



# Antenna Datasheet

**Product OC:** YXH001AA

**Version:** 2.0

**Date:** 2023-05-12

**Status:** Released

**Product Name:** 5G Sucker Antenna

**Key Features:**

Frequency Band: 700–960 MHz, 1710–2690 MHz, 3300–5000 MHz

Dimensions:  $\Phi$  45 × 285 mm

Efficiency: Up to 78.3 % (MP)

RoHS Compliant

IP65

# 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 any ground plane size or in free space 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 × 300 mm metal plane & Free Space

## 1.1. Electrical

Electrical	
Frequency Range	700–960 MHz, 1710–2690 MHz, 3300–5000 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	MP	-	4.9	4.3	-	4.9	2.1	2.9	3.1	4.0	3.6	-
	FS	-	6.0	4.0	-	5.1	2.1	3.3	3.6	4.6	3.6	-
Max. Return Loss (dB)	MP	-	-3.6	-4.2	-	-3.6	-9.1	-6.3	-5.9	-4.5	-4.9	-
	FS	-	-2.9	-4.4	-	-3.4	-8.8	-5.4	-4.9	-3.9	-4.9	-
AVG Eff. (%)	MP	-	43.6	66.6	-	42.8	61.2	64.5	45.4	42.6	41.5	-
	FS	-	42.7	49.6	-	40.0	51.2	53.0	36.7	38.7	35.3	-
AVG Gain (dB)	MP	-	-3.7	-1.8	-	-3.7	-2.1	-1.9	-3.5	-3.7	-3.8	-
	FS	-	-3.8	-3.1	-	-4.0	-2.9	-2.8	-4.4	-4.2	-4.5	-
Max. Peak Gain (dBi)	MP	-	0.9	1.4	-	3.0	6.6	5.0	3.7	4.6	3.6	-
	FS	-	0.8	4.2	-	2.1	4.9	2.7	1.6	2.5	2.9	-

VSWR	MP	$\leq 4.9$
	FS	$\leq 6.0$
Return Loss	MP	$\leq -3.6$ dB
	FS	$\leq -2.9$ dB
Peak Gain	MP	$\leq 6.6$ dBi
	FS	$\leq 4.9$ dBi

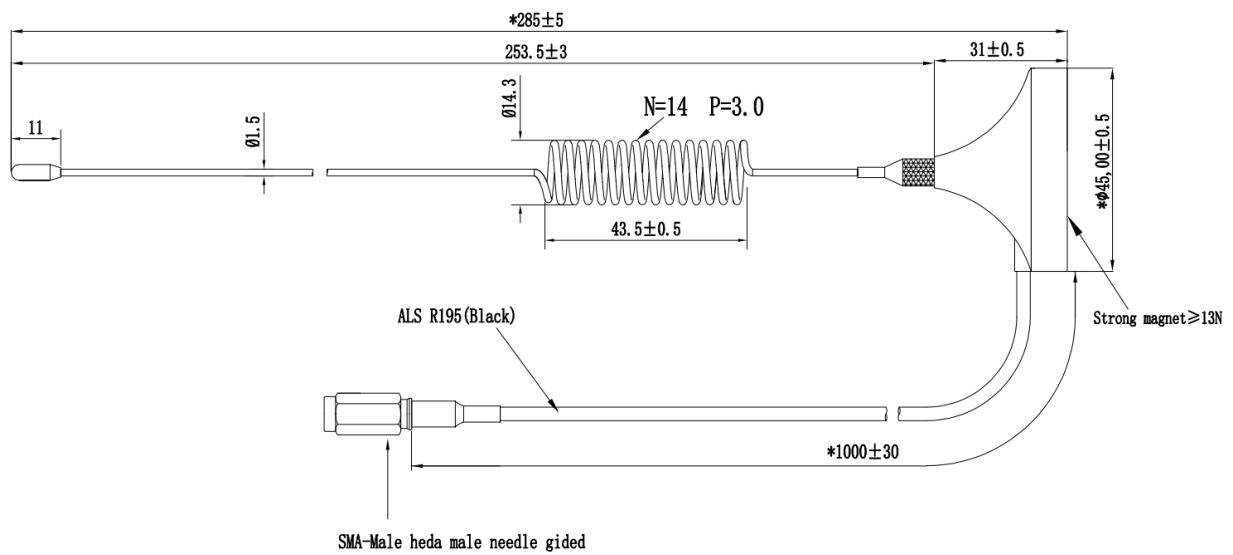
- FS: Free Space
- MP: On 300 × 300 mm metal plane

## 1.2. Mechanical, Environmental & Storage

Mechanical	
Antenna Dimensions	Φ 45 × 285 mm
Material & Color	Carbon Steel & Black
Cable Type & Color & Length	ALS R195 & Black & 1000 mm
Connector Type	SMA Male
Mounting Type	Magnet
Weight	Typ. 73.6 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	IP65
RoHS Compliant	Yes

Storage	
Storage Temperature	18 °C–27 °C
Humidity	30%–80% RH
Storage Place	Away from corrosive gas and direct sunlight
Packaging	Antennas should be stored in unopened sealed manufacturer's plastic packaging

