Multiband GNSS Dielectric Patch Antenna

APARM2504-SG3

25.1 x 25.1 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
- 25.1 x 25.1 x 4.0 mm
- Gain of GPS: 1.5 dBi
  GLONASS: 3.5 dBi
  BeiDou: 2.5 dBi

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 Galileo: 1575.42 ± 1.023		MHz	
Center Frequency		1573 ± 3		MHz	
VSWR			1.8		@CF
Polarization		RHCP			Right Hand Circular Polarization
Impedance		50		Ω	
Bandwidth	28			MHz	RL: - 10 dB
Gain		GPS: 1.5 GLONASS: 3.5 BeiDou: 2.5		dBi	Zenith

* Ground Plane size: 64.40 x 49.55 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 (T_f)	-40ºC to +105ºC (0 ± 20 ppm/ ºC)
Relative Humidity	0 ~ 95 %

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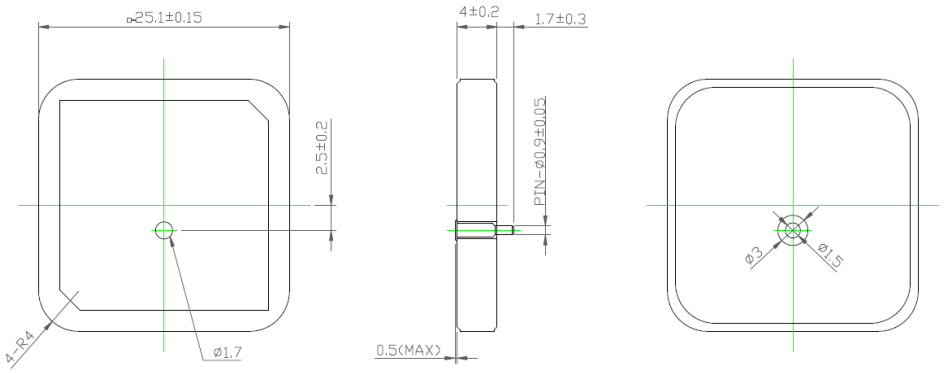
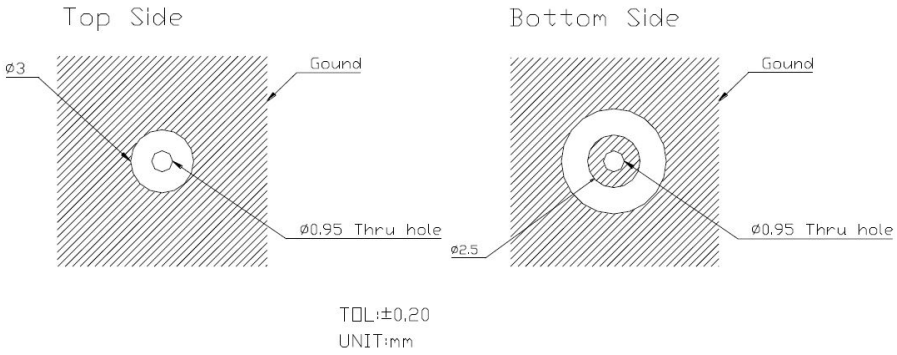
Product Dimensions (Unit: mm)

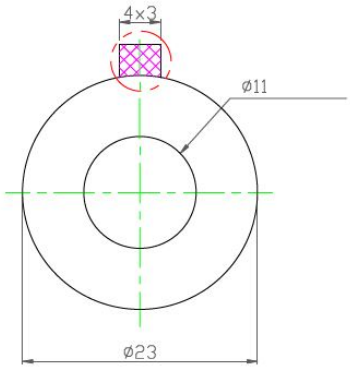


Layout Dimensions



Tape Dimension (Unit : mm)

