

# Antenna Datasheet

**Product OC:** YEBT038WFA

**Version:** 0.1

**Date:** 2024-05-08

**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:  $\Phi$ 13 mm x 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.

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# 1 Specification

Test Condition: Free Space

## 1.1. Electrical

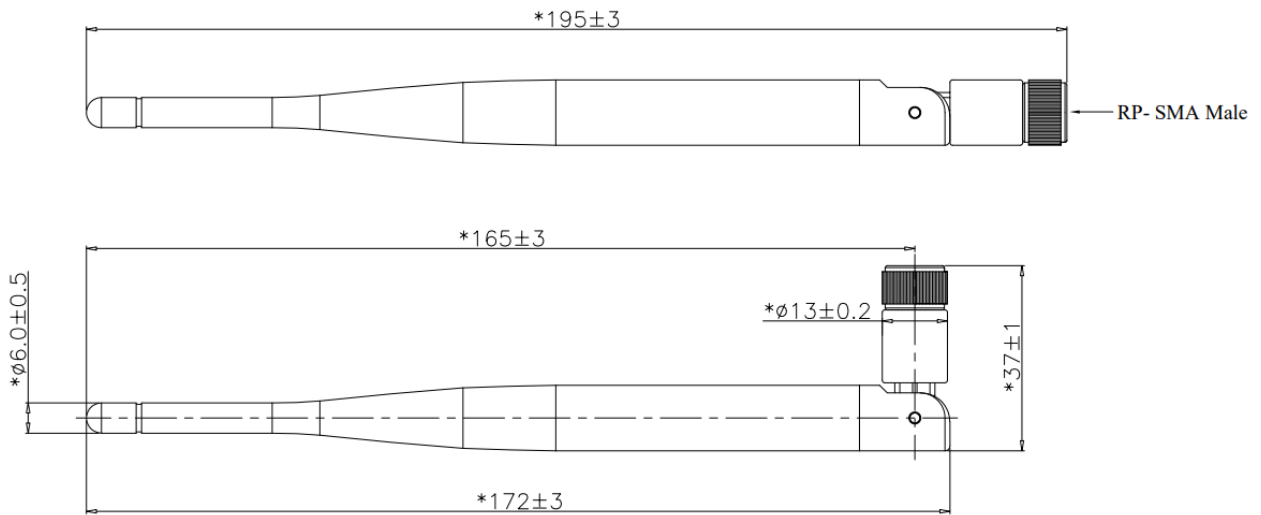
Electrical	
Frequency Range	2400–2500 MHz, 5150–5850 MHz, 5925–7125 MHz
Impedance	50 $\Omega$
Polarization	Linear
Radiation Pattern	Omni-directional
Antenna Type	Dipole

Specification	Band	Wi-Fi 5G					Wi-Fi 7G
	Band Freq. (MHz)	Wi-Fi 2G BT 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		$\leq 2.8$					
Return Loss		$\leq -6.4$ dB					
Peak Gain		$\leq 1.6$ 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

