

Antenna

YG0048AA Datasheet

Antenna Services

Version: 1.6

Date: 2021-12-05

Status: Released



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About the Document

Revision History

Version	Date	Author	Note
-	2020-12-24	Kenny YIN	Creation of the document
1.0	2020-12-24	Kenny YIN	First official release
1.1	2021-03-03	Kenny YIN	Added electrical performance information and packaging in Chapter 6.
1.2	2021-03-23	Kenny YIN	Updated electrical performance.
1.3	2021-03-25	Kenny YIN	Added VSWR and average gain in Chapter 4.
1.4	2021-07-20	Aria CHU	1. Added Chapters 3 and 7. 2. Updated working temperature (Chapter 4).
1.5	2021-08-18	Aria CHU	Added the weight information (Chapter 3).
1.6	2021-12-05	Aria CHU	Updated the product description in Chapter 1.

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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 also 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.

We provide comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs.

2 Product Features

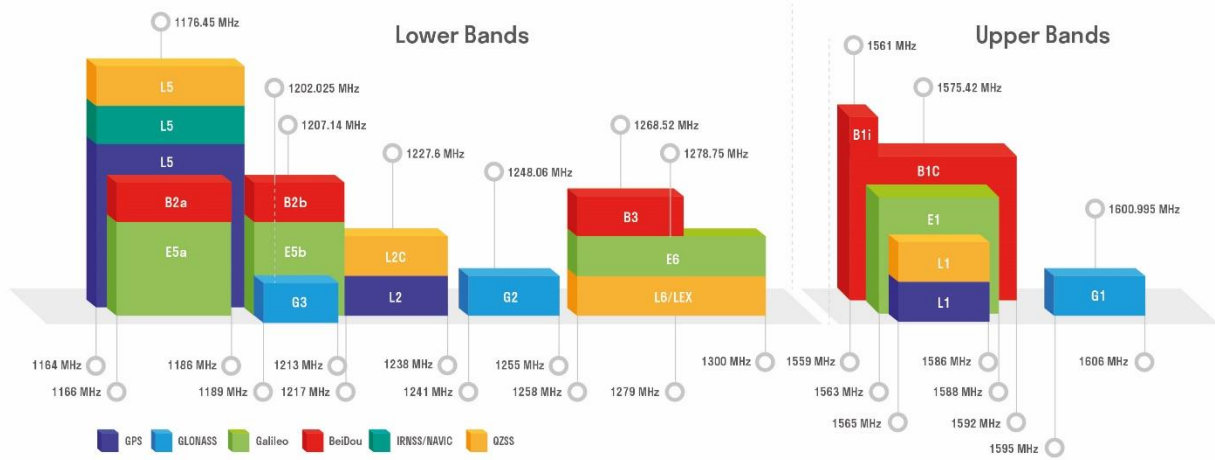
- Ceramic GNSS
- High efficiency
- Excellent performance



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)		
	●	-	●		
GLONASS	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	GPS L1: 1575 MHz GPS L5: 1176 MHz
Input Impedence	50 Ω
VSWR	L1: ≤ 2.0 L5: ≤ 2.0
Return Loss	≤ -20 dB
Peak Gain	L1: ≤ 4.1 dBi L5: ≤ 1.3 dBi
Polarization Type	RHCP

Mechanical Specifications

Antenna Size	25 mm × 25 mm × 8.1 mm (25 mm × 25 mm × 4 mm + 18 mm × 18 mm × 4 mm)
Casing	Ceramics
Connector Type	-
Working Temperature	-40 °C to +85 °C
Radome Color	-
Weight	39±3g

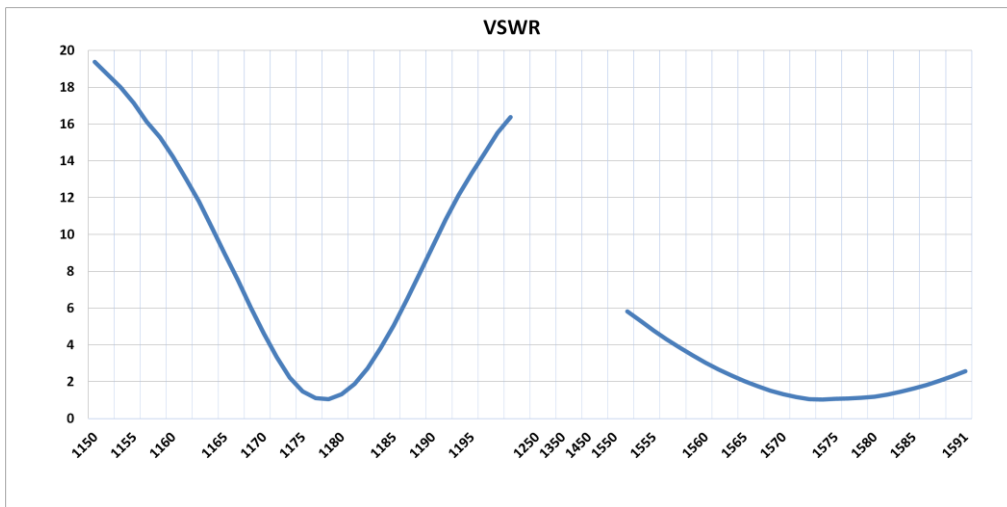
5 Overall Performance

5.1. Test Environment

- KEYSIGHT VNA Network Analyzer E5063A 100 kHz – 8.5 GHz
- RayZone® 2800 Chamber 5G (FR1) SISO/MIMO, 400 MHz – 8.0 GHz

