GPS L1+L5/GLONASS/GALILEO/BEIDOU Stacked Patch Antenna

APARM2508S-SG3L5

25.1 x 25.1 x 8.0 mm
RoHS/RoHS II Compliant
MSL = NA

Features

- Multiband GPS/GLONASS/BEIDOU/ GALILEO antenna
- Dual stacked patch for GPS L1 and L5
- Low VSWR of 1.8
- RHCP polarization
- Gain of 0.6 dBi (GPS L1), 0.5 dBi (GPS L5), 0.6 dBi (GALILEO), 3.4 dBi (GLONASS), 2.4 dBi (BEIDOU)

Applications

- GPS L1 and L5, GLONASS, GALILEO, BEIDOU applications
- IoT
- M2M
- Remote technology monitoring
- Geofencing
- Navigation
- Surveying and mapping systems
- Logistics
- Precision transportation

Electrical Specifications

Parameters	Description	Units	Notes
Operating Frequency	L1: 1575.42 ± 1.023	MHz	
	L5: 1176.45 ± 12		
	Galileo: 1577 ± 14		
	GLONASS: 1602 ± 5		
	BeiDou : 1561.098 ± 2.046		
Center Frequency	L1: 1572 ± 3	MHz	Ground plane size: 64.76 x 37.64 mm
	L5: 1174 ± 3		Ground plane size: 65.36 x 70.88 mm
Bandwidth	L1: 22	MHz	Min. (@ RL : -10 dB)
	L5: 3		
Gain	L1: 0.6	dBi	Zenith
	L5: 0.5		
	Galileo: 0.6		
	GLONASS: 3.4		
	BeiDou: 2.4		
VSWR	1.8		Max. (@ CF)
Impedance	50	Ω	

Environmental Specifications

Parameters	Specification	Notes
Operating Temperature	-40˚C to +105˚C	
Storage Temperature	-40˚C to +105˚C	
Frequency Temperature Coefficient	-40˚C to +105˚C	0 ± 20 ppm / ˚C
Relative Humidity	0 ~ 95 %	
Feed Pin Temperature	+290˚C	Max.

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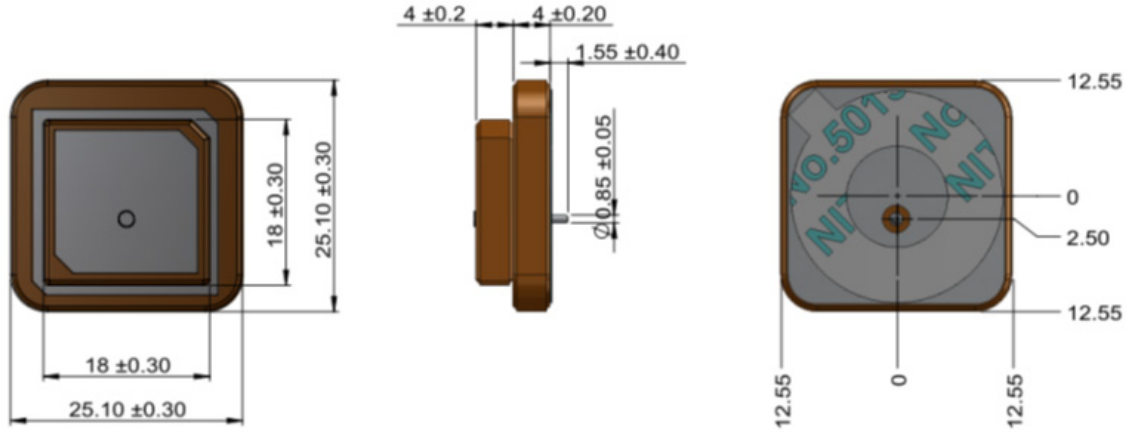
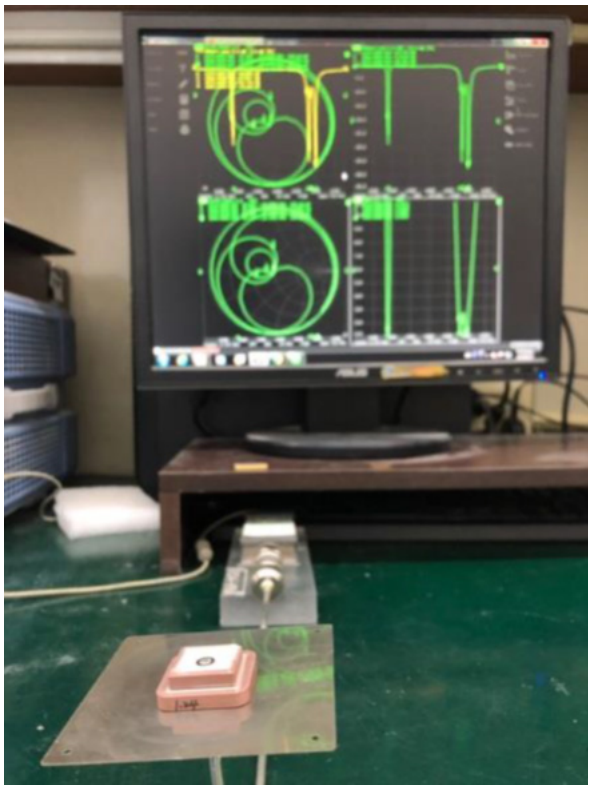
Product Dimensions



