



Antenna Datasheet

Product OC: YE0012AA

Version: 4.2

Date: 2024-02-07

Status: Released

Product Name: 4G External Antenna

Key Features:

Frequency Band: 698–2700 MHz

Dimensions: 116.5 × 21.7 × 5.6 mm

Efficiency: Up to 66.61 %

RoHS Compliant

IP53

Overview

This Quectel external 4G antenna covers main 4G LTE bands and is compatible with 3G/2G/LPWA bands as well. The external antenna is barely influenced by the internal environment of devices, giving a much better performance in efficiency, radiation and gain whilst providing an optimized solution for a customer product. Quectel also offers flexible installation with custom cable length and connector options.

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1 Specification

Test Condition: Free Space

1.1. Electrical

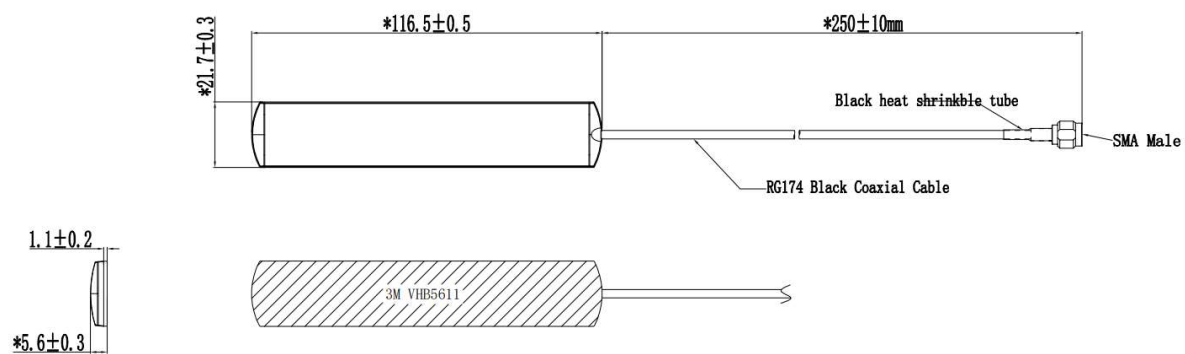
Electrical	
Frequency Range	698–2700 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

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		-	2.2	2.1	-	2.0	2.5	2.5	2.4	-	-	-
Max. Return Loss (dB)		-	-8.6	-9.2	-	-9.8	-7.4	-7.2	-7.7	-	-	-
AVG Eff. (%)		-	45.5	55.8	-	59.1	45.8	50.8	55.6	-	-	-
AVG AVG Gain (dB)		-	-3.4	-2.5	-	-2.3	-3.4	-2.9	-2.6	-	-	-
Max. Peak Gain (dBi)		-	0.6	2.0	-	4.4	2.1	1.9	1.3	-	-	-
VSWR		≤ 2.5										
Return Loss		≤ -7.2 dB										
Peak Gain		≤ 4.4 dBi										

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	116.5 × 21.7 × 5.6 mm
Material & Color	ABS + PC & Black
Cable Type & Color & Length	RG 174 & Black & 250 mm
Connector Type	SMA Male
Mounting Type	Adhesive
Weight	Typ. 16 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	IP53
RoHS Compliant	Yes

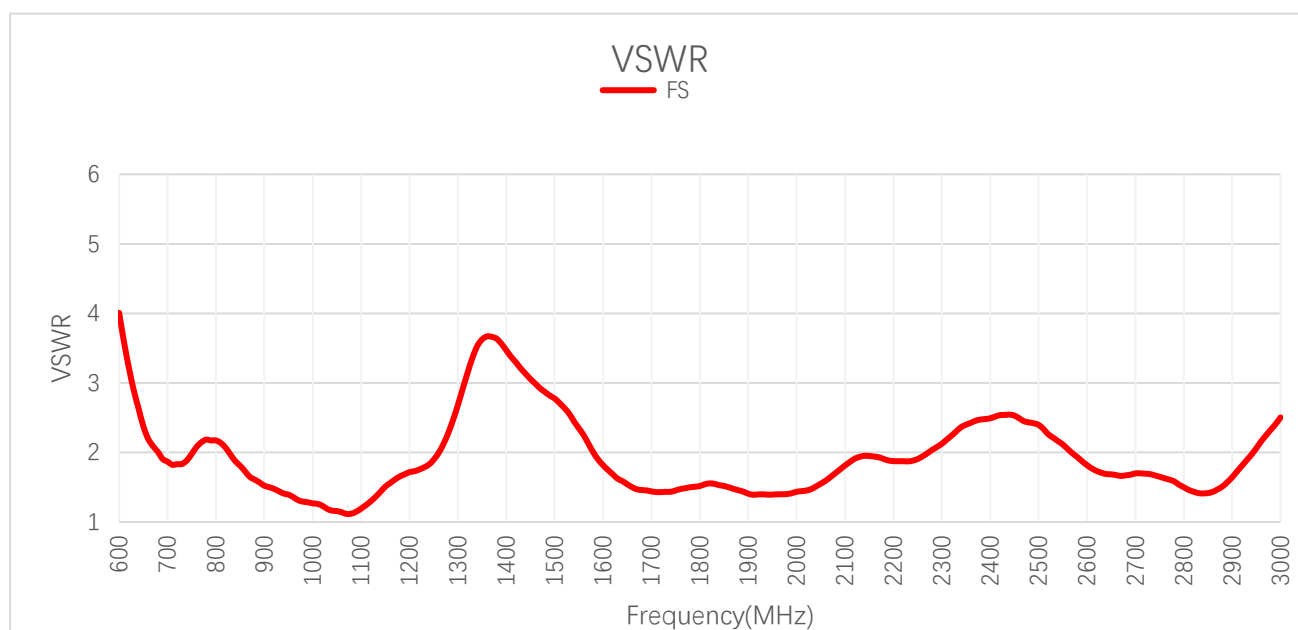
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

