



Antenna Datasheet

Product OC: YEMN017AA

Version: 1.0

Date: 2023-01-05

Status: Released

Product Name: 5G Screw Mount 5 IN 1 Antenna Box

Key Features:

Optimized for 5G and 4G Networks

Φ103.5 mm × 42.5 mm

4 * 4 5G/4G MIMO + GNSS L1 & L5

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 600-6000MHz whilst backward-compatible to support 3G/2G networks as well as 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 5 various cable lengths from 300-5000mm, terminated with SMA connectors. This screw mount omnidirectional antenna is easy to install with maximum durability with its IP67 & IP69K 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.

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1 Specification

1.1. Electrical

Electrical Specifications		
Frequency Range	LMHs	600–960 MHz, 1400–6000 MHz
	MHs	1400–6000 MHz
	GNSS	1164–1189 MHz, 1559–1606 MHz
Radiation Pattern	LMHs & MHs	Omni-directional
	GNSS	Directional
Polarization	LMHs & MHs	Linear
	GNSS	RHCP
Impedance		50 Ω
Isolation		≤ -6.1 dB
Axial Ratio (GNSS)		< 3 dB

1.1.1. LMHs

SPEC	Band	Band	B71	B12 /B13 /B28	B5 /B8 /B26	N74 /N75 /N76	B1 /B2 /B3	B40	Wi-Fi 2G	B38 /B41	B42 /B48 /N77	N79	Wi-Fi 5G
	Band	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		12.1	4.3	9.4	4.7	2.2	1.5	1.7	2.3	3.3	3.5	3.1
	MP		14.3	3.7	7.3	4.5	1.9	1.6	1.9	2.0	3.1	3.6	3.0
Max Return Loss (dB)	FS		-1.4	-4.2	-1.9	-3.7	-8.4	-13.5	-11.3	-8.0	-5.4	-5.1	-5.9
	MP		-1.2	-4.8	-2.4	-3.9	-10.2	-13.2	-10.0	-9.4	-5.9	-4.9	-6.1
AVG Eff. (%)	FS		23.5	51.5	36.4	53.8	74.7	67.6	69.0	59.7	67.6	63.3	57.3
	MP		12.9	43.6	38.3	65.0	75.8	69.5	65.4	63.4	68.0	62.9	56.9

AVG Gain (dB)	FS	-6.5	-2.9	-4.5	-2.7	-1.3	-1.7	-1.6	-2.2	-1.7	-2.0	-2.4
	MP	-9.7	-3.7	-4.2	-1.9	-1.2	-1.6	-1.9	-2.0	-1.7	-2.0	-2.5
Max Peak Gain (dBi)	FS	0.6	2.6	1.0	2.0	4.7	3.0	2.3	2.3	5.3	5.1	5.2
	MP	-0.8	3.7	3.2	7.6	6.8	6.0	5.9	6.3	8.6	8.3	7.4
VSWR	FS	≤ 12.1										
	MP	≤ 14.3										
Return Loss	FS	≤ -1.4 dB										
	MP	≤ -1.2 dB										
Peak Gain	FS	≤ 5.3 dBi										
	MP	≤ 8.6 dBi										

- LMHs: LMH1, LMH2 Antennas
- MHs: MH1, MH2 Antennas
- FS: In Free Space
- MP: On 320 × 240 mm Metal Plane

1.1.2. MHs

SPEC	Band	B71	B12 /B13 /B28	B5 /B8 /B26	N74 /N75 /N76	B1 /B2 /B3	B40	Wi-Fi 2G	B38 /B41	B42 /B48 /N77	N79	Wi-Fi 5G
	Band	Freq. (MHz)	600–700	700–810	820–960	1420–1520	1700–2170	2300–2400	2400–2500	2500–2690	3300–4200	4400–5000
Max VSWR	FS	-	-	-	4.1	2.2	3.6	2.6	3.5	1.7	1.9	2.1
	MP	-	-	-	3.4	2.1	3.6	2.6	3.5	2.3	2.2	2.2
Max Return Loss (dB)	FS	-	-	-	-4.3	-8.6	-5.0	-7.2	-5.0	-11.5	-10.2	-8.8
	MP	-	-	-	-5.3	-8.8	-5.0	-7.2	-5.2	-8.2	-8.7	-8.6
AVG Eff. (%)	FS	-	-	-	57.5	69.8	42.5	64.9	52.5	75.3	73.8	71.3
	MP	-	-	-	62.5	69.4	46.7	65.4	54.0	70.2	70.6	67.3
AVG Gain (dB)	FS	-	-	-	-2.4	-1.6	-3.7	-1.9	-2.8	-1.2	-1.3	-1.6
	MP	-	-	-	-2.1	-1.6	-3.3	-1.9	-2.7	-1.5	-1.5	-1.7
Max Peak Gain (dBi)	FS	-	-	-	2.7	4.5	3.8	4.5	4.0	6.9	7.0	7.3
	MP	-	-	-	6.9	7.4	5.9	7.1	7.0	9.2	9.3	8.2
VSWR	FS	≤ 4.1										
	MP	≤ 3.6										

Return Loss	FS	≤ -4.3 dB
	MP	≤ -5 dB
Peak Gain	FS	≤ 7.3 dBi
	MP	≤ 9.3 dBi

- LMHs: LMH1, LMH2 Antennas
- MHs: MH1, MH2 Antennas
- FS: In Free Space
- MP: On 320 × 240 mm Metal Plane

1.1.3. GNSS

Specification	Band	Band	GNSS L5	GNSS L2	GNSS L1
		Freq. (MHz)	1164 - 1189	1217 - 1238	1559 - 1606
Max VSWR	FS		5.7	-	4.0
	MP		4.3	-	5.0
Max Return Loss (dB)	FS		-3.1	-	-4.5
	MP		-4.2	-	-3.5
AVG Eff. (%)	FS		40.5	-	31.8
	MP		40.2	-	28.4
AVG Gain (dB)	FS		-4.1	-	-5.0
	MP		-4.0	-	-5.6
Max Peak Gain (dBi)	FS		2.1	-	-0.5
	MP		4.6	-	3.3
VSWR	FS		≤ 5.7		
	MP		≤ 5.0		
Return Loss	FS		≤ -3.1 dB		
	MP		≤ -1.2 dB		
Peak Gain	FS		≤ 2.1 dBi		
	MP		≤ 4.6 dBi		

- LMHs: LMH1, LMH2 Antennas
- MHs: MH1, MH2 Antennas
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GNSS LNA Electrical	
LNA Gain	28 ±2 dB
Noise Figure	≤ 2.5 dB
Output VSWR	< 2.0
Input VSWR	< 2.0
Working Voltage	DC 2–5 V
Working Current	≤ 20 mA
Impedance	50 Ω

- LMHs: LMH1, LMH2 Antennas
- MHs: MH1, MH2 Antennas
- FS: In Free Space
- MP: On 320 × 240 mm Metal Plane

1.2. Supported Bands

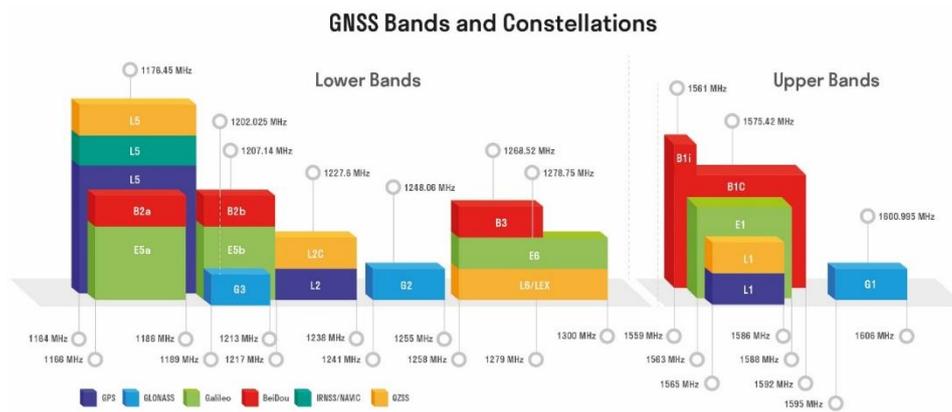
5G NR/ LTE/ LTE-Advanced/ WCDMA/ HSPA/ HSPA+/ GPRS/ GSM/ NB-IoT					
Band	Frequency (MHz)	Uplink (MHz)	Downlink (MHz)	LMHs	MHs
1	2100	1920–1980	2110–2170	√	√
2	1900	1850–1910	1930–1990	√	√
3	1800	1710–1785	1805–1880	√	√
4	1700	1710–1755	2110–2155	√	√
5	850	824–849	869–894	√	-
7	2600	2500–2570	2620–2690	√	√
8	900	880–915	925–960	√	-
9	1800	1749.9–1784.9	1844.9–1879.9	√	√
11	1500	1427.9–1447.9	1475.9–1495.9	√	√
12	700	699–716	729–746	√	-
13	700	777–787	746–756	√	-

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

5G NR/ LTE/ LTE-Advanced/ WCDMA/ HSPA/ HSPA+/ GPRS/ GSM/ NB-IoT					
Band	Frequency (MHz)	Uplink (MHz)	Downlink (MHz)	LMHs	MHs
78	3500	3300 - 3800		√	√
79	4500	4400 - 5000		√	√
Note: 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)		
FS	√	-	√		
MP	√	-	√		
GLONASS	G1-L10C-L10F Centre 1601 (1595–1606)	G2-L20C-L20F Centre 1248.06 (1241–1255)	G3-L30C Centre 1202.025 (1189–1213)		
FS	√	-	-		
MP	√	-	-		
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)	
FS	√	√	-	-	
MP	√	√	-	-	
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)
FS	√	√	√	-	-
MP	√	√	√	-	-
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)	
FS	√	-	√	-	

MP	√	-	√	-	
IRNSS	L5 Centre 1176.45 (1164–1189)				
FS	√				
MP	√				

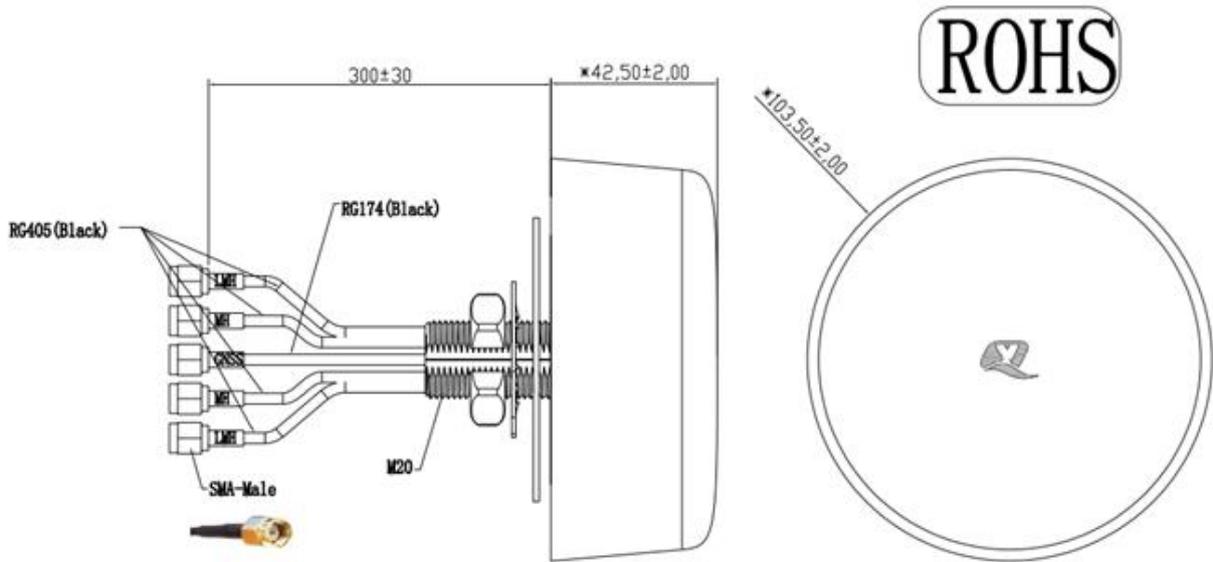


1.3. Mechanical, Environment & Storage

Mechanical		
Antenna Size	Φ 103.5 mm × 42.5 mm	
Casing Material & Color	ASA & Black	
Cable Type & Length	LMHs & MHs	RG405 Black & 300 mm
	GNSS	RG174 Black & 300 mm
Connector Type	SMA Male	
Weight	220g Typical	
Mounting Type	Screw	
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 Antennas
- MHs: MH1, MH2 Antennas
- FS: In Free Space
- MP: On 320 × 240 mm Metal Plane

2 Drawing



Spigot Mount
 $\Phi 20\text{mm}/\Phi 18\text{mm}$
 threaded spigot
 (included)



Vertical Pole Mount
 Pole/Wall Mounting
 bracket (included)



Horizontal Pole Mount
 Pole/Wall Mounting
 bracket (included)



Wall Mount
 Pole/Wall Mounting
 bracket (included)



Magnetic Mount
 Magnetic Base
 /Adhesive Surface
 Mounting (included)
 For temporary and low
 mobility installations.

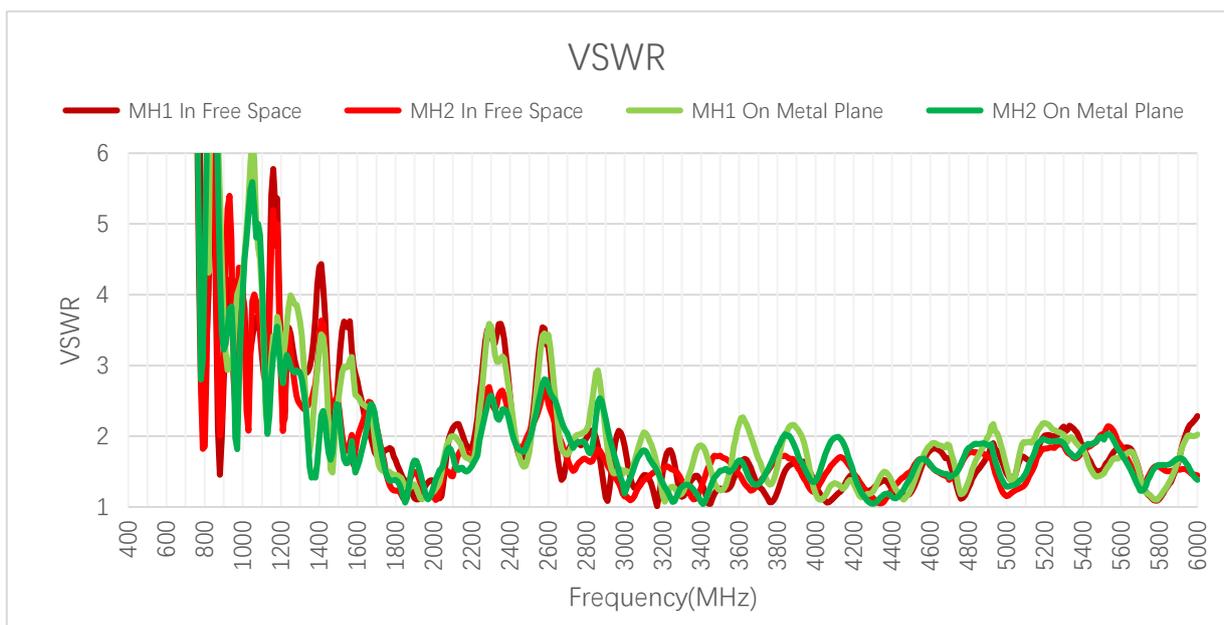
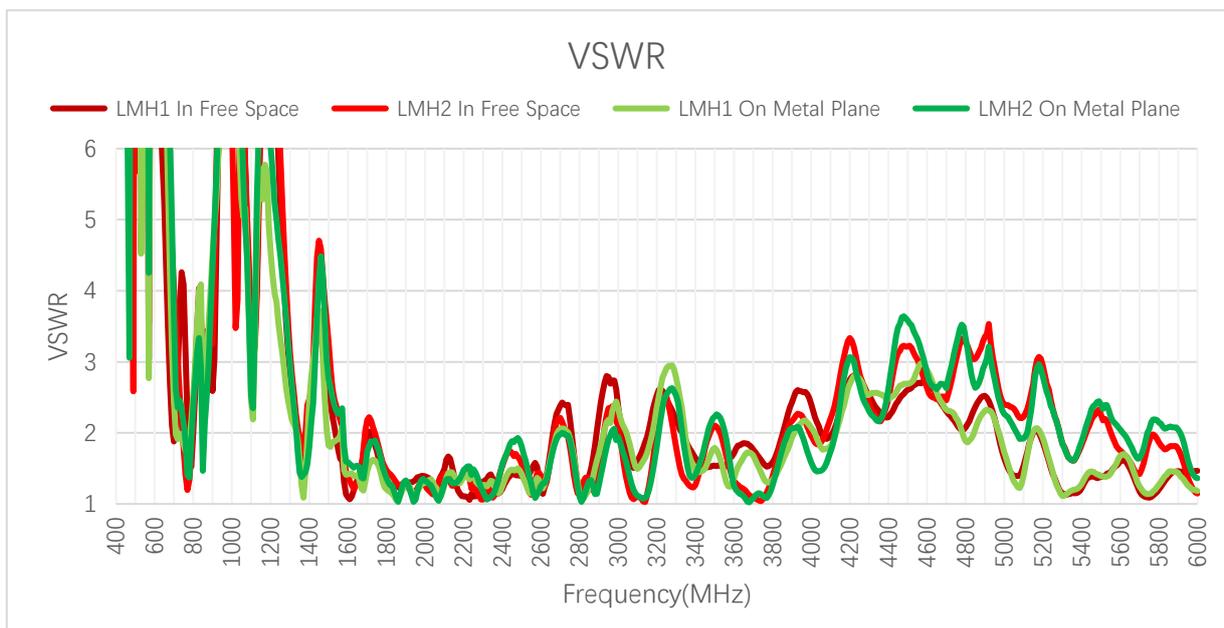


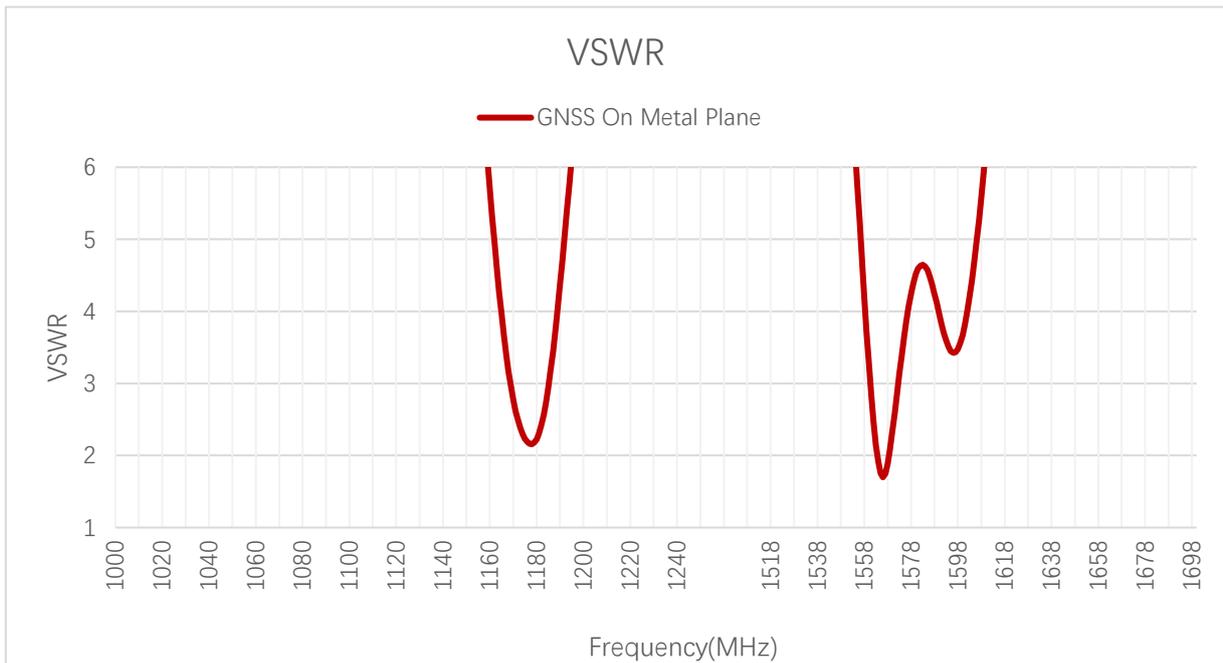
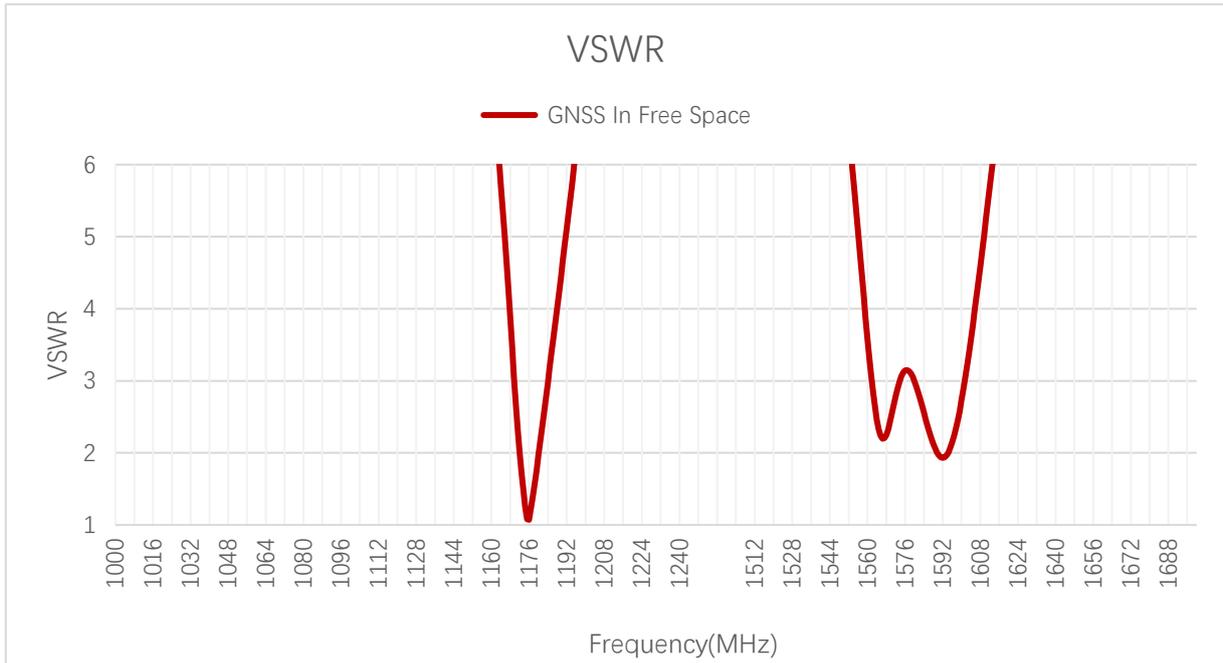
Surface Mount
 Magnetic Base
 /Adhesive Surface
 Mounting (included)
 For temporary and low
 mobility installations.

3 Detailed Performance

3.1. S-Parameter Test

3.1.1. VSWR





VSWR - LMHs

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
LMH1	FS	10.5	6.6	2.1	3.5	2.6	9.4	3.6	2.0	1.8	1.2
	MP	11.2	8.8	2.0	4.0	4.5	7.3	3.6	1.6	1.6	1.2
LMH2	FS	12.1	8.8	3.6	4.0	3.3	8.5	4.5	2.2	2.0	1.3
	MP	14.3	11.9	2.6	3.3	4.3	7.2	3.7	1.8	1.9	1.2
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
LMH1	FS	1.3	1.5	1.4	1.4	1.2	1.7	2.3	1.6	1.4	1.5
	MP	1.1	1.4	1.3	1.5	1.2	1.4	2.3	1.7	1.4	1.2
LMH2	FS	1.2	1.3	1.1	1.7	1.4	1.3	2.5	2.4	2.3	1.1
	MP	1.1	1.3	1.1	1.9	1.3	1.3	2.6	2.3	2.4	1.4

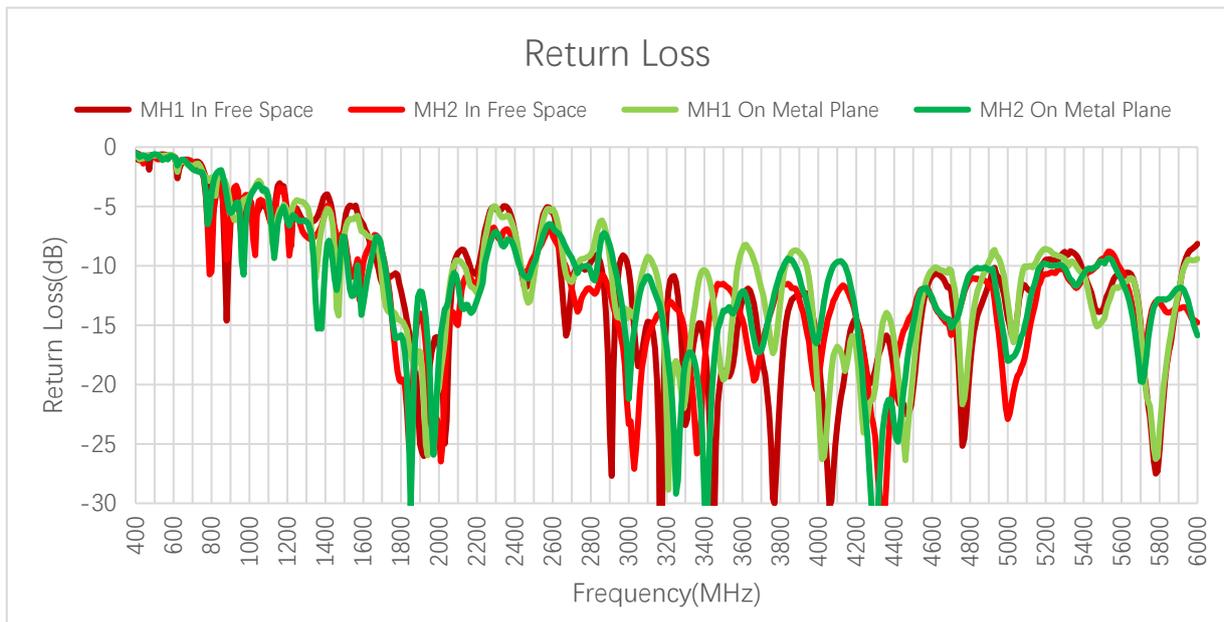
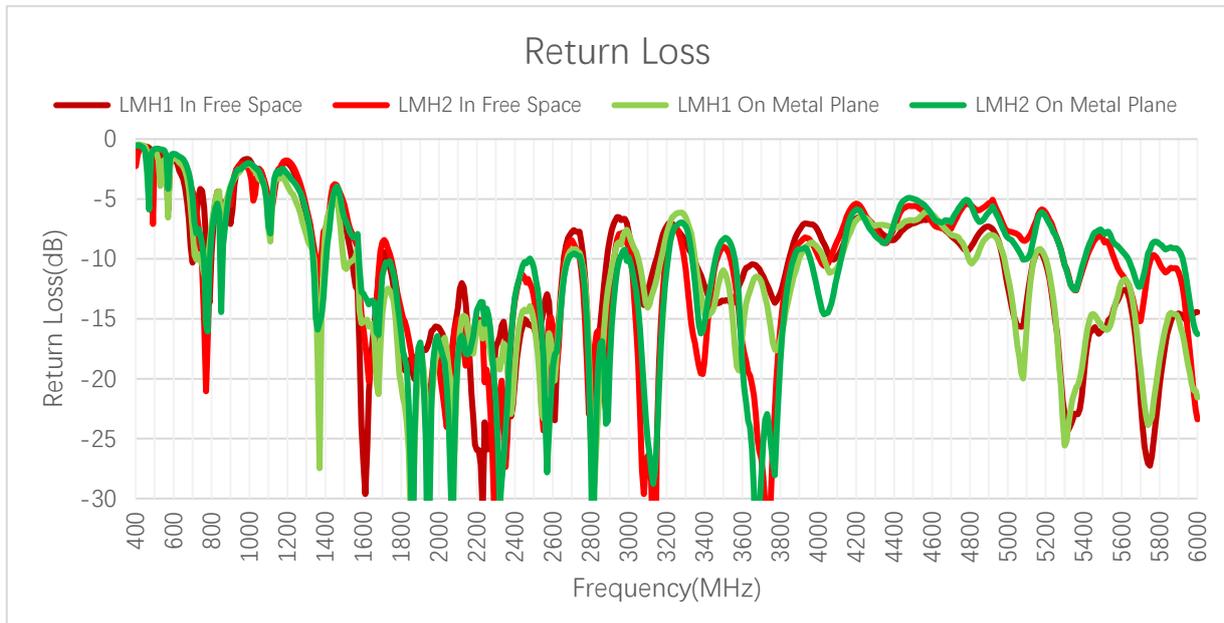
VSWR - MHs

