



# Antenna Datasheet

**Product OC:** YECN001J1A

**Version:** 1.1

**Date:** 2024-01-24

**Status:** Released

**Product Name:** External 5G Antenna

**Key Features:**

Frequency Band: 600–960 MHz, 1400–2690 MHz, 3300–6000 MHz

Dimensions:  $\Phi$  40.6 mm  $\times$  104 mm

Efficiency: Up to 89.1 %

RoHS and REACH Compliant

IP67

IP69K

IK10

Compatible with ECE-R118 cables under demand

# Overview

This Quectel external 5G antenna covers 5G NR Sub-6 GHz frequency bands and is compatible with 4G/3G/2G/LPWA bands. Featuring high efficiency and gain, it is an ideal omni-directional antenna solution to ensure high-speed data transmission, which can be widely used in a diversity of wireless communication devices such as AP, routers, outdoor equipment, real-time monitoring equipment, and many more. The antenna is designed to work with a ground plane for ease of integration. Quectel also offers flexible installation with custom cable length and connector options.

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# 1 Specification

Test Condition: On 300 mm × 300 mm metal plane

## 1.1. Electrical

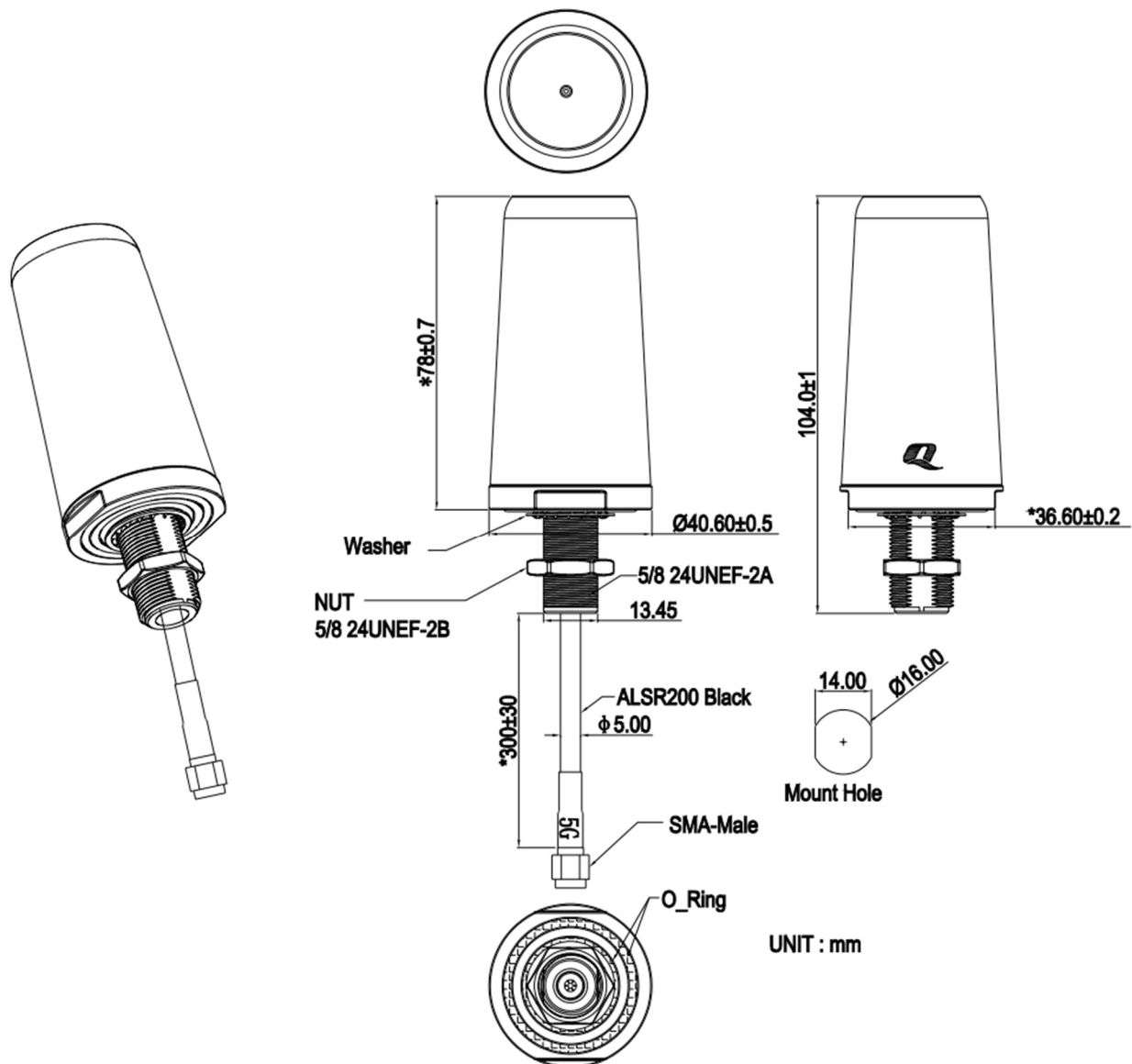
Electrical	
Frequency Range	600–960 MHz, 1400–2690 MHz, 3300–6000 MHz
Impedance	50 Ω
Polarization	Vertical
Radiation Pattern	Omni-directional

Electrical - Detail													
SPEC	Band	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		7.1	2.0	2.3	2.0	2.5	1.5	1.5	1.5	2.8	2.6	2.2	
Max. Return Loss (dB)		-2.5	-9.6	-8.2	-9.7	-7.2	-14.1	-14.0	-14.6	-6.6	-6.9	-8.7	
AVG Eff. (%)		54.1	83.9	78.4	66.4	70.1	79.1	77.2	75.8	64.4	68.9	58.8	
AVG AVG Gain (dB)		-2.9	-0.8	-1.1	-1.8	-1.5	-1.0	-1.1	-1.2	-1.9	-1.6	-2.3	
Max. Peak Gain (dBi)		1.1	2.2	2.5	1.9	2.4	2.6	3.7	3.8	6.1	5.6	8.3	
VSWR							≤ 7.1						
Return Loss							≤ -2.5 dB						
Peak Gain							≤ 8.3 dBi						

