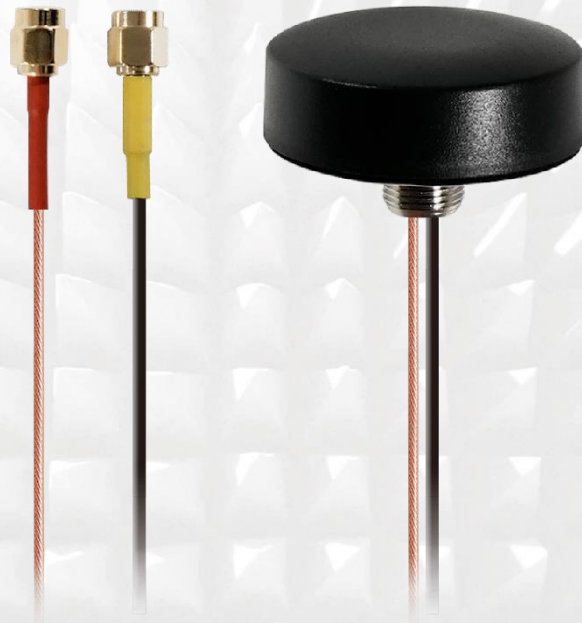




Antenna Datasheet

Product OC: YEMN205J1BM

Version: 1.0

Date: 2026-04-27

Status: Released

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

Key Features:

Frequency Band: 4G: 698–960 MHz, 1710–2690 MHz;

GNSS: 1565–1606 MHz

Dimensions: Φ 46 mm $\times$ 16 mm

Efficiency: Up to 54 % (FS)

GNSS LNA Gain: 28 $\pm$ 3 dB

RoHS Compliant

IP67

Overview

YEMN205J1BM is a 4G & GNSS 2in1 combo antenna measuring Φ 46 mm $\times$ 16 mm. This ultra-wide-band 4G & GNSS antenna provides broad coverage from 1565–1606 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 screw 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.

YEMN205J1BM has 1 $\times$ 4G LMH antennas and 1 $\times$ GNSS L1 antenna. It allows high efficiency, stable signal transmission and reception for active GNSS from 1565–1606 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.

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1 Specification

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

1.1. Electrical

Electrical Specifications			
Frequency Range	LTE	698–960 MHz, 1710–2690 MHz	
	GNSS	1565–1606 MHz	
Radiation Pattern	LTE	Omni-directional	
	GNSS	Directional	
Polarization	LTE	Linear	
	GNSS	RHCP	
Impedance		50 Ω	
Isolation	LTE-GNSS	FS	≤ -16.7 dB
		MP	≤ -14.2 dB

1.1.1. LTE

Electrical – Detail													
SPEC	Band	Band	B71	B12 /B13 /B28	B5 /B8 /B26	n74 /n75 /n76	B1 /B2 /B3	B40	Wi-Fi 2G	B38 /B41	B42 /B48 /n77	n79	Wi-Fi 5G
	Freq. (MHz)	600– 700	700– 810	820– 960	1420– 1520	1700– 2170	2300– 2400	2400– 2500	2500– 2690	3300– 4200	4400– 5000	5150– 5850	
Max. VSWR	FS	-	3.0	3.7	-	2.7	2.0	1.8	2.2	-	-	-	
	MP	-	5.3	4.6	-	2.4	2.5	2.9	3.1	-	-	-	
Max. Return Loss (dB)	FS	-	-6.0	-4.8	-	-6.7	-9.5	-11.3	-8.6	-	-	-	
	MP	-	-3.3	-3.8	-	-7.6	-7.5	-6.2	-5.8	-	-	-	
AVG Eff. (%)	FS	-	38.6	37.8	-	48.2	46.9	45.2	41.9	-	-	-	
	MP	-	26.6	28.4	-	37.0	22.9	26.4	38.5	-	-	-	
AVG AVG Gain (dB)	FS	-	-4.1	-4.2	-	-3.2	-3.3	-3.5	-3.8	-	-	-	
	MP	-	-5.8	-5.5	-	-4.7	-6.4	-5.8	-4.2	-	-	-	
Max. Peak Gain (dBi)	FS	-	0.9	1.3	-	4.7	2.9	3.9	3.1	-	-	-	
	MP	-	0.3	0.3	-	4.2	1.4	2.8	5.6	-	-	-	
VSWR			FS				≤ 3.7						
			MP				≤ 5.3						
Return Loss			FS				≤- 4.8 dB						
			MP				≤ -3.3 dB						
Gain			FS				≤ 4.7 dBi						
			MP				≤ 5.6 dBi						

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

1.1.2. GNSS

Band Frequency (MHz)	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	-	-	-	-	-		1.49	1.36
Return Loss (dB)	-	-	-	-	-		-14	-16.2
Efficiency (%)	-	-	-	-	-		47.4	45.1
Peak Gain (dBi)	-	-	-	-	-		0.47	0.59

LNA Electrical	
LNA Gain	28 ±3 dB @ 3-5 V 27 ±3 dB @ 1.8 V
Noise Figure	≤ 2.5 dB
Output VSWR	< 2.0
Input VSWR	< 2.0
Filter Out-of-Band Attenuation	60 dB f0 ±100 MHz f0 (1580 MHz)
Working Voltage	1.8–5 V
Working Current	8.3 ±2 mA
Impedance	50 Ω

1.2. Supported Bands

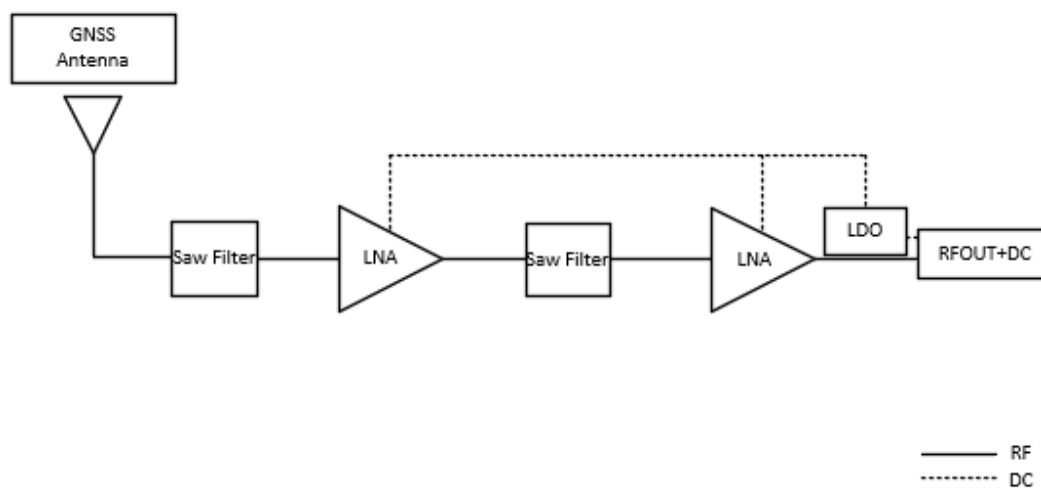
5G NR/ LTE/ LTE-Advanced/ WCDMA/ HSPA/ HSPA+/ GPRS/ GSM/ NB-IoT				
Band	Frequency (MHz)	Uplink (MHz)	Downlink (MHz)	LTE
1	2100	1920–1980	2110–2170	√
2	1900	1850–1910	1930–1990	√
3	1800	1710–1785	1805–1880	√
4	1700	1710–1755	2110–2155	√
5	850	824–849	869–894	√
7	2600	2500–2570	2620–2690	√
8	900	880–915	925–960	√
9	1800	1749.9–1784.9	1844.9–1879.9	√
11	1500	1427.9–1447.9	1475.9–1495.9	-
12	700	699–716	729–746	√
13	700	777–787	746–756	√
14	700	788–798	758–768	√
17	700	704–716	734–746	√
18	850	815–830	860–875	√
19	850	830–845	875–890	√
20	800	832–862	791–821	√
21	1500	1447.9–1462.9	1495.9–1510.9	-
22	3500	3410–3490	3510–3590	-
23	2100	2000–2020	2180–2200	√
24	1600	1626.5–1660.5	1525–1559	-
25	1900	1850–1915	1930–1995	√
26	850	814–849	859–894	√

5G NR/ LTE/ LTE-Advanced/ WCDMA/ HSPA/ HSPA+/ GPRS/ GSM/ NB-IoT				
Band	Frequency (MHz)	Uplink (MHz)	Downlink (MHz)	LTE
28	700	703–748	758–803	√
31	450	452.5–457.5	462.5–467.5	-
34	2100	2010–2025		√
38	2600	2570–2620		√
39	1900	1880–1920		√
40	2300	2300–2400		√
41	2500	2496–2690		√
42	3500	3400–3600		-
48	3500	3550–3700		-
66	1700	1710–1780	2110–2200	√
71	600	663–698	617–652	-
74	1500	1427–1470	1475–1518	-
77	3500	3300–4200		-
78	3500	3300–3800		-
79	4500	4400–5000		-

1.3. Mechanical & Environmental

Mechanical		
Antenna Dimensions		Φ 46 mm × 16 mm
Antenna Material & Color		ABS & Black
Cable Type & Color & Length	LTE	RG174 & Black & 300 ±20 mm
	GNSS	RG178 & Brown & 300 ±20 mm
Connector Type	LTE	SMA Male (The current state of the SMA connector is not waterproof. If a waterproof connector is required, it can be customized.)
	GNSS	SMA Male (The current state of the SMA connector is not waterproof. If a waterproof connector is required, it can be customized.)
Weight		Typ. 39.78 g
Mounting Type		Screw (M12 Nut)
Environmental		
Storage Temperature		-40 °C to +85 °C
Operation Temperature		-40 °C to +85 °C
Ingress Protection (IP) Rating		IP67
RoHS Compliant		Yes

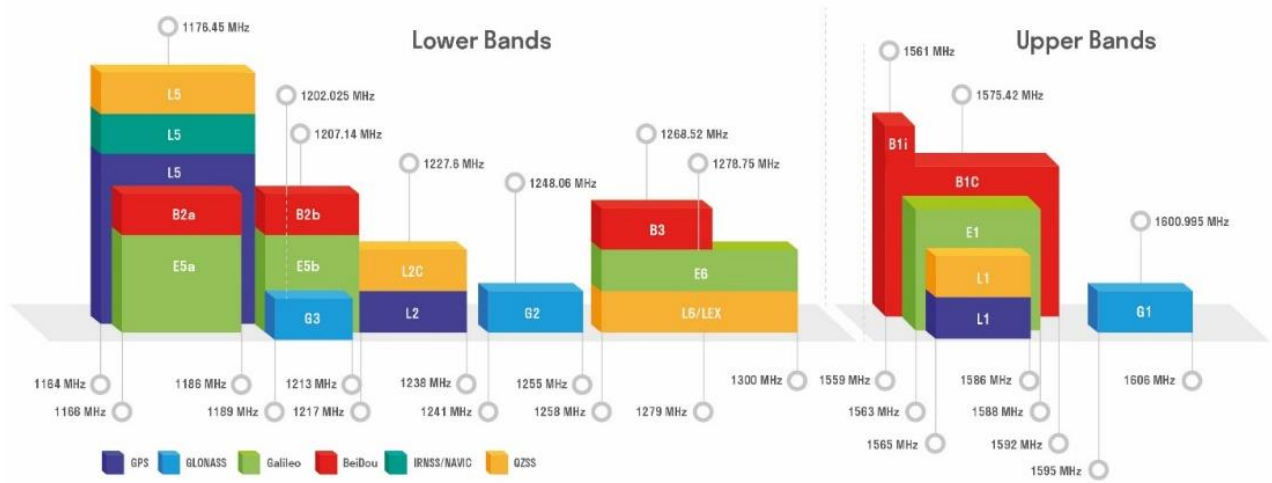
1.4. Block Diagram (Active Antenna)