Unit : mm

Test Setup



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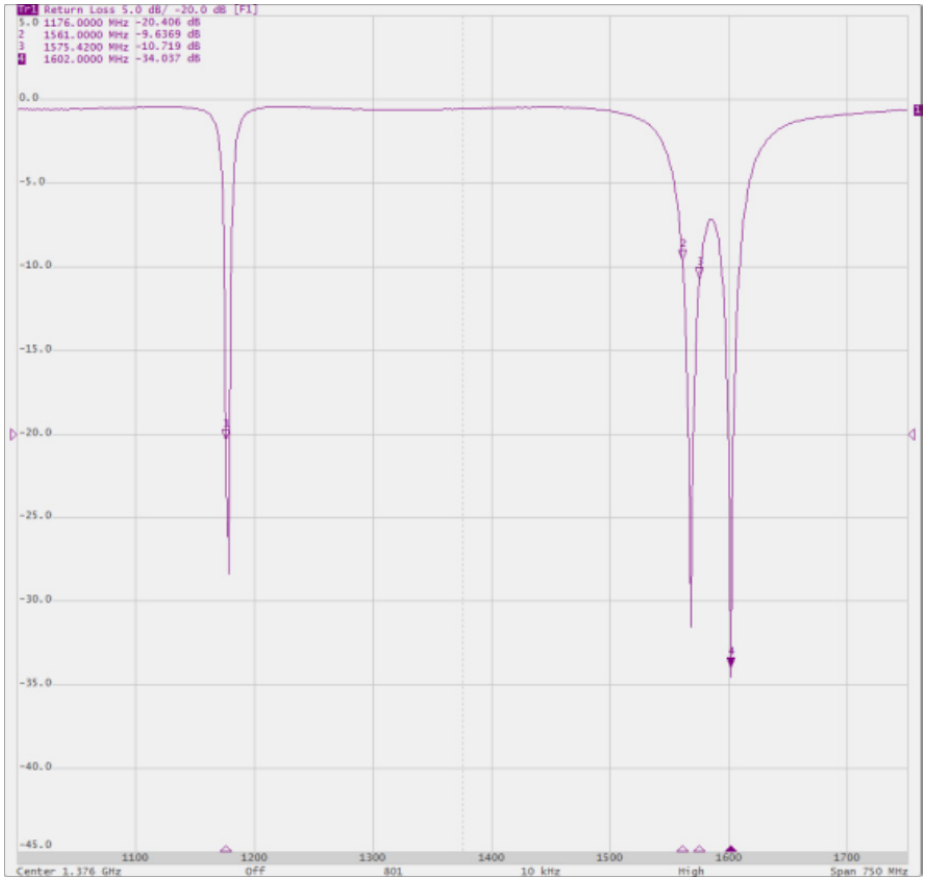
Test Measurement @ 25°C

L1 + L5 + Galileo + GLONASS + BeiDou :

S11



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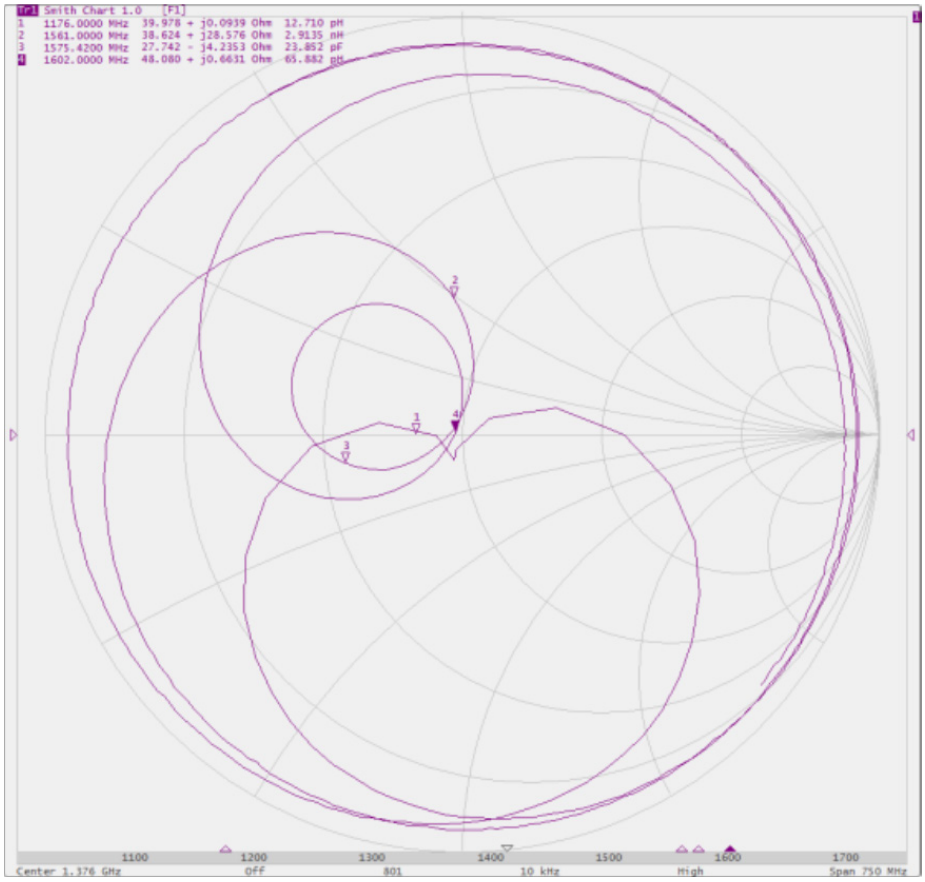
Impedance Characteristics



