

GNSS: GPS L1+L5/GLONASS/BeiDou Patch Antenna - Automotive Qualified

APRE2508GCZ

Request Samples



Check Inventory



25.1 x 25.1 x 8.0 mm
RoHS/RoHS II Compliant
MSL Level = 1

Features

- Complies with Automotive Qualification (AEC-Q200)
- Complies with IATF 16949 Certification
- Multiband GNSS patch with GPS L1+L5/GLONASS/BeiDou/Galileo
- Low VSWR ≤ 2
- RHCP polarization
- Peak Gain of 4.3 dBi
- Wide operating temperature (-40°C to +105°C)

Applications

- GNSS High-precision applications
- Automotive
- IoT, M2M, V2X
 - Industrial IoT
 - Infrastructure IoT
 - Consumer IoT
- Navigation
- Logistics
- Geofencing
- Remote monitoring
- Surveying and mapping systems

Product Image



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Electrical Specification

Parameter	Specification					Unit
	GPS		Galileo	GLONASS	BeiDou	
Operating Band	L5	L1				
Operating Frequency	1176.45 ± 12	1575.42 ± 1.023	1577 ± 14	1602 ± 5	1561.098 ± 2.046	MHz
VSWR _{max}	2					
Gain	1.3	1.6	1.6	4.3	3.1	dBi
Impedance	50					Ω
Polarization	RHCP					

Note :

- Ground Plane size : 70 x 70 mm
- Actual Electrical Value will depend on the size of ground plane in use

Mechanical Specification

Parameter	Specification
Antenna Dimension	25.1 x 25.1 x 8.0 mm
Material	Ceramic
Termination	Silver
Mounting Type	Through-Hole + Adhesive Tape

Environmental Specification

Parameter	Specification
Operating Temperature	-40°C to +105 °C
Storage Temperature	
Frequency Temperature Coefficient (T _f)	0 ± 20 ppm/ °C (-40 °C to +105 °C)
RoHS / RoHS II Compliant	Yes
MSL	1
Environmentally Friendly	Pb free
Relative Humidity	0~95%



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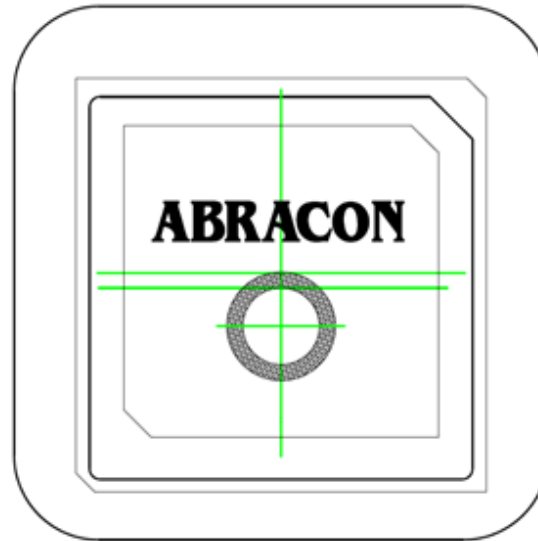


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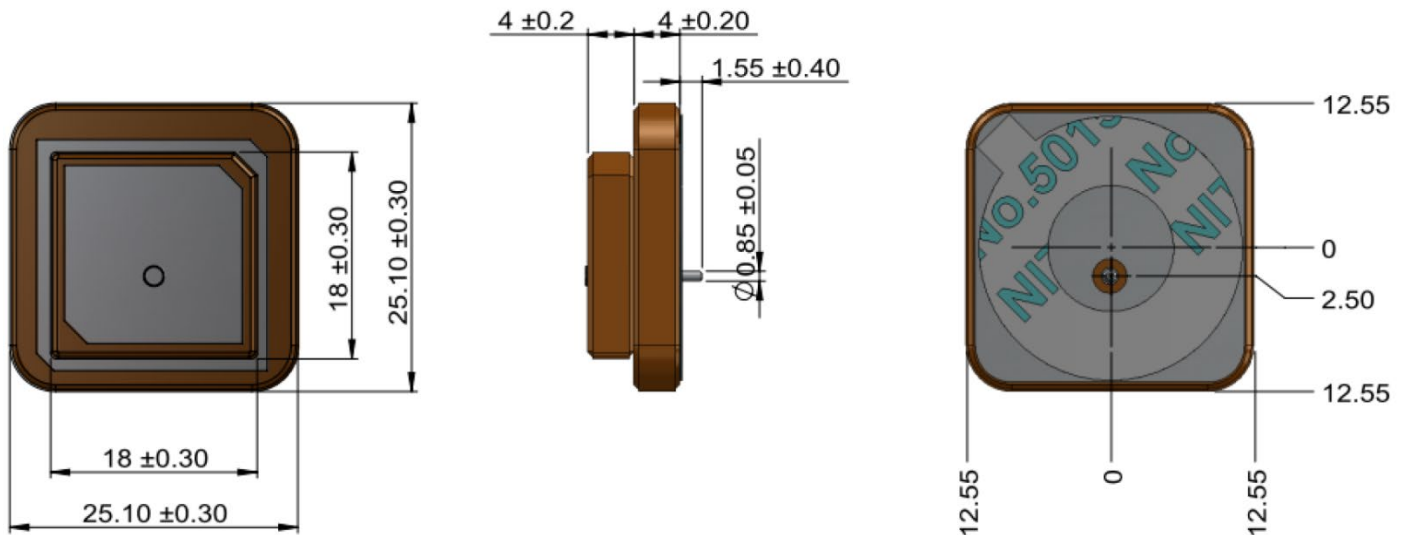


