# Antenna Datasheet

**Product OC:** YEBT002W1AM
**Version:** 2.1
**Date:** 2024-11-07
**Status:** Released

**Product Name:** Wi-Fi Terminal Mount External Dipole Antenna
**Key Features:**
Frequency Band: 2400–2500 MHz, 5150–5850 MHz, 5925–7125 MHz
Dimensions: 135 mm × 15.6 mm × 13 mm
Efficiency: Up to 72.4 %
RoHS Compliant

# Overview

YEBT002W1AM is a Wi-Fi external antenna measuring 135 mm × 15.6 mm × 13 mm. This ultra-wide-band Wi-Fi antenna provides broad coverage from 2400–2500 MHz & 5150–5850 MHz & 5925–7125 MHz. The antenna is terminated with RP SMA Male connector, also supports N male, TNC male, Fakra male connectors. 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 PC+ABS enclosure. It is compatible with Quectel's Wi-Fi modules.

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 Wi-Fi, WLAN, Zigbee, Bluetooth, and 802.11a/b/g/n/ac applications, WIFI application points and routers, offering great performance with its high gain and efficiency.

Typical applications include:

- Wi-Fi, WLAN, Zigbee, Bluetooth, and 802.11a/b/g/n/ac applications
- Wi-Fi application points and routers

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: Free Space & 130 mm × 70 mm EVB**

## 1.1. Electrical

| Electrical | |
|---|---|
| **Frequency Range** | 2400–2500 MHz, 5150–5850 MHz, 5925–7125 MHz |
| **Impedance** | 50 Ω |
| **Polarization** | Linear |
| **Radiation Pattern** | Omni-directional |

| Specification \ Band | Band | Wi-Fi 2G | Wi-Fi 5G | Wi-Fi 6G |
|---|---|---|---|---|
| | **Freq. (MHz)** | **2400–2500** | **5150–5850** | **5925–7125** |
| **Max. VSWR** | **FS** | 1.9 | 2.1 | 1.7 |
| | **EVB** | 1.9 | 1.8 | 2.5 |
| **Max. Return Loss (dB)** | **FS** | -10.0 | -9.1 | -11.9 |
| | **EVB** | -10.0 | -11.0 | -7.3 |
| **AVG Eff. (%)** | **FS** | 51.5 | 53.7 | 51.8 |
| | **EVB** | 66.3 | 60.0 | 46.4 |
| **AVG Gain (dB)** | **FS** | -2.9 | -2.7 | -2.9 |
| | **EVB** | -1.8 | -2.3 | -3.4 |
| **Max. Peak Gain (dBi)** | **FS** | 2.1 | 4.4 | 4.8 |
| | **EVB** | 3.3 | 3.9 | 3.7 |
| **VSWR** | **FS** | ≤ 2.1 | | |

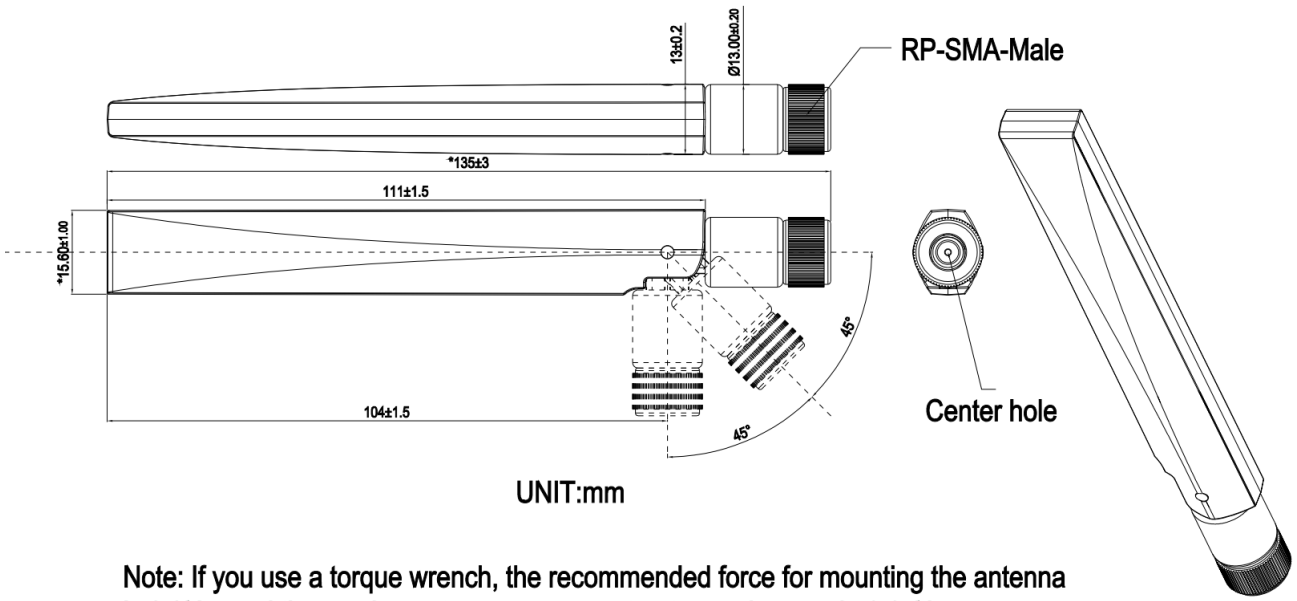
| | | |
|---|---|---|
| | **EVB** | ≤ 2.5 |
| **Return Loss** | **FS** | ≤ -9.1 dB |
| | **EVB** | ≤ -7.3 dB |
| **Peak Gain** | **FS** | ≤ 4.8 dBi |
| | **EVB** | ≤ 3.9 dBi |

