Antenna Datasheet

Product OC: YEMA206J1AM
Version: 1.0
Date: 2025-12-09
Status: Released

Product Name: 4G & GNSS 2in1 Adhesive Mount Combo External Antenna

Key Features:

Frequency Band: 4G: 698–960 MHz, 1710–2690 MHz
GNSS: 1559–1606 MHz
Dimensions: Φ 82 mm × 18.2 mm
Efficiency: Up to 69.4 % (4G-FS)
Up to 45.3 % (GNSS-FS)
GNSS LNA Gain: 16 ±3 dB
RoHS Compliant
IP67

Overview

YEMA206J1AM is a 4G & GNSS 2in1 combo antenna measuring Φ 82 mm × 18.2 mm. This ultra-wide-band 4G & GNSS antenna provides broad coverage from 1559–1606 MHz, 698–960 MHz, 1710–2690 MHz whilst offering backward-compatibility to support 3G and 2G networks as well as LTE Cat-M and narrowband IoT (NB-IoT). Ideal for applications where the antenna is required to be discrete, the antenna is available adhesive mount omni-directional antenna. It is easy to install with maximum durability assured and suitable for use in harsh outdoor environments thanks to its IP67 rated enclosure. It is compatible with Quectel's RM520x Series modules.

YEMA206J1AM has 1 × 4G LMH antenna and 1 × GNSS L1 antenna. It allows high efficiency, stable signal transmission and reception for active GNSS from 1559–1606 MHz, and 4G bands from 698–960 MHz, 1710–2690 MHz. In the meantime, this product also offers high isolation between antennas to avoid self-interference. All in all, this unique product is designed to provide stable and high-speed data connection to 4G & GNSS applications.

Typical applications include:

- Public safety
- HD Video Streaming
- Utilities and Smart Cities
- Fleet Management
- Automotive vehicle tracking

Quectel provides comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs. We have regional R & D centers to offer quick response to meet your requirements. Please contact our sales & FAEs if you have any requests.

Contents

1 Specification

Test Condition: On 300 mm × 300 mm Metal Plane & In Free Space

1.1. Electrical

Electrical Specifications			
Frequency Range	**4G**		698–960 MHz, 1710–2690 MHz
	GNSS		1559–1606 MHz
Radiation Pattern	**4G**		Omni-directional
	GNSS		Directional
Polarization	**4G**		Linear
	GNSS		RHCP
Impedance			50 Ω
Isolation	**4G-GNSS**	**FS**	≤ -17.7 dB
		MP	≤ -12.3 dB

- **MP: On 300 mm × 300 mm Metal Plane**
- **FS: In Free Space**

1.1.1. 4G

Electrical – Detail								
Band / SPEC	Band	B71	B12 /B13 /B28	B5 /B8 /B26	B1 /B2 /B3	B40	Wi-Fi 2G	B38 /B41
	Freq. (MHz)	600–700	700–810	820–960	1700–2170	2300–2400	2400–2500	2500–2690
Max. VSWR	FS	-	3.1	1.4	3.3	1.7	1.6	2.8
	MP	-	4.5	2.8	3.9	2.9	3.4	3.3
Max. Return Loss (dB)	FS	-	-5.8	-15.6	-5.5	-11.7	-12.4	-6.4
	MP	-	-3.9	-6.4	-4.6	-6.4	-5.3	-5.5
AVG Eff. (%)	FS	-	41.8	45.3	62.6	57.4	59.1	63.3
	MP	-	28.2	37.1	41.3	46.2	39.0	48.2
AVG Gain (dB)	FS	-	-3.8	-3.4	-2.1	-2.4	-2.3	-2.0
	MP	-	-5.5	-4.3	-3.9	-3.4	-4.1	-3.2
Max. Peak Gain (dBi)	FS	-	-1.0 (700)	0.7 (930)	3.3 (1890)	2.7 (2300)	2.0 (2450)	2.9 (2660)
	MP	-	-1.9 (810)	-0.5 (900)	5.8 (1830)	4.6 (2310)	4.8 (2500)	7.0 (2660)
VSWR	FS	≤ 3.3						
	MP	≤ 4.5						
Return Loss	FS	≤ -5.5 dB						
	MP	≤ -3.9 dB						
Peak Gain	FS	≤ 3.3 dBi						
	MP	≤ 7.0 dBi						

1.1.2. GNSS

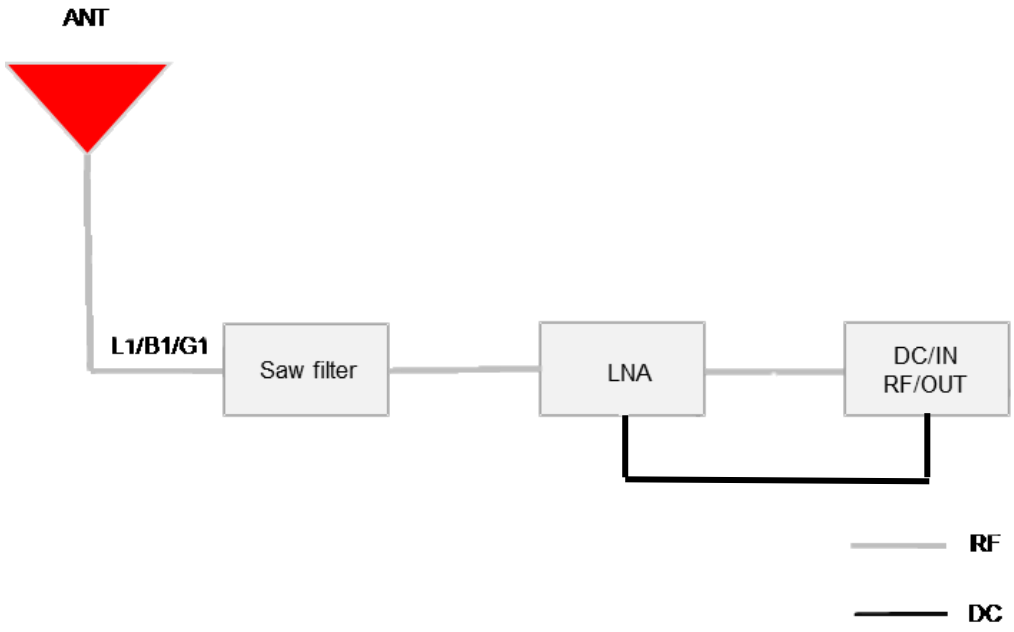
Frequency (MHz) / Band		GPS L5 GALILEO E5a BDS B2a-B2I QZSS L5 IRNSS L5	GALILEO E5b BDS B2b	GPS L2 QZSS L2C	GLONASS G2	BDS B3	BDS B1I	GPS L1 GALILEO E1 BDS B1C QZSS L1	GLONASS G1
		1176	1207	1227	1248	1268	1561	1575	1602
VSWR	MP	-	-	-	-	-	1.7	1.7	1.3
	FS	-	-	-	-	-	1.4	1.3	1.0
Return Loss (dB)	MP	-	-	-	-	-	-12.1	-11.9	-16.8
	FS	-	-	-	-	-	-15.6	-17.6	-37.1
Efficiency (%)	MP	-	-	-	-	-	46.6	50.7	65.5
	FS	-	-	-	-	-	41.3	45.3	44.3
AVG Gain (dB)	MP	-	-	-	-	-	-3.3	-3.0	-1.8
	FS	-	-	-	-	-	-3.8	-3.4	-3.5
Peak Gain (dBi)	MP	-	-	-	-	-	2.3	2.7	4.4
	FS	-	-	-	-	-	0.1	2.5	1.6

LNA Electrical	
LNA Gain	16 ±3 dB
Noise Figure	≤ 2.5 dB
Output VSWR	< 2.0
Filter Out-of-Band Attenuation	≥ 45 dB f0 ±100 MHz f0 (1568 MHz)
Working Voltage	2.7–3.3 V
Working Current	4.3 ±1.5 mA @ 3 V
Impedance	50 Ω

1.2. Mechanical & Environmental

Mechanical		
Antenna Dimensions		Φ 82 mm × 18.2 mm
Antenna Material & Color		ABS + PC & Black
Cable Type & Color & Length	**4G**	ALSR302 & Black & 300 mm
	GNSS	RG174 & Black & 300 mm
Connector Type		SMA Male
Mounting Type		Adhesive
Weight		Typ. 70.69 g
Environmental		
Operation Temperature		-40 °C to +85 °C
Storage Temperature		-40 °C to +85 °C
Ingress Protection (IP) Rating		IP67
RoHS Compliant		Yes

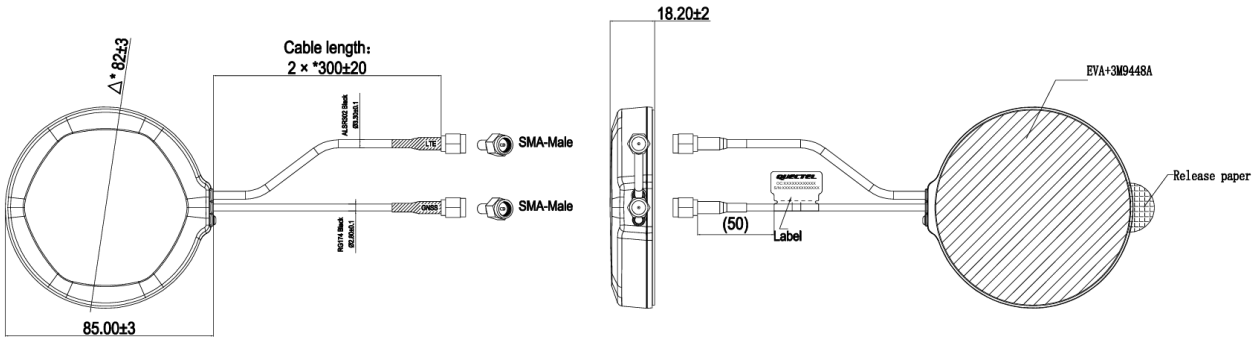
1.3. Block Diagram (Active Antenna)



1.4. Supported GNSS Frequency Bands

GNSS Frequency Bands (MHz)					
GPS	**L1** Centre 1575.42 (1565–1586)	**L2** Centre 1227.6 (1217–1238)	**L5** Centre 1176.45 (1164–1189)		
	√	-	-		
GLONASS	**G1-L1OC-L1OF** Centre 1601 (1595–1606)	**G2-L2OC-L2OF** Centre 1248.06 (1241–1255)	**G3-L3OC** Centre 1202.025 (1189–1213)		
	√	-	-		
GALILEO	**E1** Centre 1575.42 (1563–1588)	**E5a** Centre 1176.45 (1166–1187)	**E5b** Centre 1207.14 (1197–1218)	**E6** Centre 1278.75 (1258–1300)	
	√	-	-	-	
BDS	**B1I** Centre 1561.098 (1559–1564)	**B1C (BDS-3)** Centre 1575.42 (1559–1592)	**B2a-B2I** Centre 1176.45 (1166–1187)	**B2b** Centre 1207.14 (1197–1217)	**B3** Centre 1268.52 (1258–1279)
	√	√	-	-	-
QZSS	**L1** Centre 1575.42 (1573–1578)	**L2C** Centre 1227.6 (1226–1229)	**L5** Centre 1176.45 (1166–1187)	**L6** Centre 1278.75 (1257–1300)	
	√	-	-	-	
IRNSS	**L5** Centre 1176.45 (1164–1189)				
	-				

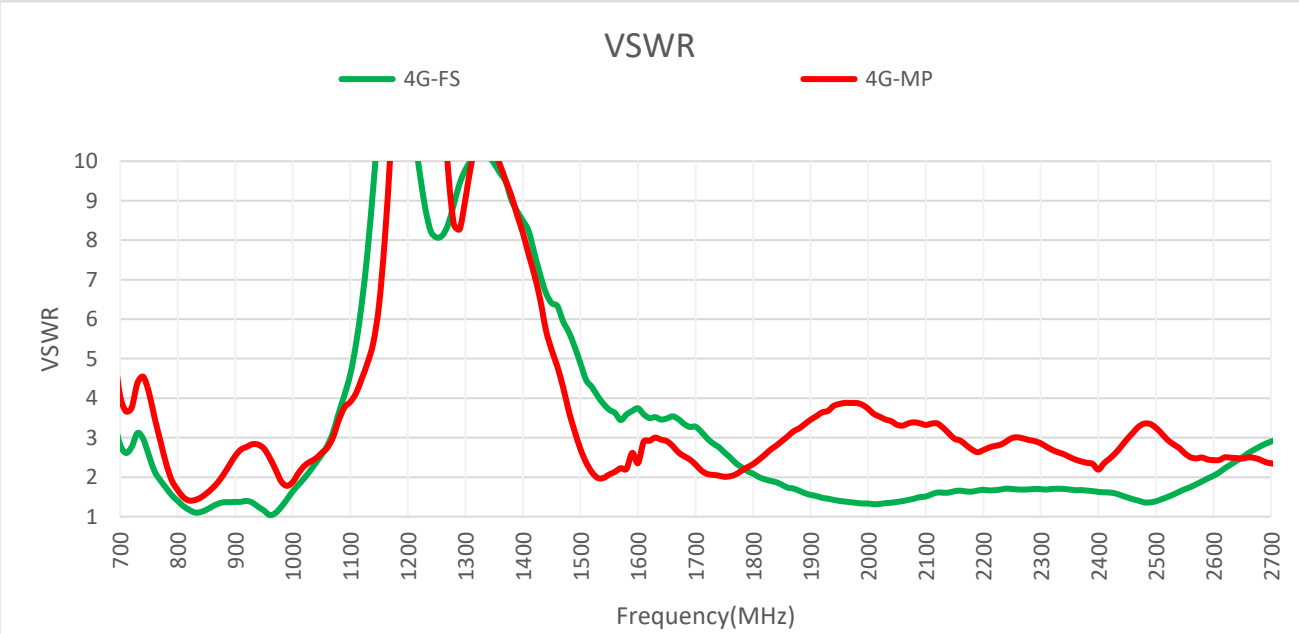
2 Drawing


Cable length:
2 × *300±20
Δ1* 82±3
SMA-Male
SMA-Male
85.00±3
18.20±2
EVA+3M9448A
Release paper
(50)
Label

