



Antenna Datasheet

Product OC: YFGC041WWAM

Version: 1.1

Date: 2025-08-18

Status: Released

Product Name: GNSS Adhesive Mount Ceramic Patch Passive
Embedded Antenna

Key Features:

Frequency Band: 1164–1189 MHz, 1565–1586 MHz

Dimensions: 25 mm × 25 mm × 4.12 mm

RoHS & REACH Compliant

Overview

The Quectel YFGC041WWAM is a compact, high-performance passive GNSS L1/L5 antenna designed for precision positioning in IoT, automotive, and industrial applications. Measuring just 25 mm × 25 mm × 4.12 mm, this ceramic antenna delivers exceptional efficiency while supporting major GNSS constellations, including GPS L1/L5, Galileo E1/E5, BDS B1C/B2a and QZSS L1/L5.

Applications

- IoT & Tracking: Wearables, asset monitors, and agricultural sensors
- Automotive: Navigation, telematics, and fleet management
- Consumer Tech: smart devices, and outdoor gear
- Industrial: Robotics and timing systems

Technical Highlights

- 50 Ω impedance for seamless GNSS integration
- Directional radiation pattern to enhance satellite signal capture
- Reflow-solderable with recommended profiles (260 °C peak)

Quectel provides comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs. We have regional R & D centers to offer quick response to meet your requirements. Please contact our sales & FAEs if you have any requests.

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1 Specification

Test Condition: The antenna is tested on a 50 mm × 50 mm PCB

1.1. Electrical

Electrical	
Frequency Range	1164–1189 MHz, 1565–1586 MHz
Impedance	50 Ω
Polarization	RHCP
Radiation Pattern	Directional

Band Frequency (MHz)	GPS L5 GALILEO E5a BDS B2a-B2I QZSS L5 IRNSS L5	GALILEO E5b BDS B2b	GPS L2 QZSS L2C	GLONASS G2	BDS B3	BDS B1I	GPS L1 GALILEO E1 BDS B1C QZSS L1	GLONASS G1
	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	1.1	-	-	-	-	-	1.5	-
Return Loss (dB)	-30.4	-	-	-	-	-	-14.4	-
Efficiency (%)	23.4	-	-	-	-	-	39.2	-
Peak Gain (dBi)	-2.5	-	-	-	-	-	-0.6	-
Average Gain (dB)	-6.3	-	-	-	-	-	-4.1	-

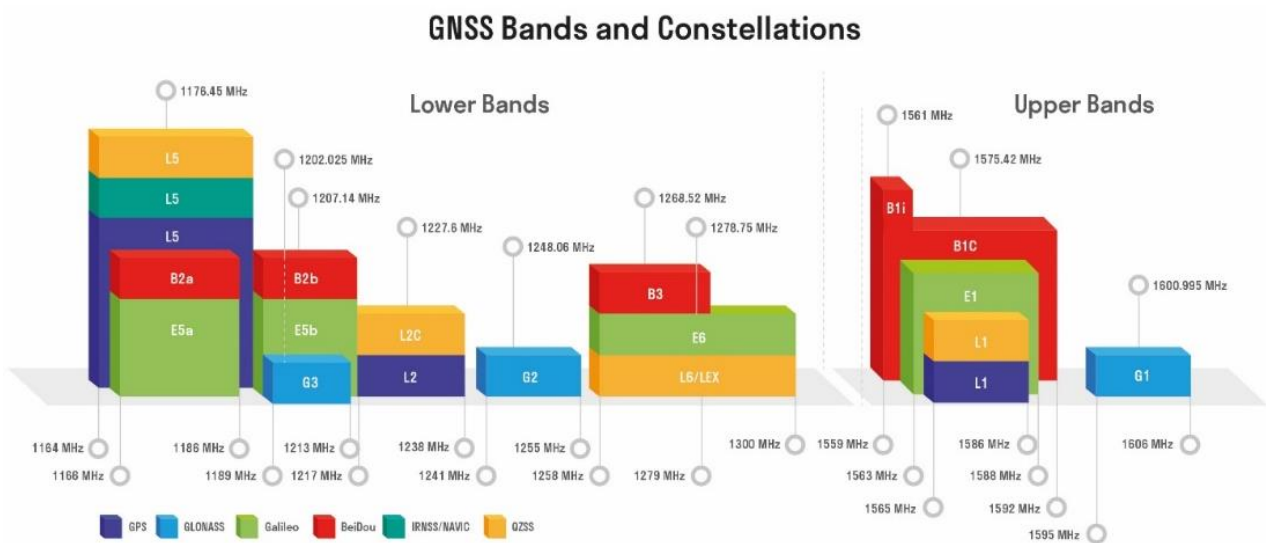
1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	25 mm × 25 mm × 4.12 mm
Material & Color	Ceramic
Mounting Type	Adhesive
Weight	Typ. 8.8 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS & REACH Compliant	Yes

