

Antenna Datasheet

Product OC: YCGO006AA

Version: 2.1

Date: 2023-12-05

Status: Released

Product Name: Passive GNSS L1 Antenna

Key Features:

Frequency Band: 1559–1586 MHz

Dimensions: 18 mm × 18 mm × 6.3 mm

Efficiency: Up to 51.2 %

RoHS and REACH Compliant

Overview

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.

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1 Specification

Test Condition: test on a 40 mm × 40 mm PCB

1.1. Electrical

Electrical											
Frequency Range				1559–1586 MHz							
Impedance				50 Ω							
Polarization				RHCP							
Radiation Pattern				Directional							

Frequency (MHz)	Band	GPS L5						GPS L1	
		GALILEO E5a	GALILEO E5b	GPS L2	GLONASS G2	BEIDOU B3	BEIDOU B1I	E1	GLONASS G1
1176		1207	1227	1248	1268	1561	1575	1602	
Return Loss (dB)		-	-	-	-	-	-11.0	-16.1	-
Efficiency (%)		-	-	-	-	-	43.9	51.2	-
Peak Gain (dBi)		-	-	-	-	-	0.4	1.4	-

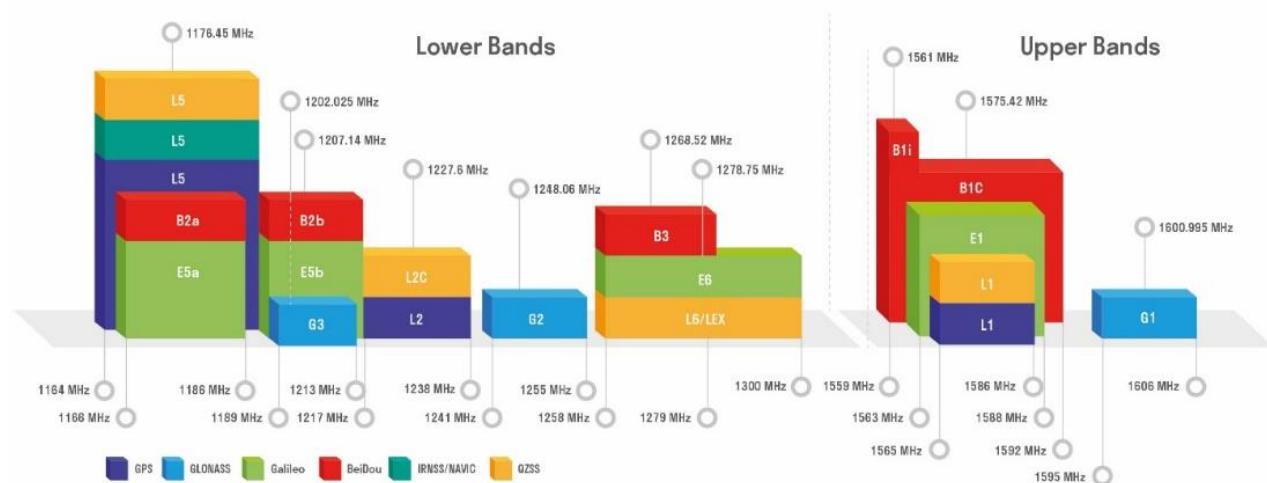
1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	18 mm × 18 mm × 6.3 mm
Material	PCB + Ceramic
Cable Type & Length	Φ 1.13 & Black & 50 mm
Connector Type	IPEX MHF 1
Mounting Type	Buckle
Weight	Typ. 7.5 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS and REACH Compliant	Yes

