Antenna Datasheet

Product OC: YECT011W1AM
Version: 1.1
Date: 2024-11-07
Status: Released

Product Name: 4G Terminal Mount External Dipole Antenna
Key Features:
Frequency Band: 700–960 MHz, 1710–2690 MHz
Dimensions: 135 mm × 15.6 mm × 13 mm
Efficiency: Up to 68.9 % (EVB)
RoHS and REACH Compliant
IP67

Overview

YECT011W1AM is a 4G external antenna measuring 135 mm × 15.6 mm × 13 mm. This ultra-wide-band 4G antenna provides broad coverage from 700–960 MHz & 1710–2690 MHz whilst offering backward-compatibility to support 3G and 2G networks as well as LTE Cat-M and narrowband IoT (NB-IoT). The antenna is terminated with SMA Male connector. Ideal for applications where the antenna is required to be discrete, this low profile, terminal mount omni-directional antenna is easy to install with maximum durability assured thanks to its IP67 rated, PC + ABS enclosure.

The antenna is designed as dipole type to work with various GND plane sizes or in free space for ease of integration with a hinged SMA Male connector to achieve the optimum position. Hinged structure helps to avoid other antennas or objects by rotating to different directions when mounted on terminals. This omni-directional antenna is ideally suited for Gateways & Routers, Smart Metering, Vending Machines, Industrial IoT, Smart Home, Connected Enterprise, offering great performance with its high gain and efficiency.

Typical applications include:

- Gateways & Routers
- Smart Metering
- Vending Machines
- Industrial IoT
- Smart Home
- Connected Enterprise

Quectel provides comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs. We have regional R & D centers to offer quick response to meet your requirements. Please contact our sales & FAEs if you have any requests.

Contents

1 Specification

Test Condition: On 130 mm × 70 mm EVB

1.1. Electrical

Electrical	
Frequency Range	700–960 MHz, 1710–2690 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Electrical – Detail

Band / 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	Straight	-	5.6	5.9	-	4.1	2.3	3.3	3.3	-	-	-
	Bent	-	5.0	6.1	-	2.6	2.4	3.3	3.3	-	-	-
Max. Return Loss (dB)	Straight	-	-3.2	-3.0	-	-4.4	-7.9	-5.5	-5.5	-	-	-
	Bent	-	-3.5	-2.9	-	-6.9	-7.7	-5.4	-5.4	-	-	-
AVG Eff. (%)	Straight	-	34.8	26.6	-	51.3	54.2	41.6	52.6	-	-	-
	Bent	-	40.0	27.5	-	60.4	51.5	41.4	56.2	-	-	-
AVG AVG Gain (dB)	Straight	-	-4.6	-5.7	-	-2.9	-2.7	-3.8	-2.8	-	-	-
	Bent	-	-4.0	-5.6	-	-2.2	-2.9	-3.8	-2.5	-	-	-

Max. Peak Gain (dBi)	**Straight**	-	0.1	-0.3	-	4.3	5.0	4.9	4.9	-	-	-
	Bent	-	-0.1	-0.2	-	2.9	1.9	1.9	4.7	-	-	-

VSWR	**Straight**	≤ 5.9
	Bent	≤ 6.1
Return Loss	**Straight**	≤ -3.0 dB
	Bent	≤ -2.9 dB
Peak Gain	**Straight**	≤ 5.0 dBi
	Bent	≤ 2.9 dBi

- **Straight: The connector is vertical.**
- **Bent: The connector is bend.**

1.2. Supported Bands

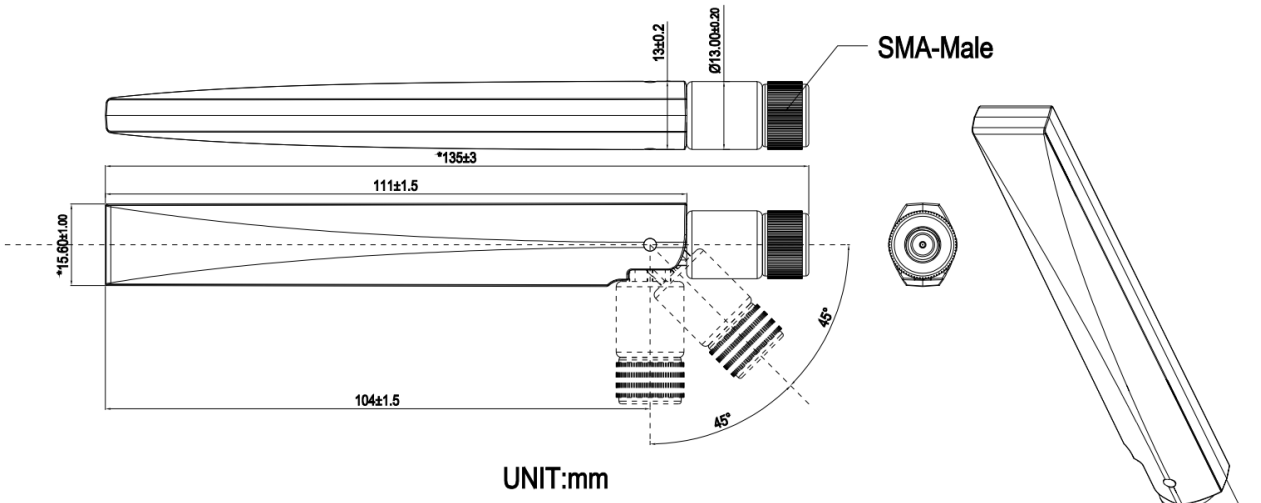
5G NR/LTE/LTE-Advanced/WCDMA/HSPA/HSPA+/GPRS/GSM/NB-IoT					
Band	**Frequency (MHz)**	**Uplink (MHz)**	**Downlink (MHz)**	**Straight**	**Bent**
1	2100	1920–1980	2110–2170	√	√
2	1900	1850–1910	1930–1990	√	√
3	1800	1710–1785	1805–1880	√	√
4	1700	1710–1755	2110–2155	√	√
5	850	824–849	869–894	√	√
7	2600	2500–2570	2620–2690	√	√
8	900	880–915	925–960	√	√
9	1800	1749.9–1784.9	1844.9–1879.9	√	√
11	1500	1427.9–1447.9	1475.9–1495.9	-	-
12	700	699–716	729–746	√	√
13	700	777–787	746–756	√	√
14	700	788–798	758–768	√	√
17	700	704–716	734–746	√	√
18	850	815–830	860–875	√	√
19	850	830–845	875–890	√	√
20	800	832–862	791–821	√	√
21	1500	1447.9–1462.9	1495.9–1510.9	-	-
22	3500	3410–3490	3510–3590	-	-
23	2100	2000–2020	2180–2200	√	√
24	1600	1626.5–1660.5	1525–1559	-	-
25	1900	1850–1915	1930–1995	√	√
26	850	814–849	859–894	√	√

5G NR/LTE/LTE-Advanced/WCDMA/HSPA/HSPA+/GPRS/GSM/NB-IoT					
Band	**Frequency (MHz)**	**Uplink (MHz)**	**Downlink (MHz)**	**Straight**	**Bent**
28	700	703–748	758–803	√	√
31	450	452.5–457.5	462.5–467.5	-	-
34	2100	2010–2025		√	√
38	2600	2570–2620		√	√
39	1900	1880–1920		√	√
40	2300	2300–2400		√	√
41	2500	2496–2690		√	√
42	3500	3400–3600		-	-
48	3500	3550–3700		-	-
66	1700	1710–1780	2110–2200	√	√
71	600	663– 698	617–652	-	-
74	1500	1427–1470	1475–1518	-	-
77	3500	3300–4200		-	-
78	3500	3300–3800		-	-
79	4500	4400–5000		-	-
Note: Covered √ means efficiency > 20 %					

1.3. Mechanical & Environmental

Mechanical	
Antenna Dimensions	135 mm × 15.6 mm × 13 mm
Material & Color	PC + ABS & 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	IP67 (After Installation)
RoHS and REACH Compliant	Yes

