



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: Φ 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	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	-	-	-	

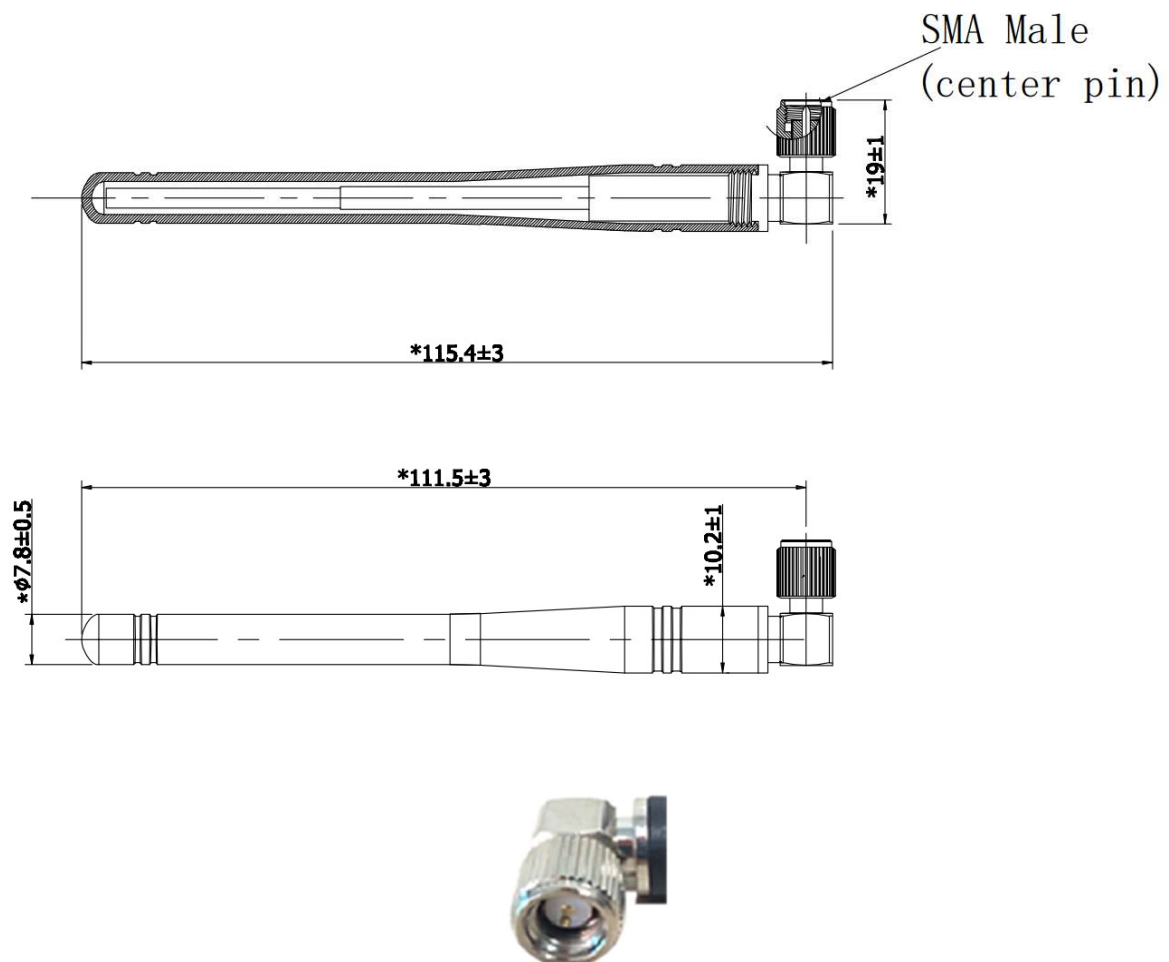
Gain (dBi)	FS	-	-1.5	-0.9	-	1.9	1.8	2.2	2.6	-	-	-
VSWR	EVB						≤ 4.7					
							≤ 2.6					
Return Loss	EVB						≤ -3.8 dB					
							≤ -7.2 dB					
Peak Gain	EVB						≤ 4.9 dBi					
							≤ 2.6 dBi					

- 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

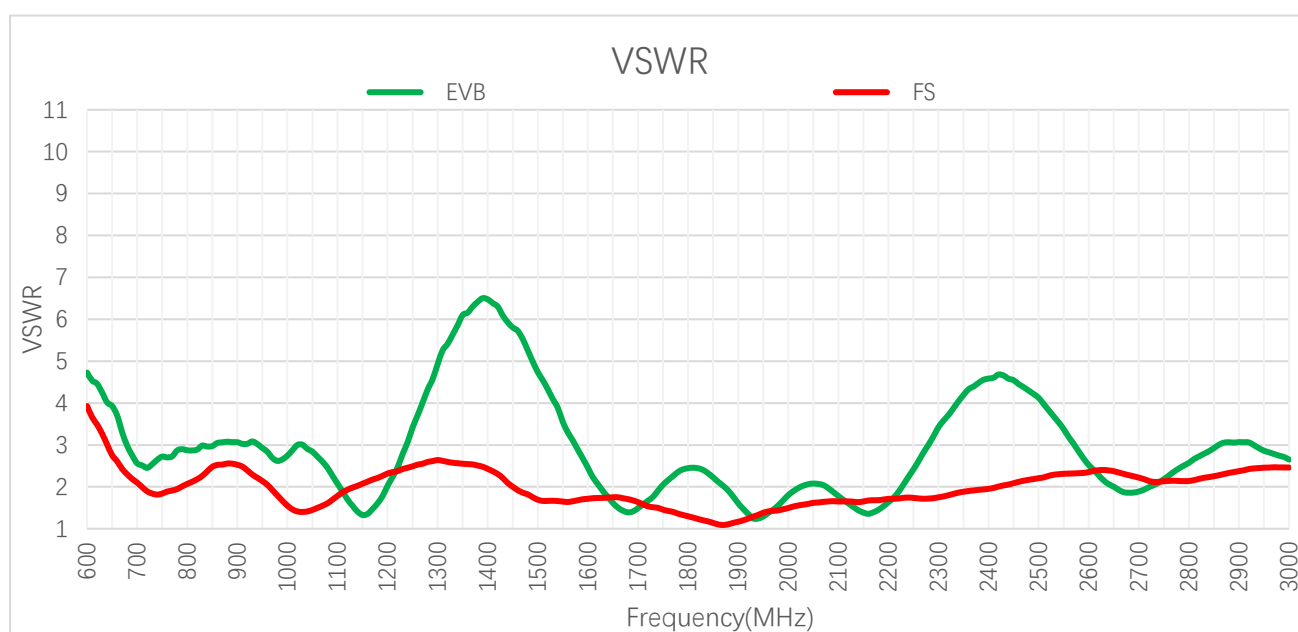
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

