



Antenna Datasheet

Product OC: YECT003AA

Version: 3.1

Date: 2024-01-15

Status: Released

Product Name: 4G External Antenna

Key Features:

Frequency Band: 698–2700 MHz

Dimensions: Φ 10 mm $\times$ 115 mm

Efficiency: Up to 84.0 % (On 130 $\times$ 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	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	-	4.0	4.3	-	3.4	4.0	4.1	3.8	-	-	-
	FS	-	2.9	2.6	-	3.0	1.7	1.2	2.0	-	-	-
Max. Return Loss (dB)	EVB	-	-4.4	-4.1	-	-5.3	-4.4	-4.3	-4.7	-	-	-
	FS	-	-6.2	-7.1	-	-5.9	-11.8	-20.6	-9.7	-	-	-
AVG Eff. (%)	EVB	-	66.5	55.0	-	70.2	48.5	46.9	50.7	-	-	-
	FS	-	25.9	39.7	-	58.0	42.3	43.2	41.2	-	-	-
AVG Gain (dB)	EVB	-	-1.8	-2.6	-	-1.6	-3.1	-3.3	-3.0	-	-	-
	FS	-	-5.9	-4.0	-	-2.4	-3.7	-3.6	-3.9	-	-	-
Max. Peak	EVB	-	0.0	-0.5	-	0.7	0.6	1.1	2.5	-	-	-

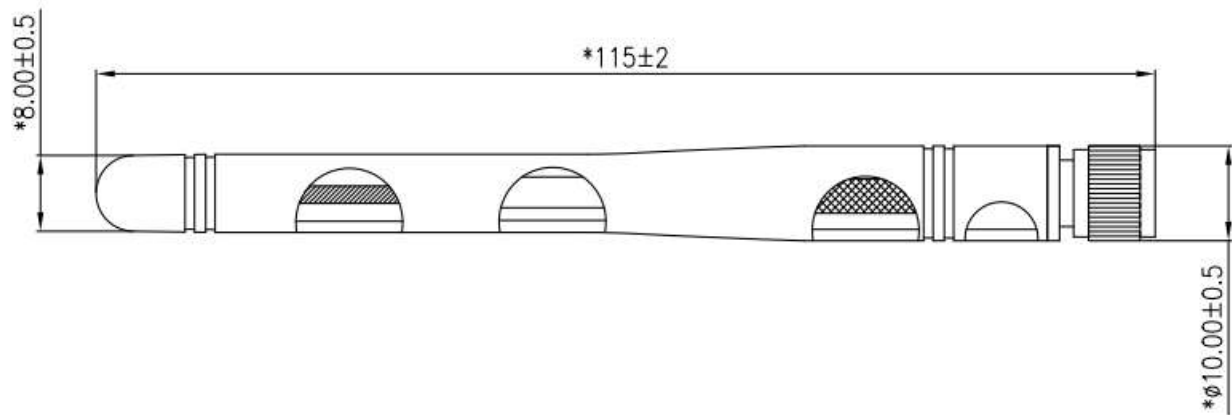
Gain (dBi)	FS	-	-3.3	-1.6	-	1.8	1.0	1.8	2.1	-	-	-
VSWR	EVB		≤ 4.3									
	FS		≤ 3.0									
Return Loss	EVB		≤ -4.1 dB									
	FS		≤ -5.9 dB									
Peak Gain	EVB		≤ 2.5 dBi									
	FS		≤ 2.1 dBi									

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

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	Φ 10 mm × 115 mm
Casing Material & Color	TPEE & Black
Connector Type	SMA Male
Mounting Type	Terminal
Weight	Typ. 12.5 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS Compliant	Yes

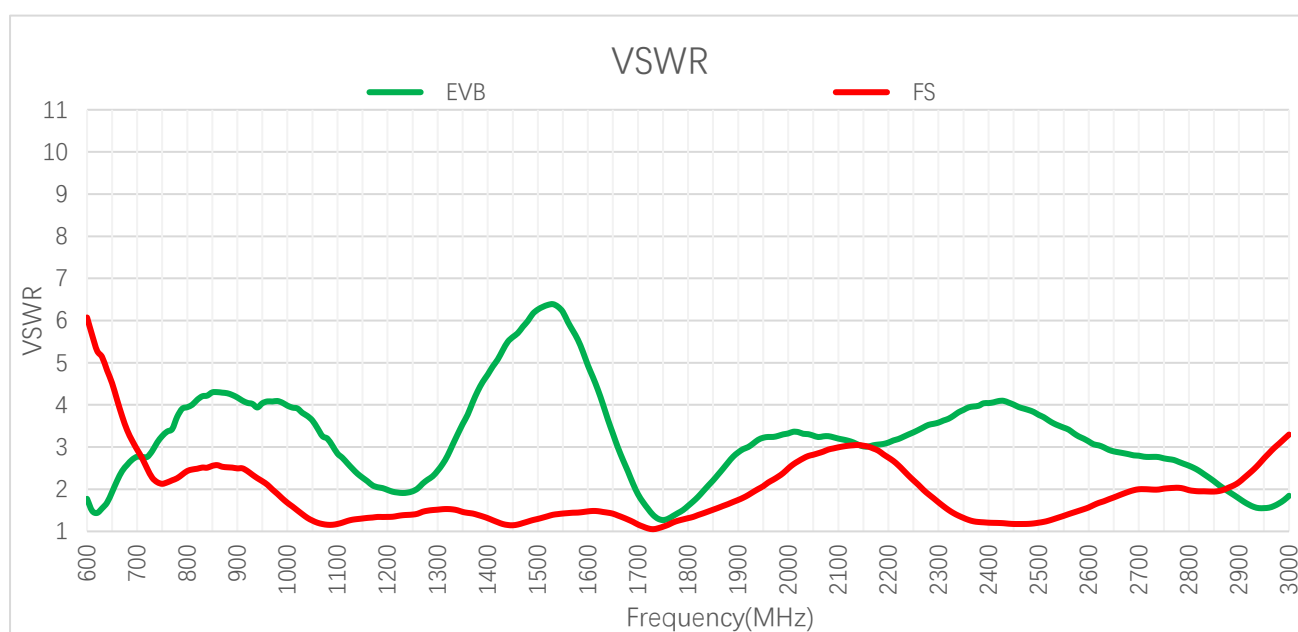
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