2 Drawing



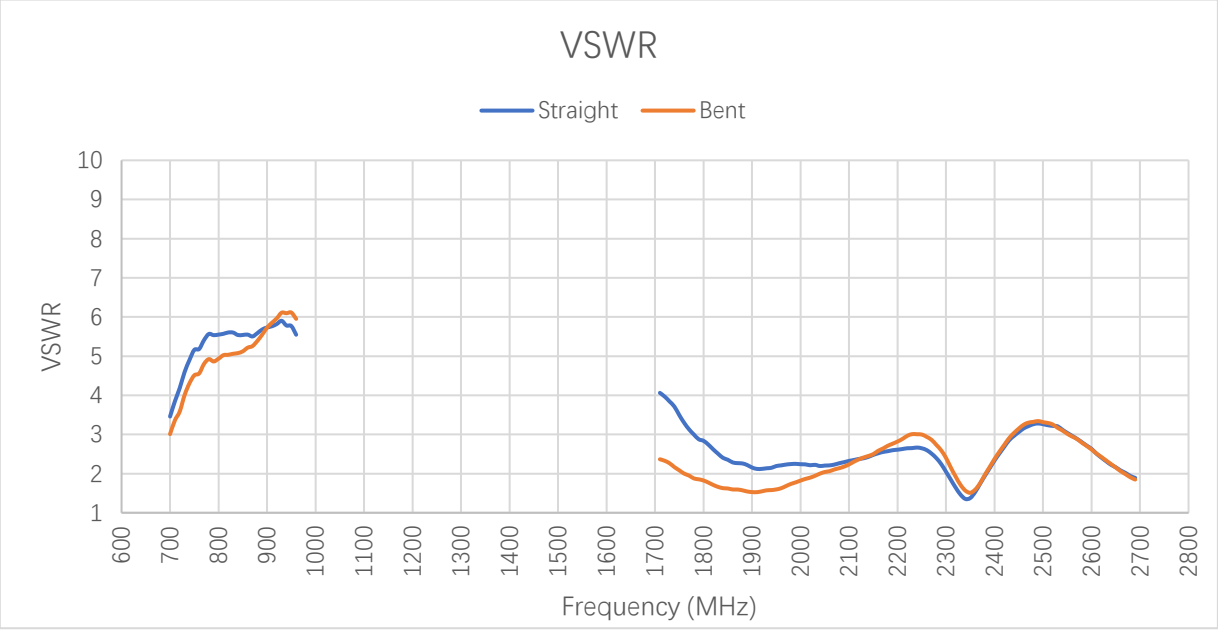
UNIT:mm

Note: If you use a torque wrench, the recommended force for mounting the antenna is 0.9Nm and the maximum torque to prevent antenna damage is 1.17Nm.

3 Detailed Performance

3.1. S-Parameter Test

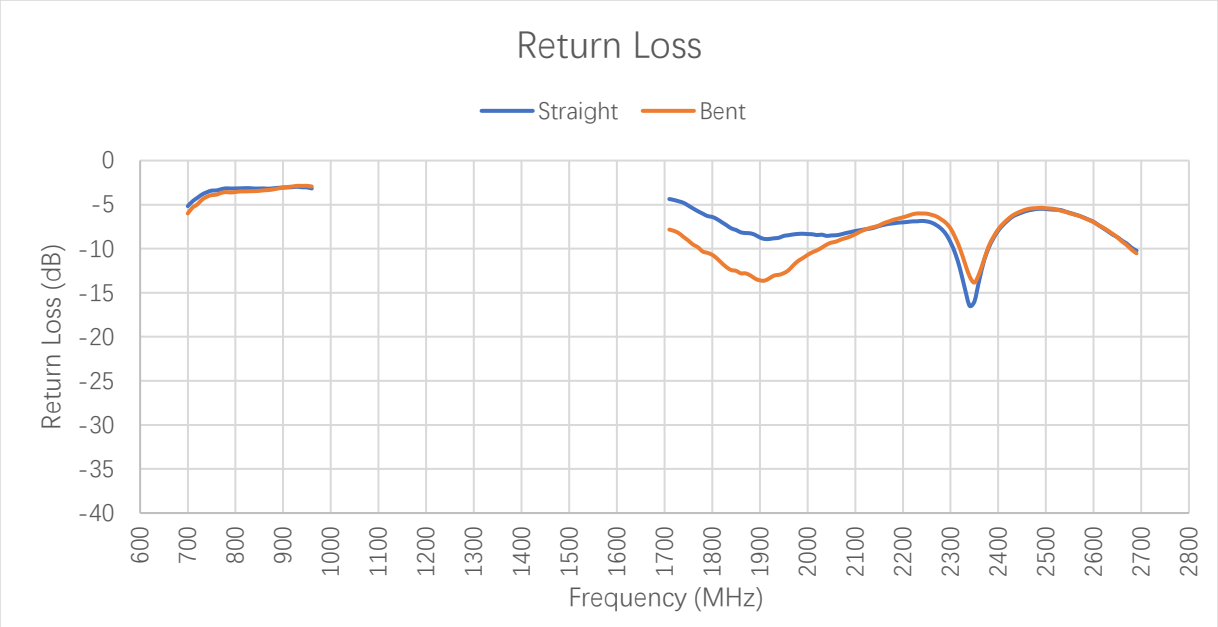
3.1.1. VSWR



VSWR

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Straight	-	-	3.8	5.6	5.7	5.5	-	4.1	3.7	2.3
Bent	-	-	3.4	5.1	5.7	6.0	-	2.4	2.2	1.6
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Straight	2.2	2.4	1.4	3.1	2.6	1.9	-	-	-	-
Bent	1.6	2.5	1.5	3.1	2.6	1.8	-	-	-	-

3.1.2. Return Loss

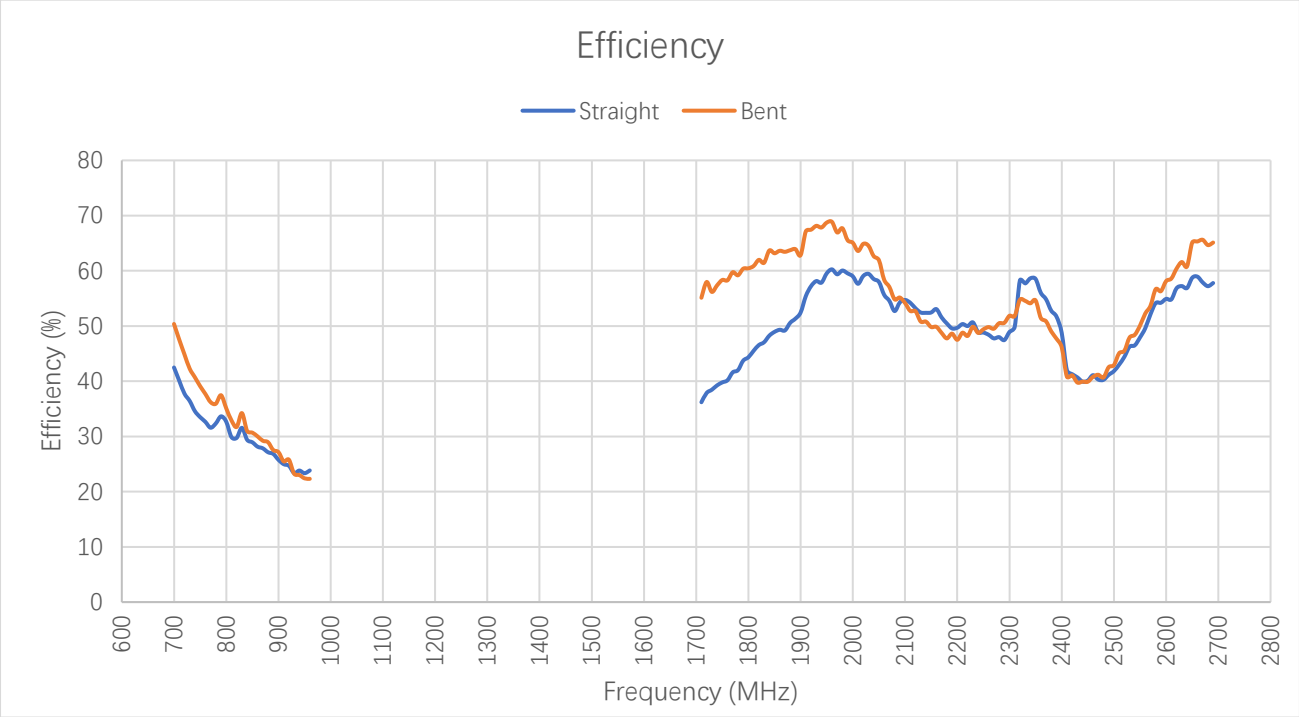


Return Loss (dB)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Straight	-	-	-4.6	-3.1	-3.1	-3.2	-	-4.4	-4.8	-8.3
Bent	-	-	-5.3	-3.5	-3.1	-2.9	-	-7.8	-8.7	-13.0
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Straight	-8.6	-7.6	-16.0	-5.9	-7.0	-10.2	-	-	-	-
Bent	-12.8	-7.5	-13.8	-5.7	-7.0	-10.5	-	-	-	-