3.1.1. VSWR



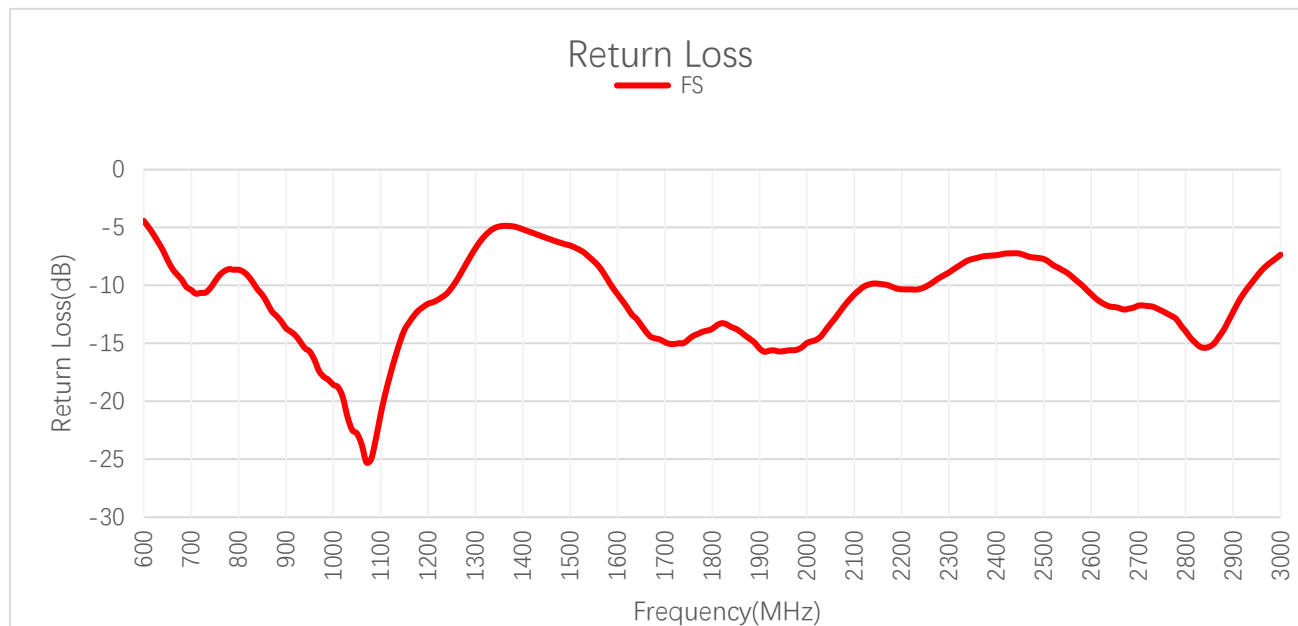
VSWR

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
VSWR	-	-	1.8	2.0	1.5	1.4	-	1.4	1.4	1.5
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
VSWR	1.4	2.0	2.4	2.5	1.8	1.7	-	-	-	-

VSWR - GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	-	2.1	-

3.1.2. Return Loss



Return Loss (dB)

