

Antenna

YCGA013AA Datasheet

Antenna Services

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About the Document

Revision History

Version	Date	Author	Note
-	2022-03-01	Xiaodong YANG/ Kenny YIN	Creation of the document
1.0	2022-03-01	Xiaodong YANG/ Kenny YIN	First official release

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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 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.

2 Product Features

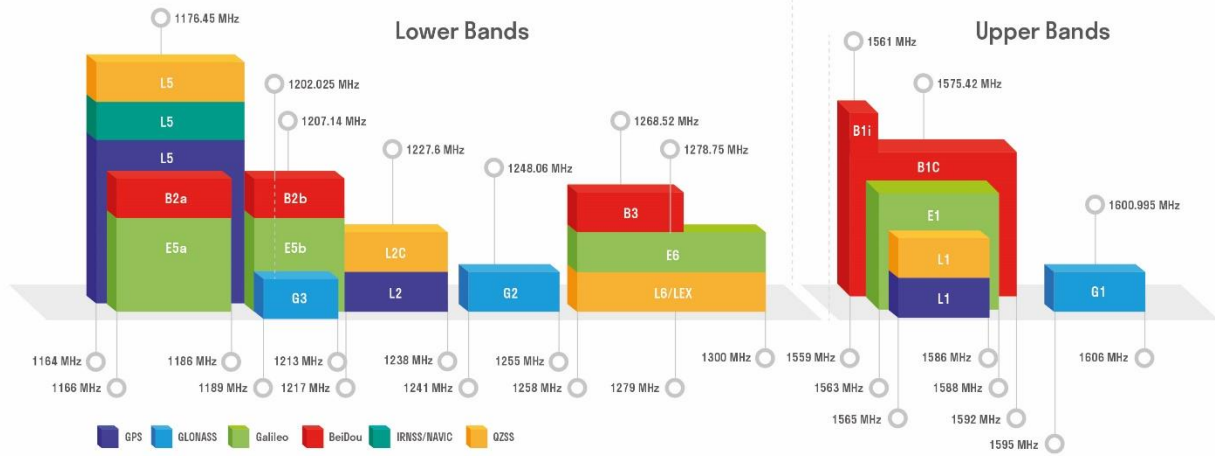
- GNSS L1/L5
- Compact Dual Feed Patch Element
- Excellent Performance



3 GNSS Frequency Band Checklist

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)	B2a/B2I Centre 1176.45 (1166–1187)	B2b 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



4 Product Specifications

- The antenna is tested on a 58.5 mm x 58.5 mm x 1 mm PCB.

Passive Electrical Specifications

Frequency Range	L5: 1166–1186 MHz, L1: 1559–1606 MHz
Input Impedance	50 Ω
VSWR	< 2
Peak Gain	L1 ≤ 3.55 dBi, L5 ≤ 0.97 dBi
Polarization Type	RHCP
AR	L1 < 1 dB, L5 < 3 dB

Mechanical Specifications

Antenna Size	45 mm x 45 mm x 10.12 mm
Casing	Ceramics
Weight	60 ±1 g
Working Temperature	-40 °C to +85 °C
Color	-

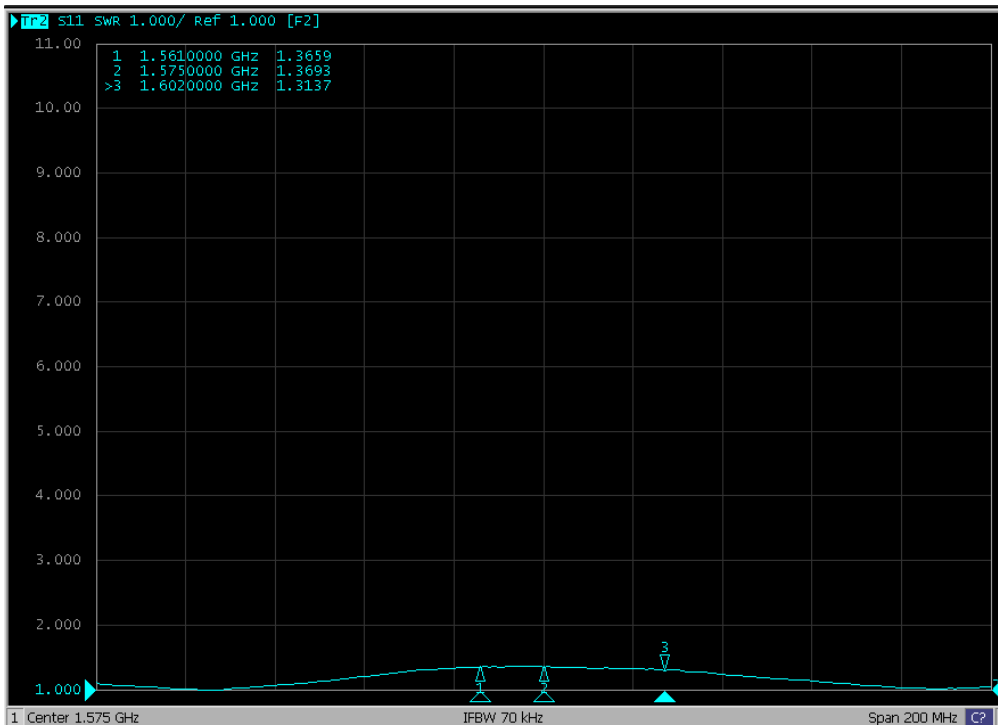
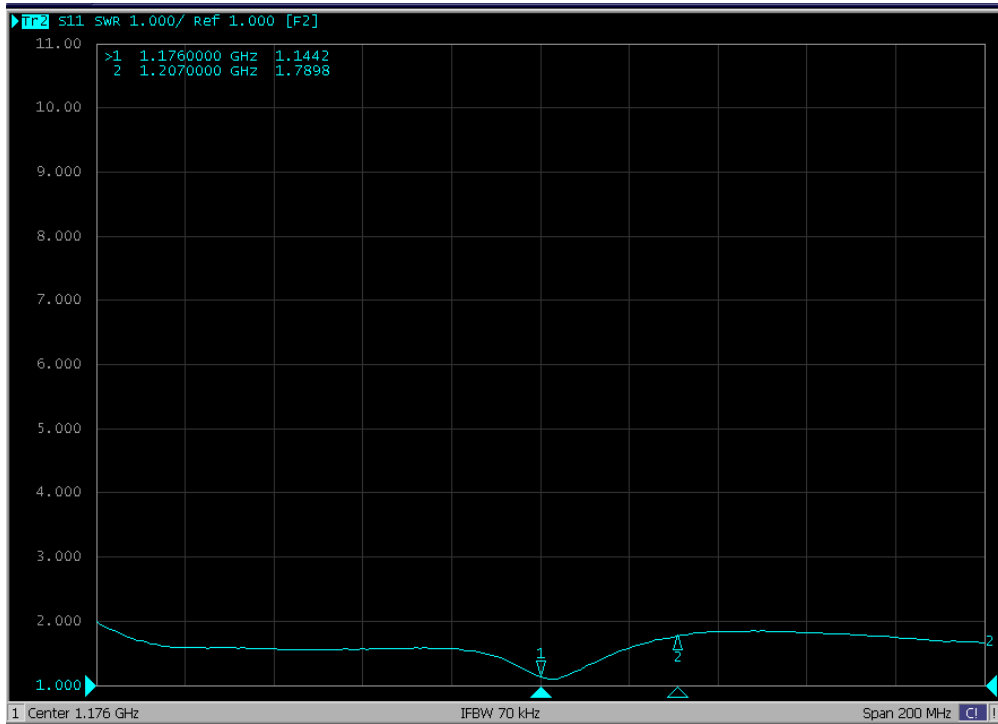
5 Overall Performance

