Antenna Datasheet

Product OC: YE0006AA
Version: 3.1
Date: 2023-08-15
Status: Released

Product Name: 4G Sucker Antenna
Key Features:
Frequency Band: 700–960 MHz, 1710–2690 MHz
Dimensions: Φ 30 × 318 mm
Efficiency: Up to 65 % (MP)
RoHS Compliant
IP65

Overview

This Quectel external 4G antenna covers main 4G LTE bands and is compatible with 3G/2G/LPWA bands as well. The external antenna is barely influenced by the internal environment of devices, giving a much better performance in efficiency, radiation and gain whilst providing an optimized solution for a customer product. Quectel also offers flexible installation with custom cable length and connector options.

Contents

1 Specification

Test Condition: On 300 × 300 mm Metal Plane & Free Space

1.1. Electrical

Electrical	
Frequency Range	700–960 MHz, 1710–2690 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Electrical - Detail

Band / SPEC	Band	B71	B12 /B13 /B28	B5 /B8 /B26	N74 /N75 /N76	B1 /B2 /B3	B40	Wi-Fi 2G	B38 /B41	B42 /B48 /N77	N79	Wi-Fi 5G
	Freq. (MHz)	600–700	700–810	820–960	1420–1520	1700–2170	2300–2400	2400–2500	2500–2690	3300–4200	4400–5000	5150–5850
Max. VSWR	MP	-	3.0	3.0	-	2.9	2.1	2.5	2.4	-	-	-
	FS	-	3.2	2.7	-	2.6	2.0	2.6	2.5	-	-	-
Max. Return Loss (dB)	MP	-	-6.0	-6.1	-	-6.3	-8.8	-7.4	-7.7	-	-	-
	FS	-	-5.7	-6.8	-	-6.9	-9.3	-6.9	-7.4	-	-	-
AVG Eff. (%)	MP	-	46.2	53.5	-	33.6	28.3	27.1	35.3	-	-	-
	FS	-	24.4	42.9	-	33.8	26.7	23.7	33.7	-	-	-
AVG AVG Gain (dB)	MP	-	-3.4	-2.8	-	-4.8	-5.5	-5.7	-4.6	-	-	-
	FS	-	-6.1	-3.7	-	-4.8	-5.7	-6.2	-4.8	-	-	-
Max. Peak	MP	-	0.1	0.7	-	4.5	0.8	1.2	3.0	-	-	-

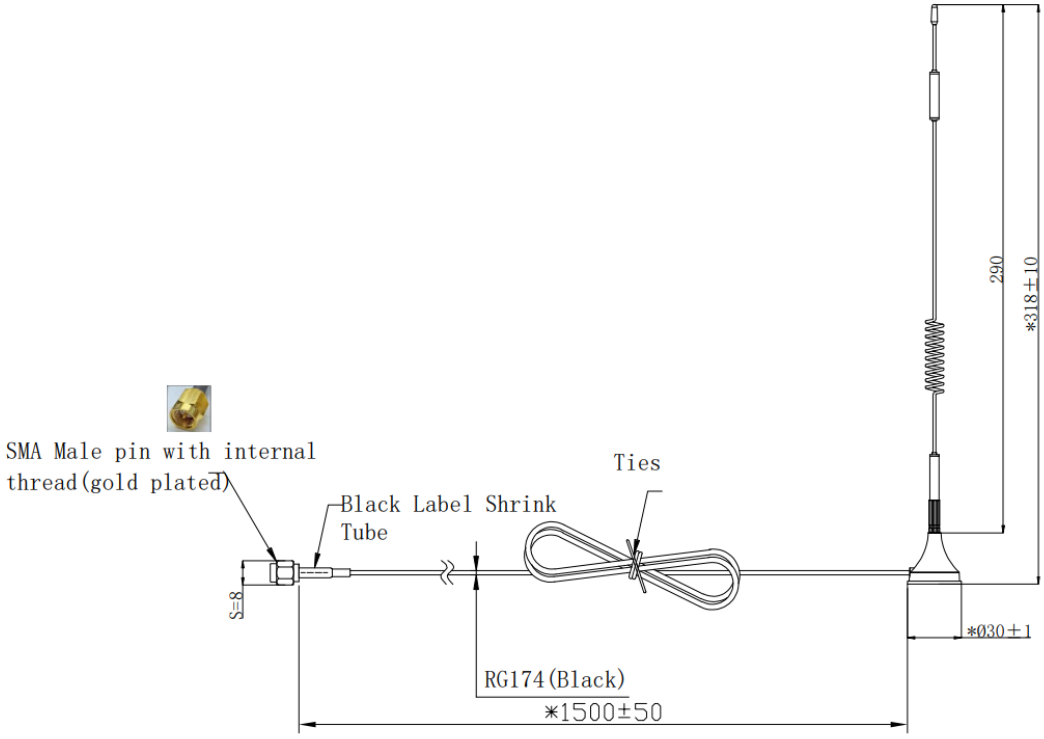
Gain (dBi)	**FS**	-	-2.1	2.6	-	4.9	-0.9	-0.8	2.6	-	-	-
VSWR			**MP**			≤ 3						
			FS			≤ 3.2						
Return Loss			**MP**			≤ -6 dB						
			FS			≤ -5.7 dB						
Peak Gain			**MP**			≤ 4.5 dBi						
			FS			≤ 4.9 dBi						

- FS: Free Space
- MP: On 300 × 300 mm Metal Plane

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	Φ 30 × 318 mm
Material & Color	Carbon Steel & Black
Cable Type & Color & Length	RG 174 & Black & 1500 mm
Connector Type	SMA Male
Mounting Type	Magnet
Weight	Typ. 41.8 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	IP65
RoHS Compliant	Yes

