# Antenna Datasheet

**Product OC:** YECT004W5AM
**Version:** 2.1
**Date:** 2025-12-29
**Status:** Released

**Product Name:** 5G Terminal Mount External Dipole Antenna
**Key Features:**
Frequency Band: 600–6000 MHz
Dimensions: 140 mm × 15.6 mm × 13 mm
Efficiency: Up to 78 % (EVB)
RoHS and REACH Compliant
IP67
Compatible with TNC and Type-N connectors

# Overview

YECT004W5AM is a 5G external antenna measuring 140 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 Fakra Female Code Zt 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** | 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 | 5.9 | 6.3 | 4.4 | 7.1 | 3.2 | 3.4 | 3.4 | 2.2 | 2.3 | 2.1 | 2.0 |
| | Bent | 5.2 | 5.5 | 4.1 | 6.0 | 2.5 | 2.8 | 2.9 | 2.6 | 2.7 | 2.4 | 3.7 |
| Max. Return Loss (dB) | Straight | -3.0 | -2.8 | -4.0 | -2.5 | -5.6 | -5.3 | -5.3 | -8.7 | -8.2 | -8.8 | -9.5 |
| | Bent | -3.4 | -3.2 | -4.3 | -2.9 | -7.4 | -6.6 | -6.3 | -7.1 | -6.7 | -7.7 | -4.8 |
| AVG Eff. (%) | Straight | 43.5 | 38.3 | 41.3 | 21.7 | 55.9 | 43.9 | 46.7 | 66.9 | 48.2 | 38.1 | 25.5 |
| | Bent | 49.3 | 41.9 | 43.1 | 27.8 | 59.2 | 50.5 | 48.6 | 58.8 | 56.3 | 44.6 | 28.0 |
| AVG AVG Gain (dB) | Straight | -3.6 | -4.2 | -3.8 | -6.7 | -2.6 | -3.6 | -3.3 | -1.8 | -3.2 | -4.2 | -6.0 |
| | Bent | -3.1 | -3.8 | -3.7 | -5.6 | -2.3 | -3.0 | -3.1 | -2.3 | -2.5 | -3.5 | -5.6 |
| Max. Peak | Straight | 2.3 | 0.3 | 1.8 | -0.3 | 3.3 | 4.7 | 5.1 | 5.7 | 5.3 | 3.0 | 2.7 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Gain (dBi)** | **Bent** | 1.9 | 0.7 | 1.2 | 0.3 | 3.1 | 2.7 | 4.1 | 5.5 | 4.3 | 3.2 | 1.9 |

| | | |
|---|---|---|
| **VSWR** | **Straight** | ≤ 7.1 |
| | **Bent** | ≤ 6.0 |
| **Return Loss** | **Straight** | ≤ -2.5 dB |
| | **Bent** | ≤ -2.9 dB |
| **Peak Gain** | **Straight** | ≤ 5.7 dBi |
| | **Bent** | ≤ 5.5 dBi |

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

## 1.2. Supported Bands

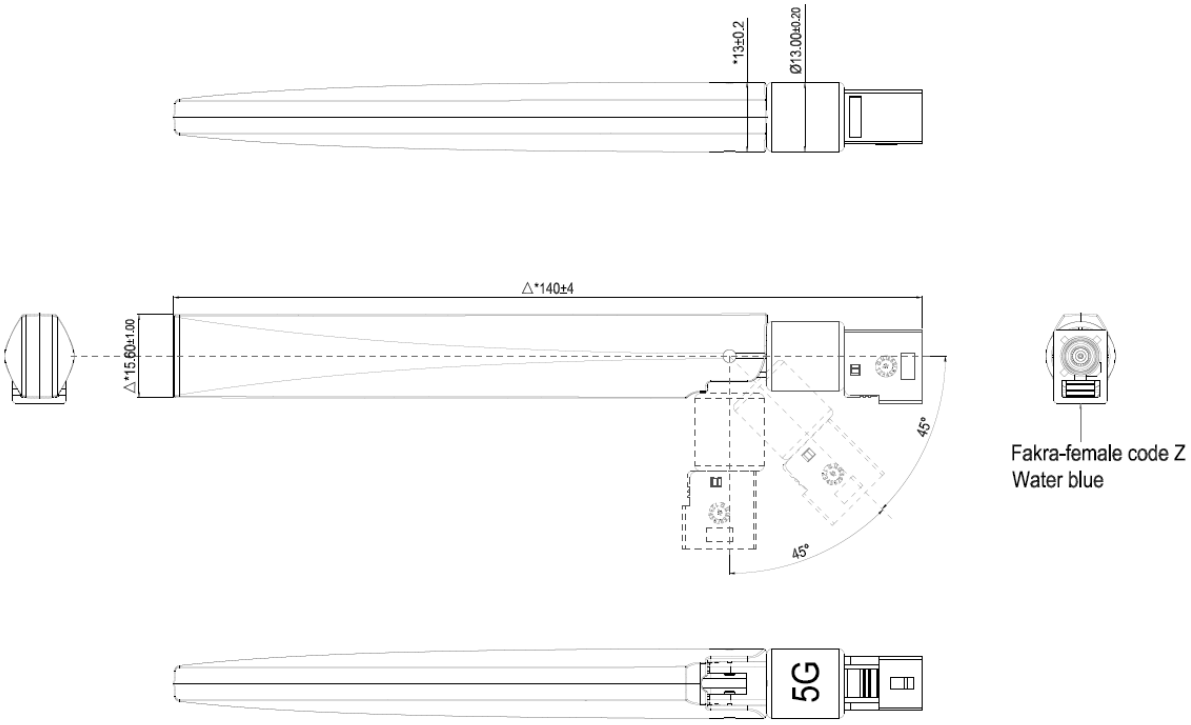
| 5G NR/ LTE/ LTE-Advanced/ WCDMA/ HSPA/ HSPA+/ GPRS/ GSM/ NB-IoT | | | | | |
|---|---|---|---|---|---|
| **Band** | **Frequency (MHz)** | **Uplink (MHz)** | **Downlink (MHz)** | **Straight** | **Bent** |
| 1 | 2100 | 1920–1980 | 2110–2170 | √ | √ |
| 2 | 1900 | 1850–1910 | 1930–1990 | √ | √ |
| 3 | 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–t3490 | 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** | 140 mm × 15.6 mm × 13 mm |
| **Material & Color** | PC + ABS & Black |
| **Connector Type** | Fakra Female Code Z |
| **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 |

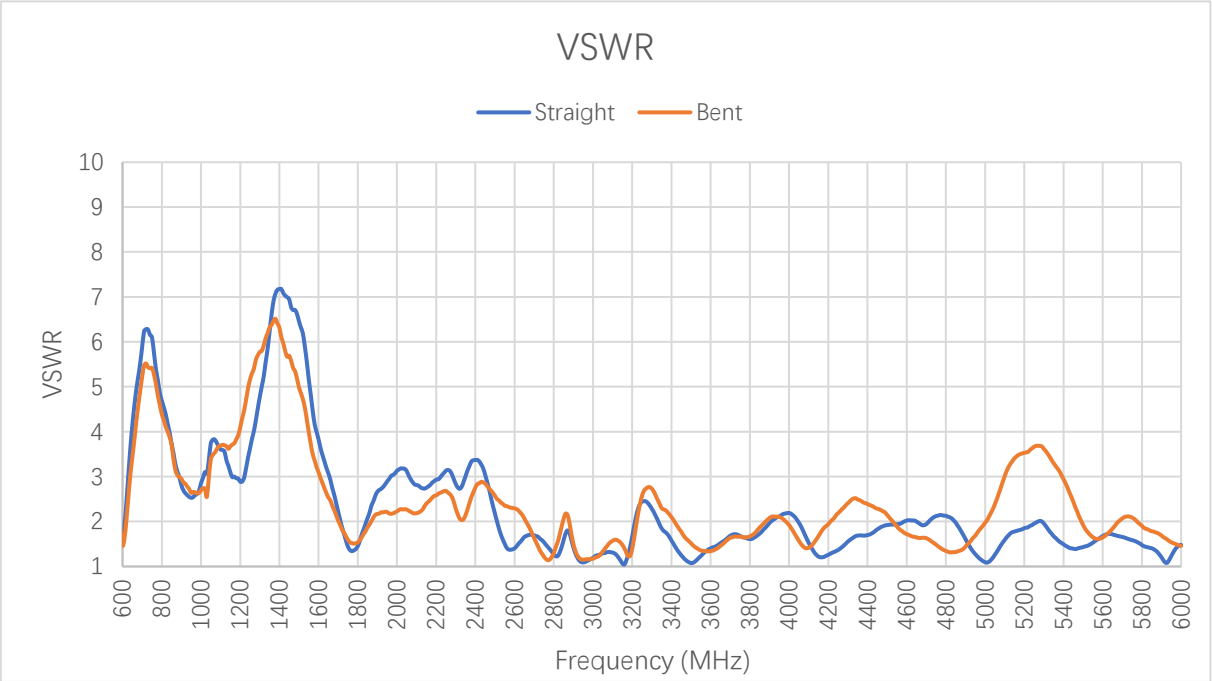
# 2 Drawing


*13±0.2
Ø13.00±0.20
△*140±4
△*15.60±1.00
45°
45°
5G
Fakra-female code Z
Water blue

