Antenna Datasheet

Product OC: YWL00A0AA
Version: 2.1
Date: 2023-08-04
Status: Released

Product Name: 4G + 4G 2IN 1 Combo Antenna
Key Features: 4G + 4G DIV
Frequency Band: 4G: 700–960 MHz; 1710–2690 MHz
4G DIV: 700–960MHz; 1710–2690 MHz
Dimensions: Φ 81 × 14.5 mm
Efficiency: Up to 51.56 % (Free Space)
RoHS Compliant
IP66

Overview

To meet customers' requirements for the high performance, high integration, and integrated appearance of their products, Quectel provides a combined antenna box series. The antenna box can integrate a variety of antennas, such as 5G, 4G, GNSS, Wi-Fi antennas, to achieve communication functions of 5G MIMO, 4G, GNSS, and Wi-Fi. These antenna boxes can be mounted on the surface of devices via screw, adhesive or other methods, supports multiple connector types and cable lengths. It is a more flexible and reliable high-performance antenna solution for outdoor applications.

Contents

1 Specification

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

1.1. Electrical

Electrical Specifications		
Frequency Range	**4G**	700–960 MHz, 1710–2690 MHz
	4G DIV	700–960 MHz, 1710–2690 MHz
Radiation Pattern		Omni-directional
Polarization		Linear
Impedance		50 Ω
Isolation		≤ -9.8 dB

1.1.1. 4G

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	-	2.5	3.6	-	2.9	2.7	2.6	2.6	-	-	-
	FS	-	1.7	3.0	-	1.7	1.9	1.9	2.2	-	-	-
Max. Return Loss (dB)	MP	-	-7.2	-4.9	-	-6.2	-6.8	-7.0	-7.0	-	-	-
	FS	-	-11.8	-6.0	-	-11.6	-10.2	-10.4	-8.6	-	-	-
AVG Eff. (%)	MP	-	28.5	34.2	-	23.8	10.6	10.8	11.5	-	-	-
	FS	-	33.3	44.1	-	35.9	31.9	28.5	30.4	-	-	-
AVG Gain (dB)	MP	-	-5.5	-4.7	-	-6.3	-9.8	-9.7	-9.4	-	-	-
	FS	-	-4.8	-3.6	-	-4.5	-5.0	-5.5	-5.2	-	-	-
Max. Peak Gain (dBi)	MP	-	1.1	-0.9	-	-2.4	-3.6	-3.0	-2.3	-	-	-
	FS	-	1.4	1.1	-	0.7	-0.9	-0.7	-0.8	-	-	-

VSWR	MP	≤ 3.6
	FS	≤ 3.0
Return Loss	MP	≤ -4.9 dB
	FS	≤ -6.0 dB
Peak Gain	MP	≤ 1.1 dBi
	FS	≤ 1.4 dBi

1.1.2. 4G DIV

Electrical - Detail

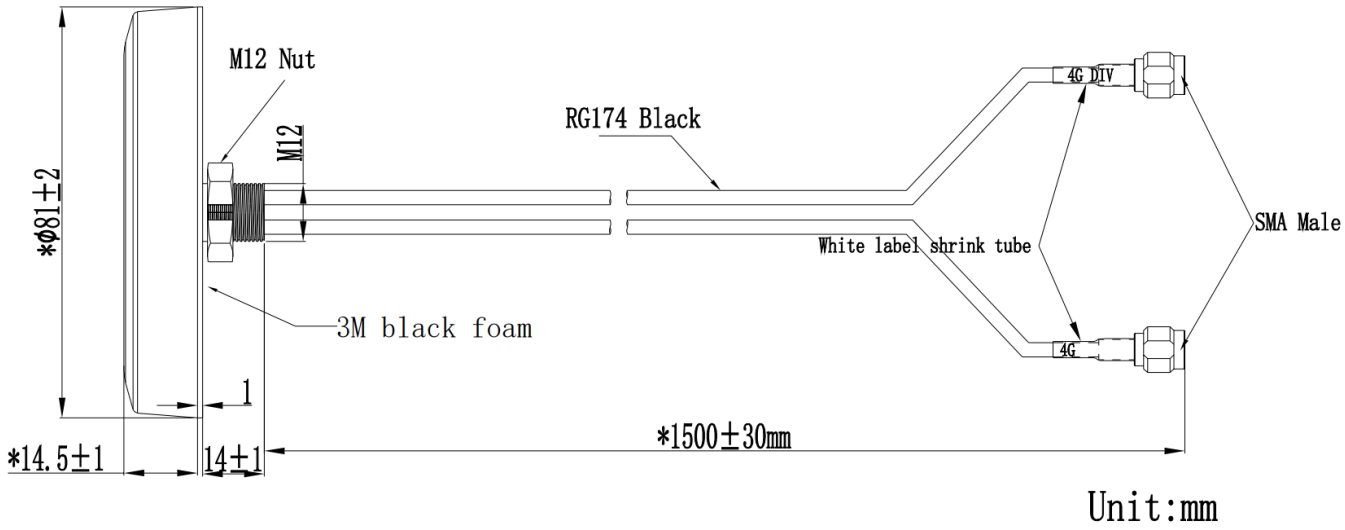
Band / SPEC	Band	B71	B12 /B13 /B28	B5 /B8 /B26	N74 /N75 /N76	B1 /B2 /B3	B40	Wi-Fi 2G	B38 /B41	B42 /B48 /N77	N79	Wi-Fi 5G
	Freq. (MHz)	600–700	700–810	820–960	1420–1520	1700–2170	2300–2400	2400–2500	2500–2690	3300–4200	4400–5000	5150–5850
Max. VSWR	MP	-	2.8	3.4	-	2.9	2.5	2.4	2.5	-	-	-
	FS	-	2.8	3.0	-	1.8	1.9	1.9	1.9	-	-	-
Max. Return Loss (dB)	MP	-	-6.4	-5.3	-	-6.3	-7.3	-7.6	-7.4	-	-	-
	FS	-	-6.4	-6.1	-	-11.1	-10.1	-10.1	-10.0	-	-	-
AVG Eff. (%)	MP	-	28.8	26.5	-	7.3	5.4	8.0	11.4	-	-	-
	FS	-	28.2	30.3	-	30.9	24.3	25.6	25.7	-	-	-
AVG Gain (dB)	MP	-	-5.4	-6.2	-	-11.4	-12.7	-11.0	-9.5	-	-	-
	FS	-	-5.5	-5.6	-	-5.1	-6.1	-5.9	-5.9	-	-	-
Max. Peak Gain (dBi)	MP	-	-0.3	0.3	-	-3.5	-5.6	-2.6	-0.8	-	-	-
	FS	-	-0.4	0.6	-	0.4	-0.5	-0.6	-1.3	-	-	-

VSWR	MP	≤ 3.4
	FS	≤ 3.0
Return Loss	MP	≤ -5.3 dB
	FS	≤ -6.1 dB
Peak Gain	MP	≤ 0.3 dBi
	FS	≤ 0.6 dBi

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	Φ 81 × 14.5 mm
Antenna Material & Color	ABS + PC & Black
Cable Type & Color & Length	RG174 & Black & 1500 mm
Connector Type	SMA Male
Weight	Typ. 82 g
Mounting Type	Screw
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	IP66
RoHS Compliant	Yes

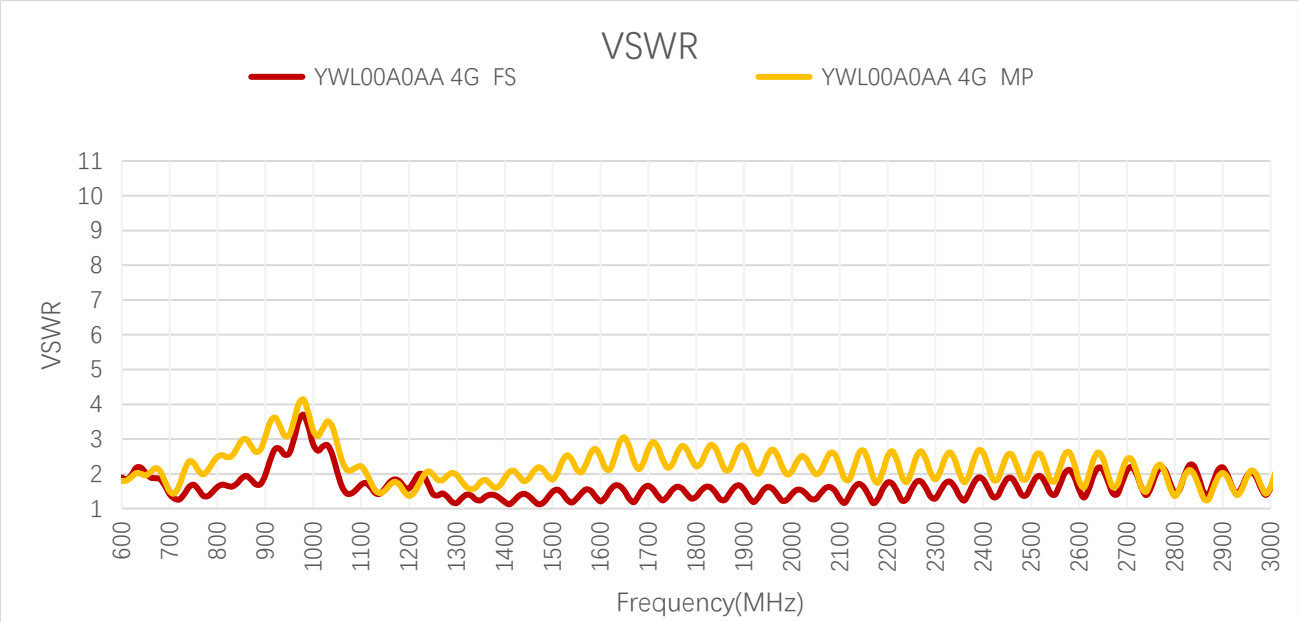
2 Drawing


M12 Nut
M12
RG174 Black
4G DIV
SMA Male
White label shrink tube
4G
3M black foam
*φ81±2
1
*14.5±1
14±1
*1500±30mm
Unit:mm