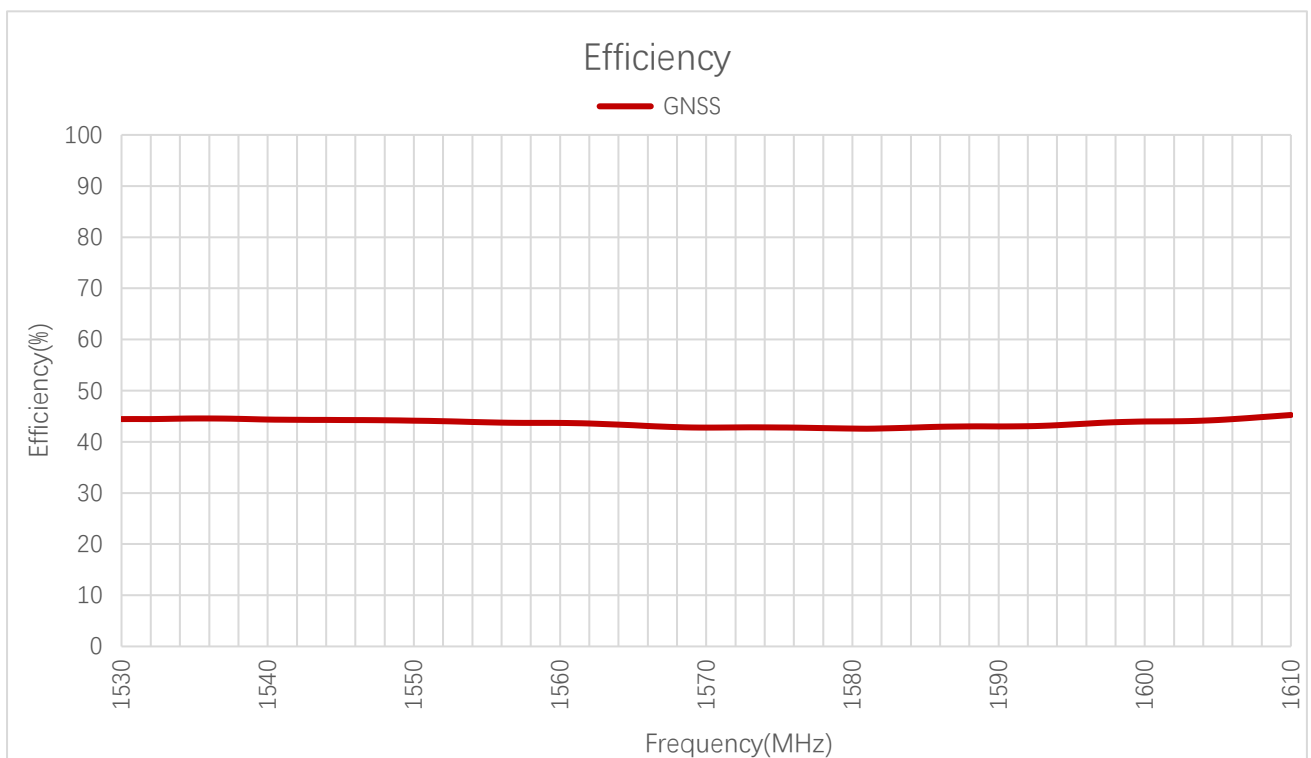
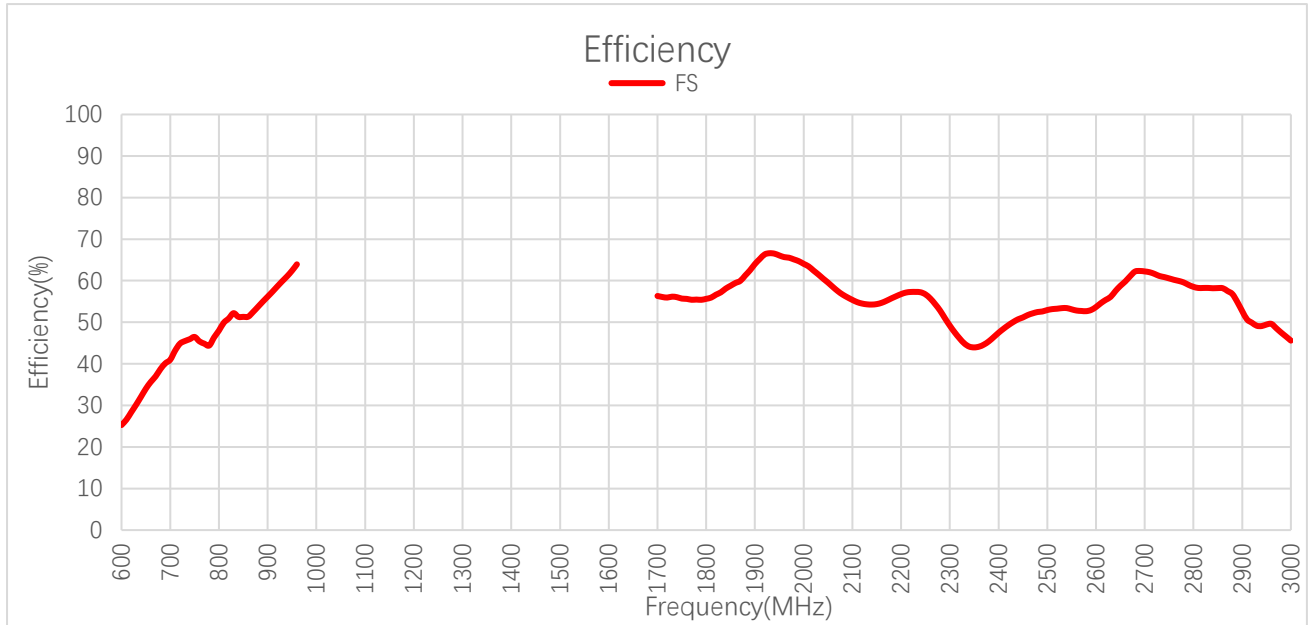
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	-	-	-10.7	-9.7	-13.7	-16.4	-	-15.0	-15.0	-14.6
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Return Loss (dB)	-15.7	-9.8	-7.7	-7.3	-10.7	-11.9	-	-	-	-

Return Loss (dB) - GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-	-	-	-	-	-	-9.0	-

