

# Antenna Datasheet

**Product OC:** YFCA011AA

**Version:** 1.2

**Date:** 2025-04-16

**Status:** Released

**Product Name:** 5G Adhesive Mount FPC + Cable Dipole Embedded  
Antenna

**Key Features:**

Frequency Band: 600–960 MHz, 1520–6000 MHz

Dimensions: 120 mm × 47 mm

Efficiency: Up to 85.71 % (5G Bands)

RoHS and REACH Compliant

# Overview

This Quectel embedded 5G/NTN FPC antenna covers 5G NR Sub-6 GHz frequency bands and is compatible with 4G/3G/2G/LPWA bands, NTN bands. 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. Used with other 5G antennas, it can achieve MIMO (multiple input, multiple output) antenna technology for wireless communications in which multiple antennas are used at both the source (transmitter) and the destination (receiver).

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# 1 Specification

Test Condition: Stick on 2 mm thick ABS Board

## 1.1. Electrical

Electrical	
Frequency Range	600–960 MHz, 1520–6000 MHz
Impedance	50 $\Omega$
Polarization	Linear
Radiation Pattern	Omni-directional

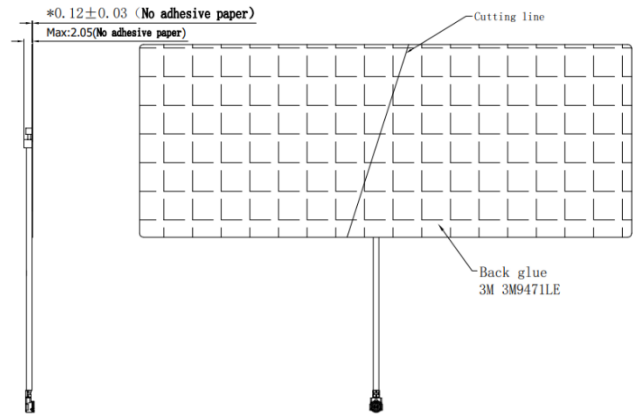
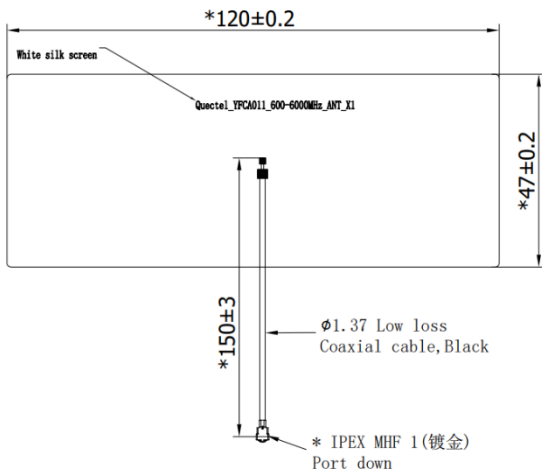
Electrical – Detail												
SPEC	Band	B71	B12 /B13 /B28	B5 /B8 /B26	n74 /n75 /n76	B1 /B2 /B3	B40	Wi-Fi 2G	B38 /B41	B42 /B48 /n77	n79	Wi-Fi 5G
	Freq. (MHz)	600– 700	700– 810	820– 960	1420– 1520	1700– 2170	2300– 2400	2400– 2500	2500– 2690	3300– 4200	4400– 5000	5150– 5850
Max. VSWR		3.1	1.8	1.8	-	1.8	1.7	2.1	2.1	1.9	2.4	1.5
Max. Return Loss (dB)		-5.9	-10.5	-11.1	-	-10.6	-11.4	-9.1	-8.8	-10.0	-7.8	-13.9
AVG Eff. (%)		40.6	78.4	71.6	-	66.5	62.1	70.6	68.2	65.3	66.4	61.8
AVG AVG Gain (dB)		-4.1	-1.1	-1.5	-	-1.8	-2.1	-1.5	-1.7	-1.9	-1.8	-2.1
Max. Peak Gain (dBi)		-0.2	2.3	2.4	-	3.5	4.1	5.1	5.1	5.7	5.2	7.5
Upper Hemisphere Efficiency (dB)		3.1	1.8	1.8	-	1.8	1.7	2.1	2.1	1.9	2.4	1.5
VSWR		$\leq 3.1$										
Return Loss		$\leq -5.9$ dB										
Gain		$\leq 7.5$ dBi										

Electrical – NTN Bands						
SPEC	Band	L Band	L Band	L Band	B256/B23	B256/B23
		1518–1559	1620–1665	1668–1675	1980–2020	2170–2200
Max. VSWR		2.8	1.5	1.5	1.3	1.8
Max. Return Loss (dB)		-6.3	-14.7	-14.4	-17.6	-10.9
AVG Eff. (%)		53.9	65.3	63.3	74.9	73.5
AVG AVG Gain (dB)		-2.7	-1.8	-2.0	-1.3	-1.3
Max. Peak Gain (dBi)		1.4	1.9	1.8	3.5	2.9
Upper Hemisphere Efficiency (dB)		-7.4	-6.2	-6.4	-5.1	-5.1
VSWR		≤ 2.8				
Return Loss		≤ -6.3 dB				
Peak Gain		≤ 3.5 dBi				

## 1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	120 mm × 47 mm
Material & Color	FPC & Black
Cable Type & Color & Length	Φ 1.37 & Black & 150 mm
Connector Type	IPEX MHF 1
Mounting Type	Adhesive
Weight	Typ. 2.43 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS and REACH Compliant	Yes

