



Antenna Datasheet

Product OC: YECT028W1A

Version: 2.0

Date: 2023-11-07

Status: Released

Product Name: 5G Antenna

Key Features:

Frequency Band: 600–960 MHz, 1710–2690 MHz, 3300–6000 MHz

Dimensions: 225 mm × 54.5 mm × 13 mm

Efficiency: Up to 86 % (FS)

RoHS and REACH Compliant

IP66 (housing)

Overview

This Quectel external 5G antenna covers 5G NR Sub-6 GHz frequency bands and is compatible with 4G/3G/2G/LPWA bands. Featuring high efficiency and gain, it is an ideal omni-directional antenna solution to ensure high-speed data transmission, which can be widely used in a diversity of wireless communication devices such as AP, routers, outdoor equipment, real-time monitoring equipment, and many more. The antenna is designed to work with any ground plane size or in free space for ease of integration. Quectel also offers flexible installation with custom cable length and connector options.

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1 Specification

Test Condition: In Free Space & On 130 mm × 130 mm EVB

1.1. Electrical

Electrical	
Frequency Range	600–960 MHz, 1710–2690 MHz, 3300–6000 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Electrical - Detail													
SPEC	Band	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	1.5	1.3	1.7	-	2.5	1.3	1.2	1.5	1.9	1.3	1.4	
	EVB	1.8	1.7	2.6	-	2.5	1.6	1.3	1.2	1.9	1.8	3.3	
Max. Return Loss (dB)	FS	-13.7	-17.8	-11.9	-	-7.5	-18.3	-21.1	-13.9	-10.1	-17.4	-14.9	
	EVB	-10.6	-11.7	-7.0	-	-7.3	-12.5	-17.1	-21.0	-10.1	-10.7	-5.4	
AVG Eff. (%)	FS	66.4	70.6	56.2	-	65.5	80.4	73.3	77.6	69.4	66.3	59.5	
	EVB	60.8	79.0	75.2	-	69.7	74.5	72.4	72.0	67.1	57.7	51.9	
AVG AVG Gain (dB)	FS	-1.8	-1.5	-2.5	-	-1.8	-0.9	-1.3	-1.1	-1.6	-1.8	-2.3	
	EVB	-2.2	-1.0	-1.3	-	-1.6	-1.3	-1.4	-1.4	-1.7	-2.4	-2.9	
Max. Peak Gain (dBi)	FS	1.5	1.1	1.7	-	1.5	3.7	3.4	4.0	5.3	5.5	4.2	
	EVB	0.1	1.5	1.4	-	3.1	4.2	4.3	4.3	3.5	4.0	4.1	
VSWR	FS	≤ 2.5											
	EVB	≤ 2.6											

Return Loss	FS	≤ -7.5 dB
	EVB	≤ -7.0 dB
Peak Gain	FS	≤ 5.5 dBi
	EVB	≤ 4.3 dBi

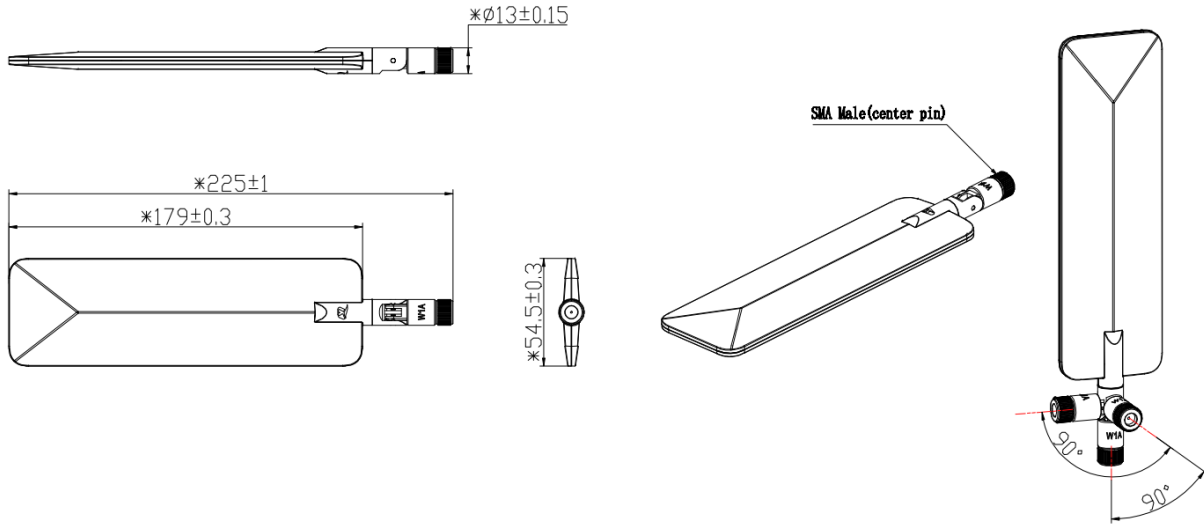
Note:

- FS: In Free Space
- EVB: On 130 mm × 130 mm EVB

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	225 mm × 54.5 mm × 13 mm
Casing Material & Color	PC & Black
Connector Type	SMA Male
Mounting Type	Terminal
Weight	Typ. 75 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	Antenna plastic housing could meet IP66, SMA connector is not waterproof. After installation, SMA connector needs additional waterproof methods.
RoHS & REACH Compliant	Yes

2 Drawing



Installation Instructions:

Step 1: Adjust the antenna to the preferred orientation and place it on the SMA(F) connector of the device.

Step 2: Hold the antenna with one hand and use the other hand to rotate the SMA(M) connector until it is fully tightened. When the antenna is tightened, it will maintain its position without shifting even in high vibration environments.

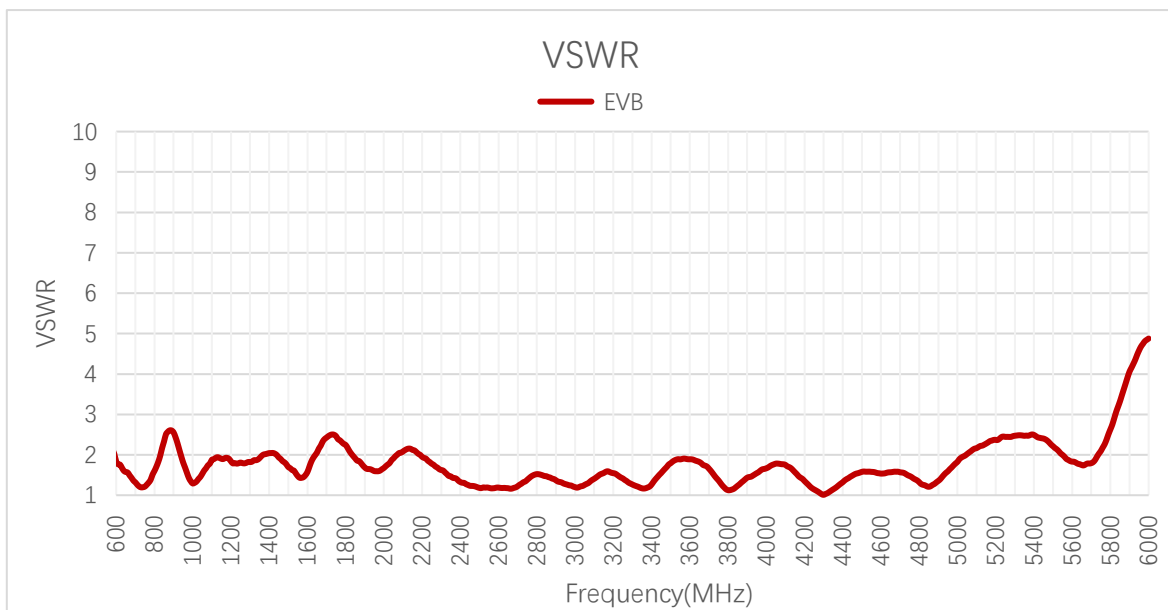
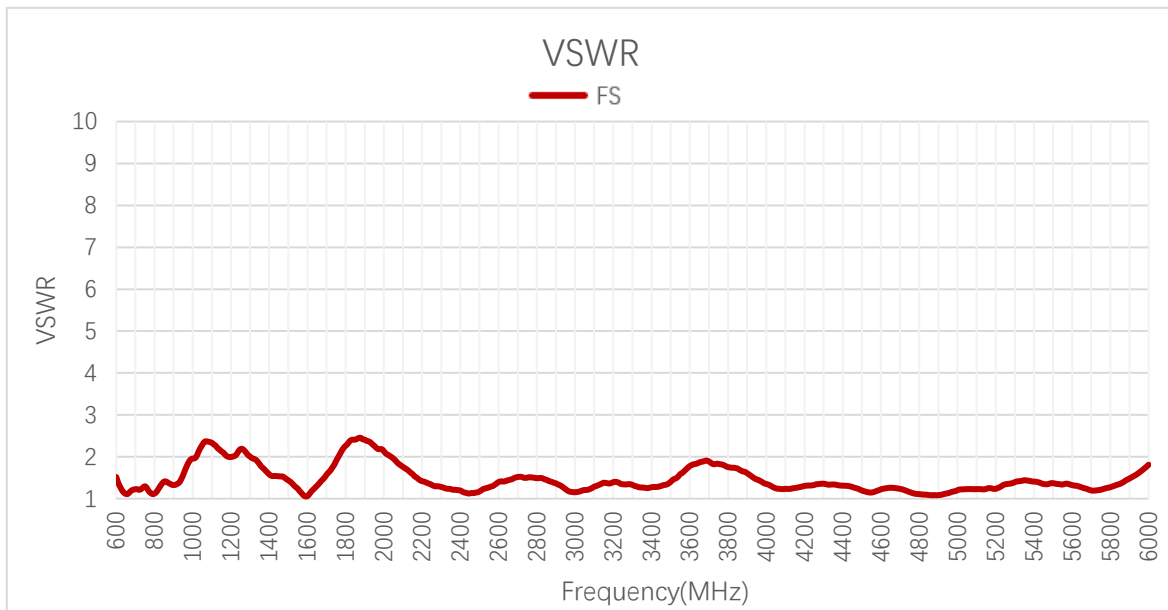