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Product Marking



Product Dimension



Unit : mm



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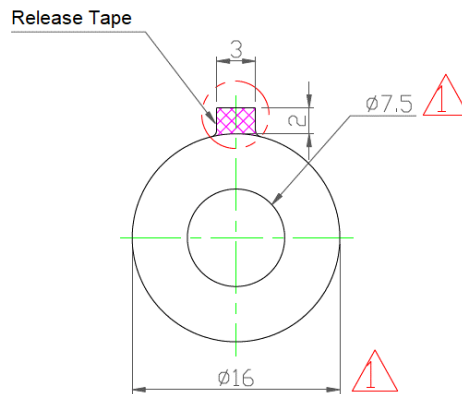


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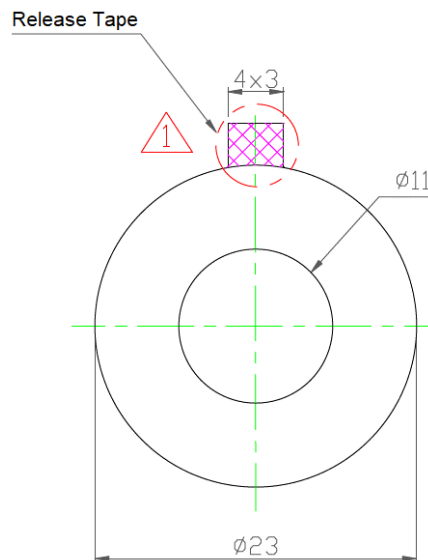
Tape Dimensions

NITTO – NO.5015 | Double-coated thin adhesive tape | Thickness : 0.12 m

18 x 18 mm Patch



25 x 25 mm Patch



Unit : mm

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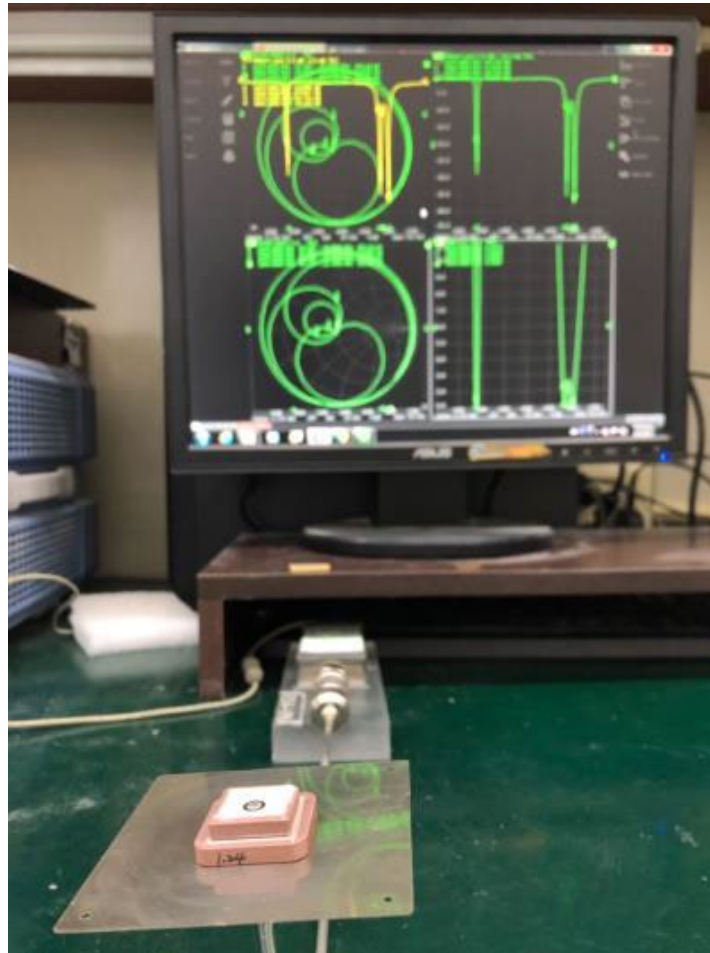


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Test Measurement : Return Loss/Smith Chart/VSWR – GPS L1 & L5 + Galileo + GLONASS + BeiDou



Frequency (MHz)	Return Loss : S11 (dB)	Impedance (Ω)	VSWR
1176	-20.40	$39.97 - j0.09$	1.26
1561	-9.63	$38.62 + j28.57$	1.98
1575.42	-10.71	$27.74 - j4.23$	1.52
1602	-34.03	$48.08 + j0.66$	1.04

