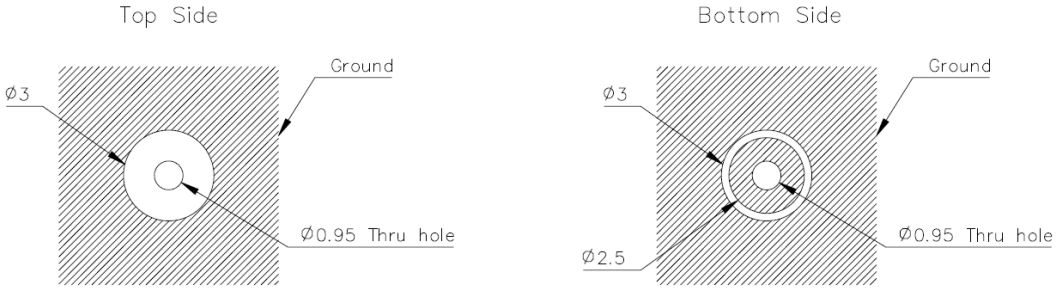
Product Dimensions



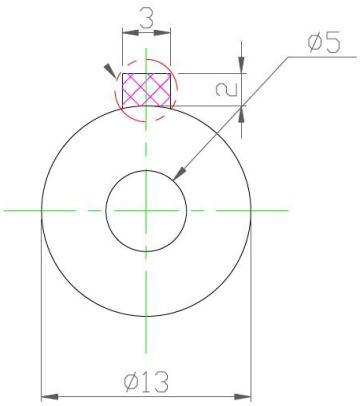
Layout Dimensions (Unit: mm)



TOL : ±0.2

Tape Dimension (Unit: mm)

Thickness : 0.05 (± 0.02) mm (Double sized very thin tape)



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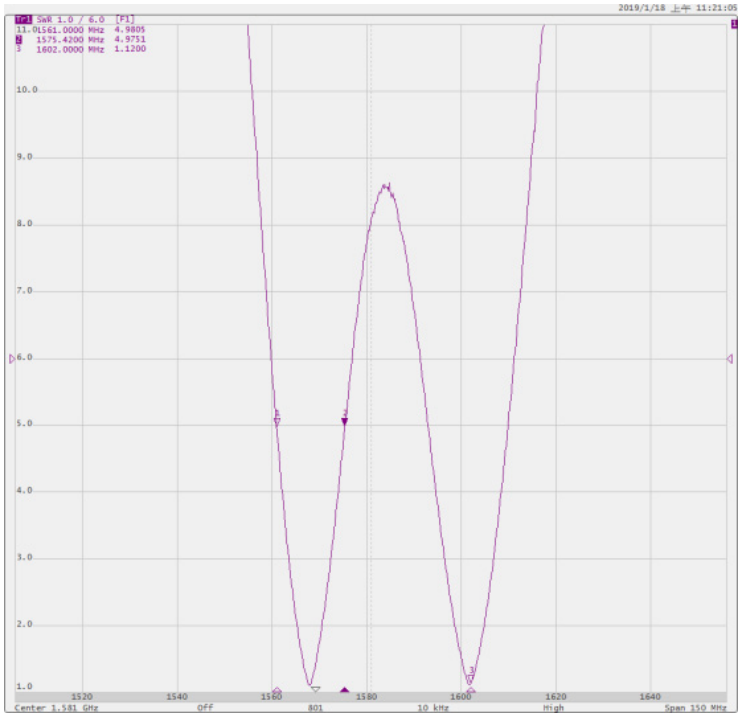
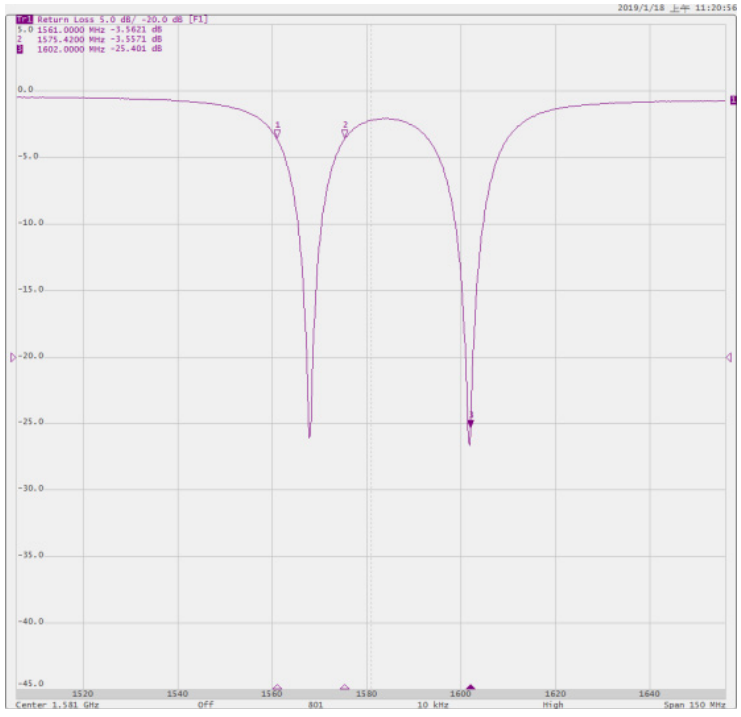
VSWR