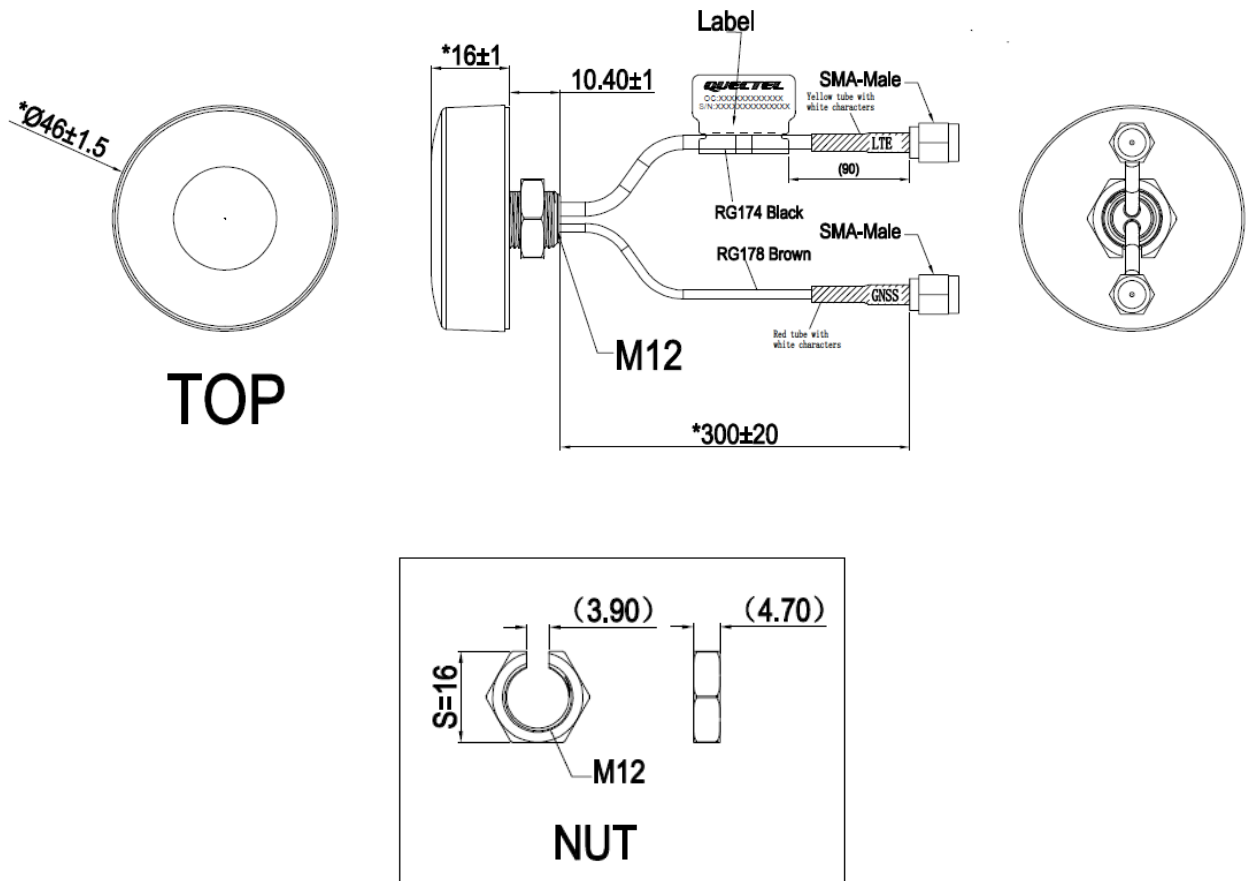
1.5. Supported GNSS Frequency Bands

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-L10C-L10F Centre 1601 (1595–1606)	G2-L20C-L20F Centre 1248.06 (1241–1255)	G3-L30C 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)				
	-				

