

# GNSS Patch Antenna - Automotive Qualified



APRA1804G3Z

Request Samples



Check Inventory



18 x 18 x 4.0 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/GLONASS/BeiDou/Galileo
- Low Return loss
- RHCP polarization
- Wide operating temperature (-40°C to +105°C)
- Peak Gain of 4.7 dBi
  - GPS: 2.5 dBi
  - GLONASS: 4.7 dBi
  - BeiDou: 3.5 dBi

## Applications

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

## Product Dimension



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## Electrical Specifications

Parameter	Specification			Unit
	GPS / Galileo	GLONASS	BeiDou	
Operating Band	GPS / Galileo	GLONASS	BeiDou	
Operating Frequency	1575.42 ± 1.023	1602 ± 5	1561.098 ± 2.046	MHz
Peak Gain	2.0	4.0	3.0	dBi
Max VSWR	3			
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 Specifications

Parameter	Specification
Antenna Dimension	18 x 18 x 4 mm
Material	Ceramic
Termination	Silver
Mounting Type	Through-Hole + Adhesive Tape

## Environmental Specifications

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



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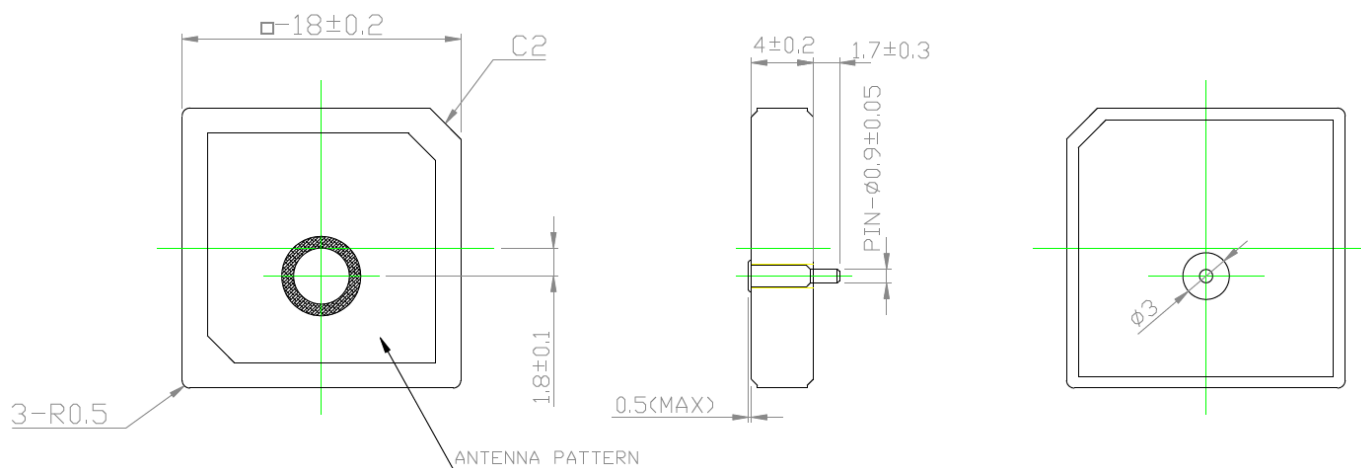


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## Product Marking



## Product Dimension



Unit : mm



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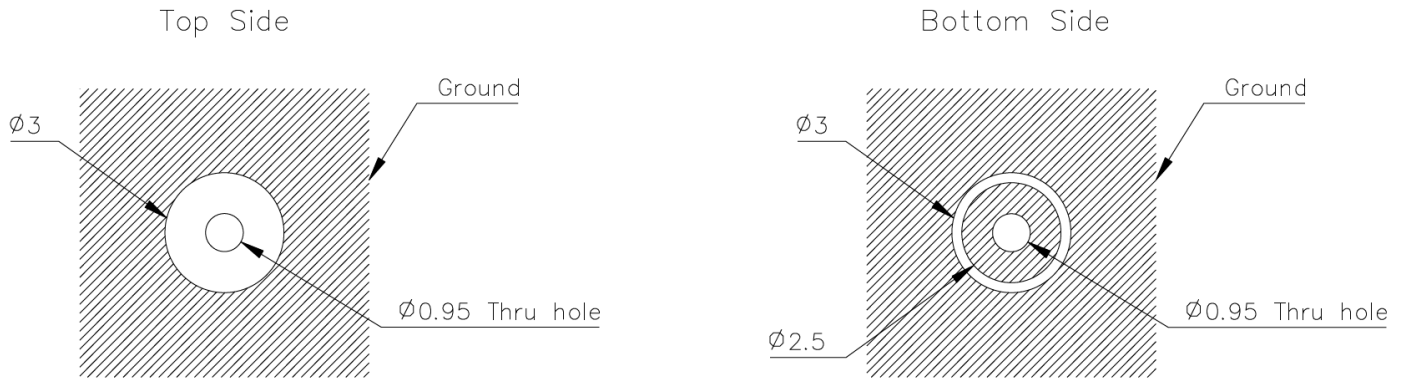