3.2. Radiation Performance Test

3.2.1. Efficiency



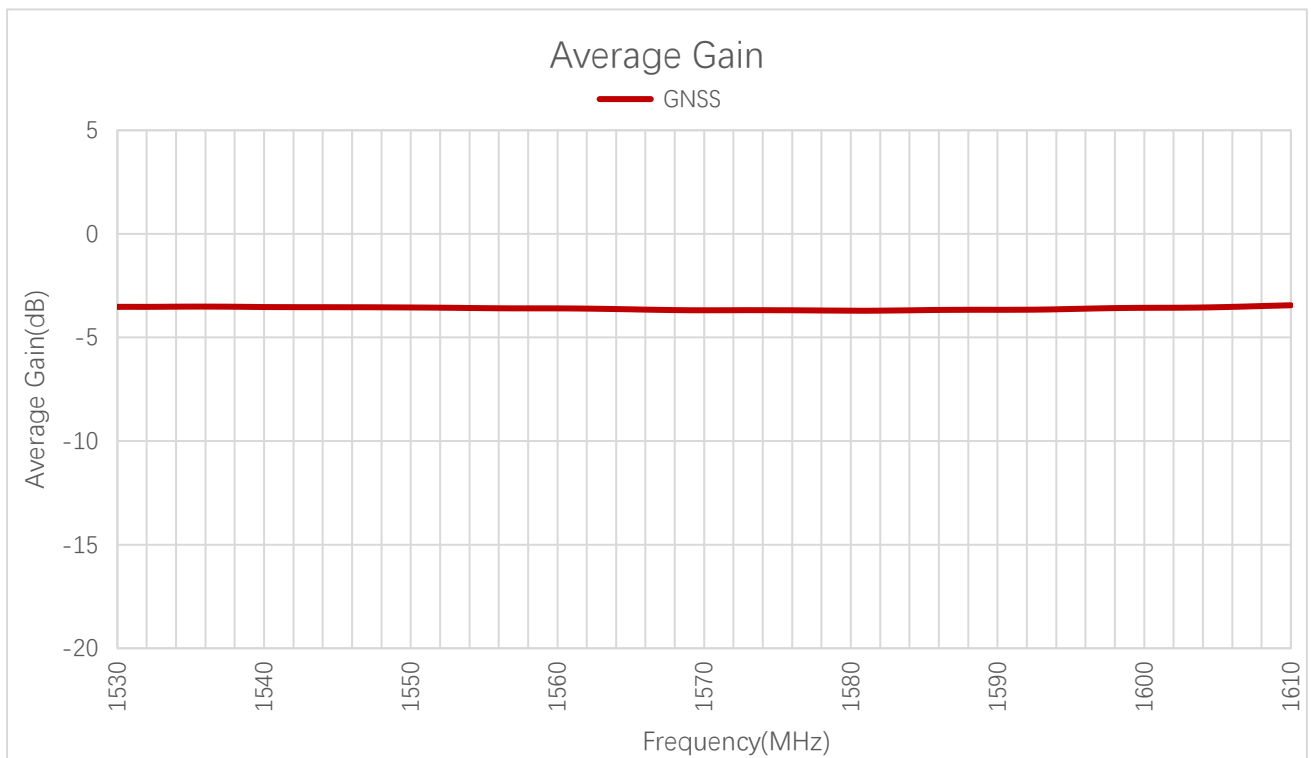
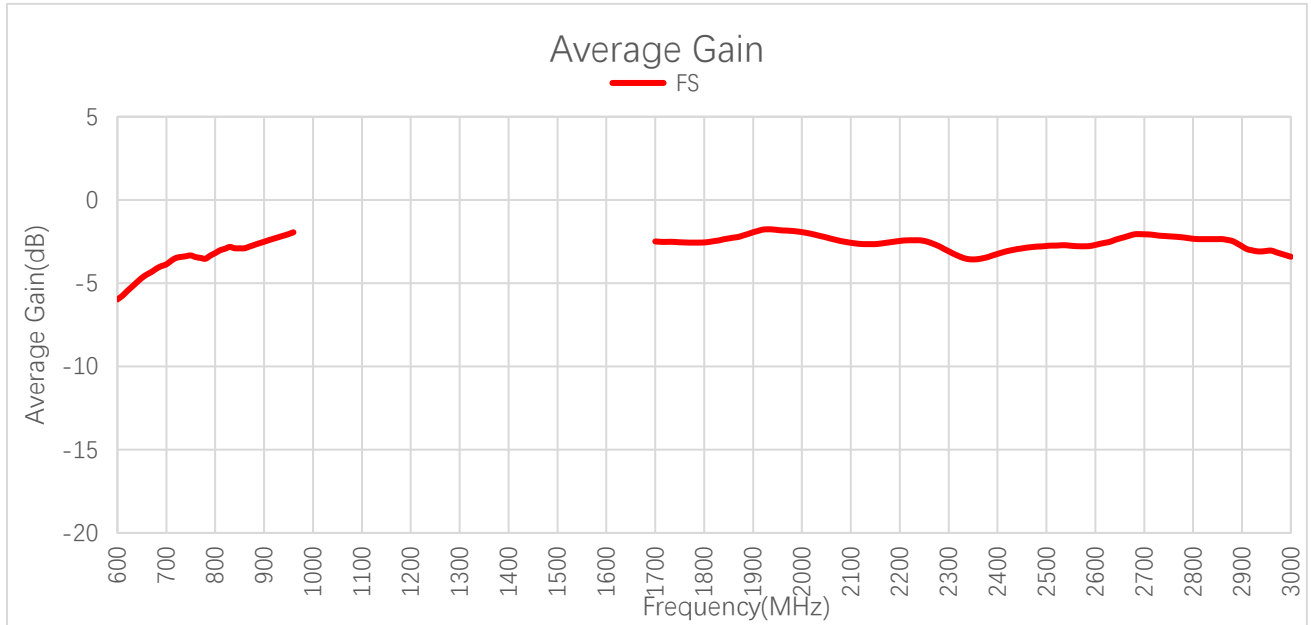
Efficiency (%)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	-	-	43.2	52.2	56.2	63.9	-	56.1	56.0	61.3
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Efficiency (%)	66.1	54.3	44.0	51.2	53.7	62.3	-	-	-	-

