Antenna Datasheet

Product OC: YECT005WFA
Version: 1.3
Date: 2025-11-07
Status: Released

Product Name: 5G Terminal Mount Whip Dipole External Antenna
Key Features:
Frequency Band: 600–6000 MHz
Dimensions: 135 mm × 15.6 mm × 13 mm
Efficiency: Up to 70.7 % (EVB)
RoHS Compliant
Compatible with FAKRA, TNC and N connector

Overview

YECT005WFA is a 5G external antenna measuring 135 mm × 15.6 mm × 13 mm. This ultra-wide-band 5G antenna provides broad coverage from 600–6000 MHz whilst offering backward-compatibility to support 4G/3G and 2G networks as well as LTE Cat-M and narrowband IoT (NB-IoT). The antenna is terminated with RP 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 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 RP 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	600–6000 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	3.6	3.5	3.5	2.8	2.7	1.3	1.9	2.1	2.5	3.0	2.5
	Bent	4.5	3.2	3.3	2.6	2.1	1.5	2.2	2.3	2.4	2.7	2.4
Max. Return Loss (dB)	Straight	-4.9	-5.1	-5.1	-6.5	-6.8	-17.1	-10.2	-9.0	-7.3	-6.1	-7.4
	Bent	-3.9	-5.7	-5.4	-7.0	-9.1	-13.5	-8.5	-8.1	-7.7	-6.9	-7.6
AVG Eff. (%)	Straight	46.0	48.0	42.3	61.0	59.2	62.7	55.1	61.5	47.4	36.8	29.1
	Bent	55.5	59.9	50.4	57.5	62.9	63.9	56.9	59.1	56.4	39.4	20.2
AVG AVG Gain (dB)	Straight	-3.4	-3.2	-3.7	-2.1	-2.3	-2.0	-2.6	-2.1	-3.2	-4.3	-5.4
	Bent	-2.6	-2.2	-3.0	-2.4	-2.0	-1.9	-2.4	-2.3	-2.5	-4.0	-7.0
Max. Peak Gain (dBi)	Straight	1.4	1.7	1.5	2.5	4.6	4.1	3.8	3.6	4.5	3.3	3.3
	Bent	2.2	1.9	1.5	1.6	2.9	3.1	2.7	3.6	3.9	2.5	0.4

VSWR	Straight	≤ 3.6
	Bent	≤ 4.5
Return Loss	Straight	≤ -4.9 dB
	Bent	≤ -3.9 dB
Peak Gain	Straight	≤ 4.6 dBi
	Bent	≤ 3.9 dBi

Electrical – NTN Bands						
SPEC \ Band		L Band	L Band	L Band	B256/B23	B256/B23
		1518–1559	1620–1665	1668–1675	1980–2020	2170–2200
Max. VSWR	Straight	1.4	2.6	2.7	1.5	1.5
	Bent	1.9	1.6	1.6	2.0	1.6
Max. Return Loss (dB)	Straight	-16.2	-7.0	-6.6	-13.3	-14.5
	Bent	-10.4	-12.8	-12.3	-9.6	-12.6
AVG Eff. (%)	Straight	67.0	54.0	51.5	56.6	65.9
	Bent	63.4	63.2	63.6	57.2	67.0
AVG AVG Gain (dB)	Straight	-1.7	-2.7	-2.9	-2.5	-1.8
	Bent	-2.0	-2.0	-2.0	-2.4	-1.7
Max. Peak Gain (dBi)	Straight	2.7	2.3	1.7	4.4	4.1
	Bent	1.7	1.9	1.7	2.4	2.9
VSWR	Straight	≤ 2.7				
	Bent	≤ 2.0				
Return Loss	Straight	≤ -6.6 dB				
	Bent	≤ -9.6 dB				
Peak Gain	Straight	≤ 4.4 dBi				
	Bent	≤ 2.9 dBi				

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

1.2. Supported Bands

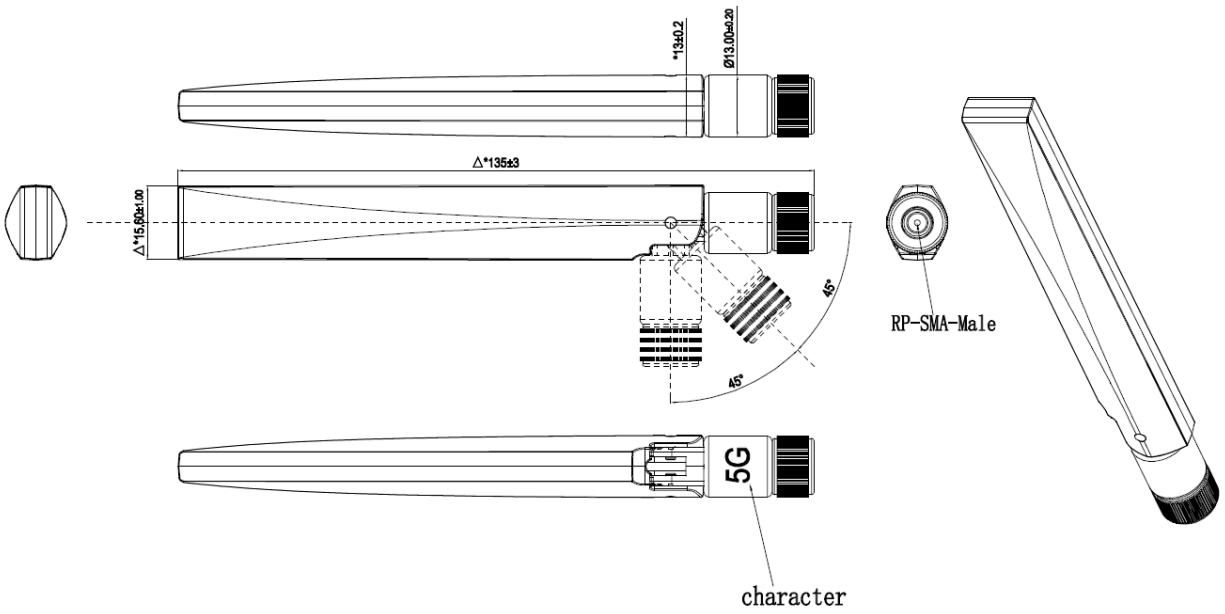
5G NR / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / GPRS / GSM / NB-IoT					
Band	**Frequency (MHz)**	**Uplink (MHz)**	**Downlink (MHz)**	**Straight**	**Bent**
1	2100	1920–1980	2110–2170	√	√
2	1900	1850–1910	1930–1990	√	√
3	1800	1710–1785	1805–1880	√	√
4	1700	1710–1755	2110–2155	√	√
5	850	824–849	869–894	√	√
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		√	√

1.3. Mechanical & Environmental

Mechanical	
Antenna Dimensions	135 mm × 15.6 mm × 13 mm
Material & Color	PC + ABS & Black
Connector Type	RP SMA Male
Mounting Type	Terminal
Weight	Typ. 16 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS Compliant	Yes

2 Drawing



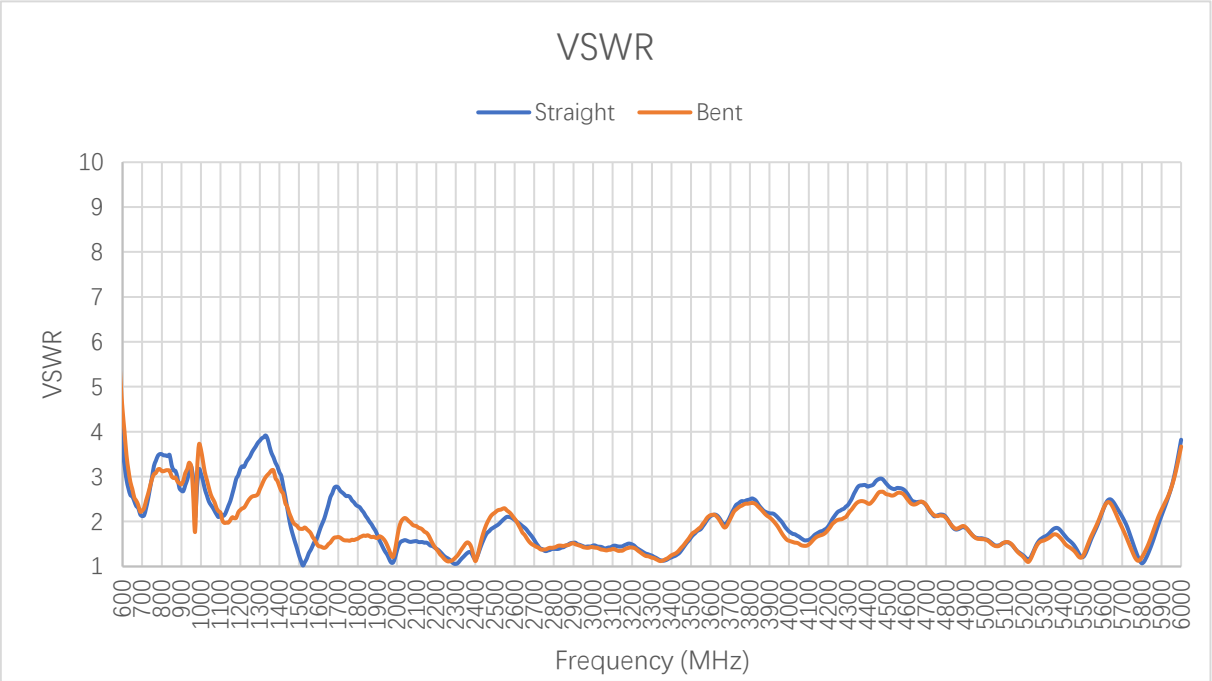
UNIT:mm

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



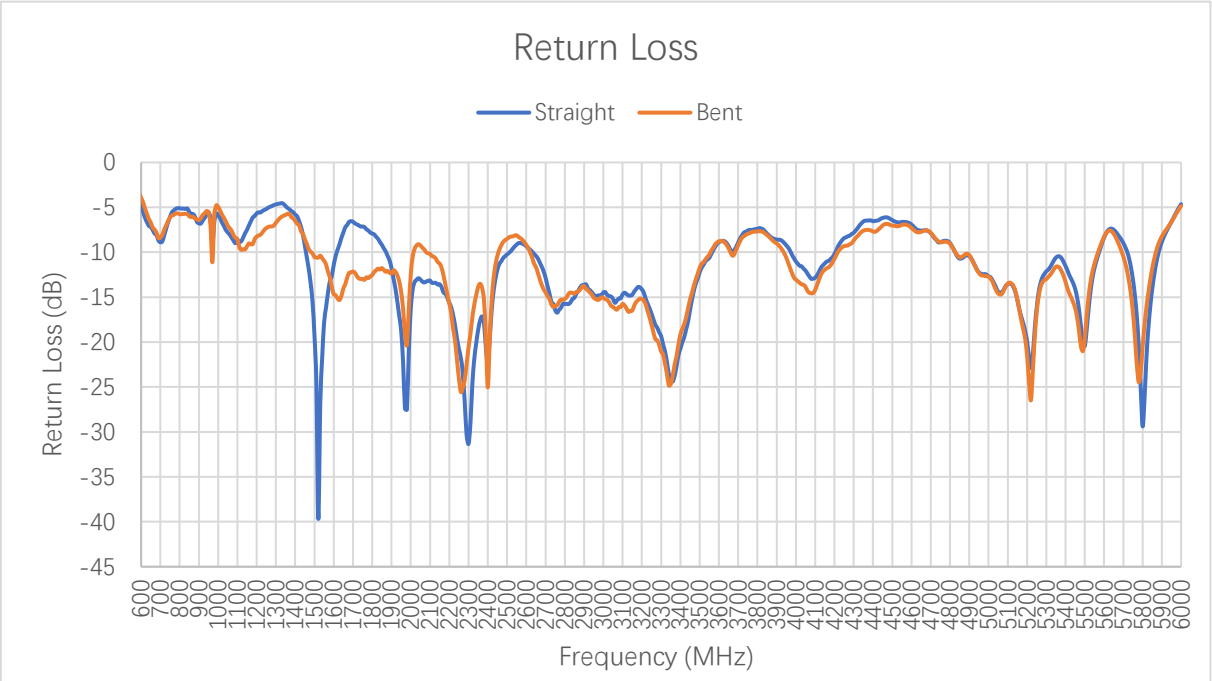
VSWR

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Straight	3.6	2.7	2.1	3.5	2.7	3.0	2.3	2.7	2.6	1.9
Bent	4.5	3.1	2.3	3.1	2.8	2.6	2.3	1.6	1.6	1.7
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Straight	1.3	1.5	1.3	1.7	2.0	2.1	2.4	1.6	1.2	3.8
Bent	1.5	1.8	1.5	1.9	2.1	2.1	2.4	1.6	1.2	3.7