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

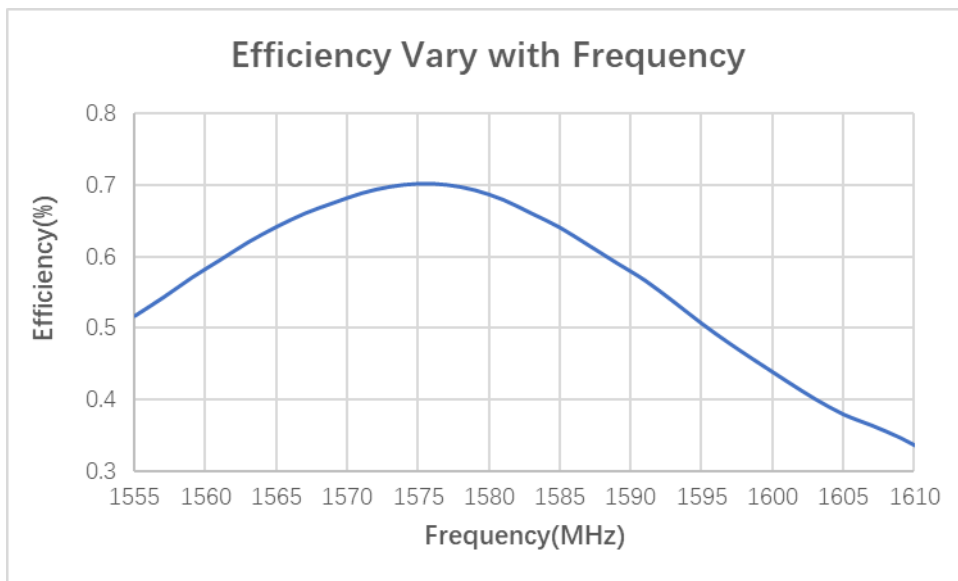
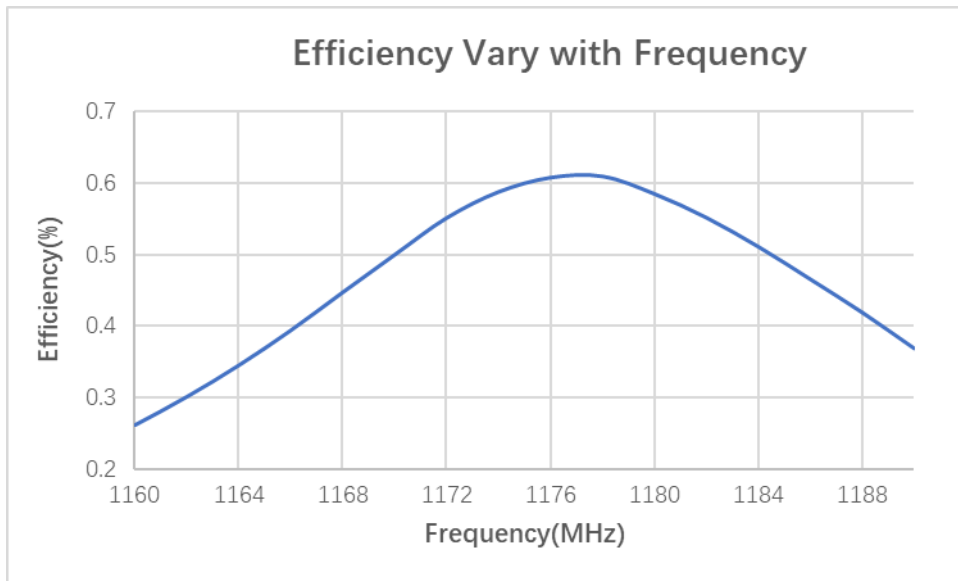