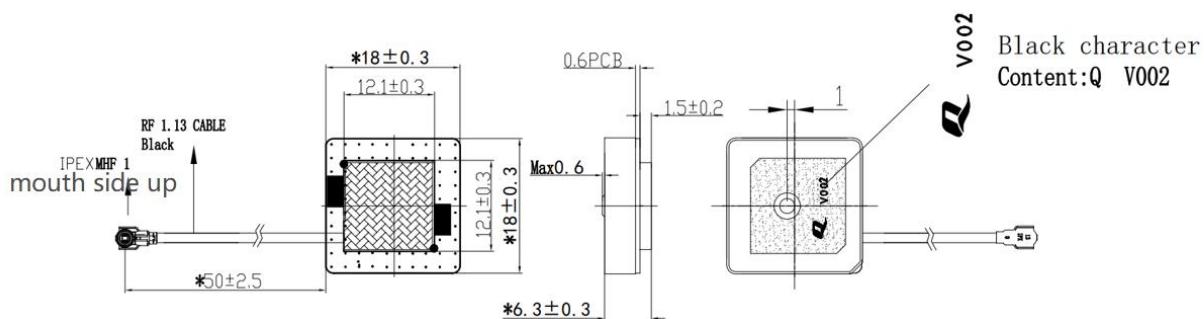
1.3. Supported GNSS Frequency Bands

GNSS Frequency Bands (MHz)					
	L1	L2	L5		
GPS	Centre 1575.42 (1565–1586)	Centre 1227.6 (1217–1238)	Centre 1176.45 (1164–1189)		
	√	-	-		
GLONASS	G1-L1OC-L1OF Centre 1601 (1595–1606)	G2-L2OC-L2OF Centre 1248.06 (1241–1255)	G3-L3OC 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 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)				
	-				