GNSS Bands and Constellations



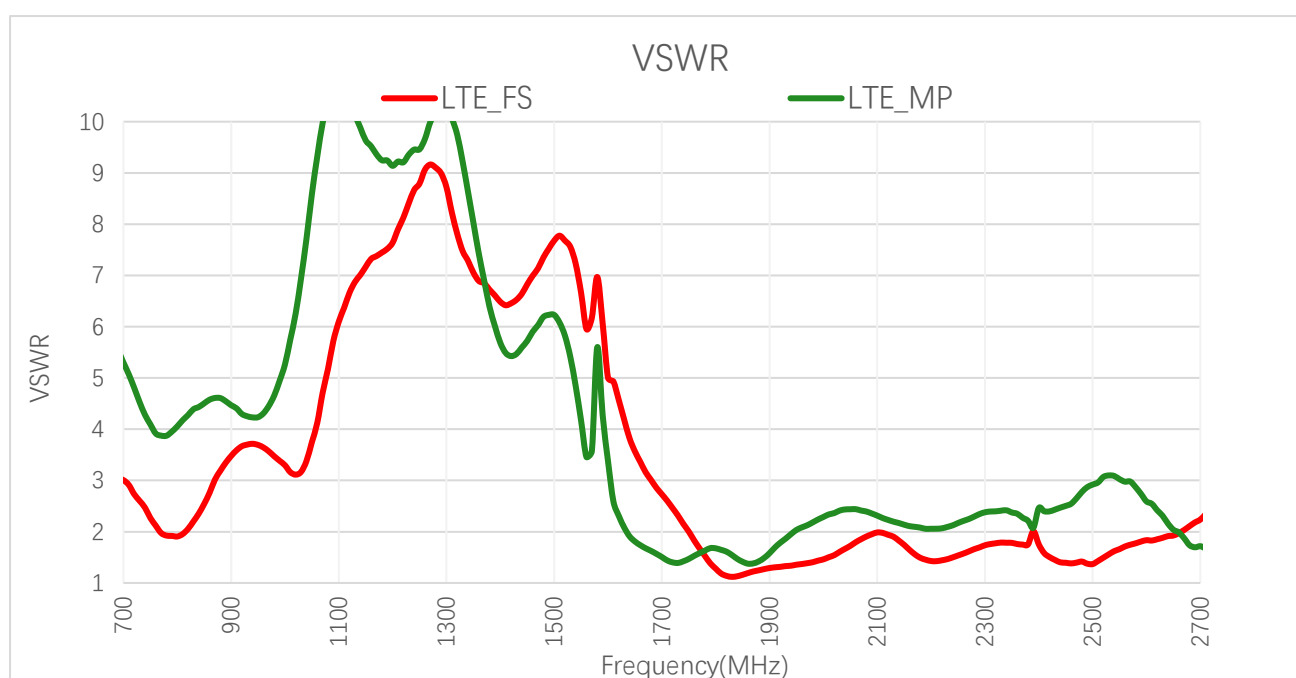
2 Drawing



3 Detailed Performance

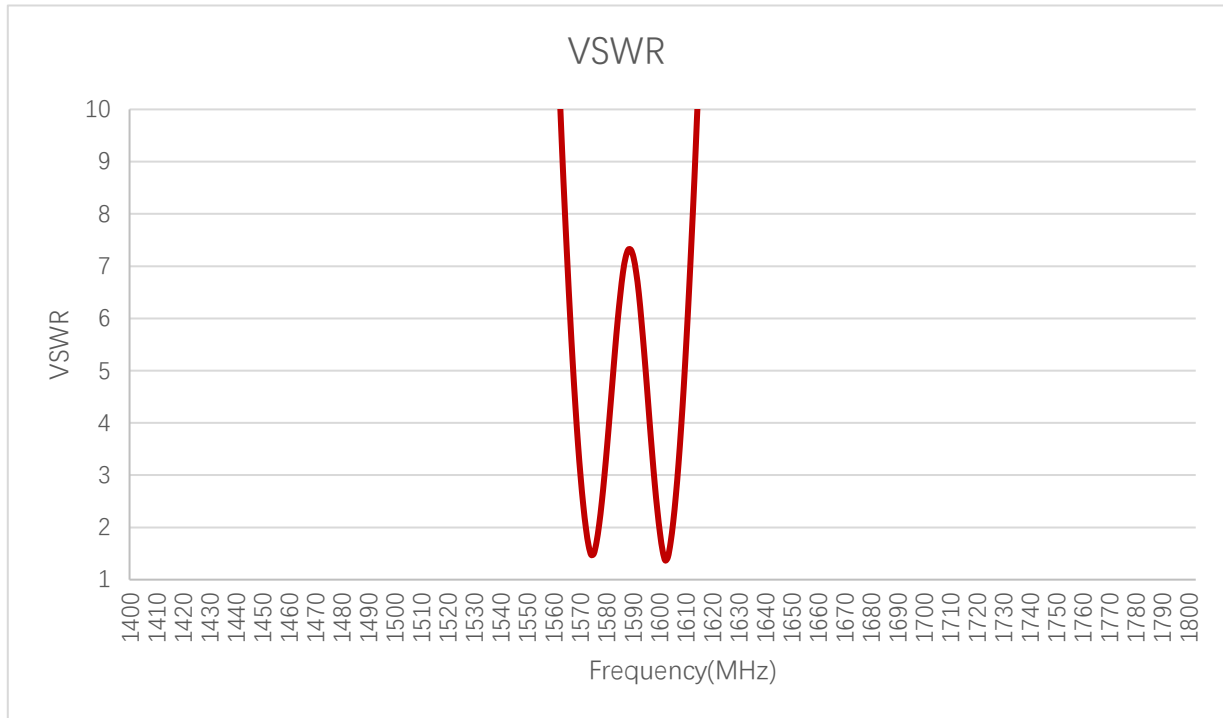
3.1. S-Parameter Test

3.1.1. VSWR



VSWR – LTE

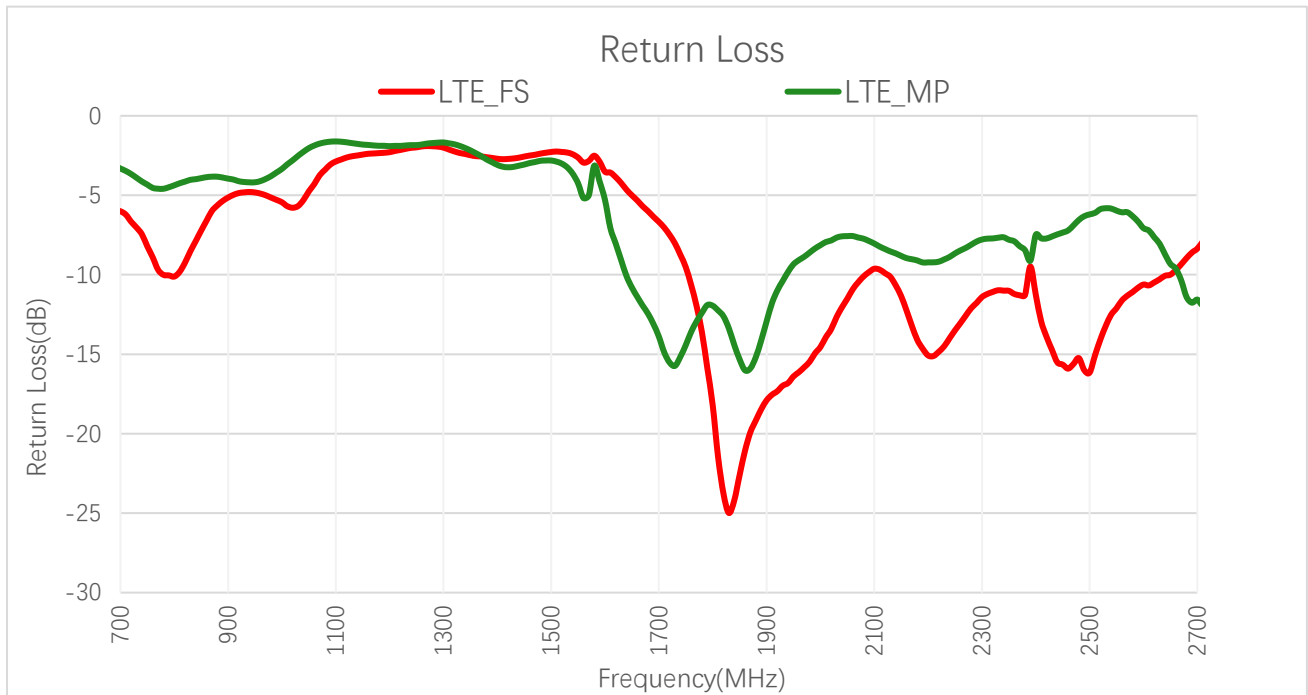
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
FS	-	-	2.9	2.2	3.5	3.6	-	2.6	2.2	1.2
MP	-	-	5.1	4.4	4.5	4.3	-	1.4	1.4	1.4
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
FS	1.4	1.8	1.8	1.4	1.8	2.2	-	-	-	-
MP	2.0	2.2	2.4	2.5	2.6	1.7	-	-	-	-



VSWR – GNSS

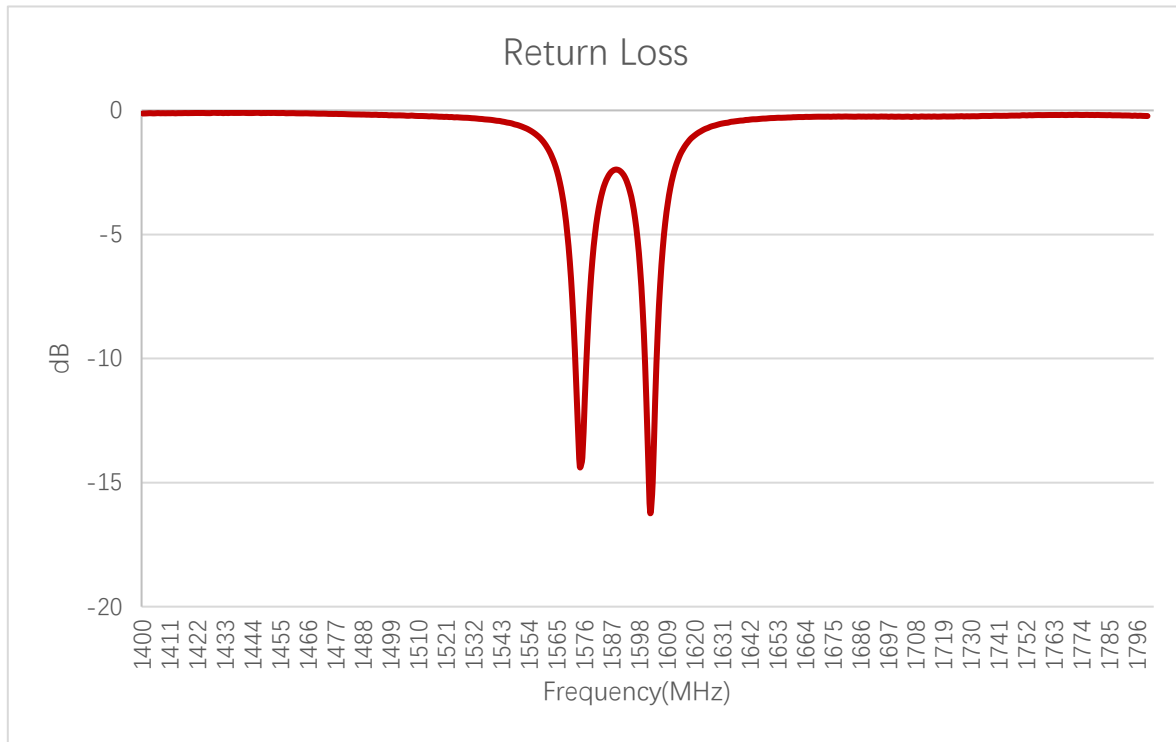
Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	-	1.49	1.36

3.1.2. Return Loss



Return Loss (dB) – LTE

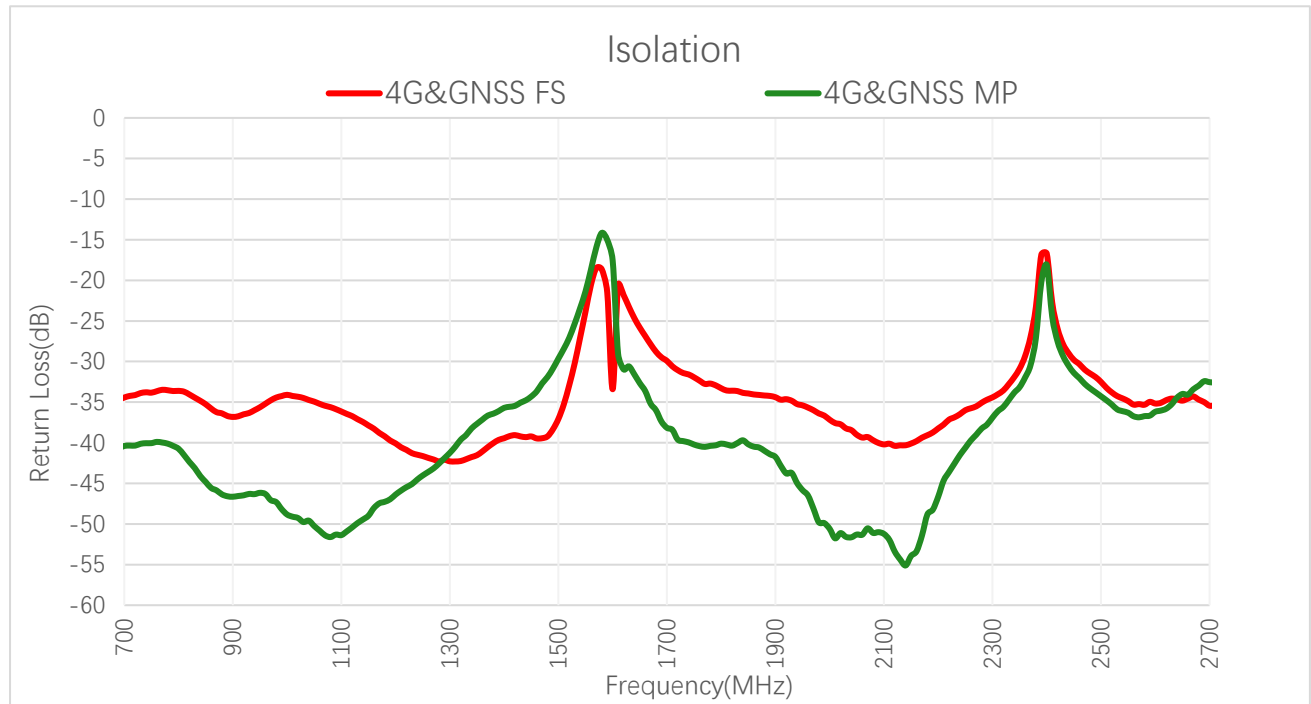
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
FS	-	-	-6.2	-8.5	-5.1	-4.9	-	-7.0	-8.7	-19.2
MP	-	-	-3.5	-4.0	-4.0	-4.1	-	-14.9	-15.2	-15.2
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
FS	-16.4	-10.7	-11.0	-15.7	-10.6	-8.6	-	-	-	-
MP	-9.3	-8.7	-7.8	-7.3	-7.1	-11.8	-	-	-	-



Return Loss(dB) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-	-	-	-	-	-	-14	-16.2

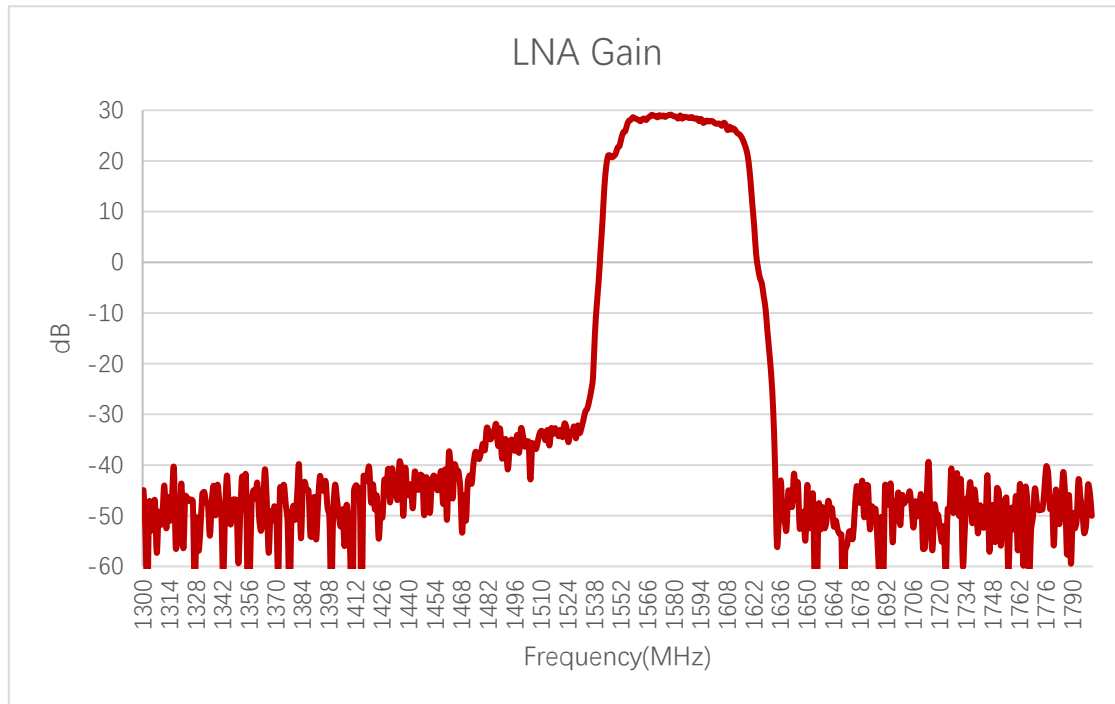
3.1.3. Isolation



Max Isolation (dB)

