

# Antenna

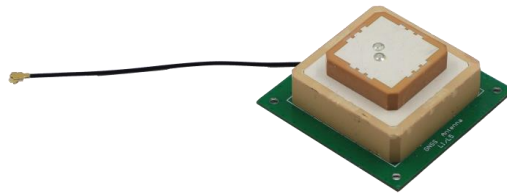
# YCGO014AA Datasheet

## Antenna Services

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**Quectel Wireless Solutions Co., Ltd.**

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

Tel: +86 21 5108 6236

Email: [info@quectel.com](mailto:info@quectel.com)

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

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# About the Document

## Revision History

Version	Date	Author	Note
-	2021-09-01	Xiaodong YANG/ Kenny YIN	Creation of the document
1.0	2021-09-29	Xiaodong YANG/ Kenny YIN	First official release
1.1	2021-12-05	Xiaodong YANG/ Kenny YIN	Updated the product description in Chapter 1.
1.2	2022-05-06	Xiaodong YANG/ Kenny YIN	Update the structural drawing (Chapter 6).

## Contents

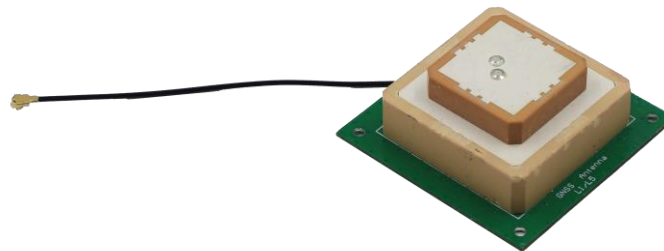
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## 1 Product Description

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.

## 2 Product Features

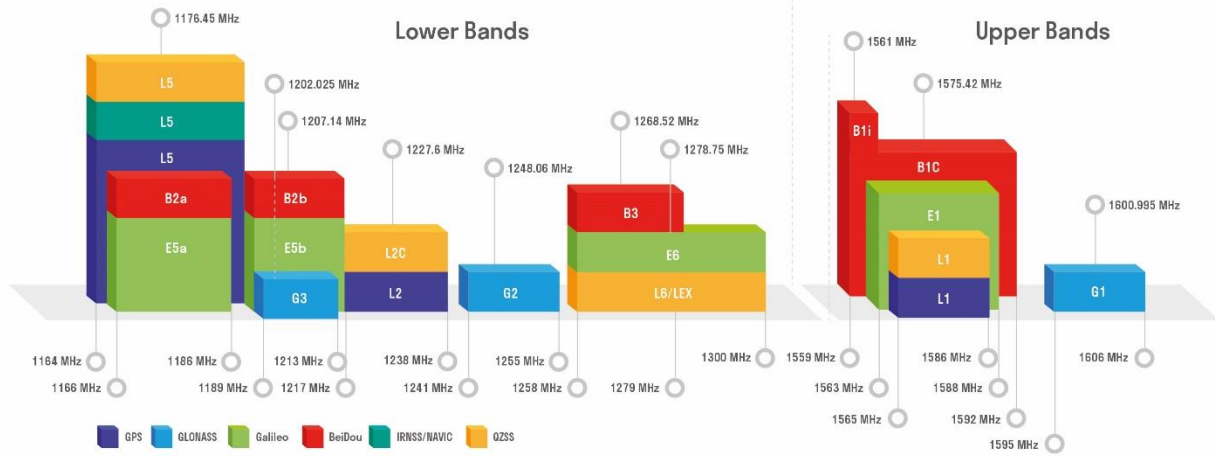
- GNSS L1/L5
- Compact Dual Feed Patch Element
- Excellent Performance



### 3 GNSS Frequency Band Checklist

GNSS Frequency Bands (MHz)					
GPS	<b>L1</b> Centre 1575.42 (1565–1586)	<b>L2</b> Centre 1227.6 (1217–1238)	<b>L5</b> Centre 1176.45 (1164–1189)		
	●	-	●		
GLONASS	<b>G1/L1OC/L1OF</b> Centre 1601 (1595–1606)	<b>G2/L2OC/L2OF</b> Centre 1248.06 (1241–1255)	<b>G3/L3OC</b> Centre 1202.025 (1189–1213)		
	●	-	-		
GALILEO	<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)	
	●	●	-	-	
BEIDOU	<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)
	●	●	●	-	-
QZSS	<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)	
	●	-	●	-	
IRNSS	<b>L5</b> Centre 1176.45 (1164–1189)				
	●				

**GNSS Bands and Constellations**





## 4 Product Specifications

- The antenna is tested on a 50 mm × 50 mm × 0.8 mm PCB.

### Passive Electrical Specifications

Frequency Range	L5: 1166–1186 MHz L1: 1559–1606 MHz
Input Impedance	50 Ω
VSWR	< 2.0
Peak Gain	L5 = 1.35 dBi, L1= 2.24 dBi
Polarization Type	RHCP
AR	< 2 dB

### Mechanical Specifications

Antenna Size (mm)	38 × 38 × 10 + 25 × 25 × 6 (Ground Plane: 50× 50× 0.8)
Casing	Ceramics
Weight	Typ. 72 g
Connector Type	IPEX-1
Working Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
Radome Color	-
IP Rating	-

