Antenna Datasheet

Product OC:	YB0027AA
Version:	2.0
Date:	2022-11-11
Status:	Released

Product Name:	5G Screw Mount Antenna Box
Key Features:	Optimized for 5G and 4G networks Terminal mounting Screw mount SMA male connector IP rating: IP67 & IP69K Durable KIBILAC® ASA housing

Overview

This ultra-wide-band 5G/4G antenna box provides broad coverage from 700-6000MHz whilst backward-compatible to support 3G/2G networks as well at Cat-M and NB-IoT. The antenna is designed to work with various GND plane sizes or in free space for ease of integration with connection via 4 various cable lengths from 500-5000mm, terminated with SMA connectors. This screw mount omnidirectional antenna is easy to install with maximum durability with its IP69 KIBILAC® ASA enclosure. It is compatible with Quectel's RM520x Series modules. Quectel provides comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs.

Contents

1 Specification

Electrical--LMHs

	Band	B71	B12 /B13 /B28	B5 /B8 /B26	N74 /N75 /N76	B1 /B2 /B3	B40	WIFI 2G	B38 /B41	B42 /B48 /N77	N79	WIFI 5G
	Freq. (MHz)	600-700	700-810	820-960	1420 - 1520	1700 - 2170	2300 - 2400	2400 - 2500	2500 - 2690	3300 - 4200	4400 - 5000	5150 - 5850
Max VSWR	FS	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	In Free Space	≤ 3.7
	On Metal Plane	≤ 3.4
Return Loss	In Free Space	≤ -4.8 dB
	On Metal Plane	≤ -5.3 dB
Peak Gain	In Free Space	≤ 4.9 dB
	On Metal Plane	≤ 8.2 dB

- LMHs: LMH1, LMH2, LMH3, LMH4 Antennas
- MHs: MH1, MH2, MH3, MH4 Antennas
- FS: In Free Space
- MP: On 300 * 400mm Metal Plane

Electrical--MHs

	Band	B71	B12 /B13 /B28	B5 /B8 /B26	N74 /N75 /N76	B1 /B2 /B3	B40	WIFI 2G	B38 /B41	B42 /B48 /N77	N79	WIFI 5G
	Freq. (MHz)	600-700	700-810	820-960	1420 - 1520	1700 - 2170	2300 - 2400	2400 - 2500	2500 - 2690	3300 - 4200	4400 - 5000	5150 - 5850
Max VSWR	FS	/	/	/	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	In Free Space	≤ 4.3
	On Metal Plane	≤ 3.7
Return Loss	In Free Space	≤ -4.1 dB
	On Metal Plane	≤ -4.8 dB
Peak Gain	In Free Space	≤ 4.1 dB
	On Metal Plane	≤ 8.1 dB

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- MHs: MH1, MH2, MH3, MH4 Antennas
- FS: In Free Space
- MP: On 300 * 400mm Metal Plane

Electrical--GNSS

	Band	GNSS L5	GNSS L2	GNSS L1
	Freq. (MHz)	1164 - 1189	1217 - 1238	1559 - 1606
Max VSWR	FS	2.0	/	2.1
	MP	2.1	/	2.0
Max Return Loss (dB)	FS	-9.7	/	-9.1
	MP	-8.8	/	-9.4
AVG Eff. (%)	FS	58.9	/	52.5
	MP	57.7	/	52.1
AVG Gain (dB)	FS	-2.3	/	-2.8
	MP	-2.4	/	-2.8
Max Peak Gain (dBi)	FS	2.8	/	4.5
	MP	4.0	/	6.3

VSWR	In Free Space	≤ 2.1
	On Metal Plane	≤ 2.1
Return Loss	In Free Space	≤ -9.1 dB
	On Metal Plane	≤ -8.8 dB
Peak Gain	In Free Space	≤ 4.5 dBi
	On Metal Plane	≤ 6.3 dBi

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- MHs: MH1, MH2, MH3, MH4 Antennas
- FS: In Free Space
- MP: On 300 * 400mm Metal Plane

Electrical		
Frequency Range	LMHs	600-960MHz,1400-6000MHz
	MHs	1400-6000MHz
	GNSS	1164-1189MHz,1559-1606MHz
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	
GNSS LNA Electrical		
LNA Gain	20 ± 3 dB	
Noise Figure	⩽ 2.5 dB	
Output VSWR	< 2.0	
Input VSWR	< 2.0	
Working Voltage	DC 2.8–3.6 V	
Working Current	24 mA Max. (Typ. 3 V)	
Impedance	50 Ω	

- LMHs: LMH1, LMH2, LMH3, LMH4 Antennas
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Mechanical			
Antenna Size		Φ162 x 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	
Weight		Typ. 535 g	
Mounting Type		Screw (M27 Nut)	
Environmental			
Operation Temperature		-40 °C to +85 °C	
Humidity		Non-condensing 65°C 95% RH	
Ingress Protection (IP) Rating		IP67 (After Installation) IP69K (After Installation)	
Impact Protection (IK) Rating		IK09	
RoHS & REACH Compliant		Yes	
Storage			
Storage Temperature		-40 °C to +85 °C	
Storage Humidity		Less than 75% RH	
Storage Place		Away from corrosive gas and direct sunlight	
Packaging		Antennas should be stored in unopened sealed manufacturer's plastic packaging.	

- LMHs: LMH1, LMH2, LMH3, LMH4 Antennas
- MHs: MH1, MH2, MH3, MH4 Antennas
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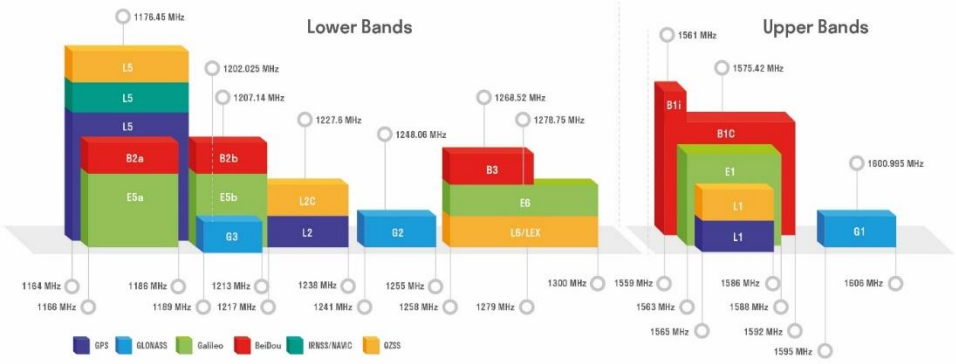
@ Supported Bands

5G NR / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / GPRS / GSM / NB-IoT					
	Frequency (MHz)	Uplink (MHz)	Downlink (MHz)	5G Mains	5G MIMOs
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	√	
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		√	√

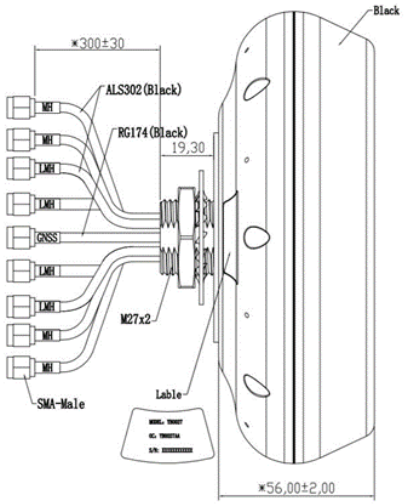
- Covered √ means efficiency > 20%

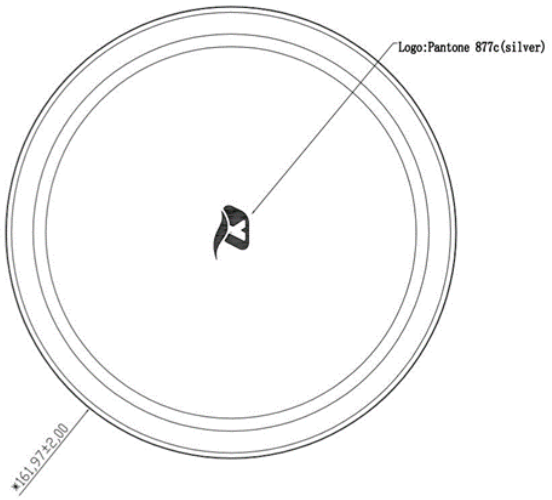
GNSS Frequency Bands (MHz)					
GPS	**L1** Centre 1575.42 (1565–1586)	**L2** Centre 1227.6 (1217–1238)	**L5** Centre 1176.45 (1164–1189)		
	√	-	√		
GLONASS	**G1/L1OC/L1OF** Centre 1601 (1595–1606)	**G2/L2OC/L2OF** Centre 1248.06 (1241–1255)	**G3/L3OC** Centre 1202.025 (1189–1213)		
	√	-	-		
GALILEO	**E1**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

GNSS Bands and Constellations

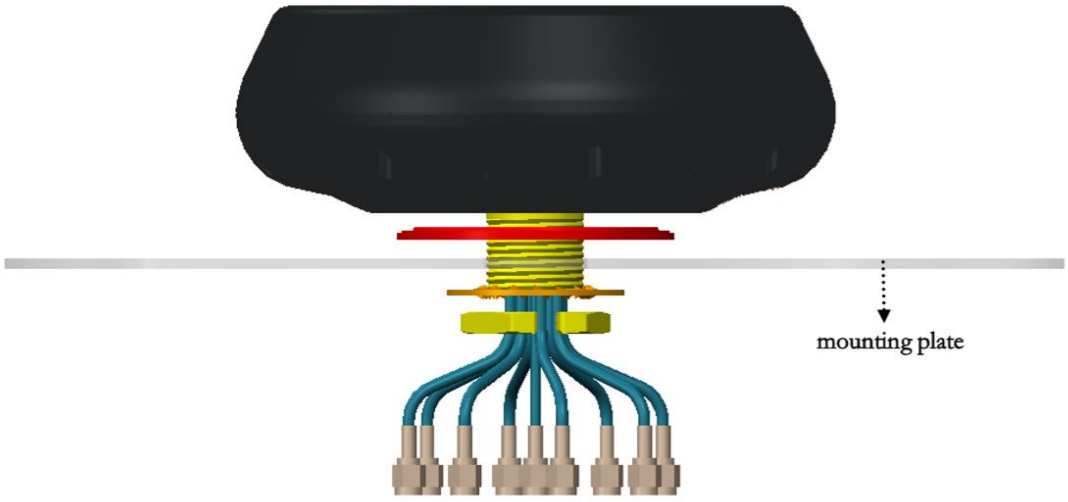


2 Drawing





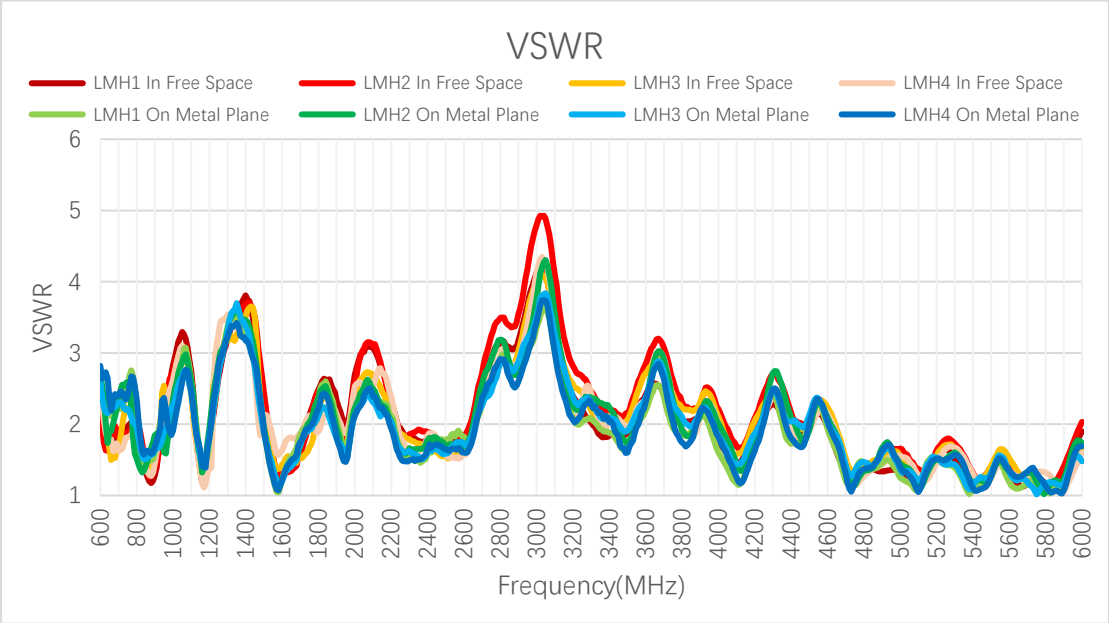
- **LMHs can be connected arbitrarily, and 4 MHs can be connected arbitrarily.**
- **Recommended assembly hole diameter: 28.0 mm.**
- **Recommended mounting plane thickness: 3.0 mm.**

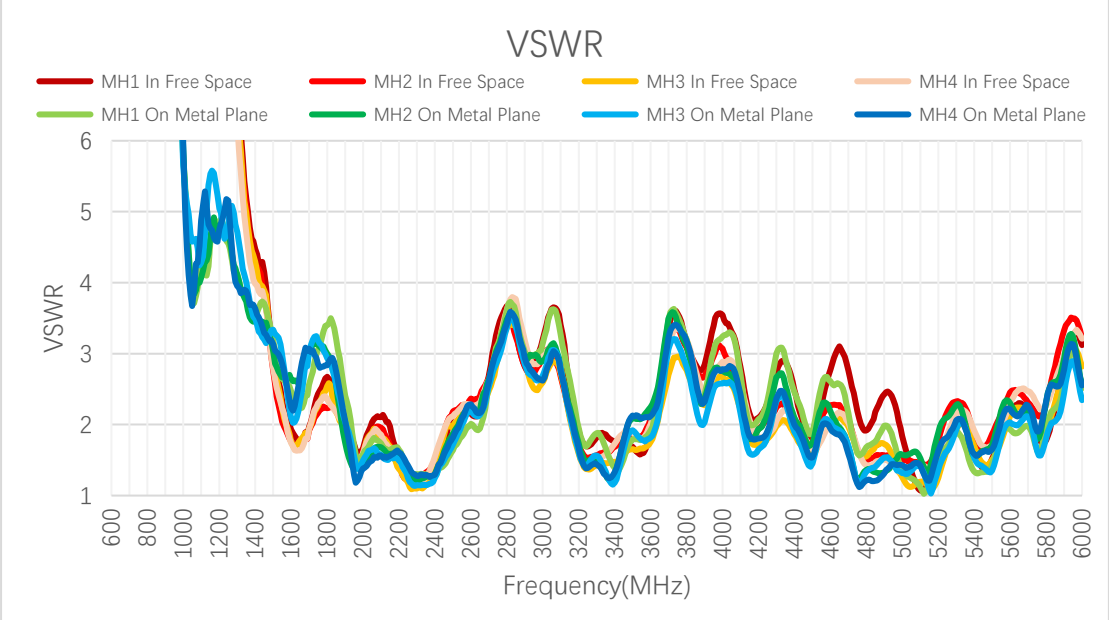


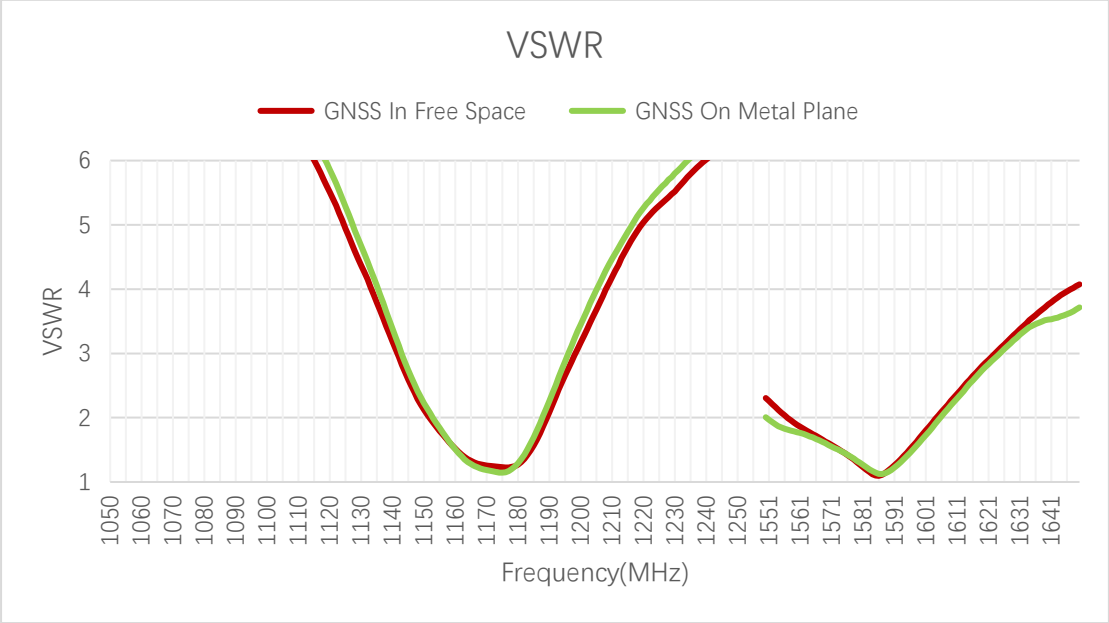
3 Detail Performance

3.1 S-Parameter Test

3.1.1 VSWR







VSWR

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

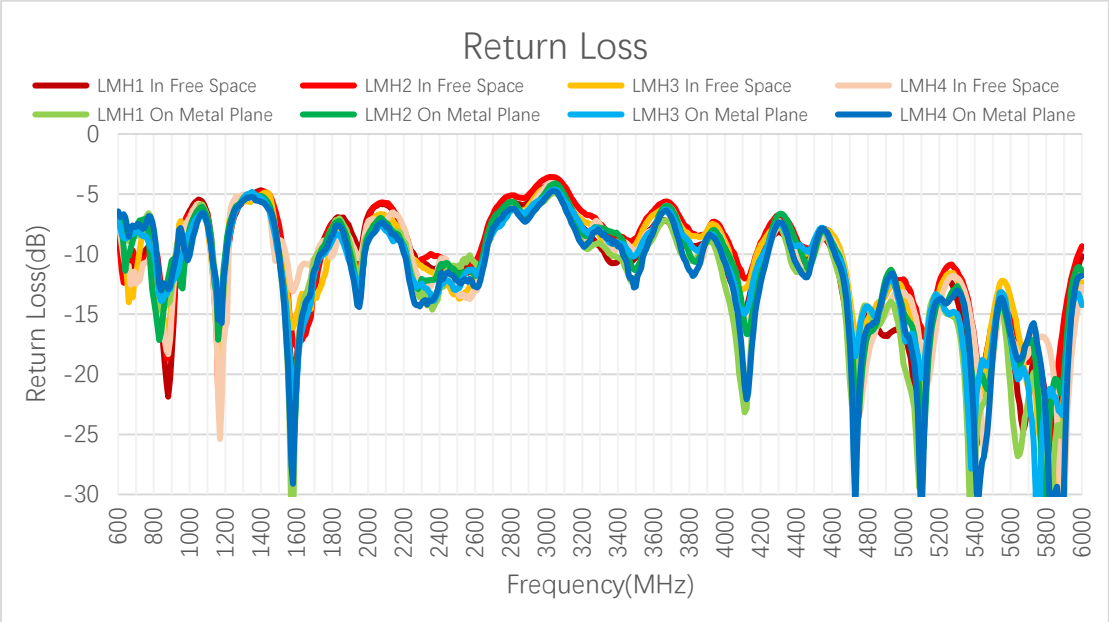
VSWR

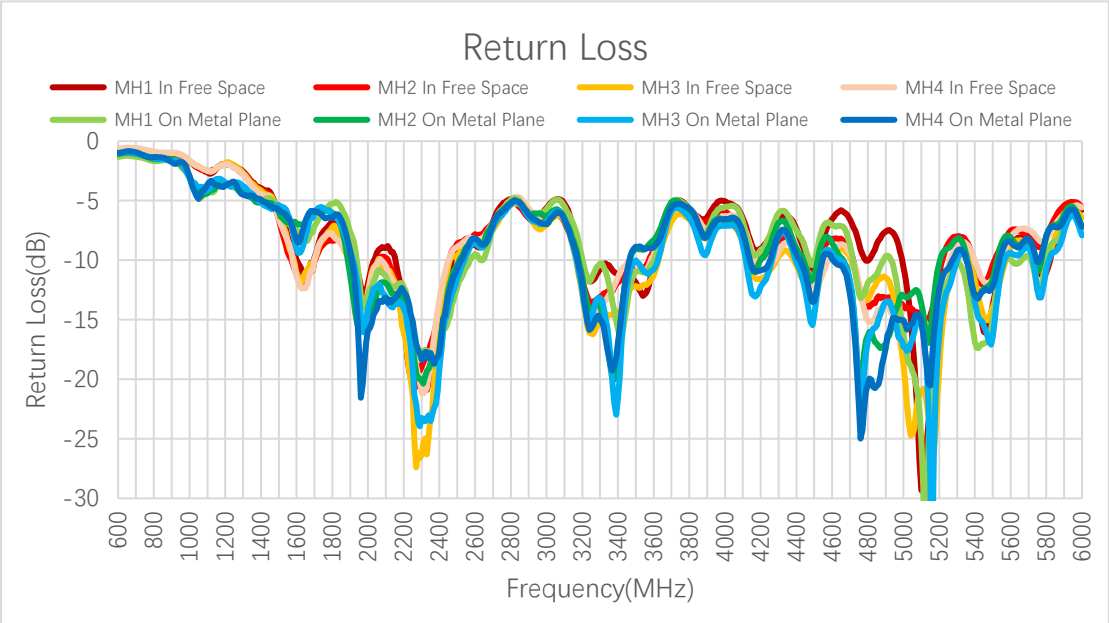
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	/	/	/	/	/	/	4.3	2.0	2.4	2.2
	MP	/	/	/	/	/	/	3.7	2.7	3.0	2.8
MH2	FS	/	/	/	/	/	/	4.0	2.0	2.1	2.1
	MP	/	/	/	/	/	/	3.5	3.1	3.1	2.0
MH3	FS	/	/	/	/	/	/	4.0	2.0	2.2	2.0
	MP	/	/	/	/	/	/	3.2	3.1	3.2	2.3
MH4	FS	/	/	/	/	/	/	3.9	2.0	2.2	2.1
	MP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

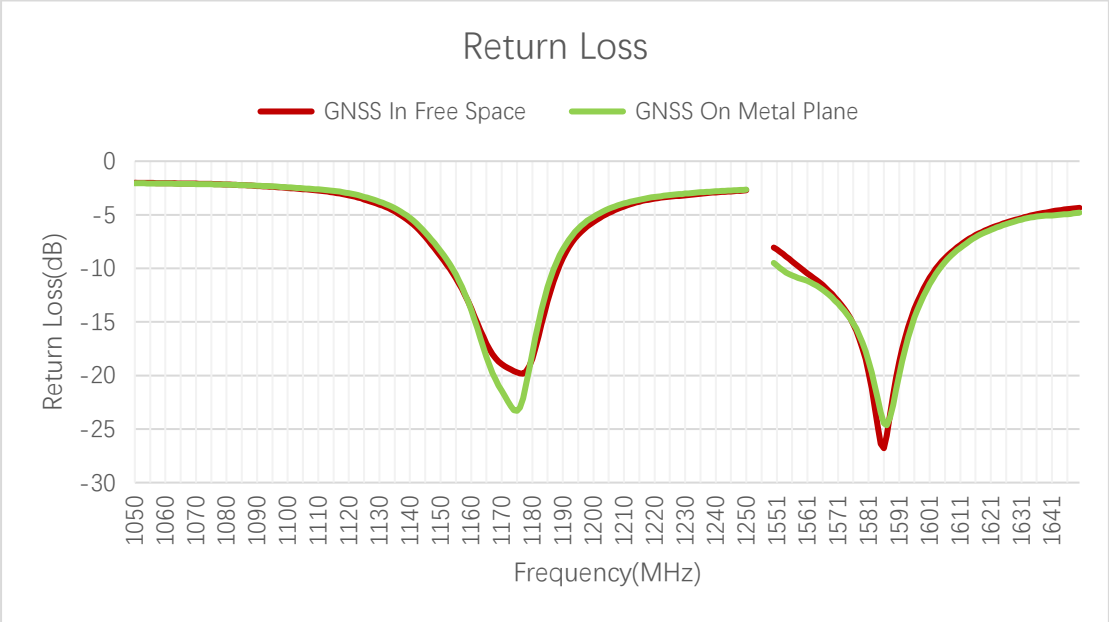
VSWR

Frequency (MHz)		1176	1227	1561	1575	1602
GNSS	FS	1.2	/	1.9	1.5	1.9
	MP	1.2	/	1.8	1.5	1.8

3.1.2 Return Loss







Return Loss(dB)

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)

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

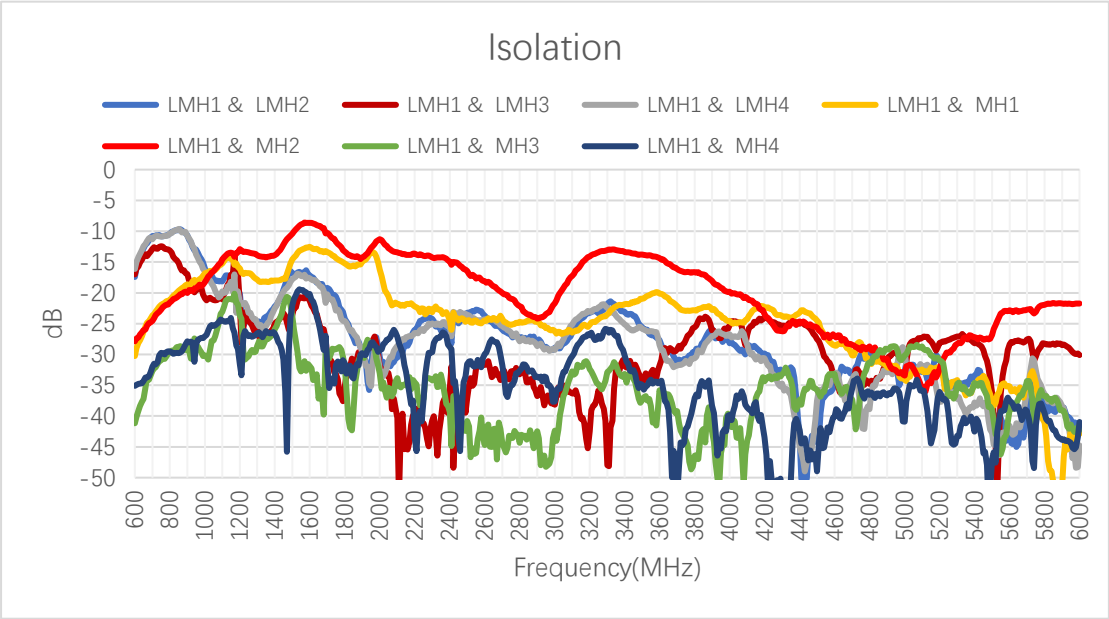
Return Loss(dB)

Frequency (MHz)		1176	1227	1561	1575	1602
GNSS	FS	-19.8	/	-10.5	-14.6	-10.4
	MP	-23.0	/	-11.2	-14.7	-11.0

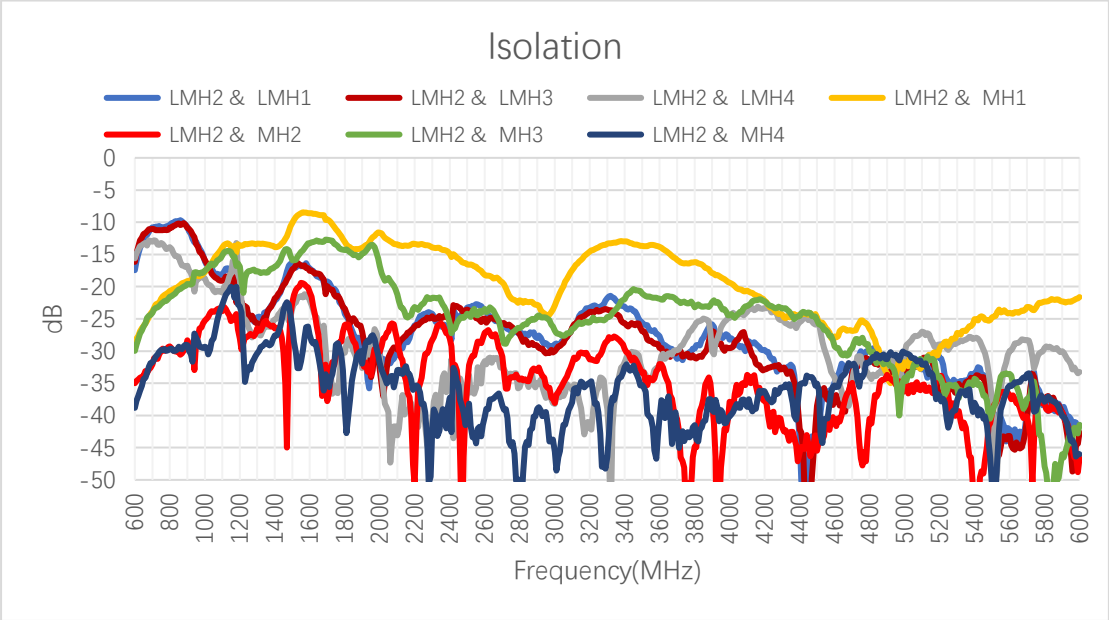
3.1.3 Isolation

3.1.3.1 Test Status: In Free Space

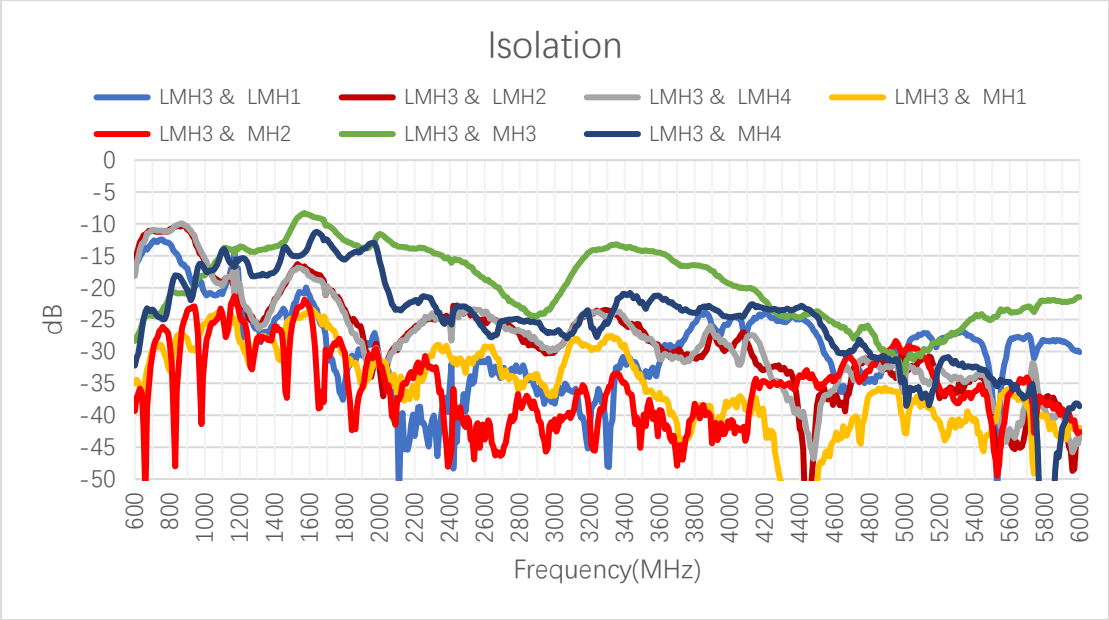
- LMH1



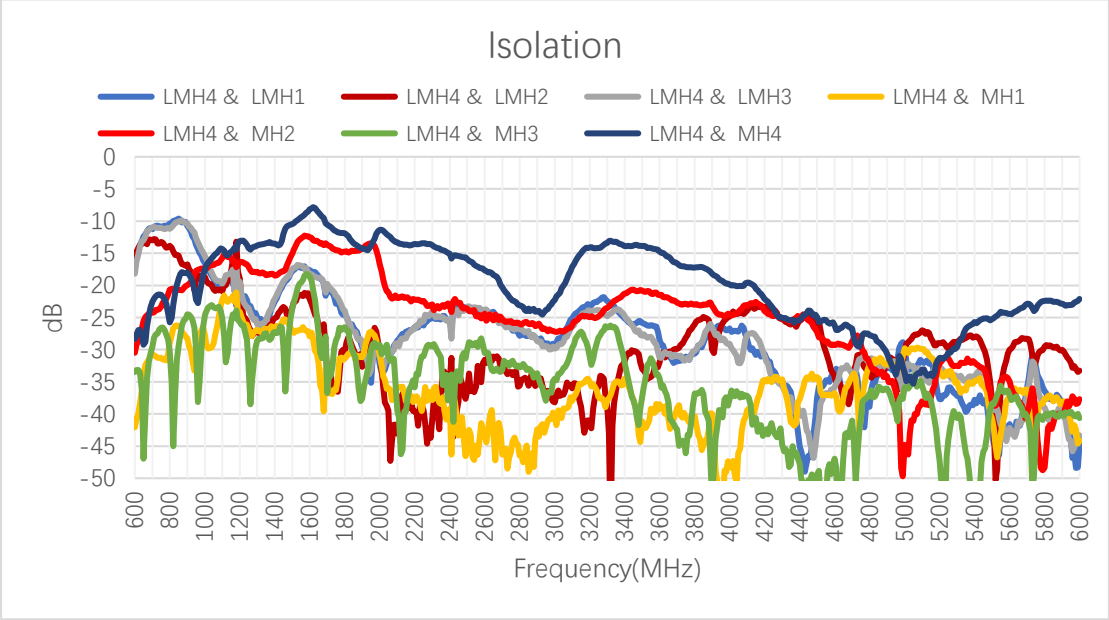
- LMH2



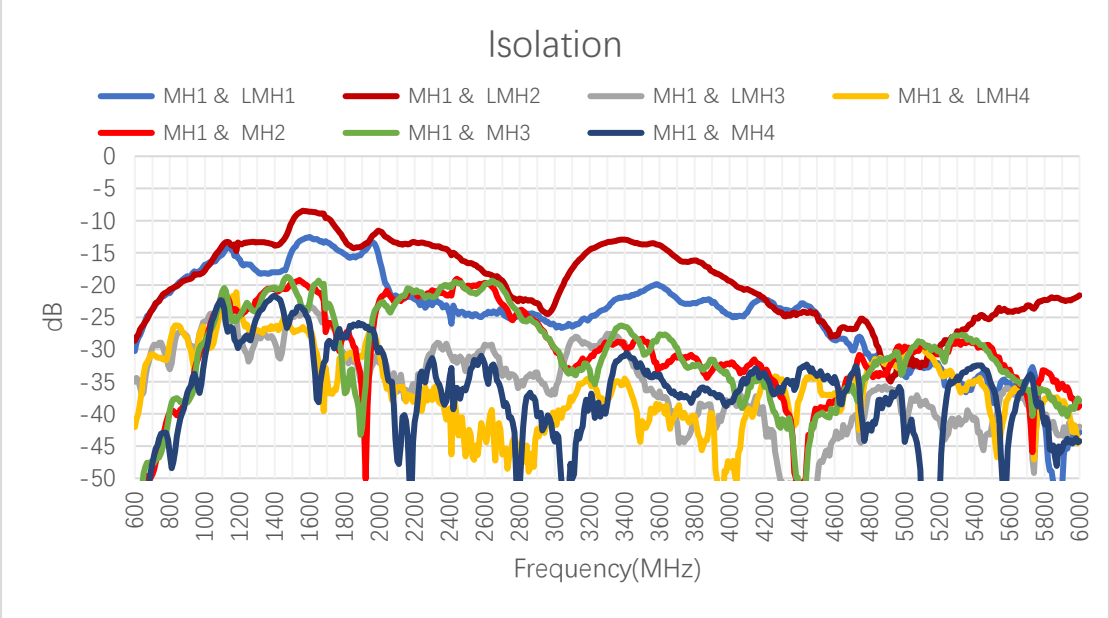
- LMH3


Isolation
LMH3 & LMH1
LMH3 & LMH2
LMH3 & LMH4
LMH3 & MH1
LMH3 & MH2
LMH3 & MH3
LMH3 & MH4
dB
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
Frequency(MHz)

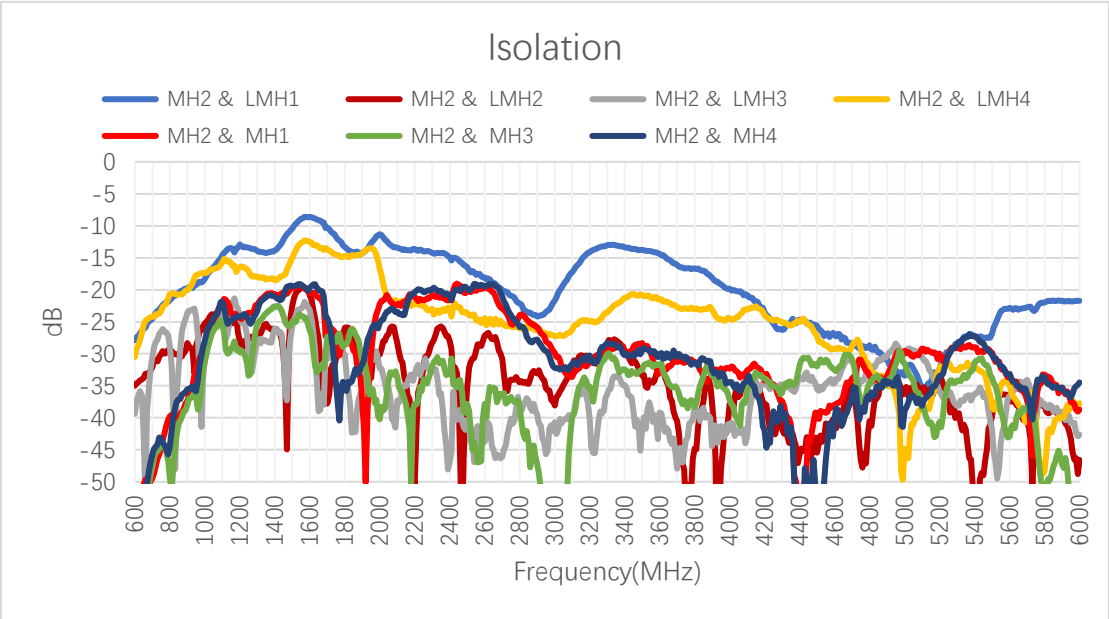
- LMH4


Isolation
LMH4 & LMH1
LMH4 & LMH2
LMH4 & LMH3
LMH4 & MH1
LMH4 & MH2
LMH4 & MH3
LMH4 & MH4
dB
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
Frequency(MHz)

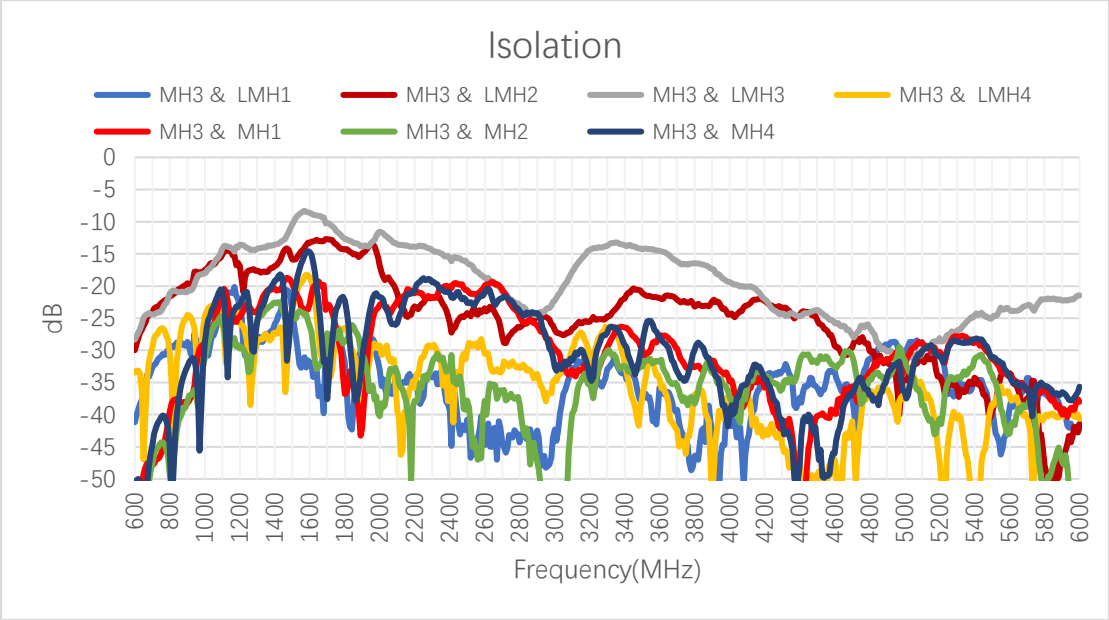
- MH1


Isolation
MH1 & LMH1
MH1 & LMH2
MH1 & LMH3
MH1 & LMH4
MH1 & MH2
MH1 & MH3
MH1 & MH4
dB
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
Frequency(MHz)

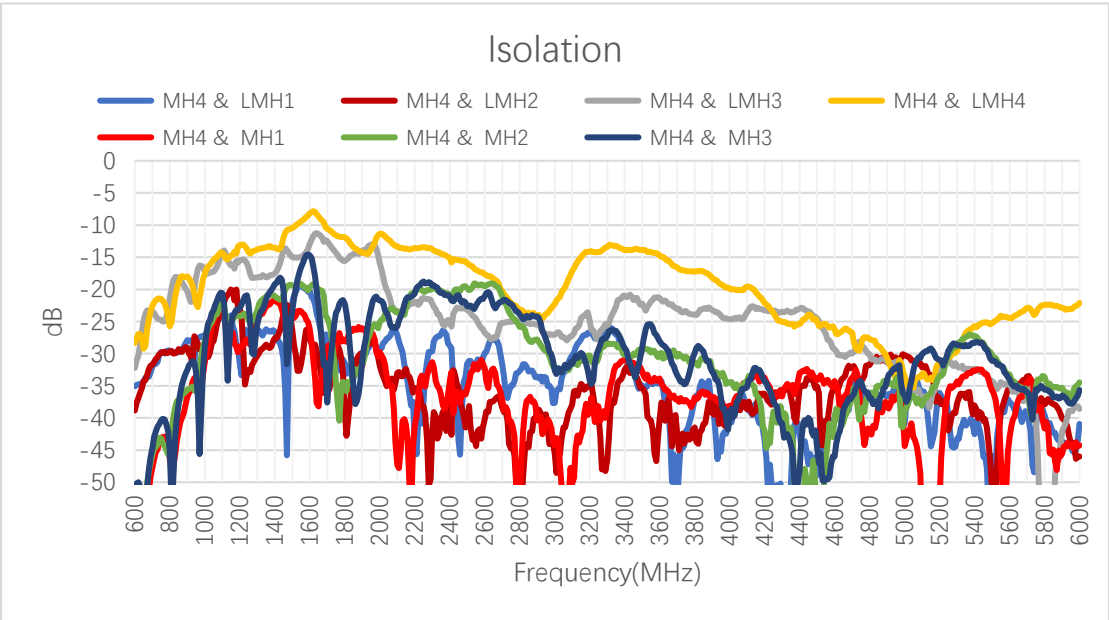
- MH2


Isolation
MH2 & LMH1
MH2 & LMH2
MH2 & LMH3
MH2 & LMH4
MH2 & MH1
MH2 & MH3
MH2 & MH4
dB
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
Frequency(MHz)

- MH3

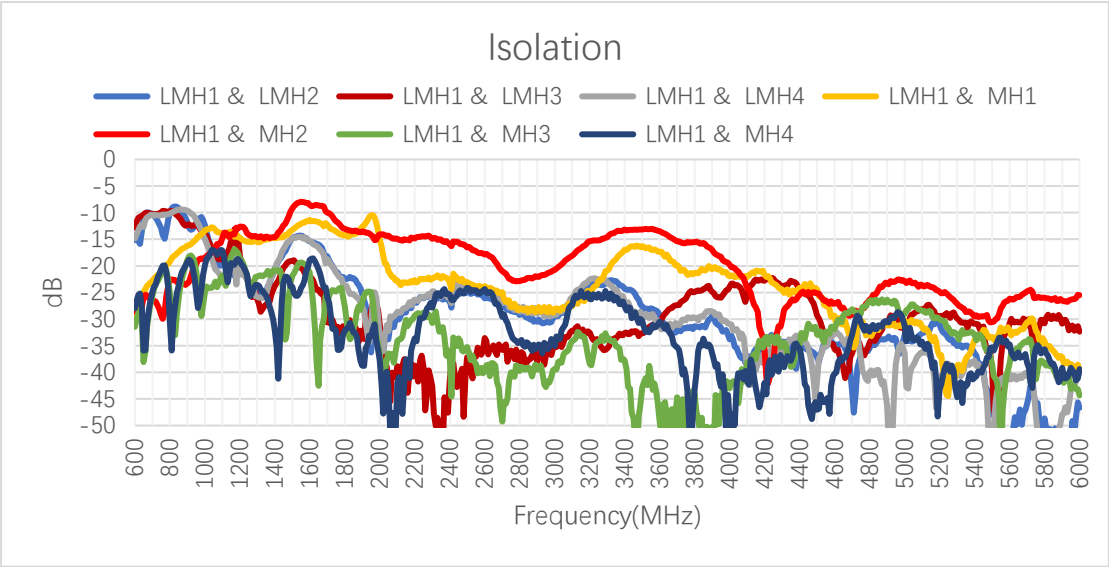

Isolation
MH3 & LMH1
MH3 & LMH2
MH3 & LMH3
MH3 & LMH4
MH3 & MH1
MH3 & MH2
MH3 & MH4
dB
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
Frequency(MHz)

- MH4

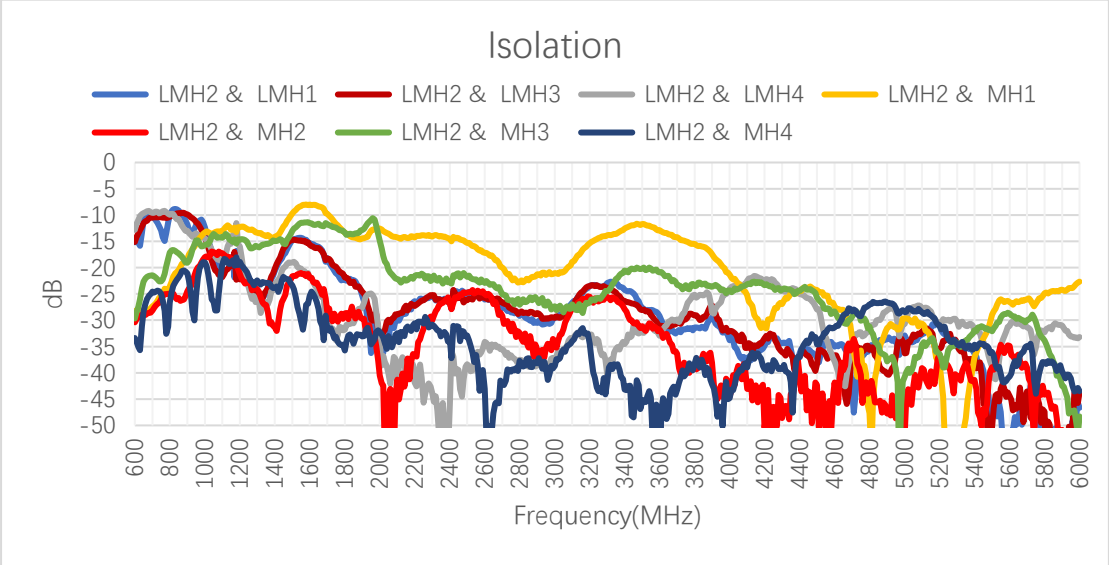

Isolation
MH4 & LMH1
MH4 & LMH2
MH4 & LMH3
MH4 & LMH4
MH4 & MH1
MH4 & MH2
MH4 & MH3
dB
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
Frequency(MHz)

3.1.3.2 Test Status: On 300 * 400 mm Metal Plane

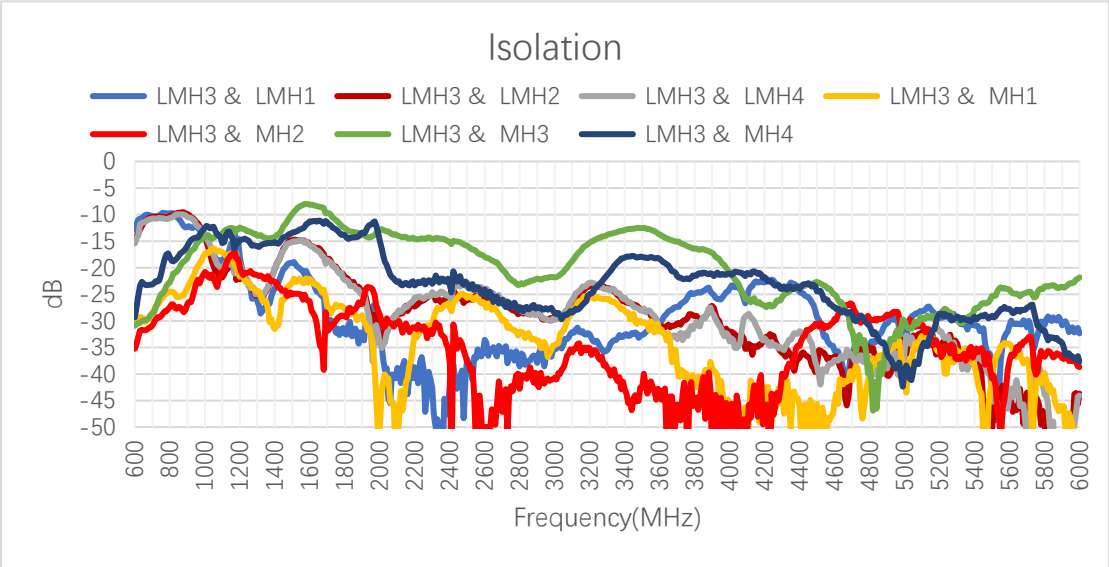
- LMH1



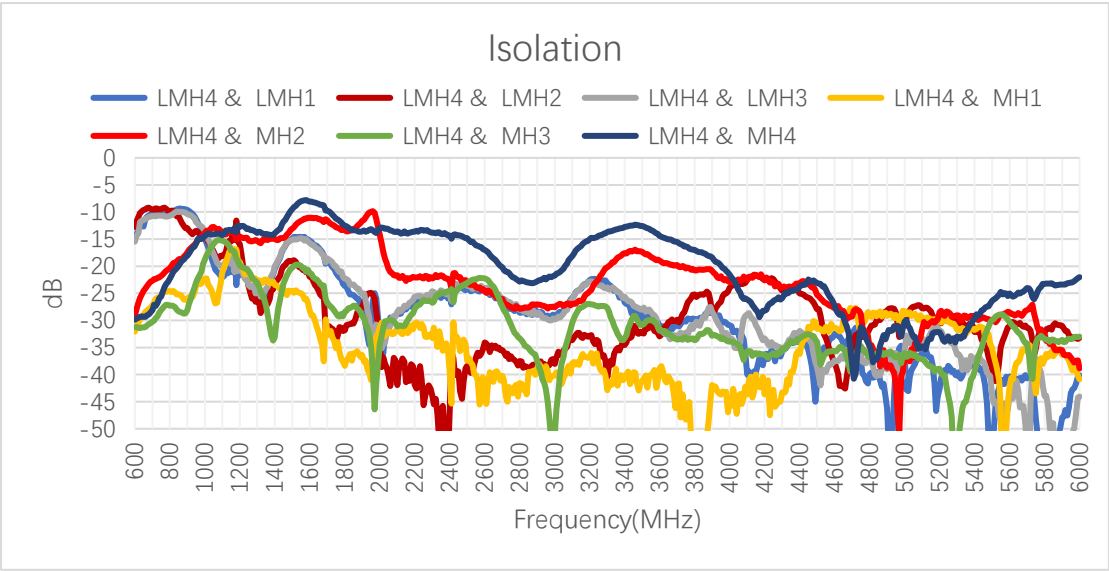
- LMH2



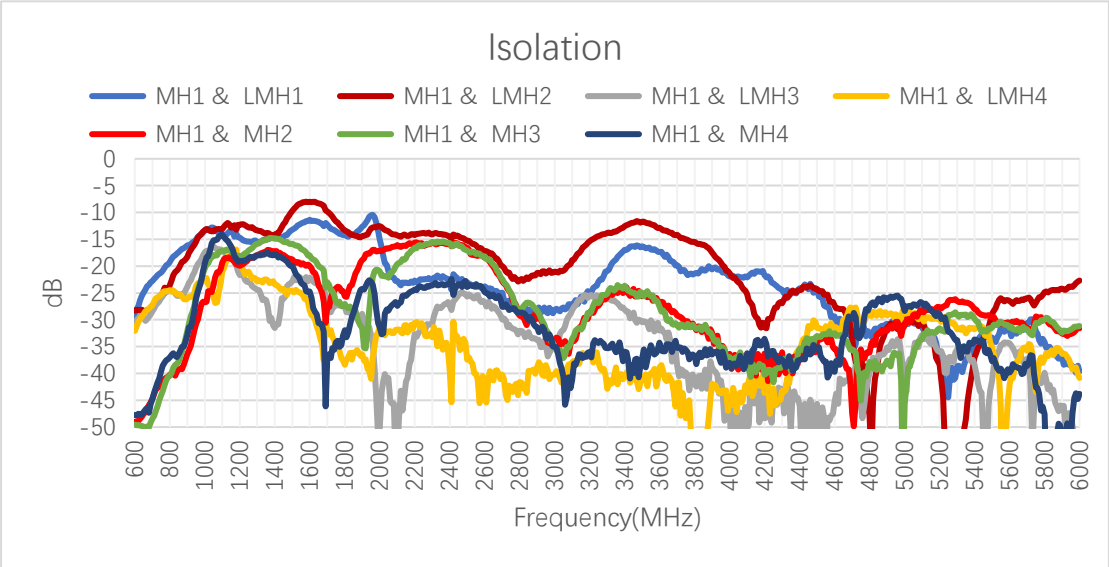
- LMH3


Isolation
LMH3 & LMH1
LMH3 & LMH2
LMH3 & LMH4
LMH3 & MH1
LMH3 & MH2
LMH3 & MH3
LMH3 & MH4
dB
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
Frequency(MHz)

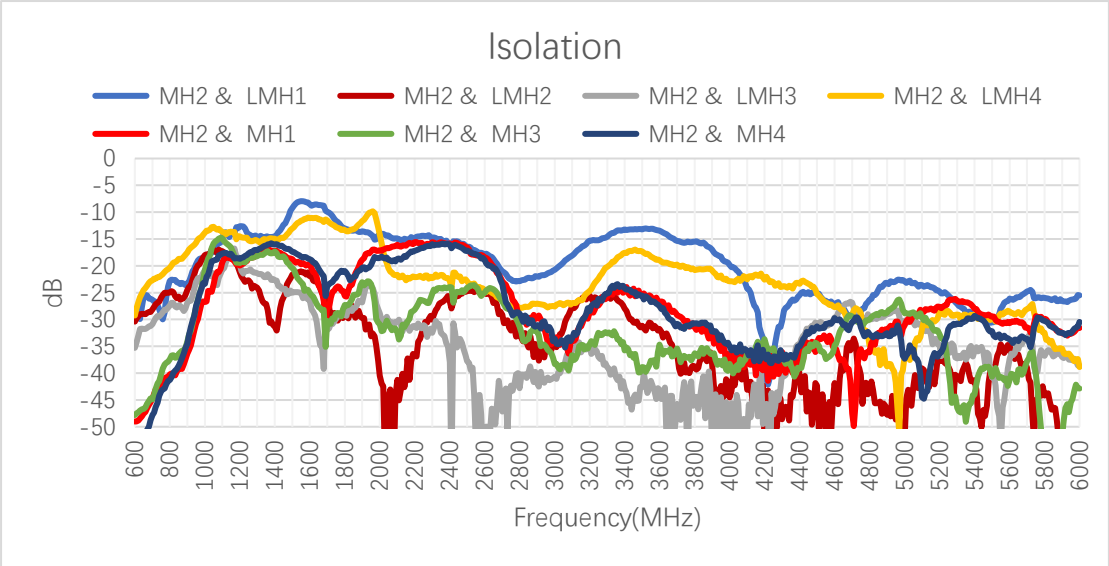
- LMH4


Isolation
LMH4 & LMH1
LMH4 & LMH2
LMH4 & LMH3
LMH4 & MH1
LMH4 & MH2
LMH4 & MH3
LMH4 & MH4
dB
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
Frequency(MHz)

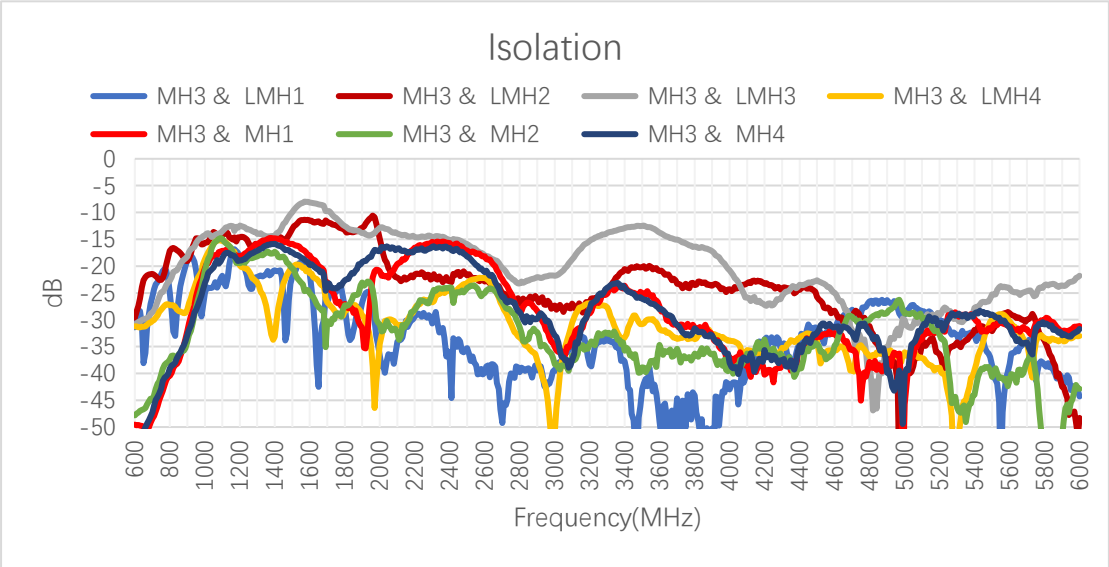
- MH1


Isolation
MH1 & LMH1
MH1 & LMH2
MH1 & LMH3
MH1 & LMH4
MH1 & MH2
MH1 & MH3
MH1 & MH4
dB
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
Frequency(MHz)

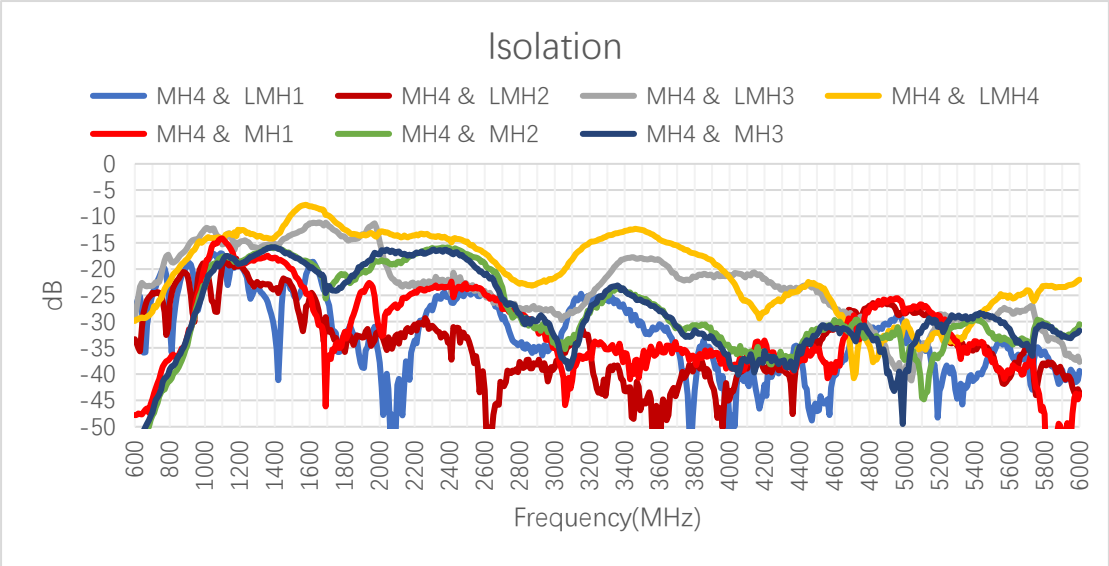
- MH2


Isolation
MH2 & LMH1
MH2 & LMH2
MH2 & LMH3
MH2 & LMH4
MH2 & MH1
MH2 & MH3
MH2 & MH4
dB
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
Frequency(MHz)

- MH3


Isolation
MH3 & LMH1
MH3 & LMH2
MH3 & LMH3
MH3 & LMH4
MH3 & MH1
MH3 & MH2
MH3 & MH4
dB
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
Frequency(MHz)

