

A photograph of the antenna component is centered in the upper half of the page. It features a black rectangular PCB with a gold-colored SMA connector on the left side. A thin black cable is attached to the right side of the PCB. The component is set against a background of white, pyramid-shaped acoustic foam. The text "Quectel_YFOA004_4147_ANT2_X1" is printed on the PCB.

Quectel_YFOA004_4147_ANT2_X1

Antenna Datasheet

Product OC: YFOA004AA

Version: 2.3

Date: 2025-07-01

Status: Released

Product Name: LPWA/ISM Adhesive Mount FPC + Cable Monopole
Embedded
Antenna

Key Features:

Frequency Band: 410–470 MHz

Dimensions: 100 mm × 20 mm

Efficiency: Up to 53.86 %

RoHS and REACH Compliant

Overview

YFOA004AA is a LoRa FPC antenna measuring 120 mm × 20 mm. This LoRa antenna provides coverage from 410–470 MHz. The antenna has a 100 mm 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 ISM Series modules.

It allows constant and reliable transmission and reception due to its omni-directional gain across all frequency bands. YFOA004AA is designed as a monopole antenna, which is ground independent to offer high efficiency in many different mounting scenarios. It is a perfect antenna product for customers that desire highest performance. This high-efficiency omni-directional antenna is ideally suited for smart metering, remote monitoring and telematics, and many other IoT devices.

Typical applications include:

- Medical Devices
- Smart Monitoring
- Smart Home
- Industrial Manufacture

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.

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1 Specification

Test Condition: Stick to ABS on 130 mm × 130 mm EVB

1.1. Electrical

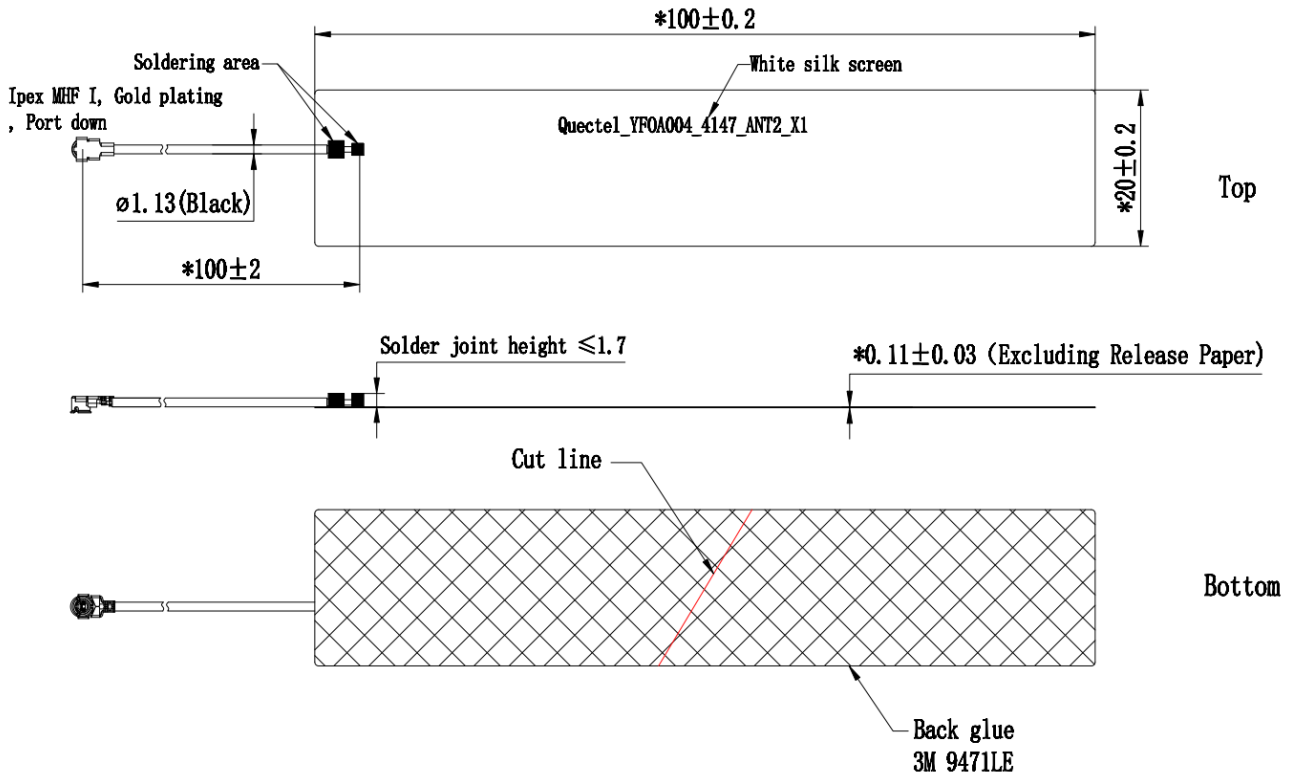
Electrical	
Frequency Range	410–470 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Specification	Band	
	410–470	860–930
Max. VSWR	4.4	-
Max. Return Loss (dB)	-4.0	-
AVG Eff. (%)	48.8	-
AVG AVG Gain (dB)	-3.1	-
Max. Peak Gain (dBi)	0.2	-
VSWR	≤ 4.4	
Return Loss	≤ -4.0 dB	
Peak Gain	≤ 0.2 dBi	