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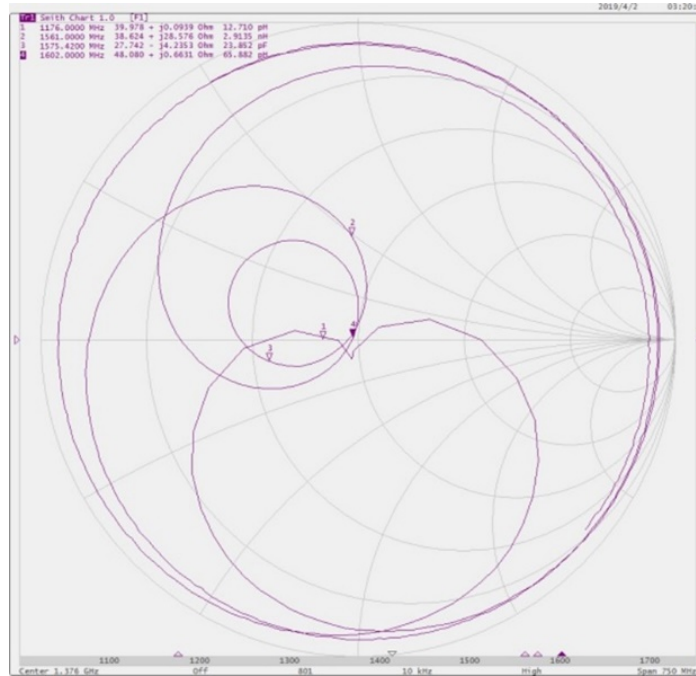


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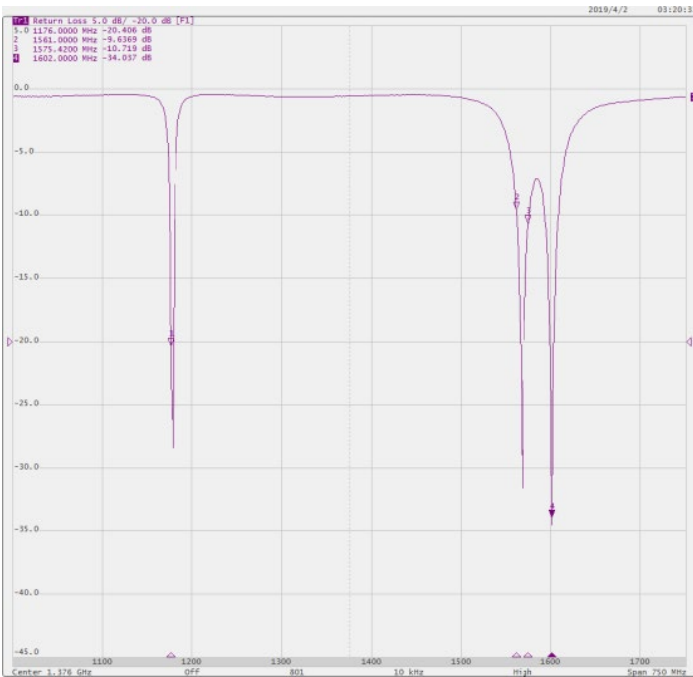


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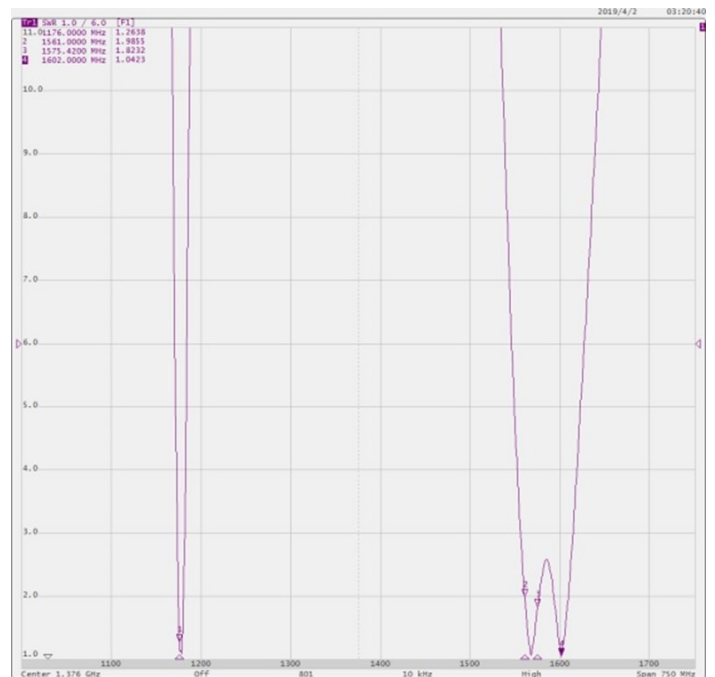
Smith Chart