## 1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	40.6 mm × 104 mm
Material & Color	ASA & Black
Cable Type & Length	ALSR200 Black & 300 mm
Connector Type	SMA Male (The current state of the SMA connector is not waterproof. If a waterproof connector is needed, it can be customized.)
Weight	Typ. 200 g
Mounting Type	Screw
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	IP67 (After Installation) IP69K (After Installation)
Impact Protection (IK) Rating	IK10
RoHS & REACH Compliant	Yes
Housing UV Resistant	UL 746c f1

## 2 Drawing



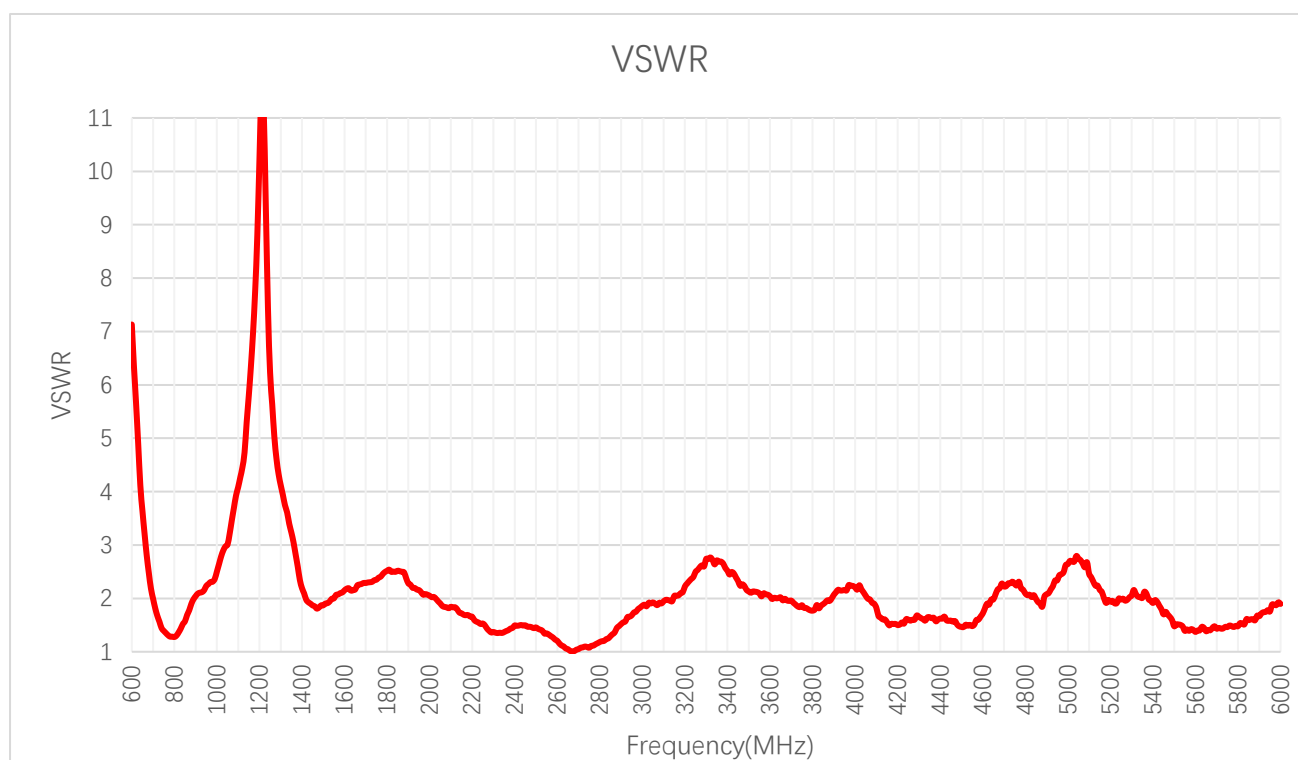
**Caution:** If you find the silicon seal ring dropping out of the groove when opening the package, it's a normal phenomenon due to its special structure design. Please assemble the silicon seal ring into groove before you assemble antenna on the device, thanks!



