



Antenna Datasheet

Product OC: YECW000N1A

Version: 1.2

Date: 2024-04-18

Status: Released

Product Name: External Antenna

Key Features:

Optimized for LPWA

High-efficiency external antenna

Low-profile antenna

Frequency band: 450–470 MHz & 700–960 MHz & 1710–2690 MHz

Efficiency: Up to 60 % (FS)

Dimensions: 150 mm × 50 mm × 36.5 mm

RoHS compliant

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.

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1 Specification

Test Condition: Free Space & On 500 mm × 500 mm Metal Plane

1.1. Electrical

Electrical	
Frequency Range	450–470 MHz & 700–960 MHz & 1710–2690 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Electrical - Detail									
SPEC	Band	Band	B31 /B72	B12 /B13 /B28	B5 /B8 /B26	B1 /B2 /B3	B40	Wi-Fi 2G	B38 /B41
		Freq. (MHz)	450 – 470	700 – 810	820 – 960	1700 – 2170	2300 – 2400	2400 – 2500	2500 – 2690
Max VSWR	FS		3.4	2.1	2.9	2.1	2.2	2.0	2.2
	MP		2.8	2.7	3.5	2.0	2.2	2.0	2.2
Max Return Loss (dB)	FS		-5.2	-9.0	-6.3	-8.9	-8.7	-9.3	-8.7
	MP		-6.5	-6.8	-5.2	-9.7	-8.5	-9.4	-8.5
AVG Eff. (%)	FS		28.4	53.9	42.6	45.6	37.1	36.1	35.5
	MP		43.5	46.4	30.2	48.9	40.3	38.1	33.4
AVG AVG Gain (dB)	FS		-5.6	-2.7	-3.7	-3.4	-4.3	-4.4	-4.5
	MP		-3.6	-3.4	-5.3	-3.1	-4.0	-4.2	-4.8

Max Peak Gain (dBi)	FS	2.8	3.6	2.9	2.8	2.1	1.9	1.8
	MP	1.3	1.4	1.1	5.1	4.9	5.0	5.2
VSWR	FS	≤ 3.4						
	MP	≤ 3.5						
Return Loss	FS	≤ -5.2 dB						
	MP	≤ -5.2 dB						
Peak Gain	FS	≤ 3.6 dBi						
	MP	≤ 5.2 dBi						

- FS: Free Space
- MP: On 500 mm × 500 mm Metal Plane

1.2. Supported Bands

5G NR / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / GPRS / GSM / NB-IoT				
Band	Frequency (MHz)	Uplink (MHz)	Downlink (MHz)	Covered
1	2100	1920–1980	2110–2170	√
2	1900	1850–1910	1930–1990	√
3	1800	1710–1785	1805–1880	√
4	1700	1710–1755	2110–2155	√
5	850	824–849	869–894	√
7	2600	2500–2570	2620–2690	√
8	900	880–915	925–960	√
9	1800	1749.9–1784.9	1844.9–1879.9	√
11	1500	1427.9–1447.9	1475.9–1495.9	-
12	700	699–716	729–746	√
13	700	777–787	746–756	√
14	700	788–798	758–768	√

17	700	704–716	734–746	√
18	850	815–830	860–875	√
19	850	830–845	875–890	√
20	800	832–862	791–821	√
21	1500	1447.9–1462.9	1495.9–1510.9	-
22	3500	3410–3490	3510–3590	-
23	2100	2000–2020	2180–2200	√
24	1600	1626.5–1660.5	1525–1559	-
25	1900	1850–1915	1930–1995	√
26	850	814–849	859–894	√
28	700	703–748	758–803	√
31	450	452.5–457.5	462.5–467.5	√
34	2100	2010–2025		√
38	2600	2570–2620		√
39	1900	1880–1920		√
40	2300	2300–2400		√
41	2500	2496–2690		√
42	3500	3400–3600		-
48	3500	3550–3700		-
66	1700	1710–1780	2110–2200	√
71	600	663–698	617–652	-
74	1500	1427–1470	1475–1518	-
77	3500	3300–4200		-
78	3500	3300–3800		-
79	4500	4400–5000		-

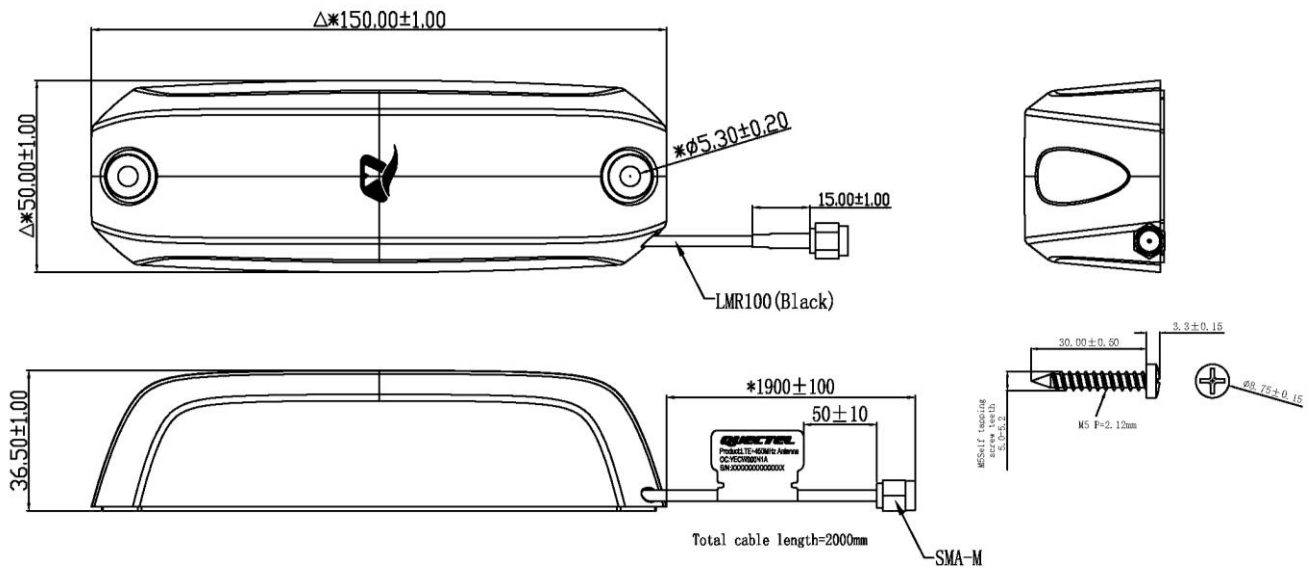
Note:

- Covered √ means efficiency > 20 %.