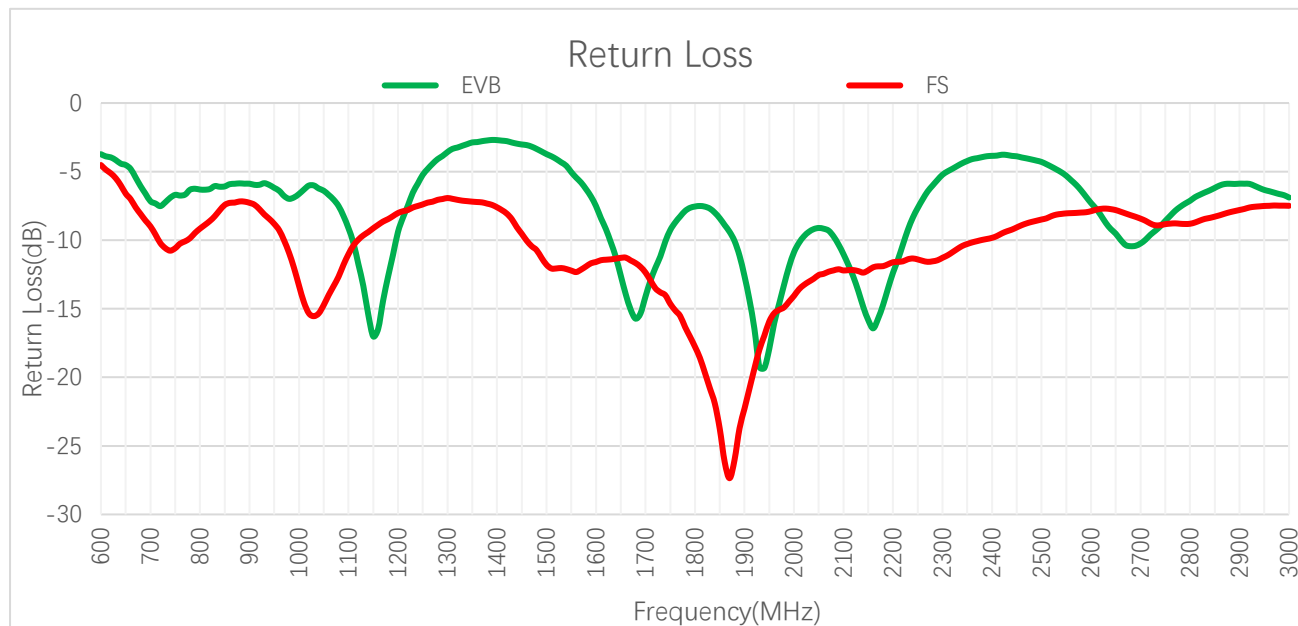
3.1.1. VSWR



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

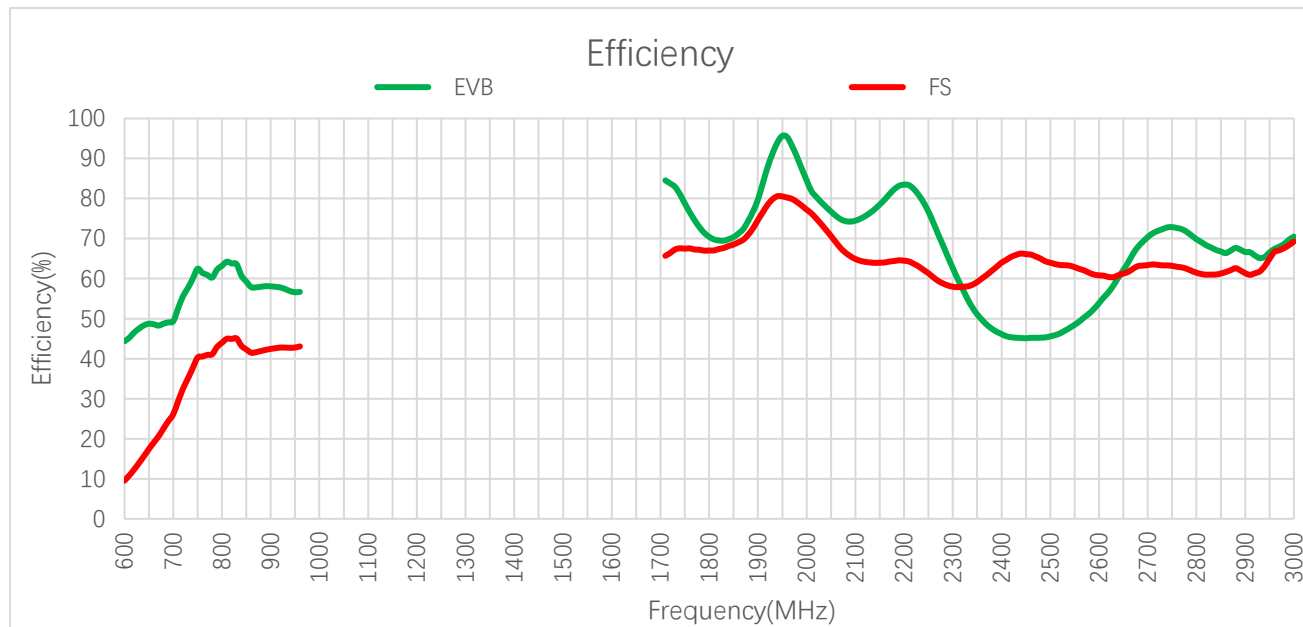


Return Loss (dB)

