



Antenna Datasheet

Product OC: YF0027AA

Version: 2.2

Date: 2024-06-26

Status: Released

Product Name: Wi-Fi FPC Antenna

Key Features:

Frequency band: 2400–2500 MHz, 5150–5850 MHz, 5925–7125 MHz

Peak efficiency: 80.4 % (ABS)

Dimensions: 38 mm × 7 mm

RoHS and REACH Compliant

Overview

Quectel Wi-Fi antenna covers 2.4 GHz, 5 GHz, and up to 7 GHz bands, fully satisfying customers' requirements for Wi-Fi 5, Wi-Fi 6, and Wi-Fi 6E/Wi-Fi 7. There are various antenna types, including built-in FPC/PCB antenna, ceramic patch antenna, and other external antennas of different shapes or sizes. The antenna performance meets the customers' demands for efficiency, gain, and radiation and ensures the superior experience of the customers' products in use.

Contents

| | |
|--|-----------|
| Overview..... | 1 |
| Contents..... | 2 |
| 1 Specification..... | 3 |
| 1.1. Electrical..... | 3 |
| 1.2. Mechanical & Environmental | 5 |
| 2 Drawing..... | 6 |
| 3 Detailed Performance..... | 7 |
| 3.1. S-Parameter Test | 7 |
| 3.1.1. VSWR..... | 7 |
| 3.1.2. Return Loss | 8 |
| 3.2. Radiation Performance Test..... | 9 |
| 3.2.1. Efficiency | 9 |
| 3.2.2. Average Gain | 10 |
| 3.2.3. Peak Gain..... | 11 |
| 3.2.4. 3D & 2D Radiation Pattern..... | 12 |
| 3.2.4.1. Test Condition: Free Space | 12 |
| 3.2.4.2. Test Condition: Stick on 2 mm Thick ABS Board | 14 |
| 4 Packaging..... | 16 |
| Contact Us..... | 18 |
| Legal Notices | 19 |
| Revision History | 21 |

1 Specification

Test Condition: Free Space & Stick on 2 mm Thick ABS Board

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 7G |
|-----------------------|-------------|-------------|-------------|-------------|
| | Freq. (MHz) | 2400 - 2500 | 5150 - 5850 | 5925 - 7125 |
| Max. VSWR | FS | 6.6 | 3.0 | 1.9 |
| | ABS | 1.6 | 1.7 | 2.5 |
| Max. Return Loss (dB) | FS | -2.6 | -6.1 | -10.3 |
| | ABS | -13.3 | -11.3 | -7.5 |
| AVG Eff. (%) | FS | 25.7 | 56.5 | 65.2 |
| | ABS | 80.4 | 67.4 | 60.9 |
| AVG Gain (dB) | FS | -5.9 | -6.4 | -1.9 |
| | ABS | -0.9 | -1.1 | -2.2 |
| Max. Peak Gain (dBi) | FS | -1.2 | -2.2 | 3.6 |
| | ABS | 2.7 | 2.0 | 6.4 |
| VSWR | FS | ≤ 6.6 | | |
| | ABS | ≤ 1.7 | | |

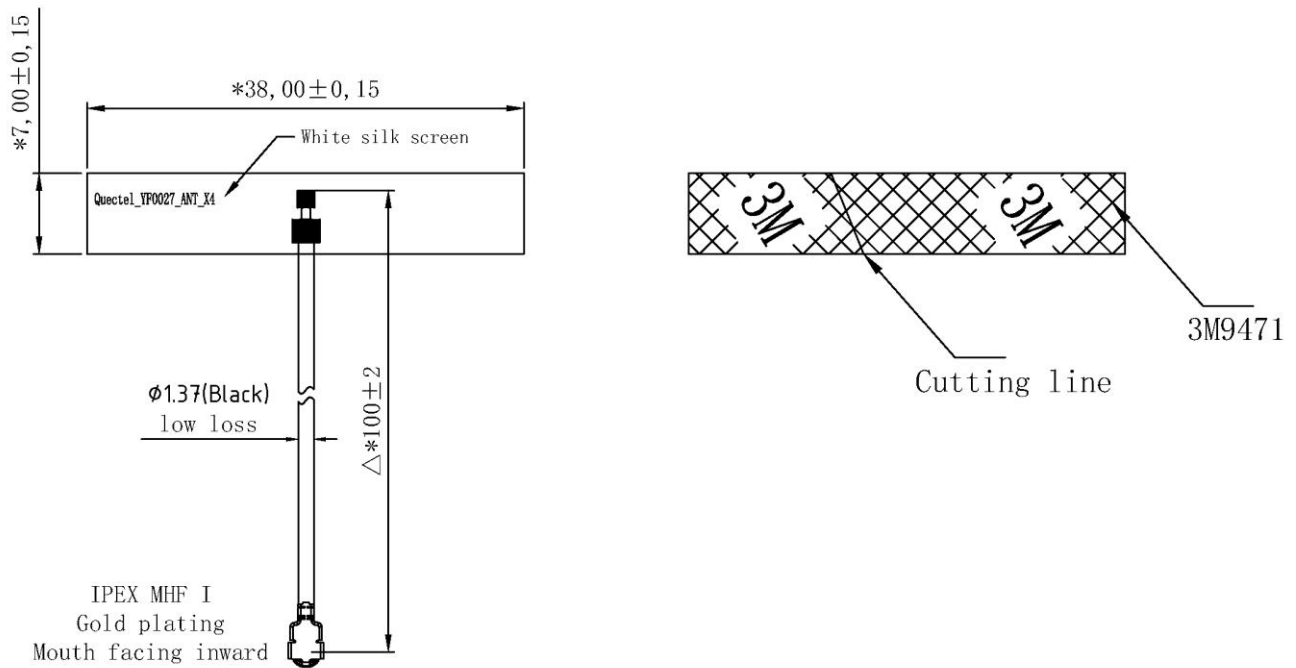
| | | |
|-------------|-----|----------------|
| Return Loss | FS | ≤ -2.6 dB |
| | ABS | ≤ -7.5 dB |
| Peak Gain | FS | ≤ 3.6 dBi |
| | ABS | ≤ 6.4 dBi |

