

Antenna Datasheet

Product OC: YE0009AA

Version: 3.1

Date: 2024-01-15

Status: Released

Product Name: 4G External Antenna

Key Features:

Frequency Band: 824–2700 MHz

Dimensions: 190 mm × 16 mm

Efficiency: Up to 85.2 % (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.

Contents

Overview.....	1
Contents	2
1 Specification.....	3
1.1. Electrical.....	3
1.2. Mechanical & Environmental	4
2 Drawing	5
3 Detailed Performance	6
3.1. S-Parameter Test	6
3.1.1. VSWR.....	6
3.1.2. Return Loss	7
3.2. Radiation Performance Test.....	8
3.2.1. Efficiency	8
3.2.2. Average Gain	9
3.2.3. Peak Gain.....	10
3.2.4. 3D & 2D Radiation Pattern.....	11
3.2.4.1. Test Condition: On 130 mm × 130 mm EVB	11
3.2.4.2. Test Condition: Free Space	15
4 Packaging	19
Contact Us.....	21
Legal Notices	22
Revision History	24

1 Specification

Test Condition: On 130 mm × 130 mm EVB & Free Space

1.1. Electrical

Electrical	
Frequency Range	824–2700 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	-	-	3.1	-	3.2	2.6	4.2	4.2	-	-	-
	FS	-	-	2.3	-	2.4	2.9	2.8	2.5	-	-	-
Max. Return Loss (dB)	EVB	-	-	-5.8	-	-5.6	-7.0	-4.2	-4.2	-	-	-
	FS	-	-	-8.1	-	-7.6	-6.2	-6.6	-7.2	-	-	-
AVG Eff. (%)	EVB	-	-	64.5	-	70.3	69.5	54.4	53.1	-	-	-
	FS	-	-	62.3	-	67.6	63.4	62.3	54.0	-	-	-
AVG Gain (dB)	EVB	-	-	-1.9	-	-1.6	-1.6	-2.7	-2.8	-	-	-
	FS	-	-	-2.2	-	-1.7	-2.0	-2.1	-2.7	-	-	-
Max. Peak	EVB	-	-	1.3	-	2.3	1.3	1.3	2.4	-	-	-

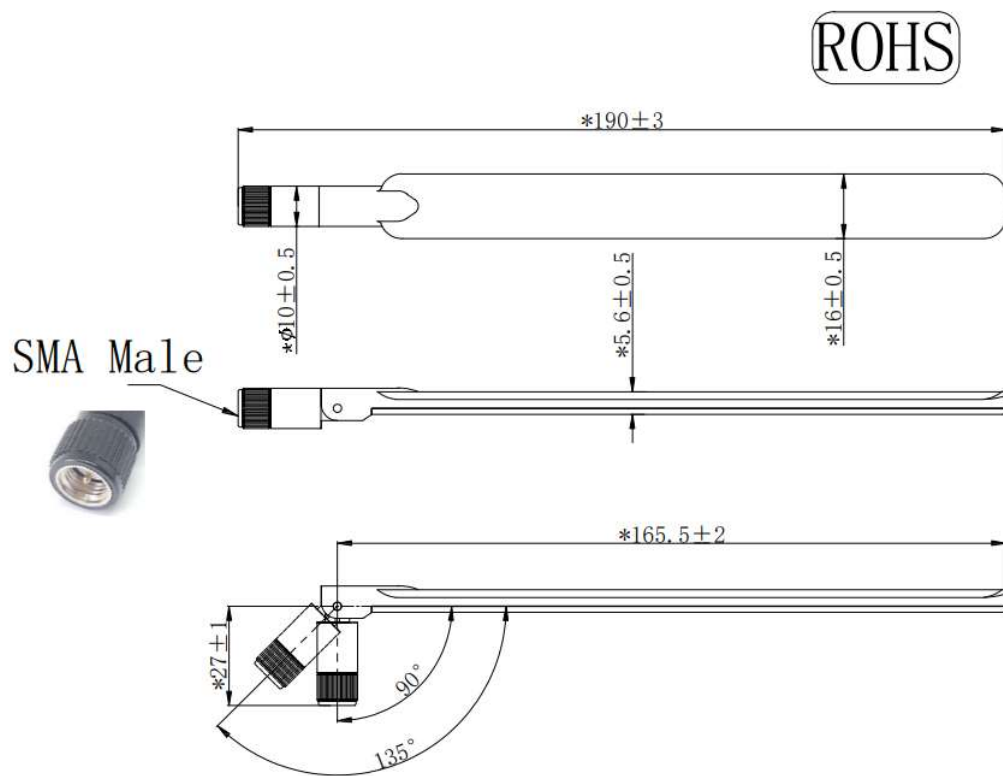
Gain (dBi)	FS	-	-	1.1	-	1.4	2.1	2.2	0.9	-	-	-
VSWR	EVB		≤ 4.2									
	FS		≤ 2.9									
Return Loss	EVB		≤ -4.2 dB									
	FS		≤ -6.2 dB									
Peak Gain	EVB		≤ 2.4 dBi									
	FS		≤ 2.2 dBi									

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

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	190 mm × 16 mm
Casing Material & Color	ABS & Black
Connector Type	SMA Male
Mounting Type	Terminal
Weight	Typ. 16.5 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS Compliant	Yes

