



# Antenna Datasheet

**Product OC:** YECT002AA

**Version:** 4.1

**Date:** 2024-01-15

**Status:** Released

**Product Name:** 4G External Antenna

**Key Features:**

Frequency Band: 600–2700 MHz

Dimensions: 196.2 × 16 × 13 mm

Efficiency: Up to 84.0 % (On 130 × 130 mm EVB)

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: On 130 mm × 130 mm EVB & Free Space

## 1.1. Electrical

Electrical	
Frequency Range	600–2700 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	5.6	3.0	5.8	-	2.6	1.6	1.9	2.3	-	-	-
	FS	4.7	1.7	3.4	-	2.1	1.5	1.8	2.0	-	-	-
Max. Return Loss (dB)	EVB	-3.1	-6.0	-3.0	-	-7.2	-13.2	-10.0	-8.0	-	-	-
	FS	-3.8	-11.8	-5.3	-	-9.2	-13.6	-10.9	-9.4	-	-	-
AVG Eff. (%)	EVB	34.7	76.5	54.0	-	62.8	66.8	59.3	63.1	-	-	-
	FS	35.4	39.6	37.5	-	58.7	77.3	75.1	58.4	-	-	-
AVG Gain (dB)	EVB	-4.9	-1.2	-2.9	-	-2.1	-1.8	-2.3	-2.0	-	-	-
	FS	-4.6	-4.0	-4.3	-	-2.4	-1.1	-1.2	-2.4	-	-	-
Max. Peak	EVB	-0.5	1.4	1.0	-	2.3	1.5	1.6	2.8	-	-	-

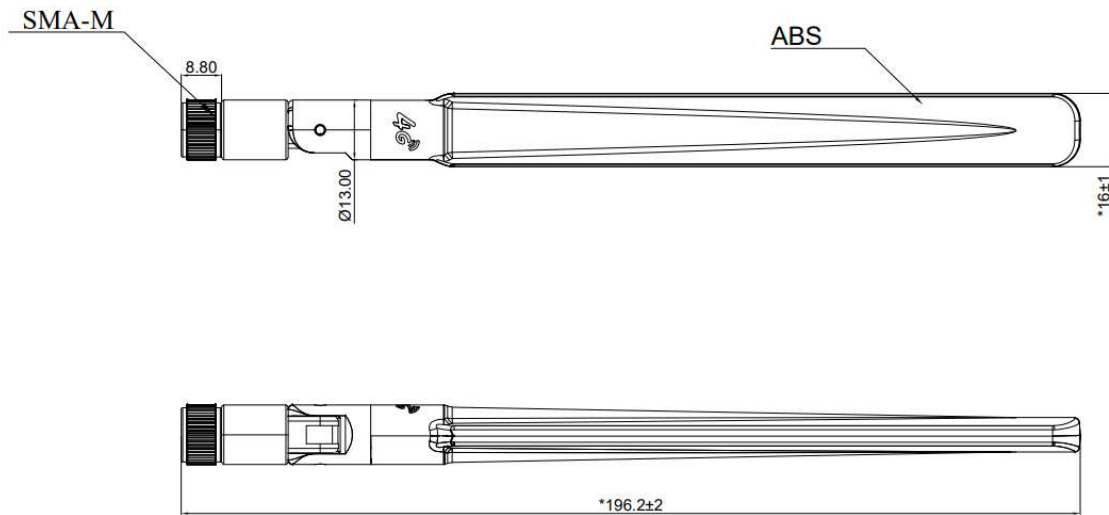
Gain (dBi)	FS	-2.0	-0.7	0.3	-	1.4	2.8	2.9	2.7	-	-	-
VSWR	EVB						≤ 5.8					
	FS						≤ 4.7					
Return Loss	EVB						≤ -3.0 dB					
	FS						≤ -3.8 dB					
Peak Gain	EVB						≤ 2.8 dBi					
	FS						≤ 2.9 dBi					

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

## 1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	196.2 mm × 16 mm × 13 mm
Casing Material & Color	ABS & Black
Connector Type	SMA Male
Mounting Type	Terminal
Weight	Typ. 19.5 g
Environmental	
Operation Temperature	-20 °C to +70 °C
Storage Temperature	-20 °C to +70 °C
RoHS Compliant	Yes