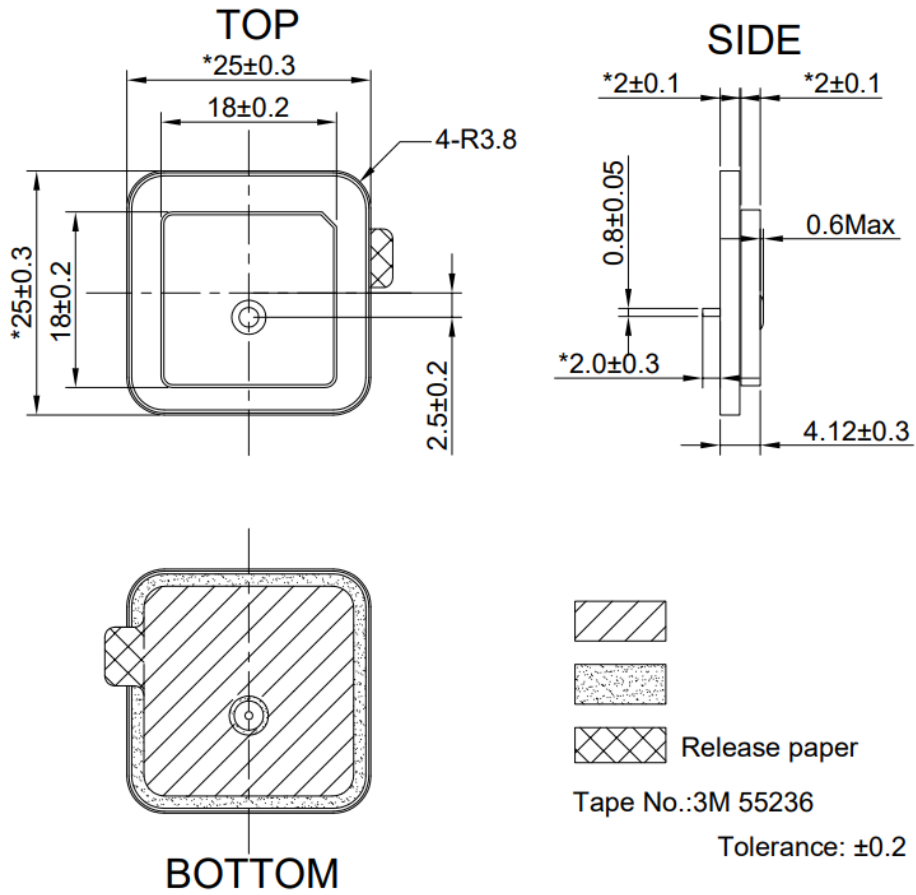
1.3. Supported GNSS Frequency Bands

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)	
	√	√	-	-	
BDS	B1I Centre 1561.098 (1559–1564)	B1C (BDS-3) Centre 1575.42 (1559–1592)	B2a Centre 1176.45 (1166–1187)	B2b-B2I 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)				
	√				