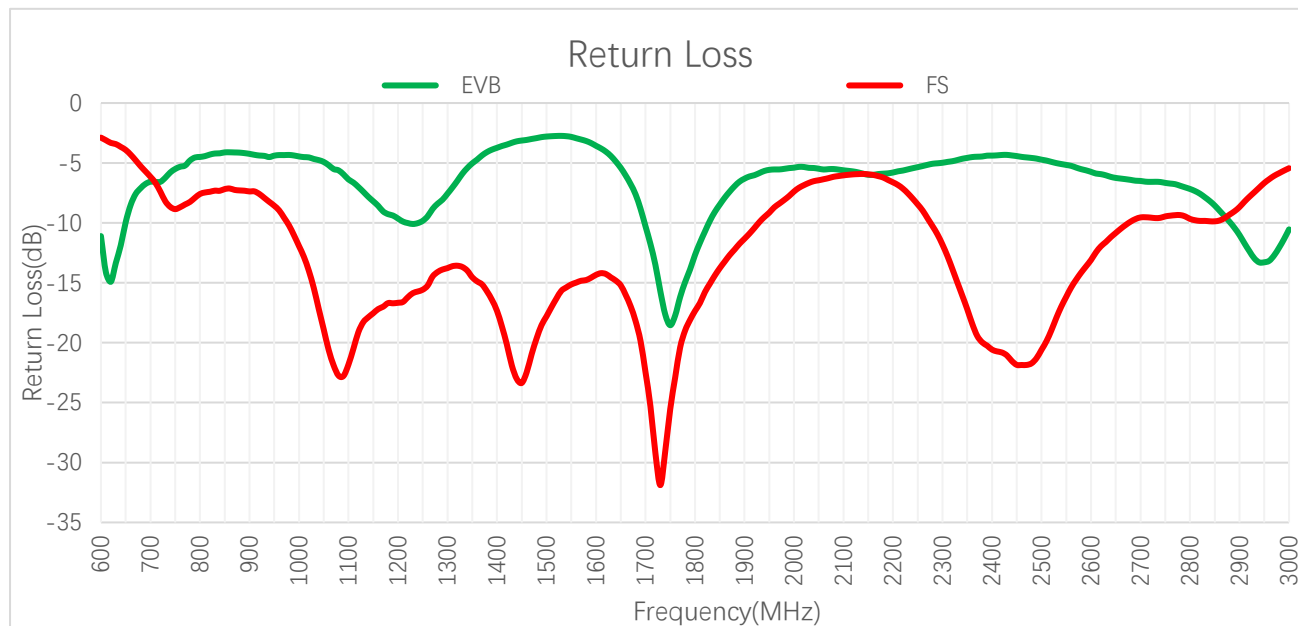
3.1.1. VSWR



VSWR

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
VSWR	EVB	-	-	2.8	4.2	4.2	4.1	-	1.7	1.3	2.6
	FS	-	-	2.7	2.5	2.5	2.1	-	1.1	1.1	1.6
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
VSWR	EVB	3.2	3.1	3.9	4.0	3.1	2.8	-	-	-	-
	FS	2.1	3.0	1.3	1.2	1.6	2.0	-	-	-	-

3.1.2. Return Loss

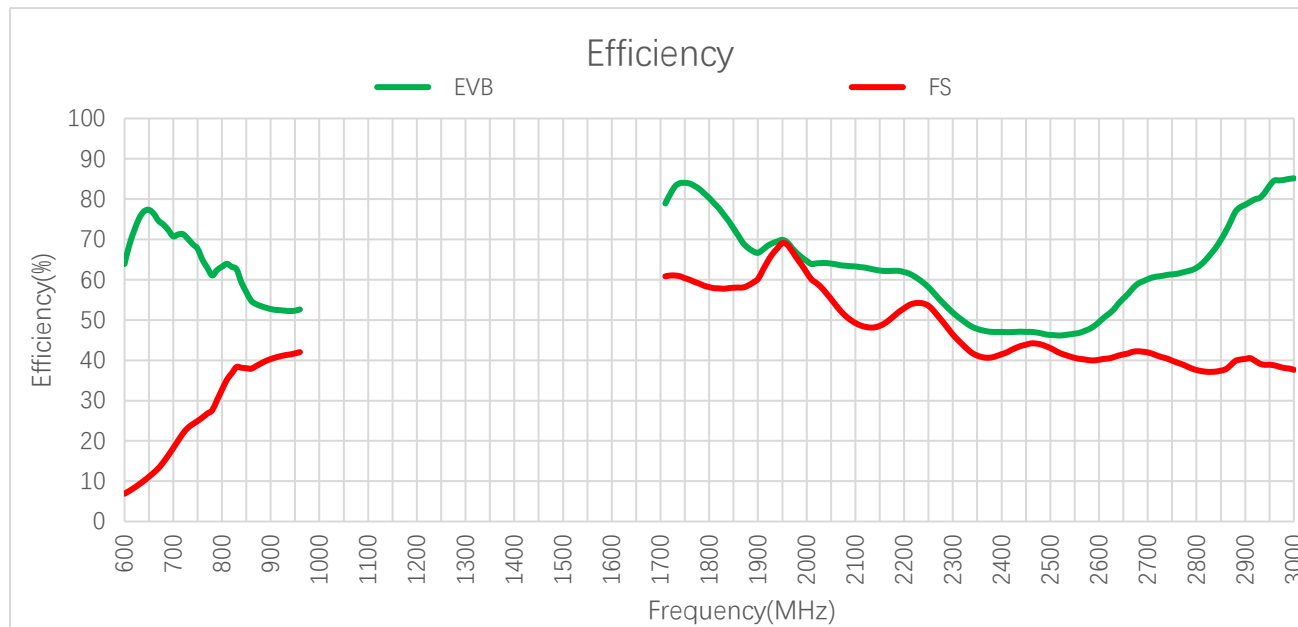


Return Loss (dB)

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	EVB	-	-	-6.6	-4.2	-4.2	-4.3	-	-11.8	-17.7	-6.9
	FS	-	-	-6.7	-7.3	-7.4	-9.0	-	-25.3	-29.0	-12.2
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Return Loss (dB)	EVB	-5.6	-5.9	-4.6	-4.4	-5.7	-6.5	-	-	-	-
	FS	-9.2	-5.9	-17.2	-21.9	-13.1	-9.7	-	-	-	-