# 3 Detailed Performance

## 3.1. S-Parameter Test

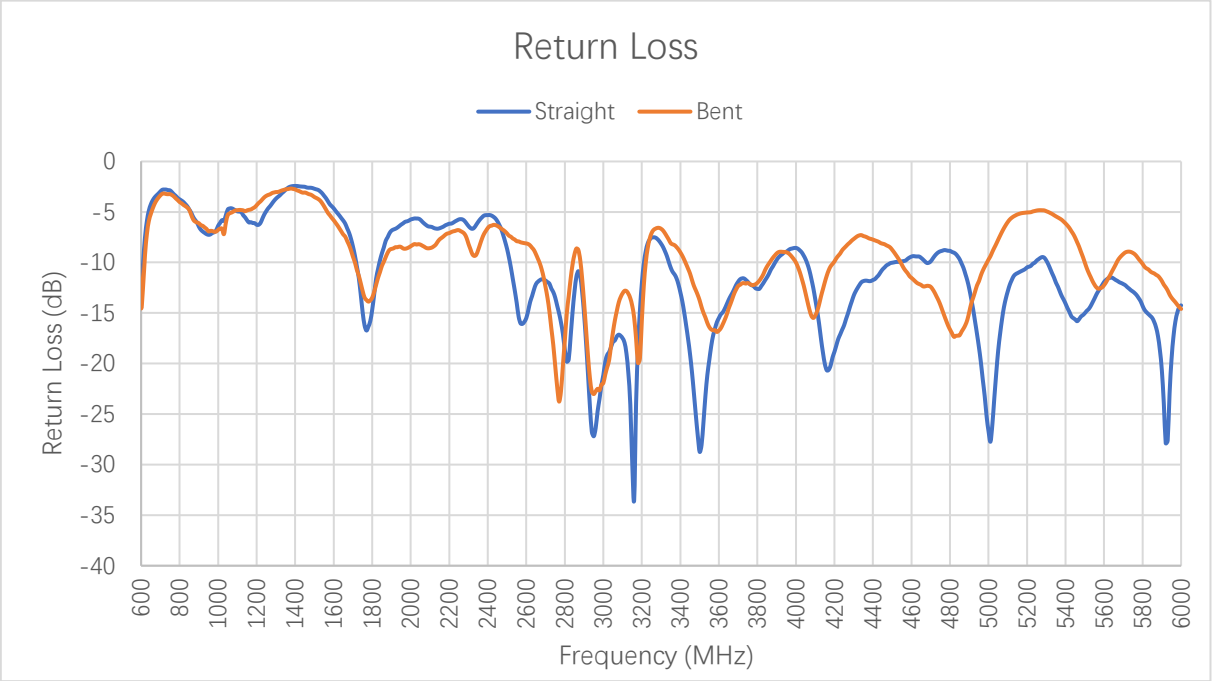
### 3.1.1. VSWR




**VSWR**

| Frequency (MHz) | 600 | 630 | 710 | 830 | 900 | 960 | 1440 | 1710 | 1740 | 1880 |
|---|---|---|---|---|---|---|---|---|---|---|
| Straight | 1.5 | 3.1 | 6.2 | 4.2 | 2.8 | 2.5 | 7.0 | 2.0 | 1.6 | 2.5 |
| Bent | 1.5 | 2.6 | 5.5 | 4.0 | 3.0 | 2.7 | 5.7 | 1.9 | 1.7 | 2.1 |
| **Frequency (MHz)** | **1950** | **2140** | **2350** | **2450** | **2600** | **3600** | **4700** | **5000** | **5500** | **6000** |
| Straight | 2.9 | 2.7 | 3.0 | 3.0 | 1.4 | 1.4 | 1.9 | 1.1 | 1.4 | 1.5 |
| Bent | 2.2 | 2.3 | 2.1 | 2.8 | 2.3 | 1.3 | 1.6 | 2.0 | 1.9 | 1.5 |

### 3.1.2. Return Loss

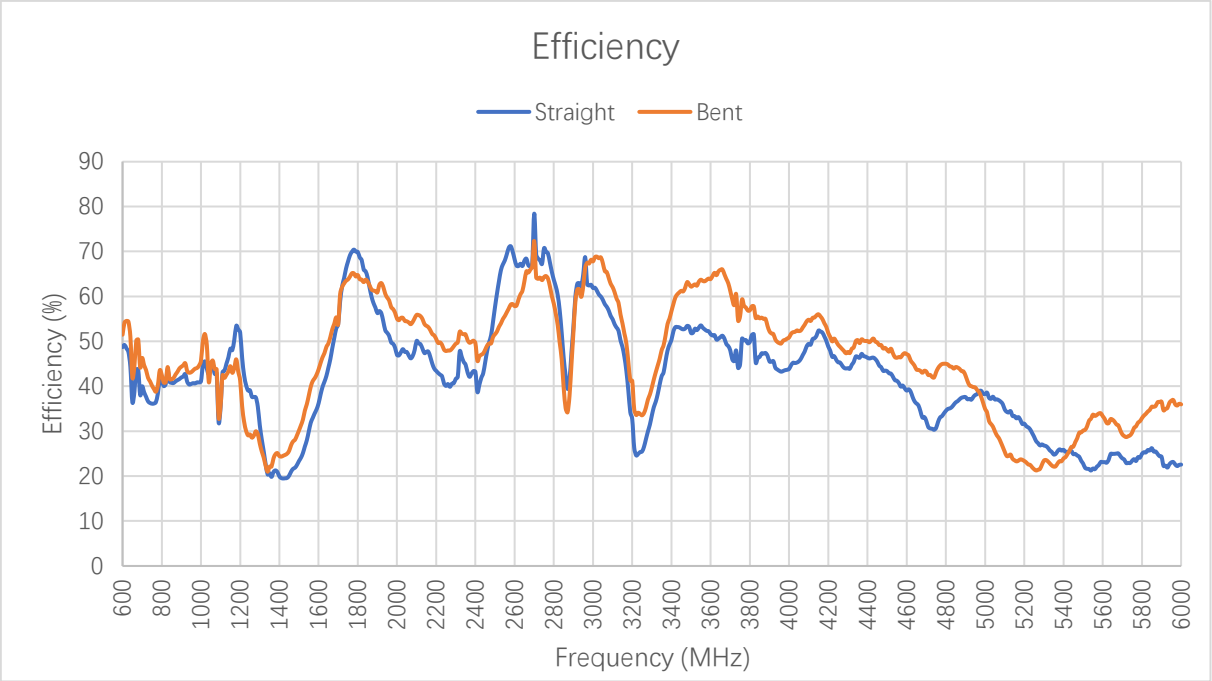



**Return Loss (dB)**

| **Frequency (MHz)** | **600** | **630** | **710** | **830** | **900** | **960** | **1440** | **1710** | **1740** | **1880** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Straight** | -13.5 | -5.9 | -2.8 | -4.2 | -6.5 | -7.2 | -2.5 | -9.3 | -13.1 | -7.5 |
| **Bent** | -14.5 | -7.2 | -3.2 | -4.4 | -6.1 | -6.9 | -3.1 | -10.0 | -12.0 | -9.0 |
| **Frequency (MHz)** | **1950** | **2140** | **2350** | **2450** | **2600** | **3600** | **4700** | **5000** | **5500** | **6000** |
| **Straight** | -6.3 | -6.7 | -6.0 | -5.9 | -15.5 | -15.5 | -9.9 | -26.7 | -15.0 | -14.2 |
| **Bent** | -8.5 | -7.9 | -8.8 | -6.4 | -8.1 | -16.7 | -12.4 | -9.7 | -10.0 | -14.6 |

## 3.2. Radiation Performance Test

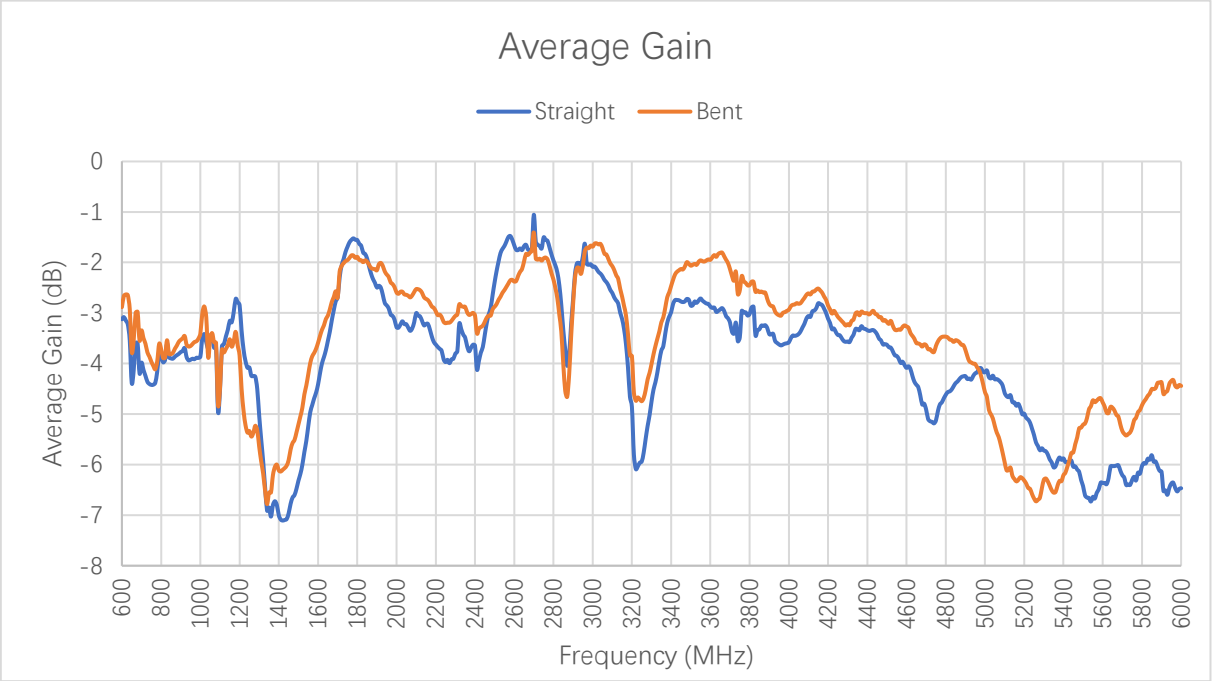
### 3.2.1. Efficiency




**Efficiency (%)**

| Frequency (MHz) | 600 | 630 | 710 | 830 | 900 | 960 | 1440 | 1710 | 1740 | 1880 |
|---|---|---|---|---|---|---|---|---|---|---|
| Straight | 48.7 | 47.6 | 38.7 | 43.6 | 42.0 | 40.7 | 19.6 | 58.9 | 66.2 | 58.5 |
| Bent | 51.5 | 54.4 | 44.7 | 44.3 | 44.3 | 43.5 | 25.0 | 60.5 | 63.5 | 61.3 |
| **Frequency (MHz)** | **1950** | **2140** | **2350** | **2450** | **2600** | **3600** | **4700** | **5000** | **5500** | **6000** |
| Straight | 51.9 | 47.4 | 44.8 | 45.4 | 68.2 | 51.6 | 32.3 | 38.3 | 22.8 | 22.6 |
| Bent | 59.7 | 53.9 | 51.5 | 48.2 | 57.8 | 63.8 | 43.3 | 34.9 | 30.1 | 36.0 |