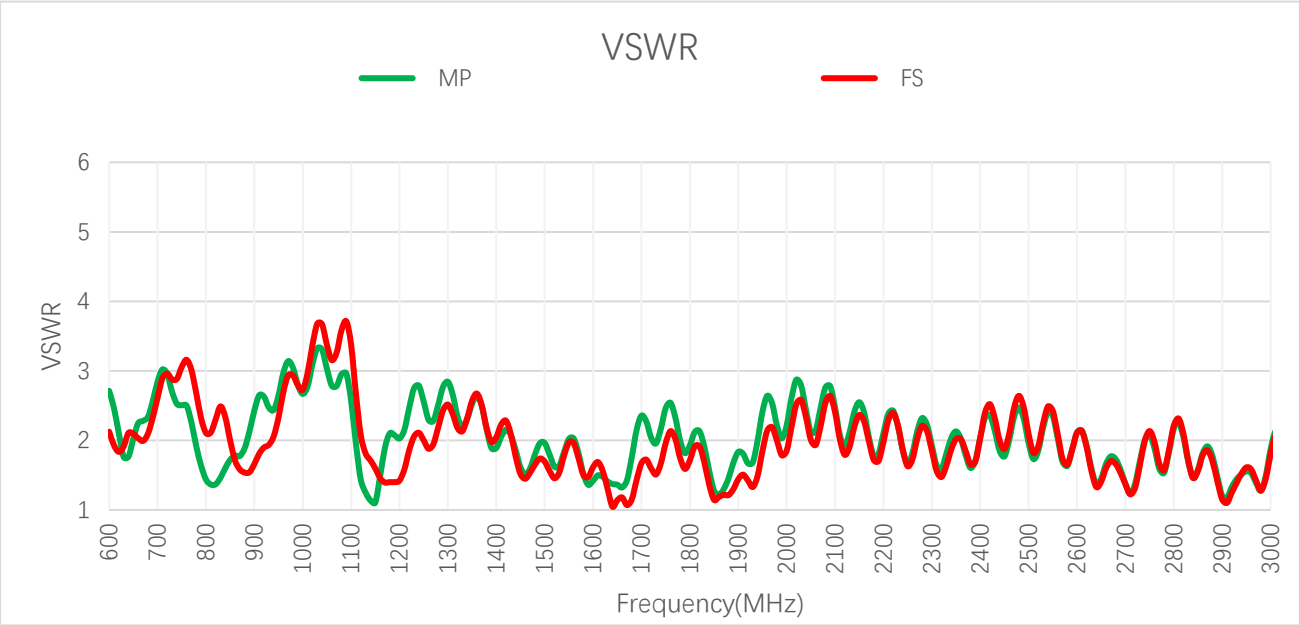
2 Drawing


290
*318±10
SMA Male pin with internal thread(gold plated)
Black Label Shrink Tube
Ties
S=8
*Ø30±1
RG174(Black)
*1500±50

3 Detailed Performance

3.1. S-Parameter Test

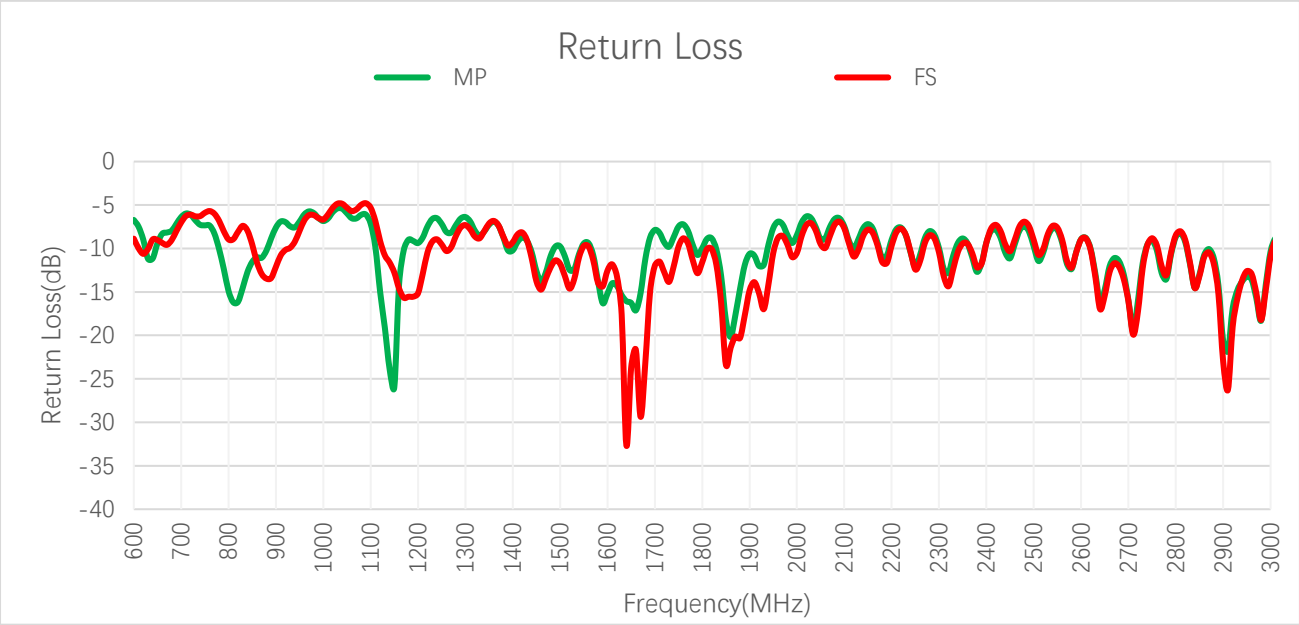
3.1.1. VSWR



VSWR

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
VSWR	MP	-	-	3.0	1.5	2.4	3.0	-	2.3	2.2	1.5
	FS	-	-	2.9	2.5	1.7	2.7	-	1.7	1.7	1.2
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
VSWR	MP	2.4	2.4	2.1	1.8	2.1	1.6	-	-	-	-
	FS	1.8	2.2	2.0	1.9	2.1	1.5	-	-	-	-

3.1.2. Return Loss

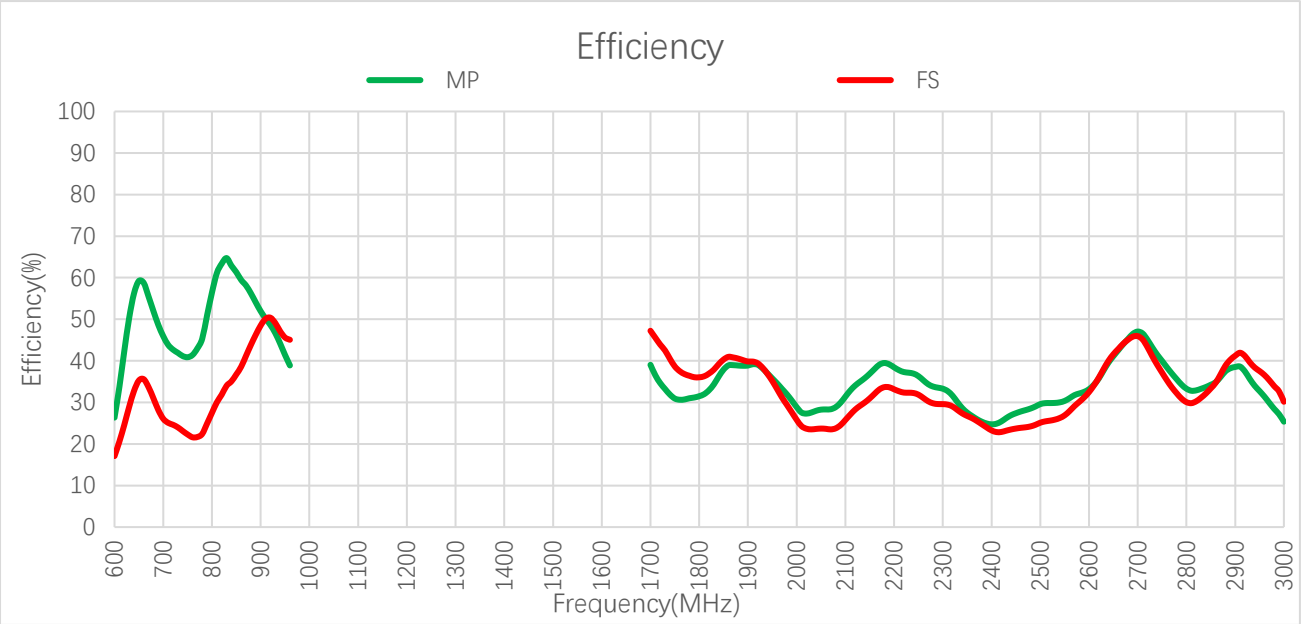


Return Loss (dB)