# 3 Detailed Performance

## 3.1. S-Parameter Test

### 3.1.1. VSWR

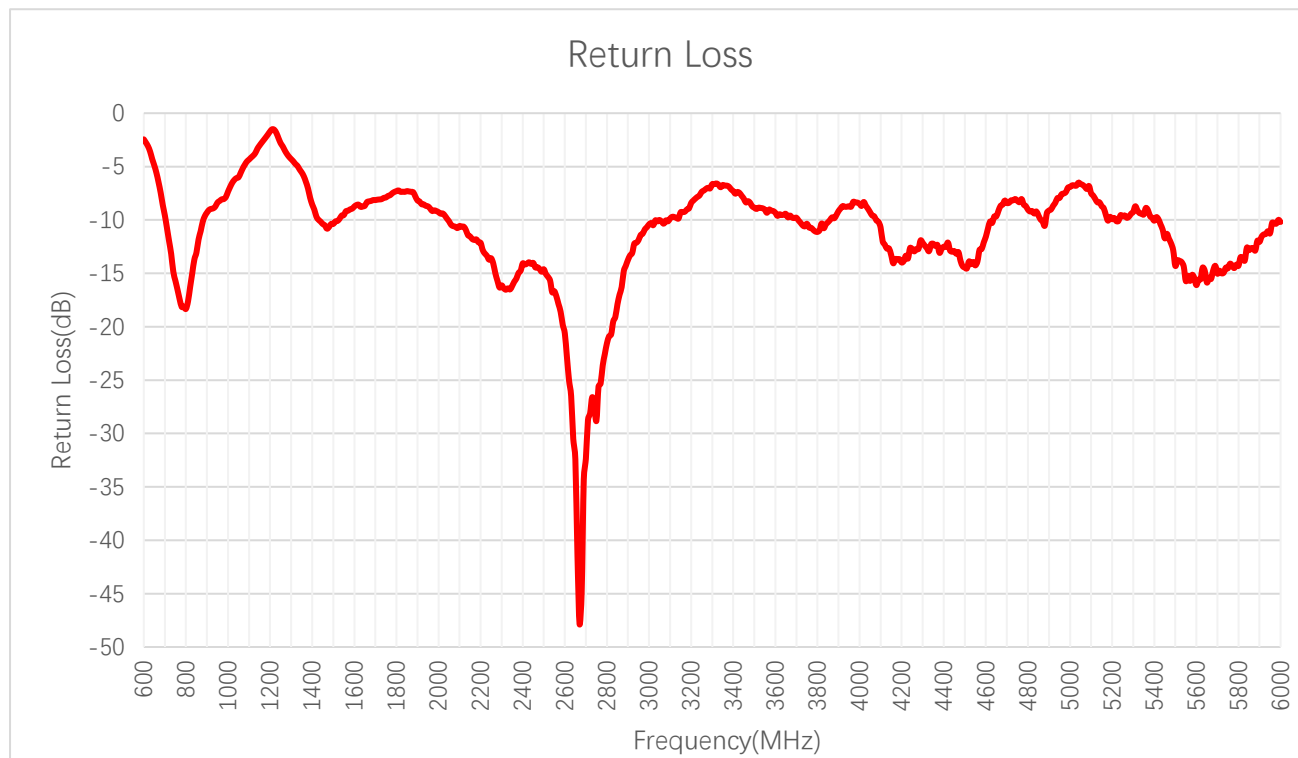


**VSWR**

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
VSWR	7.1	4.9	1.8	1.4	2.0	2.3	1.9	2.3	2.3	2.5
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
VSWR	2.2	1.7	1.4	1.5	1.2	2.0	2.2	2.6	1.5	1.9



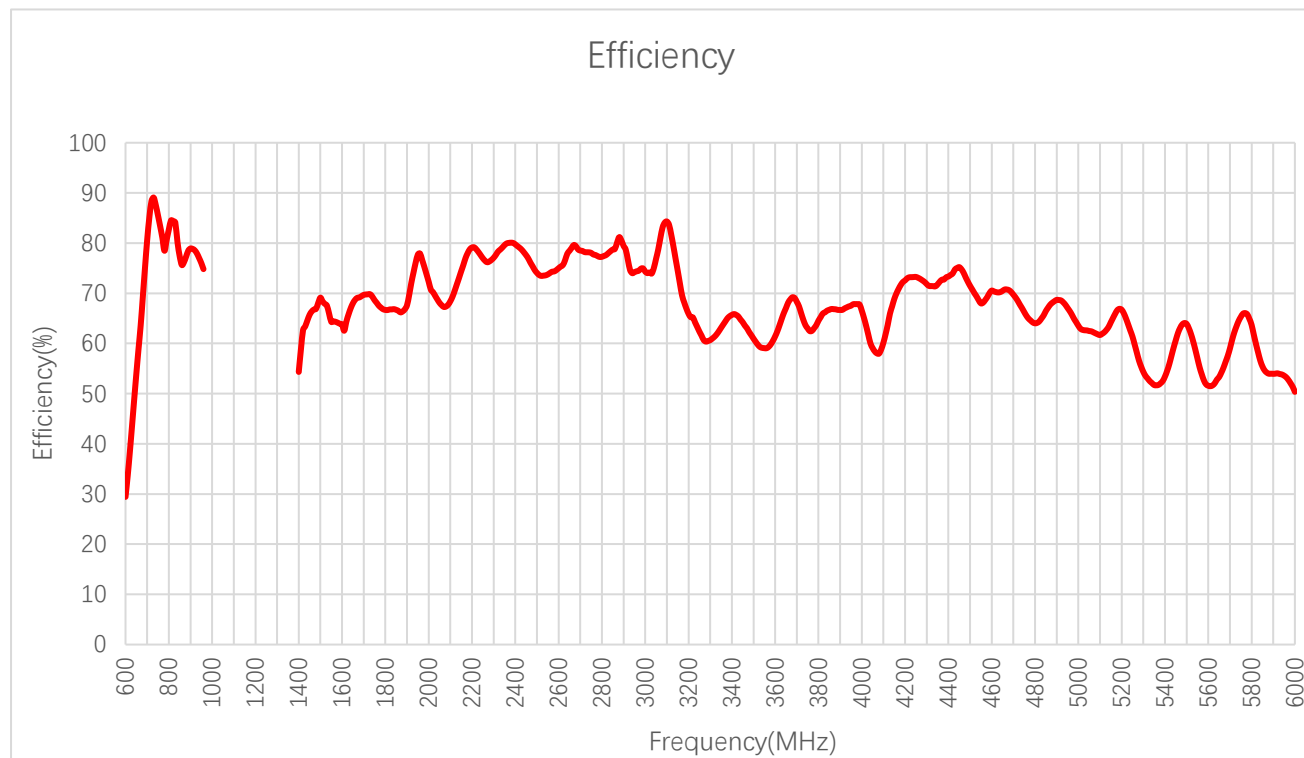
### 3.1.2. Return Loss



Return Loss (dB)										
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	-2.5	-3.6	-10.8	-15.0	-9.3	-8.2	-10.2	-8.1	-7.9	-7.4
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
Return Loss (dB)	-8.7	-11.4	-16.2	-14.0	-20.6	-9.3	-8.4	-6.9	-14.3	-10.2