GNSS Bands and Constellations



2 Drawing

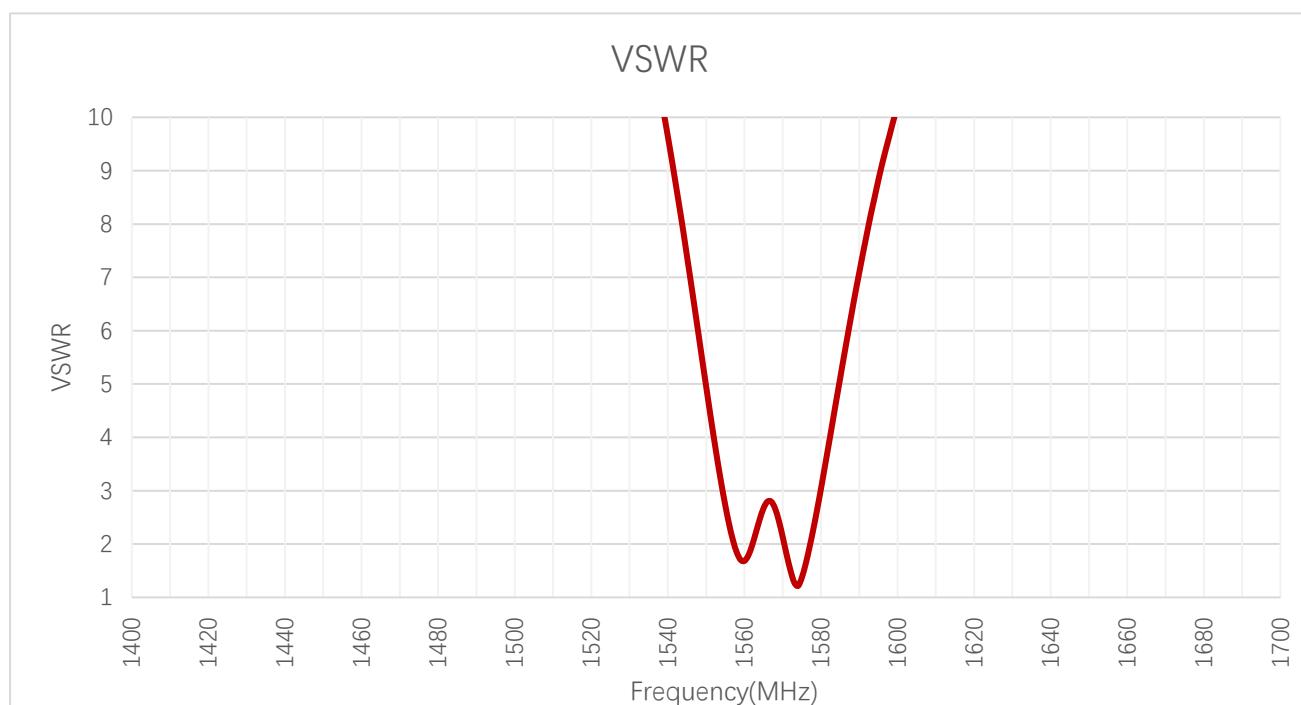


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3 Detailed Performance

3.1. S-Parameter Test

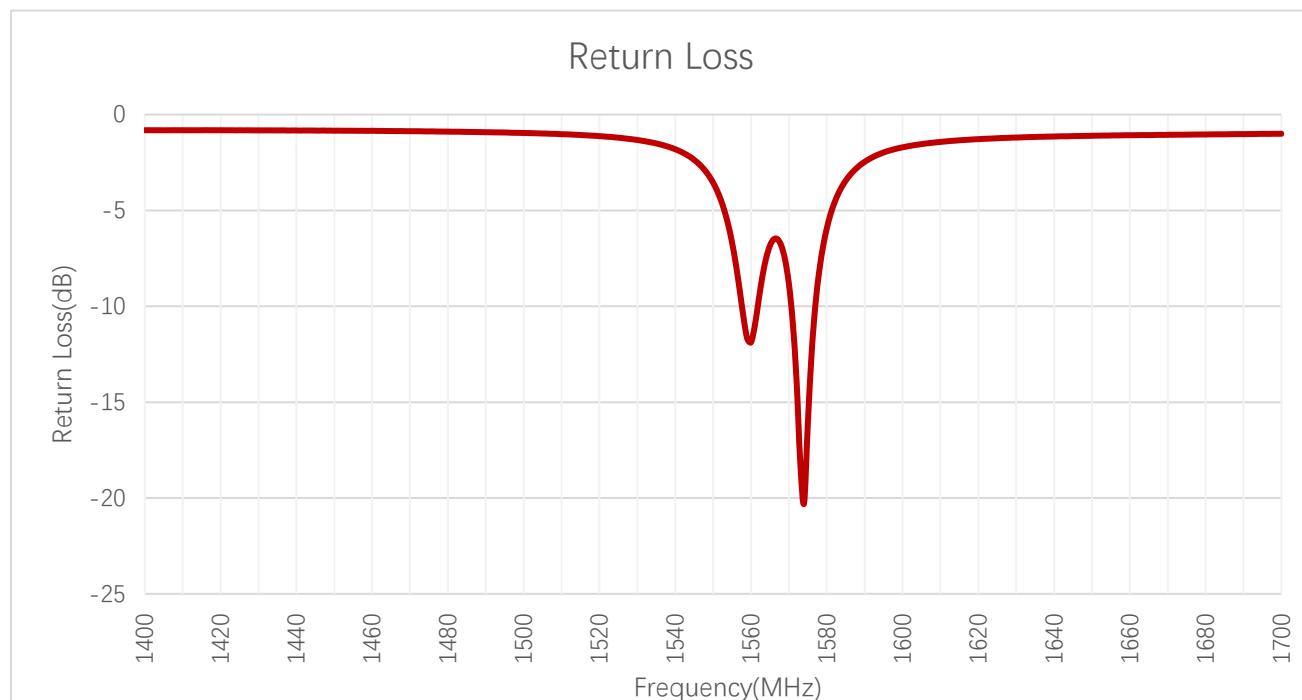
3.1.1. VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	1.8	1.4	-

