Antenna Datasheet

Product OC: YEBT038WFA
Version: 2.1
Date: 2024-02-29
Status: Preliminary

Product Name: External Wi-Fi/BT Antenna
Key Features:
Frequency band: 2400–2500 MHz, 5150–5850 MHz, 5925–7125 MHz
Peak efficiency: 50.12 %
Dimensions: Φ13 mm × 195 mm
RoHS Compliant

Overview

Quectel Wi-Fi/BT antenna covers BT, 2.4 GHz, 5 GHz, and up to 7 GHz bands, fully satisfying customers' requirements for BT, 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

1 Specification

Test Condition: Free Space

1.1. Electrical

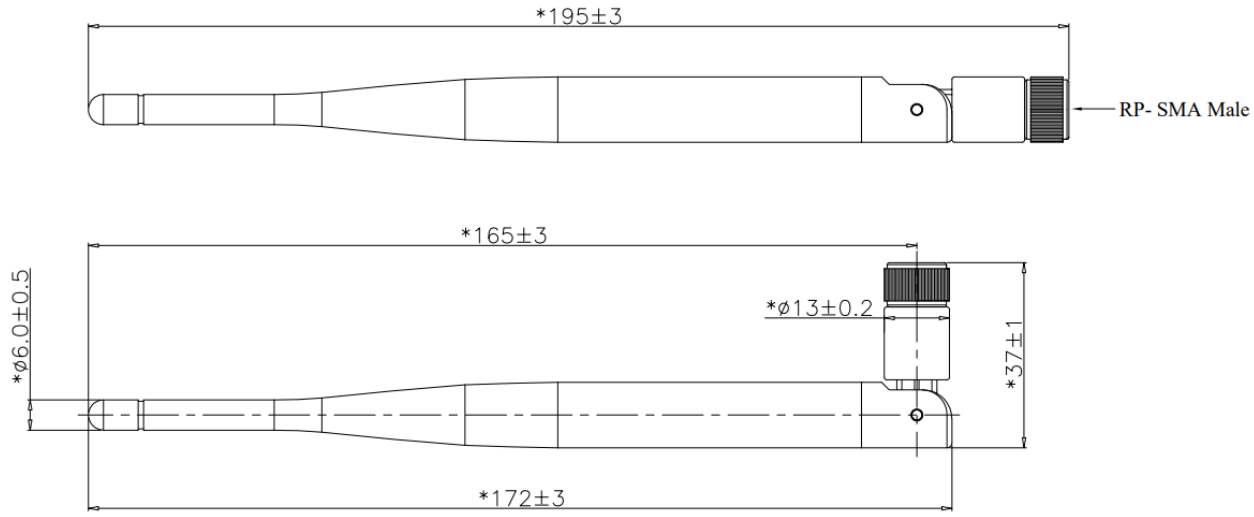
Electrical	
Frequency Range	2400–2500 MHz, 5150–5850 MHz, 5925–7125 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Band / Specification	Band	Wi-Fi 2G BT	Wi-Fi 5G				Wi-Fi 7G
	Freq. (MHz)	2400 - 2500	5150 - 5250	5250 - 5350	5470 - 5725	5725 - 5850	5925-7125
Max. VSWR		2.0	2.8	2.8	2.7	2.4	2.3
Max. Return Loss (dB)		-9.3	-6.6	-6.4	-6.7	-7.6	-8.0
AVG Eff. (%)		40.6	40.6	38.6	33.8	28.7	33.4
AVG Gain (dB)		-4.0	-3.9	-4.1	-4.7	-5.4	-4.8
Max. Peak Gain (dBi)		0.2 （2500MHz）	-0.7 （5155MHz）	-0.8 （5260MHz）	-1.2 （5480MHz）	-1.5 （5820MHz）	1.6 （6915MHz）
VSWR		≤ 2.8					
Return Loss		≤ -6.4 dB					
Peak Gain		≤ 1.6 dBi					

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	Φ13 mm × 195 mm
Material & Color	TPEE & Black
Connector Type	RP SMA Male
Mounting Type	Terminal
Weight	Typ. 18 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS Compliant	Yes

