

Antenna

YCGA003AA Datasheet

Antenna Services

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About the Document

Revision History

| Version | Date | Author | Note |
|---------|------------|------------------------|------------------------------|
| - | 2021-05-17 | Kenny YIN/ Aria CHU | Creation of the document |
| 1.0 | 2021-05-17 | Kenny YIN/ Aria CHU | First official release |
| 1.1 | 2021-07-13 | Aria CHU | Added Chapters 3 and 7. |
| 1.2 | 2022-10-08 | Aria CHU | Updated the antenna picture. |

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1 Product Description

This Quectel GNSS antenna adopts a diversity of forms to guarantee the most suitable polarization type. Quectel's positioning products support single-band or multi-band operation modes to meet various high-precision positioning requirements of customers' products. Quectel provides both passive and active antennas to satisfy the customer demand for high gain. Such antenna supports different installation or connection methods such as pin mount, surface mount, magnetic mount, internal cable, and external SMA. Customized connector type and cable length are provided according to requirements.

2 Product Features

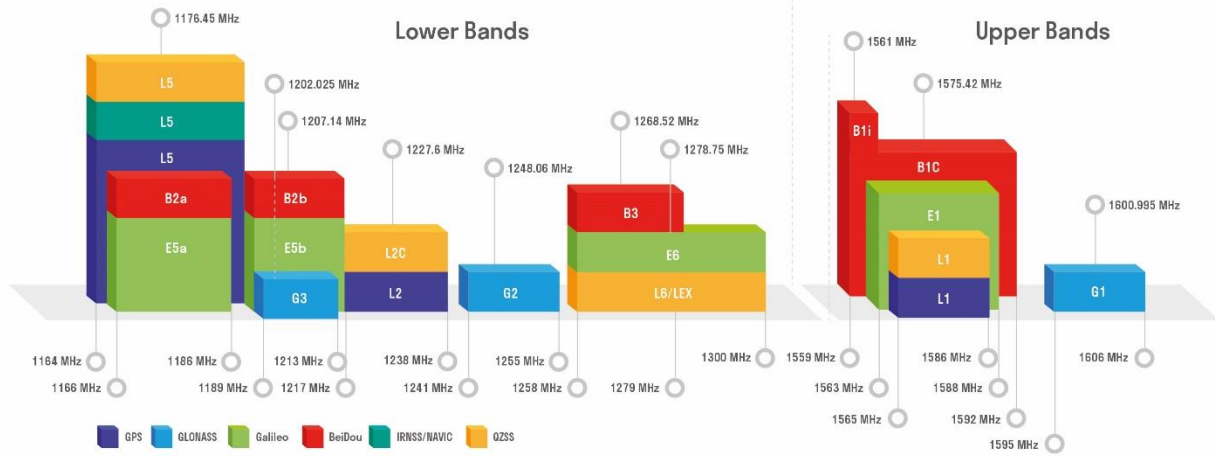
- Ceramic GNSS
- High efficiency
- Excellent performance



3 GNSS Frequency Band Checklist

| GNSS Frequency Bands (MHz) | | | | | |
|----------------------------|---|--|--|---|--|
| GPS | L1 Centre 1575.42 (1565–1586) | L2 Centre 1227.6 (1217–1238) | L5 Centre 1176.45 (1164–1189) | | |
| | ● | - | - | | |
| GLONAS S | G1/L10C/L10F Centre 1601 (1595–1606) | G2/L20C/L20F Centre 1248.06 (1241–1255) | G3/L30C Centre 1202.025 (1189–1213) | | |
| | ● | - | - | | |
| GALILEO | E1 Centre 1575.42 (1563–1588) | E5a Centre 1176.45 (1166–1187) | E5b Centre 1207.14 (1197–1218) | E6 Centre 1278.75 (1258–1300) | |
| | ● | - | - | - | |
| BEIDOU | B1I Centre 1561.098 (1559–1564) | B1C (BeiDou-3) Centre 1575.42 (1559–1592) | B2a/B2I Centre 1176.45 (1166–1187) | B2b Centre 1207.14 (1197–1217) | B3 Centre 1268.52 (1258–1279) |
| | ● | ● | - | - | - |
| QZSS | L1 Centre 1575.42 (1573–1578) | L2C Centre 1227.6 (1226–1229) | L5 Centre 1176.45 (1166–1187) | L6 Centre 1278.75 (1257–1300) | |
| | ● | - | - | - | |
| IRNSS | L5 Centre 1176.45 (1164–1189) | | | | |
| | - | | | | |

GNSS Bands and Constellations



4 Product Specifications

- This antenna is tested on a 70 mm × 70 mm PCB.