Double – coated thin adhesive tape | Thickness : 0.12 mm



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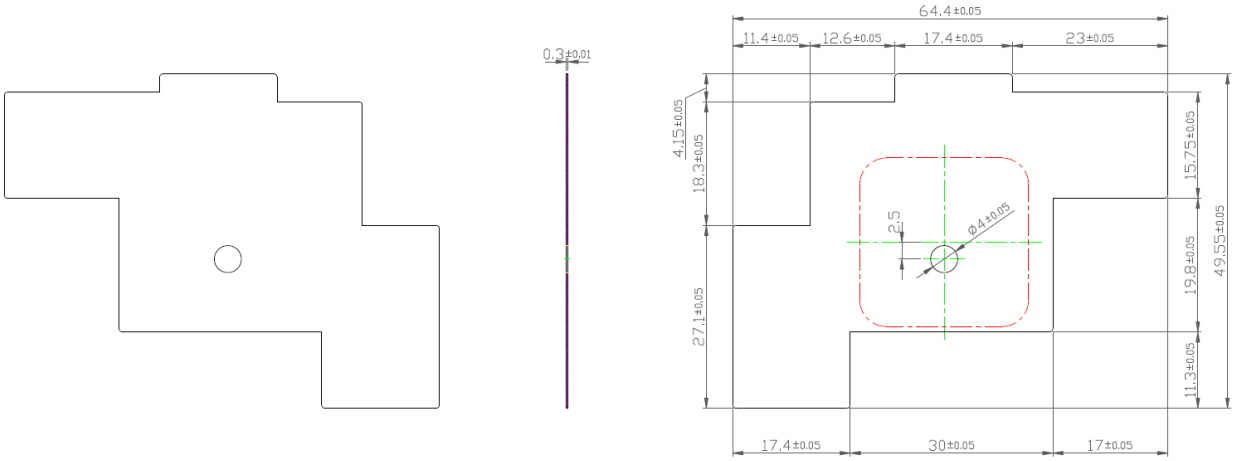
Product Dimensions

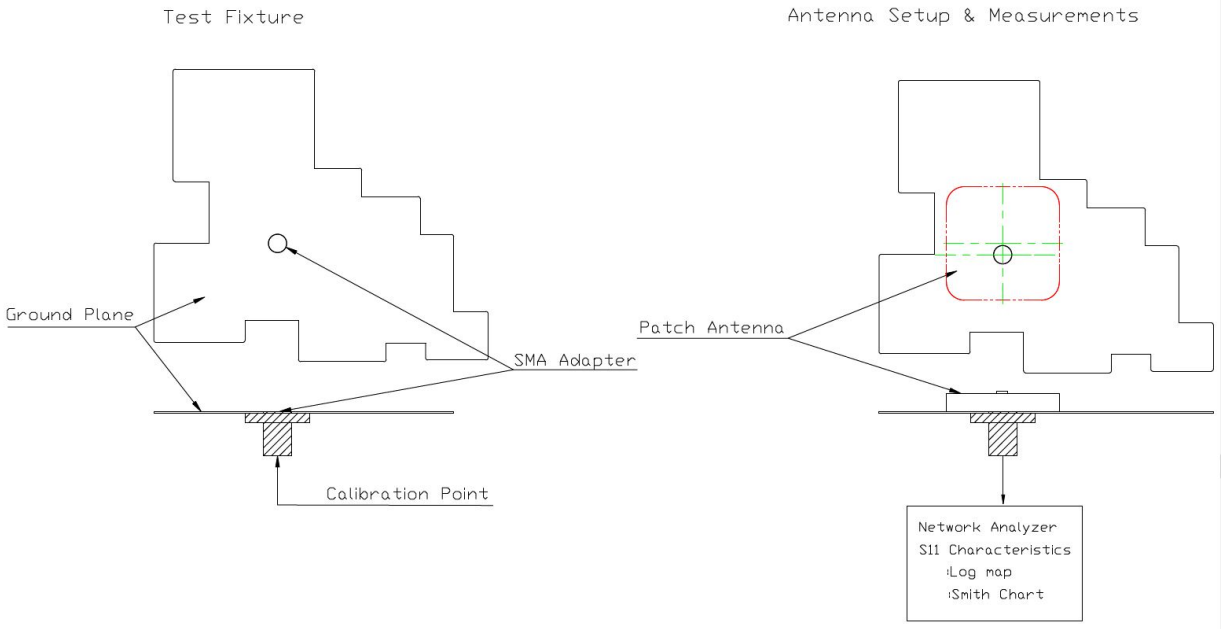
Ground Plane Dimension (Unit : mm)