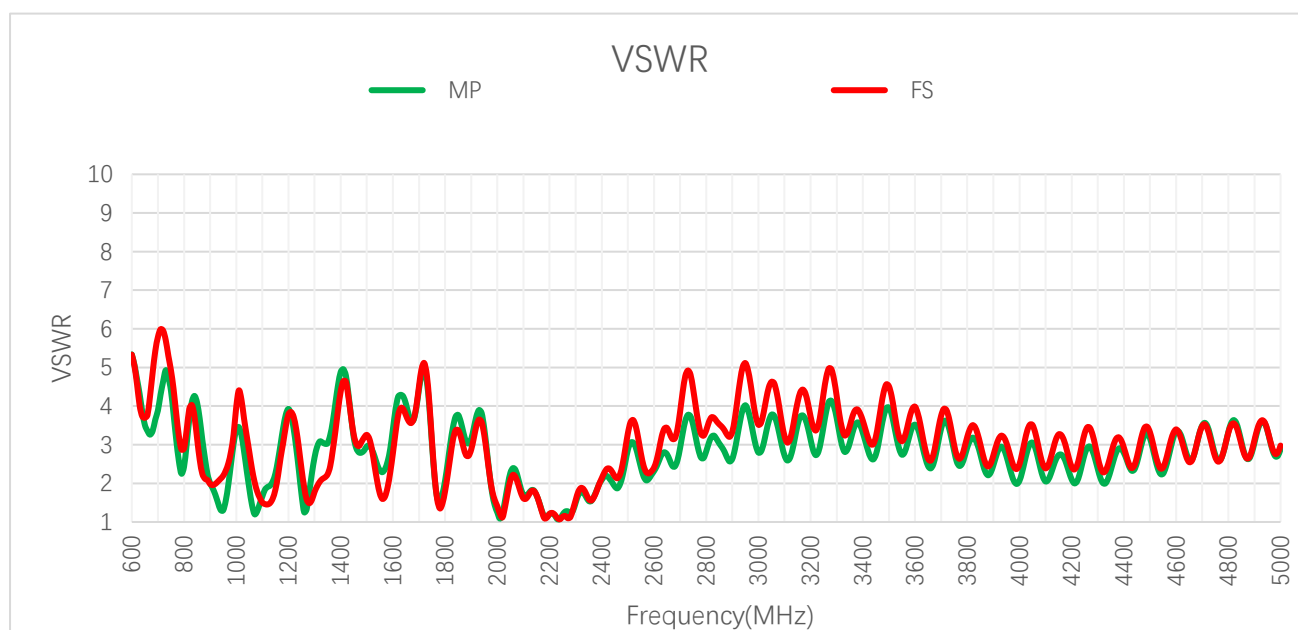
## 2 Drawing



# 3 Detailed Performance

## 3.1. S-Parameter Test

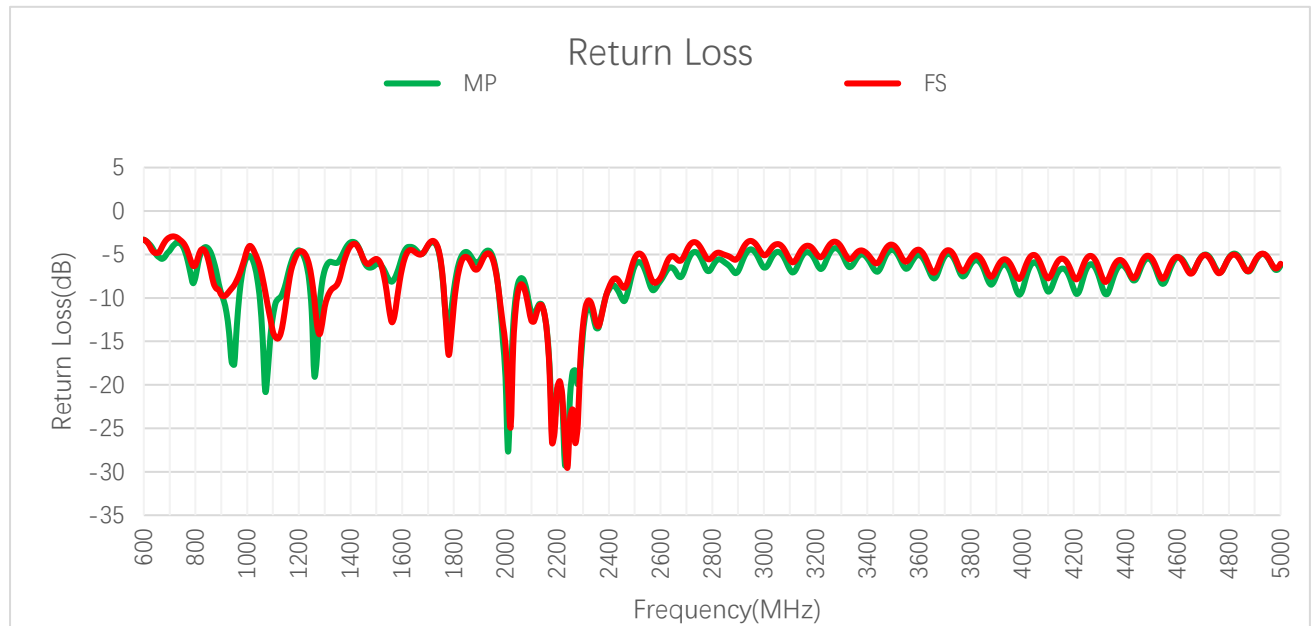
### 3.1.1. VSWR



VSWR

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
VSWR	MP	-	-	4.3	4.1	2.0	1.6	3.7	4.8	3.9	3.1
	FS	-	-	6.0	4.0	2.0	2.3	3.7	5.0	4.1	2.7
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
VSWR	MP	3.4	1.8	1.5	1.9	2.3	3.5	3.5	2.9	-	-
	FS	3.3	1.8	1.6	2.2	2.4	4.0	3.5	3.0	-	-

### 3.1.2. Return Loss



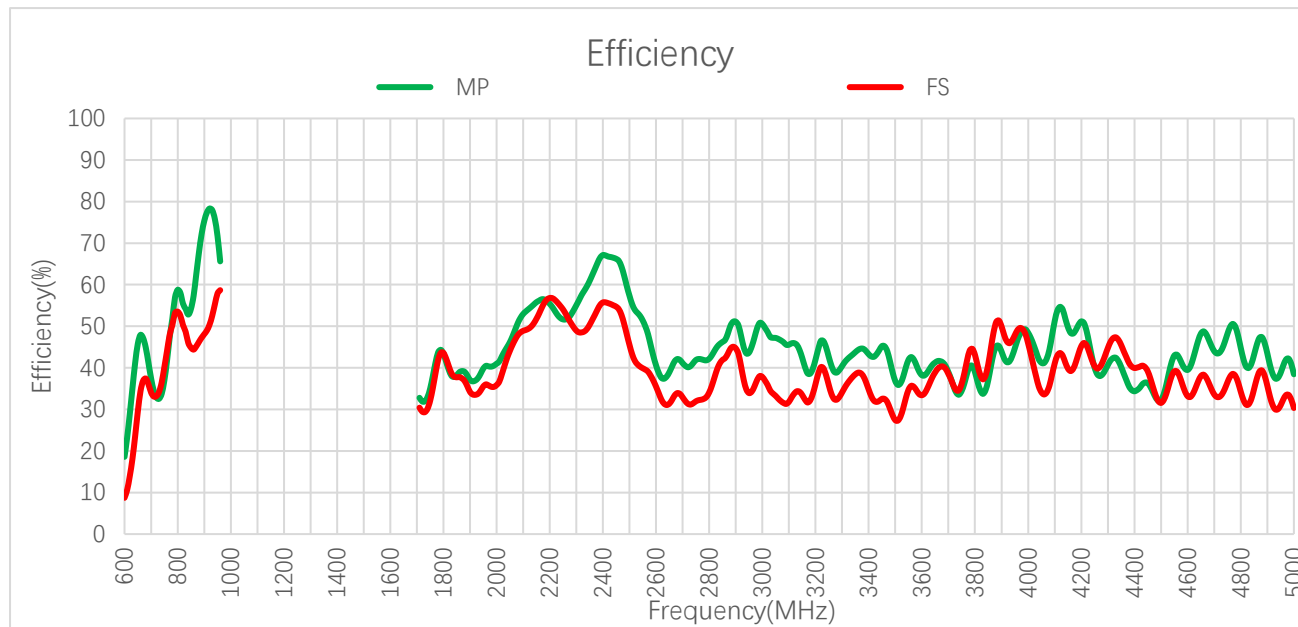
**Return Loss (dB)**

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	MP	-	-	-4.1	-4.3	-9.5	-13.3	-4.8	-3.7	-4.5	-5.8
	FS	-	-	-2.9	-4.4	-9.6	-8.0	-4.8	-3.5	-4.4	-6.7
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
Return Loss (dB)	MP	-5.2	-10.8	-13.4	-10.0	-8.0	-5.1	-5.1	-6.3	-	-
	FS	-5.5	-10.8	-12.8	-8.6	-7.7	-4.5	-5.1	-6.1	-	-



## 3.2. Radiation Performance Test

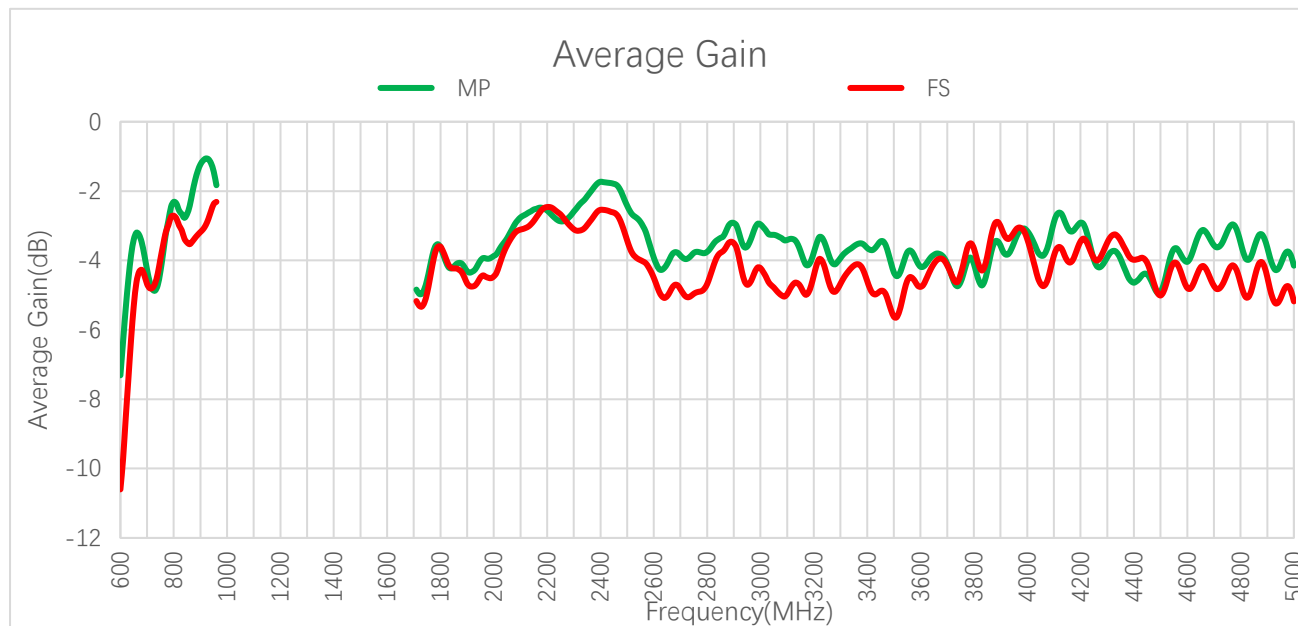
### 3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	MP	-	-	34.5	54.2	75.3	65.6	-	32.8	33.0	39.0
	FS	-	-	33.1	48.7	48.1	58.7	-	30.4	30.2	36.8
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
Efficiency (%)	MP	39.8	55.2	60.9	66.2	40.6	38.2	44.0	38.5	-	-
	FS	35.5	50.7	50.3	54.7	35.5	33.4	33.6	30.3	-	-

