
# Antenna Datasheet

**Product OC:** YFCA002HA
**Version:** 2.1
**Date:** 2024-09-18
**Status:** Released

**Product Name:** 4G Adhesive Mount FPC Monopole Antenna
**Key Features:**
Frequency Band: 700–960 MHz; 1710–2690 MHz
Dimensions: 30 mm × 20 mm
Efficiency: Up to 77 %
RoHS and REACH Compliant

# Overview

YFCA002HA is a 4G FPC antenna measuring 30 mm × 20 mm. This 4G antenna provides coverage from 700–960 MHz; 1710-2690 MHz. The antenna has an 86.5 mm-long cable, terminated with IPEX MHF 1 connector, and is available with customized cable lengths and connectors. Ideal for applications where the antenna is required to be mounted inside, this adhesive mount omni-directional antenna is easy to install thanks to its flexible material. It is compatible with Quectel's 4G Series modules. It has been tested with ABS board.

It allows constant and reliable transmission and reception due to its omni-directional gain across all frequency bands. YFCA002HA is designed as a monopole antenna, which is ground dependent to offer high efficiency in many different mounting scenarios. It is a perfect antenna product for customers that desire highest performance. This high-efficiency, high-gain omni-directional antenna is ideally suited for smart metering, remote monitoring, vehicle tracking and telematics, and many other IoT devices.

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: Stick 3 mm thick ABS board to 130 mm × 130 mm EVB board**

## 1.1. Electrical

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

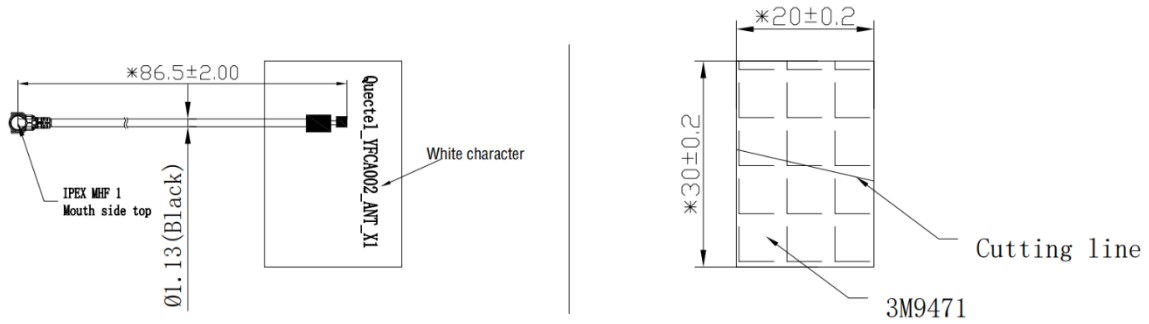
**Electrical – Detail**

| Band / SPEC | Band | B71 | B12 /B13 /B28 | B5 /B8 /B26 | n74 /n75 /n76 | B1 /B2 /B3 | B40 | Wi-Fi 2G | B38 /B41 | B42 /B48 /n77 | n79 | Wi-Fi 5G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. (MHz) | 600–700 | 700–810 | 820–960 | 1420–1520 | 1700–2170 | 2300–2400 | 2400–2500 | 2500–2690 | 3300–4200 | 4400–5000 | 5150–5850 |
| **Max. VSWR** | | - | 7.8 | 7.7 | - | 3.4 | 2.4 | 2.8 | 2.8 | - | - | - |
| **Max. Return Loss (dB)** | | - | -2.2 | -2.3 | - | -5.2 | -7.9 | -6.4 | -6.4 | - | - | - |
| **AVG Eff. (%)** | | - | 20.1 | 32.0 | - | 63.5 | 58.5 | 54.6 | 56.8 | - | - | - |
| **AVG AVG Gain (dB)** | | - | -7.0 | -5.1 | - | -2.1 | -2.3 | -2.6 | -2.5 | - | - | - |
| **Max. Peak Gain (dBi)** | | - | -2.1 | 1.7 | - | 3.1 | 2.0 | 2.9 | 3.7 | - | - | - |
| **VSWR** | ≤ 7.8 | | | | | | | | | | | |
| **Return Loss** | ≤ -2.2 dB | | | | | | | | | | | |
| **Peak Gain** | ≤ 3.7 dBi | | | | | | | | | | | |

## 1.2. Mechanical & Environmental

| | |
|---|---|
| **Mechanical** | |
| **Antenna Dimensions** | 30 mm × 20 mm |
| **Antenna Material & Color** | FPC & Black |
| **Cable Type & Color & Length** | Φ 1.13 & Black & 86.5 mm |
| **Connector Type** | IPEX MHF 1 |
| **Mounting Type** | Adhesive |
| **Antenna Weight** | Typ. 0.6 g |
| **Environmental** | |
| **Operation Temperature** | -40 °C to +85 °C |
| **Storage Temperature** | -40 °C to +85 °C |
| **RoHS and REACH Compliant** | Yes |

