Antenna Datasheet

Product OC: YEMN117L1B
Version: 1.1
Date: 2025-06-20
Status: Released

Product Name: 4G Screw Mount Low Profile Monopole External Antenna
Key Features:
Frequency Band: 410–470 MHz, 698–2690 MHz
Dimensions: Φ 108 mm × 45 mm
Efficiency: Up to 80 % (MP)
RoHS and REACH Compliant
IP67

Overview

Quectel YEMN117L1B is a 4G puck antenna measuring Φ 108 mm × 45 mm. This ultra-wide-band 4G antenna provides broad coverage from 450–2700 MHz whilst offering backward-compatibility to support 3G and 2G networks as well as LTE Cat-M and narrowband IoT (NB-IoT). The antenna is available with connection via cable lengths from 300–5,000 mm, terminated with SMA Male connector. Ideal for applications where the antenna is required to be discrete, this low profile, screw mount omni-directional antenna is easy to install with maximum durability assured thanks to its IP67 & IP69K and IK09 rated, PC enclosure. It is compatible with Quectel's RM520x Series modules.

It allows constant and reliable transmission and reception due to its omni-directional gain across all frequency bands. YEMN117L1B is designed as a monopole antenna, which offers high efficiency in all working bands. It is a perfect antenna product for customers that desire highest performance. This high-efficiency, high-gain omni-directional antenna is ideally suited for smart metering, remote monitoring, vehicle tracking and telematics, and many other IoT devices. It is suitable for outdoor and indoor applications due to its robust UV resistant and flame-resistant PC enclosure meets UL 746c f1 and UL 94 V-0.

Typical applications include:

- High speed video
- Real-time streaming
- High-capacity MIMO networks
- Public transportation

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

1.1. Electrical

Electrical	
Frequency Range	410–470 MHz, 698–2690 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	FS	1.8	1.8	3.6	2.7	2.5	2.4	1.9	1.8	-	-	-
	MP	1.8	4.2	5.0	2.8	2.8	2.6	2.2	1.7	-	-	-
Max. Return Loss (dB)	FS	-10.8	-10.6	-5.0	-6.7	-7.3	-7.8	-10.3	-11.1	-	-	-
	MP	-11.1	-4.2	-3.6	-6.5	-6.5	-7.0	-8.3	-11.4	-	-	-
AVG Eff. (%)	FS	60.7	64.9	55.2	56.8	48.4	47.3	49.9	51.9	-	-	-
	MP	77.0	64.5	39.6	47.8	49.0	47.7	51.5	52.6	-	-	-
AVG. AVG Gain (dB)	FS	-2.2	-1.9	-2.6	-2.5	-3.2	-3.2	-3.0	-2.8	-	-	-
	MP	-1.1	-1.9	-4.0	-3.2	-3.1	-3.2	-2.9	-2.8	-	-	-
Max. Peak Gain (dBi)	FS	2.8	4.6	4.1	4.7	4.9	3.9	3.5	4.8	-	-	-
	MP	6.0	6.3	4.4	6.9	6.8	6.2	6.2	6.2	-	-	-

VSWR	**FS**	≤ 3.6
	MP	≤ 5.0
Return Loss	**FS**	≤ -5.0 dB
	MP	≤ -3.6 dB
Peak Gain	**FS**	≤ 4.9 dBi
	MP	≤ 6.9 dBi

Electrical – Detail

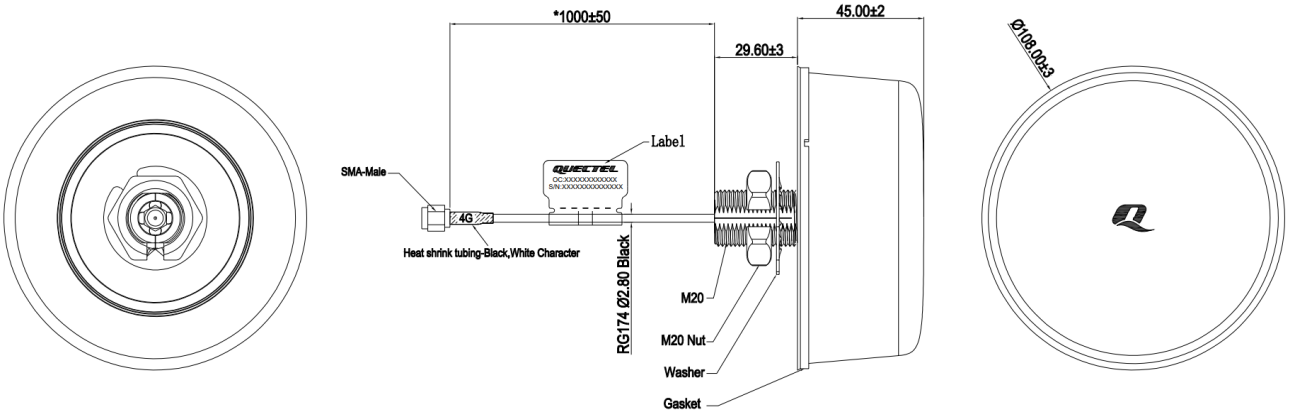
Band / **SPEC**	**Band**	**B87/B88**	**B31/B72/B73**
	Freq. (MHz)	**410–430 MHz**	**450–470 MHz**
Max. VSWR	**FS**	2.3	1.7
	MP	2.4	1.7
Max. Return Loss (dB)	**FS**	-8.1	-11.9
	MP	-7.5	-11.8
AVG Eff. (%)	**FS**	39.1	45.0
	MP	37.0	42.8
AVG. AVG Gain (dB)	**FS**	-4.1	-3.5
	MP	-4.3	-3.7
Max. Peak Gain (dBi)	**FS**	1.4	2.0
	MP	4.0	4.7

VSWR	**FS**	≤ 2.3
	MP	≤ 2.4
Return Loss	**FS**	≤ -8.1 dB
	MP	≤ -7.5 dB
Peak Gain	**FS**	≤ 2.0 dBi
	MP	≤ 4.7 dBi

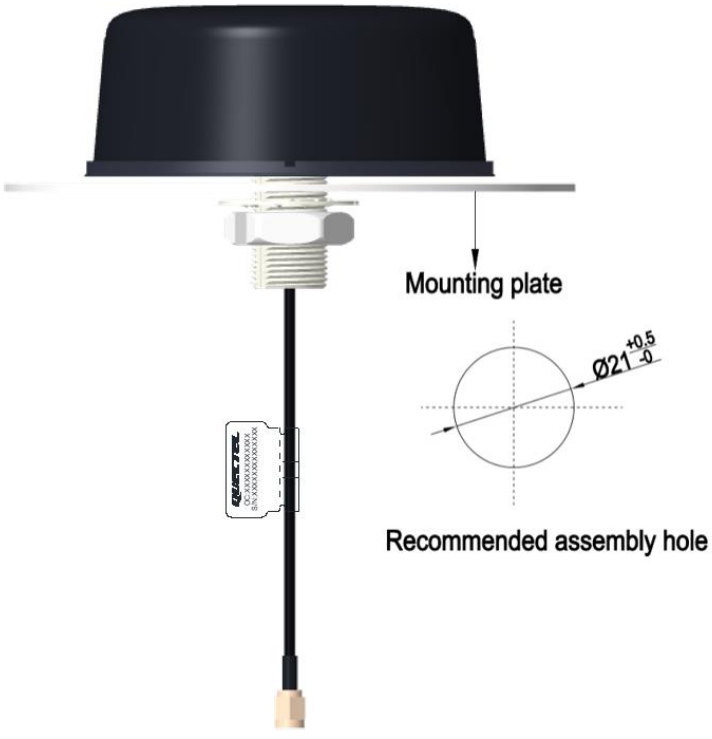
1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	Φ 108 mm × 45 mm
Material & Color	PC & Black
Connector Type	SMA Male (The current state of the SMA connector is not waterproof. If a waterproof connector is required, it can be customized.)
Mounting Type	Screw Mounting (M20)
Weight	Typ. 260 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	IP67 (After Installation) IP69K (After Installation)
Impact Protection (IK) Rating	IK09
RoHS & REACH Compliant	Yes
Housing Flame Rating	UL 94 V-0
Housing UV Resistant	UL 746c f1

2 Drawing



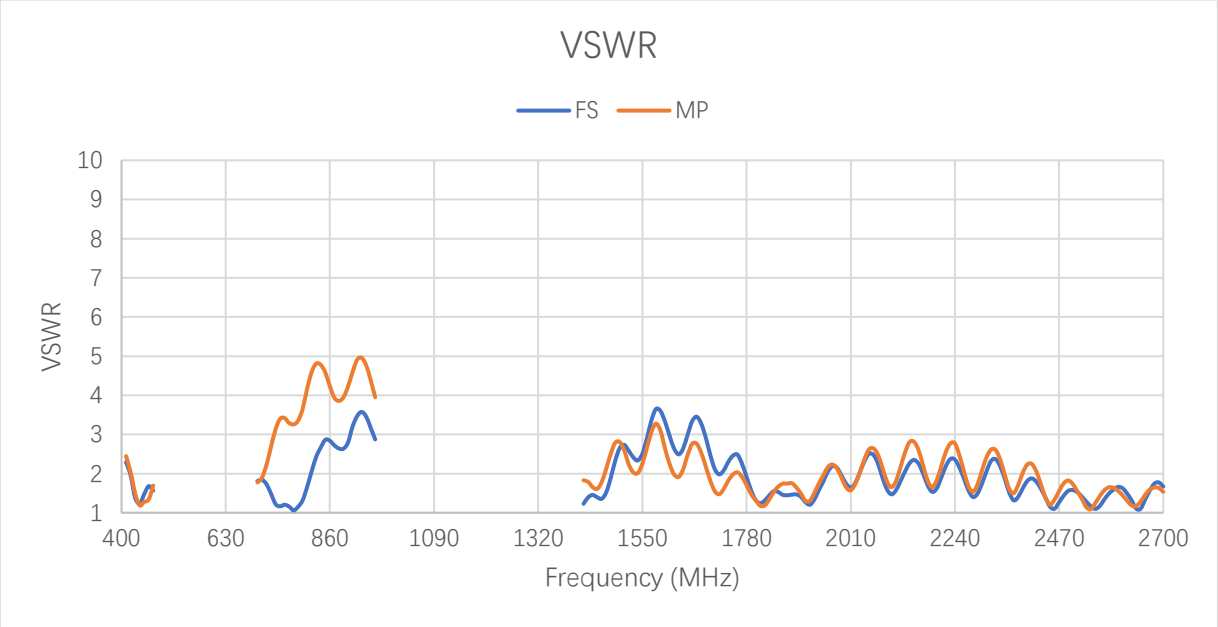
- Recommended hole dimensions as below view.
- Recommended mounting plate thickness: 2–10 mm.
- Recommended mounting plate size: ≥φ 85 mm