VSWR – NTN Bands

Frequency (MHz)	1520	1560	1630	1680	2000	2200
Straight	1.0	1.4	2.1	2.7	1.4	1.4
Bent	1.8	1.7	1.4	1.6	1.6	1.4

3.1.2. Return Loss



Return Loss (dB)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Straight	-4.9	-6.7	-8.8	-5.2	-6.8	-6.1	-8.1	-6.8	-7.1	-10.4
Bent	-3.9	-5.7	-8.1	-5.7	-6.4	-7.0	-8.0	-12.3	-13.0	-12.1
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Straight	-18.7	-13.6	-18.6	-11.9	-9.3	-8.9	-7.9	-12.7	-20.4	-4.7
Bent	-14.4	-11.1	-13.9	-10.4	-9.2	-8.8	-7.8	-12.7	-19.5	-4.9

Return Loss (dB) – NTN Bands

Frequency (MHz)	1520	1560	1630	1680	2000	2200
Straight	-39.7	-16.2	-9.1	-6.6	-16.3	-15.6
Bent	-10.6	-11.4	-15.3	-12.3	-12.5	-15.7

3.2. OTA Test Data

- Based on module: BG95-S5
- Test Condition: Free Space

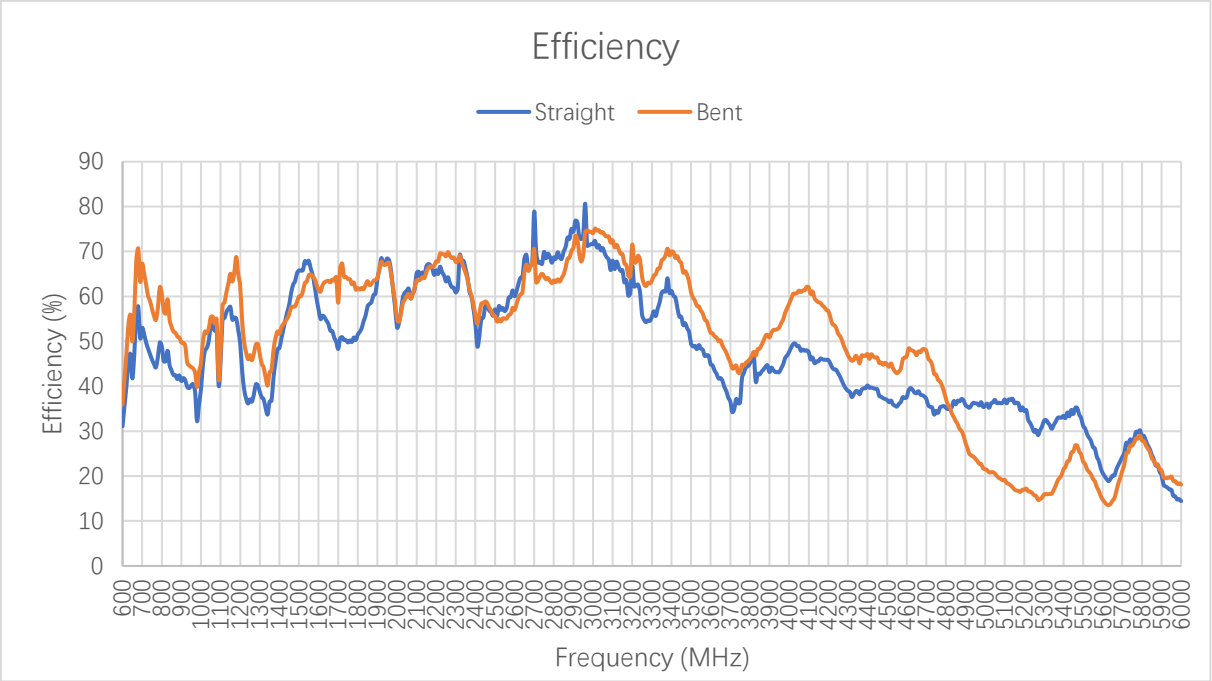
Band		Channel	TRP (dBm)	Channel	TIS (dBm)
LTE	B1 (10M)	18050	21.4		
		18350	20.94		
		18550	20.05	550	-105.49
	B2 (10M)	18650	20.6		
		18900	20.7		
		19150	20.91	1150	-106.12
	B3 (10M)	19250	20.68		
		19575	20.66		
		19900	19.78	1900	-106.72
	B4 (10M)	20000	20.01		
		20175	19.86		
		20350	19.85	2350	-105.64
	B5 (10M)	20450	21.75		
		20525	21.93		
		20600	21.27	2600	-106.03
	B7 (10M)	20800	-		
		21100	-		
		21400	-	3400	-
	B8 (10M)	21500	21.52		
		21625	20.87		
		21750	20.36	3750	-105.91

Band		Channel	TRP (dBm)	Channel	TIS (dBm)
	B12 (5M)	23035	18.49		
		23095	18.54		
		23155	19.03	5155	-104.6
	B13 (10M)	23230	21.83	5230	-103.92
	B18 (10M)	23900	21.78		
		23925	21.98		
		23950	21.32	5950	-106.07
	B19 (10M)	24050	-		
		24075	21.76		
		24100	-	6100	-106.29
	B20 (10M)	24200	21.72		
		24300	21.54		
		24400	21.46	6400	-105.19
	B25 (5M)	26065	20.58		
		26365	20.67		
		26665	21.06	8665	-105.79
	B26 (5M)	26715	21.52		
		26865	21.68		
		27015	21.73	9015	-106.28
	B27 (10M)	27090	21.32		
		27125	21.38		
		27160	21.37	9160	-106.5
	B28 (10M)	27260	17.31		
		27435	18.22		
		27610	18.97	9610	-101.1

Band		Channel	TRP (dBm)	Channel	TIS (dBm)
	B28A (10M)	27260	17.36		
		27360	18.02		
		27460	18.15	9460	-100.21
	B28B (10M)	27410	18.13		
		27510	18.34		
		27610	18.36	9610	-100.32
	B66 (10M)	132022	20.7		
		132322	20.49		
		132622	20.23	67086	-106.79
	B85 (10M)	134052	17.99		
		134092	18.33		
		134132	18.86	70496	-100.77

3.3. Radiation Performance Test

3.3.1. Efficiency



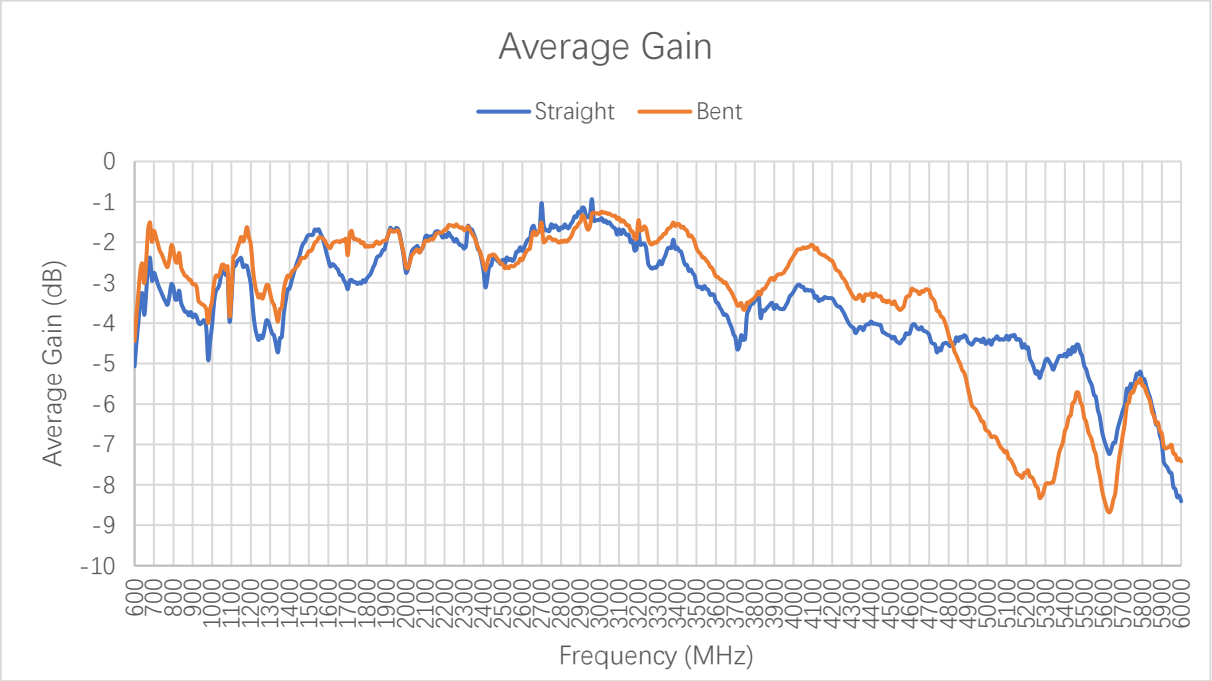
Efficiency (%)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Straight	31.1	45.6	51.6	47.9	41.2	40.4	58.1	50.6	50.3	60.3
Bent	36.0	53.7	65.1	59.4	49.7	44.0	56.0	66.2	64.4	63.5
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Straight	68.5	64.5	66.1	57.8	60.0	44.9	37.2	35.6	31.2	14.4
Bent	67.4	64.1	65.2	58.9	57.0	51.9	47.9	21.5	23.2	18.1

Efficiency (%) – NTN Bands

Frequency (MHz)	1520	1560	1630	1680	2000	2200
Straight	65.9	66.2	55.4	50.8	53.1	65.8
Bent	61.1	64.9	63.1	63.5	54.9	67.8

3.3.2. Average Gain



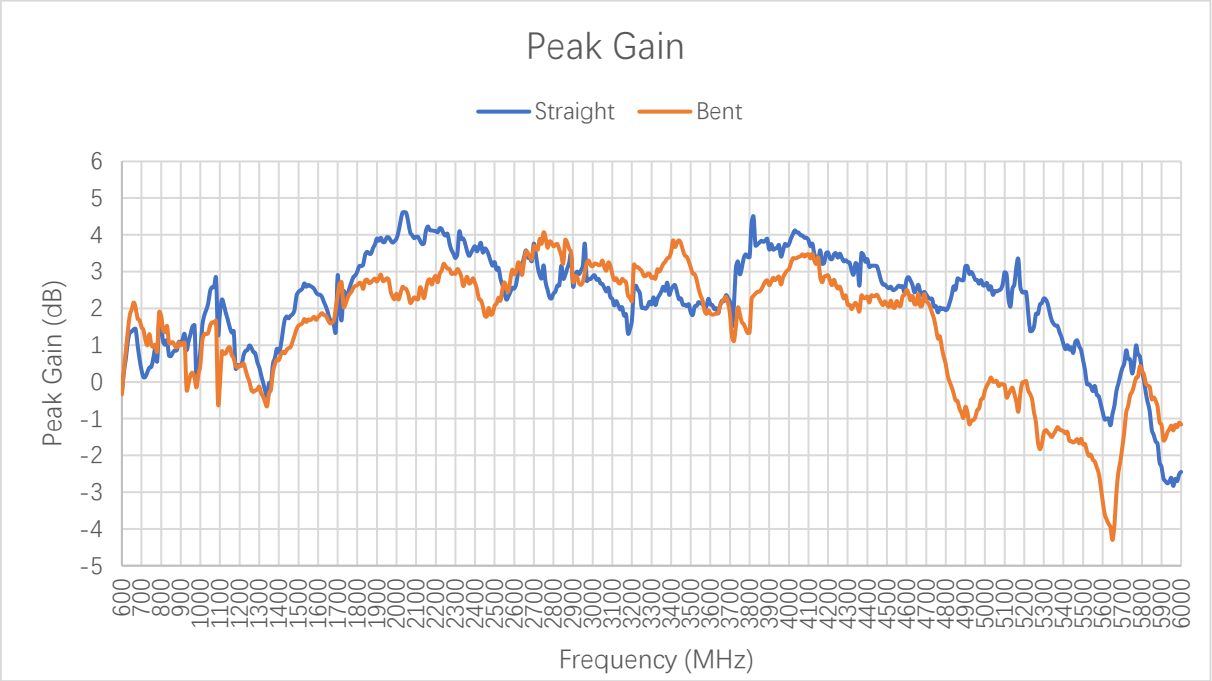
Average Gain (dB)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Straight	-5.1	-3.4	-2.9	-3.2	-3.9	-3.9	-2.4	-3.0	-3.0	-2.2
Bent	-4.4	-2.7	-1.9	-2.3	-3.0	-3.6	-2.5	-1.8	-1.9	-2.0
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Straight	-1.6	-1.9	-1.8	-2.4	-2.2	-3.5	-4.3	-4.5	-5.1	-8.4
Bent	-1.7	-1.9	-1.9	-2.3	-2.4	-2.8	-3.2	-6.7	-6.3	-7.4