## 5 Overall Performance

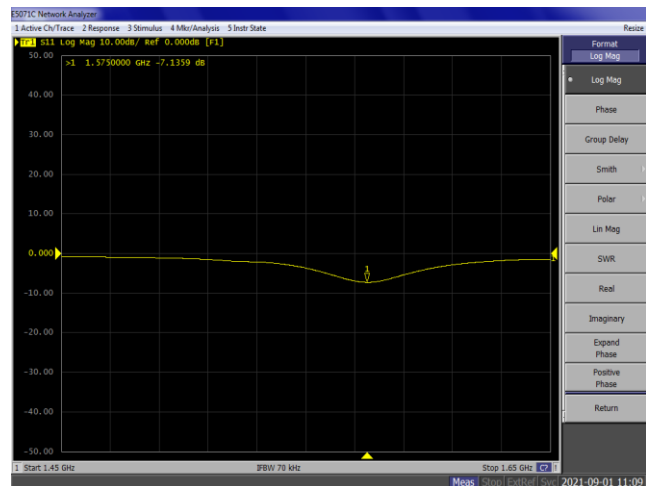
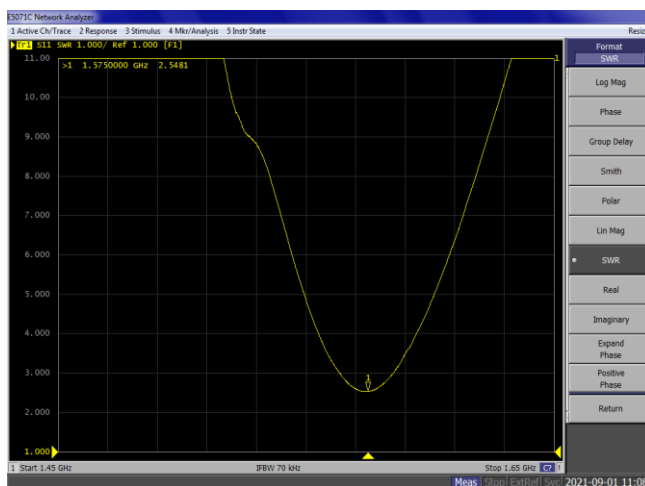
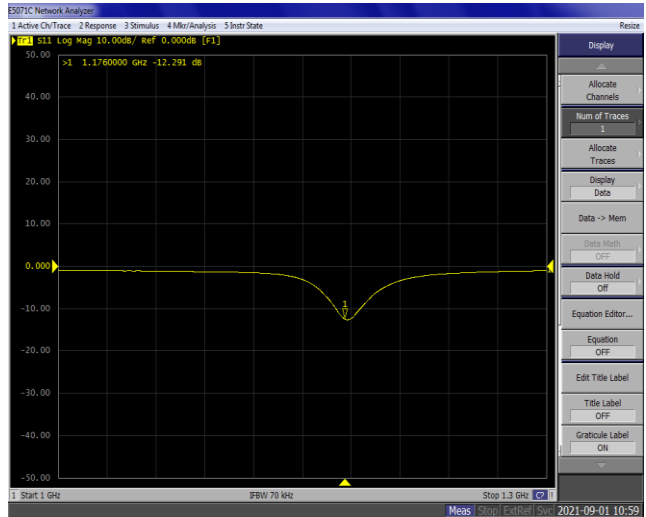
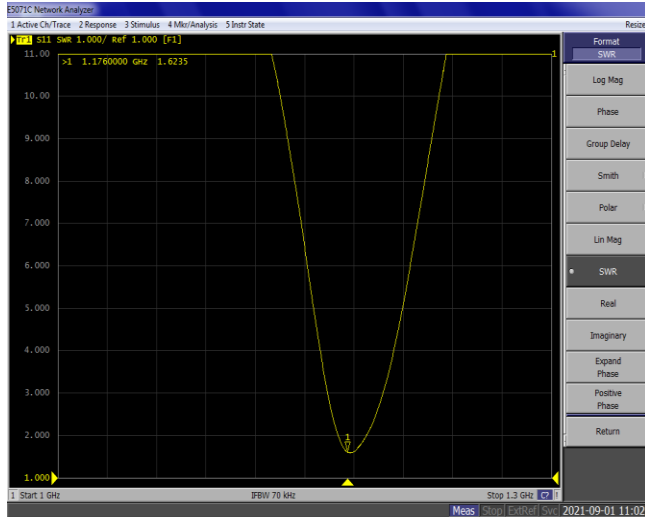
### 5.1. Test Environment

- KEYSIGHT ENA Network Analyzer E5063A 100 kHz – 8.5 GHz
- RayZone® 2800 Chamber 5G (FR1) SISO/MIMO, 600 MHz – 8.5 GHz



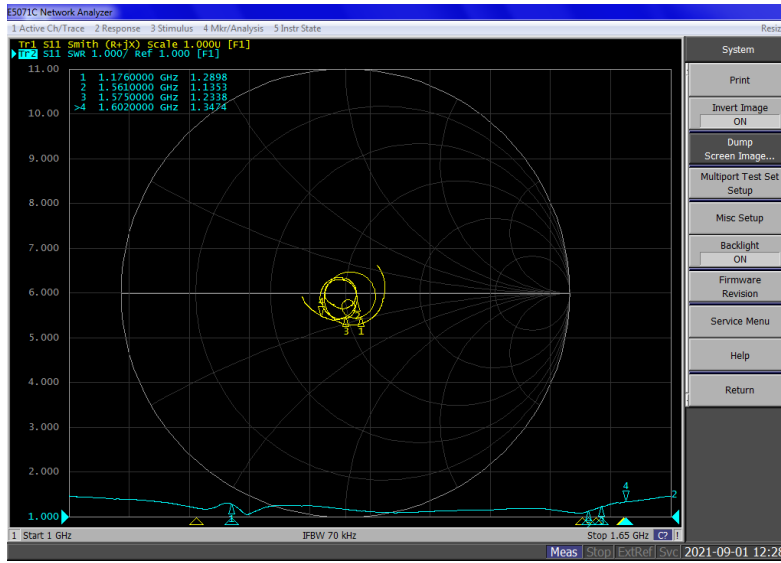
## 5.2. VSWR

- VSWR before hybrid coupler.