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	100 mm × 20 mm
Material & Color	FPC & Black
Cable Type & Color & Length	Φ 1.13 & Black & 100 mm
Connector Type	IPEX MHF 1
Mounting Type	Adhesive
Weight	Typ. 1.0 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS & REACH Compliant	Yes

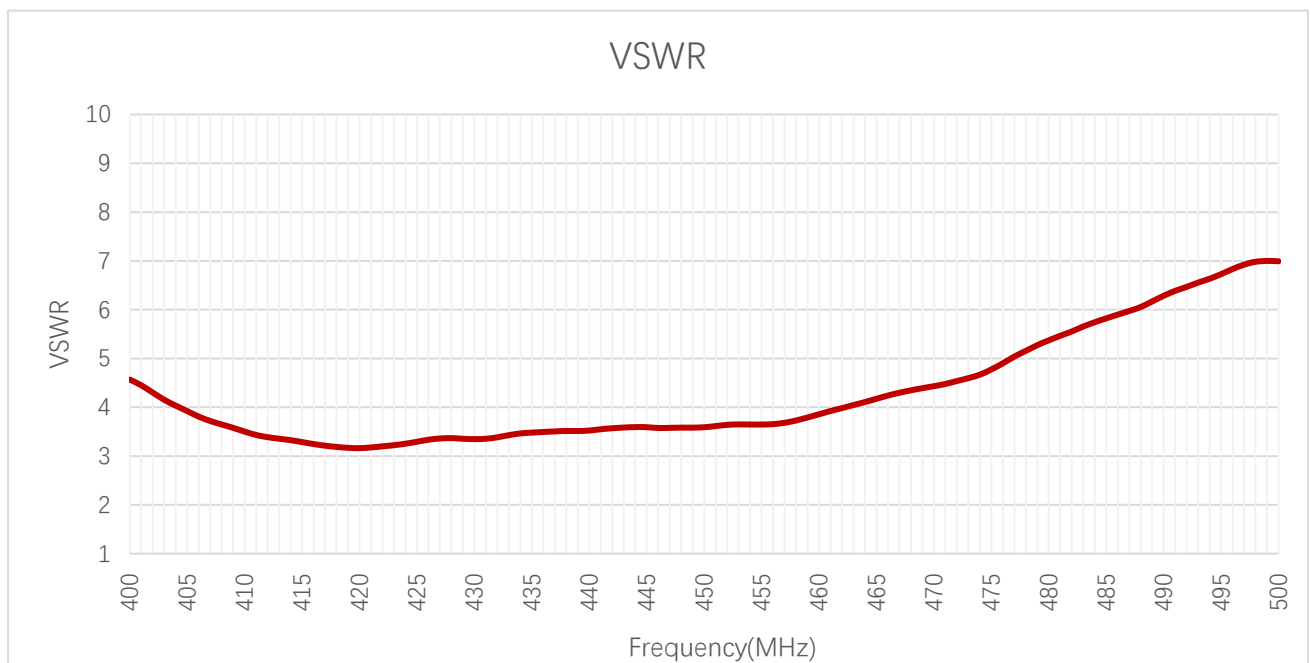
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