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

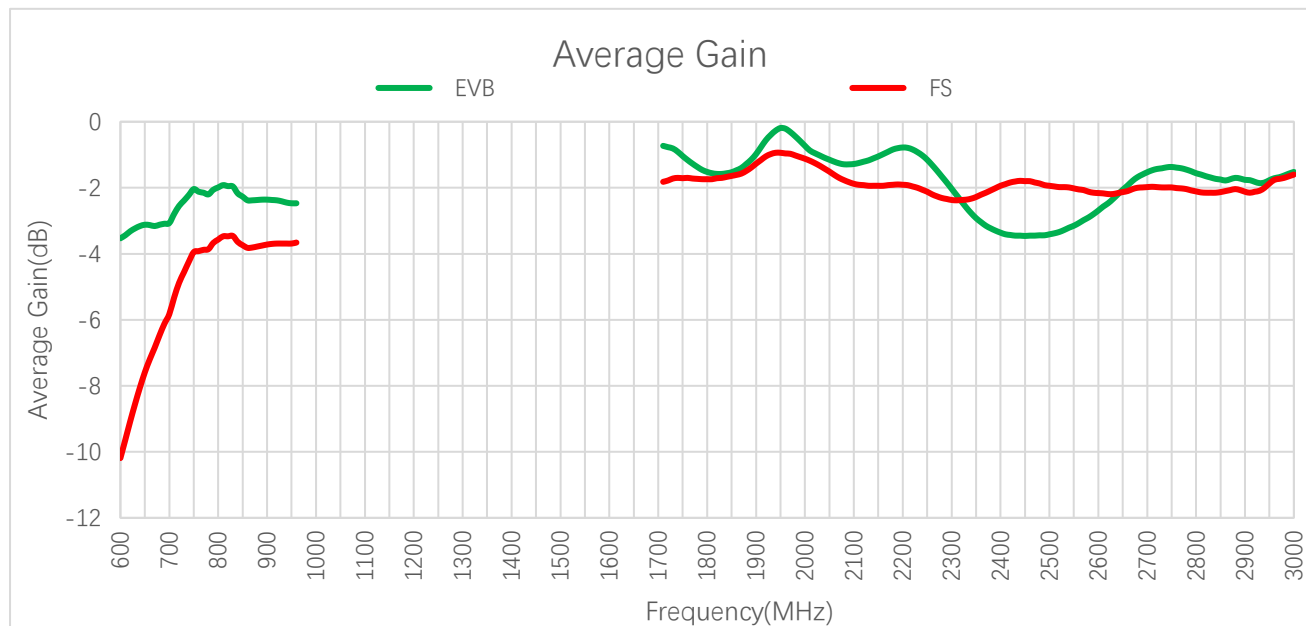
3.2.1. Efficiency



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	-	-	-	-

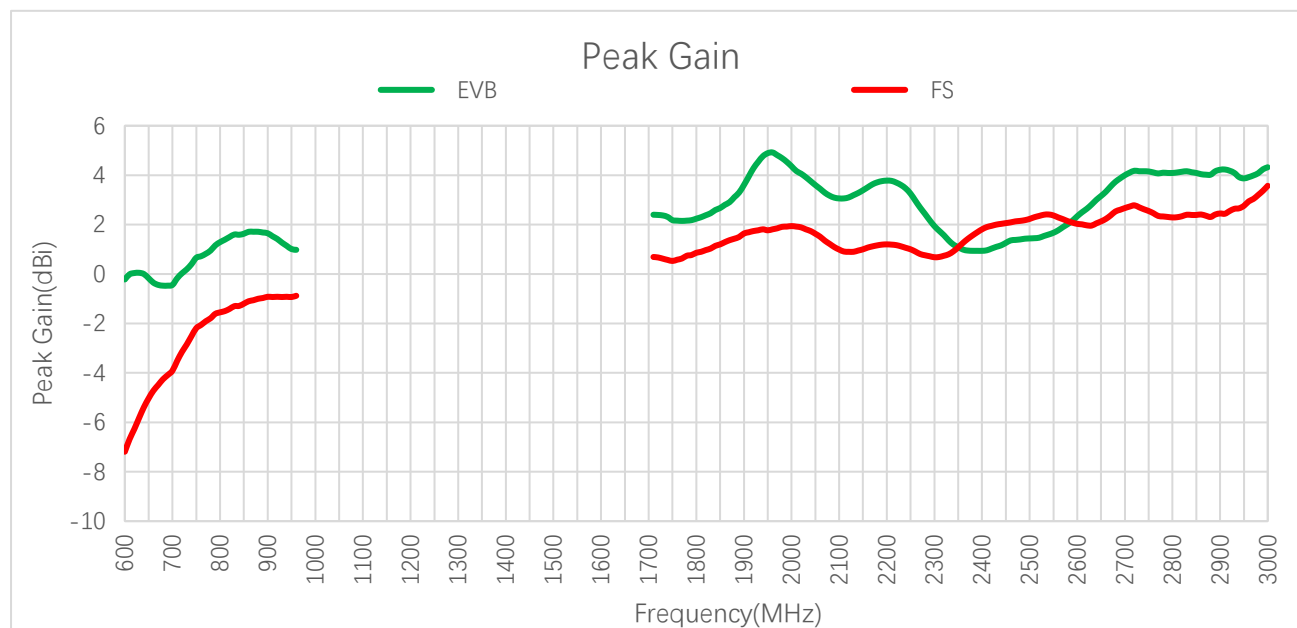
3.2.2. Average Gain



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



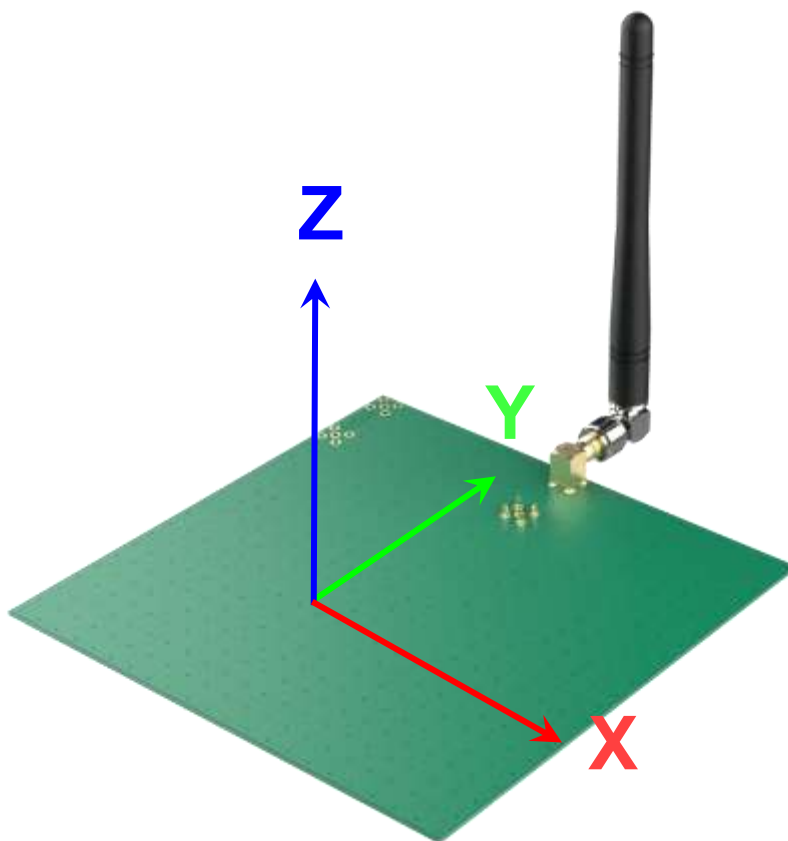
Peak Gain (dBi)

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	-	-	-	-

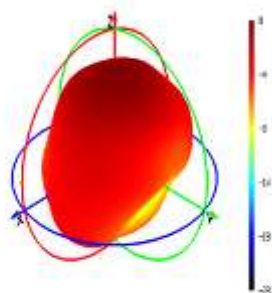
3.2.4. 3D & 2D Radiation Pattern

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

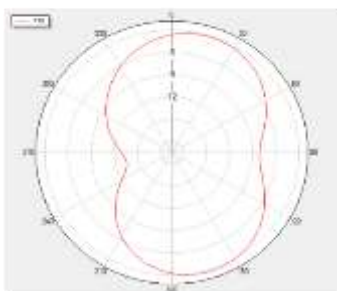
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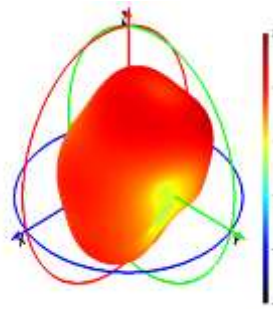
710 MHz



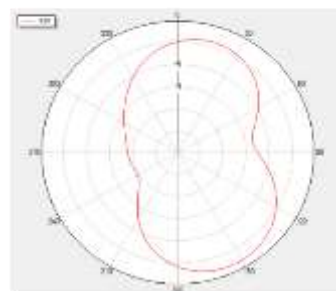