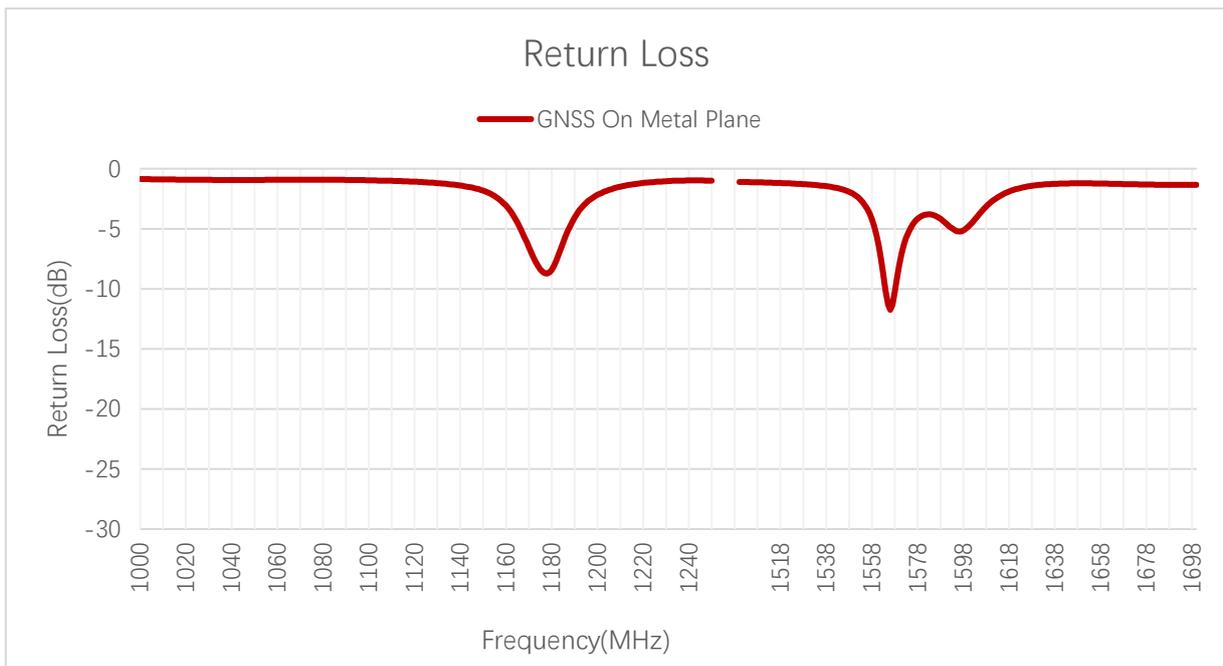
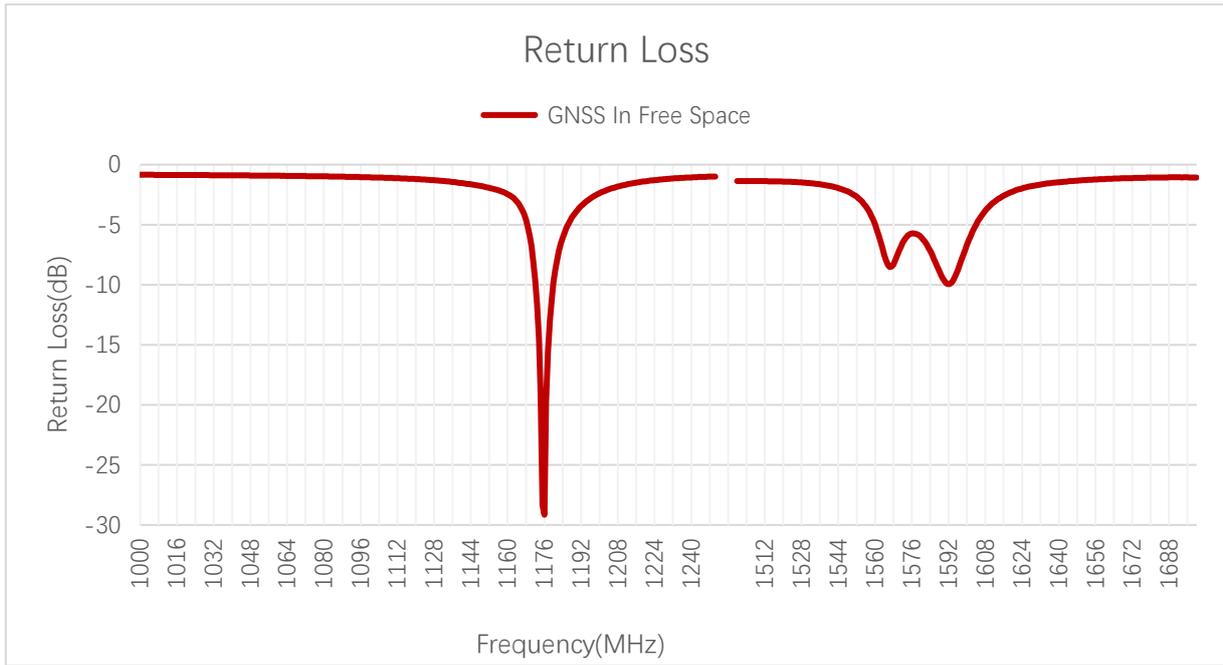
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	-	-	-	-	-	-	3.2	1.7	1.8	1.2
	MP	-	-	-	-	-	-	2.8	1.6	1.5	1.3
MH2	FS	-	-	-	-	-	-	2.9	2.0	1.6	1.4
	MP	-	-	-	-	-	-	3.2	1.7	1.8	1.2
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
MH1	FS	1.3	2.1	3.6	1.7	3.3	1.6	1.7	1.5	1.5	2.3
	MP	1.1	1.9	3.1	1.7	3.4	2.2	1.9	1.6	1.5	2.0
MH2	FS	1.2	1.8	2.6	1.8	2.5	1.5	1.4	1.2	2.0	1.4
	MP	1.3	1.6	2.3	1.8	2.7	1.7	1.4	1.3	2.0	1.4

VSWR - GNSS

Frequency (MHz)		1176	1227	1561	1575	1602
GNSS	FS	1.1	-	3.1	3.1	3.2
	MP	2.2	-	2.8	3.6	4.0

3.1.2. Return Loss





Return Loss (dB) - LMHs

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
LMH1	FS	-1.7	-2.7	-8.9	-5.1	-7.1	-1.9	-4.9	-9.4	-10.6	-20.0
	MP	-1.6	-2.0	-9.7	-4.4	-3.9	-2.4	-4.9	-13.3	-12.6	-21.7
LMH2	FS	-1.4	-2.0	-5.0	-4.4	-5.5	-2.1	-4.0	-8.4	-9.6	-18.2
	MP	-1.2	-1.5	-7.0	-5.4	-4.1	-2.4	-4.9	-10.8	-10.2	-19.9
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
LMH1	FS	-16.8	-13.7	-16.4	-15.0	-21.8	-11.6	-8.1	-12.3	-15.9	-14.4
	MP	-24.2	-14.8	-17.3	-14.2	-19.3	-16.4	-8.0	-11.4	-15.7	-21.6
LMH2	FS	-21.6	-18.9	-27.4	-11.6	-15.6	-17.1	-7.5	-7.7	-8.3	-23.4
	MP	-30.8	-17.9	-24.4	-10.3	-19.0	-18.9	-6.9	-8.2	-7.7	-16.3

Return Loss(dB) - MHs

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	-	-	-	-	-	-	-5.7	-11.6	-11.0	-19.7
	MP	-	-	-	-	-	-	-6.6	-12.7	-13.9	-18.0
MH2	FS	-	-	-	-	-	-	-6.1	-9.5	-12.4	-15.1
	MP	-	-	-	-	-	-	-9.7	-9.6	-12.9	-14.2
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
MH1	FS	-18.5	-9.0	-5.0	-11.7	-5.5	-12.9	-12.1	-14.4	-13.7	-8.1
	MP	-24.0	-10.2	-5.8	-11.8	-5.2	-8.6	-10.4	-13.0	-14.6	-9.4
MH2	FS	-20.8	-10.9	-6.9	-10.5	-7.5	-14.5	-15.8	-22.9	-9.4	-14.8
	MP	-18.6	-13.3	-8.2	-10.9	-6.8	-12.1	-15.2	-18.0	-9.7	-15.9

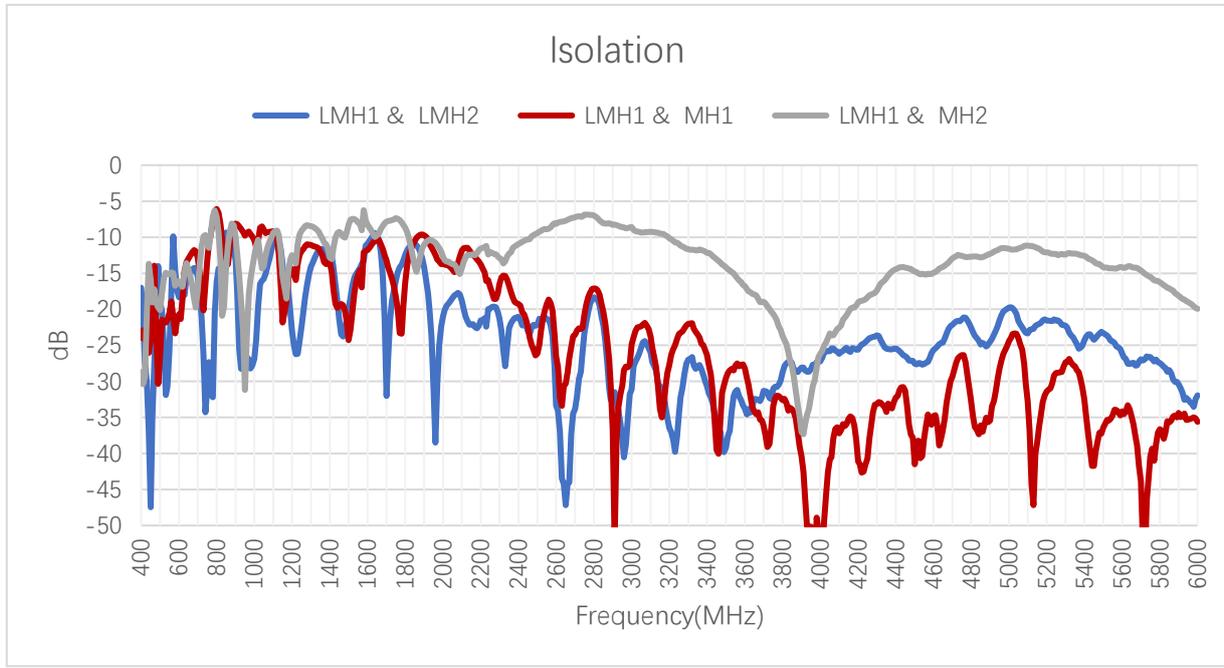
Return Loss(dB) - GNSS

Frequency (MHz)		1176	1227	1561	1575	1602
GNSS	FS	-29.2	-	-5.9	-5.8	-5.6
	MP	-8.6	-	-6.4	-4.9	-4.4

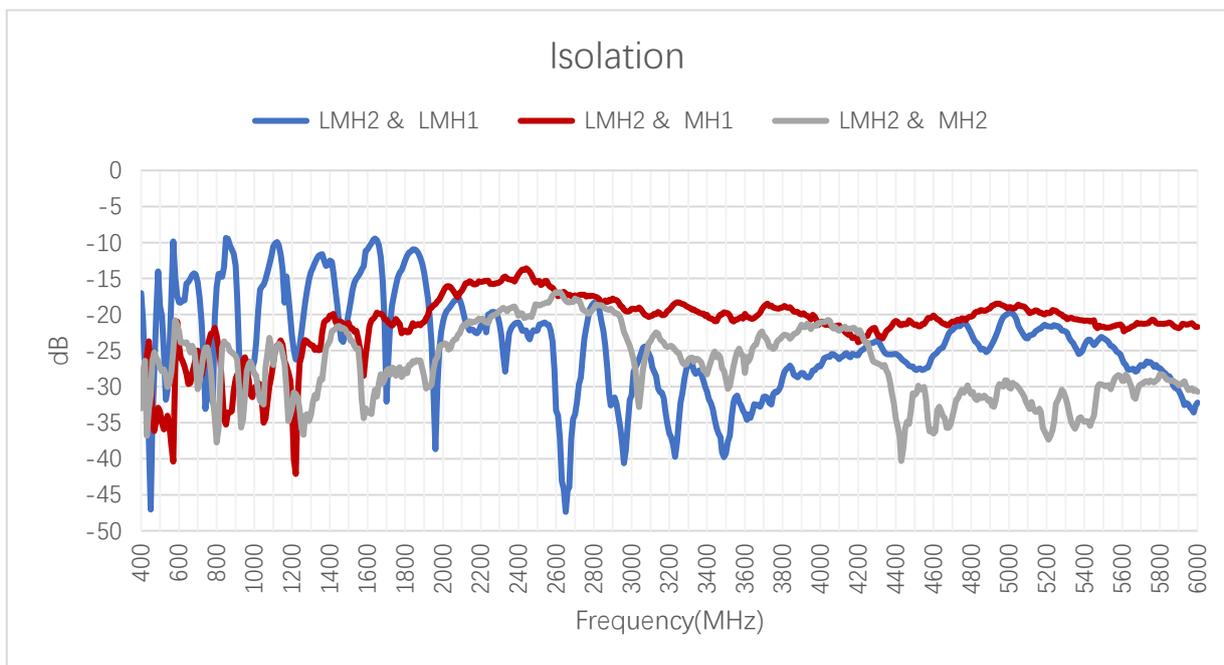
3.1.3. Isolation

3.1.3.1. Test Status: In Free Space

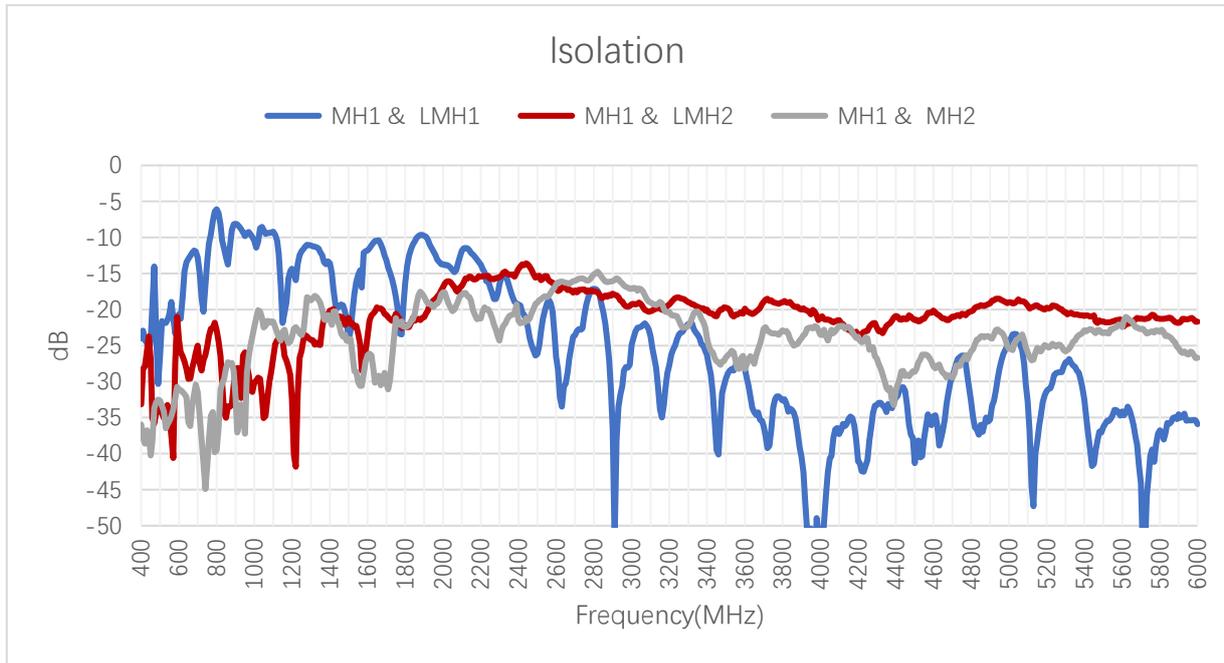
3.1.3.1.1. LMH1



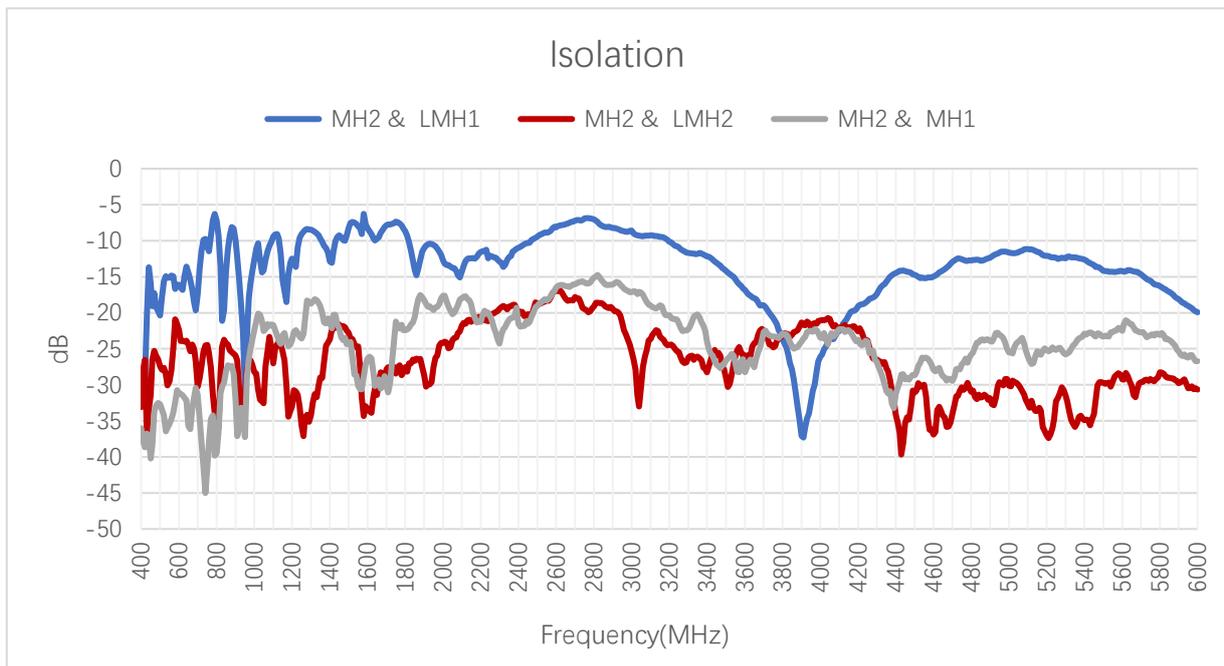
3.1.3.1.2. LMH2



3.1.3.1.3. MH1

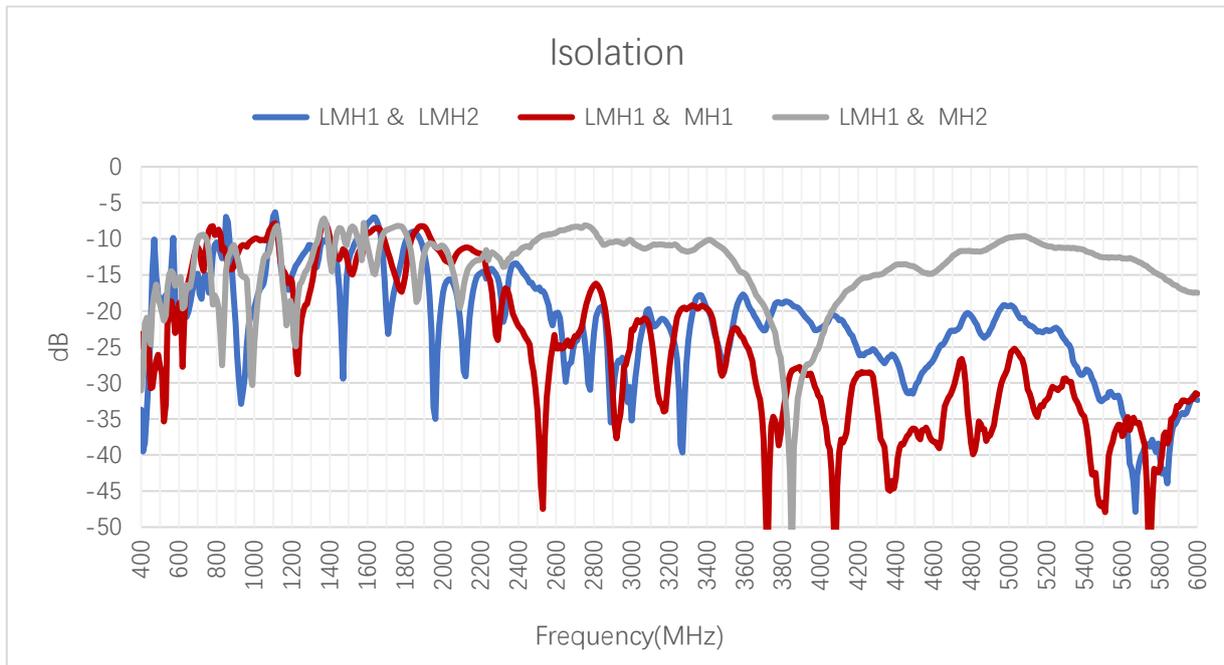


3.1.3.1.4. MH2

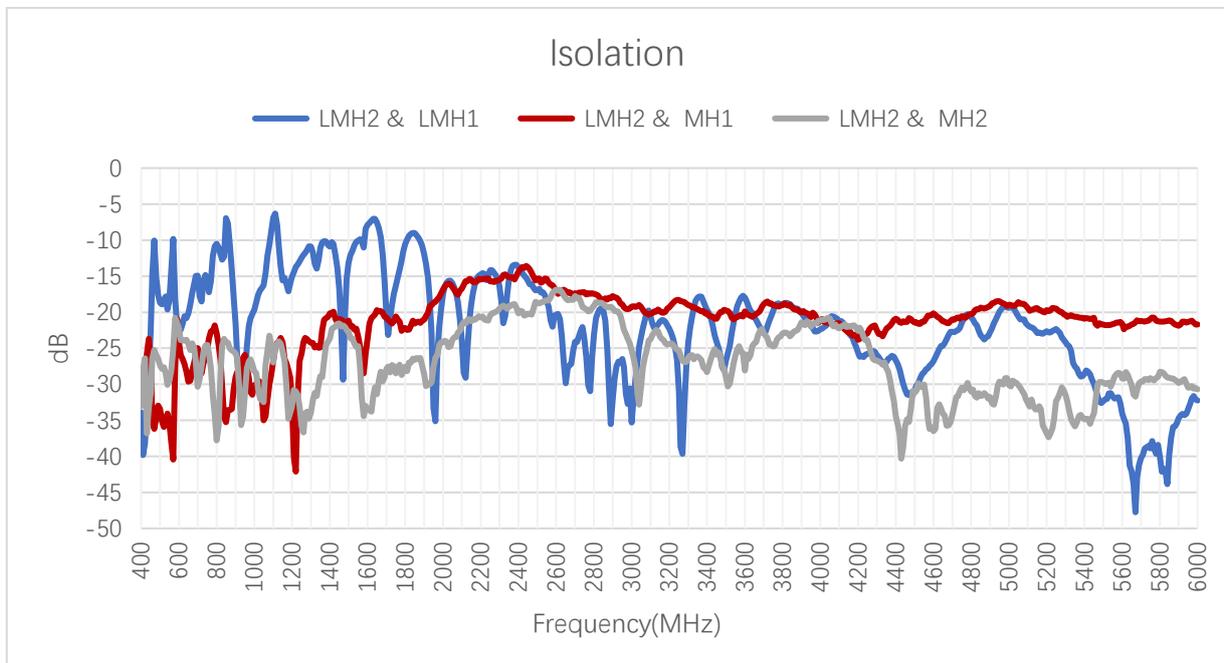


3.1.3.2. Test Status: On 320 × 240 mm Metal Plane

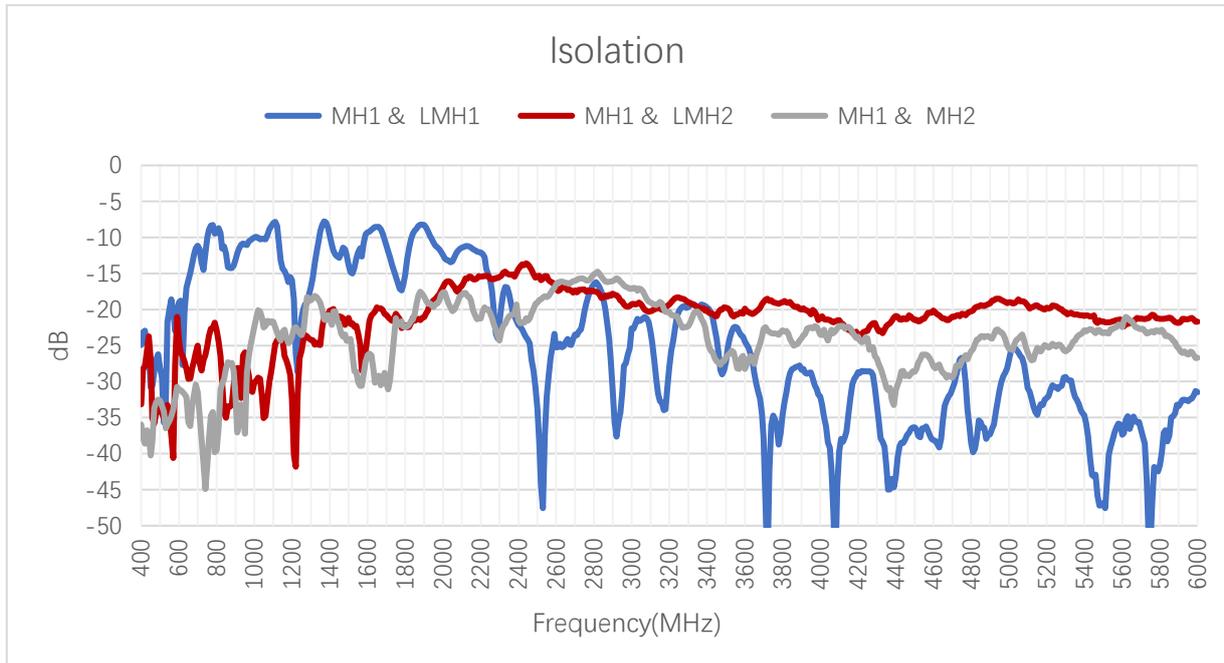
3.1.3.2.1. LMH1



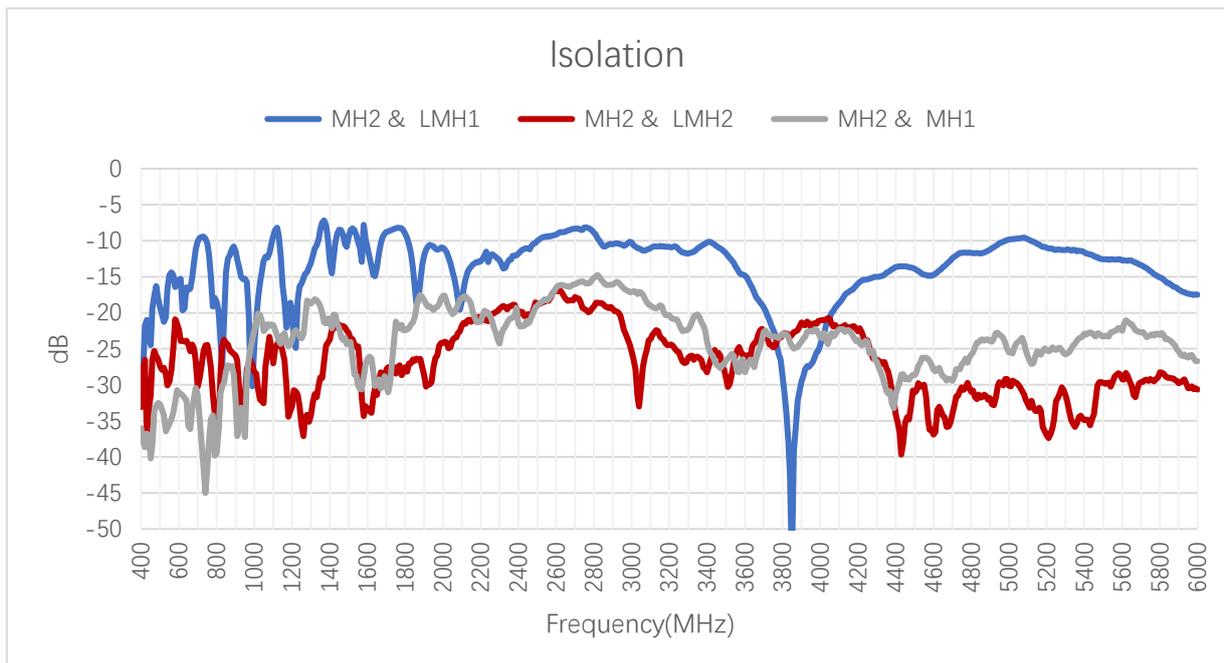
3.1.3.2.2. LMH2



3.1.3.2.3. MH1



3.1.3.2.4. MH2



- FS: In Free Space
- MP: On 320 × 240 mm Metal Plane

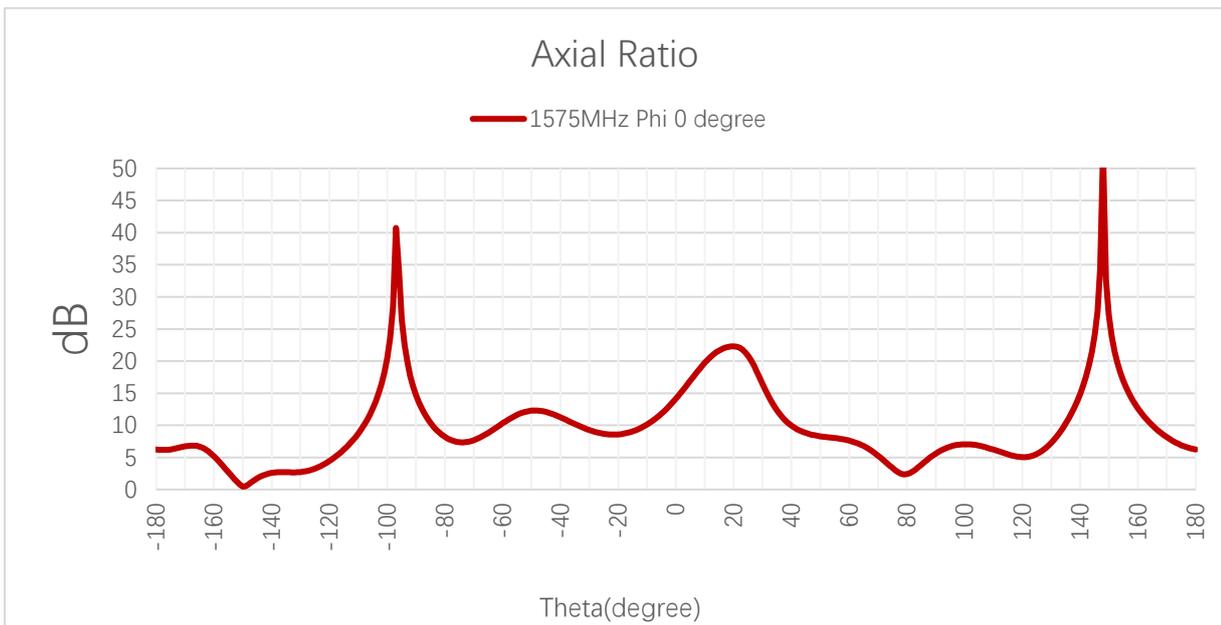
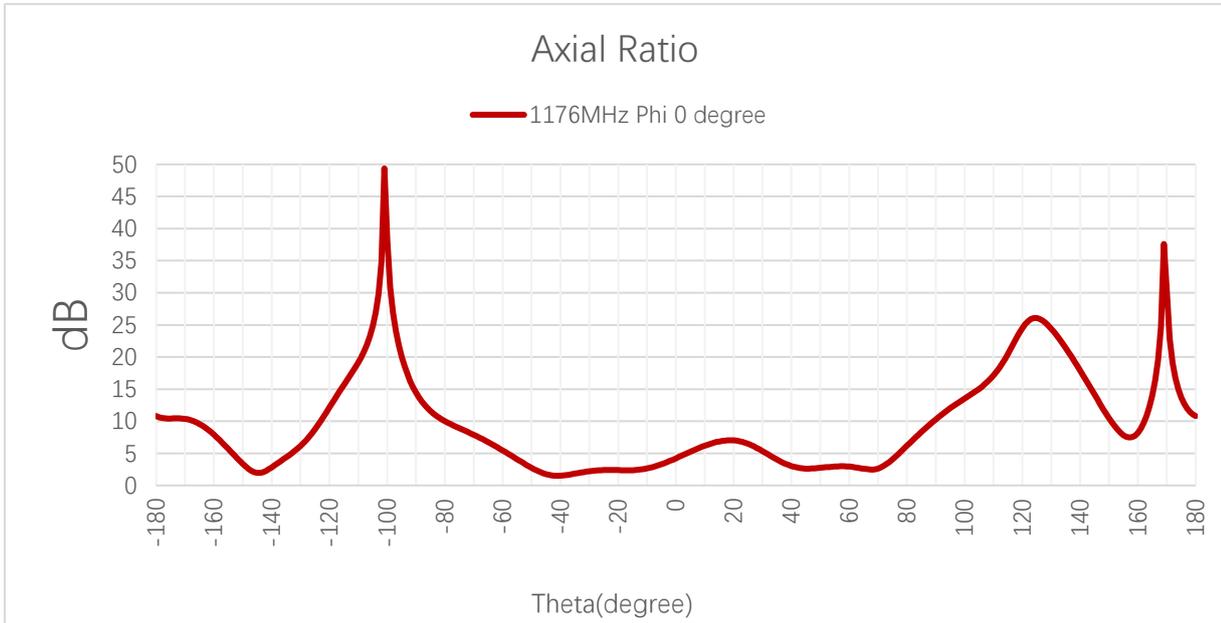
Max Isolation (dB)