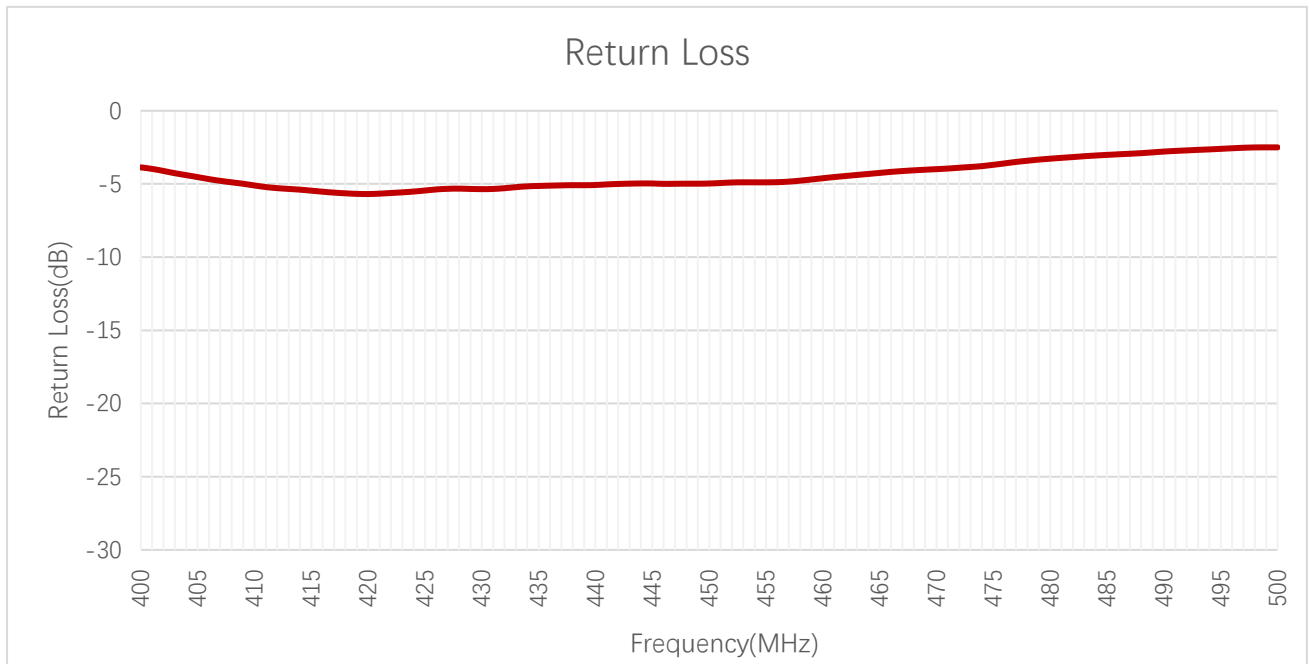
3.1.1. VSWR



VSWR

Frequency (MHz)	410	420	430	440	450	460	470	490	500	510
VSWR	3.5	3.5	3.2	3.3	3.5	3.6	3.9	-	-	-