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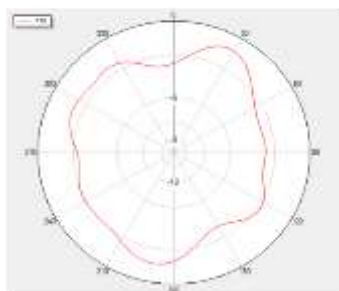
830 MHz



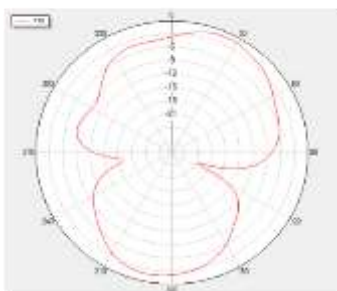
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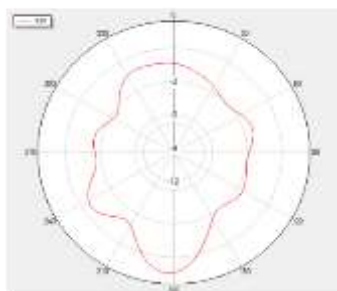
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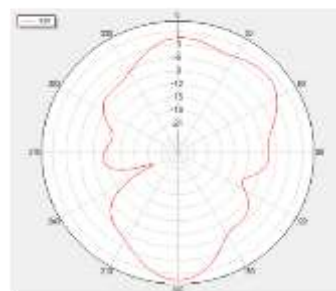
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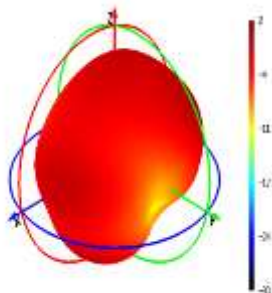
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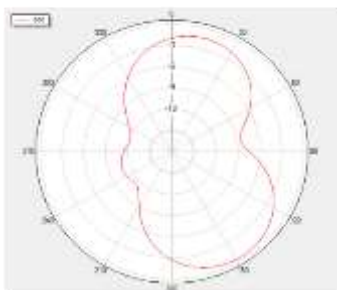
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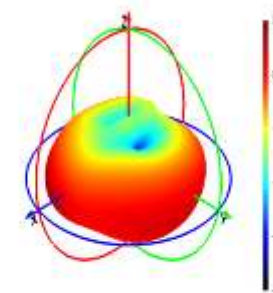
900 MHz



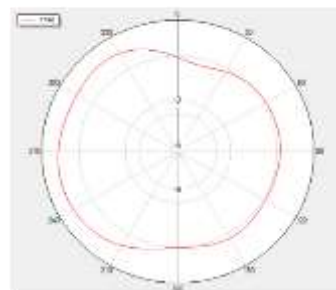
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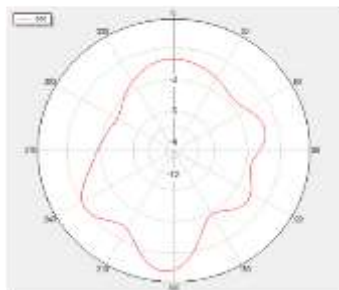
1740 MHz