3 Detailed Performance

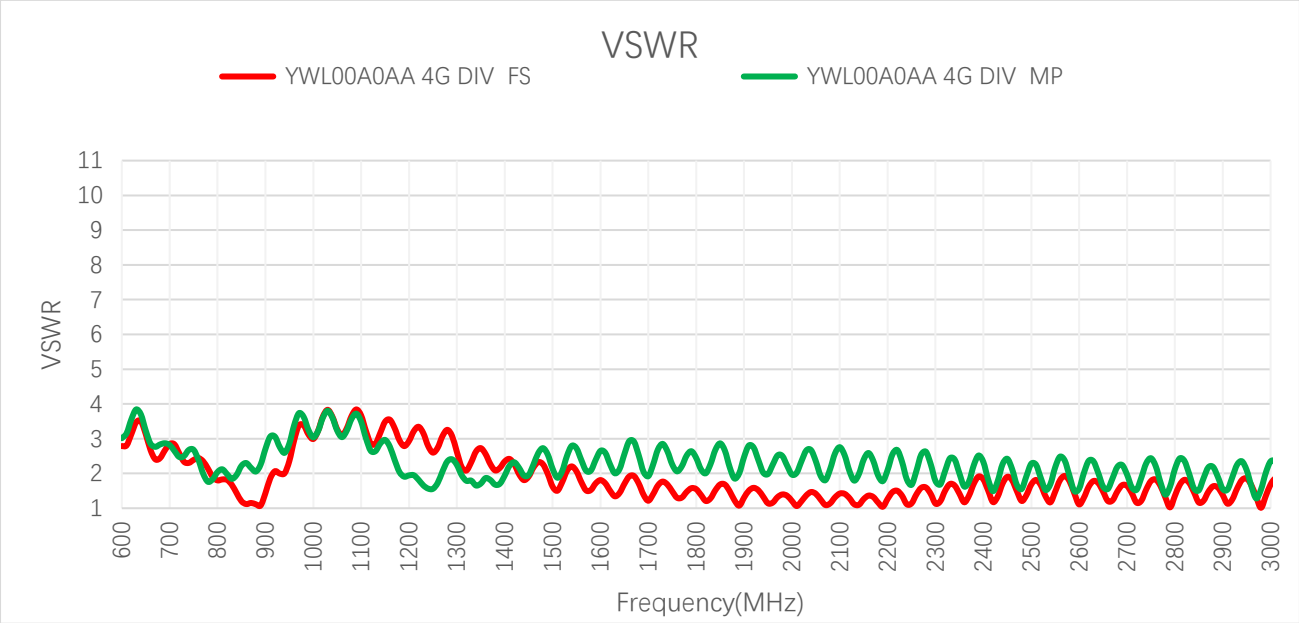
3.1. S-Parameter Test

3.1.1. VSWR



VSWR - 4G

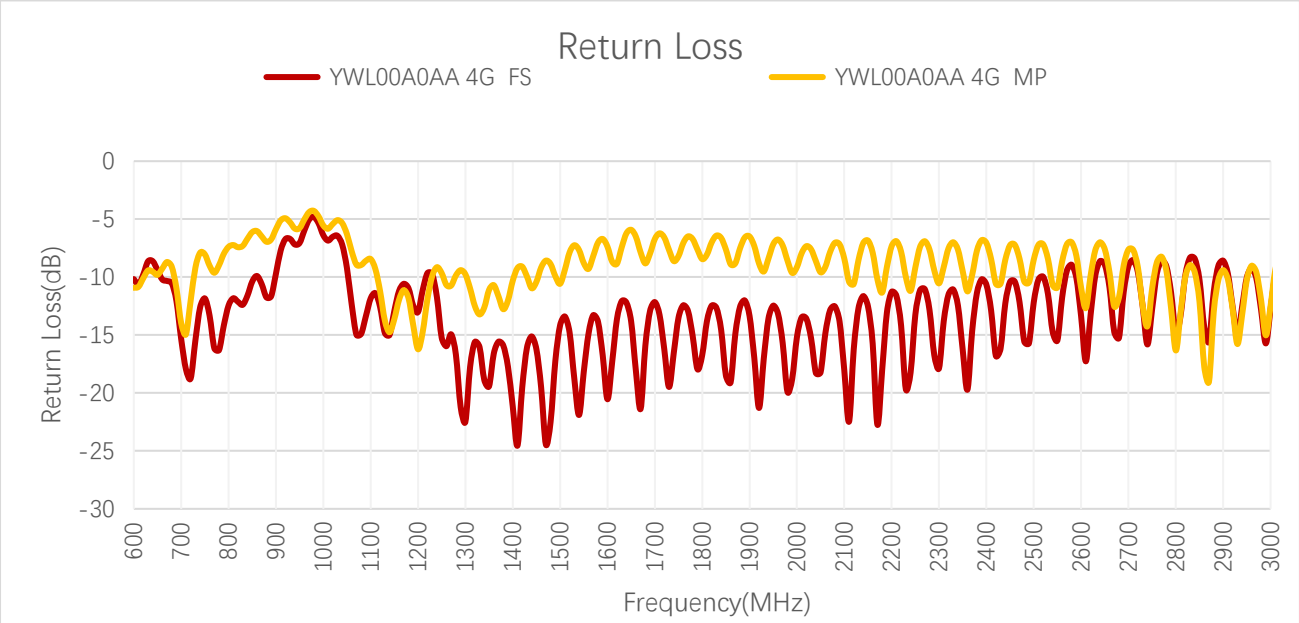
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
VSWR	MP	-	-	1.4	2.5	3.1	3.5	-	2.9	2.2	2.5
	FS	-	-	1.3	1.6	2.0	3.0	-	1.6	1.3	1.6
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
VSWR	MP	2.6	2.6	2.0	2.5	1.8	2.1	-	-	-	-
	FS	1.6	1.7	1.4	1.9	1.5	1.8	-	-	-	-



VSWR - 4G DIV

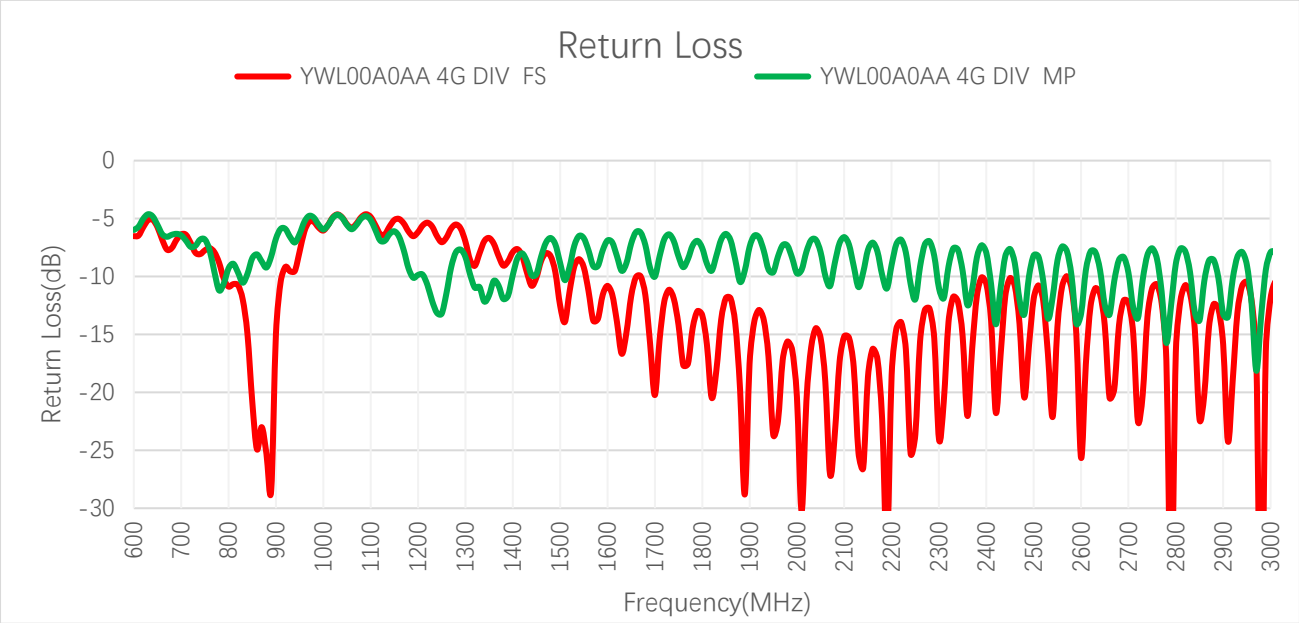
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
VSWR	MP	-	-	2.6	1.8	2.7	3.4	-	2.3	2.6	1.9
	FS	-	-	2.8	1.7	1.4	3.0	-	1.4	1.7	1.2
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
VSWR	MP	2.0	2.0	2.0	2.4	1.6	2.2	-	-	-	-
	FS	1.1	1.1	1.4	1.9	1.1	1.7	-	-	-	-

3.1.2. Return Loss



Return Loss (dB) - 4G

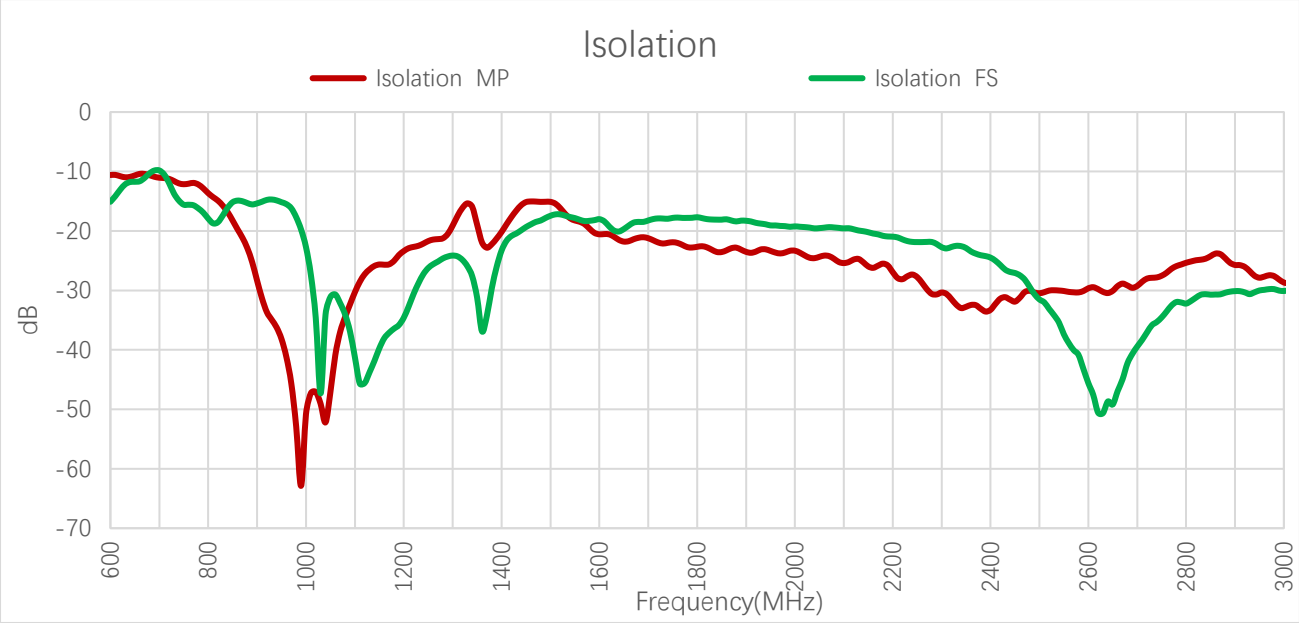
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	MP	-	-	-14.9	-7.3	-5.9	-5.0	-	-6.2	-8.6	-7.5
	FS	-	-	-17.9	-12.4	-9.7	-6.0	-	-13.3	-16.5	-12.6
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Return Loss (dB)	MP	-7.2	-7.1	-9.5	-7.2	-10.9	-9.0	-	-	-	-
	FS	-12.5	-11.6	-16.3	-10.4	-13.4	-11.3	-	-	-	-



Return Loss (dB) - 4G DIV

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	MP	-	-	-6.9	-10.5	-6.7	-5.3	-	-8.3	-6.9	-10.5
	FS	-	-	-6.4	-12.0	-15.0	-6.1	-	-15.5	-11.9	-19.8
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Return Loss (dB)	MP	-9.6	-9.6	-9.5	-7.6	-13.2	-8.3	-	-	-	-
	FS	-23.7	-26.5	-15.2	-10.1	-25.7	-12.1	-	-	-	-

3.1.3. Isolation

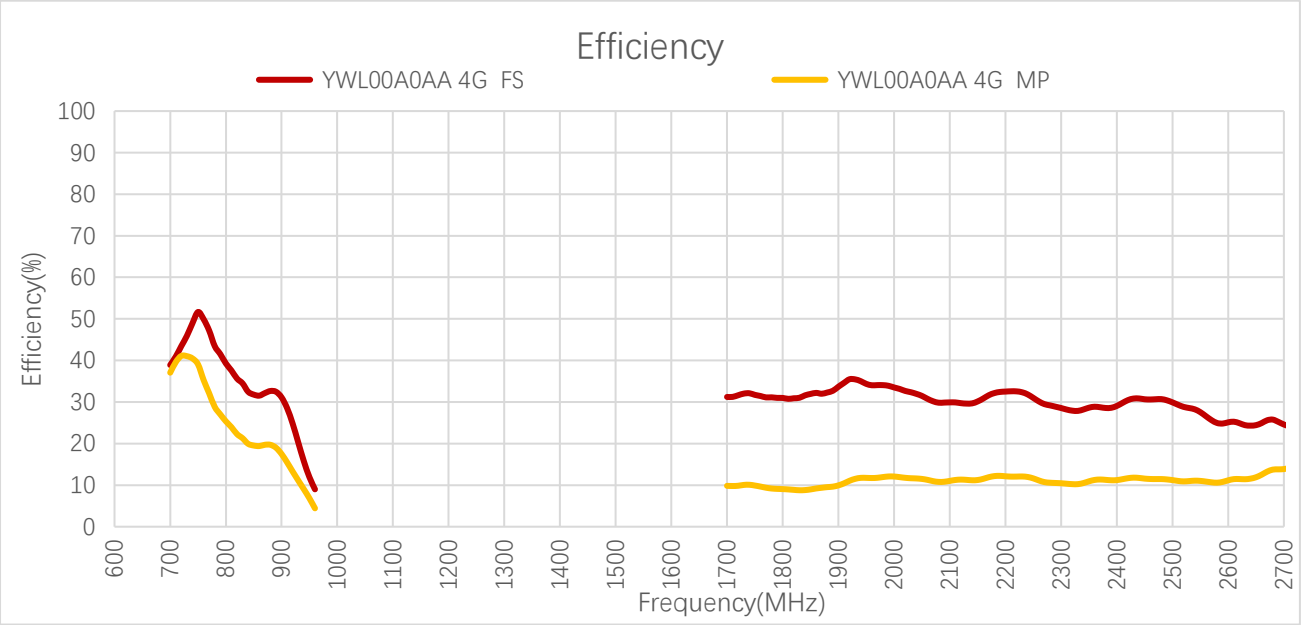


Max Isolation (dB)

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
Isolation (dB)	MP	-	-12.2	-26.6	-	-23.6	-32.3	-31.3	-29.9	-	-	-
	FS	-	-14.8	-15.6	-	-18.8	-23.3	-27.5	-41.7	-	-	-