Return Loss



VSWR



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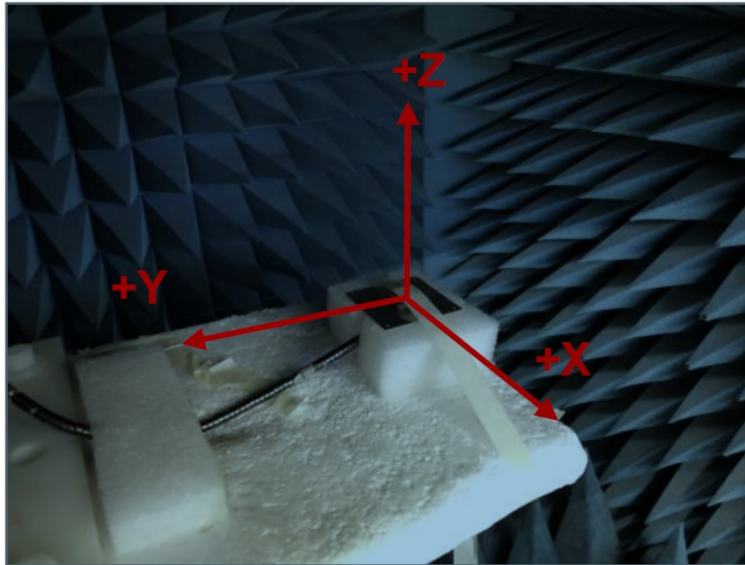
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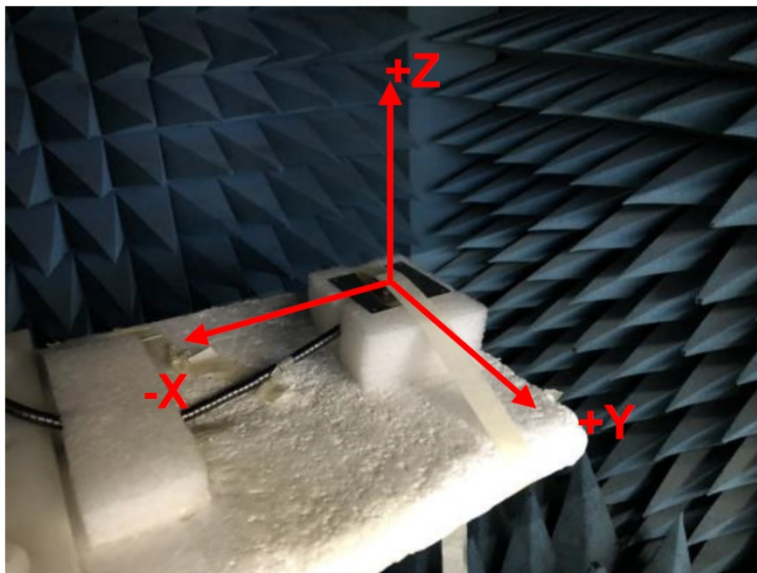
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Radiation Measurement – Set up

XZ – Plane



YZ – Plane



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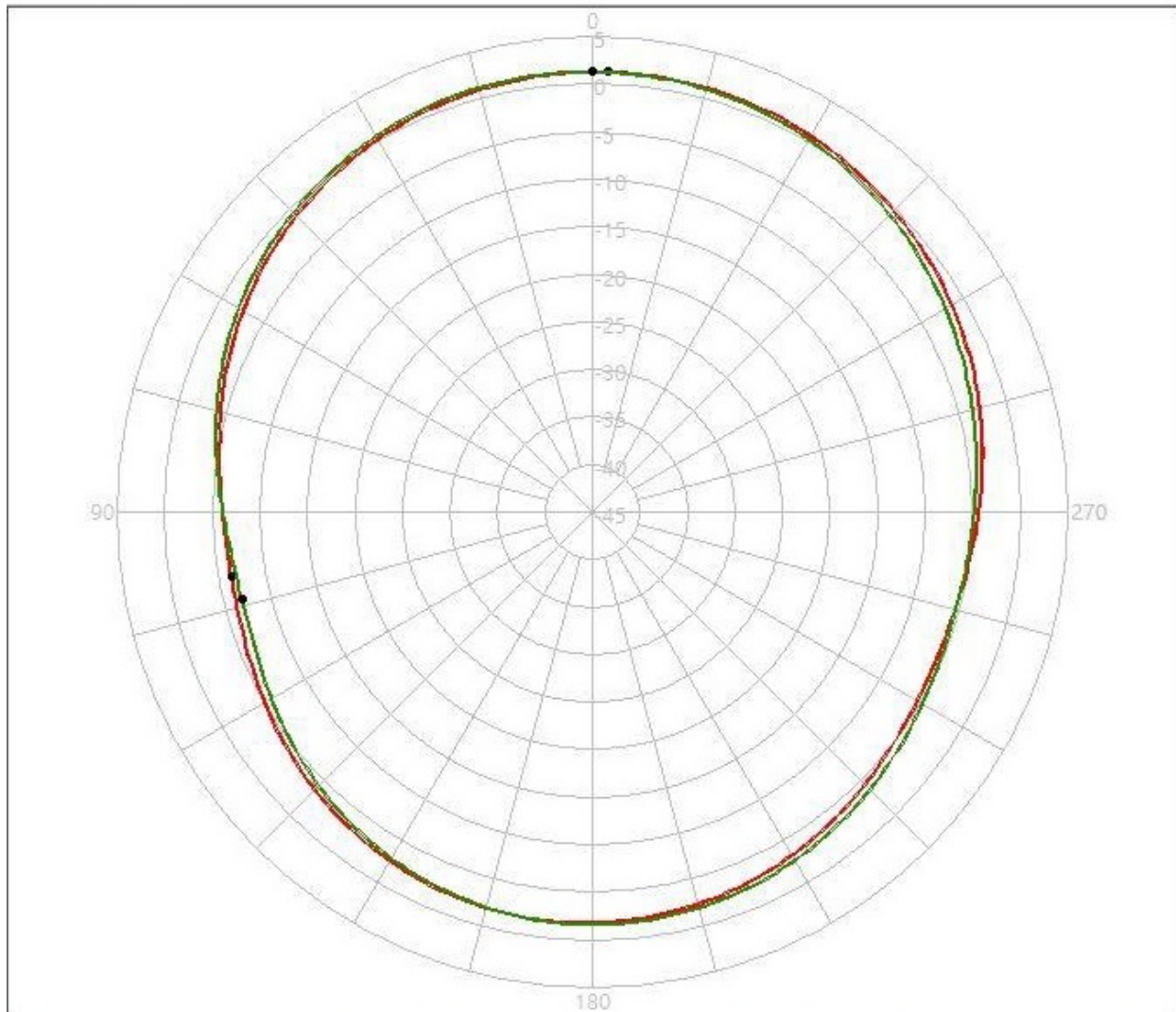
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Radiation Measurement – 2D Pattern