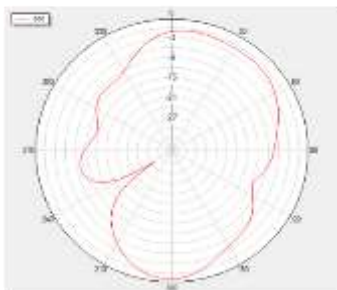
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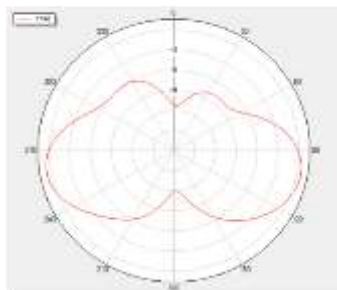
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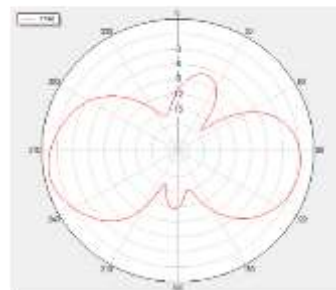
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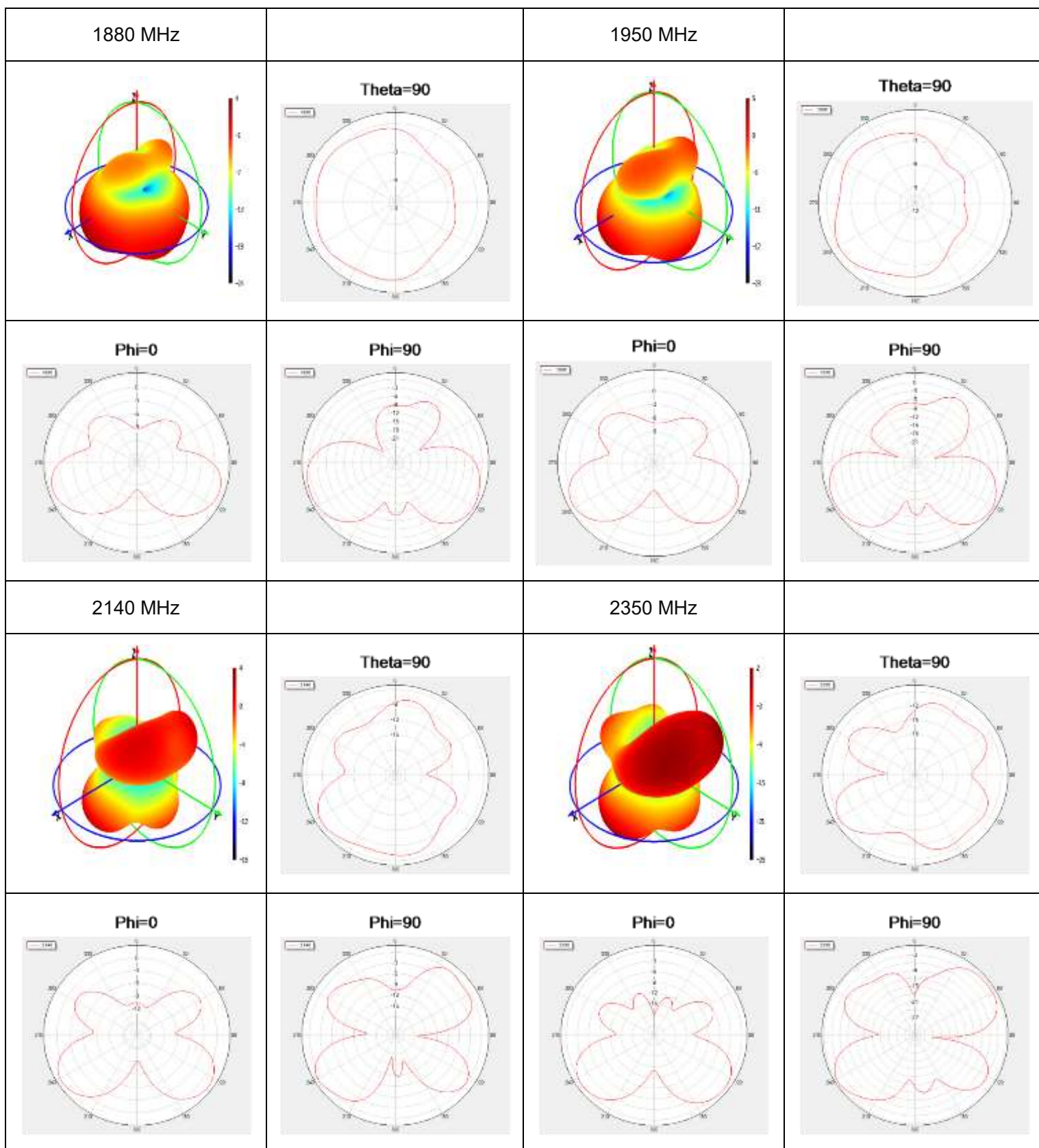