Note: If you use a torque wrench, the recommended force for mounting the antenna is 0.9Nm and the maximum torque to prevent antenna damage is 1.17Nm.

3 Detailed Performance

3.1. S-Parameter Test

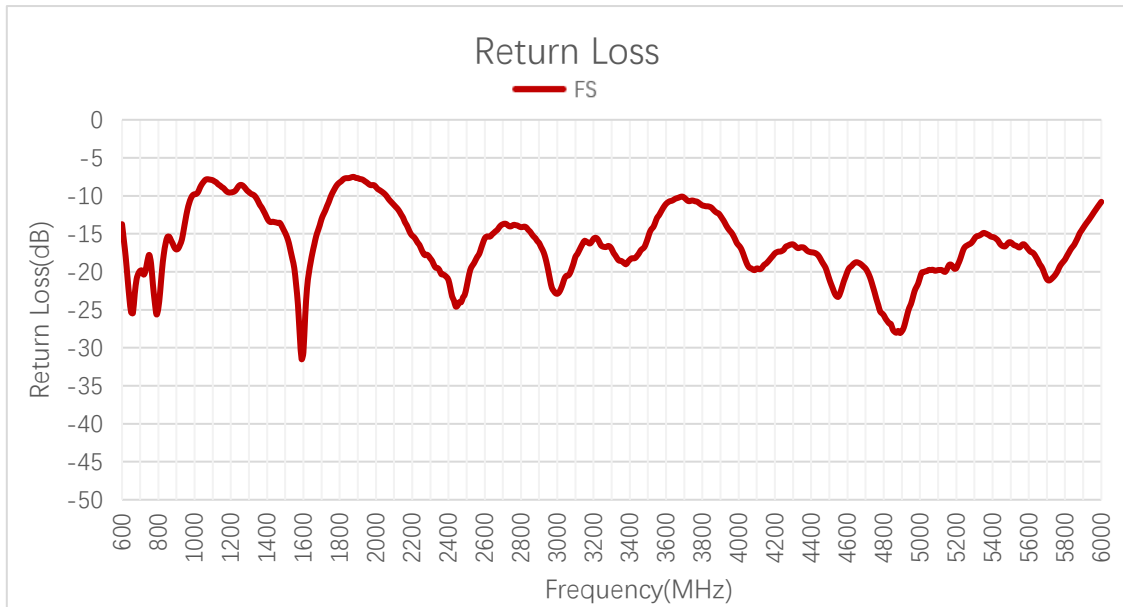
3.1.1. VSWR

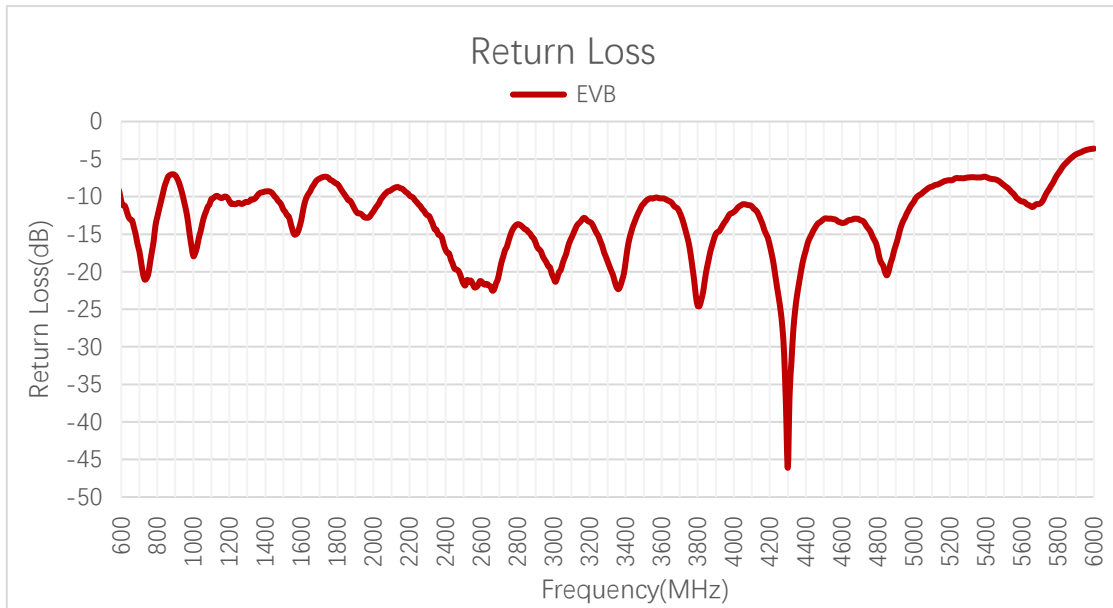


VSWR

Frequency (MHz)	600	630	710	820	900	960	1440	1710	1740	1880
FS	1.5	1.2	1.2	1.3	1.3	1.7	-	1.6	1.8	2.4
EVB	1.8	1.7	1.3	2.0	2.6	1.7	-	2.5	2.5	1.8
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
FS	2.3	1.6	1.2	1.1	1.4	1.8	1.2	1.2	1.4	1.8
EVB	1.6	2.1	1.5	1.2	1.2	1.9	1.6	1.8	2.2	4.9