3 Detailed Performance

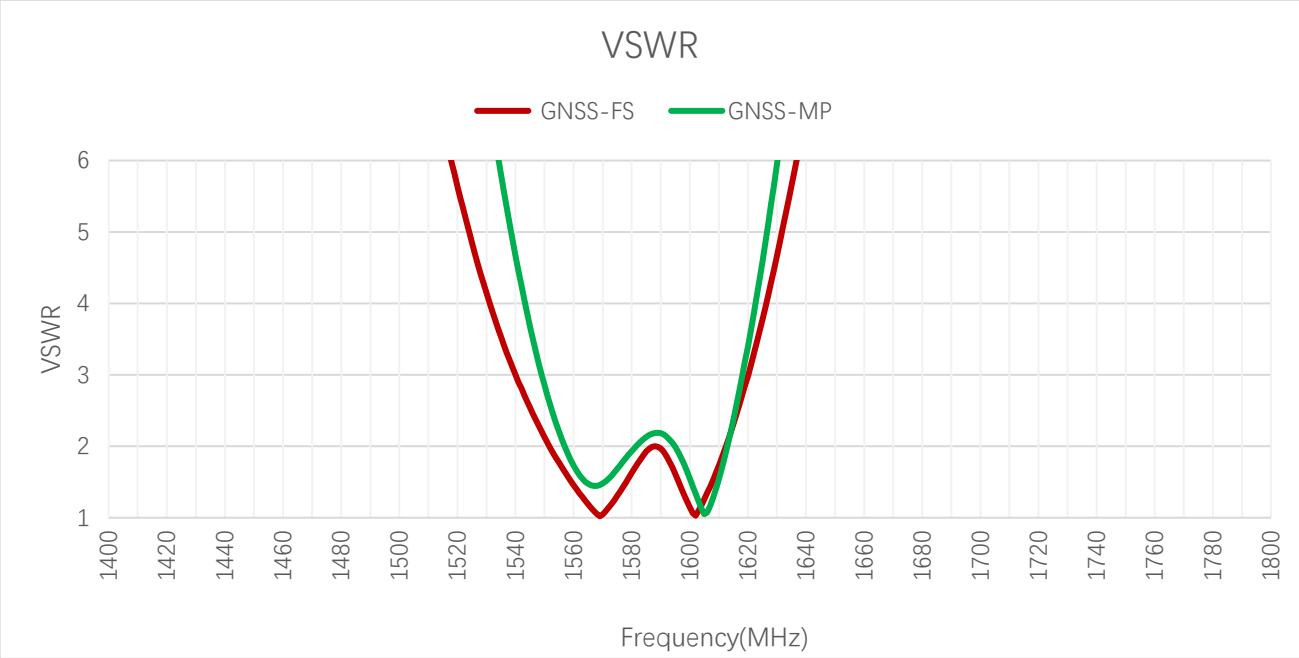
3.1. S-Parameter Test

3.1.1. VSWR



VSWR – 4G

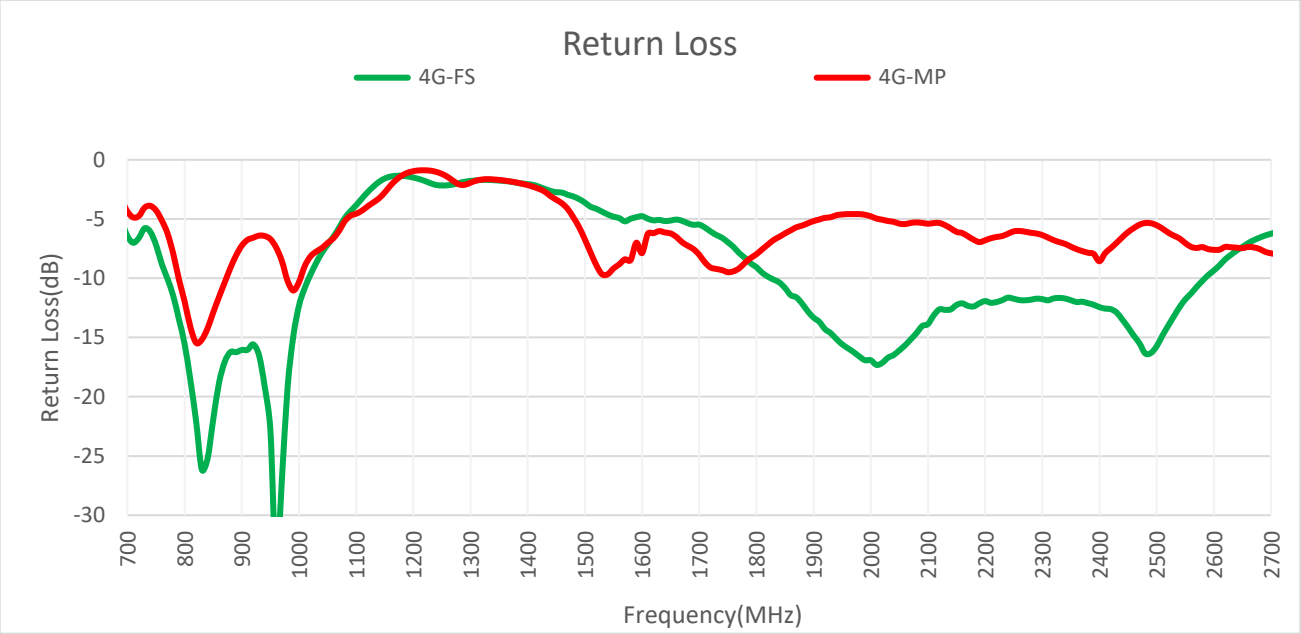
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
VSWR	FS	-	-	2.6	1.1	1.4	1.0	-	3.1	2.8	1.7
	MP	-	-	3.7	1.4	2.5	2.5	-	2.2	2.0	3.2
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
VSWR	FS	1.4	1.6	1.7	1.5	2.0	2.8	-	-	-	-
	MP	3.9	3.1	2.5	3.0	2.4	2.4	-	-	-	-



VSWR – GNSS

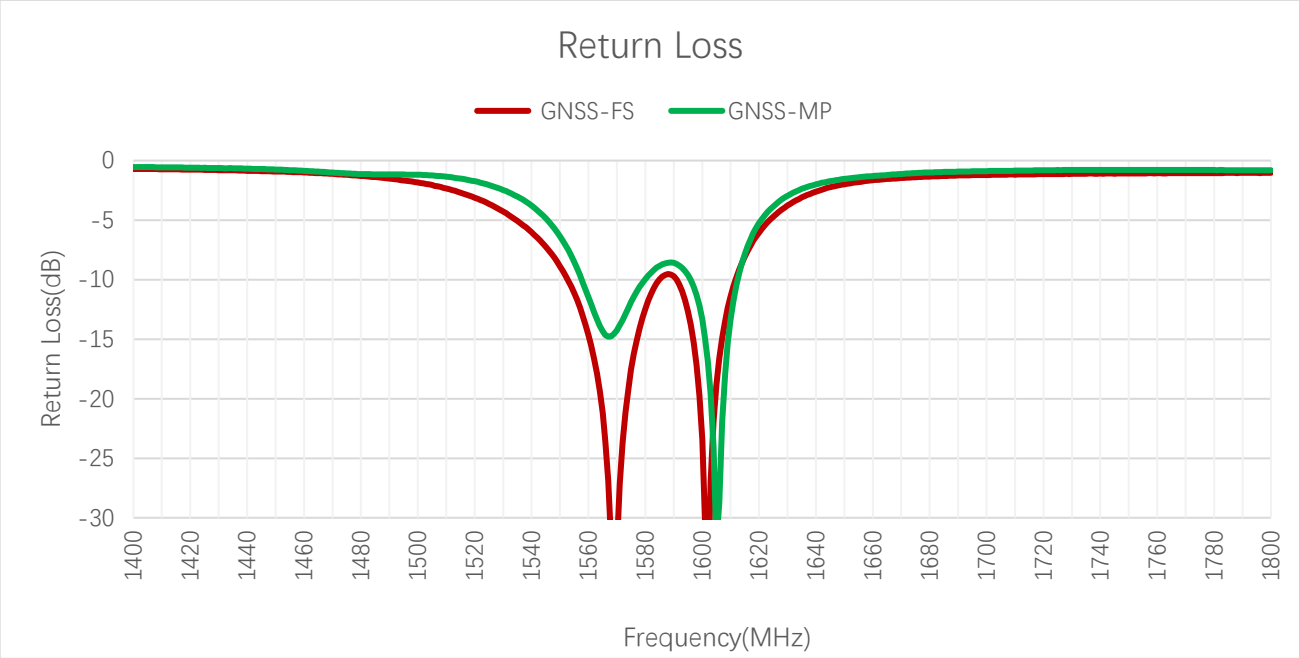
Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
VSWR	FS	-	-	-	-	-	1.4	1.3	1.0
	MP	-	-	-	-	-	1.7	1.7	1.3

3.1.2. Return Loss



Return Loss (dB) – 4G

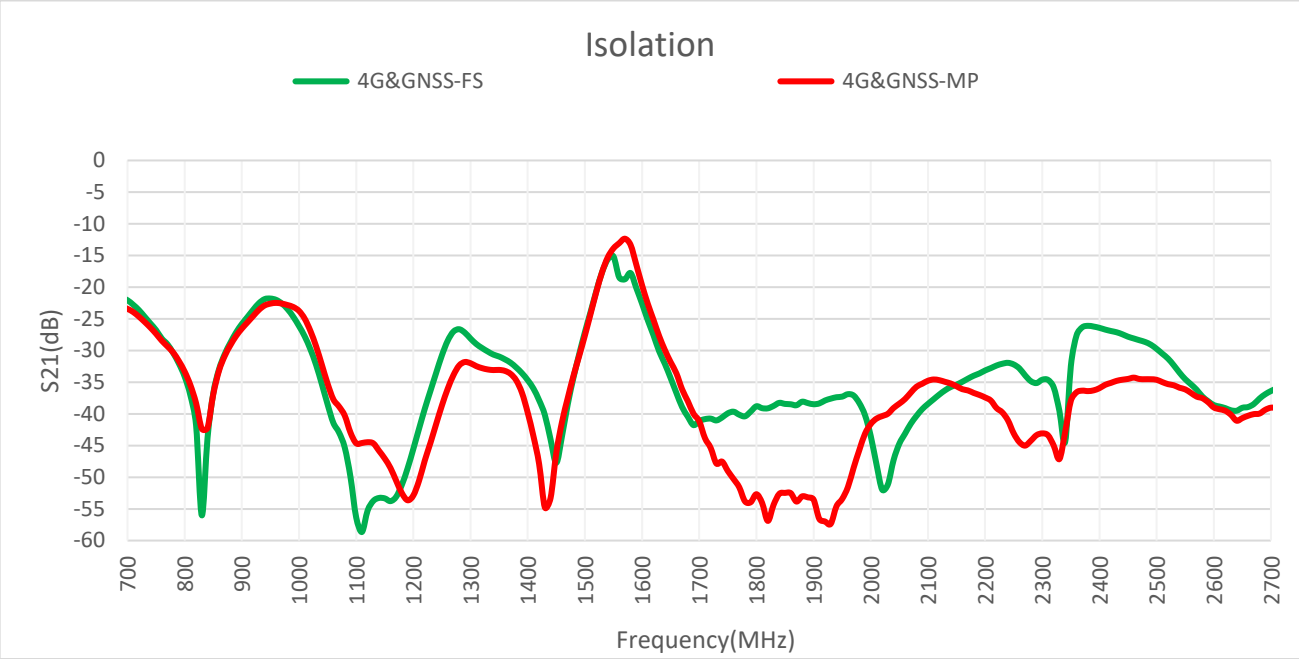
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	FS	-	-	-7.0	-26.2	-16.1	-34.4	-	-5.7	-6.6	-12.1
	MP	-	-	-4.9	-15.2	-7.2	-7.4	-	-8.7	-9.3	-5.6
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Return Loss (dB)	FS	-15.6	-12.6	-11.8	-14.1	-9.3	-6.4	-	-	-	-
	MP	-4.6	-5.8	-7.3	-6.1	-7.6	-7.8	-	-	-	-



Return Loss (dB) – GNSS

Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	FS	-	-	-	-	-	-15.6	-17.6	-37.1
	MP	-	-	-	-	-	-12.1	-11.9	-16.8

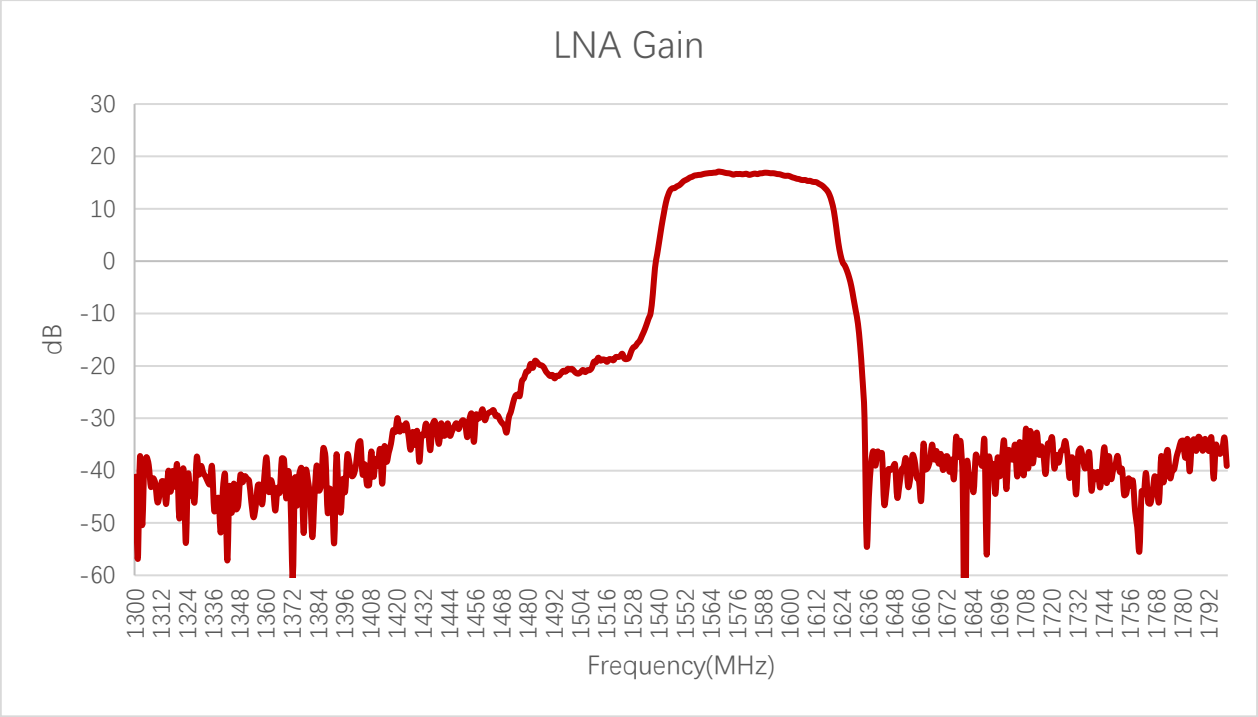
3.1.3. Isolation



Max Isolation (dB) – 4G & GNSS

Band	B71	B12/ B13/ B28	B5/ B8/ B26	B1/ B2/ B3	B40	Wi-Fi 2G	B38/ B41	BDS B1I	GPS L1
Freq. (MHz)	600– 700	700– 810	820– 960	1700– 2170	2300– 2400	2400– 2500	2500– 2690	1559– 1564	1565– 1586
FS	-	-22.0	-21.8	-34.4	-26.1	-26.6	-29.7	-18.4	-17.7
MP	-	-23.4	-22.4	-34.5	-35.9	-34.2	-34.6	-13.0	-12.3