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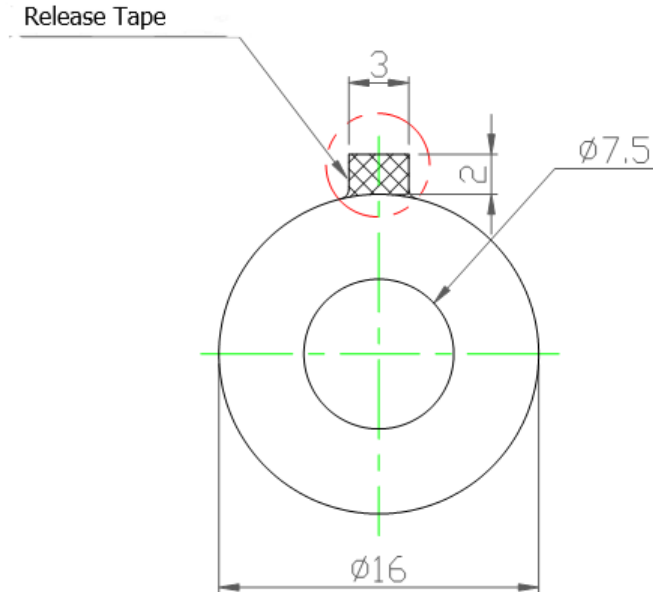
## Layout Dimensions



TOL :  $\pm 0.2$

Unit : mm

## Tape Dimensions



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

Unit : mm



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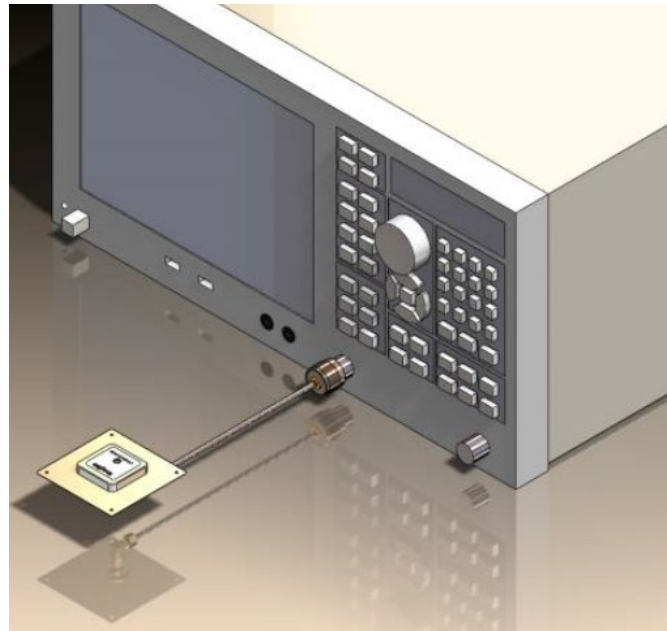


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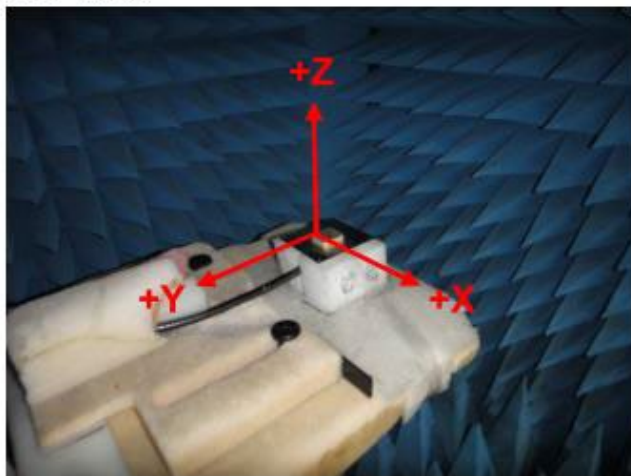
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RoHS/RoHS II Compliant  
MSL Level = 1