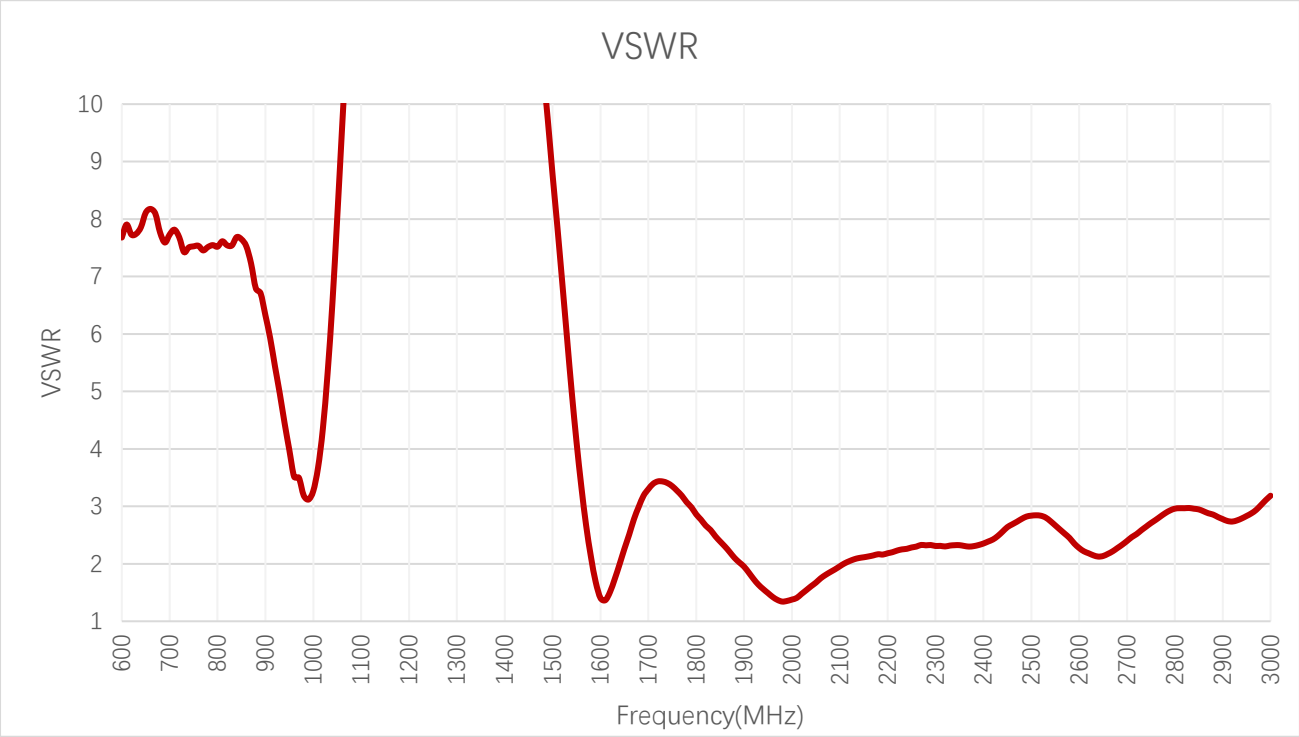
# 2 Drawing


*86.5±2.00
Quectel_YFCA002_ANT_X1
White character
IPEX MHF 1
Mouth side top
Ø1.13(Black)
*20±0.2
*30±0.2
Cutting line
3M9471

