

# Antenna Datasheet

**Product OC:** YLY01A0AA

**Version:** 1.0

**Date:** 2023-02-01

**Status:** Preliminary

**Product Name:** 4G FPC Antenna

**Key Features:**

Frequency Band: 700–900 MHz & 1710-2170 MHz

Dimensions: 119× 56 mm

Efficiency: Up to 52.5%

RoHS and REACH Compliant

# Overview

This Quectel embedded 4G FPC 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: Assembled in test device

## 1.1. Electrical

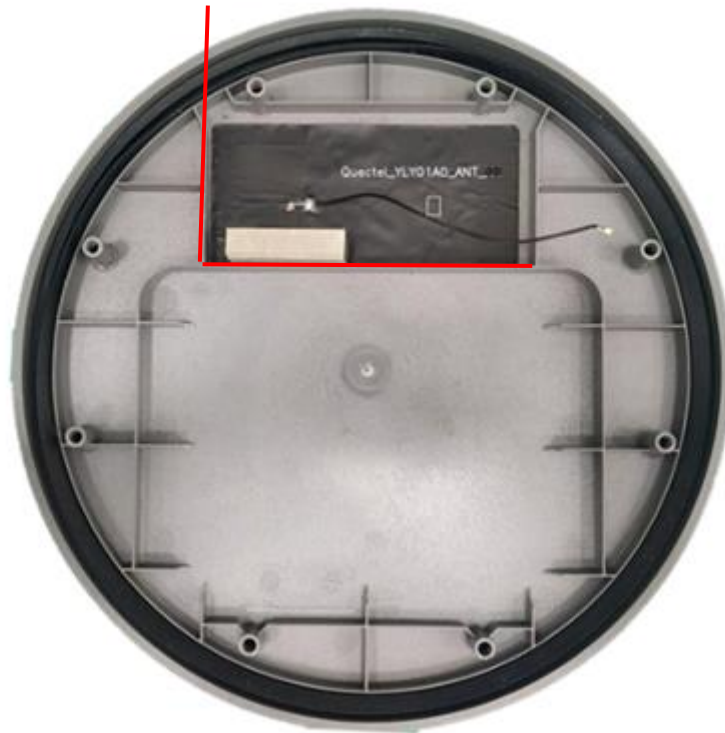
Electrical	
Frequency Range	700-900MHz, 1710-2170MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

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	-	5.6	7.6	-	2.5	-	-	-	-	-	-	-
Max. Return Loss (dB)	-	-3.1	-2.3	-	-7.4	-	-	-	-	-	-	-
AVG Eff. (%)	-	25.7	12.3	-	47.3	-	-	-	-	-	-	-
AVG Gain (dB)	-	-6.0	-9.1	-	-3.3	-	-	-	-	-	-	-
Max. Peak Gain (dBi)	-	-1.3	-1.6	-	7.9	-	-	-	-	-	-	-
VSWR	≤ 7.6											
Return Loss	≤ -2.3 dB											
Gain	≤ 7.9 dBi											

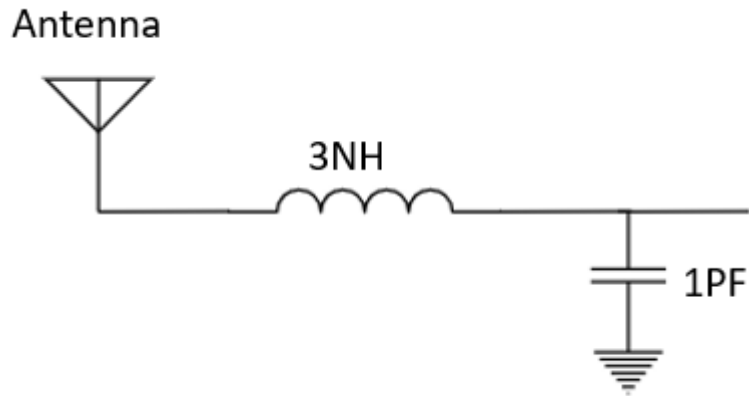
## 1.2. Mechanical, Environmental & Storage

Mechanical	
Antenna Dimensions	119* 56mm
Material & Color	FPC & Black
Cable Type & Color & Length	Φ1.13& Black & 130mm
Connector Type	RF 1
Mounting Type	Adhesive
Weight	Typ: 3.2g
Environmental	
Operation Temperature	-40 °C to +85 °C
RoHS & REACH Compliant	Yes
Storage	
Storage Temperature	-40 °C to +85 °C
Humidity	Less than 75% RH
Storage Place	Away from corrosive gas and direct sunlight
Packaging	Antennas should be stored in unopened sealed manufacturer's plastic packaging.