3 Detailed Performance

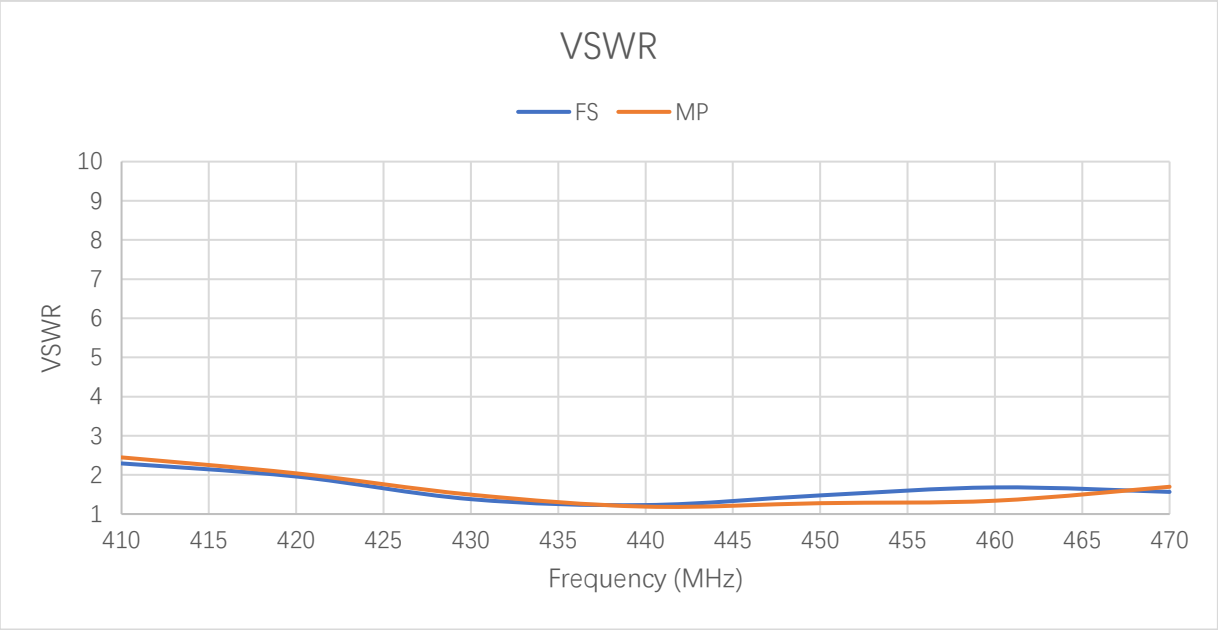
3.1. S-Parameter Test

3.1.1. VSWR



VSWR

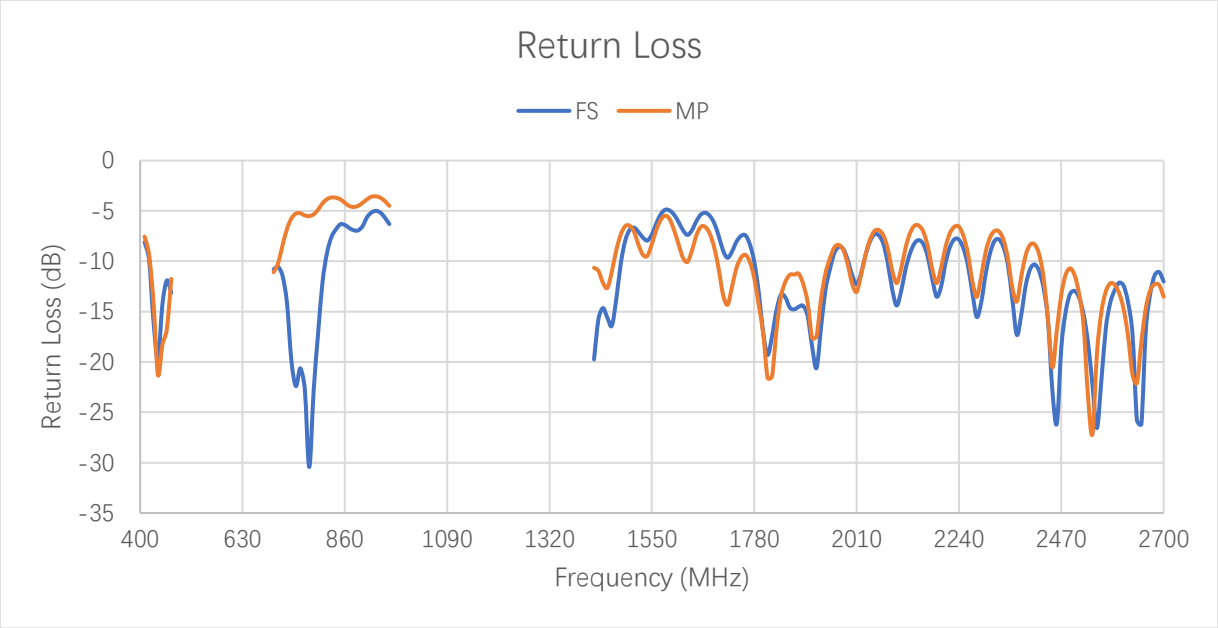
Frequency (MHz)		410	450	710	830	900	960	1440	1710	1740	1880
VSWR	FS	2.3	1.5	1.8	2.4	2.8	2.9	1.5	2.1	2.3	1.5
	MP	2.4	1.3	1.9	4.8	4.2	3.9	1.7	1.5	1.8	1.8
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
VSWR	FS	1.8	2.3	1.9	1.2	1.7	1.8	-	-	-	-
	MP	2.0	2.8	2.0	1.2	1.6	2.0	-	-	-	-



VSWR

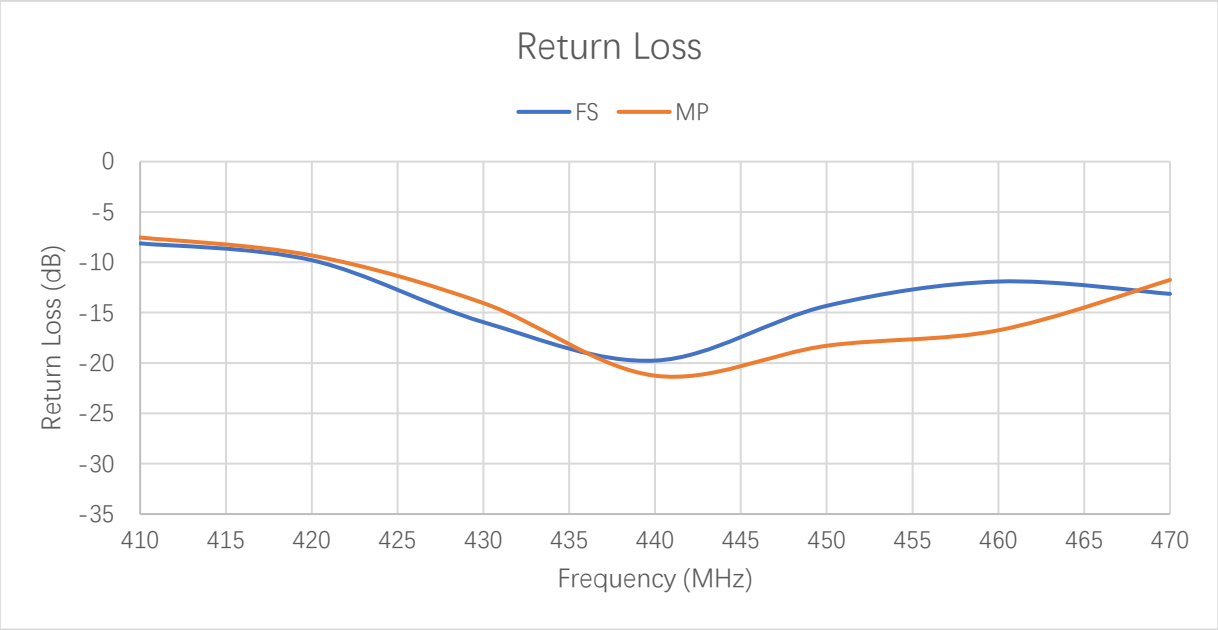
Frequency (MHz)	410	420	430	440	450	460	470
FS	2.3	2.0	1.4	1.2	1.5	1.7	1.6
MP	2.4	2.0	1.5	1.2	1.3	1.3	1.7

