



Antenna Datasheet

Product OC: YCGO010AA

Version: 2.1

Date: 2023-12-05

Status: Released

Product Name: Active GPS L1 & BEIDOU B1 Antenna

Key Features:

Frequency Band: 1559–1586 MHz

Dimensions: 18 mm × 18 mm × 6.3 mm

Efficiency: Up to 42.5 %

RoHS and REACH Compliant

LNA Gain: 18 ±3 dB

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.

Contents

Overview.....	1
Contents.....	2
1 Specification.....	3
1.1. Electrical.....	3
1.2. Mechanical & Environmental	4
1.3. Block Diagram (Active Antenna).....	5
1.4. Supported GNSS Frequency Bands.....	6
2 Drawing	8
3 Detailed Performance.....	9
3.1. S-Parameter Test	9
3.1.1. VSWR.....	9
3.1.2. Return Loss	10
3.1.3. GNSS LNA Gain.....	11
3.1.4. Noise Figure	12
3.2. Radiation Performance Test.....	13
3.2.1. Efficiency	13
3.2.2. Peak Gain.....	14
3.2.3. 3D & 2D Radiation Pattern.....	15
4 Packaging	17
Contact Us.....	19
Legal Notices	20
Revision History	22

1 Specification

Test Condition: By 40 mm square ground plane

1.1. Electrical

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

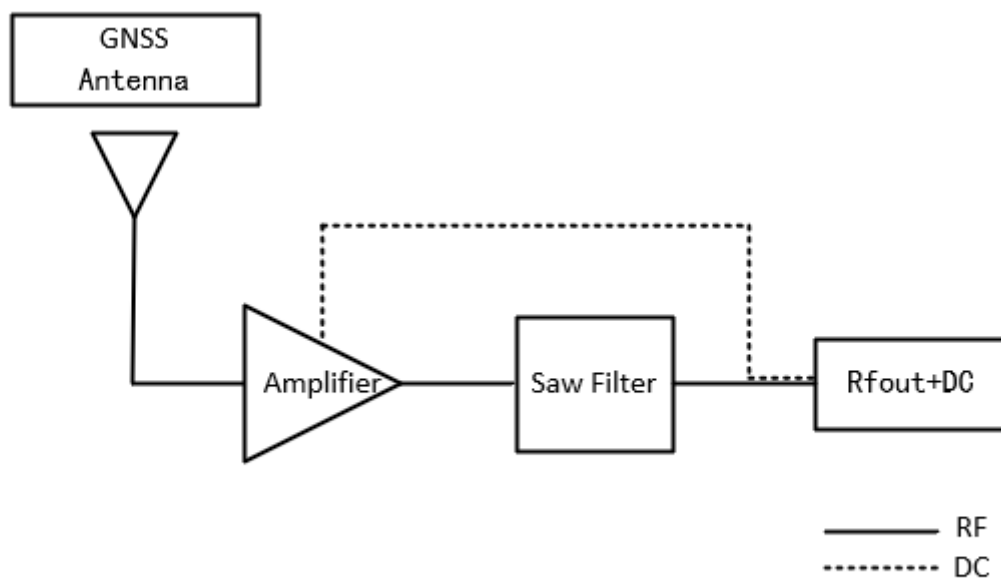
<div>Band</div> <div>Frequency (MHz)</div>	GPS L5 GALILEO E5a BEIDOU B2a-B2I QZSS L5 IRNSS L5	GALILEO E5b BEIDOU B2b	GPS L2 QZSS L2C	GLONASS G2	BEIDOU B3	BEIDOU B1I	GPS L1 GALILEO E1 BEIDOU B1C QZSS L1	GLONASS G1
	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	1.5	1.4	-
Return Loss (dB)	-	-	-	-	-	-13.8	-15.6	-
Efficiency (%)	-	-	-	-	-	42.5	40.5	-
Peak Gain (dBi)	-	-	-	-	-	1.9	0.6	-

LNA Electrical	
LNA Gain	18 ±3 dB
Noise Figure	≤ 1.5 dB
Output VSWR	< 2.0
Filter Out-of-band Attenuation	32 dB f0 ±100 MHz f0 (1568 MHz)
Working Voltage	2.7–3.3 V
Working Current	8 ±2 mA @ 3 V
Impedance	50 Ω

