



# Antenna Datasheet

**Product OC:** YEGT000W8A

**Version:** 1.1

**Date:** 2024-01-24

**Status:** Released

**Product Name:** Active GNSS L1 & L5 Antenna

**Key Features:**

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

Dimensions:  $\Phi$  65 × 45 mm

LNA Gain: 28 ±2 dB

RoHS Compliant

IP67

# 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 $\Omega$
Polarization	RHCP
Radiation Pattern	Directional

Band  Frequency (MHz)	GPS L5	GALILEO E5a	GALILEO E5b	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	-	-	-	-	1.5	1.3	1.5	
Return Loss (dB)	-13.4	-	-	-	-	-13.1	-16.4	-13.0	
Efficiency (%)	48	-	-	-	-	27	36	29	
AVG Gain (dB)	-3.1	-	-	-	-	-5.6	-4.4	-5.3	
Peak Gain (dBi)	-0.5	-	-	-	-	-1.7	-0.5	-1.3	
Axial Ratio (dB)	2.6	-	-	-	-	0.4	0.6	2.4	

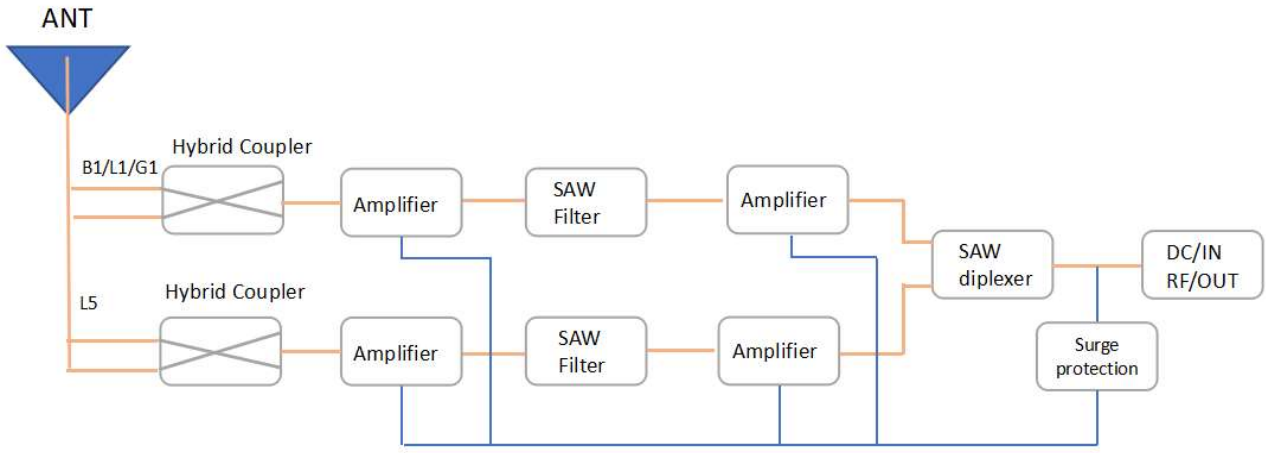
LNA Electrical	
LNA Gain	28 ±2 dB @ 3.0 V
Noise Figure	≤ 1.5 dB @ 3.0 V
Output VSWR	< 2.0
Group Delay Ripple	<10 ns
Filter Out-of-Band Attenuation	≥ 40 dB @ f0 ±40 MHz (f0 = 1176 MHz) ≥ 50 dB @ f0 ±50 MHz (f0 = 1176 MHz) ≥ 50 dB @ f0 ±50 MHz (f0 = 1580 MHz) ≥ 55 dB @ f0 ±100 MHz (f0 = 1580 MHz)
Pout 1dB Gain Compression Point	-3 dBm
Working Voltage	2.0–5.0 V
Working Current	20–26 mA
Impedance	50 Ω

## 1.2. Mechanical & Environmental

- Attention: The antenna shall be powered by PS2 or PS1 circuit

Mechanical	
Antenna Dimensions	Φ 65 mm × 45 mm
Casing Material & Color	ASA & White
Connector Type	TNC-K
Mounting Type	Screw (M18 Nut)
Weight	Typ. 130.7 g
Environmental	
Operation Temperature	-45 °C to +85 °C
Storage Temperature	-45 °C to +85 °C
Ingress Protection (IP) Rating	IP67
RoHS Compliant	Yes
Housing UV Resistant	UL 746C f1

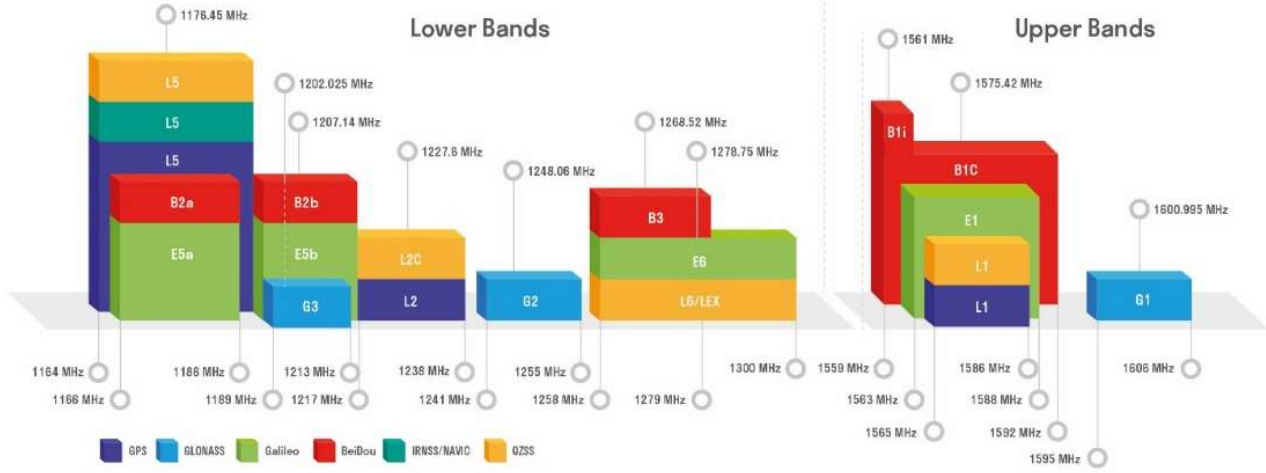
### 1.3. Block Diagram (Active Antenna)