3.2. Radiation Performance Test

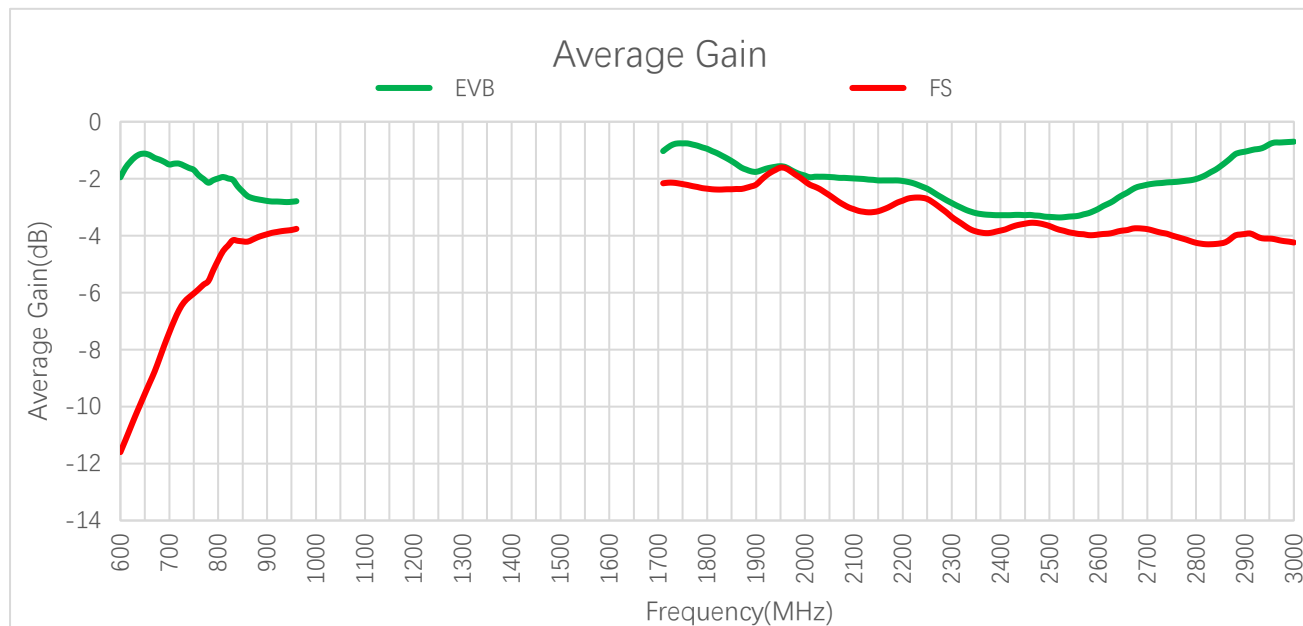
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	EVB	-	-	71.2	62.6	52.7	52.6	-	78.9	84.0	67.9
	FS	-	-	20.1	38.3	40.3	42.0	-	60.8	60.8	58.6
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Efficiency (%)	EVB	69.9	62.5	47.8	47.0	49.5	59.6	-	-	-	-
	FS	69.1	48.2	41.2	43.9	40.1	42.1	-	-	-	-

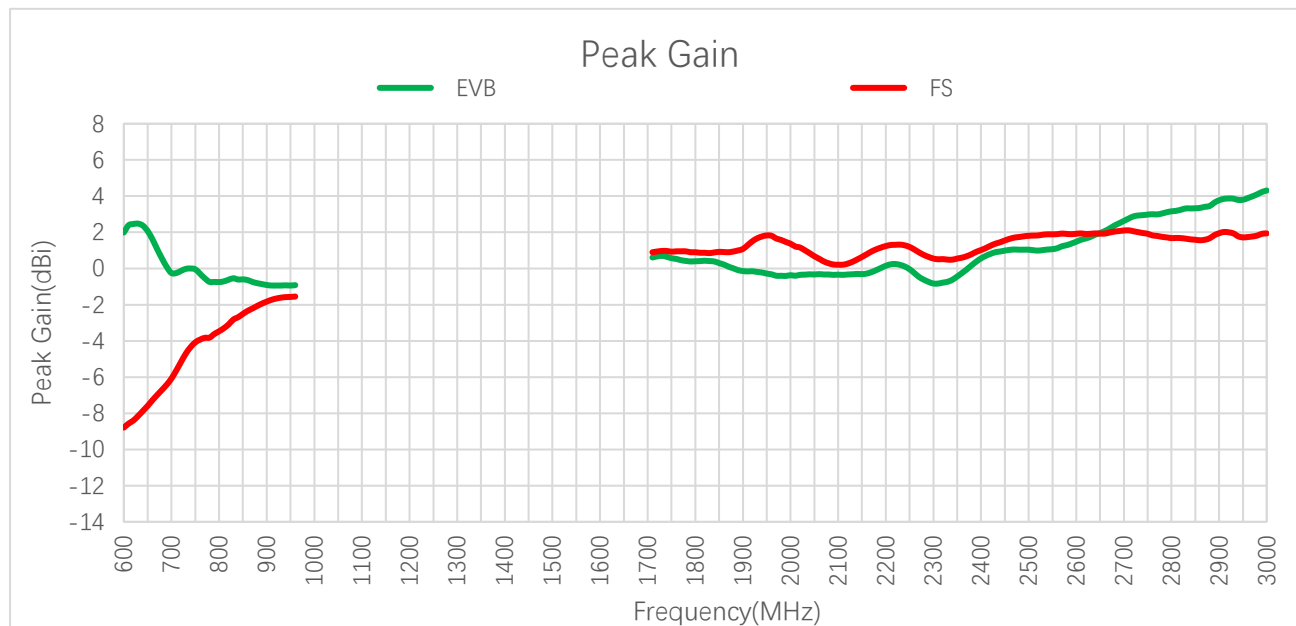
3.2.2. Average Gain



Average Gain (dB)

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	EVB	-	-	-1.5	-2.0	-2.8	-2.8	-	-1.0	-0.8	-1.7
	FS	-	-	-7.0	-4.2	-4.0	-3.8	-	-2.2	-2.2	-2.3
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Average Gain (dB)	EVB	-1.6	-2.0	-3.2	-3.3	-3.1	-2.3	-	-	-	-
	FS	-1.6	-3.2	-3.9	-3.6	-4.0	-3.8	-	-	-	-