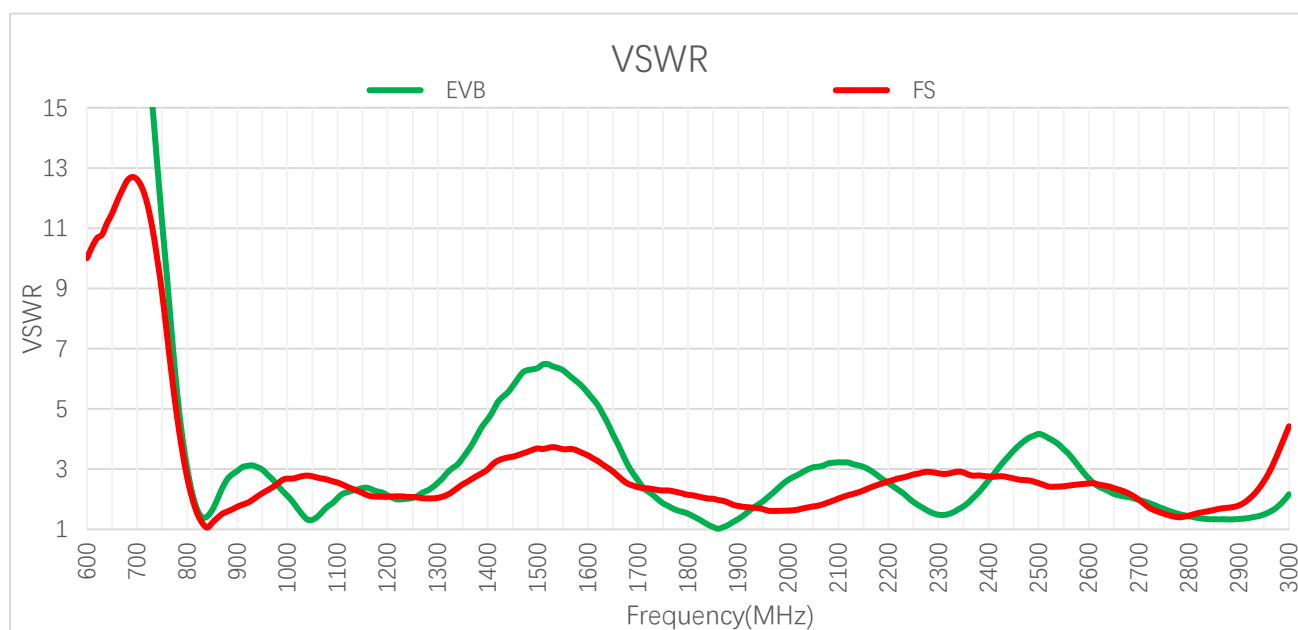
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

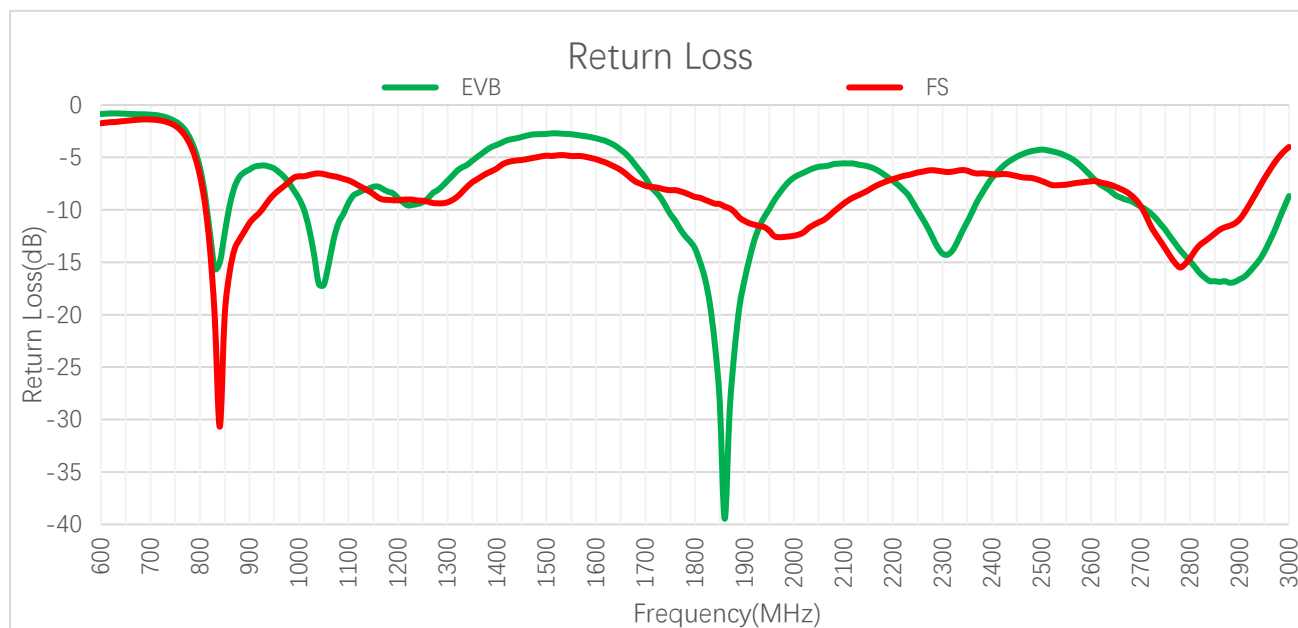
3.1.1. VSWR



VSWR

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
VSWR	EVB	-	-	-	1.4	2.9	2.8	-	2.4	2.0	1.1
	FS	-	-	-	1.2	1.8	2.3	-	2.4	2.3	1.9
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
VSWR	EVB	1.9	3.1	1.8	3.6	2.7	2.0	-	-	-	-
	FS	1.7	2.2	2.9	2.7	2.5	2.1	-	-	-	-