Average Gain (dB) – NTN Bands

Frequency (MHz)	1520	1560	1630	1680	2000	2200
Straight	-1.8	-1.8	-2.6	-2.9	-2.7	-1.8
Bent	-2.1	-1.9	-2.0	-2.0	-2.6	-1.7

3.3.3. Peak Gain



Peak Gain (dBi)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Straight	-0.3	1.1	0.1	1.1	1.0	1.5	1.7	2.0	2.3	3.6
Bent	-0.3	1.4	1.4	1.5	1.0	0.3	0.9	2.7	2.1	2.8
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Straight	3.9	3.8	3.8	3.6	2.5	2.1	2.4	2.6	0.6	-2.5
Bent	2.8	2.3	2.7	1.8	2.9	1.9	2.2	-0.2	-1.7	-1.2

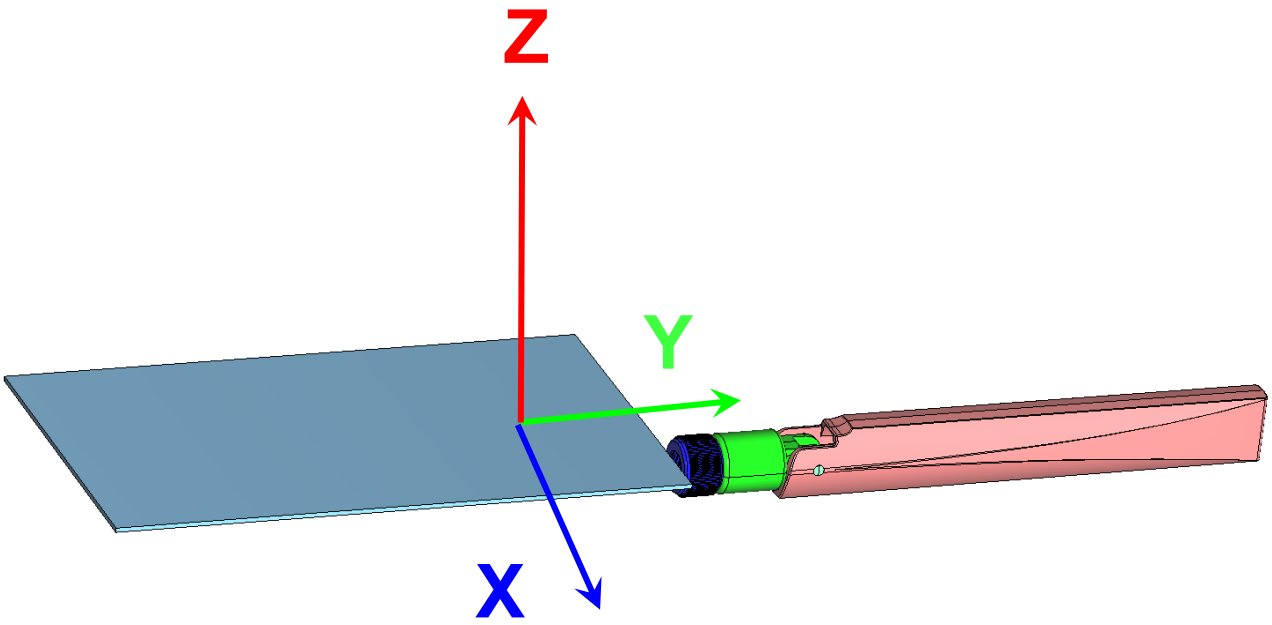
Peak Gain (dBi) – NTN Bands

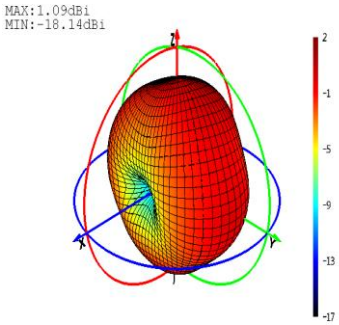
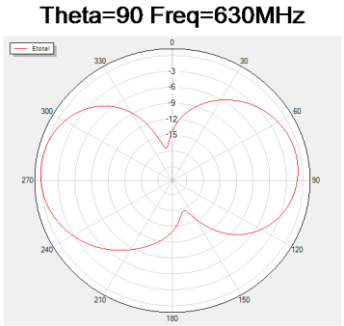
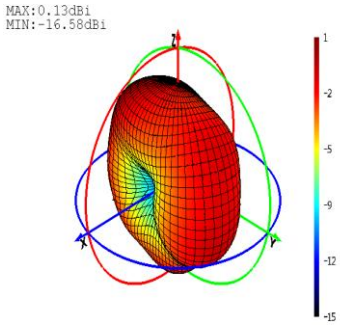
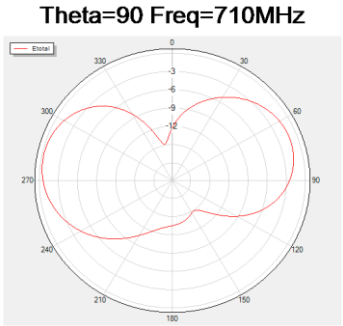
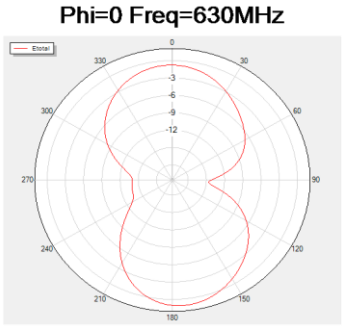
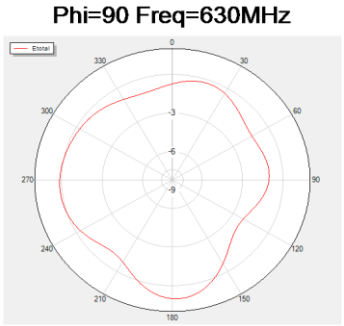
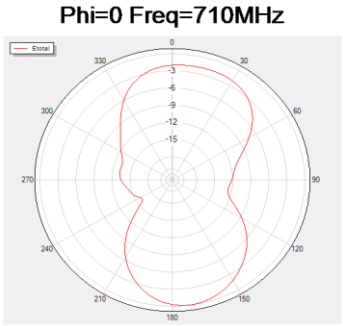
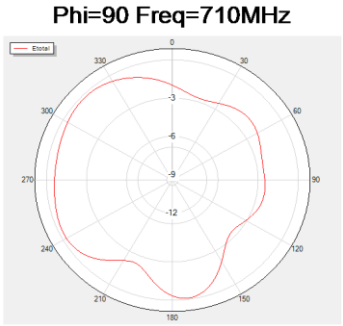
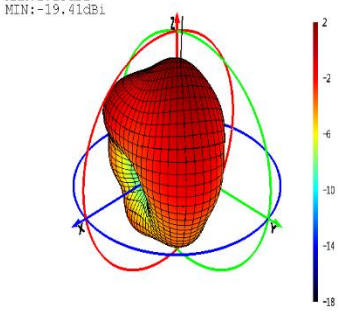
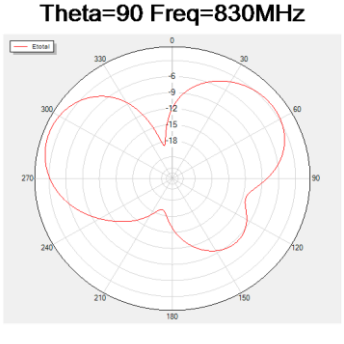
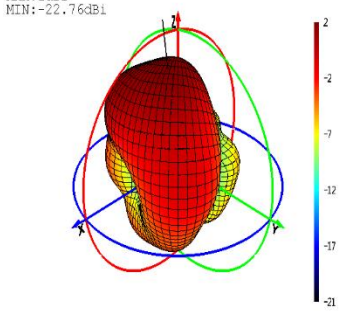
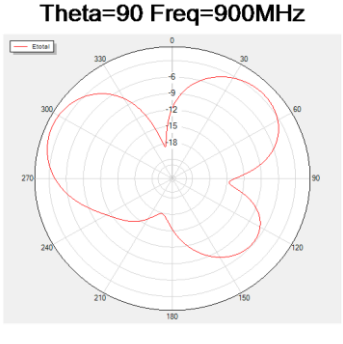
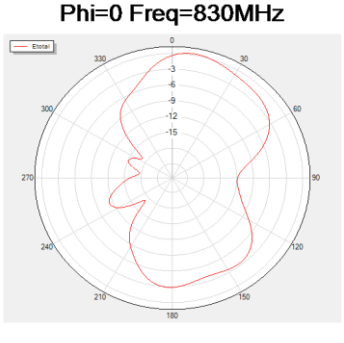
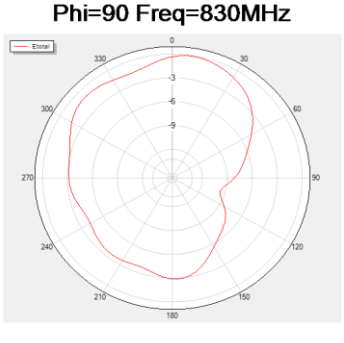
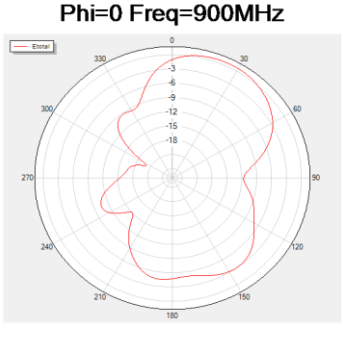
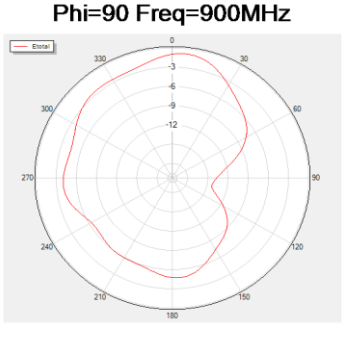
Frequency (MHz)	1520	1560	1630	1680	2000	2200
Straight	2.5	2.6	2.2	1.6	3.9	4.1
Bent	1.6	1.7	1.8	1.7	2.4	2.9

