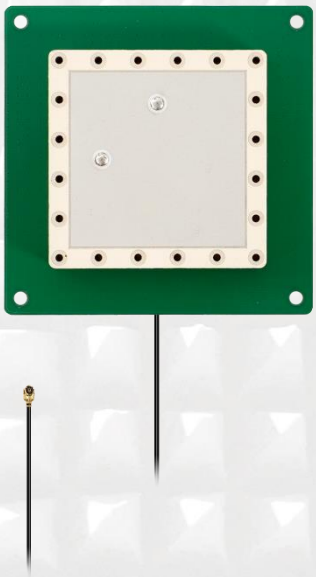


Antenna Datasheet

Product OC: YFTA009E3AM
Version: 1.2
Date: 2025-07-21
Status: Released

Product Name: L-Band & GNSS L1 & Iridium Screw Mount Ceramic Patch + Cable Passive Embedded Antenna

Key Features:

Frequency Band: GNSS L1: 1559–1606 MHz
Iridium: 1616–1626.5 MHz
L-Band: TX: 1626.5–1660.5 MHz, 1668–1675 MHz
RX: 1518–1559 MHz

Peak Gain: 5.65 dBi (Max.)
RoHS and REACH Compliant

Overview

The Quectel YFTA009E3AM is a high-performance passive embedded antenna designed for multi-band satellite communication, supporting GNSS L1 (1559–1606 MHz), Iridium (1616–1626.5 MHz), and L-Band (TX: 1626.5–1660.5 MHz, 1668–1675 MHz; RX: 1518–1559 MHz).

With a compact 80 mm × 80 mm × 13.3 mm form factor and 56.1 g weight, it features a screw-mount design for secure installation. The antenna includes a Φ 1.13 mm black cable (100 mm) with an IPEX MHF 1 connector, and its casing combines PCBA, ceramic, and RF cable for durability.

Boasting a maximum peak gain of 5.65 dBi, RHCP polarization, and high efficiency (up to 91.1 %), it ensures reliable signal reception. Operating in -40 °C to +85 °C, it meets RoHS and REACH standards, making it ideal for diverse industrial and satellite communication applications requiring robust multi-band performance.

Quectel provides comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs. We have regional R & D centers to offer quick response to meet your requirements. Please contact our sales & FAEs if you have any requests.

Contents

1 Specification

Test Condition: Free Space

1.1. Electrical

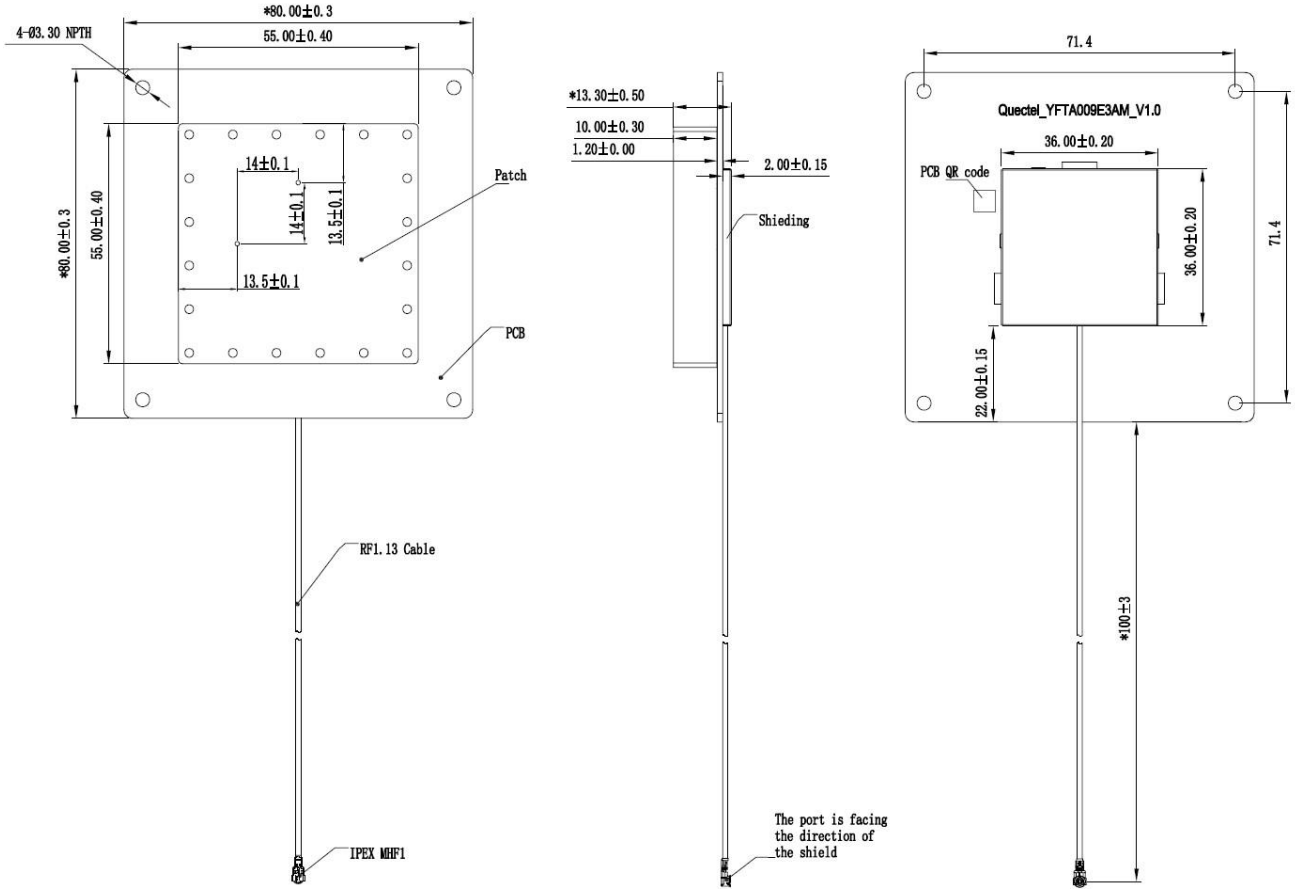
Electrical		
Frequency Range	**L-Band**	TX: 1626.5–1660.5 MHz, 1668–1675 MHz RX: 1518–1559 MHz
	GNSS	1559–1606 MHz
	Iridium	1616–1626.5 MHz
Impedance		50 Ω
Polarization		RHCP
Radiation Pattern		Directional

Band / Frequency (MHz)	L-Band TX					L-Band RX				GPS L1 GALILEO E1 BDS B1C QZSS L1	GLONASS G1
	1626	1645	1661	1668	1675	1518	1525	1543	1559	1575	1600
VSWR	1.3	1.4	1.5	1.5	1.6	1.10	1.10	1.12	1.13	1.18	1.26
Return Loss (dB)	-17	-16	-14	-14	-13	-26	-26	-25	-24	-22	-19
Efficiency (%)	87.3	91.1	88.3	87.3	83.9	59.5	62.9	71.2	75.5	75.3	79.2
Peak Gain (dBic)	5.31	5.54	5.64	5.65	5.5	3.87	4.04	4.35	4.65	4.94	5.3
Axial Ratio (dB)	2.38	2.33	2.51	2.58	2.65	1.41	1.44	1.54	1.66	1.8	2.05