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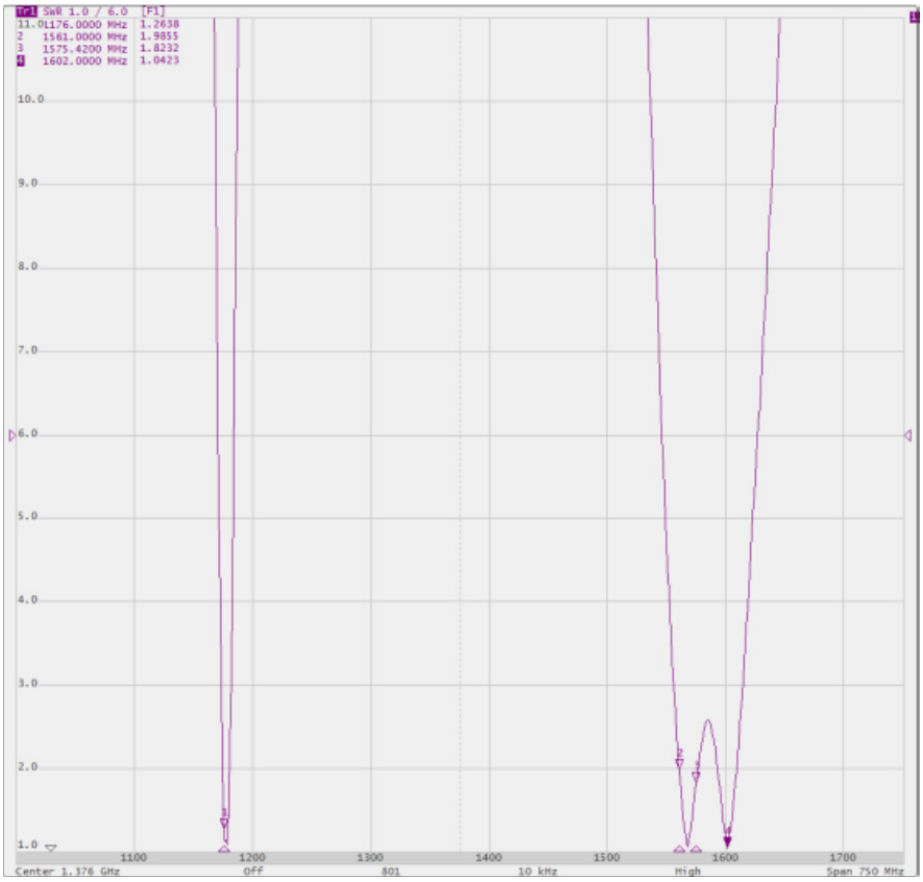
VSWR