2 Drawing

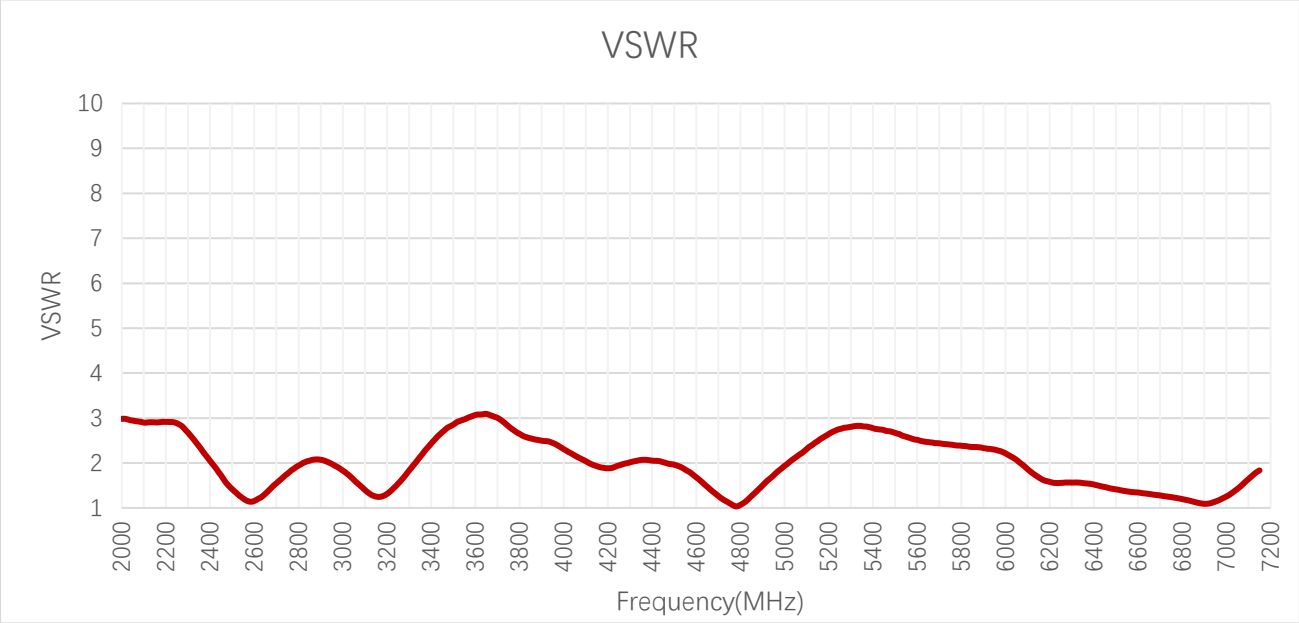


3 Detailed Performance

- Network Analyzer: Keysight E5071C (Device number: QTB6331E; Calibration date: 2022-06-24)
- Chamber: OTA RayZone 2800 GTS (Device number: QTA0709; Calibration date: 2023-07-14)
- Testing Software: Libra
- Manufacturer: Quectel Wireless Solutions (Changzhou) Co., Ltd.
  Address: No.8 Nanhu West Road, Wujin District, Changzhou City, Jiangsu Province, China