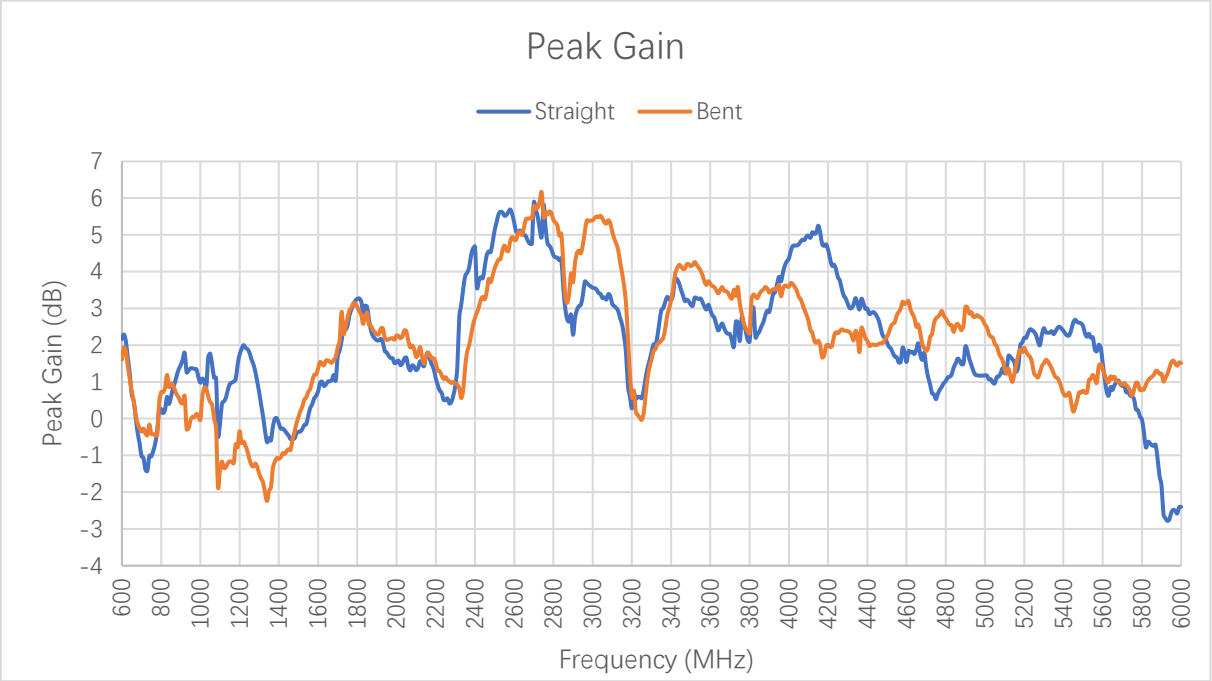
### 3.2.2. Average Gain




**Average Gain (dB)**

| Frequency (MHz) | 600 | 630 | 710 | 830 | 900 | 960 | 1440 | 1710 | 1740 | 1880 |
|---|---|---|---|---|---|---|---|---|---|---|
| Straight | -3.1 | -3.2 | -4.1 | -3.6 | -3.8 | -3.9 | -7.1 | -2.3 | -1.8 | -2.3 |
| Bent | -2.9 | -2.6 | -3.5 | -3.5 | -3.5 | -3.6 | -6.0 | -2.2 | -2.0 | -2.1 |
| **Frequency (MHz)** | **1950** | **2140** | **2350** | **2450** | **2600** | **3600** | **4700** | **5000** | **5500** | **6000** |
| Straight | -2.9 | -3.2 | -3.5 | -3.4 | -1.7 | -2.9 | -4.9 | -4.2 | -6.4 | -6.5 |
| Bent | -2.2 | -2.7 | -2.9 | -3.2 | -2.4 | -1.9 | -3.6 | -4.6 | -5.2 | -4.4 |

### 3.2.3. Peak Gain



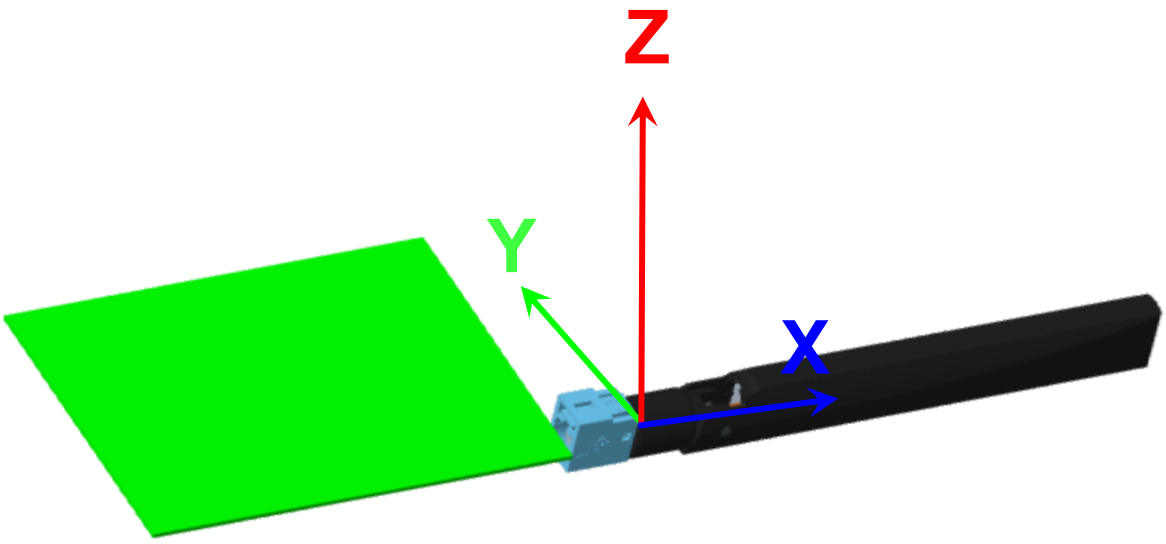

**Peak Gain (dBi)**

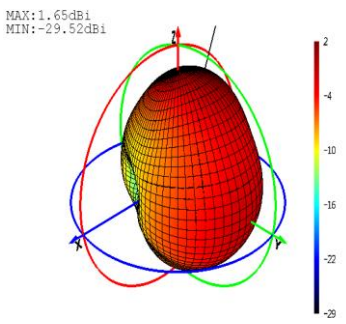
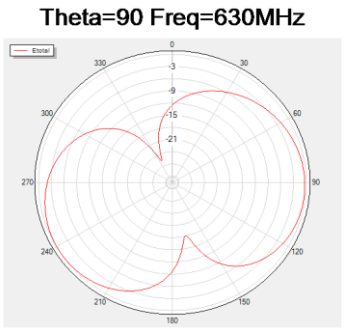
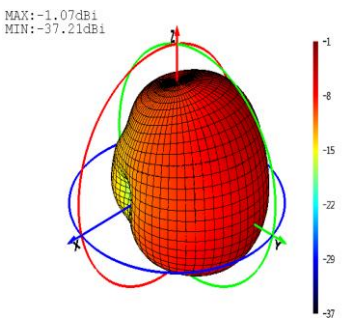
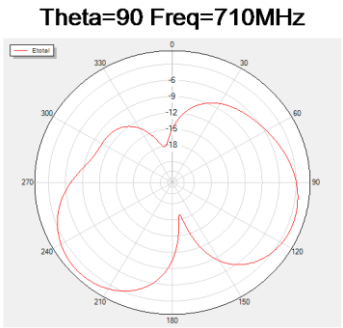
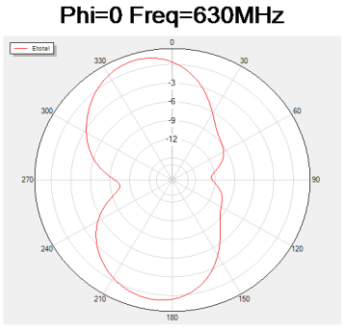
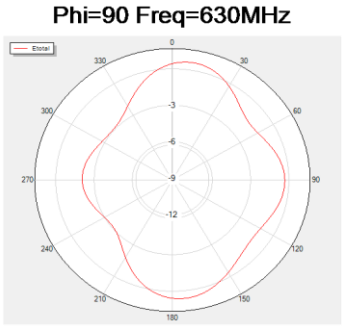
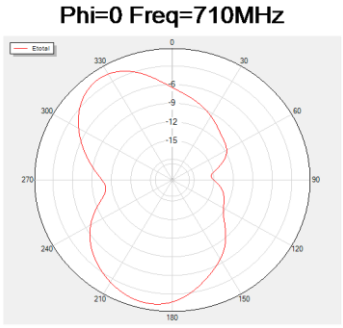
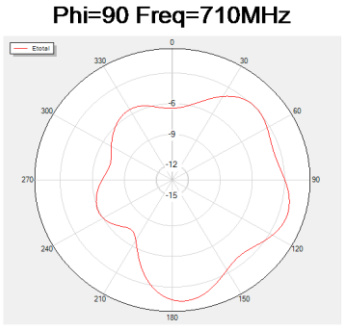
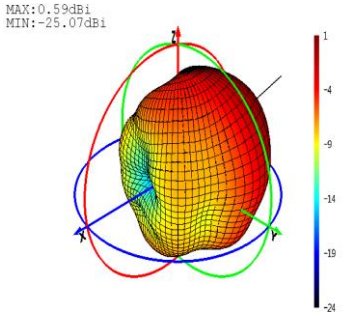
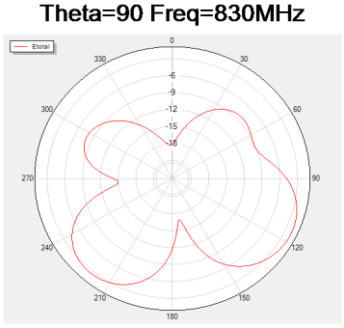
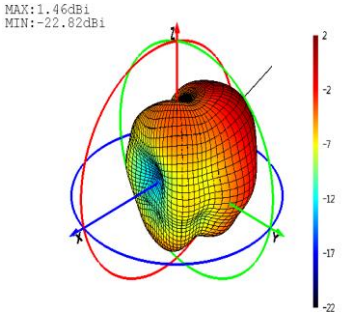
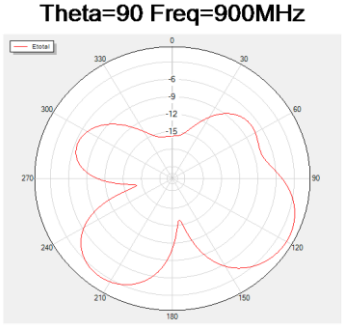
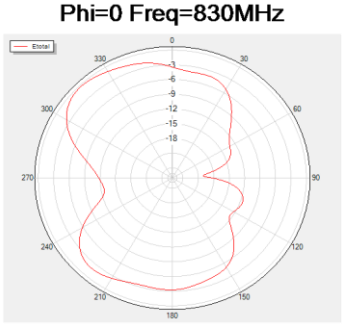
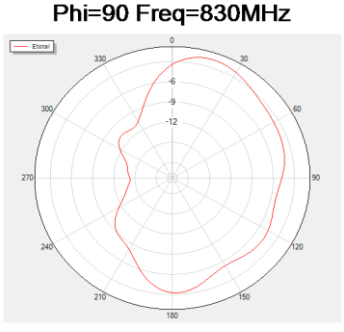
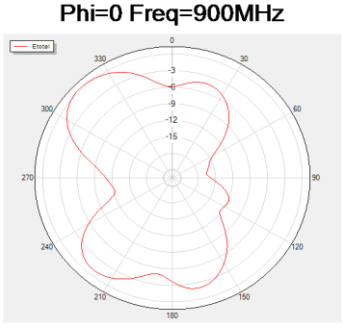
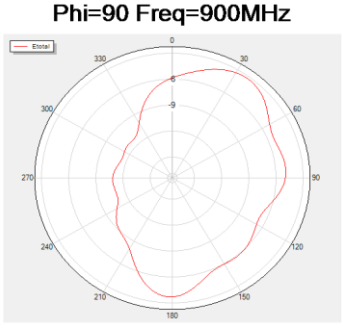
| Frequency (MHz) | 600 | 630 | 710 | 830 | 900 | 960 | 1440 | 1710 | 1740 | 1880 |
|---|---|---|---|---|---|---|---|---|---|---|
| Straight | 2.2 | 1.7 | -1.1 | 0.6 | 1.5 | 1.4 | -0.4 | 1.9 | 2.4 | 2.3 |
| Bent | 1.6 | 1.4 | -0.3 | 1.2 | 0.4 | 0.1 | -0.9 | 2.1 | 2.5 | 2.4 |
| **Frequency (MHz)** | **1950** | **2140** | **2350** | **2450** | **2600** | **3600** | **4700** | **5000** | **5500** | **6000** |
| Straight | 1.8 | 1.4 | 3.9 | 4.1 | 5.3 | 3.0 | 1.4 | 1.2 | 2.5 | -2.4 |
| Bent | 2.1 | 1.5 | 1.4 | 3.3 | 4.9 | 3.7 | 1.8 | 2.6 | 0.8 | 1.5 |

