



# 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 | B71         | B12<br>/B13<br>/B28 | B5<br>/B8<br>/B26 | N74<br>/N75<br>/N76 | B1<br>/B2<br>/B3 | B40           | Wi-Fi<br>2G   | B38<br>/B41   | B42<br>/B48<br>/N77 | N79           | Wi-Fi<br>5G   |
|-------------------------|------|-------------|---------------------|-------------------|---------------------|------------------|---------------|---------------|---------------|---------------------|---------------|---------------|
|                         | Band | 600–<br>700 | 700–<br>810         | 820–<br>960       | 1420–<br>1520       | 1700–<br>2170    | 2300–<br>2400 | 2400–<br>2500 | 2500–<br>2690 | 3300–<br>4200       | 4400–<br>5000 | 5150–<br>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<br>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.<br>(%)         | 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          |

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

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

|             |    |                |
|-------------|----|----------------|
| Return Loss | FS | $\leq -4.3$ dB |
|             | MP | $\leq -5$ dB   |
| Peak Gain   | FS | $\leq 7.3$ dBi |
|             | MP | $\leq 9.3$ 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   |             | $\leq 5.7$     |             |             |
|                      | MP   |             | $\leq 5.0$     |             |             |
| Return Loss          | FS   |             | $\leq -3.1$ dB |             |             |
|                      | MP   |             | $\leq -1.2$ dB |             |             |
| Peak Gain            | FS   |             | $\leq 2.1$ dBi |             |             |
|                      | MP   |             | $\leq 4.6$ dBi |             |             |

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

| 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        | √    | -   |

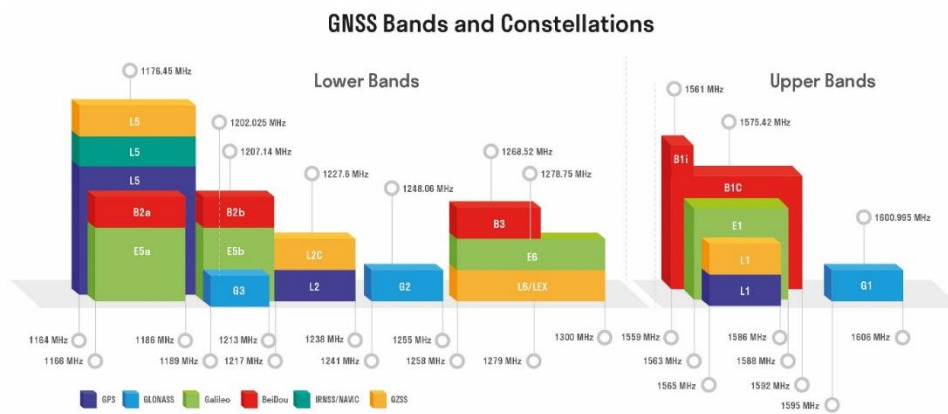
| 5G NR/ LTE/ LTE-Advanced/ WCDMA/ HSPA/ HSPA+/ GPRS/ GSM/ NB-IoT |                 |               |                |      |     |
|---|-----------------|---------------|----------------|------|-----|
| Band  | Frequency (MHz) | Uplink (MHz)  | Downlink (MHz) | LMHs | MHs |
| 14  | 700             | 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  |                | √    | √   |
| <b>Note: Covered √ means efficiency &gt; 20%</b>                |                 |              |                |      |     |

| GNSS Frequency Bands (MHz) |   |  |  |   |  |
|----------------------------|---|--|--|---|--|
| <b>GPS</b>                 | <b>L1</b><br>Centre 1575.42<br>(1565–1586)        | <b>L2</b><br>Centre 1227.6<br>(1217–1238)              | <b>L5</b><br>Centre 1176.45<br>(1164–1189)       |   |  |
| <b>FS</b>                  | √   | -  | √  |   |  |
| <b>MP</b>                  | √   | -  | √  |   |  |
| <b>GLONASS</b>             | <b>G1-L10C-L10F</b><br>Centre 1601<br>(1595–1606) | <b>G2-L20C-L20F</b><br>Centre 1248.06<br>(1241–1255)   | <b>G3-L30C</b><br>Centre 1202.025<br>(1189–1213) |   |  |
| <b>FS</b>                  | √   | -  | -  |   |  |
| <b>MP</b>                  | √   | -  | -  |   |  |
| <b>GALILEO</b>             | <b>E1</b><br>Centre 1575.42<br>(1563–1588)        | <b>E5a</b><br>Centre 1176.45<br>(1166–1187)            | <b>E5b</b><br>Centre 1207.14<br>(1197–1218)      | <b>E6</b><br>Centre 1278.75<br>(1258–1300)  |  |
| <b>FS</b>                  | √   | √  | -  | -   |  |
| <b>MP</b>                  | √   | √  | -  | -   |  |
| <b>BEIDOU</b>              | <b>B1I</b><br>Centre 1561.098<br>(1559–1564)      | <b>B1C (BeiDou-3)</b><br>Centre 1575.42<br>(1559–1592) | <b>B2a-B2I</b><br>Centre 1176.45<br>(1166–1187)  | <b>B2b</b><br>Centre 1207.14<br>(1197–1217) | <b>B3</b><br>Centre 1268.52<br>(1258–1279) |
| <b>FS</b>                  | √   | √  | √  | -   | -  |
| <b>MP</b>                  | √   | √  | √  | -   | -  |
| <b>QZSS</b>                | <b>L1</b><br>Centre 1575.42<br>(1573–1578)        | <b>L2C</b><br>Centre 1227.6<br>(1226–1229)             | <b>L5</b><br>Centre 1176.45<br>(1166–1187)       | <b>L6</b><br>Centre 1278.75<br>(1257–1300)  |  |
| <b>FS</b>                  | √   | -  | √  | -   |  |

|              |  |   |   |   |  |
|--------------|--|---|---|---|--|
| <b>MP</b>    | √  | - | √ | - |  |
| <b>IRNSS</b> | <b>L5</b><br>Centre 1176.45<br>(1164–1189) |   |   |   |  |
| <b>FS</b>    | √  |   |   |   |  |
| <b>MP</b>    | √  |   |   |   |  |

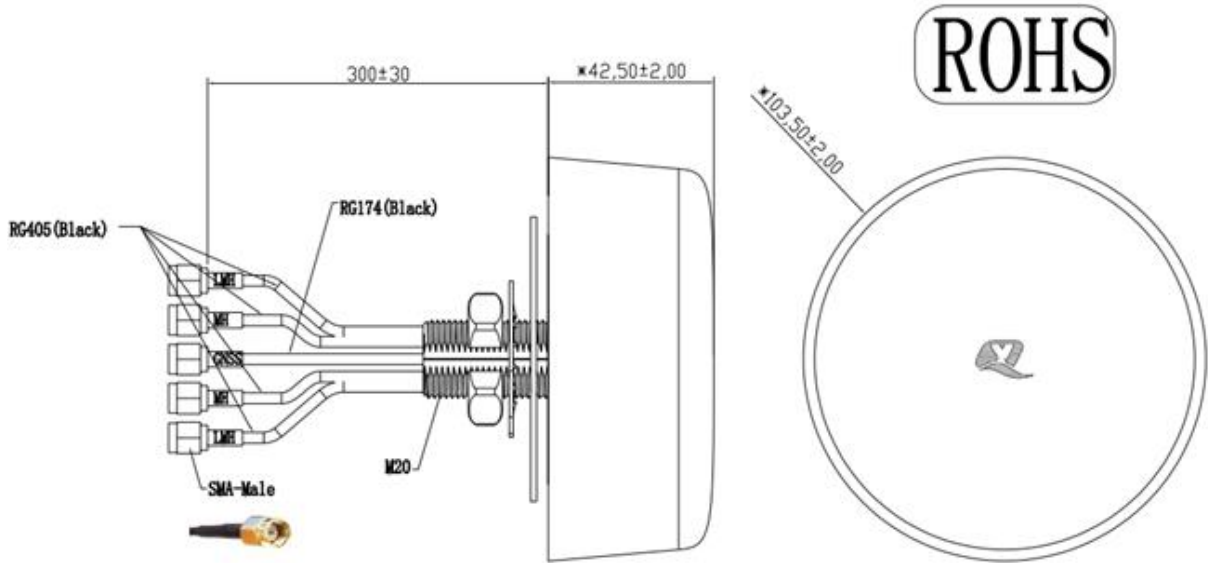


### 1.3. Mechanical, Environment & Storage

| 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)<br>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**  
Φ20mm/Φ18mm  
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.

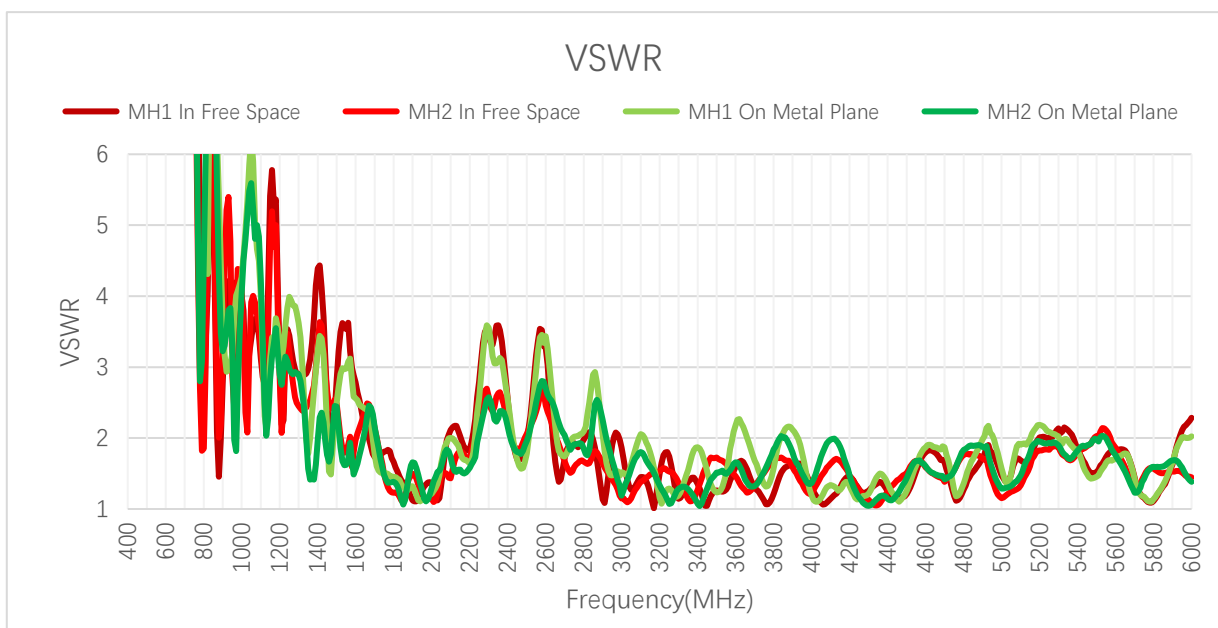
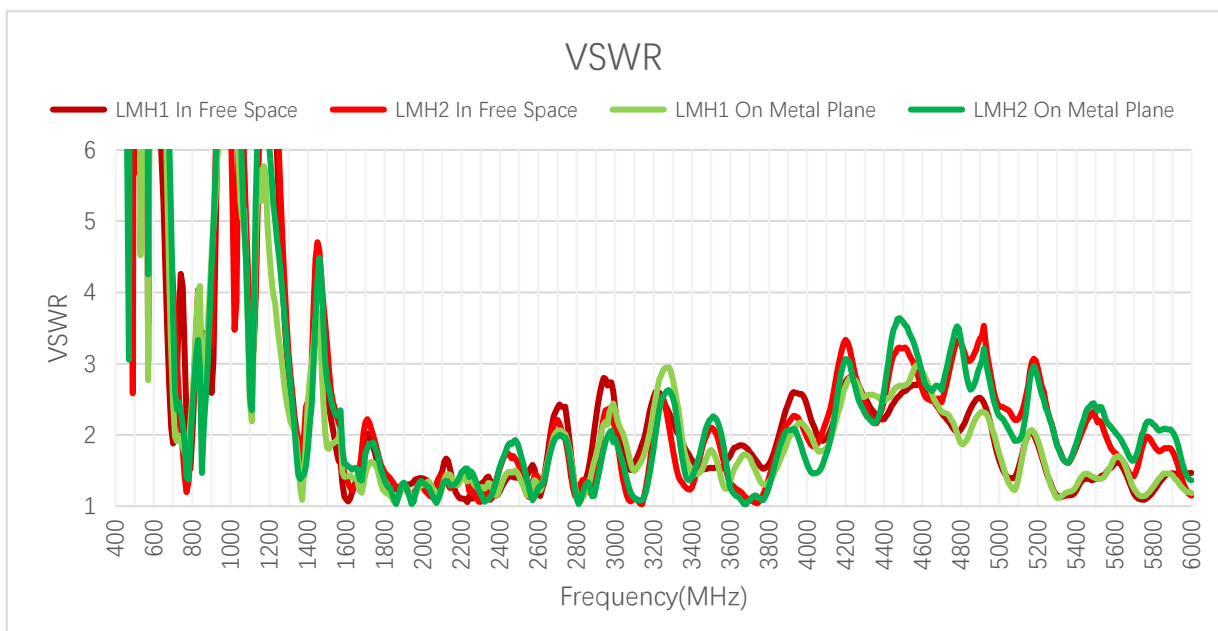


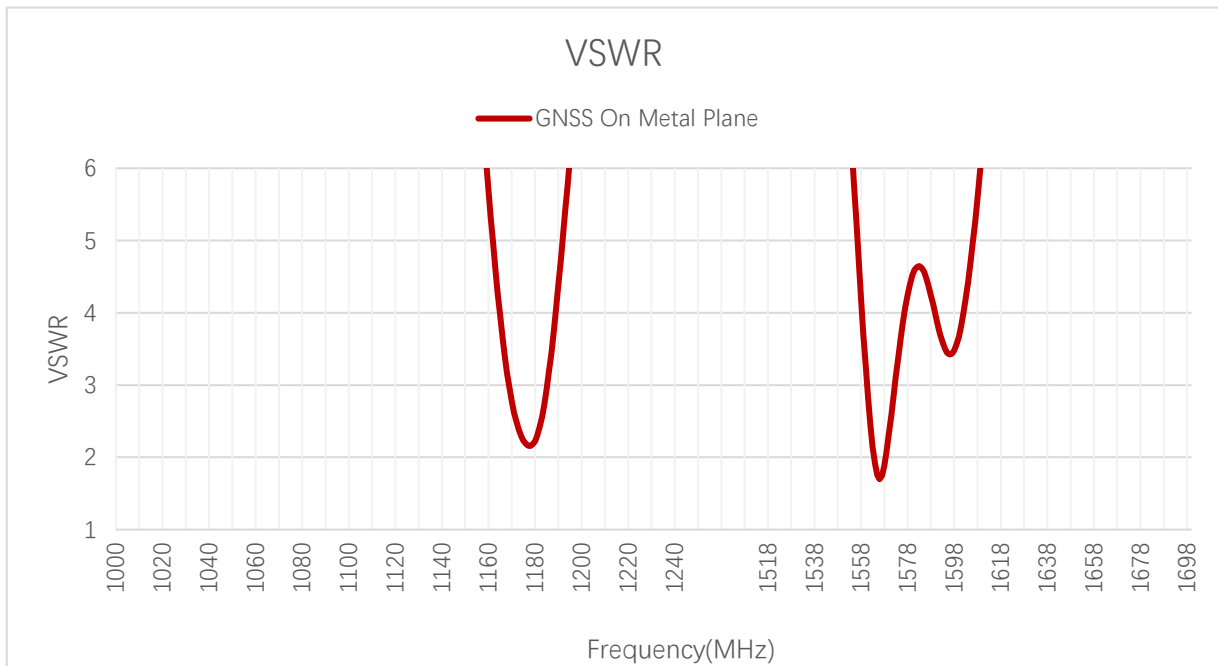
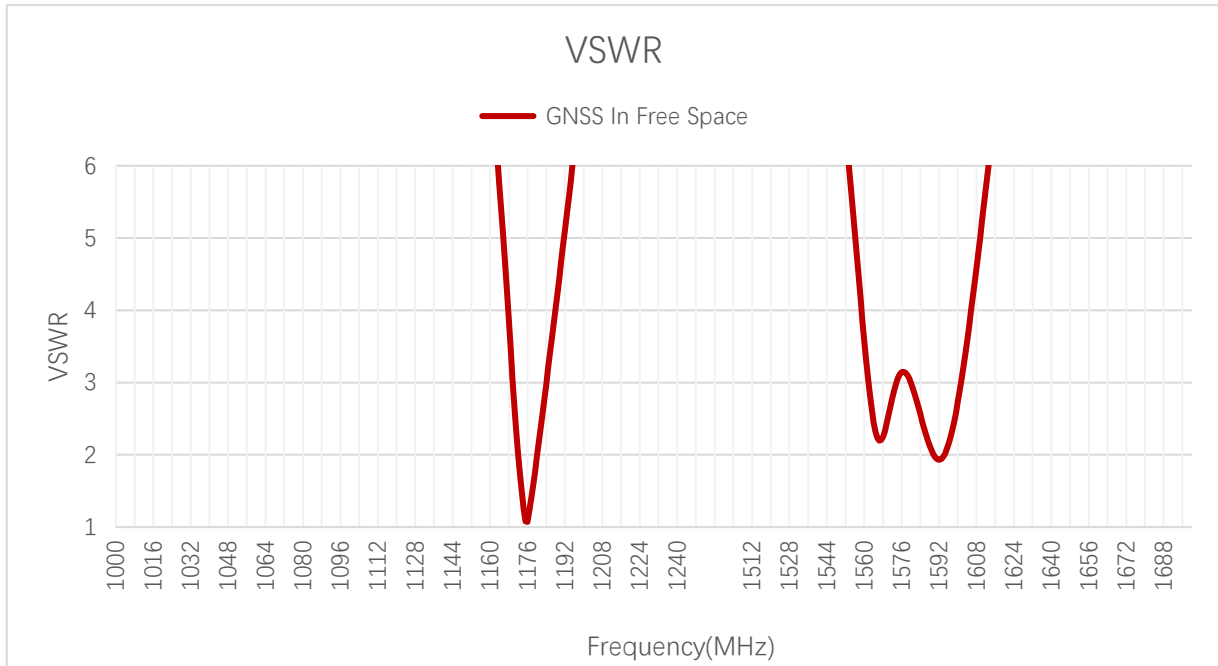
**Surface Mount**  
Magnetic Base  
/Adhesive Surface  
Mounting (included)  
For temporary and low  
mobility installations.