## VNA Test Measurement – Set up

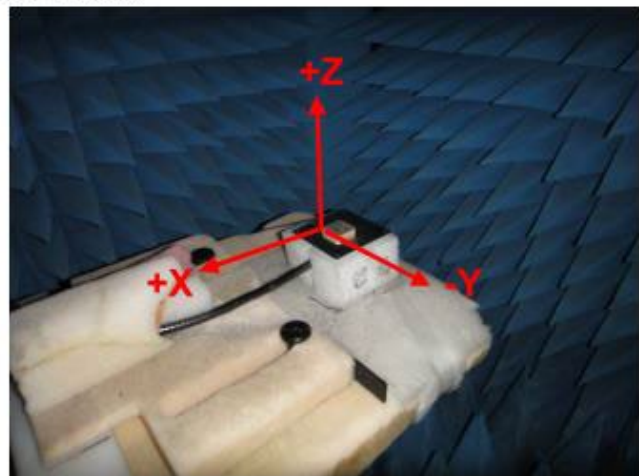


## Radiation Measurement – Set up

XZ-Plane



YZ-Plane



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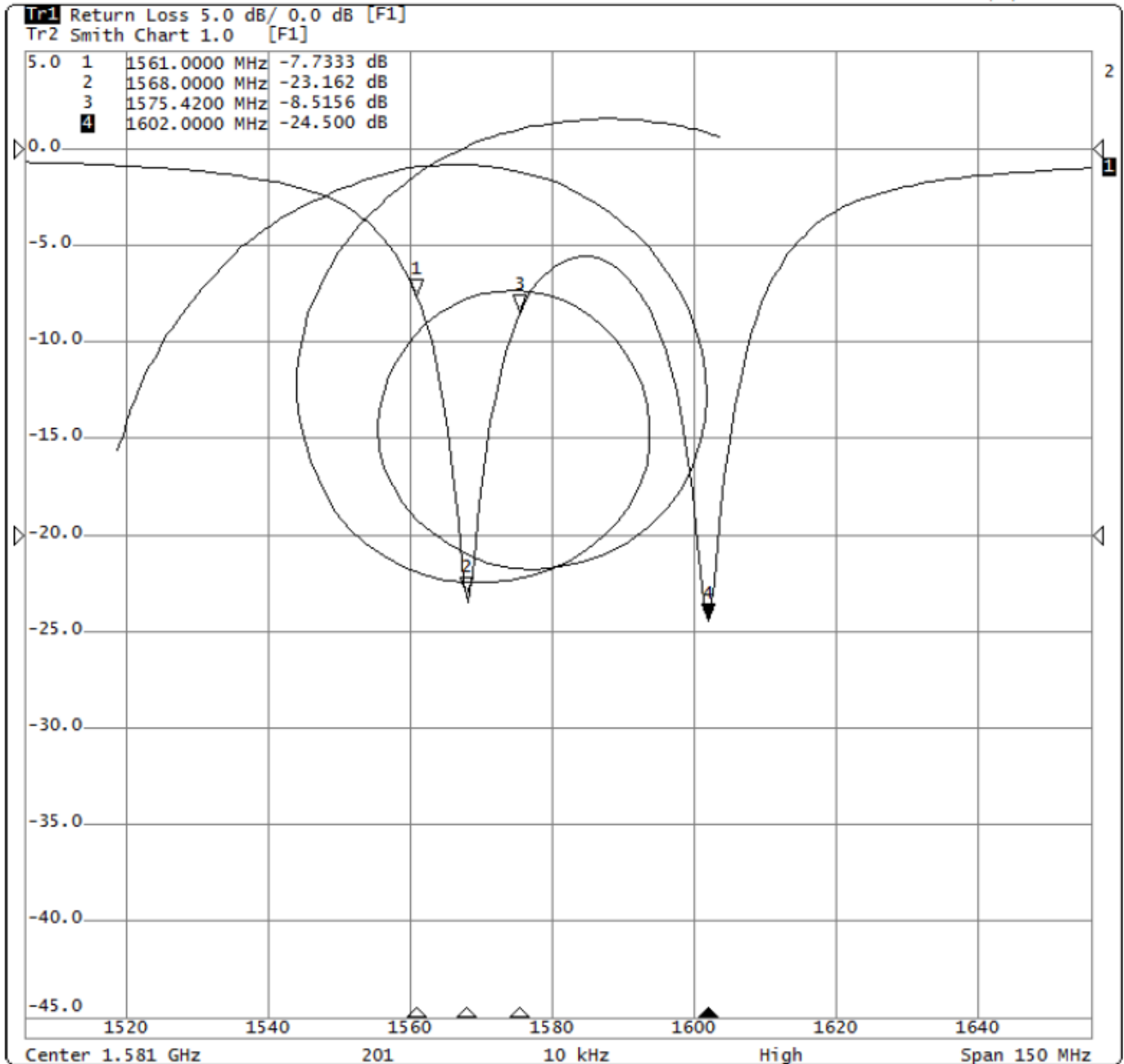


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## Test Measurement – Return Loss



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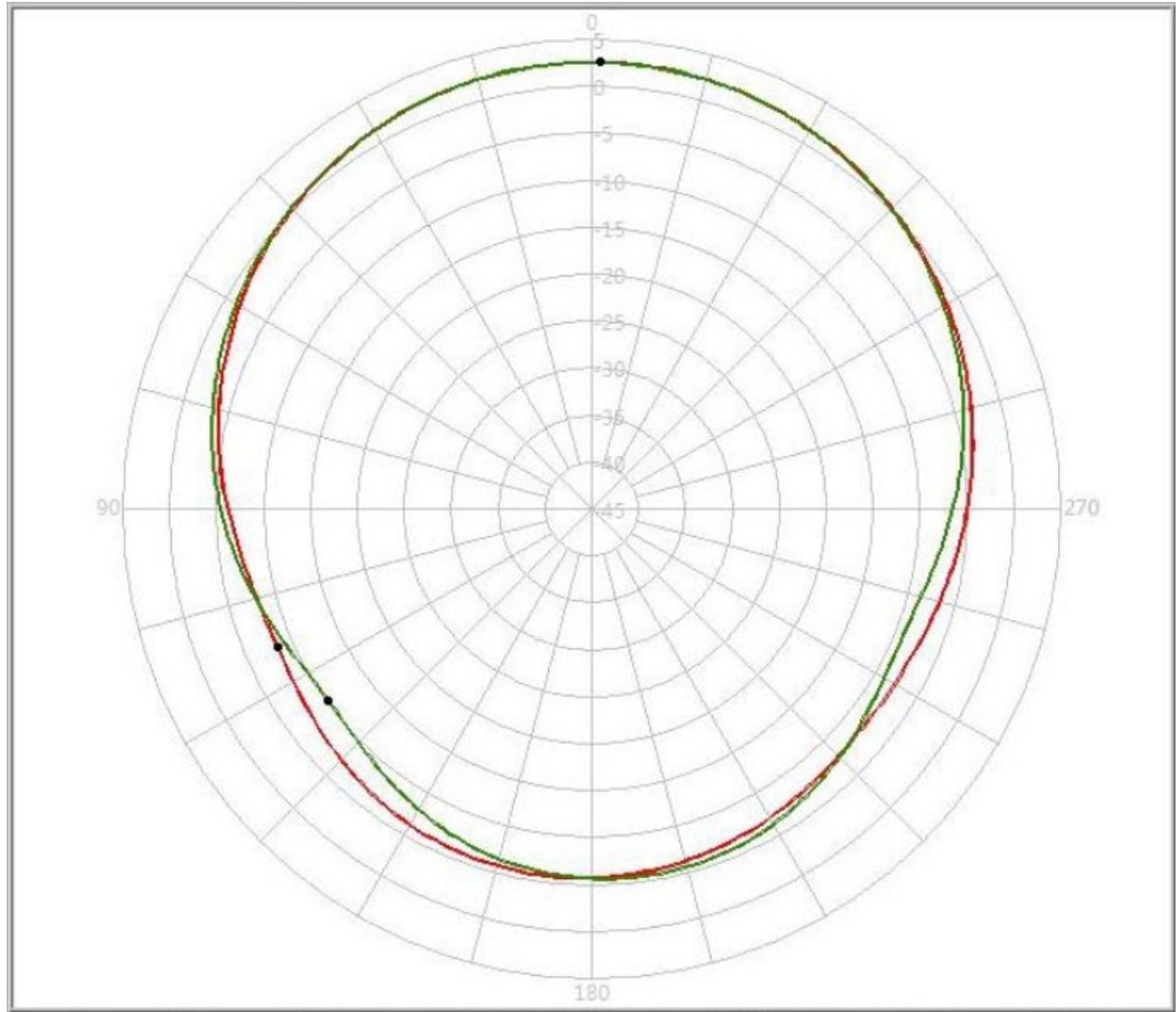
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## Radiation Measurement — 2D Pattern