3.1.2. Return Loss

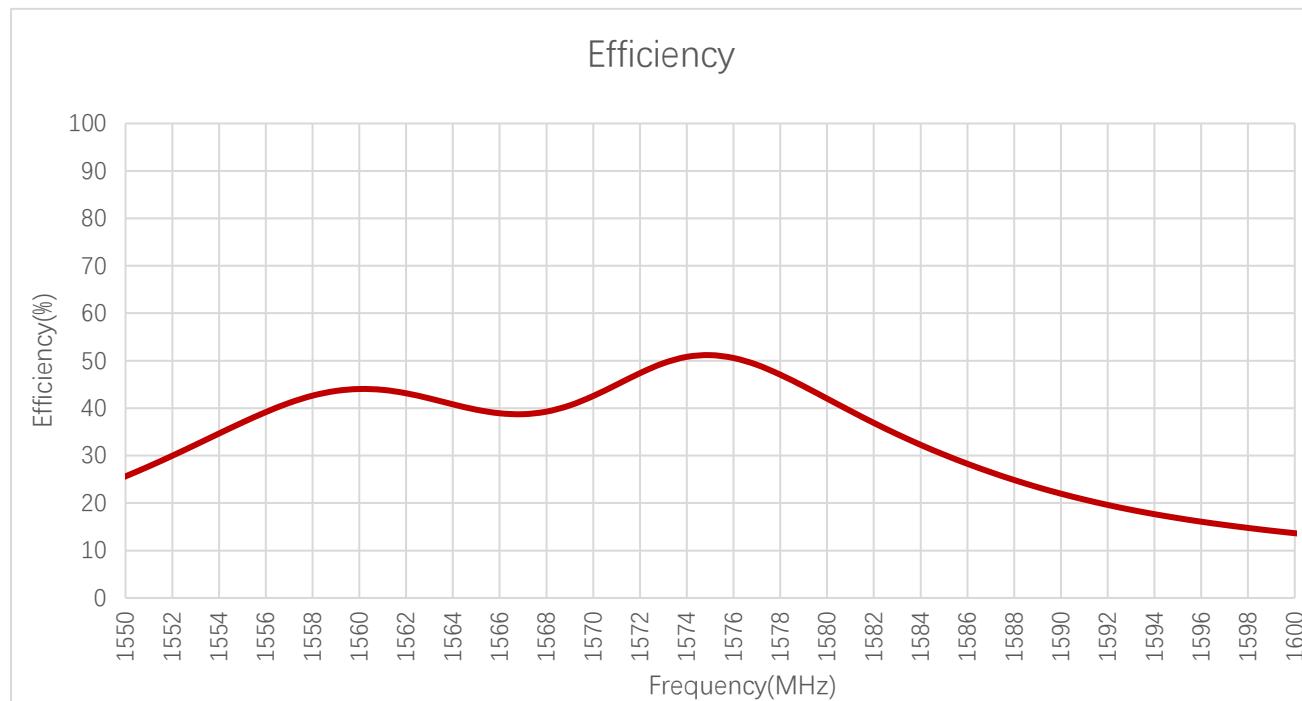


Return Loss (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-	-	-	-	-	-11.0	-16.1	-

3.2. Radiation Performance Test

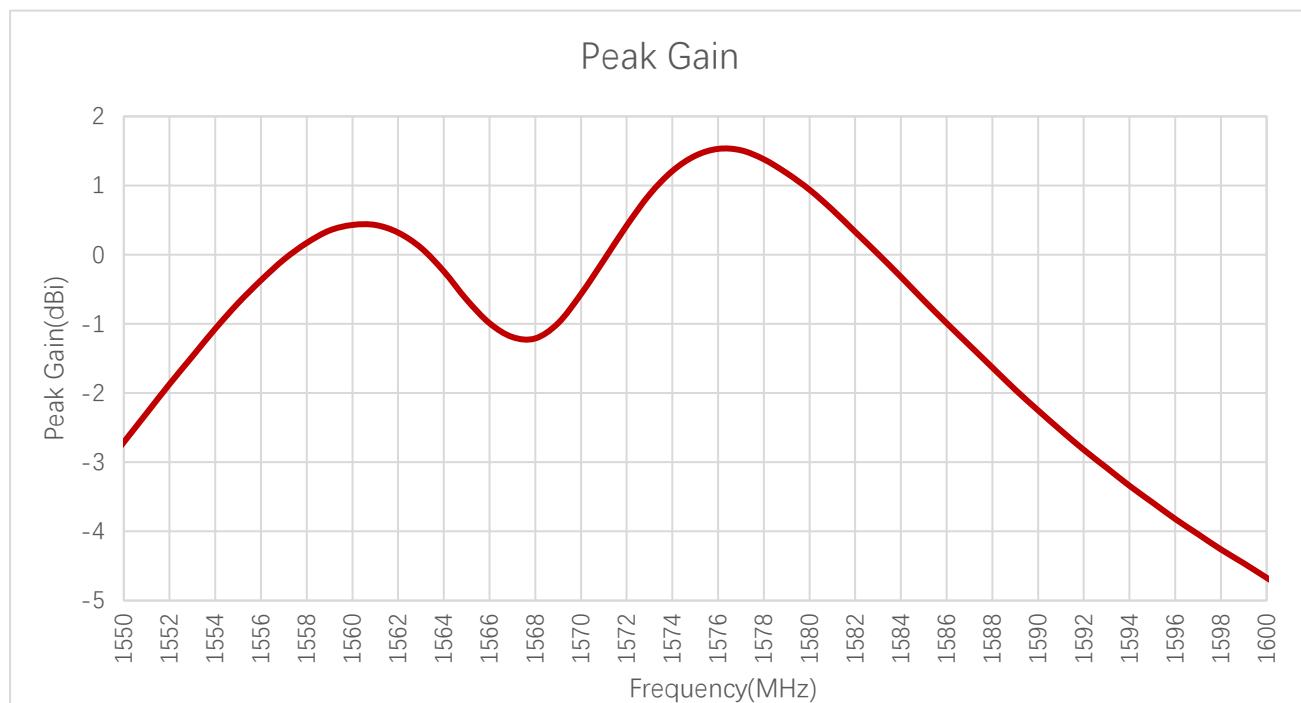
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	43.9	51.2	-