3.1.4. GNSS LNA Gain

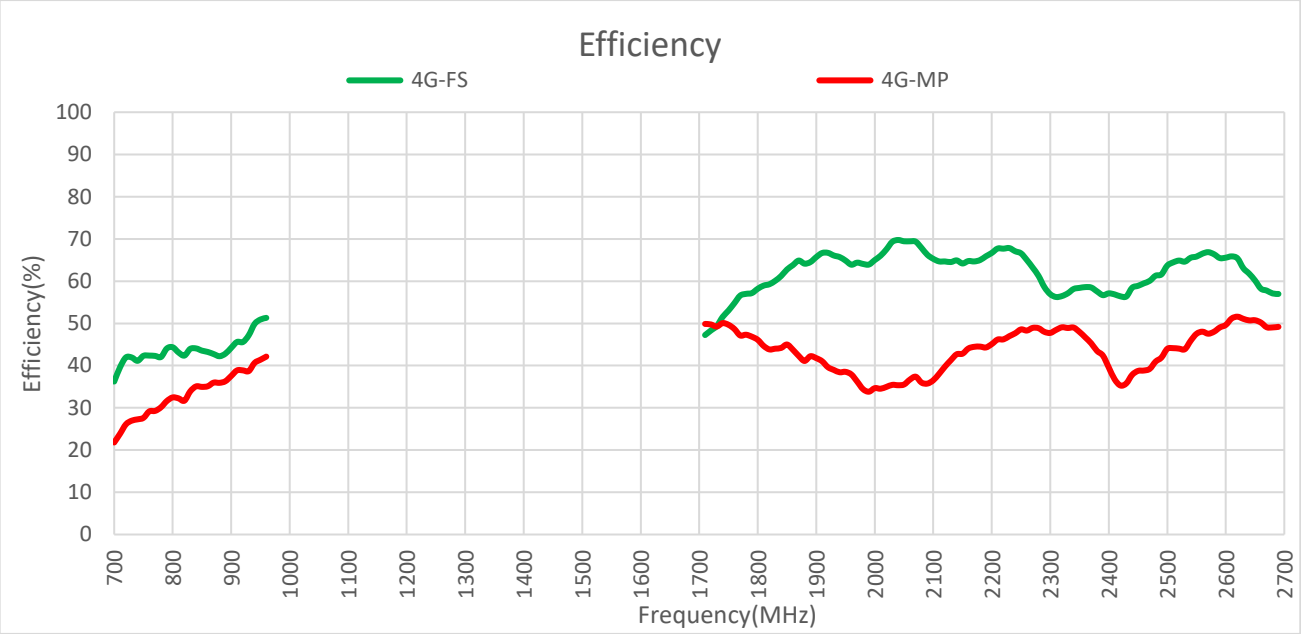


LNA Gain (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	-	-	-	-	-	16.7	16.6	15.8

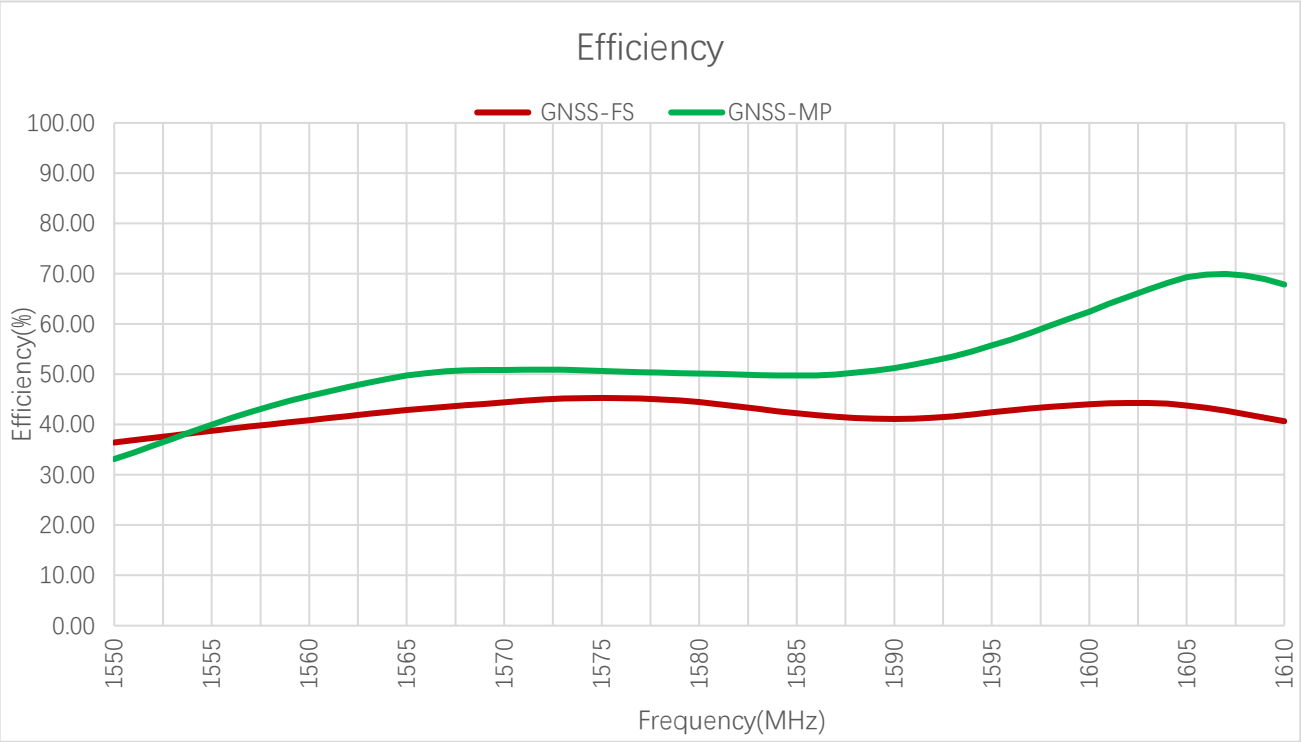
3.2. Radiation Performance Test

3.2.1. Efficiency



Efficiency (%) – 4G

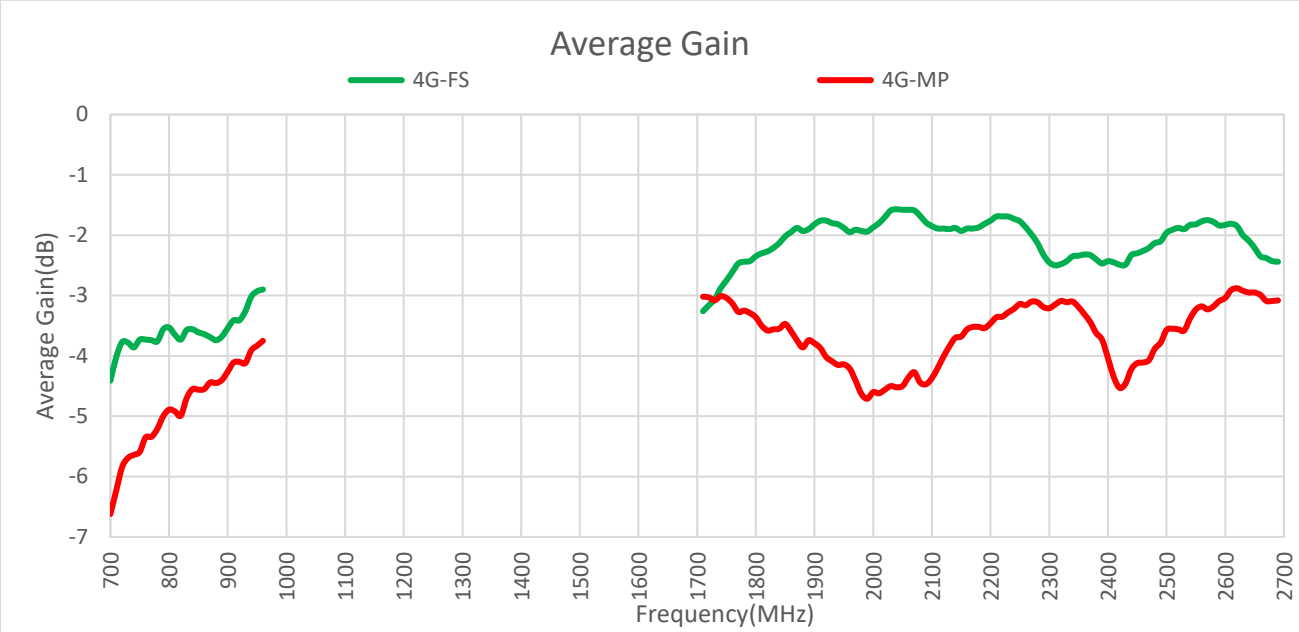
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	FS	-	-	39.6	44.0	44.2	51.3	-	47.2	51.5	64.1
	MP	-	-	23.9	33.9	37.5	42.1	-	49.9	50.1	41.1
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Efficiency (%)	FS	64.9	64.9	58.4	58.9	65.6	57.0	-	-	-	-
	MP	38.5	42.7	48.0	38.7	49.6	49.2	-	-	-	-



Efficiency (%) – GNSS

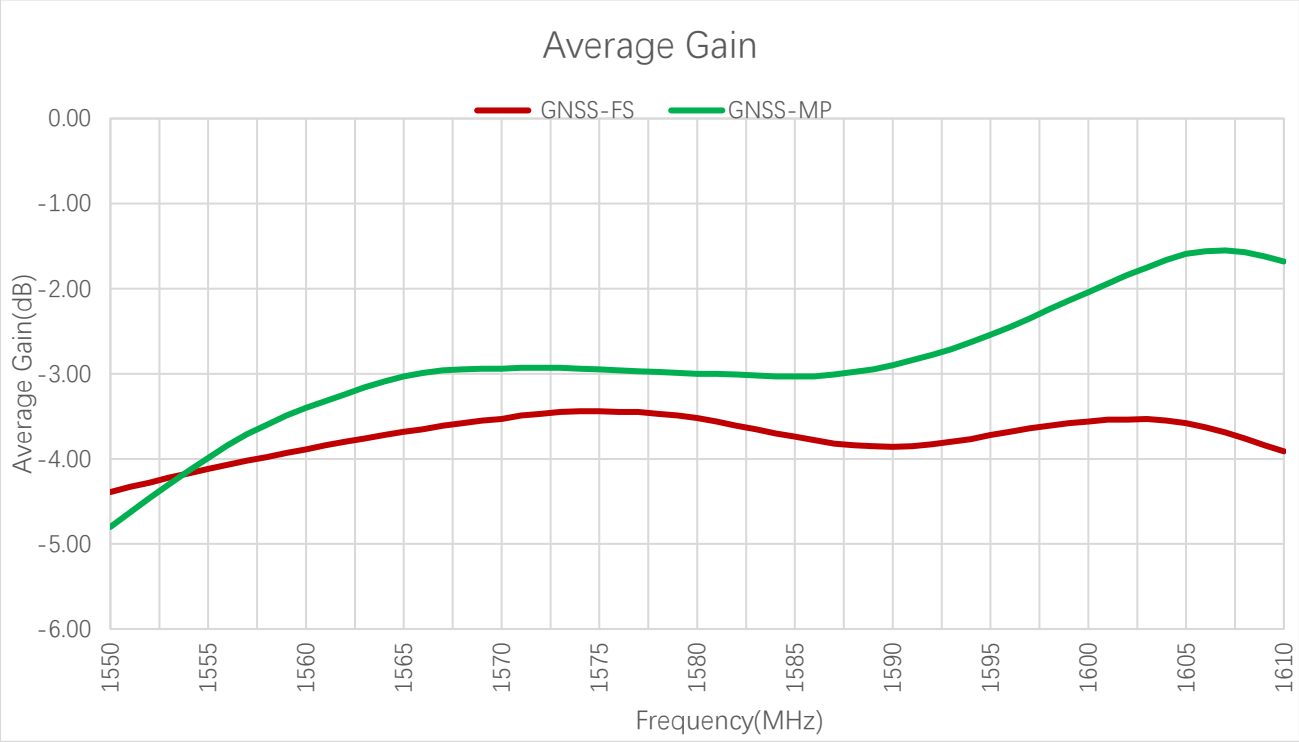
Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	FS	-	-	-	-	-	41.3	45.3	44.3
	MP	-	-	-	-	-	46.6	50.7	65.5