## 1.4. Supported GNSS Frequency Bands

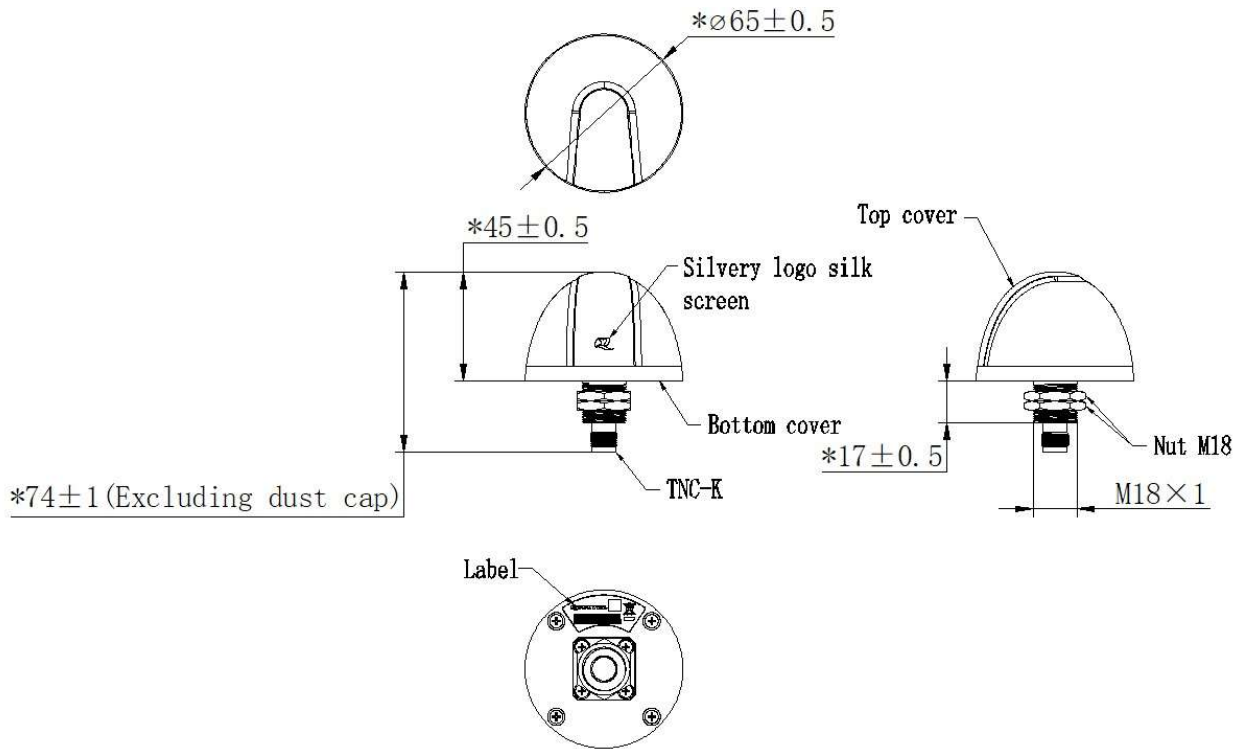
GNSS Frequency Bands (MHz)					
<b>GPS</b>	<b>L1</b> Centre 1575.42 (1565–1586)	<b>L2</b> Centre 1227.6 (1217–1238)	<b>L5</b> Centre 1176.45 (1164–1189)		
	√	-	√		
<b>GLONASS</b>	<b>G1-L10C-L10F</b> Centre 1601 (1595–1606)	<b>G2-L20C-L20F</b> Centre 1248.06 (1241–1255)	<b>G3-L30C</b> Centre 1202.025 (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**