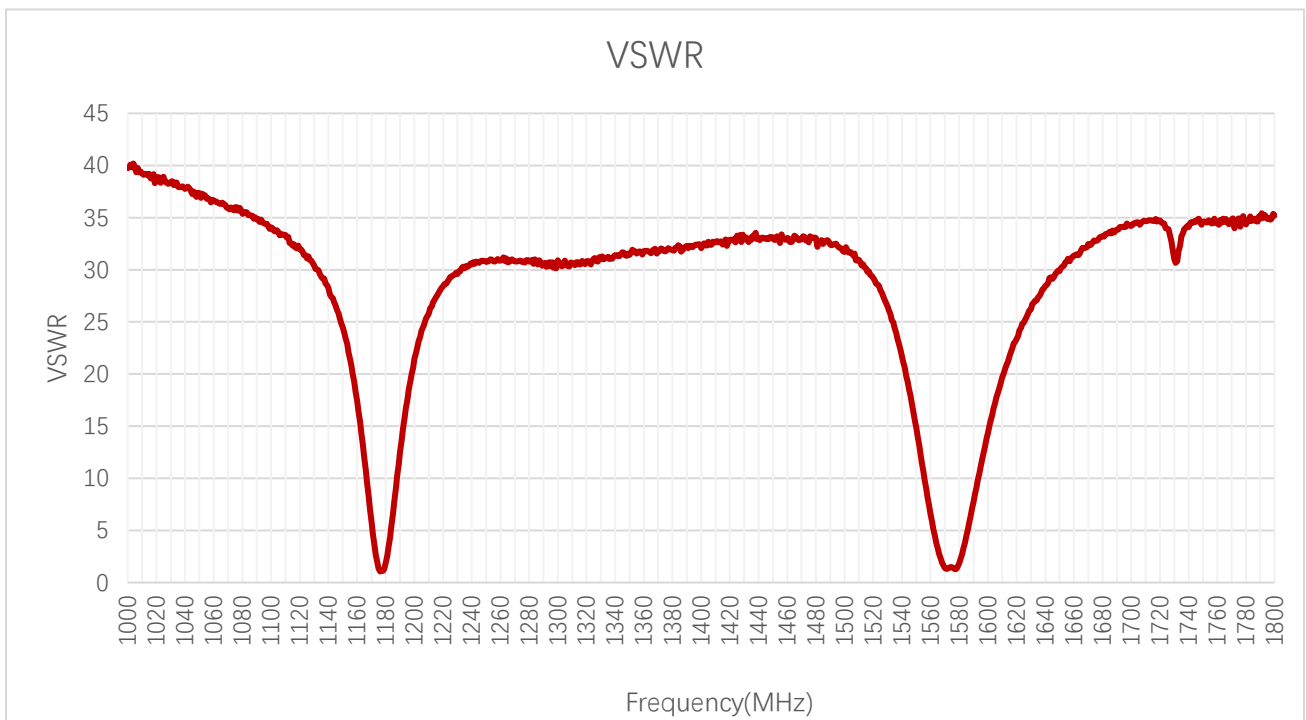
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

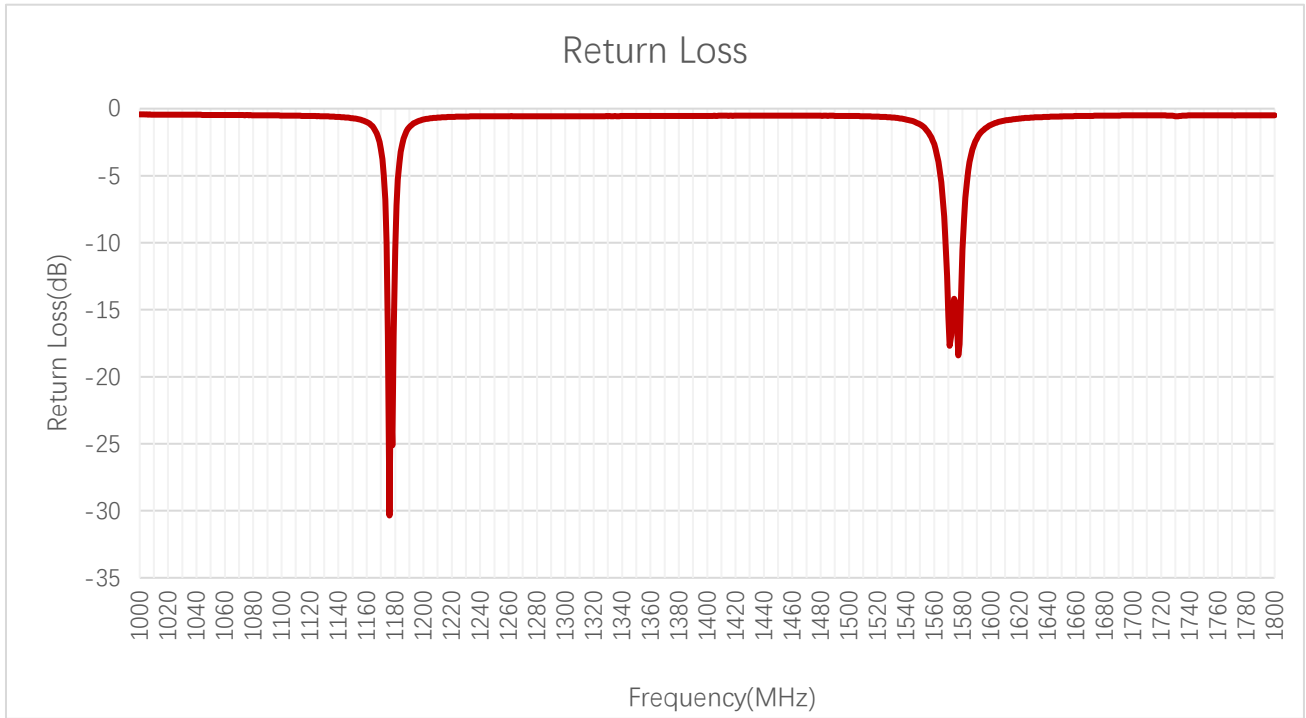
3.1.1. VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	1.1	-	-	-	-	-	1.5	-