- MH4

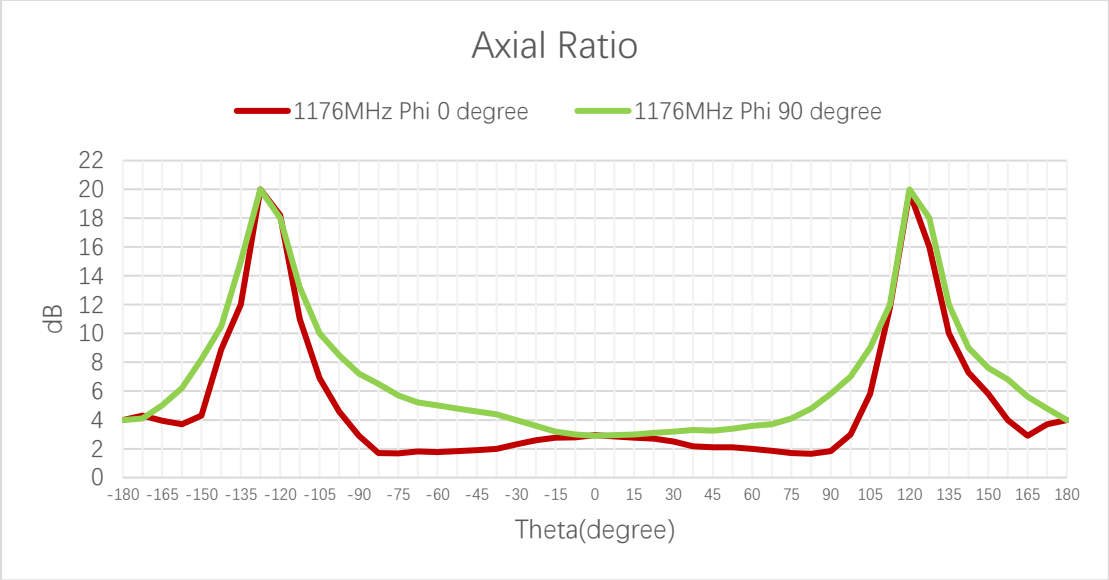

Isolation
MH4 & LMH1
MH4 & LMH2
MH4 & LMH3
MH4 & LMH4
MH4 & MH1
MH4 & MH2
MH4 & MH3
dB
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
Frequency(MHz)

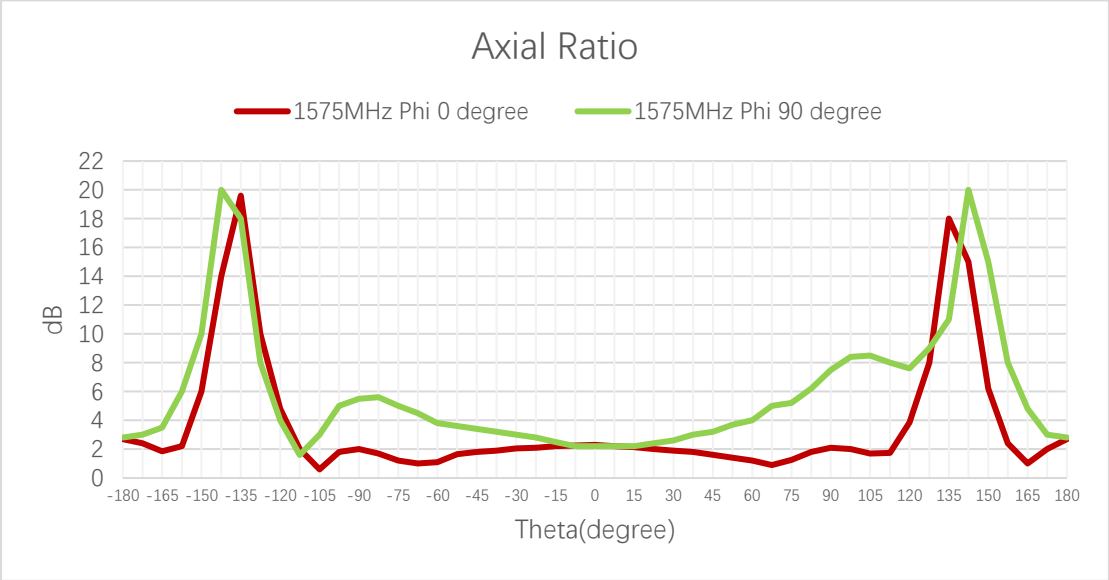
Max Isolation(dB)

	Band	B71	B12 /B13 /B28	B5 /B8 /B26	N74 /N75 /N76	B1 /B2 /B3	B40	WIFI 2G	B38 /B41	B42 /B48 /N77	N79	WIFI 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 * 400mm Metal Plane

3.1.4 GNSS Axial Ratio

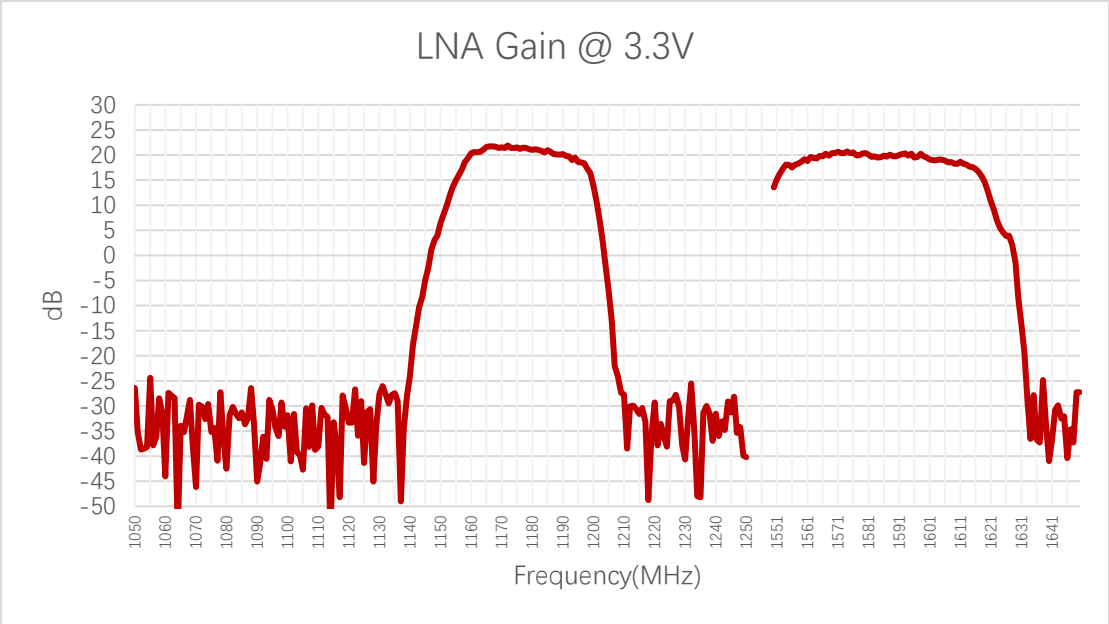




Axial Ratio(dB)

Frequency (MHz)		1176	1227	1575
GNSS	Phi = 0 (deg) Theta = 0 (deg)	2.8	/	2.2
	Phi = 90 (deg) Theta = 0 (deg)	2.8	/	2.2

3.1.5 GNSS LNA Gain

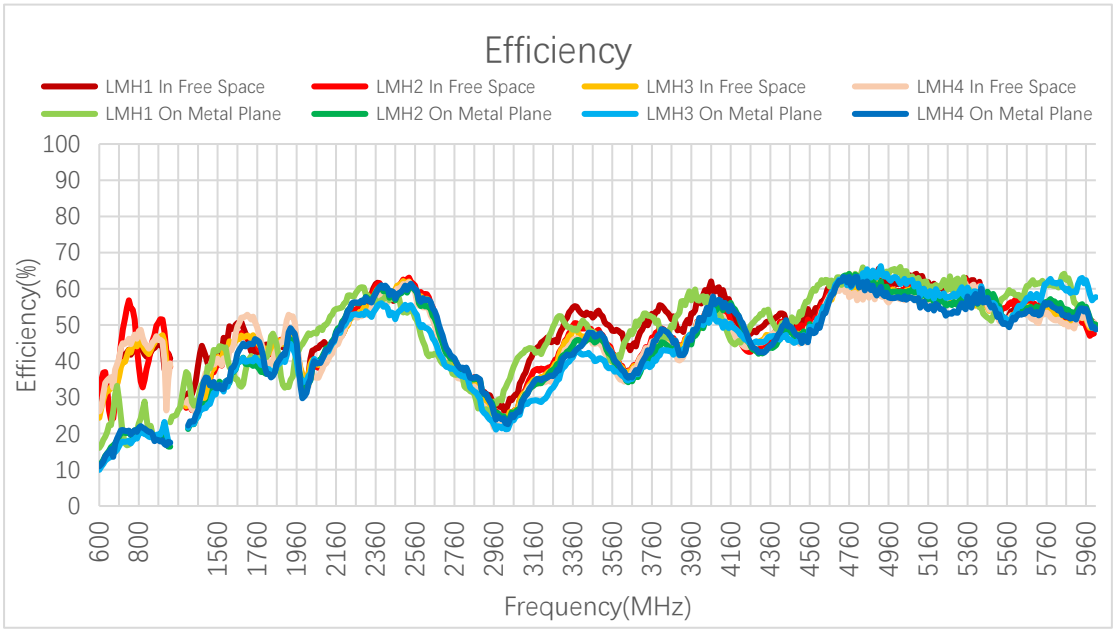


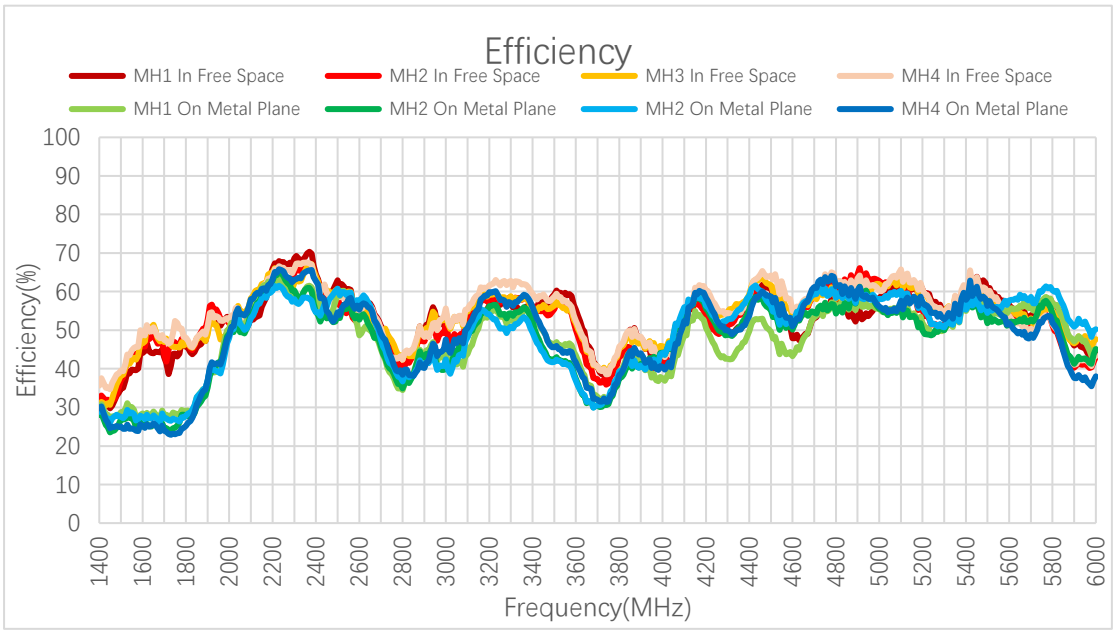
LNA Gain(dB)

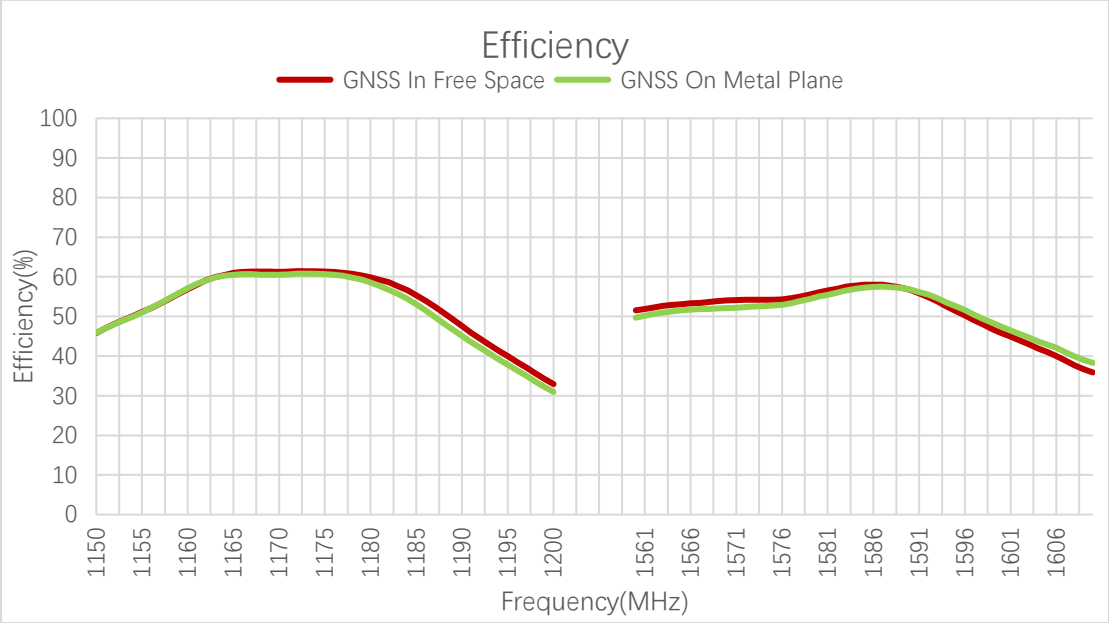
Frequency (MHz)	1176	1227	1561	1575	1602
GNSS	21.2	/	18.8	20.4	19.0

3.2 Radiation Performance Test

3.2.1 Efficiency







Efficiency (%)

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

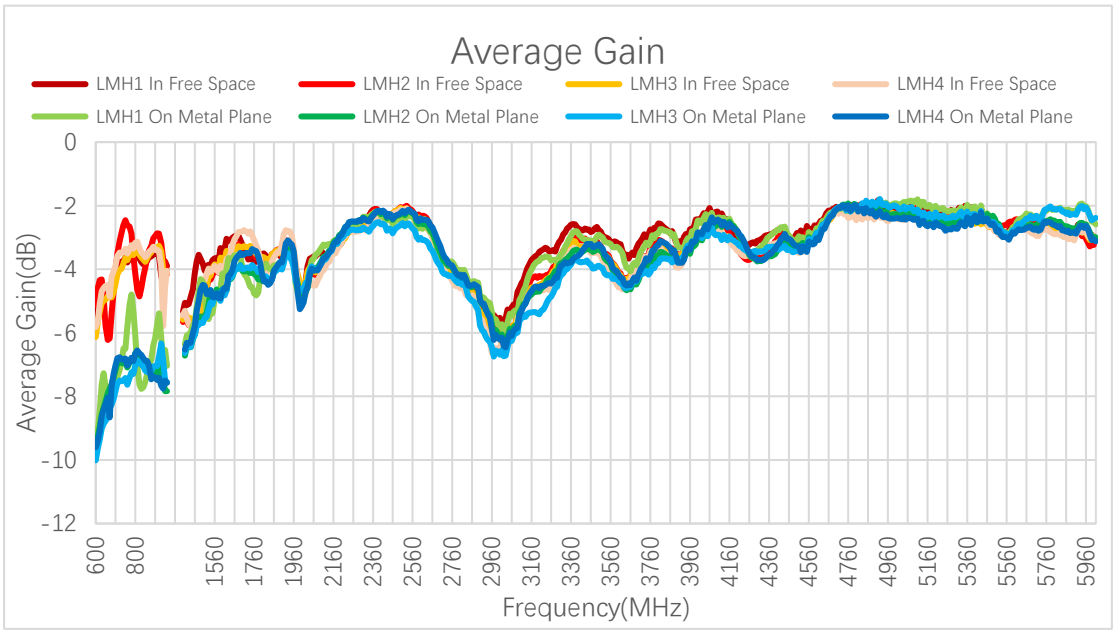
Efficiency (%)

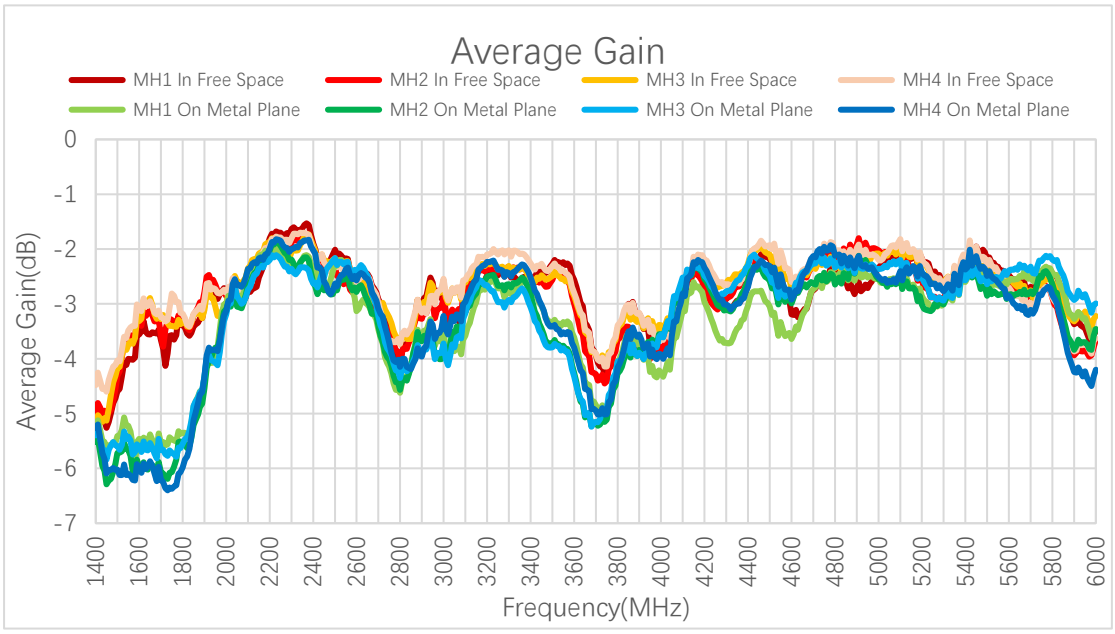
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	/	/	/	/	/	/	30.7	41.5	43.9	47.3
	MP	/	/	/	/	/	/	28.1	28.1	28.7	34.7
MH2	FS	/	/	/	/	/	/	32.0	41.9	47.1	50.4
	MP	/	/	/	/	/	/	24.9	24.6	24.6	32.5
MH3	FS	/	/	/	/	/	/	31.1	47.8	45.7	48.1
	MP	/	/	/	/	/	/	27.1	27.2	27.1	34.6
MH4	FS	/	/	/	/	/	/	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

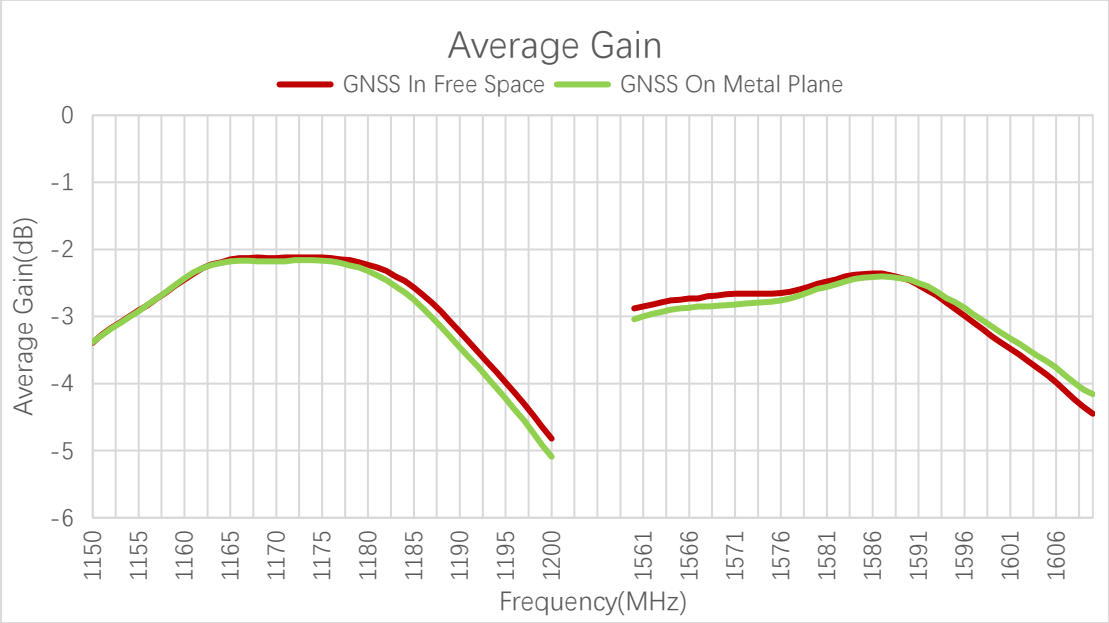
Efficiency (%)

Frequency (MHz)		1176	1227	1561	1575	1602
GNSS	FS	61.2	/	51.9	54.2	43.9
	MP	60.5	/	50.1	52.8	45.6

3.2.2 Average Gain







Average Gain(dB)

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

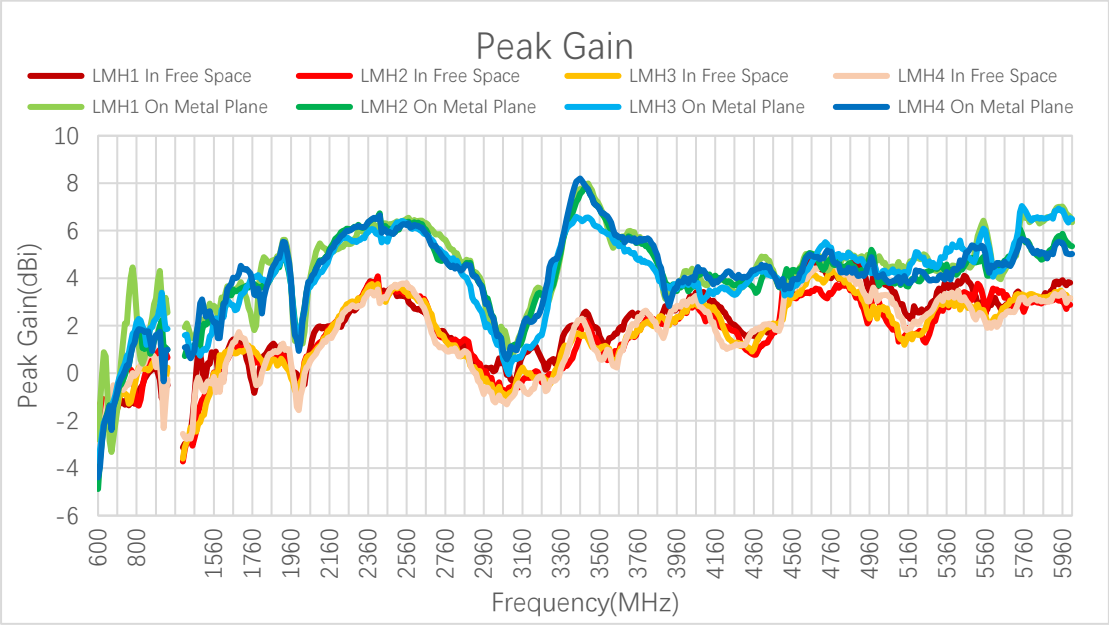
Average Gain(dB)

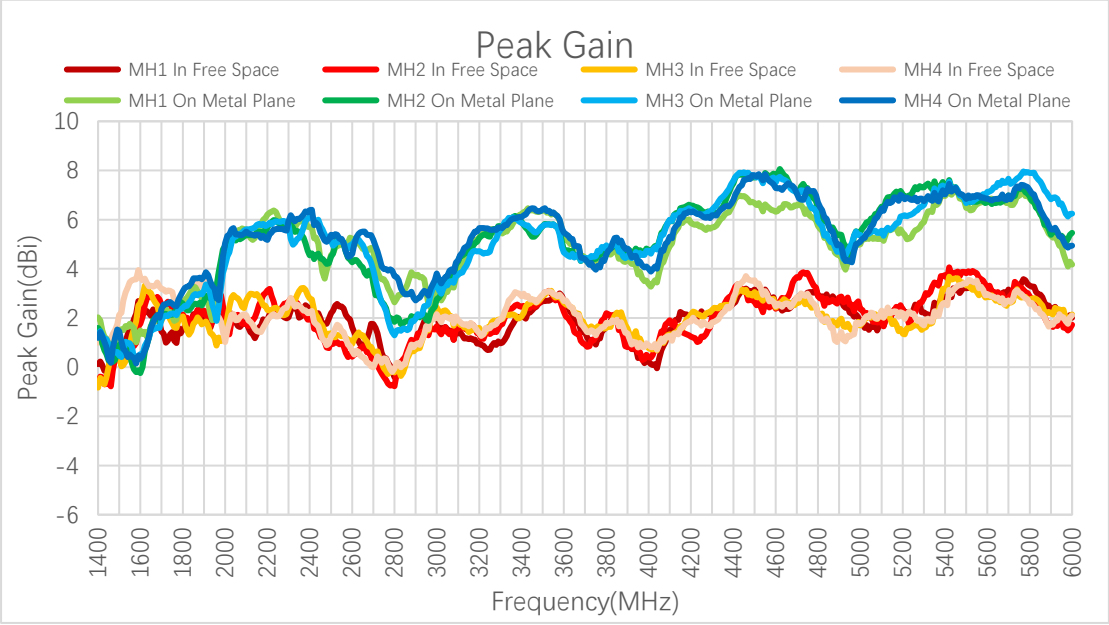
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	/	/	/	/	/	/	-5.1	-3.8	-3.6	-3.3
	MP	/	/	/	/	/	/	-5.5	-5.5	-5.4	-4.6
MH2	FS	/	/	/	/	/	/	-5.0	-3.8	-3.3	-3.0
	MP	/	/	/	/	/	/	-6.1	-6.1	-6.1	-4.9
MH3	FS	/	/	/	/	/	/	-5.1	-3.2	-3.4	-3.2
	MP	/	/	/	/	/	/	-5.7	-5.7	-5.7	-4.6
MH4	FS	/	/	/	/	/	/	-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

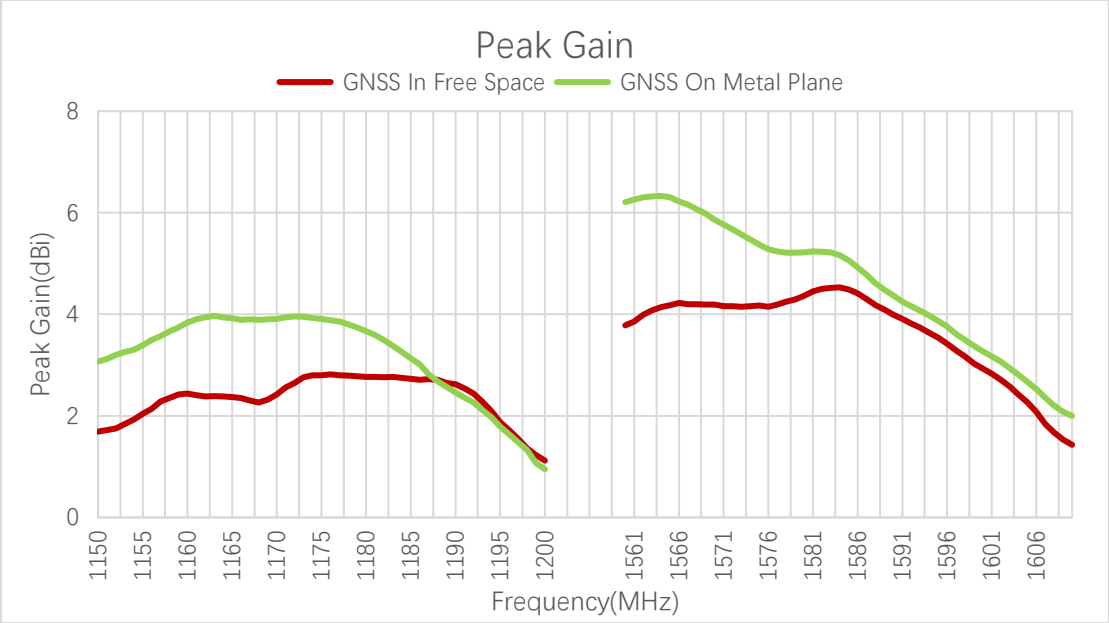
Average Gain(dB)

Frequency (MHz)		1176	1227	1561	1575	1602
GNSS	FS	-2.1	/	-2.9	-2.7	-3.6
	MP	-2.2	/	-3.0	-2.8	-3.4

3.2.3 Peak Gain







Peak Gain(dBi)

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

Peak Gain(dBi)

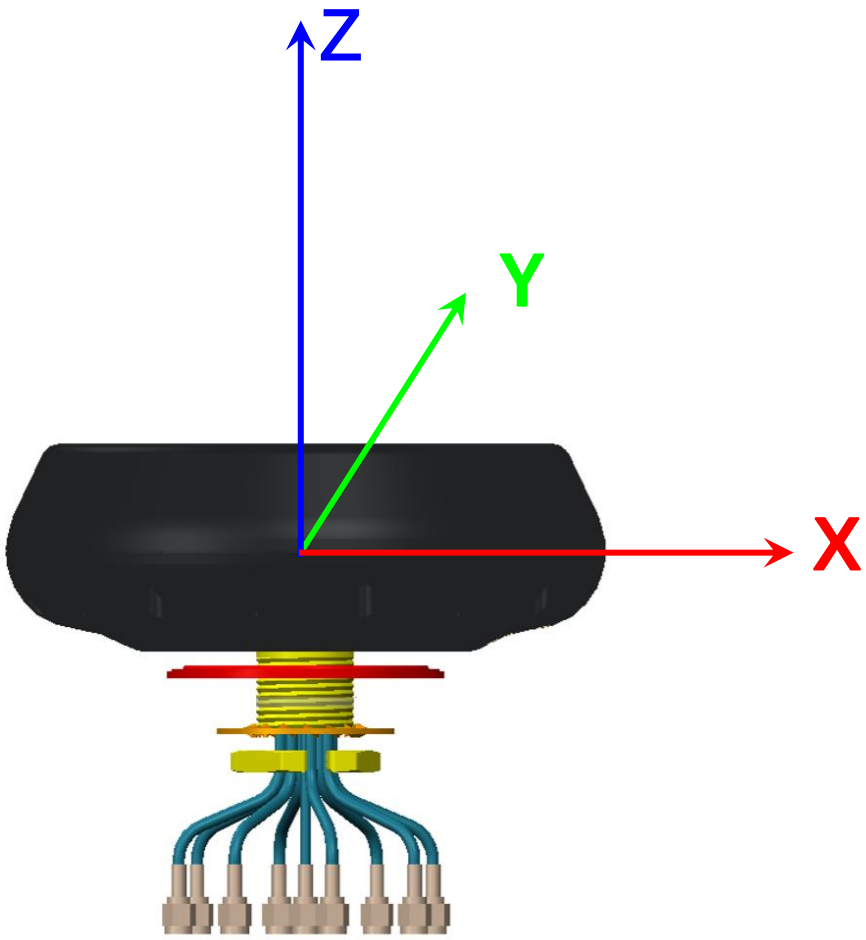
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	/	/	/	/	/	/	-5.1	-3.8	-3.6	-3.3
	MP	/	/	/	/	/	/	-5.5	-5.5	-5.4	-4.6
MH2	FS	/	/	/	/	/	/	-5.0	-3.8	-3.3	-3.0
	MP	/	/	/	/	/	/	-6.1	-6.1	-6.1	-4.9
MH3	FS	/	/	/	/	/	/	-5.1	-3.2	-3.4	-3.2
	MP	/	/	/	/	/	/	-5.7	-5.7	-5.7	-4.6
MH4	FS	/	/	/	/	/	/	-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

Peak Gain(dBi)

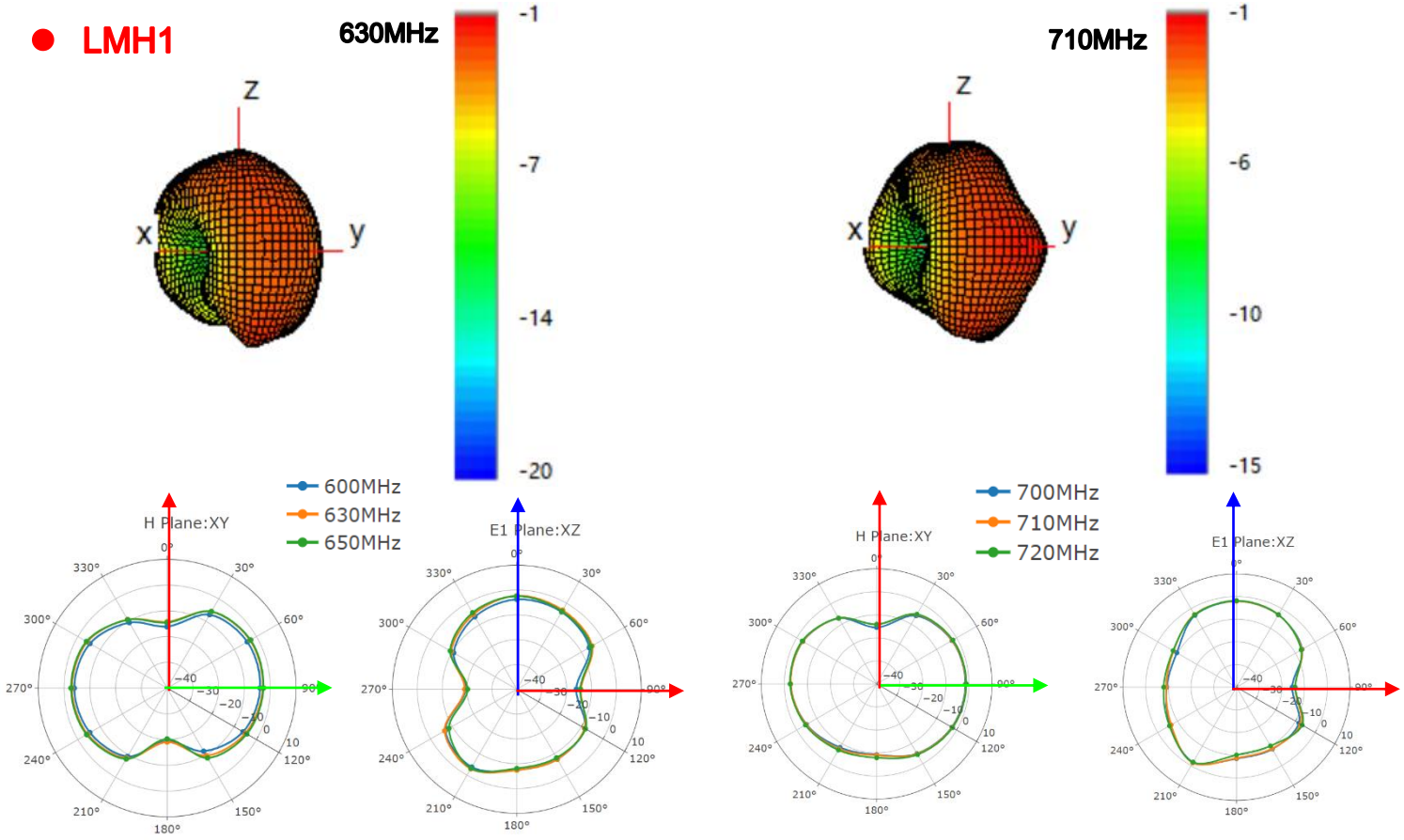
Frequency (MHz)		1176	1227	1561	1575	1602
GNSS	FS	2.8	/	3.9	4.2	2.7
	MP	3.9	/	6.3	5.4	3.1

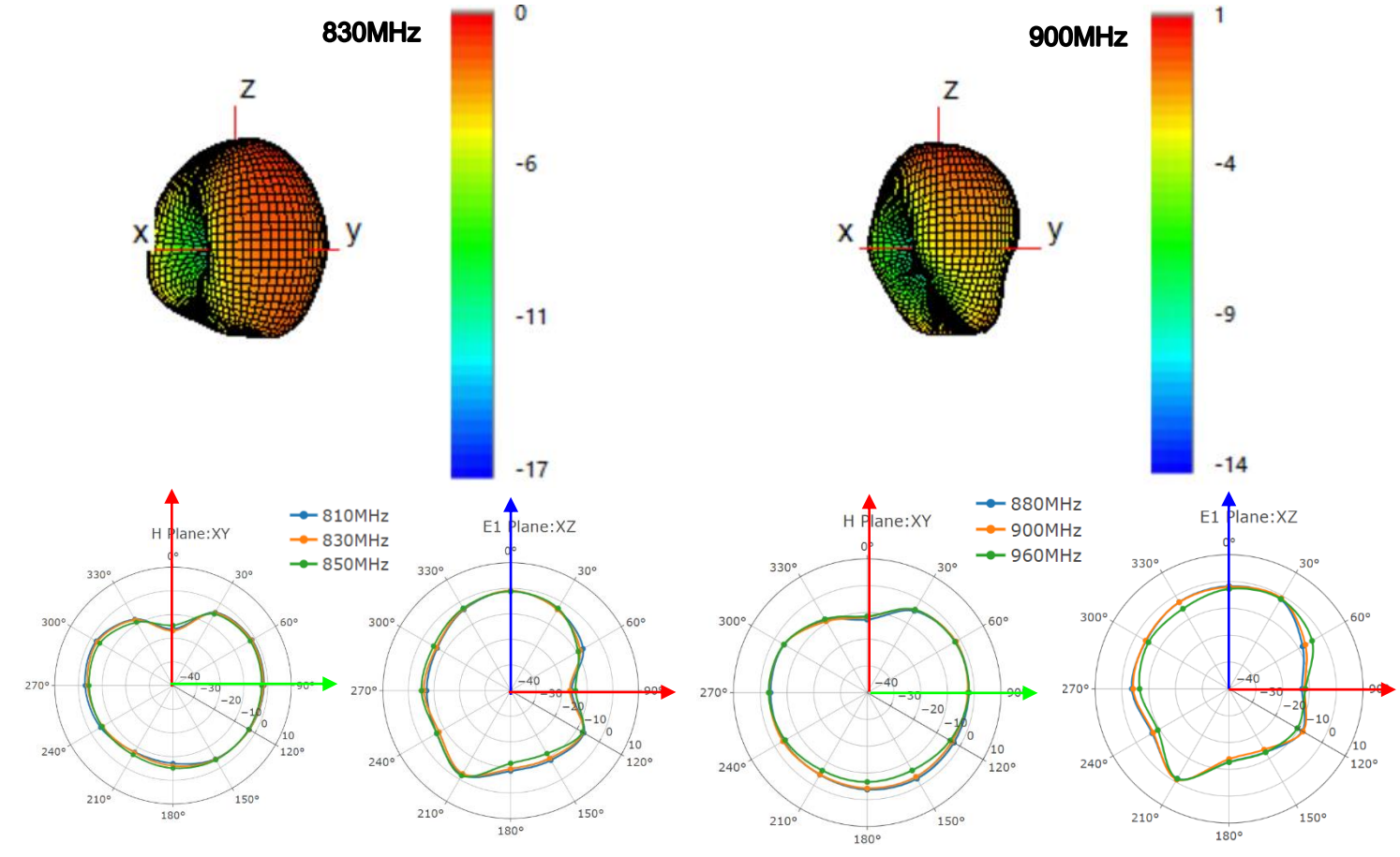
3.2.4 3D/2D Radiation Pattern

3.2.4.1 Test Status: In Free Space

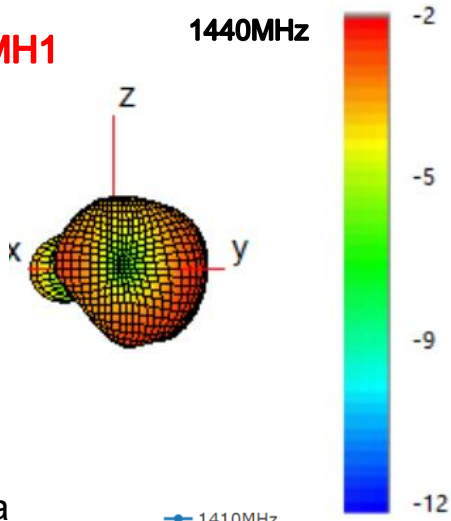


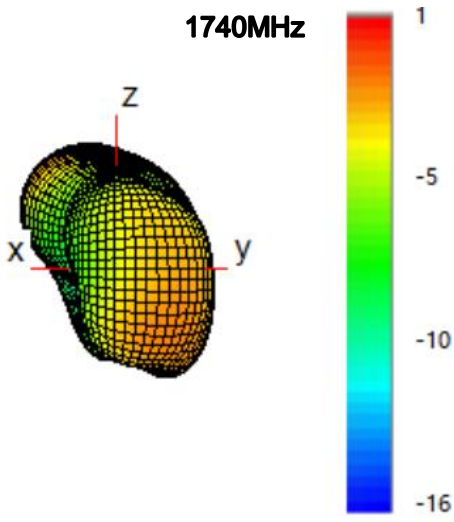
- **LMH1**


630MHz
-1
-7
-14
-20
z
x
y
600MHz
630MHz
650MHz
H Plane:XY
E1 Plane:XZ
710MHz
-1
-6
-10
-15
700MHz
710MHz
720MHz
H Plane:XY
E1 Plane:XZ

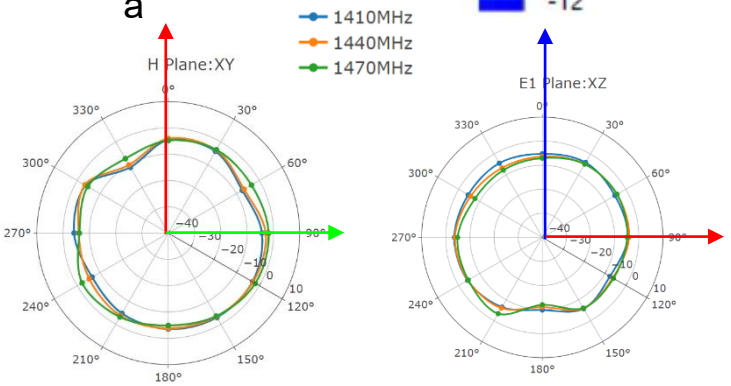

830MHz
0
-6
-11
-17
z
x
y
810MHz
830MHz
850MHz
H Plane:XY
E1 Plane:XZ
900MHz
1
-4
-9
-14
880MHz
900MHz
960MHz
H Plane:XY
E1 Plane:XZ