Passive Electrical Specifications

| | |
|-------------------|---------------|
| Frequency | 1559–1605 MHz |
| Input Impedence | 50 Ω |
| VSWR | ≤ 2 |
| Gain | ≤ 4.5 dBi |
| Polarization Type | RHCP |

Mechanical Specifications

| | |
|---------------------|----------------------|
| Antenna Size | 35 mm × 35 mm × 4 mm |
| Casing | Ceramics |
| Connector Type | - |
| Working Temperature | -40 °C to +85 °C |
| Radome Color | - |

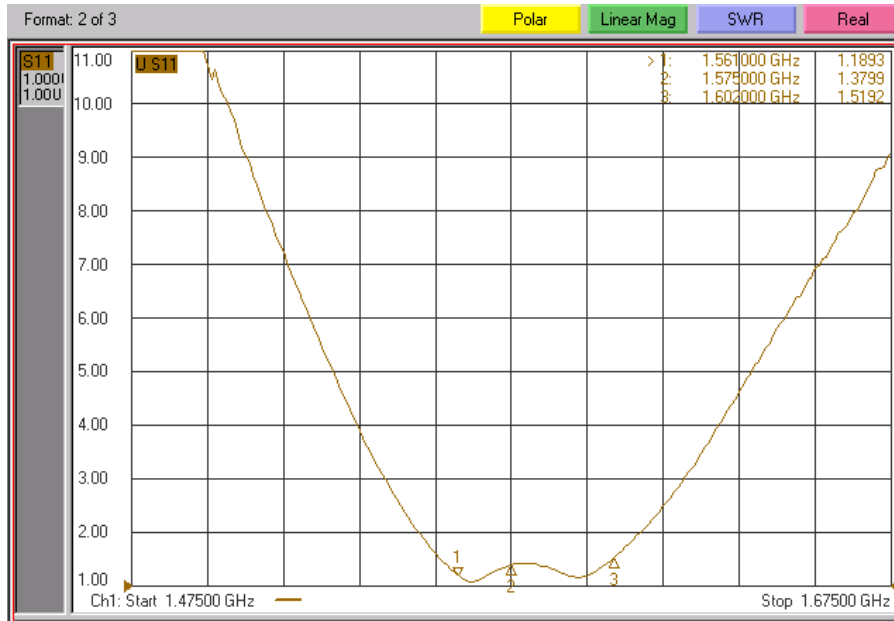
5 Overall Performance

5.1. Test Environment

- KEYSIGHT ENA Network Analyzer E5063A 100 kHz – 8.5 GHz
- RayZone® 2800 Chamber 5G (FR1) SISO/MIMO, 600 MHz – 8.5 GHz