3.1.2. Return Loss



Return Loss (dB)

Frequency (MHz)		410	450	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	FS	-8.1	-14.3	-10.6	-7.6	-6.5	-6.3	-14.6	-8.9	-8.1	-14.5
	MP	-7.5	-18.3	-10.2	-3.7	-4.2	-4.5	-12.1	-13.4	-10.7	-11.2
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Return Loss (dB)	FS	-10.8	-8.2	-10.3	-22.9	-12.1	-10.8	-	-	-	-
	MP	-9.7	-6.5	-9.7	-20.5	-13.2	-9.7	-	-	-	-

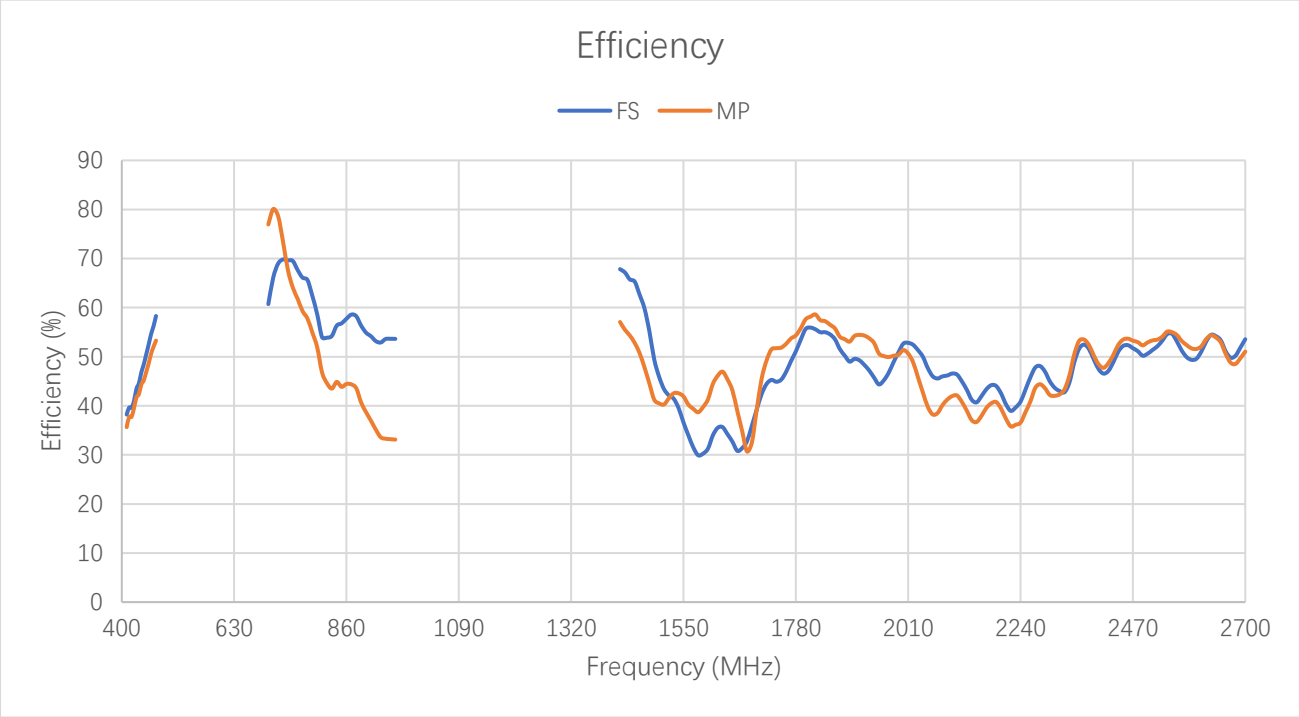


Return Loss (dB)

Frequency (MHz)	410	420	430	440	450	460	470
FS	-8.1	-9.8	-15.9	-19.8	-14.3	-11.9	-13.1
MP	-7.5	-9.3	-14.1	-21.3	-18.3	-16.8	-11.8

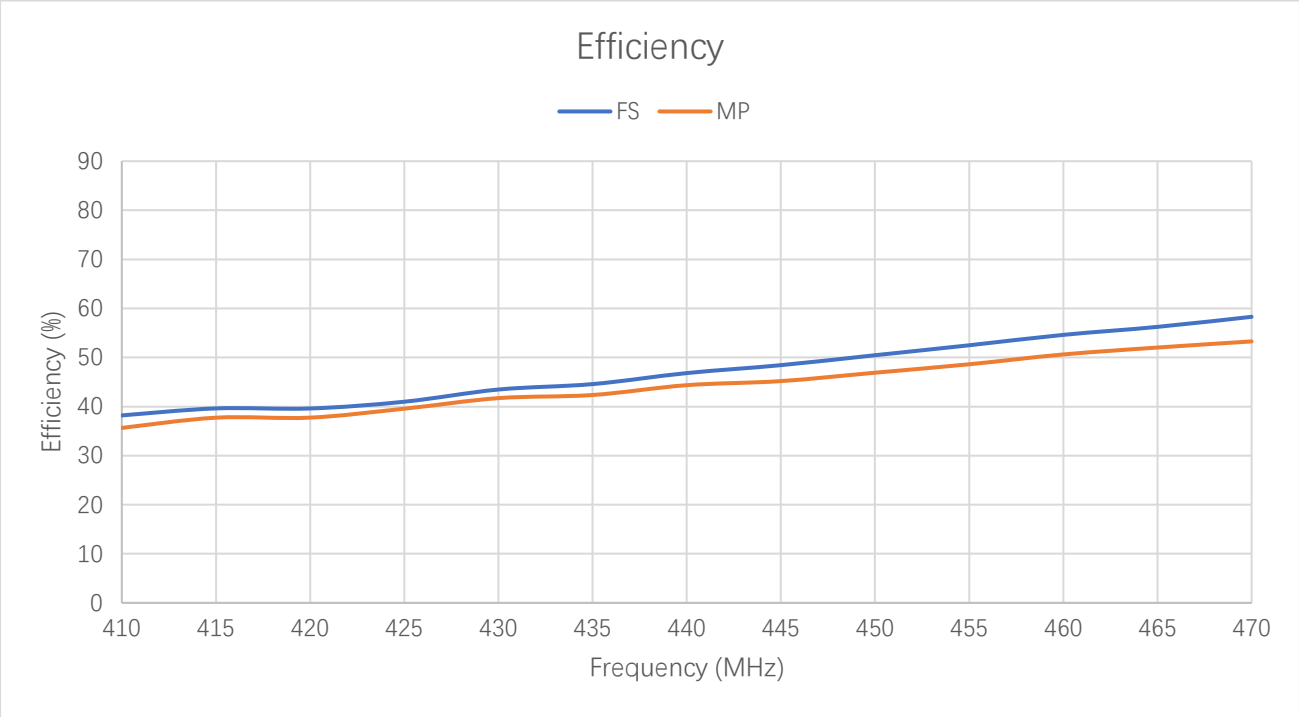
3.2. Radiation Performance Test

3.2.1. Efficiency



Efficiency (%)

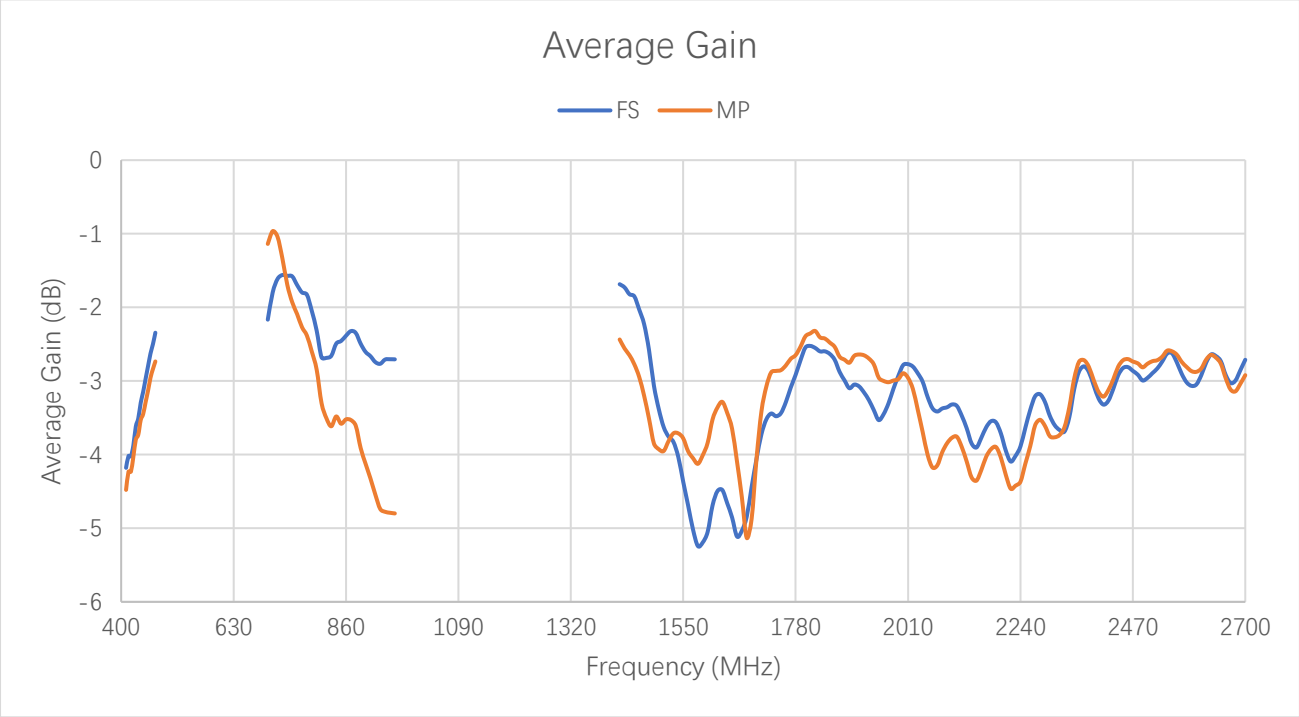
Frequency (MHz)		410	450	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	FS	38.2	50.5	66.1	54.2	54.9	53.6	65.3	42.4	44.9	50.2
	MP	35.7	46.9	80.1	43.5	38.7	33.1	52.8	45.6	51.7	53.6
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Efficiency (%)	FS	44.4	41.2	48.9	52.2	49.6	44.4	-	-	-	-
	MP	50.7	37.1	50.5	53.5	51.6	50.7	-	-	-	-