5.2. VSWR



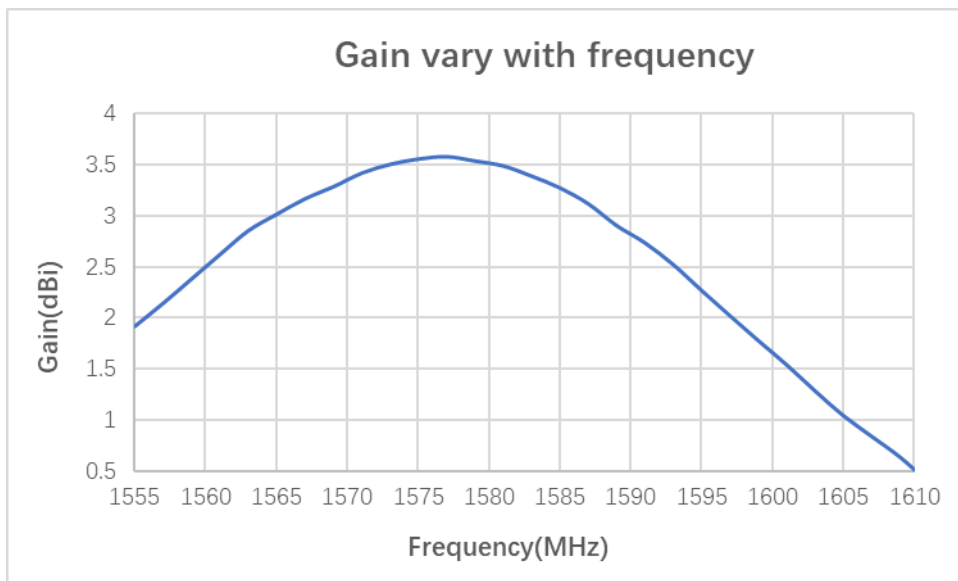
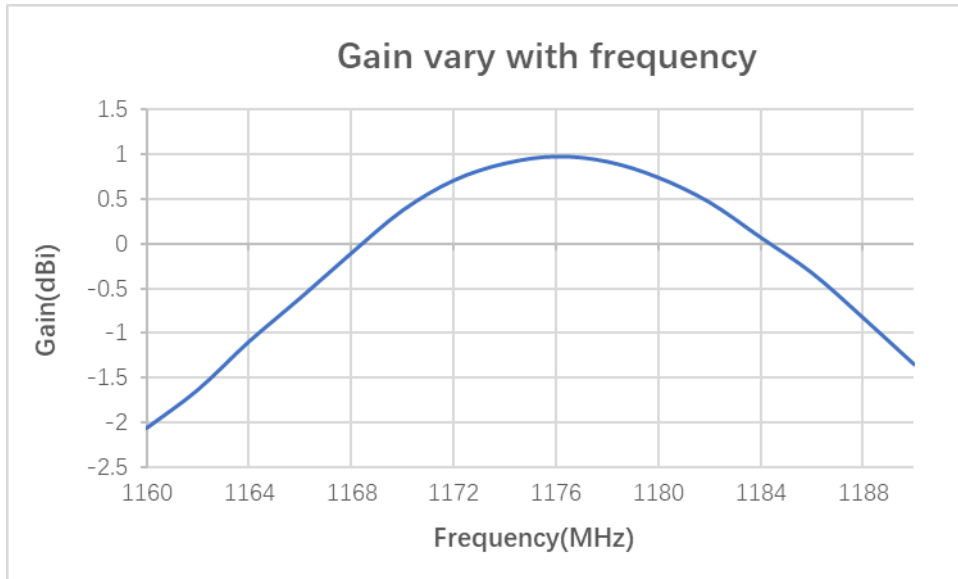
Frequency (MHz)	1176	1561	1575	1602
VSWR	1.14	1.36	1.36	1.31

