Antenna Datasheet

Product OC: YENA00L5AH
Version: 1.0
Date: 2026-01-26
Status: Preliminary

Product Name: 5G & WIFI & AM/FM & Tetra & LTE B88 & GNSS 10in1 Screw Mount Combo External Antenna

Key Features:

Optimized for 5G Networks, GNSS L1 & L5, Tetra, AM/FM, LTE B88, WIFI
Dimensions: 225 mm × 145 mm × 56.4 mm
RoHS and REACH Compliant
IP67

Overview

YENA00L5AH is a 5G & WIFI & AM/FM & Tetra & LTE B88 & GNSS combo antenna measuring 225 mm × 145 mm × 56.4 mm. This ultra-wide-band antenna provides broad coverage from 1–7,000 MHz whilst offering backward-compatibility to support 4G/3G and 2G networks as well as LTE Cat-M and narrowband IoT (NB-IoT). The antenna is available with connection via 10 cable lengths from 3000 mm, terminated with SMA Male connectors. Ideal for applications where the antenna is required to be discrete, this low-profile, screw mount omni-directional antenna is easy to install with maximum durability assured thanks to its IP67 rated enclosure. It is compatible with Quectel's RM520x Series modules.

The YENA00L5AH is a high-performance combo antenna integrating 10 internal elements: dual 5G, dual n77, dual Wi-Fi, dual TETRA, AM & FM and a single active GNSS (L1/L5) antenna. It ensures efficient, stable signal transmission and reception across all supported bands—from GNSS (1164–1189 MHz & 1559–1606 MHz) and low-frequency FM to 5G, Wi-Fi, AM & FM, and critical TETRA communications. Designed for harsh environments, it features a robust, UV-resistant (UL 746C F1) and flame-retardant (UL 94 V-0) enclosure. High inter-antenna isolation is guaranteed to prevent self-interference.
Typical Applications Include:

- Smart Utilities and Buildings
- Digital Signage
- Warehouses & Logistic systems
- Industrial factory automation, robotic machinery and other M2M systems
- Transport (Busses, Utility & Public Safety)
- Mining Vehicles & Machinery communications, telemetry and automation

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 1 m × 1 m Metal Plane

1.1. Electrical

Electrical Specifications		
Frequency Range	**5G & 5G AUX**	700–960 MHz, 1710–2690 MHz, 3300–5000 MHz
	n77_1 & n77_2	1710–2690 MHz, 3300–5000 MHz
	Wi-Fi 1 & Wi-Fi 2	2400–2500 MHz, 5150–5850 MHz, 5925–7125 MHz
	400_1	380–430 MHz
	400_2	410–430 MHz
	AM & FM	540–1710 kHz, 86–108 MHz
	GNSS	1164–1189 MHz, 1559–1606 MHz
Radiation Pattern	**5G & 5G AUX**	Omni-directional
	n77_1 & n77_2	Omni-directional
	Wi-Fi 1 & Wi-Fi 2	Omni-directional
	400_1	Omni-directional
	400_2	Omni-directional
	AM & FM	Omni-directional
	GNSS	Directional
Polarization	**5G & 5G AUX**	Linear
	n77_1 & n77_2	Linear
	Wi-Fi 1 & Wi-Fi 2	Linear
	400_1	Linear

	400_2	Linear
	AM & FM	Linear
	GNSS	RHCP
Impedance		50 Ω
Isolation		≤ -7.5 dB

1.1.1. 5G

Band / 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	Main	-	2.3	2.6	-	2.0	1.8	1.7	1.7	1.6	2.0	-
	AUX	-	3.7	2.8	-	2.2	2.1	1.9	2.0	2.0	1.7	-
Max Return Loss (dB)	Main	-	-7.9	-7.0	-	-9.6	-11.2	-12.1	-12.0	-12.5	-9.3	-
	AUX	-	-4.9	-6.6	-	-8.4	-8.8	-10.5	-9.5	-9.8	-11.8	-
AVG Eff. (%)	Main	-	34.2	28.1	-	26.8	31.1	34.4	33.4	25.8	13.5	-
	AUX	-	11.8	20.2	-	21.7	23.5	21.5	27.4	26.3	18.6	-
AVG AVG Gain (dB)	Main	-	-4.7	-5.6	-	-5.7	-5.1	-4.6	-4.8	-5.9	-8.7	-
	AUX	-	-9.4	-7.0	-	-6.7	-6.3	-6.7	-5.6	-5.8	-7.3	-
Max Peak Gain (dBi)	Main	-	2.4	0.8	-	3.6	2.5	3.8	4.2	3.6	0.9	-
	AUX	-	0.1	1.6	-	1.6	2.2	1.2	2.1	3.9	2.4	-
VSWR	Main	≤ 2.6										
	AUX	≤ 3.7										
Return Loss	Main	≤ -7.0 dB										
	AUX	≤ -4.9 dB										
Peak Gain	Main	≤ 4.2 dBi										
	AUX	≤ 3.9 dBi										

- 5G: Main, AUX Antennas
- MP: On 1 m × 1 m Metal Plane

1.1.2. n77

Band / 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	n77_1	-	-	-	-	1.6	1.5	1.7	2.0	1.6	1.7	1.6
	n77_2	-	-	-	-	1.9	1.5	1.5	1.5	1.7	1.5	1.9
Max Return Loss (dB)	n77_1	-	-	-	-	-12.3	-13.7	-12.0	-9.7	-12.9	-11.3	-12.3
	n77_2	-	-	-	-	-10.3	-13.6	-14.5	-14.4	-11.7	-13.5	-10.3
AVG Eff. (%)	n77_1	-	-	-	-	27.4	26.9	26.7	25.0	26.2	19.2	27.4
	n77_2	-	-	-	-	27.8	31.1	29.6	30.1	26.5	22.2	27.8
AVG AVG Gain (dB)	n77_1	-	-	-	-	-5.7	-5.7	-5.7	-6.0	-5.8	-7.2	-5.7
	n77_2	-	-	-	-	-5.6	-5.1	-5.3	-5.2	-5.8	-6.5	-5.6
Max Peak Gain (dBi)	n77_1	-	-	-	-	2.6	3.0	3.5	3.9	4.5	1.4	2.6
	n77_2	-	-	-	-	4.1	2.6	3.4	3.3	5.9	7.0	4.1
VSWR	n77_1	≤ 2.0										
	n77_2	≤ 1.9										
Return Loss	n77_1	≤ -9.7 dB										
	n77_2	≤ -10.3 dB										
Peak Gain	n77_1	≤ 4.5 dBi										
	n77_2	≤ 7.0 dBi										

- n77: n77_1, n77_2 Antennas
- MP: On 1 m × 1 m Metal Plane

1.1.3. Wi-Fi

Electrical – Detail				
Band / Specification	Band	Wi-Fi 2G	Wi-Fi 5G	Wi-Fi 6G
	Freq. (MHz)	2400–2500	5150–5850	5925–7125
Max. VSWR	Wi-Fi 1	1.5	1.8	1.8
	Wi-Fi 2	1.5	1.7	1.9
Max. Return Loss (dB)	Wi-Fi 1	-13.7	-11.0	-11.0
	Wi-Fi 2	-13.4	-12.1	-10.5
AVG Eff. (%)	Wi-Fi 1	27.2	12.6	11.2
	Wi-Fi 2	27.0	12.0	9.4
AVG Gain (dB)	Wi-Fi 1	-5.7	-9.0	-9.5
	Wi-Fi 2	-5.7	-9.2	-10.4
Max. Peak Gain (dBi)	Wi-Fi 1	4.0	0.2	0.4
	Wi-Fi 2	2.2	4.2	2.1
VSWR	Wi-Fi 1	≤ 1.8		
	Wi-Fi 2	≤ 1.9		
Return Loss	Wi-Fi 1	≤ -11.0 dB		
	Wi-Fi 2	≤ -10.5 dB		
Peak Gain	Wi-Fi 1	≤ 4.0 dBi		
	Wi-Fi 2	≤ 4.2 dBi		

- Wi-Fi: Wi-Fi 1, Wi-Fi 2 Antennas
- MP: On 1 m × 1 m Metal Plane

1.1.4. 400MHz

Electrical – Detail				
Band / Specification	Band	Tetra	B88	B12 /B13 /B28
	Freq. (MHz)	380–430	410–430	700–810
Max. VSWR	400_1	2.8	-	-
	400_2	-	2.7	-
Max. Return Loss (dB)	400_1	-6.4	-	-
	400_2	-	-6.9	-
AVG Eff. (%)	400_1	17.0	-	-
	400_2	-	11.5	-
AVG Gain (dB)	400_1	-7.7	-	-
	400_2	-	-9.4	-
Max. Peak Gain (dBi)	400_1	-3.3	-	-
	400_2	-	-3.4	-
VSWR	400_1	≤ 2.8		
	400_2	≤ 2.7		
Return Loss	400_1	≤ -6.4 dB		
	400_2	≤ -6.9 dB		
Peak Gain	400_1	≤ -3.3 dBi		
	400_2	≤ -3.4 dBi		

- 400 MHz: 400_1, 400_2 Antennas
- MP: On 1 m × 1 m Metal Plane

1.1.5. AM/FM

Electrical – Detail			
Band / Specification	Band	AM	FM
	Freq. (MHz)	0.54–1.71	86–108
Max. VSWR	AM	1.89	-
	FM	-	2.0
Max. Return Loss (dB)	AM	-10	-
	FM	-	-9.7
VSWR	AM	≤ 1.89	
	FM	≤ 2.0	
Return Loss	AM	≤ -10 dB	
	FM	≤ -9.7 dB	

- MP: On 1 m × 1 m Metal Plane

1.1.6. 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	1.91	-	-	-	-	1.64	1.36	1.62
Return Loss (dB)	-10.1	-	-	-	-	-12.1	-15.5	-12.4
Efficiency (%)	44.2	-	-	-	-	37.0	54.6	32.4
Peak Gain (dBi)	4.23	-	-	-	-	2.44	3.73	1.40
Axial Ratio (dB)	12.5	-	-	-	-	5.25	4.66	4.77

LNA Electrical	
LNA Gain	22 ±3 dB
Noise Figure	≤ 2.5 dB
Output VSWR	< 2.0
Filter Out-of-Band Attenuation	60 dB f0 ±100 MHz f0 (1164–1189 MHz, 1559–1606 MHz)
Working Voltage	3–5 V
Working Current	27 ±3 mA
Impedance	50 Ω

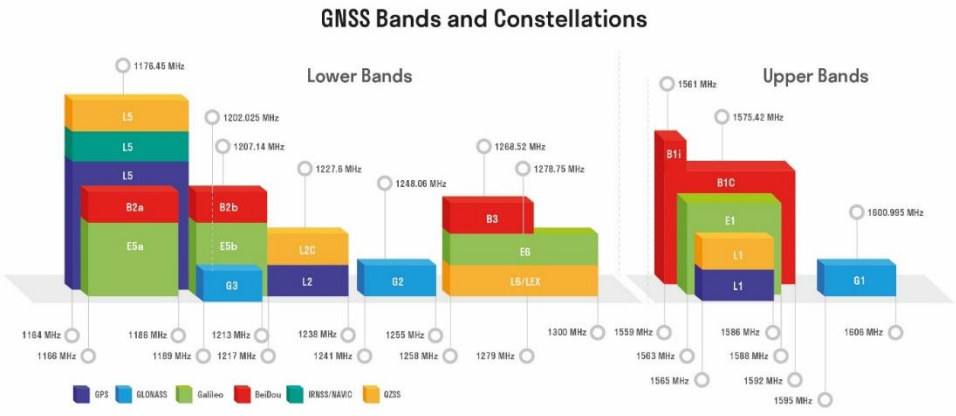
1.2. Supported Bands

5G NR/ LTE/ LTE-Advanced/ WCDMA/ HSPA/ HSPA+/ GPRS/ GSM/ NB-IoT					
Band	**Frequency (MHz)**	**Uplink (MHz)**	**Downlink (MHz)**	**LMHs**	**MHs**
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)**	**LMHs**	**MHs**
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		√	√

- LMHs: LMH antennas (5G Main, 5G AUX)
- MHs: LMH antennas (N77_1, N77_2)

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)				
	√				

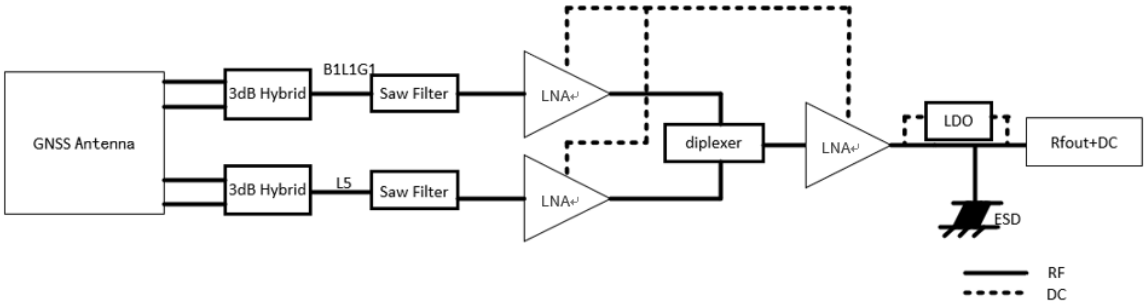


1.3. Mechanical & Environment

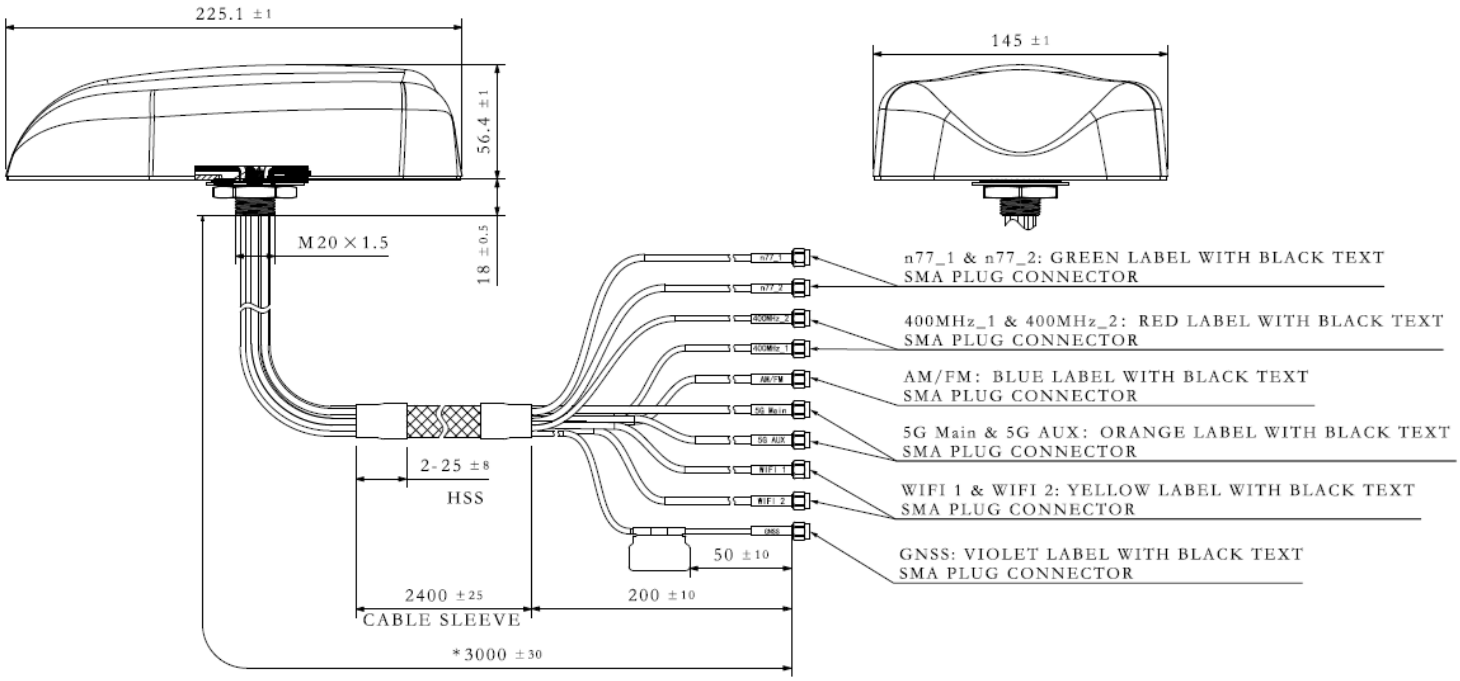
Mechanical		
Antenna Size		225 mm × 145 mm × 56.4 mm
Casing Material & Color		PC & Black
Cable Type & Length	**5G & n77& Wi-Fi**	Dacar302 Black & 3000 mm
	GNSS & 400_1 & 400_2 & AM/FM	Dacar462 Black & 3000 mm
Connector Type		SMA Male (The current state of the SMA connector is not waterproof. If a waterproof connector is required, it can be customized.)
Weight		Typ. 1060 g
Mounting Type		Screw (M20 Nut)
Environmental		
Operation Temperature		-40 °C to +85 °C
Storage Temperature		-40 °C to +85 °C
Ingress Protection (IP) Rating		IP67 (After Installation)
RoHS & REACH Compliant		Yes
Housing Flame Rating		UL 94 V-0
Housing UV Resistant		UL 746c f1

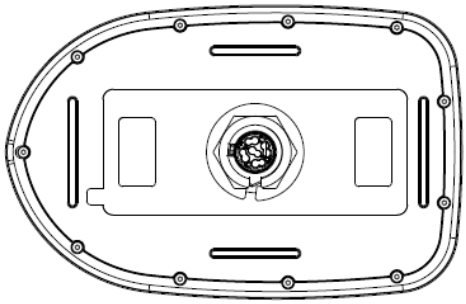
- 5G:5G Main, 5G AUX Antennas
- n77: n77_1, n77_2 Antennas
- Wi-Fi: Wi-Fi 1, Wi-Fi 2 Antennas
- MP: On 1 m × 1 m Metal Plane

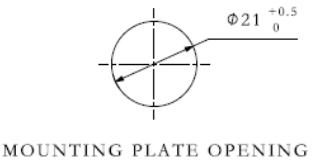
1.4. Block Diagram (Active Antenna)



2 Drawing







MOUNTING PLATE OPENING

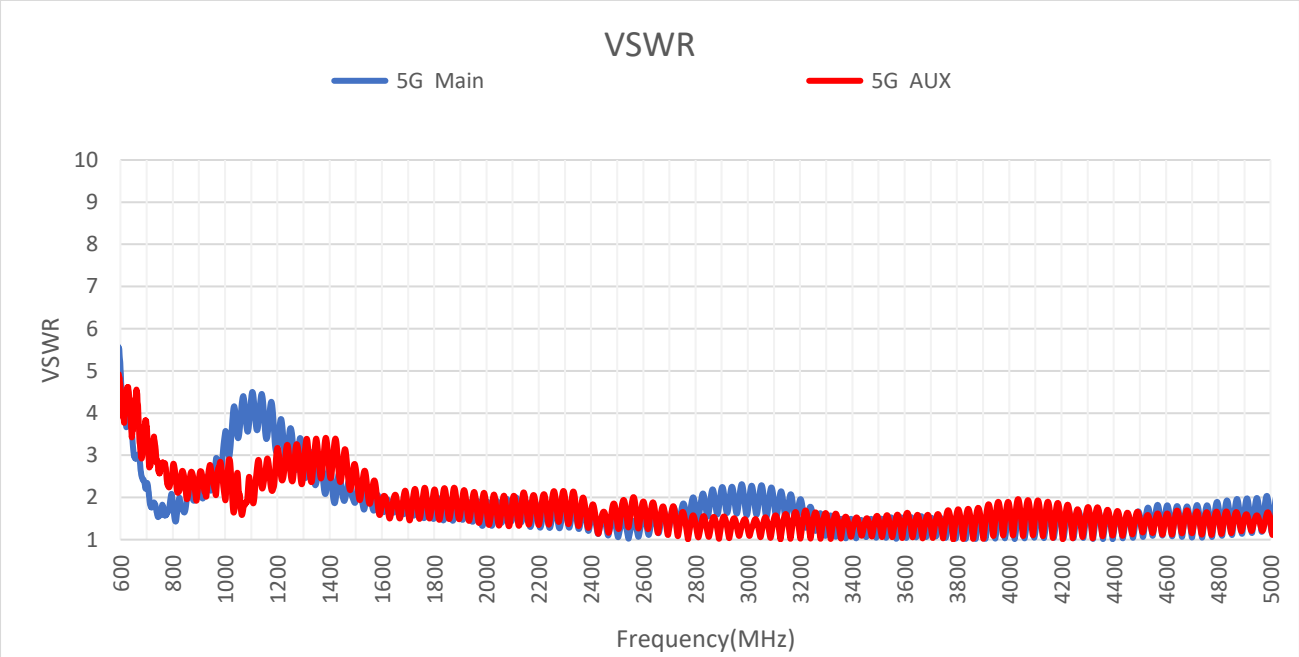
- **Recommended assembly hole diameter: 21 mm.**
- **Recommended mounting plane thickness: 1.0-3.0 mm.**

The current state of the SMA connector is not waterproof. If a waterproof connector is need, it can be customized, such as a waterproof FAKRA connector.

