

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 ≤ 3
- RHCP polarization
- Peak Gain of 3.4 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 |
| Center Frequency | 1174 ± 3 | | 1585 ± 3 | | | |
| Bandwidth | 3 | | 50 | | | |
| VSWR _{max} | 3 | | | | | |
| Gain | 0.5 | 0.6 | 0.6 | 3.4 | 2.4 | 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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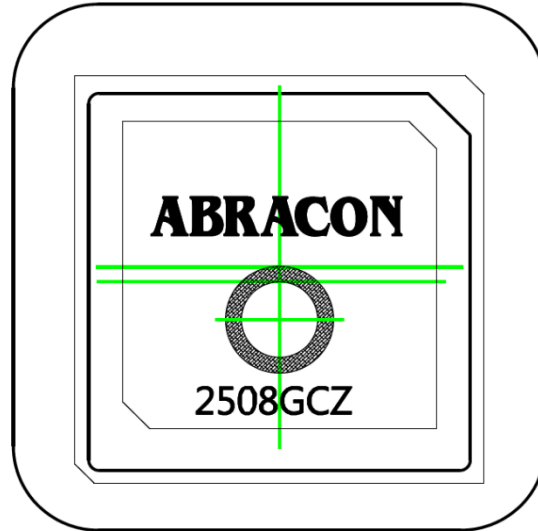


Check Inventory

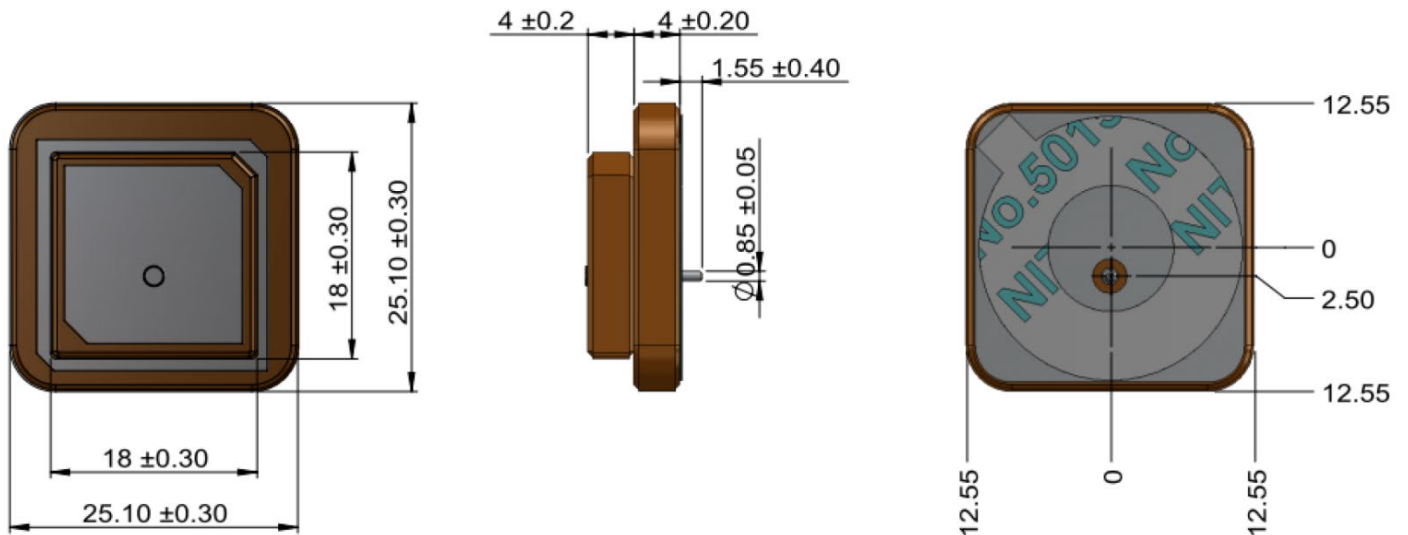


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Product Marking



Product Dimension



Unit : mm



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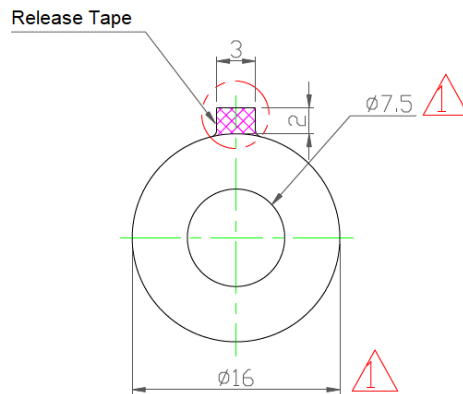


