



Antenna Datasheet

Product OC: YB0027AA

Version: 2.7

Date: 2025-07-14

Status: Released

Product Name: 5G & GNSS 9in1 Screw Mount Combo External Antenna

Key Features:

8 × 8 5G MIMO + GNSS L1 & L5

Optimized for 5G and 4G Networks

Screw Mount

SMA Male Connector

IP67 & IP69K

ASA Housing

Compatible with ECE-R118 cables under demand

Overview

YB0027AA is a 5G & GNSS 9in1 combo antenna measuring Φ 162 mm \times 56 mm. This ultra-wide-band 5G & GNSS antenna provides broad coverage from 600–6,000 MHz whilst offering backward-compatibility to support 3G and 2G networks as well as LTE Cat-M and narrowband IoT (NB-IoT). The antenna is available with connection via 9 cable lengths from 300–5,000 mm (Compatible with ECE-R118 cables), 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 & IP69K and IK09 rated enclosure. It is compatible with Quectel's RM520x Series modules.

YB0027AA has 4 \times 5G LMH antennas, 4 \times 5G MH/Wi-Fi antennas and 1 \times GNSS L1 & L5 antenna. It allows high efficiency, stable signal transmission and reception for active GNSS from 1164–1189 MHz & 1565–1606 MHz, and 5G/4G bands from 600–960 MHz and 1400–6000 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 5G & GNSS applications. YB0027AA can be used in harsh environments thanks to its robust UV resistant (UL 746c f1) enclosure.

Typical Applications Include:

- Next Generation OEM Automotive Connectivity
- Multimedia, Navigation and Telematics Systems
- V2V, V2X and Fleet Management Applications
- Real-time HD Video Streaming
- First Net Responder Routers

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.

Below are the variants based on YB0027AA.

Combo variants overview							
OC	5G LMH	5G MH/Wi-Fi	GNSS L1 & L5 (28 dB)	GNSS L1 & L5 (17 dB)	TOTAL	Mounting Type	Screw Nut
YB0027AA	4	4		1	9in1	Screw	M27
YEMN900J1AH	4	4	1		9in1	Screw	M27
YEMN800J1AH	4	4			8in1	Screw	M27
YEMN701J1AH	4	2	1		7in1	Screw	M27
YEMN700J1BH	4	2		1	7in1	Screw	M27
YEMN527J1A	4	0	1		5in1	Screw	M27
YEMN500J1BH	4	0		1	5in1	Screw	M27
YEMN501J1CH	4	1			5in1	Screw	M27
YEMN402J1AH	2	2			4in1	Screw	M27
YEMN403J1BH	4	0			4in1	Screw	M27

Contents

Overview	1
Contents	3
1 Specification	5
1.1. Electrical.....	5
1.1.1. LMHs.....	5
1.1.2. MHs.....	6
1.1.3. GNSS.....	8
1.2. Supported Bands.....	9
1.3. Mechanical & Environmental.....	12
1.4. Block Diagram (Active Antenna).....	13
2 Drawing	14
3 Detailed Performance	15
3.1. S-Parameter Test.....	15
3.1.1. VSWR.....	15
3.1.2. Return Loss.....	18
3.1.3. Isolation.....	21
3.1.3.1. Test Status: In Free Space.....	21
3.1.3.1.1. LMH1.....	21
3.1.3.1.2. LMH2.....	21
3.1.3.1.3. LMH3.....	22
3.1.3.1.4. LMH4.....	22
3.1.3.1.5. MH1.....	23
3.1.3.1.6. MH2.....	23
3.1.3.1.7. MH3.....	24
3.1.3.1.8. MH4.....	24
3.1.3.2. Test Status: On 300 mm × 400 mm Metal Plane.....	25
3.1.3.2.1. LMH1.....	25
3.1.3.2.2. LMH2.....	25
3.1.3.2.3. LMH3.....	26
3.1.3.2.4. LMH4.....	26
3.1.3.2.5. MH1.....	27
3.1.3.2.6. MH2.....	27
3.1.3.2.7. MH3.....	28
3.1.3.2.8. MH4.....	28
3.1.4. GNSS Axial Ratio.....	30
3.1.5. GNSS LNA Gain.....	31

3.1.6.	GNSS Noise Figure.....	32
3.2.	Radiation Performance Test.....	33
3.2.1.	Efficiency	33
3.2.2.	Average Gain	36
3.2.3.	Peak Gain.....	39
3.2.4.	GNSS 2D RHCP and LHCP Gain	42
3.2.5.	3D & 2D Radiation Pattern.....	44
3.2.5.1.	Test Status: In Free Space.....	44
3.2.5.2.	Test Status: On 300 mm × 400 mm Metal Plane	74
3.3.	Active OTA Test.....	103
4	Packaging	107
5	Installation	109
6	Appendix Reference	110
	Contact Us.....	112
	Legal Notices	113
	Revision History	115

1 Specification

Test Condition: Free Space & On 300 mm × 400 mm metal plane

1.1. Electrical

Electrical Specifications		
Frequency Range	LMHs	600–960 MHz, 1400–6000 MHz
	MHs	1400–6000 MHz
	GNSS	1164–1189 MHz, 1559–1606 MHz
Radiation Pattern	LMHs & MHs	Omni-directional
	GNSS	Directional
Polarization	LMHs & MHs	Linear
	GNSS	RHCP
Impedance		50 Ω
Isolation		≤ -8 dB
Axial Ratio (GNSS)		< 3 dB

1.1.1. LMHs

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
	Band	Band	Band	Band	Band	Band	Band	Band	Band	Band	Band	Band
		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	2.7	2.3	2.5	3.7	3.2	1.9	1.9	2.6	3.2	2.3	1.8
	MP	2.8	2.8	2.4	3.4	2.6	1.8	1.8	2.5	3.0	2.4	1.6
Max Return Loss (dB)	FS	-6.8	-8.3	-7.2	-4.8	-5.7	-10.0	-10.3	-7.0	-5.6	-7.9	-10.9
	MP	-6.4	-6.6	-7.8	-5.3	-7.0	-11.0	-10.7	-7.4	-6.0	-7.8	-12.7

AVG Eff. (%)	FS	32.7	44.5	43.0	31.8	43.1	57.6	59.3	56.4	47.4	56.1	55.9
	MP	14.7	20.8	19.7	28.2	40.7	57.7	57.3	53.6	46.1	56.7	56.7
AVG Gain (dB)	FS	-4.9	-3.5	-3.7	-5.0	-3.7	-2.4	-2.3	-2.5	-3.3	-2.5	-2.5
	MP	-8.4	-6.9	-7.1	-5.5	-3.9	-2.4	-2.4	-2.7	-3.4	-2.5	-2.5
Max Peak Gain (dBi)	FS	-0.5	0.2	1.0	0.9	2.0	3.9	4.1	3.8	3.4	4.9	4.1
	MP	0.9	4.5	4.3	3.1	5.6	6.6	6.7	6.5	8.2	5.5	7.0
VSWR	FS	≤ 3.7										
	MP	≤ 3.4										
Return Loss	FS	≤ -4.8 dB										
	MP	≤ -5.3 dB										
Peak Gain	FS	≤ 4.9 dBi										
	MP	≤ 8.2 dBi										

- LMHs: LMH antennas (LMH1, LMH2, LMH3, LMH4)
- MHs: MH antennas (MH1, MH2, MH3, MH4)
- FS: In Free Space
- MP: On 300 mm × 400 mm Metal Plane

1.1.2. MHs

Band	Band	B71	B12	B5	n74	B1	B40	Wi-Fi 2G	B38	B42	n79	Wi-Fi 5G
			/B13 /B28	/B8 /B26	/n75 /n76	/B2 /B3			/B41	/B48 /n77		5G
SPEC	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	-	-	-	4.3	2.7	1.5	2.2	2.6	3.6	3.1	2.8
	MP	-	-	-	3.7	3.5	1.3	1.9	2.6	3.6	2.7	2.6
Max Return Loss (dB)	FS	-	-	-	-4.1	-6.8	-13.4	-8.6	-7.0	-5.0	-5.8	-6.4
	MP	-	-	-	-4.8	-5.1	-17.5	-10.3	-7.1	-4.9	-6.8	-7.0
AVG Eff. (%)	FS	-	-	-	34.7	51.1	66.3	60.5	56.0	50.3	58.6	56.1
	MP	-	-	-	26.7	40.9	60.0	55.8	54.7	44.3	56.0	54.5
AVG Gain (dB)	FS	-	-	-	-4.6	-2.9	-1.8	-2.2	-2.5	-3.0	-2.3	-2.5
	MP	-	-	-	-5.8	-4.1	-2.2	-2.5	-2.6	-3.6	-2.5	-2.6
Max Peak Gain (dBi)	FS	-	-	-	2.7	3.5	3.2	2.8	2.6	3.1	3.9	4.1
	MP	-	-	-	1.5	5.8	6.4	6.4	5.5	6.6	8.1	8.0

VSWR	FS	≤ 4.3
	MP	≤ 3.7
Return Loss	FS	≤ -4.1 dB
	MP	≤ -4.8 dB
Peak Gain	FS	≤ 4.1 dBi
	MP	≤ 8.1 dBi

- LMHs: LMH antennas (LMH1, LMH2, LMH3, LMH4)
- MHs: MH antennas (MH1, MH2, MH3, MH4)
- FS: In Free Space
- MP: On 300 mm × 400 mm Metal Plane

1.1.3. 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	1.48	-	-	-	-	1.63	1.54	1.42
Return Loss (dB)	-14.2	-	-	-	-	-12.3	13.4	-15.2
Efficiency (%)	85	-	-	-	-	53	66	45.6
AVG Gain (dB)	-0.9	-	-	-	-	-3.37	-2.47	-4.03
Peak Gain (dBi)	4.67	-	-	-	-	2.85	3.82	2.25
Axial Ratio (dB)	2.44	-	-	-	-	1.2	0.79	0.77

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	18.8 ±4 mA
Impedance	50 Ω

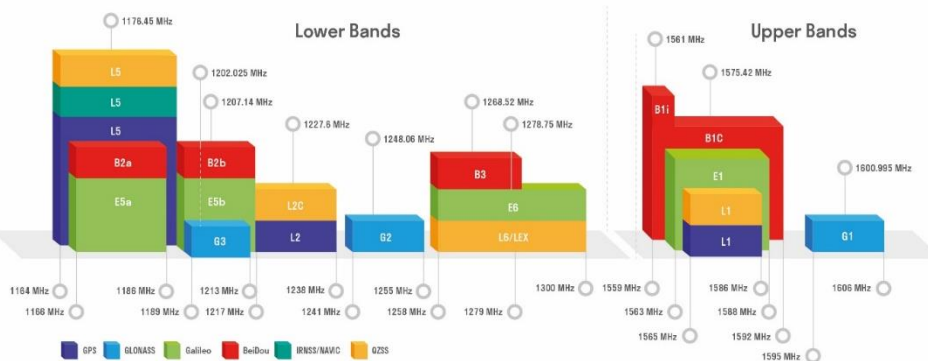
1.2. Supported Bands

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			√

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

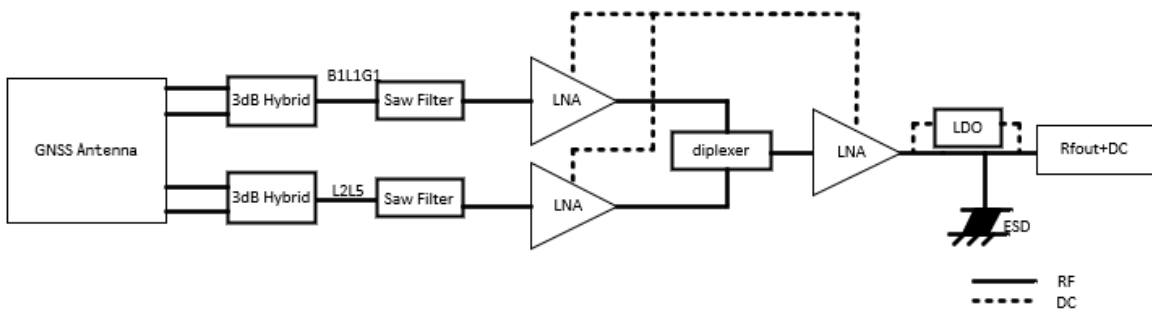


1.3. Mechanical & Environmental

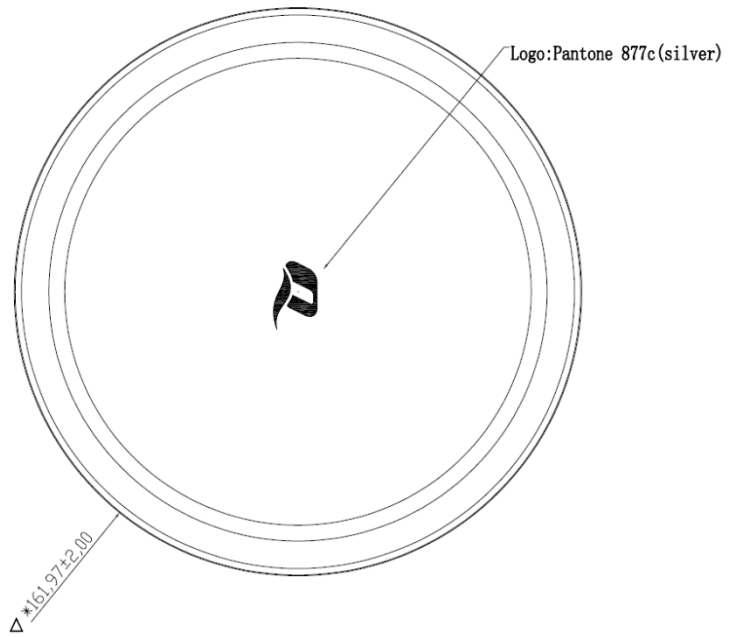
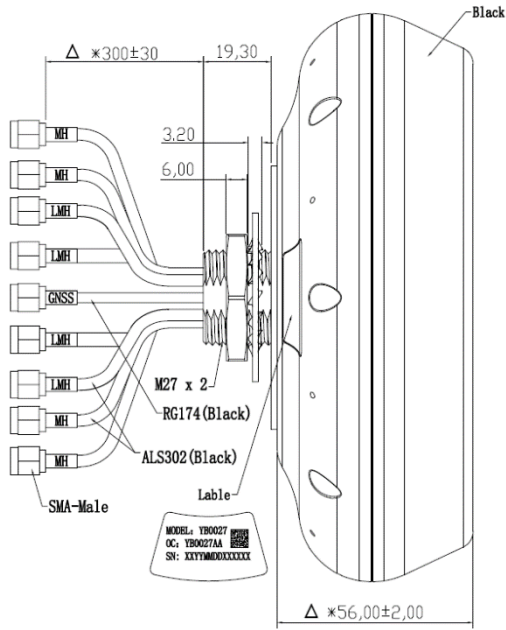
Mechanical		
Antenna Size	Φ 162 mm × 56 mm	
Casing Material & Color	ASA & Black	
Cable Type & Length	LMHs & MHs	ALS302 Black & 300 mm
	GNSS	RG174 Black & 300 mm
Connector Type	SMA Male (The current state of the SMA connector is not waterproof. If a waterproof connector is required, it can be customized.)	
Weight	Typ. 535 g	
Mounting Type	Screw Mount	
Environmental		
Operation Temperature	-40 °C to +85 °C	
Storage Temperature	-40 °C to +85 °C	
Ingress Protection (IP) Rating	IP67 (After Installation) IP69K (After Installation)	
Impact Protection (IK) Rating	IK09	
RoHS & REACH Compliant	Yes	
UV Resistant	UL 746c f1	

- LMHs: LMH antennas (LMH1, LMH2, LMH3, LMH4)
- MHs: MH antennas (MH1, MH2, MH3, MH4)
- FS: In Free Space
- MP: On 300 mm × 400 mm Metal Plane

1.4. Block Diagram (Active Antenna)



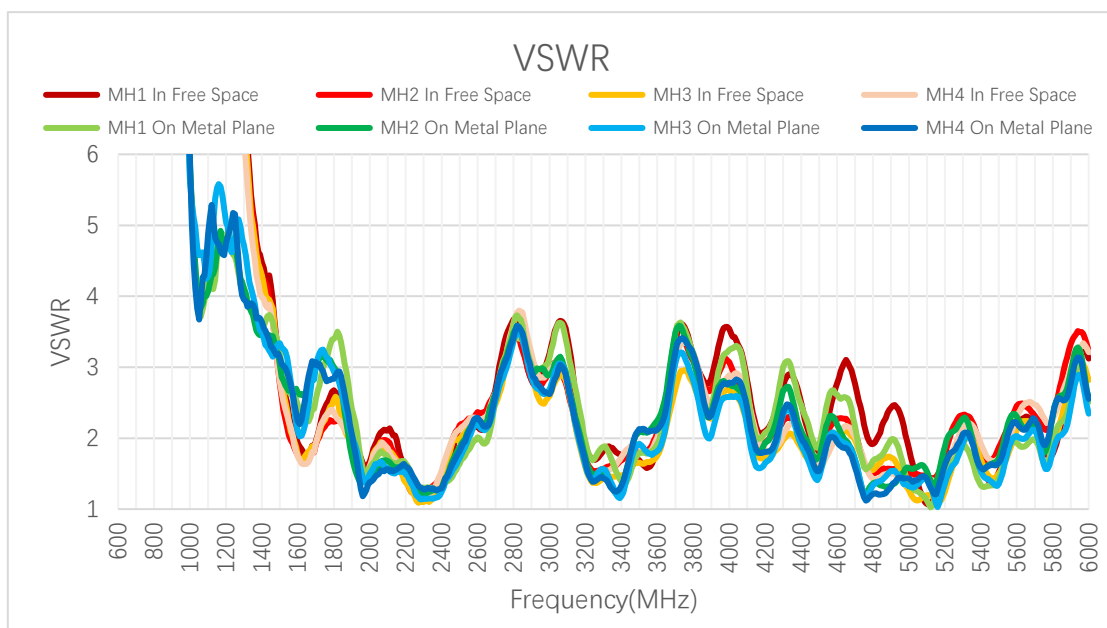
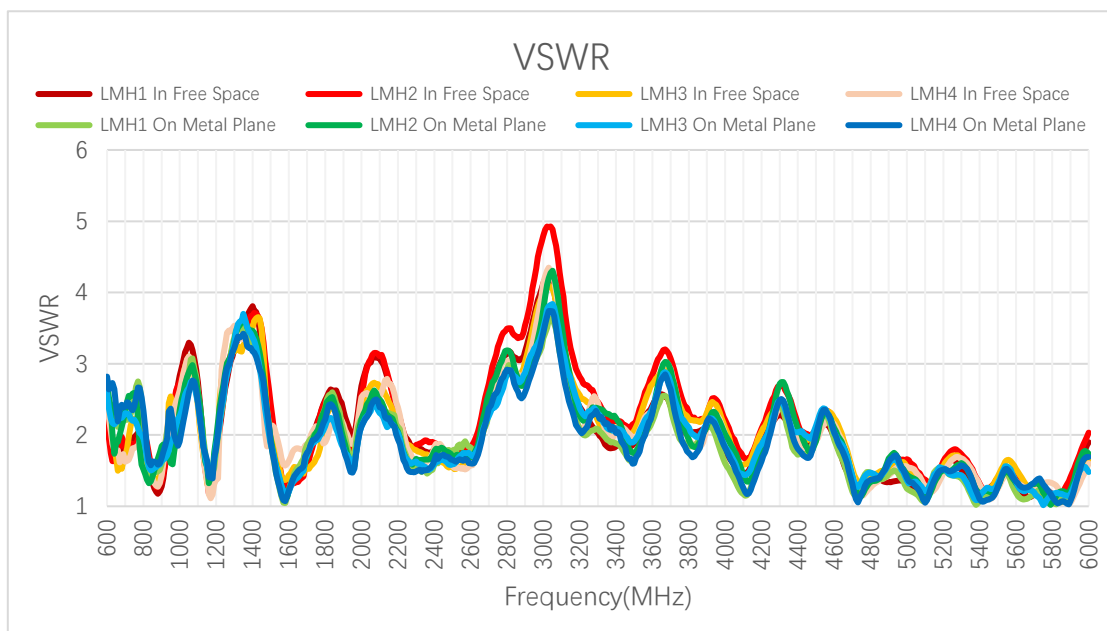
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

3.1.1. VSWR



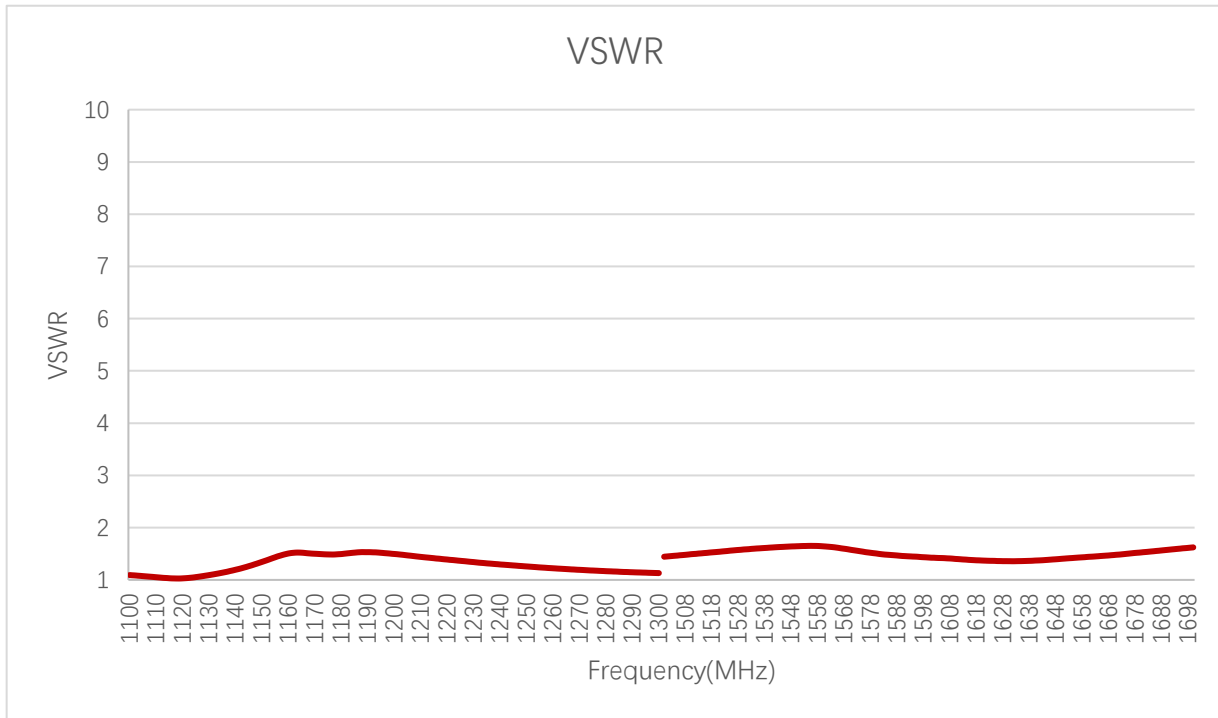
VSWR – LMH

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
LMH1	FS	2.4	1.8	1.8	1.6	1.3	2.3	3.5	1.8	2.1	2.5
	MP	2.6	2.4	2.2	1.5	1.6	2.1	3.0	1.9	2.0	2.3
LMH2	FS	2.3	1.6	1.8	1.7	1.4	2.3	3.6	1.7	1.9	2.2
	MP	2.7	2.0	2.5	1.3	1.8	1.6	3.2	1.8	2.0	2.2
LMH3	FS	2.7	2.0	1.8	1.4	1.5	2.4	3.6	1.5	1.6	2.2
	MP	2.6	2.2	2.3	1.5	1.6	1.9	2.9	1.8	1.9	1.9
LMH4	FS	2.6	1.9	1.6	1.6	1.4	2.2	3.0	1.9	2.1	2.3
	MP	2.8	2.7	2.5	1.6	1.7	2.2	2.9	1.8	1.9	2.1
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
LMH1	FS	2.0	2.8	1.8	1.8	1.8	2.4	1.3	1.3	1.4	1.9
	MP	1.6	2.3	1.5	1.7	1.8	2.2	1.2	1.2	1.3	1.7
LMH2	FS	1.8	2.9	1.9	1.8	1.8	2.8	1.5	1.7	1.4	2.0
	MP	1.5	2.3	1.7	1.8	1.7	2.3	1.4	1.4	1.3	1.7
LMH3	FS	1.6	2.5	1.7	1.6	1.7	2.7	1.5	1.6	1.4	1.6
	MP	1.6	2.1	1.6	1.7	1.7	2.4	1.4	1.4	1.3	1.5
LMH4	FS	1.9	2.8	1.6	1.8	1.6	2.3	1.5	1.6	1.2	1.6
	MP	1.5	2.2	1.5	1.7	1.6	2.3	1.3	1.4	1.3	1.7

VSWR – MH

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	-	-	-	-	-	-	4.3	2.0	2.4	2.2
	MP	-	-	-	-	-	-	3.7	2.7	3.0	2.8
MH2	FS	-	-	-	-	-	-	4.0	2.0	2.1	2.1
	MP	-	-	-	-	-	-	3.5	3.1	3.1	2.0
MH3	FS	-	-	-	-	-	-	4.0	2.0	2.2	2.0
	MP	-	-	-	-	-	-	3.2	3.1	3.2	2.3
MH4	FS	-	-	-	-	-	-	3.9	2.0	2.2	2.1

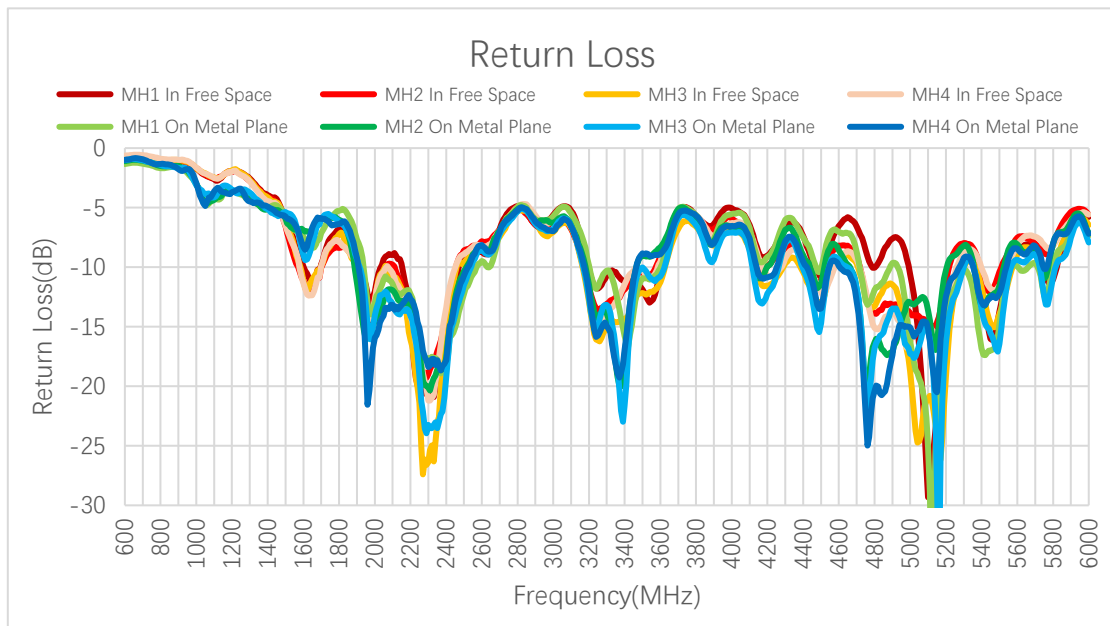
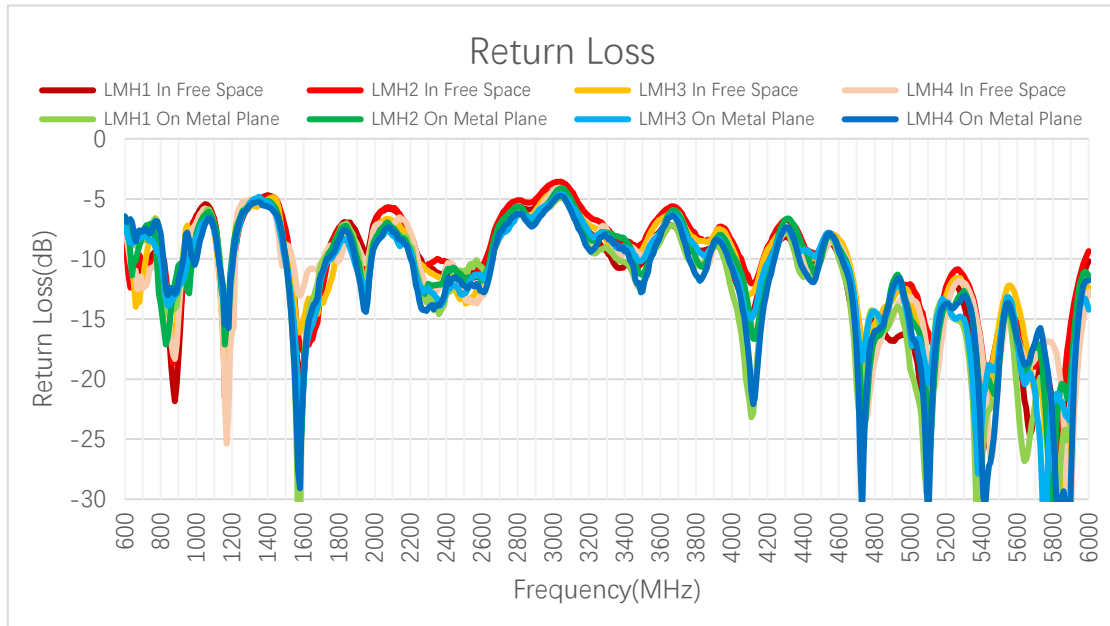
	MP	-	-	-	-	-	-	3.4	3.0	2.9	2.3
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
MH1	FS	1.7	2.0	1.2	1.7	2.2	1.9	2.8	1.8	1.5	3.1
	MP	1.7	1.6	1.3	1.4	2.0	1.9	2.2	1.4	1.4	2.5
MH2	FS	1.5	1.8	1.3	1.9	2.4	2.1	2.1	1.5	1.9	3.2
	MP	1.4	1.6	1.3	1.6	2.2	2.2	1.7	1.6	1.7	2.6
MH3	FS	1.5	1.7	1.2	1.9	2.3	1.8	2.0	1.3	1.5	2.8
	MP	1.6	1.5	1.1	1.5	2.2	1.8	1.7	1.3	1.4	2.3
MH4	FS	1.6	1.7	1.3	1.9	2.3	2.0	2.0	1.4	1.7	3.2
	MP	1.3	1.5	1.3	1.6	2.3	2.1	1.6	1.4	1.7	2.6



VSWR – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	1.48	-	-	-	-	1.63	1.54	1.42

3.1.2. Return Loss



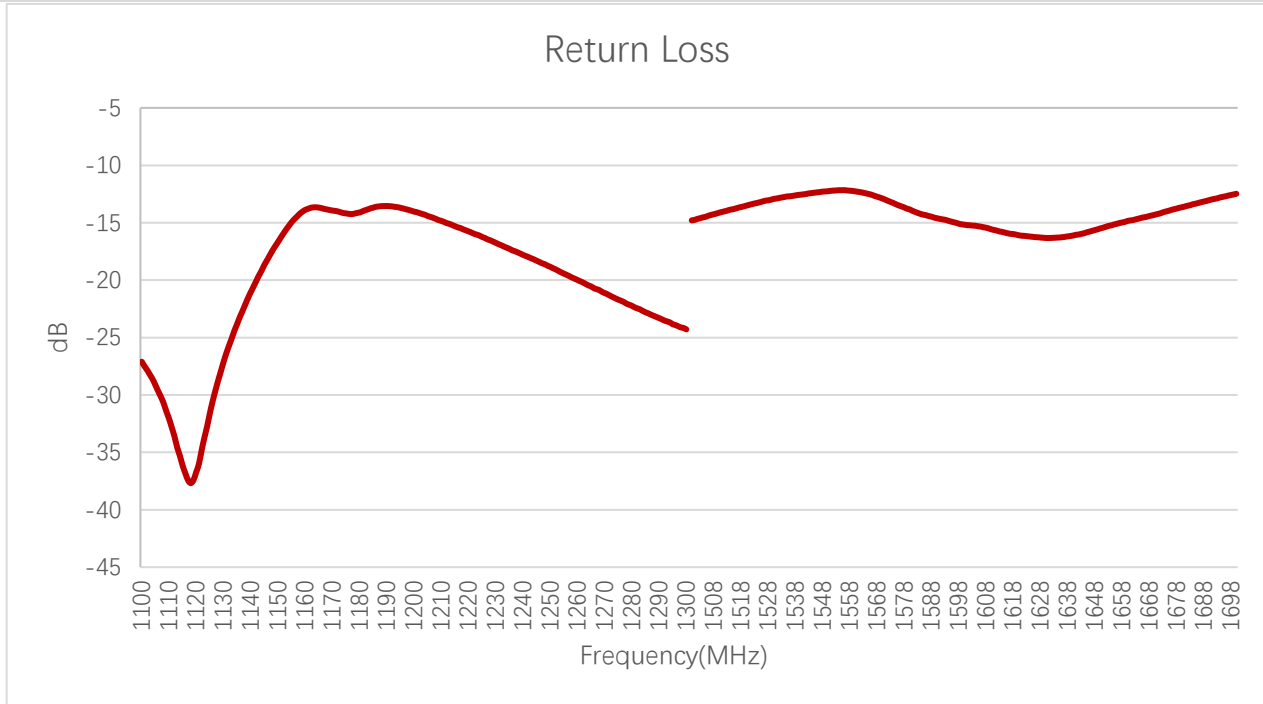
Return Loss (dB) – LMH

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
LMH1	FS	-7.6	-11.0	-11.2	-13.2	-18.3	-8.2	-5.1	-10.7	-9.3	-7.4
	MP	-7.0	-7.6	-8.5	-13.7	-12.8	-8.8	-6.0	-10.1	-9.5	-8.0
LMH2	FS	-8.0	-12.4	-11.0	-11.4	-16.3	-7.9	-4.9	-12.2	-9.9	-8.5
	MP	-6.7	-9.4	-7.5	-17.1	-10.6	-12.9	-5.7	-11.0	-9.6	-8.6
LMH3	FS	-6.8	-9.8	-10.8	-15.3	-13.7	-7.8	-4.9	-13.7	-12.5	-8.7
	MP	-7.0	-8.7	-8.1	-13.4	-12.4	-9.9	-6.2	-11.1	-10.2	-9.9
LMH4	FS	-7.2	-10.3	-12.3	-12.3	-14.9	-8.5	-6.0	-10.2	-9.0	-8.3
	MP	-6.4	-6.7	-7.5	-12.5	-11.9	-8.5	-6.2	-11.0	-9.9	-9.2
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
LMH1	FS	-9.8	-6.4	-11.1	-11.3	-10.8	-7.6	-17.7	-17.3	-15.8	-10.2
	MP	-12.5	-8.0	-14.0	-11.5	-10.7	-8.5	-20.7	-19.1	-17.6	-11.6
LMH2	FS	-10.9	-6.3	-10.0	-11.2	-10.7	-6.4	-14.3	-12.1	-15.9	-9.4
	MP	-14.1	-8.2	-12.1	-10.8	-11.8	-8.0	-15.3	-14.8	-18.5	-11.4
LMH3	FS	-12.2	-7.3	-11.5	-12.6	-12.0	-6.7	-13.8	-13.3	-15.3	-12.3
	MP	-13.0	-9.0	-13.3	-12.2	-11.5	-7.8	-15.3	-16.3	-17.1	-14.2
LMH4	FS	-10.3	-6.5	-12.7	-11.0	-13.0	-8.0	-14.7	-13.2	-19.1	-12.7
	MP	-14.4	-8.4	-13.9	-11.5	-12.7	-8.0	-17.6	-15.5	-18.3	-11.8

Return Loss (dB) – MH

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	-	-	-	-	-	-	-9.3	-7.8	-8.4	-8.4
	MP	-	-	-	-	-	-	-6.9	-6.0	-6.6	-6.6
MH2	FS	-	-	-	-	-	-	-9.7	-8.8	-8.9	-8.9
	MP	-	-	-	-	-	-	-5.9	-5.7	-9.3	-9.3
MH3	FS	-	-	-	-	-	-	-9.6	-8.4	-9.4	-9.4
	MP	-	-	-	-	-	-	-5.8	-5.5	-8.3	-8.3
MH4	FS	-	-	-	-	-	-	-9.4	-8.3	-9.2	-9.2

	MP	-	-	-	-	-	-	-6.0	-6.2	-7.9	-7.9
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
MH1	FS	-9.3	-19.7	-11.6	-8.7	-10.3	-6.6	-10.6	-13.7	-5.8	-5.8
	MP	-12.4	-17.8	-15.0	-9.5	-10.0	-8.7	-16.2	-14.8	-7.3	-7.3
MH2	FS	-11.1	-17.1	-10.3	-7.8	-9.1	-9.2	-13.8	-10.4	-5.6	-5.6
	MP	-12.9	-18.6	-12.6	-8.3	-8.3	-11.9	-13.0	-11.6	-7.1	-7.1
MH3	FS	-11.5	-23.0	-10.4	-8.2	-11.2	-9.7	-18.7	-13.9	-6.4	-6.4
	MP	-14.0	-23.5	-14.0	-8.6	-10.8	-11.7	-17.3	-16.5	-7.9	-7.9
MH4	FS	-11.8	-18.8	-10.0	-8.2	-9.5	-9.4	-16.3	-11.5	-5.6	-5.6
	MP	-13.4	-17.8	-12.9	-8.1	-8.9	-12.9	-15.0	-12.2	-7.2	-7.2



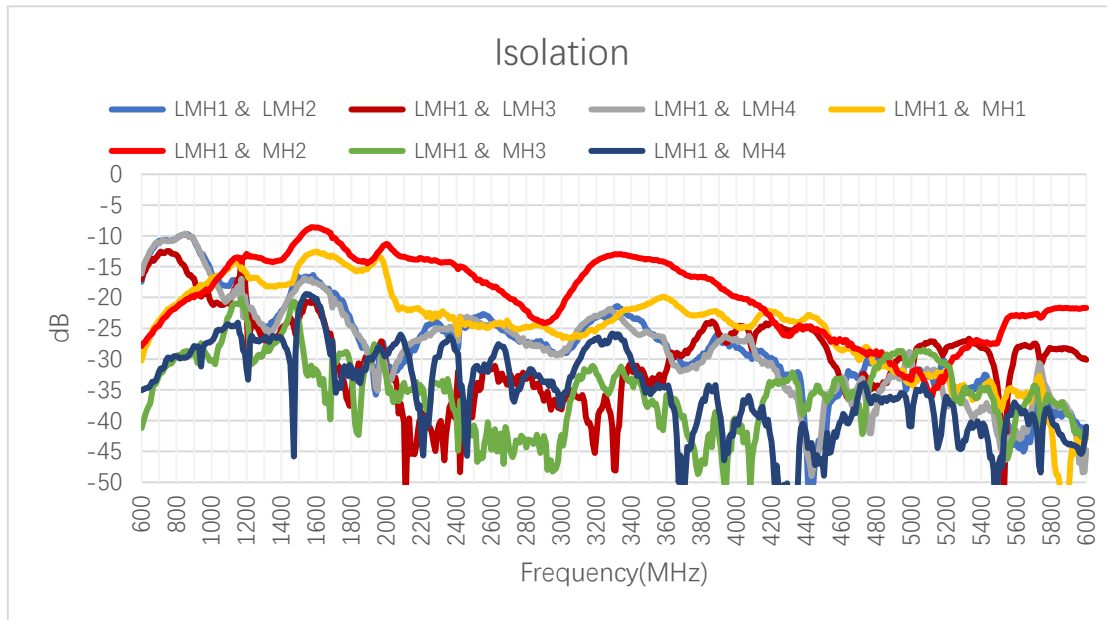
Return Loss (dB) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-14.2	-	-	-	-	-12.3	-13.4	-15.2