3 Detail Performance

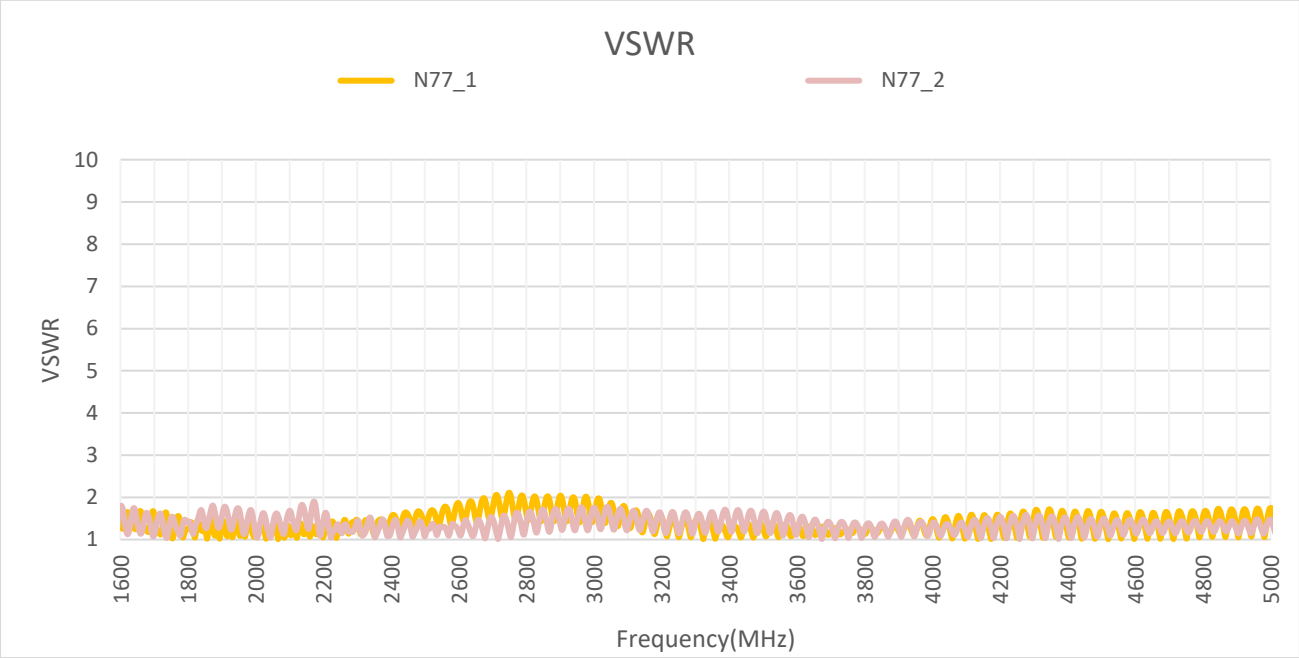
3.1. S-Parameter Test

3.1.1. VSWR



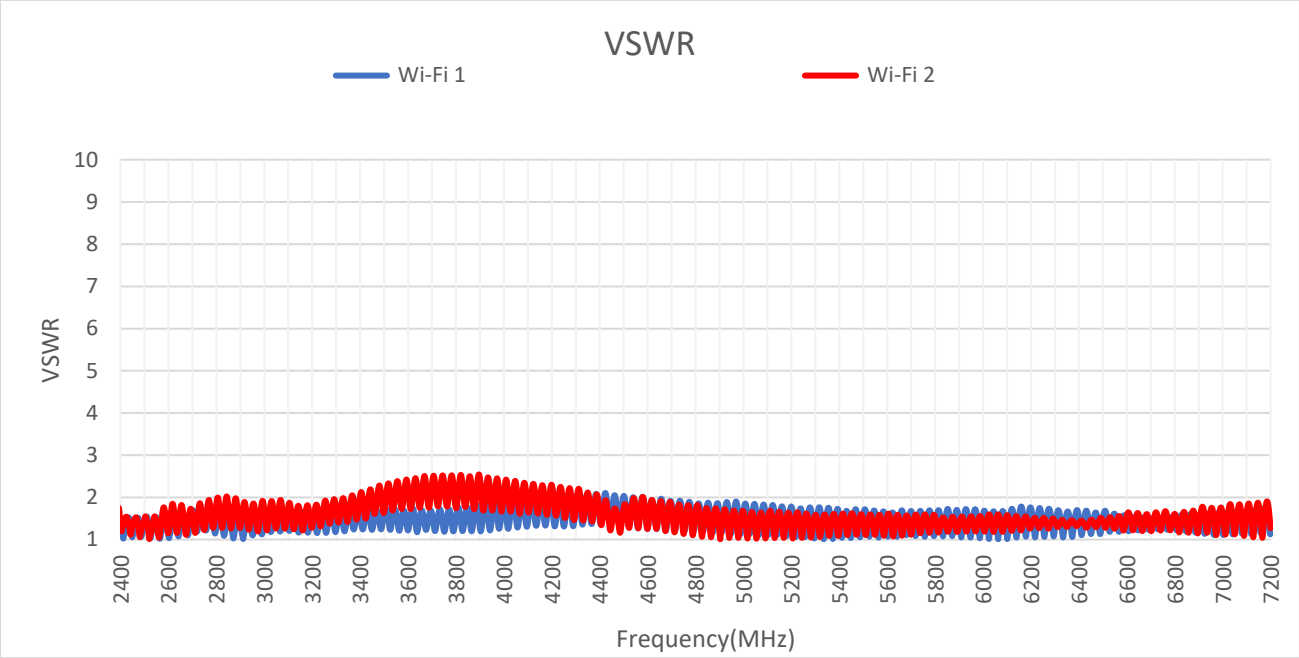
VSWR – 5G

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
VSWR	Main	5.0	4.0	2.0	1.8	2.3	2.6	2.5	1.8	1.8	1.6
	AUX	4.6	4.6	2.7	2.4	2.4	2.2	2.4	1.5	1.6	2.2
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
VSWR	Main	1.4	1.6	1.3	1.5	1.5	1.2	1.1	1.4	-	-
	AUX	2.1	2.1	1.4	1.7	1.9	1.4	1.2	1.4	-	-



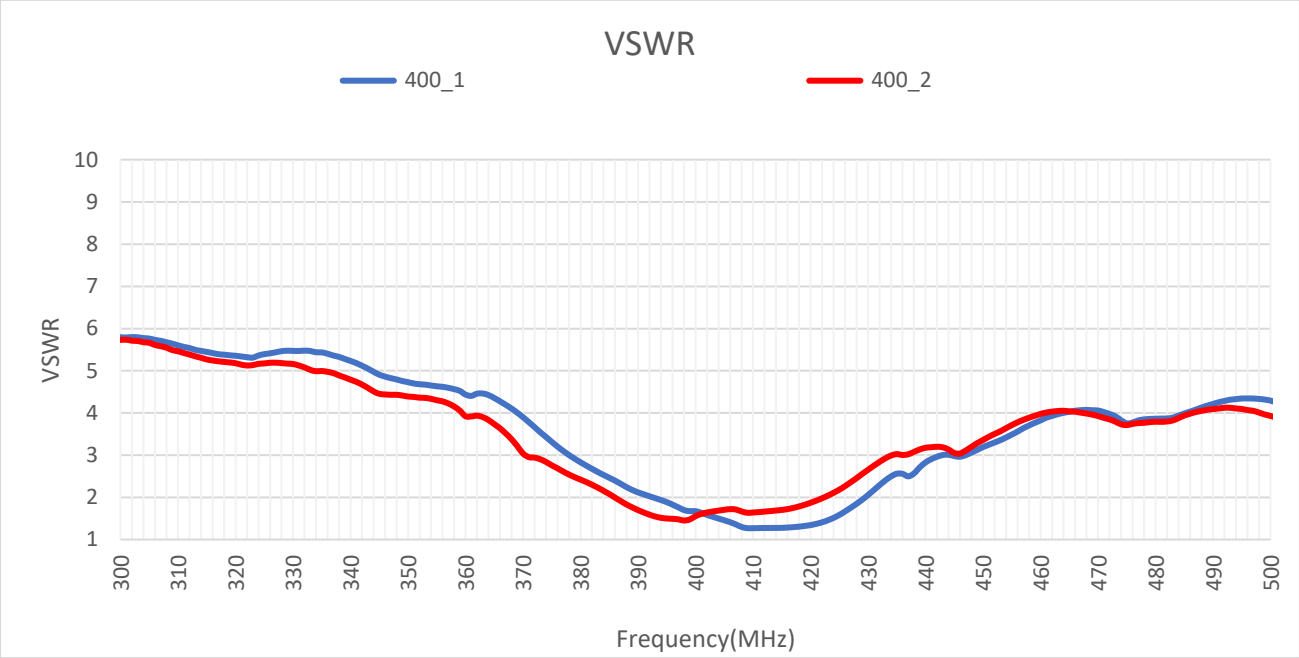
VSWR – n77

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
VSWR	n77_1	-	-	-	-	-	-	-	1.2	1.4	1.1
	n77_2	-	-	-	-	-	-	-	1.5	1.1	1.6
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
VSWR	n77_1	1.2	1.2	1.1	1.6	1.9	1.3	1.5	1.7	-	-
	n77_2	1.7	1.8	1.1	1.4	1.2	1.2	1.4	1.5	-	-



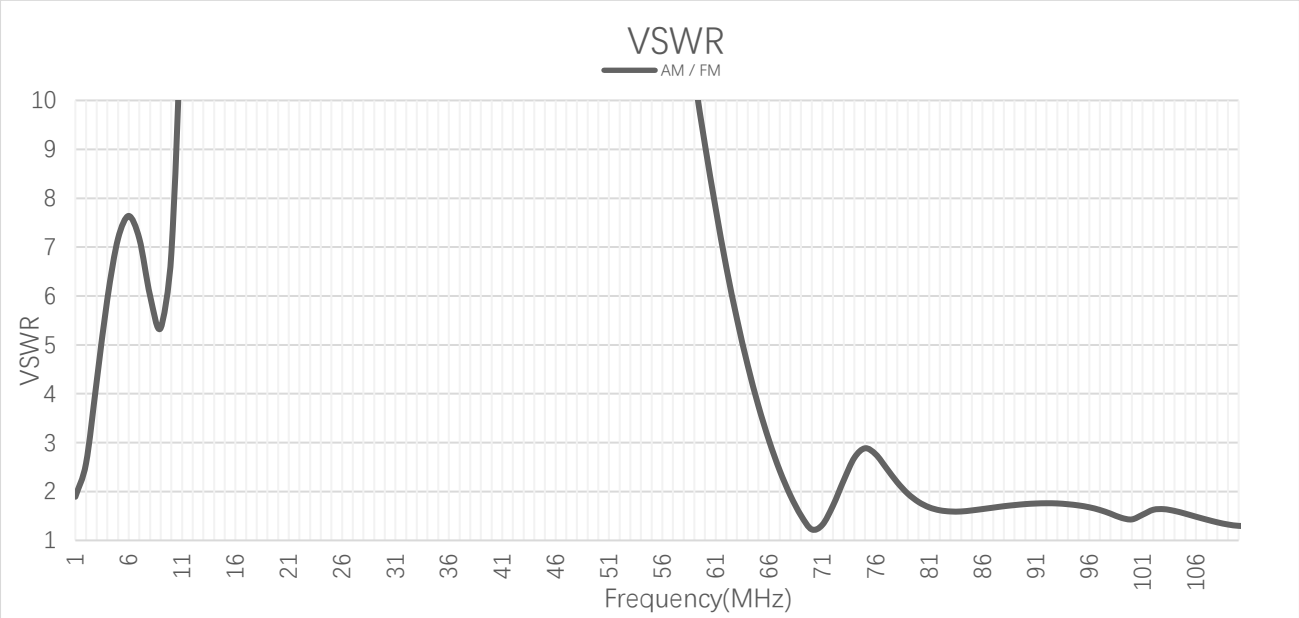
VSWR – Wi-Fi

Frequency (MHz)		2400	2450	2500	5150	5500	5850	5925	6325	6725	7125
VSWR	Wi-Fi 1	1.5	1.1	1.4	1.5	1.6	1.7	1.7	1.4	1.3	1.3
	Wi-Fi 2	1.3	1.3	1.5	1.7	1.4	1.2	1.3	1.4	1.6	1.2



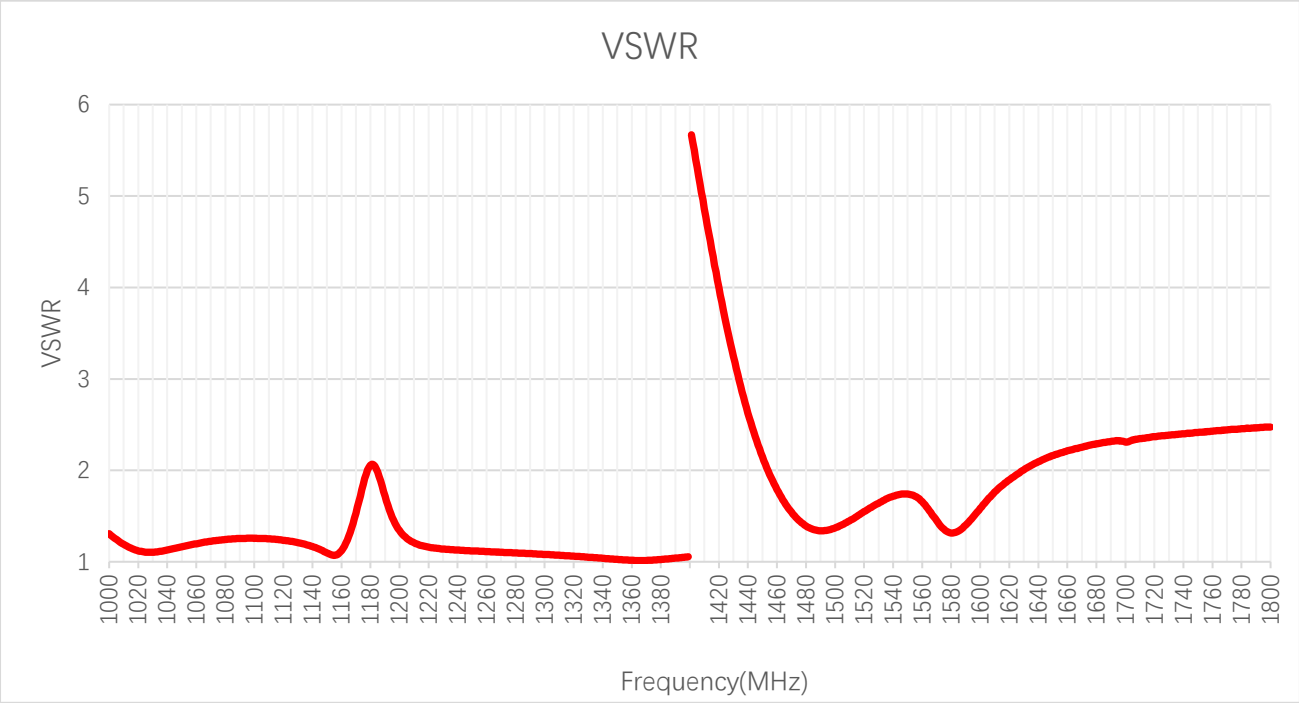
VSWR – 400 MHz

Frequency (MHz)		380	410	430	710	830	900	960	1440	1710	1740
VSWR	400_1	2.8	1.3	2.1	-	-	-	-	-	-	-
	400_2	2.4	1.6	2.7	-	-	-	-	-	-	-



VSWR – AM/FM

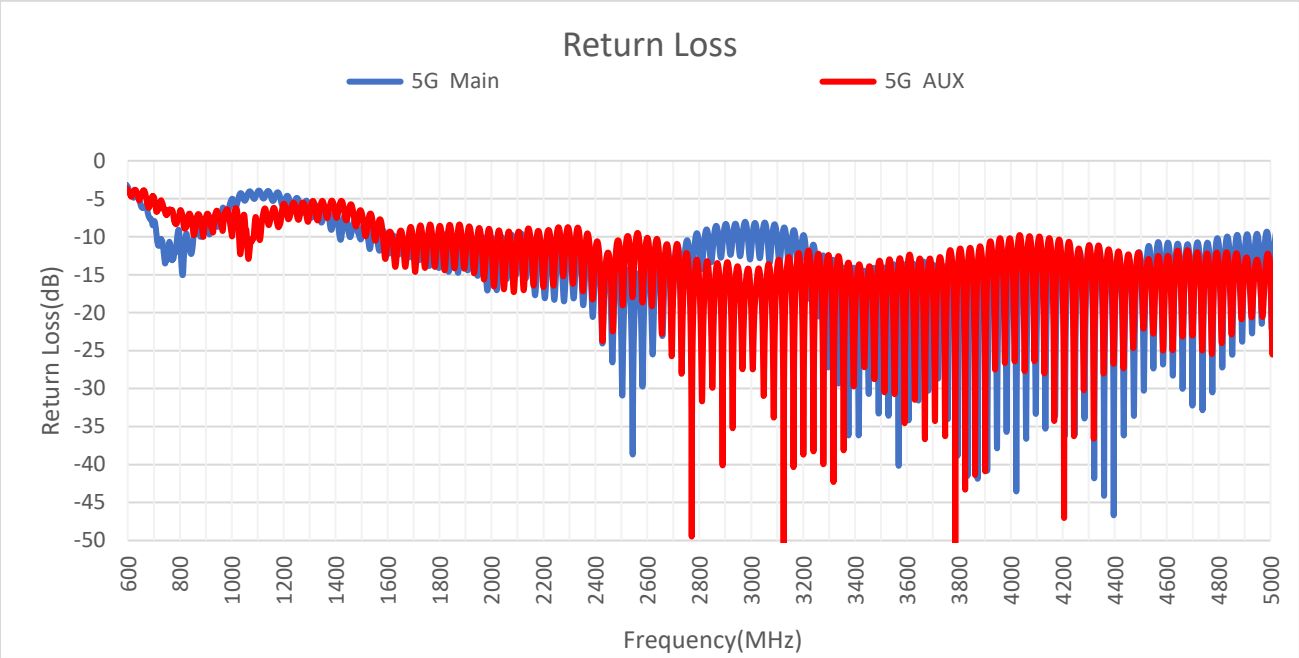
Frequency (MHz)		0.54	1.71	86	108	600	630	710	830	900	960
VSWR	AM	1.5	1.89	-	-	-	-	-	-	-	-
	FM	-	-	2.0	1.6	-	-	-	-	-	-



VSWR – GNSS

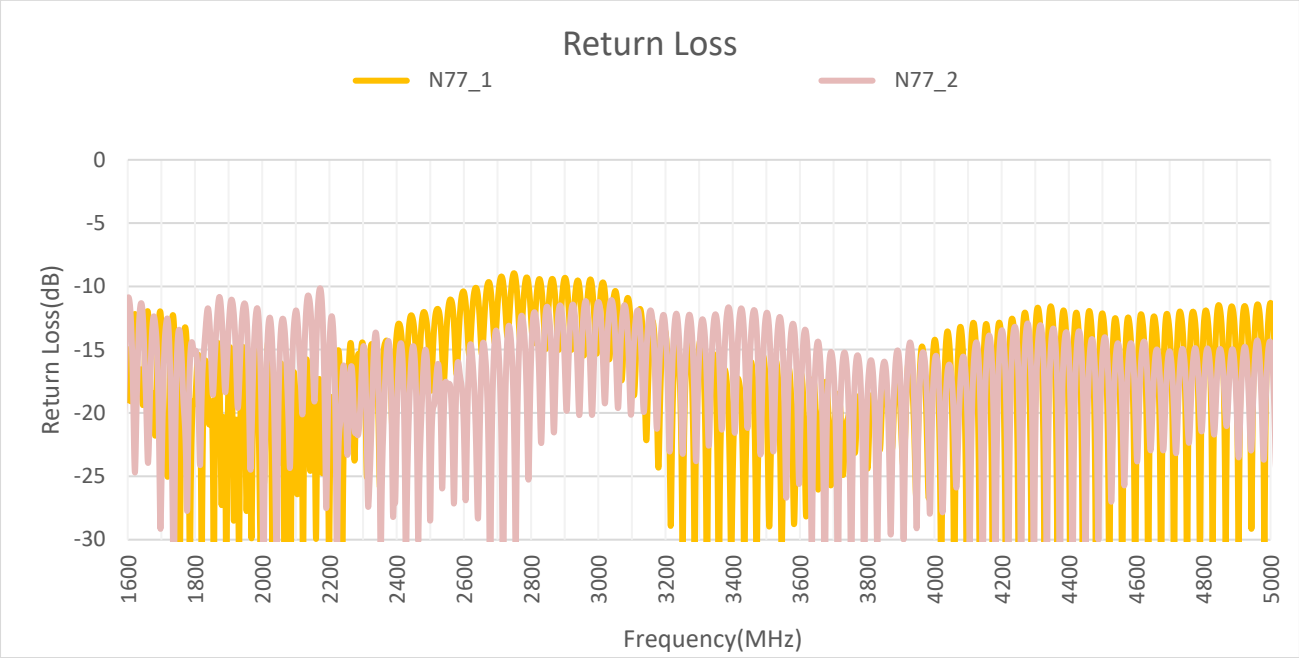
Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	1.91	-	-	-	-	1.64	1.36	1.62