Return Loss



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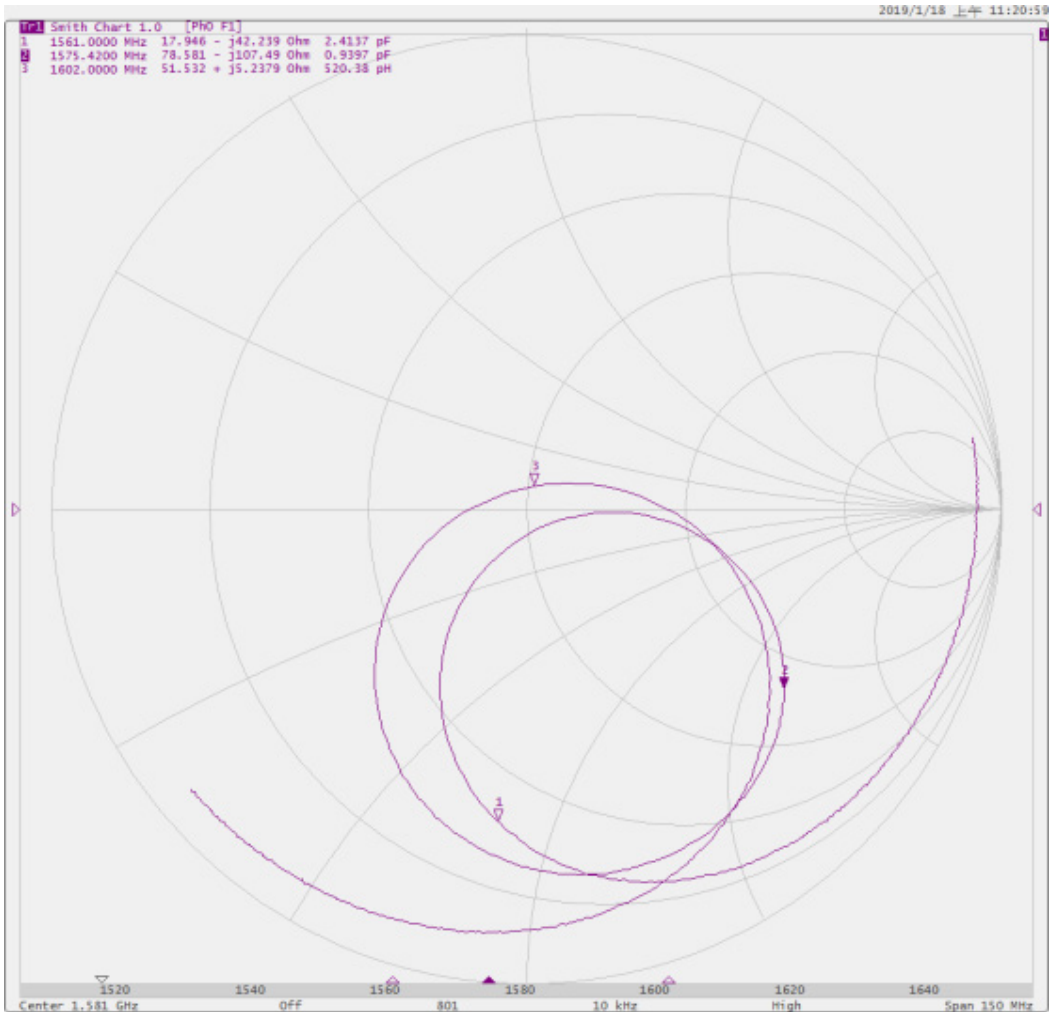
Impedance Characteristics