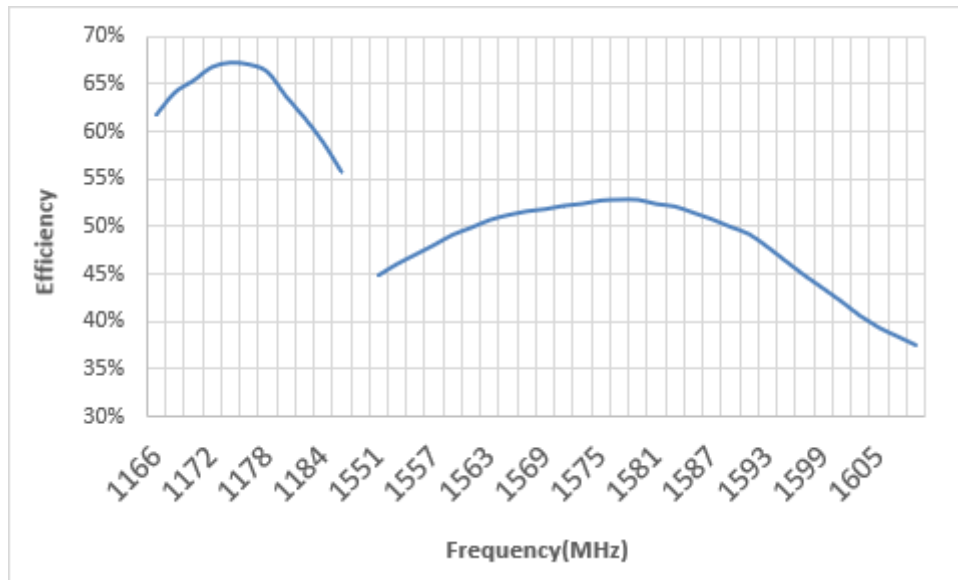
Frequency (MHz)	1176	1575
VSWR	1.62	2.54

- VSWR after hybrid coupler.



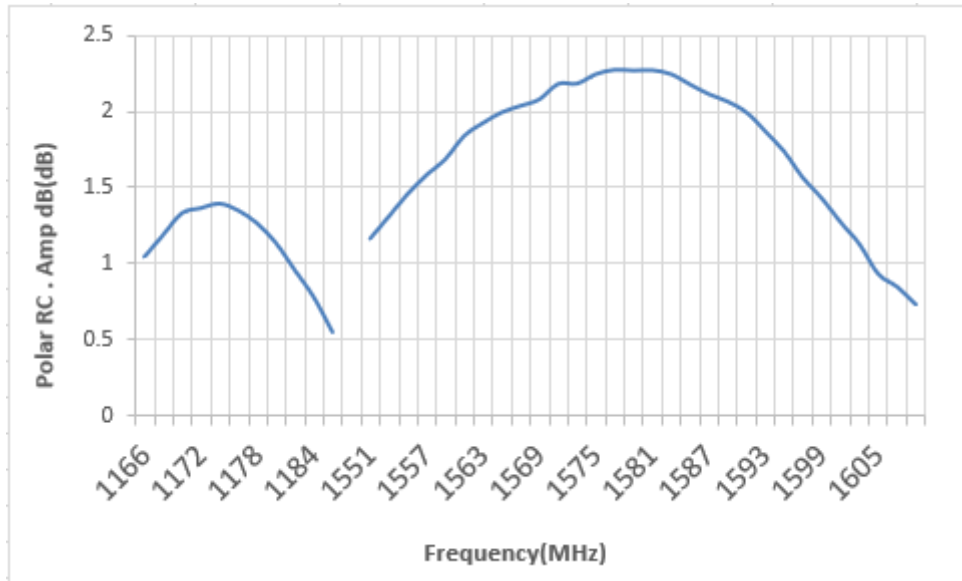
<b>Frequency (MHz)</b>	1176	1561	1575	1602
<b>VSWR</b>	1.29	1.13	1.23	1.34