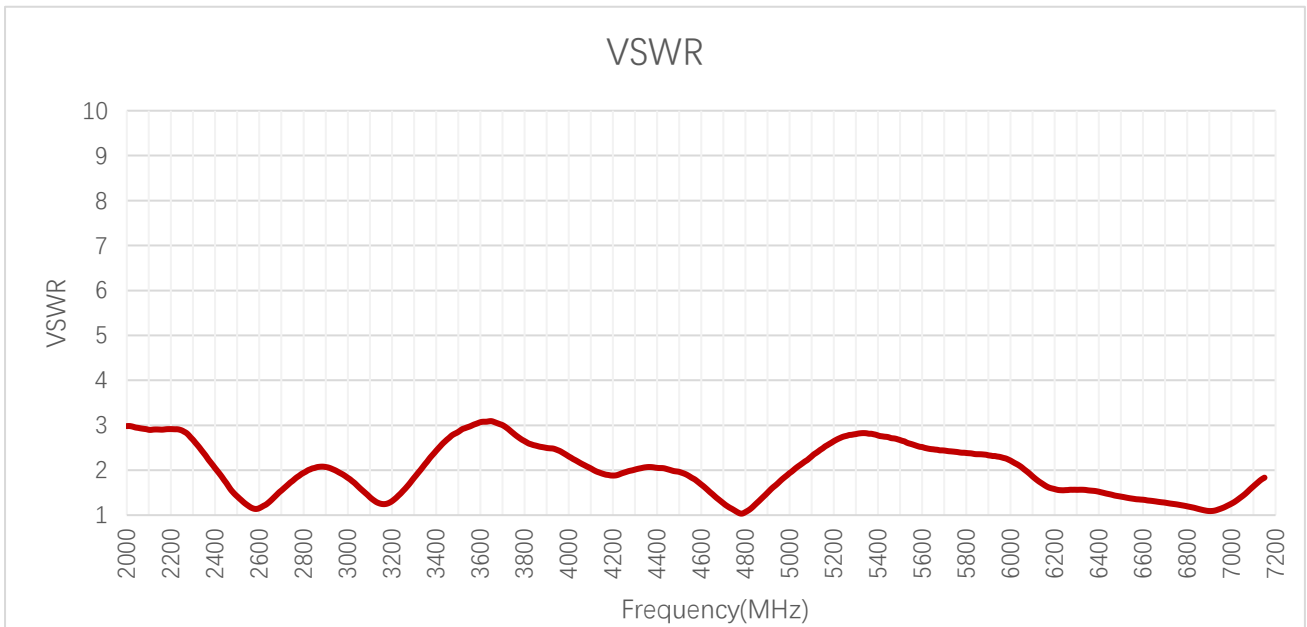


# 3 Detailed Performance

- Network Analyzer: Keysight E5071C (Device number: QTB6331E; Calibration date: 2023-12-27; Due date:2025-06-26)
- Chamber: OTA RayZone 2800 GTS (Device number: QTA0709; Calibration date: 2023-07-14; Due date:2024-07-13)
- 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