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	80 mm × 80 mm × 13.3 mm
Casing Material & Color	PCBA + Ceramic + RF Cable
Cable Type & Color & Length	Φ 1.13 & Black & 100 mm
Connector Type	IPEX MHF 1
Mounting Type	Screw
Weight	Typ. 56.1 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS & REACH Compliant	Yes

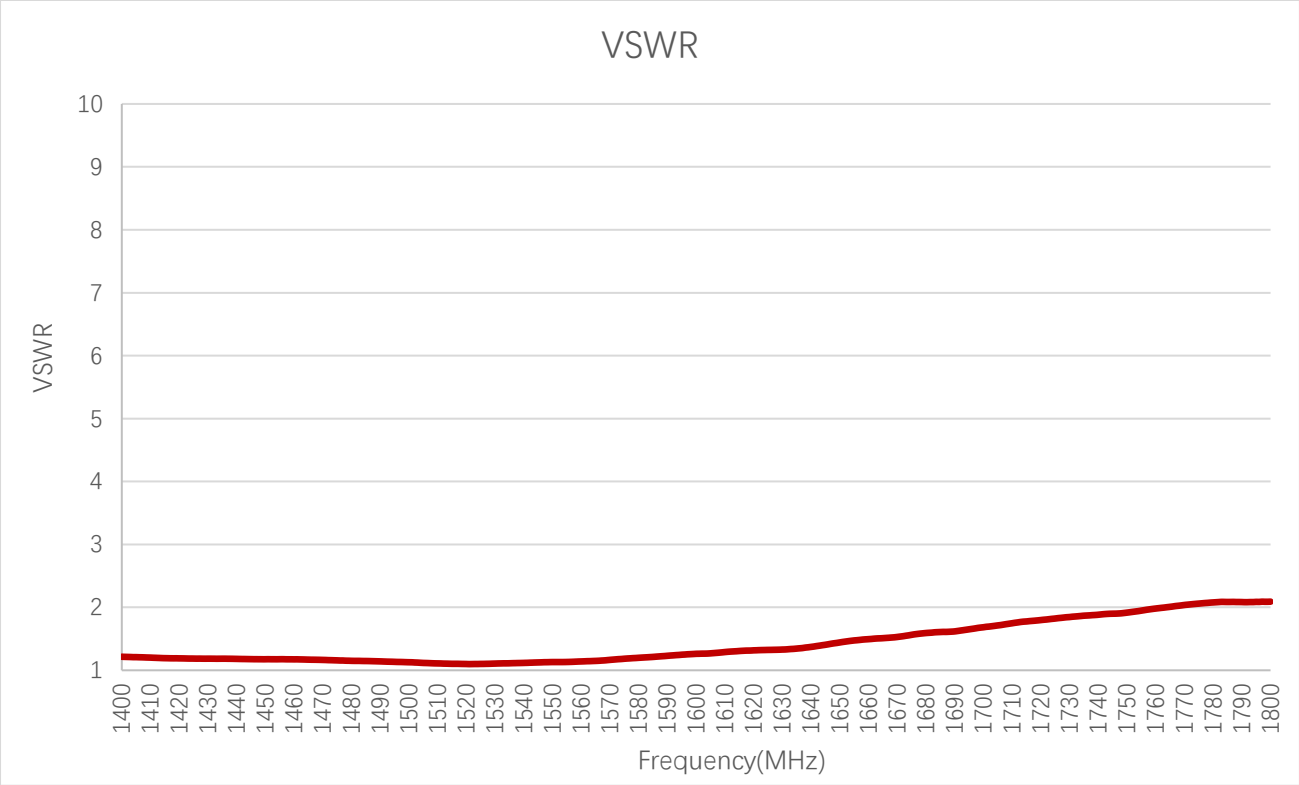
2 Drawing


*80.00±0.3
55.00±0.40
4-Ø3.30 NPTH
14±0.1
14±0.1
13.5±0.1
13.5±0.1
*80.00±0.3
55.00±0.40
Patch
PCB
RF1.13 Cable
IPEX MHF1
*13.30±0.50
10.00±0.30
1.20±0.00
2.00±0.15
Shieding
The port is facing
the direction of
the shield
71.4
Quectel_YFTA009E3AM_V1.0
36.00±0.20
PCB QR code
36.00±0.20
71.4
22.00±0.15
*100±3

3 Detailed Performance

3.1. S-Parameter Test

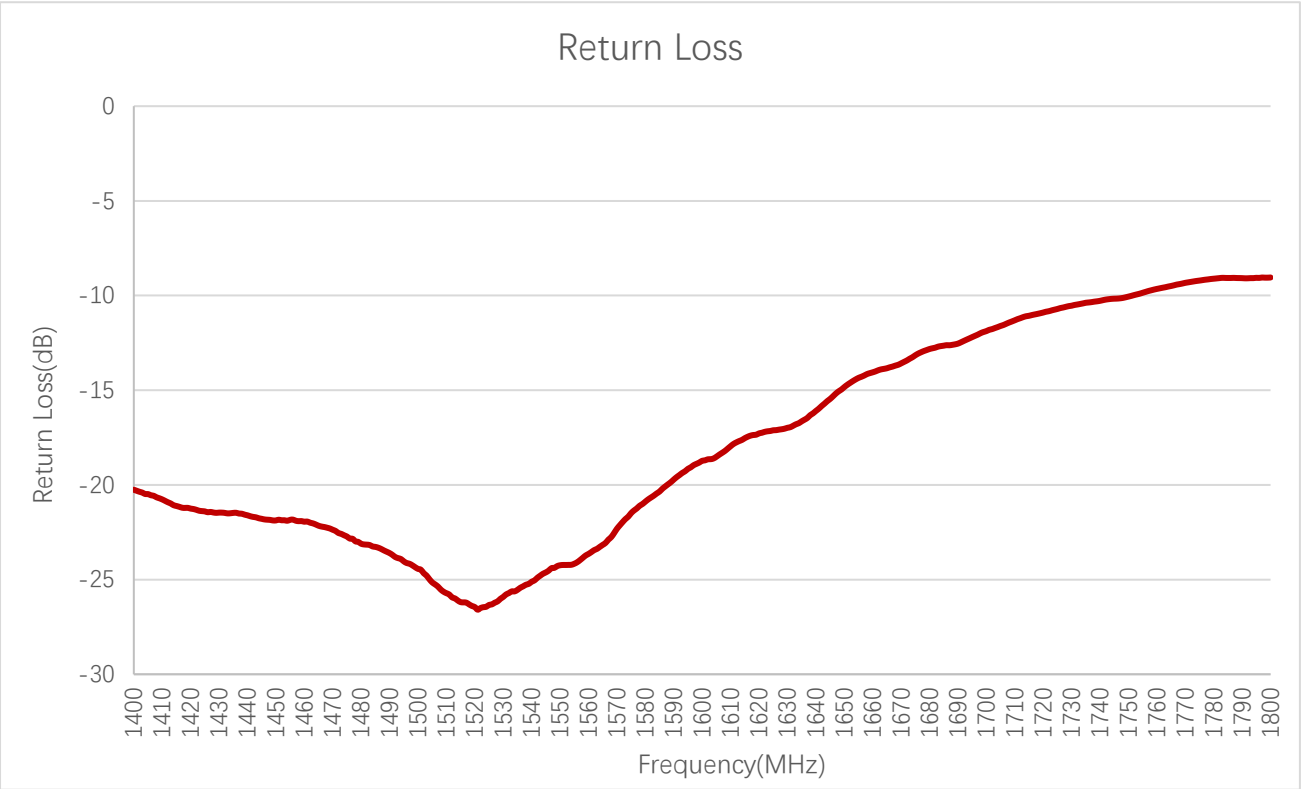
3.1.1. VSWR



VSWR

Frequency (MHz)	1518	1525	1543	1559	1575	1600	1626	1645	1661	1668	1675
VSWR	1.10	1.10	1.12	1.13	1.18	1.26	1.3	1.4	1.5	1.5	1.6