# 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  |

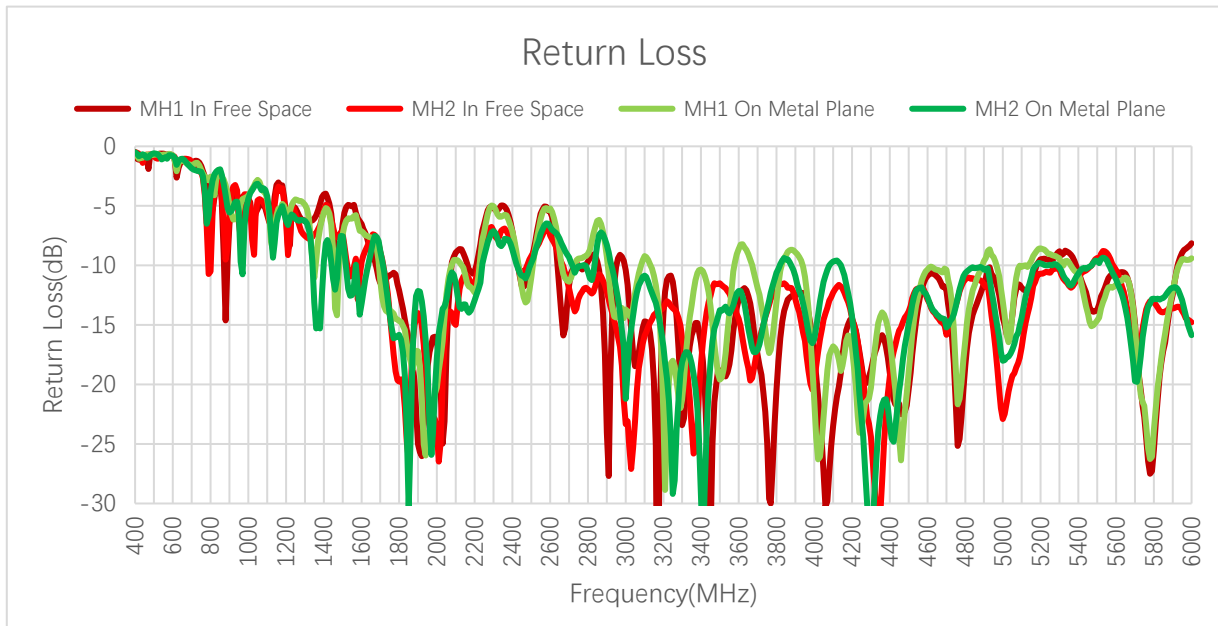
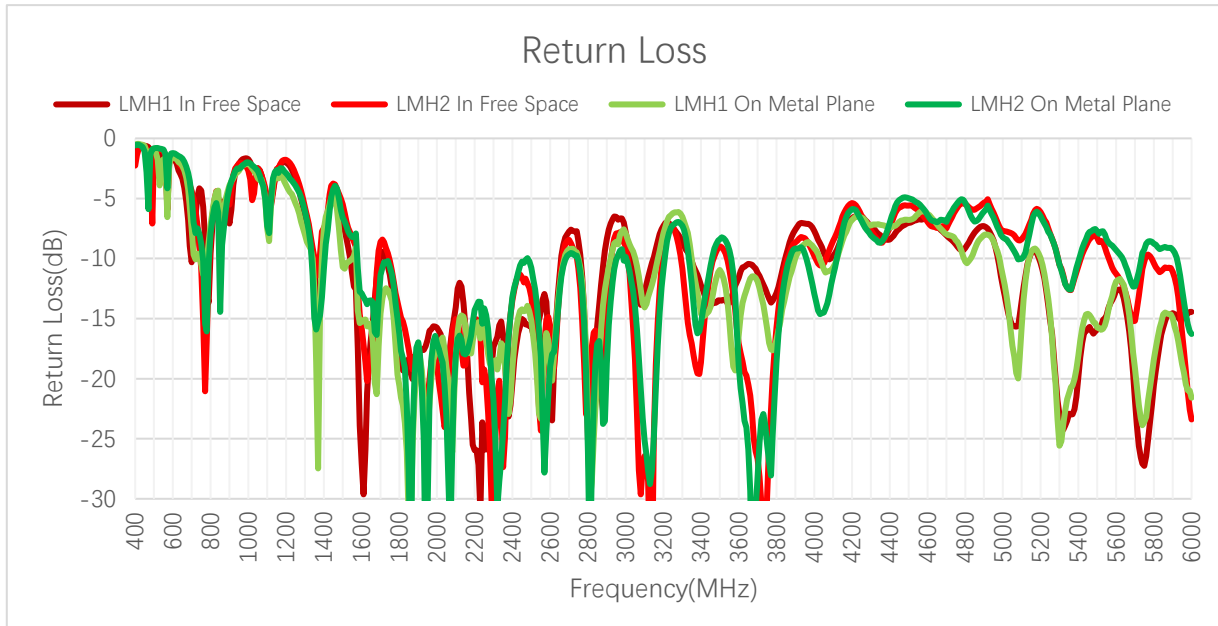
**VSWR - MHs**

| 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  |

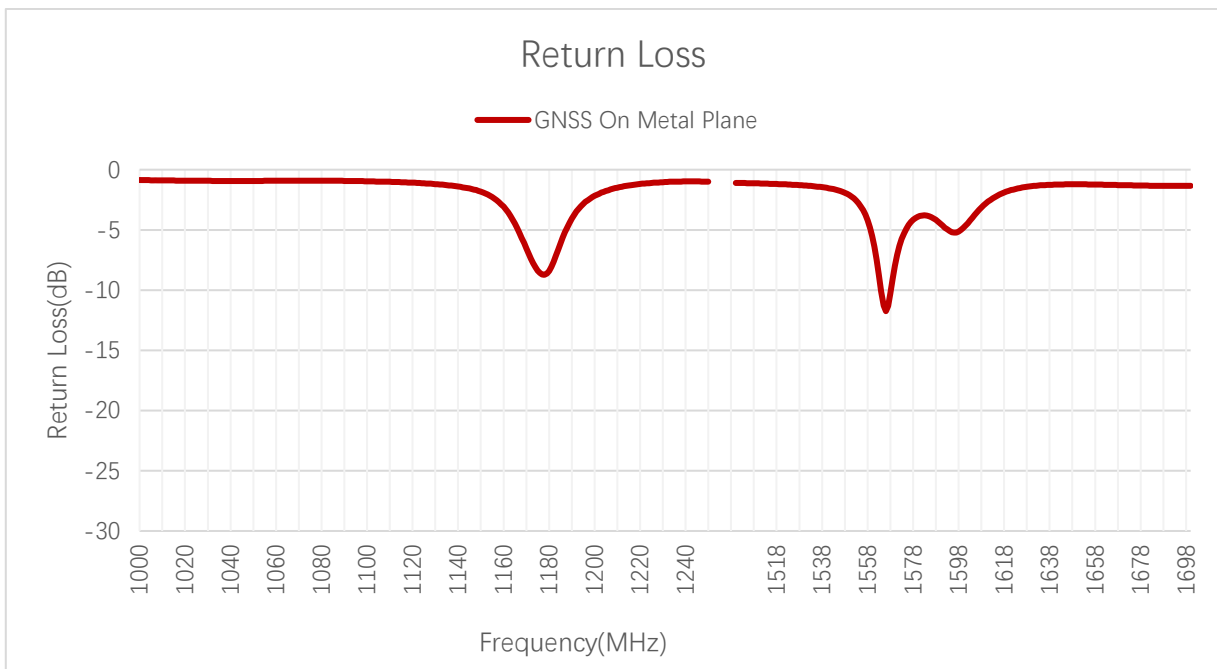
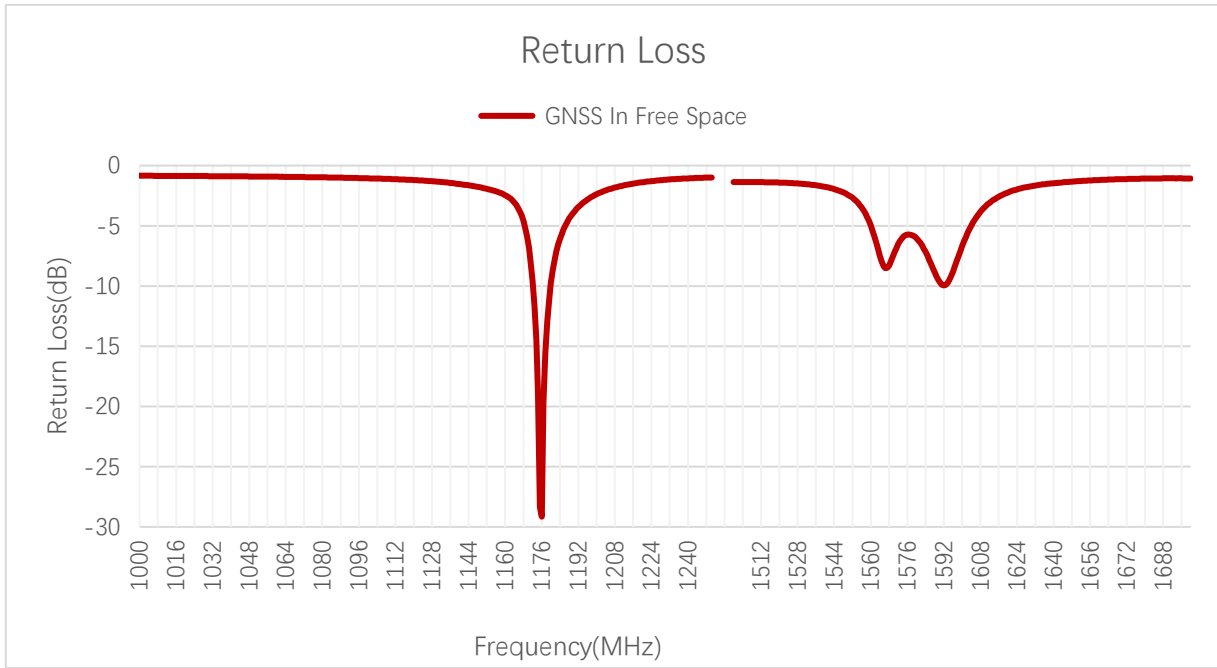
**VSWR - GNSS**