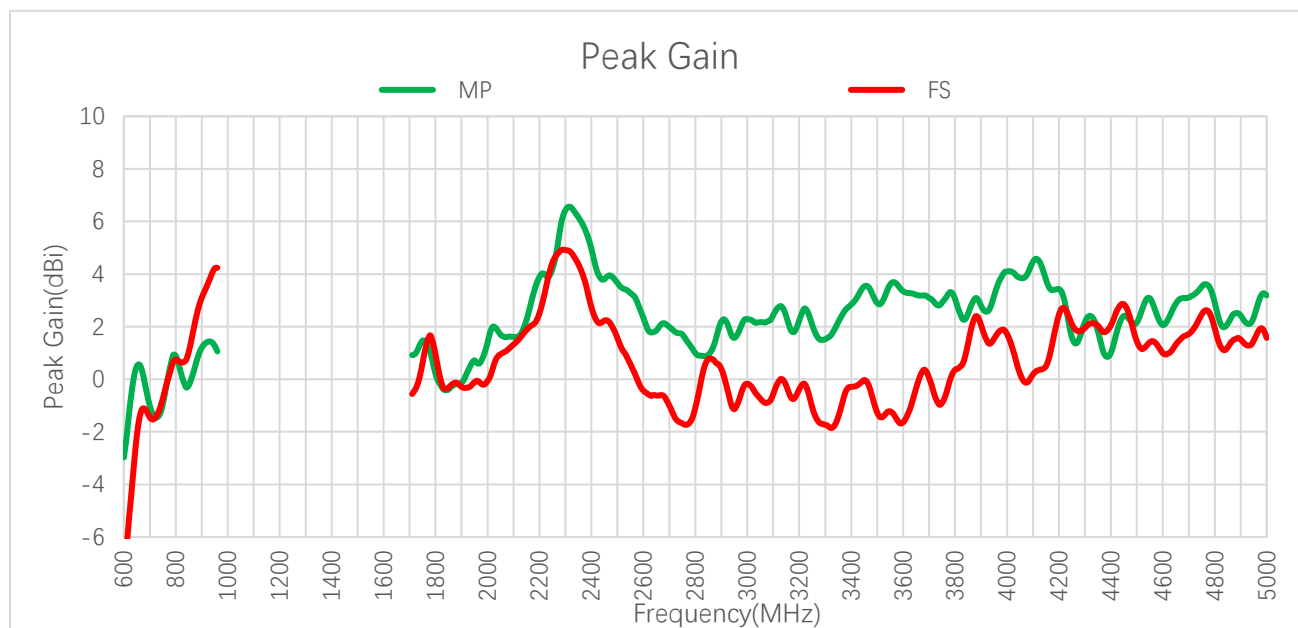
### 3.2.2. Average Gain



**Average Gain (dB)**

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	MP	-	-	-4.6	-2.7	-1.2	-1.8	-	-4.8	-4.8	-4.1
	FS	-	-	-4.8	-3.1	-3.2	-2.3	-	-5.2	-5.2	-4.3
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
Average Gain (dB)	MP	-4.0	-2.6	-2.2	-1.8	-3.9	-4.2	-3.6	-4.2	-	-
	FS	-4.5	-3.0	-3.0	-2.6	-4.5	-4.8	-4.7	-5.2	-	-

### 3.2.3. Peak Gain



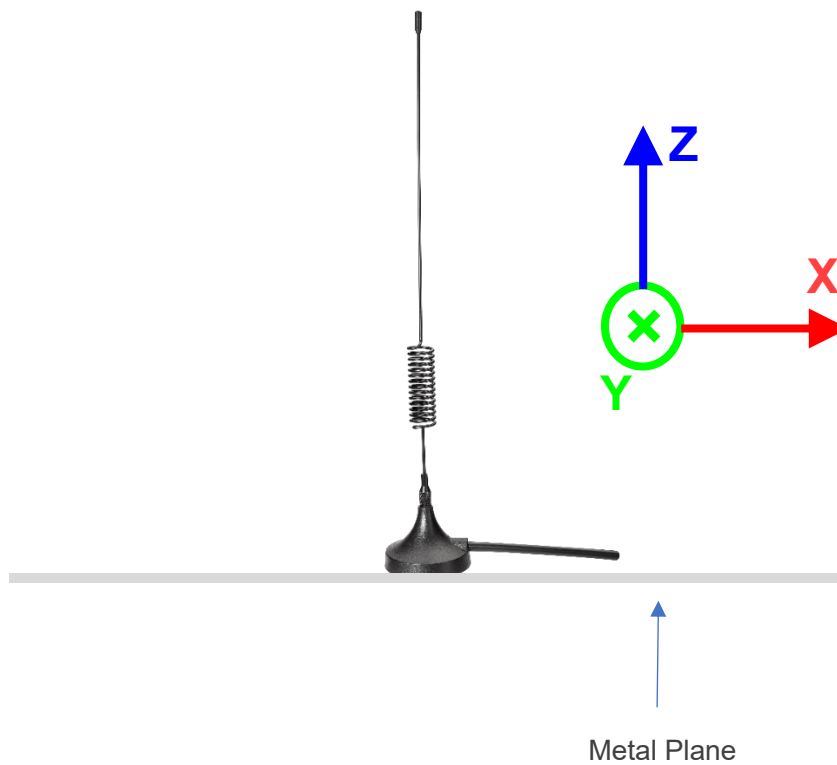
**Peak Gain (dBi)**

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	MP	-	-	-1.3	-0.1	1.2	1.1	-	0.9	1.3	-0.2
	FS	-	-	-1.5	0.7	3.1	4.2	-	-0.6	0.1	-0.1
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
Peak Gain (dBi)	MP	0.7	2.0	6.2	3.8	2.3	3.4	3.1	3.2	-	-
	FS	-0.1	1.8	4.4	2.2	-0.4	-1.6	1.7	1.6	-	-

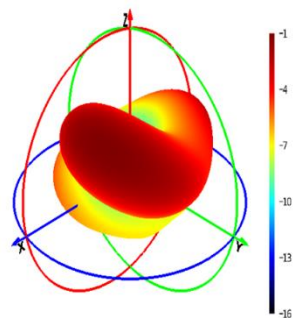
### 3.2.4. 3D & 2D Radiation Pattern

#### 3.2.4.1. Test Condition: On 300 × 300 mm metal plane

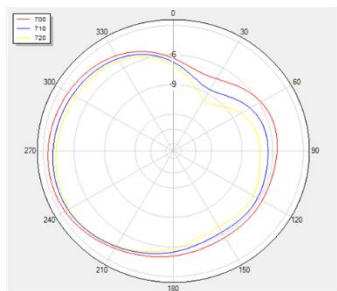
- Test Chamber: GL-S-1



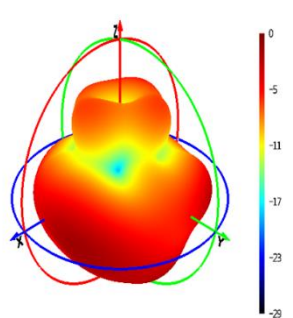
**710 MHz**



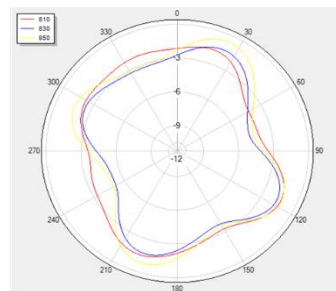
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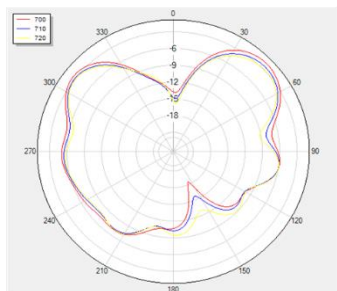
**830 MHz**