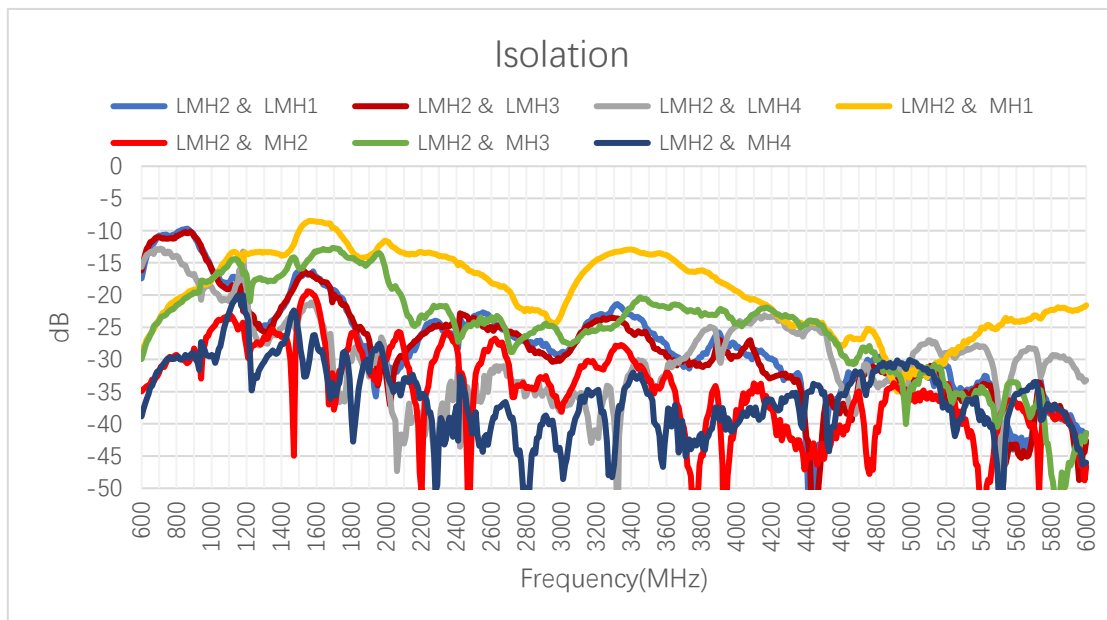
3.1.3. Isolation

3.1.3.1. Test Status: In Free Space

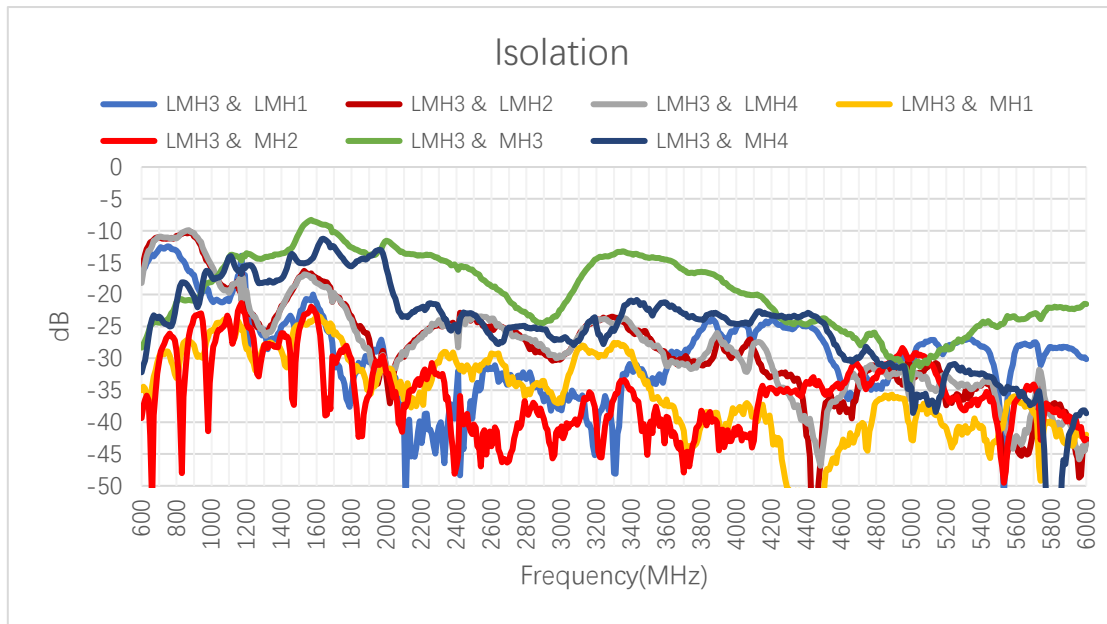
3.1.3.1.1. LMH1



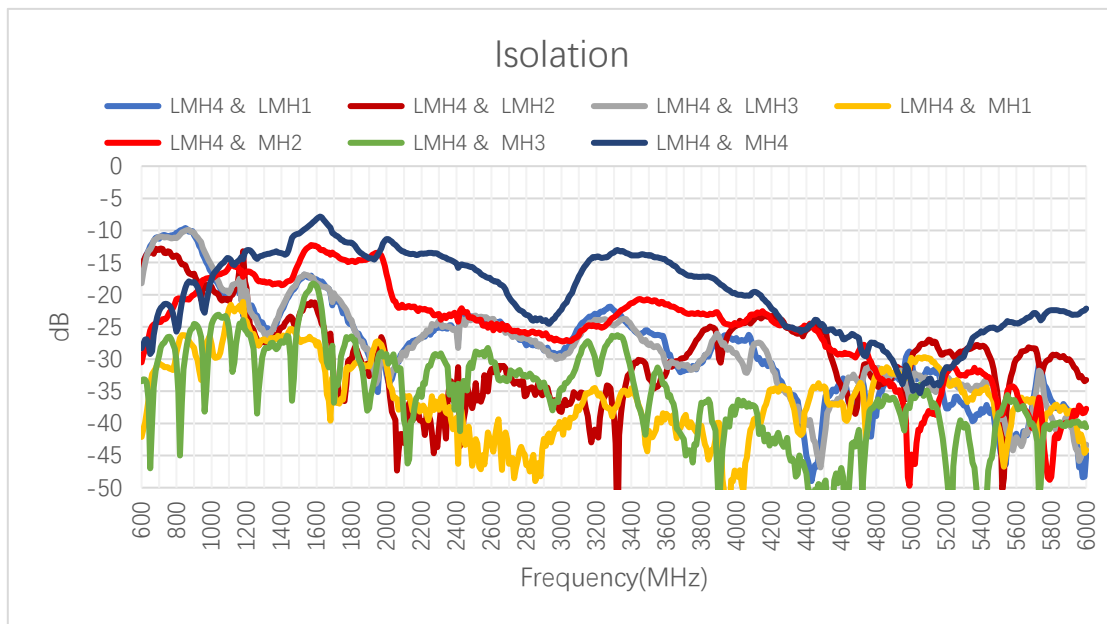
3.1.3.1.2. LMH2



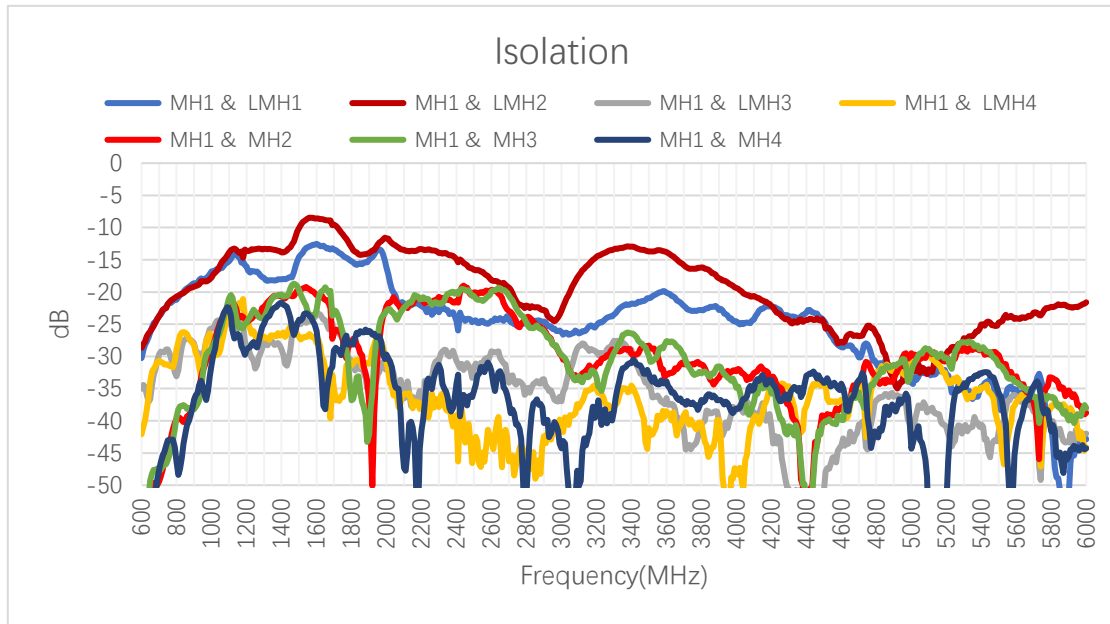
3.1.3.1.3. LMH3



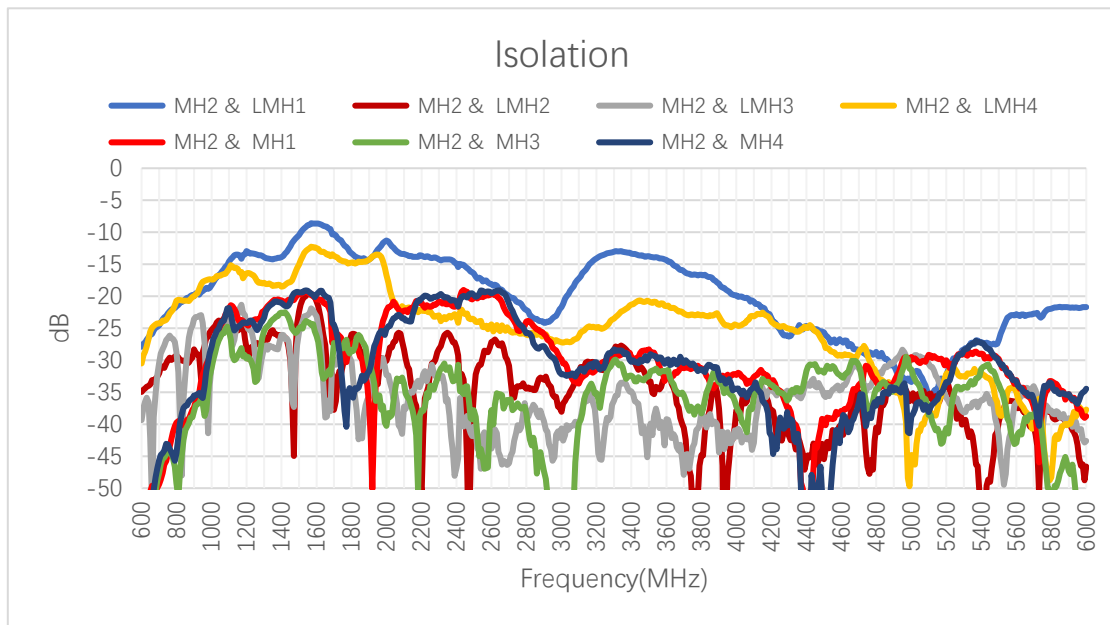
3.1.3.1.4. LMH4



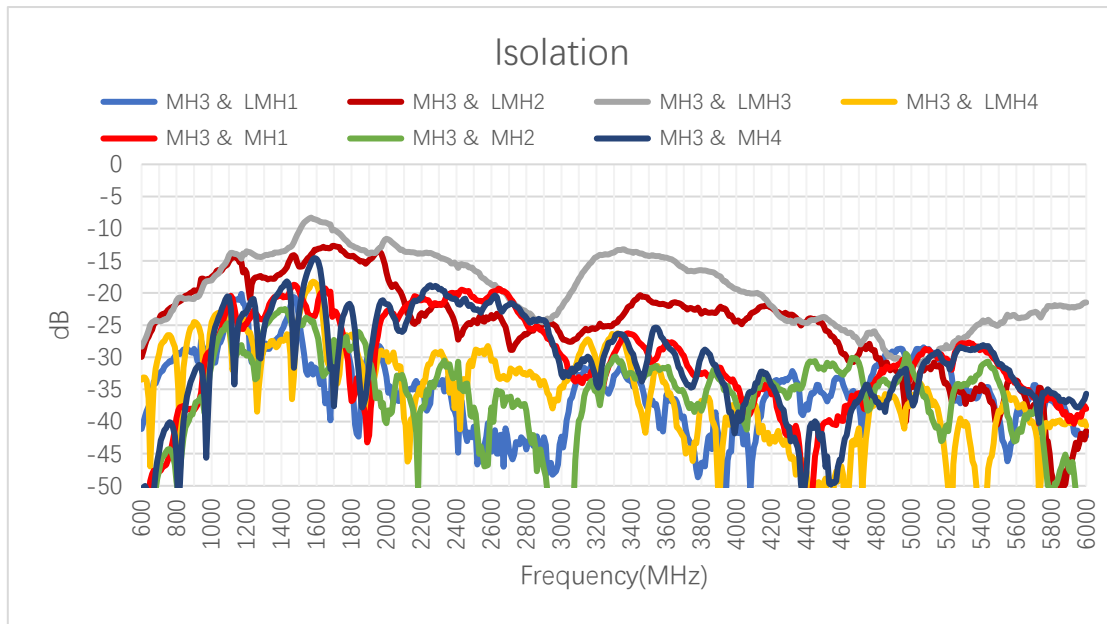
3.1.3.1.5. MH1



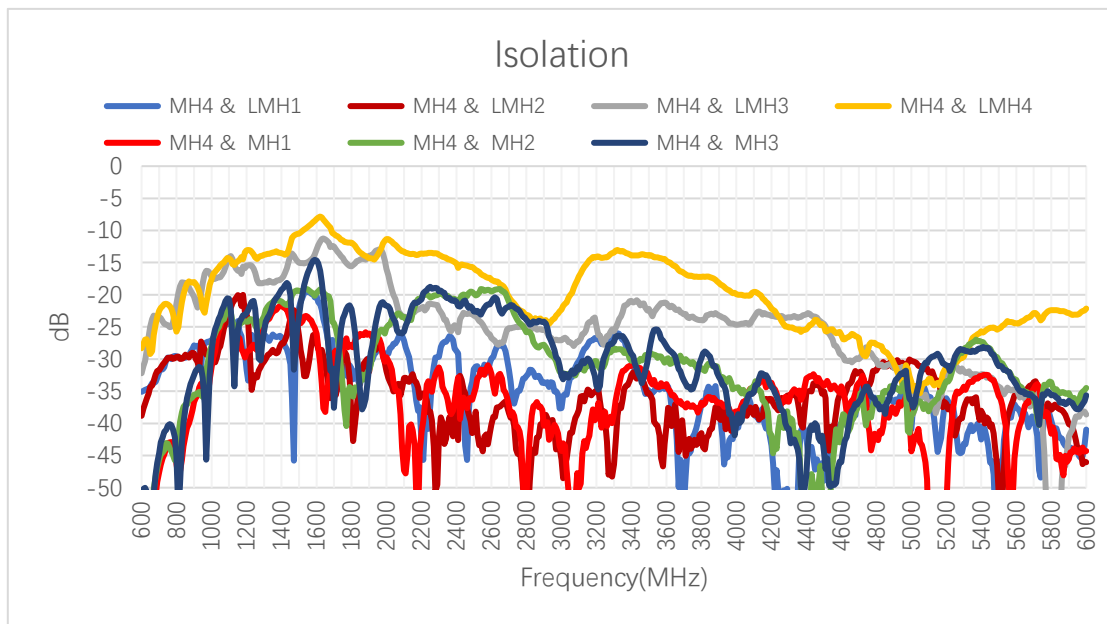
3.1.3.1.6. MH2



3.1.3.1.7. MH3

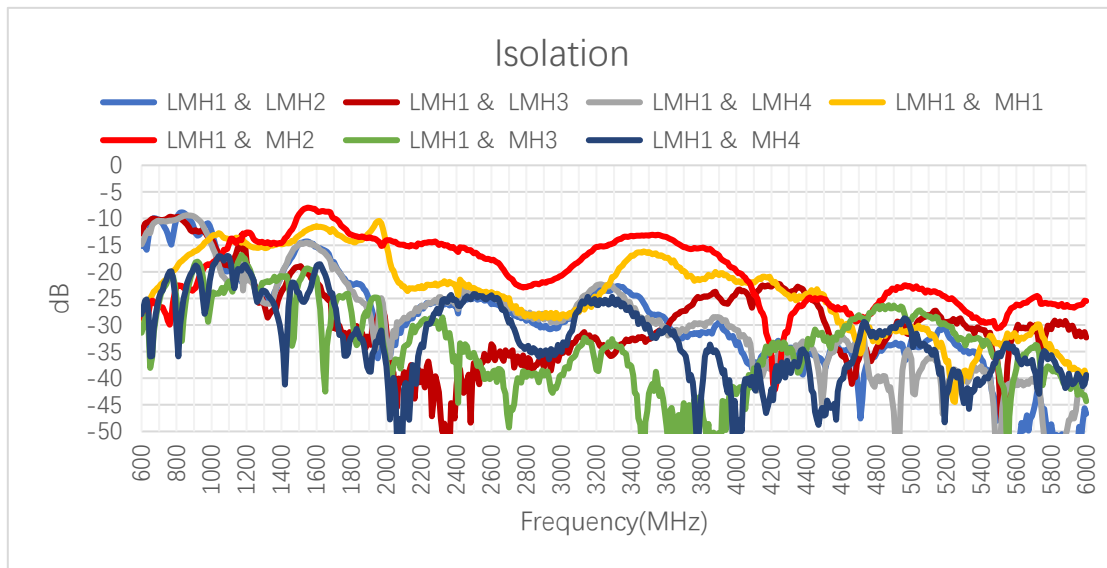


3.1.3.1.8. MH4

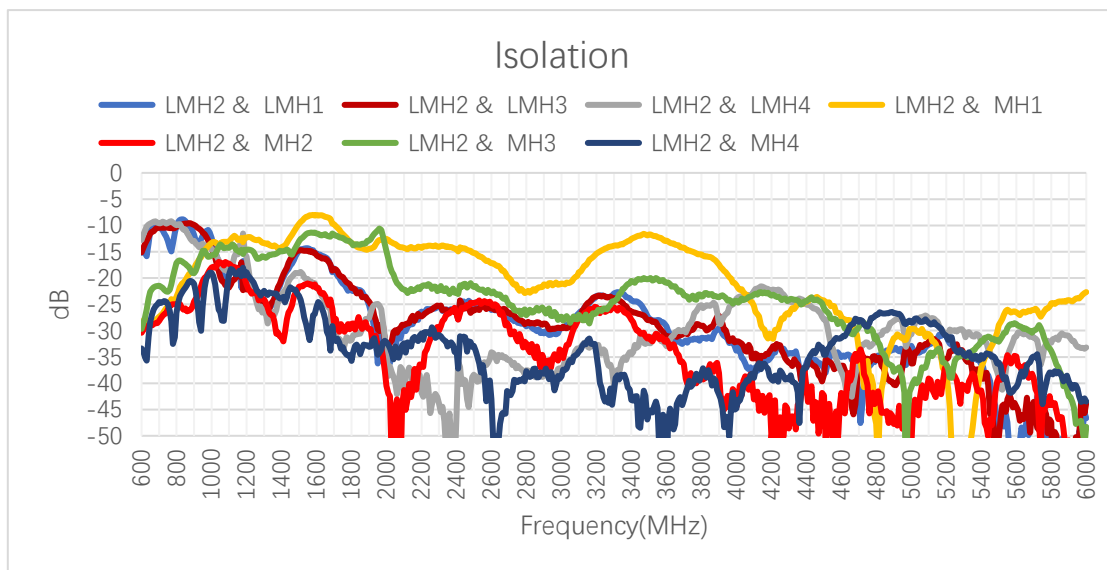


3.1.3.2. Test Status: On 300 mm × 400 mm Metal Plane

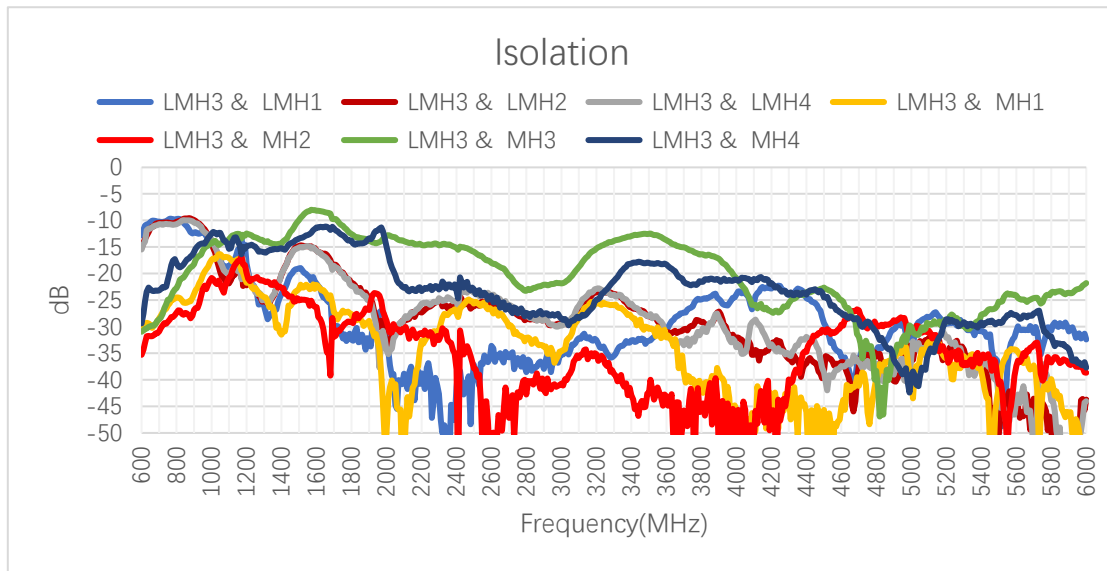
3.1.3.2.1. LMH1



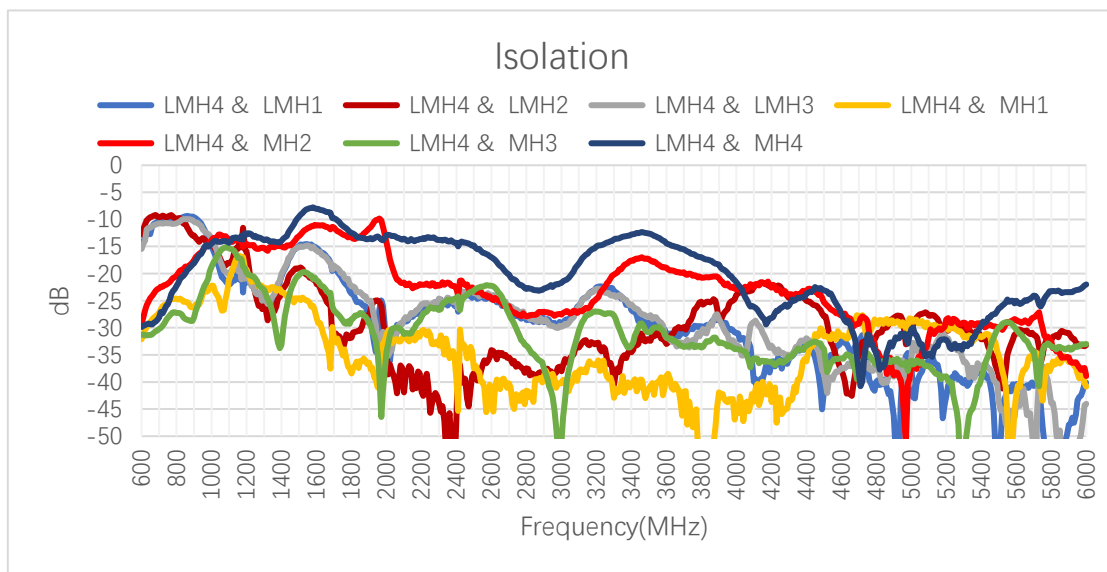
3.1.3.2.2. LMH2



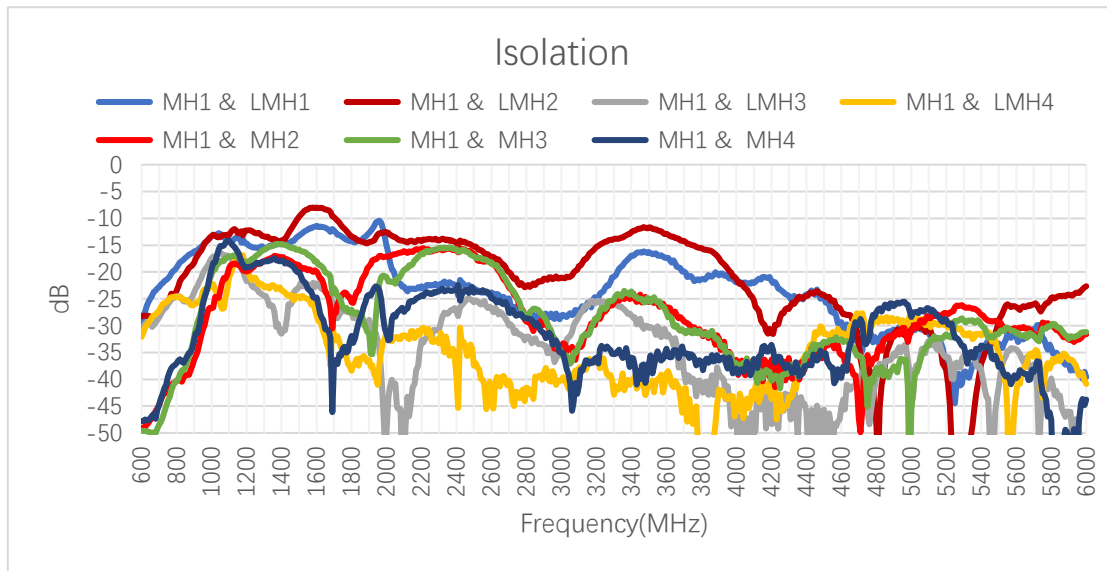
3.1.3.2.3. LMH3



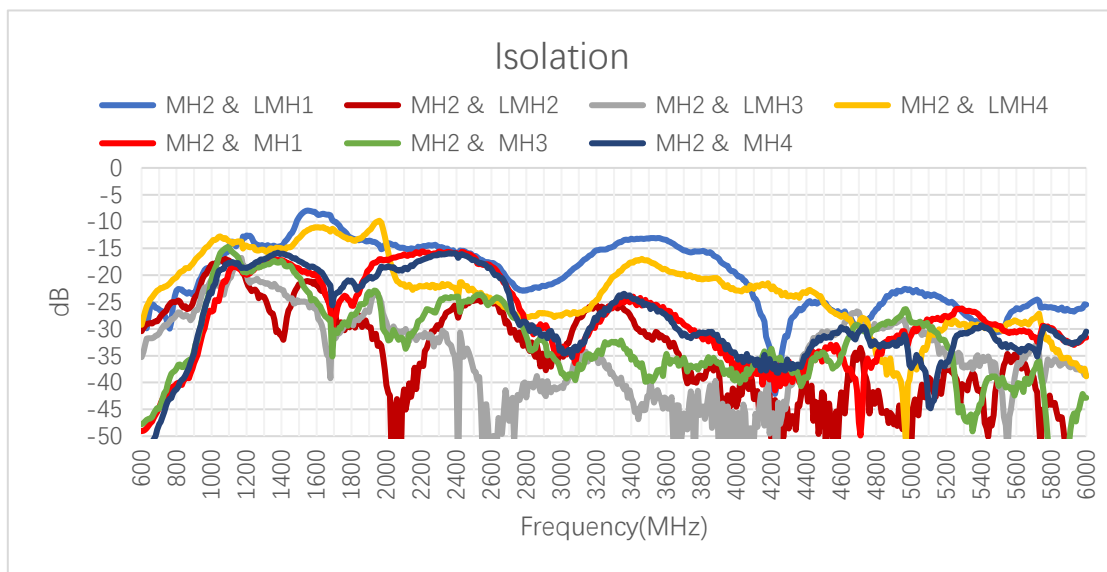
3.1.3.2.4. LMH4



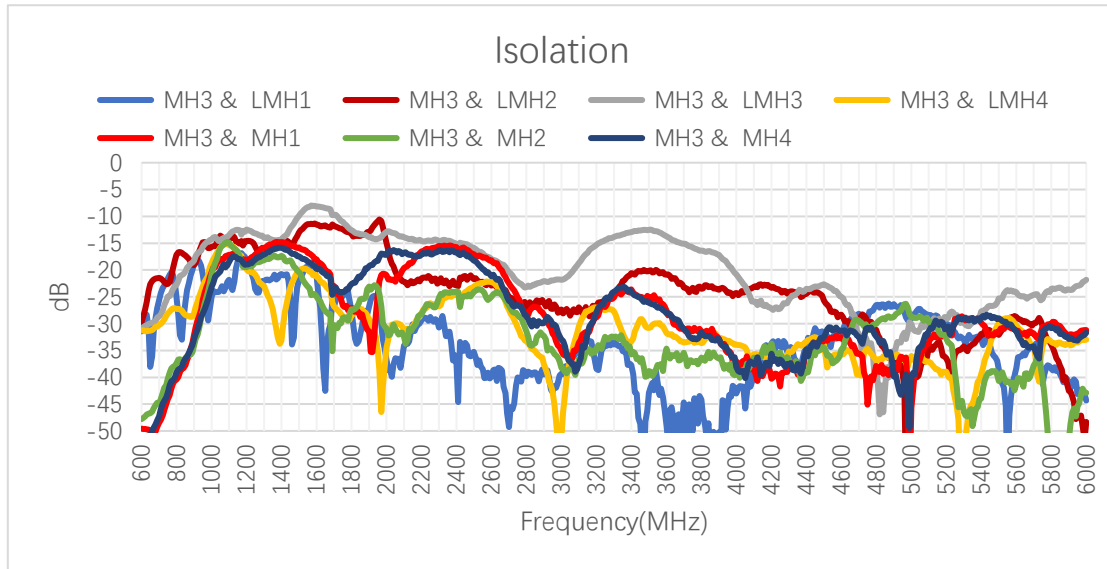
3.1.3.2.5. MH1



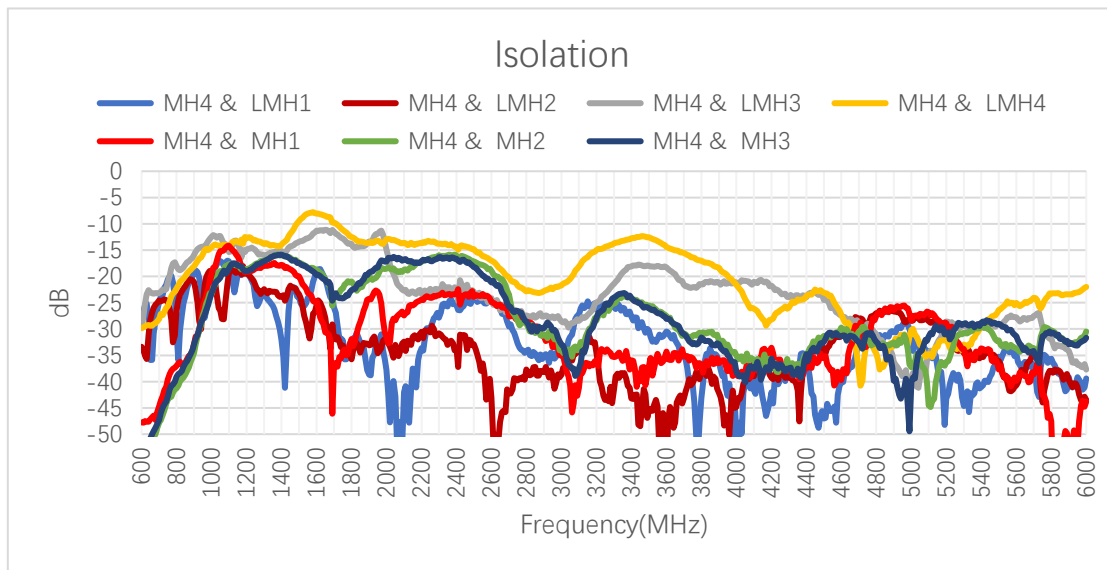
3.1.3.2.6. MH2



3.1.3.2.7. MH3



3.1.3.2.8. MH4



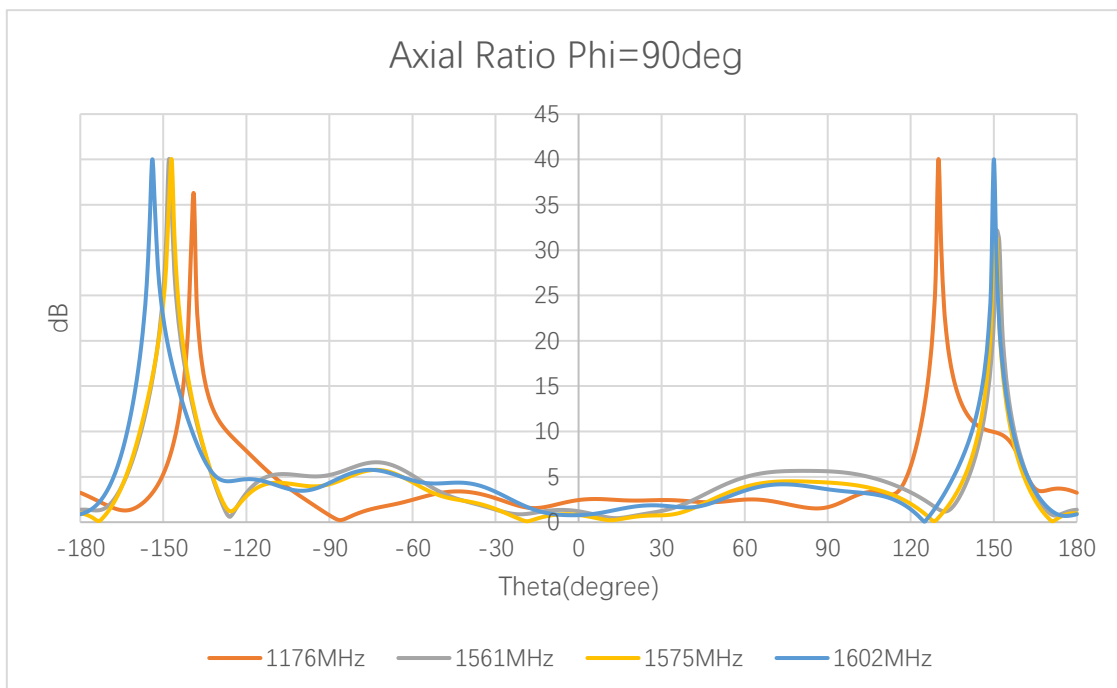
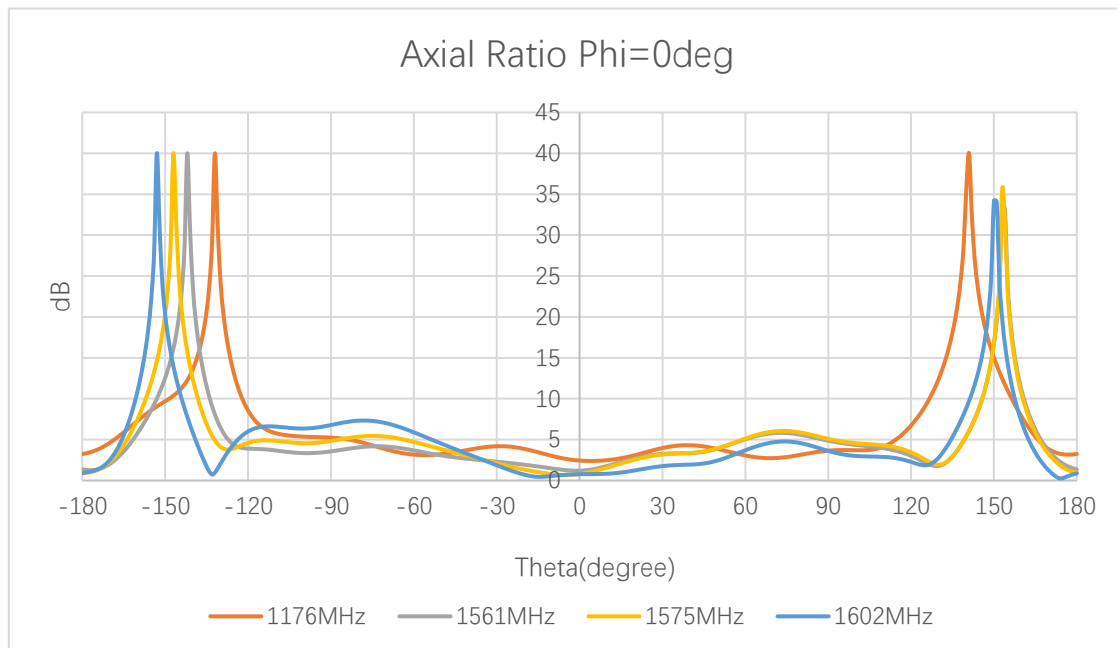
Max Isolation (dB)

	Band	B71	B12/ B13/ B28	B5/ B8/ B26	n74/ n75/ n76	B1/ B2/ B3	B40	Wi-Fi 2G	B38/ B41	B42/ B48/ n77	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
LMH1	FS	-10.8	-10.1	-9.6	-9.7	-10.3	-14.2	-14.9	-16.4	-13.0	-22.8	-21.7

	MP	-9.9	-9.3	-8.8	-8.4	-10.0	-14.7	-15.4	-16.4	-13.1	-22.6	-24.0
LMH2	FS	-10.8	-10.1	-9.7	-9.2	-9.6	-13.9	-14.9	-16.6	-12.9	-23.9	-21.9
	MP	-9.2	-9.2	-8.8	-9.0	-9.8	-13.8	-14.1	-15.3	-11.6	-23.6	-24.4
LMH3	FS	-11.0	-10.8	-9.9	-9.4	-10.2	-14.4	-15.5	-16.4	-13.2	-22.8	-21.9
	MP	-10.0	-9.7	-9.6	-9.1	-9.7	-14.4	-14.9	-15.9	-12.5	-22.7	-23.3
LMH4	FS	-11.0	-10.3	-9.6	-10.0	-10.6	-13.8	-15.1	-15.9	-13.0	-23.9	-22.4
	MP	-9.2	-9.2	-9.4	-8.8	-9.7	-13.8	-14.1	-14.8	-12.3	-22.5	-23.2
MH1	FS	-23.7	-20.5	-17.9	-9.2	-9.6	-13.9	-14.9	-16.6	-12.9	-22.8	-21.9
	MP	-22.8	-18.6	-14.5	-9.0	-9.8	-13.8	-14.1	-15.3	-11.6	-23.3	-24.4
MH2	FS	-24.2	-20.5	-17.6	-9.7	-10.3	-14.2	-14.9	-16.4	-13.0	-24.5	-21.7
	MP	-22.7	-19.9	-15.1	-8.4	-9.8	-14.7	-15.4	-16.4	-13.1	-22.6	-24.0
MH3	FS	-24.0	-20.8	-17.7	-9.4	-10.2	-14.4	-15.5	-16.4	-13.2	-23.7	-21.9
	MP	-21.5	-16.7	-14.8	-9.1	-9.7	-14.4	-14.9	-15.9	-12.5	-22.7	-23.3
MH4	FS	-22.5	-19.8	-16.8	-10.0	-10.6	-13.8	-15.1	-15.9	-13.0	-22.8	-22.4
	MP	-22.6	-17.3	-14.3	-8.8	-9.7	-13.8	-14.1	-14.8	-12.3	-22.5	-23.2

- FS: In Free Space
- MP: On 300 mm × 400 mm Metal Plane

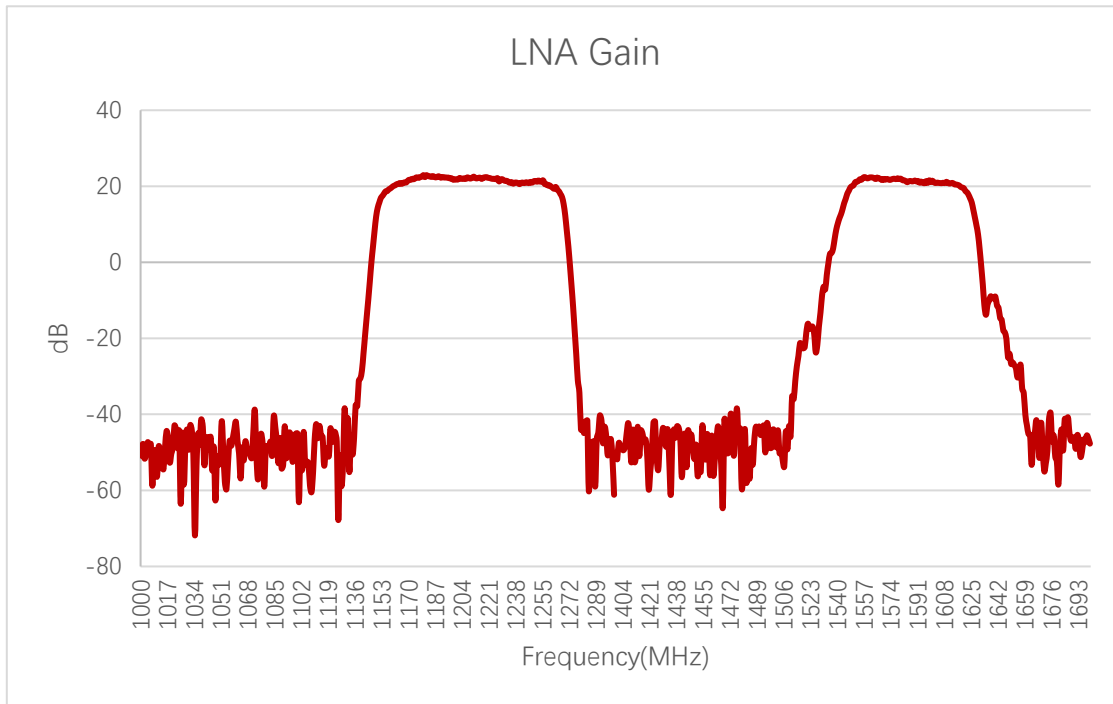
3.1.4. GNSS Axial Ratio



Axial Ratio (dB)

Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
Axial Ratio (dB)	Phi = 0 (deg) Theta = 0 (deg)	2.44	-	-	-	-	1.2	0.79	0.77
	Phi = 90 (deg) Theta = 0 (deg)	2.44	-	-	-	-	1.2	0.79	0.77

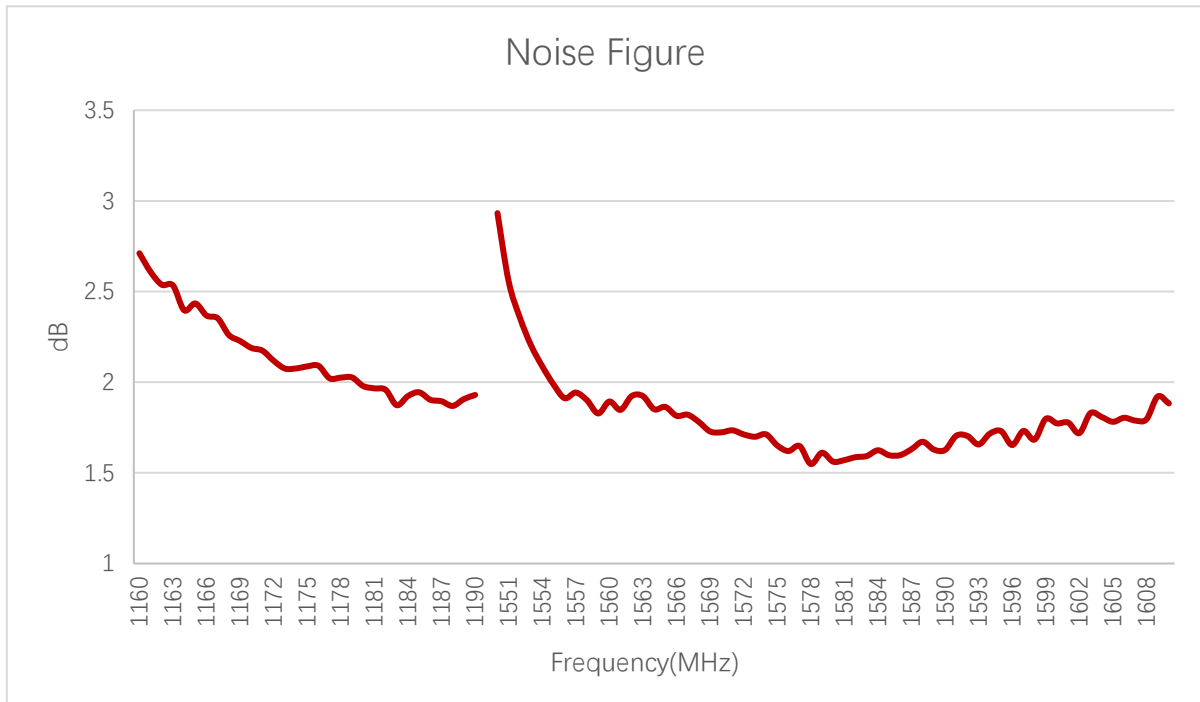
3.1.5. GNSS LNA Gain



LNA Gain (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	22.2	-	-	-	-	22.3	21.9	20.8

3.1.6. GNSS Noise Figure

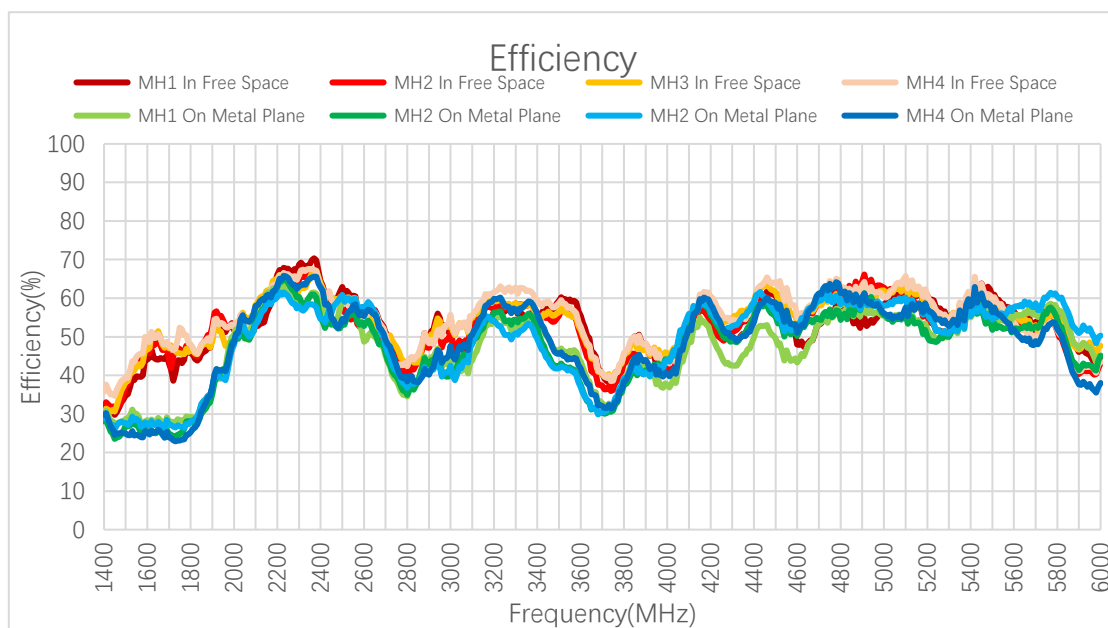
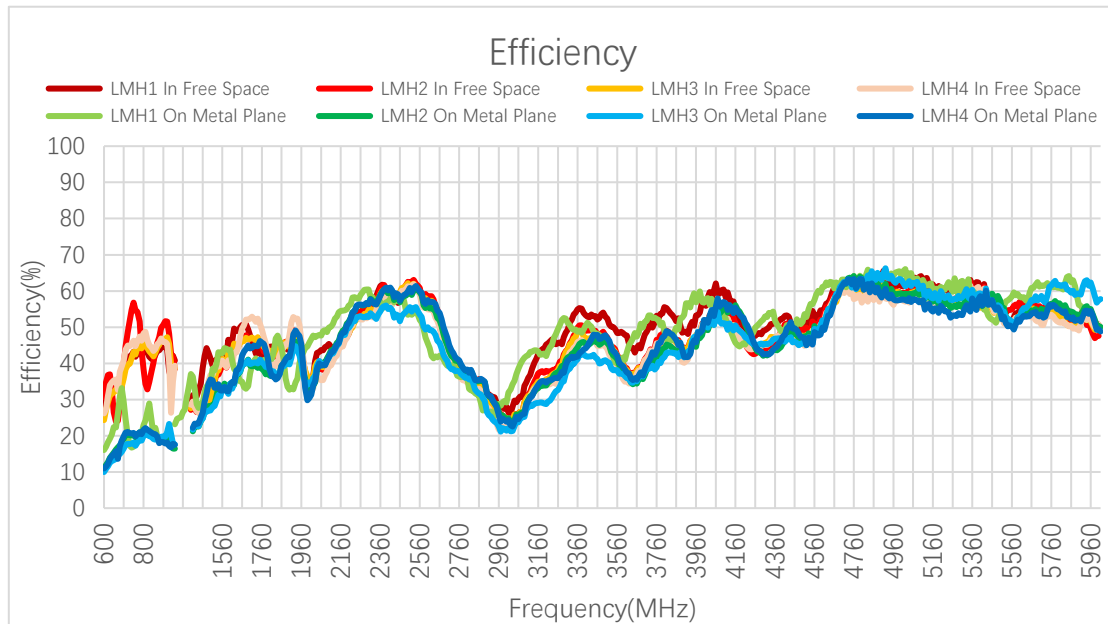


Noise Figure (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Noise Figure (dB)	2.09	-	-	-	-	1.84	1.65	1.71

3.2. Radiation Performance Test

3.2.1. Efficiency



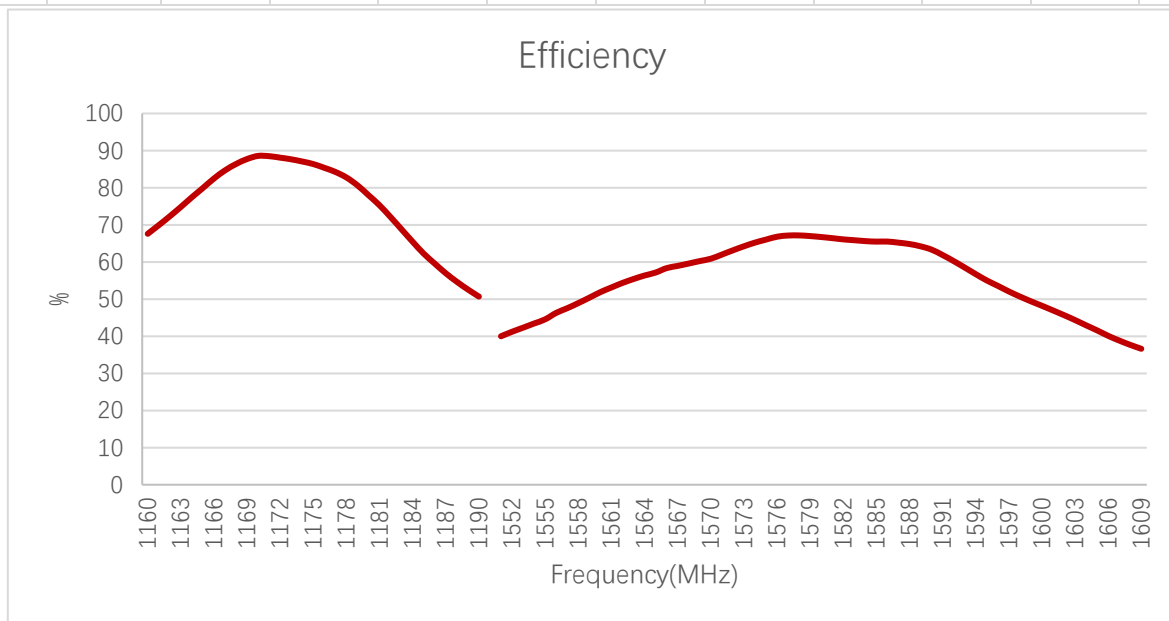
Efficiency (%) – LMH

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
LMH1	FS	28.6	34.5	40.6	41.9	44.7	40.7	32.6	46.7	43.6	45.3
	MP	11.1	17.3	18.2	16.7	24.2	19.8	26.5	37.7	35.0	41.8
LMH2	FS	30.7	37.0	44.8	34.8	50.7	38.5	26.6	46.9	47.0	46.0
	MP	10.9	13.9	20.2	20.1	18.8	16.4	24.1	39.4	39.4	41.1
LMH3	FS	24.4	31.2	38.4	43.3	46.4	38.8	27.9	47.1	47.2	45.8
	MP	10.0	12.6	17.5	19.9	19.8	17.6	24.1	40.2	41.0	40.2
LMH4	FS	26.2	34.0	43.7	45.0	45.9	39.4	26.3	52.9	52.3	45.3
	MP	11.0	13.7	20.9	21.4	18.2	17.5	25.1	44.9	46.1	41.8
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
LMH1	FS	43.7	43.5	60.1	56.7	55.7	47.9	62.6	61.4	55.2	50.6
	MP	41.0	47.7	59.6	55.1	53.4	45.7	62.4	63.9	54.8	55.0
LMH2	FS	45.4	43.4	59.1	57.5	58.4	38.8	61.6	59.2	54.3	47.6
	MP	41.8	46.2	59.0	56.8	55.2	36.3	62.3	58.9	55.2	50.1
LMH3	FS	44.8	43.7	57.7	57.8	57.1	38.5	60.6	58.8	52.5	49.6
	MP	40.3	45.4	54.4	51.6	49.2	35.9	62.6	62.3	54.0	57.7
LMH4	FS	50.7	42.1	56.6	57.2	54.9	34.9	60.4	57.6	52.4	50.7
	MP	45.3	45.7	58.7	57.3	56.8	37.5	62.2	57.7	52.2	48.8

Efficiency (%) – MH

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	-	-	-	-	-	-	30.7	41.5	43.9	47.3
	MP	-	-	-	-	-	-	28.1	28.1	28.7	34.7
MH2	FS	-	-	-	-	-	-	32.0	41.9	47.1	50.4
	MP	-	-	-	-	-	-	24.9	24.6	24.6	32.5
MH3	FS	-	-	-	-	-	-	31.1	47.8	45.7	48.1

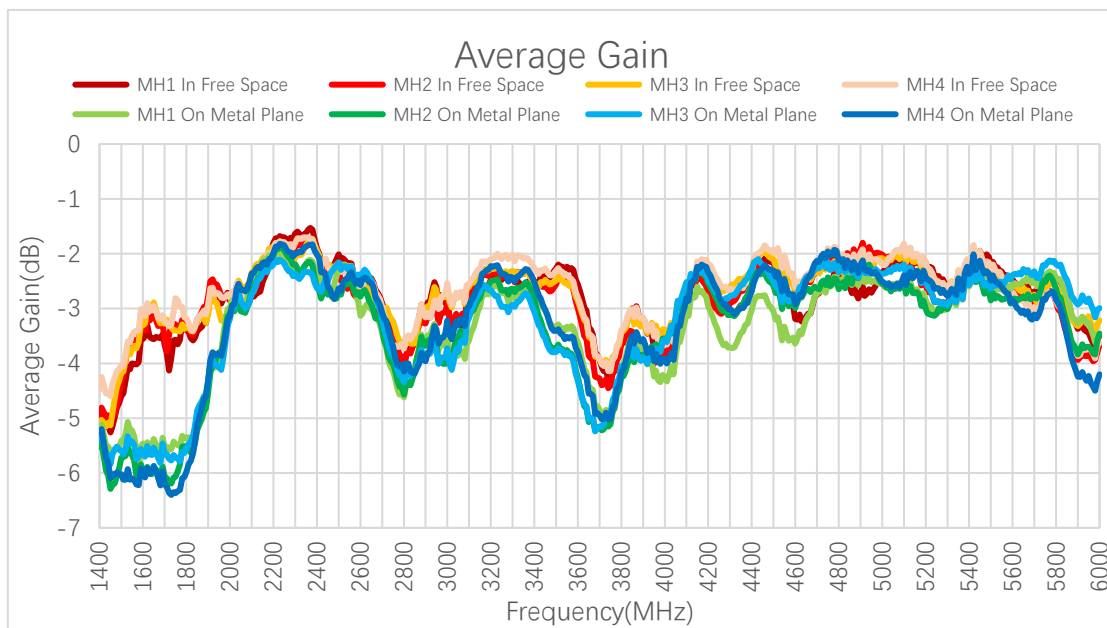
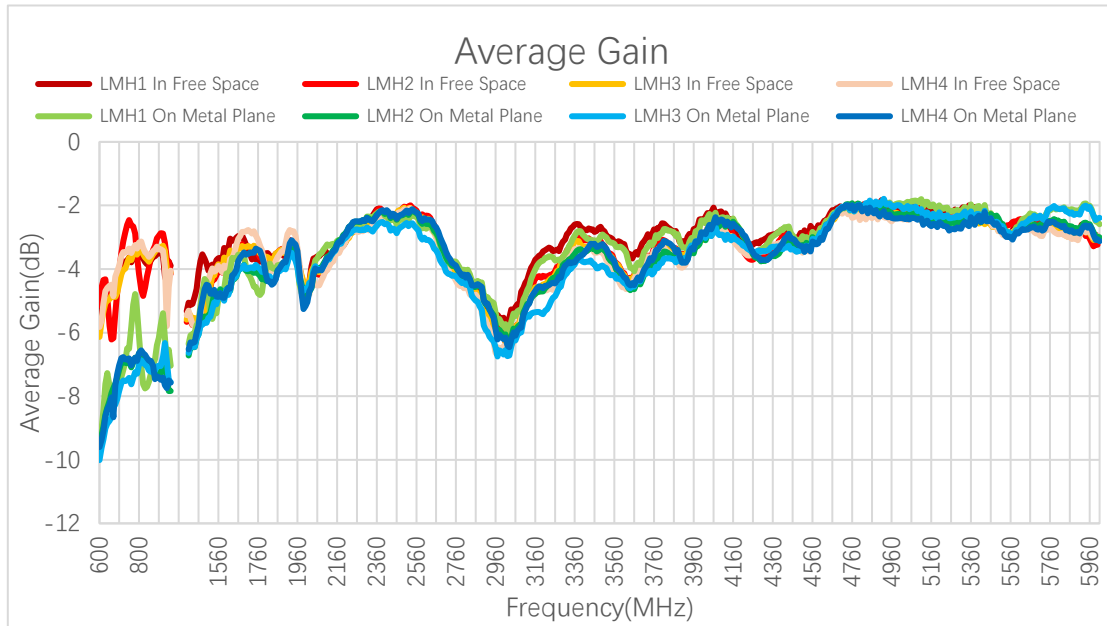
	MP	-	-	-	-	-	-	27.1	27.2	27.1	34.6
MH4	FS	-	-	-	-	-	-	35.2	47.2	49.4	49.6
	MP	-	-	-	-	-	-	26.1	23.7	23.2	34.2
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
MH1	FS	51.4	53.8	68.9	59.3	56.1	55.4	53.1	58.4	60.5	44.8
	MP	40.2	59.7	60.6	54.0	48.7	43.6	53.3	55.8	54.6	45.1
MH2	FS	54.3	58.1	66.8	58.7	53.0	50.2	58.8	62.8	56.4	43.1
	MP	41.7	57.3	60.4	53.1	52.7	37.5	54.5	55.6	51.8	45.1
MH3	FS	49.6	60.6	65.3	59.7	56.1	51.8	58.5	62.0	57.6	47.7
	MP	39.2	56.9	58.4	56.1	57.0	37.0	59.3	58.1	54.5	50.3
MH4	FS	53.3	58.0	67.5	59.6	54.6	52.5	61.1	60.3	59.0	43.4
	MP	41.4	59.5	65.0	54.9	55.4	41.7	61.2	56.1	56.3	38.0



Efficiency (%) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	85	-	-	-	-	53	66	45.7

3.2.2. Average Gain



Average Gain (dB) – LMH

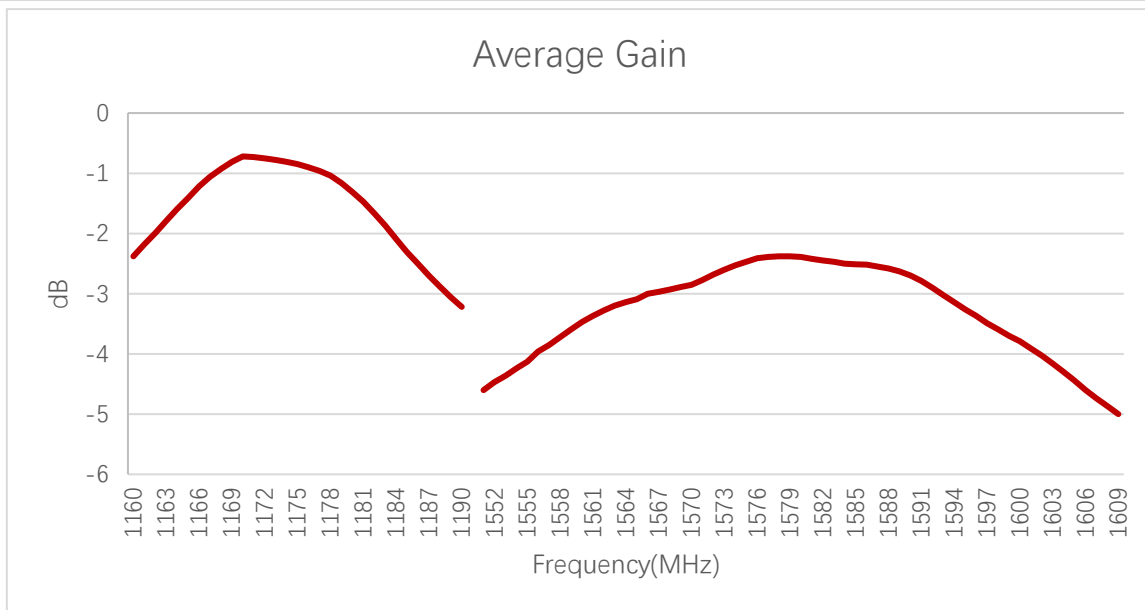
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880	
LMH1	FS	-5.4	-4.6	-3.9	-3.8	-3.5	-3.9	-4.9	-3.3	-3.6	-3.4
	MP	-9.6	-7.6	-7.4	-7.8	-6.2	-7.0	-5.8	-4.2	-4.6	-3.8
LMH2	FS	-5.1	-4.3	-3.5	-4.6	-3.0	-4.2	-5.8	-3.3	-3.3	-3.4

	MP	-9.6	-8.6	-6.9	-7.0	-7.3	-7.8	-6.2	-4.0	-4.0	-3.9
LMH3	FS	-6.1	-5.1	-4.2	-3.6	-3.3	-4.1	-5.5	-3.3	-3.3	-3.4
	MP	-10.0	-9.0	-7.6	-7.0	-7.0	-7.6	-6.2	-4.0	-3.9	-4.0
LMH4	FS	-5.8	-4.7	-3.6	-3.5	-3.4	-4.1	-5.8	-2.8	-2.8	-3.4
	MP	-9.6	-8.6	-6.8	-6.7	-7.4	-7.6	-6.0	-3.5	-3.4	-3.8
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
LMH1	FS	-3.6	-3.6	-2.2	-2.5	-2.5	-3.2	-2.0	-2.1	-2.6	-3.0
	MP	-3.9	-3.2	-2.3	-2.6	-2.7	-3.4	-2.1	-2.0	-2.6	-2.6
LMH2	FS	-3.4	-3.6	-2.3	-2.4	-2.3	-4.1	-2.1	-2.3	-2.7	-3.2
	MP	-3.8	-3.4	-2.3	-2.5	-2.6	-4.4	-2.1	-2.3	-2.6	-3.0
LMH3	FS	-3.5	-3.6	-2.4	-2.4	-2.4	-4.1	-2.2	-2.3	-2.8	-3.1
	MP	-4.0	-3.4	-2.6	-2.9	-3.1	-4.4	-2.0	-2.1	-2.7	-2.4
LMH4	FS	-3.0	-3.8	-2.5	-2.4	-2.6	-4.6	-2.2	-2.4	-2.8	-3.0
	MP	-3.4	-3.4	-2.3	-2.4	-2.5	-4.3	-2.1	-2.4	-2.8	-3.1

Average Gain (dB) – LMH

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	-	-	-	-	-	-	-5.1	-3.8	-3.6	-3.3
	MP	-	-	-	-	-	-	-5.5	-5.5	-5.4	-4.6
MH2	FS	-	-	-	-	-	-	-5.0	-3.8	-3.3	-3.0
	MP	-	-	-	-	-	-	-6.1	-6.1	-6.1	-4.9
MH3	FS	-	-	-	-	-	-	-5.1	-3.2	-3.4	-3.2
	MP	-	-	-	-	-	-	-5.7	-5.7	-5.7	-4.6
MH4	FS	-	-	-	-	-	-	-4.5	-3.3	-3.1	-3.0
	MP	-	-	-	-	-	-	-5.8	-6.3	-6.4	-4.7
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
MH1	FS	-2.9	-2.7	-1.6	-2.3	-2.5	-2.6	-2.8	-2.3	-2.2	-3.5

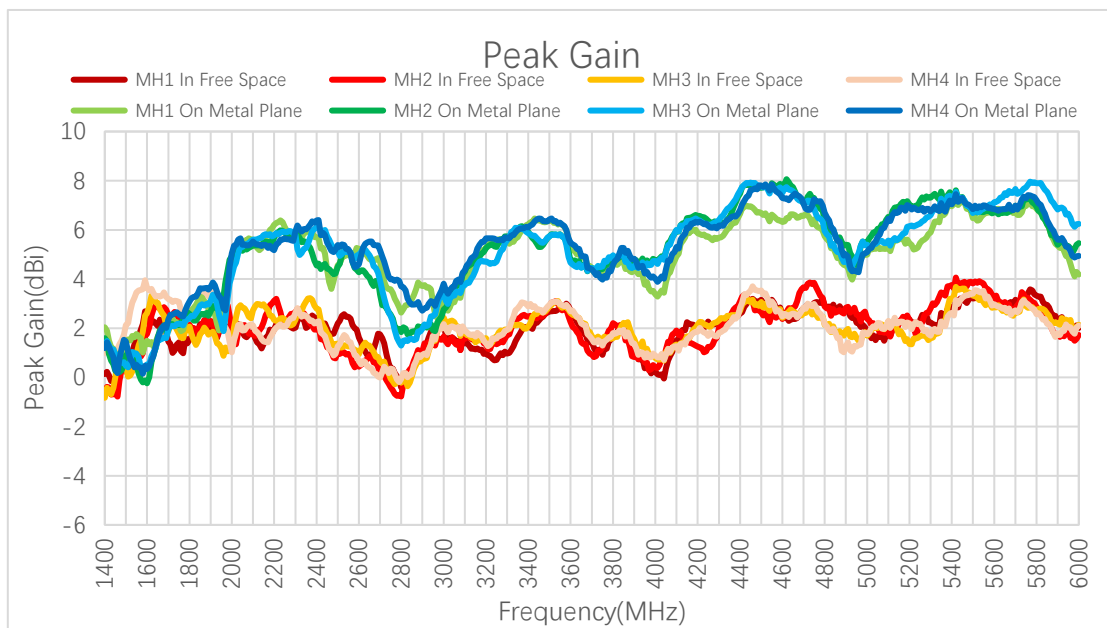
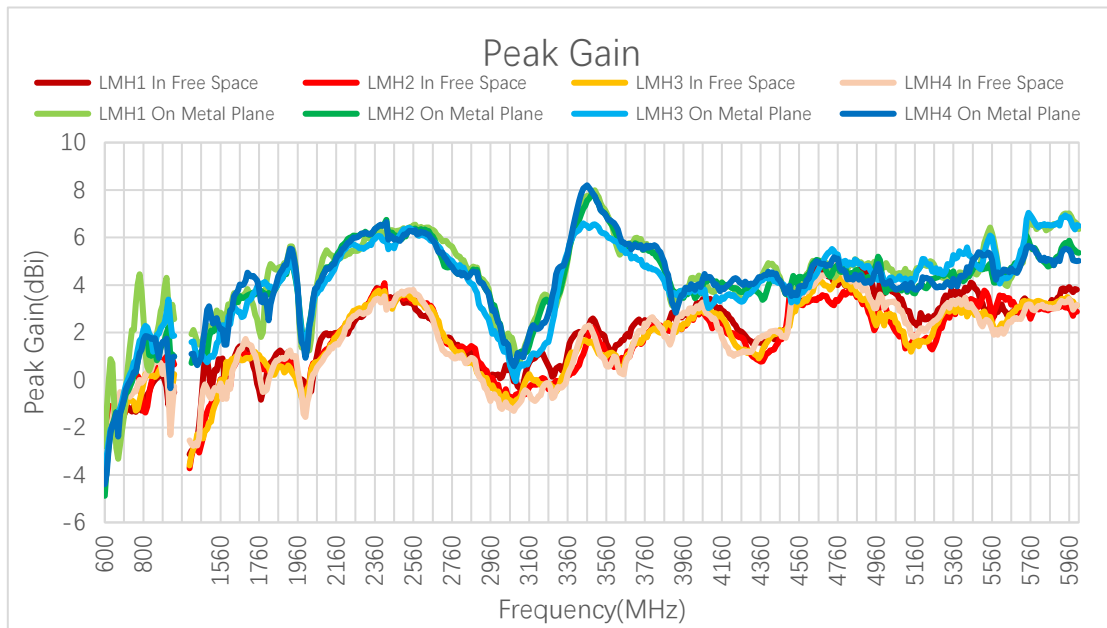
	MP	-4.0	-2.2	-2.2	-2.7	-3.1	-3.6	-2.7	-2.5	-2.6	-3.5
MH2	FS	-2.7	-2.4	-1.8	-2.3	-2.8	-3.0	-2.3	-2.0	-2.5	-3.7
	MP	-3.8	-2.4	-2.2	-2.8	-2.8	-4.3	-2.6	-2.6	-2.9	-3.5
MH3	FS	-3.1	-2.2	-1.9	-2.2	-2.5	-2.9	-2.3	-2.1	-2.4	-3.2
	MP	-4.1	-2.5	-2.3	-2.5	-2.4	-4.3	-2.3	-2.4	-2.6	-3.0
MH4	FS	-2.7	-2.4	-1.7	-2.3	-2.6	-2.8	-2.1	-2.2	-2.3	-3.6
	MP	-3.8	-2.3	-1.9	-2.6	-2.6	-3.8	-2.1	-2.5	-2.5	-4.2



Average Gain(dB) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Average Gain (dB)	-0.9	-	-	-	-	-3.37	-2.47	-4.03

3.2.3. Peak Gain



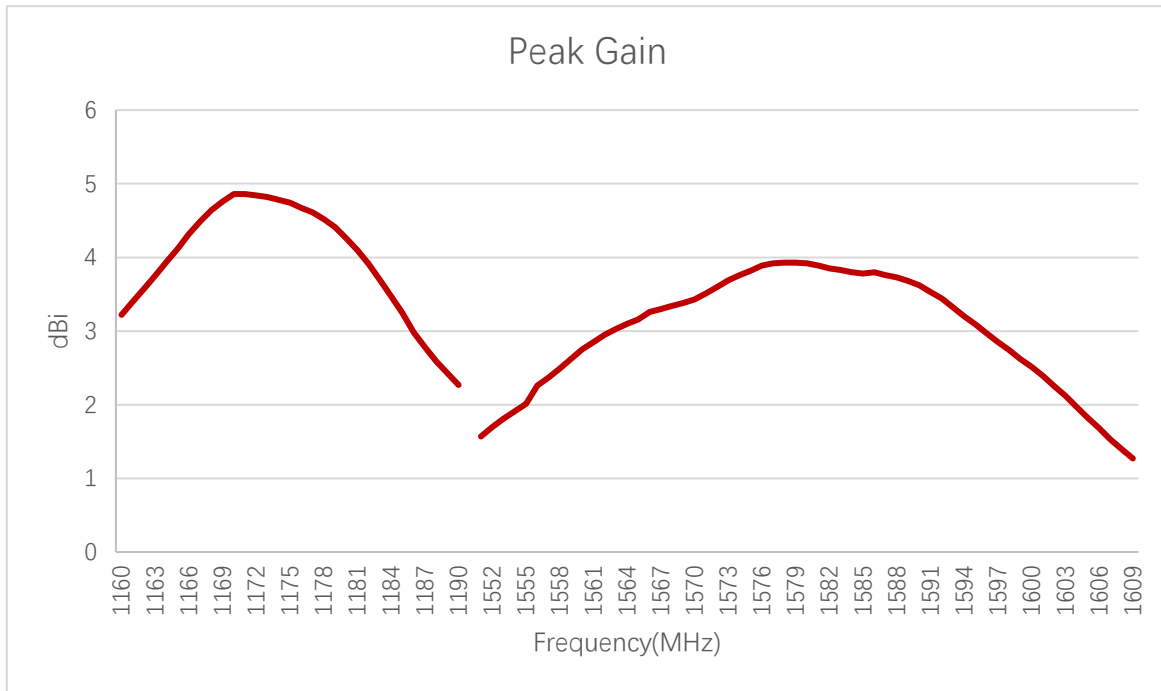
Peak Gain (dBi) – LMH

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
LMH1	FS	-2.9	-1.8	-1.3	-0.5	0.2	-0.5	-2.5	1.2	0.4	1.1
	MP	-2.8	0.9	-0.4	0.4	3.2	2.6	1.5	3.4	2.6	4.9
LMH2	FS	-2.1	-1.1	-0.3	-0.6	0.8	0.7	-2.8	1.1	1.1	0.8
	MP	-4.9	-2.2	-0.6	1.1	1.5	1.0	1.1	3.6	3.7	4.5
LMH3	FS	-2.7	-2.4	-1.0	0.2	0.5	0.2	-2.3	0.9	1.2	0.5
	MP	-3.7	-2.1	-0.2	2.0	2.3	1.9	0.9	3.4	3.9	4.5
LMH4	FS	-2.9	-2.1	-0.5	0.4	0.3	-0.3	-2.8	1.5	1.1	0.9
	MP	-4.4	-2.2	-0.4	1.8	1.6	1.0	0.8	4.4	4.2	4.8
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
LMH1	FS	0.2	1.9	3.6	3.4	2.7	1.3	4.5	3.7	3.3	3.8
	MP	3.8	5.1	6.2	6.2	6.4	5.7	4.9	4.9	5.3	6.4
LMH2	FS	0.7	1.6	3.6	3.1	3.3	0.5	3.5	3.1	3.2	2.9
	MP	3.7	4.9	6.3	6.1	6.3	6.2	4.4	3.7	4.7	5.4
LMH3	FS	0.1	1.5	3.5	3.0	3.2	1.1	4.0	2.3	2.4	3.2
	MP	3.7	4.6	5.9	5.5	6.1	5.8	5.4	4.2	4.9	6.5
LMH4	FS	1.0	1.3	3.2	3.2	3.4	1.0	4.4	3.0	2.4	3.2
	MP	3.9	4.9	6.4	5.9	6.2	6.5	4.8	4.1	5.2	5.0

Peak Gain (dBi) – MH

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	-	-	-	-	-	-	1.4	1.3	2.1	1.4
	MP	-	-	-	-	-	-	2.4	2.3	3.0	2.4
MH2	FS	-	-	-	-	-	-	2.4	2.6	2.3	2.4
	MP	-	-	-	-	-	-	2.2	2.1	2.6	2.2
MH3	FS	-	-	-	-	-	-	-0.4	2.1	2.0	1.9