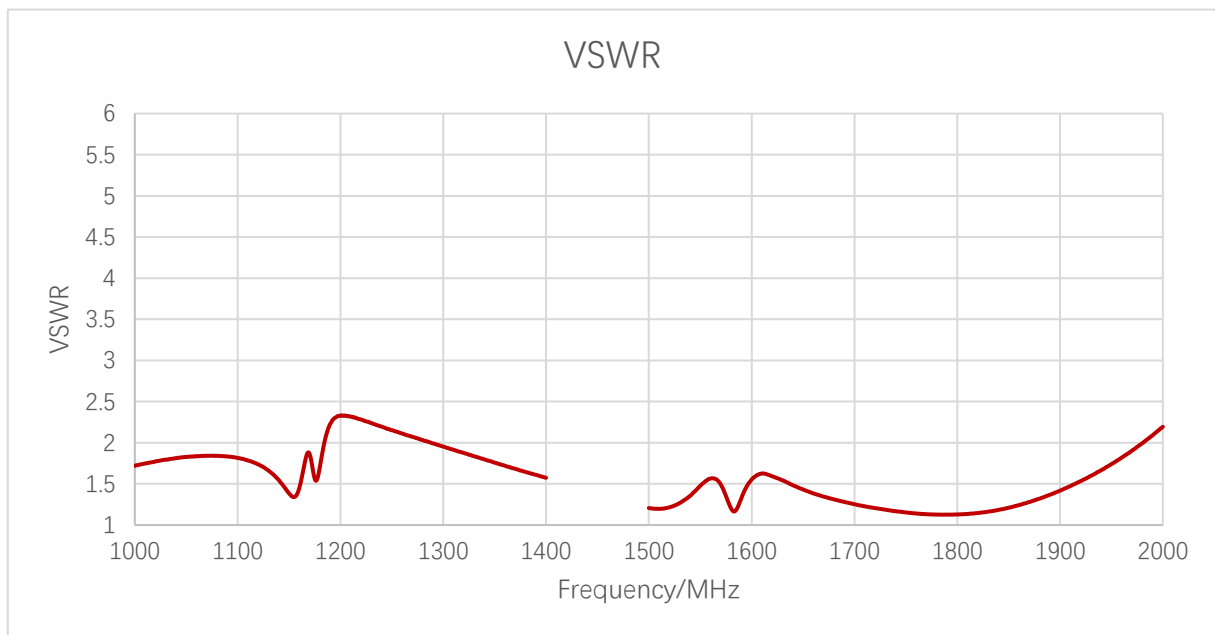
# 2 Drawing



# 3 Detailed Performance

## 3.1. S-Parameter Test

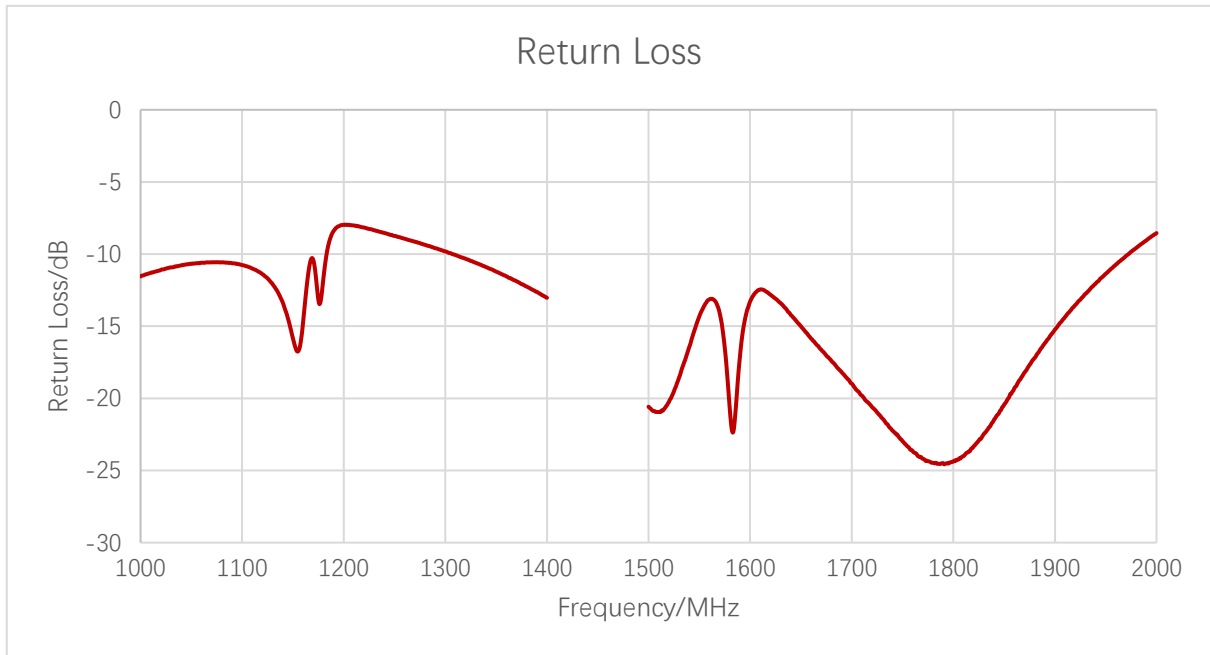
### 3.1.1. VSWR



**VSWR**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	1.5	-	-	-	-	1.5	1.3	1.5

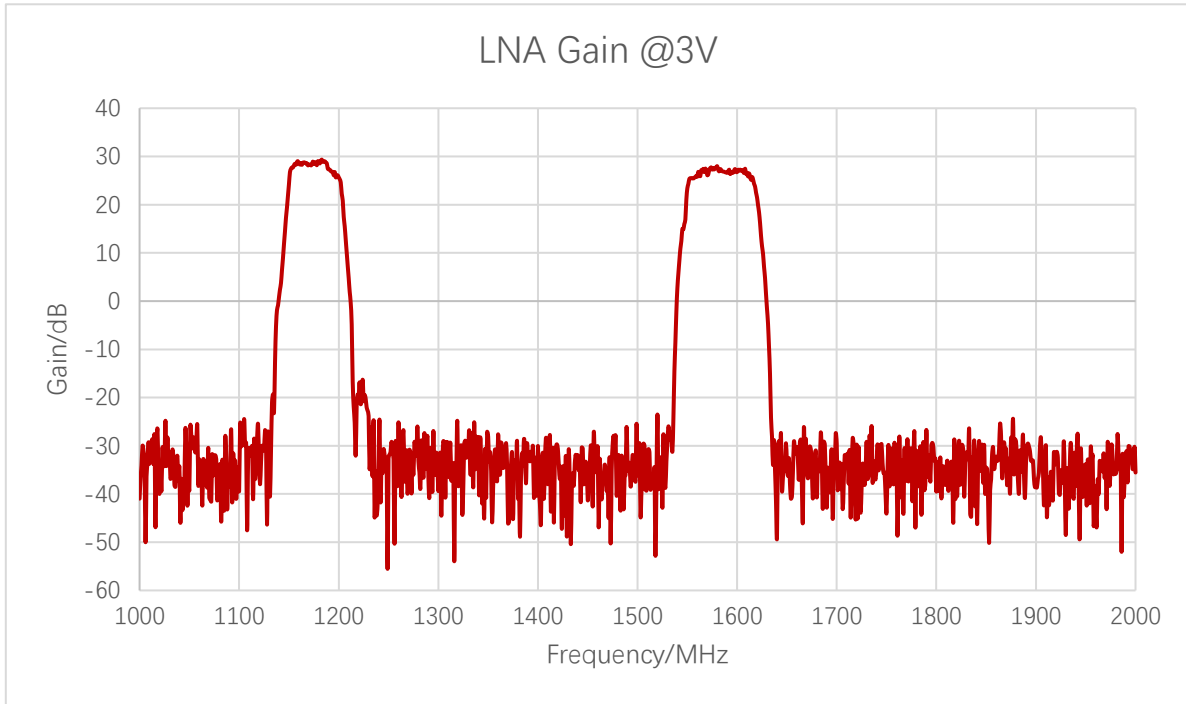
**3.1.2. Return Loss**



**Return Loss (dB)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-13.4	-	-	-	-	-13.1	-16.4	-12.9

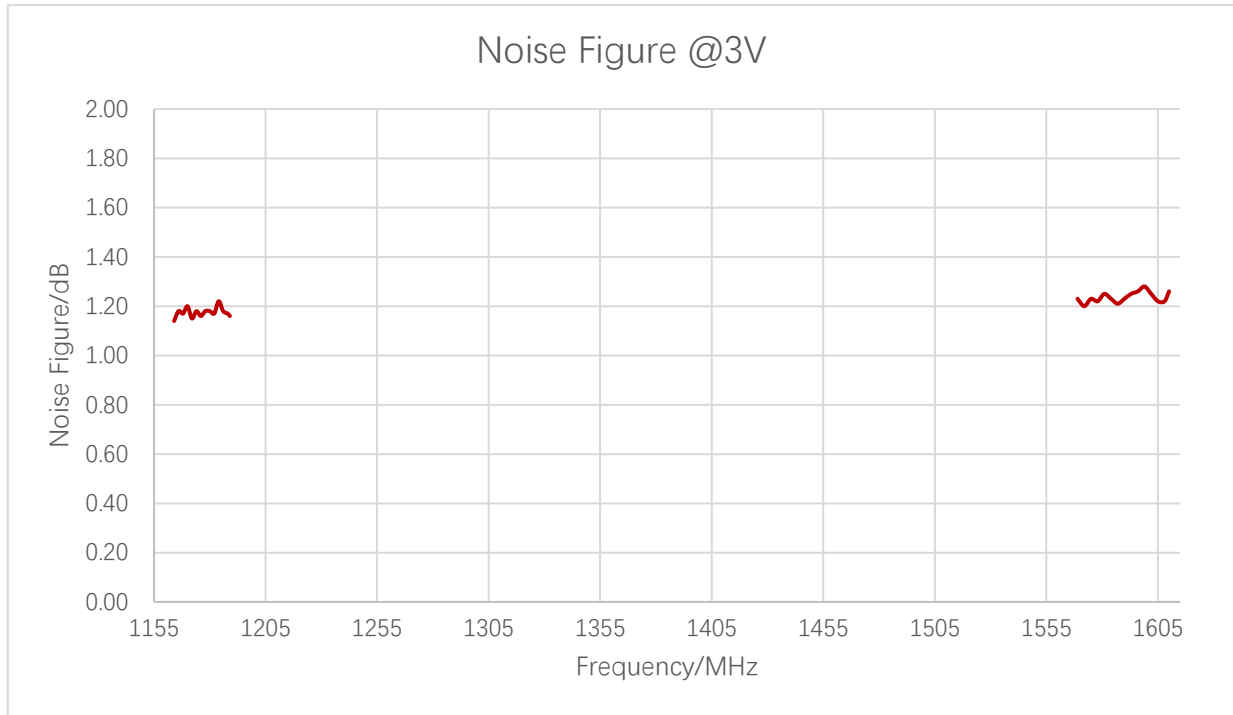