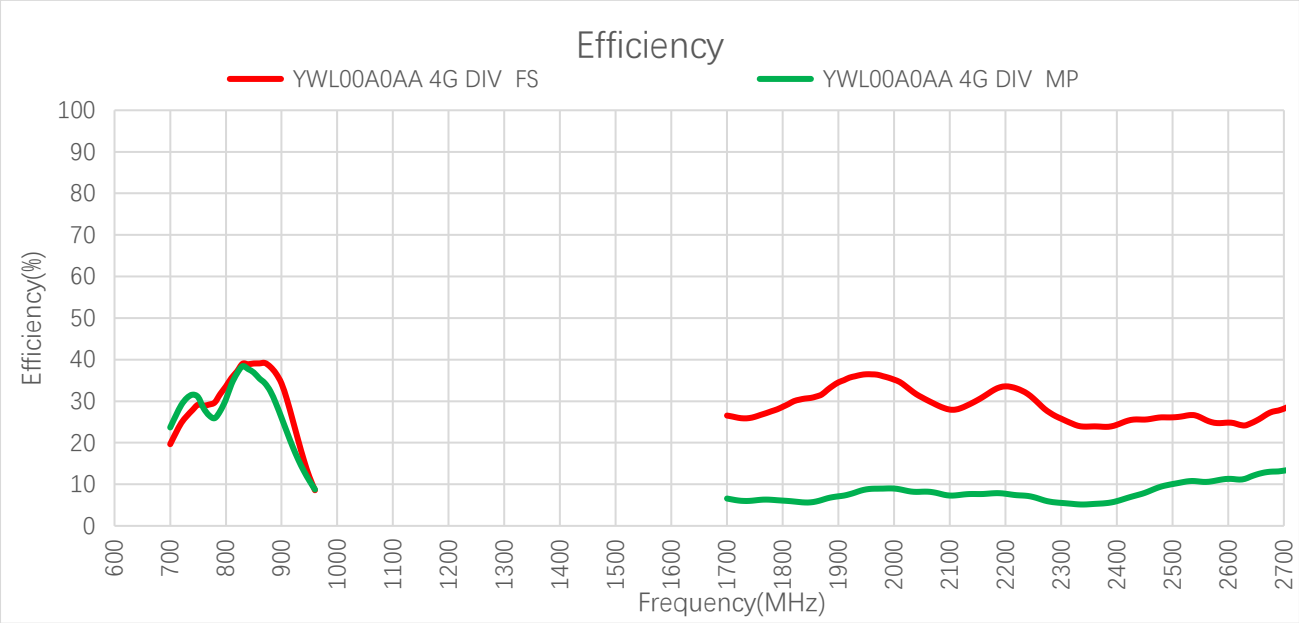
3.2. Radiation Performance Test

3.2.1. Efficiency



Efficiency (%) - 4G

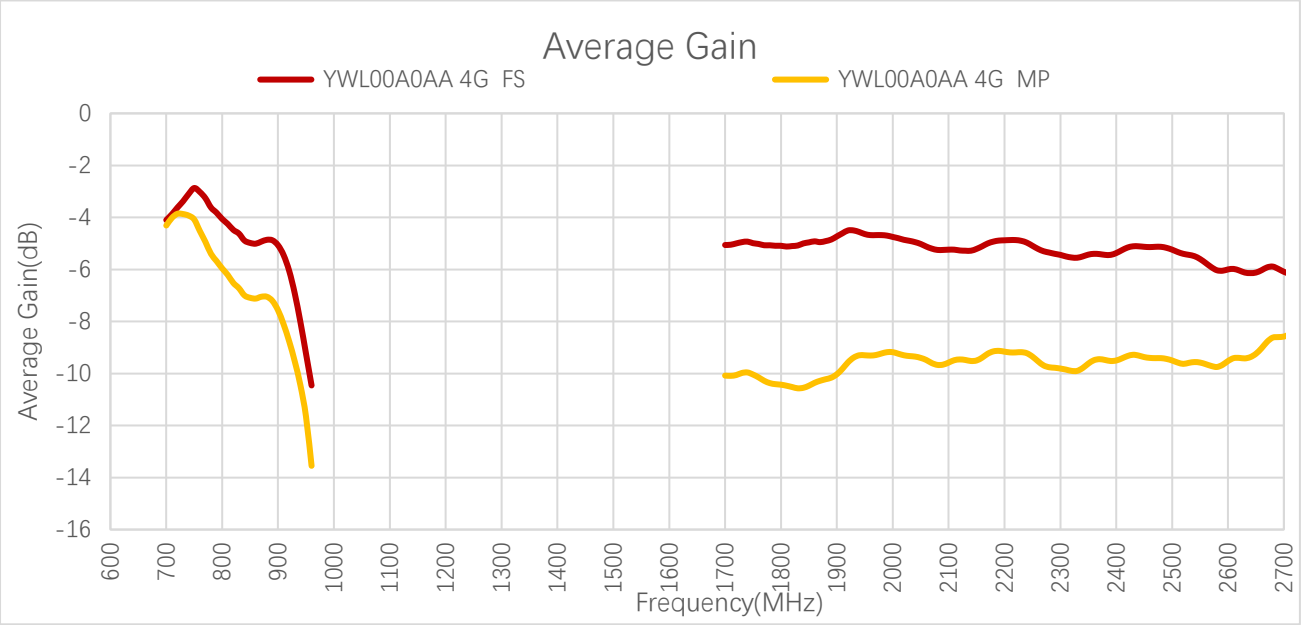
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	MP	-	-	39.6	21.3	17.5	4.4	-	9.8	10.1	9.5
	FS	-	-	40.9	34.5	31.1	9.0	-	31.2	32.1	32.3
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Efficiency (%)	MP	11.8	11.2	10.9	11.6	11.2	13.8	-	-	-	-
	FS	34.4	29.7	28.6	30.7	25.1	25.2	-	-	-	-



Efficiency (%) - 4G DIV

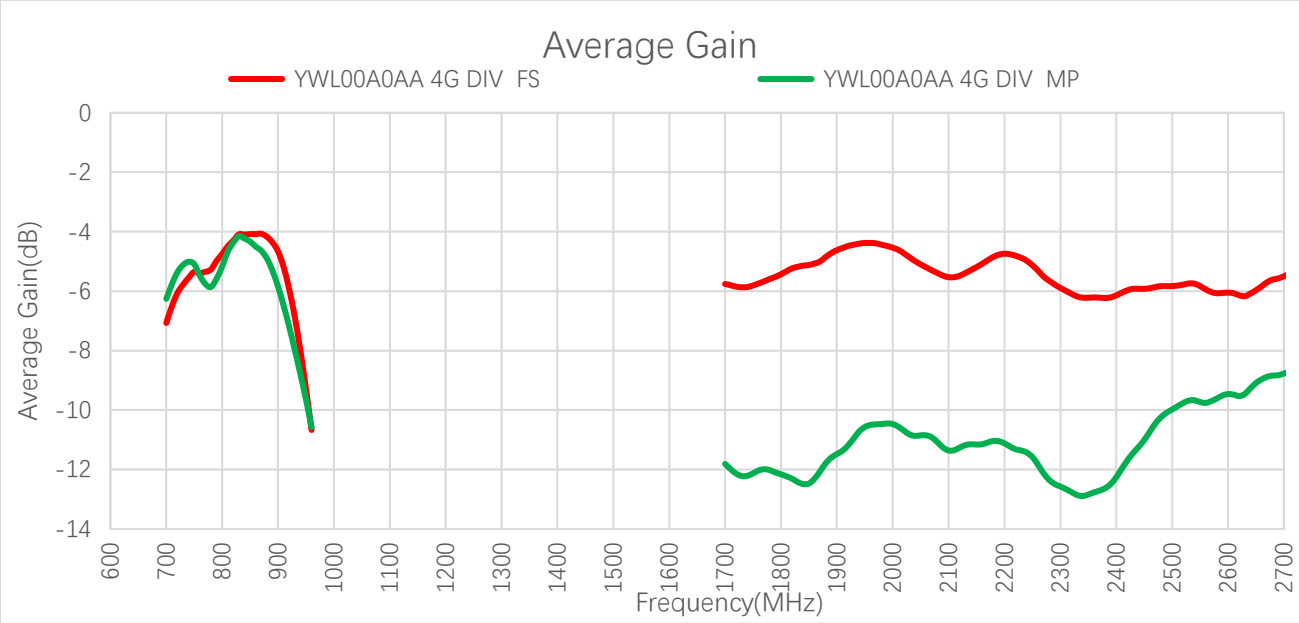
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	MP	-	-	26.5	38.4	26.0	8.8	-	6.3	6.0	6.6
	FS	-	-	22.3	39.0	34.2	8.6	-	26.3	25.9	32.7
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Efficiency (%)	MP	8.8	7.7	5.2	7.9	11.3	13.1	-	-	-	-
	FS	36.5	29.6	23.9	25.6	24.9	27.8	-	-	-	-

3.2.2. Average Gain



Average Gain (dB) - 4G

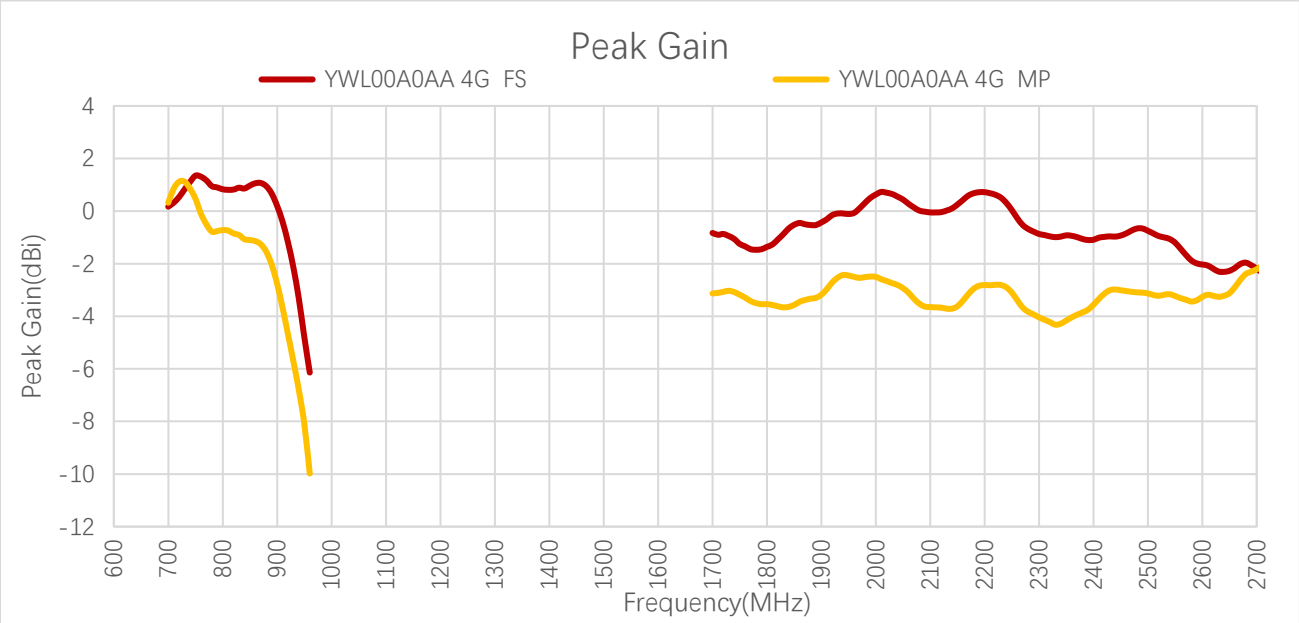
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	MP	-	-	-4.0	-6.7	-7.6	-13.6	-	-10.1	-10.0	-10.2
	FS	-	-	-3.9	-4.6	-5.1	-10.5	-	-5.1	-4.9	-4.9
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Average Gain (dB)	MP	-9.3	-9.5	-9.6	-9.4	-9.5	-8.6	-	-	-	-
	FS	-4.6	-5.3	-5.4	-5.1	-6.0	-6.0	-	-	-	-



