



Antenna Datasheet

Product OC: YF0022DA

Version: 2.0

Date: 2023-11-20

Status: Released

Product Name: 4G PCB Antenna

Key Features:

Frequency Band: 600–960 MHz, 1710–2690 MHz

Dimensions: 40 × 15 × 0.8 mm

Efficiency: Up to 72.3 %

RoHS and REACH Compliant

Overview

This Quectel embedded 4G PCB antenna covers main 4G LTE bands and is compatible with 3G/2G/LPWA bands. Featuring high efficiency and gain, it is an ideal antenna for a smooth and stable connection with high-efficiency data transmission even under the influence of the device's internal structure. Ground plane independent, it's designed to be mounted directly to the underside of either a plastic or non-metallic enclosure. Ease of integration with a cable and connector which can be customized to meet your product design and RF module.

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1 Specification

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

1.1. Electrical

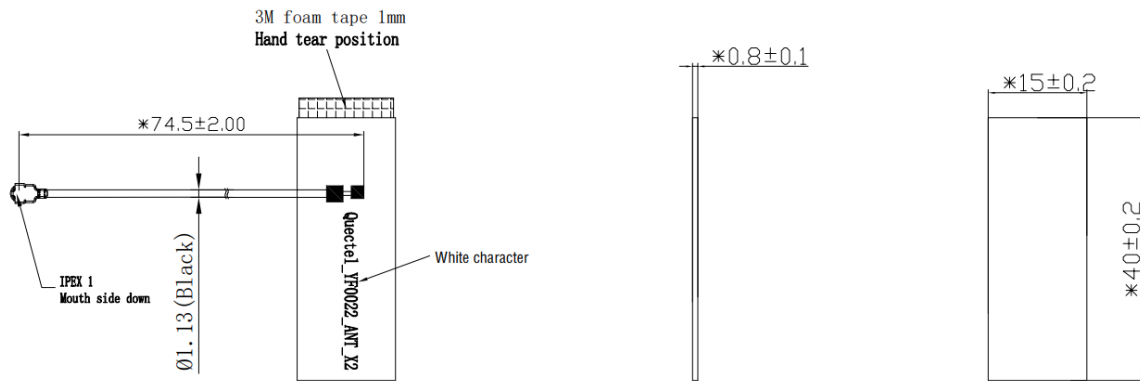
Electrical	
Frequency Range	700–960 MHz, 1710–2690 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Electrical - Detail												
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		5.5	5.7	4.1	-	3.0	2.1	1.5	1.9	-	-	-
Max. Return Loss (dB)		-3.2	-3.1	-4.4	-	-6.1	-8.8	-14.0	-10.3	-	-	-
AVG Eff. (%)		13.0	19.7	28.0	-	47.3	62.1	67.4	71.0	-	-	-
AVG AVG Gain (dB)		-8.9	-7.1	-5.6	-	-3.3	-2.1	-1.7	-1.5	-	-	-
Max. Peak Gain (dBi)		-5.3	-2.9	-1.2	-	0.8	2.6	2.2	2.4	-	-	-
VSWR						≤ 5.7						
Return Loss						≤ -3.1 dB						
Peak Gain						≤ 2.6 dBi						

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	40 × 15 × 0.8 mm
Material & Color	PCB & Black
Cable Type & Color & Length	Φ 1.13 & Black & 74.5 mm
Connector Type	IPEX MHF 1
Mounting Type	Adhesive
Weight	Typ. 1.6 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS and REACH Compliant	Yes