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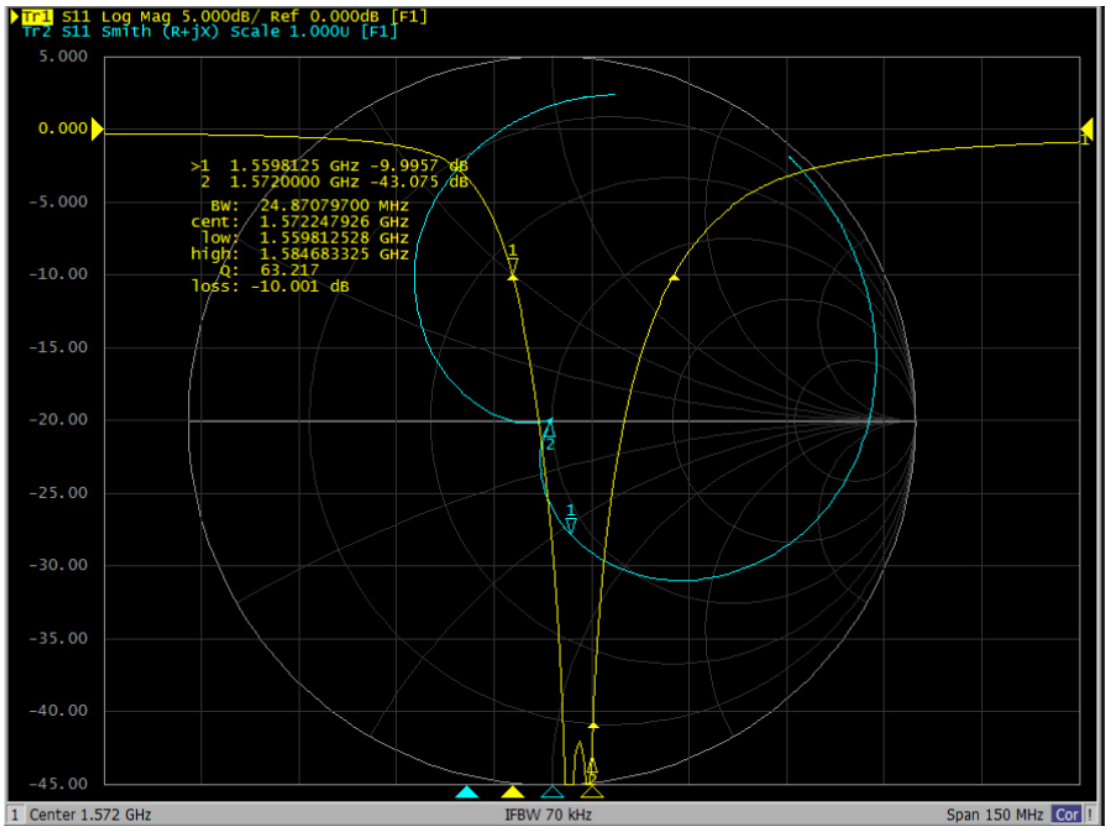
MSL = NA

L1



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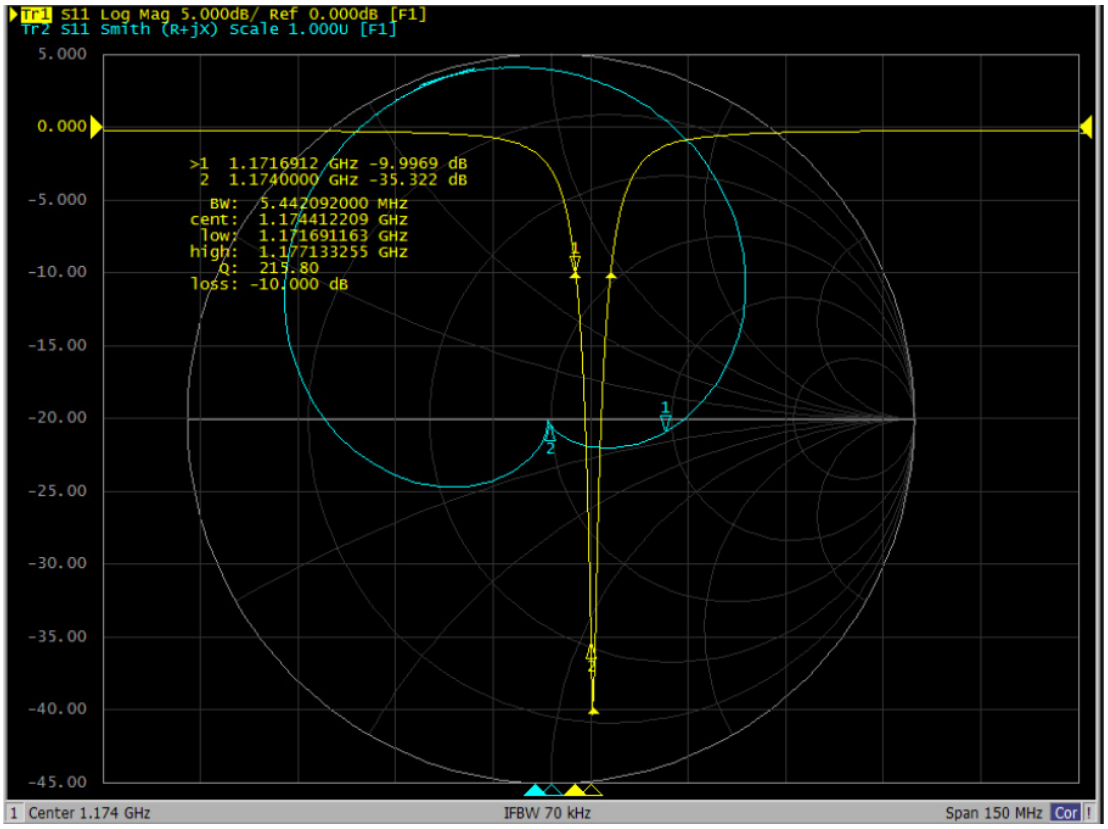
L5