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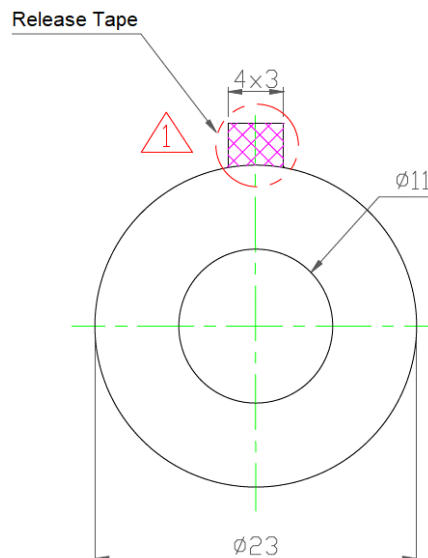
Tape Dimensions

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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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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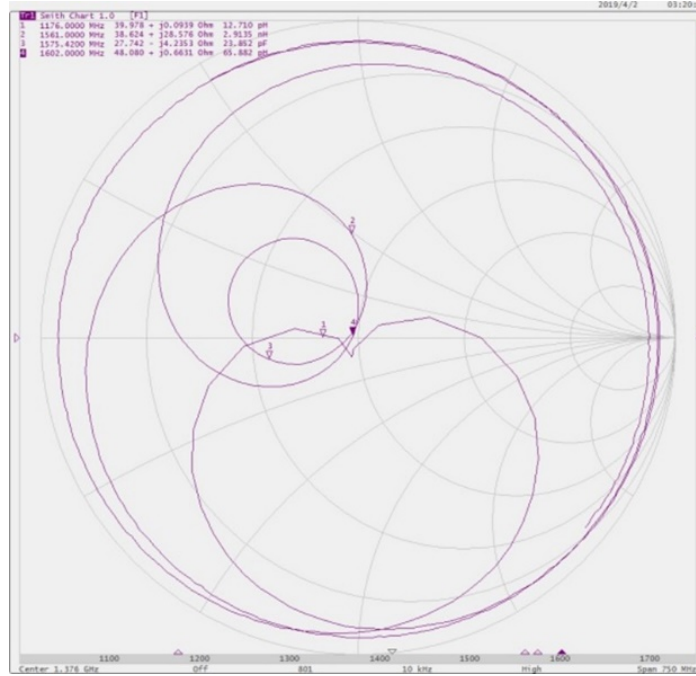