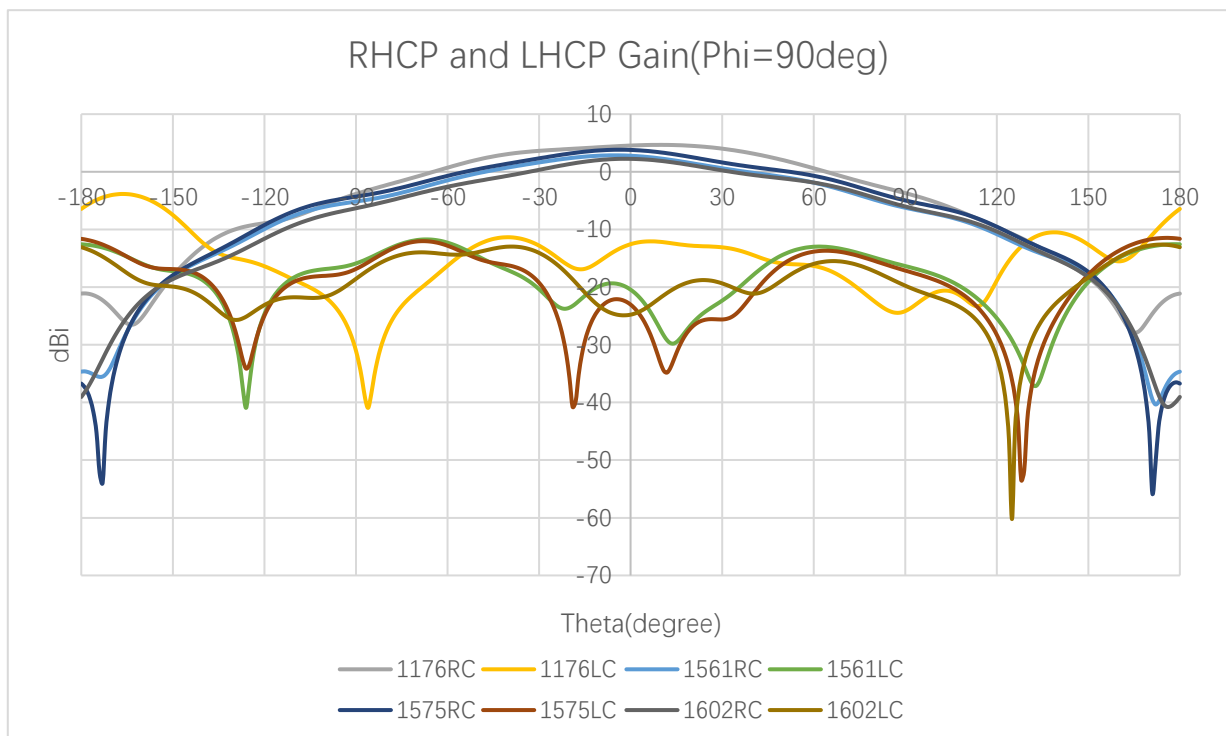
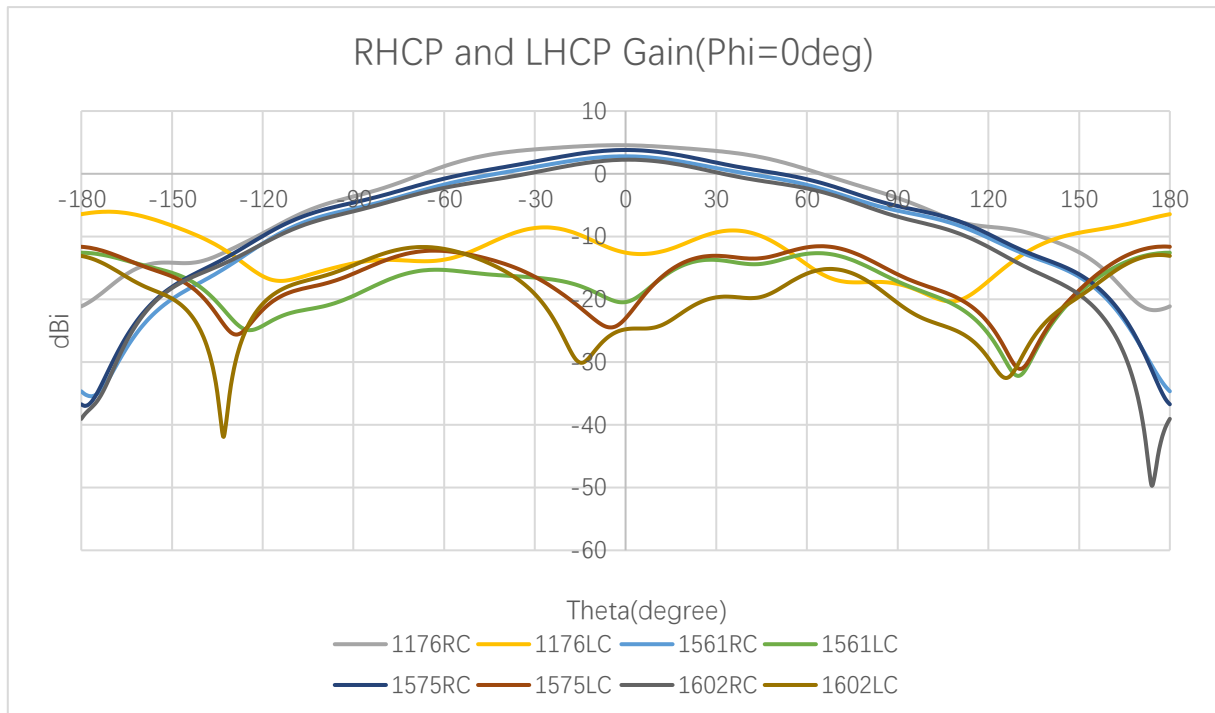
	MP	-	-	-	-	-	-	1.1	2.1	2.2	3.0
MH4	FS	-	-	-	-	-	-	0.9	3.2	3.1	3.4
	MP	-	-	-	-	-	-	0.8	2.5	2.7	3.6
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
MH1	FS	2.1	1.2	2.0	2.0	1.6	2.7	2.8	1.9	3.2	2.0
	MP	2.4	5.3	5.9	4.4	5.2	5.3	6.6	5.0	6.5	4.2
MH2	FS	2.4	2.0	2.5	1.2	0.4	2.3	3.7	2.4	3.8	1.7
	MP	3.0	5.4	5.5	4.4	4.3	4.8	7.1	5.5	6.7	5.5
MH3	FS	1.2	2.9	3.1	1.8	0.9	2.6	2.6	1.7	3.3	2.1
	MP	2.3	5.7	5.3	5.7	5.0	4.7	7.1	5.4	6.7	6.2
MH4	FS	2.0	1.6	2.5	1.4	0.7	2.7	2.9	1.8	3.4	2.1
	MP	3.2	5.3	6.0	5.5	4.6	5.5	7.1	5.1	6.8	4.9



Peak Gain (dBi) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	4.67	-	-	-	-	2.85	3.82	2.25

3.2.4. GNSS 2D RHCP and LHCP Gain



2D RHCP and LHCP Gain (dBi)

Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
RC Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	4.55	-	-	-	-	2.78	3.79	2.24
	Phi = 90 (deg) Theta = 0 (deg)	4.55	-	-	-	-	2.78	3.79	2.24
LC Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	-12.56	-	-	-	-	-20.4	-23	-24.7
	Phi = 90 (deg) Theta = 0 (deg)	-12.56	-	-	-	-	-20.4	-23	-24.7

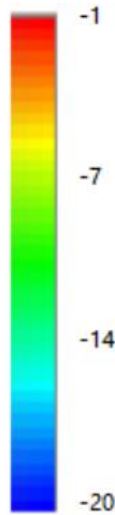
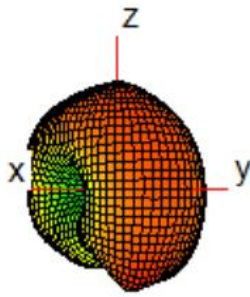
3.2.5. 3D & 2D Radiation Pattern

3.2.5.1. Test Status: In Free Space

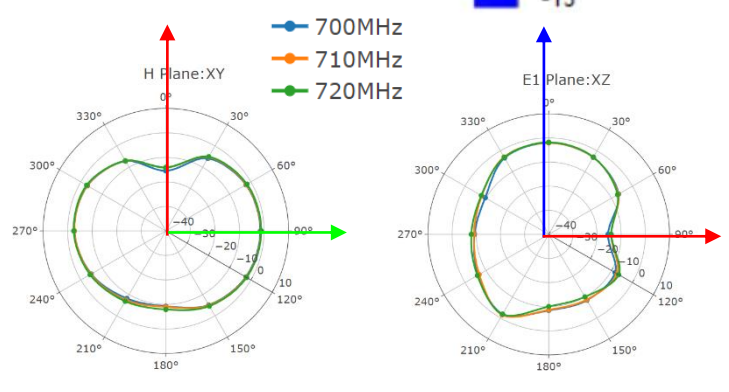
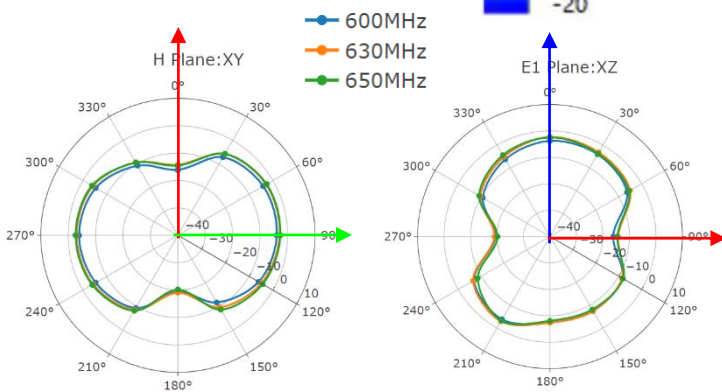
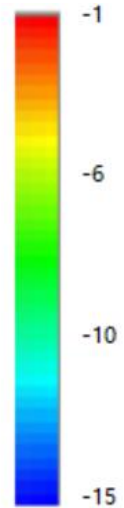
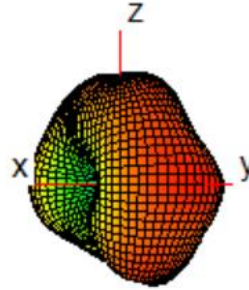


● **LMH1**

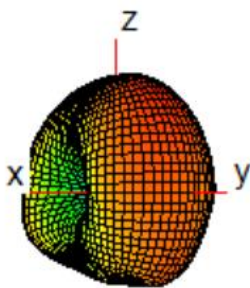
630 MHz



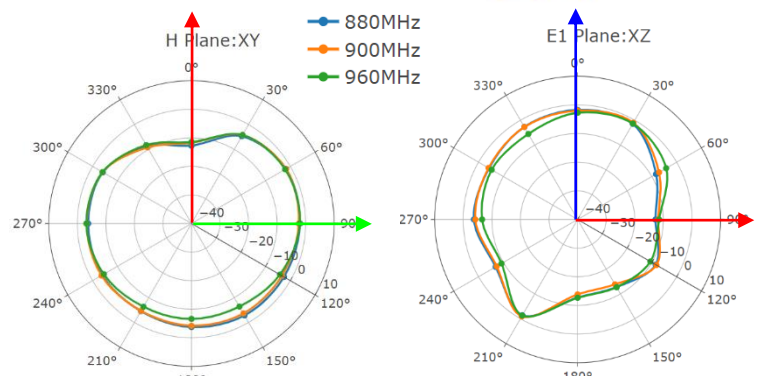
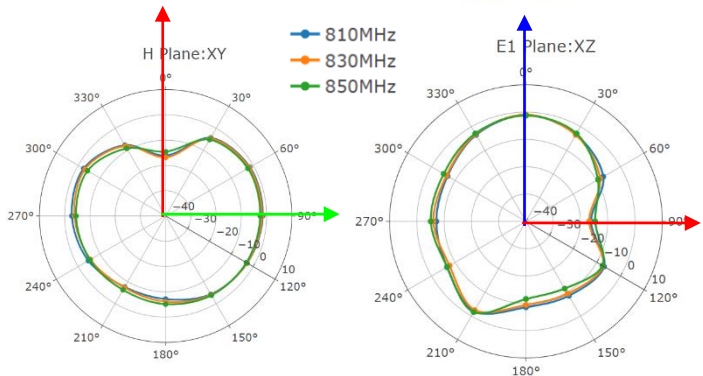
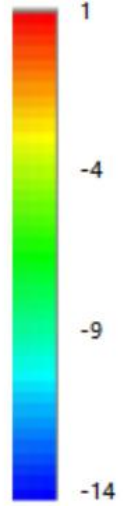
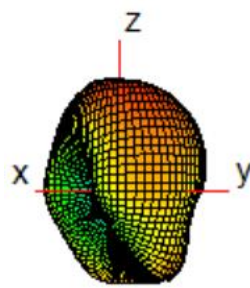
710 MHz



830 MHz



900 MHz

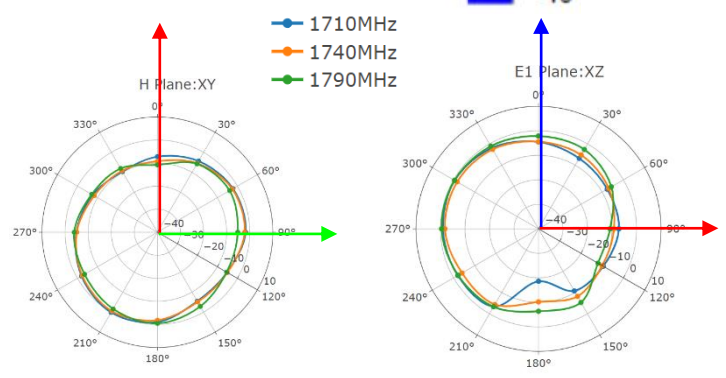
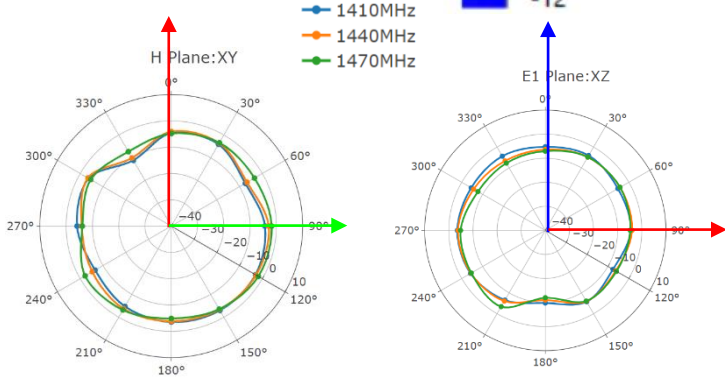
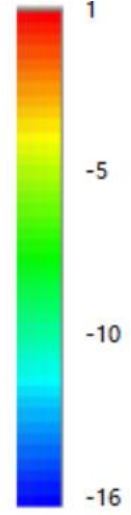


LMH1

1440 MHz



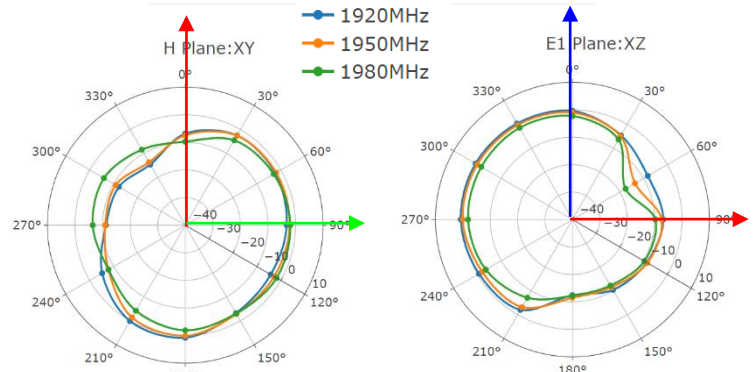
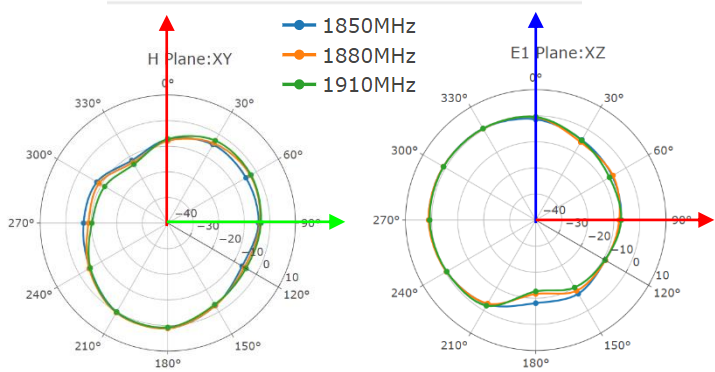
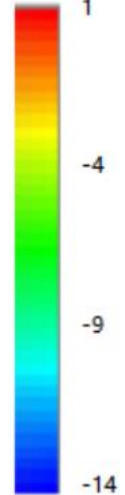
1740 MHz



1880 MHz

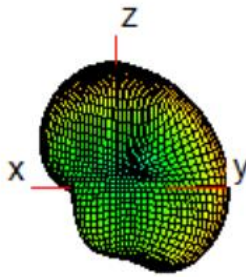


1950 MHz

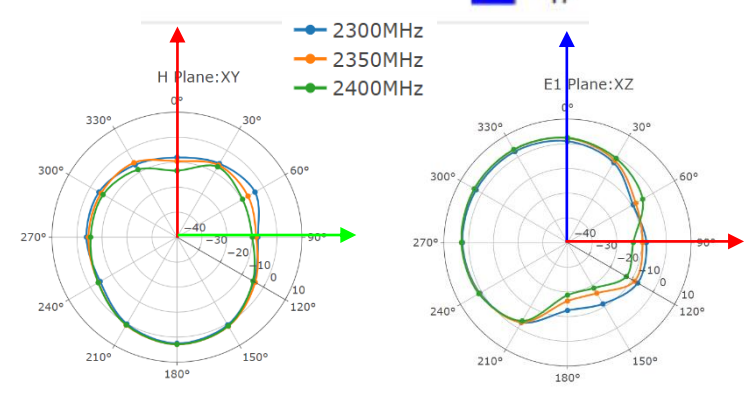
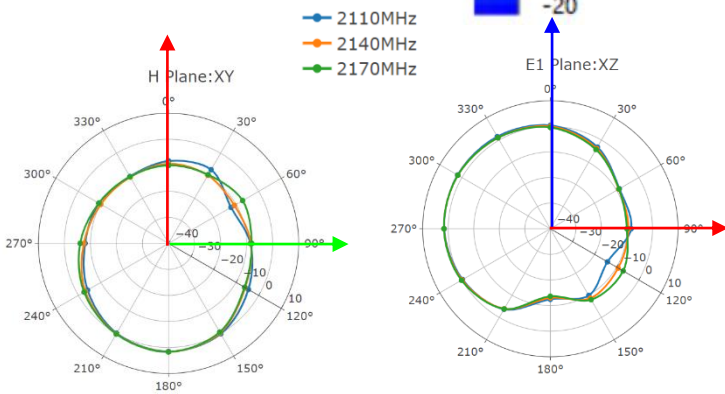
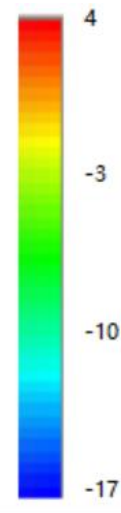
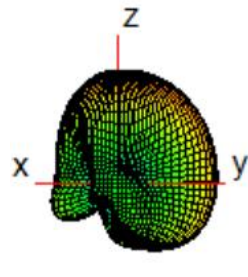


● **LMH1**

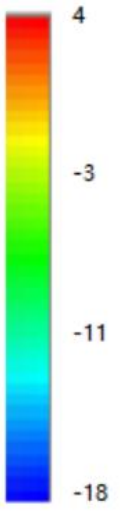
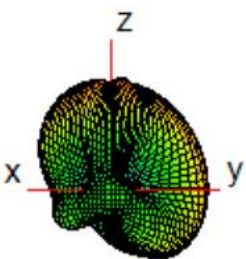
2140 MHz



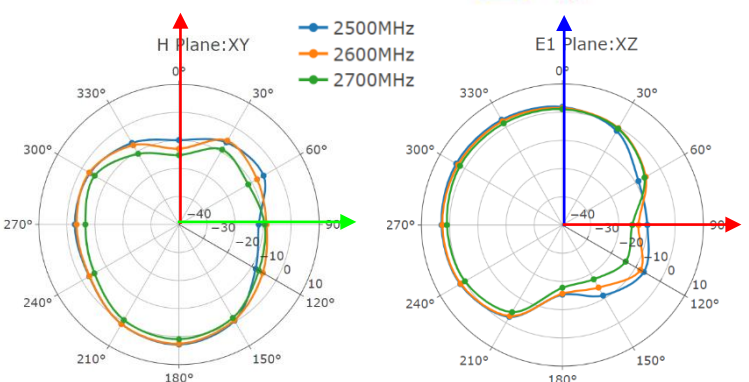
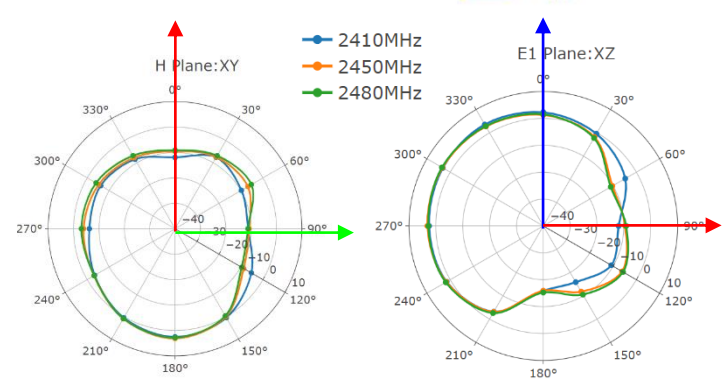
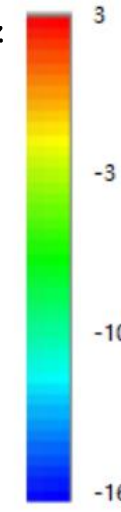
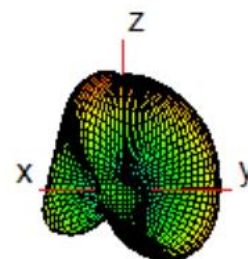
2350 MHz



2450 MHz

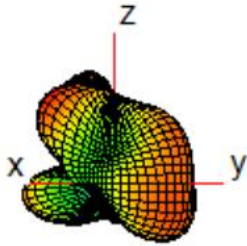


2600 MHz

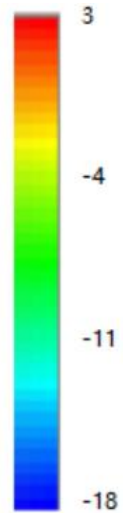
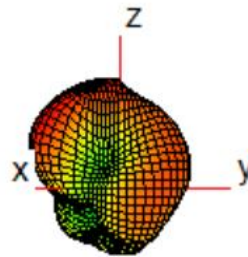


● **LMH1**

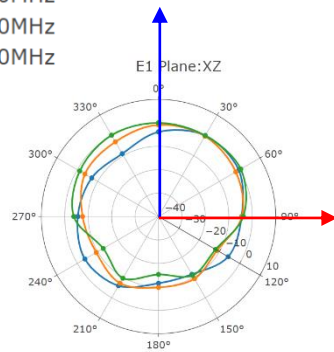
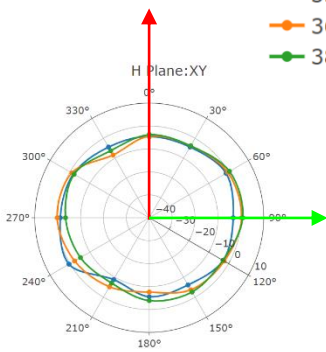
3600 MHz



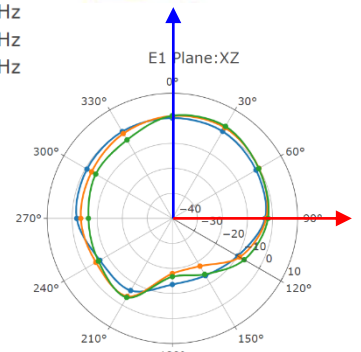
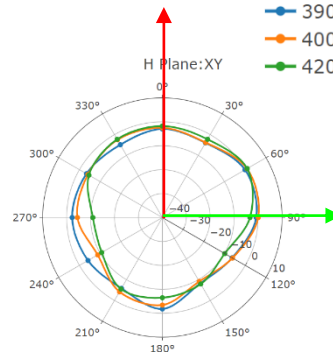
4000 MHz



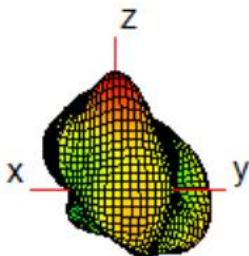
- 3300MHz
- 3600MHz
- 3800MHz



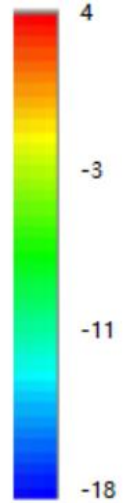
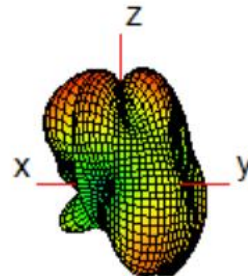
- 3900MHz
- 4000MHz
- 4200MHz



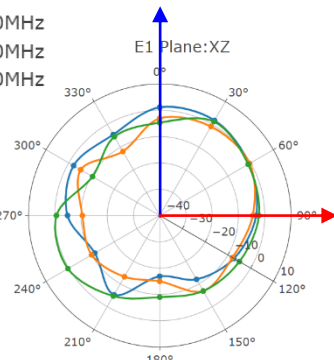
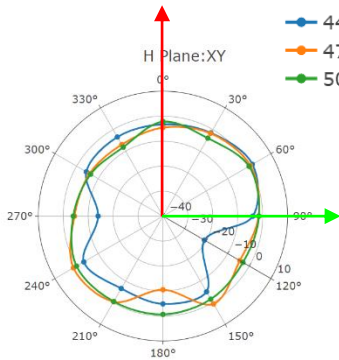
4700 MHz



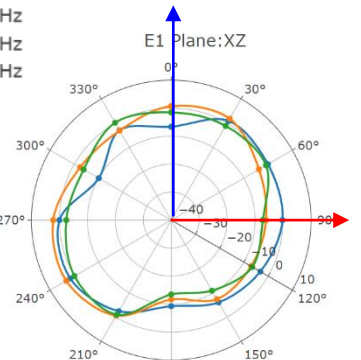
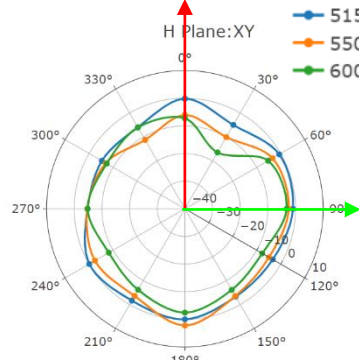
5500 MHz



- 4400MHz
- 4700MHz
- 5000MHz

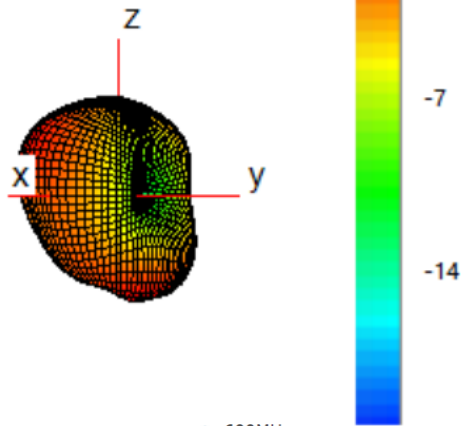


- 5150MHz
- 5500MHz
- 6000MHz

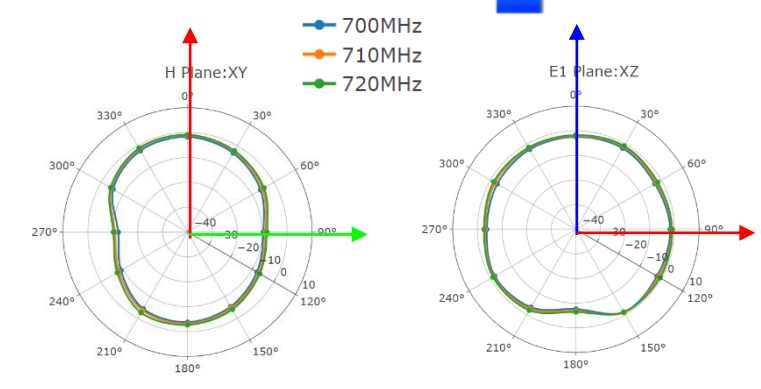
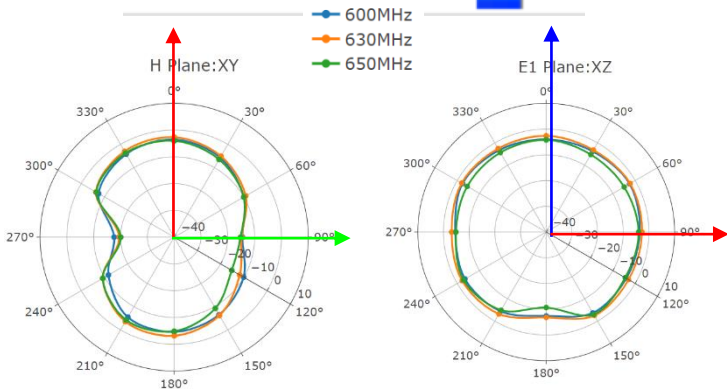
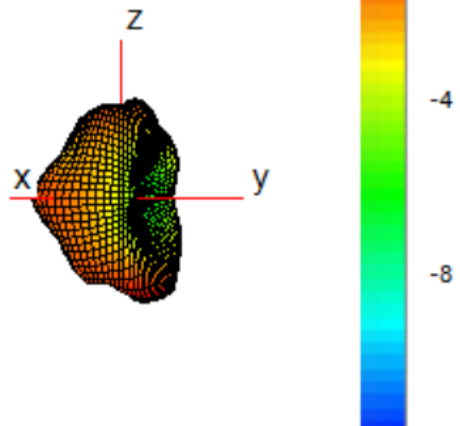


● **LMH2**

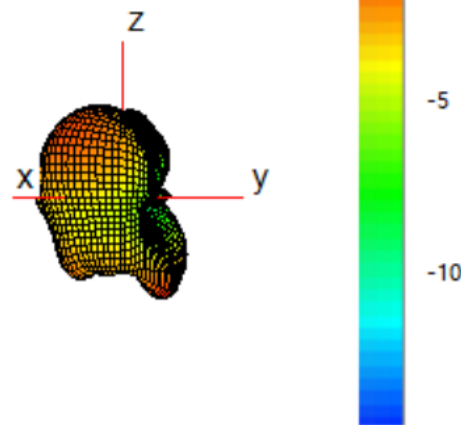
630 MHz



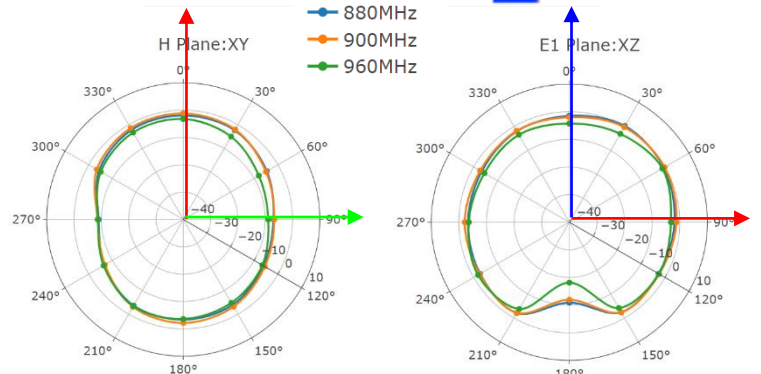
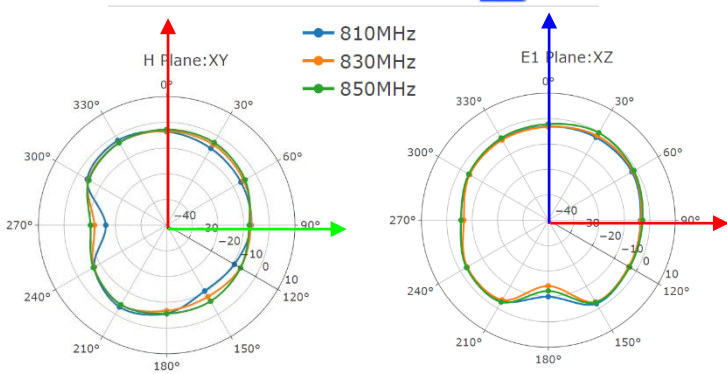
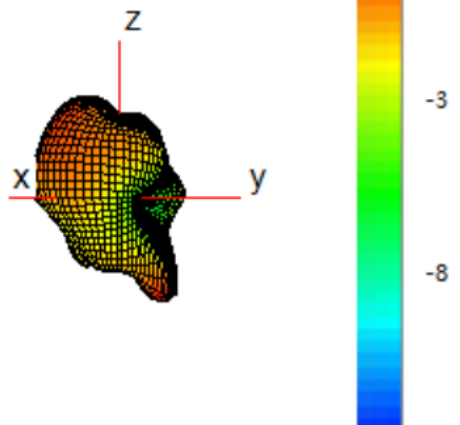
710 MHz



830MHz

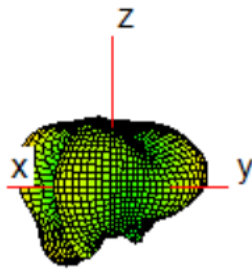


900MHz

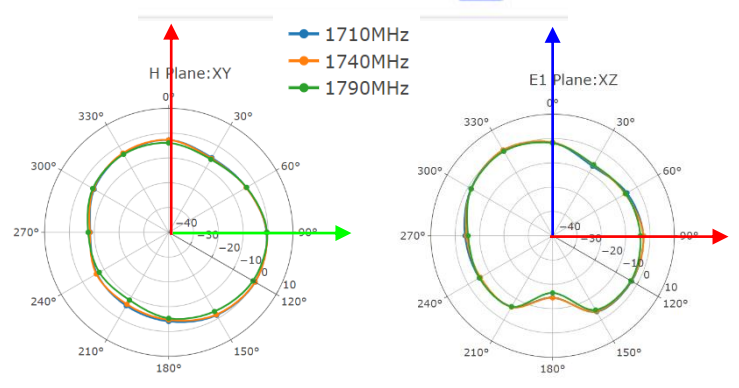
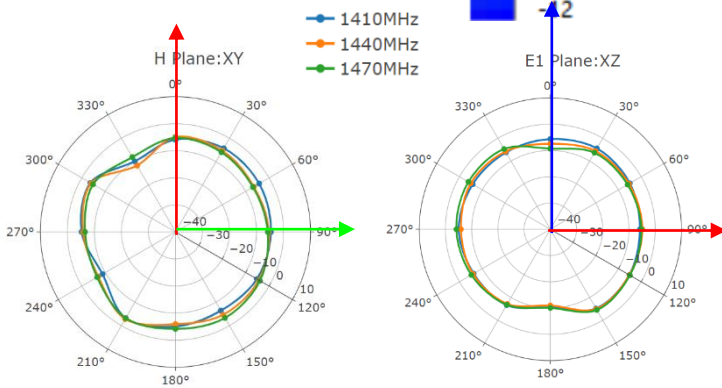
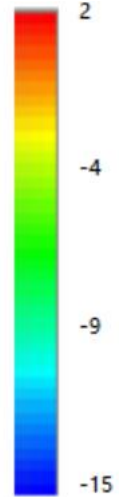
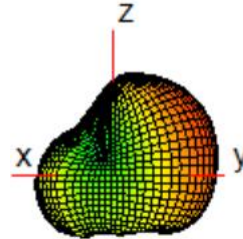


● **LMH2**

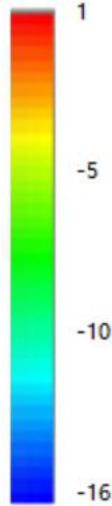
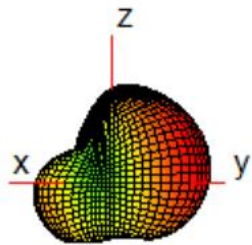
1440 MHz



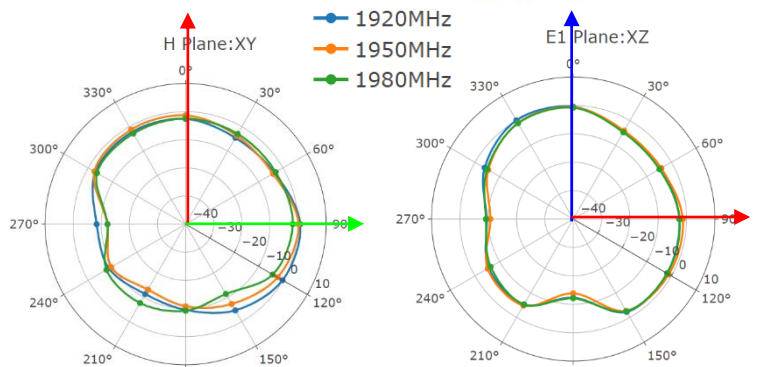
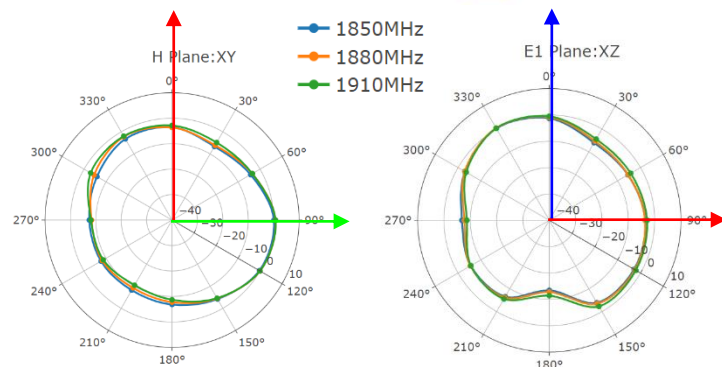
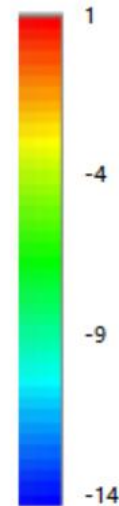
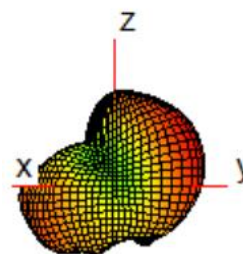
1740 MHz



1880 MHz

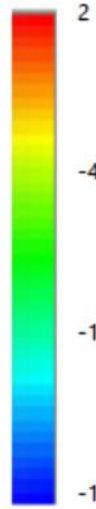
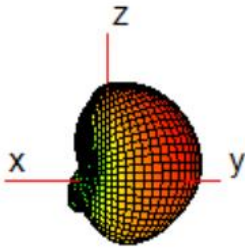


1950 MHz

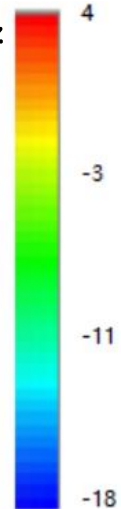
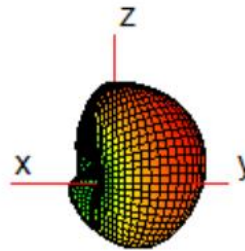


● **LMH2**

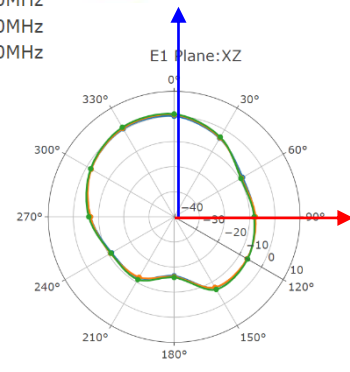
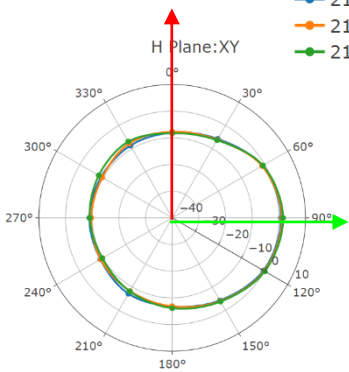
2140 MHz



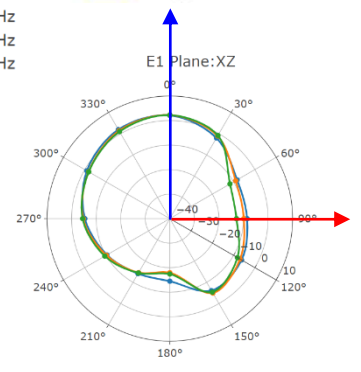
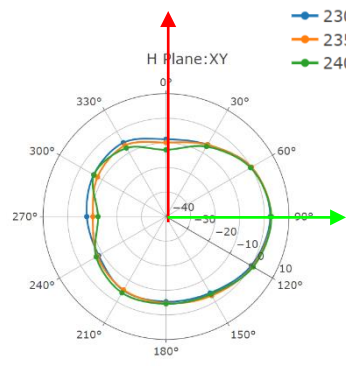
2350 MHz



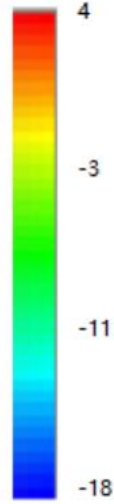
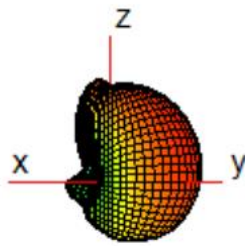
- 2110MHz
- 2140MHz
- 2170MHz



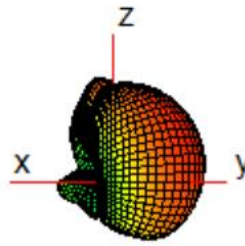
- 2300MHz
- 2350MHz
- 2400MHz



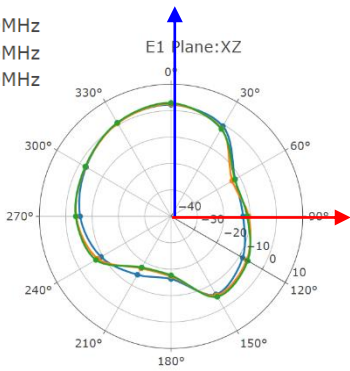
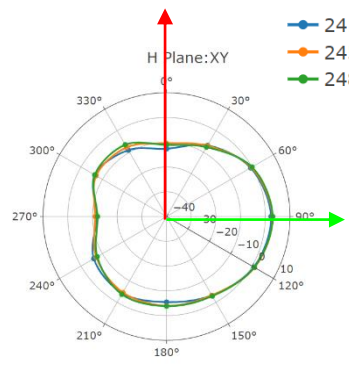
2450 MHz



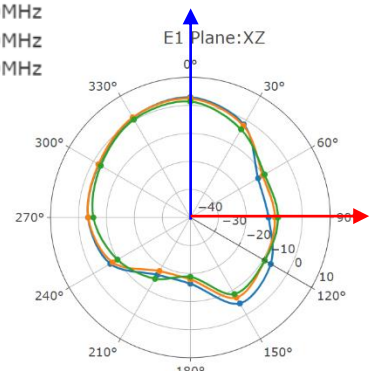
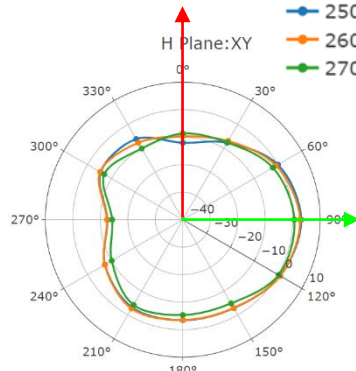
2600 MHz



- 2410MHz
- 2450MHz
- 2480MHz

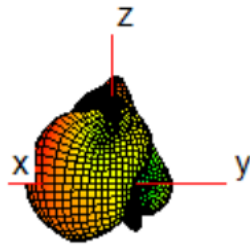


- 2500MHz
- 2600MHz
- 2700MHz

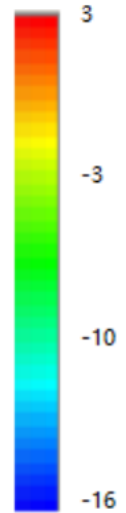
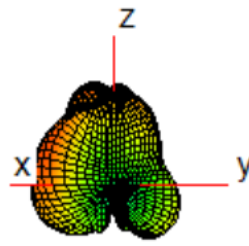


● **LMH2**

3600 MHz

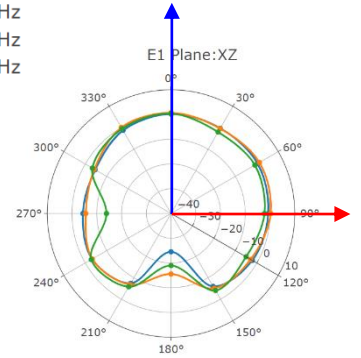
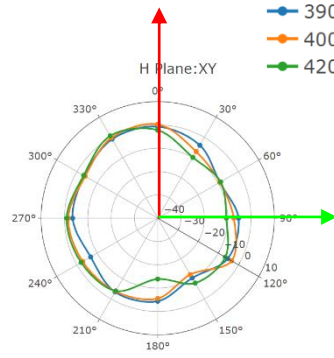
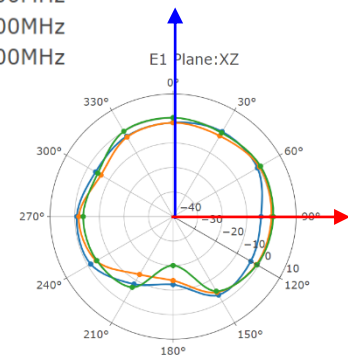
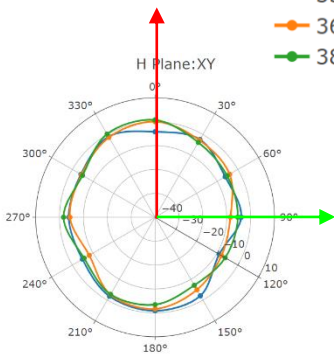


4000 MHz

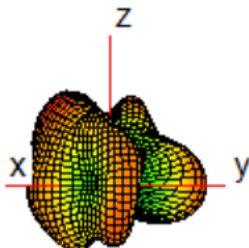


- 3300MHz
- 3600MHz
- 3800MHz

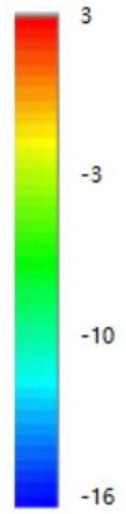
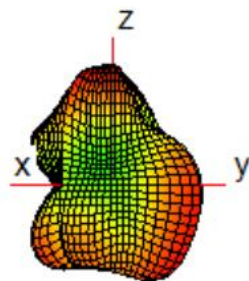
- 3900MHz
- 4000MHz
- 4200MHz



4700 MHz

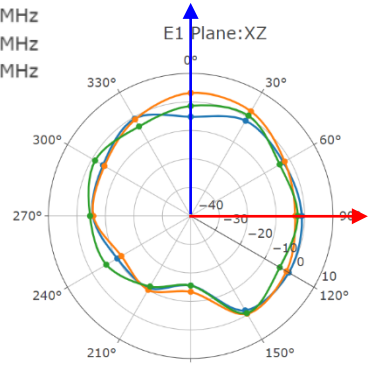
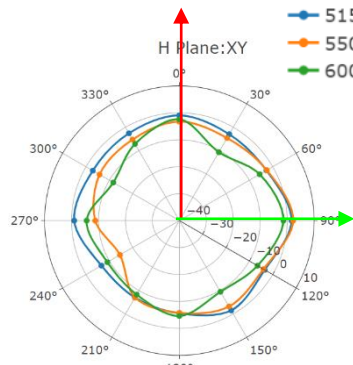
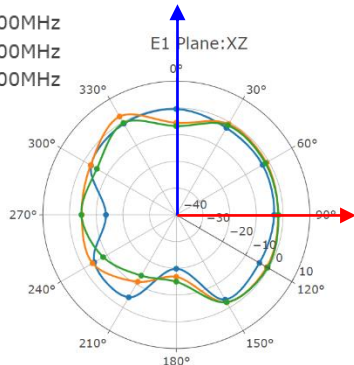
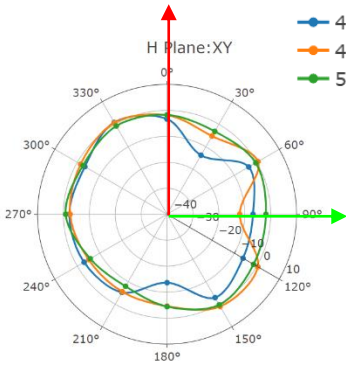


5500 MHz



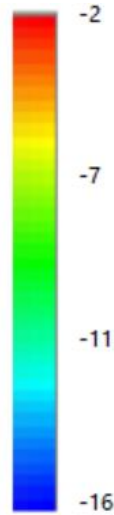
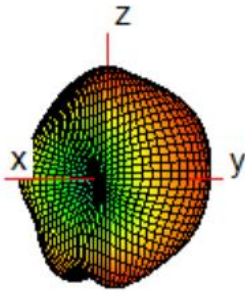
- 4400MHz
- 4700MHz
- 5000MHz

- 5150MHz
- 5500MHz
- 6000MHz

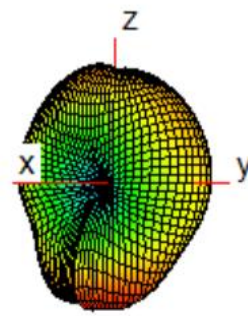


● **LMH3**

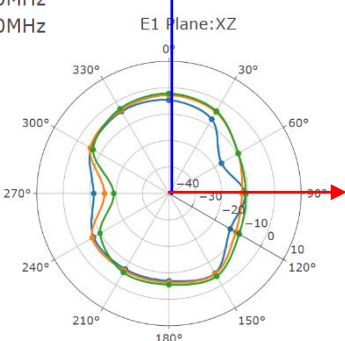
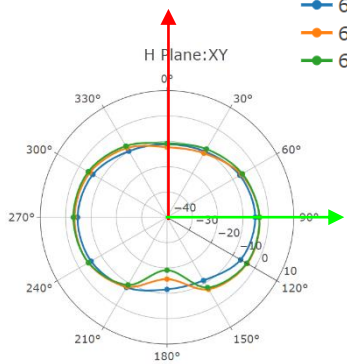
630 MHz



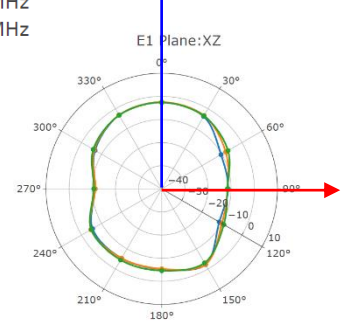
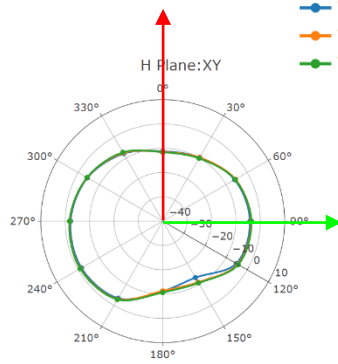
710 MHz



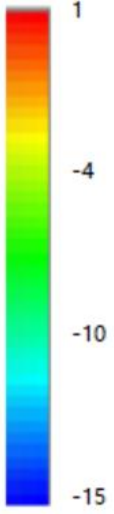
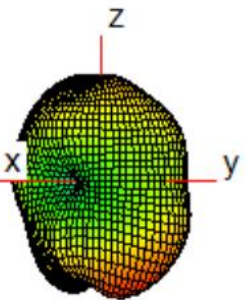
- 600MHz
- 630MHz
- 650MHz



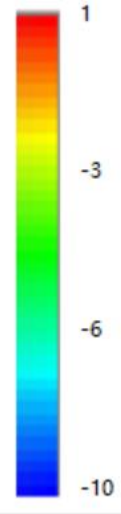
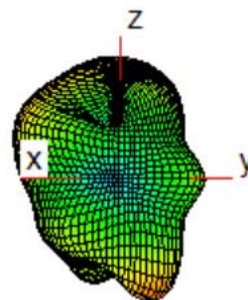
- 700MHz
- 710MHz
- 720MHz



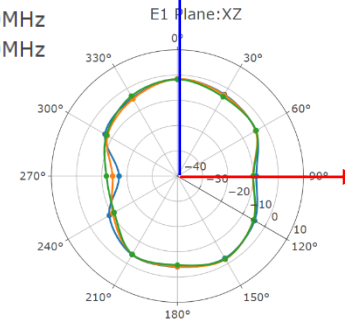
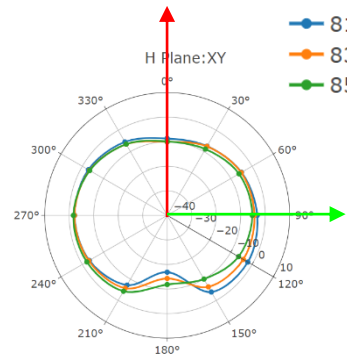
830 MHz



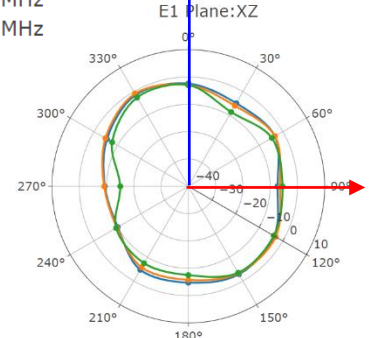
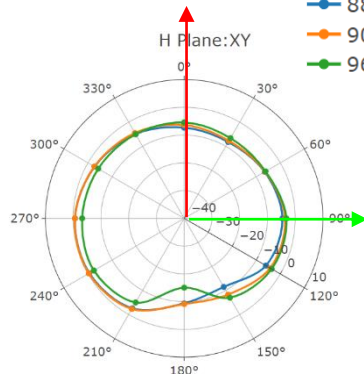
900 MHz



- 810MHz
- 830MHz
- 850MHz

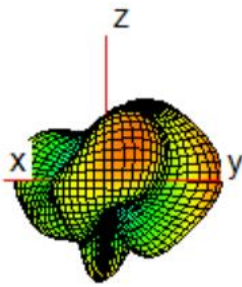


- 880MHz
- 900MHz
- 960MHz

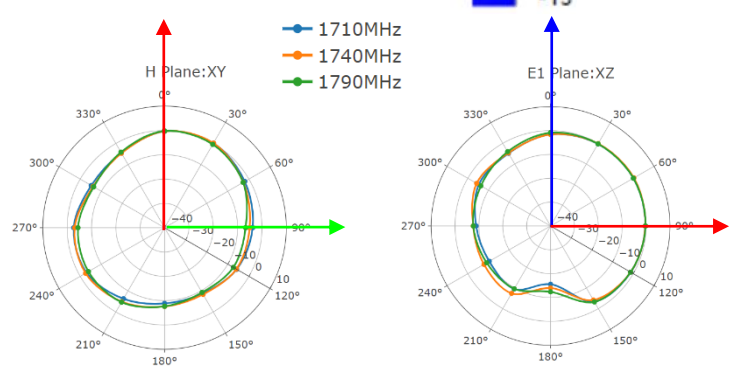
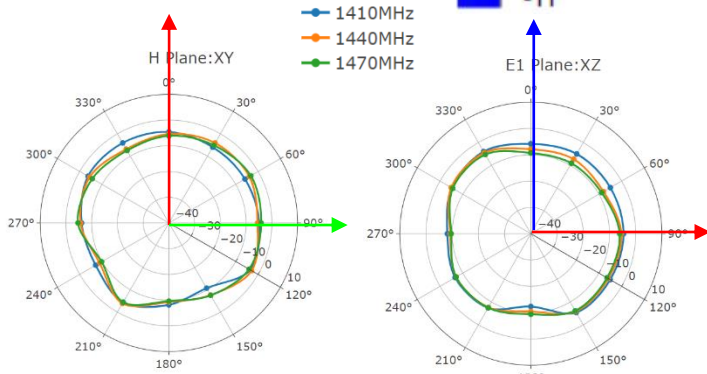
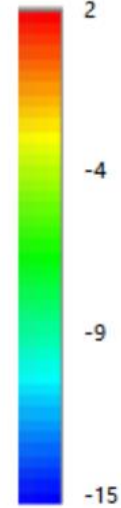
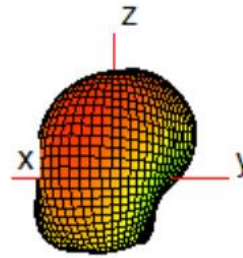


● **LMH3**

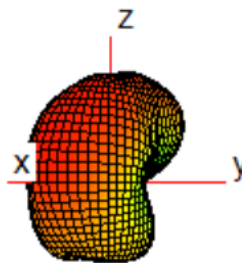
1440 MHz



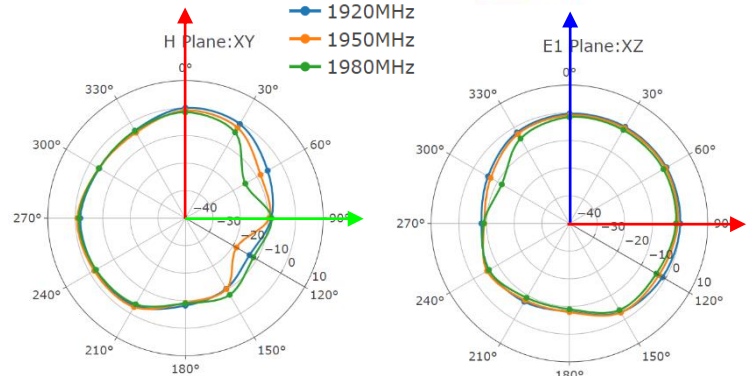
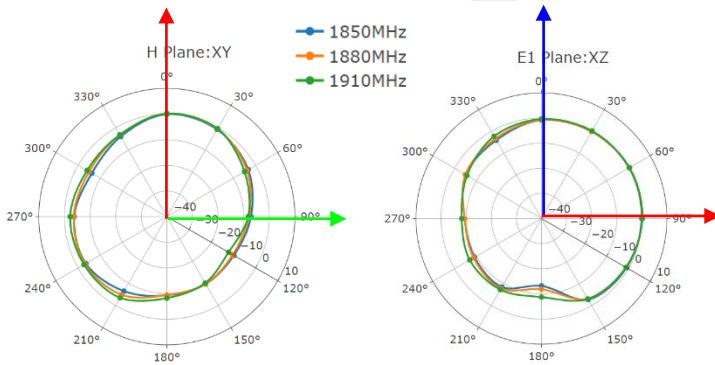
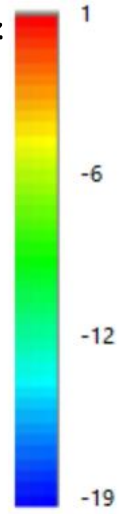
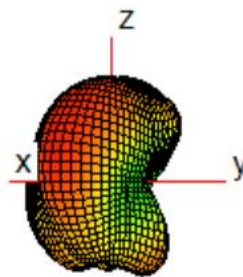
1740 MHz