3.2.3. Peak Gain



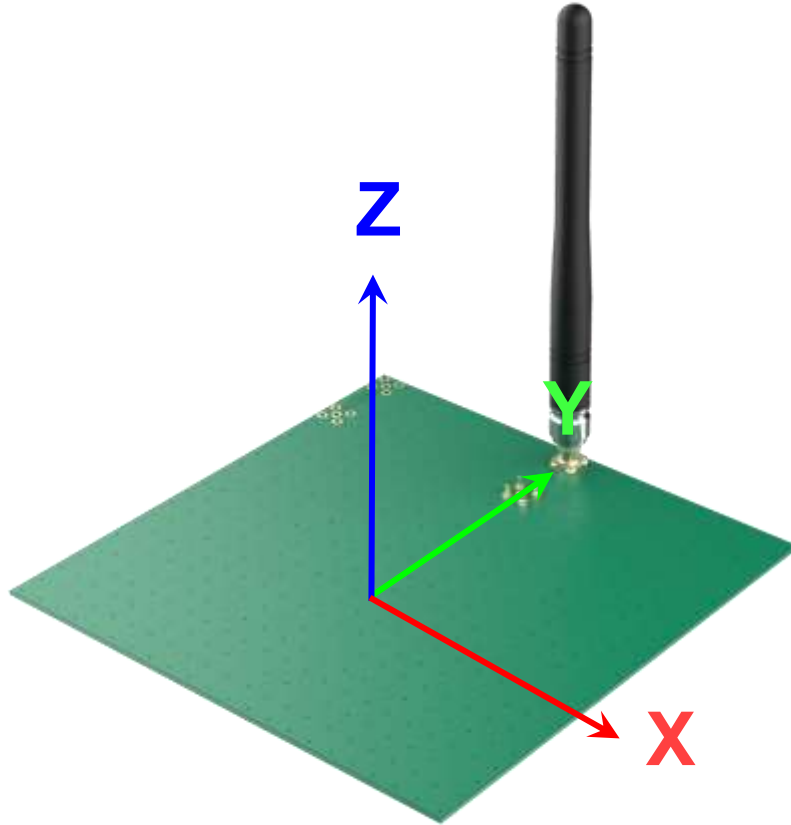
Peak Gain (dBi)

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	EVB	-	-	-0.3	-0.5	-0.9	-0.9	-	0.6	0.7	0.0
	FS	-	-	-5.6	-2.8	-1.8	-1.6	-	0.9	1.0	0.9
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Peak Gain (dBi)	EVB	-0.3	-0.3	-0.4	1.0	1.5	2.5	-	-	-	-
	FS	1.8	0.5	0.6	1.6	1.9	2.1	-	-	-	-

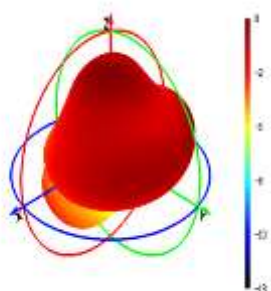
3.2.4. 3D & 2D Radiation Pattern

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

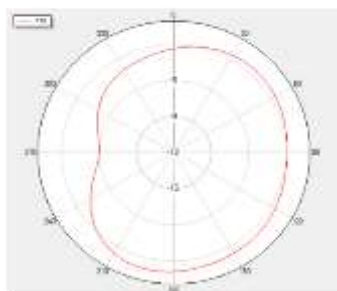
- Test Chamber: GL-S-1



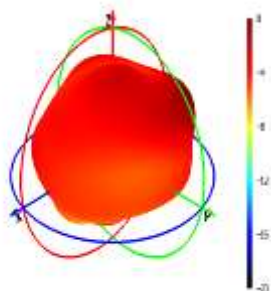
710 MHz



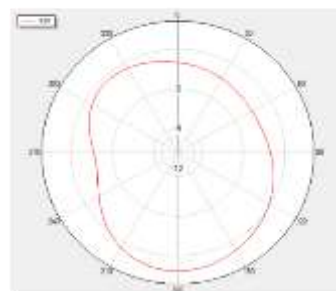
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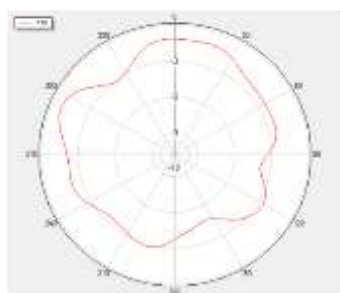
830 MHz



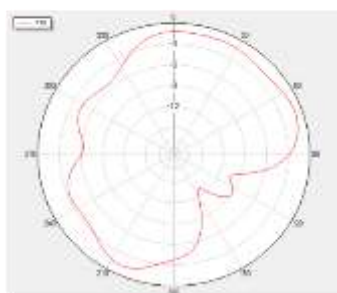
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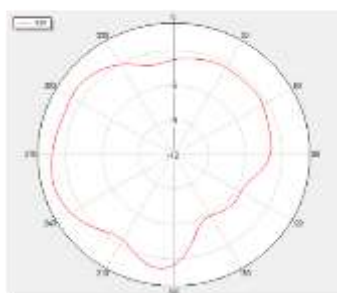
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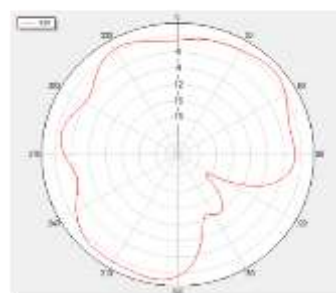
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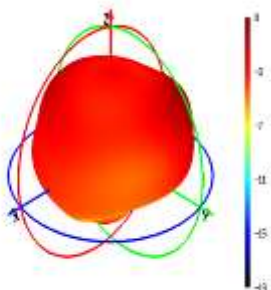
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Phi=90



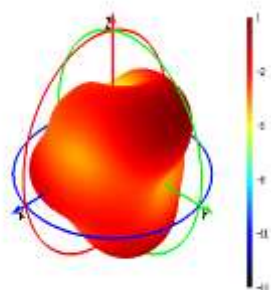
900 MHz



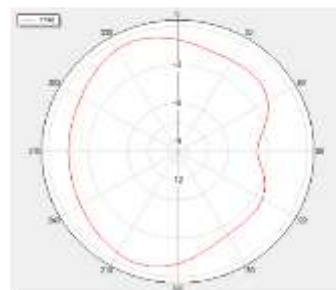
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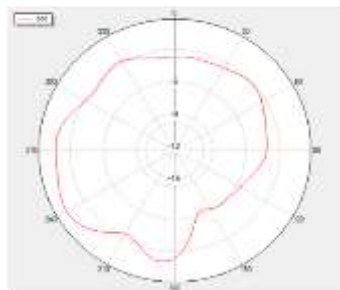
1740 MHz