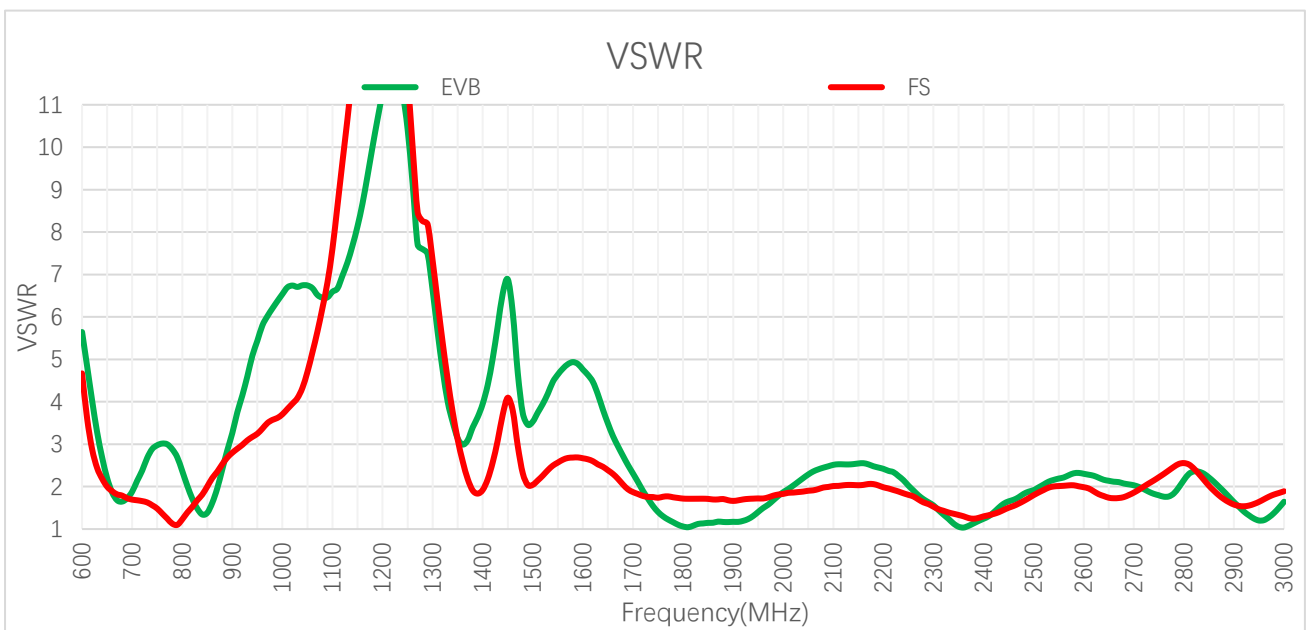
# 2 Drawing



# 3 Detailed Performance

## 3.1. S-Parameter Test

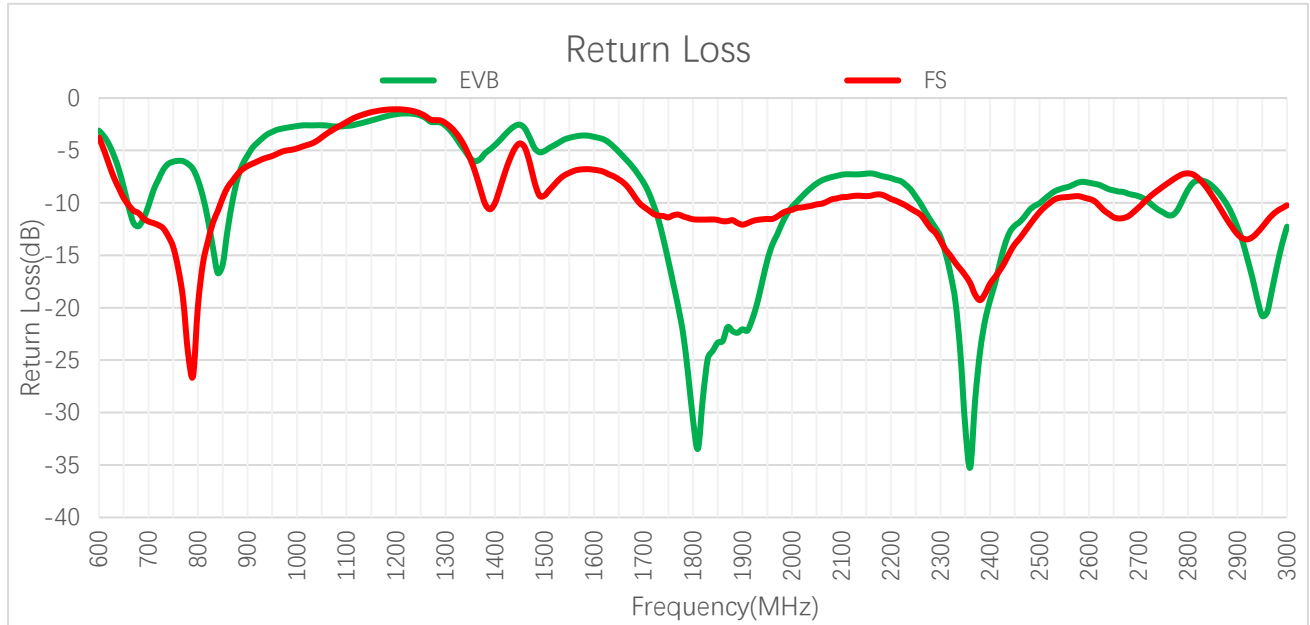
### 3.1.1. VSWR



VSWR

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
VSWR	EVB	5.6	3.3	2.1	1.5	3.3	5.8	-	2.1	1.5	1.2
	FS	4.7	2.4	1.7	1.7	2.8	3.4	-	1.8	1.8	1.7
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
VSWR	EVB	1.4	2.5	1.1	1.7	2.3	2.1	-	-	-	-
	FS	1.7	2.0	1.3	1.5	2.0	1.8	-	-	-	-