3.1.2. Return Loss

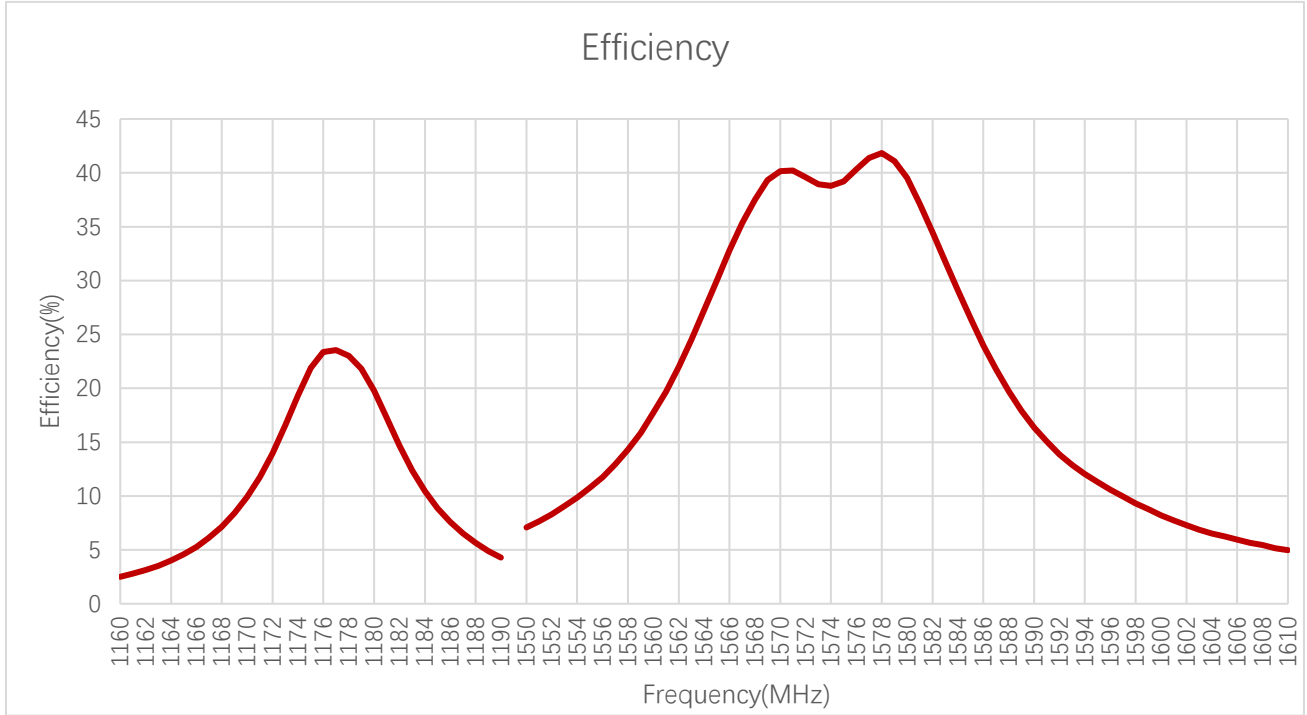


Return Loss (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-30.4	-	-	-	-	-	-14.4	-