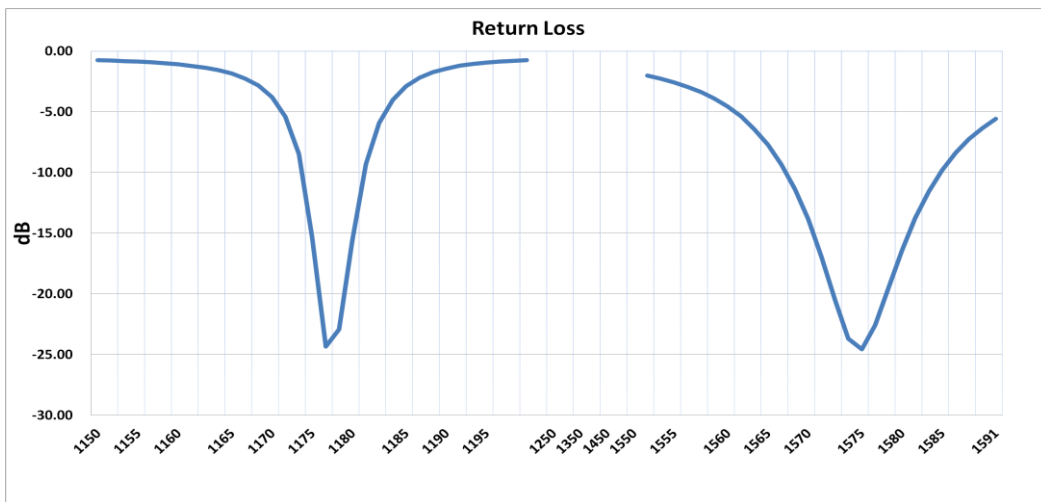


5.2. VSWR



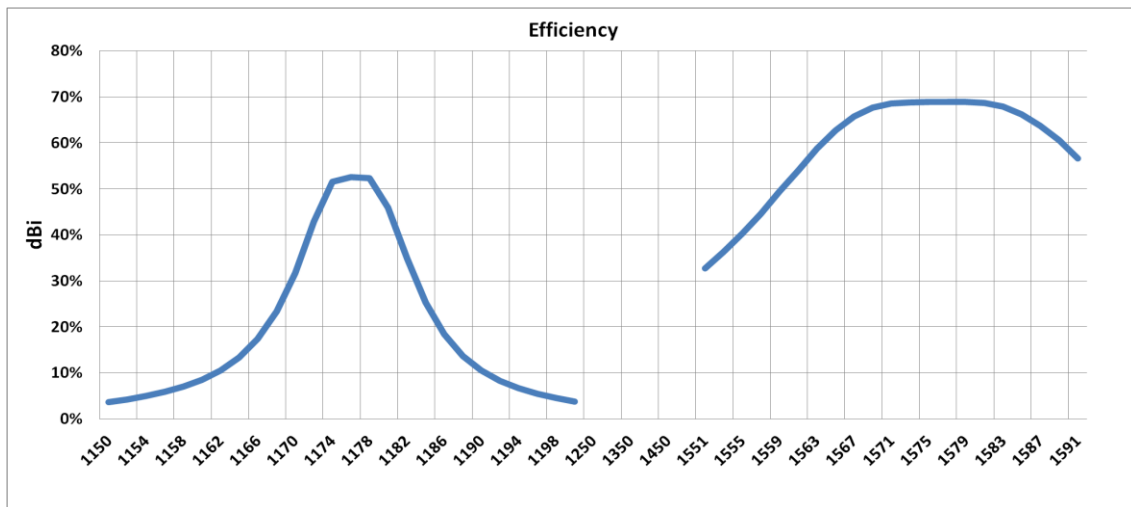
Frequency (MHz)	1176	1575
VSWR	1.05	1.10

5.3. Return Loss



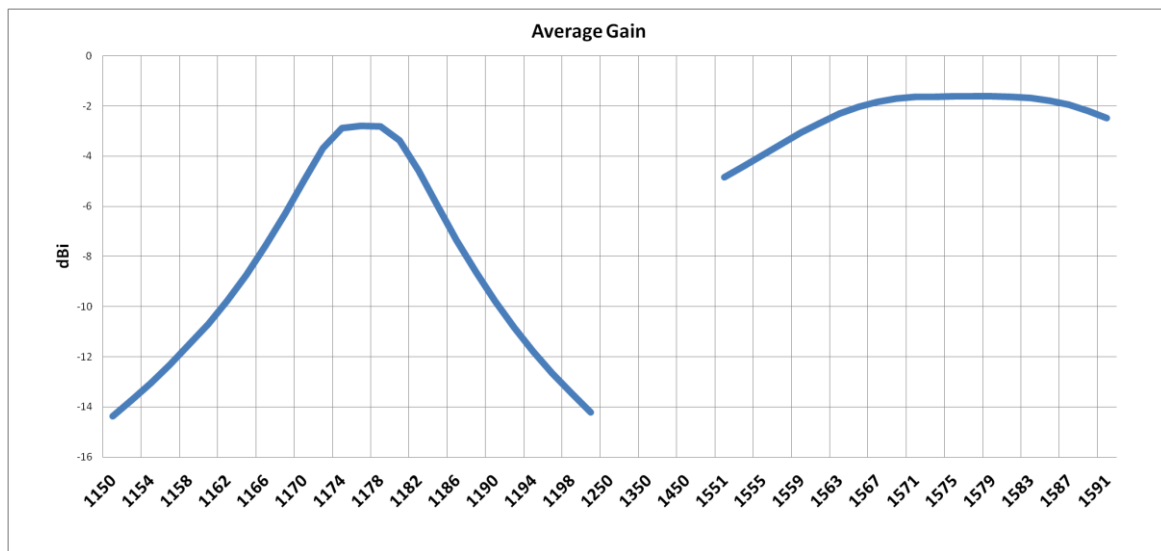
Frequency (MHz)	1176	1575
Return Loss (dB)	-23	-24.5