# 3 Detailed Performance

## 3.1. S-Parameter Test

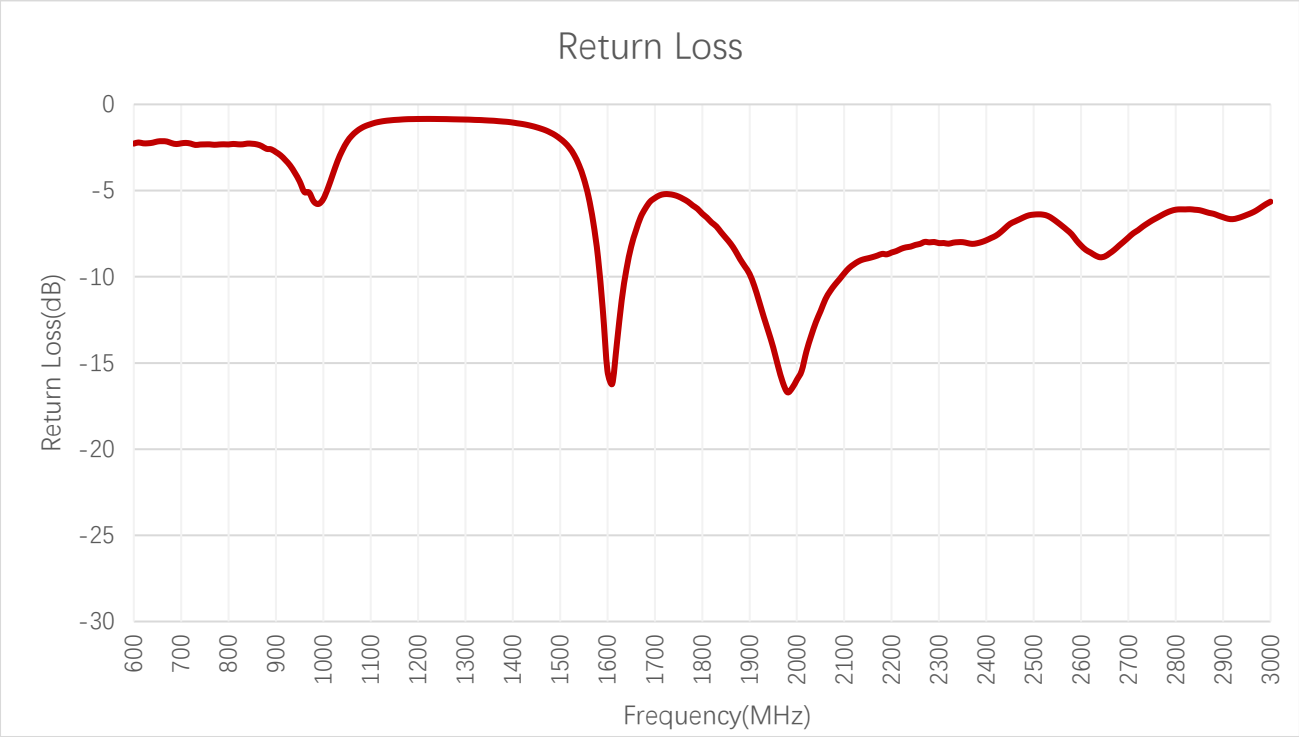
### 3.1.1. VSWR




**VSWR**

| Frequency (MHz) | 600 | 630 | 710 | 830 | 900 | 960 | 1440 | 1710 | 1740 | 1880 |
|---|---|---|---|---|---|---|---|---|---|---|
| VSWR | - | - | 7.8 | 7.5 | 6.3 | 3.5 | - | 3.4 | 3.4 | 2.1 |
| **Frequency (MHz)** | **1950** | **2140** | **2350** | **2450** | **2600** | **2690** | **4700** | **5000** | **5500** | **6000** |
| VSWR | 1.5 | 2.1 | 2.3 | 2.6 | 2.3 | 2.3 | - | - | - | - |

### 3.1.2. Return Loss

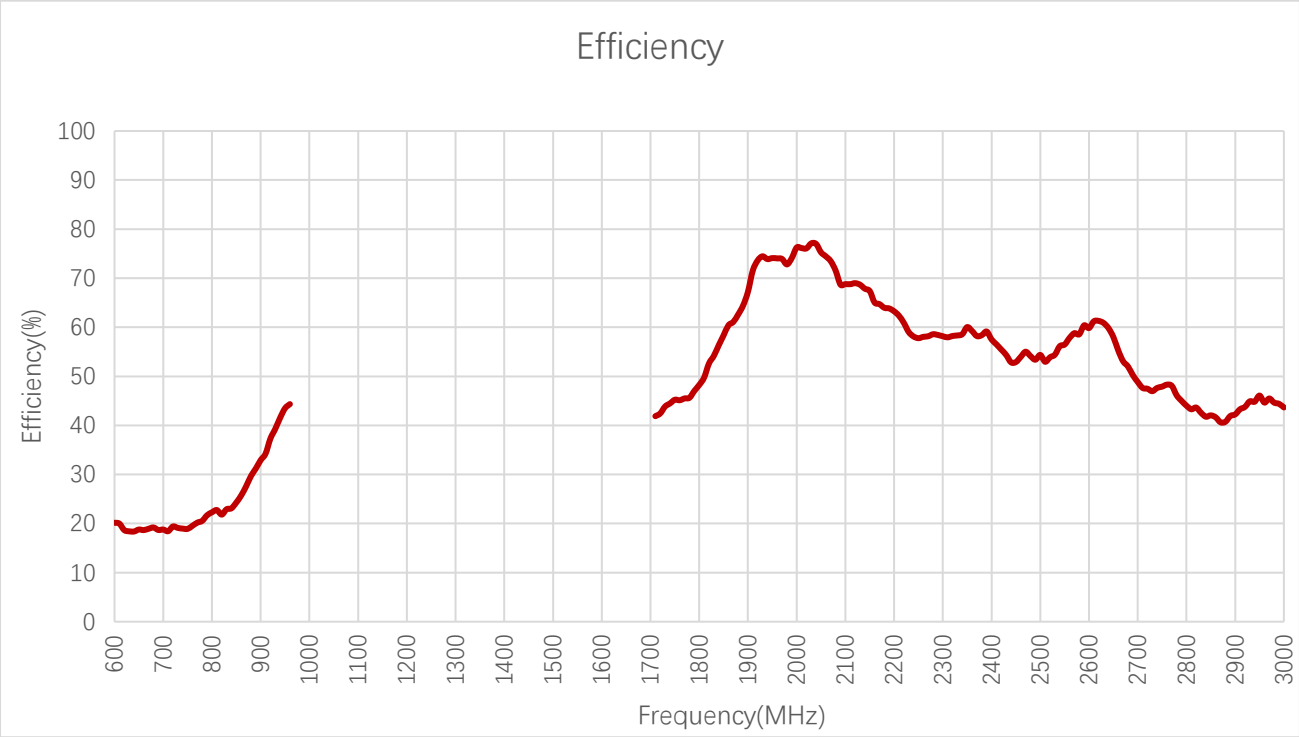



**Return Loss (dB)**

| **Frequency (MHz)** | **600** | **630** | **710** | **830** | **900** | **960** | **1440** | **1710** | **1740** | **1880** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Return Loss (dB)** | - | - | -2.2 | -2.3 | -2.8 | -5.1 | - | -5.3 | -5.3 | -9.0 |
| **Frequency (MHz)** | **1950** | **2140** | **2350** | **2450** | **2600** | **2690** | **4700** | **5000** | **5500** | **6000** |
| **Return Loss (dB)** | -14.1 | -9.0 | -8.0 | -6.9 | -8.2 | -8.0 | - | - | - | - |