### XZ + YZ Plane : 1575.42 MHz



Pattern	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	XZ	1575.42	2.57 / 358.99	-8.44 / 113.58	-1.97	V+H
2	YZ	1575.42	2.56 / 358.99	-10.26 / 126.05	-2.07	V+H





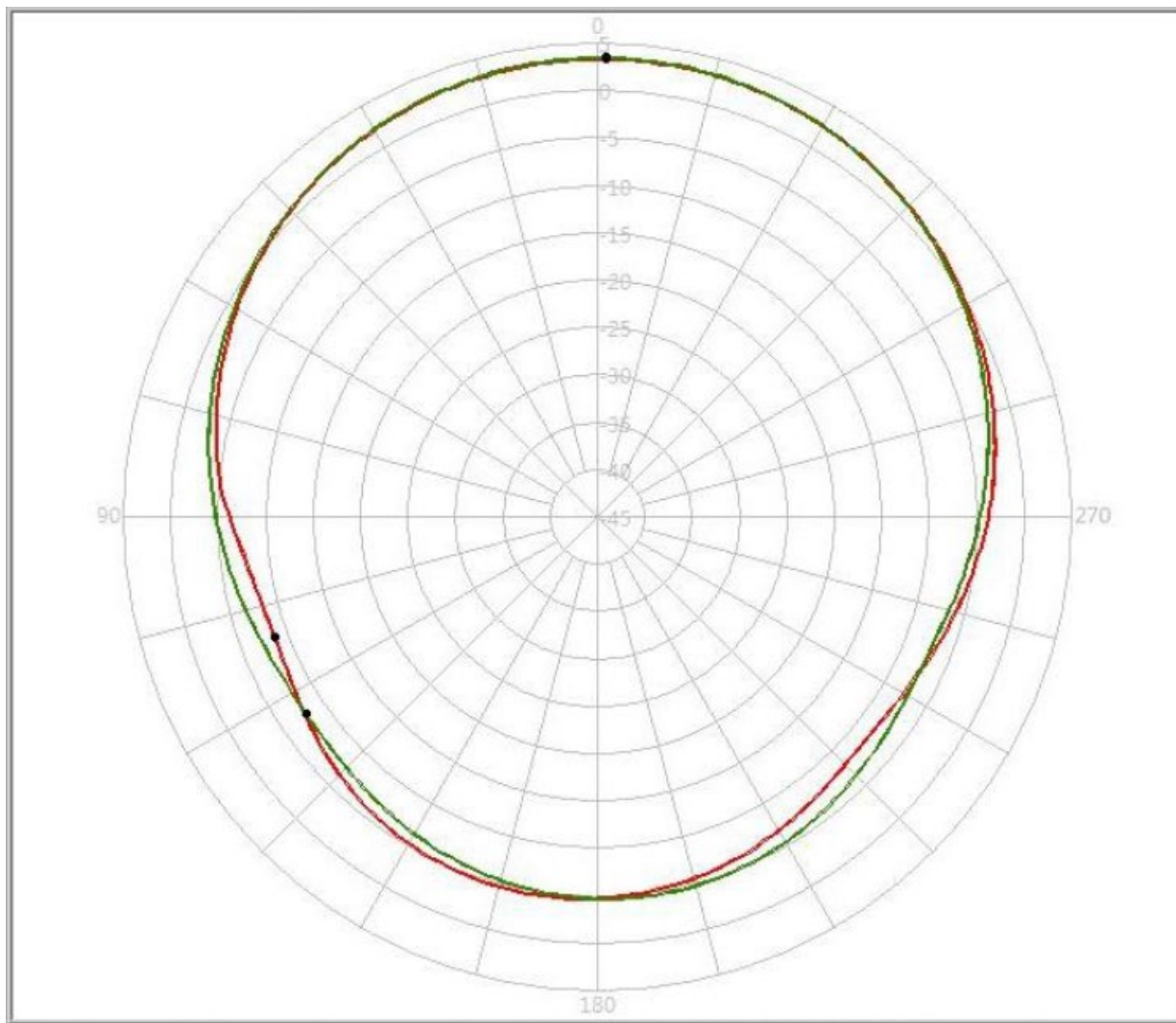
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18 x 18 x 4.0 mm  
**RoHS/RoHS II Compliant**  
 MSL Level = 1