Check Inventory

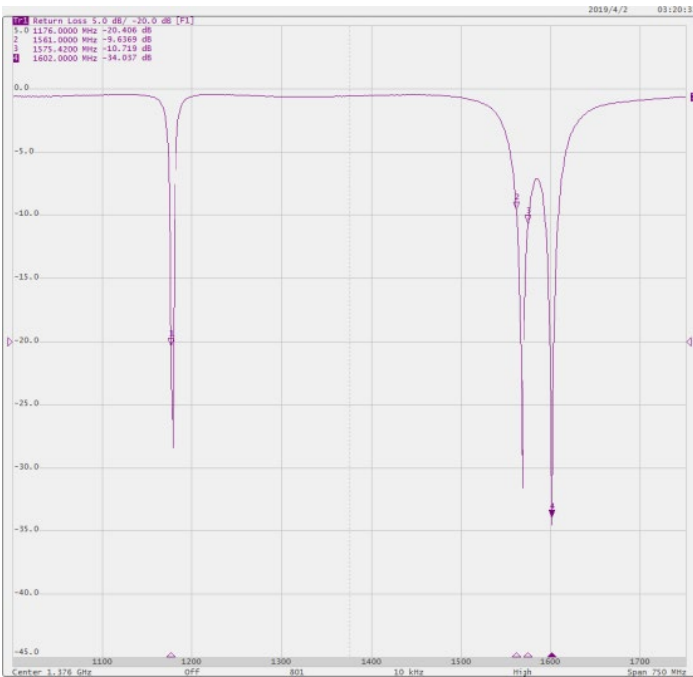


25.1 x 25.1 x 8.0 mm
RoHS/RoHS II Compliant
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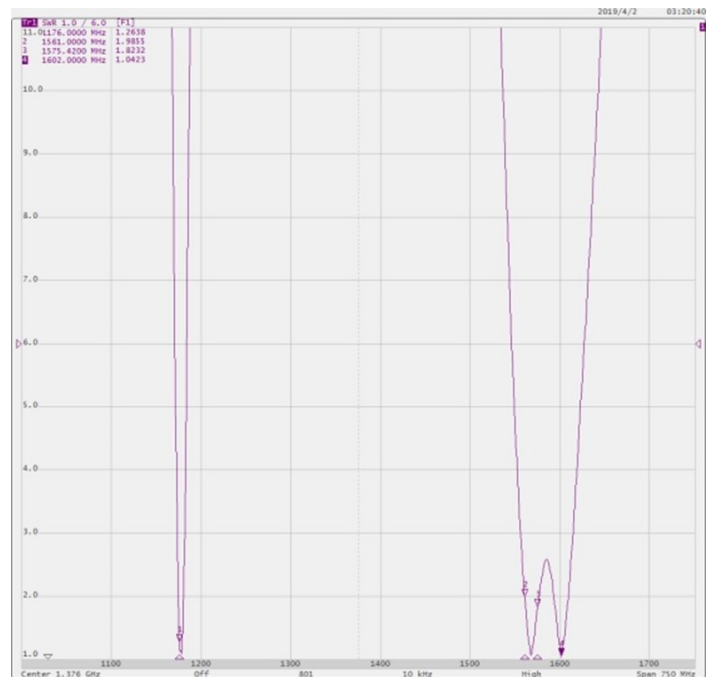
Smith Chart



Return Loss



VSWR



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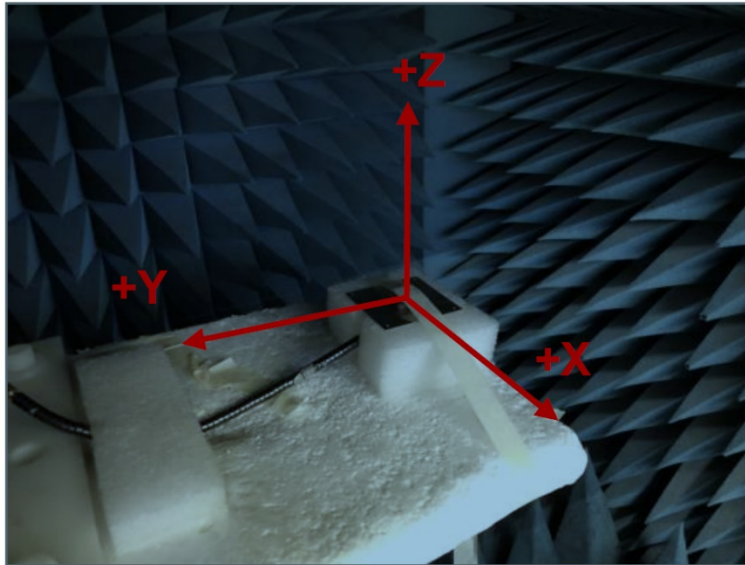
Check Inventory