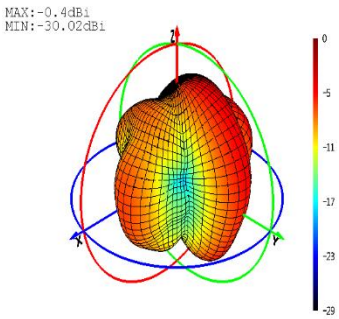
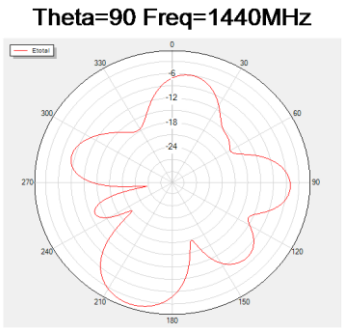
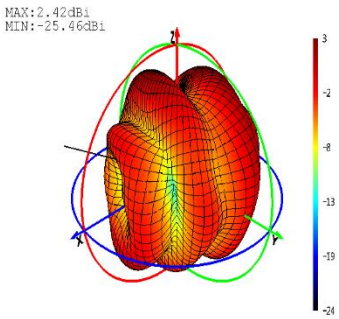
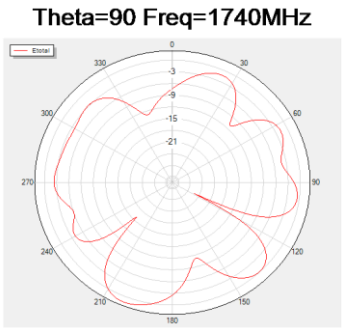
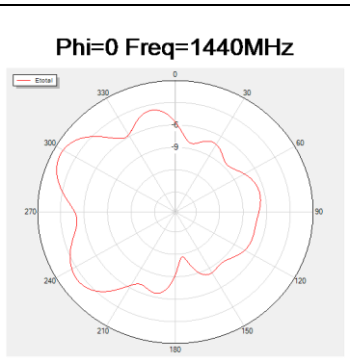
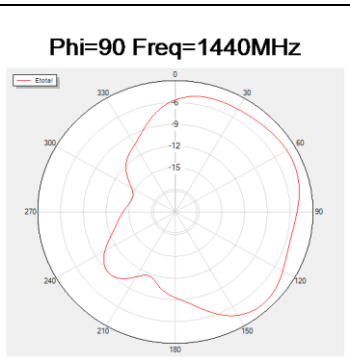
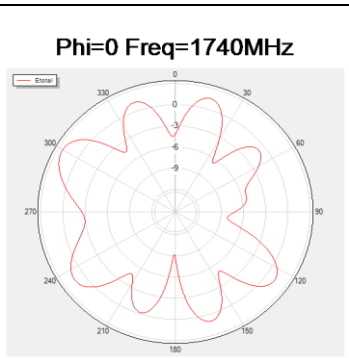
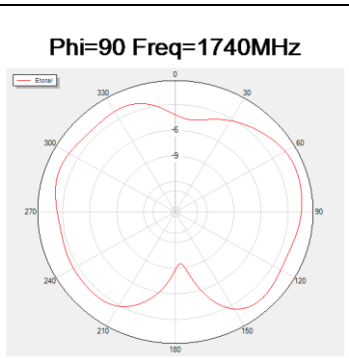
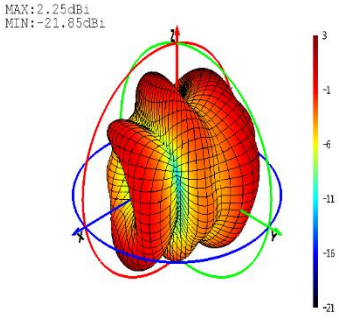
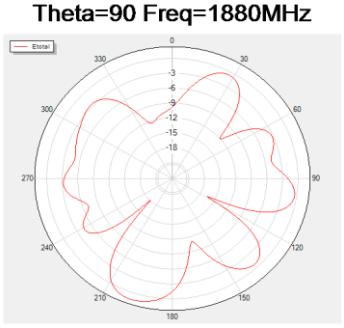
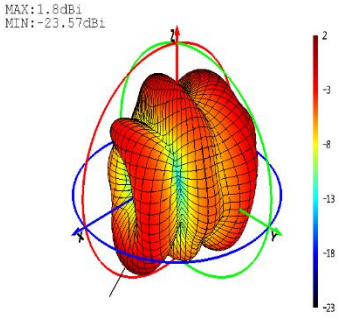
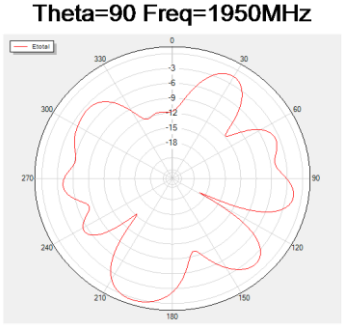
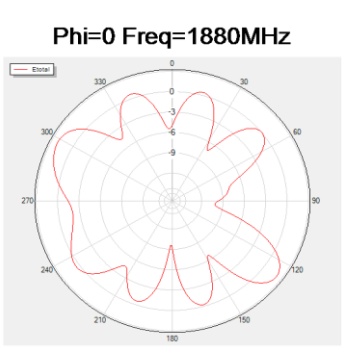
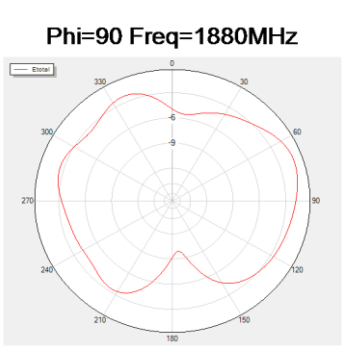
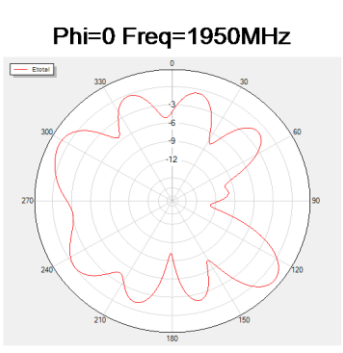
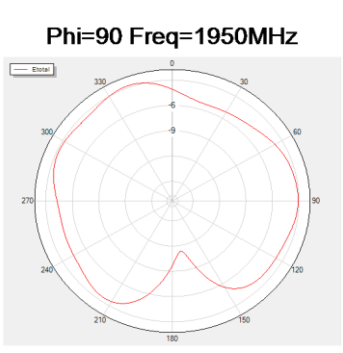
### 3.2.4. 3D & 2D Radiation Pattern