Efficiency (%) - GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	-	42.8	-

3.2.2. Average Gain



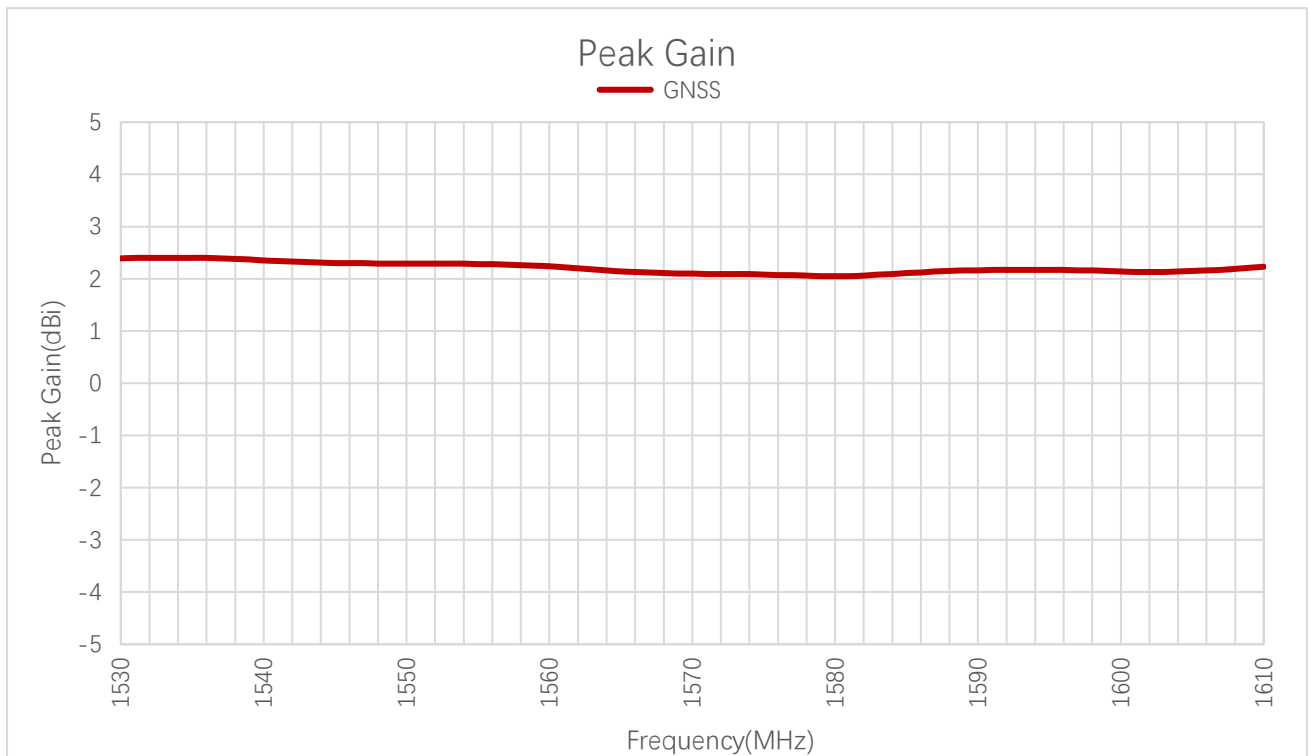
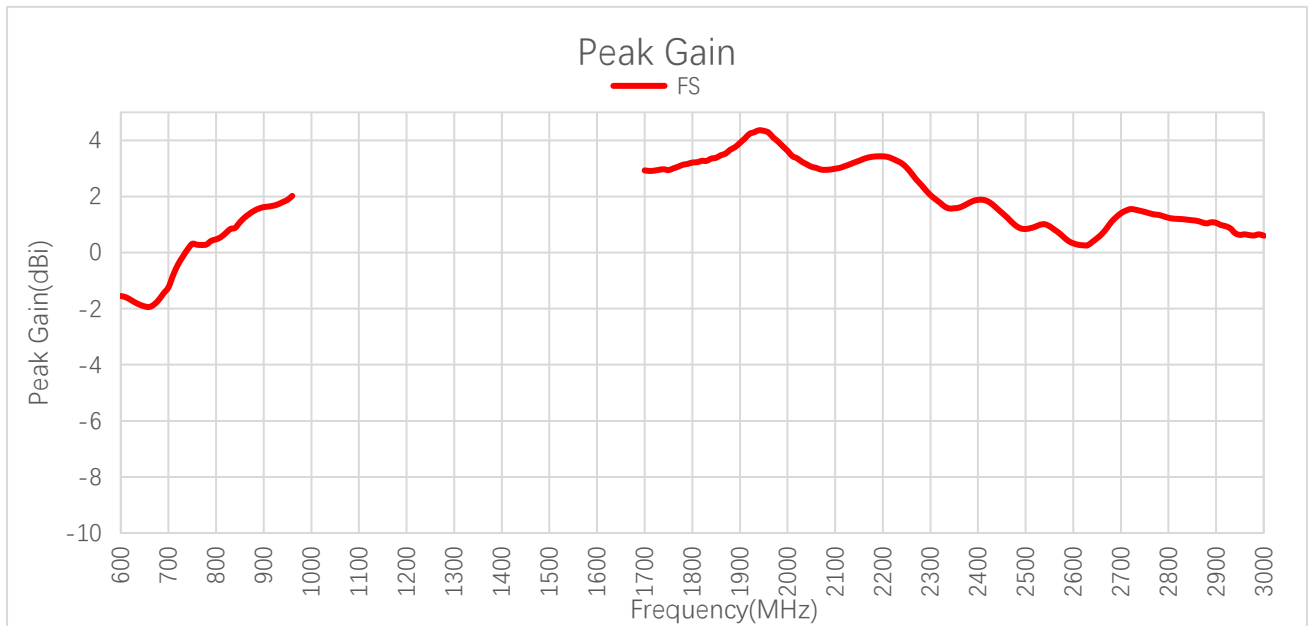
Average Gain (dB)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	-	-	-3.7	-2.8	-2.5	-1.9	-	-2.5	-2.5	-2.1
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Average Gain (dB)	-1.8	-2.7	-3.6	-2.9	-2.7	-2.1	-	-	-	-

Average Gain (dB) - GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Average Gain (dB)	-	-	-	-	-	-	-3.7	-

3.2.3. Peak Gain



Peak Gain (dBi)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	-	-	-0.8	0.8	1.6	2.0	-	2.9	3.0	3.7
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
Peak Gain (dBi)	4.3	3.2	1.6	1.4	0.3	1.3	-	-	-	-