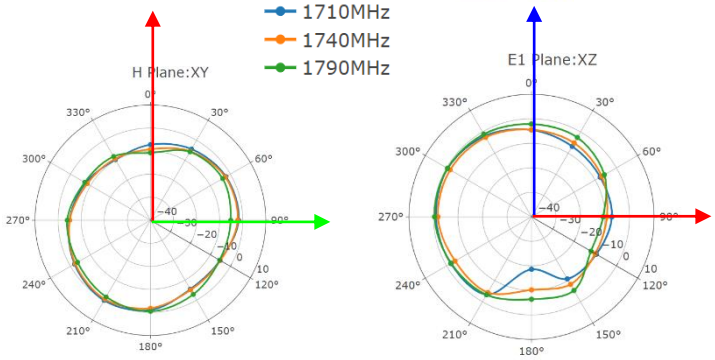
- **LMH1**

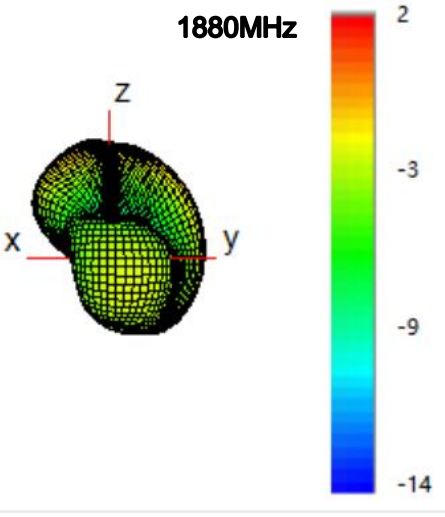

1440MHz
-2
-5
-9
-12
z
x
y

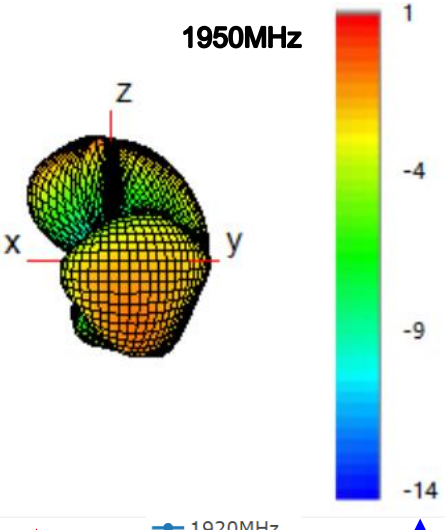

1740MHz
1
-5
-10
-16
z
x
y

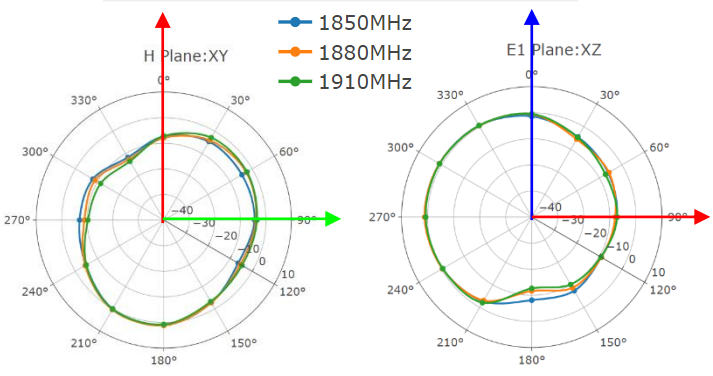
a

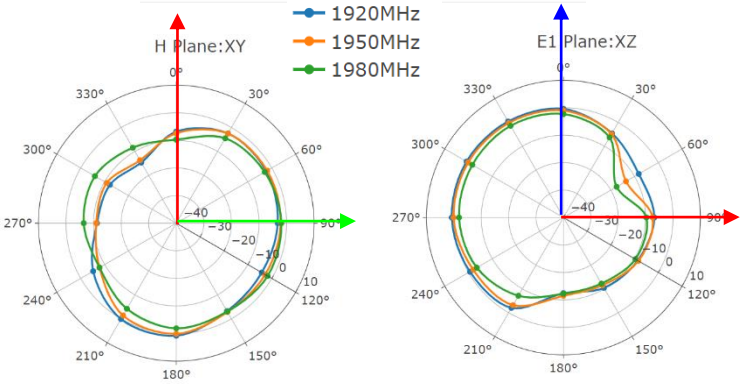

1410MHz
1440MHz
1470MHz
H Plane:XY
E1 Plane:XZ


1710MHz
1740MHz
1790MHz
H Plane:XY
E1 Plane:XZ


1880MHz
2
-3
-9
-14
z
x
y

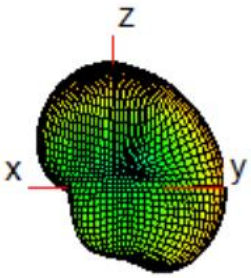

1950MHz
1
-4
-9
-14
z
x
y

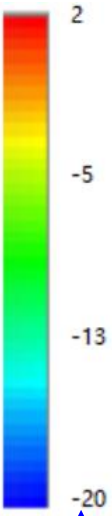

1850MHz
1880MHz
1910MHz
H Plane:XY
E1 Plane:XZ

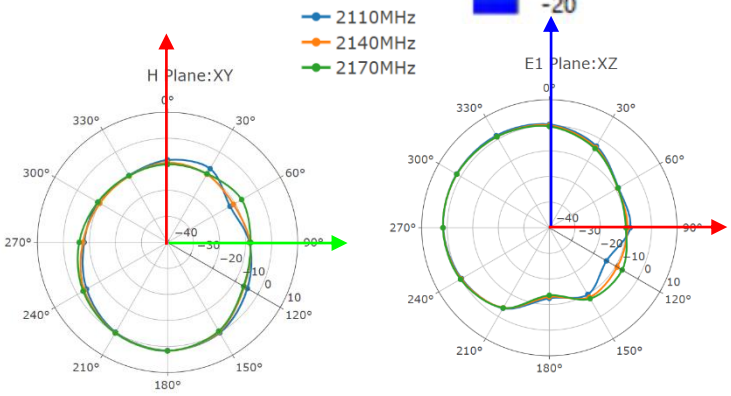

1920MHz
1950MHz
1980MHz
H Plane:XY
E1 Plane:XZ

LMH1

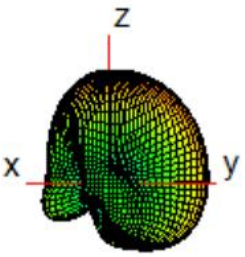
2140MHz

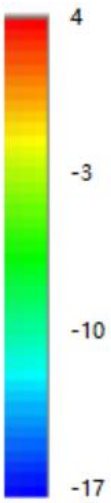


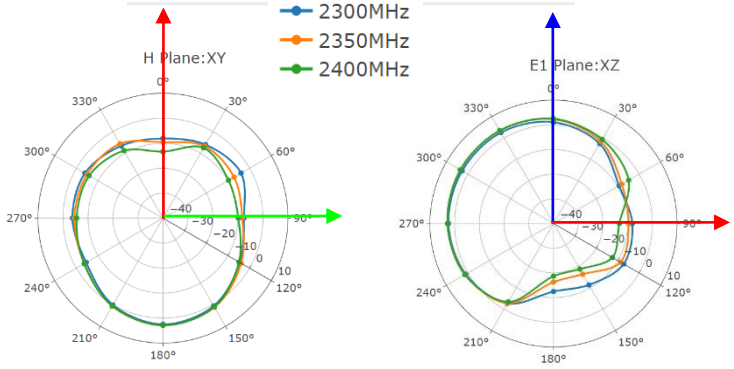




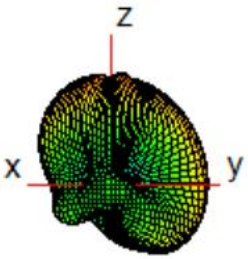
2350MHz

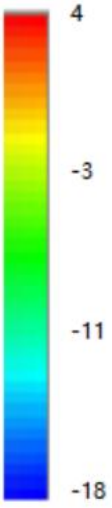


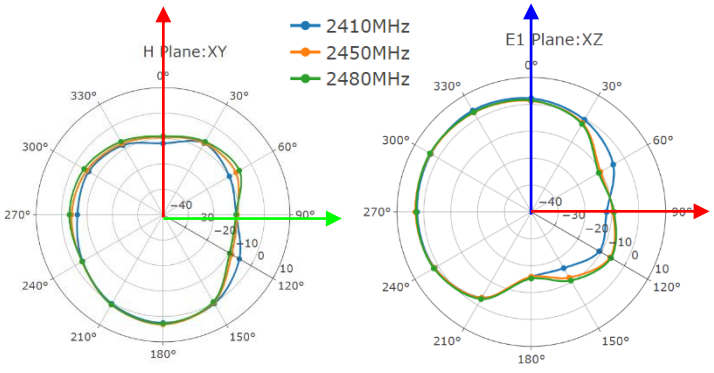




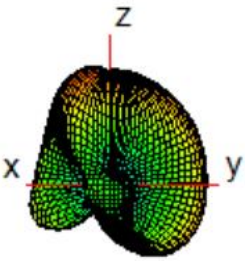
2450MHz

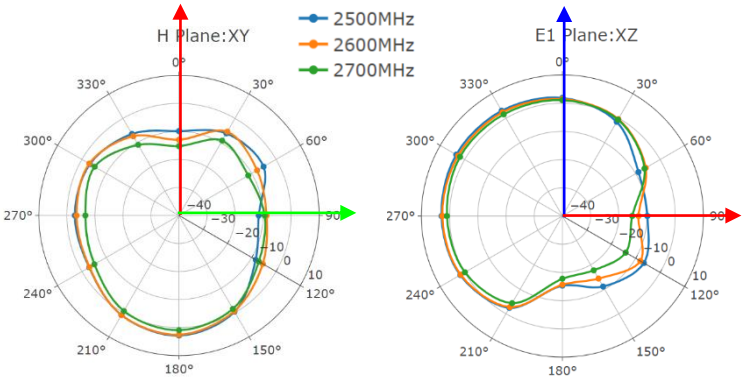






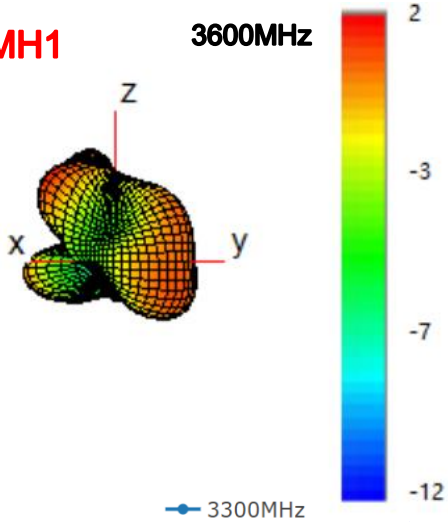
2600MHz

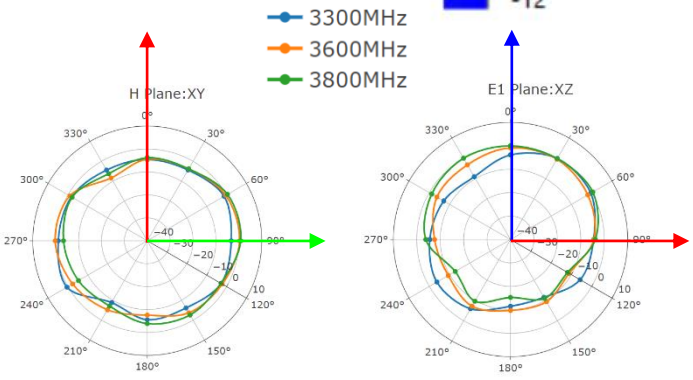




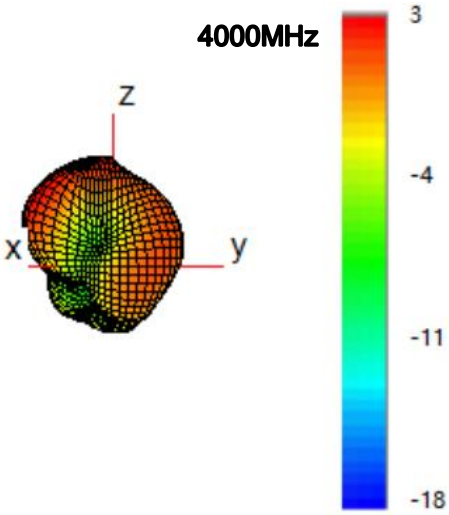
- **LMH1**

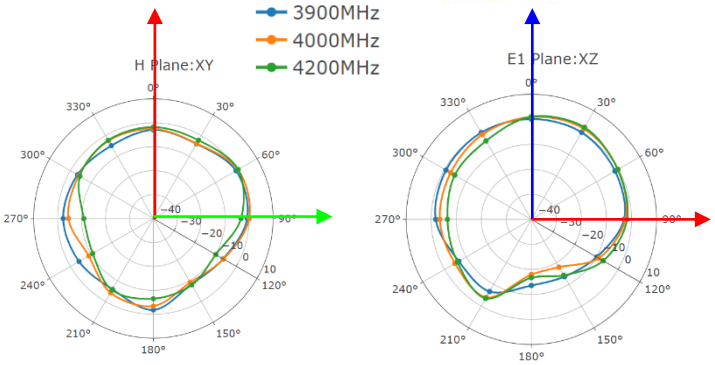
3600MHz



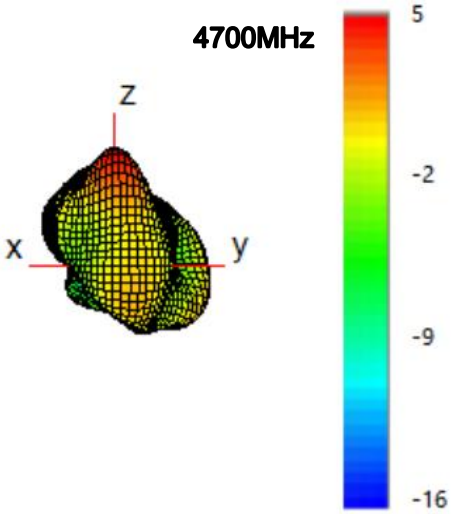


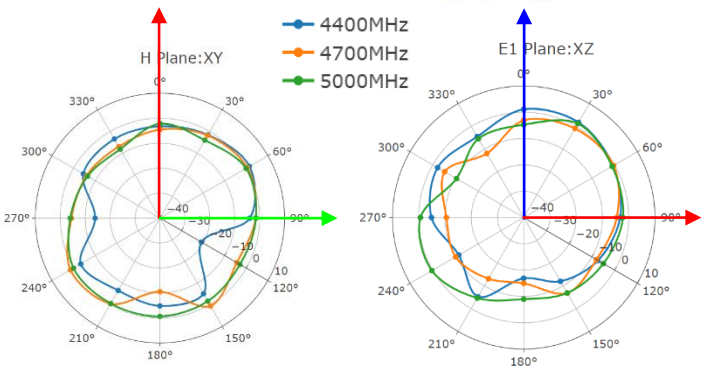
4000MHz



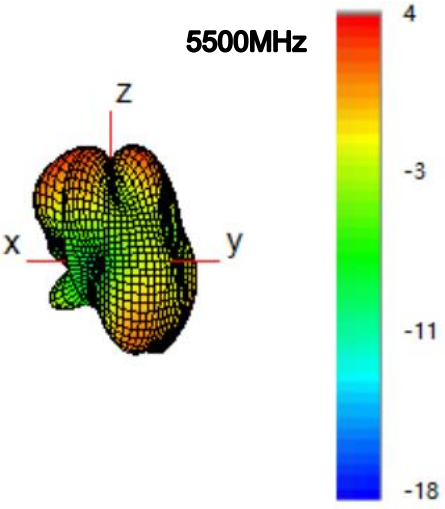


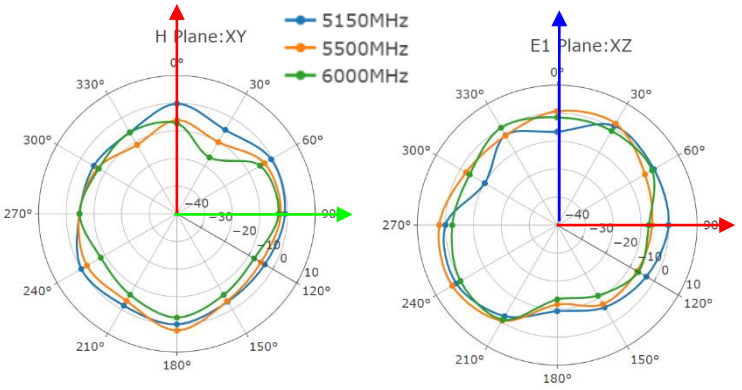
4700MHz





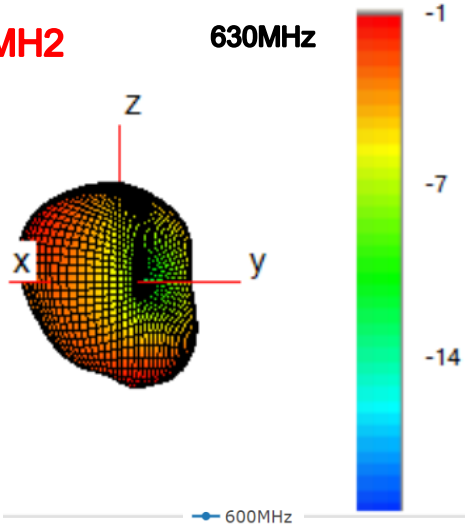
5500MHz

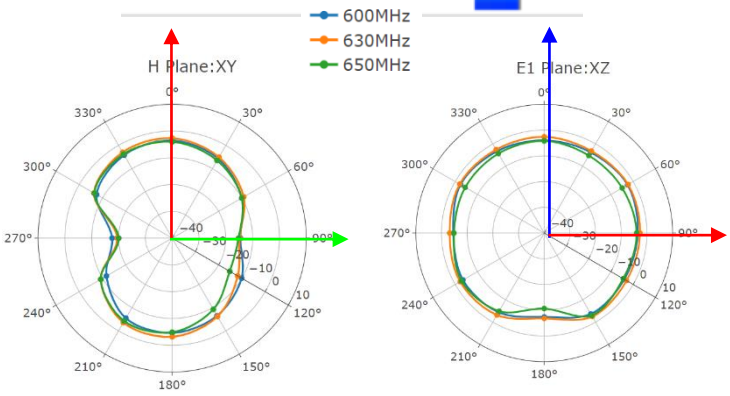




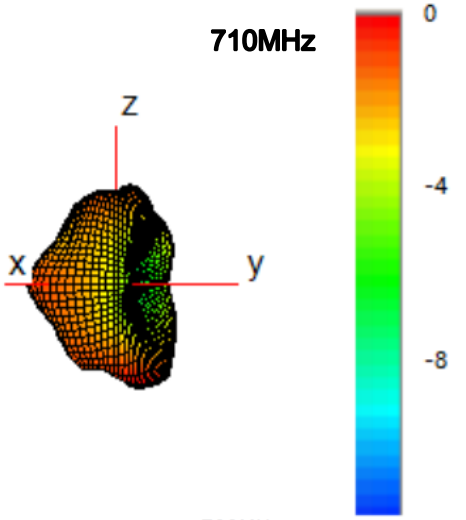
LMH2

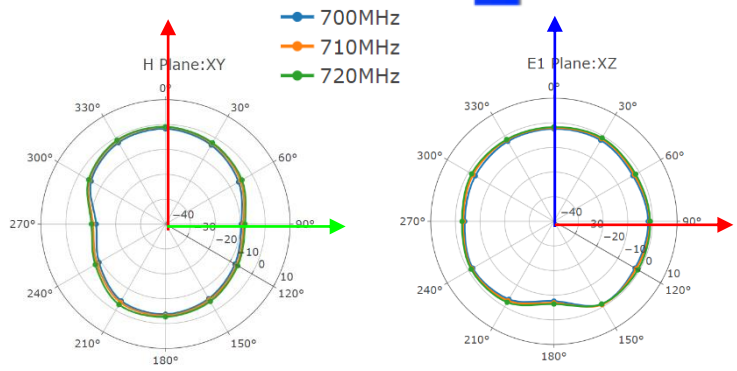
630MHz



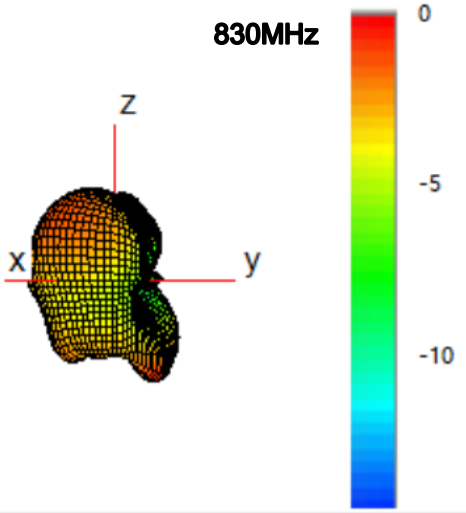


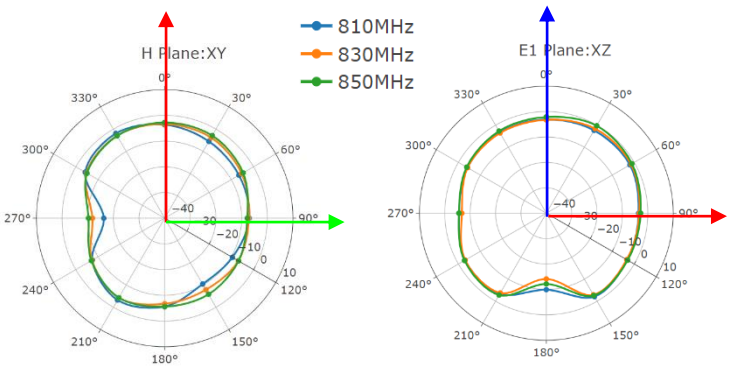
710MHz



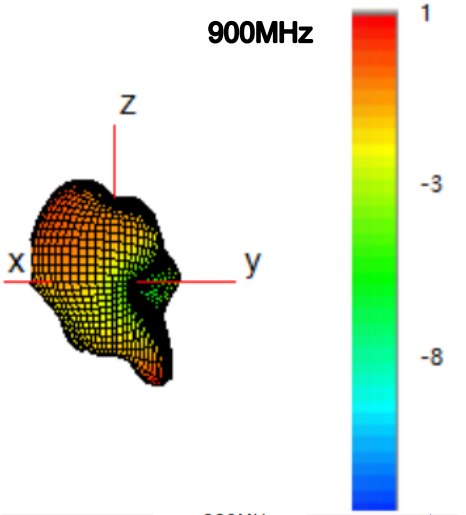


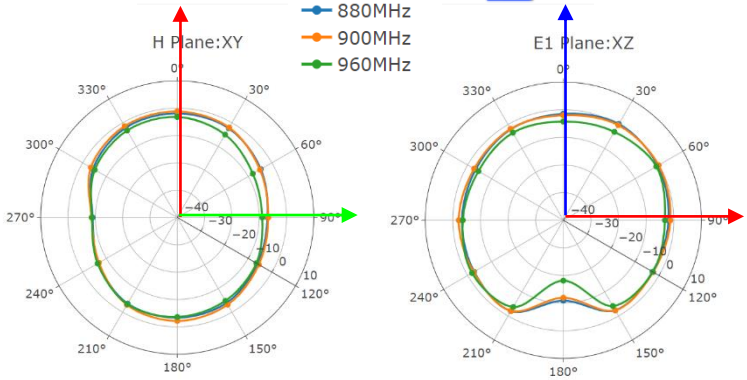
830MHz





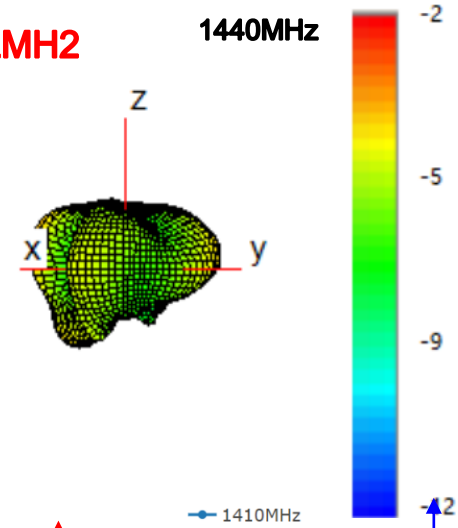
900MHz

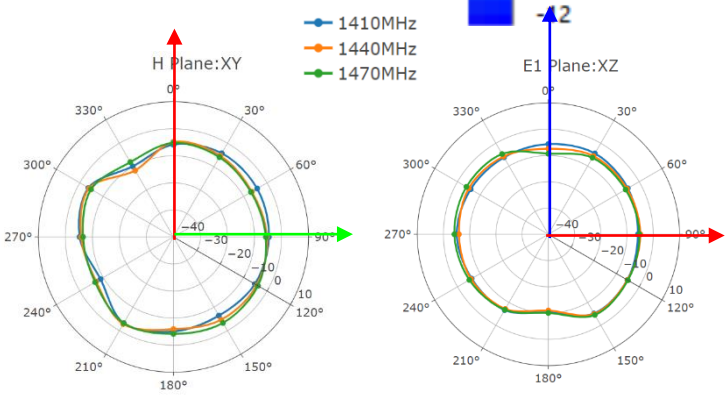




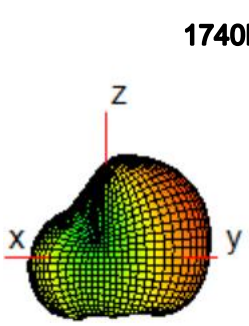
- **LMH2**

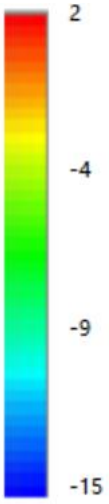
1440MHz

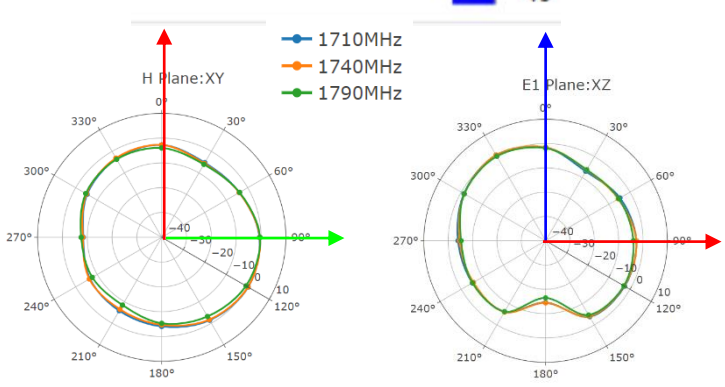




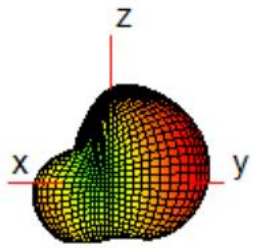
1740MHz

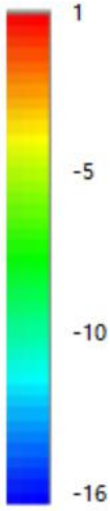


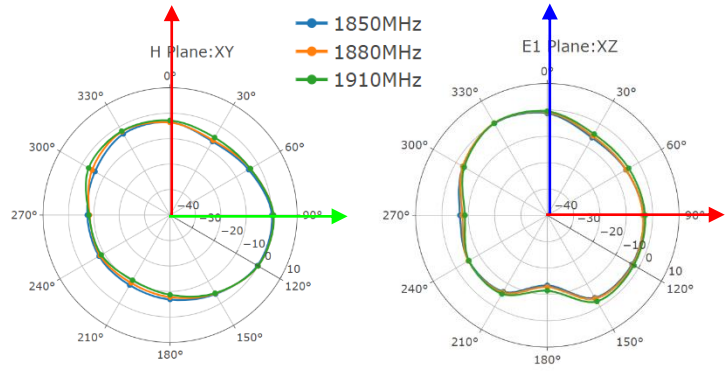




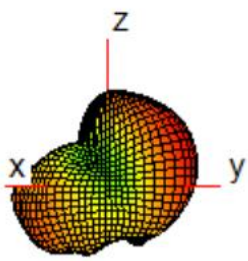
1880MHz

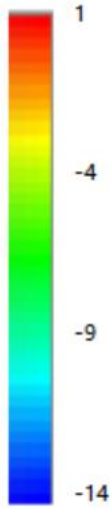


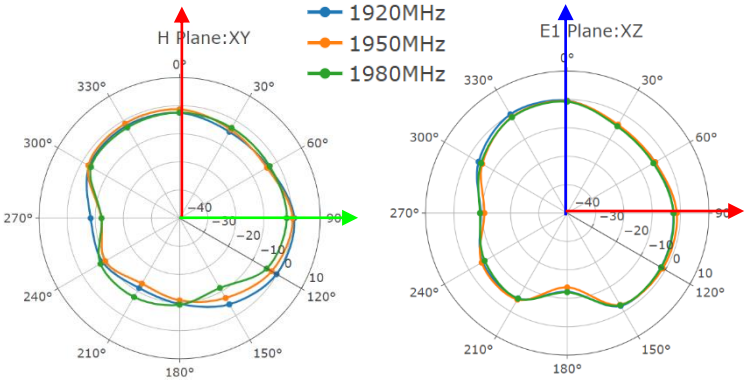




1950MHz

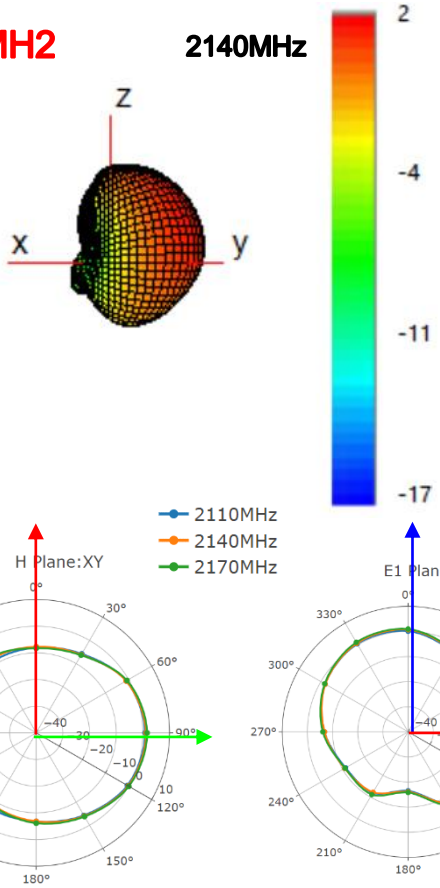




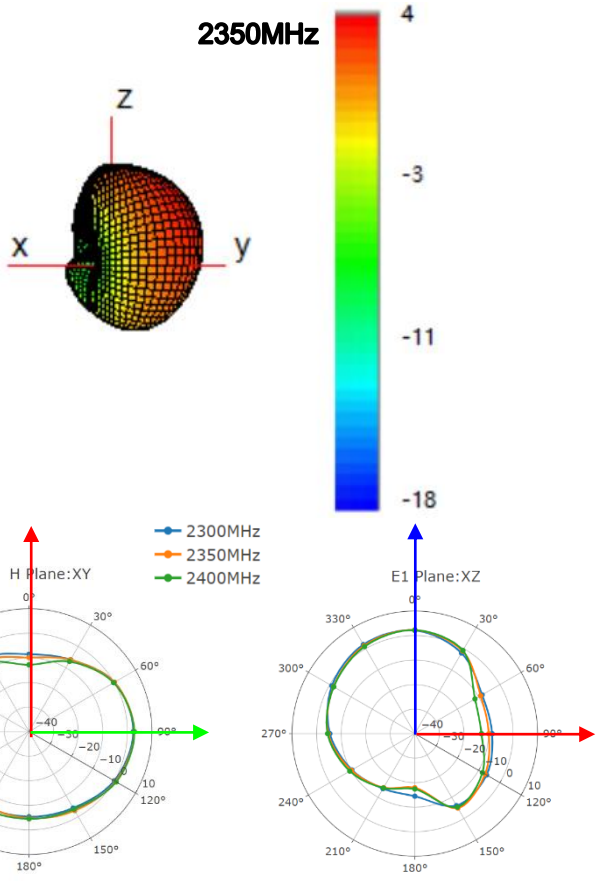


- **LMH2**

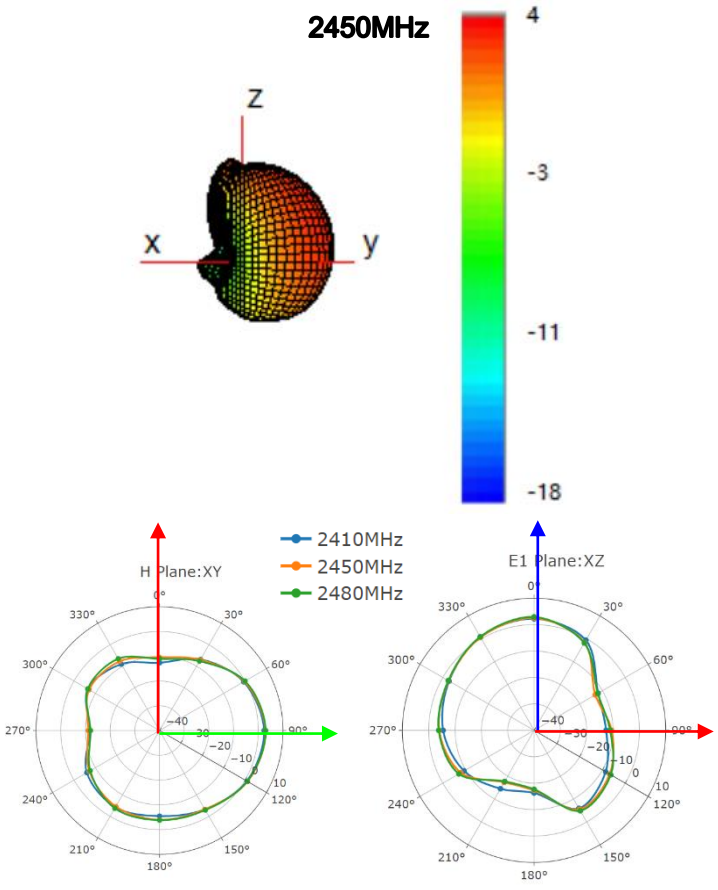
2140MHz



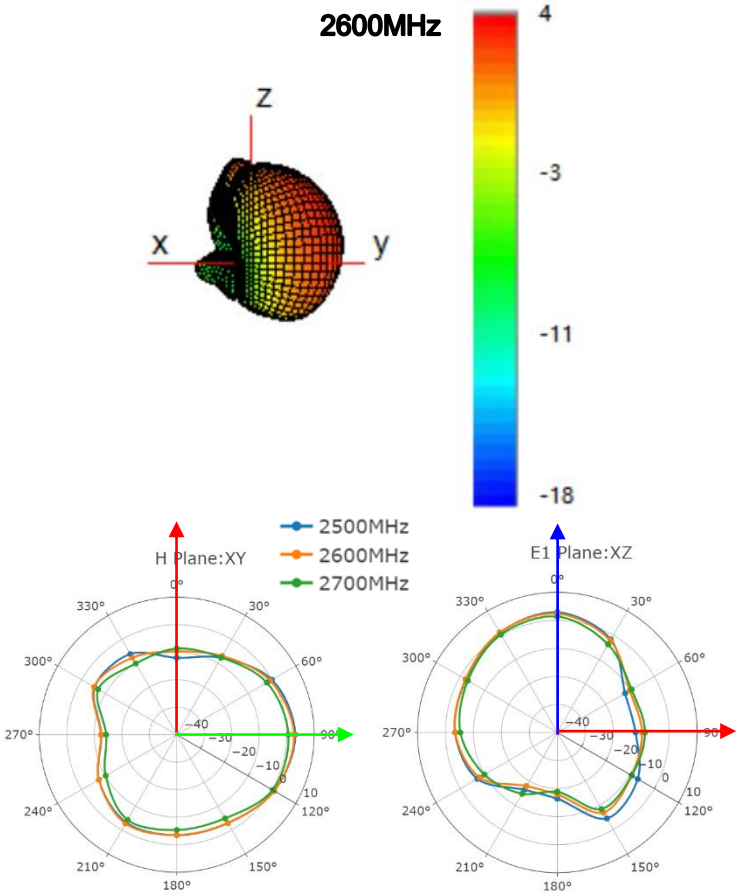
2350MHz



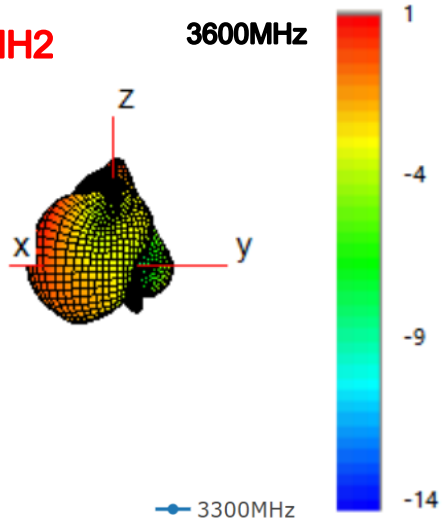
2450MHz

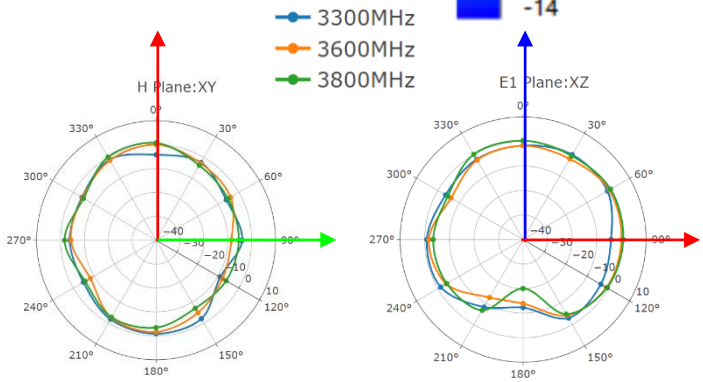


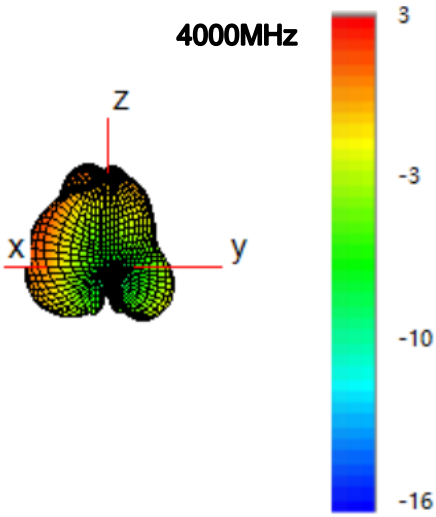
2600MHz

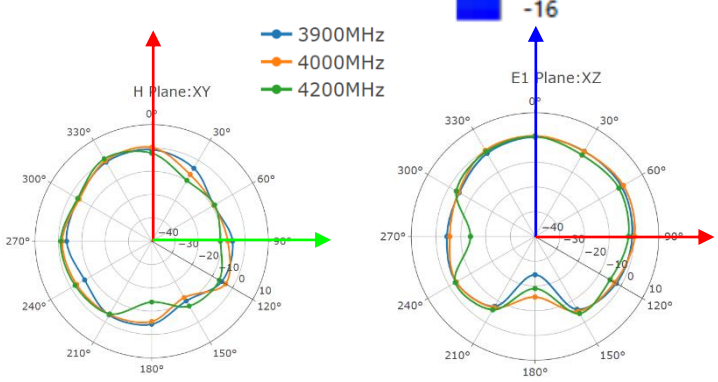


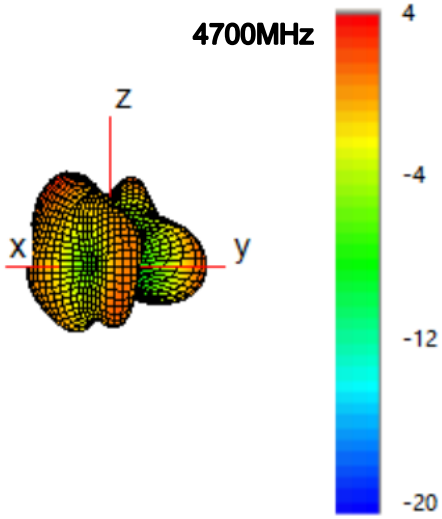
- **LMH2**

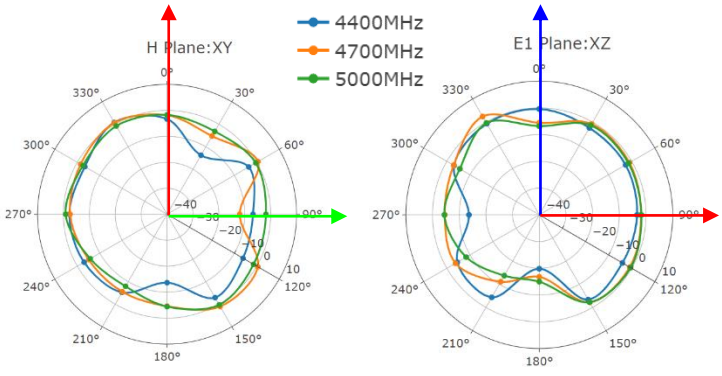

3600MHz
1
-4
-9
-14
z
x
y

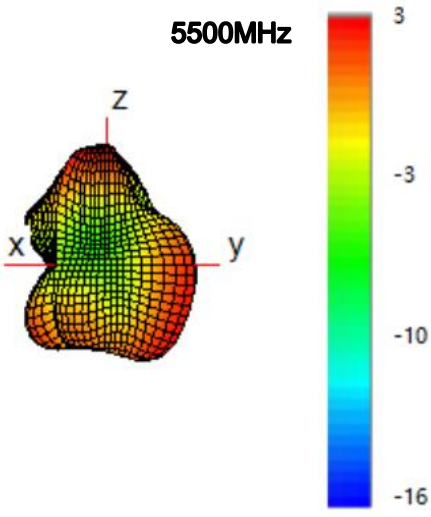

3300MHz
3600MHz
3800MHz
H Plane:XY
E1 Plane:XZ

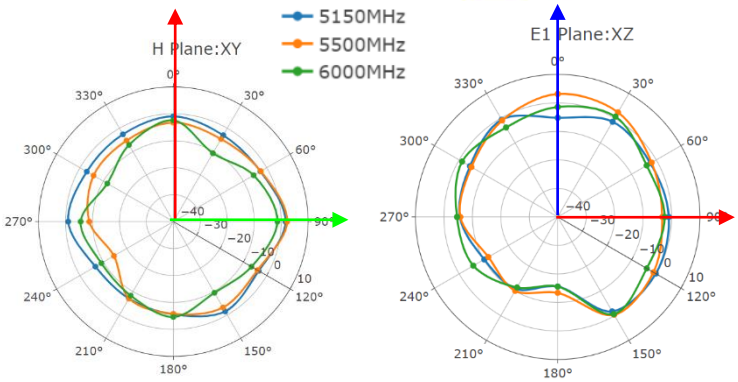

4000MHz
3
-3
-10
-16
z
x
y


3900MHz
4000MHz
4200MHz
H Plane:XY
E1 Plane:XZ

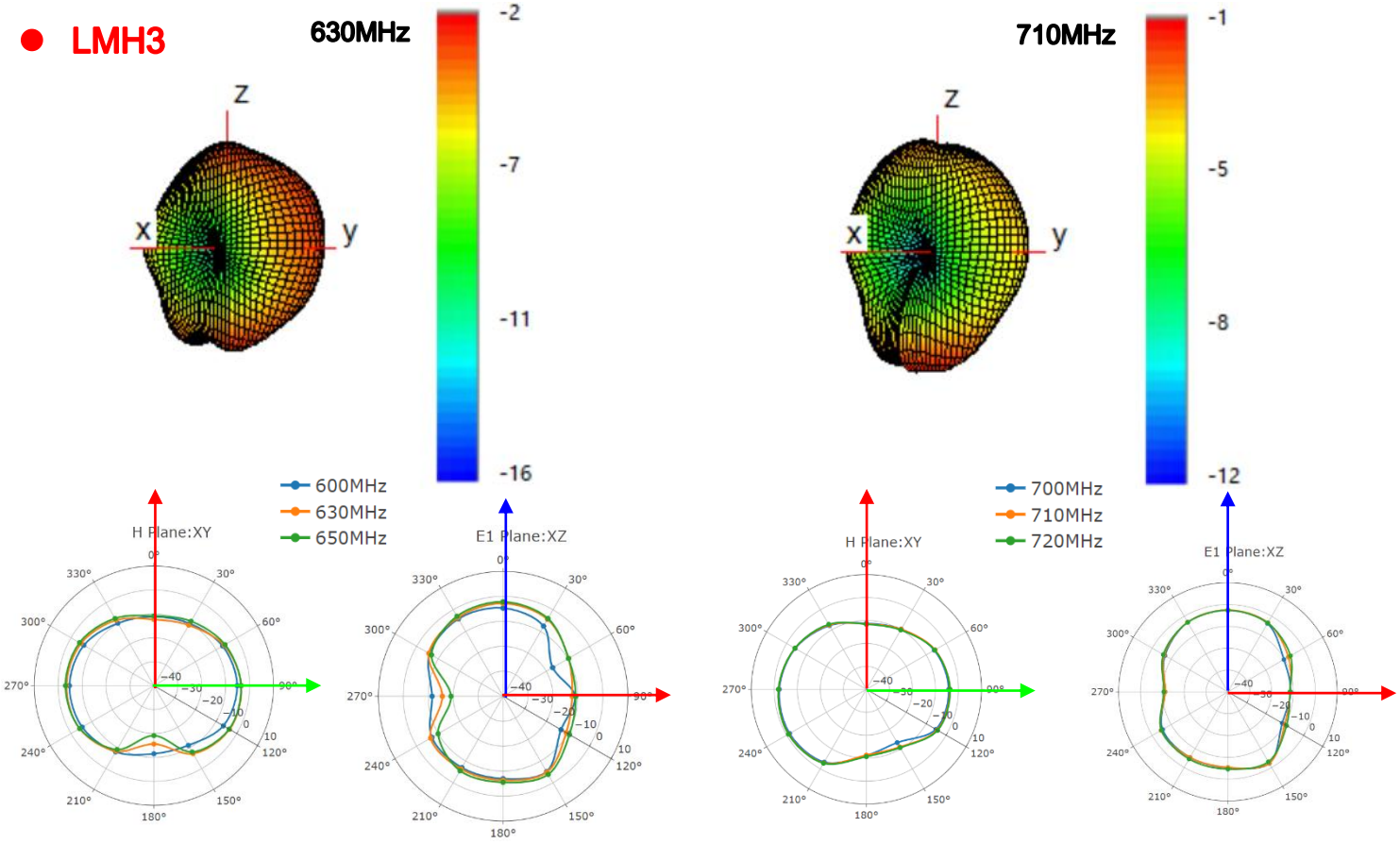

4700MHz
4
-4
-12
-20
z
x
y

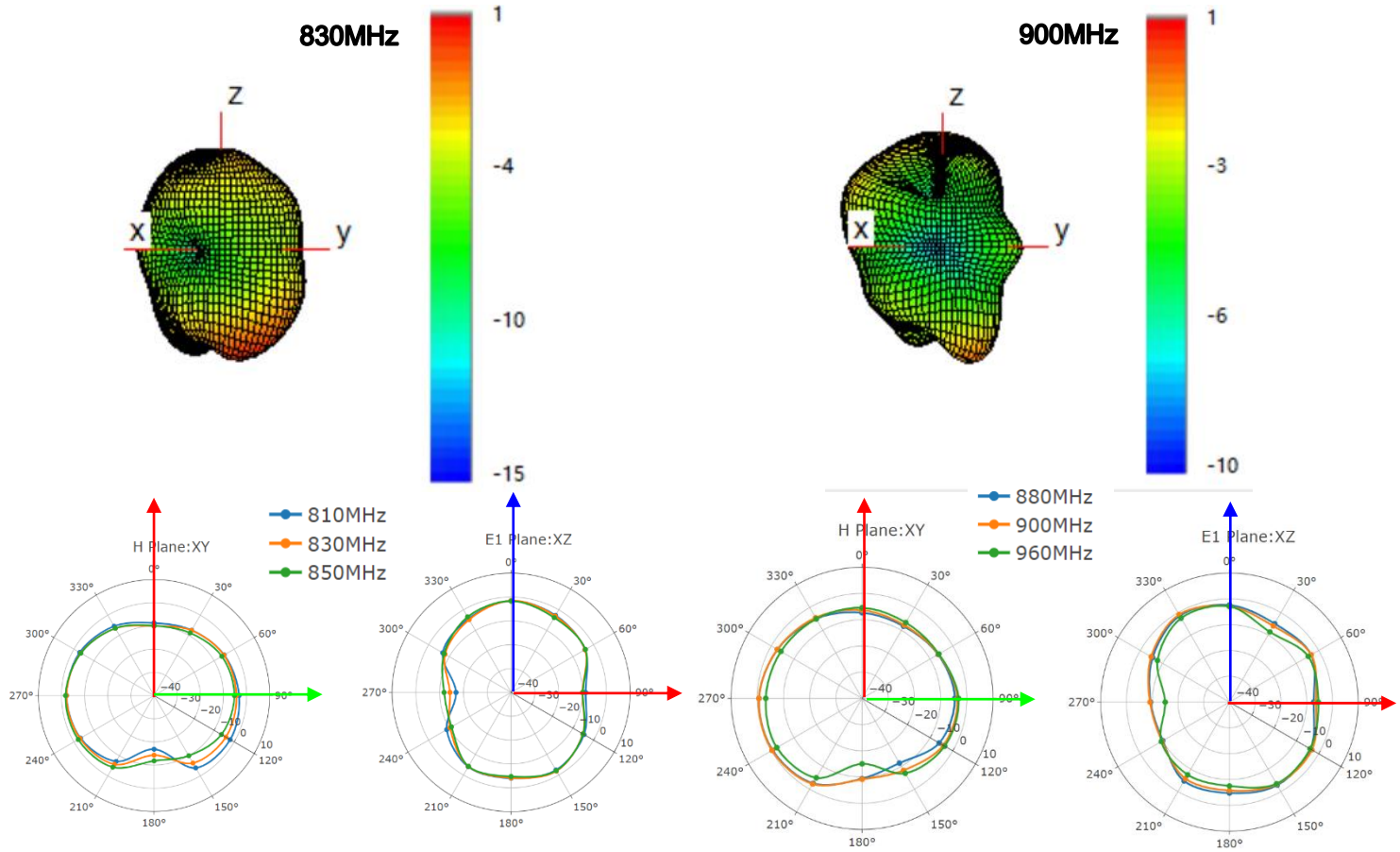

4400MHz
4700MHz
5000MHz
H Plane:XY
E1 Plane:XZ


5500MHz
3
-3
-10
-16
z
x
y


5150MHz
5500MHz
6000MHz
H Plane:XY
E1 Plane:XZ

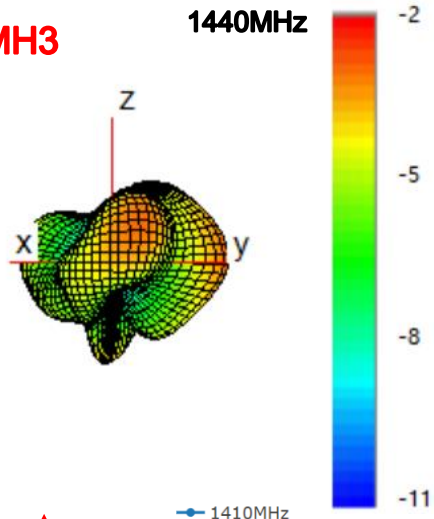
LMH3

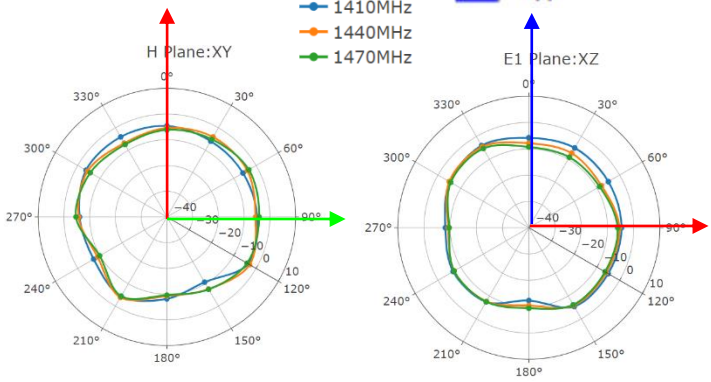

630MHz
-2
-7
-11
-16
z
x
y
600MHz
630MHz
650MHz
H Plane:XY
E1 Plane:XZ
710MHz
-1
-5
-8
-12
700MHz
710MHz
720MHz
H Plane:XY
E1 Plane:XZ


830MHz
1
-4
-10
-15
z
x
y
810MHz
830MHz
850MHz
H Plane:XY
E1 Plane:XZ
900MHz
1
-3
-6
-10
880MHz
900MHz
960MHz
H Plane:XY
E1 Plane:XZ

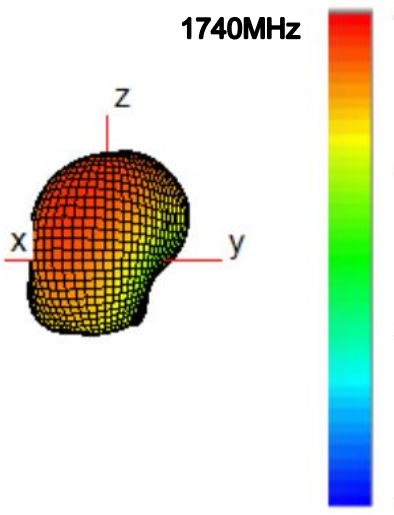
- **LMH3**

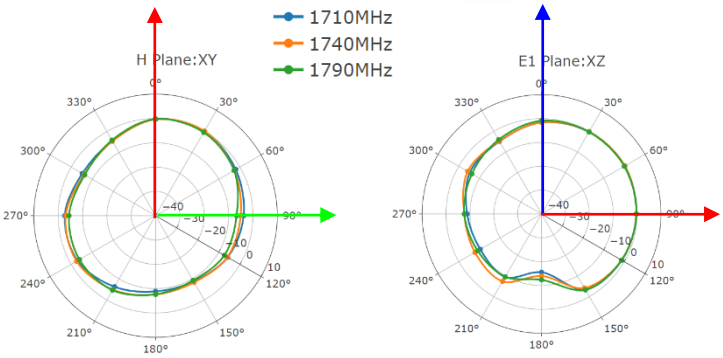
1440MHz



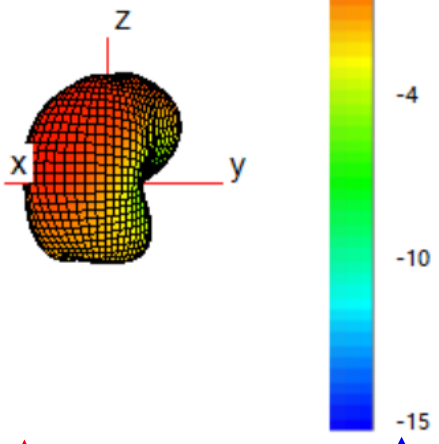


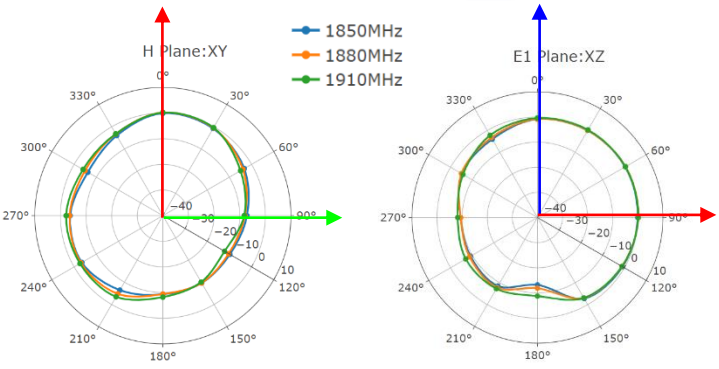
1740MHz



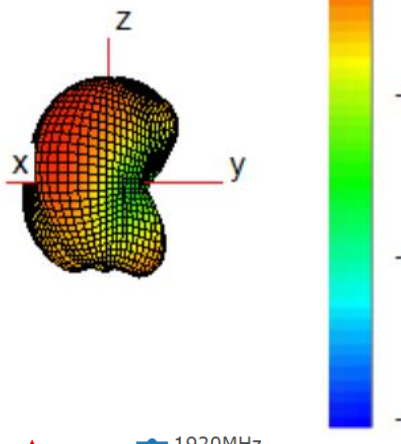


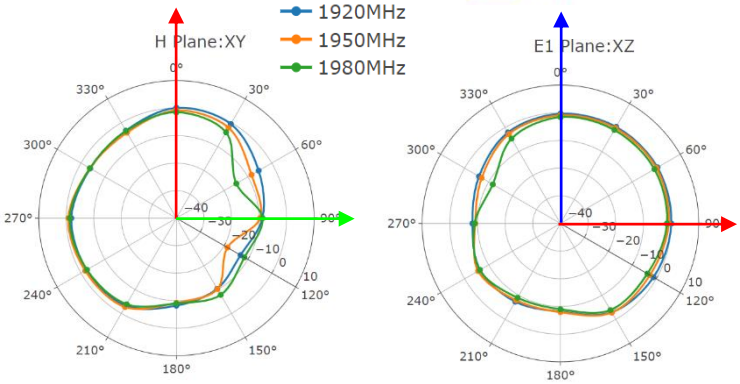
1880MHz





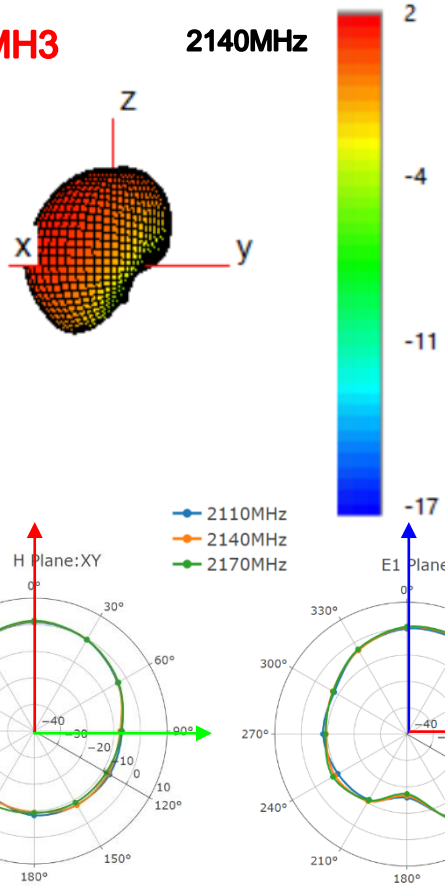
1950MHz

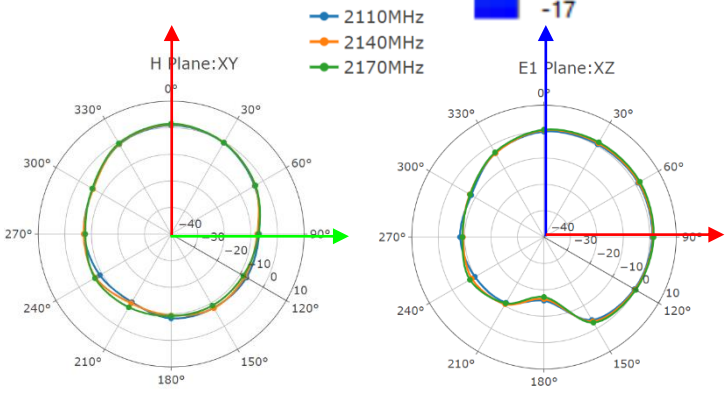




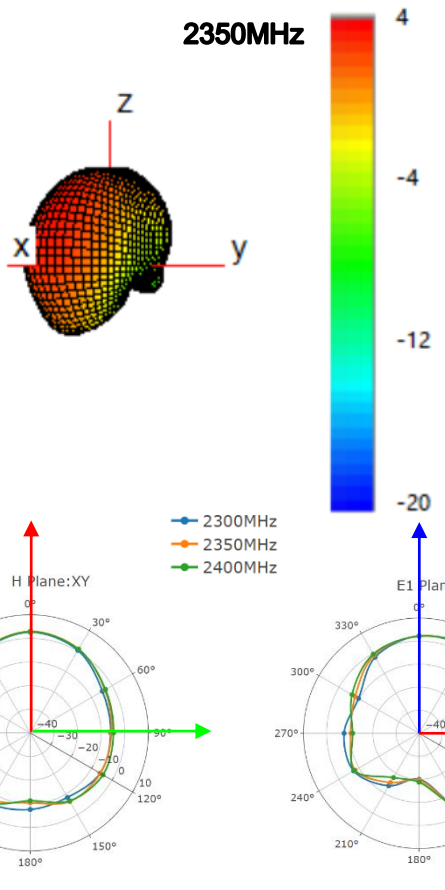
- **LMH3**

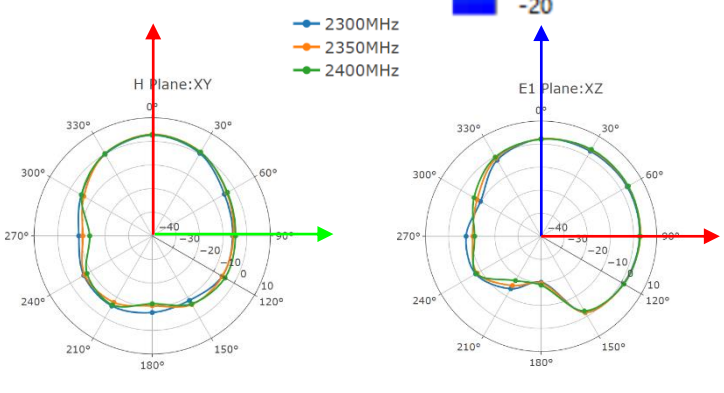
2140MHz



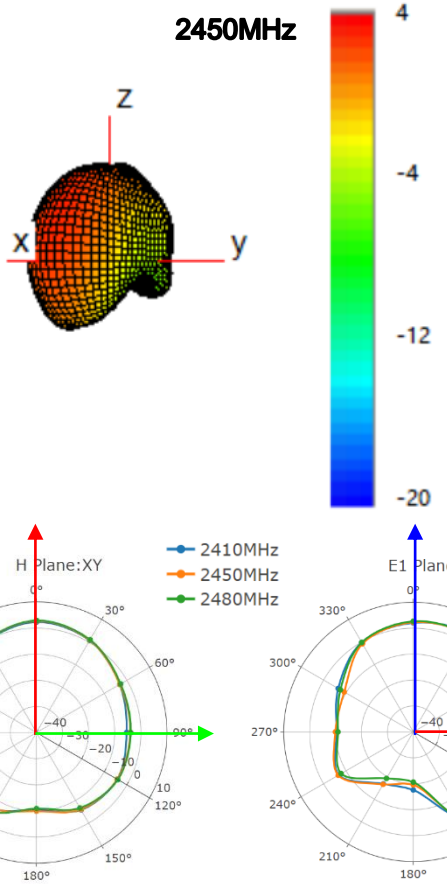


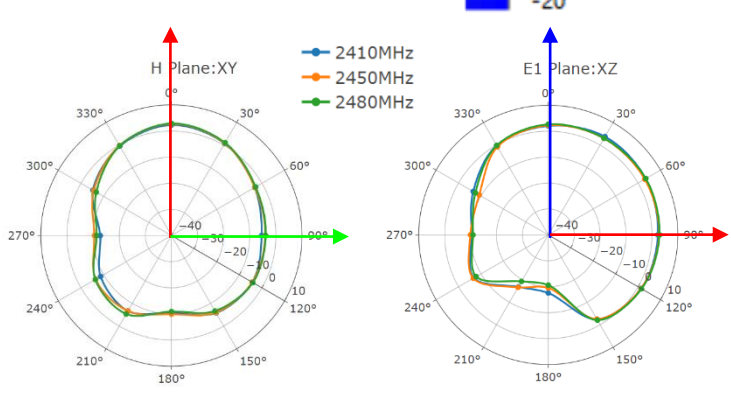
2350MHz



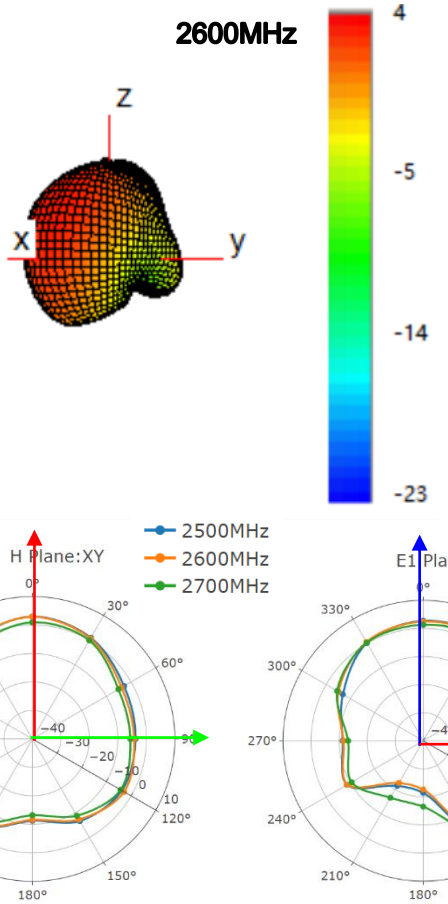


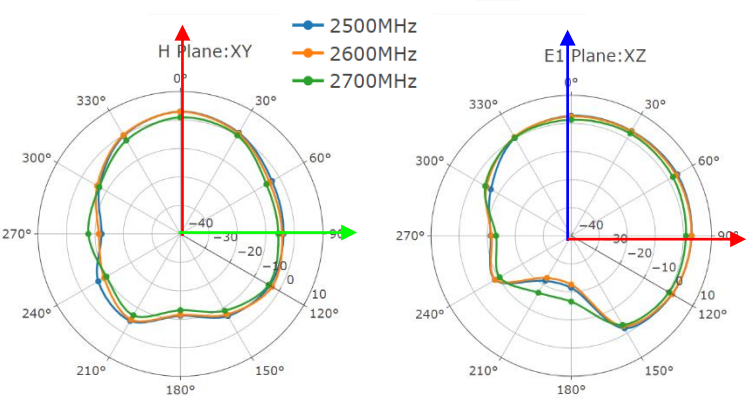
2450MHz





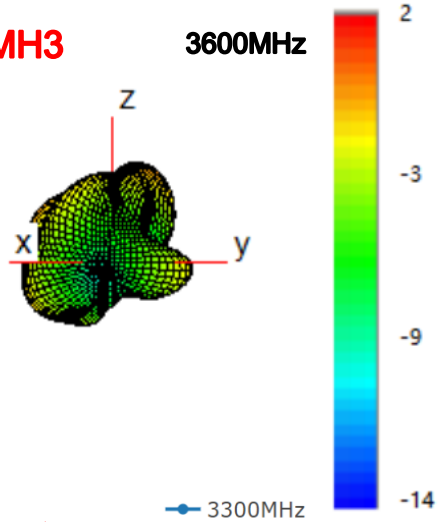
2600MHz

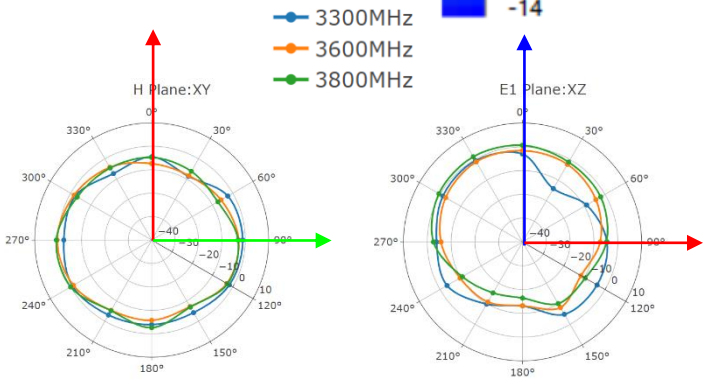




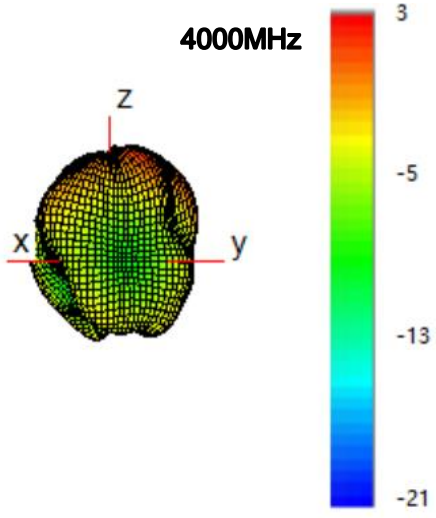
LMH3

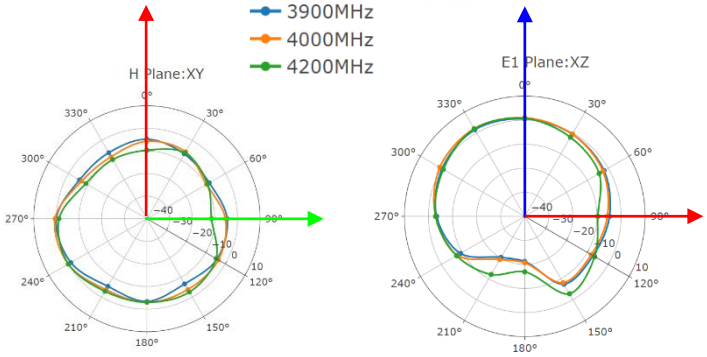
3600MHz



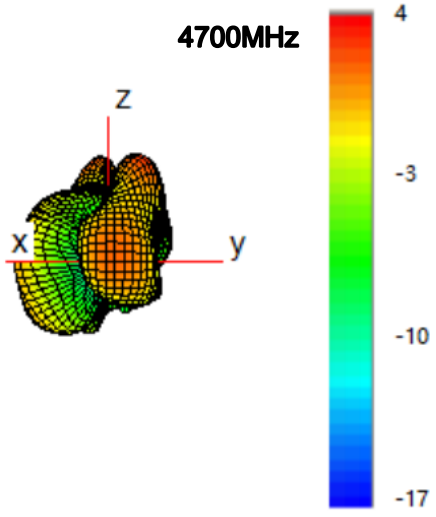


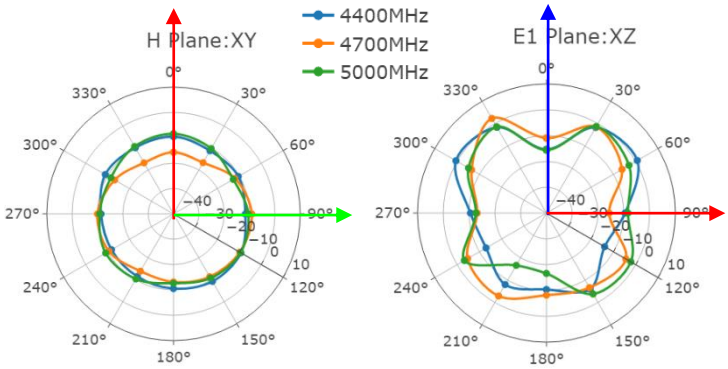
4000MHz



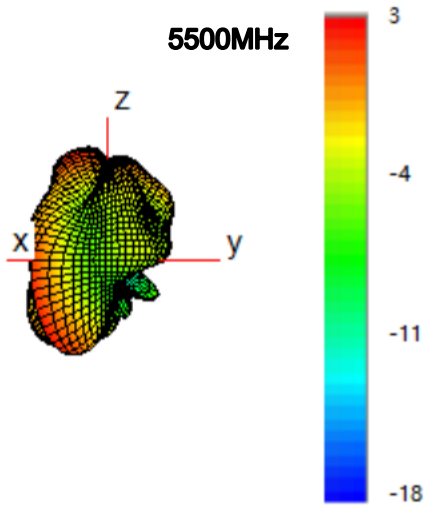


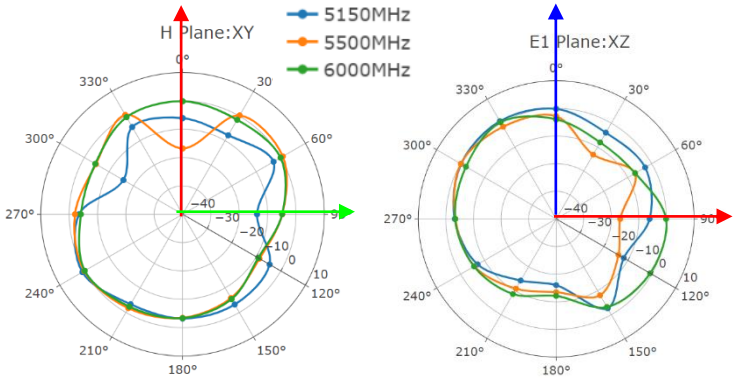
4700MHz



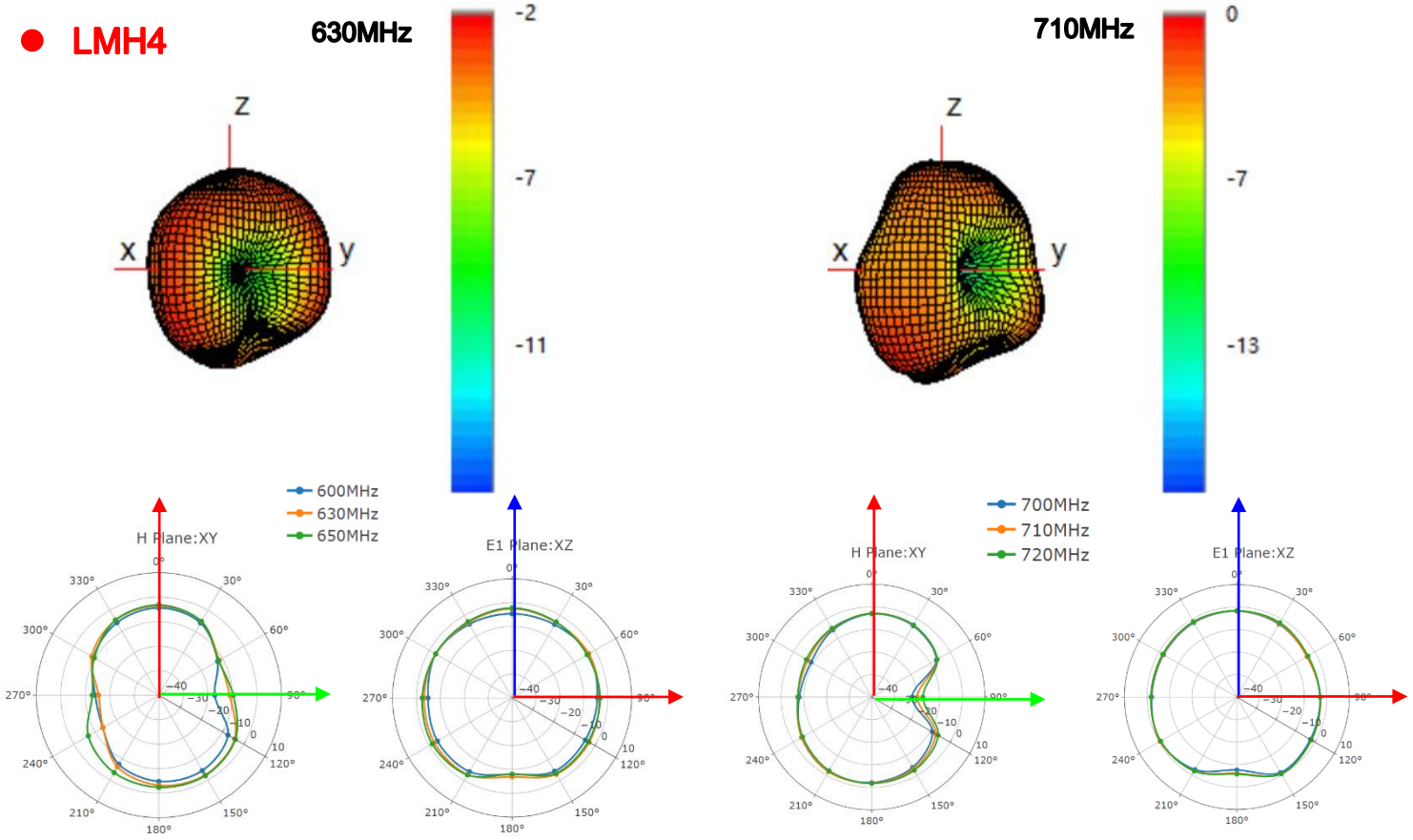


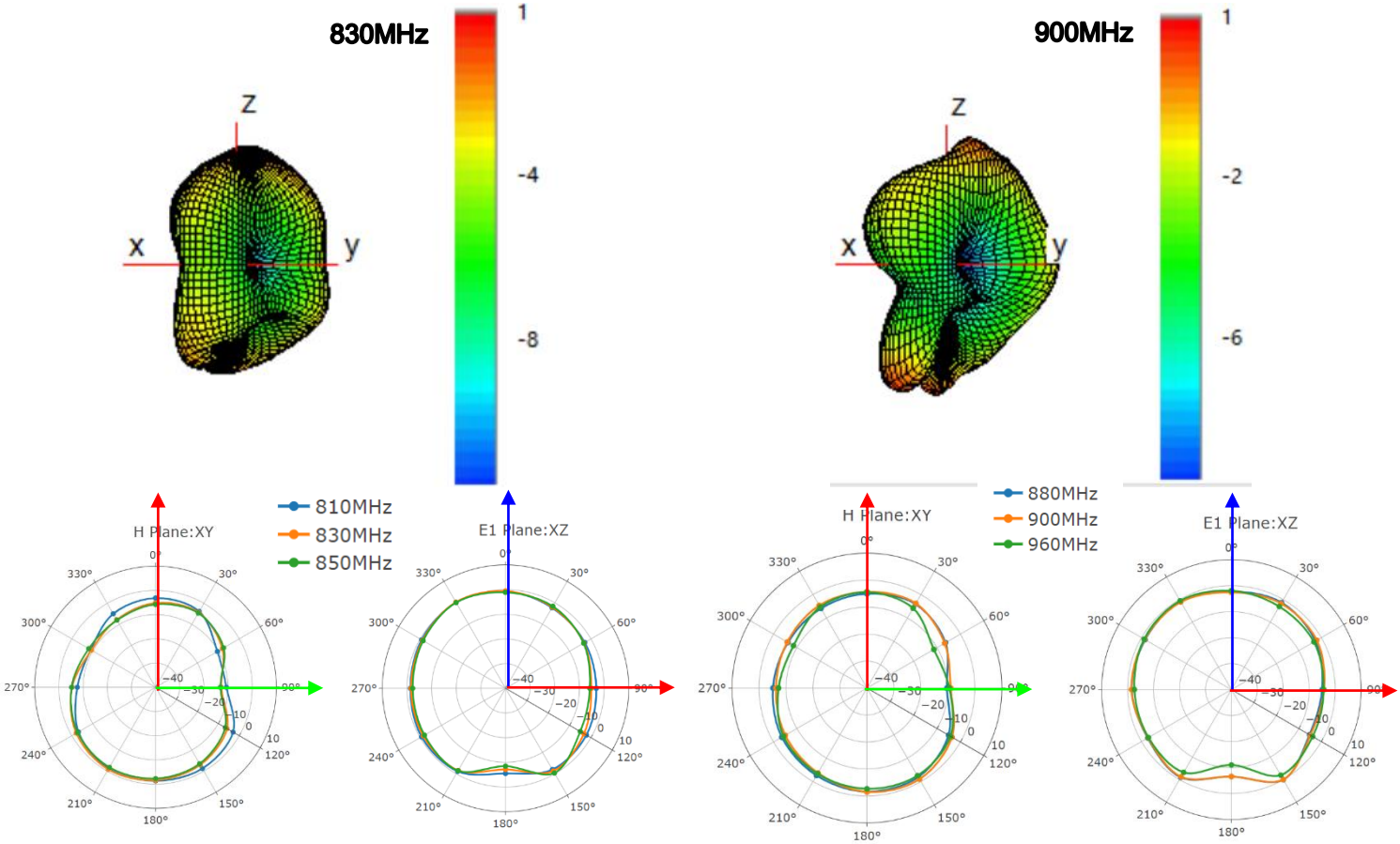
5500MHz



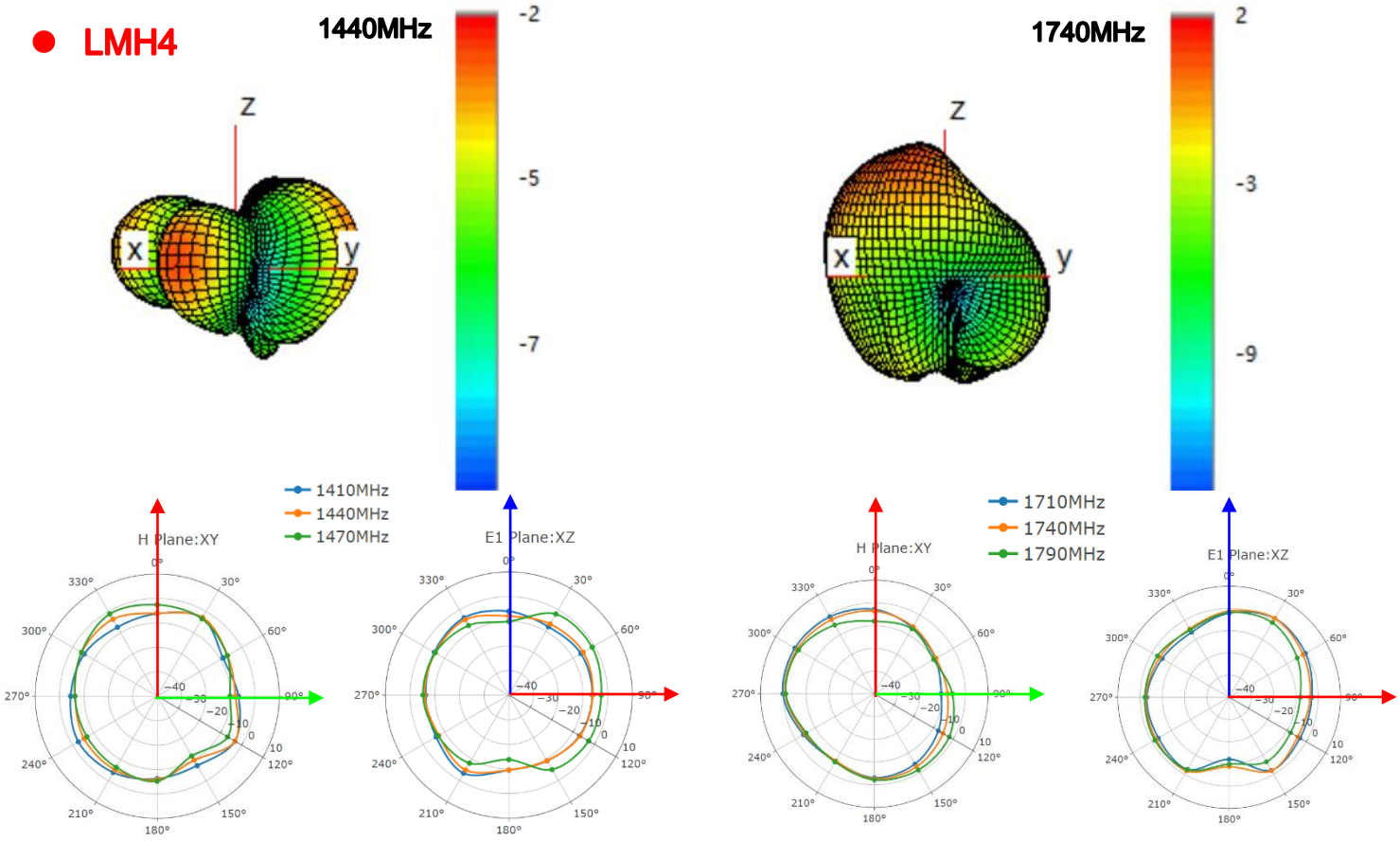


- **LMH4**

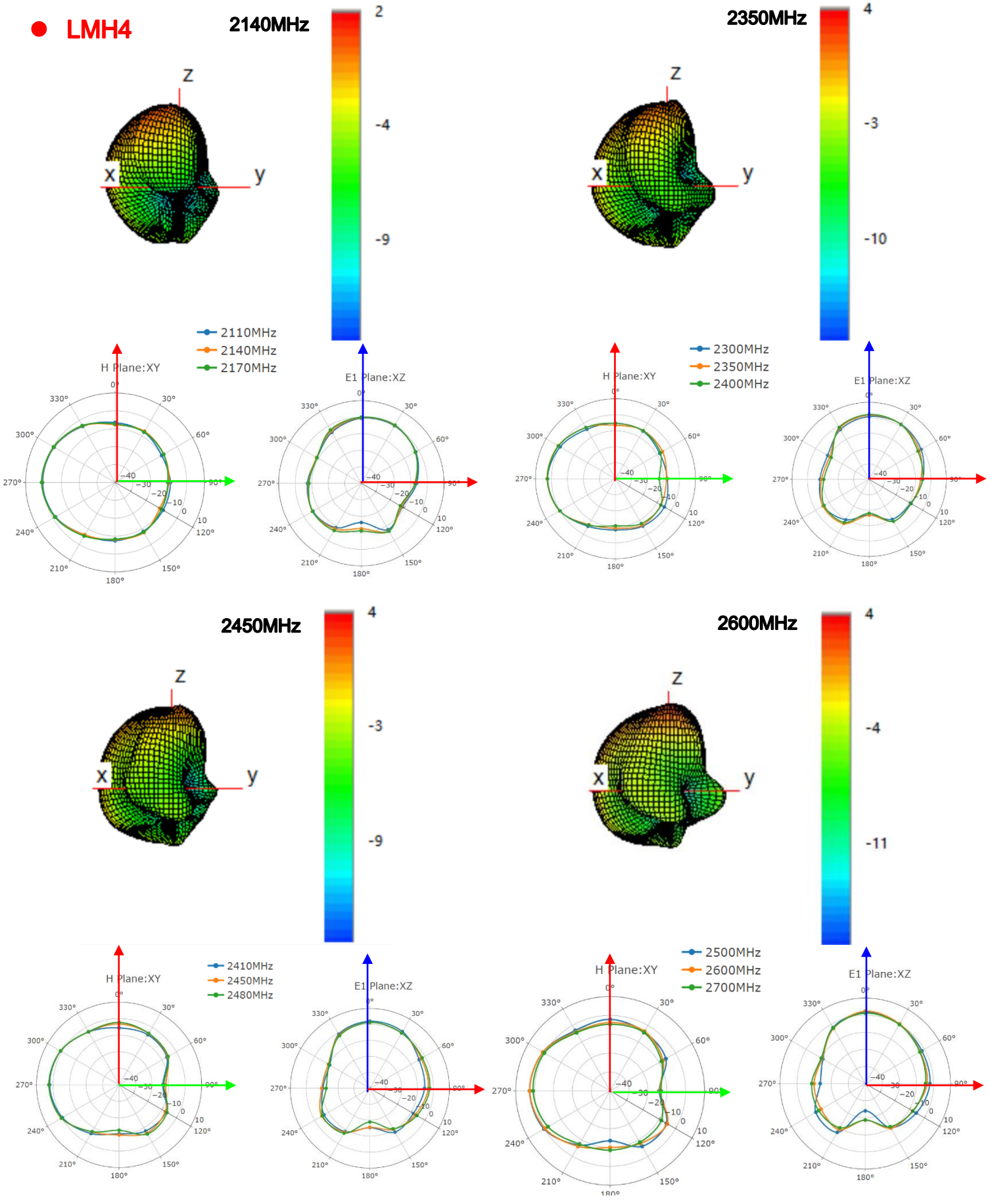

630MHz
-2
-7
-11
z
x
y
600MHz
630MHz
650MHz
H Plane:XY
E1 Plane:XZ
710MHz
0
-7
-13
700MHz
710MHz
720MHz
H Plane:XY
E1 Plane:XZ