## 3.2. Radiation Performance Test

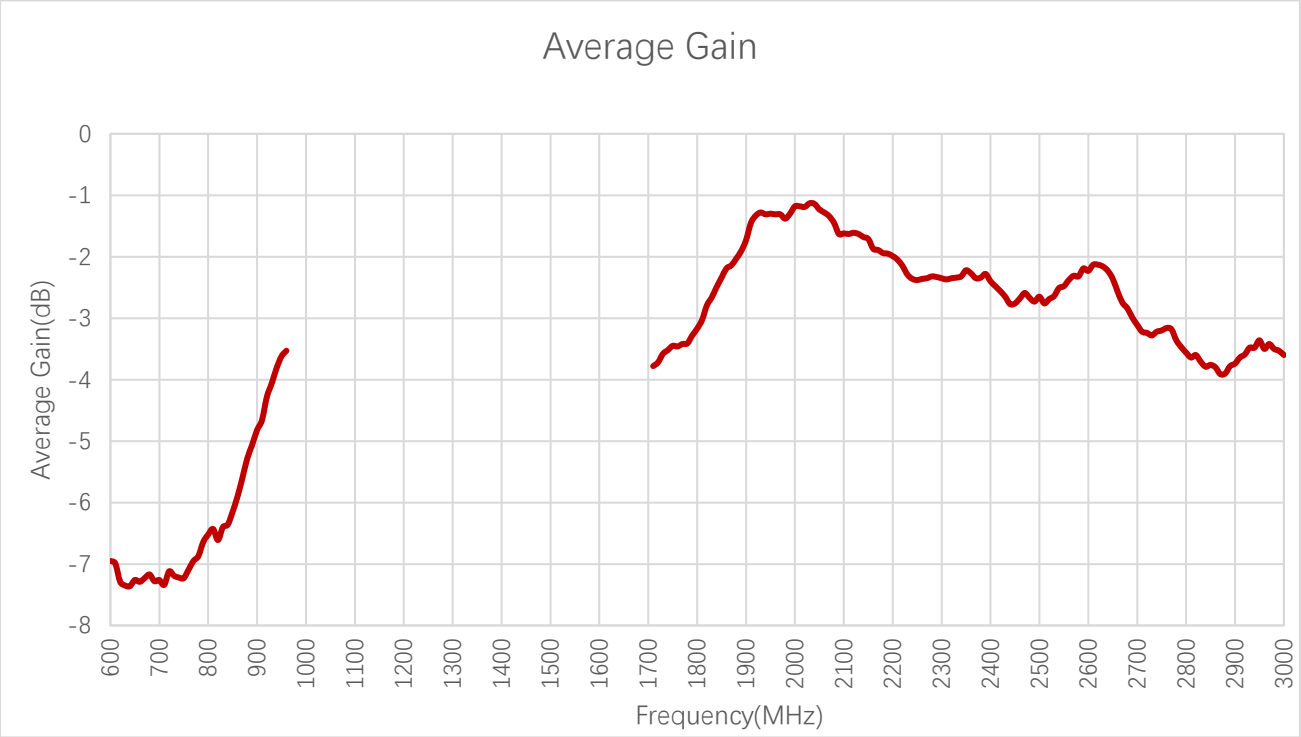
### 3.2.1. Efficiency




**Efficiency (%)**

| Frequency (MHz) | 600 | 630 | 710 | 830 | 900 | 960 | 1440 | 1710 | 1740 | 1880 |
|---|---|---|---|---|---|---|---|---|---|---|
| Efficiency (%) | - | - | 18.4 | 22.9 | 32.9 | 44.3 | - | 41.9 | 44.5 | 62.6 |
| **Frequency (MHz)** | **1950** | **2140** | **2350** | **2450** | **2600** | **2690** | **4700** | **5000** | **5500** | **6000** |
| Efficiency (%) | 74.1 | 67.9 | 60.0 | 52.9 | 59.8 | 50.3 | - | - | - | - |