### 5.3. Efficiency



<b>Frequency (MHz)</b>	1176	1561	1575	1602
<b>Efficiency (%)</b>	67	50	53	42

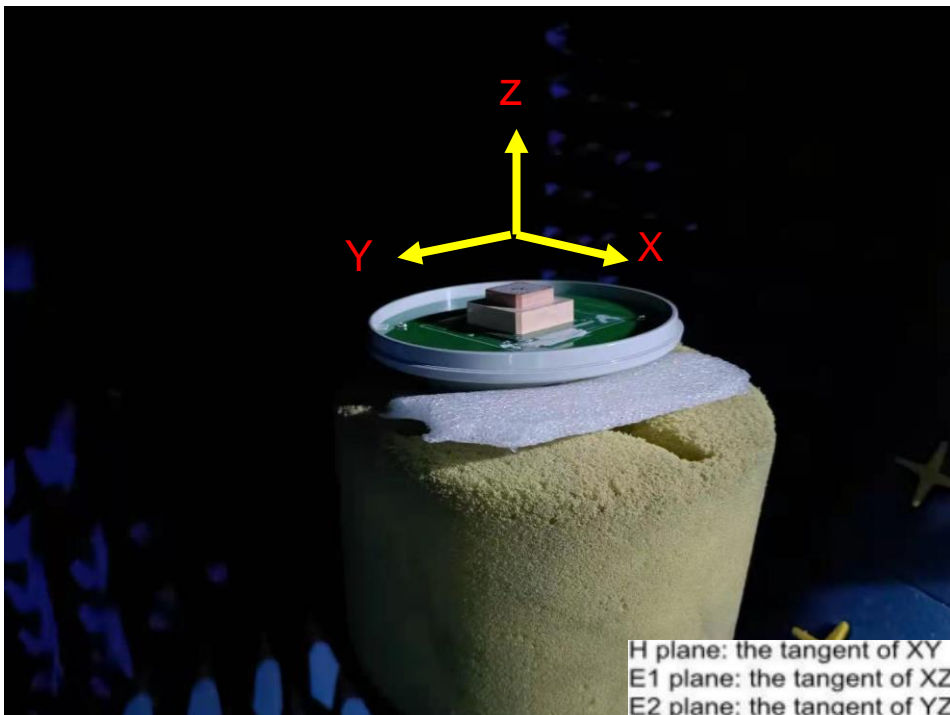
### 5.4. Gain



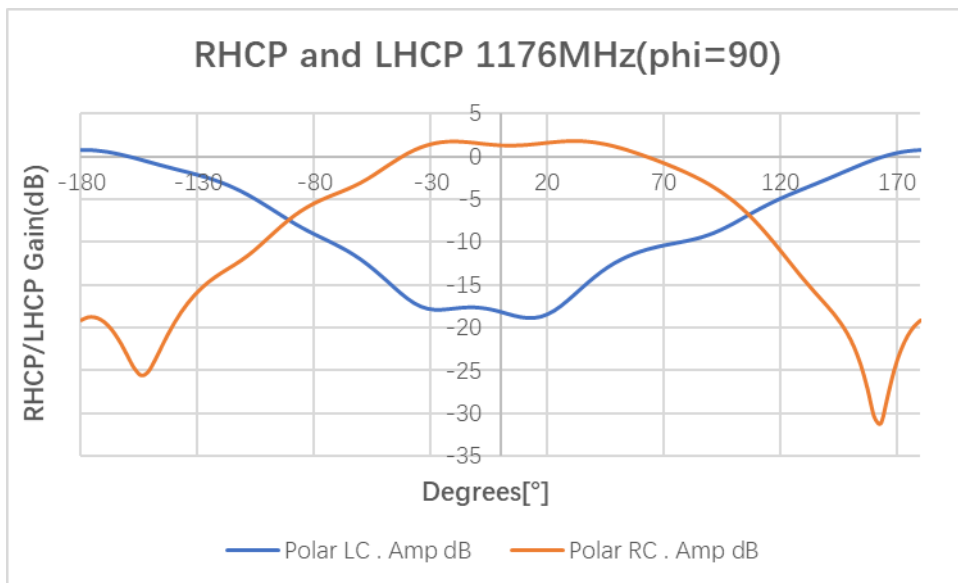
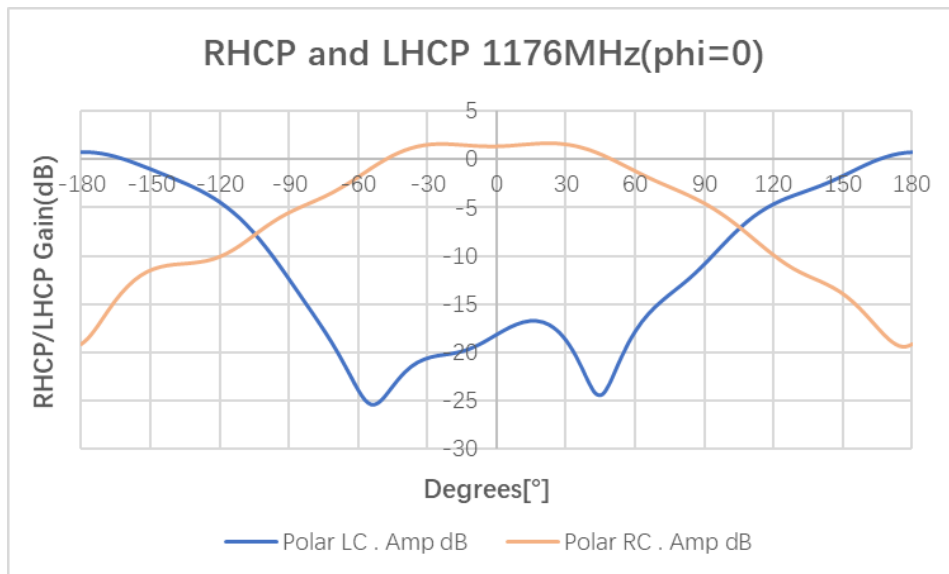
Frequency (MHz)	1176	1561	1575	1602
Gain (dBi)	1.35	1.84	2.24	1.27