Average Gain (dB) - 4G DIV

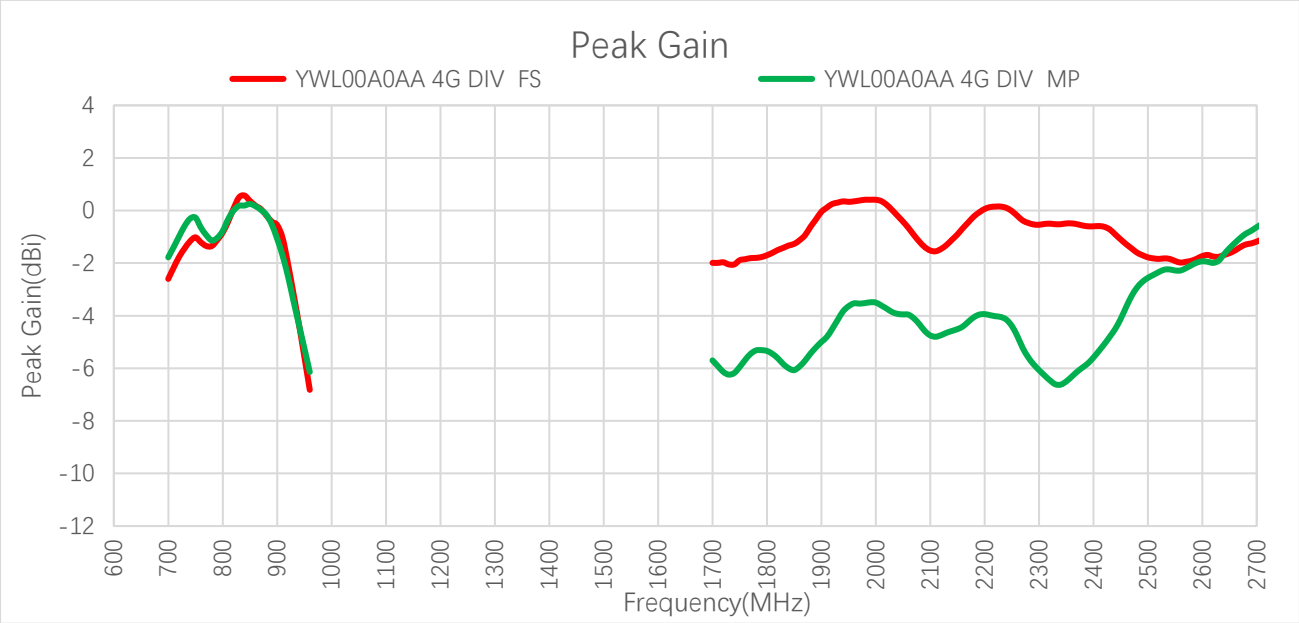
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	MP	-	-	-5.8	-4.2	-5.9	-10.6	-	-12.0	-12.2	-11.8
	FS	-	-	-6.5	-4.1	-4.7	-10.7	-	-5.8	-5.9	-4.9
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Average Gain (dB)	MP	-10.6	-11.2	-12.8	-11.0	-9.5	-8.8	-	-	-	-
	FS	-4.4	-5.3	-6.2	-5.9	-6.1	-5.6	-	-	-	-

3.2.3. Peak Gain



Peak Gain (dBi) - 4G

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	MP	-	-	0.9	-0.9	-2.8	-10.0	-	-3.1	-3.1	-3.3
	FS	-	-	0.3	0.9	0.2	-6.1	-	-0.9	-1.1	-0.5
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Peak Gain (dBi)	MP	-2.5	-3.7	-4.2	-3.0	-3.3	-2.3	-	-	-	-
	FS	-0.1	0.1	-0.9	-0.9	-2.0	-2.1	-	-	-	-



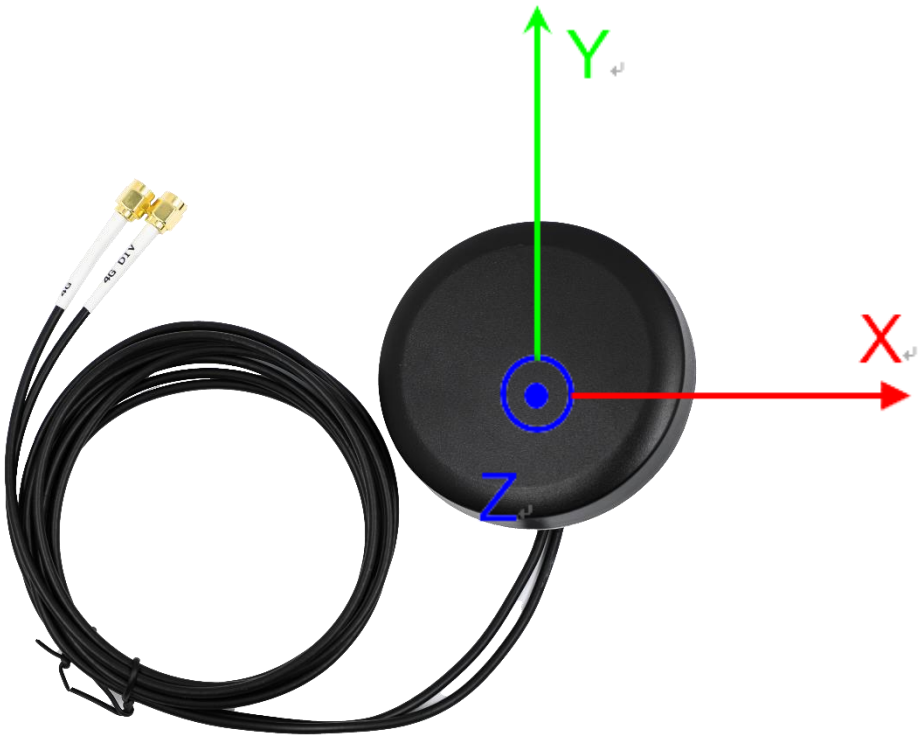
Peak Gain (dBi) - 4G DIV

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	MP	-	-	-1.4	0.2	-1.1	-6.1	-	-5.9	-6.2	-5.4
	FS	-	-	-2.2	0.5	-0.6	-6.8	-	-2.0	-2.1	-0.6
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Peak Gain (dBi)	MP	-3.6	-4.6	-6.5	-4.1	-1.9	-0.8	-	-	-	-
	FS	0.3	-1.1	-0.5	-1.1	-1.7	-1.3	-	-	-	-

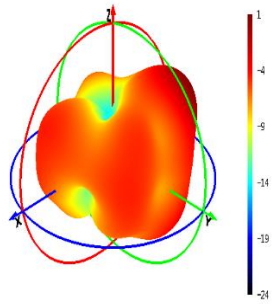
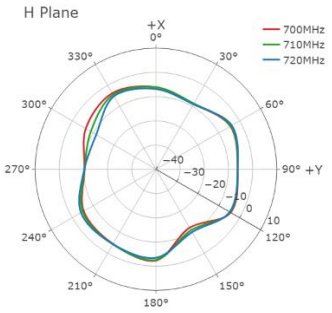
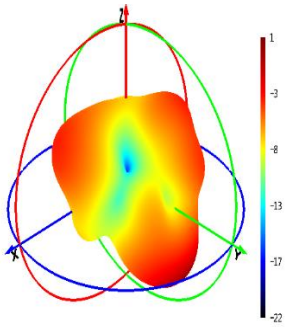
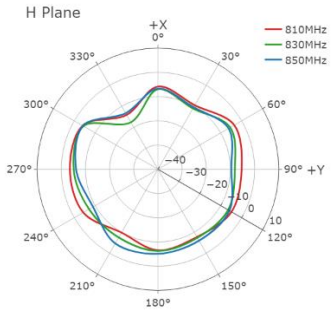
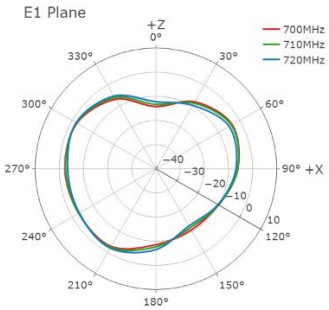
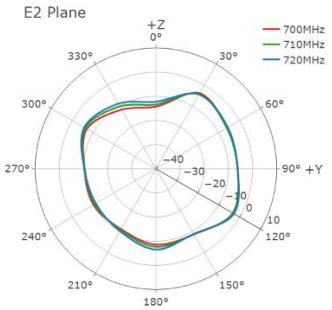
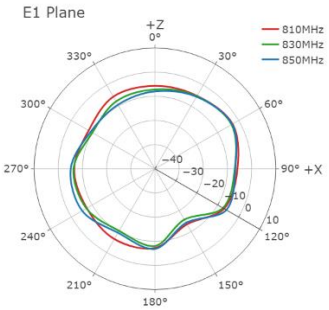
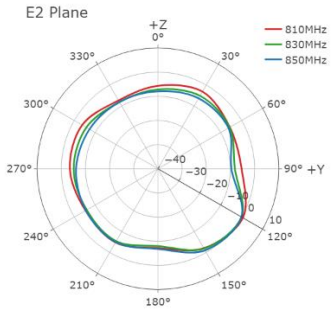
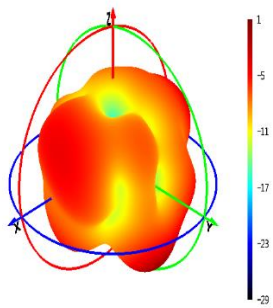
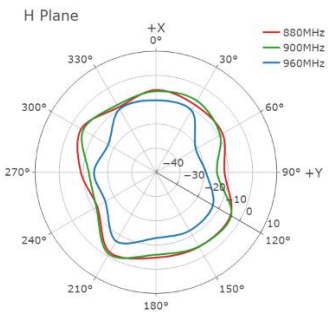
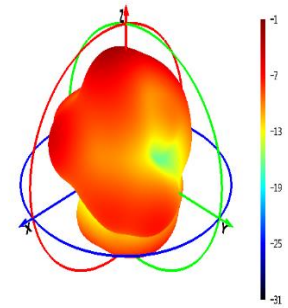
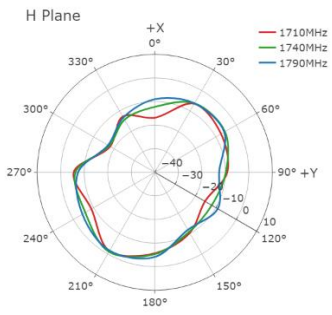
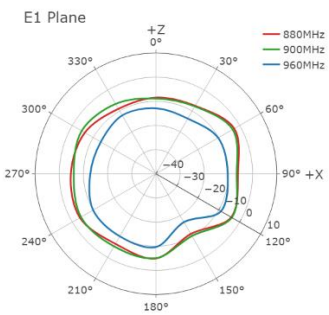
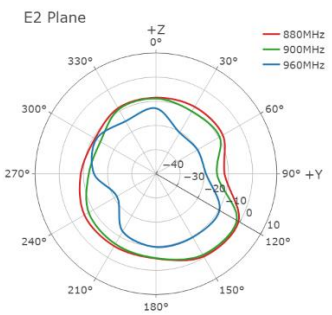
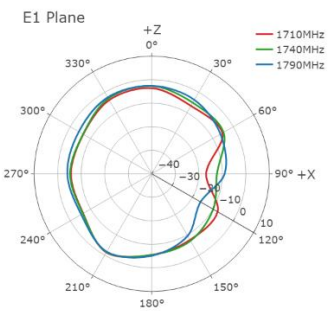
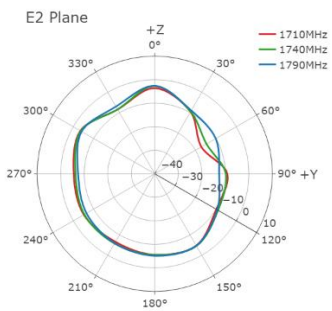
3.2.4. 3D & 2D Radiation Pattern