1880 MHz

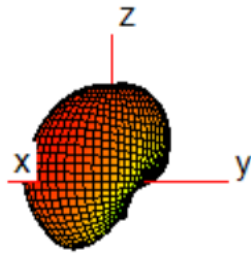


1950 MHz

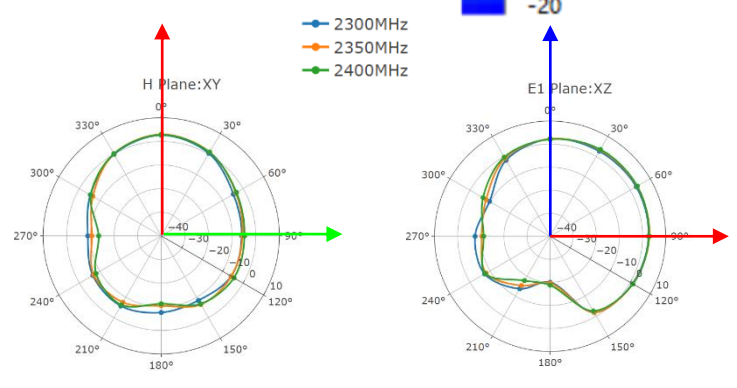
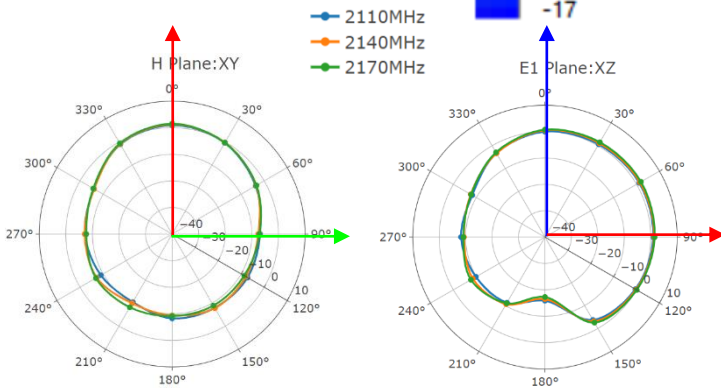
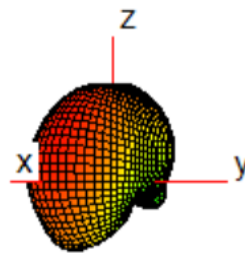


● **LMH3**

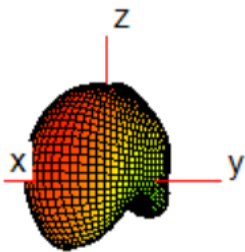
2140 MHz



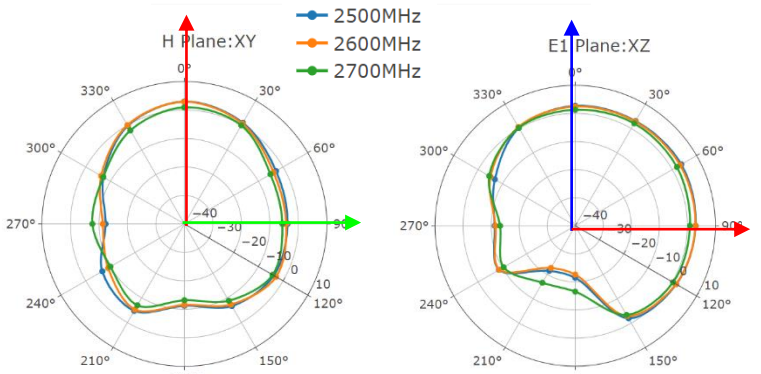
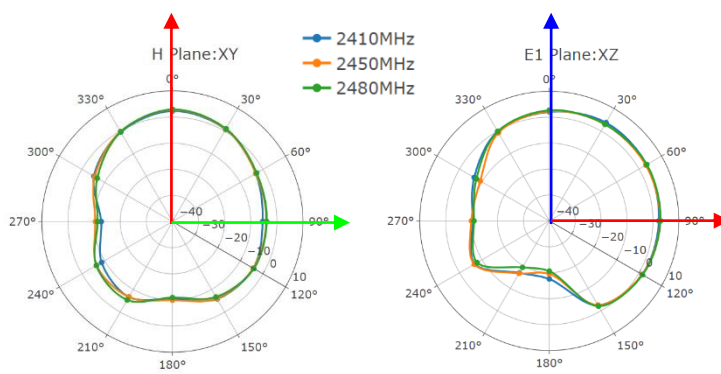
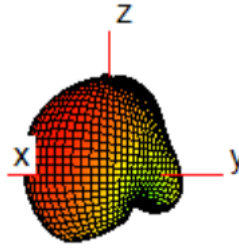
2350 MHz



2450 MHz

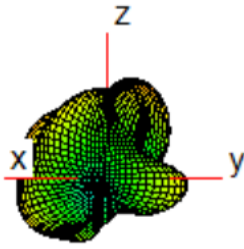


2600 MHz

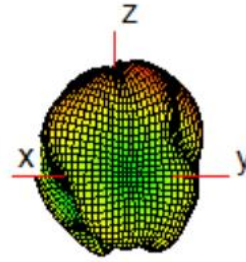


● **LMH3**

3600 MHz

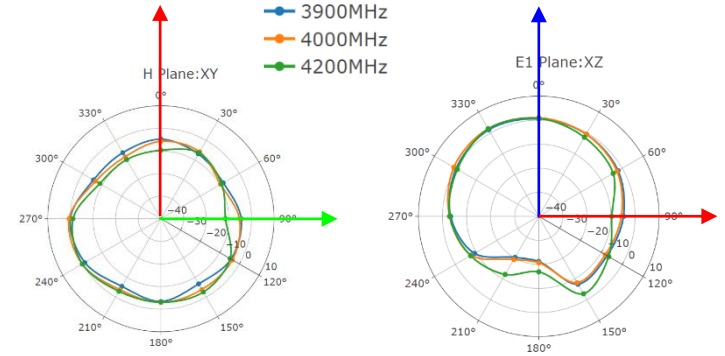
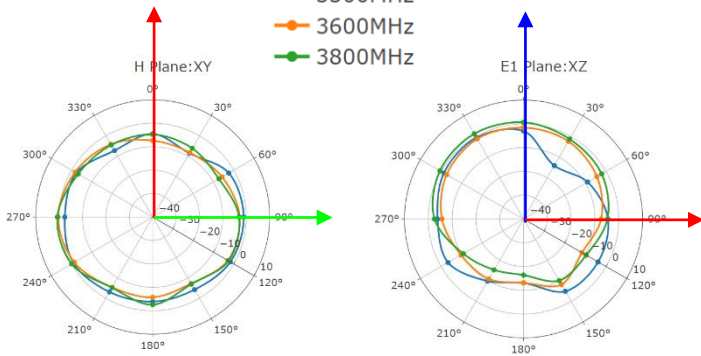


4000 MHz

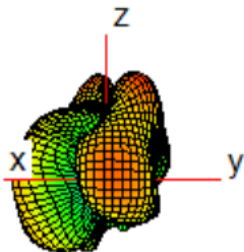


- 3300MHz
- 3600MHz
- 3800MHz

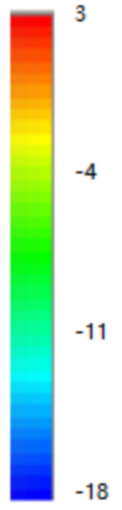
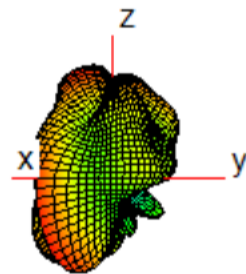
- 3900MHz
- 4000MHz
- 4200MHz



4700 MHz

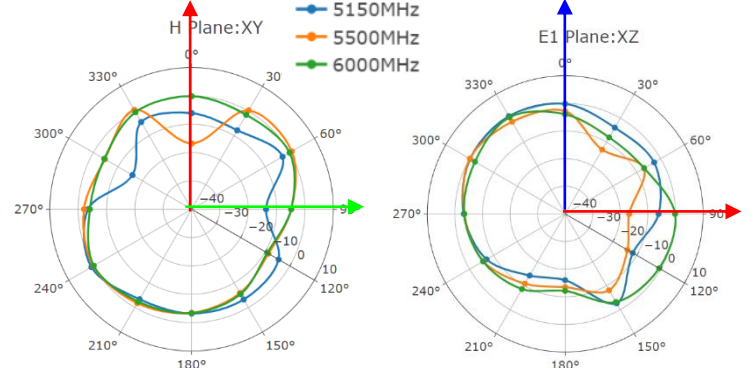
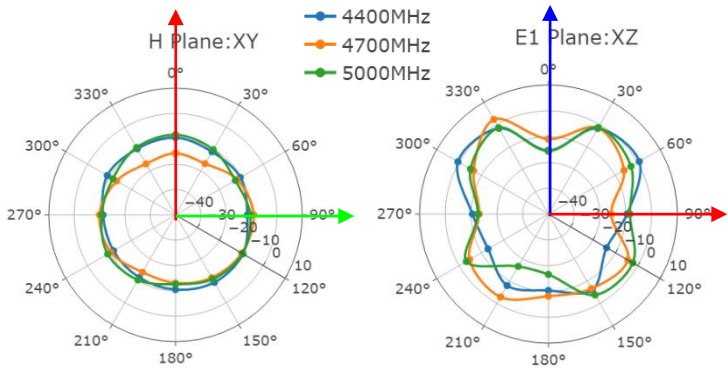


5500 MHz



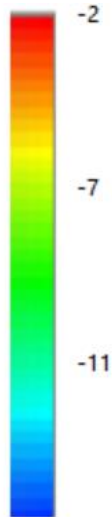
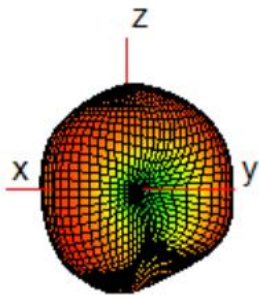
- 4400MHz
- 4700MHz
- 5000MHz

- 5150MHz
- 5500MHz
- 6000MHz

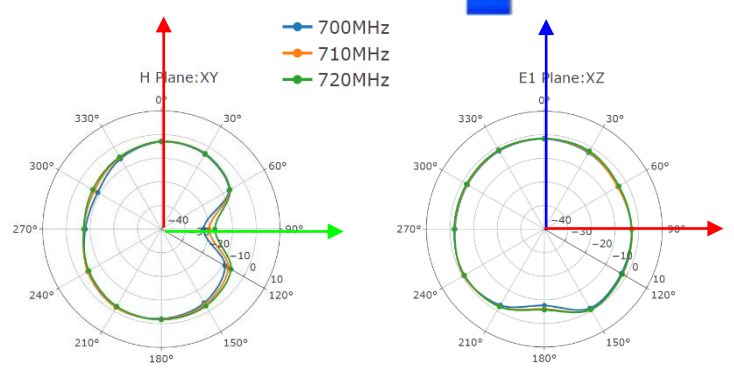
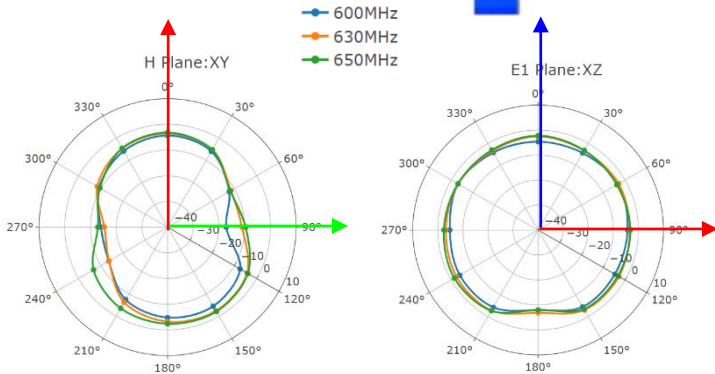
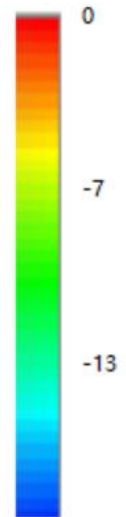
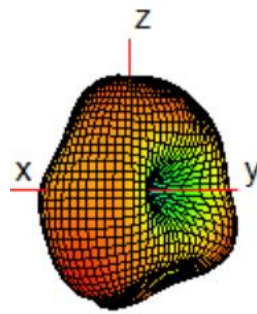


● **LMH4**

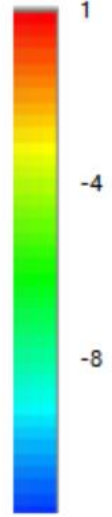
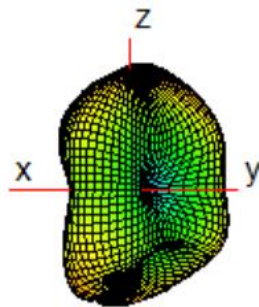
630 MHz



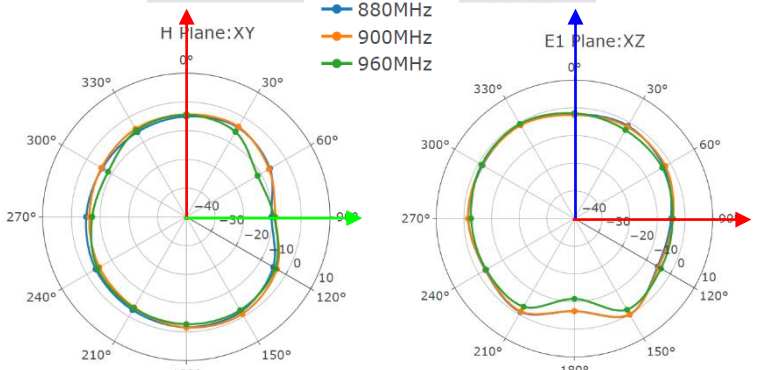
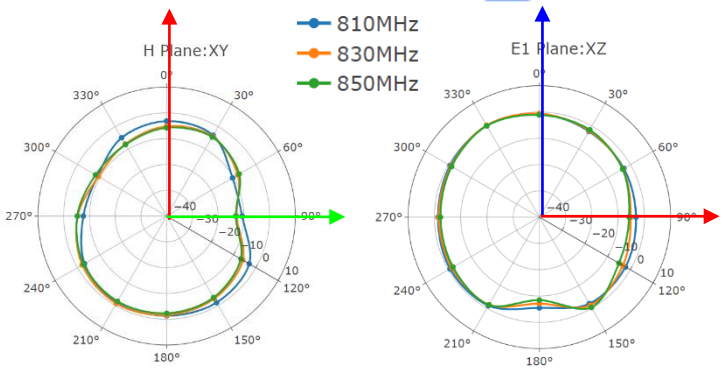
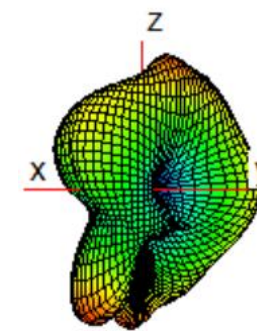
710 MHz



830 MHz

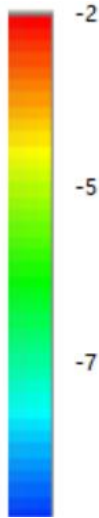
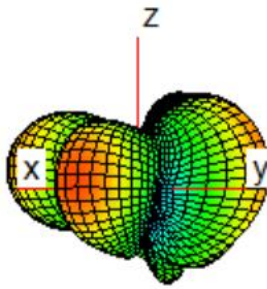


900 MHz

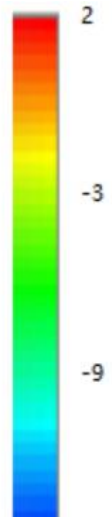
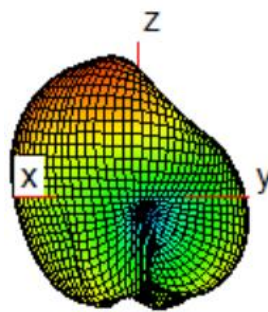


● **LMH4**

1440 MHz

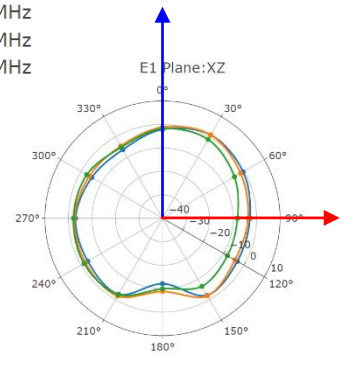
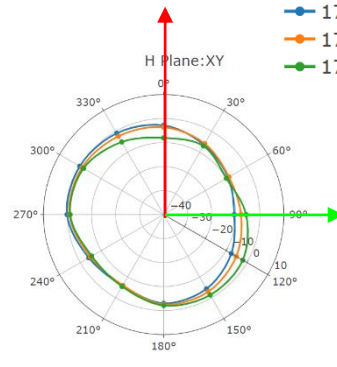
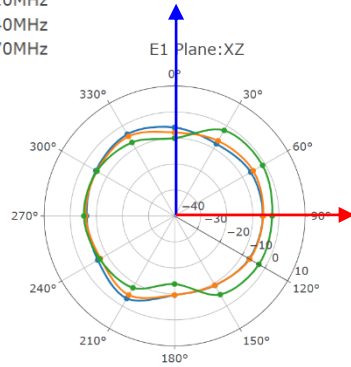
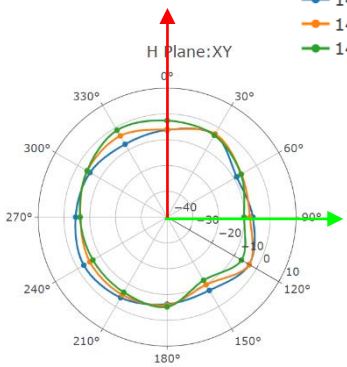


1740 MHz

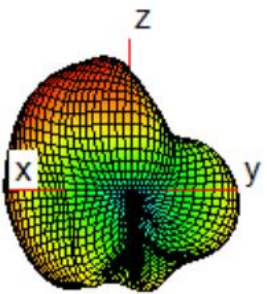


- 1410MHz
- 1440MHz
- 1470MHz

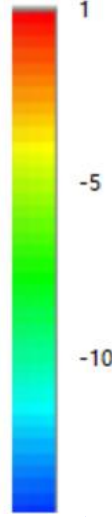
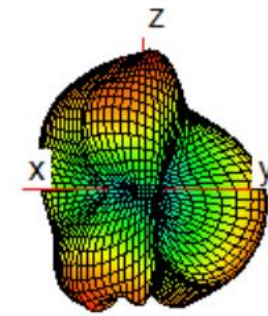
- 1710MHz
- 1740MHz
- 1790MHz



1880 MHz

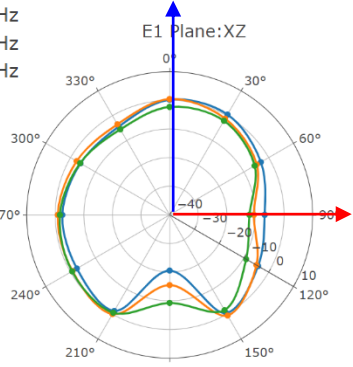
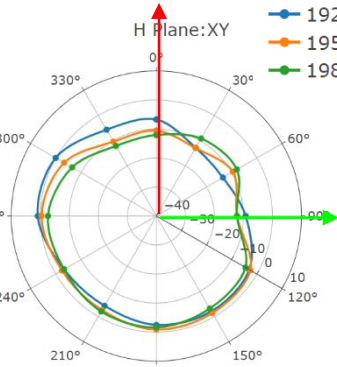
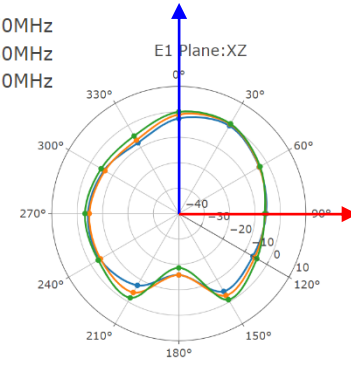
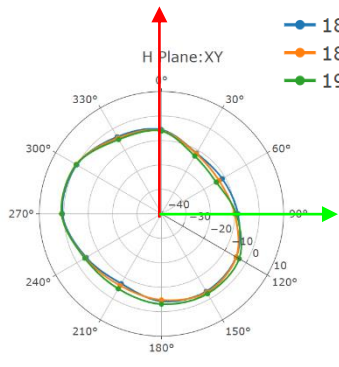


1950 MHz



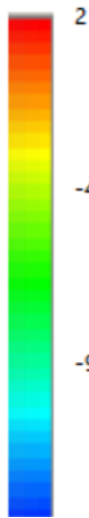
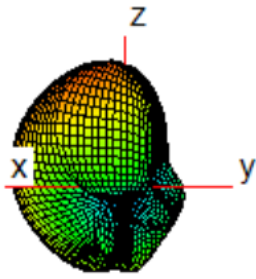
- 1850MHz
- 1880MHz
- 1910MHz

- 1920MHz
- 1950MHz
- 1980MHz

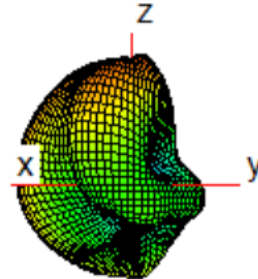


● **LMH4**

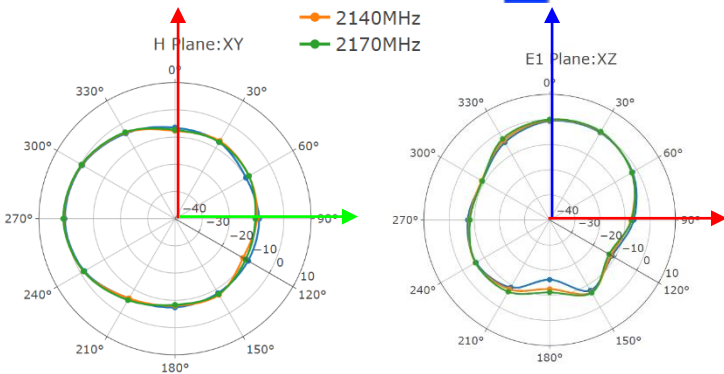
2140 MHz



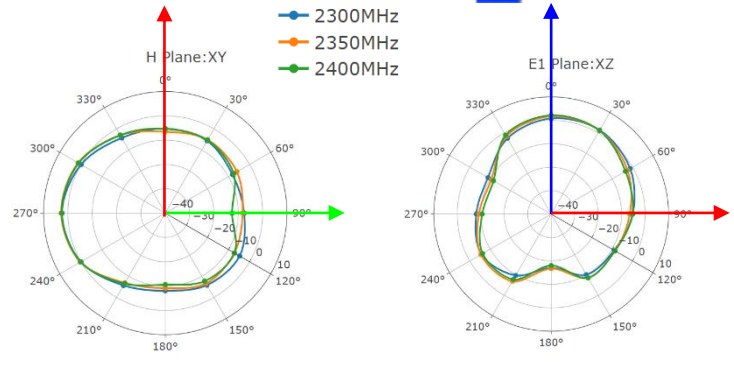
2350 MHz



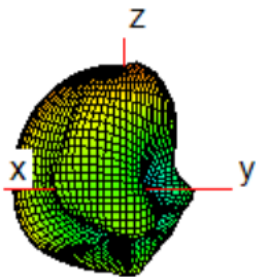
- 2110MHz
- 2140MHz
- 2170MHz



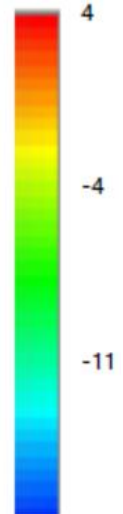
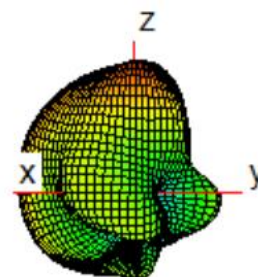
- 2300MHz
- 2350MHz
- 2400MHz



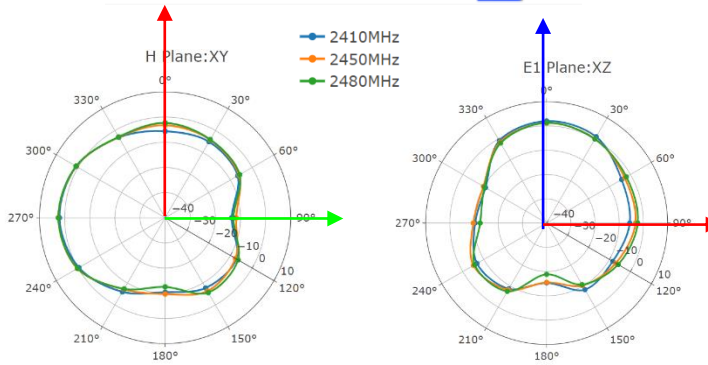
2450 MHz



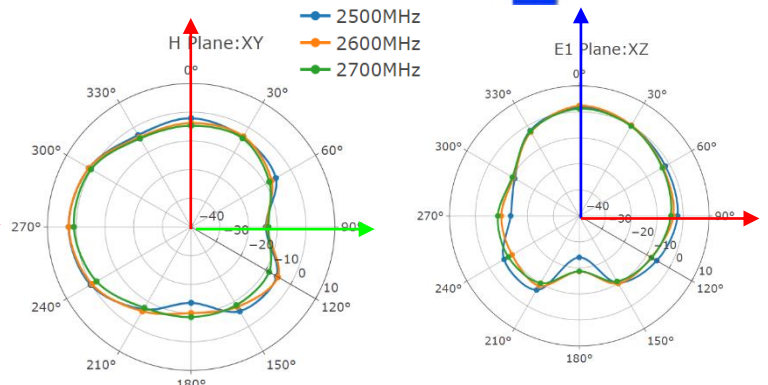
2600 MHz



- 2410MHz
- 2450MHz
- 2480MHz

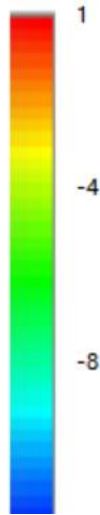
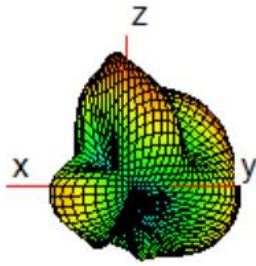


- 2500MHz
- 2600MHz
- 2700MHz

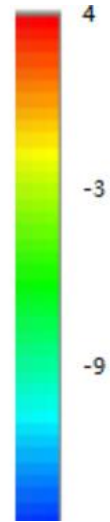
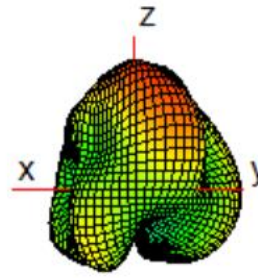


● **LMH4**

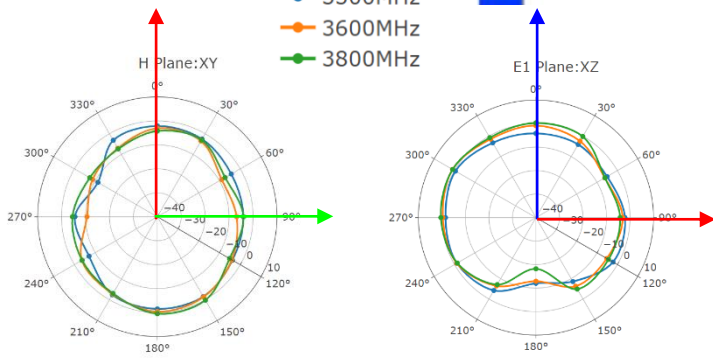
3600 MHz



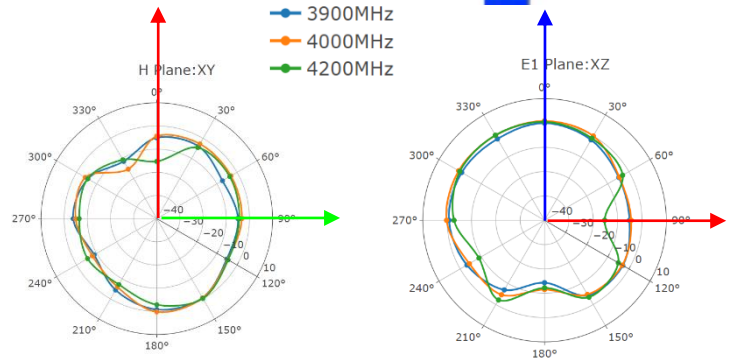
4000 MHz



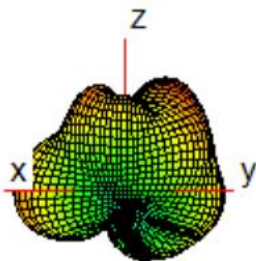
- 3300MHz
- 3600MHz
- 3800MHz



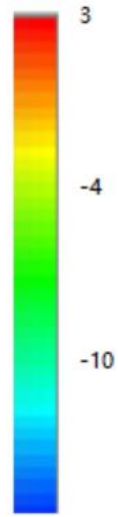
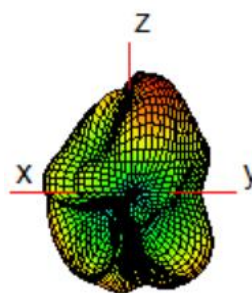
- 3900MHz
- 4000MHz
- 4200MHz



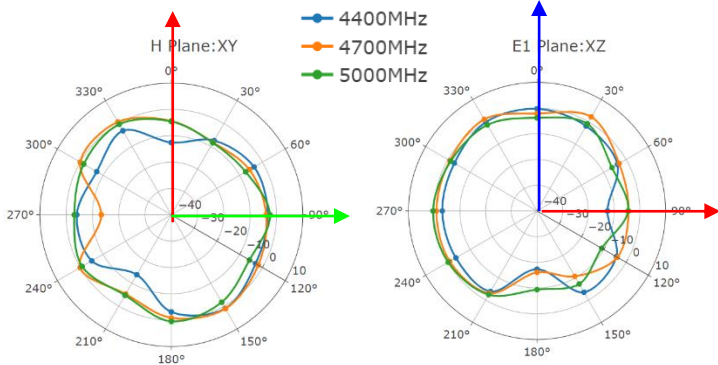
4700 MHz



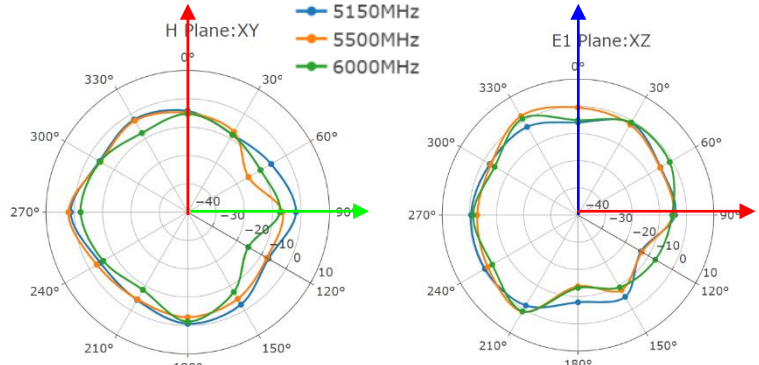
5500 MHz



- 4400MHz
- 4700MHz
- 5000MHz

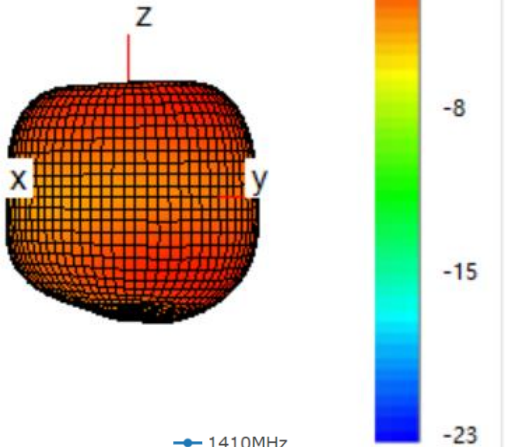


- 5150MHz
- 5500MHz
- 6000MHz

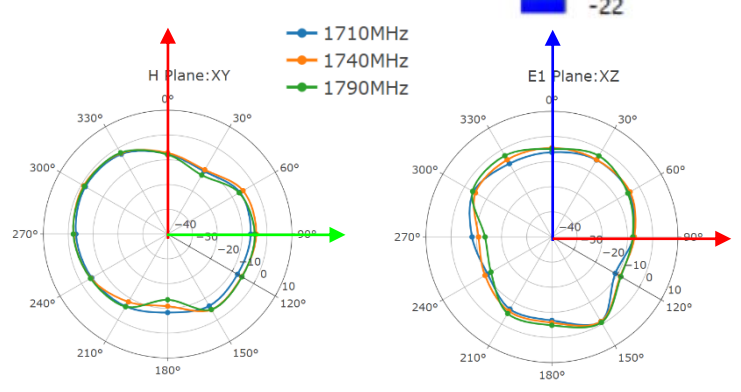
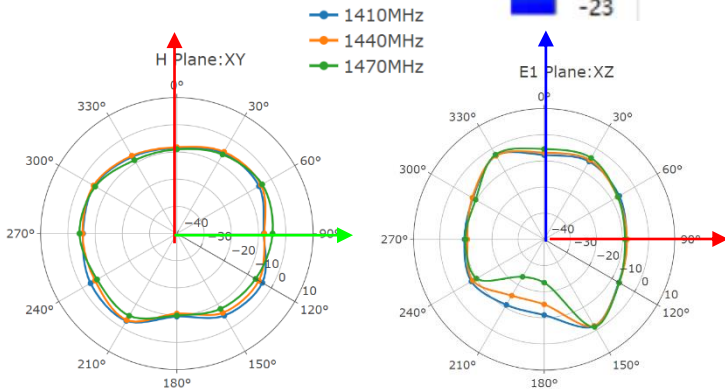
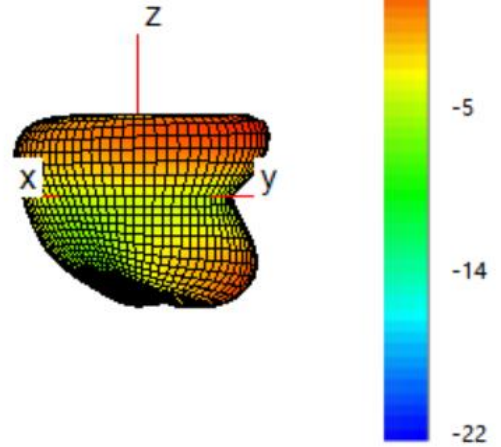


● **MH1**

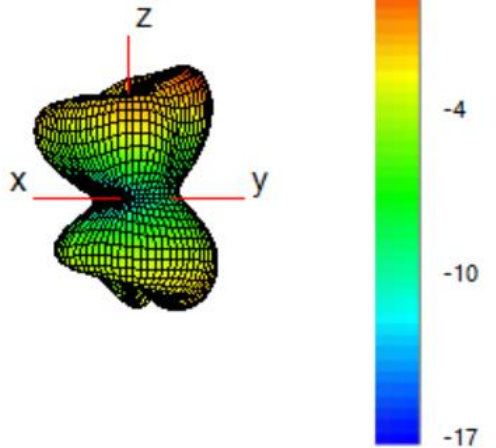
1440 MHz



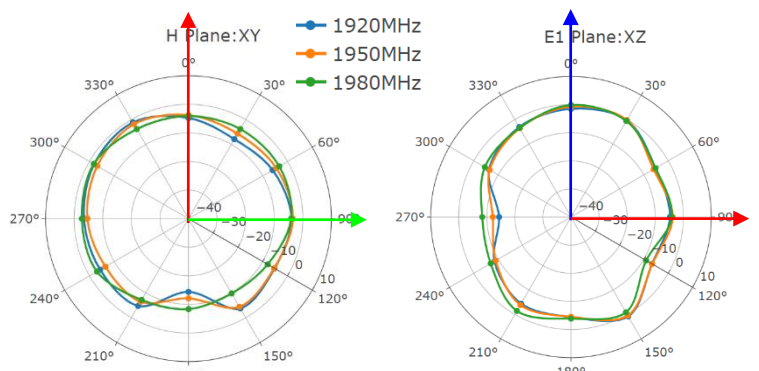
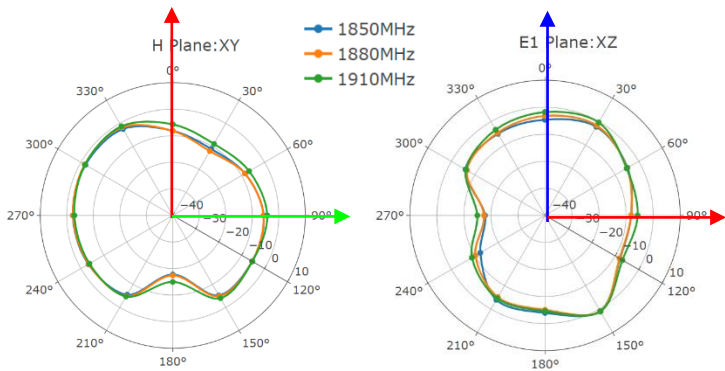
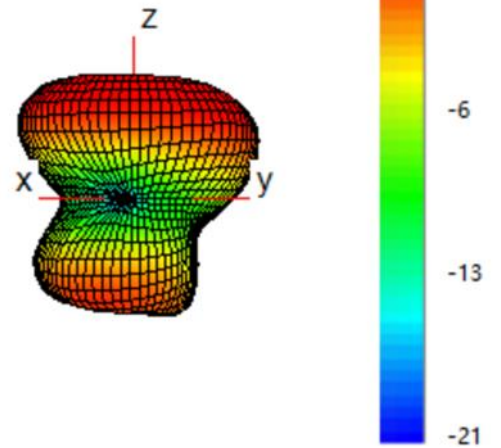
1740 MHz



1880 MHz

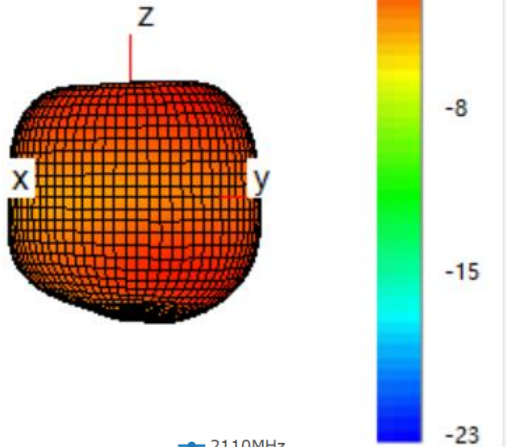


1950 MHz

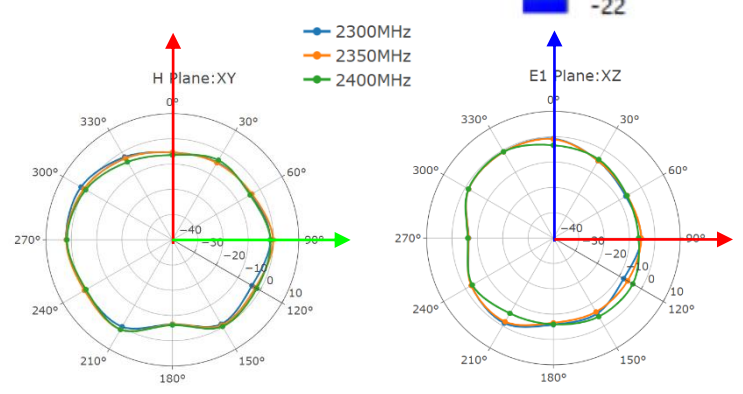
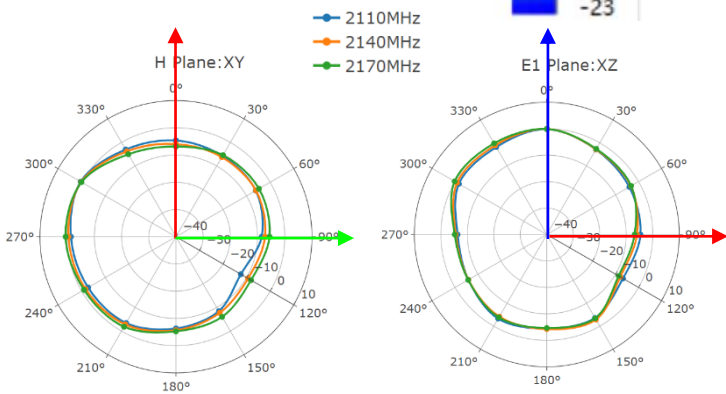
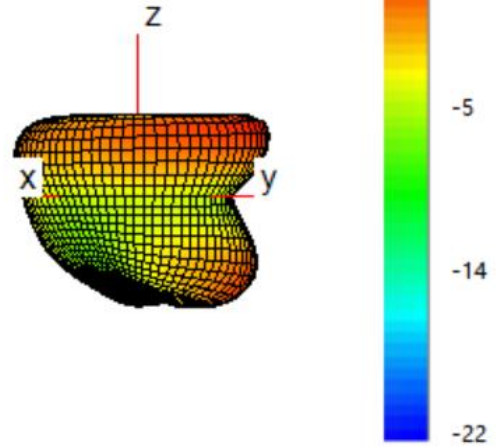


MH1

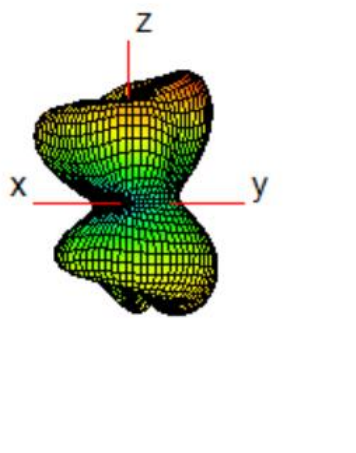
2140 MHz



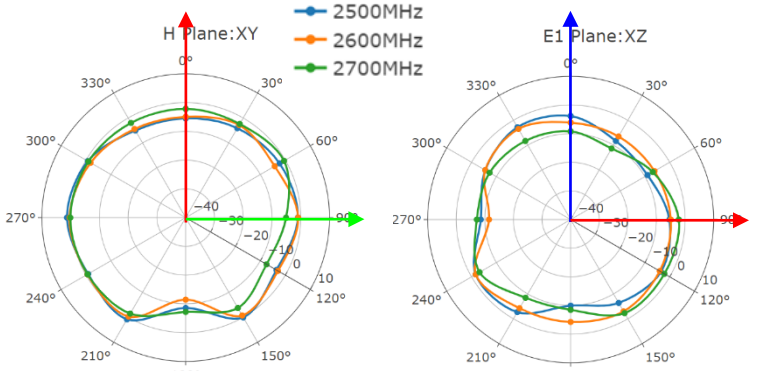
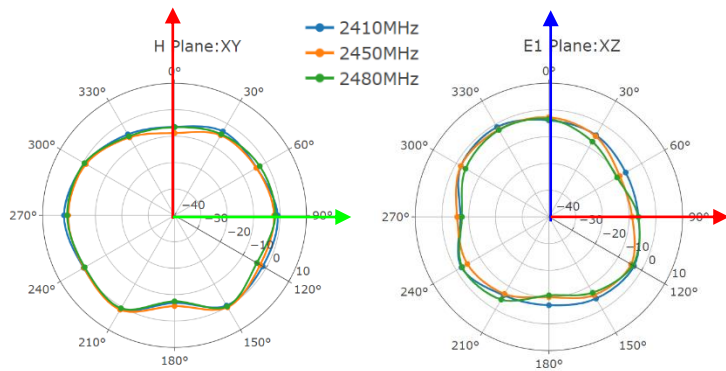
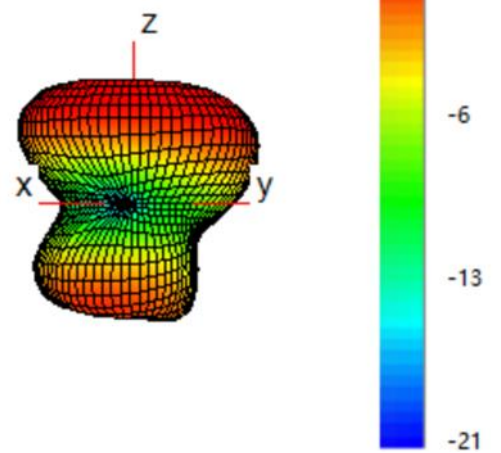
2350 MHz



2450 MHz

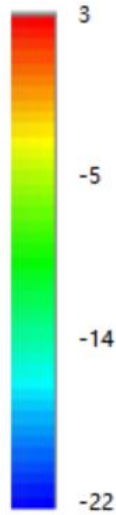
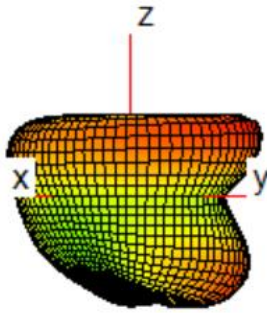


2600 MHz

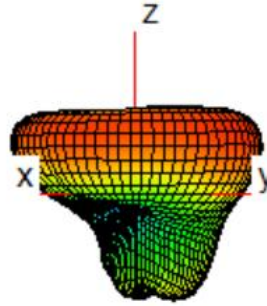


● **MH1**

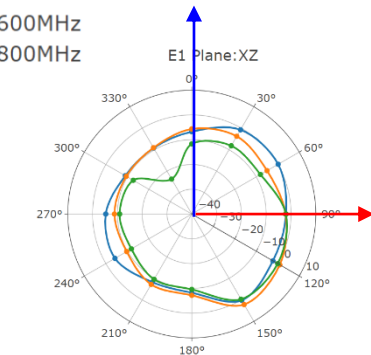
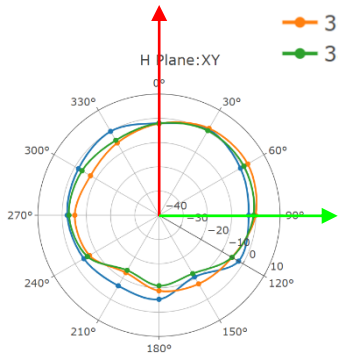
3600 MHz



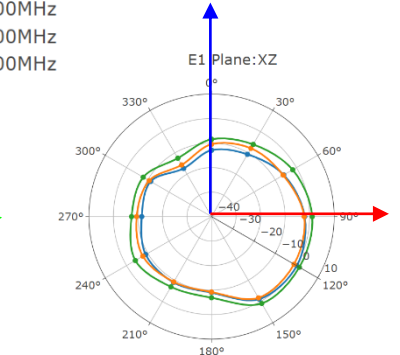
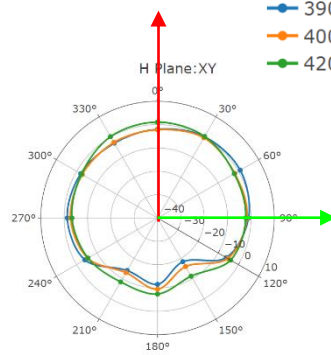
4000 MHz



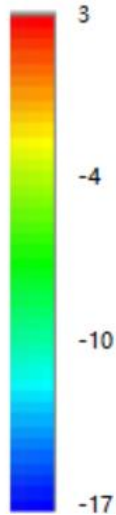
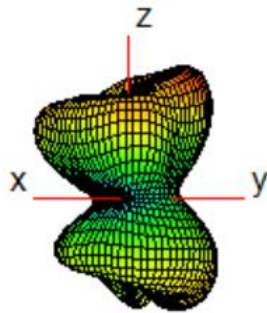
- 3300MHz
- 3600MHz
- 3800MHz



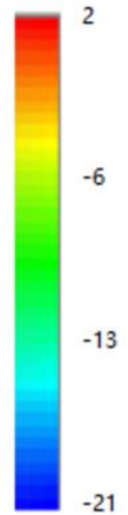
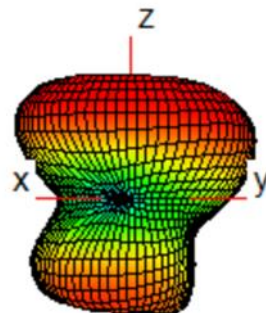
- 3900MHz
- 4000MHz
- 4200MHz



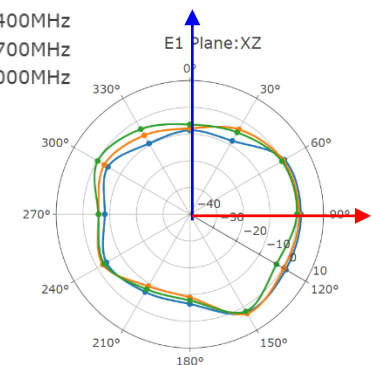
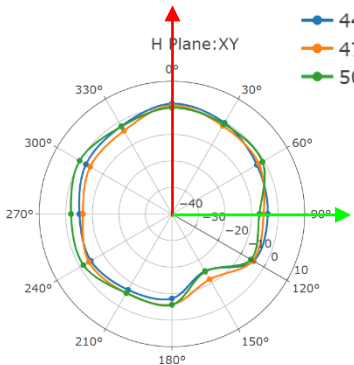
4700 MHz



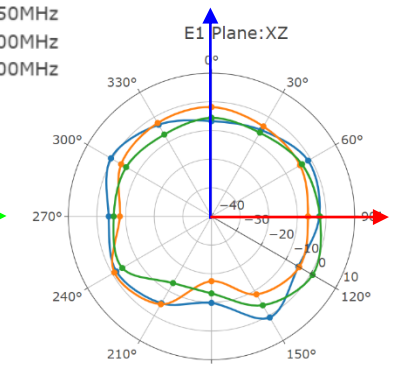
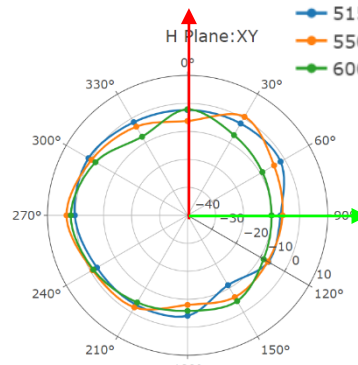
5500 MHz



- 4400MHz
- 4700MHz
- 5000MHz

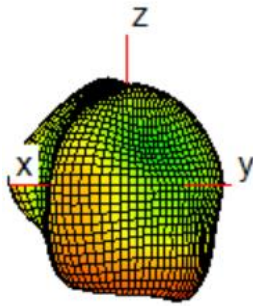


- 5150MHz
- 5500MHz
- 6000MHz

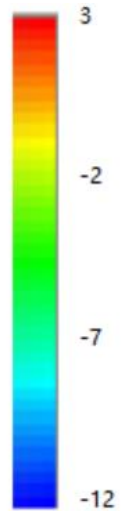
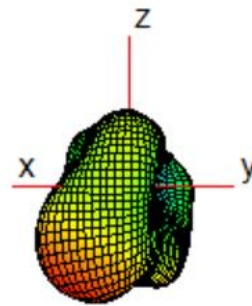


● **MH2**

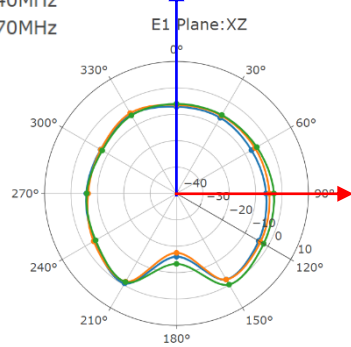
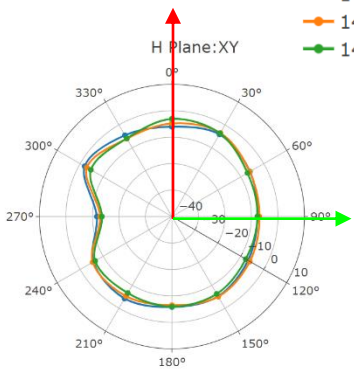
1440 MHz



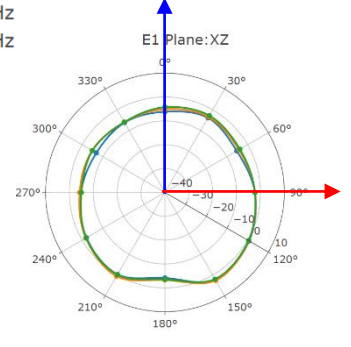
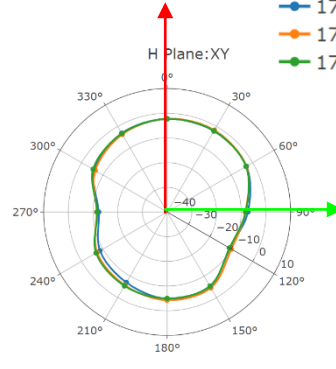
1740 MHz



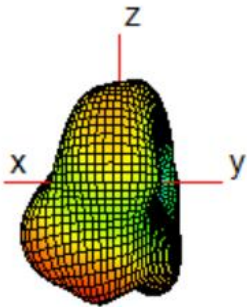
● 1410MHz
● 1440MHz
● 1470MHz



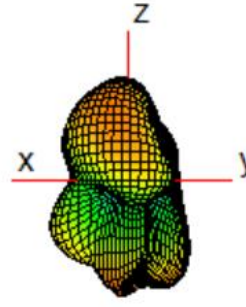
● 1710MHz
● 1740MHz
● 1790MHz



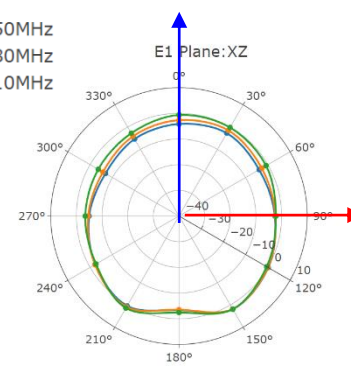
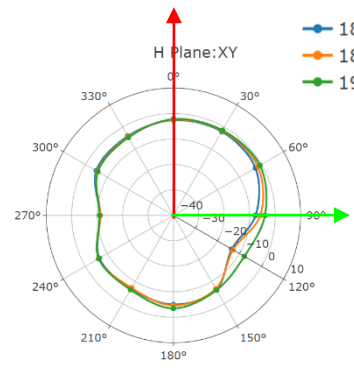
1880 MHz



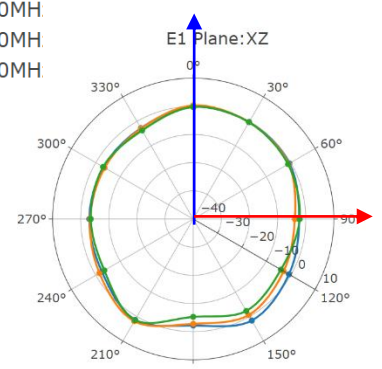
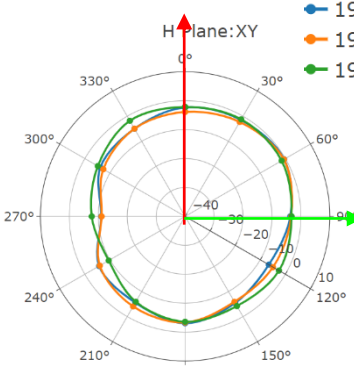
1950 MHz



● 1850MHz
● 1880MHz
● 1910MHz

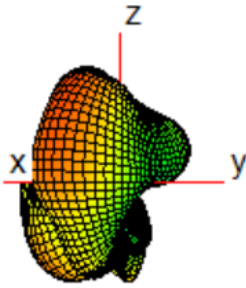


● 1920MHz
● 1950MHz
● 1980MHz

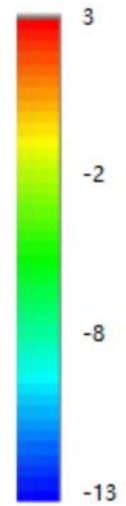
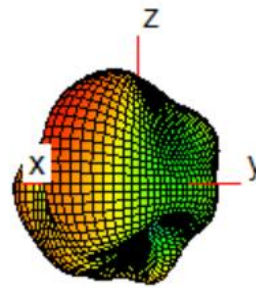


● **MH2**

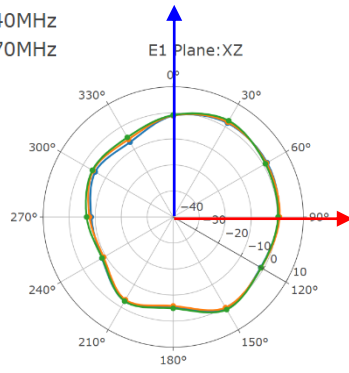
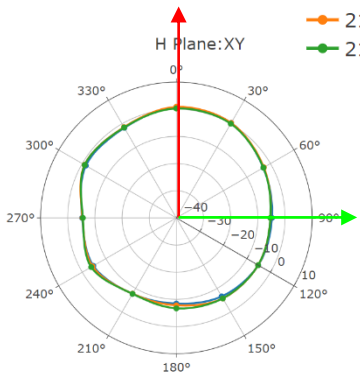
2140 MHz



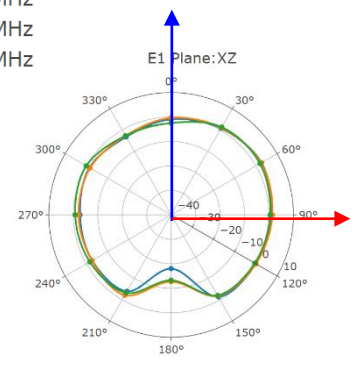
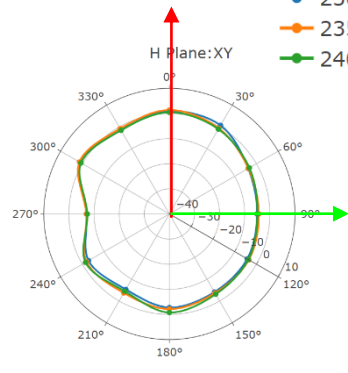
2350 MHz



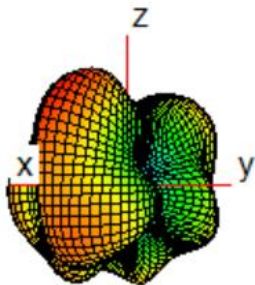
— 2110MHz
— 2140MHz
— 2170MHz



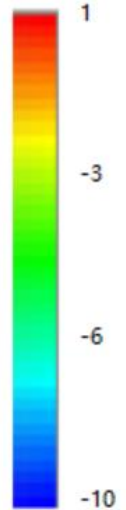
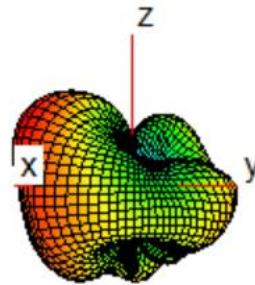
— 2300MHz
— 2350MHz
— 2400MHz