Efficiency (%)

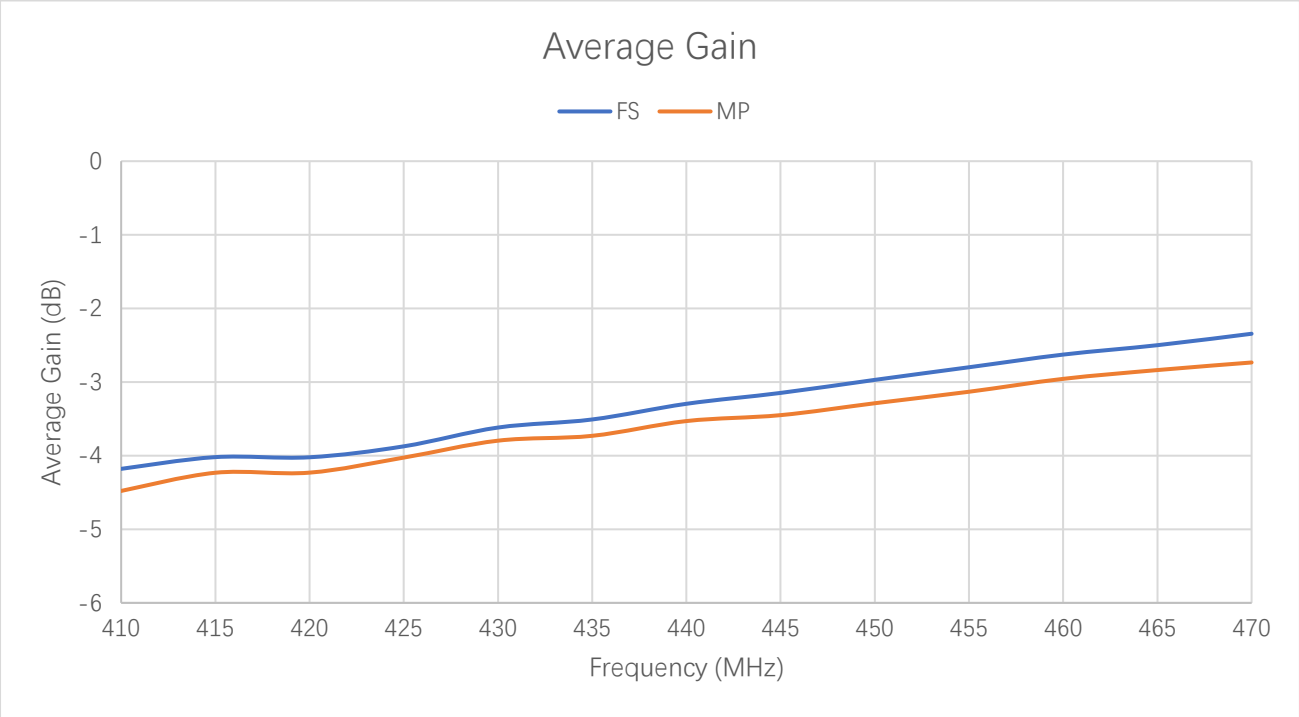
Frequency (MHz)	410	420	430	440	450	460	470
FS	38.2	39.6	43.5	46.8	50.5	54.6	58.3
MP	35.7	37.8	41.7	44.4	46.9	50.6	53.3

3.2.2. Average Gain



Average Gain (dB)

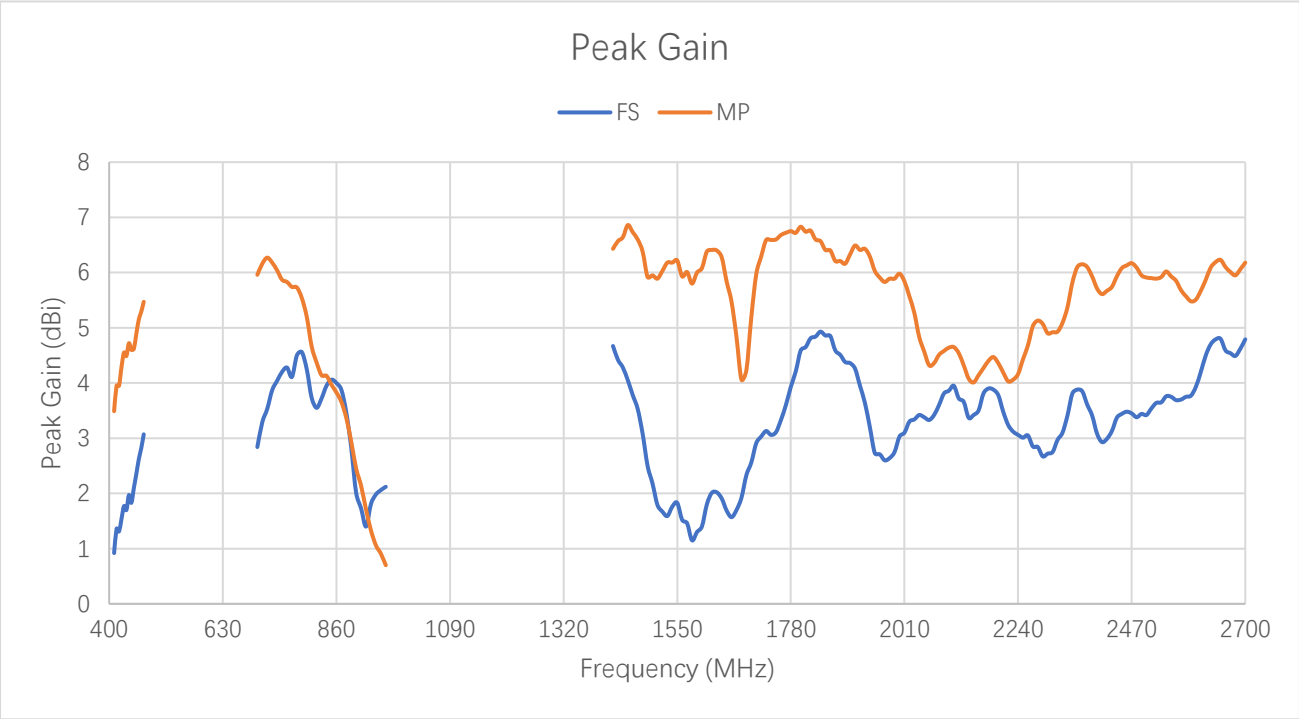
Frequency (MHz)		410	450	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	FS	-4.2	-3.0	-1.8	-2.7	-2.6	-2.7	-1.9	-3.7	-3.5	-3.0
	MP	-4.5	-3.3	-1.0	-3.6	-4.1	-4.8	-2.8	-3.4	-2.9	-2.7
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Average Gain (dB)	FS	-3.5	-3.8	-3.1	-2.8	-3.0	-3.5	-	-	-	-
	MP	-3.0	-4.3	-3.0	-2.7	-2.9	-3.0	-	-	-	-



Average Gain (dB)

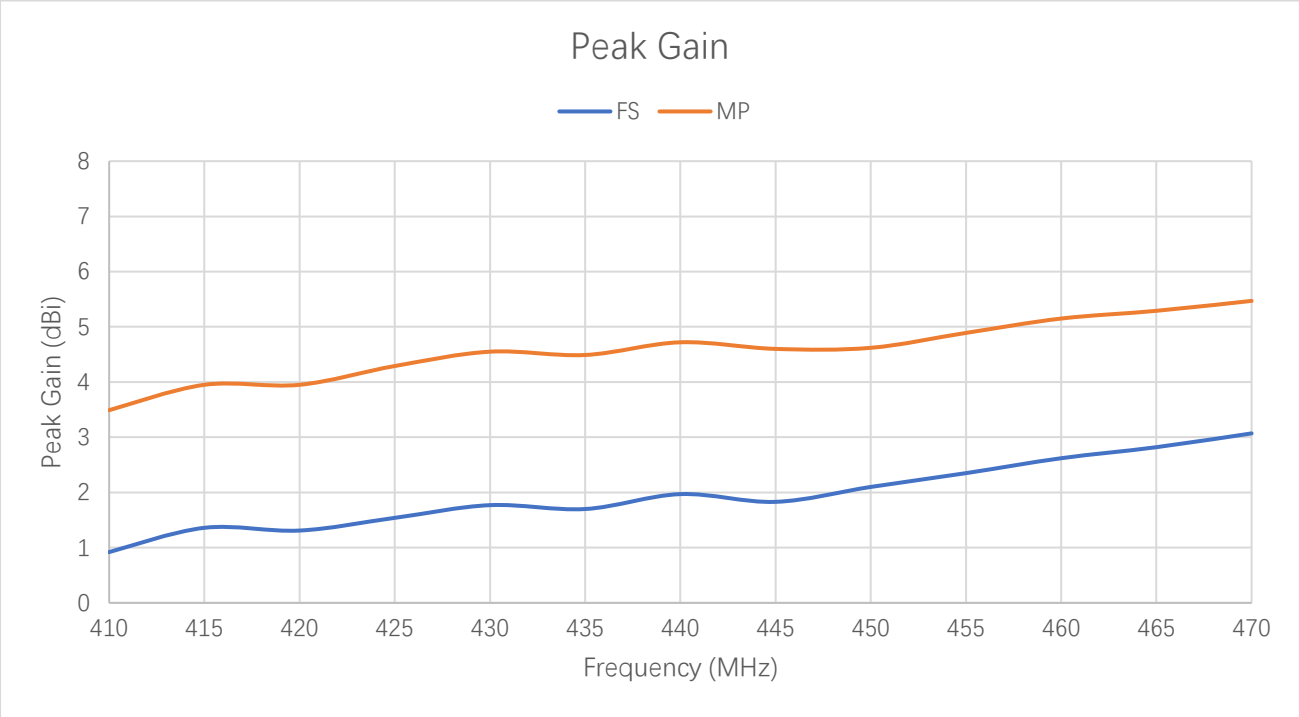
Frequency (MHz)	410	420	430	440	450	460	470
FS	-4.2	-4.0	-3.6	-3.3	-3.0	-2.6	-2.3
MP	-4.5	-4.2	-3.8	-3.5	-3.3	-3.0	-2.7