### 1.3. Antenna Assembly



## 1.4. Matching Circuit



3nH(0402)

Manufacturer: muRata

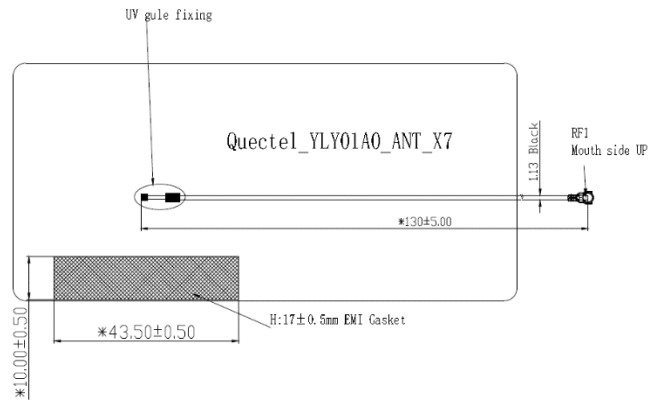
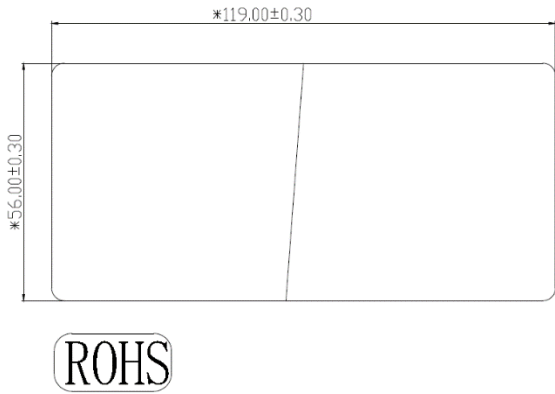
Item No: LQG15HS3N0S02D

1pF(0402)