5.3. Efficiency



Frequency (MHz)	1176	1561	1575	1602
Efficiency (%)	61	60	70	43

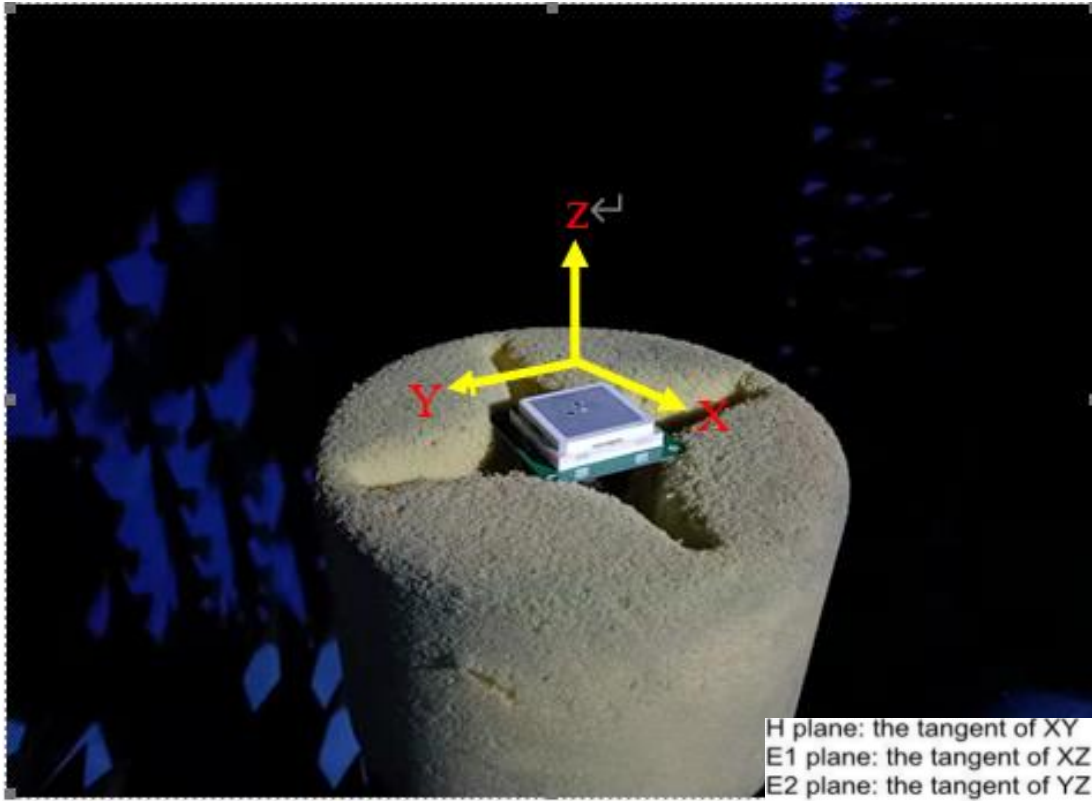
5.4. Gain



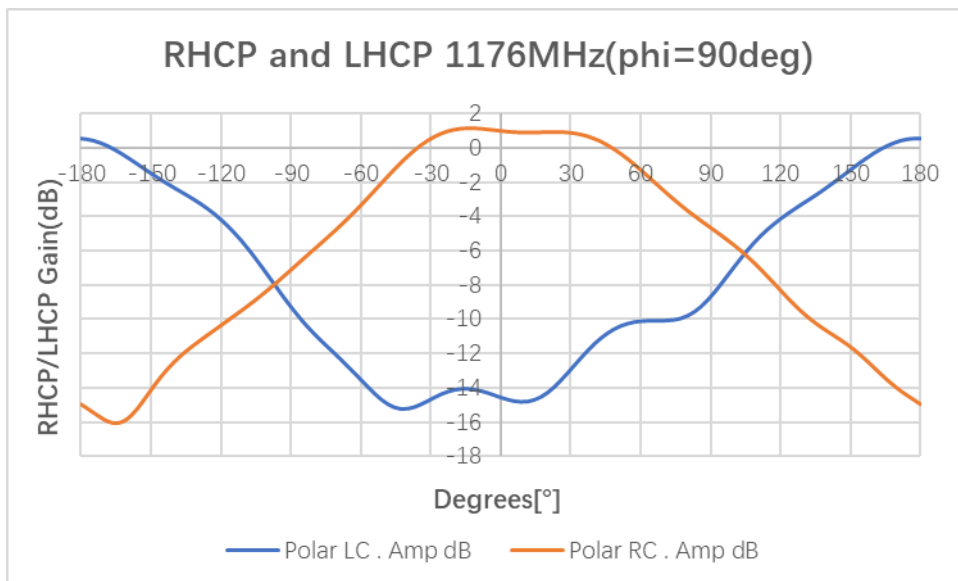
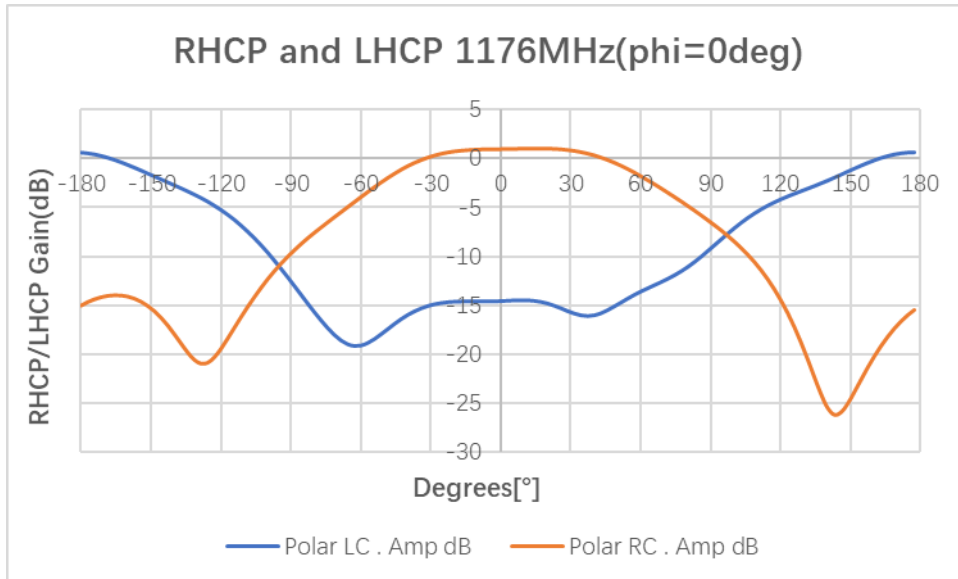
Frequency (MHz)	1176	1561	1575	1602
Gain (dBi)	0.97	2.62	3.56	1.54