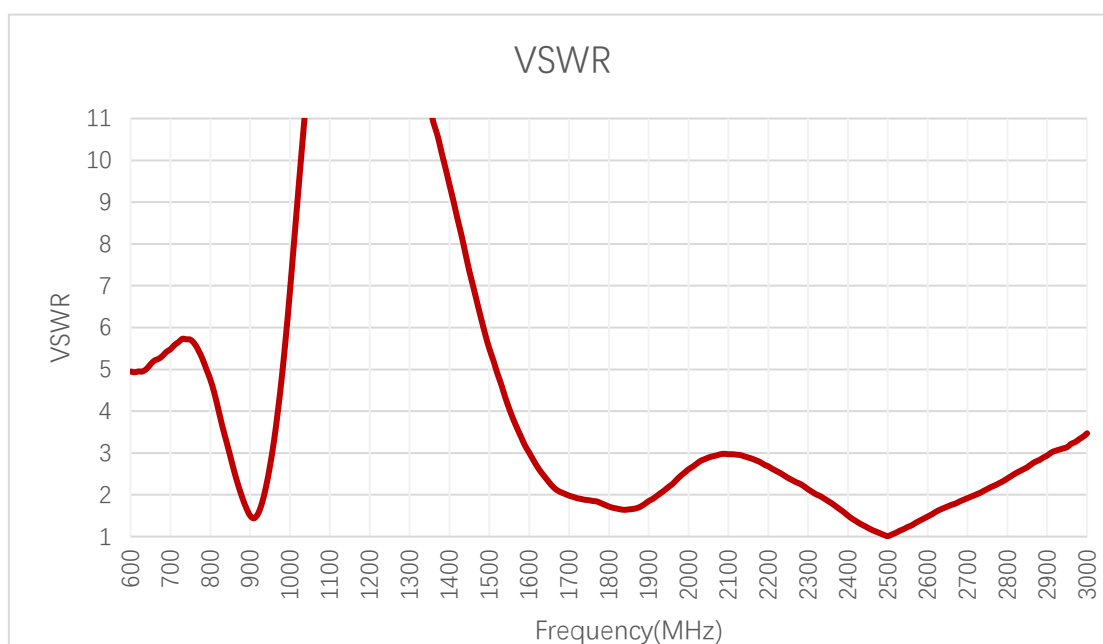
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

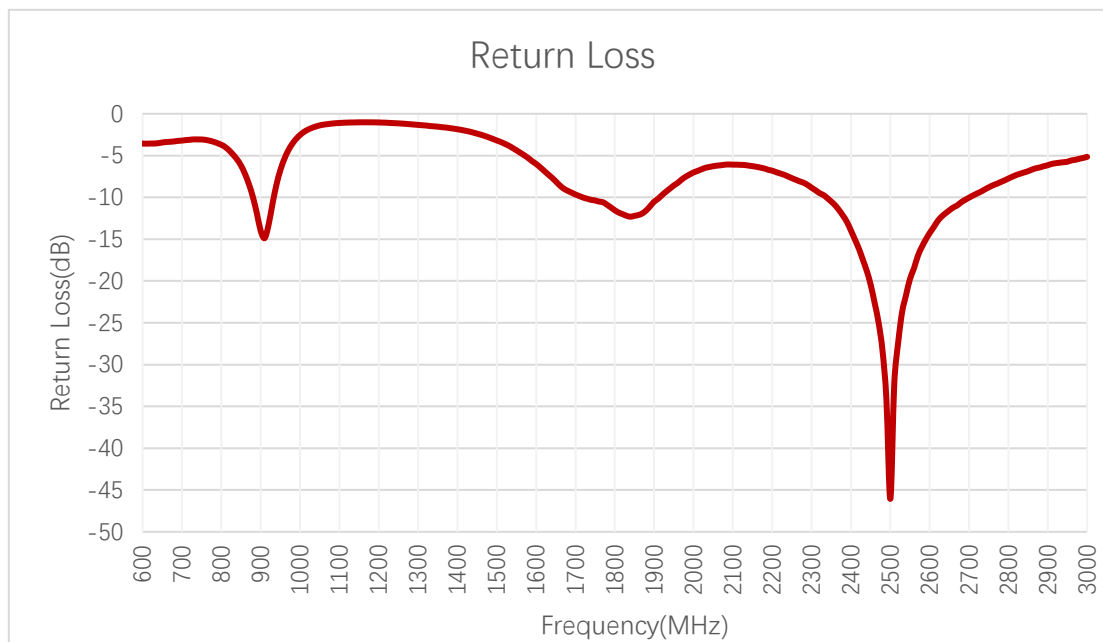
3.1.1. VSWR



VSWR

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
VSWR	5.0	5.0	5.6	3.7	1.5	3.3	-	2.0	1.9	1.7
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
VSWR	2.2	2.9	1.9	1.2	1.5	1.9	-	-	-	-