3.1.2. Return Loss

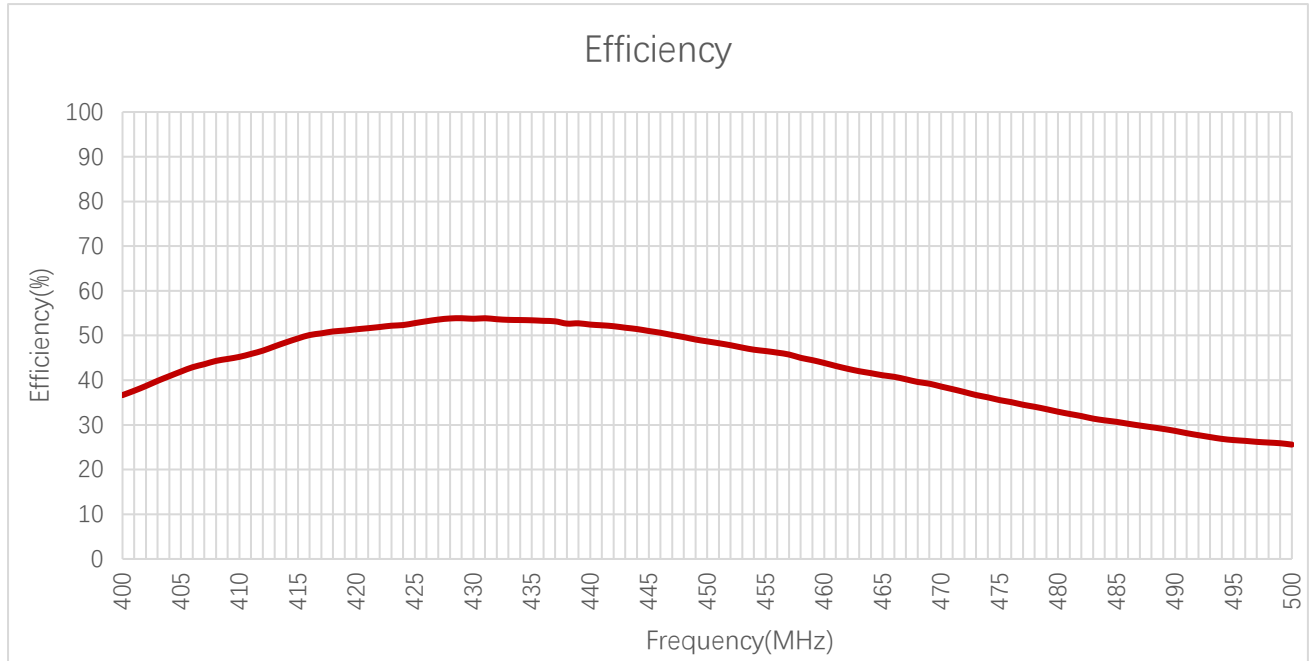


Return Loss (dB)

Frequency (MHz)	410	420	430	440	450	460	470	490	500	510
Return Loss (dB)	-5.1	-5.1	-5.7	-5.4	-5.1	-5.0	-4.6	-	-	-

3.2. Radiation Performance Test

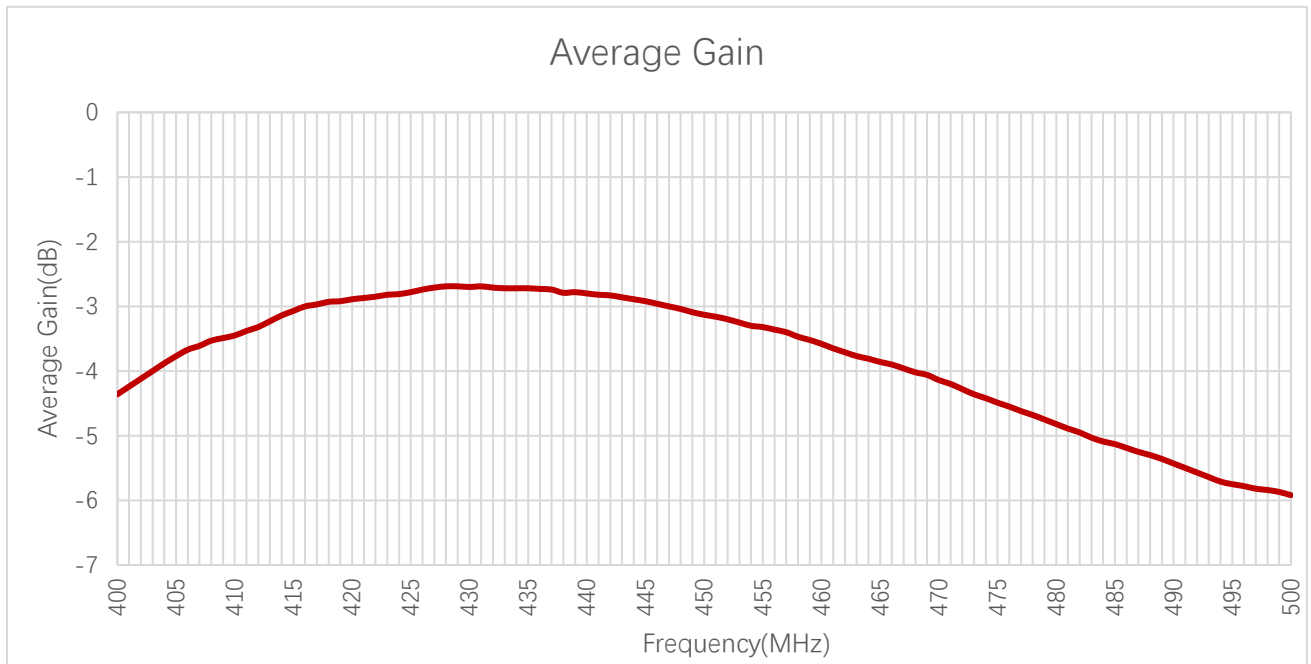
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	410	420	430	440	450	460	470	490	500	510
Efficiency (%)	45.2	45.2	51.4	53.7	52.4	48.7	43.9	-	-	-