- **FS: Free Space.**
- **EVB: On 130 mm × 70 mm EVB.**

## 1.2. 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



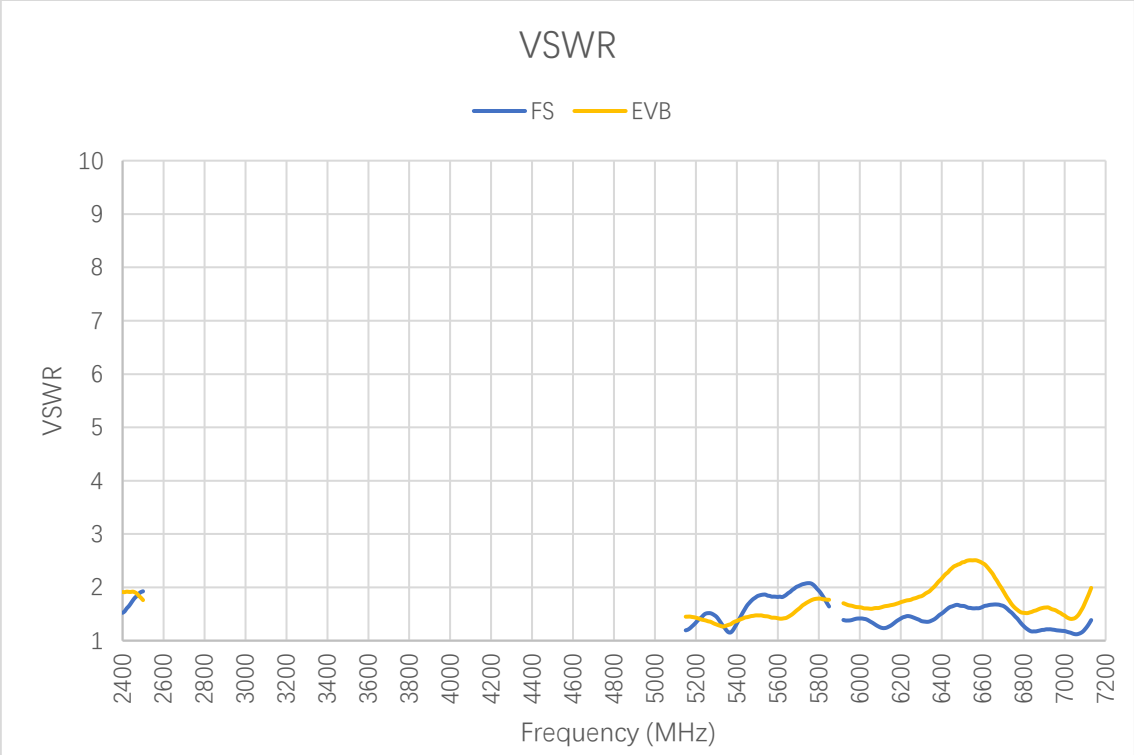

UNIT:mm

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

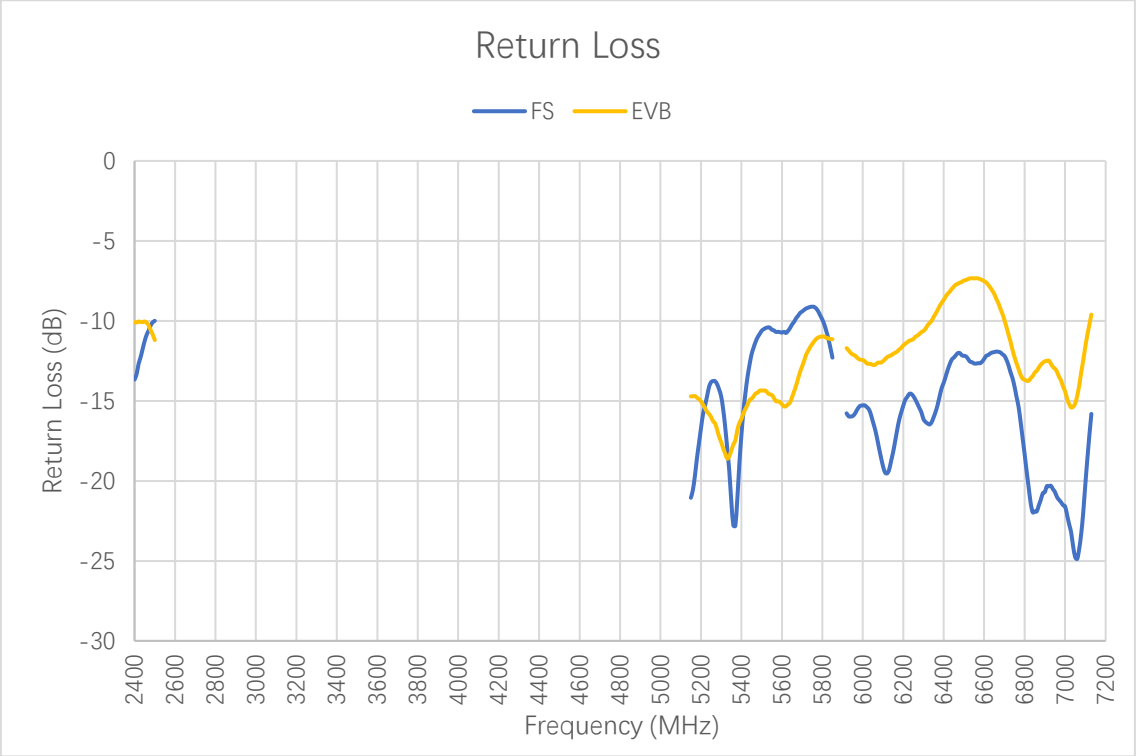
### 3.1.1. VSWR




**VSWR**

| Frequency (MHz) | 2400 | 2450 | 2500 | 5150 | 5500 | 5850 | 5925 | 6325 | 6725 | 7125 |
|---|---|---|---|---|---|---|---|---|---|---|
| **FS** | 1.5 | 1.8 | 1.9 | 1.2 | 1.8 | 1.6 | 1.4 | 1.4 | 1.6 | 1.3 |