3.1.2. Return Loss

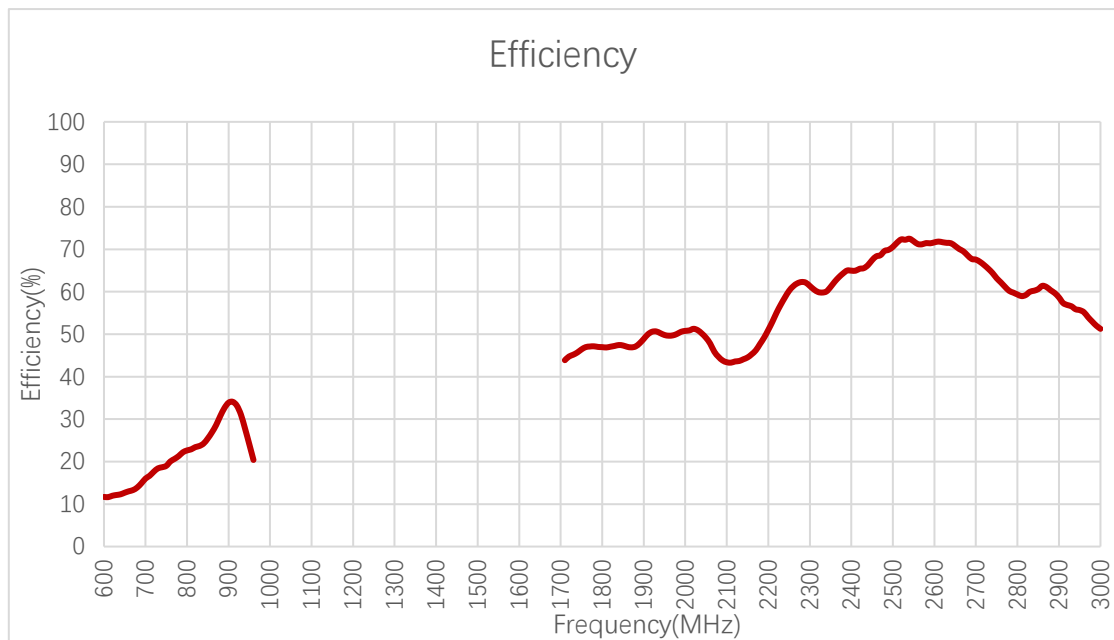


Return Loss (dB)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	-3.6	-3.6	-3.1	-4.9	-14.0	-5.4	-	-9.8	-10.3	-11.5
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Return Loss (dB)	-8.6	-6.2	-10.5	-20.4	-14.3	-10.3	-	-	-	-

3.2. Radiation Performance Test

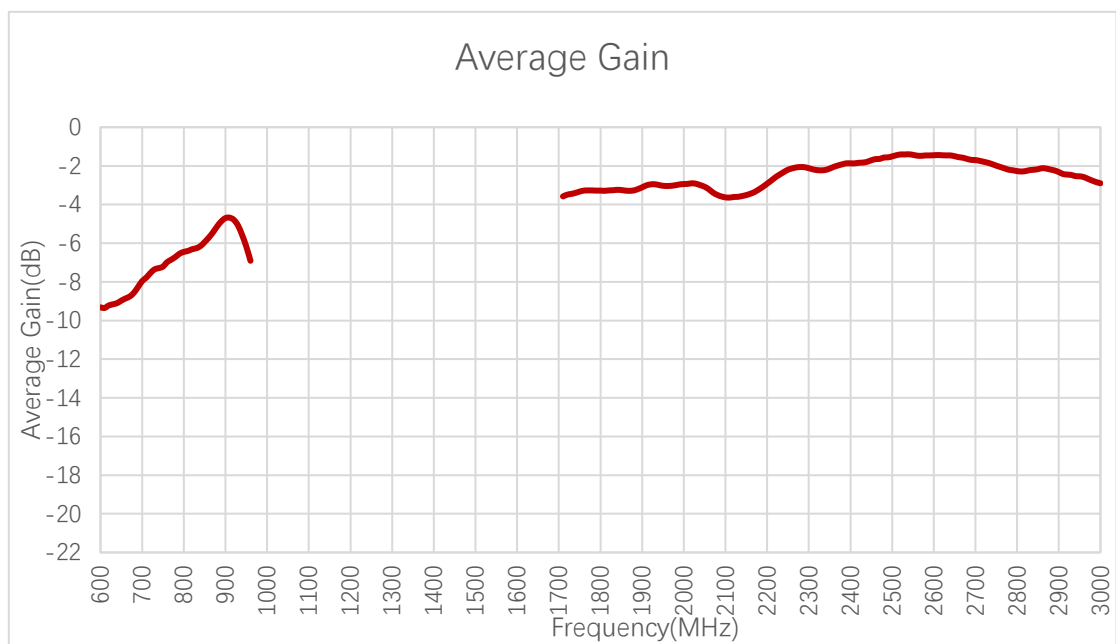
3.2.1. Efficiency



Efficiency (%)