5.4. Efficiency



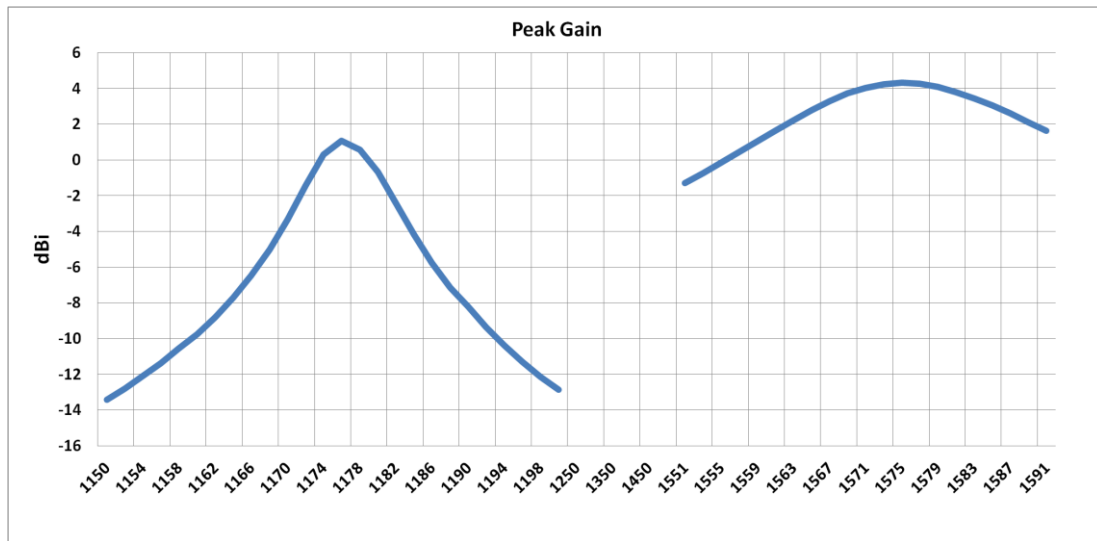
Frequency (MHz)	1176	1575
Efficiency (%)	53	69

5.5. Average Gain



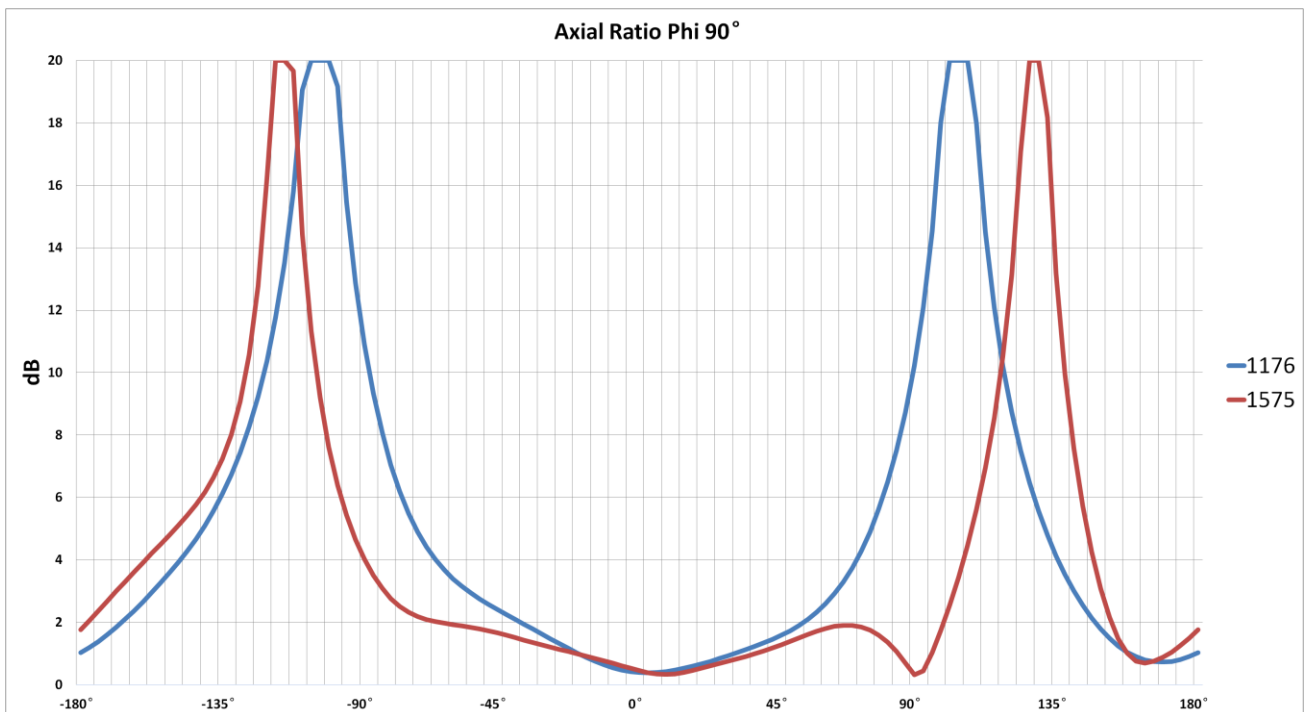
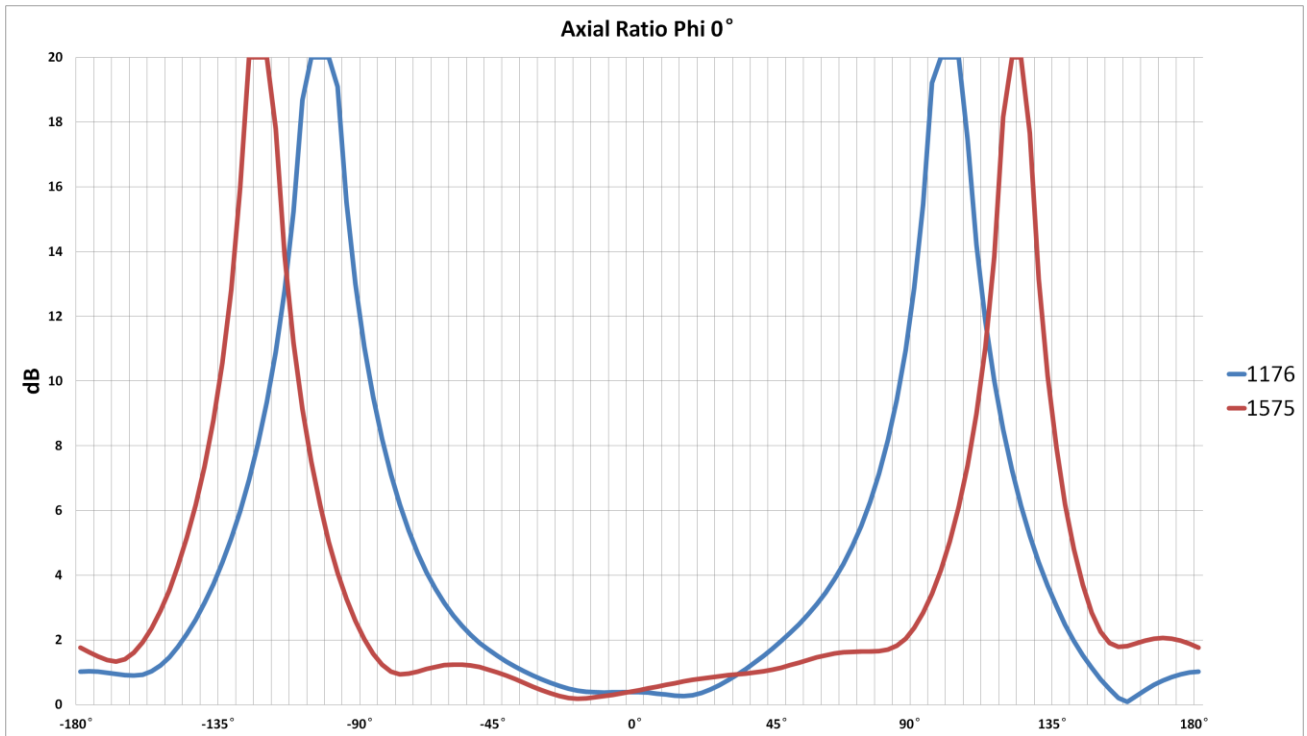
Frequency (MHz)	1176	1575
Gain (dBi)	-2.8	-1.6