1.3. Mechanical & Environmental

Mechanical	
Antenna Dimensions	150 mm × 50 mm × 36.5 mm
Material & Color	PC + ABS & Black
Cable Type & Color & Length	LMR100 & BLACK & 2000 mm
Connector Type	SMA Male
Mounting Type	Screw
Weight	Typ. 110.4 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS Compliant	Yes

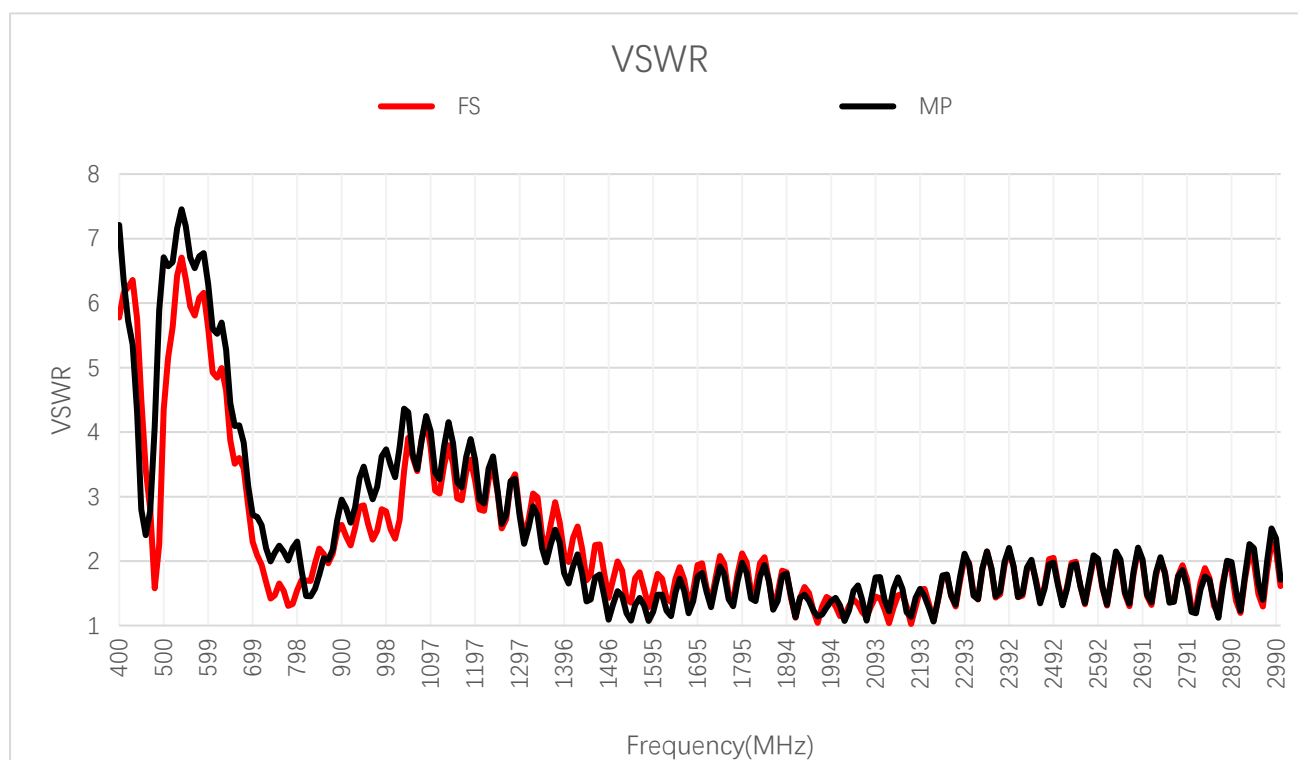
2 Drawing



3 Detailed Performance

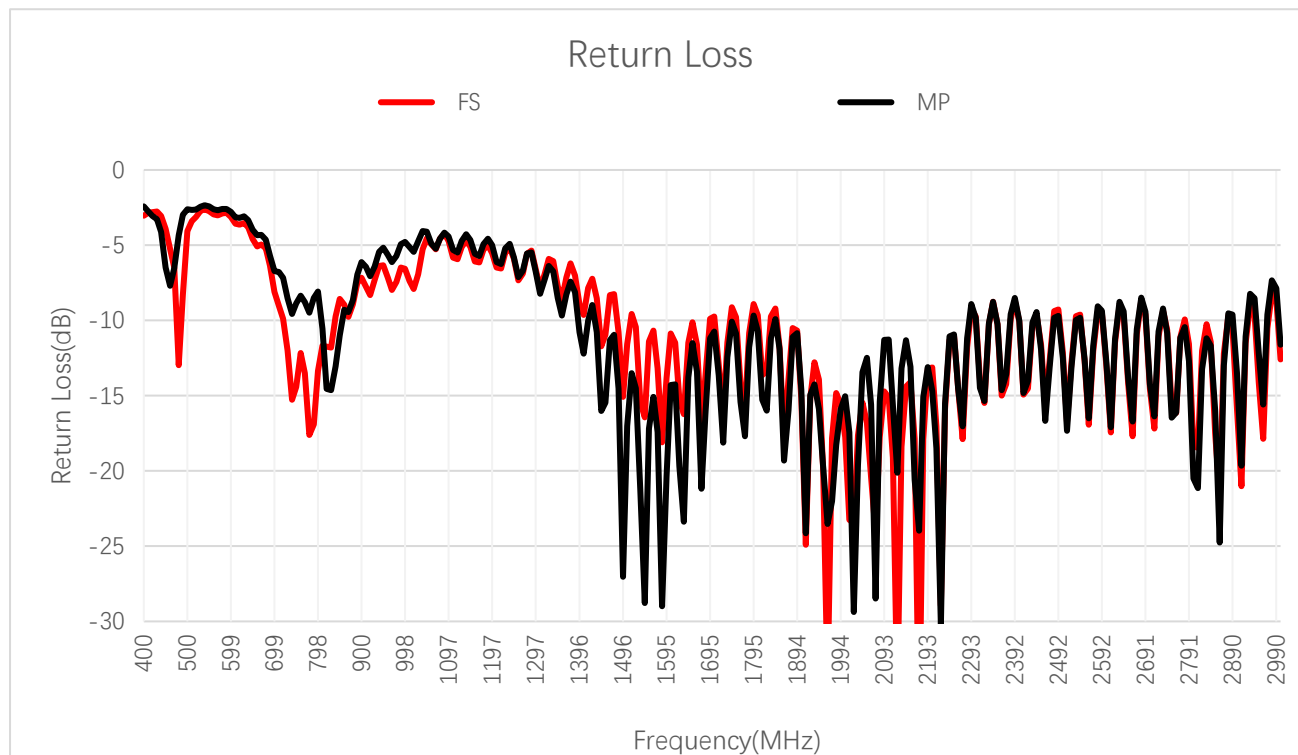
3.1. S-Parameter Test

3.1.1. VSWR



VSWR										
Frequency (MHz)	450	470	710	830	900	1740	1950	2140	2350	2600
FS	4.5	2.8	2.1	1.7	2.6	2.1	1.2	1.5	1.9	1.6
MP	2.8	2.8	2.7	1.5	3.0	1.9	1.2	1.7	1.9	1.6