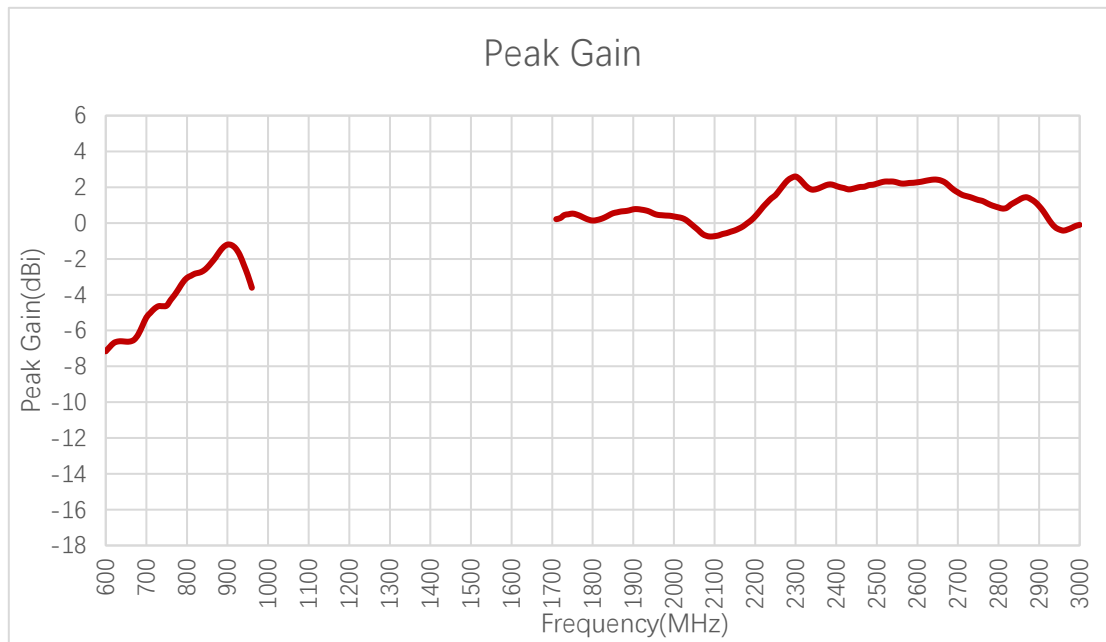
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	11.7	12.1	16.7	23.7	33.9	20.4	-	43.9	45.7	47.1
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Efficiency (%)	49.8	44.1	61.1	67.4	71.6	67.7	-	-	-	-

3.2.2. Average Gain



Average Gain (dB)										
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	-9.3	-9.2	-7.8	-6.3	-4.7	-6.9	-	-3.6	-3.4	-3.3
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Average Gain (dB)	-3.0	-3.6	-2.1	-1.7	-1.5	-1.7	-	-	-	-

3.2.3. Peak Gain

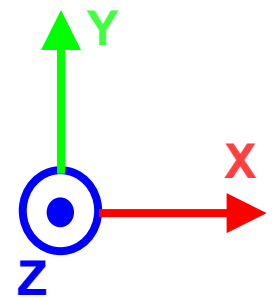
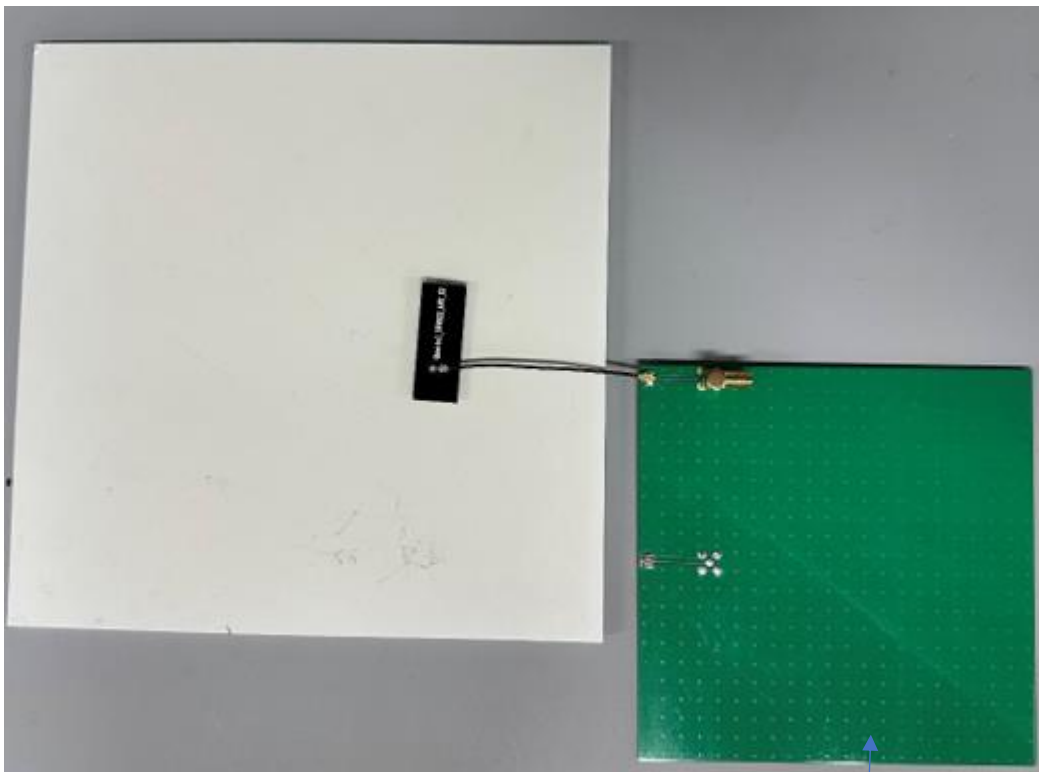