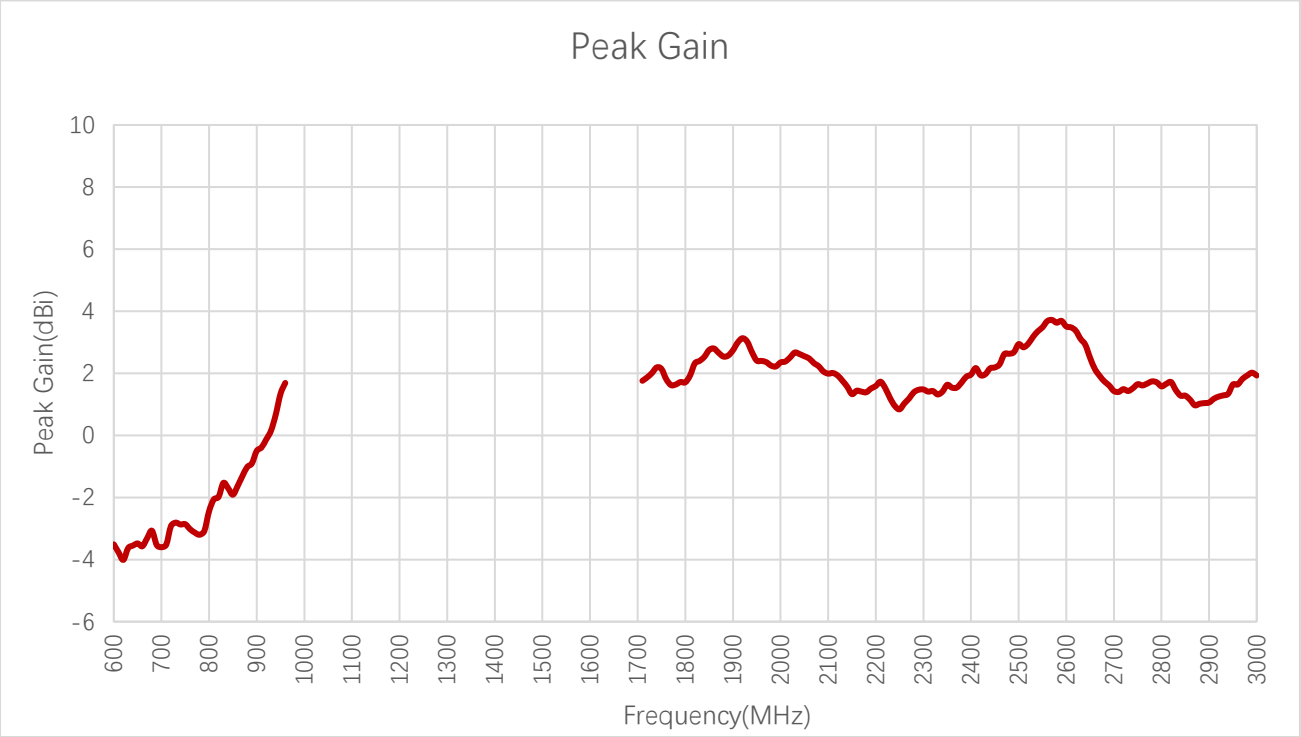
### 3.2.2. Average Gain




**Average Gain (dB)**

| Frequency (MHz) | 600 | 630 | 710 | 830 | 900 | 960 | 1440 | 1710 | 1740 | 1880 |
|---|---|---|---|---|---|---|---|---|---|---|
| Average Gain (dB) | - | - | -7.3 | -6.4 | -4.8 | -3.5 | - | -3.8 | -3.5 | -2.0 |
| **Frequency (MHz)** | **1950** | **2140** | **2350** | **2450** | **2600** | **2690** | **4700** | **5000** | **5500** | **6000** |
| Average Gain (dB) | -1.3 | -1.7 | -2.2 | -2.8 | -2.2 | -3.0 | - | - | - | - |