Bottom side

Top side

Test Fixture Antenna Setup and Measurements



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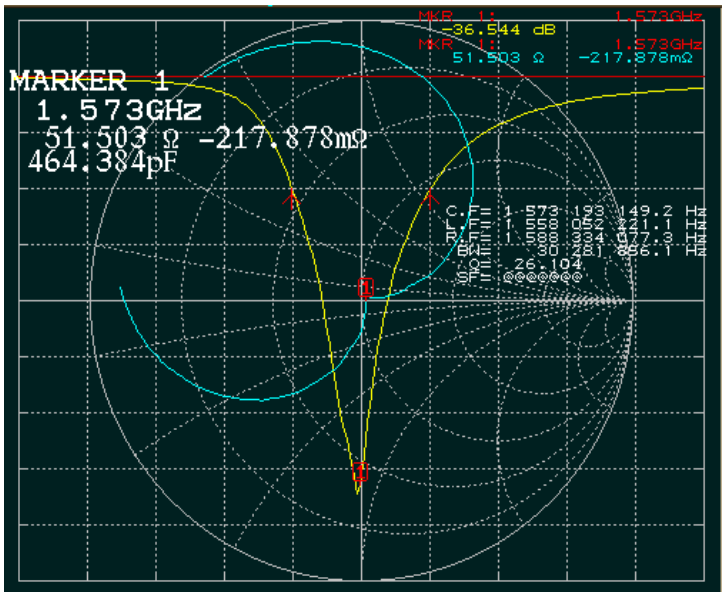
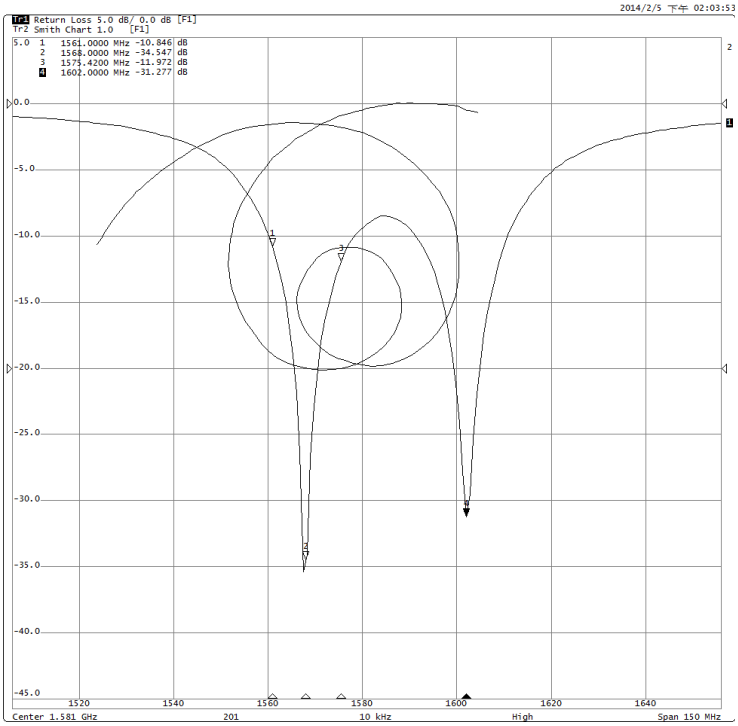
Return Loss and Impedance Characteristics