	Band	B71	B12/ B13/ B28	B5/ B8/ B26	N74/ N75/ N76	B1/ B2/ B3	B40	Wi-Fi 2G	B38/ B41	B42/ B48/ N77	N79	Wi-Fi 5G
	Freq. (MHz)	600– 700	700– 810	820– 960	1420– 1520	1700– 2170	2300– 2400	2400– 2500	2500– 2690	3300– 4200	4400– 5000	5150– 5850
LMH1	FS	-11.8	-6.1	-8.1	-7.4	-7.4	-11.0	-9.4	-7.3	-11.7	-11.5	-11.5
	MP	-10.1	-8.2	-6.9	-8.3	-8.2	-11.8	-10.0	-8.3	-10.1	-9.8	-10.4
LMH2	FS	-14.3	-14.4	-9.4	-14.2	-10.9	-14.4	-13.6	-15.3	-18.5	-18.5	-19.4
	MP	-14.9	-10.5	-7.0	-10.6	-9.0	-13.4	-13.6	-15.3	-17.7	-18.5	-19.4
MH1	FS	-11.8	-6.1	-8.1	-17.2	-9.6	-14.4	-13.6	-15.3	-18.5	-18.5	-19.4
	MP	-11.2	-8.3	-9.4	-11.4	-8.2	-14.4	-13.6	-15.3	-18.5	-18.5	-19.4
MH2	FS	-13.6	-6.3	-8.1	-7.4	-7.4	-11.0	-9.4	-7.3	-11.7	-11.5	-11.6
	MP	-10.1	-9.4	-10.8	-8.3	-8.2	-11.8	-10.0	-8.4	-10.1	-9.8	-10.4

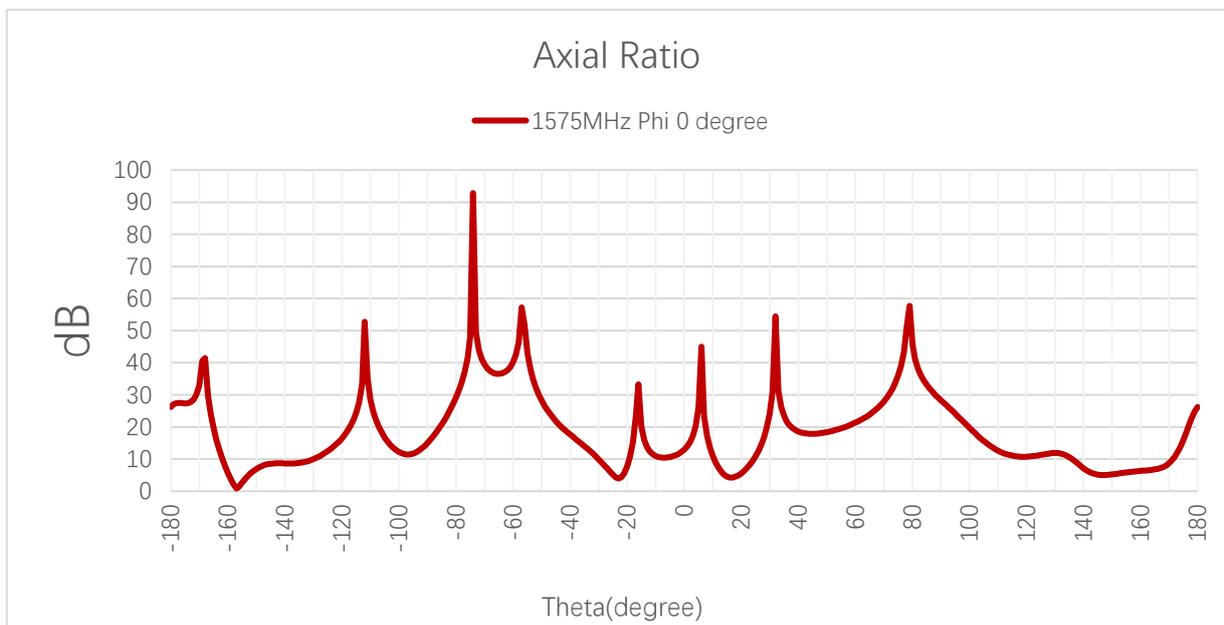
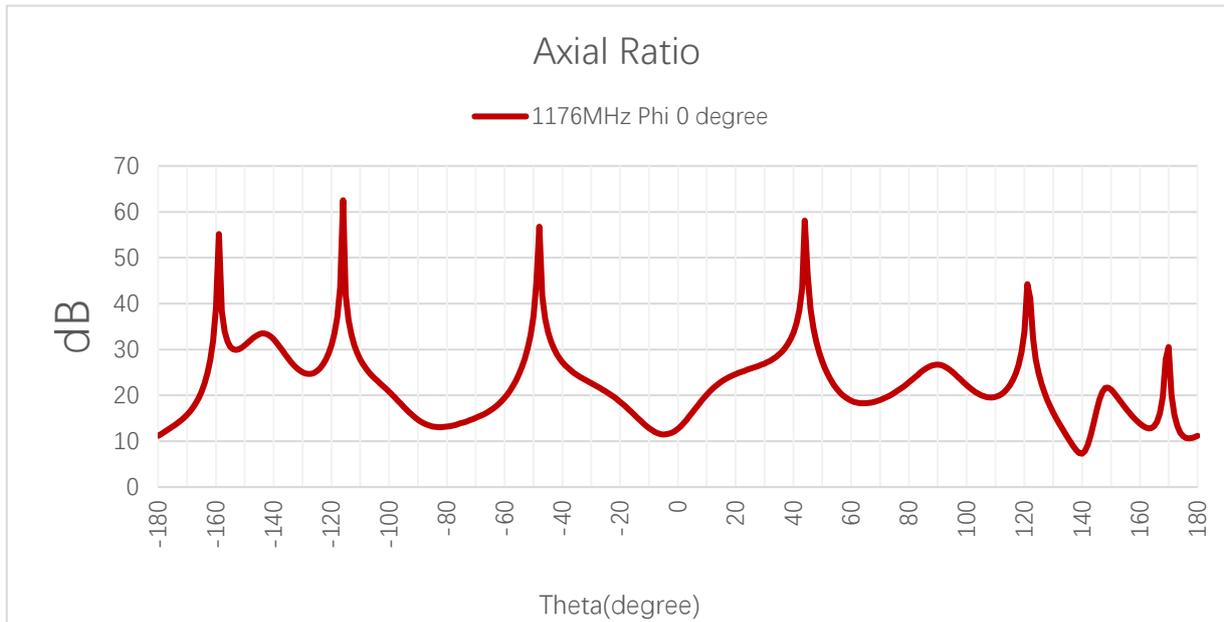
- FS: In Free Space
- MP: On 320 × 240 mm Metal Plane

3.1.4. GNSS Axial Ratio

3.1.4.1. Test Status: In Free Space



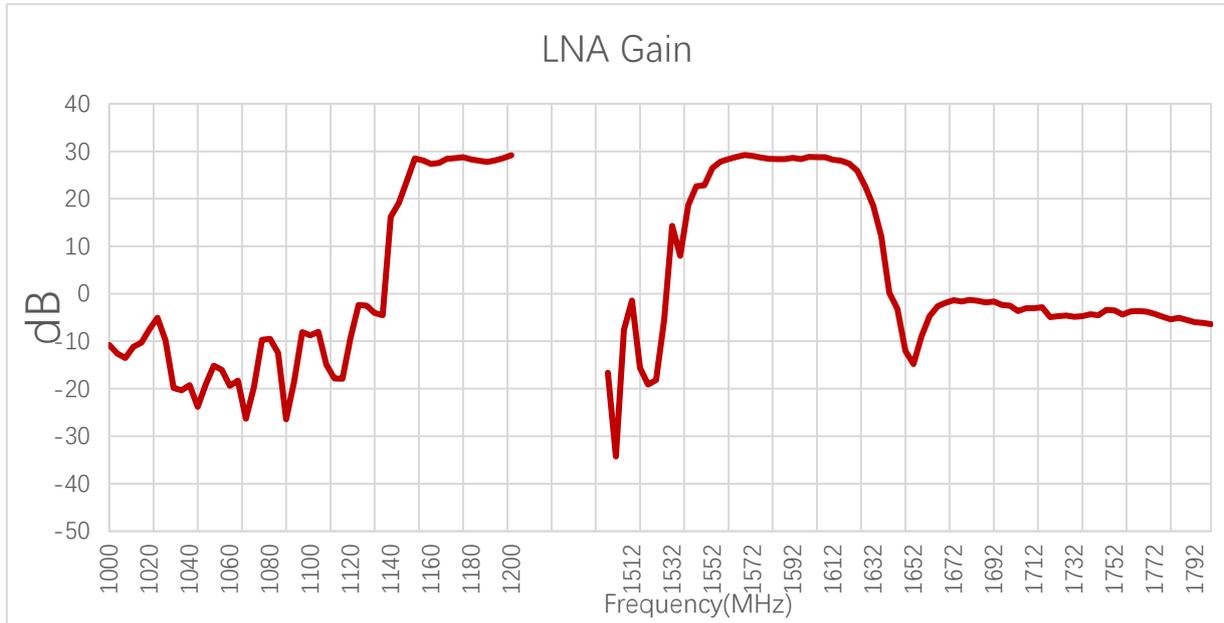
3.1.4.2. Test Status: On 320 × 240 mm Metal Plane



Axial Ratio (dB)

Frequency (MHz)			1176	1227	1575
GNSS	FS	Phi = 0 (deg) Theta = 0 (deg)	4.22	-	14.13
	MP	Phi = 0 (deg) Theta = 0 (deg)	12.72	-	12.88

3.1.5. GNSS LNA Gain

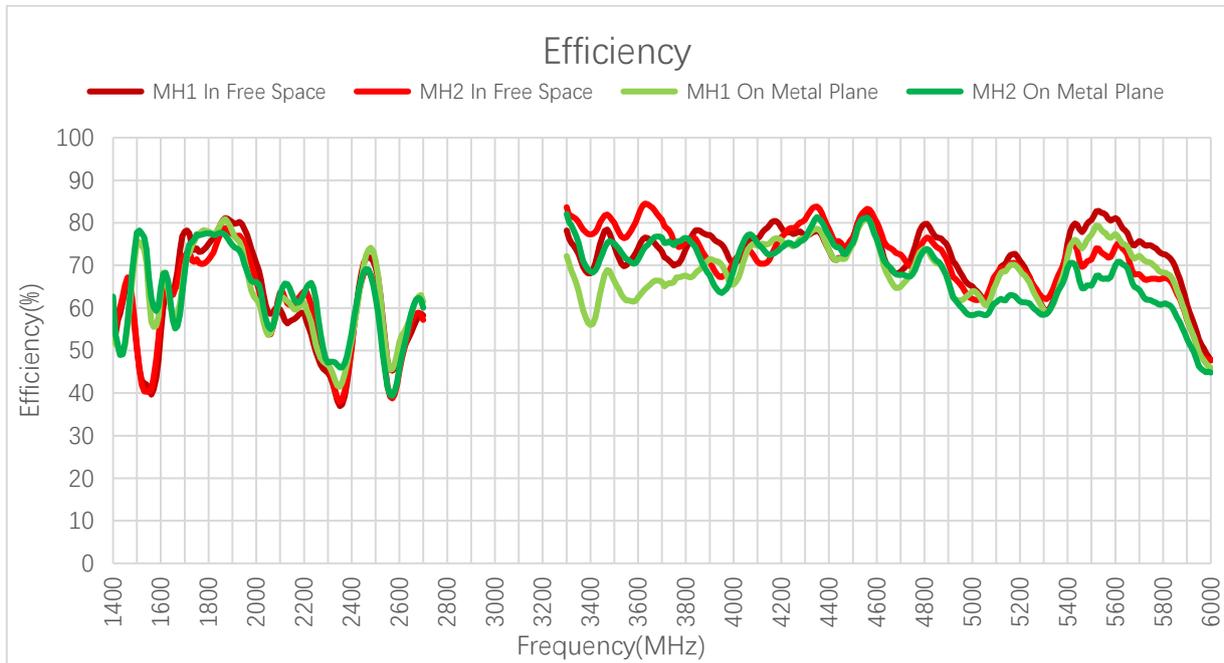
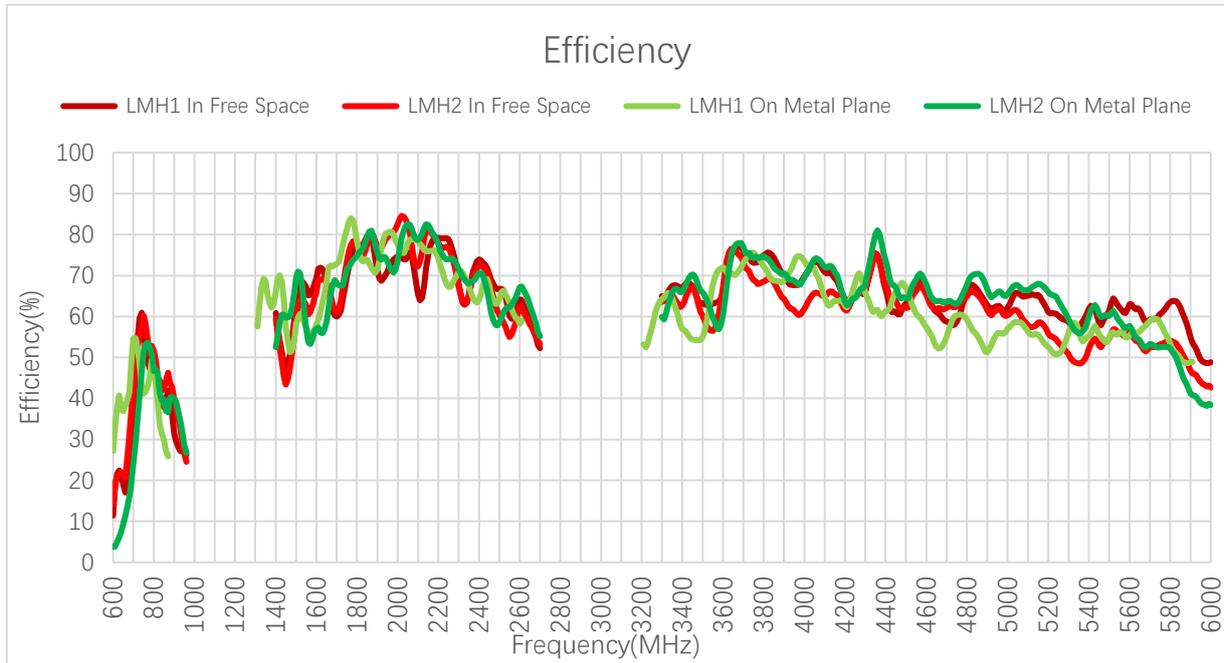


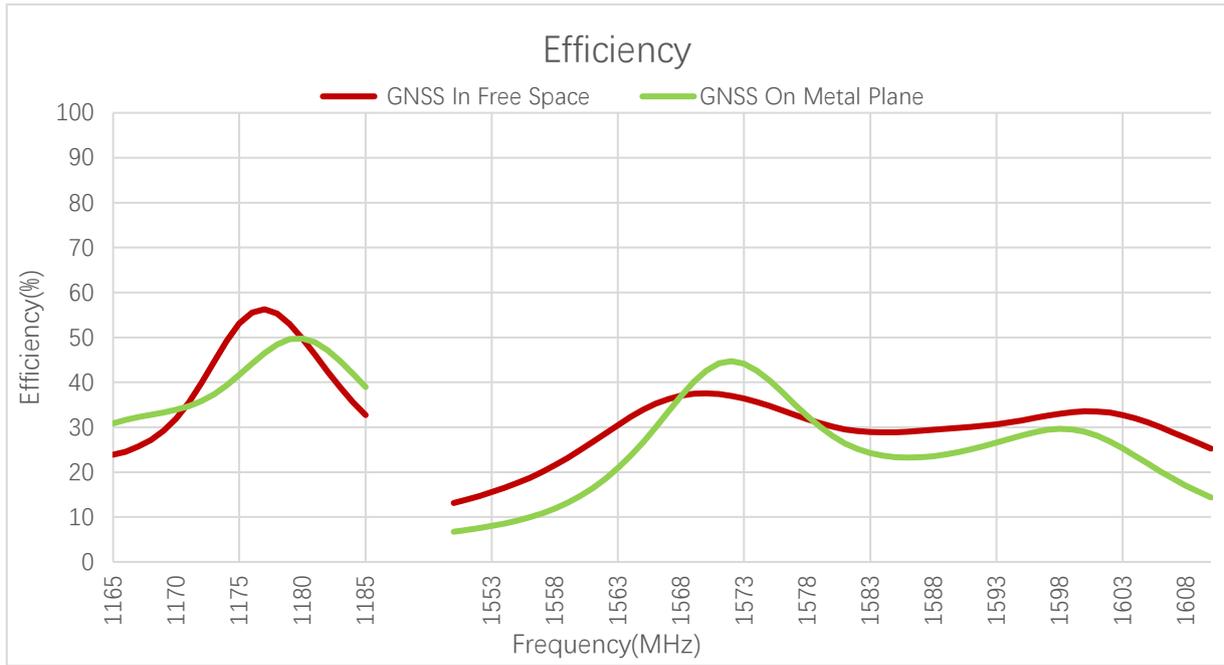
LNA Gain (dB)

Frequency (MHz)	1176	1227	1561	1575	1602
GNSS	28.73	-	28.4	28.7	28.8

3.2. Radiation Performance Test

3.2.1. Efficiency





Efficiency (%) - LMHs

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
LMH1	FS	11.4	22.4	46.8	40.8	31.4	26.2	48.3	60.5	66.7	77.1
	MP	5.2	8.3	37.9	43.3	43.4	25.9	68.6	61.3	68.5	81.3
LMH2	FS	14.2	21.6	46.8	44.3	39.9	24.5	45.3	62.0	70.3	79.7
	MP	3.7	6.1	29.3	41.4	39.9	26.7	60.5	67.6	69.2	79.4
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
LMH1	FS	71.0	71.8	65.3	70.4	64.2	65.7	58.7	62.1	61.4	48.9
	MP	72.9	78.0	67.2	65.9	65.9	56.5	56.7	52.1	55.7	48.9
LMH2	FS	79.3	81.1	65.1	68.9	62.4	67.3	62.1	60.3	54.5	42.7
	MP	73.4	82.5	68.1	63.7	67.2	60.5	63.6	65.4	60.2	38.4

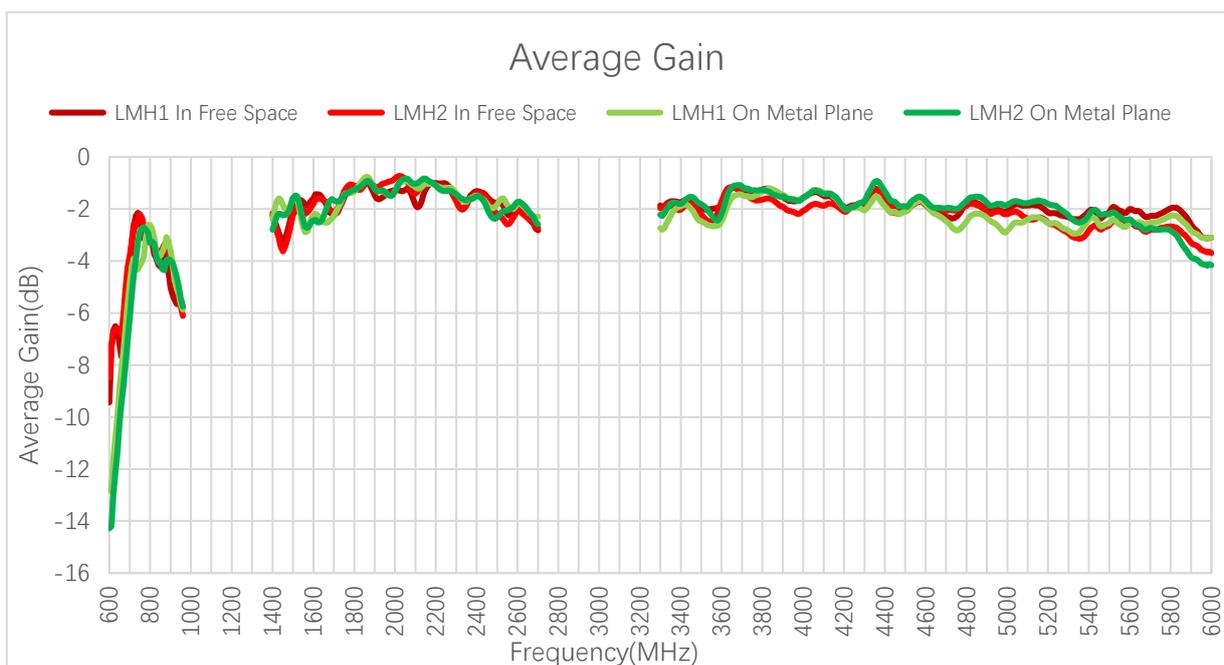
Efficiency (%) - MHs

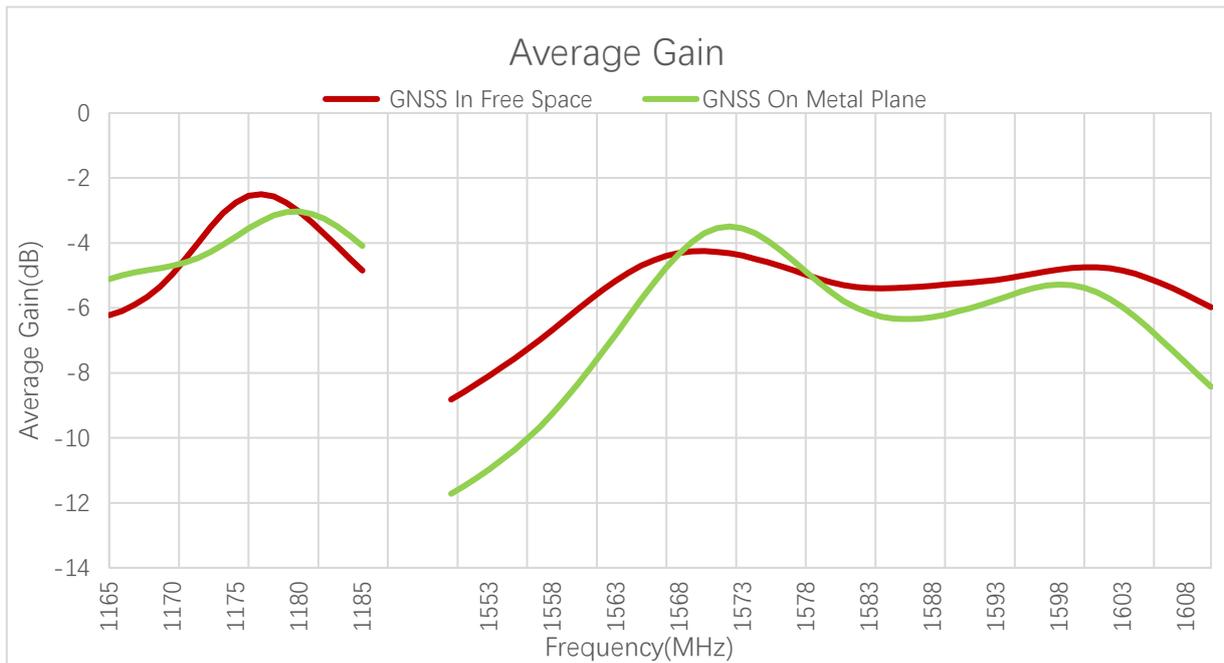
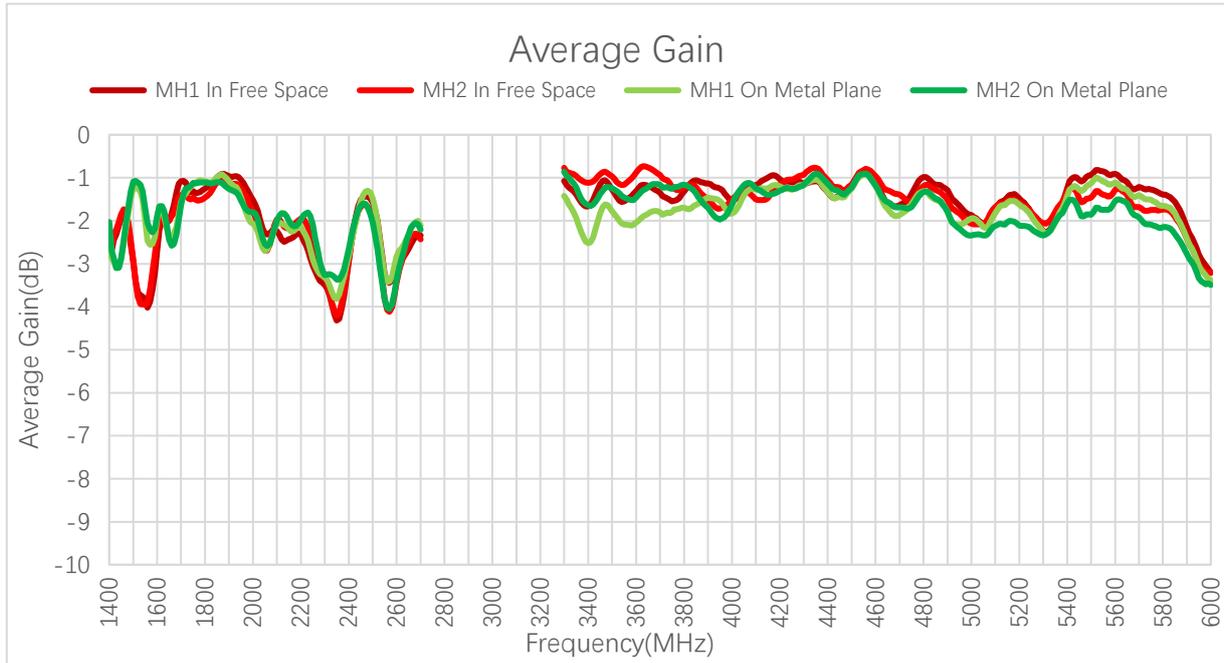
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	-	-	-	-	-	-	61.5	78.2	73.6	81.0
	MP	-	-	-	-	-	-	49.2	72.2	75.6	80.3
MH2	FS	-	-	-	-	-	-	62.8	72.9	70.8	78.2
	MP	-	-	-	-	-	-	49.1	72.9	76.1	76.4
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
MH1	FS	78.6	56.8	37.0	70.6	50.2	74.0	68.6	65.1	80.6	47.7
	MP	71.5	61.2	41.5	70.0	52.0	62.5	65.0	63.9	77.1	45.9
MH2	FS	74.9	60.7	38.0	68.1	45.3	81.7	72.6	62.1	71.4	47.9
	MP	70.4	64.7	46.0	68.5	45.9	71.4	67.8	58.3	65.2	44.8

Efficiency (%) - GNSS

Frequency (MHz)		1176	1227	1561	1575	1602
GNSS	FS	55.5	-	26.7	34.7	33.3
	MP	44.1	-	16.4	40.4	26.8

3.2.2. Average Gain





Average Gain (dB) - LMHs

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
LMH1	FS	-9.4	-6.5	-3.3	-3.9	-5.0	-5.8	-3.2	-2.2	-1.8	-1.1
	MP	-12.8	-10.8	-4.2	-3.6	-3.6	-5.9	-1.6	-2.1	-1.6	-0.9
LMH2	FS	-8.5	-6.7	-3.3	-3.5	-4.0	-6.1	-3.4	-2.1	-1.5	-1.0
	MP	-14.3	-12.2	-5.3	-3.8	-4.0	-5.7	-2.2	-1.7	-1.6	-1.0
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
LMH1	FS	-1.5	-1.4	-1.9	-1.5	-1.9	-1.8	-2.3	-2.1	-2.1	-3.1
	MP	-1.4	-1.1	-1.7	-1.8	-1.8	-2.5	-2.5	-2.8	-2.5	-3.1
LMH2	FS	-1.0	-0.9	-1.9	-1.6	-2.1	-1.7	-2.1	-2.2	-2.6	-3.7
	MP	-1.3	-0.8	-1.7	-2.0	-1.7	-2.2	-2.0	-1.9	-2.2	-4.2