## 3.2. Radiation Performance Test

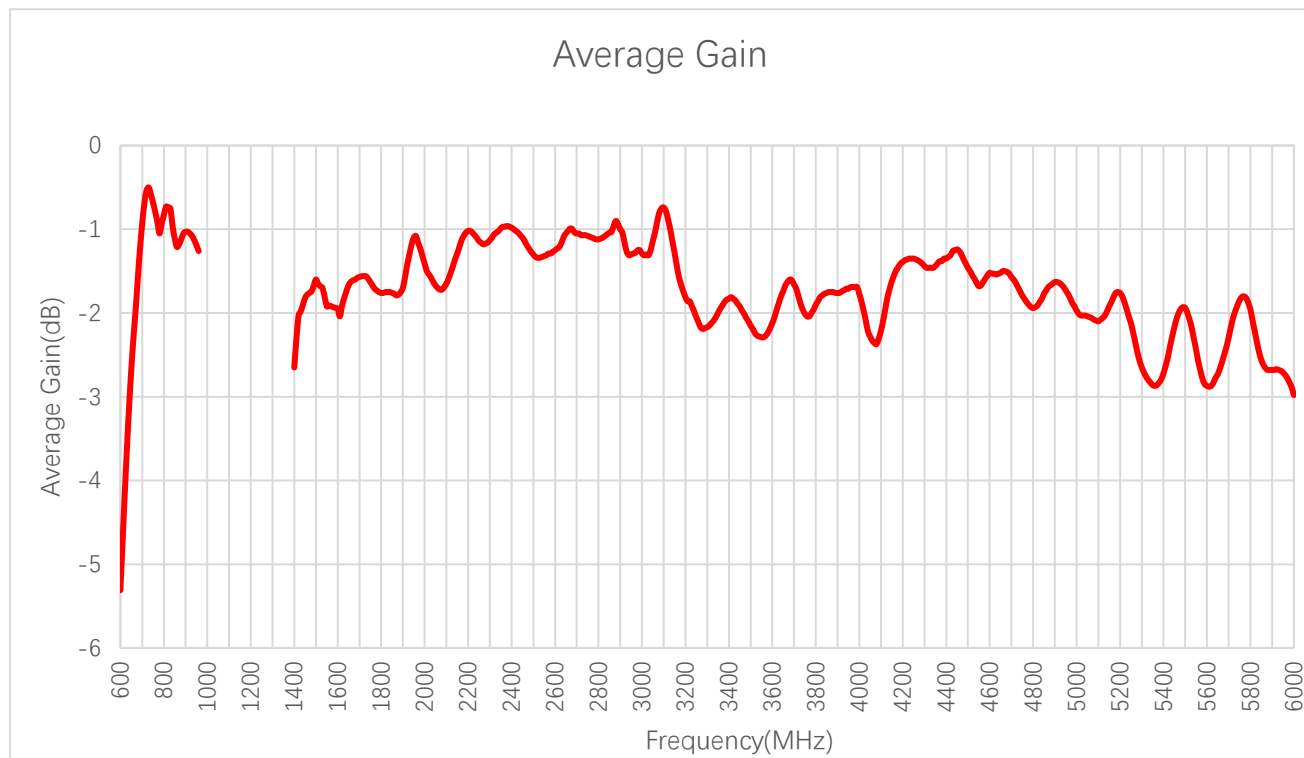
### 3.2.1. Efficiency



Efficiency (%)

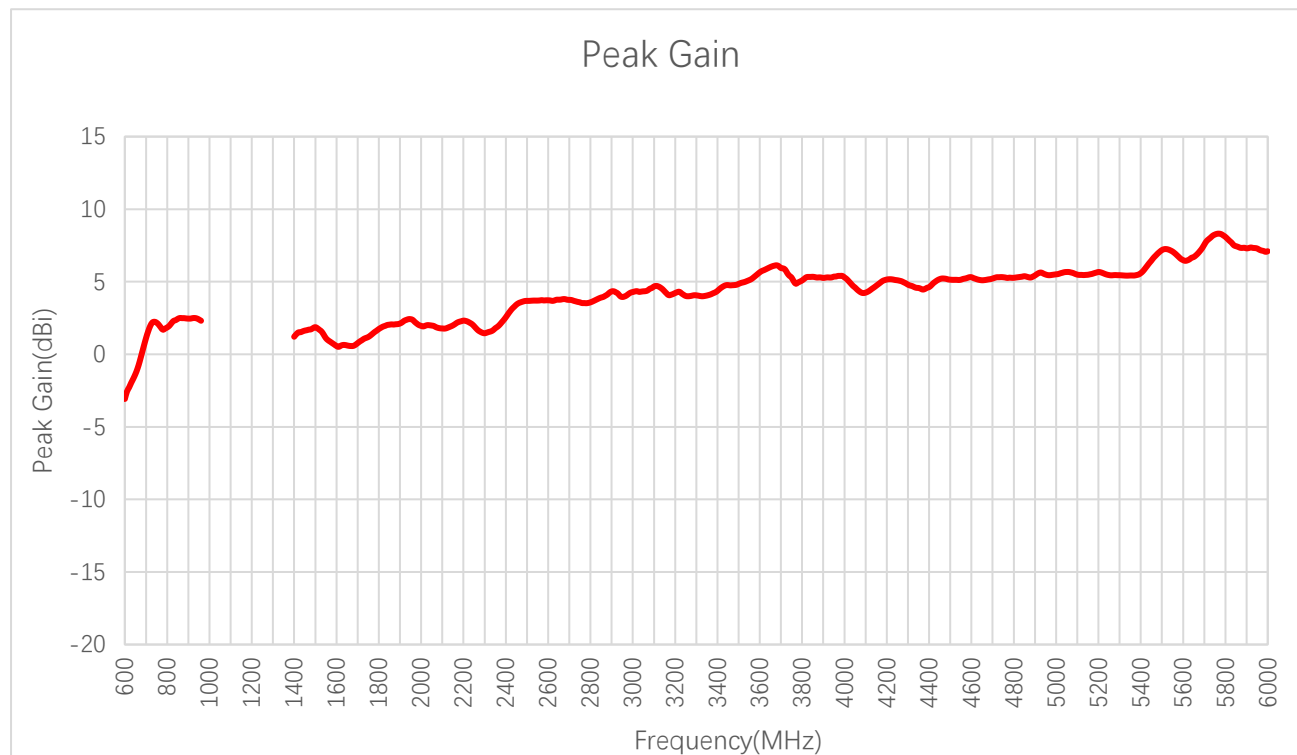
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	29.4	43.5	85.1	84.1	78.9	74.8	64.6	69.8	69.3	66.4
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
Efficiency (%)	77.7	73.0	79.6	77.6	75.0	61.4	69.7	63.5	63.9	50.4