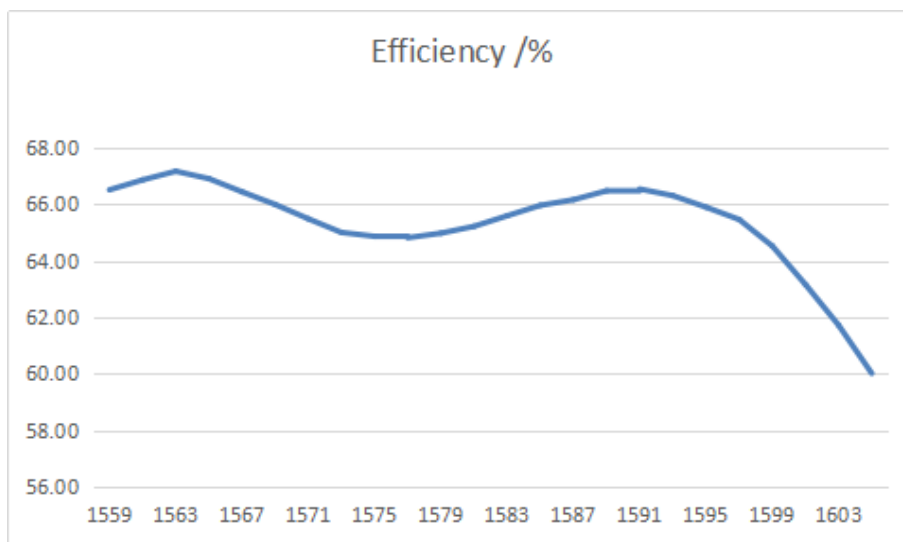


5.2. VSWR



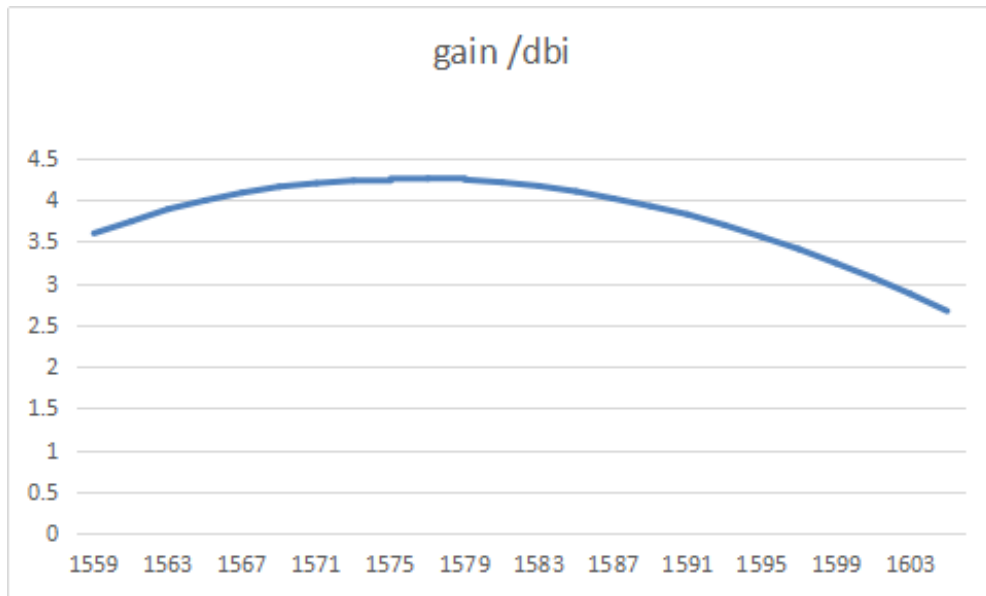
| | | | |
|-----------------|------|------|------|
| Frequency (MHz) | 1561 | 1575 | 1602 |
| VSWR | 1.2 | 1.4 | 1.52 |

5.3. Efficiency



| | | | |
|-----------------|-------|-------|-------|
| Frequency (MHz) | 1561 | 1575 | 1602 |
| Efficiency (%) | 66.86 | 64.86 | 63.16 |