| **EVB** | 1.9 | 1.9 | 1.8 | 1.5 | 1.5 | 1.8 | 1.7 | 1.9 | 1.8 | 1.9 |

### 3.1.2. Return Loss

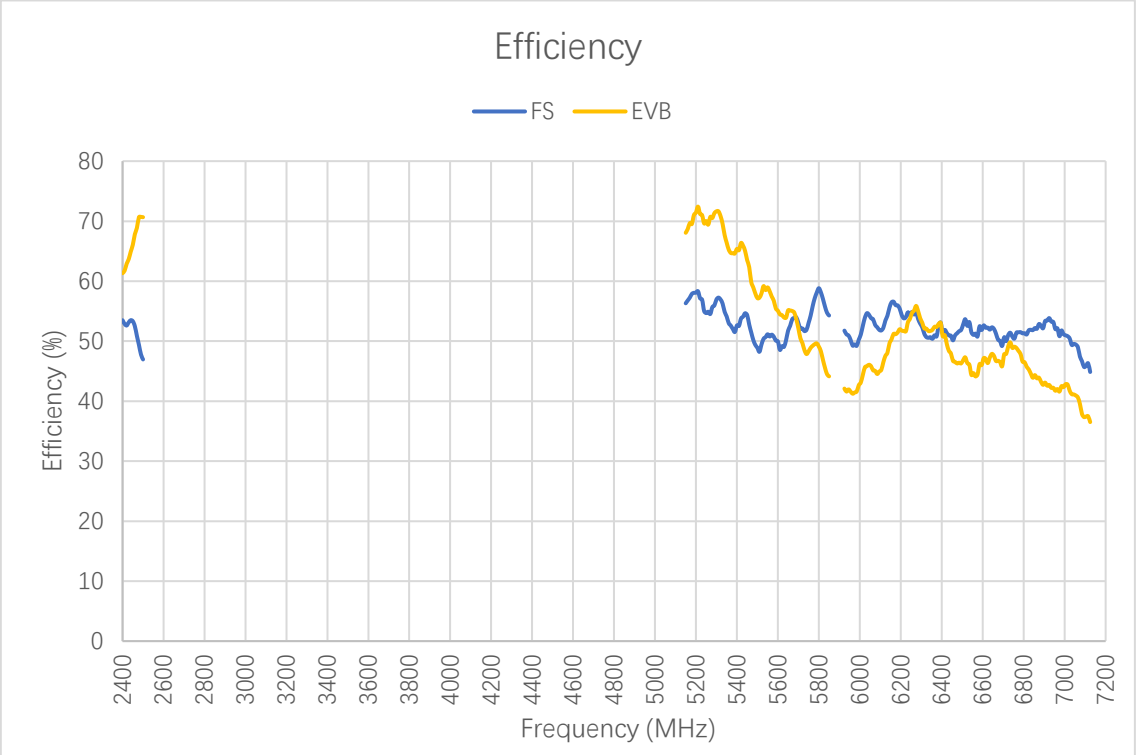



**Return Loss (dB)**

| Frequency (MHz) | 2400 | 2450 | 2500 | 5150 | 5500 | 5850 | 5925 | 6325 | 6725 | 7125 |
|---|---|---|---|---|---|---|---|---|---|---|
| **FS** | -13.7 | -11.3 | -10.0 | -21.1 | -10.6 | -12.3 | -15.8 | -16.4 | -12.8 | -17.2 |
| **EVB** | -10.1 | -10.0 | -11.2 | -14.7 | -14.3 | -11.1 | -11.7 | -10.3 | -10.8 | -10.2 |