3.1. S-Parameter Test

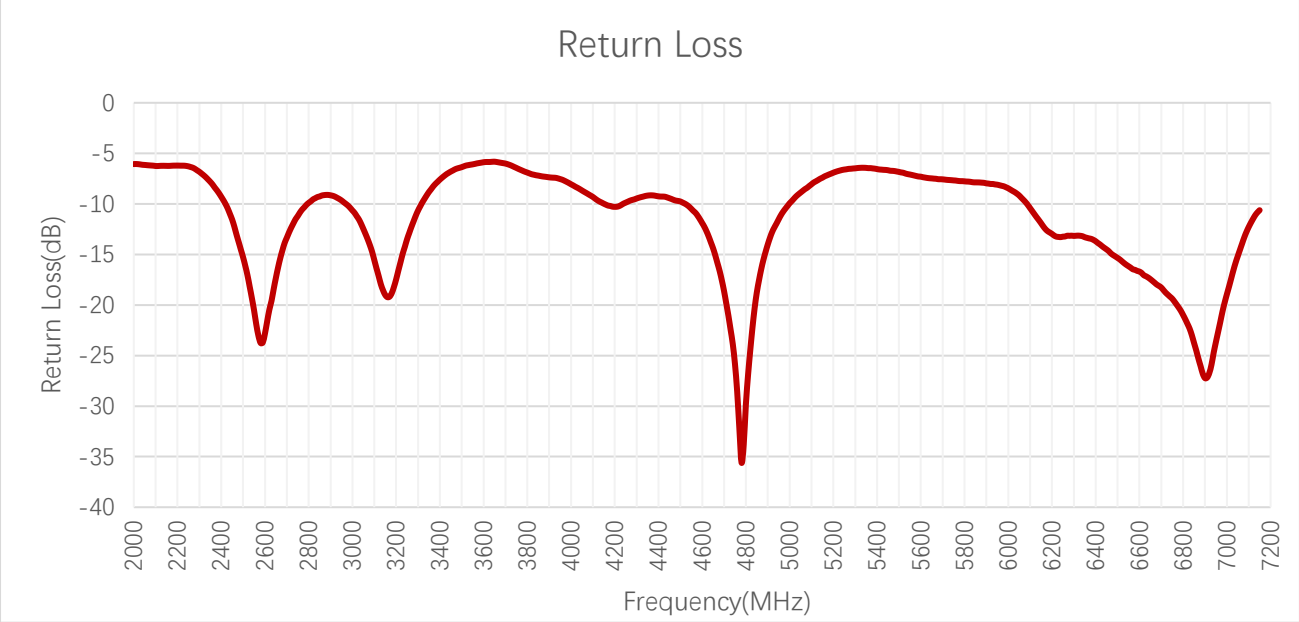
3.1.1. VSWR



VSWR

Frequency (MHz)	2400	2500	5150	5155	5250	5260	5350	5470	5480
VSWR	2.0	1.4	2.5	2.5	2.8	2.8	2.8	2.7	2.7
Frequency (MHz)	5725	5820	5850	5925	6325	6725	6915	7125	
VSWR	2.0	2.4	2.4	2.3	1.6	1.3	1.1	1.7	

3.1.2. Return Loss

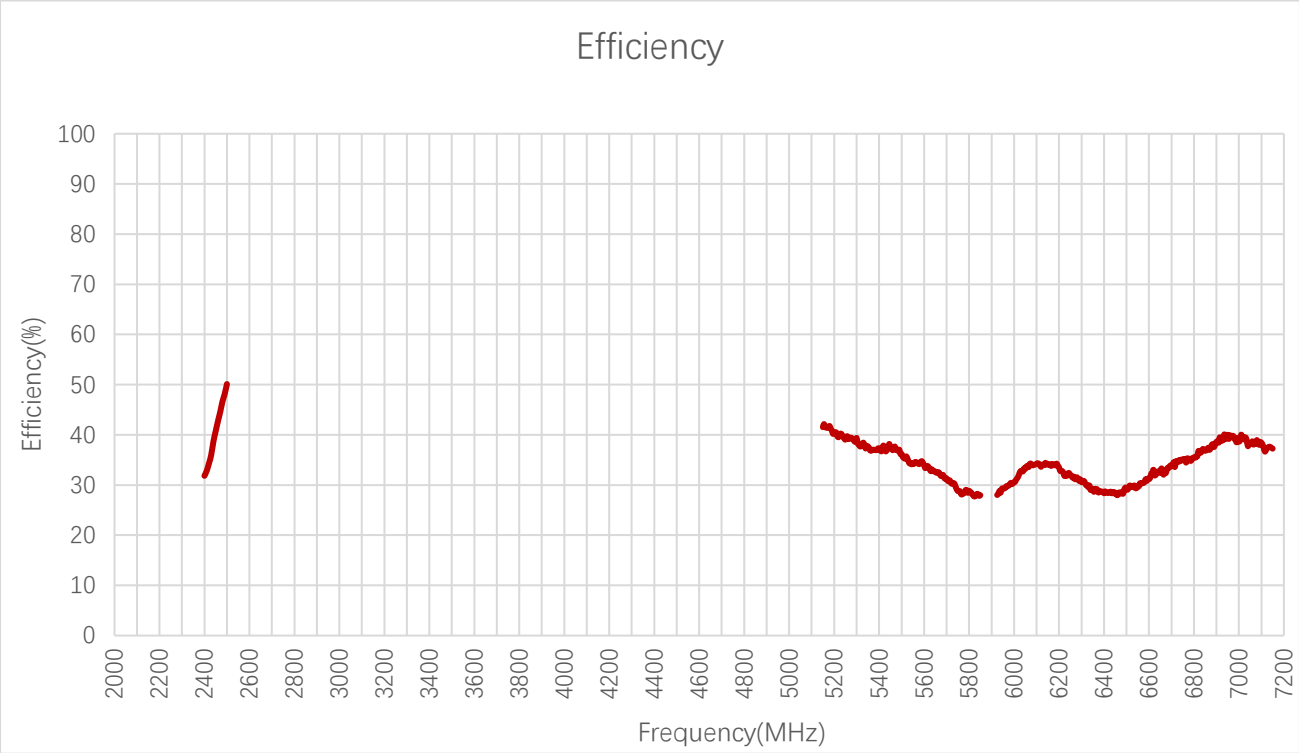


Return Loss (dB)

Frequency (MHz)	**2400**	**2500**	**5150**	**5155**	**5250**	**5260**	**5350**	**5470**	**5480**
Return Loss (dB)	-9.3	-15.3	-7.4	-7.4	-6.6	-6.6	-6.4	-6.7	-6.7
Frequency (MHz)	**5725**	**5820**	**5850**	**5925**	**6325**	**6725**	**6915**	**7125**	
Return Loss (dB)	-7.6	-7.8	-7.9	-8.0	-13.2	-19.0	-21.4	-11.1	