### 3.2.2. Average Gain



Average Gain (dB)										
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	-5.3	-3.6	-0.7	-0.8	-1.0	-1.3	-1.9	-1.6	-1.6	-1.8
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
Average Gain (dB)	-1.1	-1.4	-1.0	-1.1	-1.3	-2.1	-1.6	-2.0	-1.9	-3.0

### 3.2.3. Peak Gain

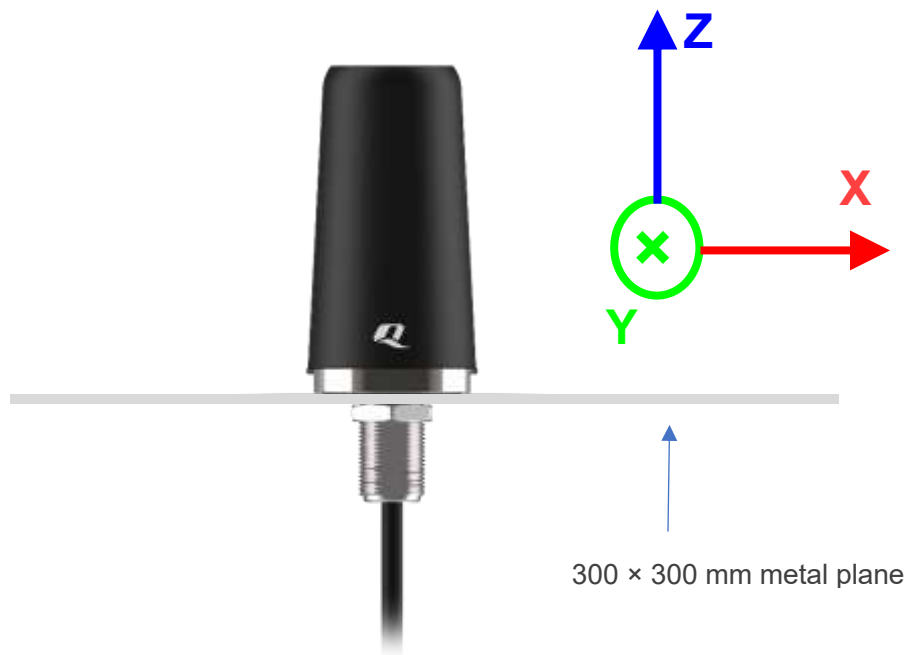


**Peak Gain (dBi)**

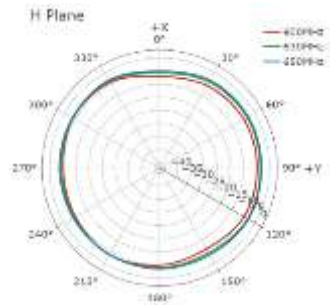
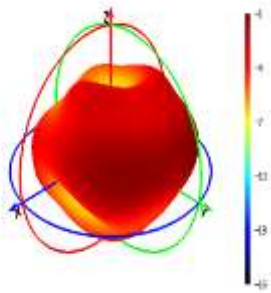
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	-3.1	-2.0	1.6	2.3	2.5	2.3	1.6	0.9	1.1	2.1
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
Peak Gain (dBi)	2.4	1.9	1.8	3.4	3.7	5.7	5.2	5.5	7.2	7.1

### 3.2.4. 3D & 2D Radiation Pattern

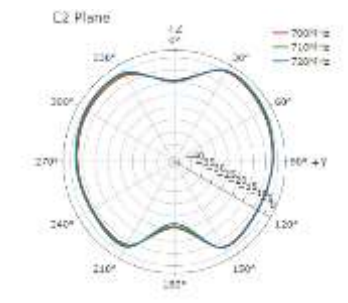
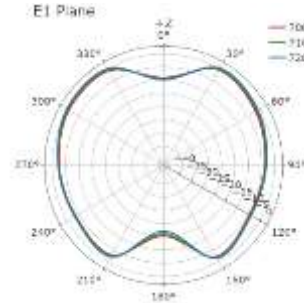
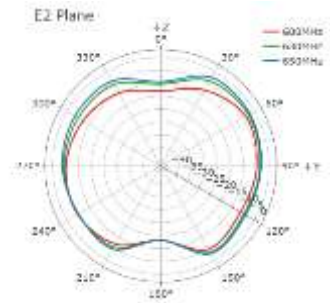
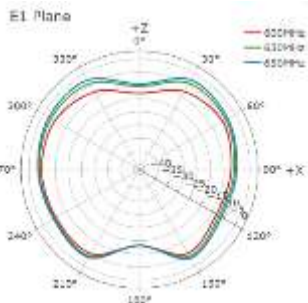
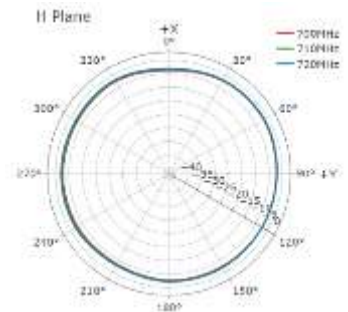
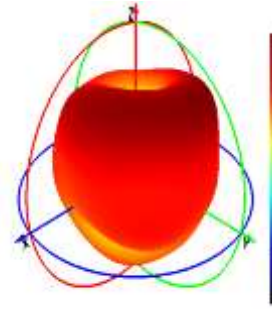
- Test Condition: On 300 mm × 300 mm metal plane
- Test Chamber: GL-S-1