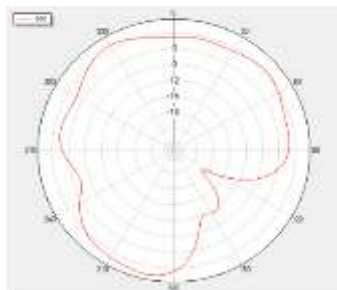
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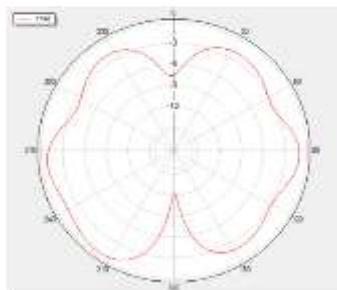
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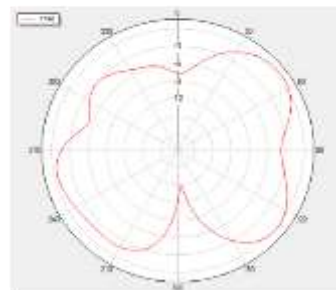
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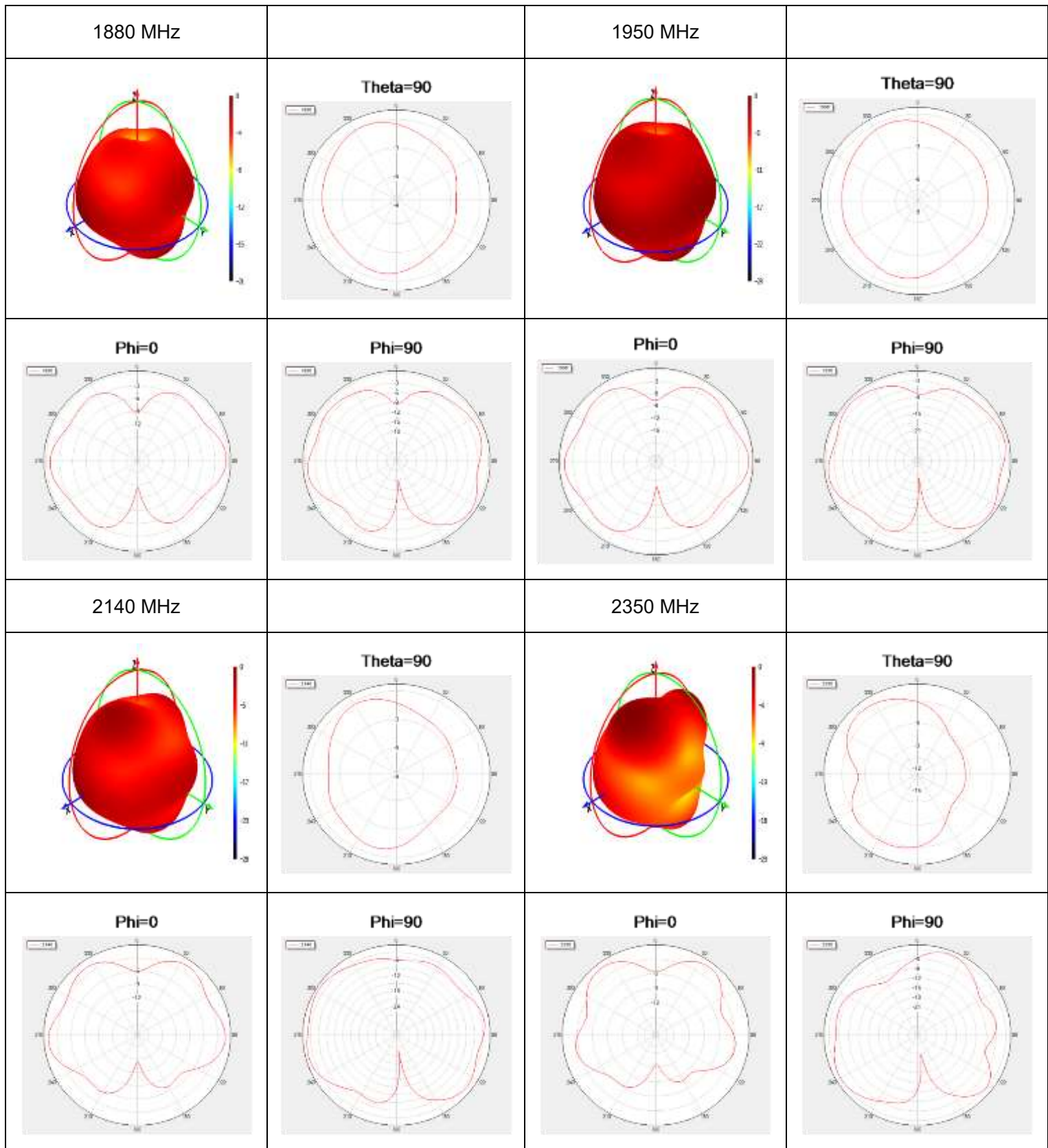