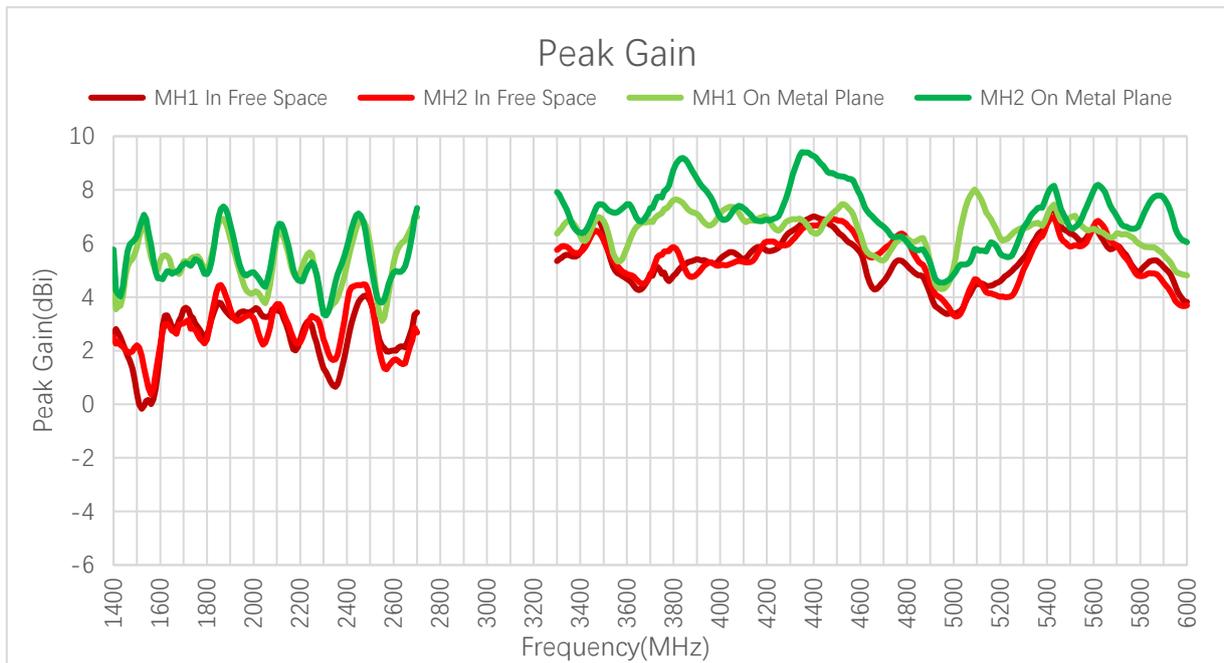
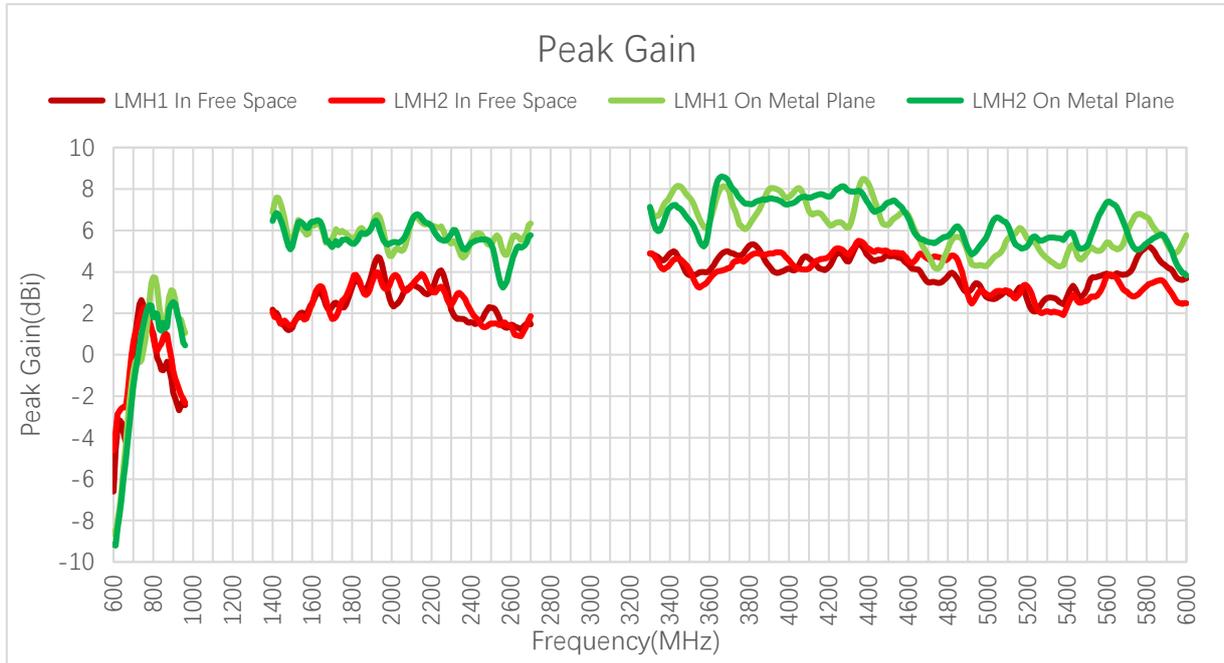
Average Gain (dB) - MHs

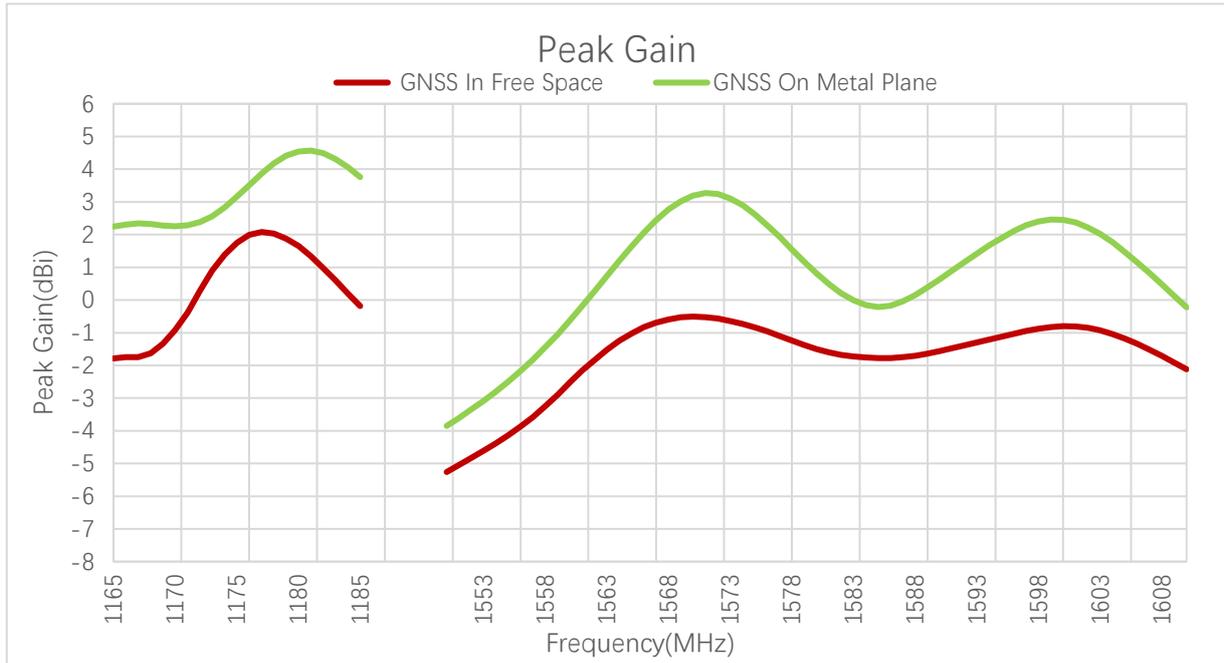
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	-	-	-	-	-	-	-2.1	-1.1	-1.3	-0.9
	MP	-	-	-	-	-	-	-3.1	-1.4	-1.2	-1.0
MH2	FS	-	-	-	-	-	-	-2.0	-1.4	-1.5	-1.1
	MP	-	-	-	-	-	-	-3.1	-1.4	-1.2	-1.2
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
MH1	FS	-1.1	-2.5	-4.3	-1.5	-3.0	-1.3	-1.6	-1.9	-0.9	-3.2
	MP	-1.5	-2.1	-3.8	-1.6	-2.8	-2.0	-1.9	-1.9	-1.1	-3.4
MH2	FS	-1.3	-2.2	-4.2	-1.7	-3.4	-0.9	-1.4	-2.1	-1.5	-3.2
	MP	-1.5	-1.9	-3.4	-1.7	-3.4	-1.5	-1.7	-2.3	-1.9	-3.5

Average Gain (dB) - GNSS

Frequency (MHz)		1176	1227	1561	1575	1602
GNSS	FS	-2.6	-	-5.7	-4.6	-4.8
	MP	-3.6	-	-7.9	-3.9	-5.7

3.2.3. Peak Gain





Peak Gain (dBi) - LMHs

Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
LMH1	FS	-6.6	-3.2	0.9	-0.4	-1.8	-2.4	1.5	2.5	2.3	3.3
	MP	-8.5	-7.4	-0.4	2.3	3.1	1.1	7.3	5.8	5.9	5.9
LMH2	FS	-4.6	-2.7	1.1	0.4	-0.8	-2.3	1.5	1.7	2.4	3.0
	MP	-9.2	-7.8	-0.9	1.2	2.6	0.5	6.5	5.3	5.4	5.9
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
LMH1	FS	4.4	3.2	1.7	1.7	1.5	4.1	3.5	2.8	3.2	3.7
	MP	6.3	6.5	4.8	5.8	5.5	6.4	4.8	4.4	4.9	5.8
LMH2	FS	3.4	3.8	2.9	1.4	1.4	3.7	4.6	2.9	2.6	2.5
	MP	5.7	6.7	5.3	5.6	4.3	6.3	5.4	5.8	5.3	3.8

Peak Gain (dBi) - MHs

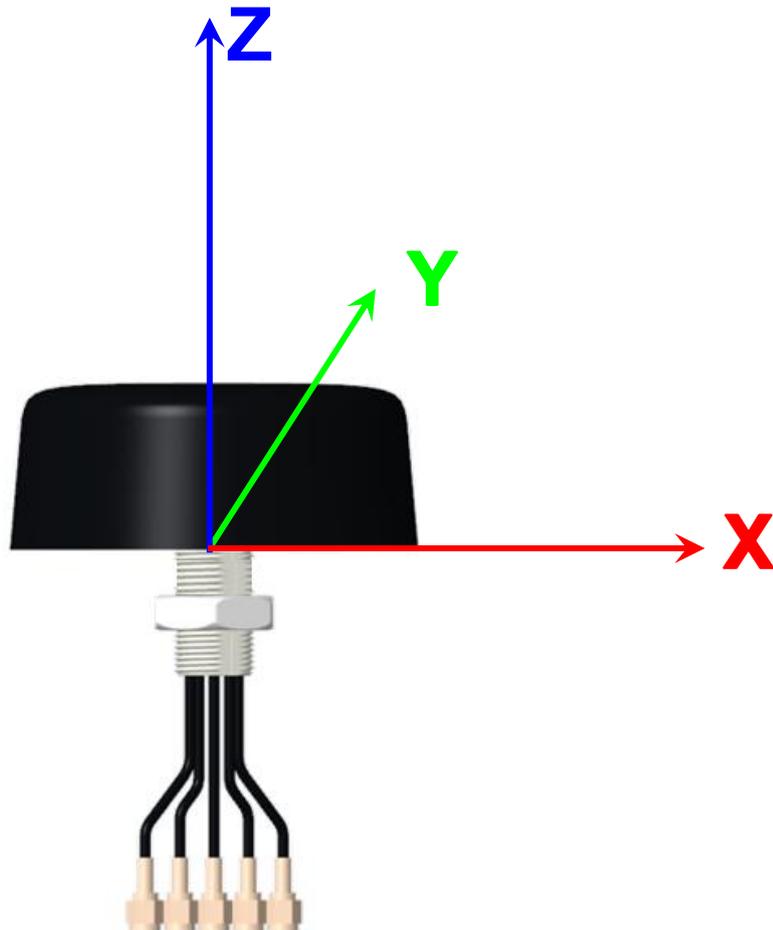
Frequency (MHz)		600	630	710	830	900	960	1440	1710	1740	1880
MH1	FS	-	-	-	-	-	-	2.3	3.6	3.2	3.5
	MP	-	-	-	-	-	-	4.1	5.3	5.5	6.8
MH2	FS	-	-	-	-	-	-	2.1	3.1	2.8	4.1
	MP	-	-	-	-	-	-	4.4	5.3	5.3	7.3
Frequency (MHz)		1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
MH1	FS	3.5	3.0	0.7	3.8	2.0	4.7	4.6	3.4	6.4	3.8
	MP	4.7	5.9	3.8	6.8	5.3	5.8	5.4	5.1	7.0	4.8
MH2	FS	3.2	3.2	1.7	4.5	1.7	4.9	5.8	3.3	5.9	3.7
	MP	5.0	6.2	4.6	7.1	4.9	7.5	6.6	4.8	6.6	6.1

Peak Gain (dBi) - GNSS

Frequency (MHz)		1176	1227	1561	1575	1602
GNSS	FS	2.0	-	-2.2	-0.8	-0.9
	MP	3.5	-	-0.2	2.6	2.2

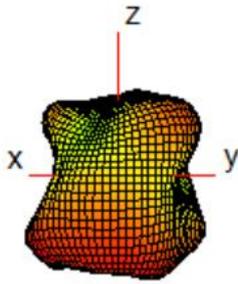
3.2.4. 3D & 2D Radiation Pattern

3.2.4.1. Test Status: In Free Space

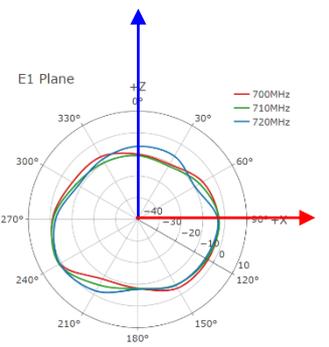
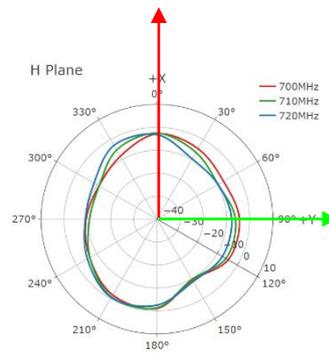
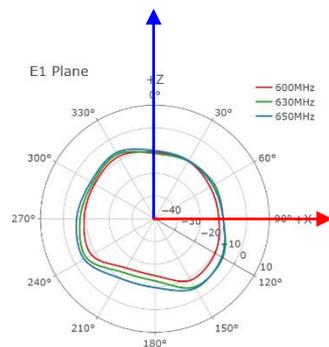
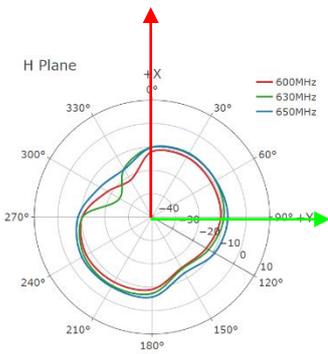
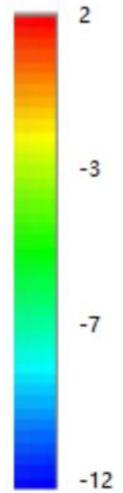
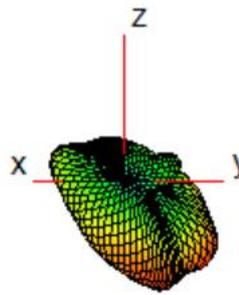


● **LMH1**

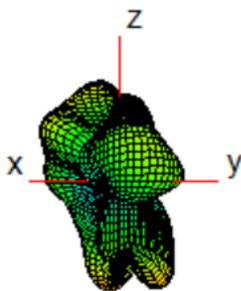
630 MHz



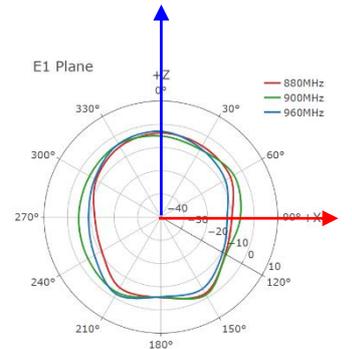
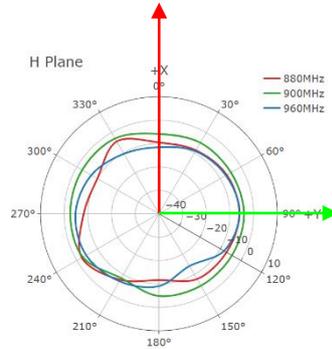
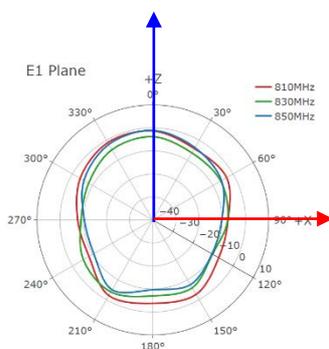
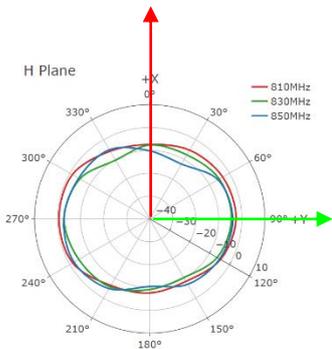
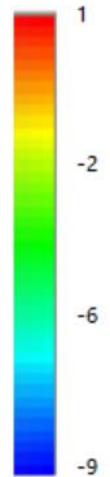
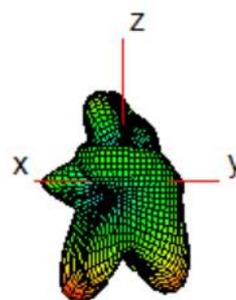
710 MHz



830MHz

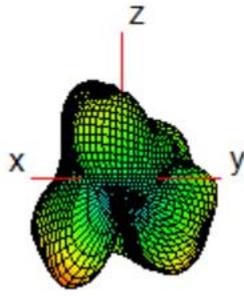


900MHz

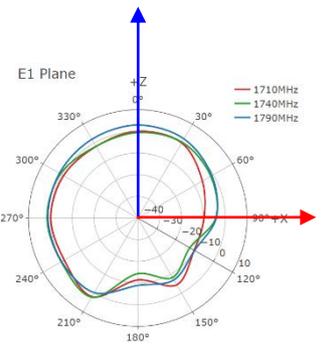
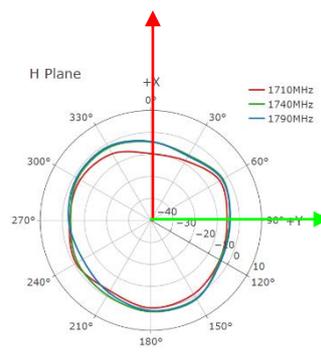
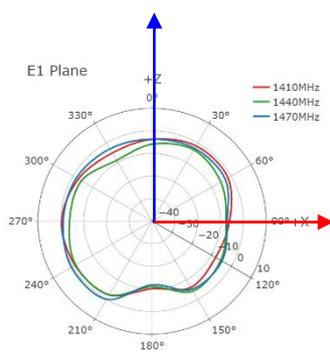
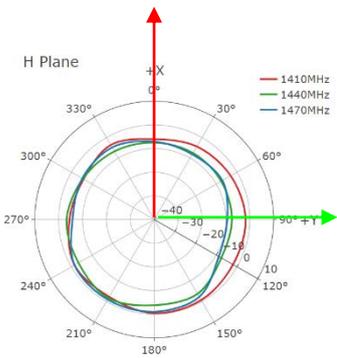
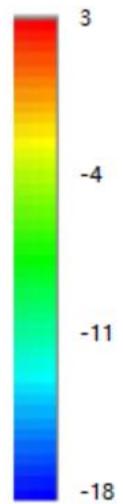
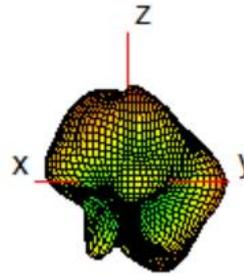


● **LMH1**

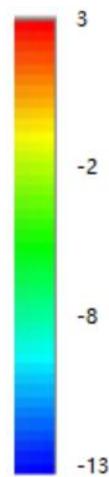
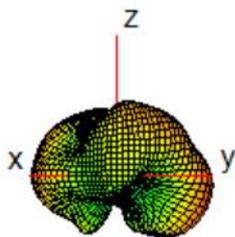
1440 MHz



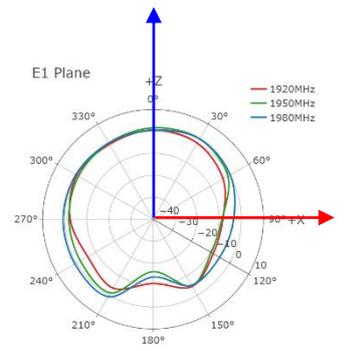
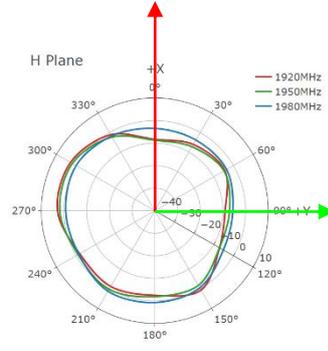
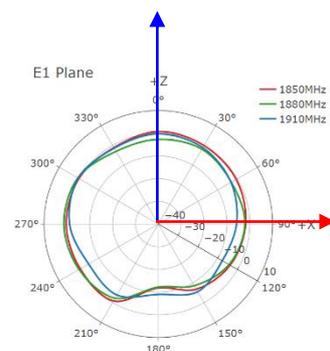
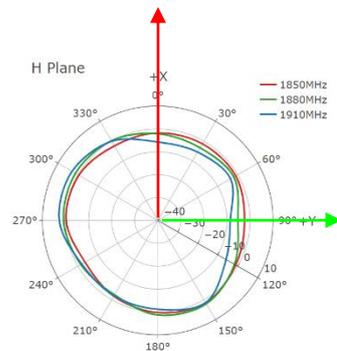
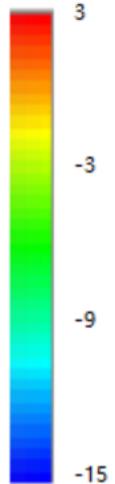
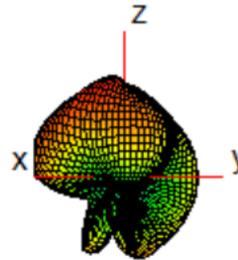
1740 MHz



1880 MHz

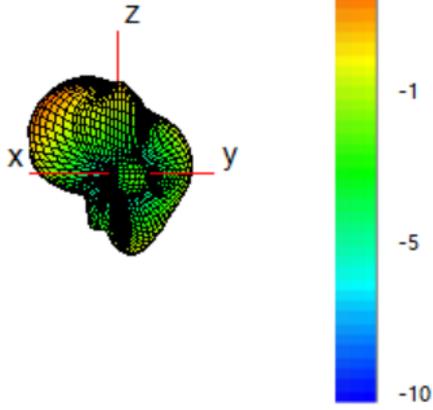


1960 MHz

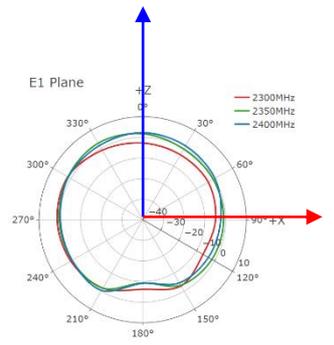
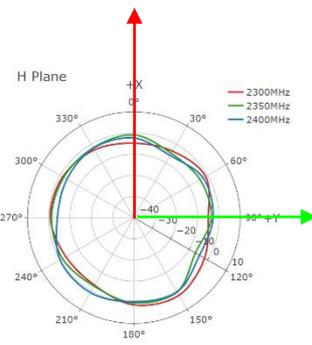
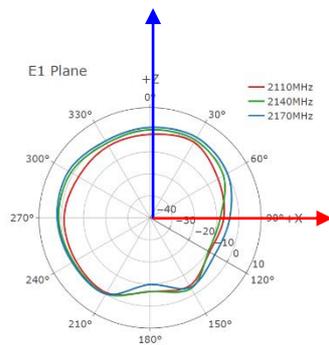
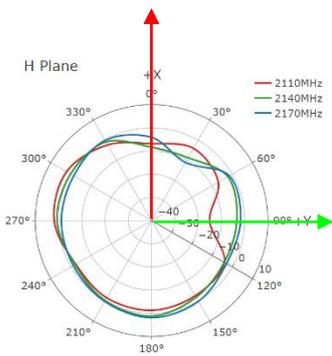
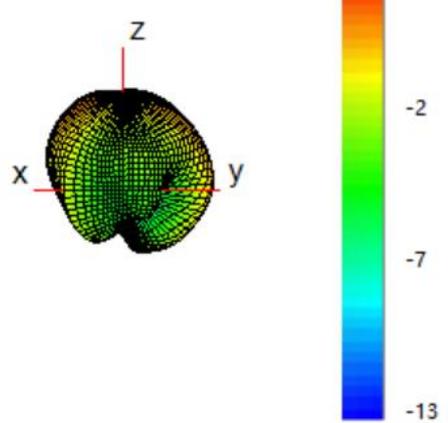


● **LMH1**

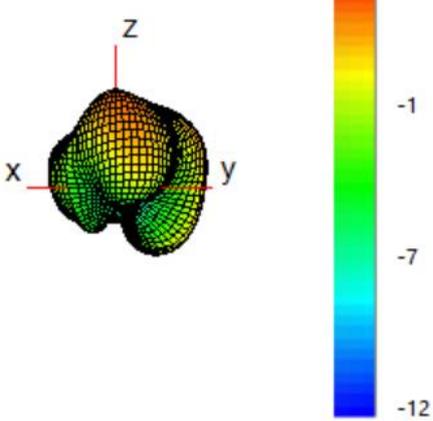
2140 MHz



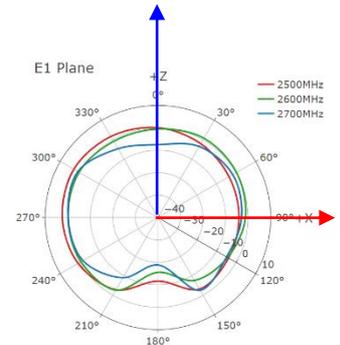
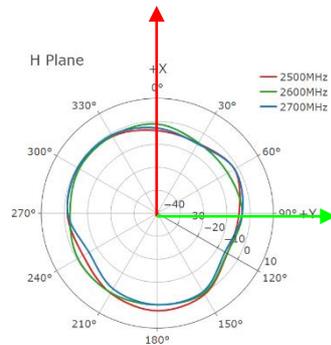
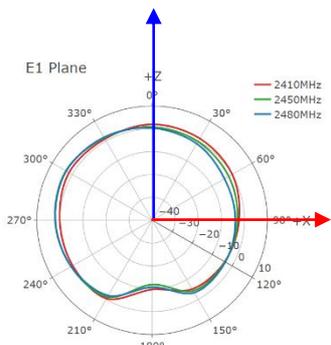
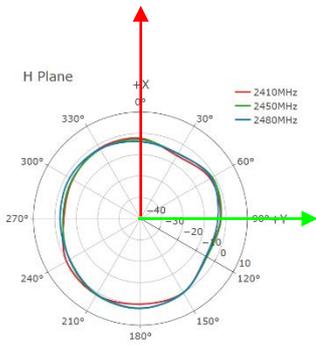
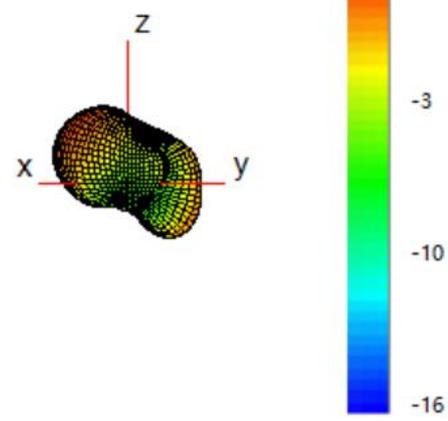
2350 MHz



2450 MHz

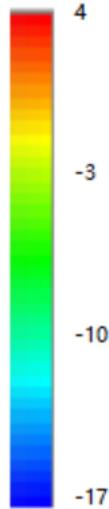
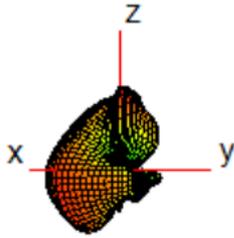


2600 MHz

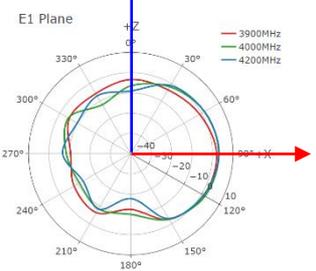
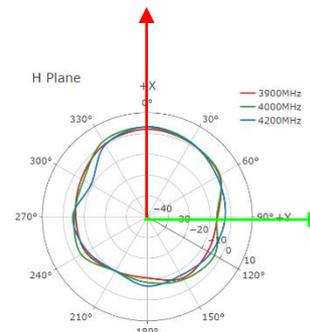
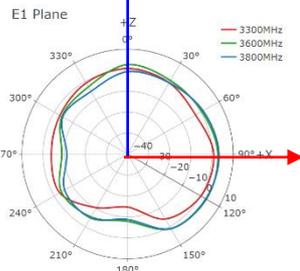
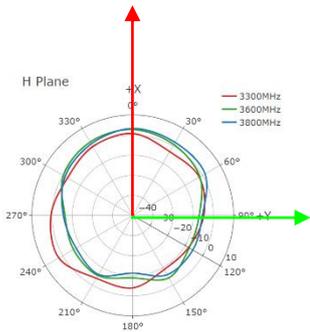
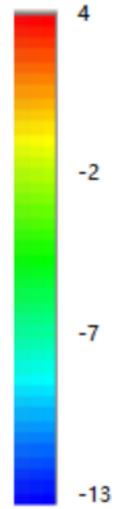
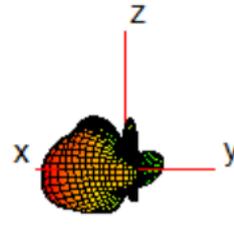


● **LMH1**

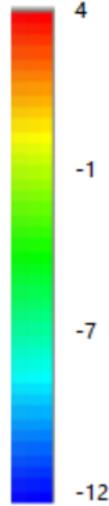
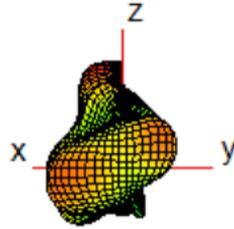
3600 MHz



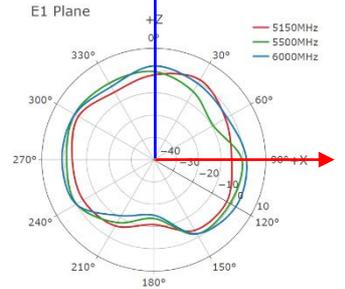
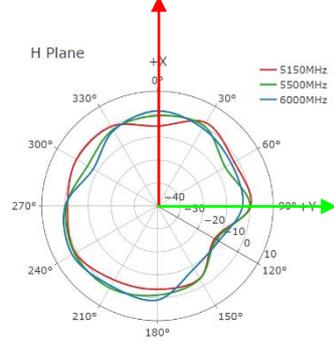
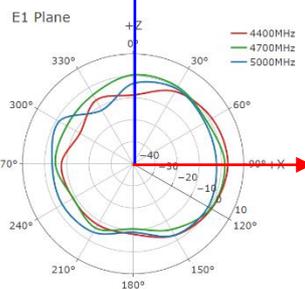
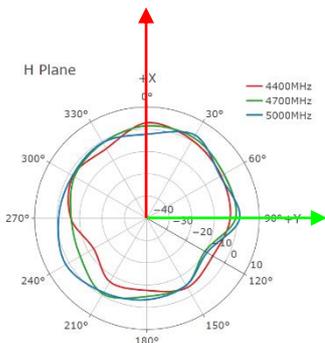
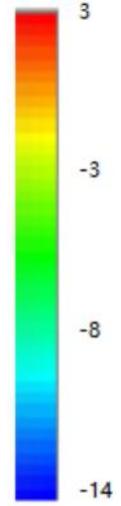
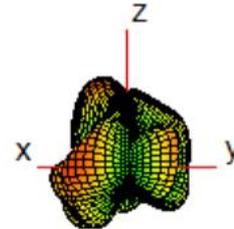
4000 MHz