Manufacturer: muRata

Item No: GRM1555C1H1R0CZ01D

# 2 Drawing

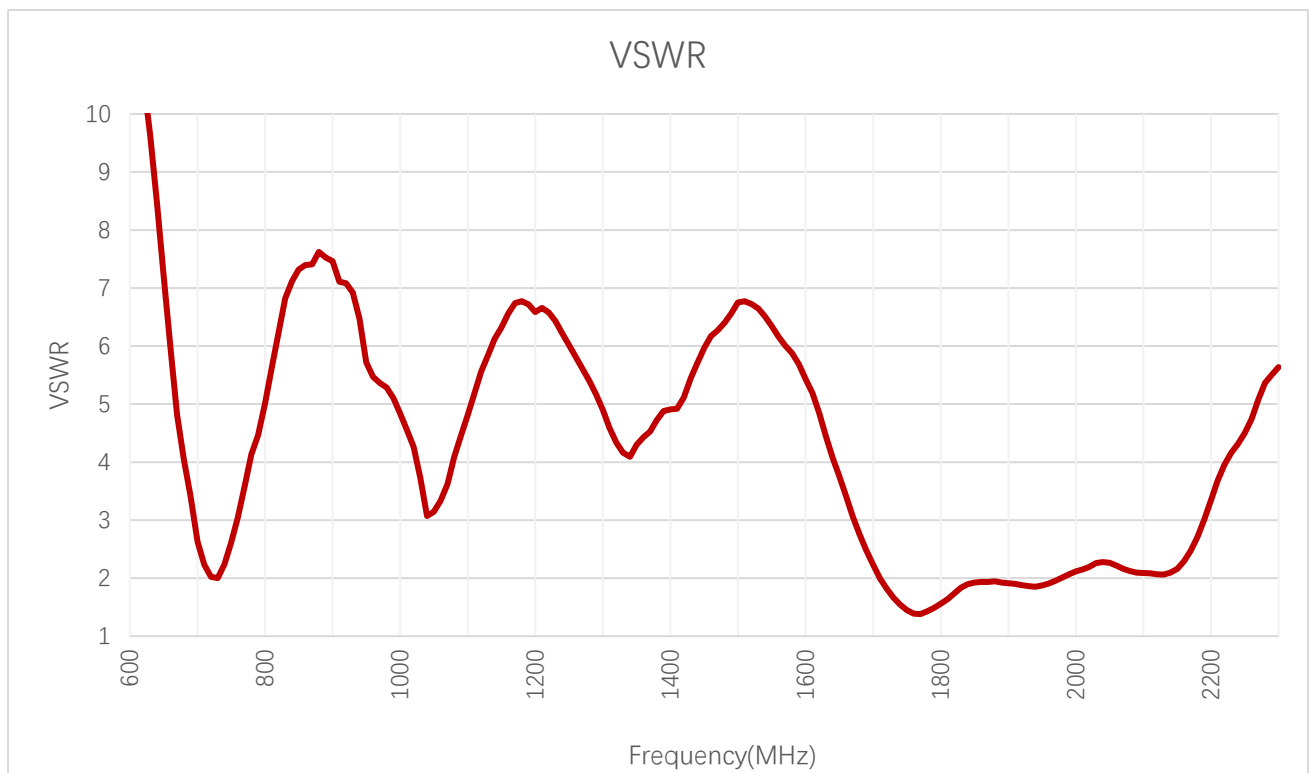




# 3 Detailed Performance

## 3.1. S-Parameter Test

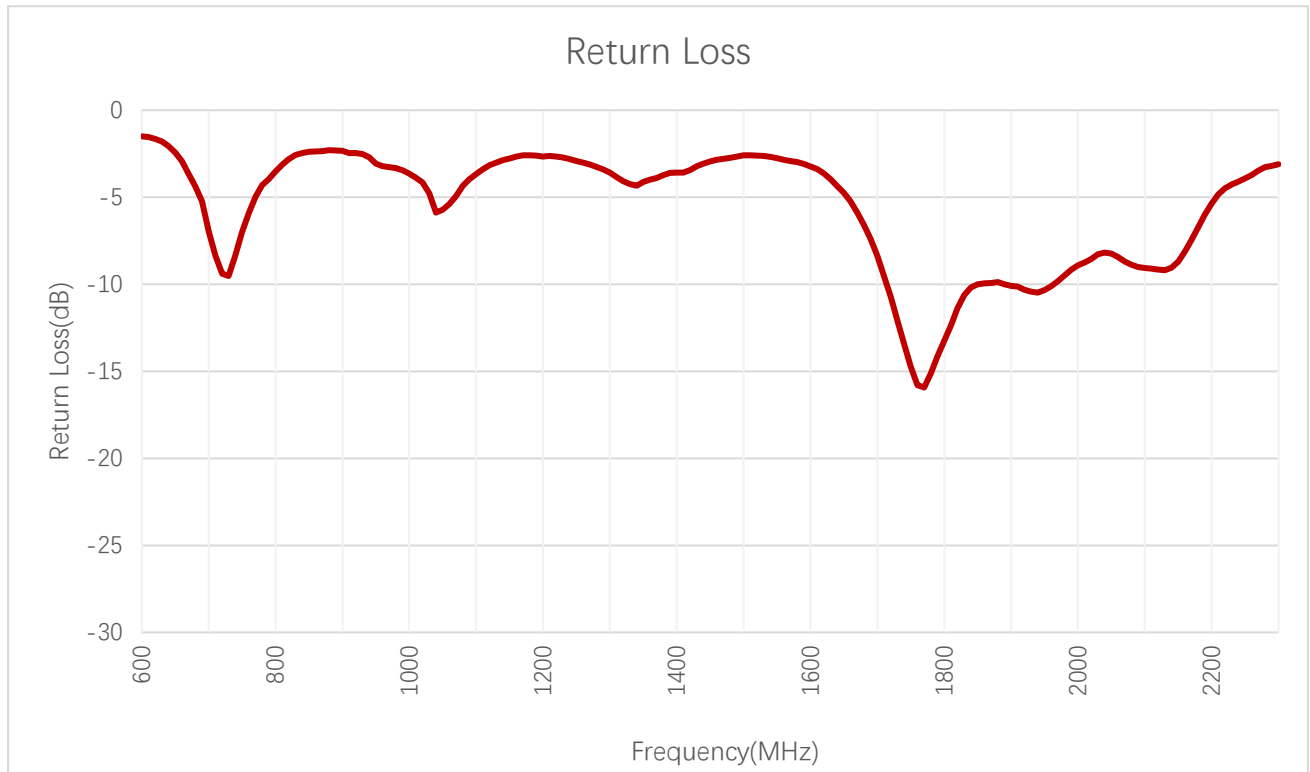
### 3.1.1. VSWR



**VSWR**

<b>Frequency (MHz)</b>	<b>600</b>	<b>630</b>	<b>700</b>	<b>830</b>	<b>900</b>	<b>960</b>	<b>1440</b>	<b>1710</b>	<b>1740</b>	<b>1880</b>
<b>VSWR</b>	-	-	2.6	6.8	7.5	-	-	2.0	1.5	1.9
<b>Frequency (MHz)</b>	<b>1950</b>	<b>2140</b>	<b>2170</b>	<b>2450</b>	<b>2600</b>	<b>3600</b>	<b>4700</b>	<b>5000</b>	<b>5500</b>	<b>6000</b>
<b>VSWR</b>	1.9	2.1	2.5	-	-	-	-	-	-	-