- **FS:** Free Space
- **ABS:** Stick on 2 mm Thick ABS Board

1.2. Mechanical & Environmental

| Mechanical | |
|-----------------------------|-------------------------|
| Antenna Size | 38 mm × 7 mm |
| Antenna Material & Color | FPC & Black |
| Cable Type & Color & Length | Φ 1.37 & Black & 100 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 |

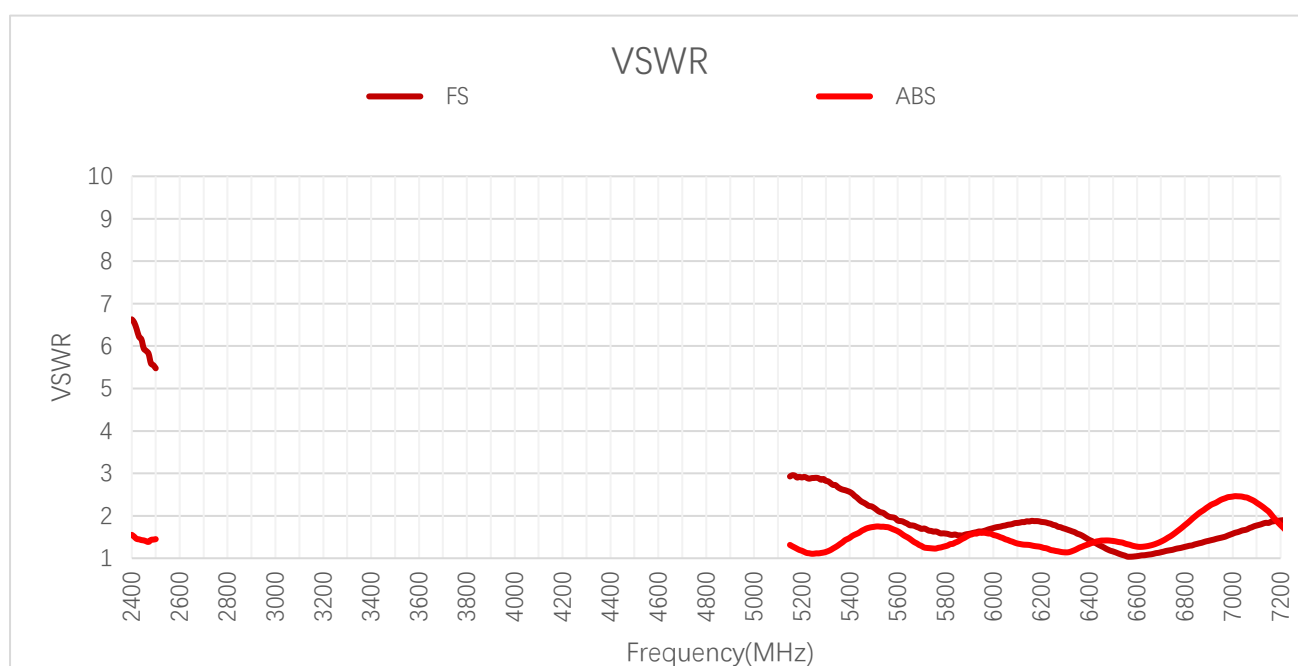
2 Drawing



3 Detailed Performance

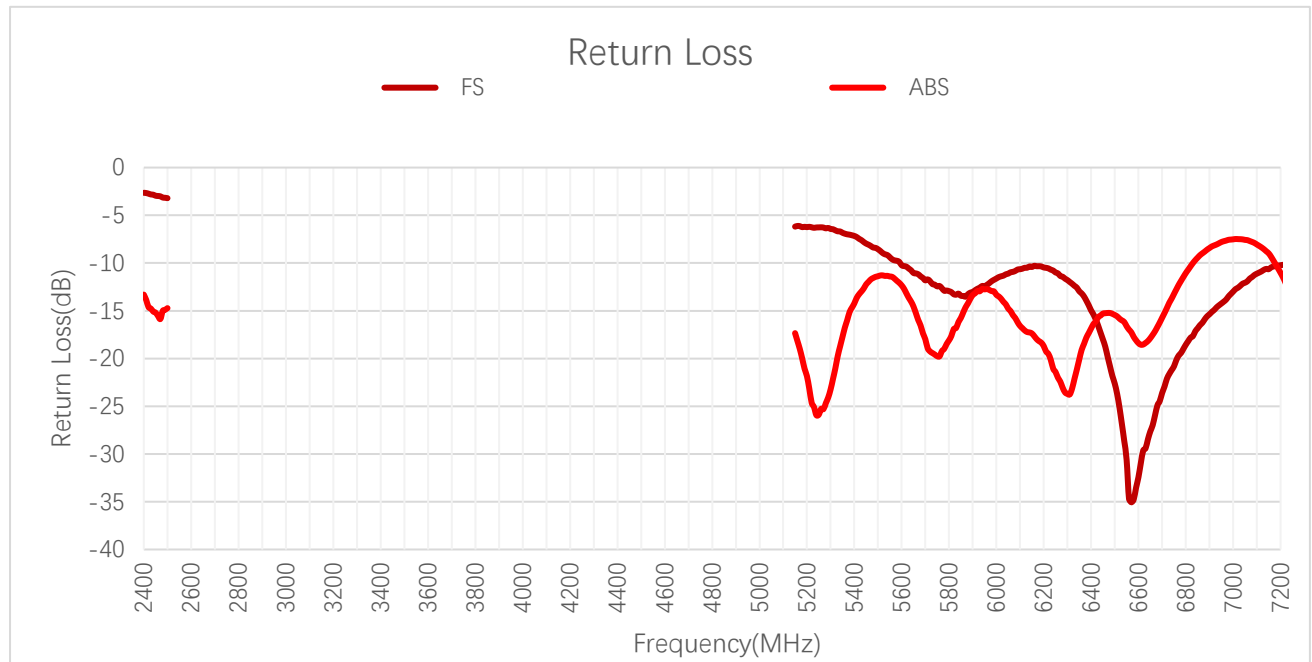
3.1. S-Parameter Test

3.1.1. VSWR



| VSWR | | | | | | | | | | |
|-----------------|------|------|------|------|------|------|------|------|------|------|
| Frequency (MHz) | 2400 | 2450 | 2500 | 5150 | 5500 | 5850 | 5920 | 6320 | 6720 | 7120 |
| FS | 6.6 | 5.9 | 5.5 | 2.9 | 2.2 | 1.5 | 1.6 | 1.7 | 1.2 | 1.8 |
| ABS | 1.6 | 1.4 | 1.4 | 1.3 | 1.7 | 1.4 | 1.6 | 1.2 | 1.5 | 2.2 |