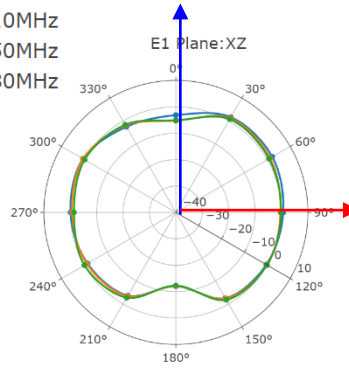
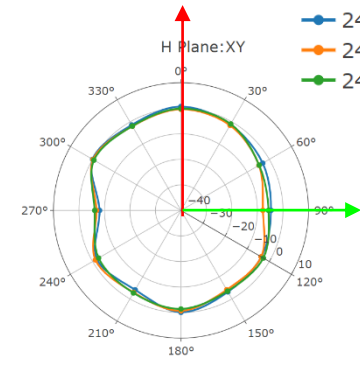
2450 MHz



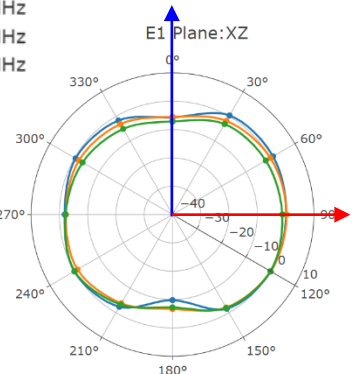
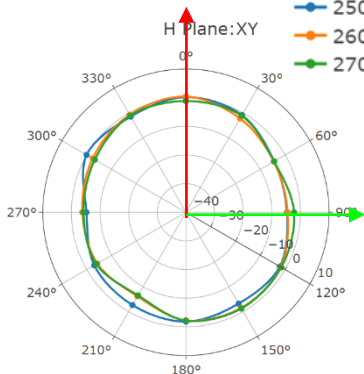
2600 MHz



— 2410MHz
— 2450MHz
— 2480MHz

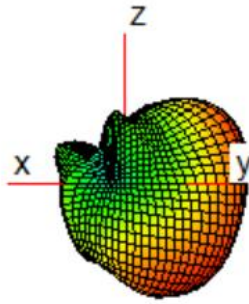


— 2500MHz
— 2600MHz
— 2700MHz

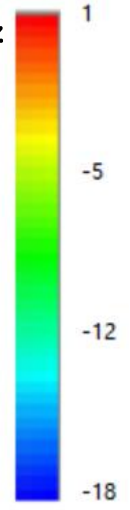
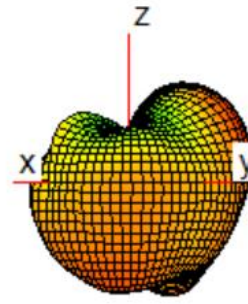


● **MH2**

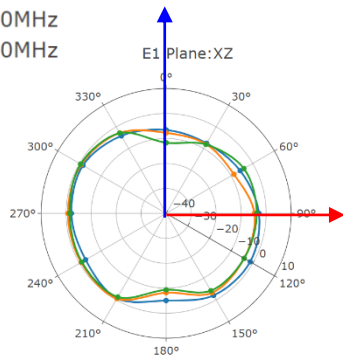
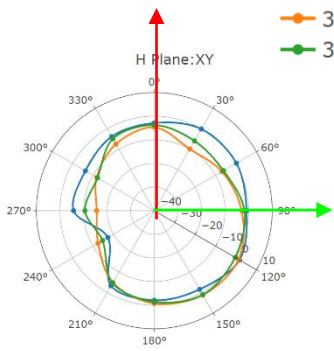
3600 MHz



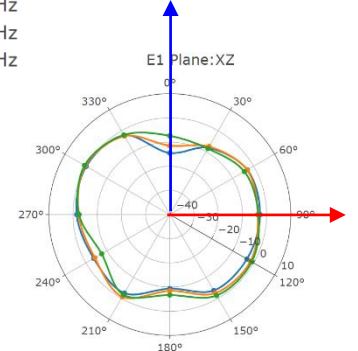
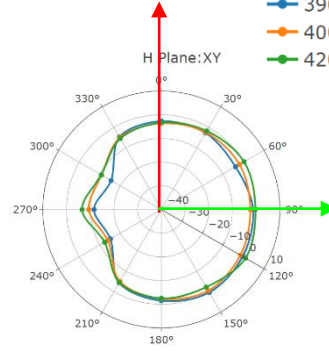
4000 MHz



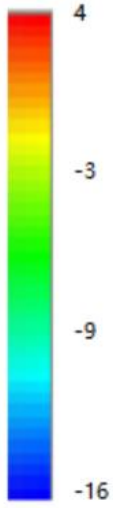
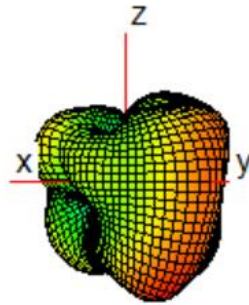
- 3300MHz
- 3600MHz
- 3800MHz



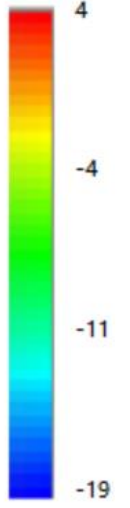
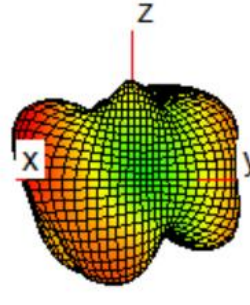
- 3900MHz
- 4000MHz
- 4200MHz



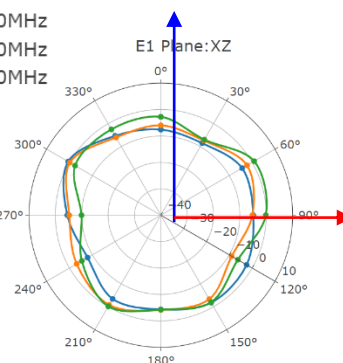
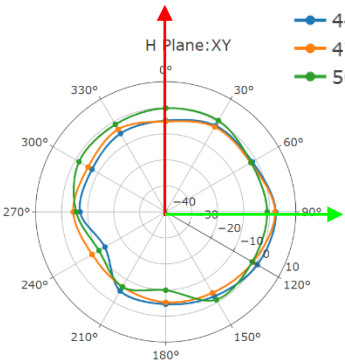
4700 MHz



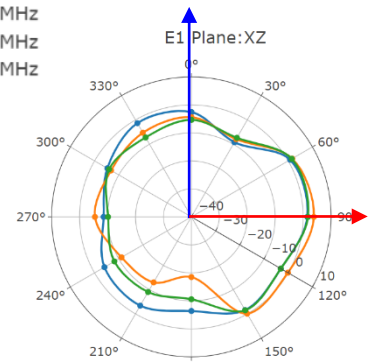
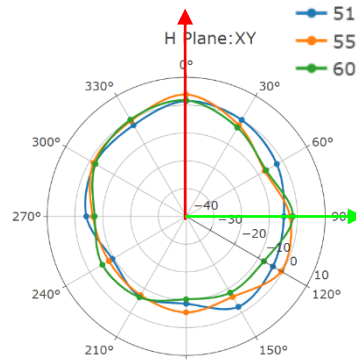
5500 MHz



- 4400MHz
- 4700MHz
- 5000MHz

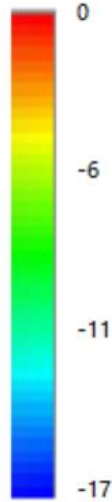
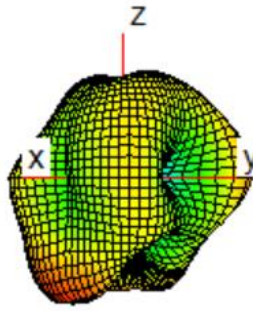


- 5150MHz
- 5500MHz
- 6000MHz

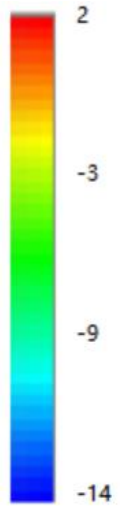
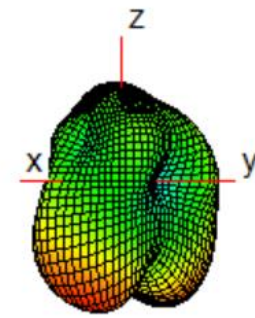


● **MH3**

1440 MHz

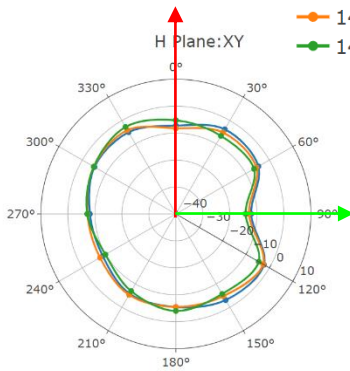


1740 MHz

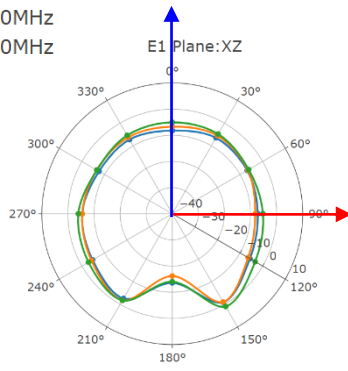


- 1410MHz
- 1440MHz
- 1470MHz

H Plane:XY

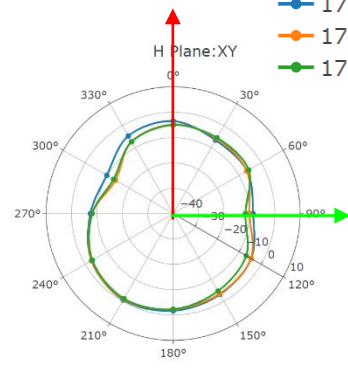


E1 Plane:XZ

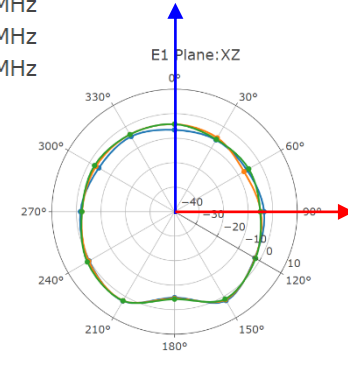


- 1710MHz
- 1740MHz
- 1790MHz

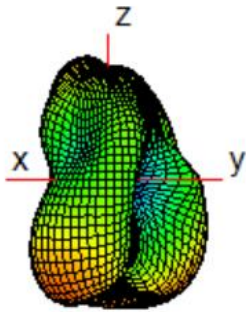
H Plane:XY



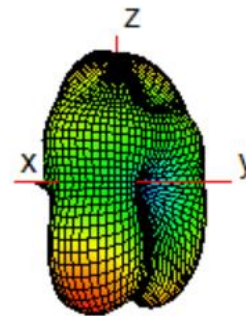
E1 Plane:XZ



1880 MHz

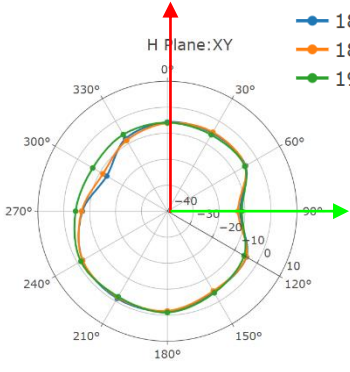


1950 MHz

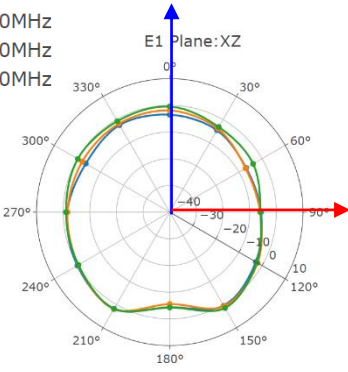


- 1850MHz
- 1880MHz
- 1910MHz

H Plane:XY

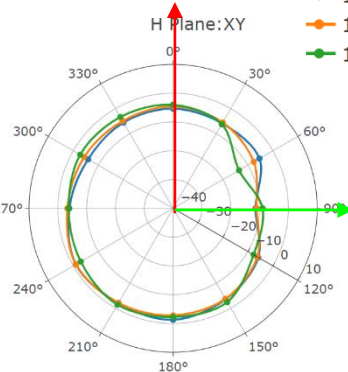


E1 Plane:XZ

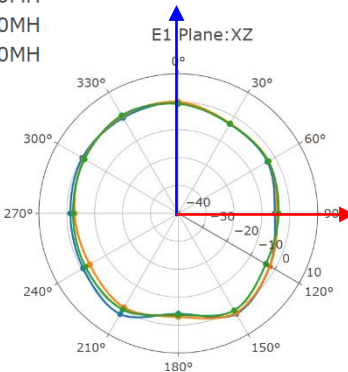


- 1920MHz
- 1950MHz
- 1980MHz

H Plane:XY

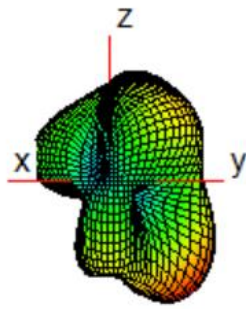


E1 Plane:XZ

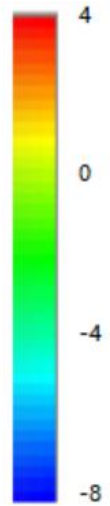
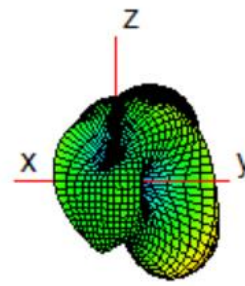


● **MH3**

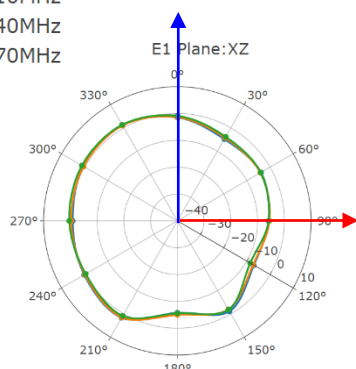
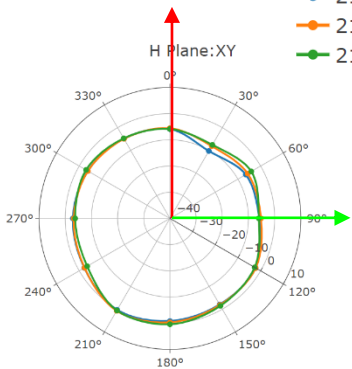
2140 MHz



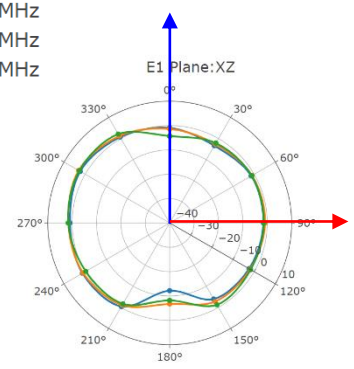
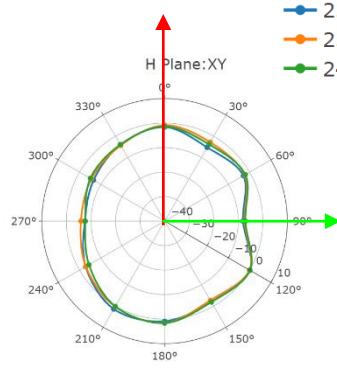
2350 MHz



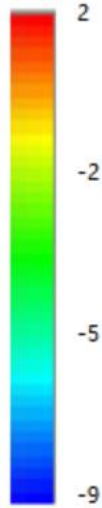
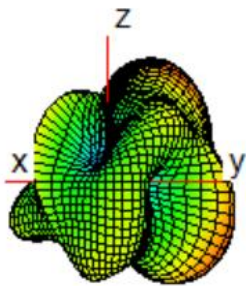
- 2110MHz
- 2140MHz
- 2170MHz



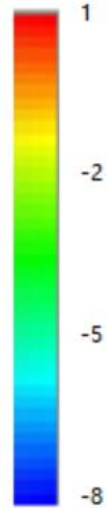
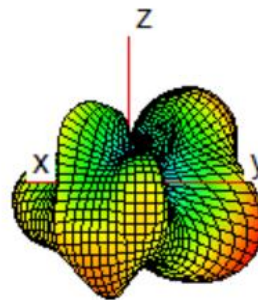
- 2300MHz
- 2350MHz
- 2400MHz



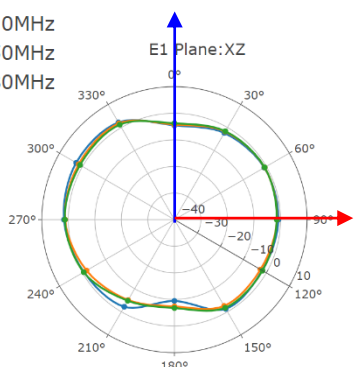
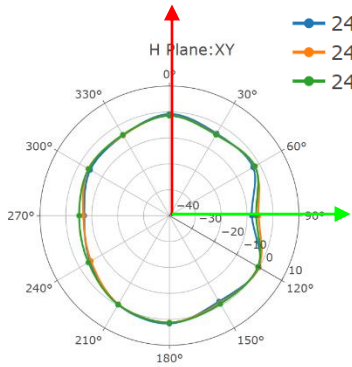
2450 MHz



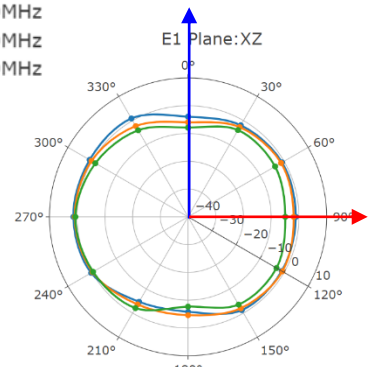
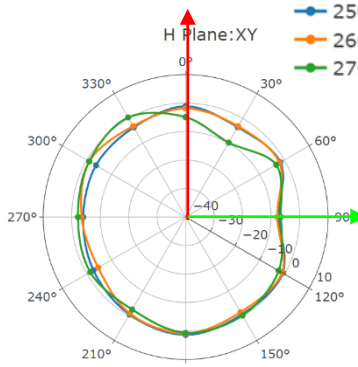
2600 MHz



- 2410MHz
- 2450MHz
- 2480MHz

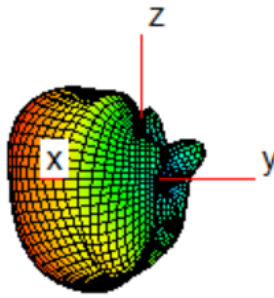


- 2500MHz
- 2600MHz
- 2700MHz

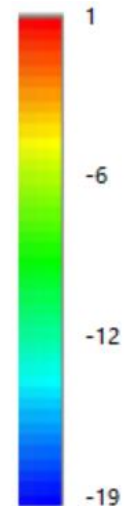
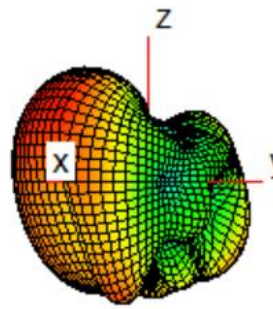


● **MH3**

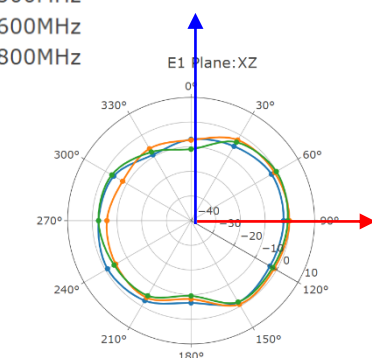
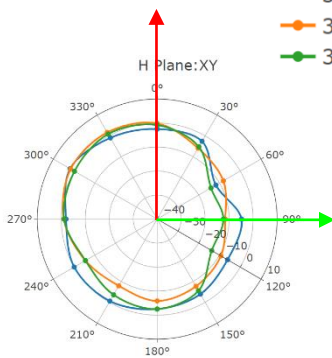
3600 MHz



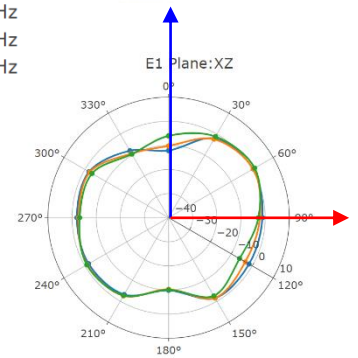
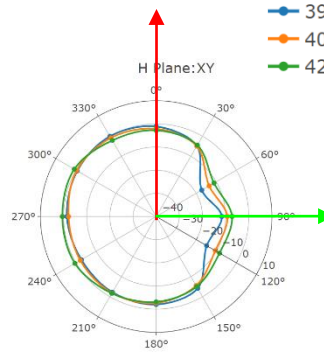
4000 MHz



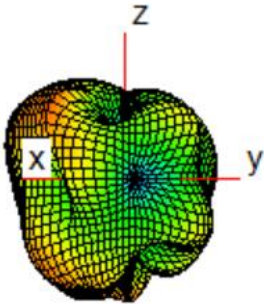
- 3300MHz
- 3600MHz
- 3800MHz



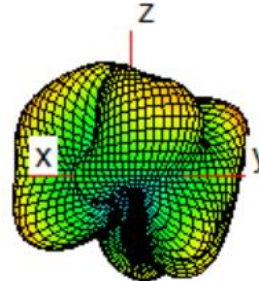
- 3900MHz
- 4000MHz
- 4200MHz



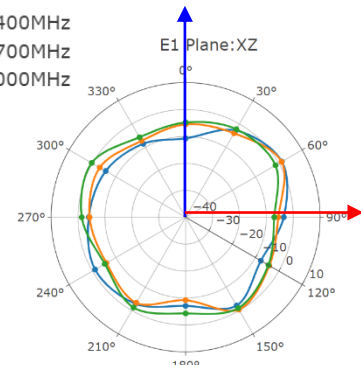
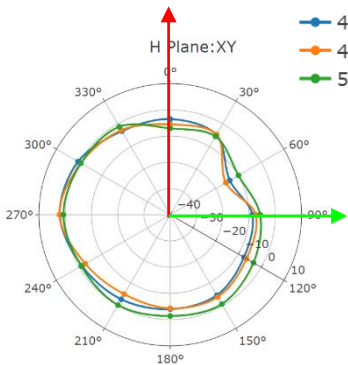
4700 MHz



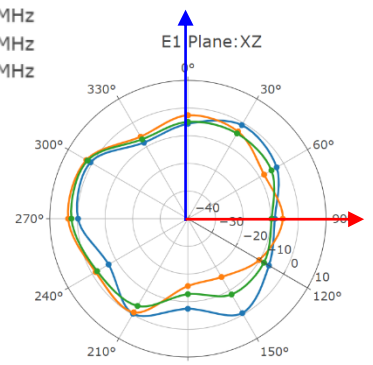
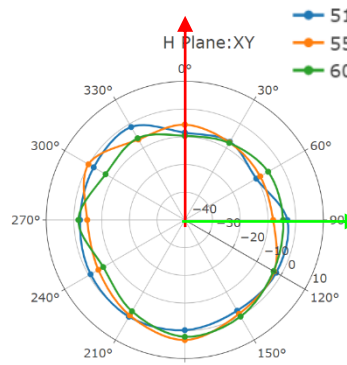
5500 MHz



- 4400MHz
- 4700MHz
- 5000MHz

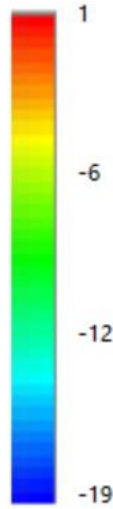
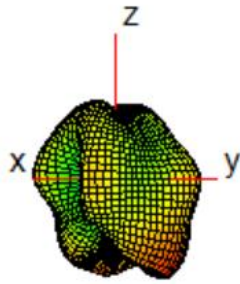


- 5150MHz
- 5500MHz
- 6000MHz

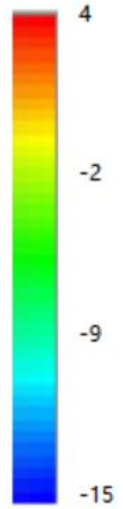
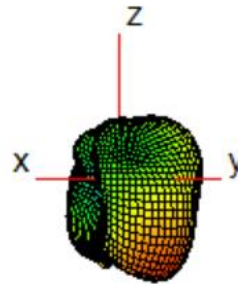


● **MH4**

1440 MHz

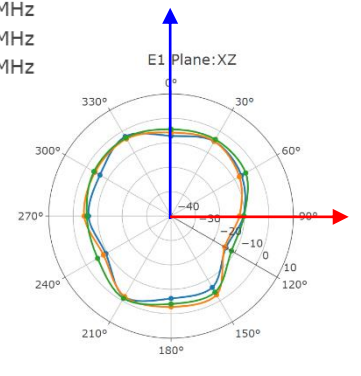
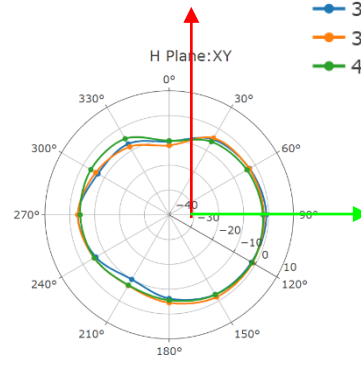
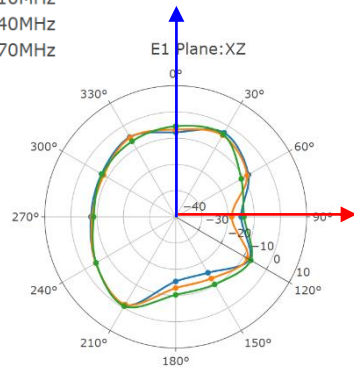
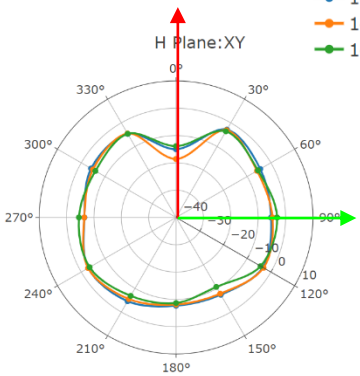


1740 MHz

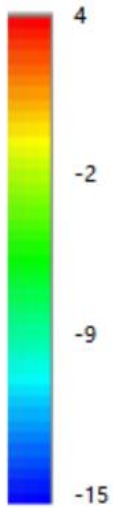
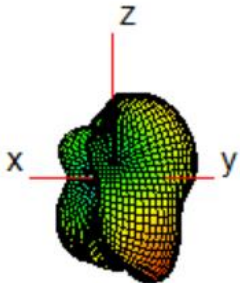


- 1410MHz
- 1440MHz
- 1470MHz

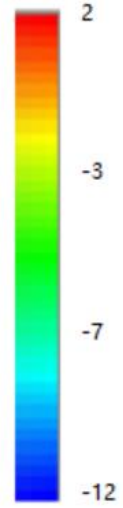
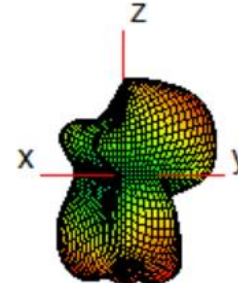
- 3300MHz
- 3600MHz
- 4200MHz



1880 MHz

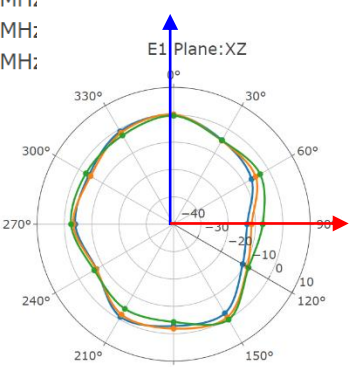
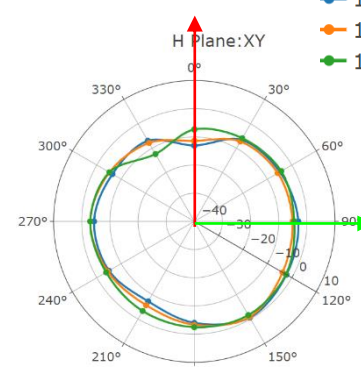
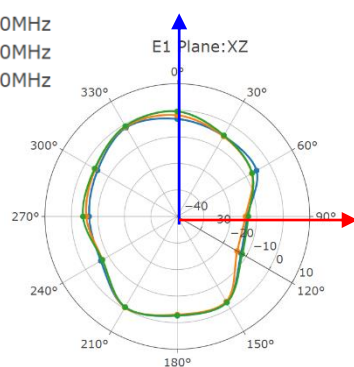
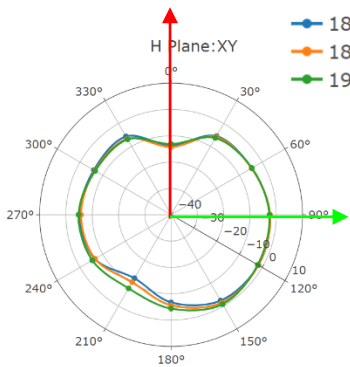


1950 MHz



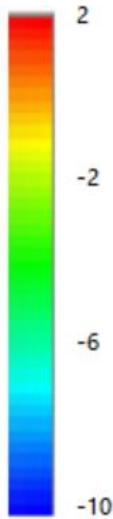
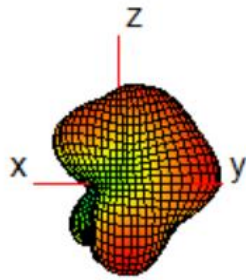
- 1850MHz
- 1880MHz
- 1910MHz

- 1920MHz
- 1950MHz
- 1980MHz

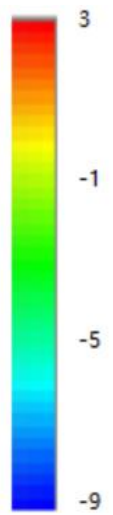
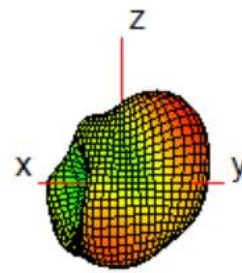


● **MH4**

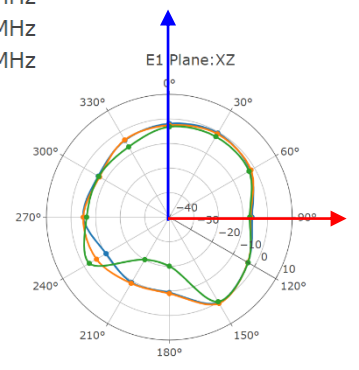
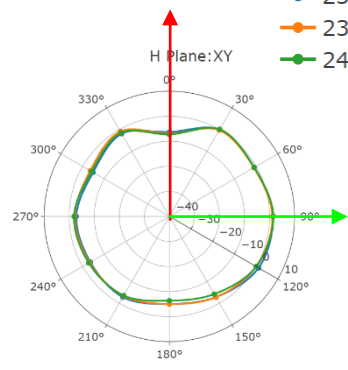
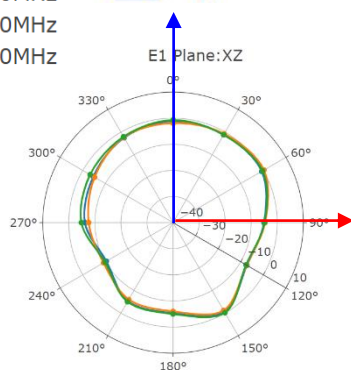
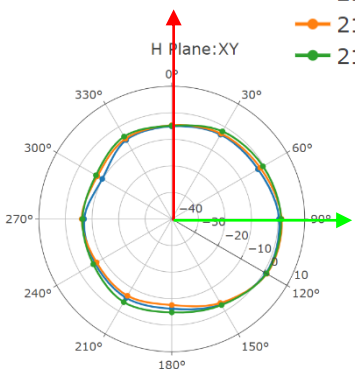
2140 MHz



2350 MHz

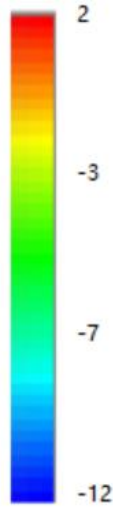
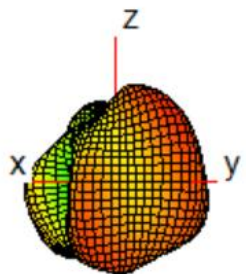


- 2110MHz
- 2140MHz
- 2170MHz

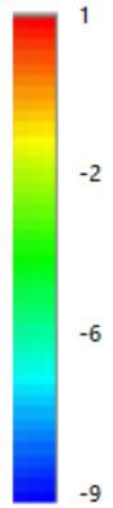
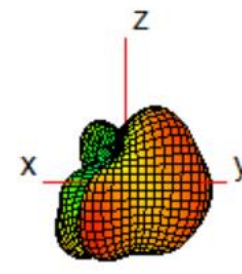


- 2300MHz
- 2350MHz
- 2400MHz

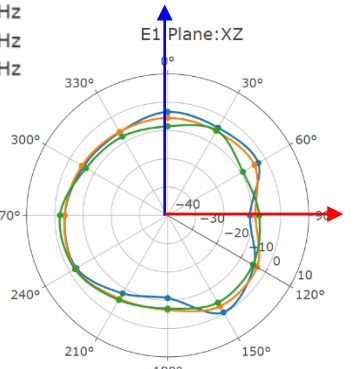
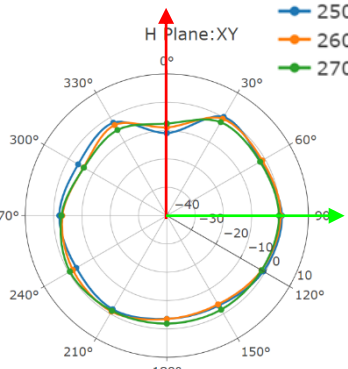
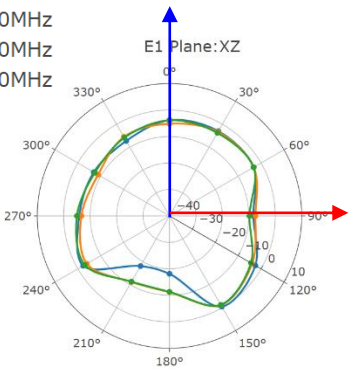
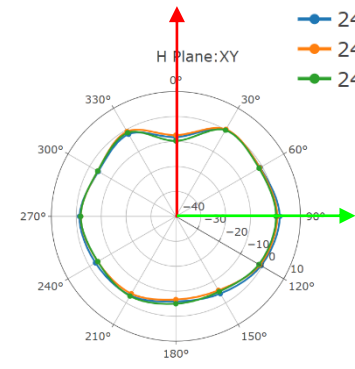
2450 MHz



2600 MHz



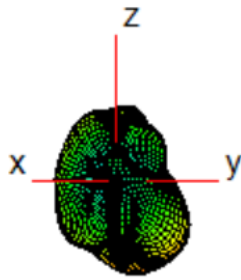
- 2410MHz
- 2450MHz
- 2480MHz



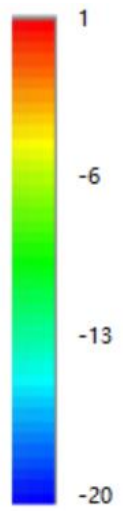
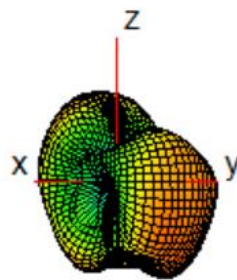
- 2500MHz
- 2600MHz
- 2700MHz

● **MH4**

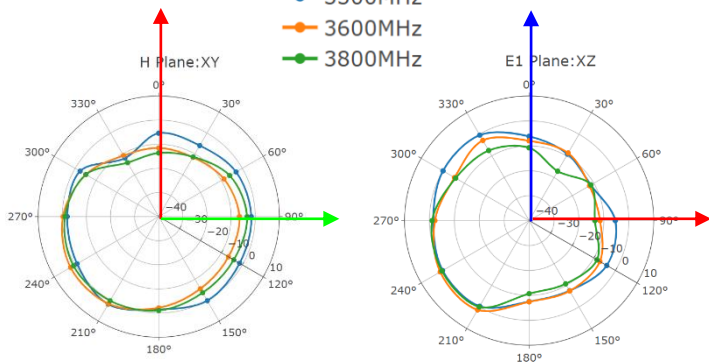
3600 MHz



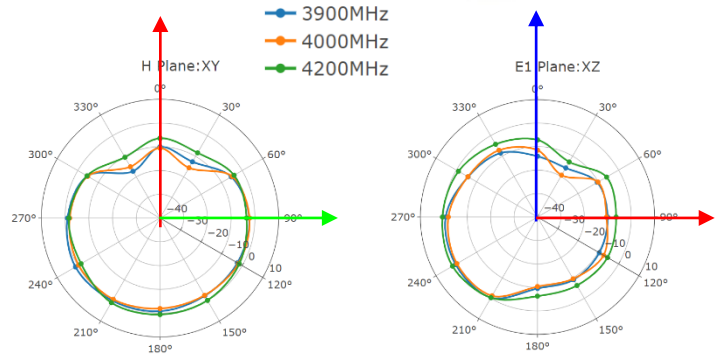
4000 MHz



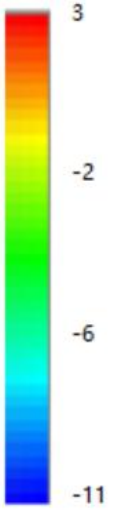
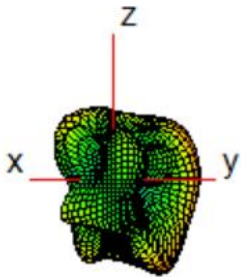
- 3300MHz
- 3600MHz
- 3800MHz



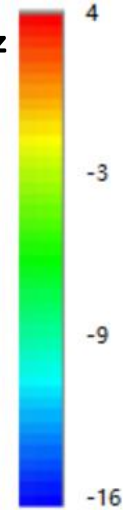
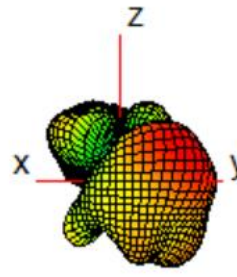
- 3900MHz
- 4000MHz
- 4200MHz



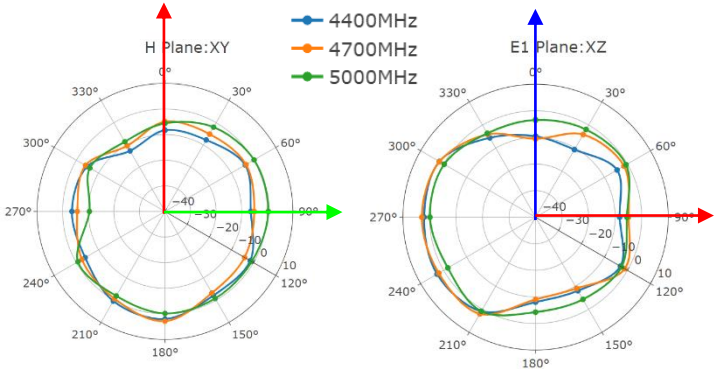
4700 MHz



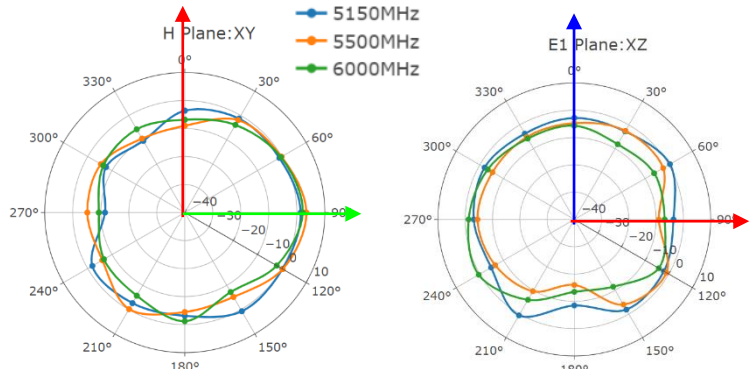
5500 MHz



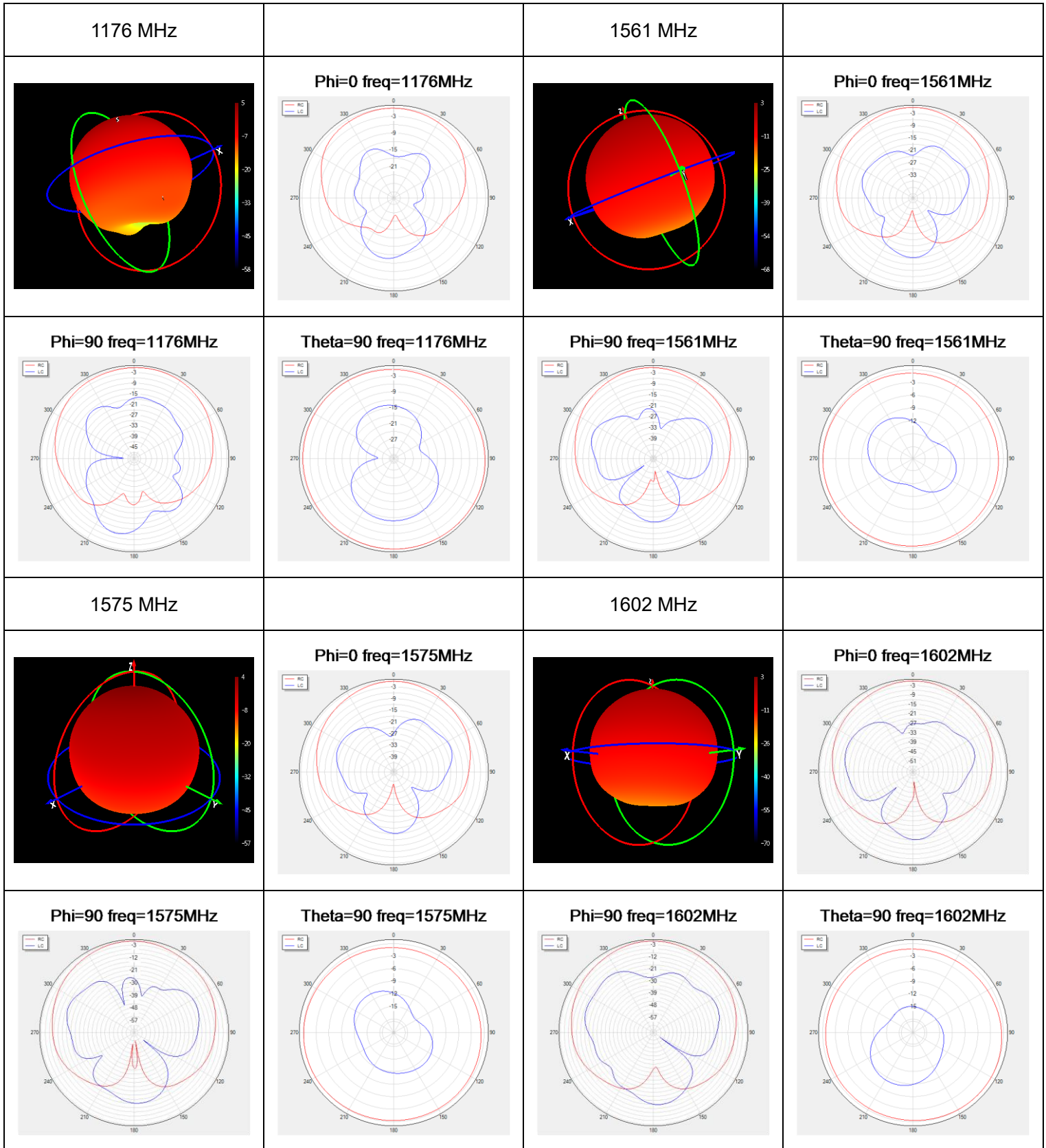
- 4400MHz
- 4700MHz
- 5000MHz



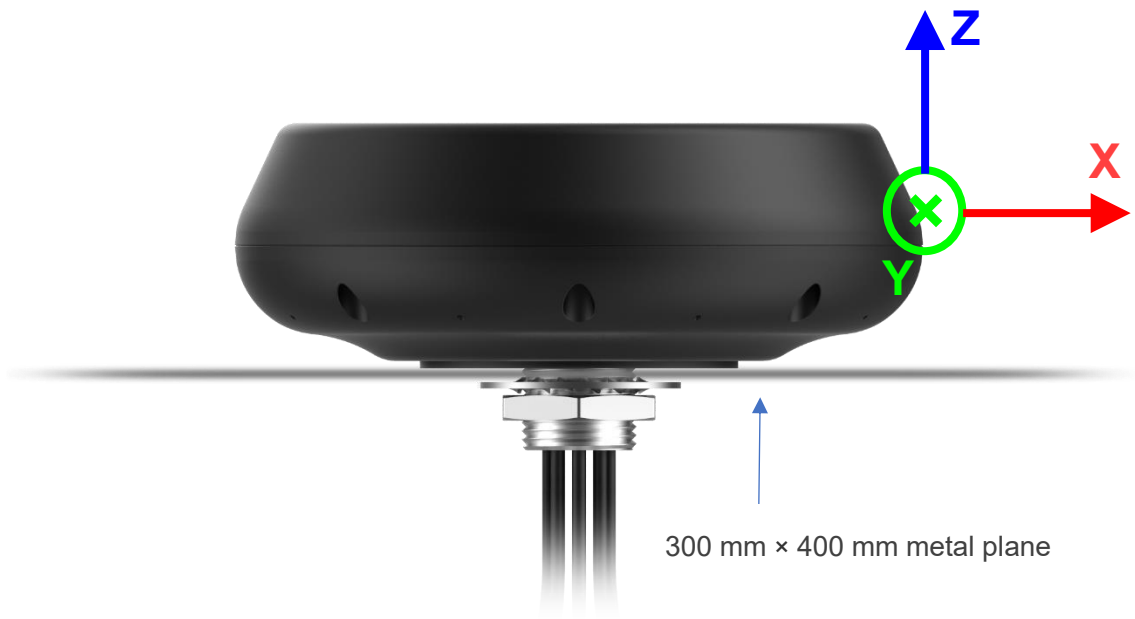
- 5150MHz
- 5500MHz
- 6000MHz



● **GNSS**

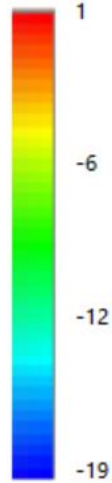
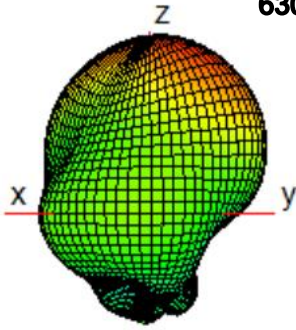


3.2.5.2. Test Status: On 300 mm × 400 mm Metal Plane

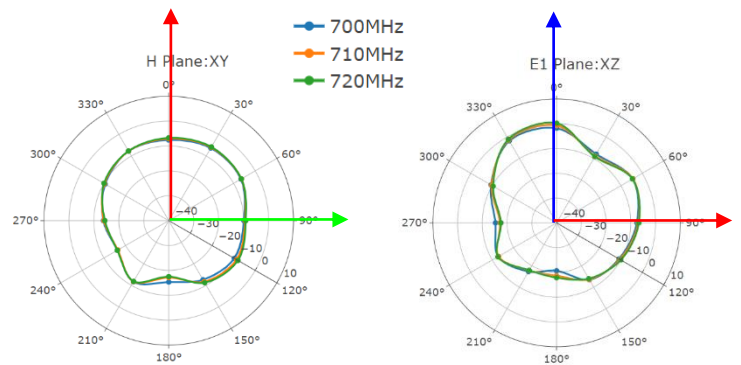
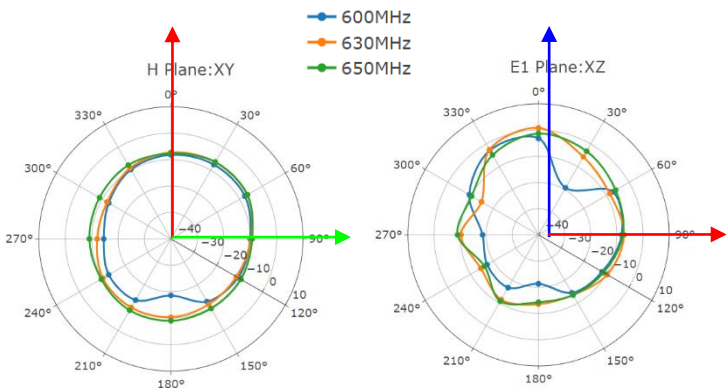
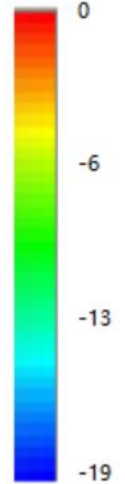
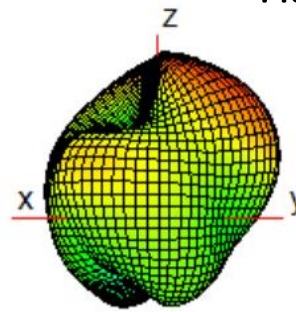


● **LMH1**

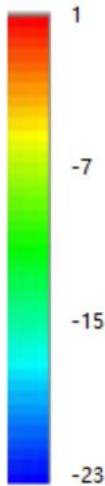
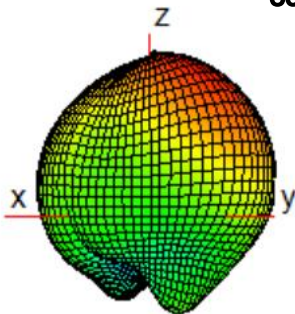
630 MHz



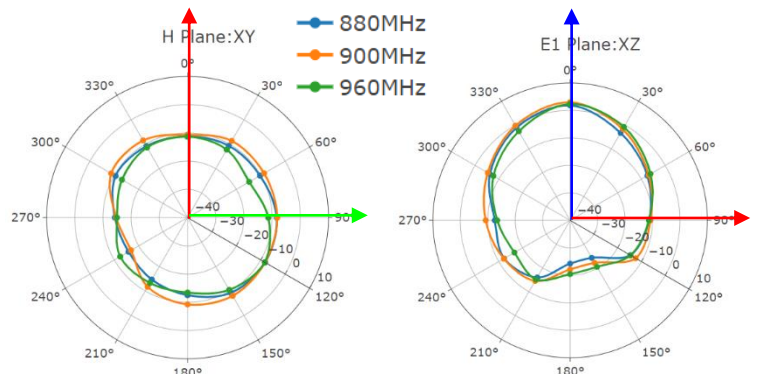
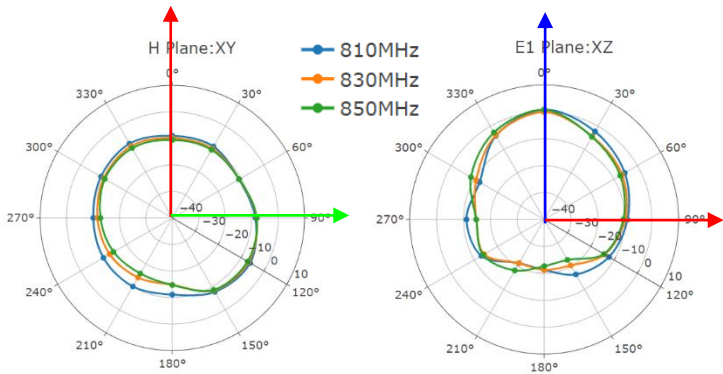
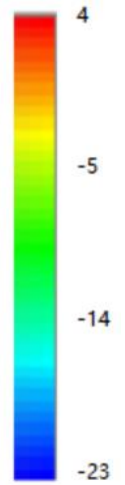
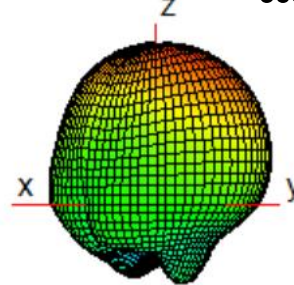
710 MHz



830 MHz



900 MHz

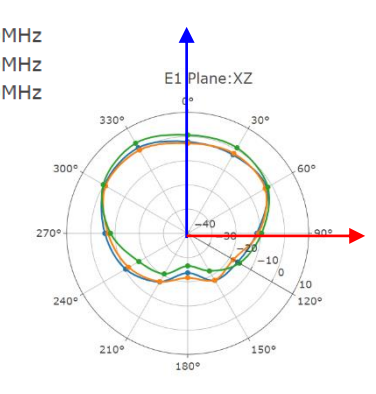
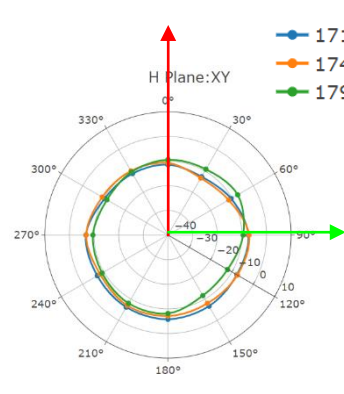
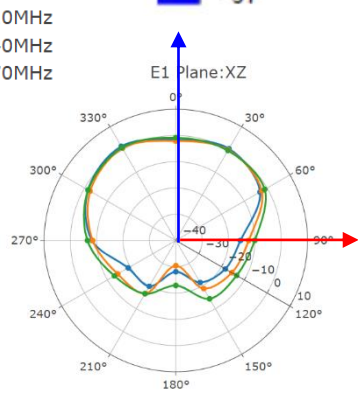
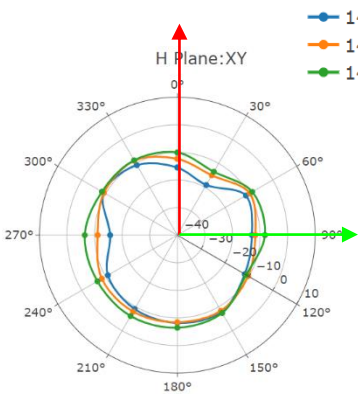
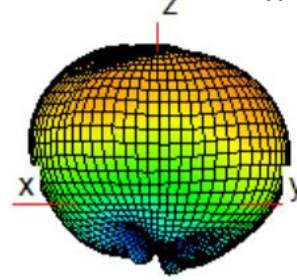
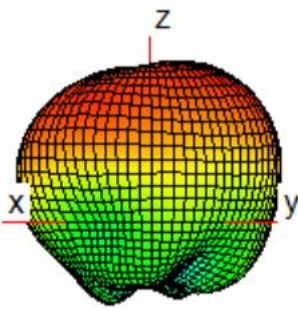
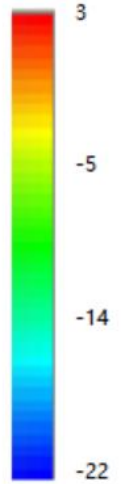


● **LMH1**

1440 MHz



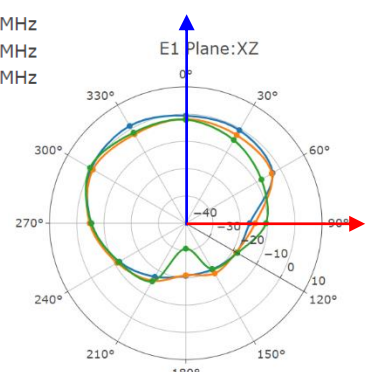
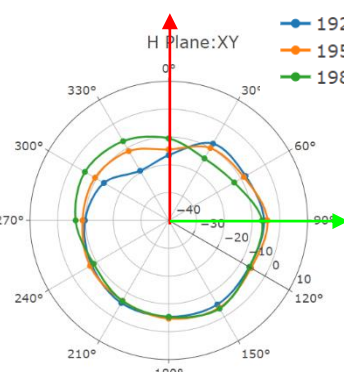
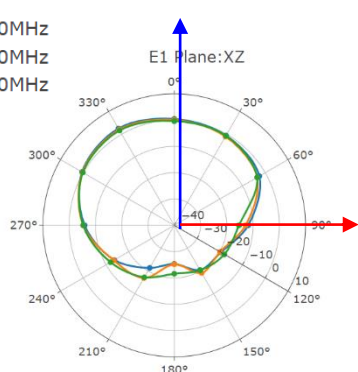
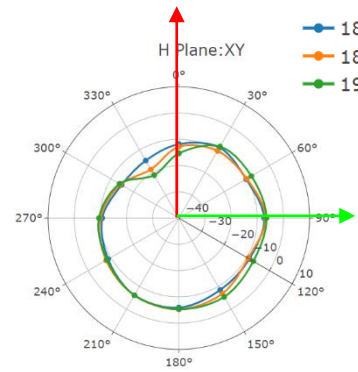
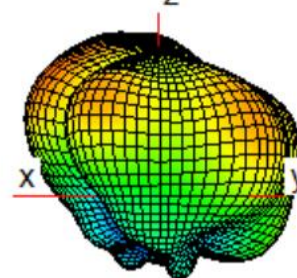
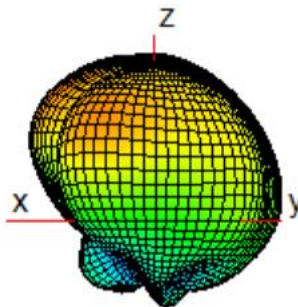
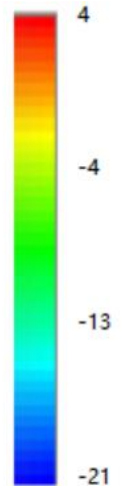
1740 MHz