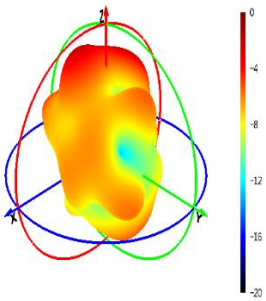
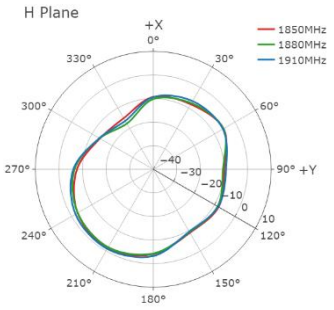
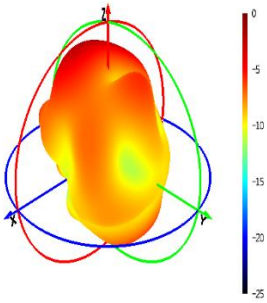
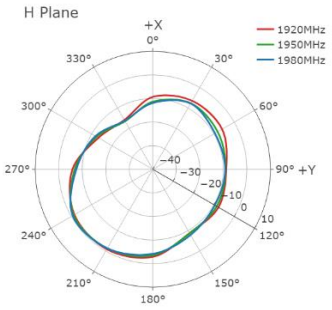
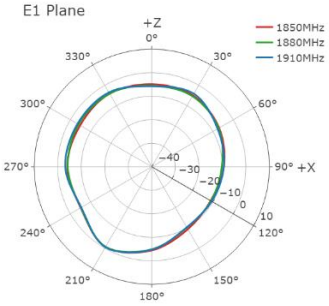
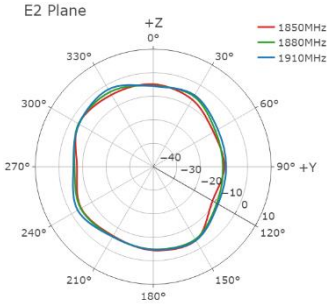
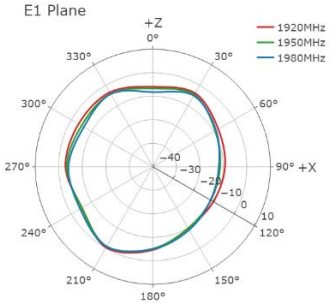
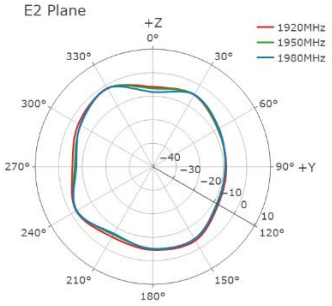
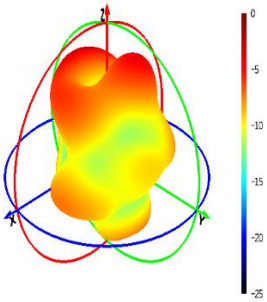
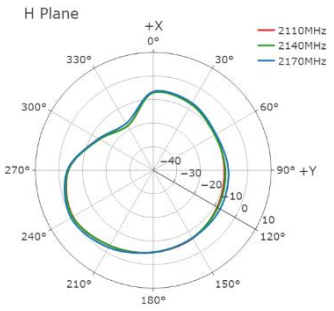
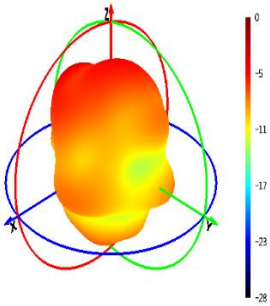
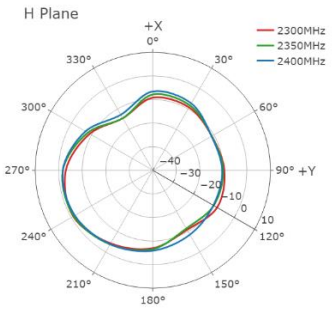
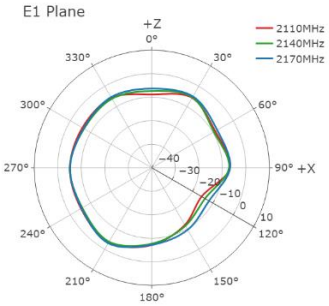
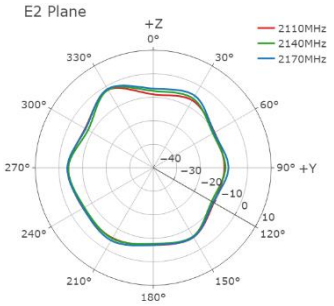
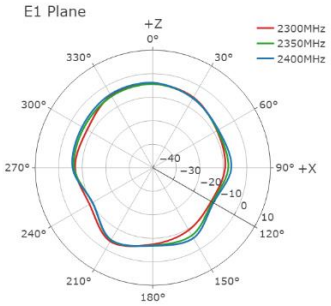
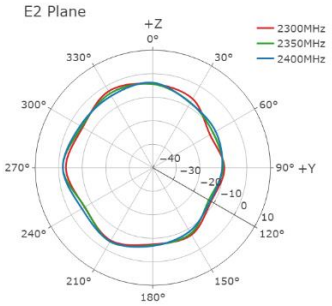
3.2.4.1. Test Status: Free Space

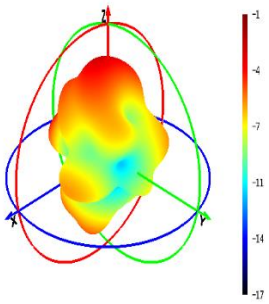
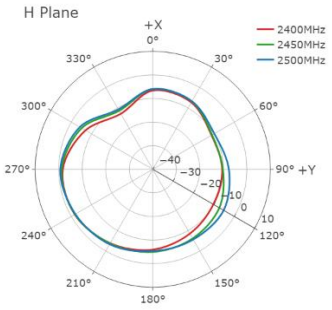
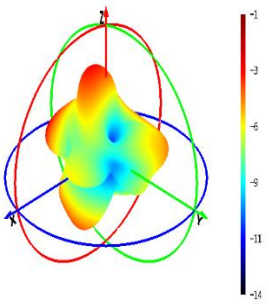
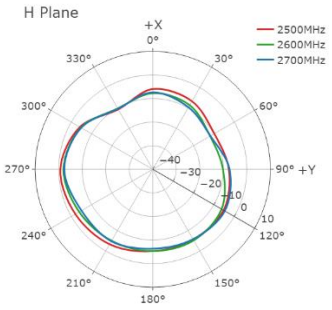
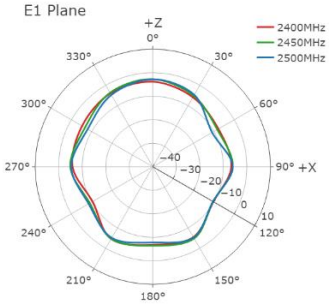
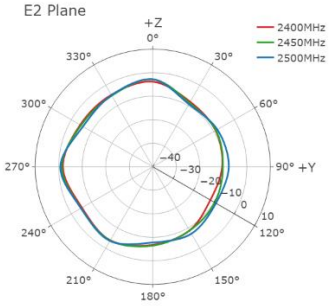
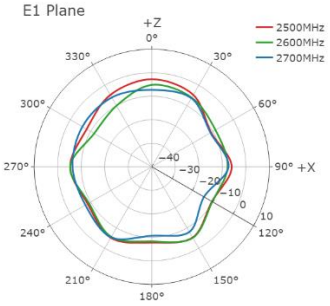
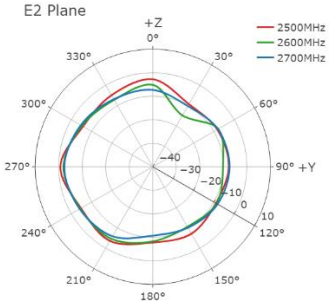
- Test Chamber: GL-S-1



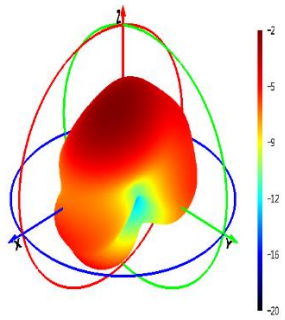
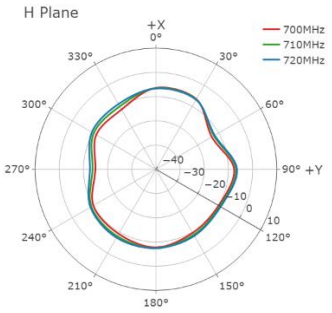
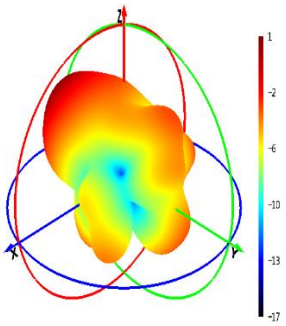
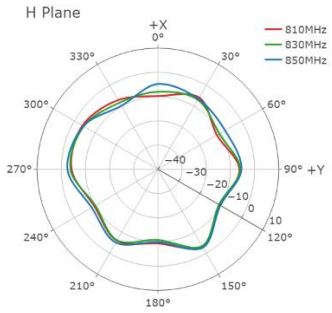
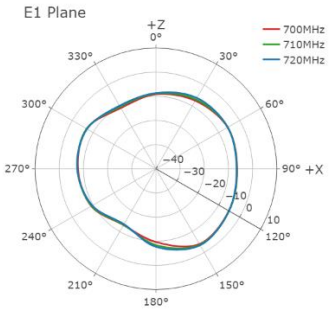
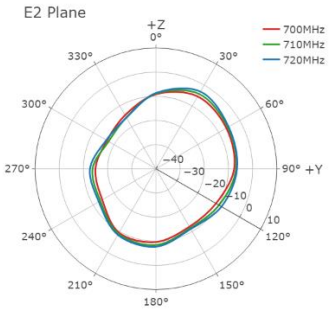
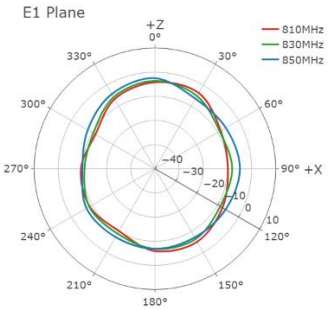
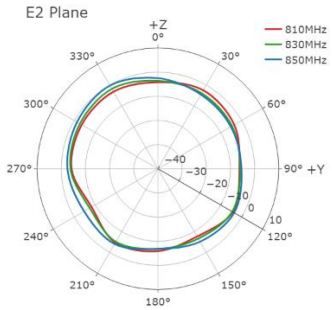
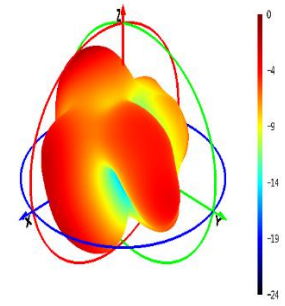
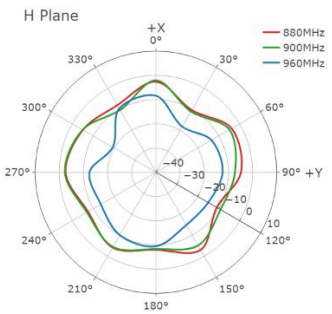
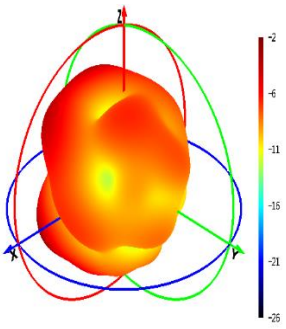
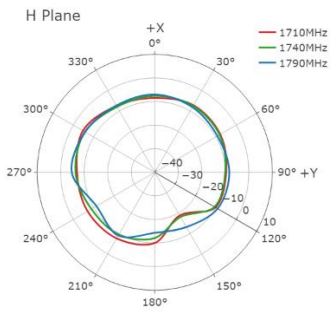
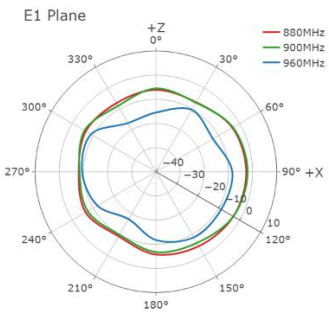
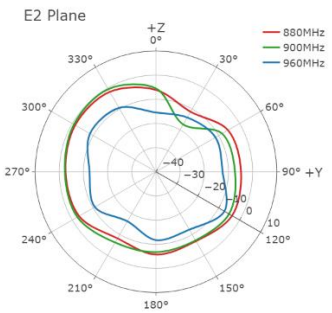
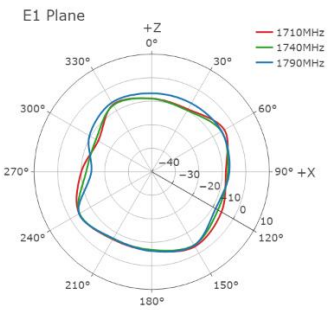
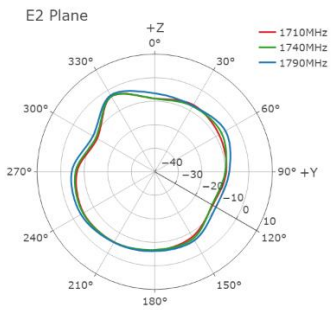
- **4G FS**