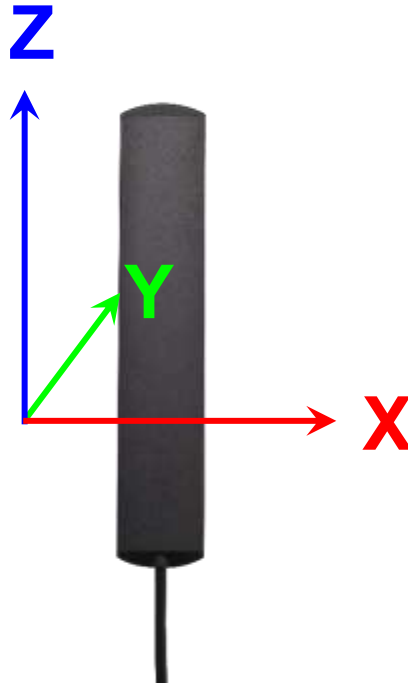
Peak Gain (dBi) - GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-	-	2.1	-

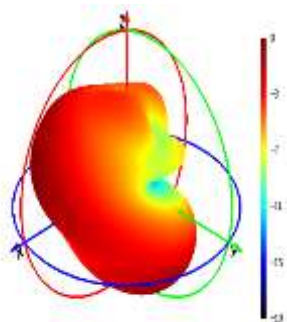
3.2.4. 3D & 2D Radiation Pattern

3.2.4.1. Test Condition: Free Space

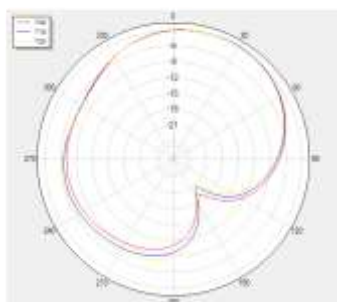
- Test Chamber: GL-S-1



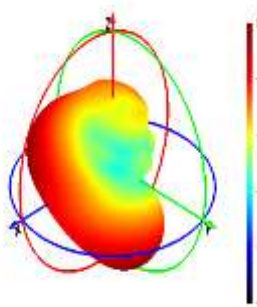
710 MHz



Theta=90



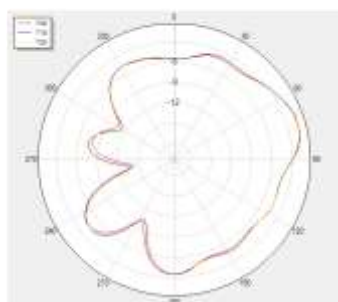
830 MHz



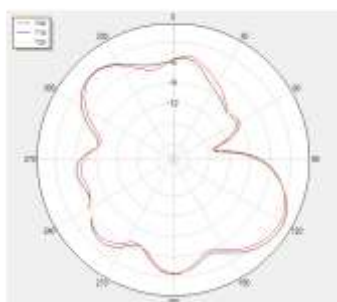
Theta=90



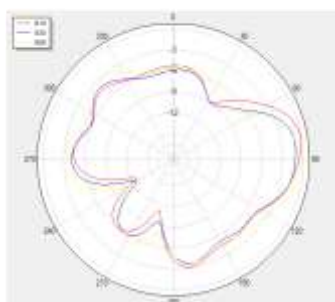
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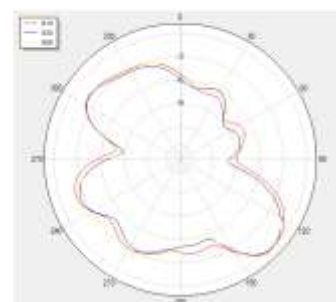
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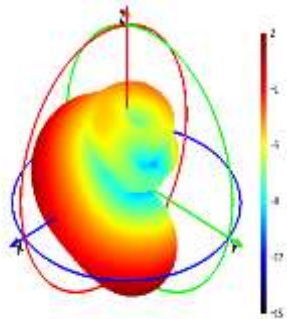
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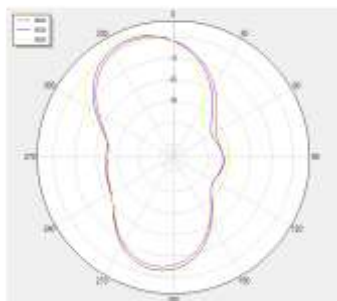
Phi=90



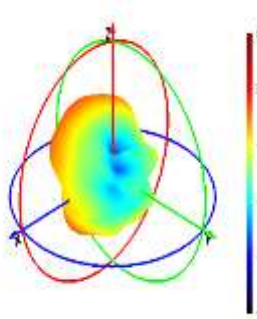
900 MHz



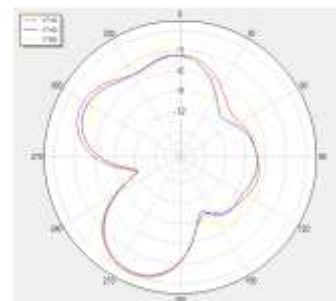
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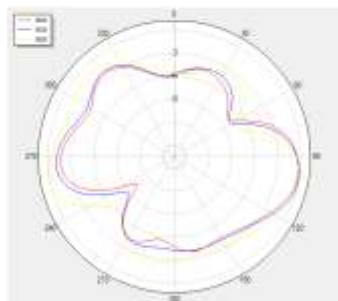
1740 MHz