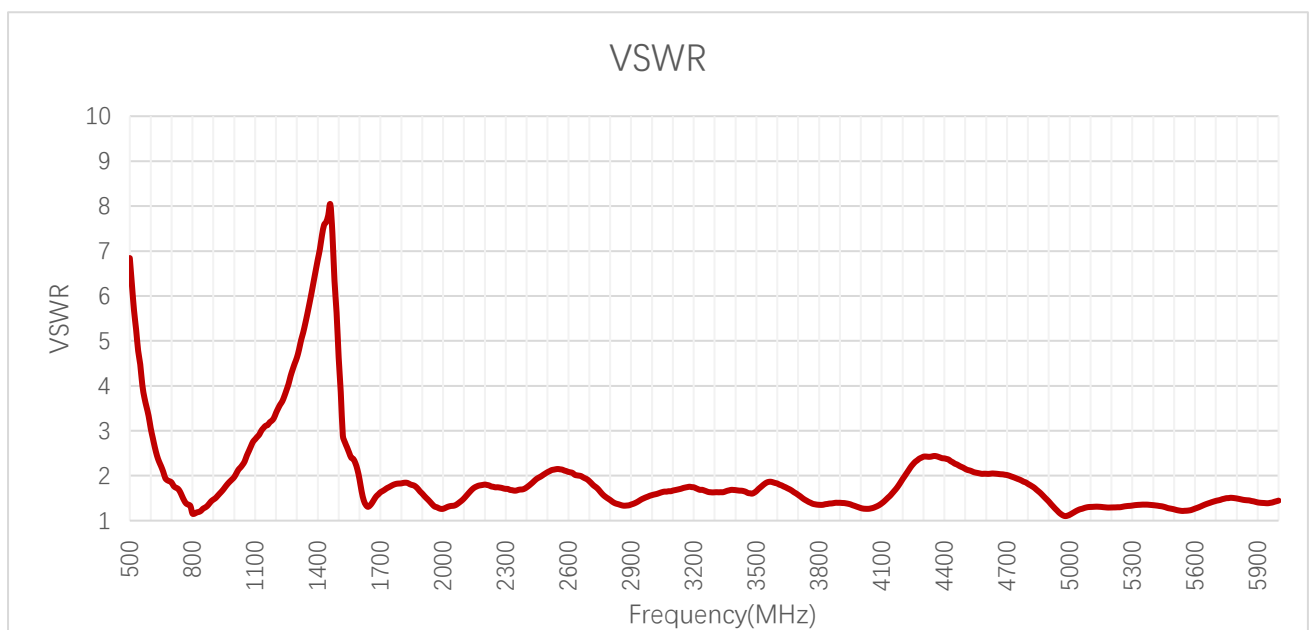
# 2 Drawing



# 3 Detailed Performance

## 3.1. S-Parameter Test

### 3.1.1. VSWR



**VSWR**

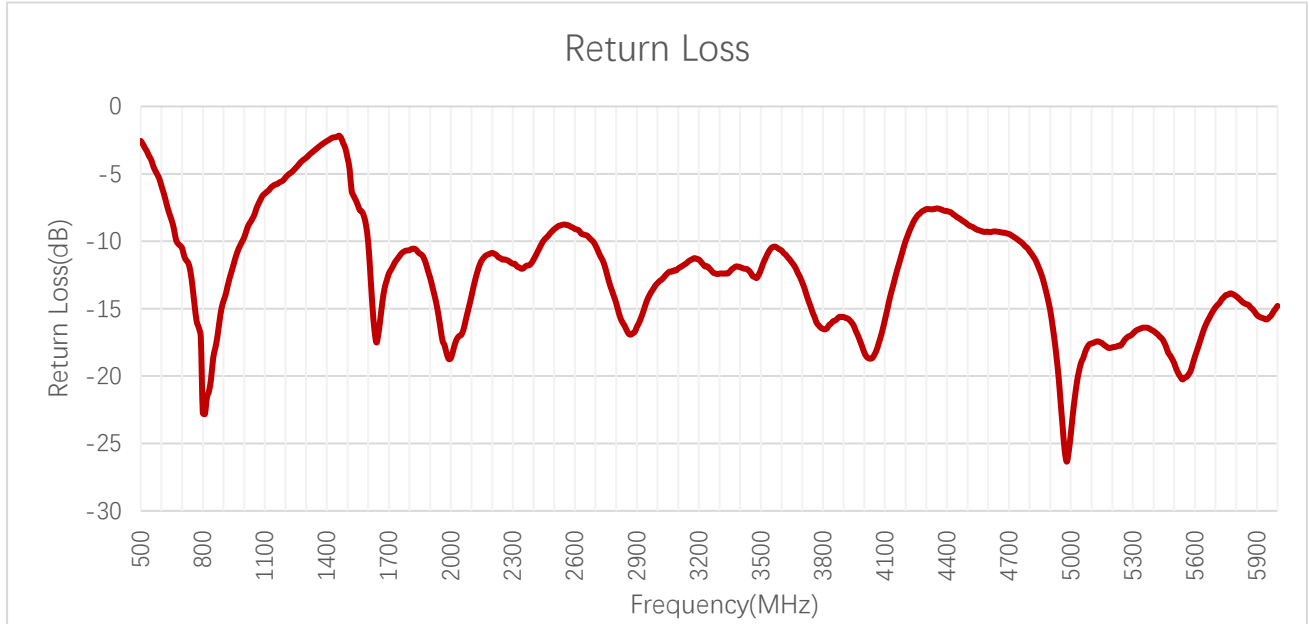
<b>Frequency (MHz)</b>	<b>600</b>	<b>630</b>	<b>710</b>	<b>830</b>	<b>900</b>	<b>960</b>	<b>1440</b>	<b>1710</b>	<b>1740</b>	<b>1880</b>
<b>VSWR</b>	3.1	2.4	1.8	1.2	1.5	1.8	-	1.7	1.7	1.7
<b>Frequency (MHz)</b>	<b>1950</b>	<b>2140</b>	<b>2350</b>	<b>2450</b>	<b>2600</b>	<b>3600</b>	<b>4000</b>	<b>4700</b>	<b>5500</b>	<b>6000</b>
<b>VSWR</b>	1.4	1.7	1.7	1.9	2.1	1.8	1.3	2.0	1.3	1.4

**VSWR – NTN Bands**

<b>Frequency (MHz)</b>	<b>1520</b>	<b>1560</b>	<b>1630</b>	<b>1680</b>	<b>2000</b>	<b>2200</b>
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<b>VSWR</b>	2.8	2.4	1.4	1.5	1.3	1.8
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**3.1.2. Return Loss**



**Return Loss (dB)**

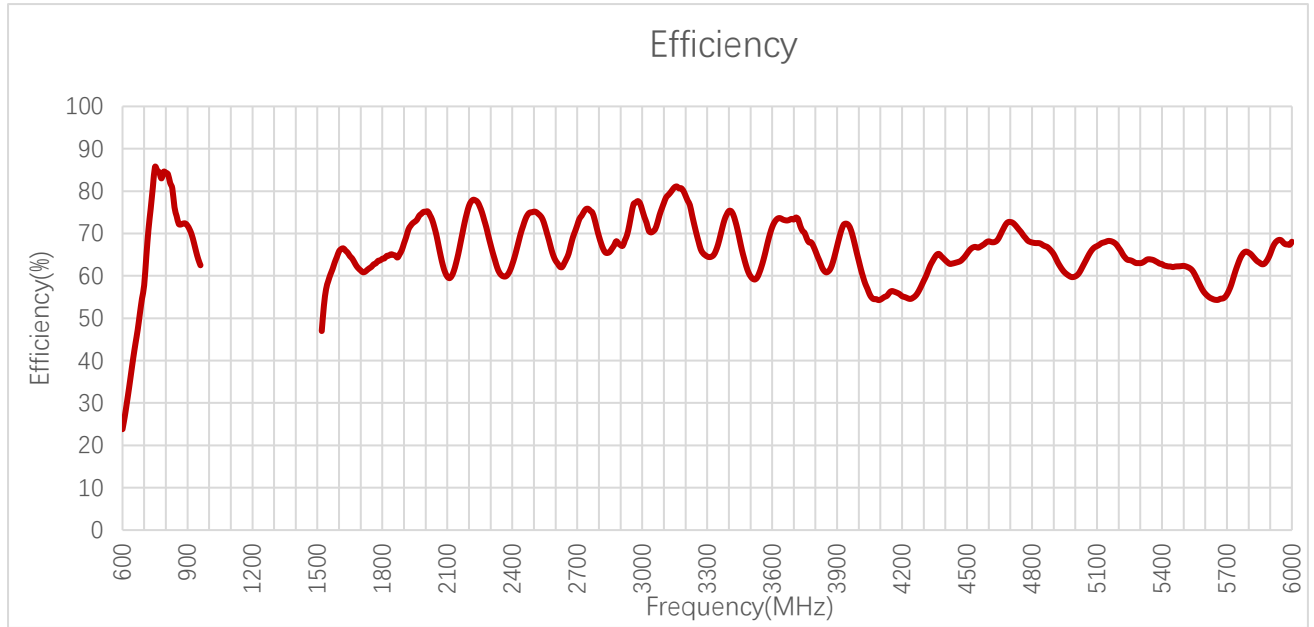
<b>Frequency (MHz)</b>	<b>600</b>	<b>630</b>	<b>710</b>	<b>830</b>	<b>900</b>	<b>960</b>	<b>1440</b>	<b>1710</b>	<b>1740</b>	<b>1880</b>
<b>Return Loss (dB)</b>	-5.9	-7.5	-11.1	-21.1	-14.4	-11.1	-	-12.1	-11.3	-11.7
<b>Frequency (MHz)</b>	<b>1950</b>	<b>2140</b>	<b>2350</b>	<b>2450</b>	<b>2600</b>	<b>3600</b>	<b>4000</b>	<b>4700</b>	<b>5500</b>	<b>6000</b>
<b>Return Loss (dB)</b>	-16.5	-11.7	-12.0	-9.9	-9.1	-10.7	-18.2	-9.5	-19.0	-14.8