5.6. Peak Gain

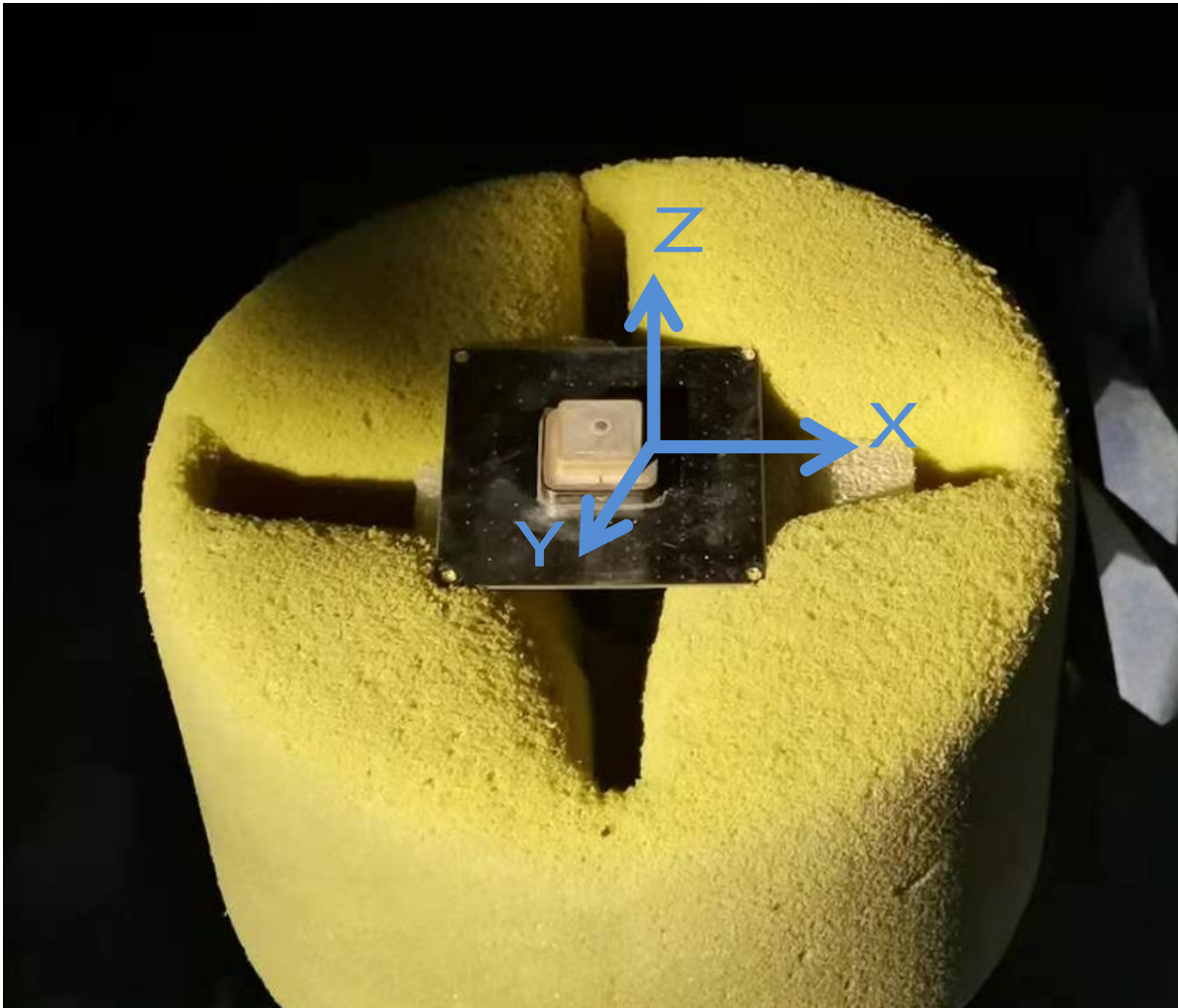


Frequency (MHz)	1176	1575
Gain (dBi)	1.3	4.1