3.1.2. Return Loss



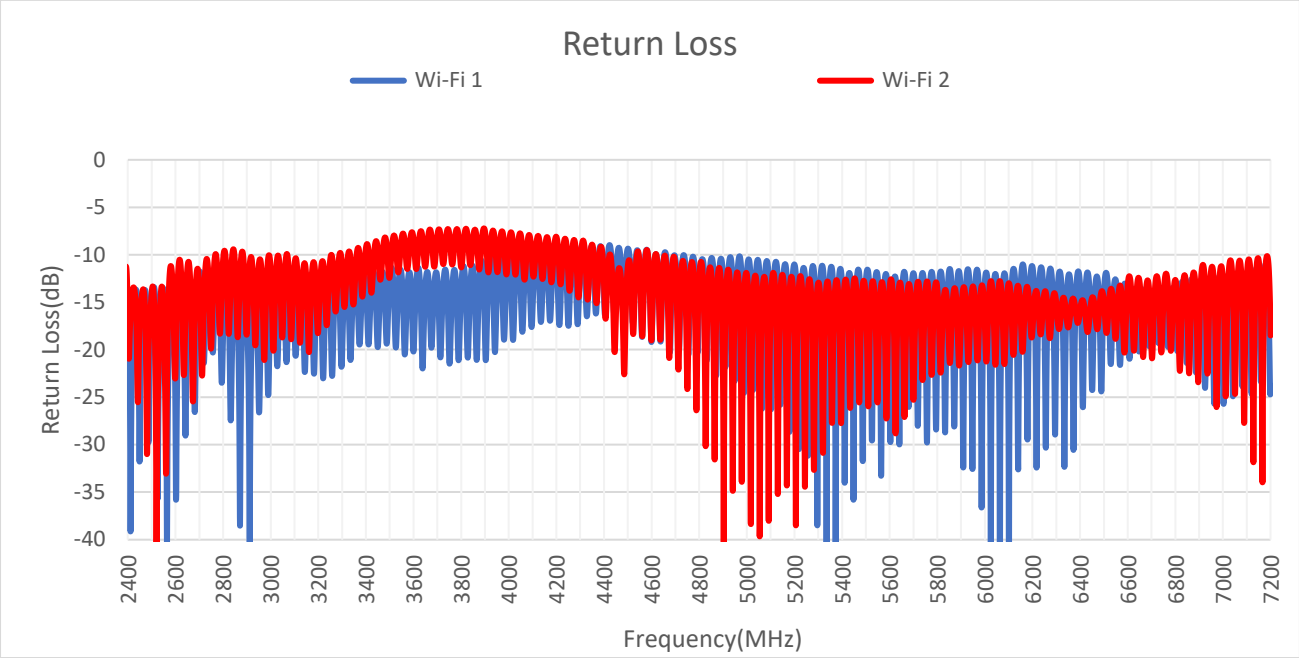
Return Loss (dB) – 5G

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	Main	-	-	-9.6	-11.1	-8.0	-7.0	-	-10.6	-10.9	-12.3
	AUX	-	-	-6.7	-7.8	-7.6	-8.5	-	-13.4	-13.0	-8.6
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Return Loss (dB)	Main	-14.9	-12.8	-17.5	-13.8	-13.4	-19.8	-31.2	-16.3	-	-
	AUX	-9.0	-9.0	-16.5	-12.1	-10.1	-15.3	-22.9	-15.9	-	-



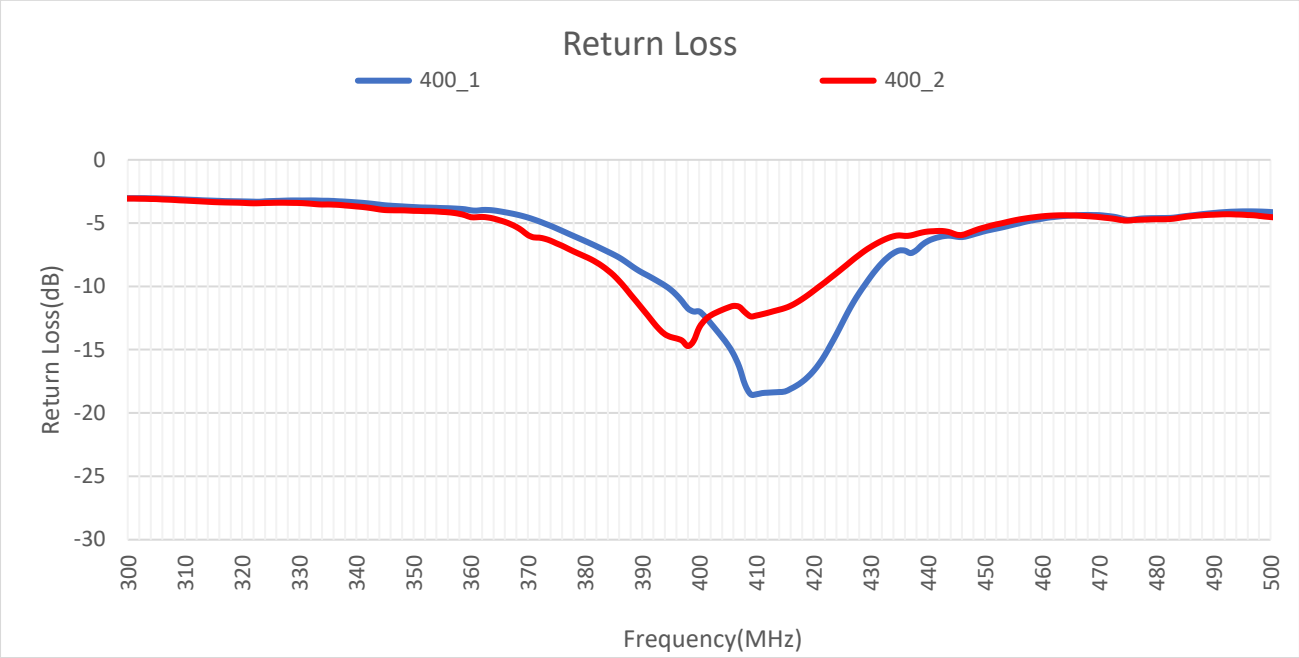
Return Loss (dB) – n77

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Return Loss (dB)	n77_1	-	-	-	-	-	-	-	-20.5	-15.4	-26.2
	n77_2	-	-	-	-	-	-	-	-14.1	-24.7	-12.8
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Return Loss (dB)	n77_1	-22.2	-22.3	-25.9	-12.9	-10.5	-16.9	-13.8	-11.3	-	-
	n77_2	-11.6	-11.0	-26.6	-14.8	-21.7	-22.6	-15.1	-14.4	-	-



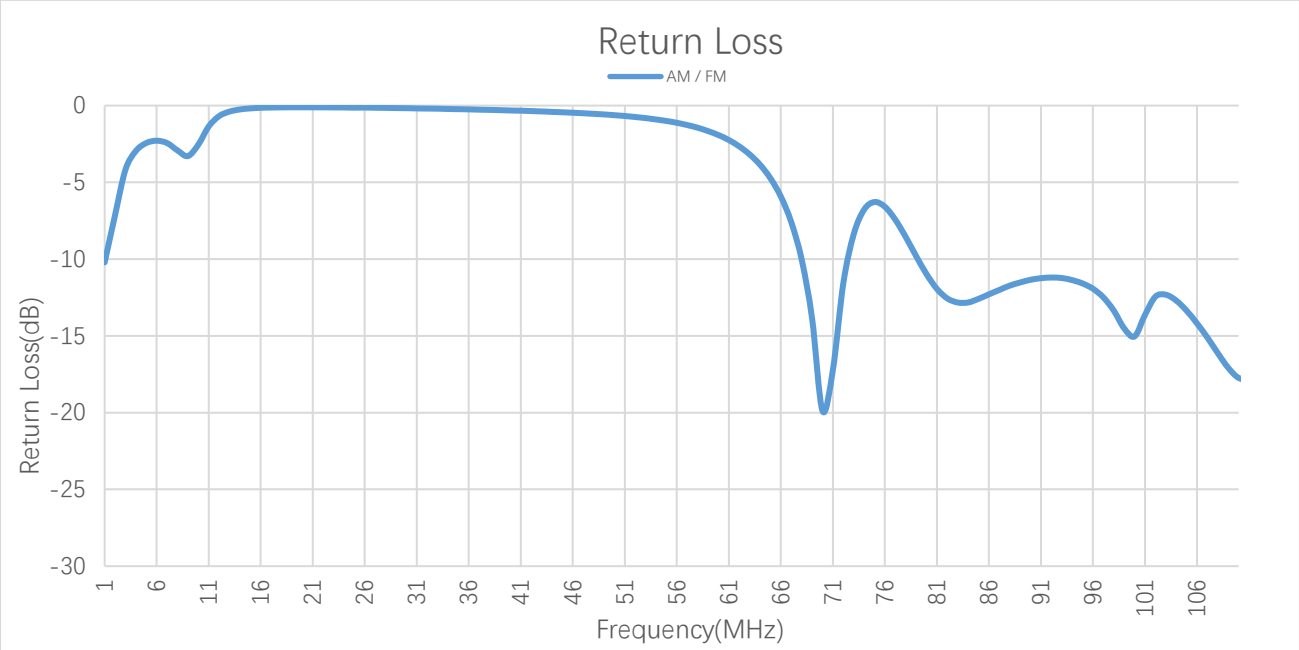
Return Loss (dB) – Wi-Fi

Frequency (MHz)		2400	2450	2500	5150	5500	5850	5925	6325	6725	7125
Return Loss (dB)	Wi-Fi 1	-14.0	-30.1	-15.8	-14.1	-12.8	-11.7	-11.9	-15.2	-18.2	-18.9
	Wi-Fi 2	-17.0	-16.9	-14.0	-12.1	-15.0	-20.3	-18.1	-14.9	-12.5	-22.3



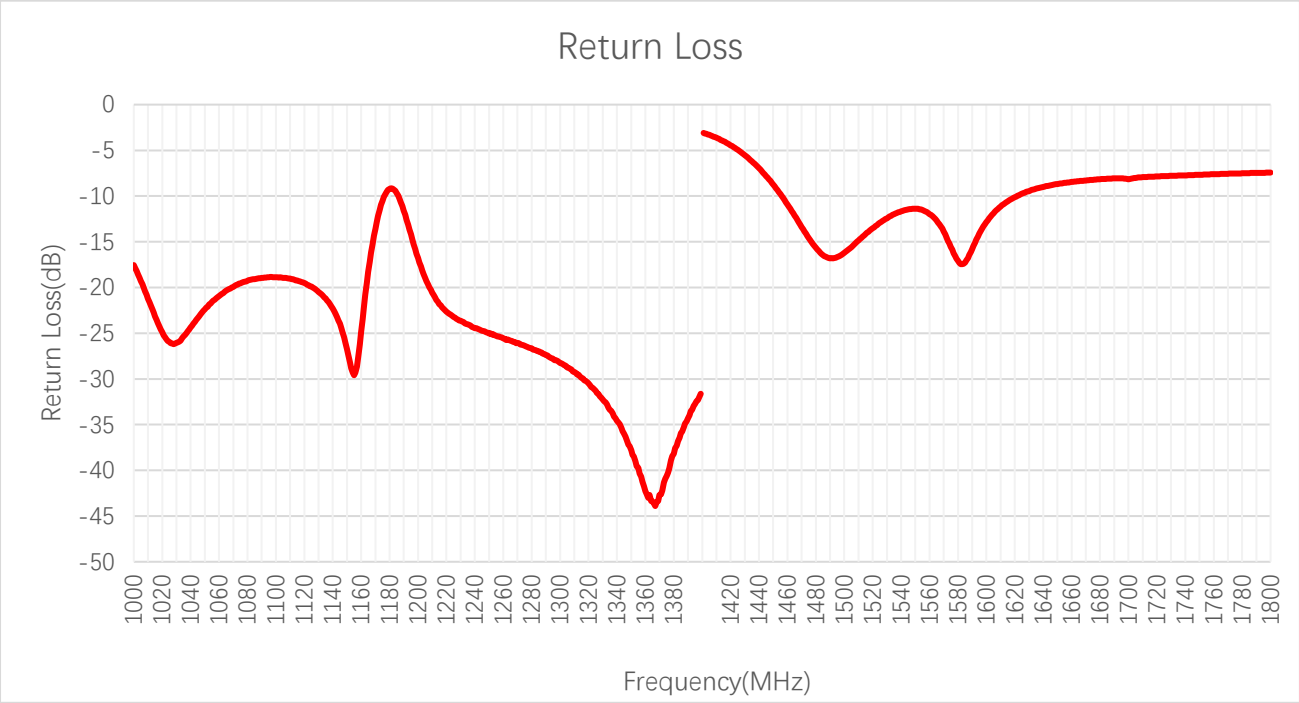
Return Loss (dB) – 400 MHz

Frequency (MHz)		380	410	430	710	830	900	960	1440	1710	1740
Return Loss (dB)	400_1	-6.4	-18.5	-9.2	-	-	-	-	-	-	-
	400_2	-7.6	-12.3	-6.9	-	-	-	-	-	-	-



Return Loss (dB) – AM/FM

Frequency (MHz)		0.54	1.71	86	108	600	630	710	830	900	960
Return Loss (dB)	AM	-10.5	-10	-	-	-	-	-	-	-	-
	FM	-	-	-9.7	-12.5	-	-	-	-	-	-

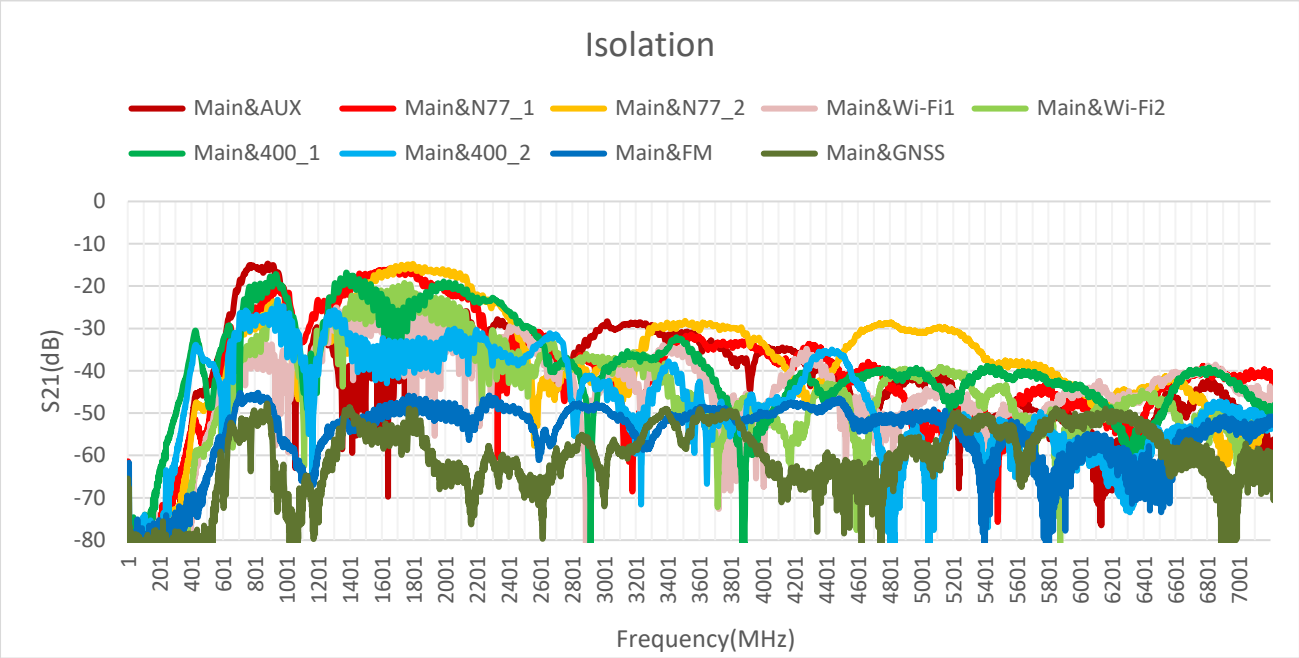


Return Loss (dB) – GNSS

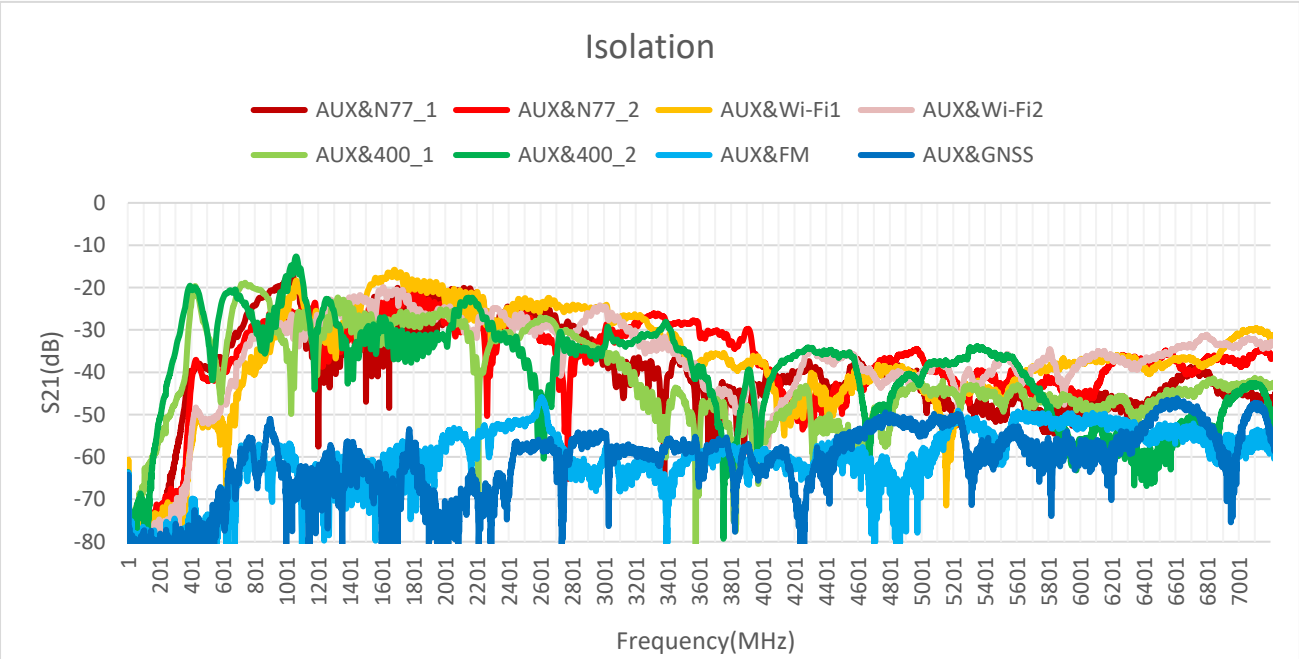
Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-10.1	-	-	-	-	-12.1	-15.5	-12.4