**3.1.3. GNSS LNA Gain**



**LNA Gain (dB)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	28.5	-	-	-	-	26.8	27.2	27.0

**3.1.4. Noise Figure**

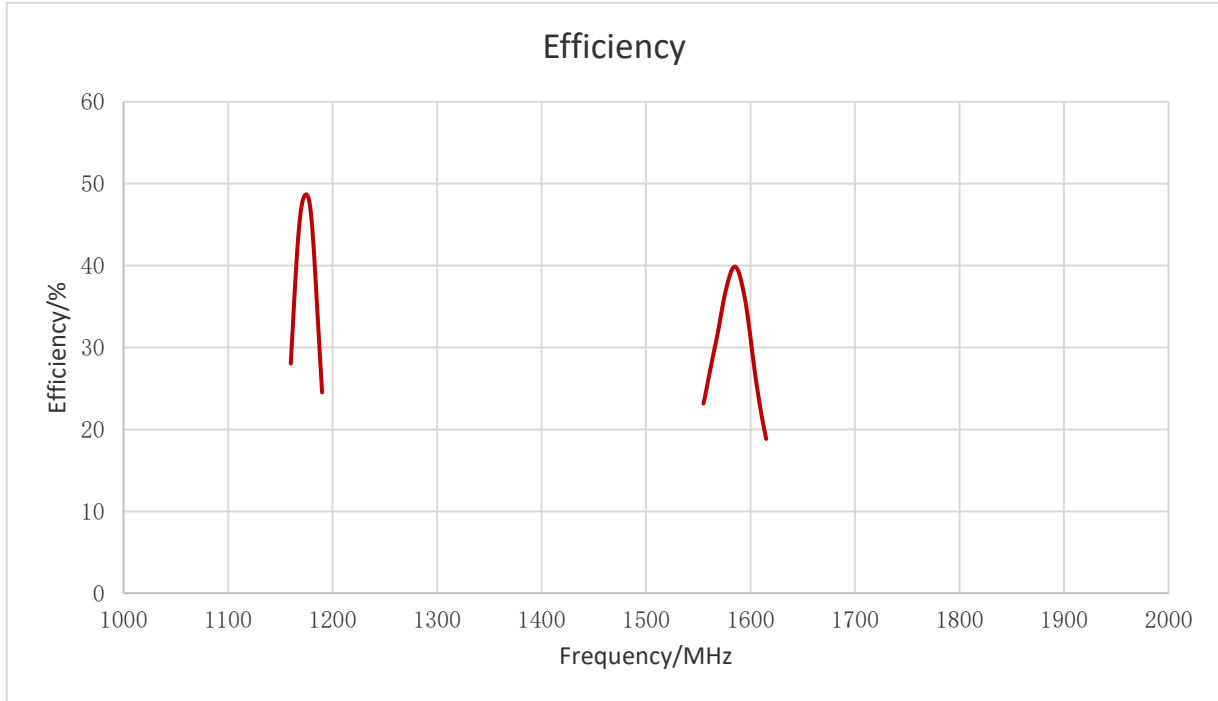


**Noise Figure (dB)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Noise Figure (dB)	1.1	-	-	-	-	1.3	1.2	1.2

### 3.2. Radiation Performance Test

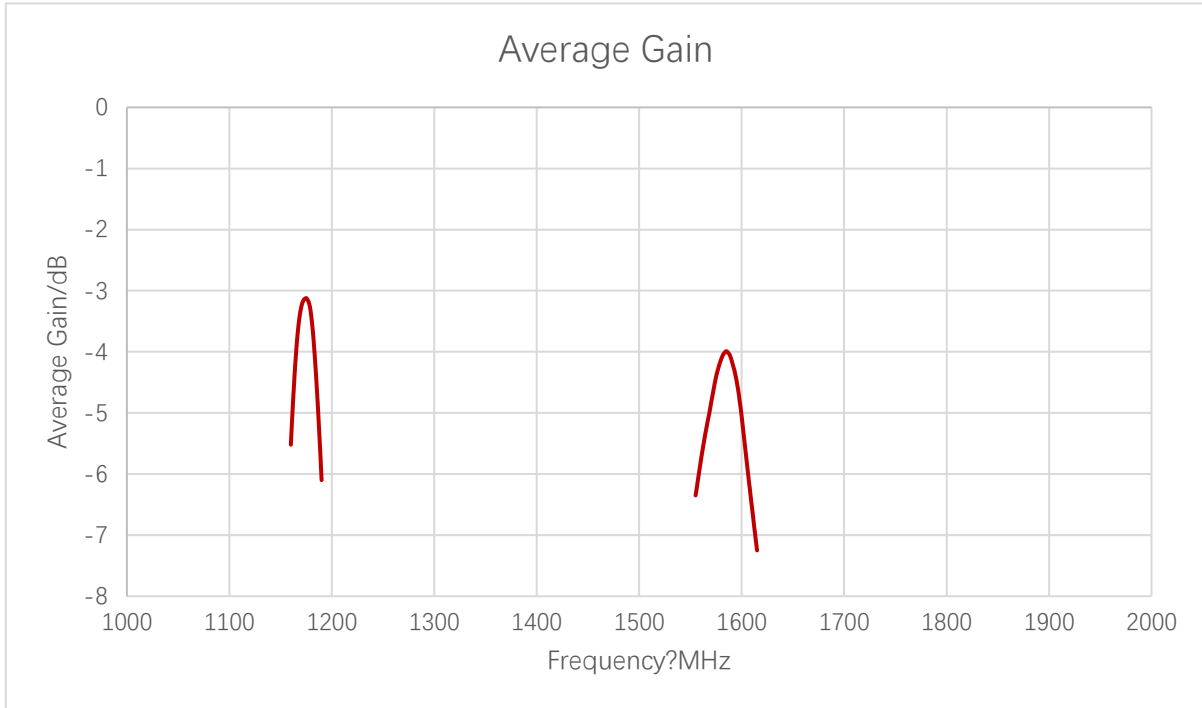
#### 3.2.1. Efficiency



**Efficiency (%)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	48	-	-	-	-	27	36	29

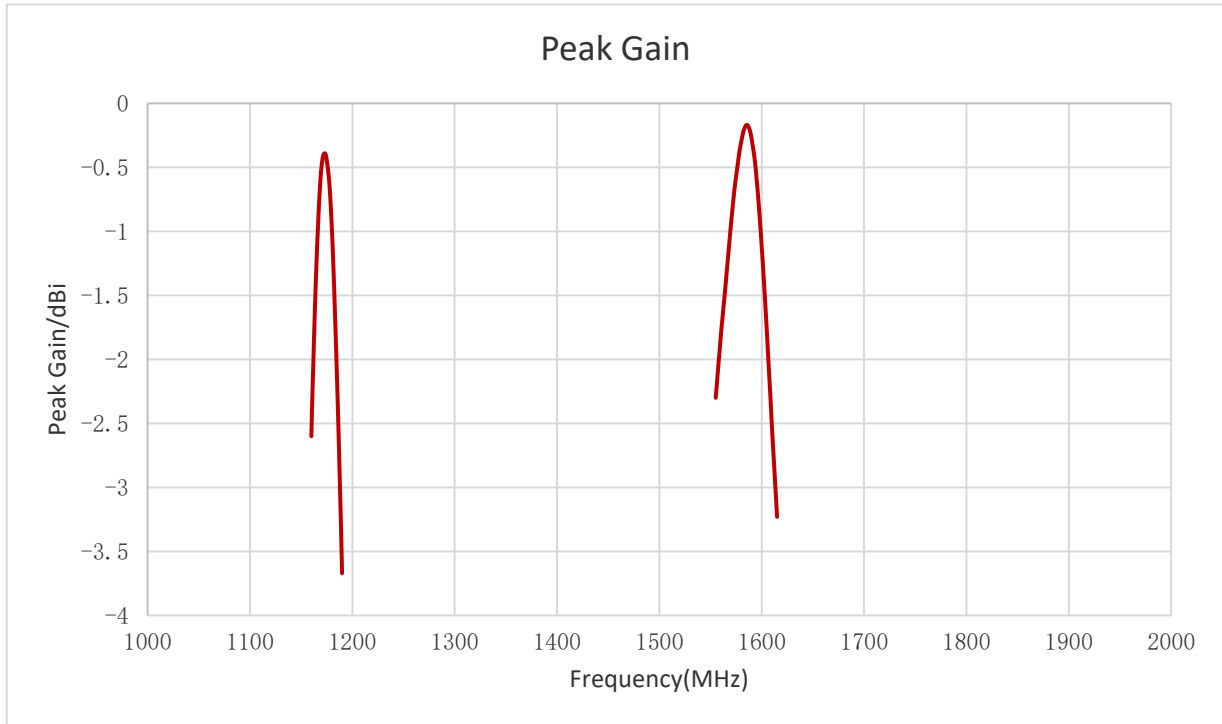