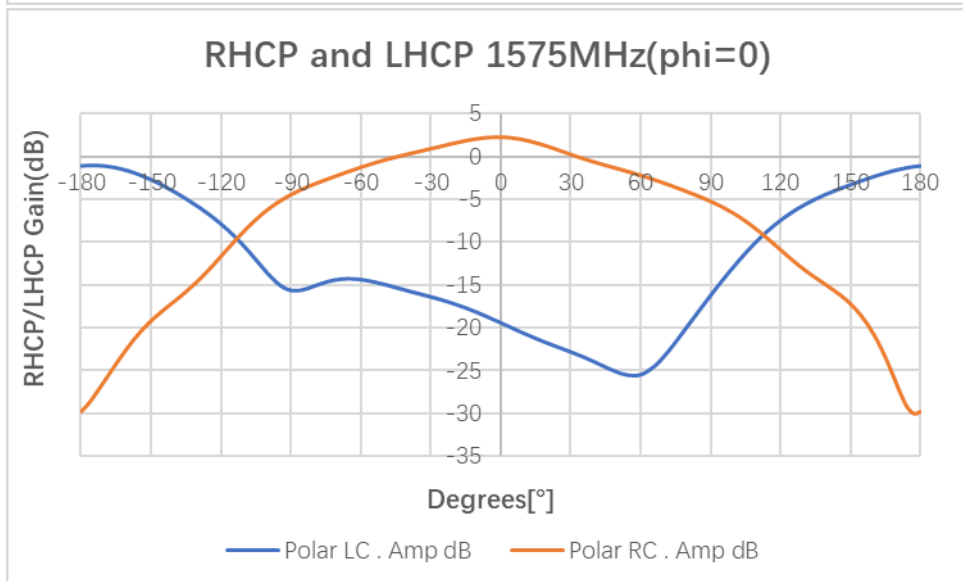
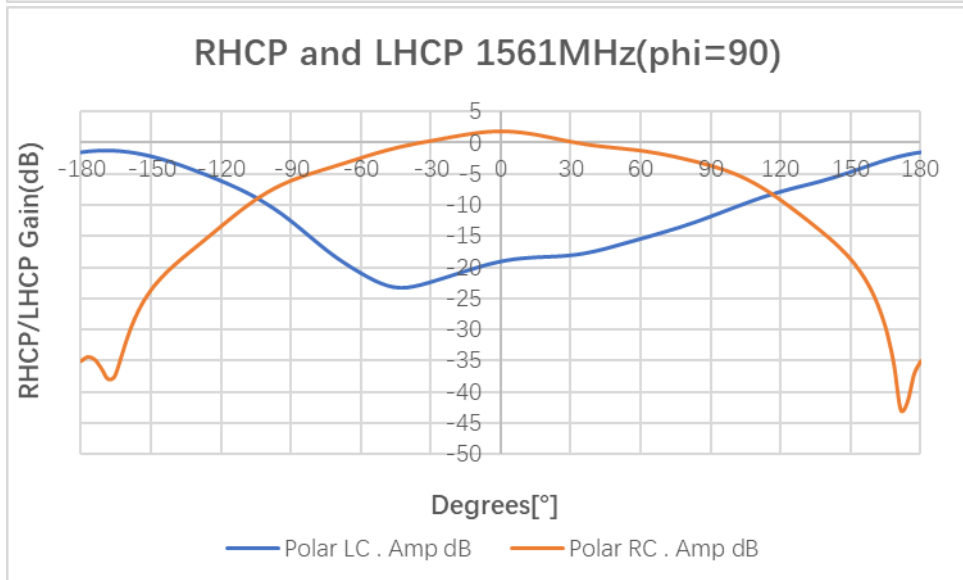
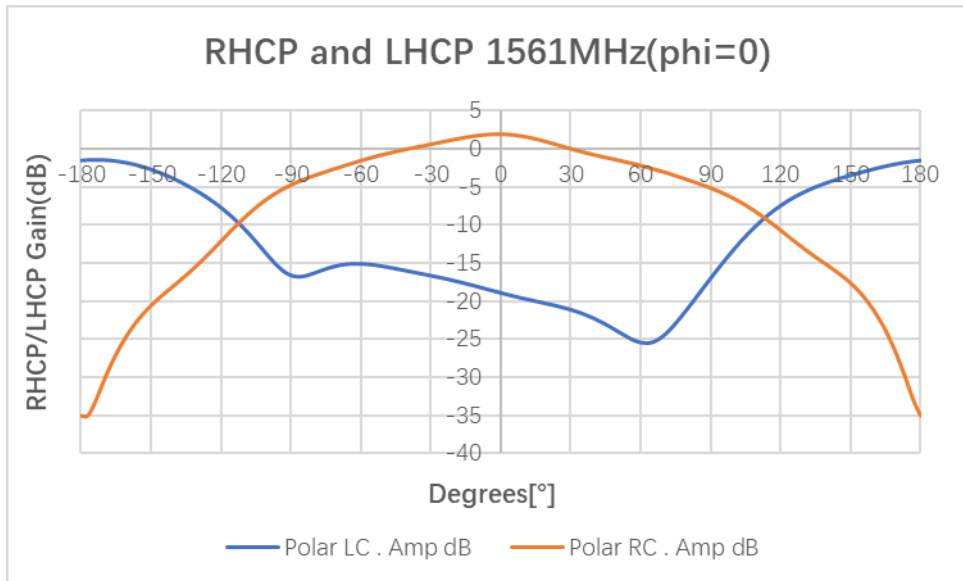
### 5.5. Radiation Pattern