830MHz
1
-4
-8
z
x
y
810MHz
830MHz
850MHz
H Plane:XY
E1 Plane:XZ
900MHz
1
-2
-6
880MHz
900MHz
960MHz
H Plane:XY
E1 Plane:XZ

- **LMH4**

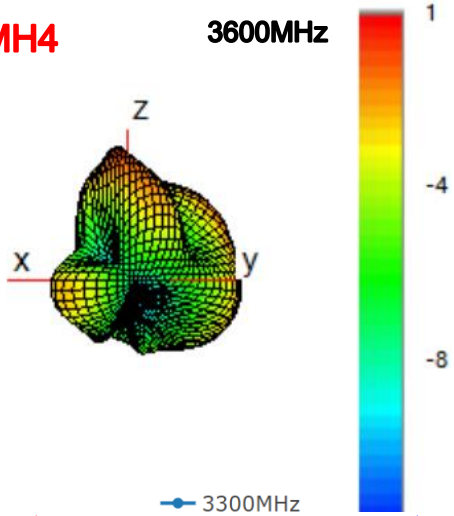

1440MHz
-2
-5
-7
Z
X
y
1410MHz
1440MHz
1470MHz
H Plane:XY
E1 Plane:XZ
1740MHz
2
-3
-9
1710MHz
1740MHz
1790MHz
1880MHz
1
-5
-11
1850MHz
1880MHz
1910MHz
1950MHz
-10
1920MHz
1950MHz
1980MHz

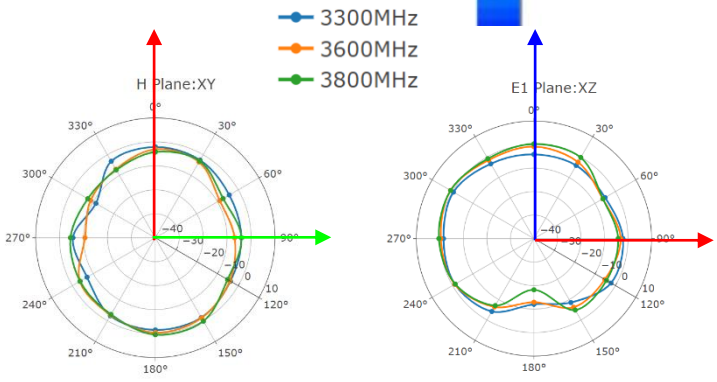
- **LMH4**


2140MHz
2
-4
-9
z
x
y
2110MHz
2140MHz
2170MHz
H Plane:XY
E1 Plane:XZ
2350MHz
4
-3
-10
2300MHz
2350MHz
2400MHz
2450MHz
4
-3
-9
2410MHz
2450MHz
2480MHz
2600MHz
4
-4
-11
2500MHz
2600MHz
2700MHz

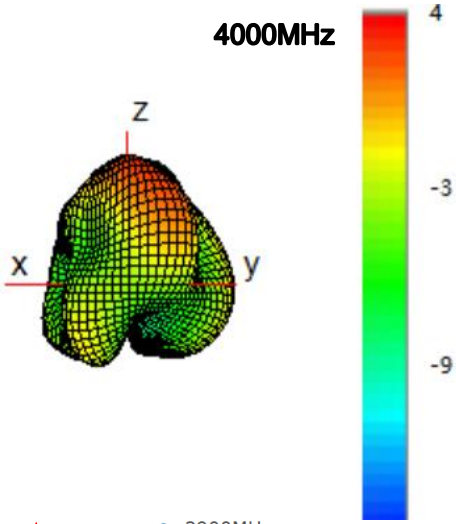
- **LMH4**

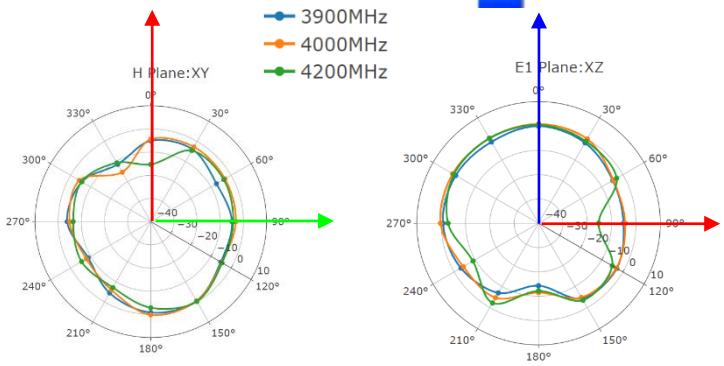
3600MHz



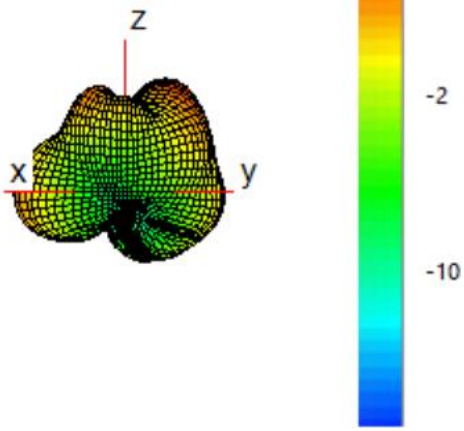


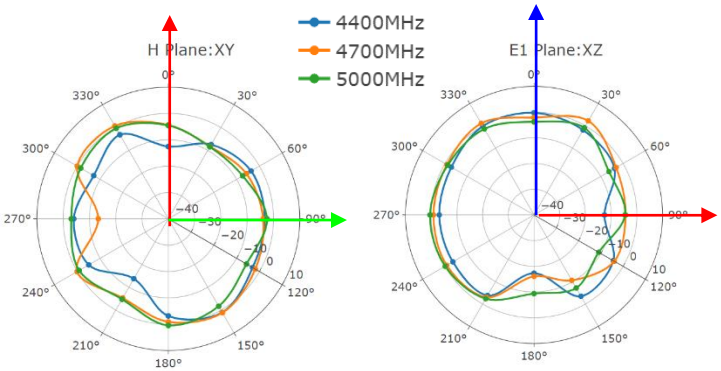
4000MHz



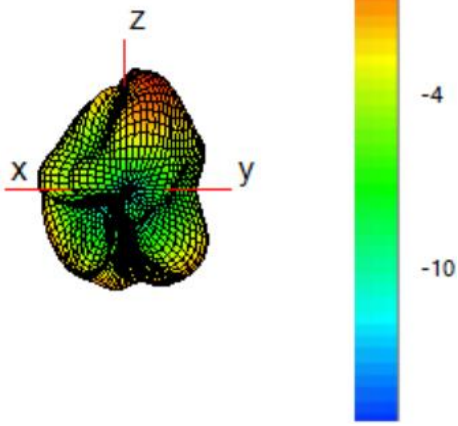


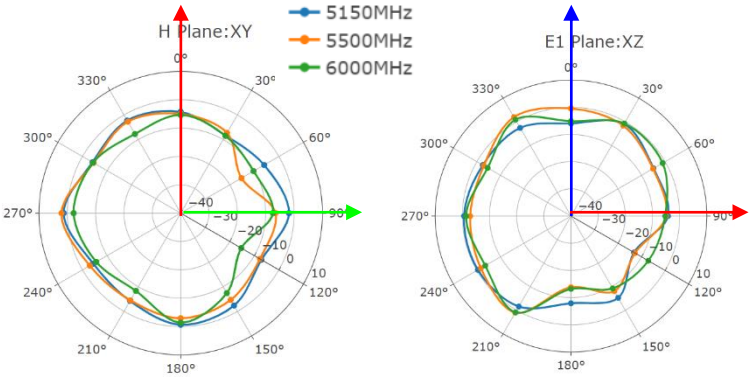
4700MHz





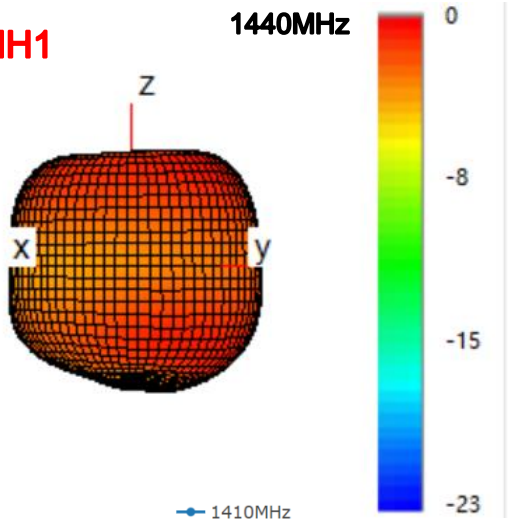
5500MHz

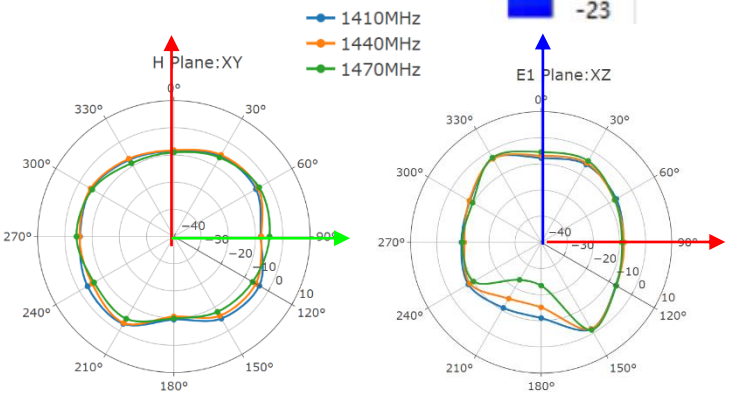




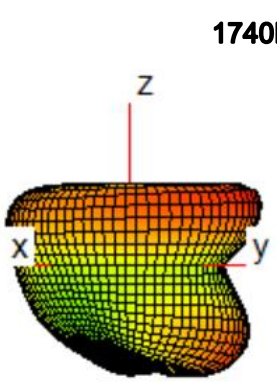
MH1

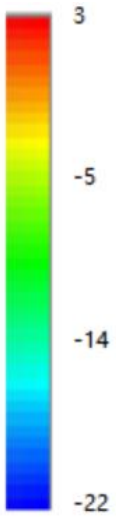
1440MHz

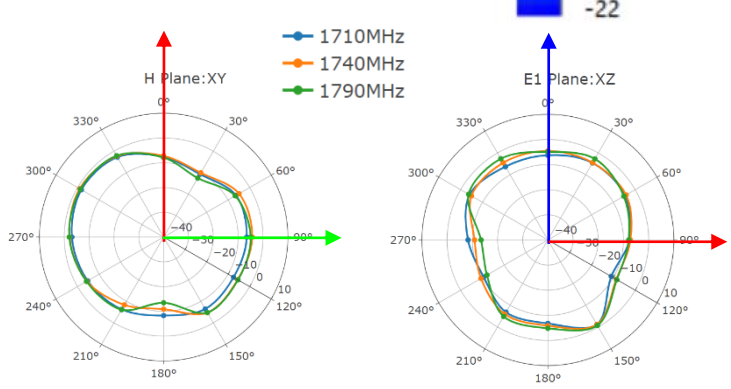




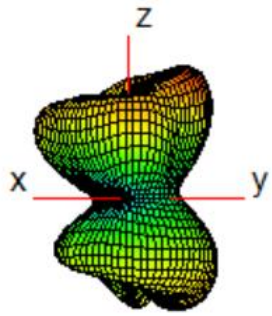
1740MHz

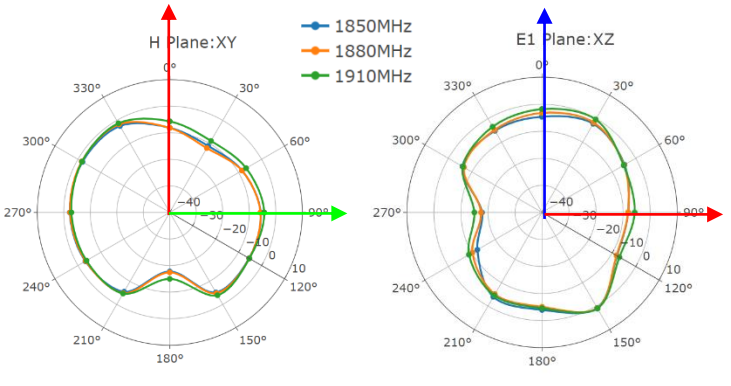




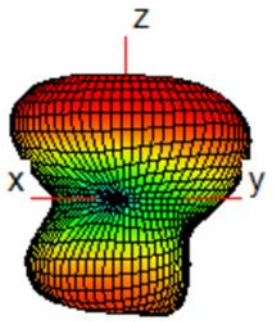


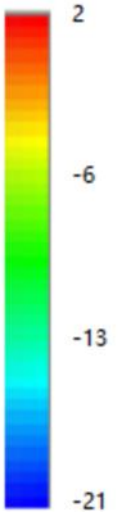
1880MHz

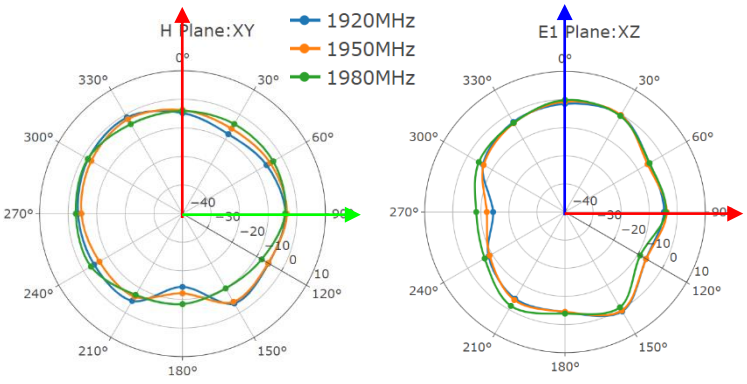




1950MHz

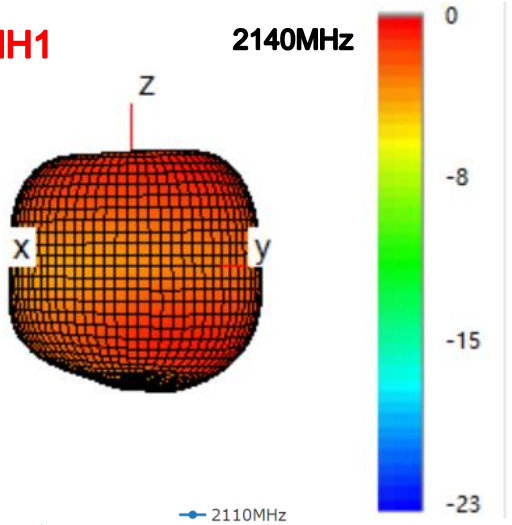


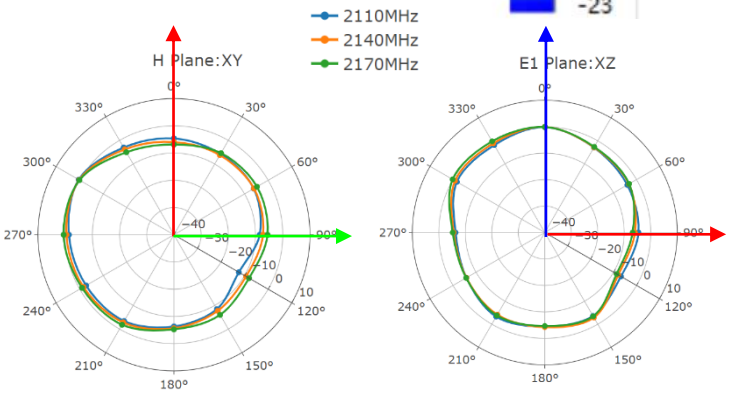




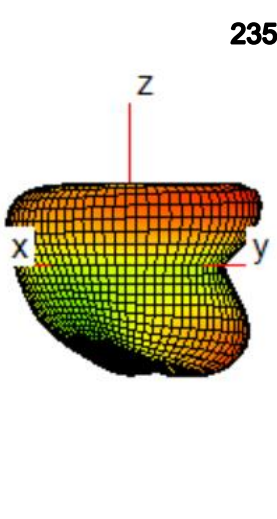
MH1

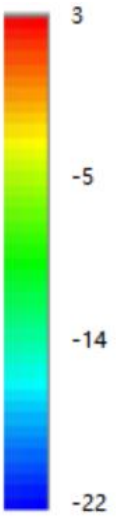
2140MHz

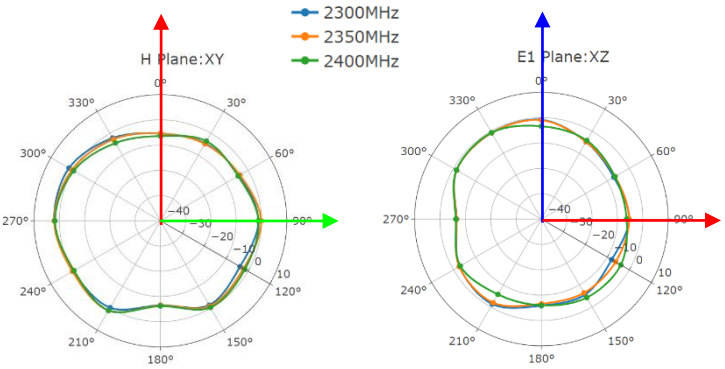




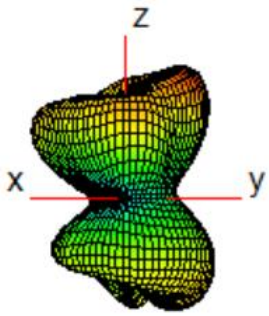
2350MHz

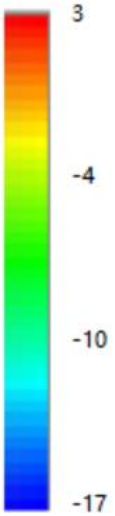


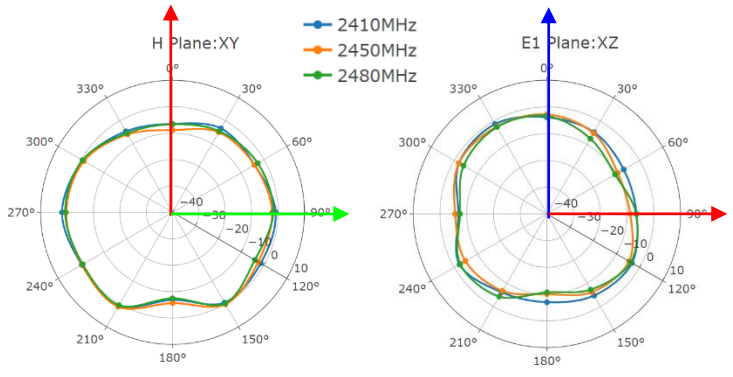




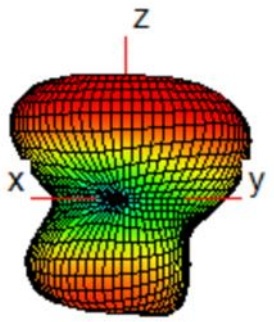
2450MHz

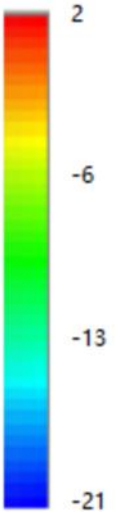


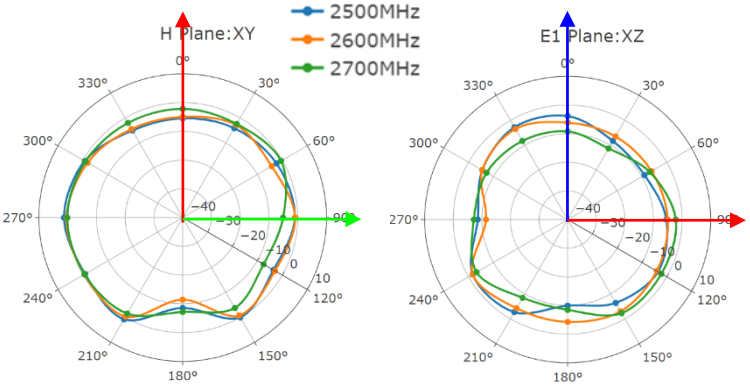




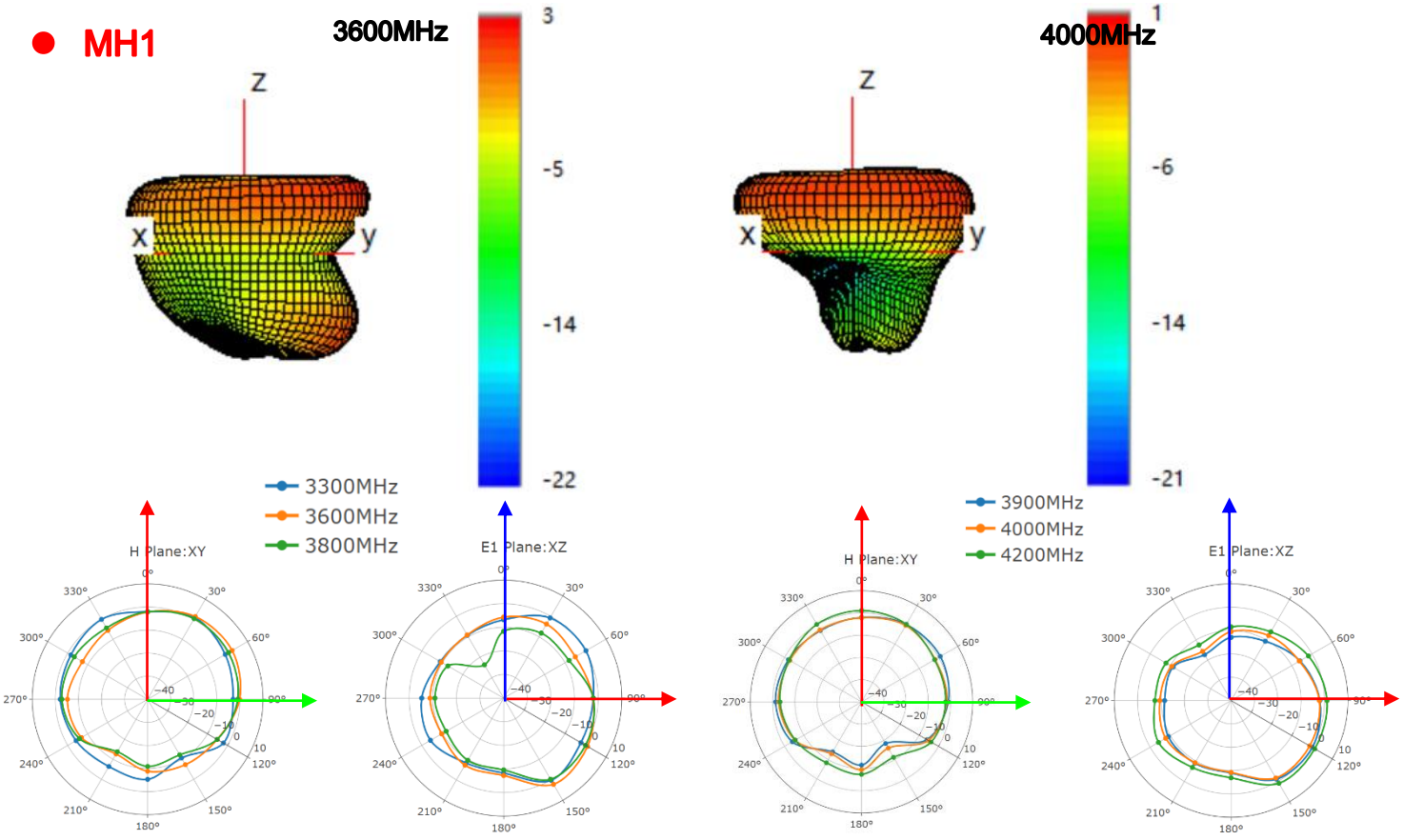
2600MHz





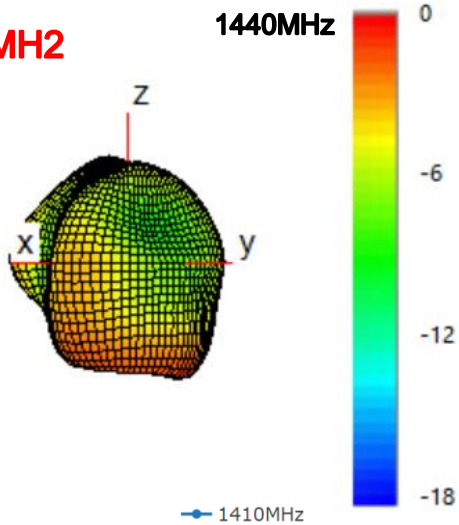


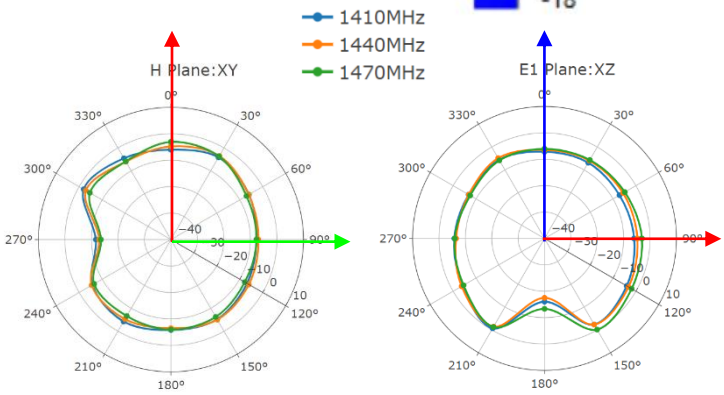
- **MH1**


3600MHz
3
-5
-14
-22
z
x
y
3300MHz
3600MHz
3800MHz
H Plane:XY
E1 Plane:XZ
4000MHz
1
-6
-14
-21
3900MHz
4000MHz
4200MHz
4700MHz
3
-4
-10
-17
4400MHz
4700MHz
5000MHz
5500MHz
2
-6
-13
-21
5150MHz
5500MHz
6000MHz