3.1.2. Return Loss



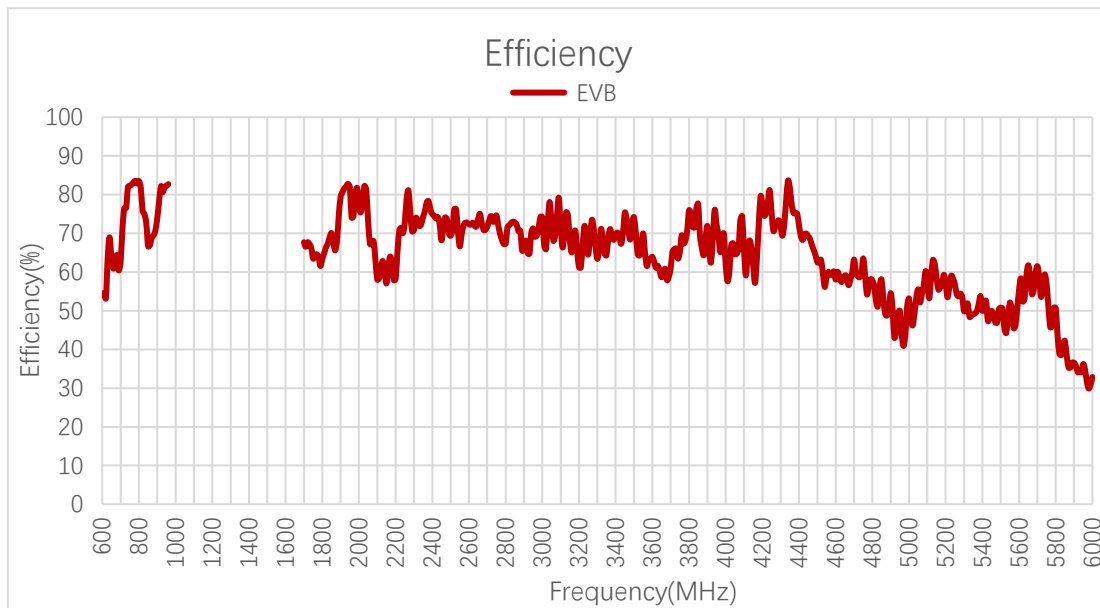
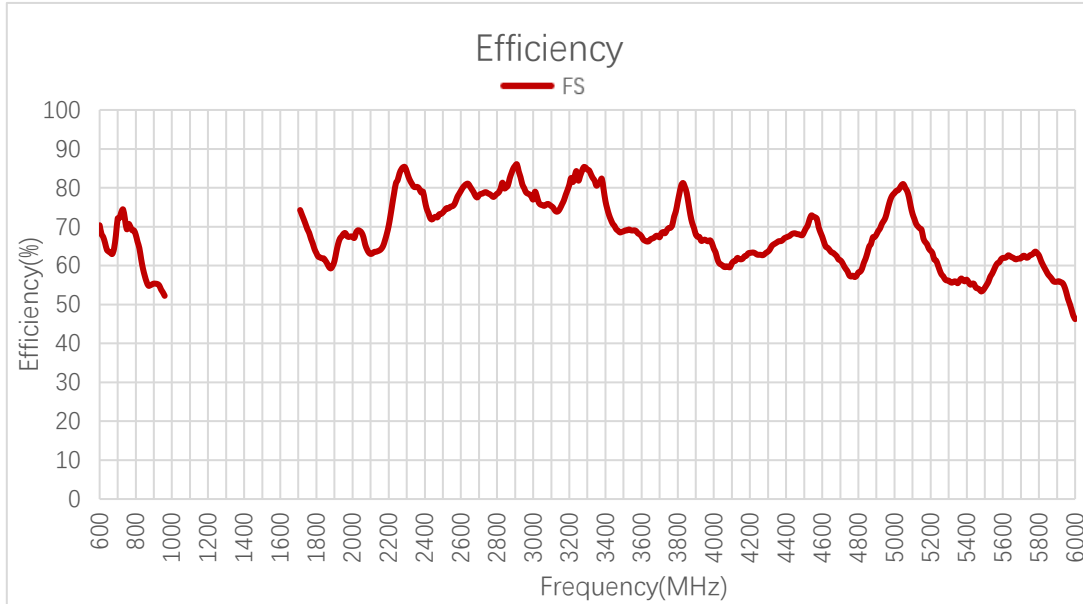


Return Loss (dB)

Frequency (MHz)	600	630	710	820	900	960	1440	1710	1740	1880
FS	-13.7	-20.7	-19.9	-17.7	-17.1	-11.9	-	-12.5	-10.8	-7.5
EVB	-10.6	-11.9	-18.7	-9.7	-7.2	-11.9	-	-7.5	-7.4	-10.9
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
FS	-8.3	-12.5	-19.8	-24.5	-15.6	-11.1	-19.6	-20.8	-16.1	-10.8
EVB	-12.8	-8.8	-14.4	-19.6	-21.3	-10.2	-13.1	-10.7	-8.5	-3.6

3.2. Radiation Performance Test

3.2.1. Efficiency

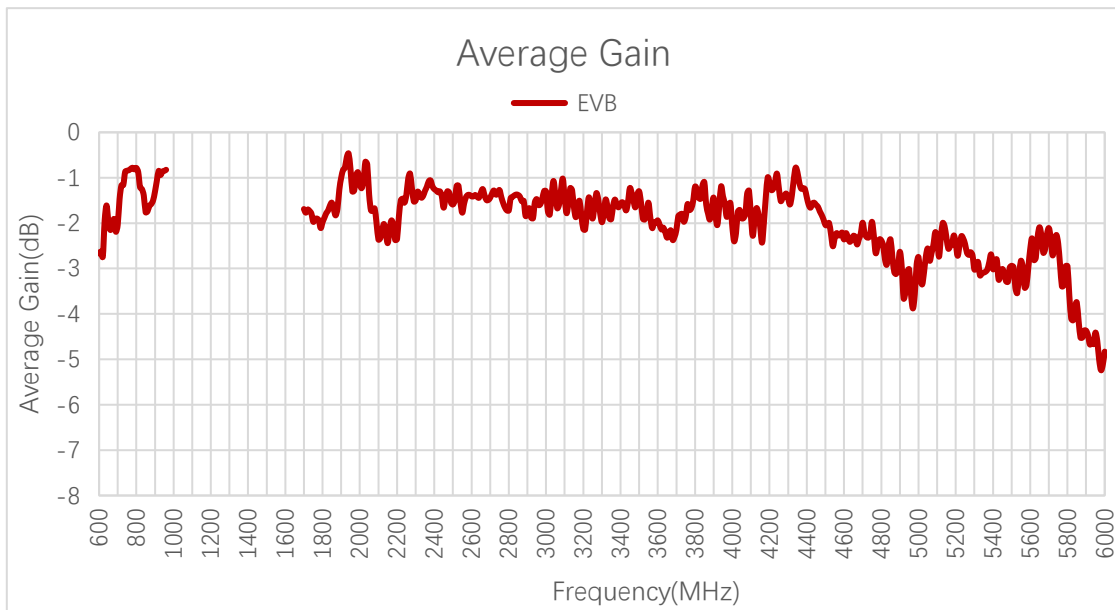
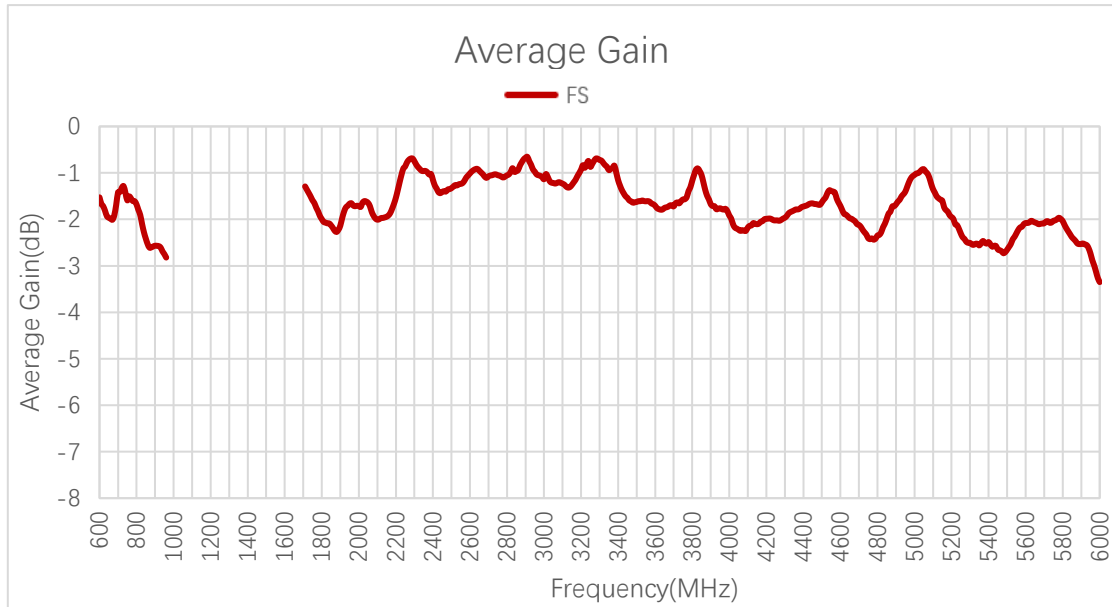


Efficiency (%)

Frequency (MHz)	600	630	710	820	900	960	1440	1710	1740	1880
FS	70.4	65.8	72.3	61.6	55.4	52.2	-	74.3	70.6	59.3
EVB	54.1	64.0	71.2	75.0	73.9	82.7	-	66.5	66.2	67.9
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000