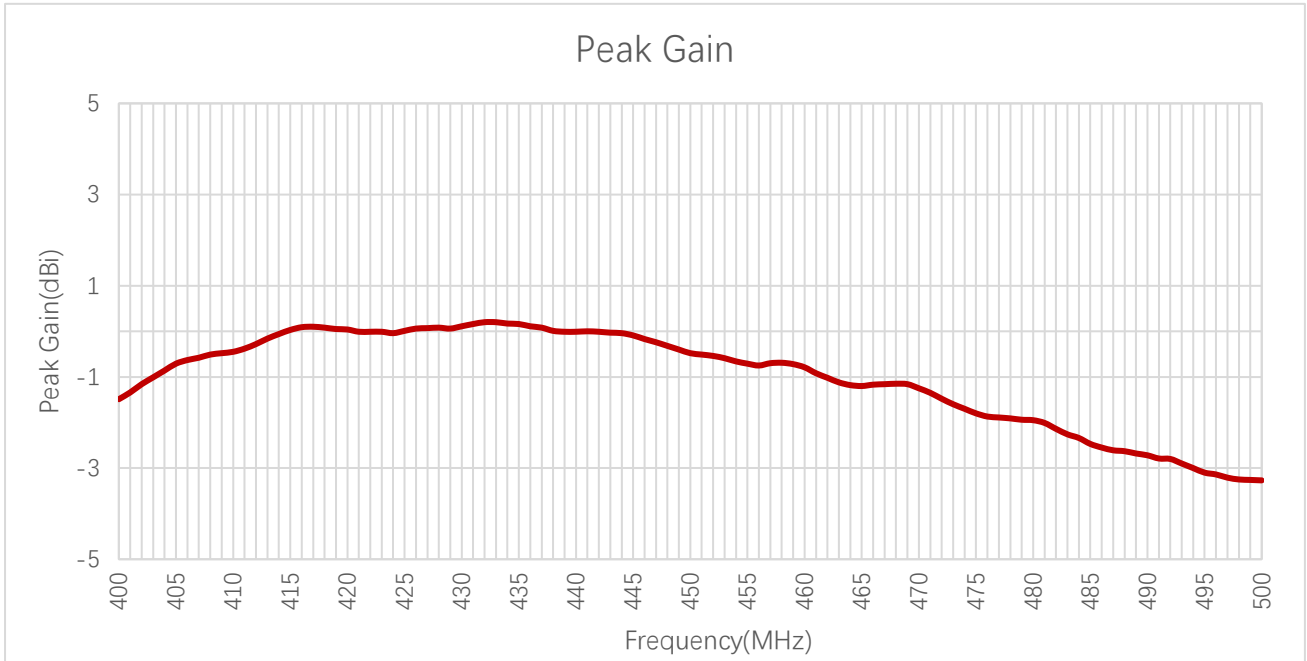
3.2.2. Average Gain



Average Gain (dB)

Frequency (MHz)	410	420	430	440	450	460	470	490	500	510
Average Gain (dB)	-3.5	-3.5	-2.9	-2.7	-2.8	-3.1	-3.6	-	-	-