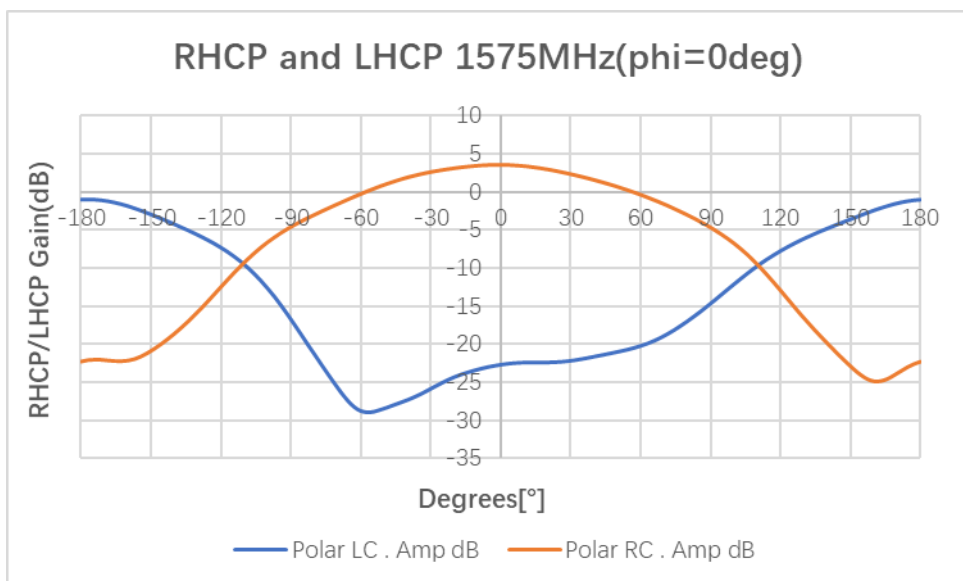
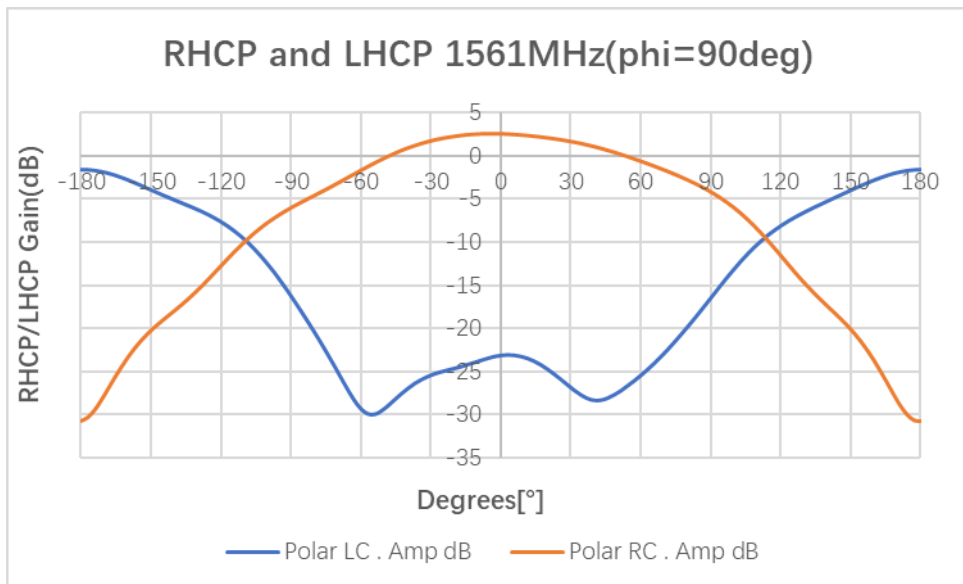
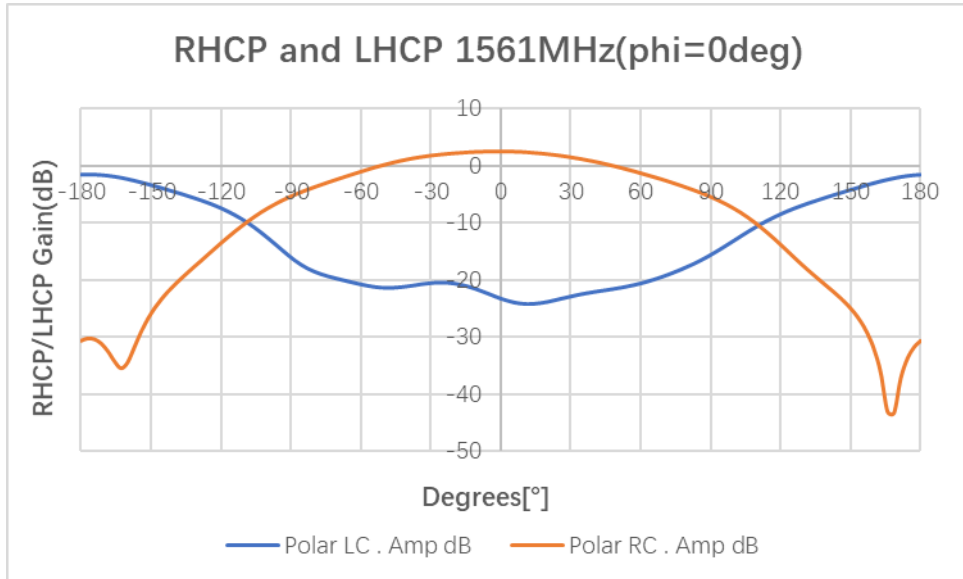
5.5. Radiation Pattern

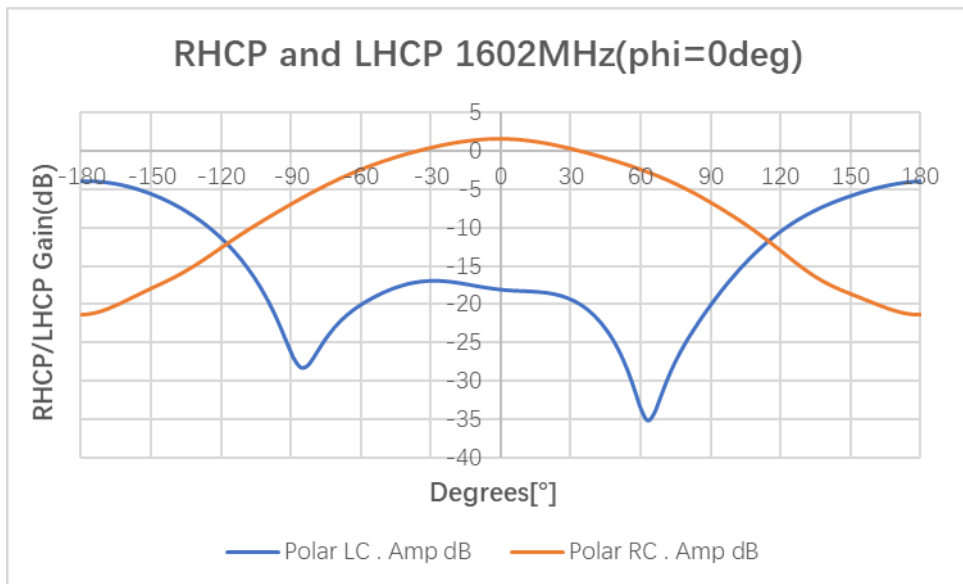
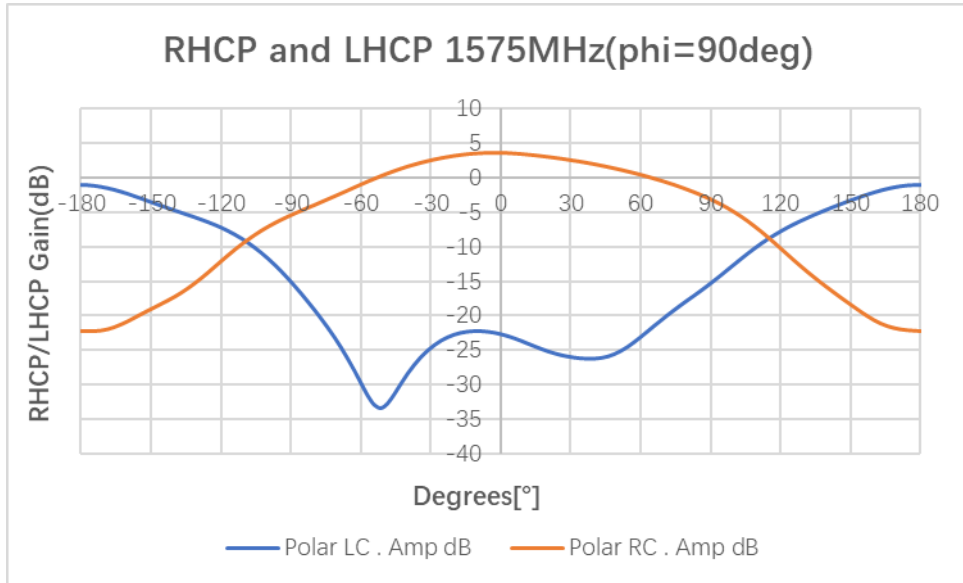
- Test condition: free space.