FS	68.2	63.7	80.2	72.3	79.2	67.5	61.4	78.6	54.3	46.2
EVB	82.0	59.9	74.3	68.2	72.3	63.9	63.2	53.1	50.8	32.9

3.2.2. Average Gain

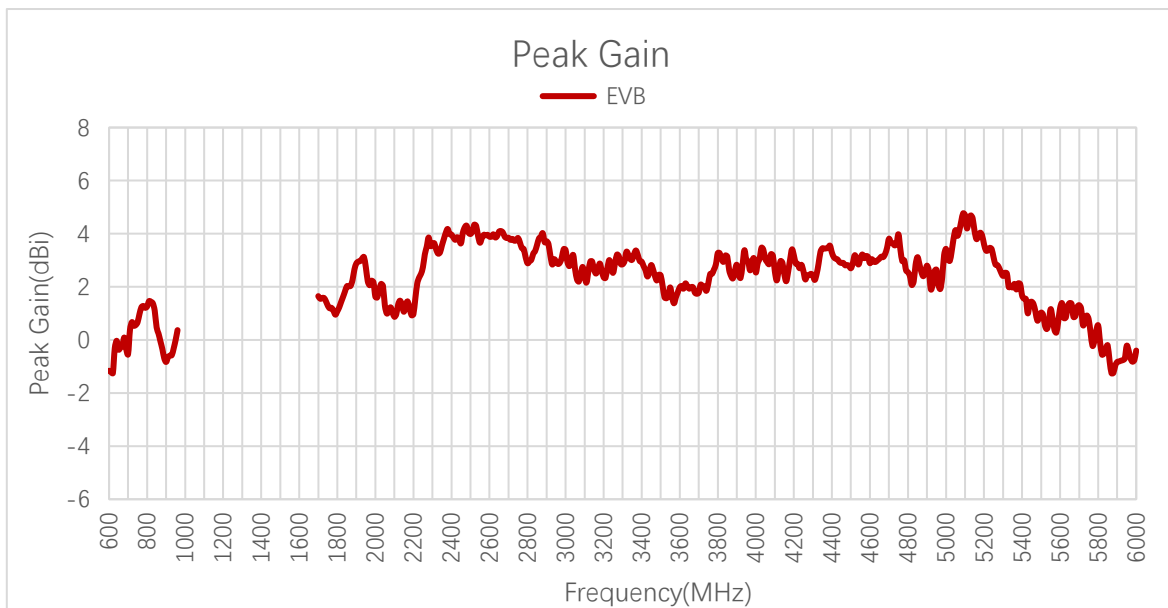
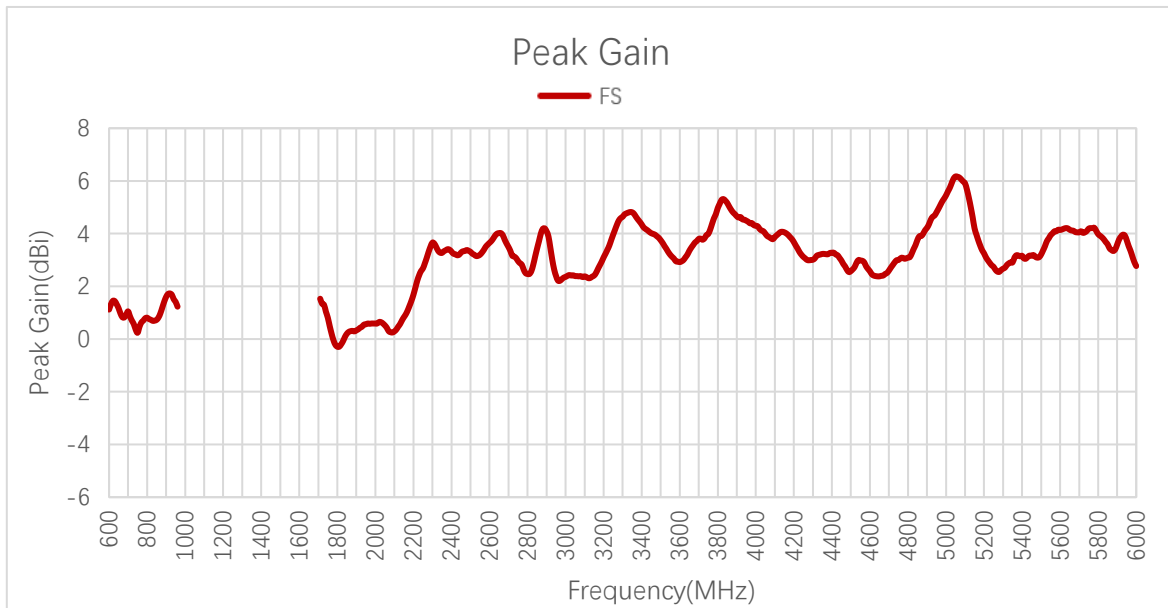


Average Gain (dB)

Frequency (MHz)	600	630	710	820	900	960	1440	1710	1740	1880
FS	-1.5	-1.8	-1.4	-2.1	-2.6	-2.8	-	-1.3	-1.5	-2.3

EVB	-2.7	-1.9	-1.5	-1.3	-1.3	-0.8	-	-1.8	-1.8	-1.7
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
FS	-1.7	-2.0	-1.0	-1.4	-1.0	-1.7	-2.1	-1.0	-2.7	-3.3
EVB	-0.8	-2.2	-1.3	-1.7	-1.4	-1.9	-2.0	-2.8	-2.9	-4.8

3.2.3. Peak Gain



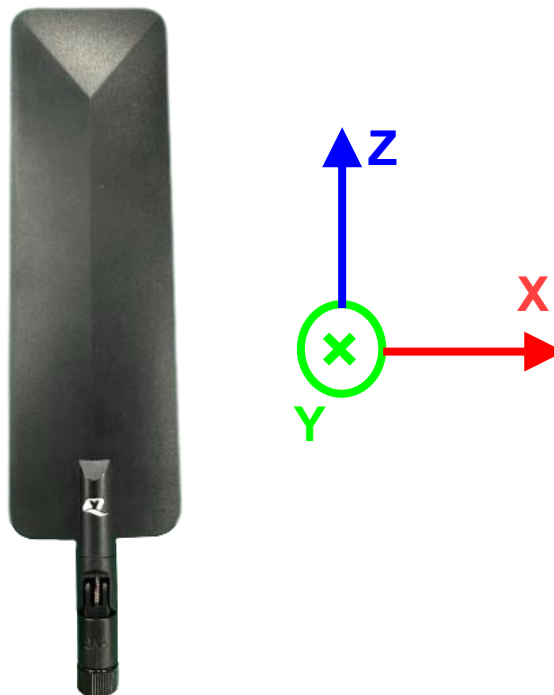
Peak Gain (dBi)

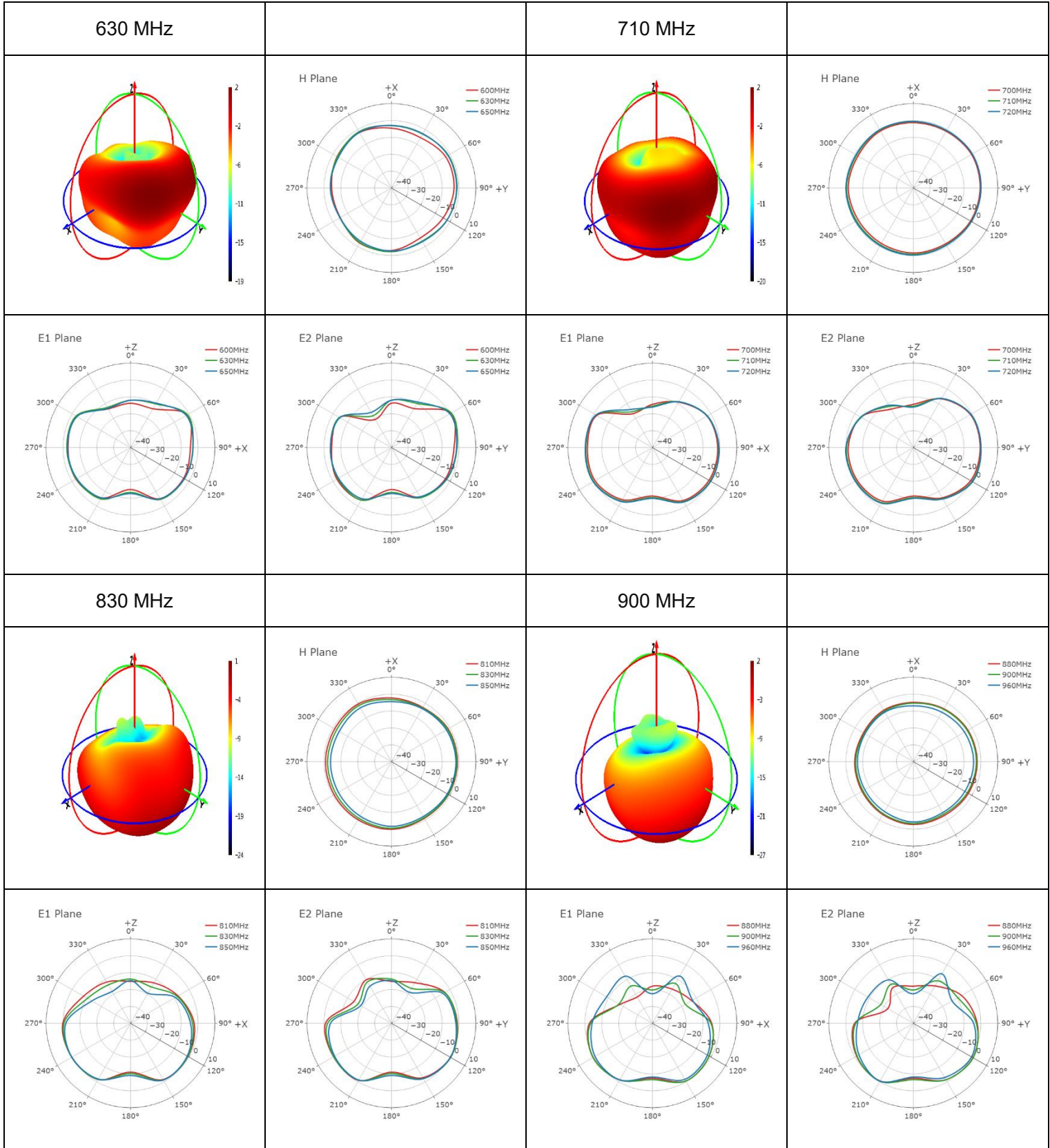
Frequency (MHz)	600	630	710	820	900	960	1440	1710	1740	1880
FS	1.1	1.4	0.9	0.7	1.6	1.2	-	1.5	1.0	0.3
EVB	-1.2	-0.3	0.4	1.4	-0.8	0.4	-	1.6	1.5	2.3
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
FS	0.6	0.7	3.3	3.3	3.7	2.9	2.6	5.5	3.2	2.8
EVB	2.7	1.3	3.6	3.6	3.9	2.0	3.8	3.4	1.0	-0.4