4700 MHz

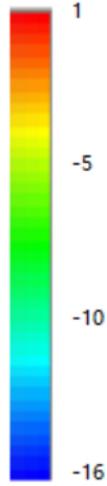
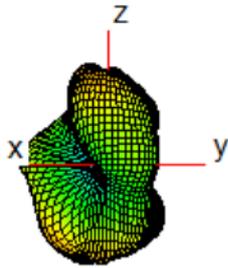


5500 MHz

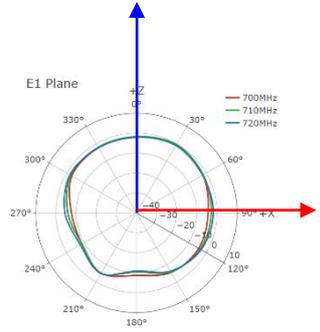
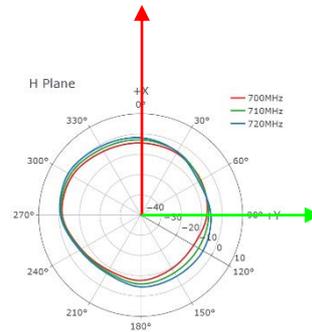
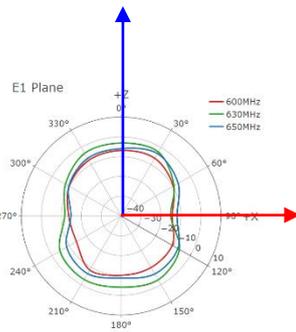
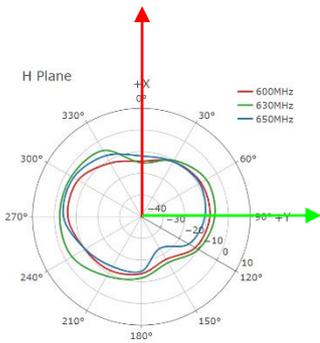
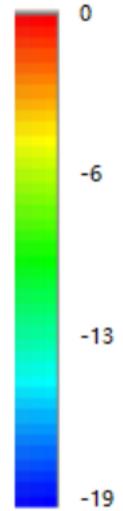
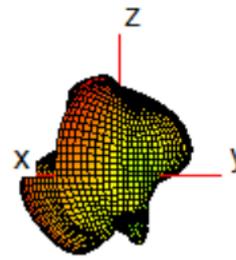


LMH2

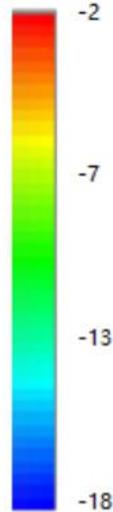
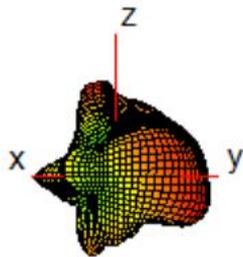
630 MHz



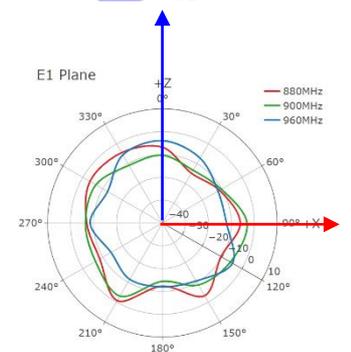
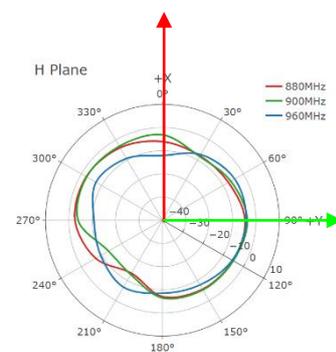
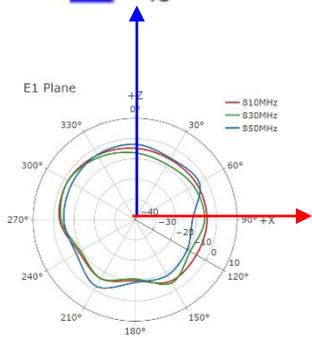
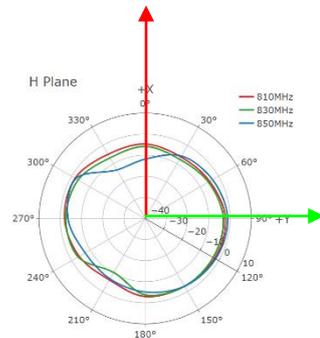
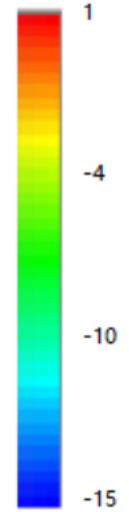
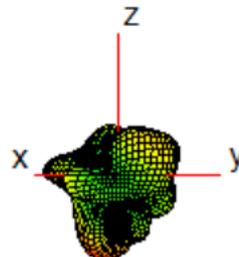
710 MHz



830MHz

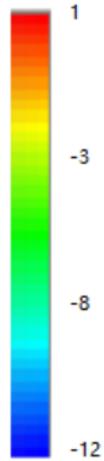
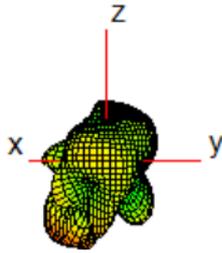


900MHz

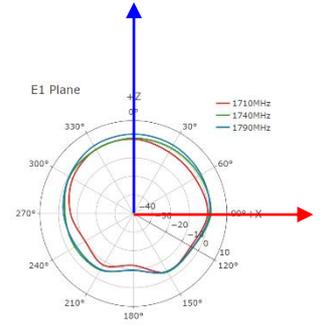
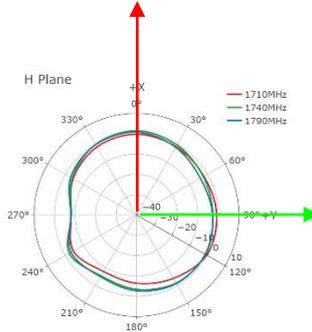
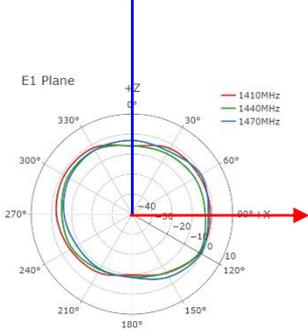
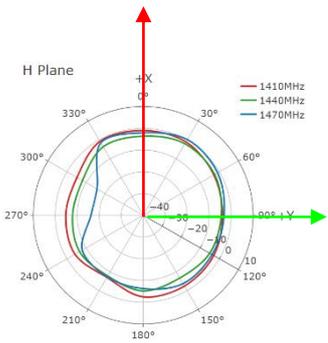
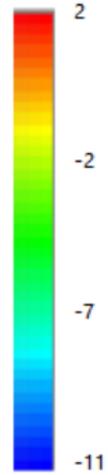
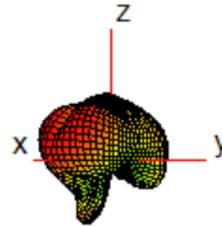


● **LMH2**

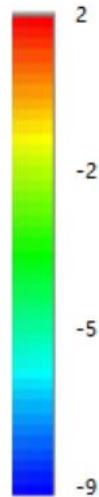
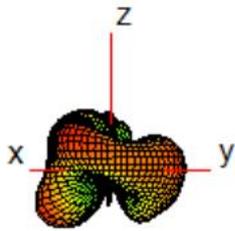
1440 MHz



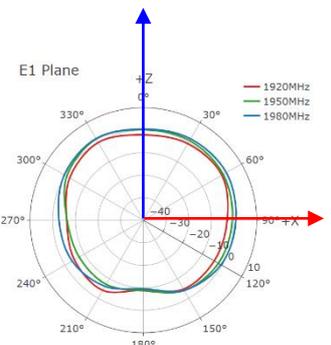
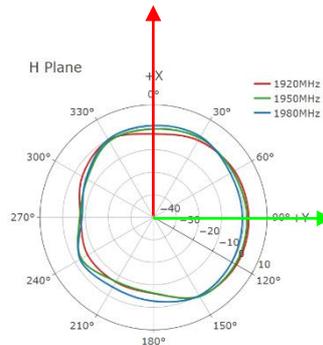
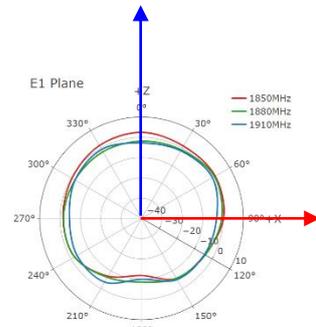
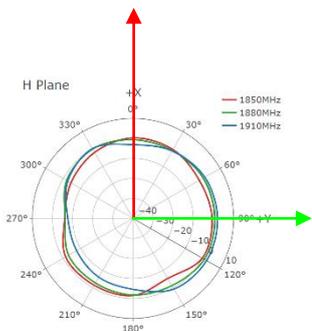
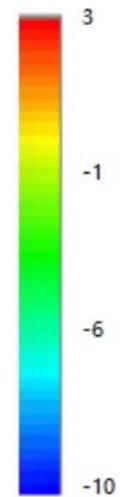
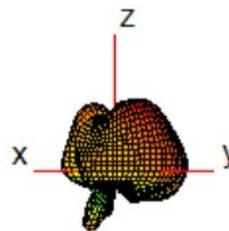
1740 MHz



1880 MHz

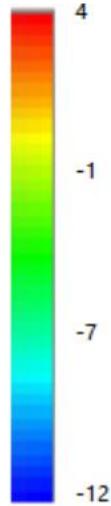
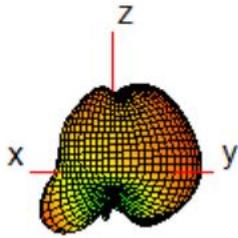


1950 MHz

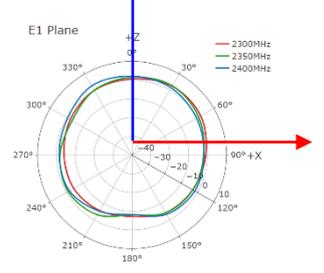
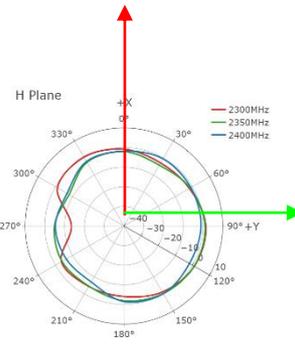
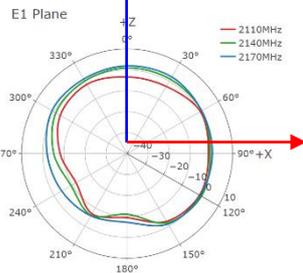
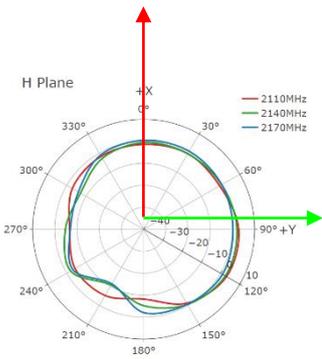
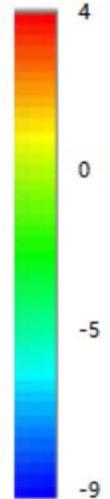
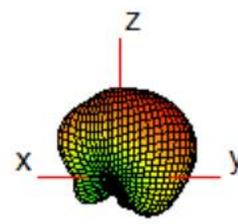


● **LMH2**

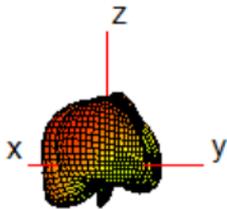
2140 MHz



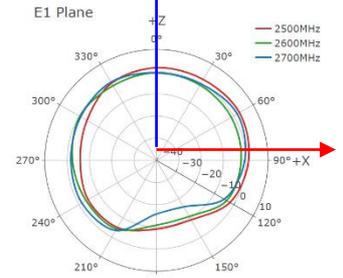
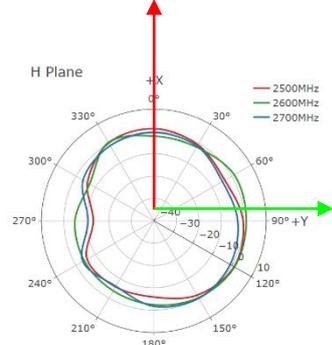
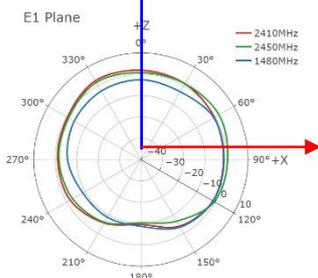
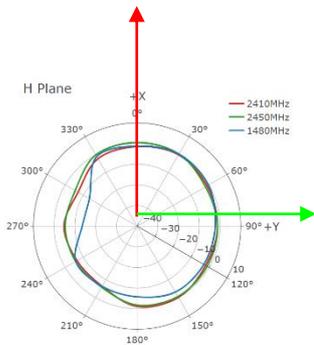
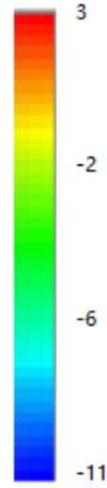
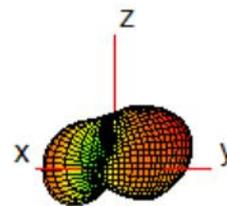
2350 MHz



2450 MHz

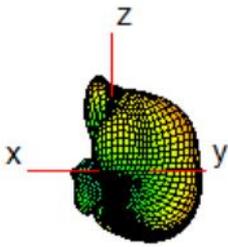


2600 MHz

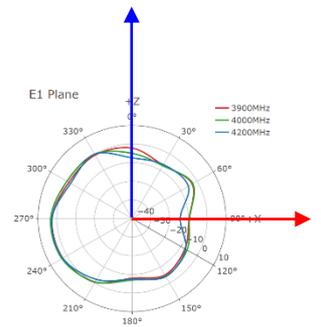
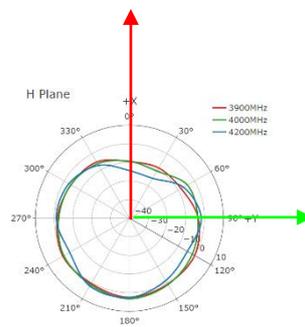
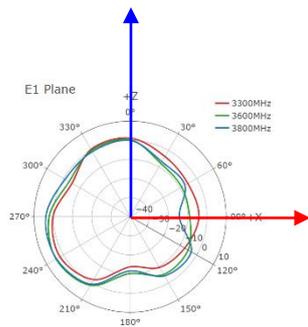
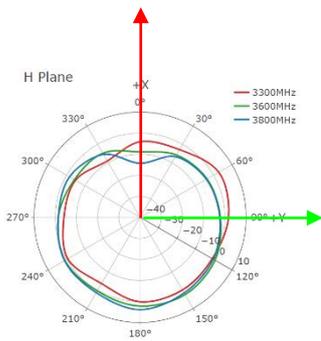
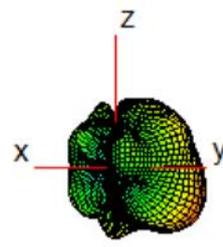


● **LMH2**

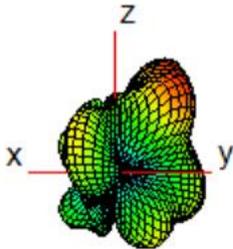
3600 MHz



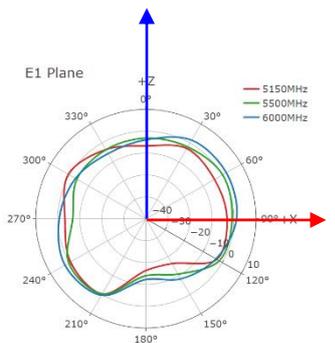
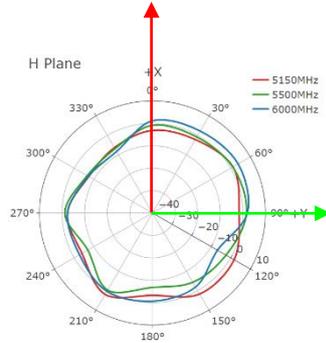
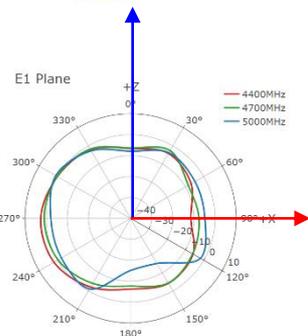
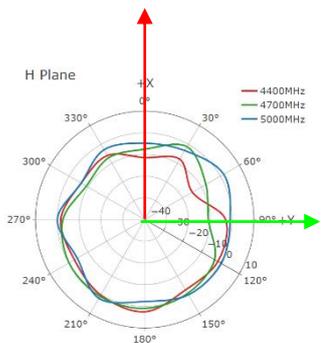
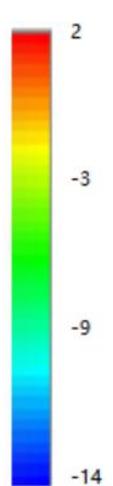
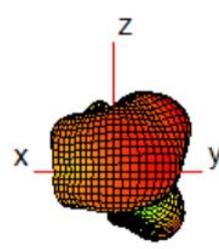
4000 MHz



4700 MHz

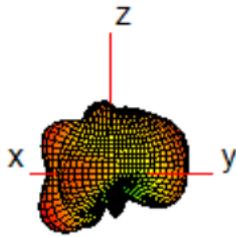


5500 MHz

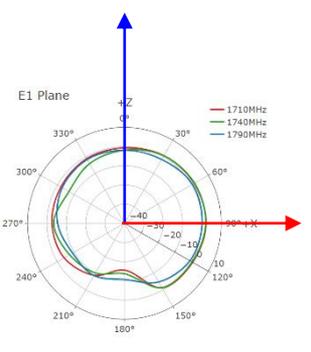
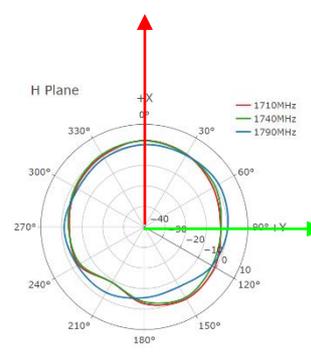
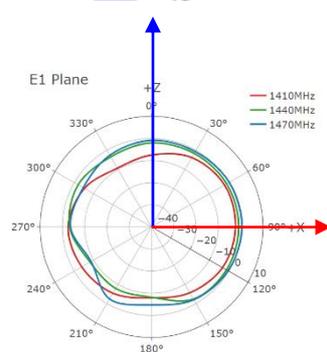
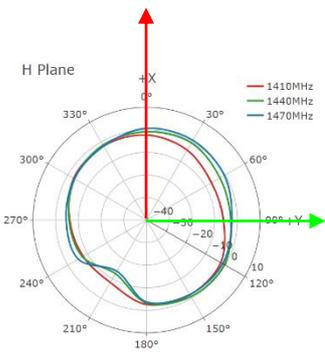
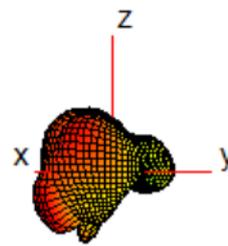


MH1

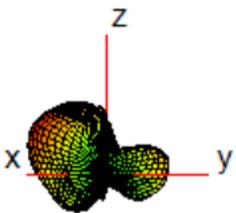
1440 MHz



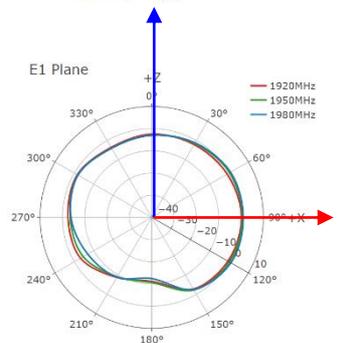
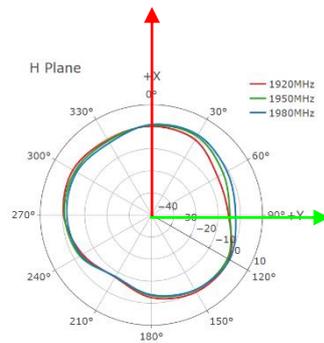
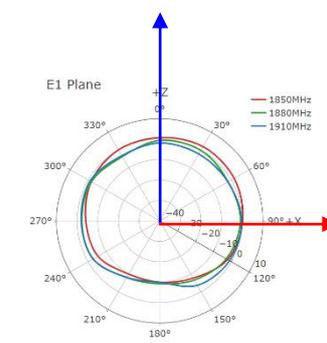
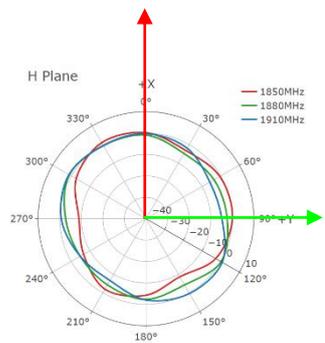
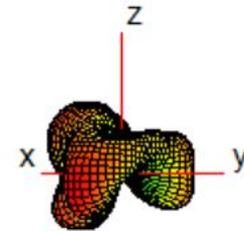
1740 MHz



1880 MHz

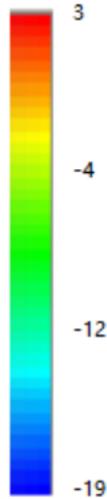
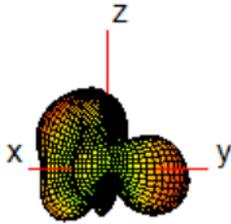


1950 MHz

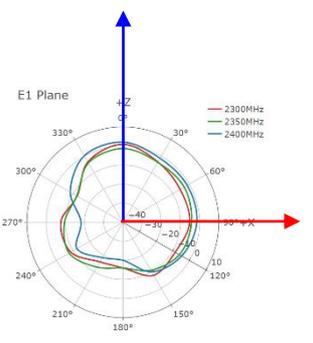
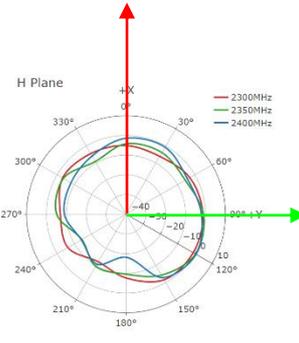
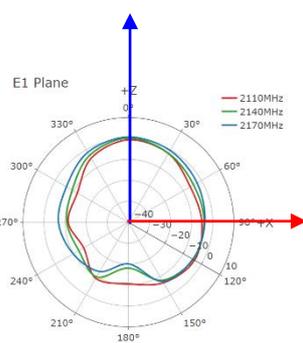
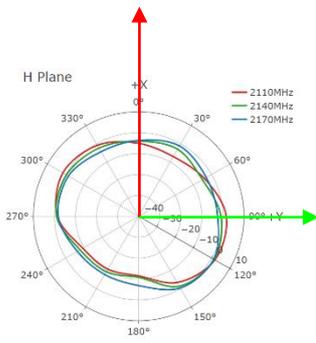
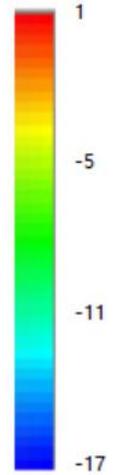
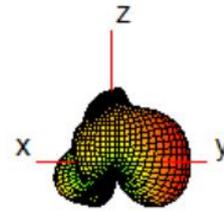


MH1

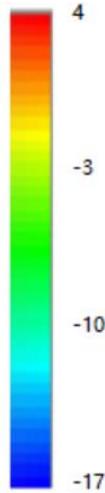
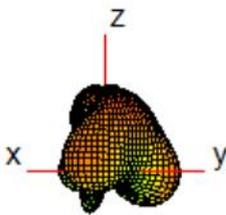
2140 MHz



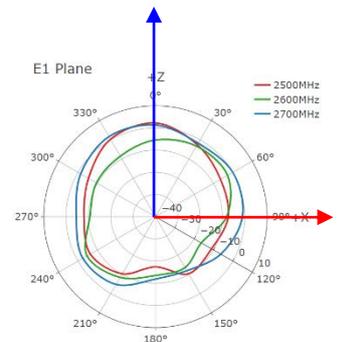
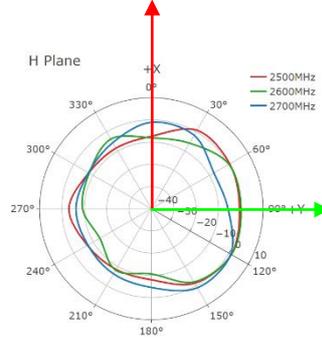
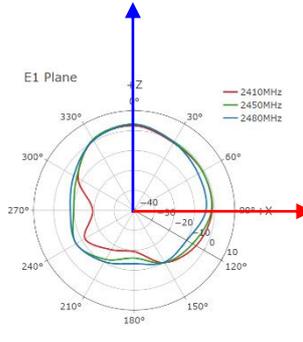
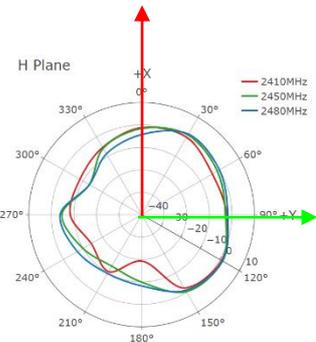
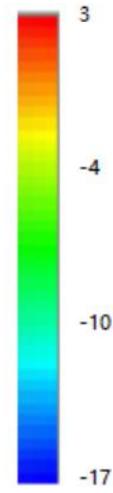
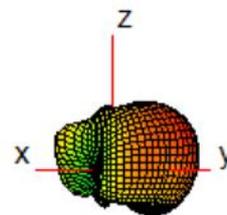
2360 MHz



2450 MHz

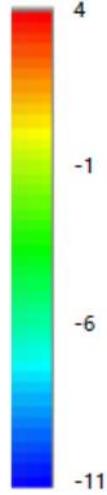
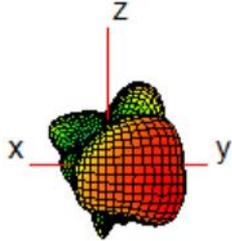


2600 MHz

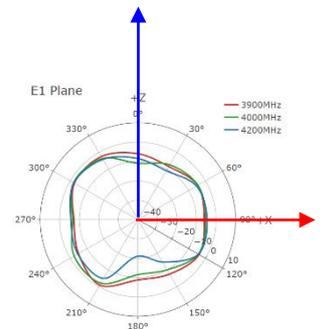
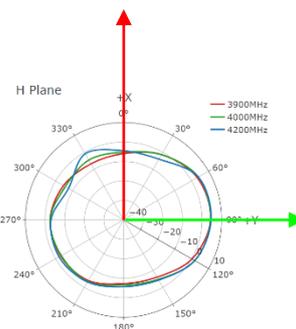
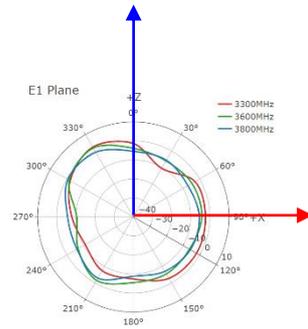
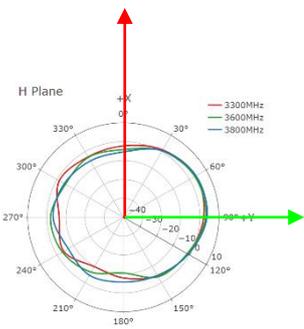
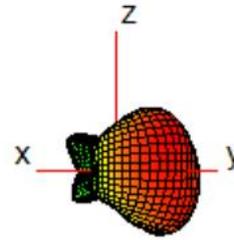


MH1

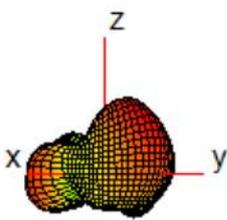
3600 MHz



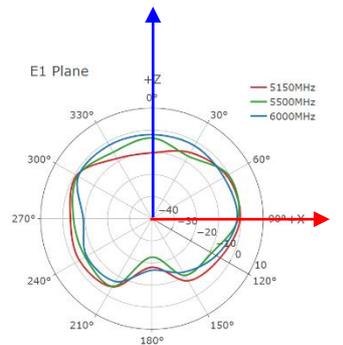
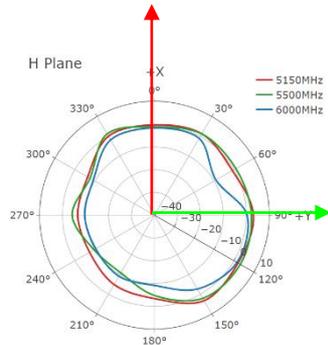
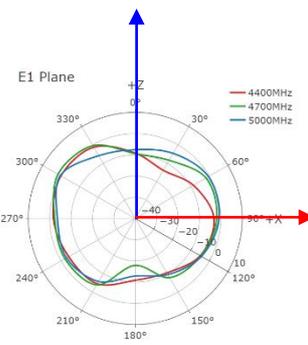
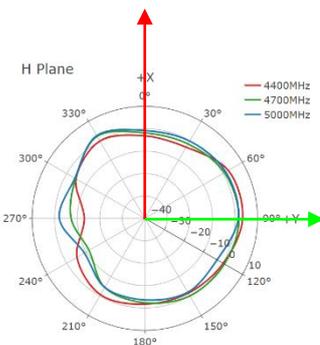
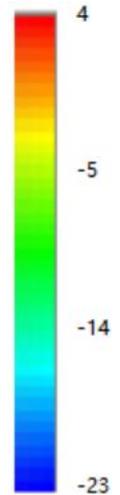
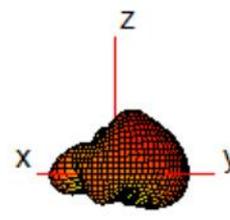
4000 MHz



4700 MHz

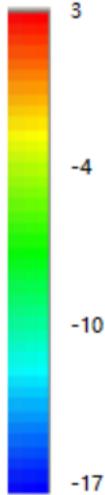
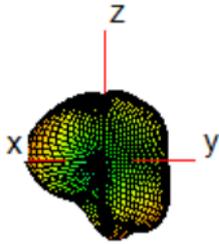