3.1.2. Return Loss

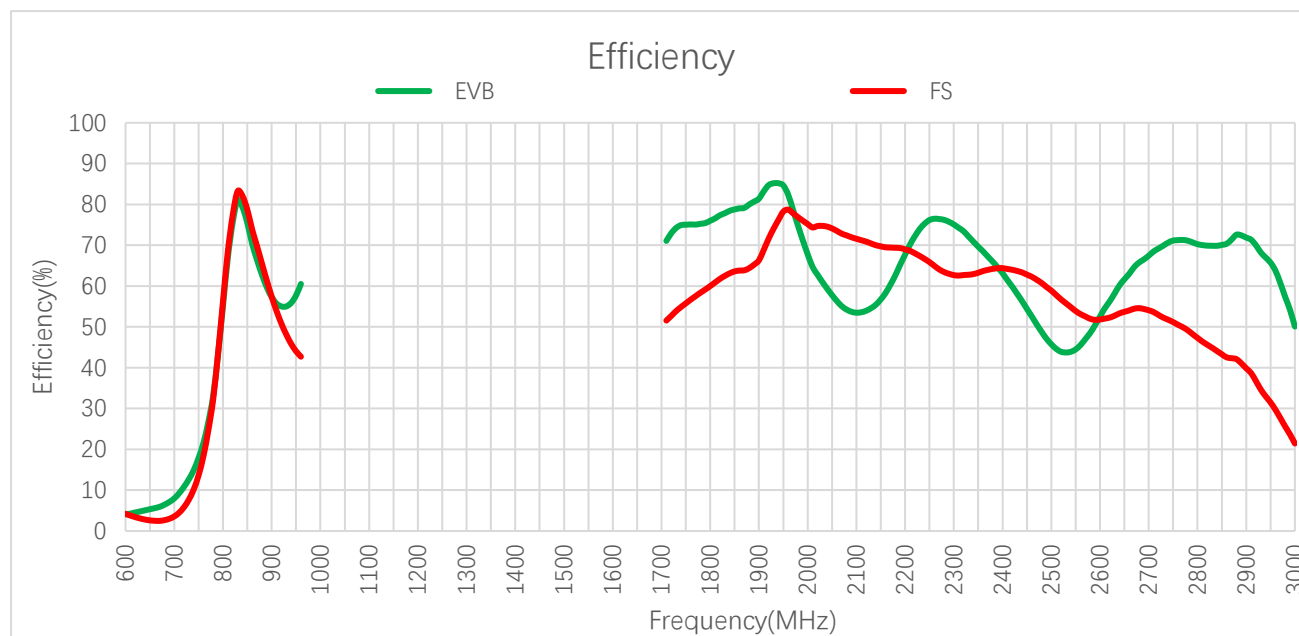


Return Loss (dB)

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	EVB	-	-	-	-15.6	-6.2	-6.4	-	-7.7	-9.6	-23.4
	FS	-	-	-	-20.3	-11.3	-8.1	-	-7.8	-8.1	-10.2
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Return Loss (dB)	EVB	-9.9	-5.8	-11.1	-4.9	-6.8	-9.4	-	-	-	-
	FS	-12.0	-8.4	-6.3	-6.8	-7.3	-9.0	-	-	-	-

3.2. Radiation Performance Test

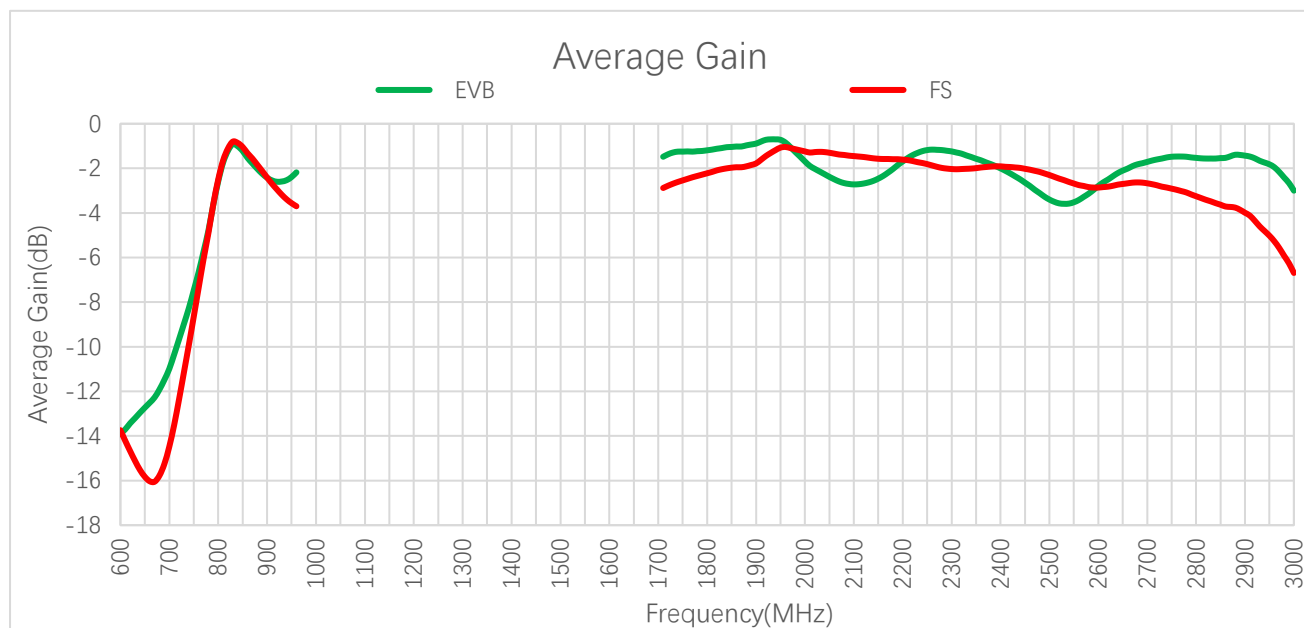
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	EVB	-	-	-	81.0	57.3	60.5	-	71.1	74.9	80.0
	FS	-	-	-	83.2	57.4	42.7	-	51.6	54.9	64.4
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Efficiency (%)	EVB	84.7	55.4	69.7	54.4	52.6	66.5	-	-	-	-
	FS	78.2	70.0	63.3	62.8	51.8	54.4	-	-	-	-