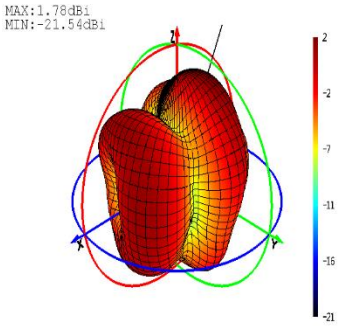
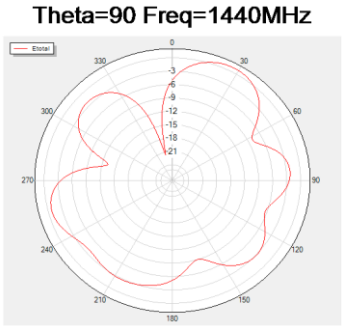
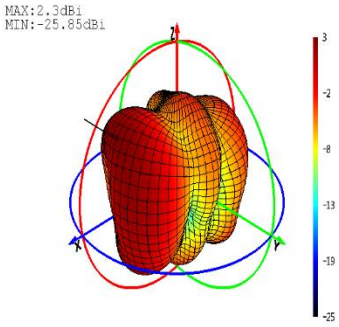
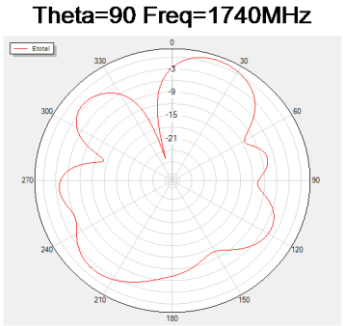
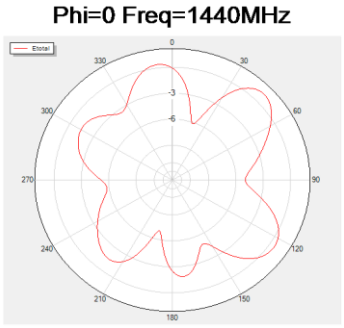
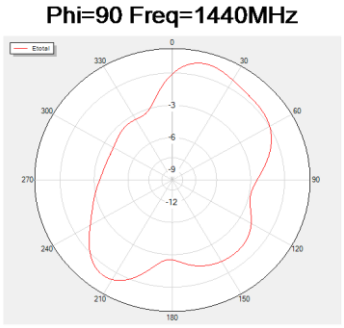
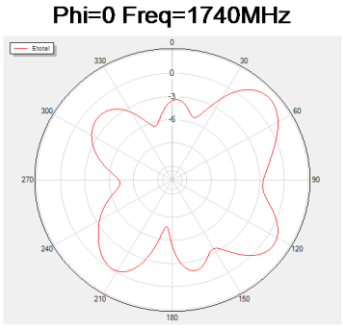
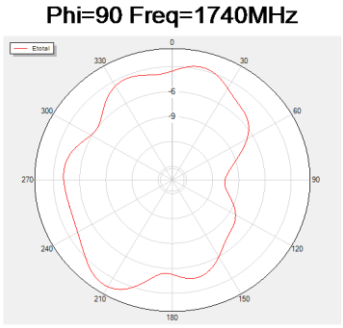
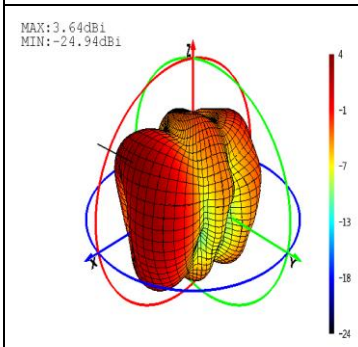
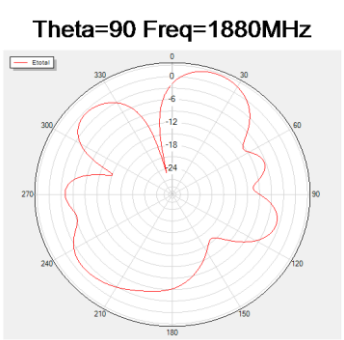
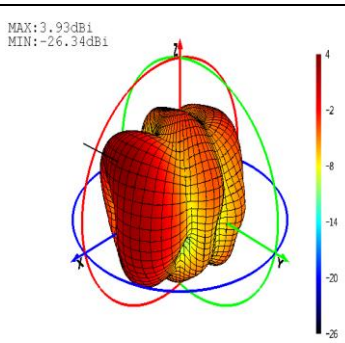
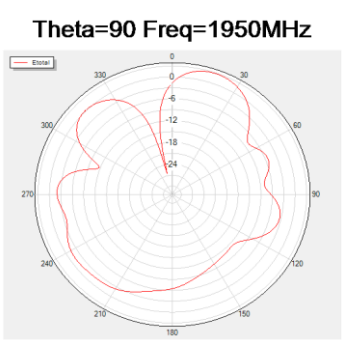
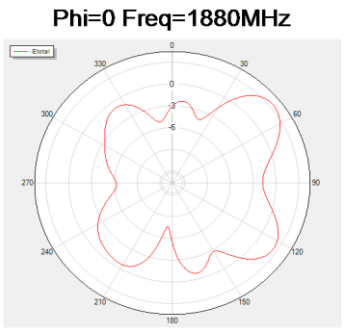
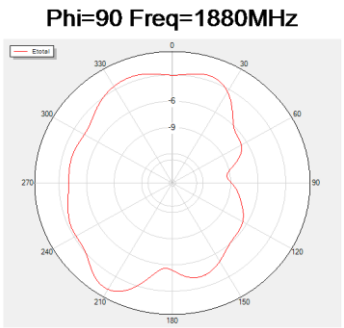
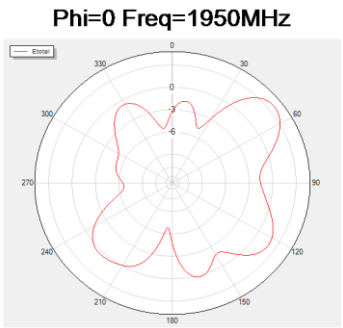
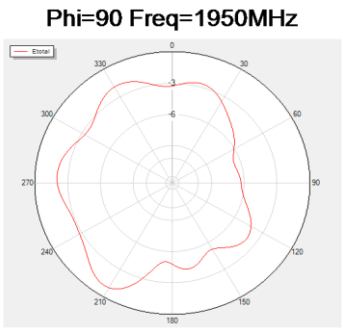
3.3.4. 3D & 2D Radiation Pattern

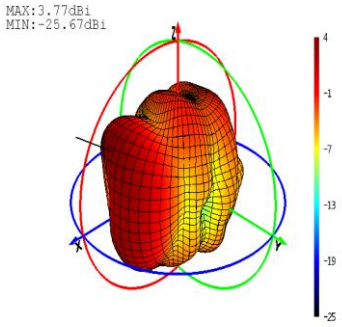
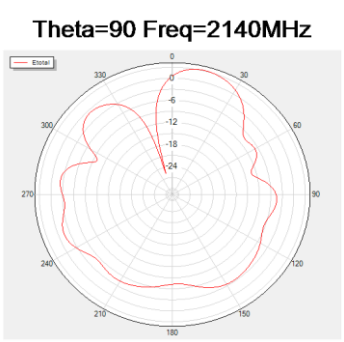
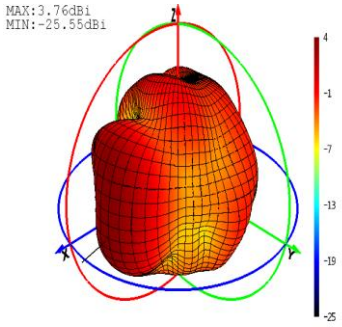
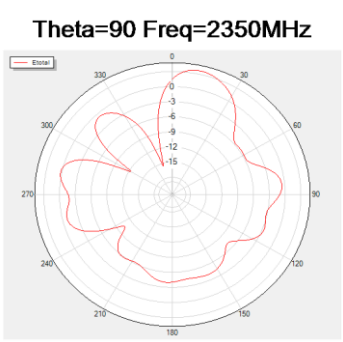
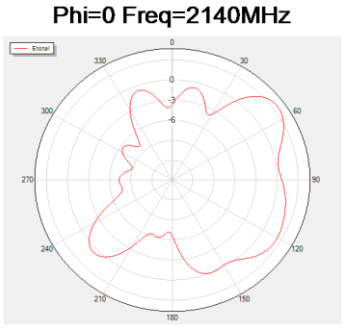
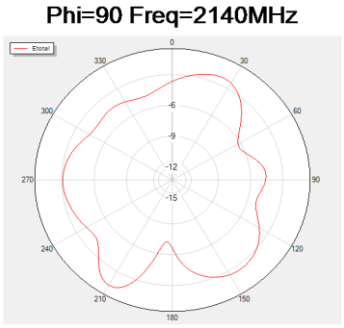
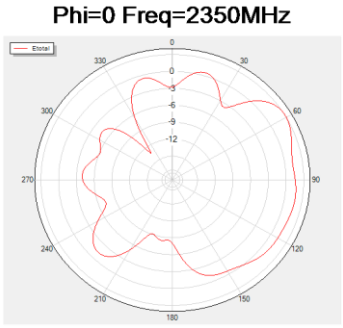
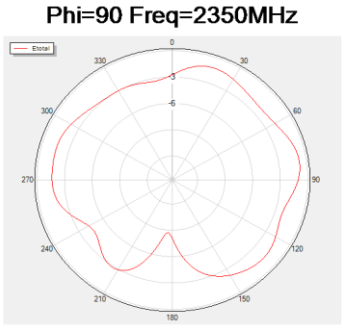
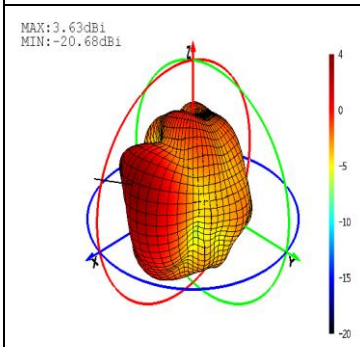
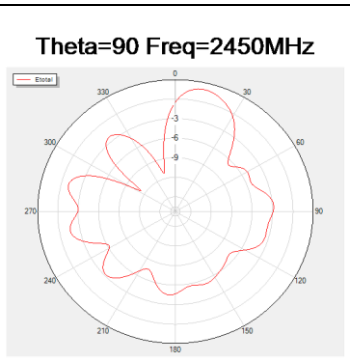
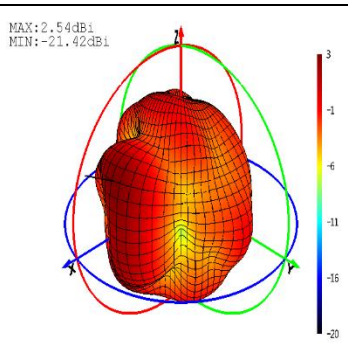
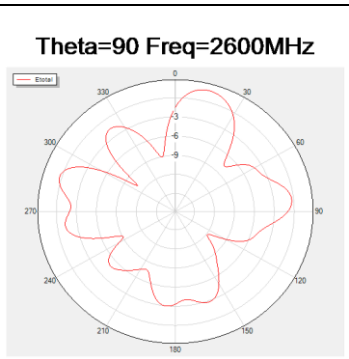
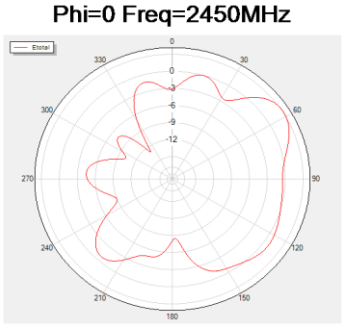
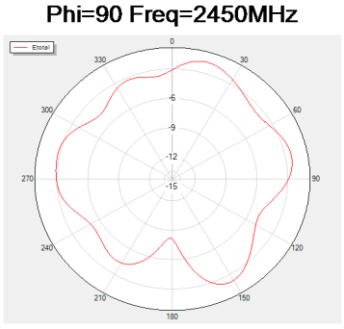
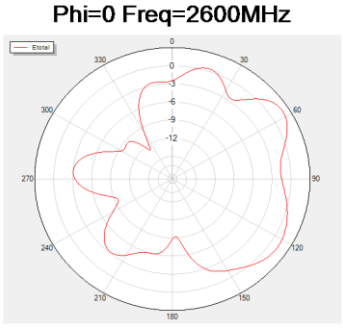
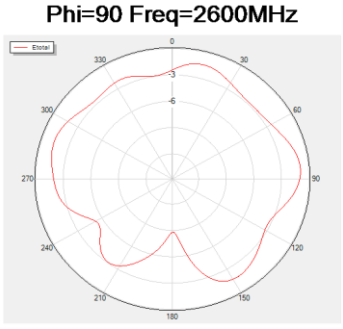
3.3.4.1. Test Condition: On 130 mm × 70 mm EVB and Straight

