



# Antenna Datasheet

**Product OC:** YEGB001Q1A & YEGN001Q1A

**Version:** 1.1

**Date:** 2024-01-15

**Status:** Released

**Product Name:** Active GNSS Antenna

**Key Features:**

Frequency Band: 1164–1189 MHz, 1559–1606 MHz

Dimensions: 55.2 mm × 48 mm × 20.5 mm

LNA Gain: 21 ±3 dB

RoHS and REACH Compliant

IP 67

Compatible with ECE-R118 cables under demand

# 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 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: Free Space

## 1.1. Electrical

Electrical	
Frequency Range	1164–1189 MHz, 1559–1606 MHz
Impedance	50 Ω
Polarization	RHCP
Radiation Pattern	Directional

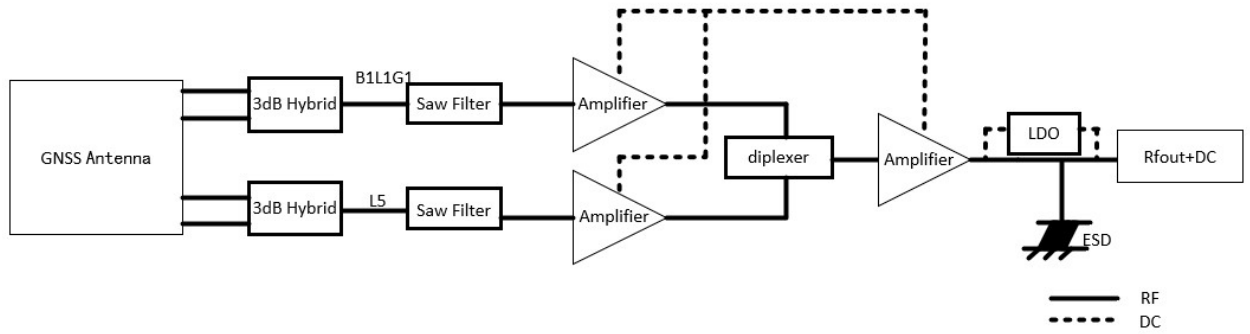
Band	GPS L5	GALILEO	GPS L2	GLONASS	BEIDOU	BEIDOU	GPS L1	
	GALILEO E5a	GALILEO E5b	GPS L2 QZSS L2C	GLONASS G2	BEIDOU B3	BEIDOU B1I	GALILEO E1	GLONASS G1
Frequency (MHz)	BEIDOU B2a-B2I	BEIDOU B2b					BEIDOU B1C	
	QZSS L5						QZSS L1	
	IRNSS L5							
	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	1.16	-	-	-	-	1.21	1.35	1.46
Return Loss (dB)	-22.3	-	-	-	-	-20.1	-16.2	-14.4
Efficiency (%)	52	-	-	-	-	37	52	32
Peak Gain (dBi)	0.99	-	-	-	-	-0.62	1.19	-0.97
Axial Ratio (dB)	1.72	-	-	-	-	1.88	1.42	1.17

LNA Electrical	
LNA Gain	21 ±3 dB
Noise Figure	≤ 2.5 dB
Output VSWR	< 2.0
Filter Out-of-Band Attenuation	60 dB f0 ±100 MHz f0 (1176 MHz, 1580 MHz)
Working Voltage	3–5 V
Working Current	15.3 ±3 mA
Impedance	50 Ω

## 1.2. Mechanical & Environmental

Mechanical		
Antenna Dimensions		55.2 mm × 48 mm × 20.5 mm
Material & Color		PC & Black
Cable Type & Length		RG174 Black & 3000 mm
Connector Type		SMA Male (The current state of the SMA connector is not waterproof. If a waterproof connector is needed, it can be customized.)
Mounting Type	YEGB001Q1A	Magnet & Adhesive
	YEGN001Q1A	Bracket (Support installation reference torque 0.7N.m)
Weight	YEGB001Q1A	Typ. 95.6 ±5 g
	YEGN001Q1A	Typ. 104.1 ±5 g
Environmental		
Operation Temperature		-40 °C to +85 °C
Storage Temperature		-40 °C to +85 °C
Ingress Protection (IP) Rating		IP67
RoHS & REACH Compliant		Yes
Housing Flame Rating		UL 94 V-0
Housing UV Resistant		UL 746c f1