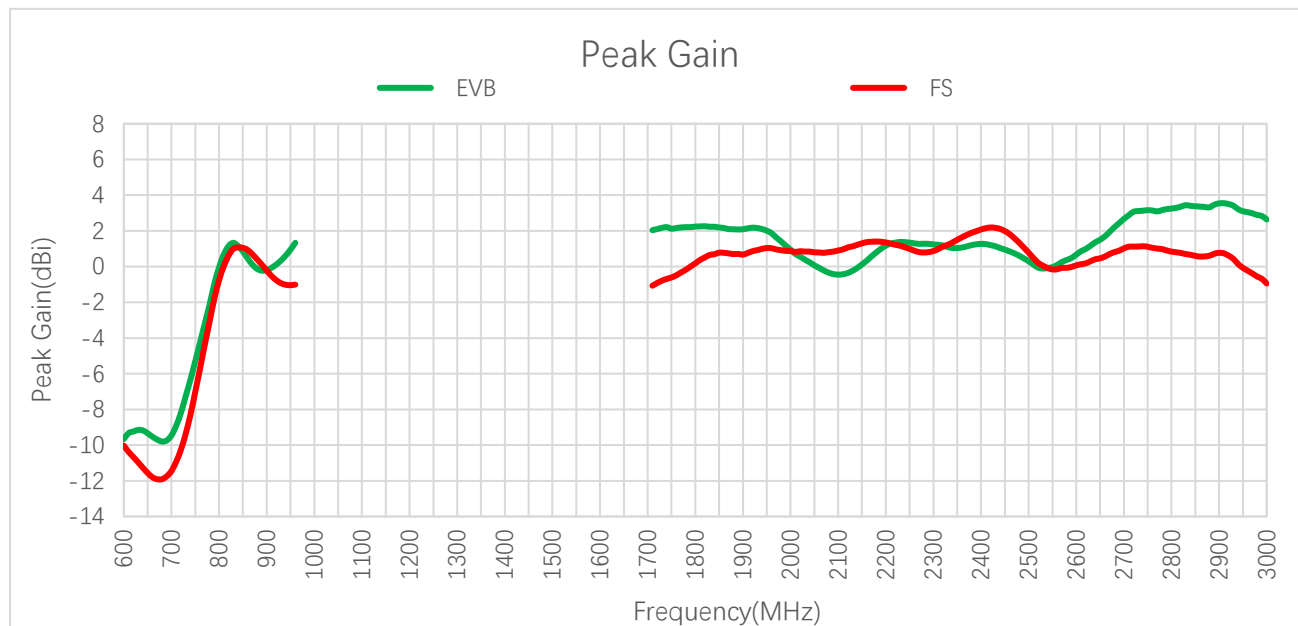
3.2.2. Average Gain



Average Gain (dB)

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	EVB	-	-	-	-0.9	-2.4	-2.2	-	-1.5	-1.3	-1.0
	FS	-	-	-	-0.8	-2.4	-3.7	-	-2.9	-2.6	-1.9
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Average Gain (dB)	EVB	-0.7	-2.6	-1.6	-2.6	-2.8	-1.8	-	-	-	-
	FS	-1.1	-1.6	-2.0	-2.0	-2.9	-2.6	-	-	-	-

3.2.3. Peak Gain



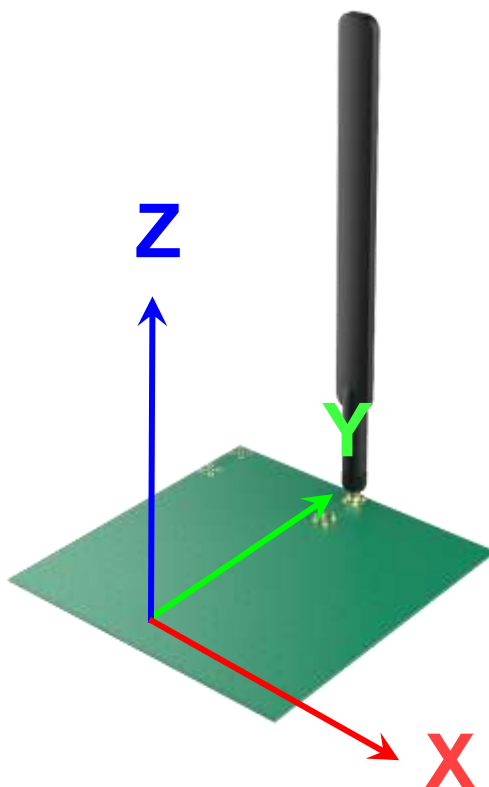
Peak Gain (dBi)

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	EVB	-	-	-	1.3	-0.2	1.3	-	2.0	2.2	2.1
	FS	-	-	-	1.0	-0.2	-1.0	-	-1.1	-0.7	0.7
Frequency (MHz)		1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Peak Gain (dBi)	EVB	2.0	-0.1	1.0	1.0	0.7	2.4	-	-	-	-
	FS	1.0	1.2	1.5	2.0	0.1	0.9	-	-	-	-

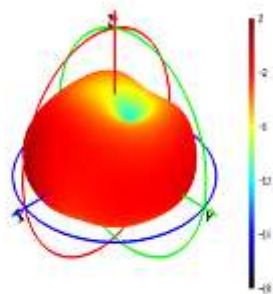
3.2.4. 3D & 2D Radiation Pattern

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

- Test Chamber: GL-S-1



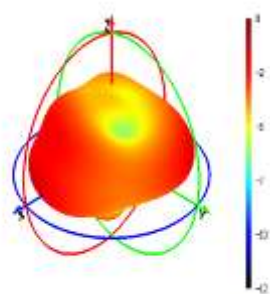
830 MHz



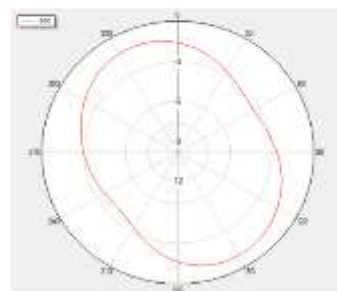
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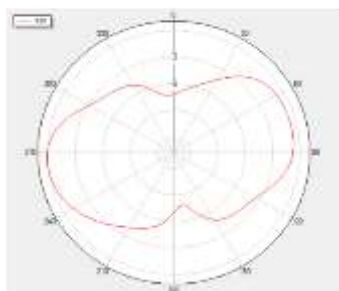
900 MHz