Ground Plane Size : 70 x 70 mm



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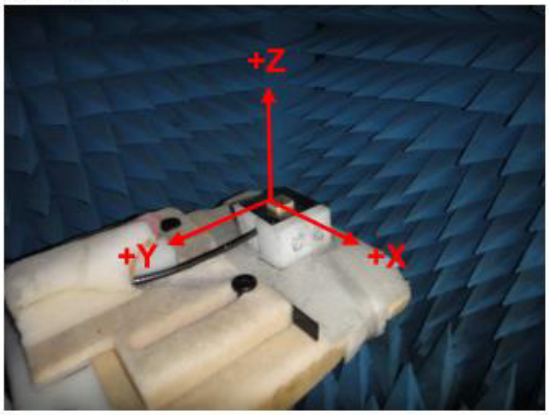
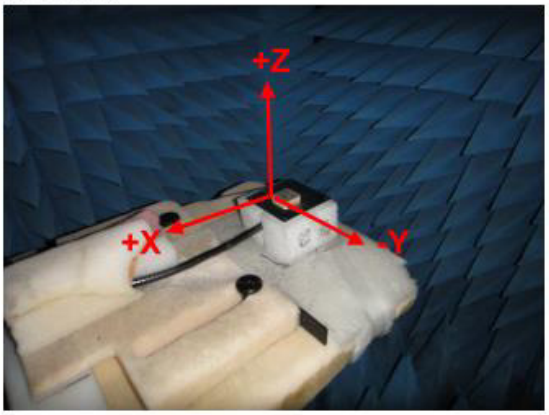
Radiation Patterns

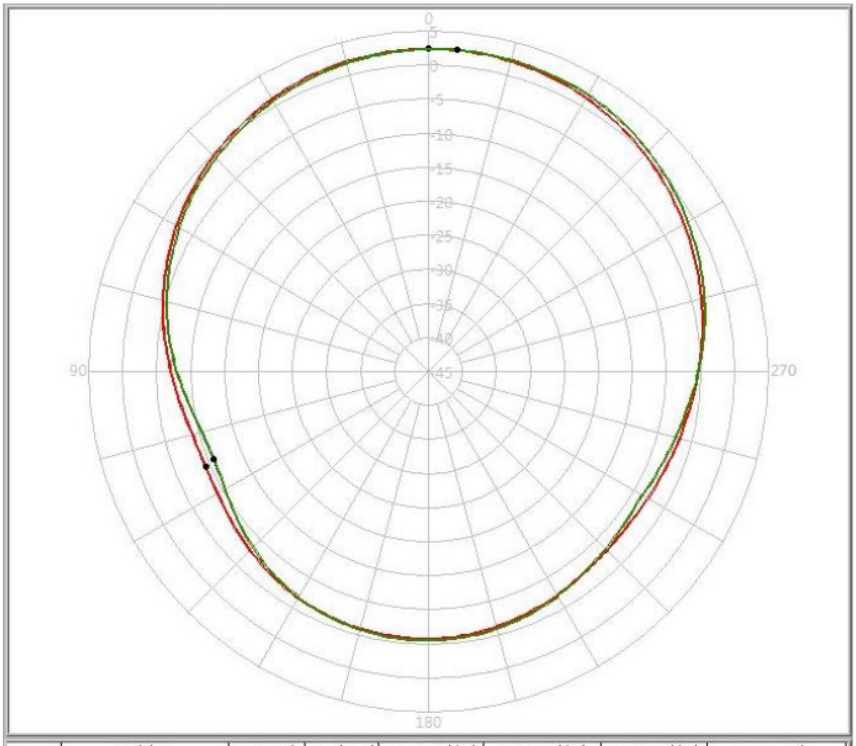
XZ-Plane



YZ-Plane



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	APARM2504-SG3	XZ	1575.42	2.39 / 0.00	-9.38 / 112.94	-2.26	V+H
2	APRAM2504-SG3	YZ	1575.42	2.38 / 354.99	-10.88 / 112.31	-2.25	V+H