3.2. Radiation Performance Test

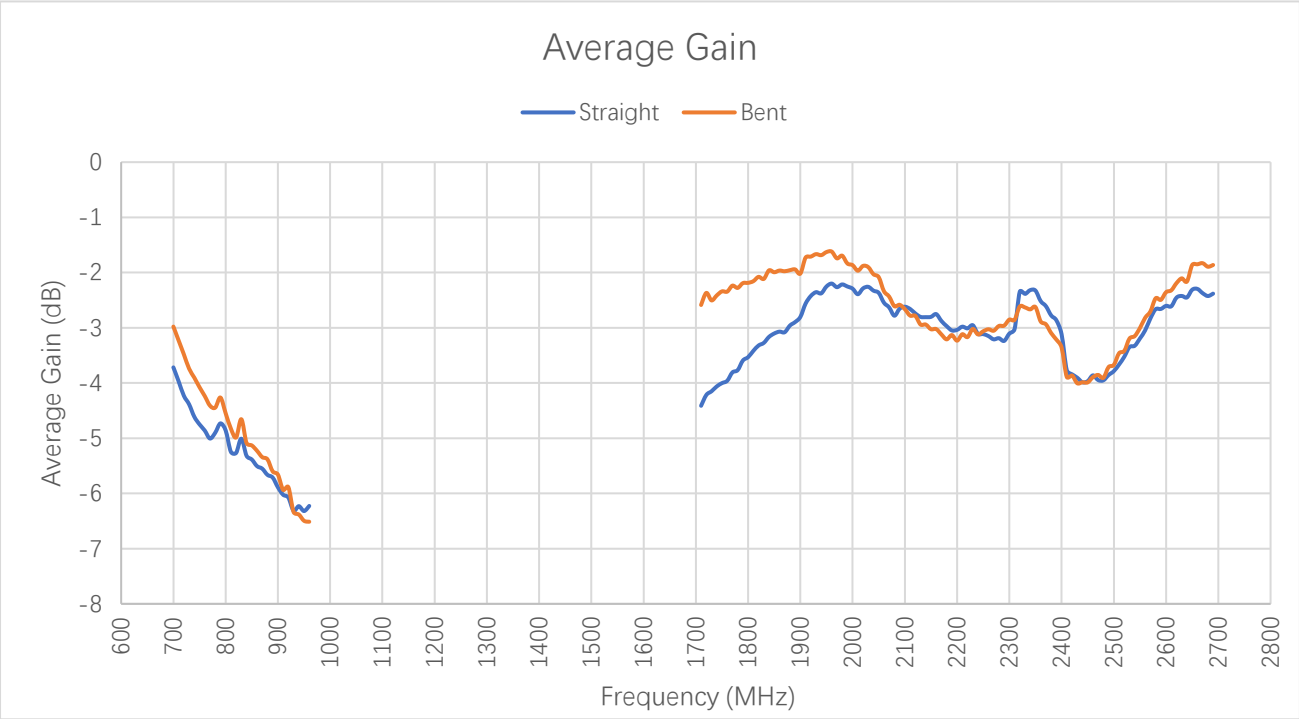
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Straight	-	-	40.1	31.6	25.8	23.8	-	36.2	39.3	50.6
Bent	-	-	47.5	34.2	27.2	22.3	-	55.1	57.4	63.7
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Straight	59.5	52.4	58.5	40.1	54.9	57.8	-	-	-	-
Bent	68.7	50.8	54.6	39.9	58.1	65.1	-	-	-	-

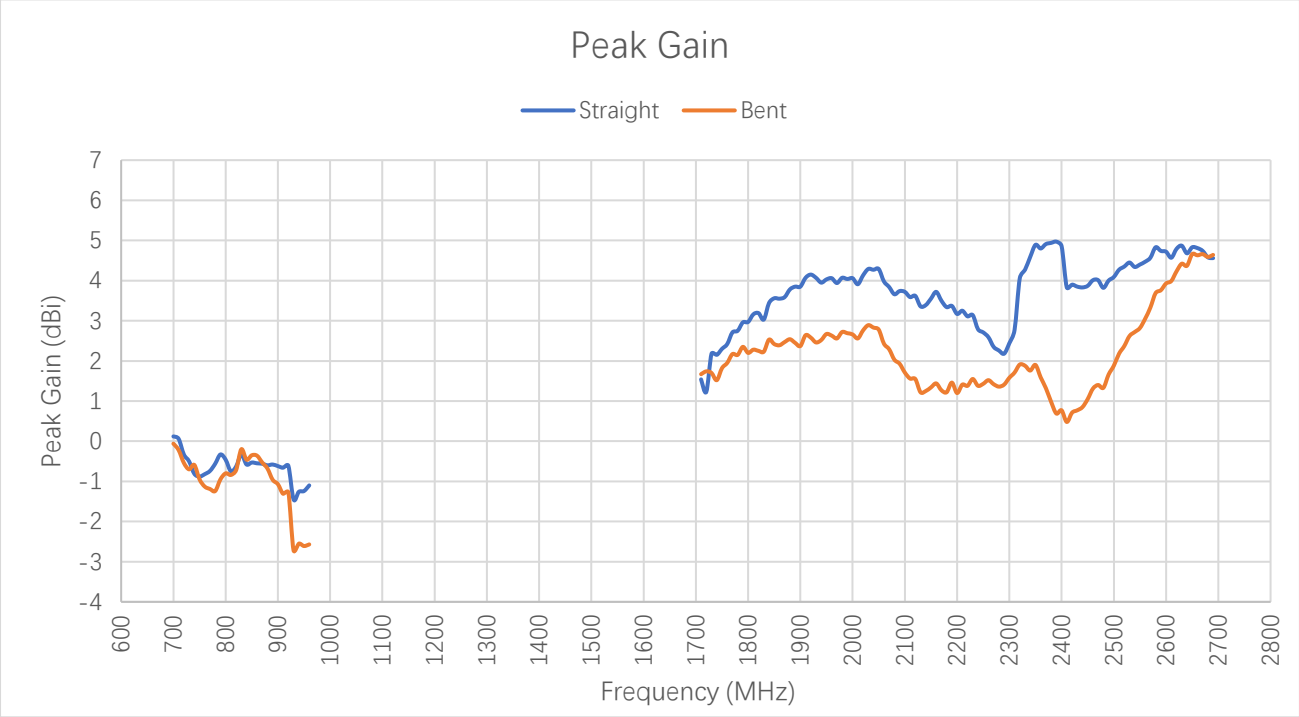
3.2.2. Average Gain



Average Gain (dB)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Straight	-	-	-4.0	-5.0	-5.9	-6.2	-	-4.4	-4.1	-3.0
Bent	-	-	-3.2	-4.7	-5.7	-6.5	-	-2.6	-2.4	-2.0
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Straight	-2.3	-2.8	-2.3	-4.0	-2.6	-2.4	-	-	-	-
Bent	-1.6	-2.9	-2.6	-4.0	-2.4	-1.9	-	-	-	-

