



# Antenna Datasheet

**Product OC:** YE0013CA

**Version:** 2.1

**Date:** 2024-01-15

**Status:** Released

**Product Name:** 4G External Antenna

**Key Features:**

Frequency Band: 698–2700 MHz

Dimensions:  $\Phi$  10.2 mm  $\times$  115.4 mm

Efficiency: Up to 95.7 % (On 130  $\times$  130 mm EVB)

RoHS Compliant

IP66

# 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: On 130 mm × 130 mm EVB & Free Space

## 1.1. Electrical

Electrical	
Frequency Range	698–2700 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Electrical - Detail												
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	EVB	-	2.9	3.1	-	2.5	4.6	4.7	4.1	-	-	-
	FS	-	2.1	2.6	-	1.7	2.0	2.2	2.4	-	-	-
Max. Return Loss (dB)	EVB	-	-6.3	-5.8	-	-7.5	-3.9	-3.8	-4.3	-	-	-
	FS	-	-8.9	-7.2	-	-11.9	-9.8	-8.5	-7.7	-	-	-
AVG Eff. (%)	EVB	-	59.2	58.7	-	79.1	52.5	45.4	59.2	-	-	-
	FS	-	38.0	42.8	-	70.4	59.9	65.2	38.0	-	-	-
AVG Gain (dB)	EVB	-	-2.3	-2.3	-	-1.0	-2.8	-3.4	-2.6	-	-	-
	FS	-	-4.3	-3.7	-	-1.5	-2.2	-1.9	-2.1	-	-	-
Max. Peak	EVB	-	1.4	1.7	-	4.9	1.9	1.4	3.9	-	-	-

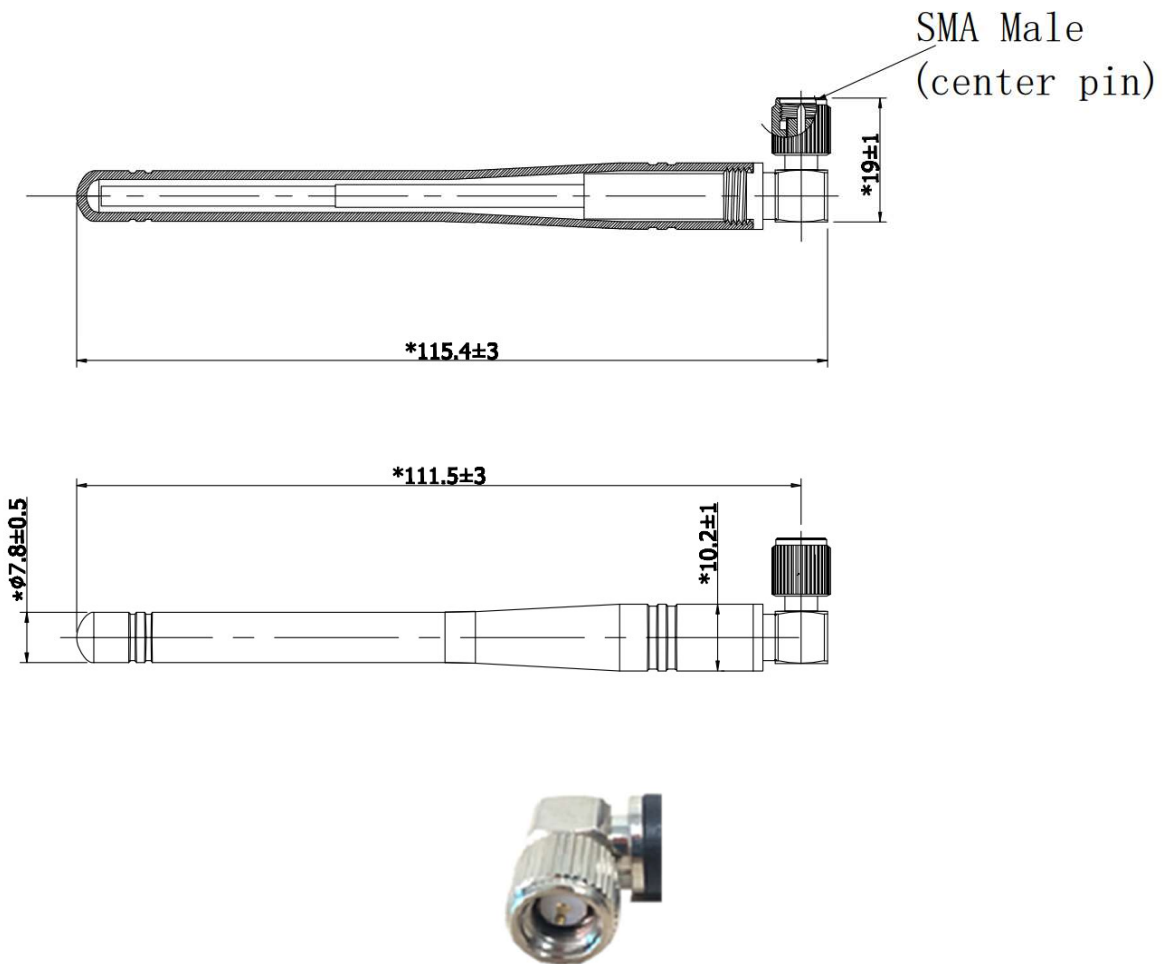
Gain (dBi)	FS	-	-1.5	-0.9	-	1.9	1.8	2.2	2.6	-	-	-
VSWR	EVB		$\leq 4.7$									
	FS		$\leq 2.6$									
Return Loss	EVB		$\leq -3.8$ dB									
	FS		$\leq -7.2$ dB									
Peak Gain	EVB		$\leq 4.9$ dBi									
	FS		$\leq 2.6$ dBi									

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

## 1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	Φ 10.2 mm × 115.4 mm
Casing Material & Color	TPEE & Black
Connector Type	SMA Male
Mounting Type	Terminal
Weight	Typ. 17 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	IP66
RoHS Compliant	Yes