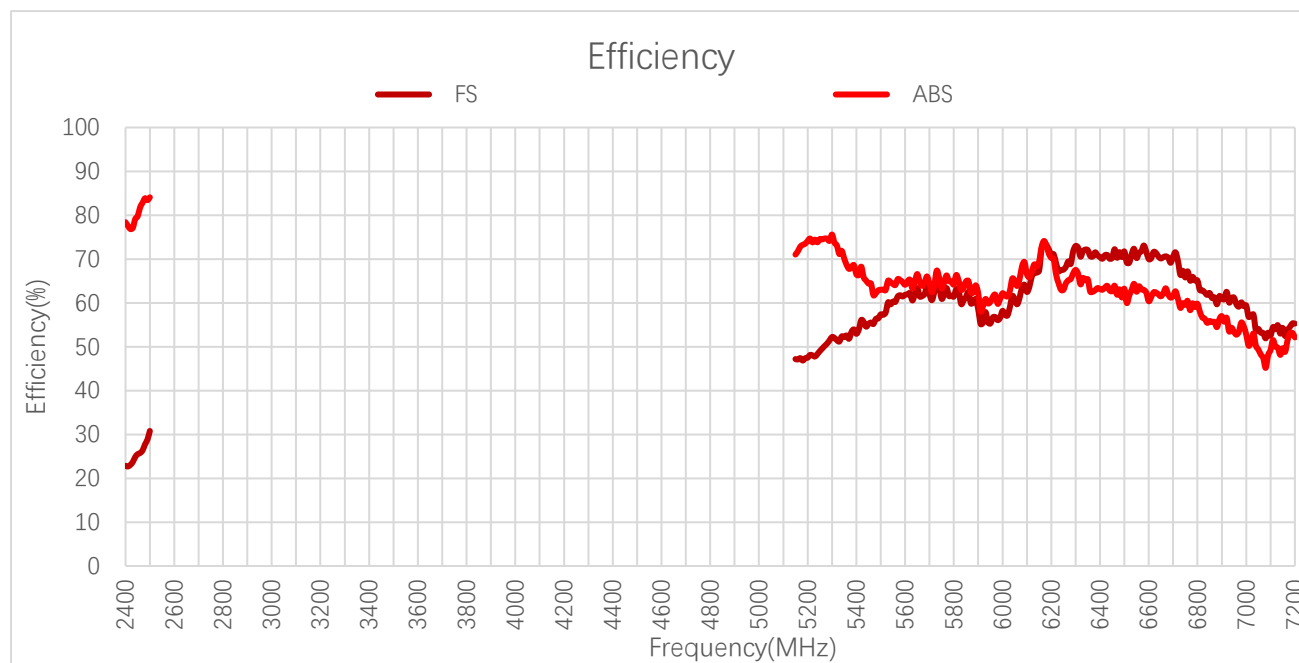
3.1.2. Return Loss



| Return Loss | | | | | | | | | | |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Frequency (MHz) | 2400 | 2450 | 2500 | 5150 | 5500 | 5850 | 5920 | 6320 | 6720 | 7120 |
| FS | -2.6 | -3.0 | -3.2 | -6.2 | -8.6 | -13.4 | -12.7 | -12.2 | -22.1 | -10.9 |
| ABS | -13.3 | -15.2 | -14.7 | -17.3 | -11.4 | -15.8 | -12.9 | -23.1 | -14.7 | -8.4 |

3.2. Radiation Performance Test

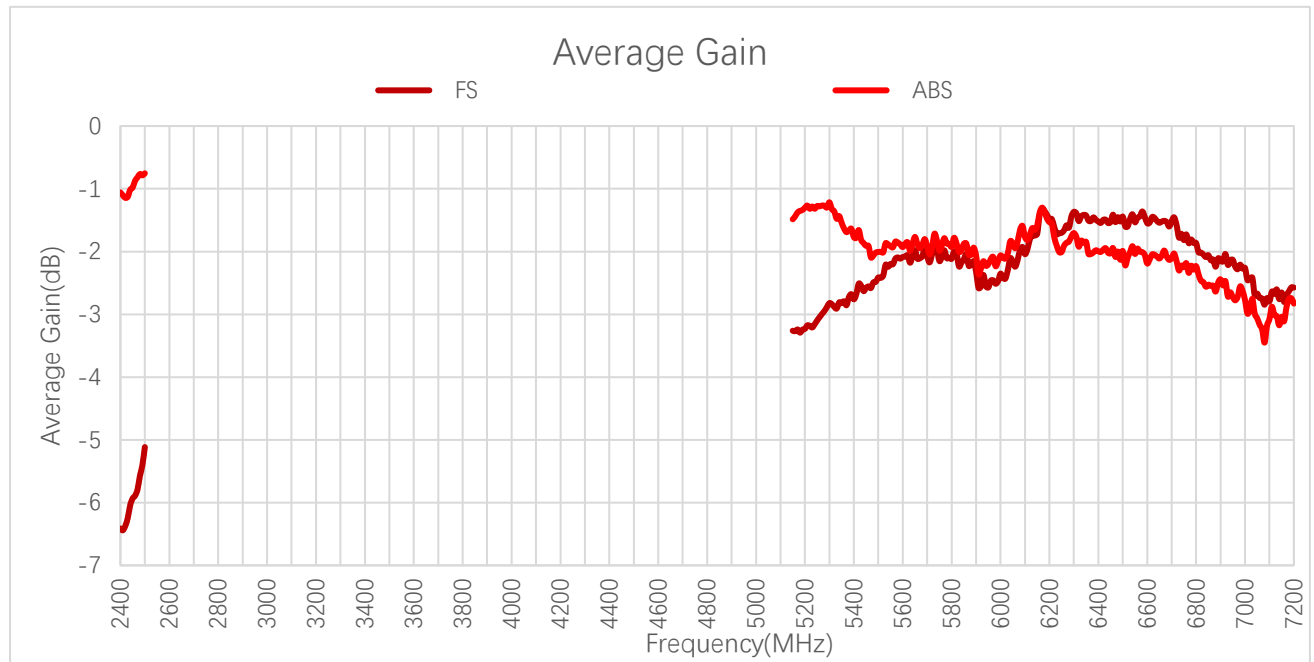
3.2.1. Efficiency



Efficiency (%)

| Frequency (MHz) | 2400 | 2450 | 2500 | 5150 | 5500 | 5850 | 5920 | 6320 | 6720 | 7120 |
|-----------------|------|------|------|------|------|------|------|------|------|------|
| FS | 22.8 | 25.5 | 30.8 | 47.2 | 57.4 | 61.4 | 55.5 | 70.5 | 69.6 | 54.0 |
| ABS | 78.4 | 79.8 | 84.1 | 71.0 | 63.0 | 64.9 | 59.3 | 64.2 | 60.9 | 50.0 |

