

# Antenna Datasheet

**Product OC:** YFCO002AA

**Version:** 2.2

**Date:** 2025-04-16

**Status:** Released

**Product Name:** 5G 2in1 Adhesive Mount Combo Embedded Antenna

**Key Features:**

Frequency Band: 600–6000 MHz

Dimensions: 237 mm × 22 mm

Efficiency: Up to 78.09 % (Right)

RoHS and REACH Compliant

# Overview

To meet customers' requirements for the high performance, high integration, and integrated appearance of their products, Quectel provides a combined internal antenna series. The internal antenna series 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 internal antenna series can be mounted inside the devices, supports multiple connector types and cable lengths. It is a more flexible and reliable high-performance antenna solution for the applications need internal antennas.

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# 1 Specification

Test Condition: Stick on the 3 mm ABS

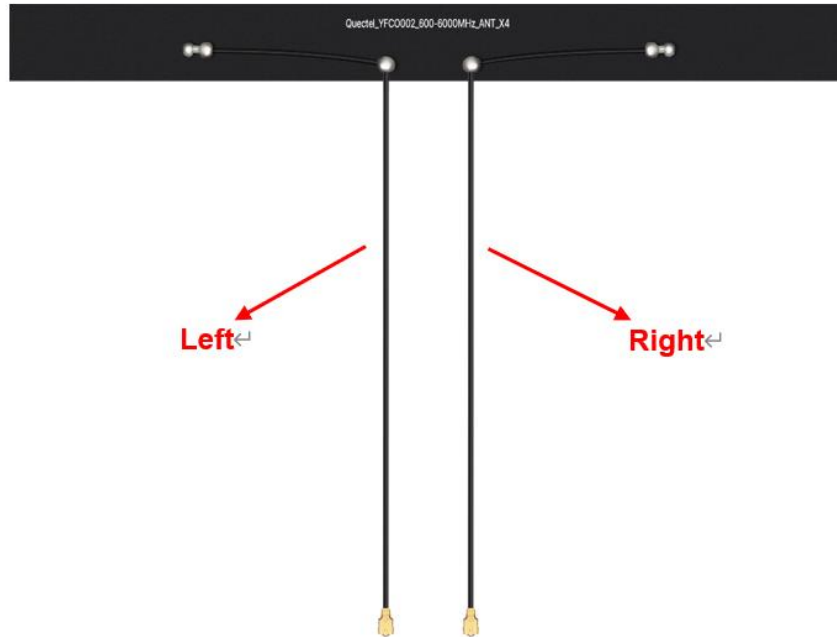
## 1.1. Electrical

Electrical	
Frequency Range	600–6000 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Electrical – Detail												
Band	Band	B71	B12	B5	n74	B1	B40	Wi-Fi	B38	B42	n79	Wi-Fi
			/B13	/B8	/n75	/B2		2G	/B41	/B48		5G
Spec	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	Right	2.0	1.7	1.9	1.4	1.9	1.8	1.7	1.7	1.7	2.4	2.7
	Left	2.0	1.8	1.8	1.3	1.8	1.9	1.7	1.6	1.8	2.4	2.6
Max. Return Loss (dB)	Right	-9.5	-11.9	-10.3	-15.8	-10.1	-10.9	-11.6	-11.5	-11.3	-7.9	-6.7
	Left	-9.4	-11.0	-10.8	-16.7	-10.5	-10.2	-11.5	-12.7	-11.1	-7.7	-7.0
AVG Eff. (%)	Right	40.2	46.7	53.2	70.7	65.5	61.3	56.4	57.2	58.0	44.9	47.4
	Left	41.3	48.0	49.0	72.3	68.2	64.1	61.3	60.8	61.1	47.7	47.3
AVG AVG Gain (dB)	Right	-4.0	-3.3	-2.7	-1.5	-1.8	-2.1	-2.5	-2.4	-2.4	-3.5	-3.3
	Left	-3.8	-3.2	-3.1	-1.4	-1.7	-1.9	-2.1	-2.2	-2.2	-3.2	-3.3
Max. Peak Gain (dBi)	Right	-0.2	2.3	3.0	3.5	4.0	2.8	2.6	2.9	3.9	3.0	5.0
	Left	-0.3	2.4	2.3	2.3	3.5	3.0	2.9	3.9	4.2	3.4	4.8

<b>VSWR</b>	<b>Right</b>	$\leq 2.7$
	<b>Left</b>	$\leq 2.6$
<b>Return Loss</b>	<b>Right</b>	$\leq -6.7$ dB
	<b>Left</b>	$\leq -7.0$ dB
<b>Peak Gain</b>	<b>Right</b>	$\leq 5.0$ dBi
	<b>Left</b>	$\leq 4.8$ dBi

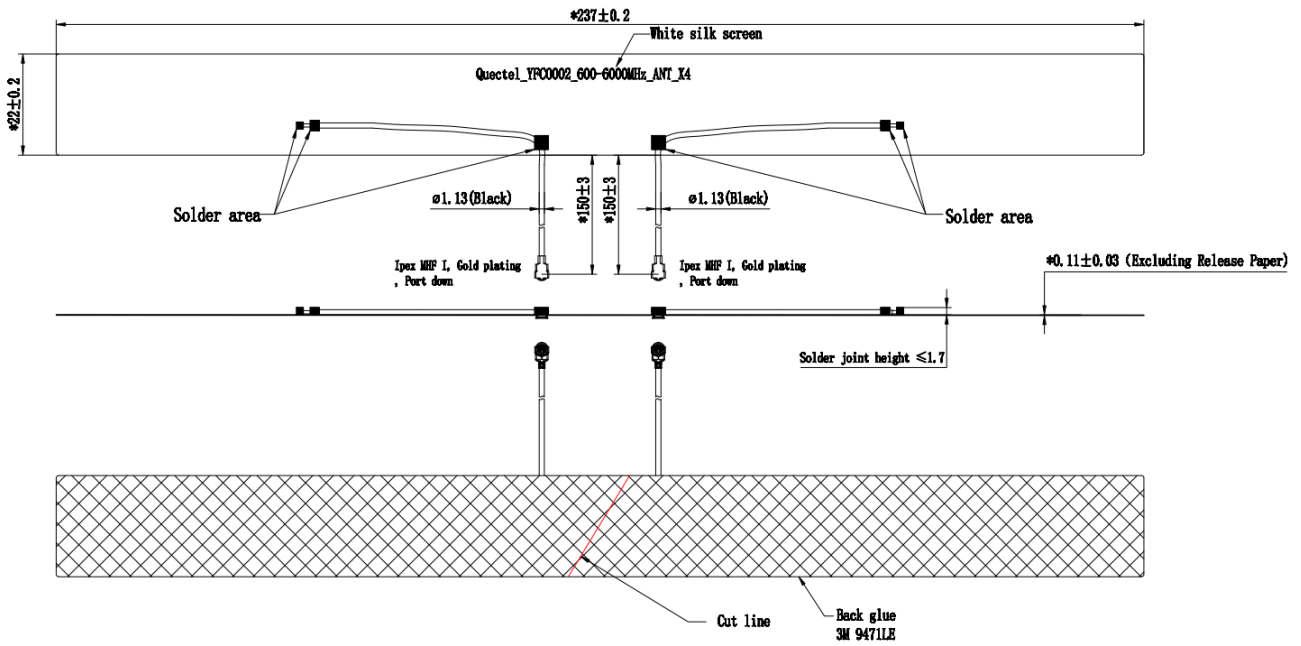
- Antenna placement



## 1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	237 mm × 22 mm
Antenna Material & Color	FPC & Black
Cable Type & Color & Length	Φ 1.13 & Black & 150 mm
Connector Type	IPEX MHF 1
Mounting Type	Adhesive
Weight	Typ. 3.1 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS and REACH Compliant	Yes