### 1.3. Block Diagram (Active Antenna)

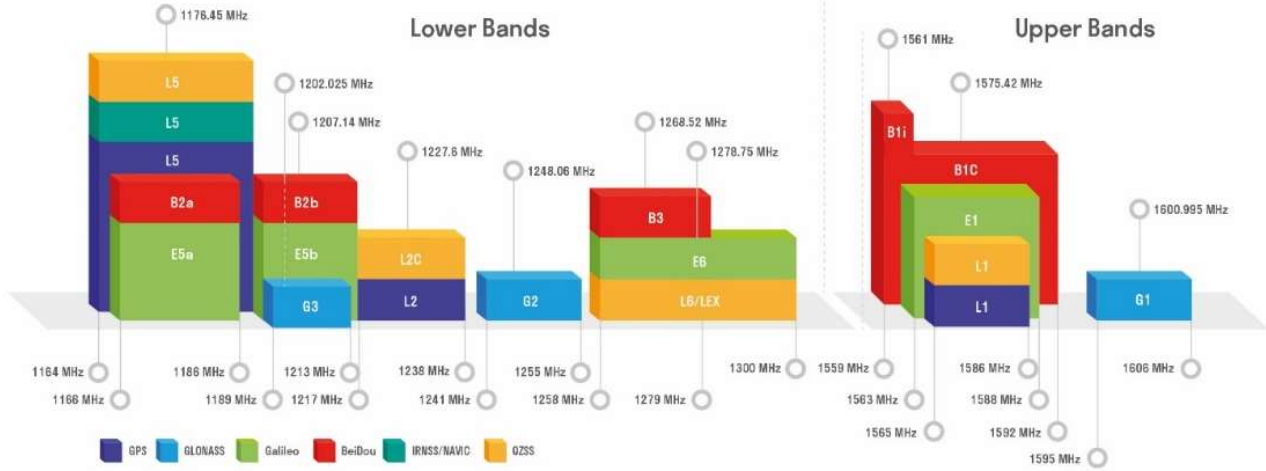


## 1.4. Supported GNSS Frequency Bands

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

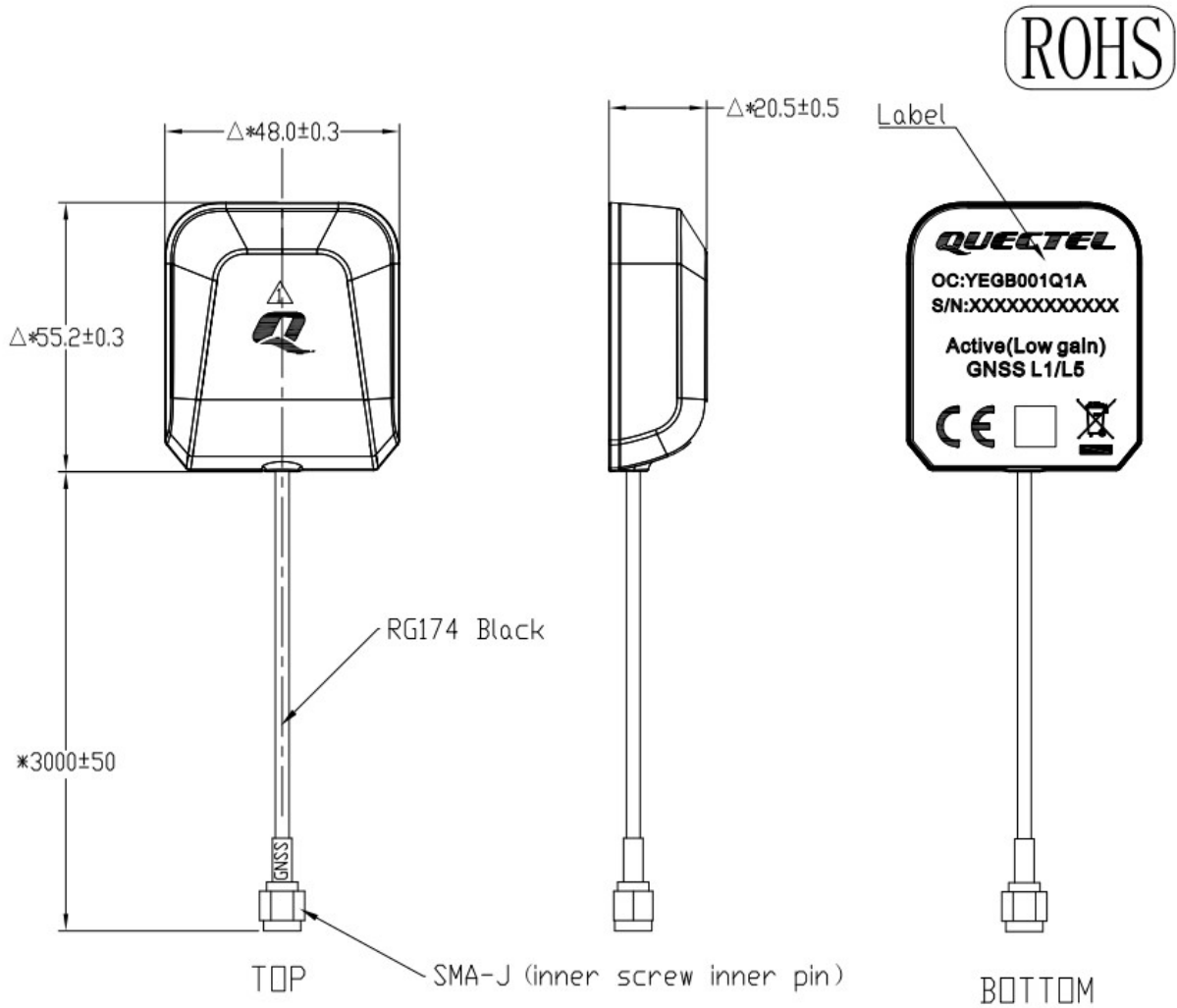


**GNSS Bands and Constellations**

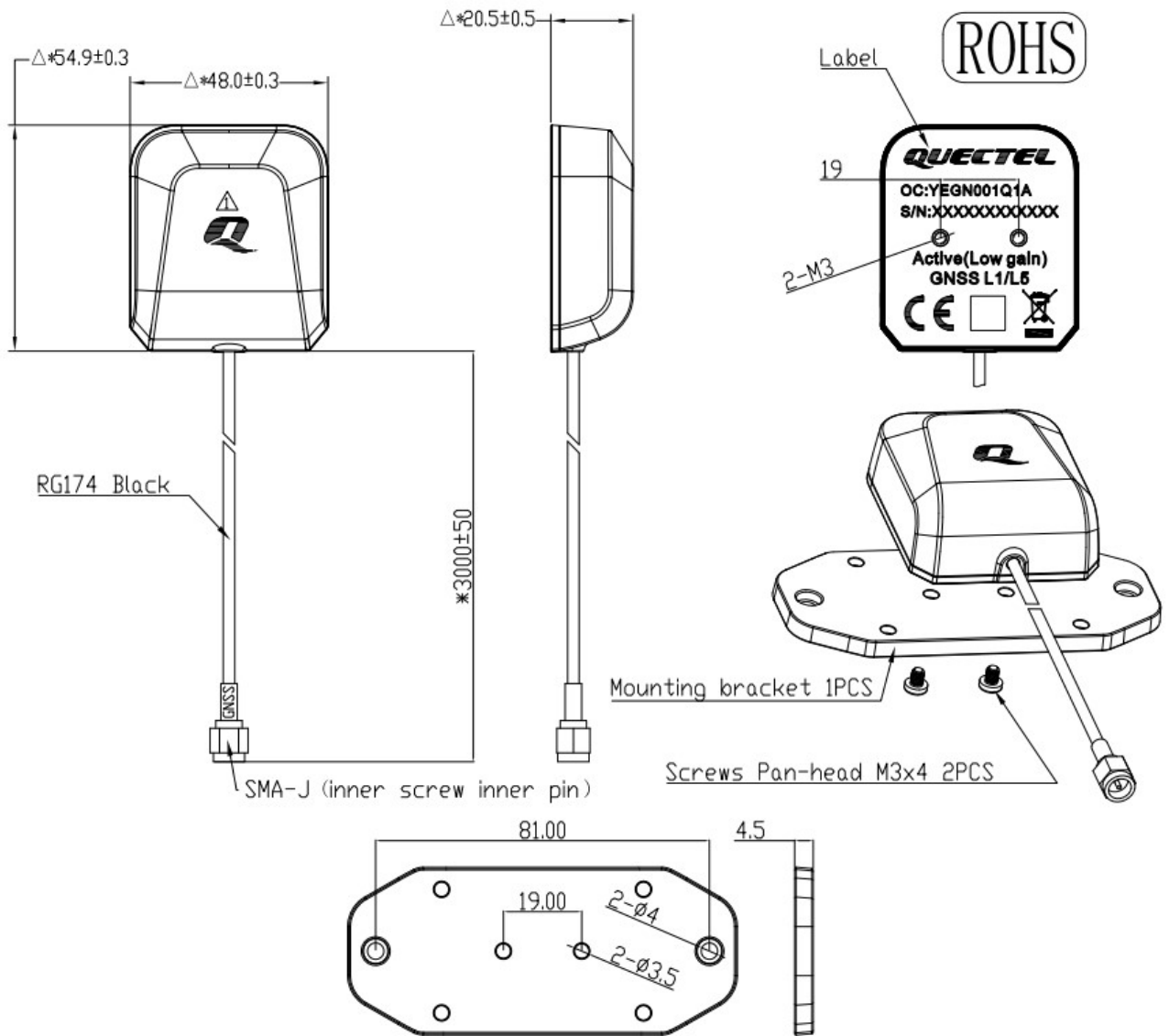