3.2.3. Peak Gain



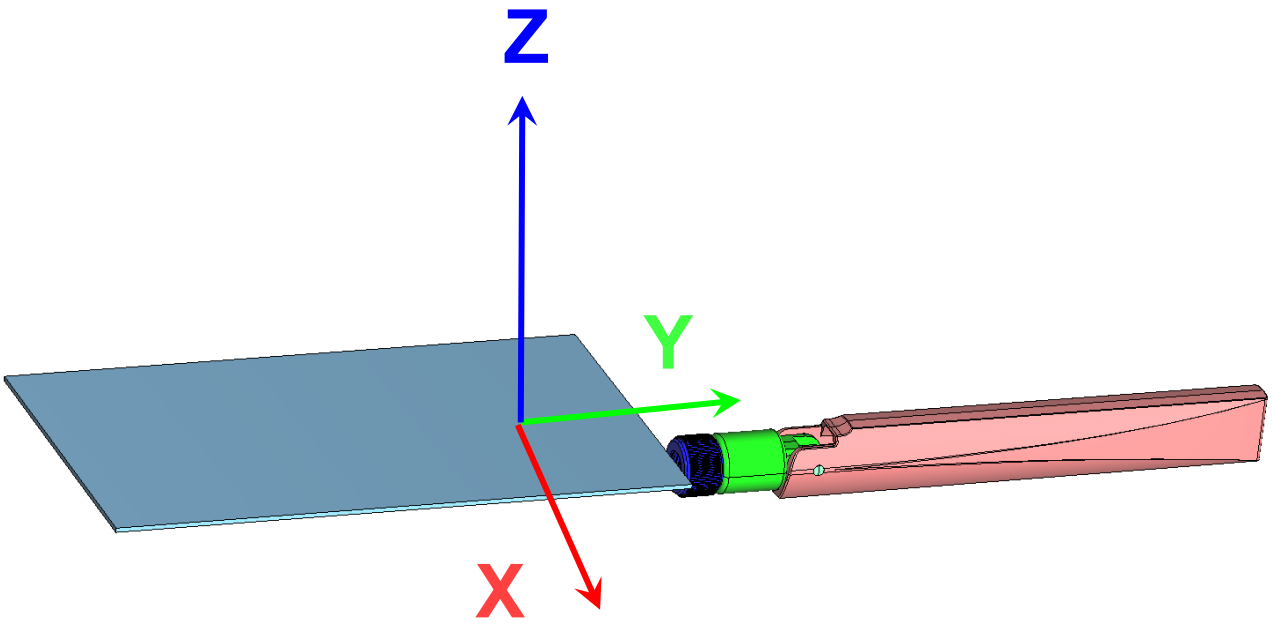
Peak Gain (dBi)

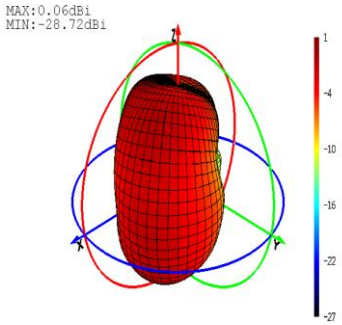
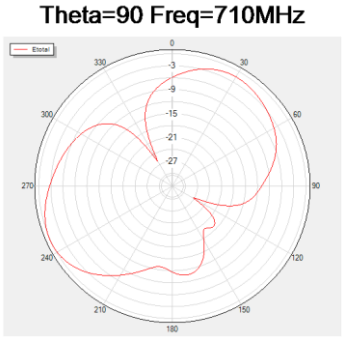
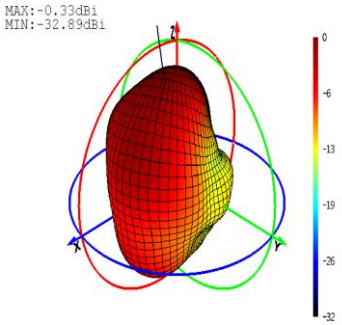
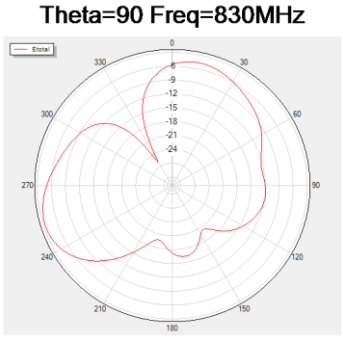
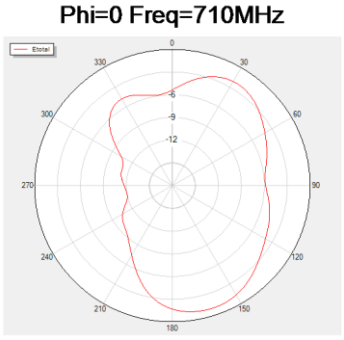
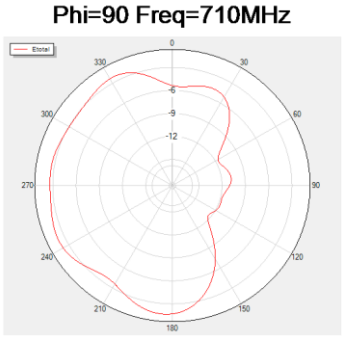
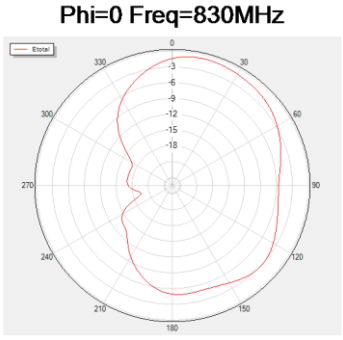
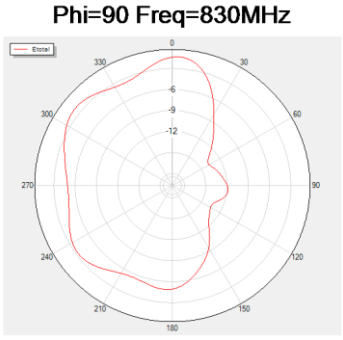
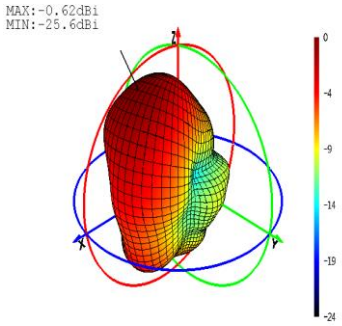
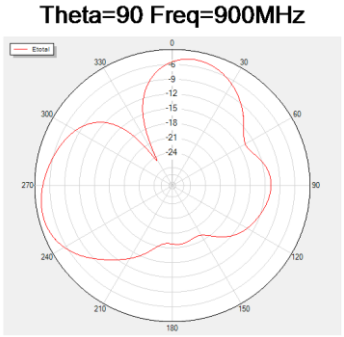
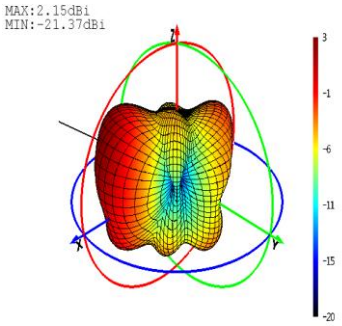
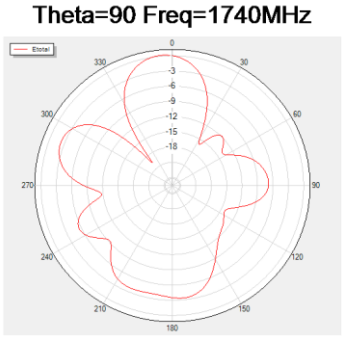
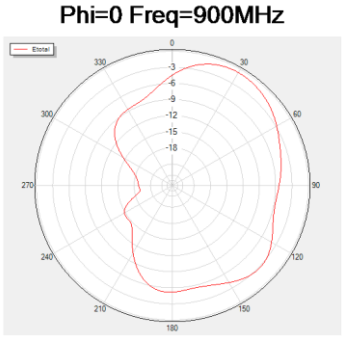
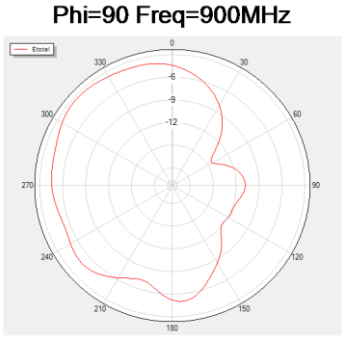
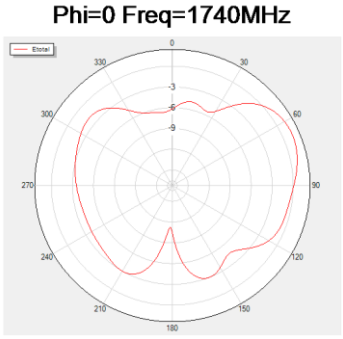
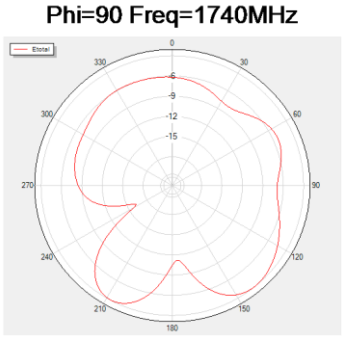
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Straight	-	-	0.1	-0.3	-0.6	-1.1	-	1.5	2.2	3.8
Bent	-	-	-0.2	-0.2	-1.1	-2.6	-	1.7	1.5	2.5
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Straight	4.0	3.4	4.9	3.9	4.7	4.6	-	-	-	-
Bent	2.7	1.3	1.9	1.1	3.9	4.6	-	-	-	-