3.1.2. Return Loss

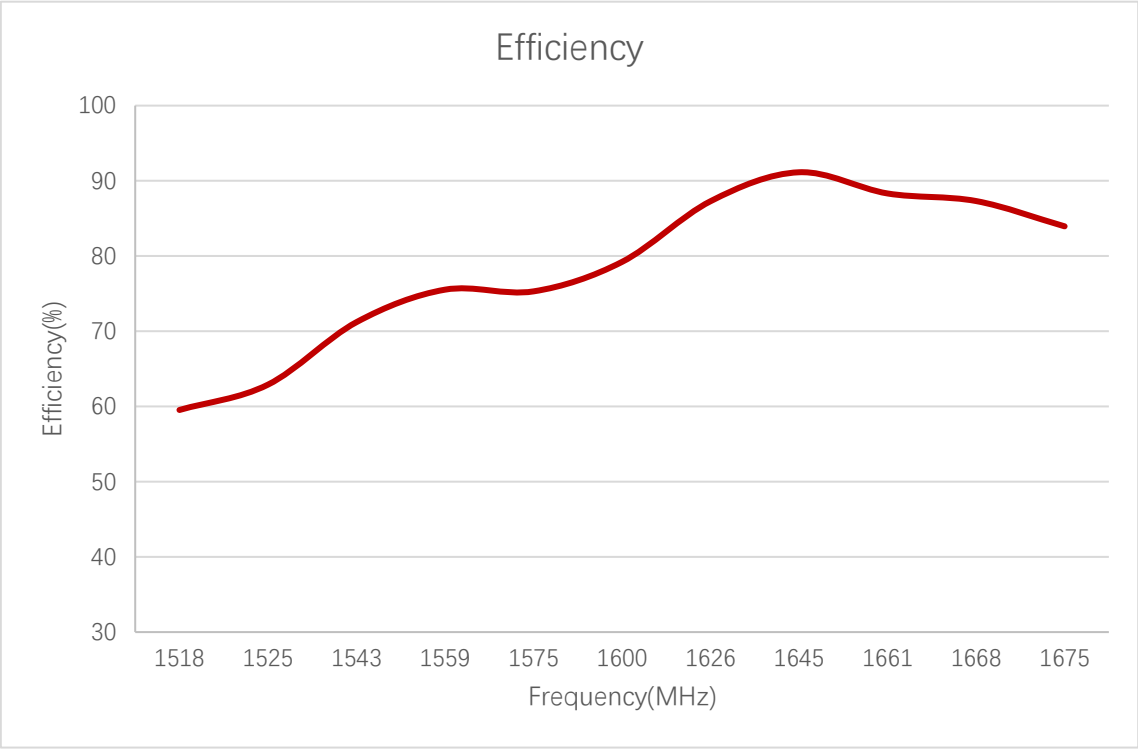


Return Loss (dB)

Frequency (MHz)	1518	1525	1543	1559	1575	1600	1626	1645	1661	1668	1675
Return Loss (dB)	-26	-26	-25	-24	-22	-19	-17	-16	-14	-14	-13

3.2. Radiation Performance Test

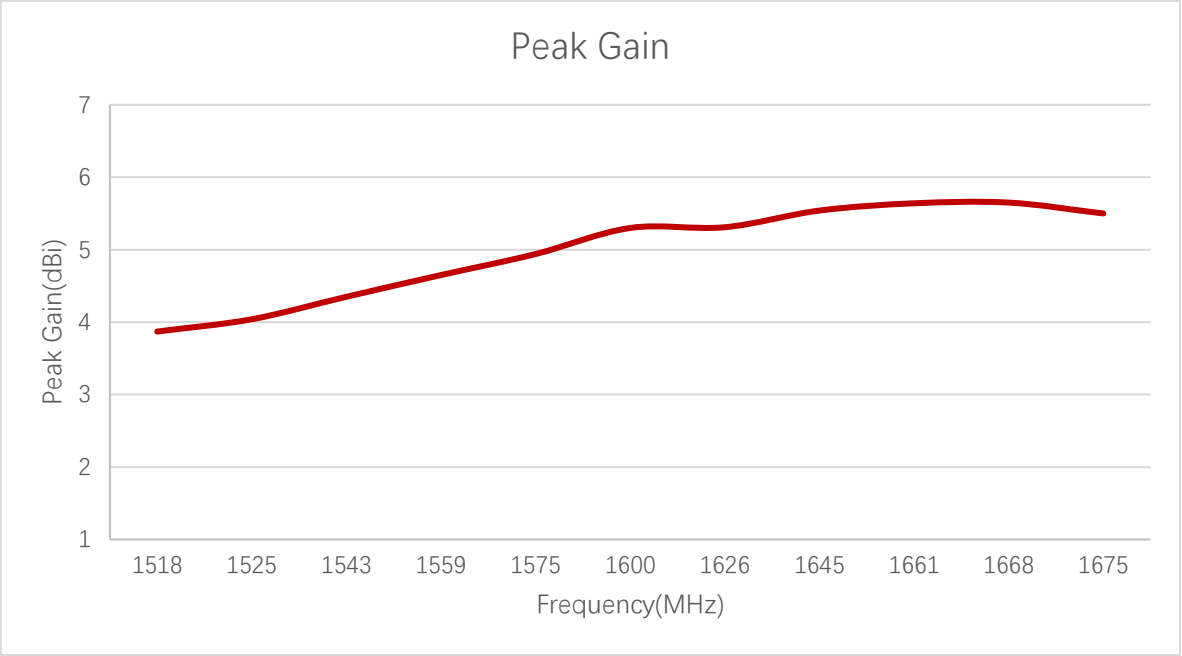
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1518	1525	1543	1559	1575	1600	1626	1645	1661	1668	1675
Efficiency (%)	59.5	62.9	71.2	75.5	75.3	79.2	87.3	91.1	88.3	87.3	83.9