3.2. Radiation Performance Test

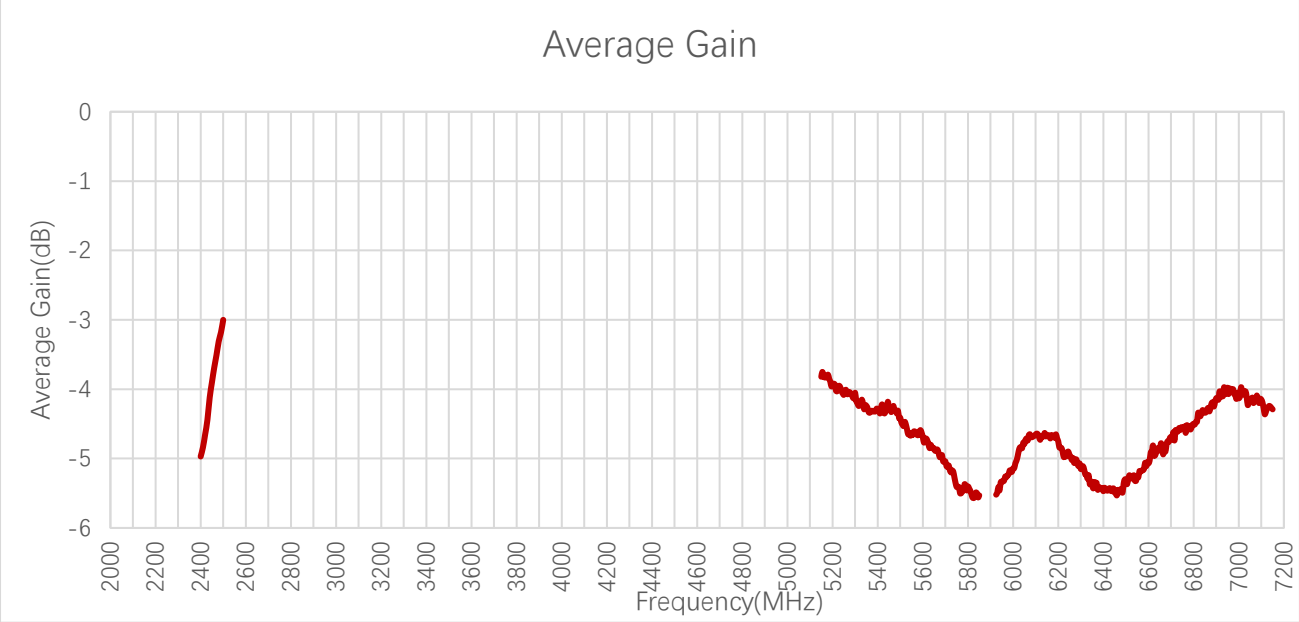
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	**2400**	**2500**	**5150**	**5155**	**5250**	**5260**	**5350**	**5470**	**5480**
Efficiency (%)	31.8	50.1	41.5	42.2	39.1	39.7	37.7	37.7	37.1
Frequency (MHz)	**5725**	**5820**	**5850**	**5925**	**6325**	**6725**	**6915**	**7125**	
Efficiency (%)	30.2	27.8	28.0	28.0	30.0	34.6	39.5	37.4	