**3.2.2. Average Gain**



**Average Gain (dB)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Average Gain (dB)	-3.1	-	-	-	-	-5.6	-4.4	-5.3

**3.2.3. Peak Gain**

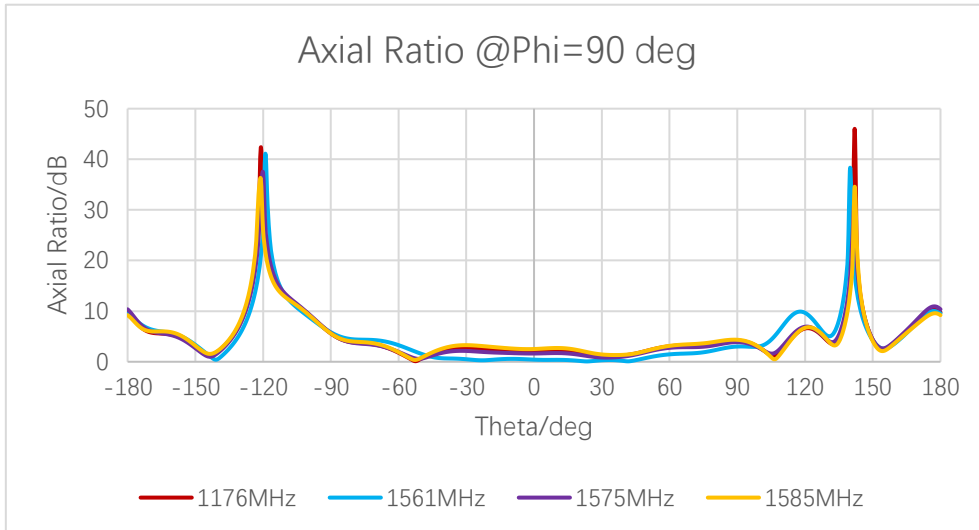
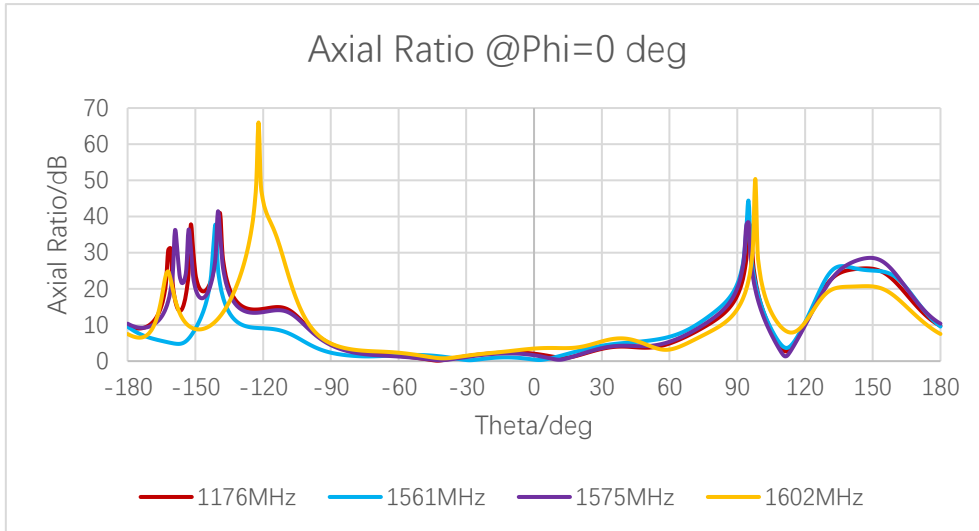


**Peak Gain (dBi)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-0.5	-	-	-	-	-1.7	-0.5	-1.3



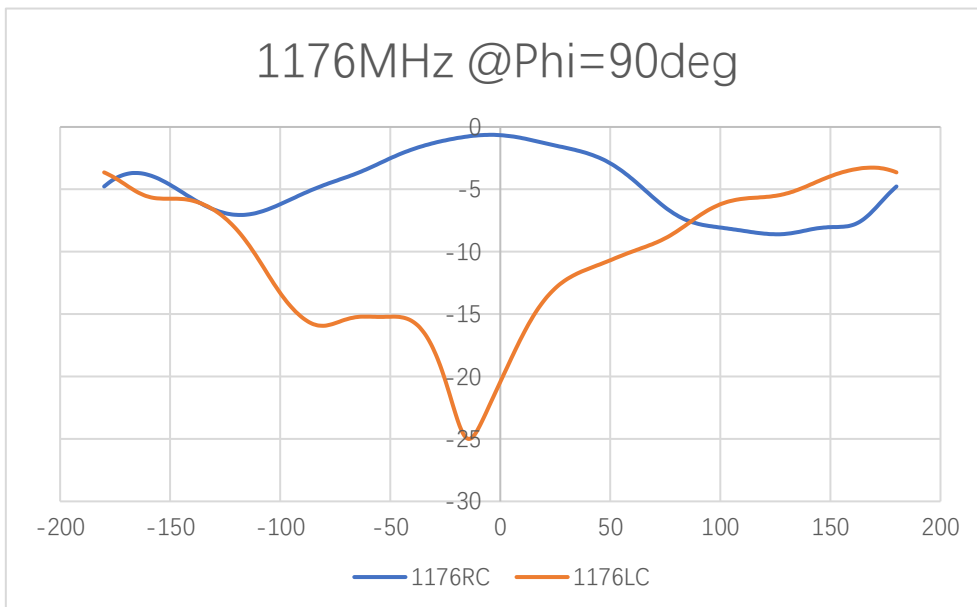
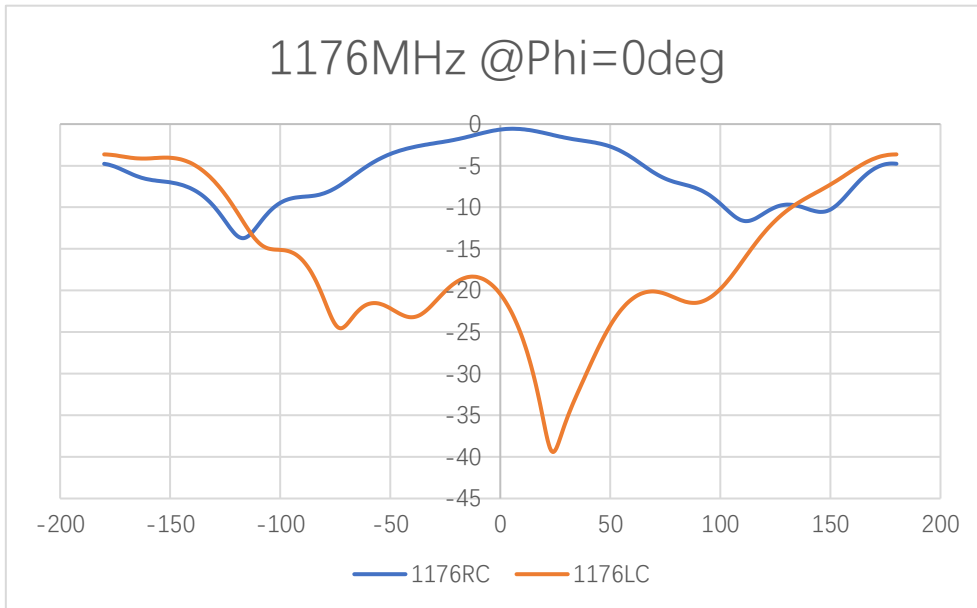
**3.2.4. Axial Ratio**