| 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 |

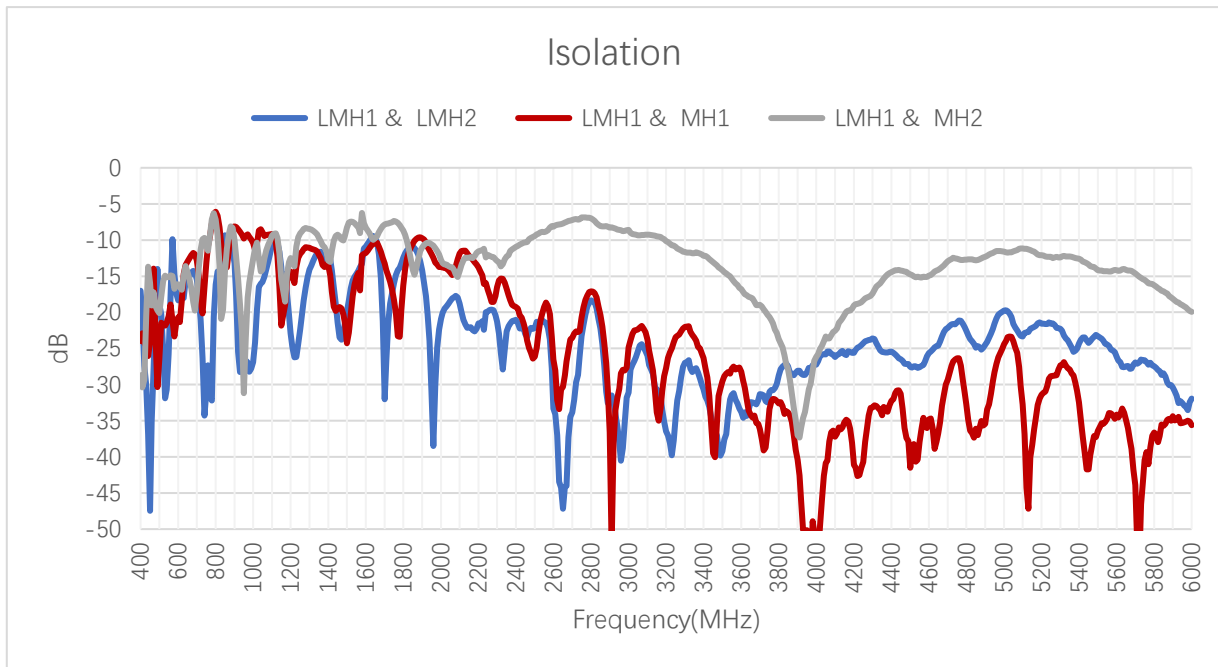
**Return Loss(dB) - GNSS**

| 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 |

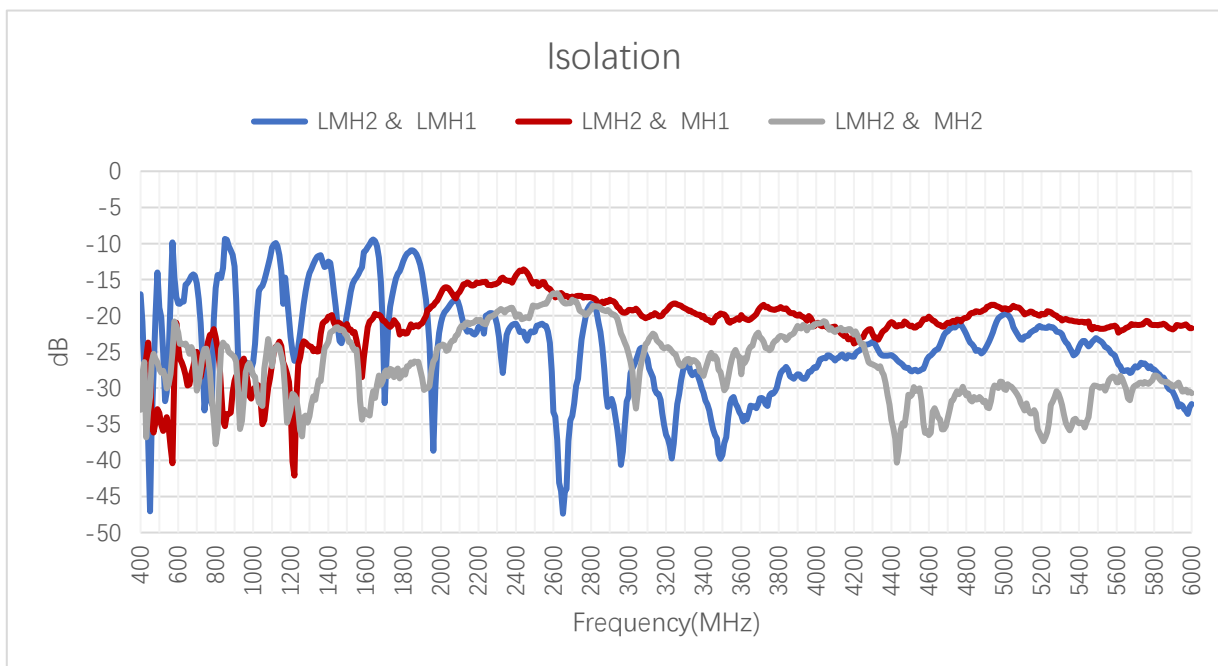
### 3.1.3. Isolation

#### 3.1.3.1. Test Status: In Free Space

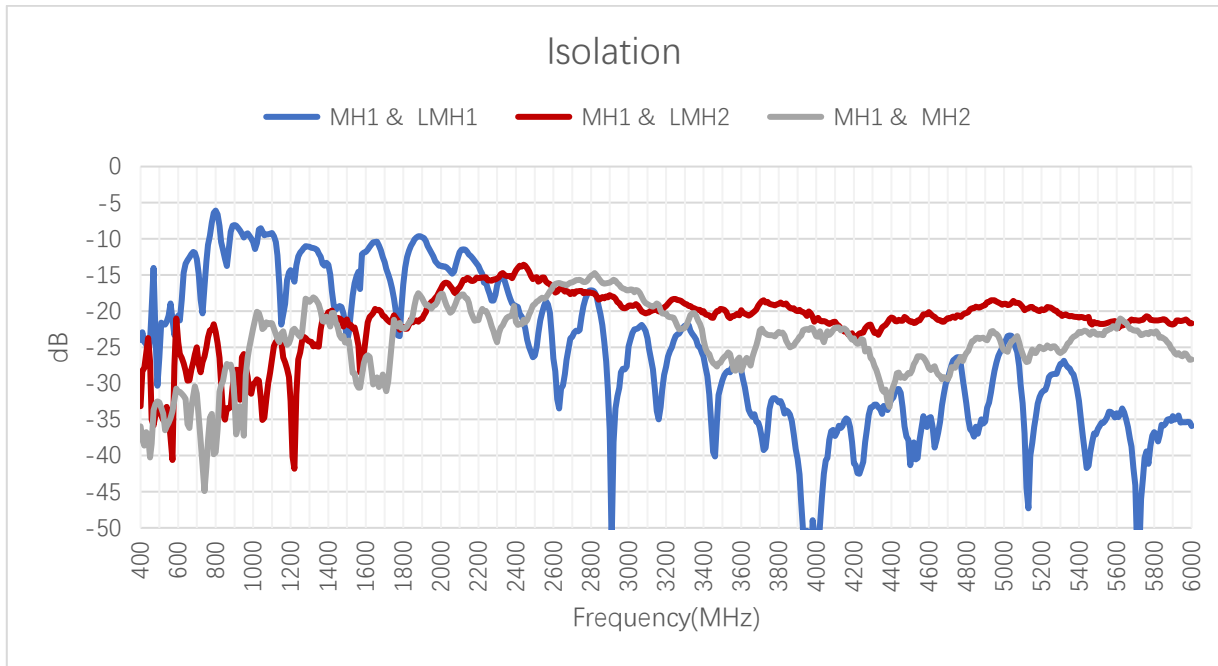
##### 3.1.3.1.1. LMH1



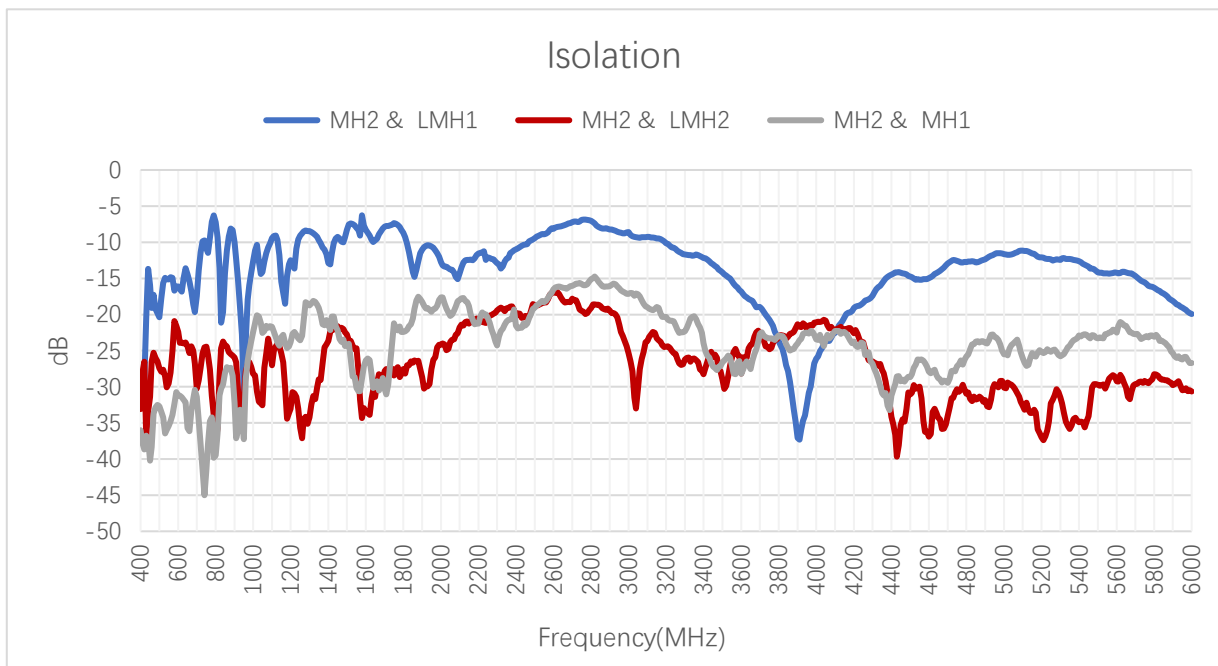
##### 3.1.3.1.2. LMH2



**3.1.3.1.3. MH1**

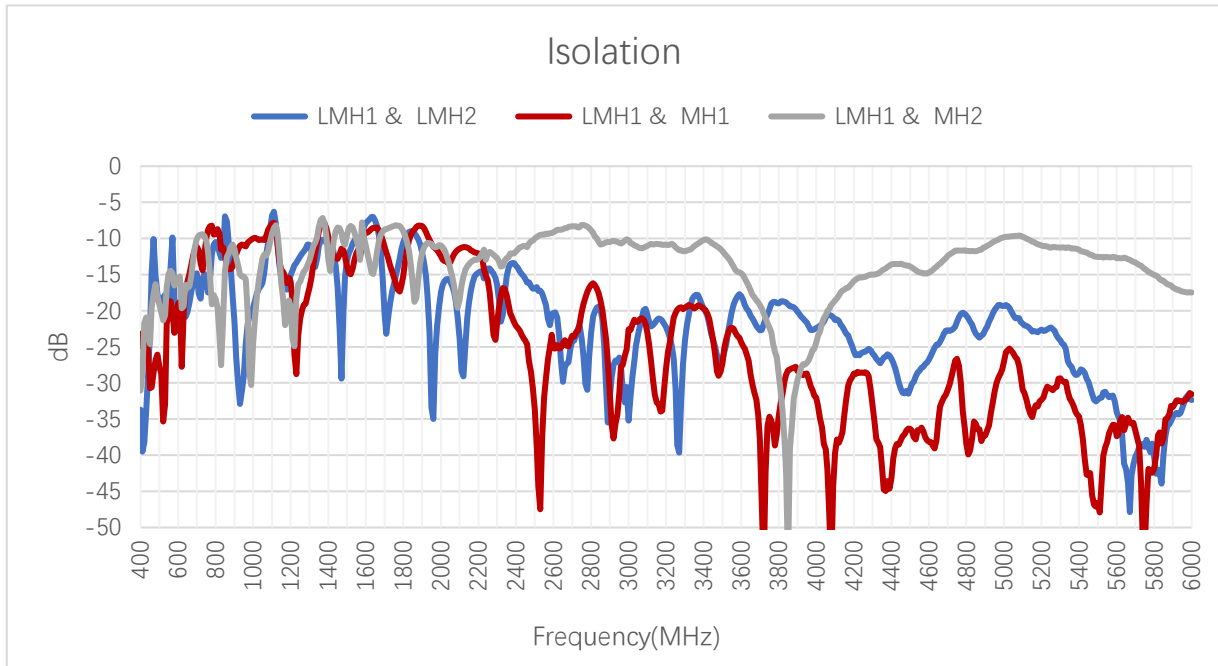


**3.1.3.1.4. MH2**

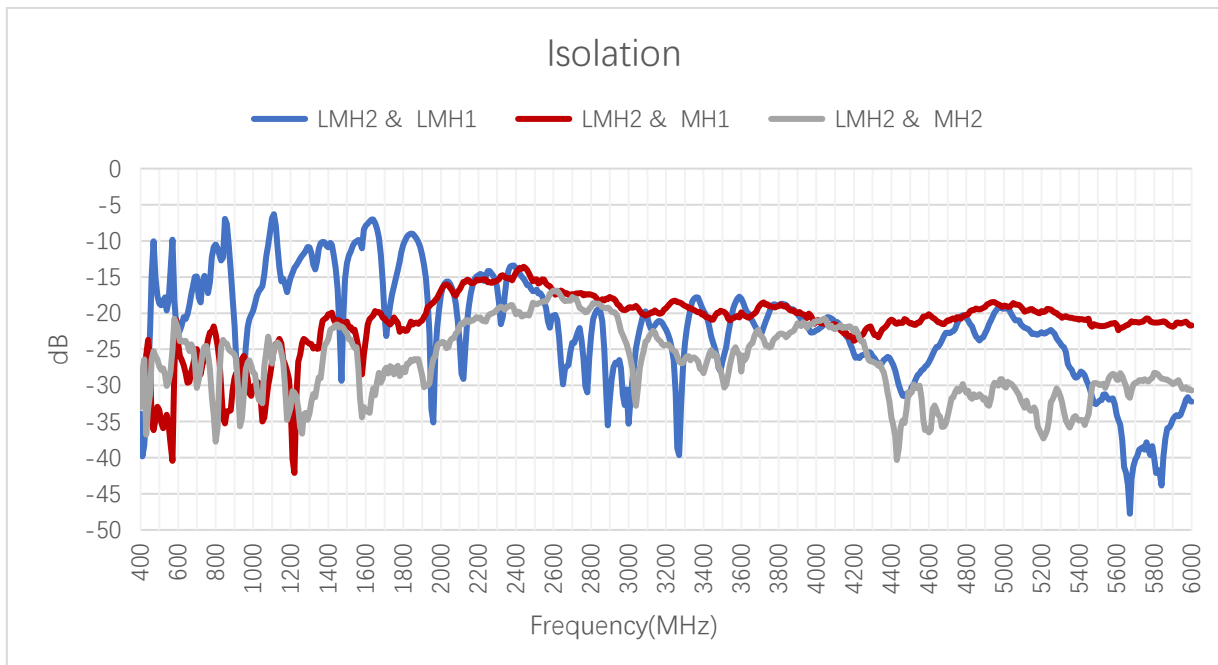


3.1.3.2. Test Status: On 320 × 240 mm Metal Plane

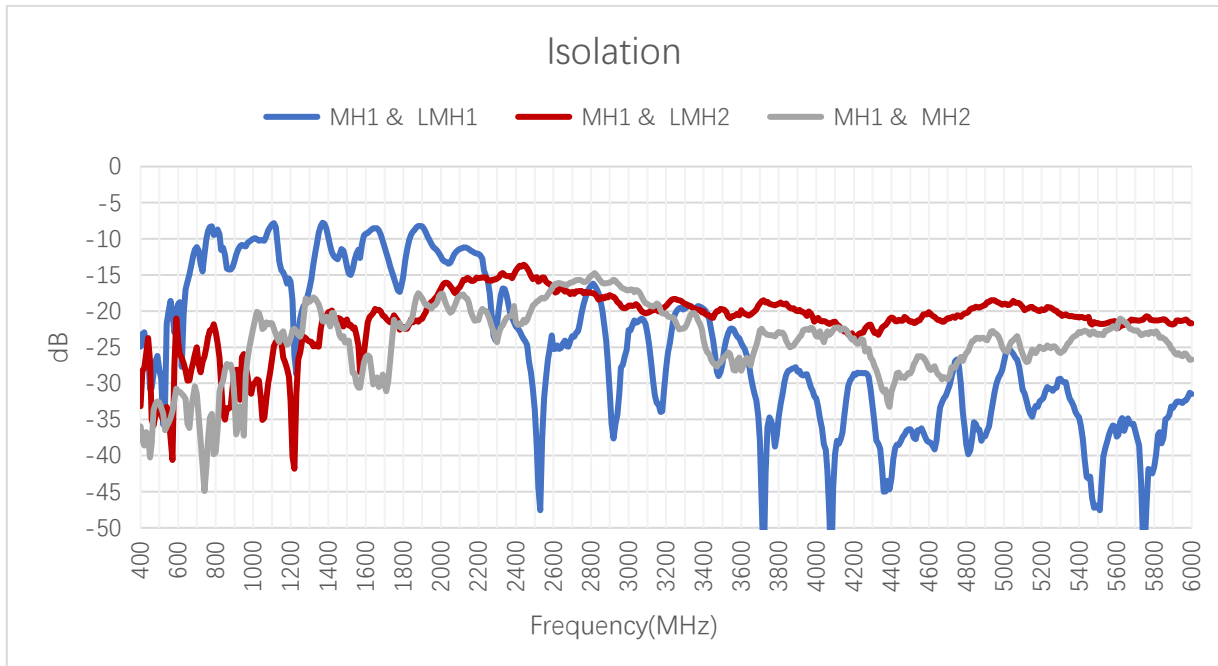
3.1.3.2.1. LMH1



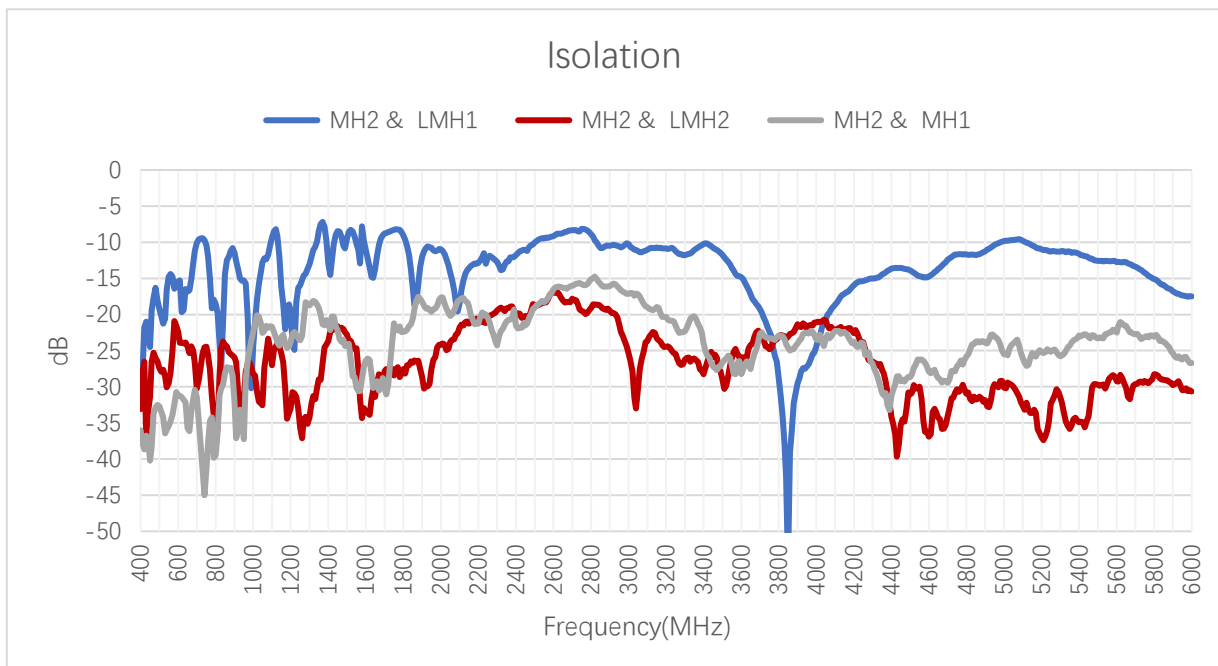
3.1.3.2.2. LMH2



**3.1.3.2.3. MH1**



**3.1.3.2.4. MH2**



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

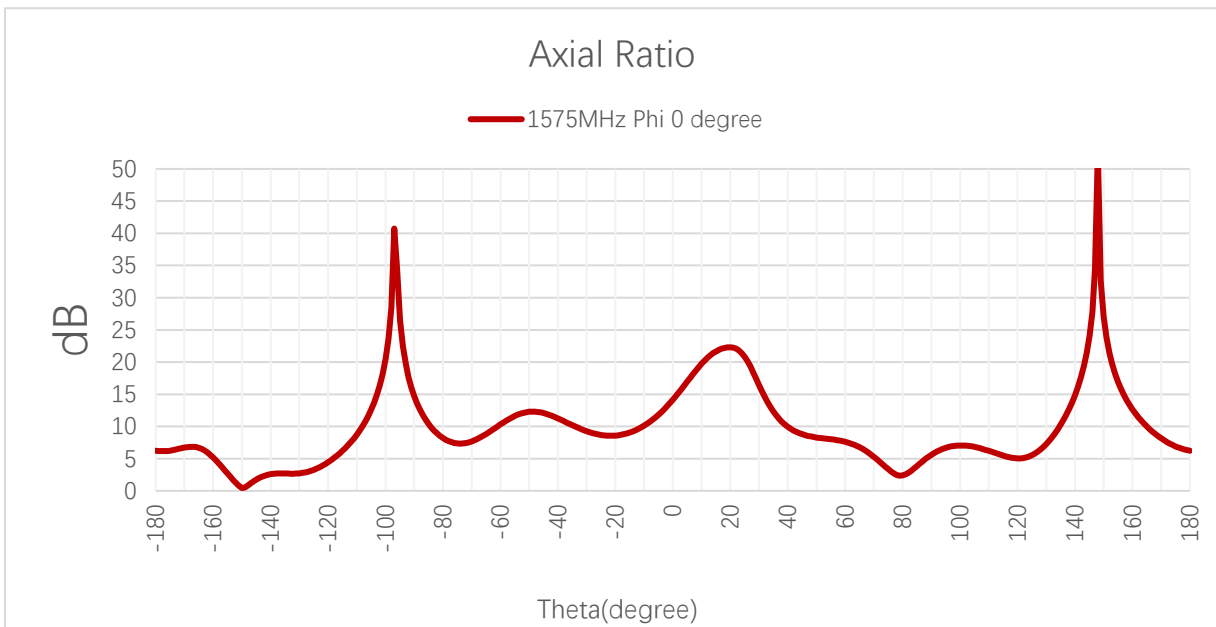
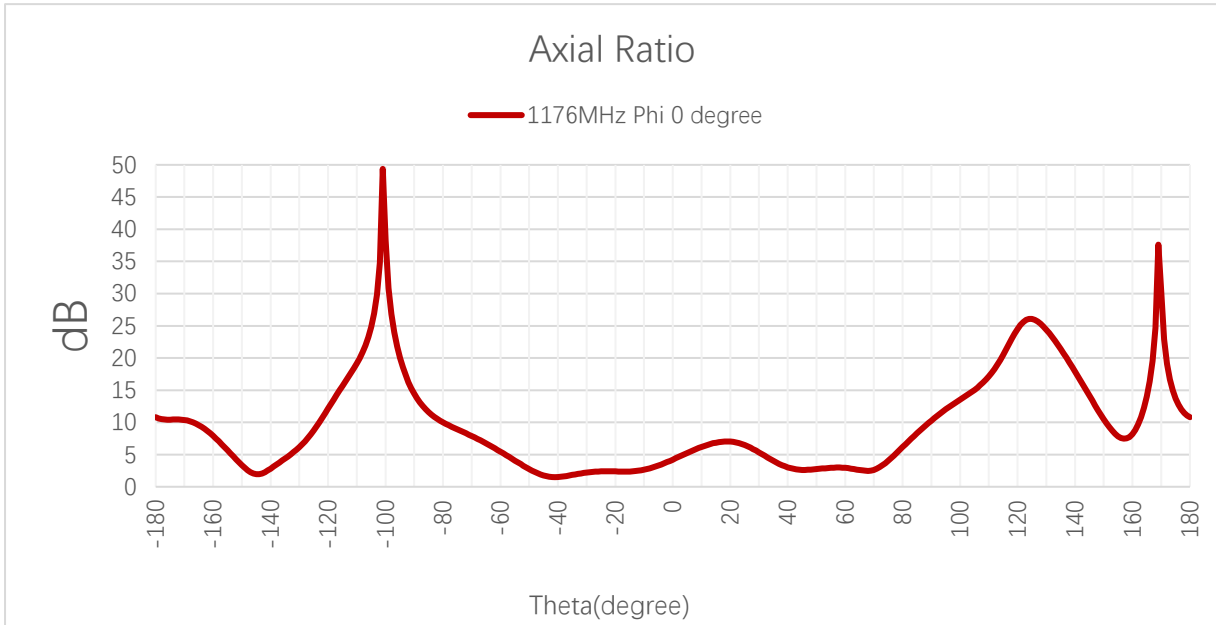
Max Isolation (dB)