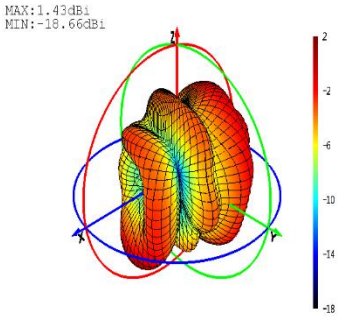
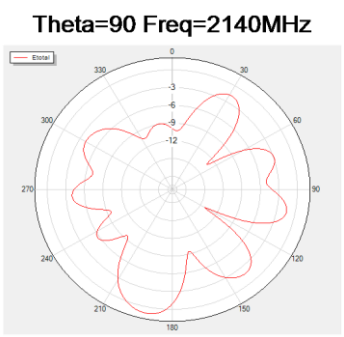
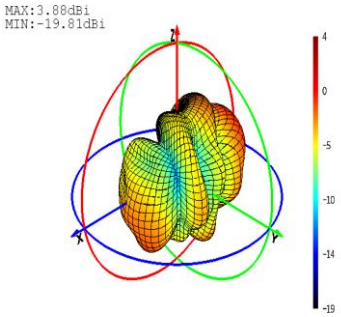
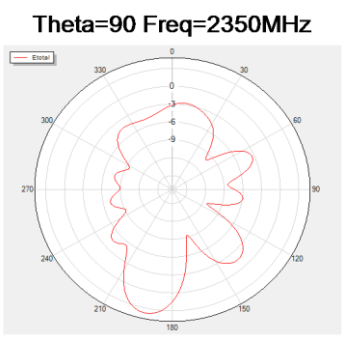
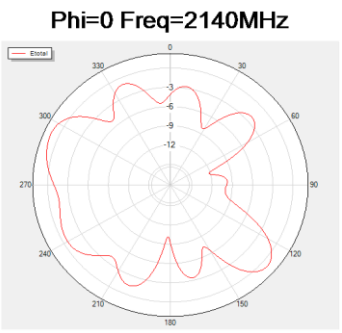
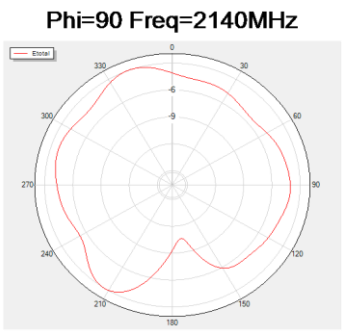
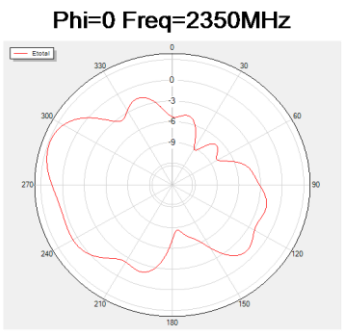
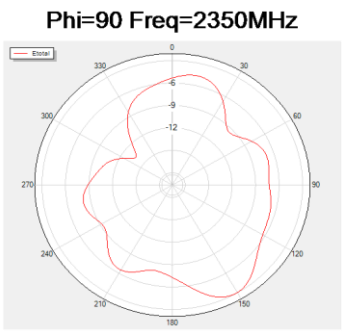
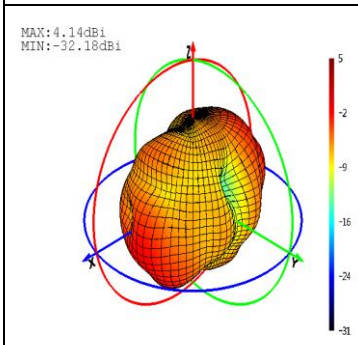
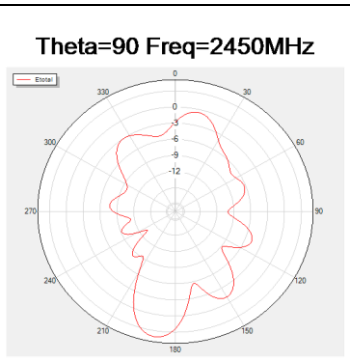
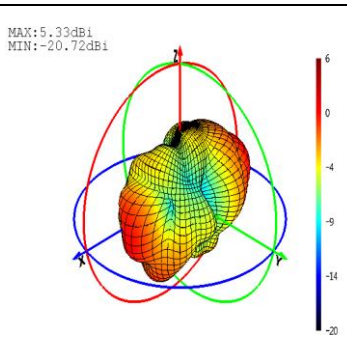
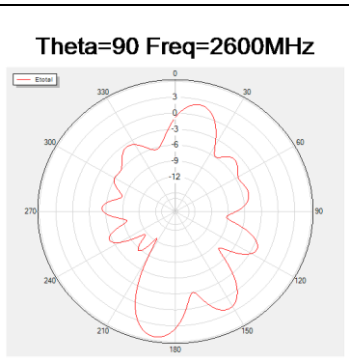
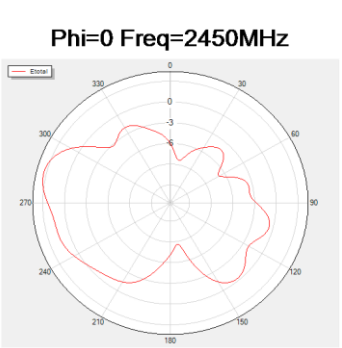
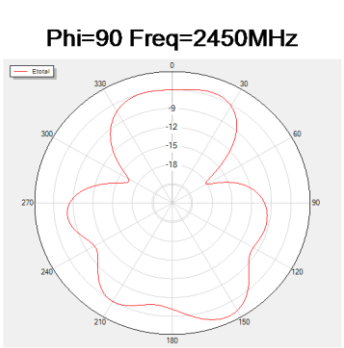
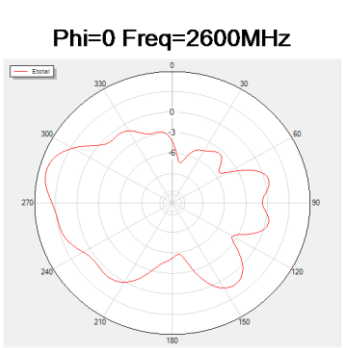
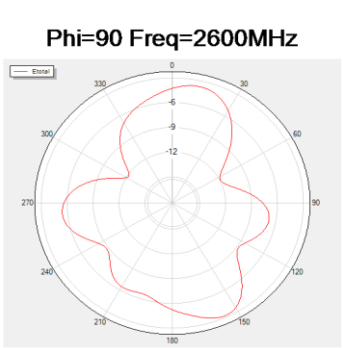
#### 3.2.4.1. Test Condition: On 130 mm × 70 mm EVB and Straight

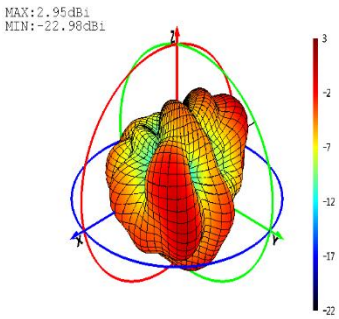
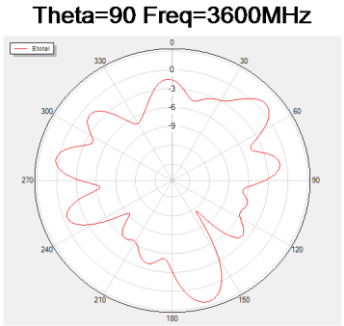
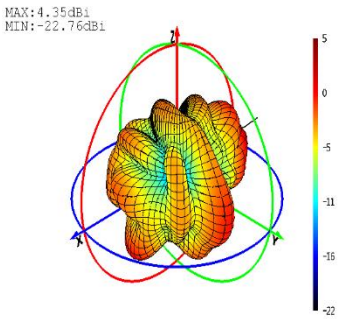
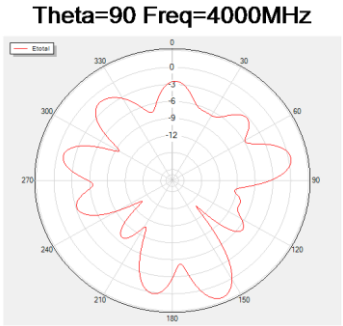
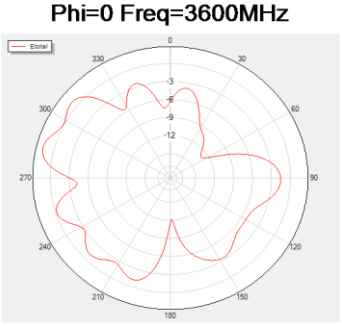
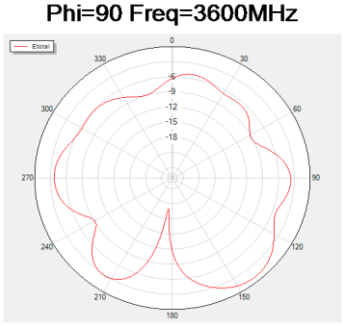
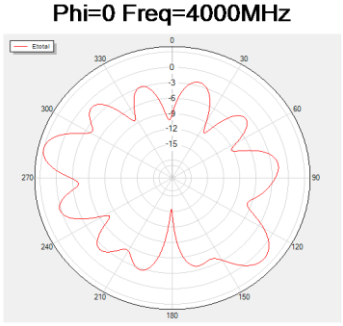
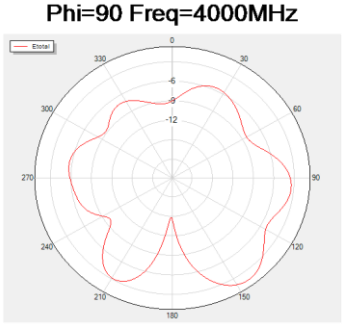
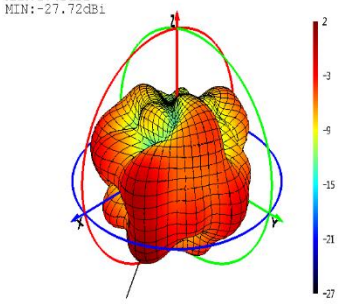
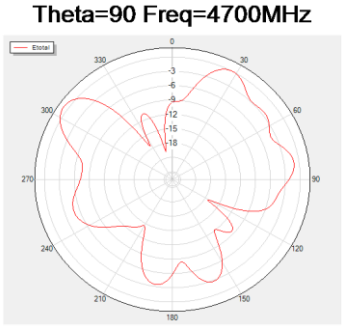
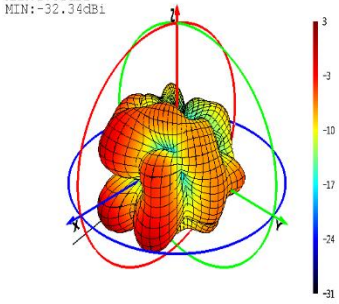
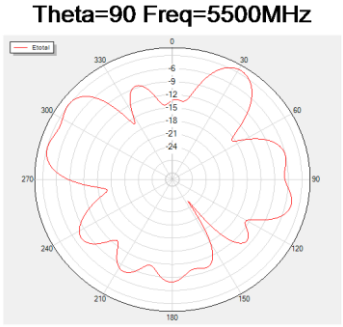
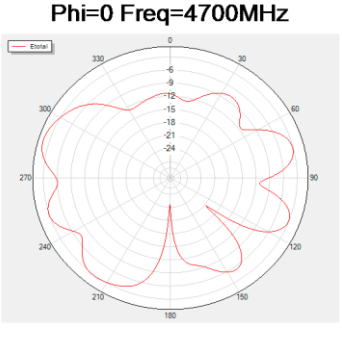
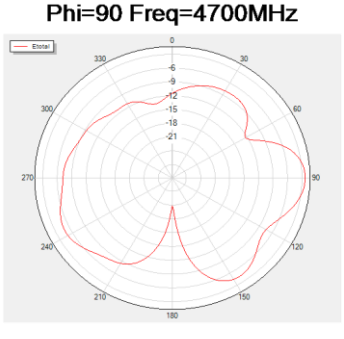
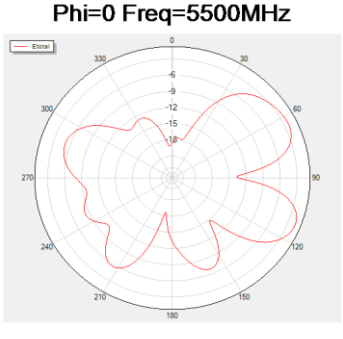
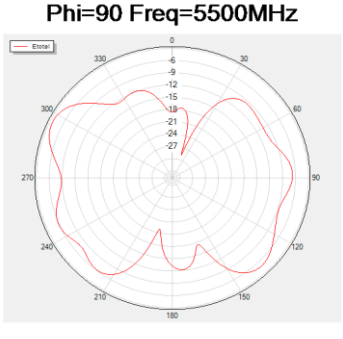
- Test Chamber: FS-S-1



| 630 MHz | | 710 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
| 830 MHz | | 900 MHz | |
|  |  |  |  |
|  |  |  |  |