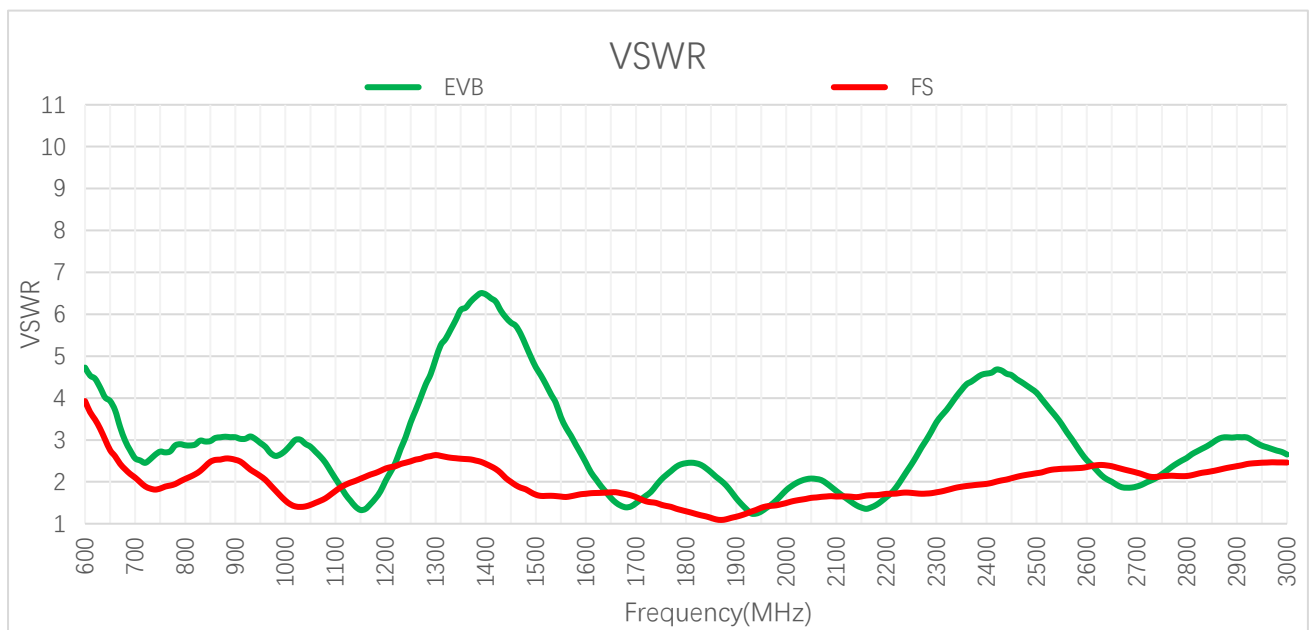
# 2 Drawing



# 3 Detailed Performance

## 3.1. S-Parameter Test

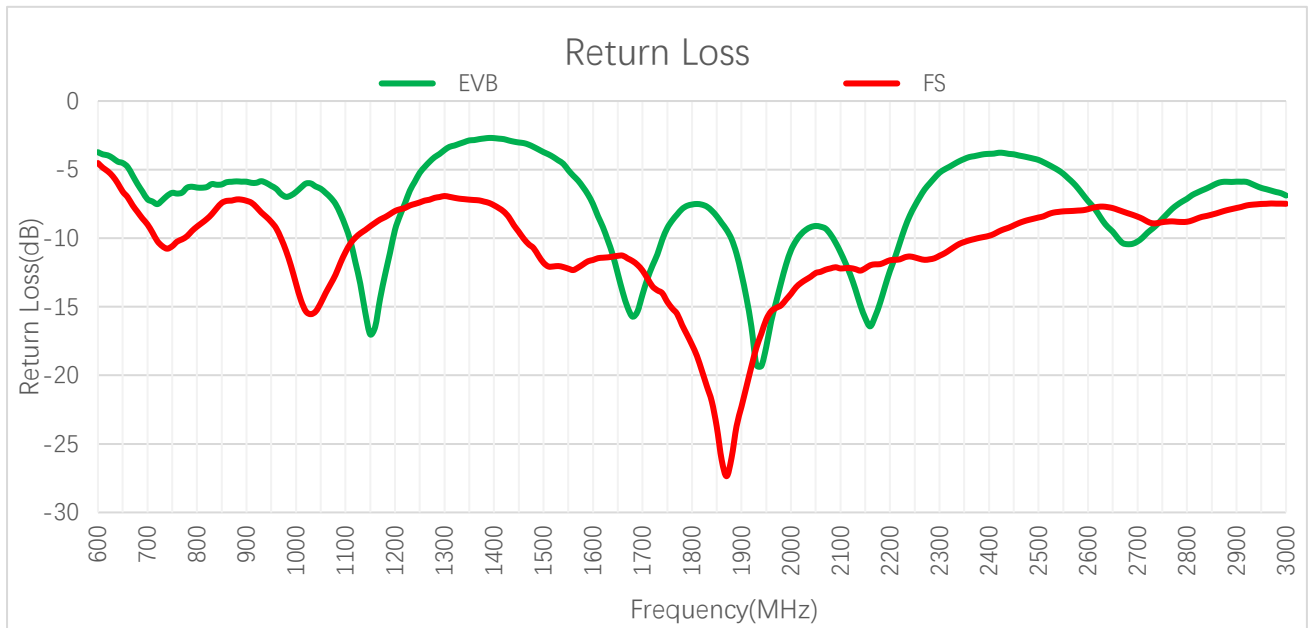
### 3.1.1. VSWR



**VSWR**

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880	
VSWR	EVB	-	-	2.5	3.0	3.1	2.8	-	1.6	1.9	1.9
	FS	-	-	2.0	2.3	2.5	2.0	-	1.6	1.5	1.1
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000	
VSWR	EVB	1.3	1.4	4.2	4.5	2.5	1.9	-	-	-	-
	FS	1.4	1.6	1.9	2.1	2.4	2.3	-	-	-	-