## XZ + YZ – Plane : 1561 MHz



Pattern	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	XZ	1561.00	3.32 / 358.99	-8.68 / 110.54	-1.18	V+H
2	YZ	1561.00	3.45 / 358.99	-7.91 / 124.03	-1.11	V+H



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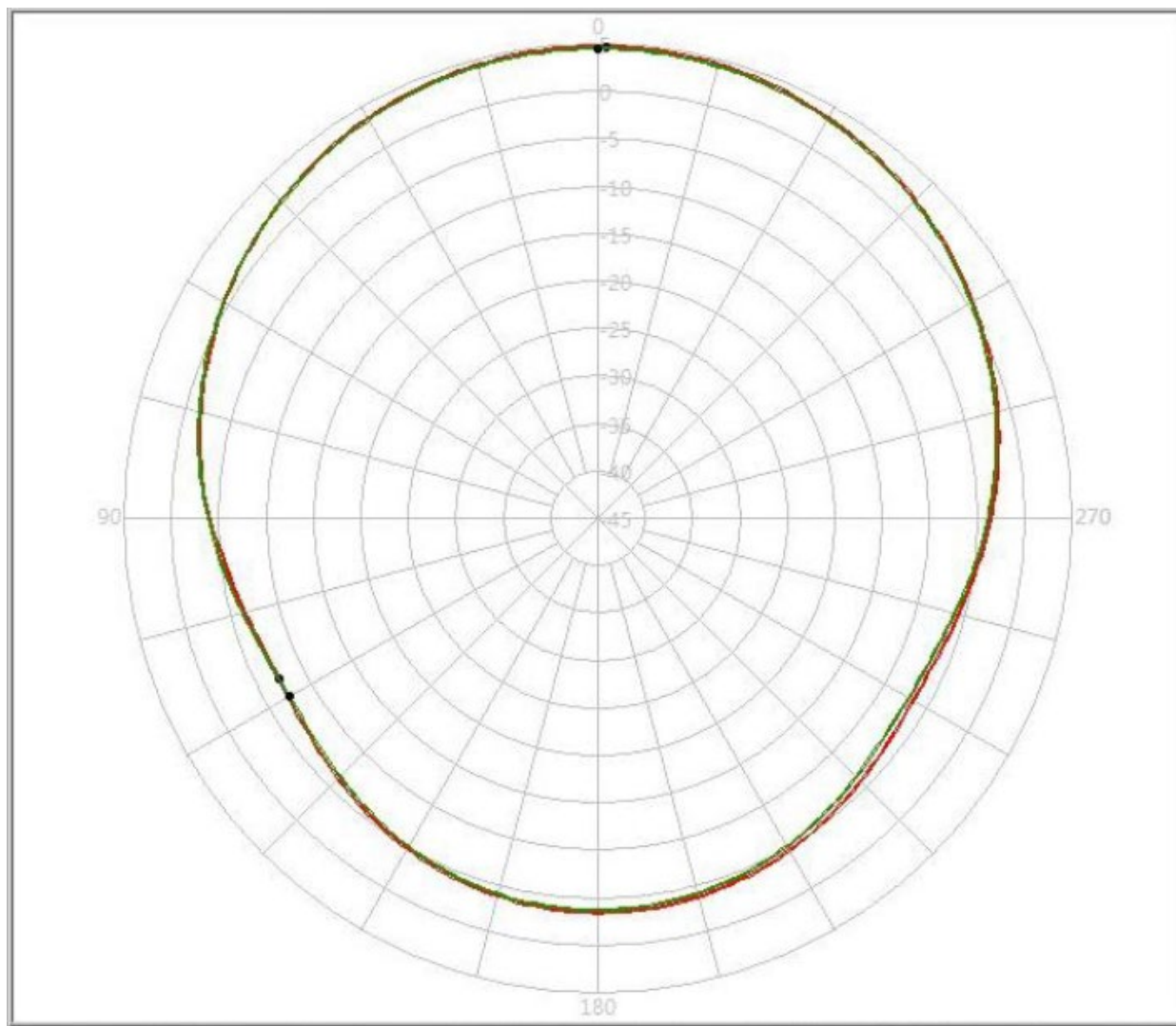
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Request Samples

Check Inventory

18 x 18 x 4.0 mm  
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## XZ + YZ – Plane : 1602 MHz



Pattern	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	XZ	1602.00	4.72 / 358.99	-7.34 / 116.62	0.08	V+H
2	YZ	1602.00	4.52 / 0.00	-7.37 / 120.00	-0.08	V+H