**3.1.2. Return Loss**



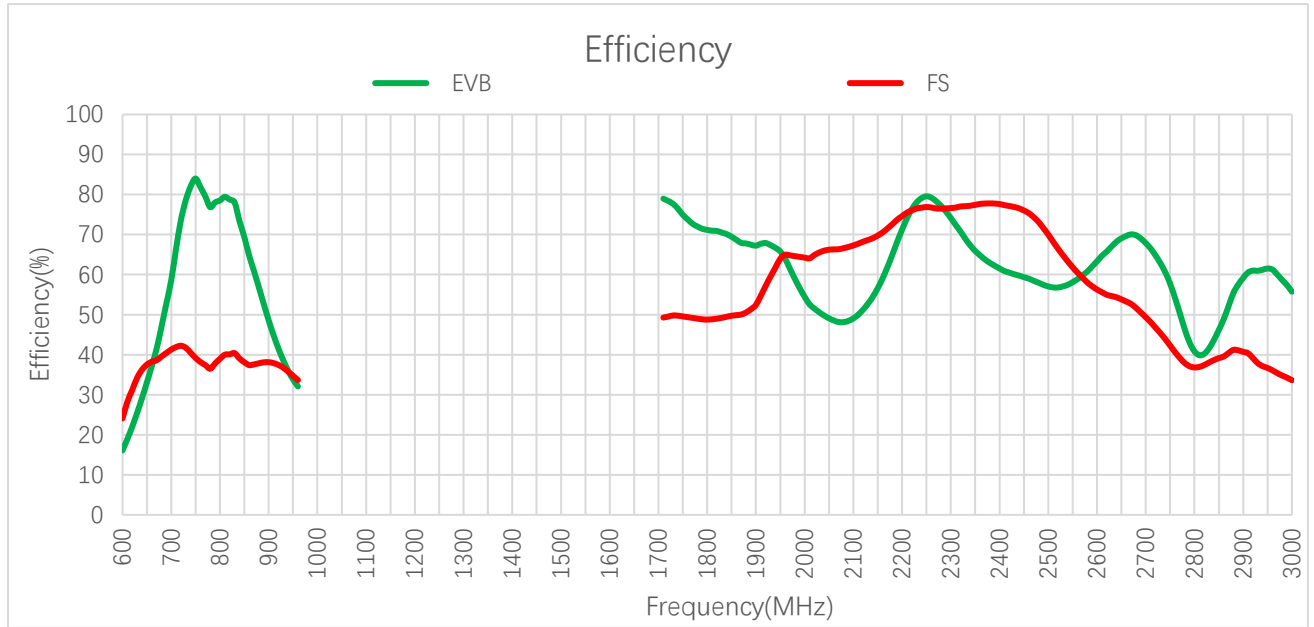
**Return Loss (dB)**

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	EVB	-3.1	-5.5	-8.8	-14.2	-5.5	-3.0	-	-9.0	-13.4	-22.2
	FS	-3.8	-7.6	-11.9	-11.9	-6.5	-5.3	-	-10.7	-11.2	-11.7
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Return Loss (dB)	EVB	-15.5	-7.3	-31.3	-12.2	-8.1	-9.2	-	-	-	-
	FS	-11.5	-9.3	-16.9	-13.9	-9.6	-10.9	-	-	-	-



### 3.2. Radiation Performance Test

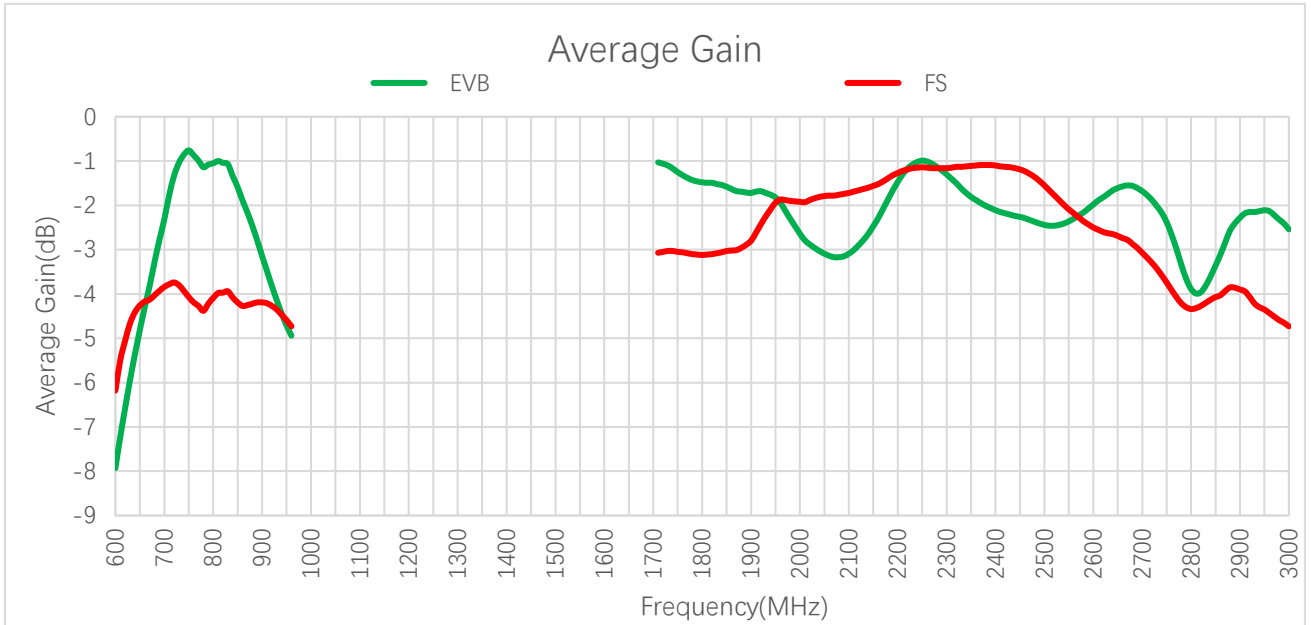
#### 3.2.1. Efficiency



**Efficiency (%)**

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	EVB	16.1	25.5	66.5	78.1	48.6	32.1	-	79.0	76.5	67.8
	FS	24.1	34.2	41.9	40.4	38.1	33.7	-	49.3	49.7	50.6
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Efficiency (%)	EVB	65.8	54.5	65.9	59.4	63.3	69.0	-	-	-	-
	FS	64.0	69.1	77.4	76.0	56.3	50.5	-	-	-	-