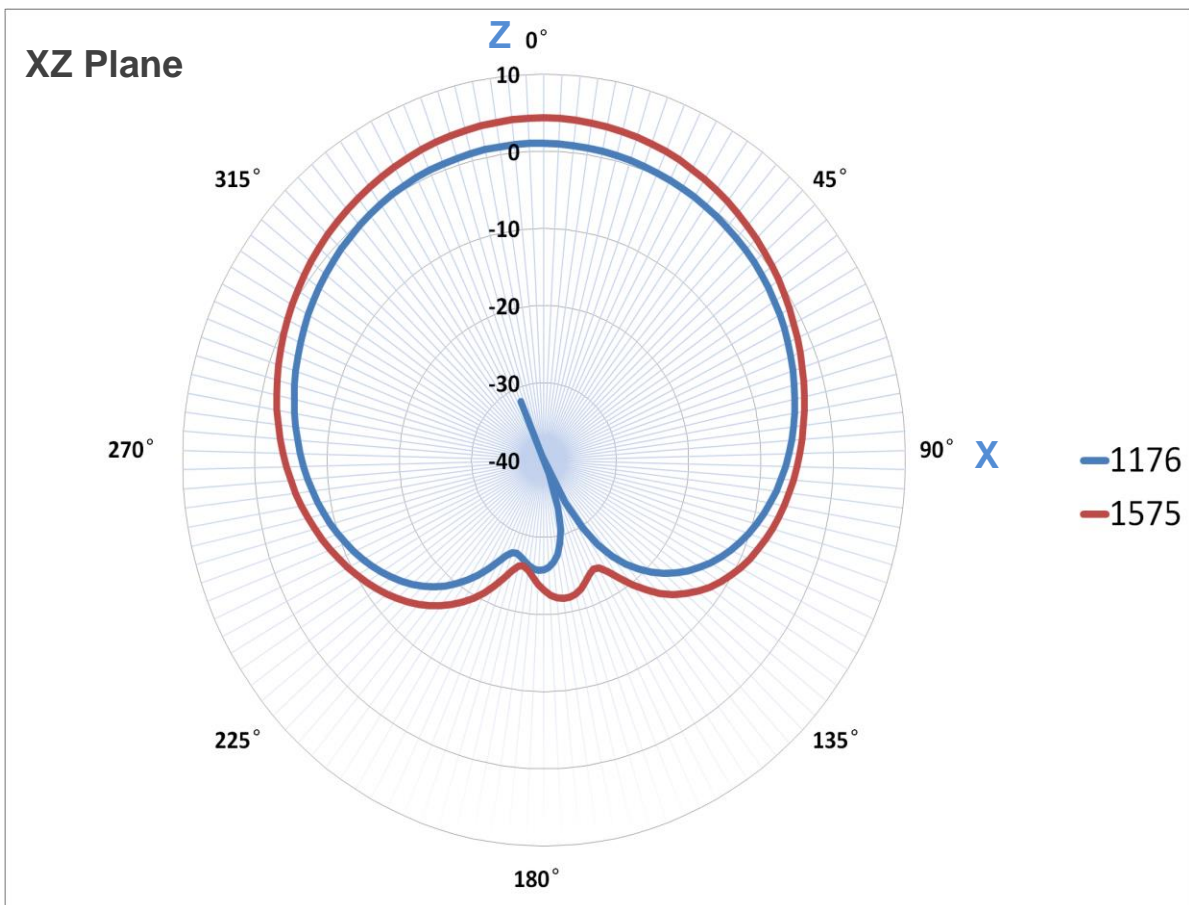
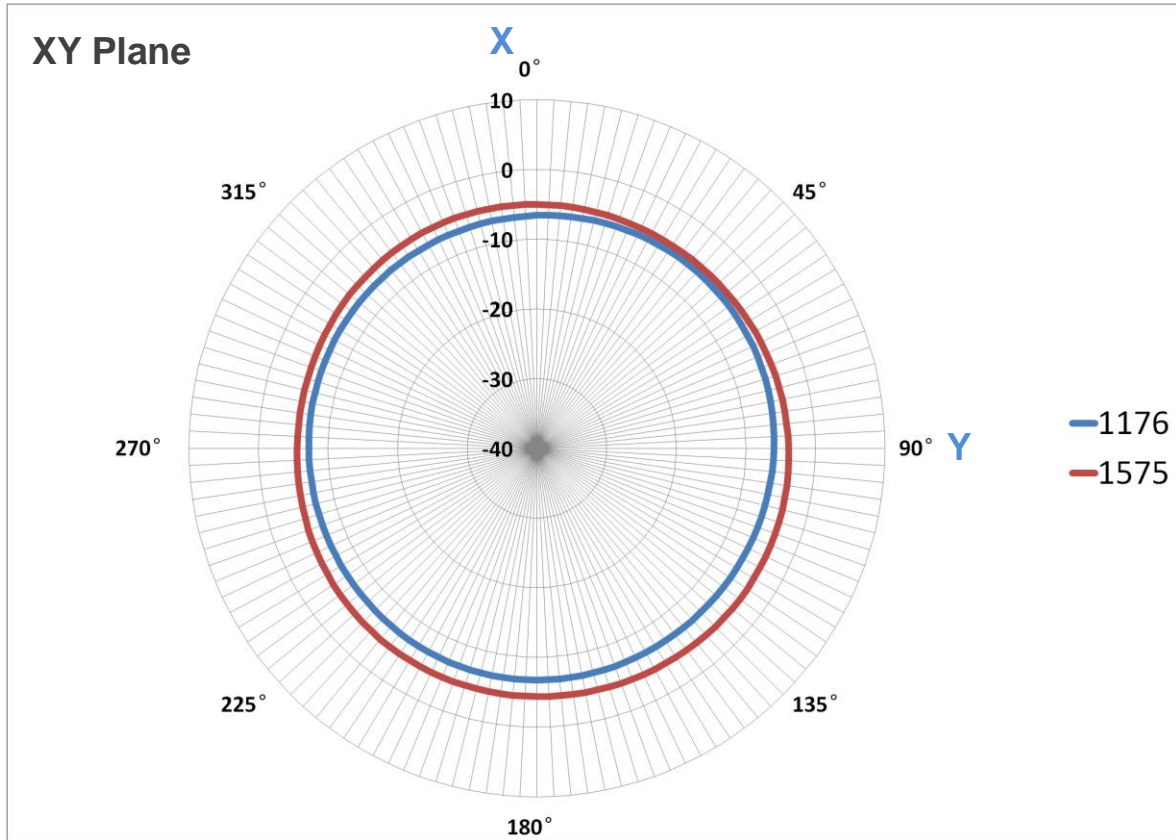
5.7. Axial Ratio