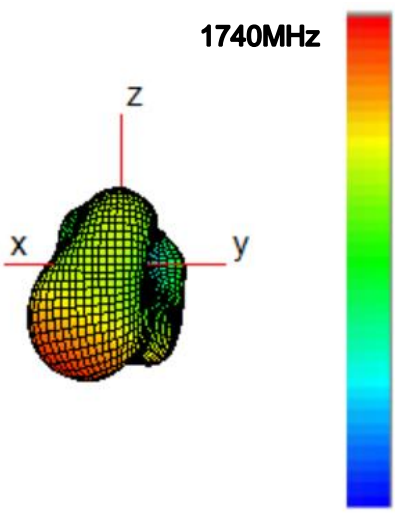
- **MH2**

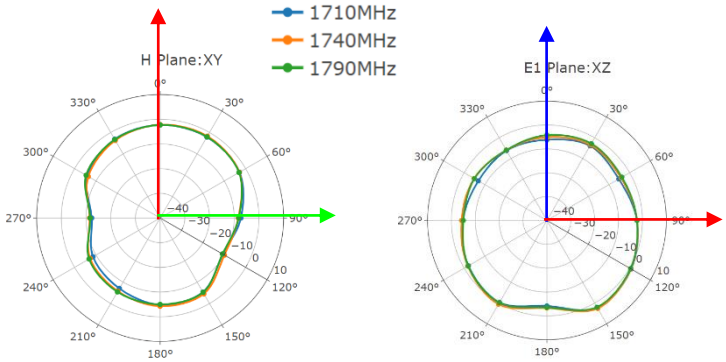
1440MHz



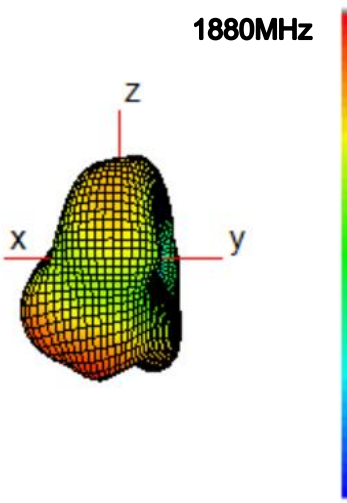


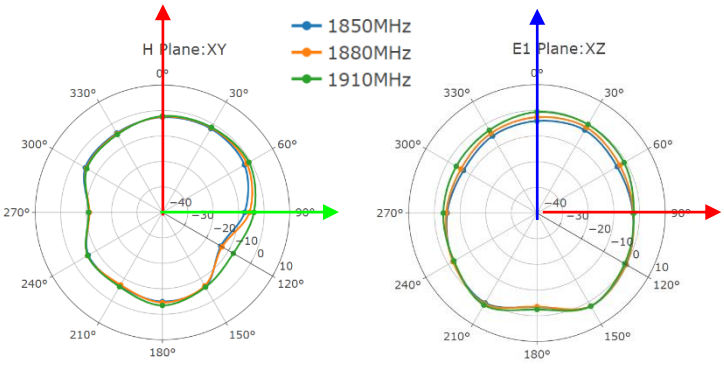
1740MHz



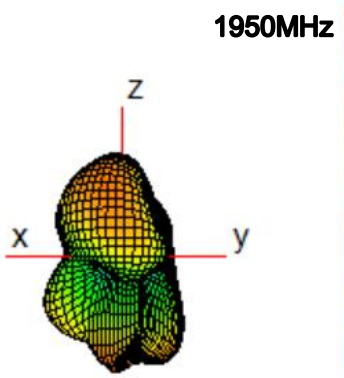


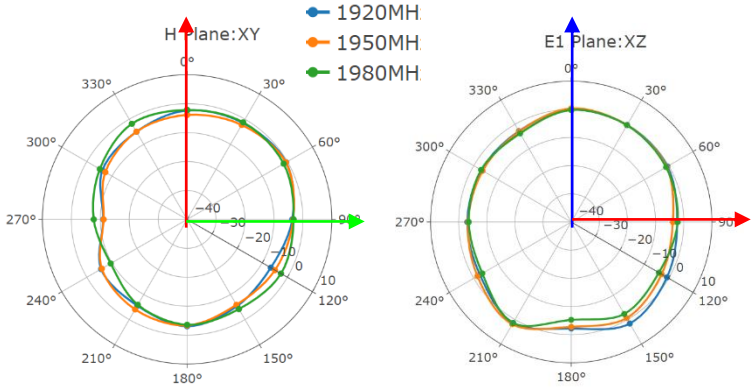
1880MHz





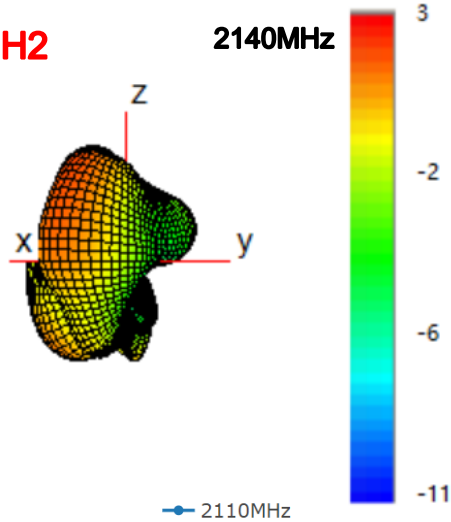
1950MHz

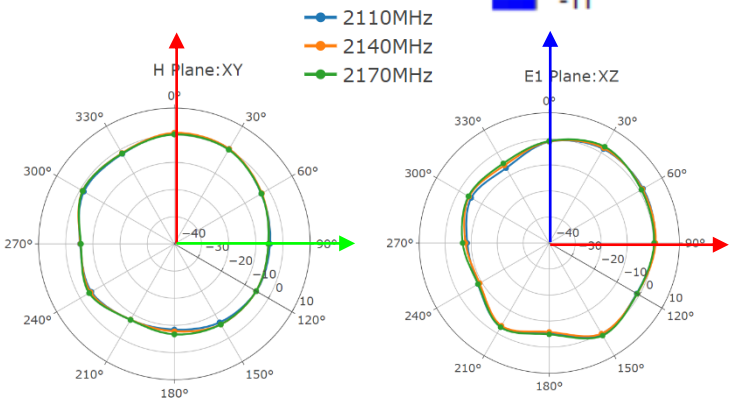




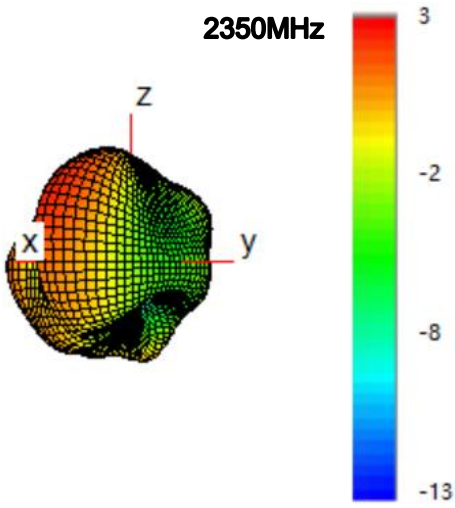
MH2

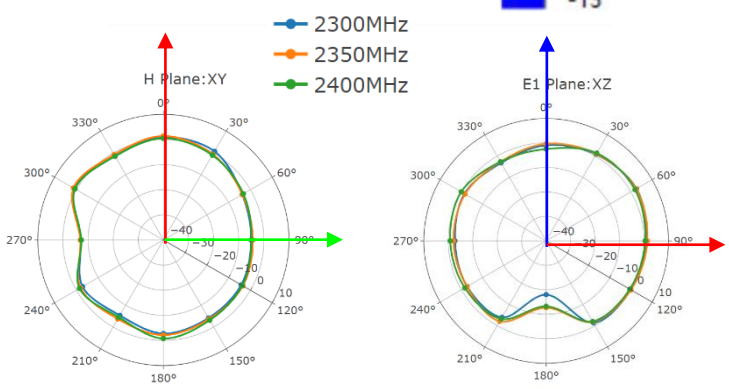
2140MHz



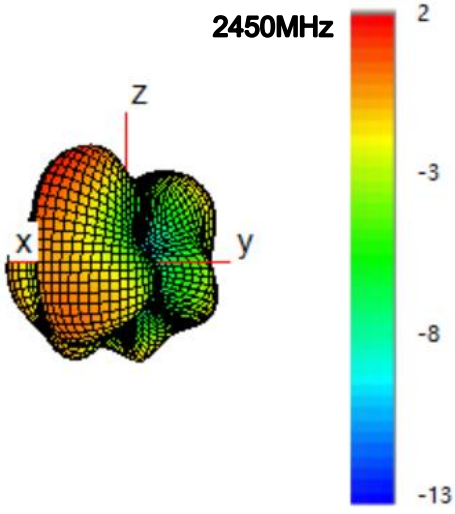


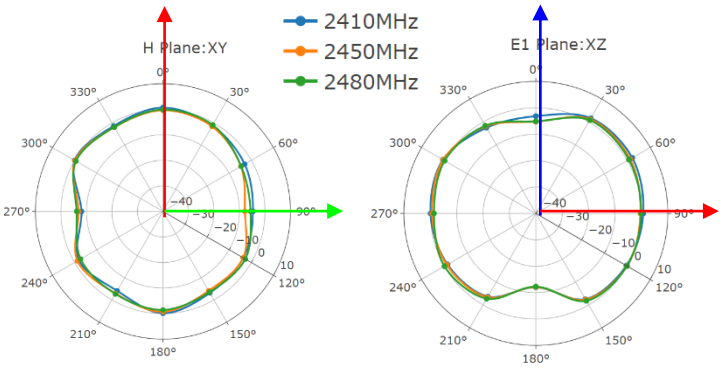
2350MHz



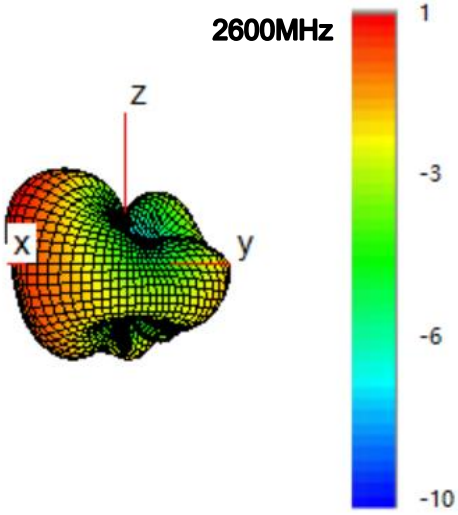


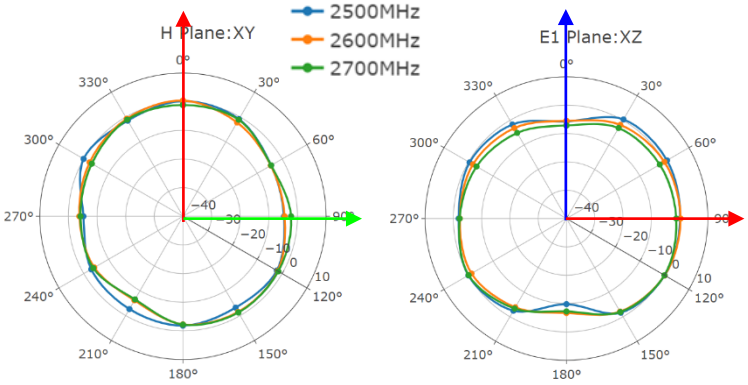
2450MHz



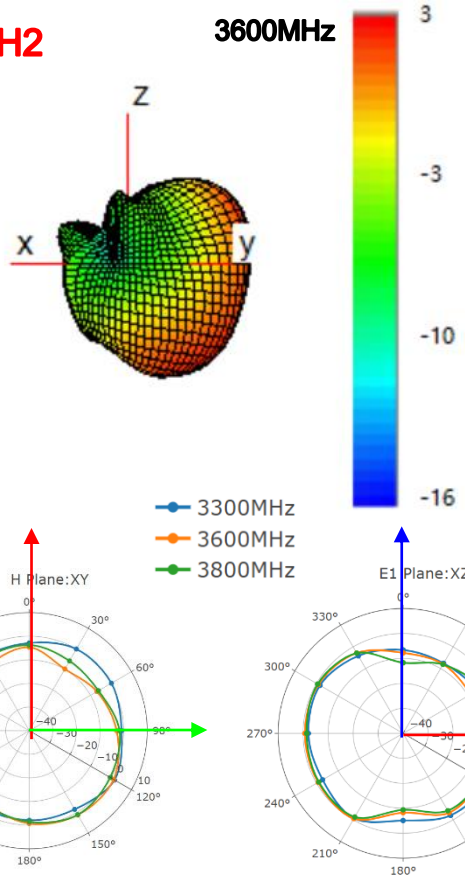


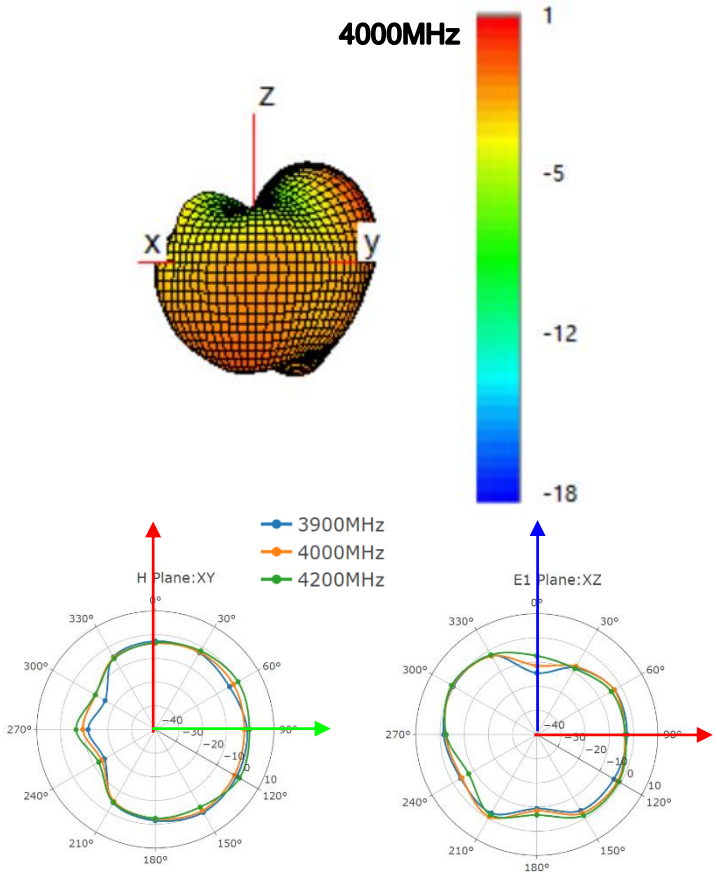
2600MHz

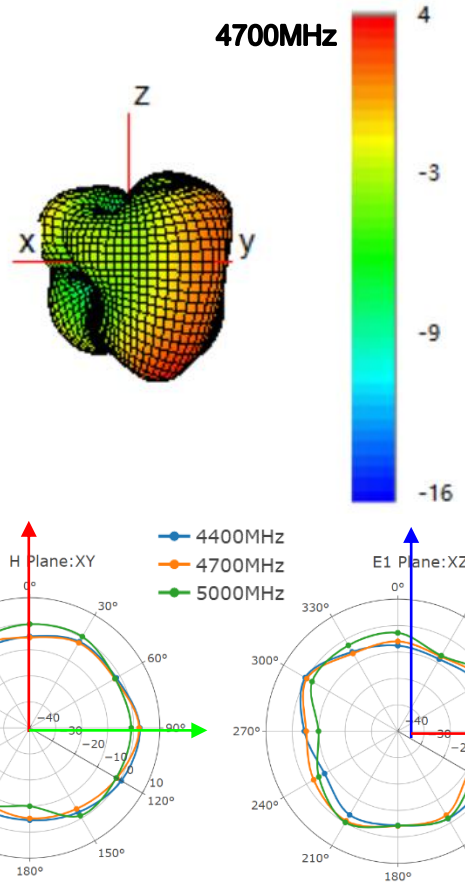


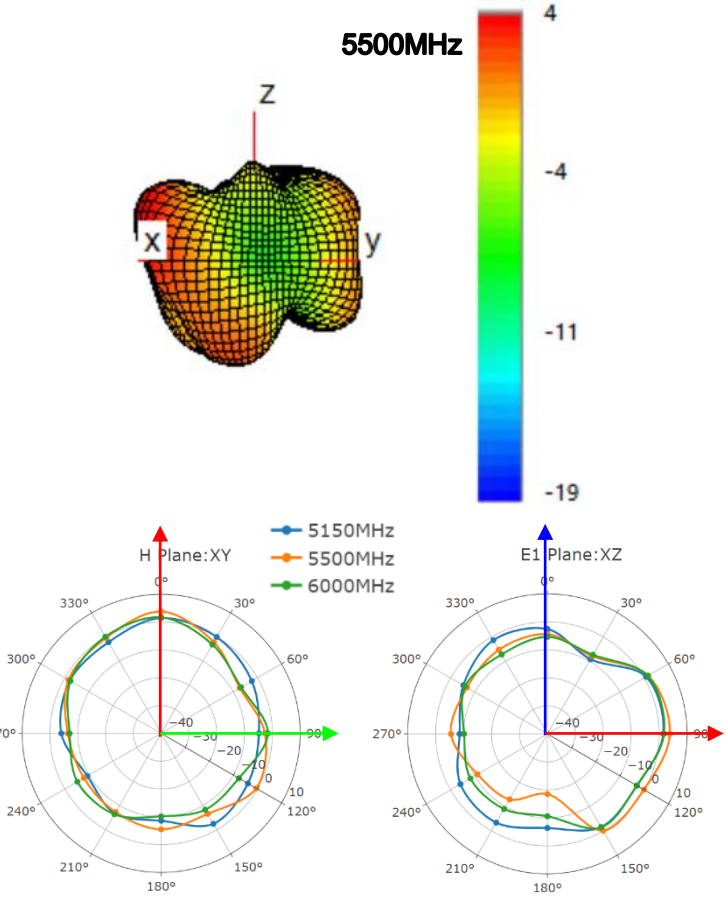


- **MH2**


3600MHz
3
-3
-10
-16
Z
X
Y
3300MHz
3600MHz
3800MHz
H Plane:XY
E1 Plane:XZ

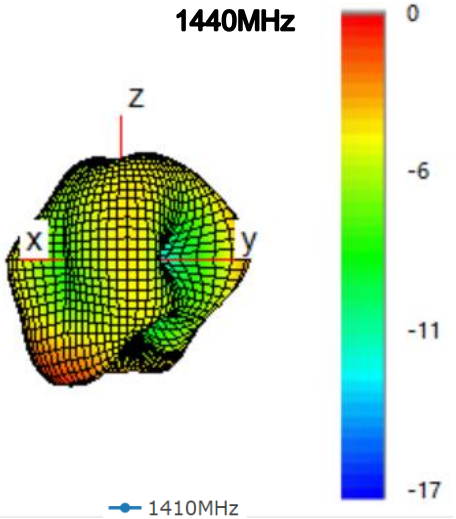

4000MHz
1
-5
-12
-18
Z
X
Y
3900MHz
4000MHz
4200MHz
H Plane:XY
E1 Plane:XZ

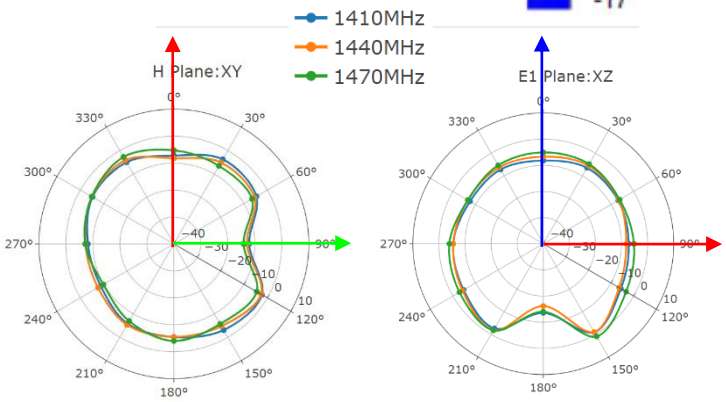

4700MHz
4
-3
-9
-16
Z
X
Y
4400MHz
4700MHz
5000MHz
H Plane:XY
E1 Plane:XZ


5500MHz
4
-4
-11
-19
Z
X
Y
5150MHz
5500MHz
6000MHz
H Plane:XY
E1 Plane:XZ

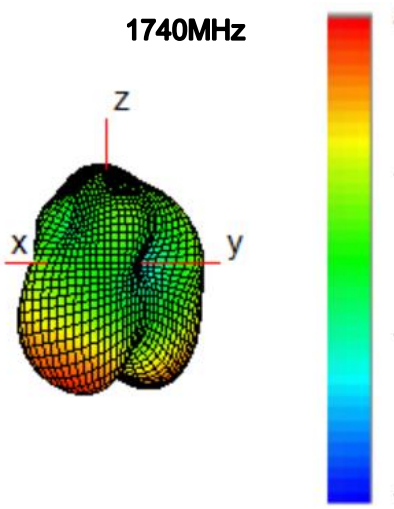
- **MH3**

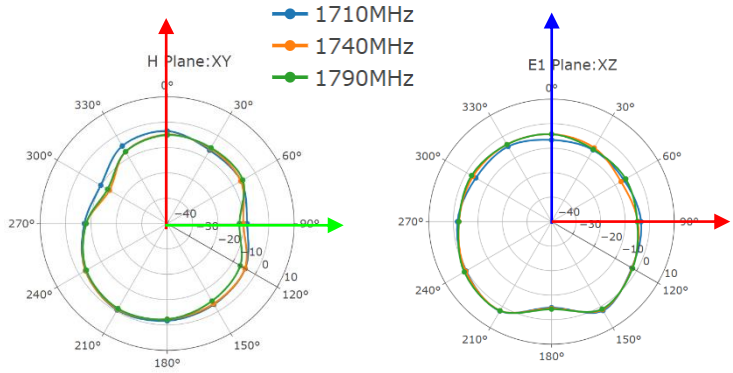
1440MHz



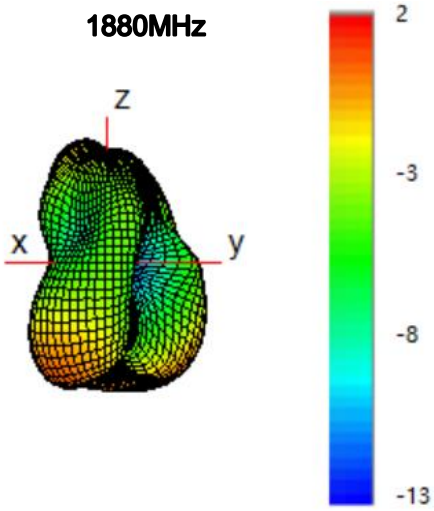


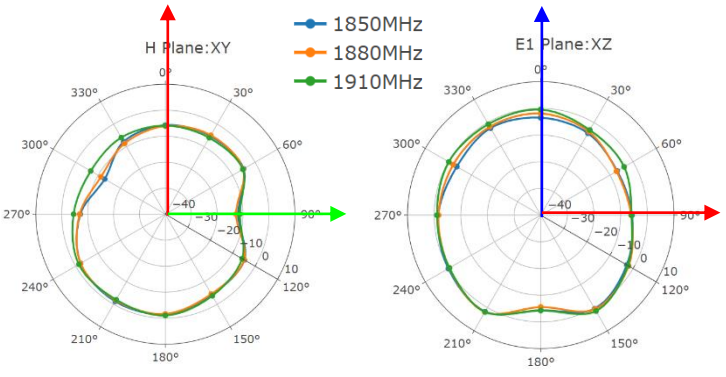
1740MHz



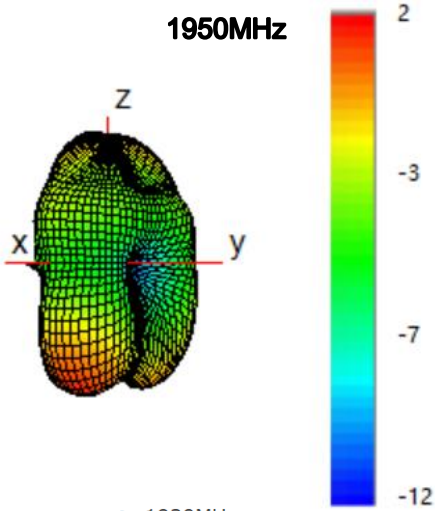


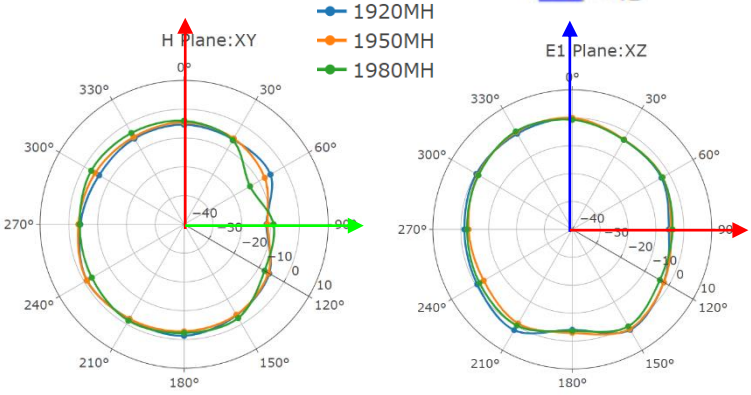
1880MHz





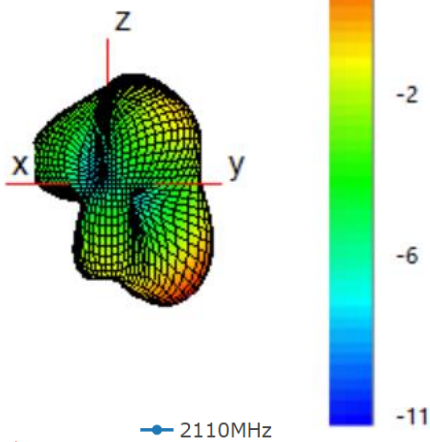
1950MHz

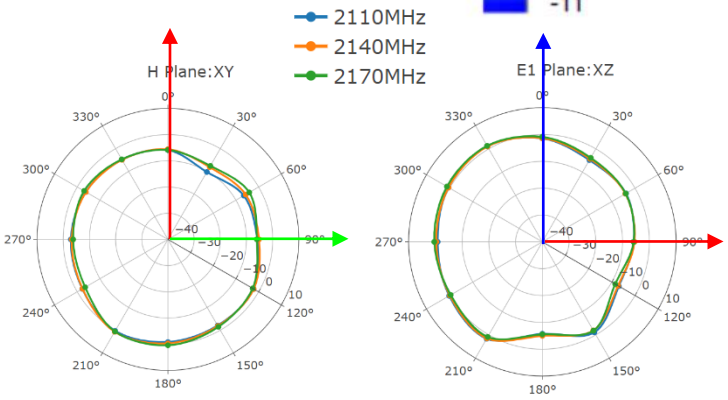




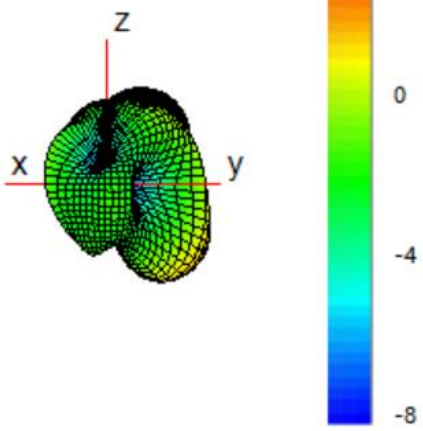
MH3

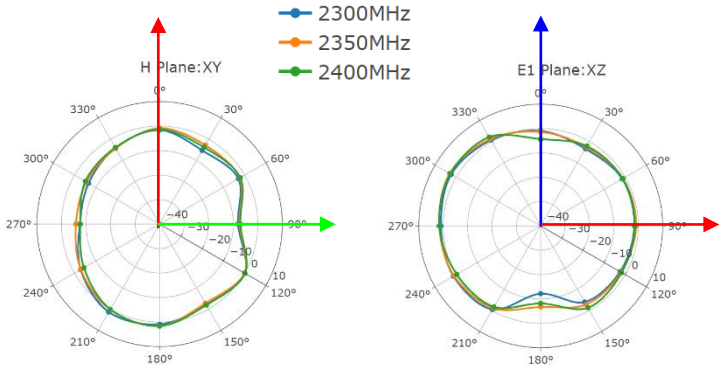
2140MHz



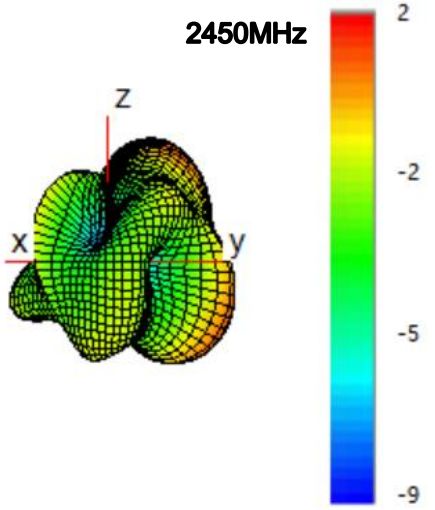


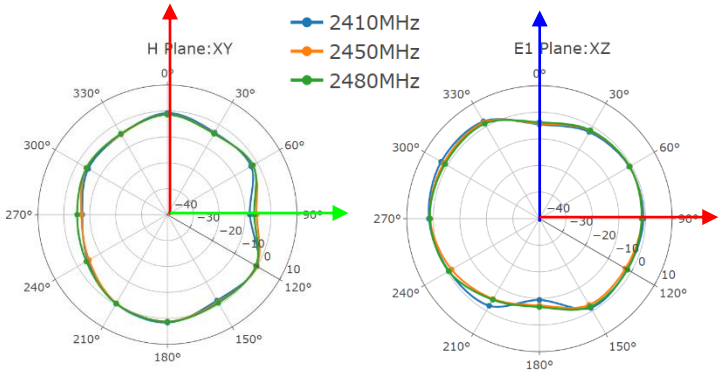
2350MHz



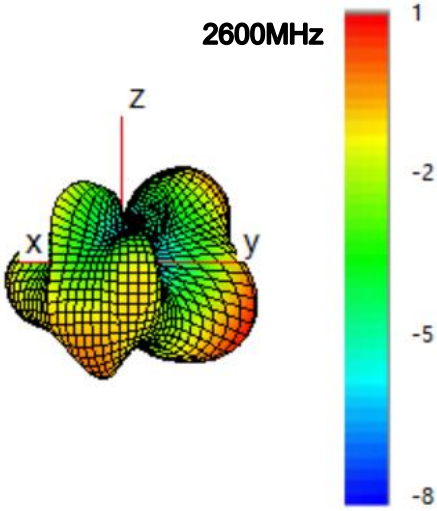


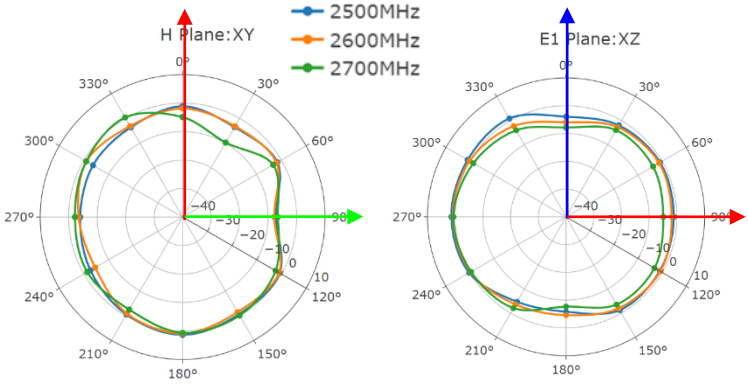
2450MHz



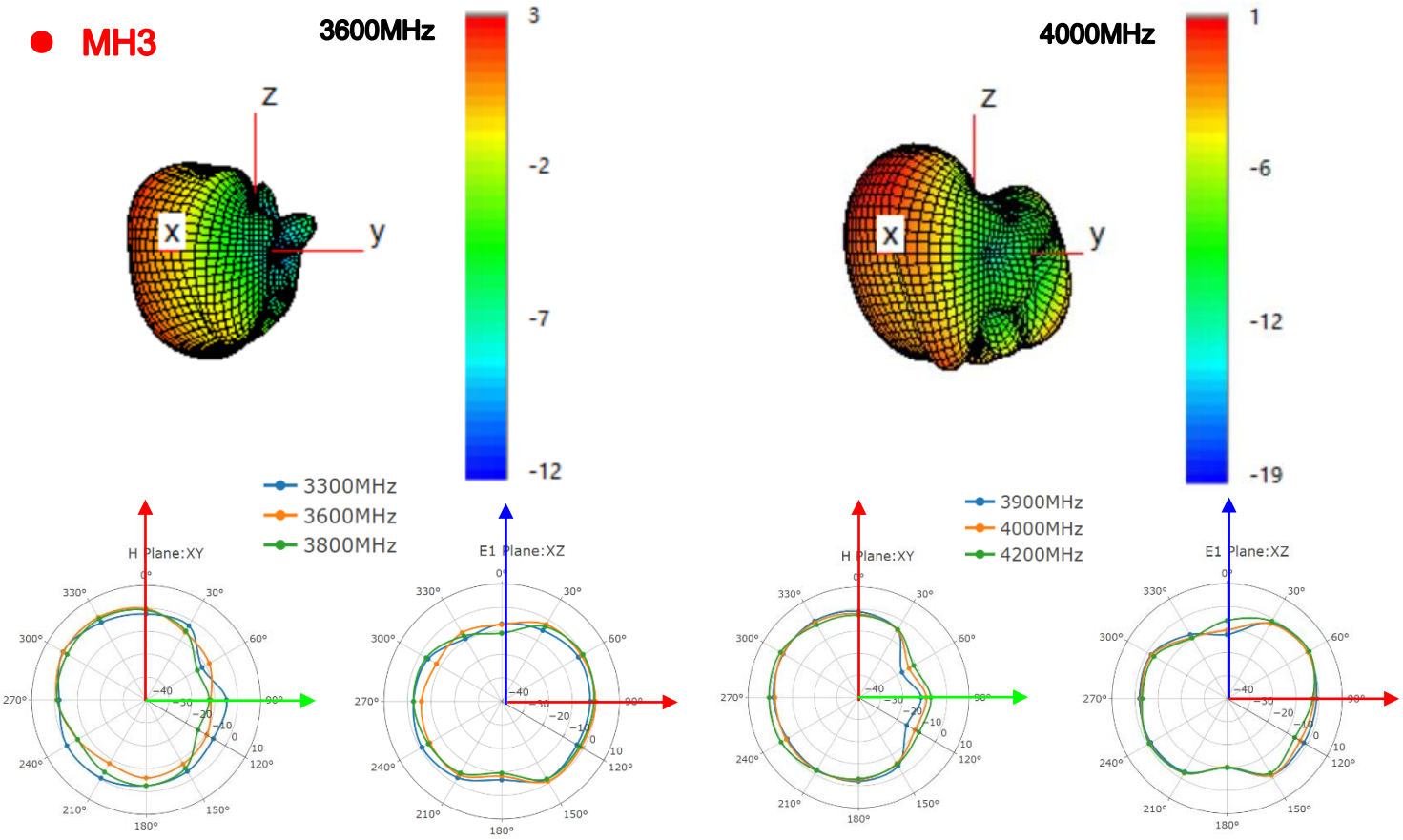


2600MHz

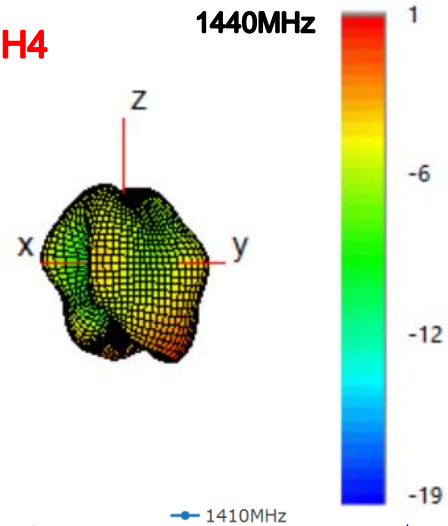


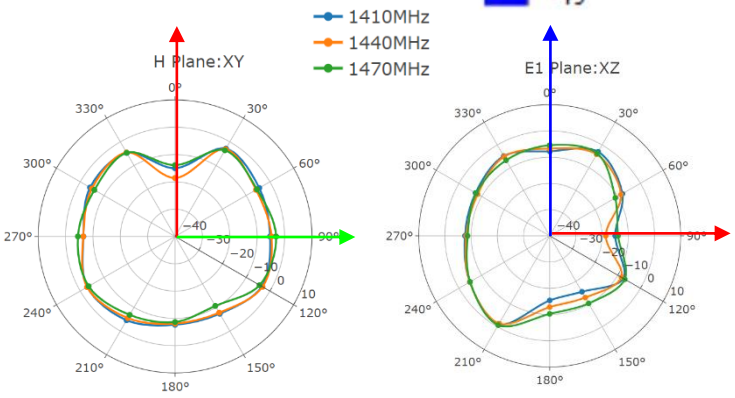


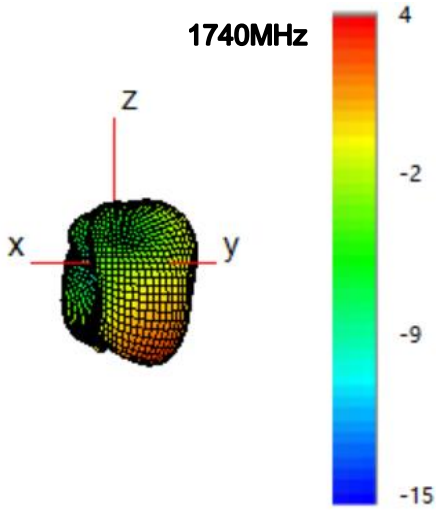
- **MH3**

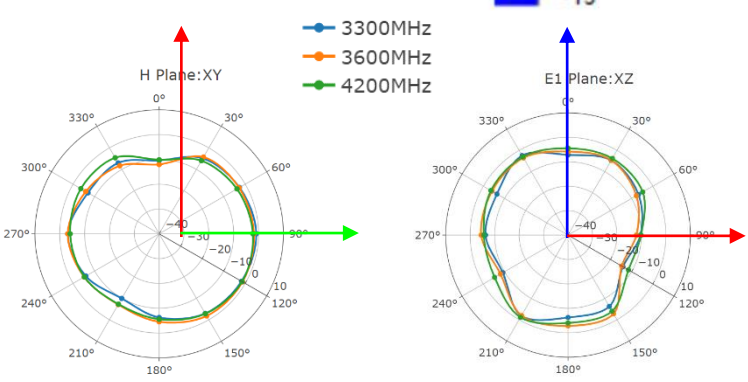

3600MHz
3
-2
-7
-12
Z
X
y
3300MHz
3600MHz
3800MHz
H Plane:XY
E1 Plane:XZ
4000MHz
1
-6
-12
-19
3900MHz
4000MHz
4200MHz
4700MHz
3
-3
-10
-16
4400MHz
4700MHz
5000MHz
5500MHz
4
-3
-9
-16
5150MHz
5500MHz
6000MHz

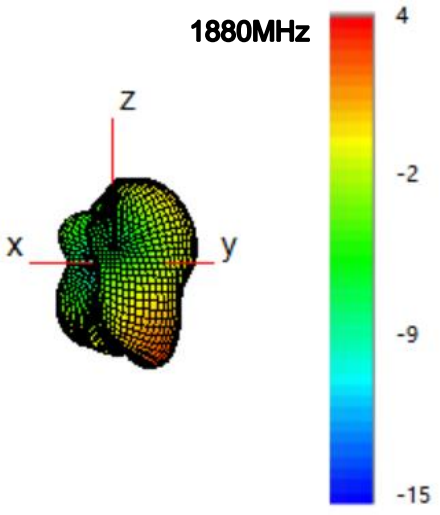
- **MH4**

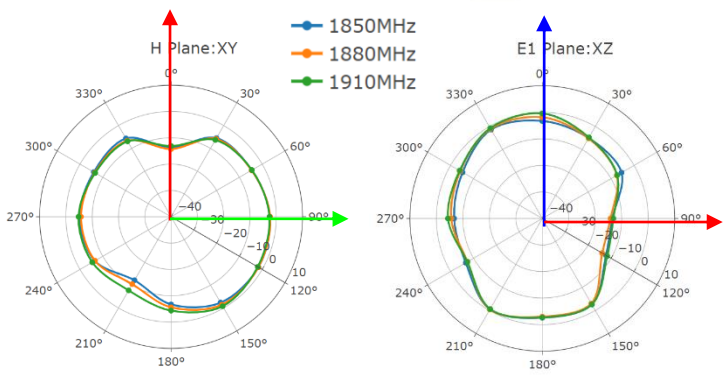

1440MHz
1
-6
-12
-19
Z
X
Y

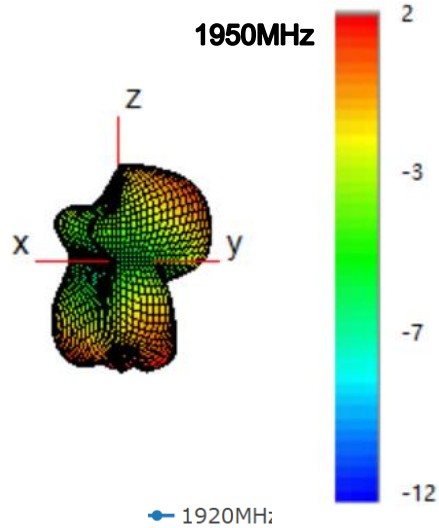

1410MHz
1440MHz
1470MHz
H Plane:XY
E1 Plane:XZ

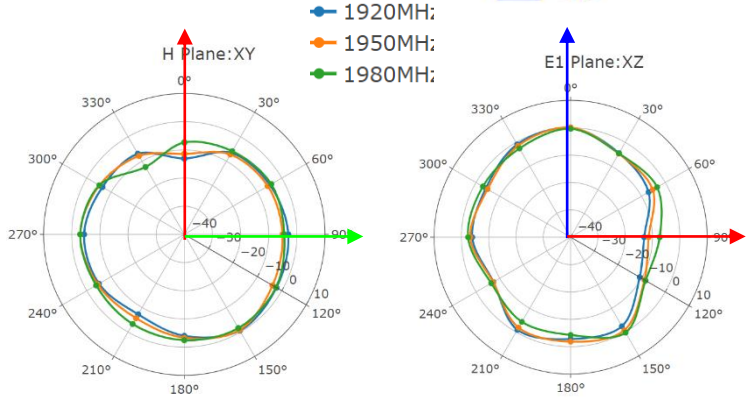

1740MHz
4
-2
-9
-15
Z
X
Y


3300MHz
3600MHz
4200MHz
H Plane:XY
E1 Plane:XZ


1880MHz
4
-2
-9
-15
Z
X
Y

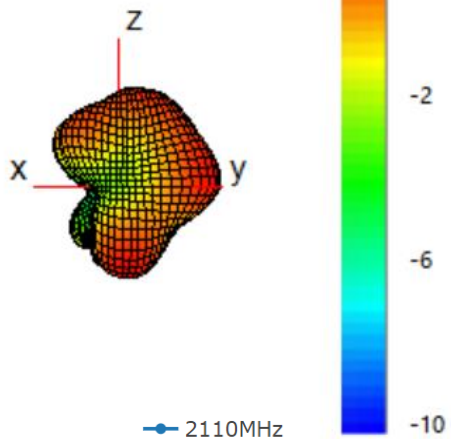

1850MHz
1880MHz
1910MHz
H Plane:XY
E1 Plane:XZ

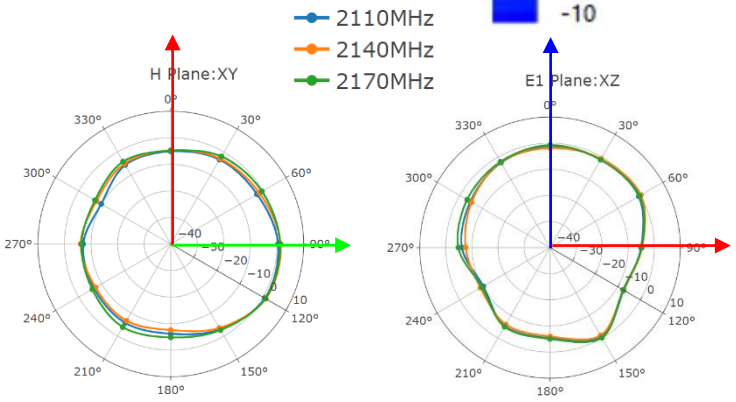

1950MHz
2
-3
-7
-12
Z
X
Y


1920MHz
1950MHz
1980MHz
H Plane:XY
E1 Plane:XZ

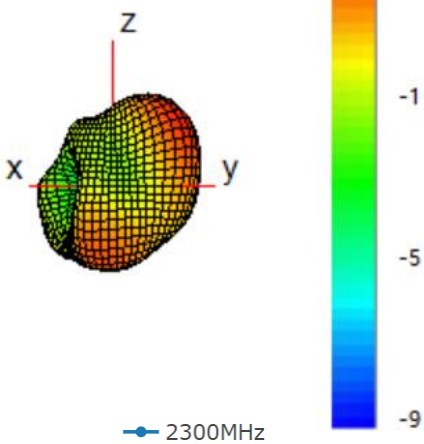
MH4

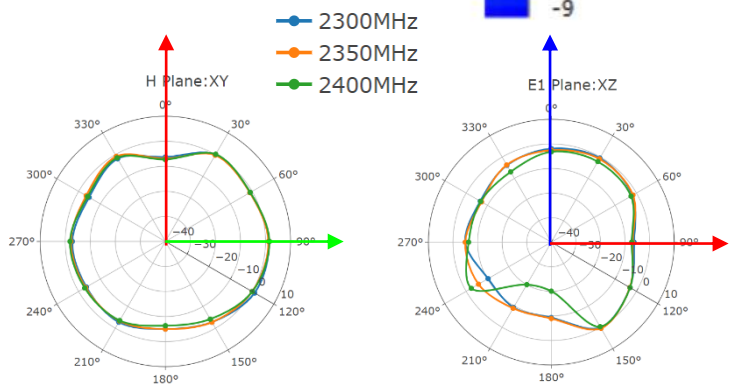
2140MHz



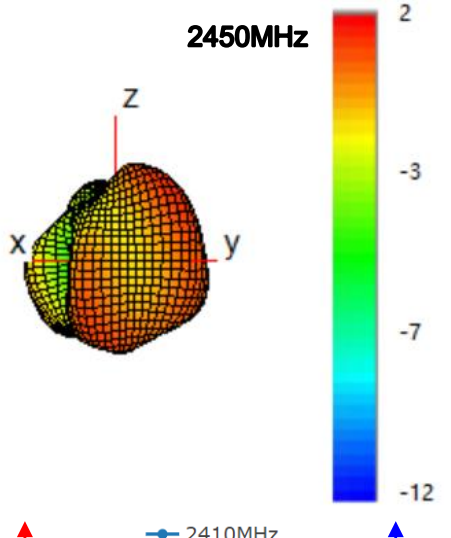


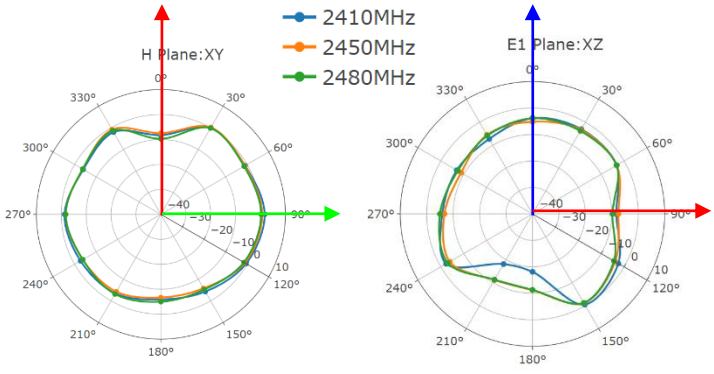
2350MHz



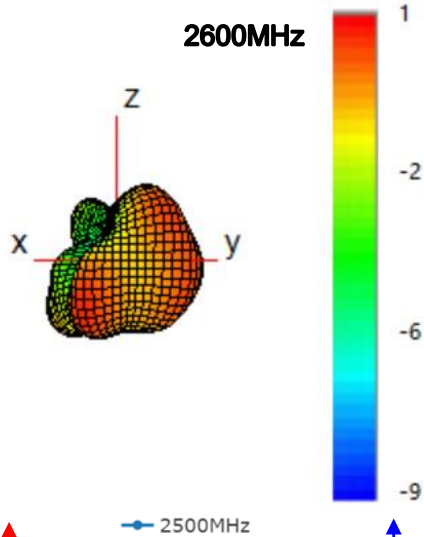


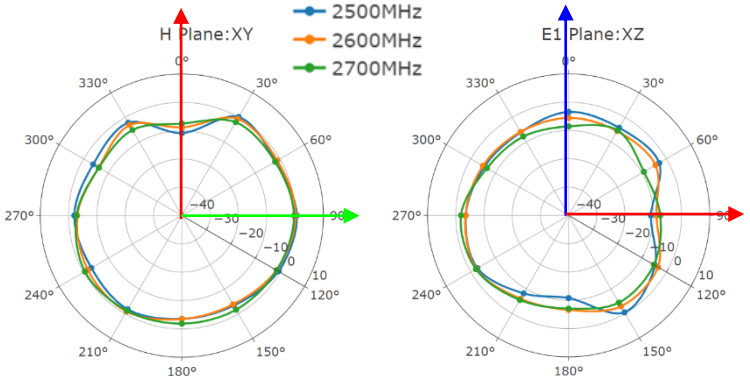
2450MHz





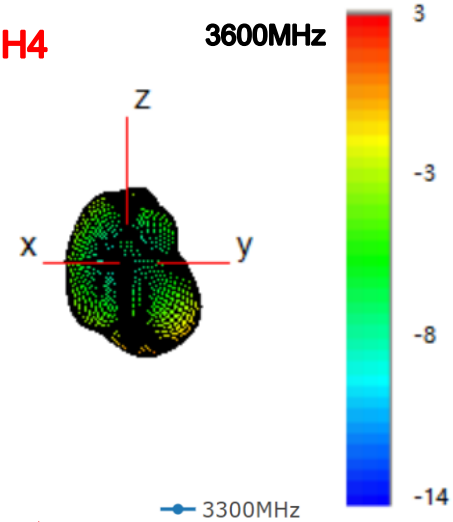
2600MHz

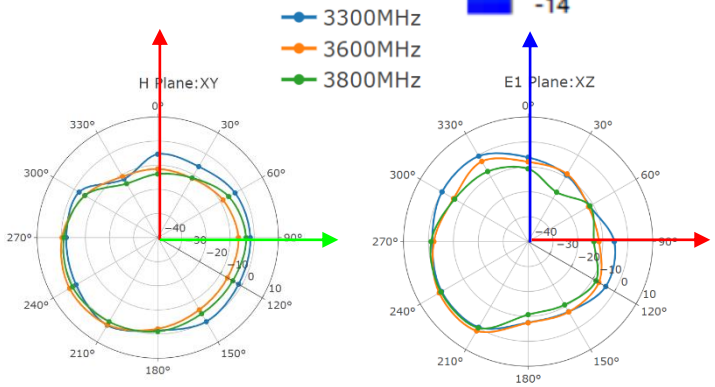




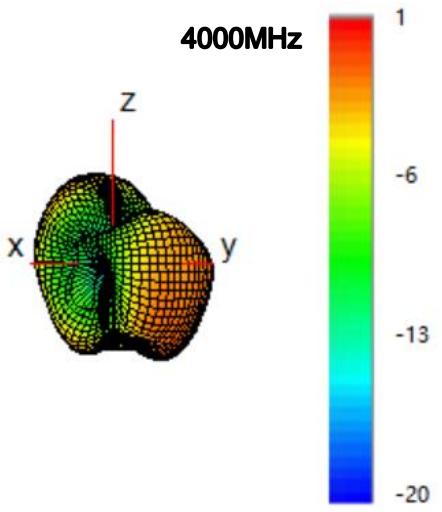
MH4

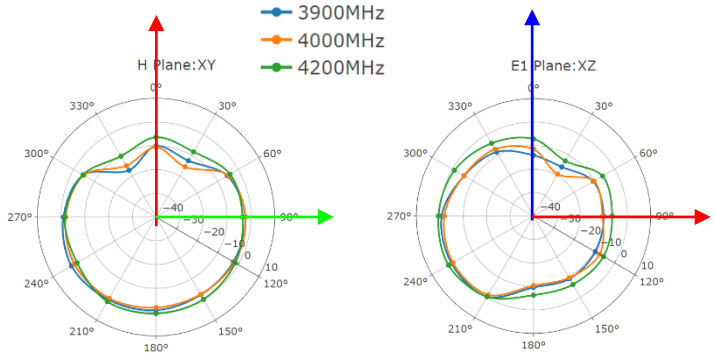
3600MHz



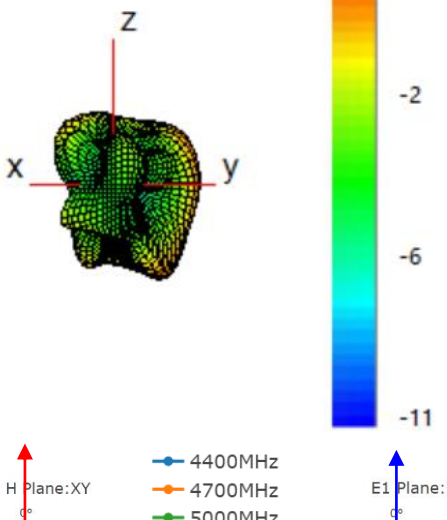


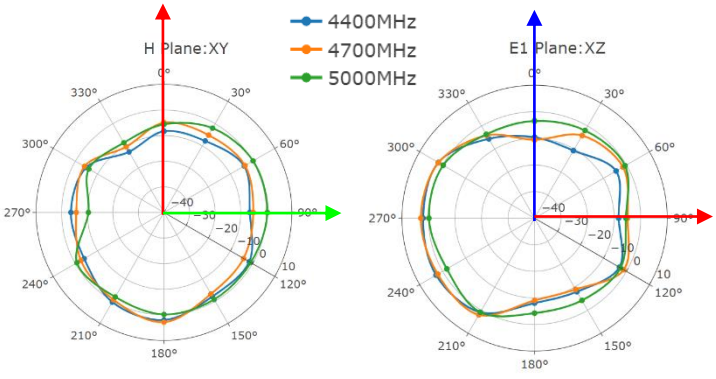
4000MHz



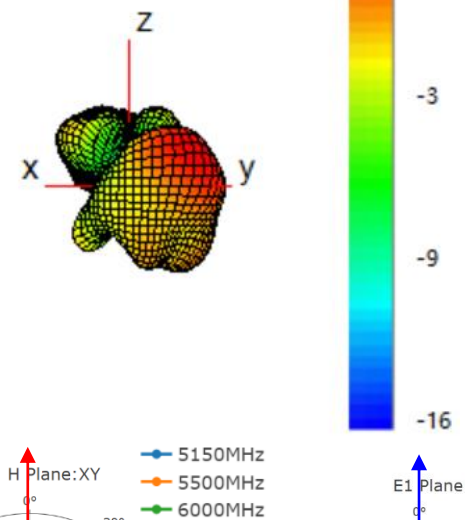


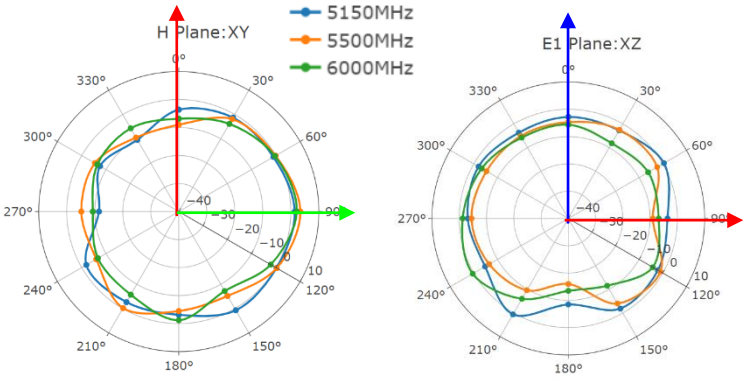
4700MHz



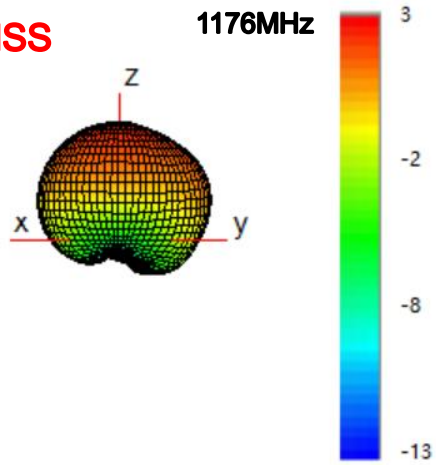


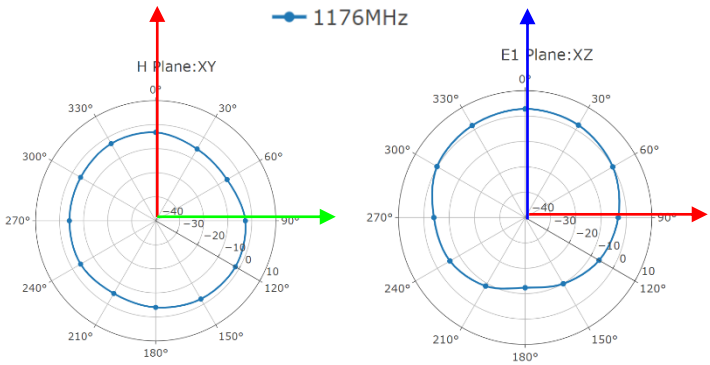
5500MHz

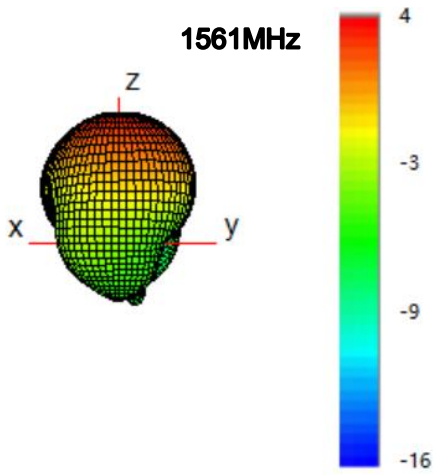


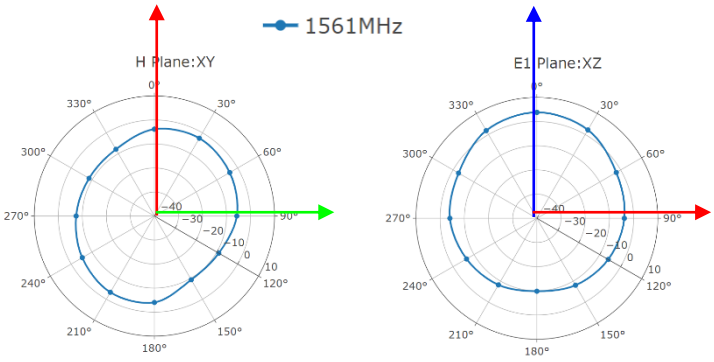


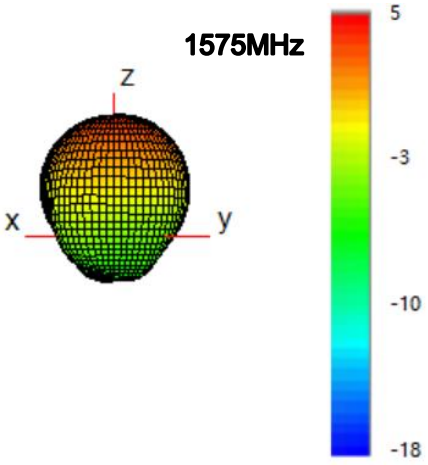
- **GNSS**

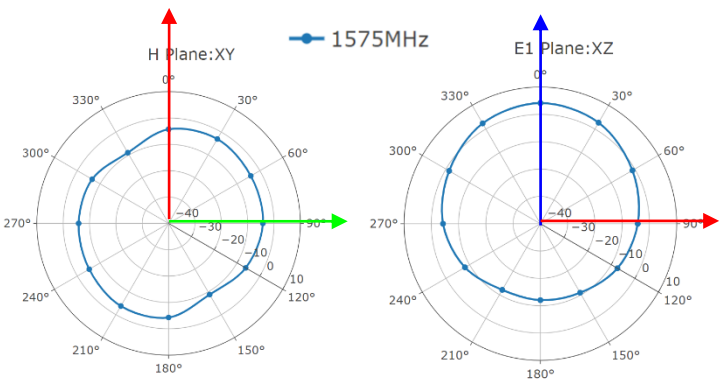

1176MHz
3
-2
-8
-13
z
x
y

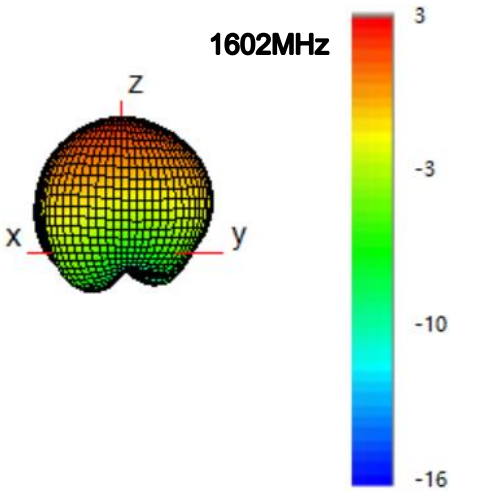

1176MHz
H Plane:XY
E1 Plane:XZ

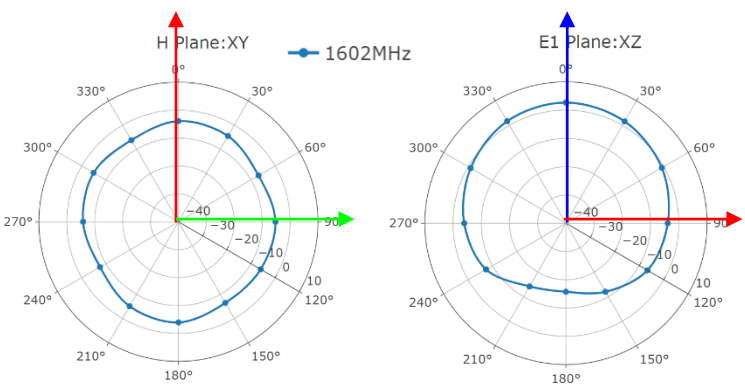

1561MHz
4
-3
-9
-16
z
x
y


1561MHz
H Plane:XY
E1 Plane:XZ

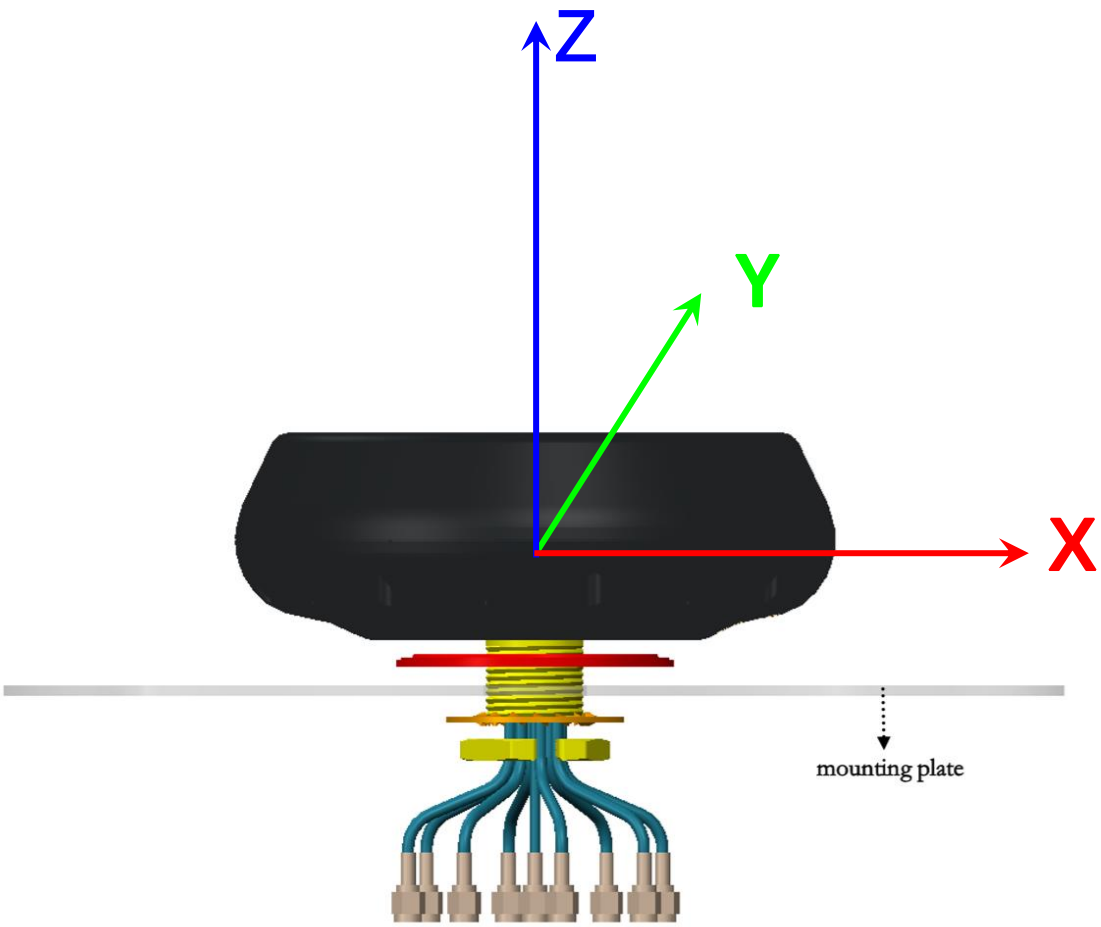

1575MHz
5
-3
-10
-18
z
x
y


1575MHz
H Plane:XY
E1 Plane:XZ

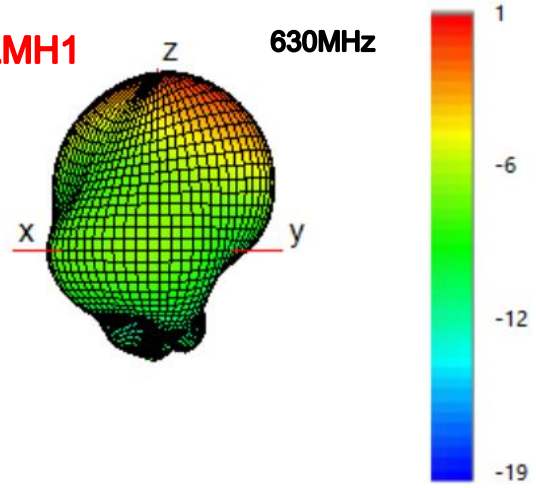

1602MHz
3
-3
-10
-16
z
x
y

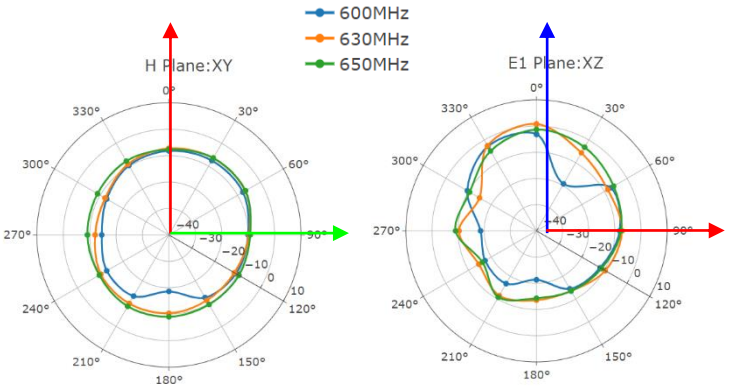

1602MHz
H Plane:XY
E1 Plane:XZ

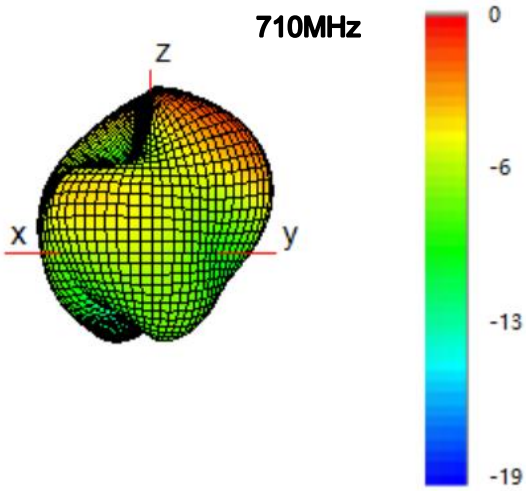
3.2.4.2 Test Status: On 300 * 400 mm Metal Plane