**Return Loss (dB) – NTN Bands**

<b>Frequency (MHz)</b>	<b>1520</b>	<b>1560</b>	<b>1630</b>	<b>1680</b>	<b>2000</b>	<b>2200</b>
<b>Return Loss (dB)</b>	-6.3	-7.7	-16.5	-13.4	-18.7	-10.9

### 3.2. Radiation Performance Test

#### 3.2.1. Efficiency



**Efficiency (%) – 5G Bands**

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	23.8	33.5	64.6	80.6	71.9	62.5	-	60.9	61.8	65.1

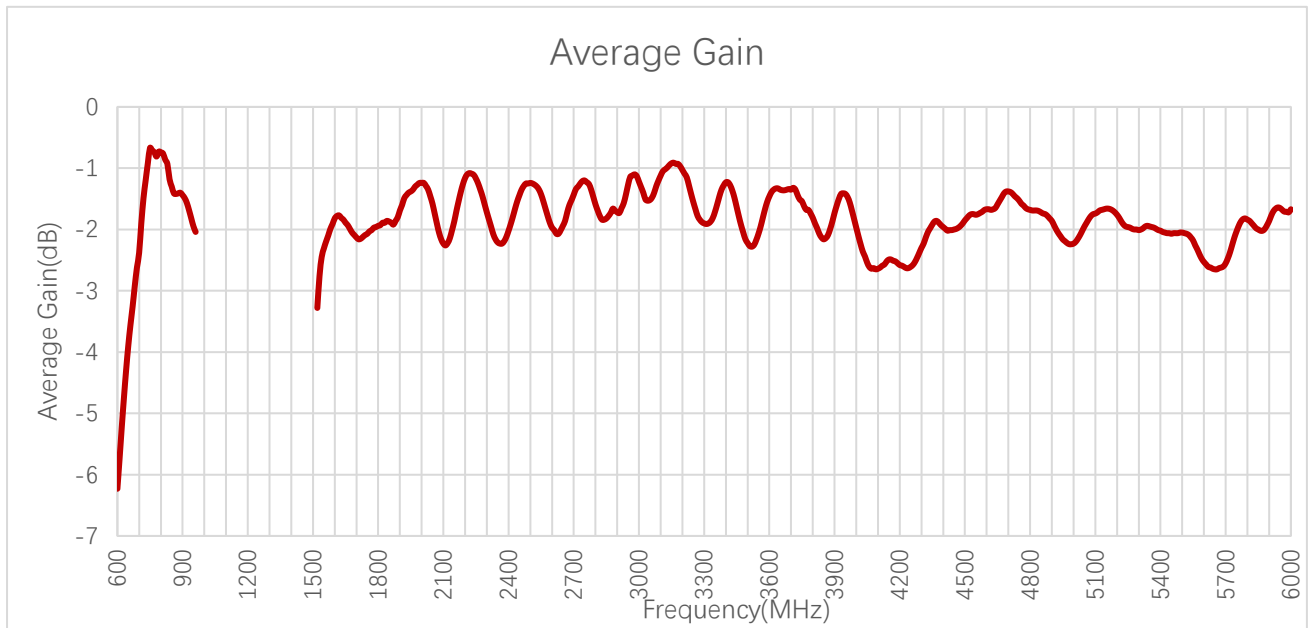
  

Frequency (MHz)	1950	2140	2350	2450	2600	3600	4000	4700	5500	6000
Efficiency (%)	72.8	62.9	60.2	71.8	63.6	71.5	63.6	72.7	62.4	68.1

**Efficiency (%) – NTN Bands**

Frequency (MHz)	1520	1560	1630	1680	2000	2200
Efficiency (%)	47.0	60.3	66.0	62.4	75.1	76.5