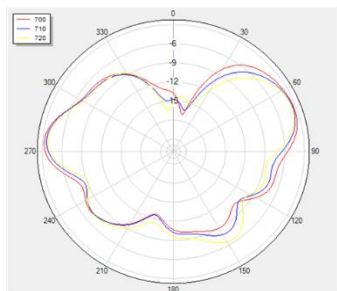
**Theta=90**



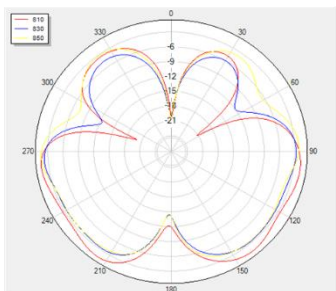
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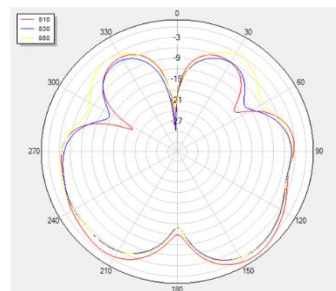
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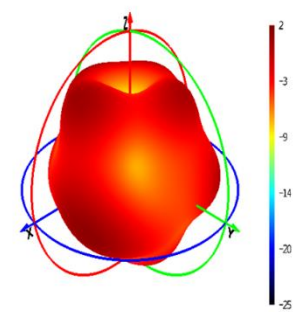
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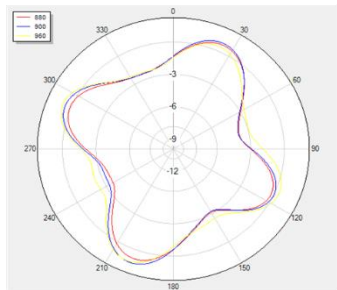
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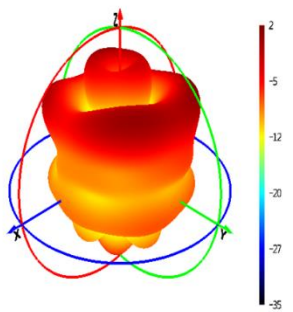
**900 MHz**



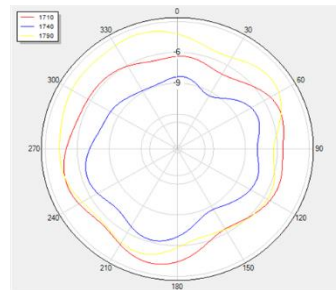
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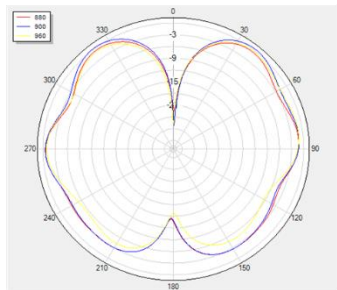
**1740 MHz**



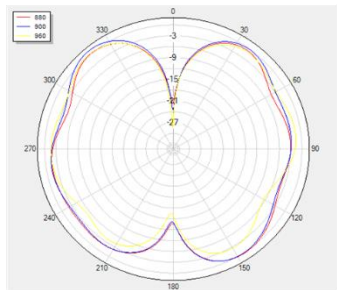
**Theta=90**



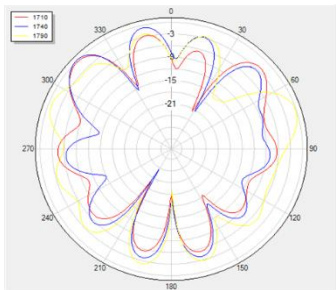
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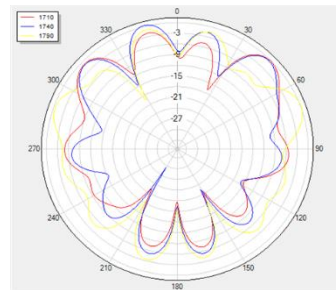
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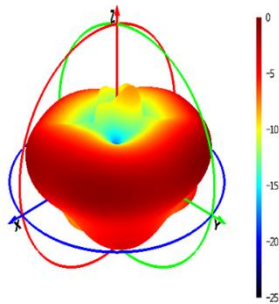
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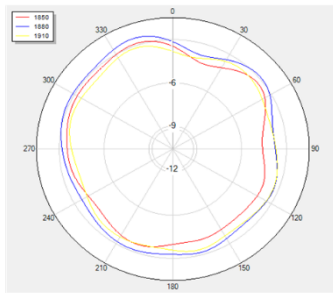
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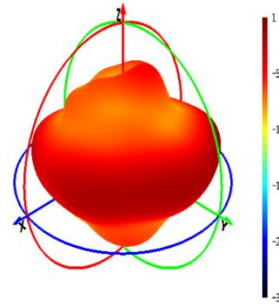
**1880 MHz**



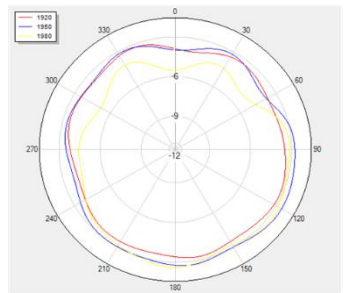
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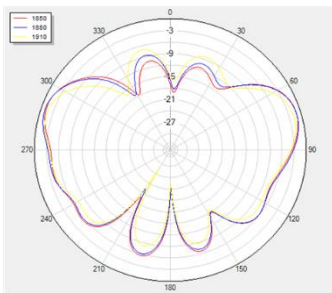
**1950 MHz**



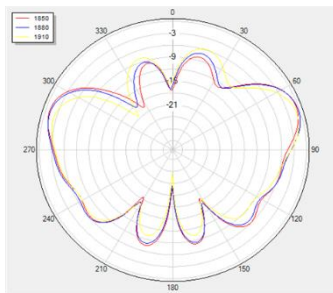
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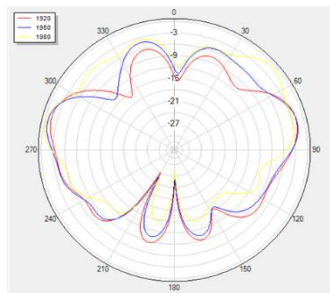
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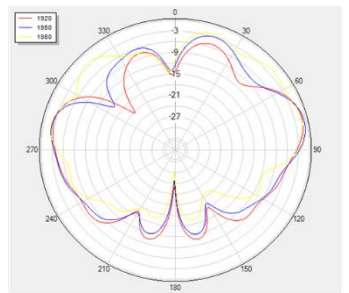
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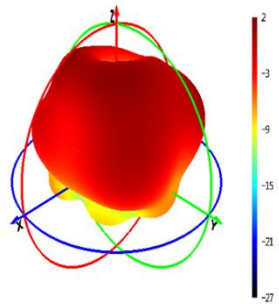
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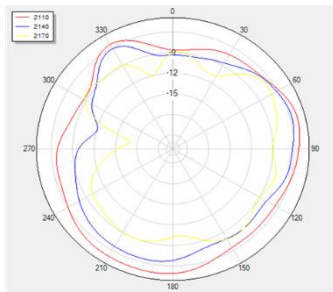
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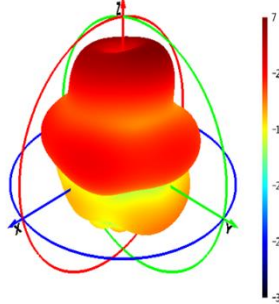
**2140 MHz**