1880 MHz

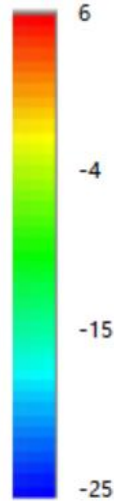


1950 MHz

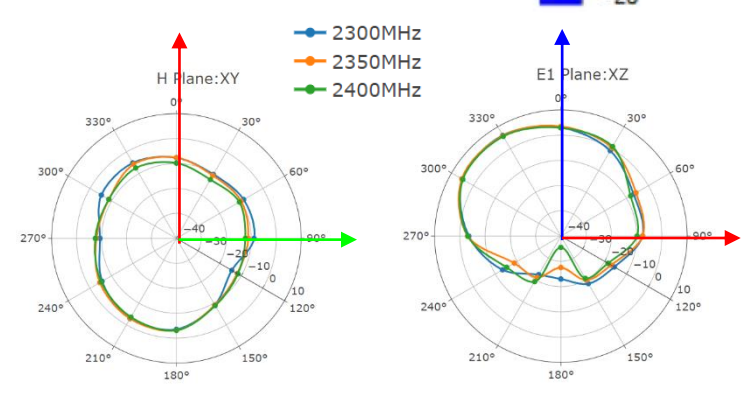
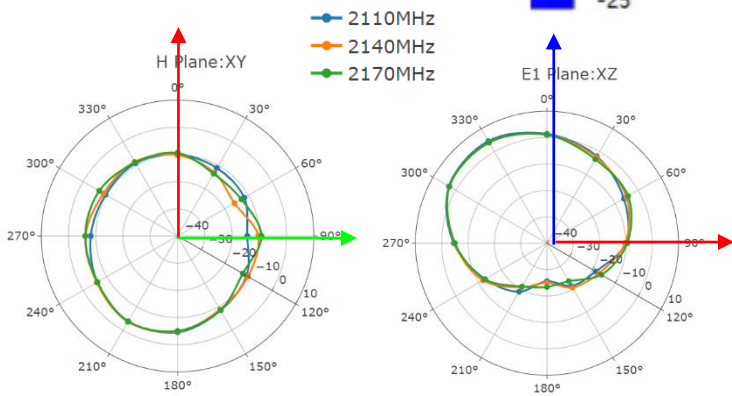
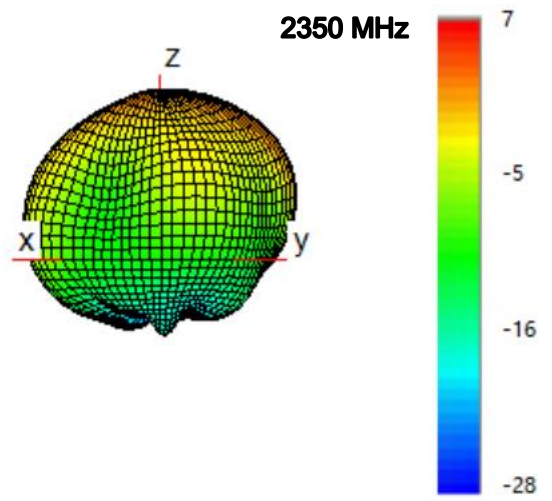


● **LMH1**

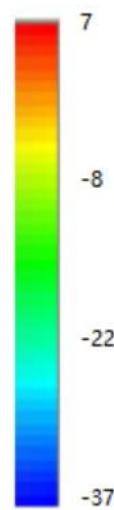
2140MHz



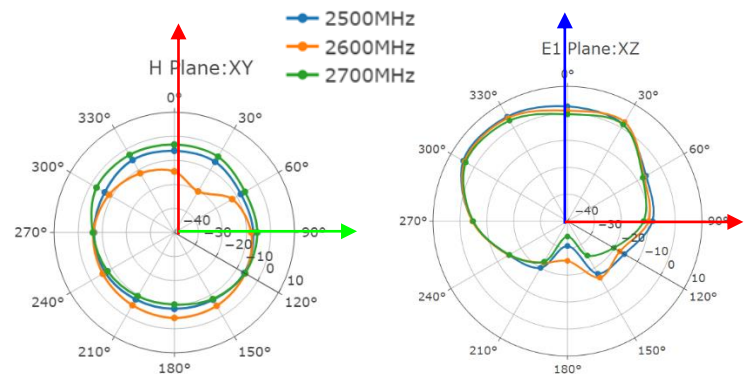
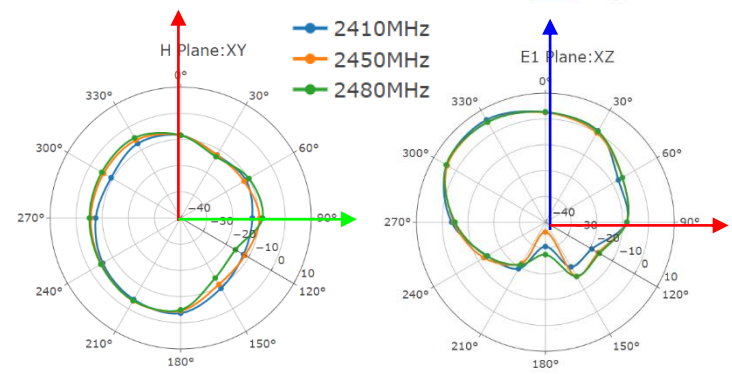
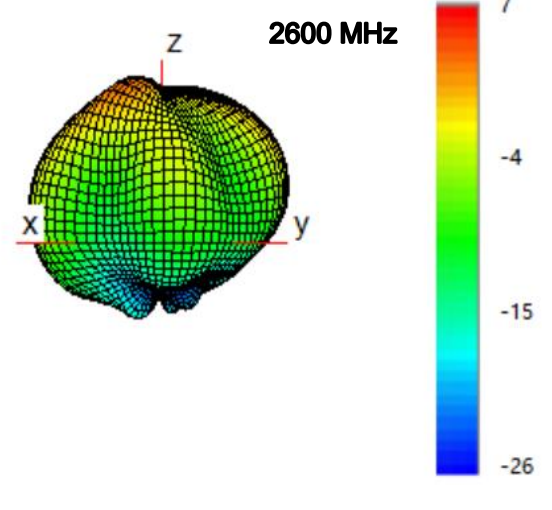
2350 MHz



2450 MHz

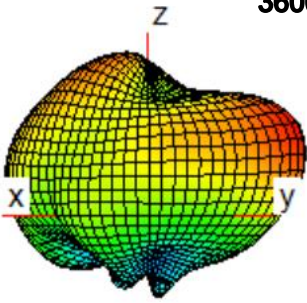


2600 MHz

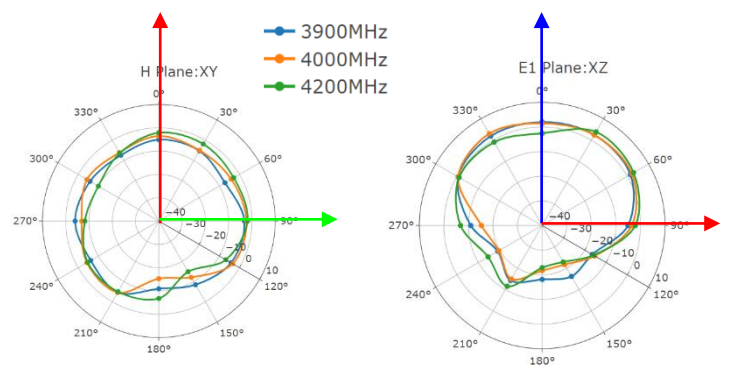
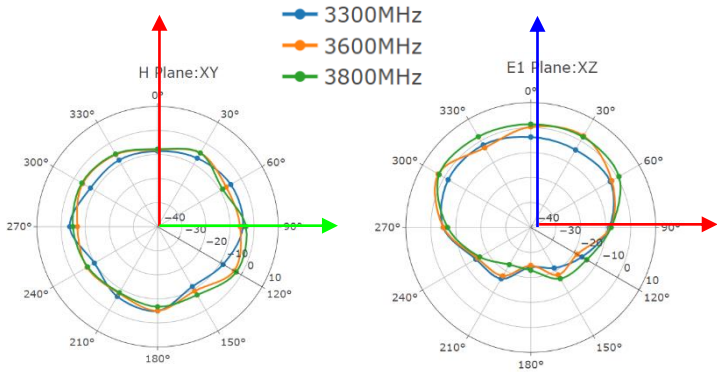
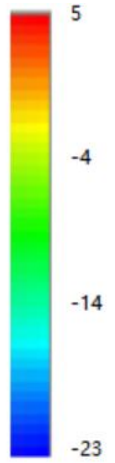
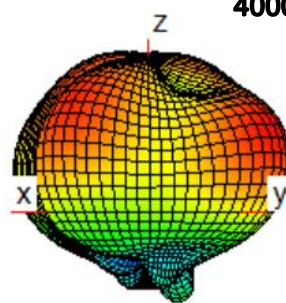


● **LMH1**

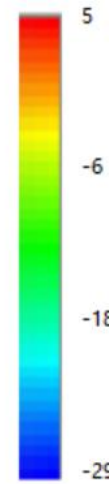
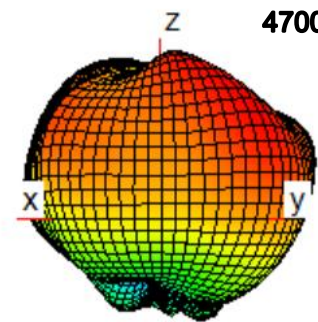
3600 MHz



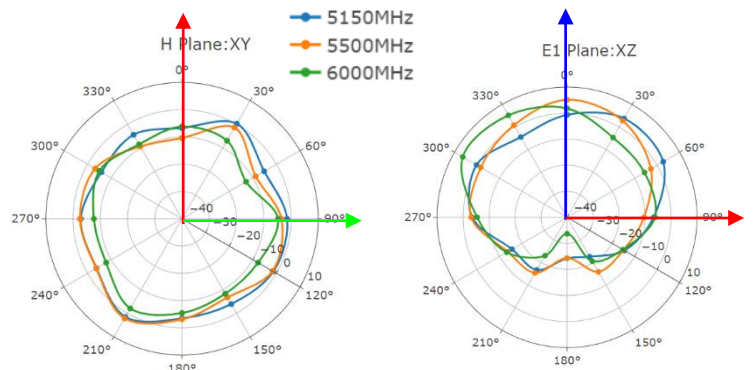
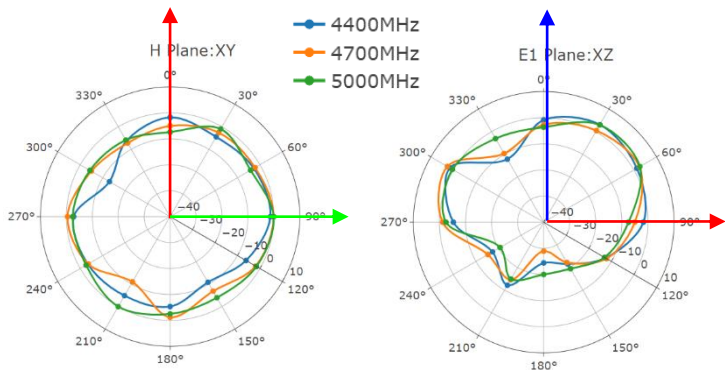
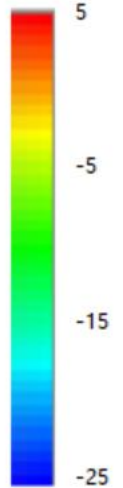
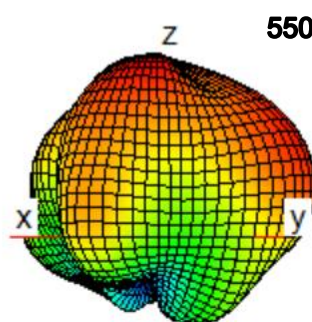
4000 MHz



4700 MHz

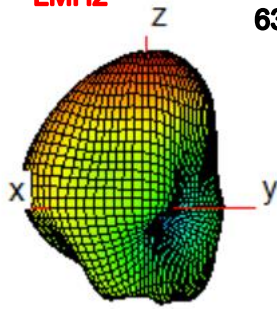


5500 MHz

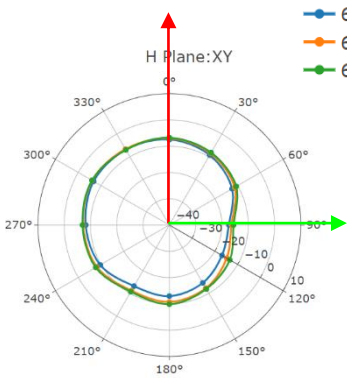
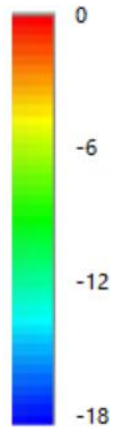
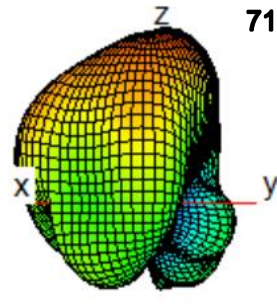


● **LMH2**

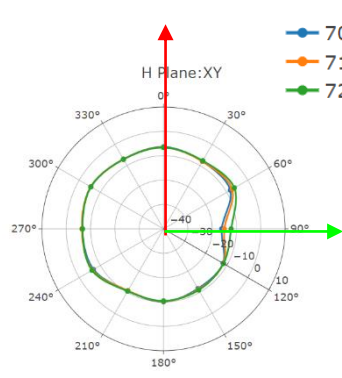
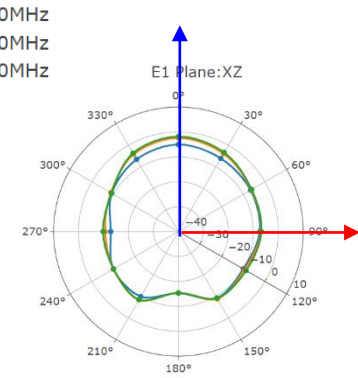
630 MHz



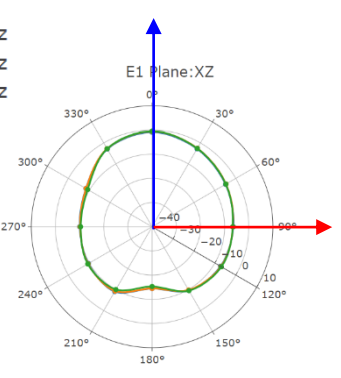
710 MHz



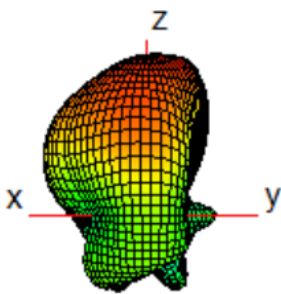
● 600MHz
● 630MHz
● 650MHz



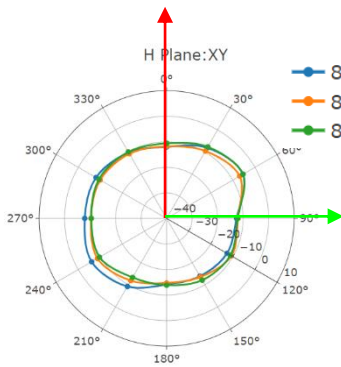
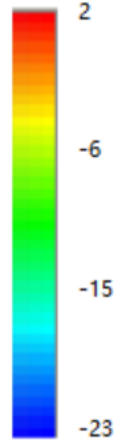
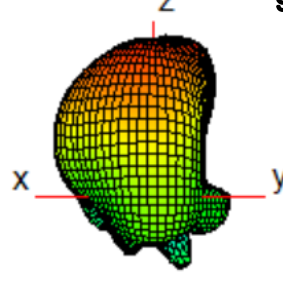
● 700MHz
● 710MHz
● 720MHz



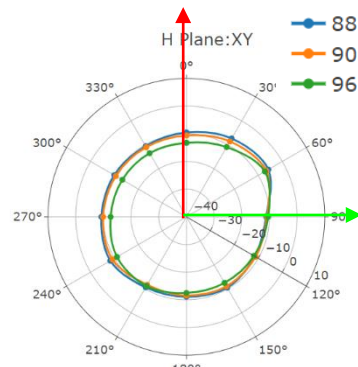
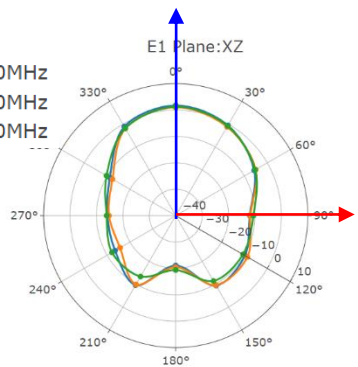
830 MHz



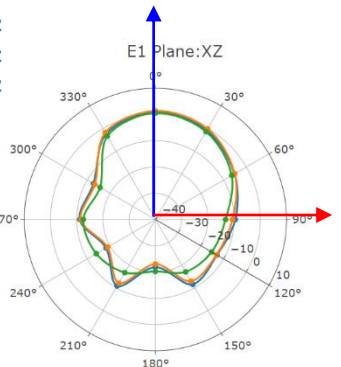
900 MHz



● 810MHz
● 830MHz
● 850MHz

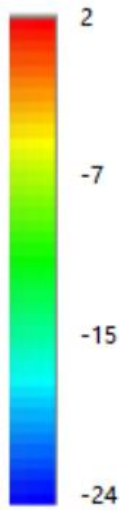


● 880MHz
● 900MHz
● 960MHz

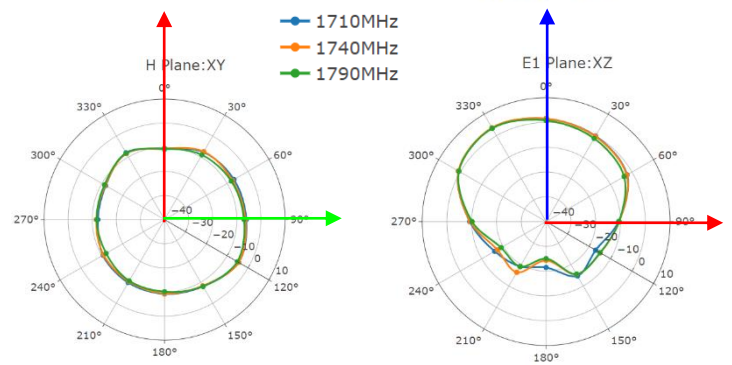
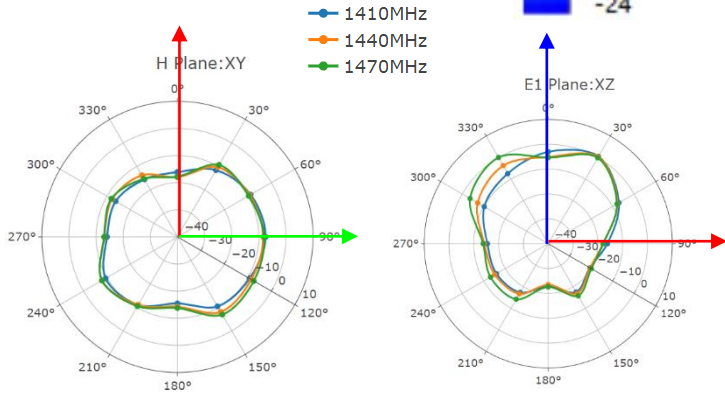
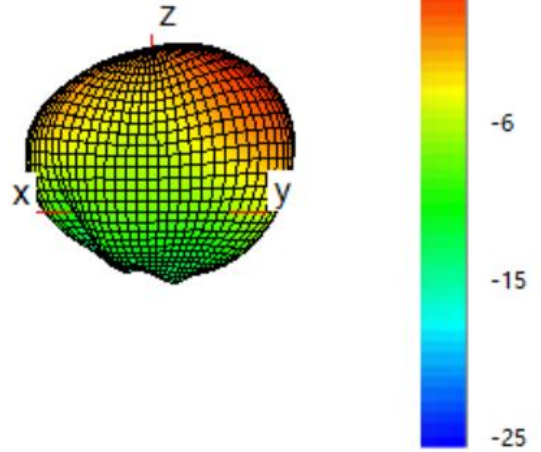


● **LMH2**

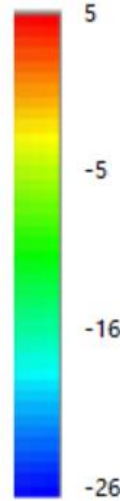
1440 MHz



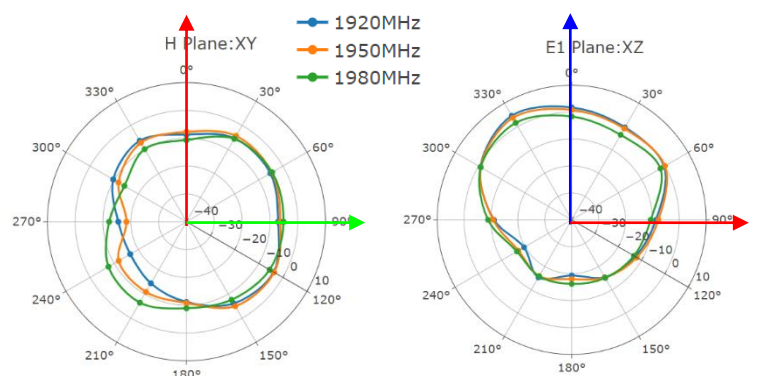
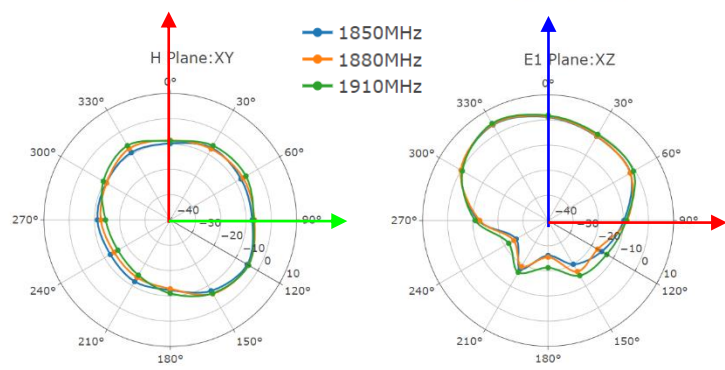
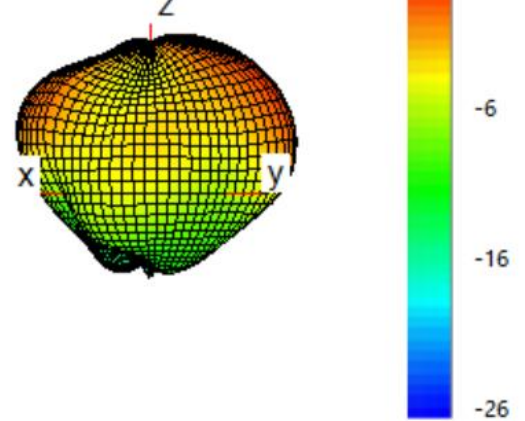
1740 MHz



1880 MHz

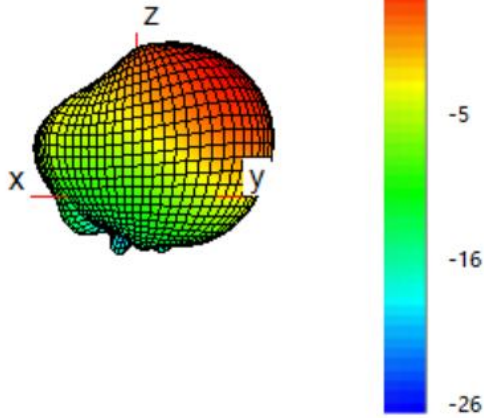


1950 MHz

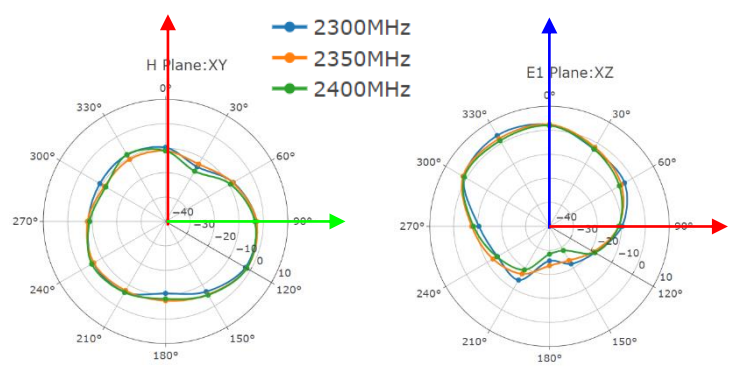
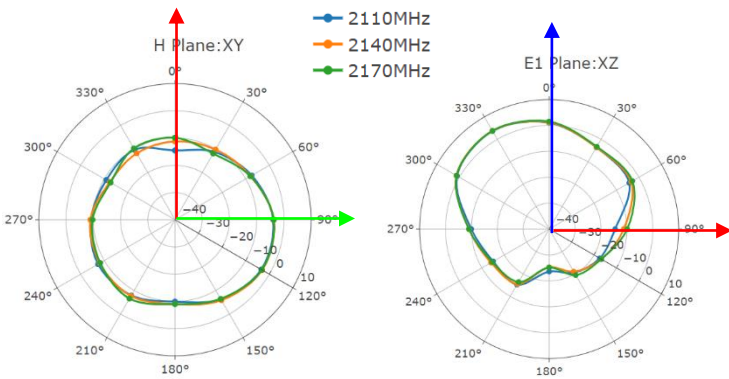
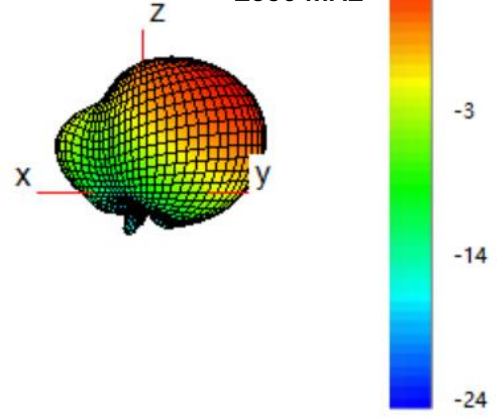


● **LMH2**

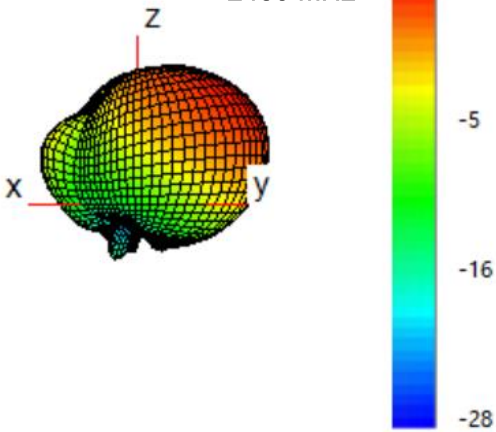
2140 MHz



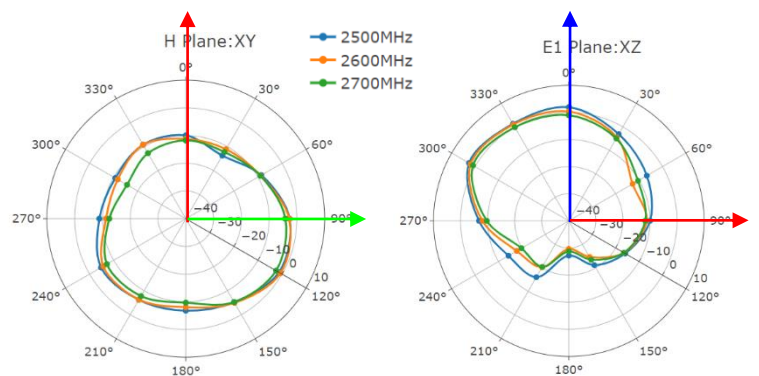
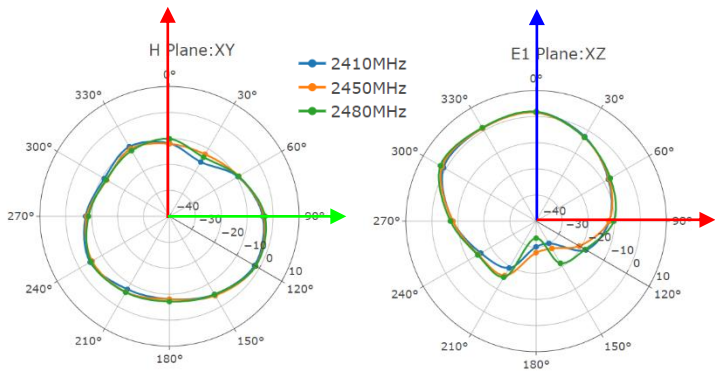
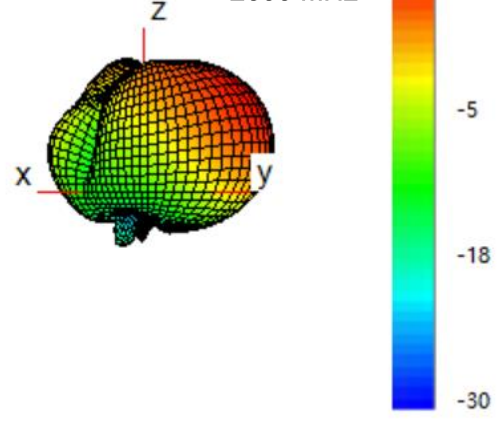
2350 MHz



2450 MHz

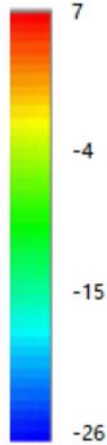
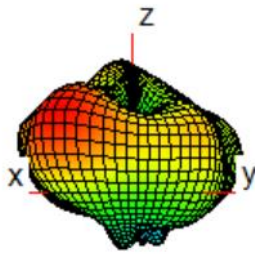


2600 MHz

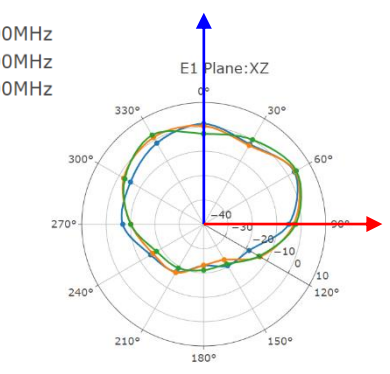
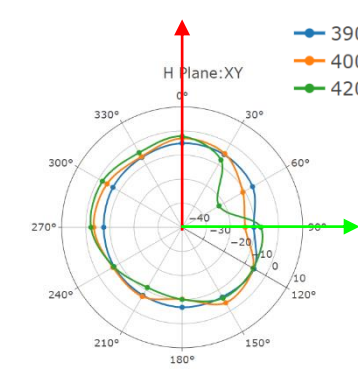
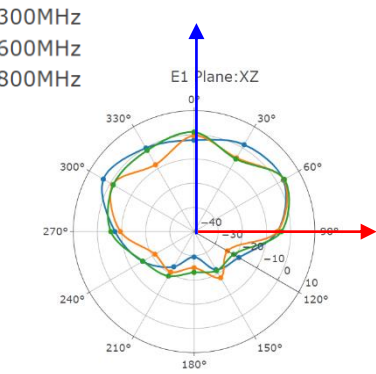
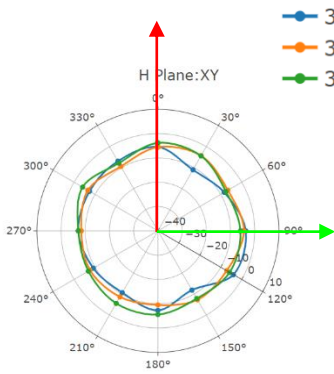
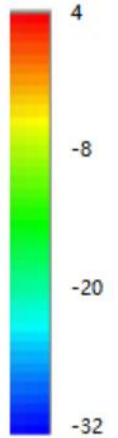
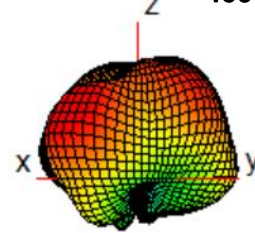


● **LMH2**

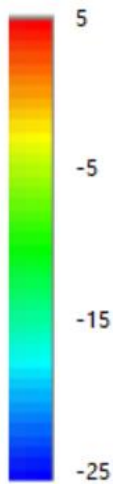
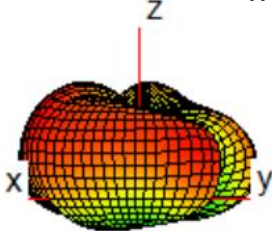
3600 MHz



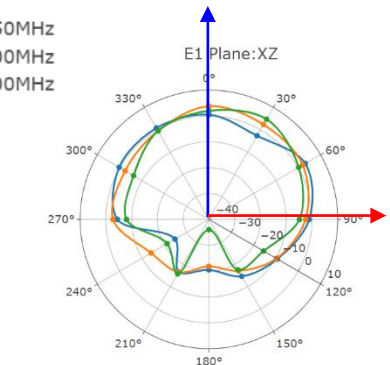
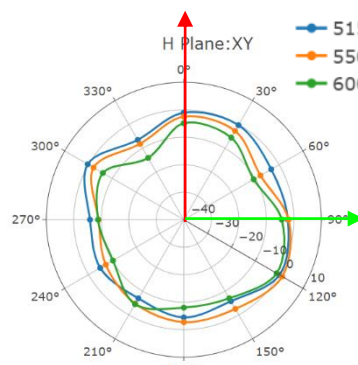
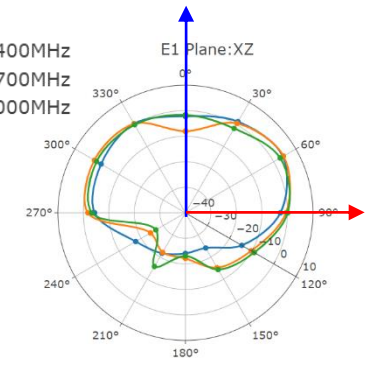
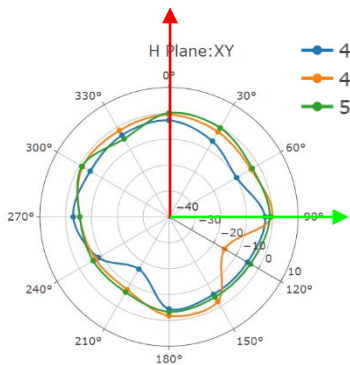
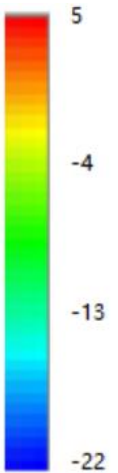
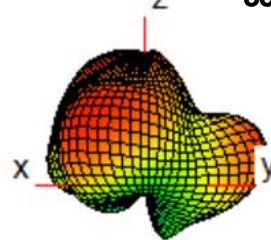
4000 MHz



4700 MHz

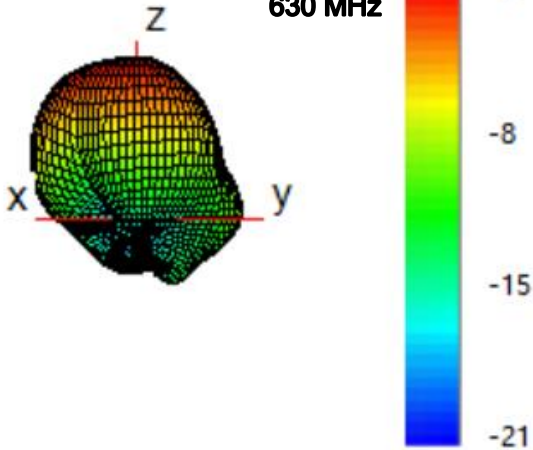


5500 MHz

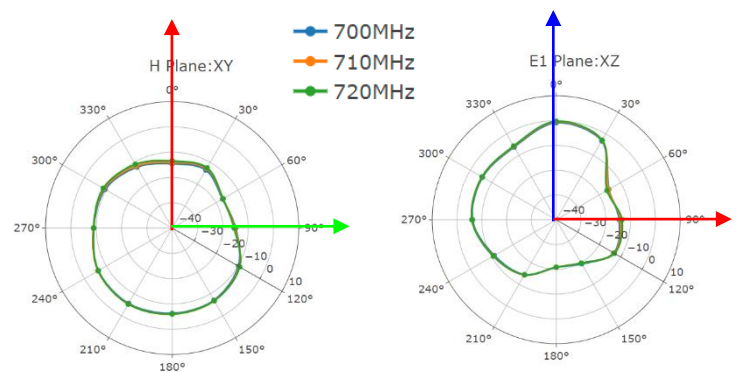
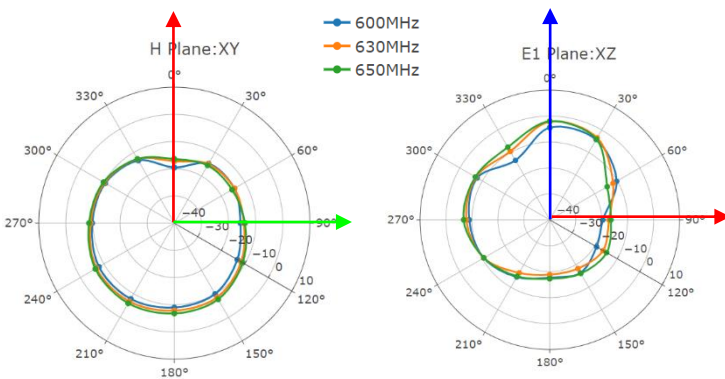
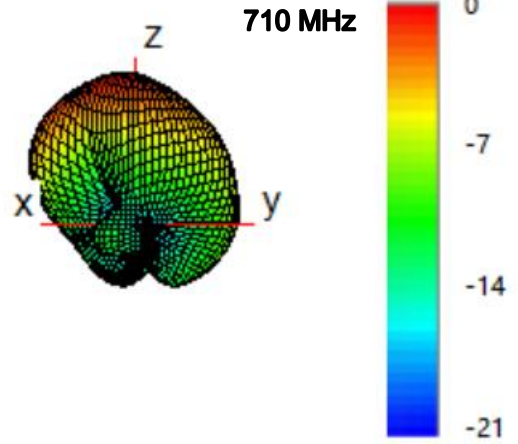


● **LMH3**

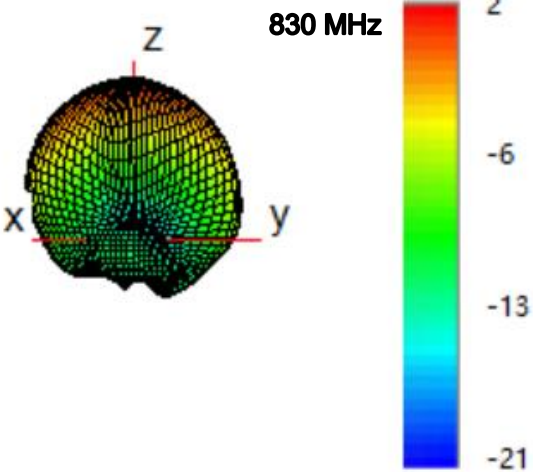
630 MHz



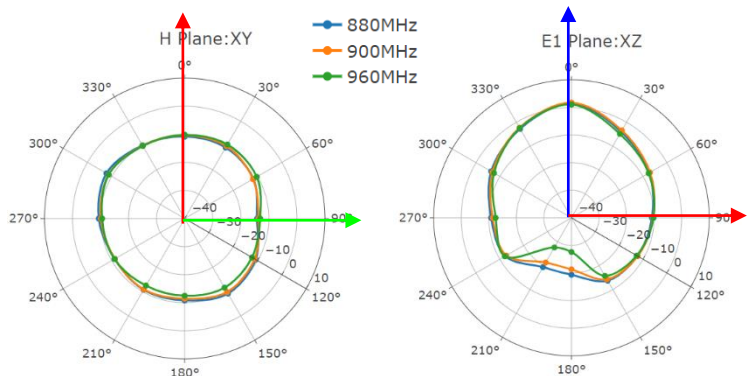
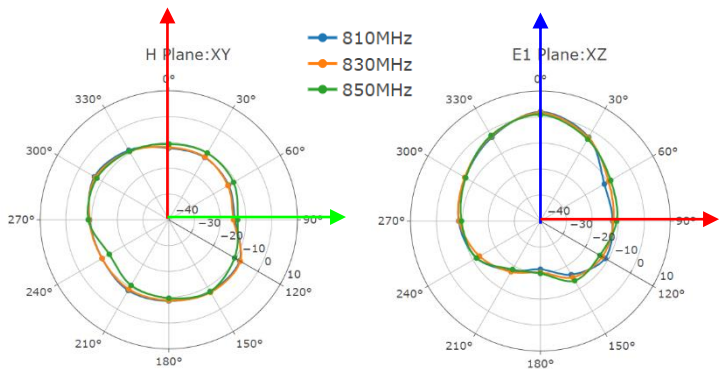
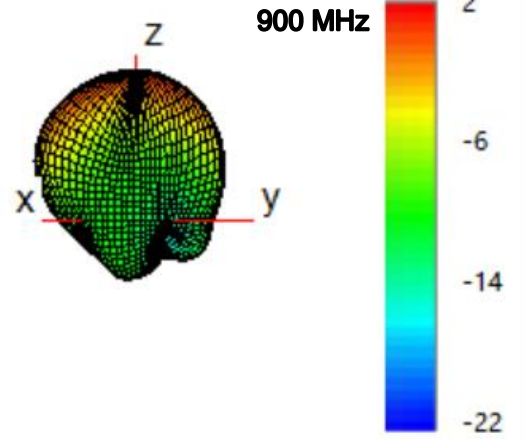
710 MHz



830 MHz

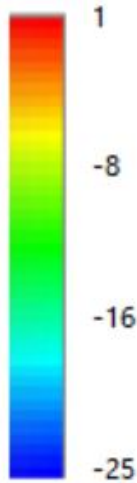
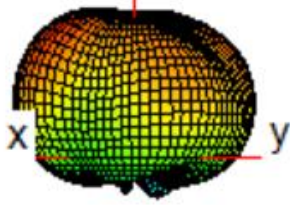


900 MHz

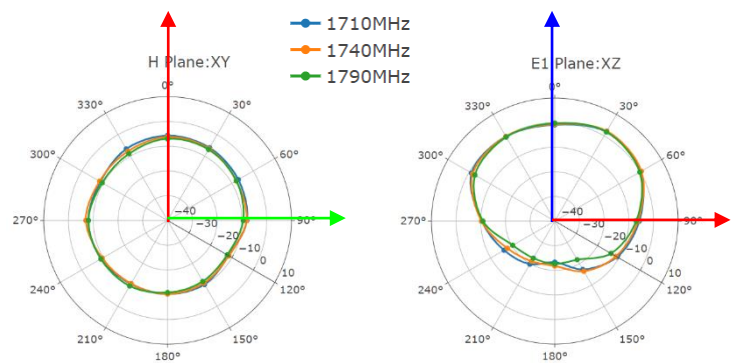
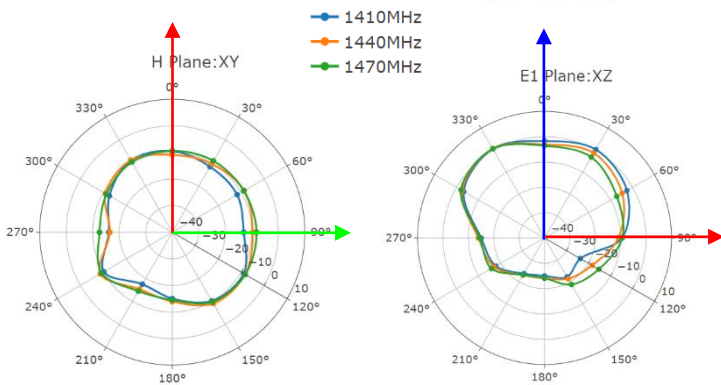
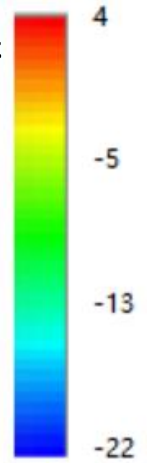
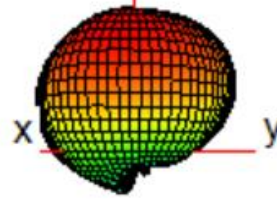


● **LMH3**

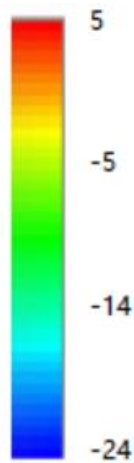
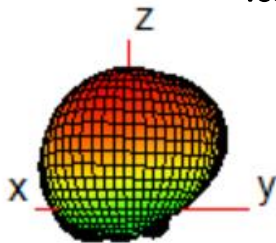
1440 MHz



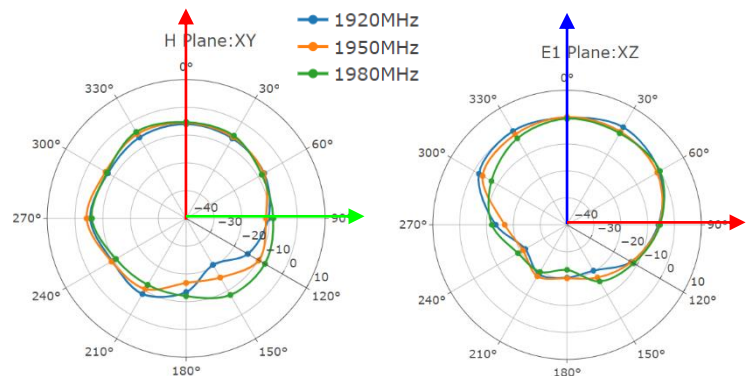
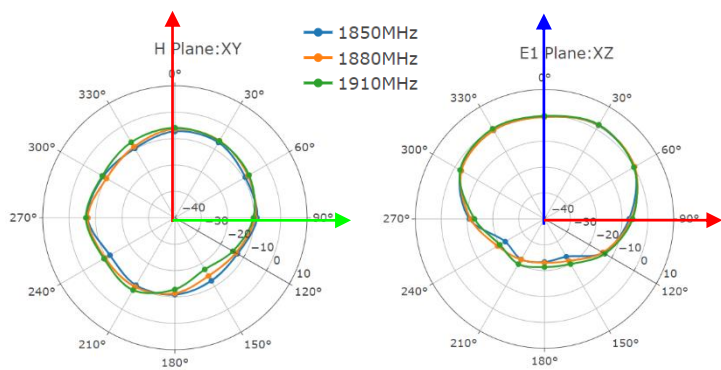
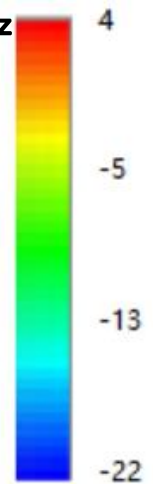
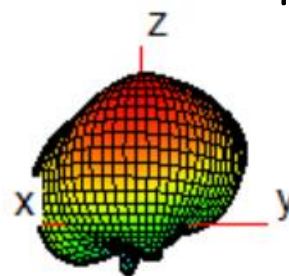
1740 MHz



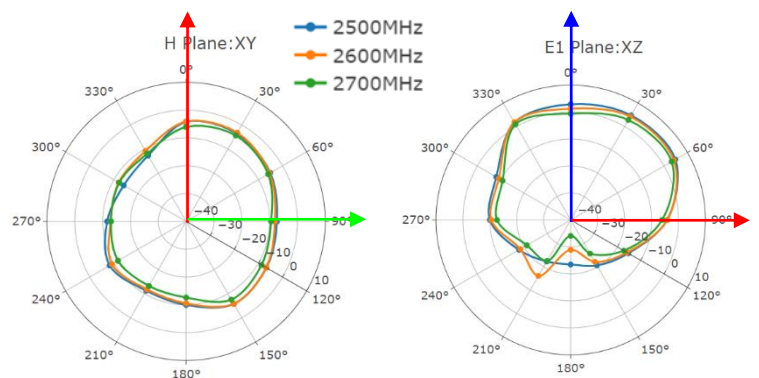
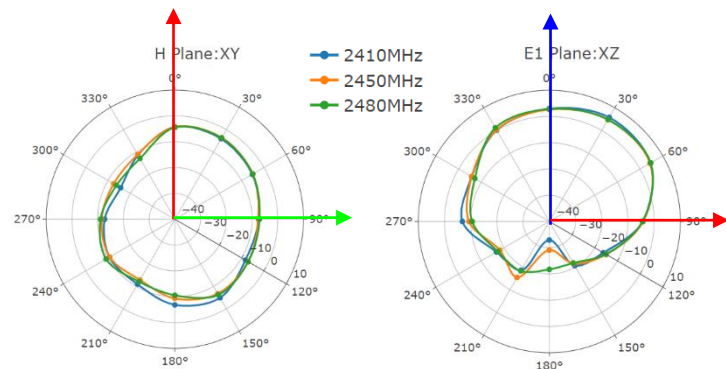
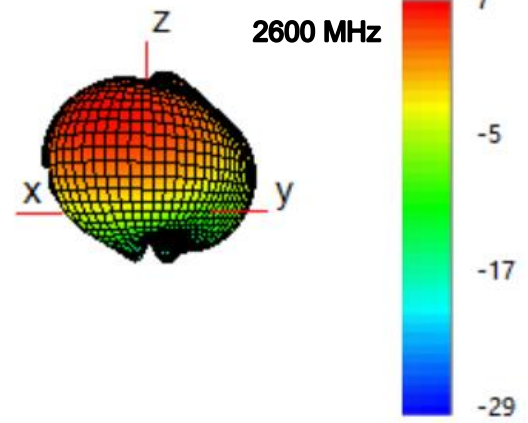
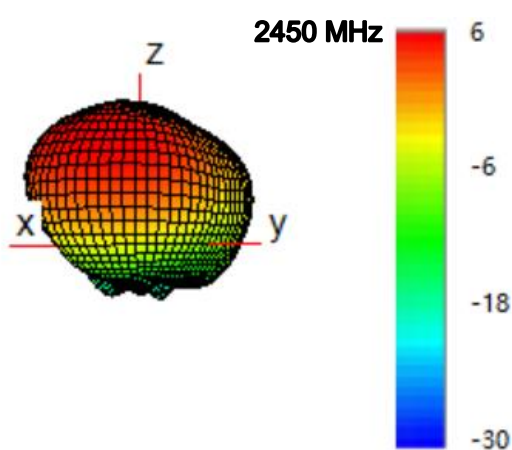
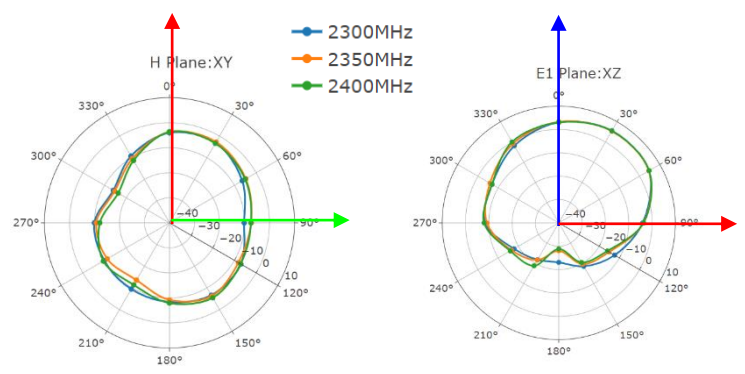
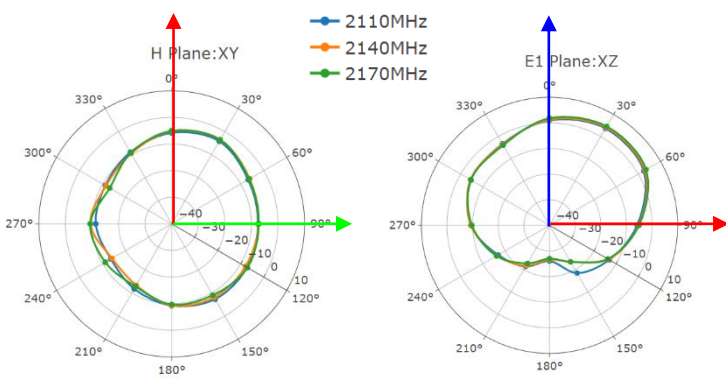
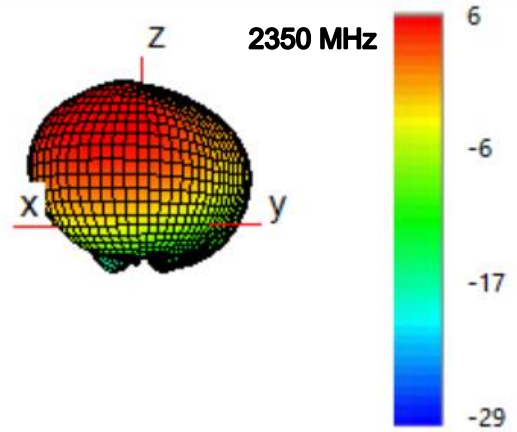
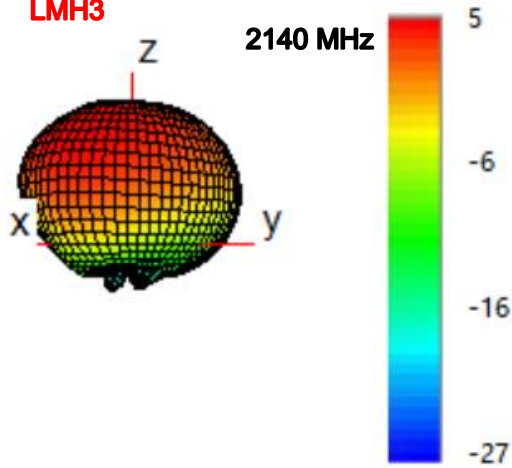
1880 MHz



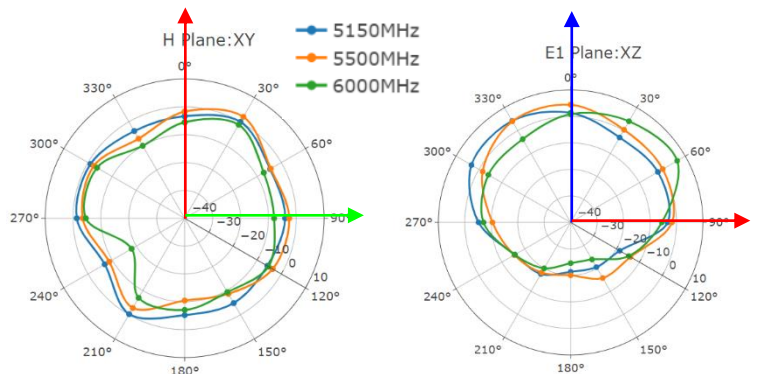
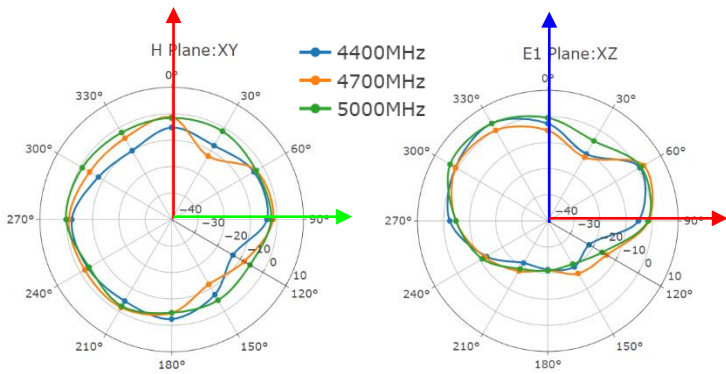
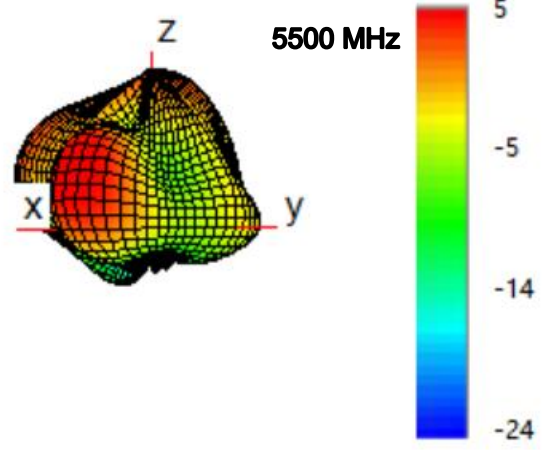
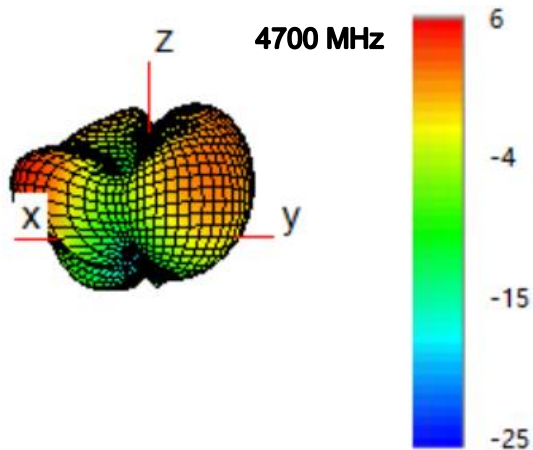
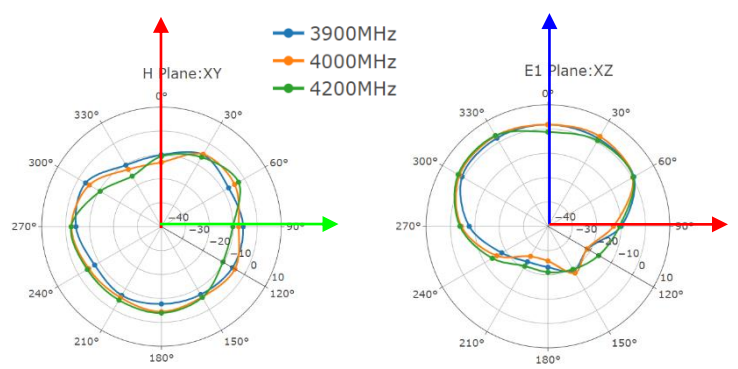
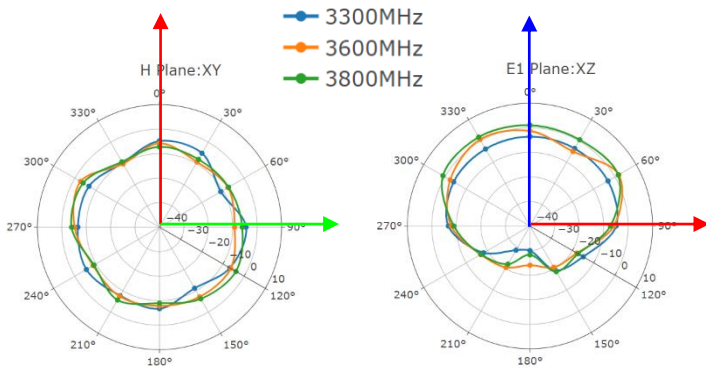
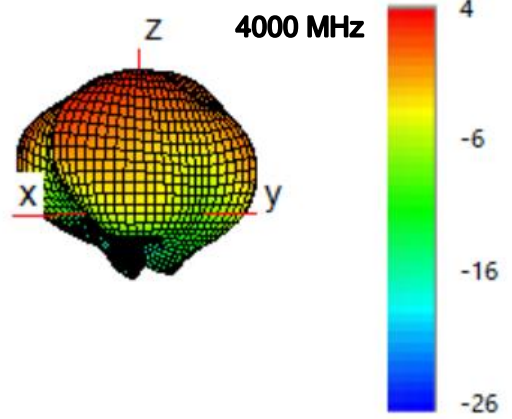
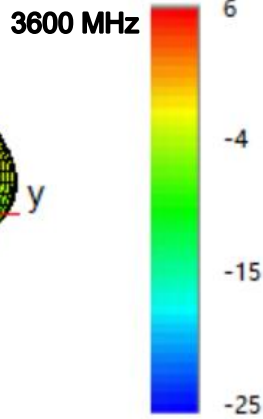
1950 MHz