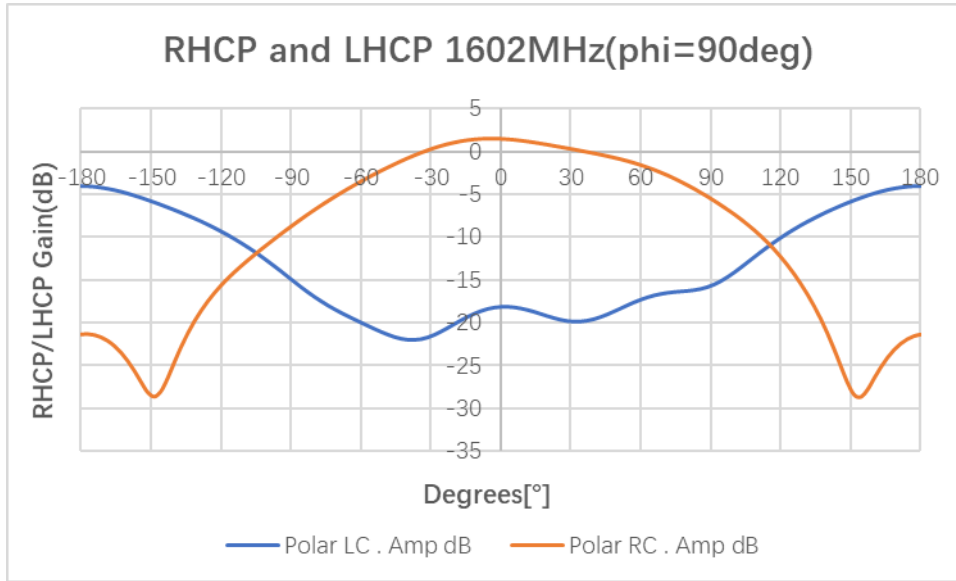


5.5.1. 2D RHCP and LHCP Gain



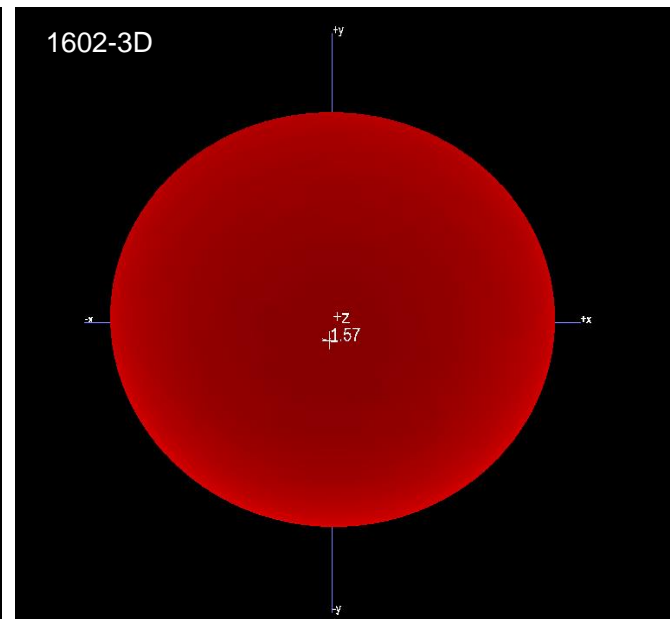
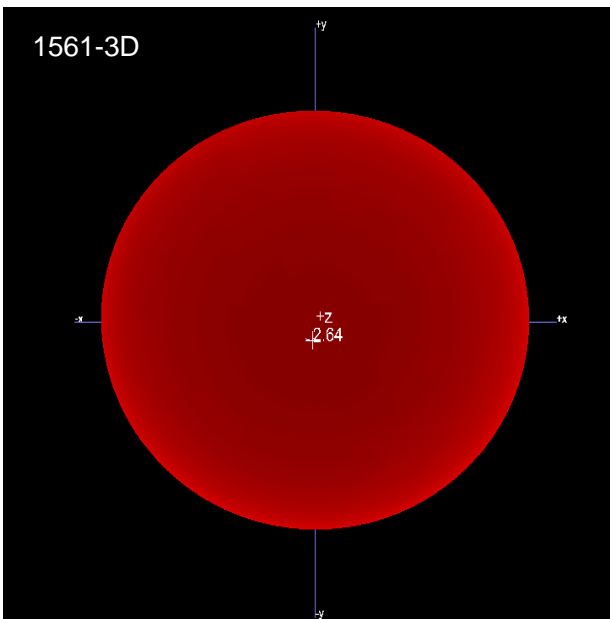
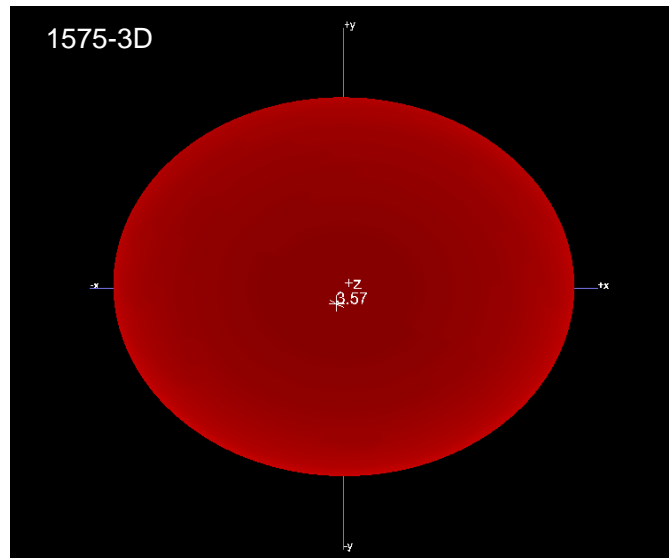
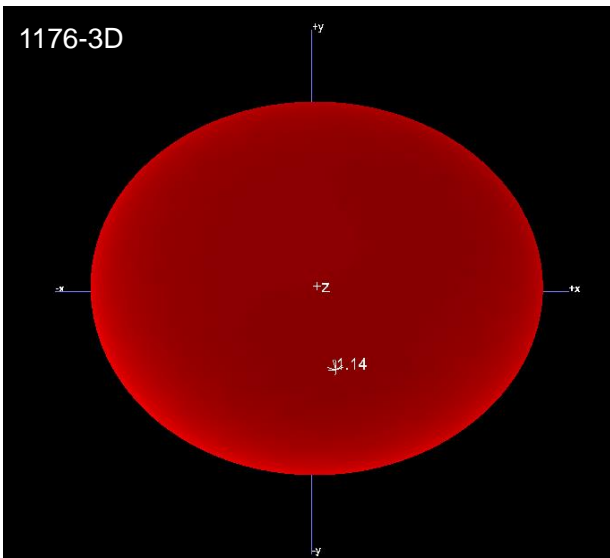