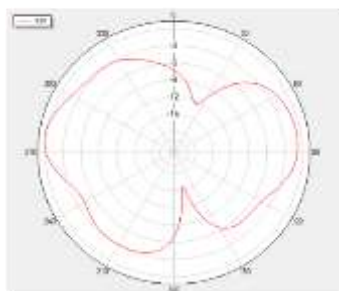
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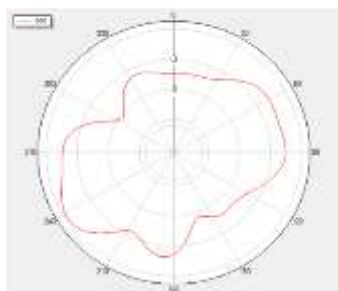
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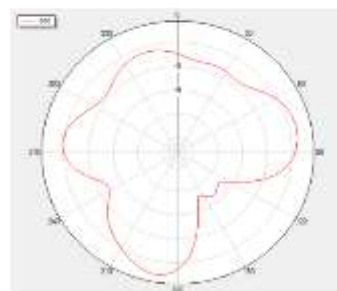
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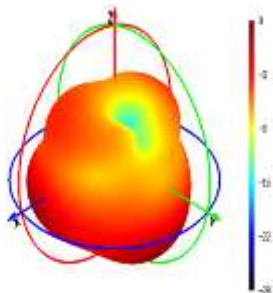
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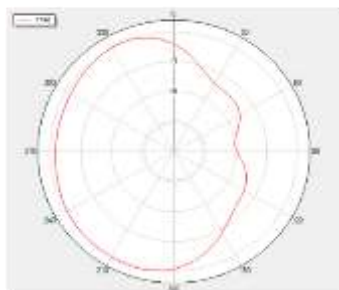
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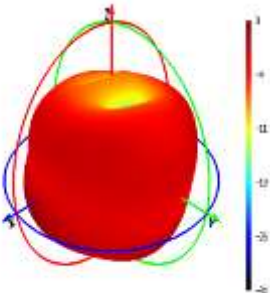
1740 MHz



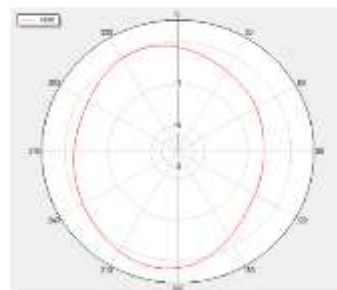
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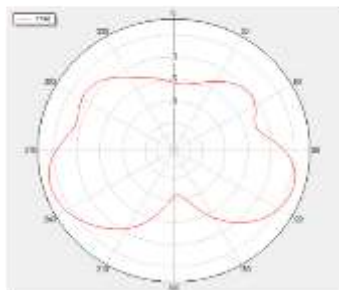
1880 MHz



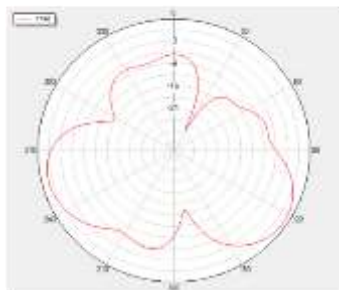
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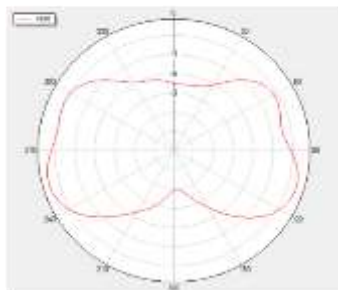
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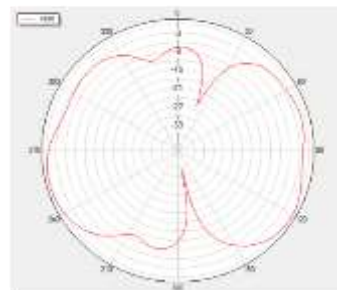
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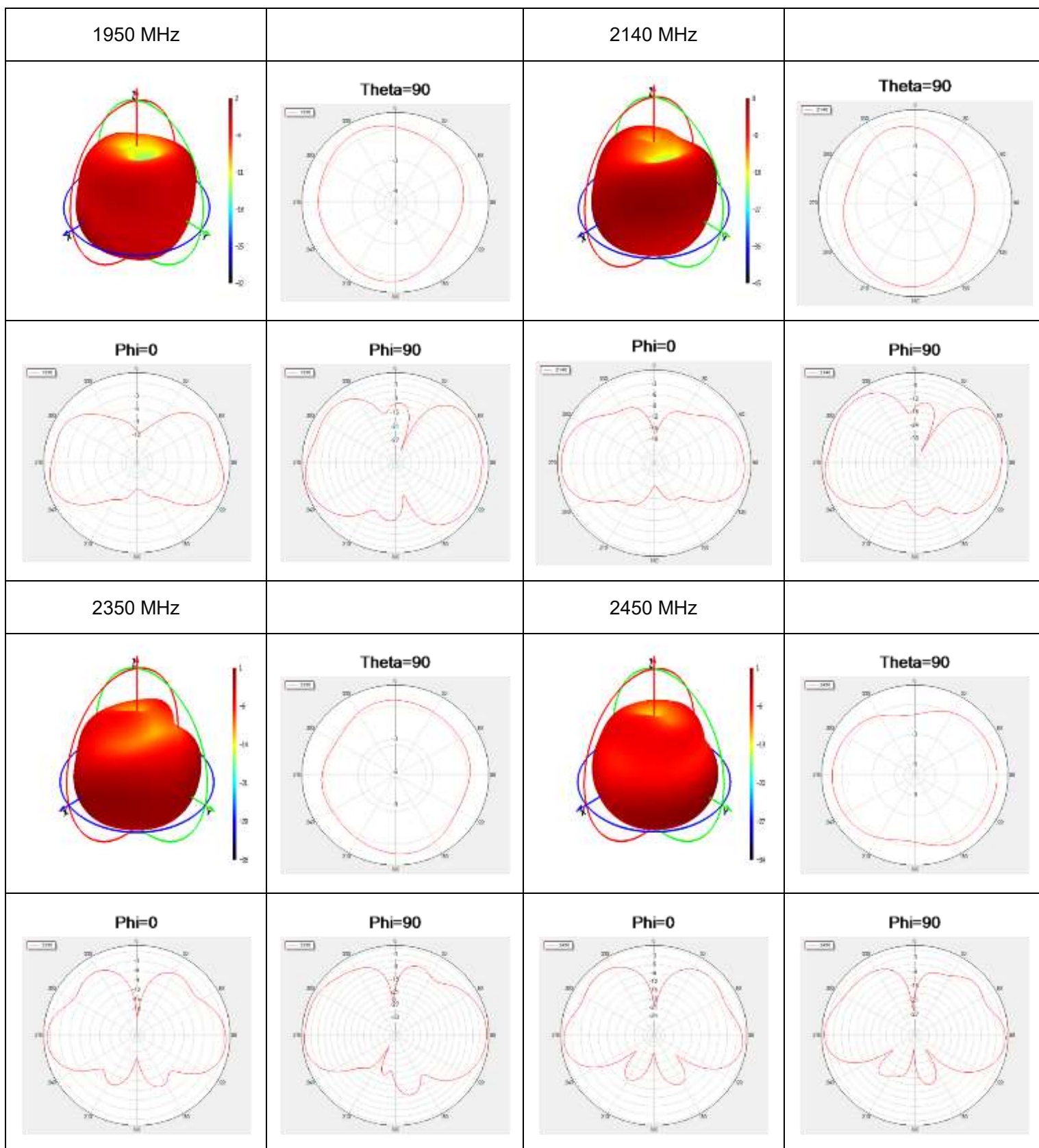