## 3.2. Radiation Performance Test

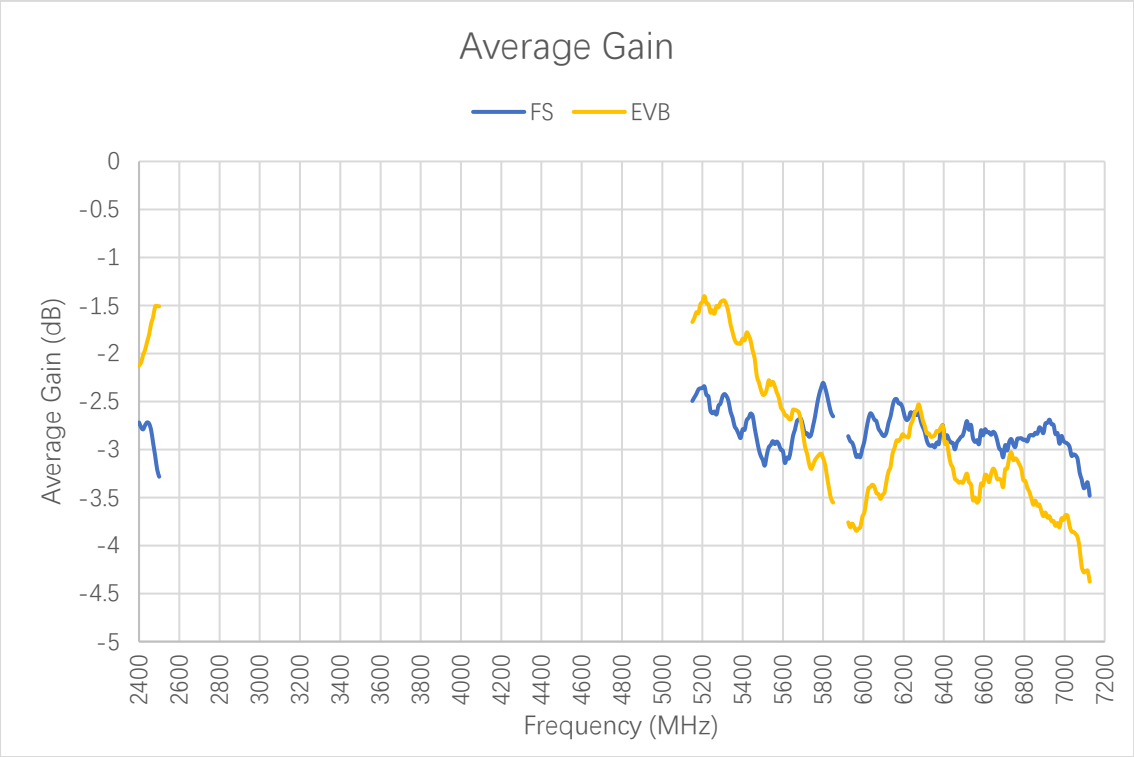
### 3.2.1. Efficiency




**Efficiency (%)**

| Frequency (MHz) | 2400 | 2450 | 2500 | 5150 | 5500 | 5850 | 5925 | 6325 | 6725 | 7125 |
|---|---|---|---|---|---|---|---|---|---|---|
| **FS** | 53.5 | 53.3 | 47.0 | 56.3 | 48.9 | 54.3 | 51.8 | 50.7 | 51.0 | 44.9 |
| **EVB** | 61.3 | 66.1 | 70.7 | 68.1 | 57.2 | 44.1 | 42.1 | 52.1 | 49.2 | 36.5 |