Peak Gain (dBi)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	-7.2	-6.6	-5.0	-2.8	-1.2	-3.6	-	0.2	0.5	0.7
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Peak Gain (dBi)	0.5	-0.5	1.9	2.0	2.3	1.9	-	-	-	-

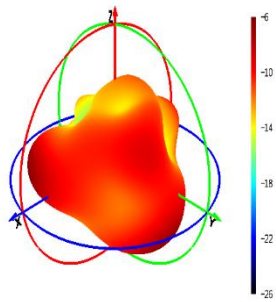
3.2.4. 3D & 2D Radiation Pattern

- Test Condition: Stick to ABS board on 130 × 130 mm EVB board
- Test Chamber: GL-S-1

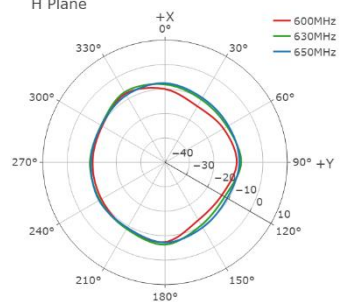


130 × 130 mm EVB

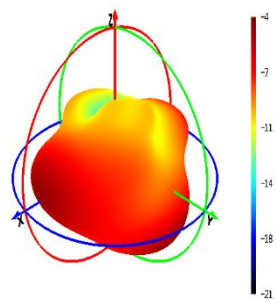
630 MHz



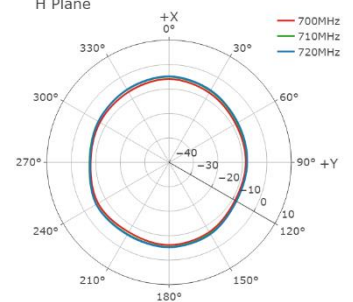