Band		B71	B12/ B13/ B28	B5/ B8/ B26	n74/ n75/ n76	B1/ B2/ B3	B40	Wi-Fi 2G	B38/ B41	B42/ B48/ n77	BDS B1I	GPS L1
Freq. (MHz)		600– 700	700– 810	820– 960	1420– 1520	1700– 2170	2300– 2400	2400– 2500	2500– 2690	3300– 4200	1559– 1564	1565– 1586
LTE & GNSS	FS	-	-33.5	-34.1	-	-29.9	-16.7	-16.7	-32.5	-	-20.6	-18.5
	MP	-	-39.9	-42.4	-	-38.2	-18.1	-18.1	-32.4	-	-18.7	-14.2

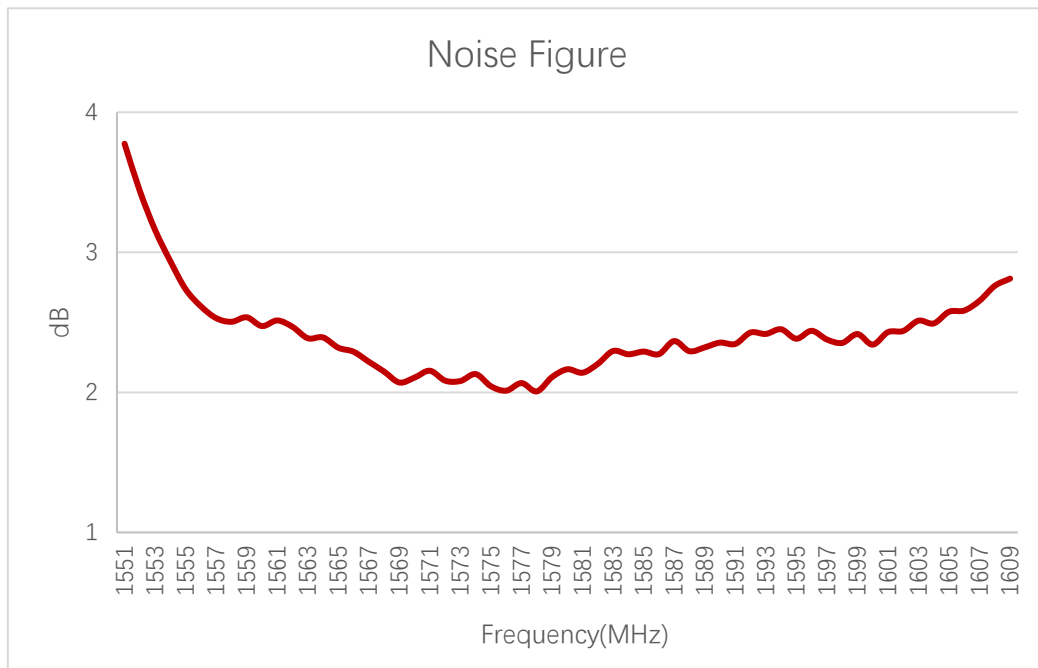
3.1.4. GNSS LNA Gain



LNA Gain (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	-	-	-	-	-	28.1	28.6	27.3

3.1.5. GNSS Noise Figure

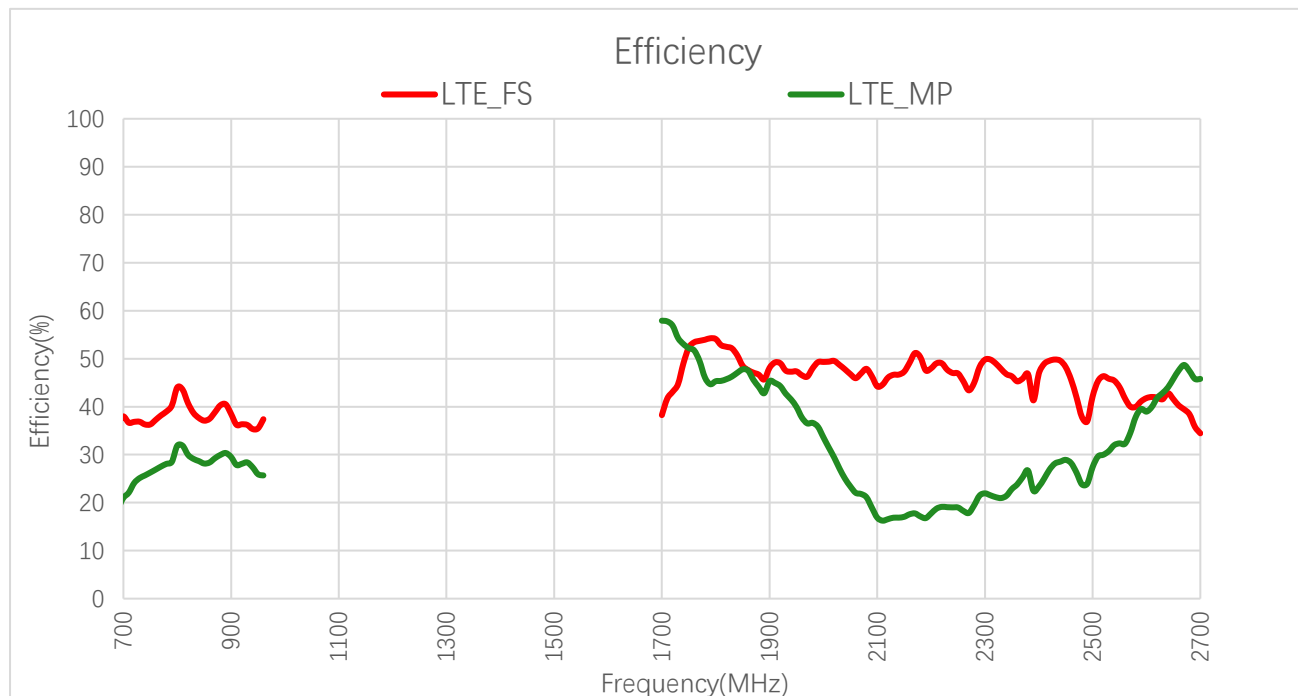


Noise Figure (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Noise Figure (dB)	-	-	-	-	-	2.5	2.04	2.43

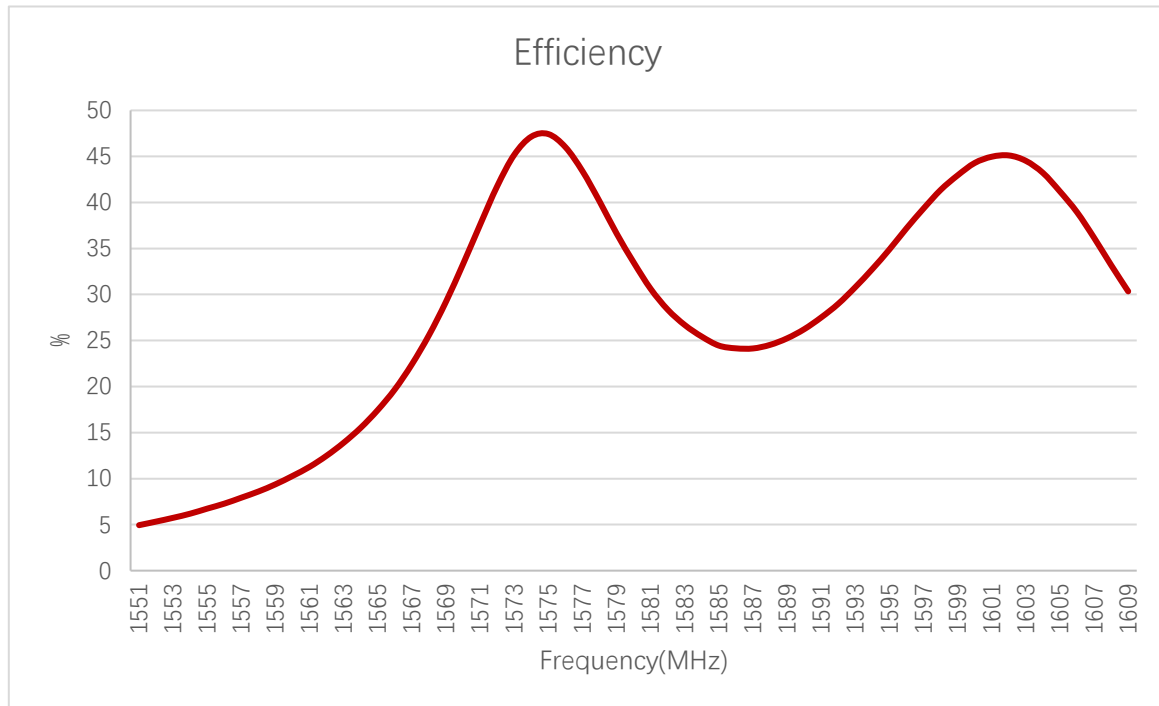
3.2. Radiation Performance Test

3.2.1. Efficiency



Efficiency (%) – LTE

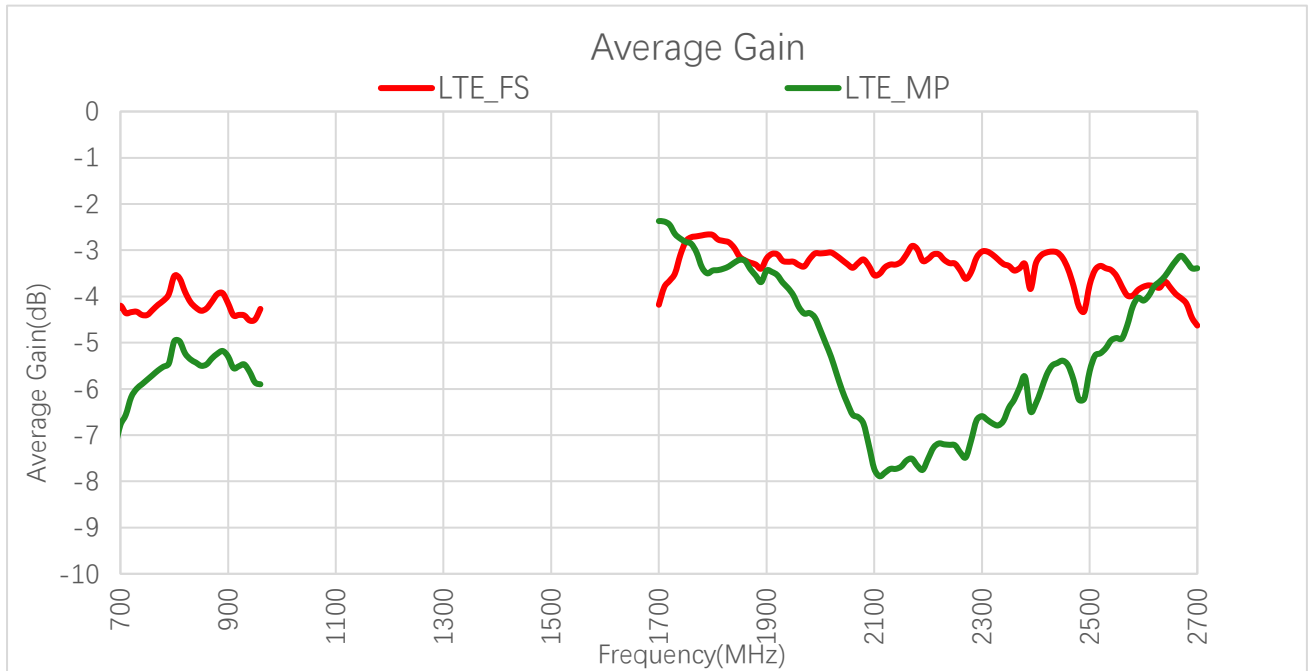
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
FS	-	-	36.7	38.7	38.5	37.4	-	41.7	49.0	46.7
MP	-	-	22.1	29.1	29.5	25.7	-	57.8	53.1	44.1
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
FS	47.4	46.7	46.3	48.3	41.8	35.8	-	-	-	-
MP	40.0	16.9	22.8	28.9	39.0	45.8	-	-	-	-