3.2. Radiation Performance Test

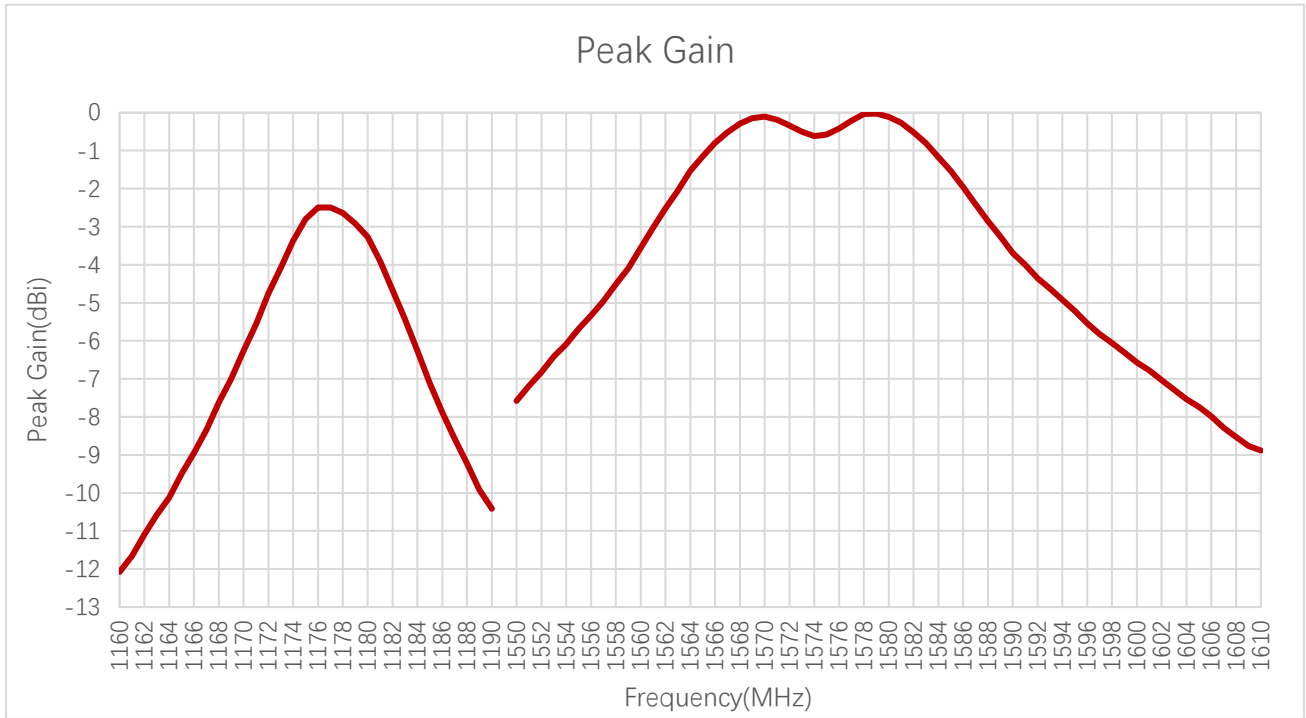
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	23.4	-	-	-	-	-	39.2	-