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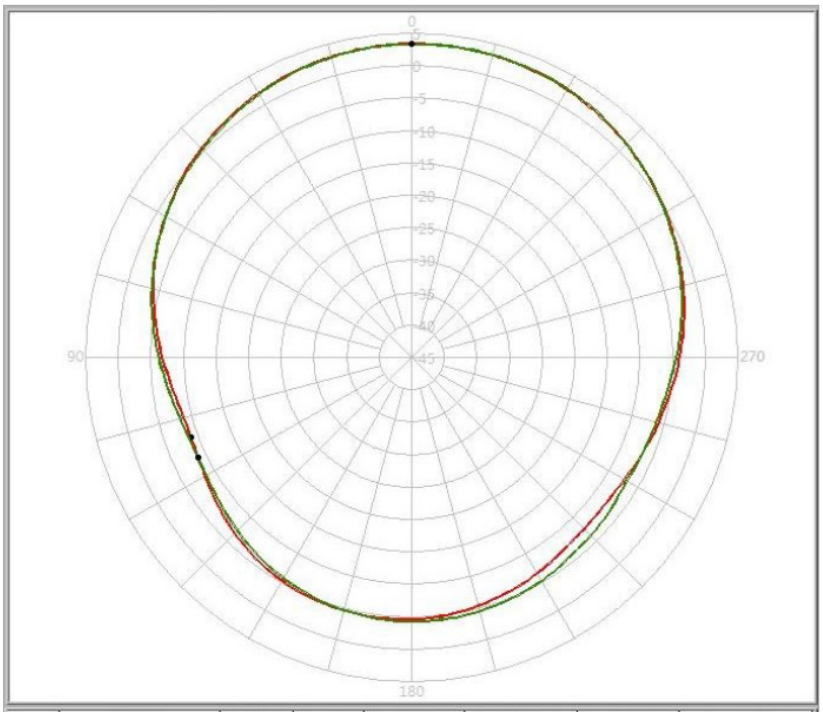
Radiation Patterns

XZ + YZ – Plane : 1562 MHz



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	APAG2504-SG3	XZ	1562.00	3.41 / 0.00	-8.98 / 109.92	-1.20	V+H
2	APAG2504-SG3	YZ	1562.00	3.36 / 0.00	-8.76 / 115.32	-1.19	V+H

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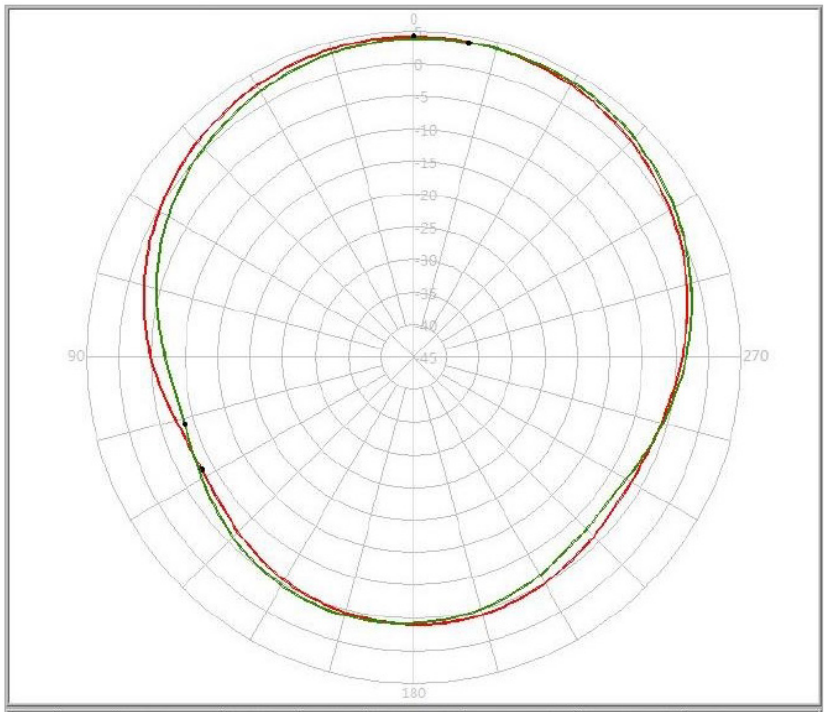
Radiation Patterns

XZ + YZ – Plane : 1602 MHz



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	APARM2504-SG3	XZ	1602.00	4.21 / 0.00	-8.32 / 117.98	-0.48	V+H
2	APARM2504-SG3	YZ	1602.00	3.95 / 349.97	-8.58 / 106.30	-0.73	V+H

Packaging

The carton is of dimension 330 x 280 x 254 mm and has 800 pcs.

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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 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, check the appearance and functions.

vii. Soldering heat resistance test: 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, check the appearance and functions.

viii. Adhesion test: Solder the subjected devices on test PCB. Then apply 0.5 Kg (5 N) of force for 5 ± 1 seconds in the direction parallel to the substrate. (Perform soldering by reflow, conduct with care so that the soldering is uniform, and free of defect by stress such as heat shock).

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