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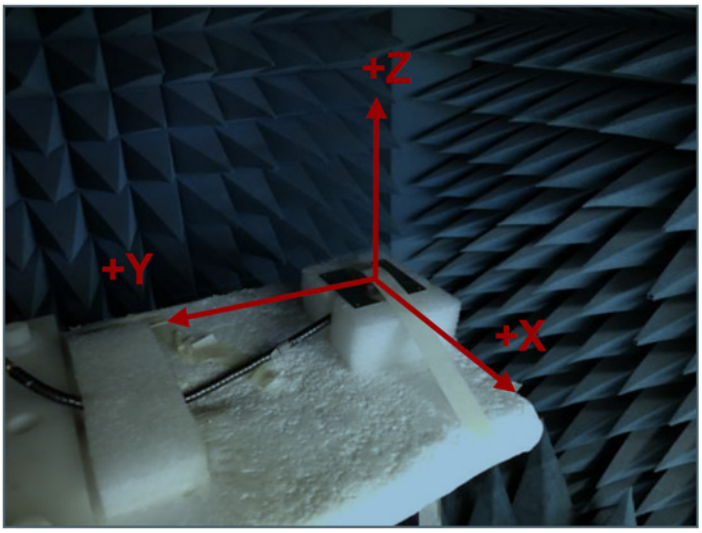
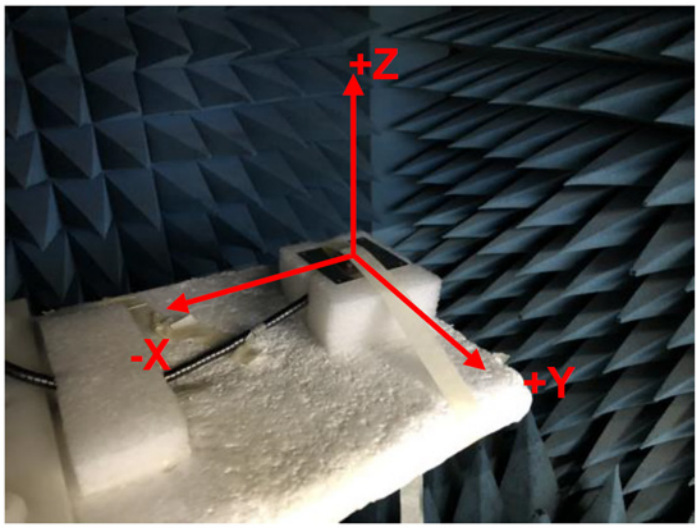
MSL = NA

Radiation Pattern Measurement

XZ Plane



YZ Plane



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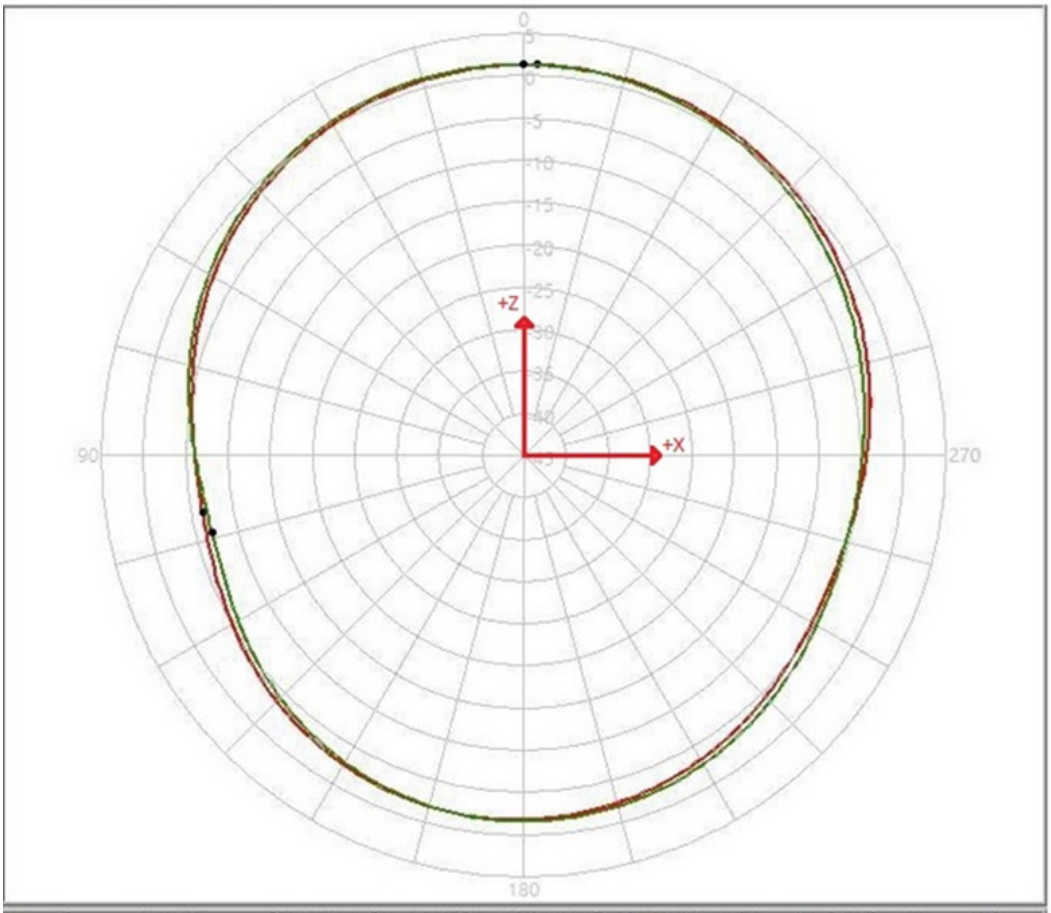
MSL = NA