3.2.3. Peak Gain

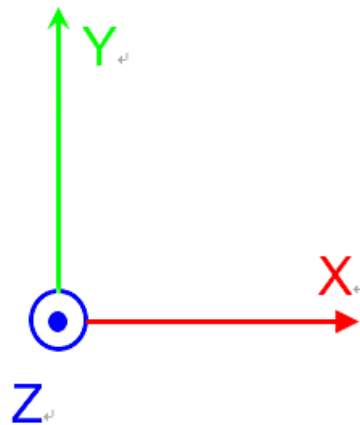
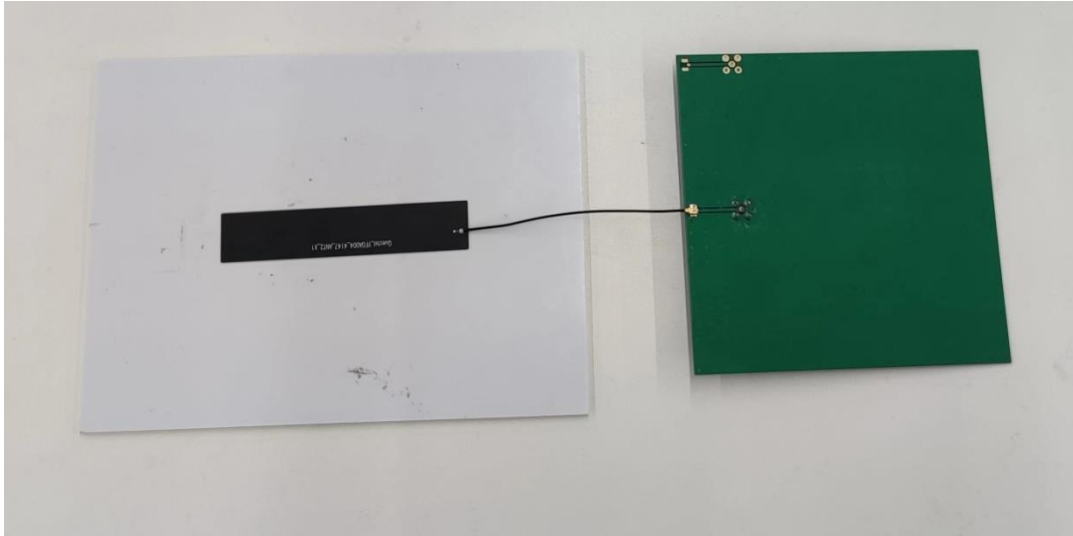


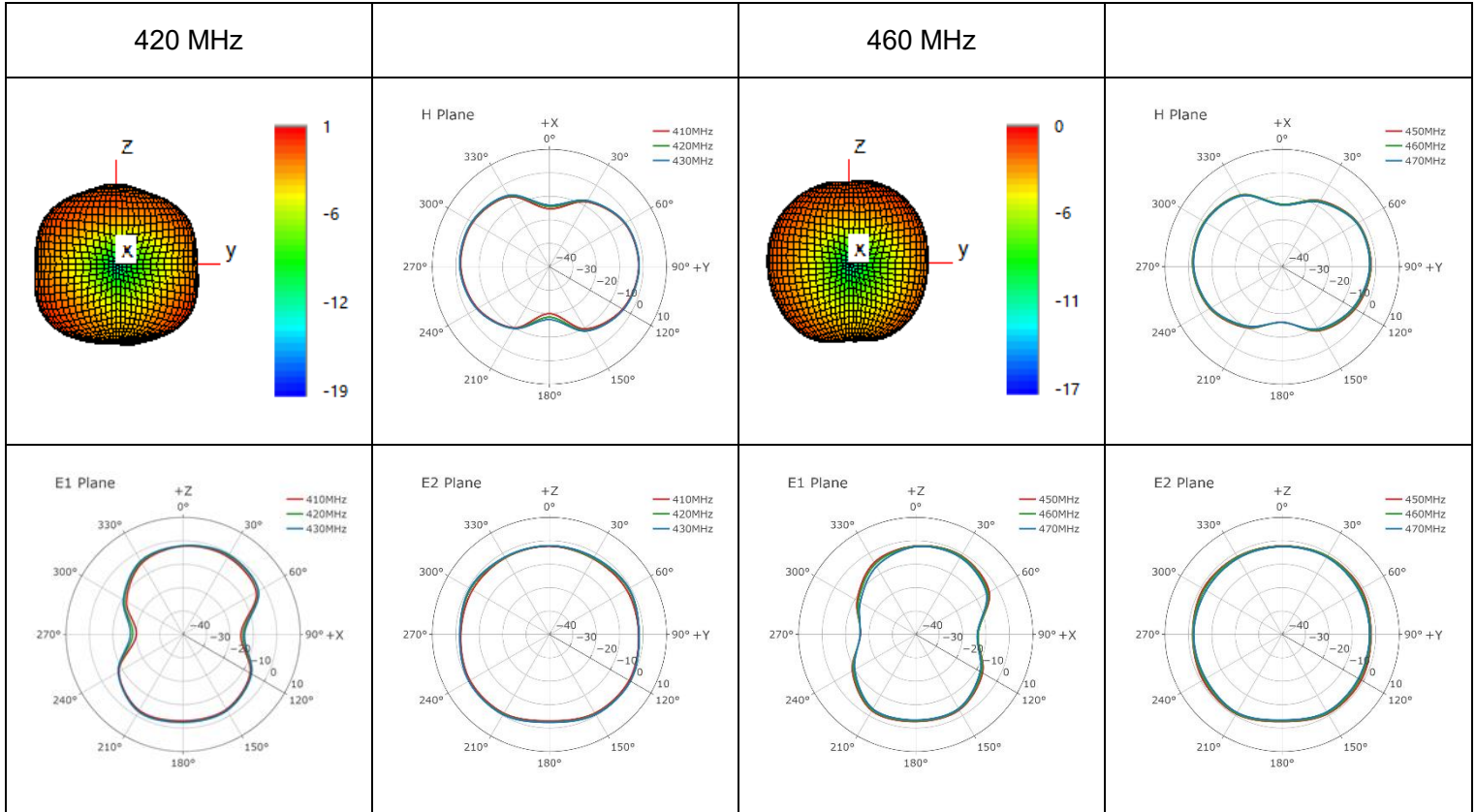
Peak Gain (dBi)