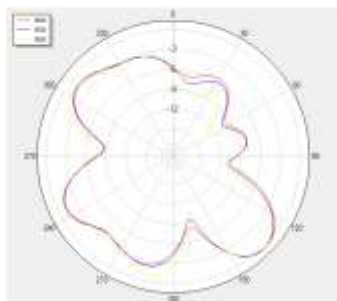
Theta=90



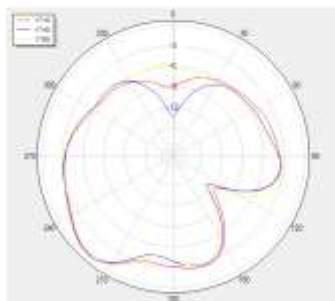
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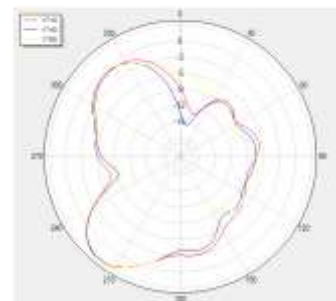
Phi=90

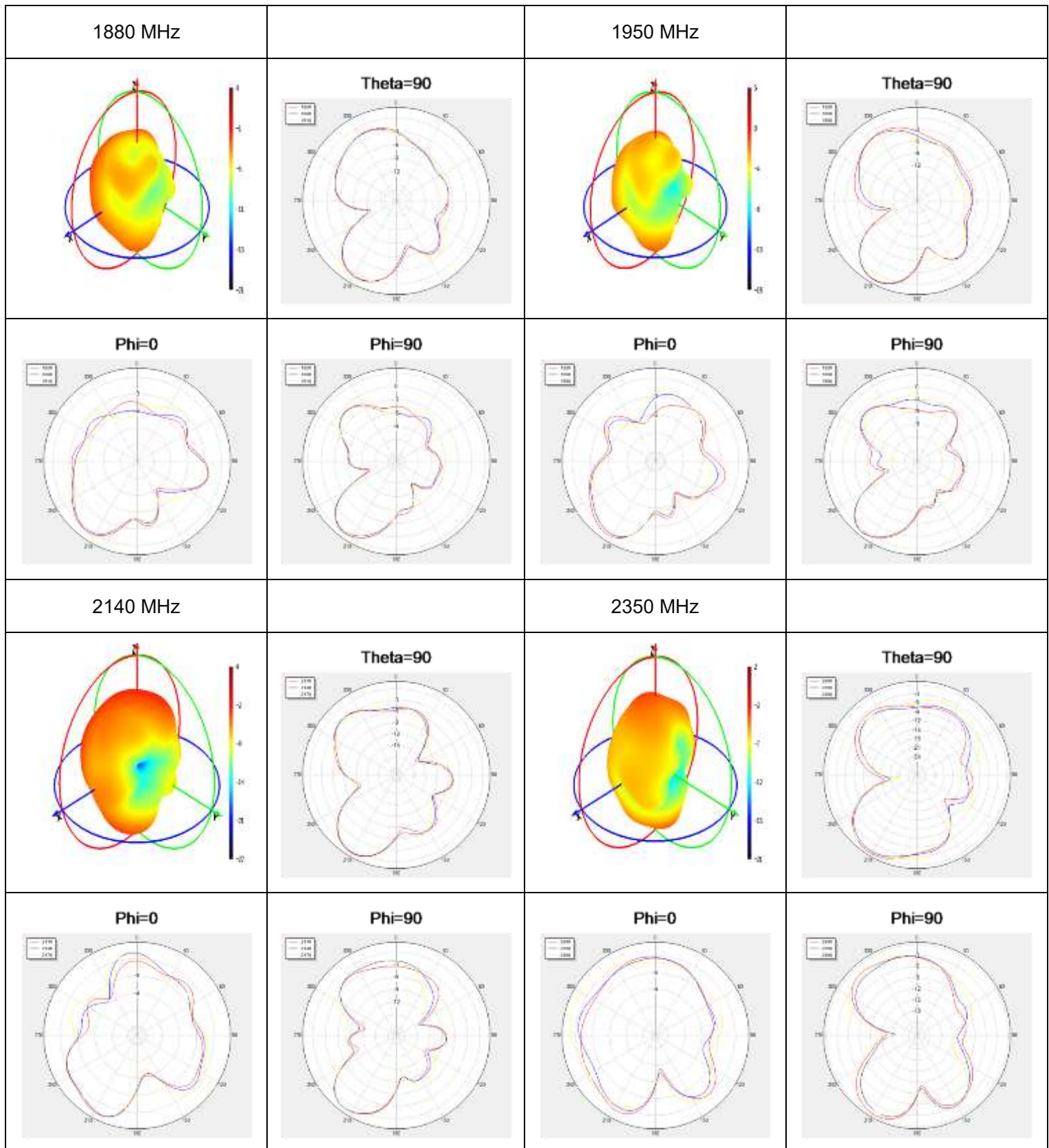


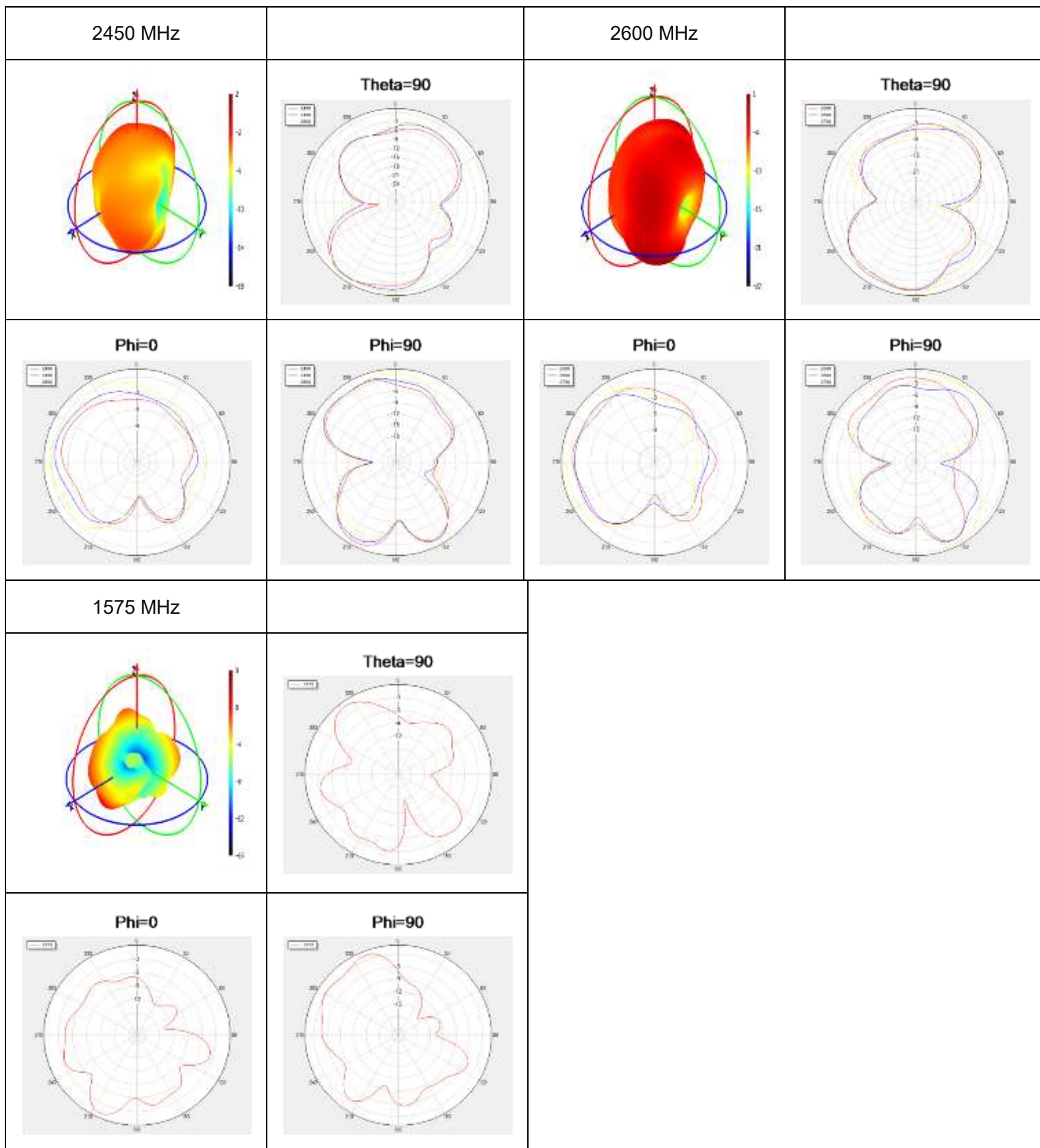
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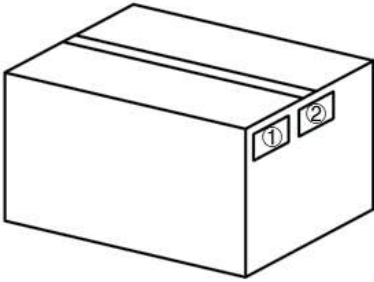
Phi=90

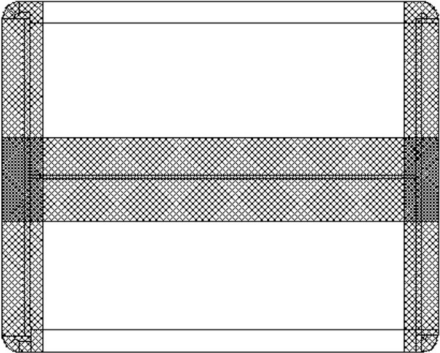






4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		50 pcs antenna products in a PE bag. (50 PCS / PE Bag)
2		(7 PE Bags / Carton Box) (350 PCS Antennas / Carton Box) <u>Carton Size:</u> <u>L × W × H = 405 × 293 × 185 mm</u>
3		Position for Attaching Labels ① Carton Label ② Quality Label

4		Sealing Cartons “工” type sealing cartons
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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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Email: info@quectel.com

Or our local offices. For more information, please visit:

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Revision History

Version	Date	Author	Note