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	18 mm × 18 mm × 6.3 mm
Material	PCB + Ceramic
Cable Type & Color & 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

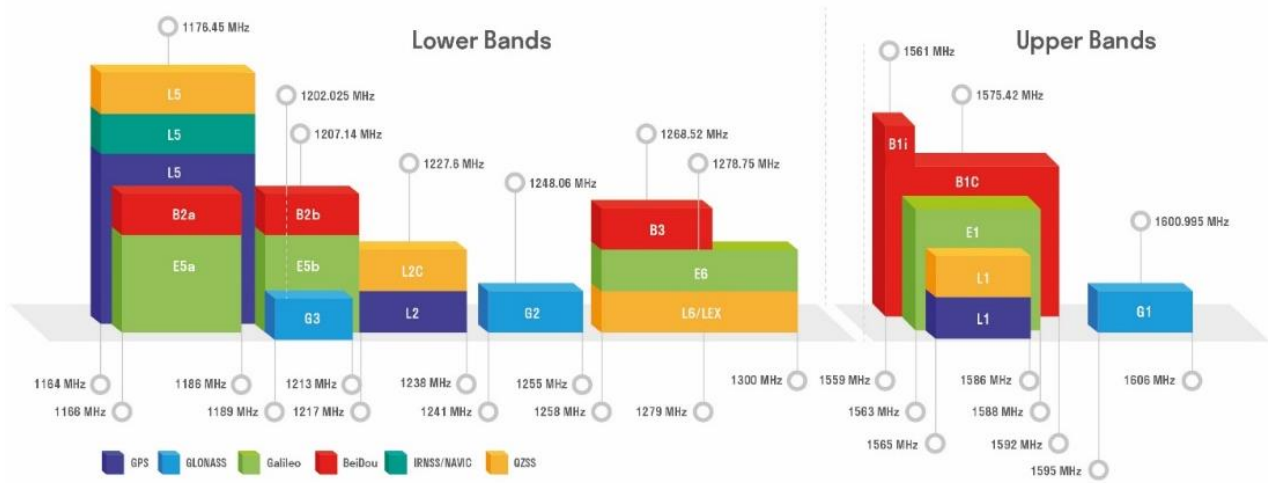
1.3. Block Diagram (Active Antenna)