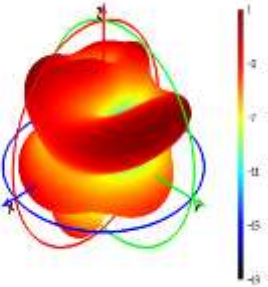
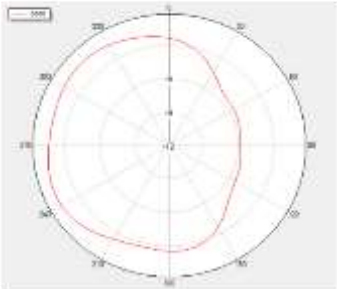
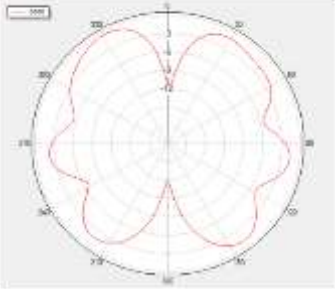
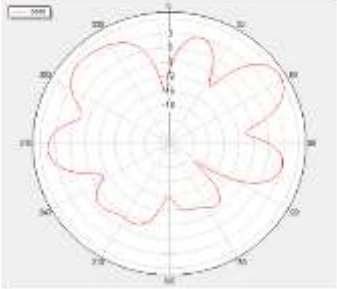
Phi=0



Phi=90

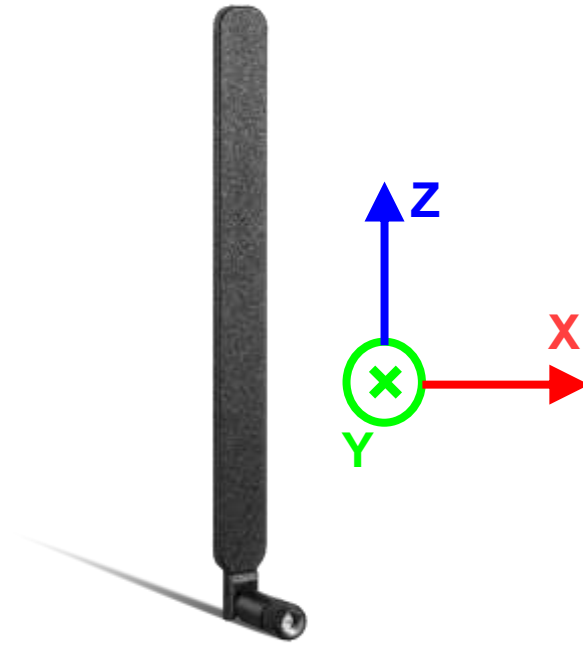




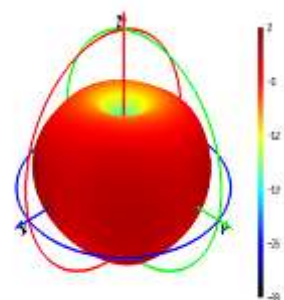
2600 MHz			
			
			

3.2.4.2. Test Condition: Free Space

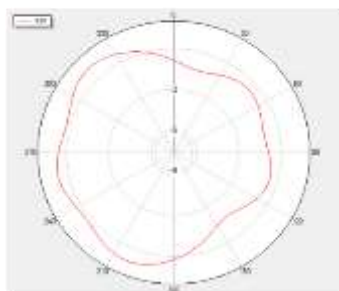
- Test Chamber: GL-S-1



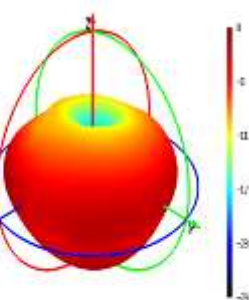
830 MHz



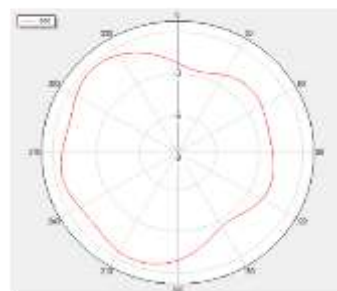
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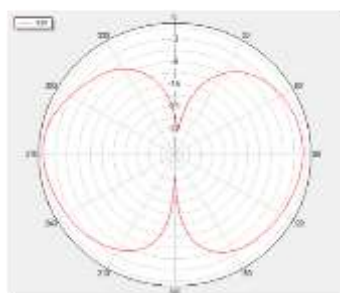
900 MHz