**3.2.2. Average Gain**



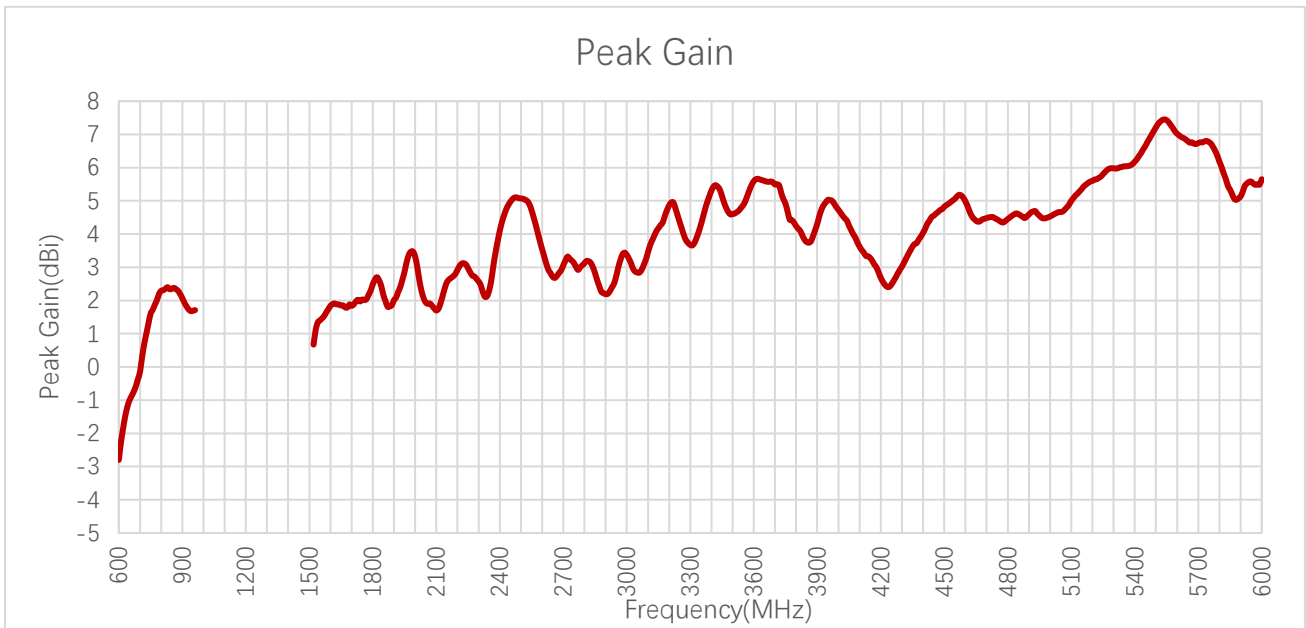
**Average Gain (dB) – 5G Bands**

<b>Frequency (MHz)</b>	<b>600</b>	<b>630</b>	<b>710</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>	-6.2	-4.8	-1.9	-0.9	-1.4	-2.0	-	-2.2	-2.1	-1.9
<b>Frequency (MHz)</b>	<b>1950</b>	<b>2140</b>	<b>2350</b>	<b>2450</b>	<b>2600</b>	<b>3600</b>	<b>4000</b>	<b>4700</b>	<b>5500</b>	<b>6000</b>
<b>Average Gain (dB)</b>	-1.4	-2.0	-2.2	-1.4	-2.0	-1.5	-2.0	-1.4	-2.1	-1.7

**Average Gain (dB) – NTN Bands**

<b>Frequency (MHz)</b>	<b>1520</b>	<b>1560</b>	<b>1630</b>	<b>1680</b>	<b>2000</b>	<b>2200</b>
<b>Average Gain (dB)</b>	-3.3	-2.2	-1.8	-2.1	-1.2	-1.2

**3.2.3. Peak Gain**



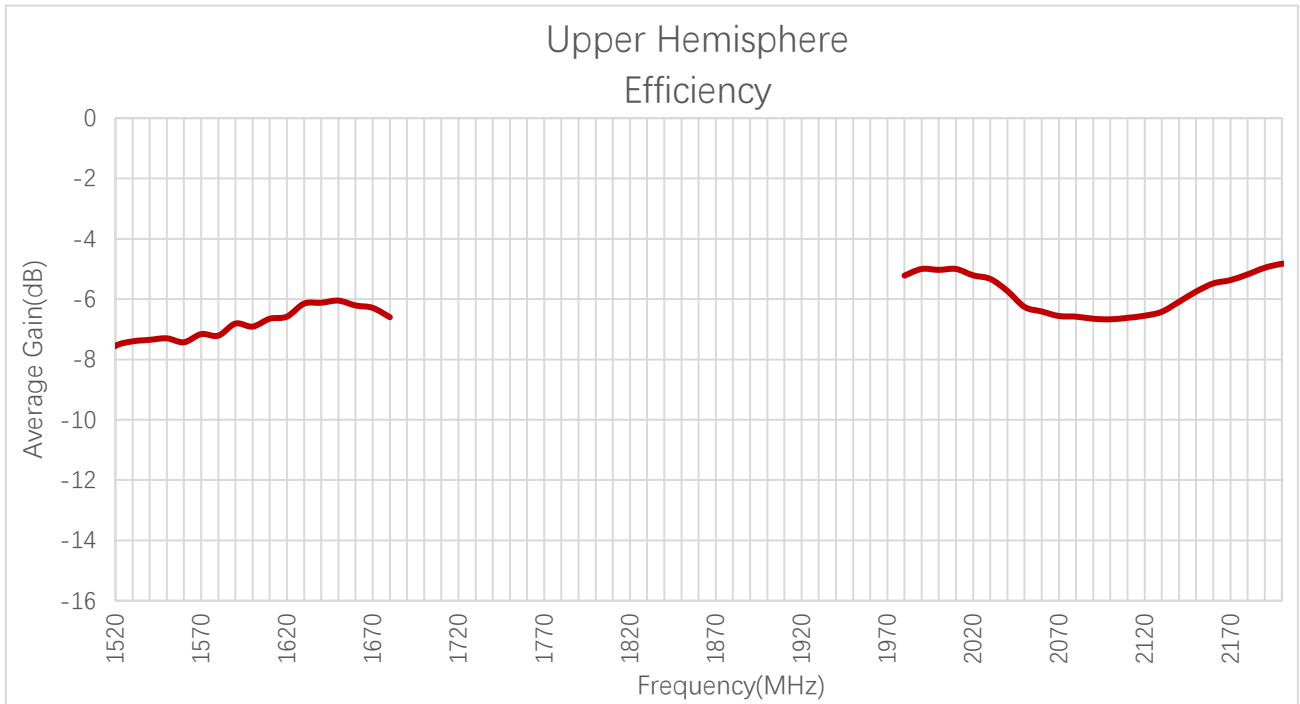
**Peak Gain (dBi) – 5G Bands**

<b>Frequency (MHz)</b>	<b>600</b>	<b>630</b>	<b>710</b>	<b>830</b>	<b>900</b>	<b>960</b>	<b>1440</b>	<b>1710</b>	<b>1740</b>	<b>1880</b>
<b>Peak Gain (dBi)</b>	-2.8	-1.5	0.3	2.4	2.1	1.7	-	1.9	2.0	1.8
<b>Frequency (MHz)</b>	<b>1950</b>	<b>2140</b>	<b>2350</b>	<b>2450</b>	<b>2600</b>	<b>3600</b>	<b>4000</b>	<b>4700</b>	<b>5500</b>	<b>6000</b>
<b>Peak Gain (dBi)</b>	2.9	2.4	2.3	5.0	3.5	5.6	4.7	4.5	7.2	5.7

**Peak Gain (dBi) – NTN Bands**

<b>Frequency (MHz)</b>	<b>1520</b>	<b>1560</b>	<b>1630</b>	<b>1680</b>	<b>2000</b>	<b>2200</b>
<b>Peak Gain (dBi)</b>	0.7	1.5	1.9	1.8	3.3	2.9