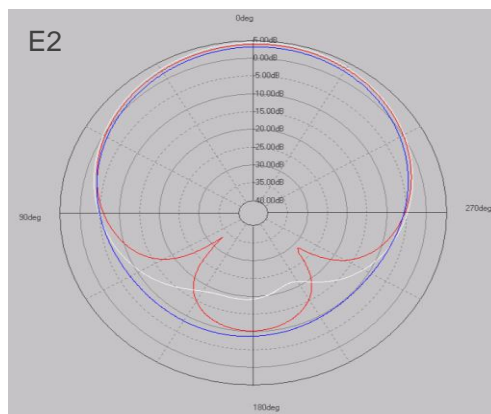
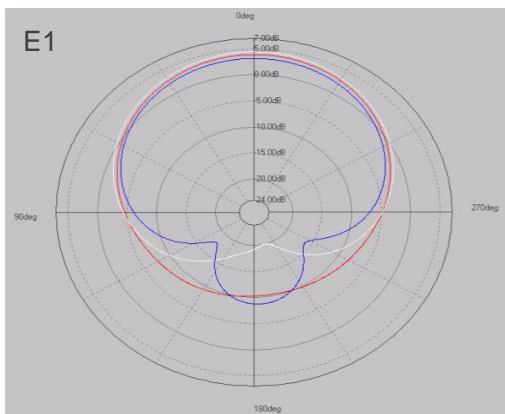
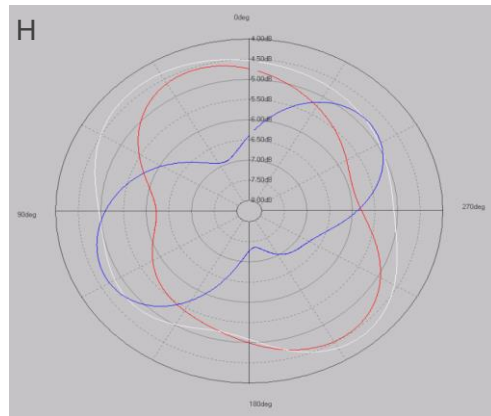
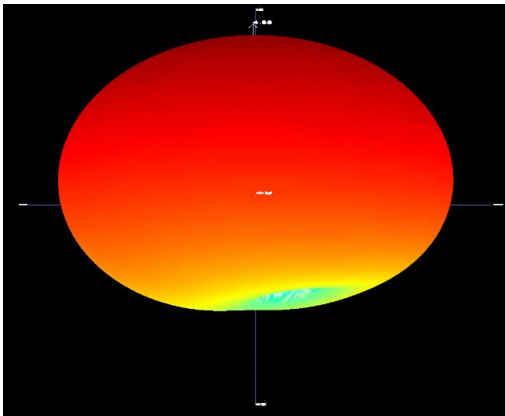
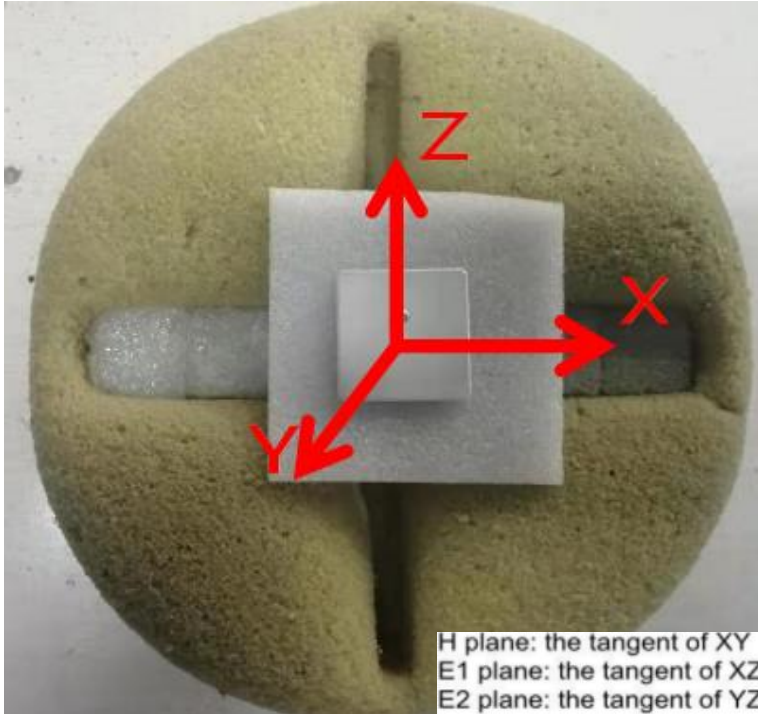
5.4. Gain



| | | | |
|-----------------|------|------|------|
| Frequency (MHz) | 1561 | 1575 | 1602 |
| Gain (dBi) | 3.7 | 4.2 | 3.0 |