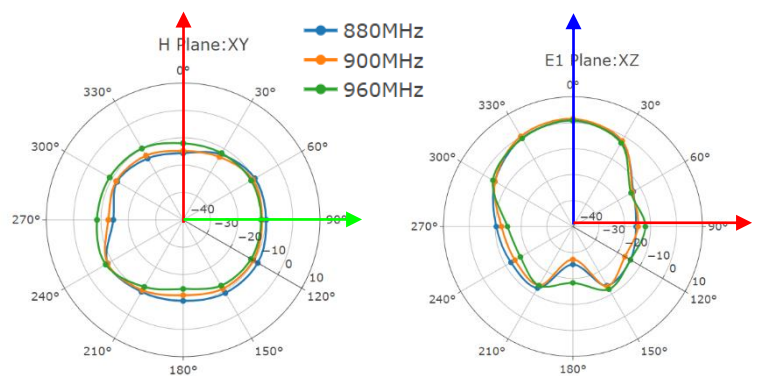
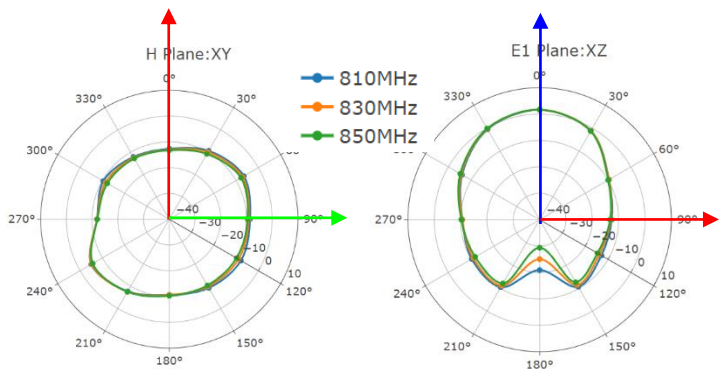
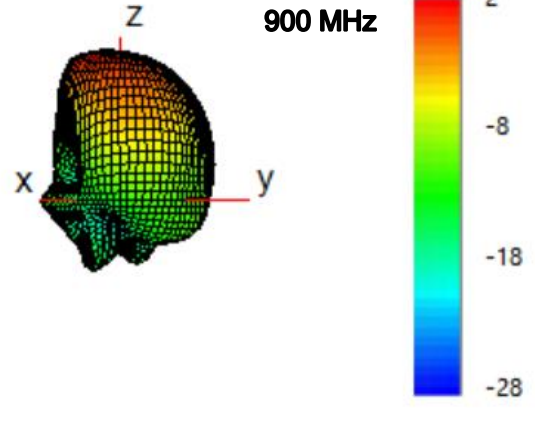
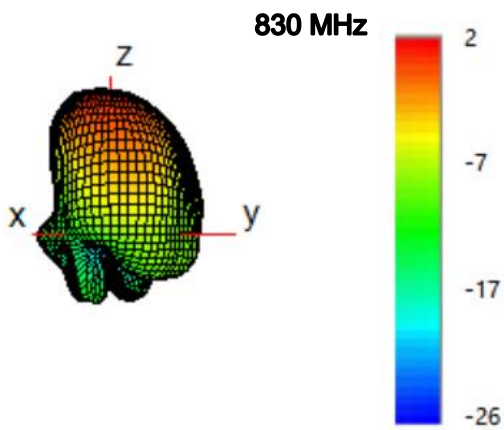
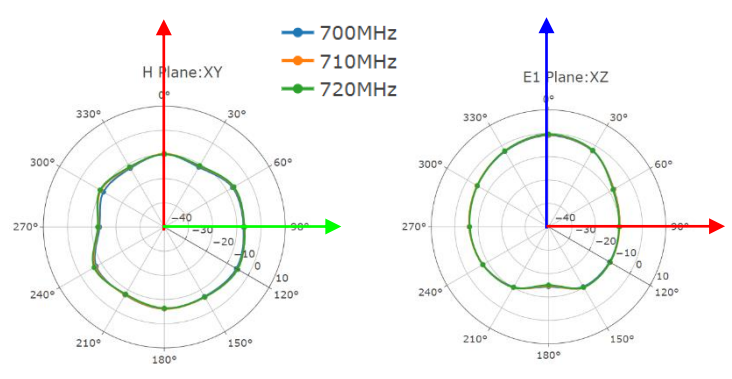
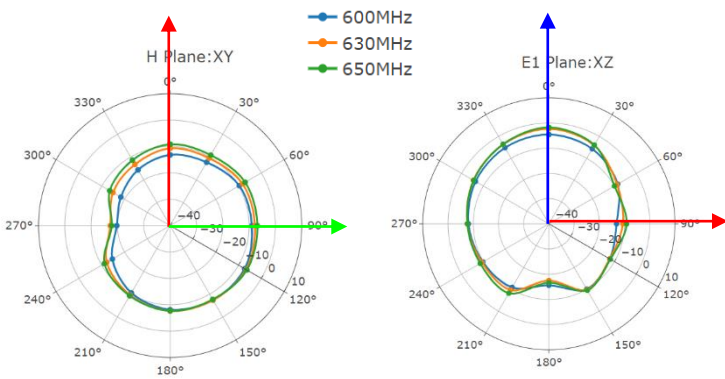
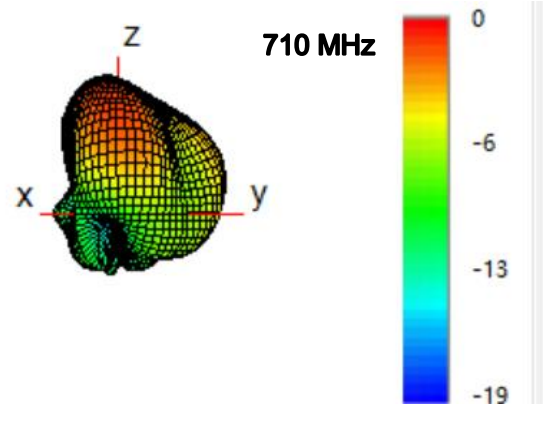
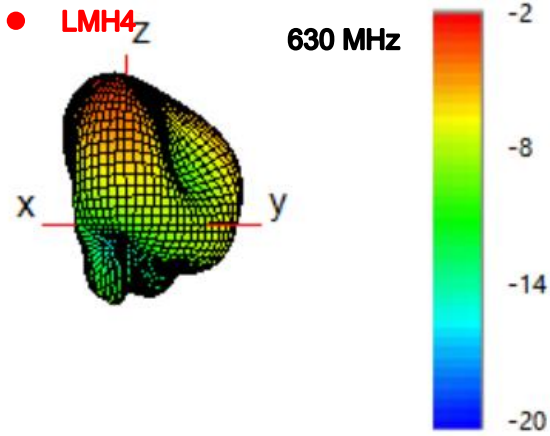


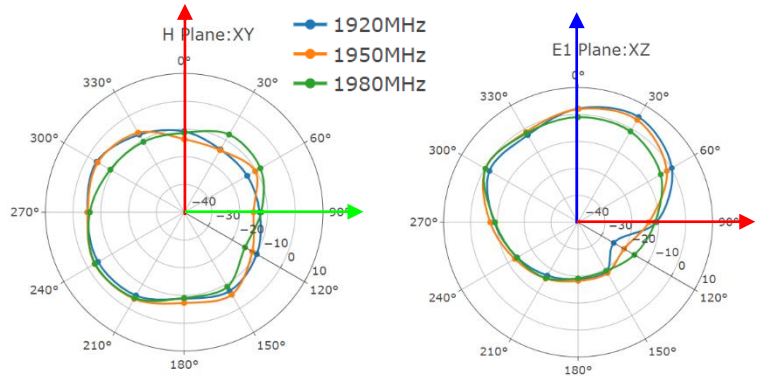
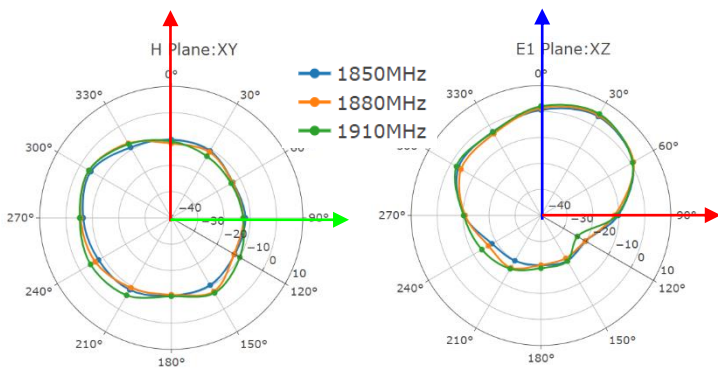
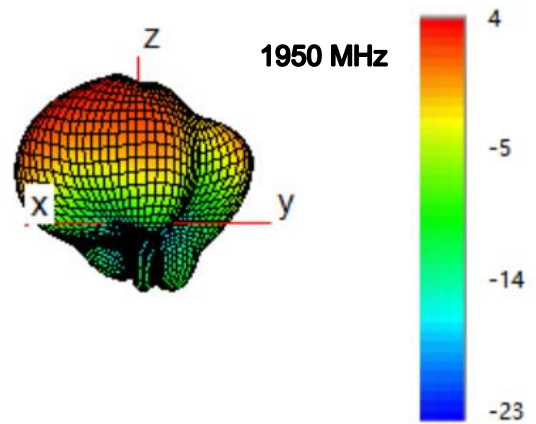
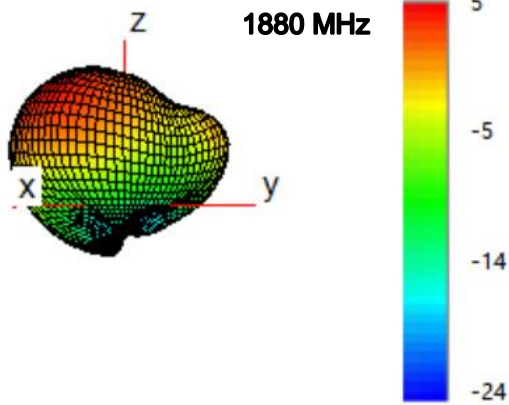
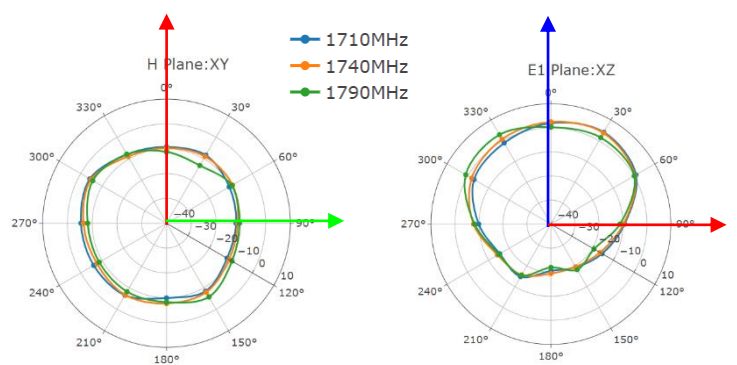
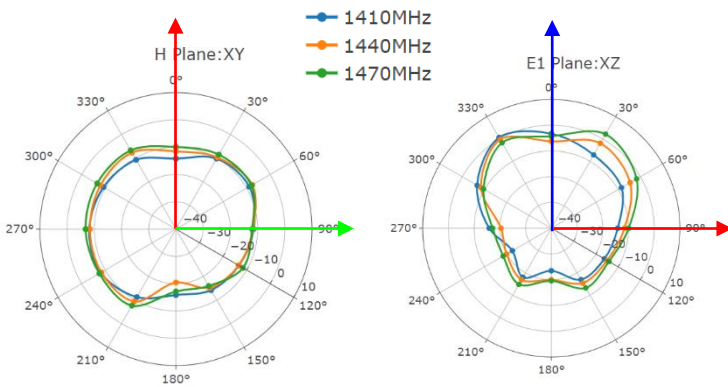
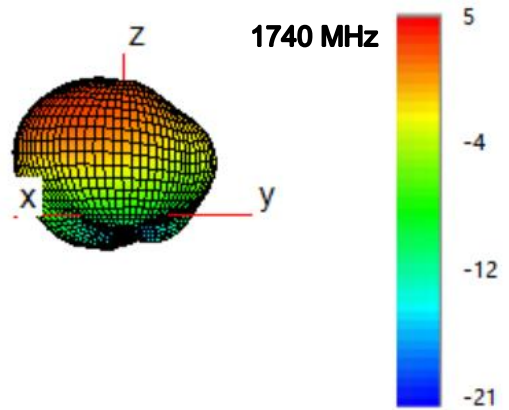
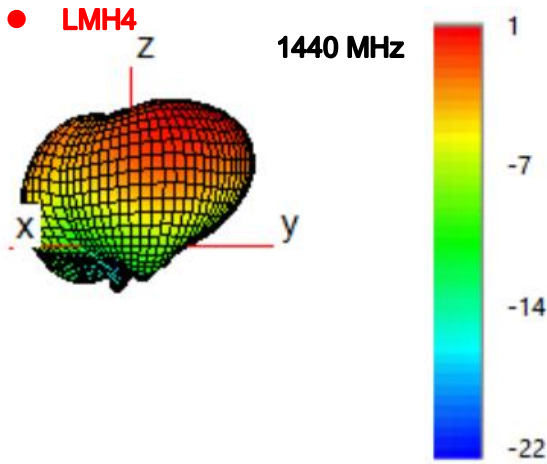
● **LMH3**



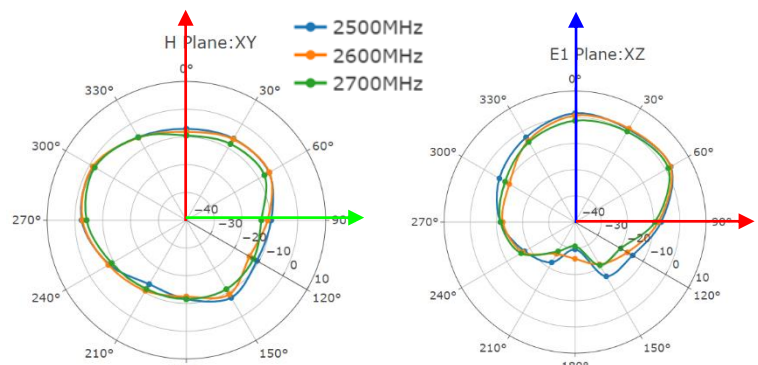
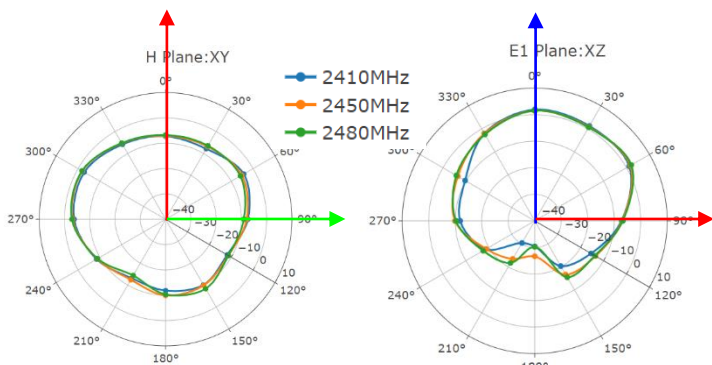
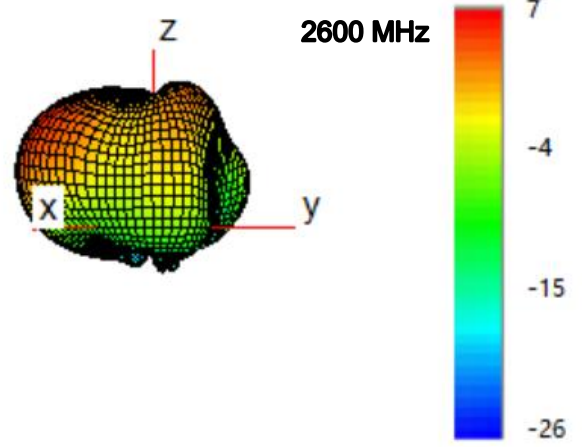
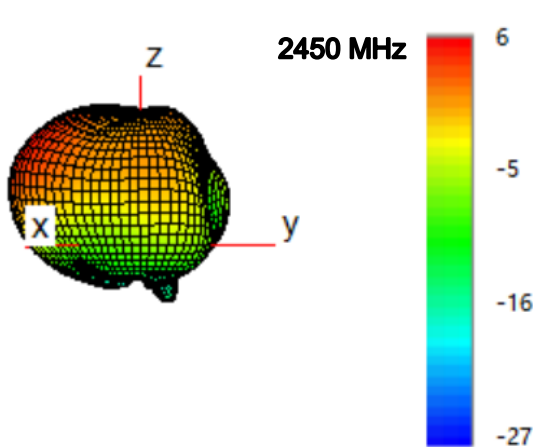
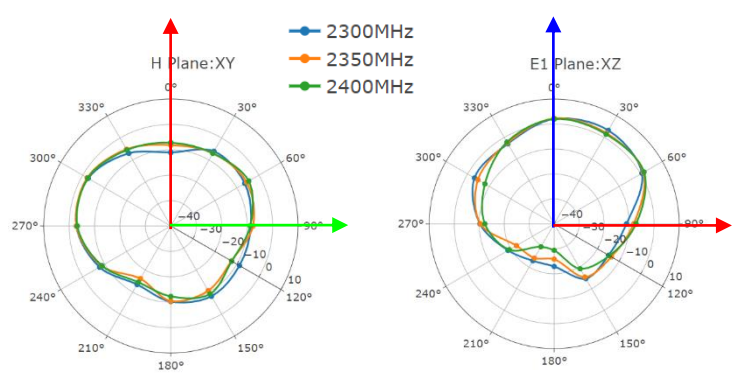
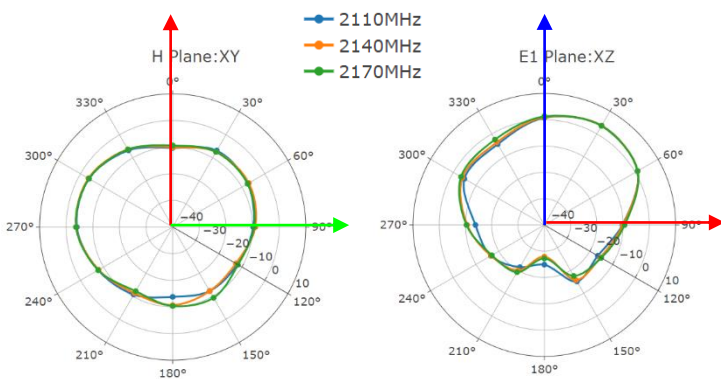
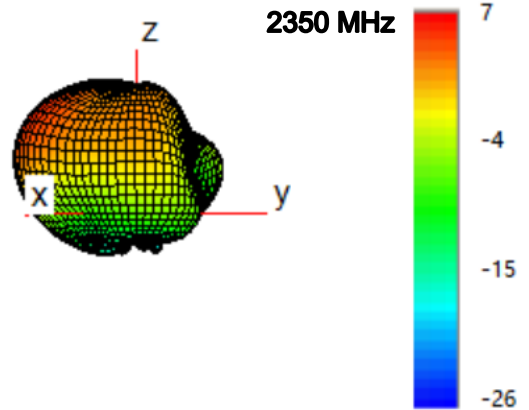
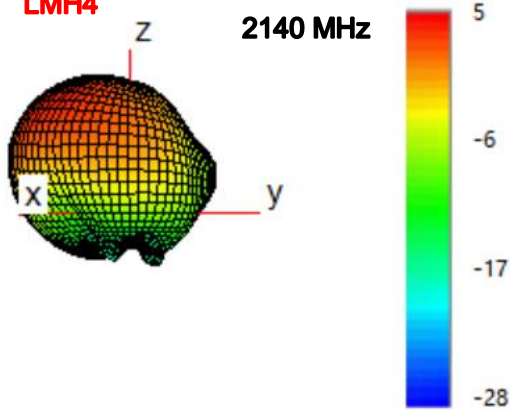
● **LMH3**



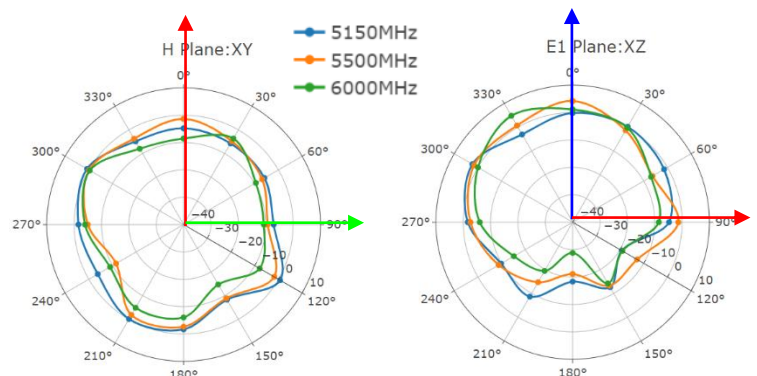
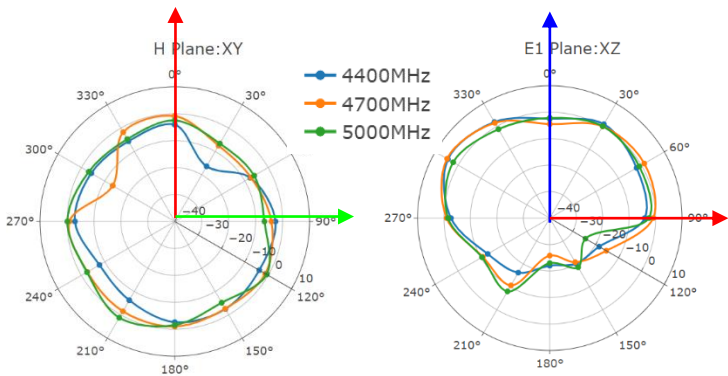
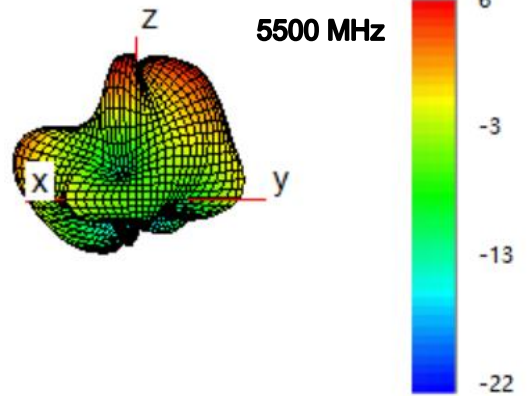
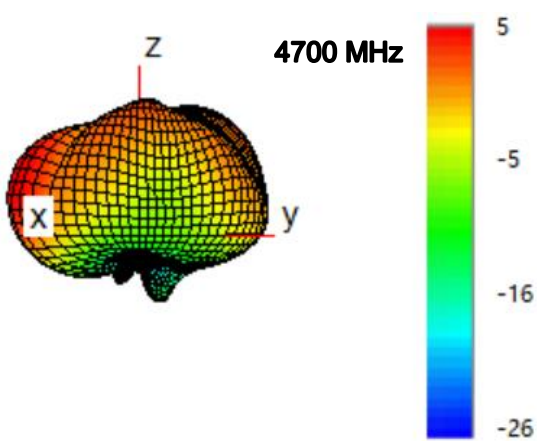
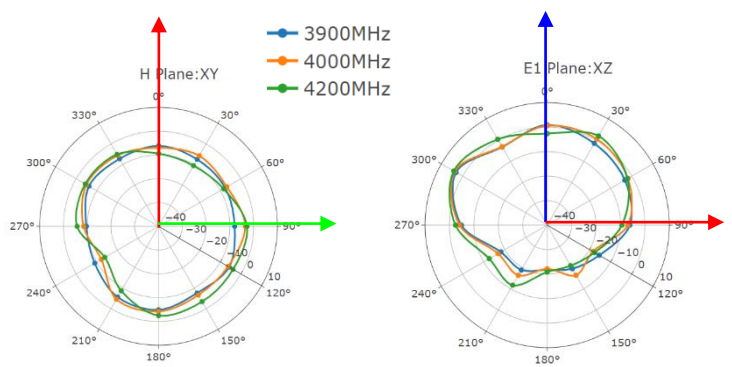
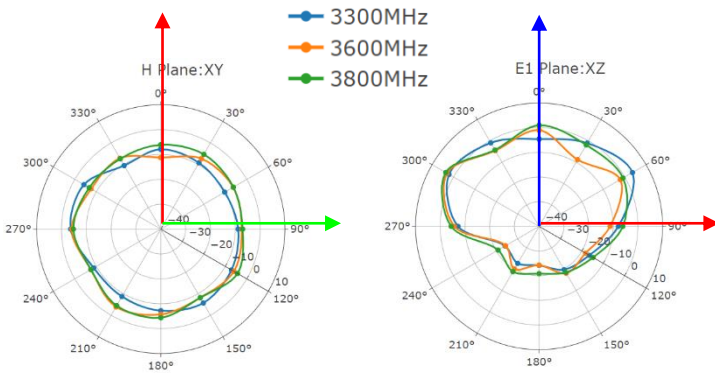
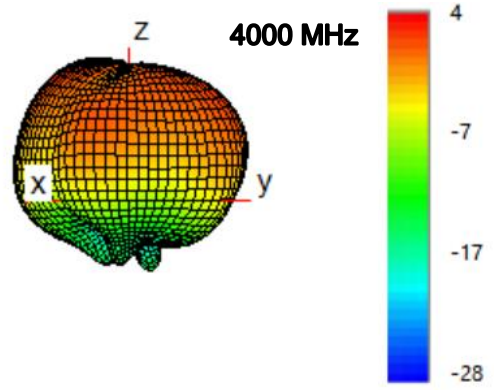
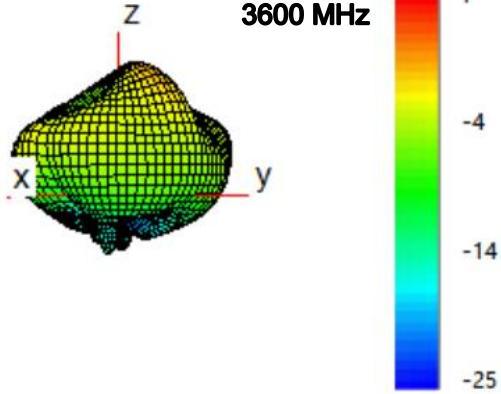


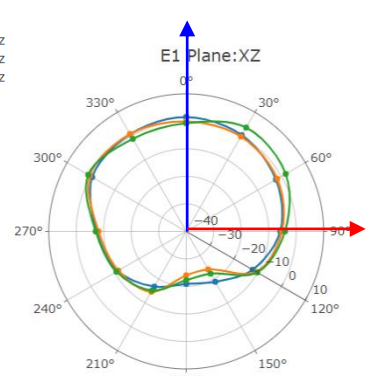
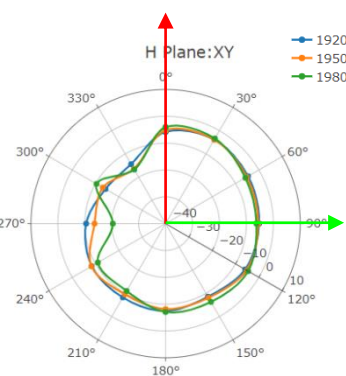
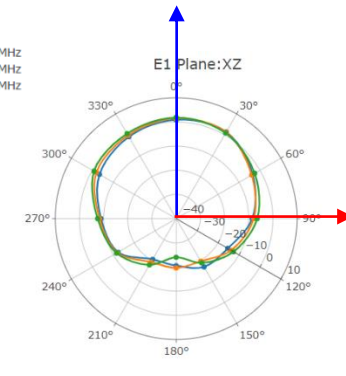
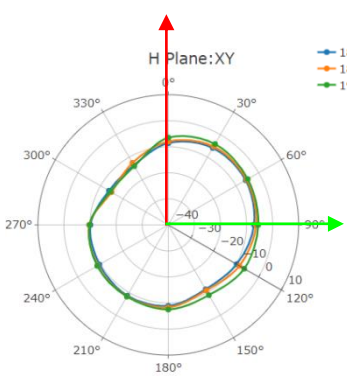
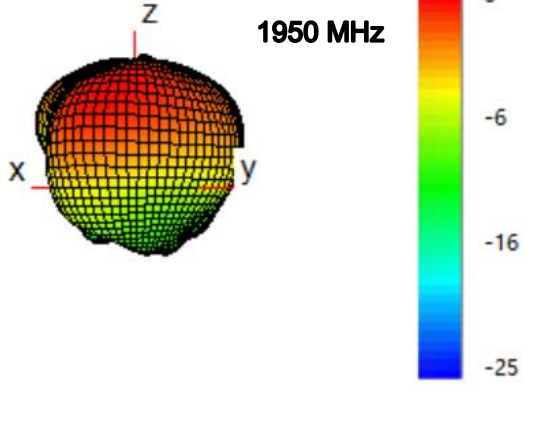
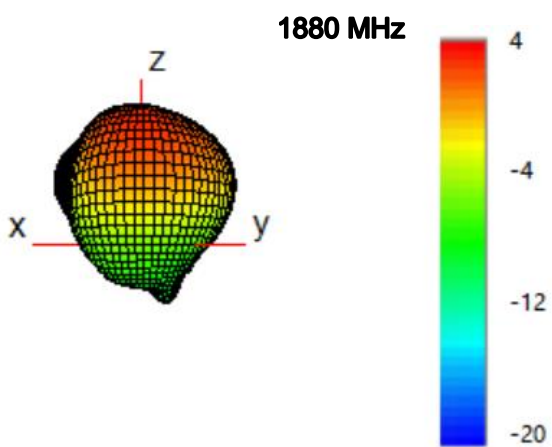
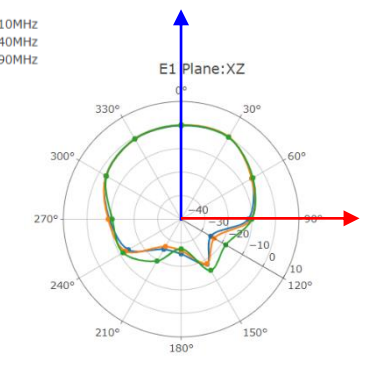
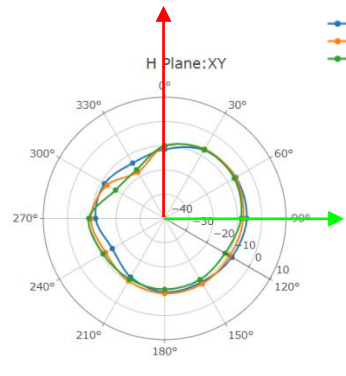
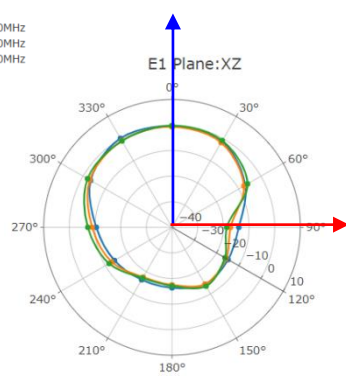
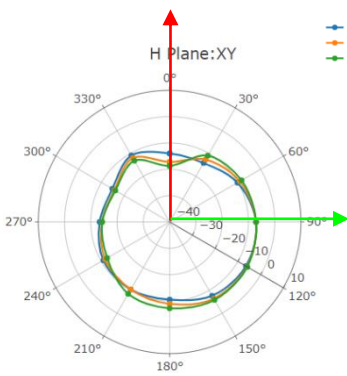
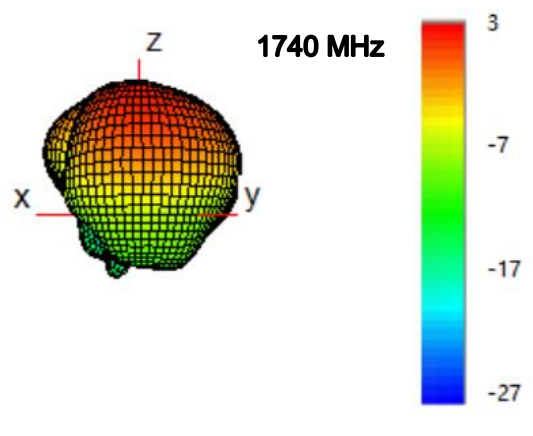
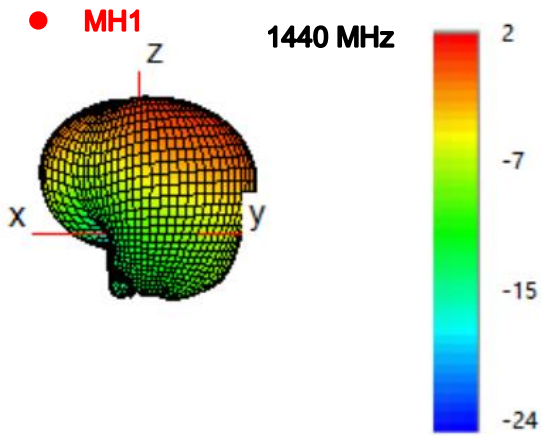


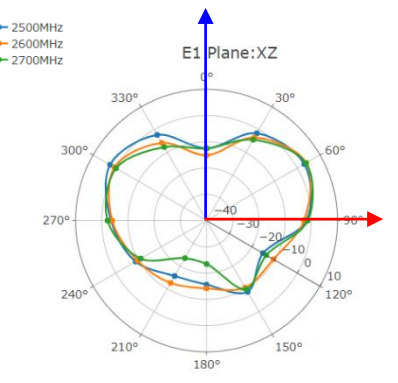
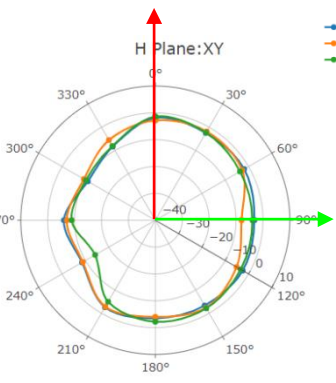
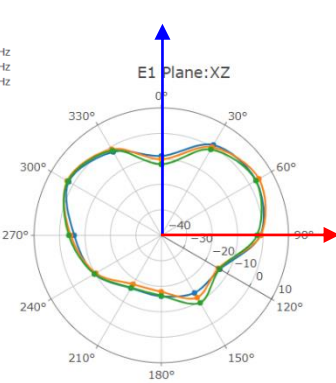
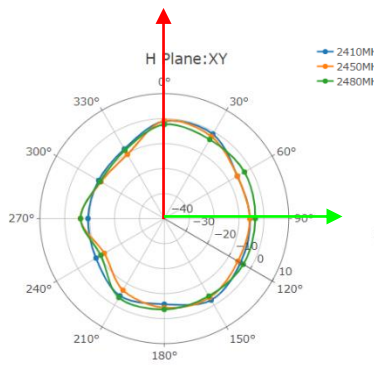
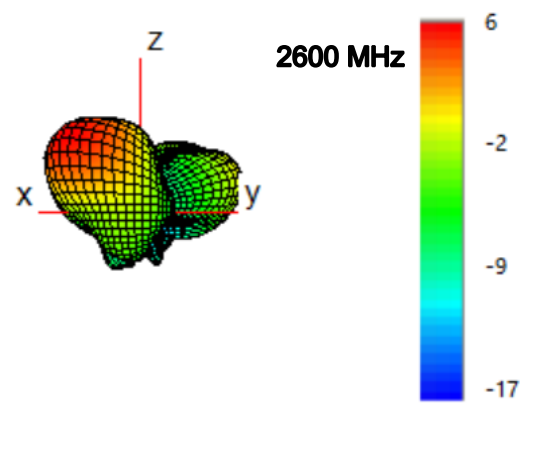
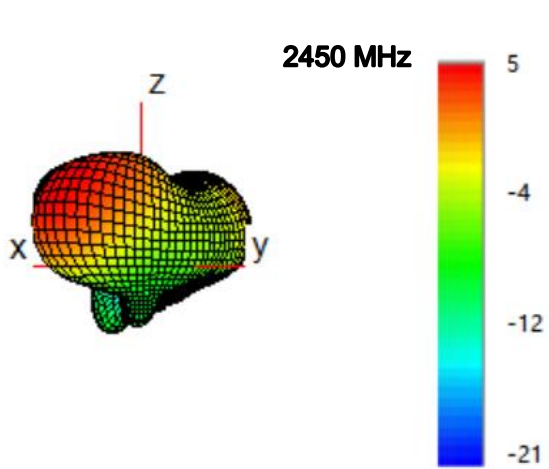
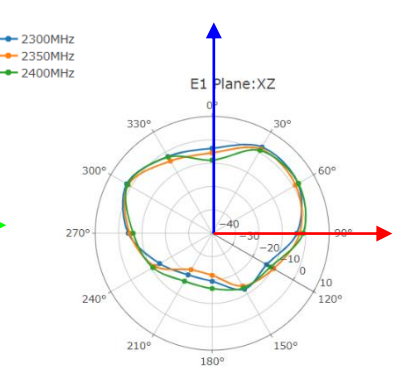
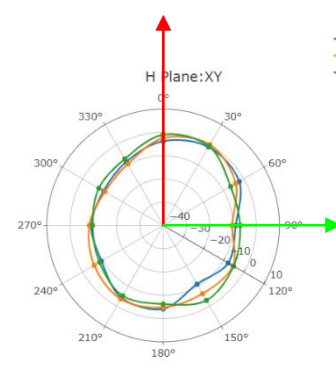
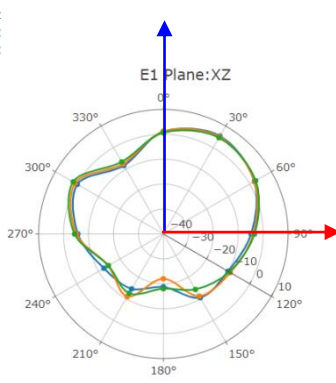
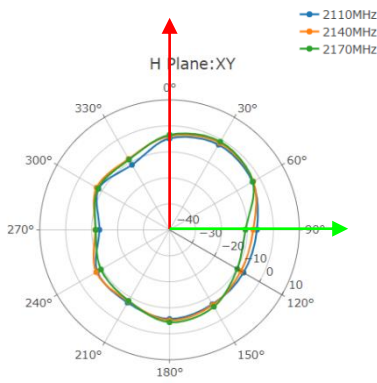
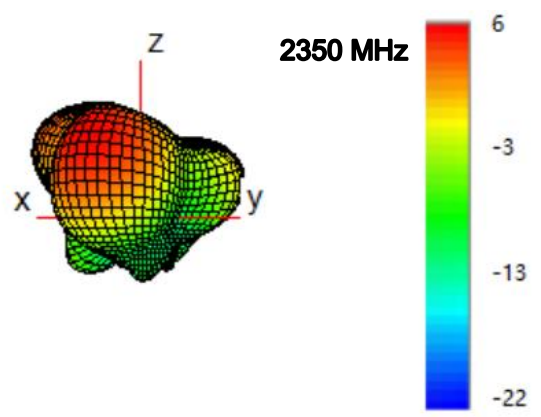
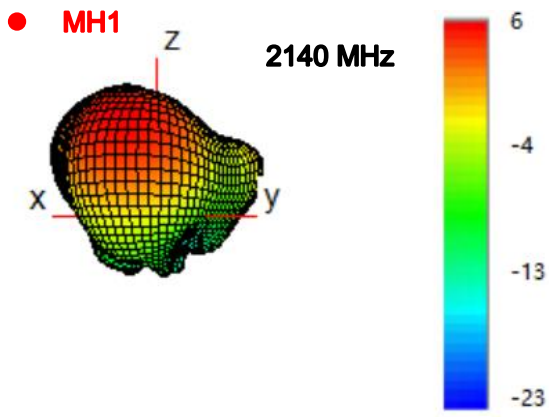
● **LMH4**



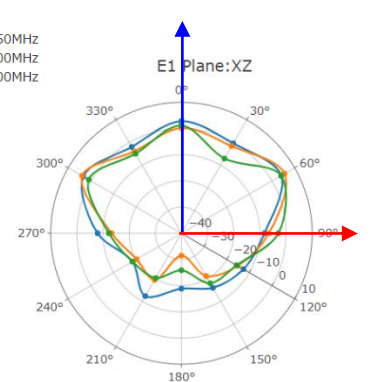
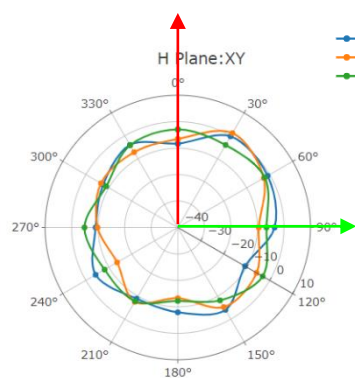
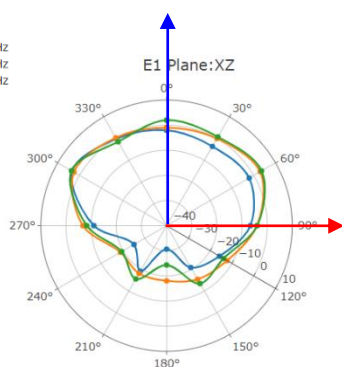
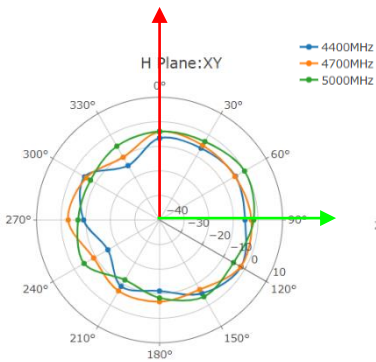
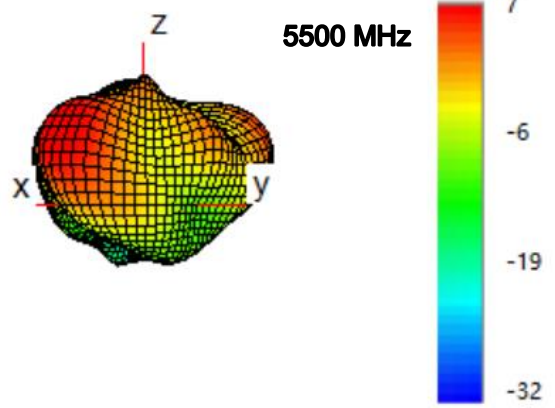
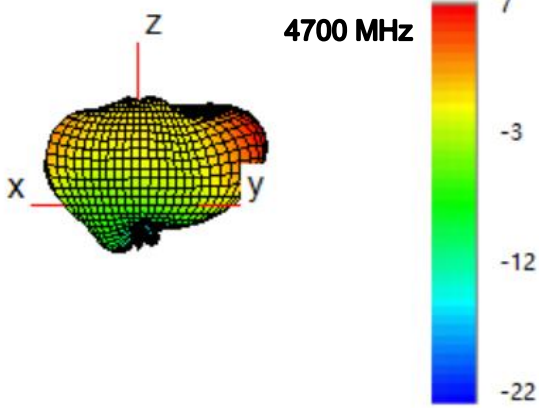
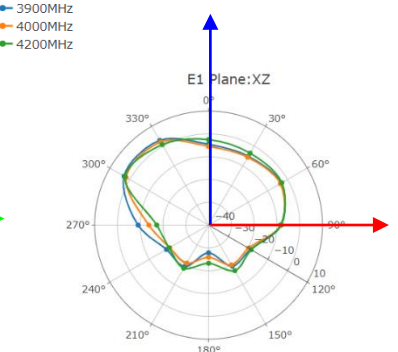
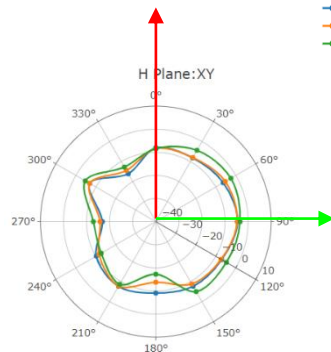
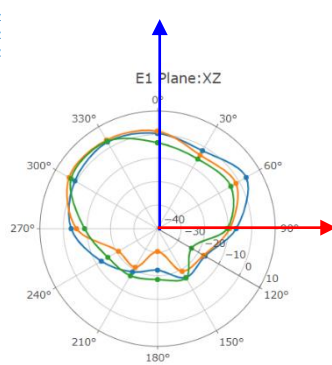
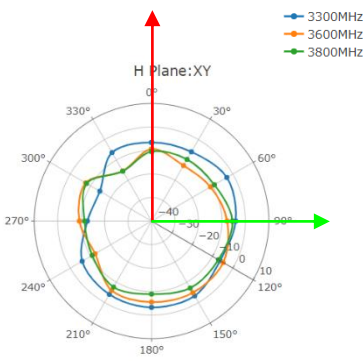
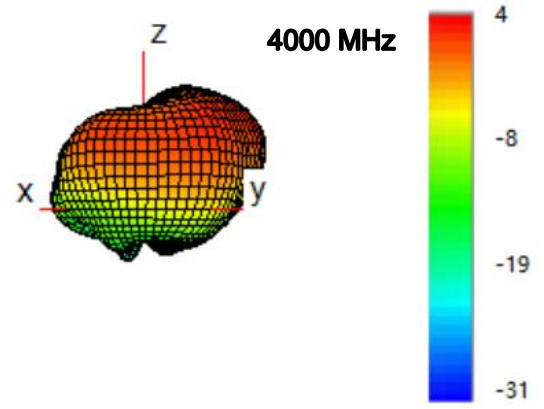
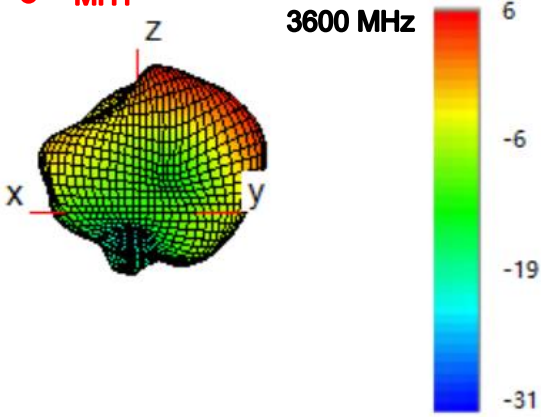
● **LMH4**

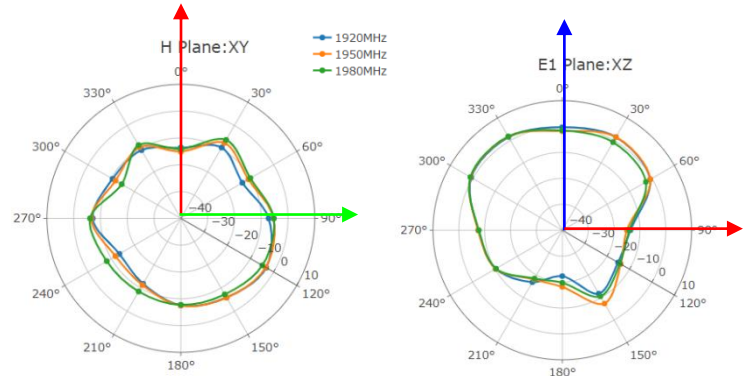
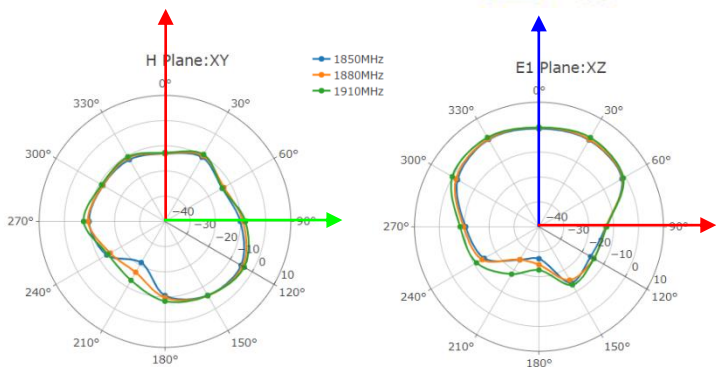
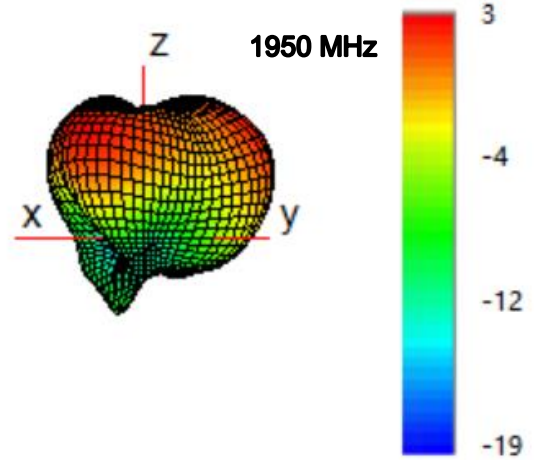
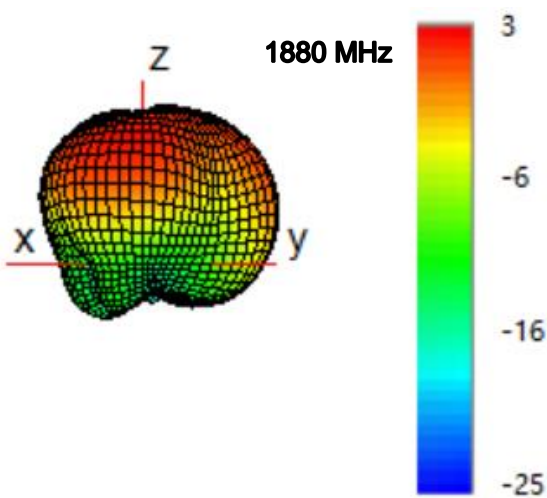
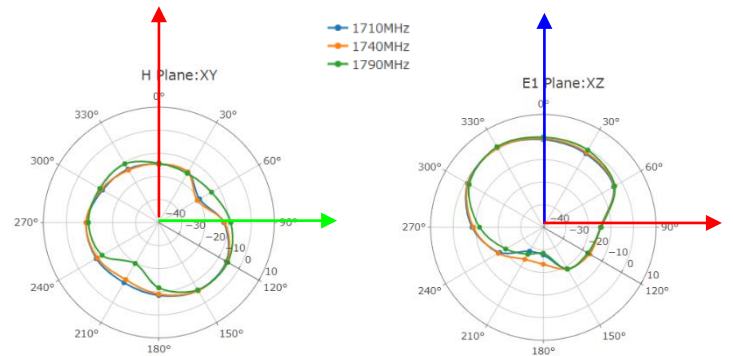
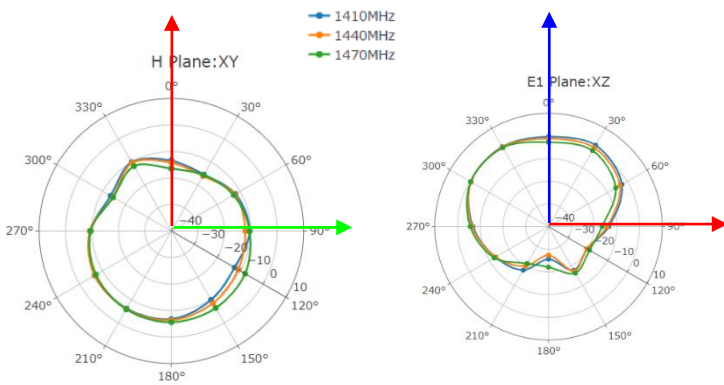
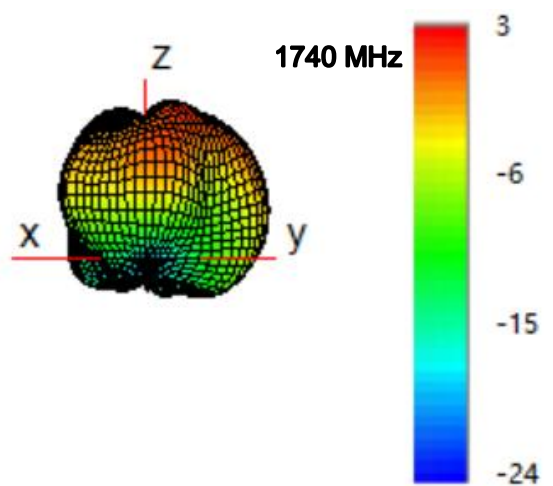
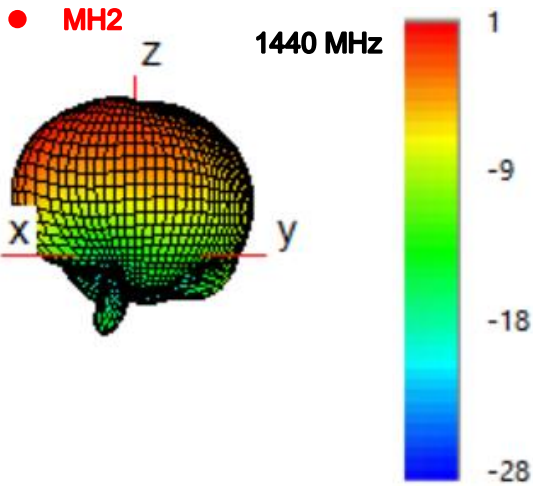






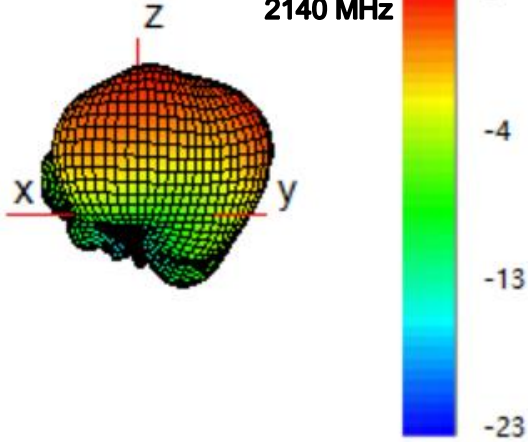
● **MH1**



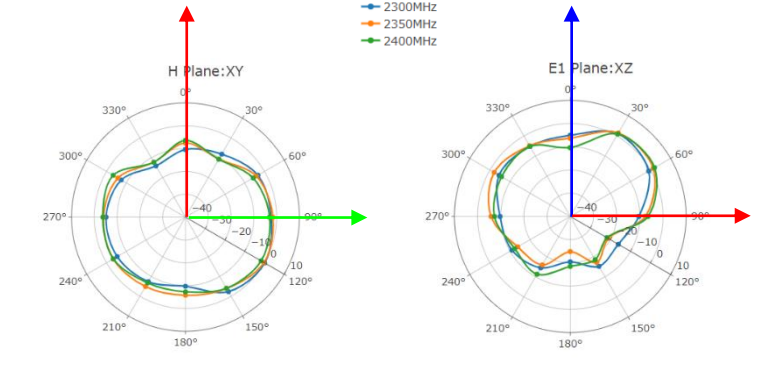
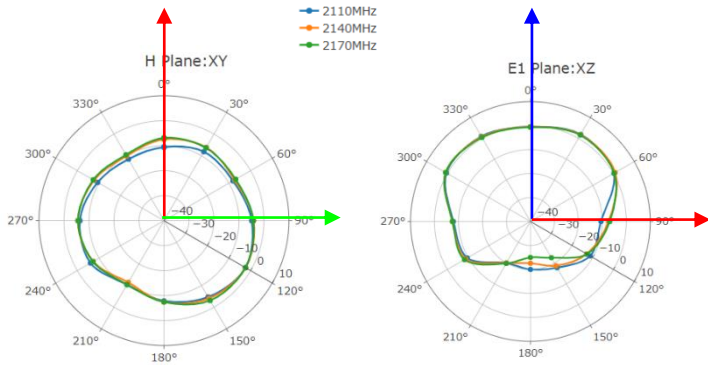
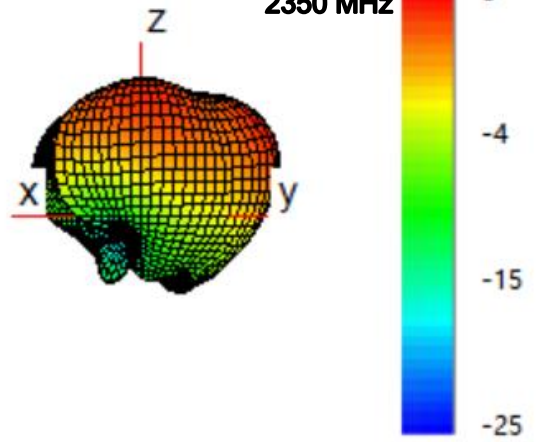