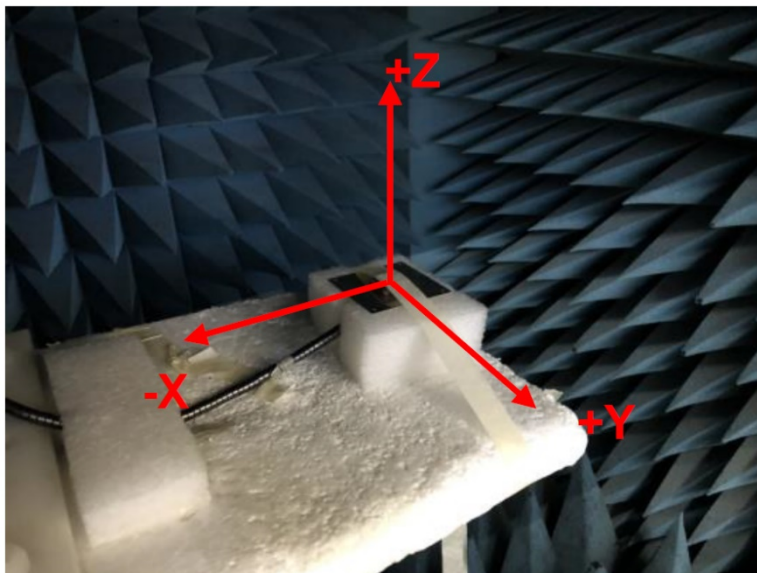
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Radiation Measurement – Set up

XZ – Plane



YZ – Plane



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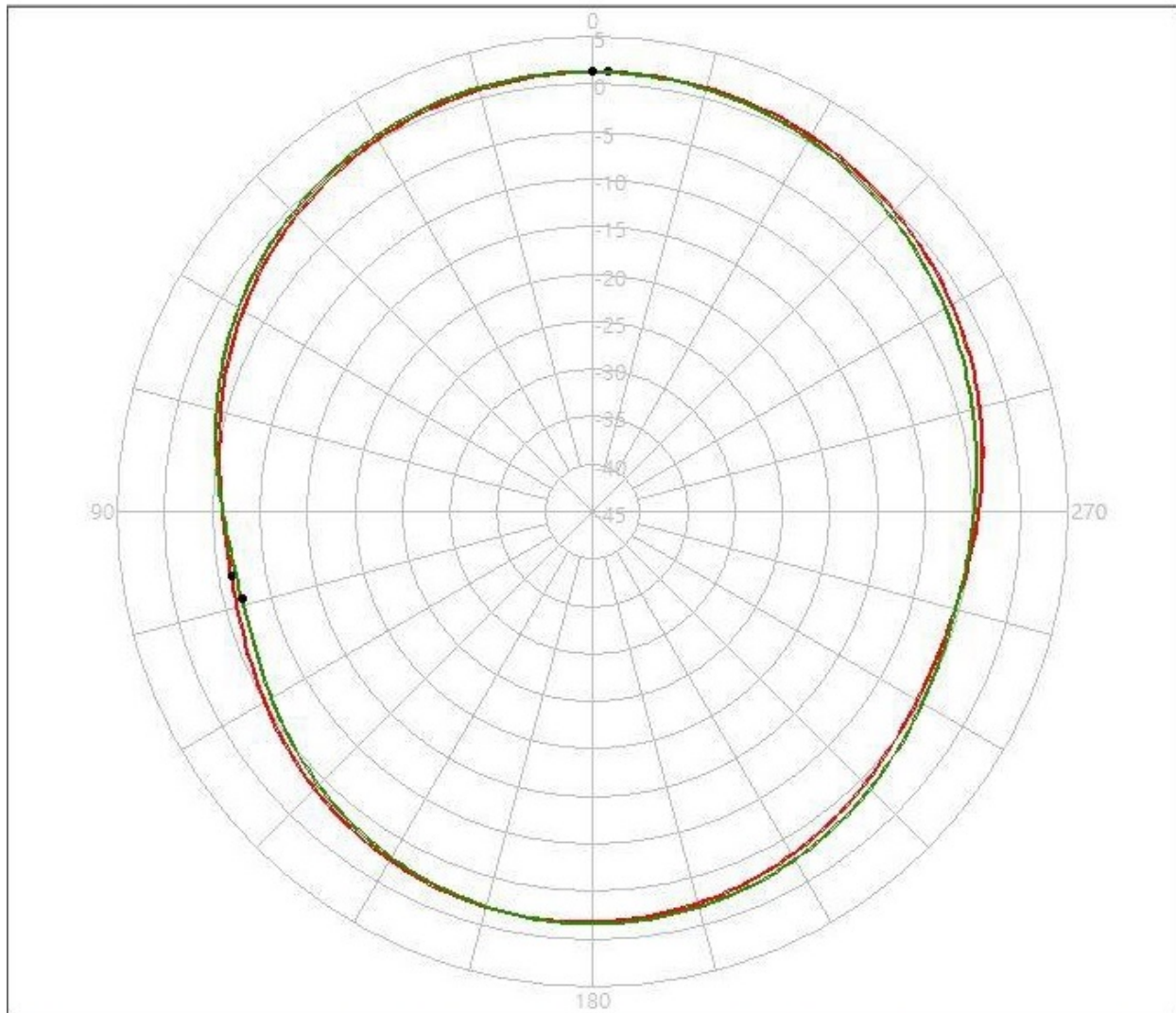
Check Inventory