H Plane



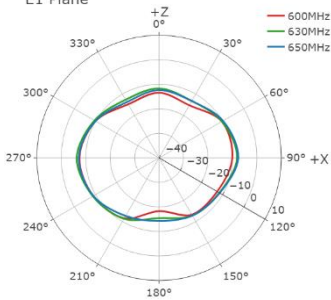
710 MHz



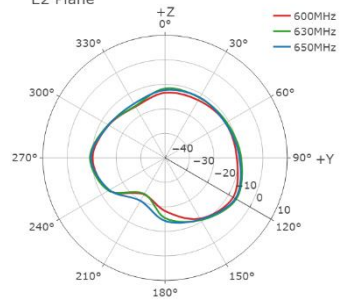
H Plane



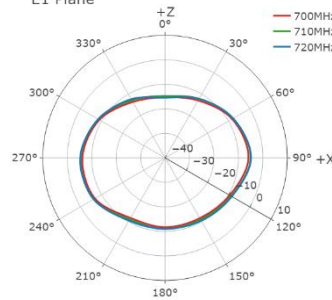
E1 Plane



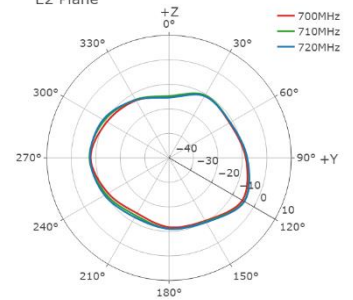
E2 Plane



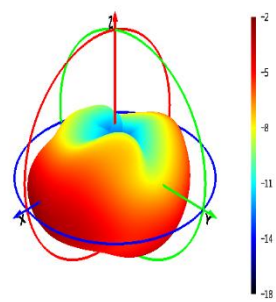
E1 Plane



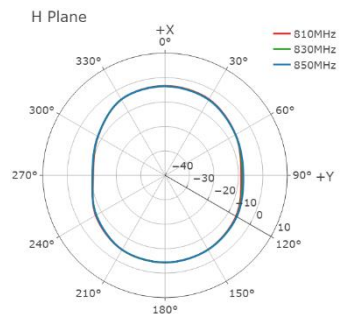
E2 Plane



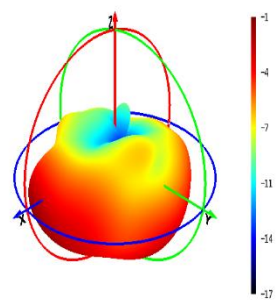
830 MHz



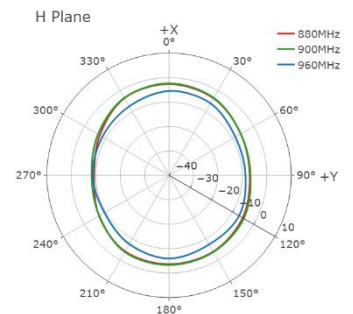
H Plane



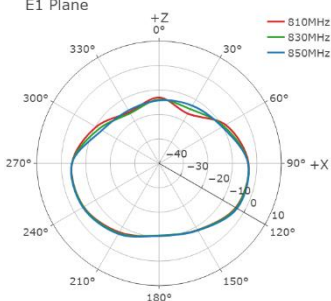
900 MHz



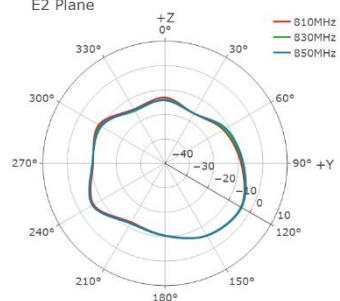