### 3.2.3. Peak Gain



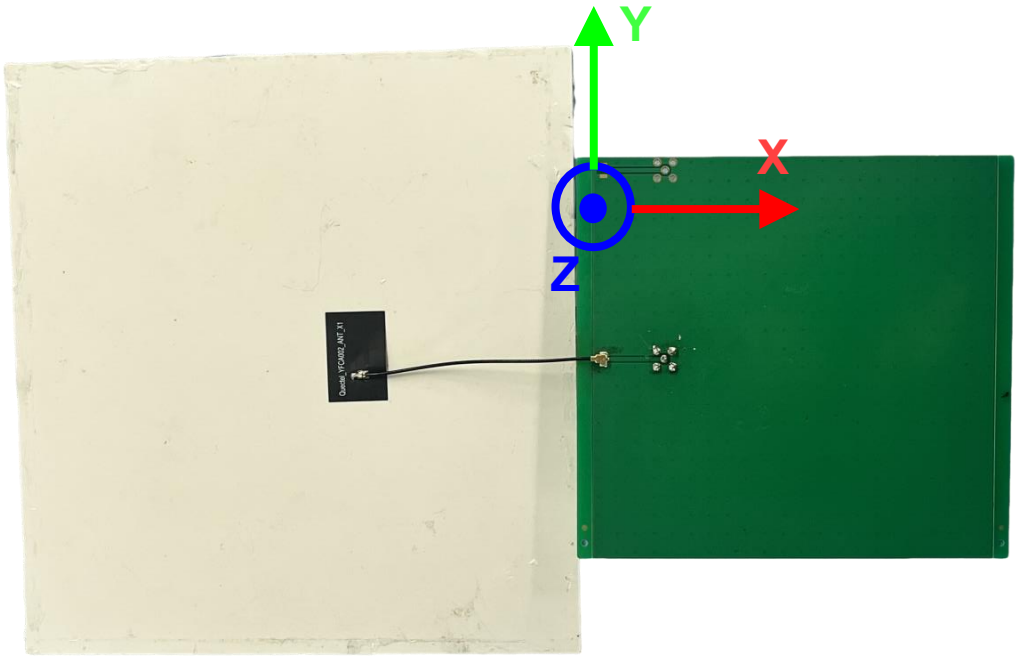

**Peak Gain (dBi)**

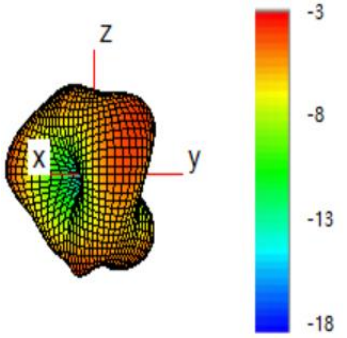
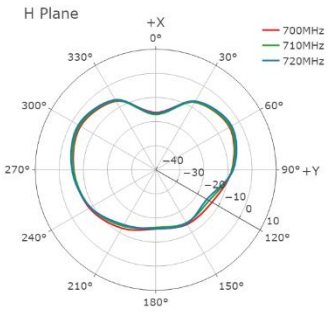
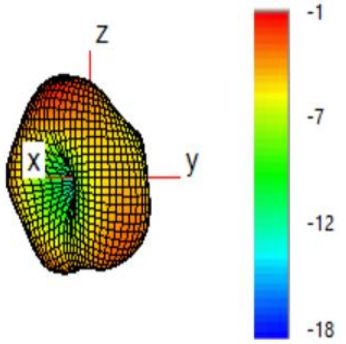
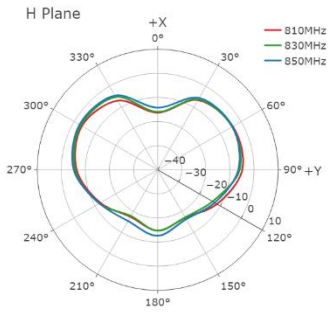
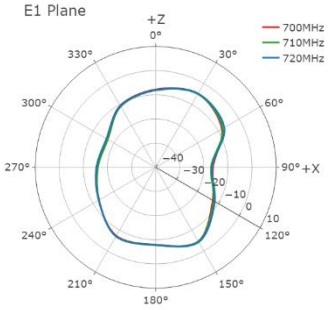
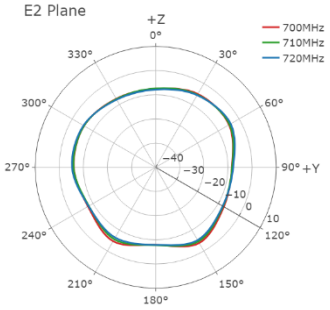
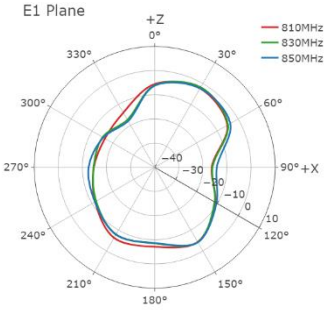
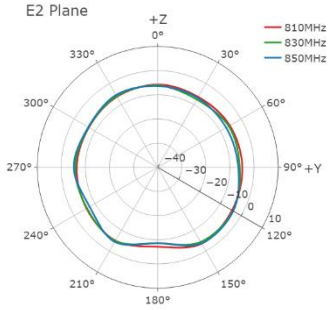
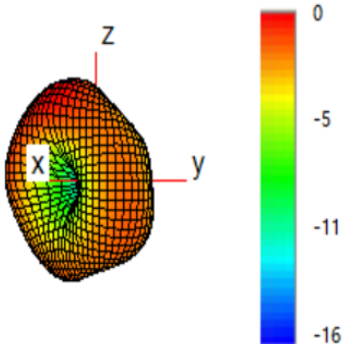
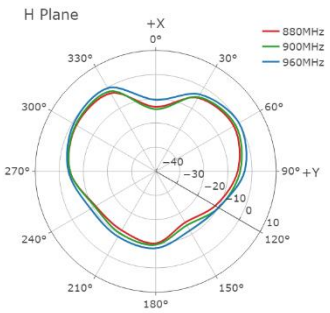
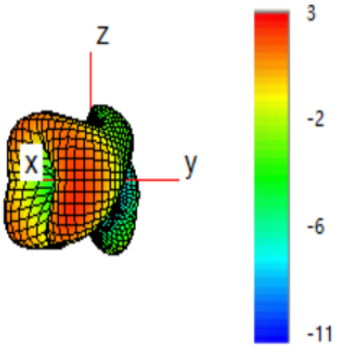
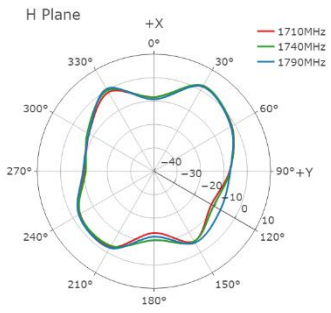
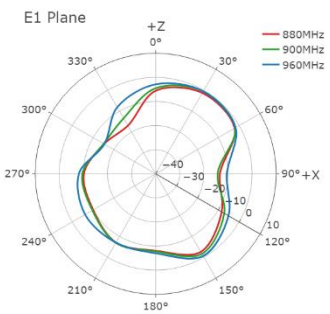
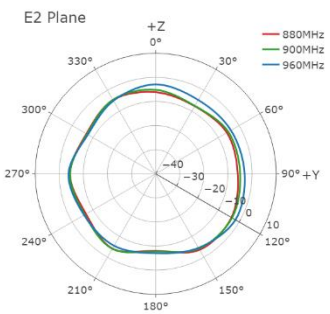
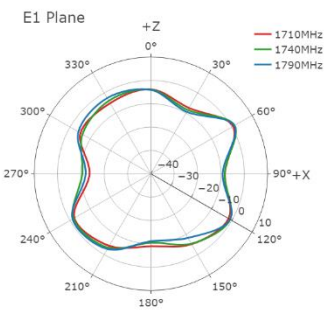
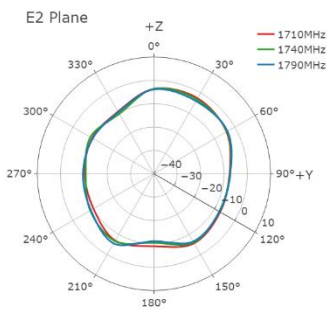
| **Frequency (MHz)** | **600** | **630** | **710** | **830** | **900** | **960** | **1440** | **1710** | **1740** | **1880** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Peak Gain (dBi)** | - | - | -3.5 | -1.5 | -0.5 | 1.7 | - | 1.8 | 2.2 | 2.5 |
| **Frequency (MHz)** | **1950** | **2140** | **2350** | **2450** | **2600** | **2690** | **4700** | **5000** | **5500** | **6000** |
| **Peak Gain (dBi)** | 2.4 | 1.6 | 1.6 | 2.2 | 3.5 | 1.6 | - | - | - | - |