3.2.3. Peak Gain



Peak Gain (dBi)

Frequency (MHz)		410	450	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	FS	0.9	2.1	3.3	3.7	2.0	2.1	4.1	2.9	3.1	4.5
	MP	3.5	4.6	6.2	4.1	2.5	0.7	6.9	6.0	6.6	6.2
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Peak Gain (dBi)	FS	2.7	3.4	3.8	3.4	3.9	2.7	-	-	-	-
	MP	6.0	4.1	5.8	6.1	5.5	6.0	-	-	-	-



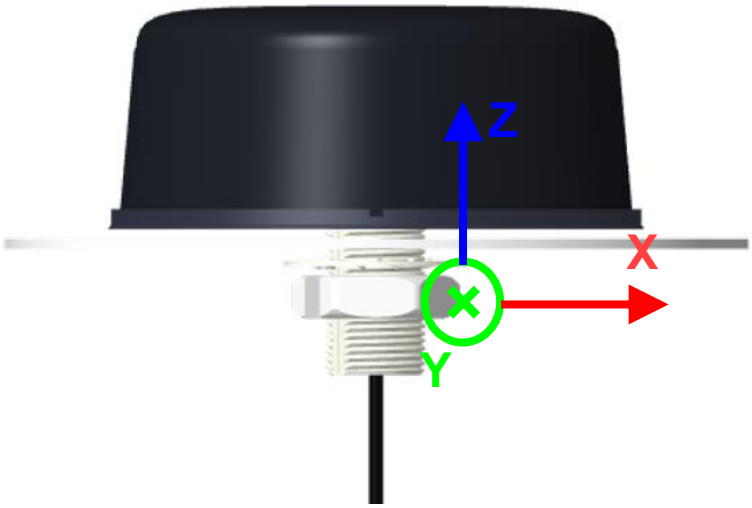
Peak Gain (dBi)

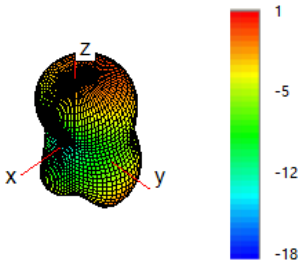
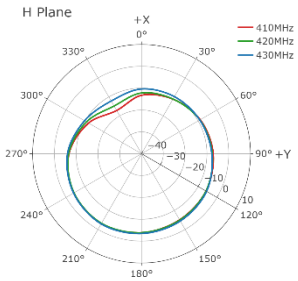
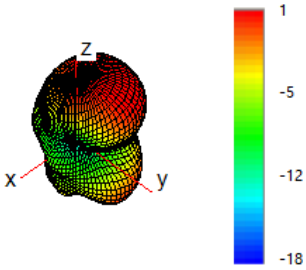
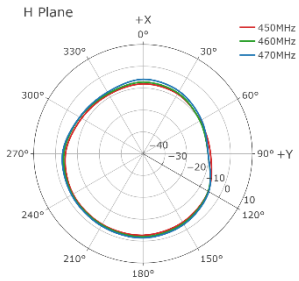
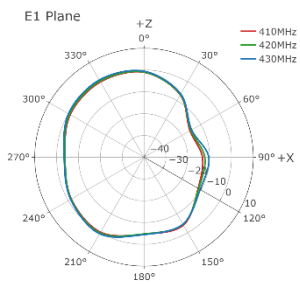
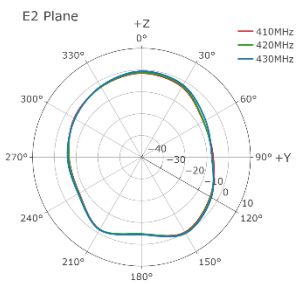
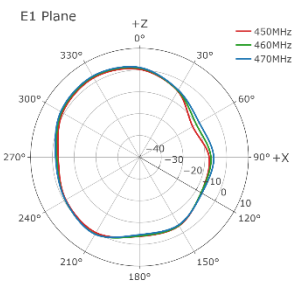
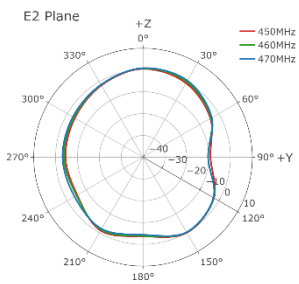
Frequency (MHz)	410	420	430	440	450	460	470
FS	0.9	1.3	1.8	2.0	2.1	2.6	3.1
MP	3.5	4.0	4.6	4.7	4.6	5.2	5.5

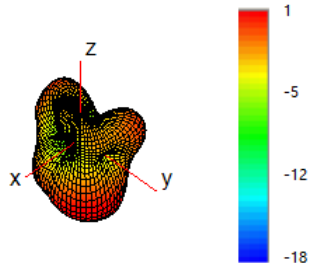
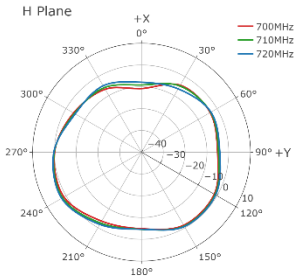
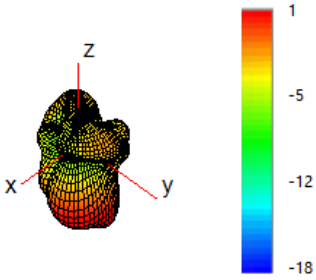
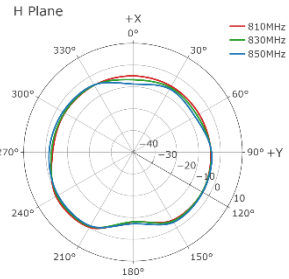
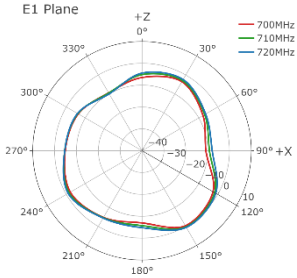
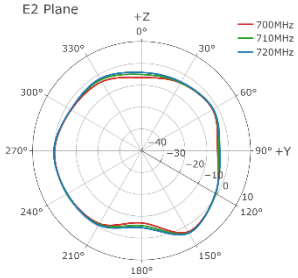
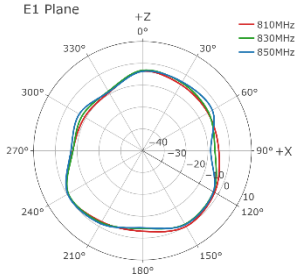
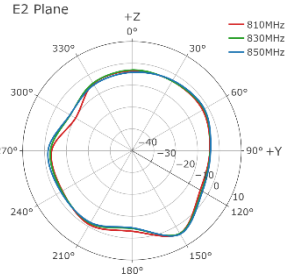
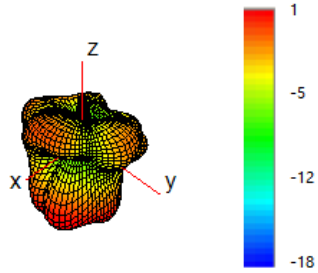
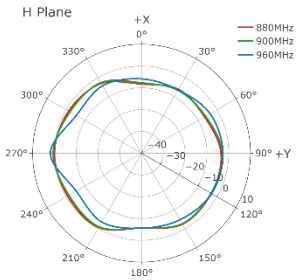
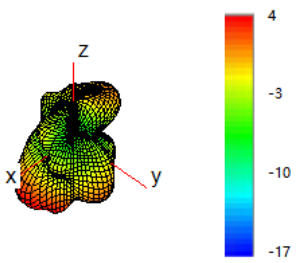
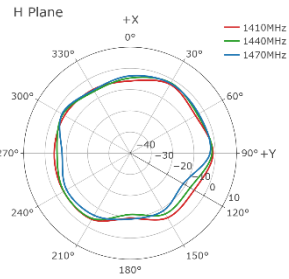
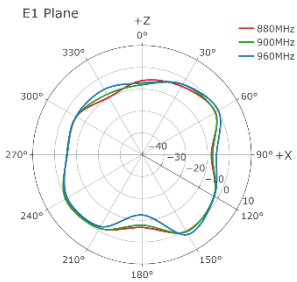
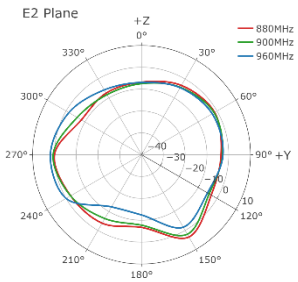
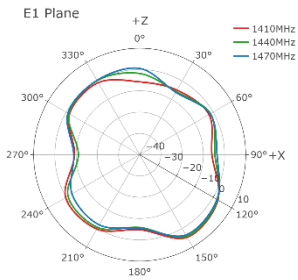
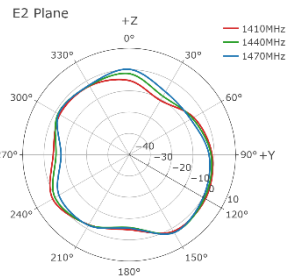
3.2.4. 3D & 2D Radiation Pattern