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	MP	-	-	-6.0	-14.5	-7.6	-6.1	-	-8.2	-8.7	-14.6
	FS	-	-	-6.3	-7.4	-12.1	-6.8	-	-11.5	-12.0	-20.3
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Return Loss (dB)	MP	-7.7	-7.7	-8.8	-11.1	-8.9	-13.0	-	-	-	-
	FS	-10.5	-8.5	-9.4	-10.3	-9.0	-13.5	-	-	-	-

3.2. Radiation Performance Test

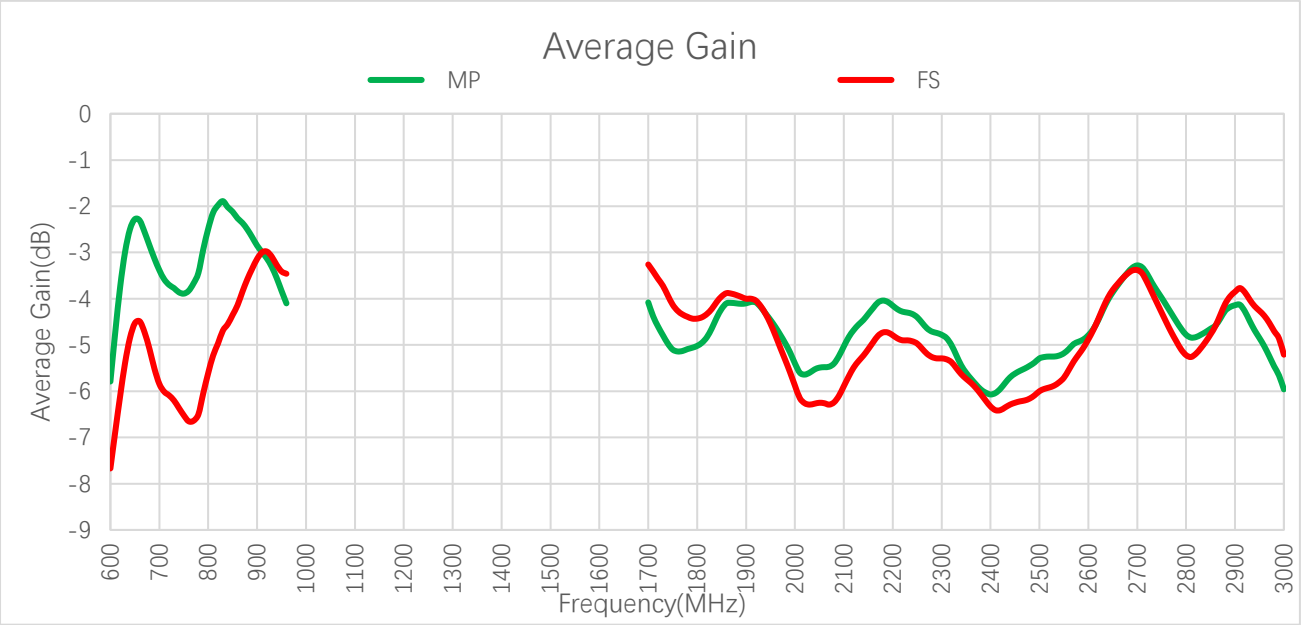
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	MP	-	-	43.9	64.7	51.9	38.9	-	36.5	31.9	38.9
	FS	-	-	25.1	34.0	48.5	45.1	-	45.6	40.5	40.5
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Efficiency (%)	MP	35.8	35.9	27.5	27.4	33.2	46.5	-	-	-	-
	FS	35.2	30.0	26.7	23.7	32.5	45.8	-	-	-	-

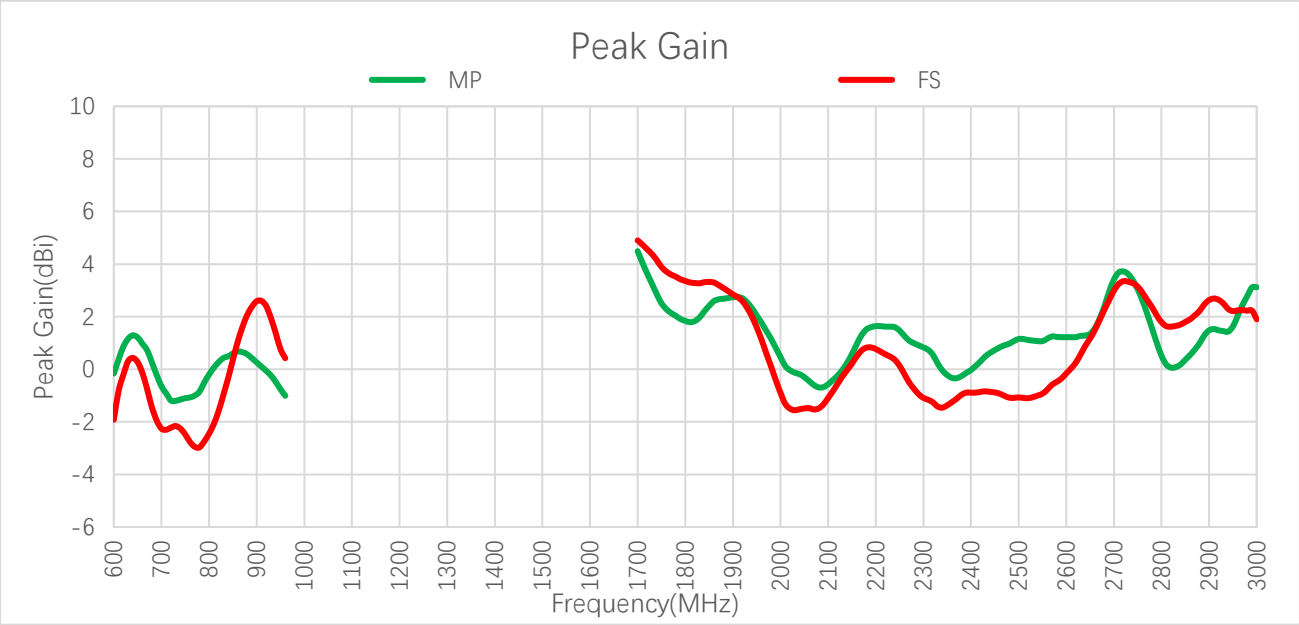
3.2.2. Average Gain



Average Gain (dB)

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	MP	-	-	-3.6	-1.9	-2.9	-4.1	-	-4.4	-5.0	-4.1
	FS	-	-	-6.0	-4.7	-3.1	-3.5	-	-3.4	-3.9	-3.9
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Average Gain (dB)	MP	-4.5	-4.5	-5.6	-5.6	-4.8	-3.3	-	-	-	-
	FS	-4.5	-5.2	-5.7	-6.3	-4.9	-3.4	-	-	-	-