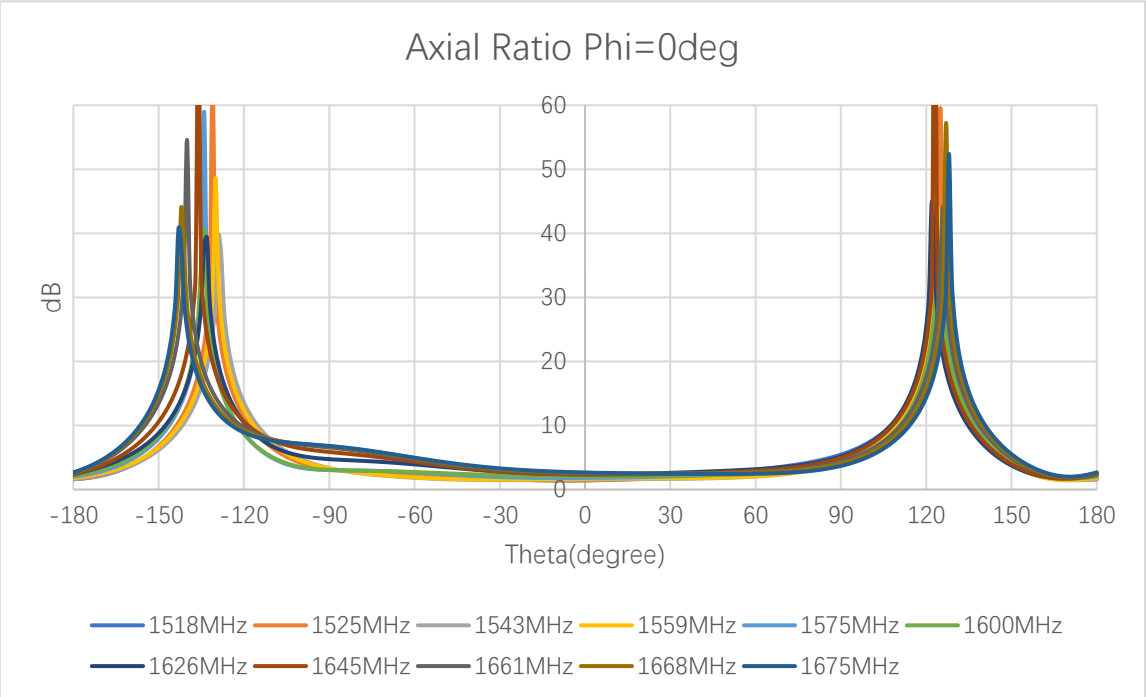
3.2.2. Peak Gain

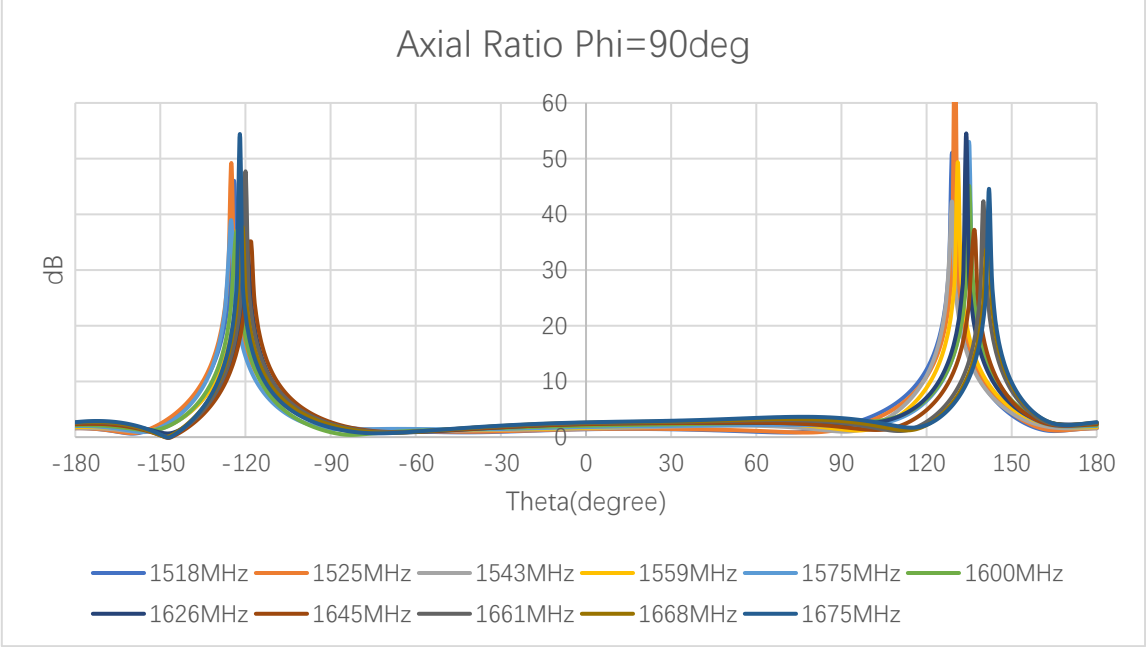


Peak Gain (dBi)

Frequency (MHz)	1518	1525	1543	1559	1575	1600	1626	1645	1661	1668	1675
Peak Gain (dBi)	3.87	4.04	4.35	4.65	4.94	5.3	5.31	5.54	5.64	5.65	5.5