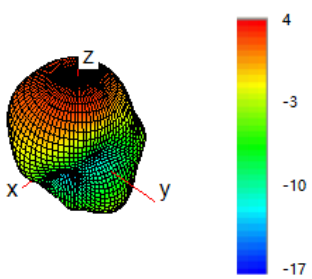
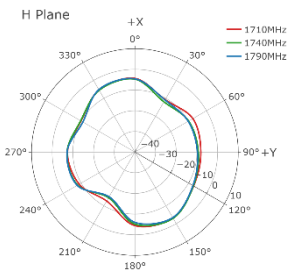
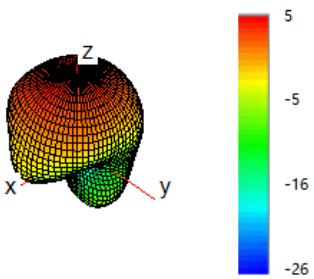
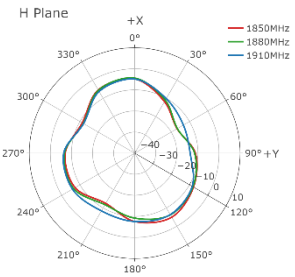
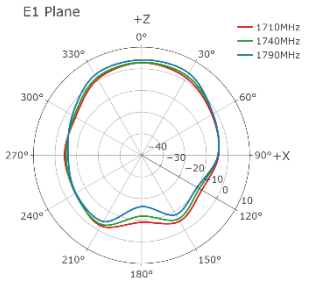
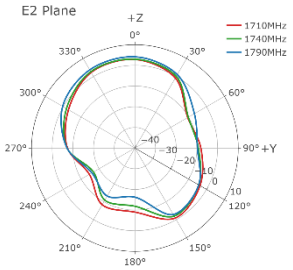
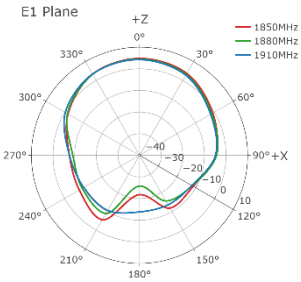
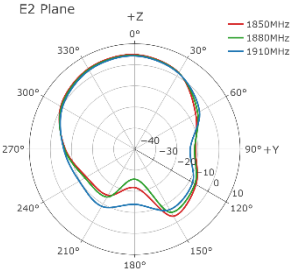
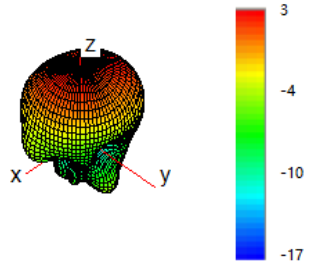
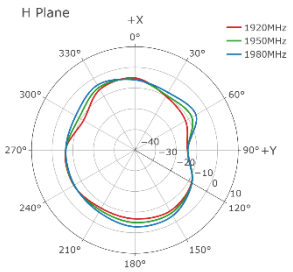
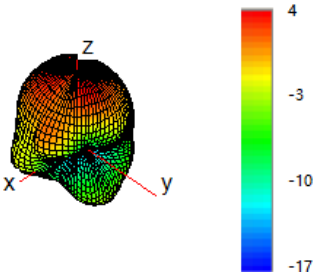
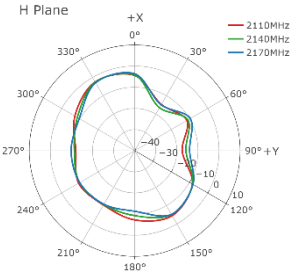
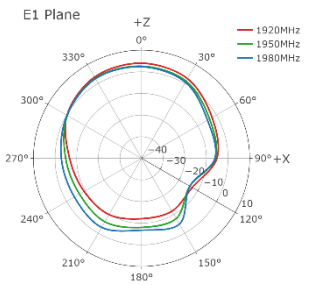
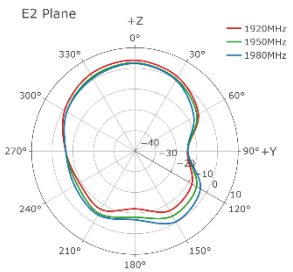
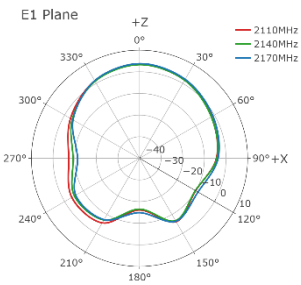
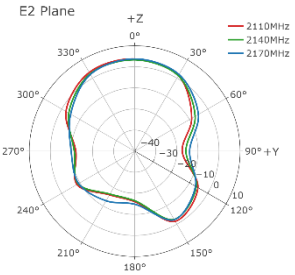
3.2.4.1. Test Condition: Free Space

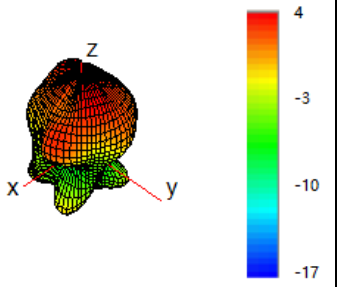
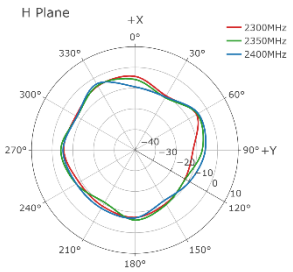
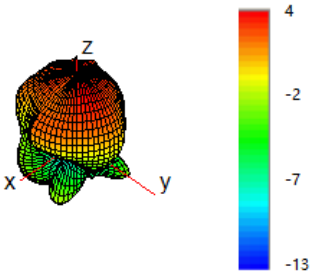
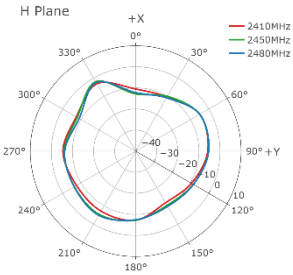
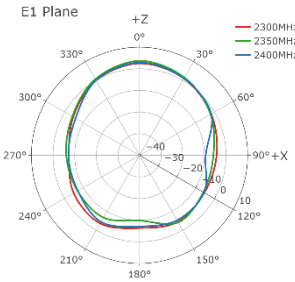
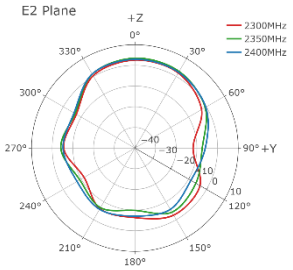
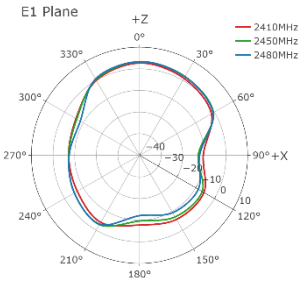
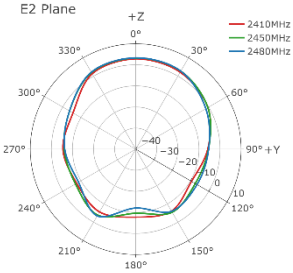
- Test Chamber: FS-G-1

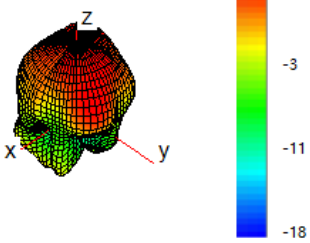
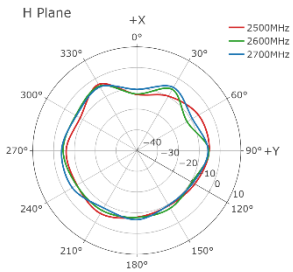
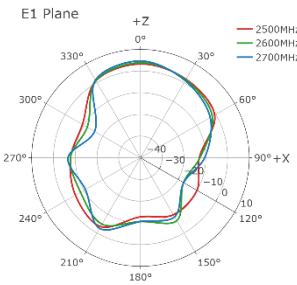
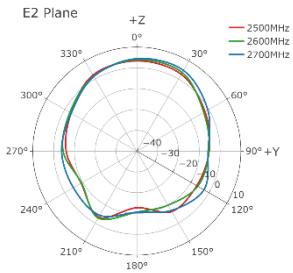


420 MHz		460 MHz	
			
			

710 MHz		830 MHz	
			
			
900 MHz		1440 MHz	
			
			