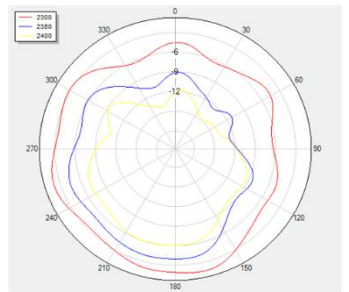
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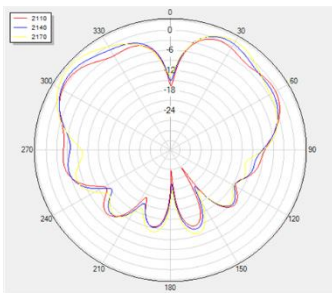
**2350 MHz**



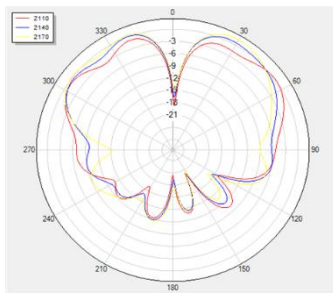
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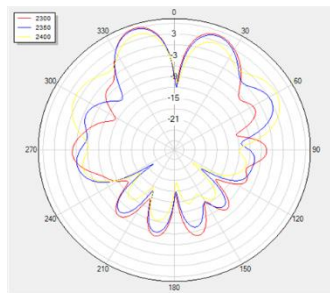
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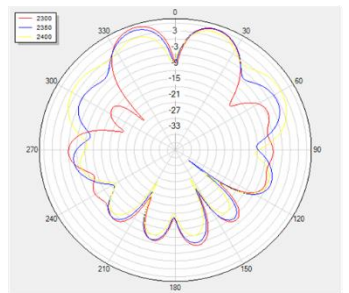
**Phi=90**



**Phi=0**

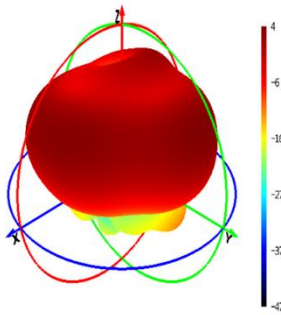


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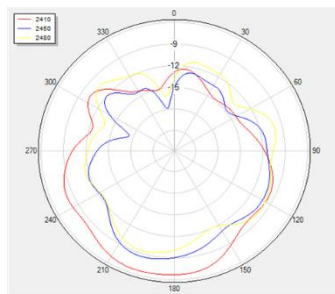




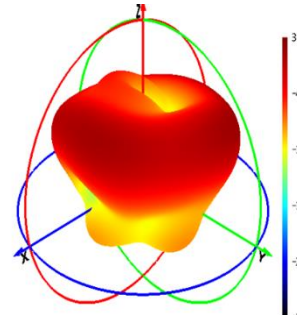
2450 MHz



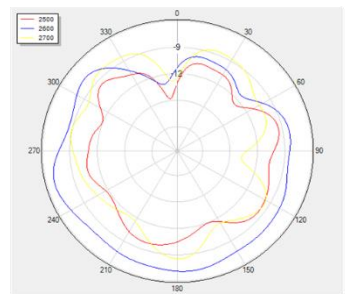
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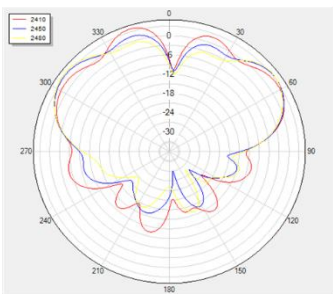
2600 MHz



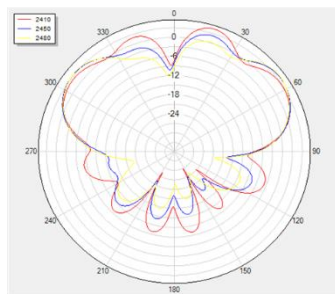
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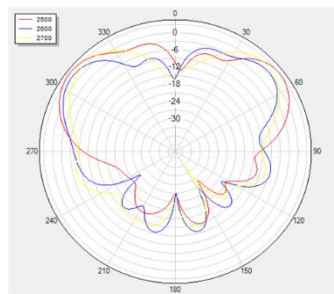
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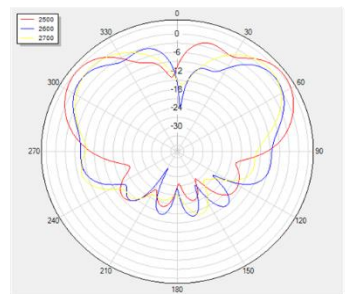
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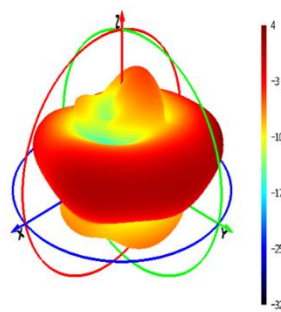
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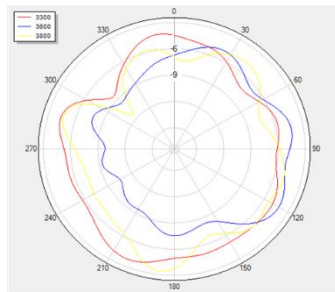
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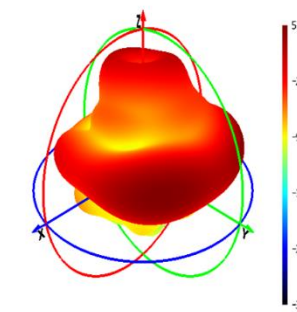
3600 MHz



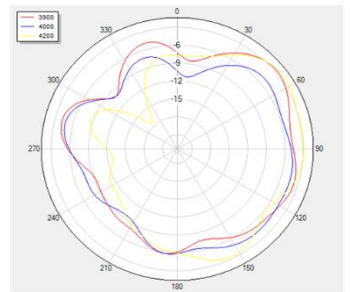
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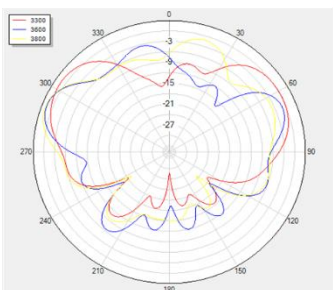
4000 MHz



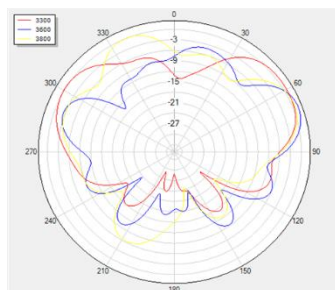
Theta=90



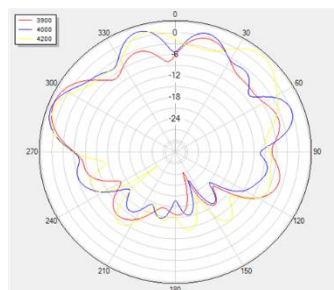
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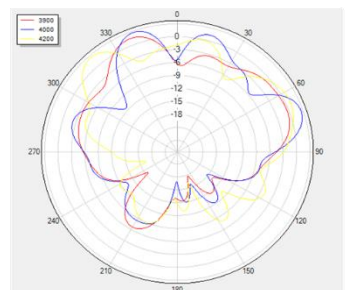
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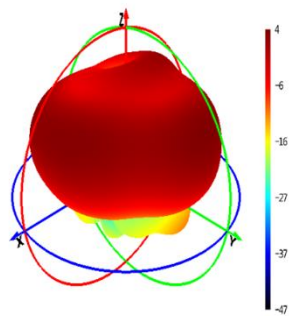
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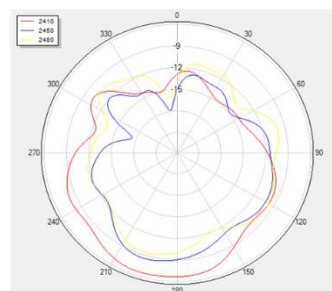
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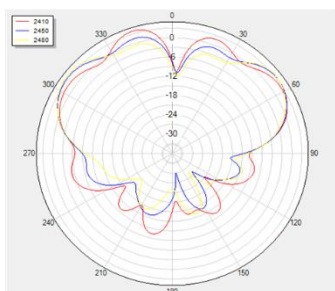
4700 MHz