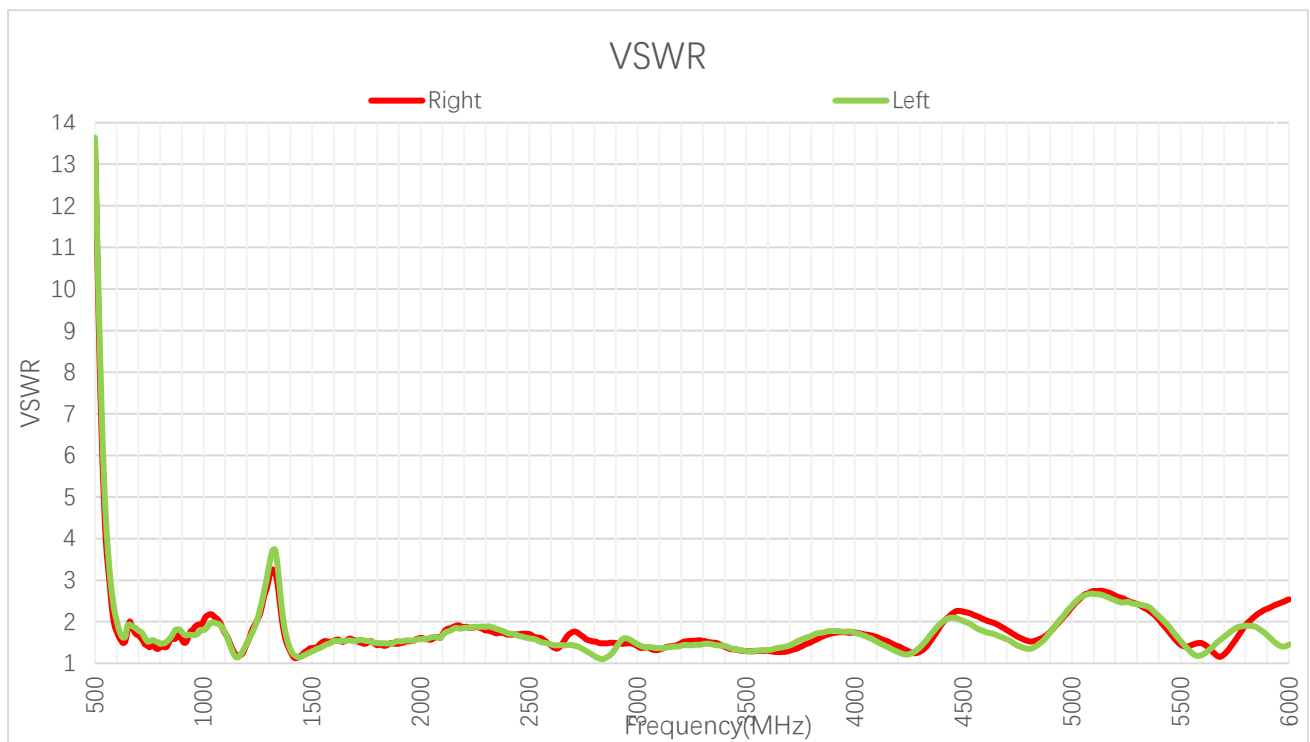
# 2 Drawing



# 3 Detailed Performance

## 3.1. S-Parameter Test

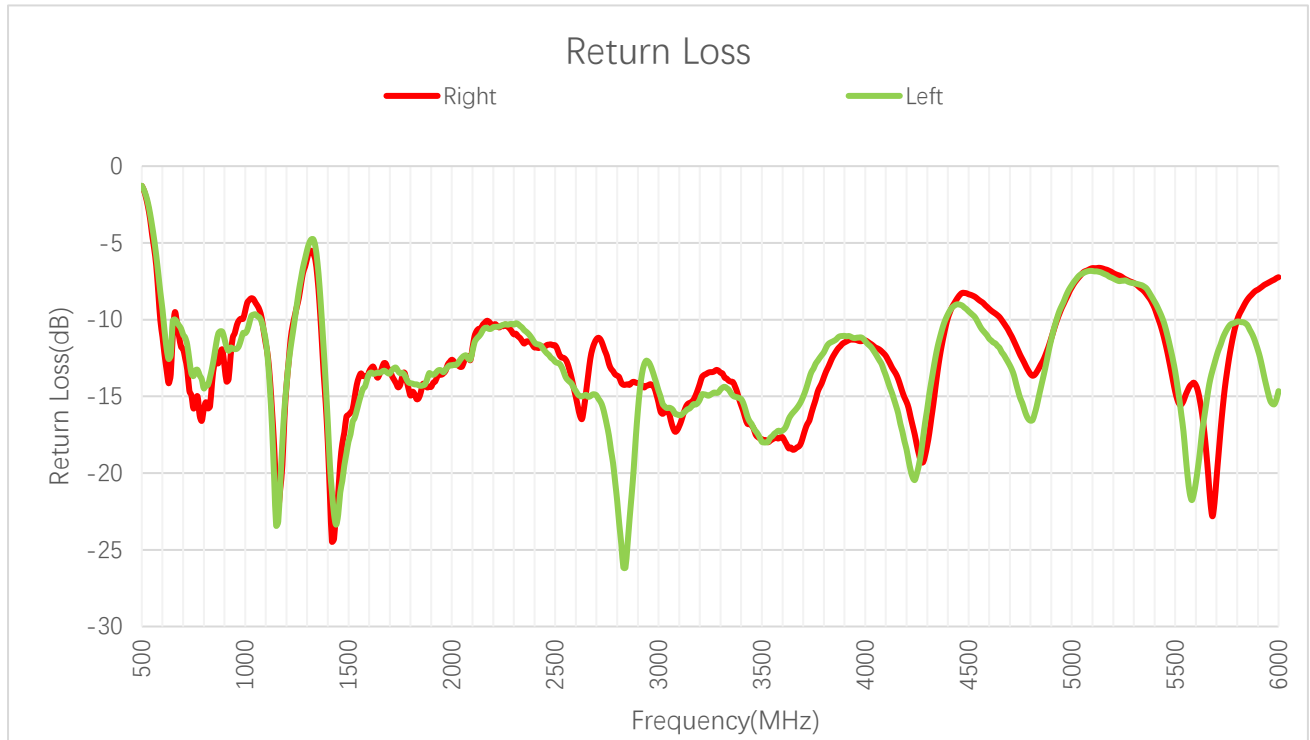
### 3.1.1. VSWR



**VSWR**

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Right	1.8	1.5	1.6	1.4	1.6	1.9	1.2	1.5	1.5	1.5
Left	2.0	1.6	1.8	1.5	1.8	1.7	1.1	1.6	1.5	1.5
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Right	1.5	1.8	1.7	1.7	1.4	1.7	1.8	2.4	1.5	2.5
Left	1.5	1.8	1.8	1.7	1.5	1.4	1.6	2.4	1.5	1.5

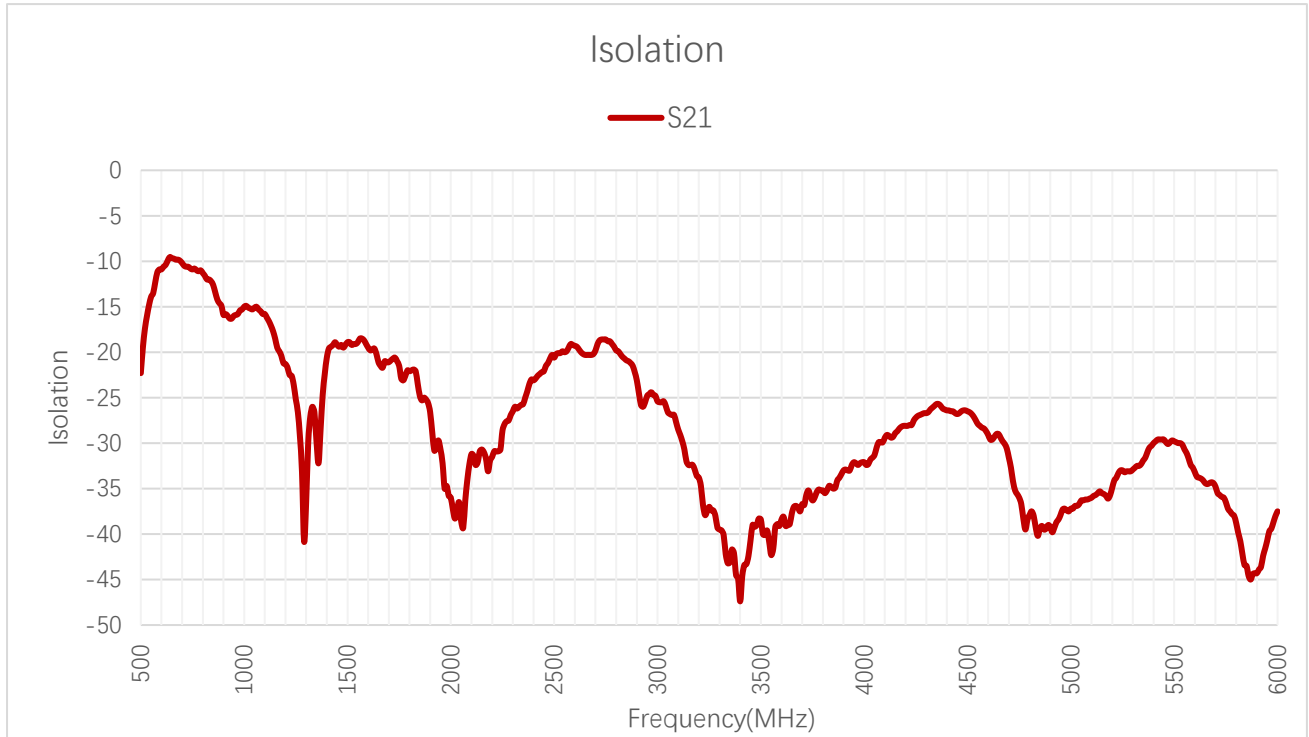
**3.1.2. Return Loss**



**Return Loss (dB)**

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
<b>Right</b>	-11.1	-14.2	-12.5	-15.6	-13.0	-10.3	-22.5	-13.7	-14.4	-14.4
<b>Left</b>	-9.4	-12.6	-11.2	-13.8	-11.3	-11.9	-23.4	-13.3	-13.4	-13.9
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
<b>Right</b>	-13.6	-10.6	-11.6	-11.8	-15.0	-11.5	-10.9	-7.9	-14.7	-7.2
<b>Left</b>	-13.3	-10.9	-10.7	-12.0	-14.7	-14.9	-13.0	-7.7	-13.4	-14.7