Efficiency (%) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	-	47.4	45.1

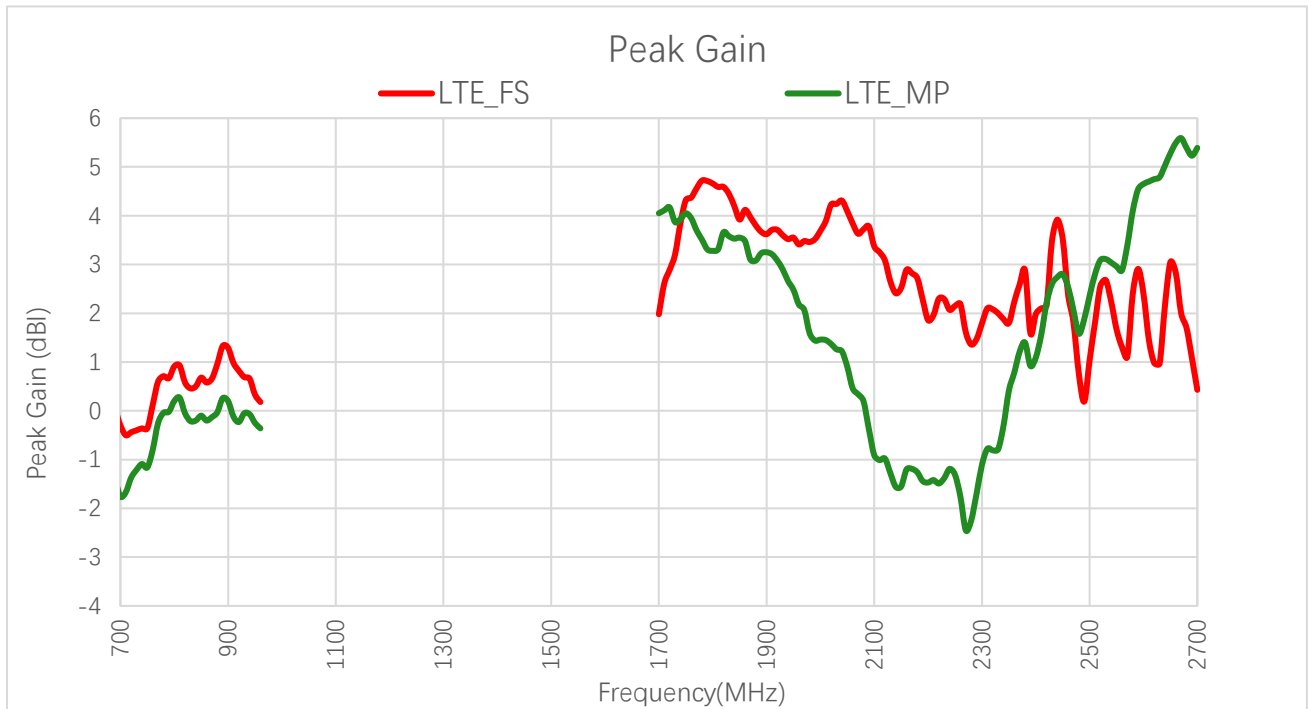
3.2.2. Average Gain



Average Gain (dB) – LTE

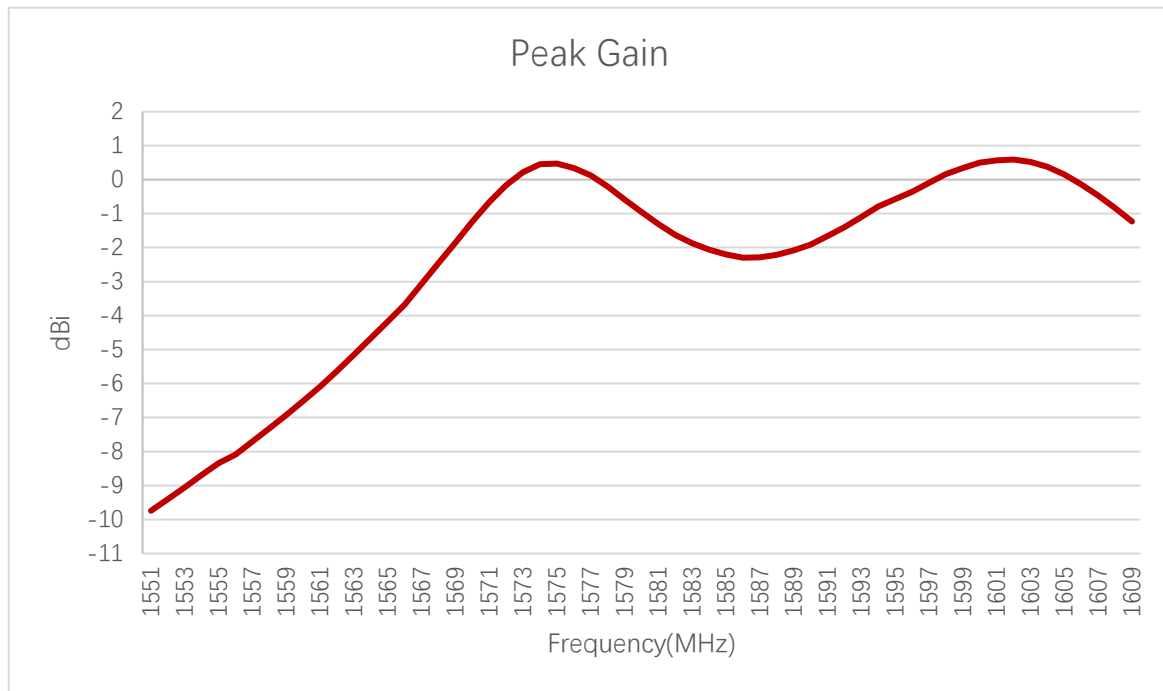
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
FS	-	-	-4.4	-4.1	-4.2	-4.3	-	-3.8	-3.1	-3.3
MP	-	-	-6.6	-5.4	-5.3	-5.9	-	-2.4	-2.8	-3.6
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
FS	-3.3	-3.3	-3.3	-3.2	-3.8	-4.5	-	-	-	-
MP	-4.0	-7.7	-6.4	-5.4	-4.1	-3.4	-	-	-	-

3.2.3. Peak Gain



Peak Gain (dBi) – LTE

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
FS	-	-	-0.5	0.5	1.3	0.2	-	2.6	3.8	3.8
MP	-	-	-1.7	-0.2	0.2	-0.4	-	4.1	3.9	3.1
Frequency (MHz)	1950	2140	2350	2450	2600	2690	4700	5000	5500	6000
FS	3.6	2.4	1.8	3.5	2.4	1.1	-	-	-	-
MP	2.5	-1.6	0.4	2.8	4.7	5.2	-	-	-	-

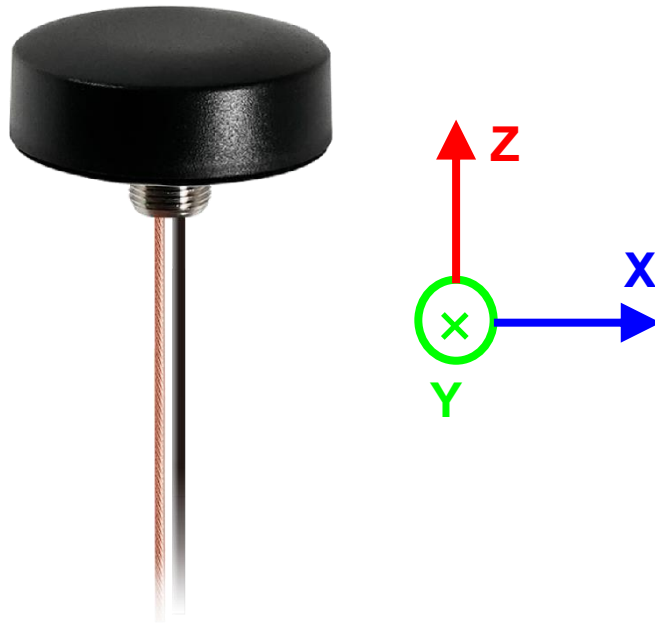


Peak Gain (dBi) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-	-	0.47	0.59

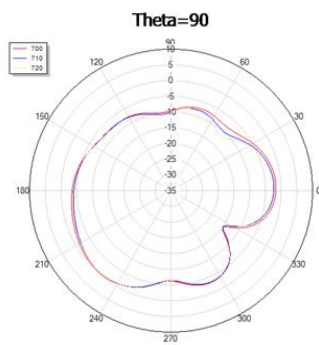
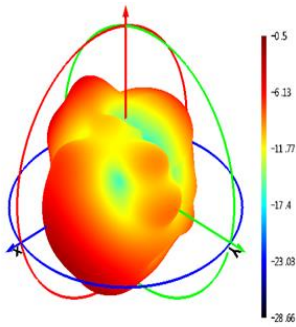
3.2.4. 3D & 2D Radiation Pattern

- Test Condition: Free space
- Test Chamber: HF-S-1 (LTE); SH-SY-16 (GNSS)

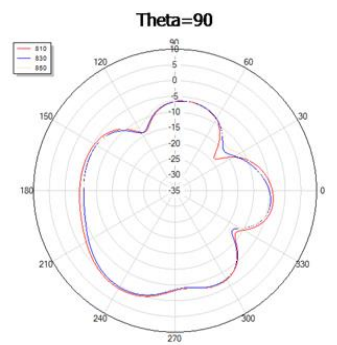
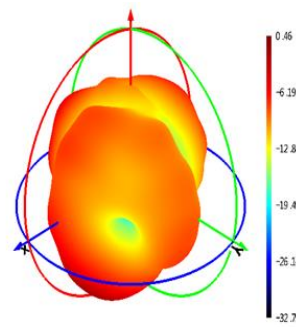