**3.1.2. Return Loss**



**Return Loss (dB)**

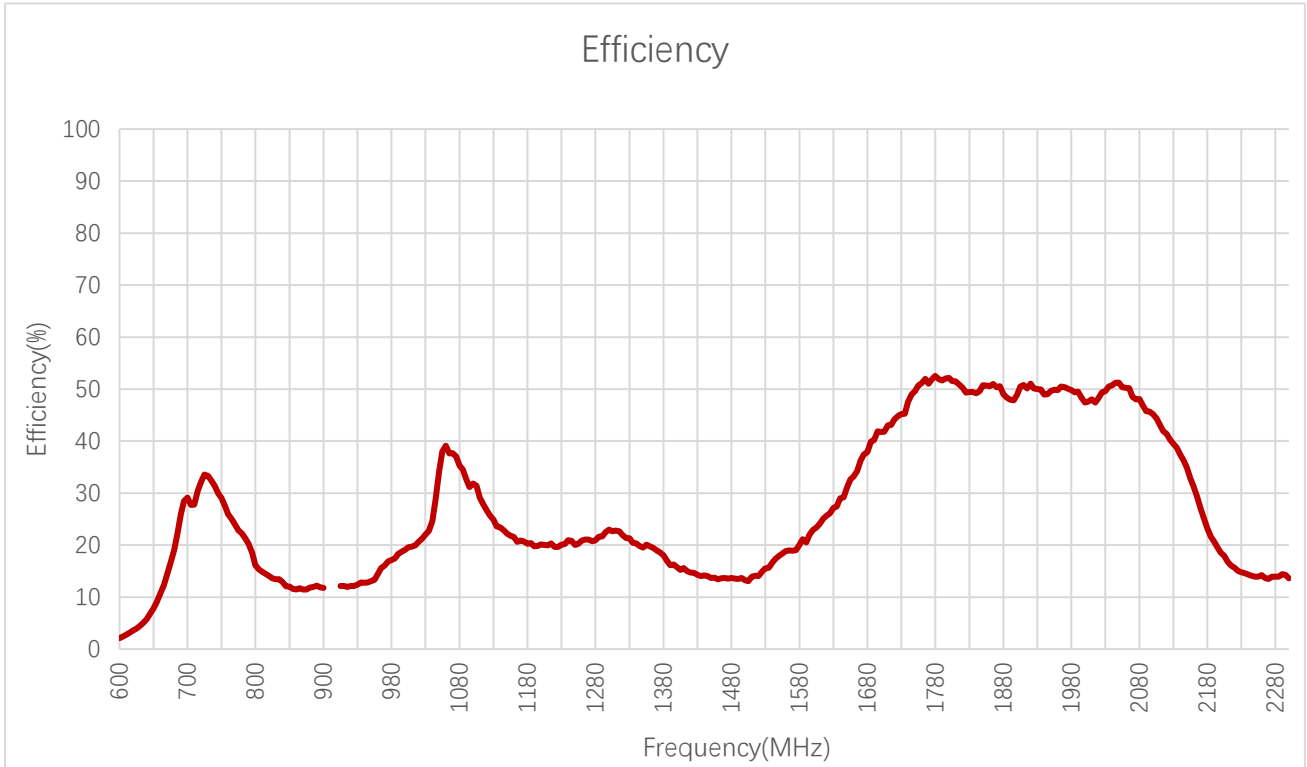
<b>Frequency (MHz)</b>	<b>600</b>	<b>630</b>	<b>700</b>	<b>830</b>	<b>900</b>	<b>960</b>	<b>1440</b>	<b>1710</b>	<b>1740</b>	<b>1880</b>
<b>Return Loss (dB)</b>	-	-	-7.0	-2.6	-2.3	-	-	-9.6	-13.4	-9.9
<b>Frequency (MHz)</b>	<b>1950</b>	<b>2140</b>	<b>2170</b>	<b>2450</b>	<b>2600</b>	<b>3600</b>	<b>4700</b>	<b>5000</b>	<b>5500</b>	<b>6000</b>
<b>Return Loss (dB)</b>	-10.3	-9.0	-7.4	-	-	-	-	-	-	-

### 3.2. OTA Test Data

Band		Channel	TRP (dBm)	Channel	TIS (dBm)
LTE	B2 (10M)	18650	20.36	-	-
		18900	20.32	-	-
		19150	20.43	1150	-96.21
	B4 (10M)	20000	20.56	-	-
		20175	20.34	-	-
		20350	20.39	2350	-93.82
	B5 (10M)	20450	17.06	-	-
		20525	16.99	-	-
		20600	16.09	2600	-88.01
	B12 (5M)	23035	18.82	-	-
		23095	18.67	-	-
		23155	18.26	5155	-94.02
	B25 (10M)	26065	20.17	-	-
		26365	20.44	-	-
		26665	20.3	8665	-96
	B26 (10M)	26715	16.97	-	-
		26865	17.42	-	-
		27015	15.99	9015	-88.84