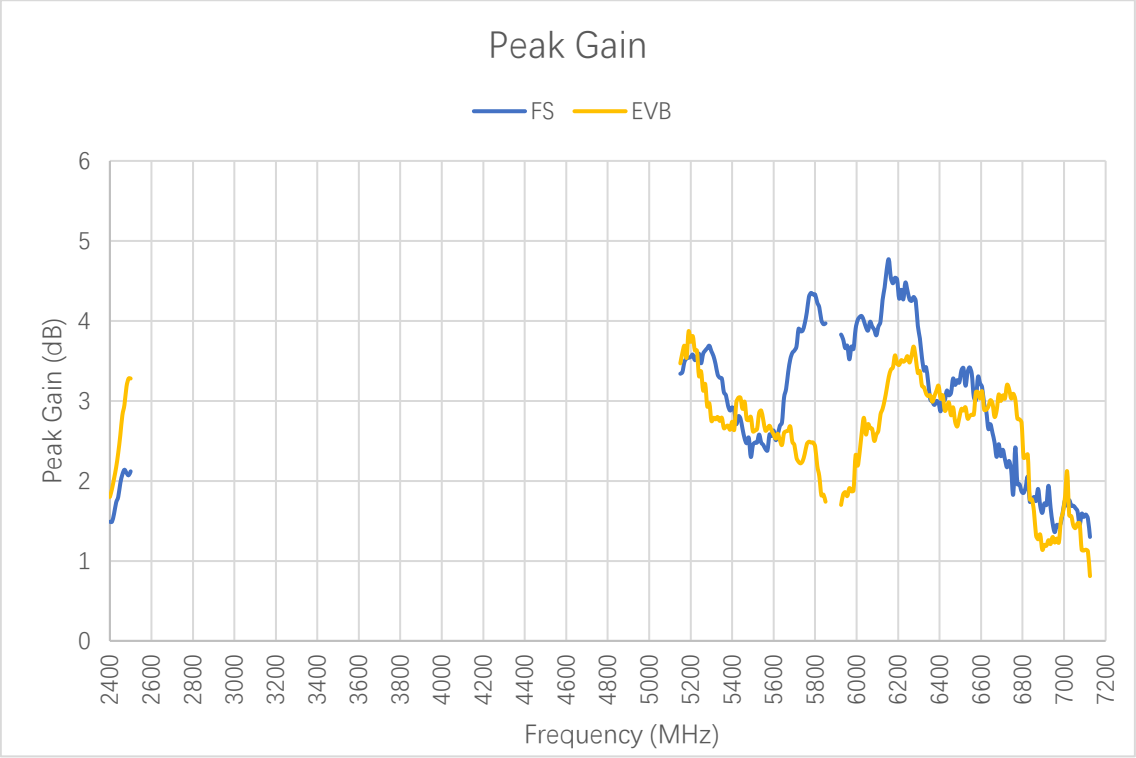
### 3.2.2. Average Gain




**Average Gain (dB)**

| Frequency (MHz) | 2400 | 2450 | 2500 | 5150 | 5500 | 5850 | 5925 | 6325 | 6725 | 7125 |
|---|---|---|---|---|---|---|---|---|---|---|
| **FS** | -2.7 | -2.7 | -3.3 | -2.5 | -3.1 | -2.7 | -2.9 | -3.0 | -2.9 | -3.5 |
| **EVB** | -2.1 | -1.8 | -1.5 | -1.7 | -2.4 | -3.6 | -3.8 | -2.8 | -3.1 | -4.4 |