**3.1.2. Return Loss**

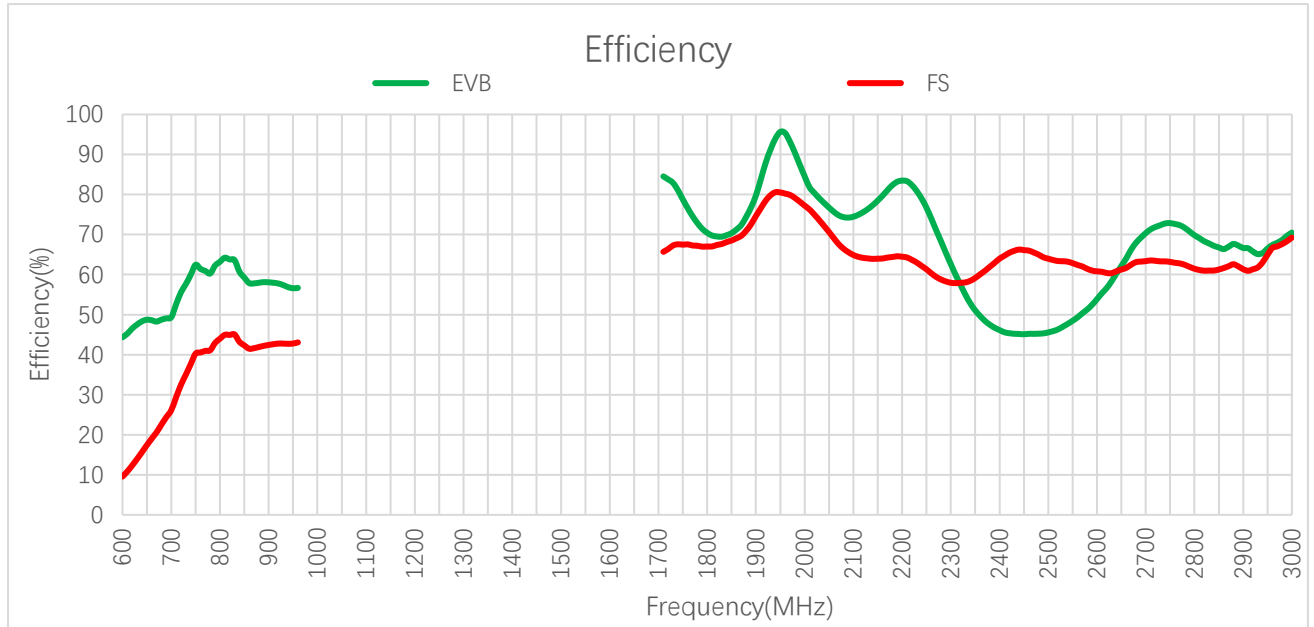


**Return Loss (dB)**

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	EVB	-	-	-7.3	-6.1	-5.9	-6.4	-	-13.0	-10.1	-10.1
	FS	-	-	-9.6	-8.3	-7.3	-9.3	-	-12.9	-14.0	-26.0
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Return Loss (dB)	EVB	-17.9	-14.9	-4.2	-3.9	-7.3	-10.4	-	-	-	-
	FS	-15.9	-12.4	-10.3	-9.1	-7.9	-8.3	-	-	-	-

### 3.2. Radiation Performance Test

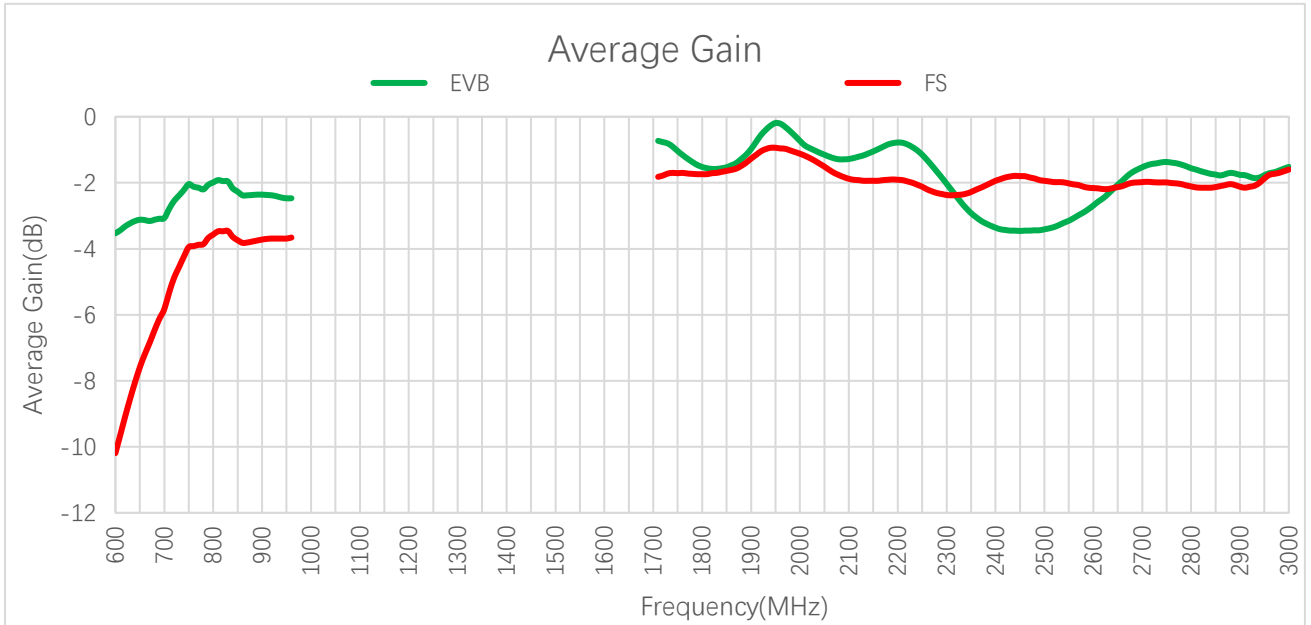
#### 3.2.1. Efficiency



**Efficiency (%)**

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	EVB	-	-	52.6	63.6	58.1	56.7	-	84.5	81.1	74.4
	FS	-	-	29.4	45.1	42.4	43.1	-	65.7	67.6	71.0
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Efficiency (%)	EVB	95.7	77.4	51.1	45.1	53.9	69.2	-	-	-	-
	FS	80.5	63.9	59.2	66.1	60.8	63.3	-	-	-	-