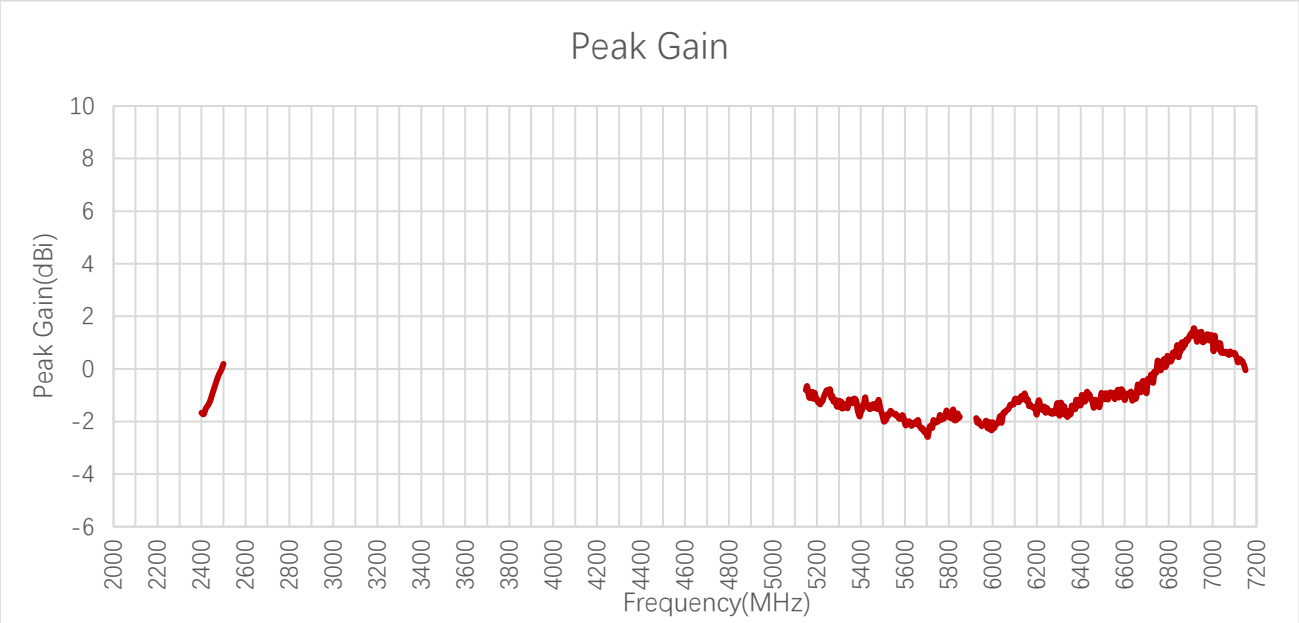
3.2.2. Average Gain



Average Gain (dB)

Frequency (MHz)	2400	2500	5150	5155	5250	5260	5350	5470	5480
Average Gain (dB)	-5.0	-3.0	-3.8	-3.8	-4.1	-4.0	-4.2	-4.2	-4.3
Frequency (MHz)	**5725**	**5820**	**5850**	**5925**	**6325**	**6725**	**6915**	**7125**	
Average Gain (dB)	-5.2	-5.6	-5.5	-5.5	-5.2	-4.6	-4.0	-4.3	

3.2.3. Peak Gain



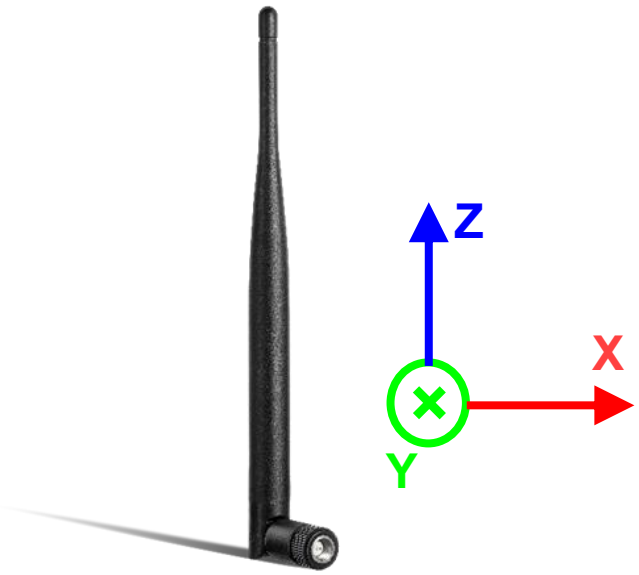
Peak Gain (dBi)