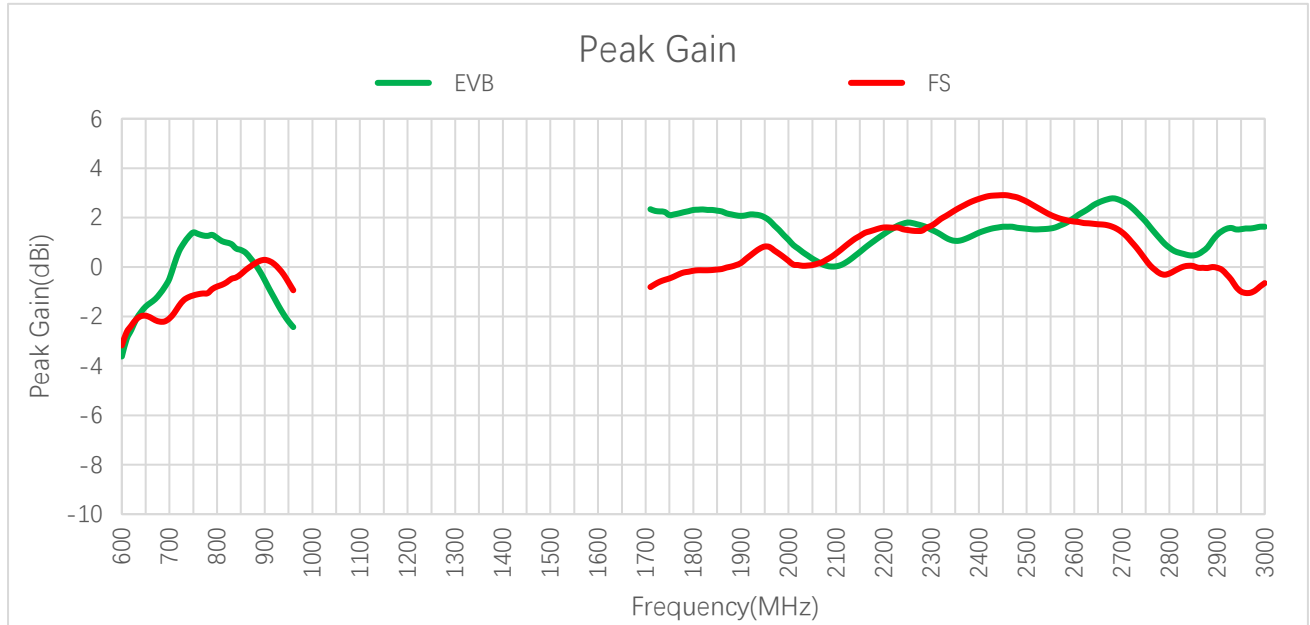
**3.2.2. Average Gain**



**Average Gain (dB)**

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	EVB	-7.9	-5.9	-1.8	-1.1	-3.1	-4.9	-	-1.0	-1.2	-1.7
	FS	-6.2	-4.7	-3.8	-3.9	-4.2	-4.7	-	-3.1	-3.0	-3.0
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Average Gain (dB)	EVB	-1.8	-2.6	-1.8	-2.3	-2.0	-1.6	-	-	-	-
	FS	-1.9	-1.6	-1.1	-1.2	-2.5	-3.0	-	-	-	-