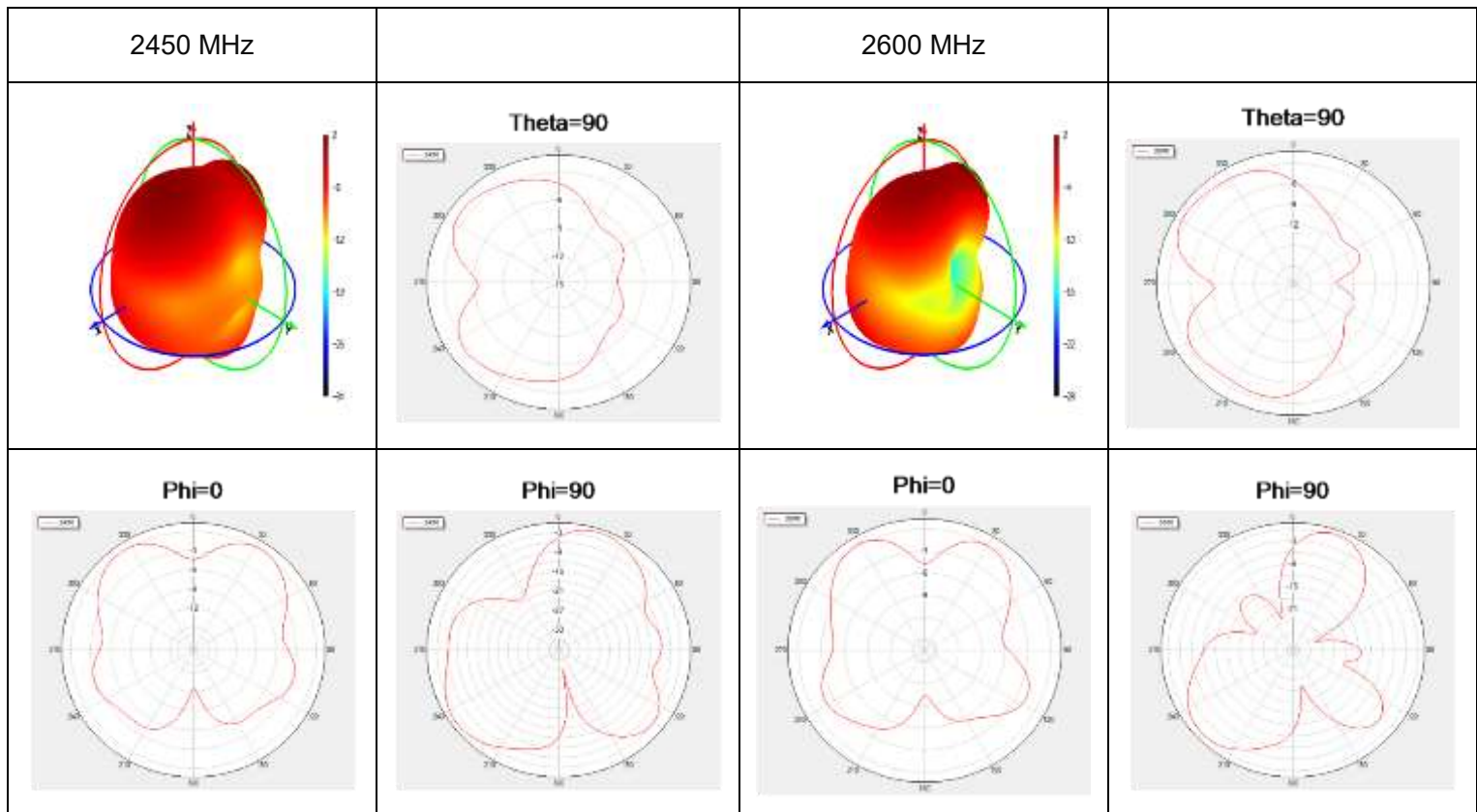
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Phi=90

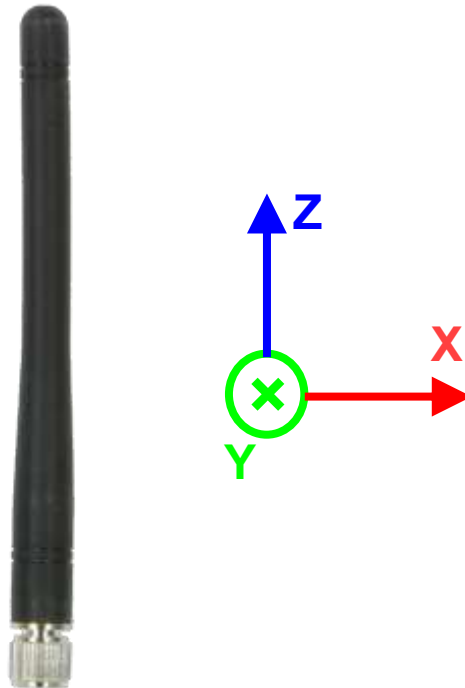




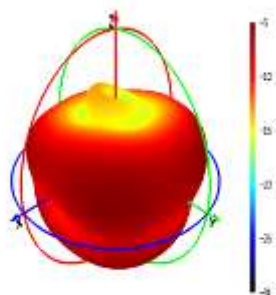


3.2.4.2. Test Condition: Free Space

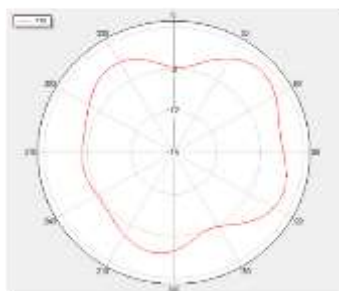
- Test Chamber: GL-S-1



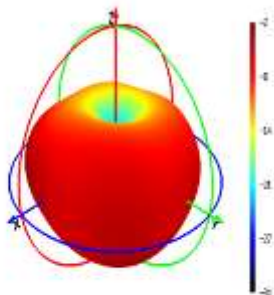
710 MHz



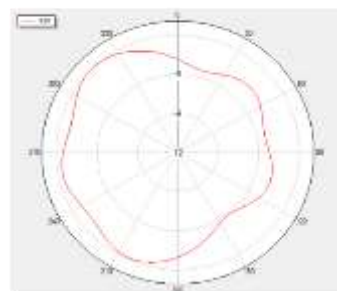
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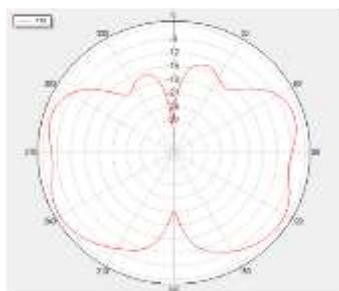
830 MHz