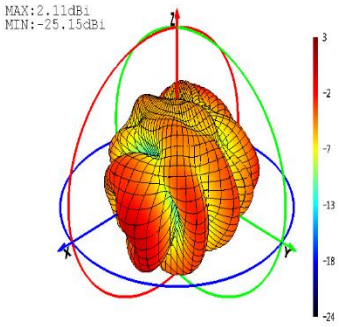
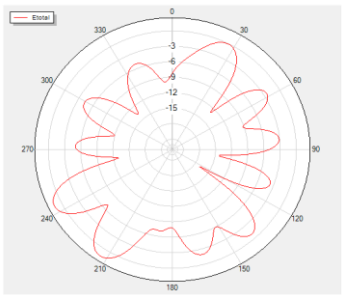
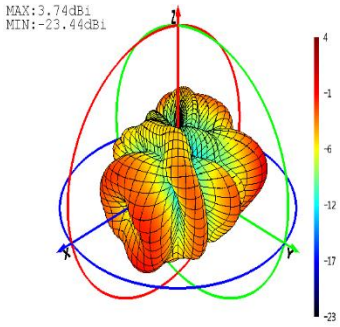
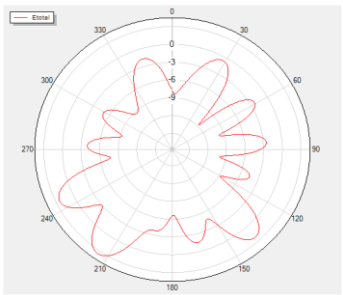
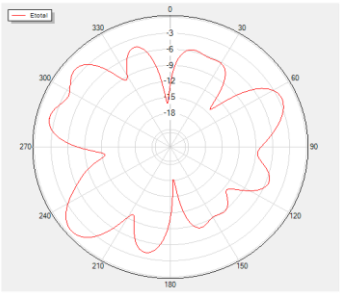
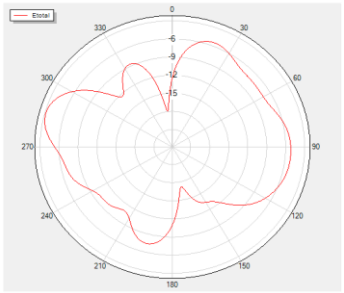
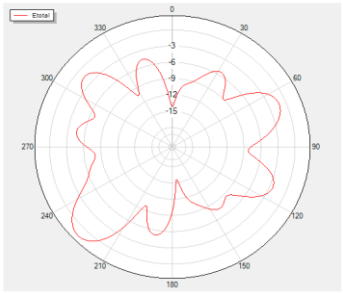
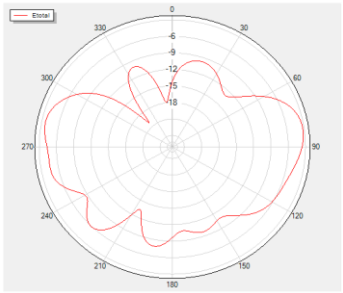
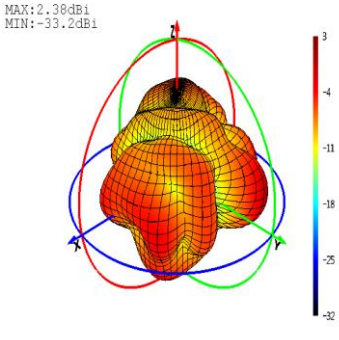
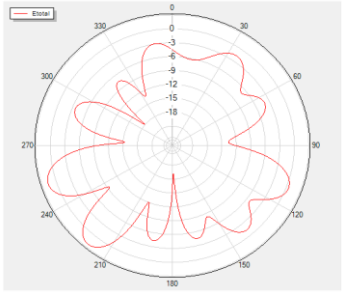
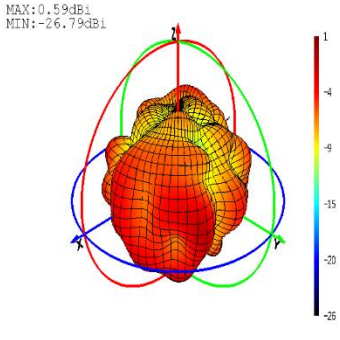
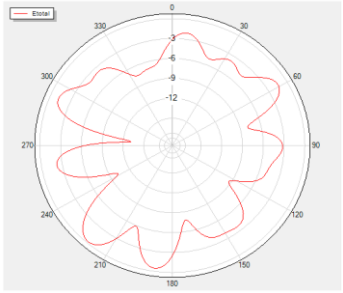
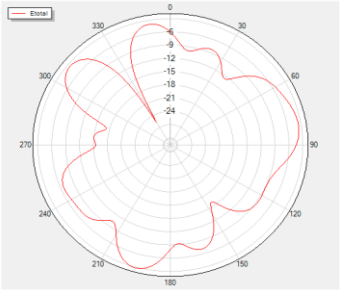
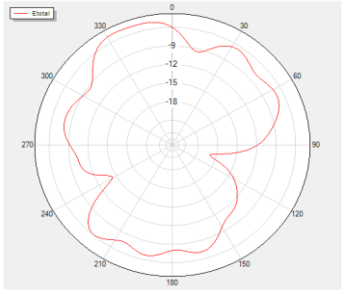
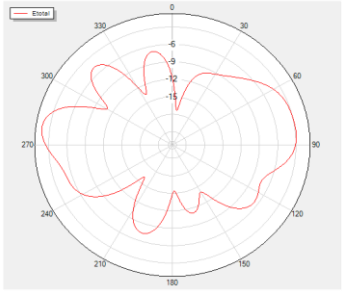
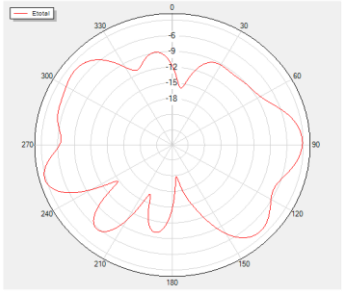
- Test Chamber: FS-S-1

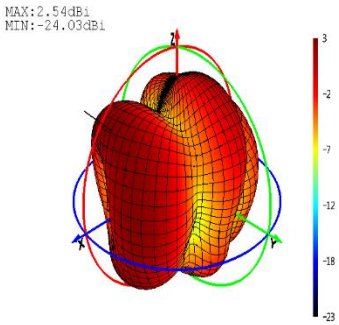
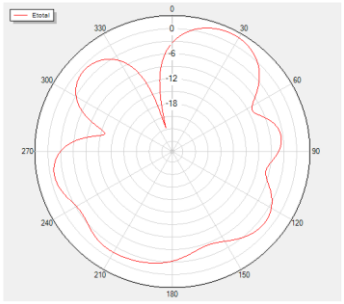
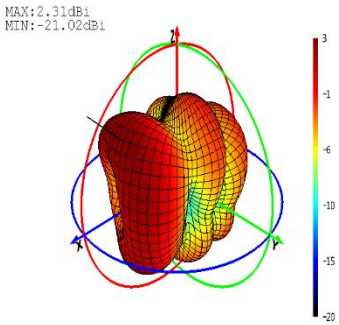
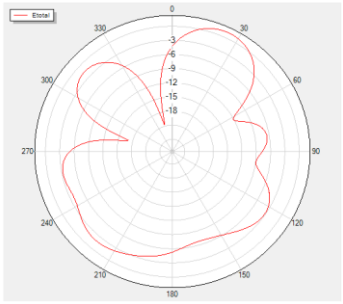
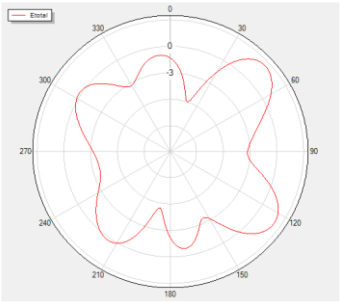
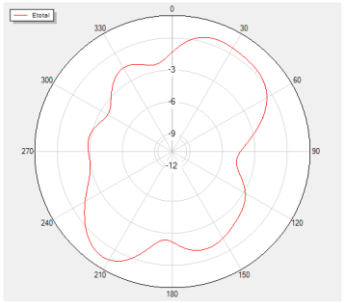
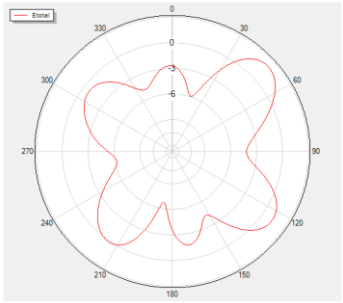
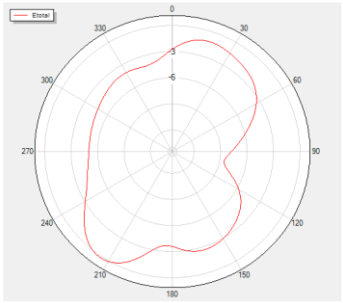
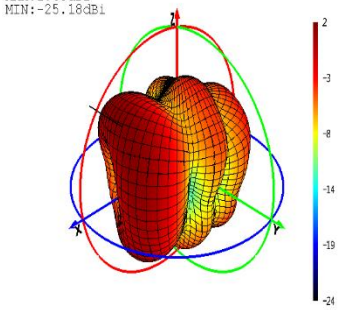
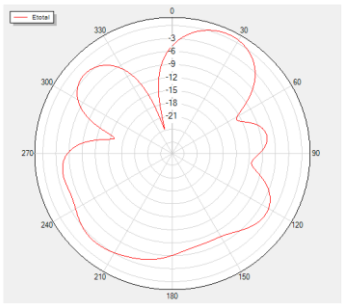
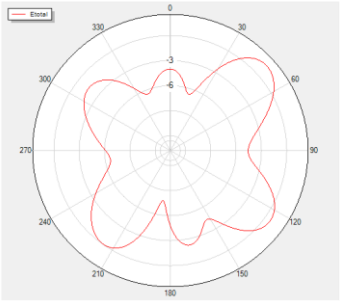
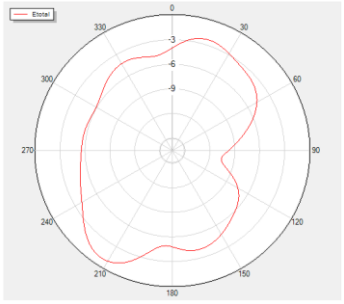


630 MHz		710 MHz	
			
			
830 MHz		900 MHz	
			
			

1440 MHz		1740 MHz	
			
			
1880 MHz		1950 MHz	
			
			