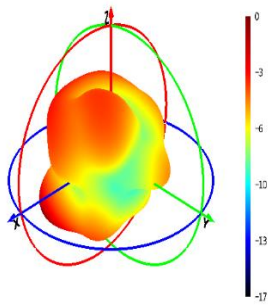
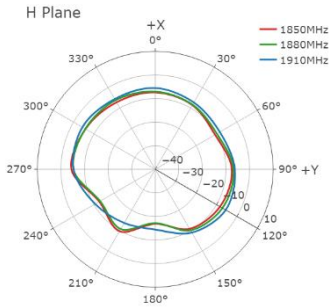
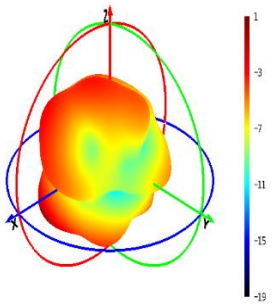
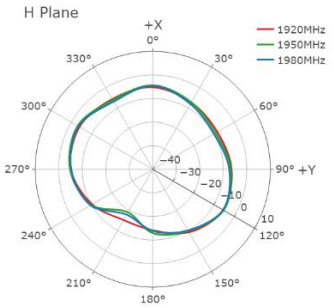
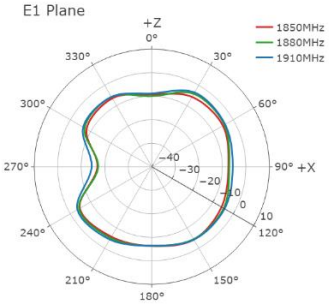
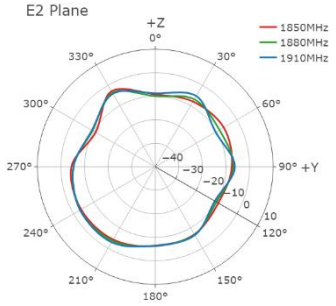
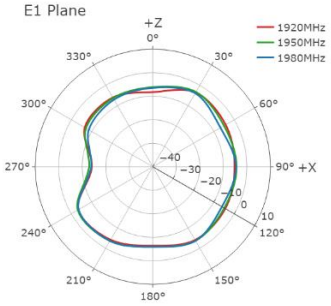
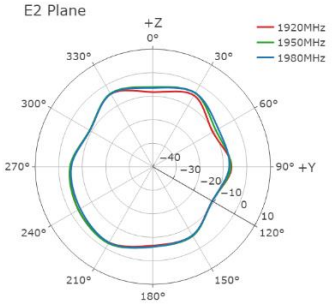
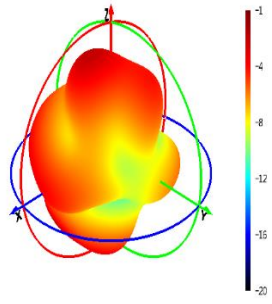
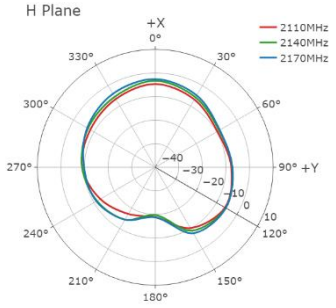
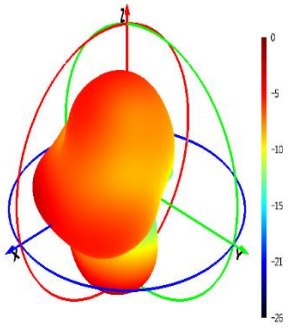
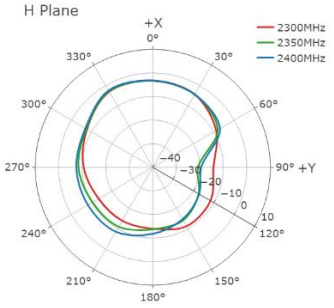
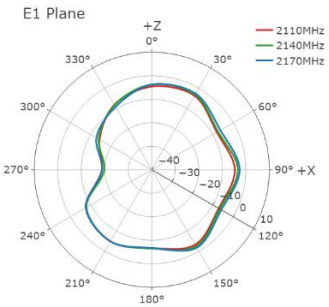
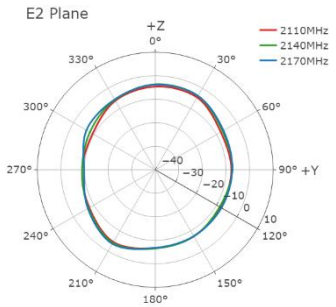
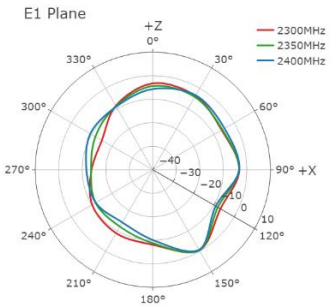
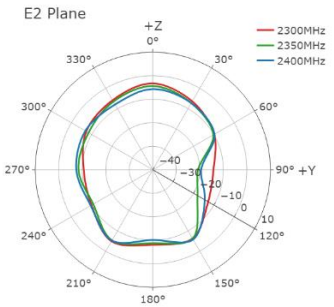
710 MHz		830 MHz	
			
			
900 MHz		1740 MHz	
			
			

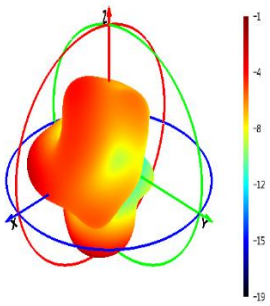
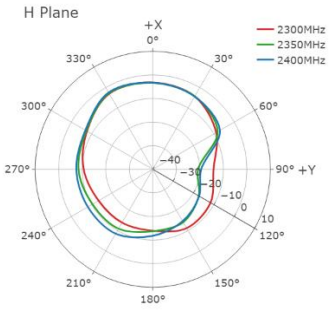
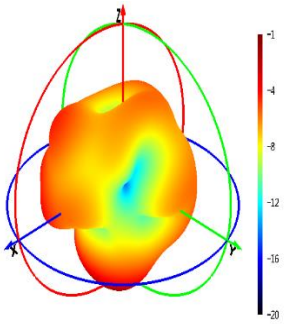
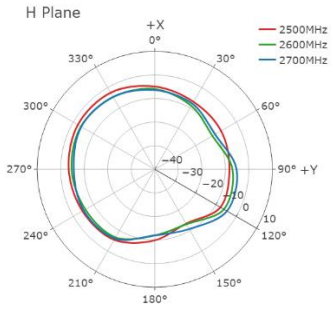
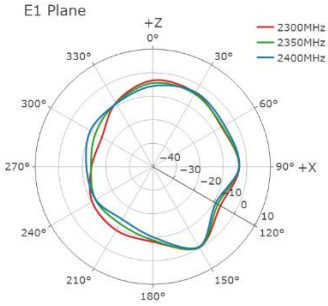
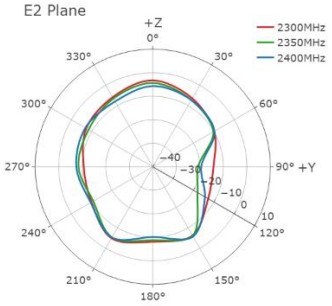
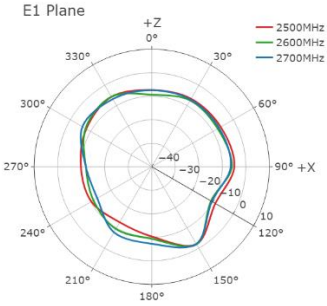
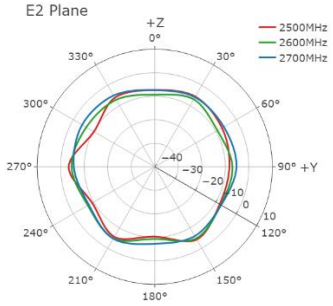
1880 MHz		1950 MHz	
			
			
2140 MHz		**2350 MHz**	
			
			

2450 MHz		2600 MHz	
			
			

- **4G DIV FS**

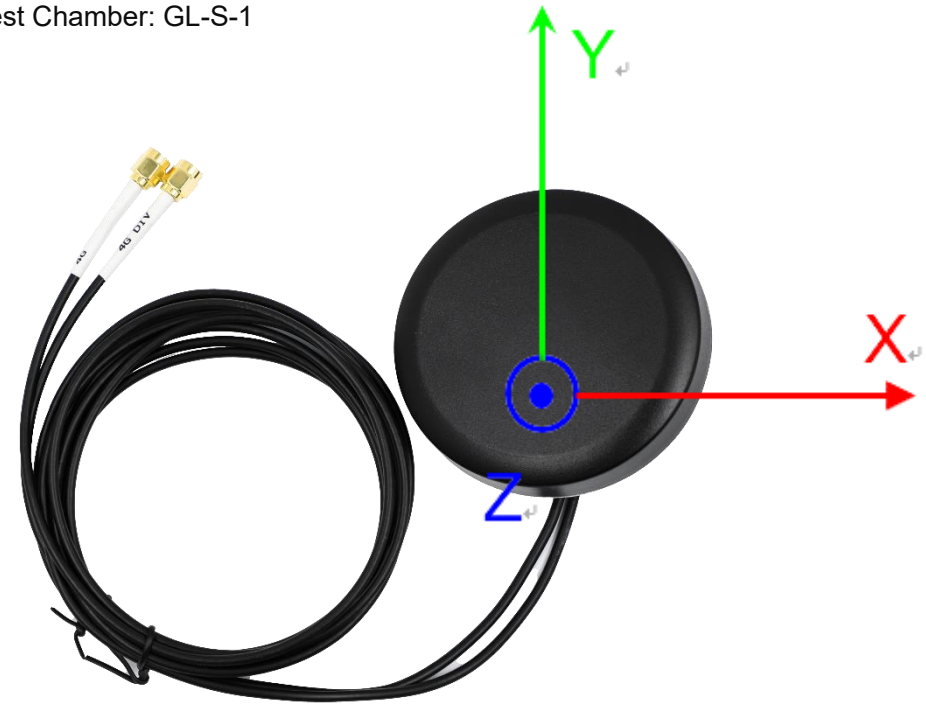
710 MHz		830 MHz	
			
			
900 MHz		1740 MHz	
			
			

1880 MHz		1950 MHz	
			
			
2140 MHz		2350 MHz	
			
			

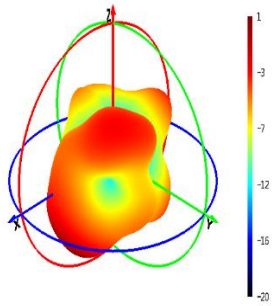
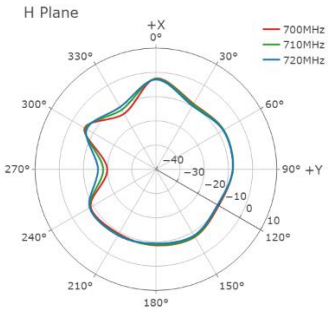
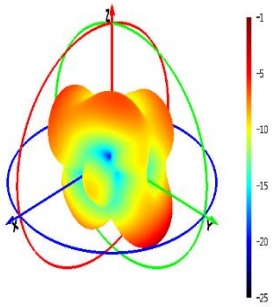
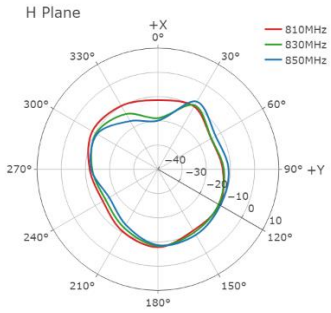
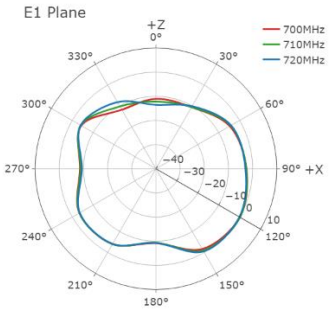
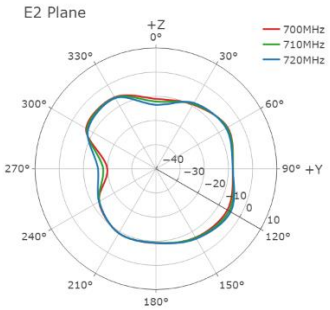
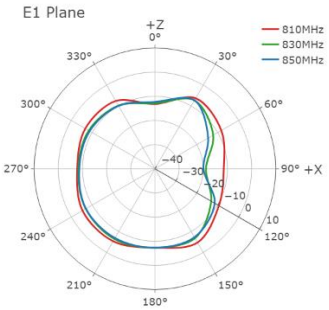
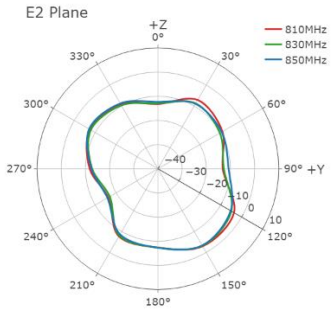
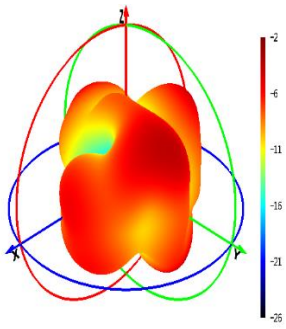
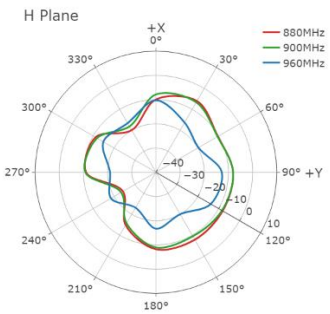
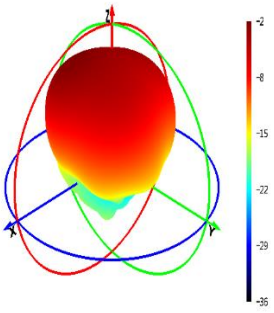
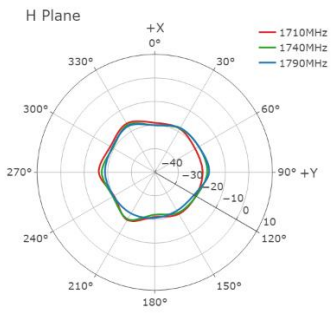
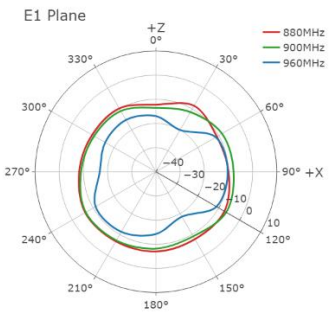
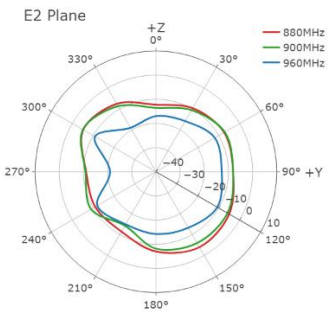
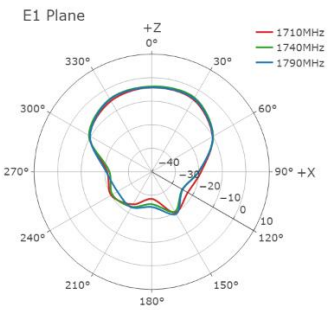
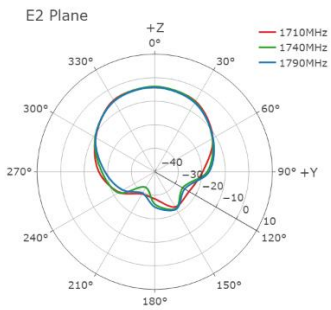
2450 MHz		2600 MHz	
			