● **MH2**

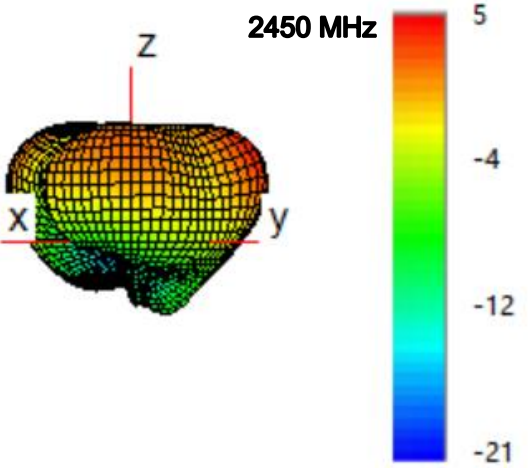
2140 MHz



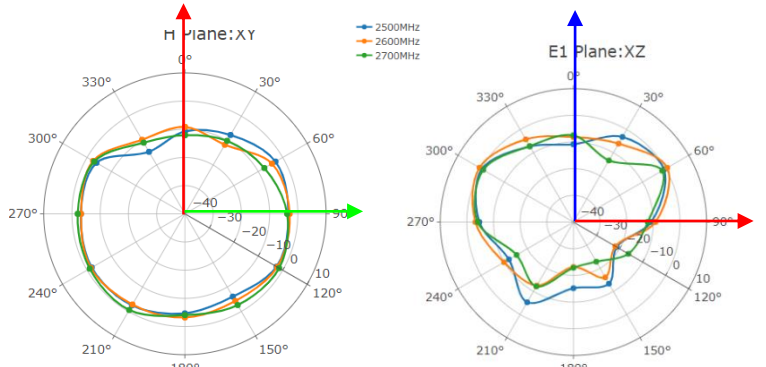
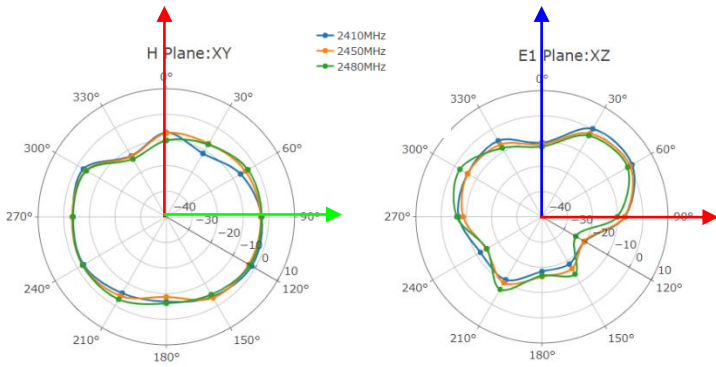
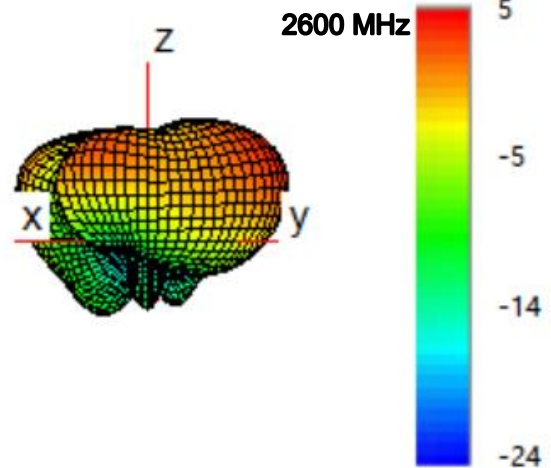
2350 MHz

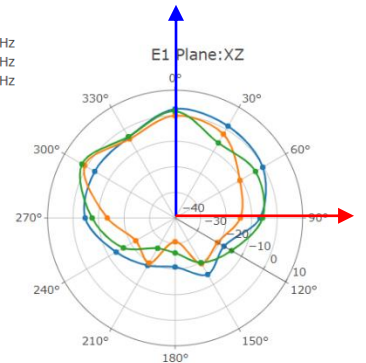
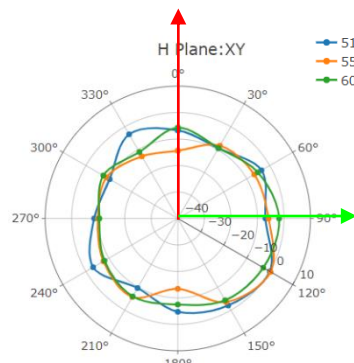
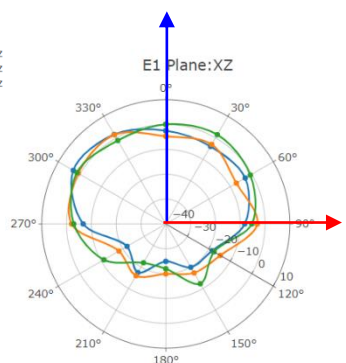
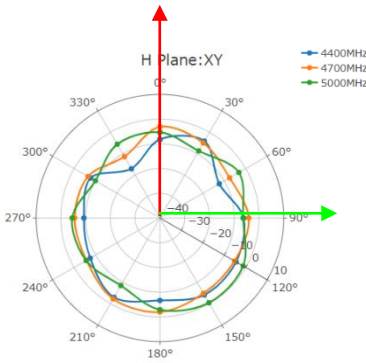
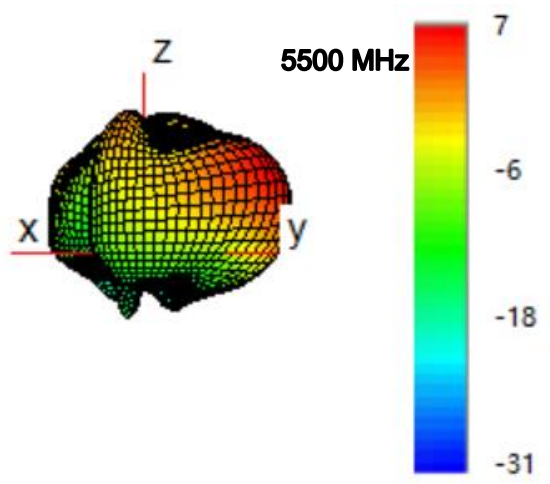
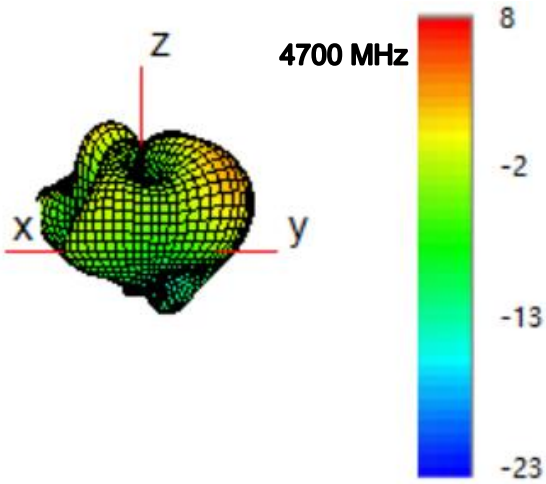
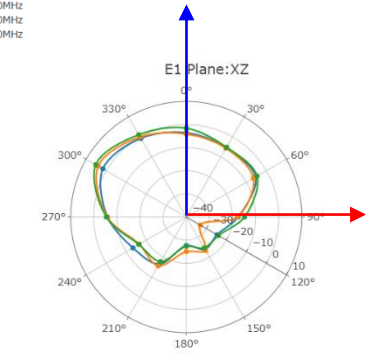
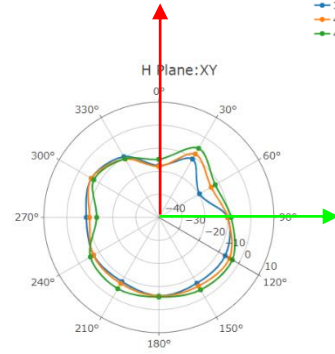
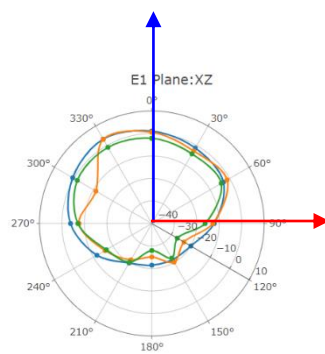
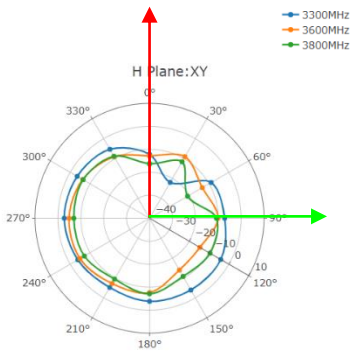
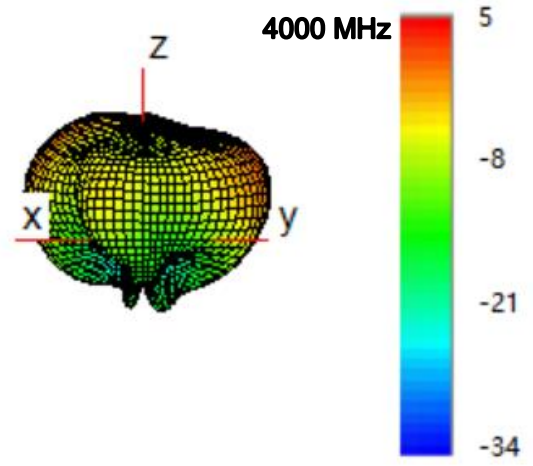
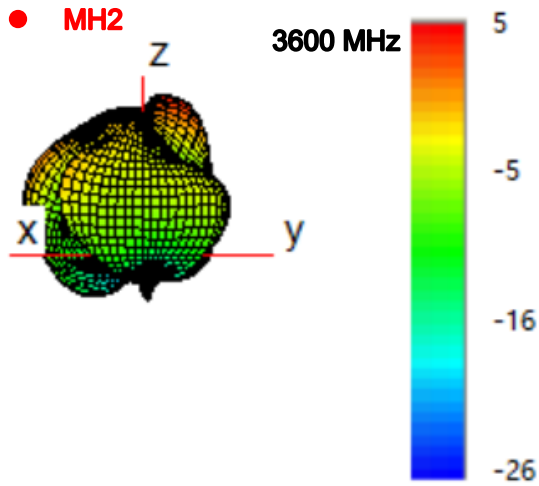


2450 MHz



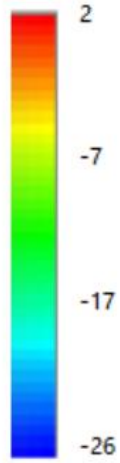
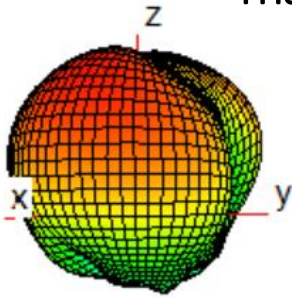
2600 MHz



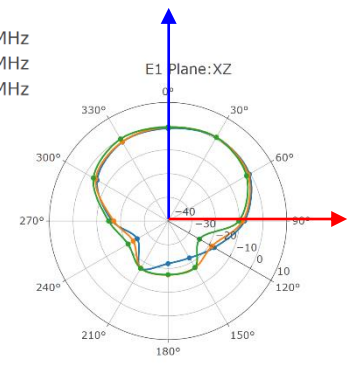
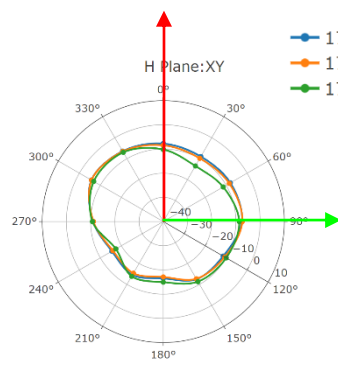
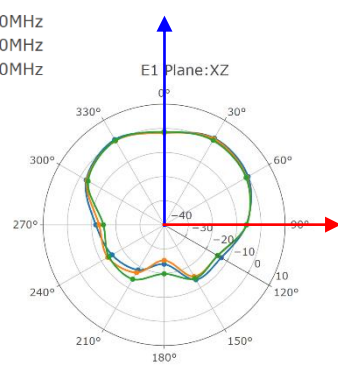
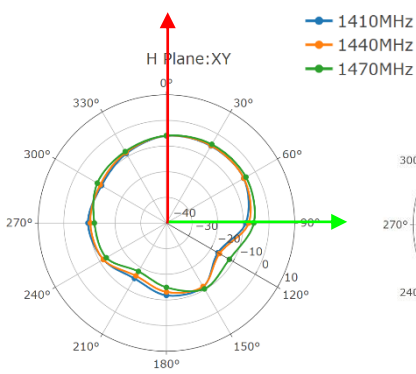
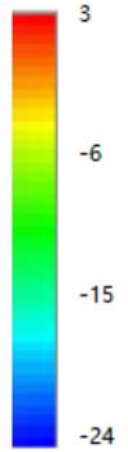
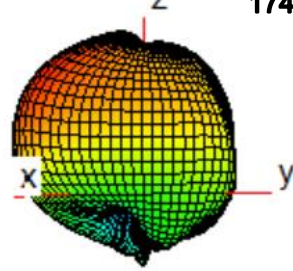


● **MH3**

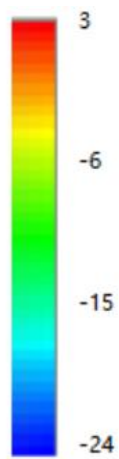
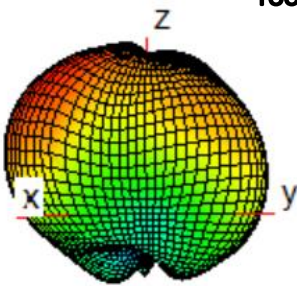
1440 MHz



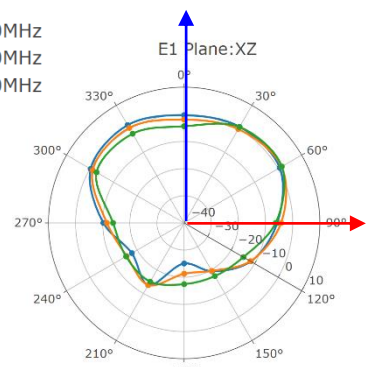
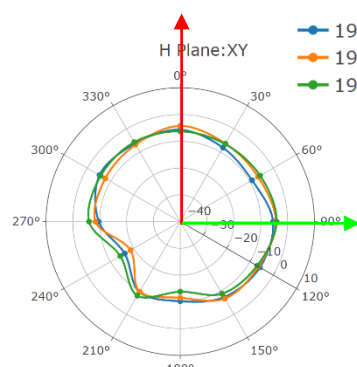
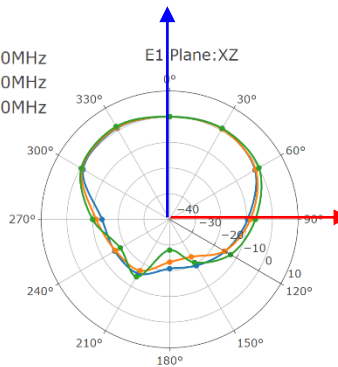
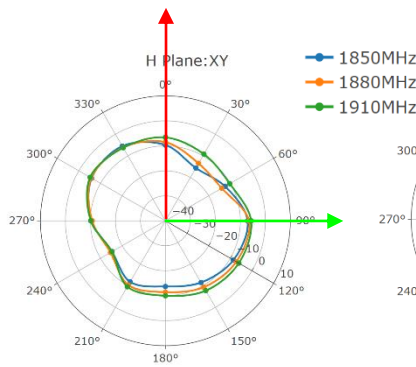
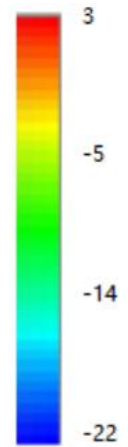
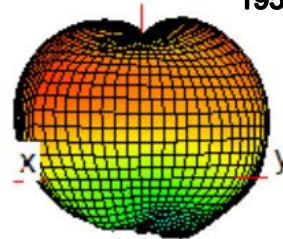
1740 MHz



1880 MHz

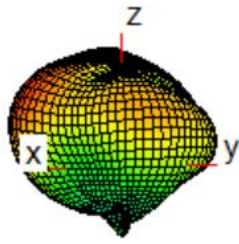


1950 MHz

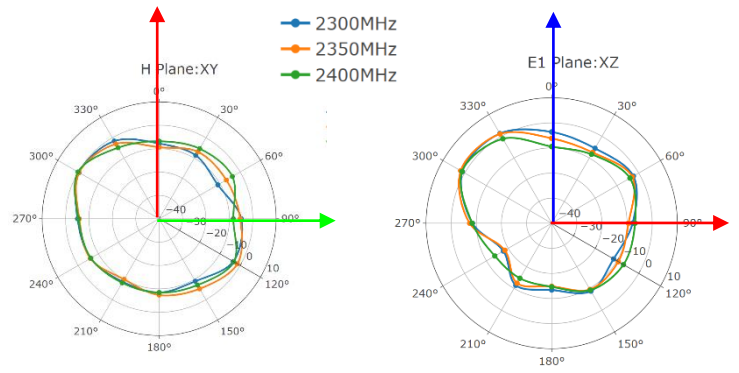
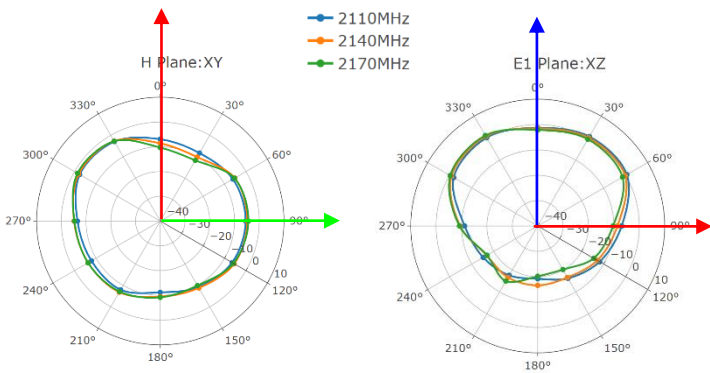
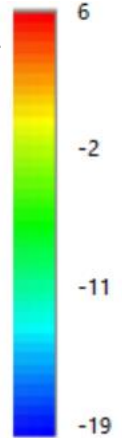
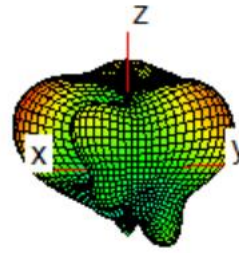


● **MH3**

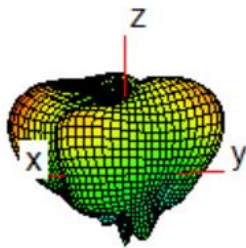
2140 MHz



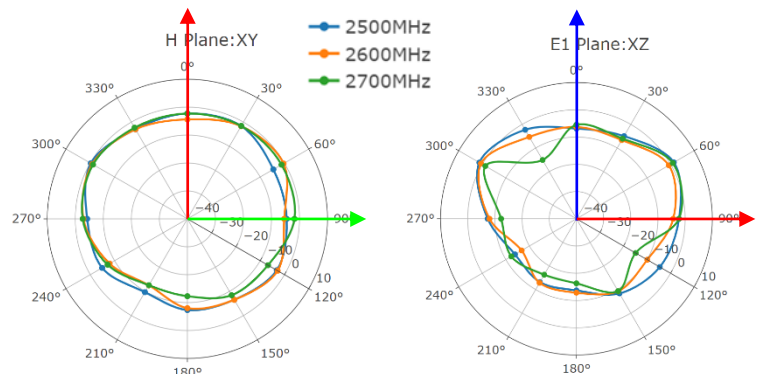
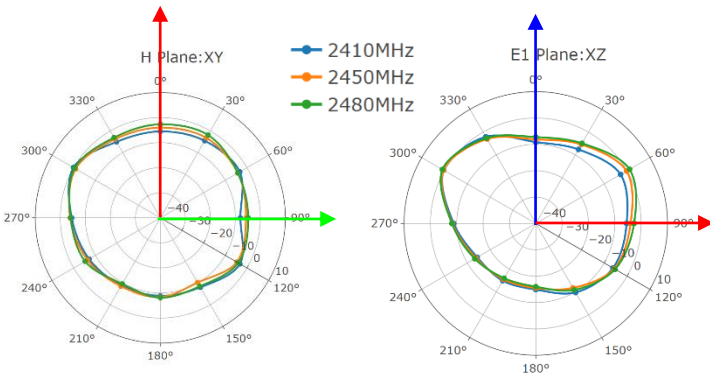
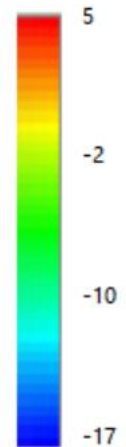
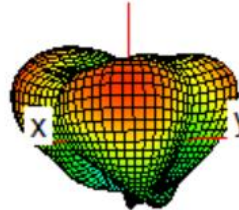
2350 MHz



2450 MHz

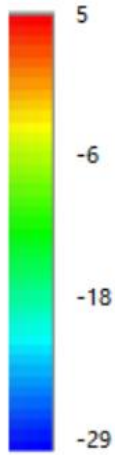
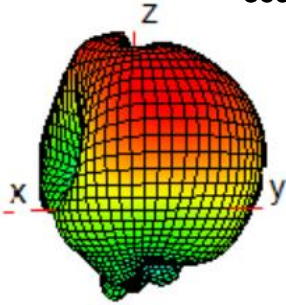


2600 MHz

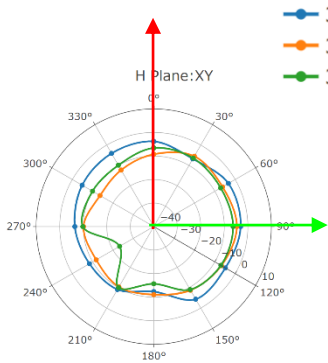
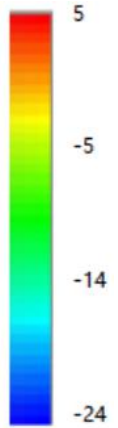
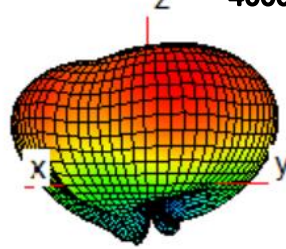


MH3

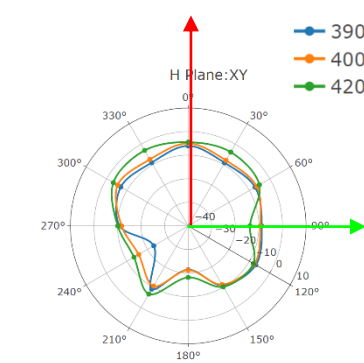
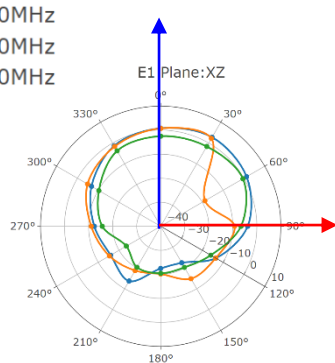
3600 MHz



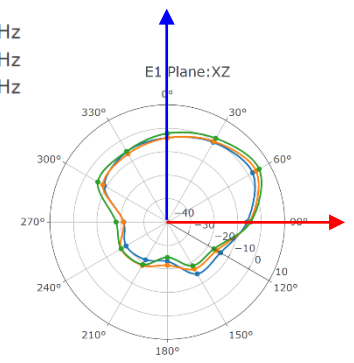
4000 MHz



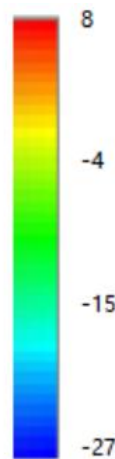
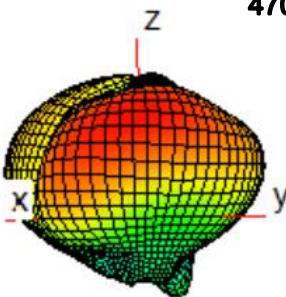
— 3300MHz
— 3600MHz
— 3800MHz



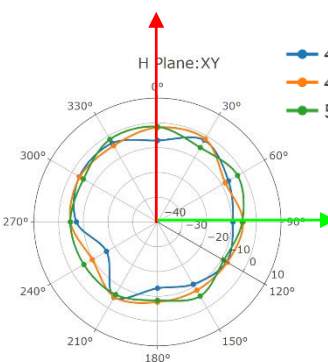
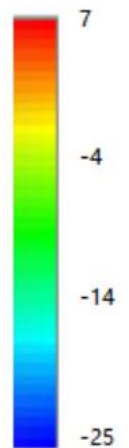
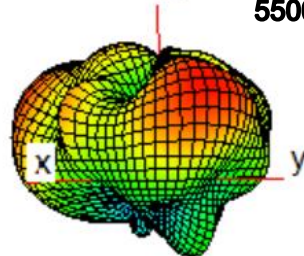
— 3900MHz
— 4000MHz
— 4200MHz



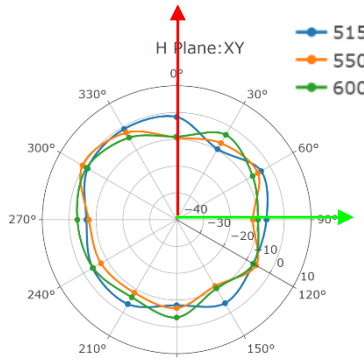
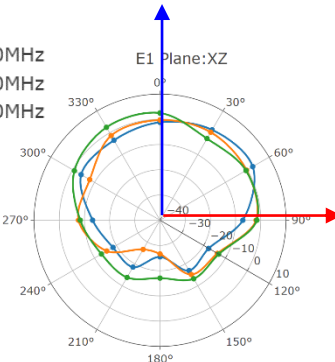
4700 MHz



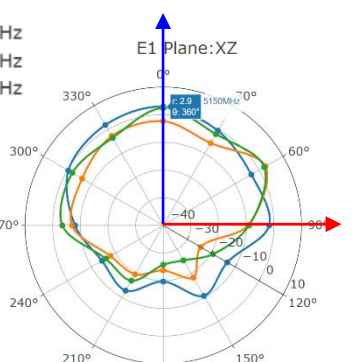
5500 MHz



— 4400MHz
— 4700MHz
— 5000MHz

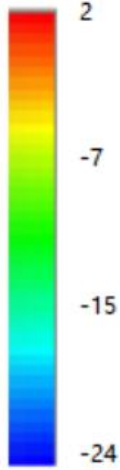
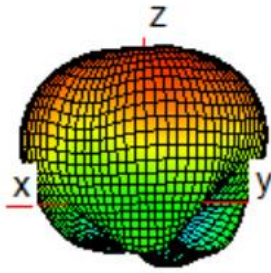


— 5150MHz
— 5500MHz
— 6000MHz

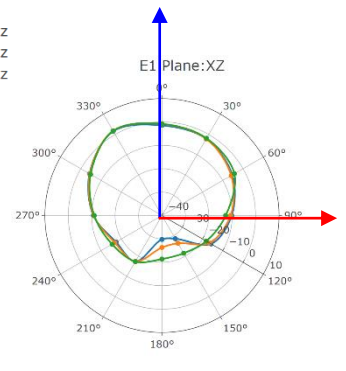
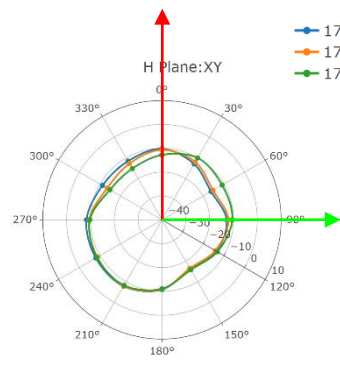
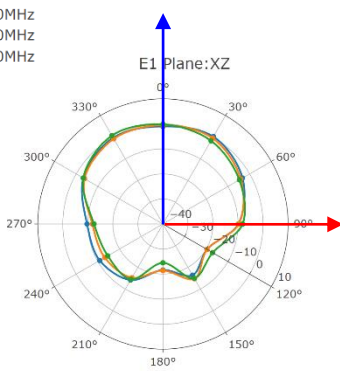
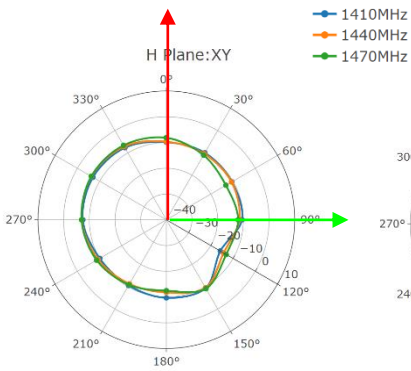
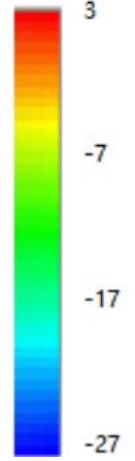
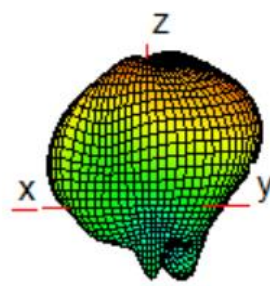


● **MH4**

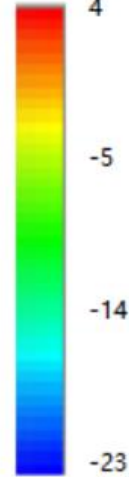
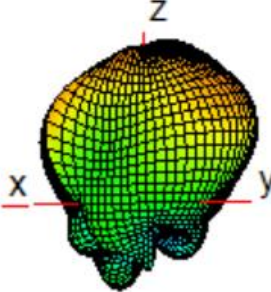
1440 MHz



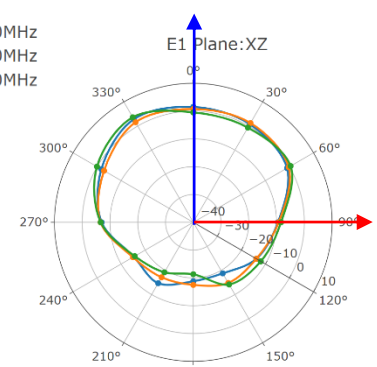
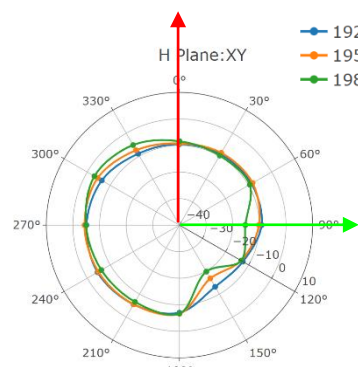
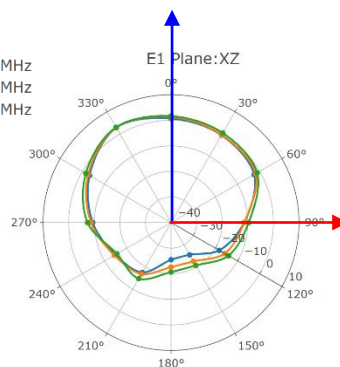
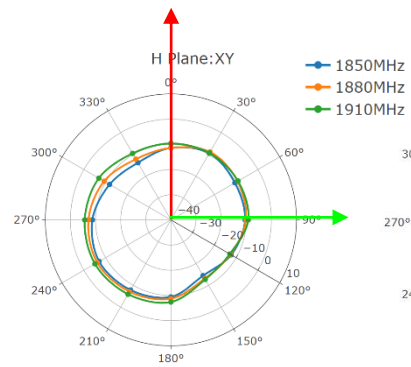
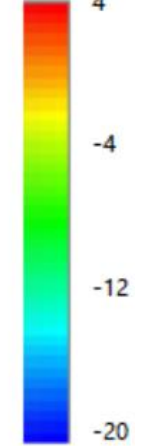
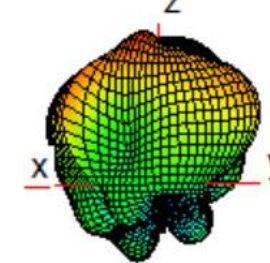
1740 MHz



1880 MHz

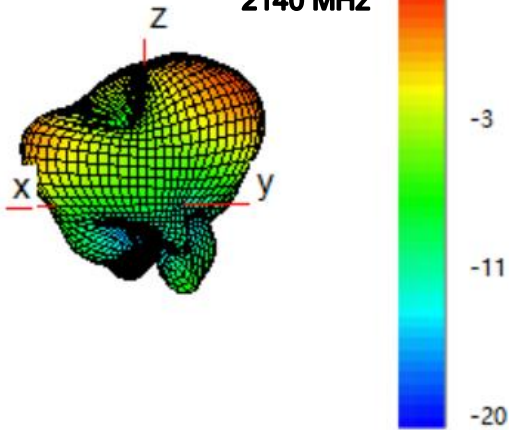


1950 MHz

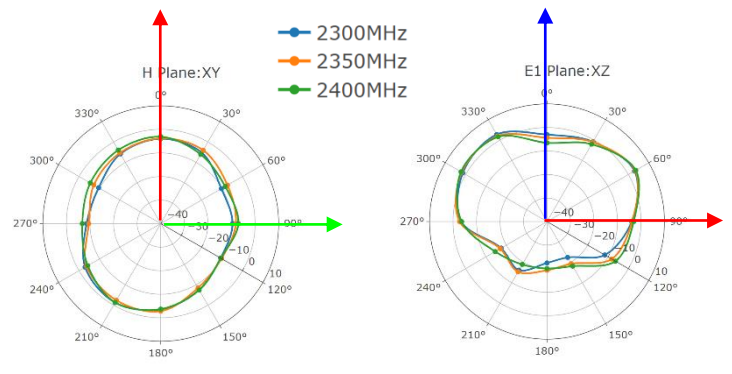
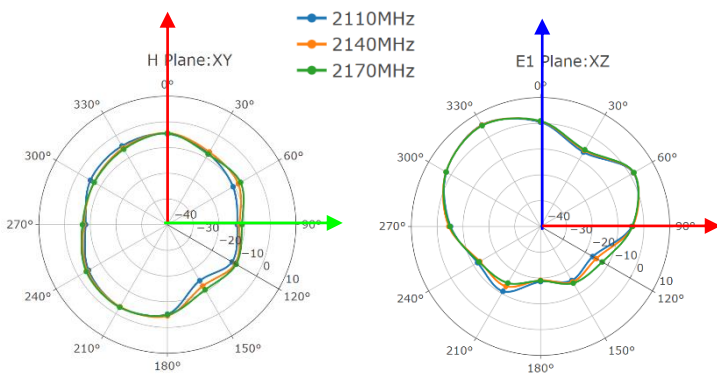
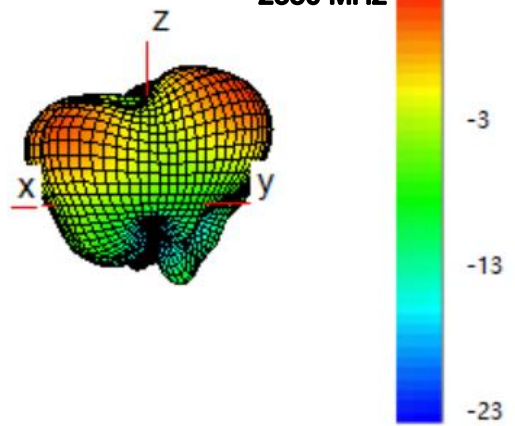


● **MH4**

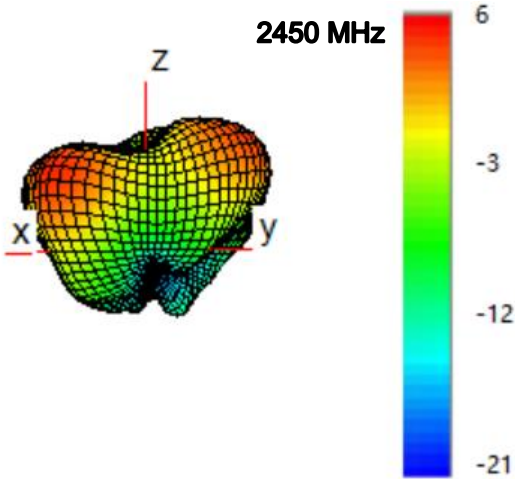
2140 MHz



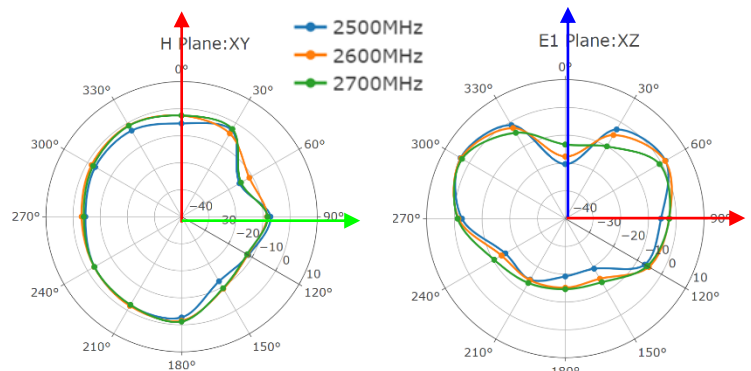
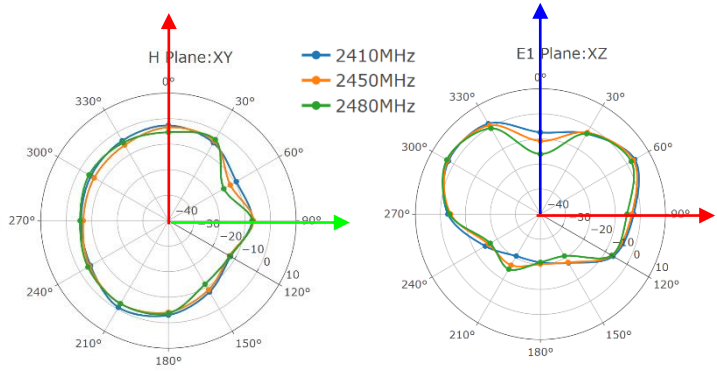
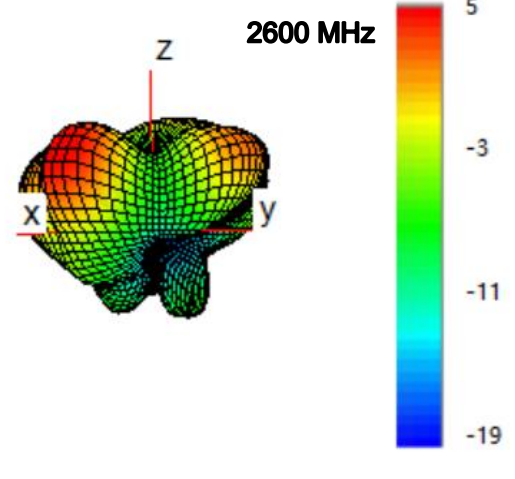
2350 MHz



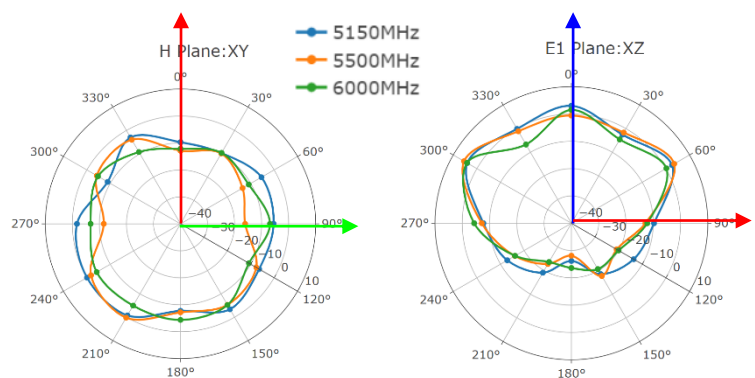
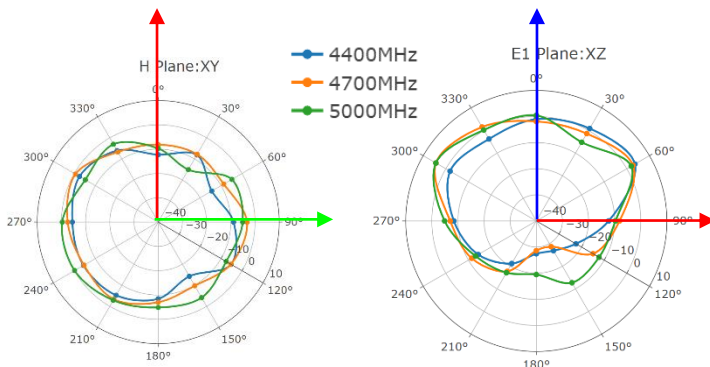
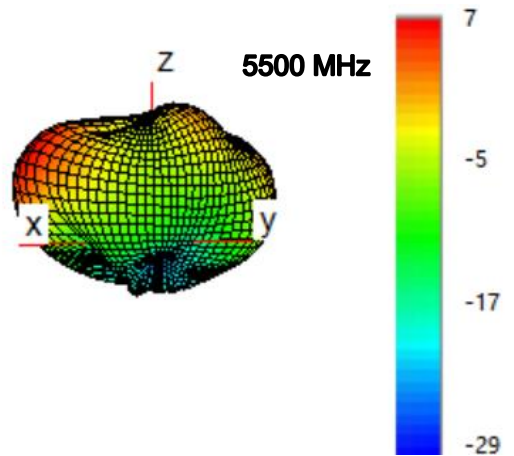
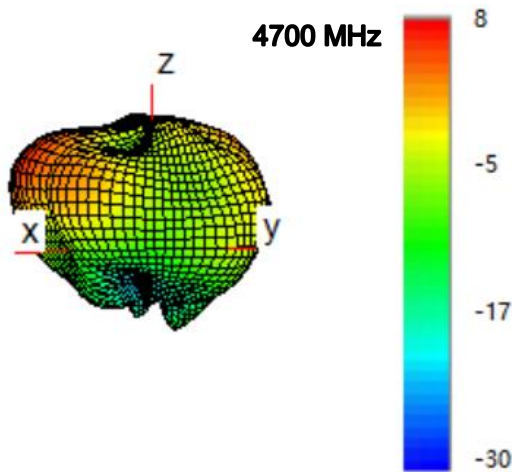
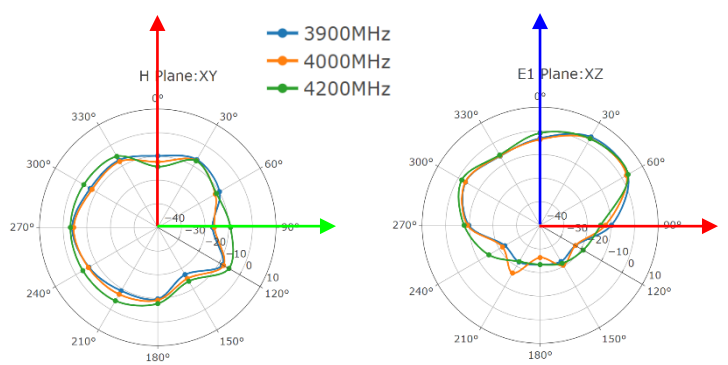
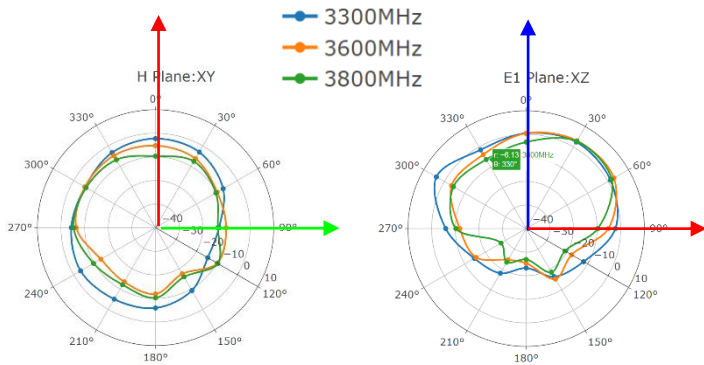
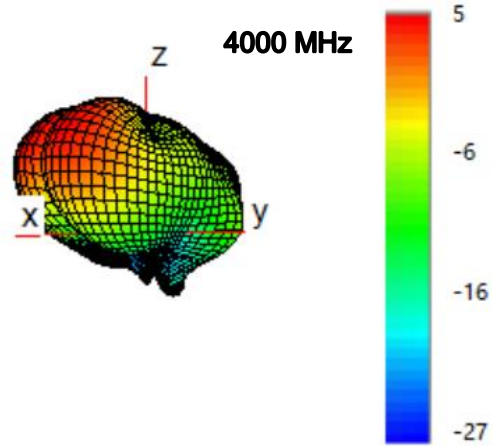
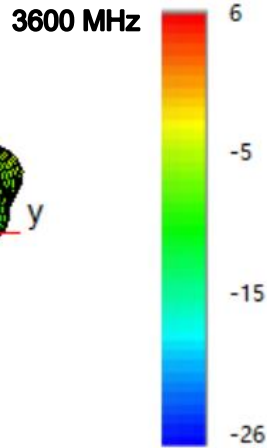
2450 MHz



2600 MHz



● **MH4**



3.3. Active OTA Test

- Based on Module: RG502Q-EA & RG500L-NA
- Test Status: In Free Space.

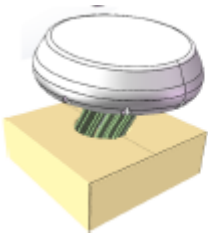


Band		Channel	TRP (dBm)	Channel	TIS (dBm)
LTE	B1 (10M)	18050	20.2	50	-102.7
		18350	19.9	350	-101.7
		18550	19.6	550	-102.1
	B2 (10M)	18650	19.0	650	-101.4
		18900	19.6	900	-101.8
		19150	19.8	1150	-101.4
	B3 (10M)	19250	21.1	1250	-100.4
		19575	20.1	1575	-100.9
		19900	20.7	1900	-100.1
	B4 (10M)	20000	20.5	2000	-102.7
		20175	20.6	2175	-102.6
		20350	20.9	2350	-102.0
	B5 (10M)	20450	19.3	2450	-96.8
		20525	19.4	2525	-96.6
		20600	19.2	2600	-96.9
	B7 (10M)	20800	19.1	2800	-98.3
		21100	20.0	3100	-99.8
		21400	20.7	3400	-100.8
	B8 (10M)	21500	20.0	3500	-97.4
		21625	20.3	3625	-97.7
		21750	20.2	3750	-98.2

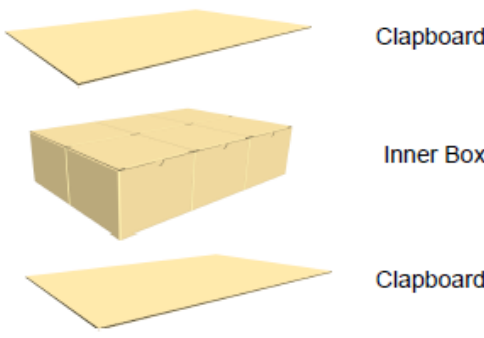
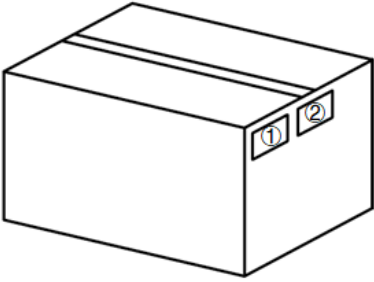
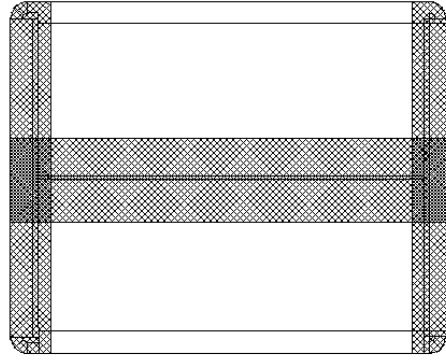
Band		Channel	TRP (dBm)	Channel	TIS (dBm)
	B12 (5M)	23035	19.0	5035	-98.5
		23095	19.2	5095	-97.3
		23155	19.9	5155	-96.1
	B13 (10M)	-	-	-	-
		23230	19.3	5230	-96.2
		-	-	-	-
	B14 (10M)	-	-	-	-
		23330	19.0	5330	-95.0
		-	-	-	-
	B17 (10M)	23780	18.4	5780	-95.9
		23790	18.6	5790	-95.7
		23800	18.6	5800	-95.3
	B18 (10M)	23900	20.4	5900	-97.9
		23925	19.7	5925	-97.8
		23950	19.1	5950	-97.7
	B19 (10M)	24050	19.7	6050	-97.0
		24075	20.4	6075	-97.3
		24100	20.2	6100	-97.3
	B20 (10M)	24200	20.0	6200	-96.9
		24300	19.6	6300	-97.2
		24400	19.7	6400	-97.3
	B25 (10M)	26090	19.4	8090	-100.2
		26365	19.7	8365	-99.8
		26640	19.0	8640	-99.4
	B26 (10M)	26740	18.9	8740	-99.1

Band		Channel	TRP (dBm)	Channel	TIS (dBm)
		26865	19.3	8865	-97.6
		26990	20.6	8990	-98.9
	B28 (10M)	27260	19.2	9260	-96.1
		27335	19.6	9335	-96.6
		27410	18.8	9410	-97.1
	B38 (20M)	37850	20.1	37850	-97.6
		38000	21.7	38000	-97.5
		38150	22.3	38150	-97.6
	B39 (20M)	38350	20.1	38350	-98.3
		38450	20.2	38450	-98.3
		38550	20.2	38550	-98.6
	B40 (20M)	38750	21.4	38750	-97.9
		39150	21.0	39150	-98.4
		39550	20.3	39550	-98.2
	B41 (20M)	40340	20.5	40340	-97.3
		40620	20.9	40620	-97.4
		41140	20.1	41140	-97.2
	B66 (10M)	132022	20.4	66486	-101.8
		132322	20.1	66886	-102.1
		132622	19.5	67086	-101.7
	B71 (10M)	133172	19.9	68636	-96.0
		133297	19.5	68761	-95.1
		133422	19.3	68886	-95.5
	5G	N41 (100M)	509202	21.77	509202
518598			21.46	518598	-89.72

Band	Channel	TRP (dBm)	Channel	TIS (dBm)	
	528000	22.00	528000	-90.44	
	N77 (100M)	623334	22.03	623334	-89.77
		650000	22.60	650000	-90.89
		676666	22.48	676666	-90.11
	N78 (100M)	623334	22.20	623334	-90.01
		636666	22.41	636666	-90.59
		650000	22.58	650000	-91.25
	N79 (100M)	697094	20.67	697094	-89.76
		713990	20.23	713990	-89.48
		729468	19.78	729468	-89.10

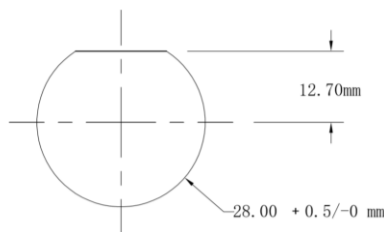
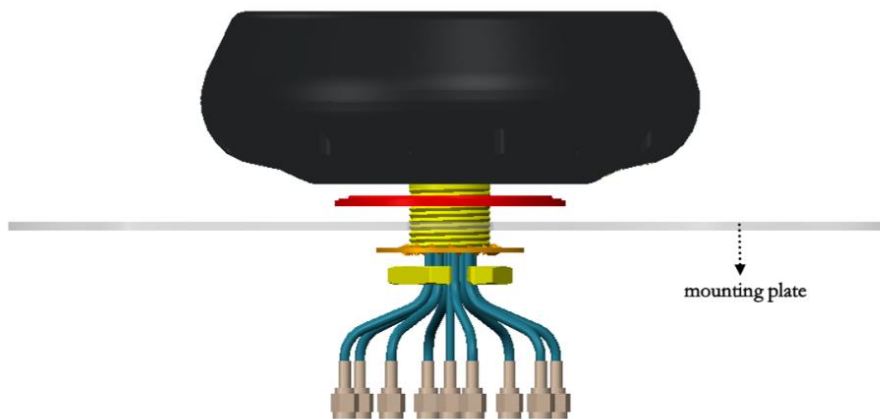
4 Packaging

Step	Packaging Picture / 2D Picture	Description
1	 <p>Lined with cardboard</p>	<p>1 PC: Antenna 1 PC: Lined with Cardboard Size: 185 × 185 × 60 mm</p> <p>Arrange the antenna and put it in the lined cardboard.</p>
2	 <p>EPE Pearl Foam</p> <p>Lined with cardboard</p>	<p>1 PC: EPE Pearl Foam Size: 186 × 186 × 40 mm</p> <p>After placing the product, use EPE Pearl Foam on the upper layer.</p>
3	 <p>Inner Box</p>	<p>1 PC: Inner Box Size: 191 × 191 × 135 mm</p> <p>Place the antenna and lining cardboard in the inner box.</p>

<p>4</p>	 <p>Clapboard</p> <p>Inner Box</p> <p>Clapboard</p>	<p>1 PC: Carton Size: 600 × 404 × 164 mm Antenna: 6 PCS / Carton 2 PCS: Clapboard Size: 588 × 392 mm</p> <p>Place 1 clapboard on the bottom. Then 6 PCS antennas in the middle. Then 1 PC clapboard on the top.</p>
<p>5</p>		<p>Labeling</p> <p>① Carton label ② Quality label</p>
<p>6</p>		<p>Sealing Cartons H-shaped sealing cartons</p>

5 Installation

- Recommended hole dimensions as below.
- Recommended mounting plate thickness: ≤3 mm.
- Reference torque: 10-12N. M.



Hole for housing or mounting plane

Installation Instructions					
Tube Mark	Tube Color	Cable	Connector	Frequency (MHz)	Technology
LMH	Red	ALS302	SMA Male	600–960 MHz, 1400–6000 MHz	5G/4G/3G/2G
MH	Black	ALS302	SMA Male	1400–6000 MHz	5G MIMO/Wi-Fi/BT
GNSS	Blue	RG174	SMA Male	1164–1189 MHz, 1565–1606 MHz	GPS/GLONASS/GALILEO /BDS/QZSS/IRNSS

- Note: YB0027AA (9IN1=4 x LMH+4 x MH+1 x GNSS)

6 Appendix Reference

Abbreviation	Description
5G	5th-Generation Mobile Communication Technology
4G	4th-Generation Mobile Communication Technology
3G	3rd-Generation Mobile Communication Technology
2G	2nd-Generation Mobile Communication Technology
GNSS	Global Navigation Satellite System
GLONASS	Global Navigation Satellite System (Russia)
GPS	Global Positioning System
QZSS	Quasi-Zenith Satellite System
IRNSS	Indian Regional Navigation Satellite System
LTE	Long Term Evolution
LTE-A	LTE-Advanced
NB-IoT	Narrow Band Internet of Things
LPWA	Low Power Wide Area
WCDMA	Wideband Code Division Multiple Access
GSM	Global System for Mobile Communications
Wi-Fi	Wireless Fidelity
GND	Ground
LMH	Low-Middle-High Bands
LMHs	LMH antennas
MH	Middle-High Envelope Bands
MHs	MH antennas

FS	In Free Space
MP	On Metal Plane
VSWR	Voltage Standing Wave Ratio
S-Parameter	Scatter Parameter
LNA	Low Noise Amplifier
GPRS	General Packet Radio Service
WLAN	Wireless Local Area Network
HSPA	High-Speed Packet Access
RHCP	Right Hand Circularly Polarized
RoHS	Restriction of Hazardous Substances
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
IP	Ingress Protection
IK	Impact Protection
ECE R118	UN Regulation No. 118 (ECE R118-approved cables are flame-resistant cables)

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.

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

Tel: +86 21 5108 6236

Email: info@quectel.com

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

[http: www.quectel.com-support-sales.htm](http://www.quectel.com-support-sales.htm)

For technical support, or to report documentation errors, please visit:

[http: www.quectel.com-support-technical.htm](http://www.quectel.com-support-technical.htm)

Or email us at: support@quectel.com

Legal Notices

We offer information as a service to you. The provided information is based on your requirements and we make every effort to ensure its quality. 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. We may revise or restate this document from time to time at our sole discretion without any prior notice to you.

Use and Disclosure Restrictions

License Agreements

Documents and information provided by us shall be kept confidential, unless specific permission is granted. They shall not be accessed or used for any purpose except as expressly provided herein.

Copyright

Our and third-party products hereunder may contain copyrighted material. Such copyrighted material shall not be copied, reproduced, distributed, merged, published, translated, or modified without prior written consent. We and the third party have exclusive rights over copyrighted material. No license shall be granted or conveyed under any patents, copyrights, trademarks, or service mark rights. To avoid ambiguities, purchasing in any form cannot be deemed as granting a license other than the normal non-exclusive, royalty-free license to use the material. We reserve the right to take legal action for noncompliance with abovementioned requirements, unauthorized use, or other illegal or malicious use of the material.

Trademarks

Except as otherwise set forth herein, nothing in this document shall be construed as conferring any rights to use any trademark, trade name or name, abbreviation, or counterfeit product thereof owned by Quectel or any third party in advertising, publicity, or other aspects.

Third-Party Rights

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 shall be governed by all restrictions and obligations applicable thereto.

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 or usage of trade.

Privacy Policy

To implement module functionality, certain device data are uploaded to Quectel's or third-party's servers, including carriers, chipset suppliers or customer-designated servers. Quectel, strictly abiding by the relevant laws and regulations, shall retain, use, disclose or otherwise process relevant data for the purpose of performing the service only or as permitted by applicable laws. Before data interaction with third parties, please be informed of their privacy and data security policy.

Disclaimer

- a) We acknowledge no liability for any injury or damage arising from the reliance upon the information.
- b) We shall bear no liability resulting from any inaccuracies or omissions, or from the use of the information contained herein.
- c) While we have made every effort to ensure that the functions and features under development are free from errors, it is possible that they could contain errors, inaccuracies, and omissions. Unless otherwise provided by valid agreement, we make no warranties of any kind, either implied or express, and exclude all liability for any loss or damage suffered in connection with the use of features and functions under development, to the maximum extent permitted by law, regardless of whether such loss or damage may have been foreseeable.
- d) We are not responsible for the accessibility, safety, accuracy, availability, legality, or completeness of information, advertising, commercial offers, products, services, and materials on third-party websites and third-party resources.

Copyright © Quectel Wireless Solutions Co., Ltd. 2025. All rights reserved.

NOTE



This product must not be disposed of as normal household waste, in accordance with EU directive for waste electrical and electronic equipment (WEEE- 2012/19/EU). Instead, it should be disposed of by returning it to the point of sale, or to a municipal recycling collection point.

Revision History

Version	Date	Author	Note
-	2022-04-08	Boris WANG/ Kenny YIN	Creation of the document
1.0	2022-05-26	Boris WANG/ Kenny YIN	First official release
1.1	2022-06-07	Boris WANG	Updated the data (Chapter 3)
1.2	2022-09-13	Boris WANG	Updated the electrical performance data.
2.0	2022-11-11	Wilson BAO	Updated the whole content based on the new datasheet format.
2.1	2023-05-23	Wilson Bao	Update the cover and second page and some other small points
2.2	2023-07-20	Boris WANG/ Kenny YIN	Updated some details
2.3	2023-11-15	Kenny YIN	Updated the drawing (Chapter 2).
2.4	2023-12-07	Junsen LI/ Aria CHU	Updated GNSS LNA data (Chapters 1.1.3 and 3.1.5).
2.5	2024-06-25	Junsen LI/ Kenny YIN/ David LIU/ Vinnie LIU	<ol style="list-style-type: none"> 1. Updated the product name. 2. Updated the overview. 3. Added UV resistant (Chapter 1.3) 4. Added Chapters 1.4, 5 and 6. 5. Updated lots of data in this document. It should be read in its entirety.
2.6	2025-02-21	Mordecai LIU	Updated average gain data (Chapter 3.2.2).
2.7	2025-07-14	Mike GUO/ Aria CHU	<ol style="list-style-type: none"> 1. Updated the antenna image (Cover page). 2. Updated the drawing (Chapter 2).

QUECTEL

www.quectel.com