|      | Band               | B71         | B12/<br>B13/<br>B28 | B5/<br>B8/<br>B26 | N74/<br>N75/<br>N76 | B1/<br>B2/<br>B3 | B40           | Wi-Fi<br>2G   | B38/<br>B41   | B42/<br>B48/<br>N77 | N79           | Wi-Fi<br>5G   |
|------|--------------------|-------------|---------------------|-------------------|---------------------|------------------|---------------|---------------|---------------|---------------------|---------------|---------------|
|      | Freq.<br>(MHz<br>) | 600–<br>700 | 700–<br>810         | 820–<br>960       | 1420–<br>1520       | 1700–<br>2170    | 2300–<br>2400 | 2400–<br>2500 | 2500–<br>2690 | 3300–<br>4200       | 4400–<br>5000 | 5150–<br>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

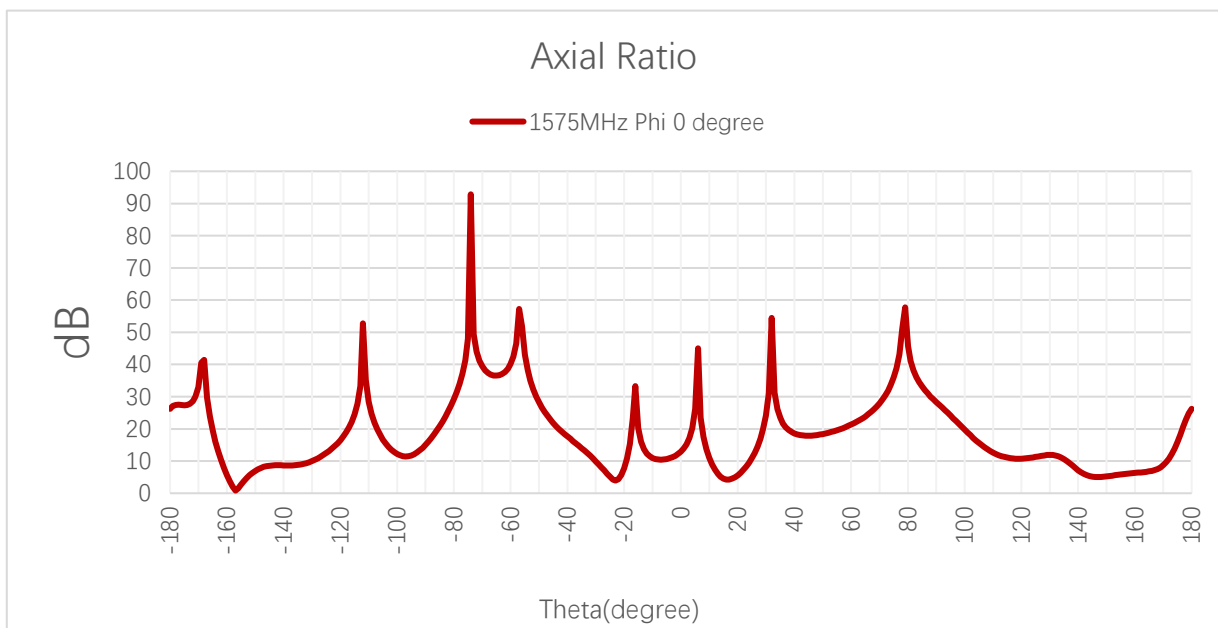
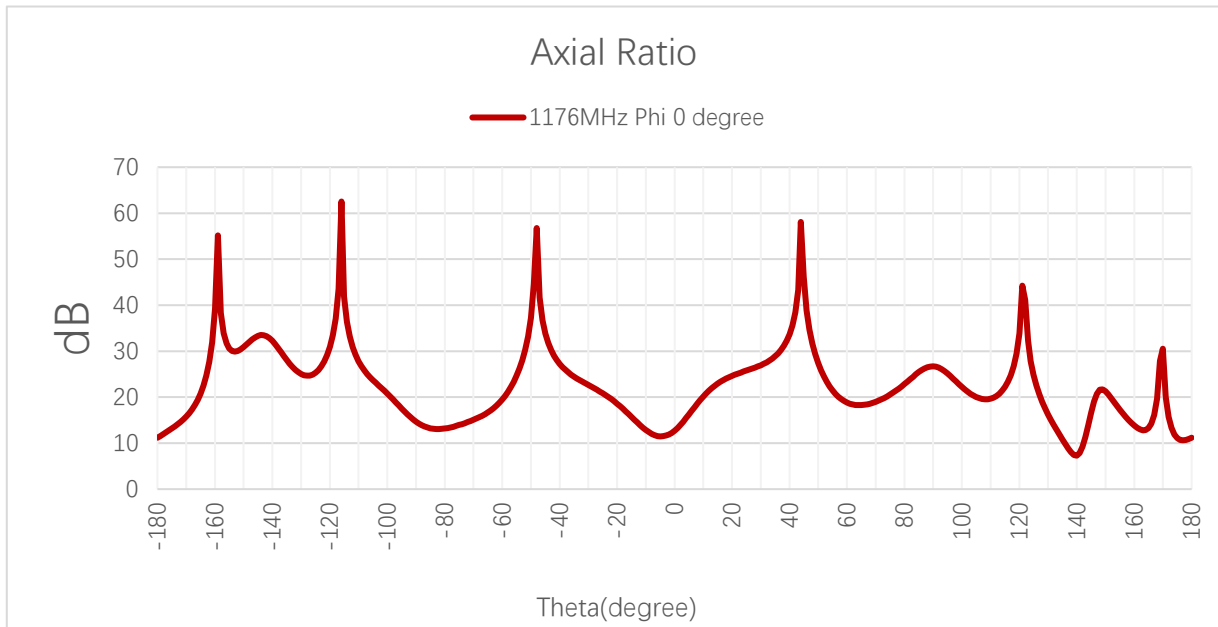
### 3.1.4. GNSS Axial Ratio

#### 3.1.4.1. Test Status: In Free Space





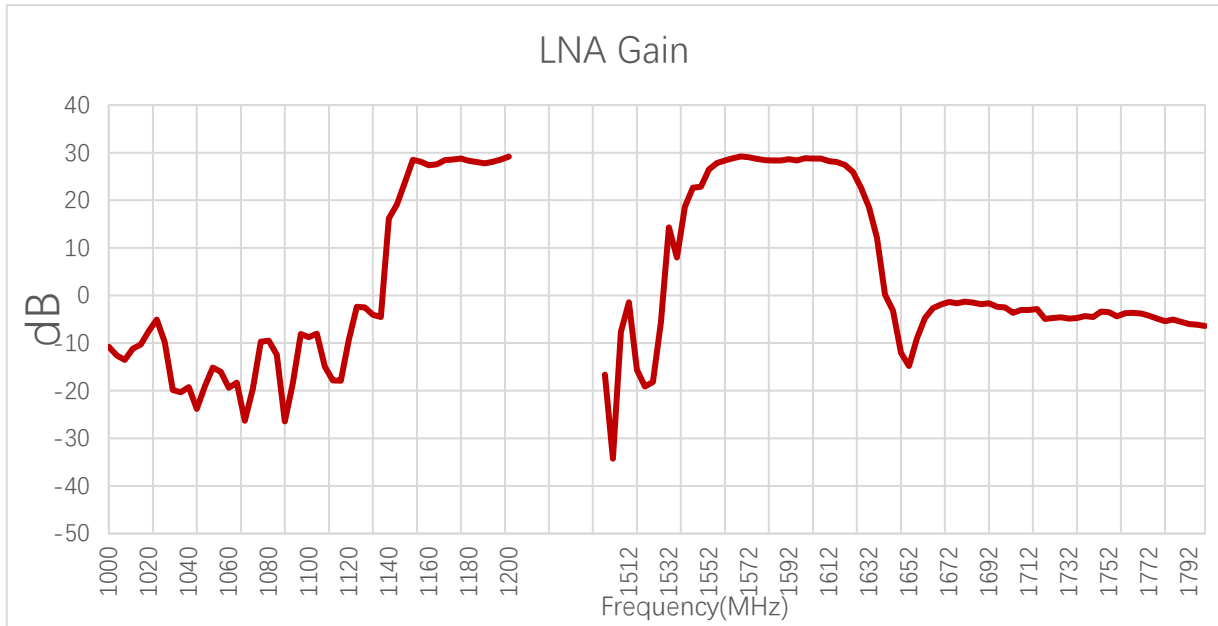
**3.1.4.2. Test Status: On 320 × 240 mm Metal Plane**



**Axial Ratio (dB)**

| Frequency (MHz) |           |  | <b>1176</b> | <b>1227</b> | <b>1575</b> |
|-----------------|-----------|--|-------------|-------------|-------------|
| <b>GNSS</b>     | <b>FS</b> | <b>Phi = 0 (deg)</b><br><b>Theta = 0 (deg)</b> | 4.22        | -           | 14.13       |
|                 | <b>MP</b> | <b>Phi = 0 (deg)</b><br><b>Theta = 0 (deg)</b> | 12.72       | -           | 12.88       |

**3.1.5. GNSS LNA Gain**

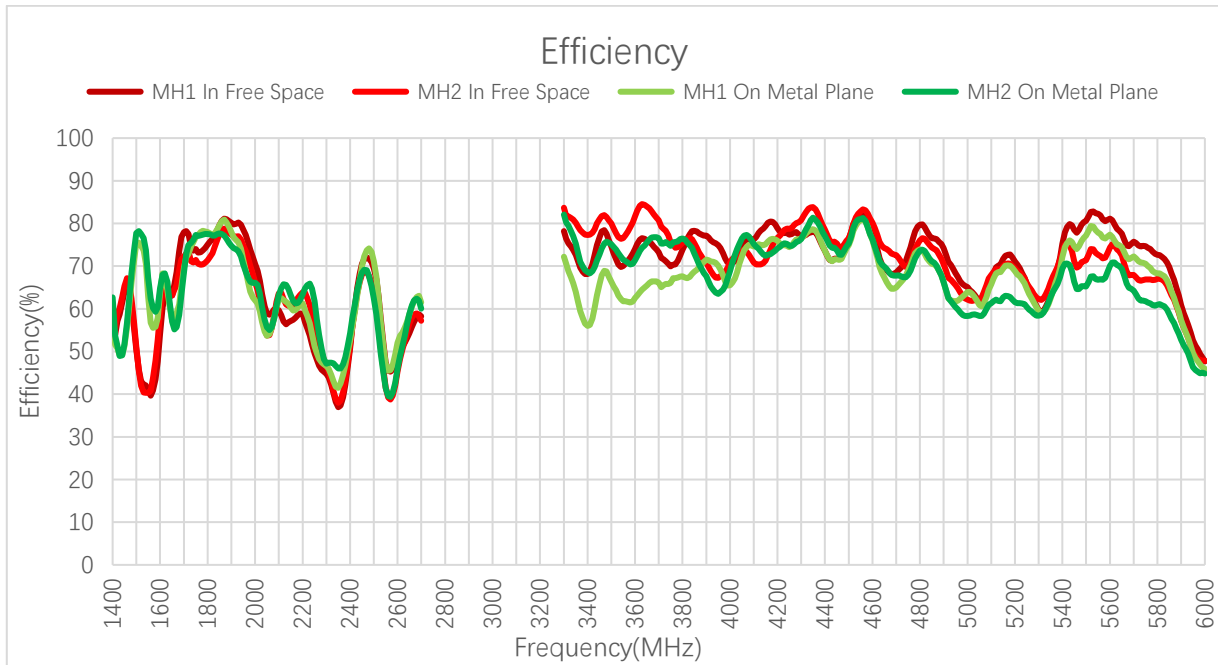
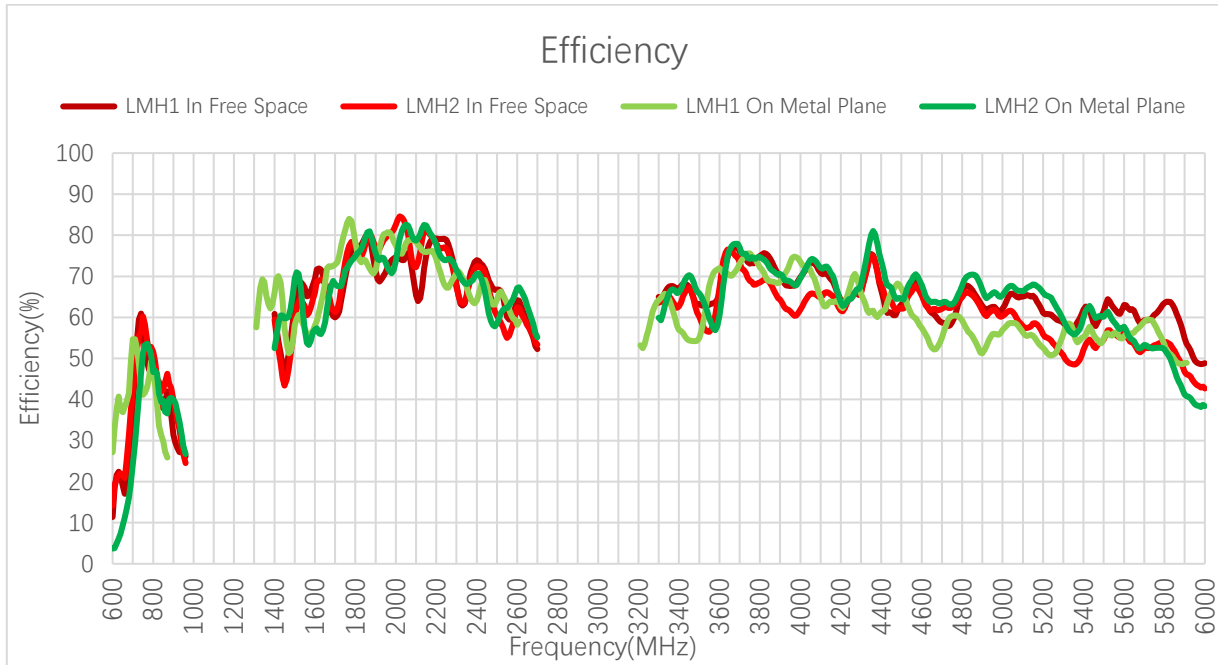