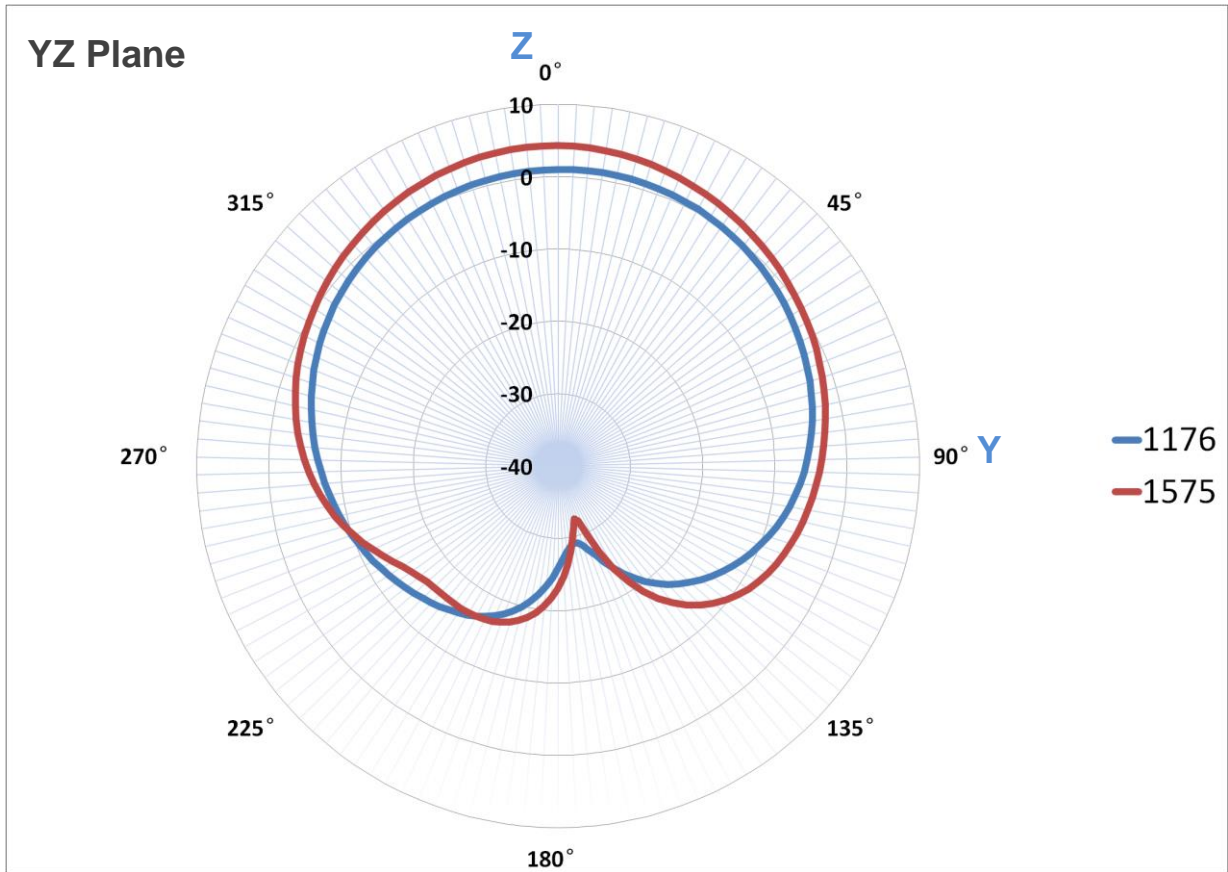


5.8. 2D Radiation Pattern

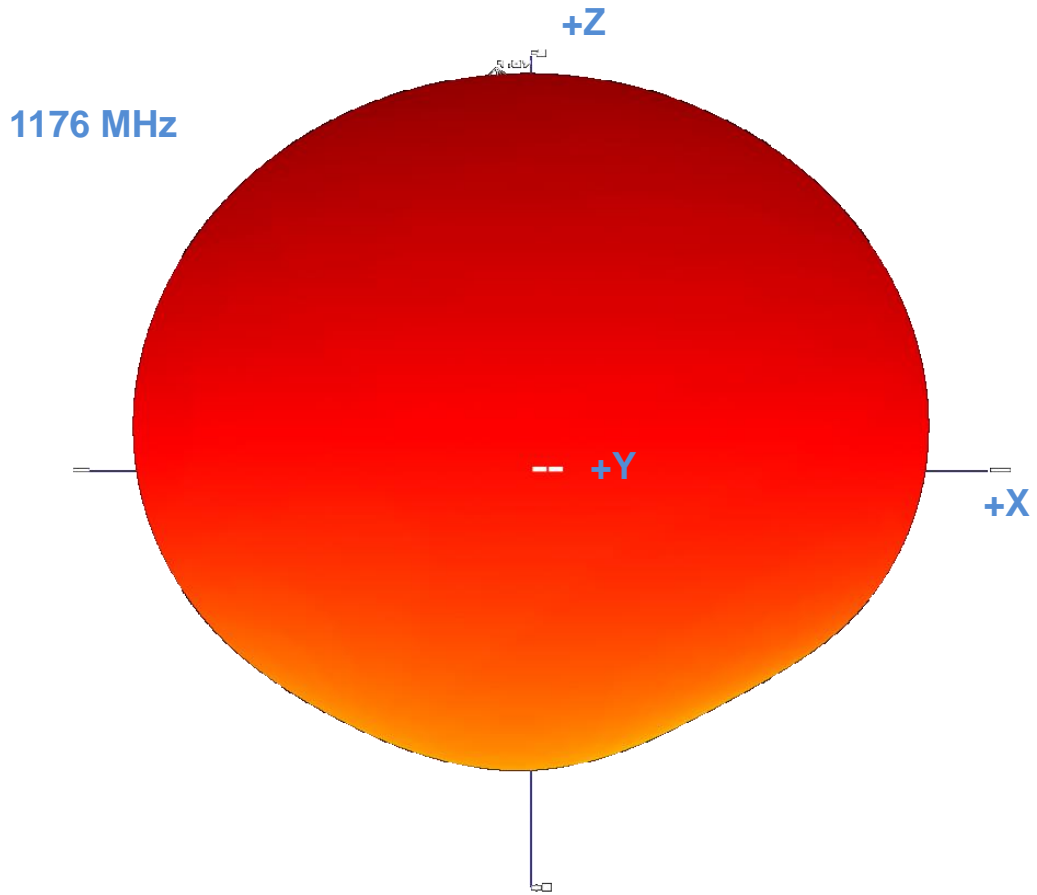