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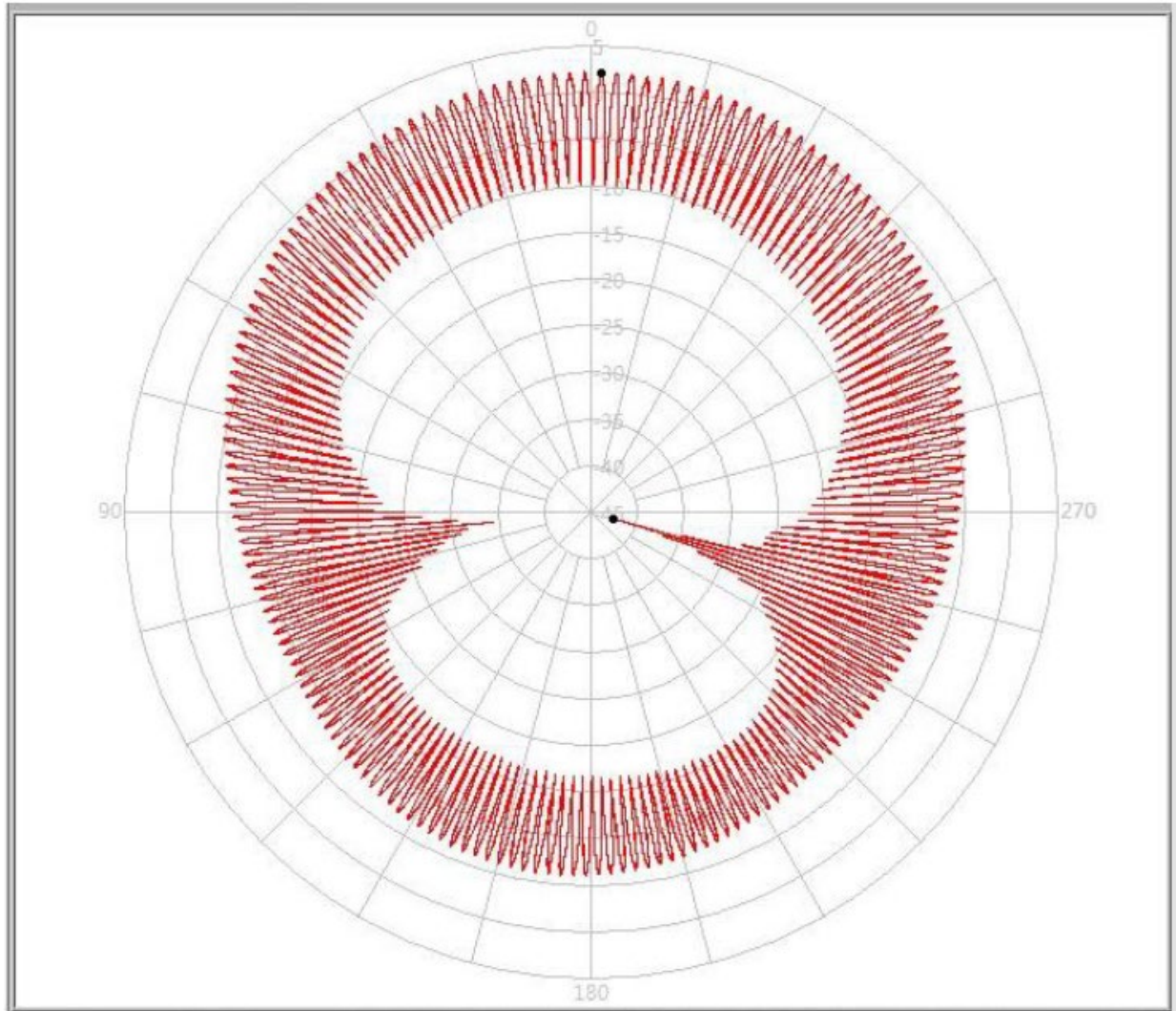
Check Inventory



**18 x 18 x 4.0 mm**  
**RoHS/RoHS II Compliant**  
**MSL Level = 1**

## Axial Ratio

**1575.42 MHz**



Pattern	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	<span style="color: red;">■</span> Axial Ratio	1575.42	2.07 / 358.60	-42.48 / 253.60	-5.27	CP