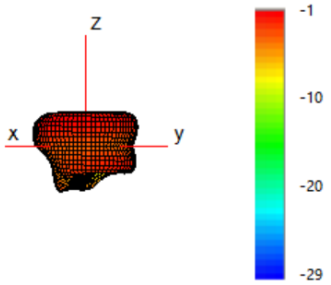
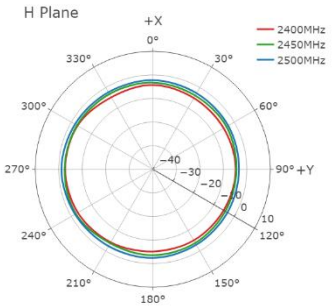
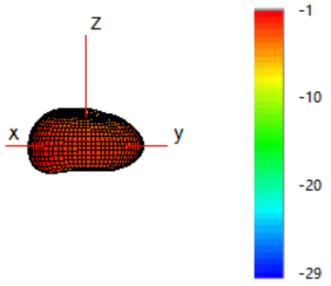
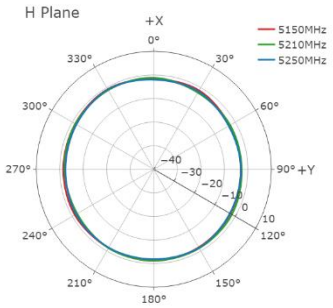
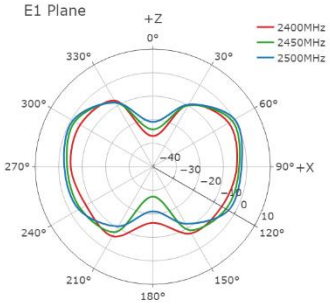
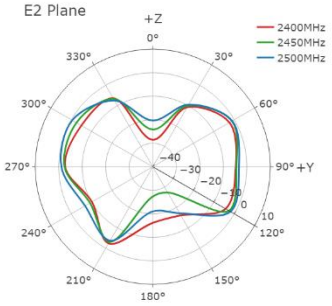
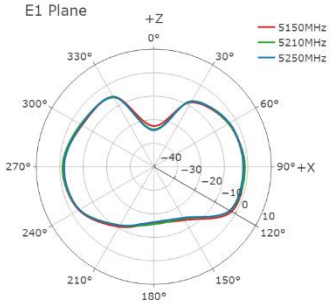
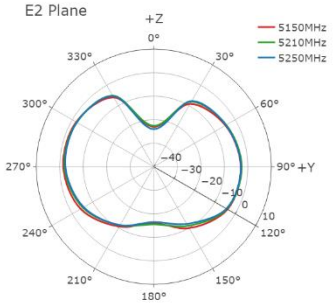
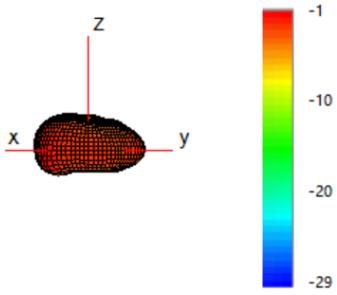
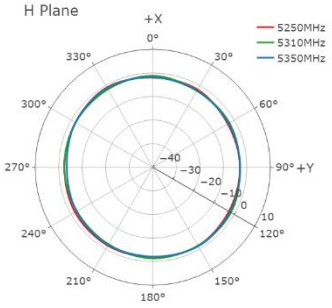
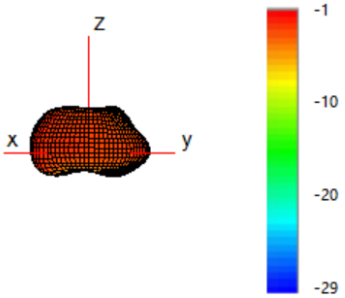
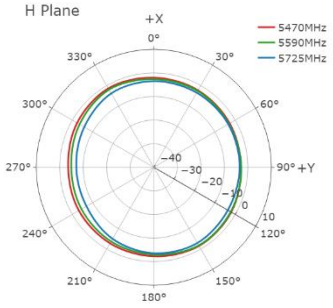
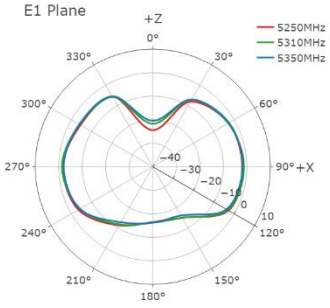
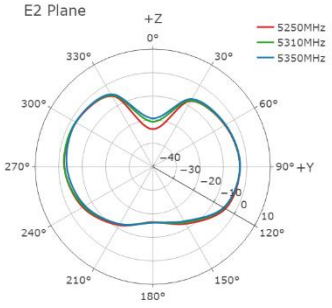
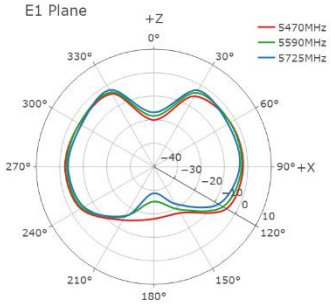
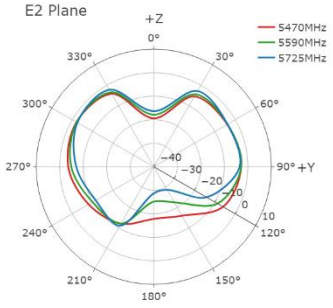
Frequency (MHz)	**2400**	**2500**	**5150**	**5155**	**5250**	**5260**	**5350**	**5470**	**5480**
Peak Gain (dBi)	-1.7	0.2	-0.8	-0.7	-0.9	-0.8	-1.3	-1.4	-1.2
Frequency (MHz)	**5725**	**5820**	**5850**	**5925**	**6325**	**6725**	**6915**	**7125**	
Peak Gain (dBi)	-2.2	-1.5	-1.8	-1.9	-1.4	-0.3	1.6	0.4	