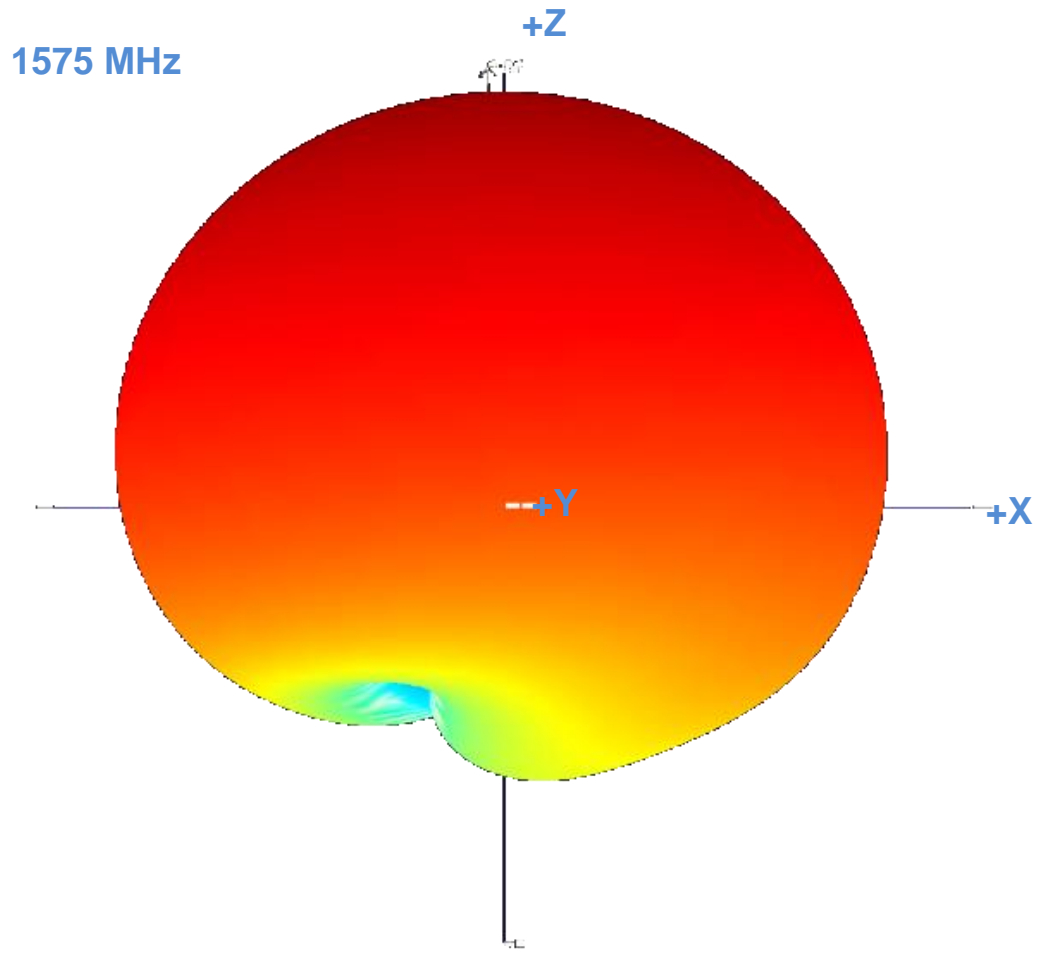
H plane: the tangent of XY
E1 plane: the tangent of XZ
E2 plane: the tangent of YZ