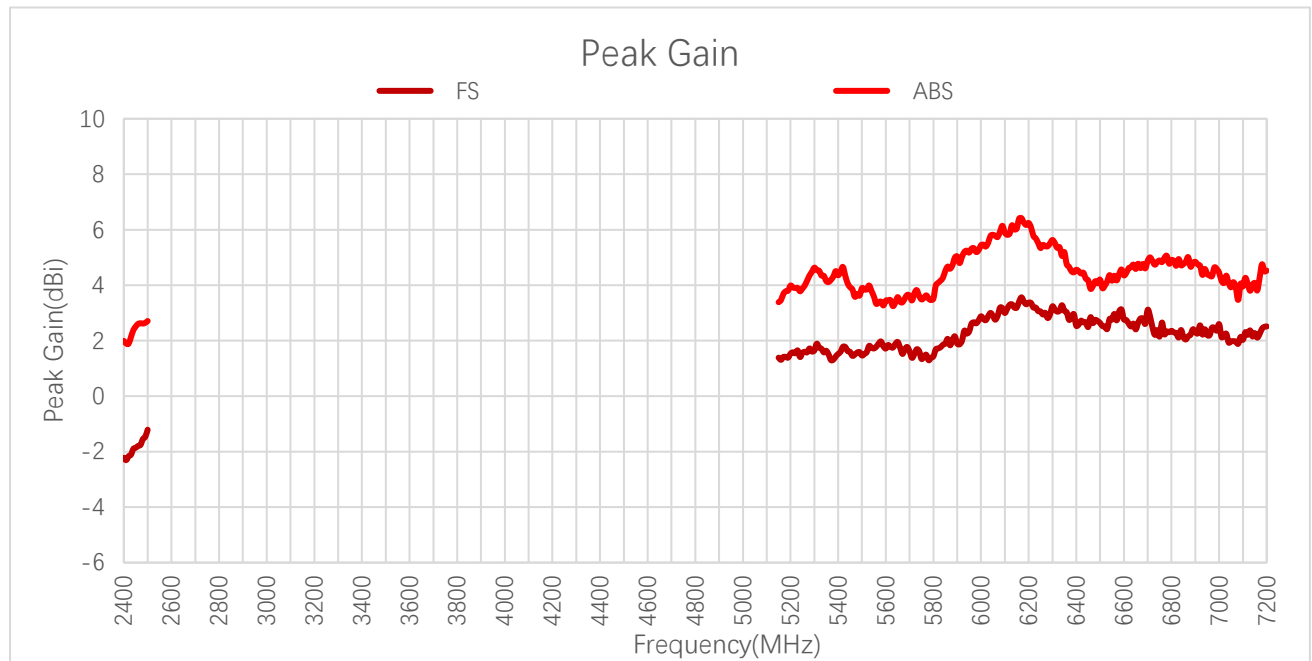
3.2.2. Average Gain



Average Gain (dB)

| Frequency (MHz) | 2400 | 2450 | 2500 | 5150 | 5500 | 5850 | 5920 | 6320 | 6720 | 7120 |
|-----------------|------|------|------|------|------|------|------|------|------|------|
| FS | -6.4 | -5.9 | -5.1 | -3.3 | -2.4 | -2.1 | -2.6 | -1.5 | -1.6 | -2.7 |
| ABS | -1.1 | -1.0 | -0.8 | -1.5 | -2.0 | -1.9 | -2.3 | -1.9 | -2.2 | -3.0 |