3.2.3. Peak Gain



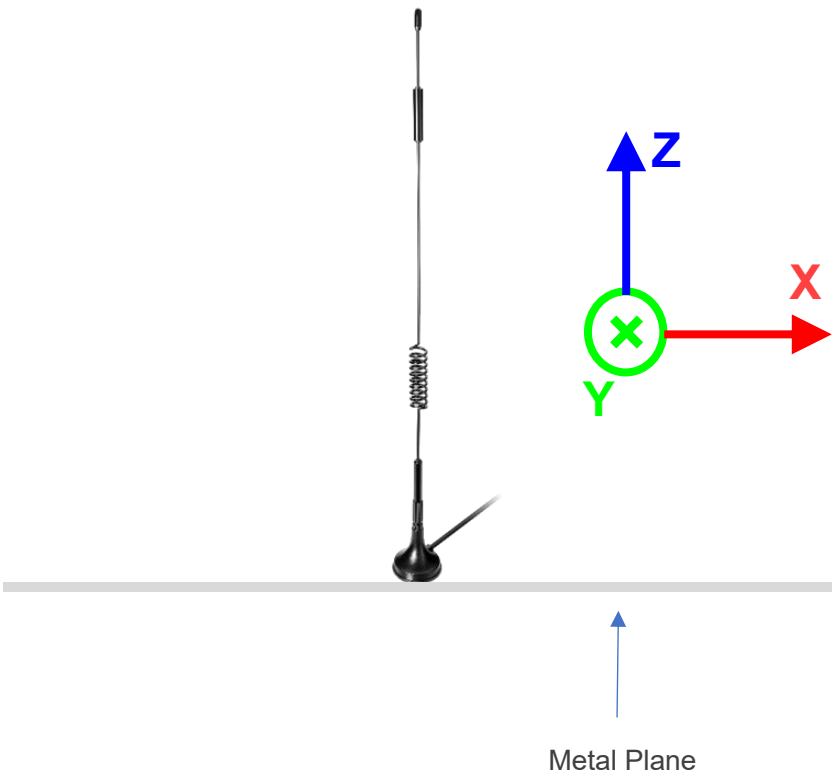
Peak Gain (dBi)

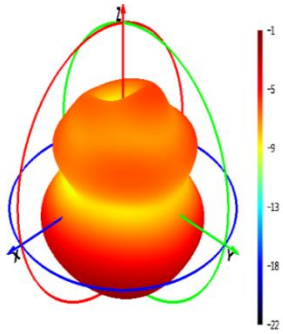
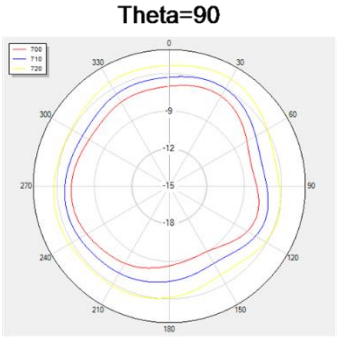
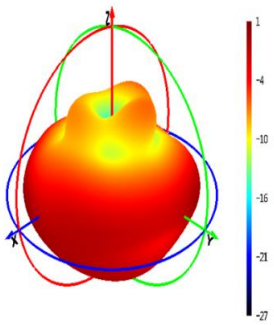
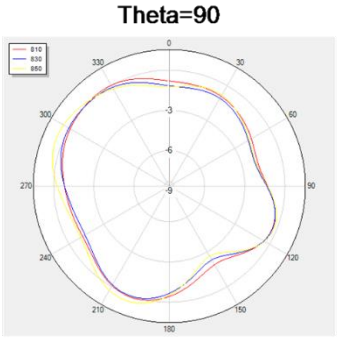
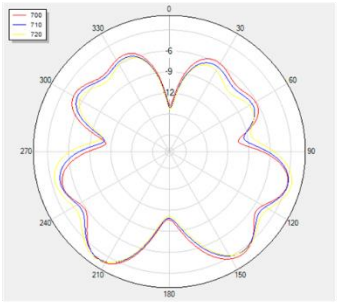
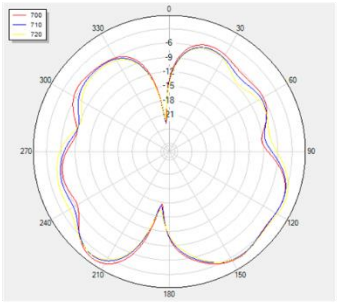
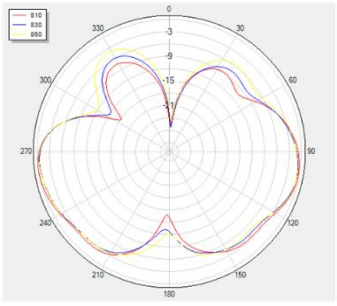
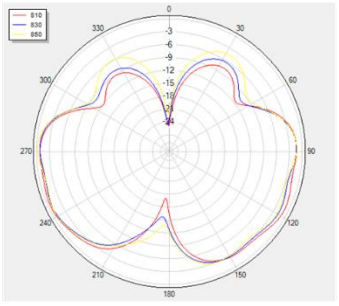
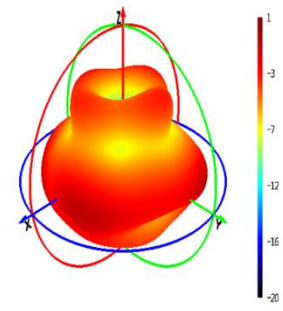
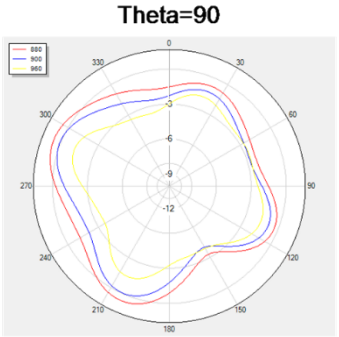
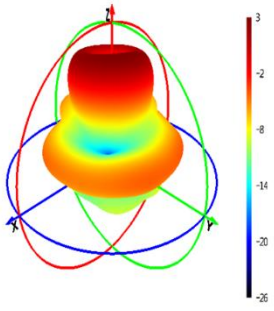
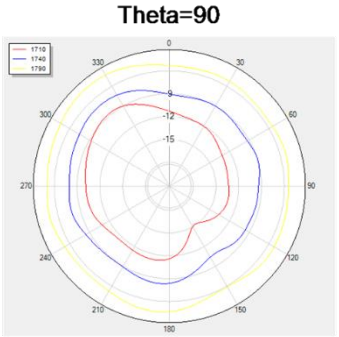
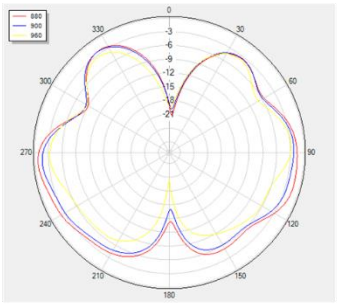
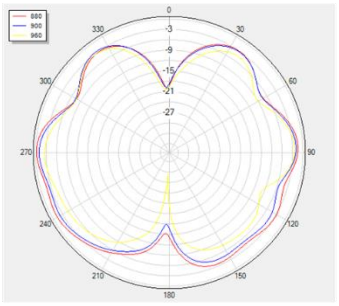
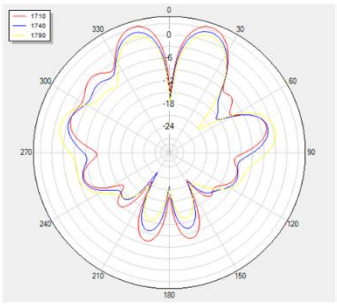
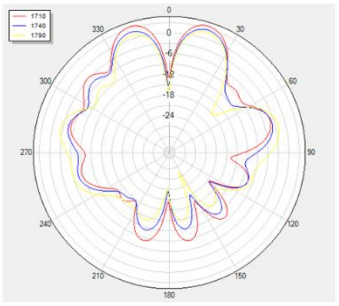
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	MP	-	-	-0.9	0.4	0.3	-1.0	-	4.1	2.9	2.7
	FS	-	-	-2.3	-1.0	2.6	0.4	-	4.7	4.2	3.1
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Peak Gain (dBi)	MP	2.0	0.3	-0.2	0.7	1.2	3.0	-	-	-	-
	FS	1.6	0.0	-1.4	-0.9	-0.2	2.6	-	-	-	-