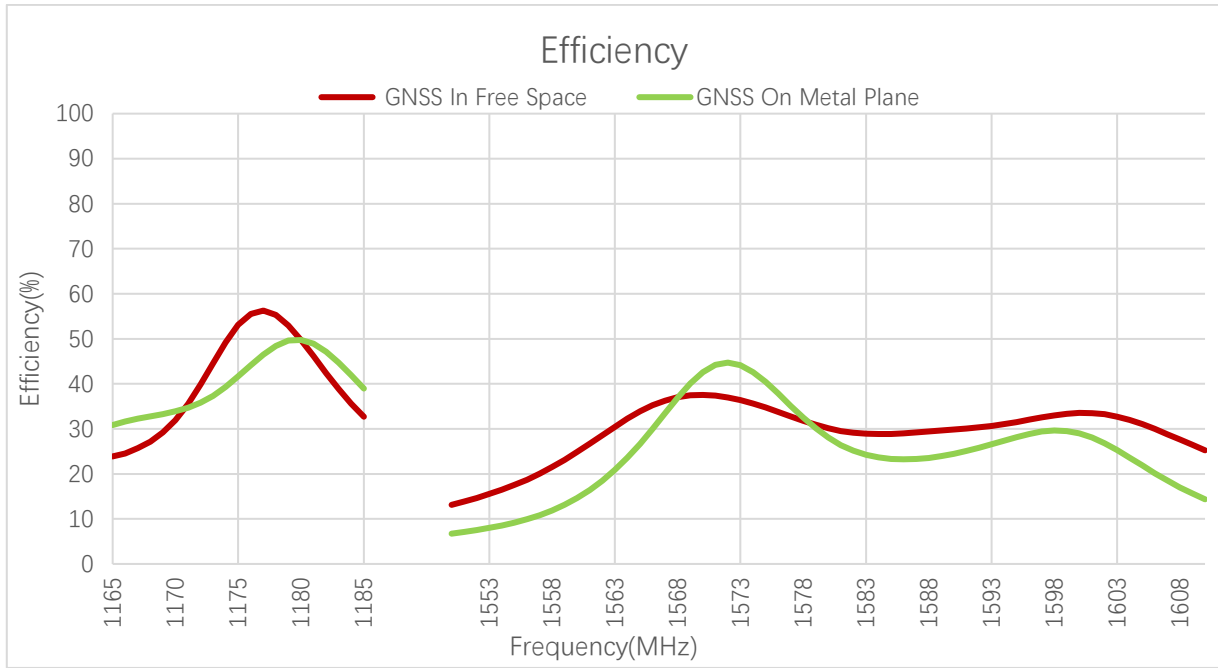
**LNA Gain (dB)**

| 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 |

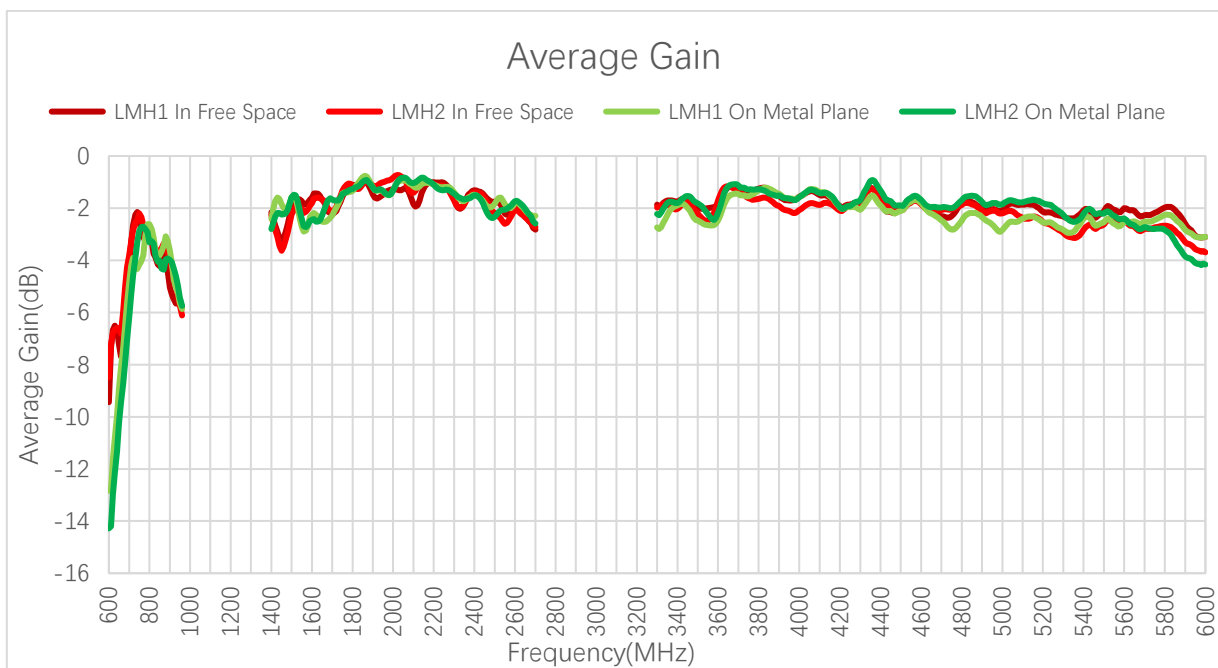
  

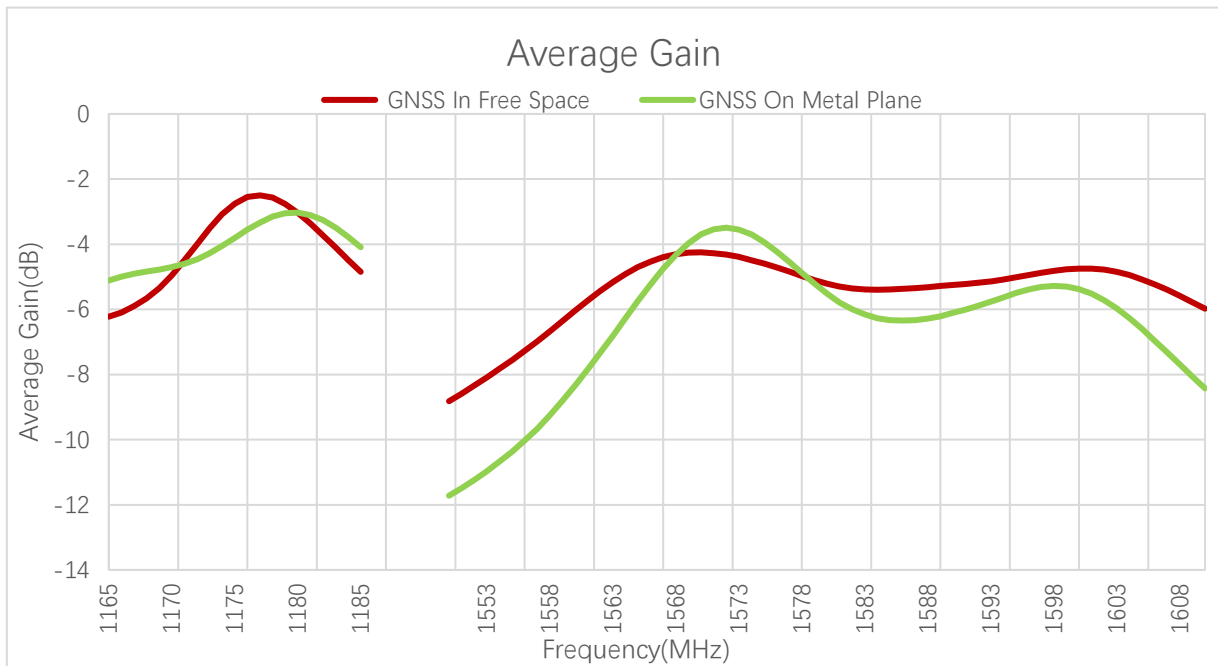
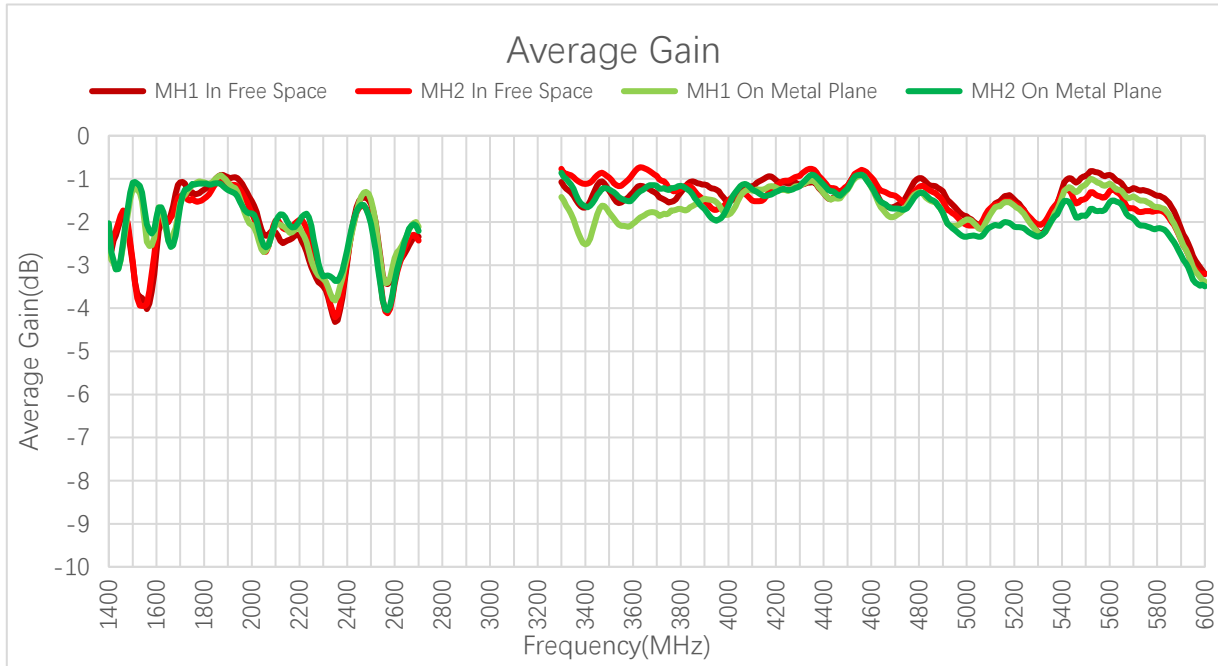
| Frequency (MHz) |    | 1950 | 2140 | 2350 | 2450 | 2600 | 3600 | 4700 | 5000 | 5500 | 6000 |
|-----------------|----|------|------|------|------|------|------|------|------|------|------|
| MH1             | FS | 78.6 | 56.8 | 37.0 | 70.6 | 50.2 | 74.0 | 68.6 | 65.1 | 80.6 | 47.7 |
|                 | 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 |

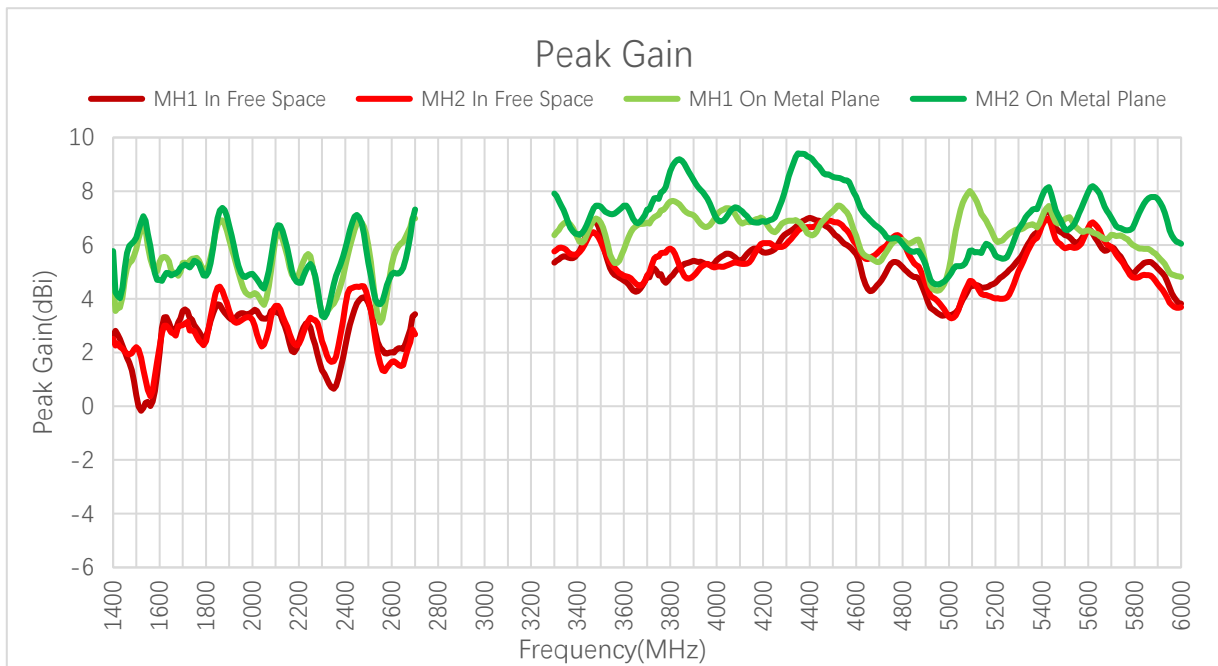
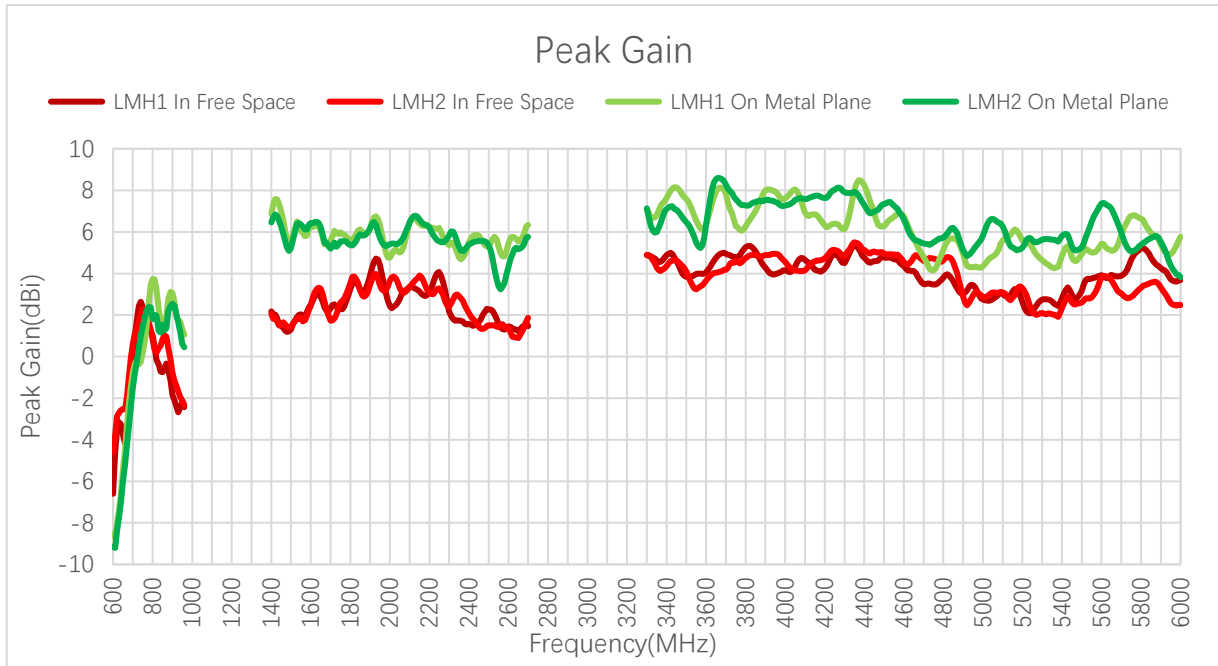
**Average Gain (dB) - MHs**