3.2.3. Axial Ratio



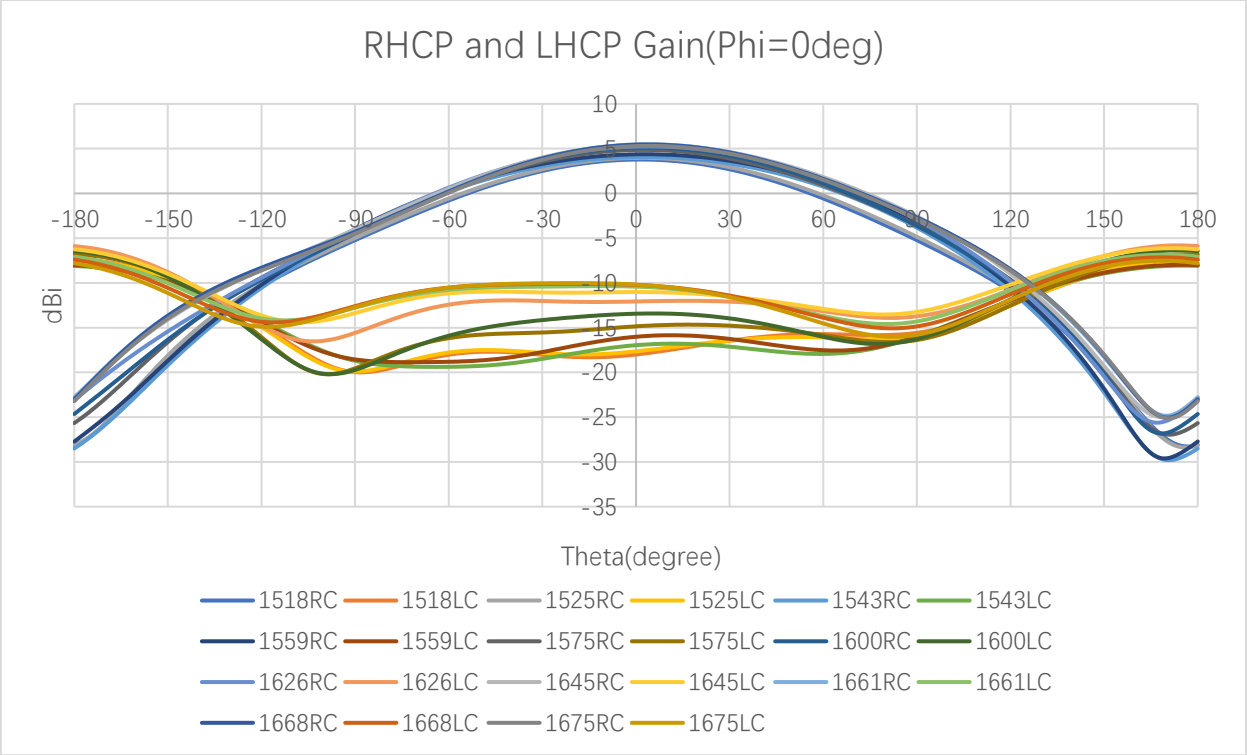


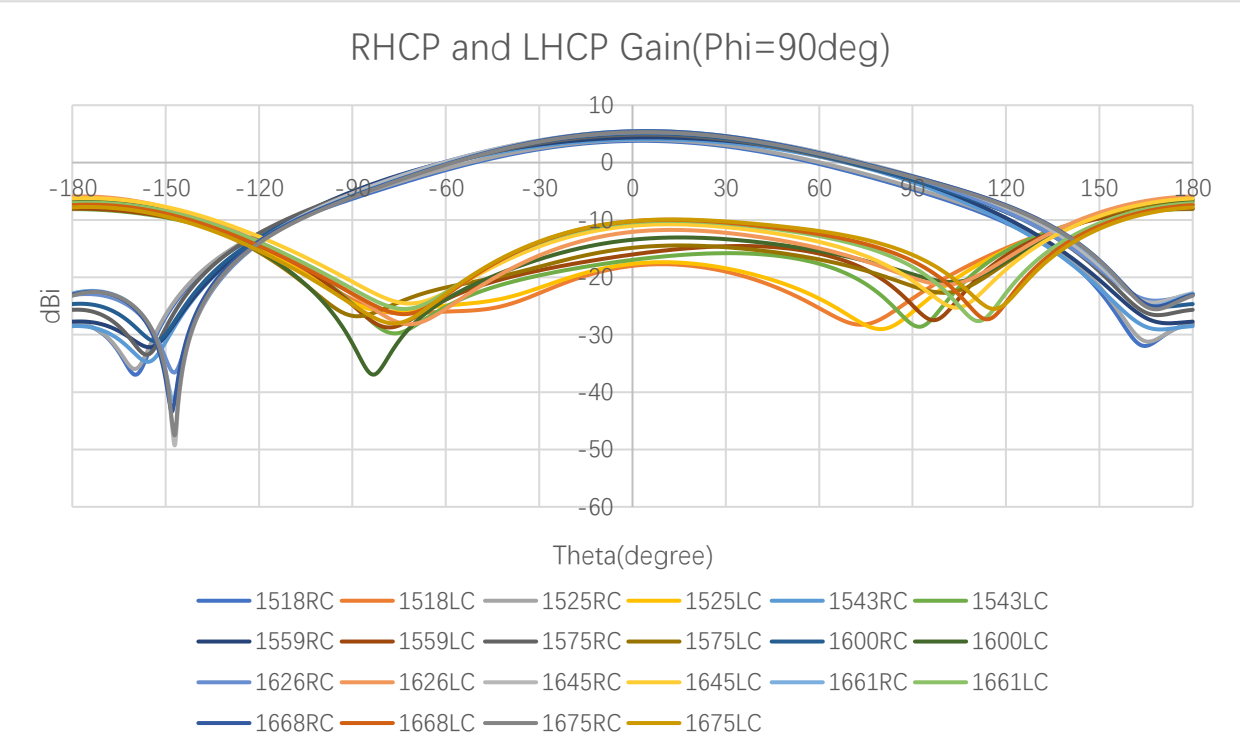
Axial Ratio (dB)

Frequency (MHz)		1518	1525	1543	1559	1575	1600	1626	1645	1661	1668	1675
Axial Ratio (dB)	Phi= 0 (deg) Theta = 0 (deg)	1.41	1.44	1.54	1.66	1.80	2.05	2.38	2.33	2.51	2.58	2.65

	Phi = 90 (deg) Theta = 0 (deg)	1.41	1.44	1.54	1.66	1.80	2.05	2.38	2.33	2.51	2.58	2.65