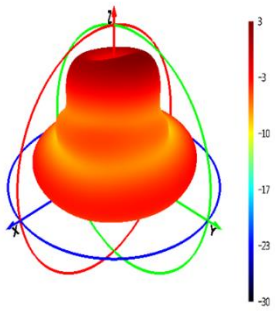
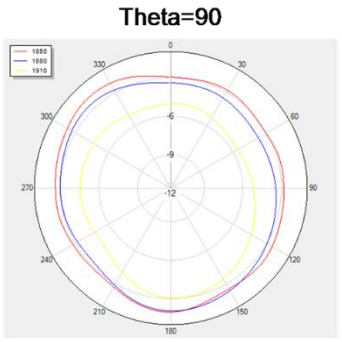
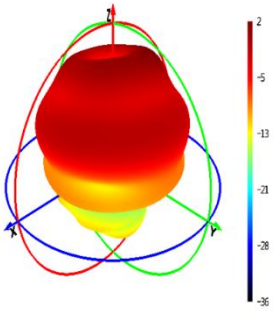
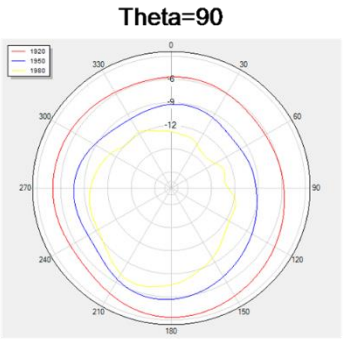
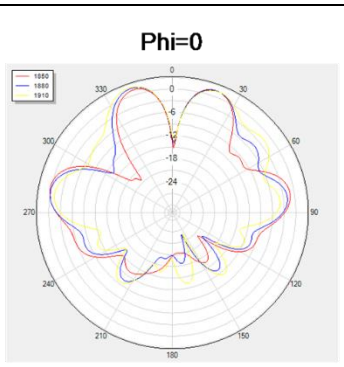
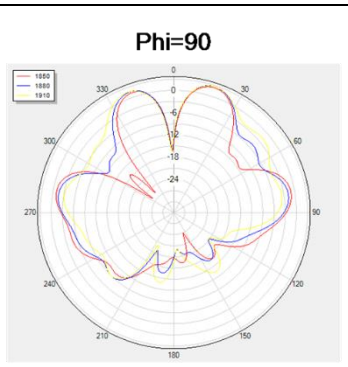
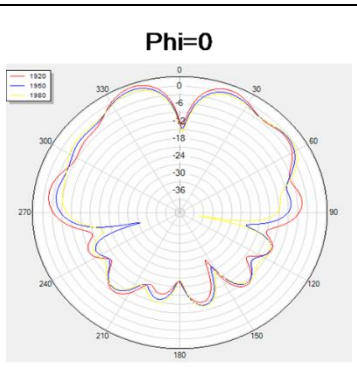
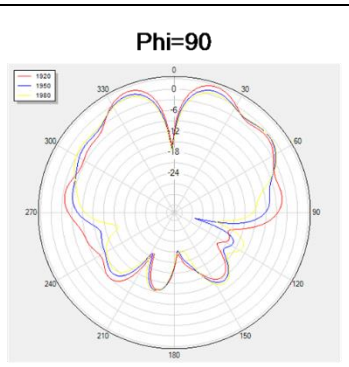
3.2.4. 3D & 2D Radiation Pattern

3.2.4.1. Test Condition: On 300 × 300 mm Metal Plane

- Test Chamber: GL-S-1



710 MHz		830 MHz	
			
			
900 MHz		1740 MHz	
			
			