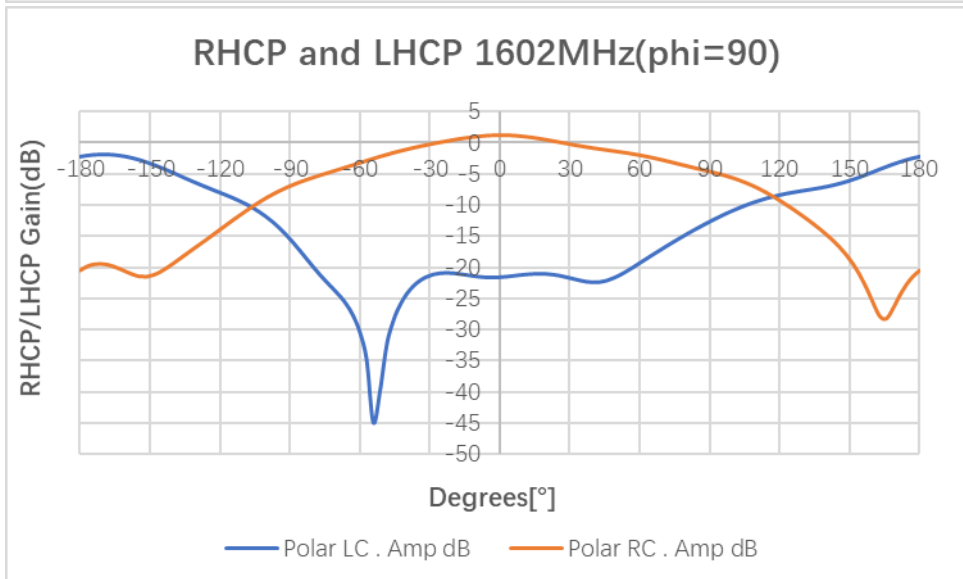
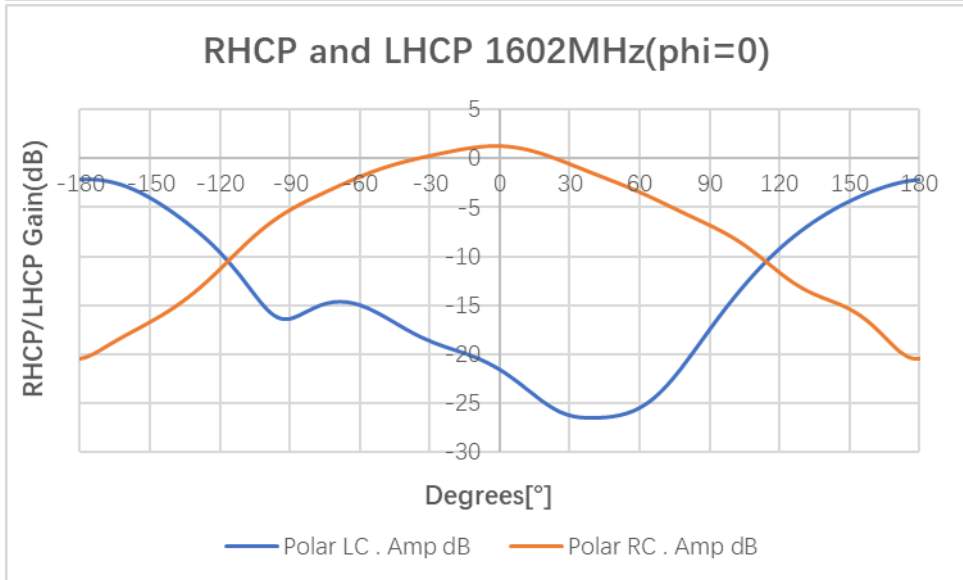
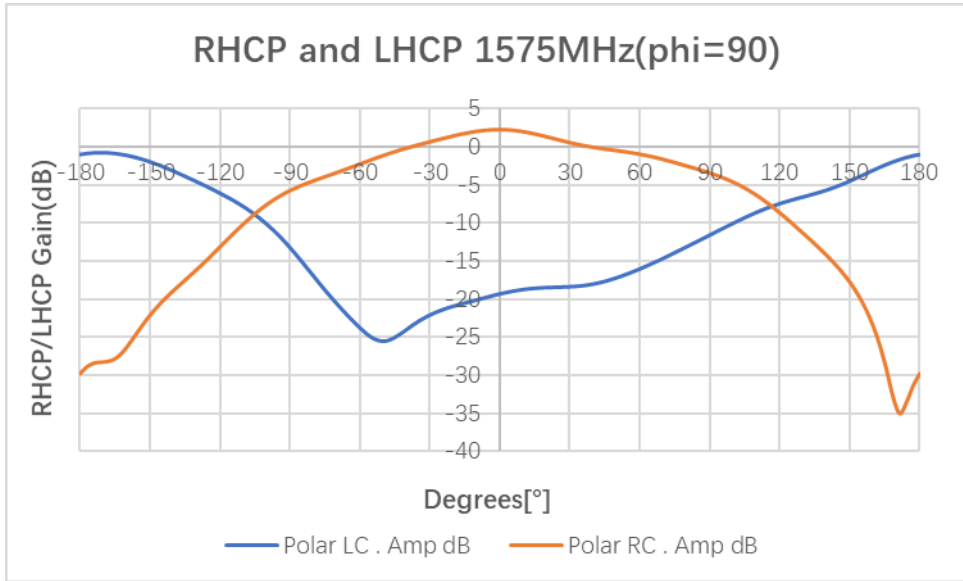
- Test condition: with metal plate (50 mm x50 mm).