**3.1.3. Isolation**

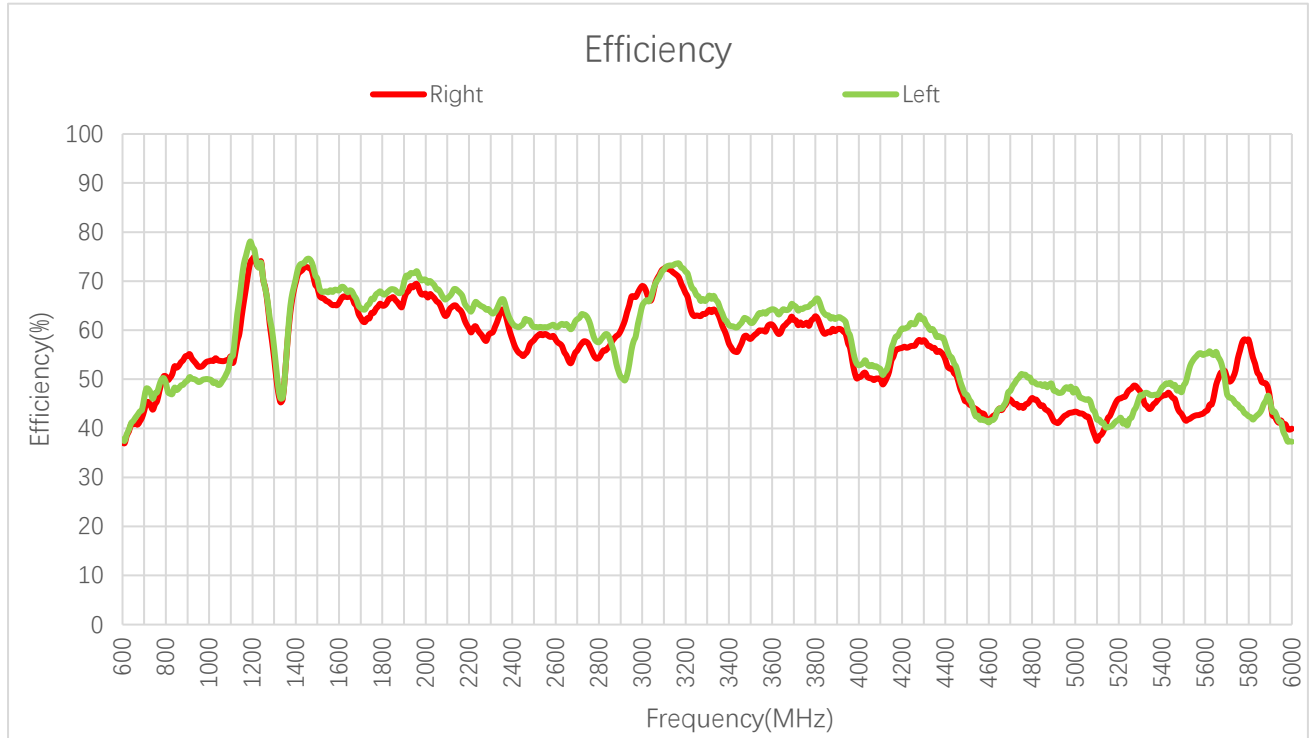


**Isolation**

<b>Frequency (MHz)</b>	<b>600</b>	<b>630</b>	<b>710</b>	<b>830</b>	<b>900</b>	<b>960</b>	<b>1440</b>	<b>1710</b>	<b>1740</b>	<b>1880</b>
<b>Isolation (dB)</b>	-10.5	-9.9	-10.5	-12.0	-15.9	-15.9	-18.9	-20.9	-21.0	-25.2
<b>Frequency (MHz)</b>	<b>1950</b>	<b>2140</b>	<b>2350</b>	<b>2450</b>	<b>2600</b>	<b>2690</b>	<b>4700</b>	<b>5000</b>	<b>5500</b>	<b>6000</b>
<b>Isolation (dB)</b>	-30.7	-30.9	-25.7	-22.1	-19.3	-20.2	-31.6	-37.2	-29.8	-37.5

### 3.2. Radiation Performance Test

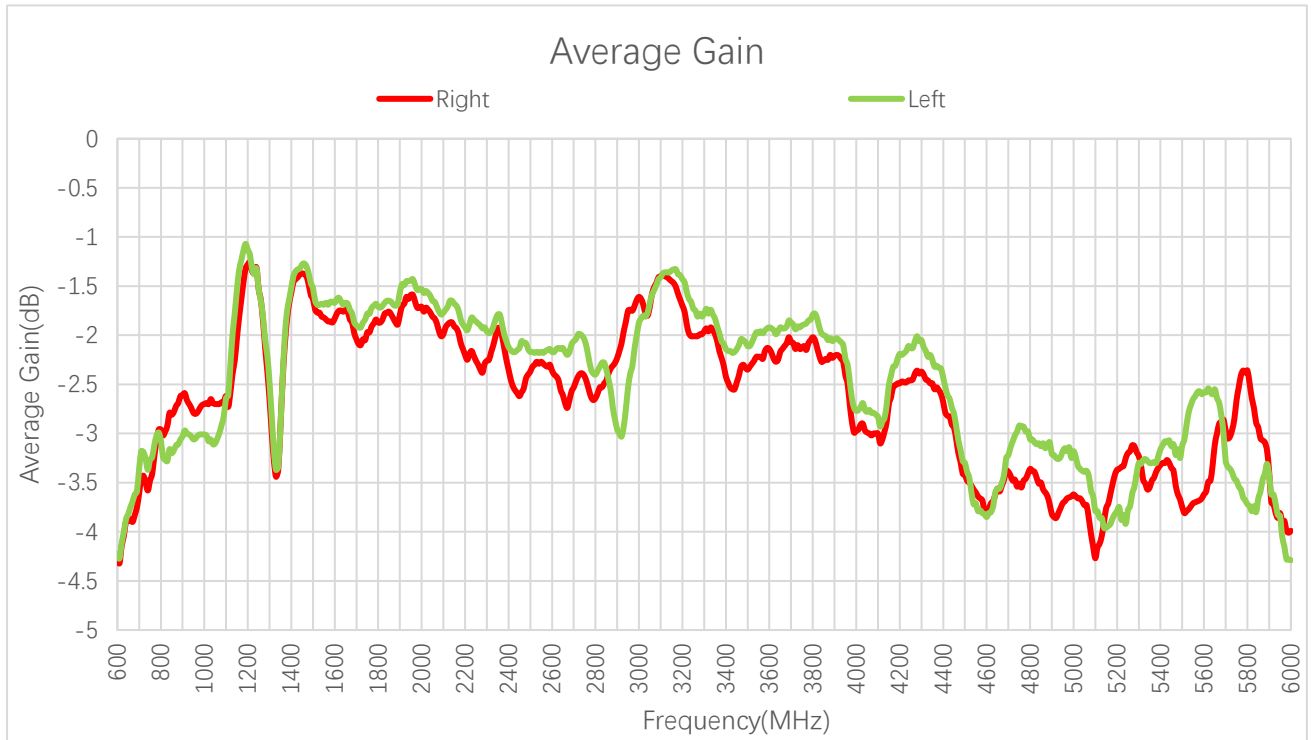
#### 3.2.1. Efficiency



**Efficiency (%)**

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Right	37.1	39.4	45.2	51.1	54.8	52.5	72.8	61.8	62.4	65.0
Left	37.8	39.8	48.1	47.0	49.7	49.6	73.8	64.3	65.4	67.6
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Right	69.3	65.0	64.1	54.7	58.1	55.4	45.9	43.4	42.2	39.9
Left	71.7	68.4	66.3	61.3	60.7	61.8	47.6	48.1	48.7	37.3