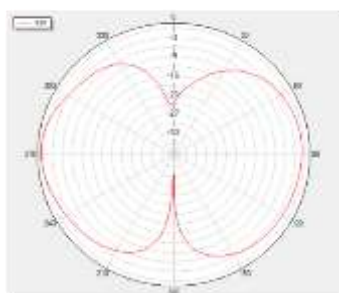
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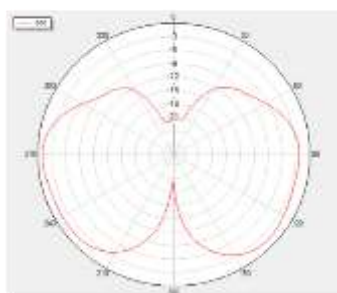
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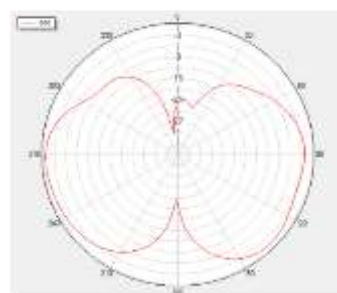
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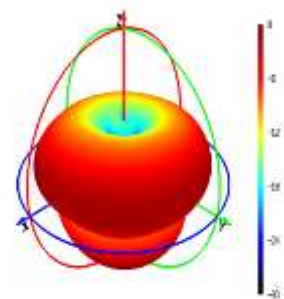
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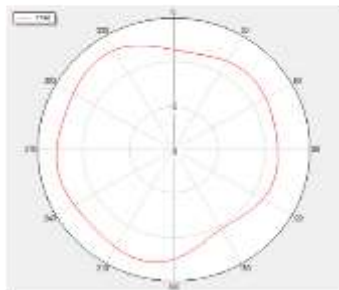
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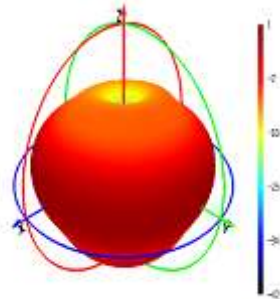
1740 MHz



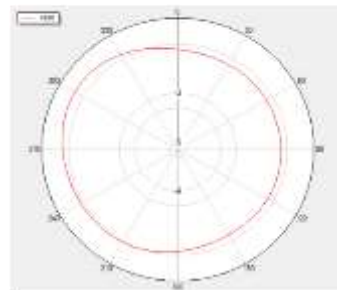
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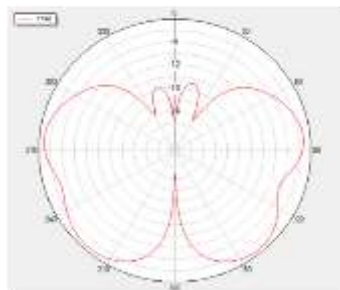
1880 MHz



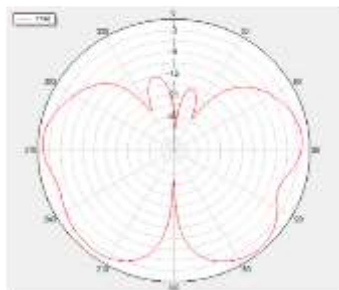
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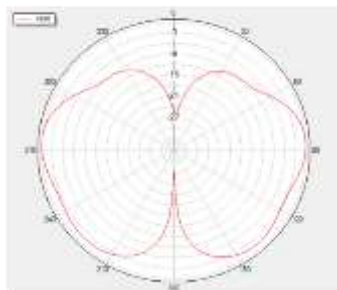
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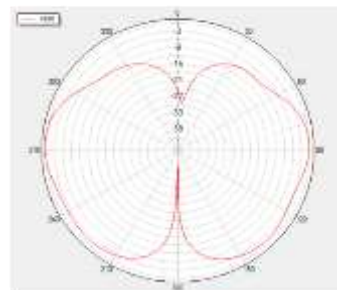
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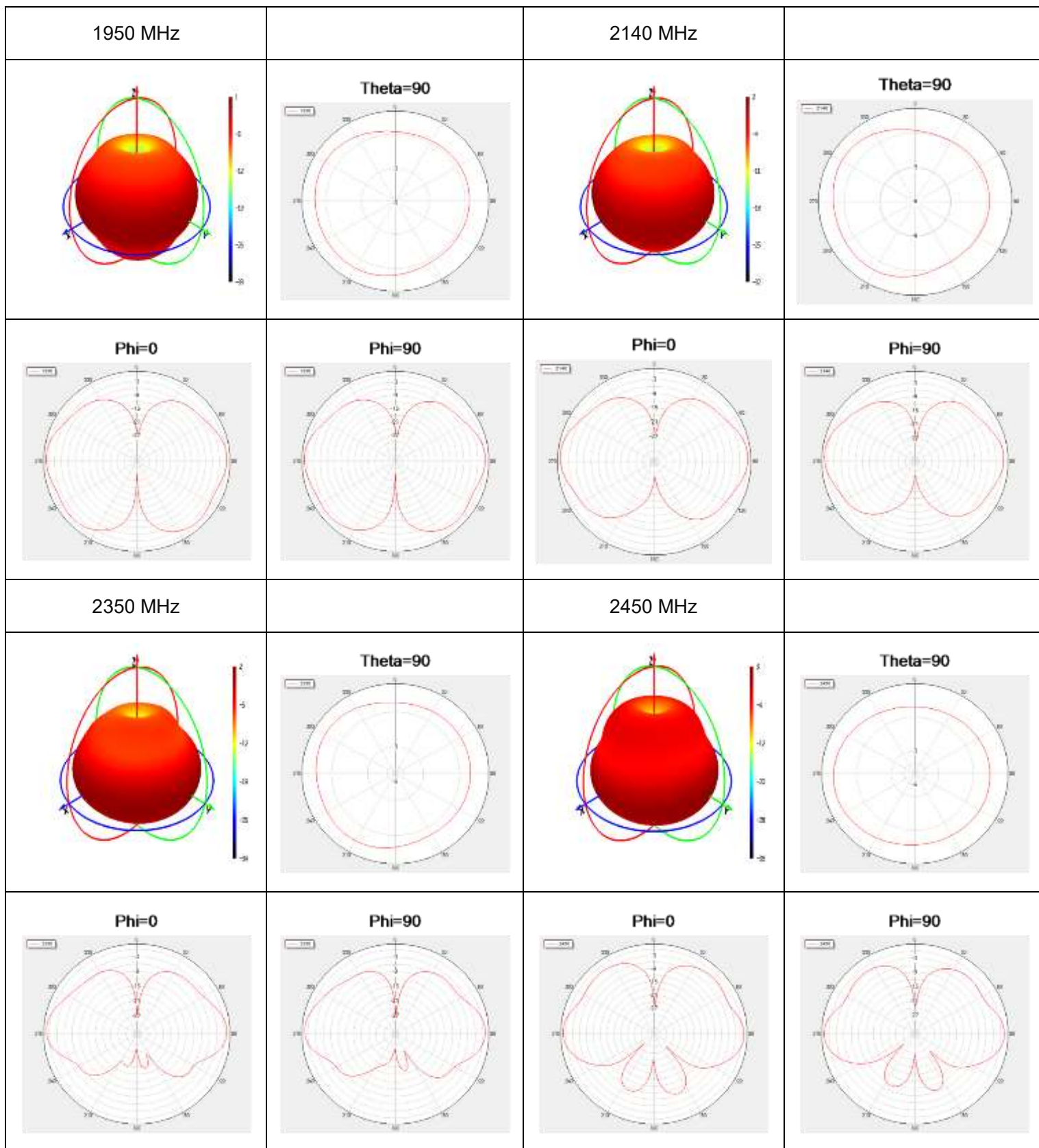