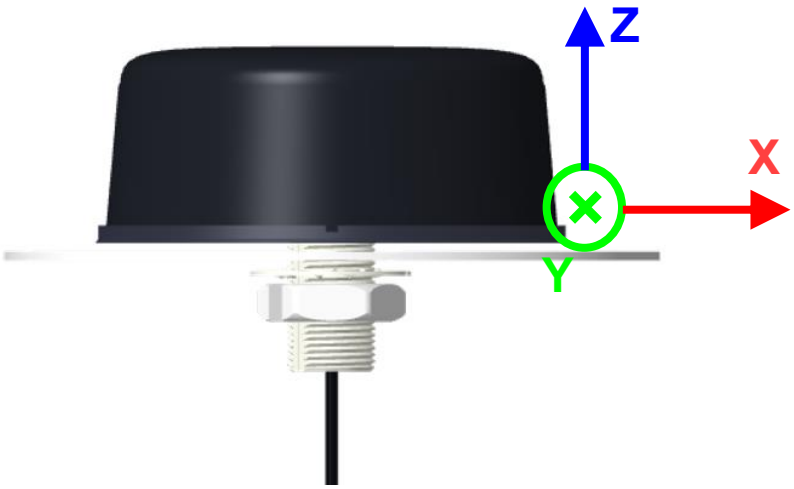
1740 MHz		1880 MHz	
			
			
1950 MHz		2140 MHz	
			
			

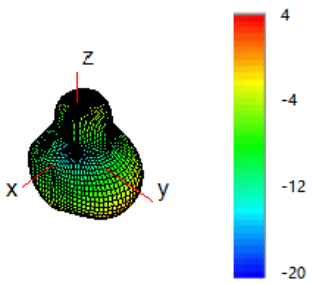
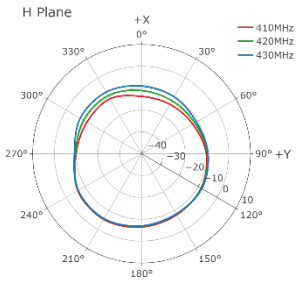
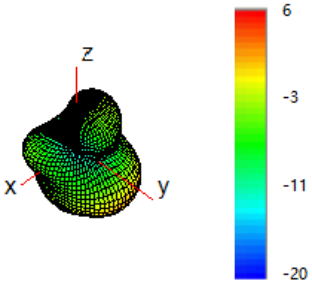
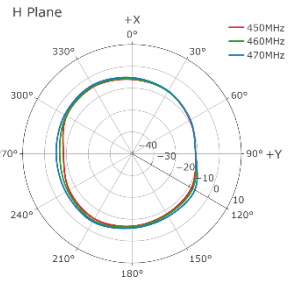
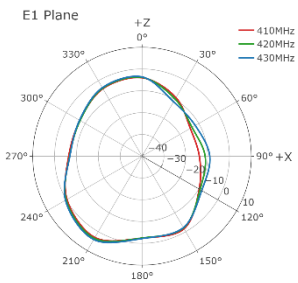
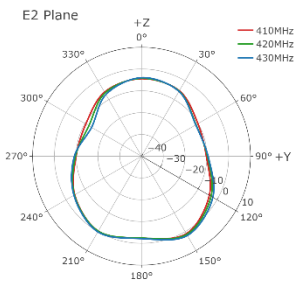
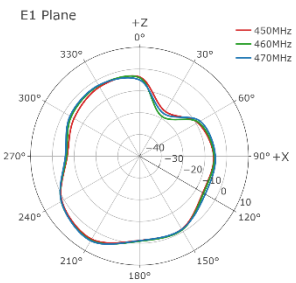
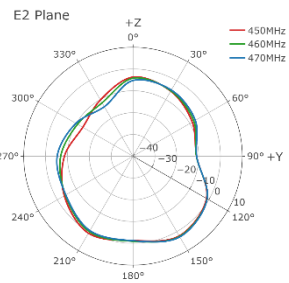
2350 MHz		2450 MHz	
			
			

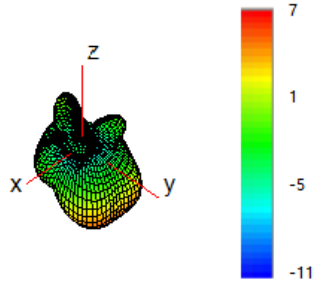
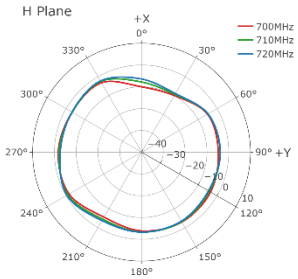
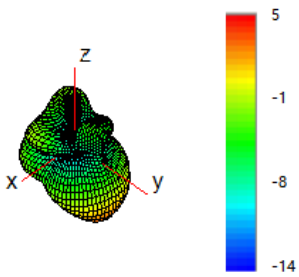
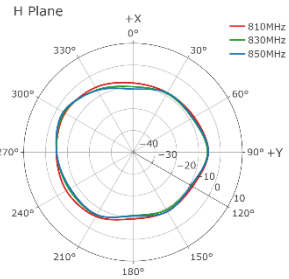
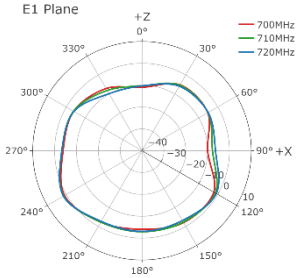
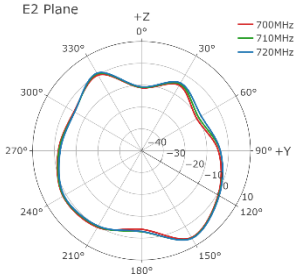
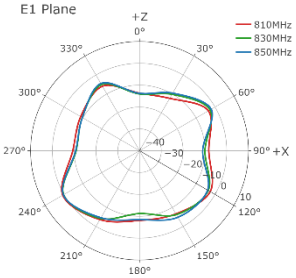
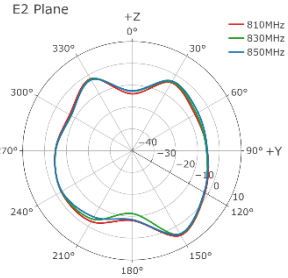
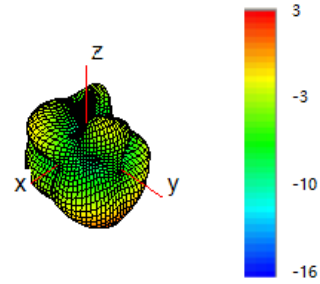
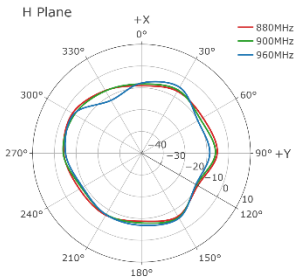
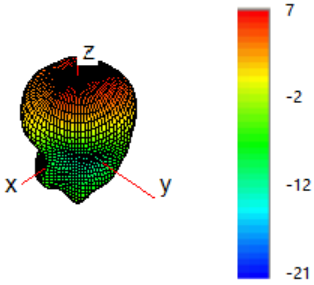
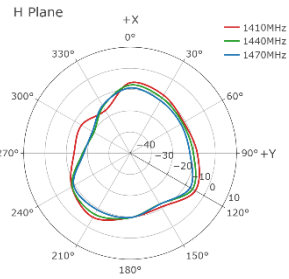
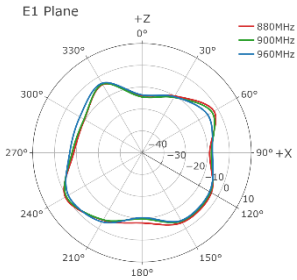
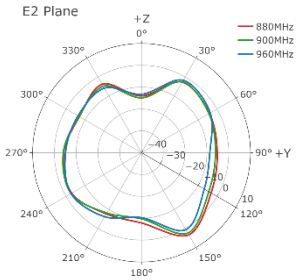
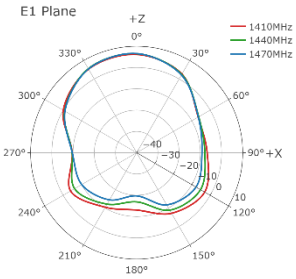
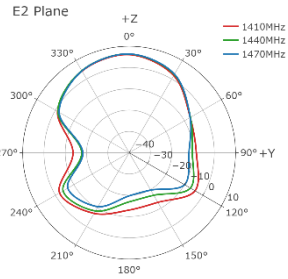
2600 MHz	
	
	