3.1.3. Isolation

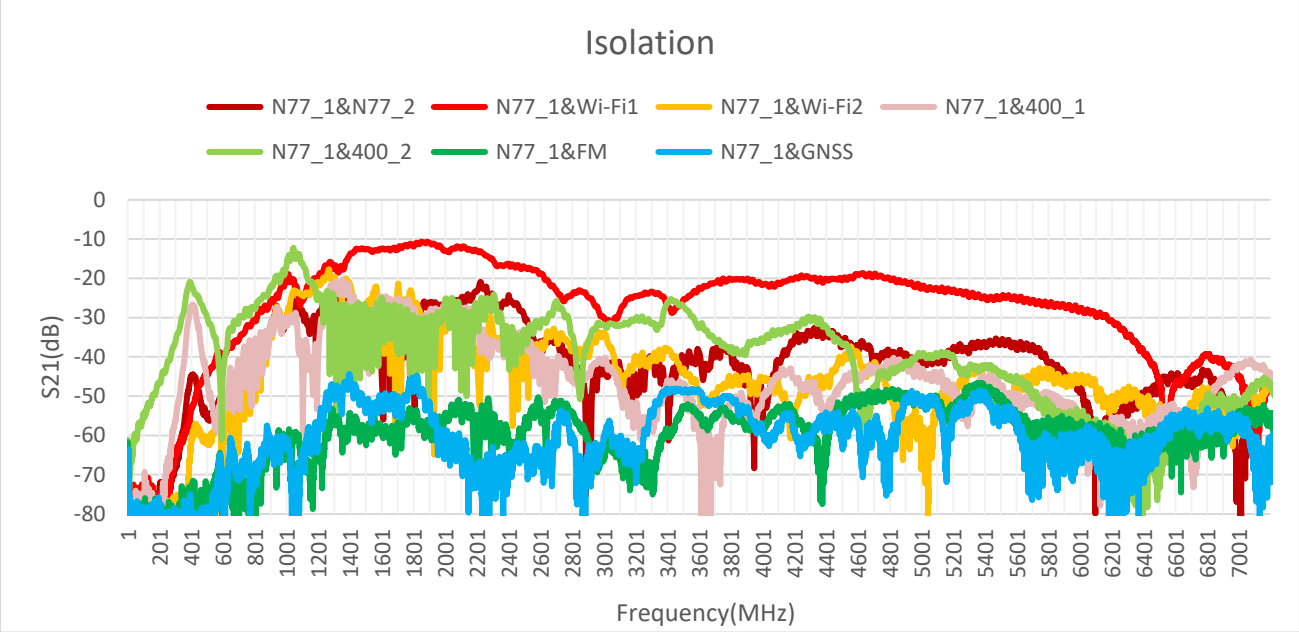
3.1.3.1. 5G Main



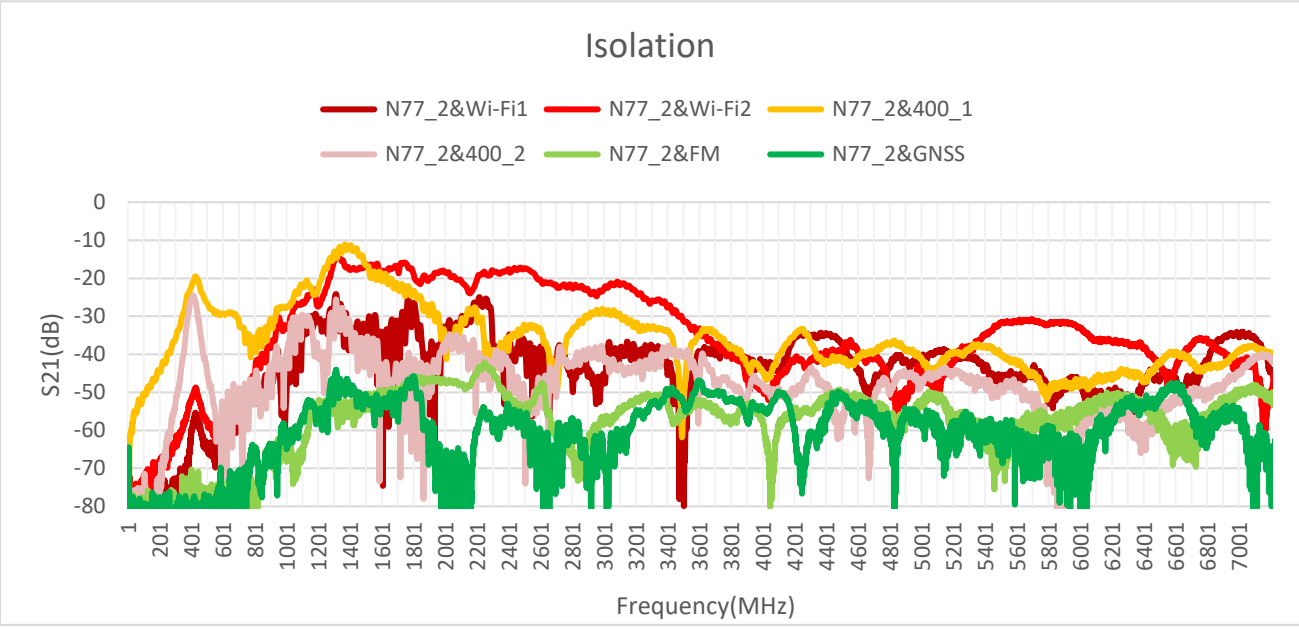
3.1.3.2. 5G AUX



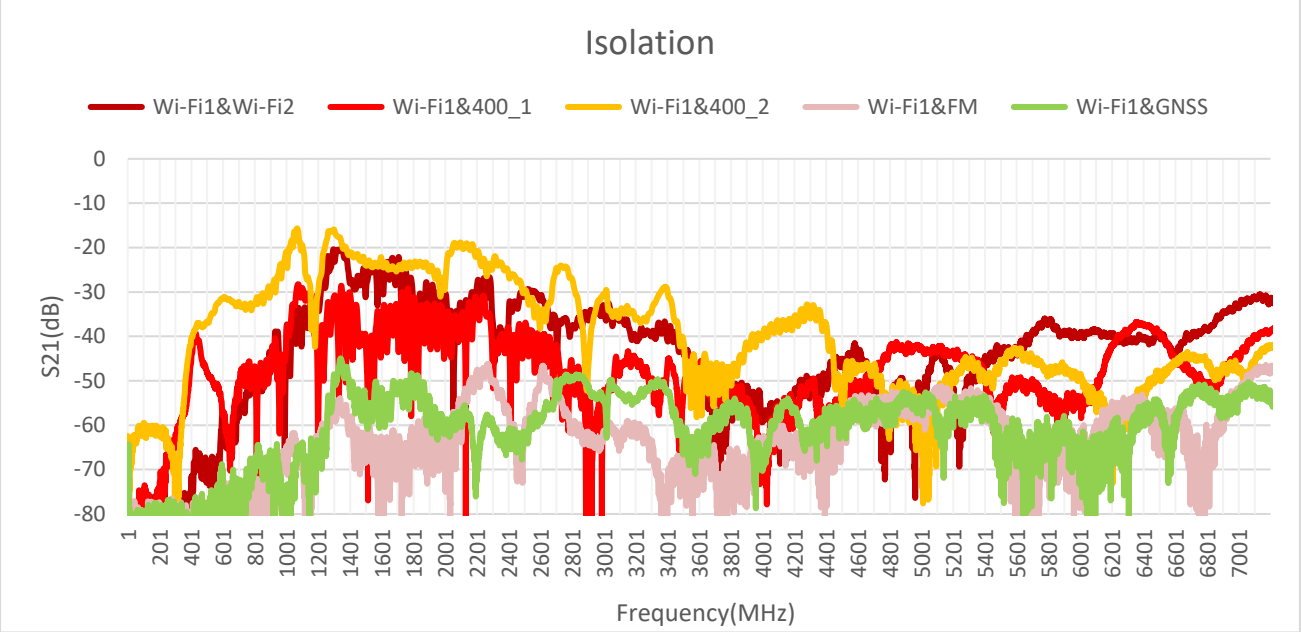
3.1.3.3. n77_1



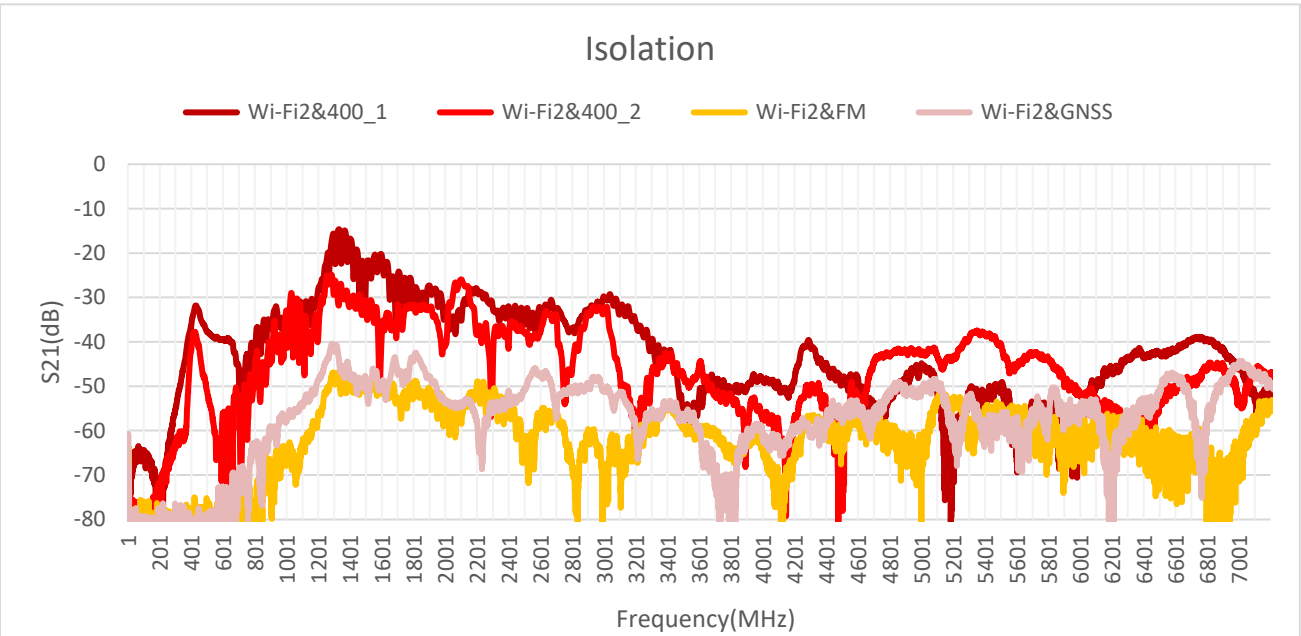
3.1.3.4. n77_2



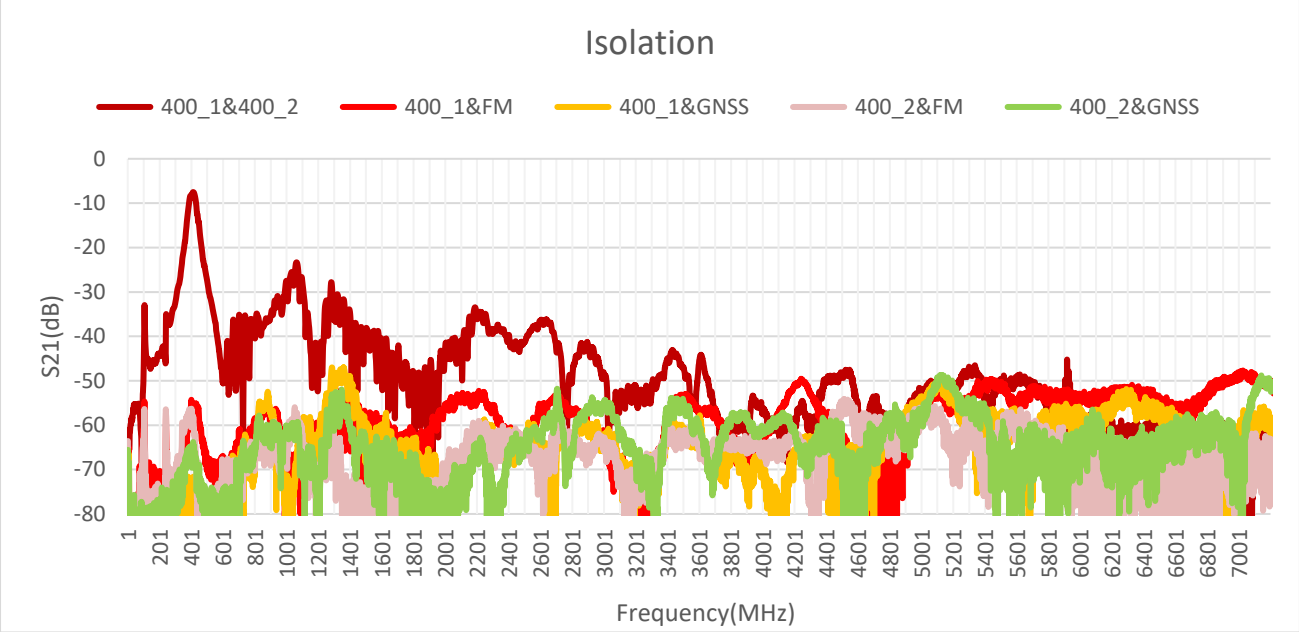
3.1.3.5. Wi-Fi 1



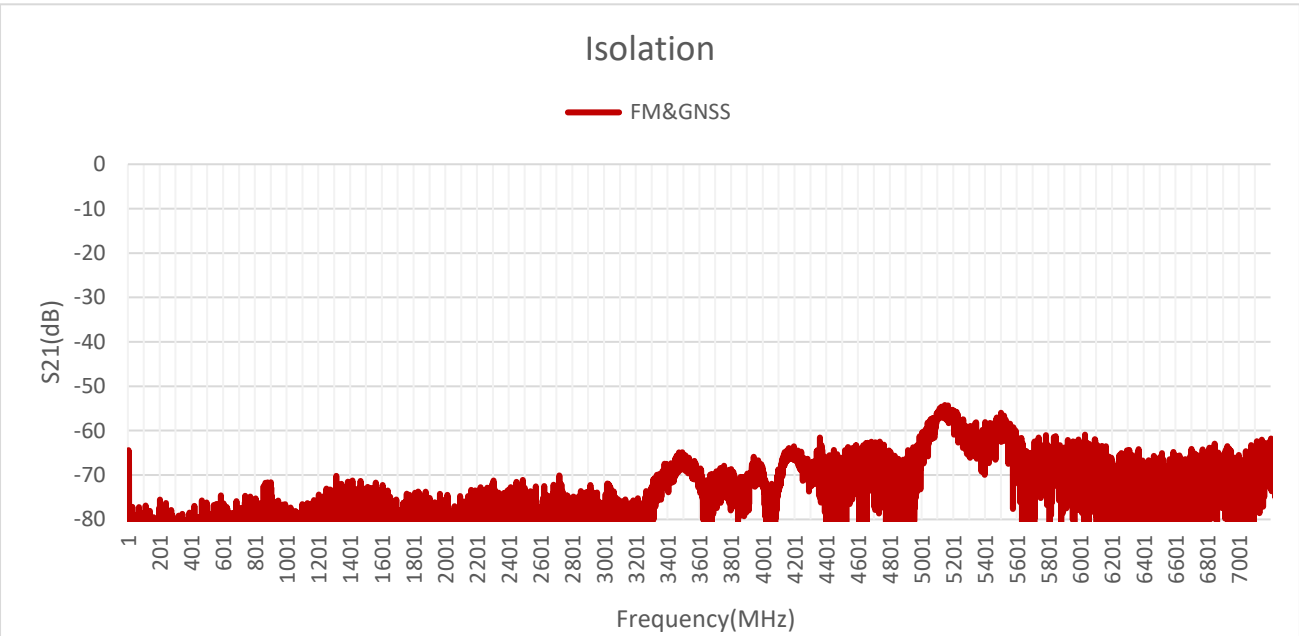
3.1.3.6. Wi-Fi 2



3.1.3.7. 400 MHz



3.1.3.8. AM/FM

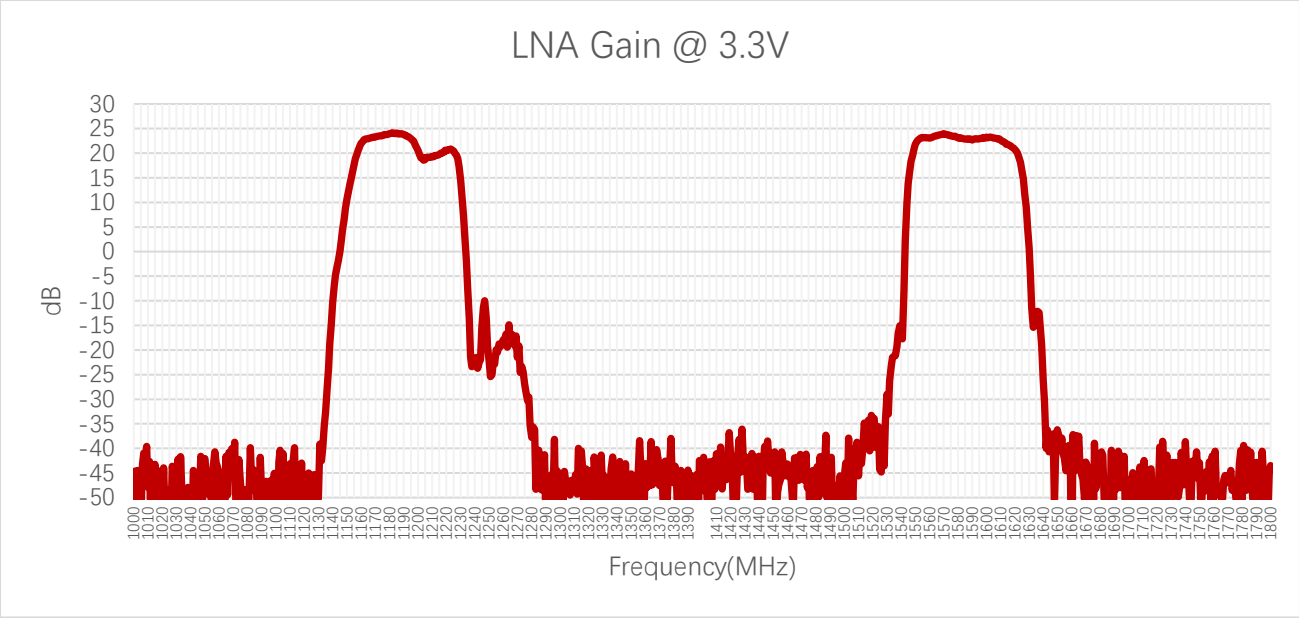


Max Isolation (dB)

Band	AM	FM	B88	B12/ B13/ B28/B 71	B5/ B8/ B26	B1/ B2/ B3/B4 0	Wi-Fi 2G	B38/ B41	B42/ B48/ n77/n 79	Wi-Fi 5G	Wi-Fi 6G
Freq. (MHz)	0.54– 1.71	86– 108	380– 430	600– 810	820– 960	1700– 2400	2400– 2500	2500– 2690	3300– 5000	5150– 5850	5925– 7125
5G Main	-64.5	-77.2	-30.5	-15.0	-14.7	-14.7	-27.1	-34.8	-28.2	-29.8	-40.8
5G AUX	-66.7	-76.5	-19.6	-15.0	-14.7	-16.4	-22.6	-22.4	-29.5	-38.0	-29.6
n77_1	-75.7	-72.4	-49.9	-30.5	-22.8	-10.7	-16.3	-17.1	-18.6	-22.6	-26.8
n77_2	-64.2	-71.5	-48.7	-41.7	-30.2	-15.9	-17.2	-17.4	-25.5	-30.8	-31.6
Wi-Fi 1	-73.2	-59.5	-38.0	-31.1	-24.0	-18.9	-26.0	-26.2	-28.8	-42.6	-43.5
Wi-Fi 2	-76.0	-77.8	-37.7	-43.1	-35.2	-25.9	-35.3	-33.1	-41.4	-37.4	-44.7
400_1	-69.5	-32.9	-7.5	-35.1	-30.9	-33.4	-39.7	-36.2	-43.0	-46.5	-47.8
400_2	-63.5	-69.8	-19.6	-20.5	-21.2	-22.4	-31.6	-36.7	-28.1	-33.8	-42.5
AM & FM	-81.1	-78.8	-76.9	-74.7	-71.6	-71.2	-71.1	-72.2	-61.3	-54.3	-60.9
GNSS	-66.8	-77.3	-72.6	-55.4	-51.0	-53.4	-56.4	-55.7	-49.5	-49.9	-46.1

- FS: In Free Space
- MP: On 1 m × 1 m Metal Plane

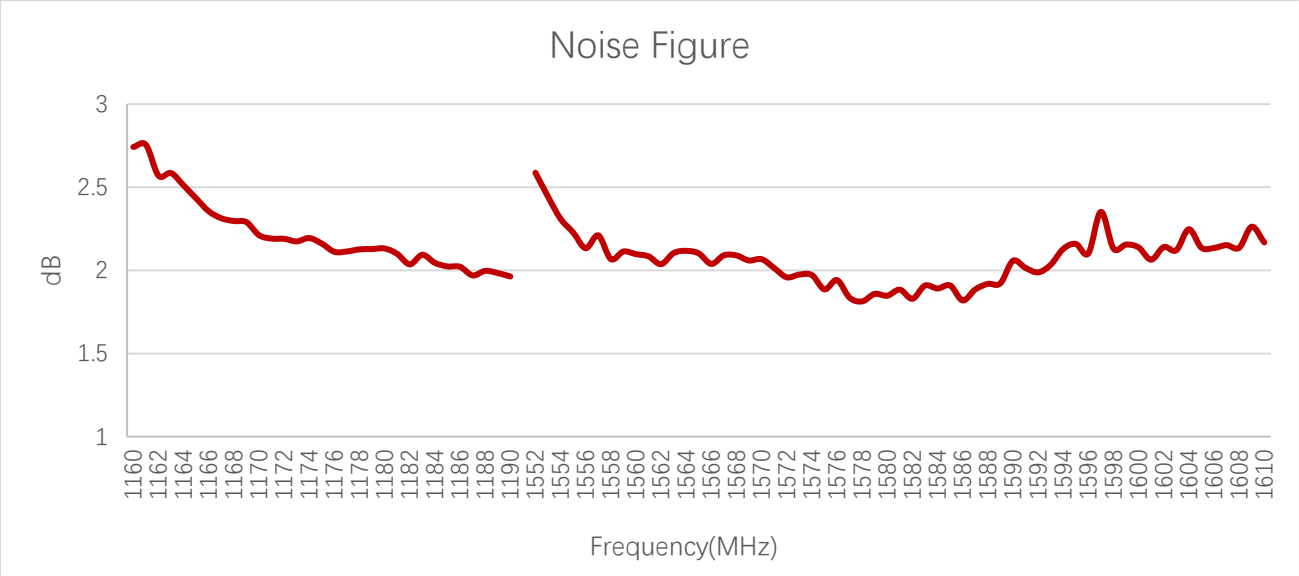
3.1.4. GNSS LNA Gain



LNA Gain (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	23.8	-	-	-	-	23.1	23.6	23.3

3.1.5. GNSS Noise Figure

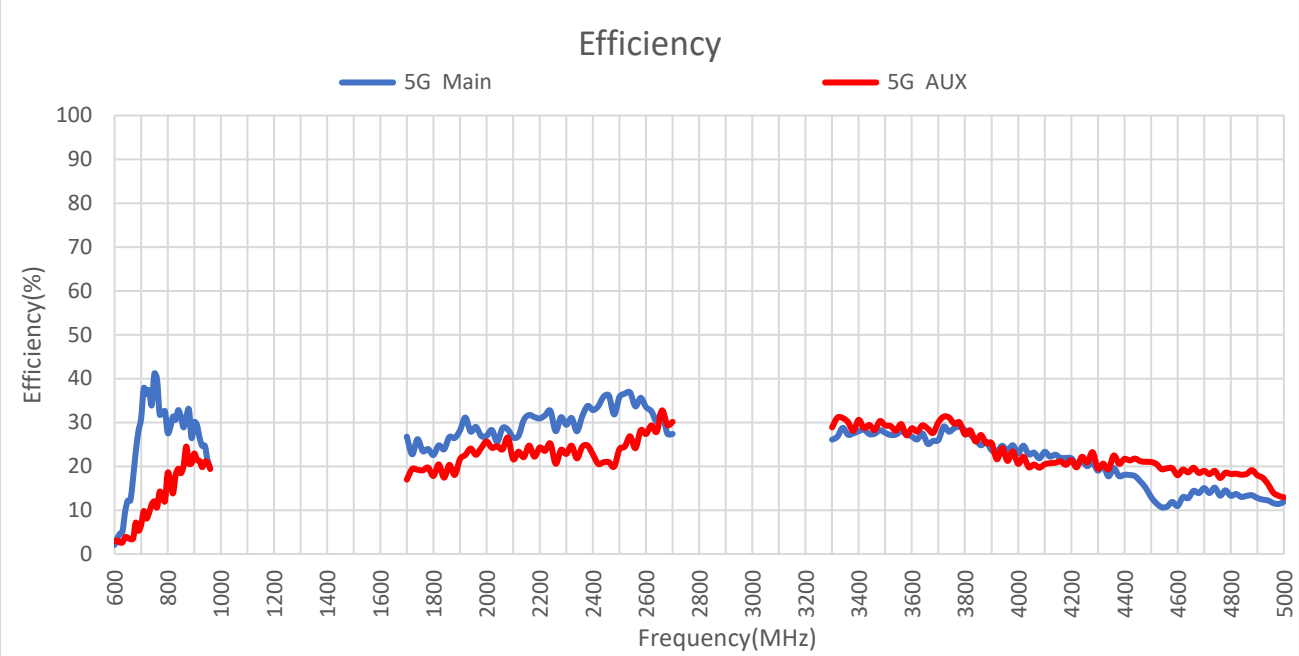


Noise Figure (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Noise Figure (dB)	2.11	-	-	-	-	2.08	1.88	2.06