| 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 |

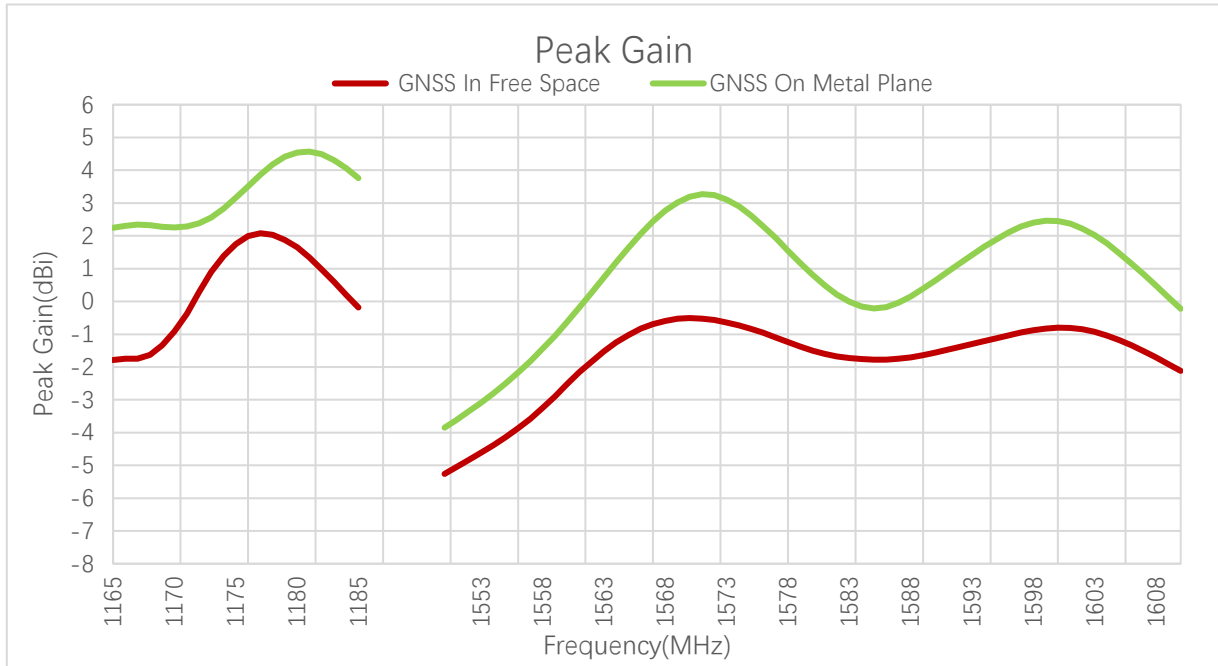
**Average Gain (dB) - GNSS**

| 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

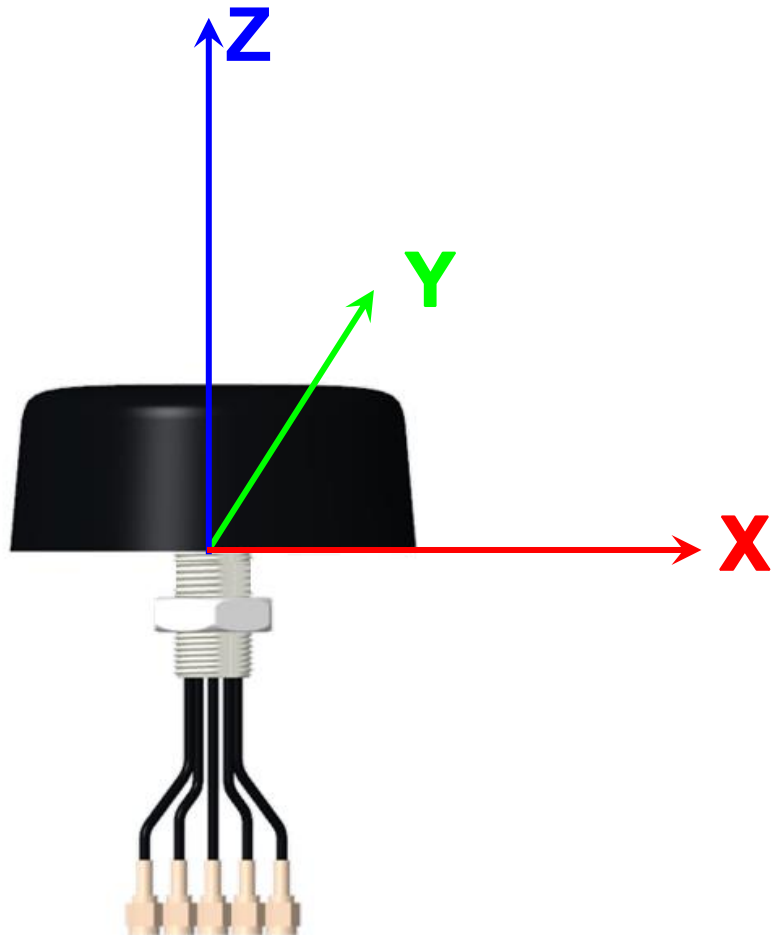
| Frequency (MHz) |    | 600  | 630  | 710  | 830  | 900  | 960  | 1440 | 1710 | 1740 | 1880 |
|-----------------|----|------|------|------|------|------|------|------|------|------|------|
| MH1             | FS | -    | -    | -    | -    | -    | -    | 2.3  | 3.6  | 3.2  | 3.5  |
|                 | 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  |

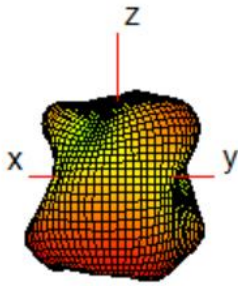
3.2.4. 3D & 2D Radiation Pattern

3.2.4.1. Test Status: In Free Space

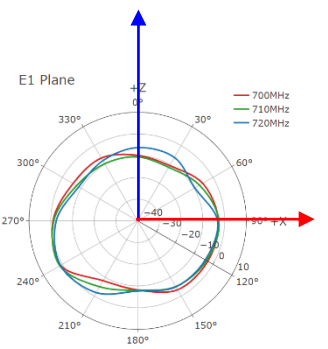
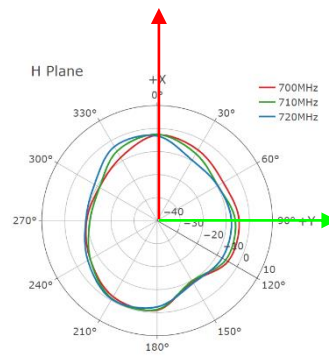
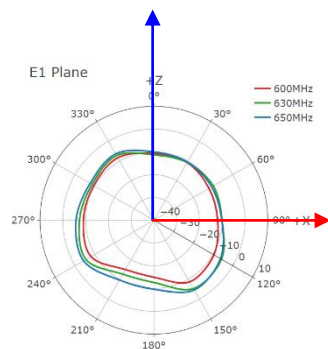
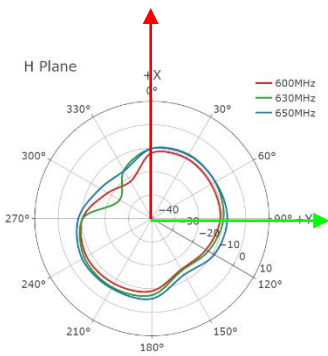
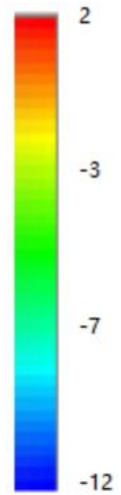
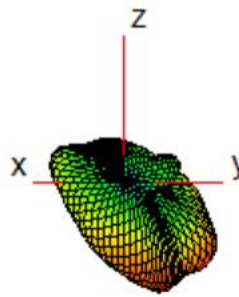


● **LMH1**

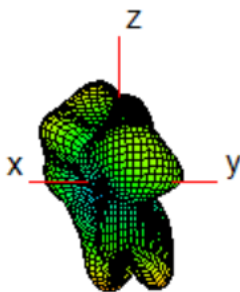
**630 MHz**



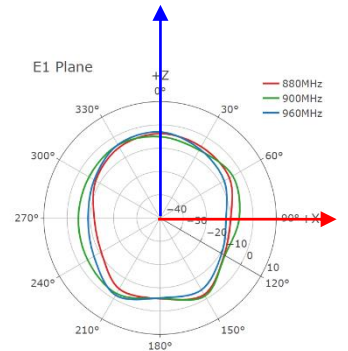
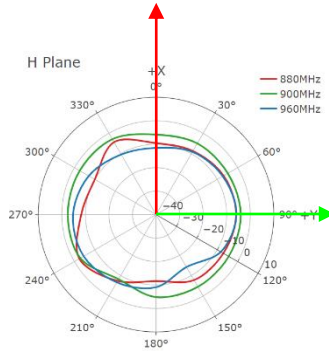
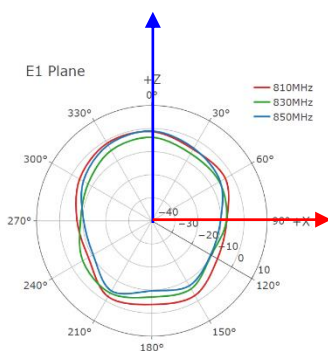
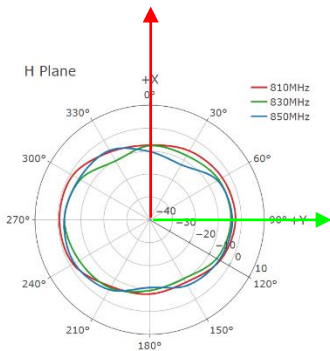
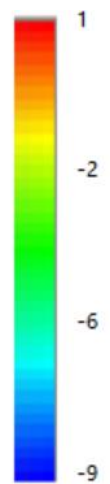
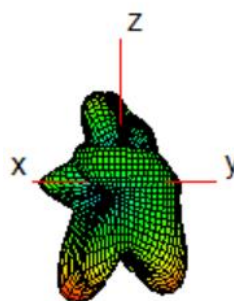
**710 MHz**



**830MHz**

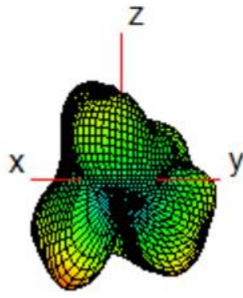


**900MHz**

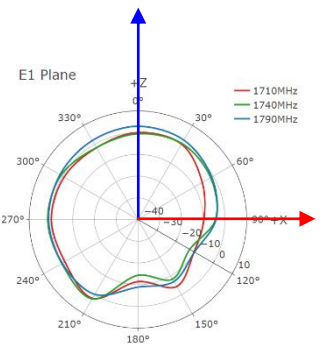
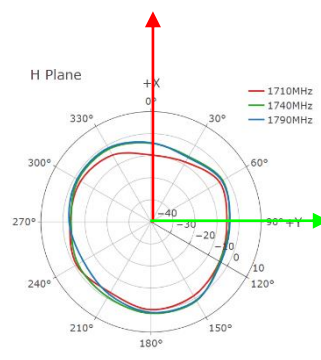
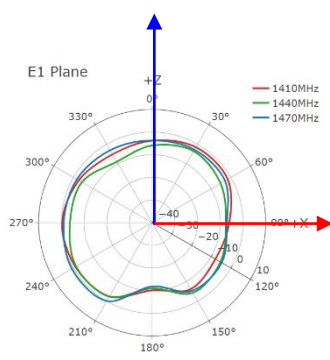
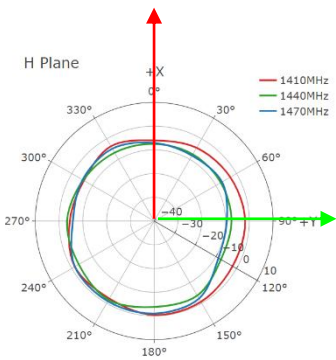
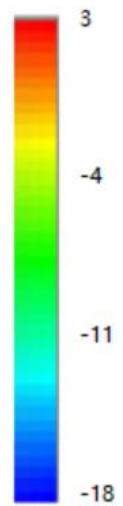
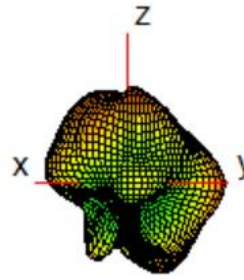


● **LMH1**

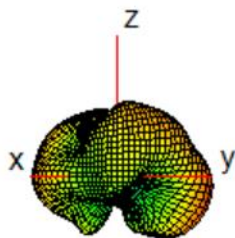
**1440 MHz**



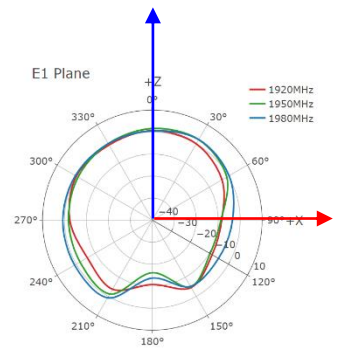
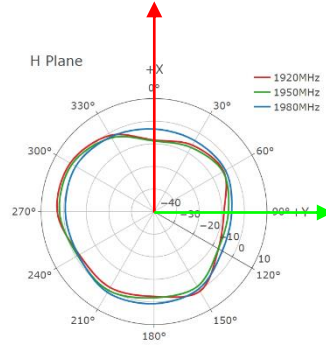
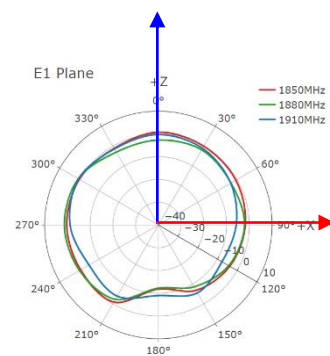
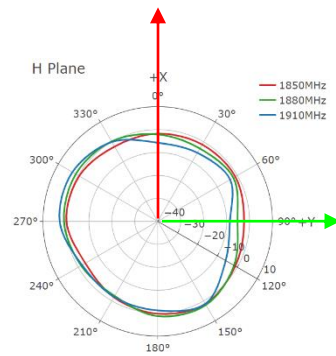
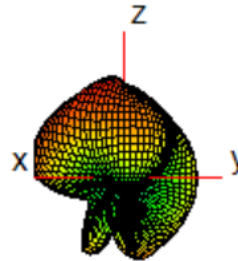
**1740 MHz**



**1880 MHz**

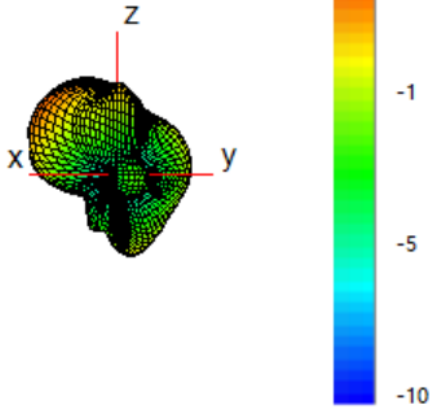


**1960 MHz**

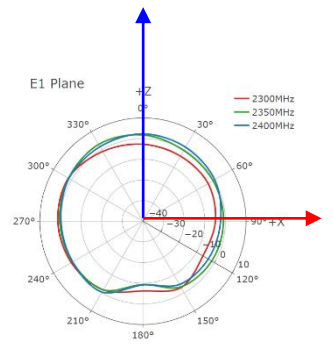
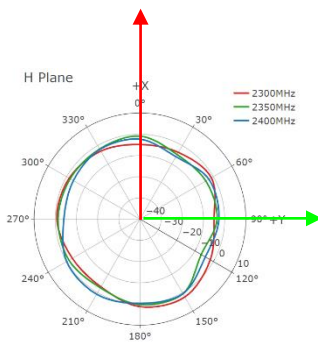
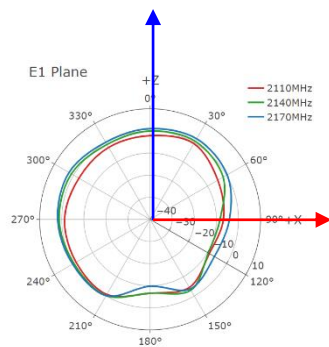
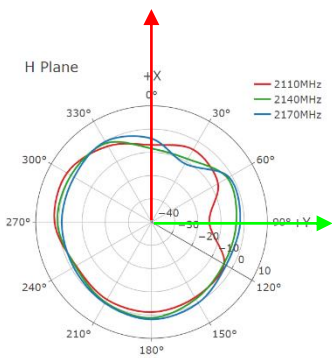
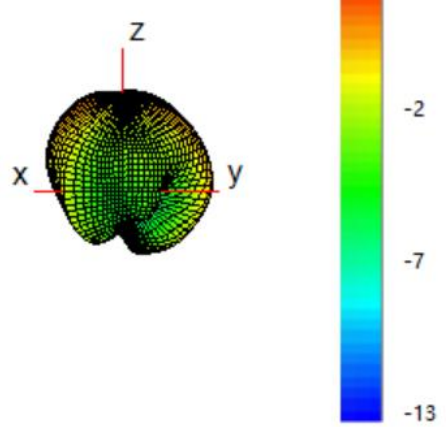


● **LMH1**

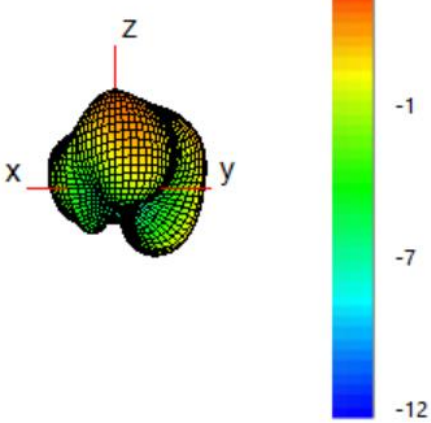
**2140 MHz**



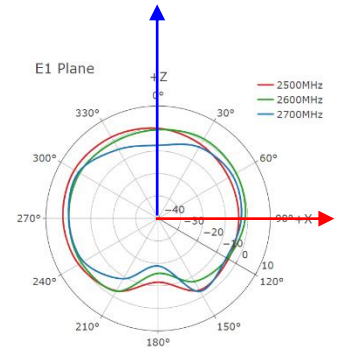
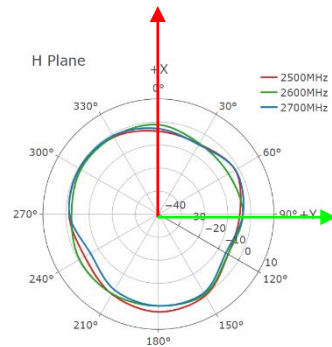
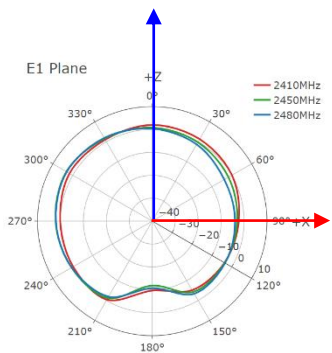
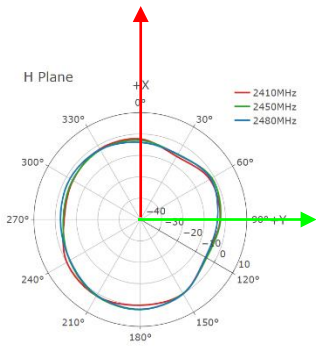
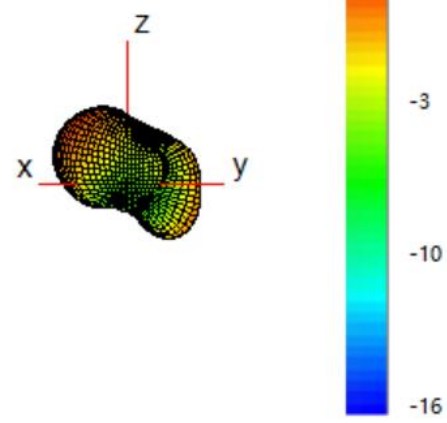
**2350 MHz**