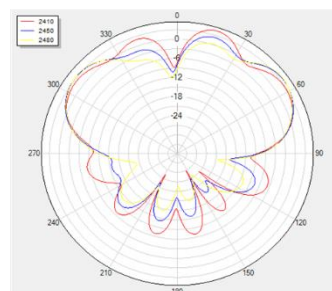
Theta=90



Phi=0



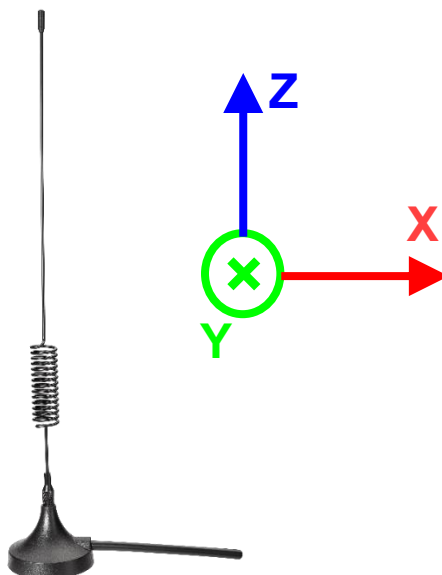
Phi=90



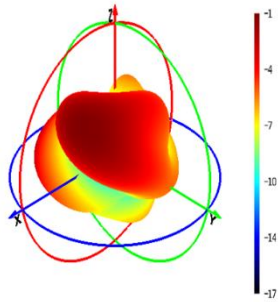


### 3.2.4.2. Test Condition: Free Space

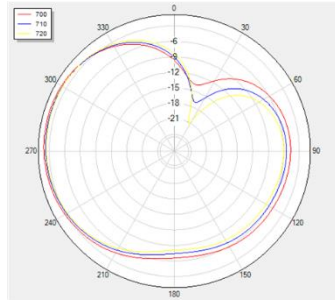
- Test Chamber: GL-S-1



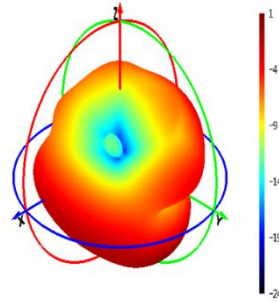
**710 MHz**



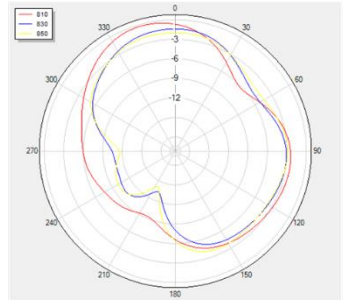
**Theta=90**



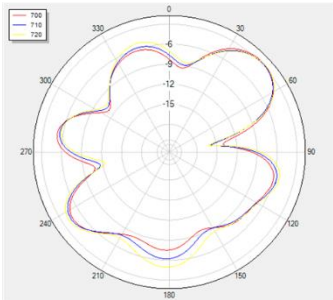
**830 MHz**



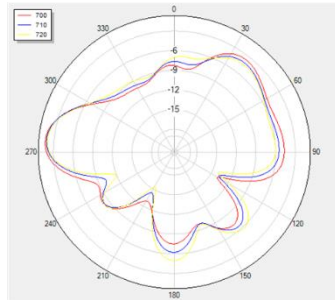
**Theta=90**



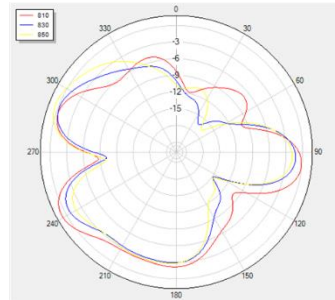
**Phi=0**



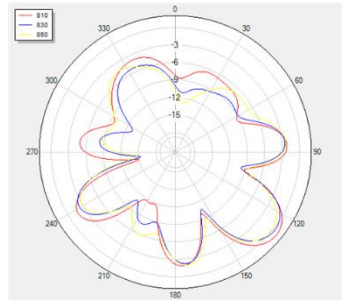
**Phi=90**



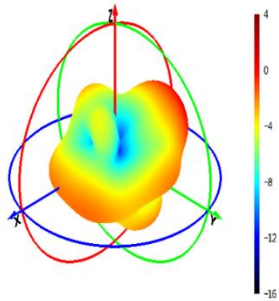
**Phi=0**



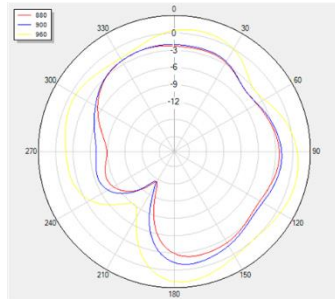
**Phi=90**



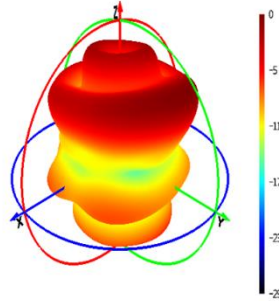
**900 MHz**



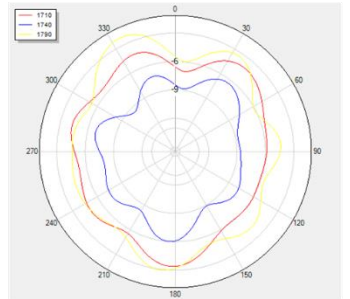
**Theta=90**



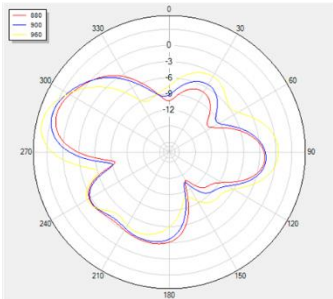
**1740 MHz**



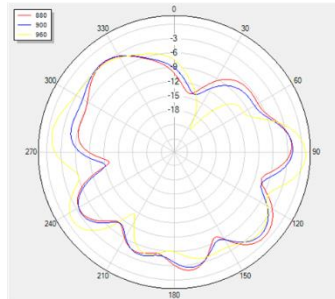
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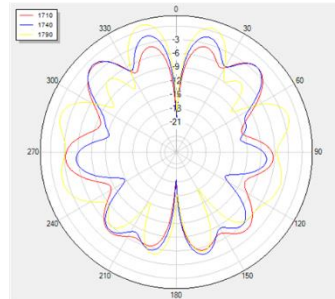
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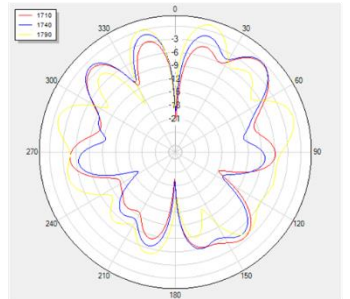
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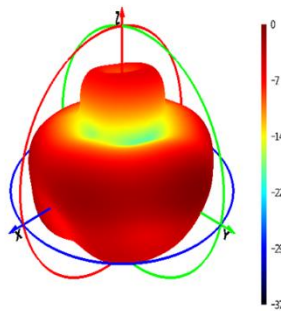
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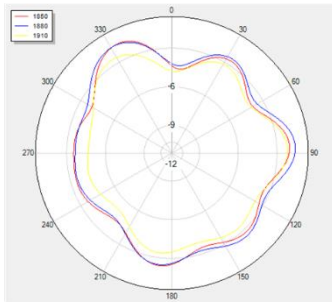
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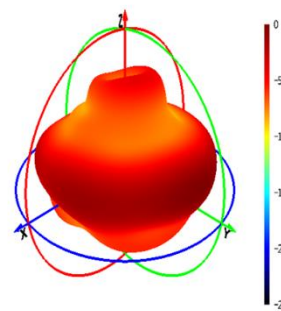
**1880 MHz**