● **LTE**

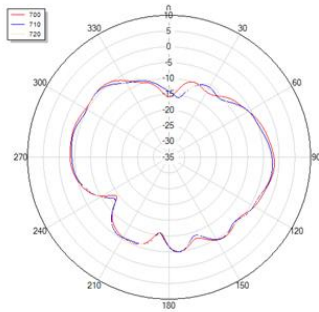
710 MHz



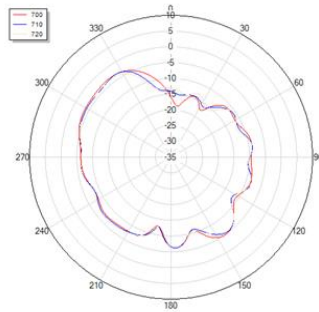
830 MHz



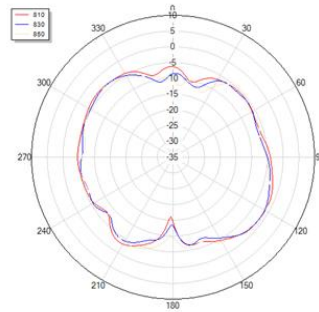
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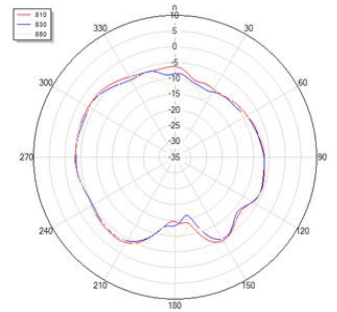
Phi=90



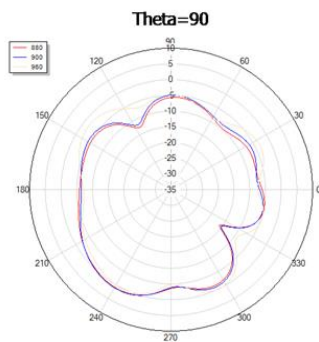
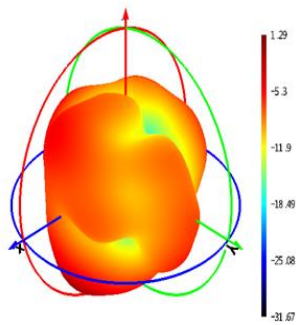
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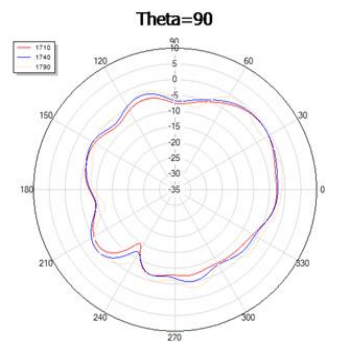
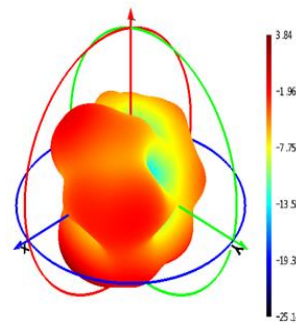
Phi=90