**3.2.3. Peak Gain**



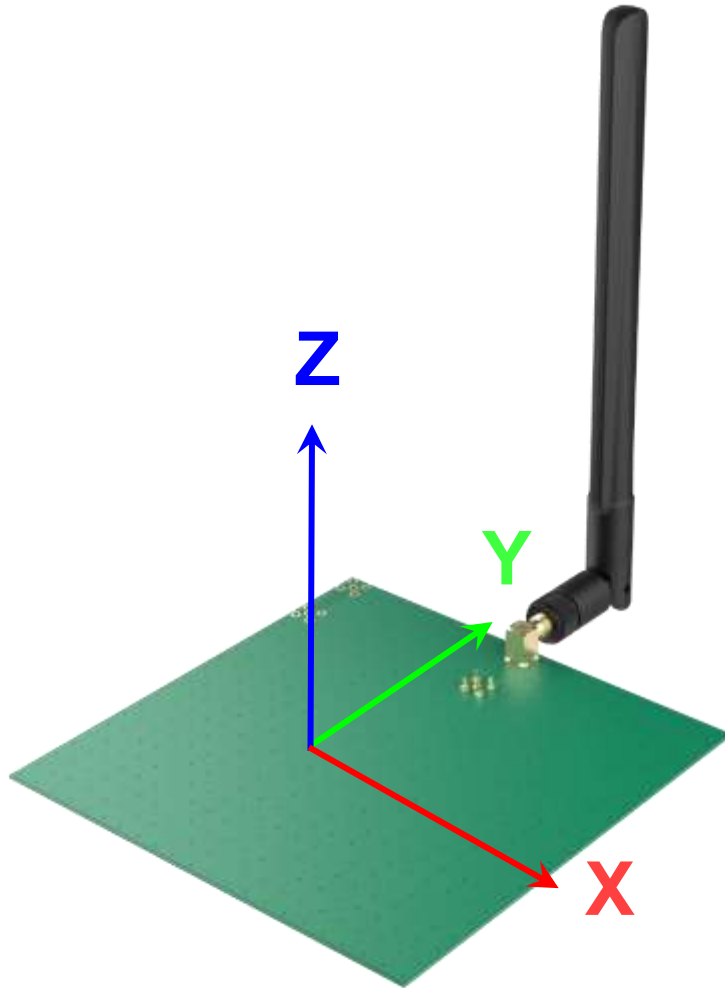
**Peak Gain (dBi)**

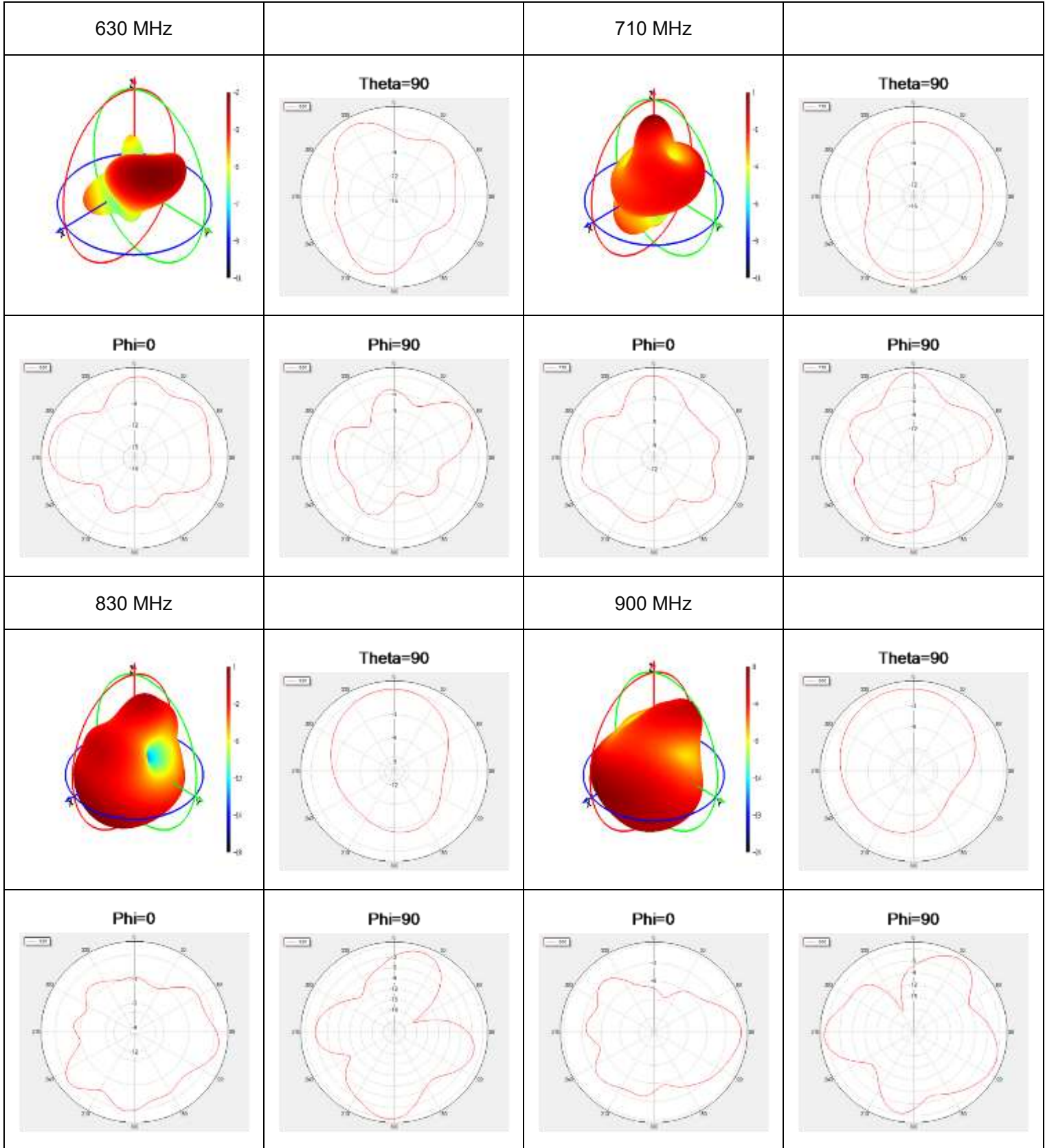
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	EVB	-3.6	-2.1	0.1	0.9	-0.5	-2.4	-	2.3	2.2	2.1
	FS	-3.2	-2.1	-1.9	-0.5	0.3	-0.9	-	-0.8	-0.5	0.0
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Peak Gain (dBi)	EVB	2.0	0.5	1.1	1.6	2.0	2.8	-	-	-	-
	FS	0.8	1.2	2.3	2.9	1.8	1.5	-	-	-	-