**3.2.4. Upper Hemisphere Efficiency**

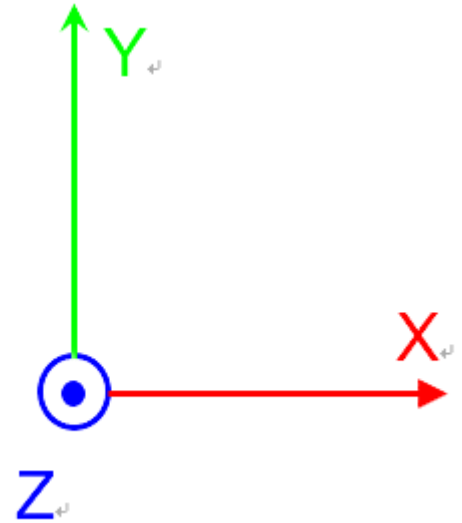


**Upper Hemisphere Efficiency (dB) – NTN Bands**

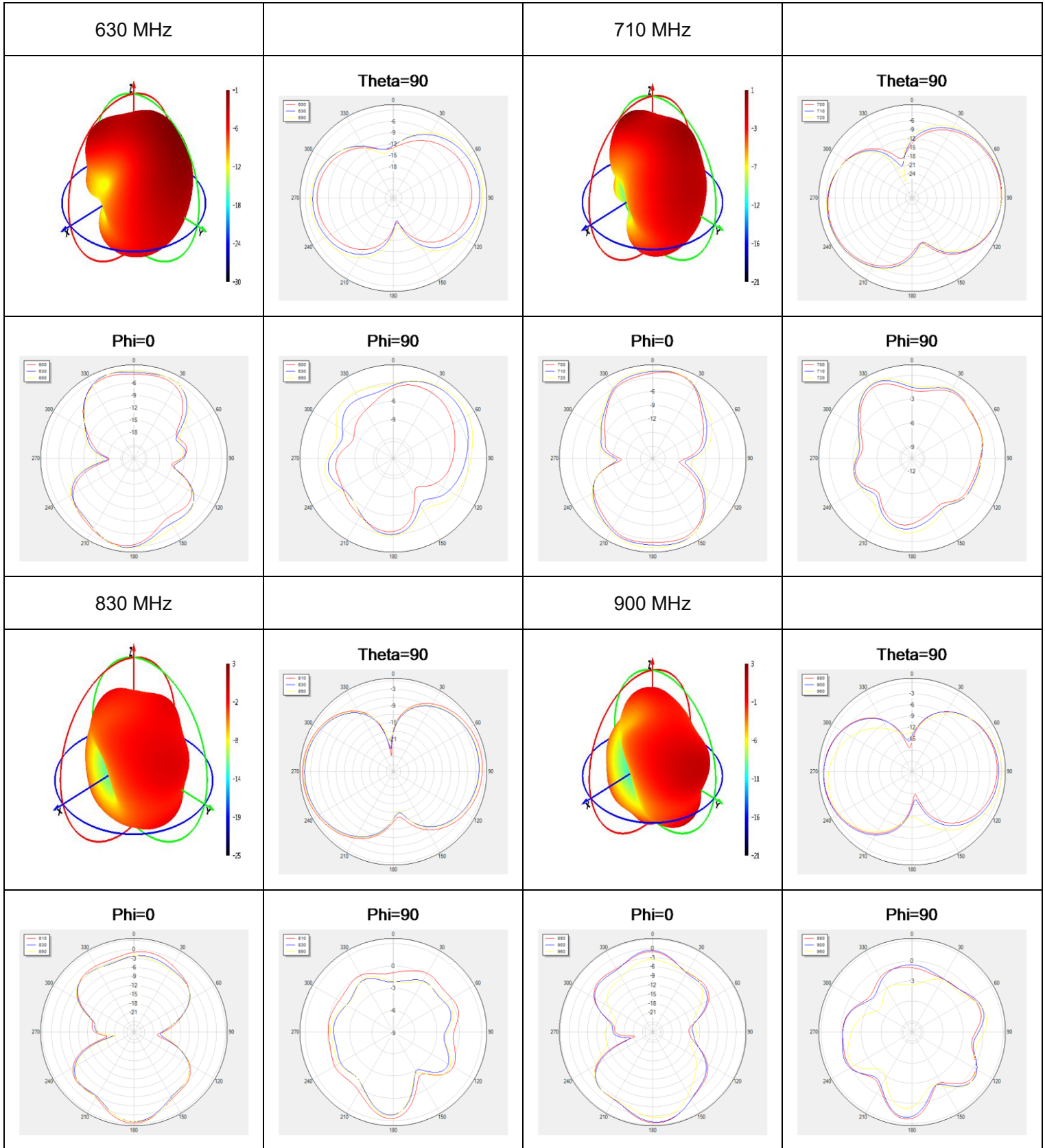
Frequency (MHz)	1520	1560	1630	1680	2000	2200
Upper Hemisphere Efficiency (dB)	-7.5	-7.4	-6.2	-6.6	-5.0	-4.8

### 3.2.5. 3D & 2D Radiation Pattern

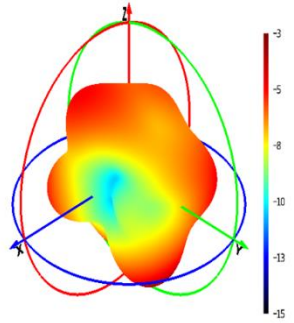
- Test Condition: Stick on 2 mm thick ABS Board
- Test Chamber: GL-S-1



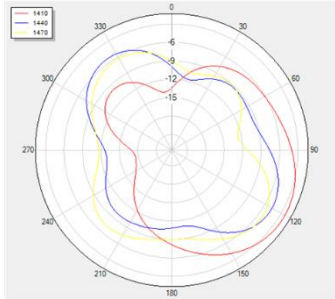
● **5G Bands**



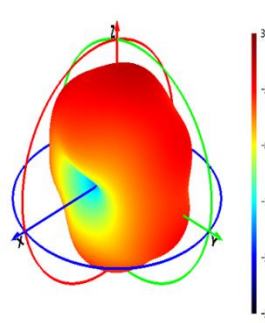
1440 MHz



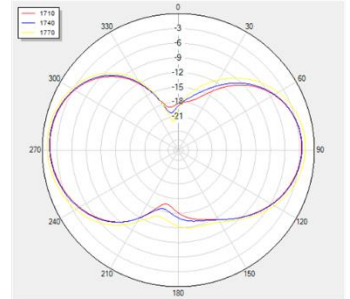
Theta=90



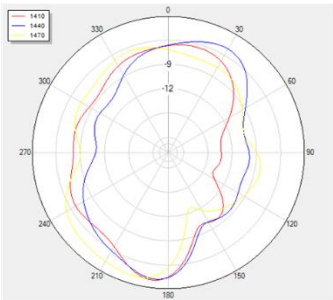
1740 MHz



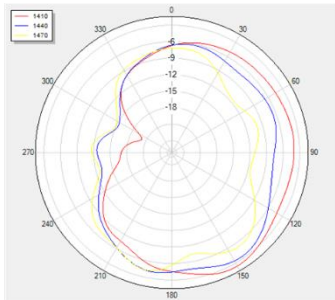
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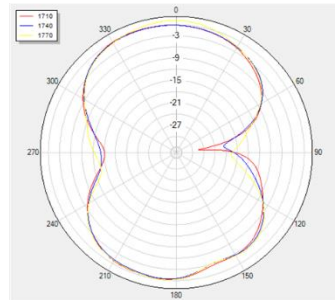
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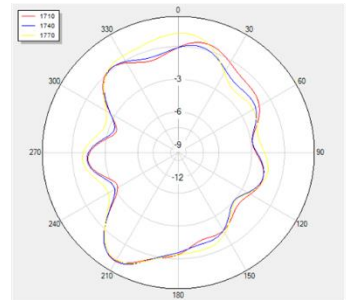
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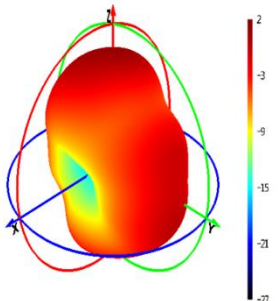
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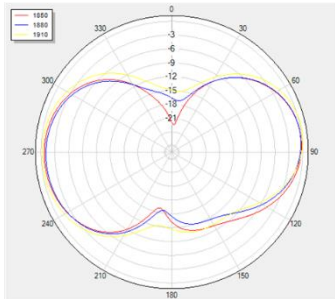
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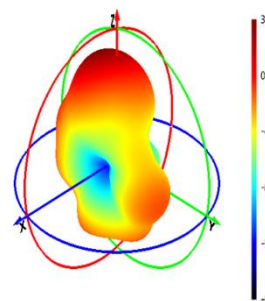
1880 MHz