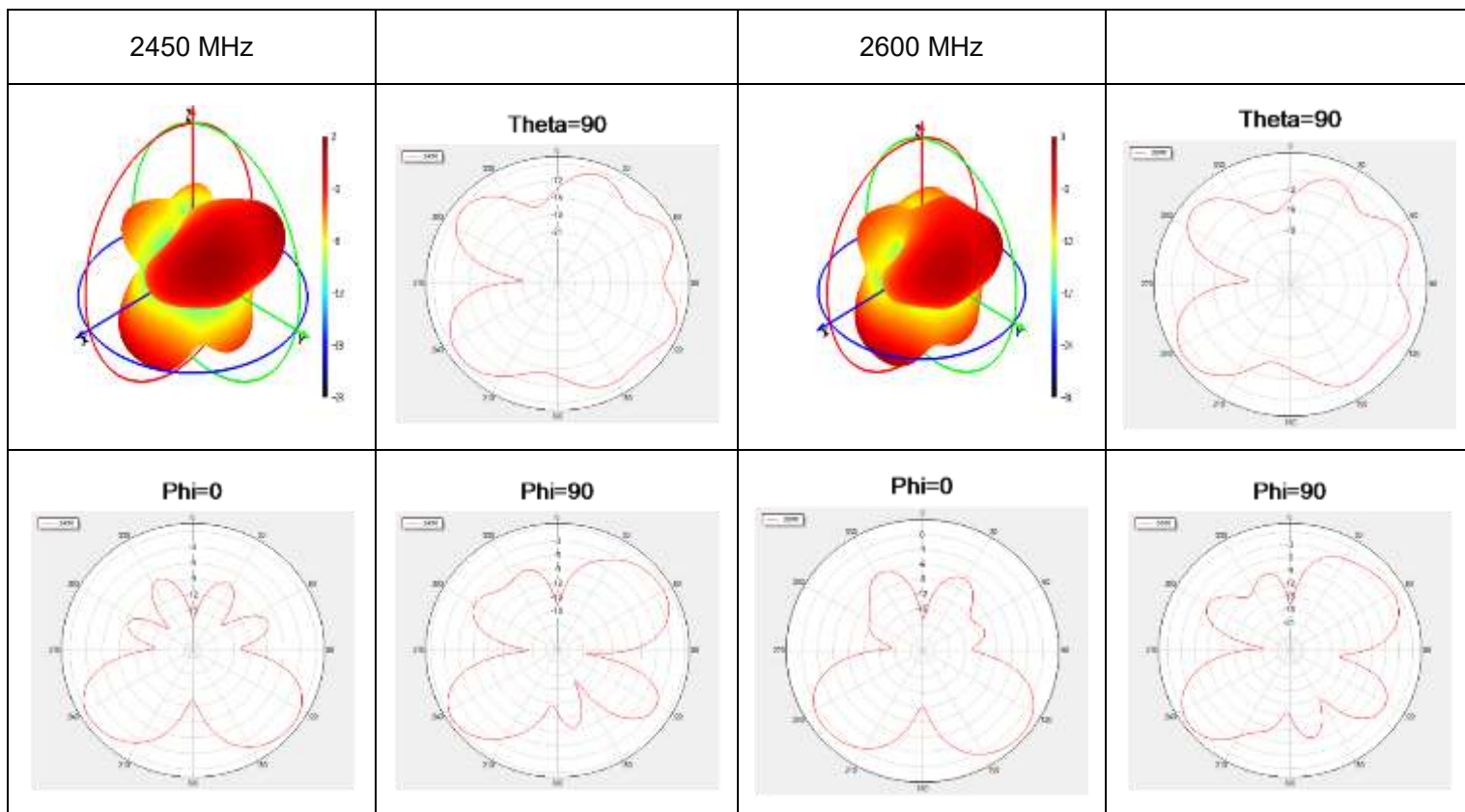
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Phi=90

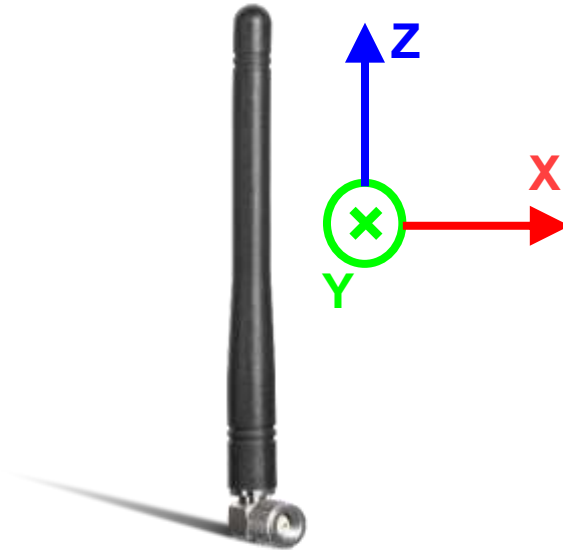




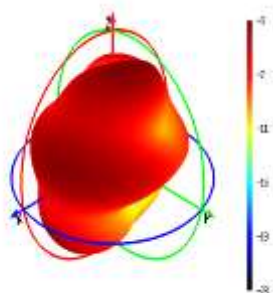


3.2.4.2. Test Condition: Free Space

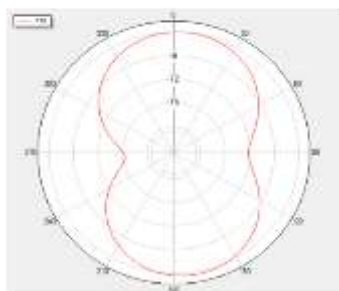
- Test Chamber: GL-S-1



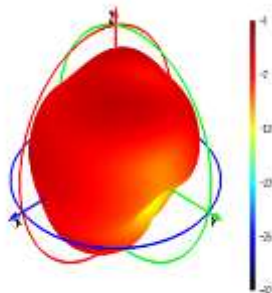
710 MHz



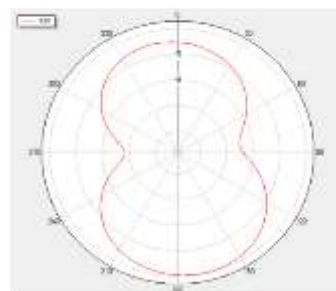
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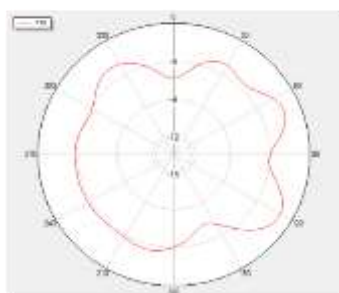
830 MHz