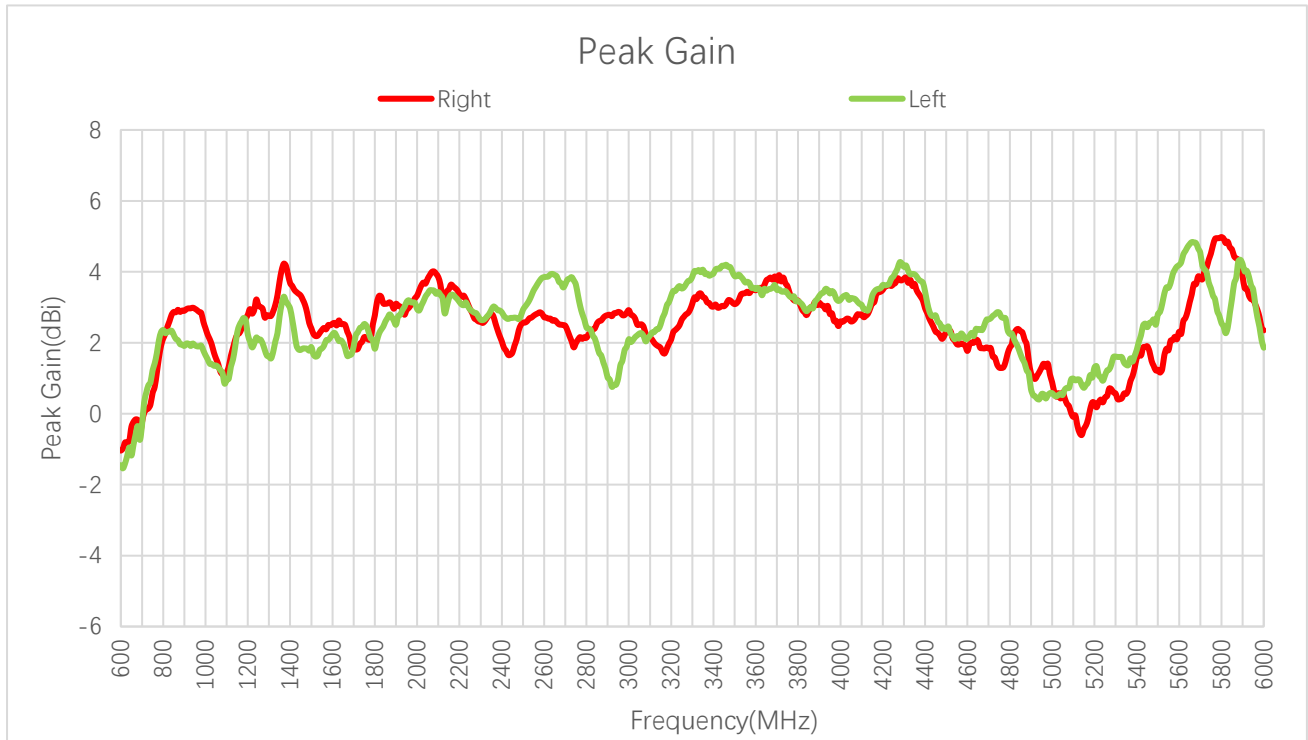
**3.2.2. Average Gain**



**Average Gain (dB)**

<b>Frequency (MHz)</b>	<b>600</b>	<b>630</b>	<b>710</b>	<b>830</b>	<b>900</b>	<b>960</b>	<b>1440</b>	<b>1710</b>	<b>1740</b>	<b>1880</b>
<b>Right</b>	-4.3	-4.0	-3.5	-2.9	-2.6	-2.8	-1.4	-2.1	-2.1	-1.9
<b>Left</b>	-4.2	-4.0	-3.2	-3.3	-3.0	-3.1	-1.3	-1.9	-1.8	-1.7
<b>Frequency (MHz)</b>	<b>1950</b>	<b>2140</b>	<b>2350</b>	<b>2450</b>	<b>2600</b>	<b>2690</b>	<b>4700</b>	<b>5000</b>	<b>5500</b>	<b>6000</b>
<b>Right</b>	-1.6	-1.9	-1.9	-2.6	-2.4	-2.6	-3.4	-3.6	-3.8	-4.0
<b>Left</b>	-1.4	-1.7	-1.8	-2.1	-2.2	-2.1	-3.2	-3.2	-3.1	-4.3