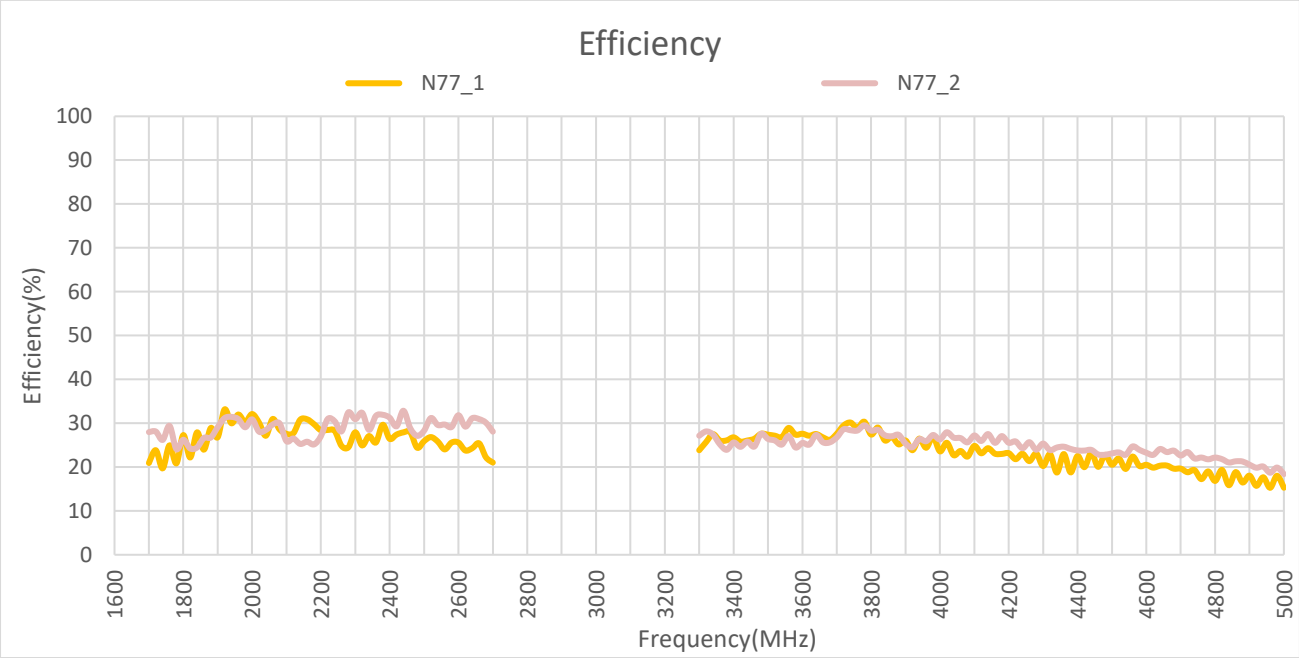
3.2. Radiation Performance Test

3.2.1. Efficiency



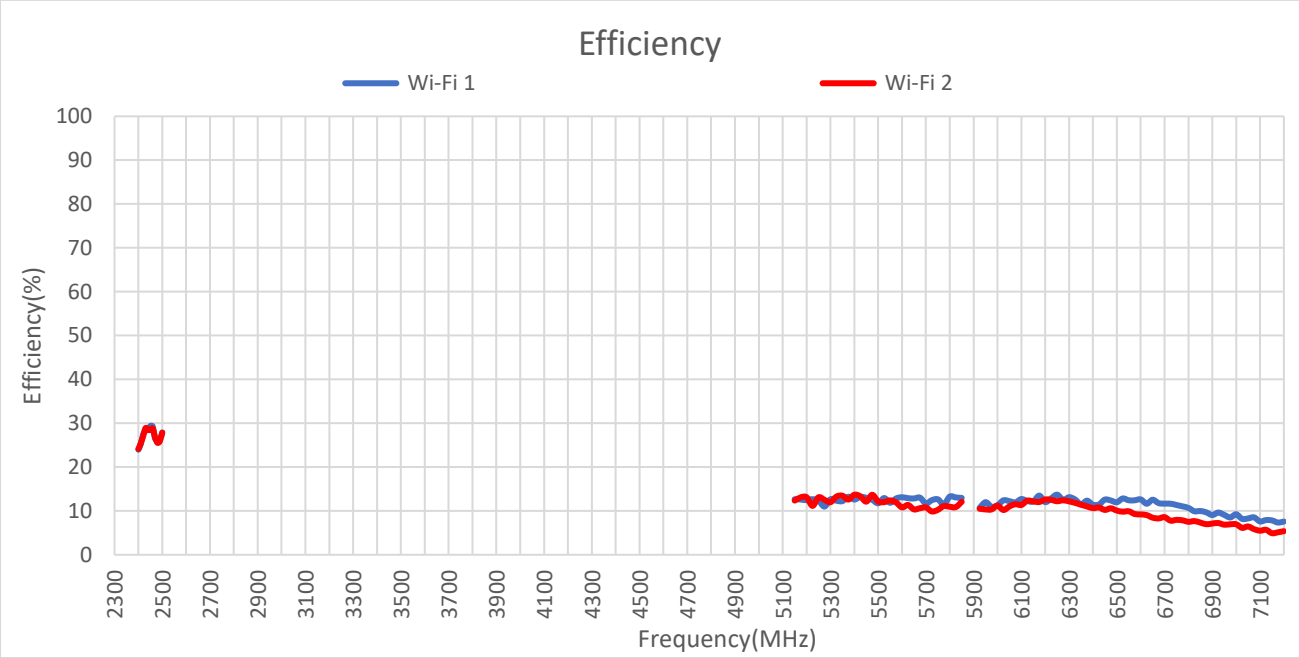
Efficiency (%) – 5G

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	Main	-	-	37.8	30.6	30.0	19.6	-	26.8	26.2	26.5
	AUX	-	-	9.8	18.0	22.9	19.4	-	17.0	19.2	18.0
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Efficiency (%)	Main	27.9	30.6	28.0	35.9	33.5	26.8	15.0	11.9	-	-
	AUX	24.1	22.1	21.8	20.9	27.4	28.7	19.0	12.9	-	-



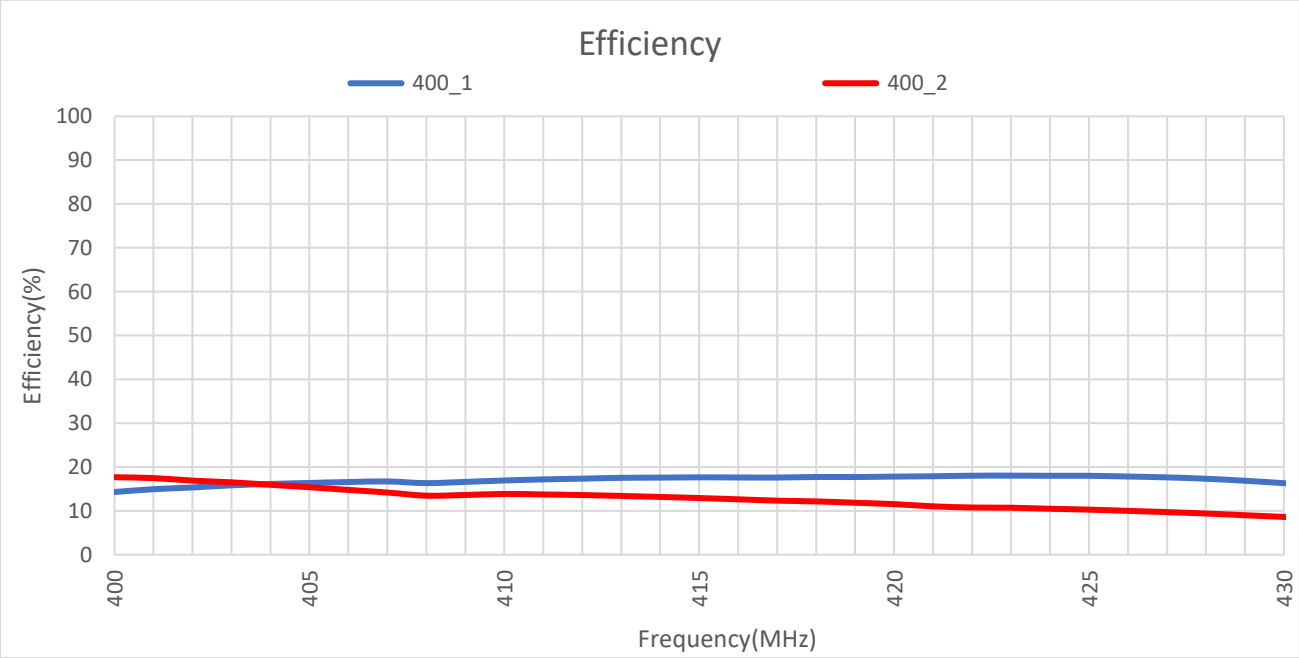
Efficiency (%) – n77

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	n77_1	-	-	-	-	-	-	-	20.9	19.7	28.9
	n77_2	-	-	-	-	-	-	-	28.0	26.2	26.7
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Efficiency (%)	n77_1	30.0	30.8	27.1	27.9	25.6	27.6	19.7	15.3	-	-
	n77_2	31.5	25.3	28.5	32.9	31.8	25.5	22.6	18.4	-	-



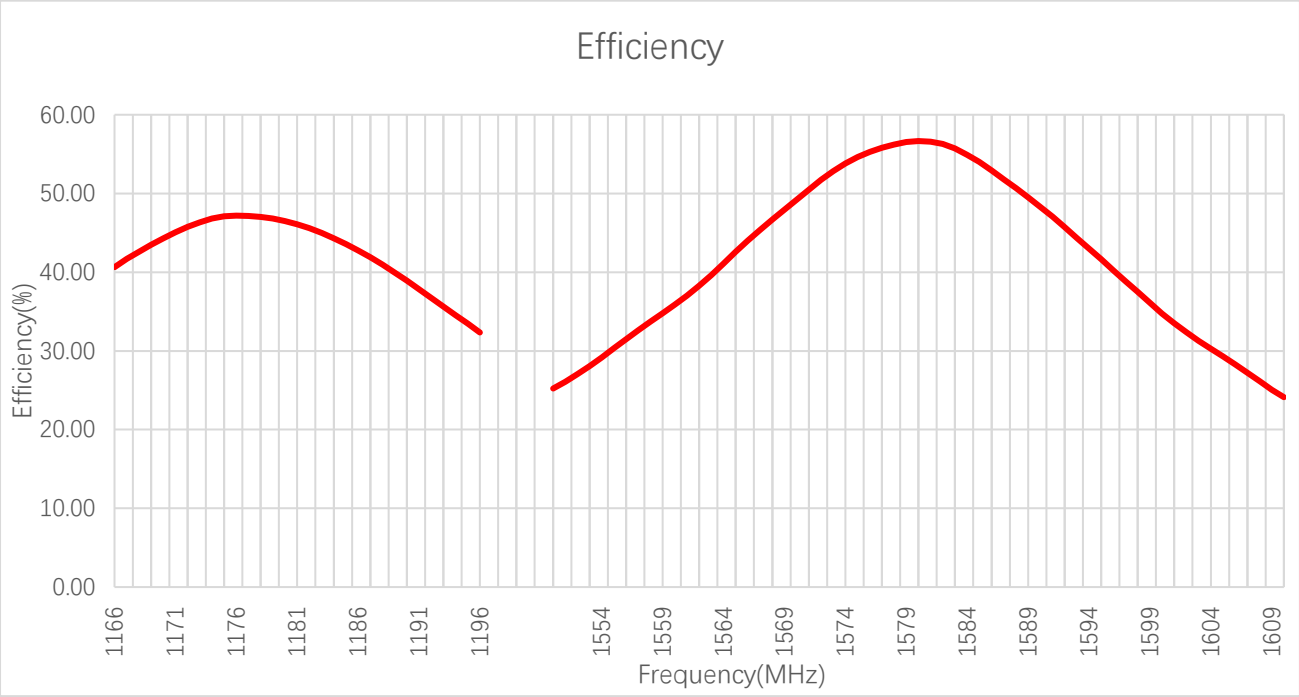
Efficiency (%) – Wi-Fi

Frequency (MHz)		2400	2450	2500	5150	5500	5850	5925	6325	6725	7125
Efficiency (%)	Wi-Fi 1	24.0	29.4	27.9	12.7	11.7	13.0	10.7	12.6	11.7	7.9
	Wi-Fi 2	24.1	28.4	27.9	12.4	12.2	12.1	10.5	11.8	7.8	5.7



Efficiency (%) – 400 MHz

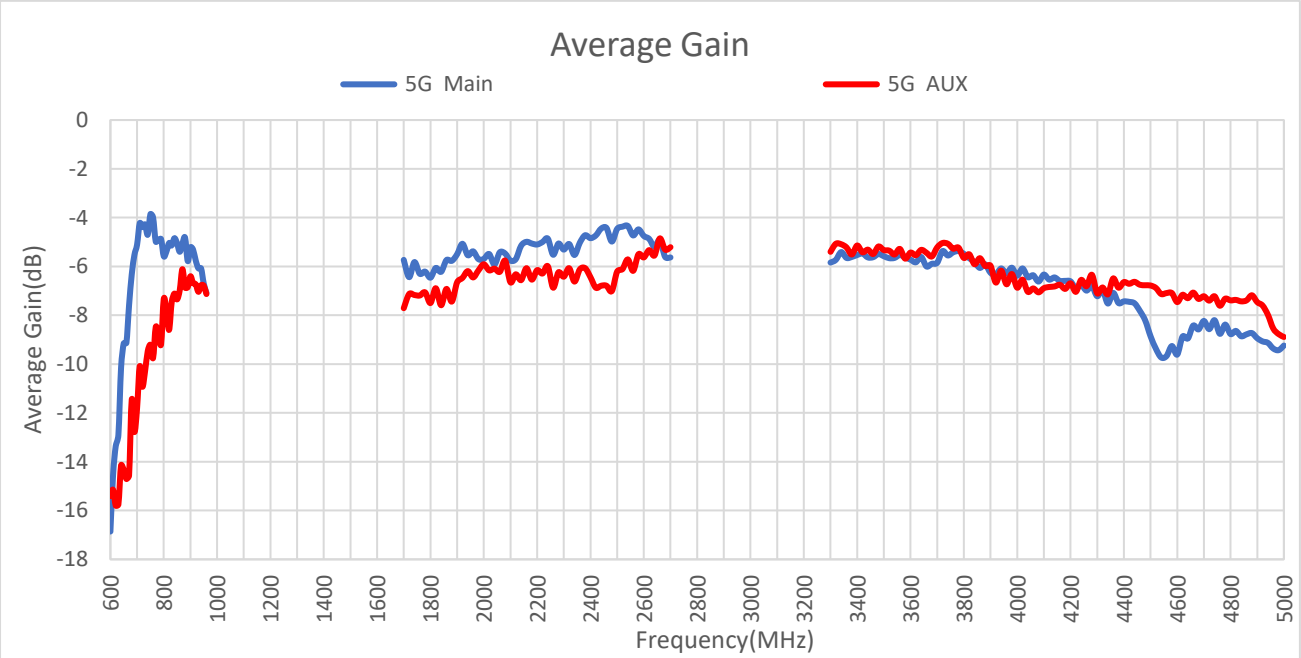
Frequency (MHz)		410	600	630	710	830	900	960	1440	1710	1740
Efficiency (%)	400_1	16.9	-	-	-	-	-	-	-	-	-
	400_2	13.9	-	-	-	-	-	-	-	-	-



Efficiency (%) – GNSS

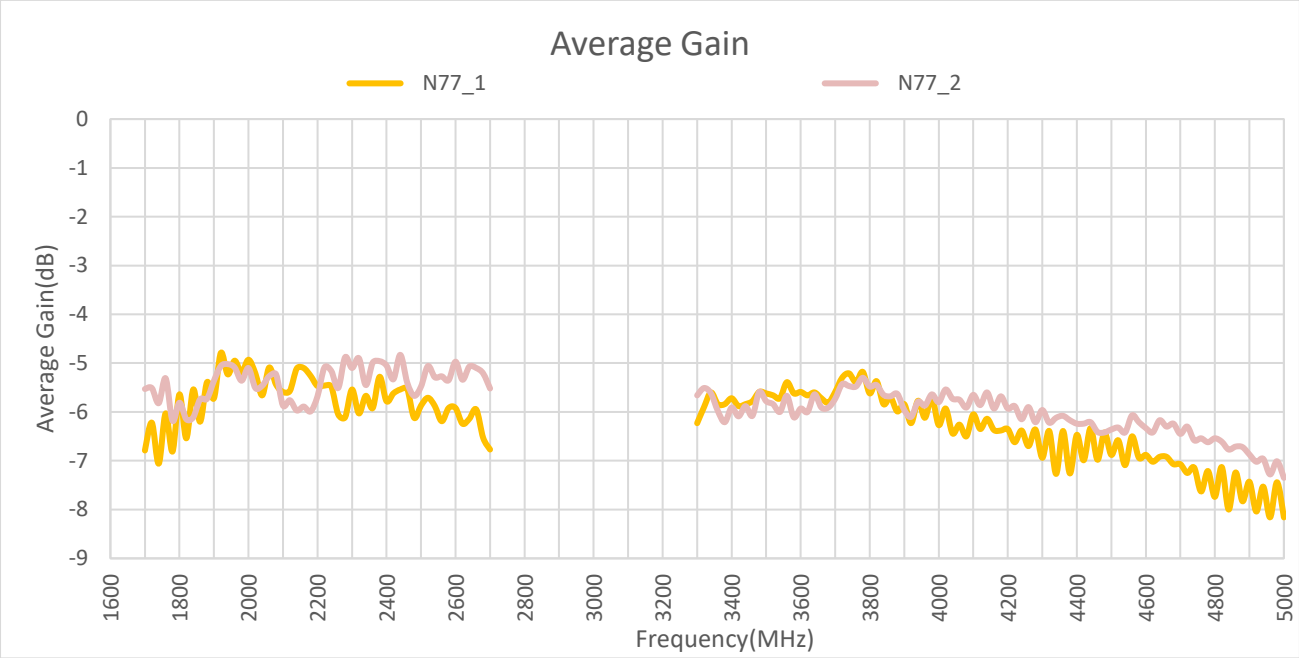
Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	44.2	-	-	-	-	37.0	54.6	32.4

3.2.2. Average Gain



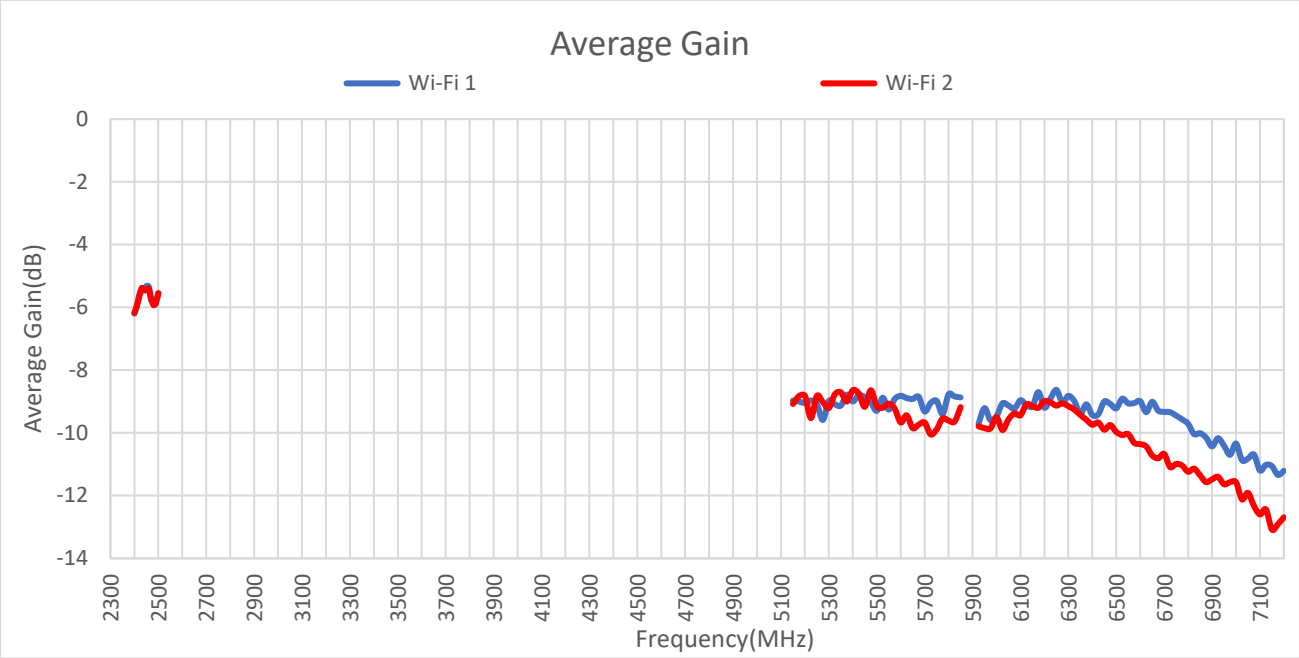
Average Gain (dB) – 5G

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	Main	-	-	-4.2	-5.1	-5.2	-7.1	-	-5.7	-5.8	-5.8
	AUX	-	-	-10.1	-7.5	-6.4	-7.1	-	-7.7	-7.2	-7.4
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Average Gain (dB)	Main	-5.5	-5.2	-5.5	-4.5	-4.8	-5.7	-8.2	-9.2	-	-
	AUX	-6.2	-6.6	-6.6	-6.8	-5.6	-5.4	-7.2	-8.9	-	-