1880 MHz		1950 MHz	
			
			
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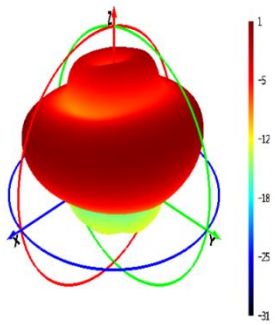
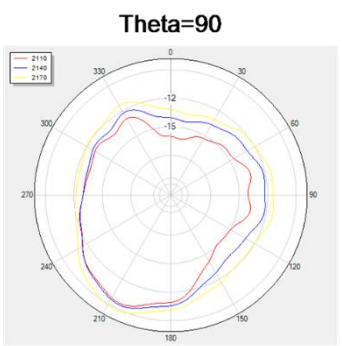
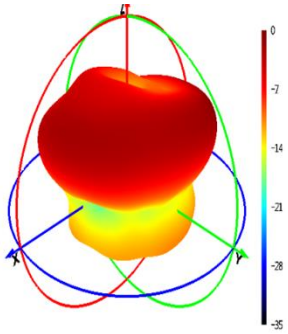
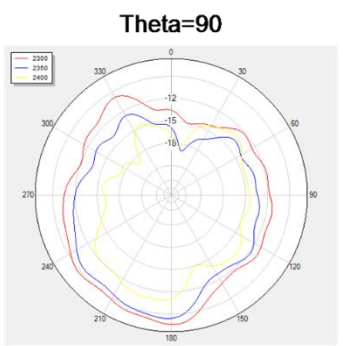
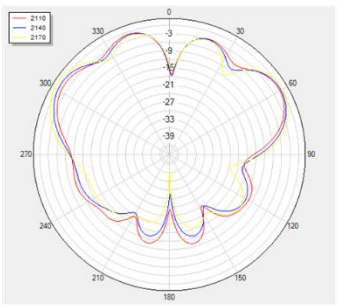
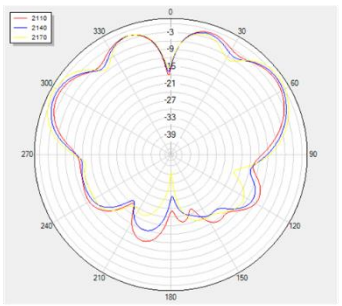
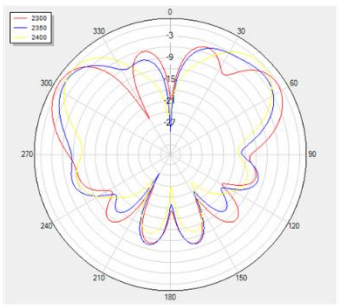
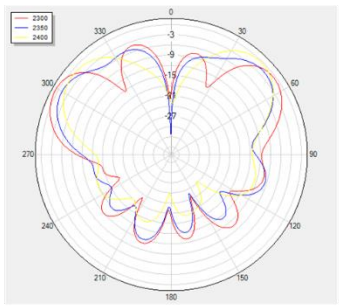
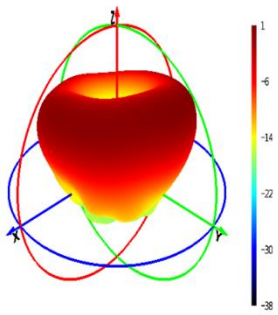
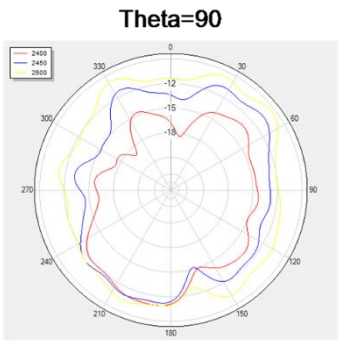
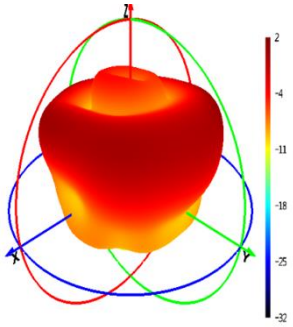
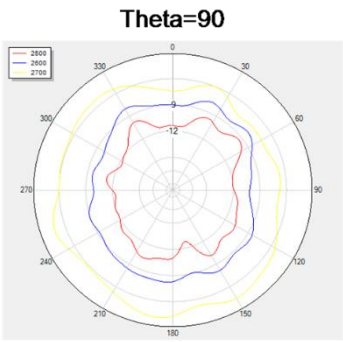
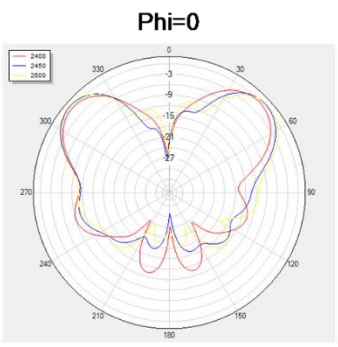
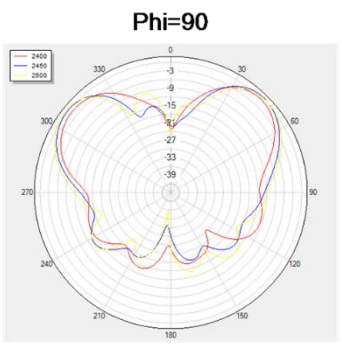
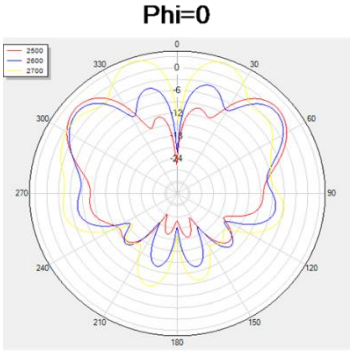
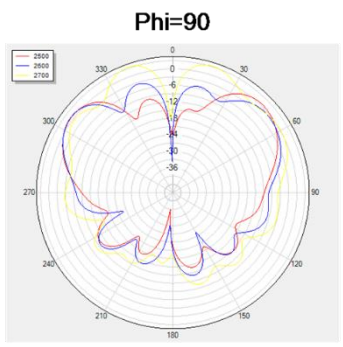
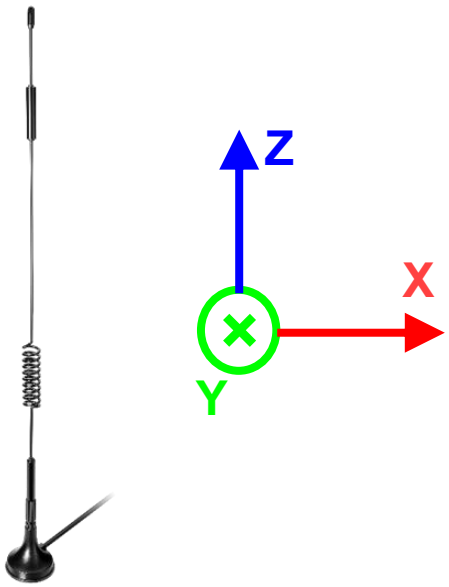
			
			

2450 MHz		2600 MHz	
			
			