3.2.2. Average Gain



Average Gain (dB) – 4G

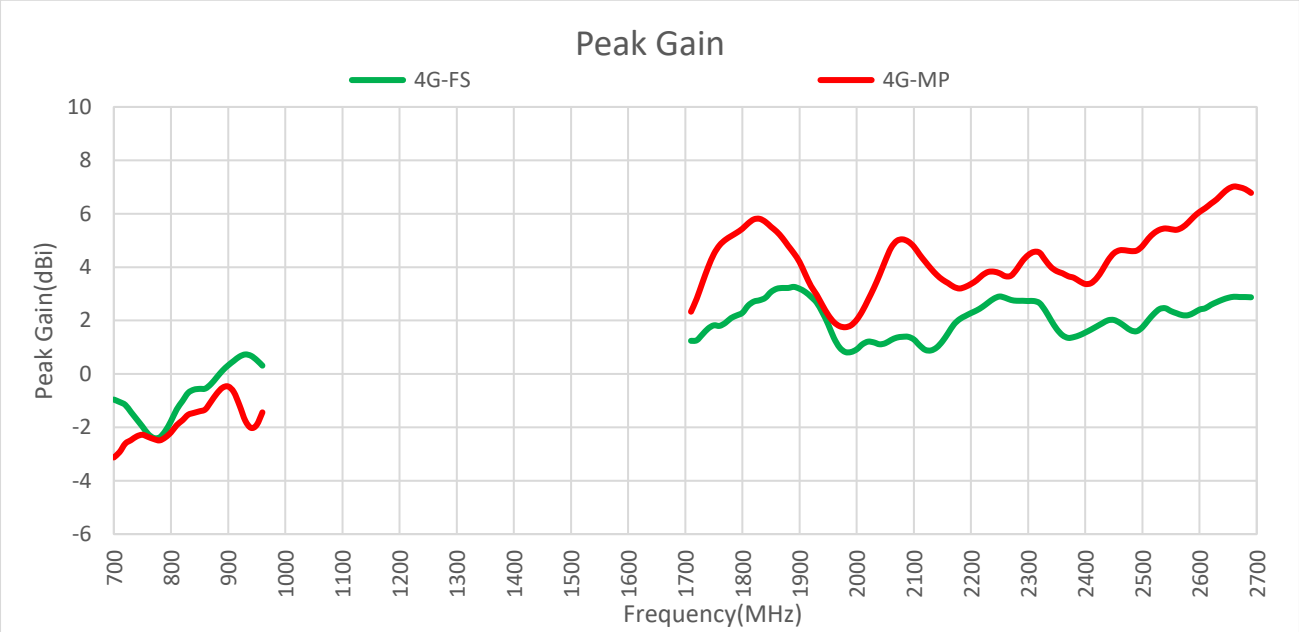
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	FS	-	-	-4.0	-3.6	-3.5	-2.9	-	-3.3	-2.9	-1.9
	MP	-	-	-6.2	-4.7	-4.3	-3.8	-	-3.0	-3.0	-3.9
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Average Gain (dB)	FS	-1.9	-1.9	-2.3	-2.3	-1.8	-2.4	-	-	-	-
	MP	-4.1	-3.7	-3.2	-4.1	-3.0	-3.1	-	-	-	-



Average Gain (dB) – GNSS

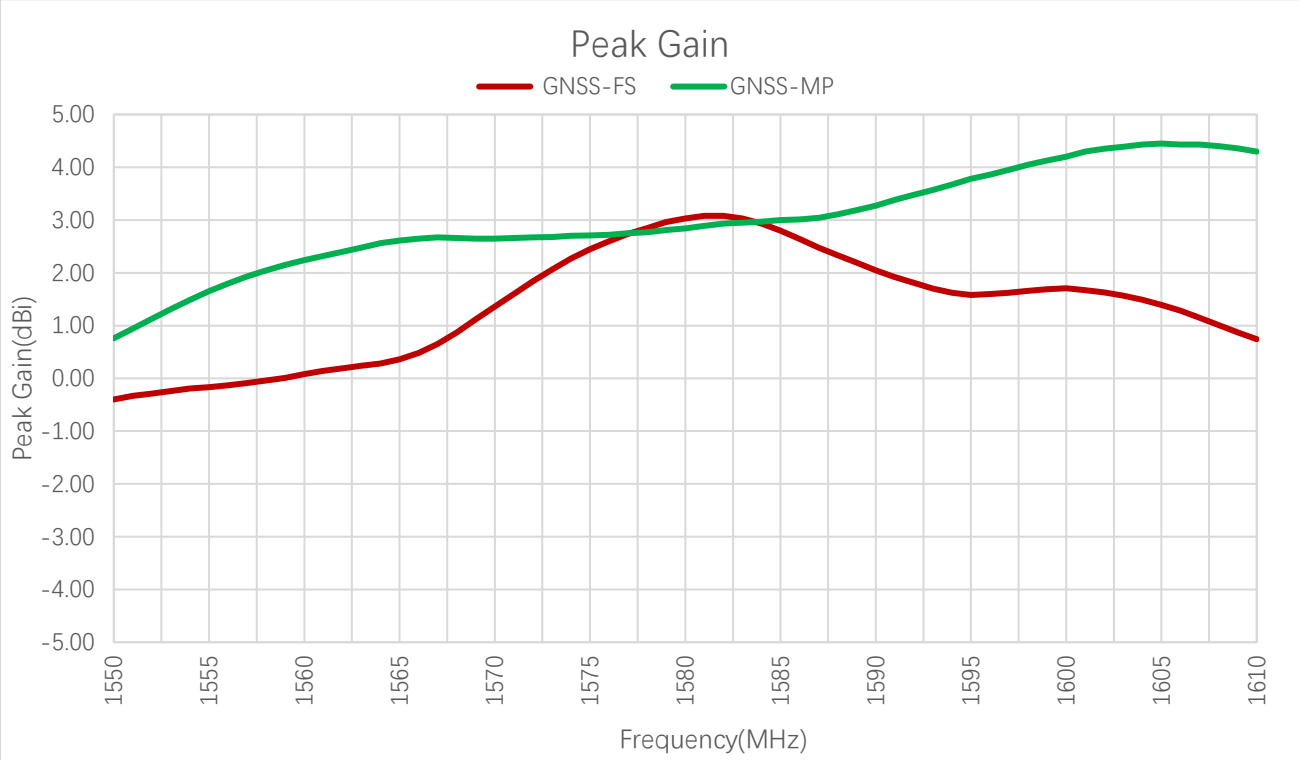
Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
Average Gain (dB)	FS	-	-	-	-	-	-3.8	-3.4	-3.5
	MP	-	-	-	-	-	-3.3	-3.0	-1.8

3.2.3. Peak Gain



Peak Gain (dBi) – 4G

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	FS	-	-	-1.1	-0.7	0.3	0.3	-	1.2	1.7	3.2
	MP	-	-	-2.9	-1.5	-0.5	-1.4	-	2.3	4.0	4.8
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**4700**	**5000**	**5500**	**6000**
Peak Gain (dBi)	FS	1.9	1.0	1.7	2.0	2.4	2.9	-	-	-	-
	MP	2.2	3.7	3.9	4.5	6.1	6.8	-	-	-	-



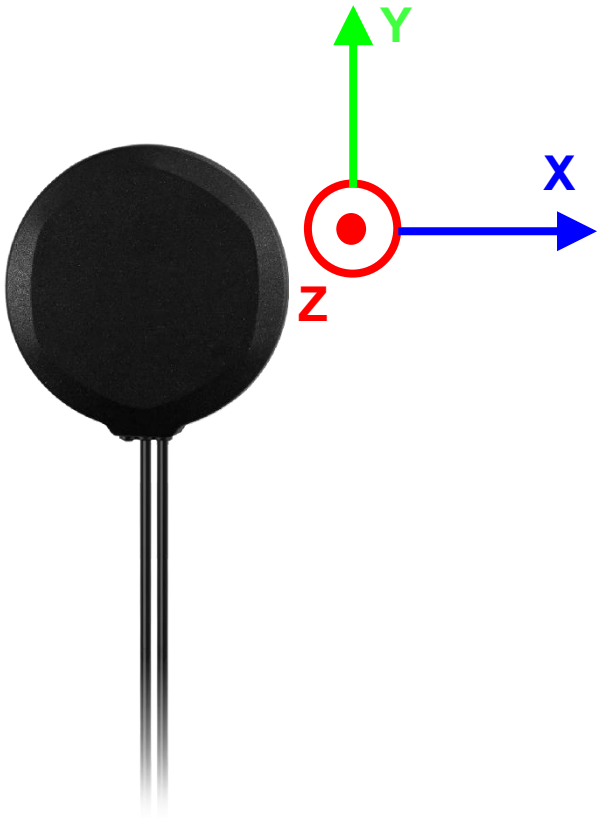
Peak Gain (dBi) – GNSS

Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	FS	-	-	-	-	-	0.1	2.5	1.6
	MP	-	-	-	-	-	2.3	2.7	4.4

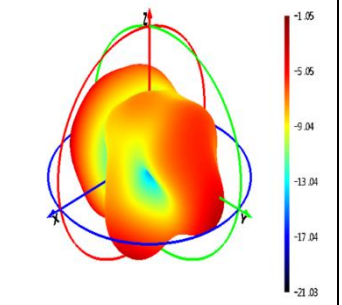
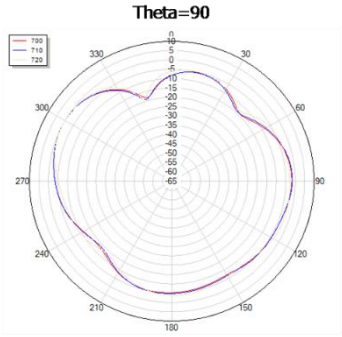
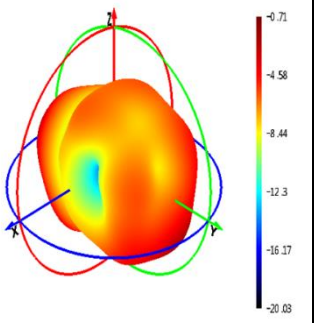
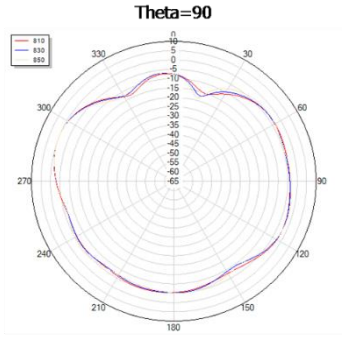
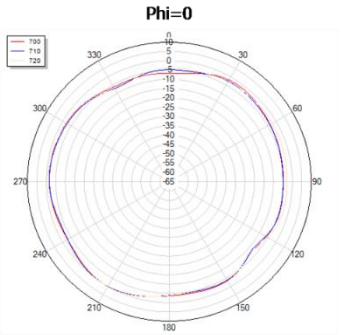
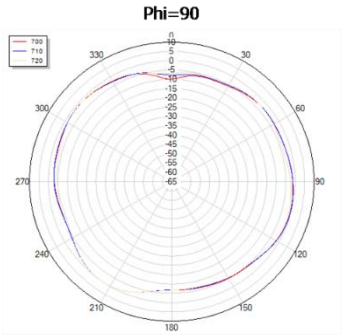
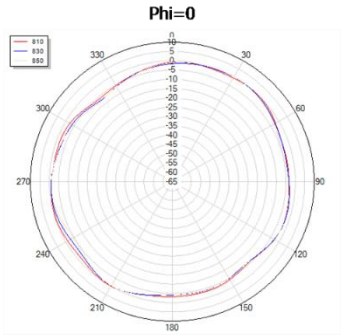
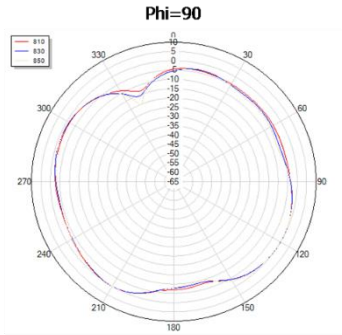
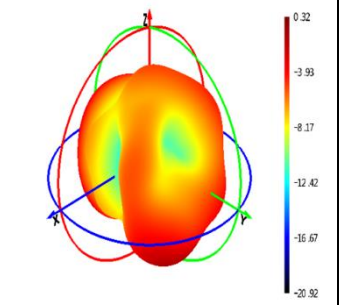
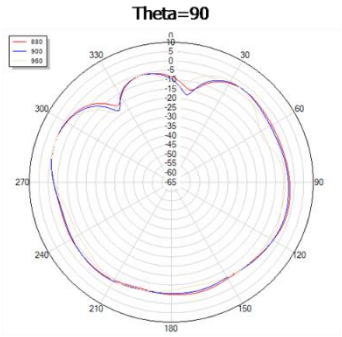
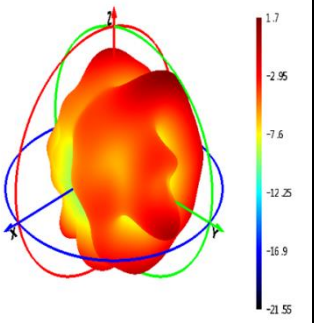
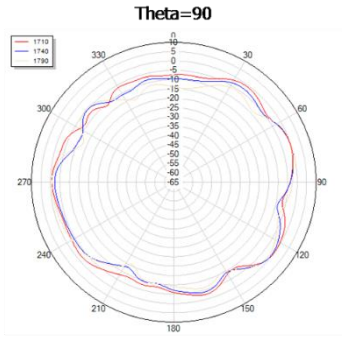
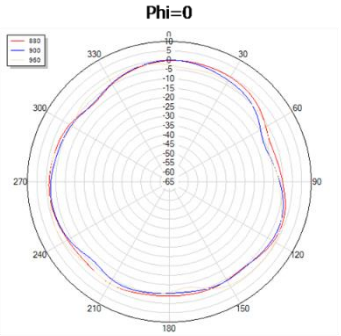
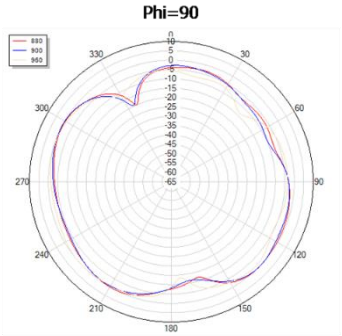
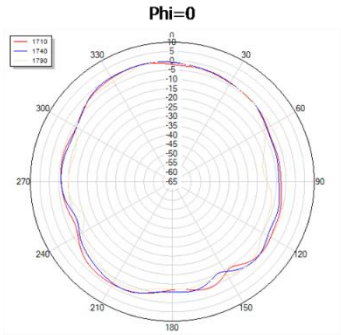
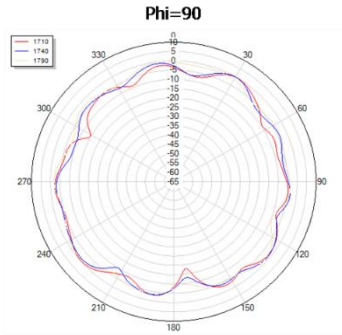
3.2.4. 3D & 2D Radiation Pattern