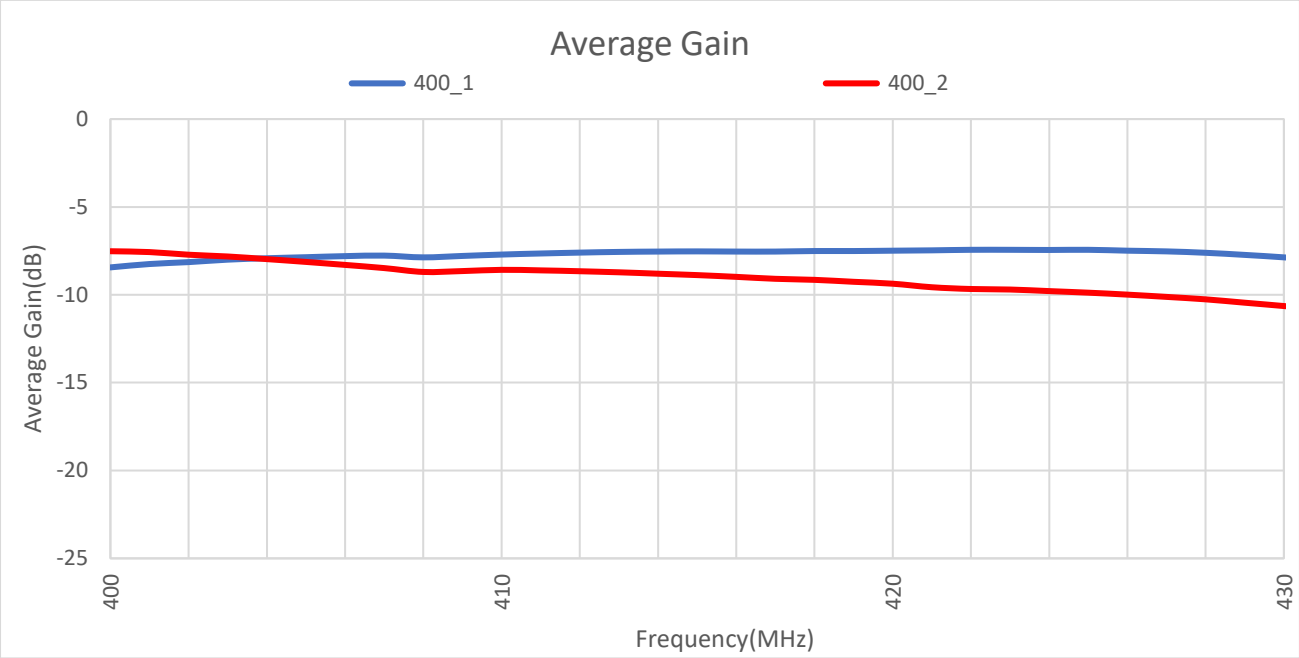
Average Gain (dB) – n77

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	n77_1	-	-	-	-	-	-	-	-6.8	-7.1	-5.4
	n77_2	-	-	-	-	-	-	-	-5.5	-5.8	-5.7
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Average Gain (dB)	n77_1	-5.2	-5.1	-5.7	-5.5	-5.9	-5.6	-7.1	-8.2	1.9	1.5
	n77_2	-5.0	-6.0	-5.5	-4.8	-5.0	-5.9	-6.5	-7.4	1.9	1.5



Average Gain (dB) – Wi-Fi

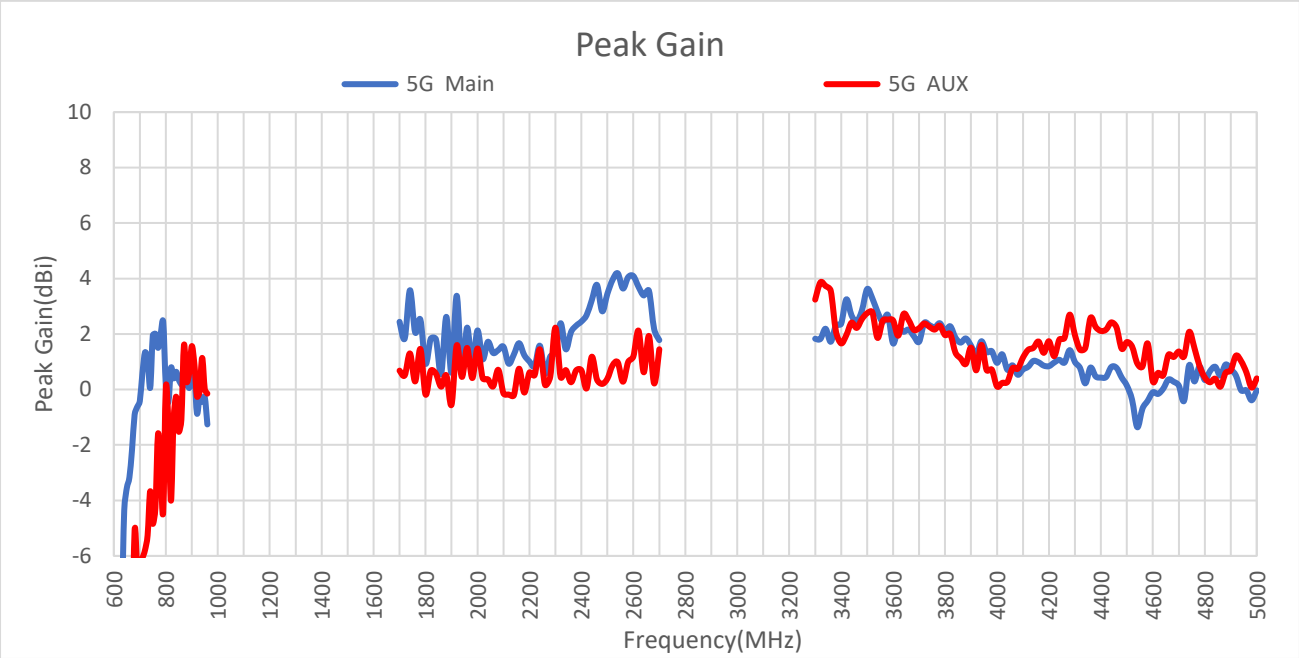
Frequency (MHz)		2400	2450	2500	5150	5500	5850	5925	6325	6725	7125
Average Gain (dB)	Wi-Fi 1	-6.2	-5.3	-5.6	-9.0	-9.3	-8.9	-9.7	-9.0	-9.3	-11.0
	Wi-Fi 2	-6.2	-5.5	-5.6	-9.1	-9.2	-9.2	-9.8	-9.3	-11.1	-12.4



Average Gain(dB) – 400 MHz

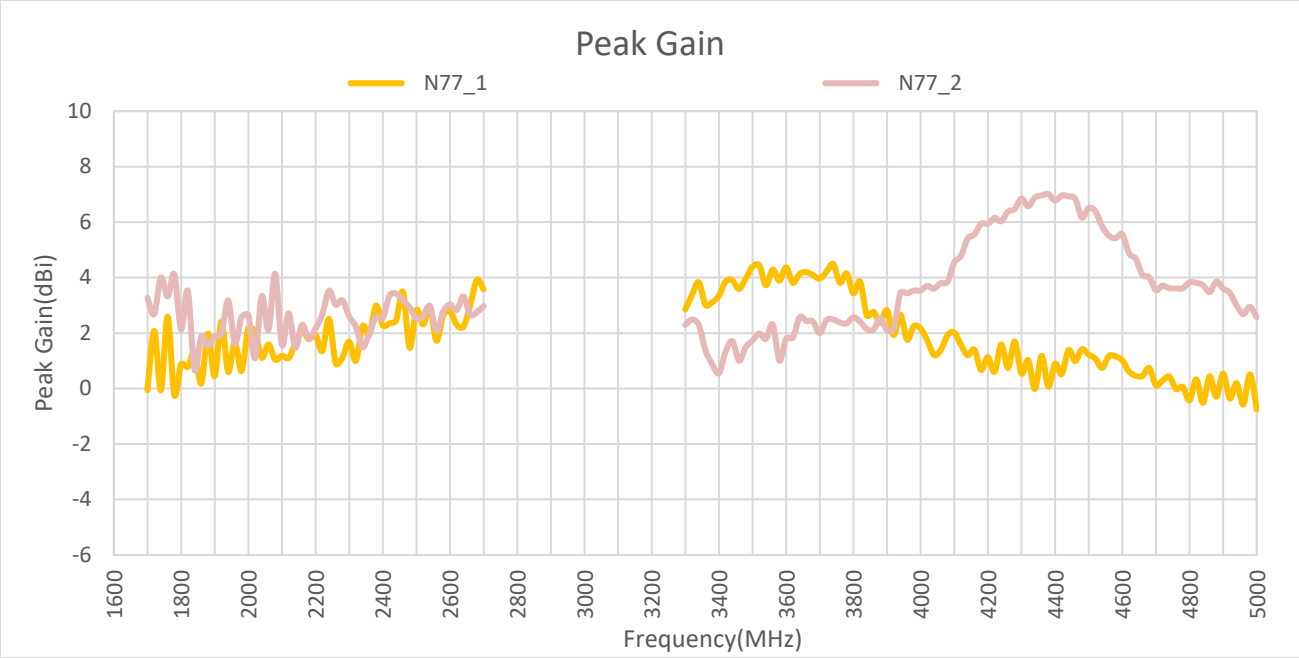
Frequency (MHz)		410	600	630	710	830	900	960	1440	1710	1740
Average Gain (dB)	400_1	-7.7	-	-	-	-	-	-	-	-	-
	400_2	-8.6	-	-	-	-	-	-	-	-	-

3.2.3. Peak Gain



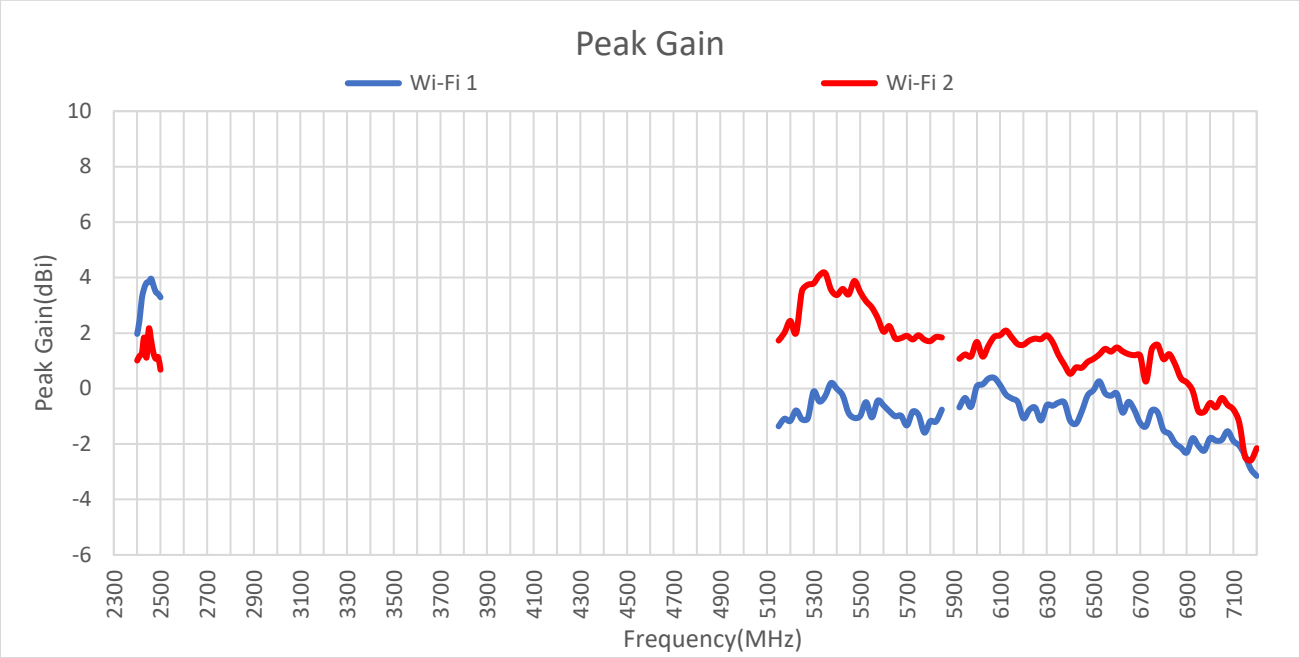
Peak Gain (dBi) – 5G

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	Main	-	-	0.6	0.4	0.7	-1.3	-	2.4	3.6	2.6
	AUX	-	-	-6.1	-1.1	1.6	-0.2	-	0.7	1.3	0.5
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Peak Gain (dBi)	Main	0.6	1.3	1.5	3.2	4.1	1.7	0.1	0.0	0.6	1.3
	AUX	0.5	-0.2	0.7	1.2	1.2	2.5	1.4	0.4	0.5	-0.2



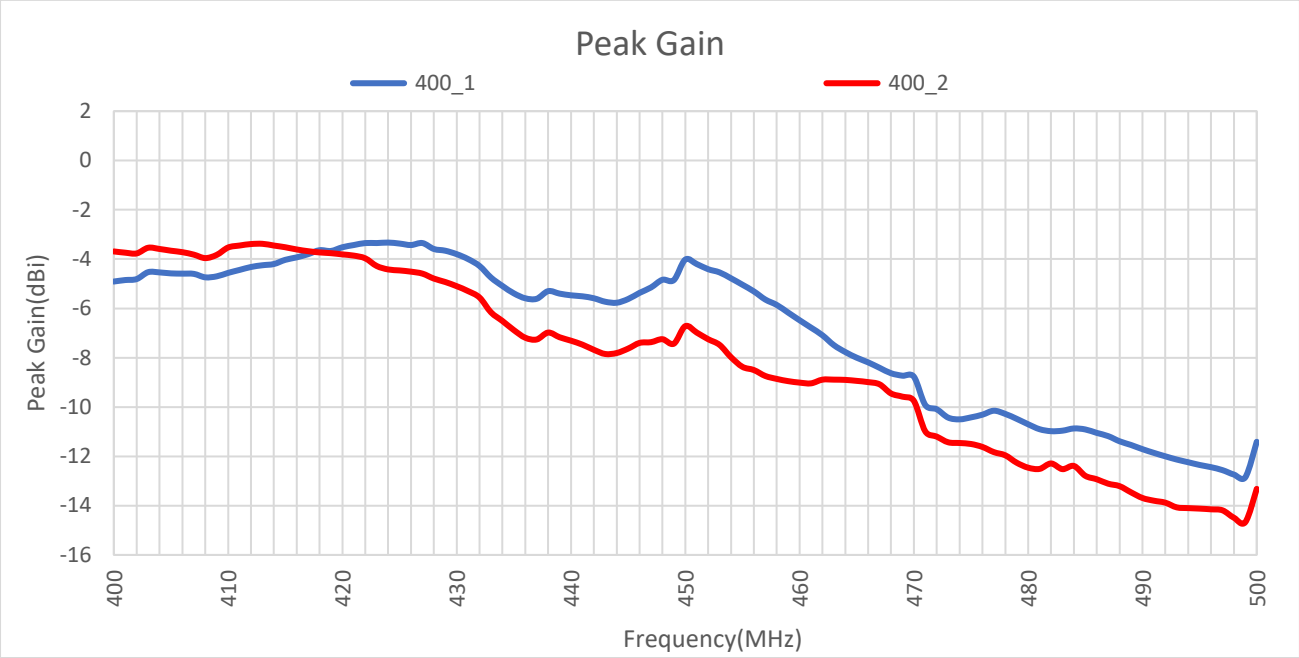
Peak Gain (dBi) – n77

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	n77_1	-	-	-	-	-	-	-	-0.1	-0.1	2.0
	n77_2	-	-	-	-	-	-	-	3.3	4.0	1.5
Frequency (MHz)		**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Peak Gain (dBi)	n77_1	0.6	1.6	2.3	2.5	2.8	4.4	0.1	-0.8	-	-
	n77_2	3.2	1.5	1.5	3.4	3.0	1.8	3.6	2.6	-	-



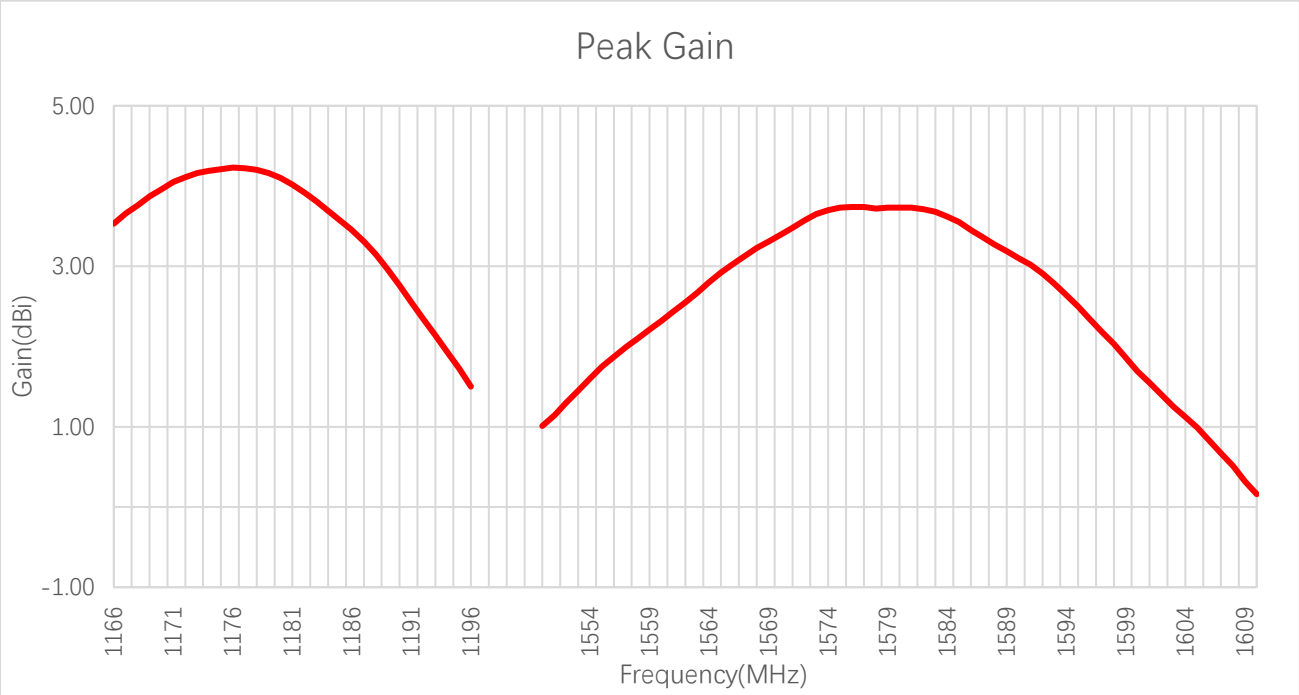
Peak Gain (dBi) – Wi-Fi

Frequency (MHz)		2400	2450	2500	5150	5500	5850	5925	6325	6725	7125
Peak Gain (dBi)	Wi-Fi 1	2.0	3.8	3.3	-1.4	-1.0	-0.8	-0.7	-0.6	-1.4	-2.1
	Wi-Fi 2	1.0	2.2	0.7	1.7	3.5	1.8	1.1	1.7	0.3	-1.2



Peak Gain (dBi) – 400 MHz

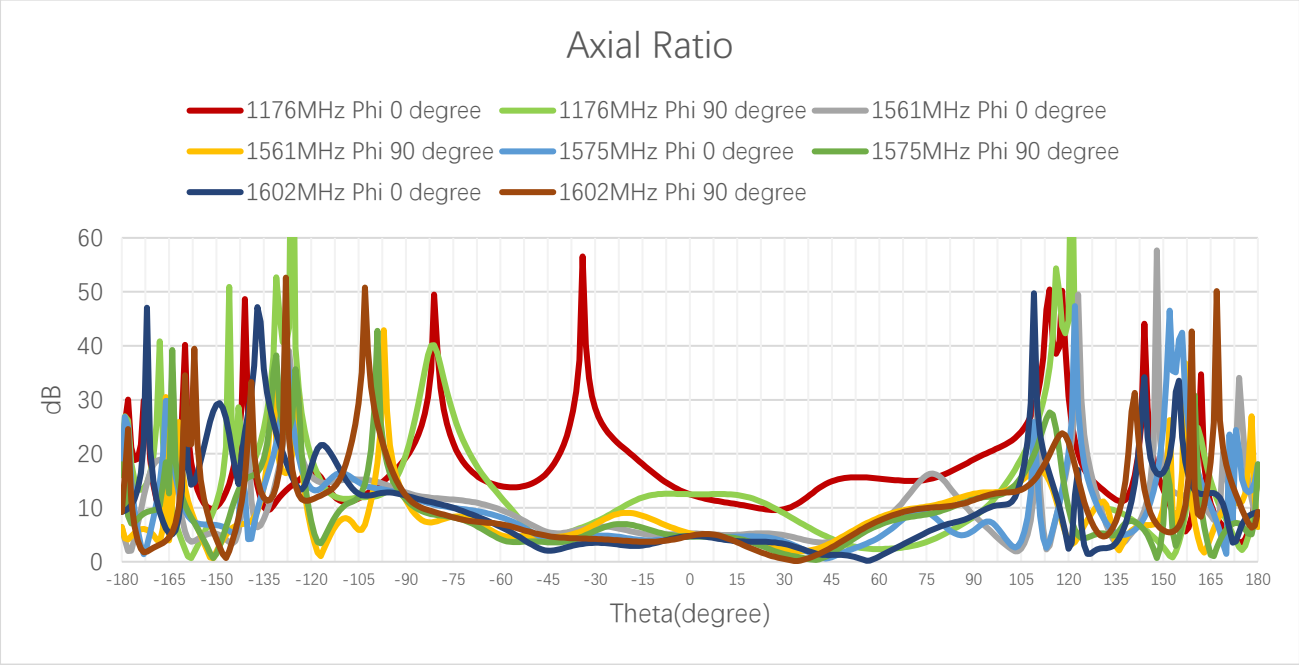
Frequency (MHz)		410	600	630	710	830	900	960	1440	1710	1740
Peak Gain (dBi)	400_1	-4.6	-	-	-	-	-	-	-	-	-
	400_2	-3.5	-	-	-	-	-	-	-	-	-