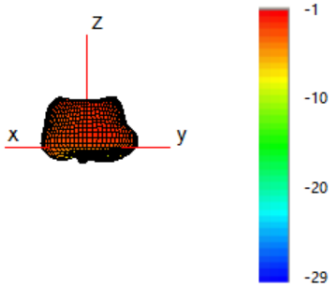
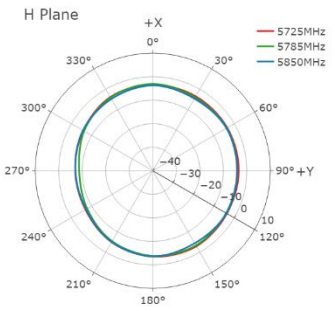
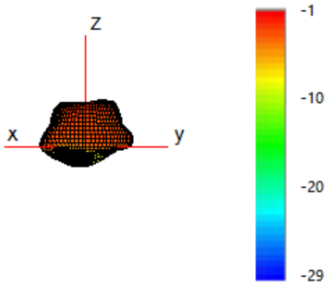
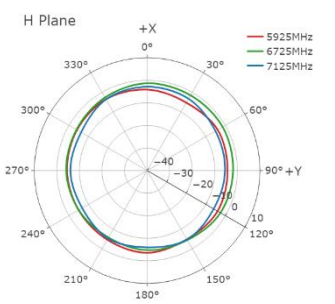
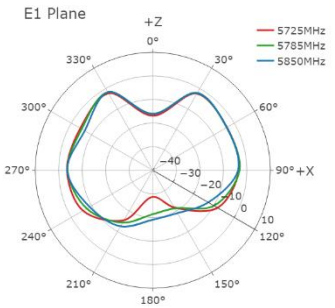
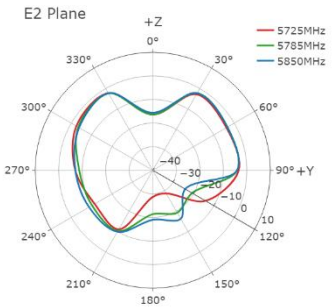
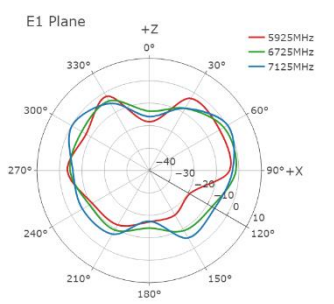
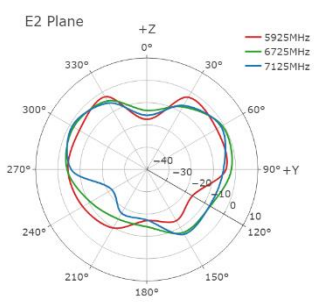
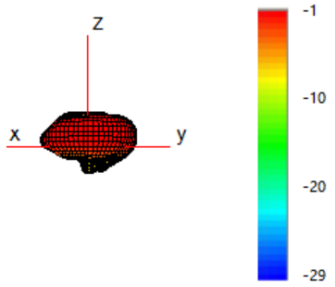
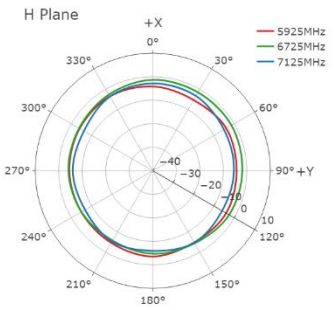
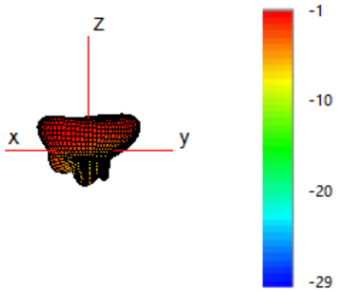
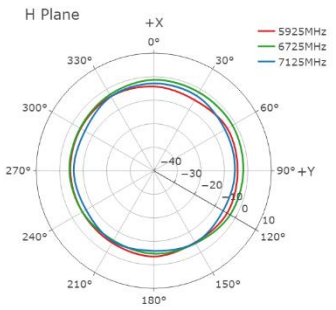
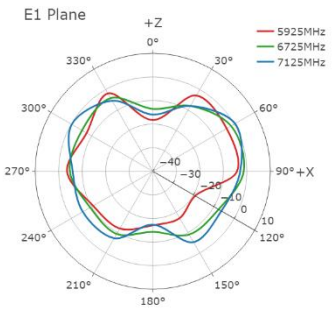
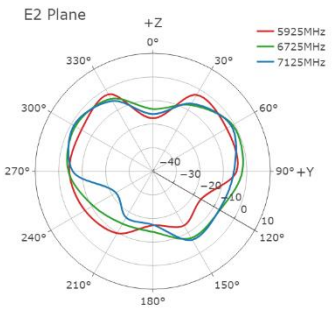
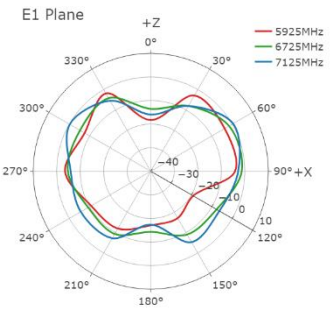
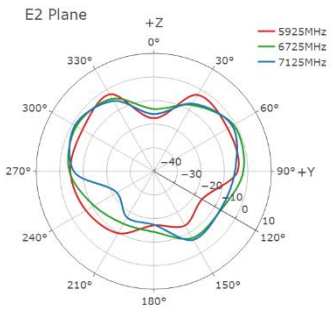
3.2.4. 3D & 2D Radiation Pattern