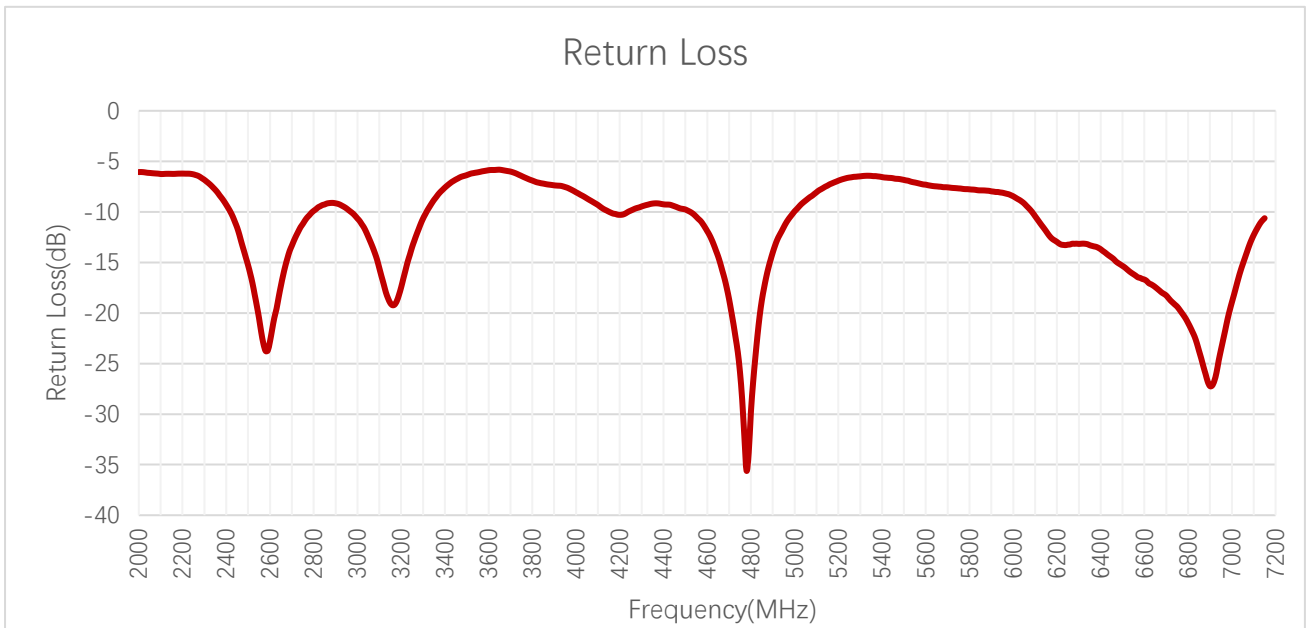


**VSWR**

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



**3.1.2. Return Loss**

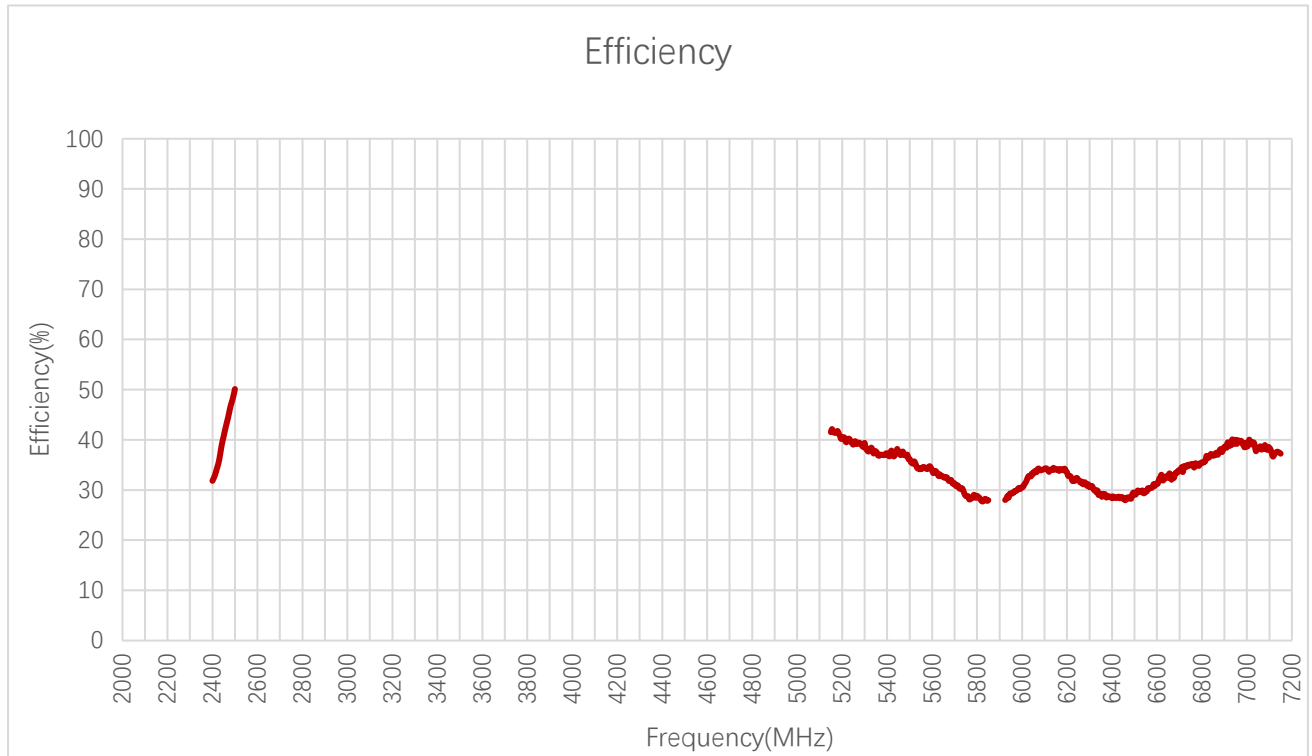


**Return Loss (dB)**

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

### 3.2. Radiation Performance Test

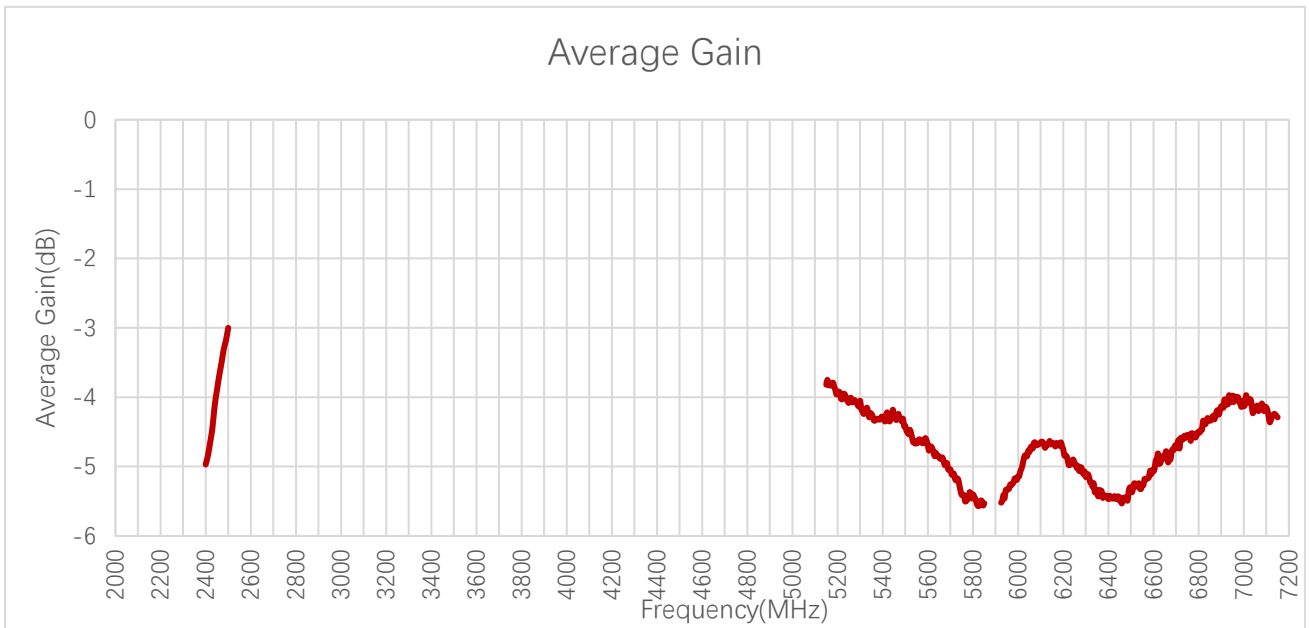