# 2 Drawing

- YEGB001Q1A



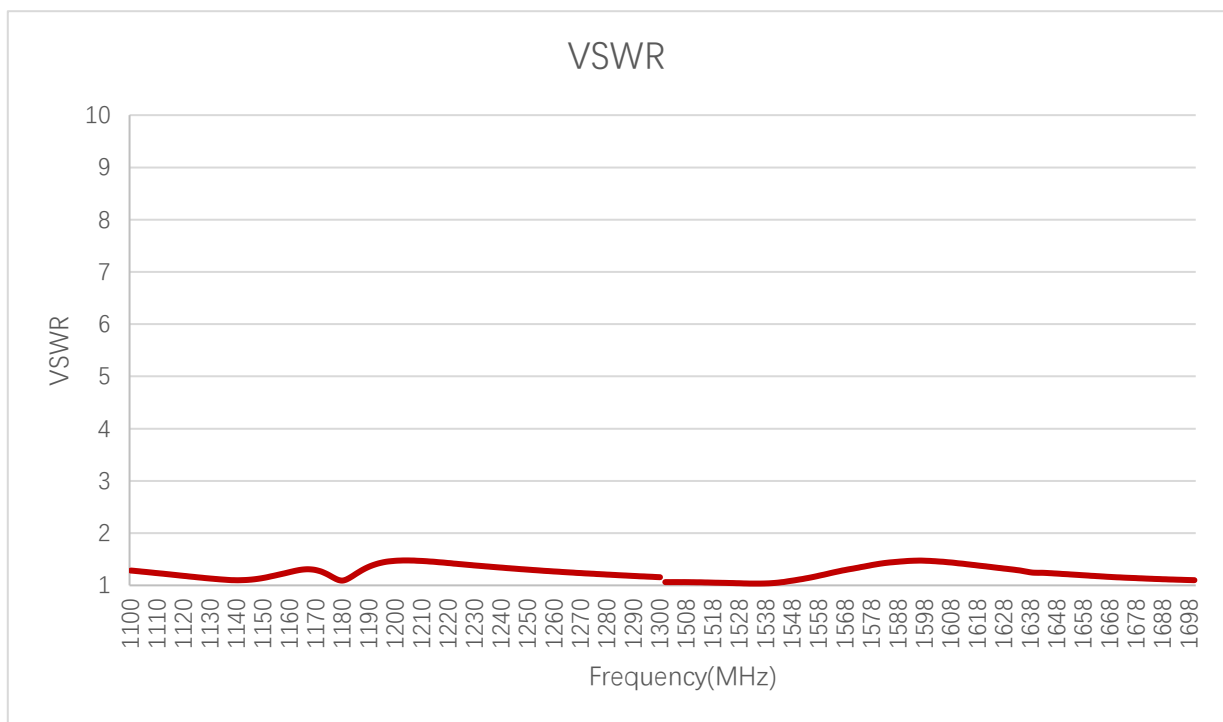
● YEGN001Q1A



# 3 Detailed Performance

## 3.1. S-Parameter Test

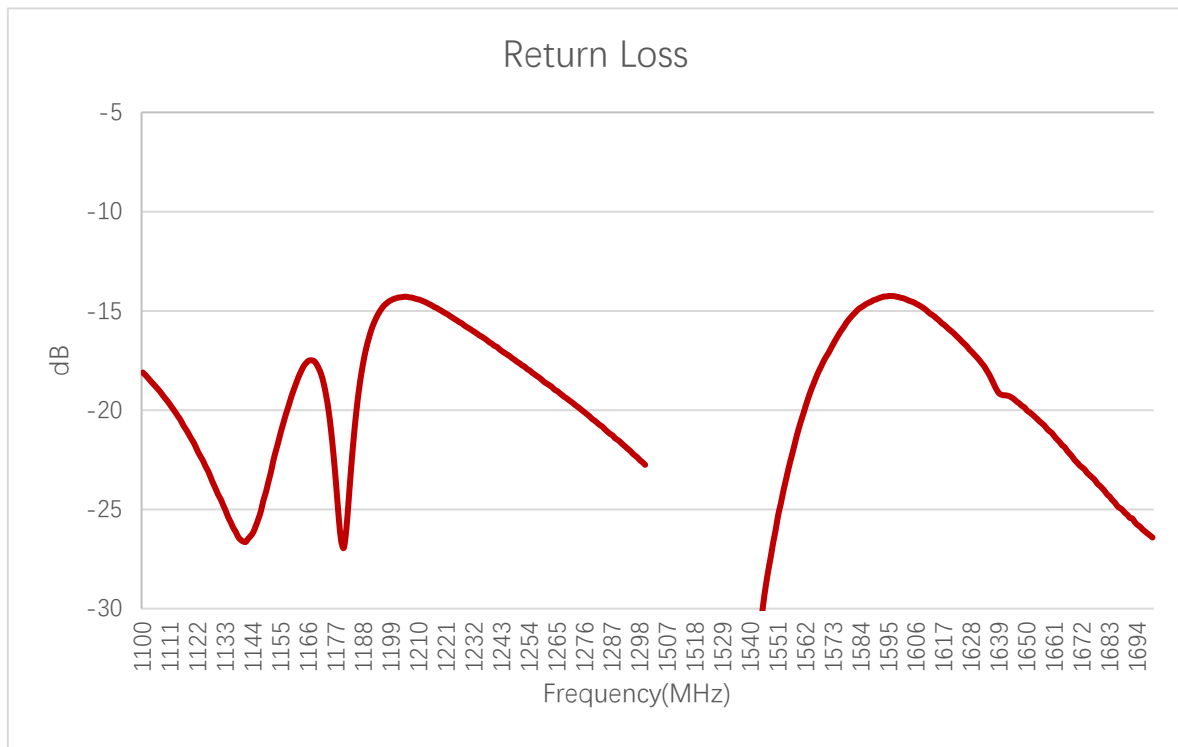
### 3.1.1. VSWR



**VSWR**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	1.16	