### 3.2.3. Peak Gain



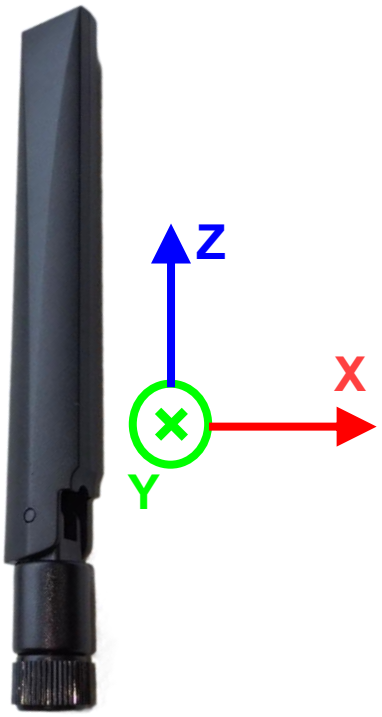

**Peak Gain (dBi)**

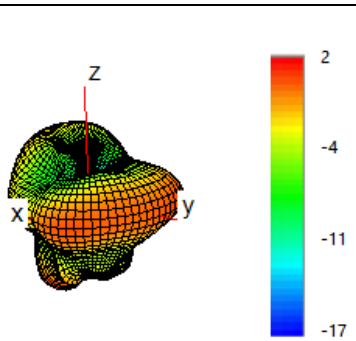
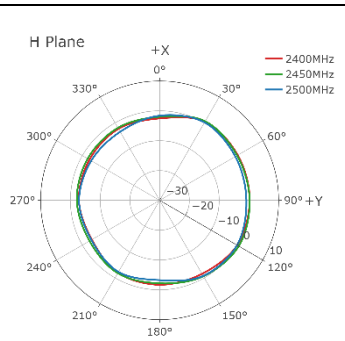
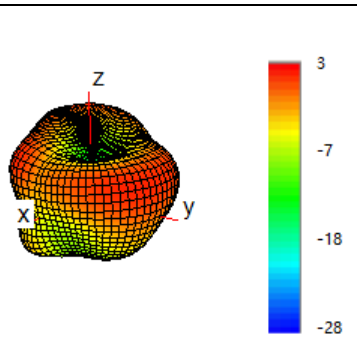
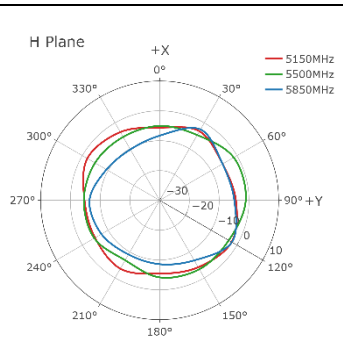
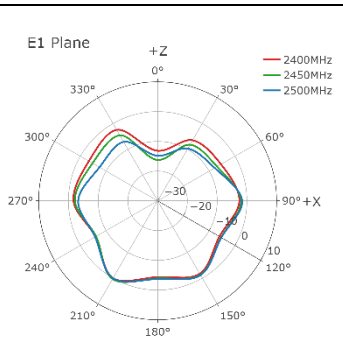
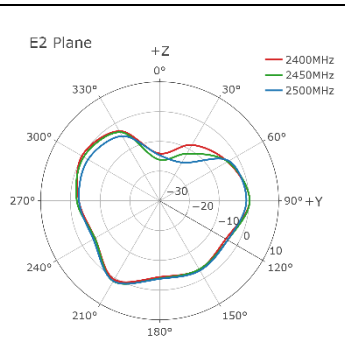
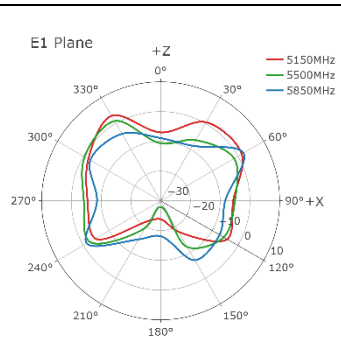
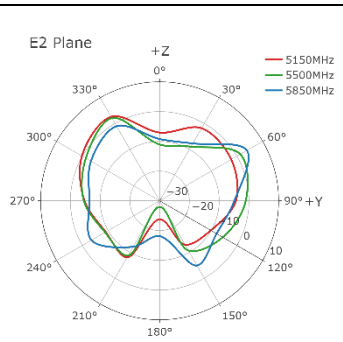
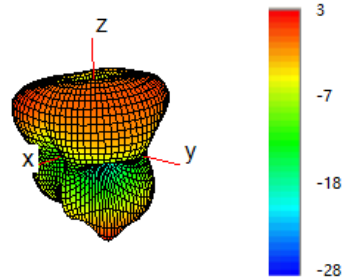
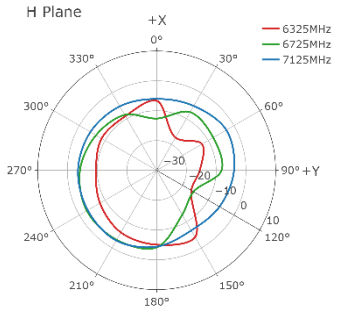
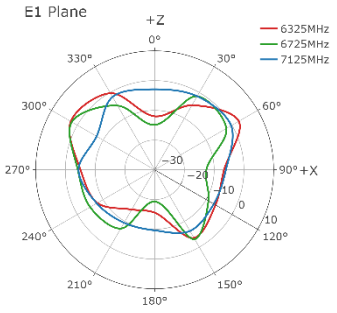
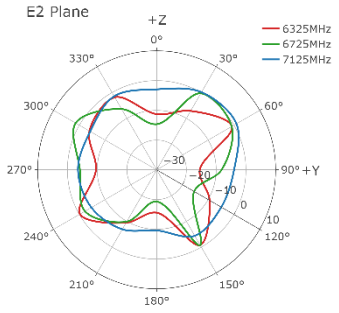
| Frequency (MHz) | 2400 | 2450 | 2500 | 5150 | 5500 | 5850 | 5925 | 6325 | 6725 | 7125 |
|---|---|---|---|---|---|---|---|---|---|---|
| **FS** | 1.5 | 2.0 | 2.1 | 3.3 | 2.5 | 4.0 | 3.8 | 3.4 | 2.2 | 1.3 |
| **EVB** | 1.8 | 2.6 | 3.3 | 3.5 | 2.6 | 1.7 | 1.7 | 3.2 | 3.2 | 0.8 |