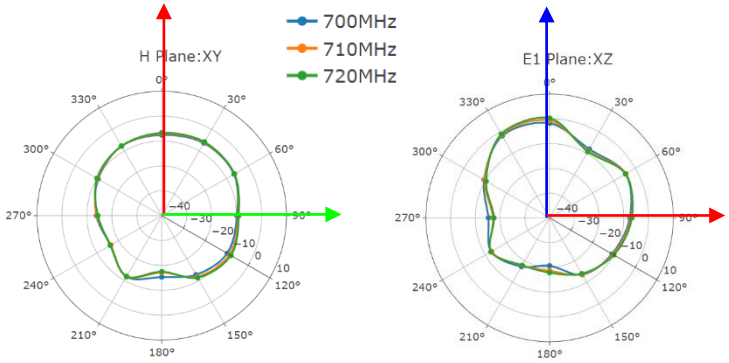


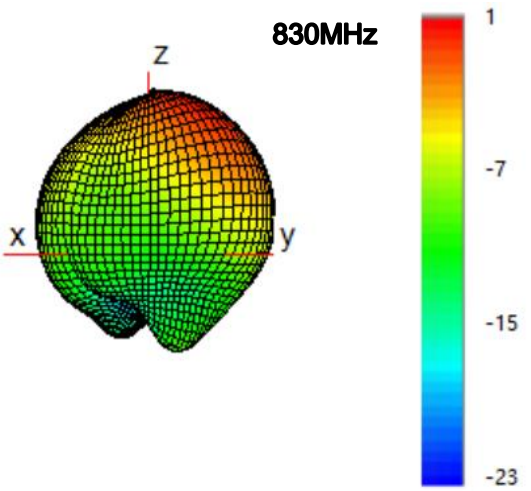
LMH1

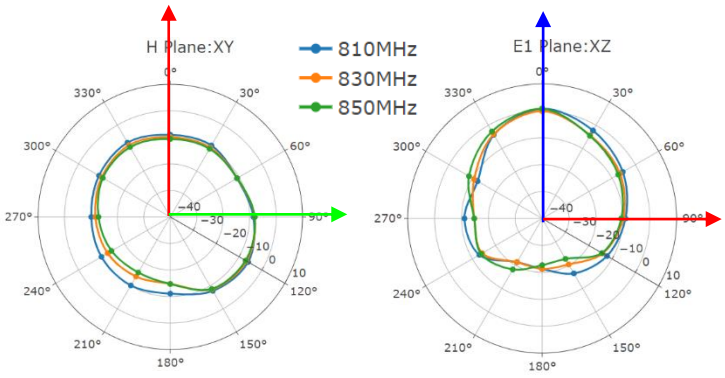

630MHz
z
x
y
1
-6
-12
-19

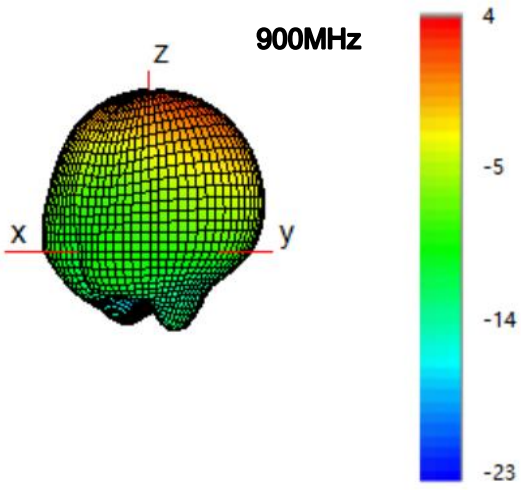

600MHz
630MHz
650MHz
H Plane:XY
E1 Plane:XZ

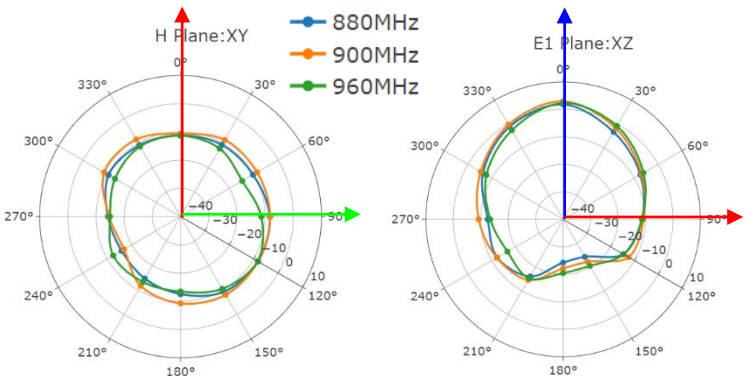

710MHz
z
x
y
0
-6
-13
-19


700MHz
710MHz
720MHz
H Plane:XY
E1 Plane:XZ


830MHz
z
x
y
1
-7
-15
-23

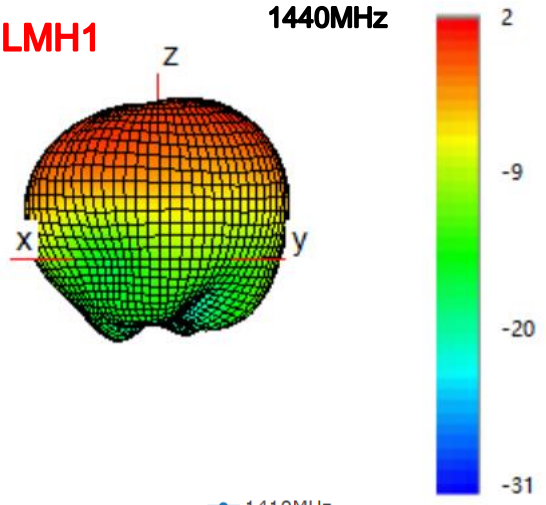

810MHz
830MHz
850MHz
H Plane:XY
E1 Plane:XZ


900MHz
z
x
y
4
-5
-14
-23

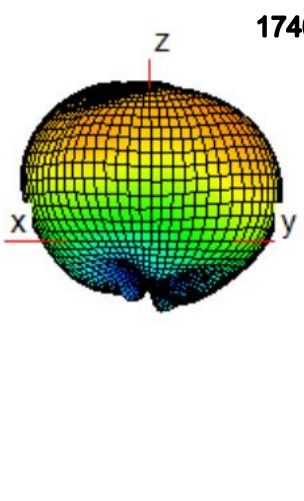

880MHz
900MHz
960MHz
H Plane:XY
E1 Plane:XZ

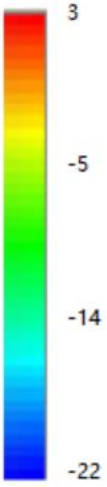
- **LMH1**

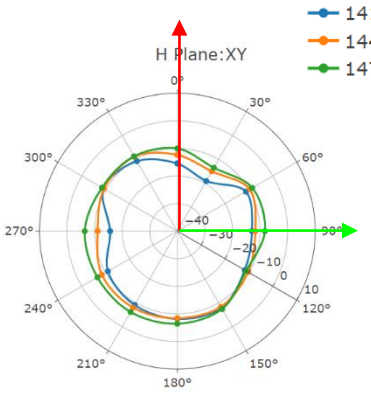
1440MHz

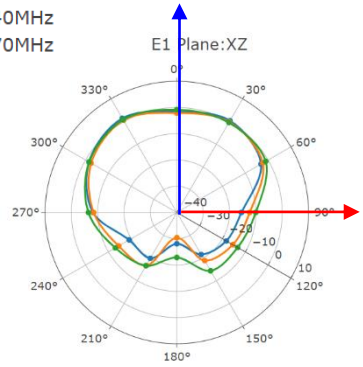


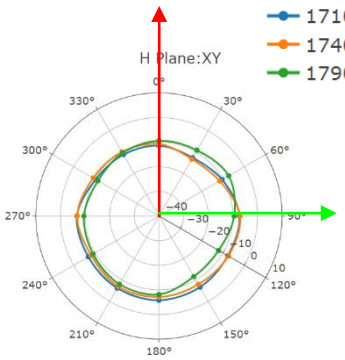
1740MHz

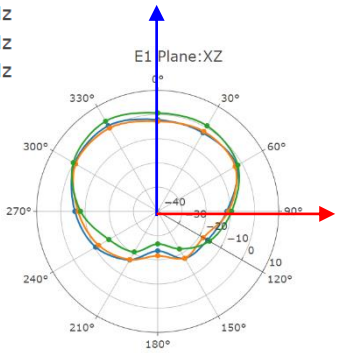




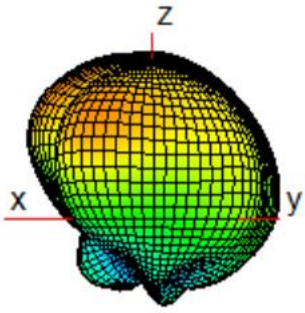


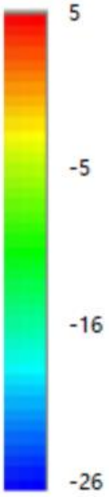




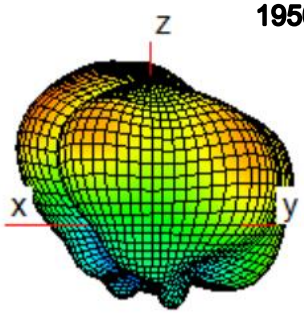


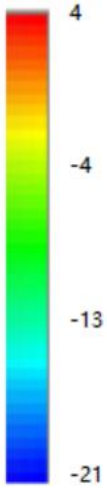
1880MHz

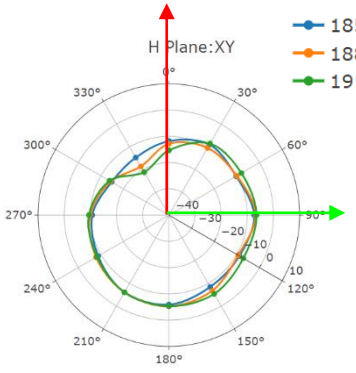


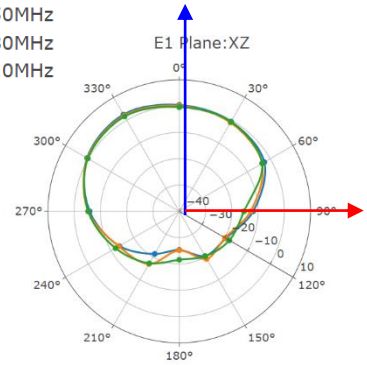


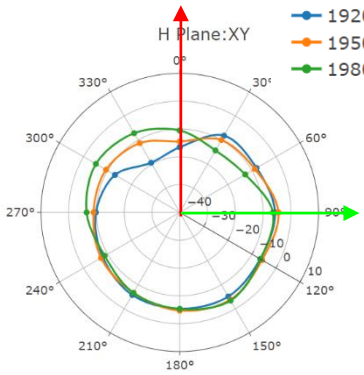
1950MHz

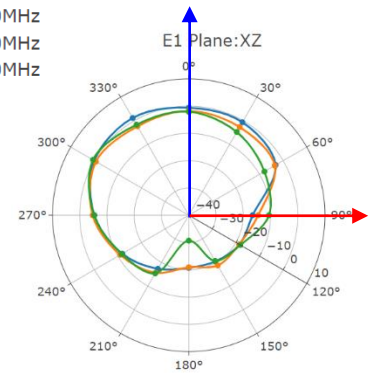




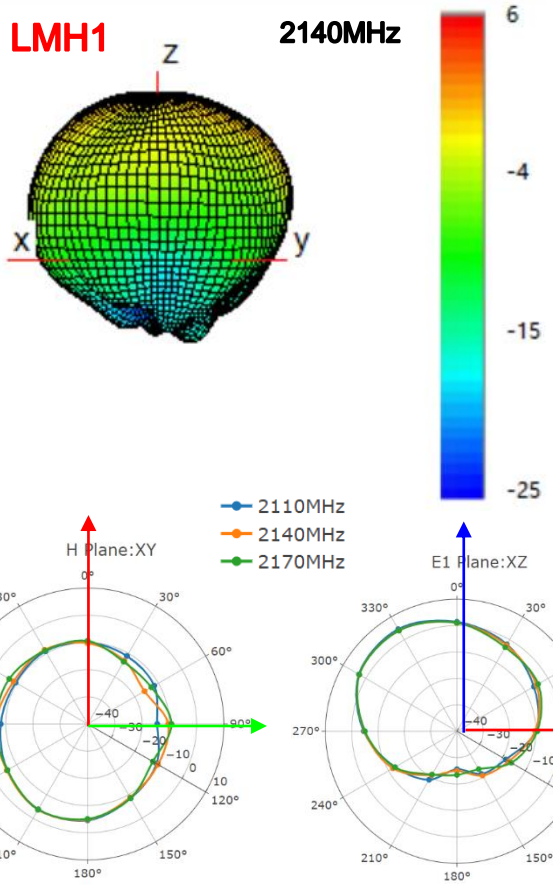


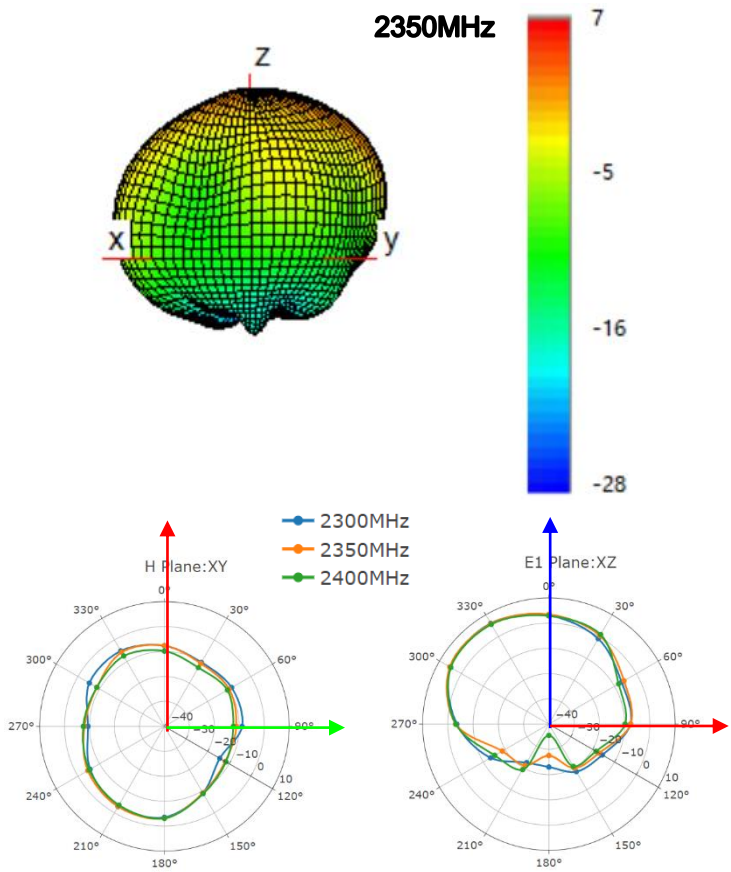


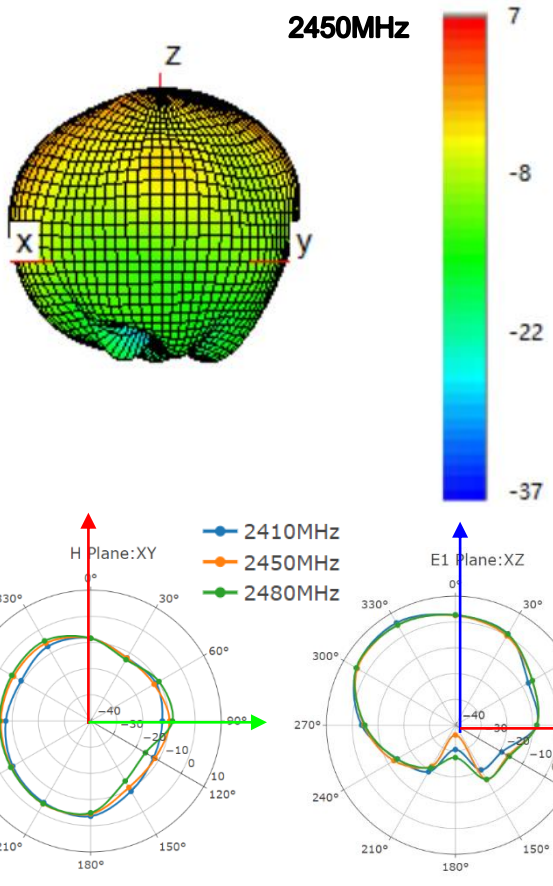


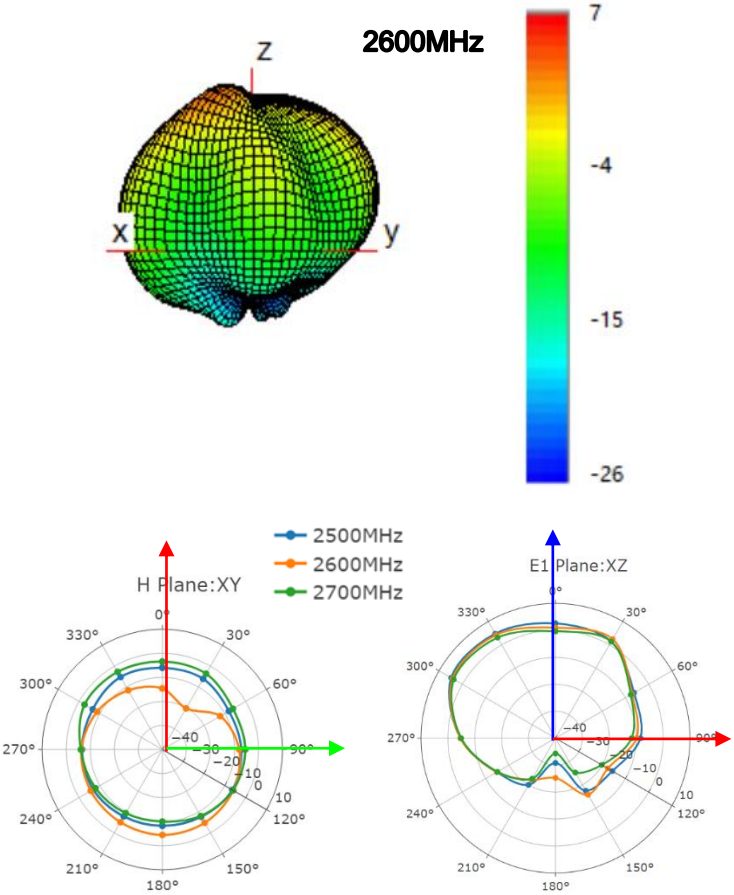


- **LMH1**

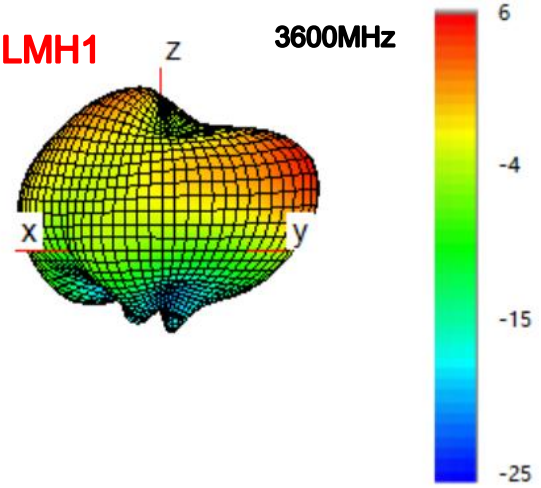

2140MHz
Z
X
y
6
-4
-15
-25
2110MHz
2140MHz
2170MHz
H Plane:XY
E1 Plane:XZ

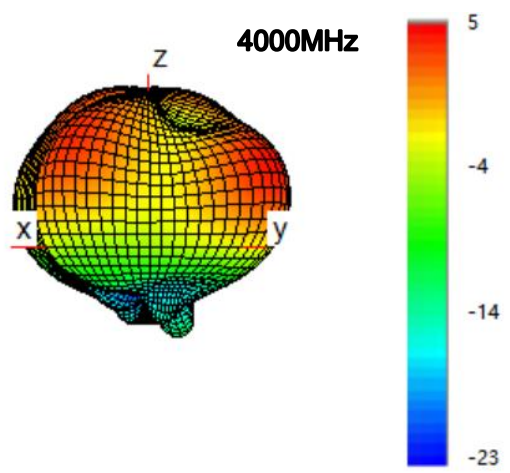

2350MHz
Z
X
y
7
-5
-16
-28
2300MHz
2350MHz
2400MHz
H Plane:XY
E1 Plane:XZ

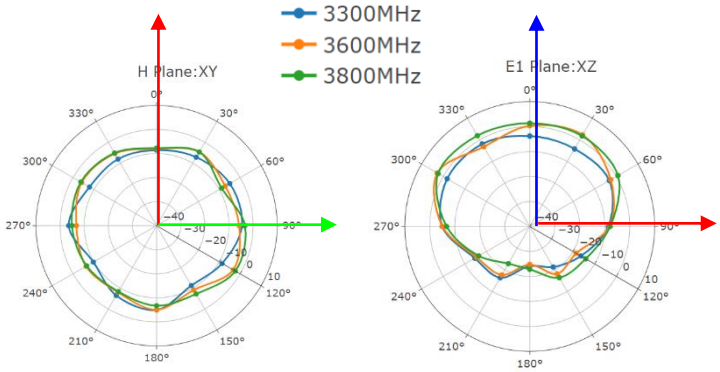

2450MHz
Z
X
y
7
-8
-22
-37
2410MHz
2450MHz
2480MHz
H Plane:XY
E1 Plane:XZ

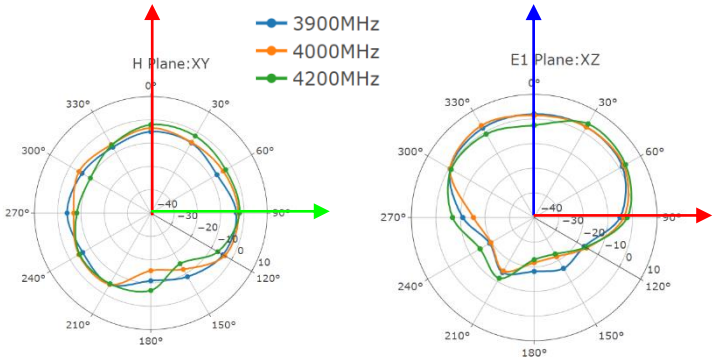

2600MHz
Z
X
y
7
-4
-15
-26
2500MHz
2600MHz
2700MHz
H Plane:XY
E1 Plane:XZ

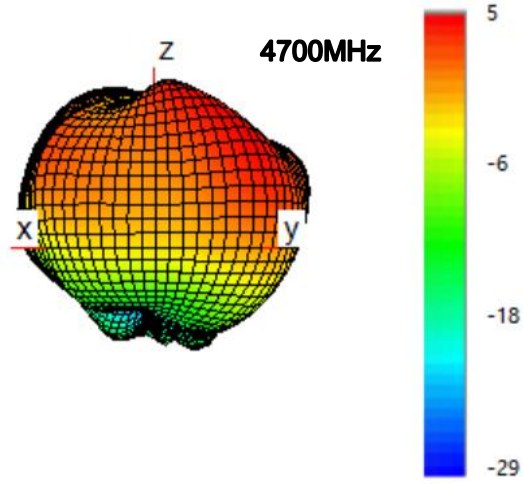
- **LMH1**

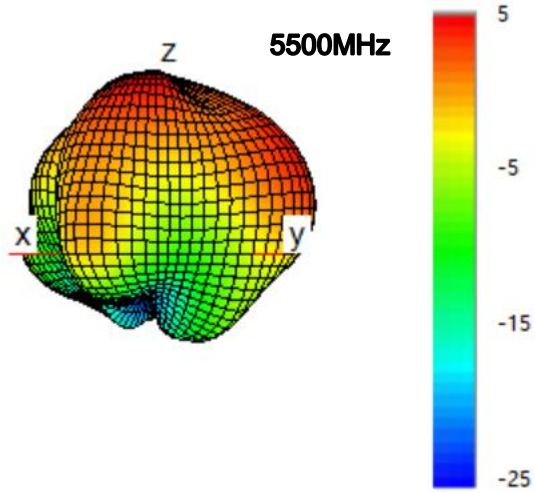

3600MHz
Z
X
Y
6
-4
-15
-25

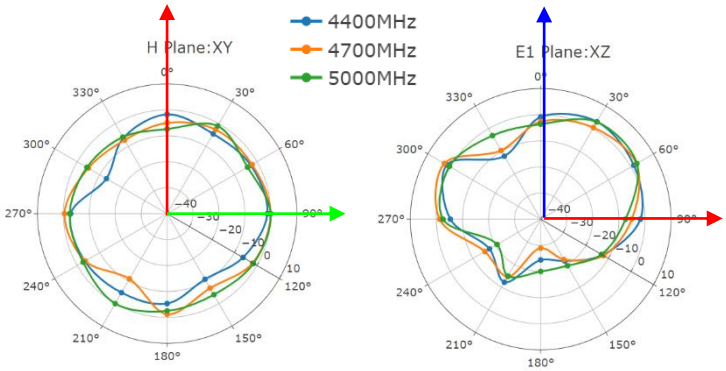

4000MHz
Z
X
Y
5
-4
-14
-23

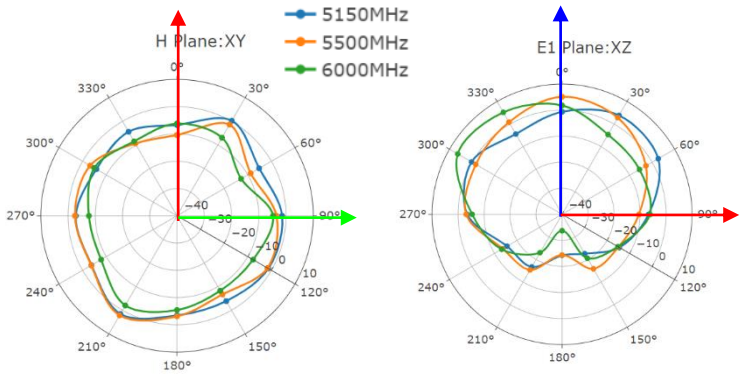

3300MHz
3600MHz
3800MHz
H Plane:XY
E1 Plane:XZ


3900MHz
4000MHz
4200MHz
H Plane:XY
E1 Plane:XZ

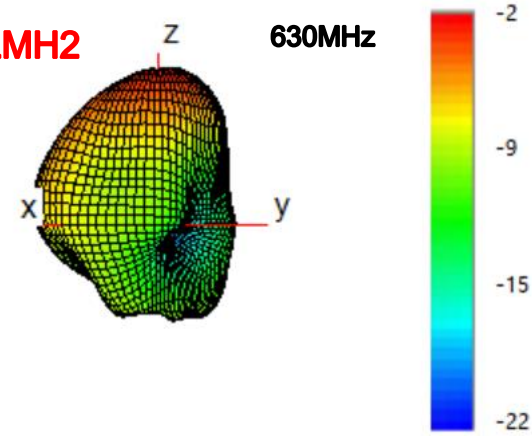

4700MHz
Z
X
Y
5
-6
-18
-29

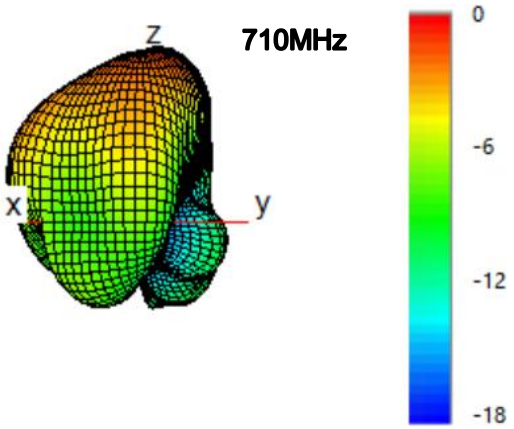

5500MHz
Z
X
Y
5
-5
-15
-25

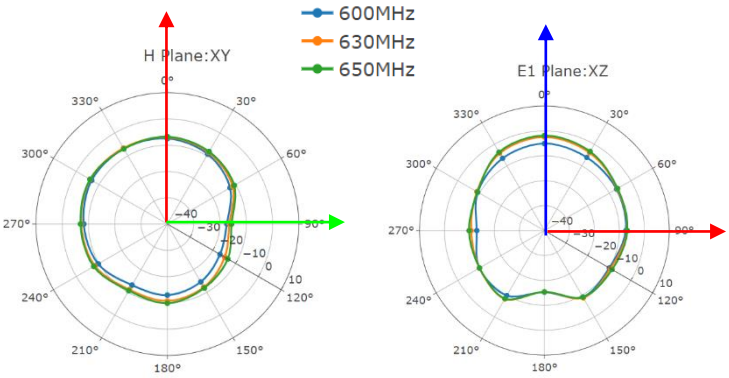

4400MHz
4700MHz
5000MHz
H Plane:XY
E1 Plane:XZ

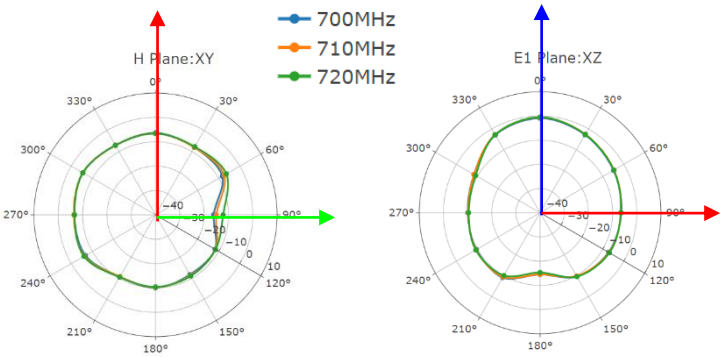

5150MHz
5500MHz
6000MHz
H Plane:XY
E1 Plane:XZ

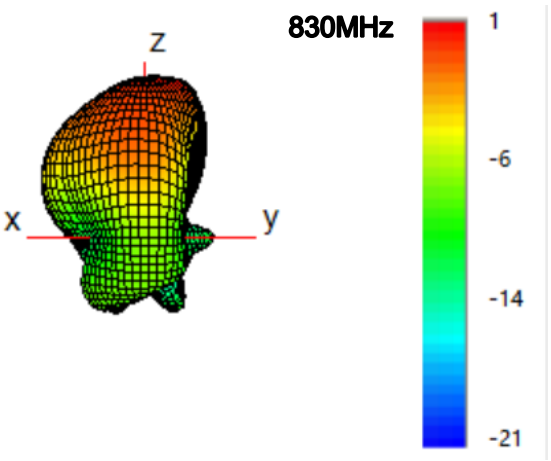
- **LMH2**

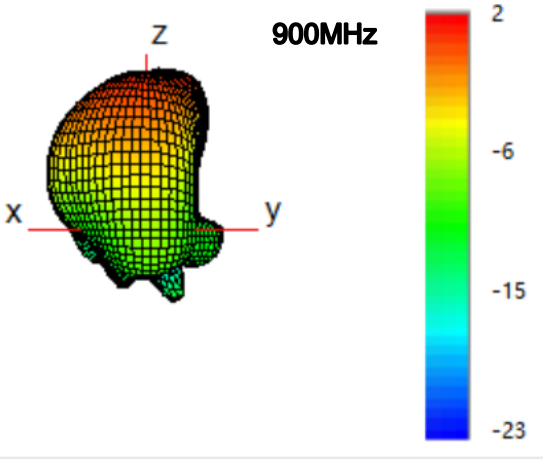

630MHz
z
x
y
-2
-9
-15
-22

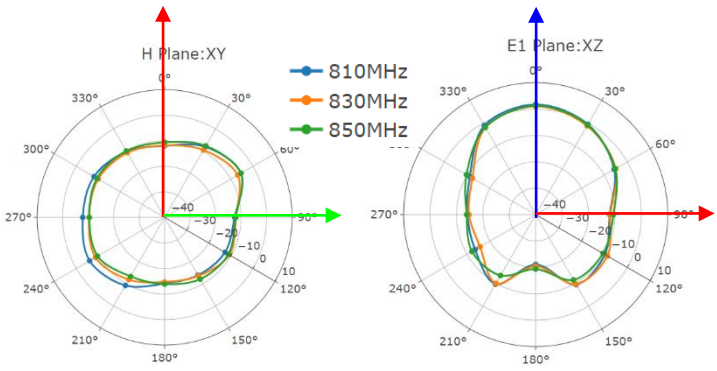

710MHz
z
x
y
0
-6
-12
-18

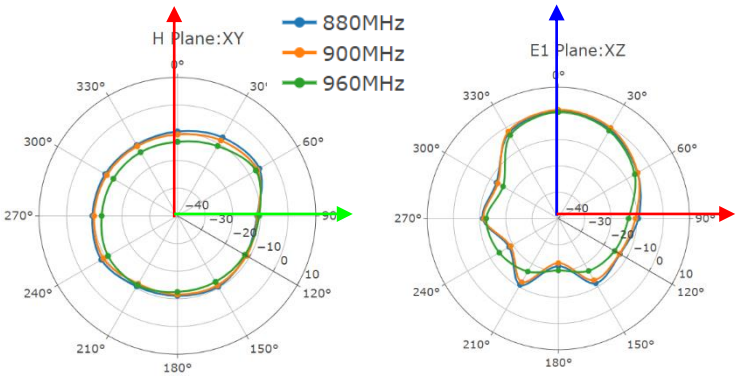

600MHz
630MHz
650MHz
H Plane:XY
E1 Plane:XZ


700MHz
710MHz
720MHz
H Plane:XY
E1 Plane:XZ


830MHz
z
x
y
1
-6
-14
-21

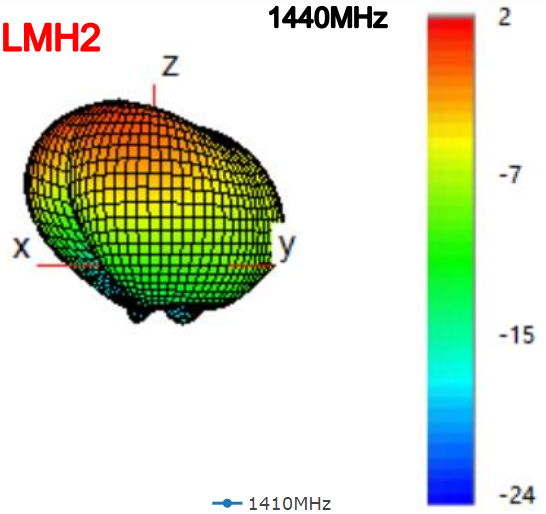

900MHz
z
x
y
2
-6
-15
-23

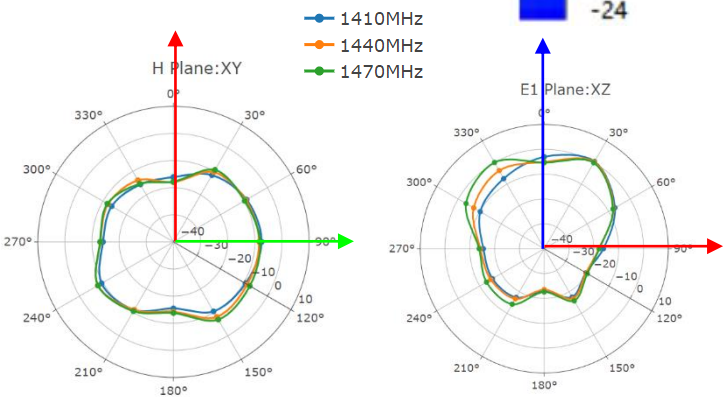

810MHz
830MHz
850MHz
H Plane:XY
E1 Plane:XZ


880MHz
900MHz
960MHz
H Plane:XY
E1 Plane:XZ

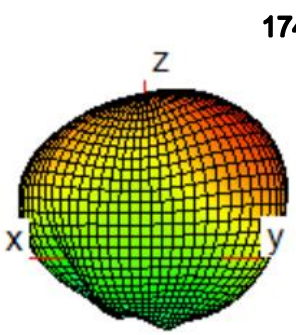
- **LMH2**

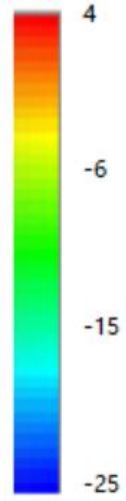
1440MHz

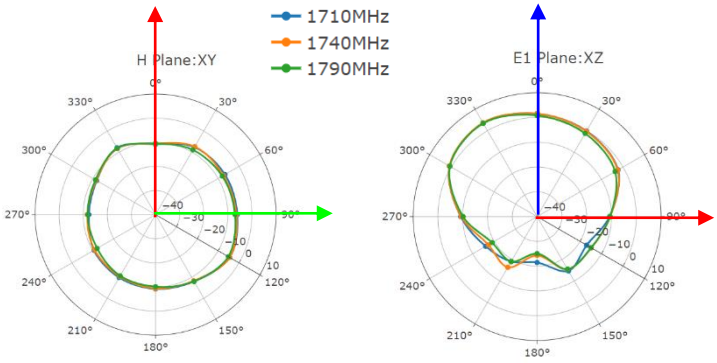




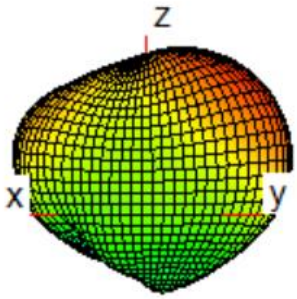
1740MHz

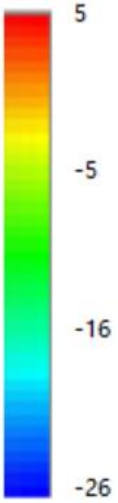


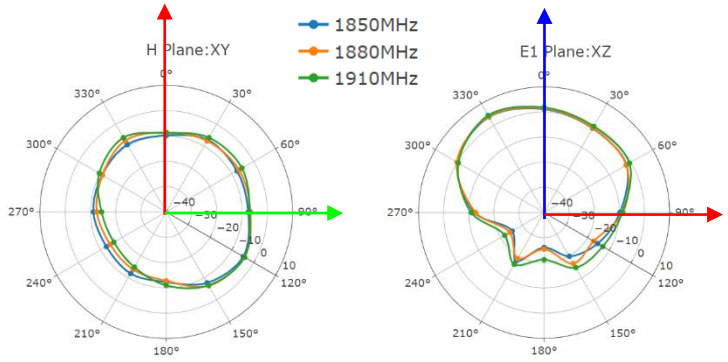




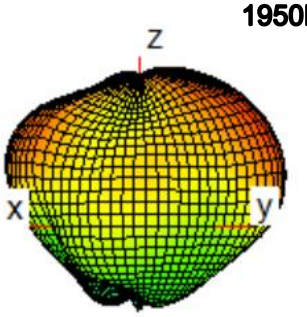
1880MHz

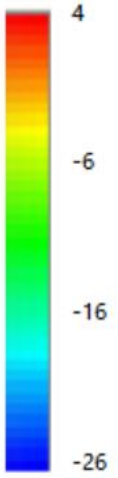


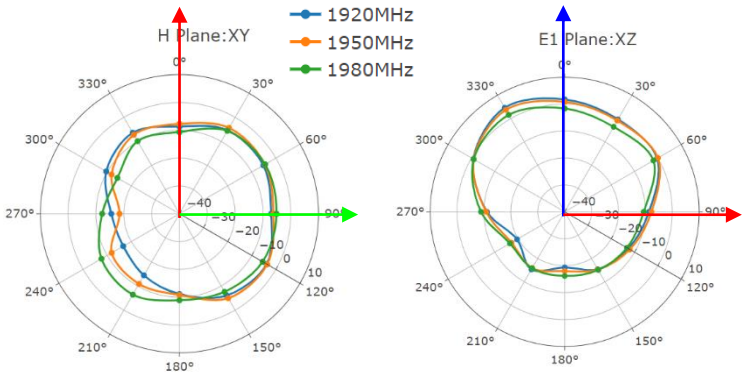




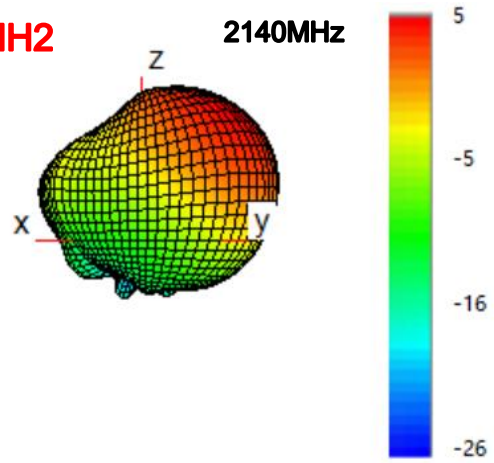
1950MHz

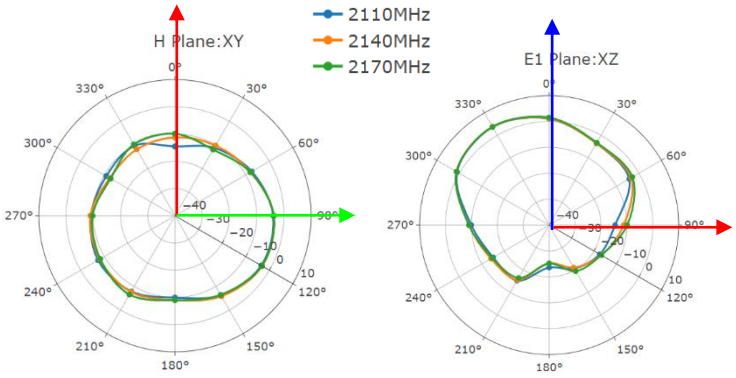


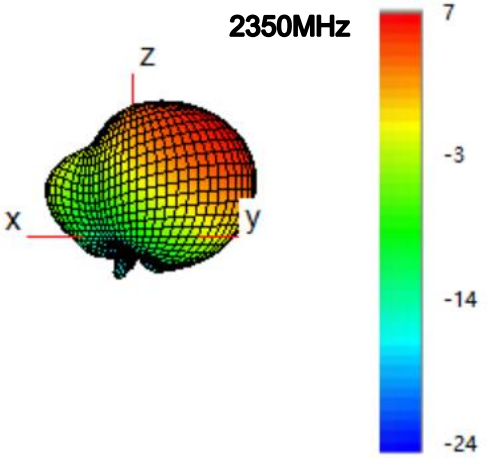


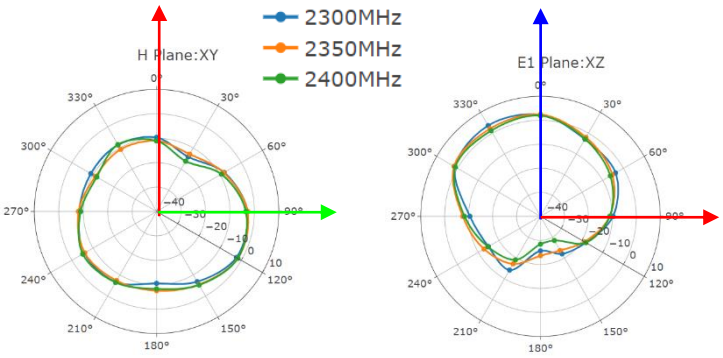


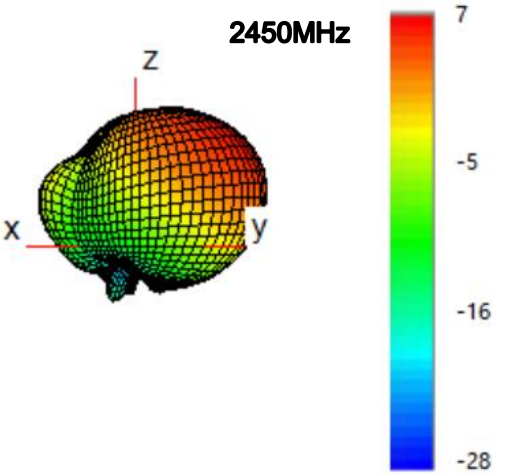
- **LMH2**

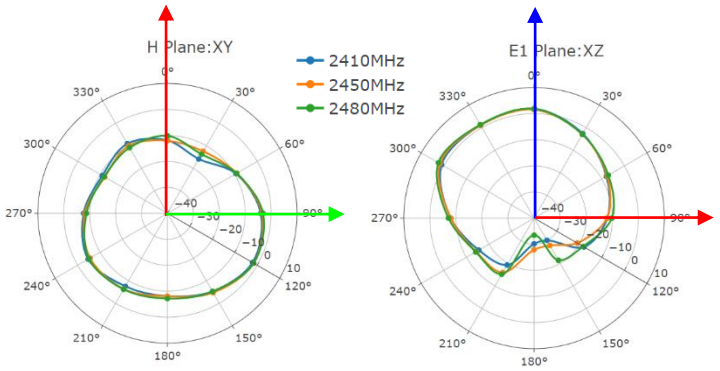

2140MHz
Z
X
Y
5
-5
-16
-26

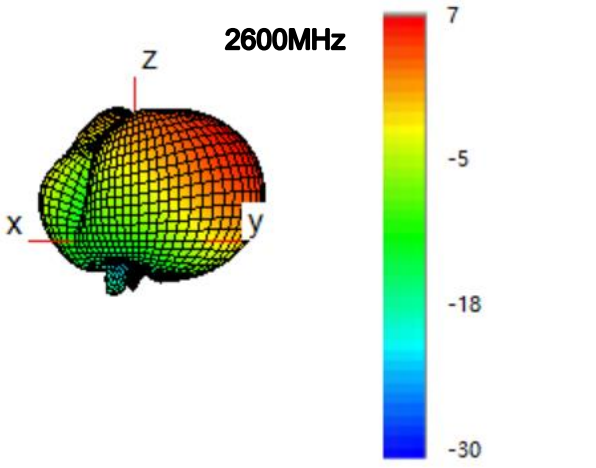

H Plane:XY
2110MHz
2140MHz
2170MHz
E1 Plane:XZ

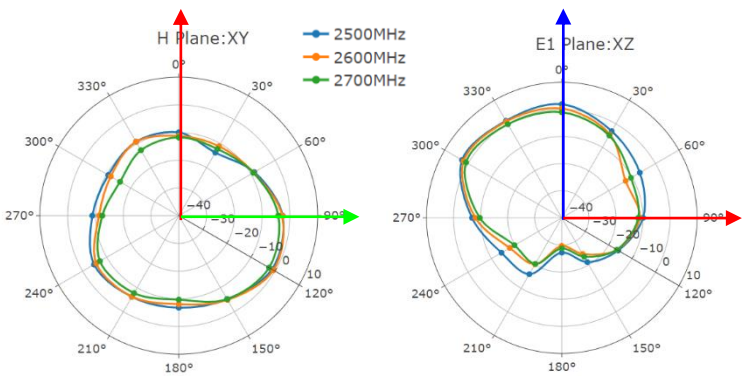

2350MHz
Z
X
Y
7
-3
-14
-24


H Plane:XY
2300MHz
2350MHz
2400MHz
E1 Plane:XZ

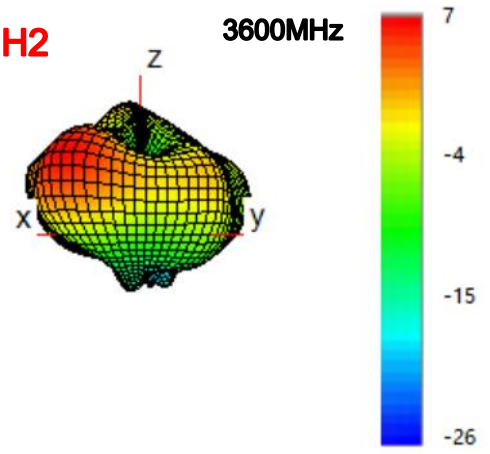

2450MHz
Z
X
Y
7
-5
-16
-28

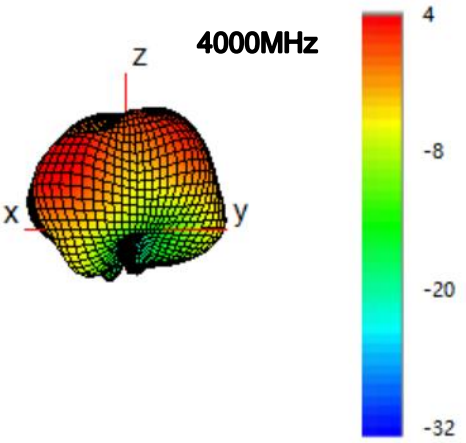

H Plane:XY
2410MHz
2450MHz
2480MHz
E1 Plane:XZ

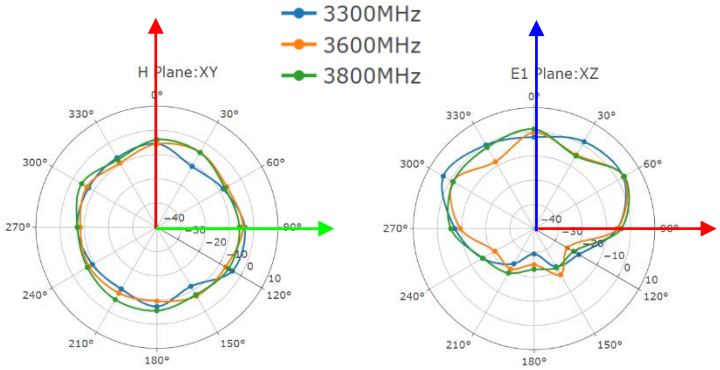

2600MHz
Z
X
Y
7
-5
-18
-30

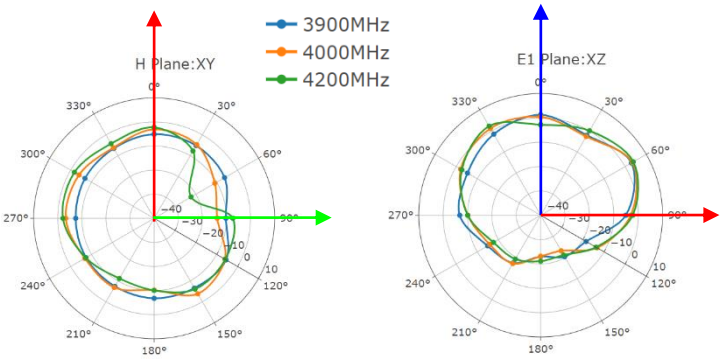

H Plane:XY
2500MHz
2600MHz
2700MHz
E1 Plane:XZ

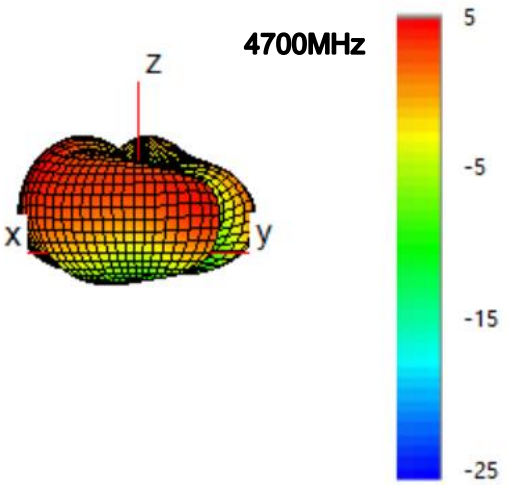
- **LMH2**

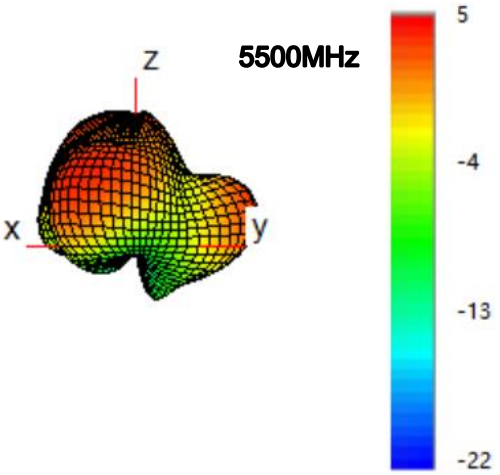

3600MHz
Z
X
Y
7
-4
-15
-26

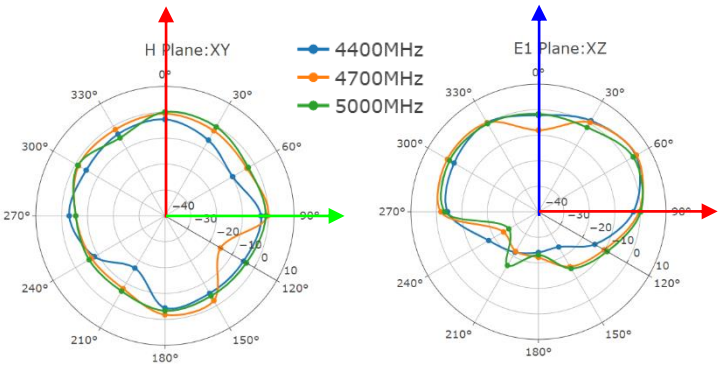

4000MHz
Z
X
Y
4
-8
-20
-32

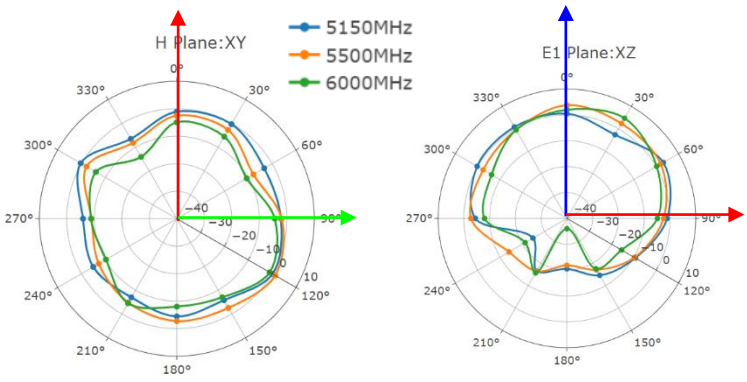

3300MHz
3600MHz
3800MHz
H Plane:XY
E1 Plane:XZ


3900MHz
4000MHz
4200MHz
H Plane:XY
E1 Plane:XZ

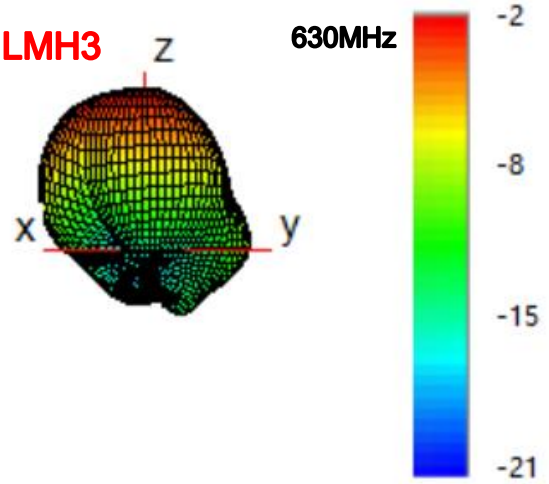

4700MHz
Z
X
Y
5
-5
-15
-25

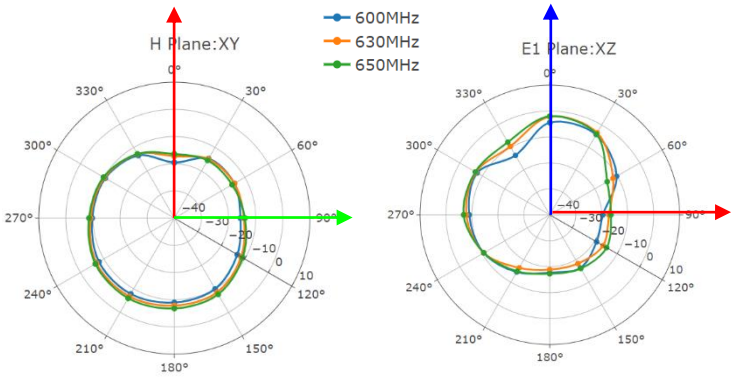

5500MHz
Z
X
Y
5
-4
-13
-22

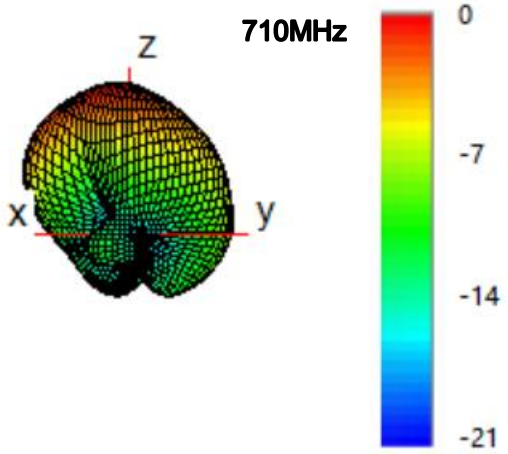

4400MHz
4700MHz
5000MHz
H Plane:XY
E1 Plane:XZ

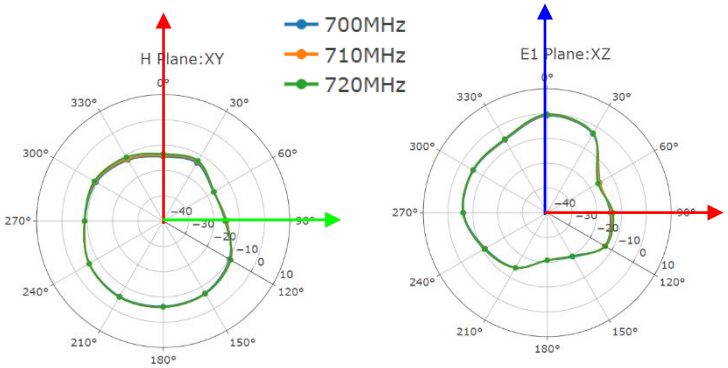

5150MHz
5500MHz
6000MHz
H Plane:XY
E1 Plane:XZ

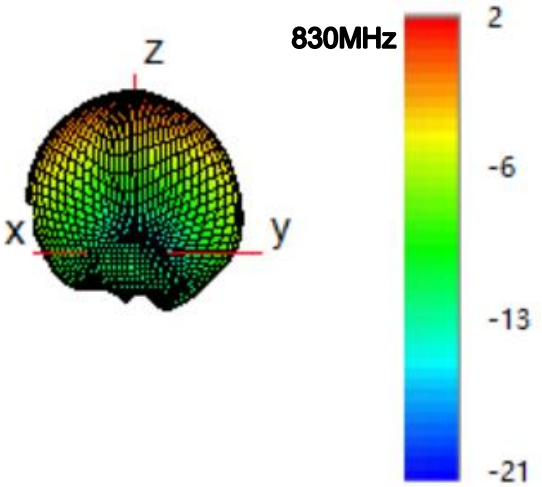
- **LMH3**

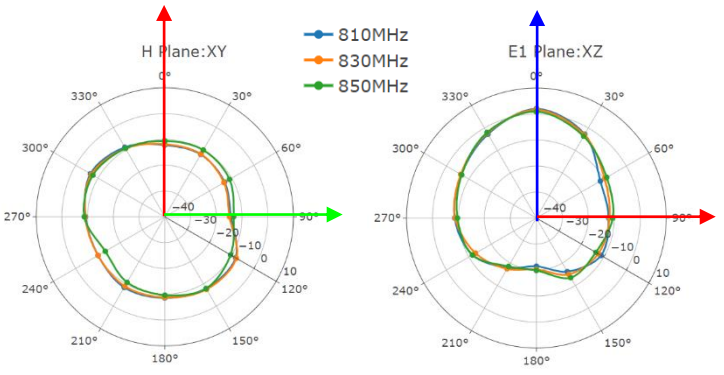

630MHz
z
x
y
-2
-8
-15
-21

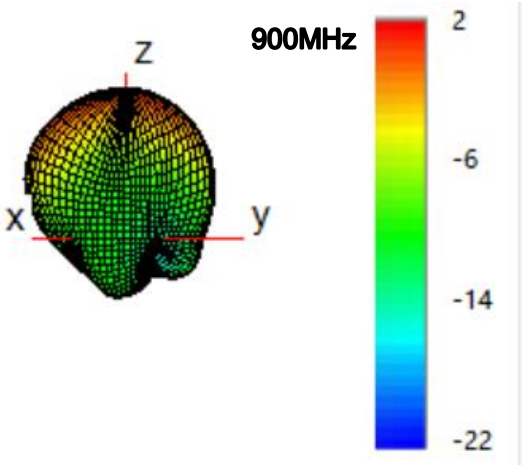

H Plane:XY
E1 Plane:XZ
600MHz
630MHz
650MHz

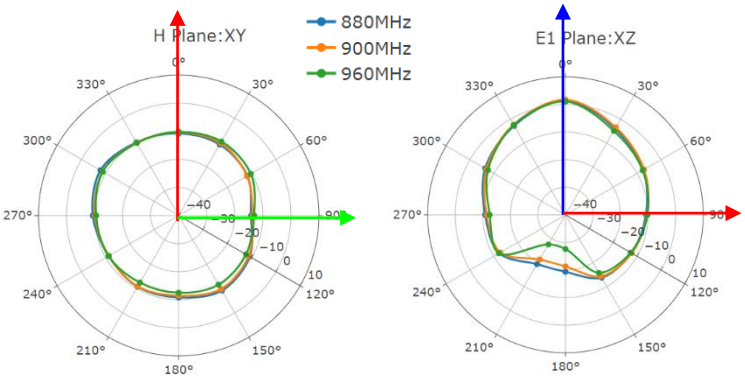

710MHz
z
x
y
0
-7
-14
-21


H Plane:XY
E1 Plane:XZ
700MHz
710MHz
720MHz

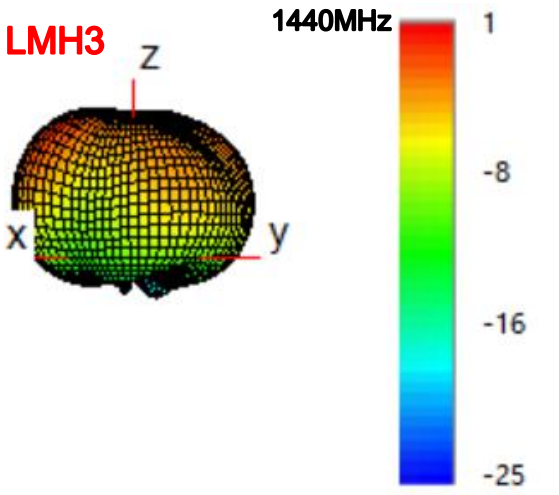

830MHz
z
x
y
2
-6
-13
-21

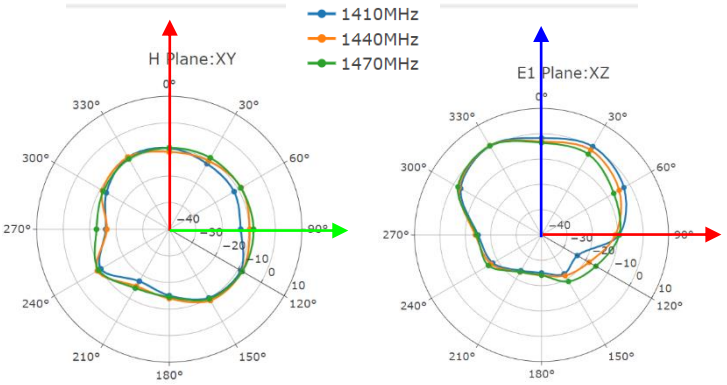

H Plane:XY
E1 Plane:XZ
810MHz
830MHz
850MHz

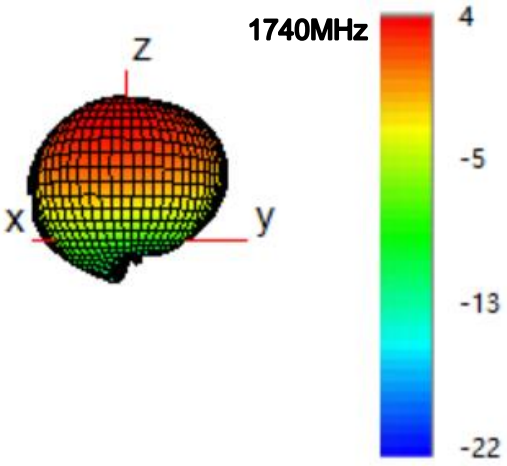

900MHz
z
x
y
2
-6
-14
-22

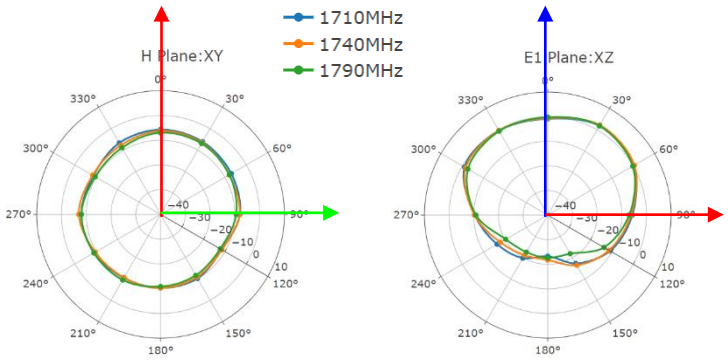

H Plane:XY
E1 Plane:XZ
880MHz
900MHz
960MHz

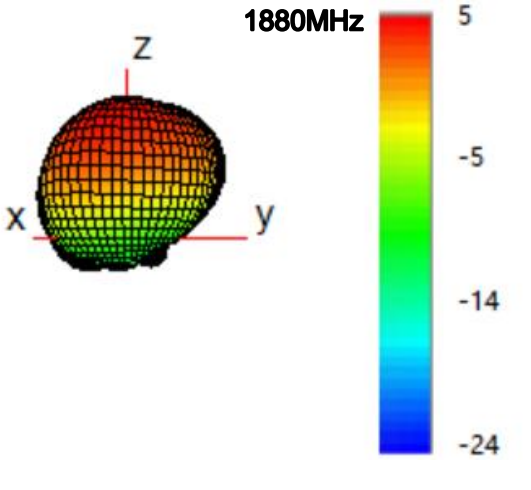
- **LMH3**

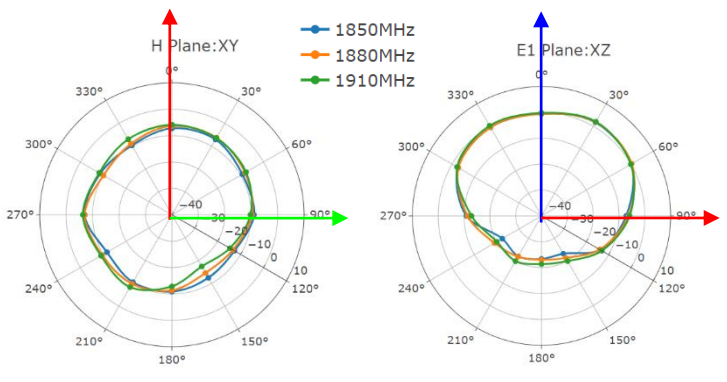

1440MHz
1
-8
-16
-25
z
x
y

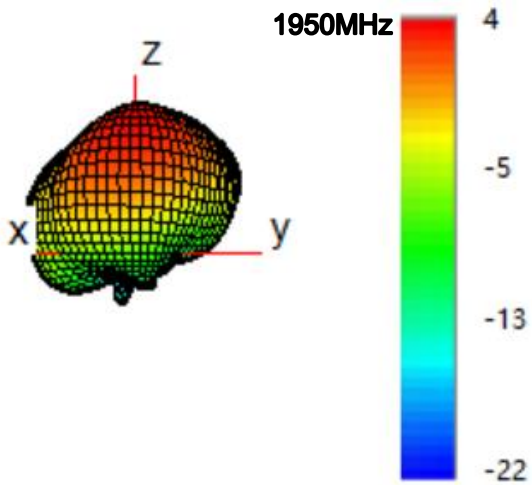

1410MHz
1440MHz
1470MHz
H Plane:XY
E1 Plane:XZ

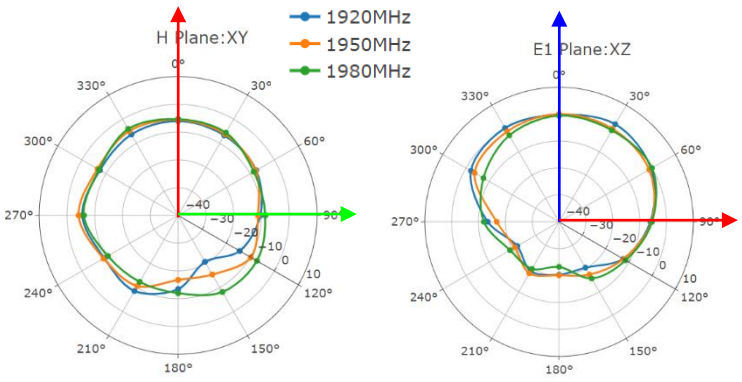

1740MHz
4
-5
-13
-22
z
x
y


1710MHz
1740MHz
1790MHz
H Plane:XY
E1 Plane:XZ

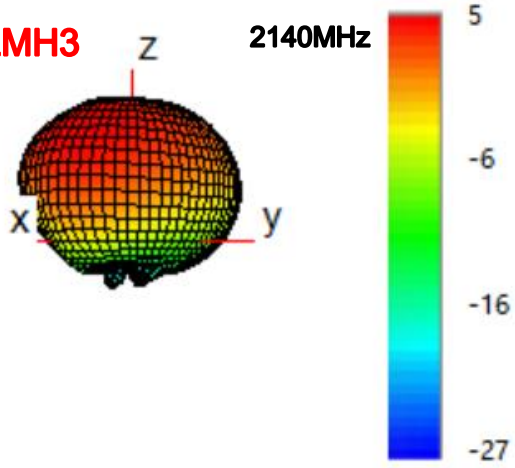

1880MHz
5
-5
-14
-24
z
x
y

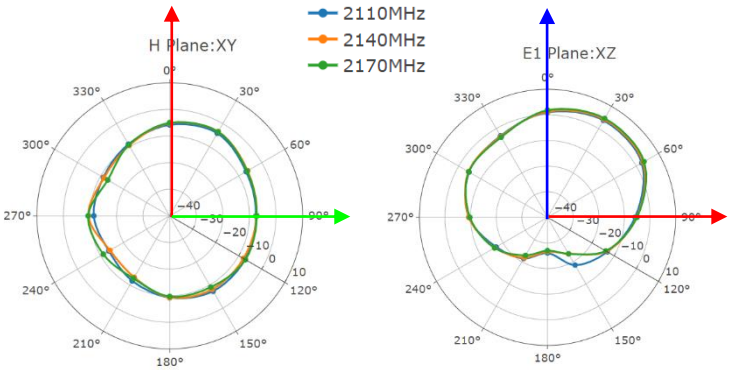

1850MHz
1880MHz
1910MHz
H Plane:XY
E1 Plane:XZ

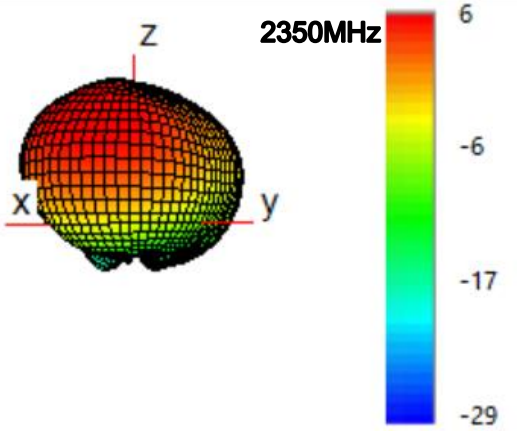

1950MHz
4
-5
-13
-22
z
x
y

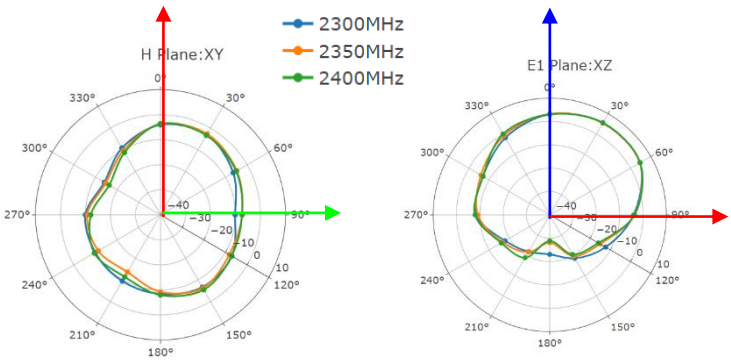

1920MHz
1950MHz
1980MHz
H Plane:XY
E1 Plane:XZ