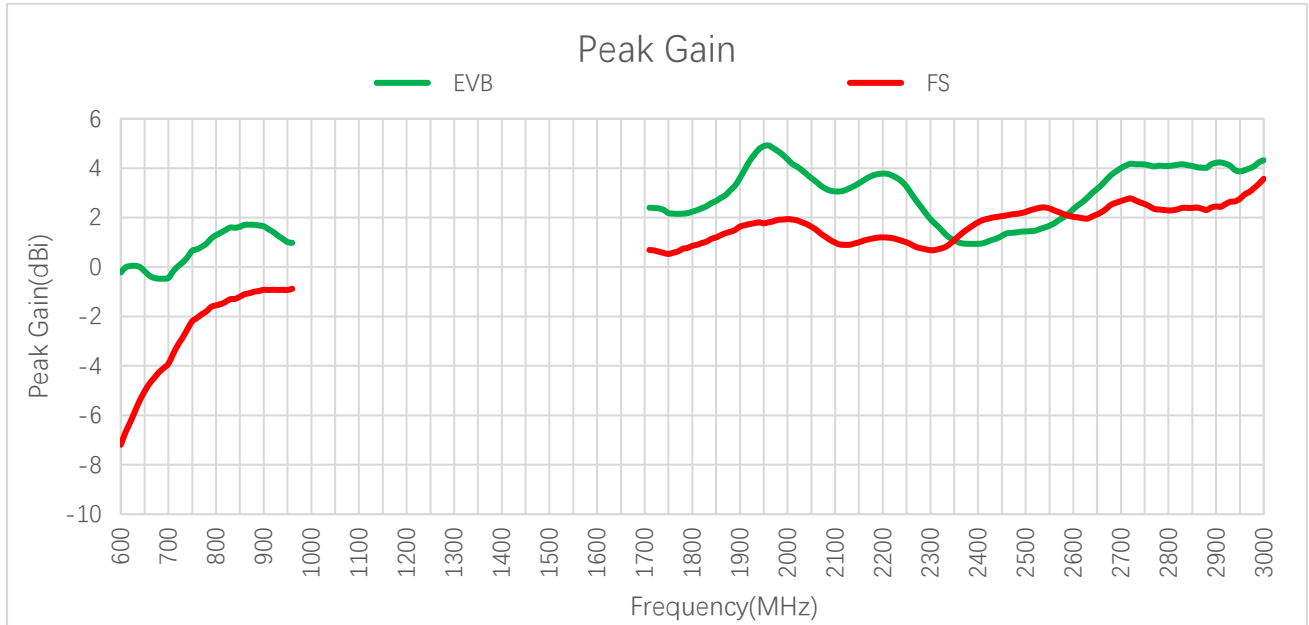
**3.2.2. Average Gain**



**Average Gain (dB)**

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	EVB	-	-	-2.8	-2.0	-2.4	-2.5	-	-0.7	-0.9	-1.3
	FS	-	-	-5.3	-3.5	-3.7	-3.7	-	-1.8	-1.7	-1.5
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Average Gain (dB)	EVB	-0.2	-1.1	-2.9	-3.5	-2.7	-1.6	-	-	-	-
	FS	-0.9	-1.9	-2.3	-1.8	-2.2	-2.0	-	-	-	-