**2450 MHz**

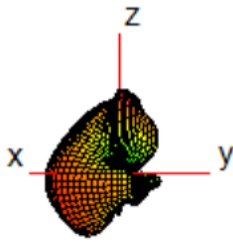


**2600 MHz**

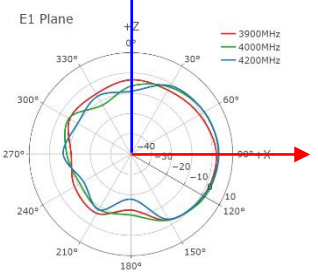
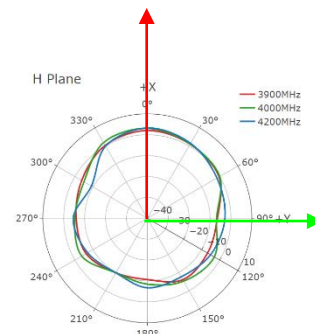
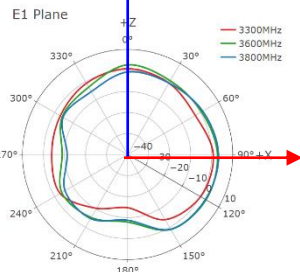
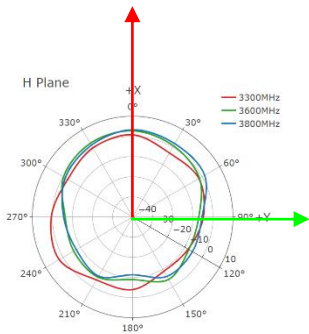
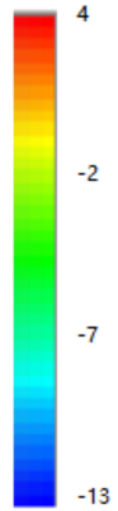
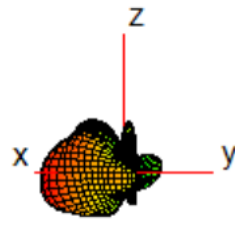


● **LMH1**

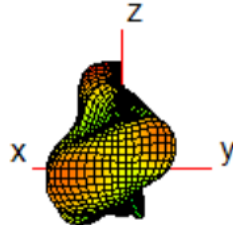
**3600 MHz**



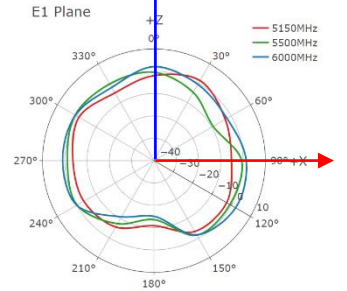
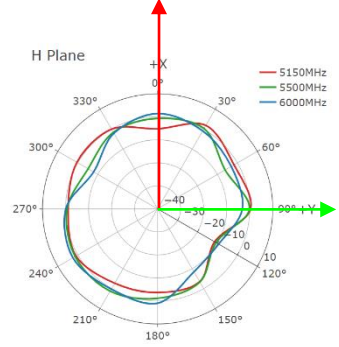
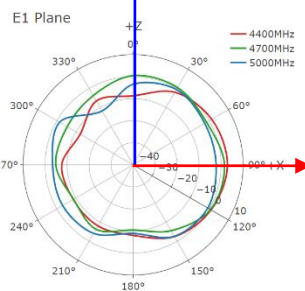
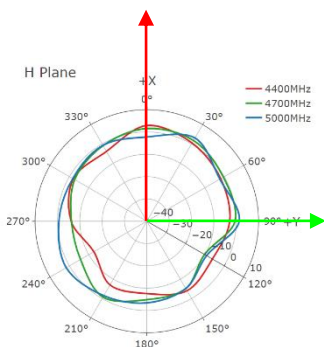
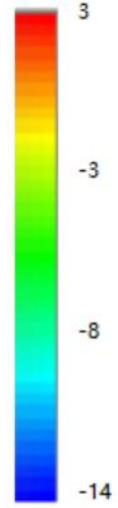
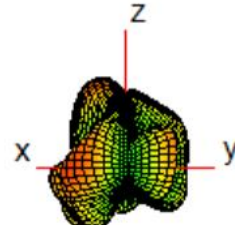
**4000 MHz**



**4700 MHz**

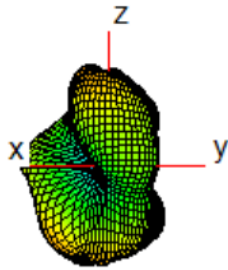


**5500 MHz**

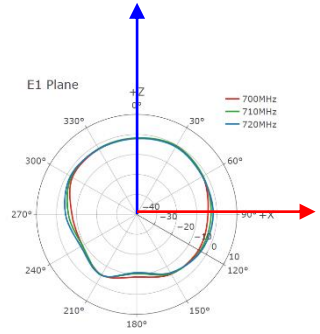
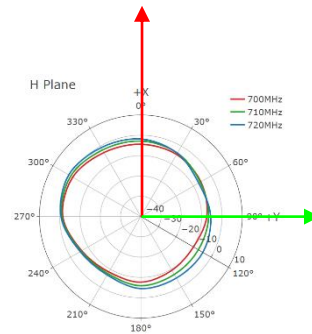
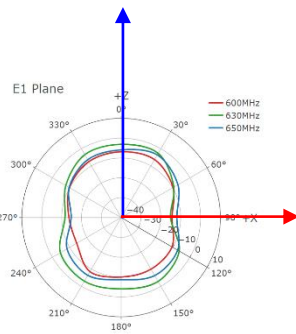
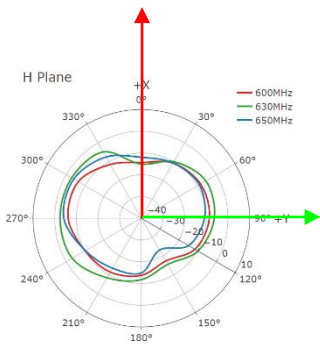
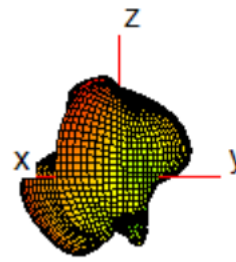


**LMH2**

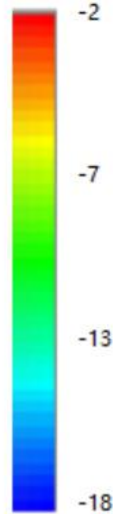
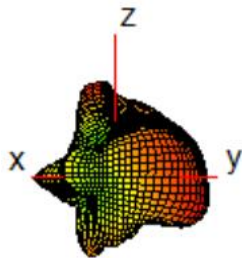
**630 MHz**



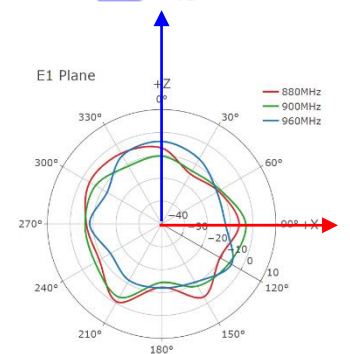
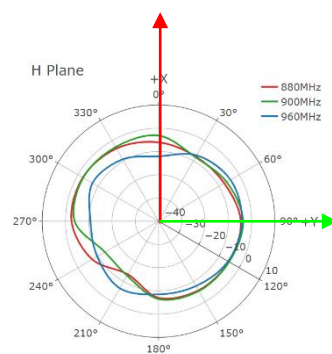
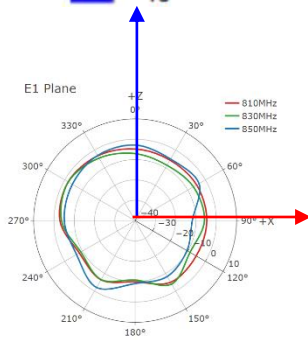
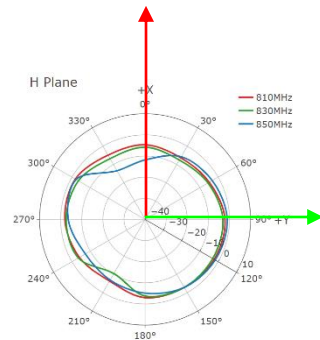
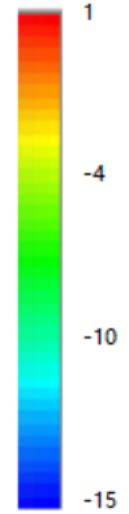
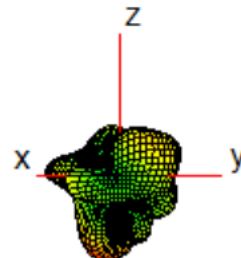
**710 MHz**



**830MHz**



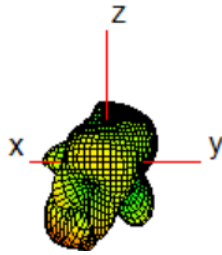
**900MHz**



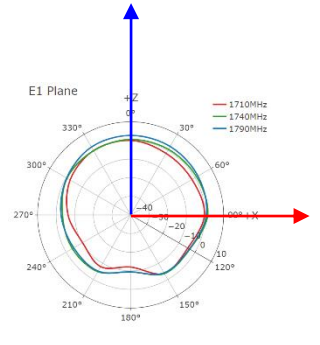
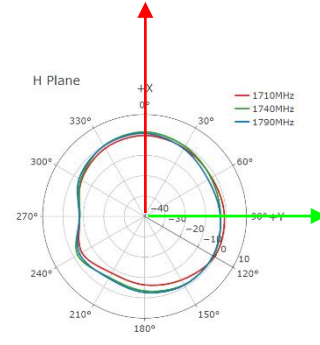
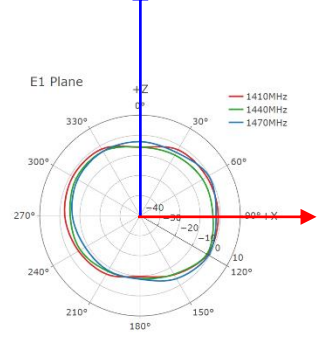
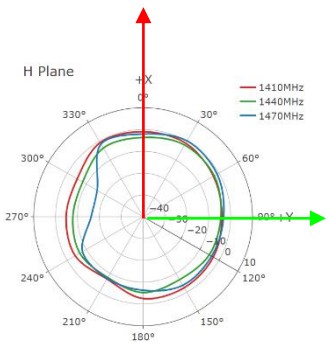
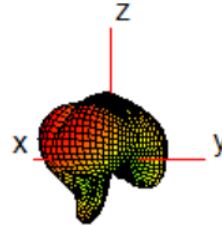


**LMH2**

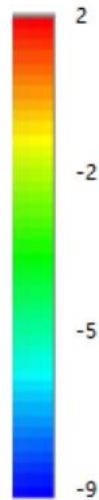
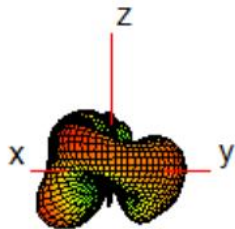
**1440 MHz**



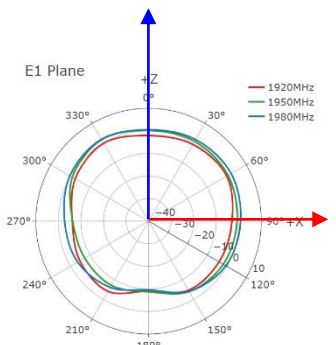
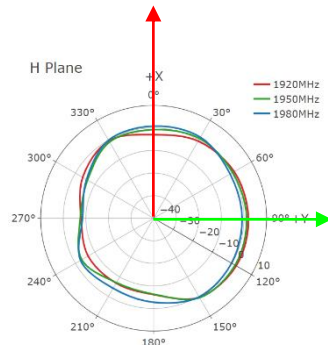
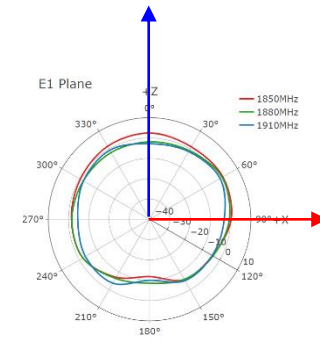
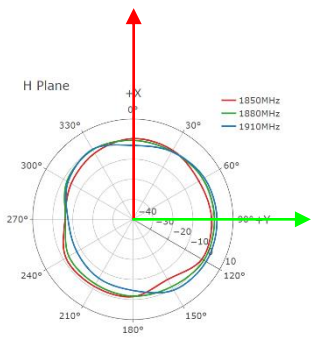
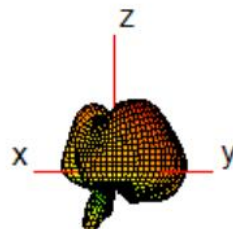
**1740 MHz**



**1880 MHz**

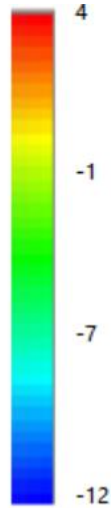
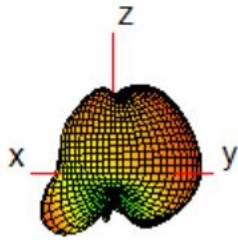


**1950 MHz**

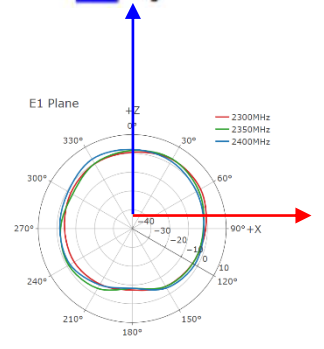
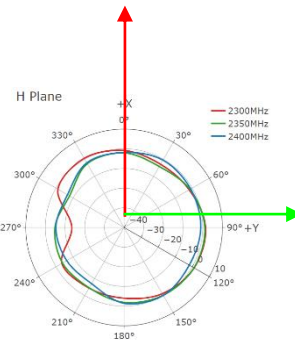
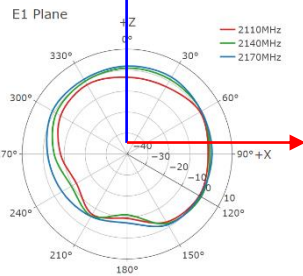
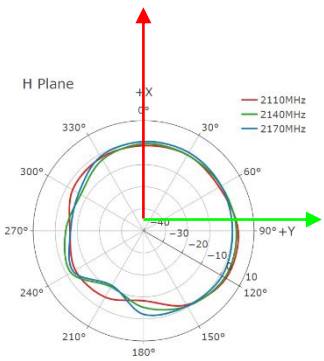
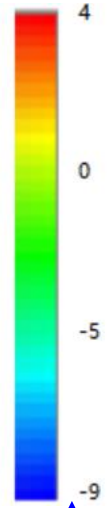
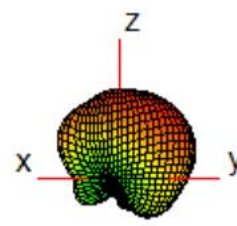


● **LMH2**

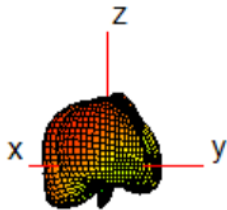
**2140 MHz**



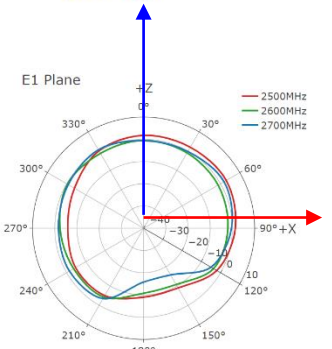
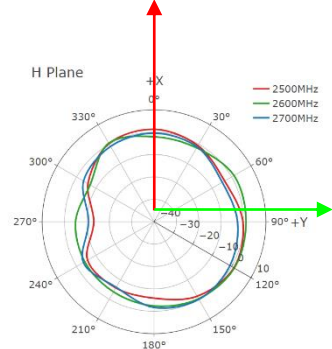
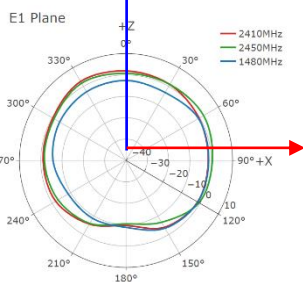
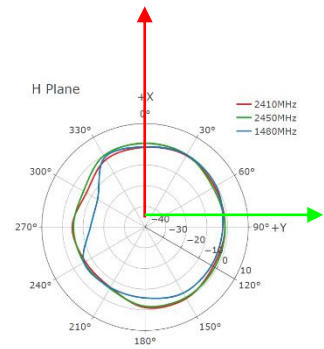
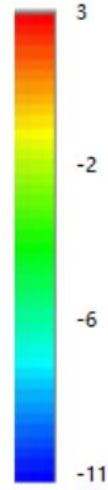
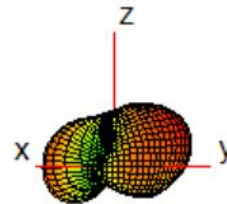
**2350 MHz**



**2450 MHz**

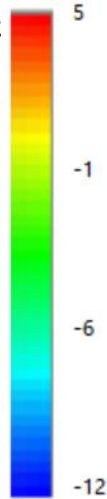
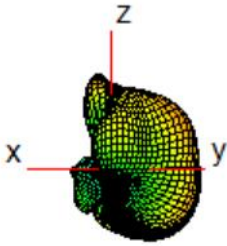