Theta=90



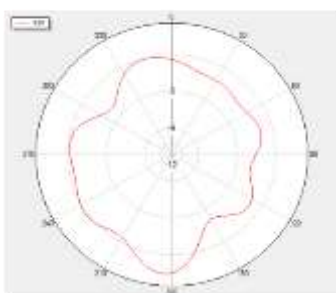
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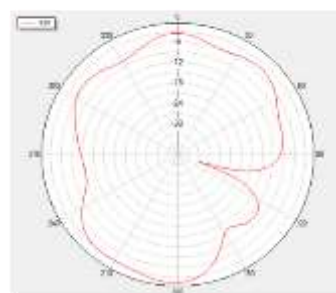
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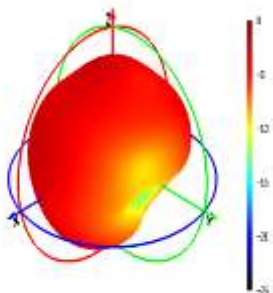
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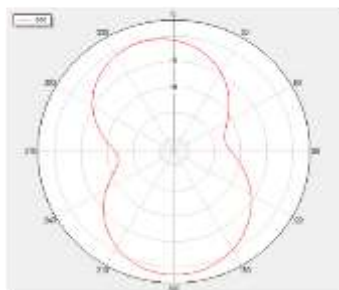
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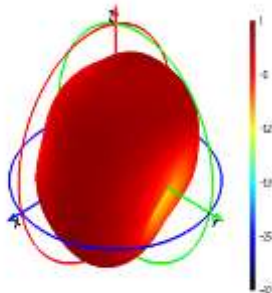
900 MHz



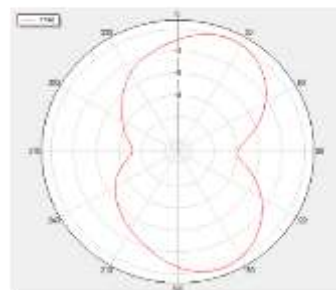
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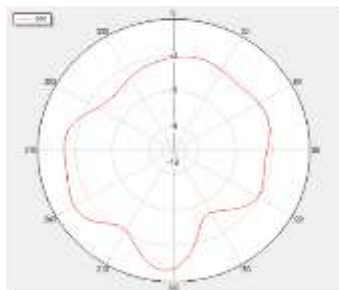
1740 MHz



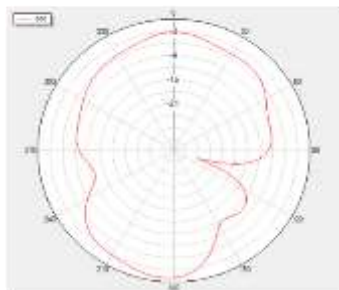
Theta=90



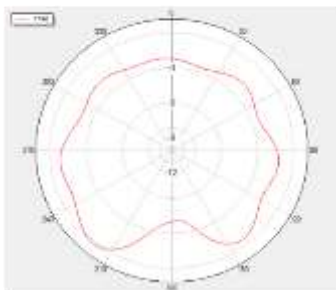
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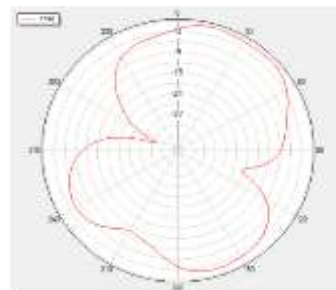
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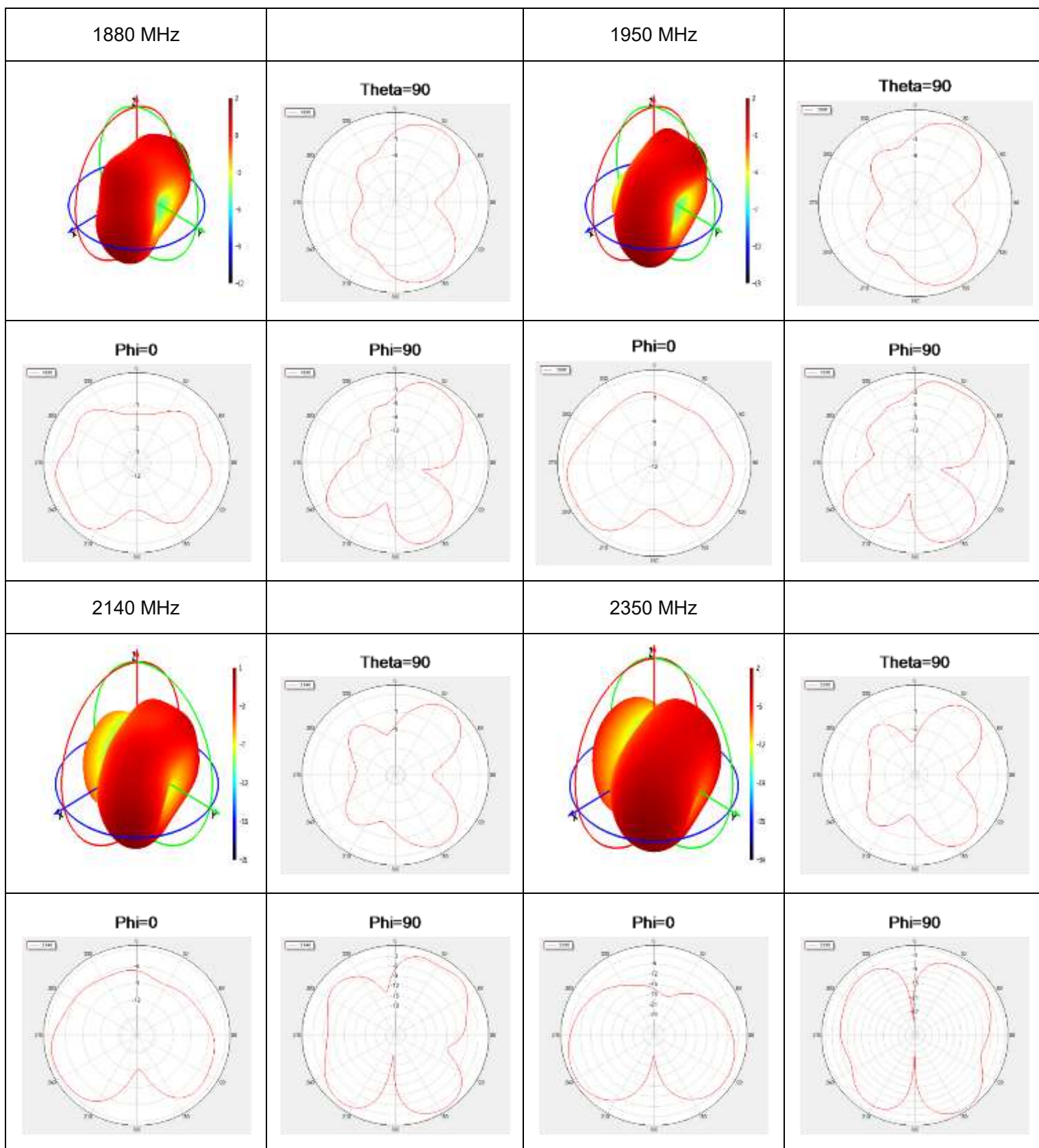