3.2.4.2. Test Condition: Free Space

- Test Chamber: GL-S-1



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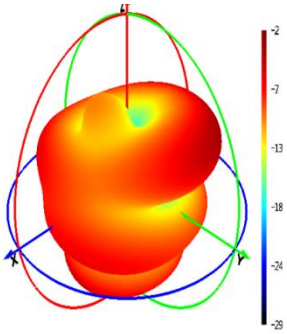
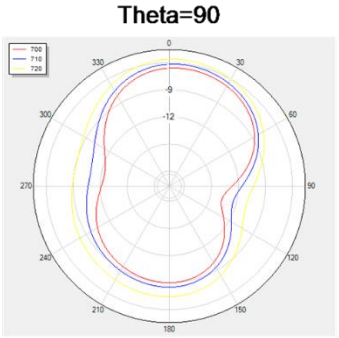
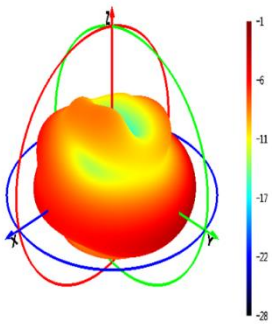
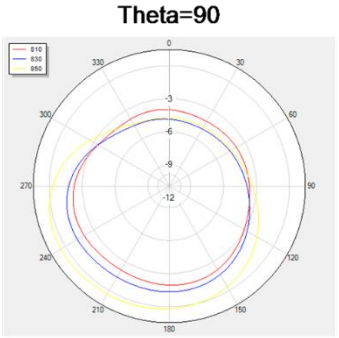
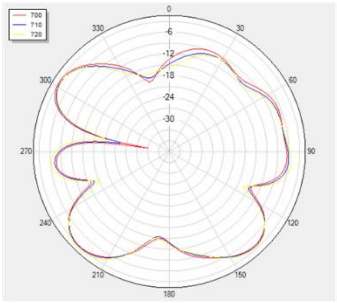
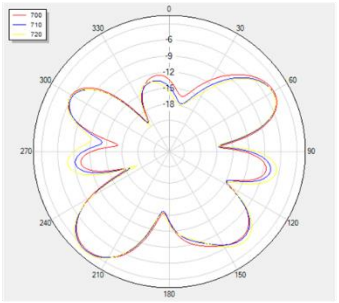
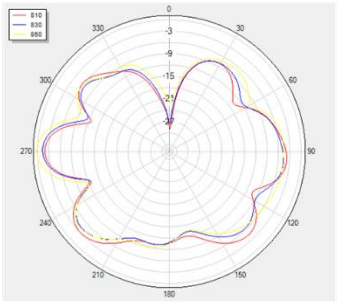
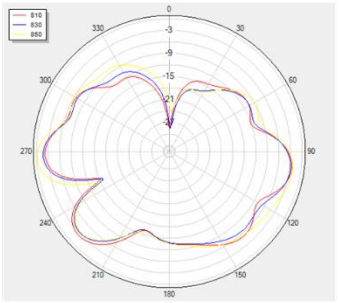
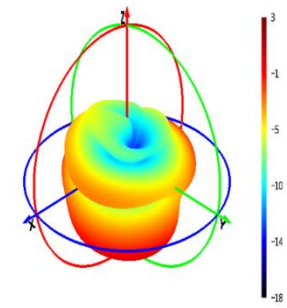
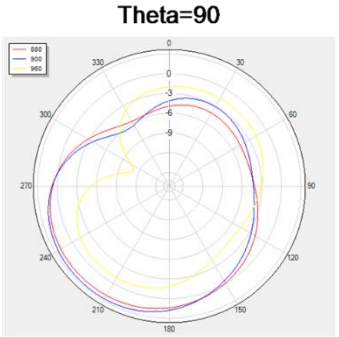
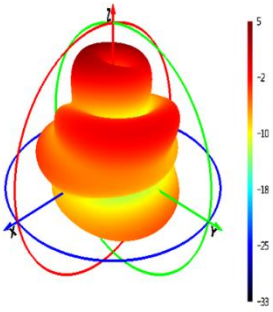
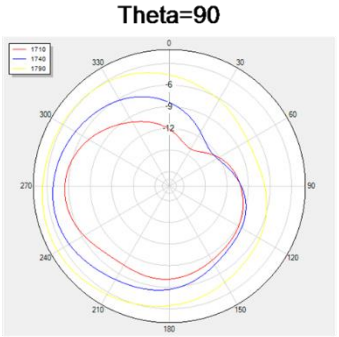
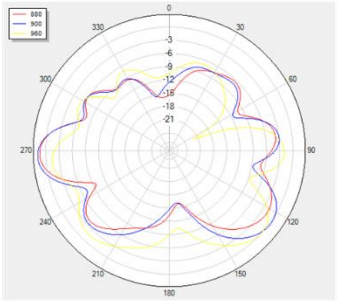
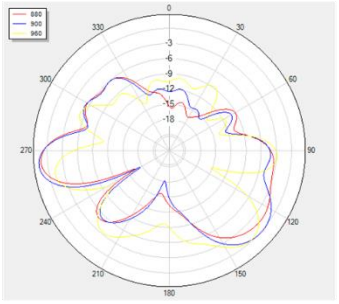
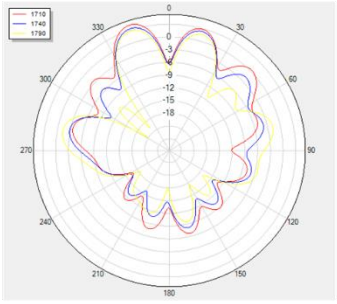
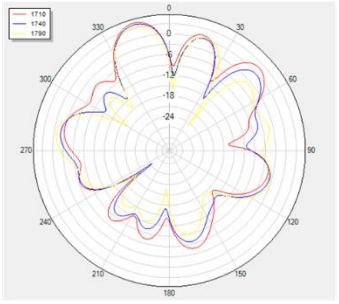
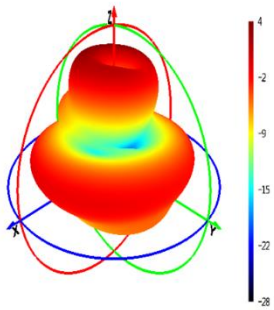
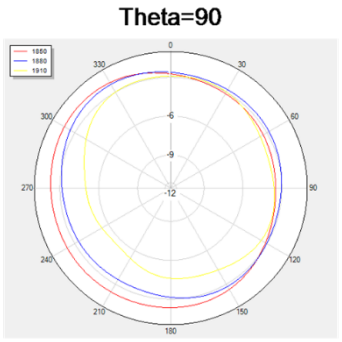
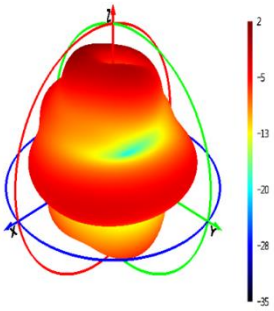
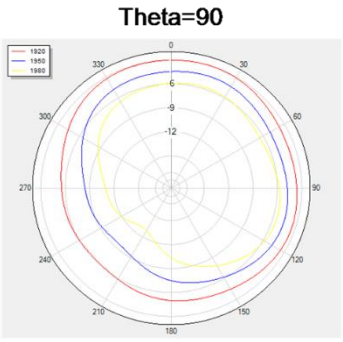
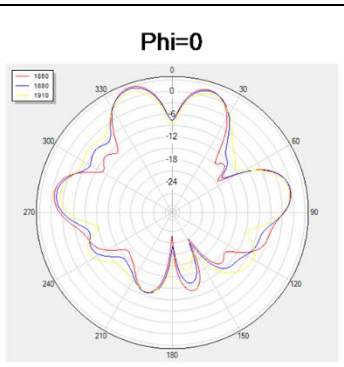
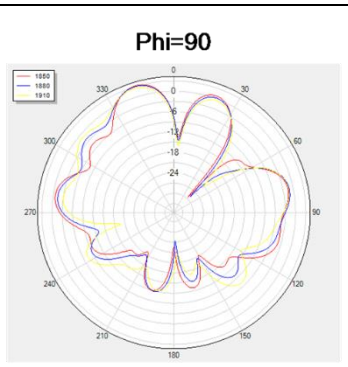
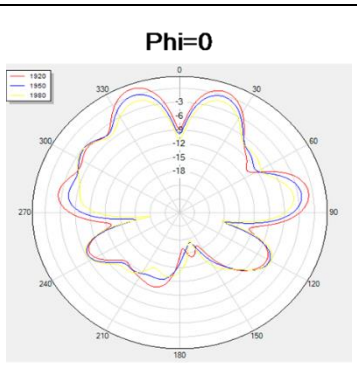
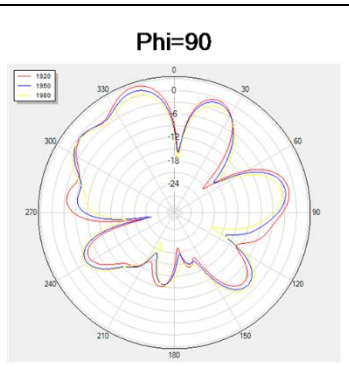
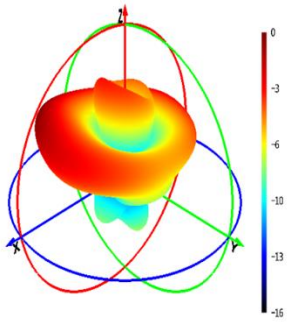
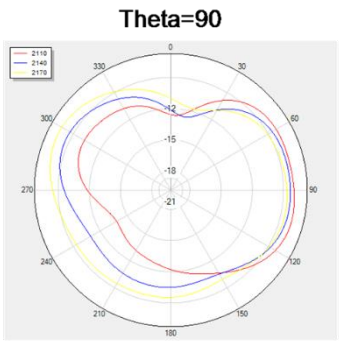
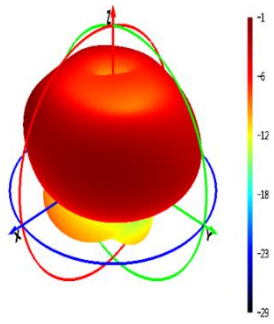
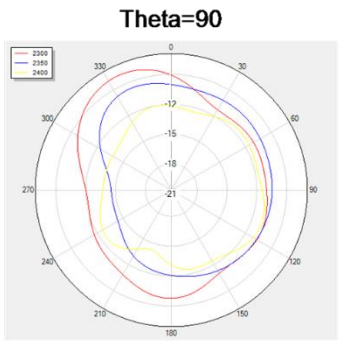
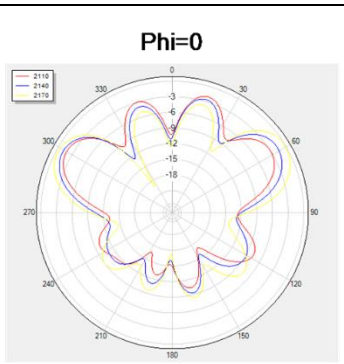
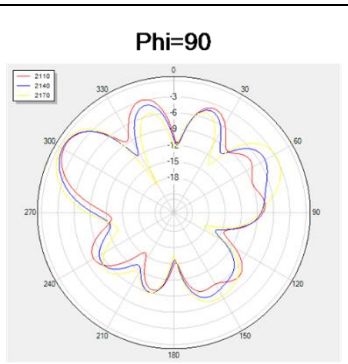
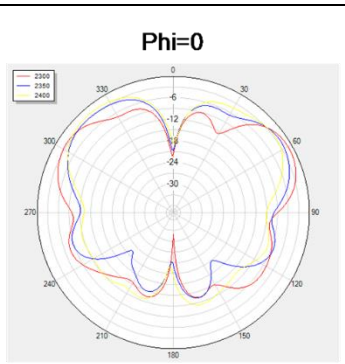
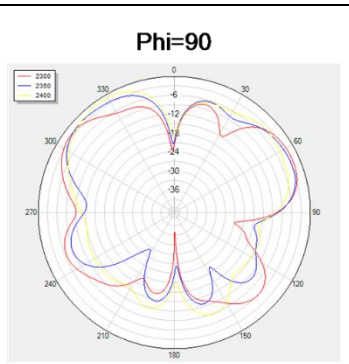
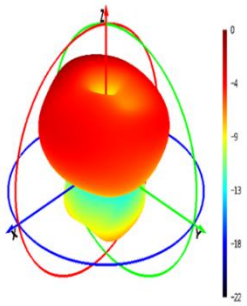
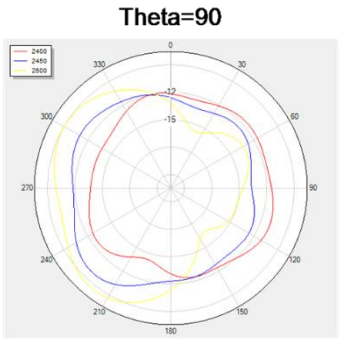
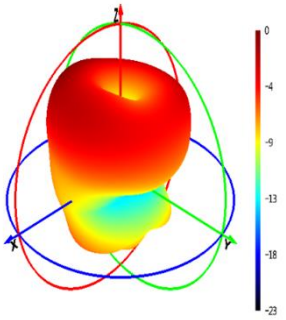
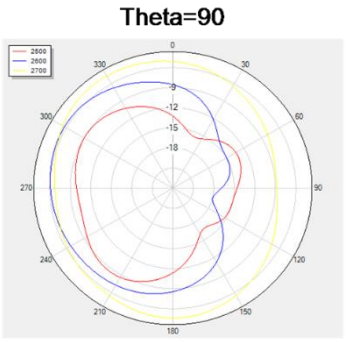
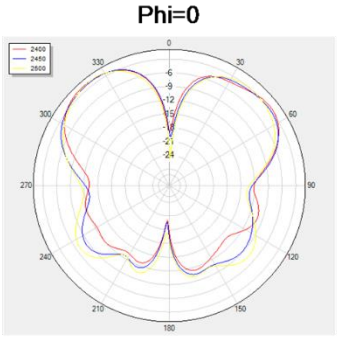
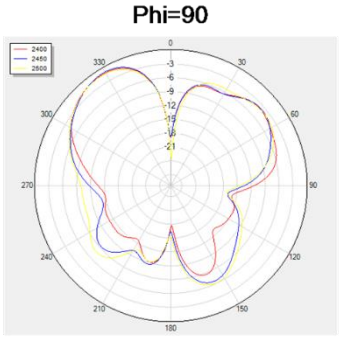
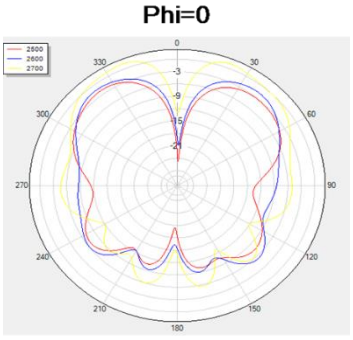
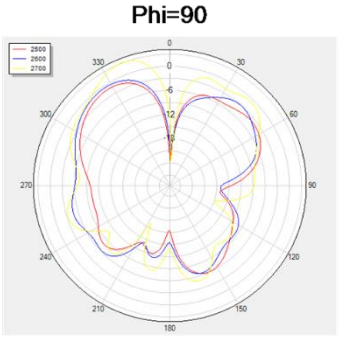
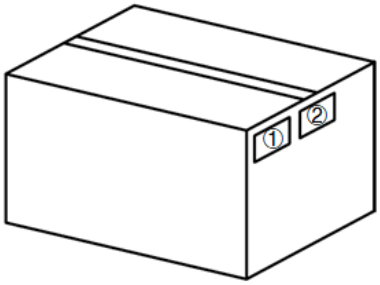
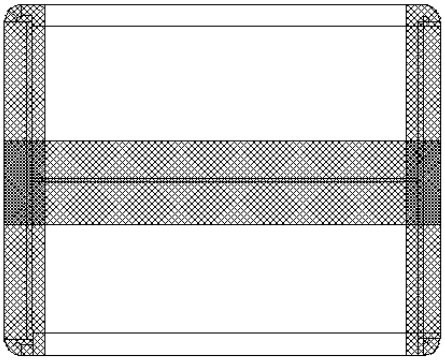
			