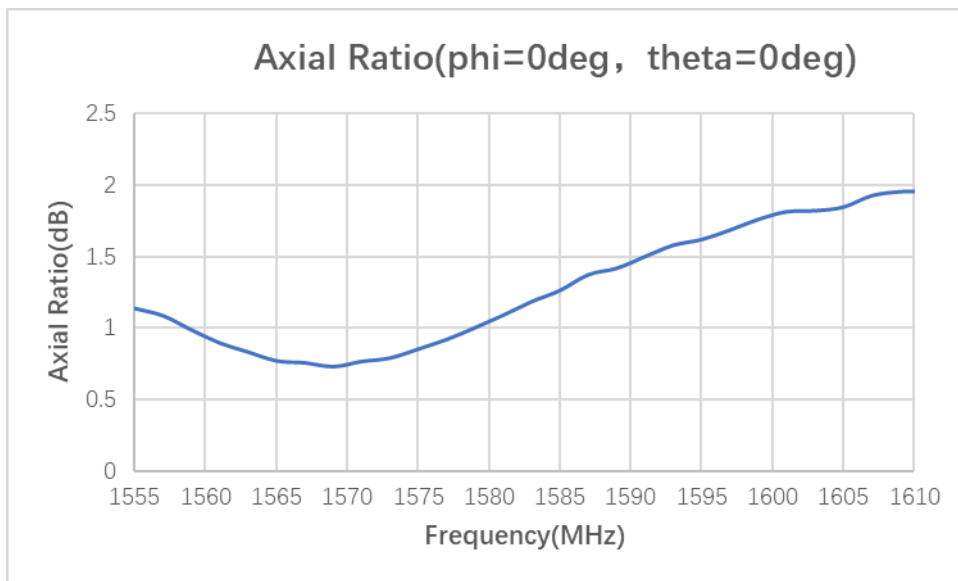
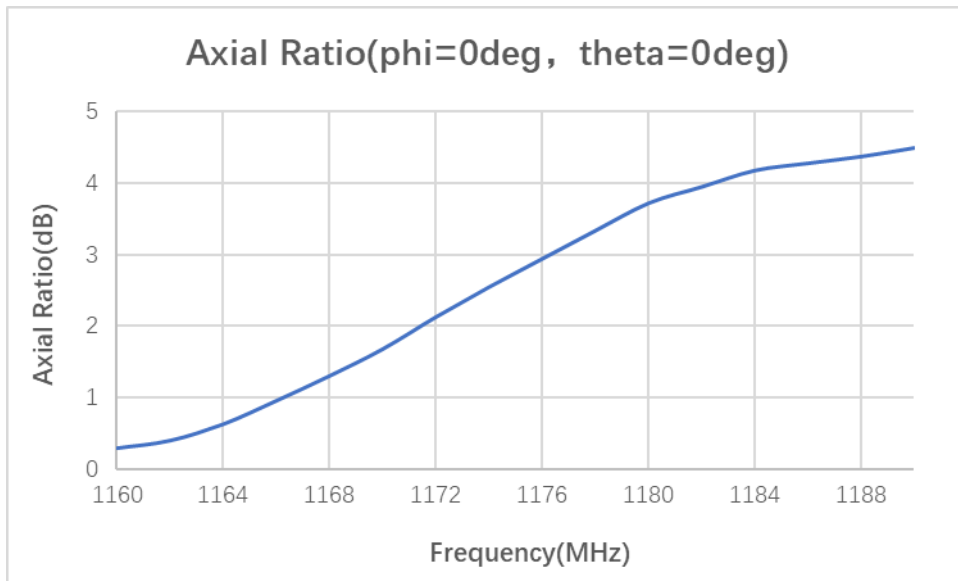


Frequency (MHz)	1176	1561	1575	1602
RC Gain (dB) Phi = 0 (deg) Theta = 0 (deg)	0.97	2.63	3.56	1.54
RC Gain (dB) Phi = 90 (deg) Theta = 0 (deg)	0.97	2.63	3.56	1.54
LC Gain (dB) Phi = 0 (deg) Theta = 0 (deg)	-14.54	-23.17	-22.65	-18.1
LC Gain (dB) Phi = 90 (deg) Theta = 0 (deg)	-14.54	-23.17	22.65	-18.1