3.1.2. Return Loss

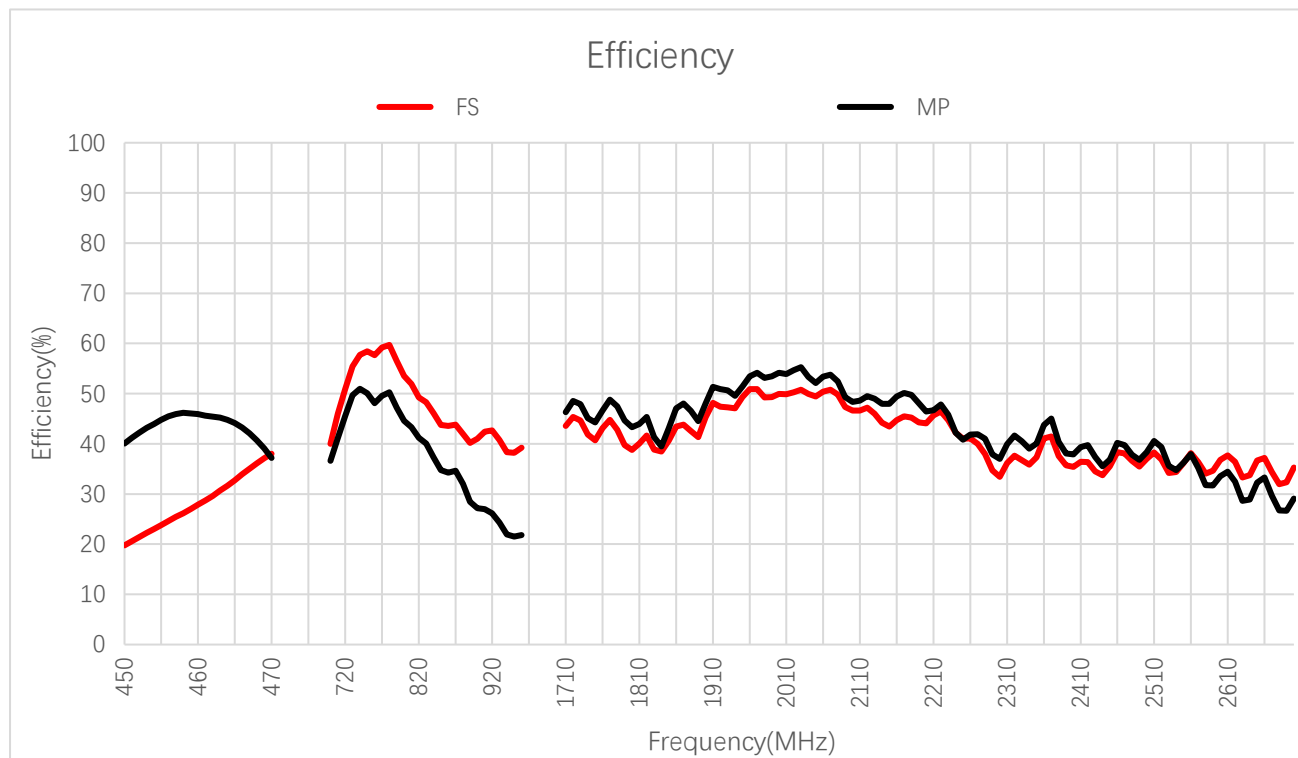


Return Loss (dB)

Frequency (MHz)	450	470	710	830	900	1740	1950	2140	2350	2600
FS	-3.9	-6.5	-9.0	-11.8	-7.2	-9.1	-19.8	-14.4	-10.3	-13.0
MP	-6.5	-6.5	-6.8	-14.6	-6.1	-10.1	-19.7	-11.3	-10.2	-12.8

3.2. Radiation Performance Test

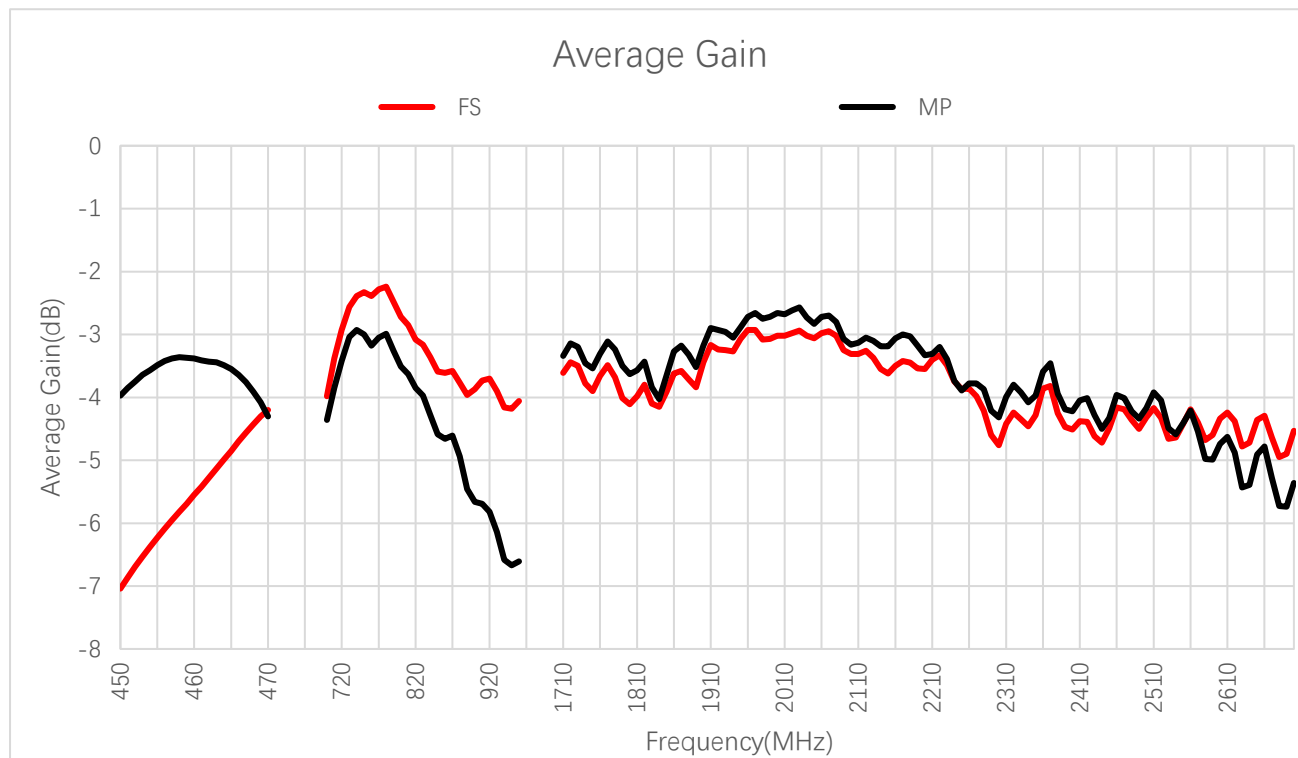
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	450	470	710	830	900	1740	1950	2140	2350	2600
FS	19.8	38.0	46.0	48.3	41.0	41.8	49.3	44.2	37.3	36.8
MP	40.1	37.2	41.2	40.1	27.2	45.1	51.4	48.0	40.1	33.6