**5.6. 2D RHCP and LHCP Gain**



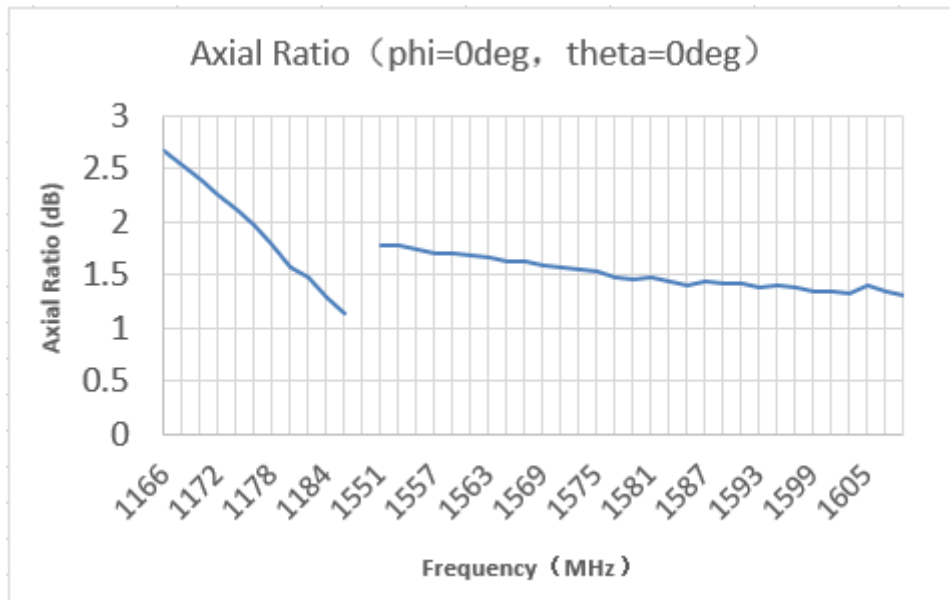




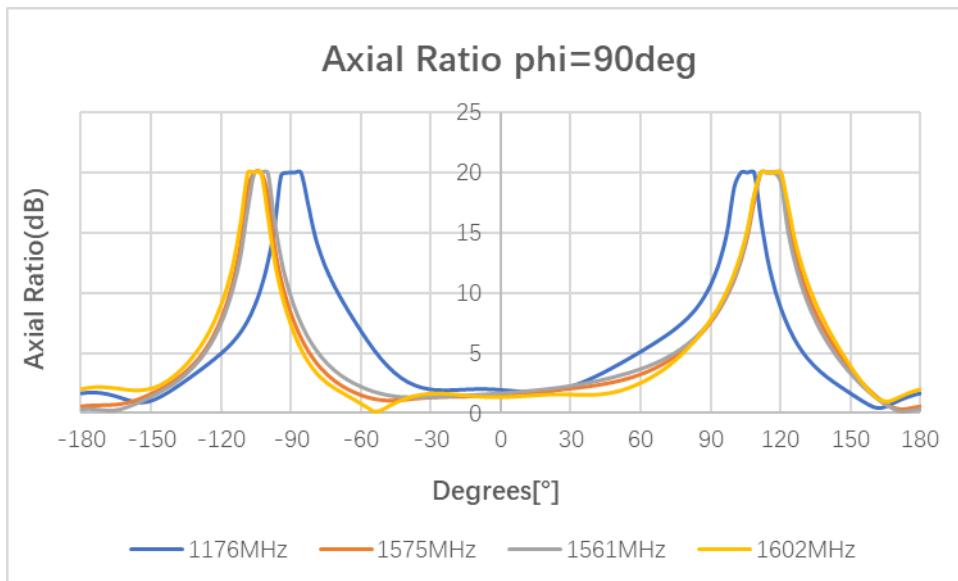
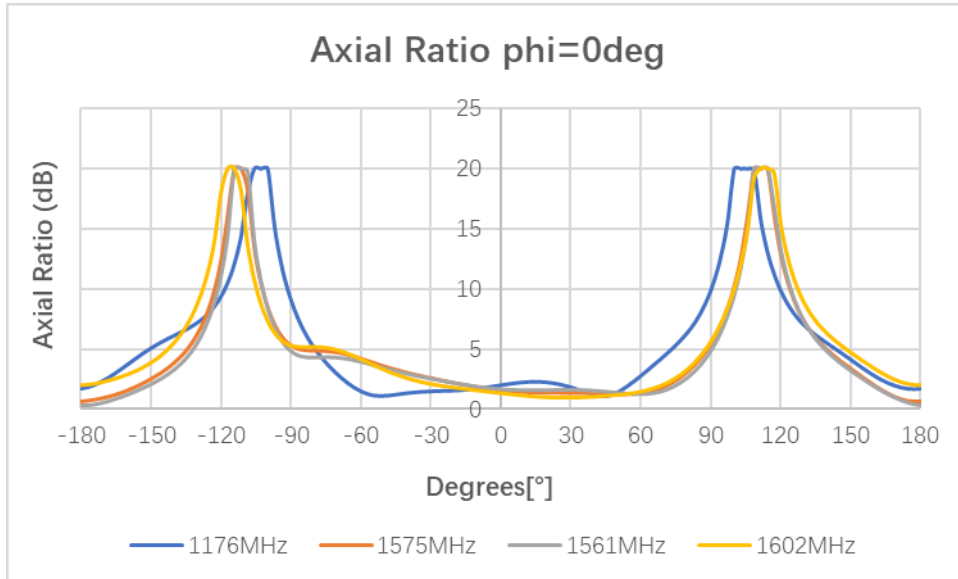


Frequency (MHz)	1176	1561	1575	1602
RC Gain (dB) Phi = 0 (deg) Theta = 0 (deg)	1.35	1.84	2.24	1.27
RC Gain (dB) Phi = 90 (deg) Theta = 0 (deg)	1.35	1.84	2.24	1.27
LC Gain (dB) Phi = 0 (deg) Theta = 0 (deg)	-18.15	-18.97	-19.38	-21.54
LC Gain (dB) Phi = 90 (deg) Theta = 0 (deg)	-18.15	-18.97	-19.38	-21.54

### 5.7. Axial Ratio

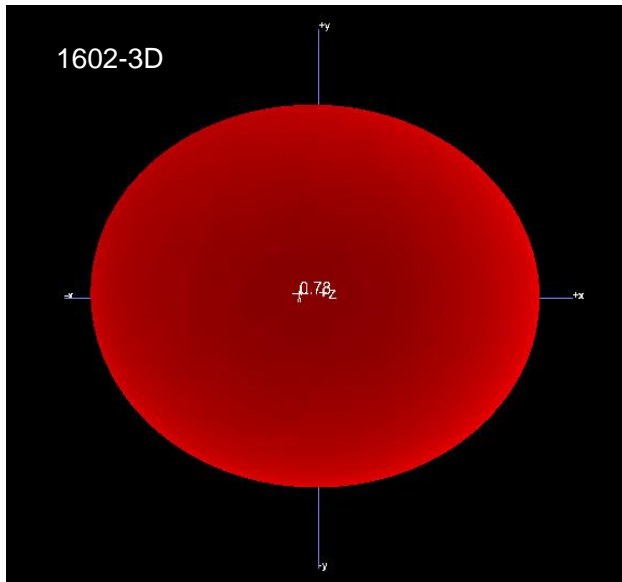
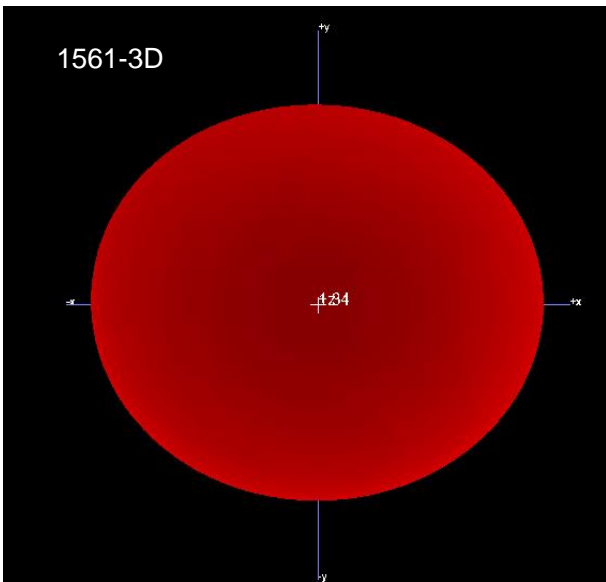
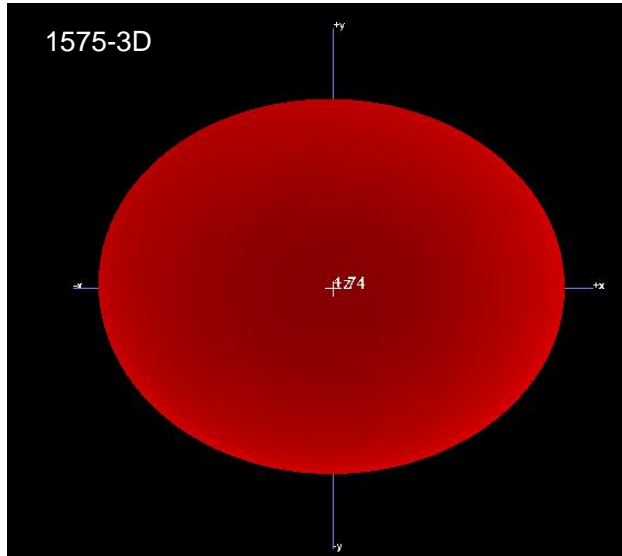
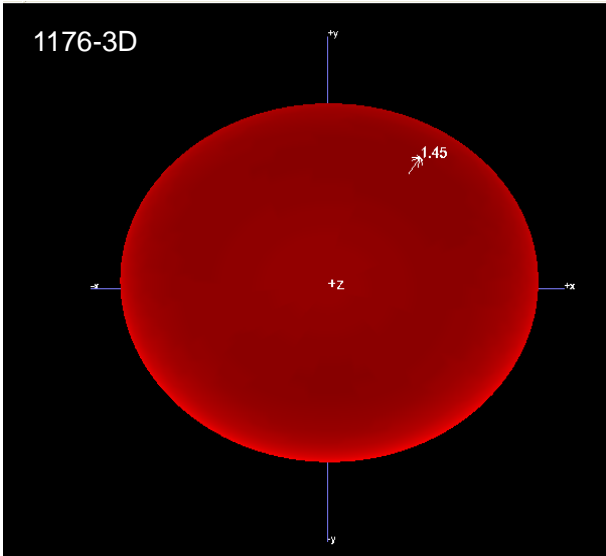