### 3.3. Radiation Performance Test

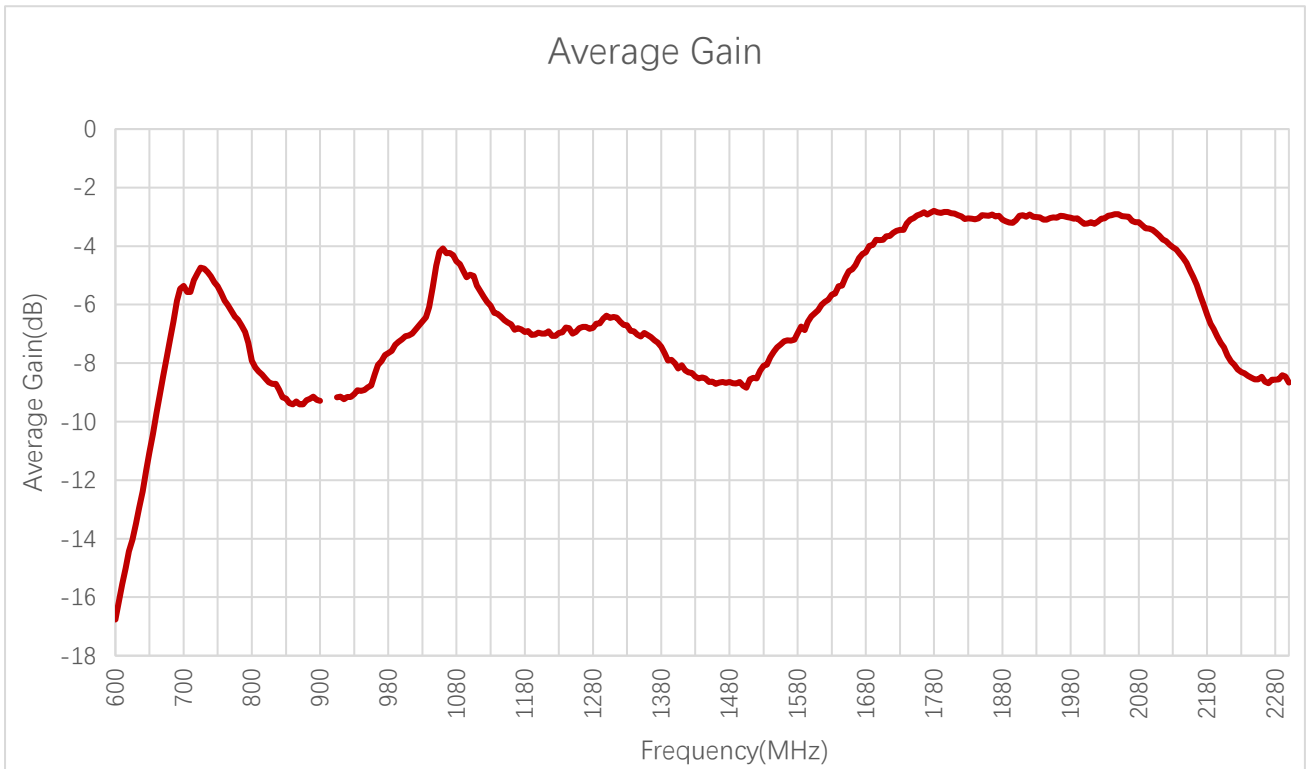
#### 3.3.1. Efficiency



**Efficiency (%)**

<b>Frequency (MHz)</b>	<b>600</b>	<b>630</b>	<b>700</b>	<b>830</b>	<b>900</b>	<b>960</b>	<b>1440</b>	<b>1710</b>	<b>1740</b>	<b>1880</b>
<b>Efficiency (%)</b>	-	-	29.1	13.5	11.8	-	-	43.0	47.6	49.0
<b>Frequency (MHz)</b>	<b>1950</b>	<b>2140</b>	<b>2170</b>	<b>2450</b>	<b>2600</b>	<b>3600</b>	<b>4700</b>	<b>5000</b>	<b>5500</b>	<b>6000</b>
<b>Efficiency (%)</b>	49.6	37.5	27.0	-	-	-	-	-	-	-