3.2.2. Peak Gain

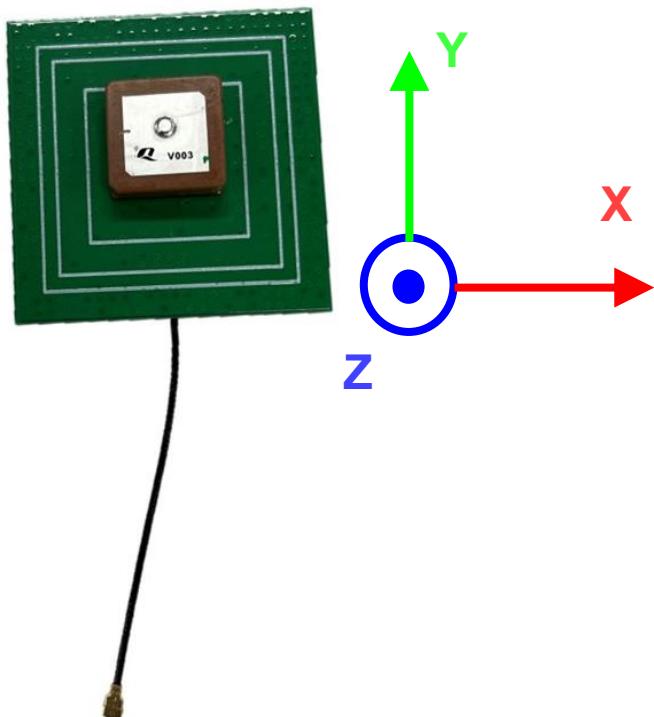


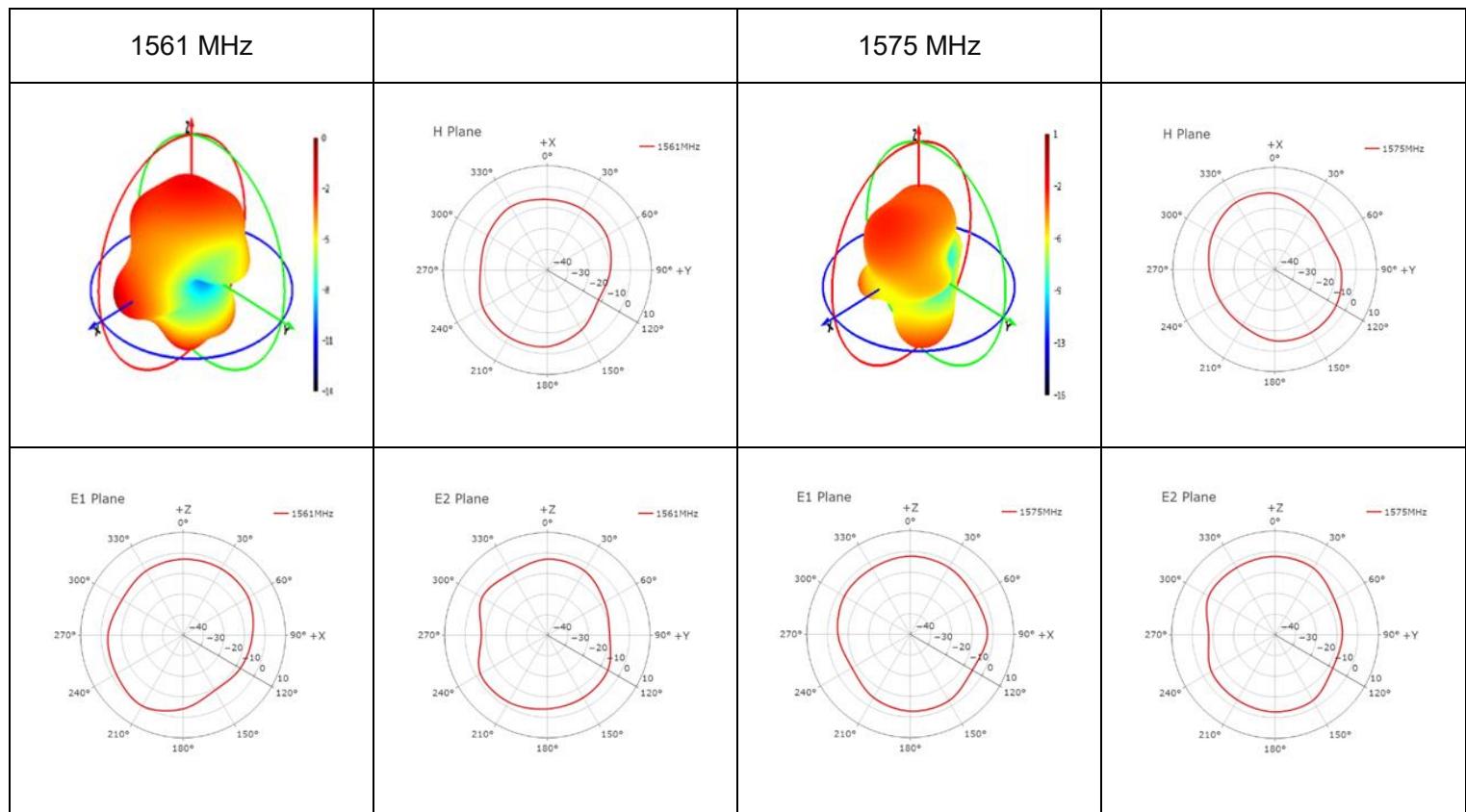
Peak Gain (dBi)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-	0.4	1.4	-

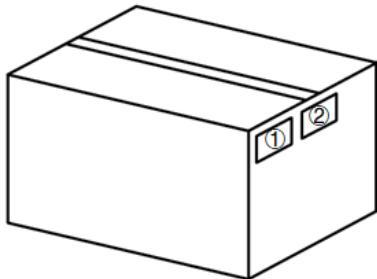
3.2.3. 3D & 2D Radiation Pattern

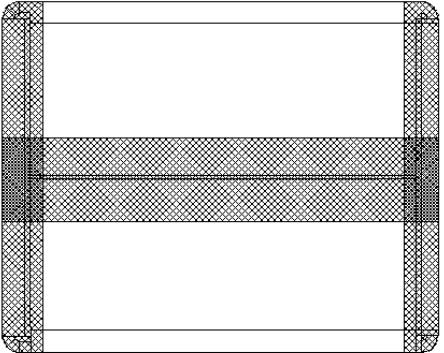
- Test Condition: test on a 40 mm × 40 mm PCB
- Test Chamber: GL-S-1





4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		Vacuum 80 products in a pearl cotton tray; (80 pcs antennas per pearl cotton tray)
2		Put 5 pearl cotton trays inside the outer box and put bubble bags on the top. (400 pcs antennas per carton box) <u>Carton Size:</u> <u>$L \times W \times H = 405 \times 293 \times 185 \text{ mm}$</u>
3		Position for Attaching Labels ① Carton Label ② Quality Label

4		<p>Sealing Cartons “工” type sealing cartons</p>
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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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Revision History

Version	Date	Author	Note
-	2021-05-18	Kenny YIN/ Aria CHU	Creation of the document
1.0	2021-05-18	Kenny YIN/ Aria CHU	First official release
1.1	2021-12-05	Kenny YIN/ Aria CHU	Updated the product description (Chapter 1).
2.0	2023-08-26	Damon ZHANG/ Lucky FENG/ David LIU/ Aria CHU	Updated all test data in this datasheet.
2.1	2023-12-05	Lucky FENG/ Aria CHU	Added REACH compliant (Chapter 1.2).



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