1176 MHz



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	L1+L5+Ga+G1	XZ	1176.00	1.29 / 358.00	-6.42 / 100.00	-1.91	V+H
2	L1+L5+Ga+G1	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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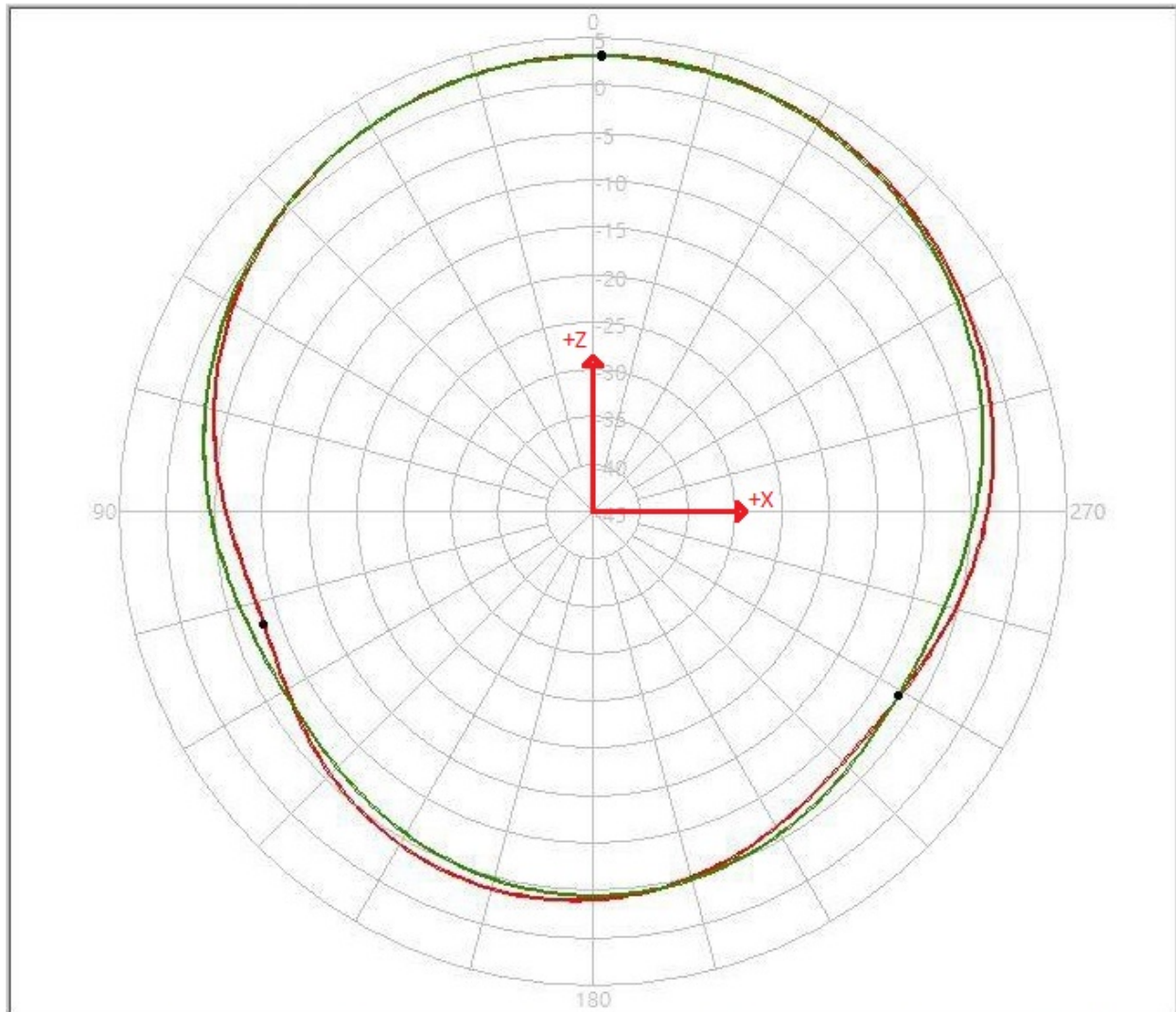