3.2.4. 2D RHCP and LHCP Gain



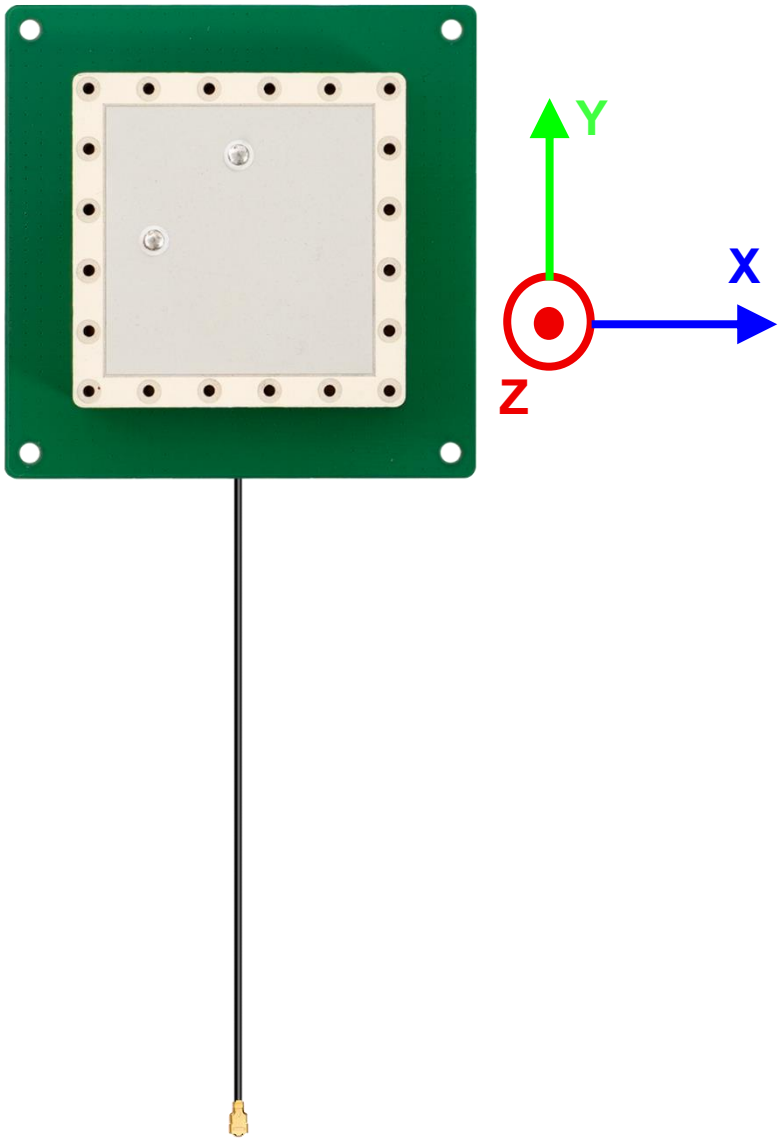


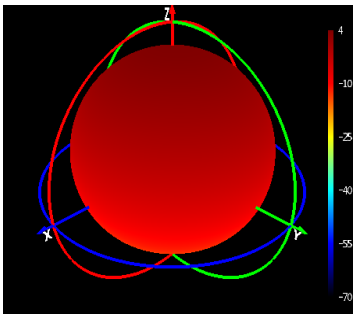
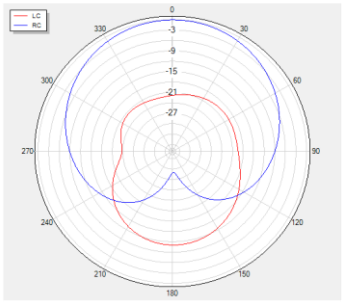
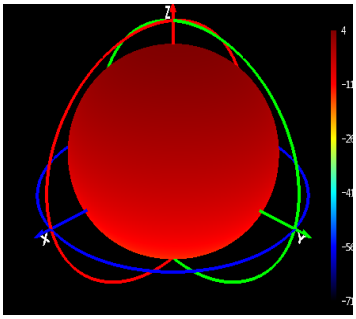
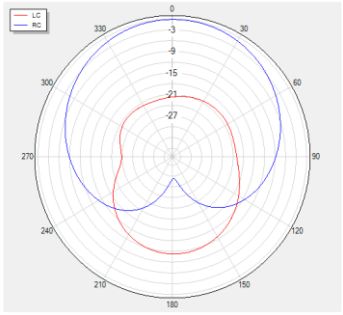
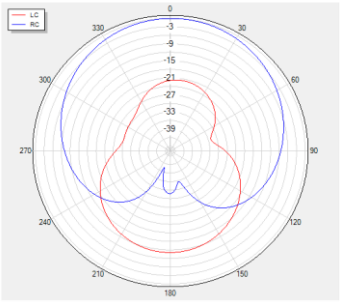
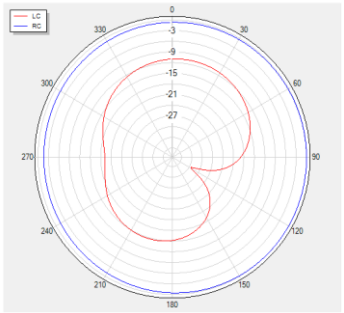
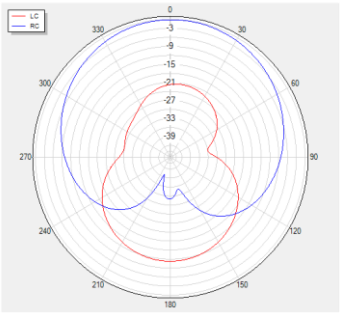
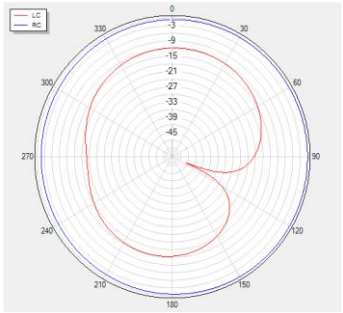
2D RHCP and LHCP Gain (dBi)

Frequency (MHz)		1518	1525	1543	1559	1575	1600	1626	1645	1661	1668	1675
RHCP Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	3.78	3.96	4.07	4.37	4.86	5.12	5.24	5.44	5.47	5.44	5.29
	Phi = 90 (deg) Theta = 0 (deg)	3.78	3.96	4.07	4.37	4.86	5.12	5.24	5.44	5.47	5.44	5.29
LHCP Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	-18	-17.6	-16.9	-16	-14.8	-13.4	-12	-11	-10.4	-10.2	-10.1
	Phi = 90 (deg) Theta = 0 (deg)	-18	-17.6	-16.9	-16	-14.8	-13.4	-12	-11	-10.4	-10.2	-10.1

3.2.5. 3D & 2D Radiation Pattern

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



1518 MHz		1525 MHz	
	Phi=0 freq=1518MHz 		Phi=0 freq=1525MHz 
Phi=90 freq=1518MHz 	Theta=90 freq=1518MHz 	Phi=90 freq=1525MHz 	Theta=90 freq=1525MHz 
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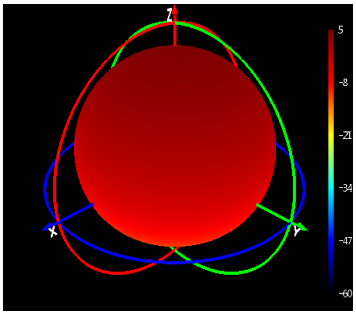
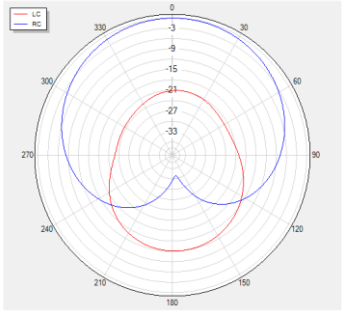
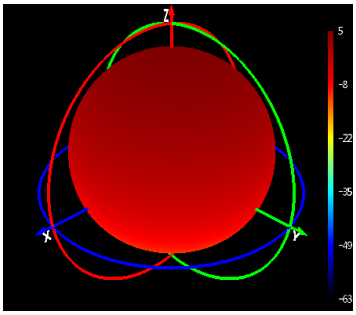
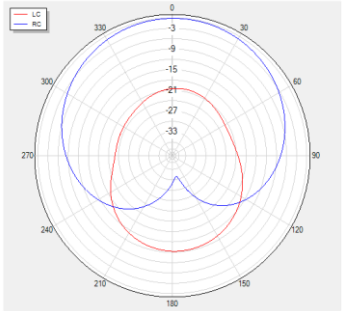
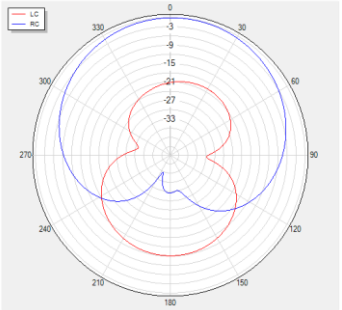
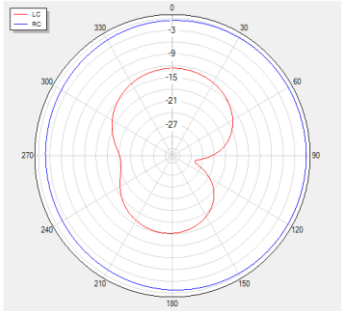
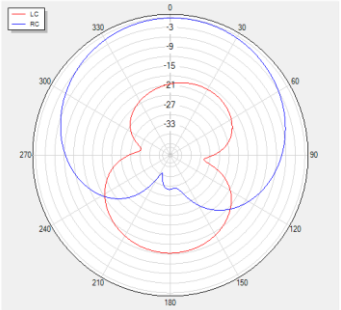
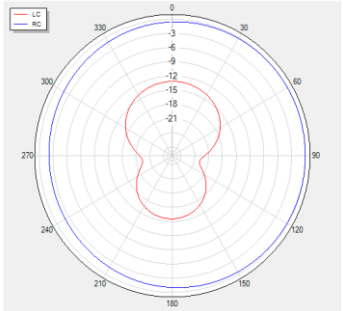
	Phi=0 freq=1543MHz 		Phi=0 freq=1559MHz 
Phi=90 freq=1543MHz 	Theta=90 freq=1543MHz 	Phi=90 freq=1559MHz 	Theta=90 freq=1559MHz 