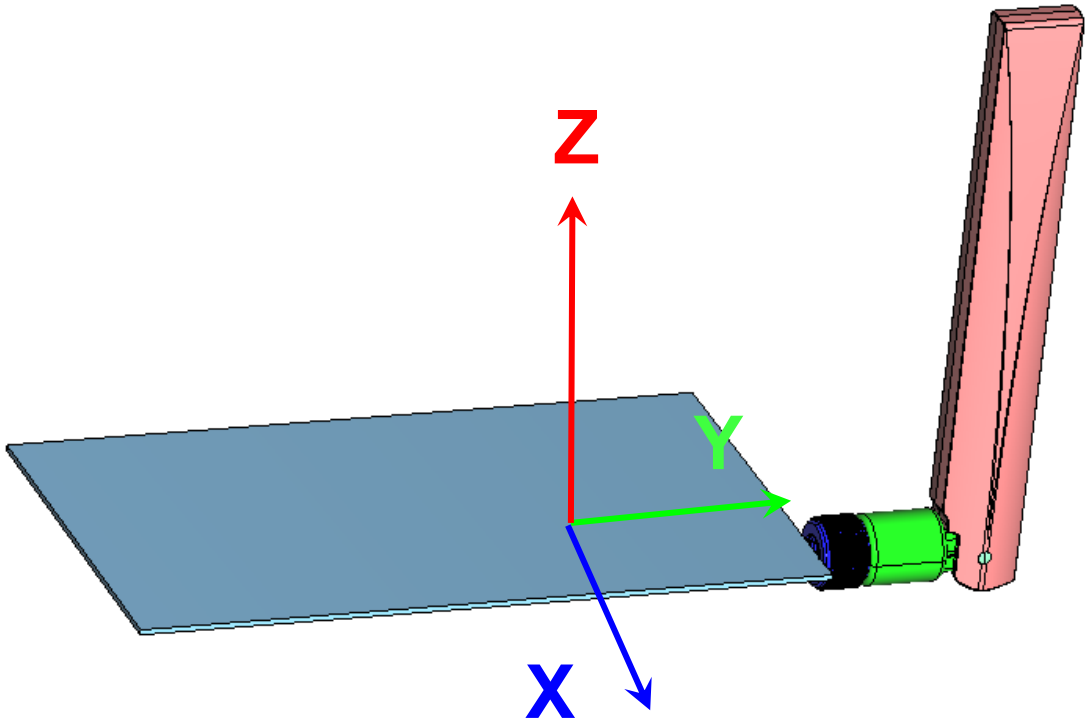
2140 MHz		2350 MHz	
			
			
2450 MHz		2600 MHz	
			
			

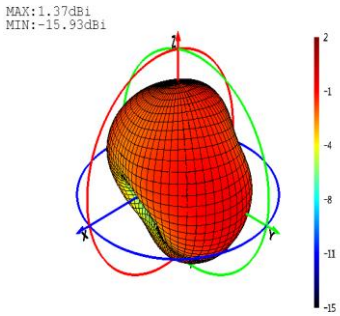
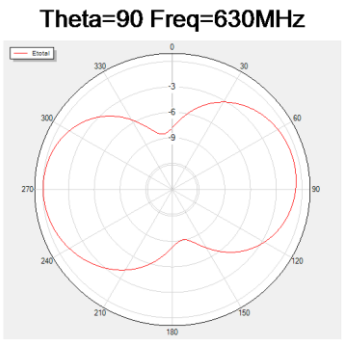
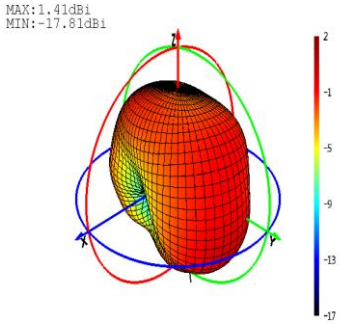
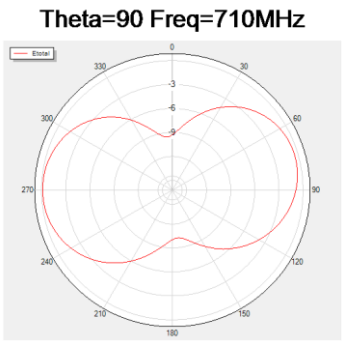
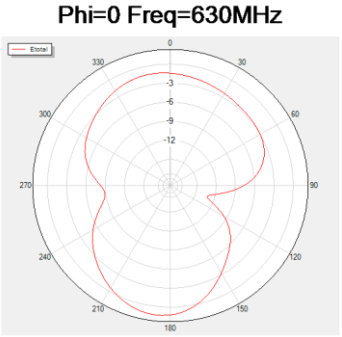
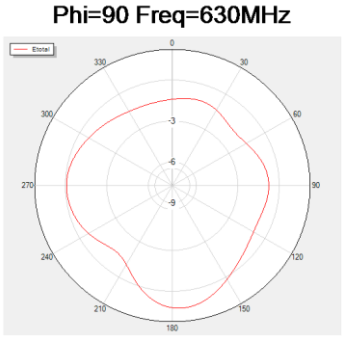
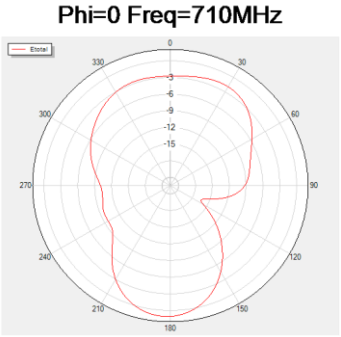
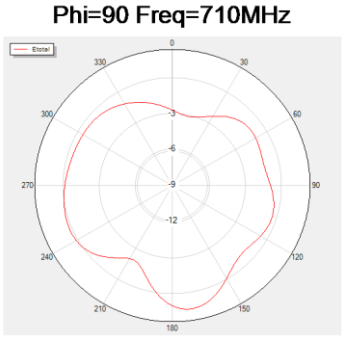
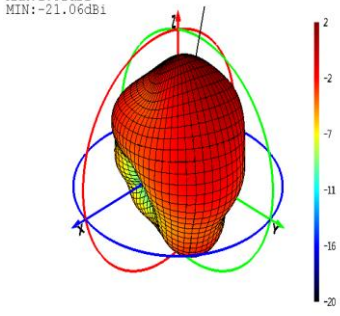
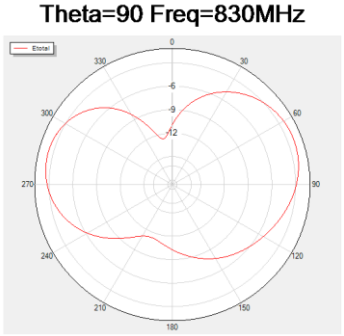
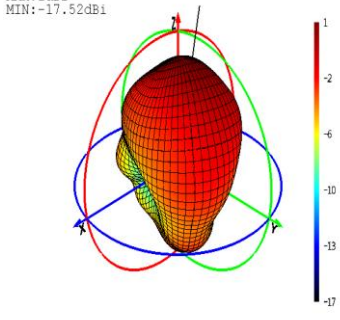
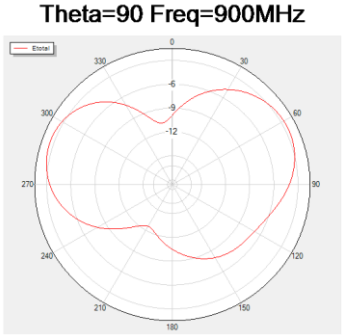
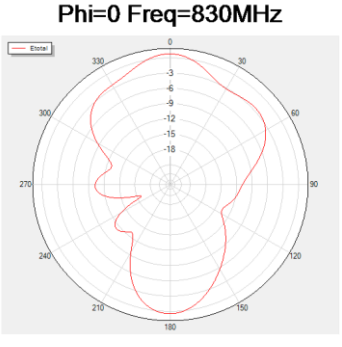
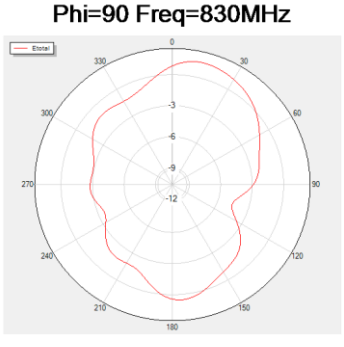
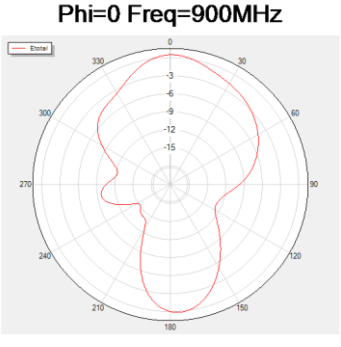
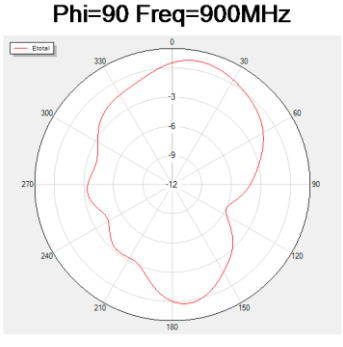
3600 MHz		4000 MHz	
			
			
4700 MHz		5500 MHz	
			
			

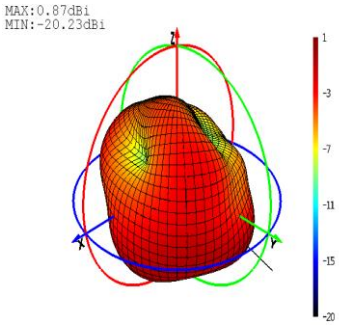
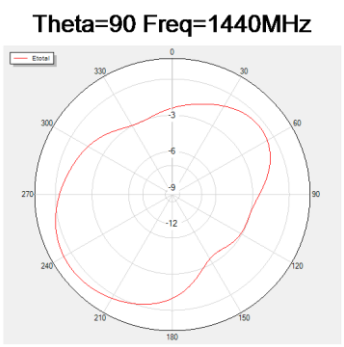
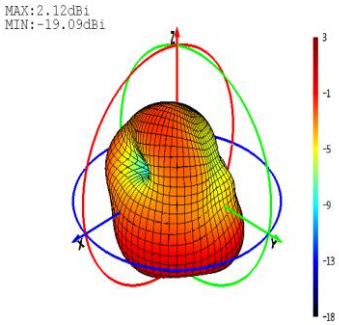
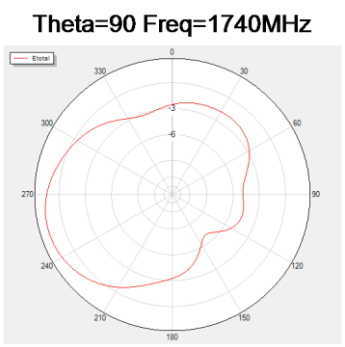
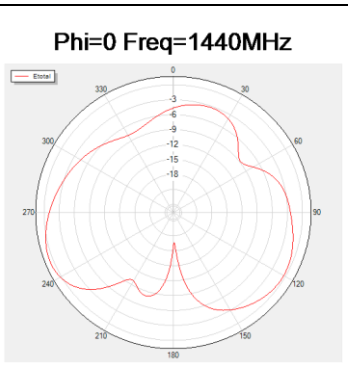
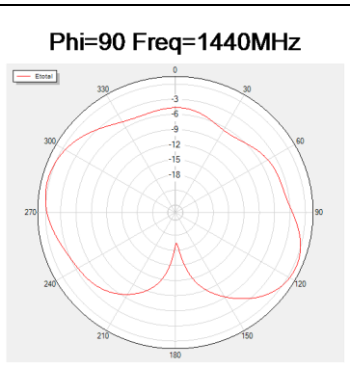
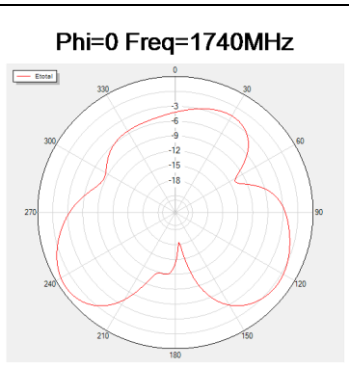
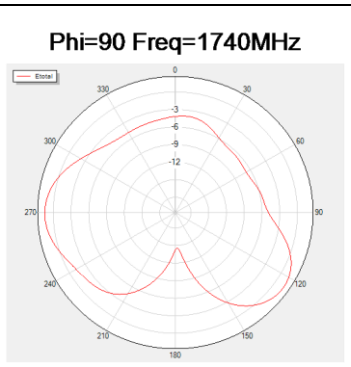
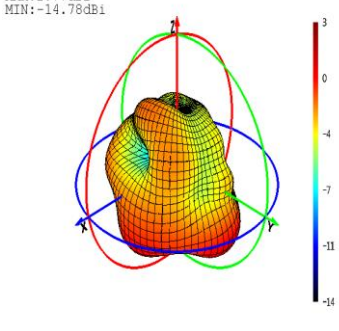
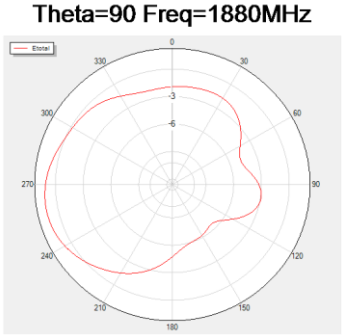
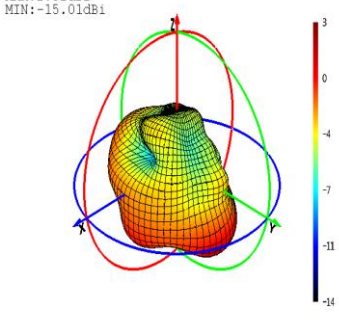
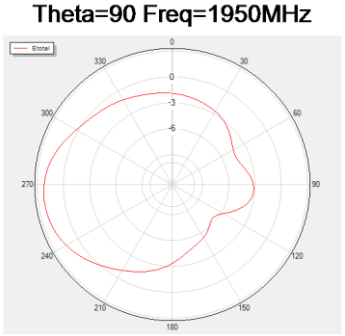
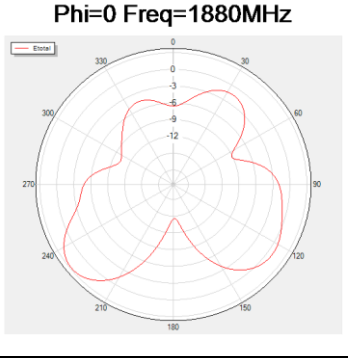
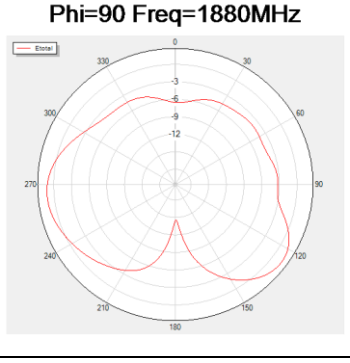
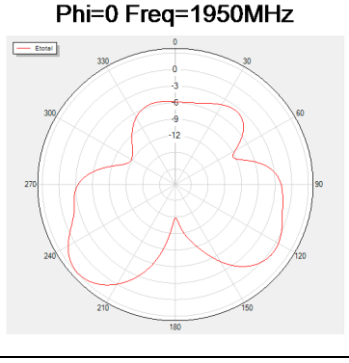
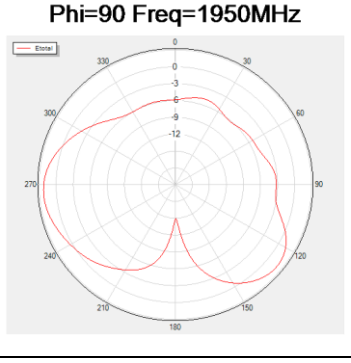
1520 MHz		1620 MHz	
	Theta=90 Freq=1520MHz 		Theta=90 Freq=1620MHz 
Phi=0 Freq=1520MHz 	Phi=90 Freq=1520MHz 	Phi=0 Freq=1620MHz 	Phi=90 Freq=1620MHz 
1670 MHz			
	Theta=90 Freq=1670MHz 		
Phi=0 Freq=1670MHz 	Phi=90 Freq=1670MHz 		