			

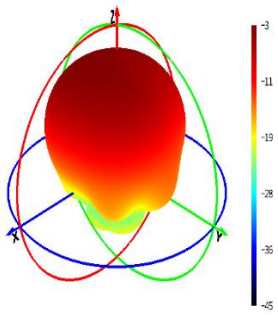
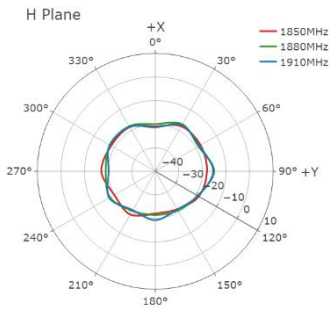
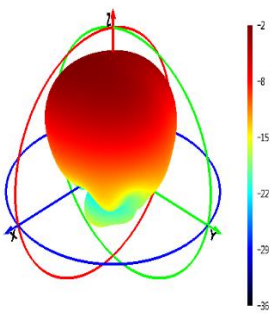
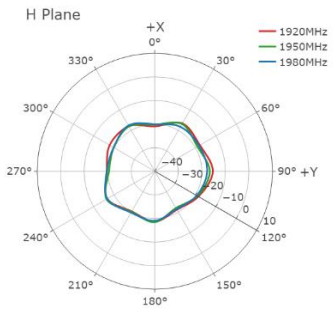
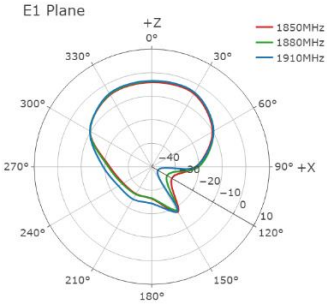
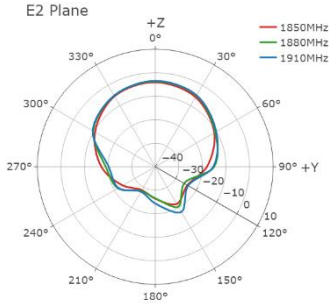
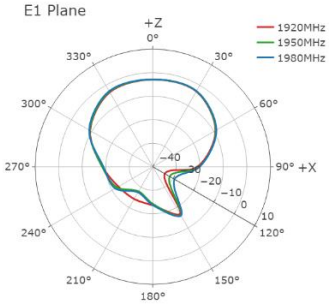
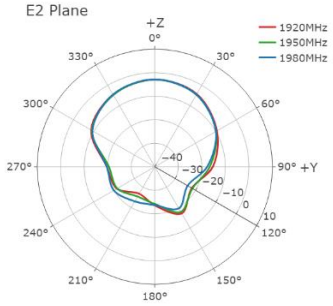
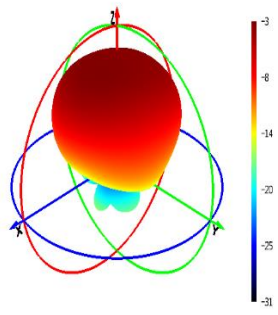
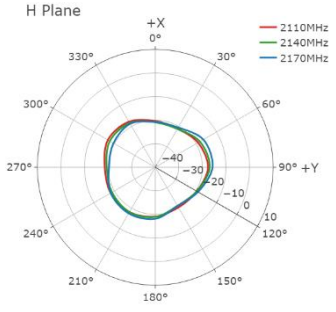
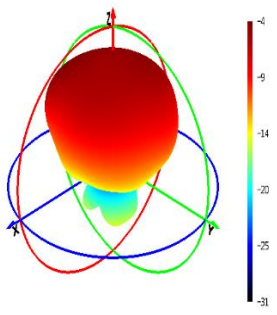
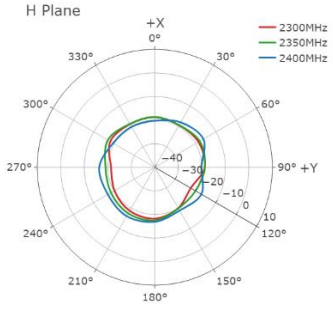
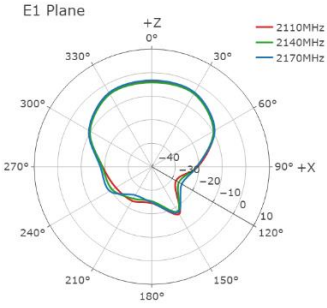
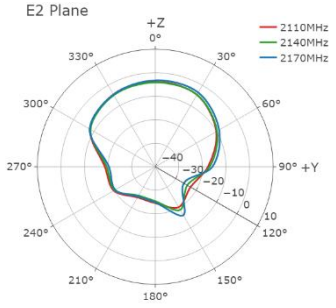
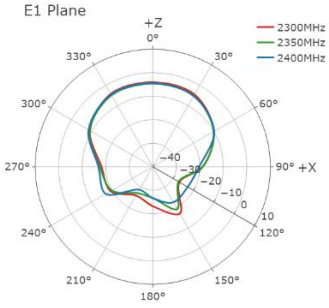
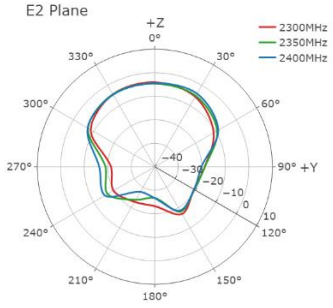
3.2.4.2. Test Status: On 300 × 300 mm Metal Plane

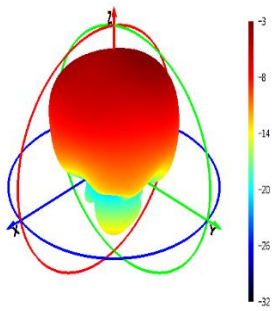
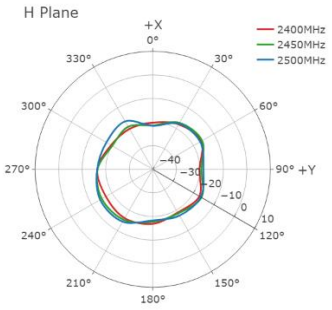
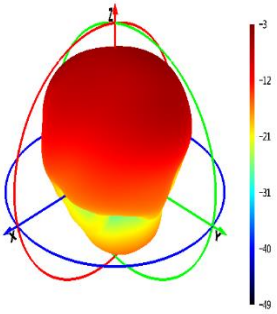
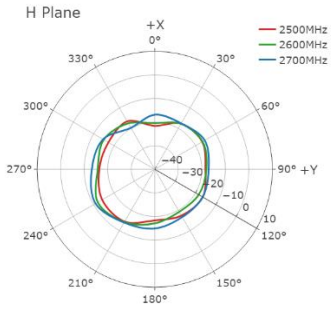
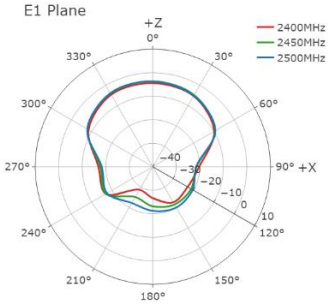
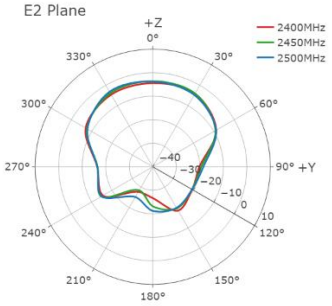
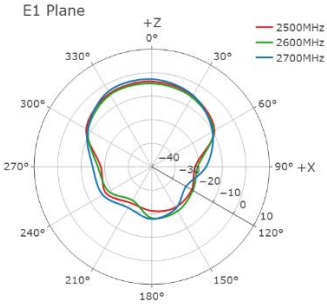
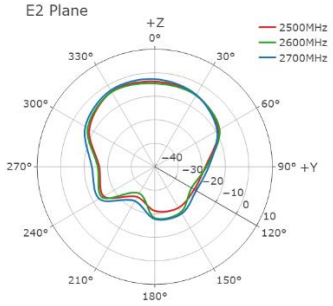
- Test Chamber: GL-S-1



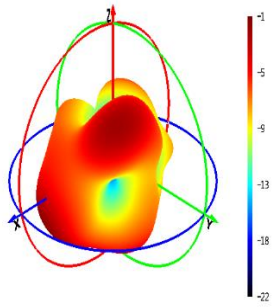
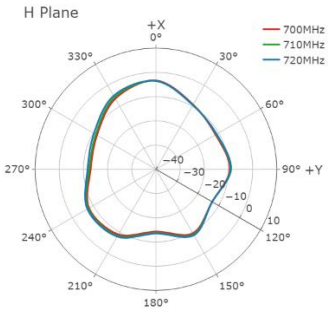
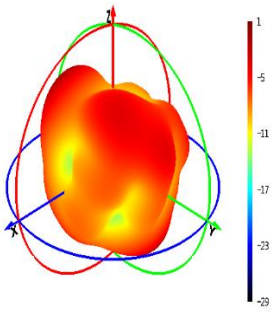
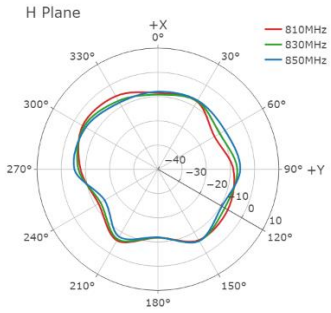
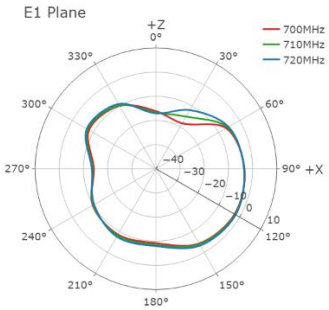
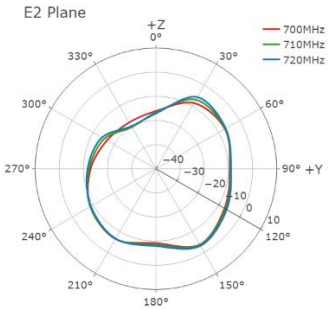
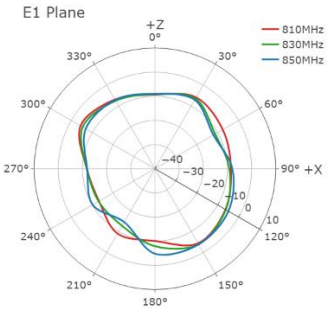
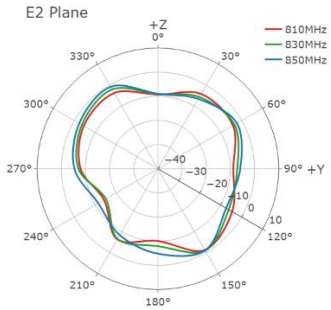
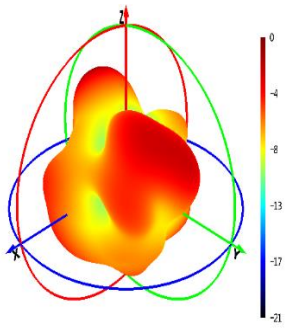
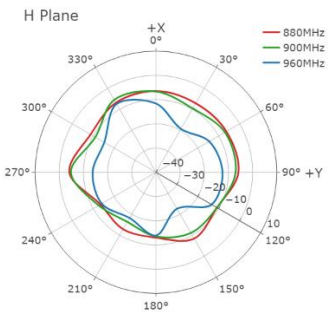
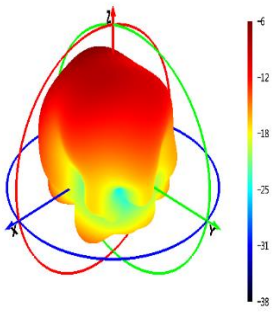
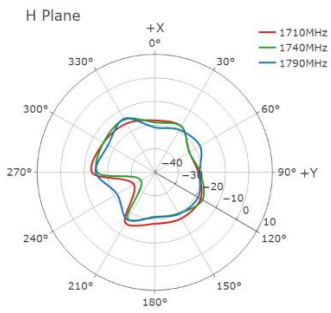
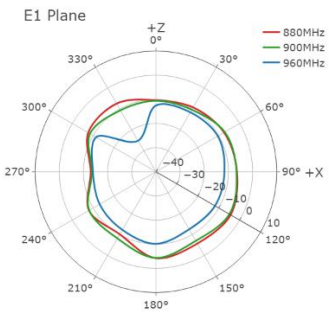
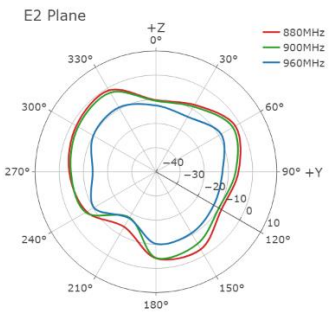
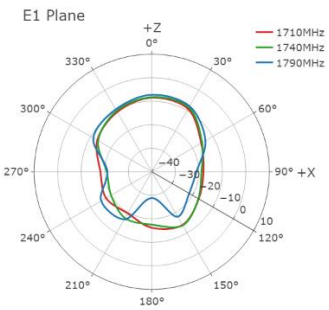
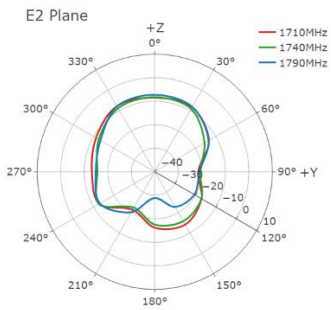
- **4G MP**