5500 MHz

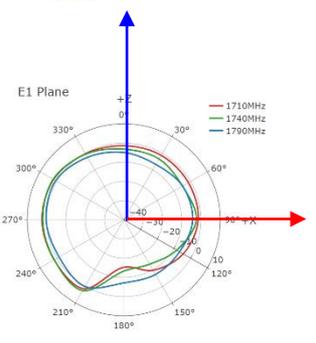
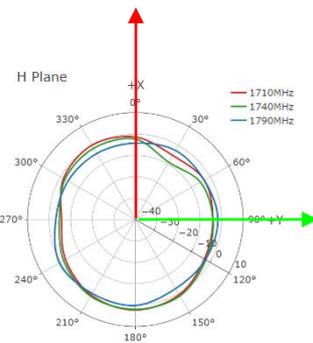
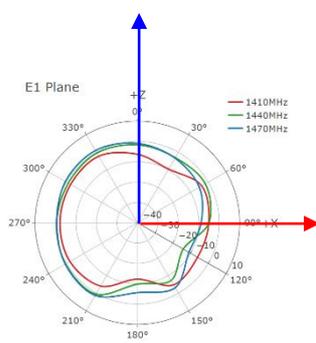
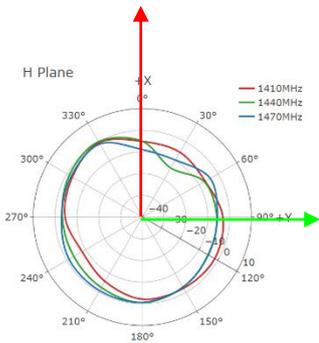
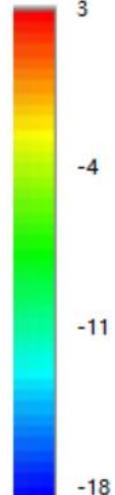
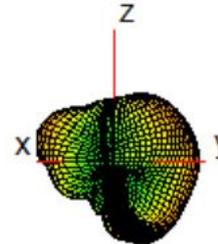


MH2

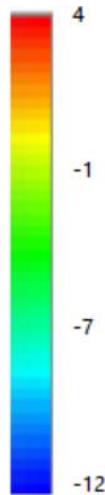
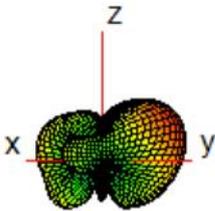
1440 MHz



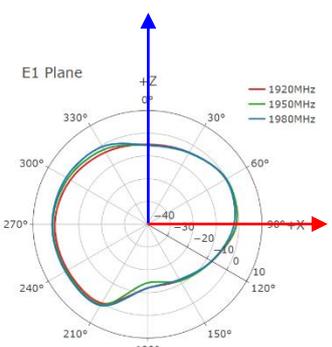
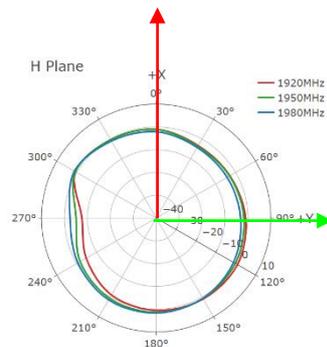
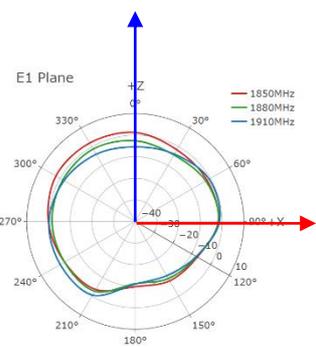
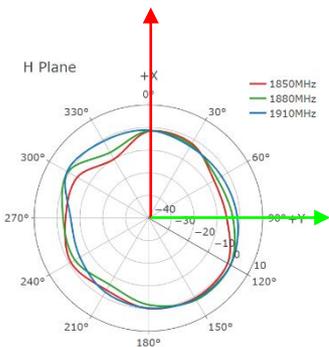
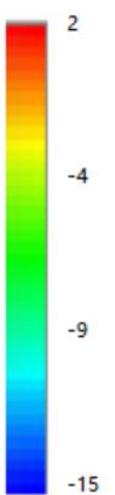
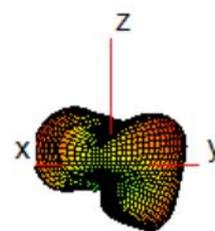
1740 MHz



1880MHz

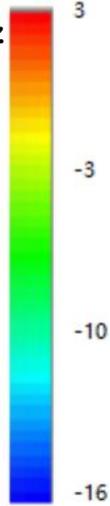
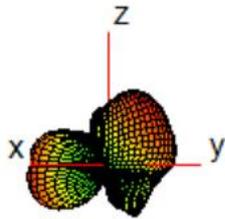


1950MHz

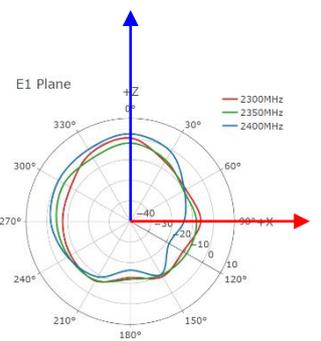
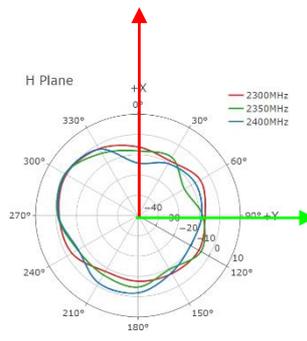
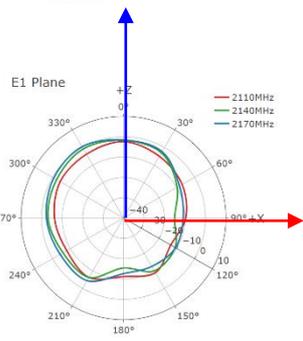
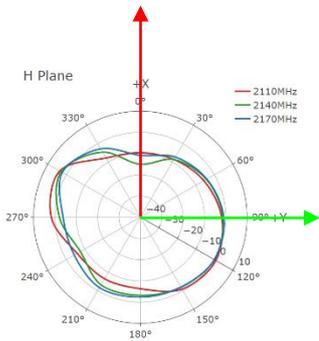
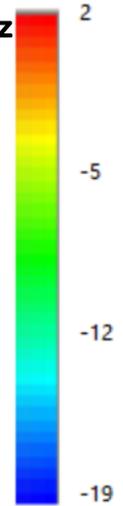
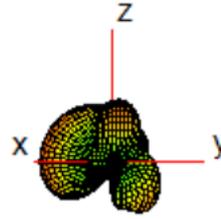


● **MH2**

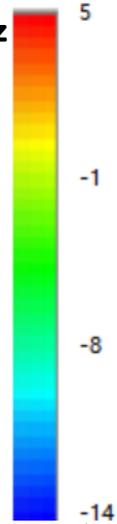
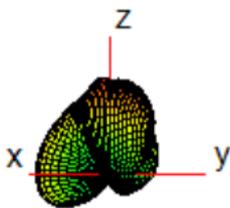
2140 MHz



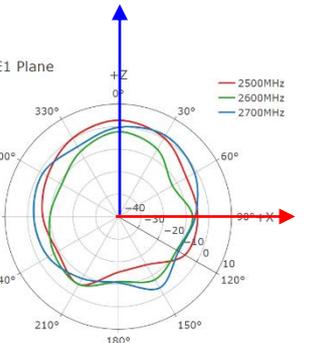
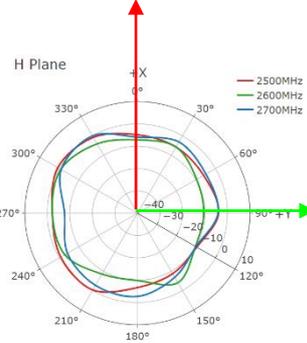
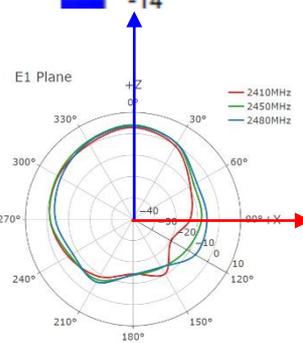
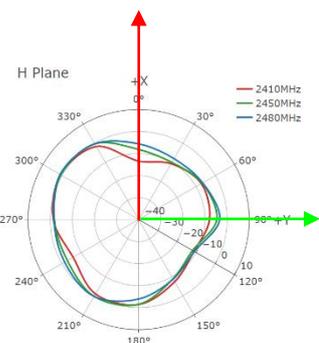
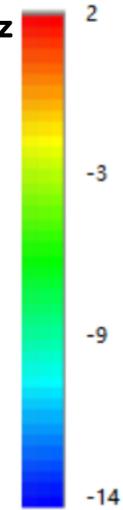
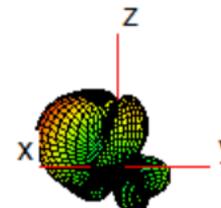
2350 MHz



2450 MHz

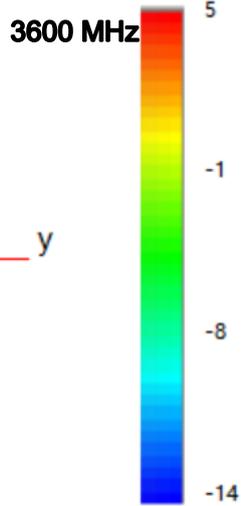
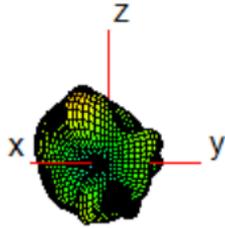


2600 MHz

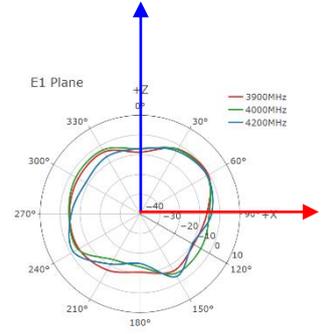
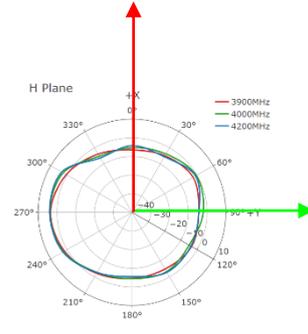
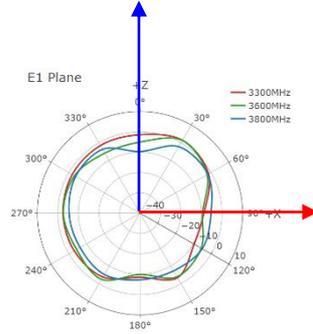
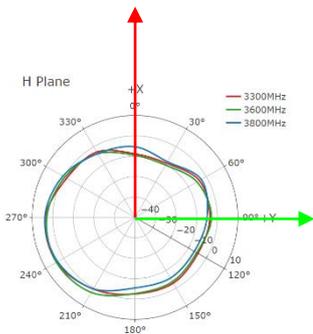
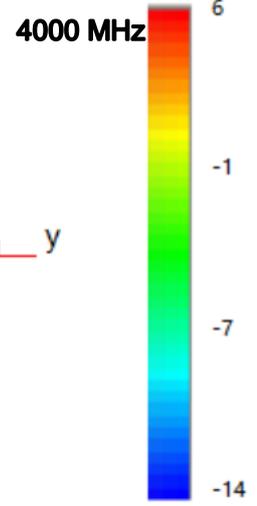
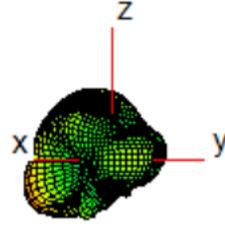


MH2

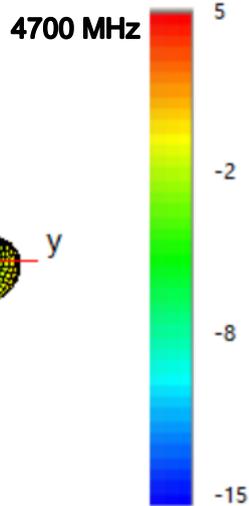
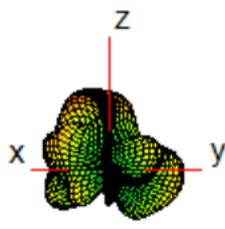
3600 MHz



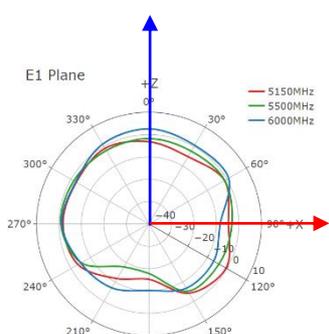
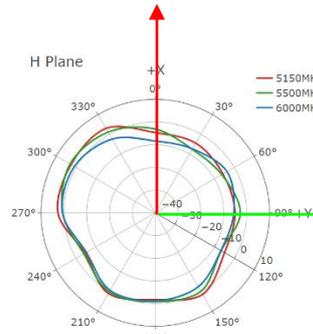
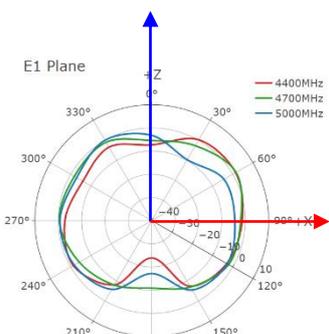
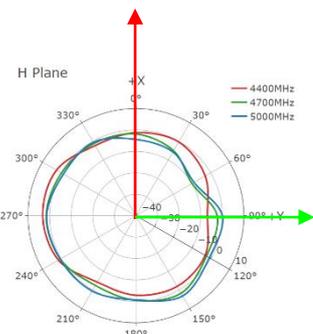
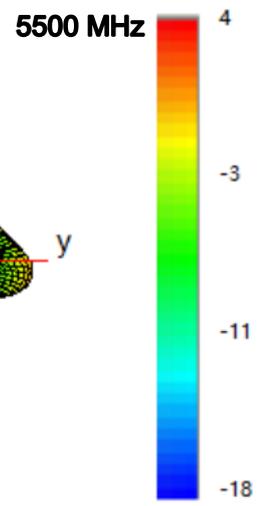
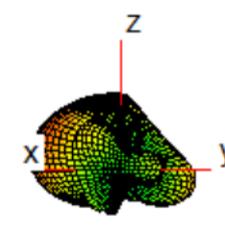
4000 MHz



4700 MHz



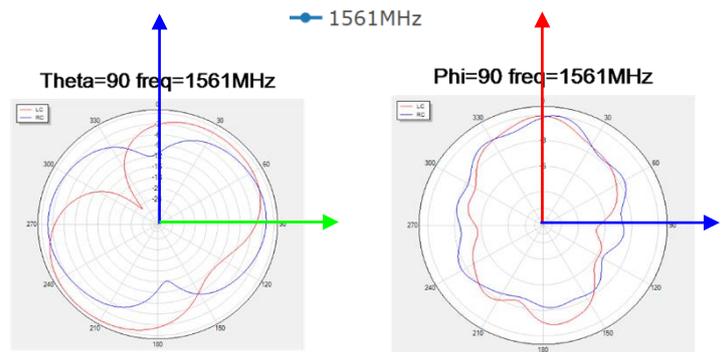
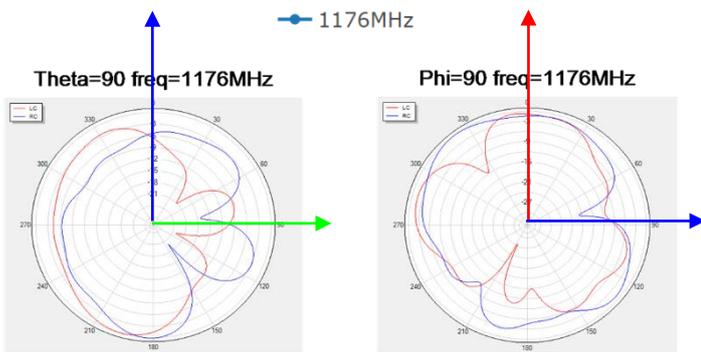
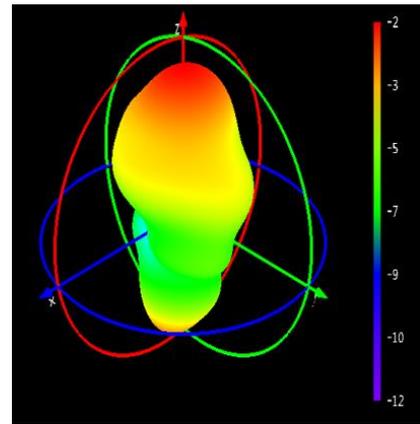
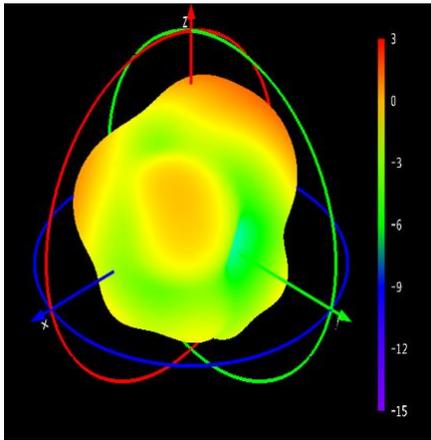
5500 MHz



● **GNSS**

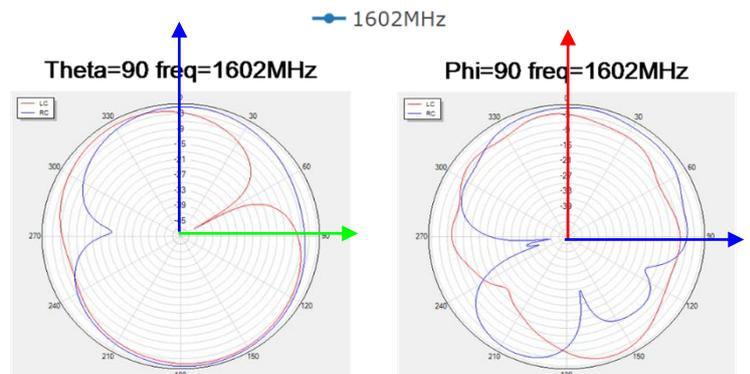
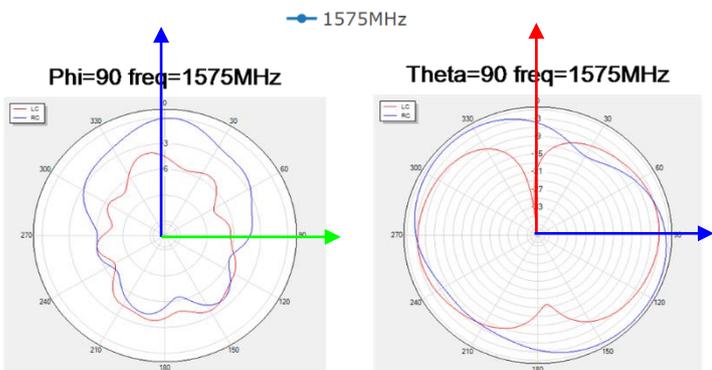
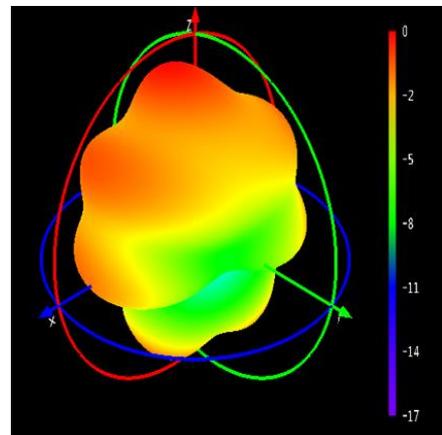
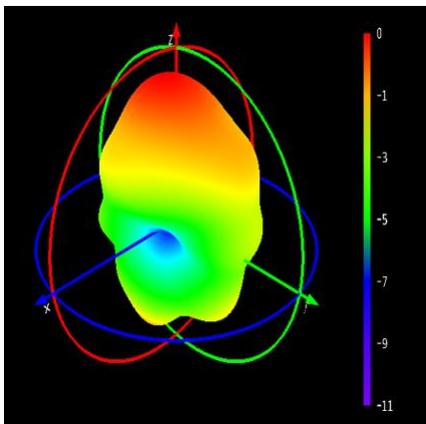
1176 MHz

1561 MHz

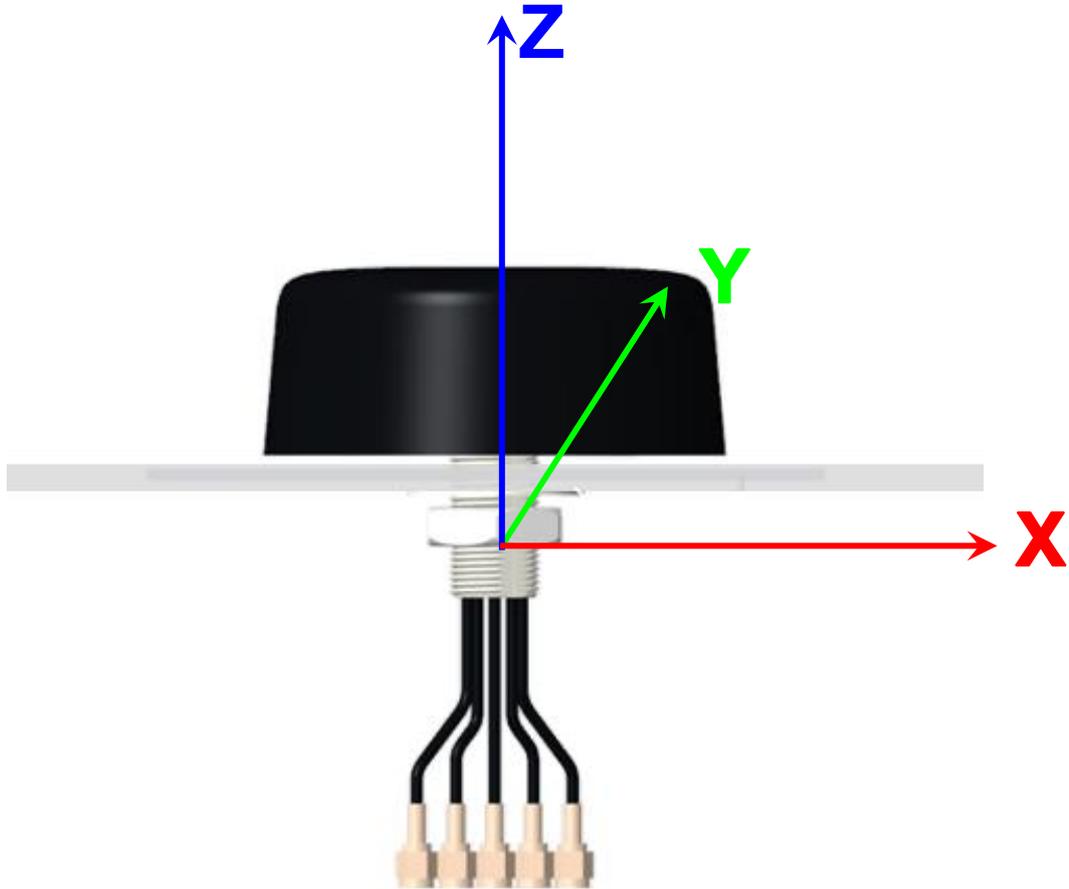


1575 MHz

1602 MHz

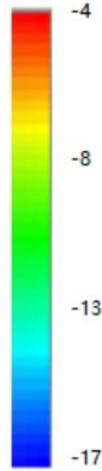
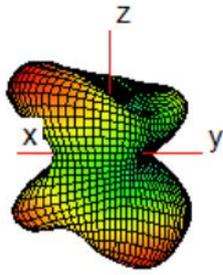


3.2.4.2. Test Status: On 320 × 240 mm Metal Plane

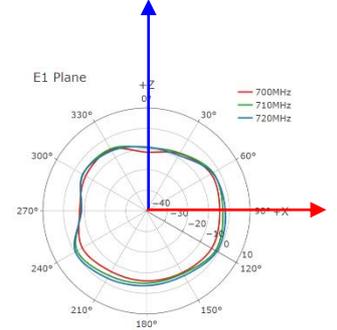
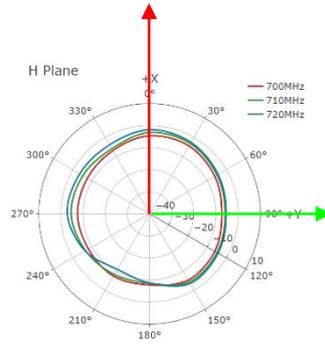
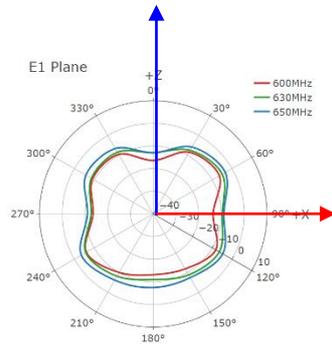
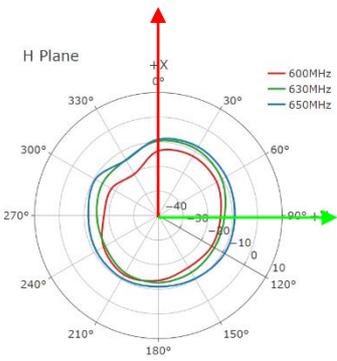
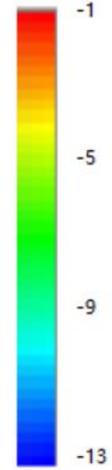
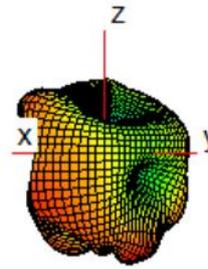


● **LMH1**

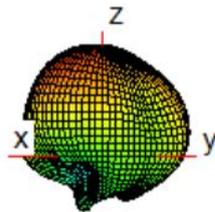
630 MHz



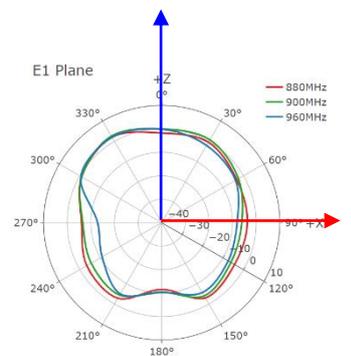
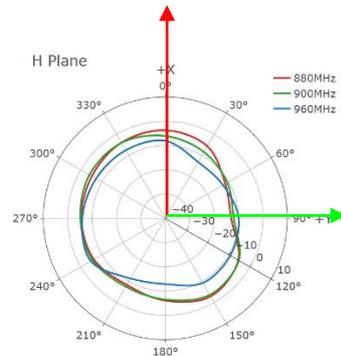
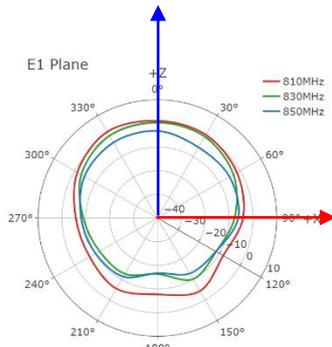
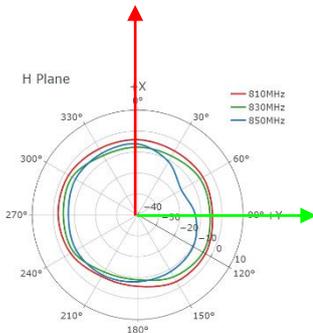
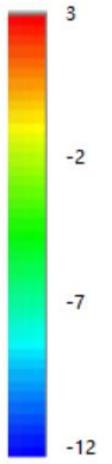
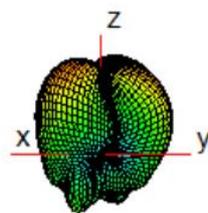
710 MHz



830 MHz

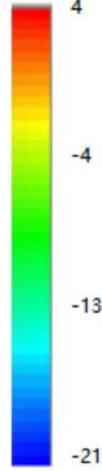
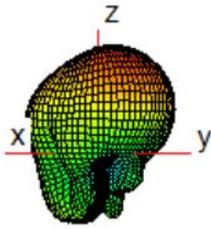


900 MHz

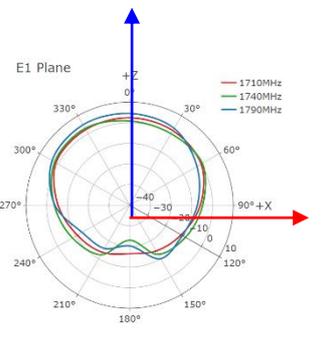
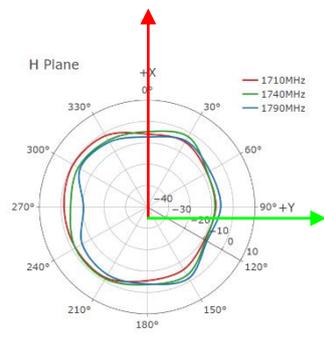
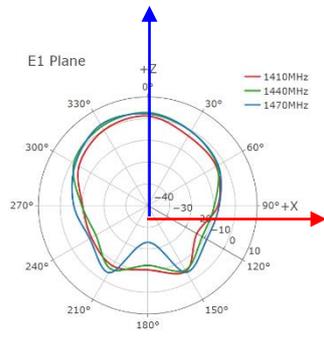
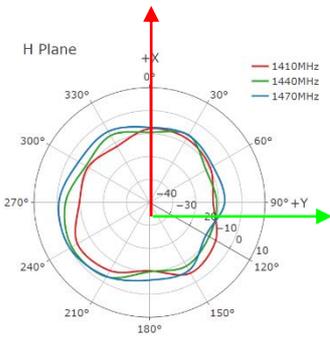
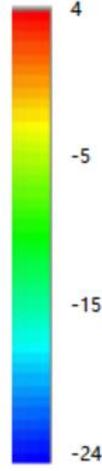
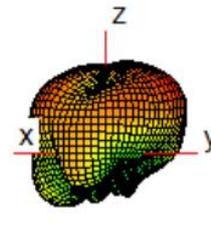


● **LMH1**

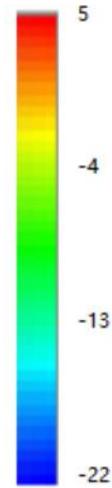
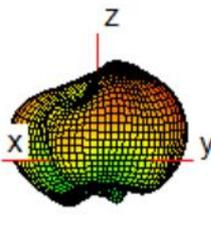
1440 MHz



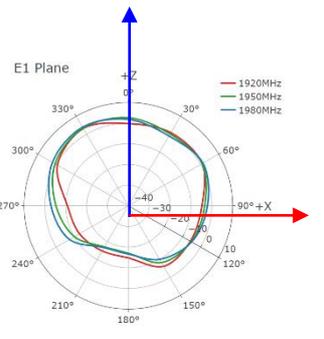
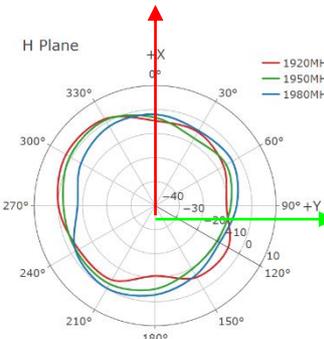
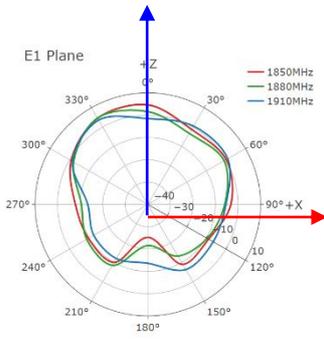
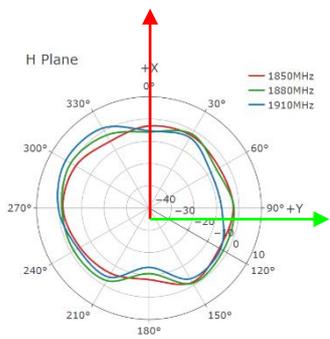
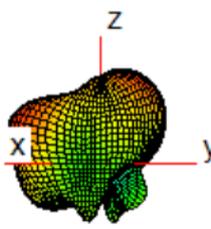
1740 MHz