-	-	-	-	1.21	1.35	1.46

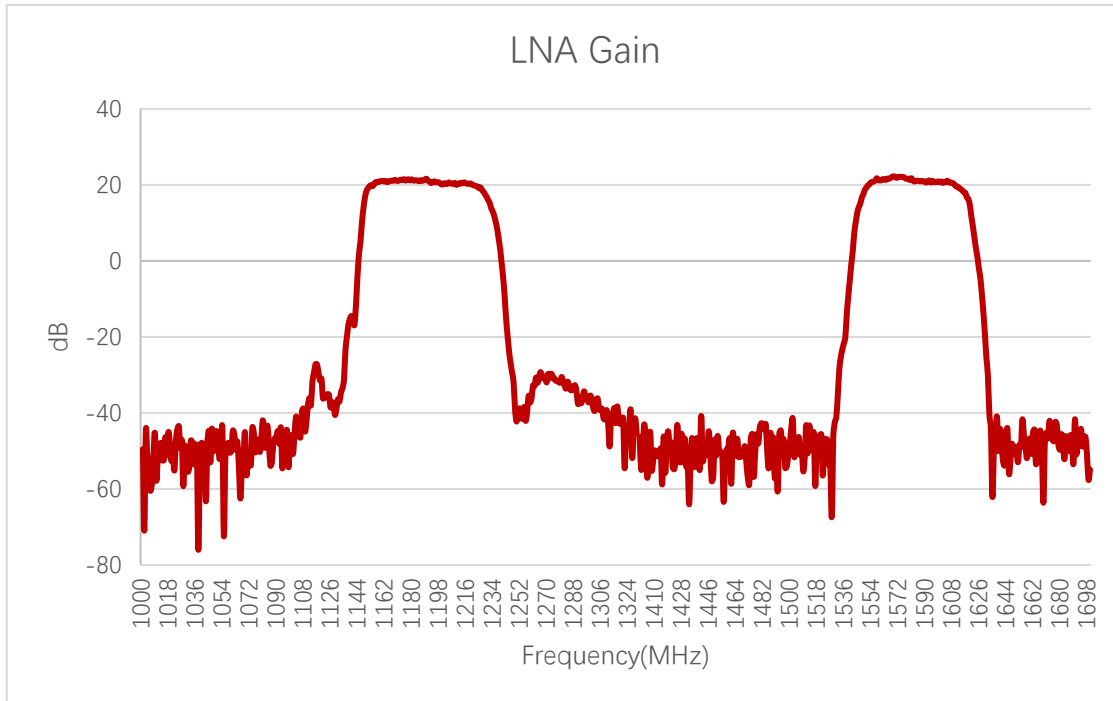
**3.1.2. Return Loss**



**Return Loss (dB)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-22.3	-	-	-	-	-20.1	-16.2	-14.4

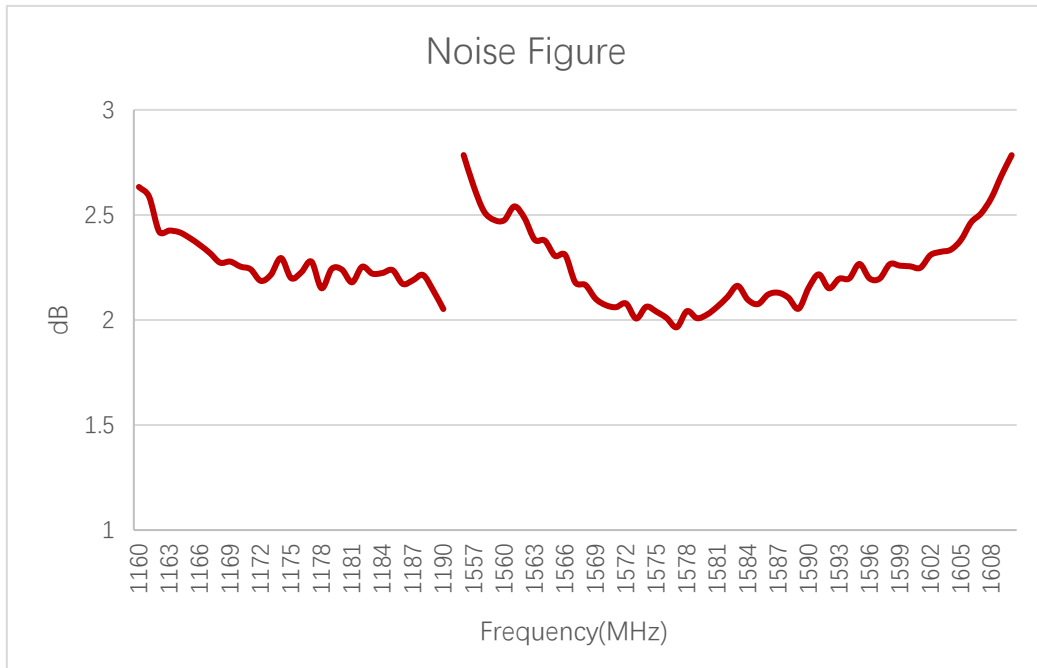
**3.1.3. LNA Gain**



**LNA Gain (dB)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	21.1	-	-	-	-	21.2	22	20.5

**3.1.4. Noise Figure**

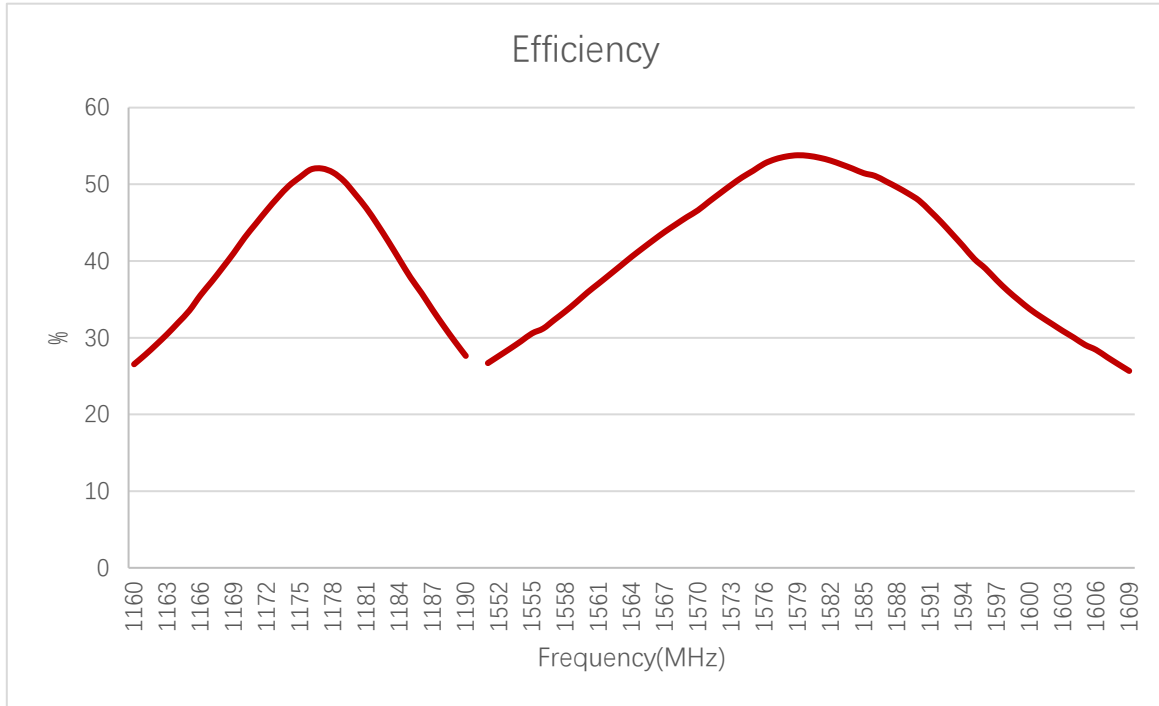


**Noise Figure (dB)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Noise Figure (dB)	2.22	-	-	-	-	2.5	2.01	2.3

### 3.2. Radiation