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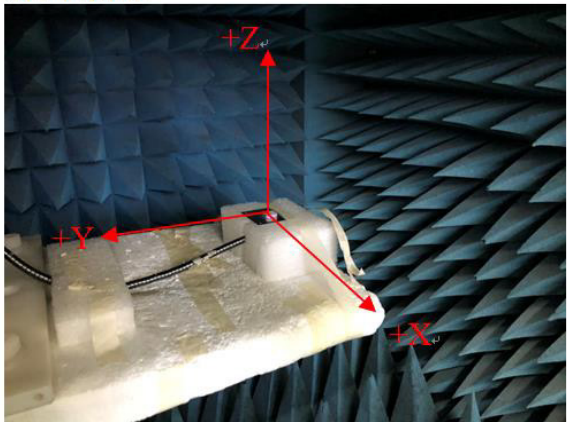
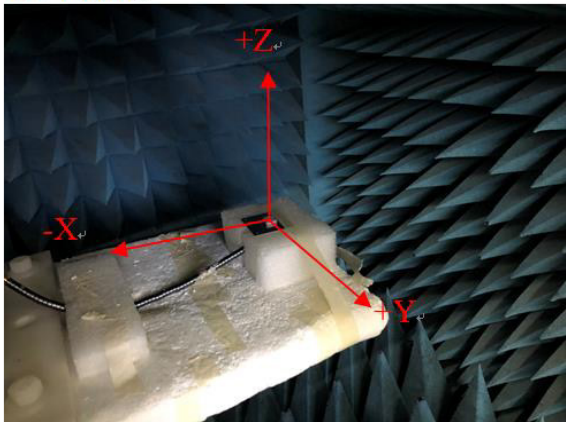
Radiation Patterns

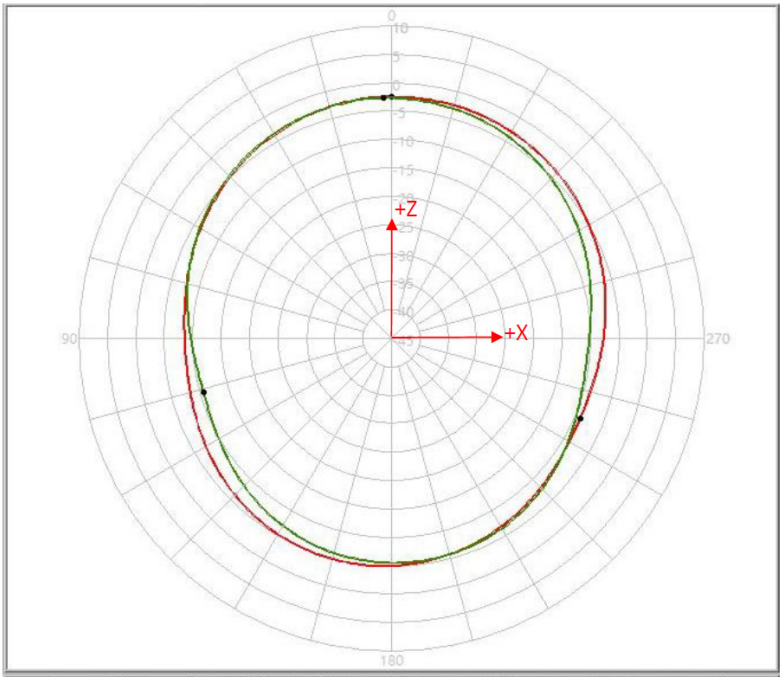
XZ-Plane



YZ-Plane



XZ + YZ – Plane : 1561 MHz



1561 MHz	Peak Gain	Zenith Gain (dBi)
XZ	-2.44	-2.44
YZ	-2.64	-2.65

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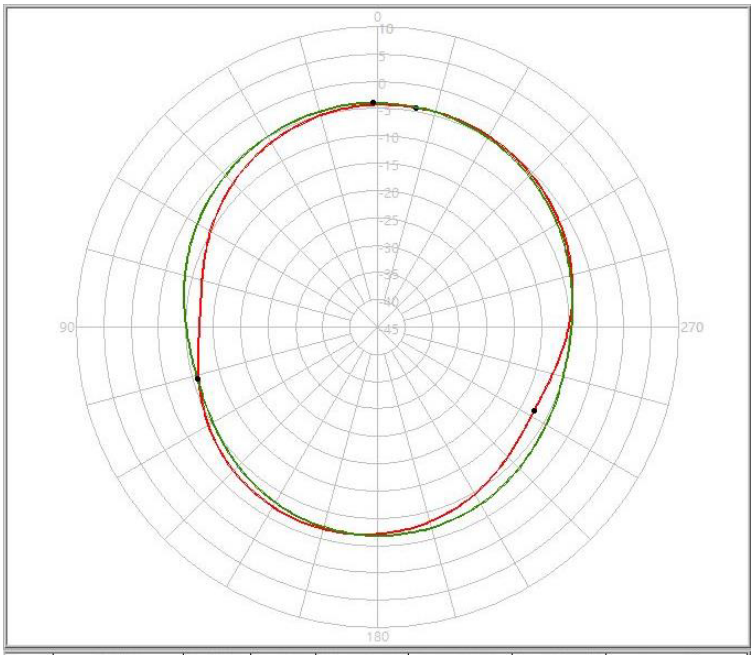
Radiation Patterns