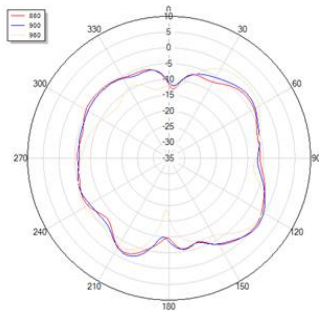
900 MHz



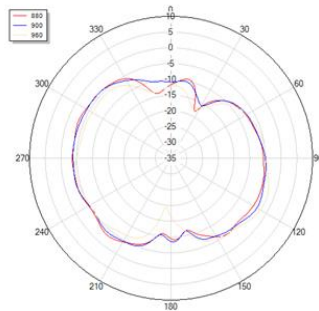
1740 MHz



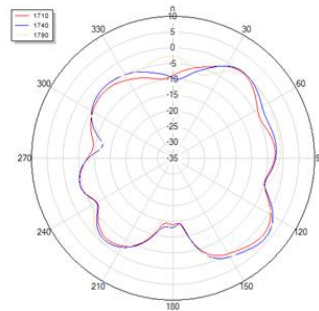
Phi=0



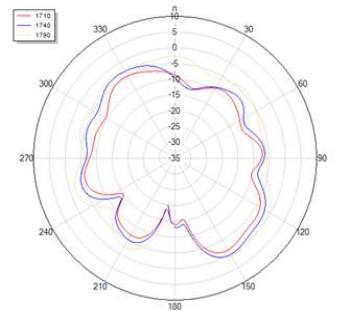
Phi=90

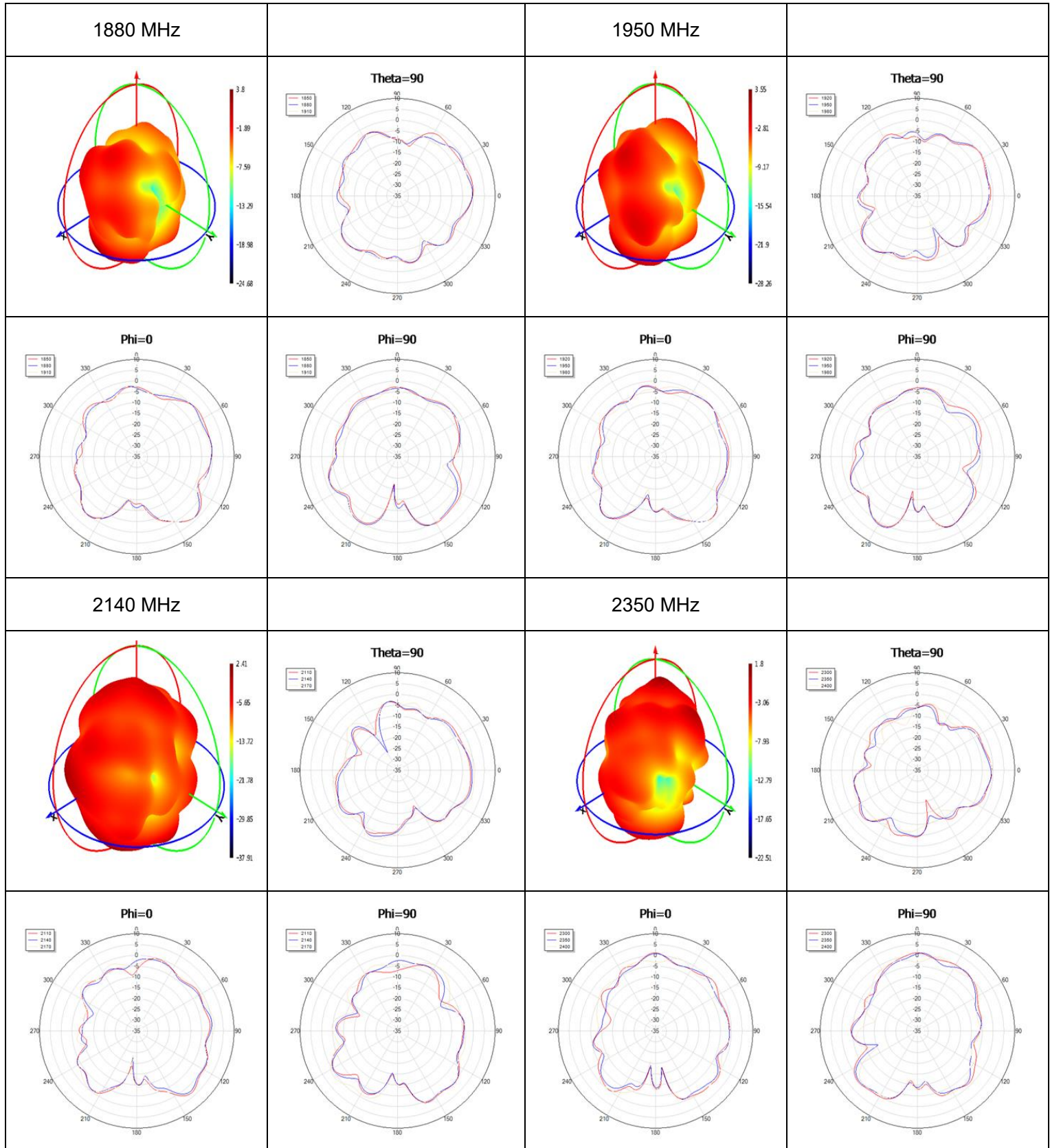


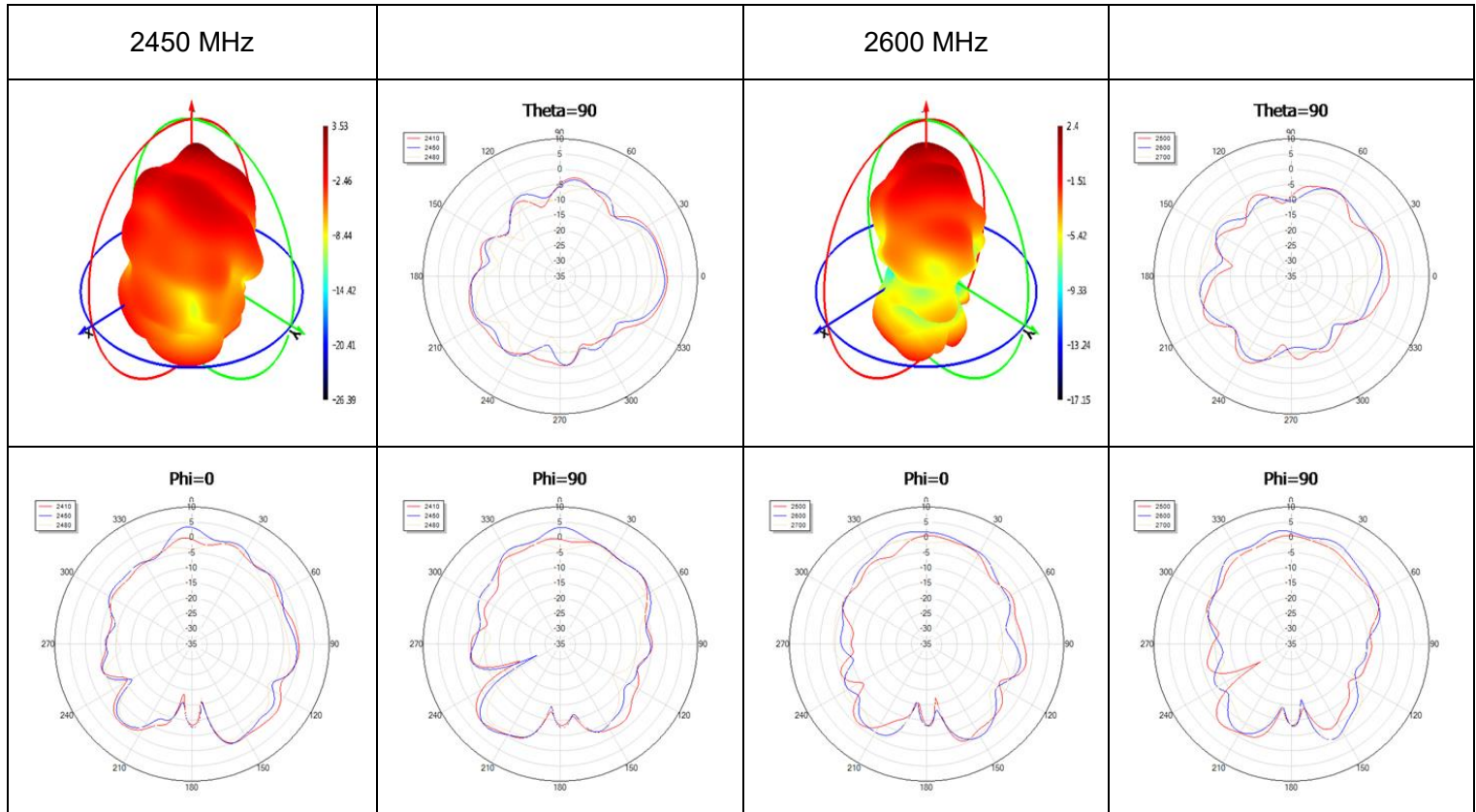
Phi=0



Phi=90



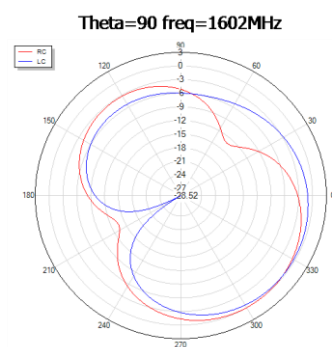
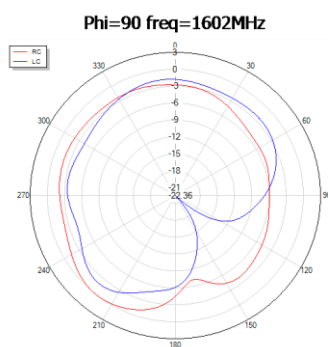
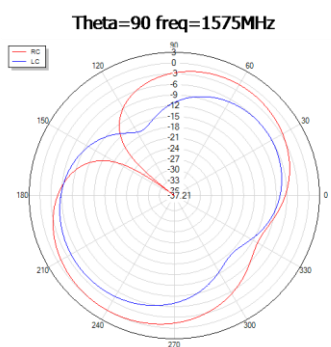
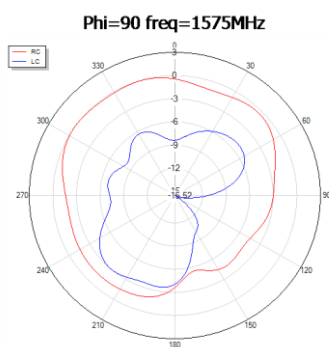
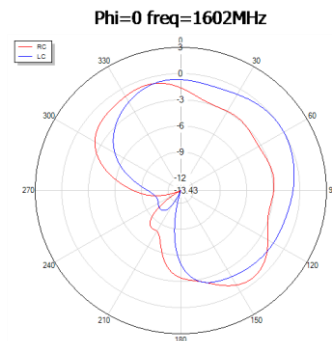
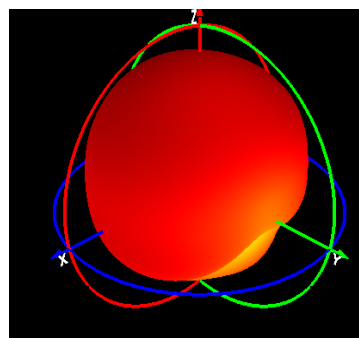
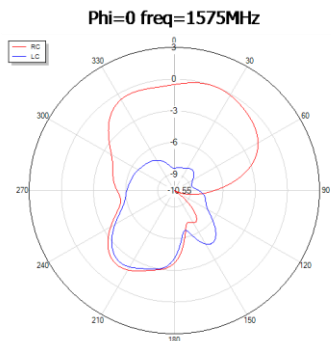
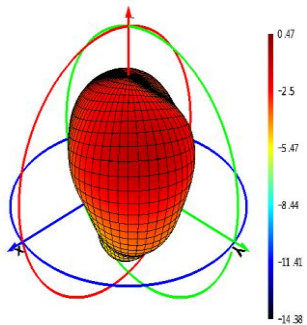




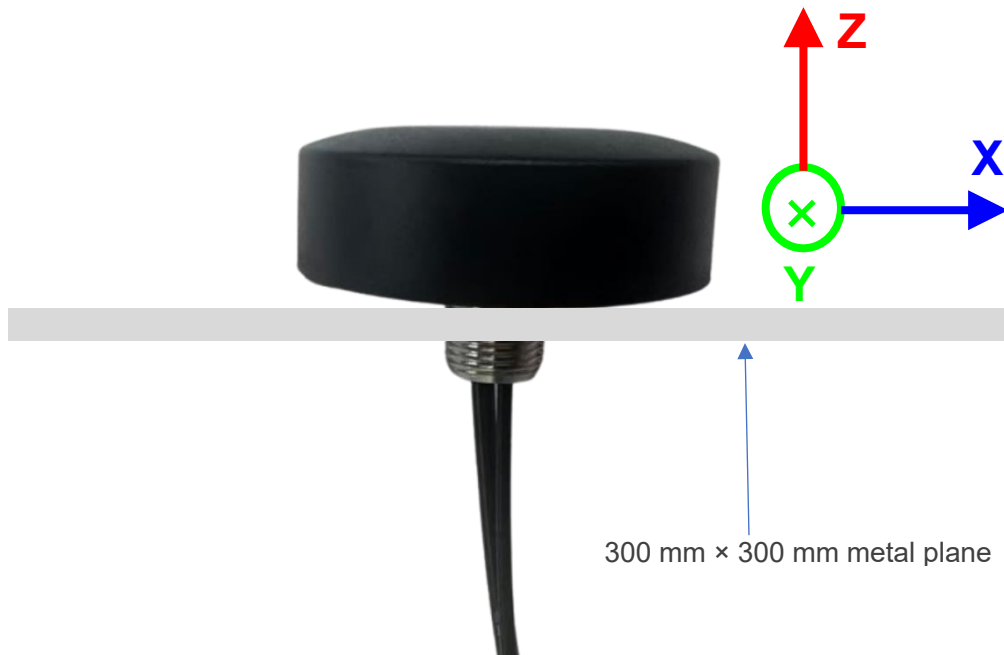
● **GNSS**

1575 MHz

1602 MHz

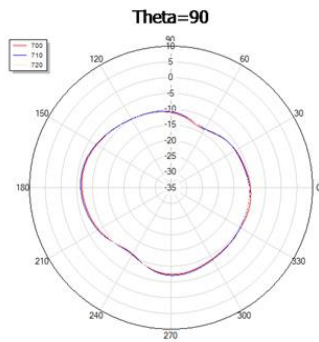
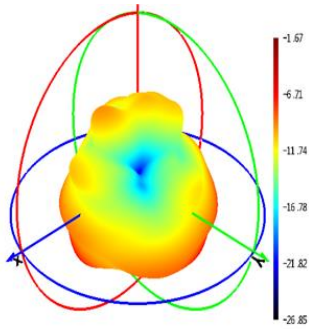


- Test Condition: On 300 mm × 300 mm Metal Plane
- Test Chamber: HF-S-1 (LTE)

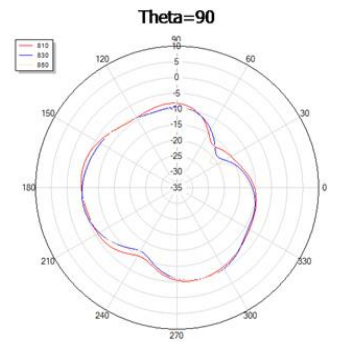
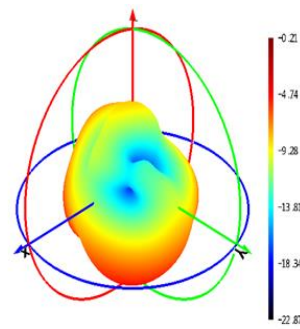


● **LTE**

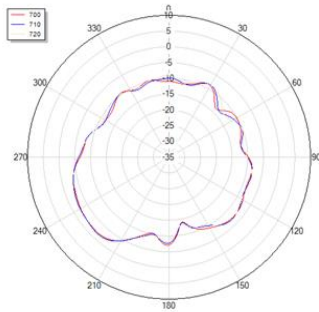
710 MHz



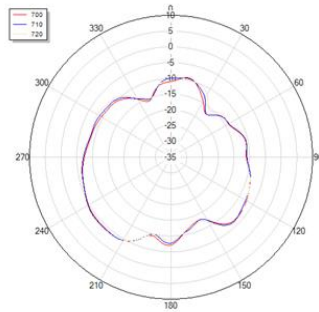
830 MHz



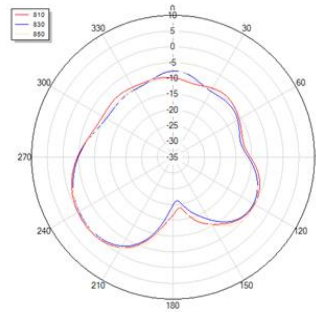
Phi=0



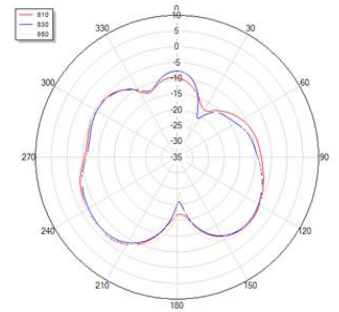
Phi=90



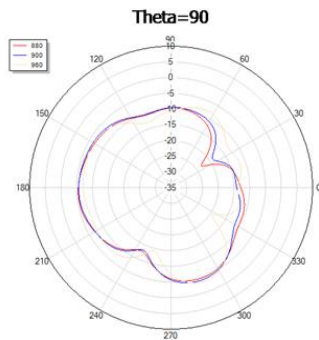
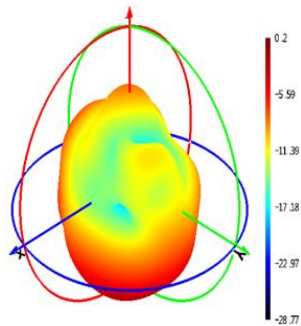
Phi=0



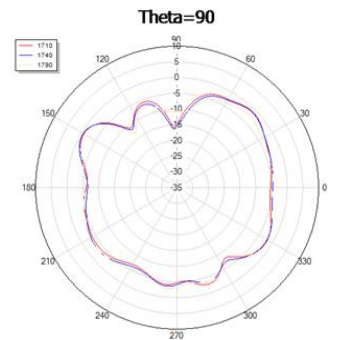
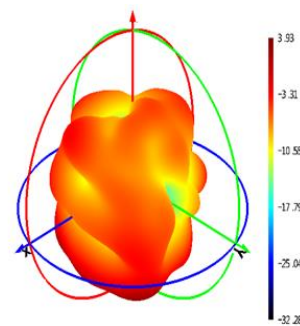
Phi=90