-	2020-06-30	Kenny YIN	Creation of the document
1.0	2020-06-30	Kenny YIN	First official release
2.0	2020-07-03	Kenny YIN	Updated the specifications (Chapter 3).
2.1	2020-12-16	Kenny YIN	Updated the antenna image (Chapter 2).
2.2	2021-01-27	Kenny YIN	Added IP rating description and installation method (Chapter 3).
3.0	2021-03-29	Kenny YIN/ Aria CHU	Updated all test data in the datasheet and some other data.
3.1	2021-07-05	Kenny YIN	1. Updated product specifications (Chapter 3) 2. Added test condition (Chapter 4).
3.2	2021-07-25	Kenny YIN Aria CHU	1. Updated working temperature (Chapter 3). 2. Added detailed passive electrical specifications (Chapter 3).
3.3	2021-12-01	Kenny YIN/ Aria CHU	Updated the product description (Chapter 1).
4.0	2023-05-11	Joyful HUANG/ Lucky FENG/ David LIU/ Aria CHU	Updated all data and datasheet template.
4.1	2023-10-19	Lucky FENG	1. Updated the overview. 2. Updated the mechanical and environmental data (Chapter 1.2). 3. Updated the drawing (Chapter 2).
4.2	2024-02-07	Rhone WEI/ Rainey LIAO	Added GPS L1 frequency performance.



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