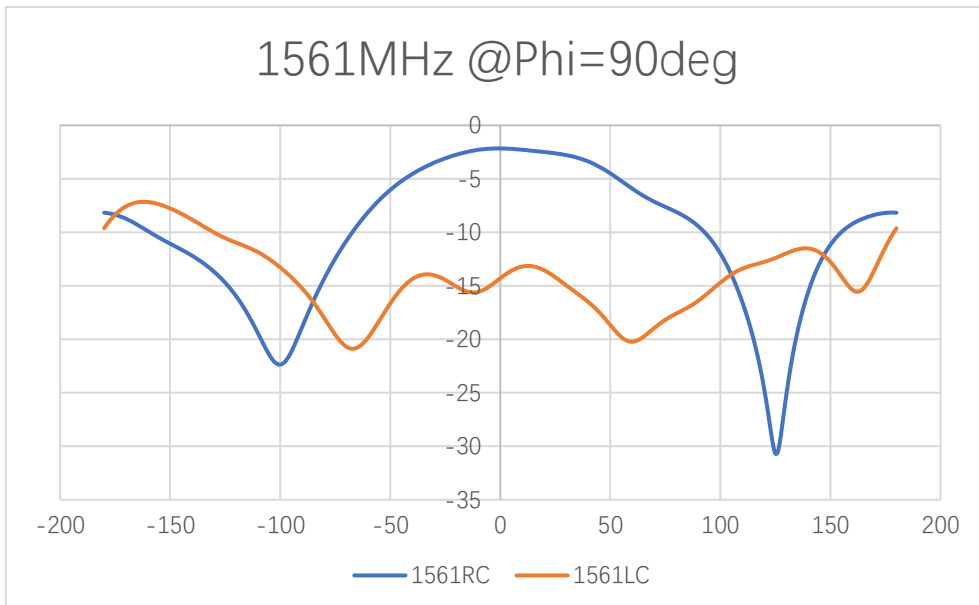
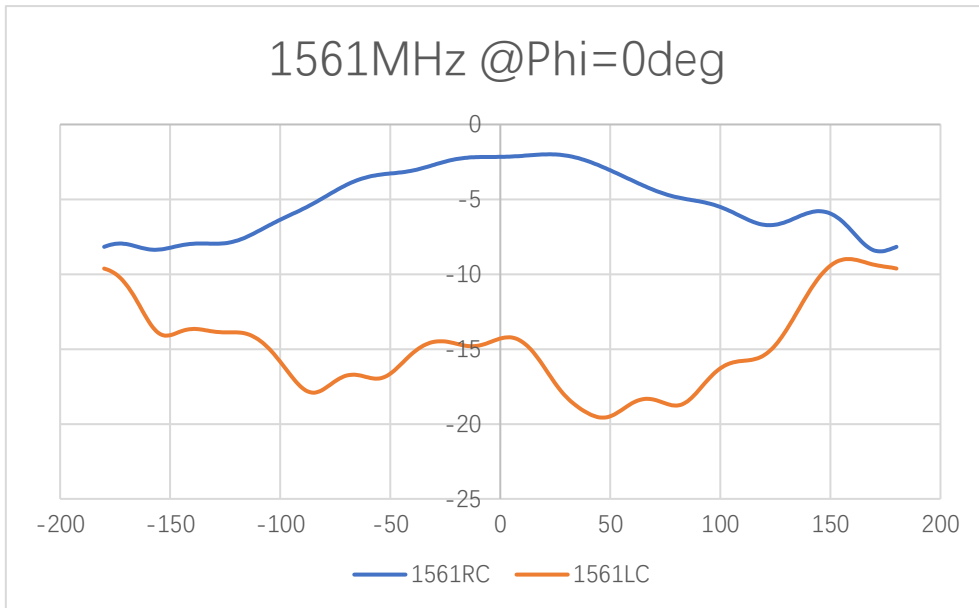


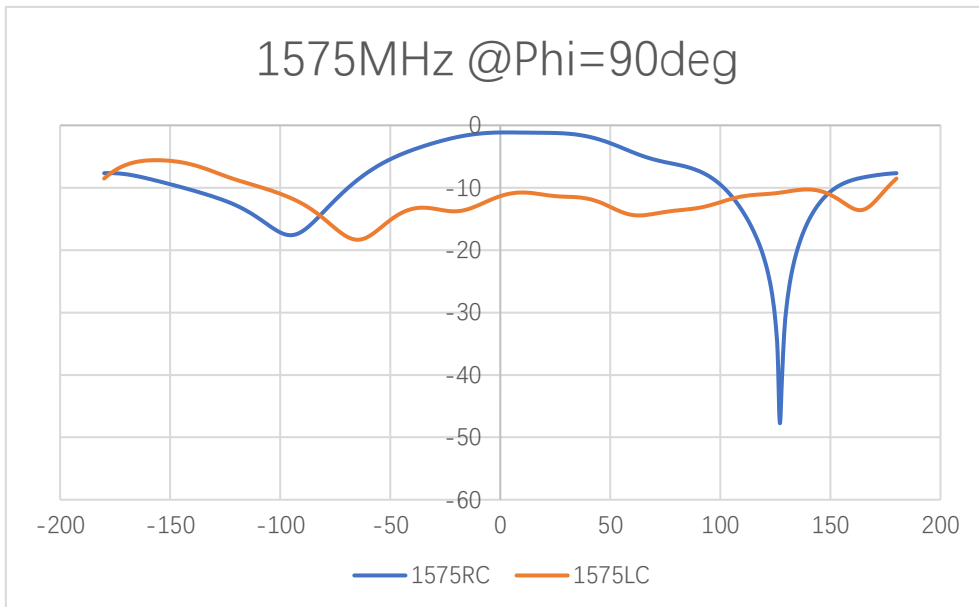
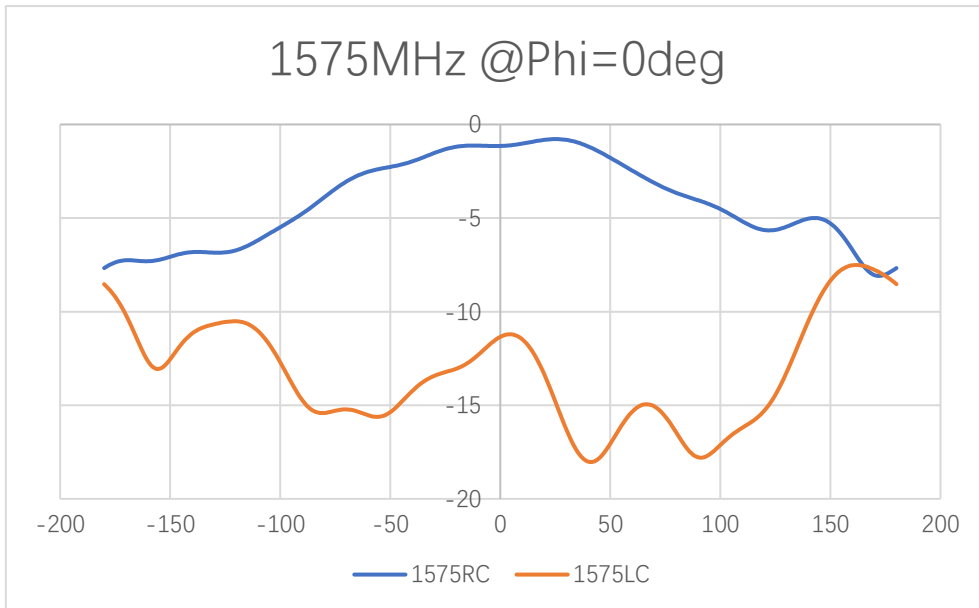
**Axial Ratio (dB)**