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

#### 3.2.4.1. Test Condition: Free Space

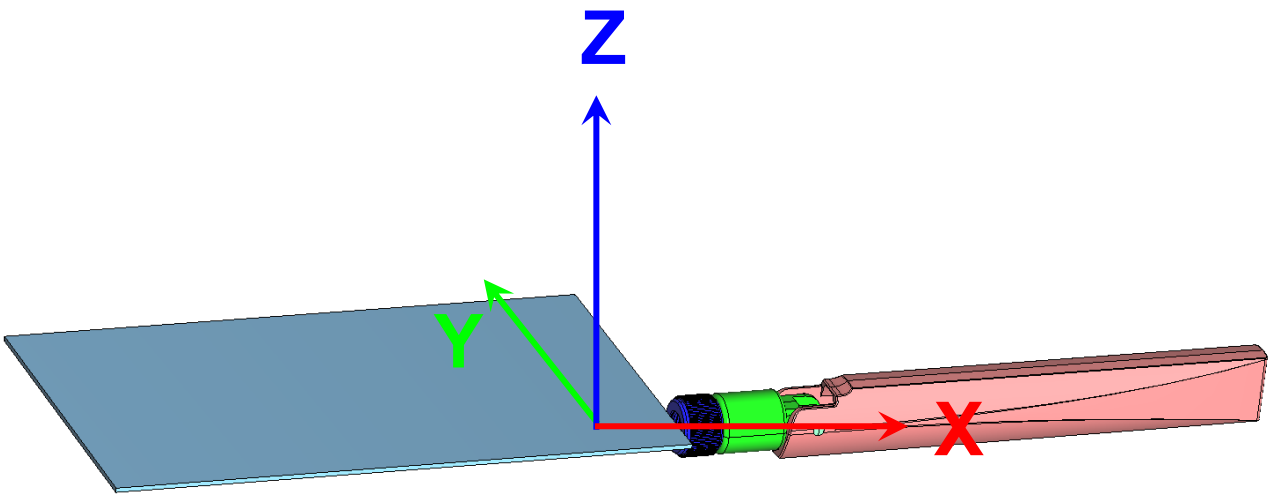
- Test Chamber: FS-G-1

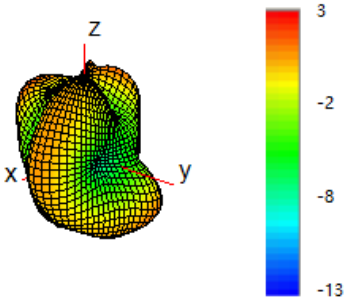
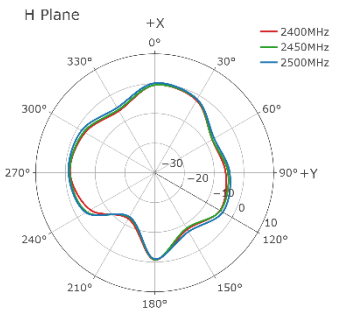
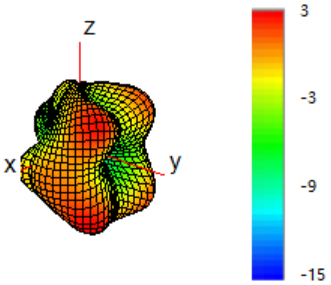
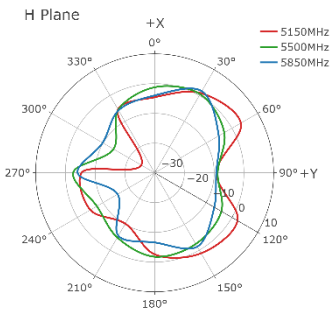
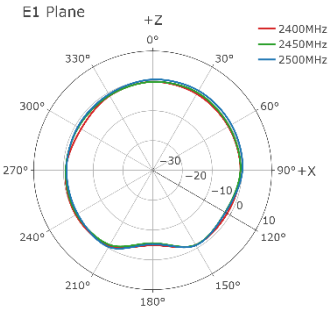
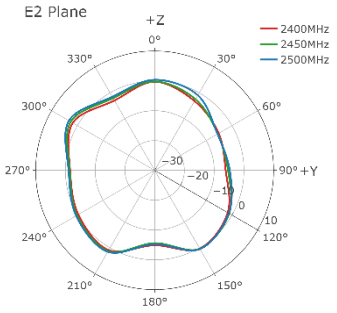
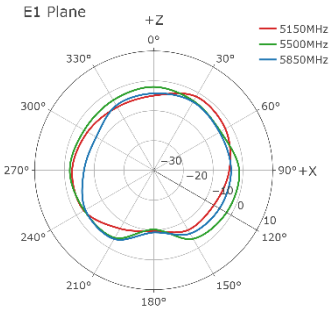
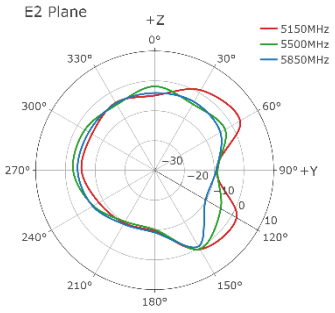
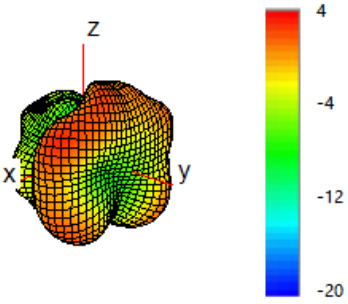
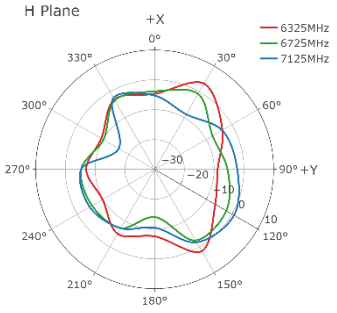
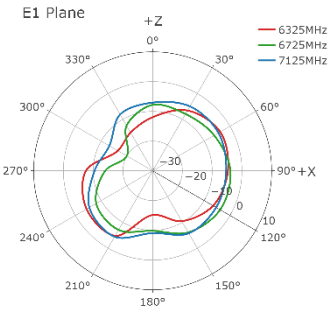
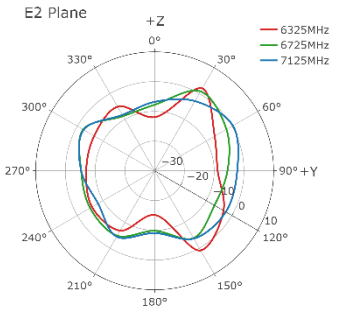