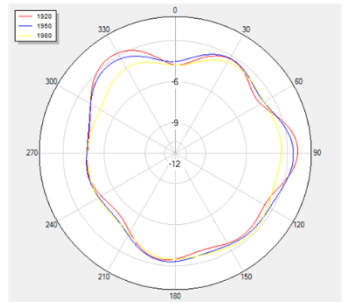
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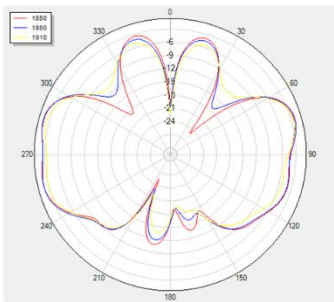
**1950 MHz**



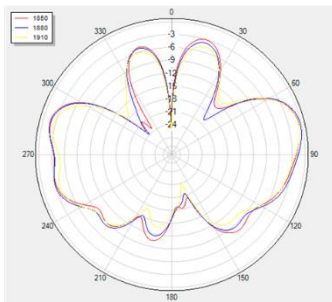
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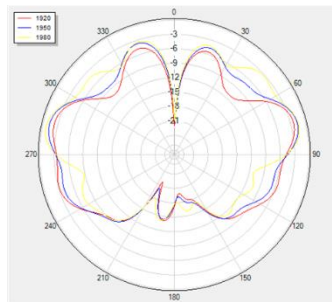
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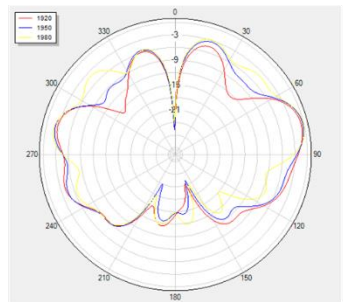
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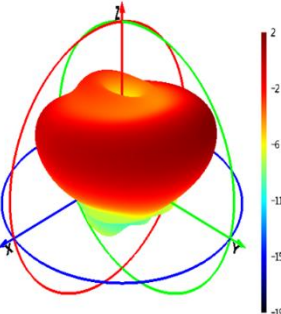
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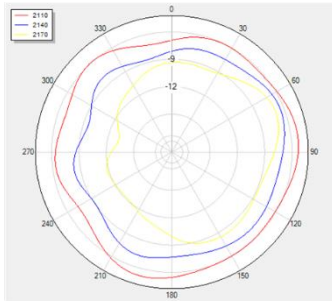
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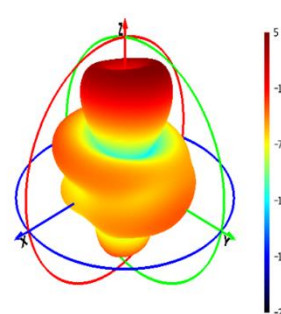
**2140 MHz**



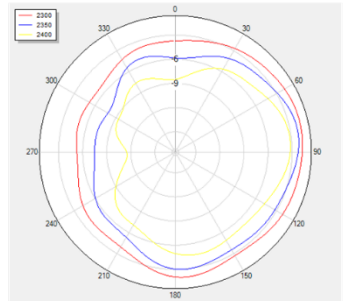
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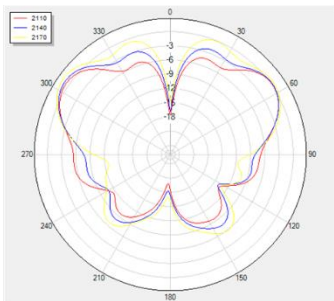
**2350 MHz**



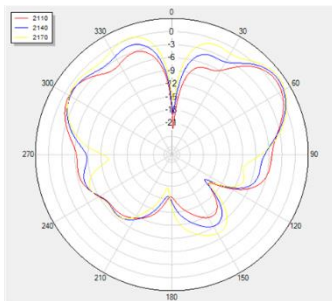
**Theta=90**



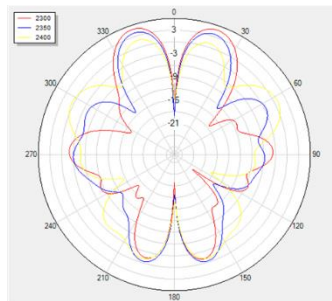
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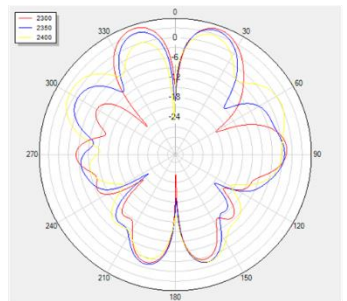
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**Phi=0**

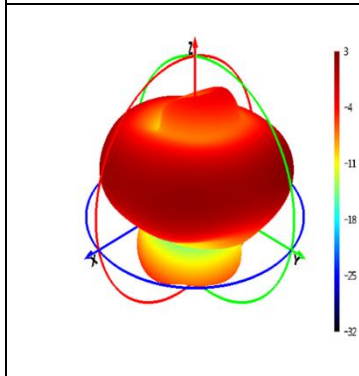


**Phi=90**

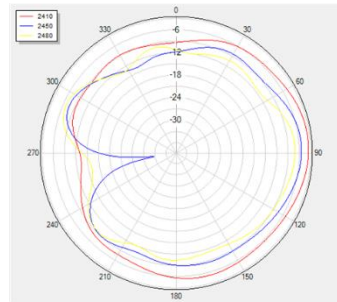




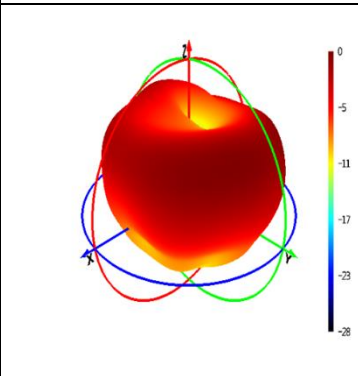
2450 MHz



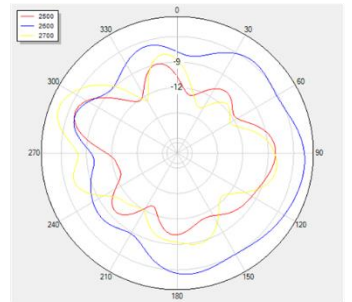
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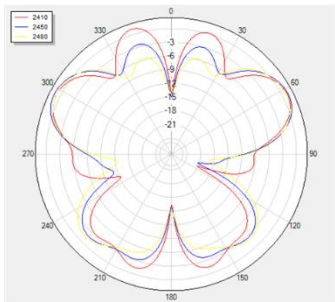
2600 MHz



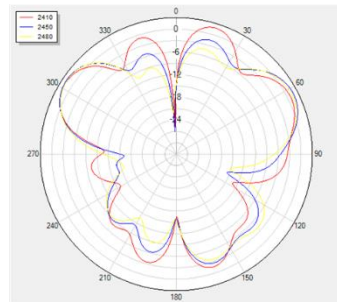
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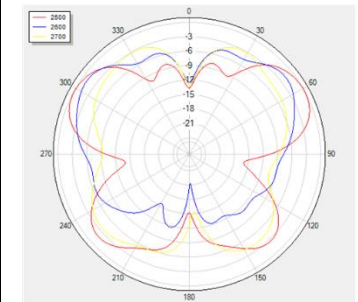
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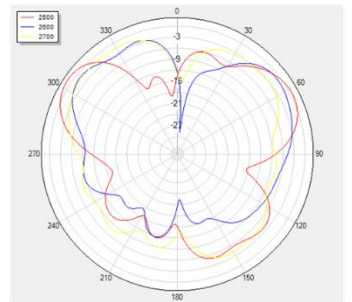
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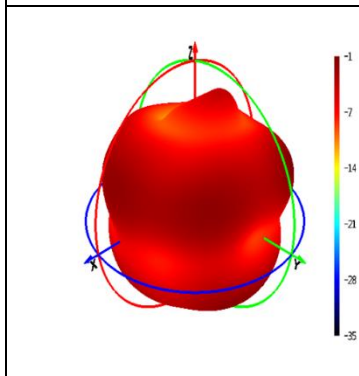
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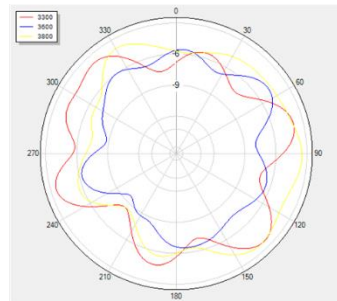
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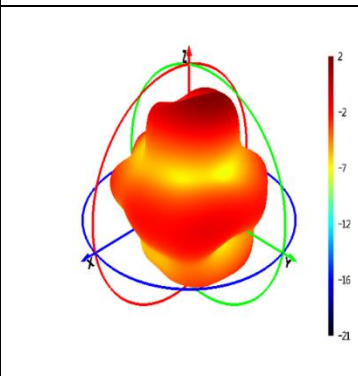
3600 MHz