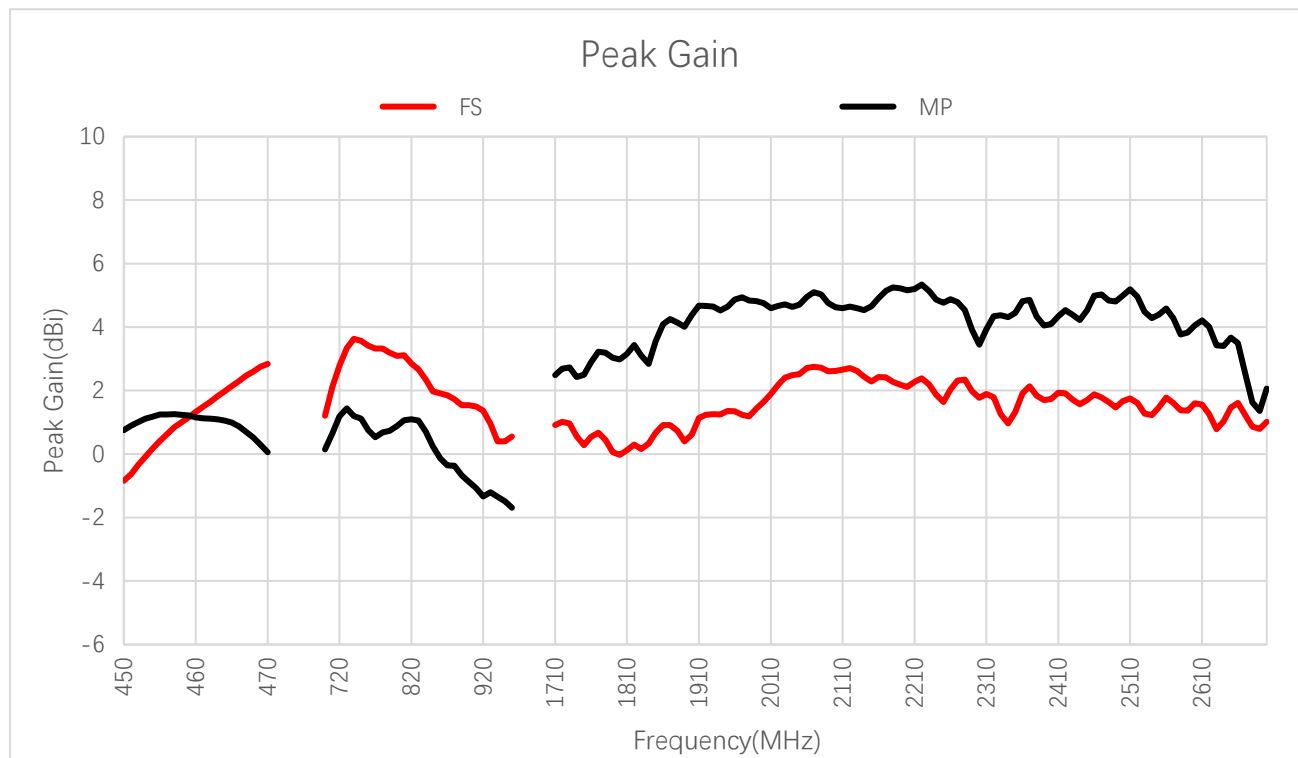
3.2.2. Average Gain



Average Gain (dB)

Frequency (MHz)	450	470	710	830	900	1740	1950	2140	2350	2600
FS	-7.0	-4.2	-3.4	-3.2	-3.9	-3.8	-3.1	-3.6	-4.3	-4.3
MP	-4.0	-4.3	-3.9	-4.0	-5.7	-3.5	-2.9	-3.2	-4.0	-4.7

3.2.3. Peak Gain



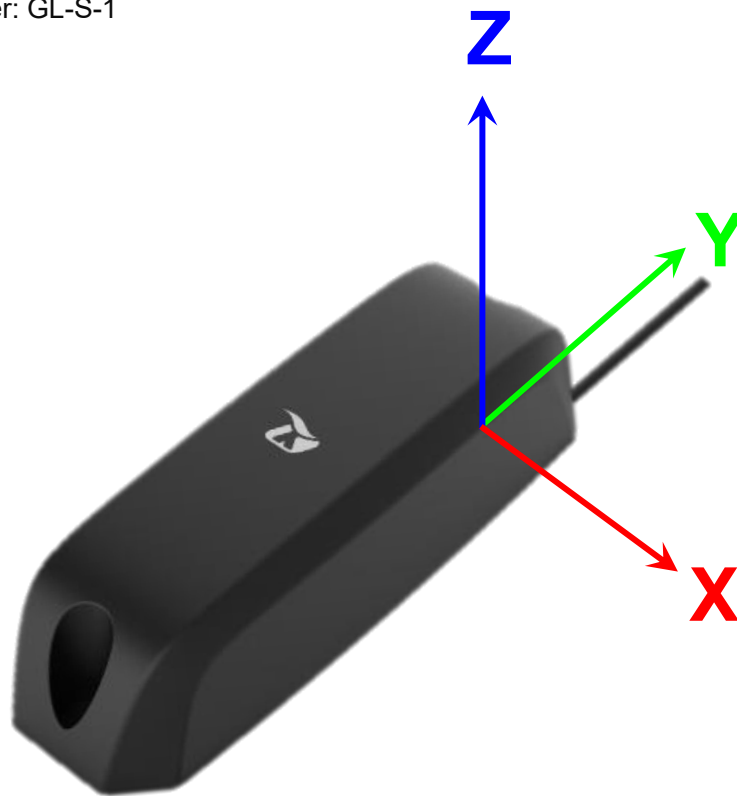
Peak Gain (dBi)

Frequency (MHz)	450	470	710	830	900	1740	1950	2140	2350	2600
FS	-7.0	-4.2	2.1	2.7	1.5	0.6	1.4	2.4	1.3	1.6
MP	-4.0	-4.3	0.7	1.1	-0.9	2.4	4.7	4.5	4.4	4.1

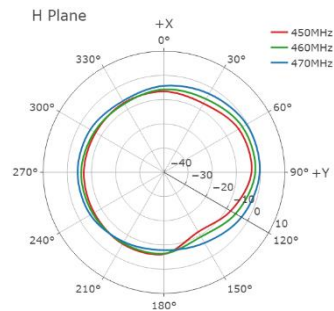
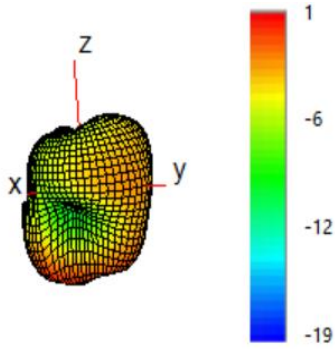
3.2.4. 3D & 2D Radiation Pattern

3.2.4.1. Test Condition: Free Space

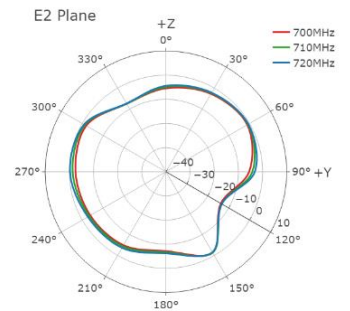
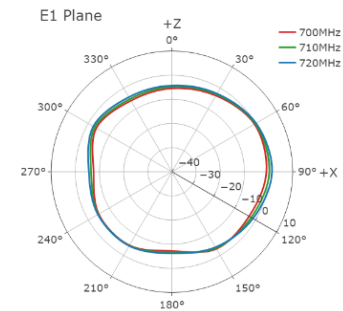
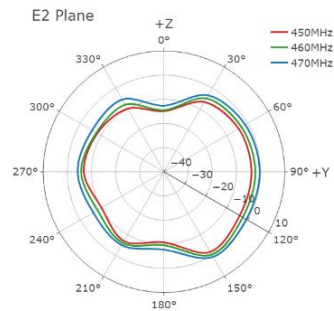
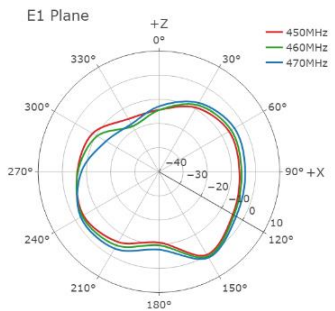
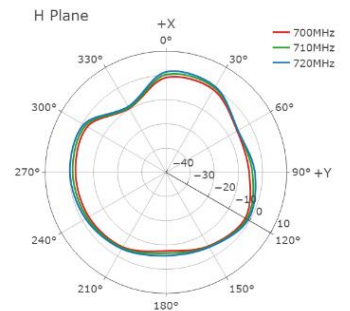
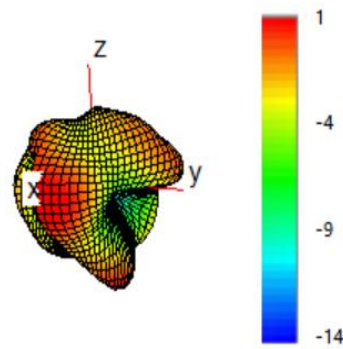
- Test Chamber: GL-S-1



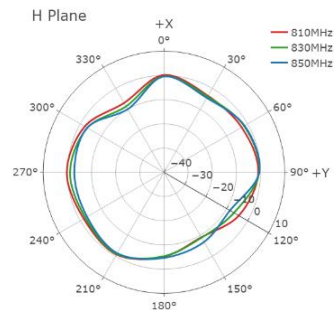
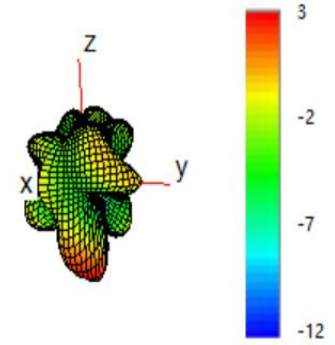
460 MHz