**3.2.3. Peak Gain**

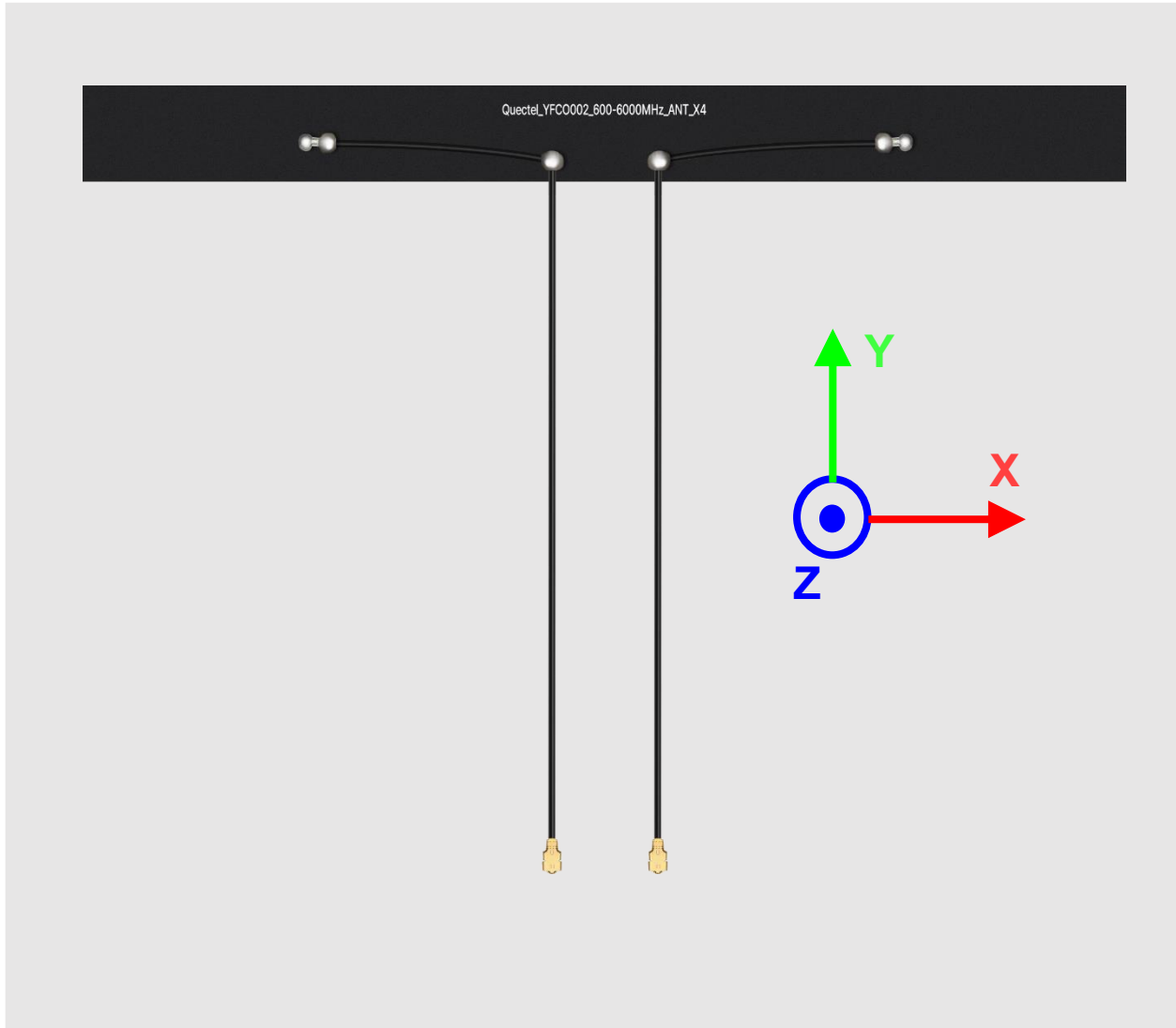


**Peak Gain (dBi)**

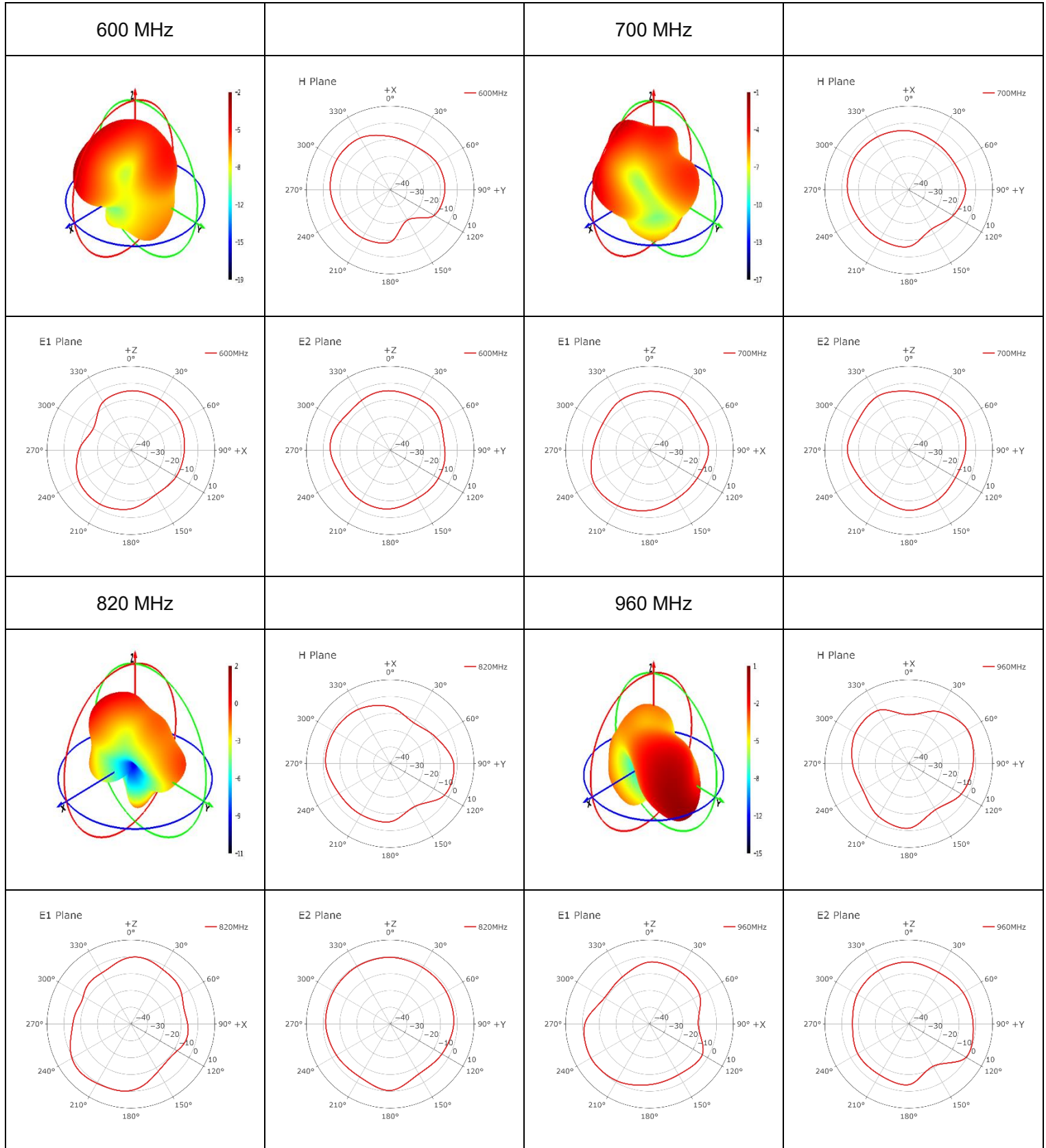
<b>Frequency (MHz)</b>	<b>600</b>	<b>630</b>	<b>710</b>	<b>830</b>	<b>900</b>	<b>960</b>	<b>1440</b>	<b>1710</b>	<b>1740</b>	<b>1880</b>
<b>Right</b>	-1.0	-0.8	0.0	2.6	2.9	2.9	3.4	1.8	2.0	3.1
<b>Left</b>	-1.5	-1.2	0.3	2.3	1.9	1.9	1.8	2.2	2.4	2.7
<b>Frequency (MHz)</b>	<b>1950</b>	<b>2140</b>	<b>2350</b>	<b>2450</b>	<b>2600</b>	<b>2690</b>	<b>4700</b>	<b>5000</b>	<b>5500</b>	<b>6000</b>
<b>Right</b>	2.9	3.4	2.8	1.7	2.7	2.5	1.8	0.9	1.2	2.4
<b>Left</b>	3.2	3.0	2.9	2.7	3.9	3.6	2.7	0.6	2.8	1.9