### 5.8. Axial Ratio in XOZ/YOZ

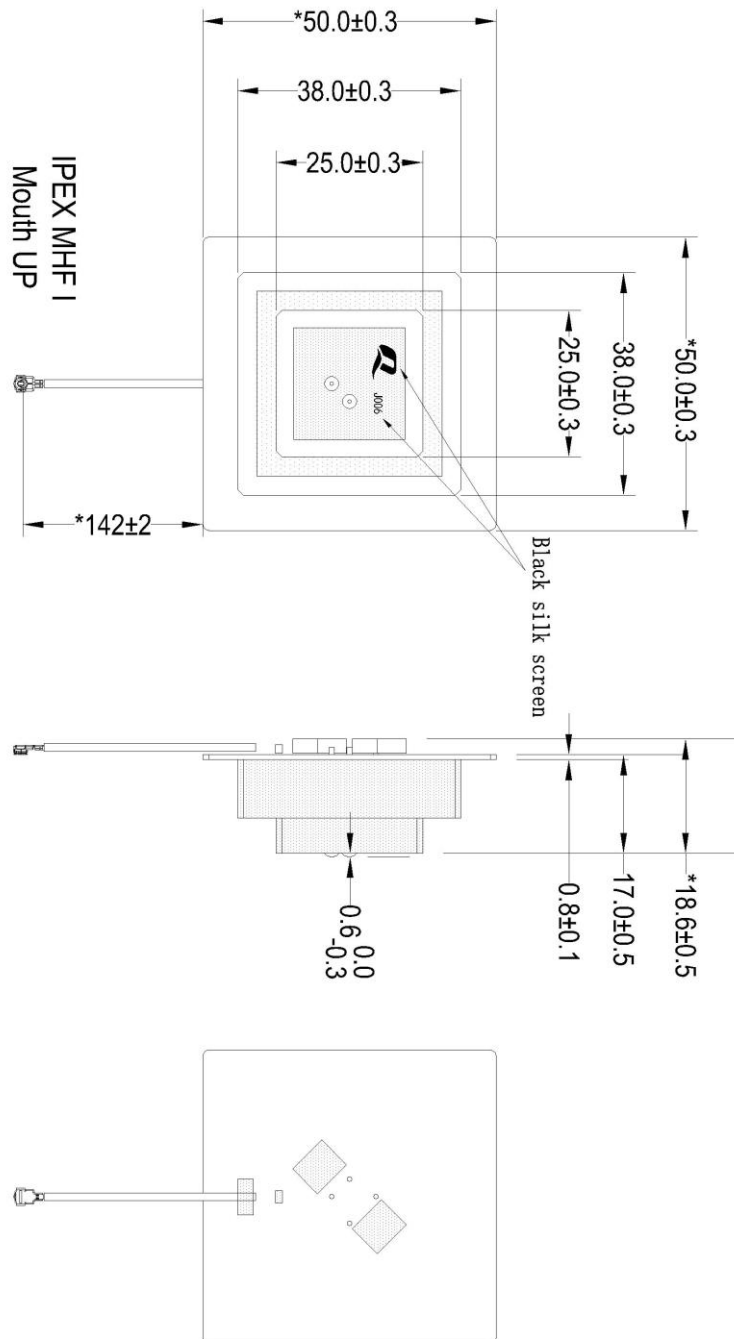


Frequency (MHz)	1176	1561	1575	1602
AR (dB) Phi = 0 (deg) Theta = 0 (deg)	1.95	1.53	1.68	1.33
AR (dB) Phi = 90 (deg) Theta = 0 (deg)	1.95	1.53	1.68	1.33

### 5.9. 3D Radiation



## 6 Product Size



Unit:mm  
General tolerances:±0.2

## 7 PCB Footprint Recommendation