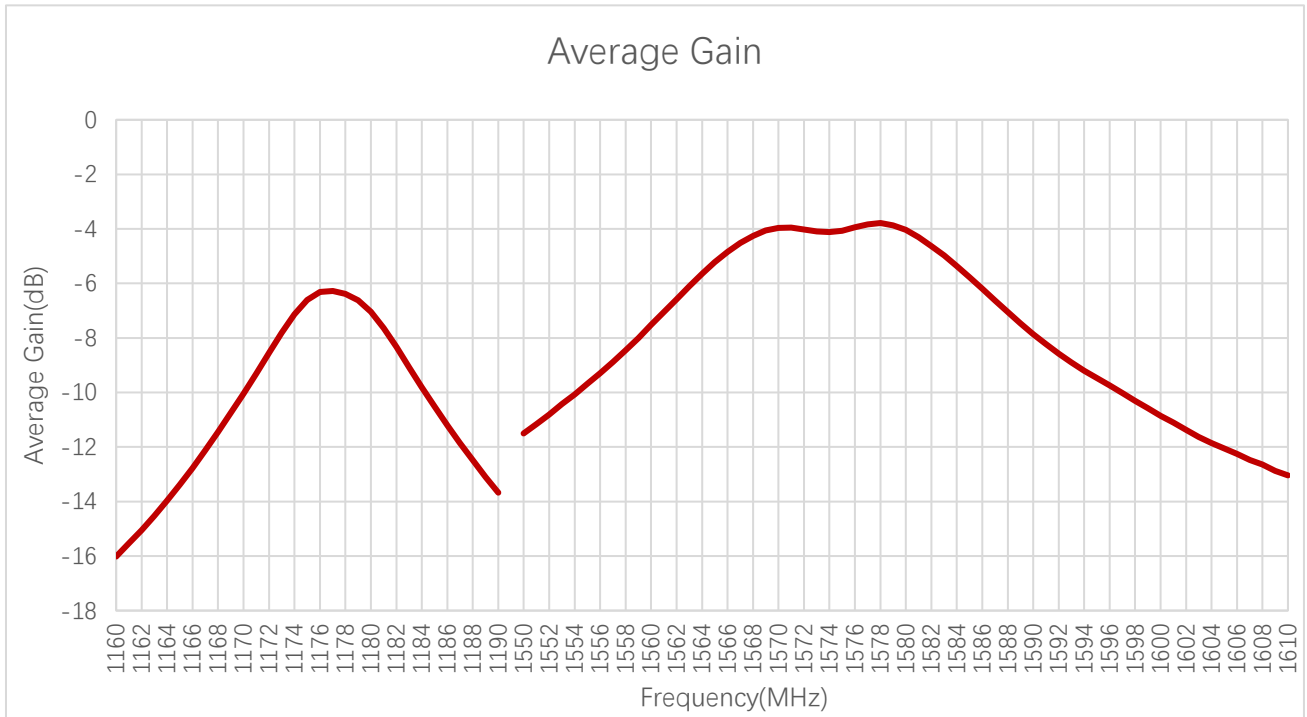
3.2.2. Peak Gain



Peak Gain (dBi)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-2.5	-	-	-	-	-	-0.6	-

3.2.3. Average Gain

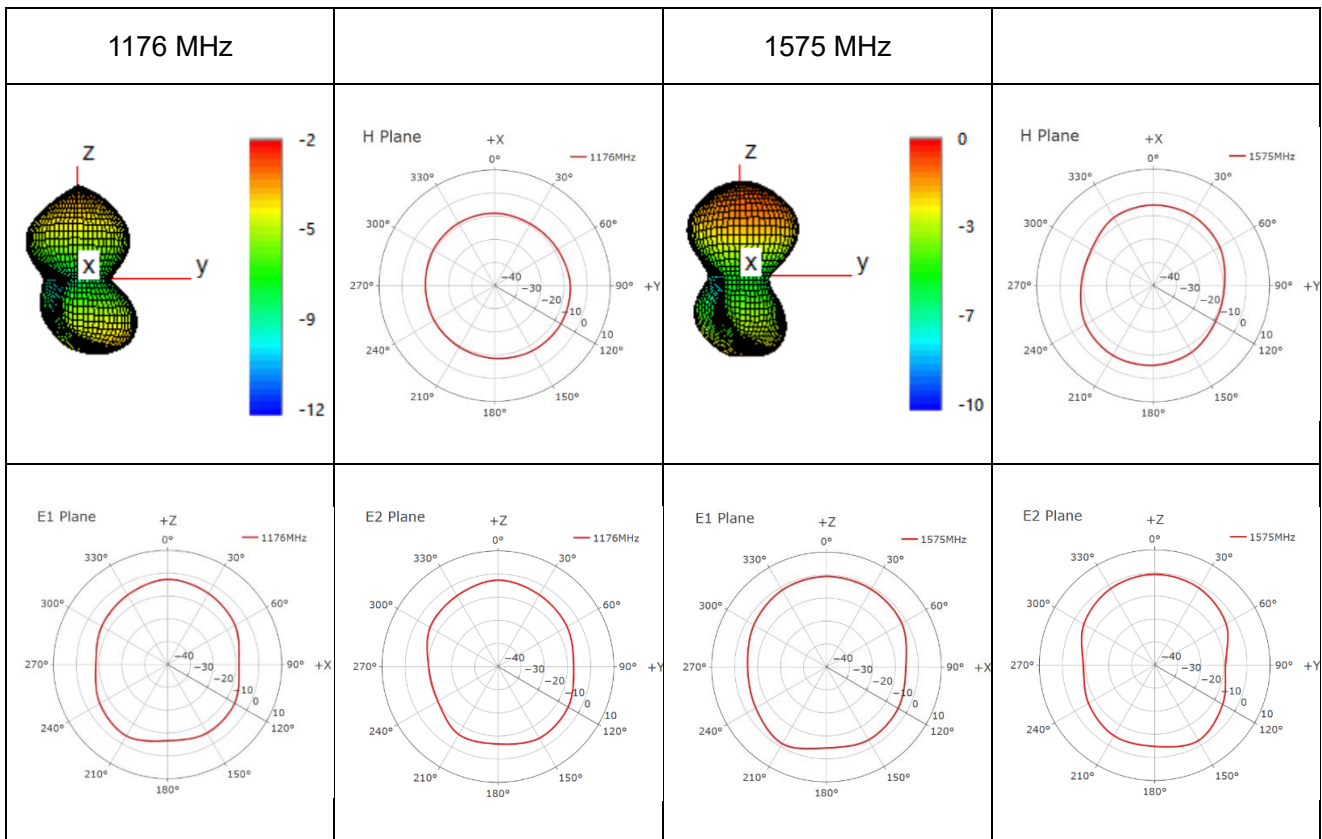
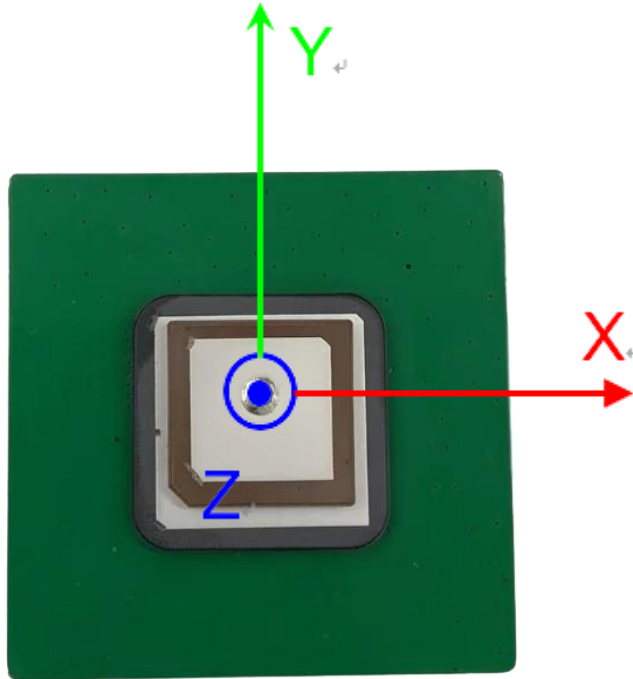