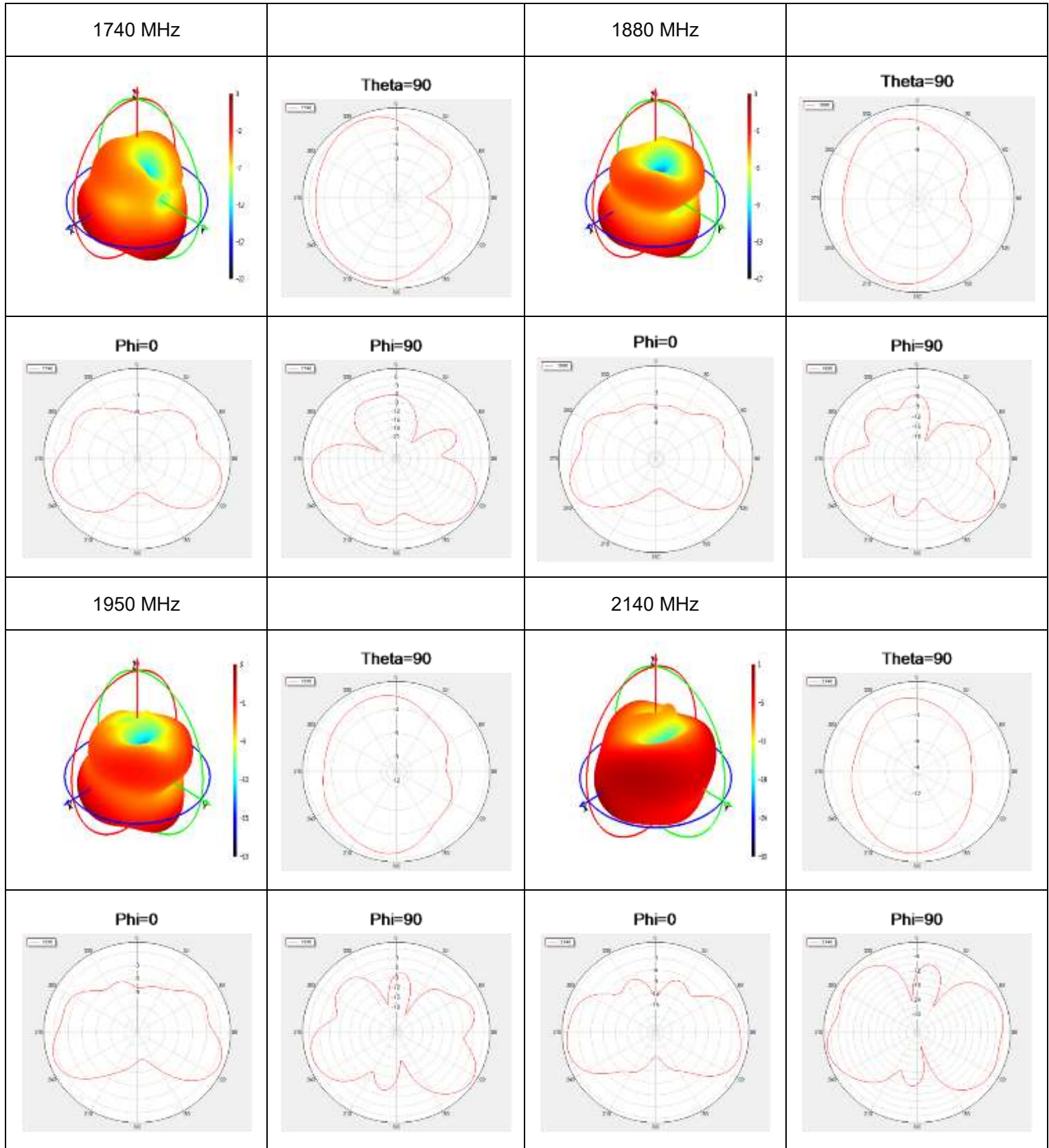
### 3.2.4. 3D & 2D Radiation Pattern

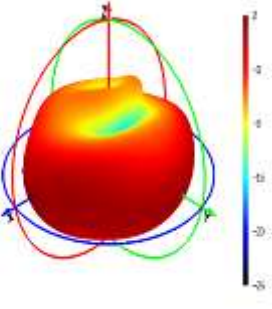
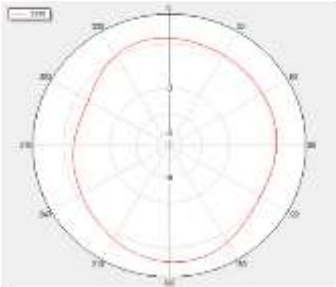
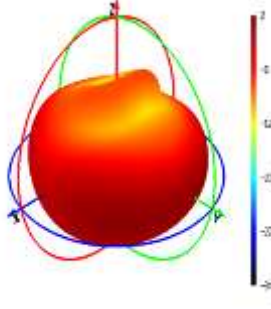
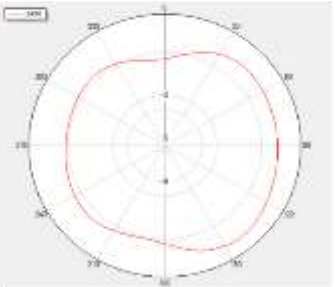
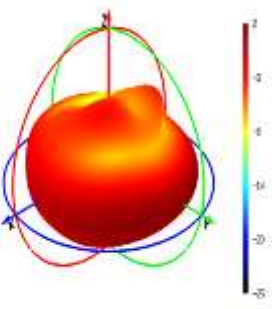

#### 3.2.4.1. Test Condition: On 130 mm × 130 mm EVB

- Test Chamber: GL-S-1



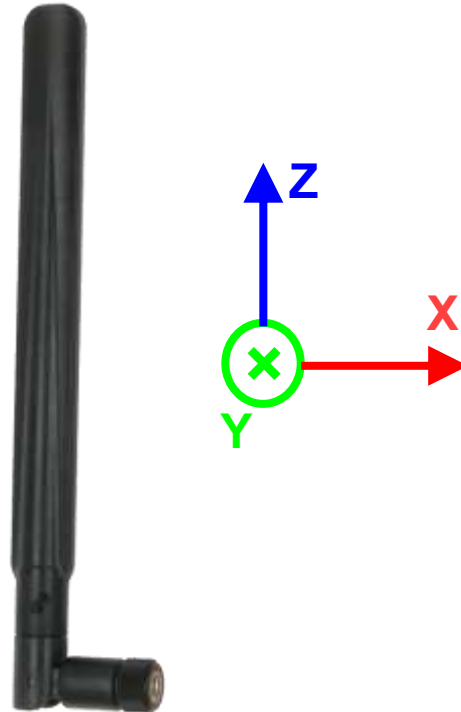




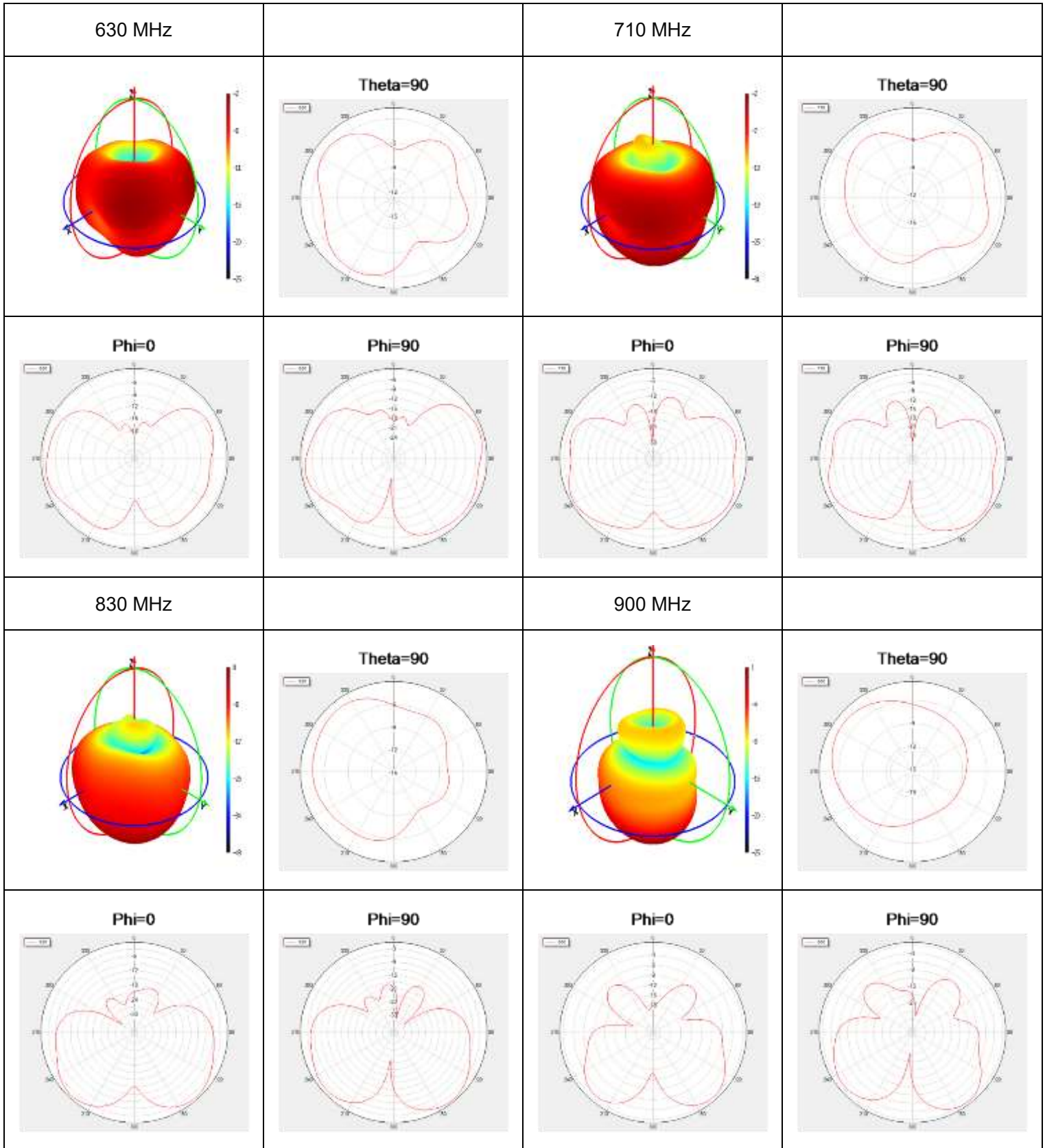
<p>2350 MHz</p>	<p>Theta=90</p>	<p>2450 MHz</p>	<p>Theta=90</p>
			