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 MSL Level = 1

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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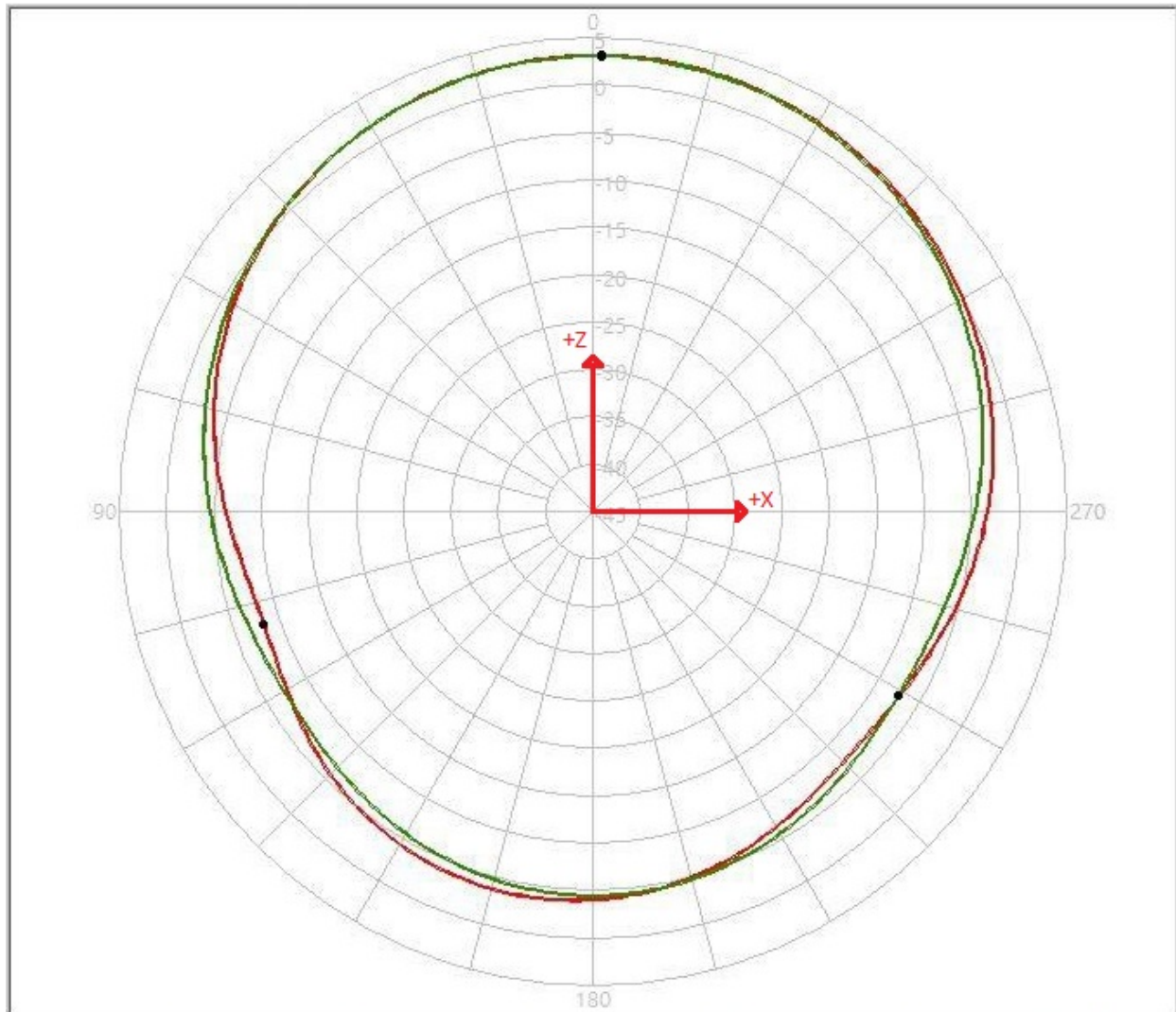