Radiation Pattern

Gain : 1176 MHz



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	L1+L5+Ga+Gl	XZ	1176.00	1.29 / 358.00	-6.42 / 100.00	-1.91	V+H
2	L1+L5+Ga+Gl	YZ	1176.00	1.33 / 0.00	-6.99 / 104.00	-1.93	V+H

1176 MHz	10° ~ 30°	40° ~ 60°	70° ~ 80°
XZ (dBi)	-2.82	-0.16	1.17
YZ (dBi)	-3.58	-0.76	1.00

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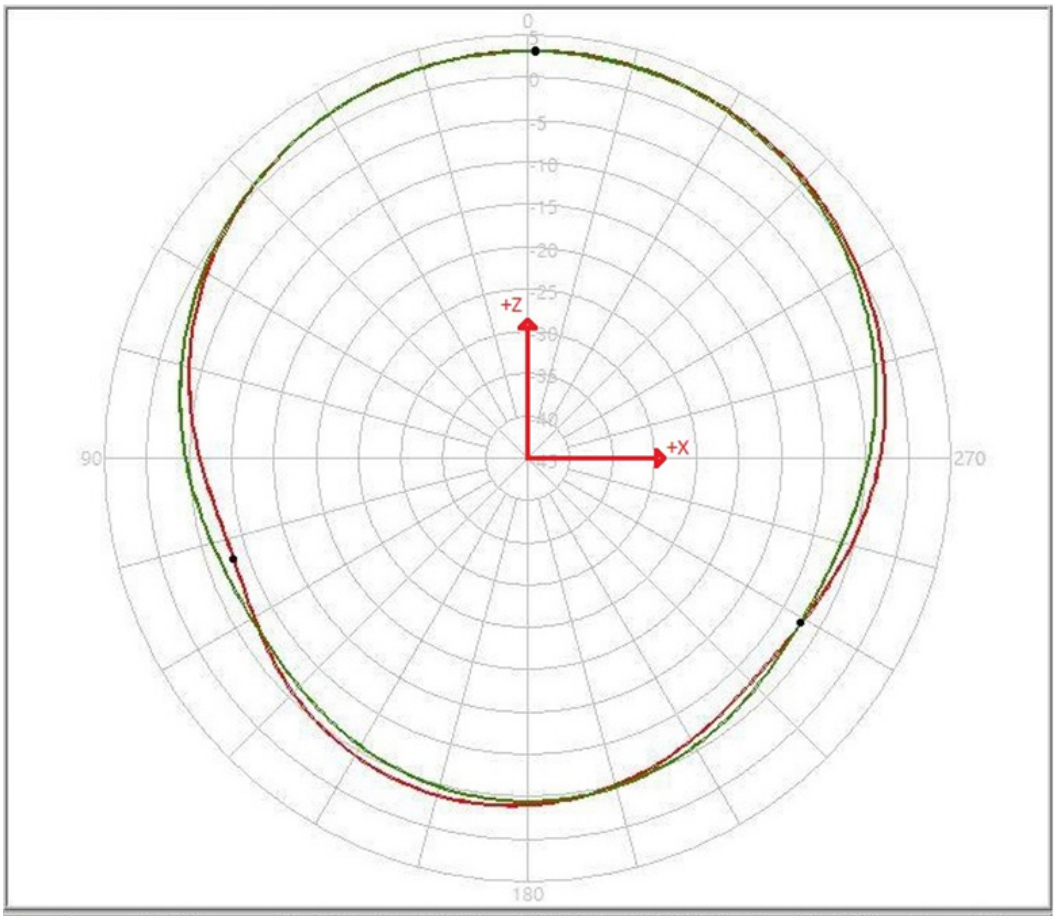
MSL = NA

Radiation Pattern

Gain : 1561 MHz



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	L1+L5+Ga+Gl	XZ	1561.00	3.13 / 359.00	-8.28 / 109.00	-1.18	V+H
2	L1+L5+Ga+Gl	YZ	1561.00	3.08 / 359.00	-7.35 / 239.00	-1.31	V+H