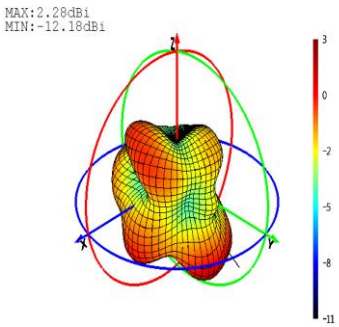
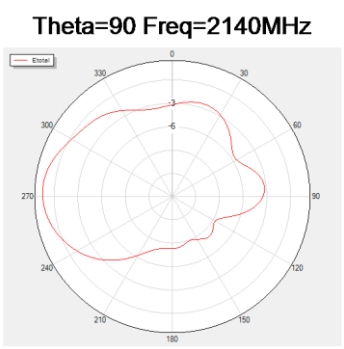
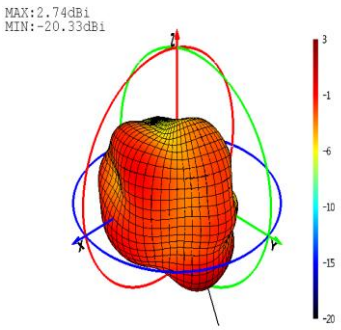
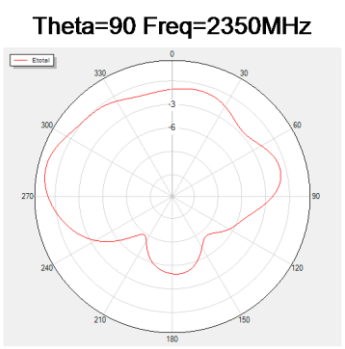
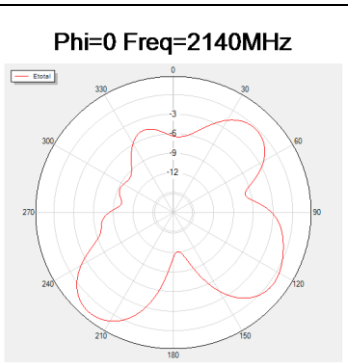
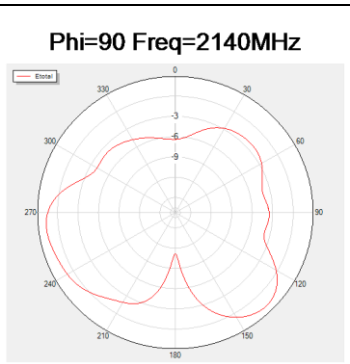
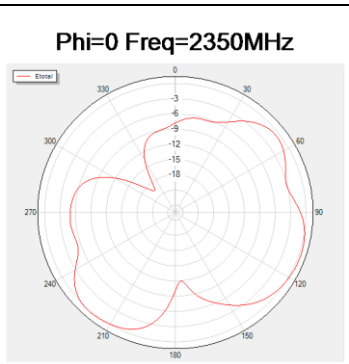
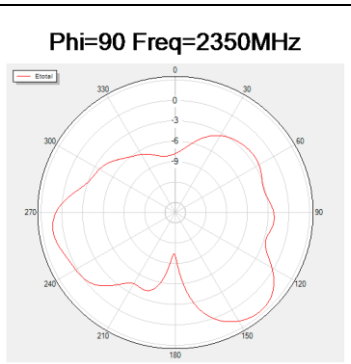
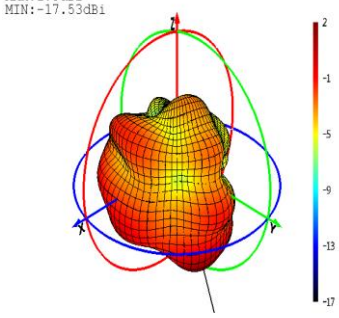
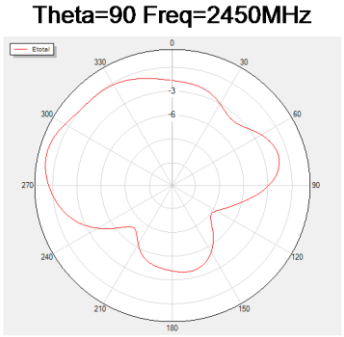
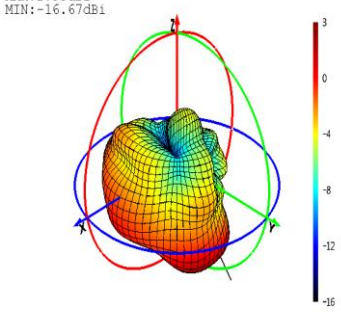
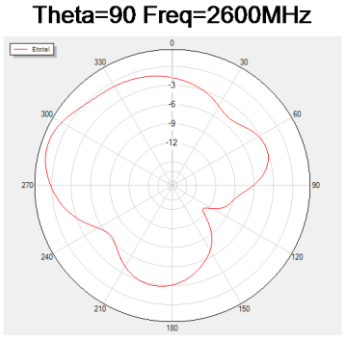
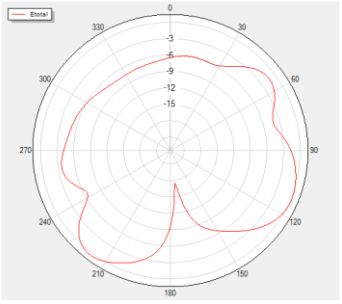
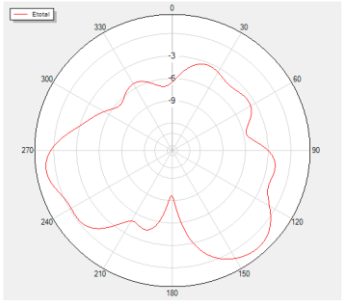
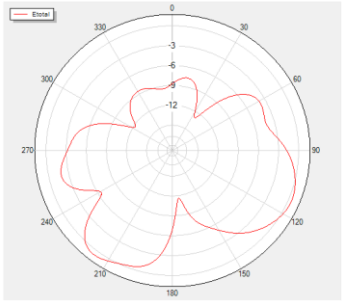
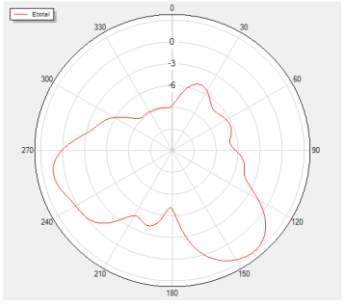
3.3.4.2. Test Condition: On 130 mm × 70 mm EVB and Bent

- Test Chamber: FS-S-1



630 MHz		710 MHz	
			
			
830 MHz		900 MHz	
			
			

1440 MHz		1740 MHz	
			
			
1880 MHz		1950 MHz	
			
			

2140 MHz		2350 MHz	
			
			
2450 MHz		2600 MHz	
			
			