3.2.3. Peak Gain

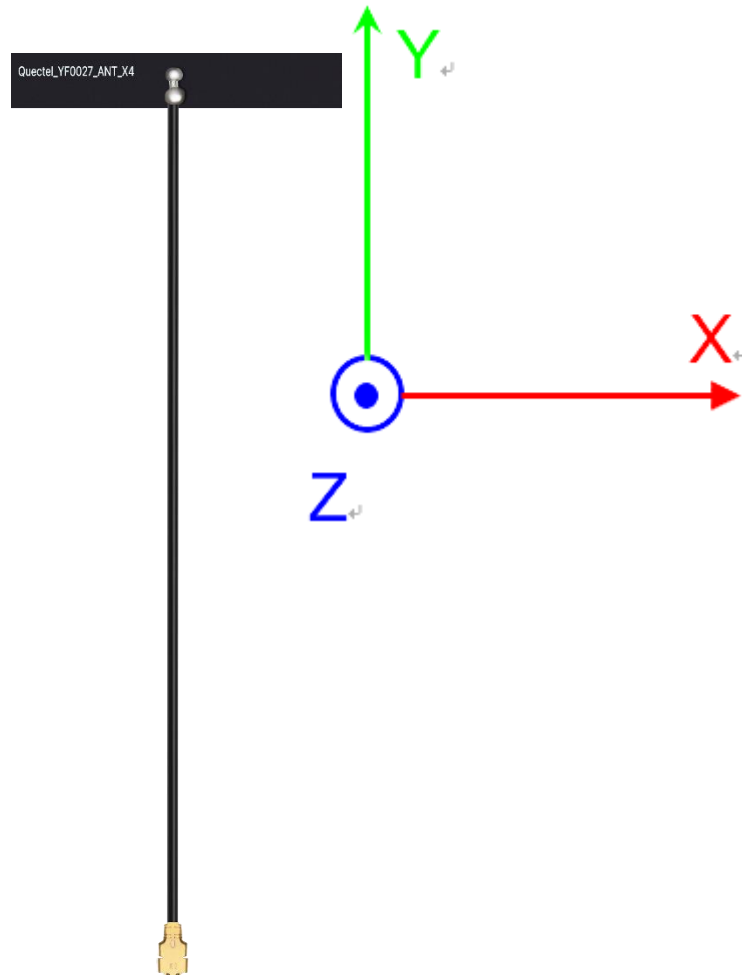


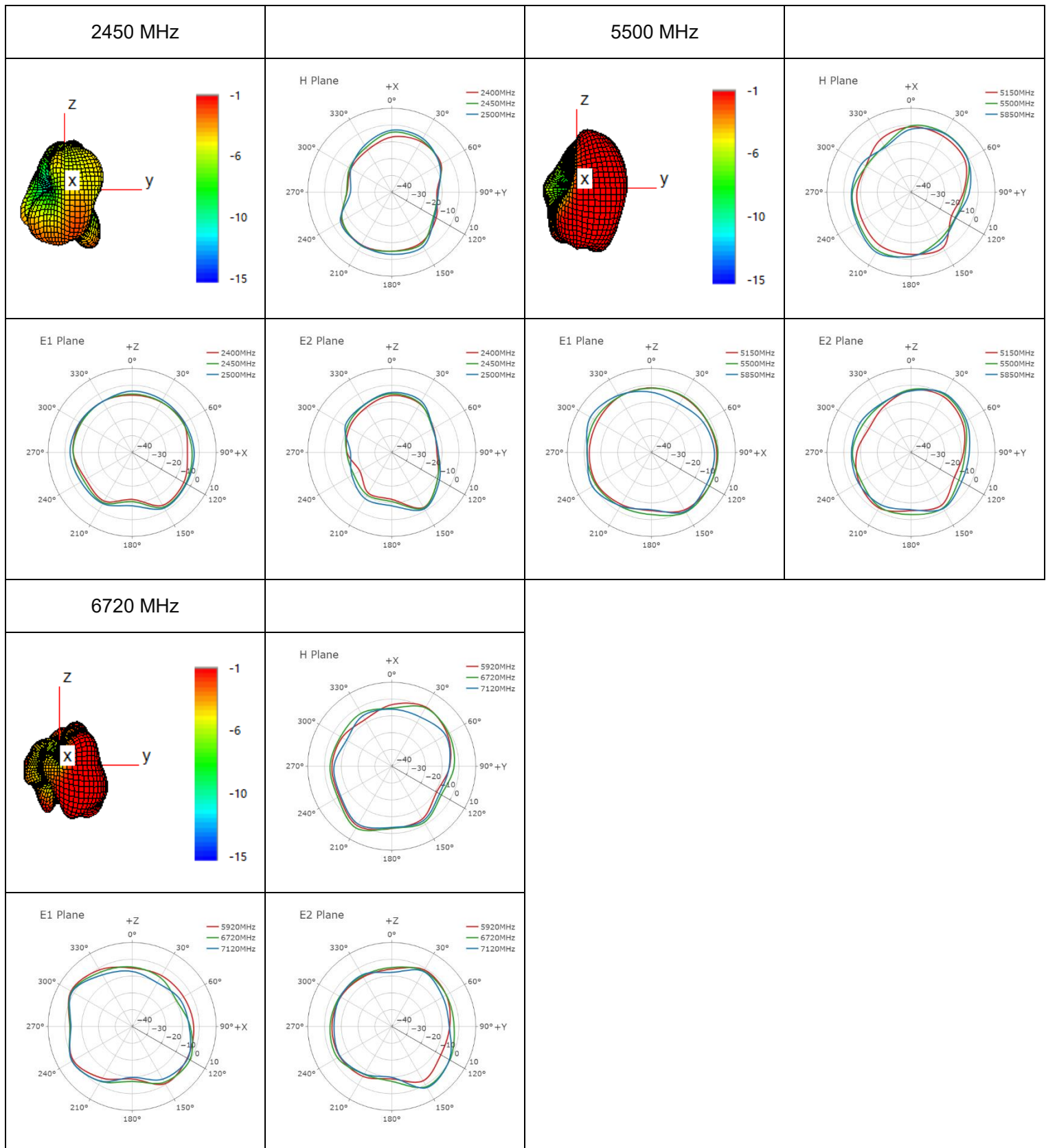
| Peak Gain (dBi) | | | | | | | | | | |
|-----------------|------|------|------|------|------|------|------|------|------|------|
| Frequency (MHz) | 2400 | 2450 | 2500 | 5150 | 5500 | 5850 | 5920 | 6320 | 6720 | 7120 |
| FS | -2.2 | -1.9 | -1.2 | 1.4 | 1.5 | 1.9 | 2.0 | 3.0 | 2.5 | 2.2 |
| ABS | 2.0 | 2.5 | 2.7 | 3.4 | 3.9 | 4.5 | 5.0 | 5.3 | 4.9 | 4.0 |