<p>Phi=0</p>	<p>Phi=90</p>	<p>Phi=0</p>	<p>Phi=90</p>
<p>2600 MHz</p>	<p>Theta=90</p>		
			
<p>Phi=0</p>	<p>Phi=90</p>		

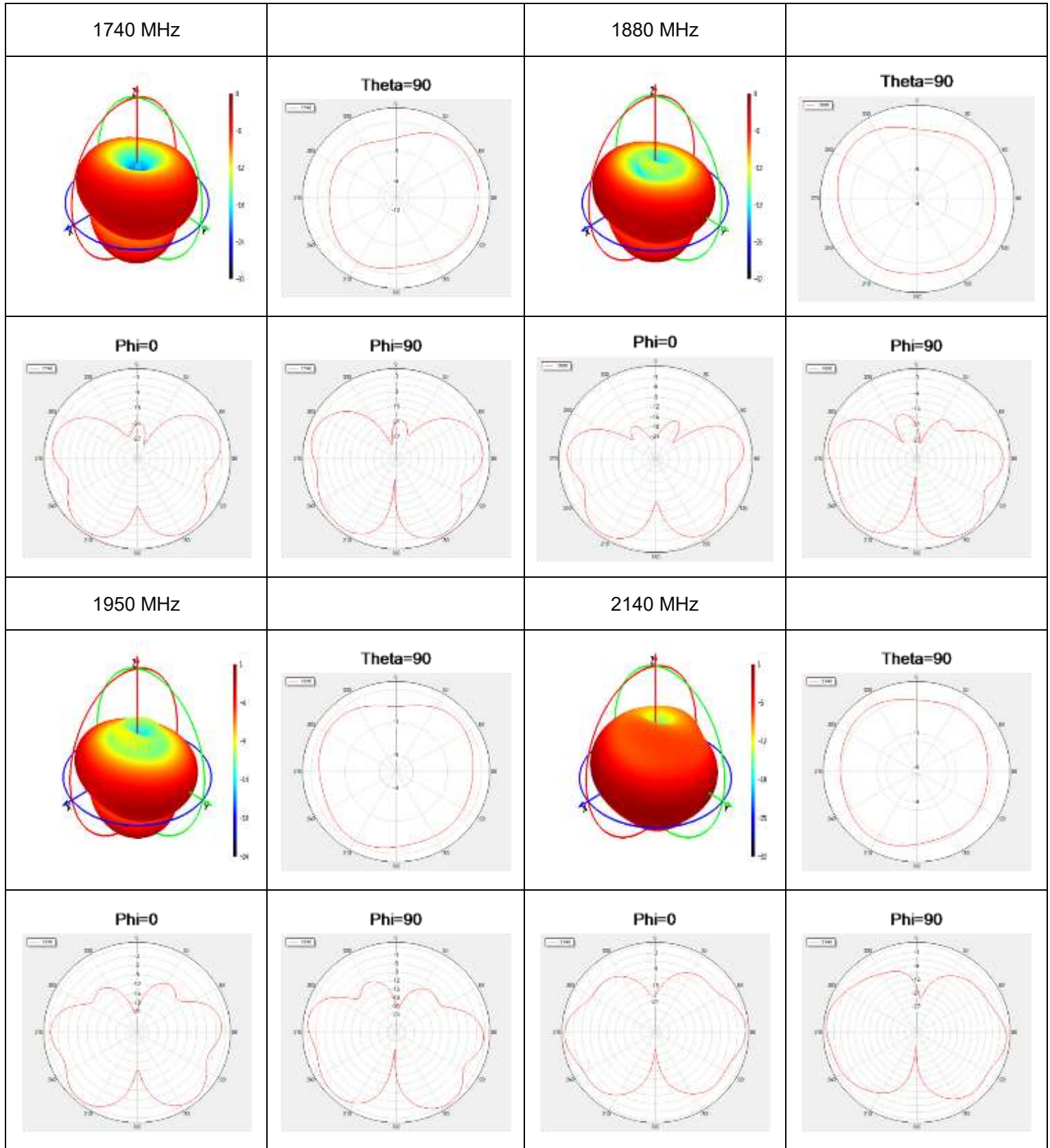
**3.2.4.2. Test Condition: Free Space**

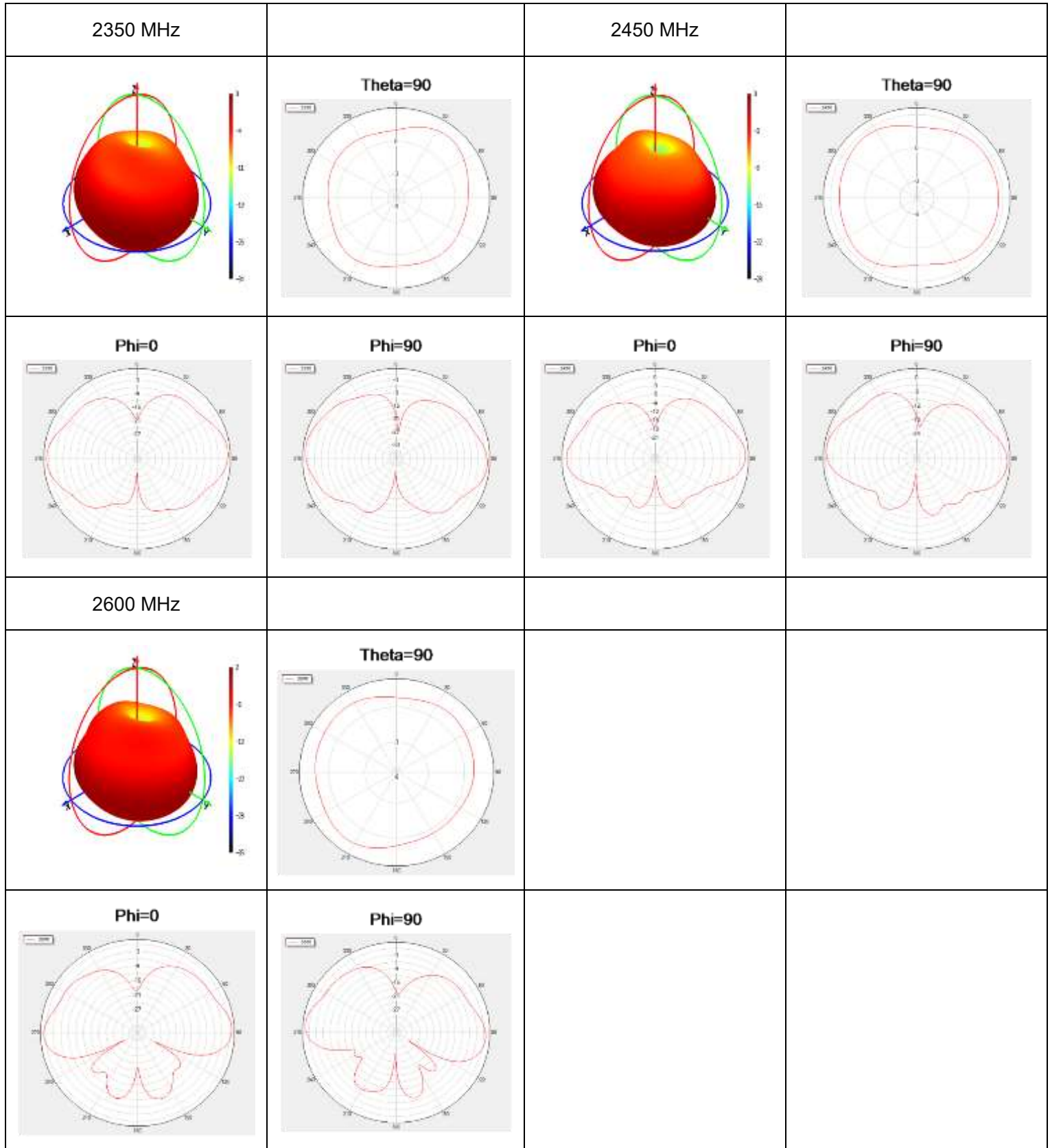
- Test Chamber: GL-S-1





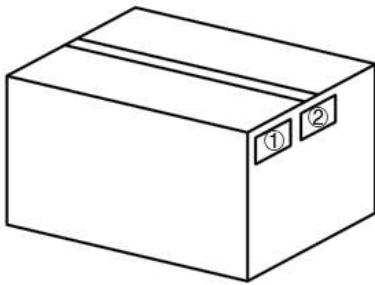


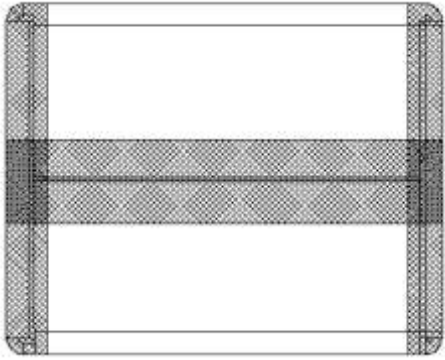






# 4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		<p>50 pcs antenna products in a PE bag. (50 Antennas / PE Bag)</p>
2		<p>(6 PE Bags / Carton Box) (300 PCS Antennas / Carton Box)</p> <p><u>Carton Size:</u> <u>L × W × H = 300 × 250 × 200 mm</u></p>
3		<p><b>Position for Attaching Labels</b></p> <p>① Carton Label ② Quality Label</p>

4		<p><b>Sealing Cartons</b> “I” type sealing cartons</p>
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# 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:**

**Quectel Wireless Solutions Co., Ltd.**

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

Tel: +86 21 5108 6236

Email: [info@quectel.com](mailto:info@quectel.com)

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

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# Revision History

Version	Date	Author	Note
-	2021-06-29	Kenny YIN/ Aria CHU	Creation of the document
1.0	2021-06-29	Kenny YIN/ Aria CHU	First official release
1.1	2021-07-25	Kenny YIN/ Aria CHU	<ol style="list-style-type: none"> <li>Updated working temperature (Chapter 3).</li> <li>Added detailed passive electrical specifications (Chapter 3).</li> </ol>
2.0	2021-09-17	Vinnie LIU	Updated all test data in this datasheet.
2.1	2021-11-27	Vinnie LIU	Updated the product description (Chapter 1).
2.2	2022-03-14	Vinnie LIU	Updated the antenna drawing (Chapter 5).
2.3	2022-10-17	Aria CHU	Deleted the IP rating.
3.0	2022-12-28	Vinnie LIU	Updated the test data (Chapter 4).
4.0	2023-05-03	Black LI/ Lucky FENG/ David LIU/ Aria CHU	Updated all data and datasheet template.
4.1	2024-01-15	Lucky FENG	Update operating temperature and added storage temperature in (Chapter 1.2).

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