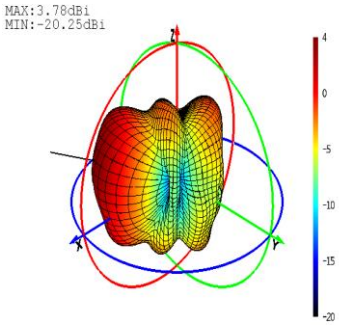
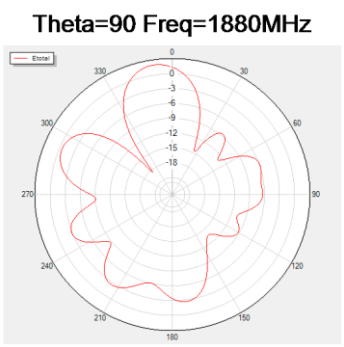
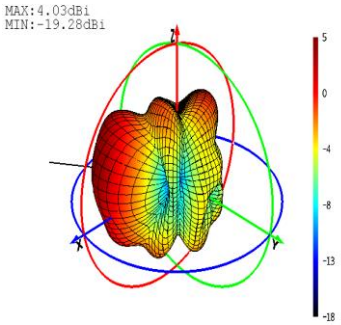
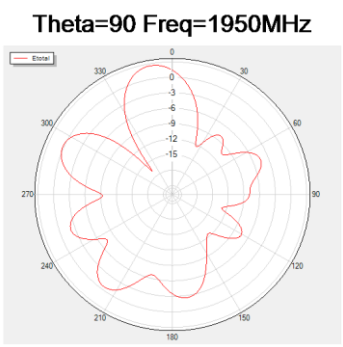
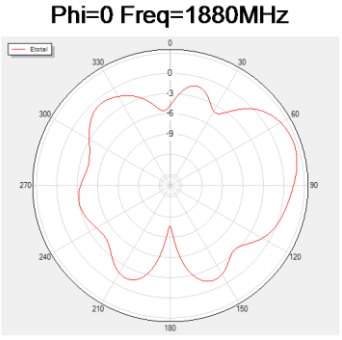
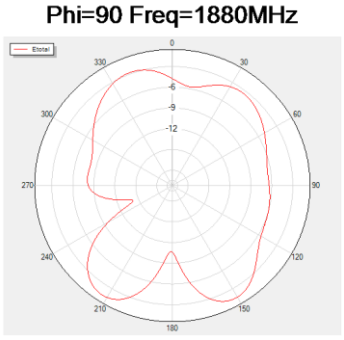
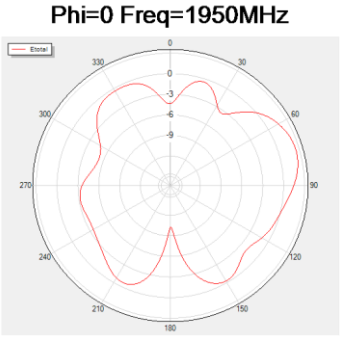
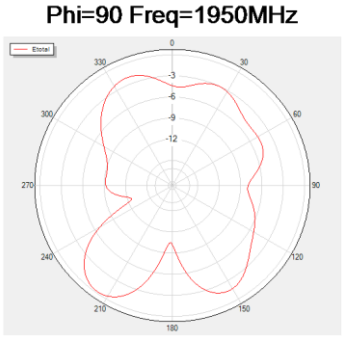
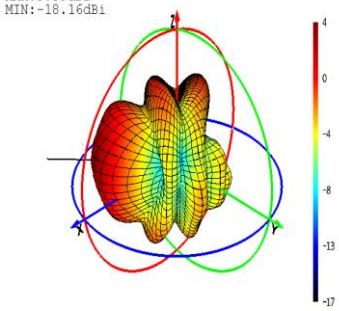
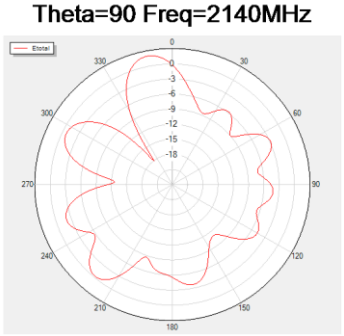
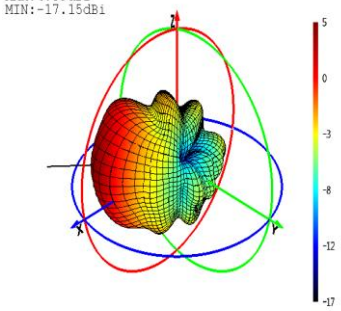
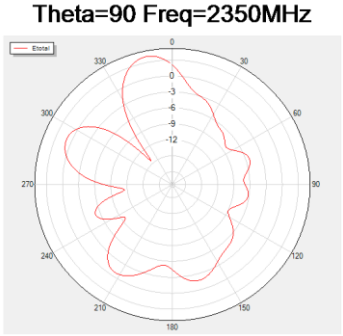
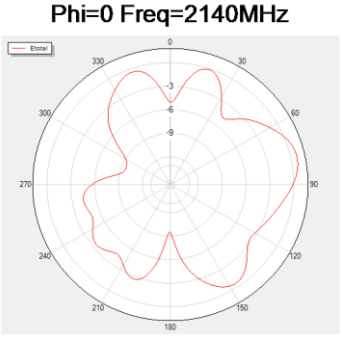
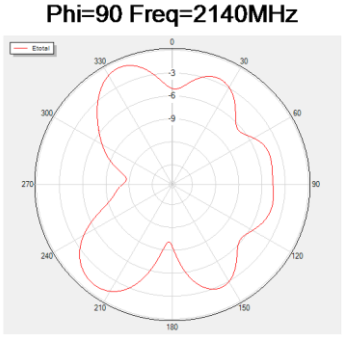
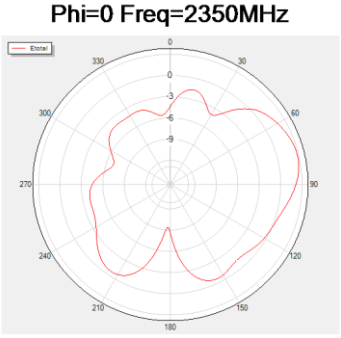
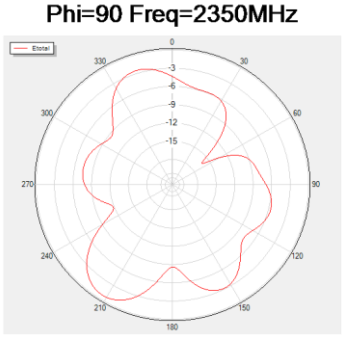
3.2.4. 3D & 2D Radiation Pattern

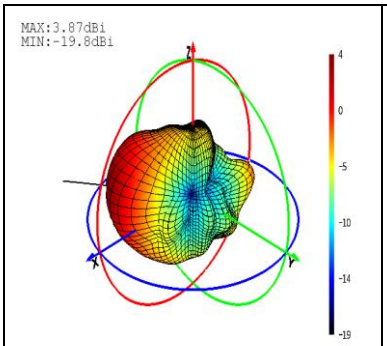
3.2.4.1. Test Condition: On 130 mm × 70 mm EVB and Straight

- Test Chamber: FS-S-1

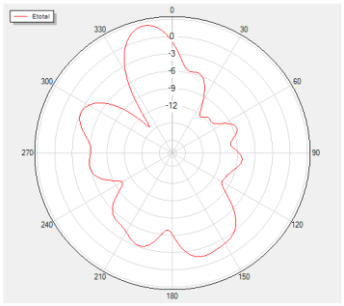


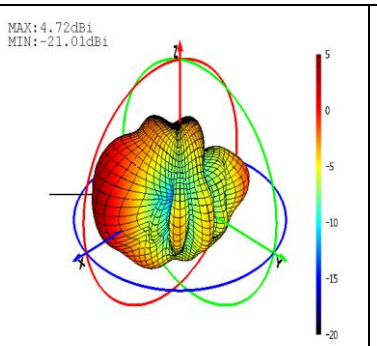
710 MHz		830 MHz	
			
			
900 MHz		1740 MHz	
			
			