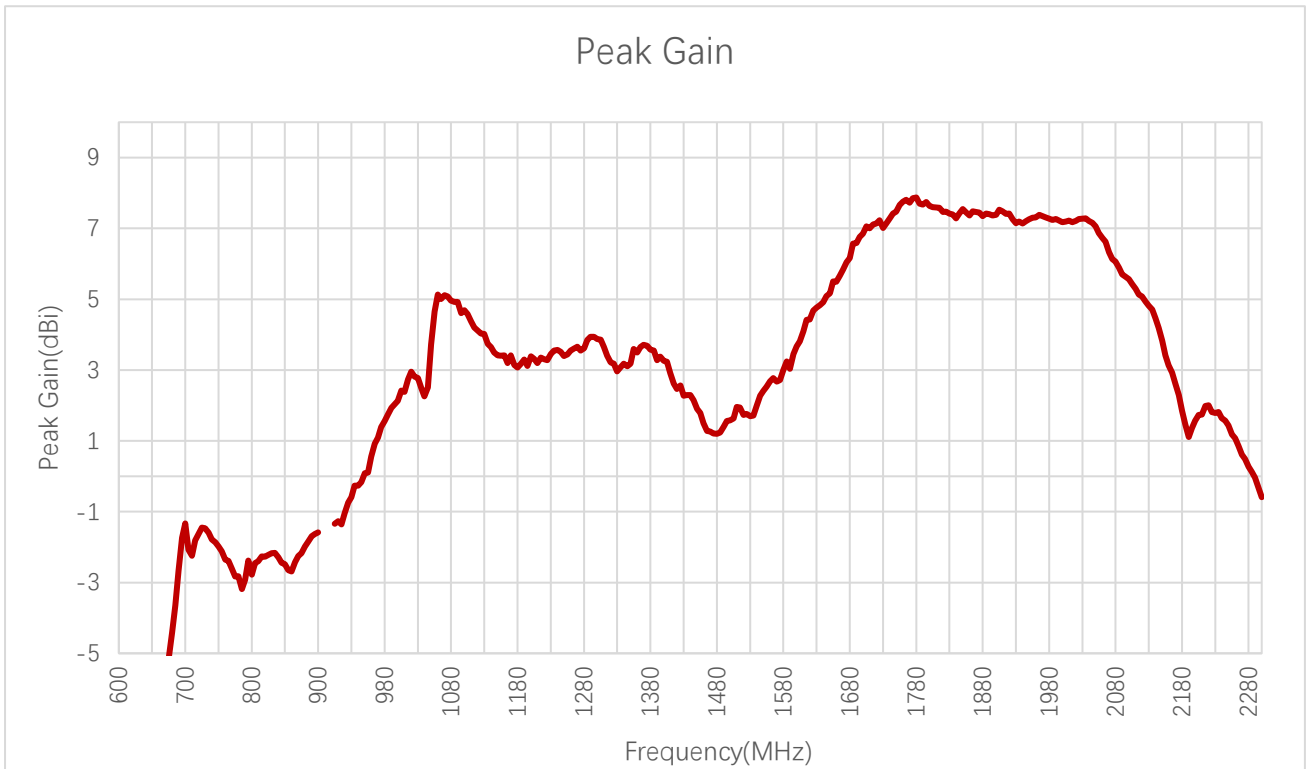
**3.3.2. Average Gain**



**Average Gain (dB)**

<b>Frequency (MHz)</b>	<b>600</b>	<b>630</b>	<b>700</b>	<b>830</b>	<b>900</b>	<b>960</b>	<b>1440</b>	<b>1710</b>	<b>1740</b>	<b>1880</b>
<b>Average Gain (dB)</b>	-	-	-5.4	-8.7	-9.3	-	-	-3.7	-3.2	-3.1
<b>Frequency (MHz)</b>	<b>1950</b>	<b>2140</b>	<b>2170</b>	<b>2450</b>	<b>2600</b>	<b>3600</b>	<b>4700</b>	<b>5000</b>	<b>5500</b>	<b>6000</b>
<b>Average Gain (dB)</b>	-3.0	-4.3	-5.7	-	-	-	-	-	-	-

**3.3.3. Peak Gain**

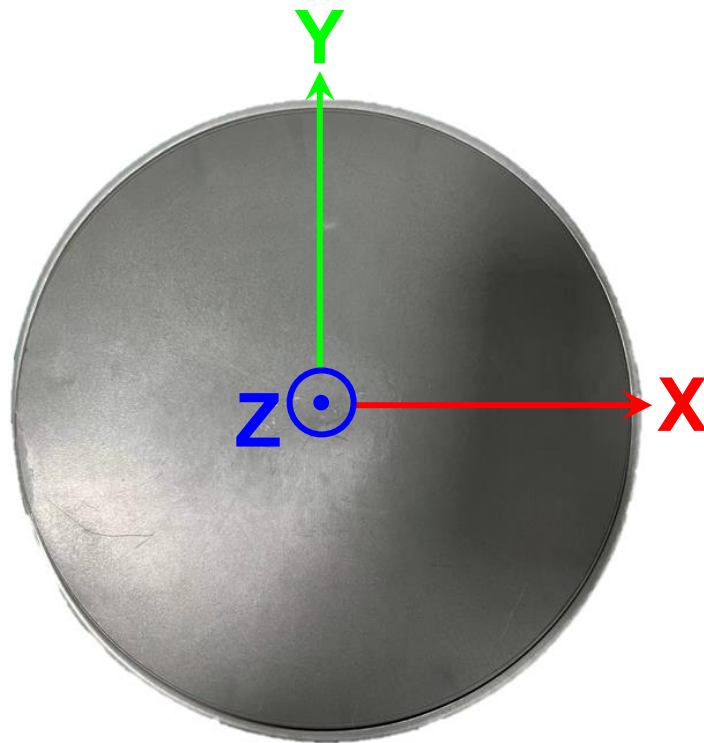


**Peak Gain (dBi)**

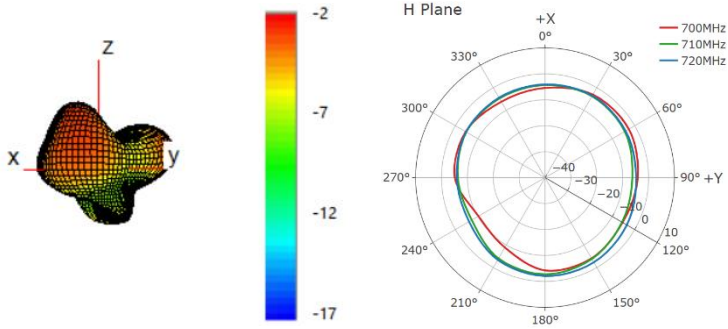
<b>Frequency (MHz)</b>	600	630	700	830	900	960	1440	1710	1740	1880
<b>Peak Gain (dBi)</b>	-	-	-1.3	-2.2	-1.6	-	-	7.0	7.3	7.3
<b>Frequency (MHz)</b>	1950	2140	2170	2450	2600	3600	4700	5000	5500	6000
<b>Peak Gain (dBi)</b>	7.3	4.5	2.6	-	-	-	-	-	-	-