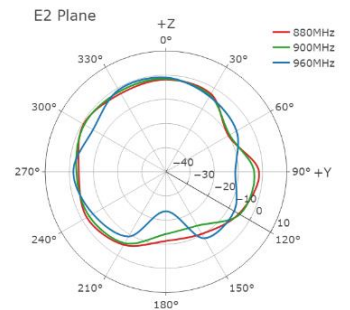
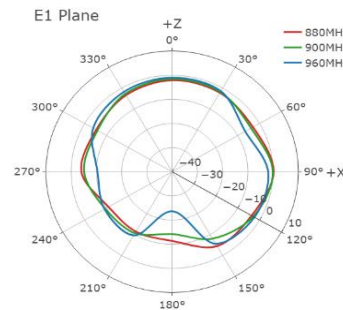
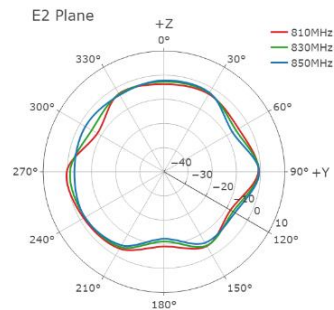
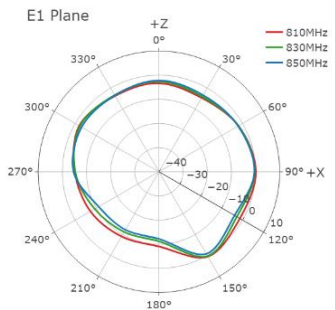
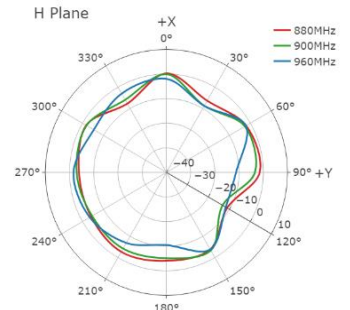
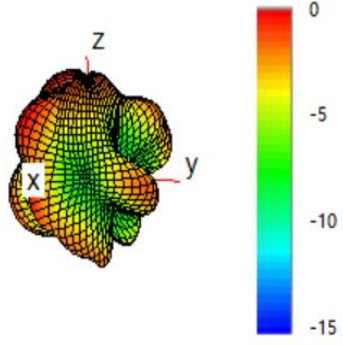
710 MHz