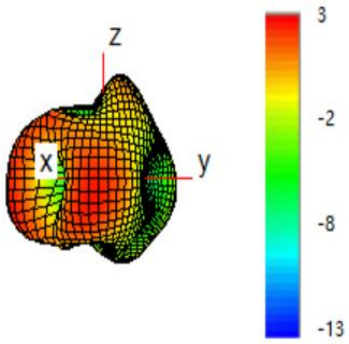
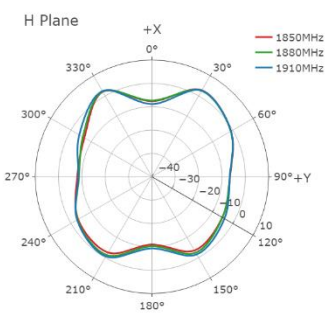
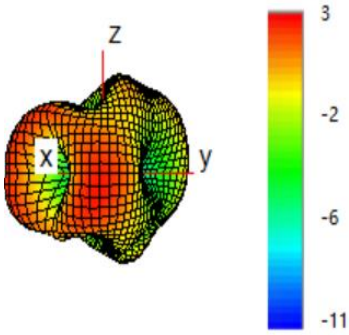
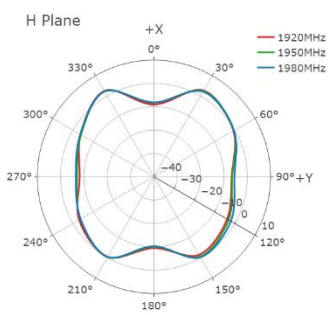
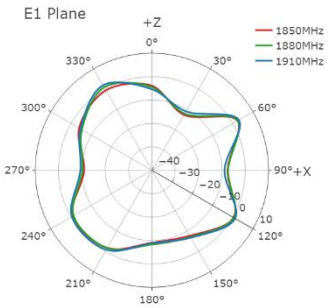
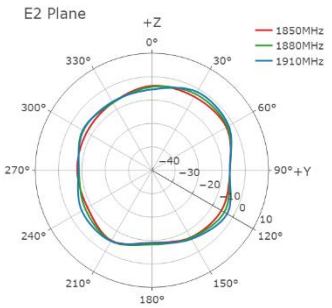
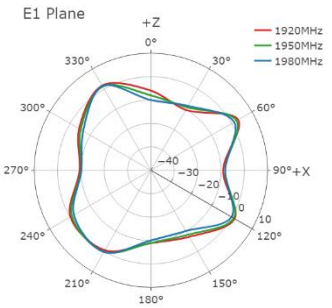
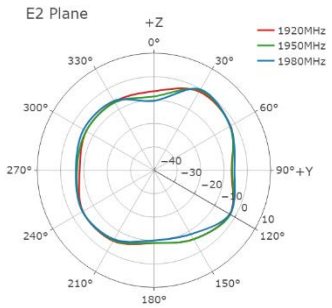
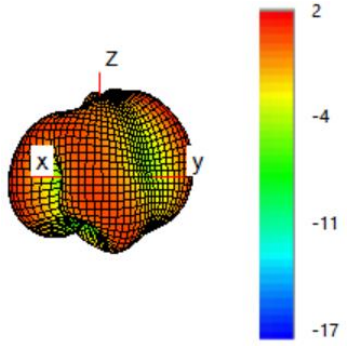
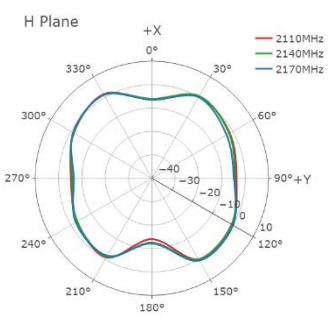
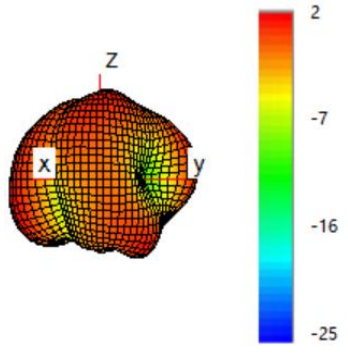
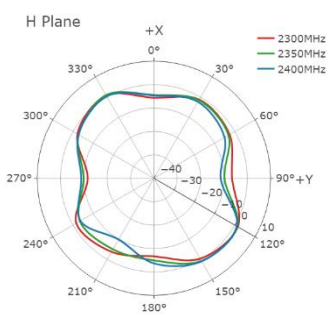
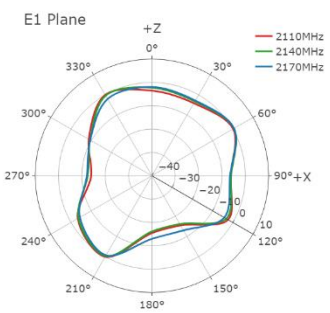
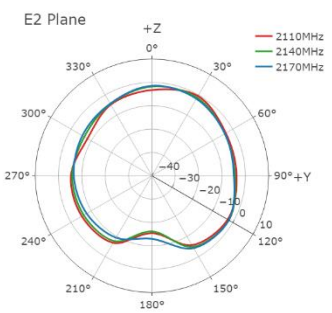
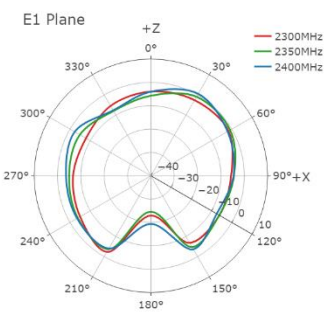
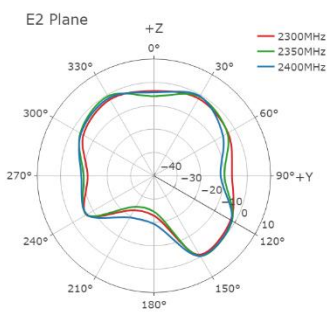
### 3.2.4. 3D & 2D Radiation Pattern