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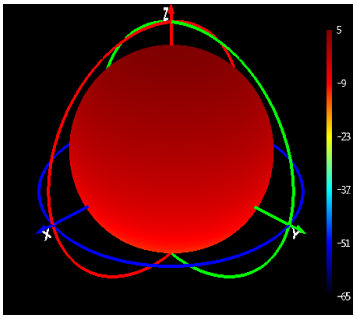
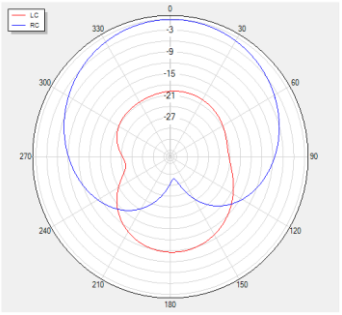
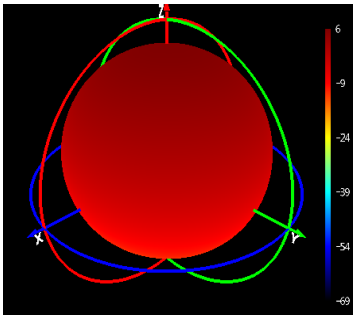
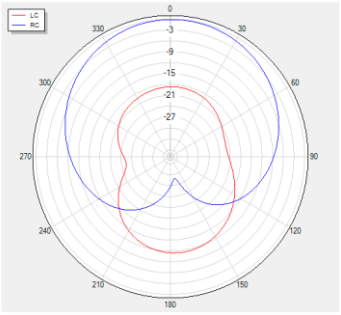
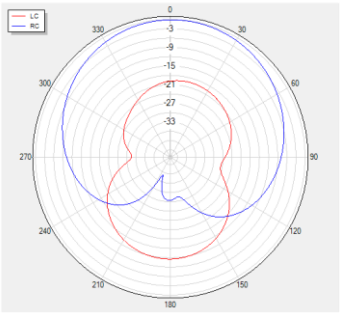
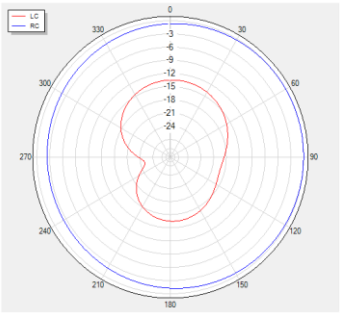
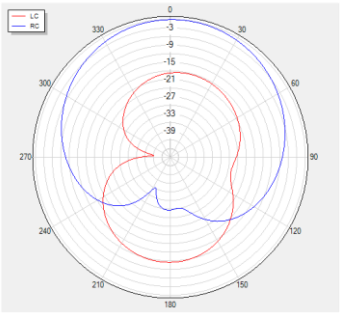
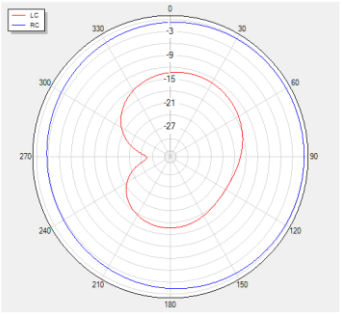
	Phi=0 freq=1575MHz 		Phi=0 freq=1600MHz 
Phi=90 freq=1575MHz 	Theta=90 freq=1575MHz 	Phi=90 freq=1600MHz 	Theta=90 freq=1600MHz 
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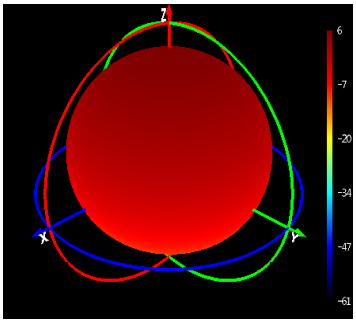
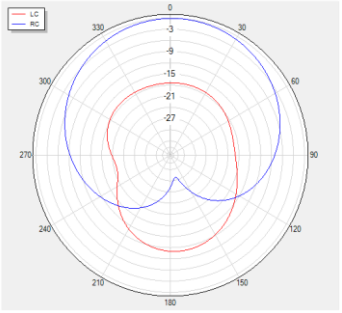
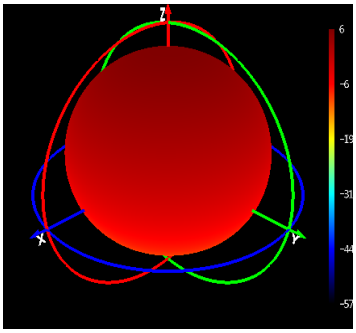
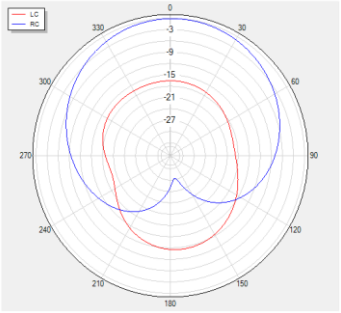
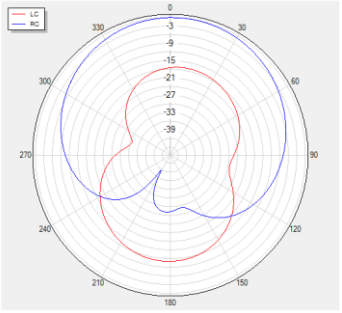
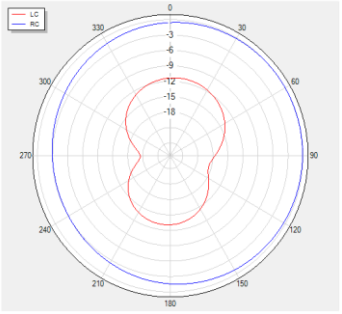
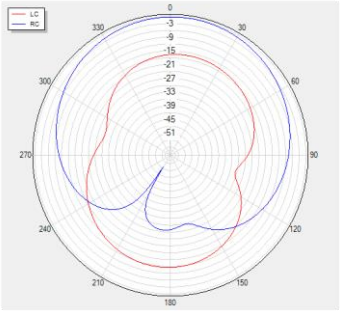
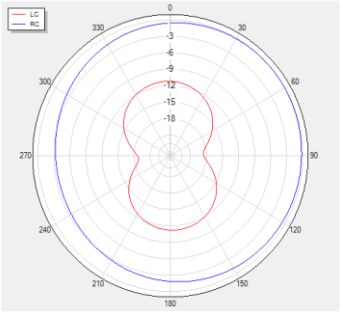
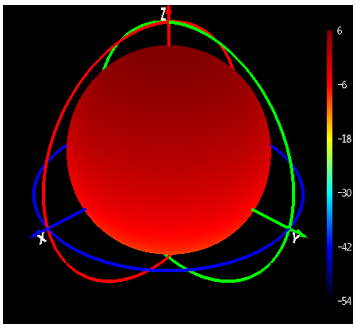
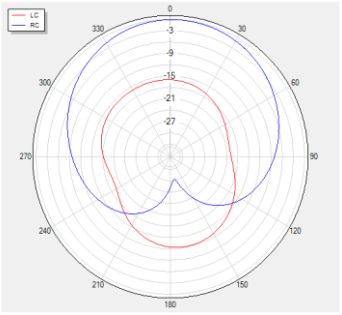
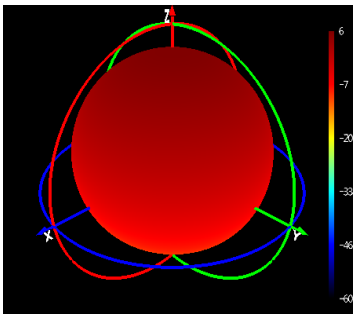
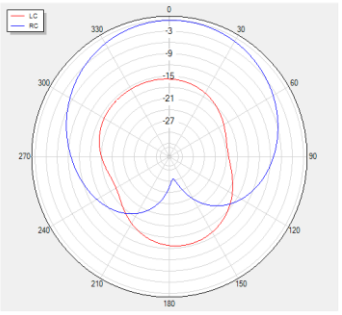
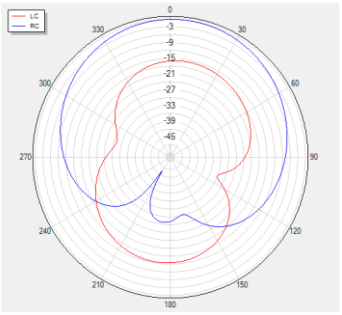
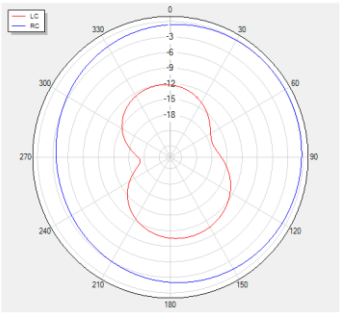
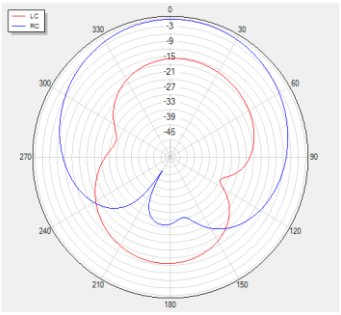
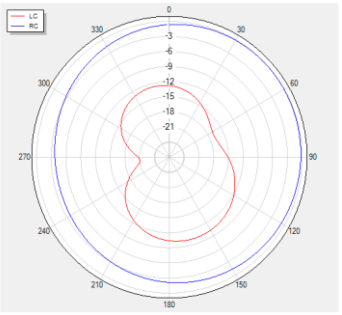
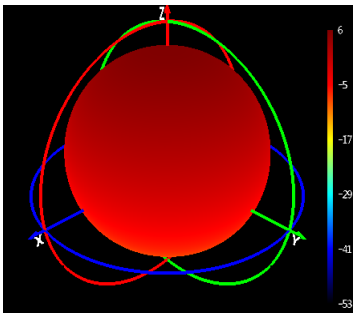
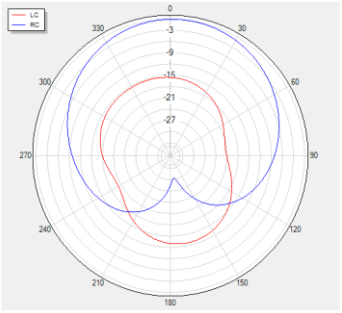
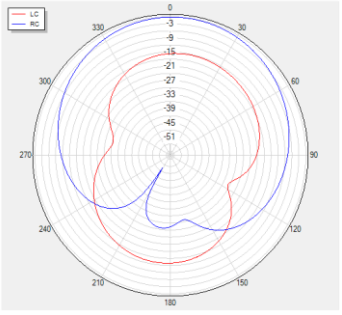
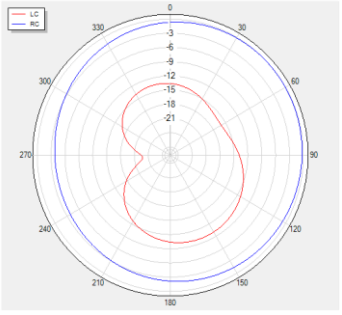
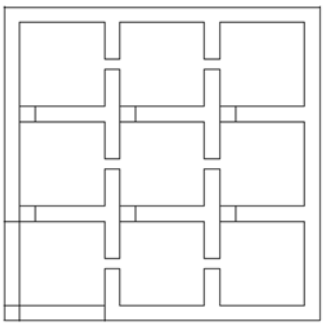
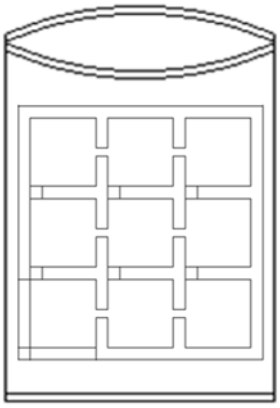
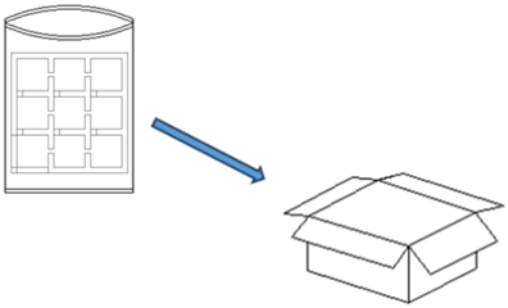
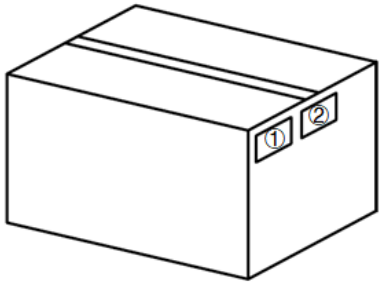
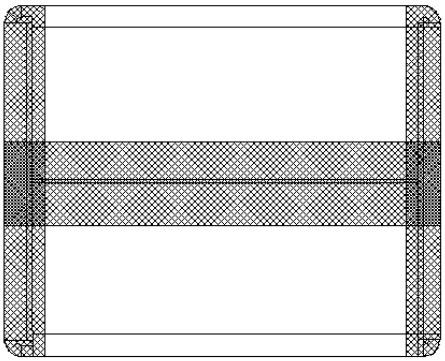
	Phi=0 freq=1626MHz 		Phi=0 freq=1645MHz 
Phi=90 freq=1626MHz 	Theta=90 freq=1626MHz 	Phi=90 freq=1645MHz 	Theta=90 freq=1645MHz 