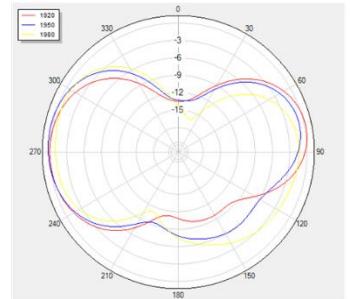
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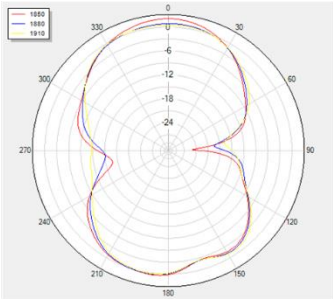
1950 MHz



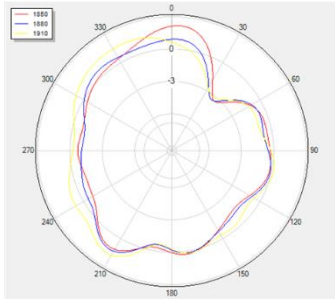
Theta=90



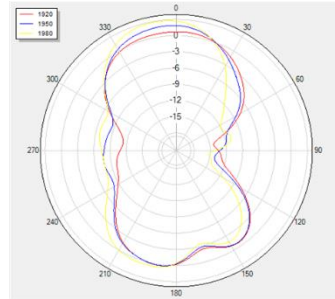
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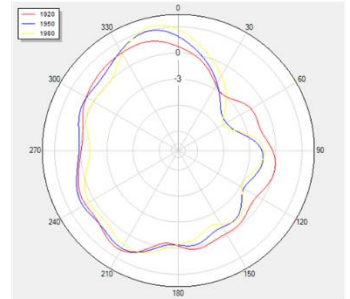
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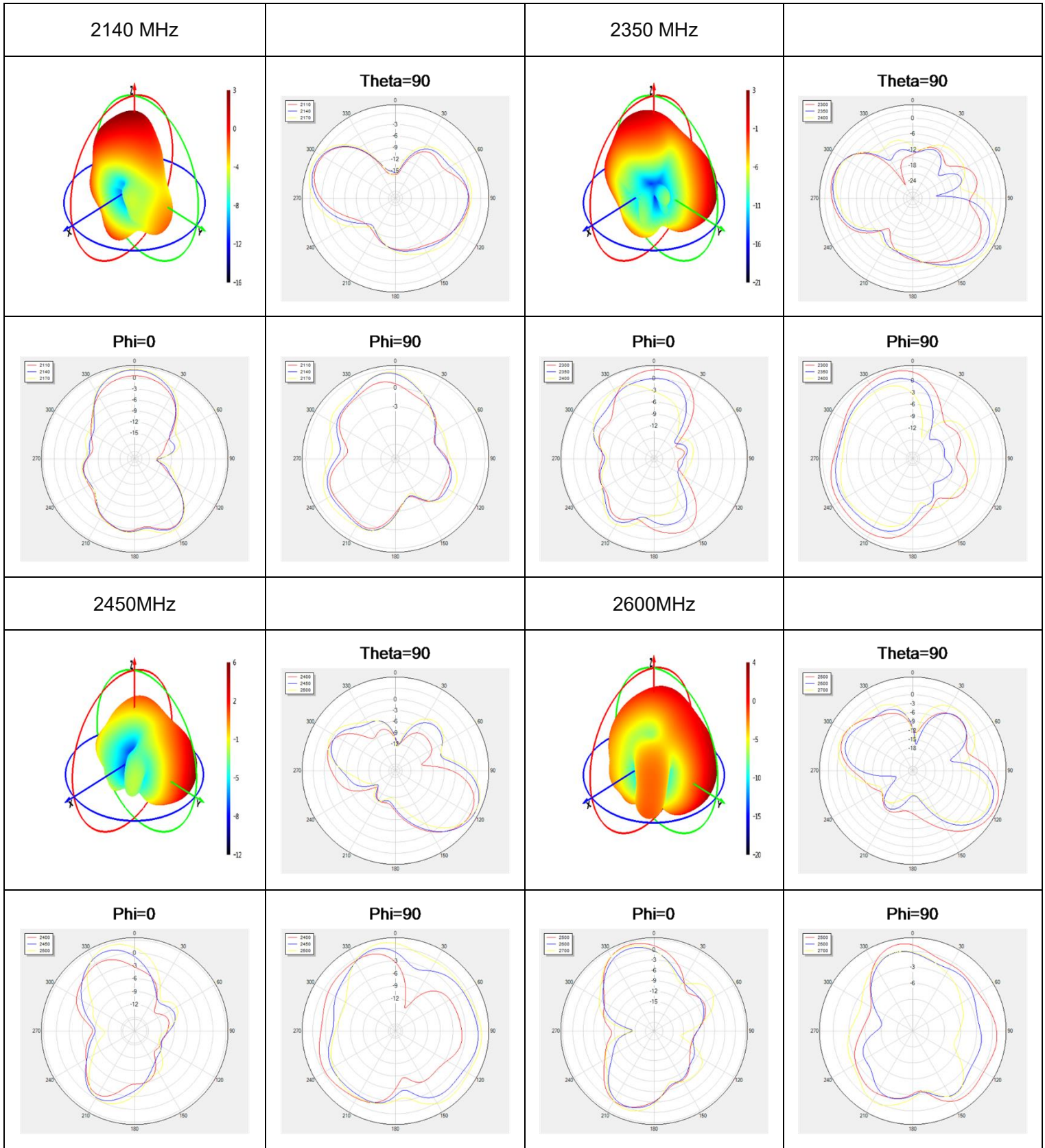