Check Inventory



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

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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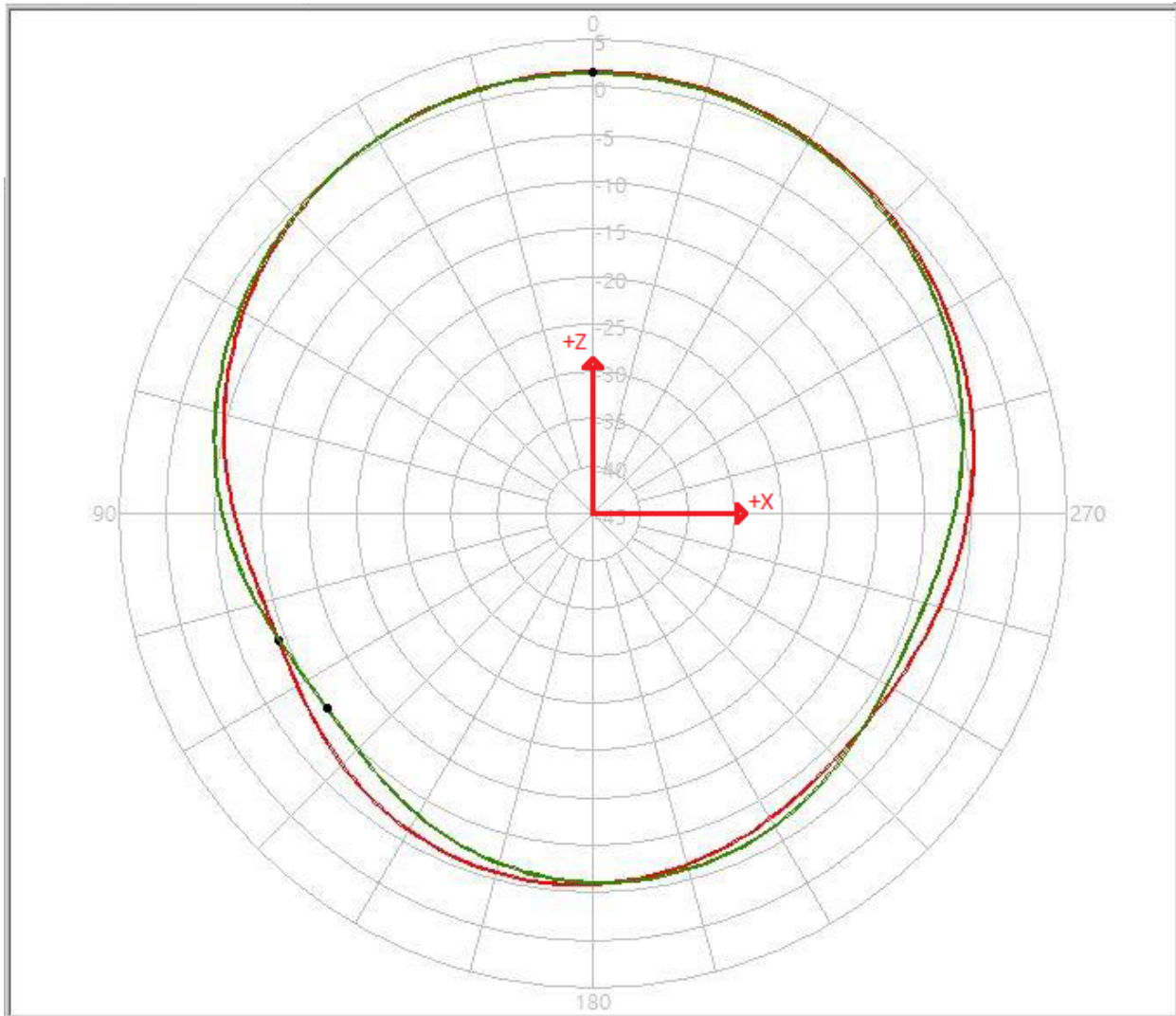