Performance Test

#### 3.2.1. Efficiency

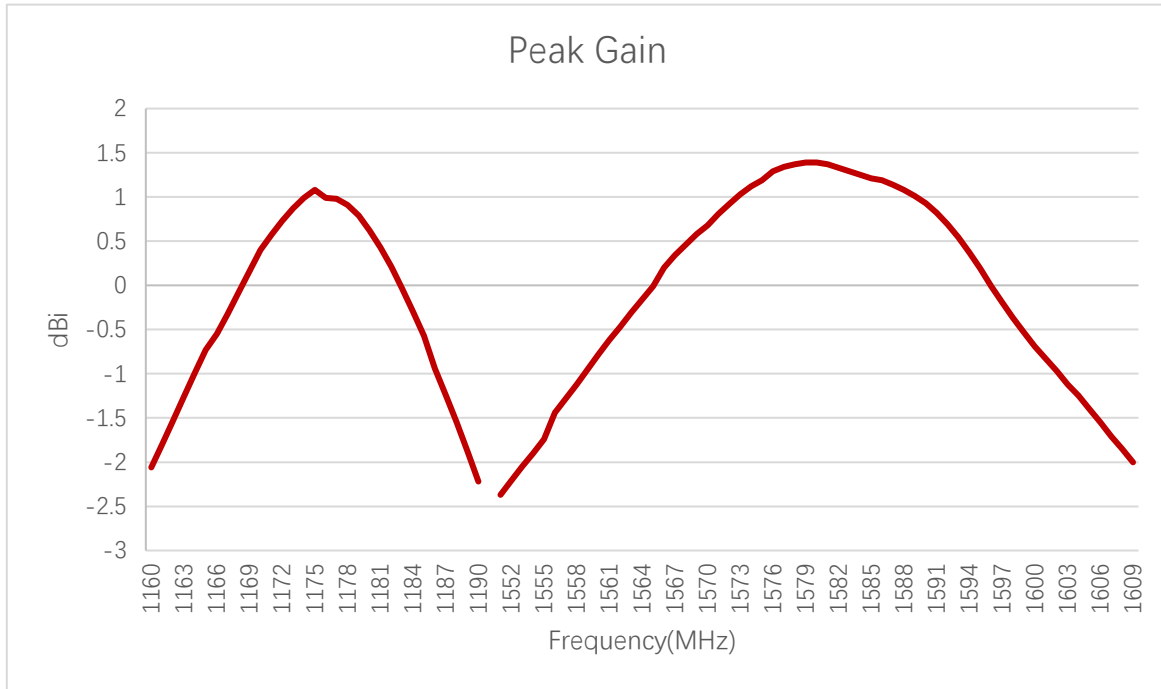


**Efficiency (%)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	52	-	-	-	-	37	52	32



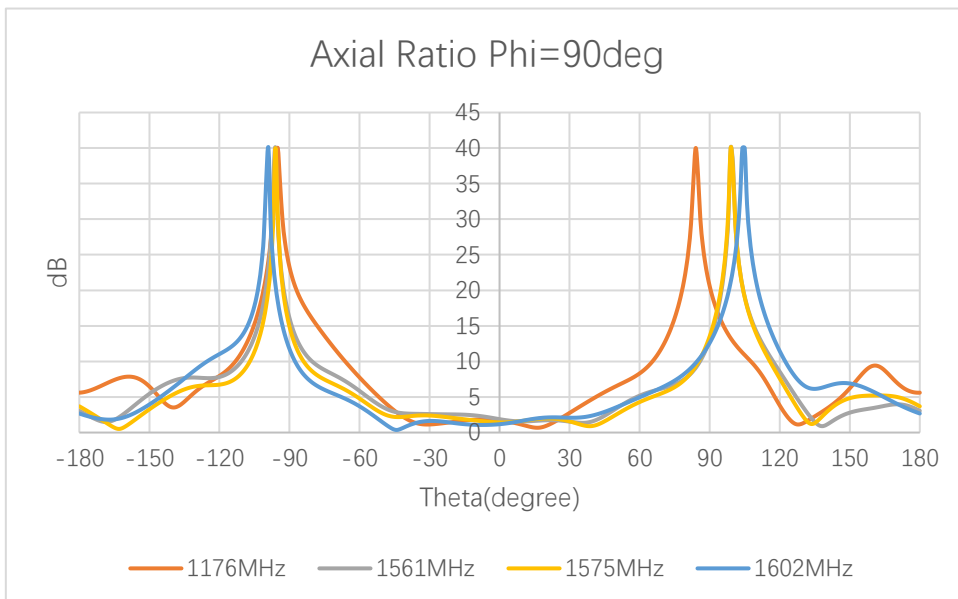
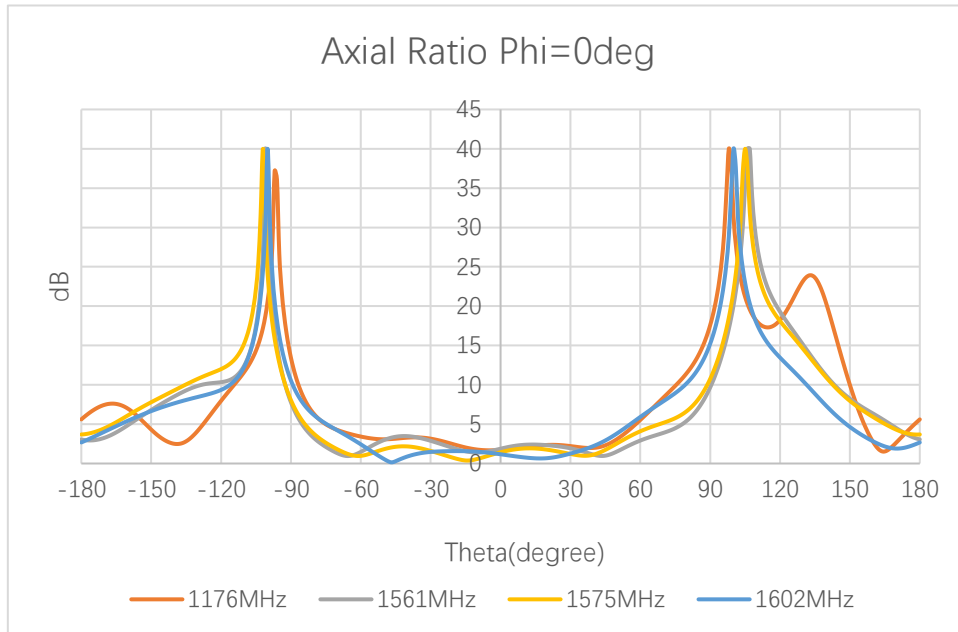
**3.2.2. Peak Gain**