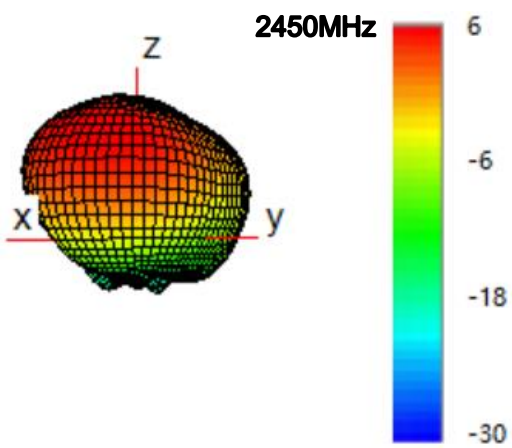
- **LMH3**

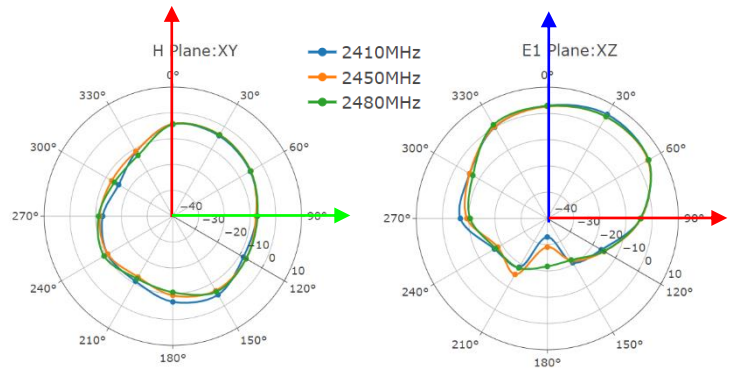

2140MHz
z
x
y
5
-6
-16
-27

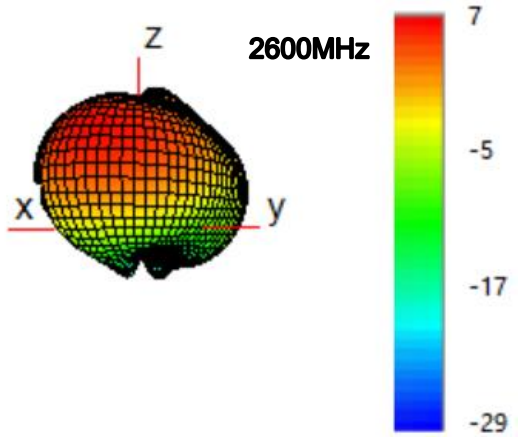

H Plane:XY
E1 Plane:XZ
2110MHz
2140MHz
2170MHz

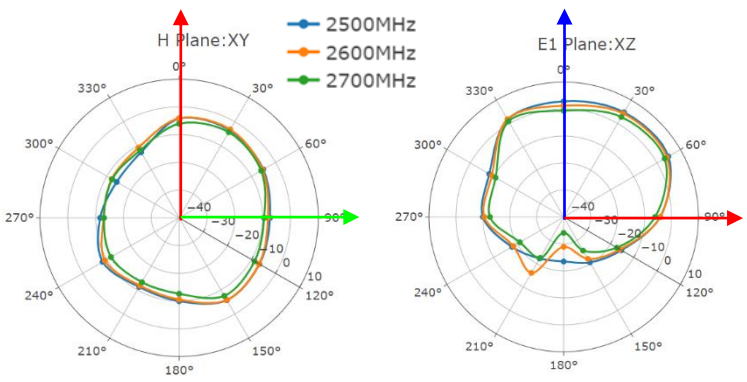

2350MHz
z
x
y
6
-6
-17
-29


H Plane:XY
E1 Plane:XZ
2300MHz
2350MHz
2400MHz

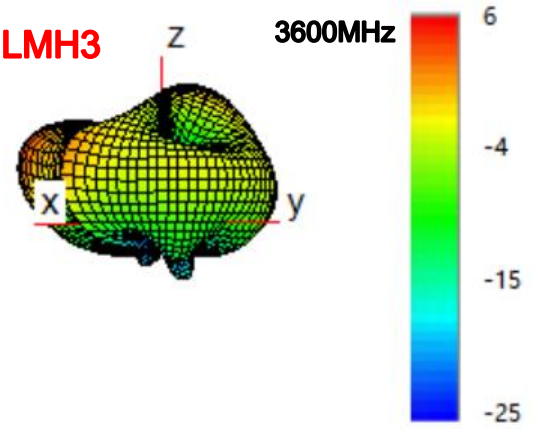

2450MHz
z
x
y
6
-6
-18
-30

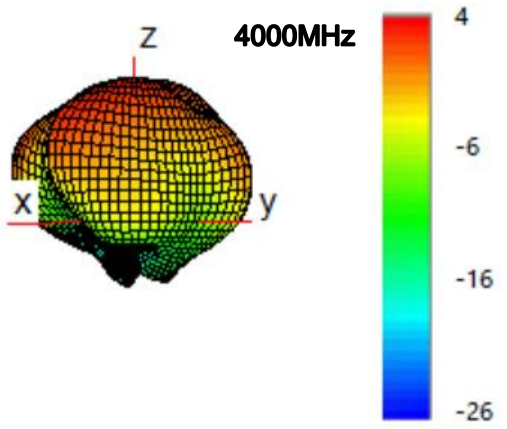

H Plane:XY
E1 Plane:XZ
2410MHz
2450MHz
2480MHz

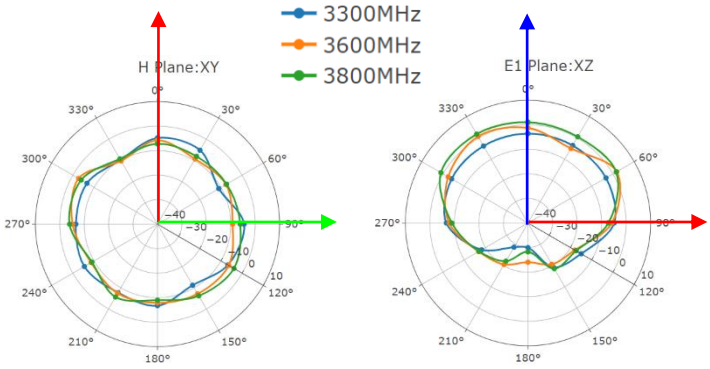

2600MHz
z
x
y
7
-5
-17
-29

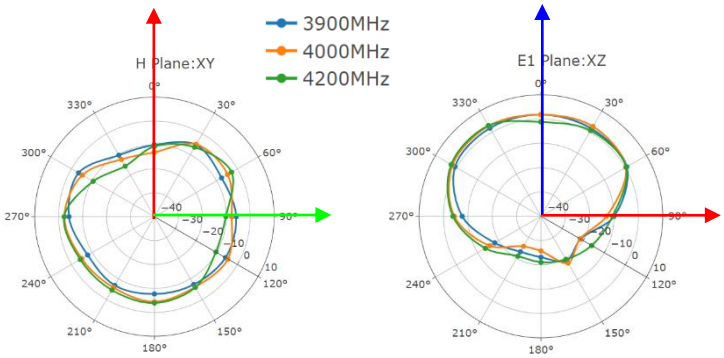

H Plane:XY
E1 Plane:XZ
2500MHz
2600MHz
2700MHz

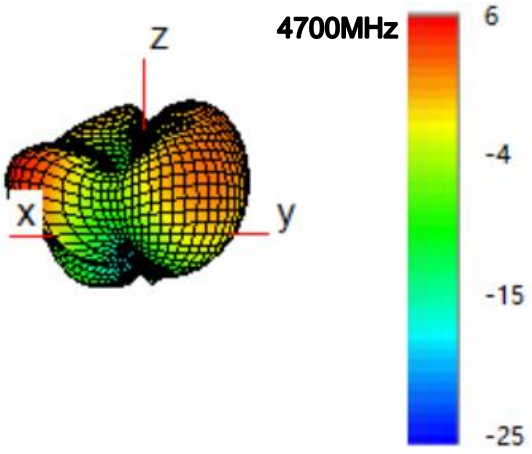
- **LMH3**

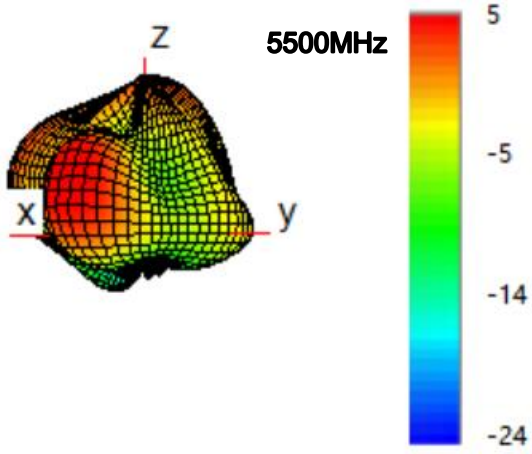

3600MHz
z
x
y
6
-4
-15
-25

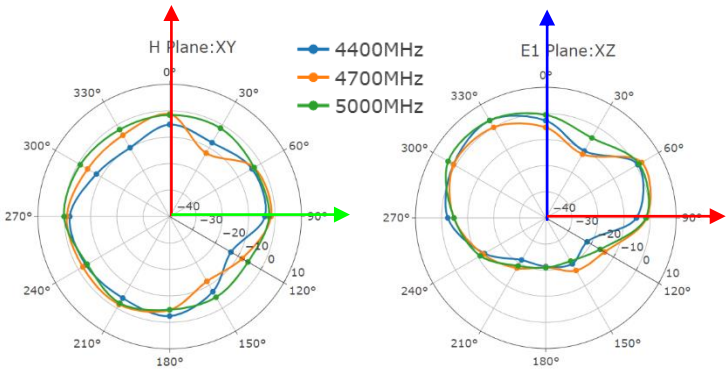

4000MHz
z
x
y
4
-6
-16
-26

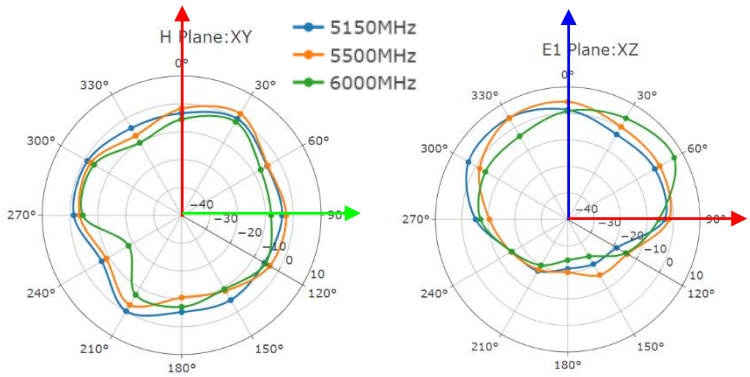

3300MHz
3600MHz
3800MHz
H Plane:XY
E1 Plane:XZ


3900MHz
4000MHz
4200MHz
H Plane:XY
E1 Plane:XZ

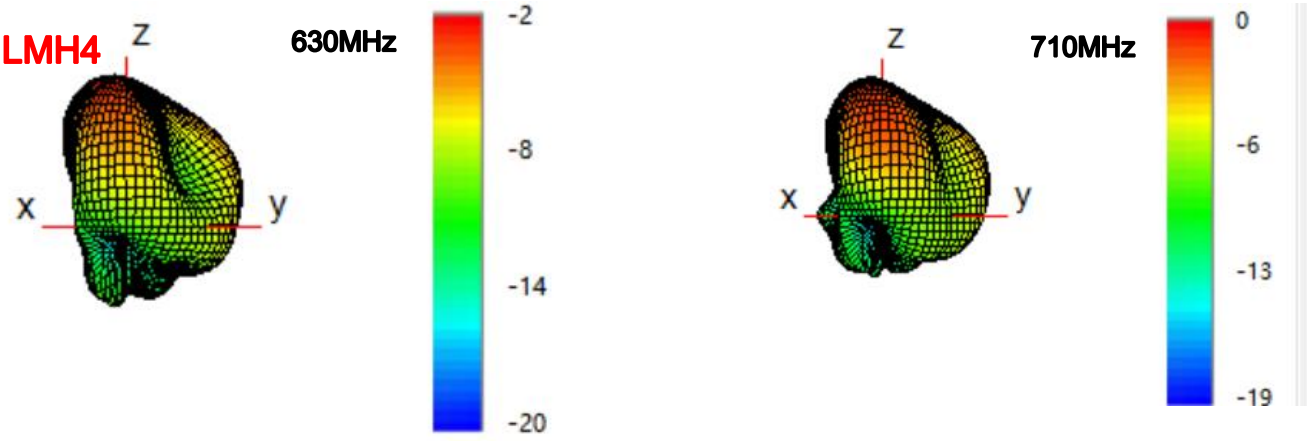

4700MHz
z
x
y
6
-4
-15
-25

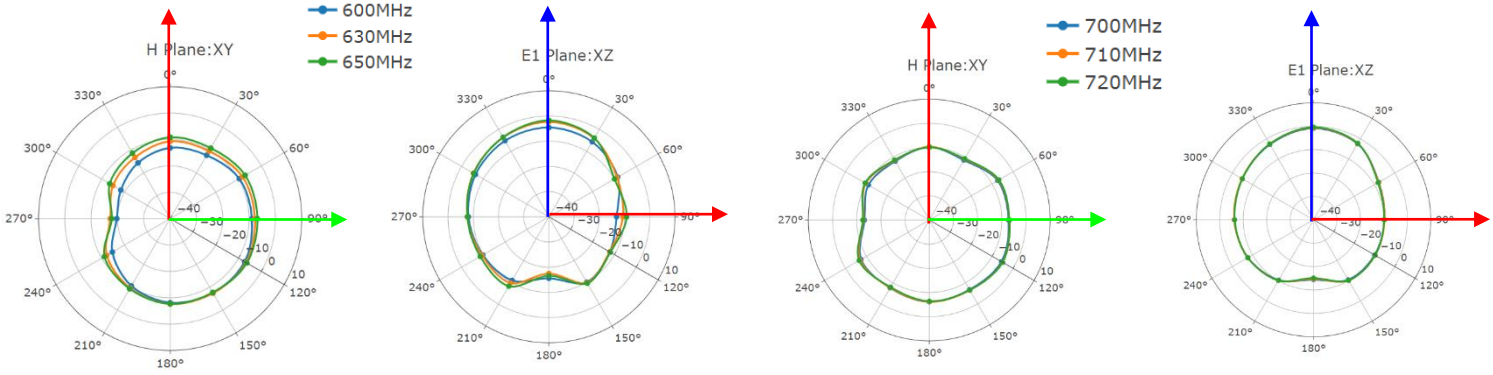

5500MHz
z
x
y
5
-5
-14
-24

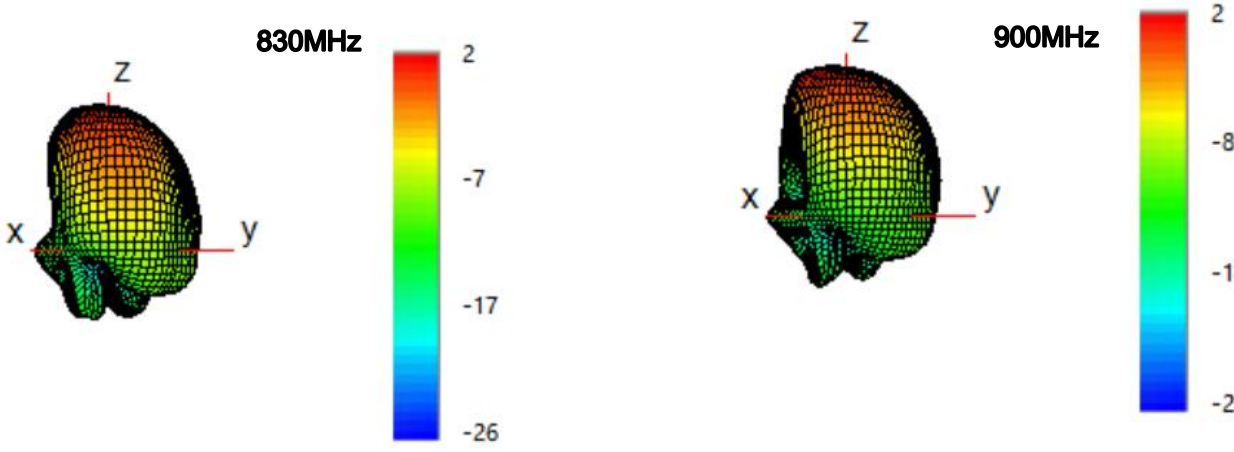

4400MHz
4700MHz
5000MHz
H Plane:XY
E1 Plane:XZ

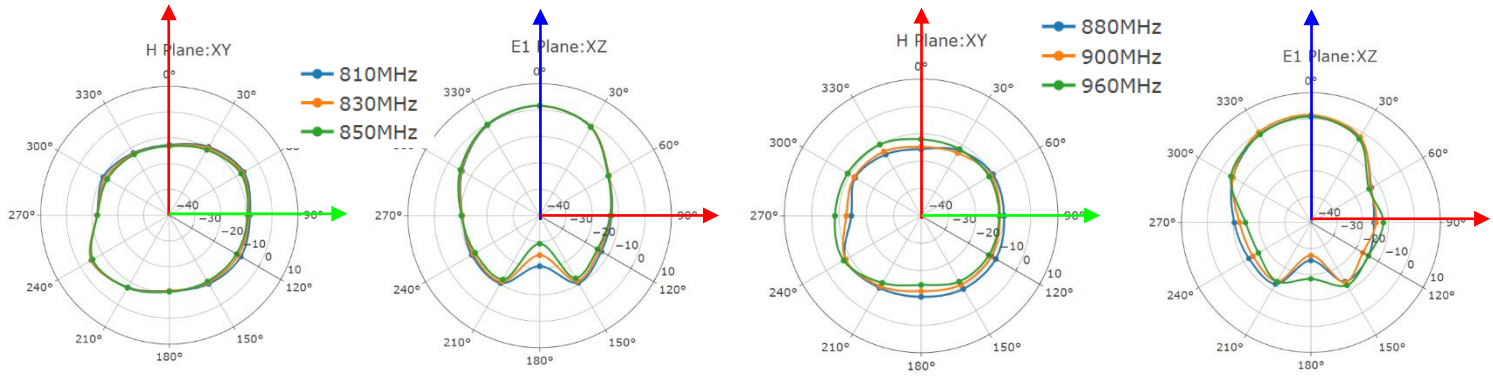

5150MHz
5500MHz
6000MHz
H Plane:XY
E1 Plane:XZ

- **LMH4**

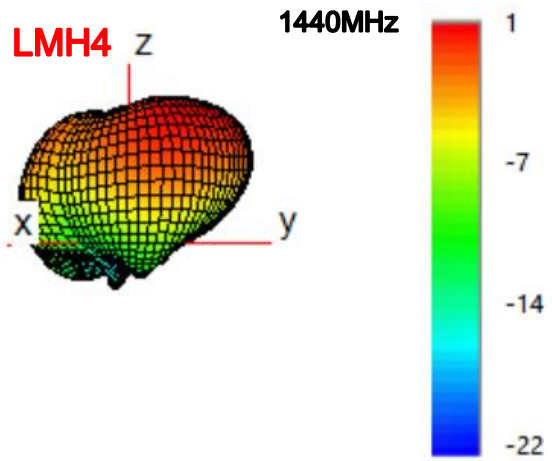

630MHz
z
x
y
-2
-8
-14
-20
710MHz
z
x
y
0
-6
-13
-19

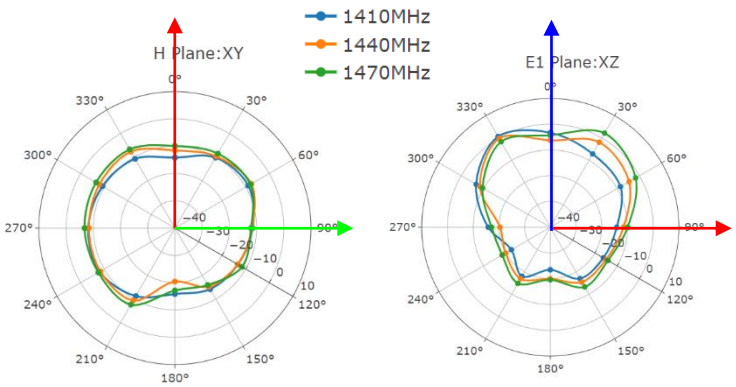

600MHz
630MHz
650MHz
H Plane:XY
E1 Plane:XZ
700MHz
710MHz
720MHz
H Plane:XY
E1 Plane:XZ

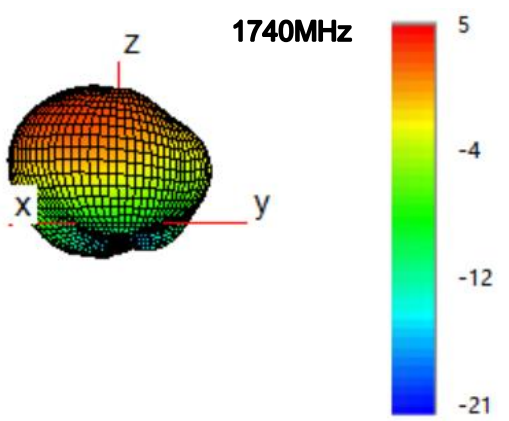

830MHz
z
x
y
2
-7
-17
-26
900MHz
z
x
y
2
-8
-18
-28

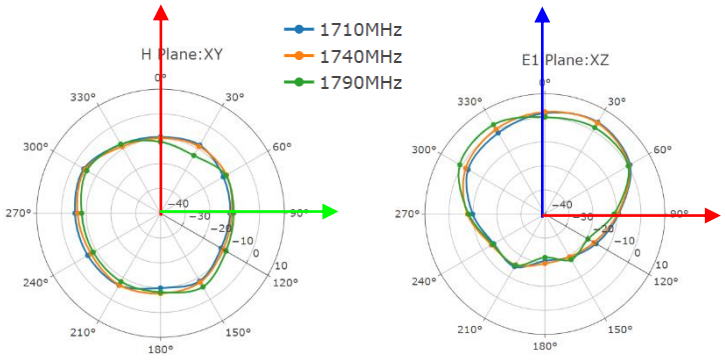

H Plane:XY
E1 Plane:XZ
810MHz
830MHz
850MHz
H Plane:XY
E1 Plane:XZ
880MHz
900MHz
960MHz

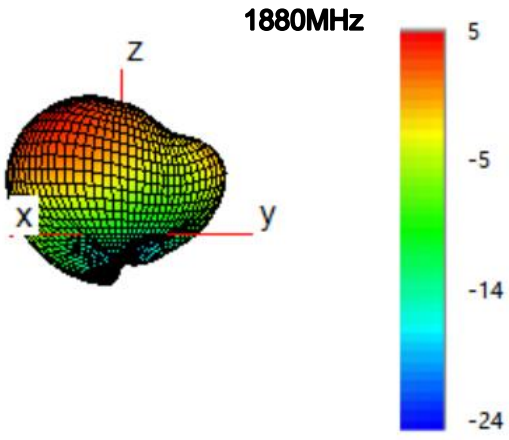
- **LMH4**

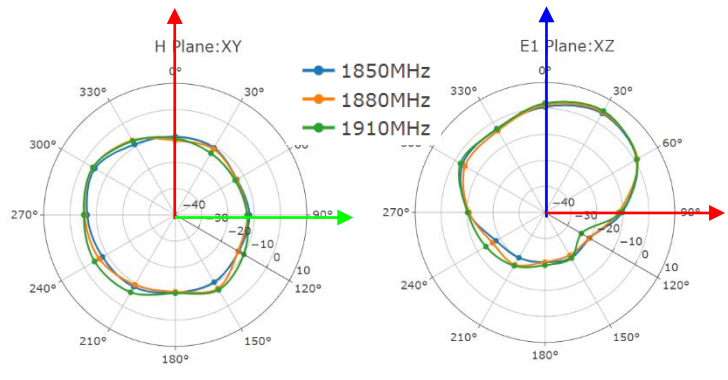

1440MHz
z
x
y
1
-7
-14
-22

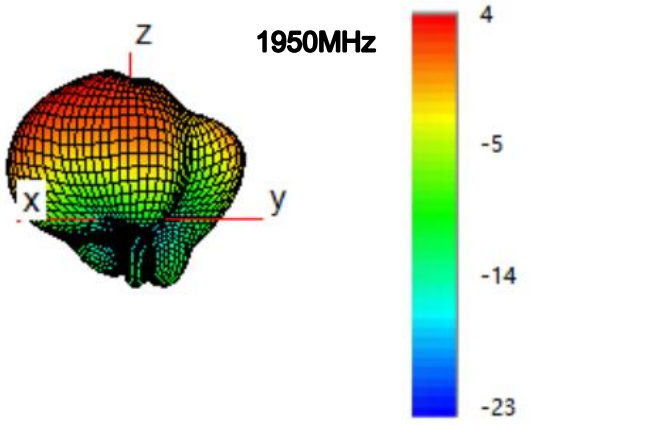

H Plane:XY
E1 Plane:XZ
1410MHz
1440MHz
1470MHz

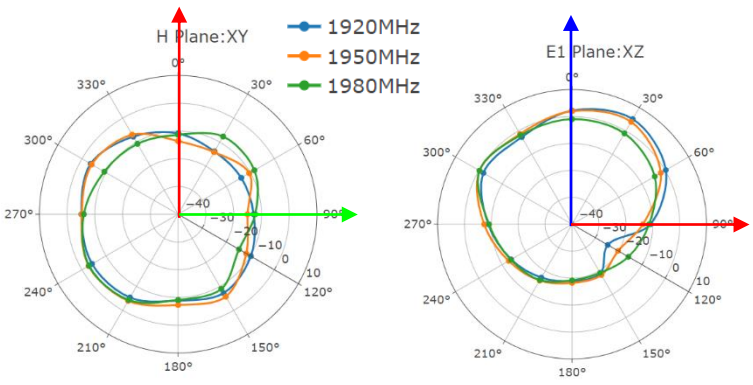

1740MHz
z
x
y
5
-4
-12
-21


H Plane:XY
E1 Plane:XZ
1710MHz
1740MHz
1790MHz

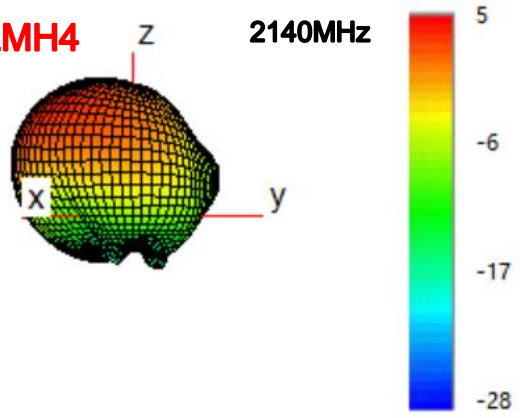

1880MHz
z
x
y
5
-5
-14
-24

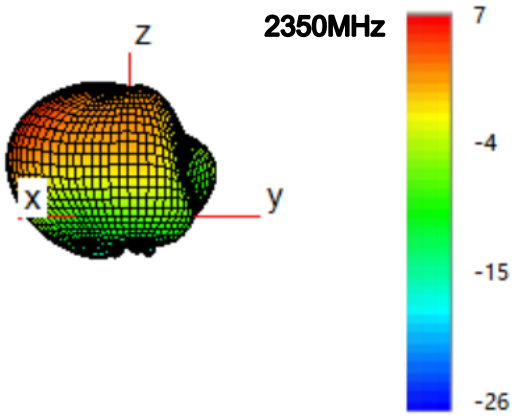

H Plane:XY
E1 Plane:XZ
1850MHz
1880MHz
1910MHz

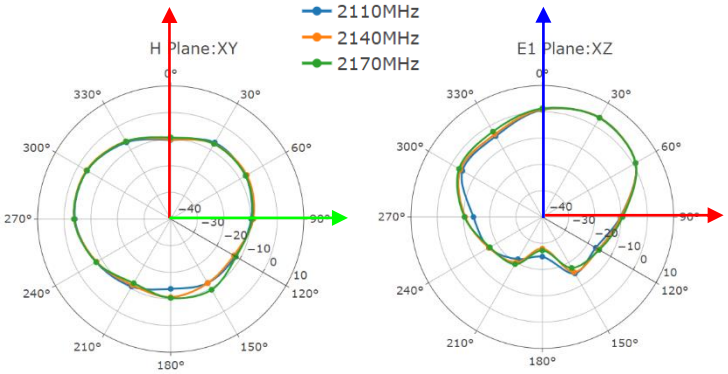

1950MHz
z
x
y
4
-5
-14
-23

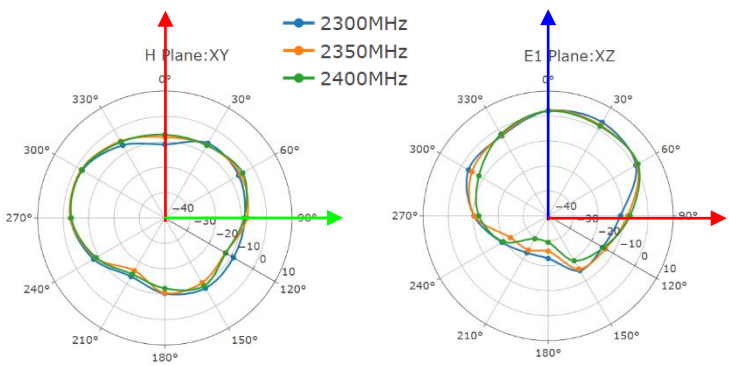

H Plane:XY
E1 Plane:XZ
1920MHz
1950MHz
1980MHz

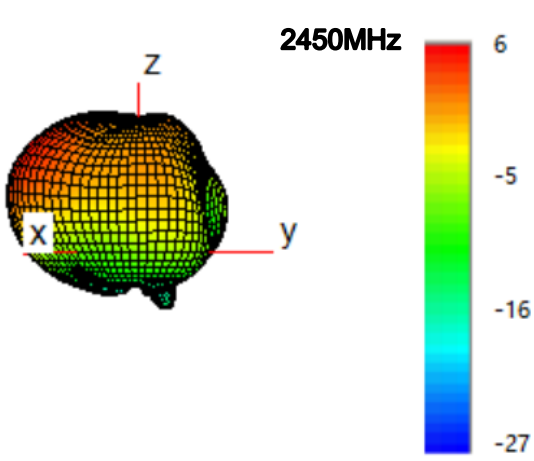
- **LMH4**

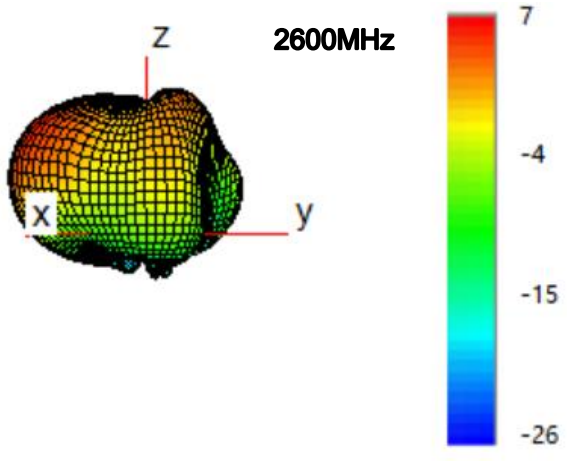

2140MHz
z
x
y
5
-6
-17
-28

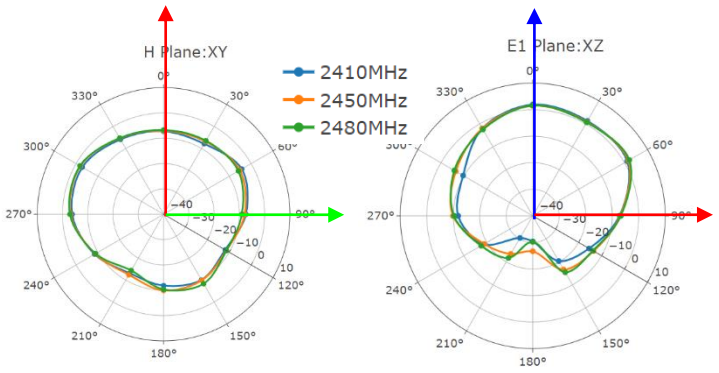

2350MHz
z
x
y
7
-4
-15
-26

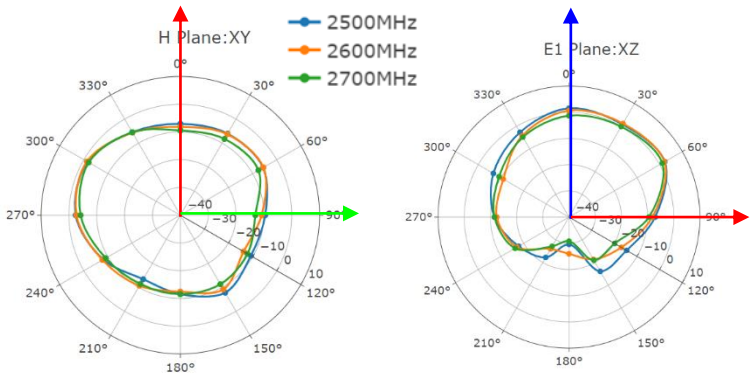

H Plane:XY
E1 Plane:XZ
2110MHz
2140MHz
2170MHz


H Plane:XY
E1 Plane:XZ
2300MHz
2350MHz
2400MHz

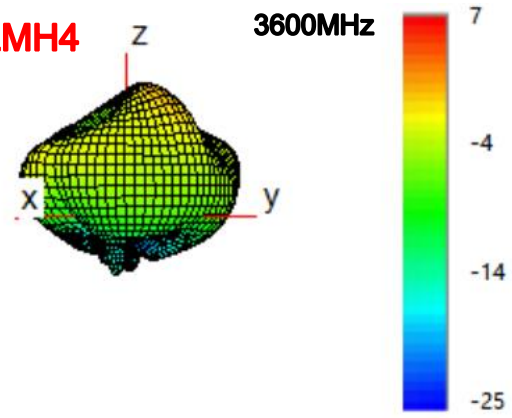

2450MHz
z
x
y
6
-5
-16
-27

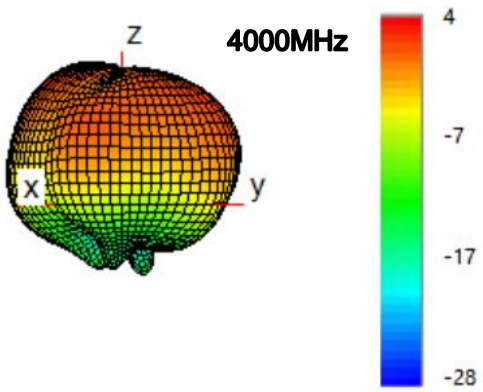

2600MHz
z
x
y
7
-4
-15
-26

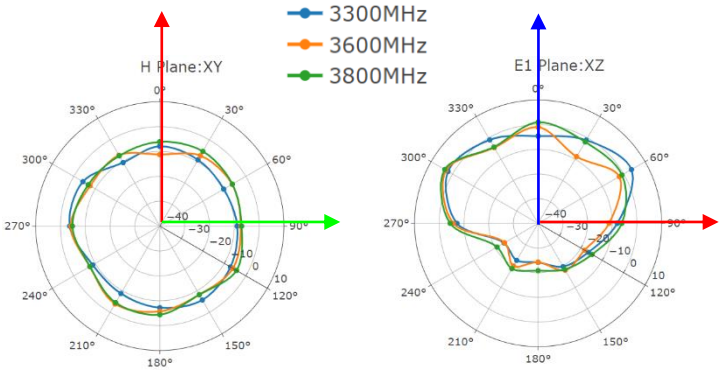

H Plane:XY
E1 Plane:XZ
2410MHz
2450MHz
2480MHz

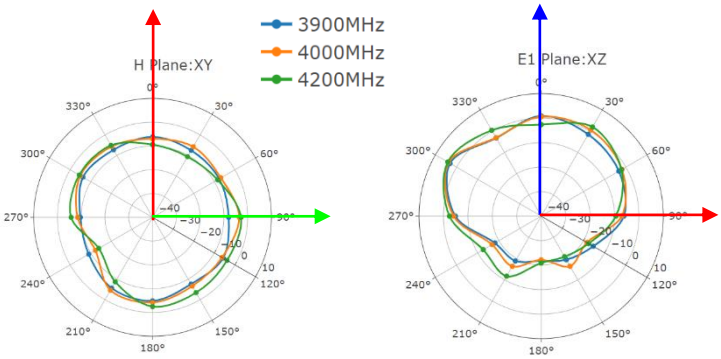

H Plane:XY
E1 Plane:XZ
2500MHz
2600MHz
2700MHz

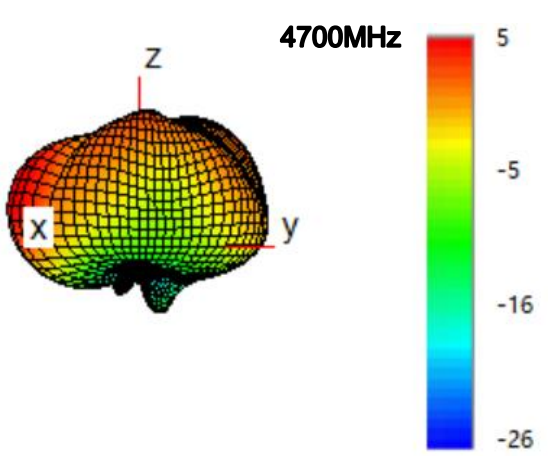
- **LMH4**

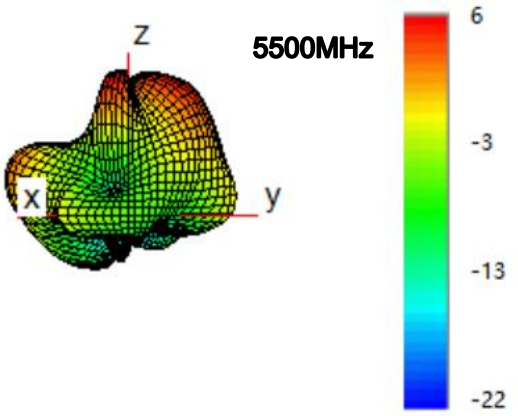

3600MHz
z
x
y
7
-4
-14
-25

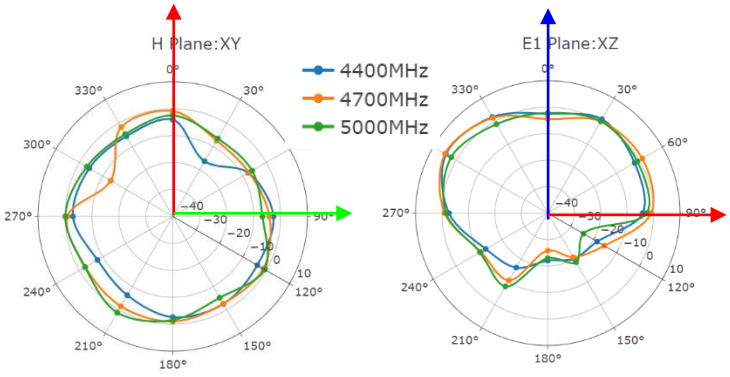

4000MHz
z
x
y
4
-7
-17
-28

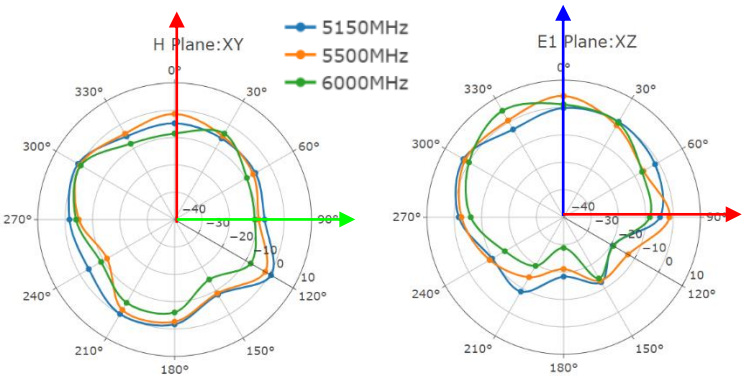

3300MHz
3600MHz
3800MHz
H Plane:XY
E1 Plane:XZ


3900MHz
4000MHz
4200MHz
H Plane:XY
E1 Plane:XZ

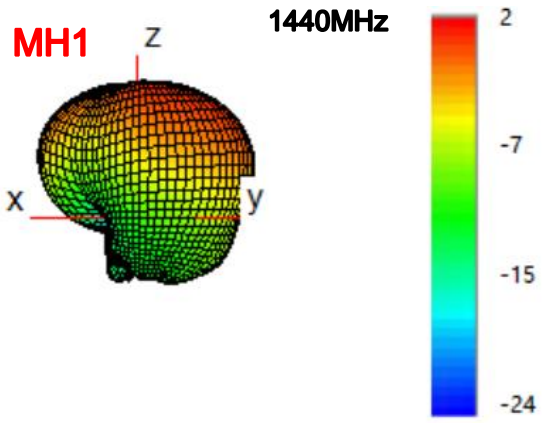

4700MHz
z
x
y
5
-5
-16
-26

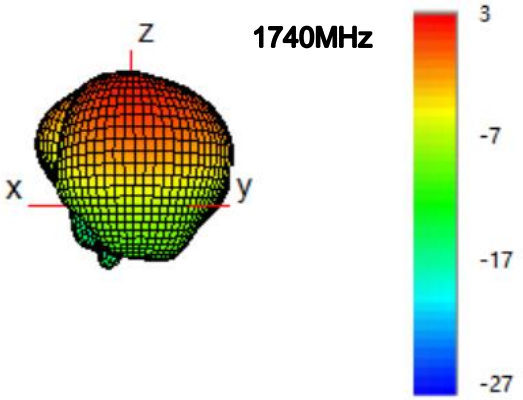

5500MHz
z
x
y
6
-3
-13
-22

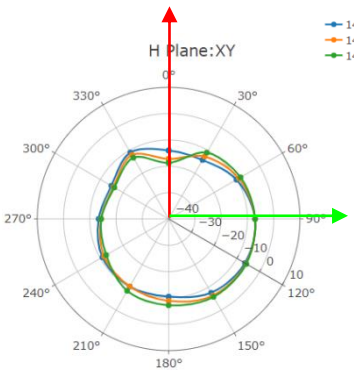

4400MHz
4700MHz
5000MHz
H Plane:XY
E1 Plane:XZ

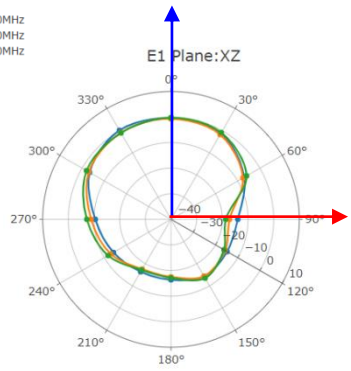

5150MHz
5500MHz
6000MHz
H Plane:XY
E1 Plane:XZ

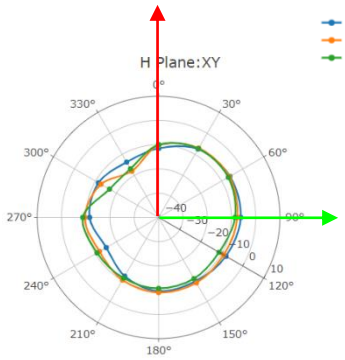
● MH1

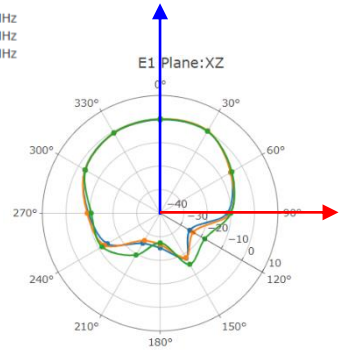

1440MHz
Z
X
y
2
-7
-15
-24

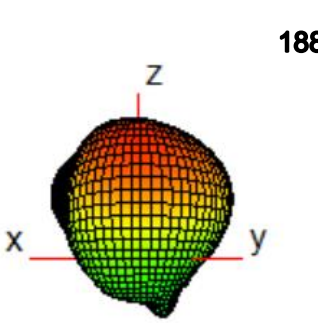

1740MHz
Z
X
y
3
-7
-17
-27

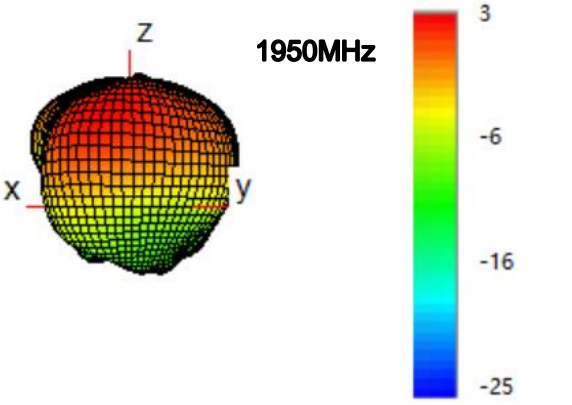

H Plane:XY
1410MHz
1440MHz
1470MHz

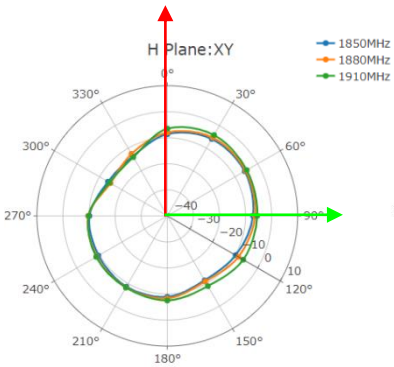

E1 Plane:XZ

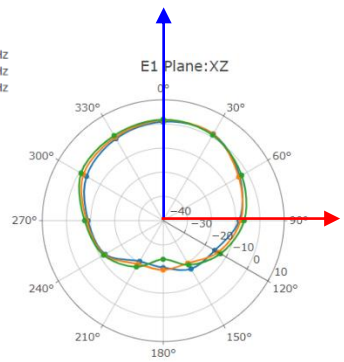

H Plane:XY
1710MHz
1740MHz
1790MHz

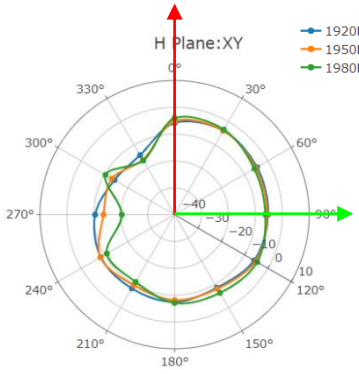

E1 Plane:XZ

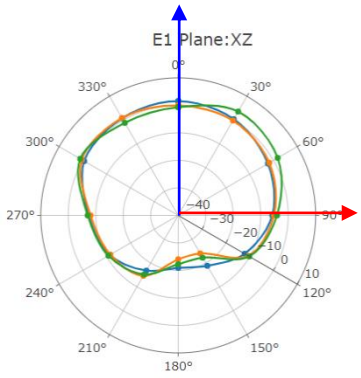

1880MHz
Z
X
y
4
-4
-12
-20


1950MHz
Z
X
y
3
-6
-16
-25

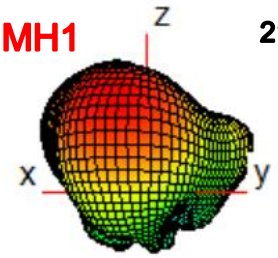

H Plane:XY
1850MHz
1880MHz
1910MHz


E1 Plane:XZ

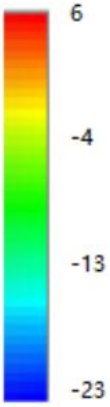

H Plane:XY
1920MHz
1950MHz
1980MHz

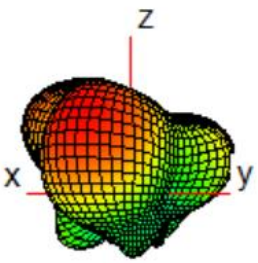

E1 Plane:XZ

- **MH1**

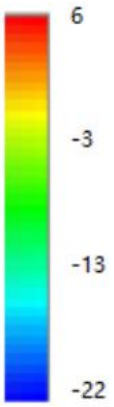


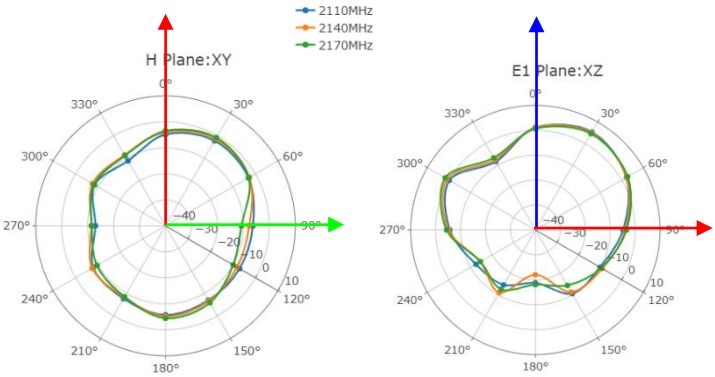
2140MHz

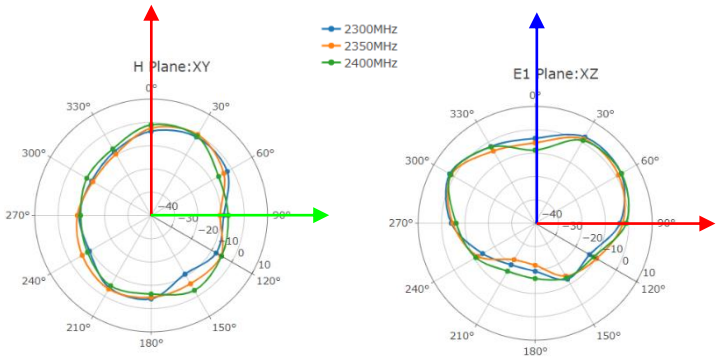




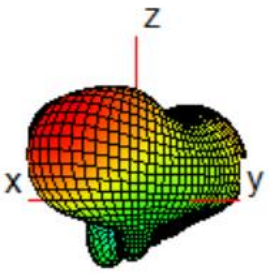
2350MHz

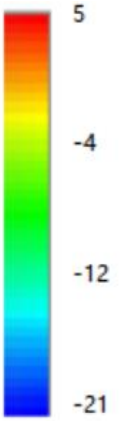




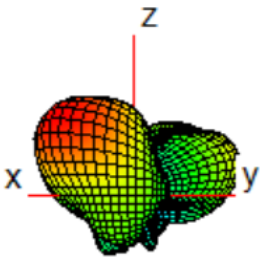


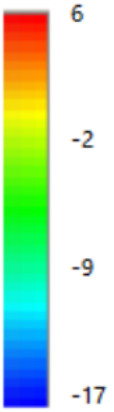
2450MHz

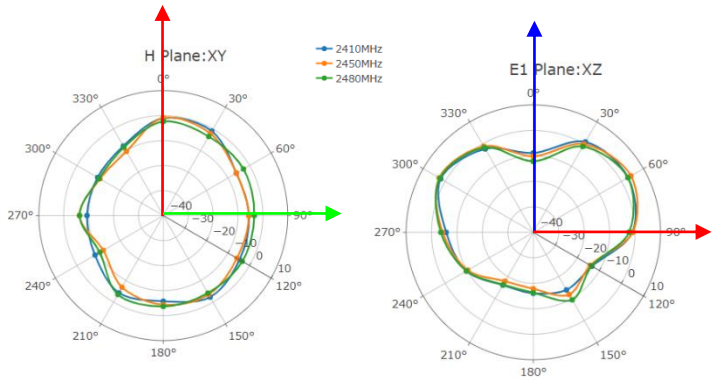


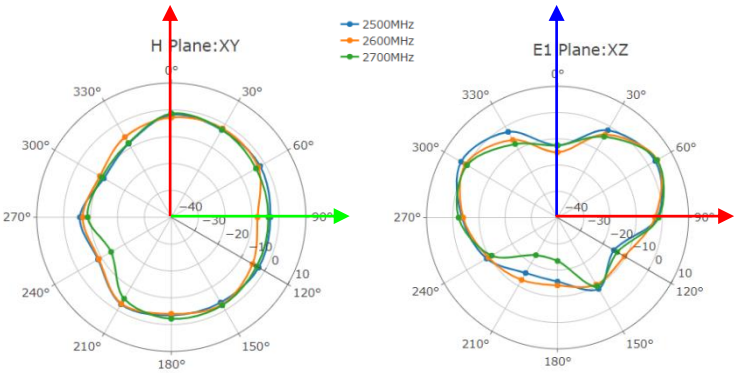


2600MHz

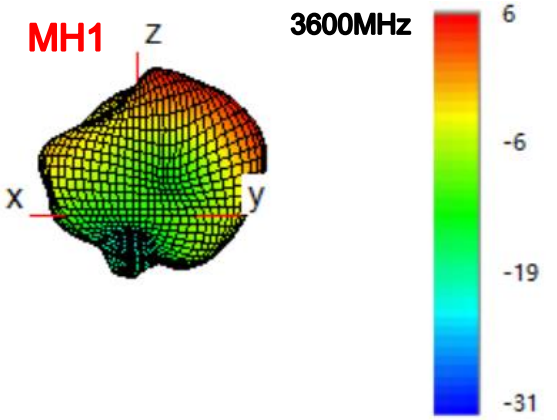


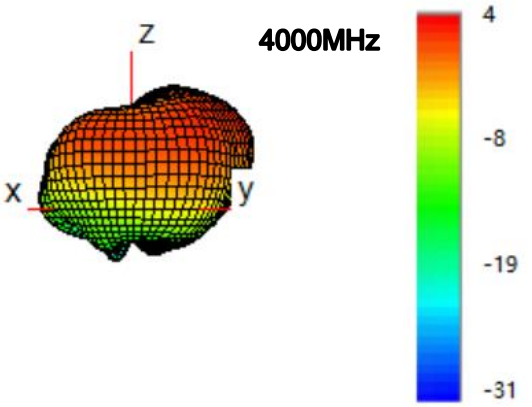


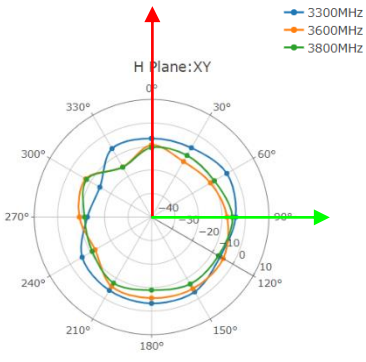


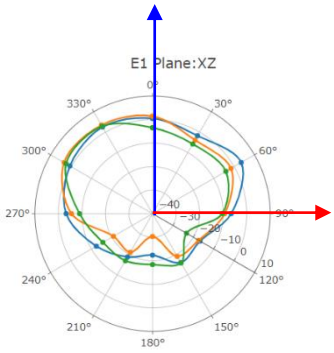


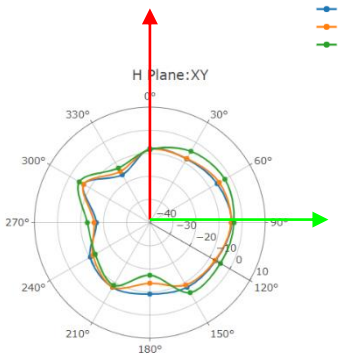
- **MH1**

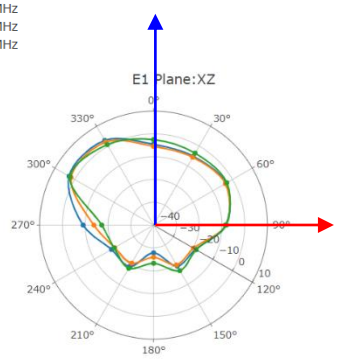

3600MHz
z
x
y
6
-6
-19
-31

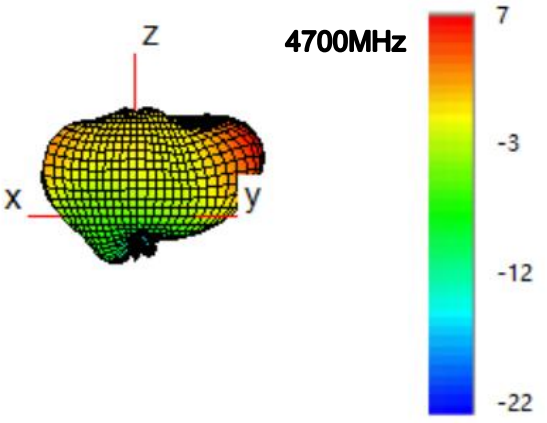

4000MHz
z
x
y
4
-8
-19
-31

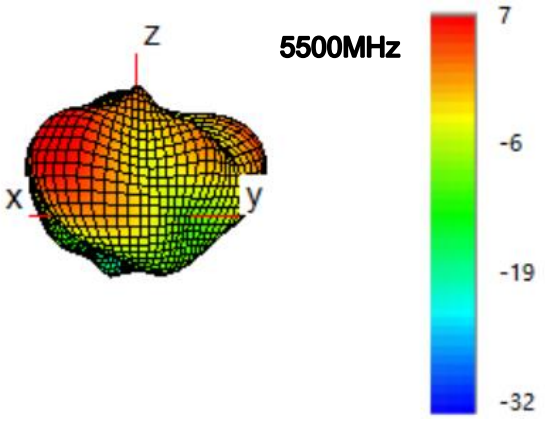

3300MHz
3600MHz
3800MHz
H Plane:XY

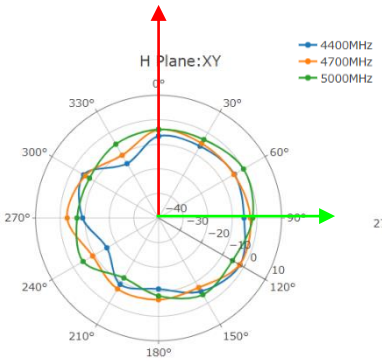

E1 Plane:XZ

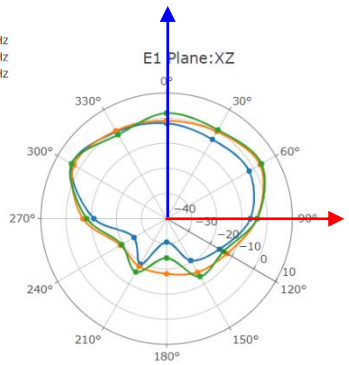

3900MHz
4000MHz
4200MHz
H Plane:XY

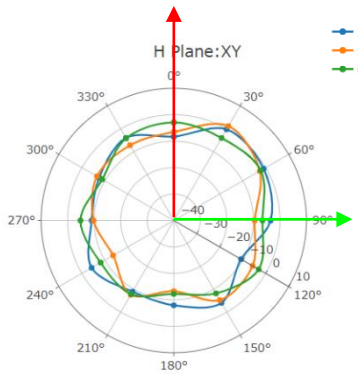

E1 Plane:XZ

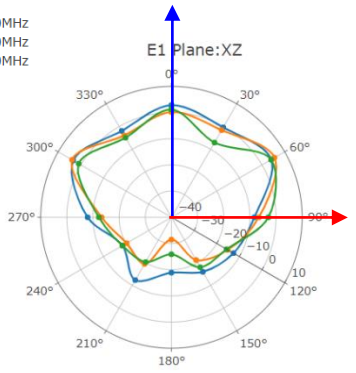

4700MHz
z
x
y
7
-3
-12
-22


5500MHz
z
x
y
7
-6
-19
-32

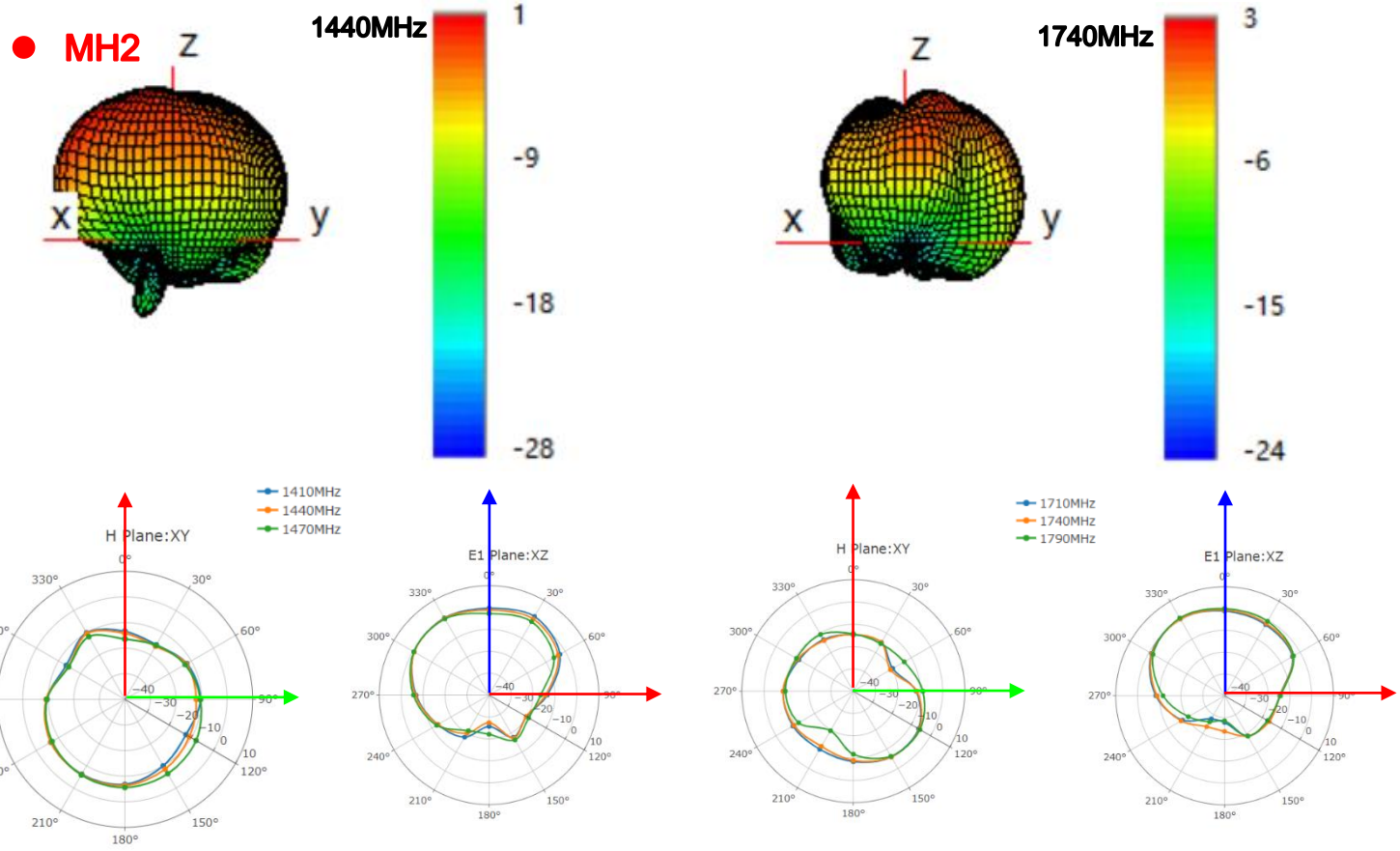

4400MHz
4700MHz
5000MHz
H Plane:XY

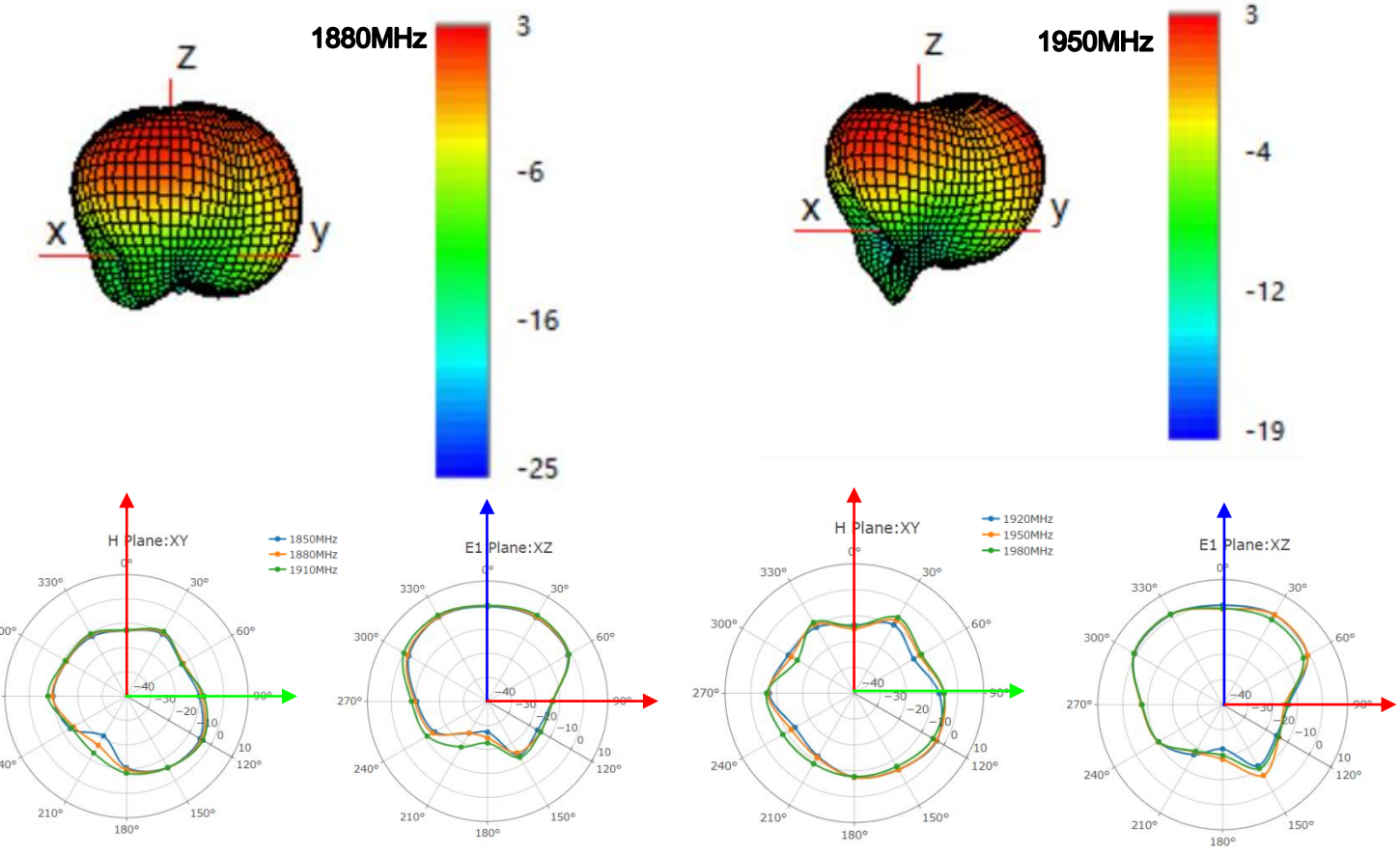

E1 Plane:XZ


5150MHz
5500MHz
6000MHz
H Plane:XY

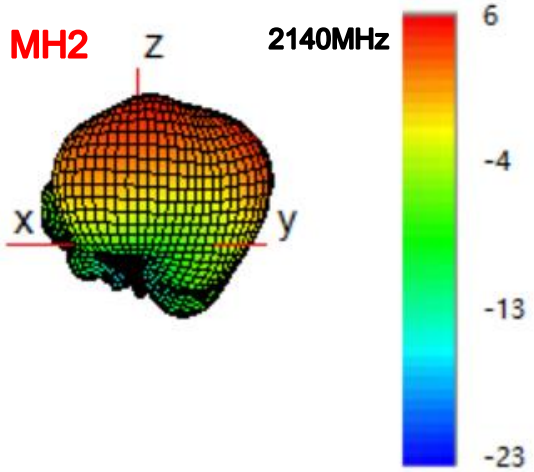

E1 Plane:XZ

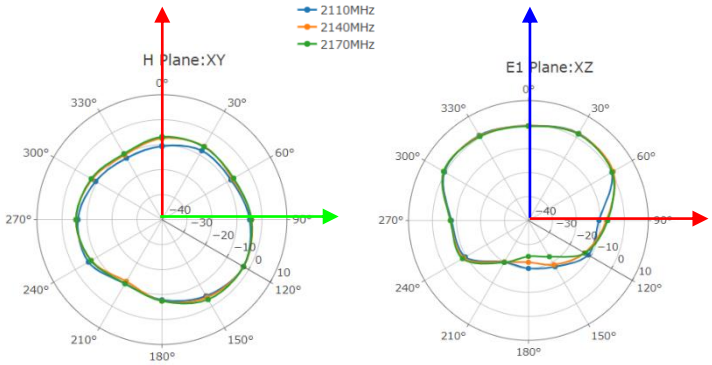
- MH2

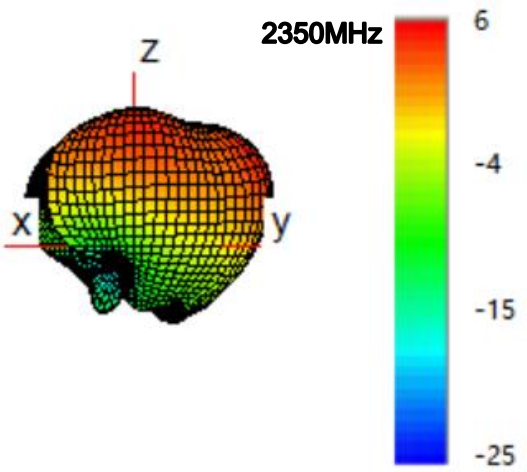

1440MHz
1
-9
-18
-28
z
x
y
H Plane:XY
E1 Plane:XZ
1410MHz
1440MHz
1470MHz
1740MHz
3
-6
-15
-24
1710MHz
1740MHz
1790MHz

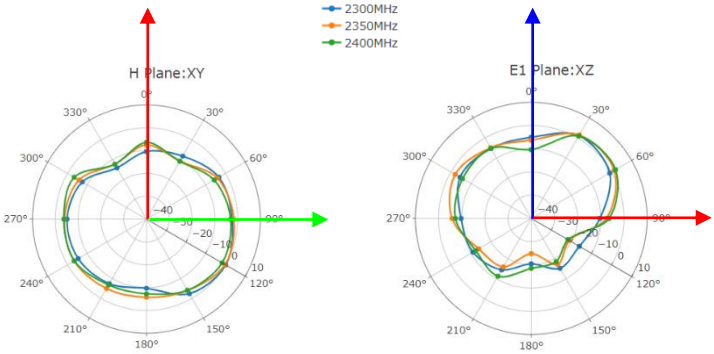

1880MHz
3
-6
-16
-25
1950MHz
3
-4
-12
-19
z
x
y
H Plane:XY
E1 Plane:XZ
1850MHz
1880MHz
1910MHz
1920MHz
1950MHz
1980MHz