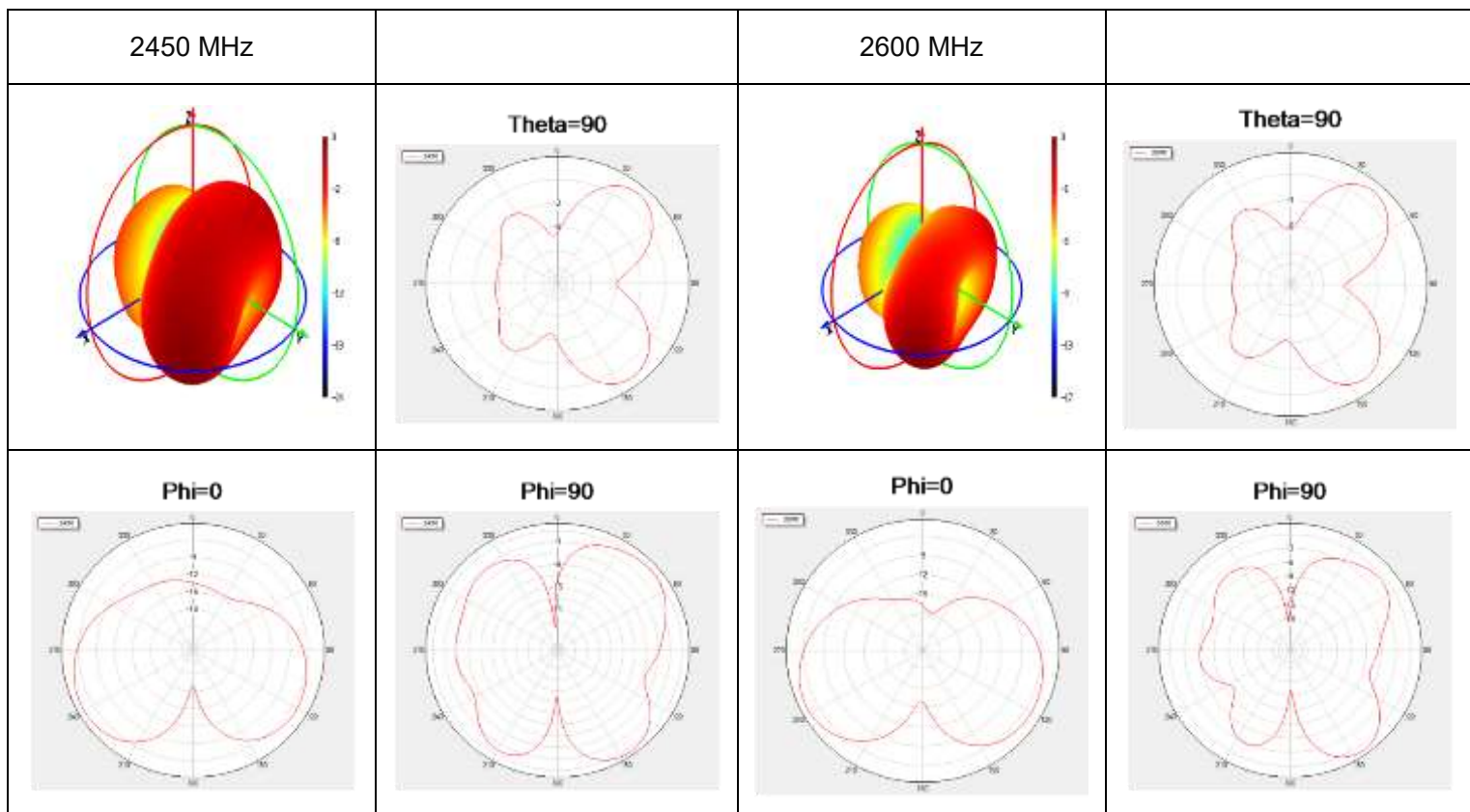
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Phi=90

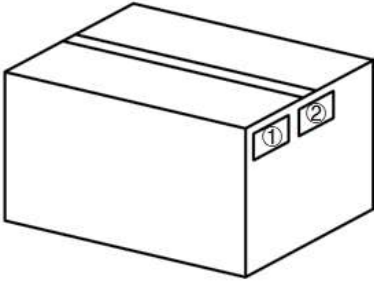
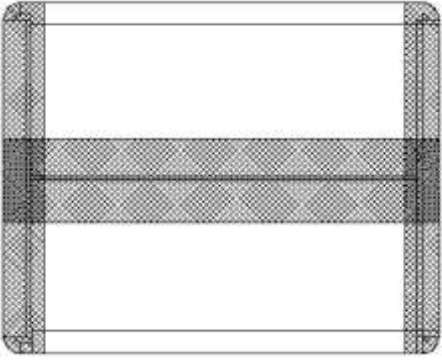






4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		Put the product in a one-piece bag. Each one-piece bag contains 10 products.
2		20 pcs antenna products in a PE bag. (20 PCS / PE Bag)
3		(30 PE bags per carton box) (600 pcs antennas per carton box) <u>Carton Size:</u> <u>L × W × H = 325 × 325 × 200 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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Tel: +86 21 5108 6236

Email: info@quectel.com

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	1. Updated Chapter 1.2. 2. Updated the drawing (Chapter 2).



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