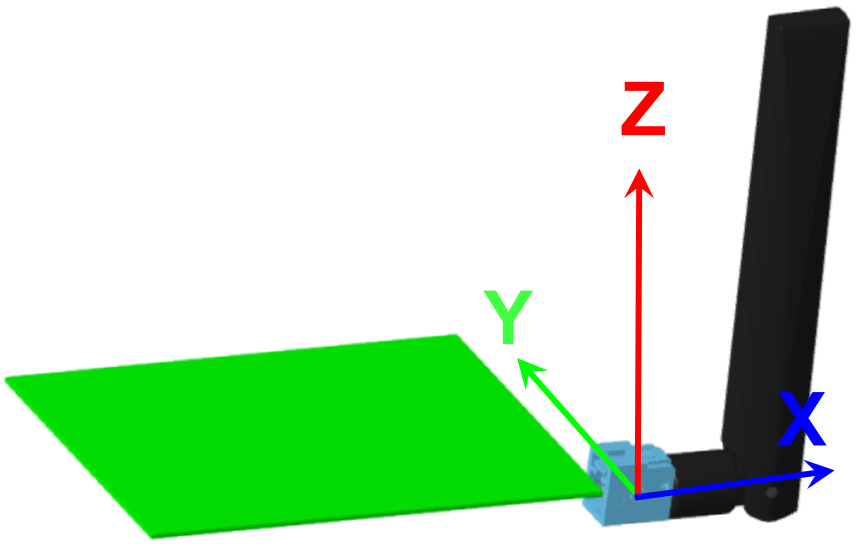
| 1440 MHz | | 1740 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
| 1880 MHz | | 1950 MHz | |
|  |  |  |  |
|  |  |  |  |

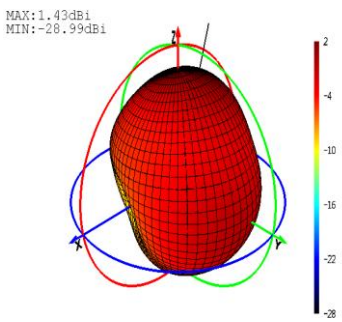
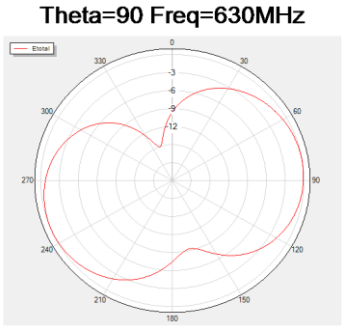
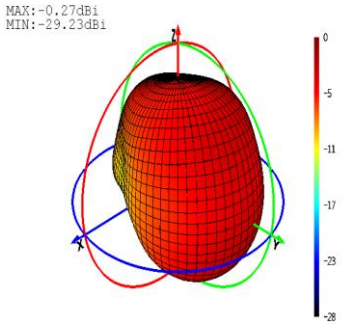
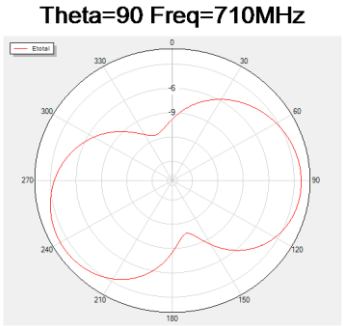
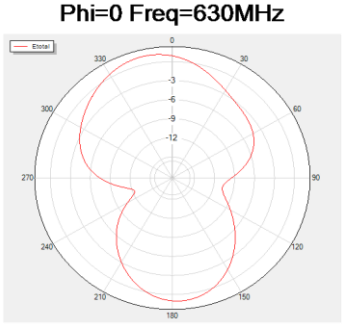
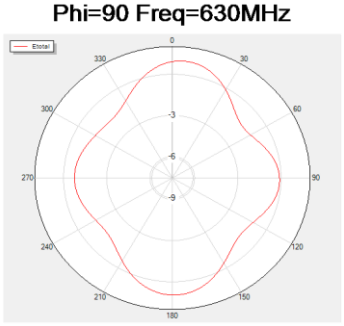
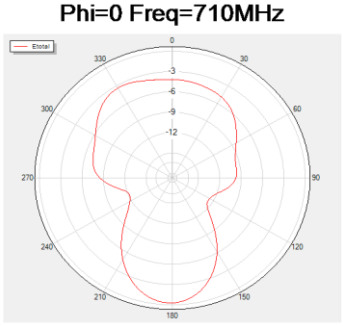
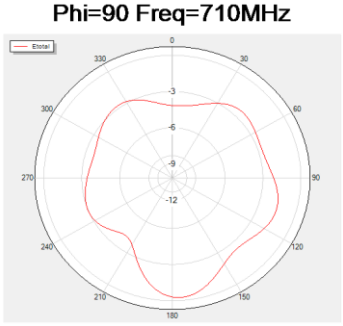
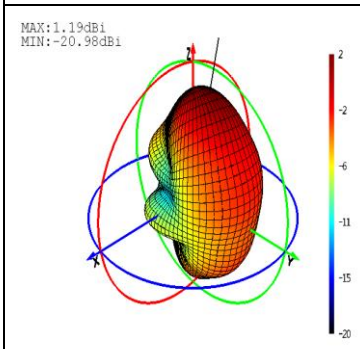
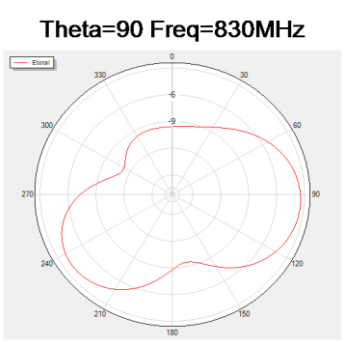
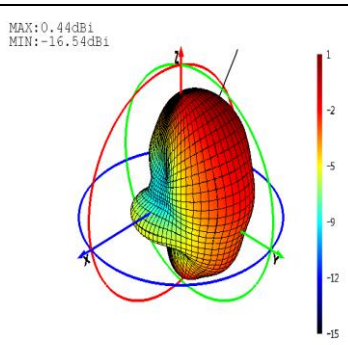
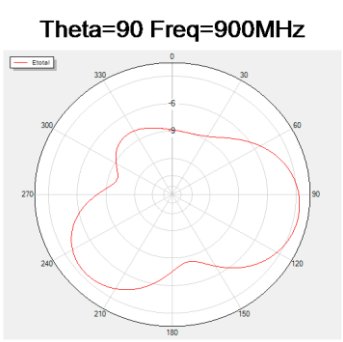
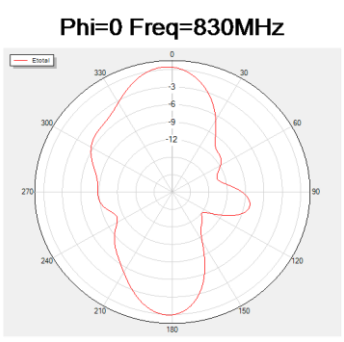
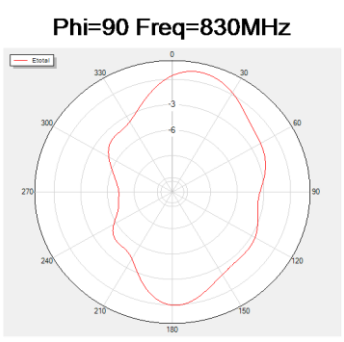
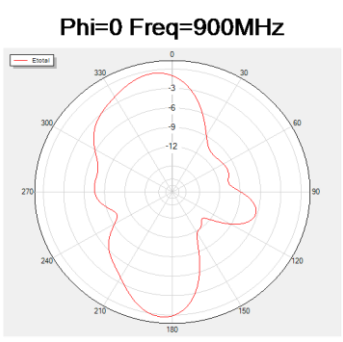
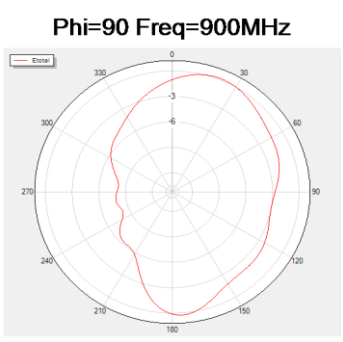
| 2140 MHz | | 2350 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
| 2450 MHz | | 2600 MHz | |
|  |  |  |  |
|  |  |  |  |