### 3.3.4. 3D & 2D Radiation Pattern

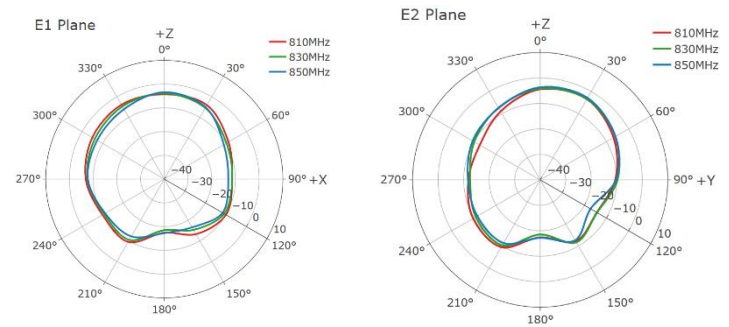
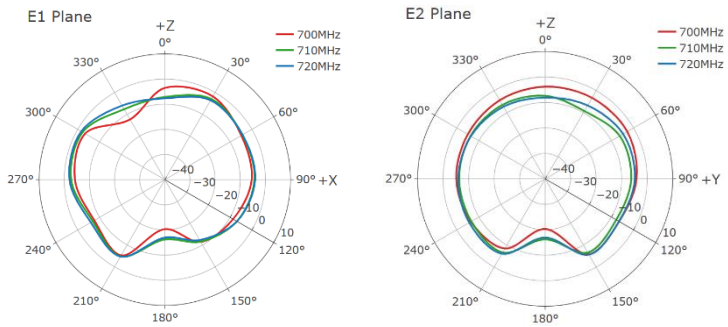
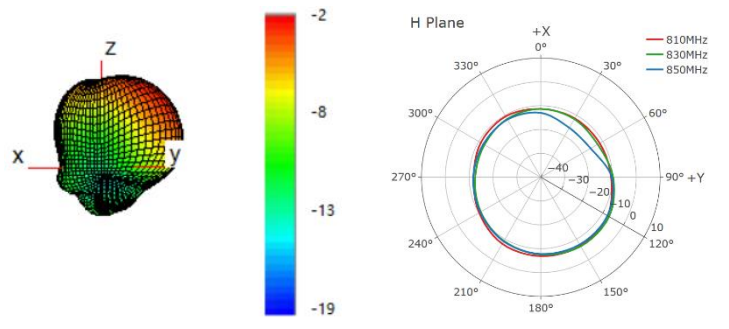
- Test Condition: Assembled in test device
- Test Chamber: HF-G-1



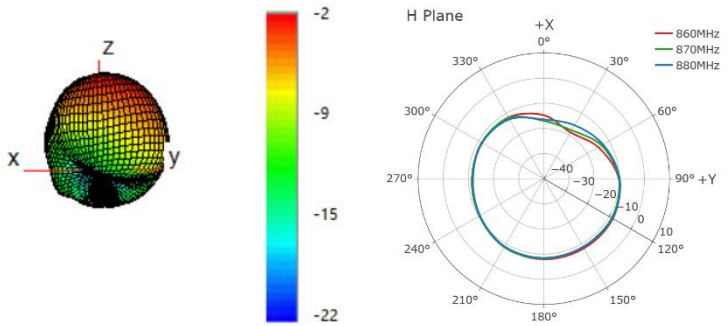
**710MHz**



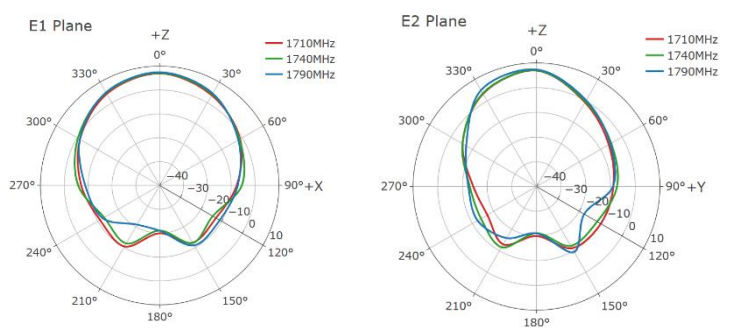
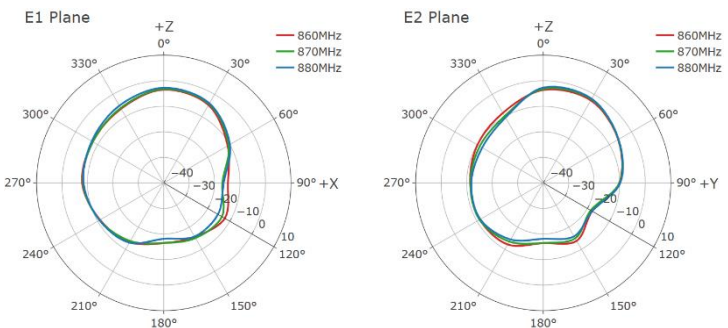
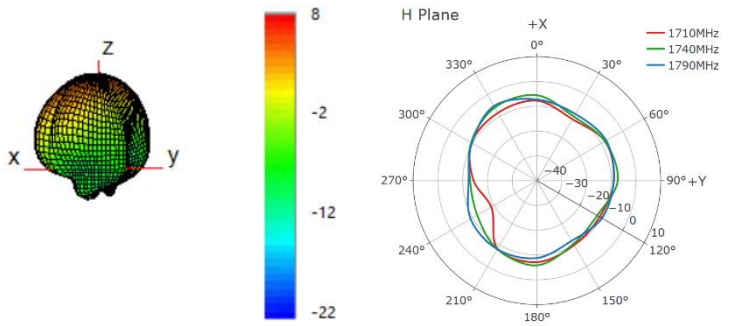
**830MHz**