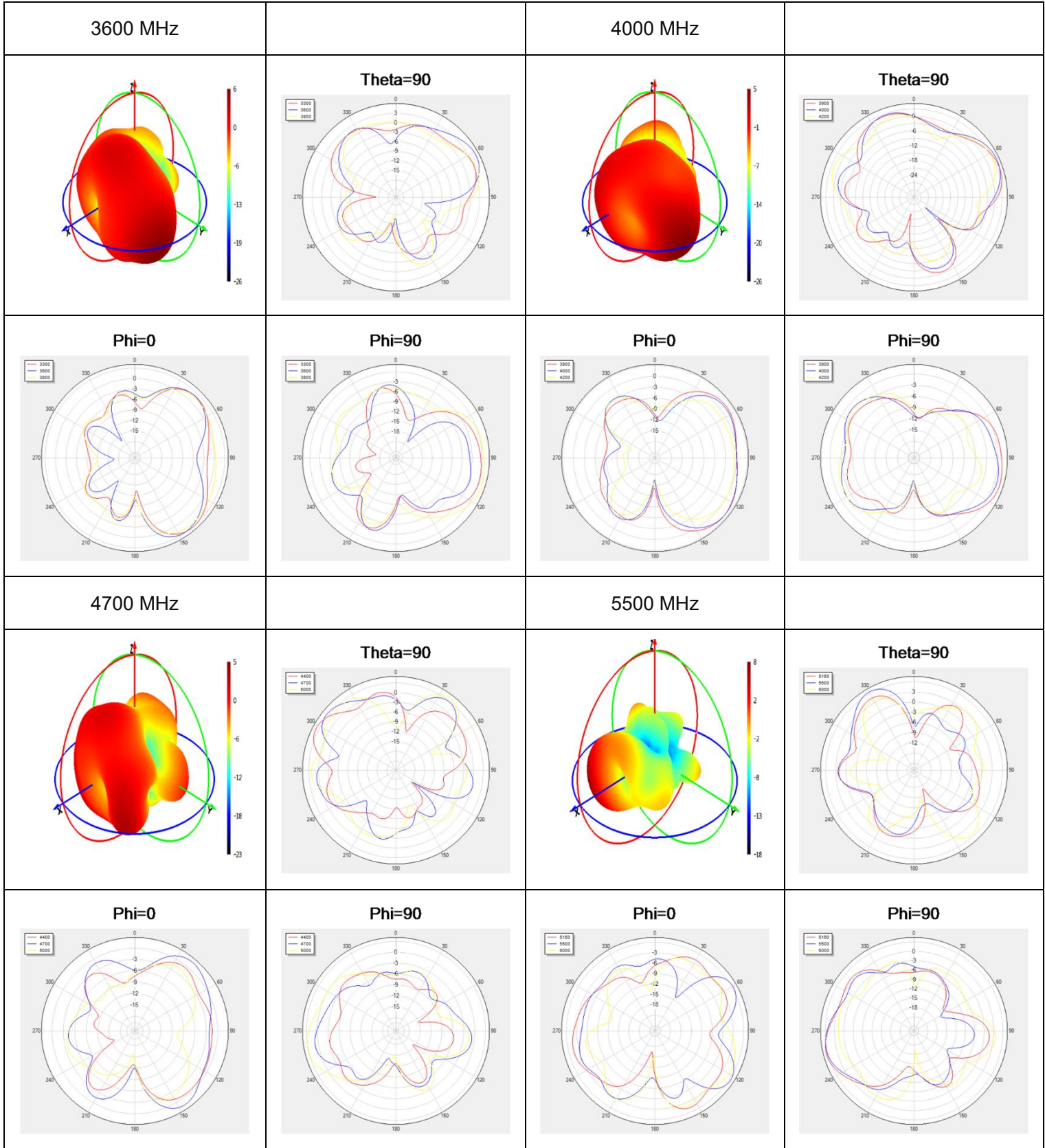
Phi=0



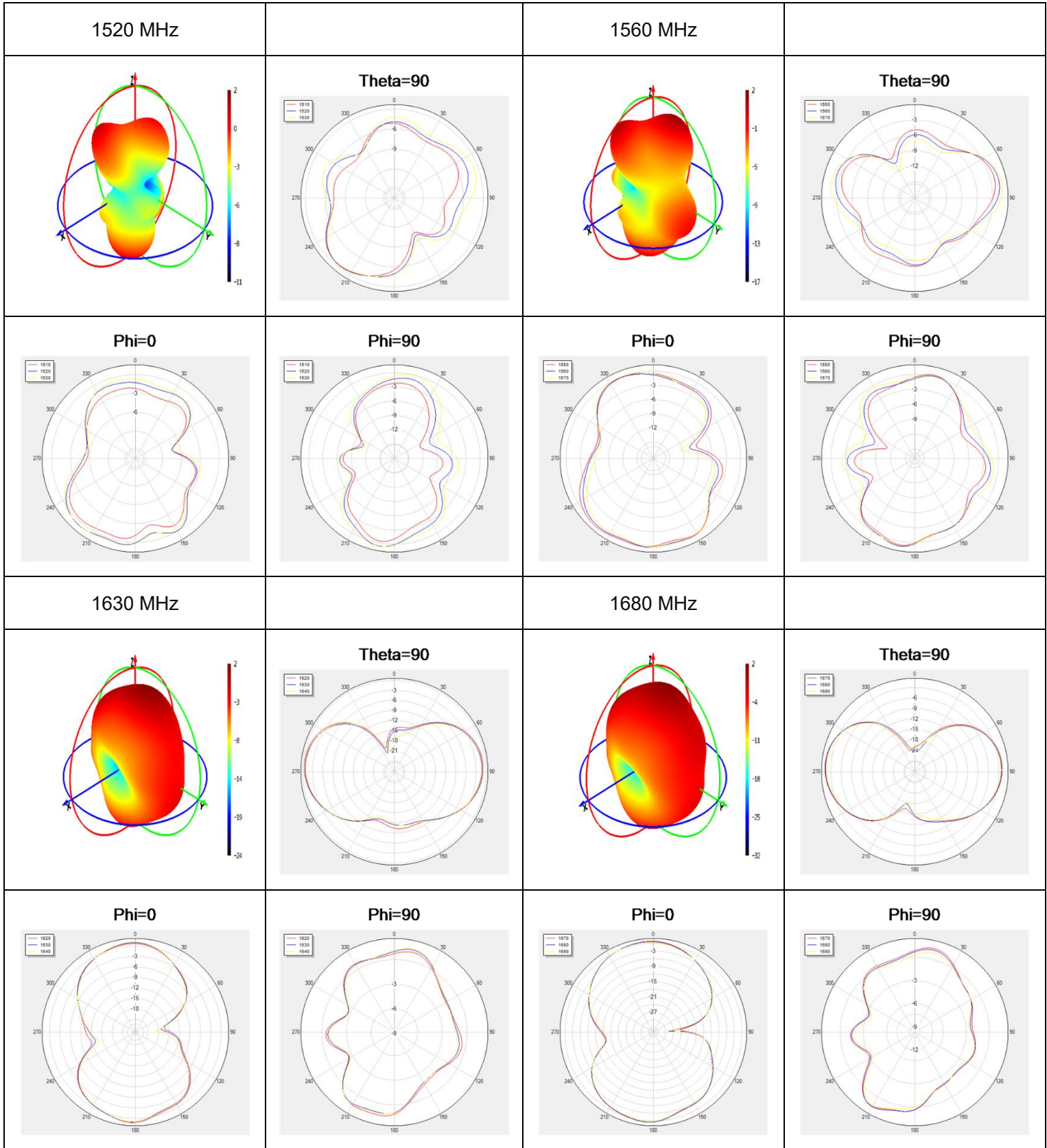
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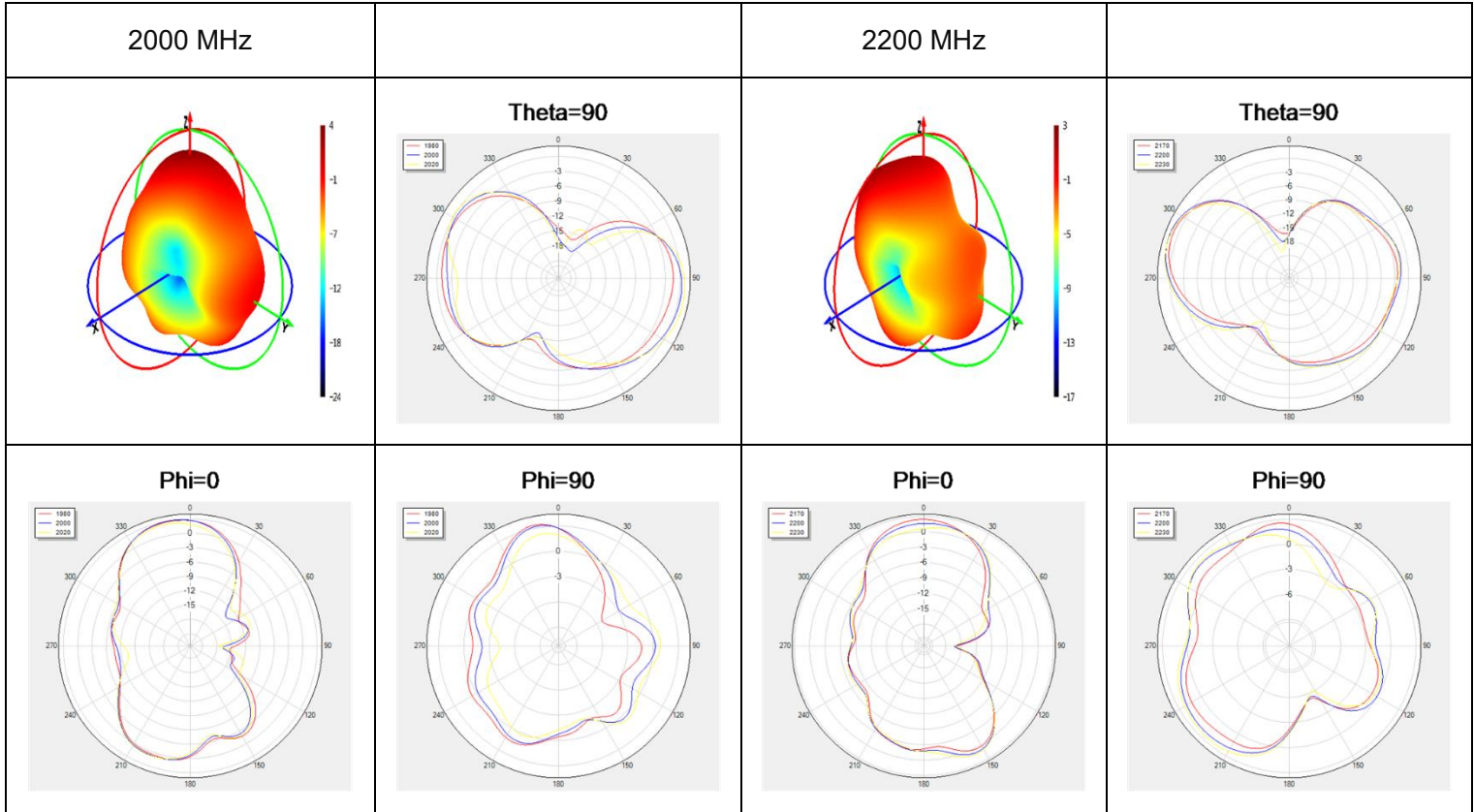