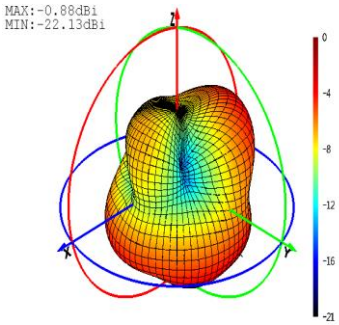
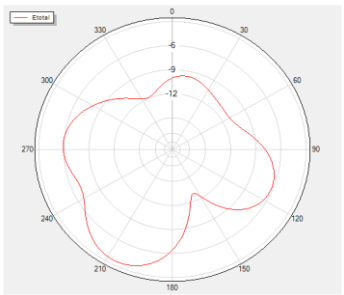
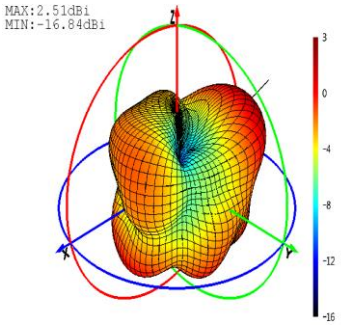
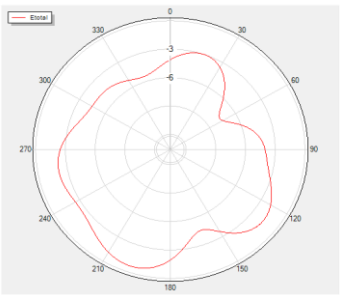
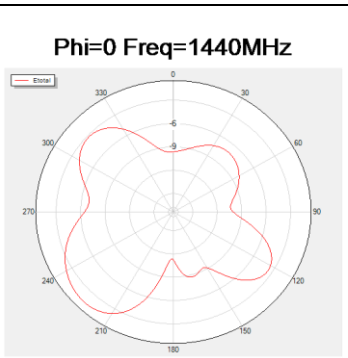
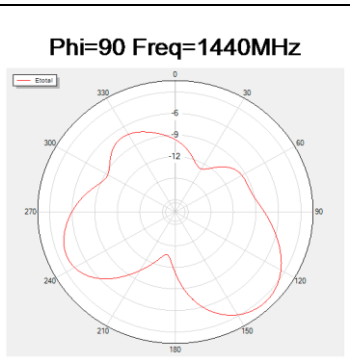
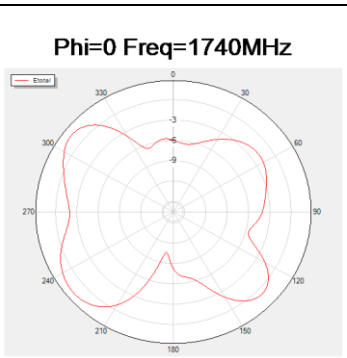
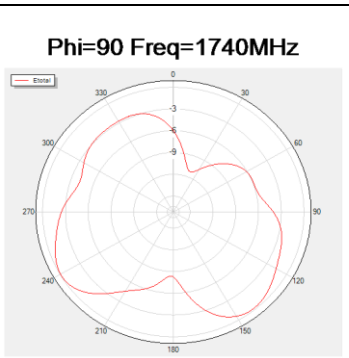
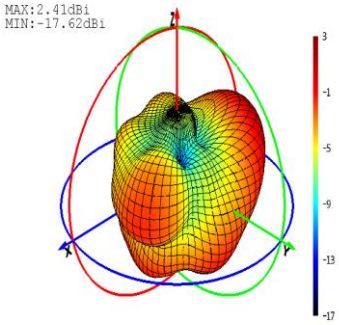
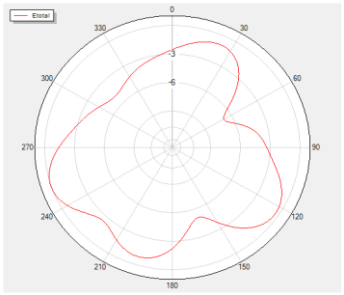
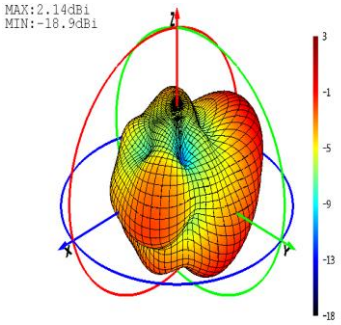
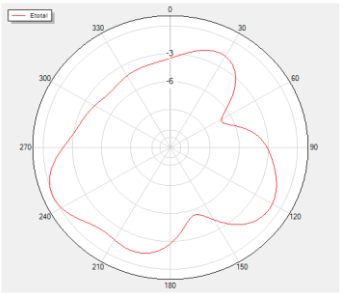
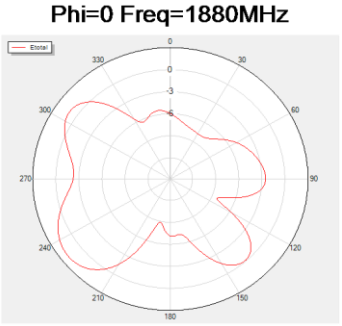
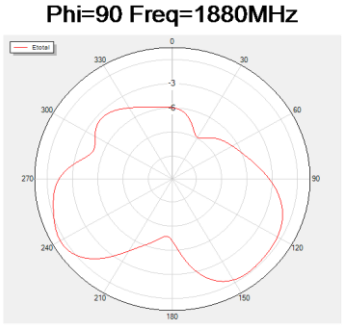
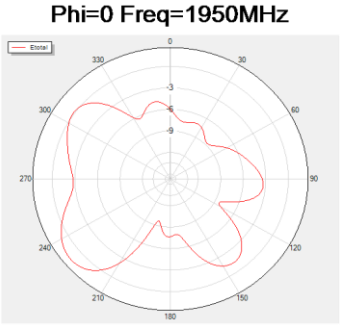
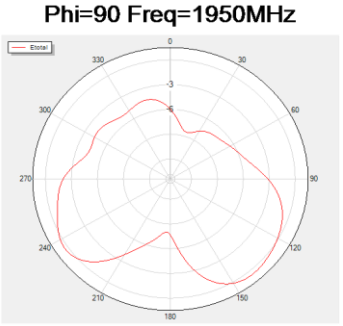
| 3600 MHz | | 4000 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
| 4700 MHz | | 5500 MHz | |
|  |  |  |  |
|  |  |  |  |

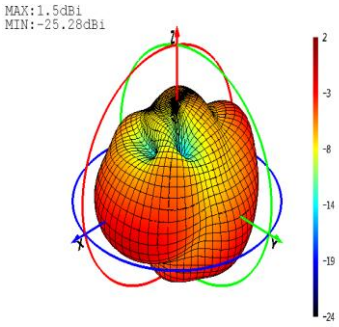
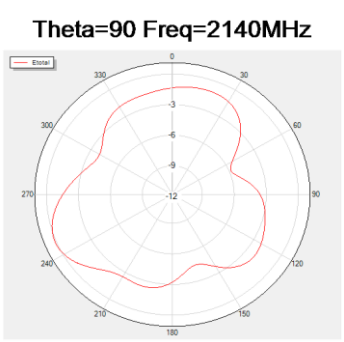
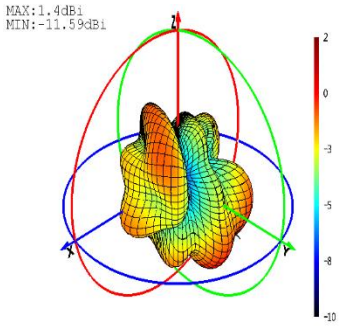
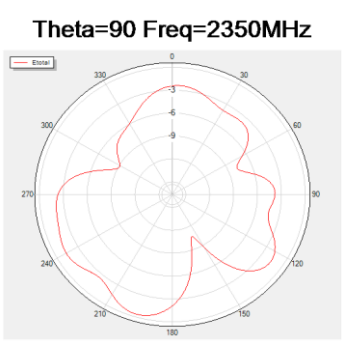
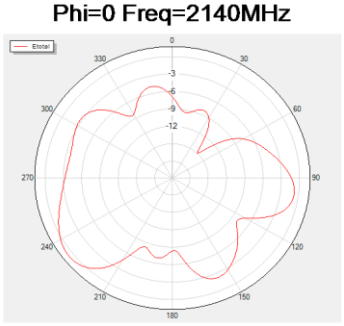
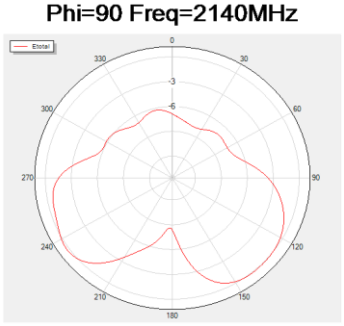
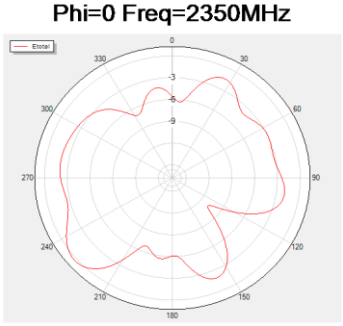
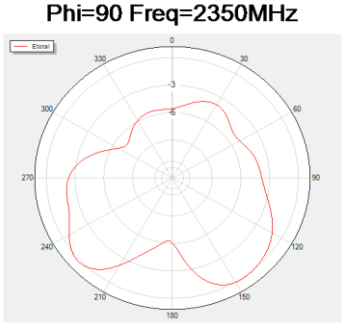
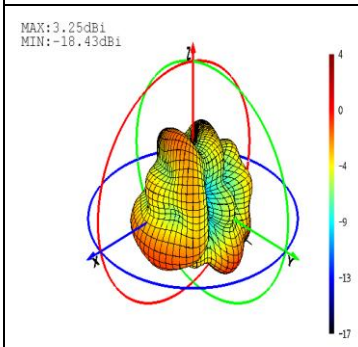
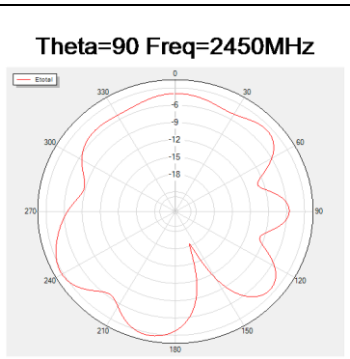
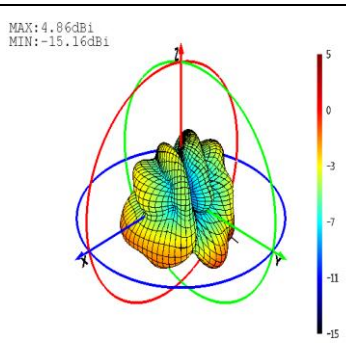
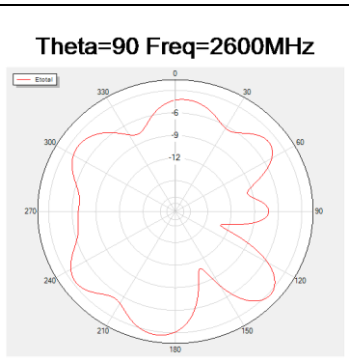
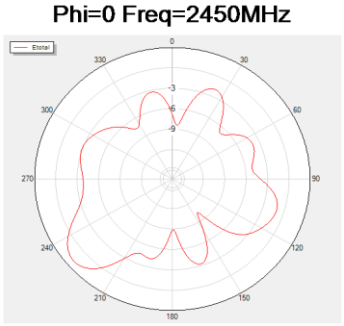
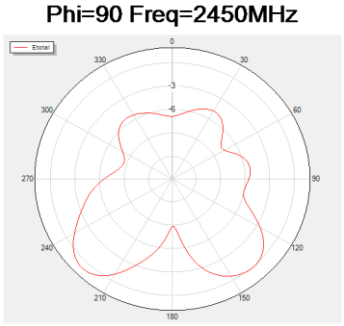
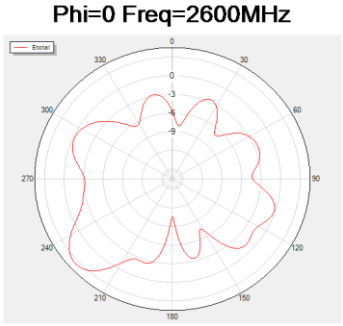
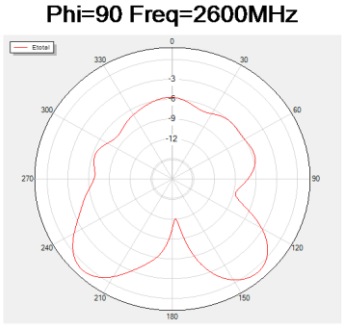
#### 3.2.4.2. Test Condition: On 130 mm × 70 mm EVB and Bent