3.2.4. 3D & 2D Radiation Pattern

3.2.4.1. Test Condition: Free Space

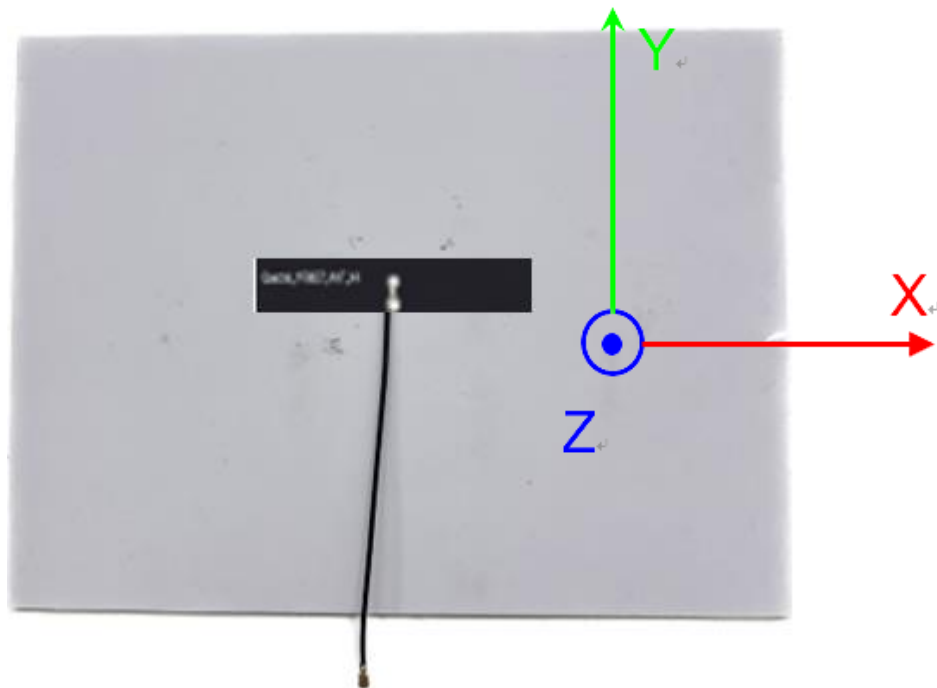
- Test Chamber: HF-G-1



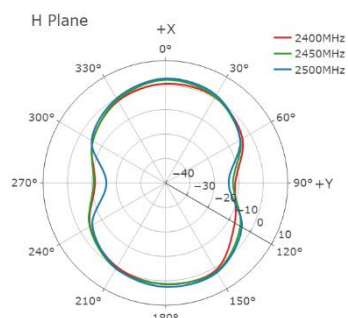
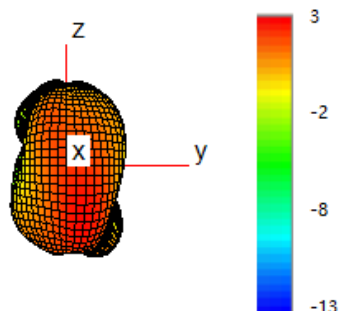


3.2.4.2. Test Condition: Stick on 2 mm Thick ABS Board

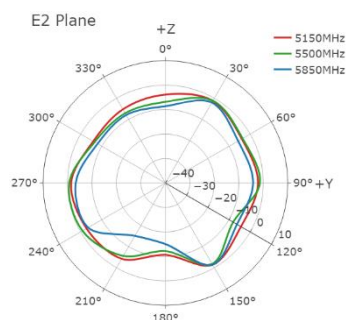
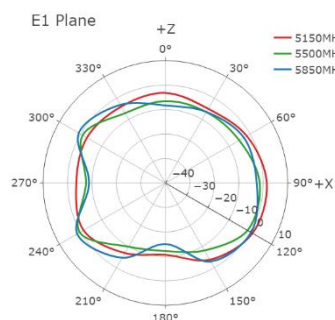
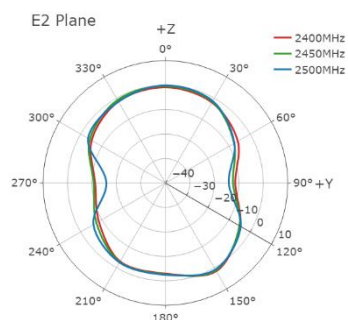
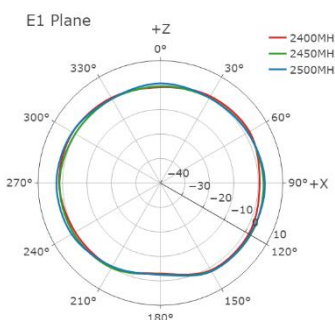
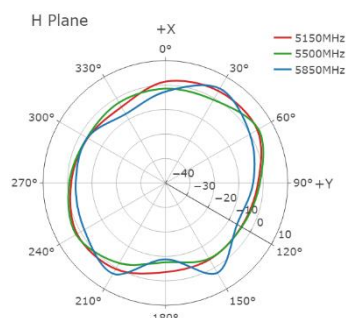
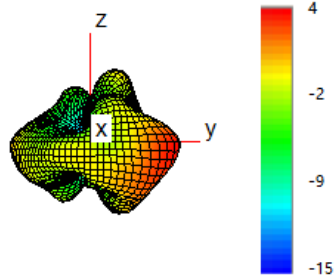
- Test Chamber: HF-G-1