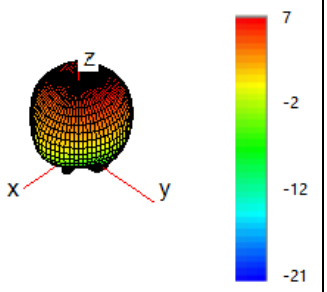
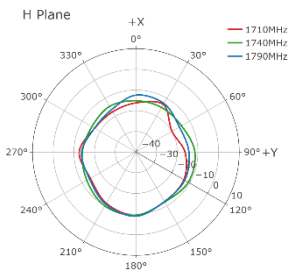
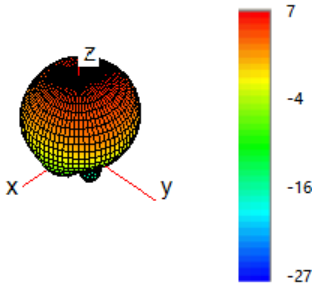
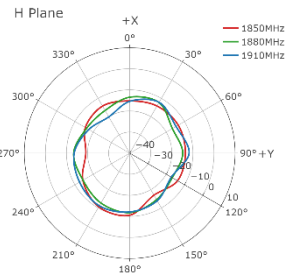
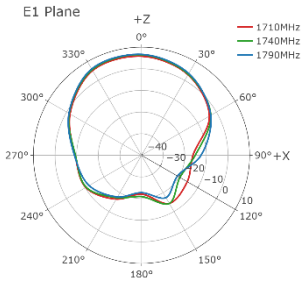
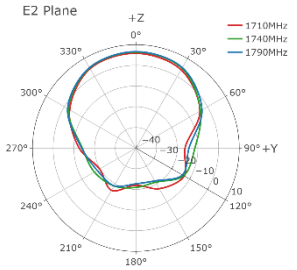
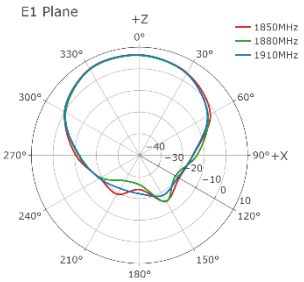
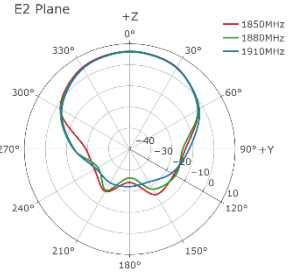
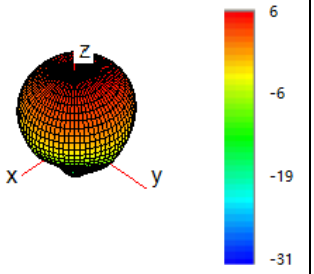
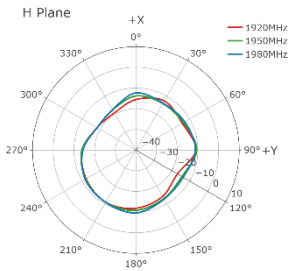
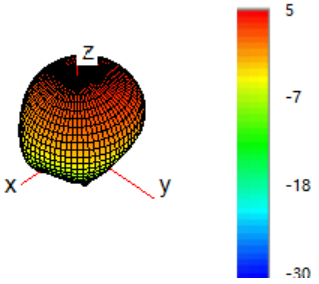
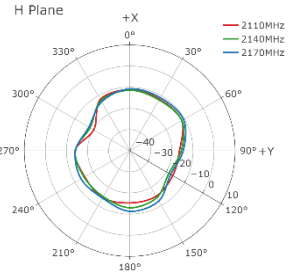
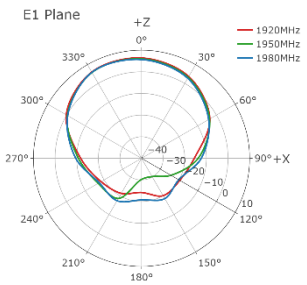
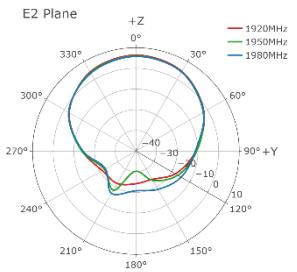
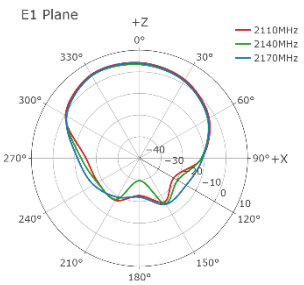
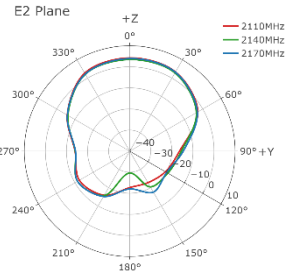
3.2.4.2. Test Condition: On 300 mm × 300 mm metal plane

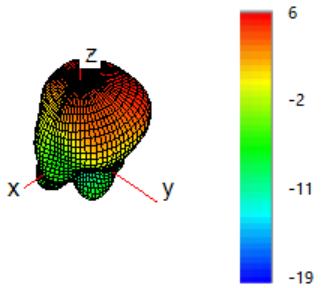
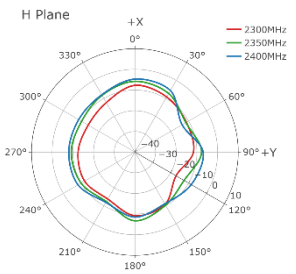
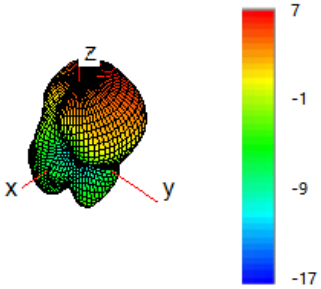
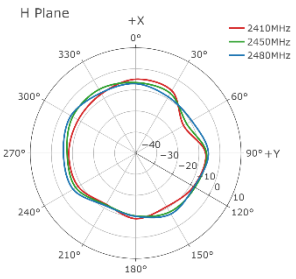
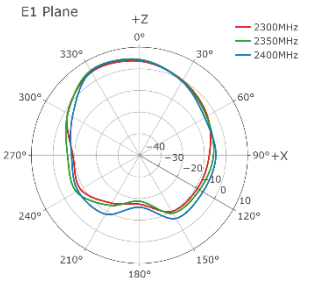
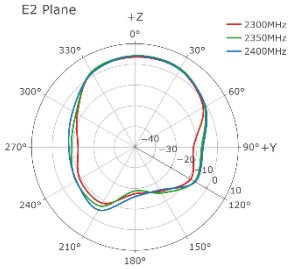
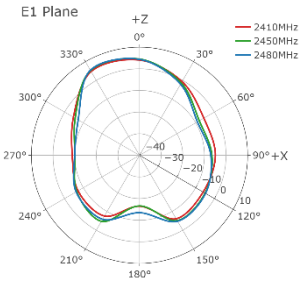
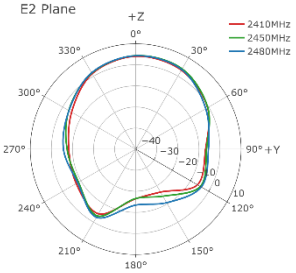
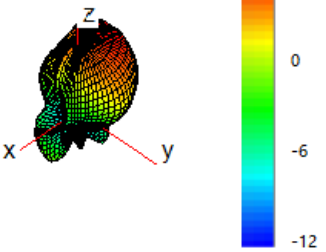
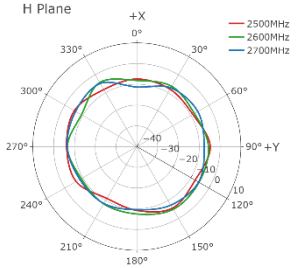
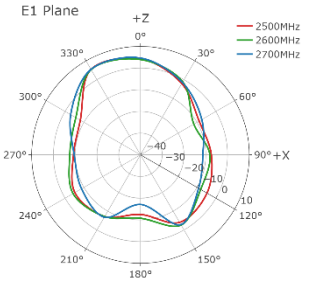
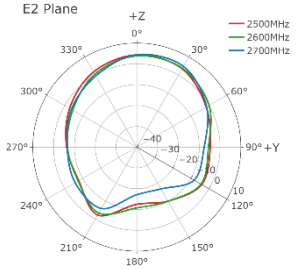
- Test Chamber: FS-G-1



420 MHz		460 MHz	
			
			

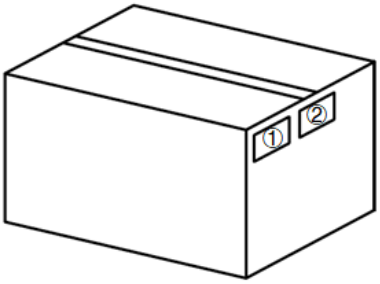
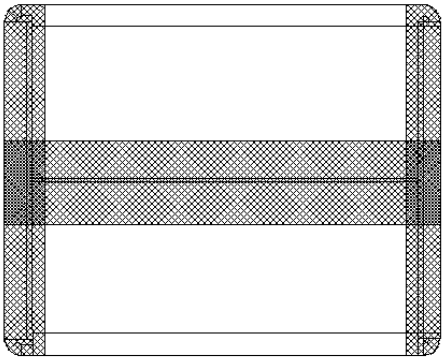
710 MHz		830 MHz	
			
			
900 MHz		1440 MHz	
			
			

1740 MHz		1880 MHz	
			
			
1950 MHz		2140 MHz	
			
			

2350 MHz		2450 MHz	
			
			
2600 MHz			
			
			

4 Packaging

Step	Packaging picture / 2D picture	Description
1		Wrap the product in a PE bag and put it into the inner box.
2		Place the pearl cotton on the product.
3		Inner box diagram Inner Box Size: L × W × H = 165× 165 × 135 mm

4		(18 Inner Boxes / Carton Box) (18 PCS Antennas / Carton Box) Carton Size: L × W × H = 525 × 525 × 305 mm
5		**Position for Attaching Labels** ① Carton Label ② Quality Label
6		**Sealing Cartons** H-shaped sealing cartons

Contact Us

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

Version	Date	Author	Note
-	2024-03-19	Mordecai LIU/ Lance SUN/ David LIU/ Rainey LIAO	Creation of the document
1.0	2024-03-19	Mordecai LIU/ Lance SUN/ David LIU/ Rainey LIAO	First official release
1.1	2025-06-20	Mordecai LIU/ Strong QIANG/ Rainey LIAO	1. Updated the supported antenna frequency band to 698–2690 MHz. 2. Updated the antenna image (Cover page). 3. Listed the related data of 410-470 MHz separately (Chapter 3). 4. Updated the packaging (Chapter 4).

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