1880 MHz

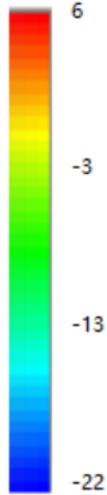
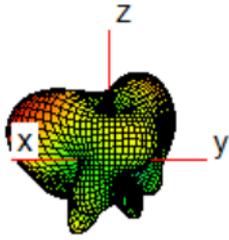


1950 MHz

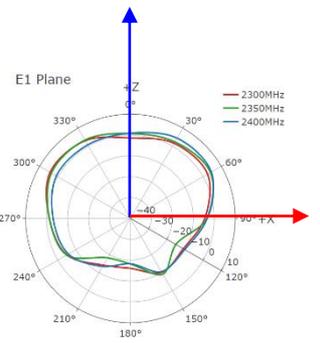
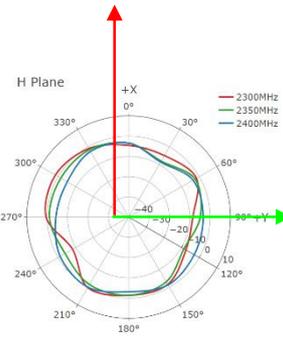
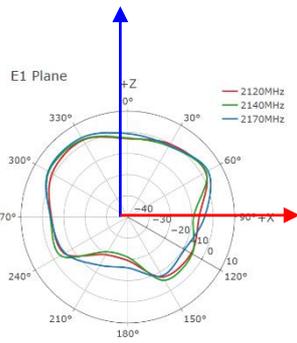
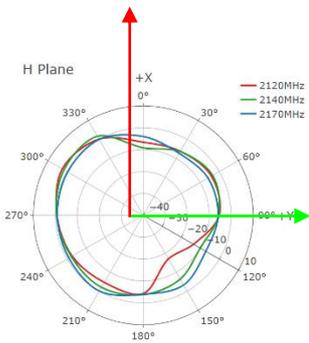
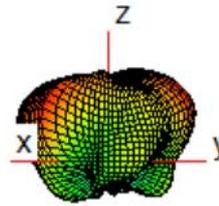


● **LMH1**

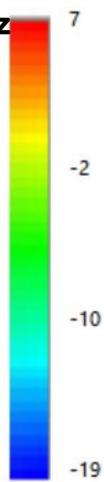
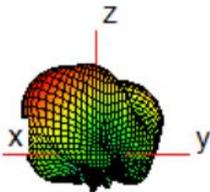
2140MHz



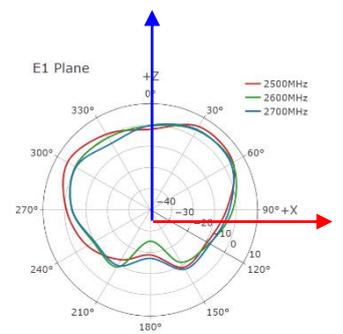
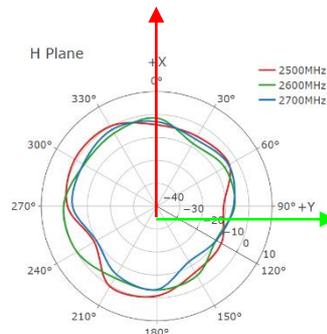
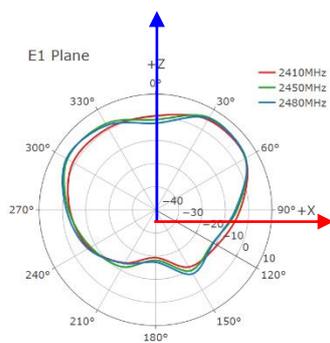
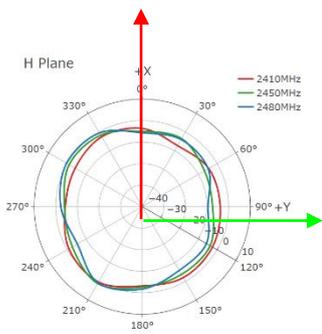
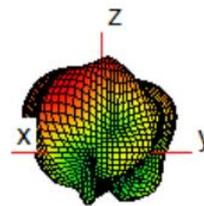
2350 MHz



2450 MHz

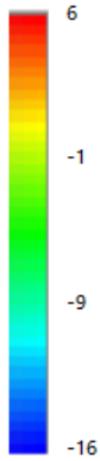
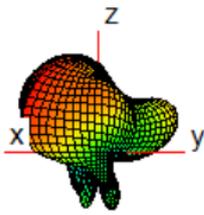


2600 MHz

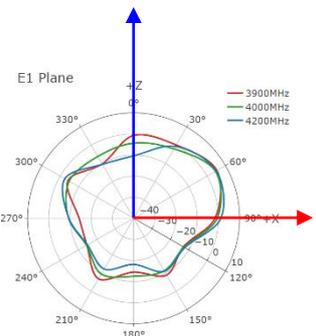
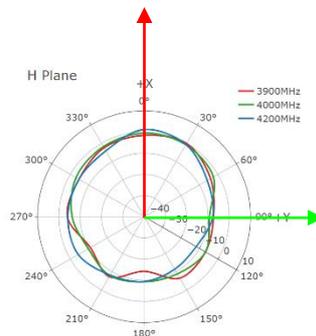
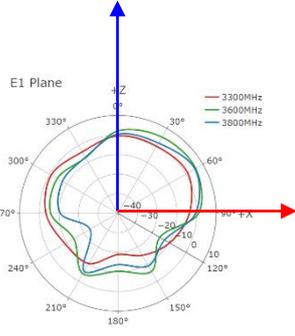
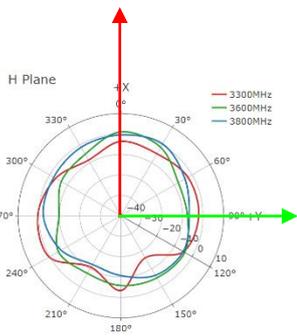
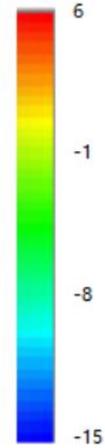
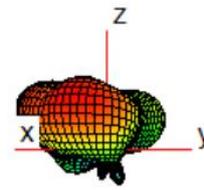


● **LMH1**

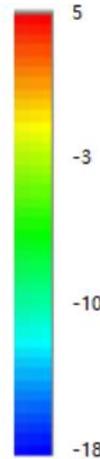
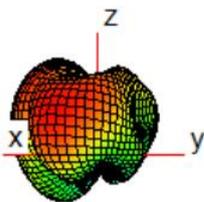
3600 MHz



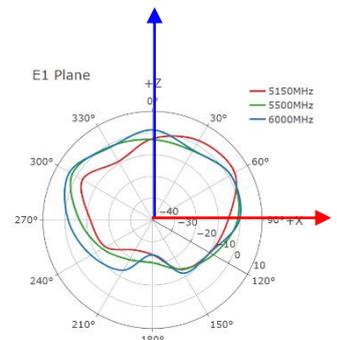
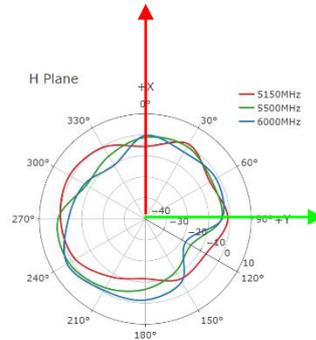
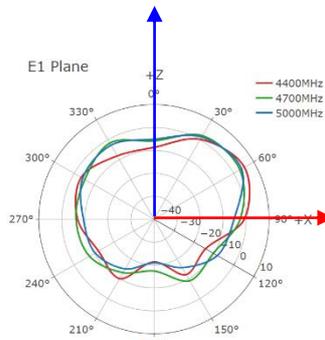
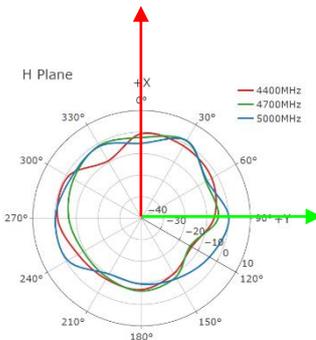
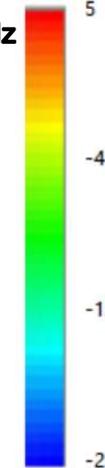
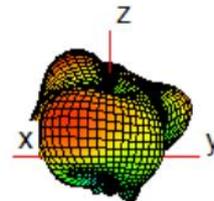
4000 MHz



4700 MHz

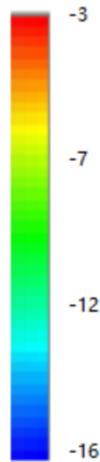
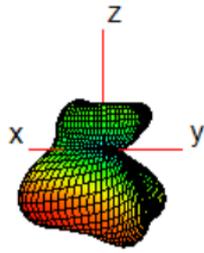


5500 MHz

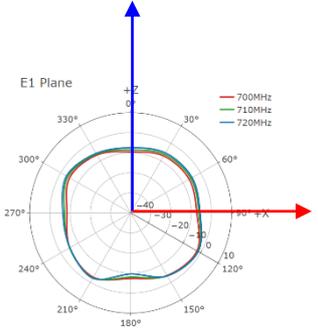
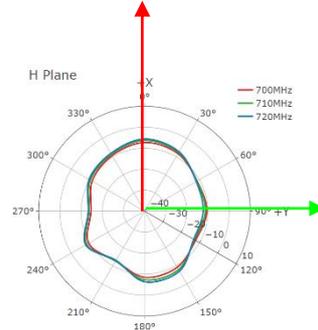
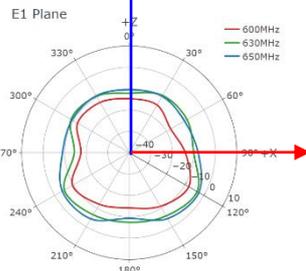
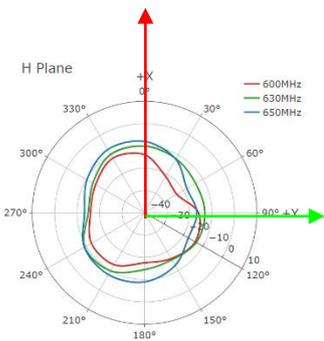
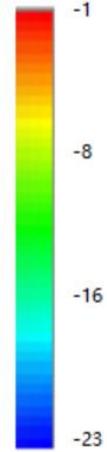
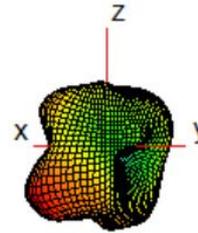


● **LMH2**

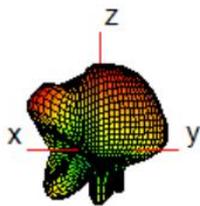
630 MHz



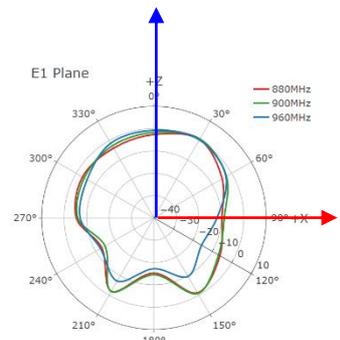
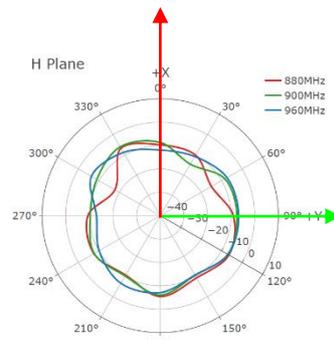
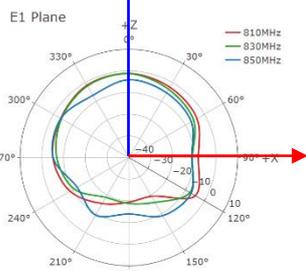
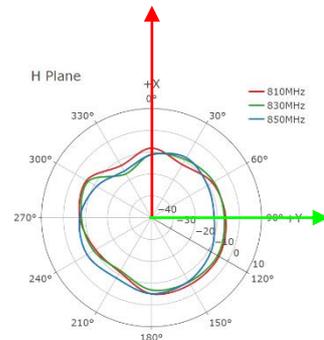
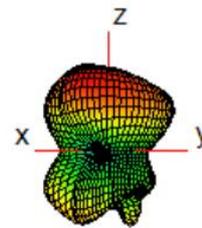
710 MHz



830 MHz

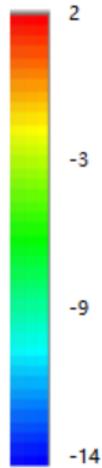
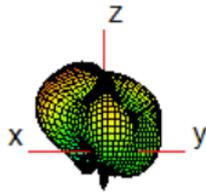


900 MHz

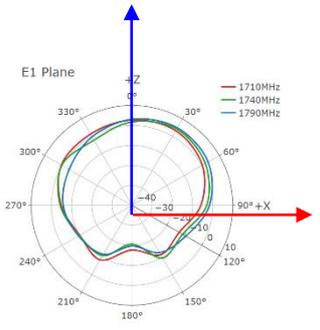
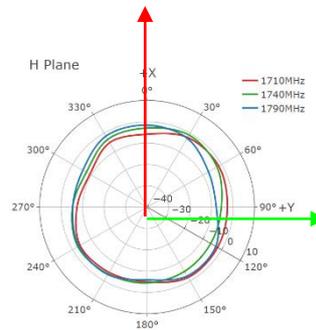
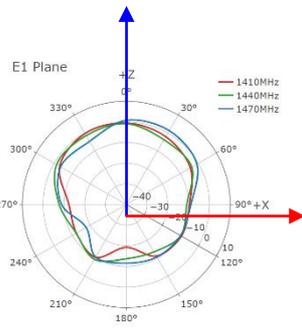
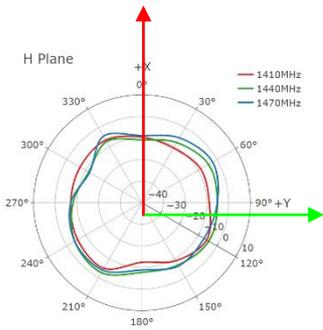
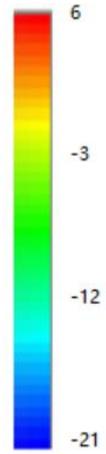
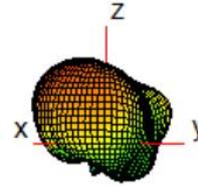


LMH2

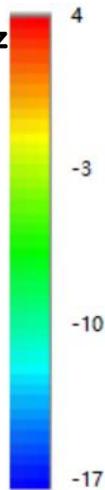
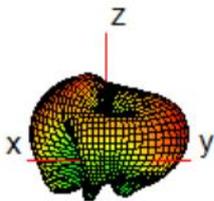
1440 MHz



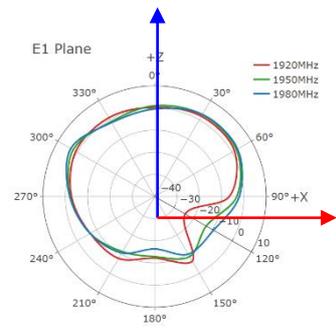
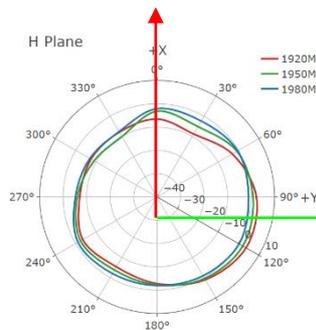
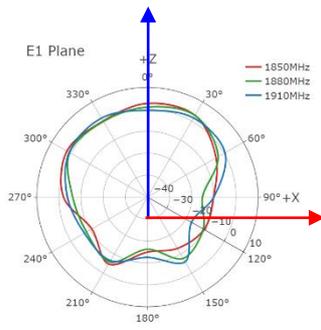
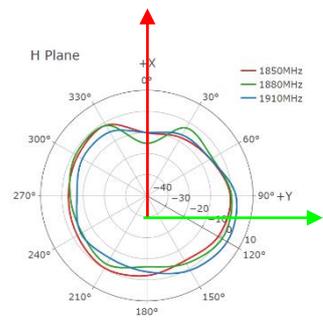
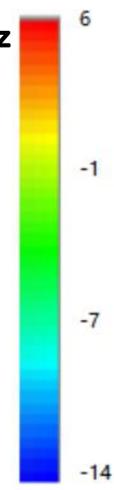
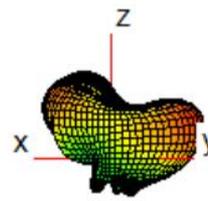
1740 MHz



1880 MHz

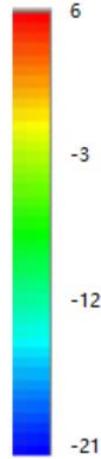
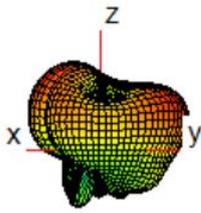


1950 MHz

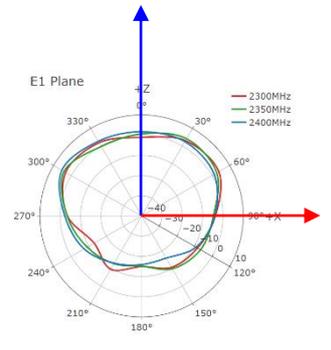
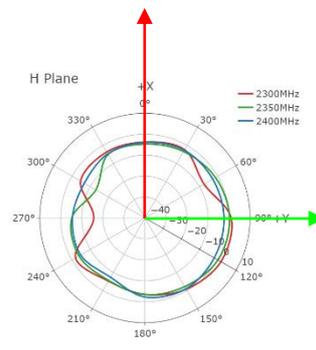
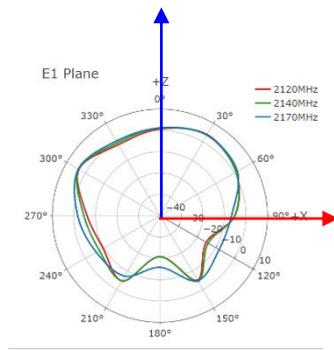
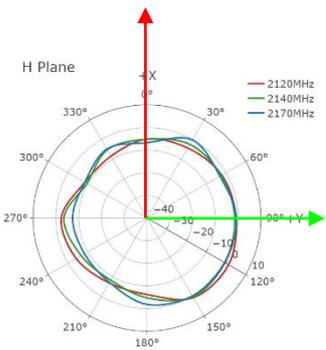
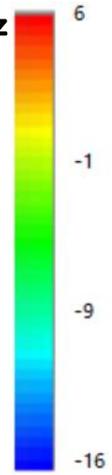
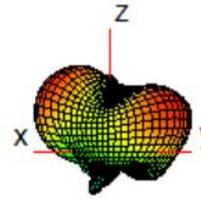


● **LMH2**

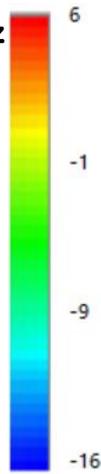
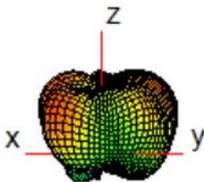
2140 MHz



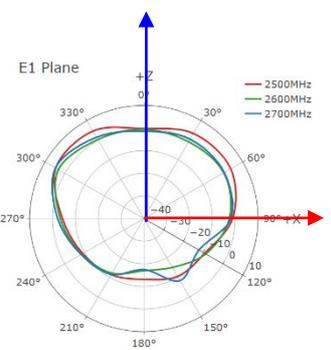
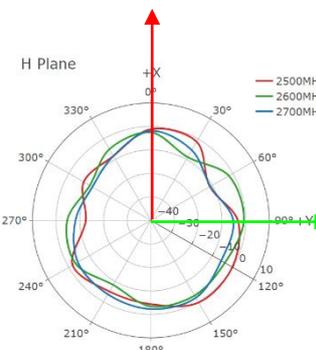
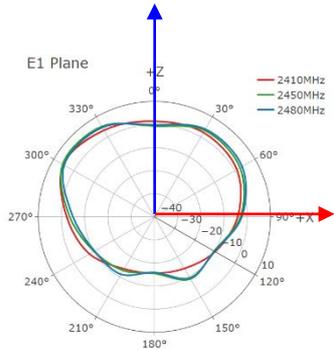
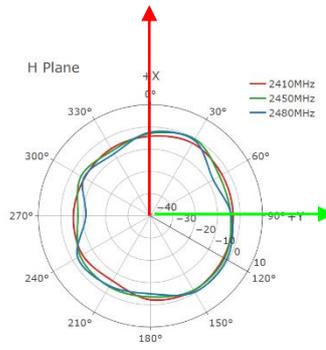
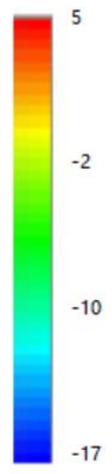
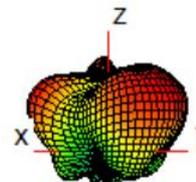
2350 MHz



2460 MHz

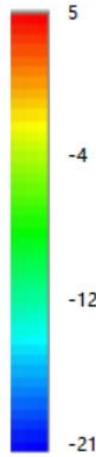
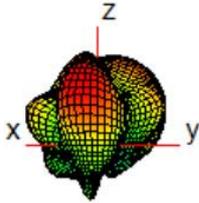


2600 MHz

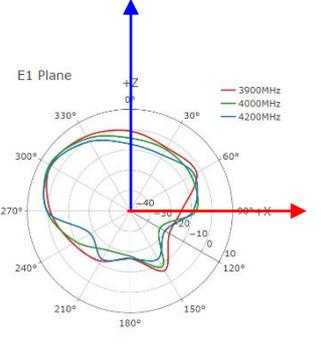
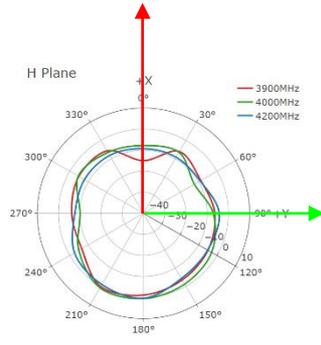
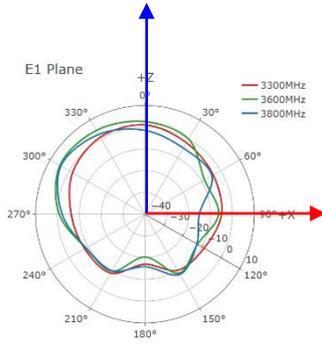
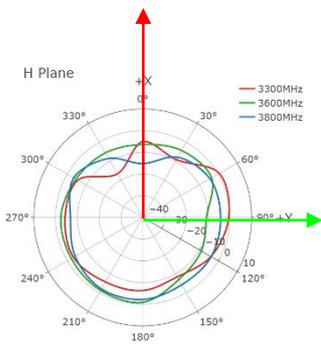
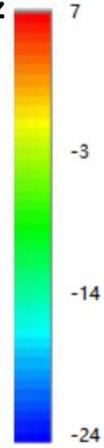
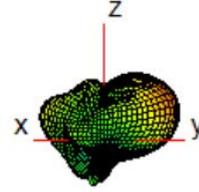


● **LMH2**

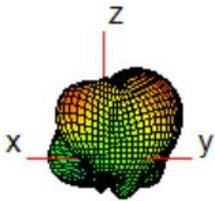
3600 MHz



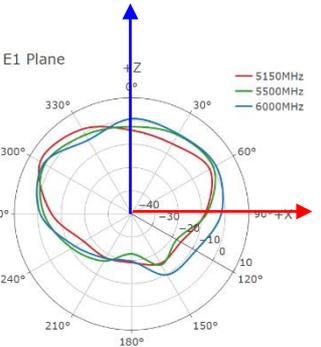
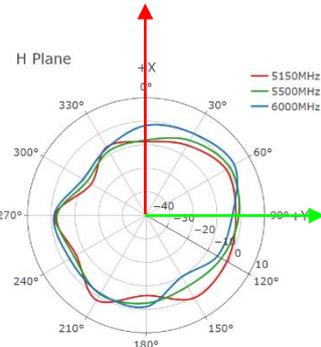
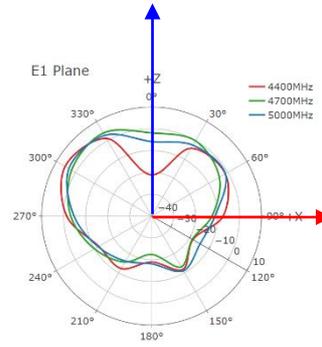
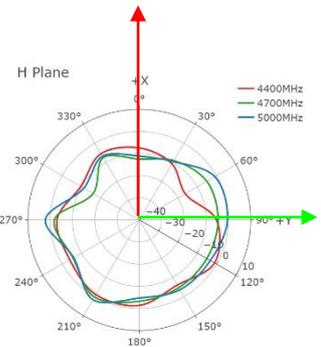
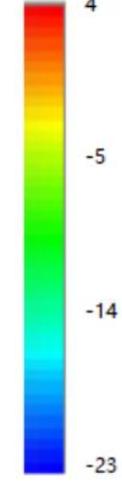
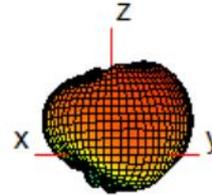
4000 MHz



4700 MHz

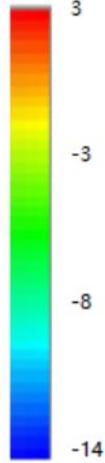
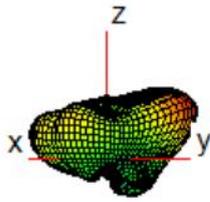


5500 MHz

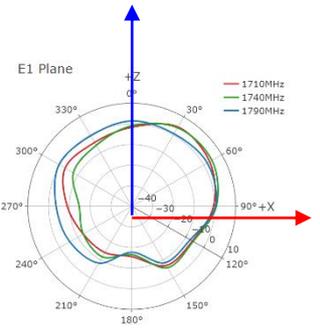
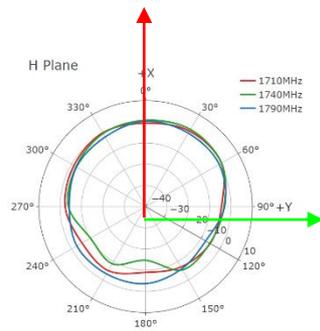
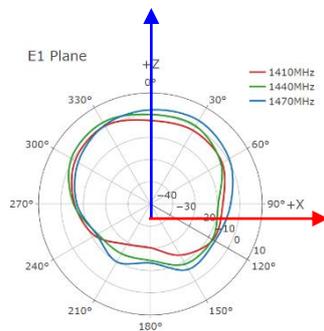
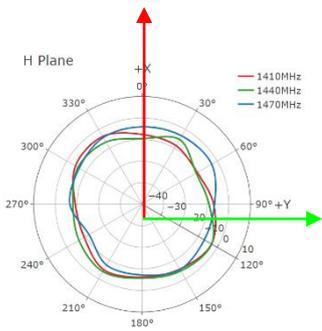
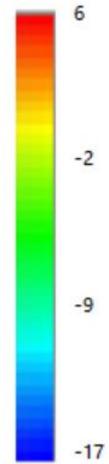
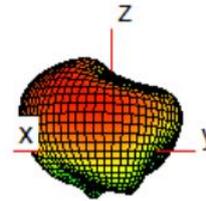


● **MH1**

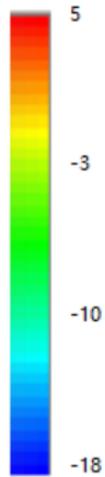
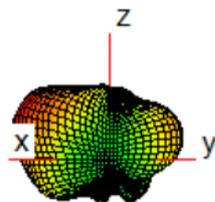
1440 MHz



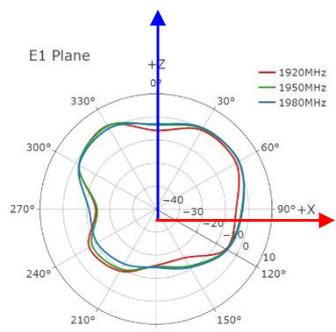
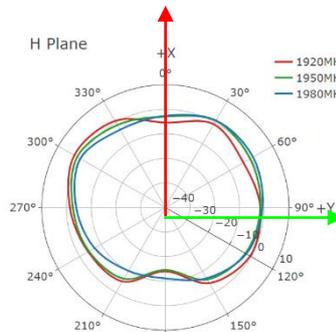
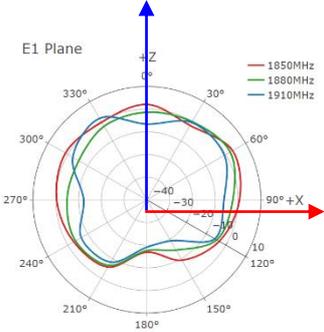
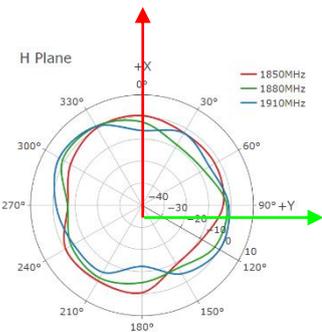
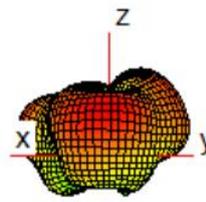
1740 MHz



1880 MHz

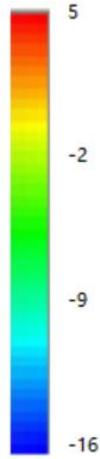
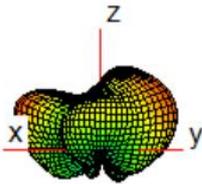