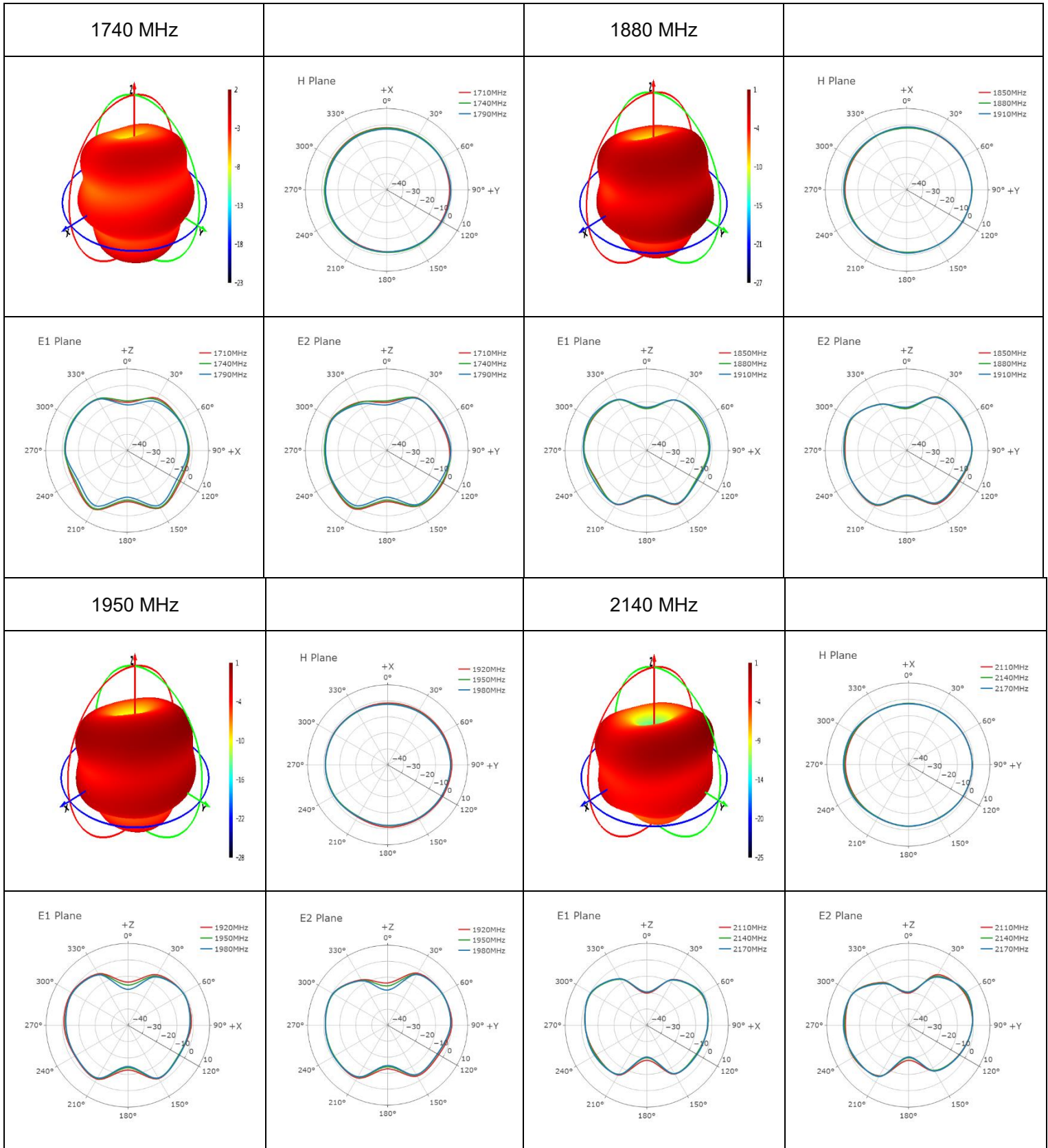
3.2.4. 3D & 2D Radiation Pattern

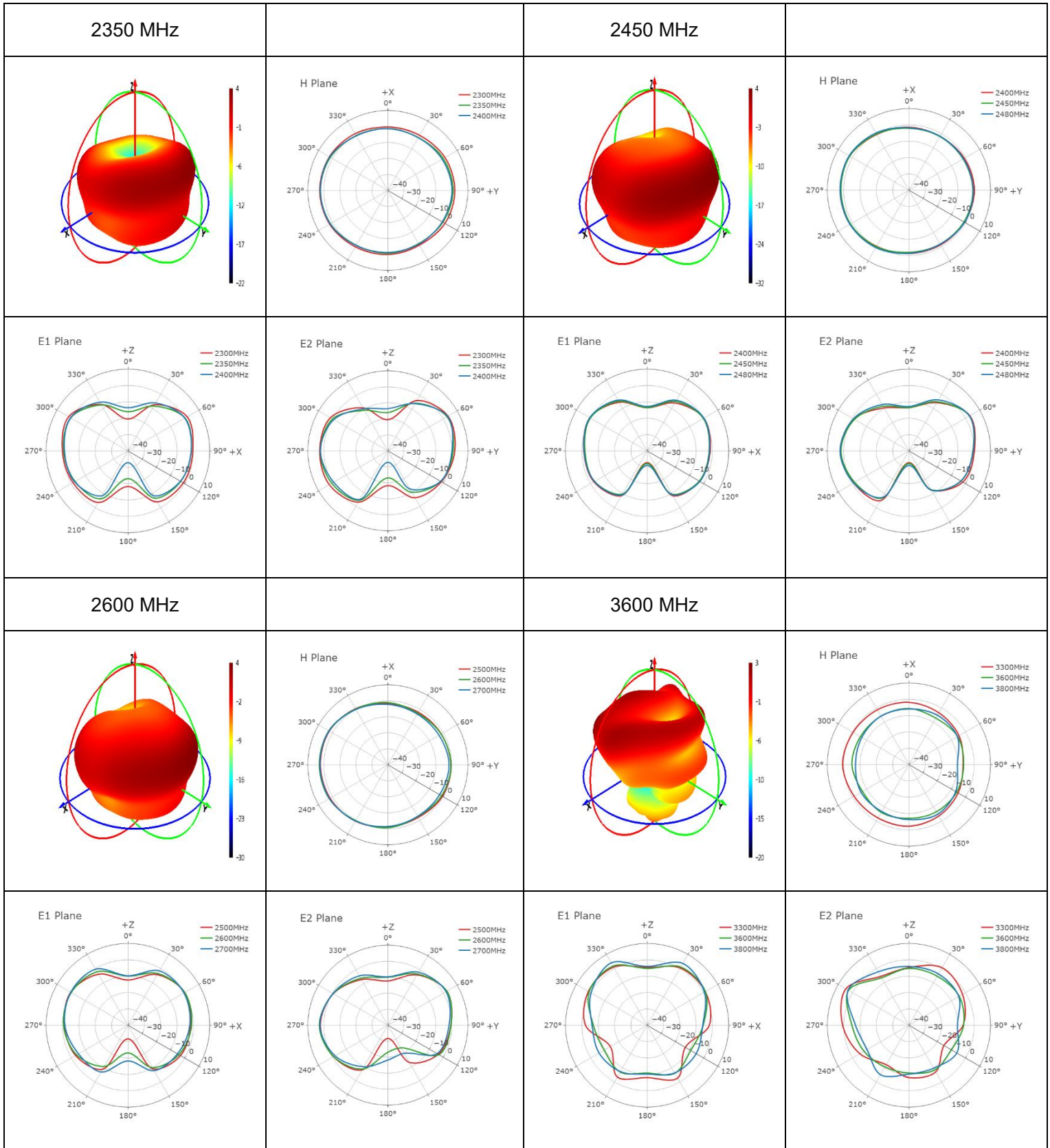
3.2.4.1. Test Condition: In Free Space

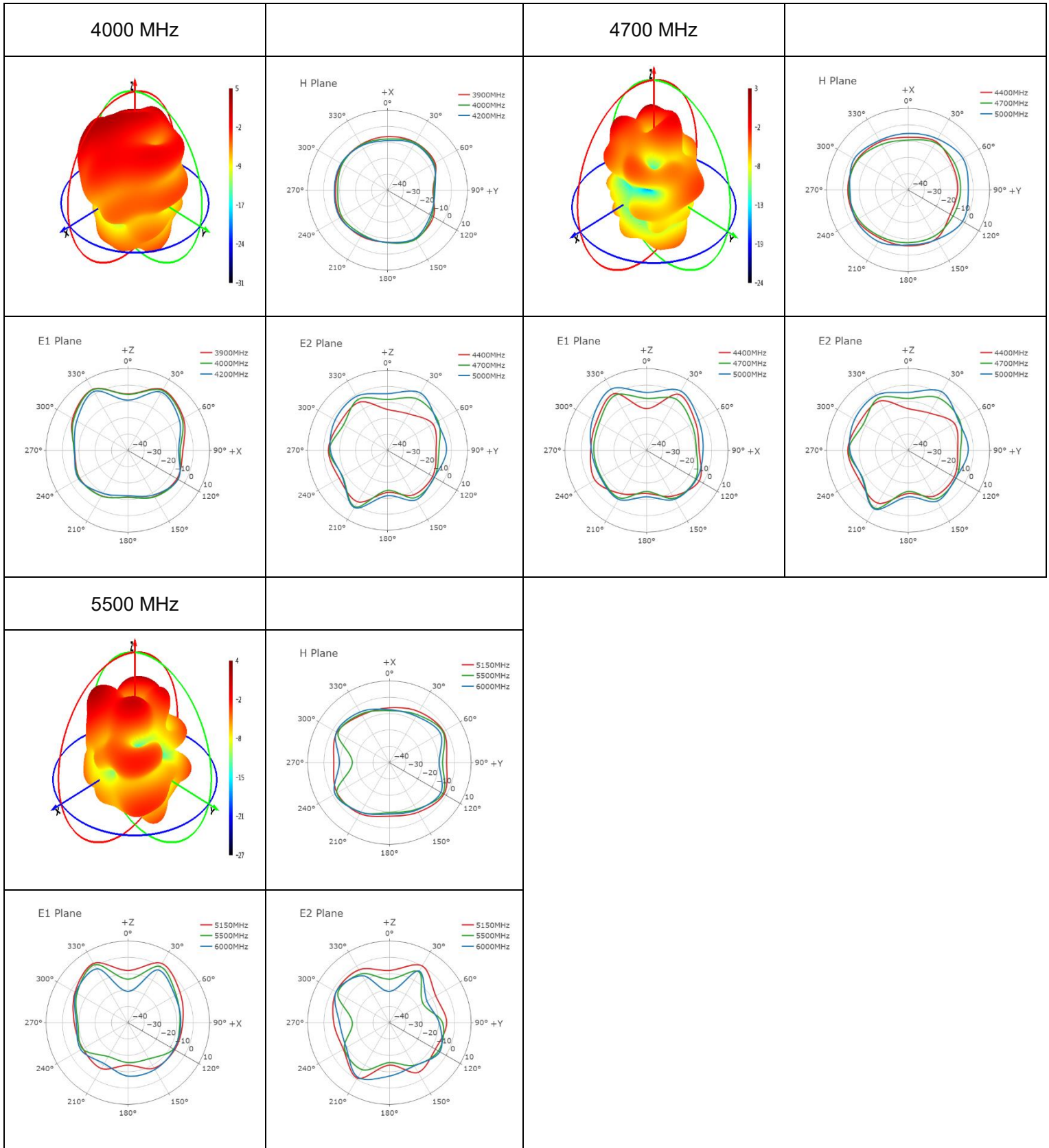
- Test Chamber: GL-S-1





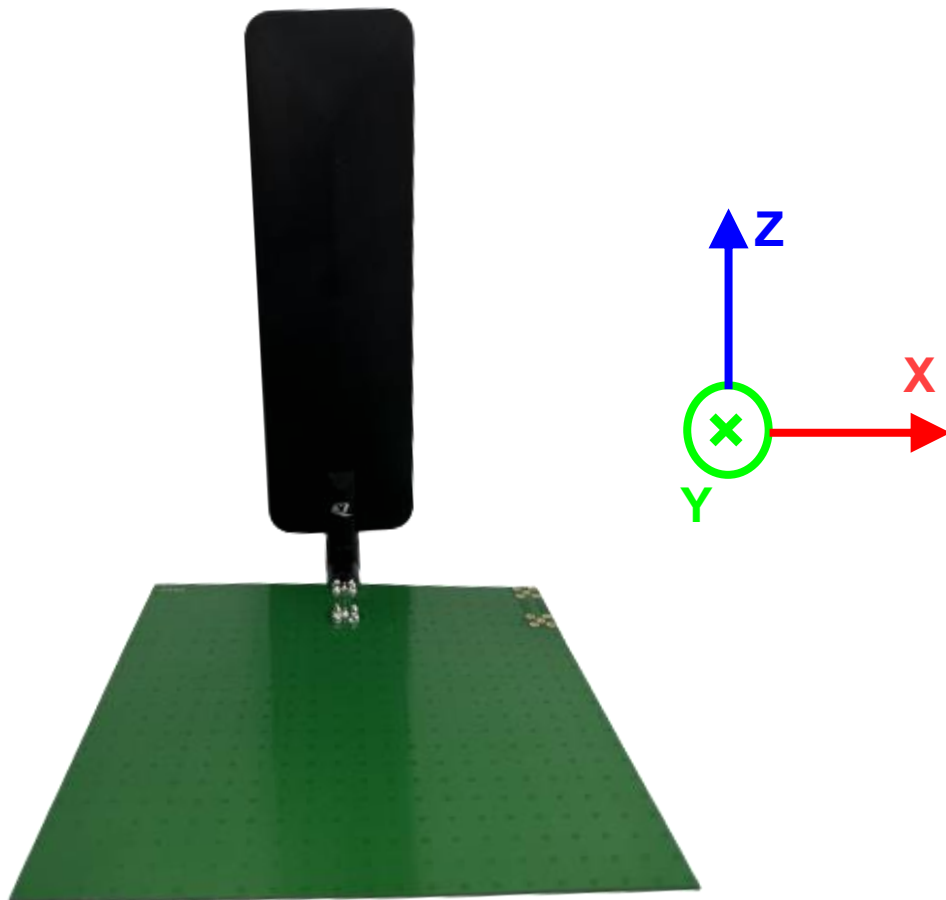


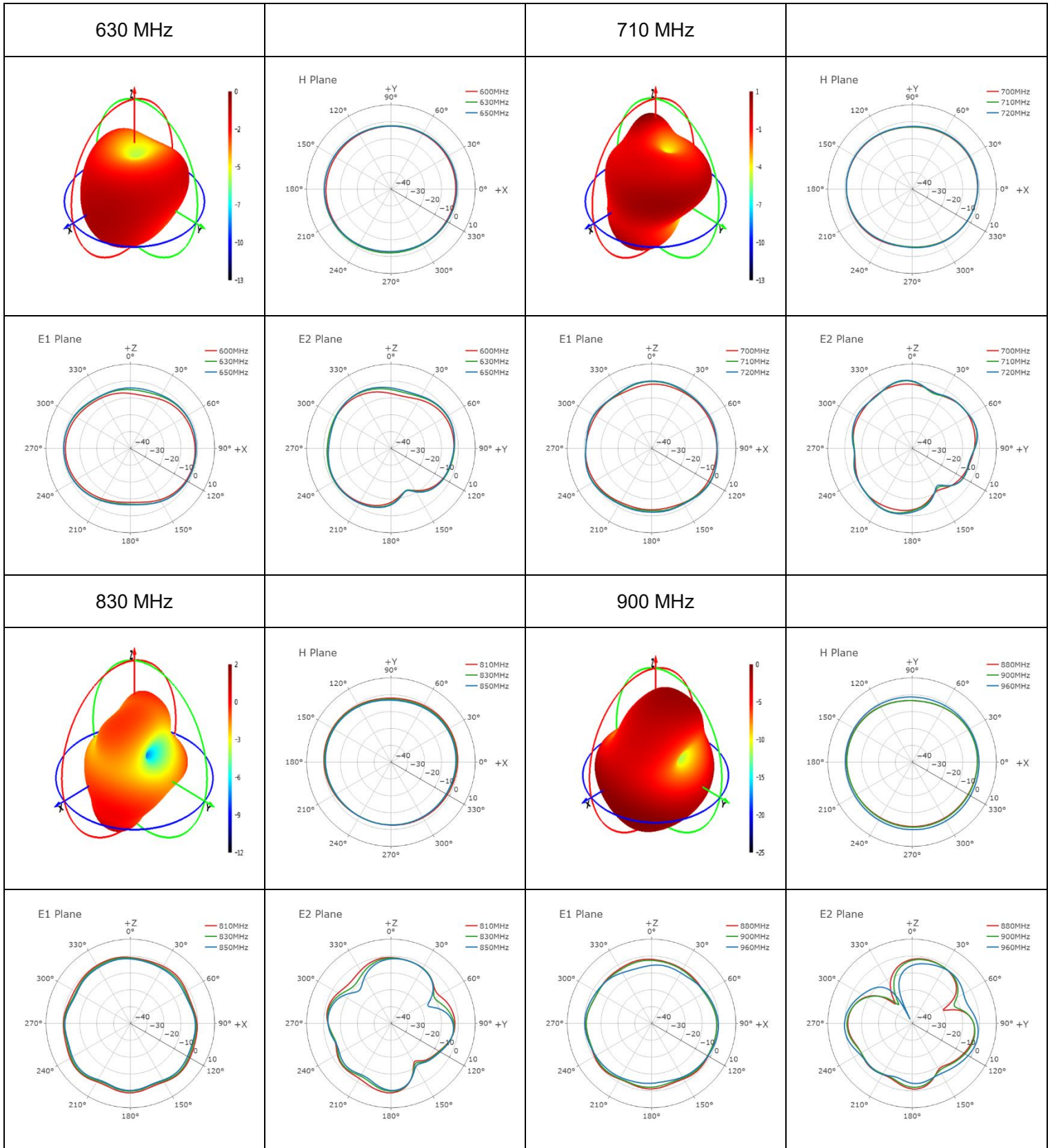


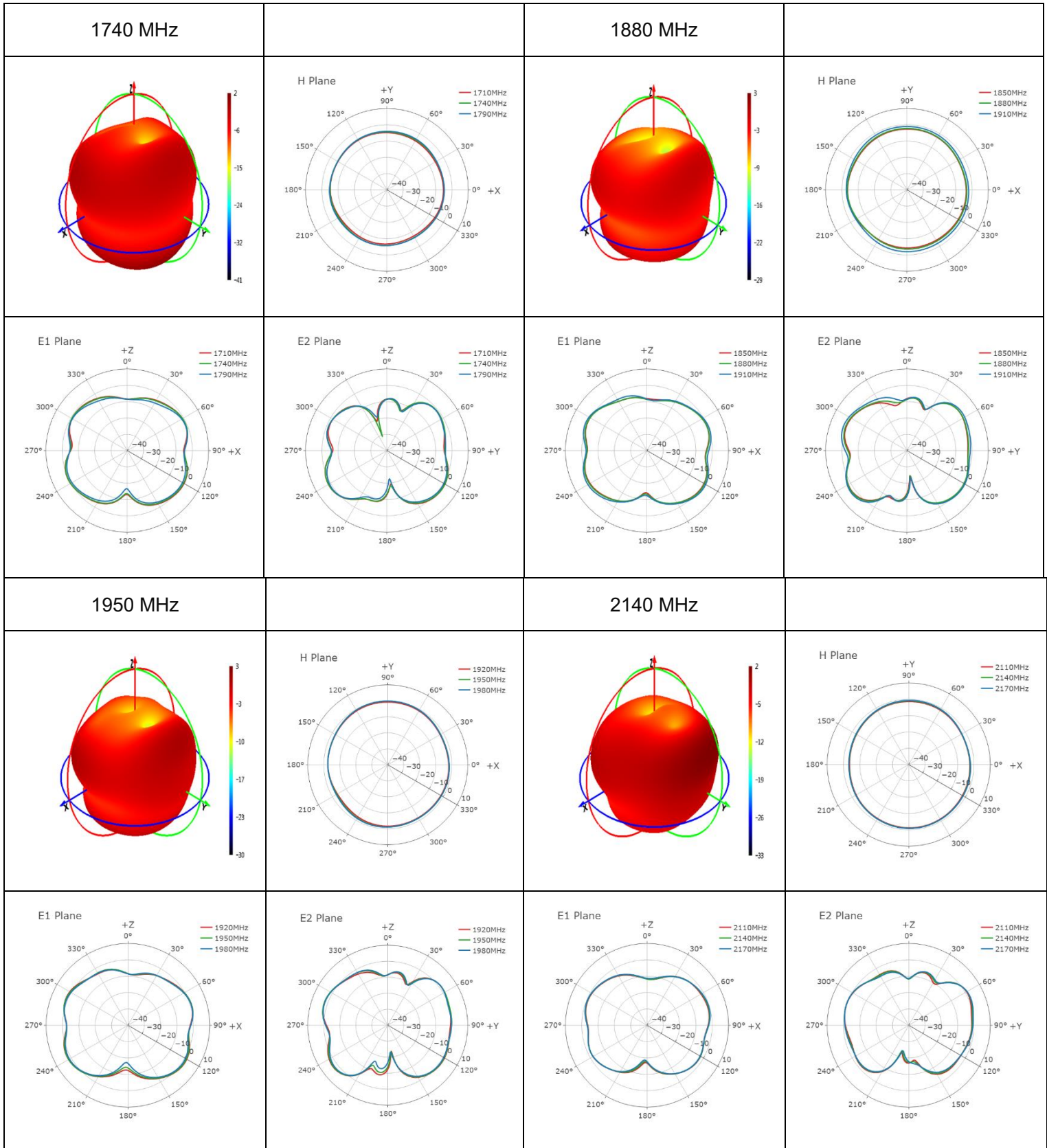


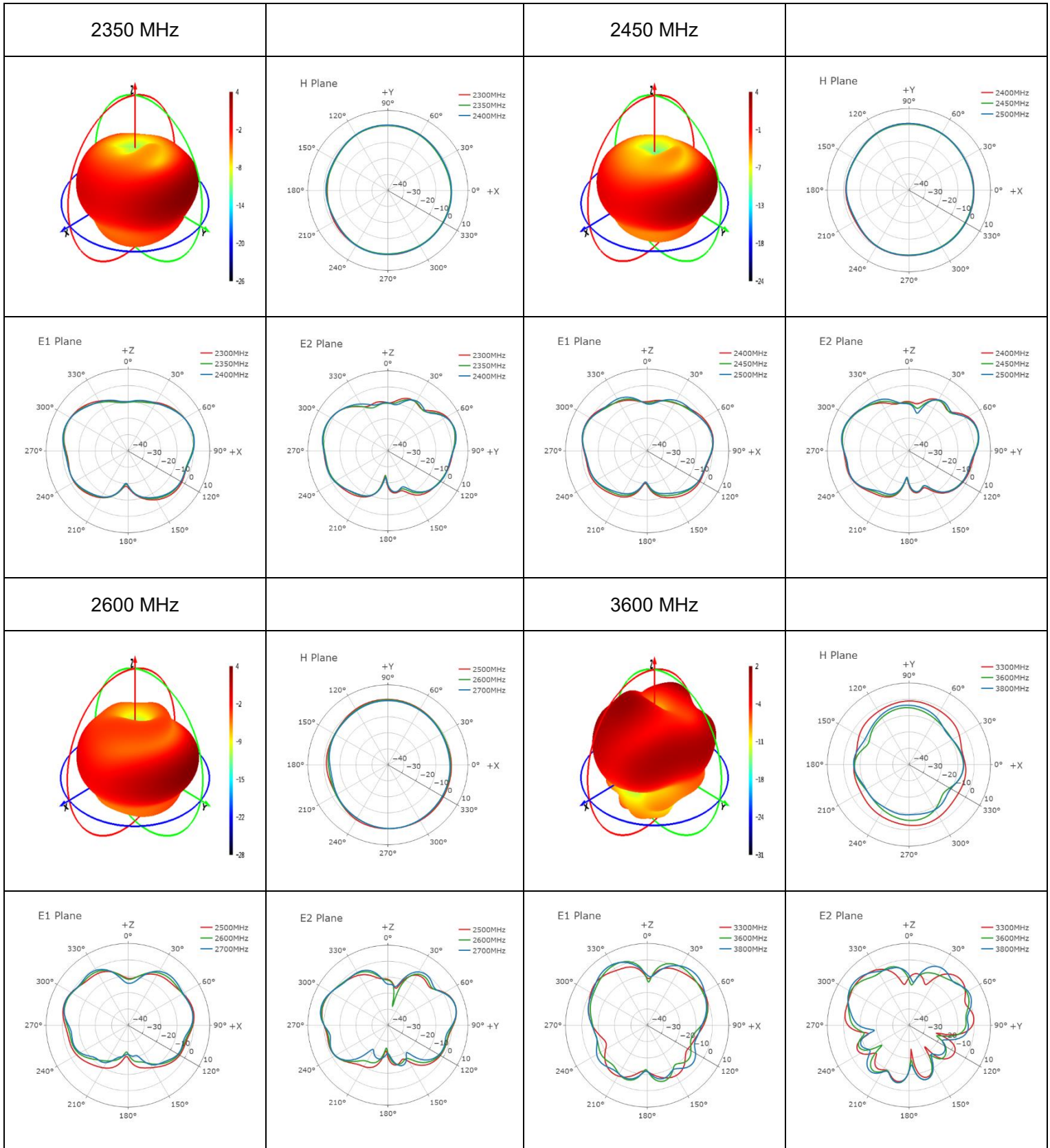
3.2.4.2. Test Condition: On 130 mm × 130 mm EVB