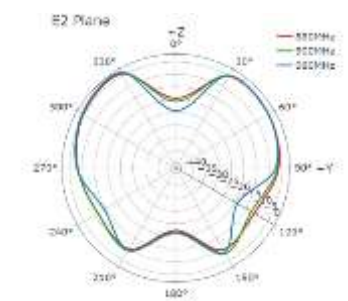
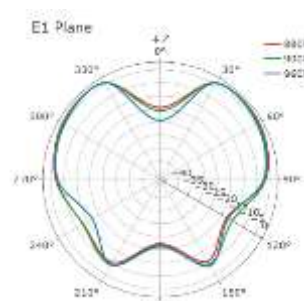
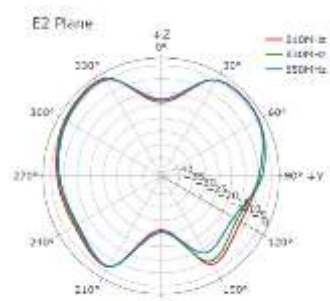
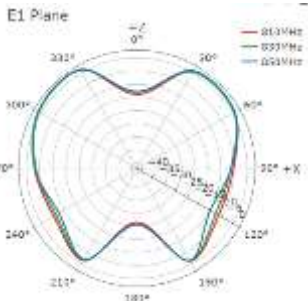
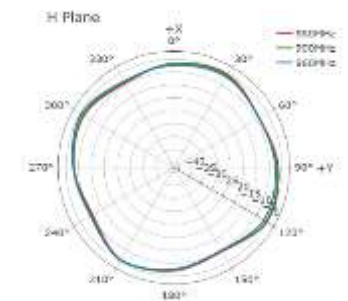
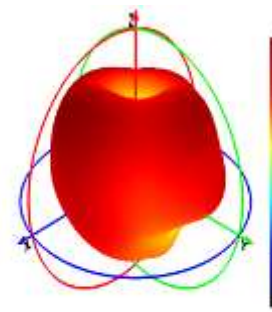
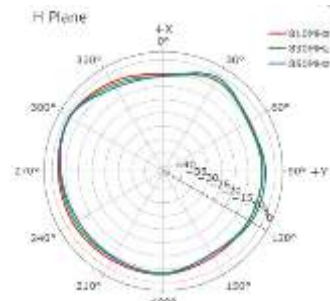
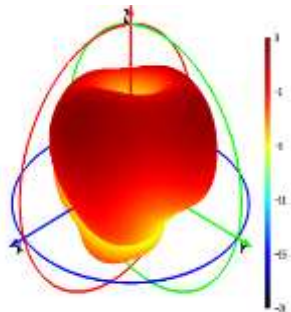
**630 MHz**