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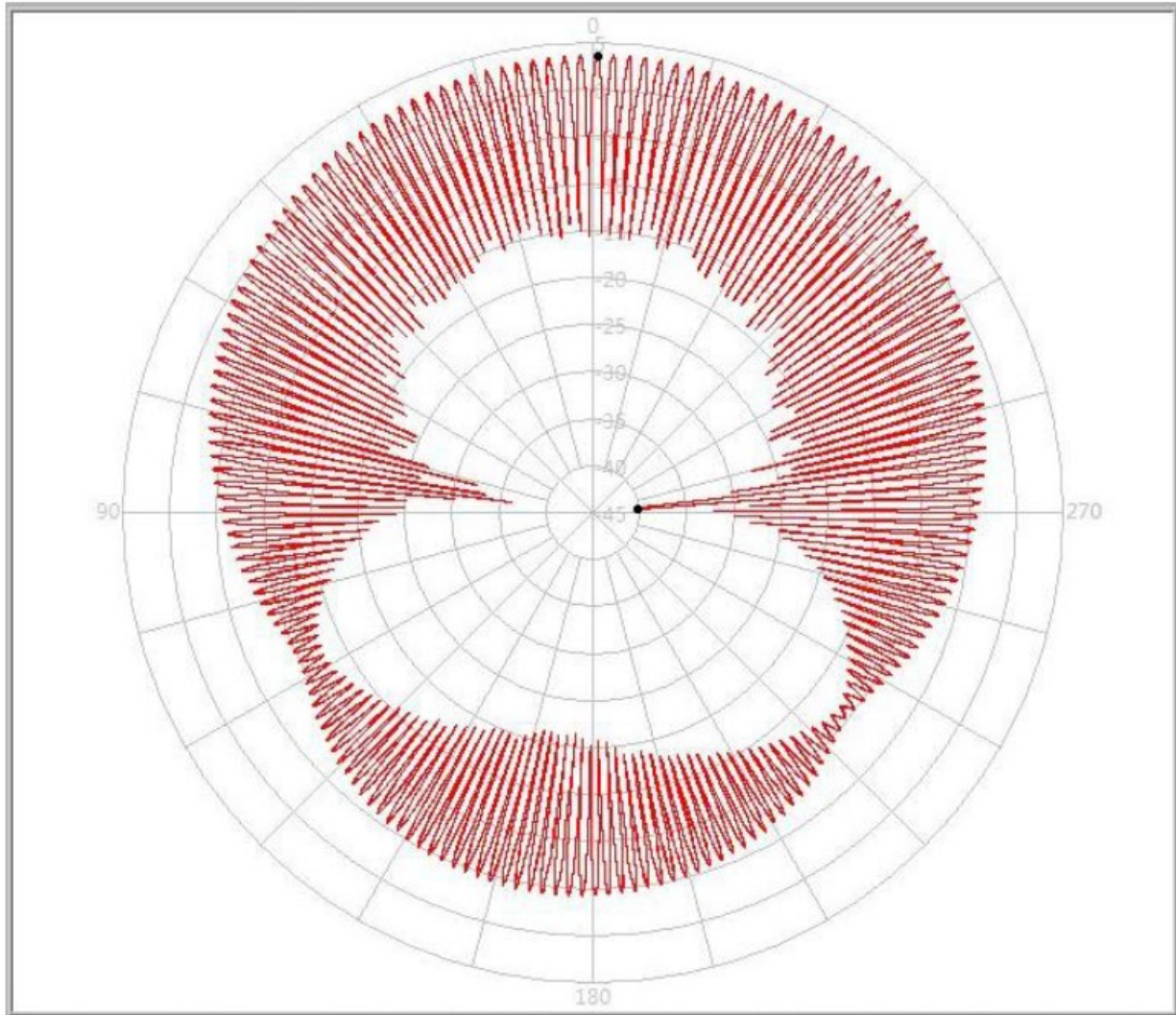
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 MSL Level = 1

## 1561 MHz



Pattern	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	Axial Ratio	1561.00	3.60 / 359.40	-40.14 / 274.46	-3.92	CP



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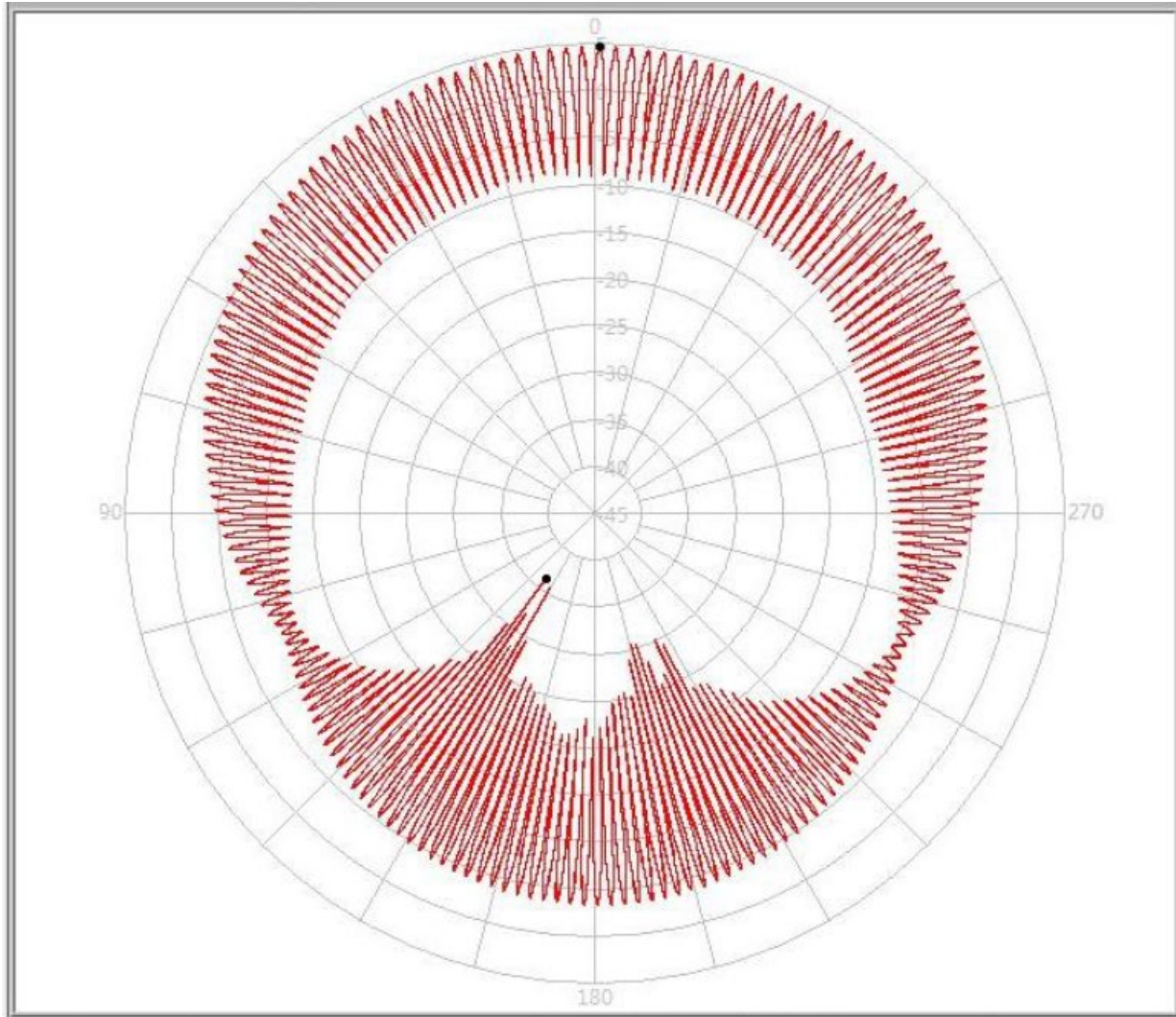
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**MSL Level = 1**