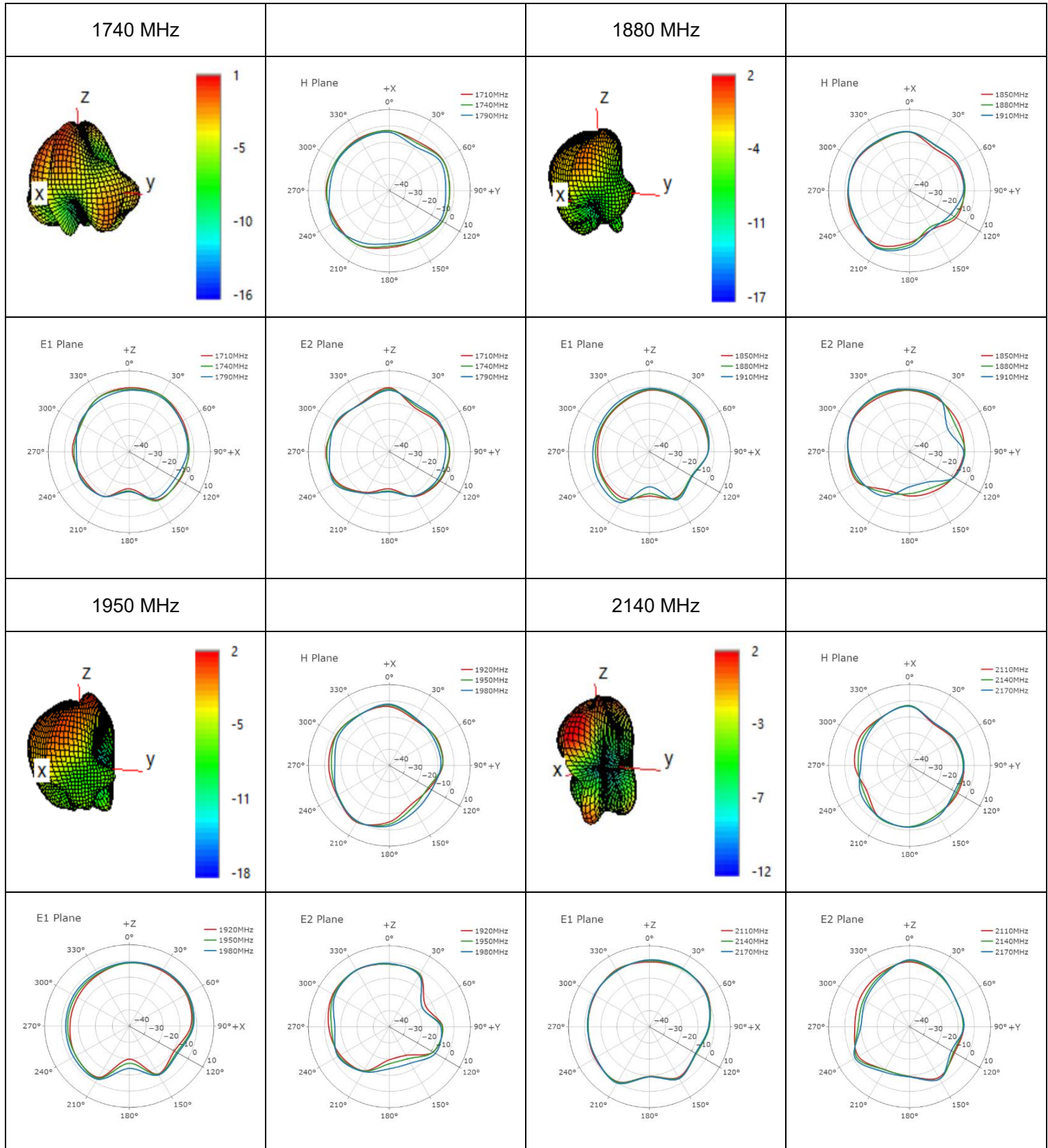


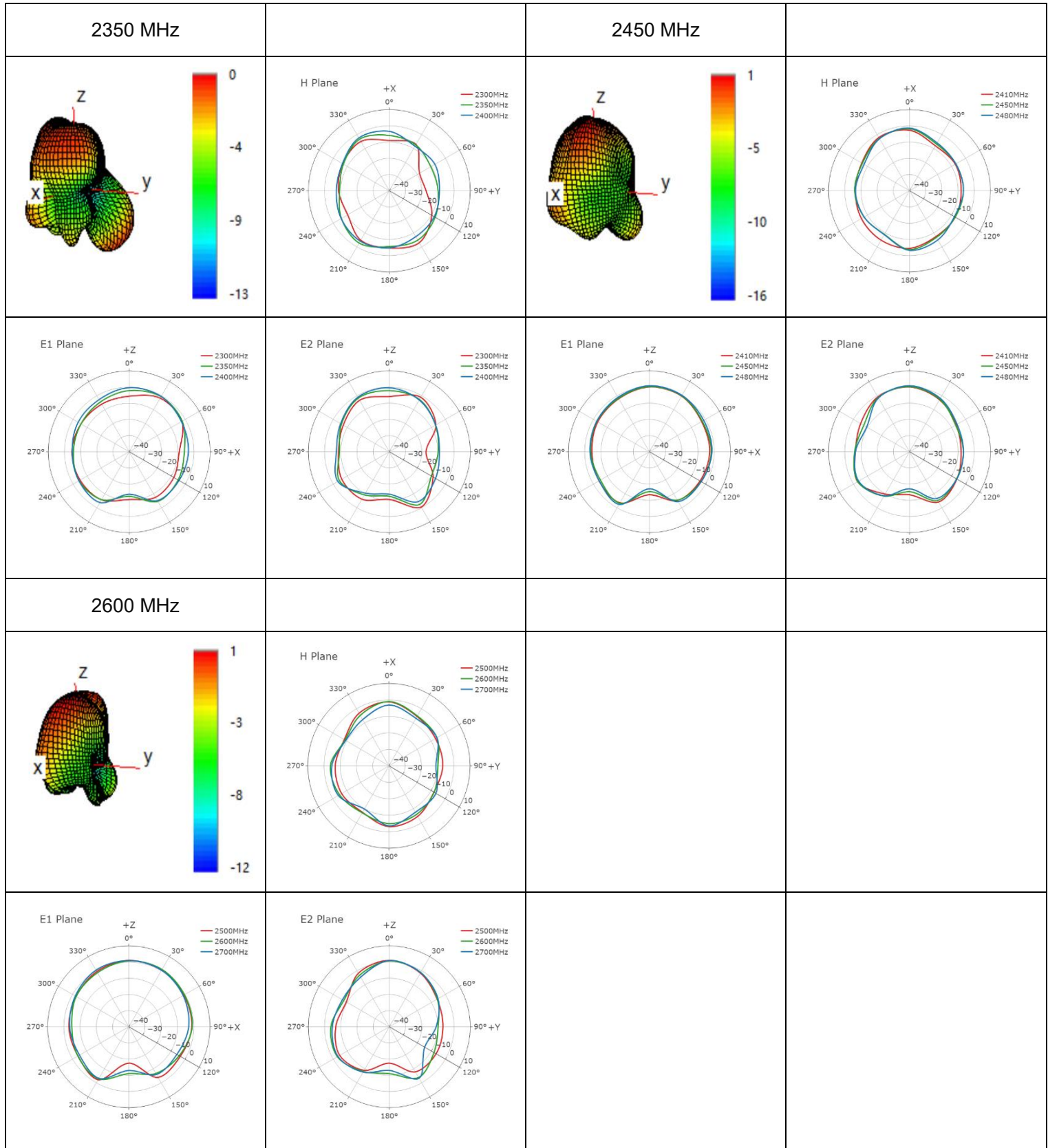
830 MHz



900 MHz

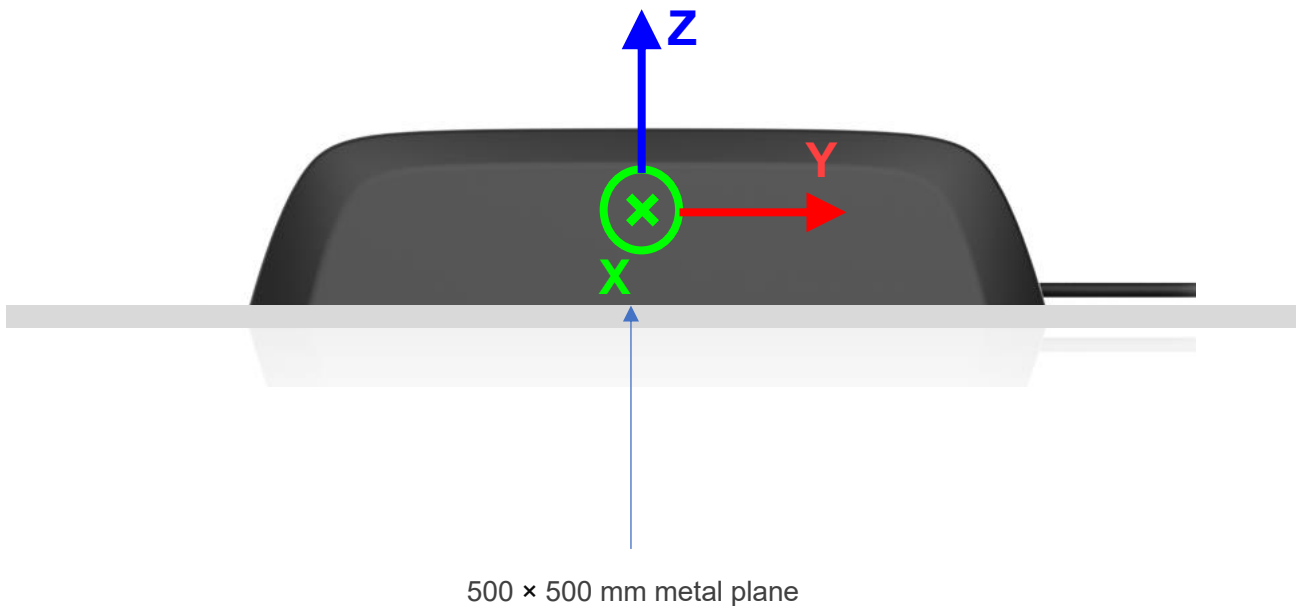




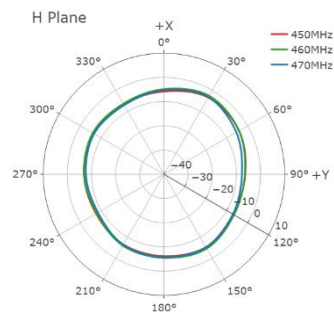
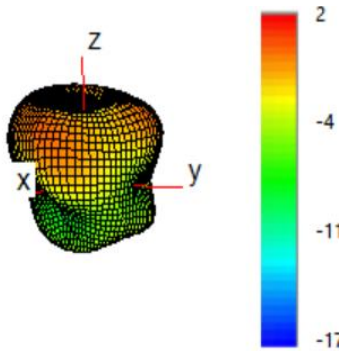


3.2.4.2. Test Condition: On 500 mm × 500 mm Metal Plane

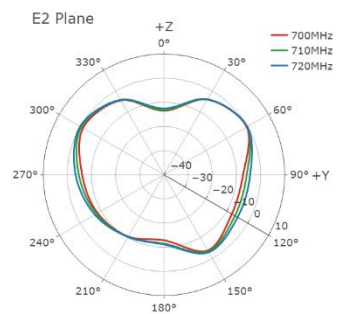
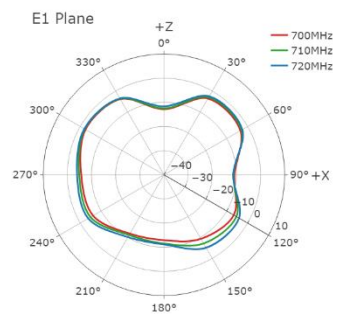
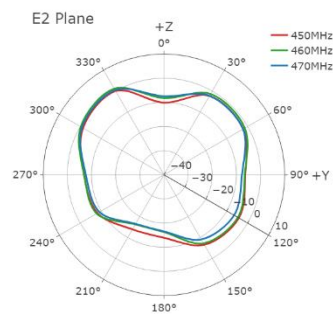
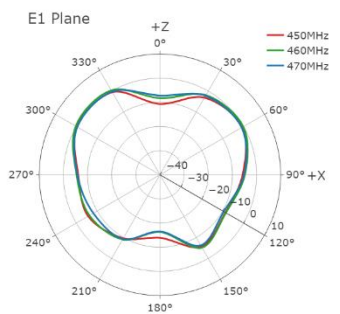
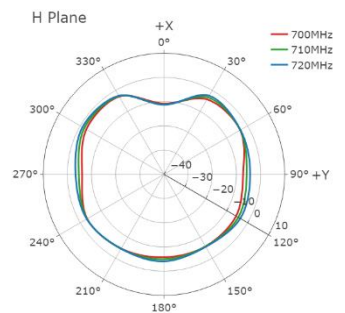
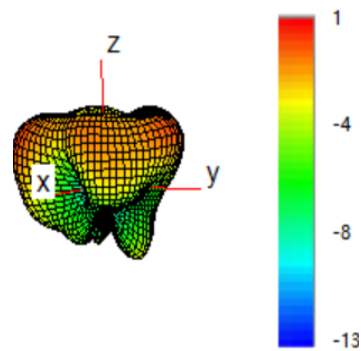
- Test Chamber: GL-S-1