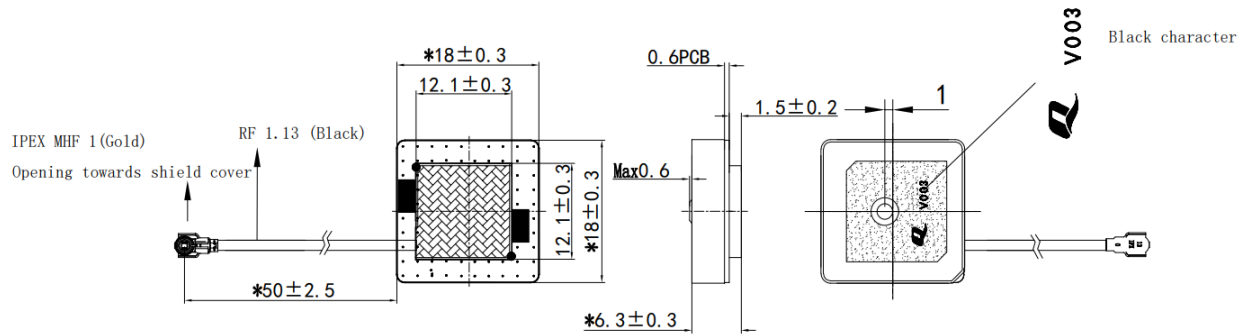
1.4. Supported GNSS Frequency Bands

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



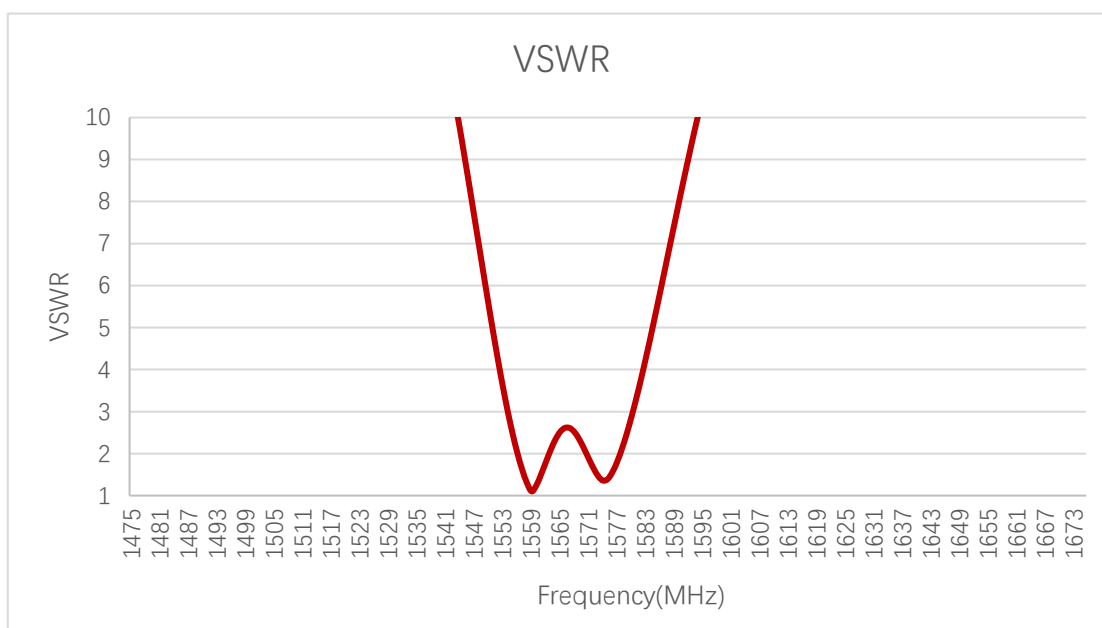
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

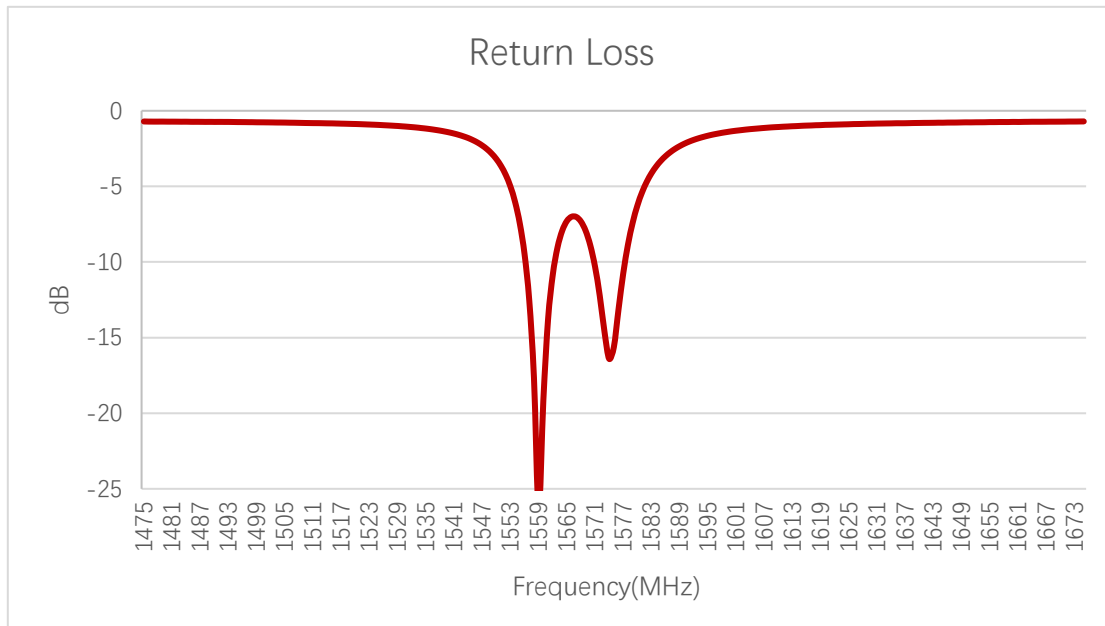
3.1.1. VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	1.5	1.4	-