#### 3.2.1. Efficiency



**Efficiency (%)**

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

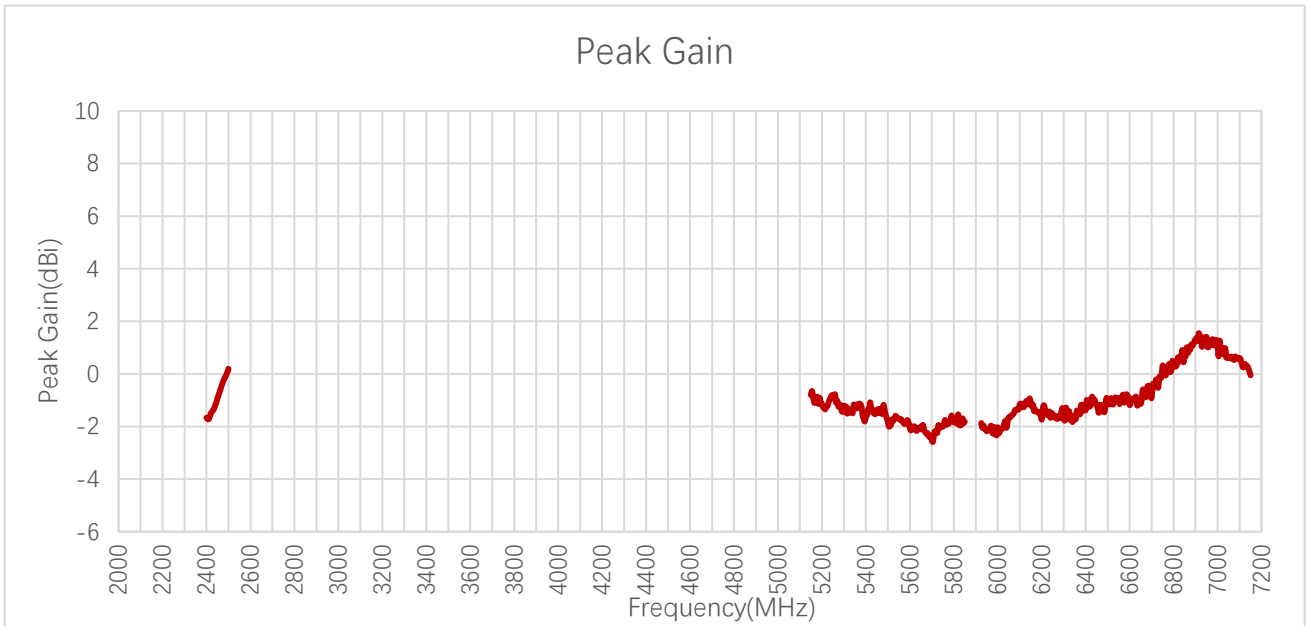
**3.2.2. Average Gain**



**Average Gain (dB)**

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

**3.2.3. Peak Gain**



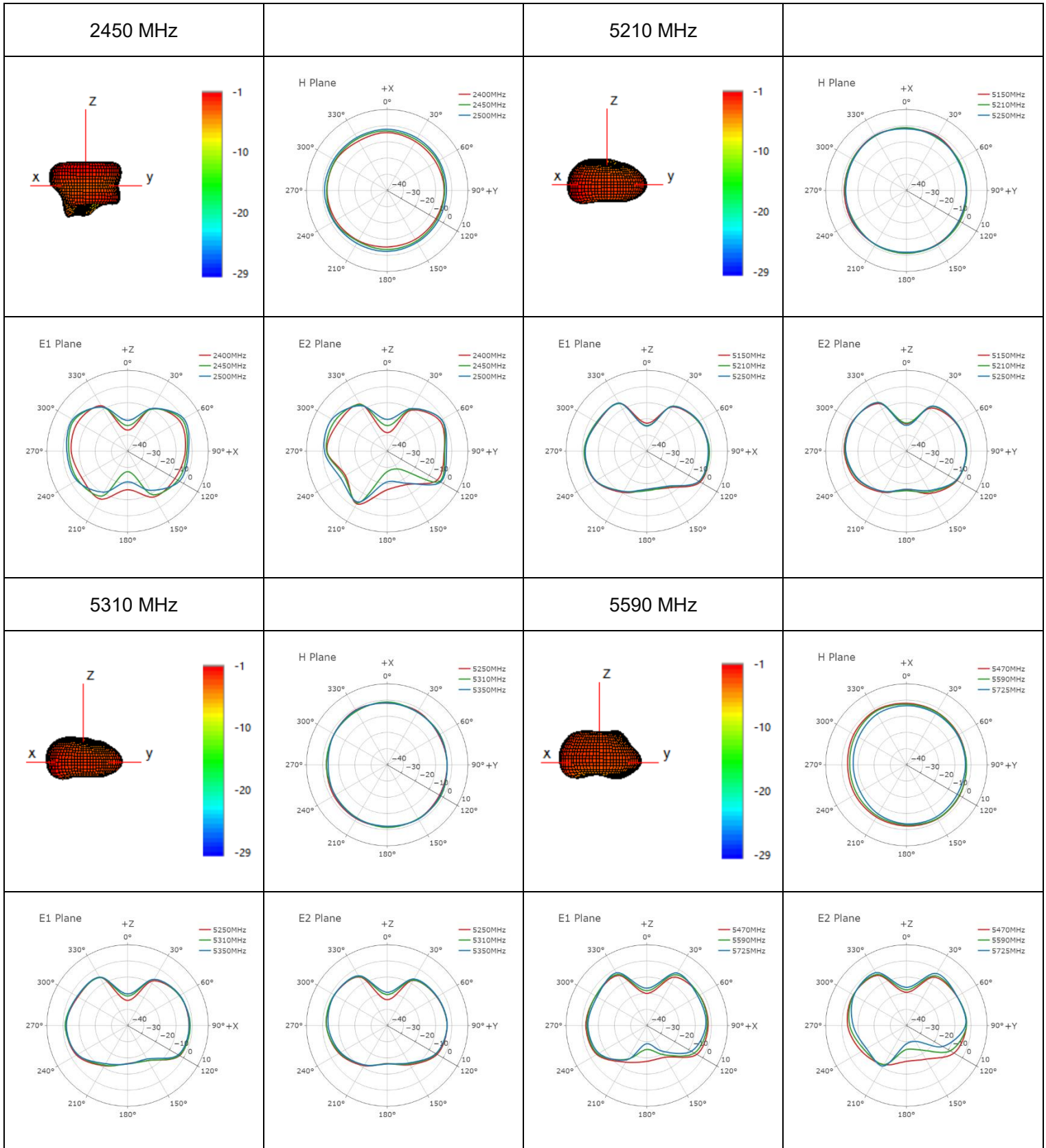