1561 MHz	10° ~ 30°	40° ~ 60°	70° ~ 80°
XZ (dBi)	-1.50	1.40	2.96
YZ (dBi)	-2.37	1.05	2.85

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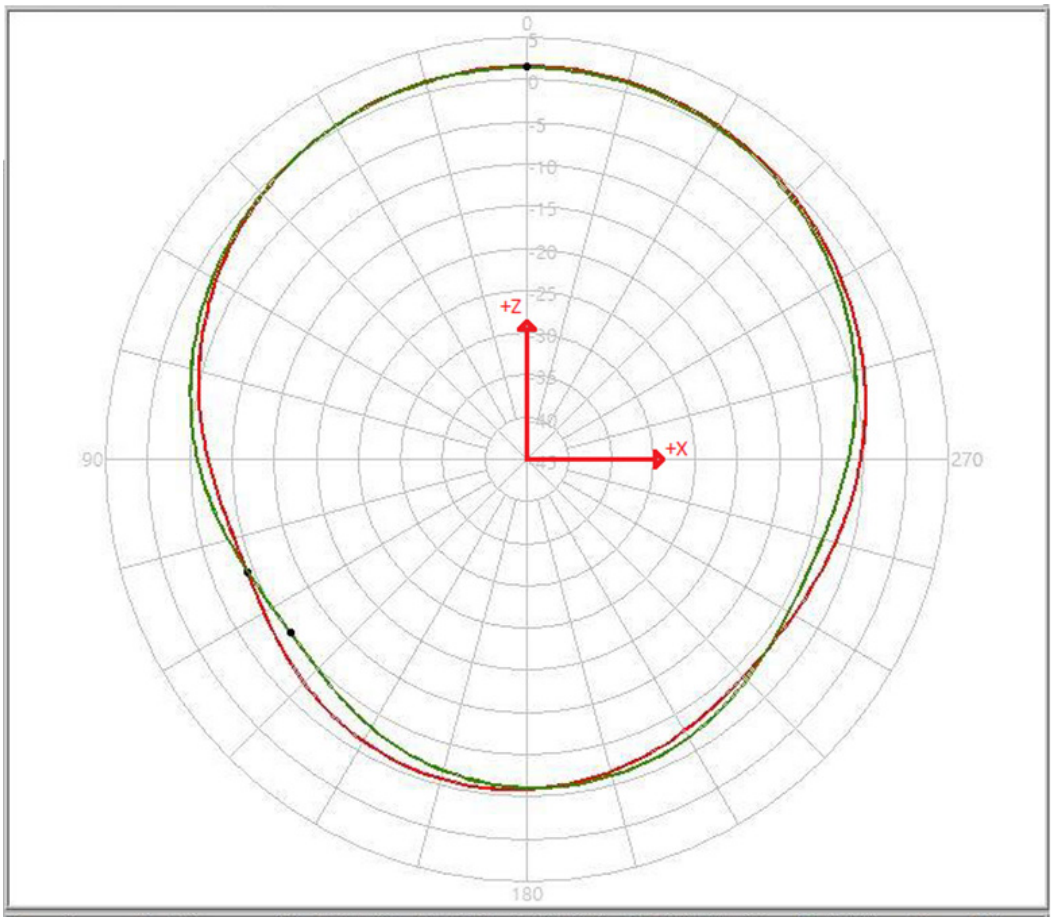
MSL = NA

Radiation Pattern

Gain : 1575.42 MHz



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	L1+L5+Ga+Gl	XZ	1575.42	1.58 / 0.00	-9.24 / 112.00	-2.78	V+H
2	L1+L5+Ga+Gl	YZ	1575.42	1.44 / 0.00	-10.25 / 126.00	-2.97	V+H

1575.42 MHz	10° ~ 30°	40° ~ 60°	70° ~ 80°
XZ (dBi)	-3.61	-0.57	1.29
YZ (dBi)	-4.63	-0.93	1.09

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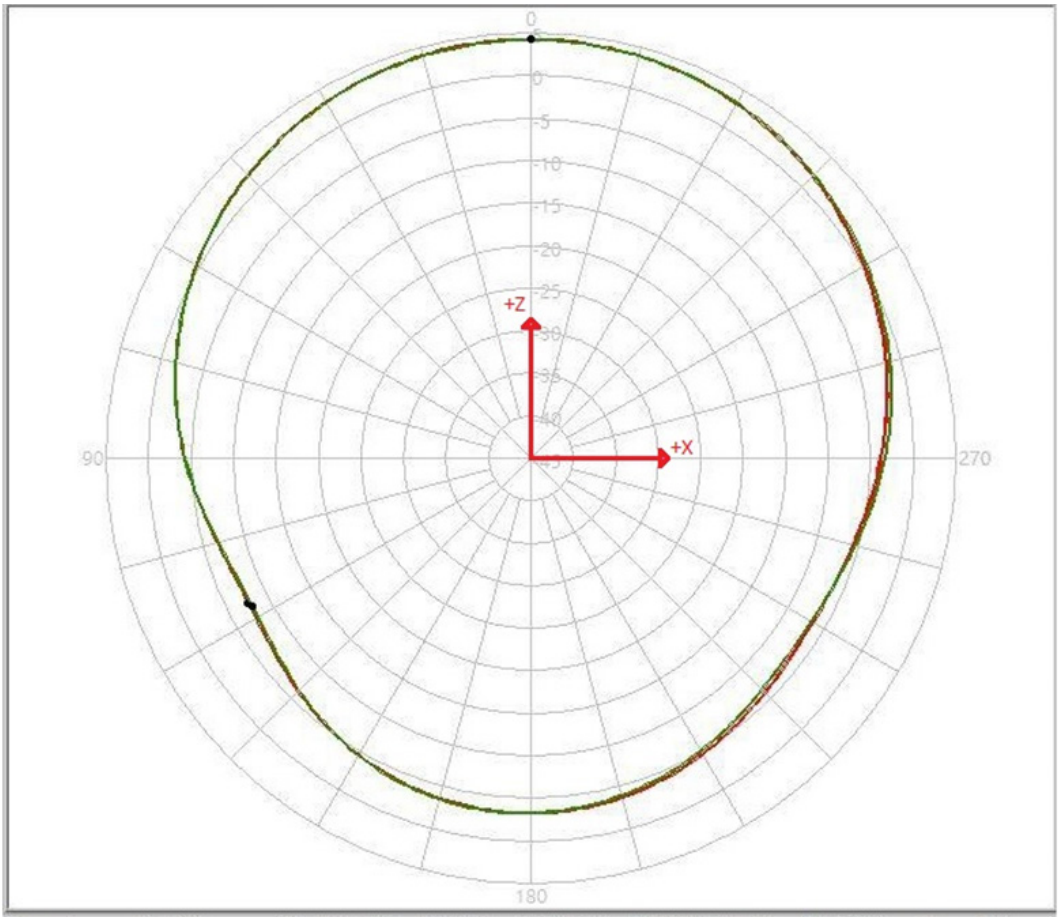
MSL = NA