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1561 MHz



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	L1+L5+Ga+G1	XZ	1561.00	3.13 / 359.00	-8.28 / 109.00	-1.18	V+H
2	L1+L5+Ga+G1	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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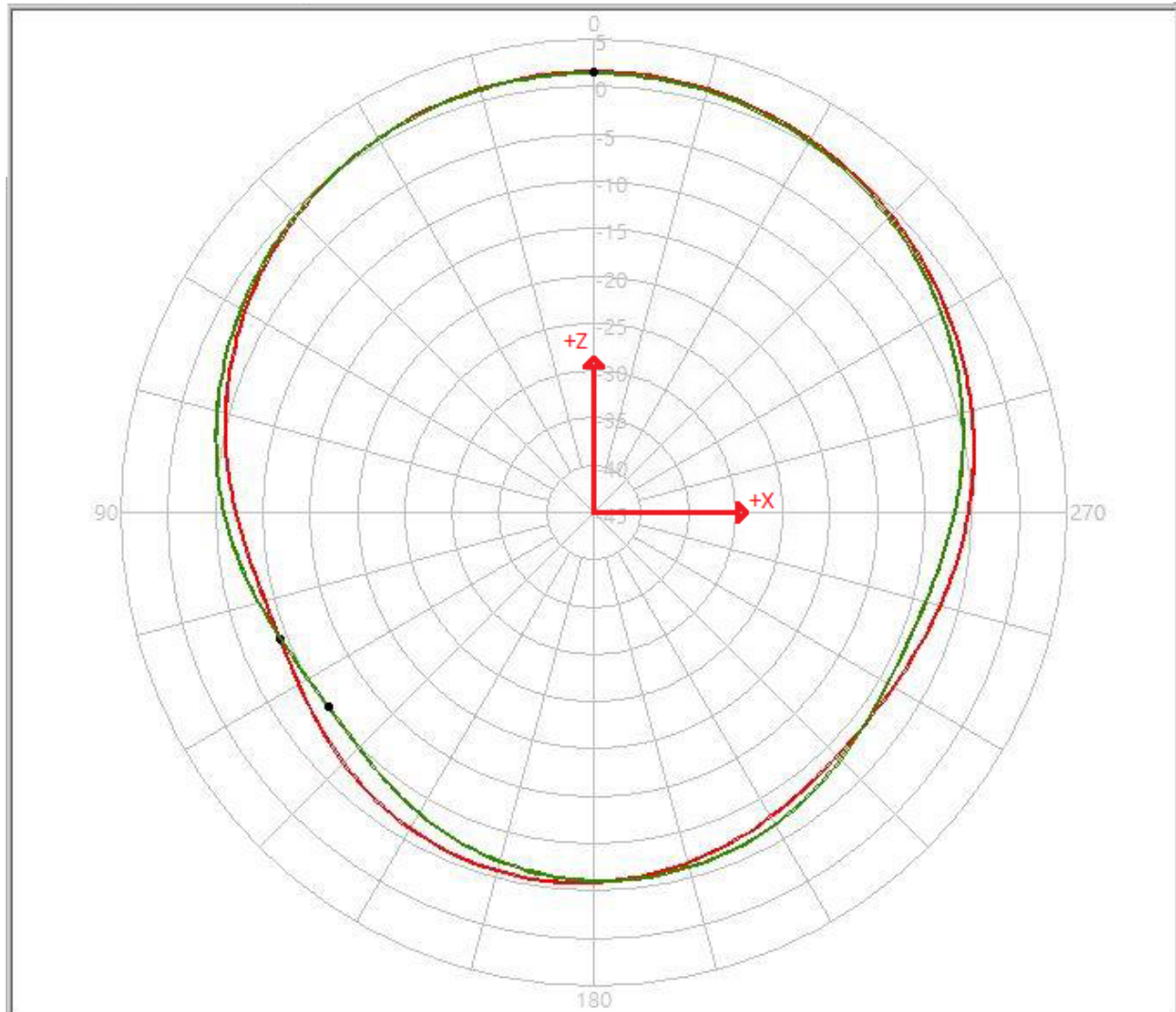