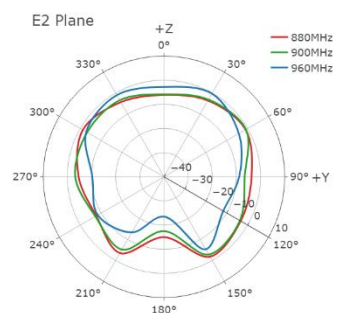
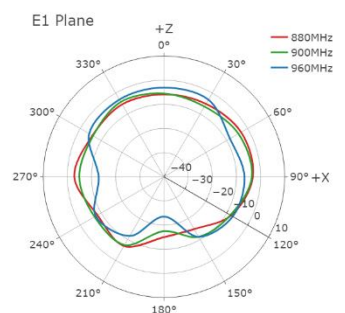
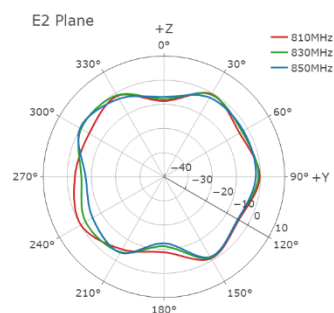
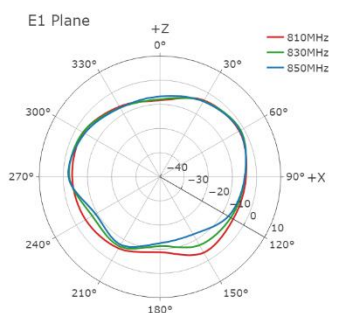
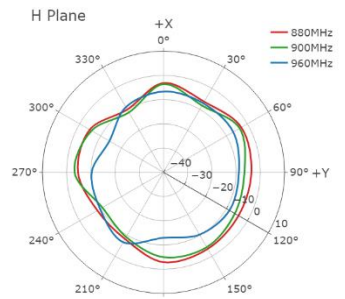
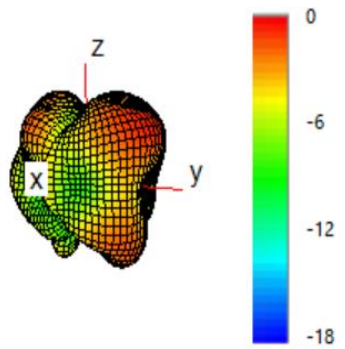
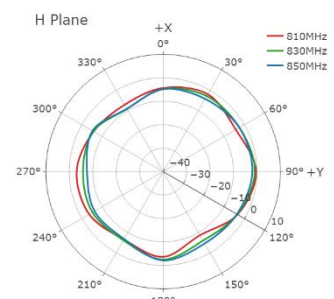
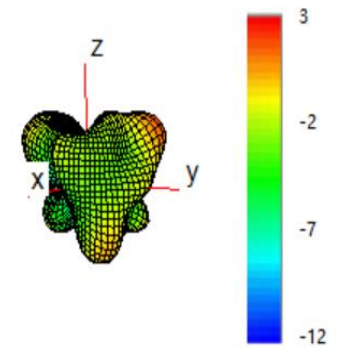
460 MHz

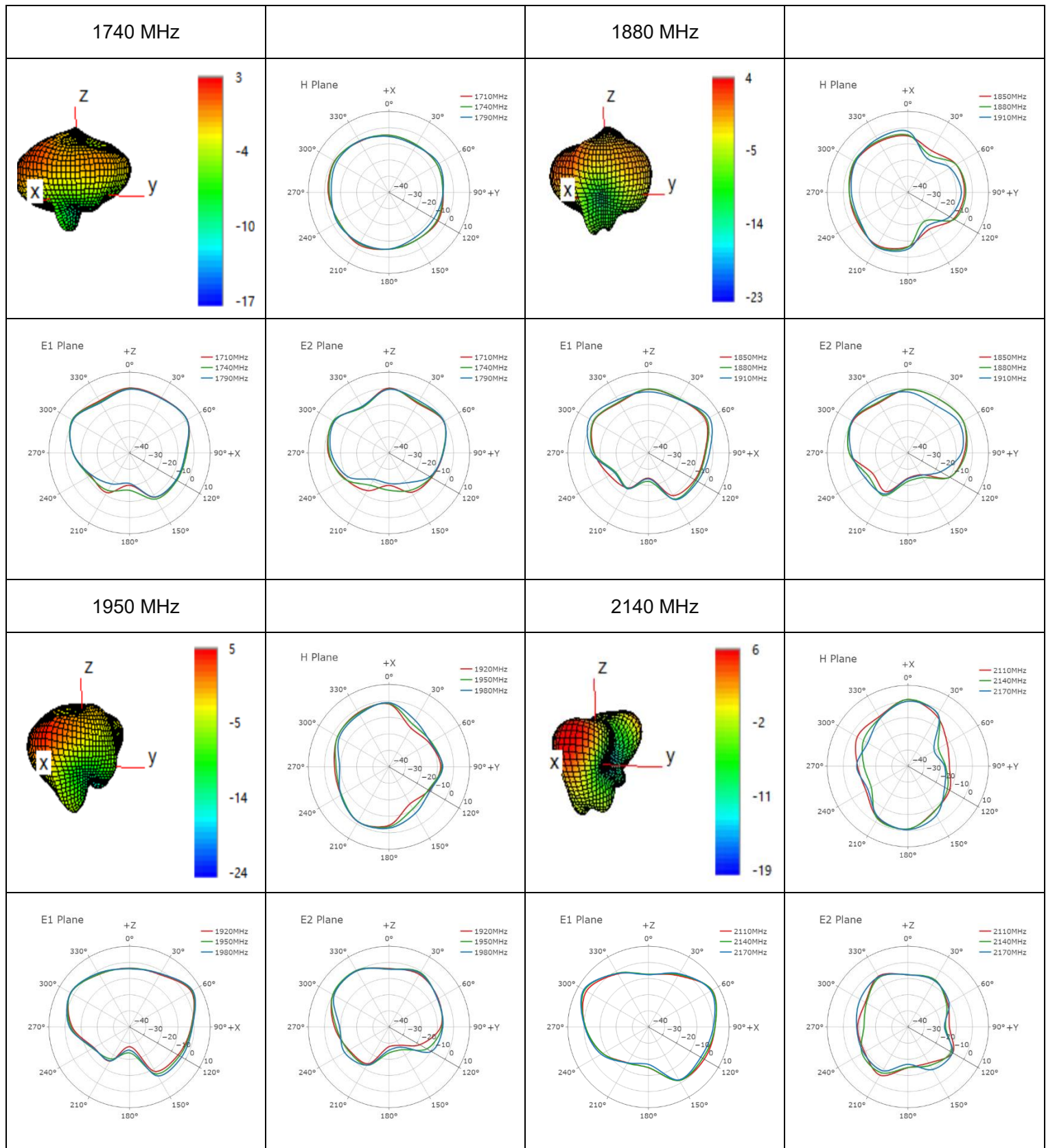


710 MHz

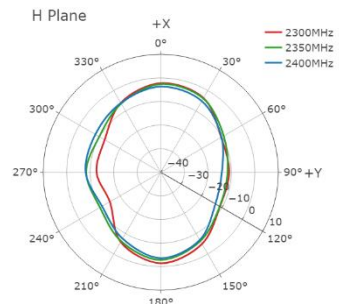
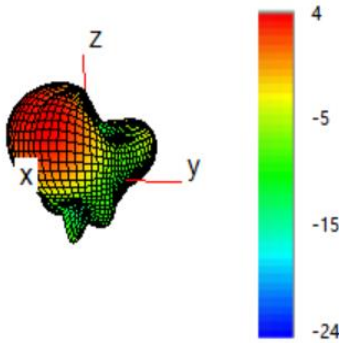