XZ + YZ – Plane : 1575.42 MHz



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	SP15B	XZ	1575.42	-4.23 / 350.00	-12.54 / 242.00	-7.53	V+H
2	SP15B	YZ	1575.42	-3.92 / 1.00	-10.77 / 106.00	-6.97	V+H

1575.42 MHz	Peak Gain	Zenith Gain (dBi)
XZ	-4.23	-4.28
YZ	-3.92	-3.92

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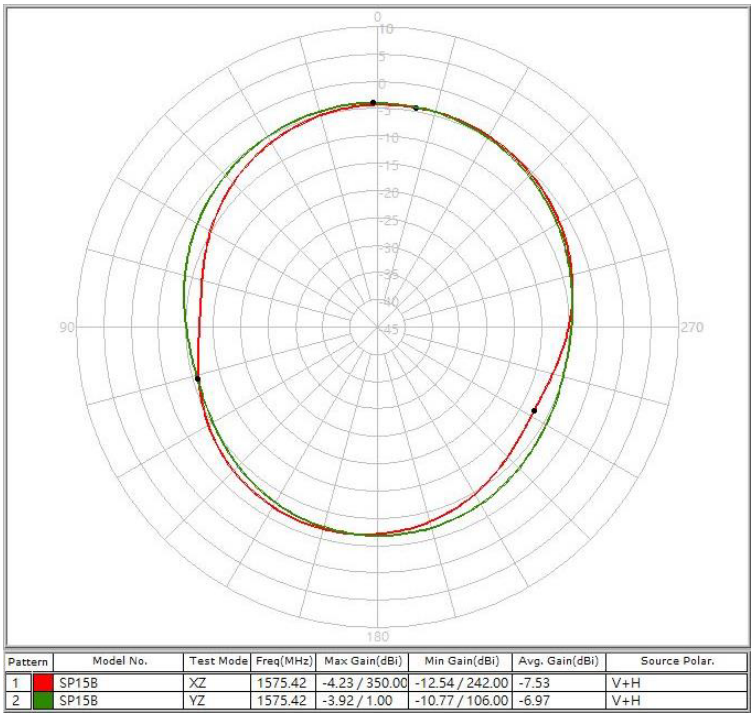
Radiation Patterns

XZ + YZ – Plane : 1602 MHz



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	SP15B	XZ	1575.42	-4.23 / 350.00	-12.54 / 242.00	-7.53	V+H
2	SP15B	YZ	1575.42	-3.92 / 1.00	-10.77 / 106.00	-6.97	V+H

1602 MHz	Peak Gain	Zenith Gain (dBi)
XZ	1.12	1.12
YZ	1.46	1.46

Packaging

The carton is of dimension 330 x 280 x 254 mm and contains over 1600 antennas.

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Reliability Tests

i. Low-temperature test: Expose the specimen to -40ºC for 400 hours and then to normal temperature/ humidity for 24 hours or more. After this test, examine its appearance and functions.

ii. High-temperature test: Expose the specimen to +105ºC for 400 hours and then to normal temperature/humidity for 24 hours or more. After this test, examine its appearance and functions.

iii. High-temperature/ High-humidity test: Subject the object to the environmental conditions of +60ºC and 90 – 95 % R.H. for 96 hours, then expose to normal temperature/ humidity for 24 hours or more. After this test, examine its appearance and functions.

iv. Thermal shock test: Subject the object to cyclic temperature change (-40ºC, 2 hours ↔ +85ºC, 2 hours) for 100 cycles, the expose to normal temperature/humidity for 24 hours or more.

v. Vibration test:
   - Sinusoidal vibration test: Subject the object to vibrations of 5 to 200 to 5 Hz swept in 10 minutes, 4.5 G 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 packed as illustrated, to vibrations of 15 to 60 to 15 Hz swept in 6 minutes, 4 G at maximum (2 mm 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.

vi. Free fall test in packaged condition: Drop the object, which is packed 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, check the appearance and functions.

vii. Soldering heat resistance test: After the lead pins of the unit are soaked in solder bath at 260ºC ± 5ºC for 10 seconds. After this test, examine its appearance and functions.

viii. Adhesion test: The device is subjected to be soldered on test PCB. Then apply 0.5 Kg (5 N) of force for 5 ± 1 seconds in the direction 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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