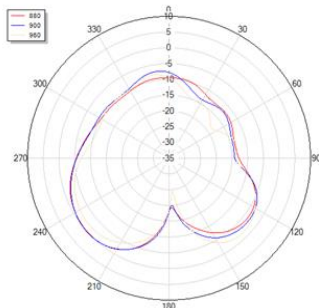
900 MHz



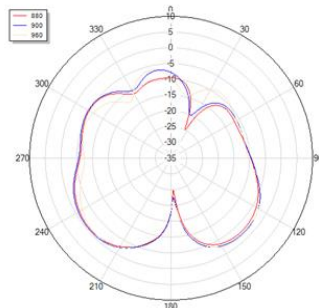
1740 MHz



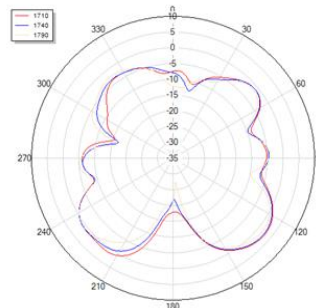
Phi=0



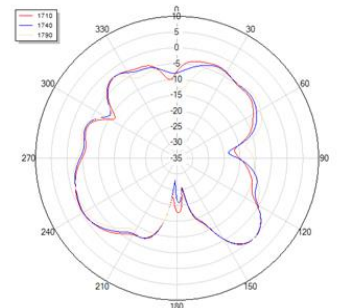
Phi=90

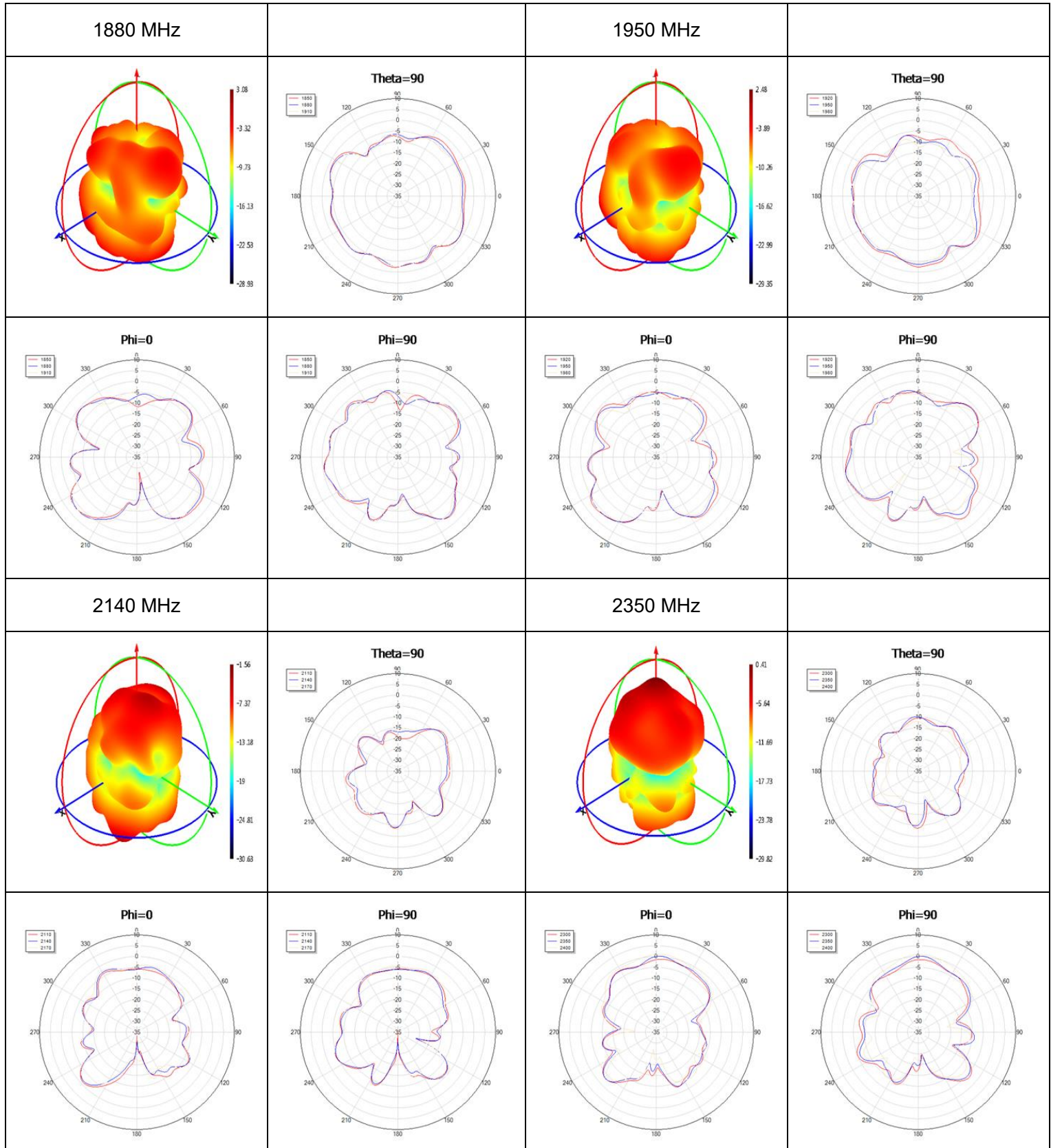


Phi=0

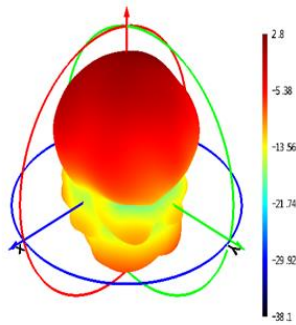


Phi=90

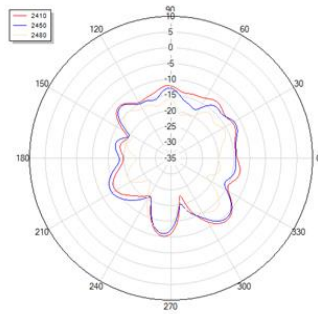




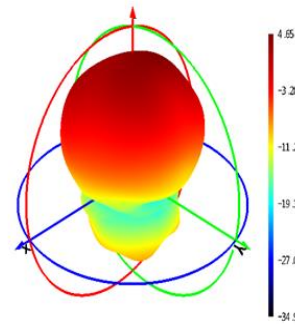
2450 MHz



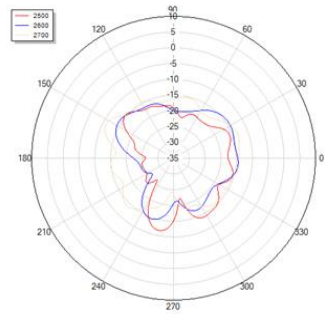
Theta=90



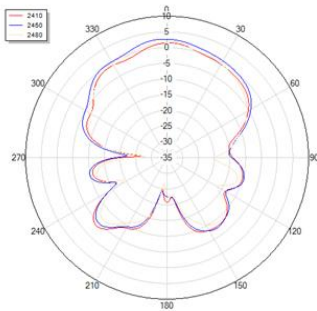
2600 MHz



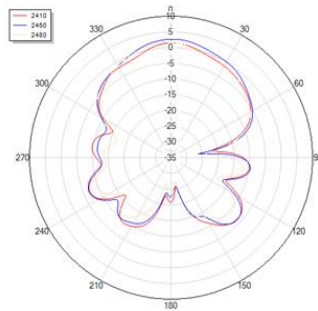
Theta=90



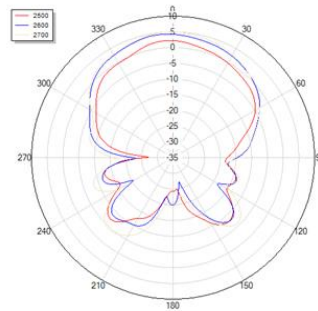
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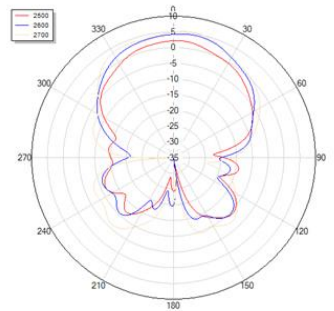
Phi=90



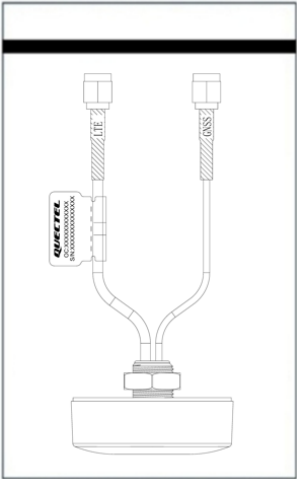
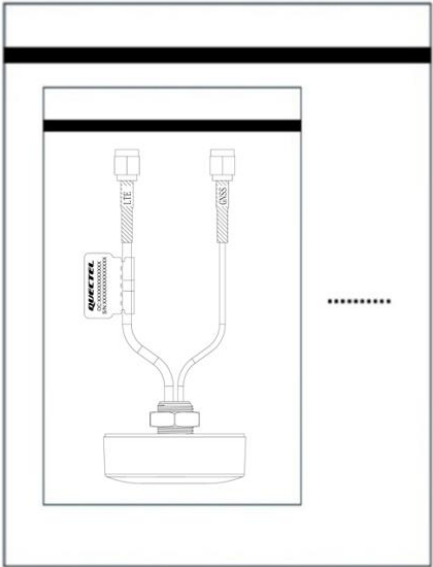
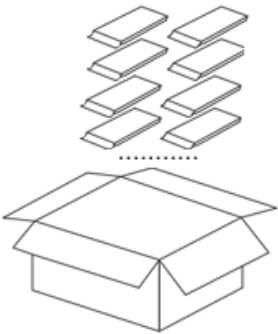
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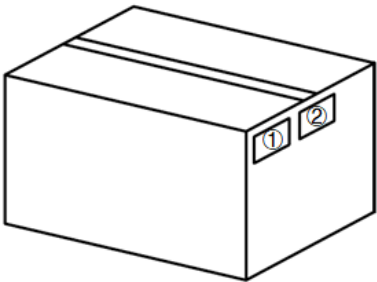
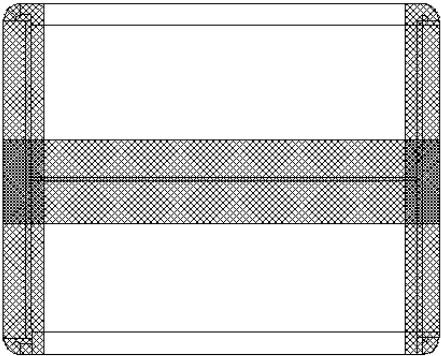


Phi=90



4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		1 antenna product in a small PE bag. (1 Antenna / Small PE Bag)
2		20 antenna products in a big PE bag. (20 Antennas / Big PE Bag)
3		(14 Big PE Bags / Carton Box) (280 Antennas / Carton Box) Estimated quantity Products that cannot fill the entire carton box are packed in a suitable size carton box. <u>Carton Size:</u> <u>L × W × H = 470 × 430 × 310 mm</u>

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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Revision History

Version	Date	Author	Note
-	2026-04-27	Christopher Yao/ Junsen Li/ Blake Xiang/ Kessie Geng/ Rainey Liao	Creation of the document
1.0	2026-04-27	Christopher Yao/ Junsen Li/ Blake Xiang/ Kessie Geng/ Rainey Liao	First official release



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