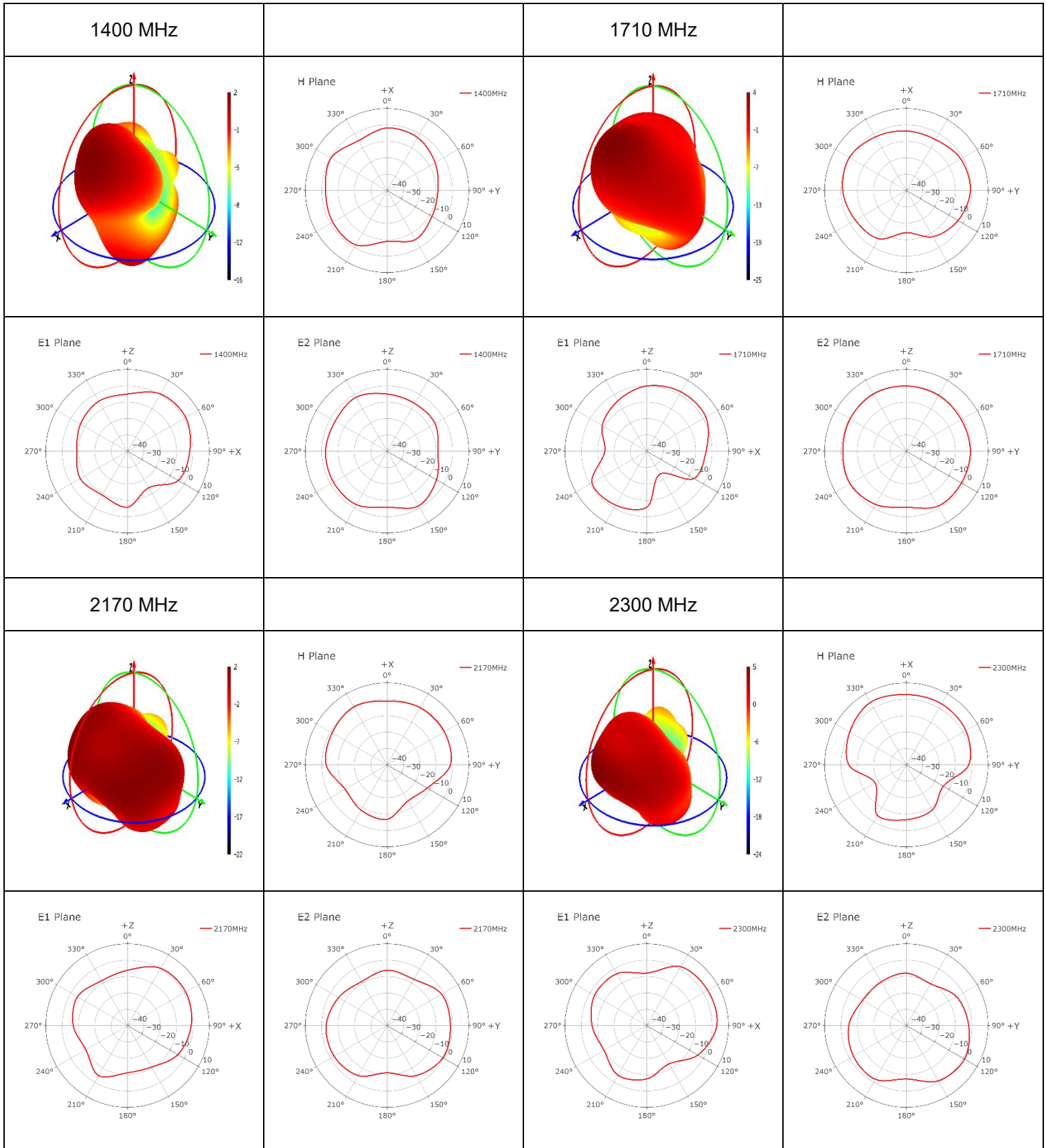
### 3.2.4. 3D & 2D Radiation Pattern

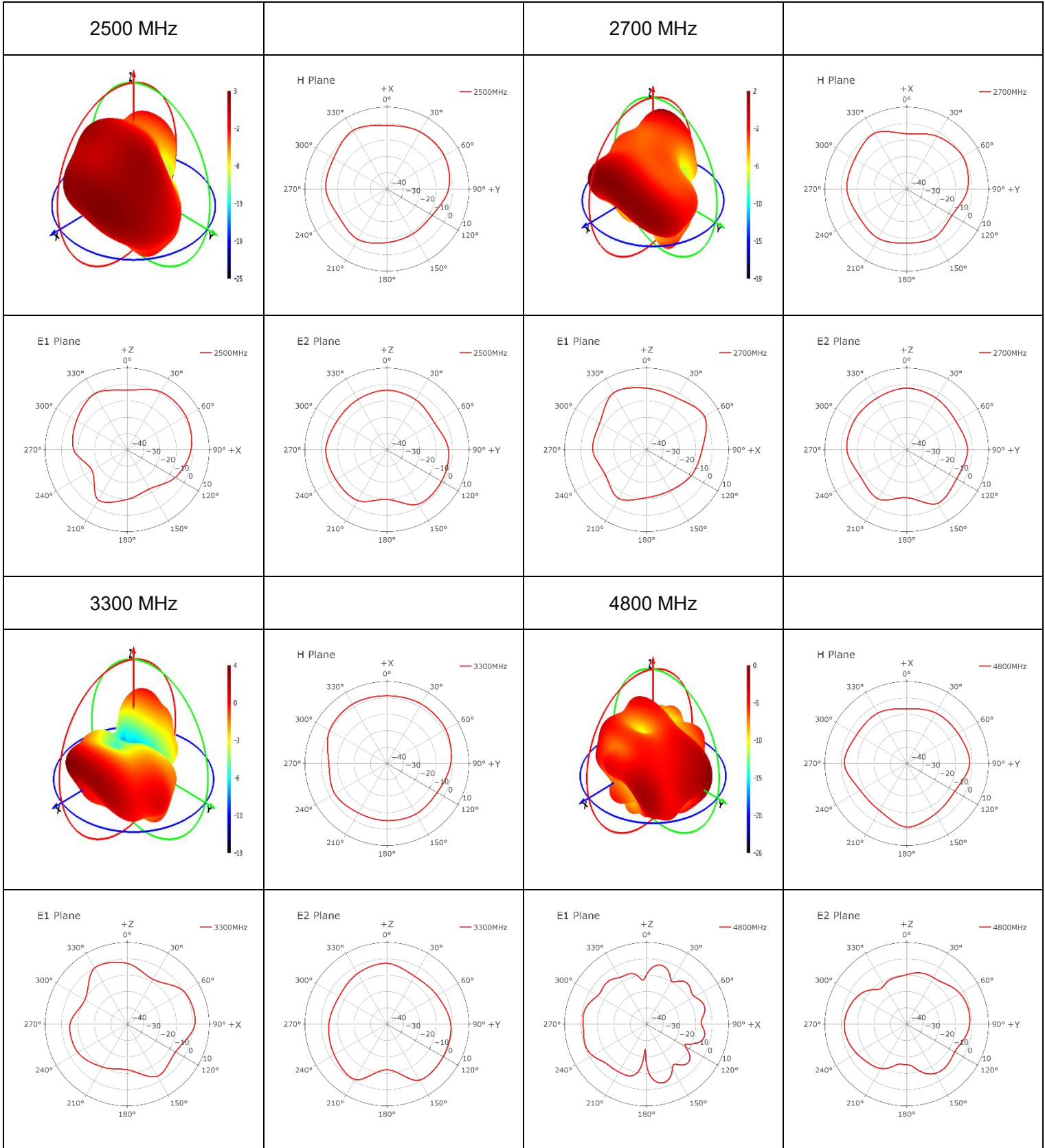
- Test Condition: Stick on the 3 mm ABS
- Test Chamber: GL-S-1