3.2.4.1. Test Condition: Free Space

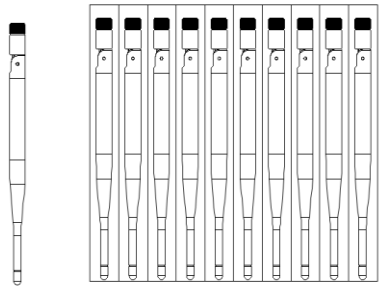
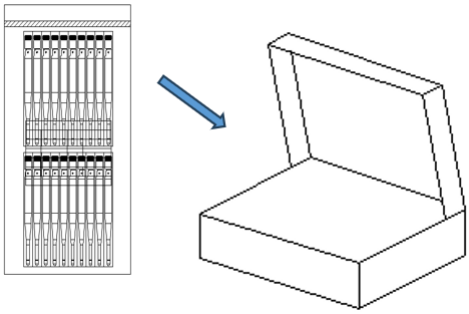
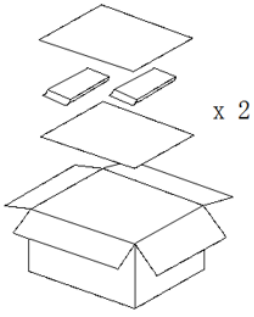
- Test Chamber: HF-G-1

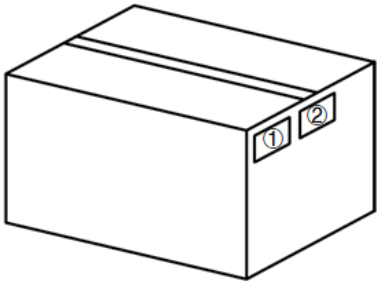
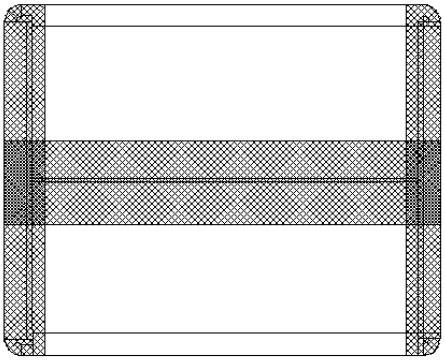


2450 MHz		5210 MHz	
			
			
5310 MHz		5590 MHz	
			
			

5785 MHz		5925 MHz	
			
			
6725 MHz		7125 MHz	
			
			

4 Packaging

Step	Packaging Picture / 2D Picture	Description
1	 1 product 10 products / One-piece Bag	The product goes into a one-piece bag. (10 PCS Antennas / One-piece Bag)
2		40 pcs antenna products in a PE bag. 120 pcs antenna products in an inner box.
3	 ..	(2 Inner Boxes / Carton Box) (240 PCS Antennas / Carton Box) Estimated quantity Products that cannot fill the entire carton box are packed in a suitable size carton box. Carton Size: L × W × H = 325 × 325 × 200 mm

4		**Position for Attaching Labels** ① Carton Label ② Quality Label
5		**Sealing Cartons** "工" type 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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Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Tel: +86 21 5108 6236
Email: info@quectel.com

Or our local offices. For more information, please visit:
http://www.quectel.com/support/sales.htm.

For technical support, or to report documentation errors, please visit:
http://www.quectel.com/support/technical.htm.
Or email us at: support@quectel.com.

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Revision History

Version	Date	Author	Note
-	2023-10-16	Sly LIU/ Lucky FENG/ Aria CHU	Creation of the document
1.0	2023-10-16	Sly LIU/ Lucky FENG/ Aria CHU	First official release
1.1	2023-11-23	Sly LIU	1. Updated the material (Chapter 1.2). 2. Updated the drawing (Chapter 2). 3. Updated 3D&2D radiation pattern (Chapter 3.2.4).
2.0	2024-02-05	Aria CHU	Numerous changes were made to this document. It should be read in its entirety.
2.1	2024-02-29	Sly LIU	Updated the test data

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