Radiation Pattern

Gain : 1602 MHz



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	L1+L5+Ga+Gl	XZ	1602.00	4.25 / 0.00	-7.68 / 117.00	-0.25	V+H
2	L1+L5+Ga+Gl	YZ	1602.00	4.21 / 0.00	-7.88 / 118.00	-0.23	V+H

1575.42 MHz	10° ~ 30°	40° ~ 60°	70° ~ 80°
XZ (dBi)	-1.7	1.89	3.93
YZ (dBi)	-3.58	-0.76	3.93

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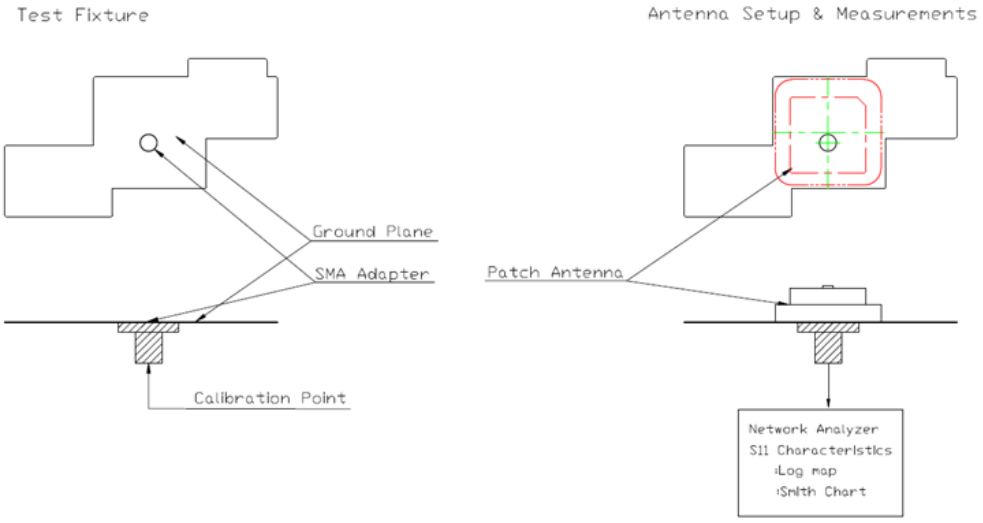
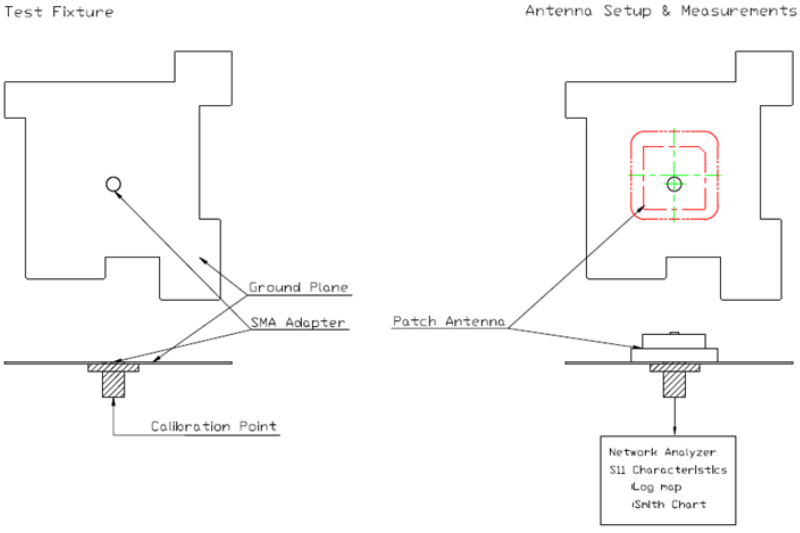
Test Fixture: Antenna Set Up and Measurement

L1:



L5:



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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).

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Packaging

A carton is 330 x 280 x 254 mm and holds 700 units.

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