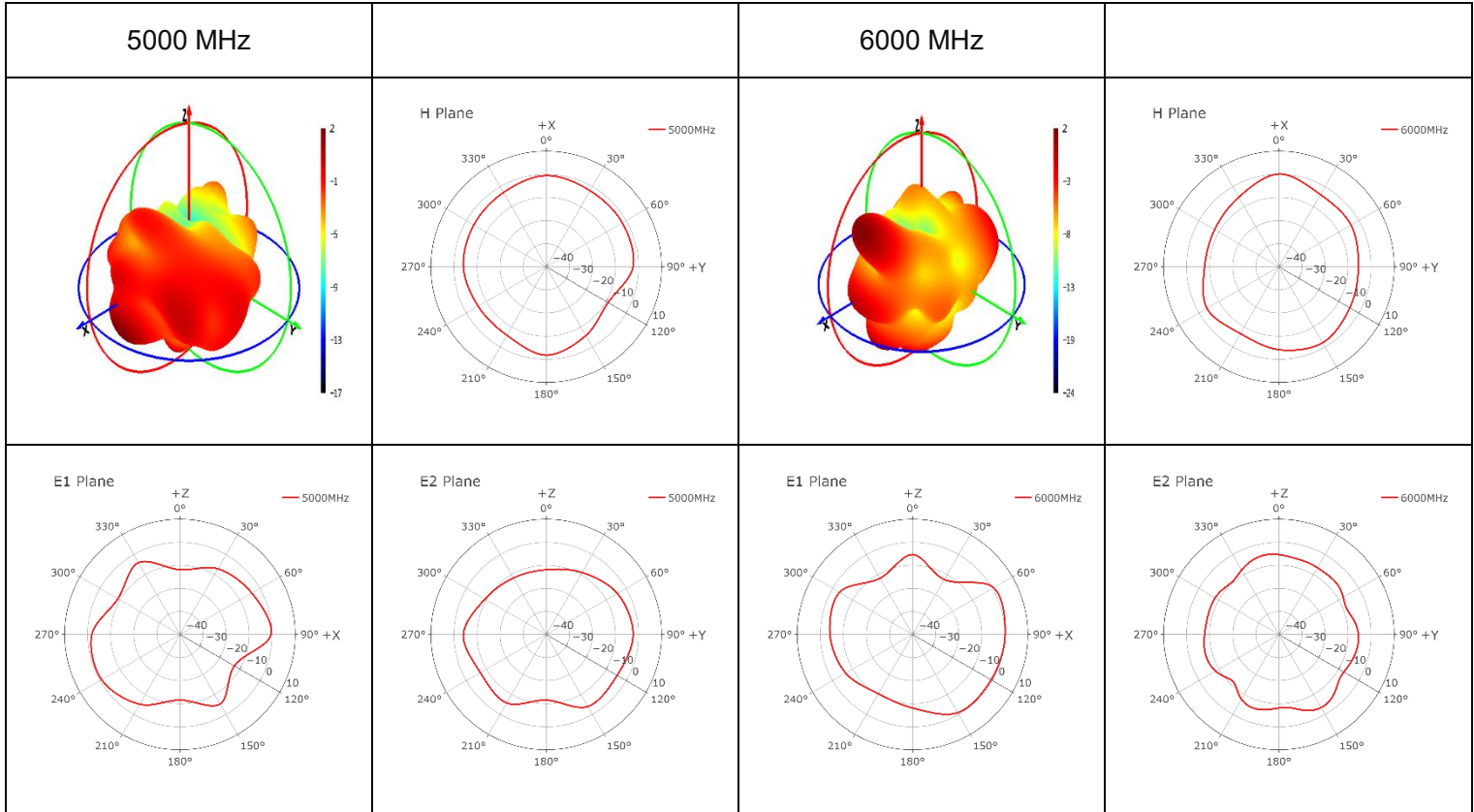


● **Right**

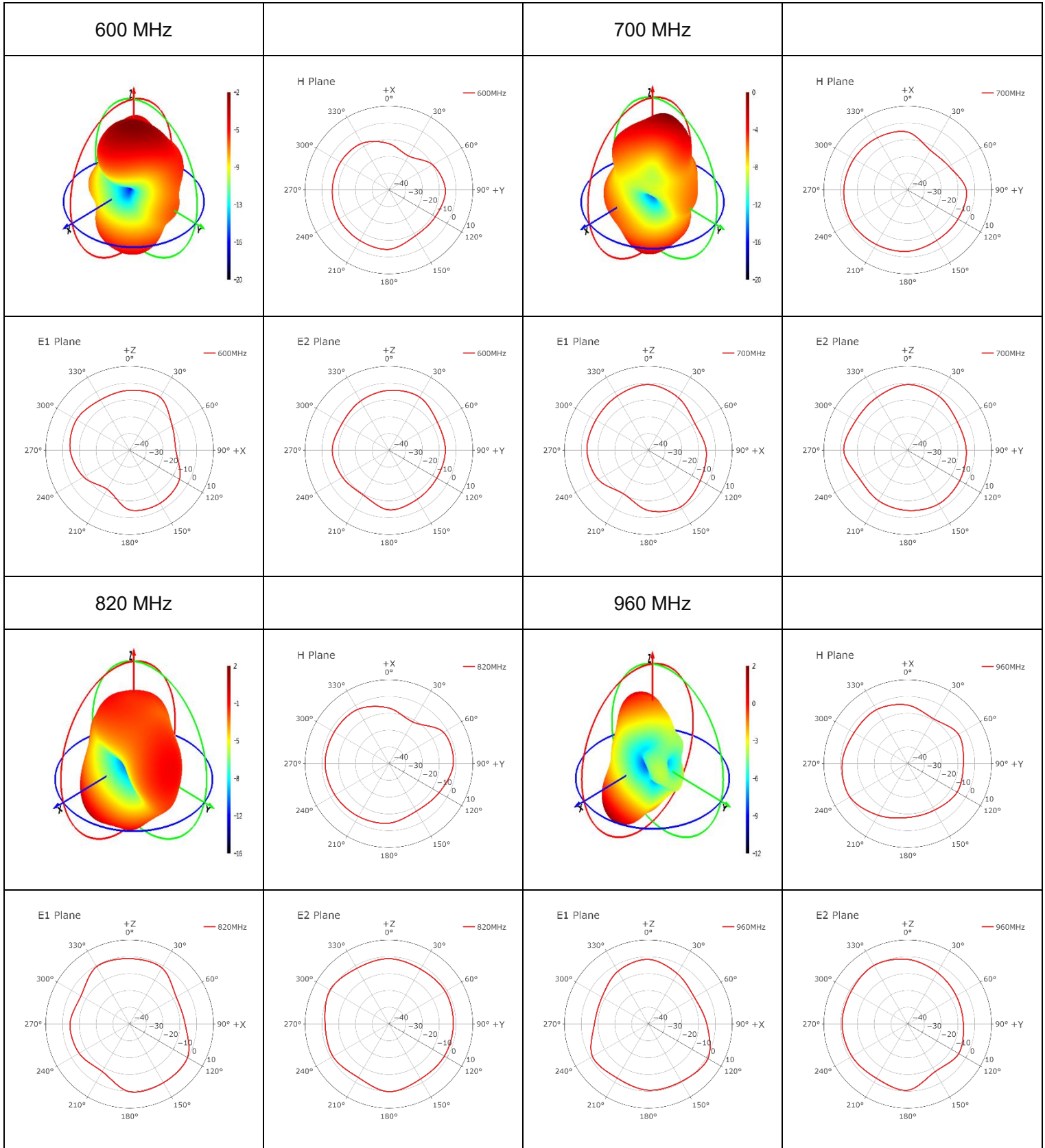


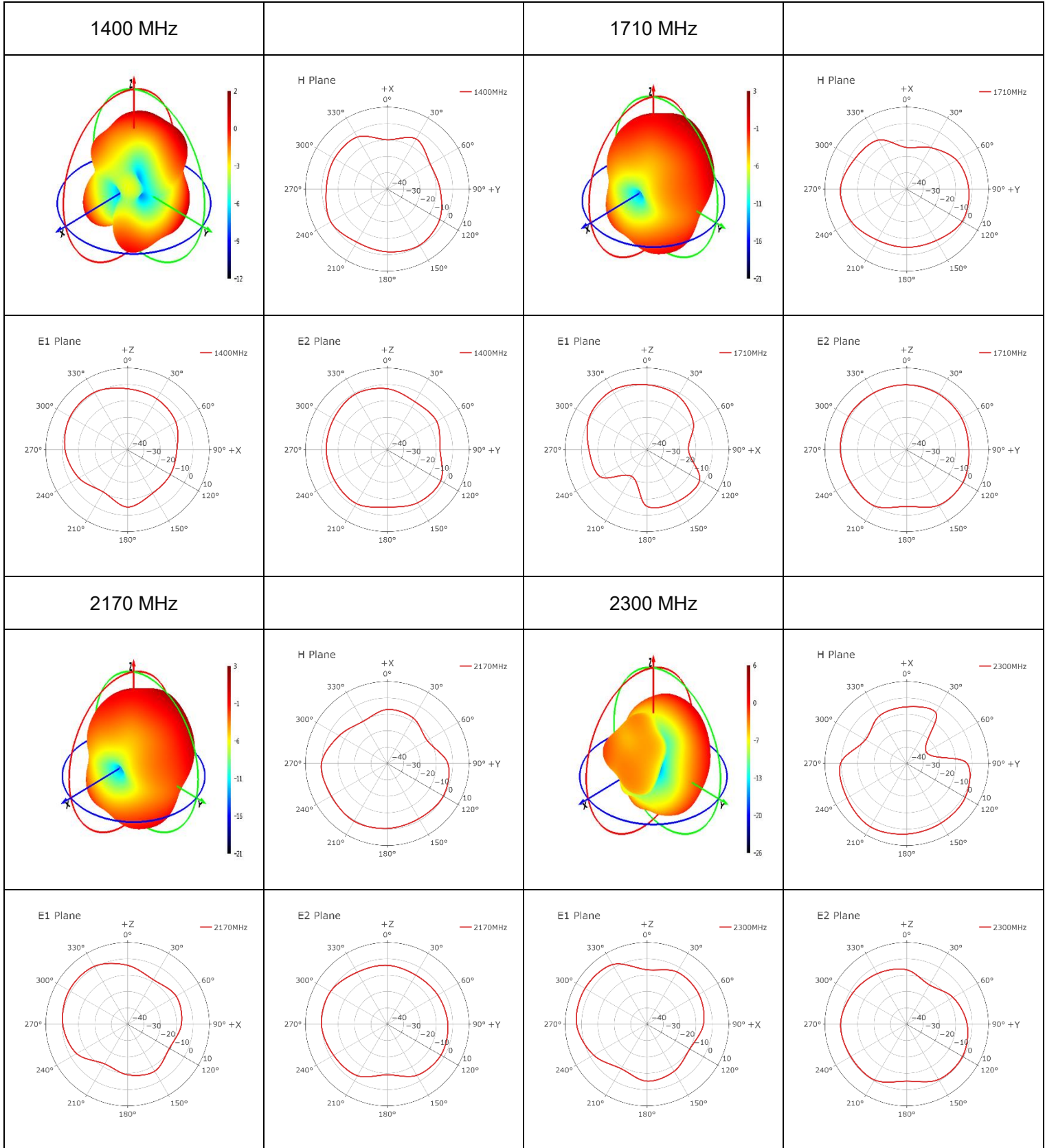


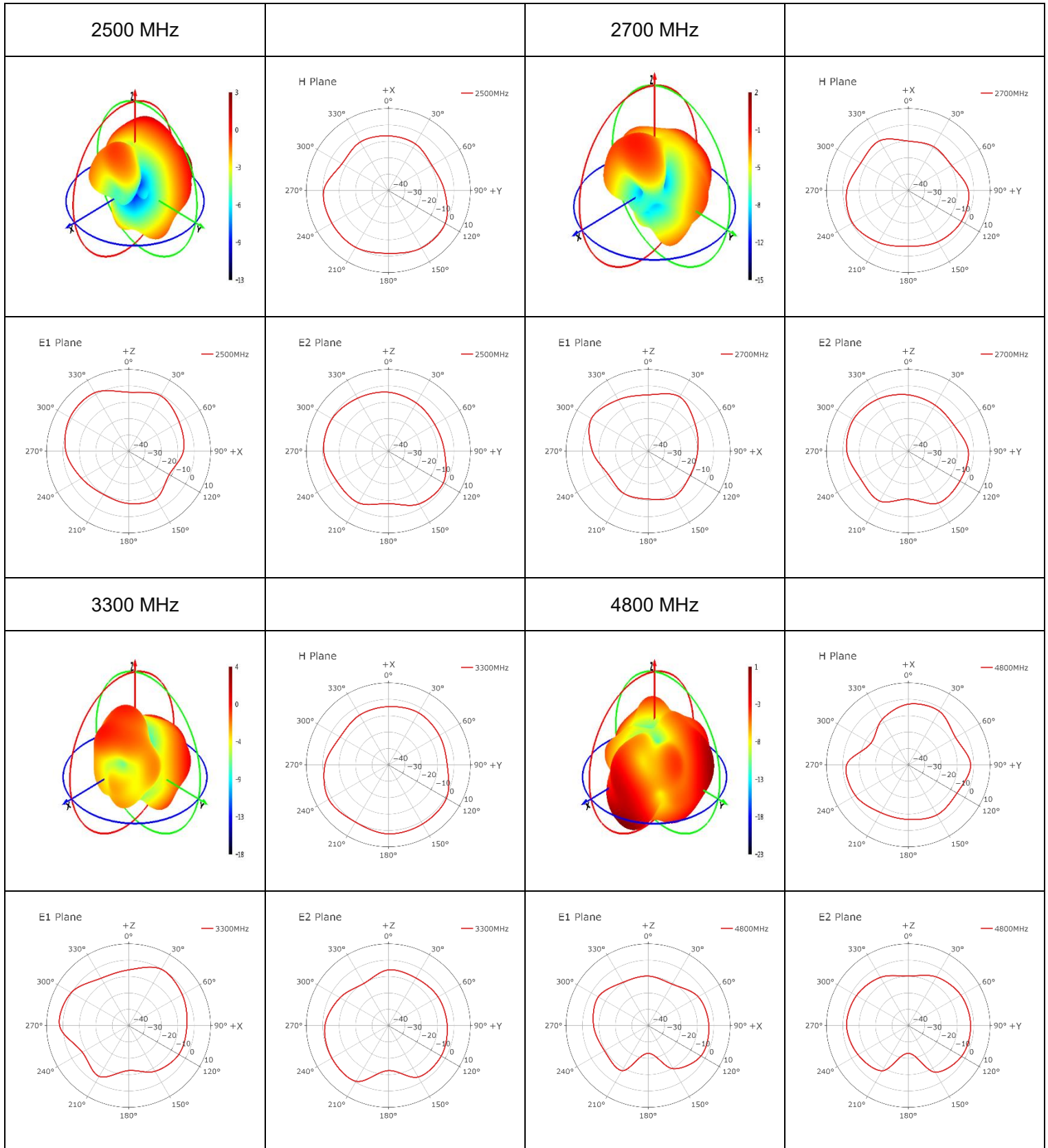


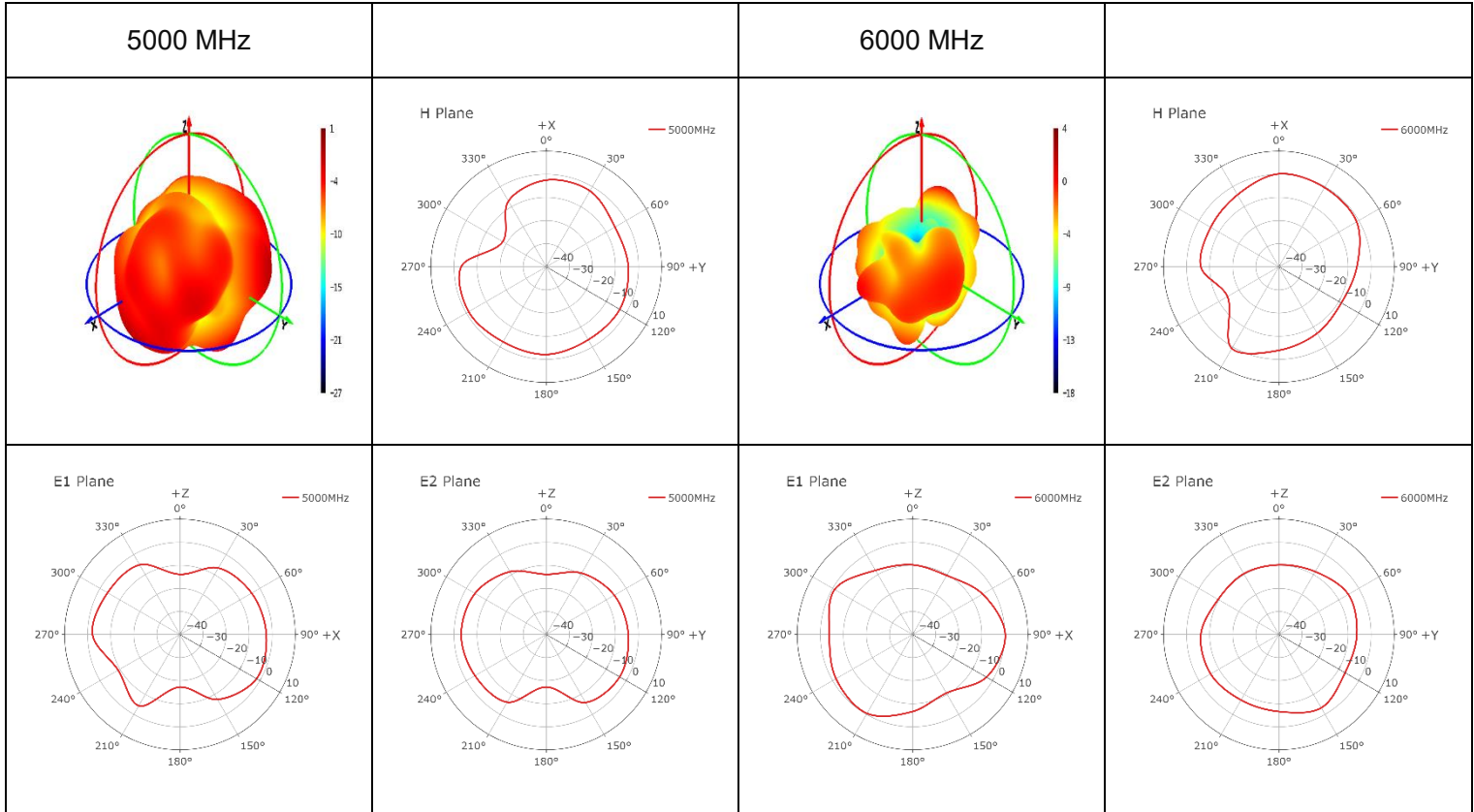


● **Left**

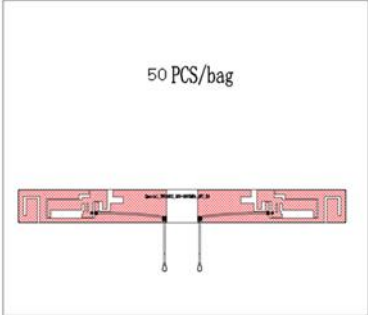
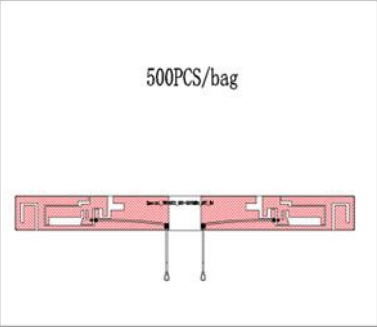
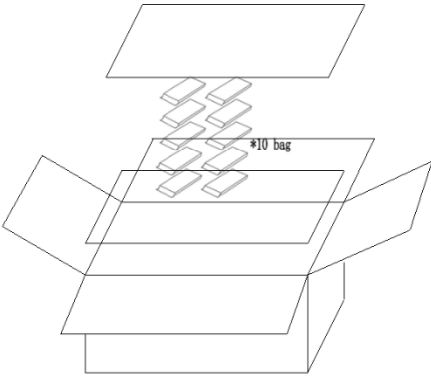


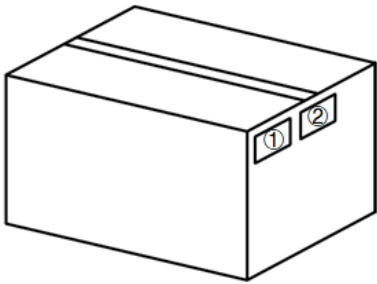
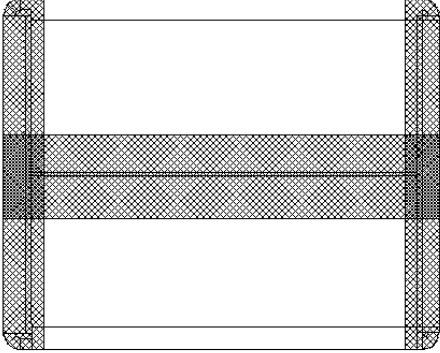






# 4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		<p>50 antenna products in a small PE bag. (50 PCS / Small PE Bag)</p>
2		<p>500 antenna products in a big PE bag. (500 PCS / Big PE Bag)</p>
3		<p>(10 PE Bags / Carton Box) (5000 PCS / Carton Box) Estimated quantity</p> <p>Products that cannot fill the entire carton box are packed in a suitable size carton box.</p> <p><u>Carton Size:</u> <u>L × W × H = 300 × 250 × 200 mm</u></p>

<p>4</p>		<p><b>Position for Attaching Labels</b></p> <ul style="list-style-type: none"> <li>① Carton Label</li> <li>② Quality Label</li> </ul>
<p>5</p>		<p><b>Sealing Cartons</b> H-shaped sealing cartons</p>
<p>Note</p>	<p>The initial packaging method described above is for reference only, and the final actual packaging method shall be subject to the actual shipping packaging.</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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# Revision History

Version	Date	Author	Note
	2021-12-17	Eleven Long Jason Long	Creation of the document
1.0	2021-12-17	Eleven Long Jason Long	First official release
1.1	2022-01-12	Eleven Long Jason Long	Updated to IPEX MHF original terminal and added the antenna weight parameter (Chapter 3).
2.0	2024-06-27	Jaden Feng/ Hart HU/ David LIU/ Aria CHU	<ol style="list-style-type: none"><li>1. Updated test data in this datasheet.</li><li>2. Updated the drawing (Chapter 2).</li></ol>
2.1	2024-10-31	Jason LONG	Updated the cable length (Chapter 1.2).
2.2	2025-04-16	Aria CHU	Updated the antenna image (Cover page).

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