Frequency (MHz)	410	420	430	440	450	460	470	490	500	510
Peak Gain (dBi)	-0.5	-0.5	0.0	0.1	0.0	-0.5	-0.8	-	-	-


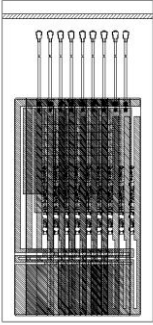
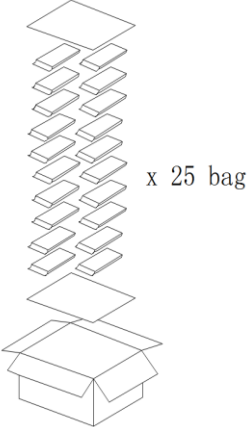
3.2.4. 3D & 2D Radiation Pattern

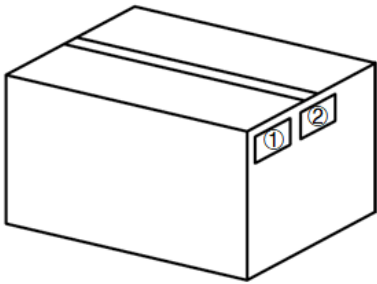
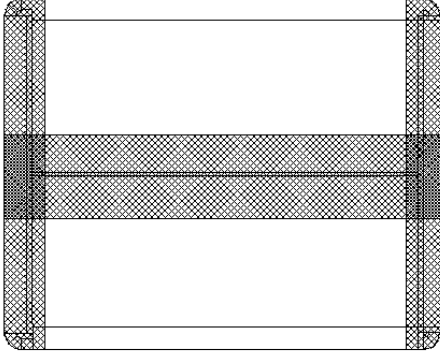
- Test Condition: Stick to ABS on 130 mm × 130 mm EVB
- Test Chamber: HF-G-1





4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		Product drawing
2		200 antenna products in a big PE bag. (200 Antennas / Big PE Bag)
		<p>(25 Big PE Bags / Carton Box) (5000 Antennas / Carton Box) Estimated quantity Products that cannot fill the entire carton box are packed in a suitable size carton box.</p> <p><u>Carton Size:</u> <u>L × W × H = 325 × 325 × 200 mm</u></p>

<p>3</p>		<p>Position for Attaching Labels</p> <ul style="list-style-type: none"> ① Carton Label ② Quality Label
<p>4</p>		<p>Sealing Cartons H-shaped sealing cartons</p>
<p>Note</p>	<p>The initial packaging method described above is for reference only, and the final actual packaging method shall be subject to the actual shipping packaging.</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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Or our local offices. For more information, please visit:

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Revision History

Version	Date	Author	Note
-	2022-04-26	Owen DENG/ Jason LONG	Creation of the document
1.0	2022-04-26	Owen DENG/ Jason LONG	First official release
2.0	2023-09-15	Aria CHU/ Lucky FENG/ David LIU	Updated all test data in this datasheet.
2.1	2024-04-02	Jason LONG	Updated the drawing (Chapter 2).
2.2	2024-06-28	Hart HU	Updated the 2D drawing (Chapter 2).
2.3	2025-07-01	Aria CHU	1. Updated the antenna image (Cover page). 2. Updated the overview.

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