**Peak Gain (dBi)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	0.99	-	-	-	-	-0.62	1.19	-0.97

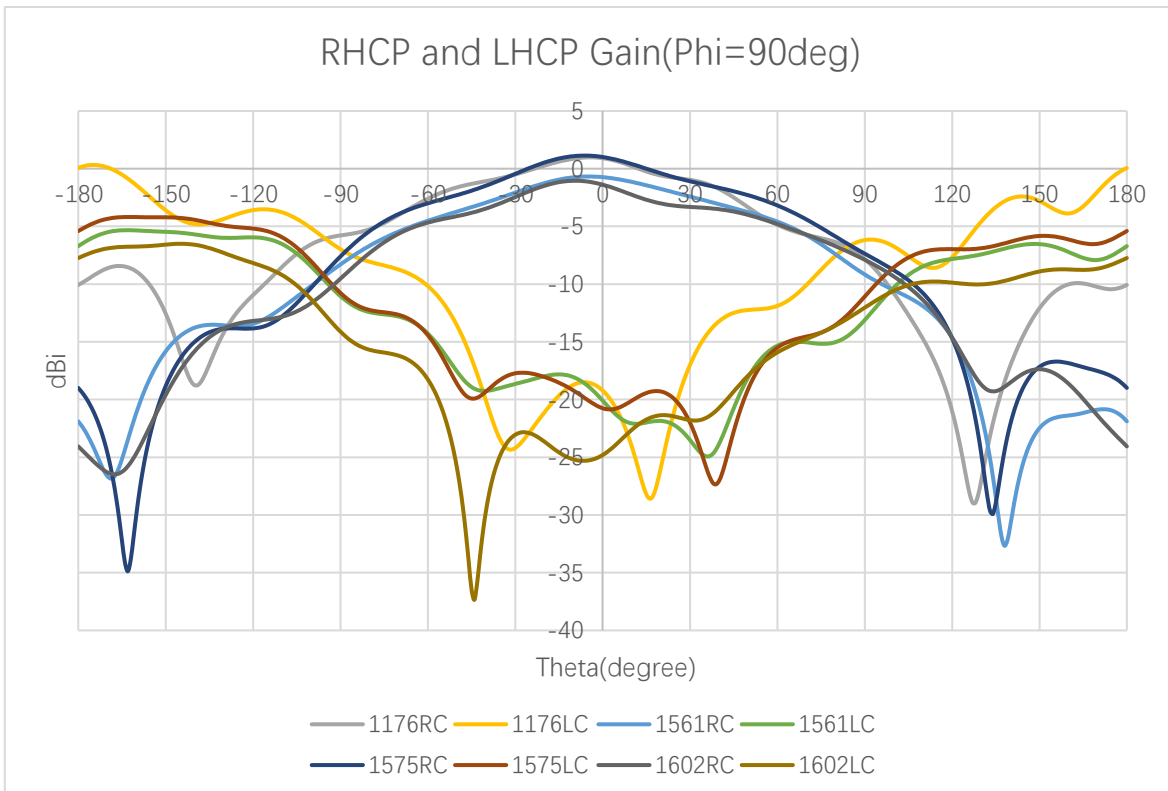
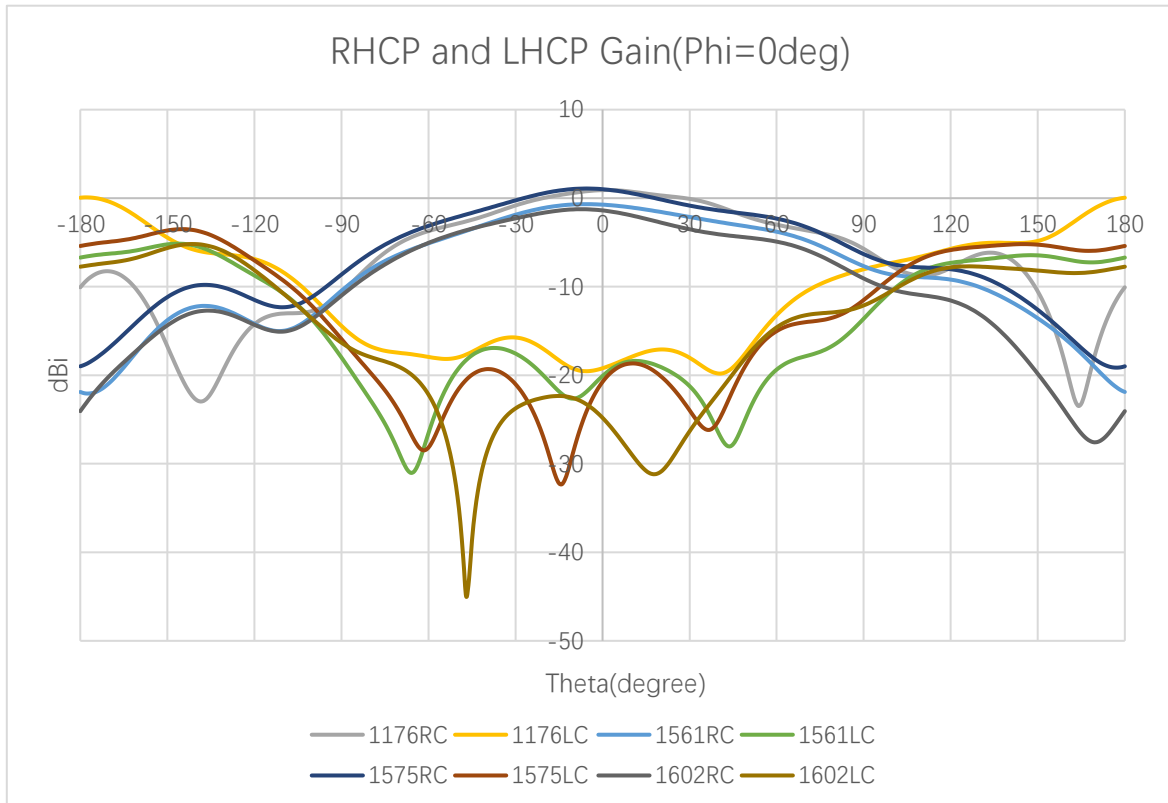
**3.2.3. Axial Ratio**



**Axial Ratio (dB)**

Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
Axial Ratio (dB)	Phi = 0 (deg) Theta = 0 (deg)	1.72	-	-	-	-	1.88	1.42	1.17
	Phi = 90 (deg) Theta = 0 (deg)	1.72	-	-	-	-	1.88	1.42	1.17