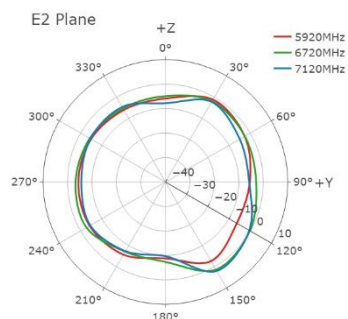
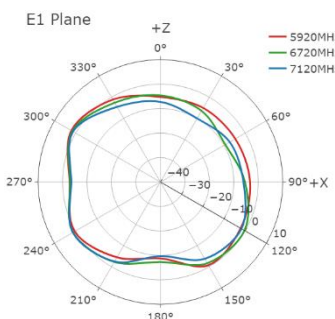
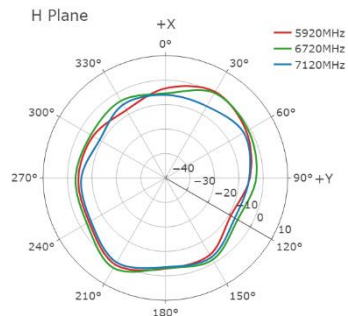
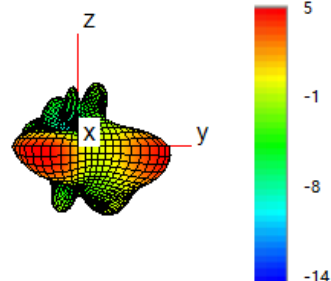
2450 MHz



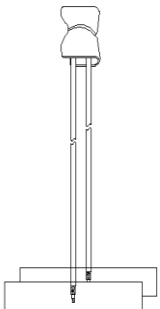
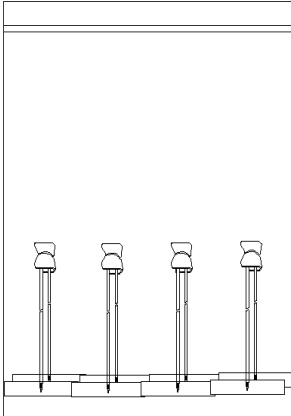
5500 MHz

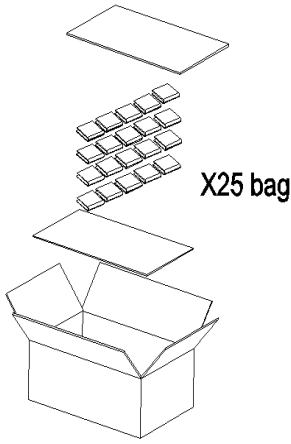
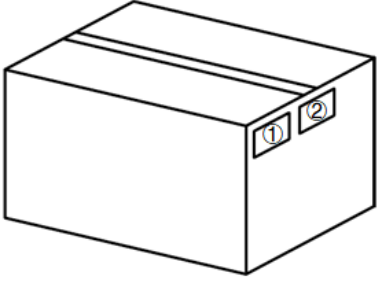
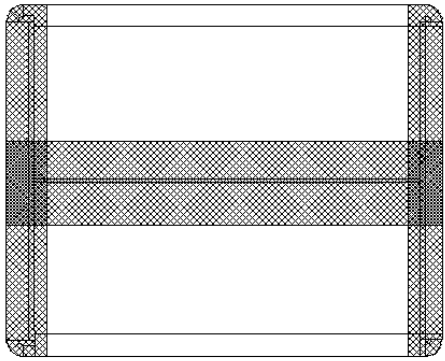


6720 MHz



4 Packaging

| Step | Packaging Picture / 2D Picture | Description |
|------|---|--|
| 1 |  <p>50PCS/bale</p> | A bundle of 50 products |
| 2 |  <p>200PCS/bag</p> | <p>200 pcs antenna products in a PE bag. <u>PE Bag Size: L × W = 300 × 200 mm</u></p> |

| | | |
|---|---|---|
| 3 |  | <p>Place a clapboard at the bottom and top. (25 PE bags per carton box) (5000 pcs antennas per carton box)</p> <p><u>Carton Size:</u> <u>L × W × H = 370 × 295 × 150 mm</u></p> |
| 4 |  | <p>Position for Attaching Labels</p> <p>① Carton Label ② Quality Label</p> |
| 5 |  | <p>Sealing Cartons “I” type sealing cartons</p> |

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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Revision History

| Version | Date | Author | Note |
|---------|------------|---------------------------------------|--|
| - | 2021-04-01 | Kenny YIN | Creation of the document |
| 1.0 | 2021-04-01 | Kenny YIN | First official release |
| 1.1 | 2021-11-30 | Kenny YIN | Updated the product description (Chapter 1). |
| 2.0 | 2023-04-27 | Aria CHU/ Lucky FENG/ David LIU | Updated all data and datasheet template. |
| 2.1 | 2023-12-05 | Lucky FENG/ Aria CHU | Added REACH compliant (Chapter 1.2). |
| 2.2 | 2024-06-26 | Bailey ZHANG | Updated the drawing (Chapter 2). |



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