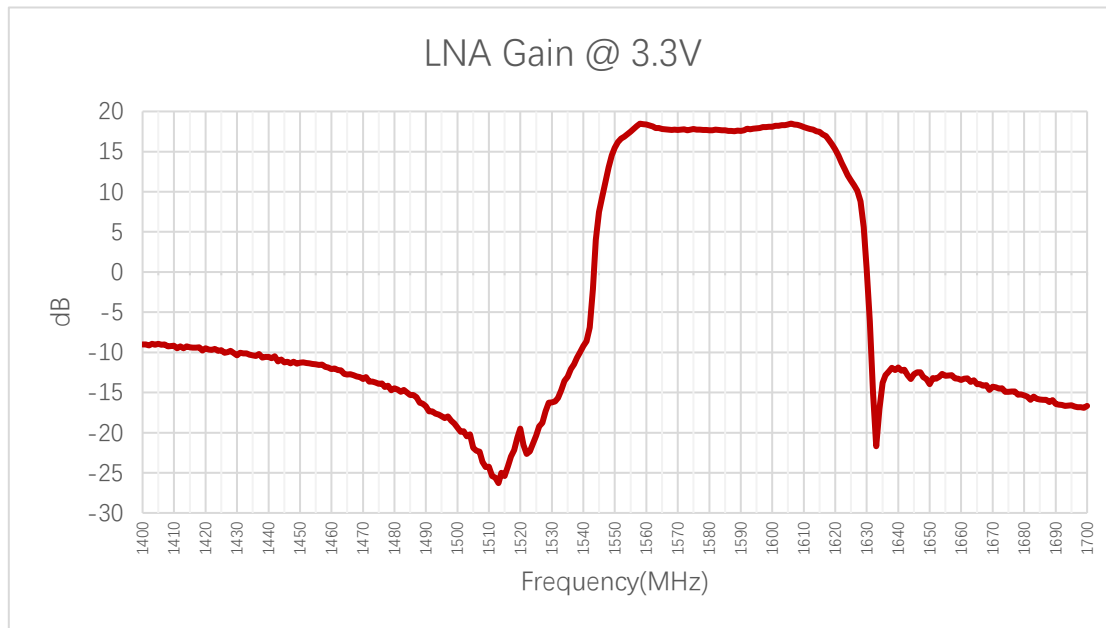
3.1.2. Return Loss



Return Loss (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-	-	-	-	-	-13.8	-15.6	-