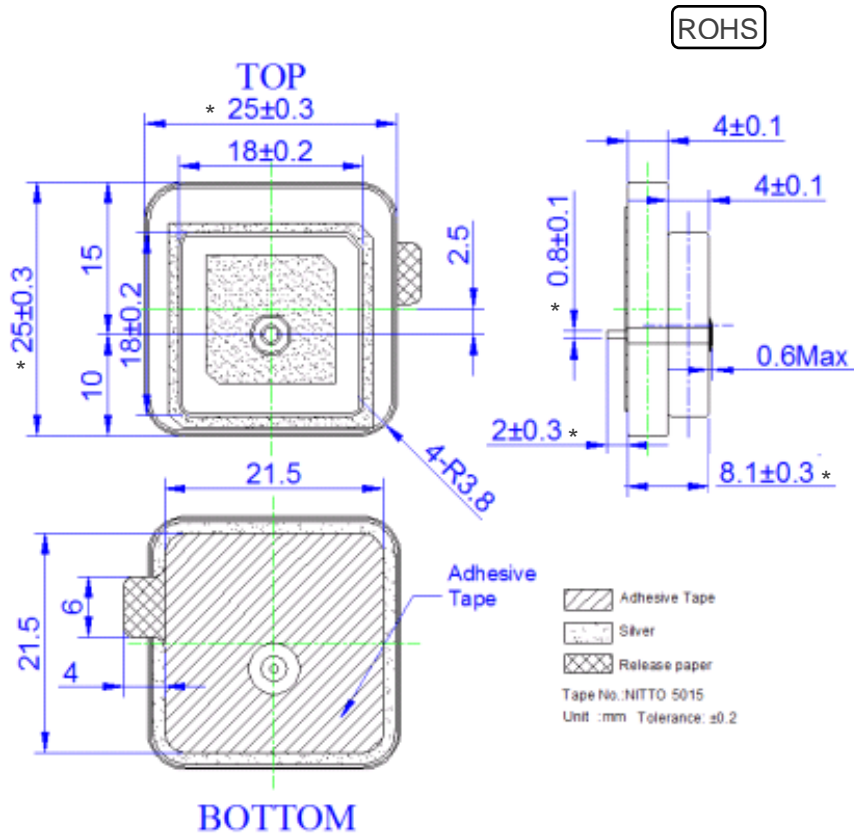


5.9. 3D Radiation Pattern

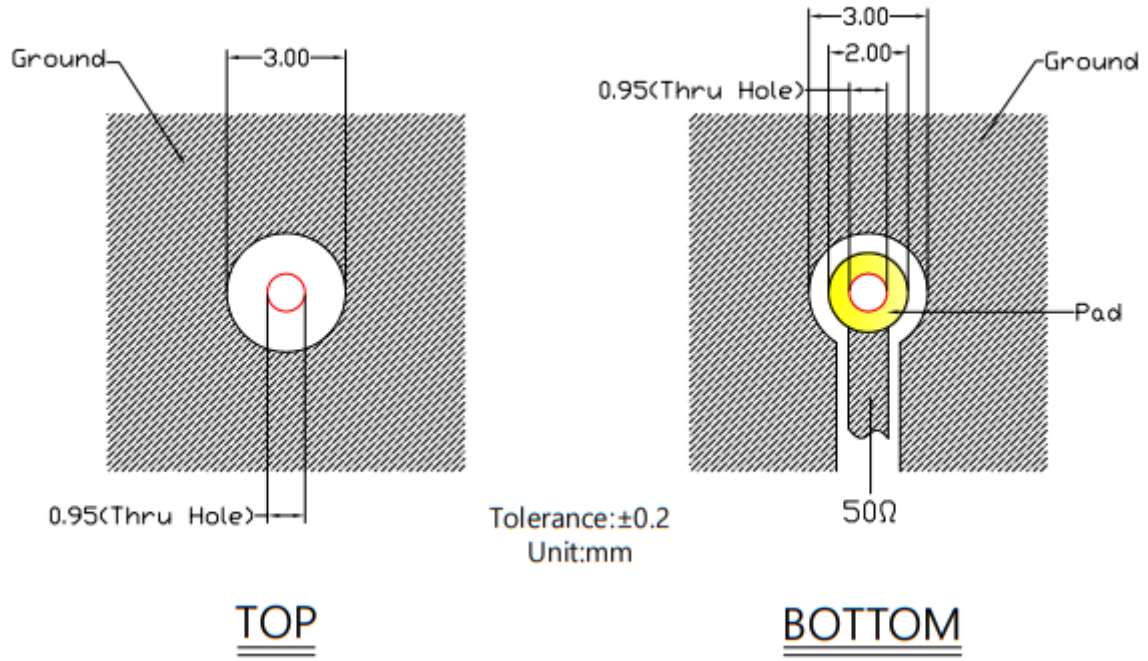




6 Product Size

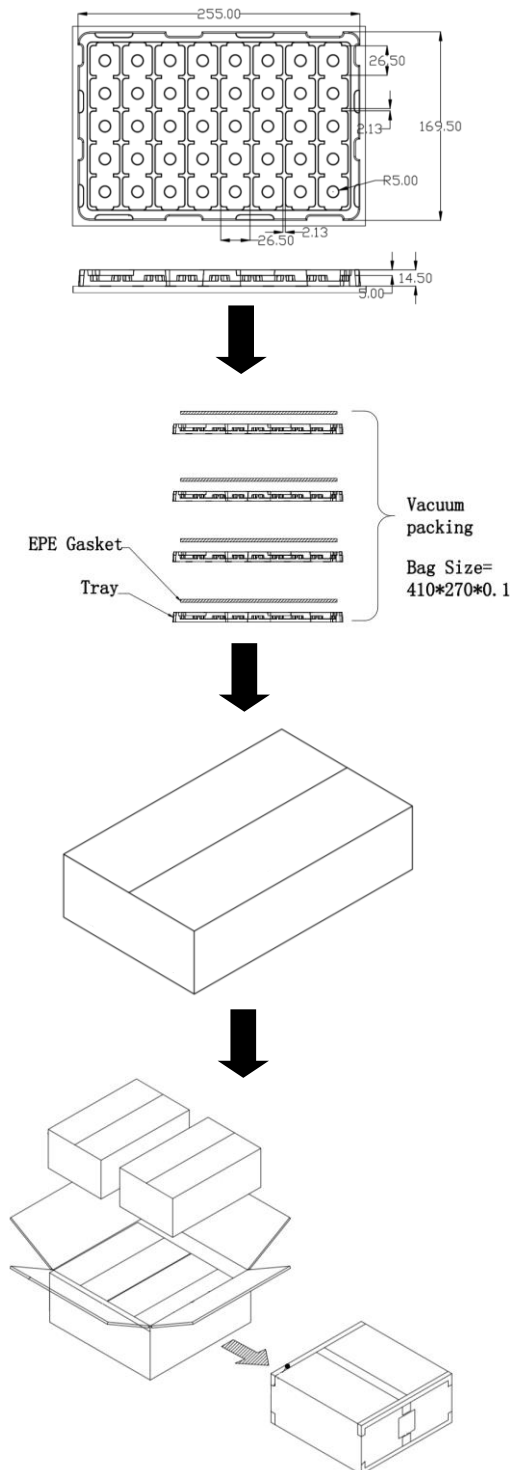


7 PCB Footprint Recommendation



8 Packaging

- 40pcs/Tray, 160pcs/Small box, 640pcs/Carton.
- The packaging steps are as follows:



Step 1:

Place 1 pcs in each cell.

40 pcs/Tray.

Tray size: 255 mm × 169.5 mm × 14.5 mm.

Step 2:

1. Four trays are staggered.

2. Vacuum sealing.

Step 3:

Put the sealed 160 pcs into the small box.

Small box size: 280 mm × 187 mm × 70 mm

Step 4:

Put four small boxes into the Carton.

640 pcs/Carton.

Carton size: 405 mm × 293 mm × 185 mm.