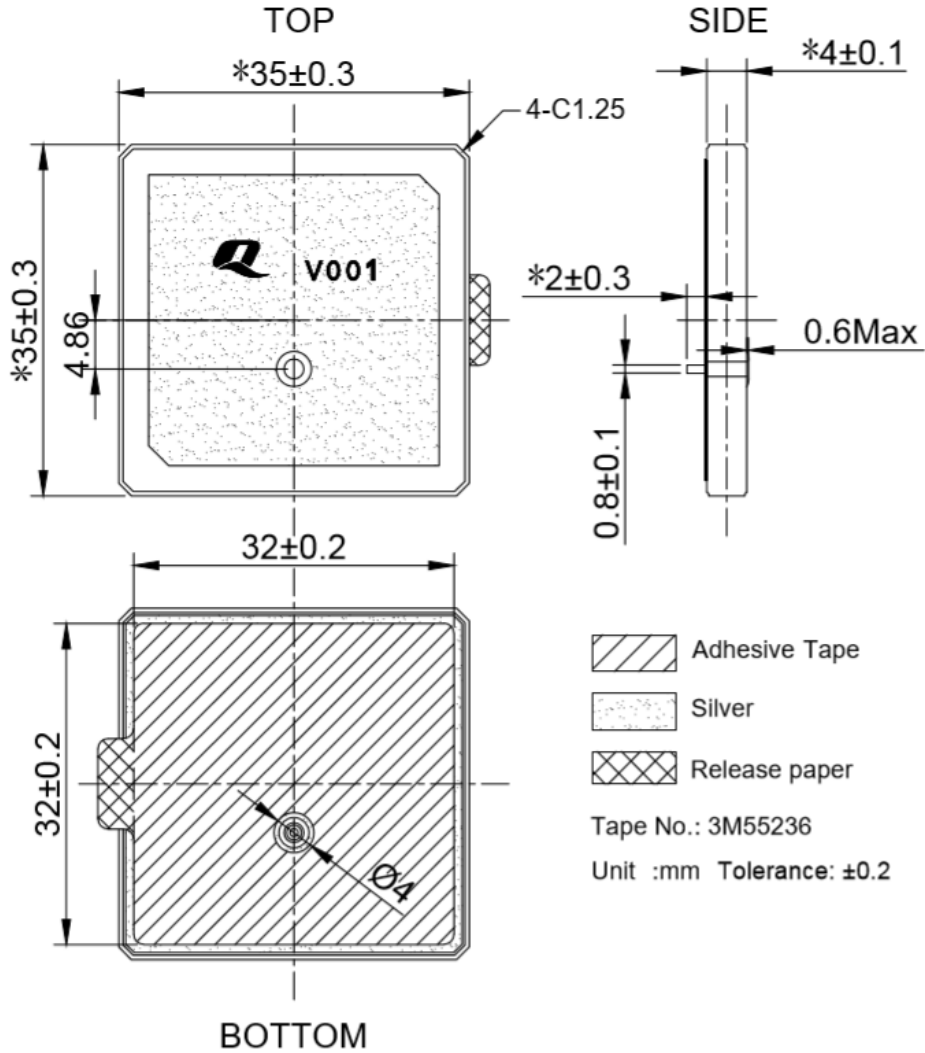
5.5. Radiation Pattern

- Test condition: free space.