**Peak Gain (dBi)**

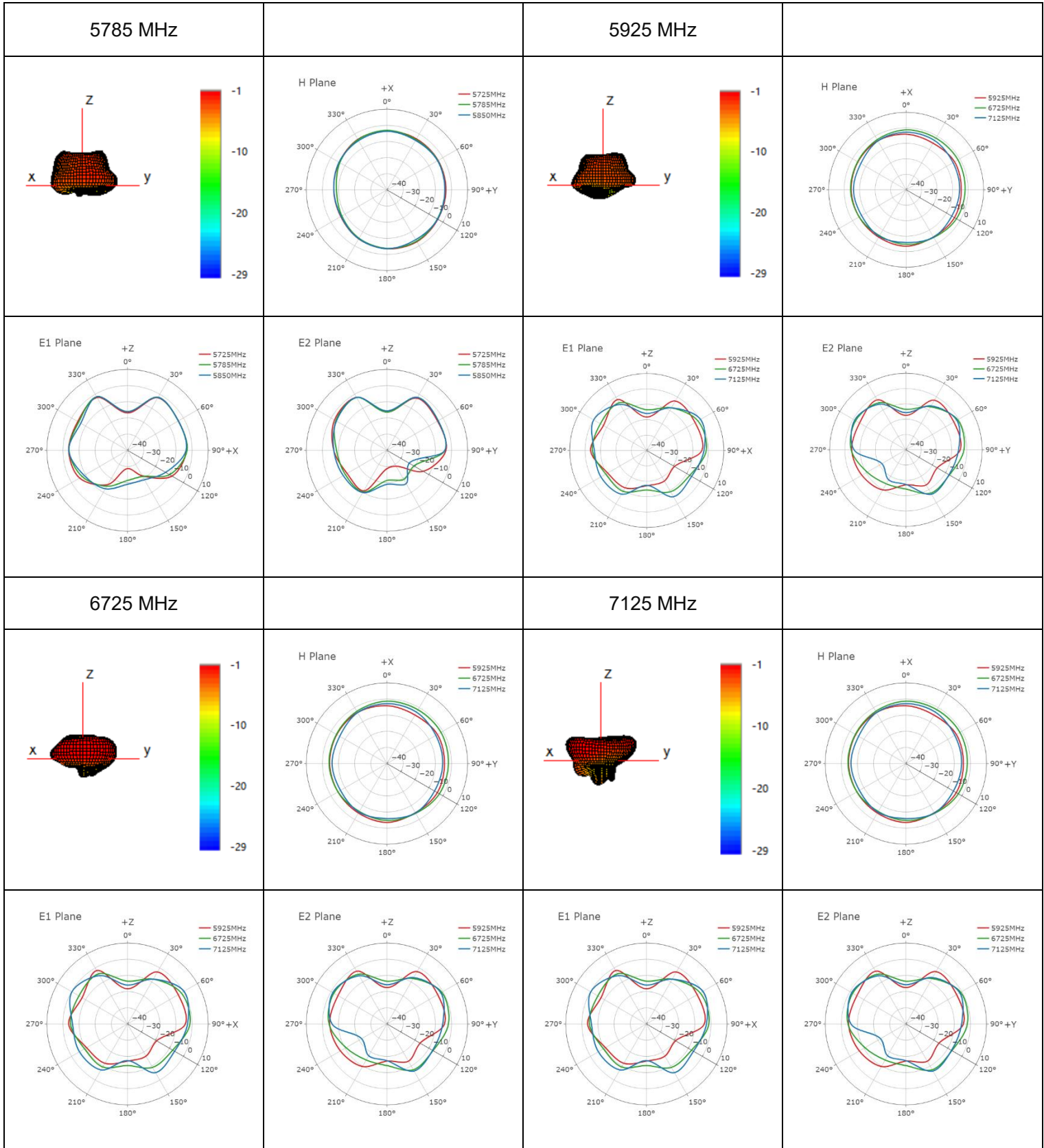
<b>Frequency (MHz)</b>	<b>2400</b>	<b>2500</b>	<b>5150</b>	<b>5155</b>	<b>5250</b>	<b>5260</b>	<b>5350</b>	<b>5470</b>	<b>5480</b>
<b>Peak Gain (dBi)</b>	-1.7	0.2	-0.8	-0.7	-0.9	-0.8	-1.3	-1.4	-1.2
<b>Frequency (MHz)</b>	<b>5725</b>	<b>5820</b>	<b>5850</b>	<b>5925</b>	<b>6325</b>	<b>6725</b>	<b>6915</b>	<b>7125</b>	
<b>Peak Gain (dBi)</b>	-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





# 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
-	2024-05-08	Sly LIU/ Aria CHU	Creation of the document
0.1	2023-05-08	Sly LIU/ Aria CHU	First official release

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