**3.2.3. Peak Gain**



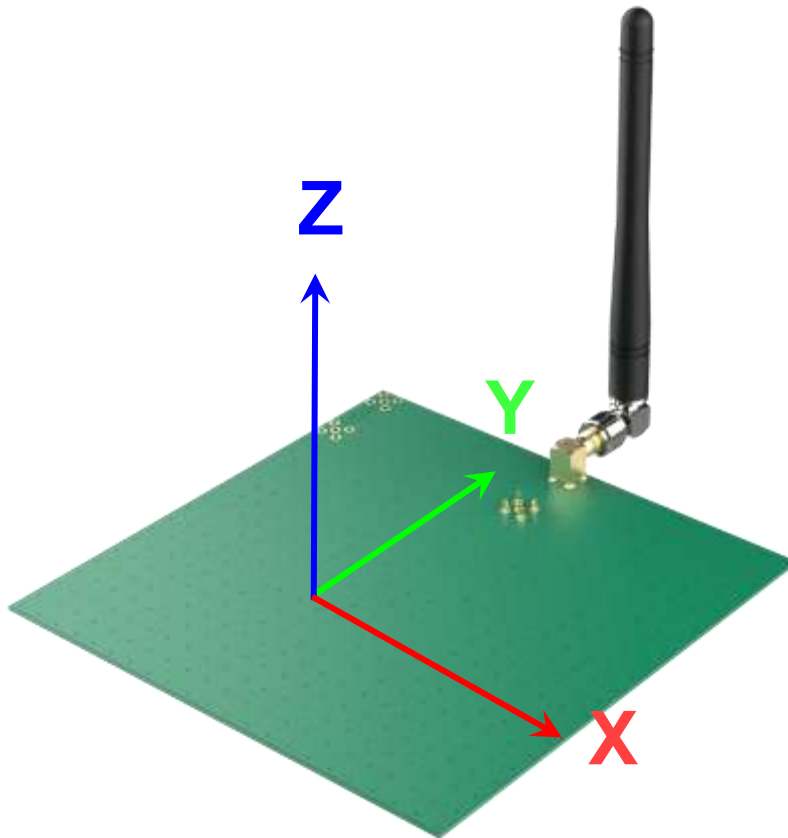
**Peak Gain (dBi)**

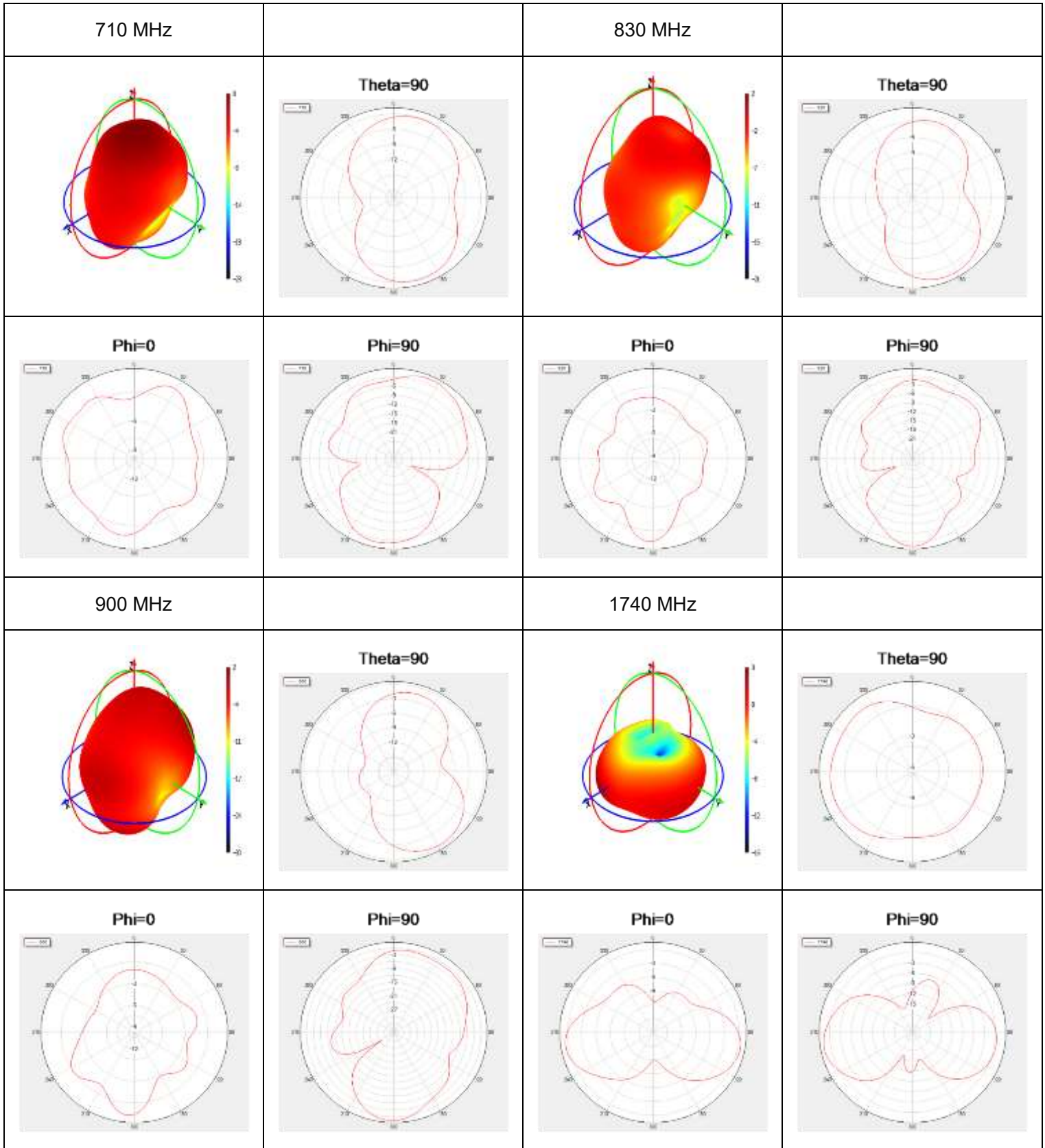
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	EVB	-	-	-0.2	1.6	1.7	1.0	-	2.4	2.3	3.1
	FS	-	-	-3.5	-1.3	-0.9	-0.9	-	0.7	0.6	1.4
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Peak Gain (dBi)	EVB	4.9	3.3	1.1	1.3	2.3	3.9	-	-	-	-
	FS	1.8	1.0	1.1	2.1	2.0	2.6	-	-	-	-