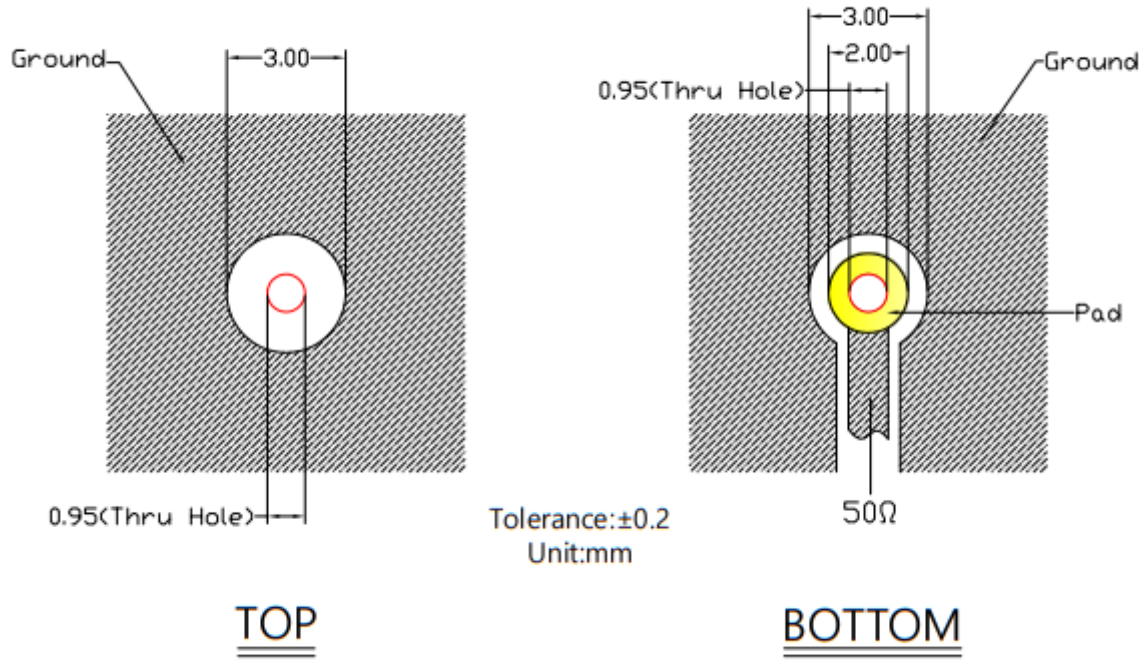


6 Product Size

RoHS

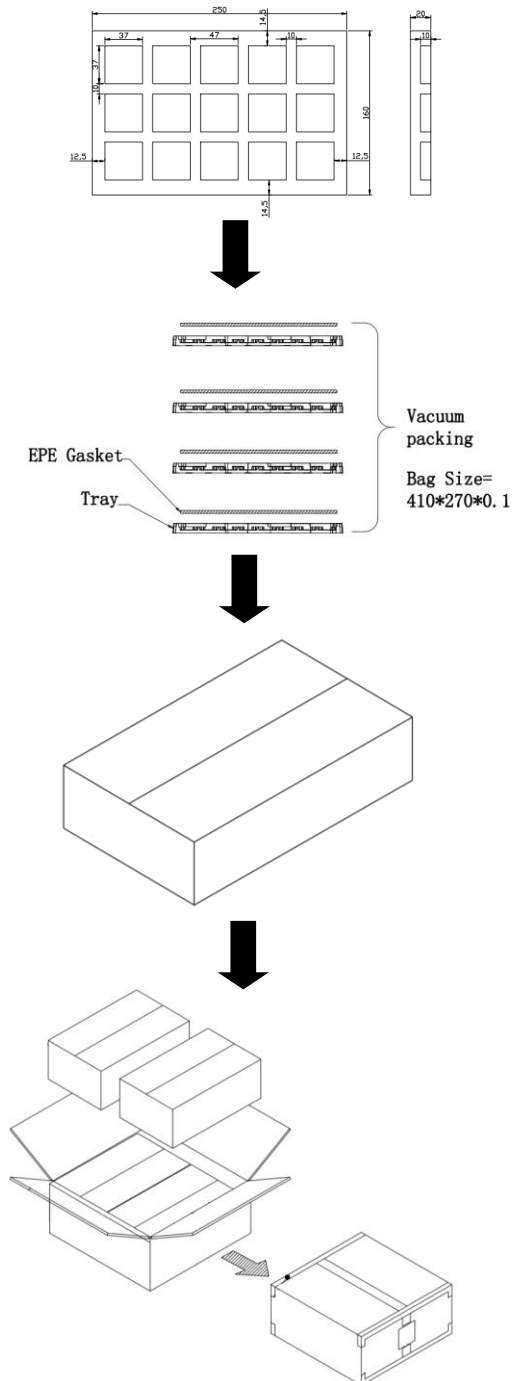


7 PCB Footprint Recommendation



8 Packaging

- 15 pcs/Tray, 120 pcs/Small box, 240 pcs/Carton.
- The packaging steps are as follows:



Step 1:

15 pcs/Tray

Place 1 pcs in each cell

Tray size: 250 mm x 160 mm x 20 mm

Step 2:

1.8 trays are staggered

Vacuum sealing

Step 3:

Put the sealed 120 pcs into the small box

Small box size: 280 mm x 187 mm x 170 mm

Step 4:

Put two small boxes into the Carton

240 pcs/Carton

Carton size: 405 mm x 293 mm x 185 mm