H Plane



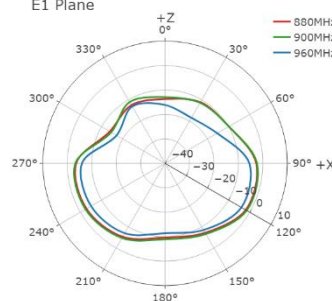
E1 Plane



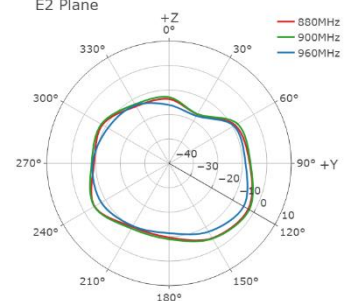
E2 Plane

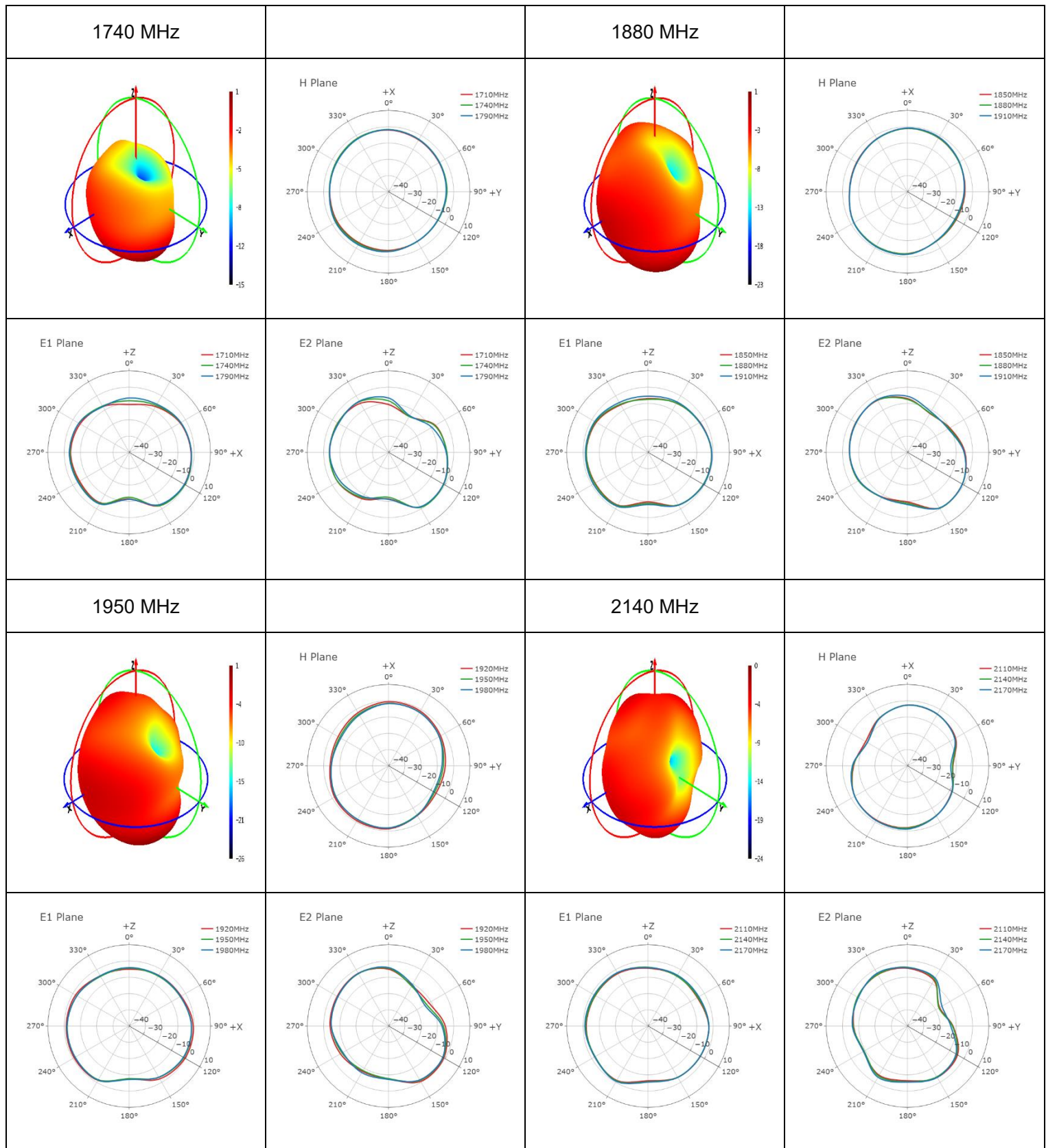


E1 Plane

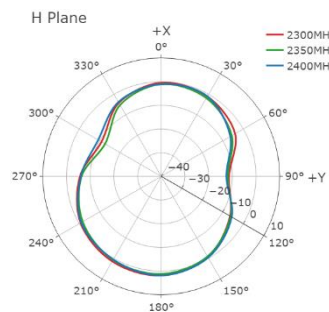
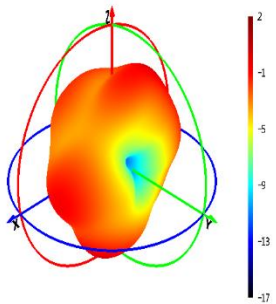


E2 Plane

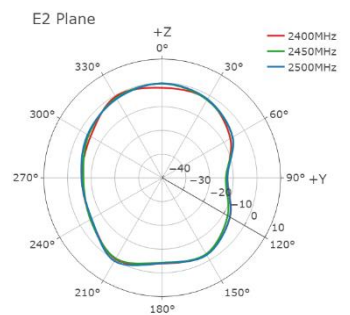
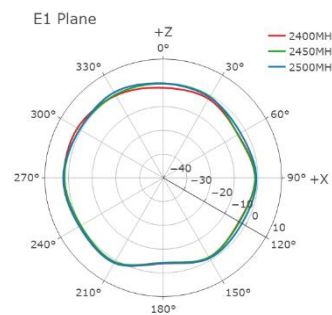
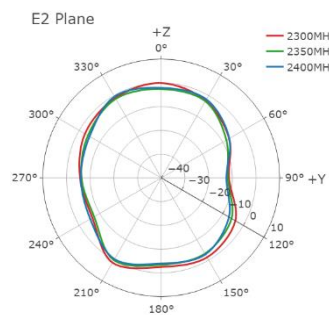
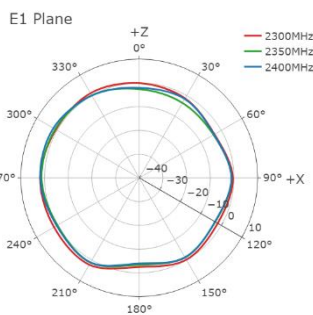
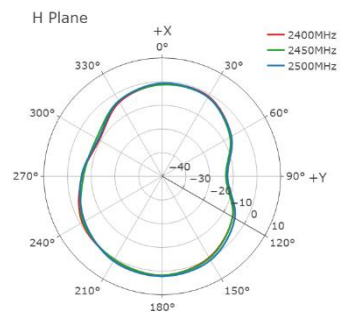
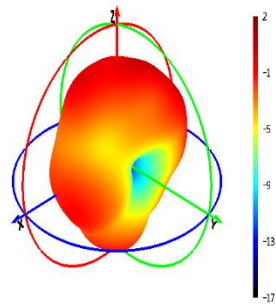