## 1602 MHz



Pattern	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1	Axial Ratio	1602.00	4.55 / 359.40	-36.39 / 143.50	-2.97	CP



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18 x 18 x 4.0 mm

RoHS/RoHS II Compliant

MSL Level = 1

## Soldering Condition

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

## Precautions

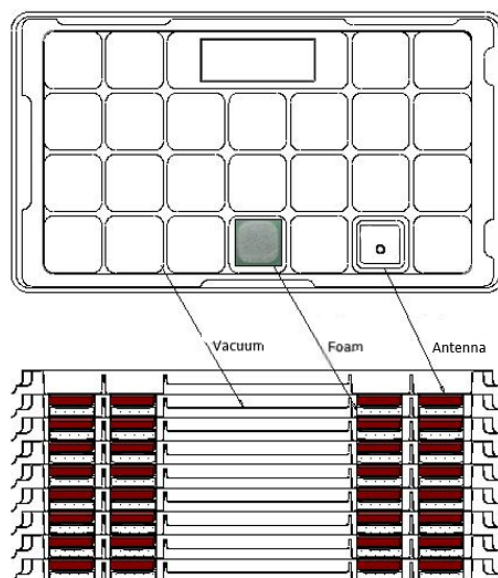
- Soldering : Do not direct solder onto the silver electrode of the antenna pattern.
- Antenna pattern uses an Ag / Ni / Sn electrode. Do not use the patch antenna in a corrosive gaseous atmosphere for example sulfur gas, chlorine gas.
- Ultrasonic cleaning : Ultrasonic vibration may cause deterioration & destruction of the component. Please avoid ultrasonic cleaning.

## Packaging Information

Dimensions of the Carton : 330 x 280 x 254 mm

Number of pcs per Carton : 800

DA Tray Packaging (25 pcs/Tray)



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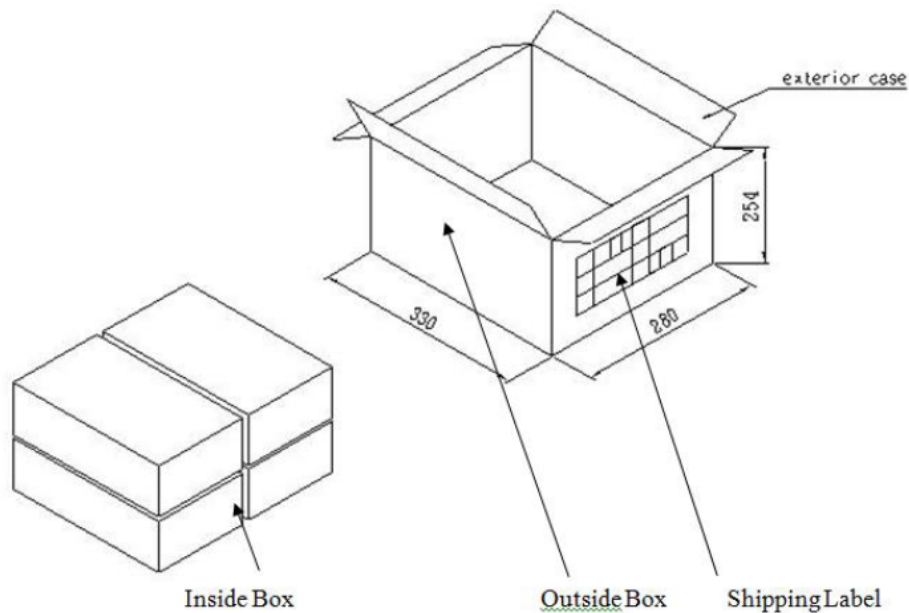
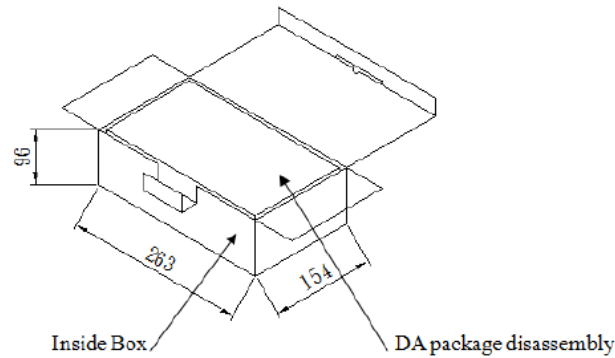
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Inner Box Packaging : 200 pcs (8 Trays x 25 pcs)

Outer Box Packaging : 800 pcs (4 inner box x 200 pcs)



Unit : mm

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