**870MHz**



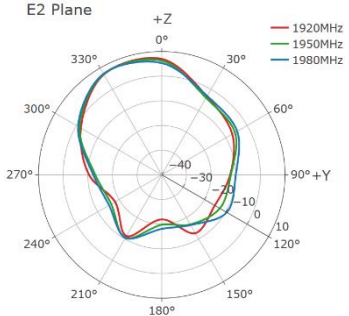
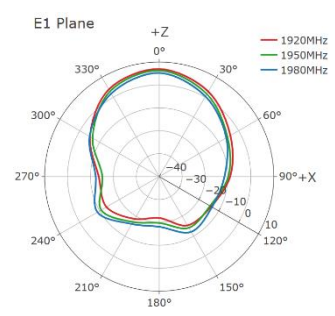
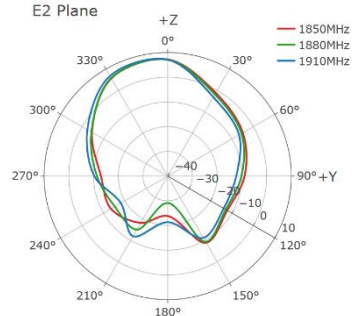
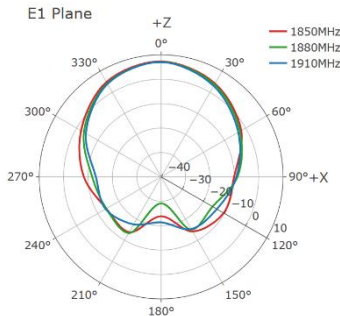
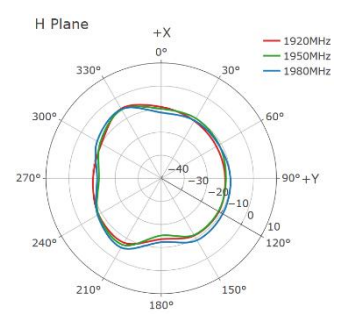
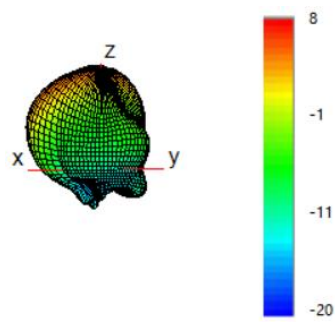
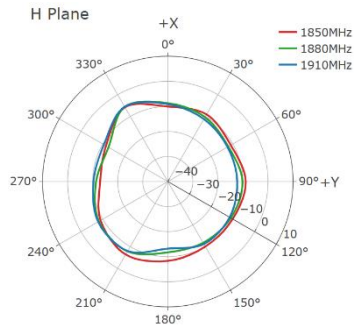
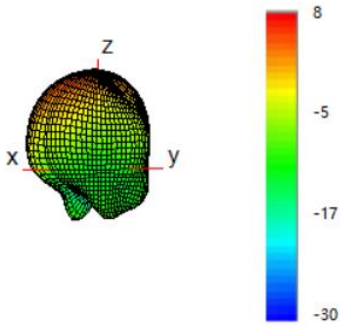
**1740MHz**



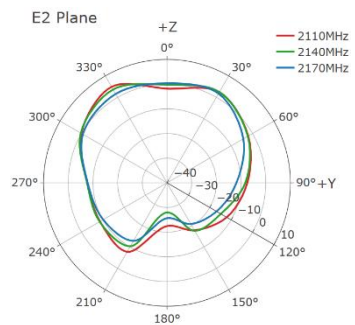
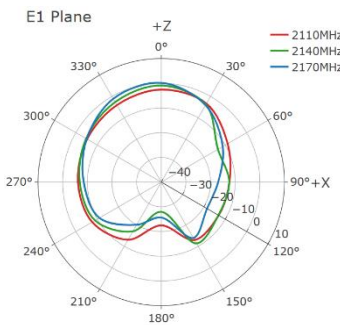
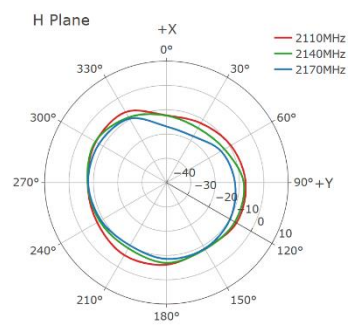
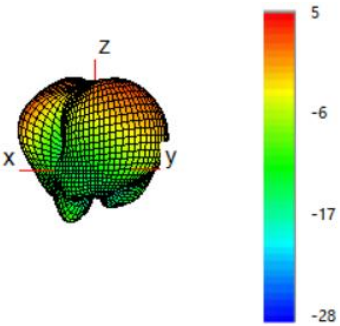
**1880MHz**

**1950MHz**





**2140MHz**



## 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
-	2023-02-01	Kane Liu Joye Wang Vinnie Liu	Creation of the document
1.0	2023-02-01	Kane Liu Joye Wang Vinnie Liu	First official release

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