Average Gain (dB)

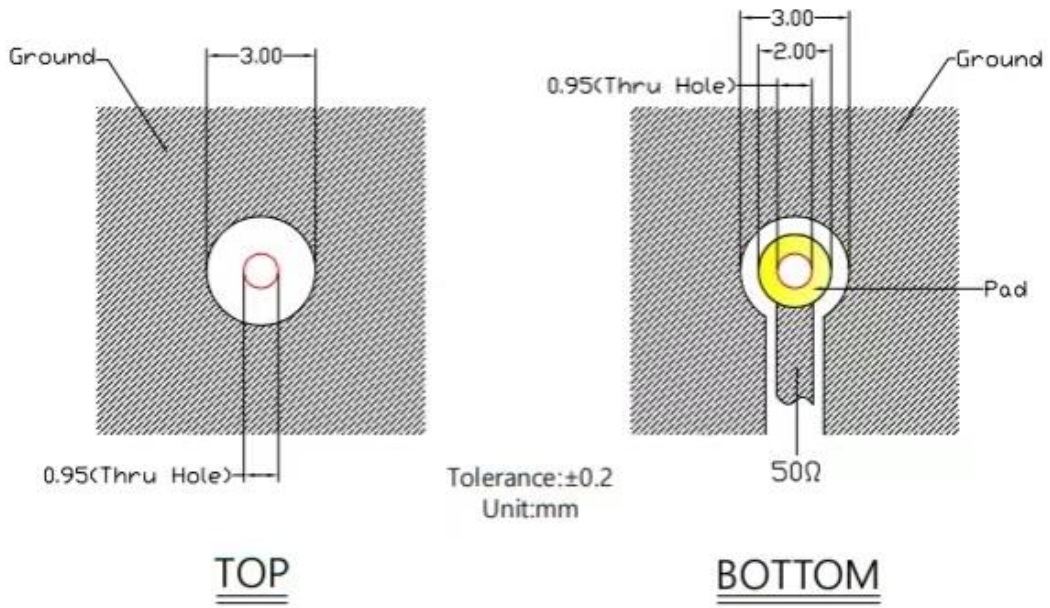
Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Average Gain (dB)	-6.3	-	-	-	-	-	-4.1	-