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1575.42 MHz



| 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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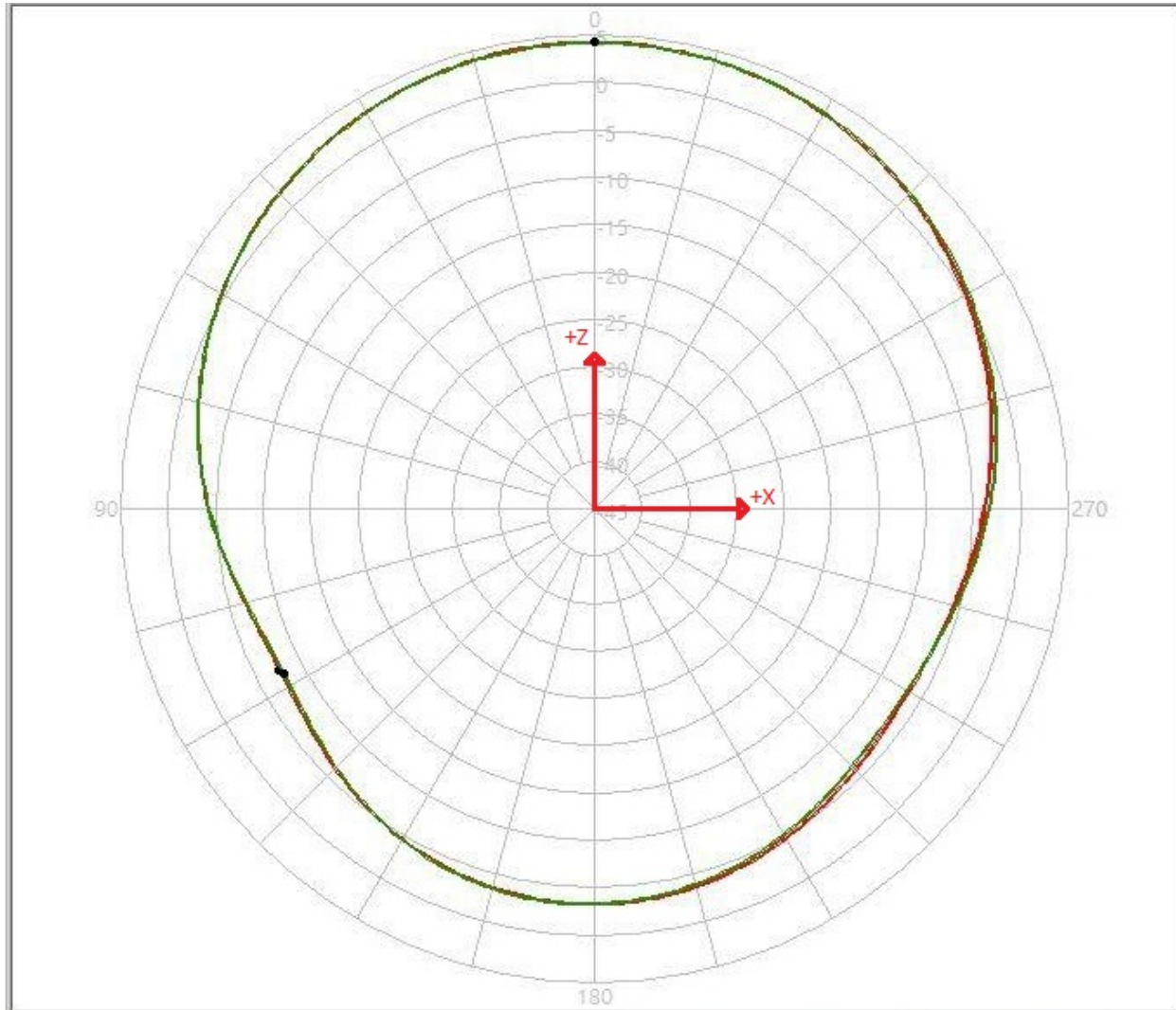