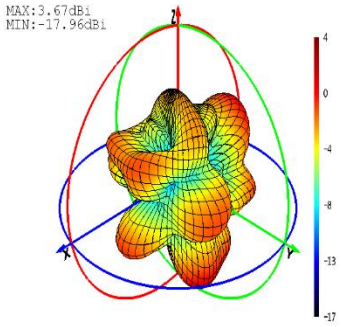
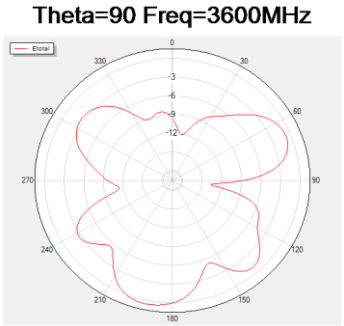
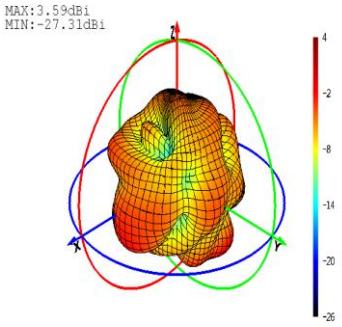
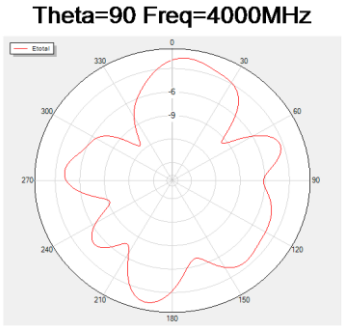
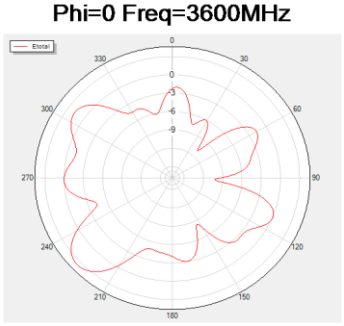
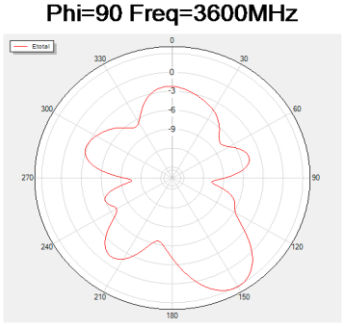
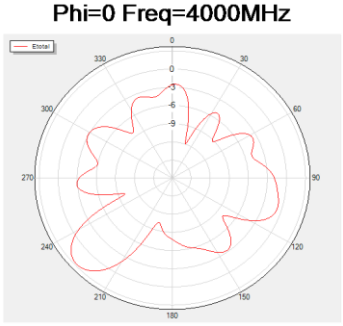
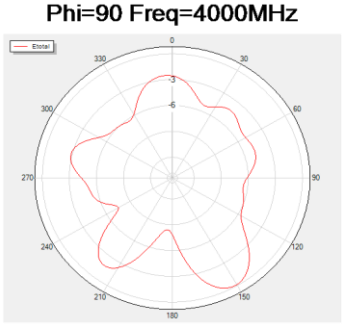
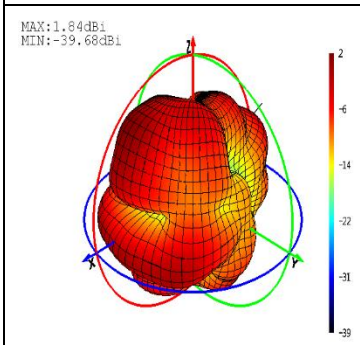
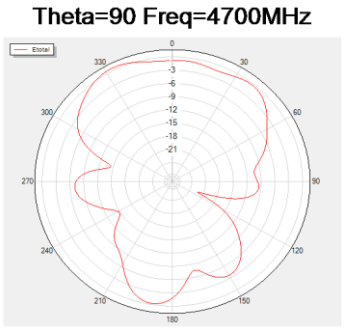
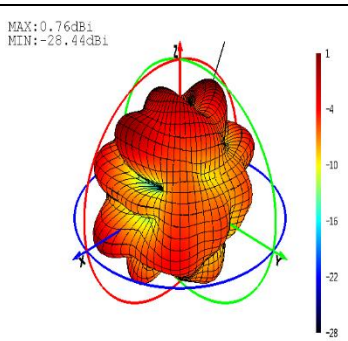
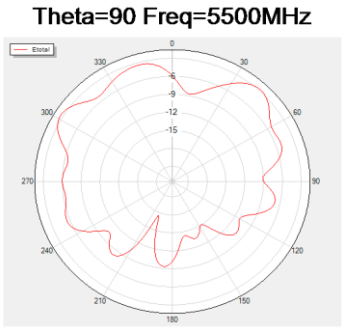
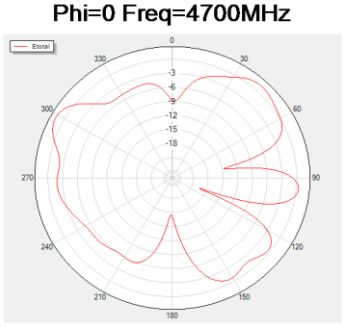
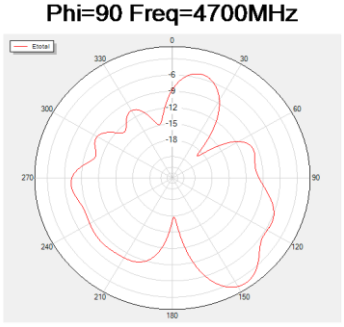
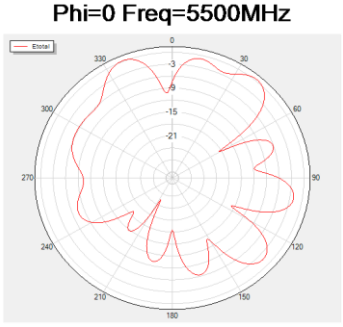
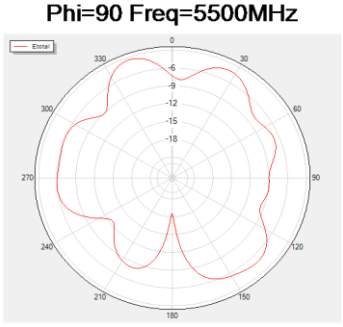
- Test Chamber: FS-S-1



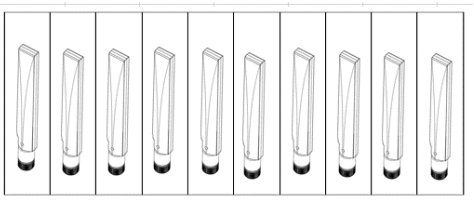
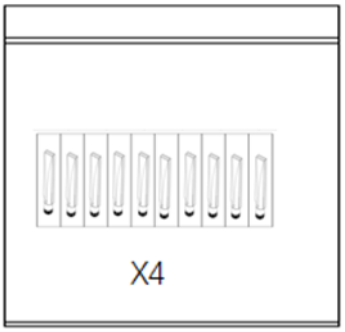
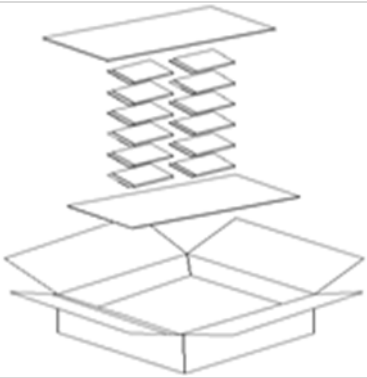
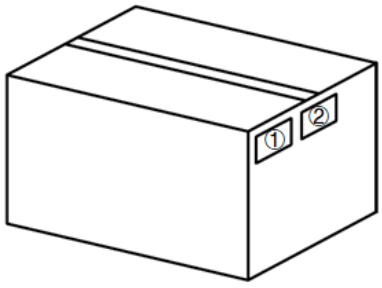
| 630 MHz | | 710 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
| 830 MHz | | 900 MHz | |
|  |  |  |  |
|  |  |  |  |

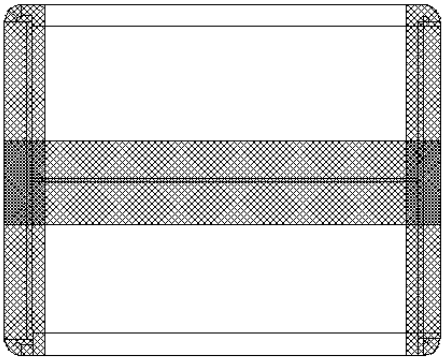
| 1440 MHz | | 1740 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
| 1880 MHz | | 1950 MHz | |
|  |  |  |  |
|  |  |  |  |

| 2140 MHz | | 2350 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
| 2450 MHz | | 2600 MHz | |
|  |  |  |  |
|  |  |  |  |

| 3600 MHz | | 4000 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
| 4700 MHz | | 5500 MHz | |
|  |  |  |  |
|  |  |  |  |

# 4 Packaging

| Step | Packaging Picture / 2D Picture | Description |
|---|---|---|
| 1 |  | 10 antenna products in a one-piece bag.<br>(10 Antennas / One-piece Bag) |
| 2 |  | 40 antenna products in a PE bag.<br>(40 Antennas / PE Bag) |
| 3 |  | (16 PE Bags / Carton Box)<br>(640 Antennas / Carton Box)<br>Estimated quantity<br>Products that cannot fill the entire carton box are packed in a suitable size carton box.<br>Carton Size:<br>L × W × H = 325 × 325 × 200 mm |
| 4 |  | **Position for Attaching Labels**<br>① Carton Label<br>② Quality Label |

| | | |
|---|---|---|
| 5 |  | **Sealing Cartons**<br>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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**Or our local offices. For more information, please visit:**
https://www.quectel.com/contact/.

**For technical support, or to report documentation errors, please visit:**
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# Revision History

| Version | Date | Author | Note |
|---|---|---|---|
| - | 2024-05-12 | Mordecai Liu/ Lance Sun/ David Liu/ Rainey Liao | Creation of the document |
| 1.0 | 2024-05-12 | Mordecai Liu/ Lance Sun/ David Liu/ Rainey Liao | First official release |
| 2.0 | 2024-12-17 | Mordecai Liu/ Lance Sun | Numerous changes were made to this document. It should be read in its entirety. |
| 2.1 | 2025-12-29 | Blake Xiang | Updated the drawing (Chapter 2). |

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