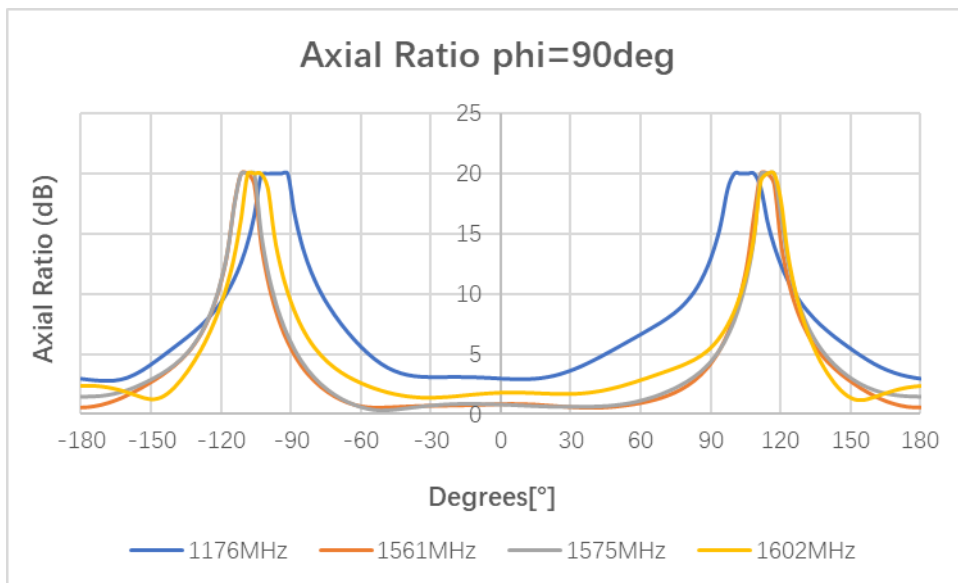
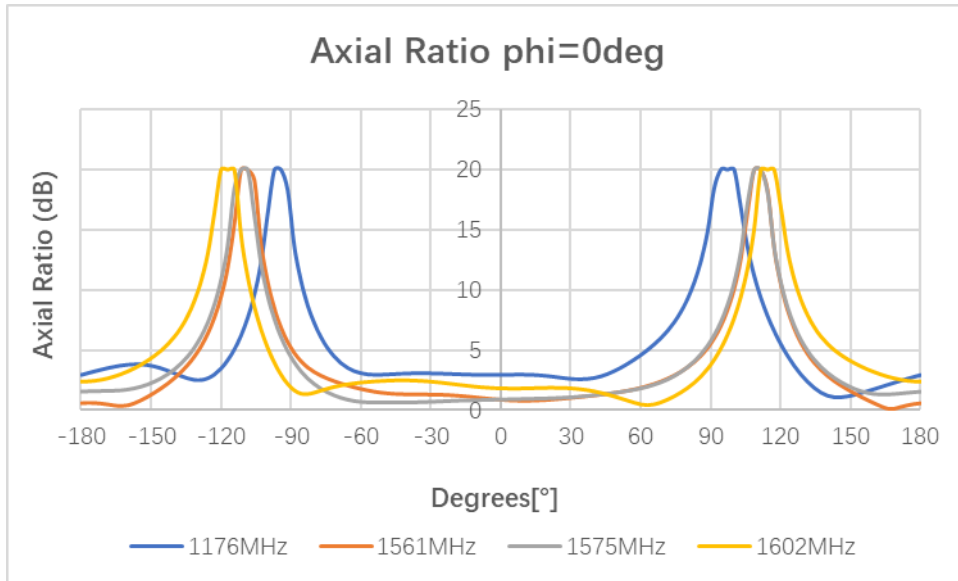
5.5.2. 3D Radiation



5.6. Axial Ratio

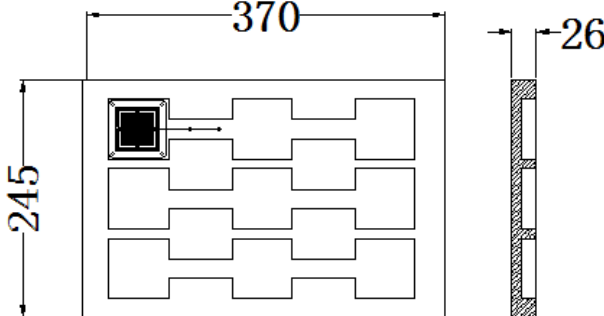

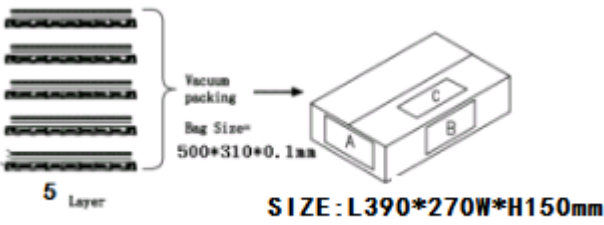


5.6.1. Axial Ratio in XOZ/YOZ



Frequency (MHz)	1176	1561	1575	1602
AR (dB) Phi = 0 (deg) Theta = 0 (deg)	2.94	0.89	0.85	1.82
AR (dB) Phi = 90 (deg) Theta = 0 (deg)	2.94	0.89	0.85	1.82

8. Packaging

S/N	Content	QTY	Remark
1		9	<ul style="list-style-type: none"> ● 9 PCS per EPE tray. ● Size: 370 mm x 245 mm x 26 mm.
2		9	<ul style="list-style-type: none"> ● One paper card on EPE. ● Vacuum packing.
3	 <p>SIZE: L390*270W*H150mm</p>	45	<ul style="list-style-type: none"> ● Carton size: 390 mm (L) x 270 mm (W) x 150 mm (H). ● 5 layers. ● Antenna No.: 45 PCS.