**3.2.4. 2D RHCP and LHCP Gain**

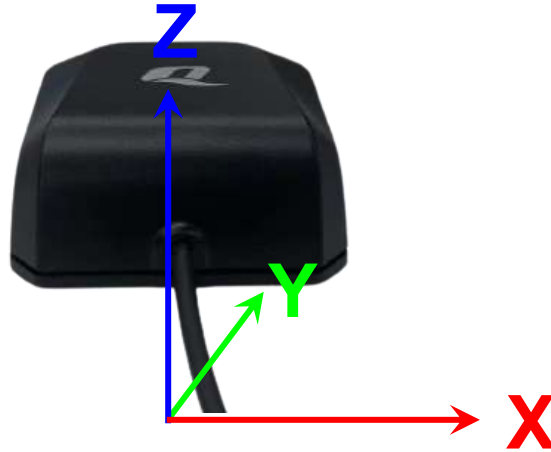


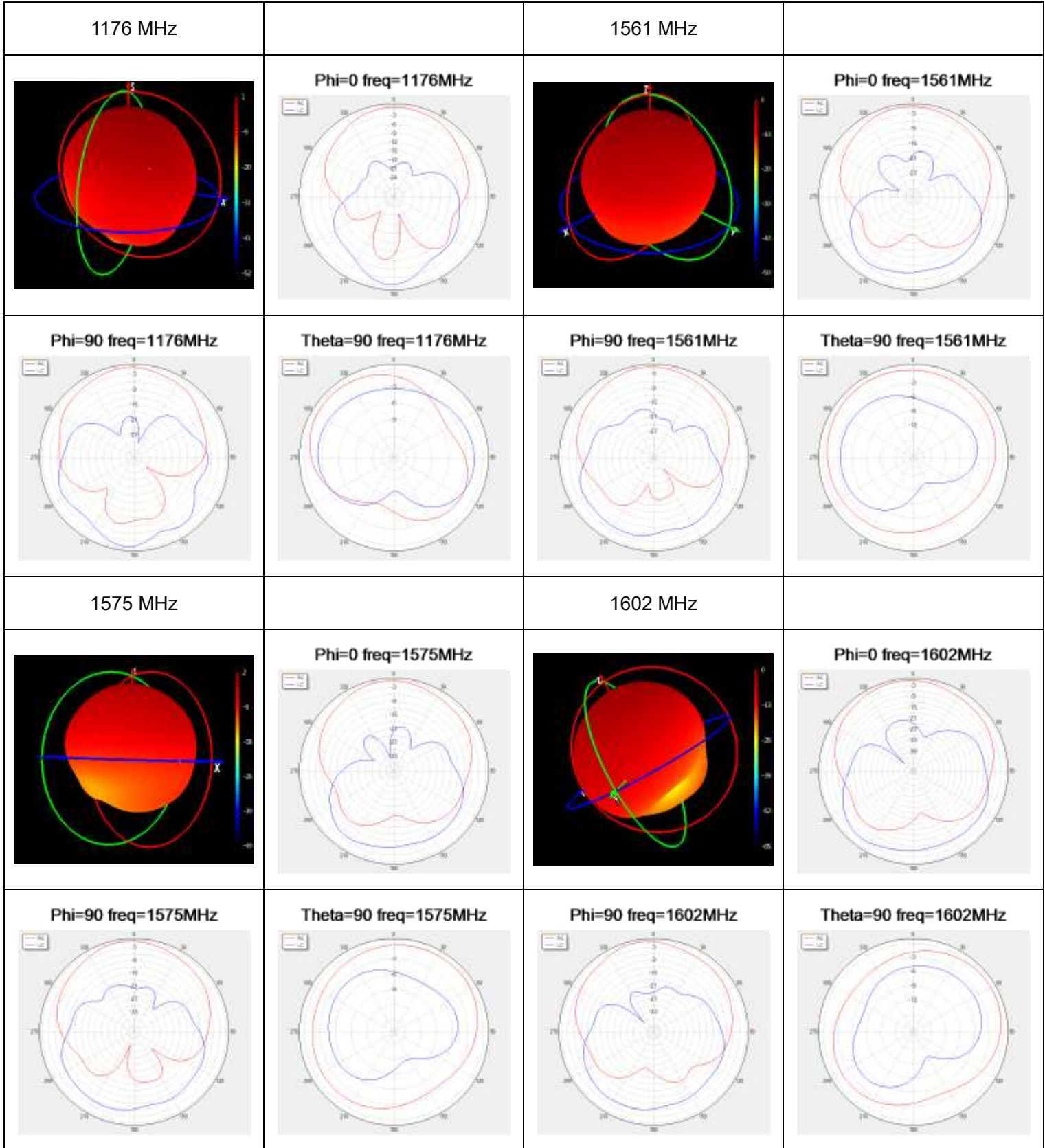
2D RHCP and LHCP Gain (dBi)

Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
RC Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	0.91	-	-	-	-	-0.73	1.01	-1.38
	Phi = 90 (deg) Theta = 0 (deg)	0.91	-	-	-	-	-0.73	1.01	-1.38
LC Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	-19.2	-	-	-	-	-20.8	-20.7	-25.8
	Phi = 90 (deg) Theta = 0 (deg)	-19.2	-	-	-	-	-20.8	-20.7	-25.8

### 3.2.5. 3D & 2D Radiation Pattern


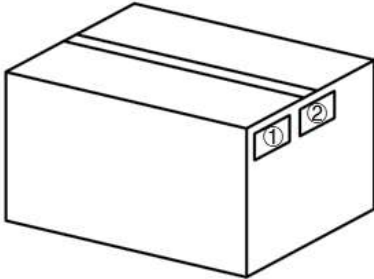
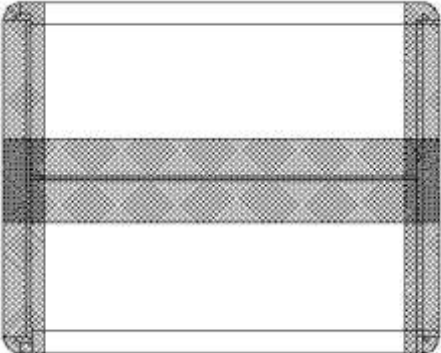
- Test Condition: Free Space
- Test Chamber: SH-SY-16M





# 4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		<p>1 pc antenna products in a small PE bag.            (1 PC / Small PE Bag)</p>
2		<p>10 pcs antenna products in a big PE bag.            (10 PCS / Big PE Bag)</p>
3		<p>Independent packaging of accessories</p>

<p>4</p>		<p>(6 Big Product PE Bags and Accessory Bag / Carton Box)        (60 PCS Antennas / Carton Box)  <u>Carton Size:</u>  <u>L × W × H = 405 × 293 × 185 mm</u></p>
<p>5</p>		<p><b>Position for Attaching Labels</b></p> <ul style="list-style-type: none"> <li>① Carton Label</li> <li>② Quality Label</li> </ul>
<p>6</p>		<p><b>Sealing Cartons</b>        “工” 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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# Revision History

Version	Date	Author	Note
-	2023-11-28	Junsen LI/ Steven MO/ David LIU/ Vinnie LIU	Creation of the document
1.0	2023-11-28	Junsen LI/ Steven MO/ David LIU/ Vinnie LIU	First official release
1.1	2024-01-15	Steven MO/ David LIU	<ol style="list-style-type: none"><li>1. Added installation instruction of the antenna YEGN001Q1A, Housing Flame Rating and Housing UV Resistant (Chapter 1.2).</li><li>2. Updated the packaging (Chapter 4).</li></ol>

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