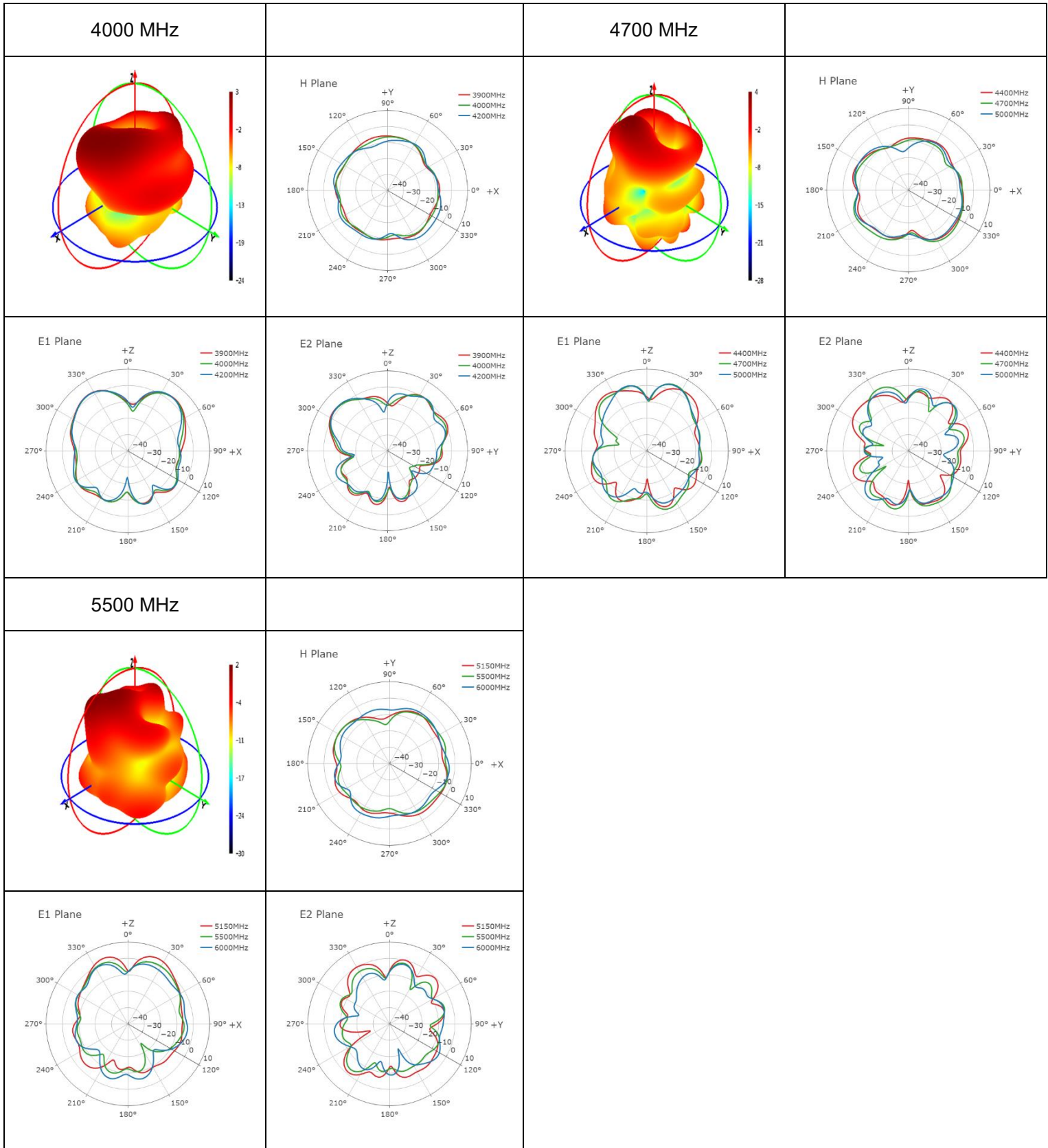
- Test Chamber: GL-S-1





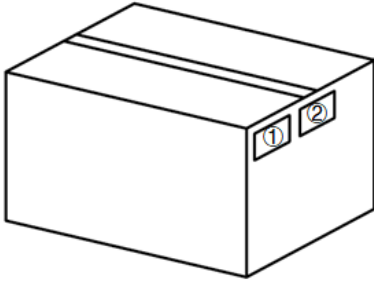
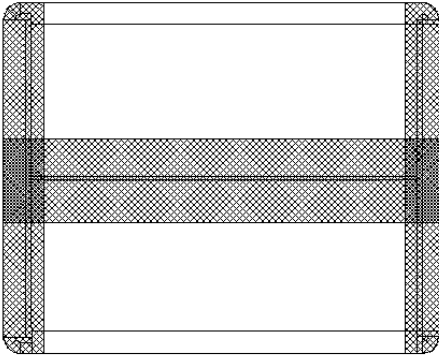






4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		<p>Put the product in a one-piece bag; Each one-piece bag contains 10 products.</p>
2		<p>10 pcs antenna products in a PE bag; (10 pcs antennas per PE bag)</p> <p><u>PE Bag Size: L × W = 320 × 220 mm</u></p>
3		<p>(10 PE bags per carton box) (100 pcs antennas per carton box)</p> <p><u>Carton Size:</u> <u>L × W × H = 405 × 293 × 185 mm</u></p>

4		<p>Position for Attaching Labels</p> <ul style="list-style-type: none">① Carton Label② Quality Label
5		<p>Sealing Cartons</p> <p>“工” type sealing cartons</p>

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

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Revision History

Version	Date	Author	Note
-	2023-09-05	Ezail TAN/ Hart HU/ David LIU/ Aria CHU	Creation of the document
1.0	2023-09-05	Ezail TAN/ Hart HU/ David LIU/ Aria CHU	First official release
2.0	2023-11-07	Hart HU/ Black LI	<ol style="list-style-type: none">1. Updated efficiency data (Front page)2. Added antenna installation instructions (Chapter 2).3. Added EVB status test data (Chapter 3).

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