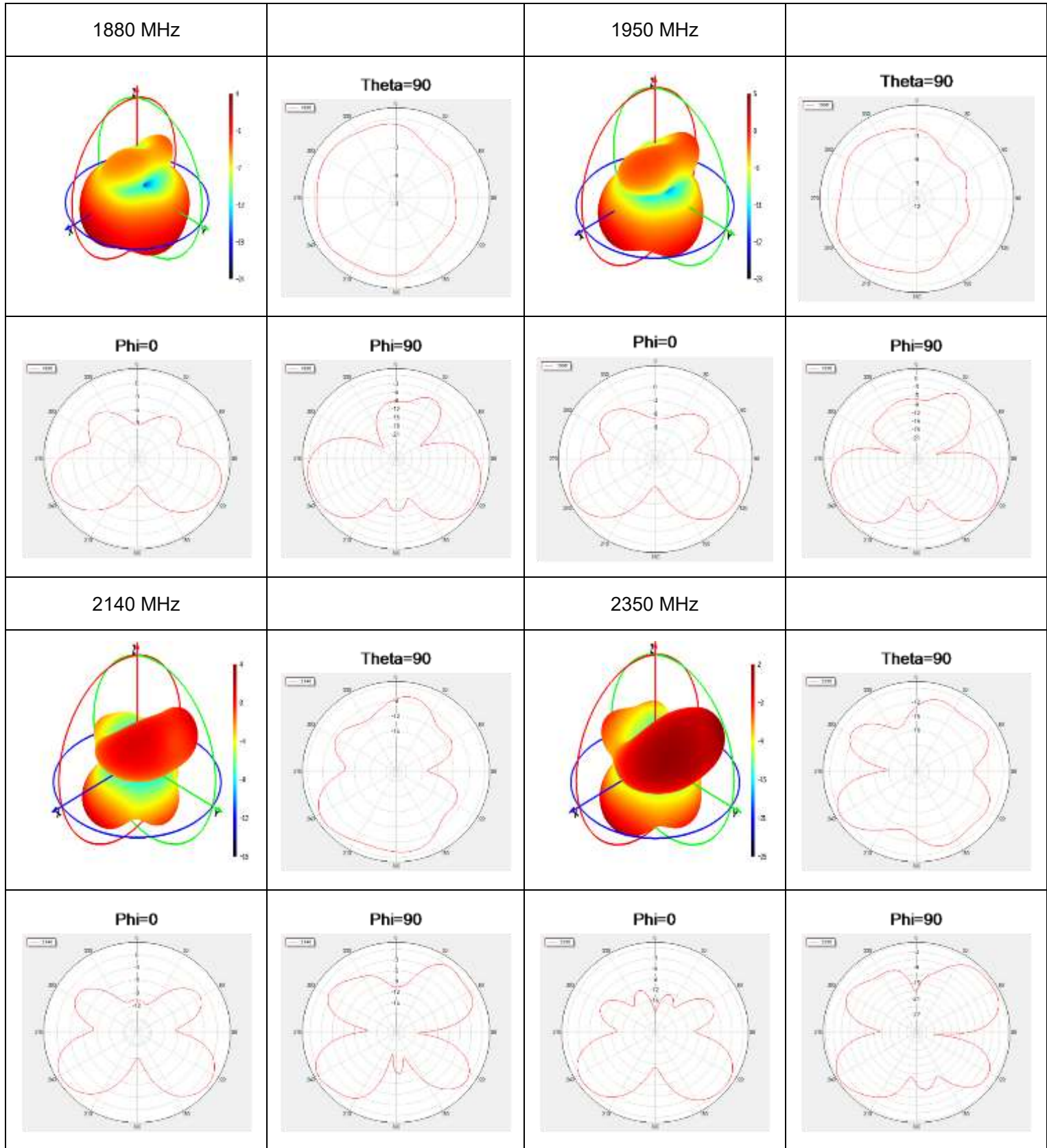
### 3.2.4. 3D & 2D Radiation Pattern

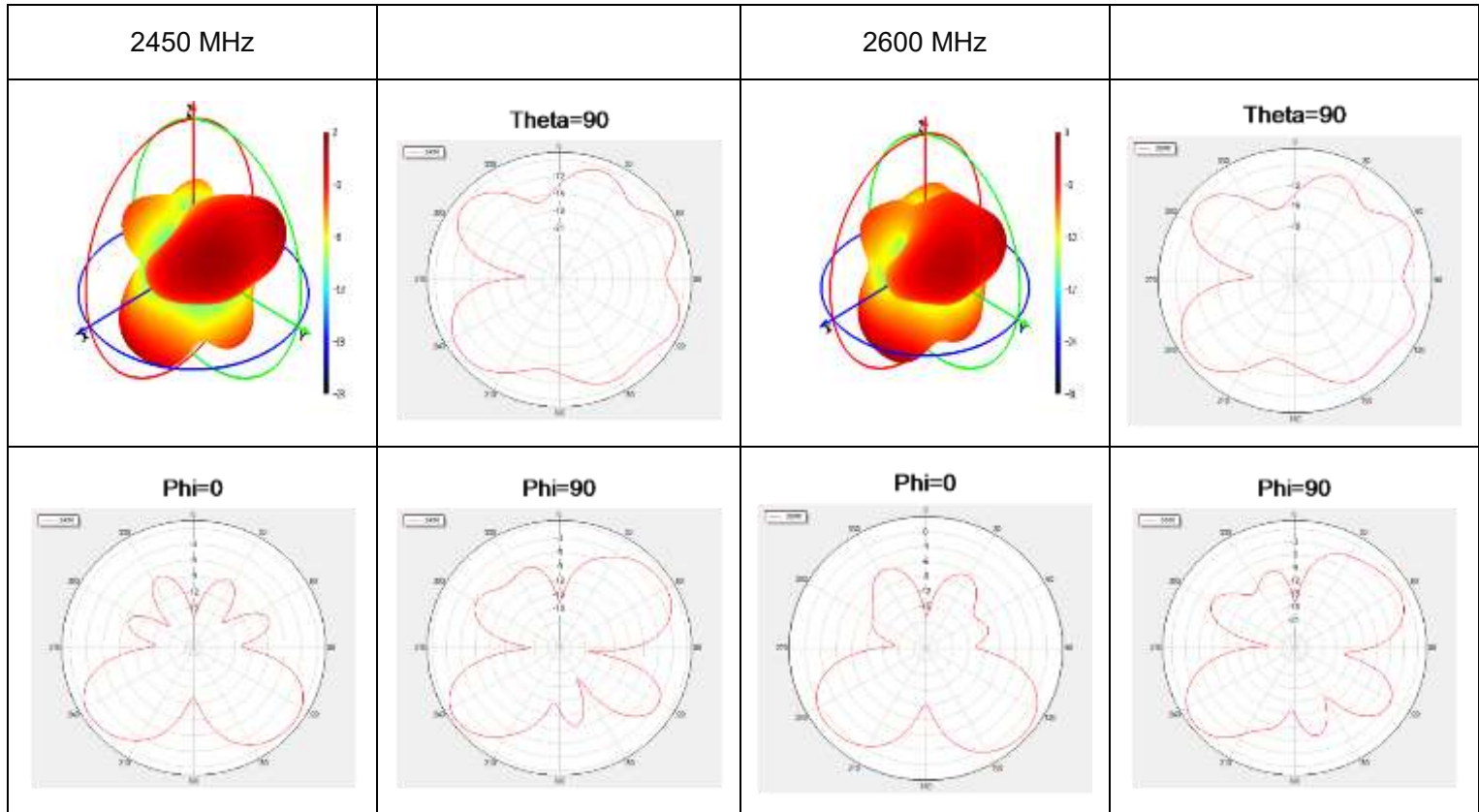
#### 3.2.4.1. Test Condition: On 130 mm × 130 mm EVB