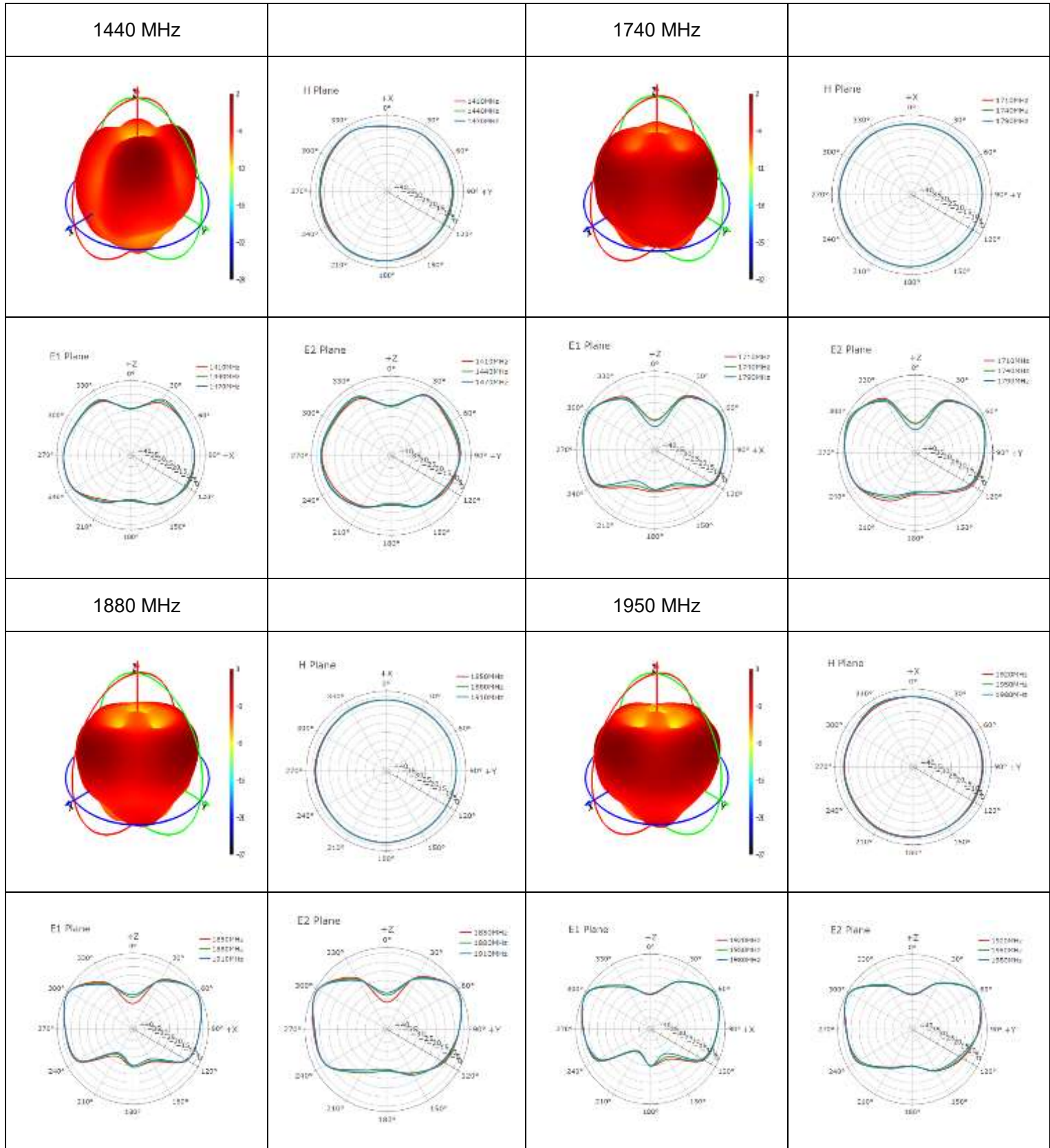


**710 MHz**

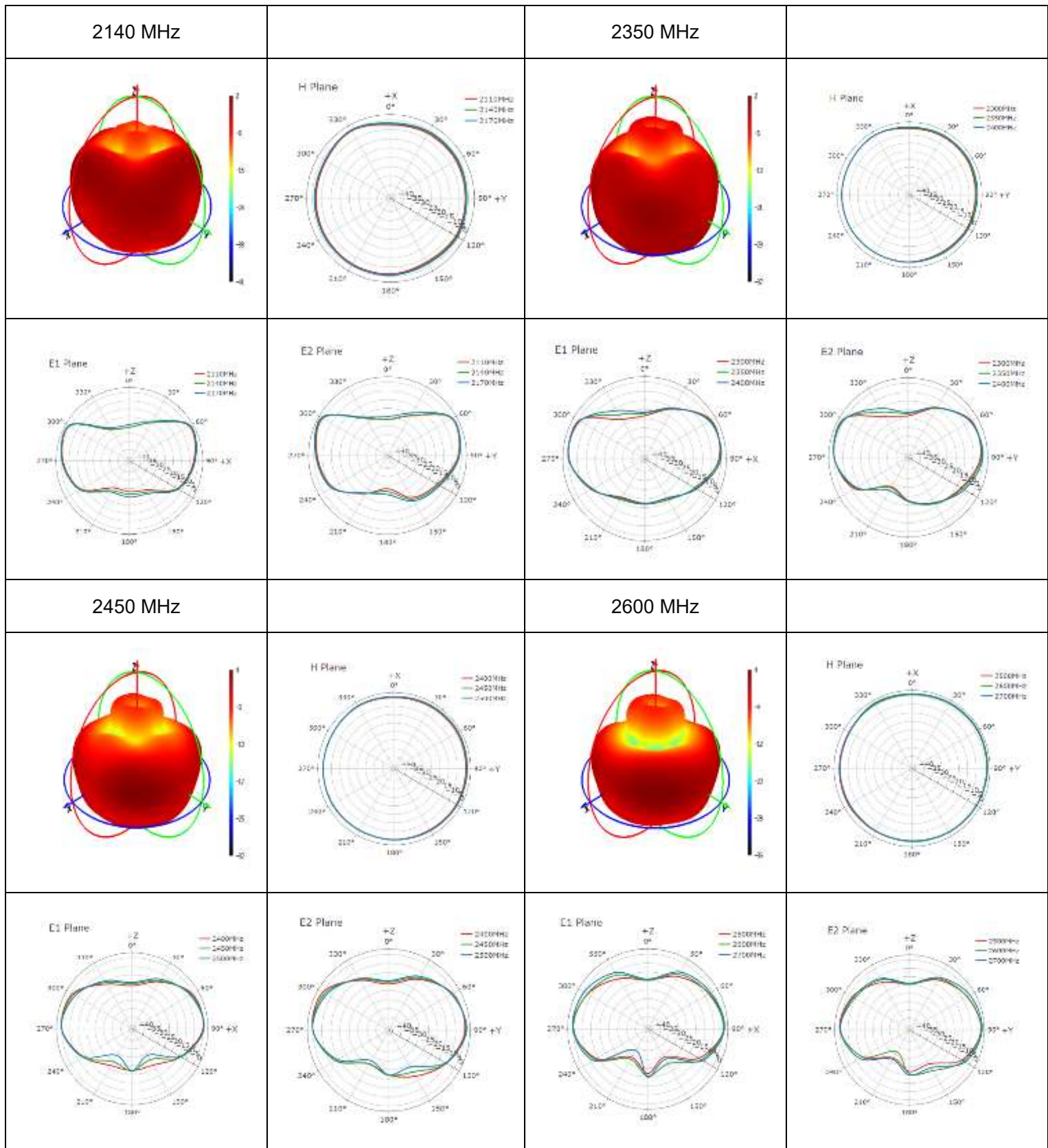


**830 MHz**

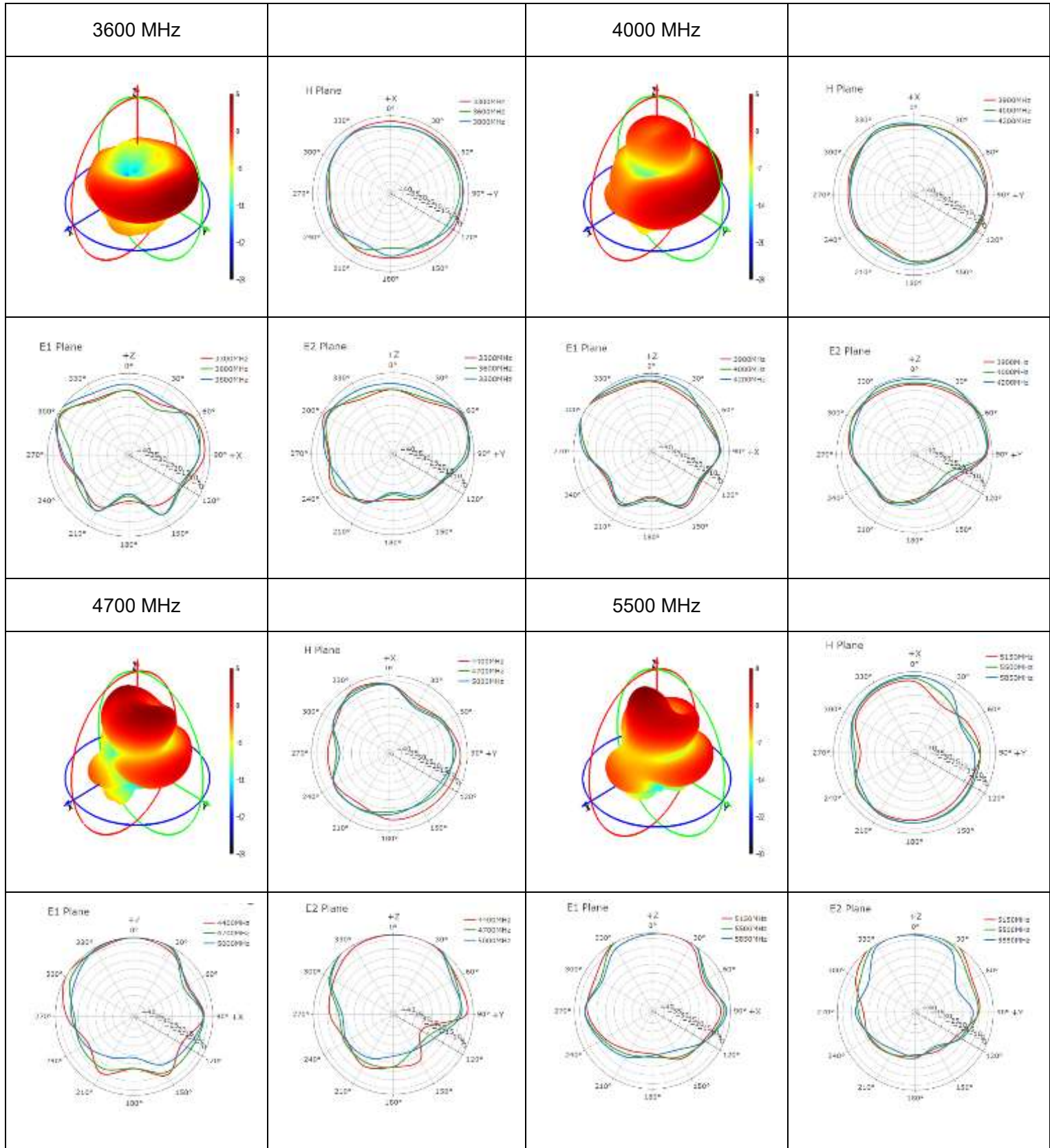




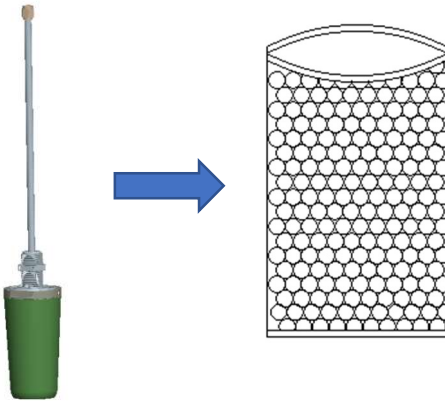
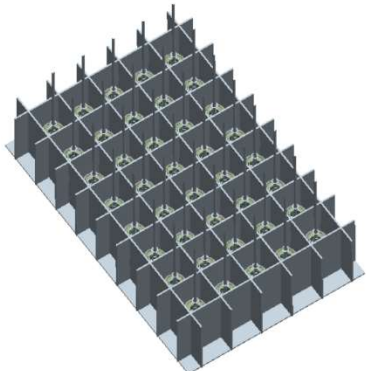


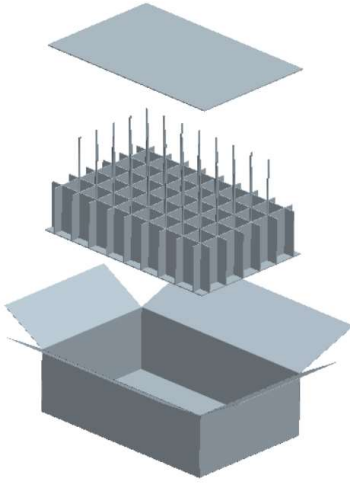
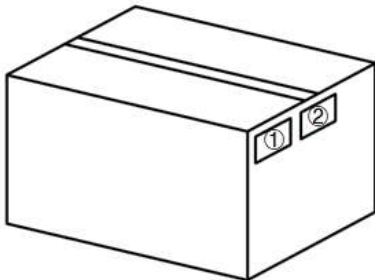
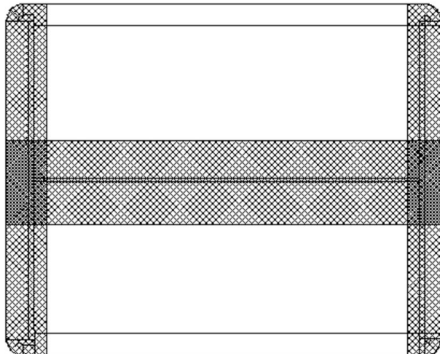






## 4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		Put the product in a bubble bag.
2		Each knife card slot holds 1 product, and one layer of knife cards holds 40 products.

3		<p>(40 PCS Antennas / Carton Box)</p> <p><u>Carton Size:</u> <u>L × W × H = 594 × 396 × 175 mm</u></p>
4		<p><b>Position for Attaching Labels</b></p> <p>① Carton Label ② Quality Label</p>
5		<p><b>Sealing Cartons</b></p> <p>“┐” type sealing cartons</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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Tel: +86 21 5108 6236

Email: [info@quectel.com](mailto:info@quectel.com)

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## Revision History

Version	Date	Author	Note
-	2023-12-18	Sly LIU/ Lance SUN/ David LIU/ Vinnie LIU	Creation of the document
1.0	2023-12-18	Sly LIU/ Lance SUN/ David LIU/ Vinnie LIU	First official release
1.1	2024-01-24	Lance SUN	Added Housing UV Resistant (Chapter 1.2).



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