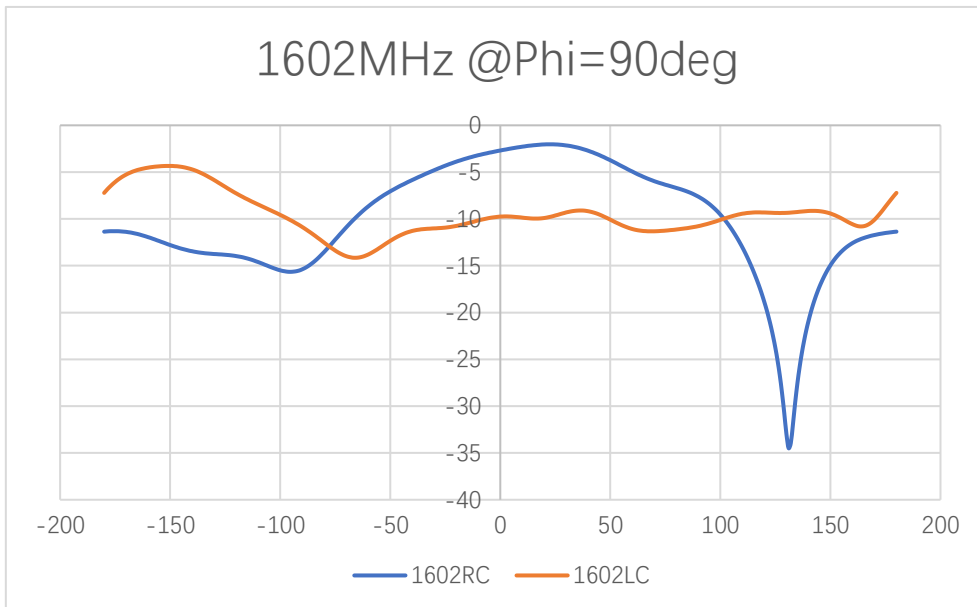
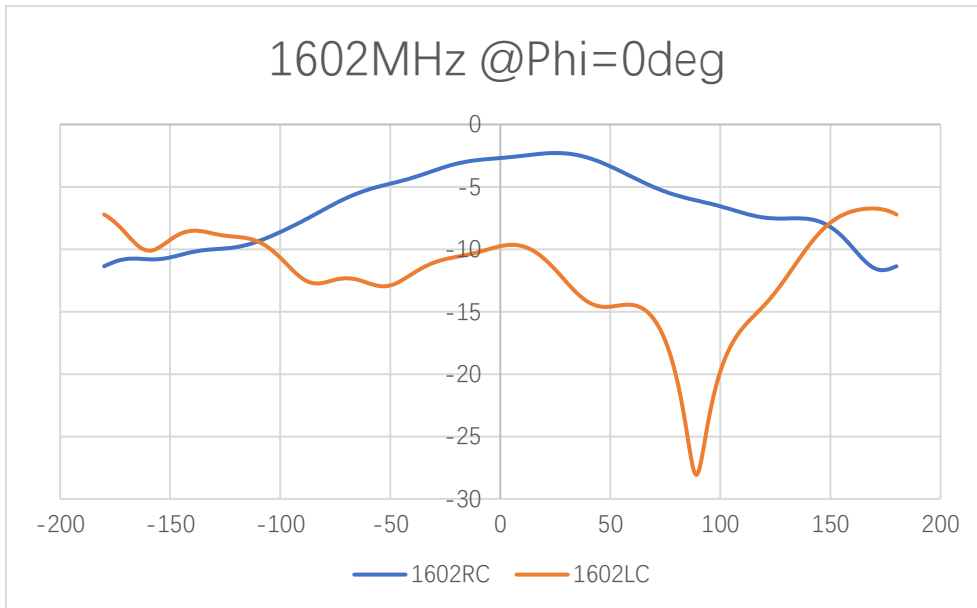
Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
Axial Ratio (dB)	Phi = 0 (deg) Theta = 0 (deg)	2.6	-	-	-	-	0.4	0.6	2.4
	Phi = 90 (deg) Theta = 0 (deg)	2.6	-	-	-	-	0.4	0.6	2.4

**3.2.5. 2D RHCP and LHCP Gain**







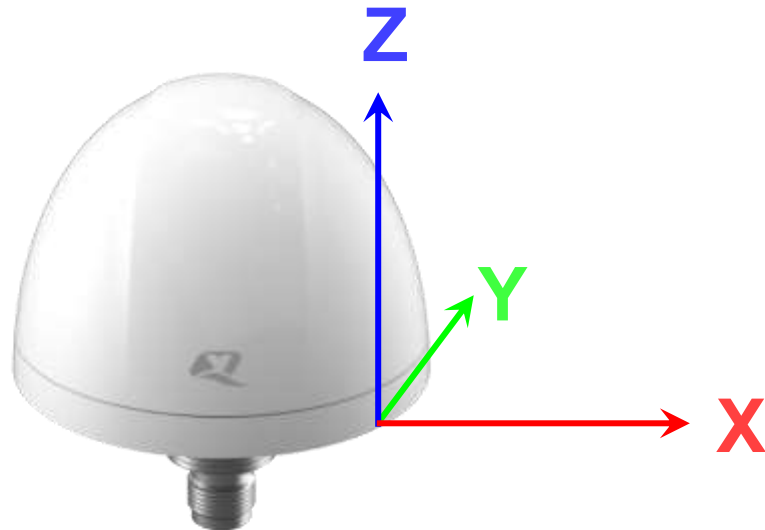


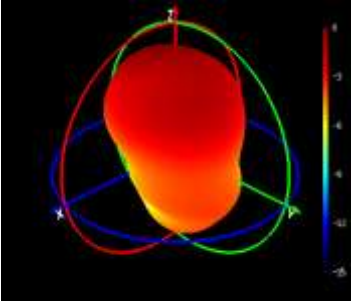
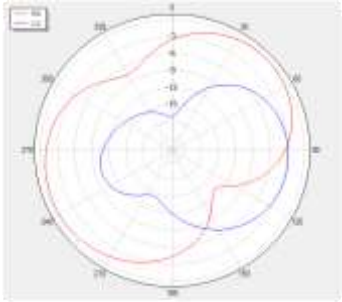
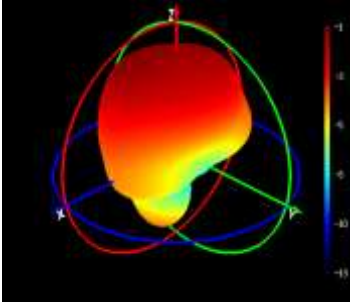