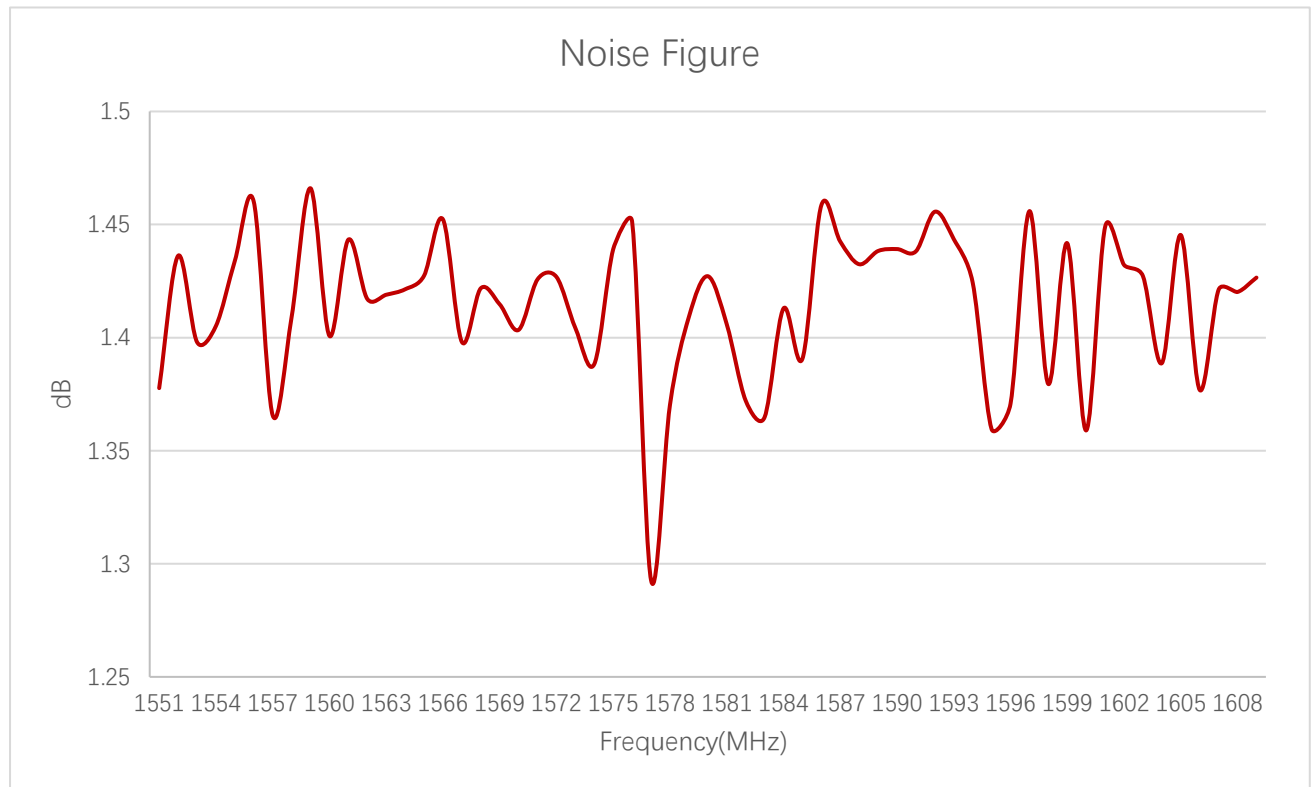
3.1.3. GNSS LNA Gain



LNA Gain (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	-	-	-	-	-	18.2	17.8	-

3.1.4. Noise Figure

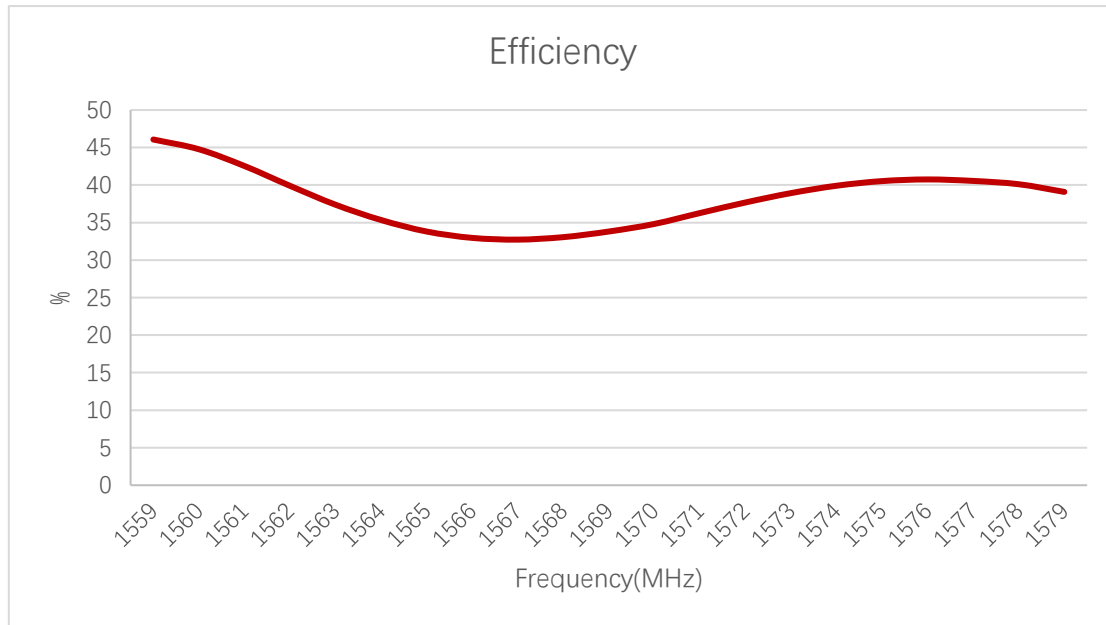


Noise Figure (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Noise Figure (dB)	-	-	-	-	-	1.4	1.4	-