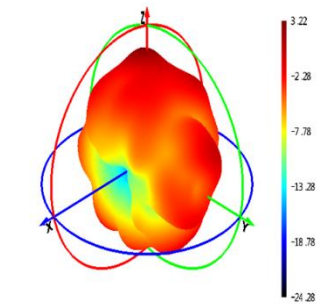
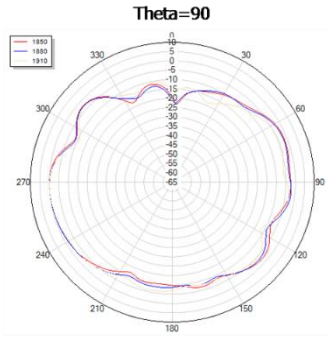
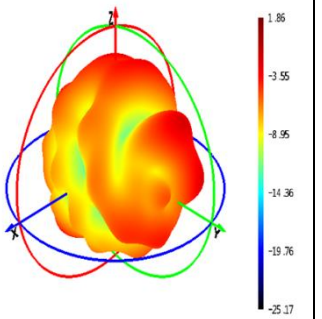
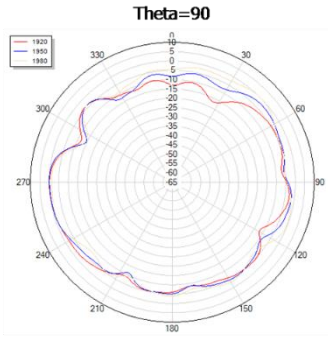
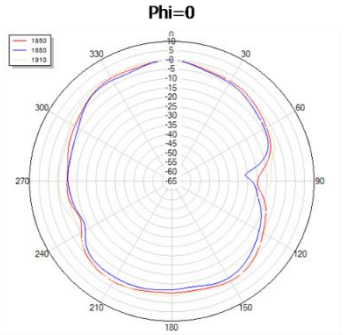
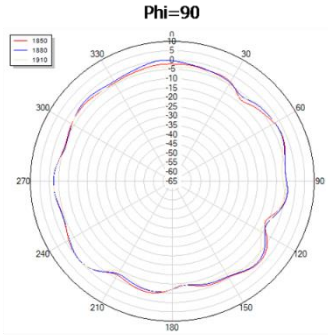
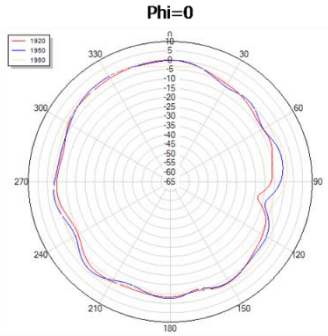
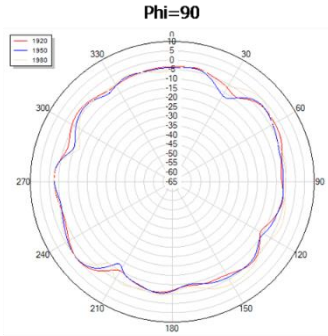
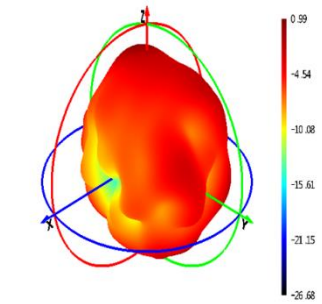
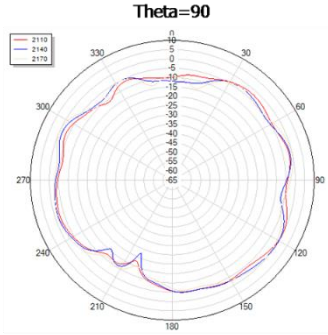
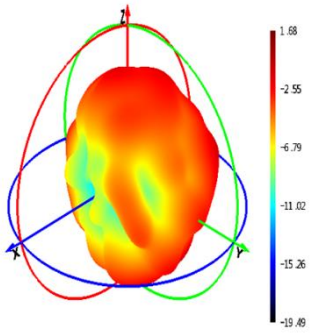
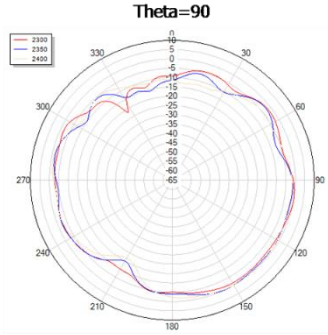
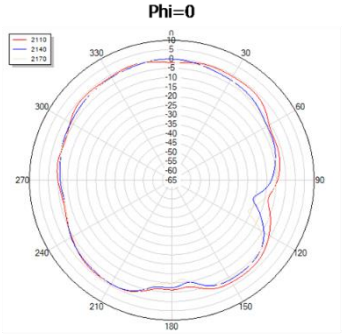
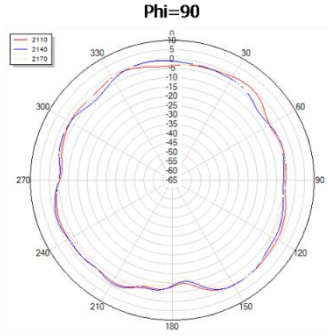
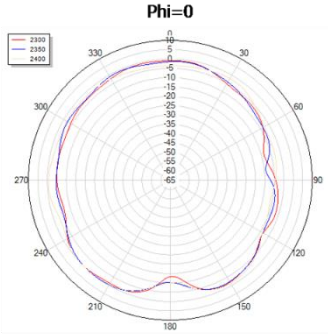
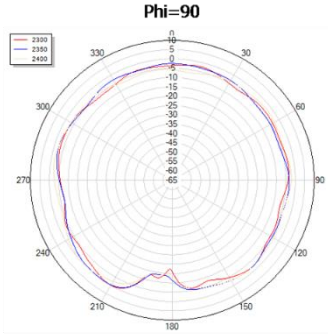
3.2.6.1. Test Condition: In Free Space

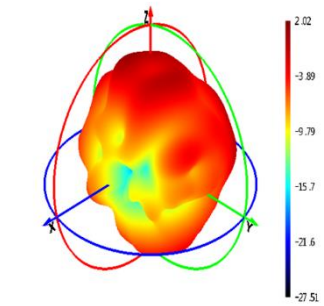
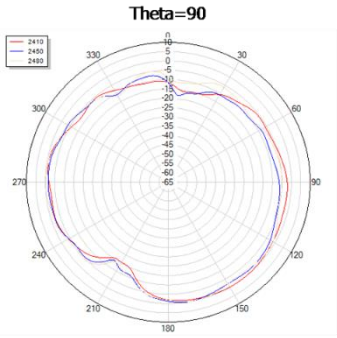
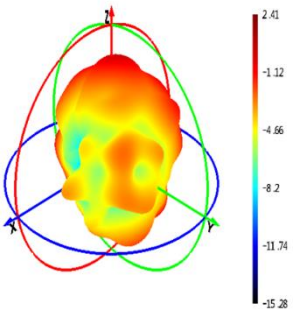
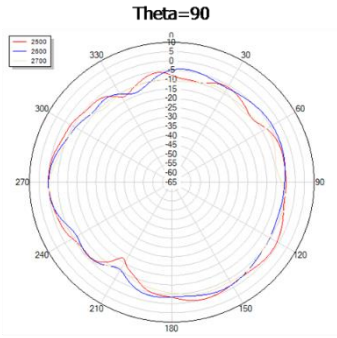
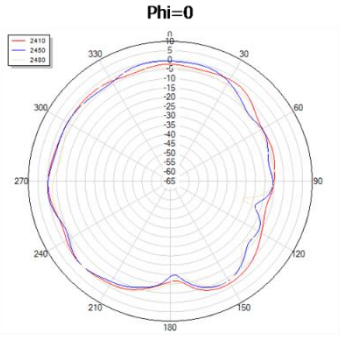
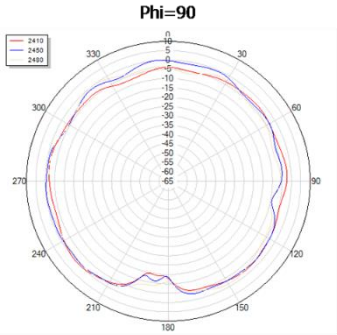
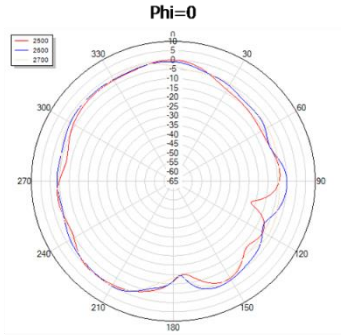
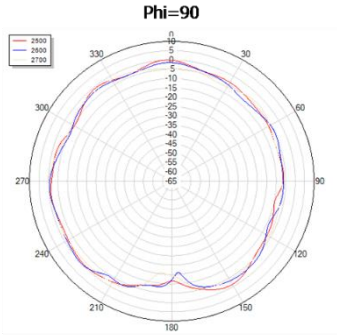
- Test Chamber: HF-S-1



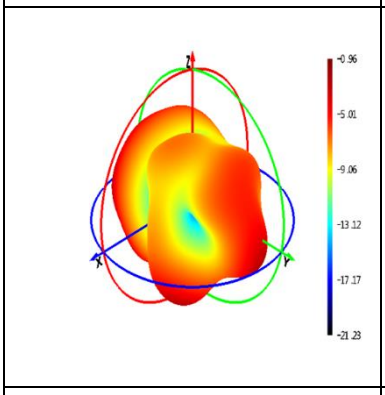
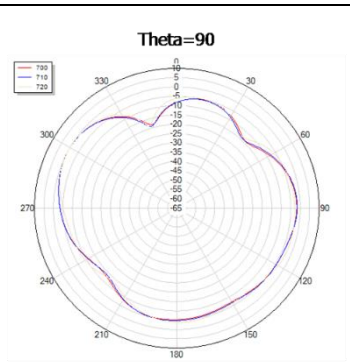
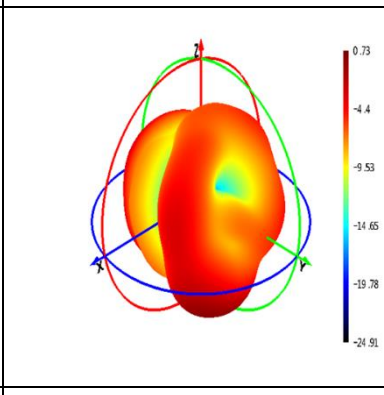
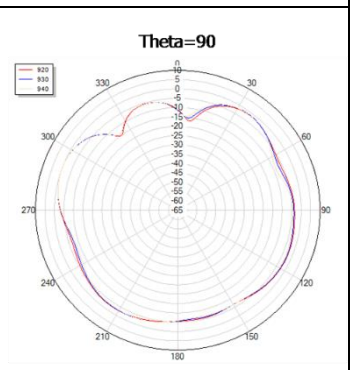
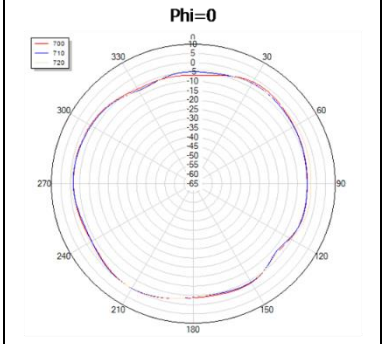
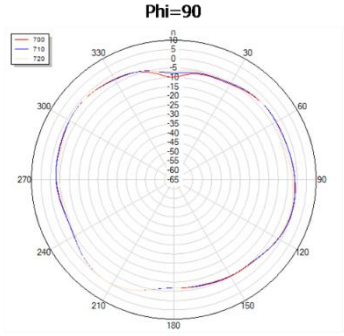
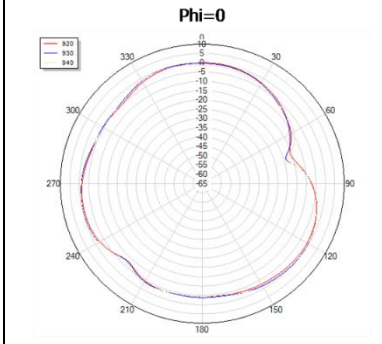
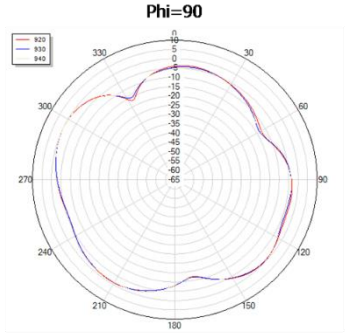
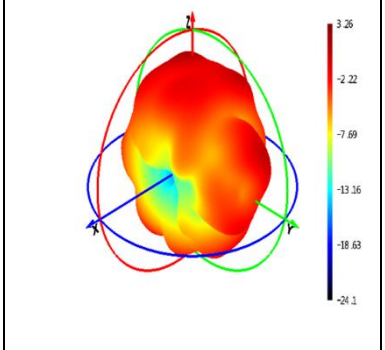
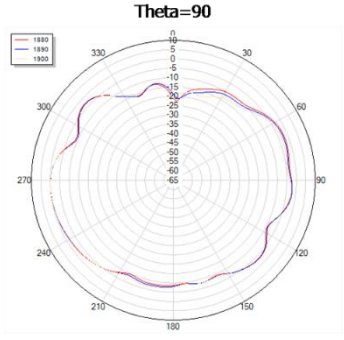
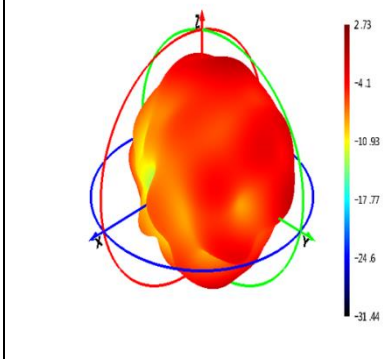
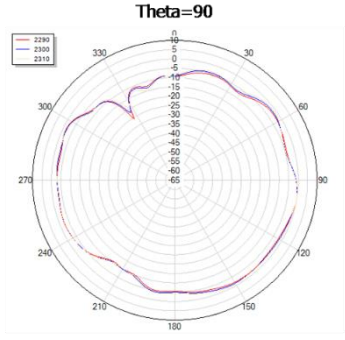
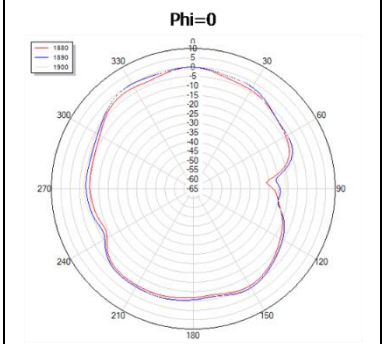
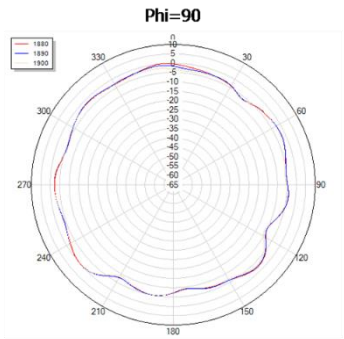
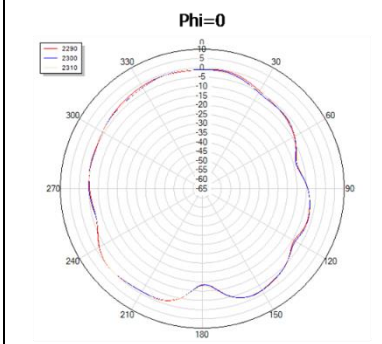
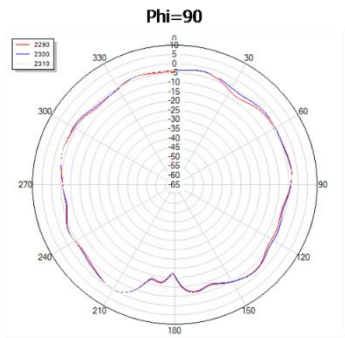
- **4G**