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MSL Level = 1

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 Outer Carton : 330 x 280 x 254 mm

Number of pcs per Carton : 700

DA Tray Packaging (25 pcs/Tray)



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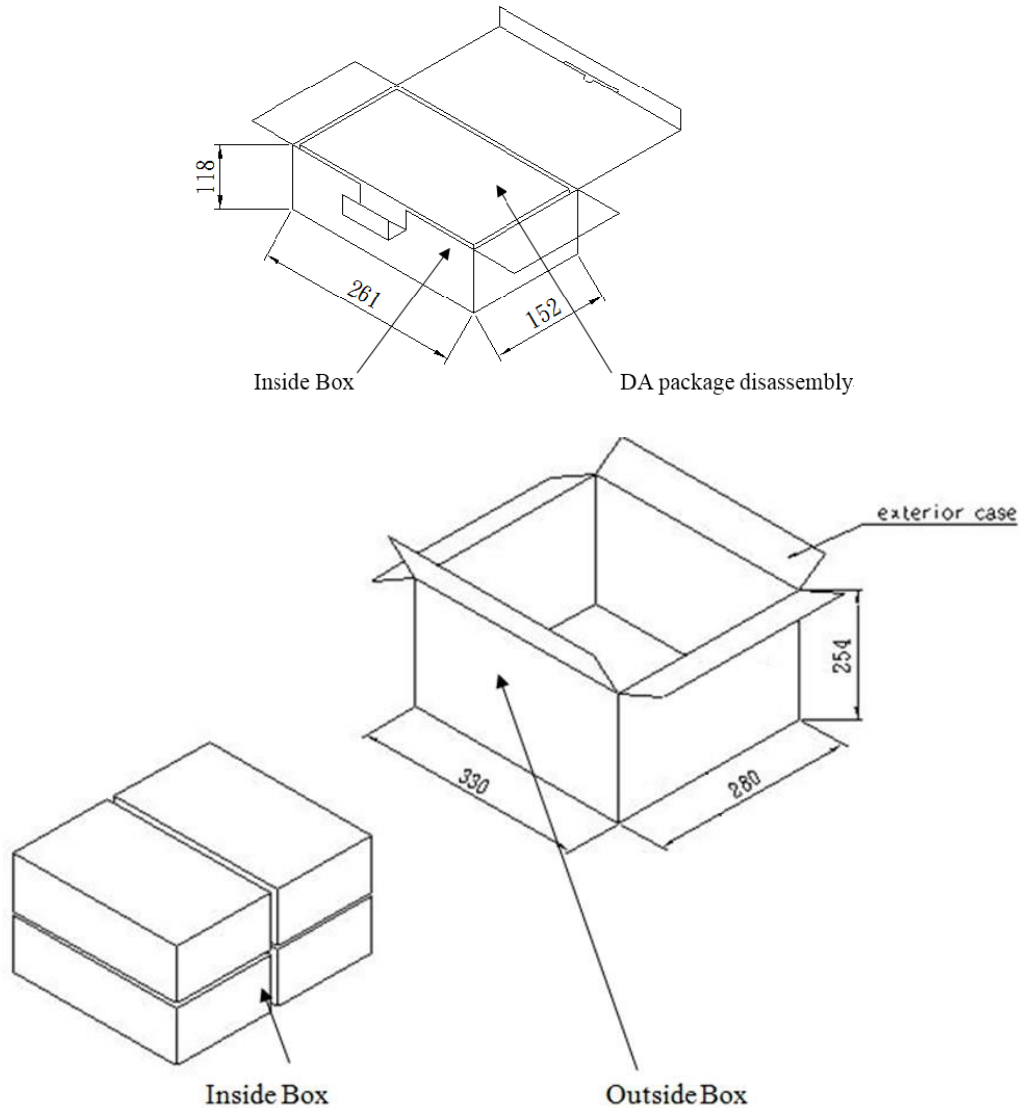
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Inner Box Packaging : 175 pcs (261 x 152 x 118 mm)

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



Unit : mm

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