3.2. Radiation Performance Test

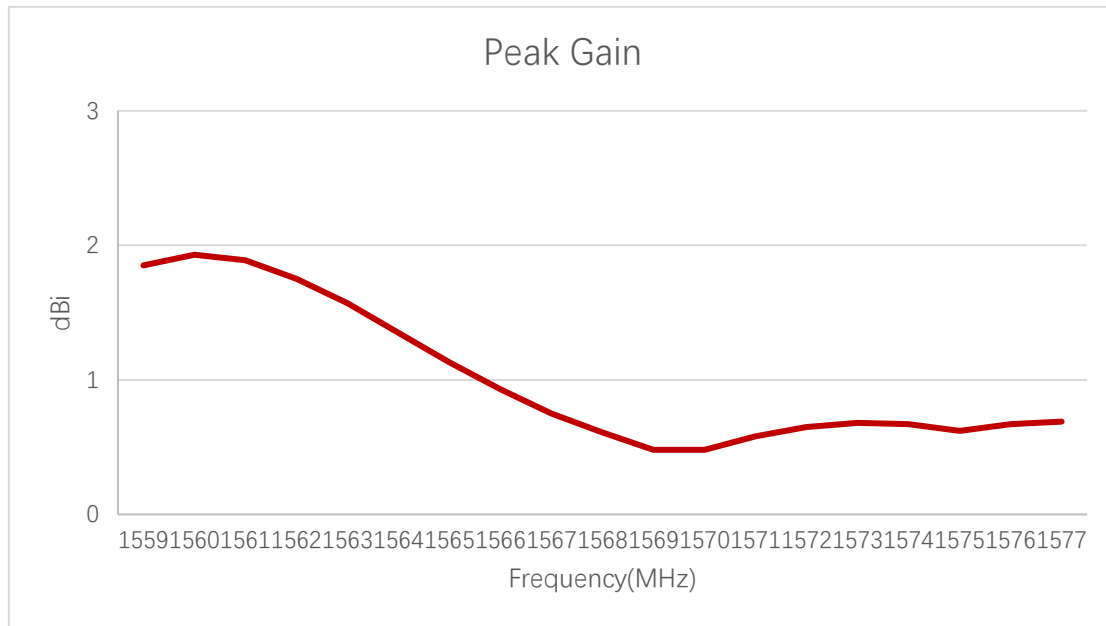
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	42.5	40.5	-