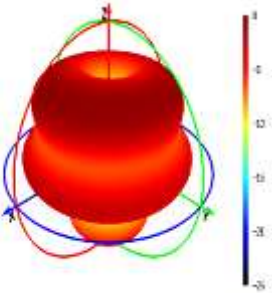
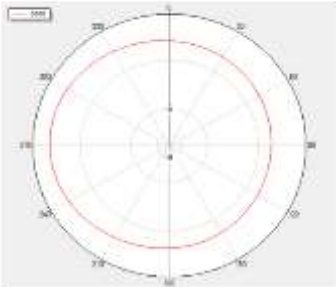
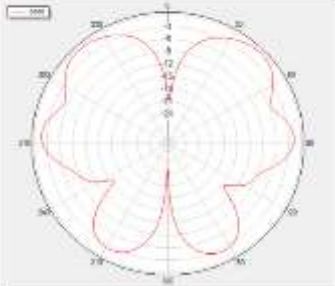
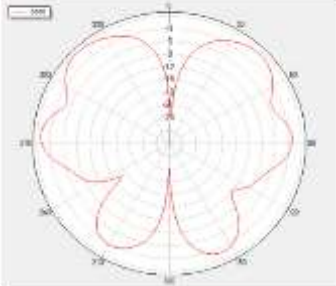
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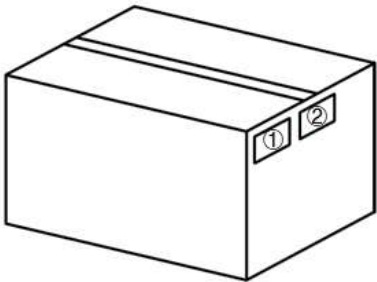
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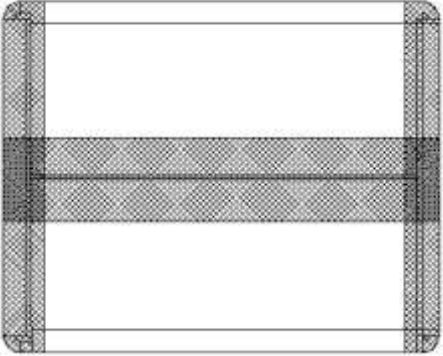




2600 MHz			
			
			

4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		50 pcs antenna products in a PE bag. (50 PCS / PE Bag)
2		(12 PE Bags / Carton Box) (600 PCS Antennas / Carton Box) <u>Carton Size:</u> <u>L × W × H = 405 × 293 × 185 mm</u>
3		Position for Attaching Labels ① Carton Label ② Quality Label

4		Sealing Cartons “工” type sealing cartons
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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:

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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

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

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Revision History

Version	Date	Author	Note
-	2020-06-10	Kenny YIN	Creation of the document
1.0	2020-06-10	Kenny YIN	First official release
1.1	2021-01-12	Kenny YIN	Updated images in Efficiency and Gain (Chapter 4).
1.2	2021-01-27	Kenny YIN	Added IP rating description.
2.0	2021-04-25	Kenny YIN	Updated all test data in the datasheet and some other data.
2.1	2021-07-25	Kenny YIN	- Updated working temperature (Chapter 3). - Added detailed passive electrical specifications (Chapter 3).
2.2	2021-11-27	Kenny YIN	Updated the product description (Chapter 1)
2.3	2022-10-17	Aria CHU	Deleted the IP rating.
2.4	2023-02-22	Kenny YIN	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	- Added the storage temperature (Chapter 1.2). - Updated the drawing (Chapter 2).



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