| 2450 MHz | | 5500 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
| 6725 MHz | | | |
|  |  | | |
|  |  | | |

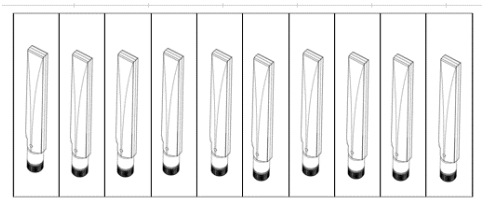
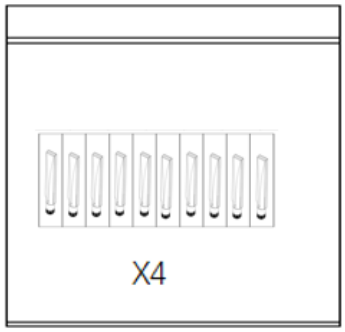
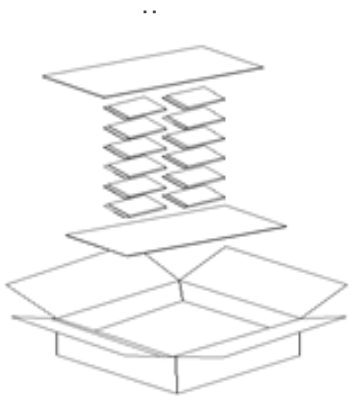
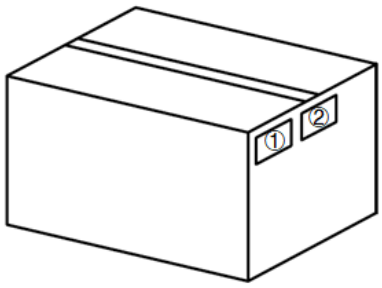
#### 3.2.4.2. Test Condition: On 130 mm × 70 mm EVB

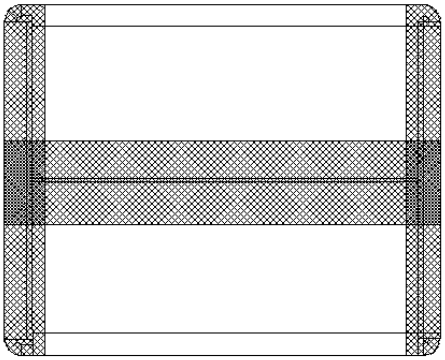
- Test Chamber: FS-G-1



| 2450 MHz | | 5500 MHz | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
| 6725 MHz | | | |
|  |  | | |
|  |  | | |

# 4 Packaging

| Step | Packaging Picture / 2D Picture | Description |
|---|---|---|
| 1 |  | 10 pcs antenna products in a one-piece bag.<br>(10 PCS / One-piece Bag) |
| 2 |  | 40 pcs antenna products in a PE bag.<br>(40 PCS / PE Bag) |
| 3 |  | (8 PE Bags / Carton Box)<br>(320 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 = 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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Tel: +86 21 5108 6236
Email: info@quectel.com

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# Revision History

| Version | Date | Author | Note |
|---|---|---|---|
| - | 2024-06-03 | Mordecai LIU/ Lance SUN/ David LIU/ Rainey LIAO | Creation of the document |
| 1.0 | 2024-06-03 | Mordecai LIU/ Lance SUN/ David LIU/ Rainey LIAO | First official release |
| 2.0 | 2024-09-03 | Mordecai LIU | Numerous changes were made to this document. It should be read in its entirety. |
| 2.1 | 2024-11-07 | Lance SUN | Updated the drawing (Chapter 2). |

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