1661 MHz		1668 MHz	
	Phi=0 freq=1661MHz 		Phi=0 freq=1668MHz 
Phi=90 freq=1661MHz 	Theta=90 freq=1661MHz 	Phi=90 freq=1668MHz 	Theta=90 freq=1668MHz 
1675 MHz			
	Phi=0 freq=1675MHz 		
Phi=90 freq=1675MHz 	Theta=90 freq=1675MHz 		

4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		(9 Antennas / Pearl Cotton Tray)
2		The pearl cotton tray is vacuumed in a vacuum bag.
3		(4 Pearl Cotton Trays / Carton Box) (36 Antennas / Carton Box) Carton Size: L × W × H = 340 × 340 × 185 mm

4		**Position for Attaching Labels** ① Carton Label ② Quality Label
5		**Sealing Cartons** H-shaped sealing cartons

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Revision History

Version	Date	Author	Note
-	2024-04-28	Junsen LI/ Mike GUO/ David LIU/ Rainey LIAO	Creation of the document
1.0	2024-04-28	Junsen LI/ Mike GUO/ David LIU/ Rainey LIAO	Preliminary document
1.1	2024-11-19	Mike GUO	Deleted buckle mounting type of antenna (Chapter 1.2).
1.2	2025-07-21	Aria CHU	1. Updated the antenna image (Cover page). 2. Updated the overview.

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