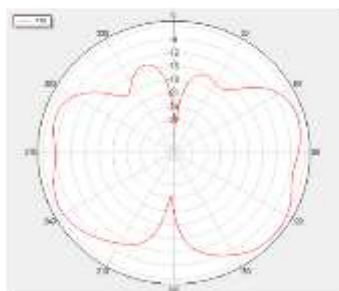
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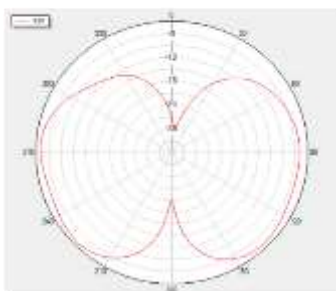
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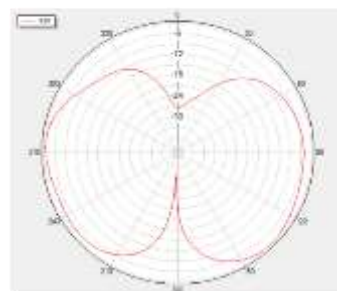
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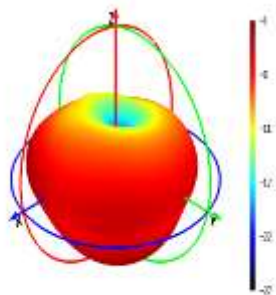
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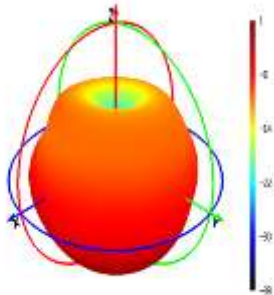
900 MHz



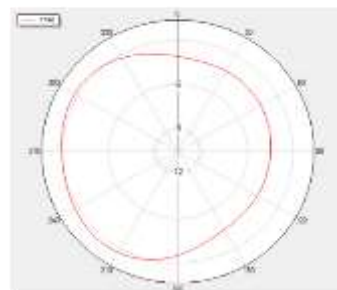
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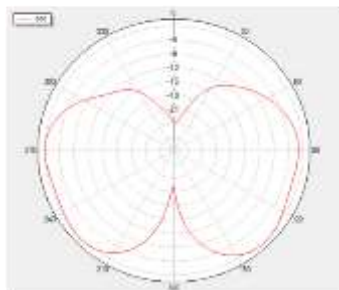
1740 MHz



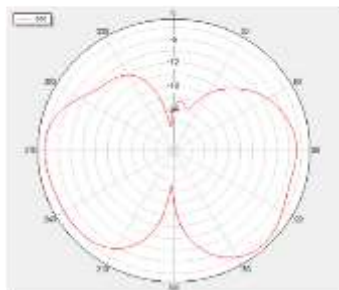
Theta=90



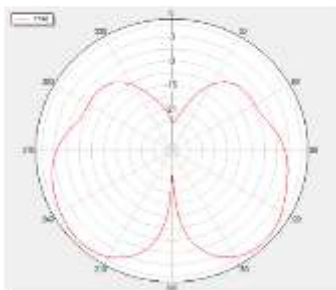
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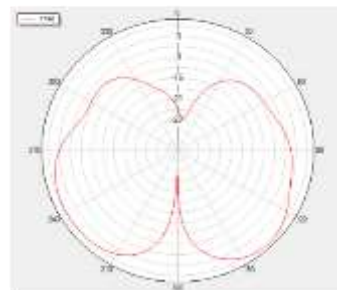
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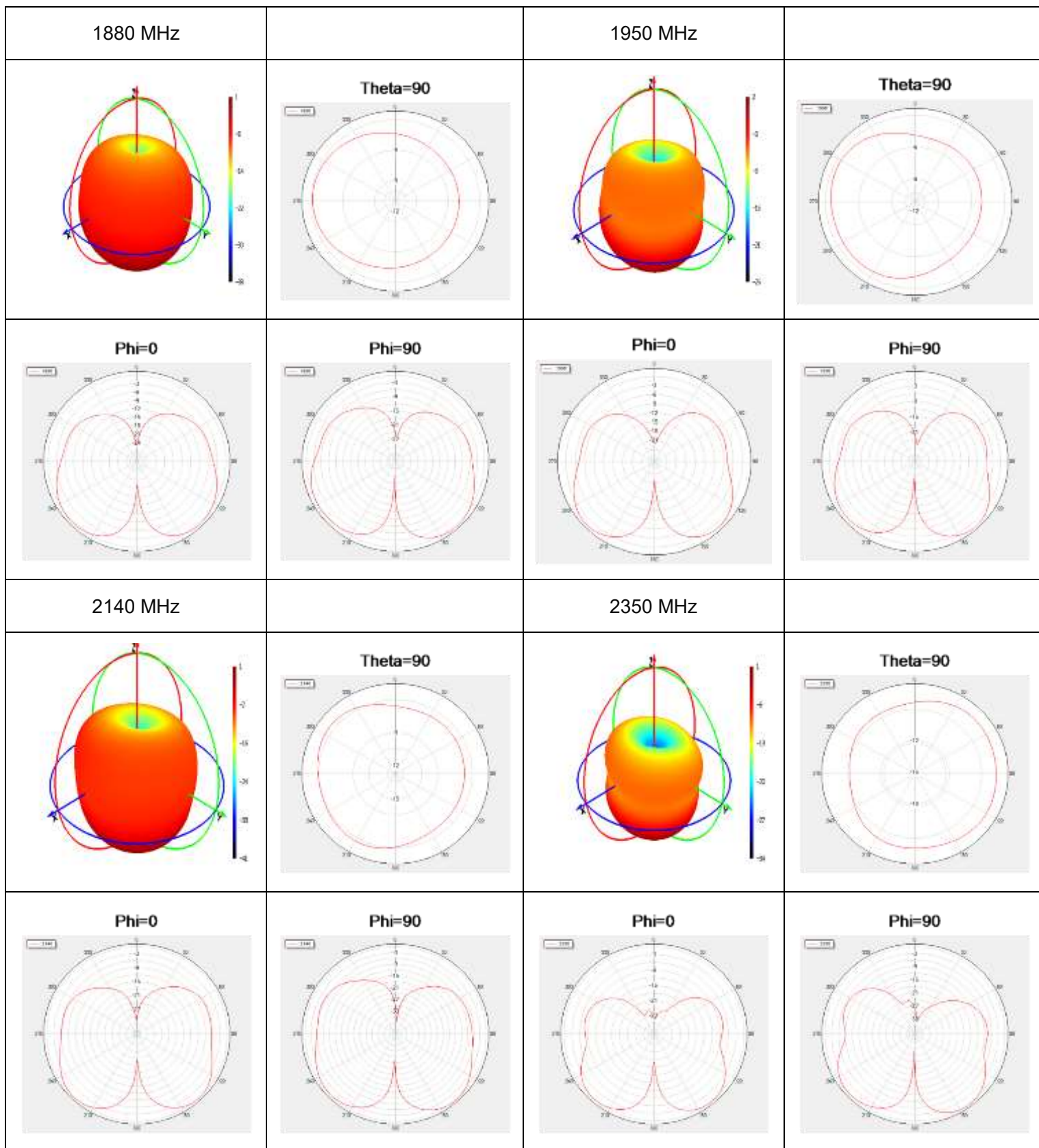