3.2.2. Peak Gain



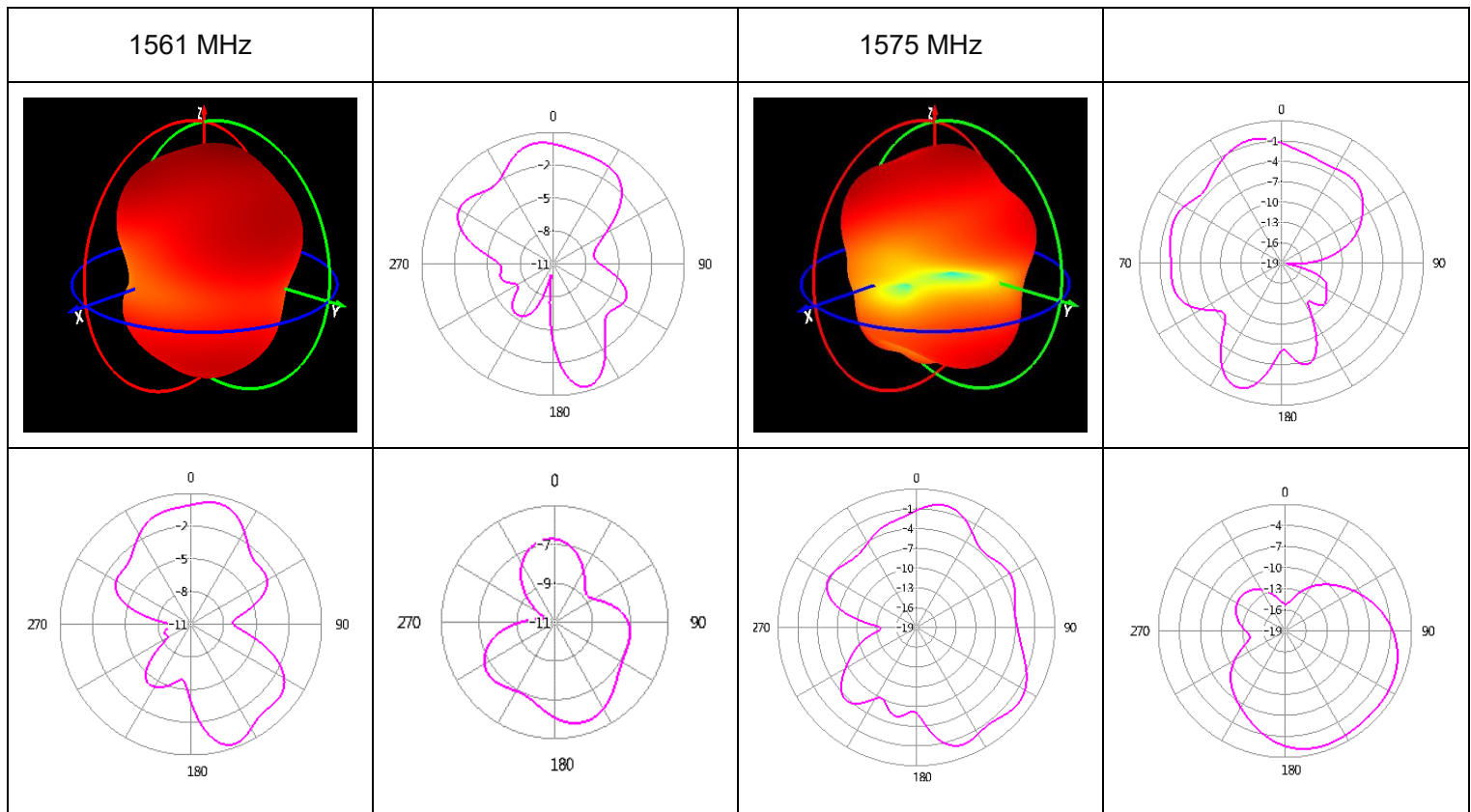
Peak Gain (dBi)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-	1.9	0.6	-




3.2.3. 3D & 2D Radiation Pattern

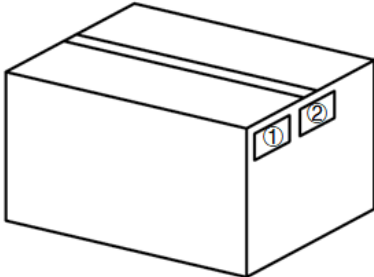
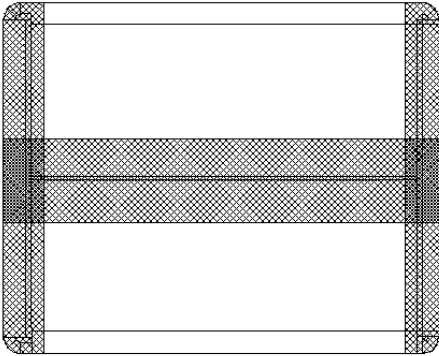
- Test Condition: By 40 mm square ground plane
- Test Chamber: GL-S-1





4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		Put the product into the pearl cotton tray. (80 PCS / Cotton Tray) Put the tray in a vacuum bag to vacuum.
2		Put 5 vacuum bags into the carton box. (400 PCS Antennas / Carton Box) <u>Carton Box Size:</u> <u>L × W × H = 405 × 293 × 185 mm</u>
3		Put a bubble bag on the top of the product.

4		<p>Position for Attaching Labels</p> <p>① Carton Label</p> <p>② Quality Label</p>
5		<p>Sealing Cartons</p> <p>“I” type sealing cartons</p>

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
-	2021-05-19	Kenny YIN/ Aria CHU	Creation of the document
1.0	2021-05-19	Kenny YIN/ Aria CHU	First official release
1.1	2021-07-25	Kenny YIN/ Aria CHU	Updated working temperature (Chapter 3).
1.2	2021-11-30	Kenny YIN/ Aria CHU	Updated the product description (Chapter 1).
1.3	2023-06-25	Toby WANG/ Vinnie LIU	Updated the drawing (Chapter 5).
2.0	2023-08-26	Nico PAN/ 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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