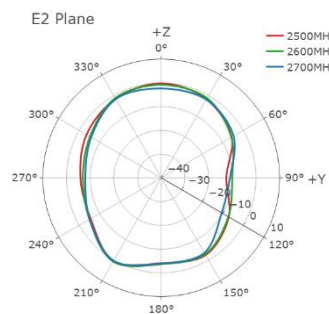
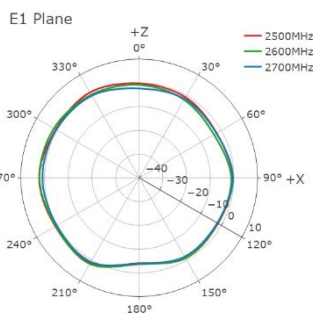
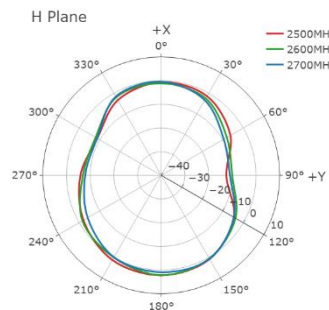
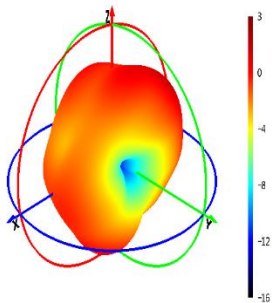
2350 MHz



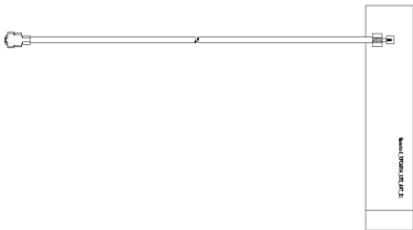
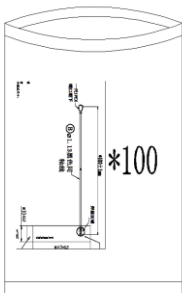
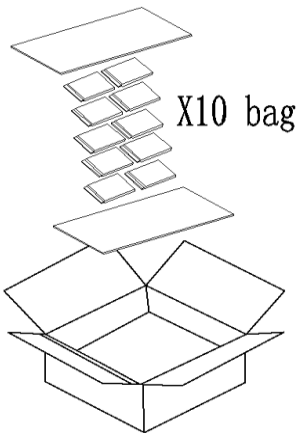
2450 MHz

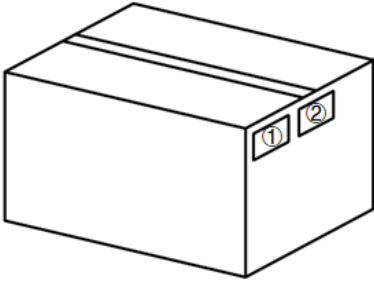
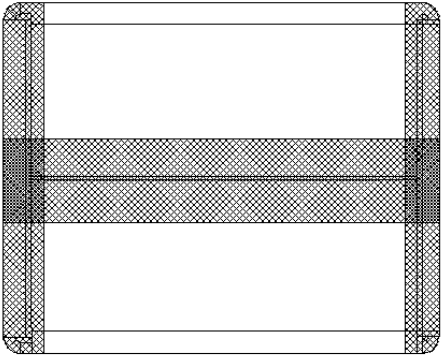


2600 MHz



4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		Product drawing
2	 100PCS/bag	100 pcs antenna products in a PE bag. (100 PCS/ PE Bag) <u>PE Bag Size: L × W = 200 × 150 mm</u>
3	 X10 bag	Place a clapboard at the bottom and top. (10 PE Bags / Carton Box) (1000 PCS Antennas / Carton Box) Estimated quantity Products that cannot fill the entire carton box are packed in a suitable size carton box. <u>Carton Size:</u> <u>L × W × H = 290 × 210 × 100 mm</u>

4		Position for Attaching Labels ① Carton Label ② Quality Label
5		Sealing Cartons “Ⅰ” type sealing cartons
6	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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Revision History

Version	Date	Author	Note
-	2023-02-07	Richard LIU/ Joye WANG	Creation of the document
1.0	2023-02-07	Richard LIU/ Joye WANG	First official release
2.0	2023-09-07	Edwin XIAO/ Lucky FENG/ David LIU/ Aria CHU	Updated all test data in this datasheet.
2.1	2023-11-20	Edwin XIAO	Updated test data of the tables (Chapter 3).



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