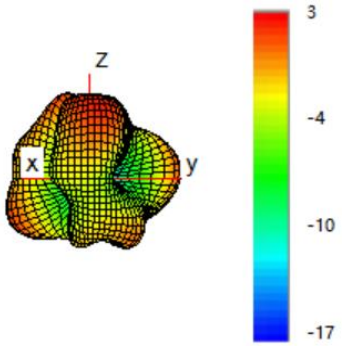
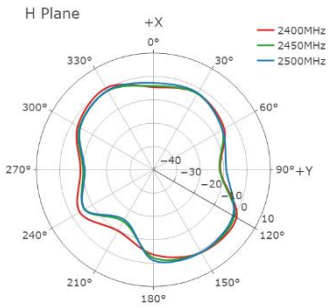
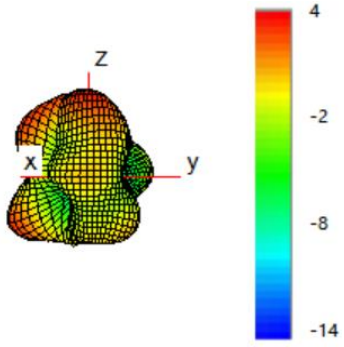
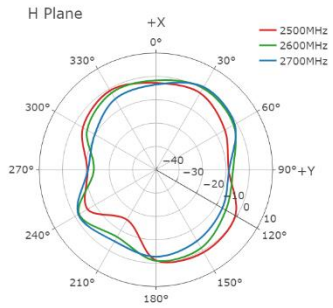
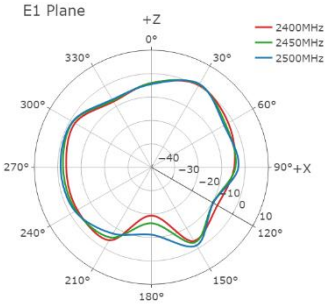
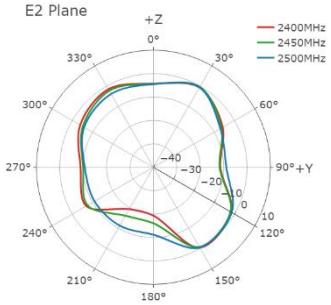
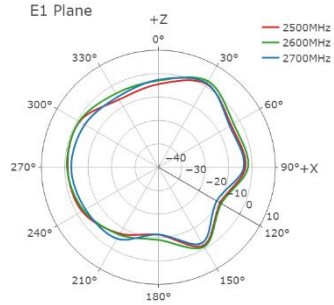
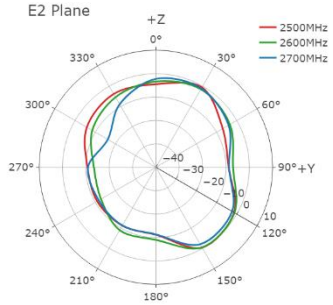
#### 3.2.4.1. Test Condition: Stick 3 mm Thick ABS Board to 130 × 130 mm EVB Board

- Test Chamber: GL-G-1

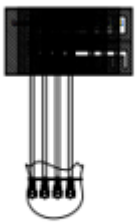
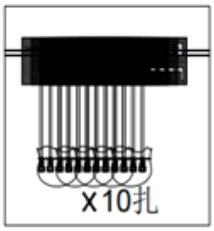
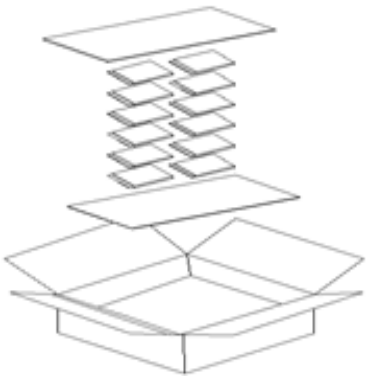


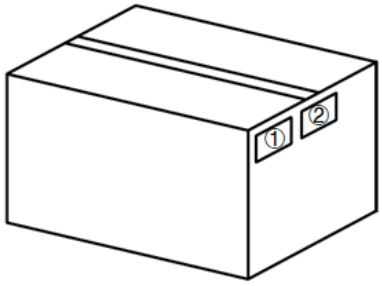
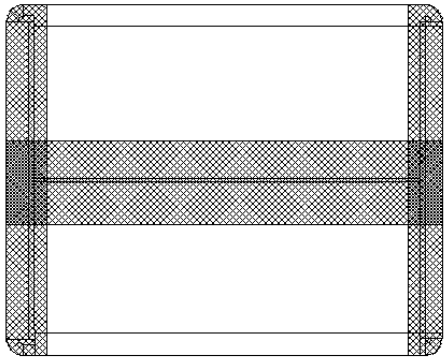
| 710 MHz | | 830 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
| 900 MHz | | 1740 MHz | |
|  |  |  |  |
|  |  |  |  |

| 1880 MHz | | 1950 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
| 2140 MHz | | 2350 MHz | |
|  |  |  |  |
|  |  |  |  |

| 2450 MHz | | 2600 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |

# 4 Packaging

| Step | Packaging Picture/2D Picture | Description |
|---|---|---|
| 1 |  <br>20pcs/tie | The product terminals are wrapped with EPE foam.<br>(20 PCS / Tie) |
| 2 |  <br>200pcs/bag | 200 pcs antenna products in a PE bag.<br>(200 PCS / PE Bag) |
| 3 |  | (30 PE Bags / Carton Box)<br>(6000 PCS 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 = 300 × 250 × 200 mm |

| | | |
|---|---|---|
| 4 |  | **Position for Attaching Labels**<br>① Carton Label<br>② Quality Label |
| 5 |  | **Sealing Cartons**<br>"工" type sealing cartons |

# Contact Us

**At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:**

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Tel: +86 21 5108 6236
Email: info@quectel.com

**Or our local offices. For more information, please visit:**
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# Revision History

| Version | Date | Author | Note |
|---|---|---|---|
| - | 2022-07-25 | Andy MIAO/ Joye WANG | Creation of the document |
| 1.0 | 2022-07-25 | Andy MIAO/ Joye WANG | First official release |
| 1.1 | 2023-06-12 | David LIU/ Vinnie LIU | Added the packaging information (Chapter 6). |
| 1.2 | 2024-06-07 | Joye WANG | Updated drawing (Chapter 5) |
| 2.0 | 2024-07-24 | Nico PAN/ Lucky FENG/ David LIU/ Rainey LIAO | 1. Numerous changes were made to this document. It should be read in its entirety.<br>2. Updated the template. |
| 2.1 | 2024-09-18 | Rainey LIAO | Updated the Overview. |

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