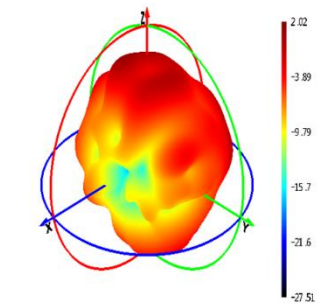
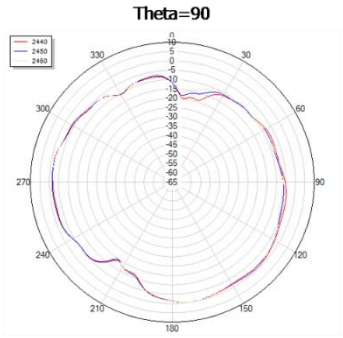
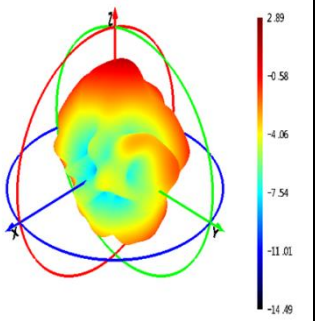
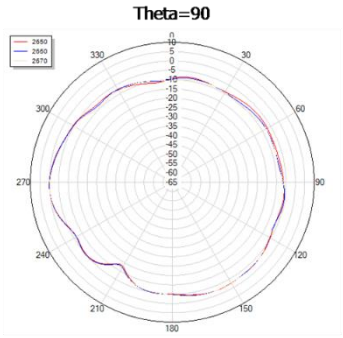
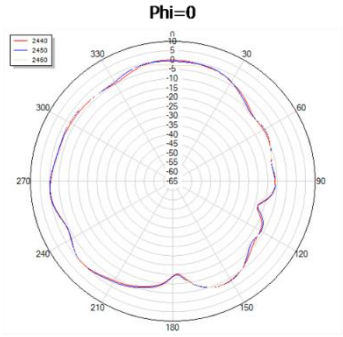
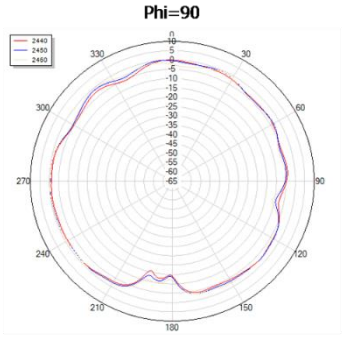
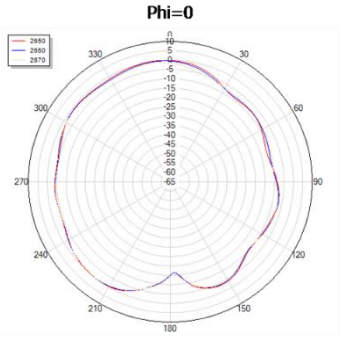
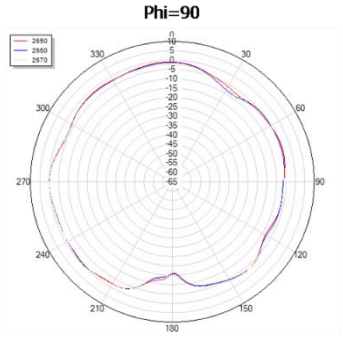
710 MHz		830 MHz	
			
			
900 MHz		1740 MHz	
			
			

1880 MHz		1950 MHz	
			
			
2140 MHz		**2350 MHz**	
			
			

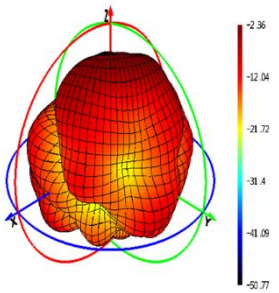
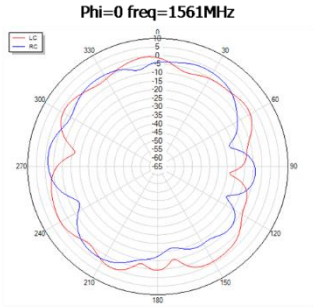
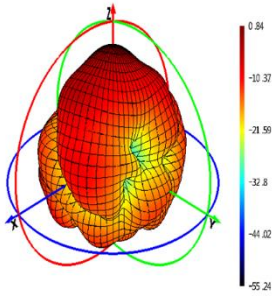
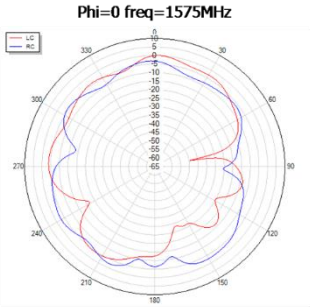
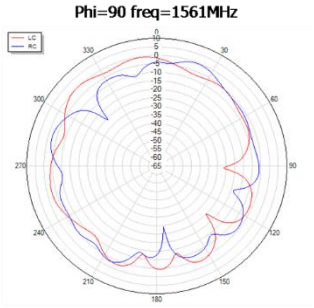
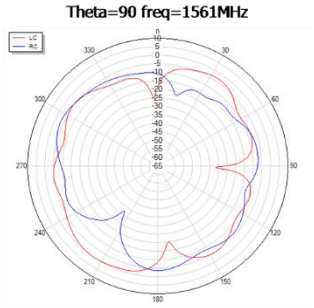
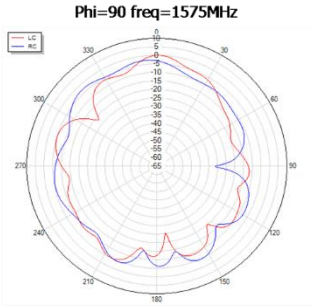
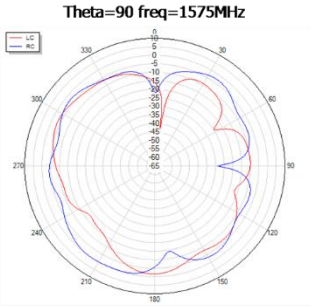
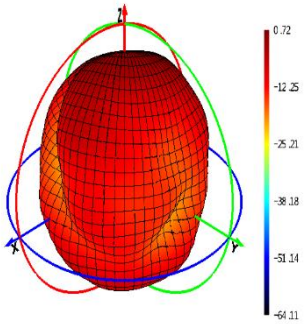
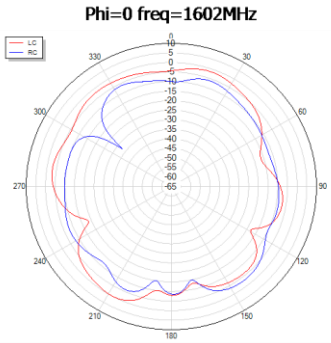
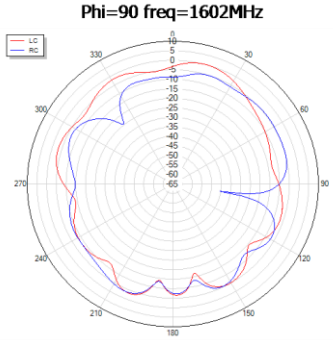
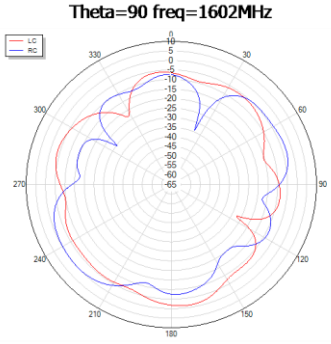
2450 MHz		2600 MHz	
			
			

- **4G-Peak Gain**

700 MHz		930 MHz	
			
			
1890 MHz		**2300 MHz**	
			
			

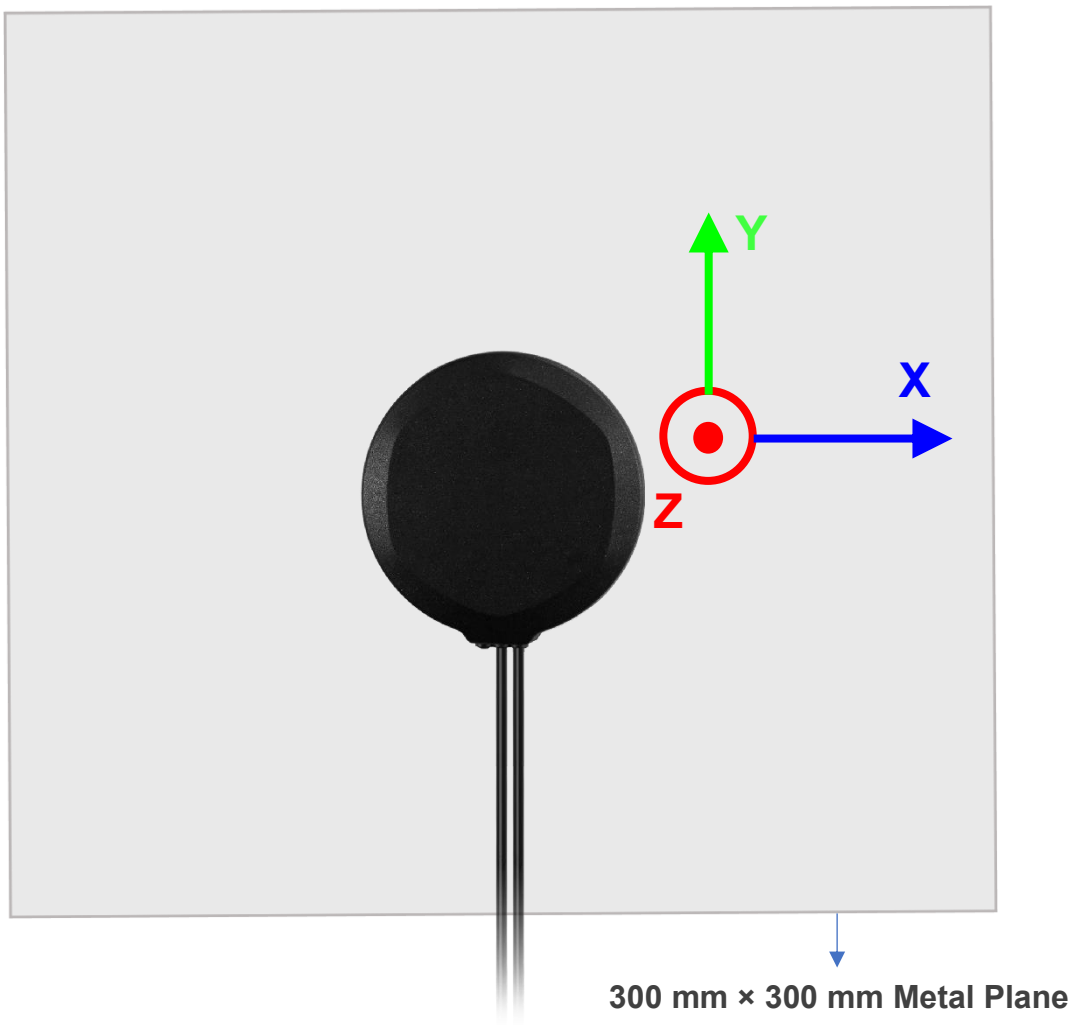
2450 MHz		2660 MHz	
			
			