1880 MHz		1950 MHz	
			
			
2140 MHz		2350 MHz	
			
			
2450 MHz		2600 MHz	

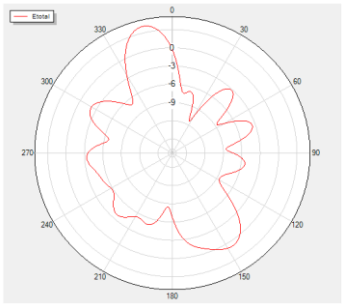


Theta=90 Freq=2450MHz

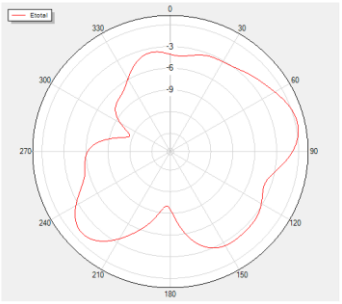




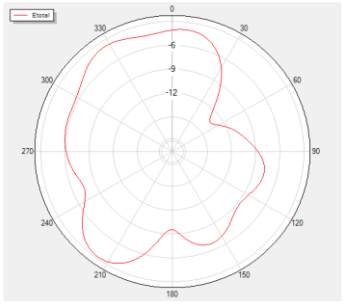
Theta=90 Freq=2600MHz



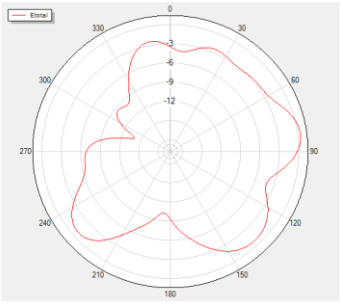
Phi=0 Freq=2450MHz



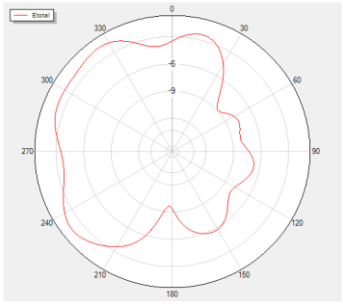
Phi=90 Freq=2450MHz



Phi=0 Freq=2600MHz

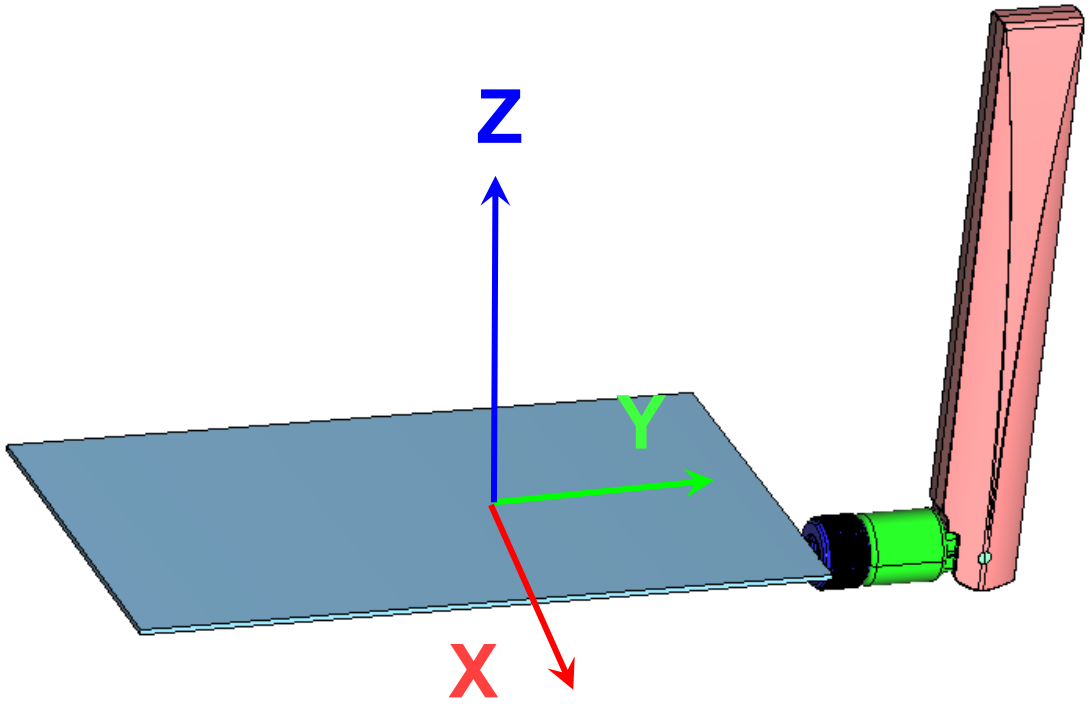


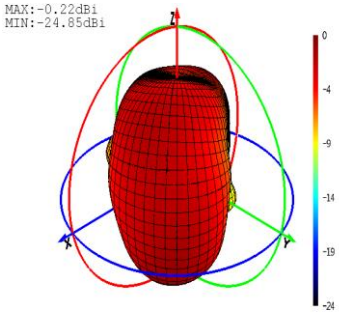
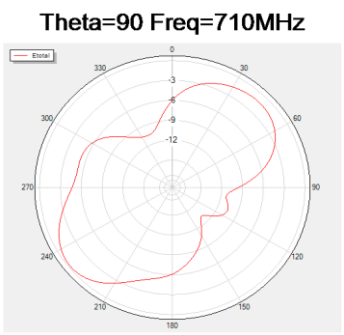
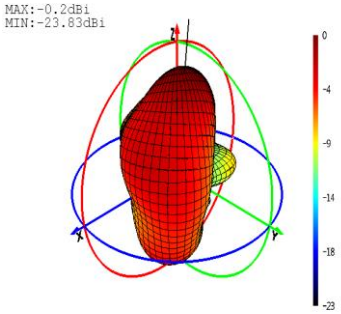
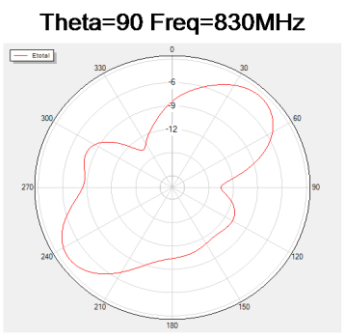
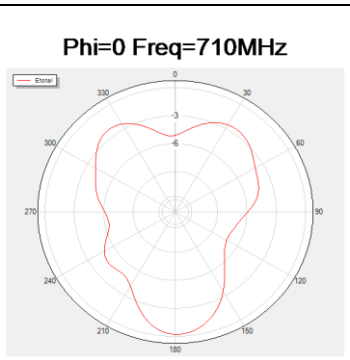
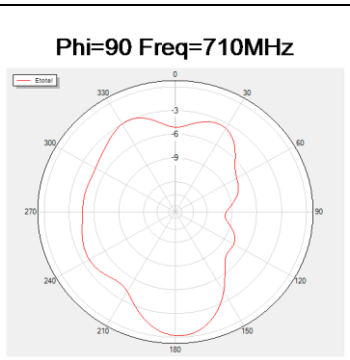
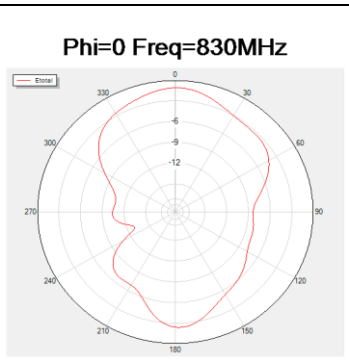
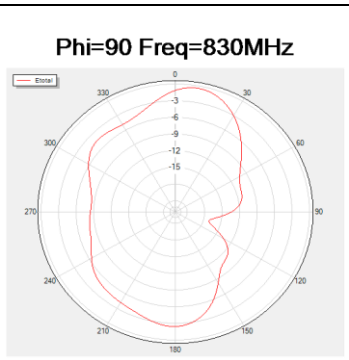
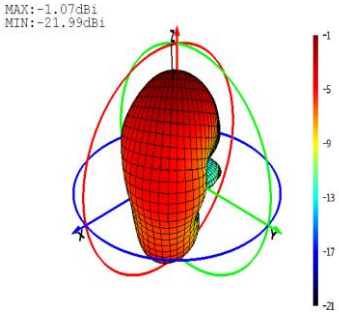
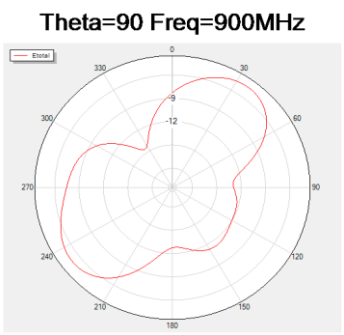
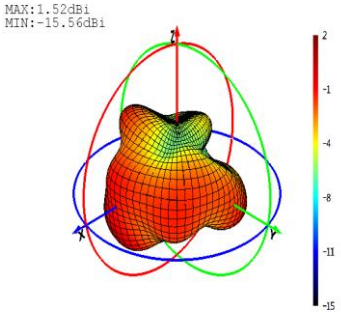