Peak Gain (dBi) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	4.23	-	-	-	-	2.44	3.73	1.40

3.2.4. GNSS Axial Ratio

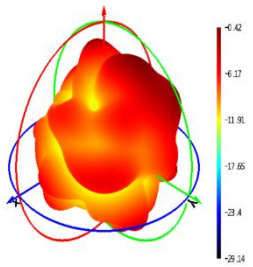
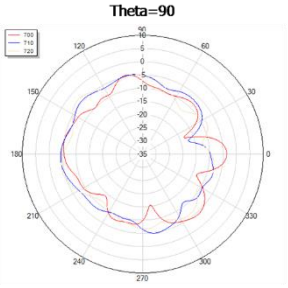
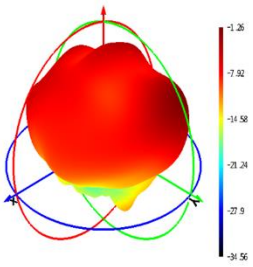
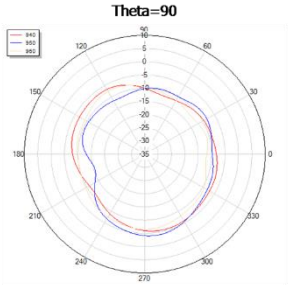
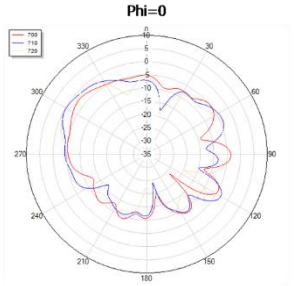
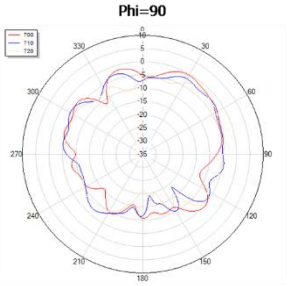
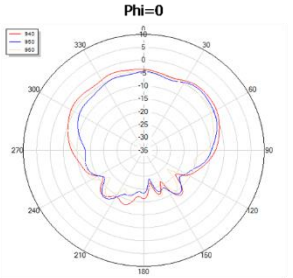
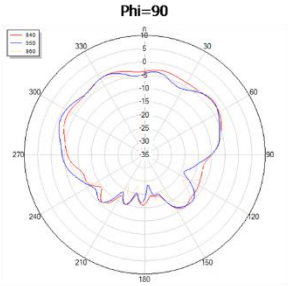
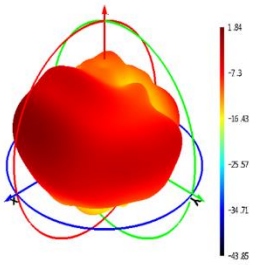
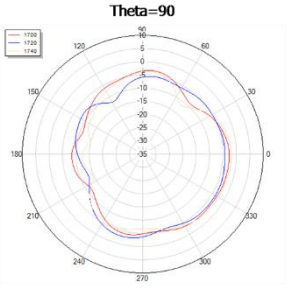
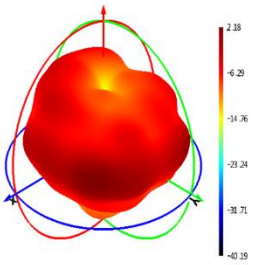
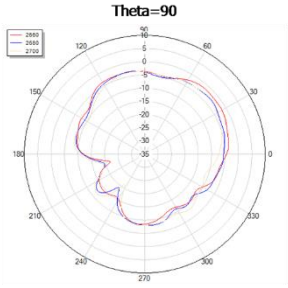
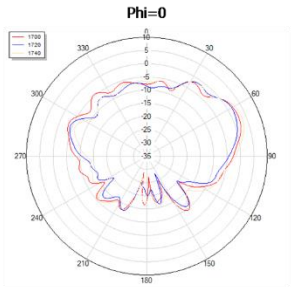
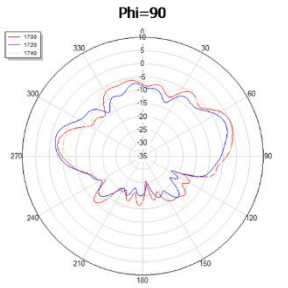
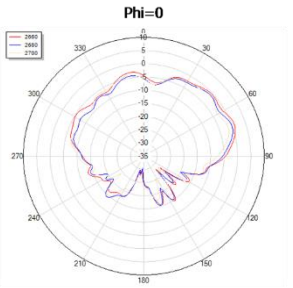
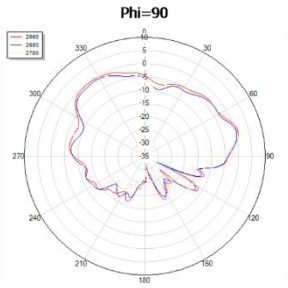
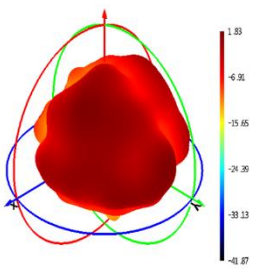
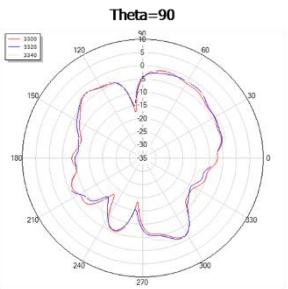
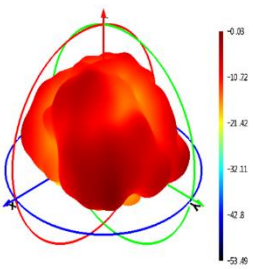
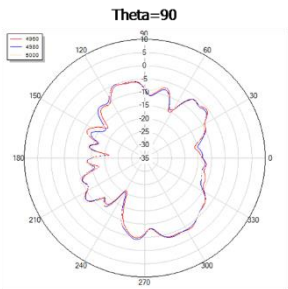


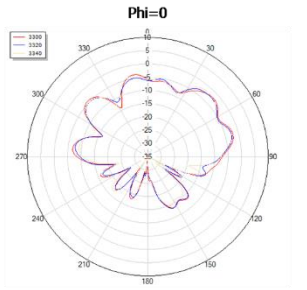
Axial Ratio (dB)

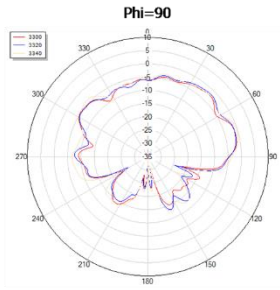
Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
Axial Ratio (dB)	Phi = 0 (deg) Theta = 0 (deg)	12.50	-	-	-	-	5.25	4.66	4.77
	Phi = 90 (deg) Theta = 0 (deg)	12.50	-	-	-	-	5.25	4.66	4.77

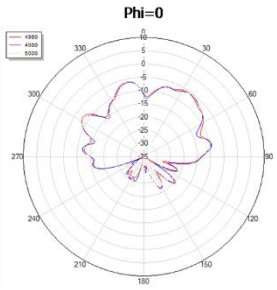
3.2.5. 3D & 2D Radiation Pattern

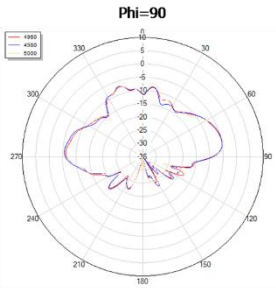
- Test Condition: On 1 m × 1 m Metal Plane
- Test Chamber: HF-S-1

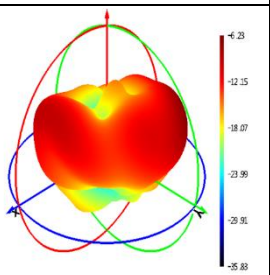
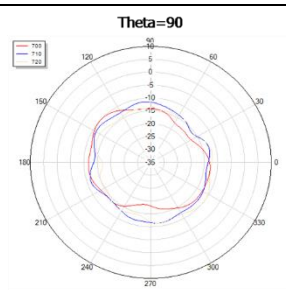
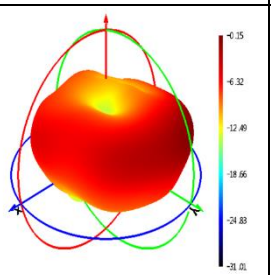
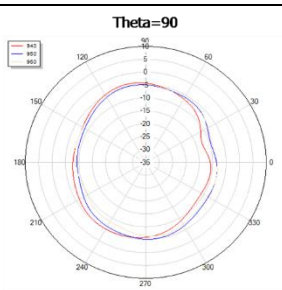
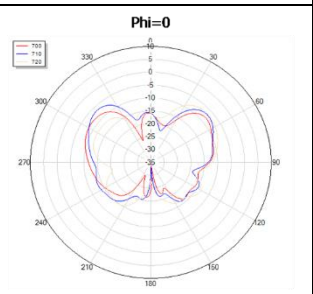
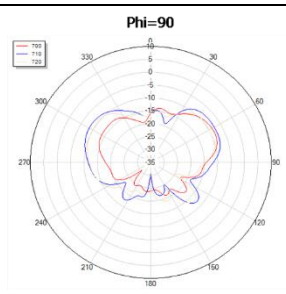
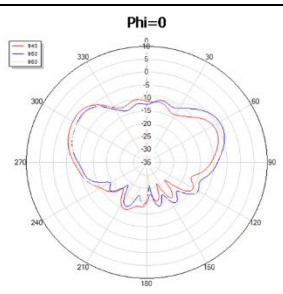
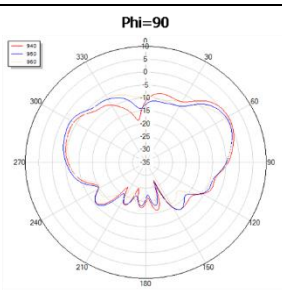
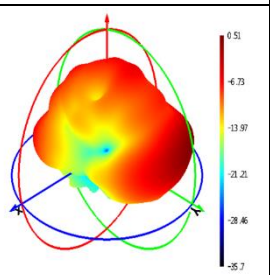
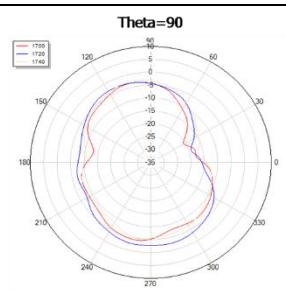
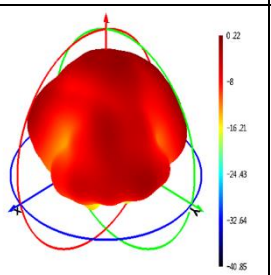
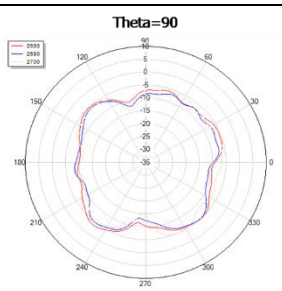
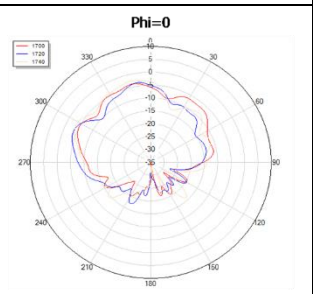
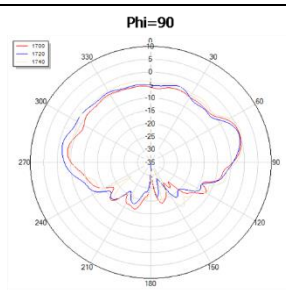
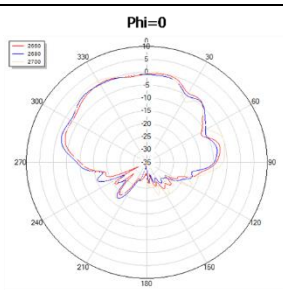
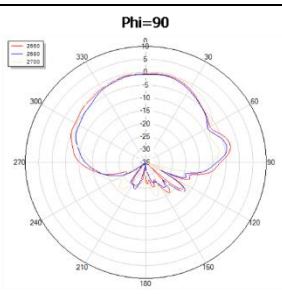
5G Main			
700 MHz		960 MHz	
			
			
1720 MHz		2680 MHz	
			
			
3300 MHz		5000 MHz	
			

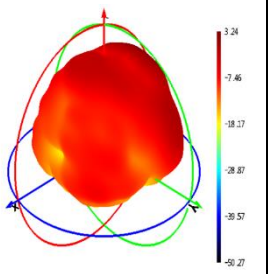
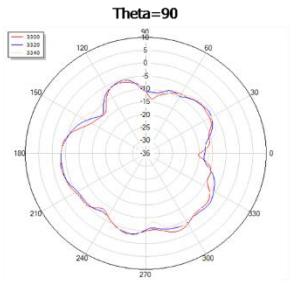
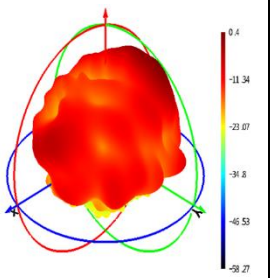
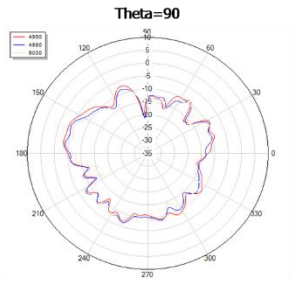
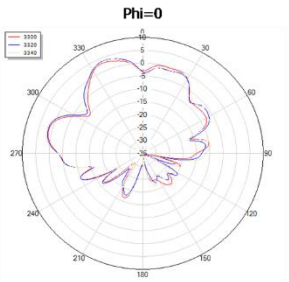
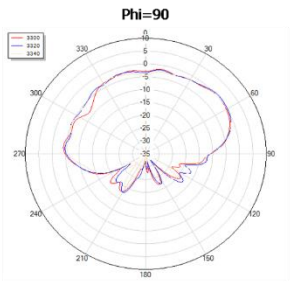
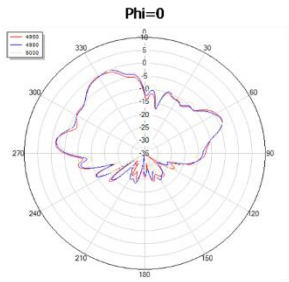
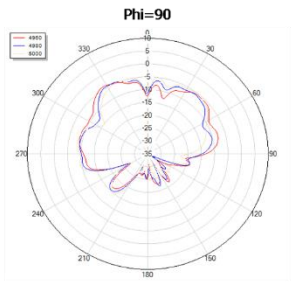


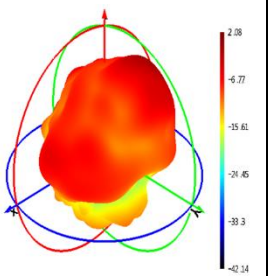
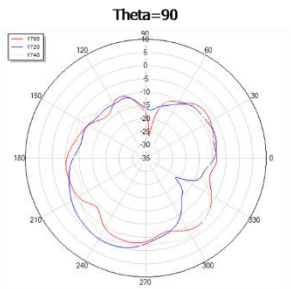
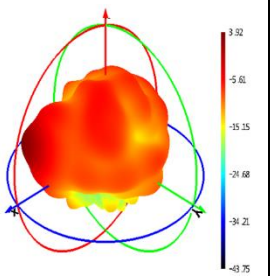
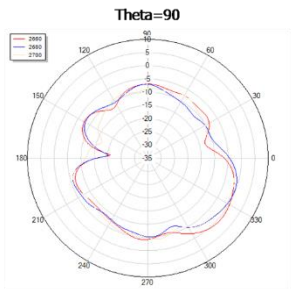
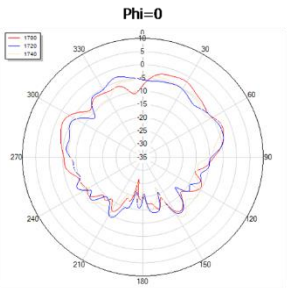
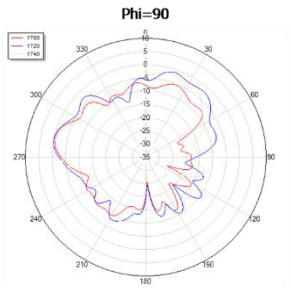
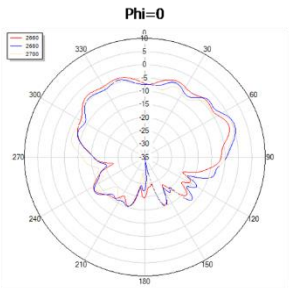
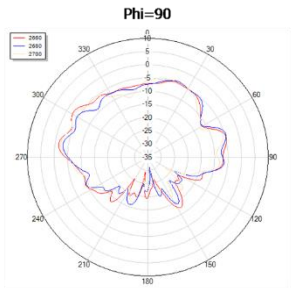
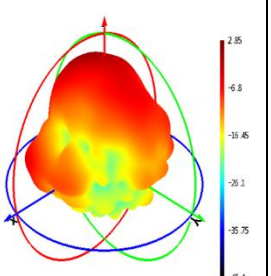
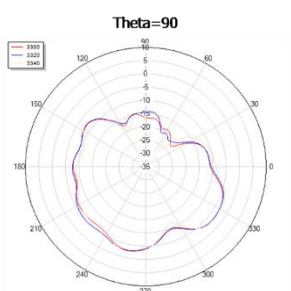
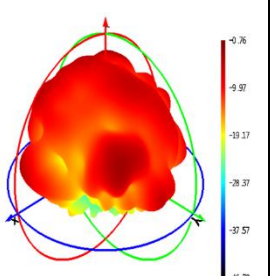
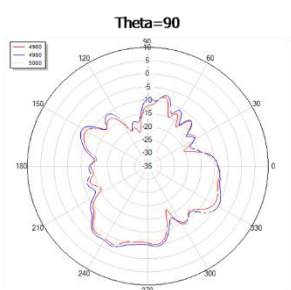


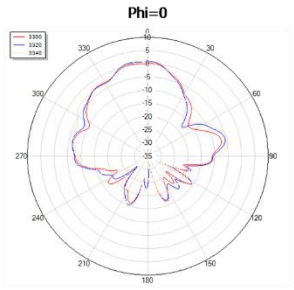
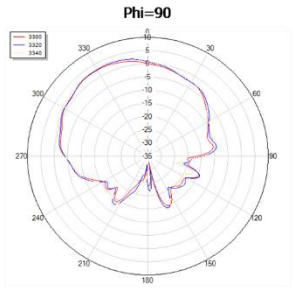
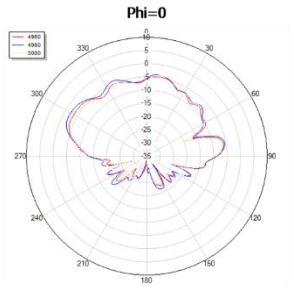
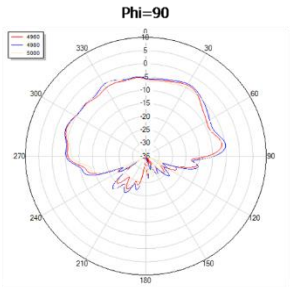


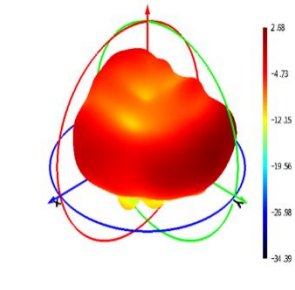
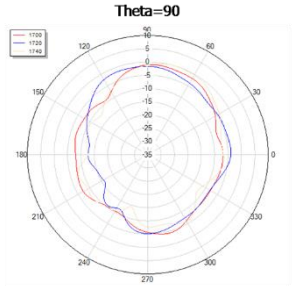
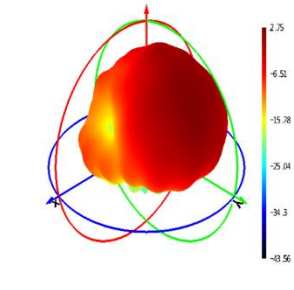
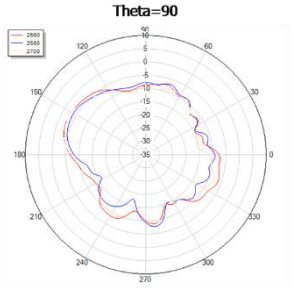
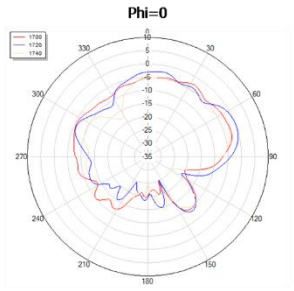
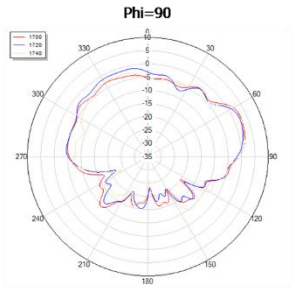
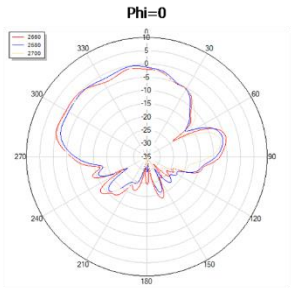
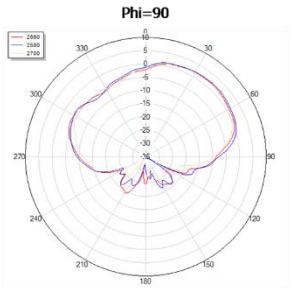
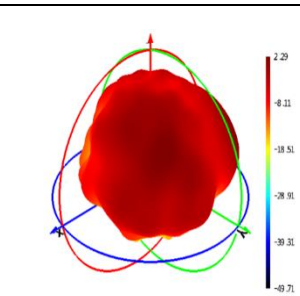
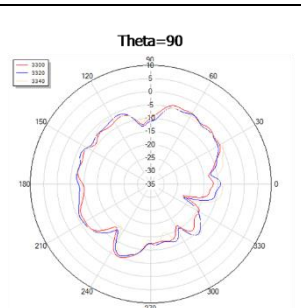
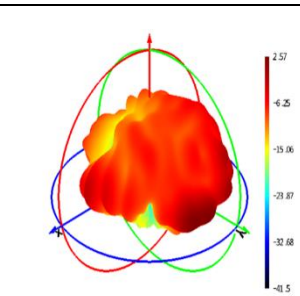
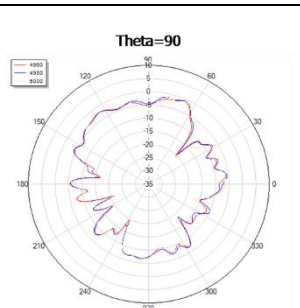
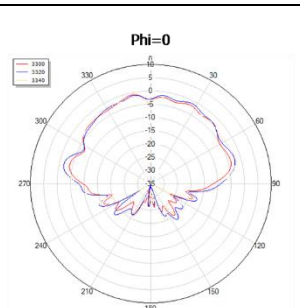
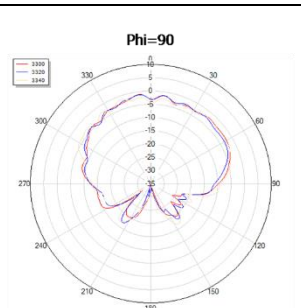
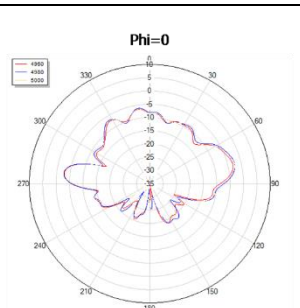
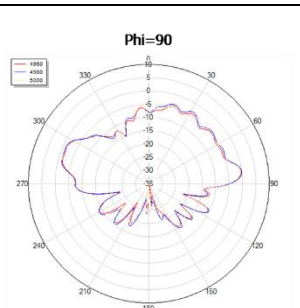