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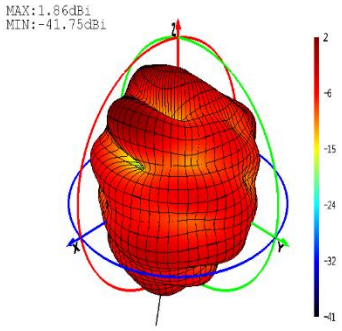	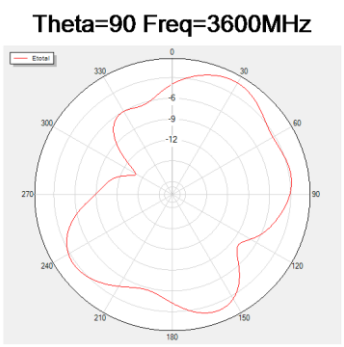	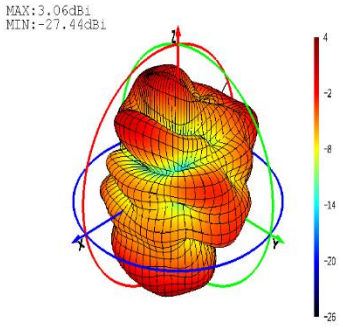	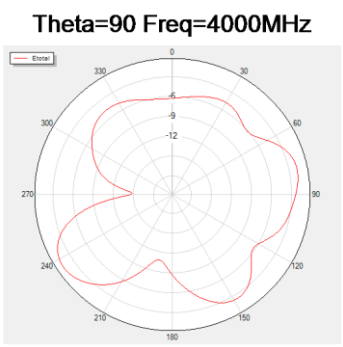
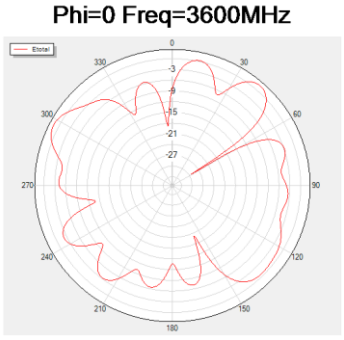	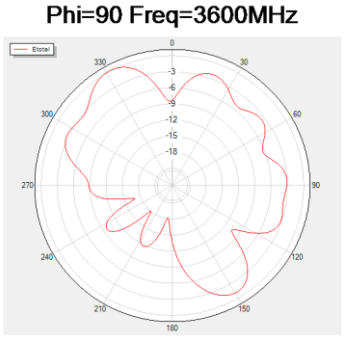	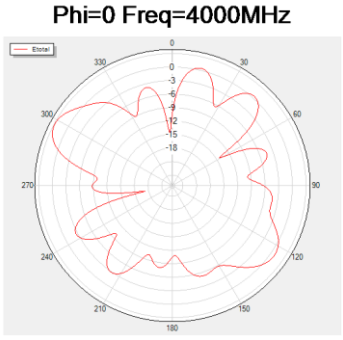	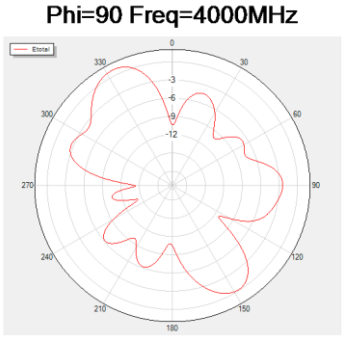
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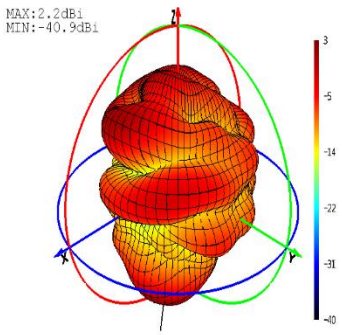	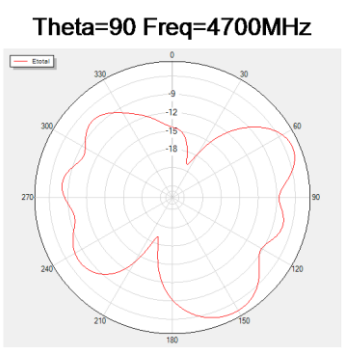	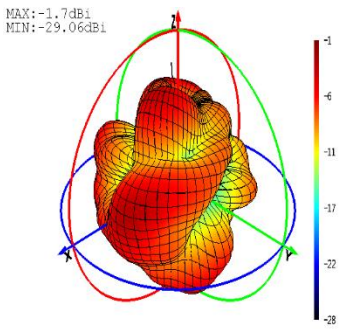	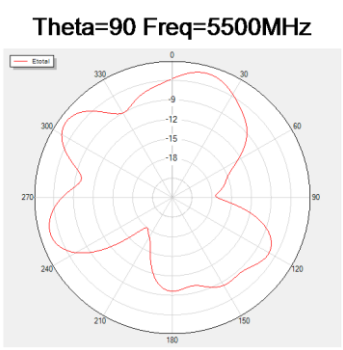
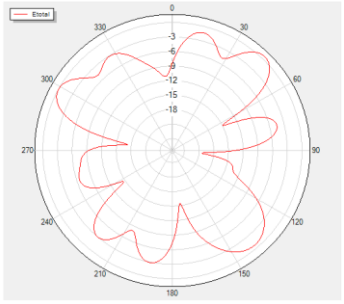	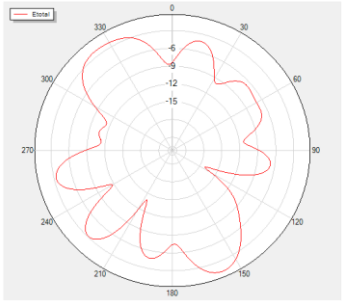	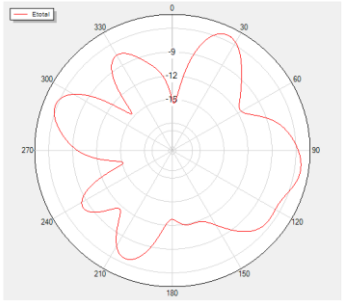	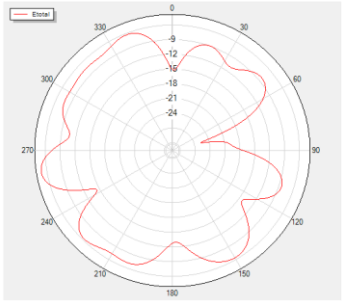

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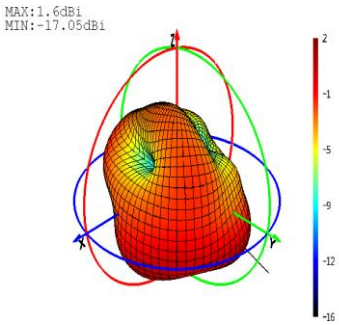
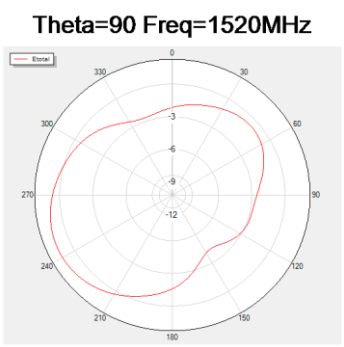
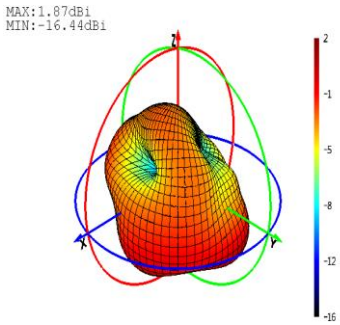
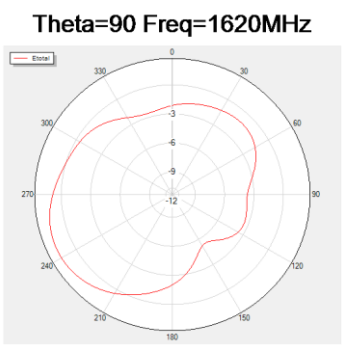
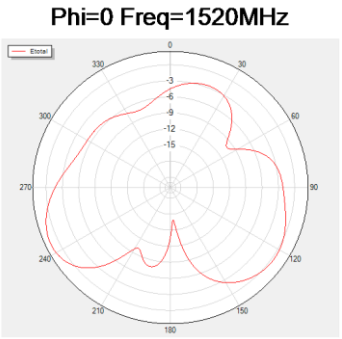
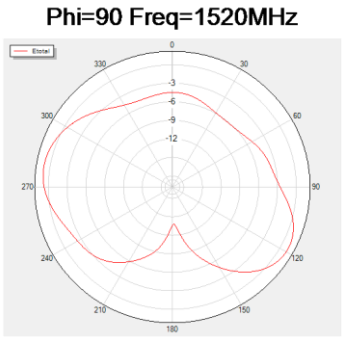
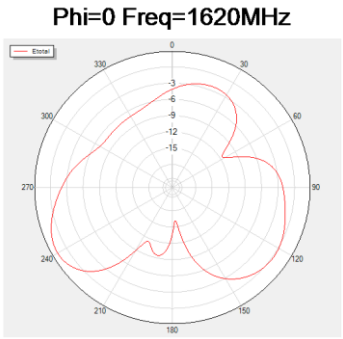
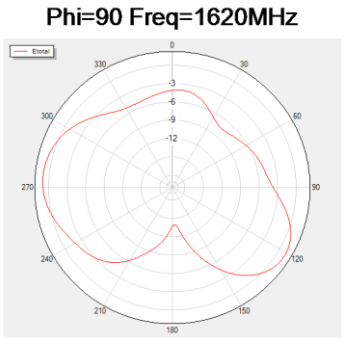
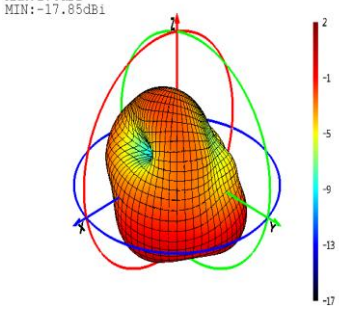
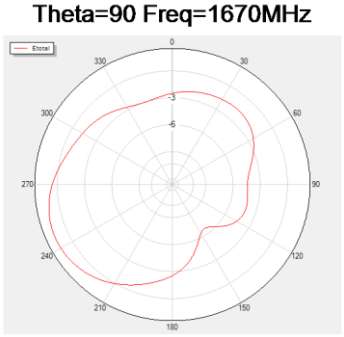
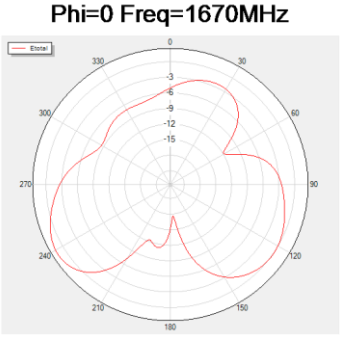
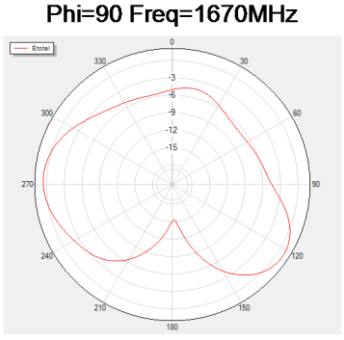
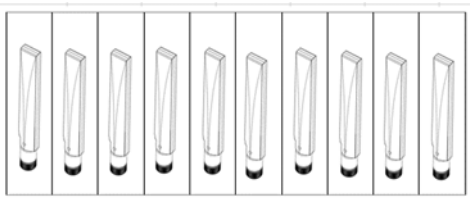
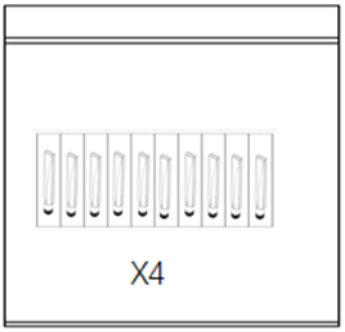
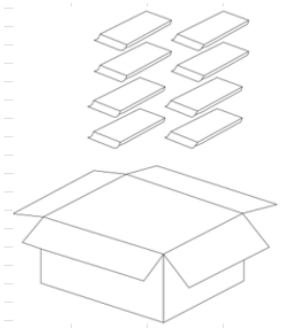
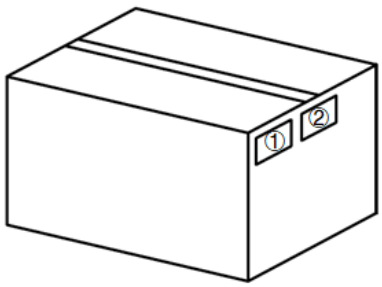
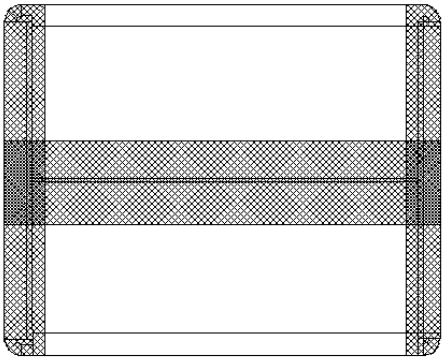
			
			
1670 MHz			
			
			

4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		10 antenna products in a one-piece bag. (10 Antennas / One-piece Bag)
2		40 antenna products in a PE bag. (40 Antennas / PE Bag)
3		(8 PE Bags / Carton Box) (320 Antennas / Carton Box) Estimated quantity Products that cannot fill the entire carton box is 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:

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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
-	2024-11-13	Mordecai Liu/ Lance Sun/ David Liu/ Rainey Liao	Creation of the document
1.0	2024-11-13	Mordecai Liu/ Lance Sun/ David Liu/ Rainey Liao	First official release
1.1	2024-12-19	Rainey Liao	1. Added the note about antenna adapter connectors (Homepage). 2. Delete the note about antenna efficiency (Chapter 1.2).
1.2	2025-04-24	Rainey Liao	Updated the antenna image (Cover page).
1.3	2025-11-07	Blake Xiang	Updated the drawing (Chapter 2).

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