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1575.42 MHz



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	L1+L5+Ga+G1	XZ	1575.42	1.58 / 0.00	-9.24 / 112.00	-2.78	V+H
2	L1+L5+Ga+G1	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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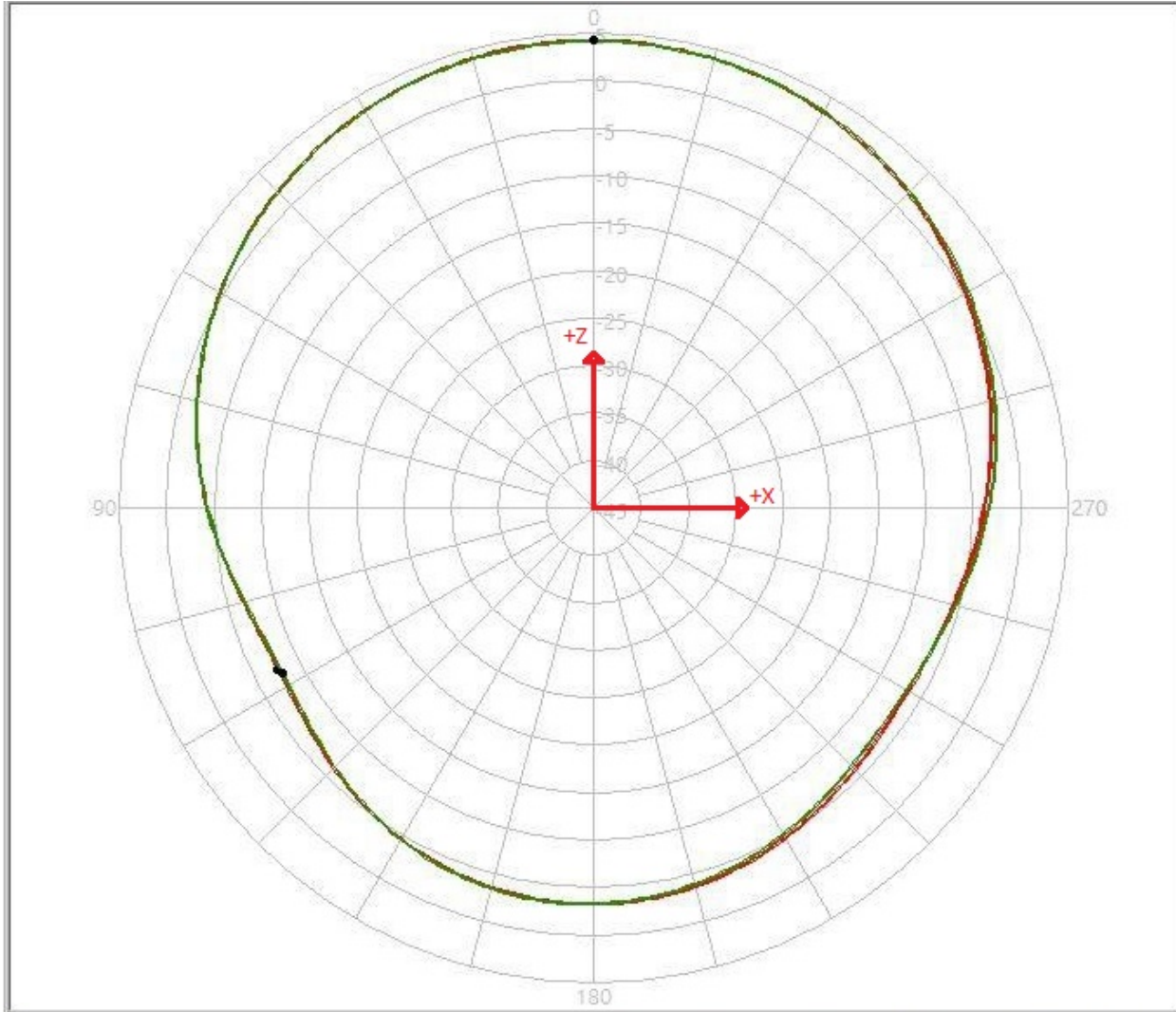


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 MSL Level = 1

1602 MHz



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	L1+L5+Ga+G1	XZ	1602.00	4.25 / 0.00	-7.68 / 117.00	-0.25	V+H
2	L1+L5+Ga+G1	YZ	1602.00	4.21 / 0.00	-7.88 / 118.00	-0.23	V+H

1602 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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Soldering Condition

- Soldering should be done in 3 seconds by a feed pin of maximum temperature +290 °C.