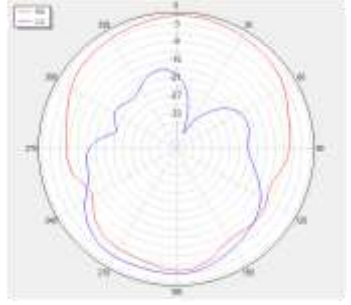
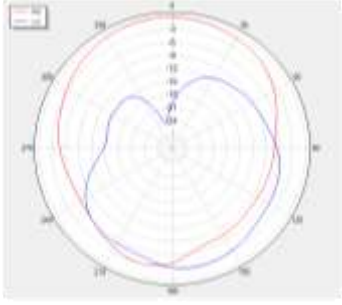
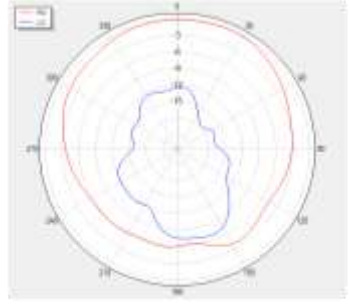
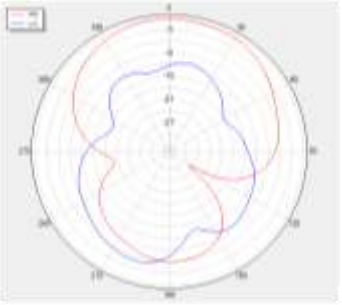
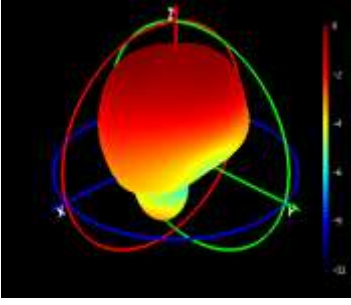
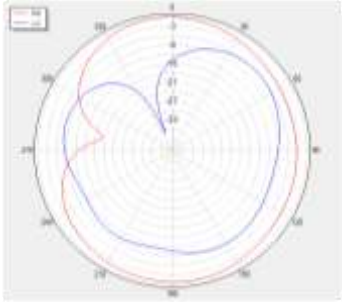
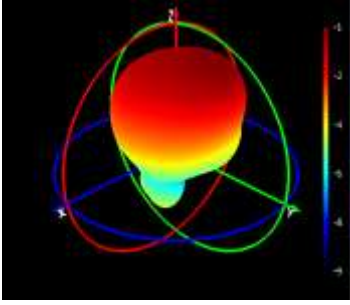
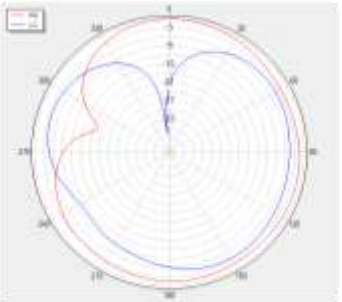
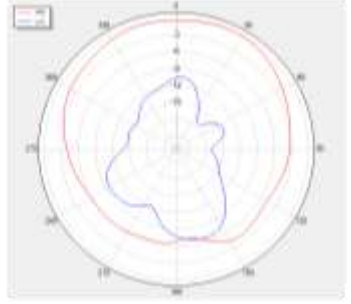
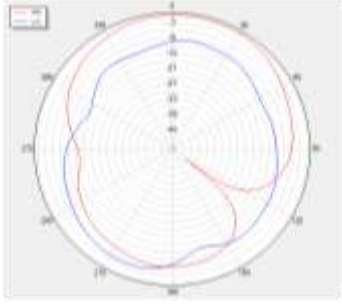

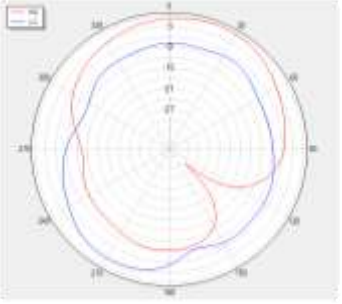
**RHCP and LHCP Gain (dBi)**

Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
RHCP Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	-0.6	-	-	-	-	-2.1	-1.1	-2.7
	Phi = 90 (deg) Theta = 0 (deg)	-0.6	-	-	-	-	-2.1	-1.1	-2.7
LHCP Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	-20.4	-	-	-	-	-14.3	-11.3	-9.7
	Phi = 90 (deg) Theta = 0 (deg)	-20.4	-	-	-	-	-14.3	-11.3	-9.7


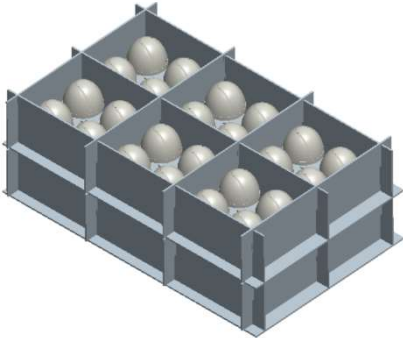
### 3.2.6. 3D & 2D Radiation Pattern

- Test Condition: Free Space
- Test Chamber: FS-G-1

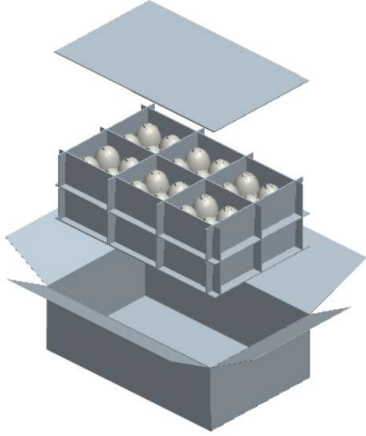
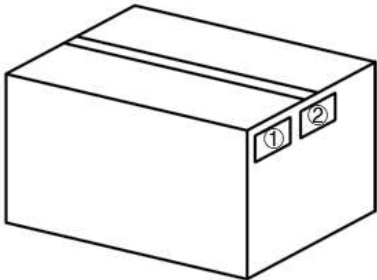
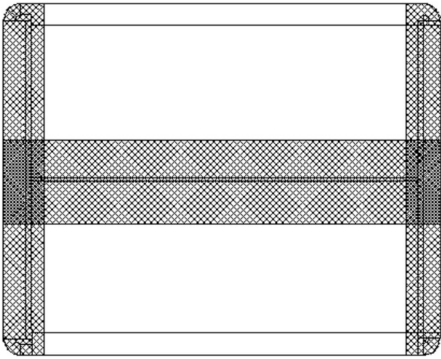


1176 MHz		1561 MHz	
	H plane 		H plane 
E1 plane 	E2 plane 	E1 plane 	E2 plane 
1575 MHz		1602 MHz	
	H plane 		H plane 
E1 plane 	E2 plane 	E1 plane 	E2 plane 

# 4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		Put the product in a bubble bag.
2		Each knife card slot holds 4 products and one layer of knife cards holds 24 products.



<p>3</p>		<p>Stack knife cards in 2 layers; (48 PCS Antennas / Carton Box)</p> <p><u>Carton Size:</u> <u>L × W × H = 550 × 350 × 210 mm</u></p>
<p>4</p>		<p><b>Position for Attaching Labels</b></p> <p>① Carton Label ② Quality Label</p>
<p>5</p>		<p><b>Sealing Cartons</b> “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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Email: [info@quectel.com](mailto:info@quectel.com)

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# Revision History

Version	Date	Author	Note
-	2023-05-10	Mastin ZENG/ Jason LONG/ David LIU/ Vinnie LIU	Creation of the document
1.0	2023-05-10	Mastin ZENG/ Jason LONG/ David LIU/ Vinnie LIU	First official release
1.1	2024-01-24	Jason LONG	Added Housing UV Resistant (Chapter 1.2)



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