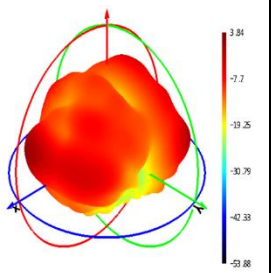
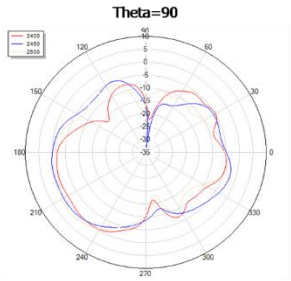
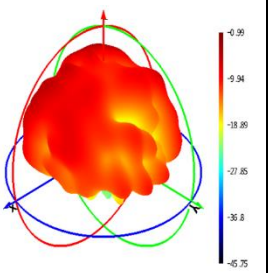
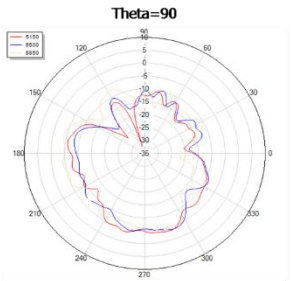
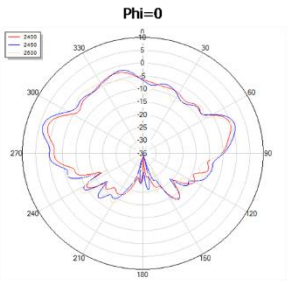
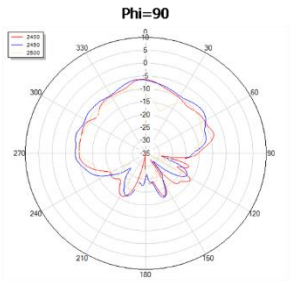
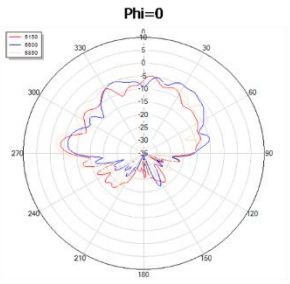
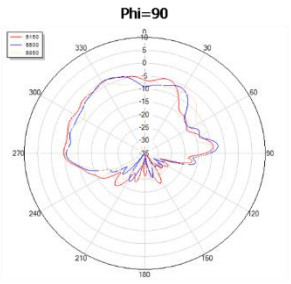
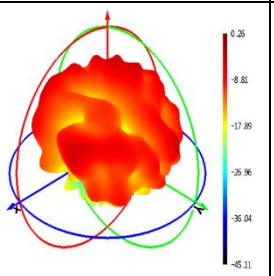
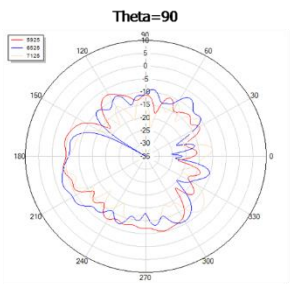
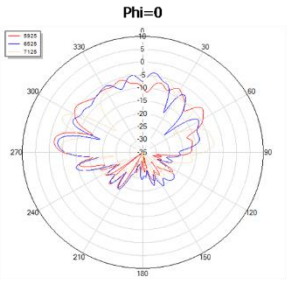
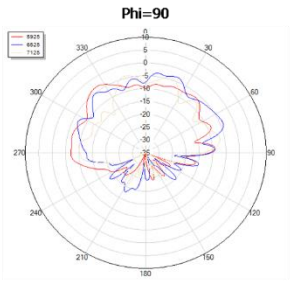
5G AUX			
700 MHz		960 MHz	
			
			
1720 MHz		2680 MHz	
			
			

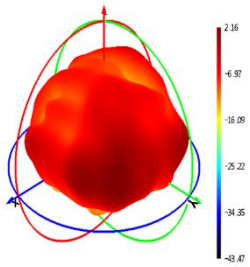
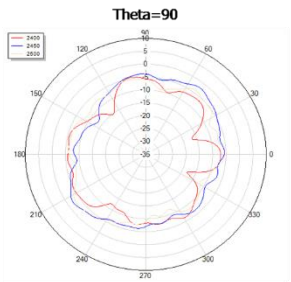
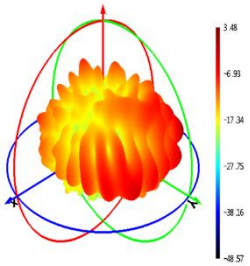
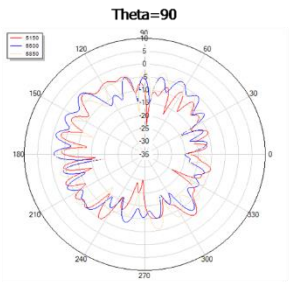
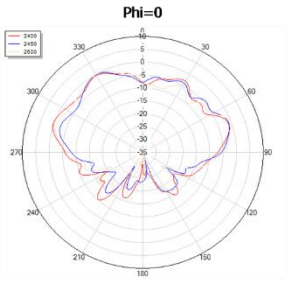
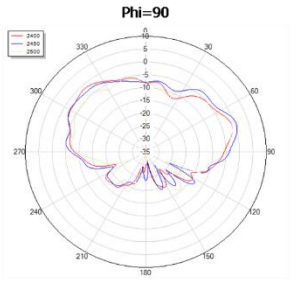
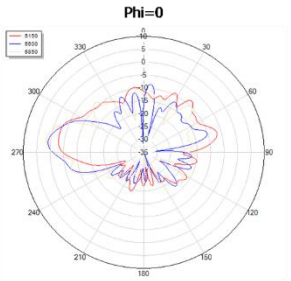
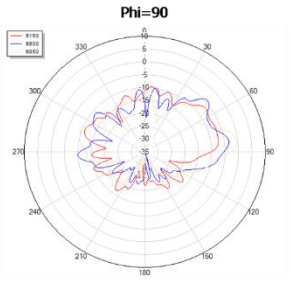
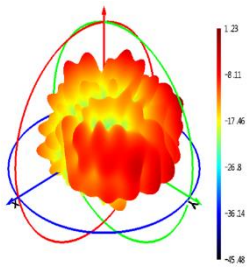
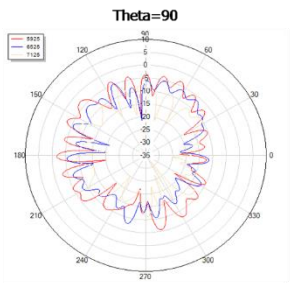
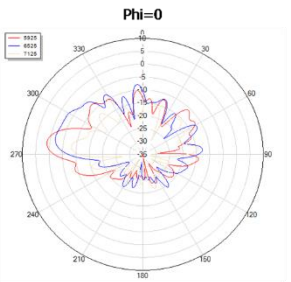
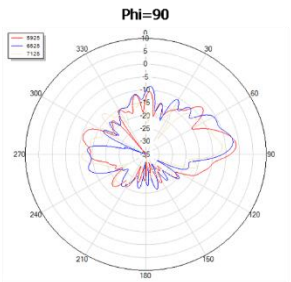
3300 MHz		5000 MHz	
			
			

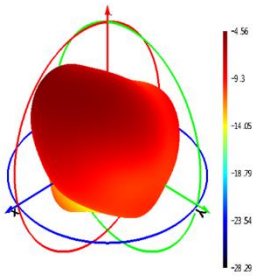
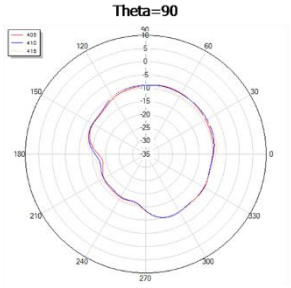
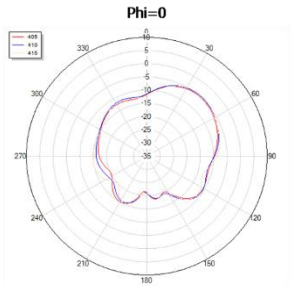
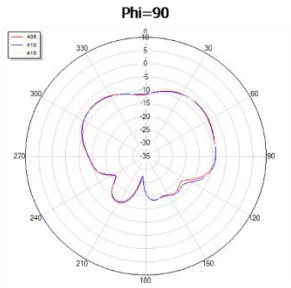
n77_1			
1720 MHz		2680 MHz	
			
			
3330 MHz		5000 MHz	
			

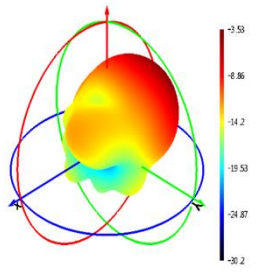
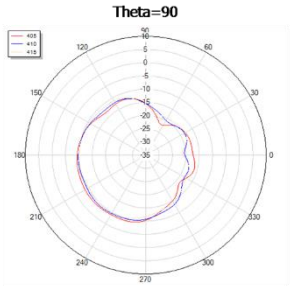
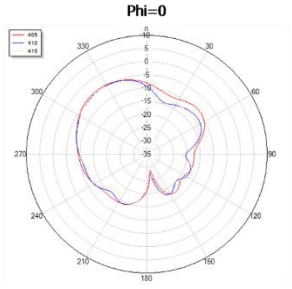
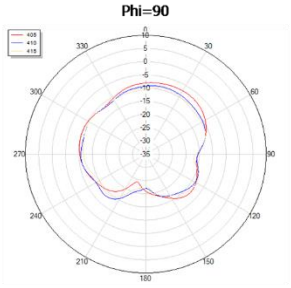
			

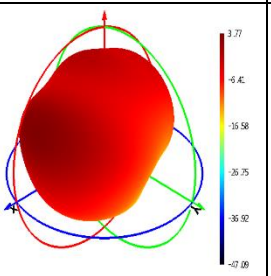
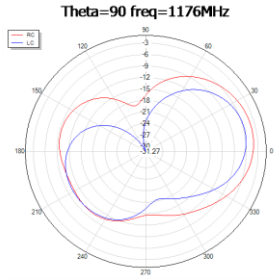
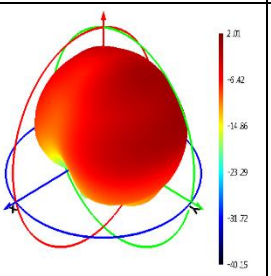
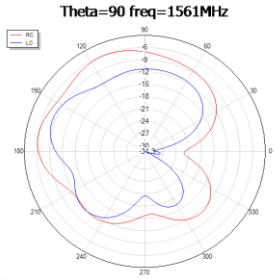
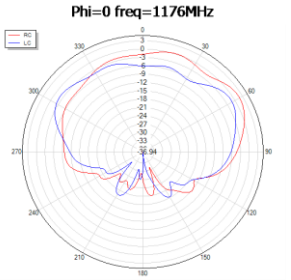
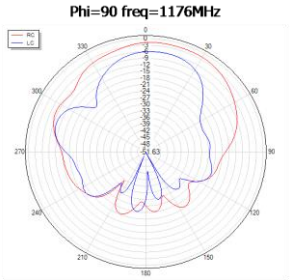
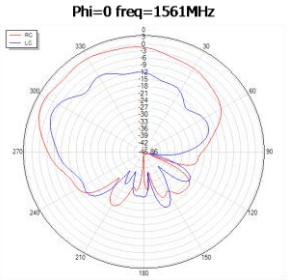
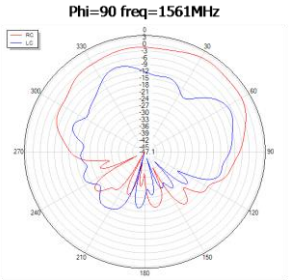
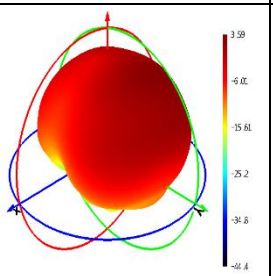
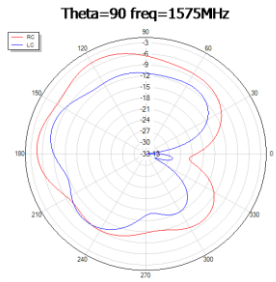
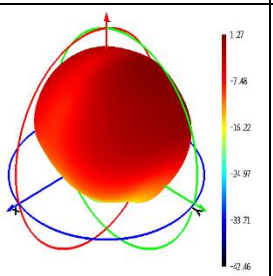
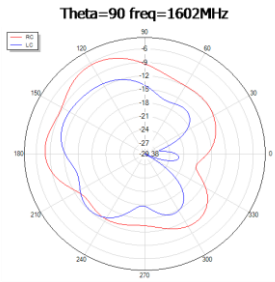
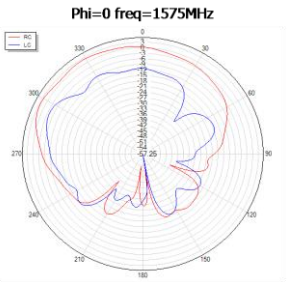
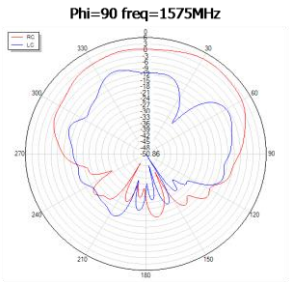
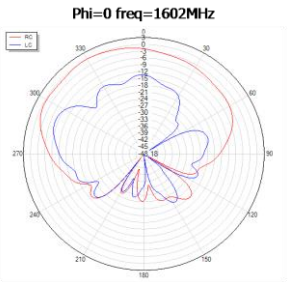
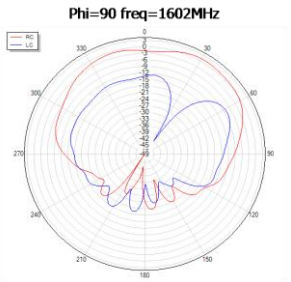
n77_2			
1720 MHz		2680 MHz	
			
			
3330 MHz		5000 MHz	
			
			

Wi-Fi 1			
2450 MHz		5500 MHz	
			
			
6525 MHz			
			
			

Wi-Fi 2			
2450 MHz		5500 MHz	
			
			
6525 MHz			
			
			

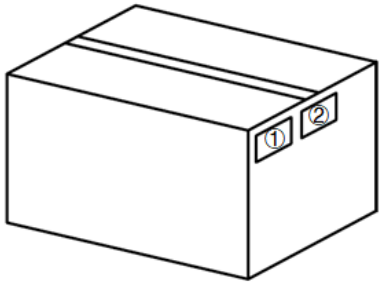
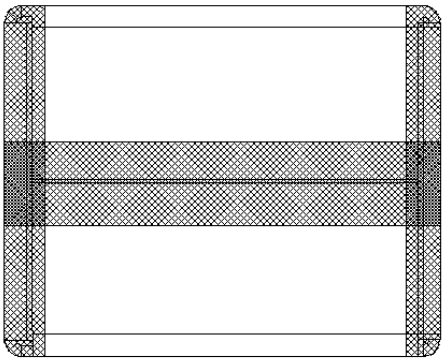
400_1			
410 MHz			
			
			

400_2			
410 MHz			
			
			

GNSS			
1176 MHz		1561 MHz	
			
			
1575 MHz		1602MHz	
			
			

4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		Put the product in the inner box.
2		Top the product with the pearl cotton.
3		(8 inner boxes / Carton Box) (8 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 × 450 × 385 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:

Quectel Wireless Solutions Co., Ltd.
No. 8 Waipojing Road, Sijing Town, Songjiang District, Shanghai 201601, China
Tel: +86 21 5108 6236
Email: info@quectel.com

Or our local offices. For more information, please visit:
https://www.quectel.com/contact/.

For technical support, or to report documentation errors, please visit:
https://www.quectel.com/tech-support/.
Or email us at: support@quectel.com.

Legal Notices

We provide this document to support your product design. You are required to design your products based on the specifications and parameters set forth herein. You agree that you are responsible for using independent analysis and evaluation in designing intended products, and we provide reference designs for illustrative purposes only. Before using any hardware, software or service guided by this document, please read this notice carefully. Even though we employ commercially reasonable efforts to provide the best possible experience, you hereby acknowledge and agree that this document and related services hereunder are provided to you on an “as available” basis. You acknowledge and agree that we may add to, amend, or restate this document at any time at our sole discretion without any prior notice to you, and such additions, amendments, or restatements shall be binding upon you.

Use and Disclosure Restrictions

License Agreements

The recipient of any hardware, software, materials, or documentation provided by us shall keep such content confidential, unless expressly authorized by us. The recipient shall not disclose, access, or use any part of the received content for any purpose other than the execution and implementation of the intended project.

Copyright

Our and third-party products hereunder may contain copyrighted materials, including but not limited to protected content, hardware, software, and documentation owned by us or applicable third parties. Unless prior written consent is obtained, you shall not access, use, or disclose any documents or information provided by us, nor shall you copy, reproduce, republish, display, translate, distribute, merge, modify, or create derivative works from any such copyrighted materials. We and the applicable third party retain exclusive rights to all copyrighted materials. No license to any patents, copyrights, trademarks, or service marks shall be granted or transferred. For the avoidance of doubt, no form of purchase shall be construed as granting any license beyond a normal, non-exclusive, royalty-free license to use the product. We reserve the right to pursue legal action against any violation of confidentiality obligations, unauthorized use, or any other unlawful or malicious use of the aforementioned documents and information.

Trademarks

Unless otherwise expressly provided, nothing in this document shall be construed as conferring any rights to use any trademark, trade name, name, abbreviation, or counterfeit thereof owned by us or any third party in advertising, publicity, or any other contexts.

Third-Party Rights

You understand that this document may refer to hardware, software, and/or documentation owned by one or more third parties (“third-party materials”). Use of such third-party materials is subject to all applicable restrictions and obligations set forth herein.

We make no warranty or representation, either express or implied, regarding the third-party materials, including but not limited to any implied or statutory, warranties of merchantability or fitness for a particular purpose, quiet enjoyment, system integration, information accuracy, and non-infringement of any third-party intellectual property rights with regard to the licensed technology or use thereof. Nothing herein constitutes a representation or warranty by us to either develop, enhance, modify, distribute, market, sell, offer for sale, or otherwise maintain production of any our products or any other hardware, software, device, tool, information, or product. We moreover disclaim any and all warranties arising from the course of dealing, course of performance, or usage of trade.

Privacy Policy

To enable product functionality, certain device data may be uploaded to our or third-party servers, including those operated by carriers, chipset suppliers, or servers designated by you. We strictly comply with applicable laws and regulations and will retain, use, disclose, or otherwise process relevant data solely for the purpose of enabling product functionality, or as permitted by applicable laws. Before interacting with any third party regarding data exchange, please be informed of and understand their privacy and data security policies.

Disclaimer

a) We shall not be liable for any damages resulting from failure to comply with applicable operational or design specifications.
b) We shall bear no liability for any inaccuracies or omissions in this document, nor for any damages arising from the use of the information contained herein.
c) While we make every effort to ensure the integrity, accuracy, and timeliness of the features and functions under development, errors or omissions may nevertheless occur. Unless otherwise provided in a valid written agreement, we make no warranties of any kind, express, implied, or statutory, and disclaim all liability for any loss or damage arising from the use of any features or functions under development, to the maximum extent permitted by law, regardless of whether such loss or damage is foreseeable.
d) We assume no legal responsibility for the accessibility, safety, accuracy, availability, legality, or completeness of any information, content, advertising, commercial offers, products, services, or materials on third-party websites or third-party resources.

Revision History

Version	Date	Author	Note
-	2026-01-26	Nero Zhang/ Faber Shen/ Will Gu/ Riva Ren/ Rainey Liao	Creation of the document
1.0	2026-01-26	Nero Zhang/ Faber Shen/ Will Gu/ Riva Ren/ Rainey Liao	First official release

www.quectel.com