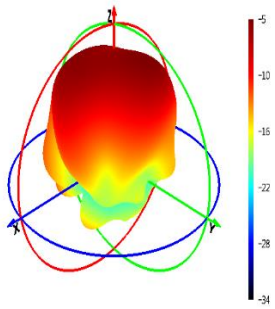
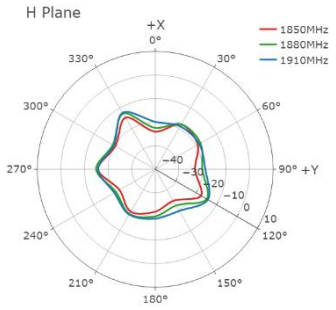
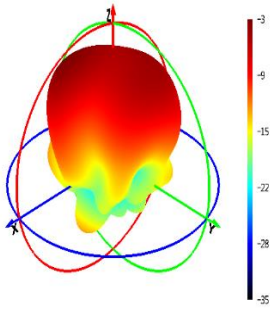
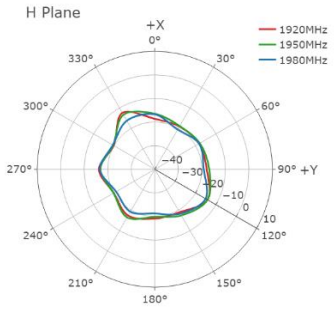
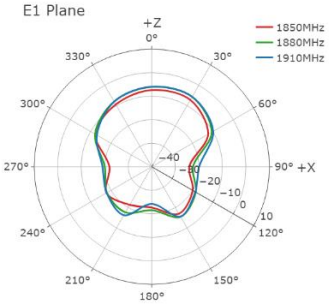
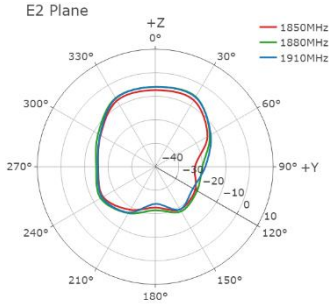
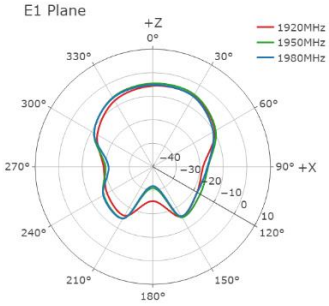
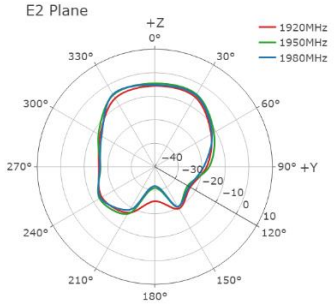
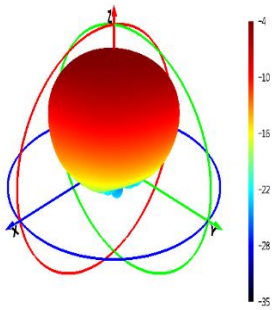
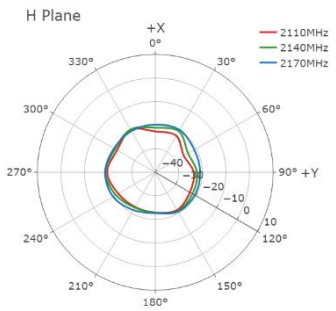
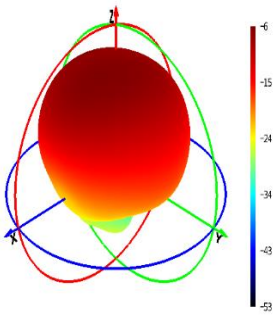
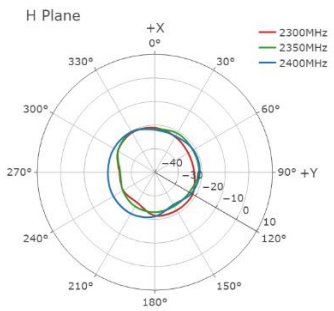
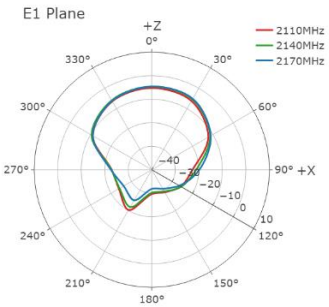
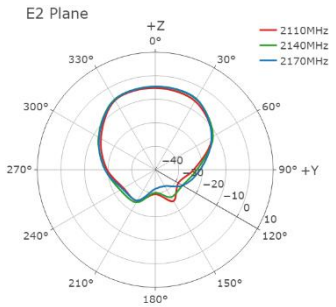
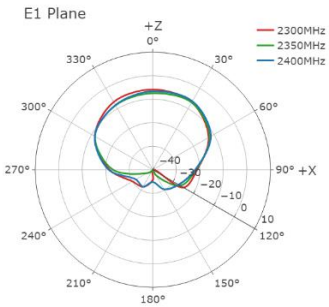
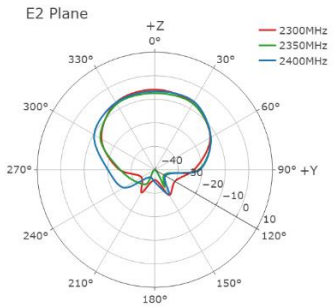
710 MHz		830 MHz	
			
			
900 MHz		1740 MHz	
			
			

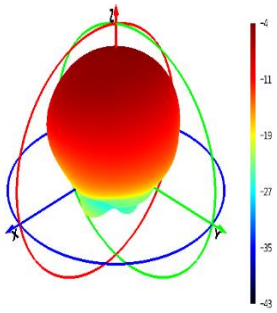
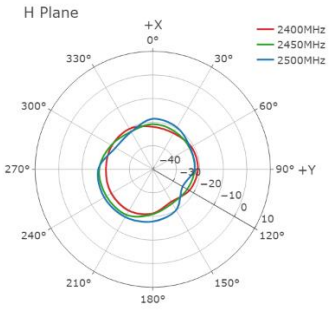
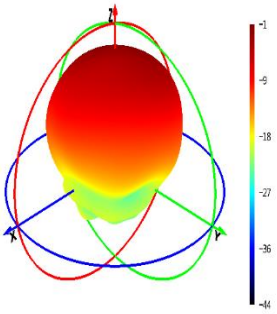
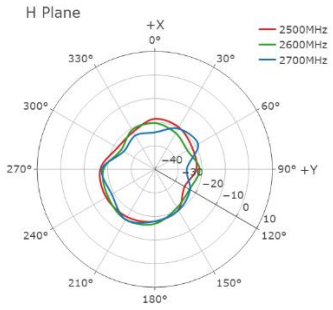
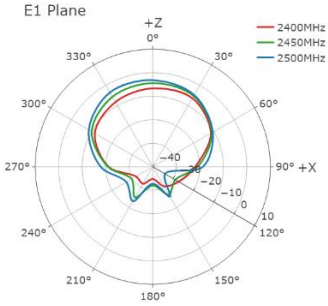
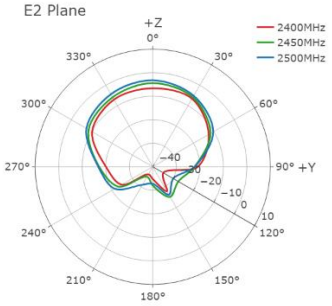
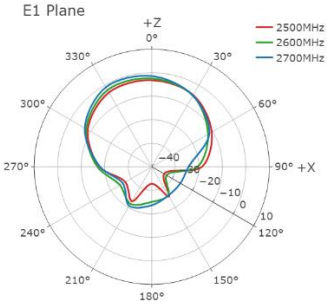
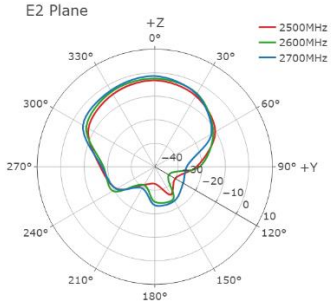
1880 MHz		1950 MHz	
			
			
2140 MHz		2350 MHz	
			
			

2450 MHz		2600 MHz	
			
			

- **4G DIV MP**

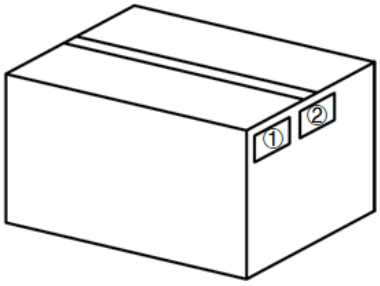
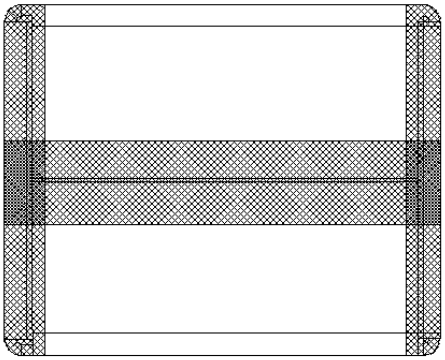
710 MHz		830 MHz	
			
			
900 MHz		1740 MHz	
			
			

1880 MHz		1950 MHz	
			
			
2140 MHz		2350 MHz	
			
			

2450 MHz		2600 MHz	
			
			

4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		20 pcs antenna products in a PE bag; (20 pcs antennas per PE bag)
2		(3 PE bags per carton box) (60 pcs antennas per carton box) Carton Size: L × W × H = 450 × 293 × 185 mm
3		Accessories are packaged separately and placed on the top of the product.

4		**Position for Attaching Labels** ① Carton Label ② Quality Label
5		**Sealing Cartons** "工" type sealing cartons

Contact Us

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Revision History

Version	Date	Author	Note
-	2021-08-10	Aria CHU/ Kenny YIN	Creation of the document
1.0	2021-08-10	Aria CHU/ Kenny YIN	First official release
1.1	2021-12-03	Aria CHU/ Kenny YIN	Updated the product description (Chapter 1).
2.0	2023-06-09	Joyful HUANG/ Lucky FENG/ David LIU/ Aria CHU	Updated all test data and template.
2.1	2023-08-04	Lance SUN	Updated the drawing (Chapter 5).

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