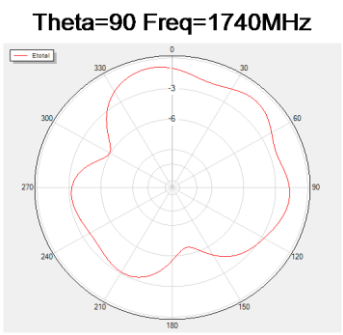
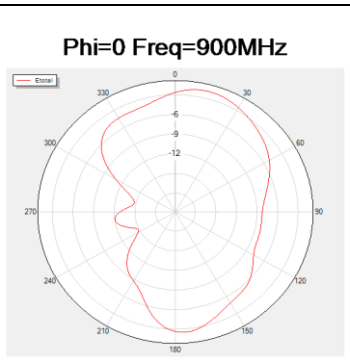
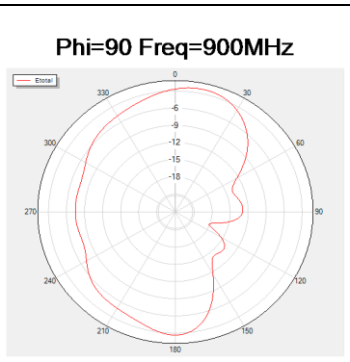
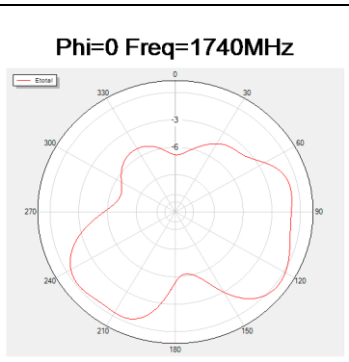
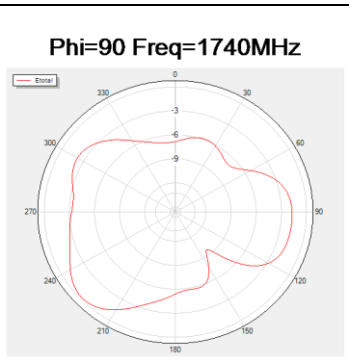
Phi=90 Freq=2600MHz

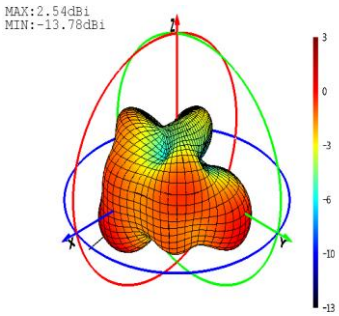
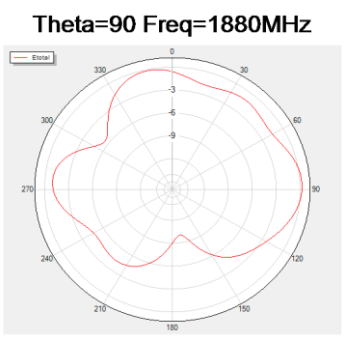
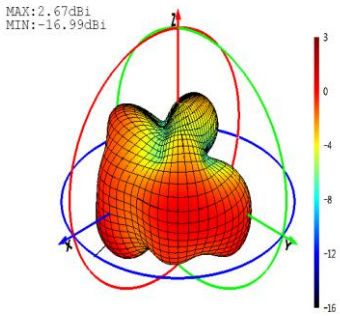
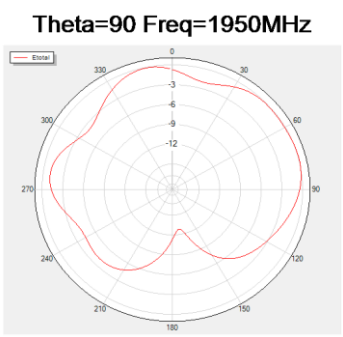
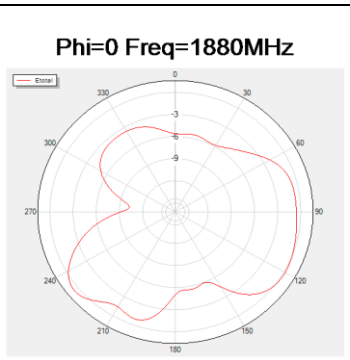
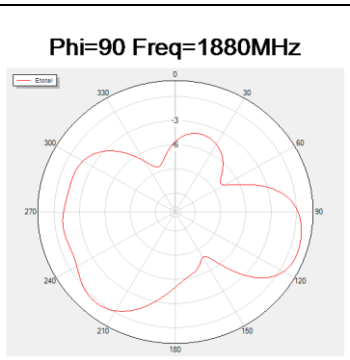
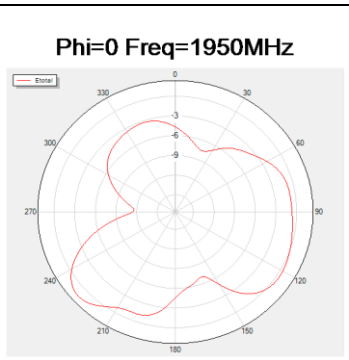
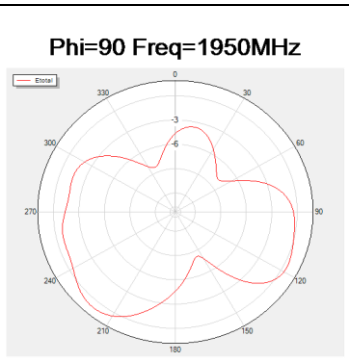
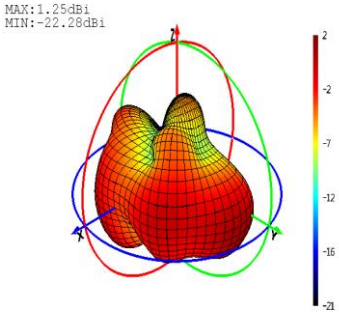
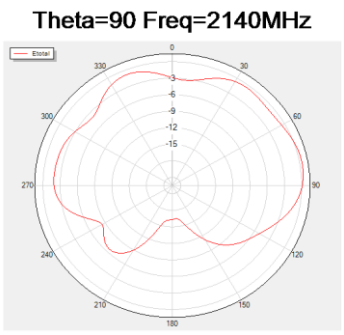
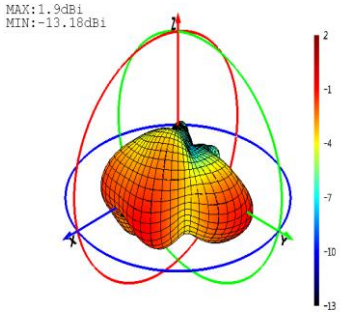
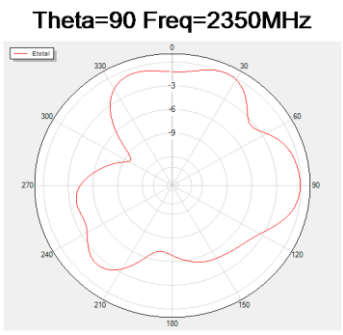
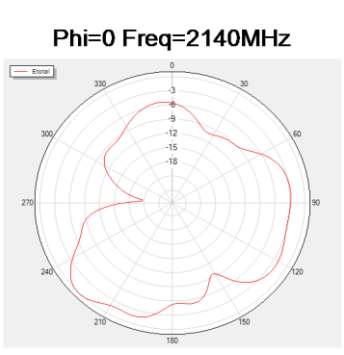
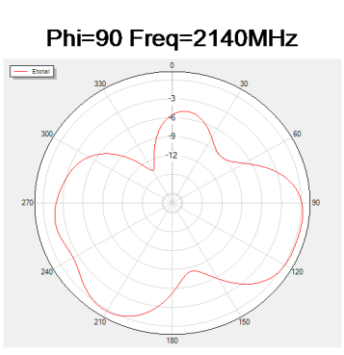
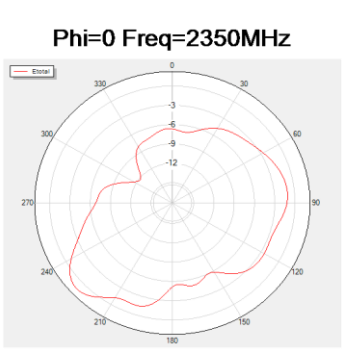
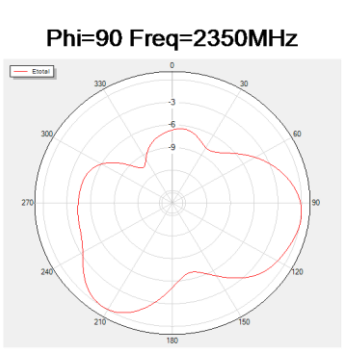