- Test Chamber: GL-S-1



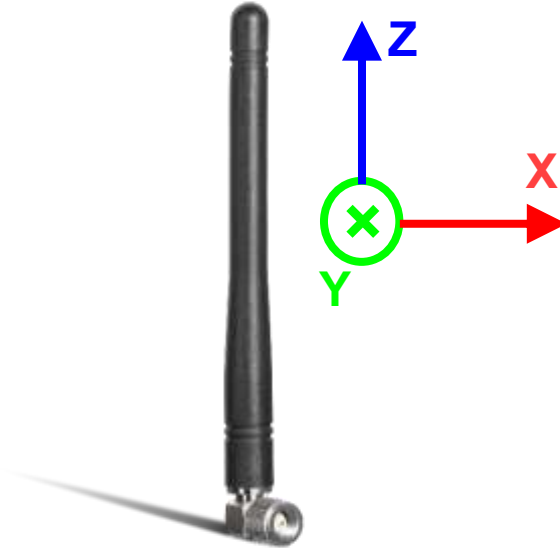


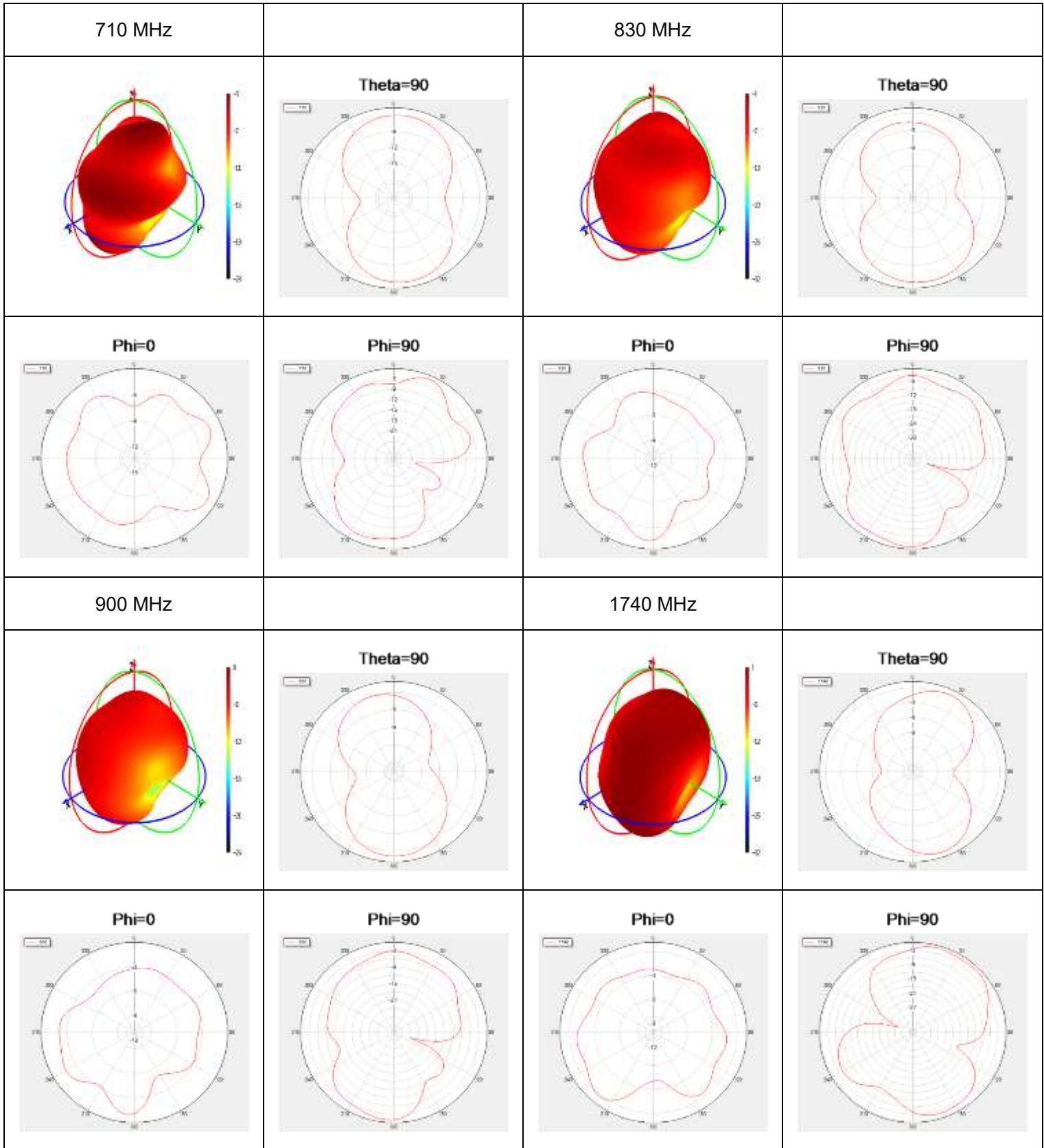


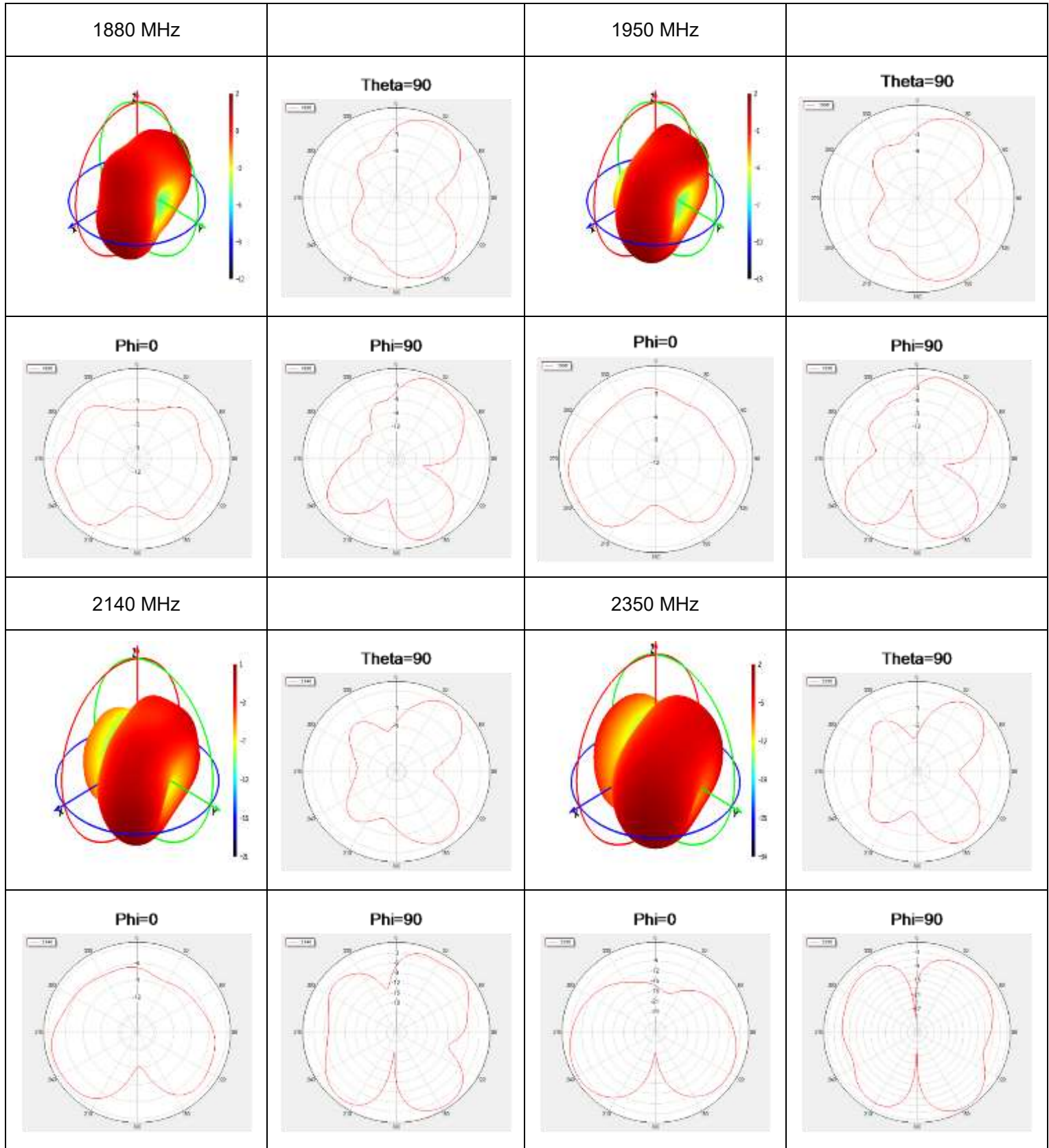


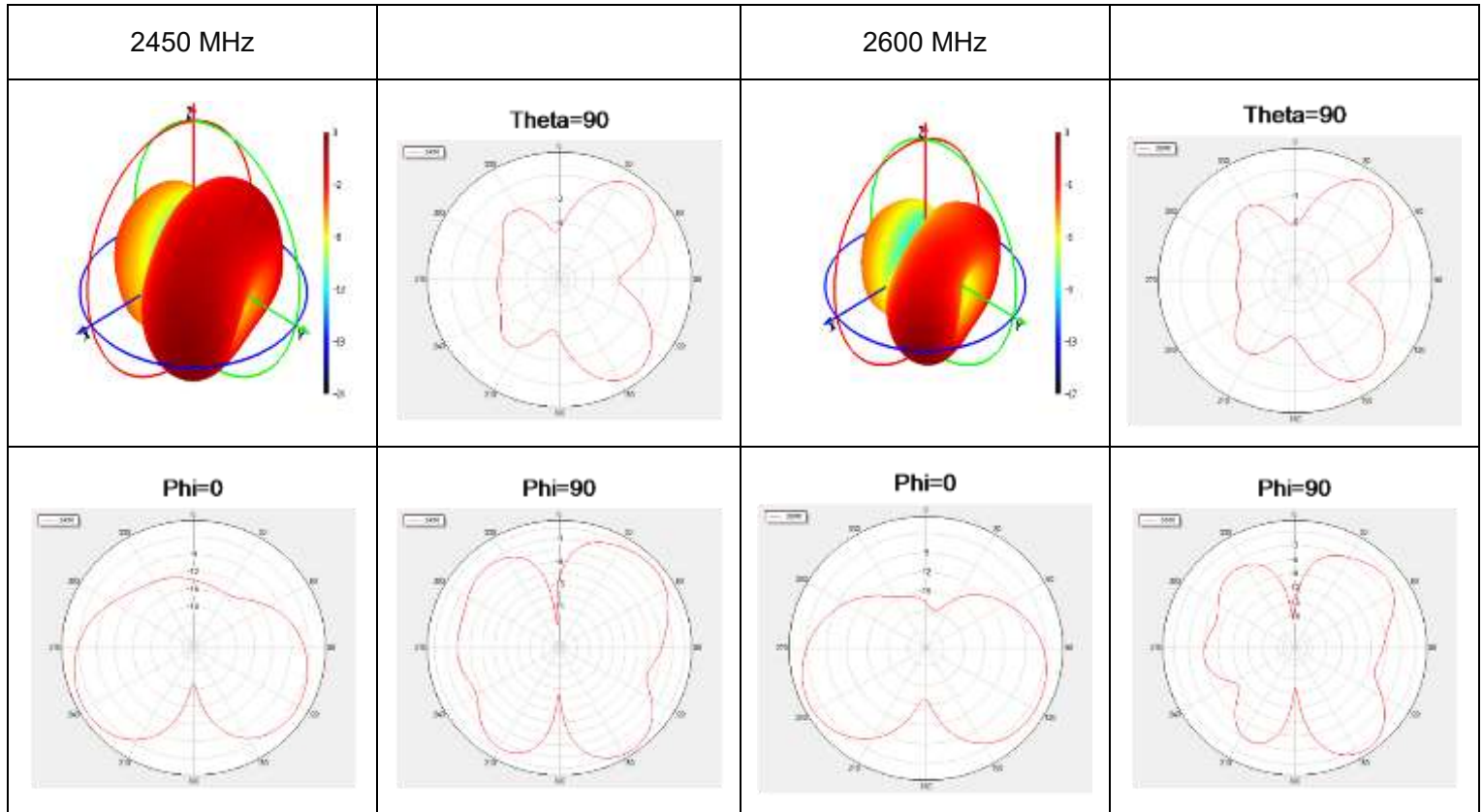
**3.2.4.2. Test Condition: Free Space**

- Test Chamber: GL-S-1



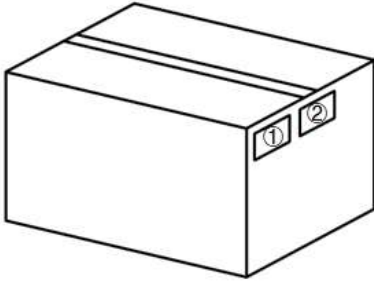
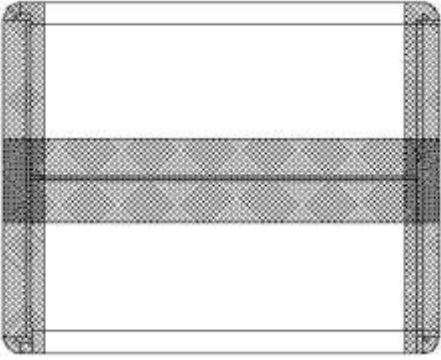






# 4 Packaging

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>20 pcs antenna products in a PE bag. (20 PCS / PE Bag)</p>
3		<p>(30 PE bags per carton box) (600 pcs antennas per carton box)</p> <p><u>Carton Size:</u> <u>L × W × H = 325 × 325 × 200 mm</u></p>

4	 A 3D perspective drawing of a rectangular carton. On the front face, there are two small rectangular labels. The left label is marked with a circled '1' and the right label is marked with a circled '2'.	<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>
5	 A 3D perspective drawing of a rectangular carton. A horizontal, shaded strip is wrapped around the middle of the carton, representing a sealing strip. The strip is wider than the height of the carton's body.	<p><b>Sealing Cartons</b></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
-	2022-06-10	Toby WANG/ Riona HAN	Creation of the document
1.0	2022-06-10	Toby WANG/ Riona HAN	First official release
2.0	2023-05-04	Black LI/ Lucky FENG/ David LIU/ Aria CHU	Updated all data and datasheet template.
2.1	2024-01-15	Lucky FENG	<ol style="list-style-type: none"><li>1. Updated Chapter 1.2.</li><li>2. Updated the drawing (Chapter 2).</li></ol>

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