- **GNSS**

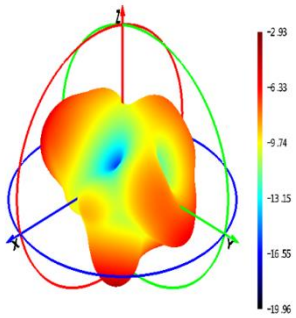
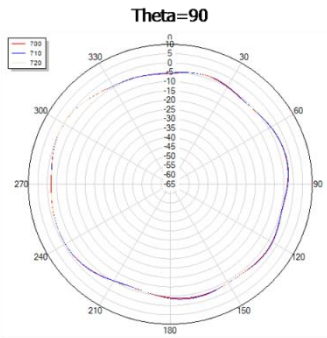
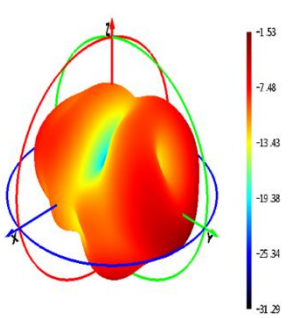
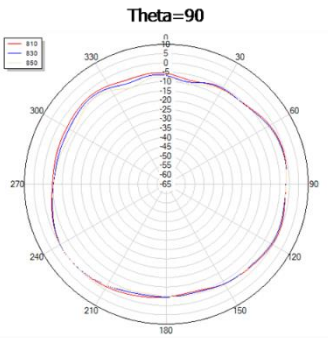
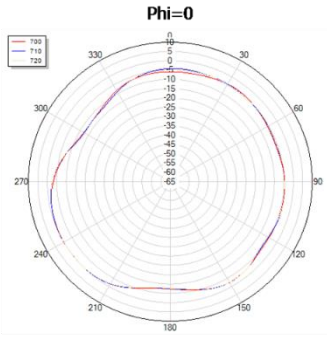
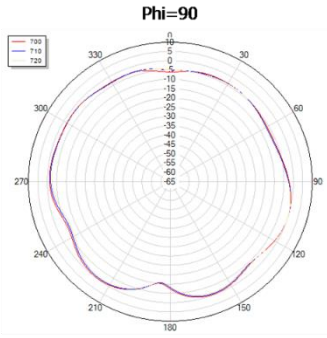
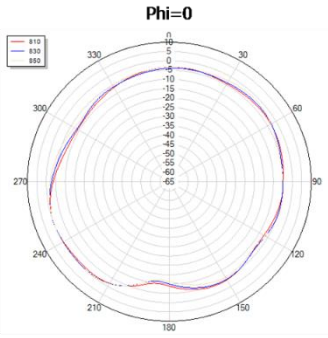
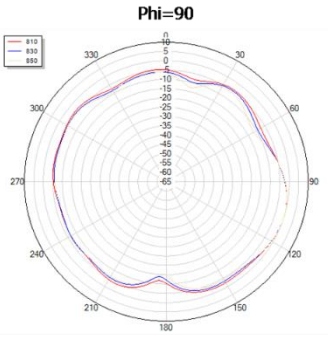
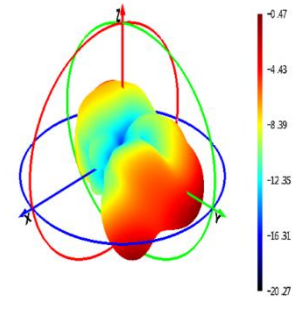
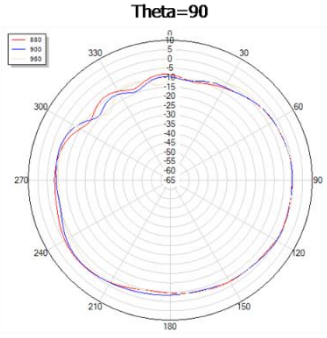
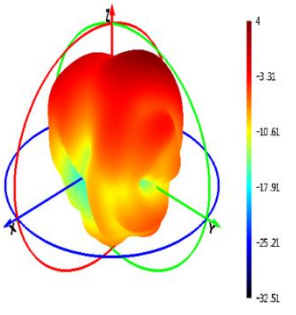
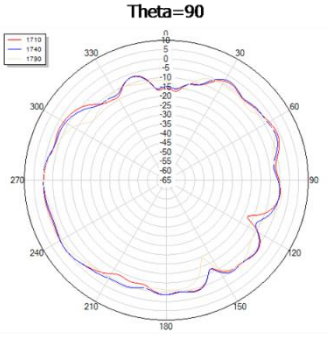
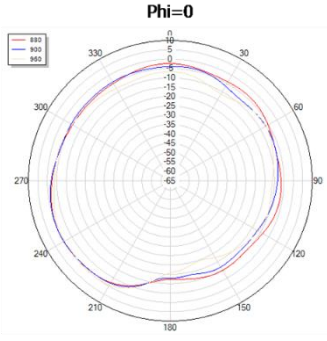
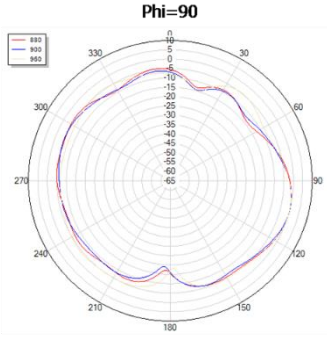
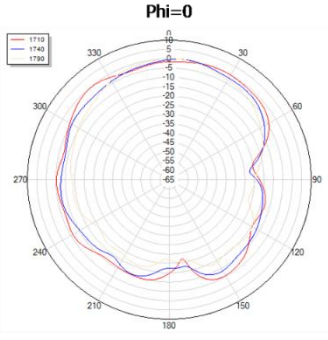
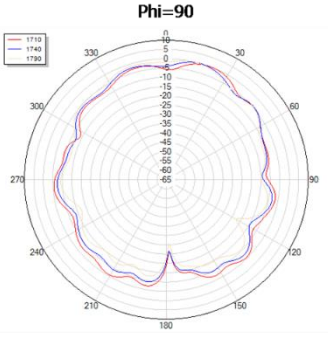
1561 MHz		1575 MHz	
			
			
1602 MHz			
			
			

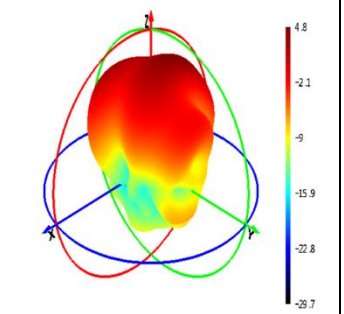
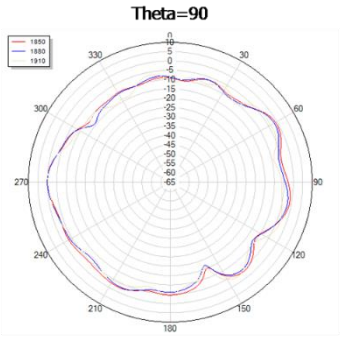
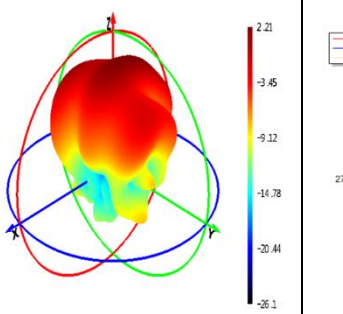
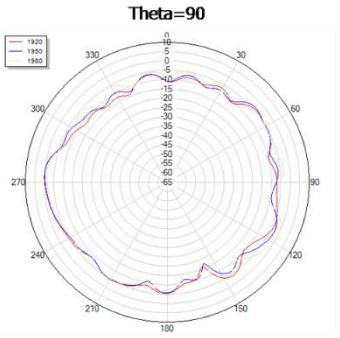
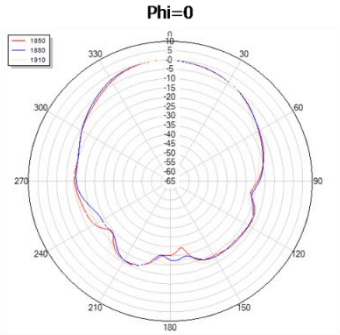
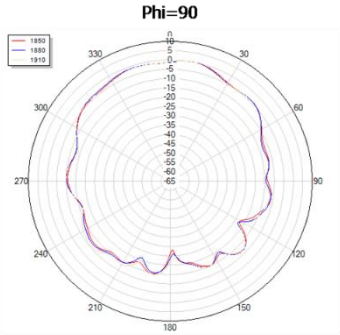
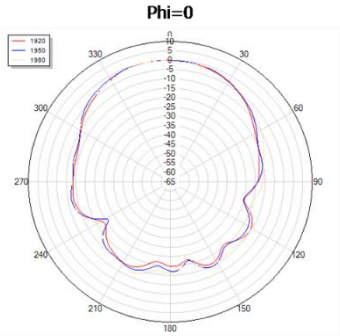
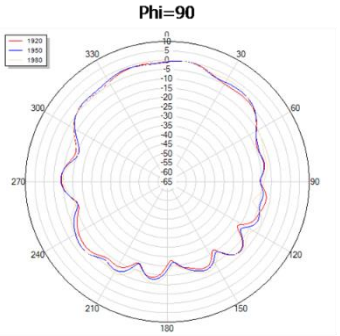
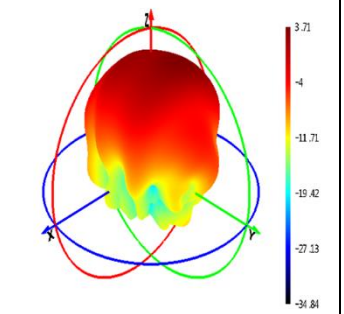
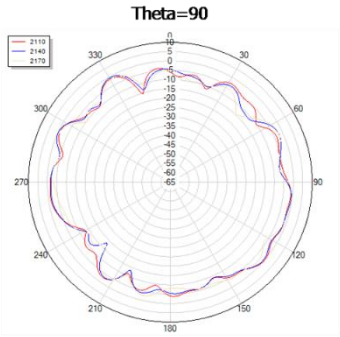
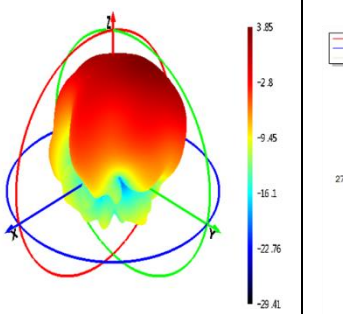
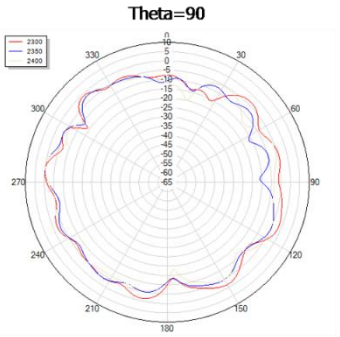
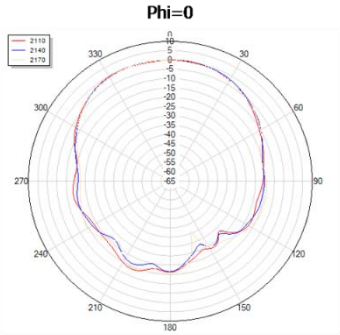
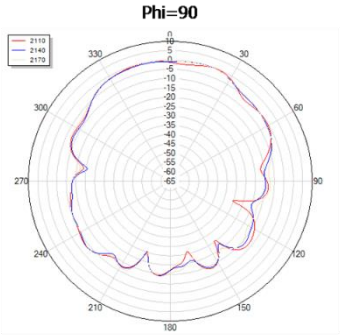
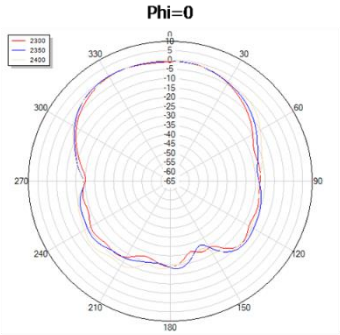
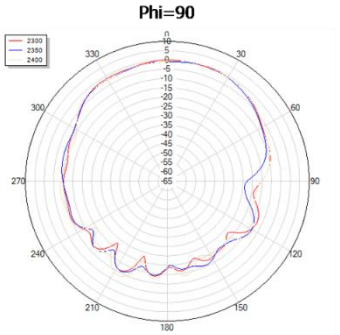
3.2.6.2. Test Condition: On 300 mm × 300 mm Metal Plane

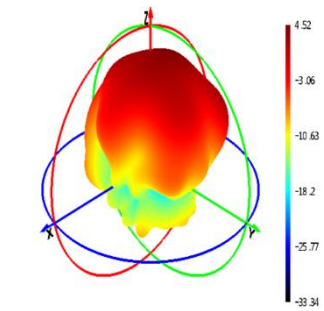
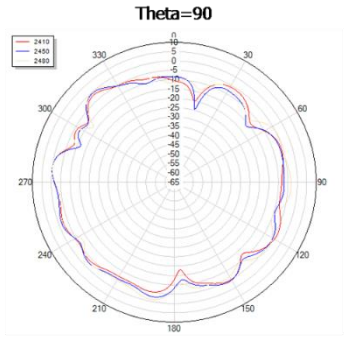
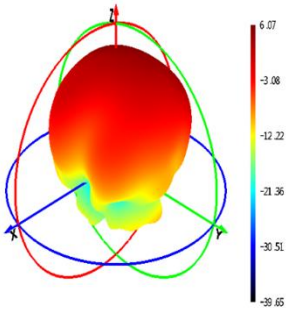
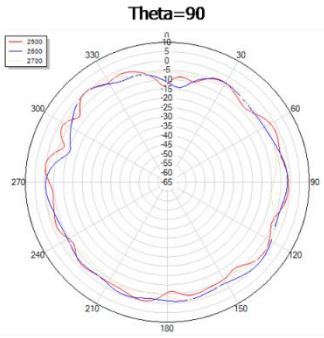
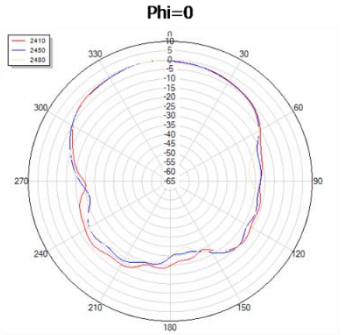
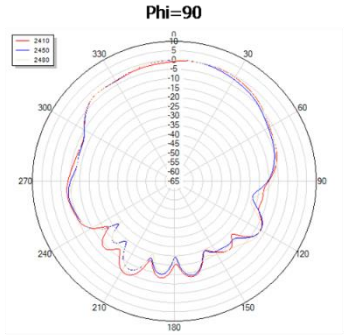
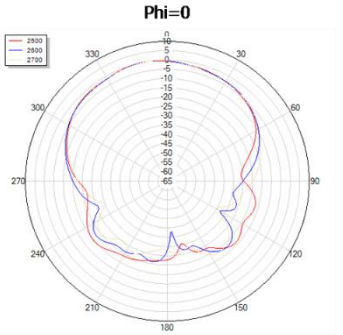
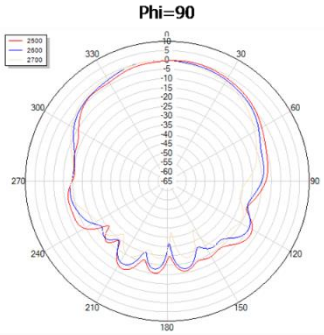
- Test Chamber: HF-S-1