1950 MHz

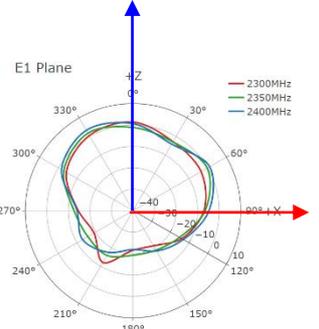
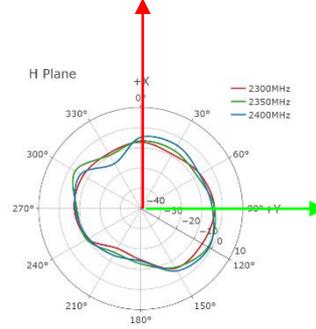
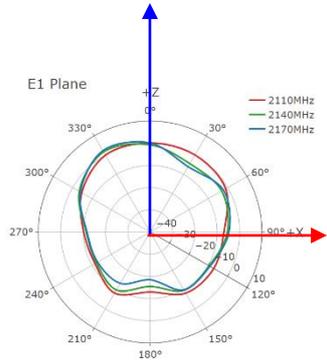
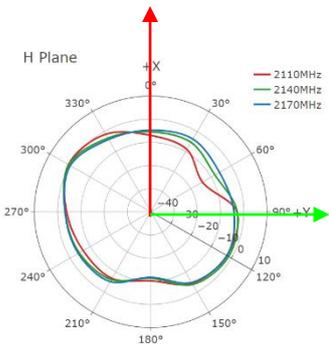
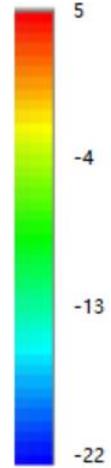
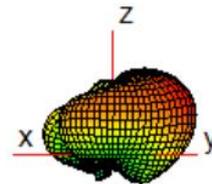


MH1

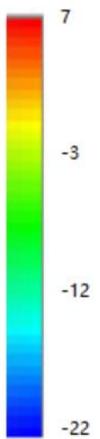
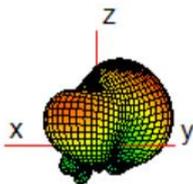
2140 MHz



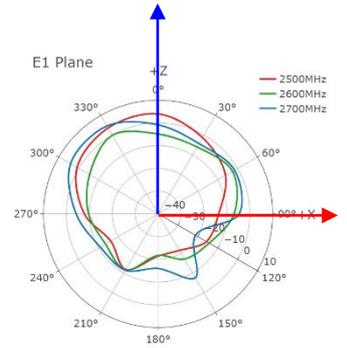
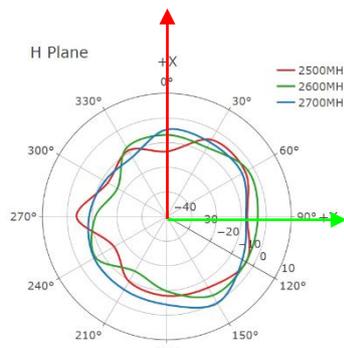
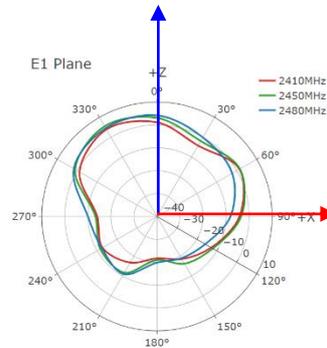
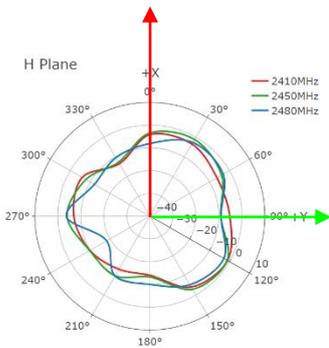
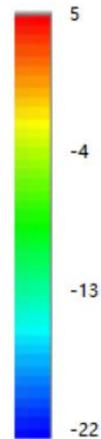
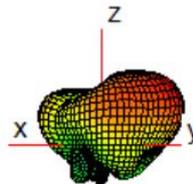
2350 MHz



2450 MHz

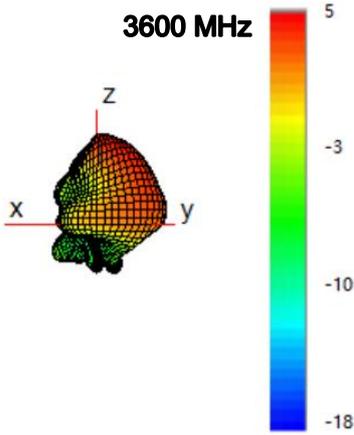


2600 MHz

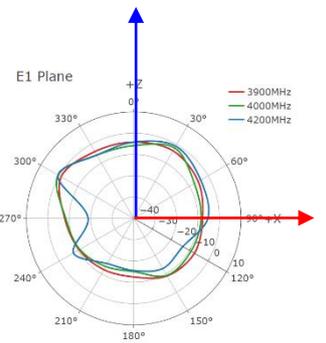
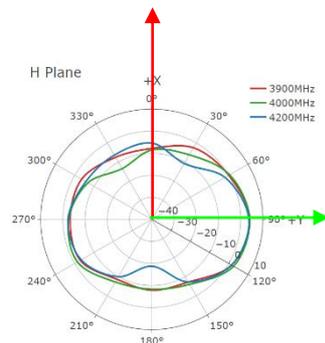
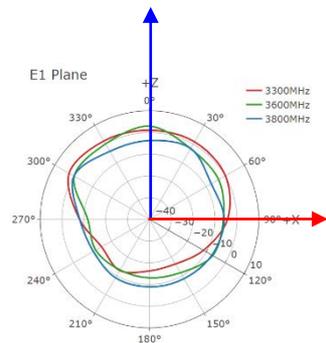
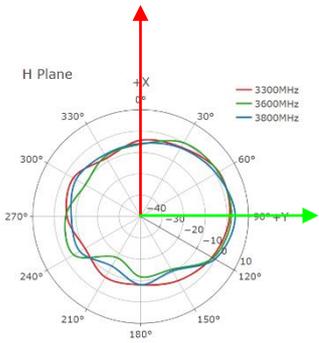
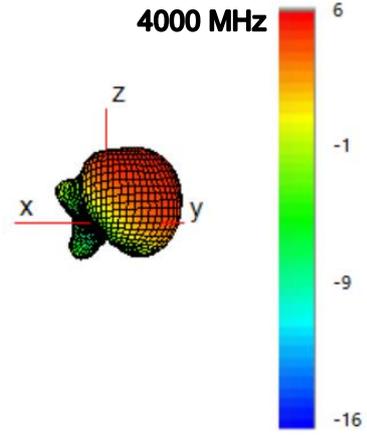


● **MH1**

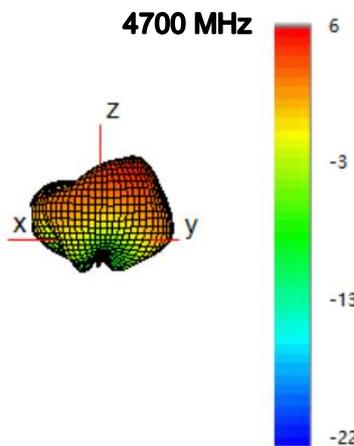
3600 MHz



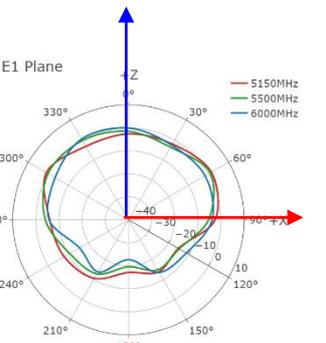
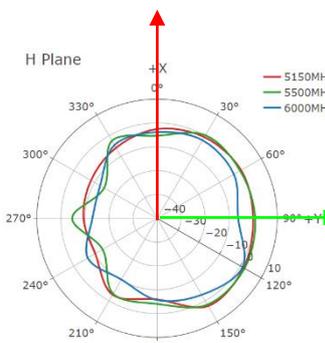
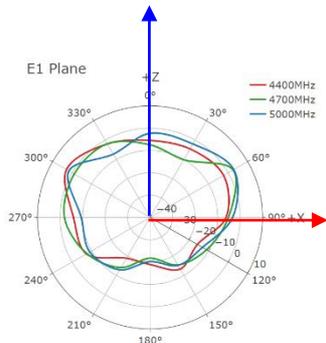
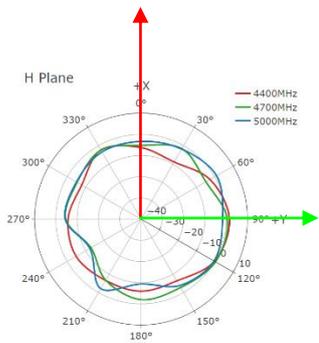
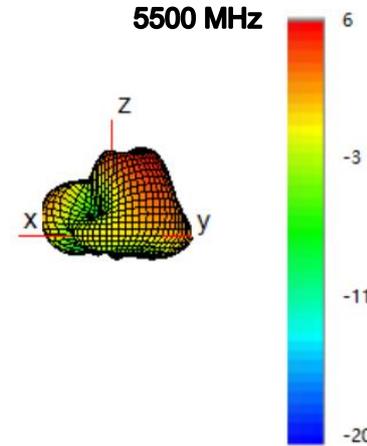
4000 MHz



4700 MHz

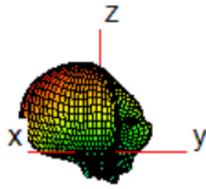


5500 MHz

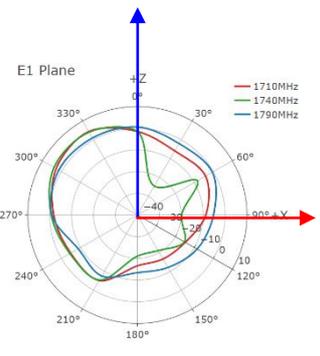
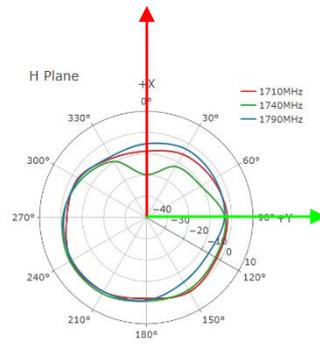
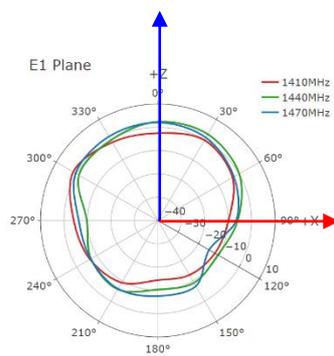
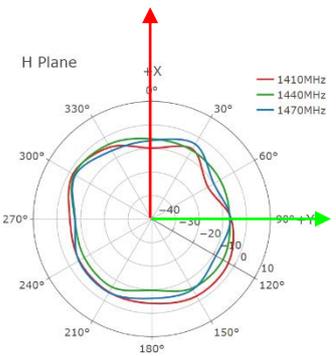
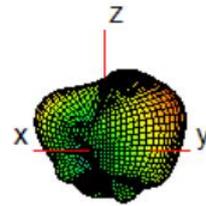


MH2

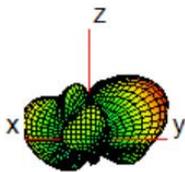
1440 MHz



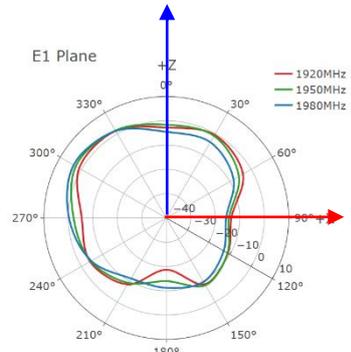
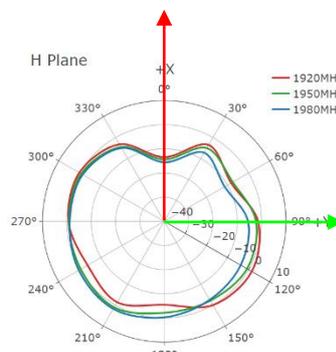
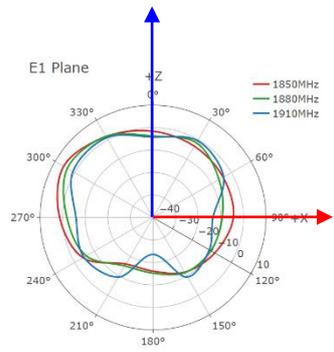
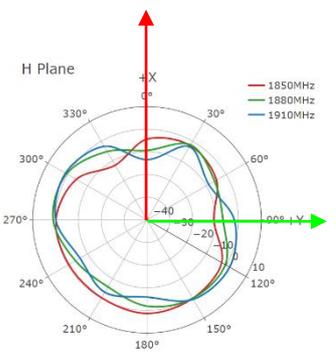
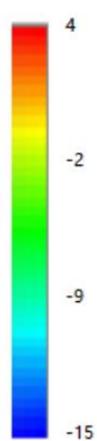
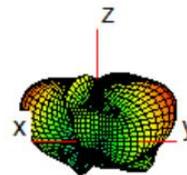
1740 MHz



1880 MHz

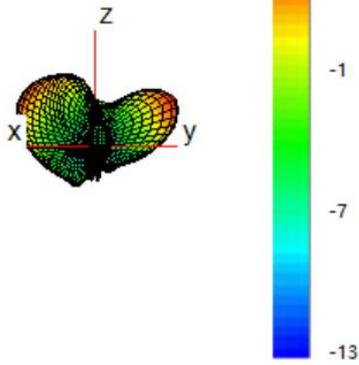


1950 MHz

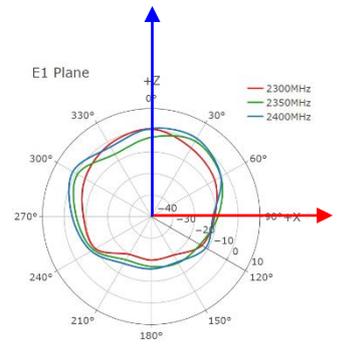
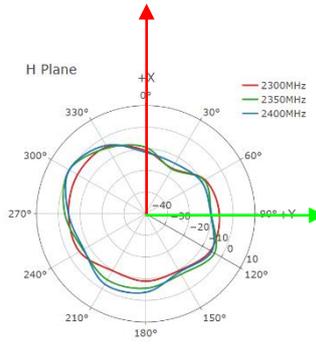
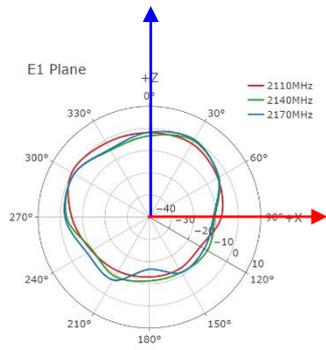
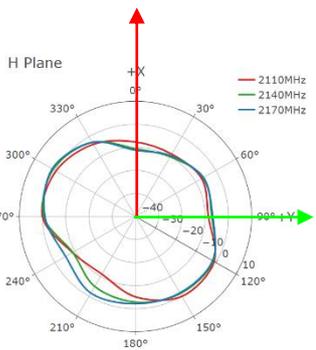
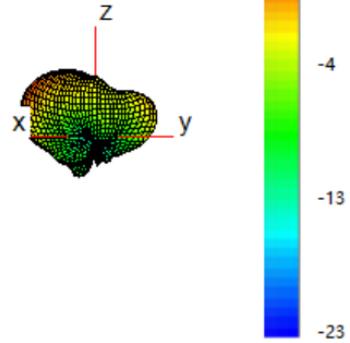


MH2

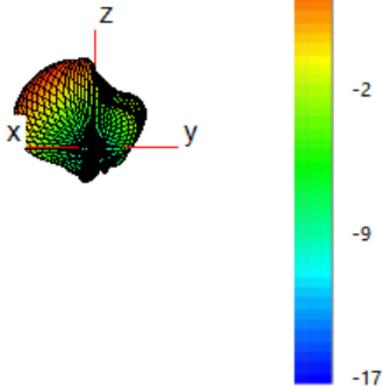
2140 MHz



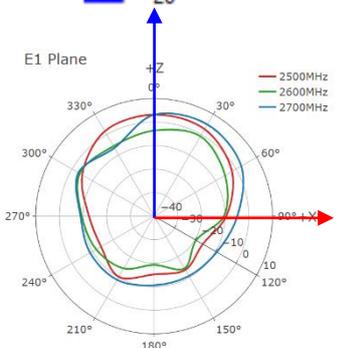
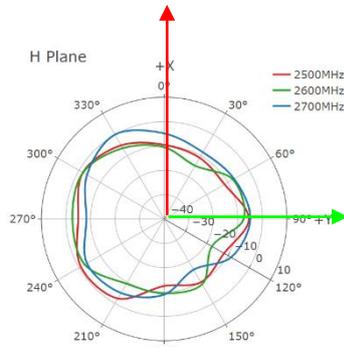
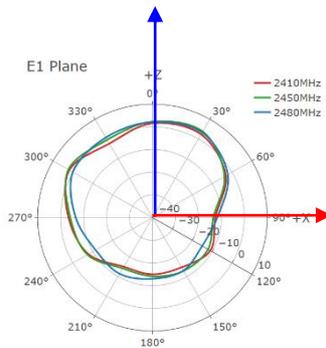
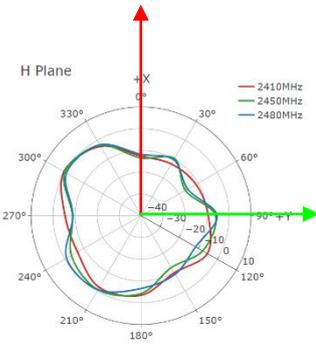
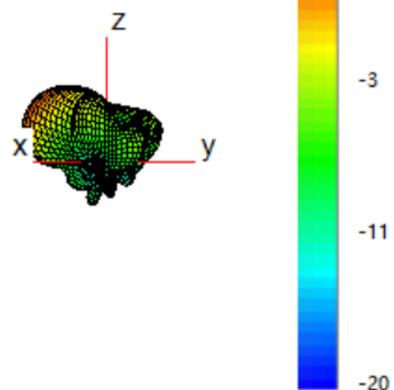
2350 MHz



2450 MHz

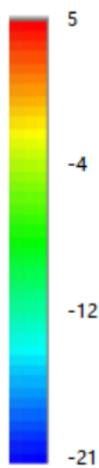
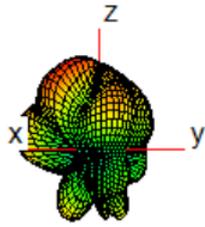


2600 MHz

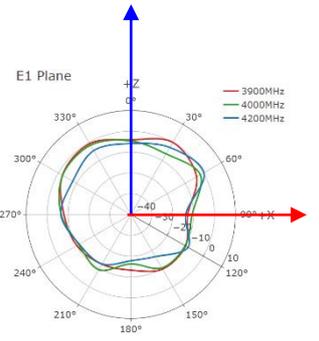
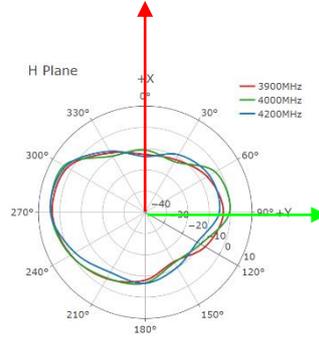
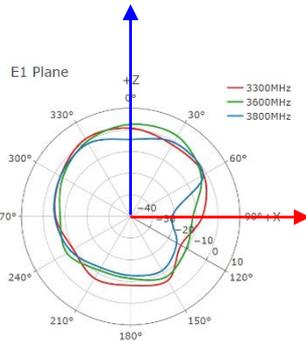
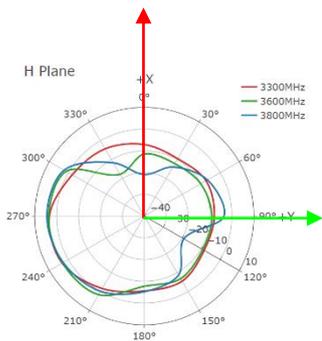
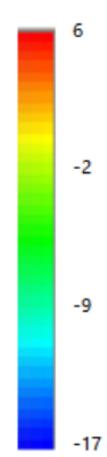
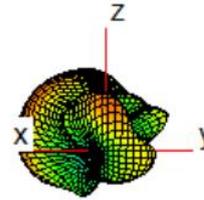


MH2

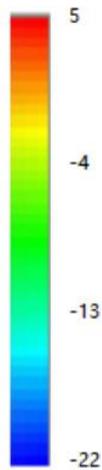
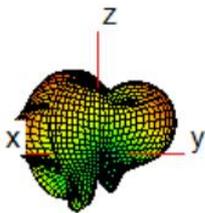
3600 MHz



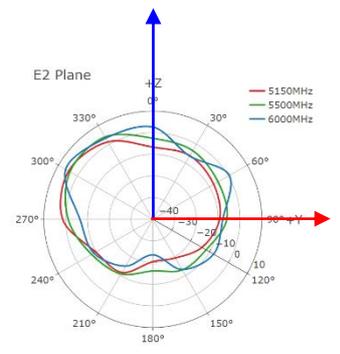
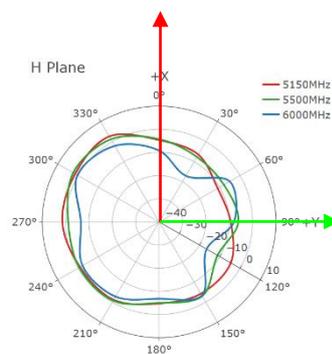
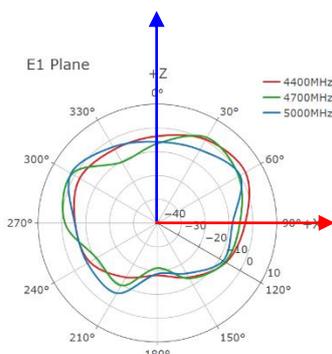
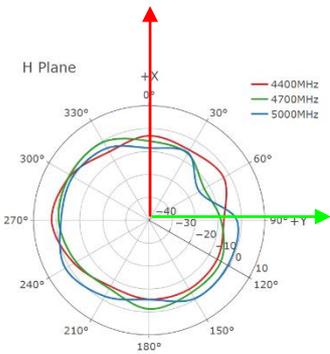
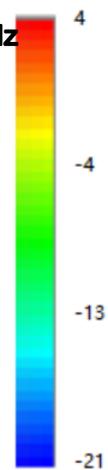
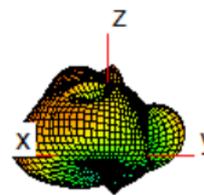
4000 MHz



4700 MHz



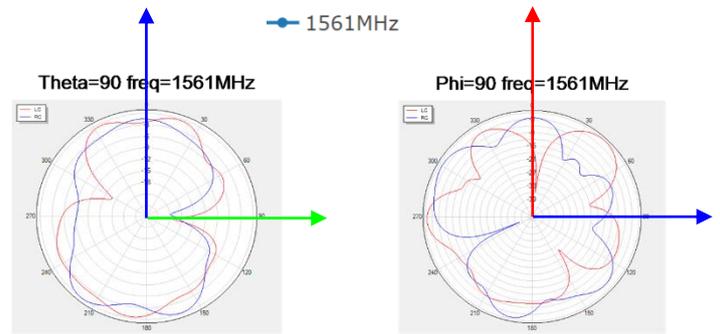
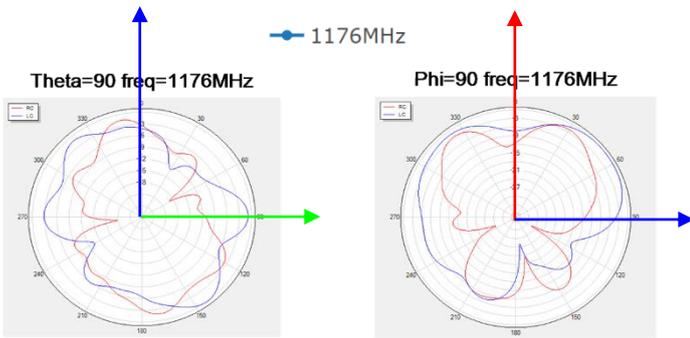
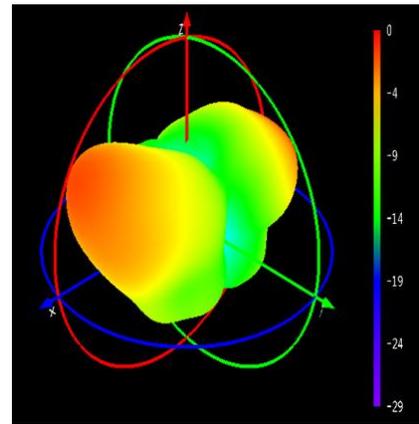
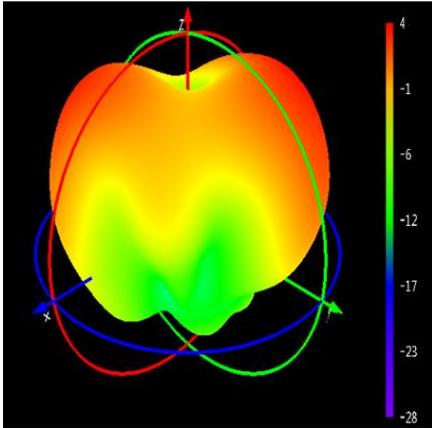
5500 MHz



GNSS

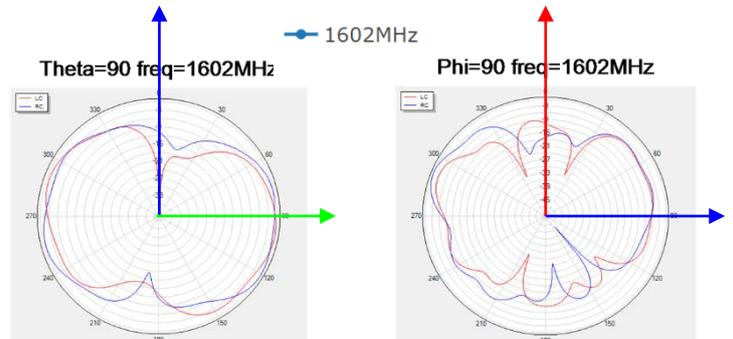
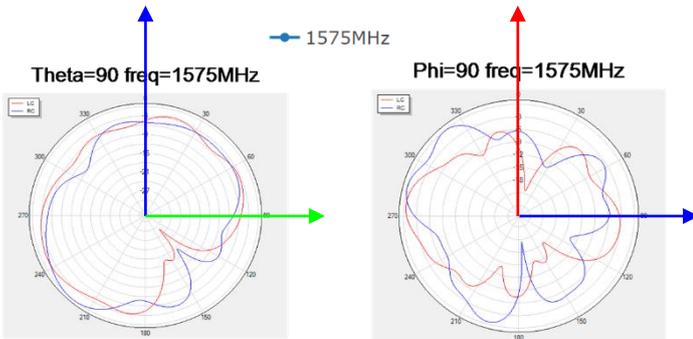
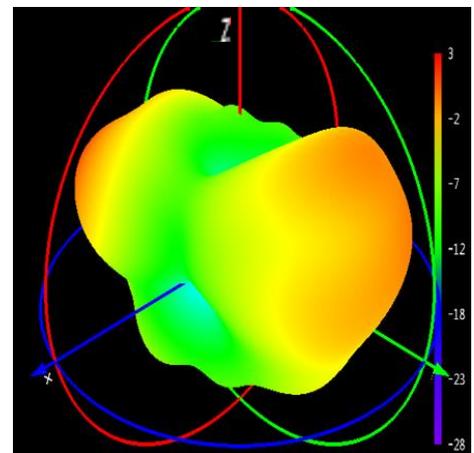
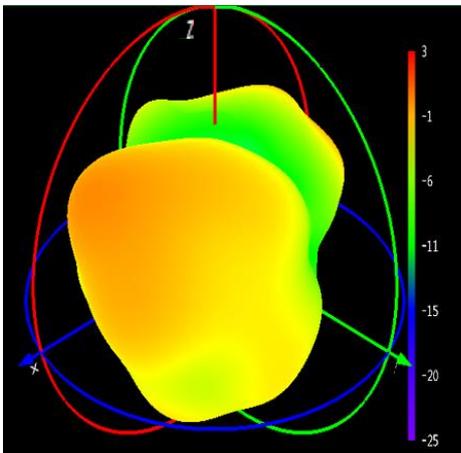
1176 MHz

1561 MHz

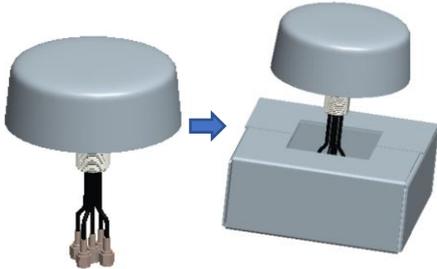
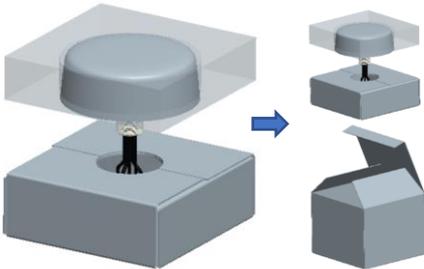
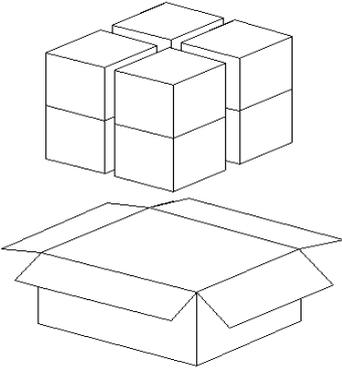


1575 MHz

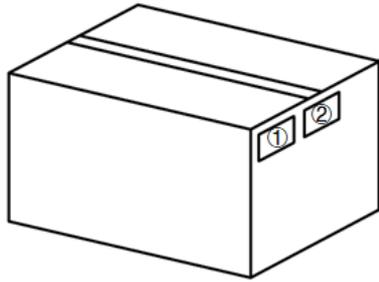
1602 MHz



4 Packaging

Step	Packaging picture / 2D picture	Description
1		<p>Put the product harness and accessories inside the paper card, and the product on the paper card</p>
2		<p>Product top wrapped with bubble wrap; Place the product in the box</p> <p><u>Inner box Size: L*W*H= 148*148*175mm</u></p>
3		<p>Inner boxes into the outer box, 4 per layer, stacked 2 layers, a total of 8 inner boxes (8pcs Antenna / Per Carton Box)</p> <p><u>Carton Size: L*W*H= 310*310*370mm</u></p>

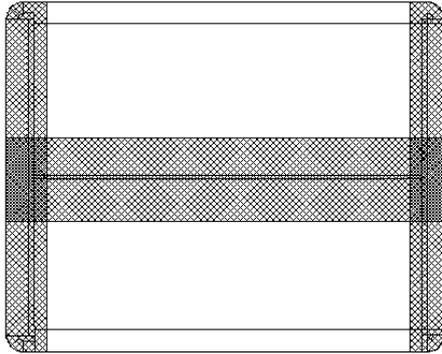
4



Position for Attaching Labels---

- ① Carton Label
- ② Quality Label

5



Sealing Cartons---

“工” type sealing cartons

Contact US

At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:

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Tel: +86 21 5108 6236

Email: info@quectel.com

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Revision History

Version	Date	Author	Note
-	2023-01-05	Wilson Bao	Creation of the document
1.0	2023-01-05	Wilson Bao	Initial Version

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