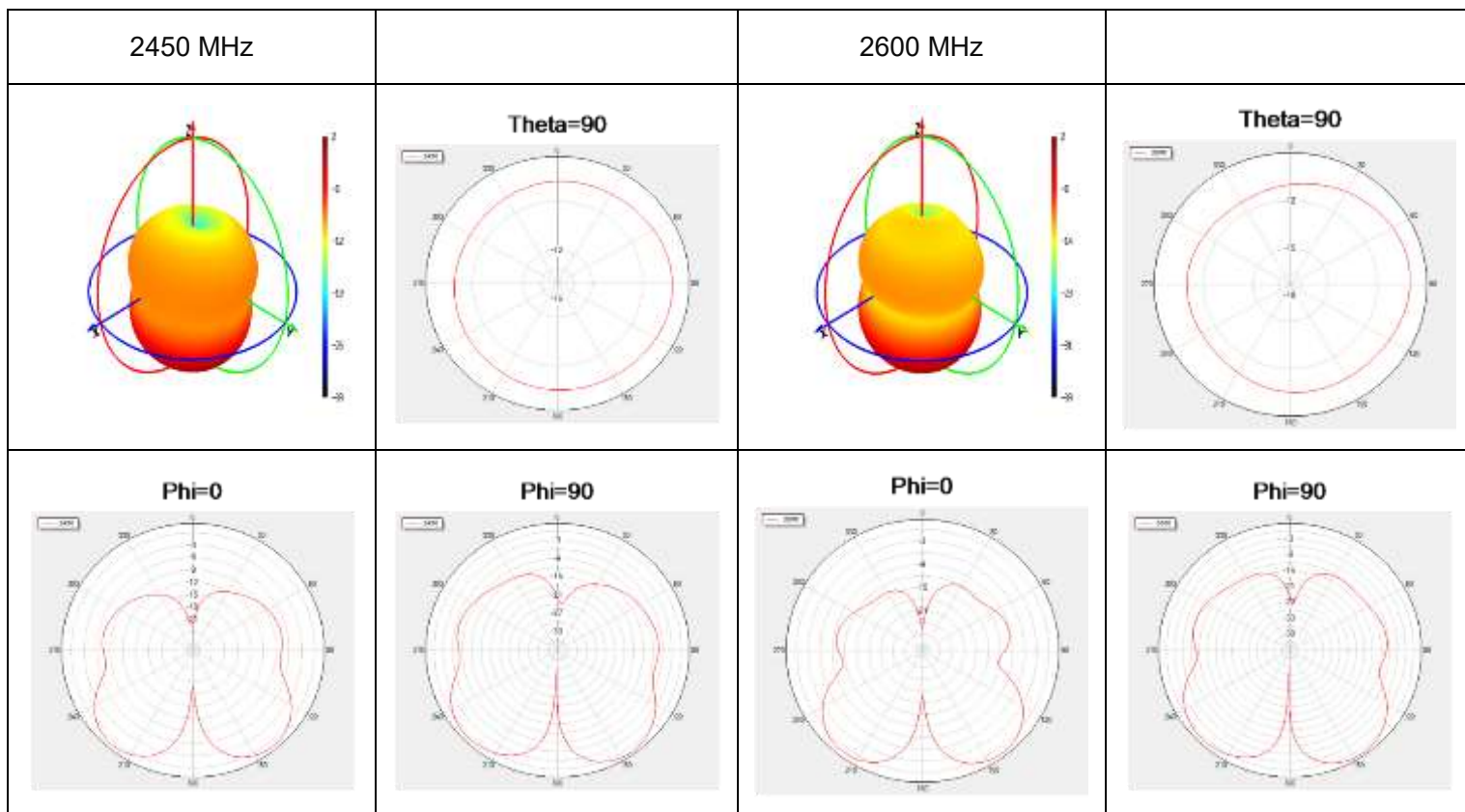
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Phi=90

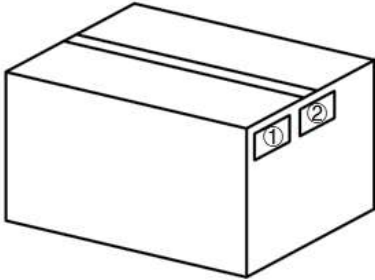
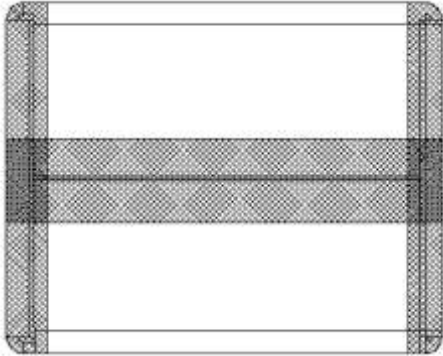






4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		10 pcs antenna products in a one-piece bag.
2		20 pcs antenna products in a PE bag. (20 PCS / PE Bag)
3		Put a bubble bag on the top of the product. (36 PE Bags / Carton Box) (720 PCS Antennas / Carton Box) <u>Carton Size:</u> <u>L × W × H = 405 × 293 × 185 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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Email: info@quectel.com

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

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Revision History

Version	Date	Author	Note
-	2021-06-02	Kenny YIN/ Aria CHU	Creation of the document
1.0	2021-06-02	Kenny YIN/ Aria CHU	First official release
1.1	2021-07-25	Kenny YIN/ Aria CHU	1. Updated working temperature (Chapter 3). 2. Added detailed passive electrical specifications (Chapter 3).
1.2	2021-11-27	Kenny YIN/ Aria CHU	Updated the product description (Chapter 1).
1.3	2022-10-17	Aria CHU	Deleted the IP rating.
2.0	2022-11-22	Mary LI	Updated the drawing (Chapter 5).
3.0	2023-05-04	Black LI/ Lucky FENG/ David LIU/ Aria CHU	Updated all data and datasheet template.
3.1	2024-01-15	Lucky FENG	Updated the antenna size and added storage temperature (Chapter 1.2).



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