			
900 MHz		1740 MHz	
			
			

1880 MHz		1950 MHz	
			
			
2140 MHz		2350 MHz	
			
			

2450 MHz		2600 MHz	
			
			

4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		1 pc antenna product in a PE bag
		50 pcs antenna products in a big PE bag

3		(6 pcs PE bags per carton box) (300 pcs antennas per carton box) Carton Size: L × W × H = 370 × 370 × 295 mm
4		**Position for Attaching Labels** ① Carton Label ② Quality Label
5		**Sealing Cartons** “工” type sealing cartons

Contact Us

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Tel: +86 21 5108 6236
Email: info@quectel.com

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Revision History

Version	Date	Author	Note
-	2021-04-14	Kenny YIN	Creation of the document
1.0	2020-06-16	Kenny YIN	First official release
1.1	2020-12-11	Kenny YIN	Updated the antenna image (Chapter 2).
1.2	2021-01-12	Kenny YIN	Updated the efficiency data (Chapter 4).
1.3	2021-01-27	Kenny YIN	Added IP rating description and installation method.
2.0	2021-04-30	Aria CHU	Updated all test data in the datasheet.
2.1	2021-07-25	Aria CHU	1. Updated working temperature (Chapter 3). 2. Added detailed passive electrical specifications (Chapter 3).
2.2	2021-12-01	Aria CHU	Updated the product description (Chapter 1).
3.0	2023-02-24	Damon ZHANG/ Lucky FENG/ David LIU/ Aria CHU	Updated all data and datasheet template.
3.1	2023-08-15	Lucky FENG	Updated the drawing (Chapter 2).

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