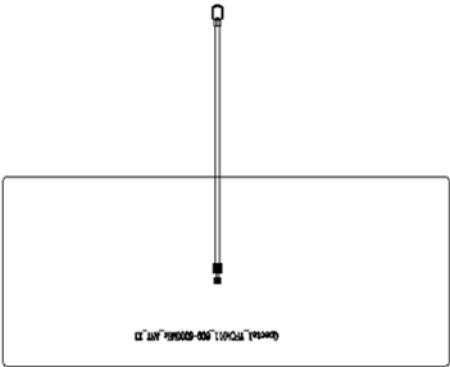
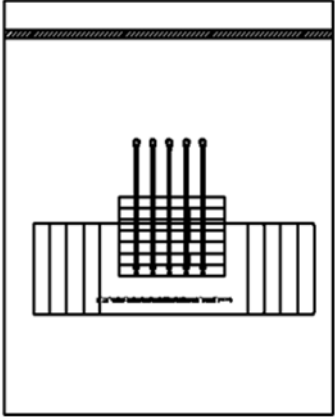


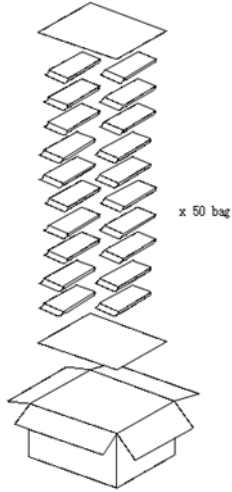
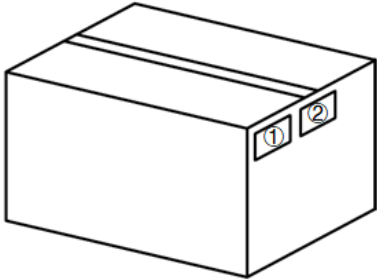
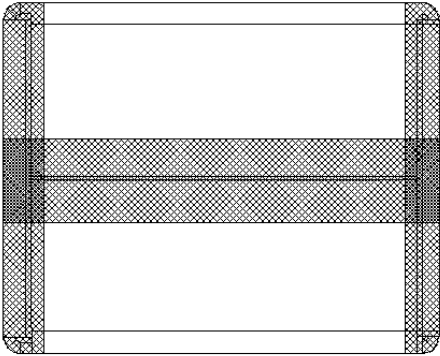
● **NTN Bands**





# 4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		Product drawing
2	 <p>100pcs/bag</p>	<p>100 pcs antenna products in a PE bag. (100 PCS Antennas / PE bag)</p> <p><u>Bag Size: L × W = 250 × 150 mm</u></p>

<p>3</p>		<p>Place a clapboard at the bottom and top. (50 PE Bags / Carton Box) (5000 PCS Antenna / Carton Box) Estimated quantity</p> <p><u>Carton Size:</u> <u>L x W x H = 325 x 325 x 200 mm</u></p>
<p>4</p>		<p><b>Position for Attaching Labels</b></p> <ul style="list-style-type: none"> <li>① Carton Label</li> <li>② Quality Label</li> </ul>
<p>5</p>		<p><b>Sealing Cartons</b> H-shaped 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
-	2023-05-08	Joyful HUANG/ Lucky FENG/ David LIU/ Bunny ZHANG	Creation of the document
1.0	2023-06-08	Joyful HUANG/ Lucky FENG/ David LIU/ Bunny ZHANG	First official release
1.1	2024-06-07	Lucky FENG	<ol style="list-style-type: none"><li>1. Updated the antenna picture.</li><li>2. Added the storage temperature (Chapter 1.2).</li><li>3. Updated the drawing (Chapter 2).</li></ol>
1.2	2025-04-16	Aria CHU	Updated the antenna image (Cover page).

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