3.2.4. 3D & 2D Radiation Pattern

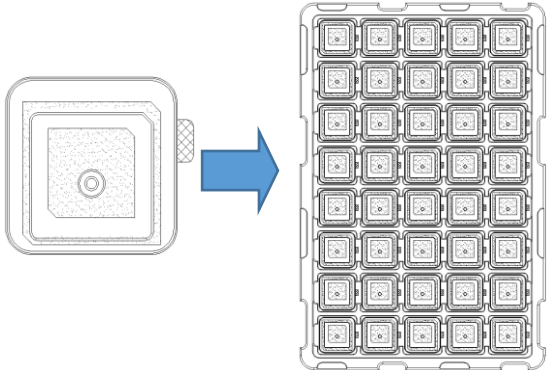
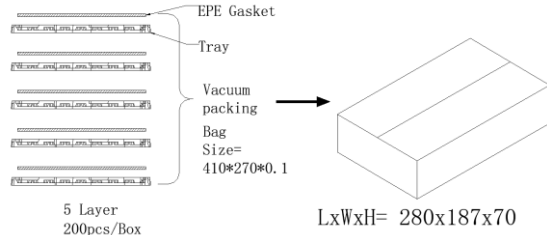
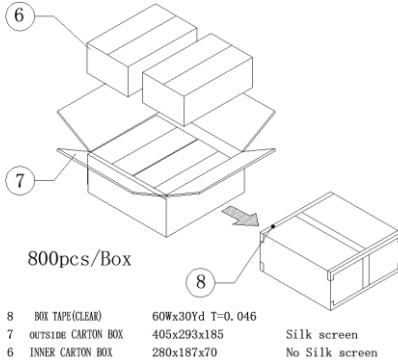
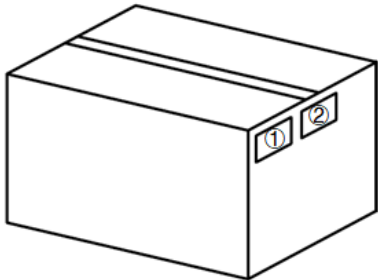
- Test Condition: The antenna is tested on a 50 mm × 50 mm PCB
- Test Chamber: HF-G-1

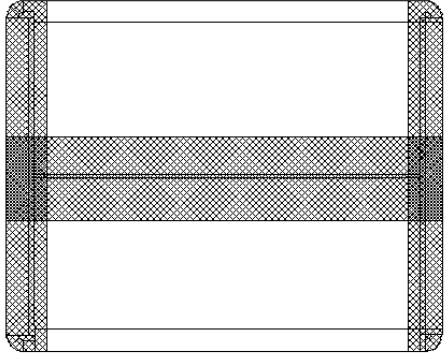


4 Pin Footprint Recommendation



5 Packaging

Step	Packaging Picture / 2D Picture	Description
1		<p>40 antenna products in a blister tray. (40 Antennas / Blister Tray)</p>
2	 <p>EPE Gasket Tray Vacuum packing Bag Size= 410*270*0.1</p> <p>5 Layer 200pcs/Box</p> <p>LxWxH= 280x187x70</p>	<p>5-layer blister trays in an inner box. 200 antenna products in an inner box. (200 Antennas / Inner Box)</p>
3	 <p>800pcs/Box</p> <p>8 BOX TAPE(CLEAR) 60Wx30Yd T=0.046 7 OUTSIDE CARTON BOX 405x293x185 6 INNER CARTON BOX 280x187x70</p> <p>Silk screen No Silk screen</p>	<p>(4 Inner Boxes / Carton Box) (800 Antennas / Carton Box) Estimated quantity Products that cannot fill the entire carton box are packed in a suitable size carton box. <u>Carton Size:</u> <u>L x W x H = 405 x 293 x 185 mm</u></p>
4		<p>Position for Attaching Labels</p> <p>① Carton Label ② Quality Label</p>

5	 A technical drawing of an H-shaped sealing carton. It consists of a central horizontal rectangular section with a cross-hatched texture, representing the sealing material. This central section is flanked by two vertical rectangular sections, also with a cross-hatched texture, representing the side panels of the carton. The overall shape is an 'H'.	Sealing Cartons H-shaped sealing cartons
Note	The initial packaging method described above is for reference only, and the final actual packaging method shall be subject to the actual shipping packaging.	

Contact Us

At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:

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Or our local offices. For more information, please visit:

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Revision History

Version	Date	Author	Note
-	2025-02-13	Rhone Wei/ Lucky Feng/ Riva Ren/ Rainey Liao	Creation of the document
1.0	2025-02-13	Rhone Wei/ Lucky Feng/ Riva Ren/ Rainey Liao	First official release
1.1	2025-08-18	Rhone Wei/ Rainey Liao	<ol style="list-style-type: none">1. Updated the frequency range.2. Added the overview.3. Added Chapter 4.

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