830 MHz

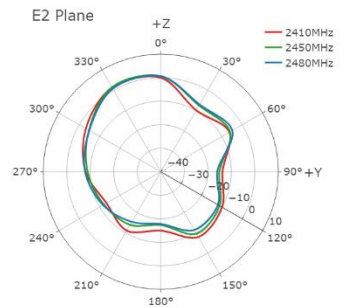
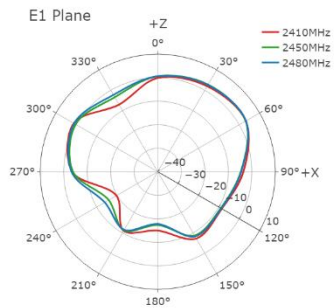
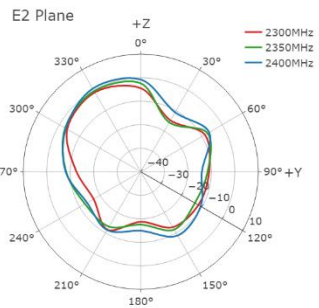
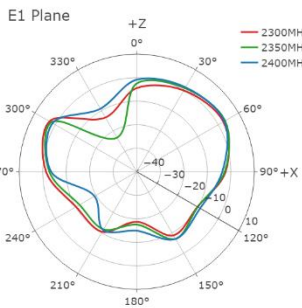
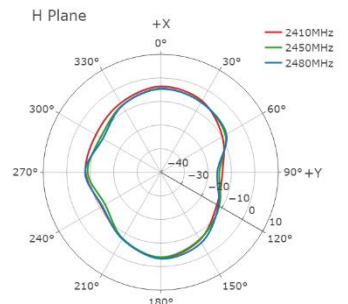
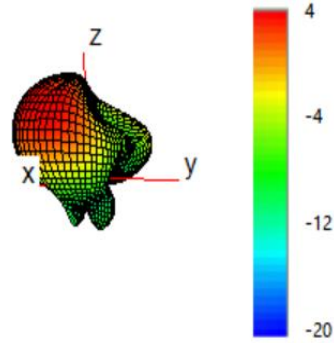




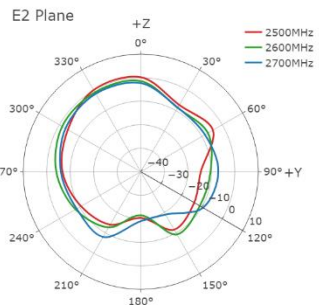
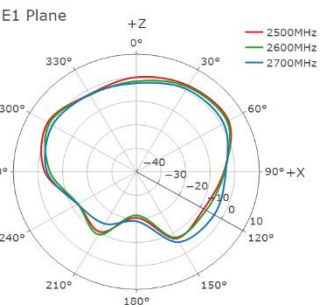
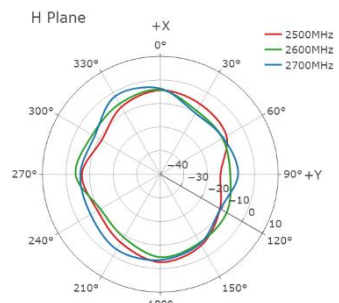
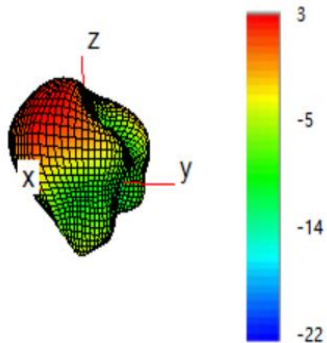
2350 MHz



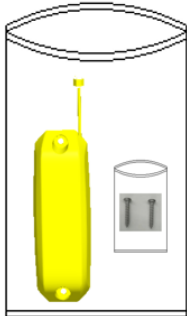
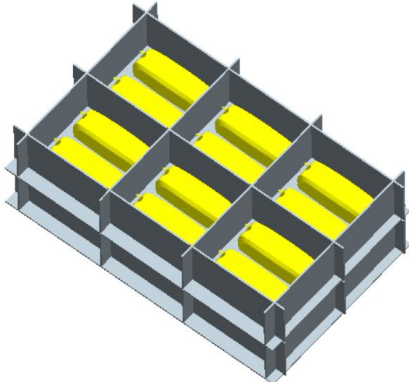
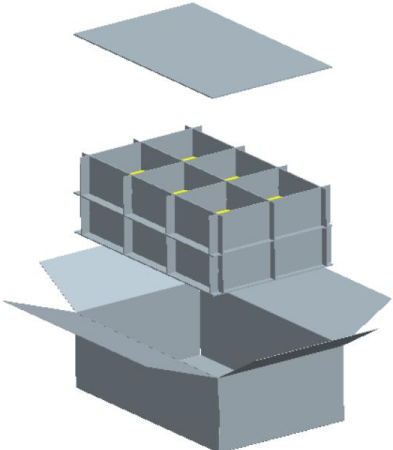
2450 MHz

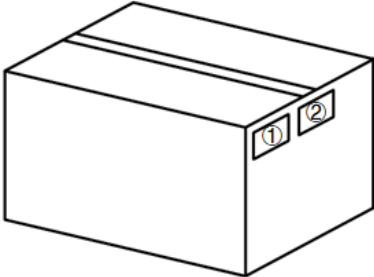
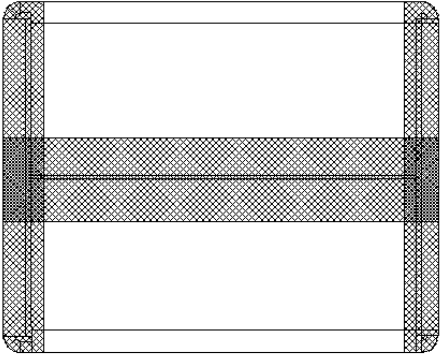


2600 MHz



4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		1 pc antenna product in a bubble bag. (1 PC Antenna / Bubble Bag)
2		The products are put into the knife card surface, the cavity of each knife card is loaded with 2 products, and a layer of knife card is loaded with 12 products.
3		Place a flapboard at the bottom and top. Put 2 layers of stack knife cards. (24 PCS Antennas / Carton Box) <u>Carton Size:</u> <u>L × W × H= 550 × 350 × 210 mm</u>

4		Position for Attaching Labels ① Carton Label ② Quality Label
5		Sealing Cartons “I” type sealing cartons

Contact Us

At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:

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Revision History

Version	Date	Author	Note
-	2023-05-18	Andy YAN/ Bailey ZHANG/ David LIU/ Aria CHU	Creation of the document
1.0	2023-05-18	Andy YAN/ Bailey ZHANG/ David LIU/ Aria CHU	First official release
1.1	2023-09-01	Bailey ZHANG	Updated the drawing (Chapter 2).
1.2	2024-04-18	David LIU	- Deleted the table about "Storage" and added the storage temperature (Chapter 1.2). - Updated the drawing (Chapter 2). - Updated the Packaging (Chapter 4)



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