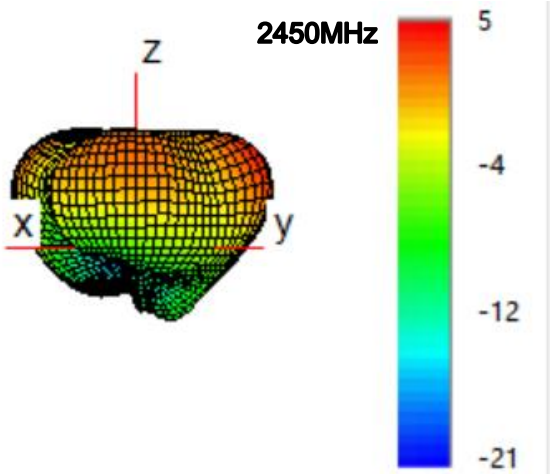
MH2

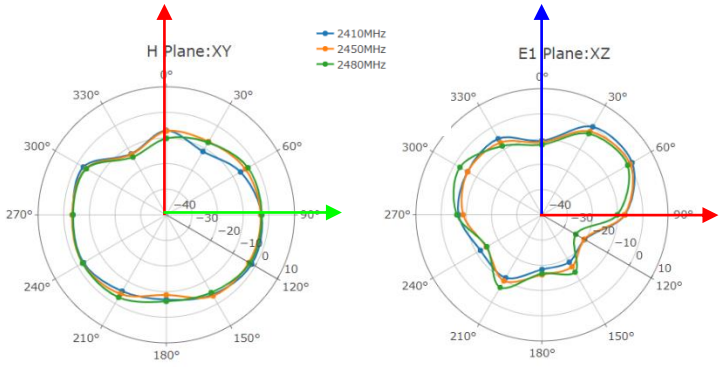

2140MHz
Z
x
y
6
-4
-13
-23

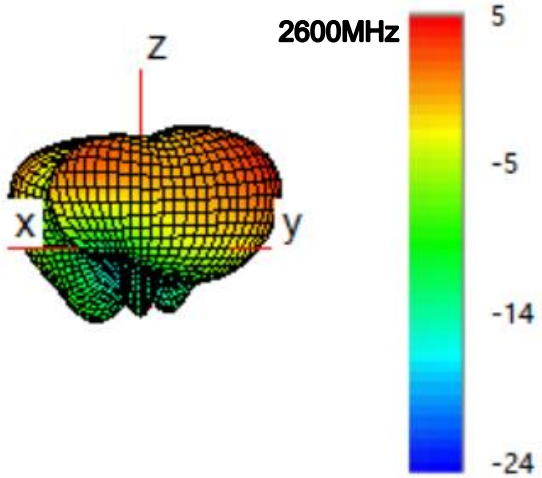

H Plane:XY
E1 Plane:XZ
2110MHz
2140MHz
2170MHz

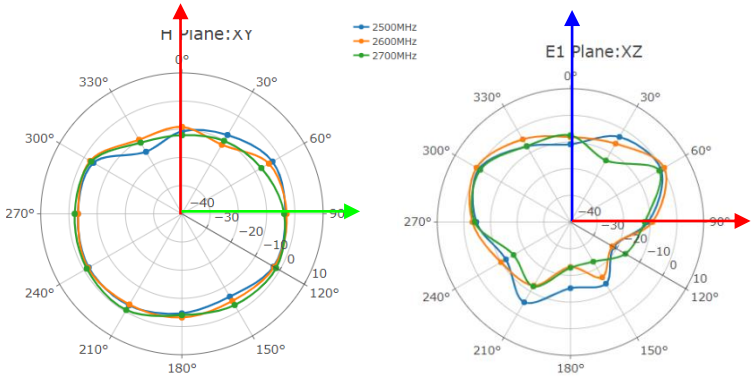

2350MHz
Z
x
y
6
-4
-15
-25


H Plane:XY
E1 Plane:XZ
2300MHz
2350MHz
2400MHz

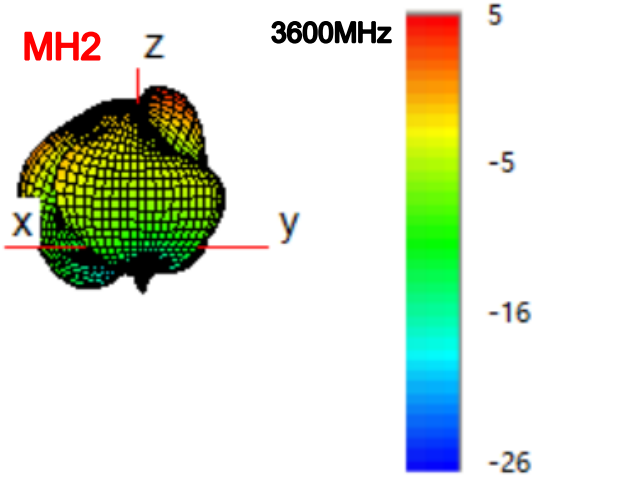

2450MHz
Z
x
y
5
-4
-12
-21

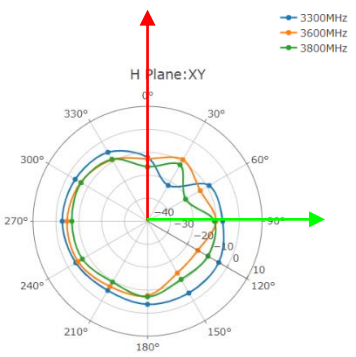

H Plane:XY
E1 Plane:XZ
2410MHz
2450MHz
2480MHz

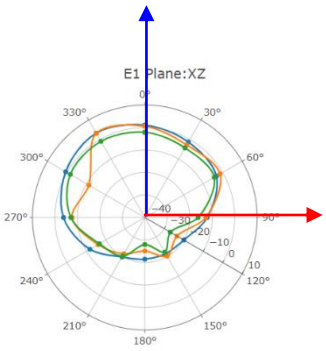

2600MHz
Z
x
y
5
-5
-14
-24

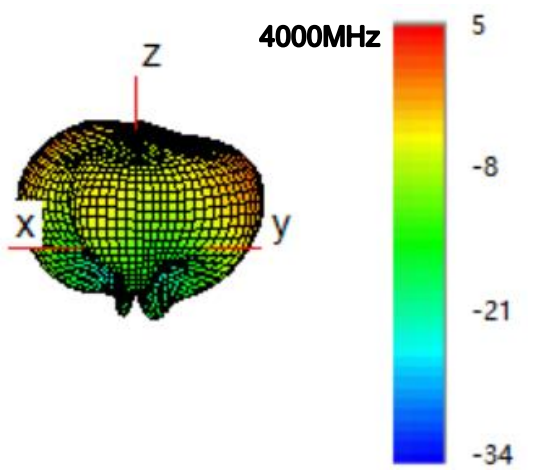

H Plane:XY
E1 Plane:XZ
2500MHz
2600MHz
2700MHz

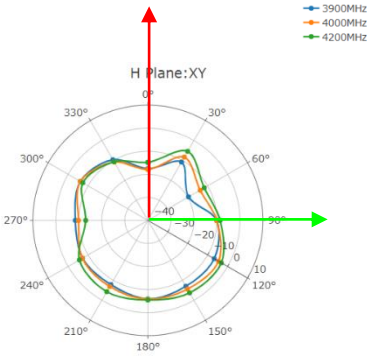
- **MH2**

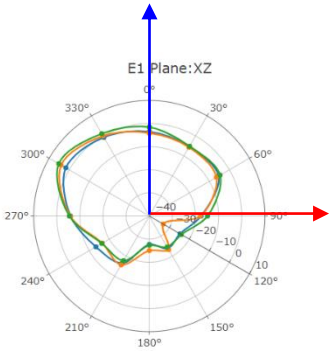

3600MHz
5
-5
-16
-26
z
x
y

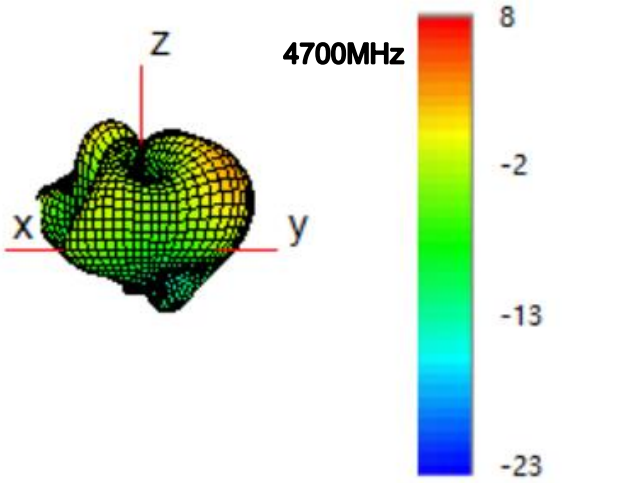

3300MHz
3600MHz
3800MHz
H Plane:XY

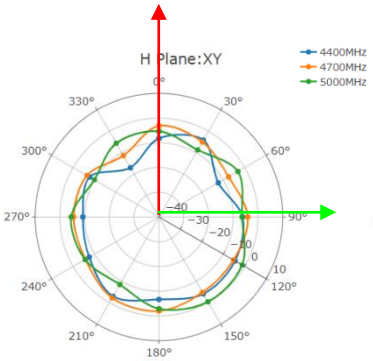

E1 Plane:XZ

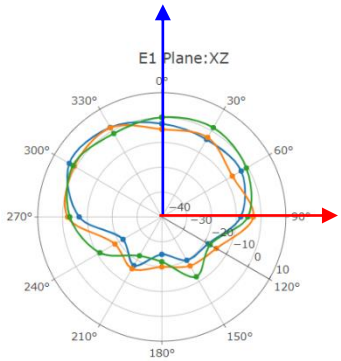

4000MHz
5
-8
-21
-34
z
x
y

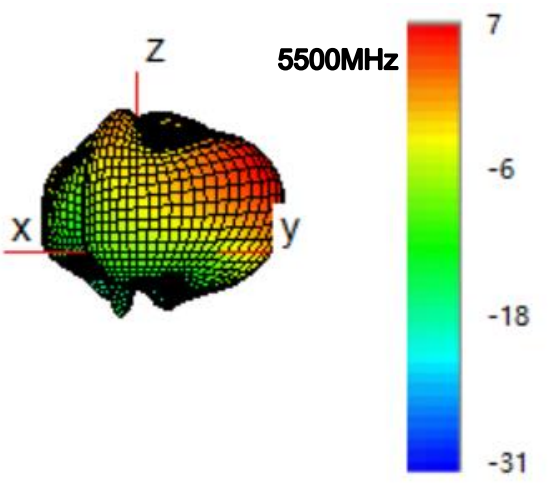

3900MHz
4000MHz
4200MHz
H Plane:XY

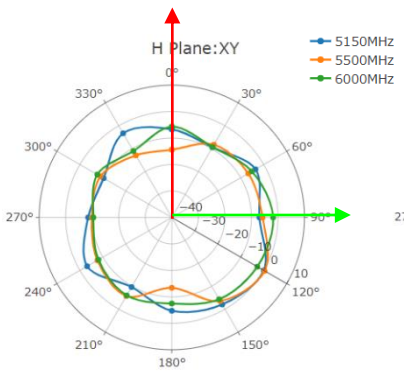

E1 Plane:XZ

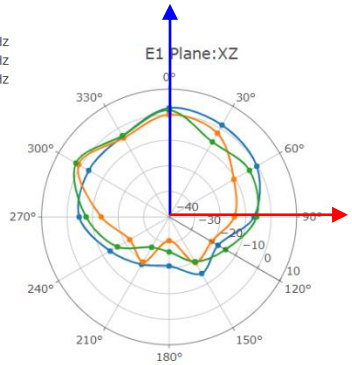

4700MHz
8
-2
-13
-23
z
x
y


4400MHz
4700MHz
5000MHz
H Plane:XY

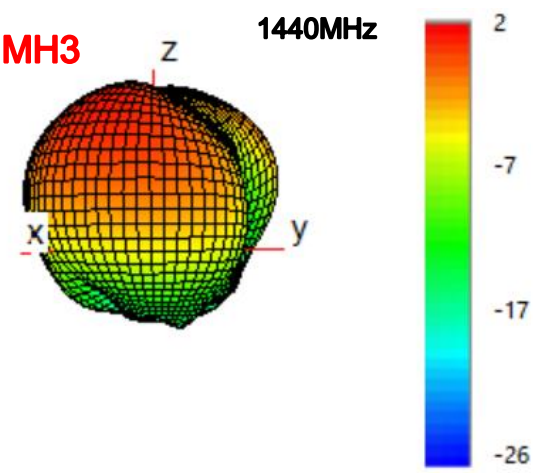

E1 Plane:XZ

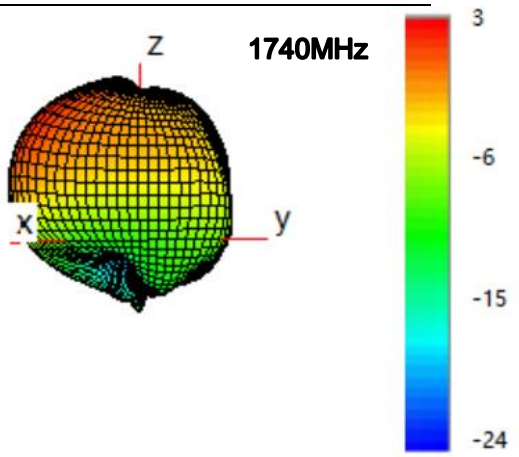

5500MHz
7
-6
-18
-31
z
x
y

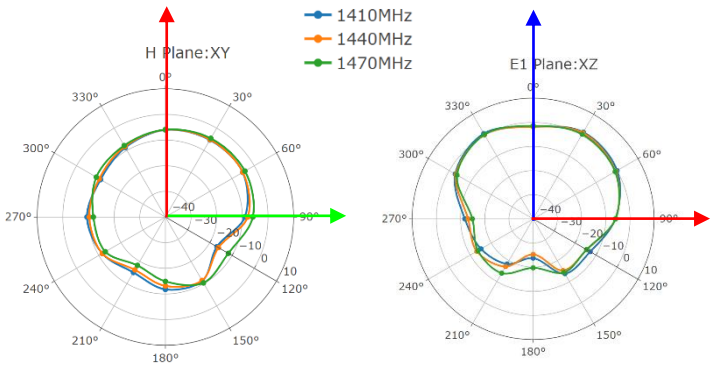

5150MHz
5500MHz
6000MHz
H Plane:XY

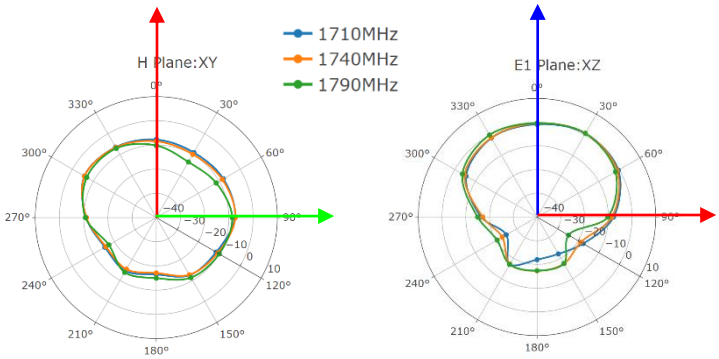

E1 Plane:XZ

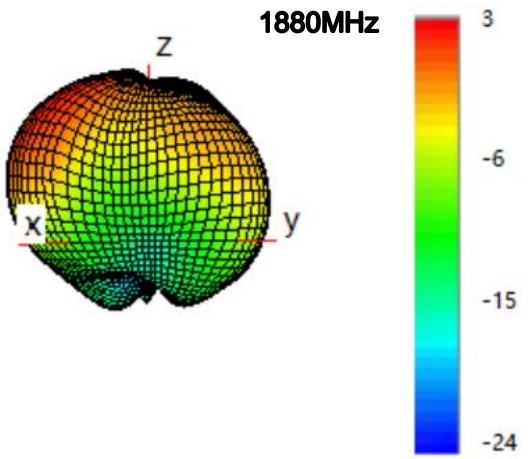
- **MH3**

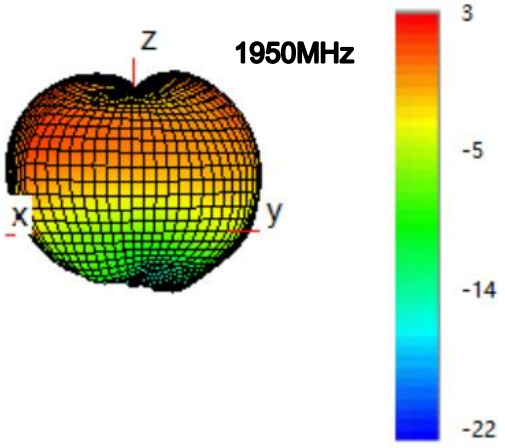

1440MHz
Z
X
y
2
-7
-17
-26

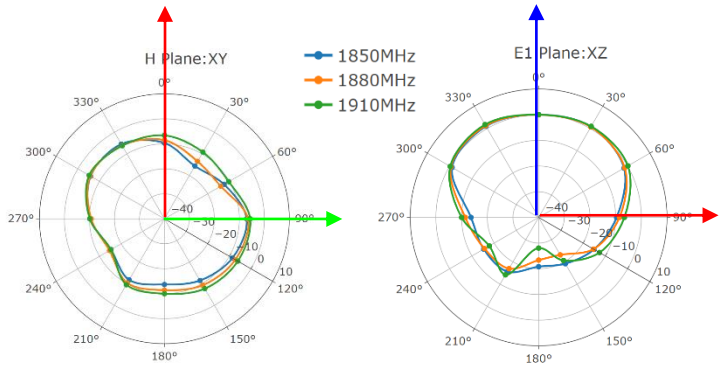

1740MHz
Z
X
y
3
-6
-15
-24

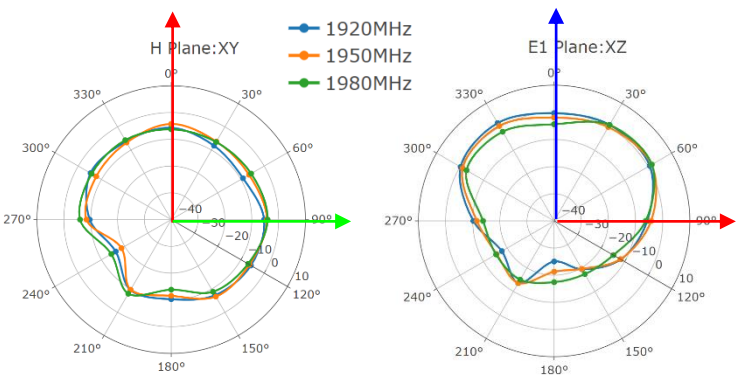

H Plane:XY
E1 Plane:XZ
1410MHz
1440MHz
1470MHz


H Plane:XY
E1 Plane:XZ
1710MHz
1740MHz
1790MHz

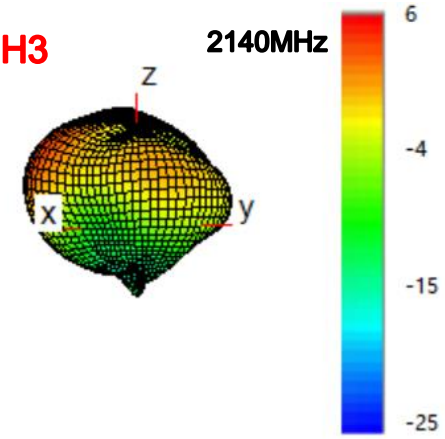

1880MHz
Z
X
y
3
-6
-15
-24

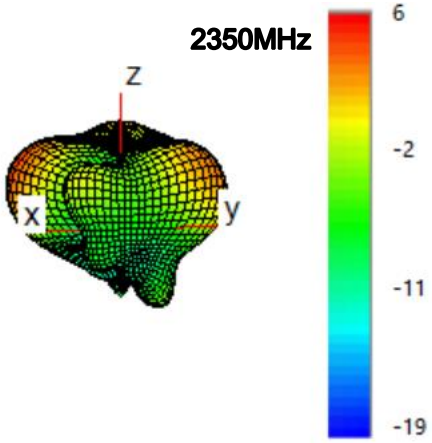

1950MHz
Z
X
y
3
-5
-14
-22

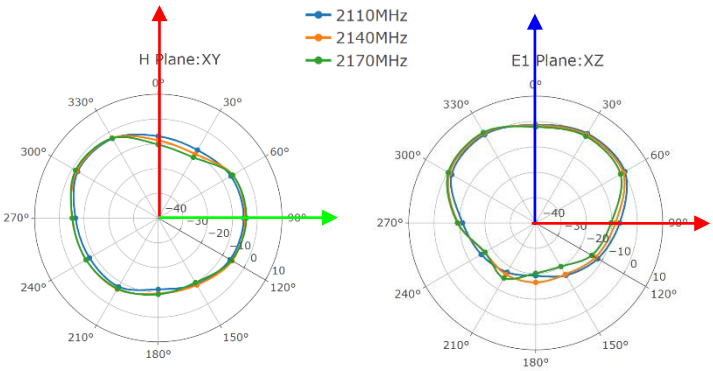

H Plane:XY
E1 Plane:XZ
1850MHz
1880MHz
1910MHz

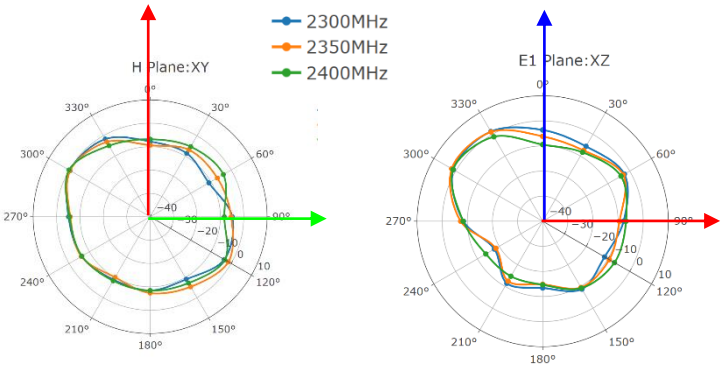

H Plane:XY
E1 Plane:XZ
1920MHz
1950MHz
1980MHz

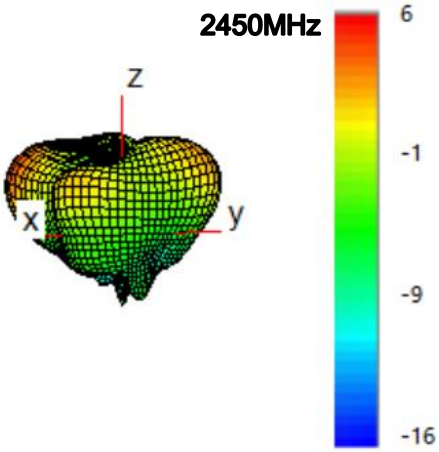
- **MH3**

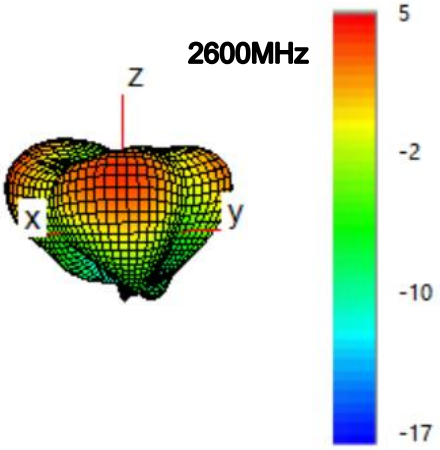

2140MHz
6
-4
-15
-25
z
x
y

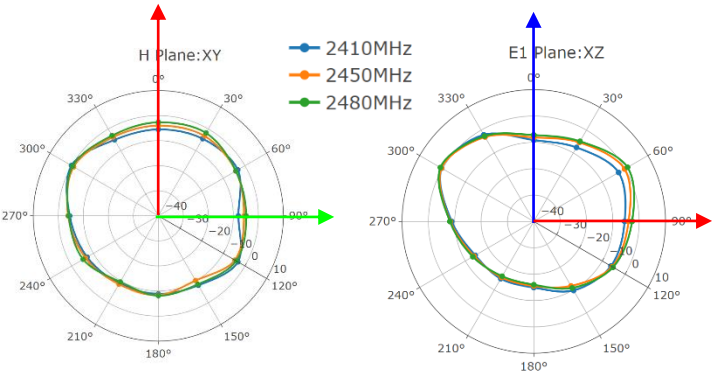

2350MHz
6
-2
-11
-19
z
x
y

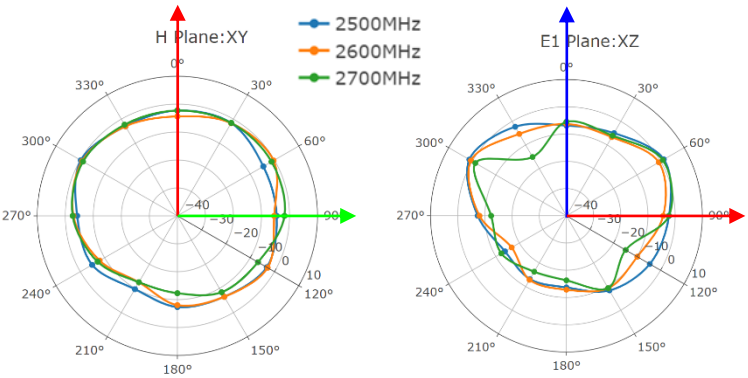

2110MHz
2140MHz
2170MHz
H Plane:XY
E1 Plane:XZ


2300MHz
2350MHz
2400MHz
H Plane:XY
E1 Plane:XZ

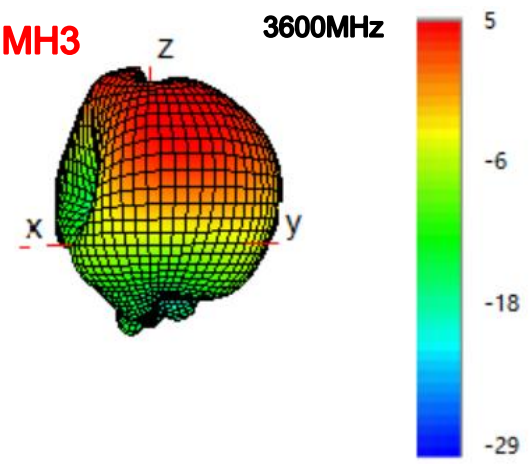

2450MHz
6
-1
-9
-16
z
x
y

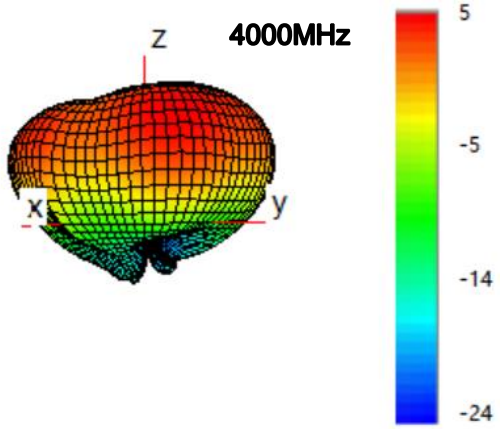

2600MHz
5
-2
-10
-17
z
x
y

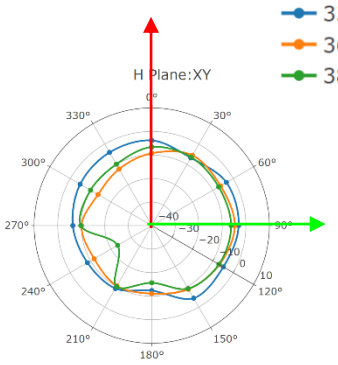

2410MHz
2450MHz
2480MHz
H Plane:XY
E1 Plane:XZ

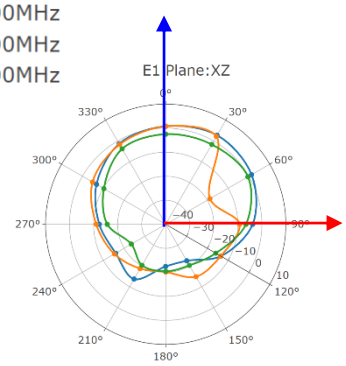

2500MHz
2600MHz
2700MHz
H Plane:XY
E1 Plane:XZ

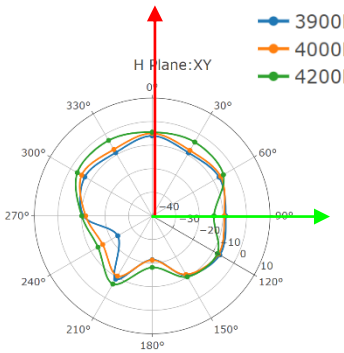
- **MH3**

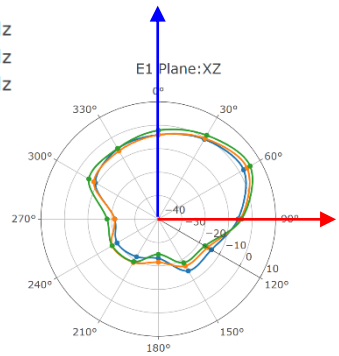

3600MHz
Z
x
y
5
-6
-18
-29

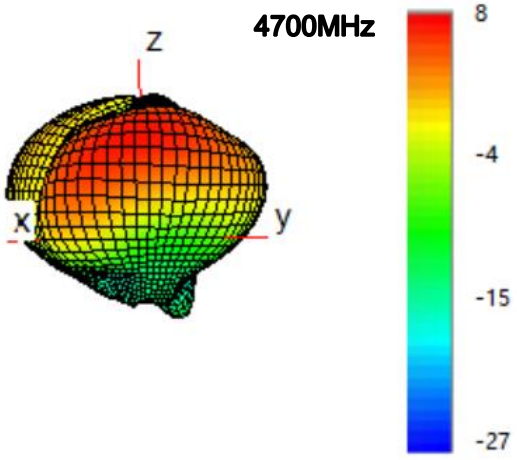

4000MHz
Z
x
y
5
-5
-14
-24

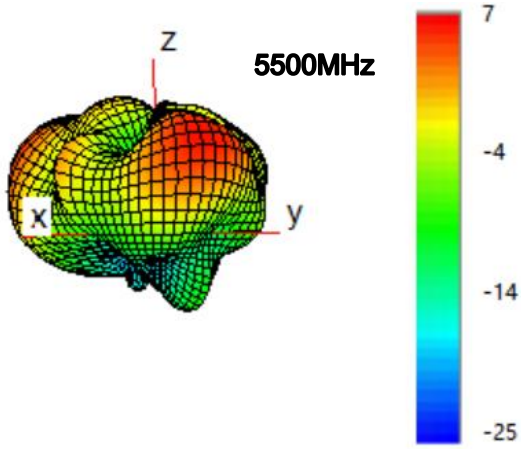

3300MHz
3600MHz
3800MHz
H Plane:XY

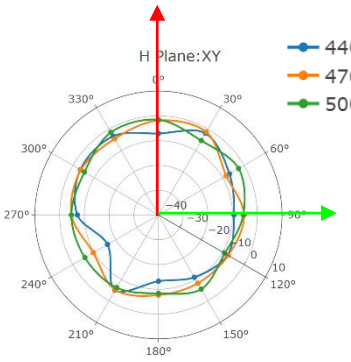

E1 Plane:XZ

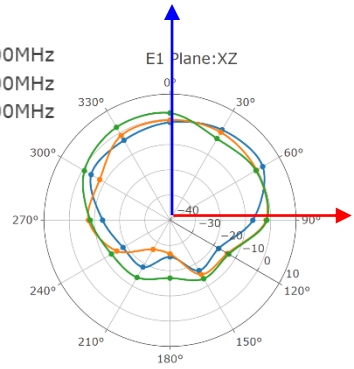

3900MHz
4000MHz
4200MHz
H Plane:XY

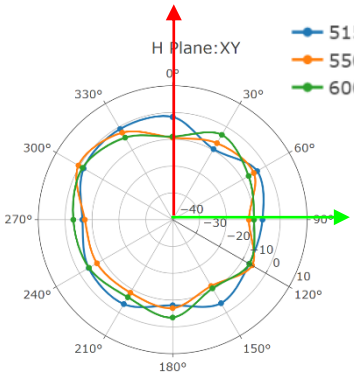

E1 Plane:XZ

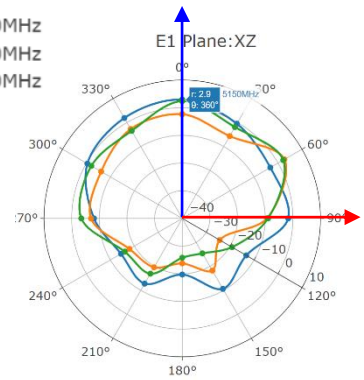

4700MHz
Z
x
y
8
-4
-15
-27


5500MHz
Z
x
y
7
-4
-14
-25


4400MHz
4700MHz
5000MHz
H Plane:XY

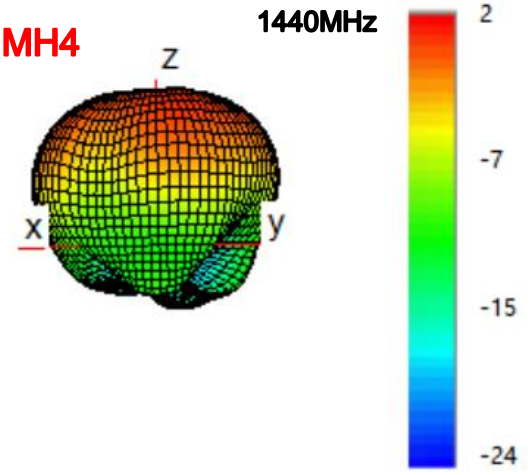

E1 Plane:XZ

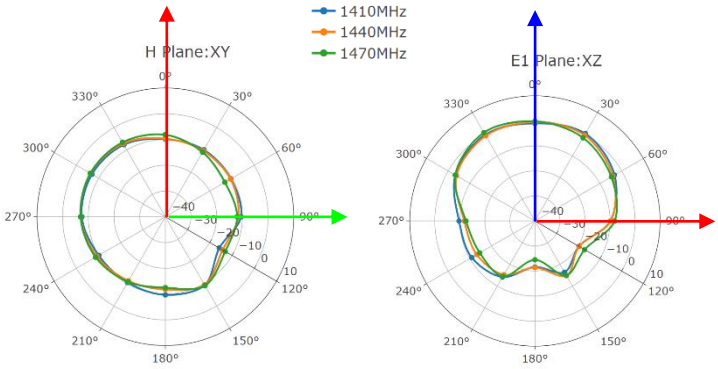

5150MHz
5500MHz
6000MHz
H Plane:XY


E1 Plane:XZ

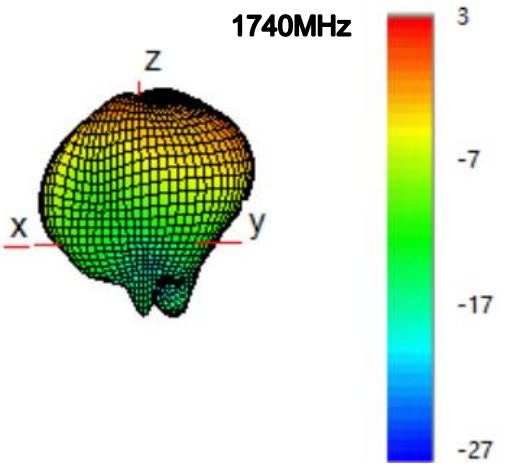
- **MH4**

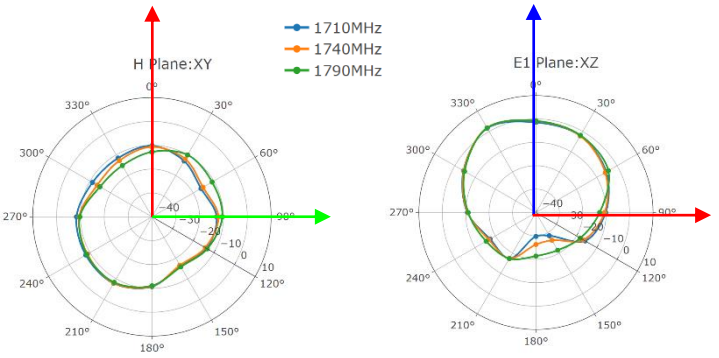
1440MHz



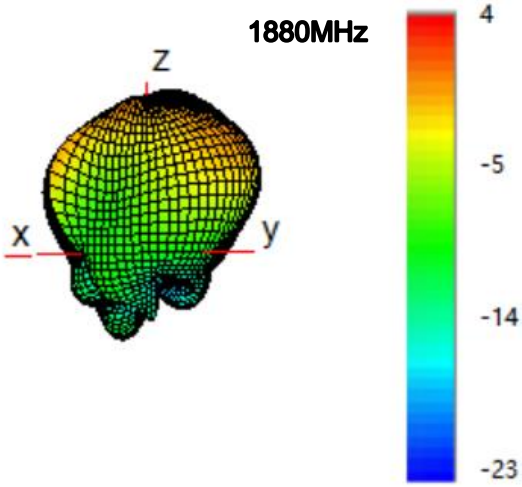


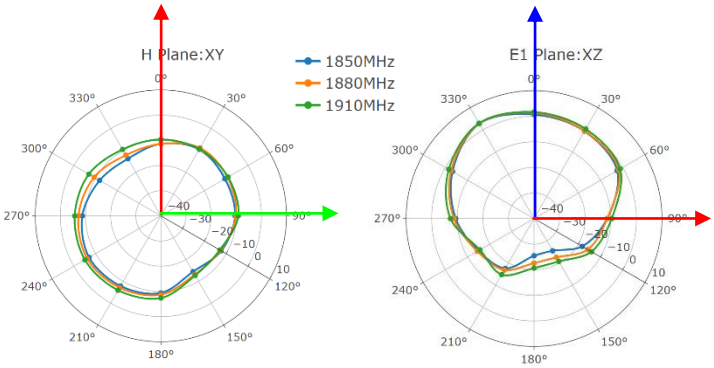
1740MHz



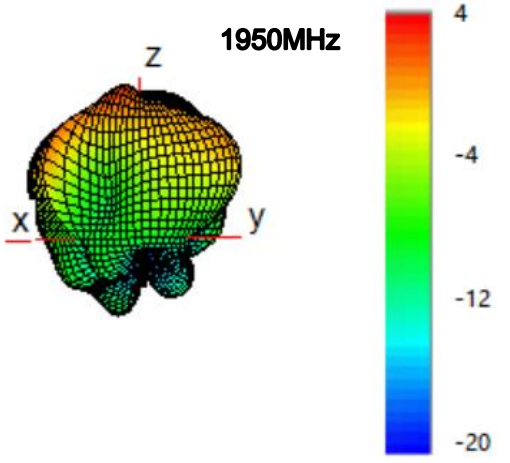


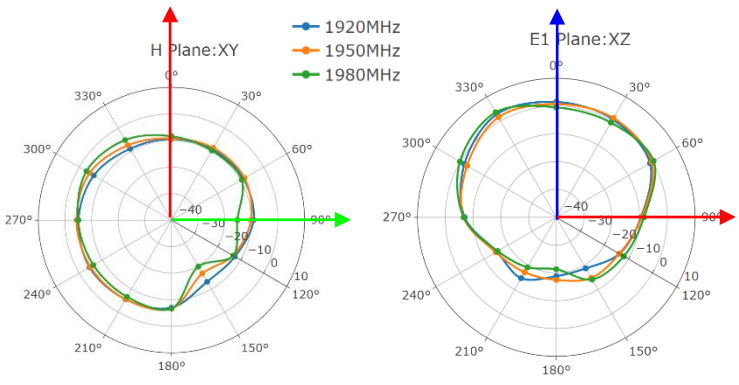
1880MHz



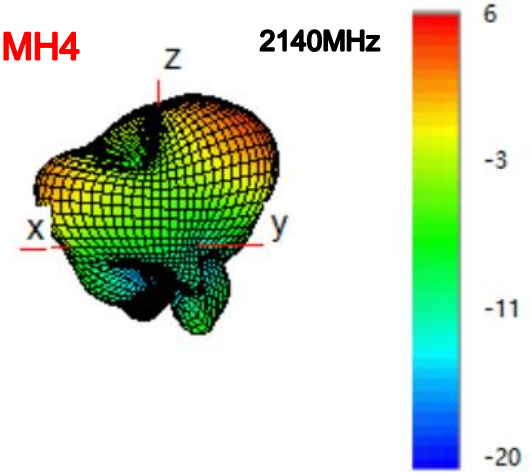


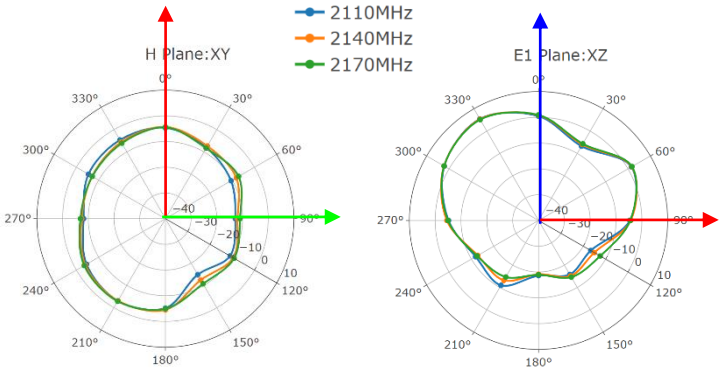
1950MHz

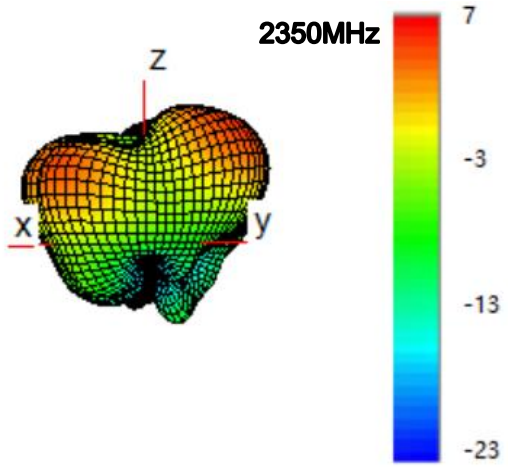


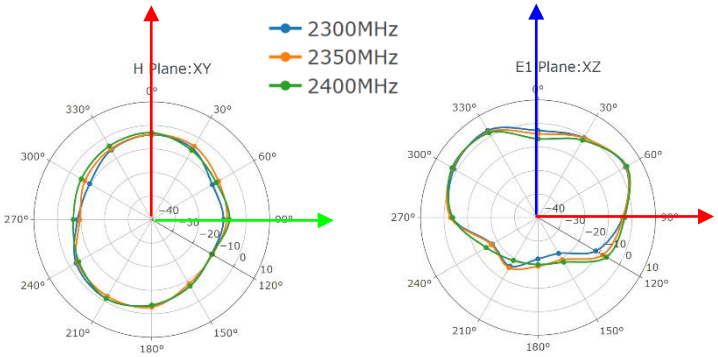


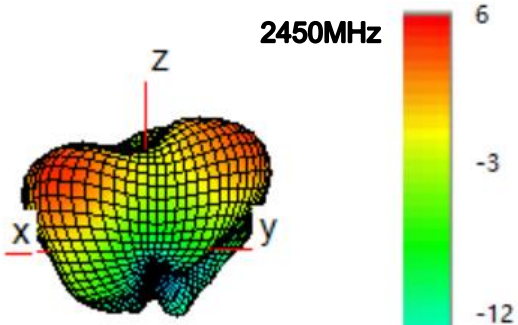
- **MH4**

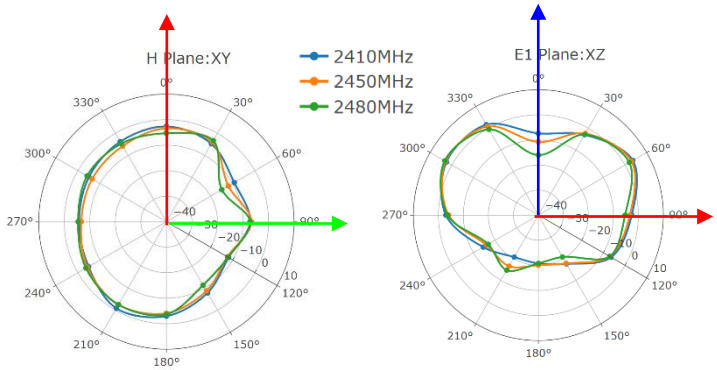

2140MHz
Z
X
Y
6
-3
-11
-20

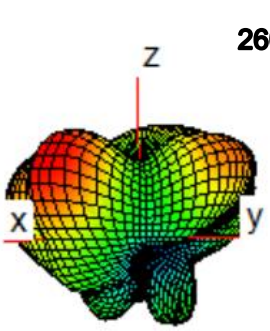

H Plane:XY
E1 Plane:XZ
2110MHz
2140MHz
2170MHz

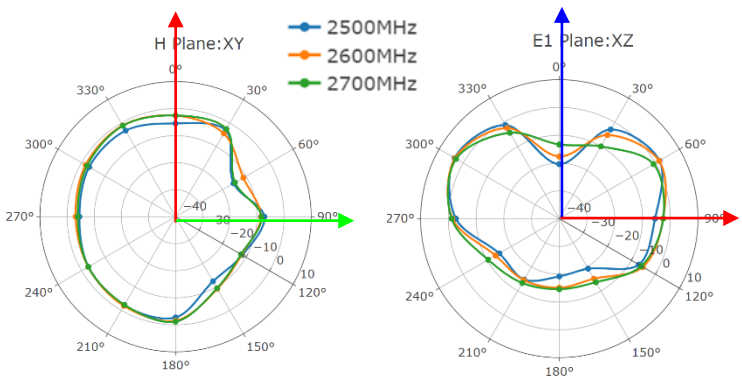

2350MHz
Z
X
Y
7
-3
-13
-23


H Plane:XY
E1 Plane:XZ
2300MHz
2350MHz
2400MHz

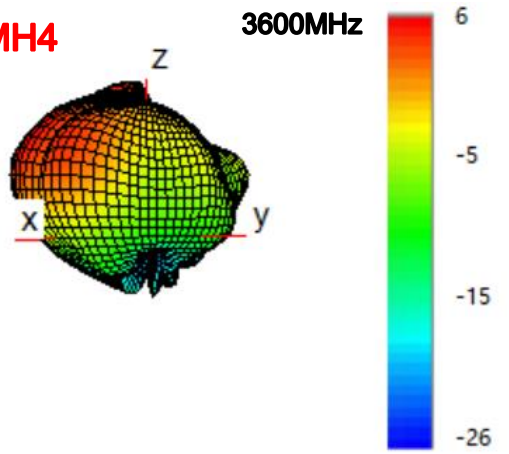

2450MHz
Z
X
Y
6
-3
-12
-21

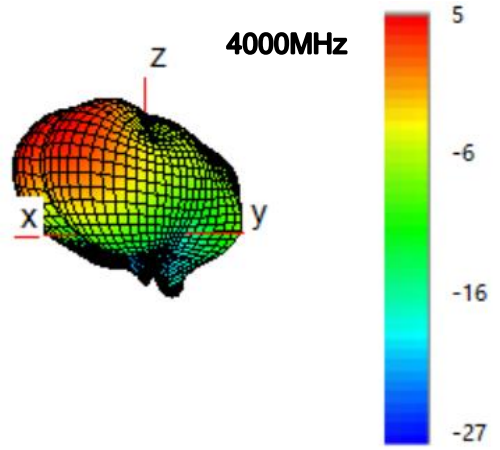

H Plane:XY
E1 Plane:XZ
2410MHz
2450MHz
2480MHz

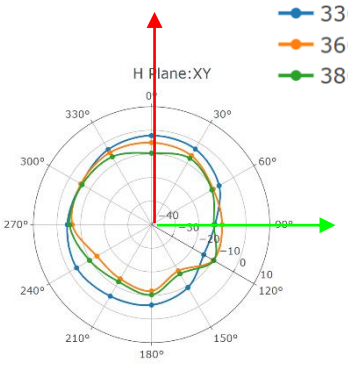

2600MHz
Z
X
Y
5
-3
-11
-19

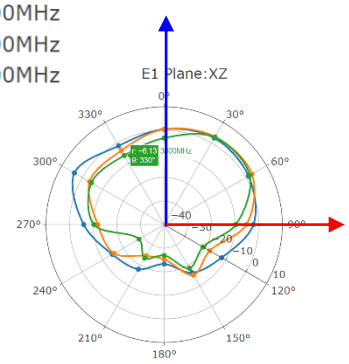

H Plane:XY
E1 Plane:XZ
2500MHz
2600MHz
2700MHz

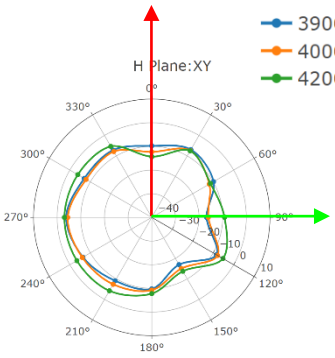
- **MH4**

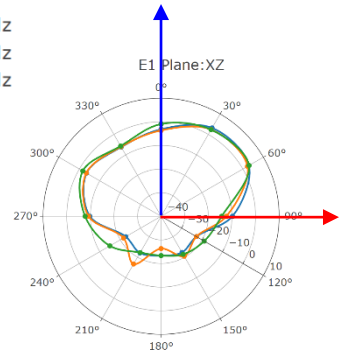

3600MHz
Z
X
Y
6
-5
-15
-26

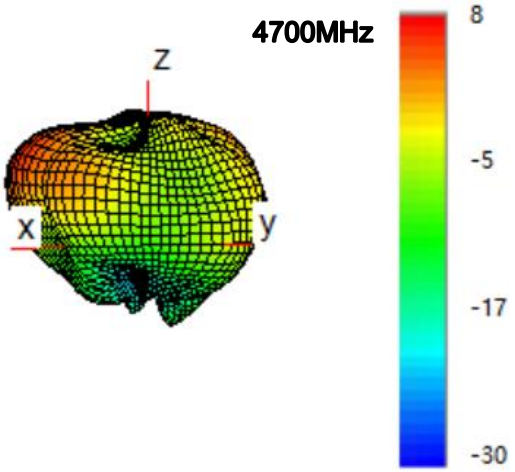

4000MHz
Z
X
Y
5
-6
-16
-27

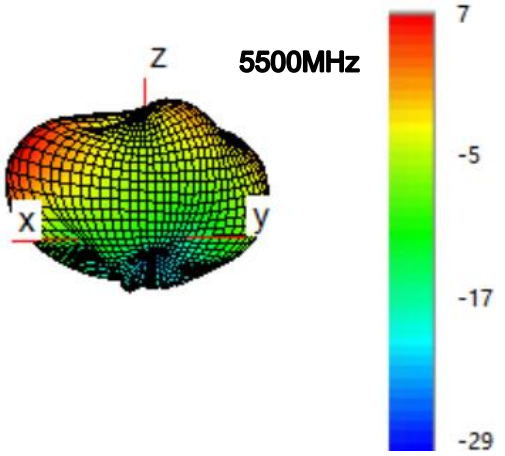

H Plane:XY
3300MHz
3600MHz
3800MHz

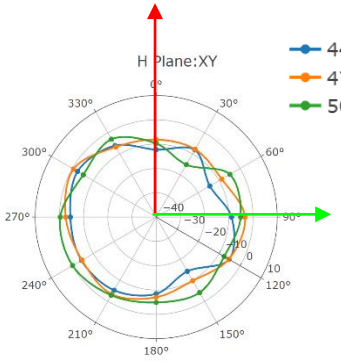

E1 Plane:XZ

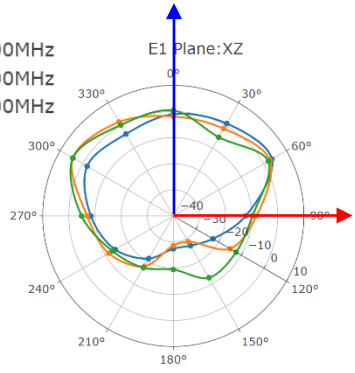

H Plane:XY
3900MHz
4000MHz
4200MHz

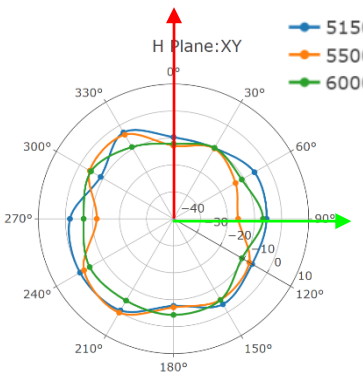

E1 Plane:XZ

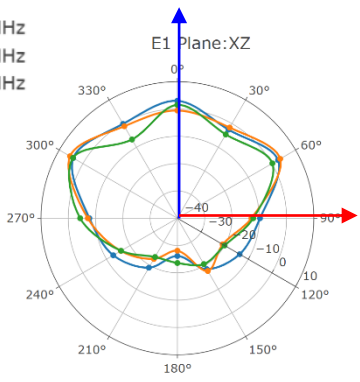

4700MHz
Z
X
Y
8
-5
-17
-30


5500MHz
Z
X
Y
7
-5
-17
-29

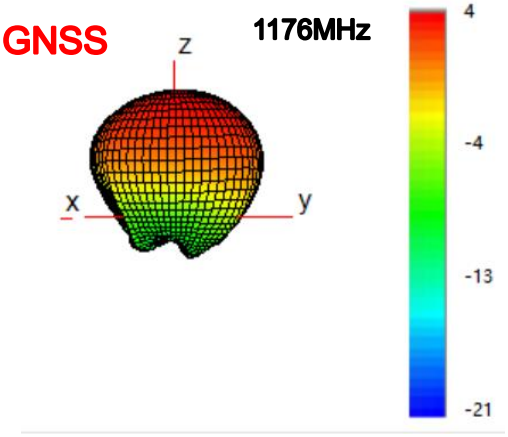

H Plane:XY
4400MHz
4700MHz
5000MHz

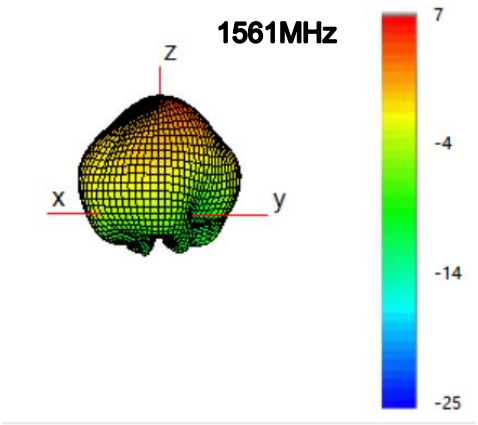

E1 Plane:XZ

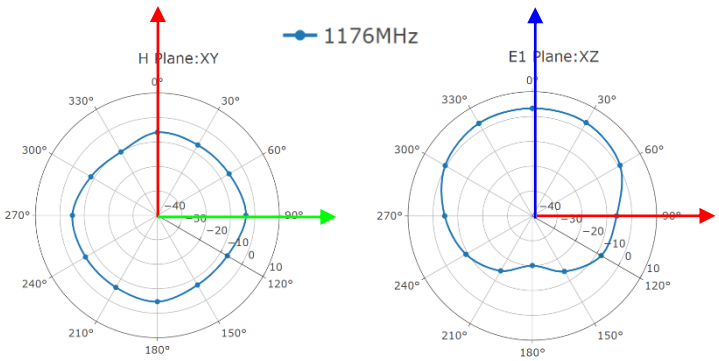

H Plane:XY
5150MHz
5500MHz
6000MHz

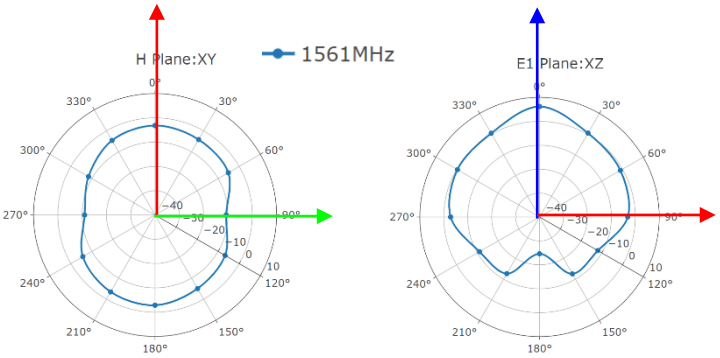

E1 Plane:XZ

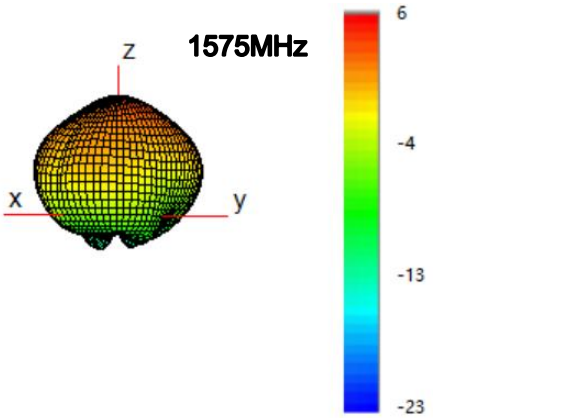
- **GNSS**

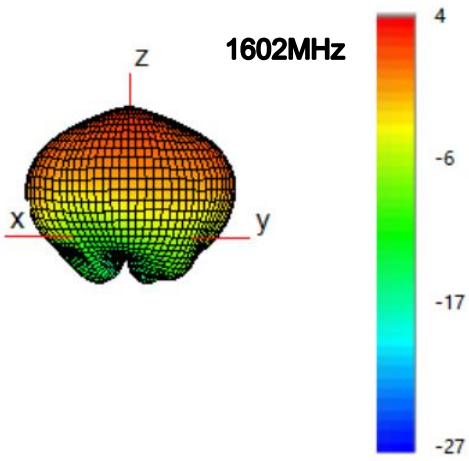

1176MHz
z
x
y
4
-4
-13
-21

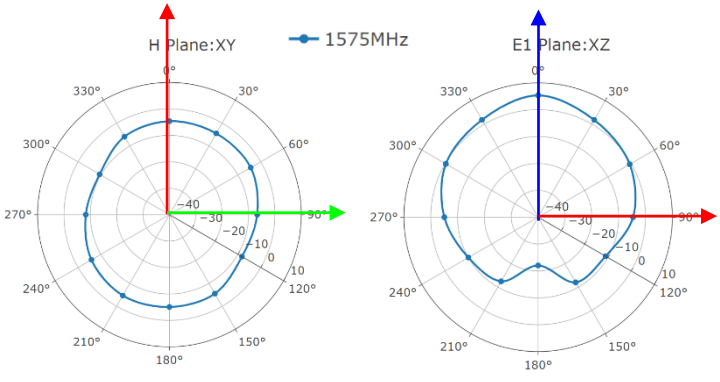

1561MHz
z
x
y
7
-4
-14
-25

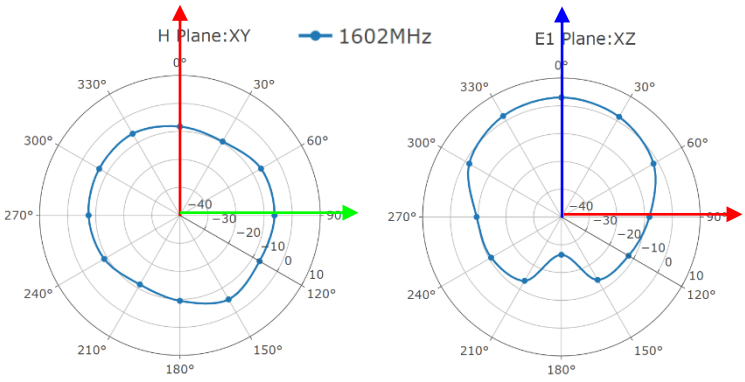

1176MHz
H Plane:XY
E1 Plane:XZ


1561MHz
H Plane:XY
E1 Plane:XZ


1575MHz
z
x
y
6
-4
-13
-23


1602MHz
z
x
y
4
-6
-17
-27


1575MHz
H Plane:XY
E1 Plane:XZ


1602MHz
H Plane:XY
E1 Plane:XZ

3.3 Active OTA Test

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

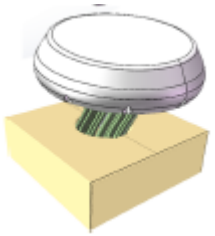
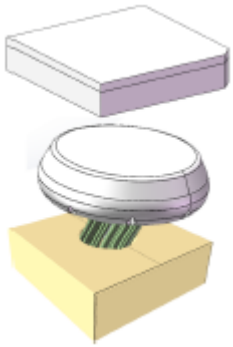
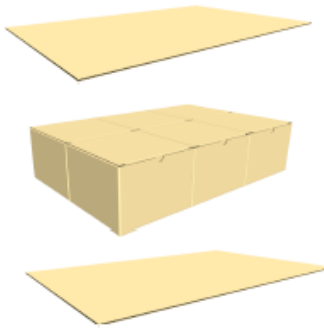
	Band	Channel	TRP (dBm)	Channel	TIS (dBm)
LTE	B1(10M)	18050	20.2	50	-102.7
		18350	19.9	350	-101.7
		18550	19.6	550	-102.1
	B2(10M)	18650	19.0	650	-101.4
		18900	19.6	900	-101.8
		19150	19.8	1150	-101.4
	B3(10M)	19250	21.1	1250	-100.4
		19575	20.1	1575	-100.9
		19900	20.7	1900	-100.1
	B4(10M)	20000	20.5	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

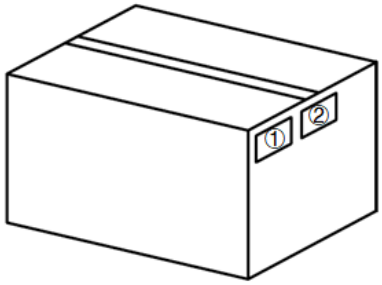
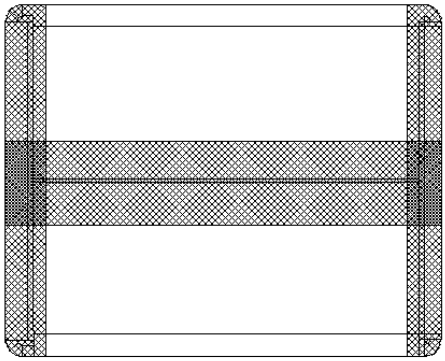
	21625	20.3	3625	-97.7
	21750	20.2	3750	-98.2
B12(5M)	23035	19.0	5035	-98.5
	23095	19.2	5095	-97.3
	23155	19.9	5155	-96.1
B13(10M)	-	-	-	-
	23230	19.3	5230	-96.2
	-	-	-	-
B14(10M)	-	-	-	-
	23330	19.0	5330	-95.0
	-	-	-	-
B17(10M)	23780	18.4	5780	-95.9
	23790	18.6	5790	-95.7
	23800	18.6	5800	-95.3
B18(10M)	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
	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
Band		Channel	TRP	Channel	TIS
5G	N41(100M)	509202	21.77	509202	-90.18
		518598	21.46	518598	-89.72
		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	 Lined with cardboard	1 PCS: Antenna 1 PCS: Lined with Cardboard Size: 185*185*60mm Arrange the antenna and put it in the lined cardboard
2	 EPE Pearl Foam Lined with cardboard	1 PCS: EPE Pearl Foam Size: 186*186*40mm After placing the product, use EPE Pearl Foam on the upper layer
3	 Inner Box	1 PCS: Inner Box Size: 191*191*135mm Place the antenna and lining cardboard in Inner Box
4	 Clapboard Inner Box Clapboard	1 PCS: Carton Size: 600*404*164mm Antenna: 6 PCS/Carton 2 PCS: Clapboard Size: 588*392mm Place 1 Clapboard on the bottom, Then 6 PCS Antenna in the middle Then 1 PCS Clapboard on the top

5		**Labeling---** ① Carton Label ② Quality Label
6		**Sealing Cartons---** “工” type sealing cartons

5 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:
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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 electrical performance data
2.0	2022-11-11	Wilson Bao	New datasheet template