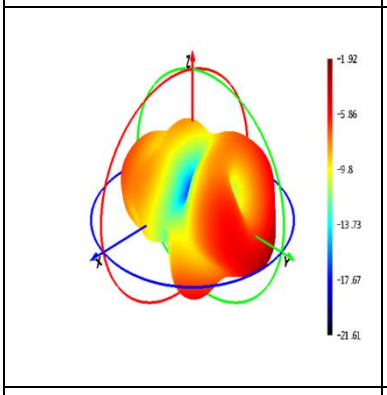
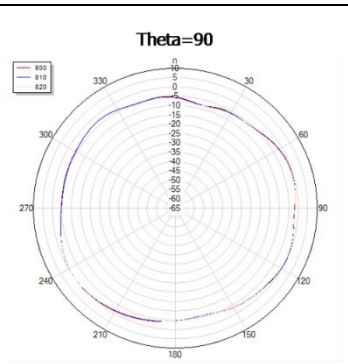
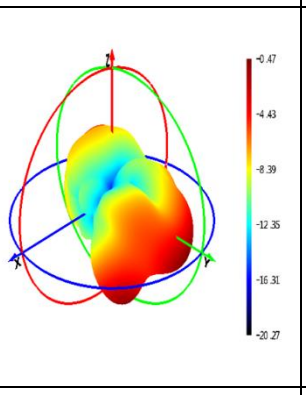
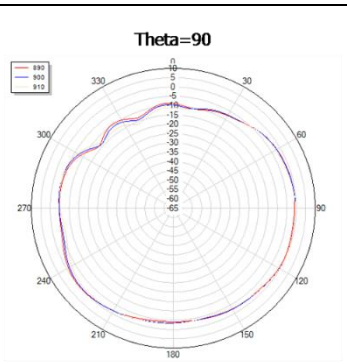
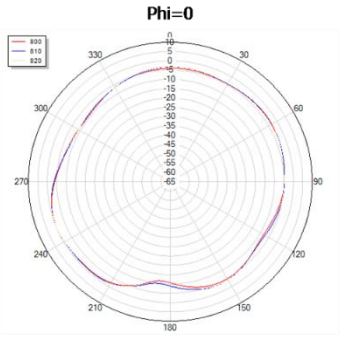
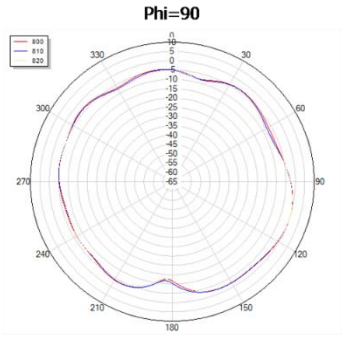
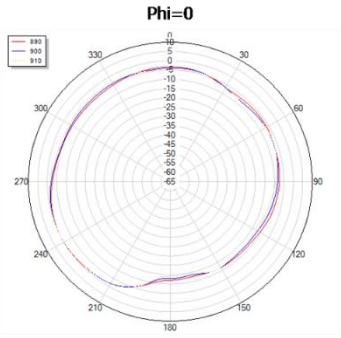
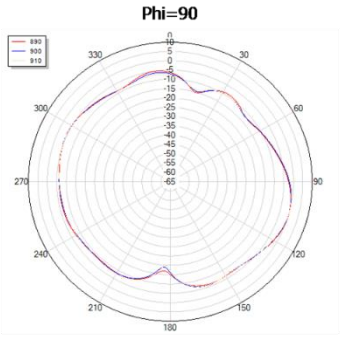
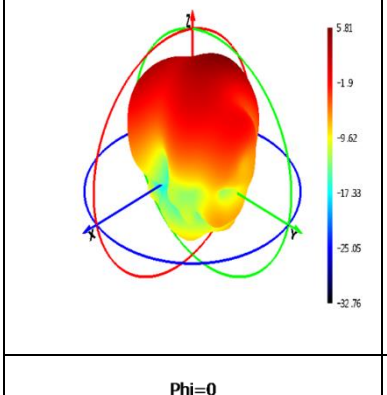
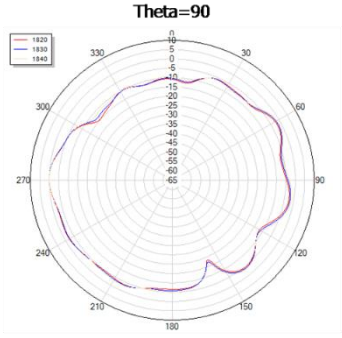
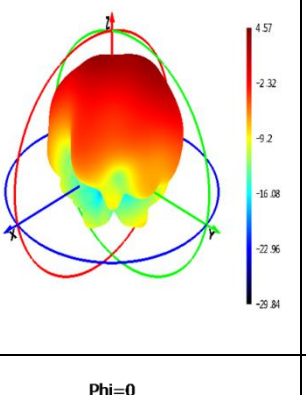
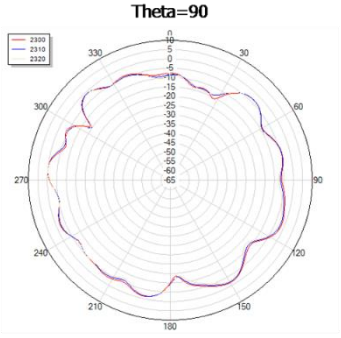
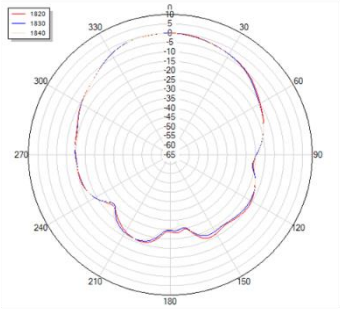
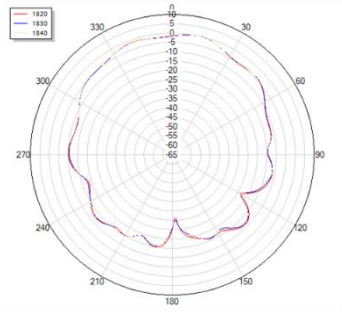
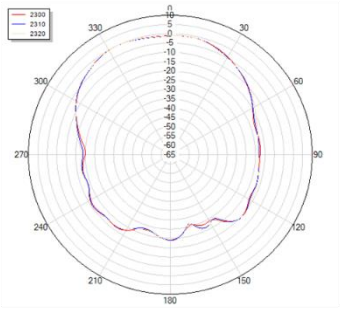
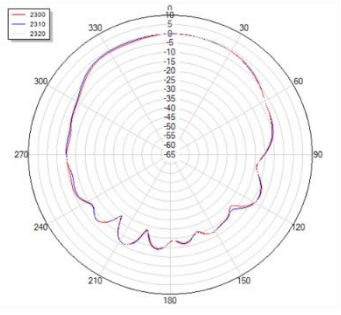
- **4G**

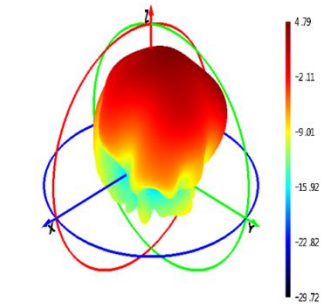
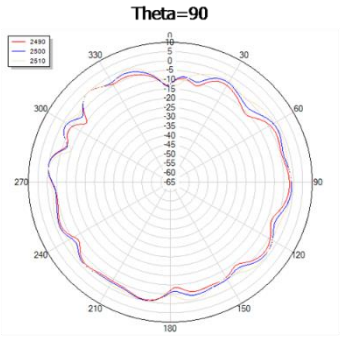
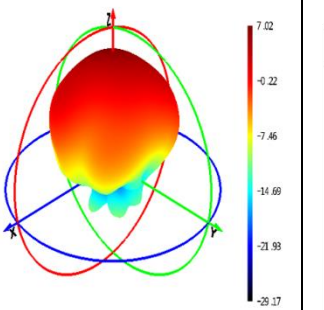
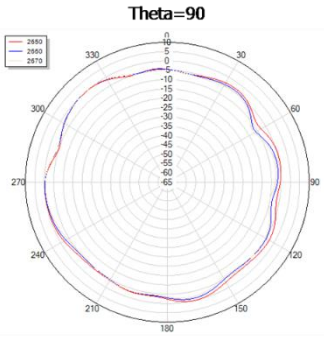
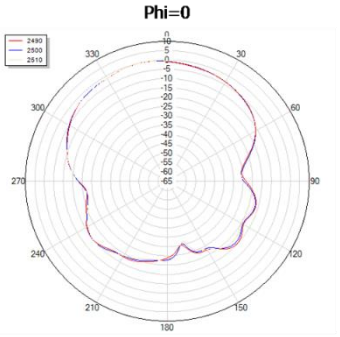
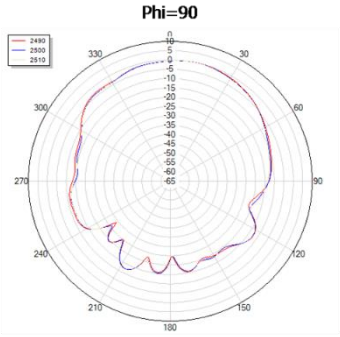
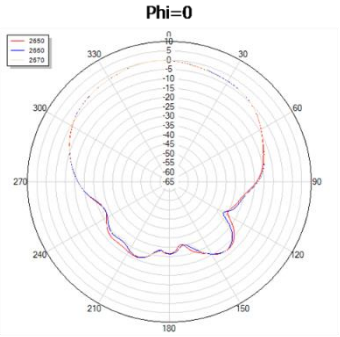
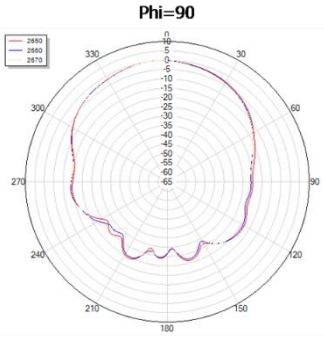
710 MHz		830 MHz	
			
			
900 MHz		**1740 MHz**	
			
			

1880 MHz		1950 MHz	
			
			
2140 MHz		2350 MHz	
			
			

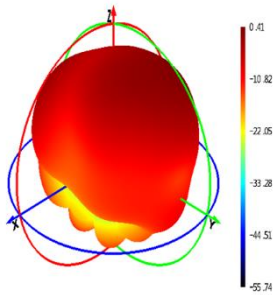
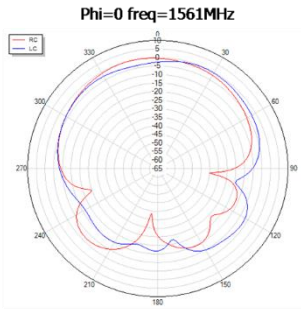
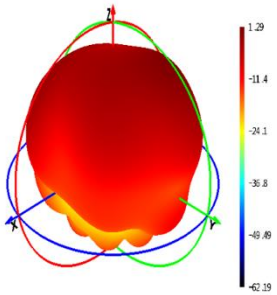
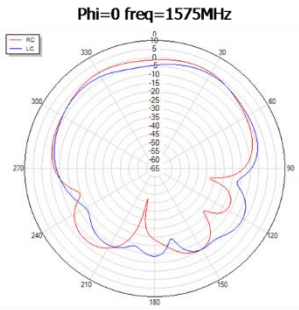
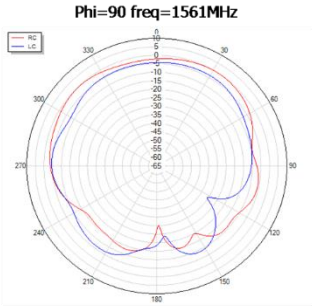
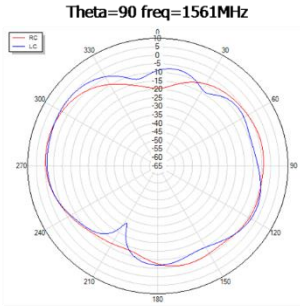
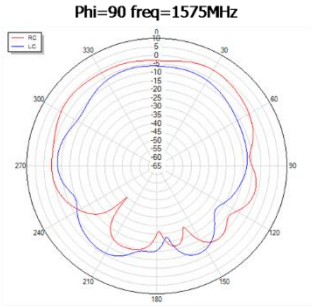
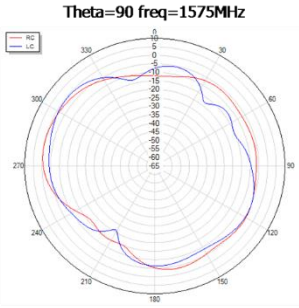
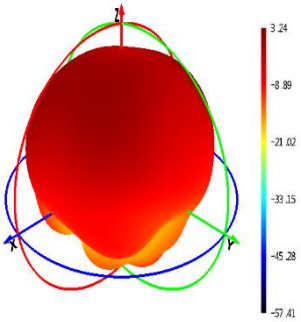
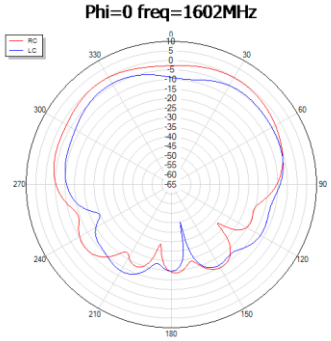
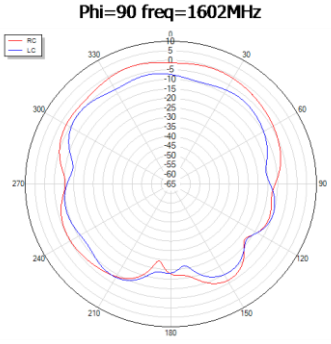
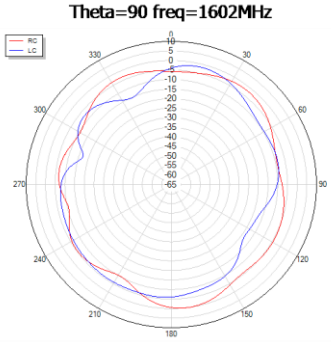
2450 MHz		2600 MHz	
			
			

- **4G-Peak Gain**

810 MHz		900 MHz	
			
			
1830 MHz		2310 MHz	
			
			

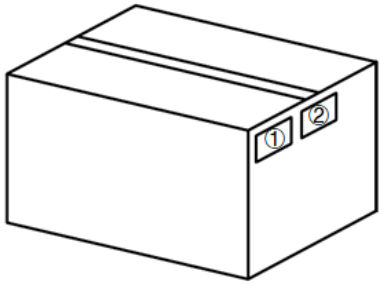
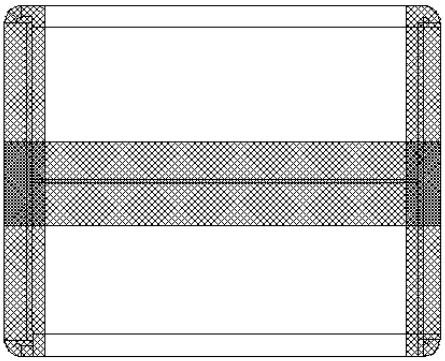
2500 MHz		2660 MHz	
			
			

- **GNSS**

1561 MHz		1575 MHz	
			
			
1602 MHz			
			
			

4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		1 antenna product head is wrapped with bubble bag. (1 Antenna / Bubble Bag) Whole antenna product in a small PE bag. (1 Antenna / Small PE Bag)
2		18 antenna products in a big PE bag. (18 Antennas / Big PE Bag)
3		(8 Big PE Bags / Carton Box) (144 Antennas / Carton Box) Estimated quantity Products that cannot fill the entire carton box are packed in a suitable size carton box. Carton Size: L × W × H = 470 × 430 × 310 mm

4		**Position for Attaching Labels** ① Carton Label ② Quality Label
5		**Sealing Cartons** H-shaped sealing cartons
Note	The initial packaging method described above is for reference only, and the final actual packaging method shall be subject to the actual shipping packaging.	

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
-	2025-12-09	Ryan Xun/ Faber Shen/ Lance Sun/ Strong Qiang/ Rainey Liao	Creation of the document
1.0	2025-12-09	Ryan Xun/ Faber Shen/ Lance Sun/ Strong Qiang/ Rainey Liao	First official release

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