Precautions

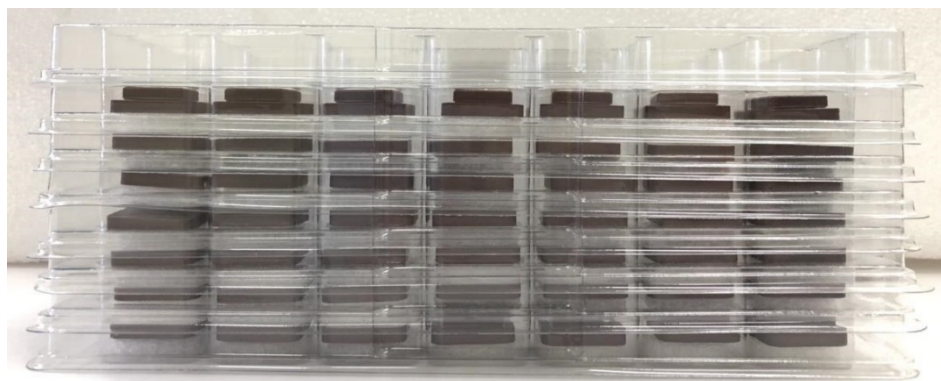
- Soldering : Do not direct solder onto the silver electrode of the antenna pattern.
- Antenna pattern uses an Ag / Ni / Sn electrode. Do not use the patch antenna in a corrosive gaseous atmosphere for example sulfur gas, chlorine gas.

Packaging Information

Dimensions of the Carton : 330 x 280 x 270 mm

Number of pcs per Carton : 700

DA Tray Packaging (25 pcs/Tray)



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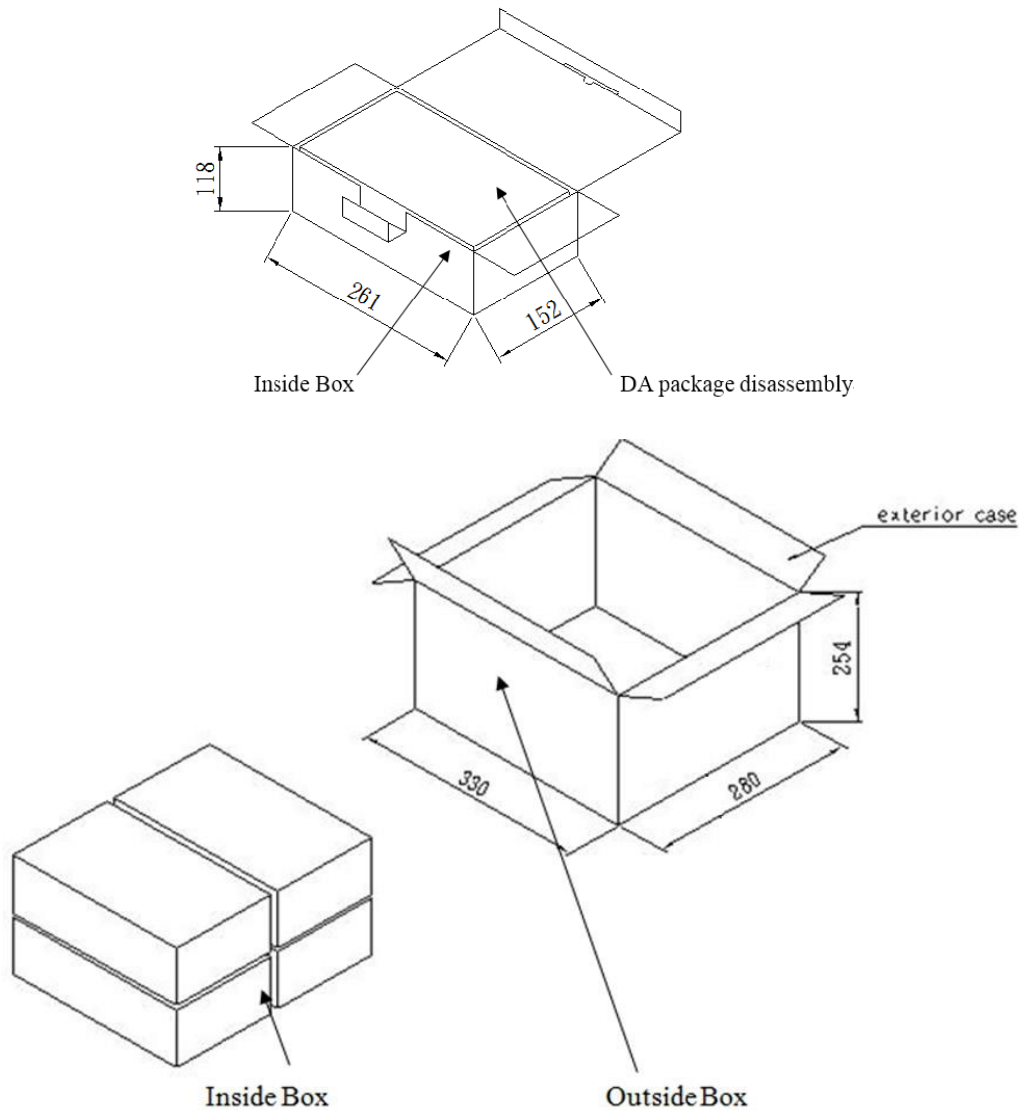
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Inner Box Packaging : 175 pcs (261 x 152 x 118 mm)

Outer Box Packaging : 700 pcs (330 x 280 x 254 mm)



Unit : mm

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