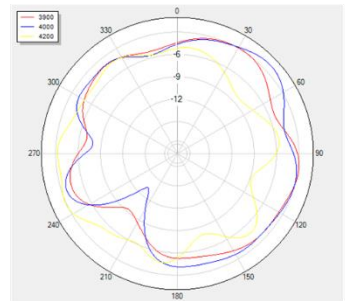
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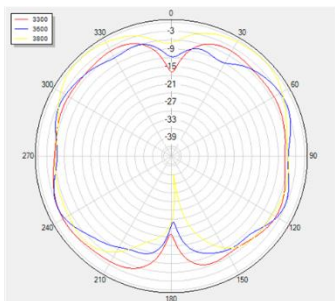
4000 MHz



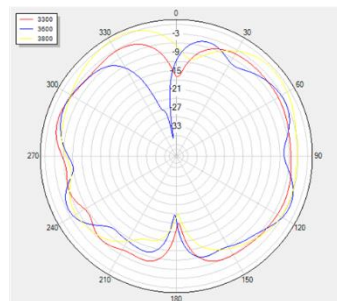
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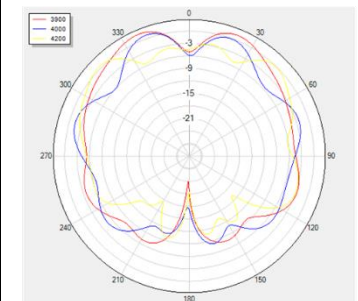
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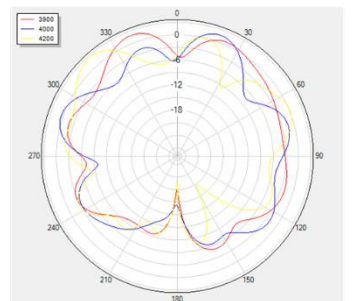
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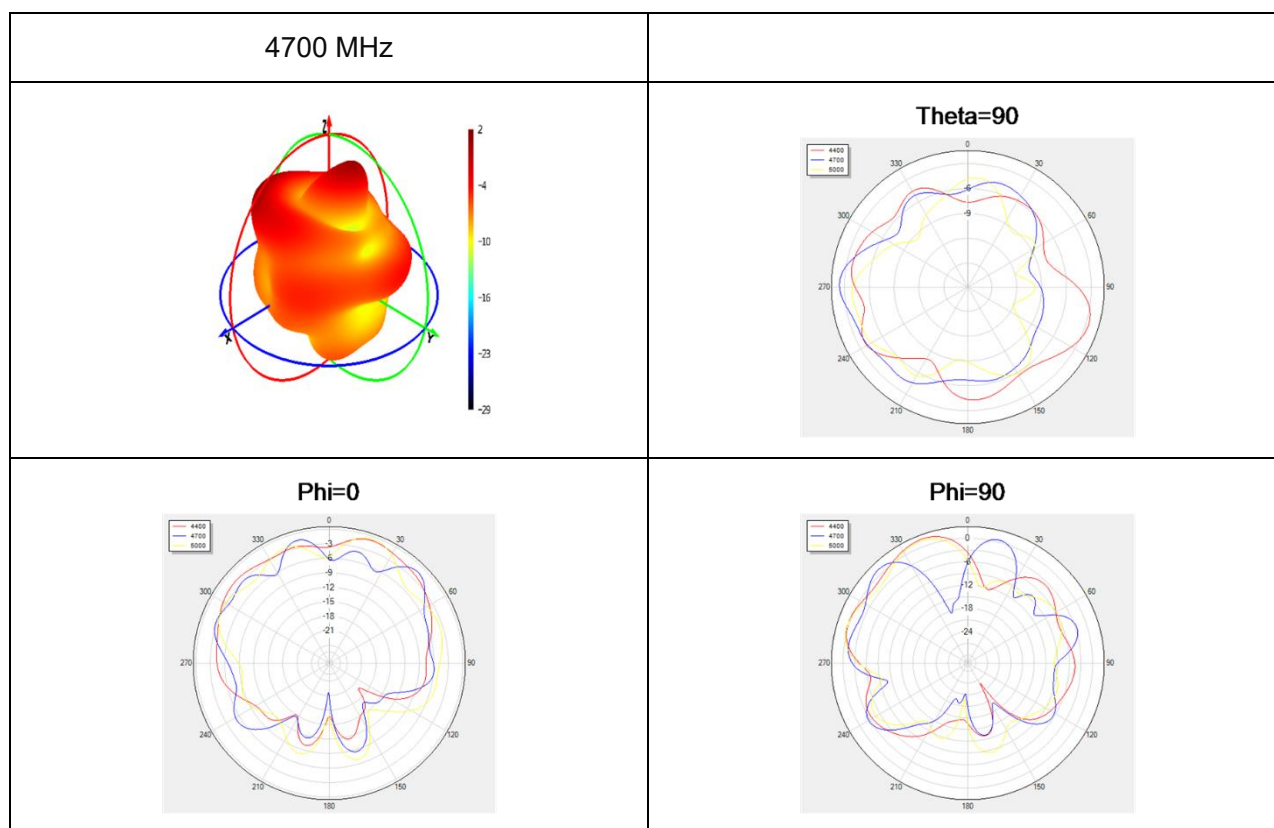


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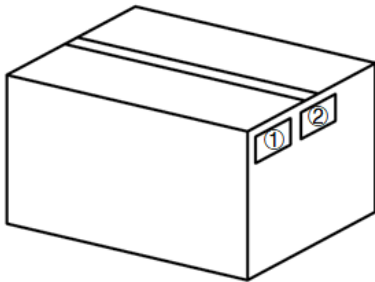
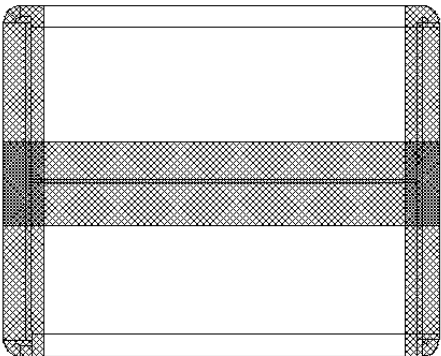

Phi=90





## 4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		1 pc antenna product in a PE bag
		20 pcs antenna products in a big PE bag

3		<p>(5 pcs PE bags per carton box) (100 pcs antennas per carton box)</p> <p><u>Carton Size:</u> <u>L × W × H = 370 × 370 × 295 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> “” type sealing cartons</p>

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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
1.0	2020-12-21	Kenny YIN	Initial
1.1	2021-01-12	Kenny YIN	Updated the antenna image (Chapter 2).
1.2	2021-01-27	Kenny YIN	Added IP rating description.
1.3	2021-07-01	Kenny YIN	1. Added test condition (Chapter 4.5). 2. Updated the drawing (Chapter 5).
1.4	2021-07-25	Kenny YIN	1. Updated the working temperature and added detailed passive electrical specifications (Chapter 3). 2. Updated the drawing (Chapter 5).
1.5	2021-11-30	Kenny YIN	Updated the product description (Chapter 1).
2.0	2023-05-12	Black LI/ Lucky FENG/ David LIU/ Aria CHU	Updated all data and datasheet template.



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