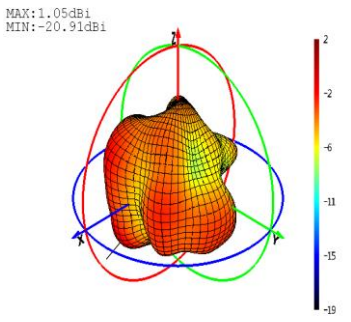
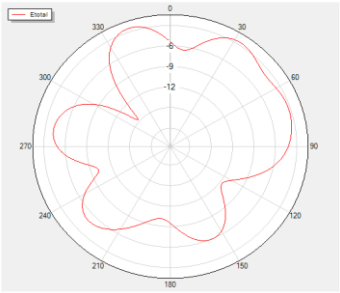
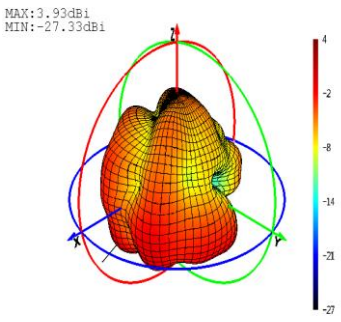
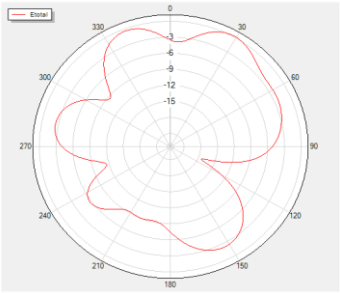
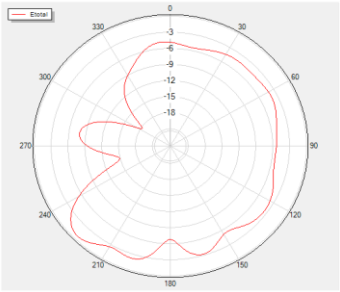
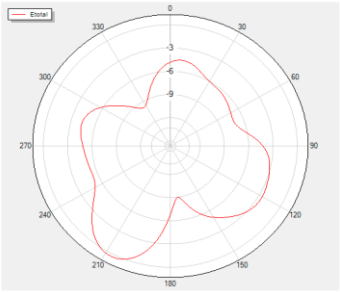
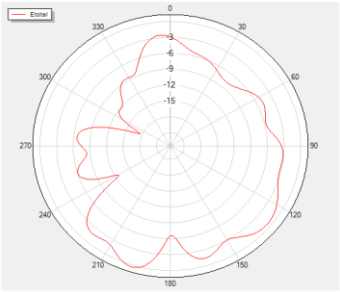
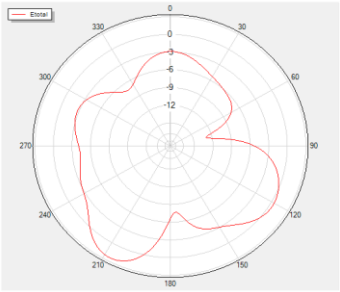
3.2.4.2. Test Condition: On 130 mm × 70 mm EVB and Bent

- Test Chamber: FS-S-1

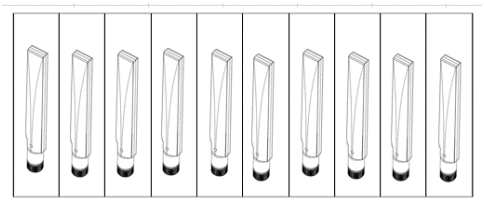
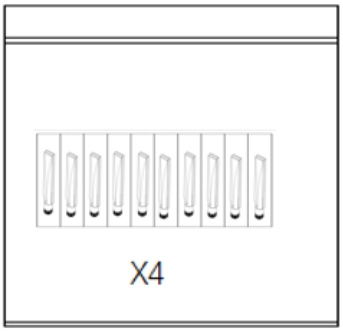
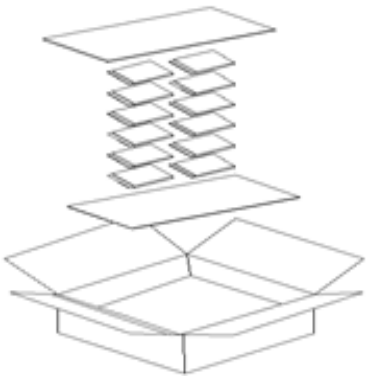
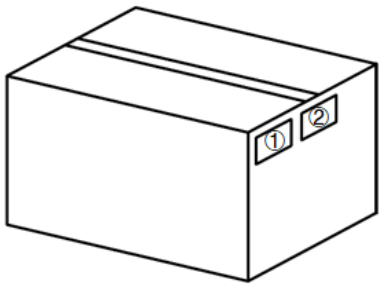


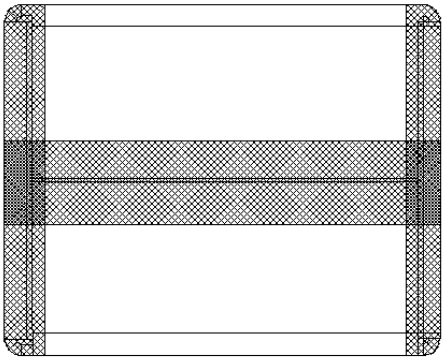
710 MHz		830 MHz	
			
			
900 MHz		1740 MHz	
			
			

1880 MHz		1950 MHz	
			
			
2140 MHz		2350 MHz	
			
			
2450 MHz		2600 MHz	

	Theta=90 Freq=2450MHz 		Theta=90 Freq=2600MHz 
Phi=0 Freq=2450MHz 	Phi=90 Freq=2450MHz 	Phi=0 Freq=2600MHz 	Phi=90 Freq=2600MHz 

4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		10 pcs antenna products in a one-piece bag. (10 PCS Antennas / One-piece Bag)
2		40 pcs antenna products in a PE bag. (40 PCS Antennas / PE Bag)
3		(8 PE Bags / Carton Box) (320 PCS Antennas / Carton Box) Estimated quantity Products that cannot fill the entire carton box are packed in a suitable size carton box. Carton Size: L × W × H = 325 × 325 × 200 mm
4		**Position for Attaching Labels** ① Carton Label ② Quality Label

5		**Sealing Cartons** H-shaped sealing cartons
Note	The initial packaging method described above is for reference only, and the final actual packaging method shall be subject to the actual shipping packaging.	

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

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Revision History

Version	Date	Author	Note
-	2024-08-27	Mordecai LIU/ Lance SUN/ David LIU/ Rainey LIAO	Creation of the document
1.0	2024-08-27	Mordecai LIU/ Lance SUN/ David LIU/ Rainey LIAO	First official release
1.1	2024-11-07	Lance SUN	Updated the drawing (Chapter 2).

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