**2600 MHz**

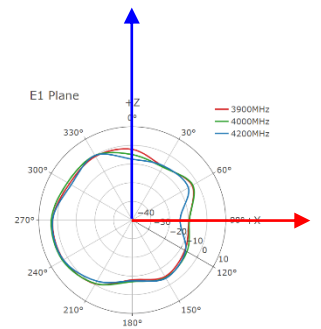
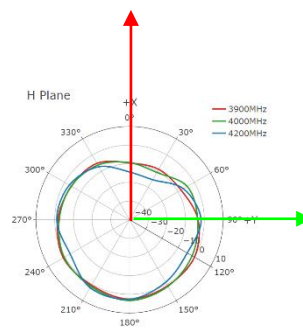
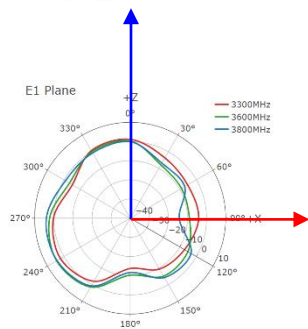
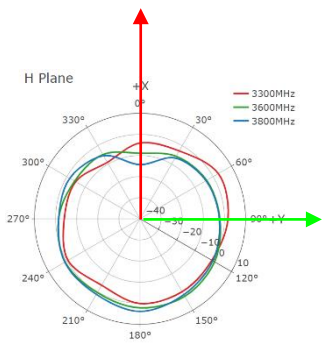
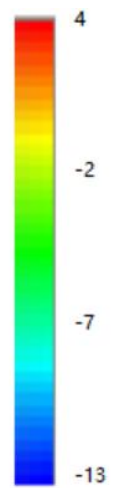
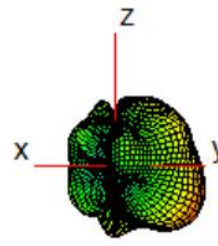


● **LMH2**

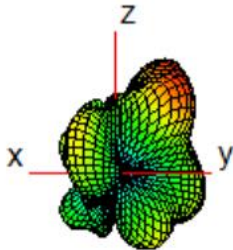
**3600 MHz**



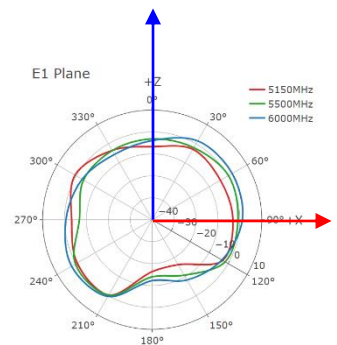
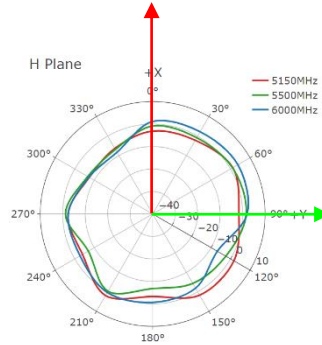
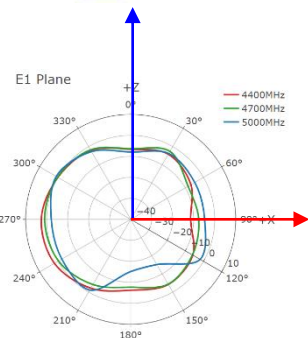
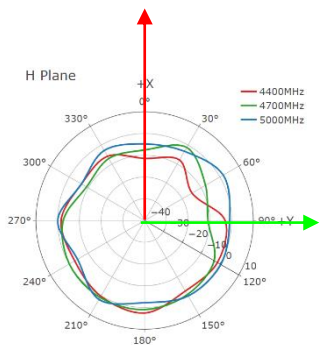
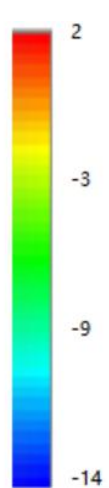
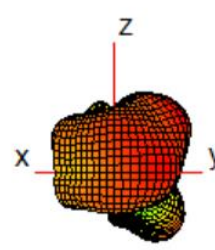
**4000 MHz**



**4700 MHz**

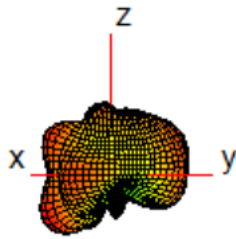


**5500 MHz**

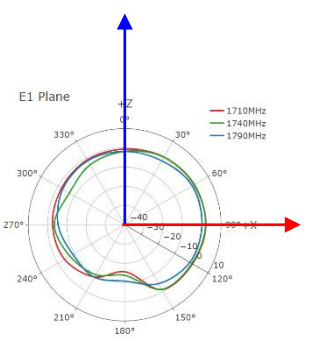
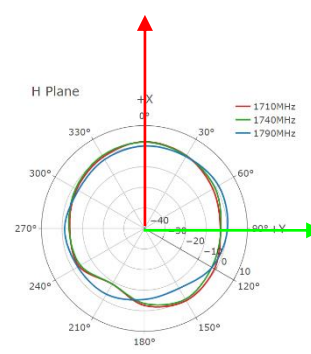
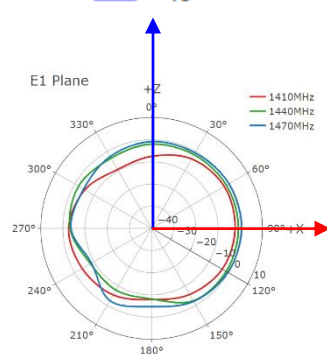
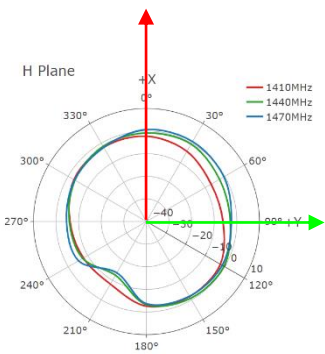
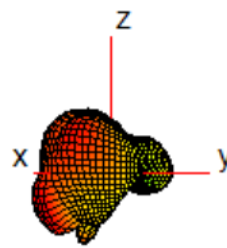


**MH1**

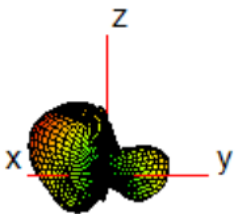
**1440 MHz**



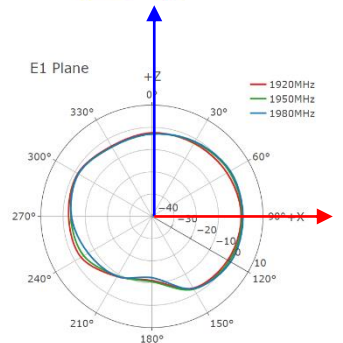
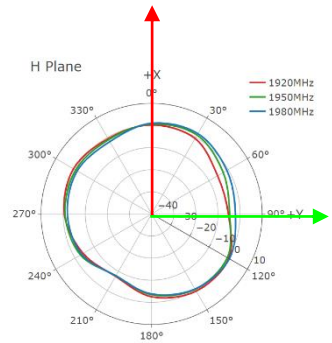
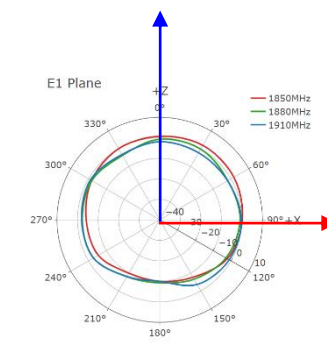
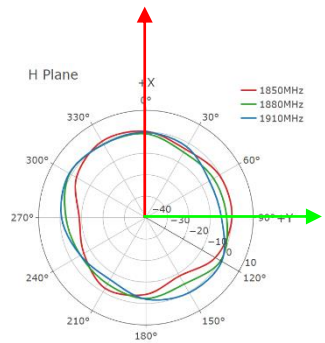
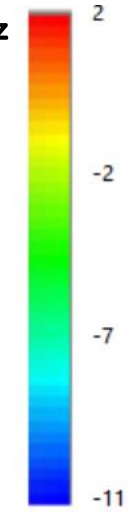
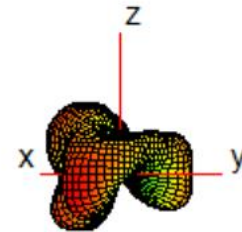
**1740 MHz**



**1880 MHz**

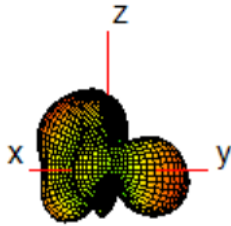


**1950 MHz**

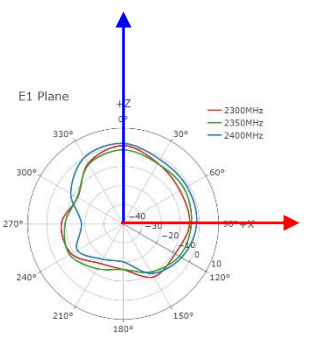
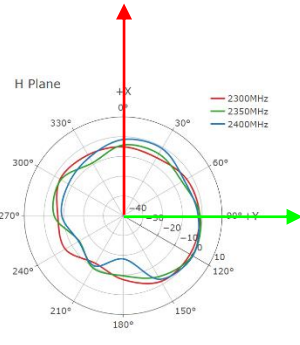
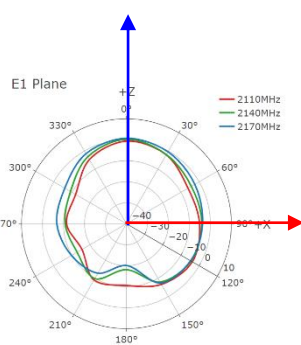
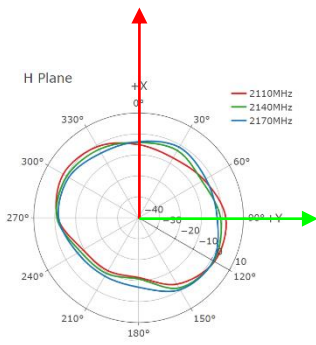
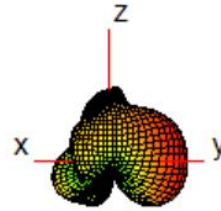


**MH1**

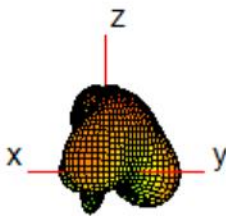
**2140 MHz**



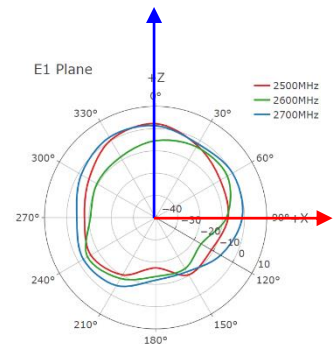
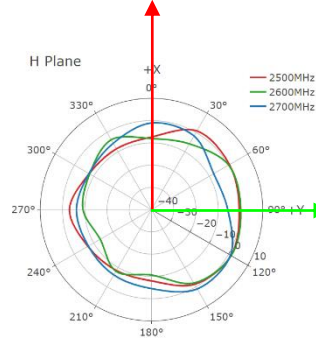
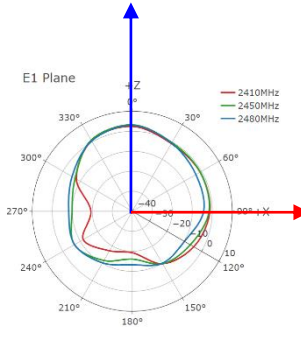
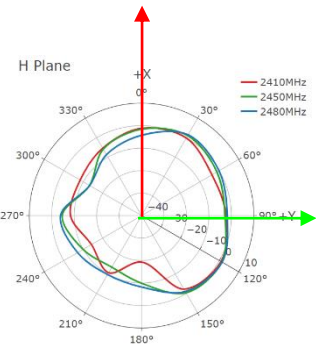
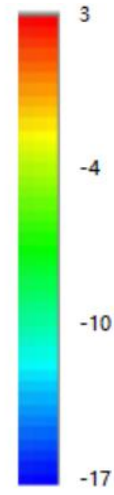
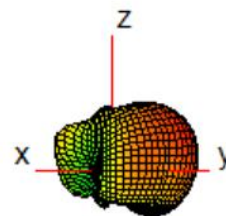
**2360 MHz**



**2450 MHz**

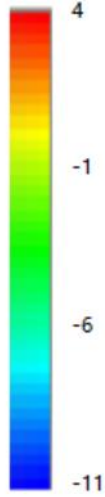
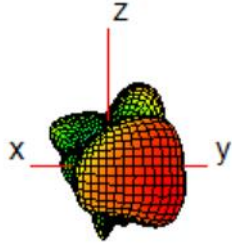


**2600 MHz**

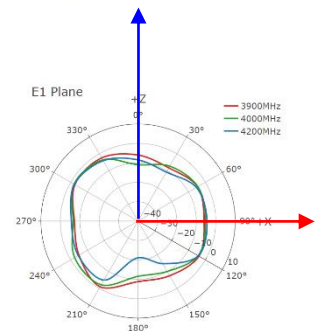
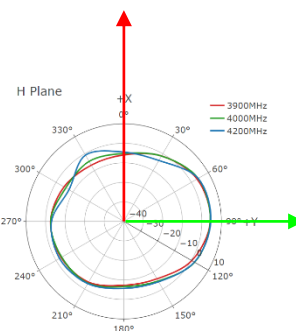
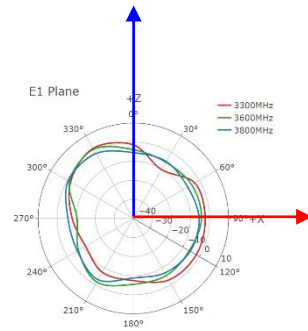
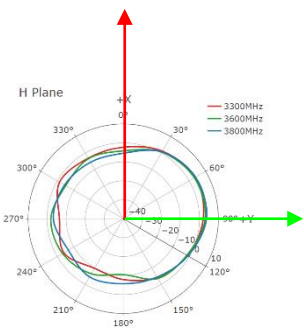
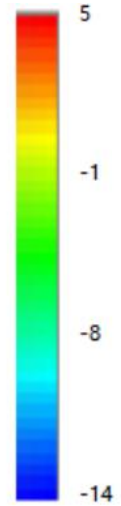
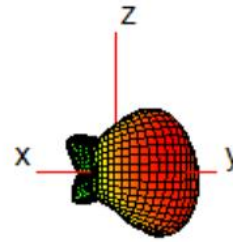


**MH1**

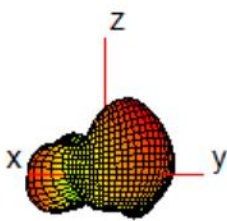
**3600 MHz**



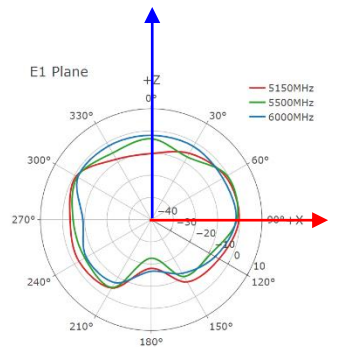
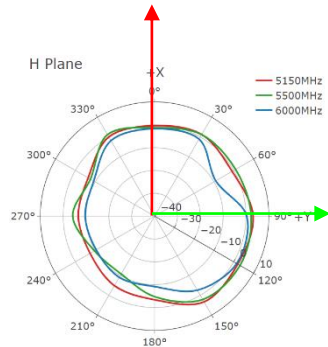
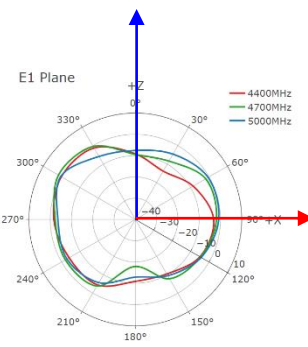
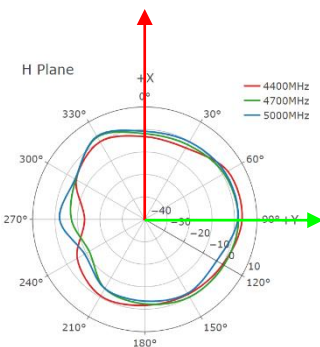
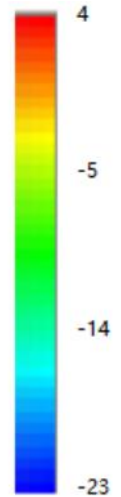
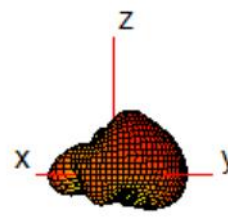
**4000 MHz**



**4700 MHz**

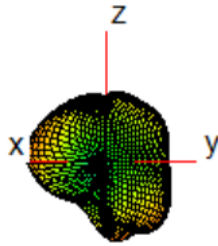


**5500 MHz**

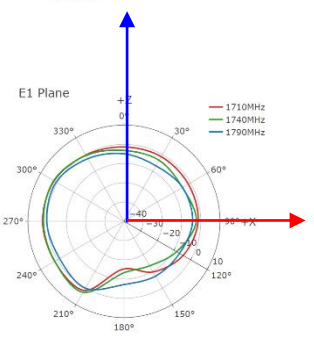
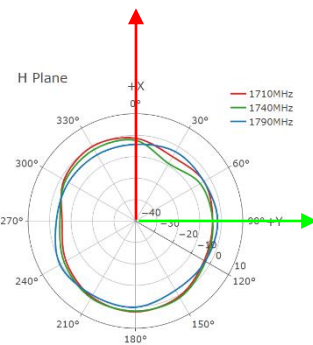
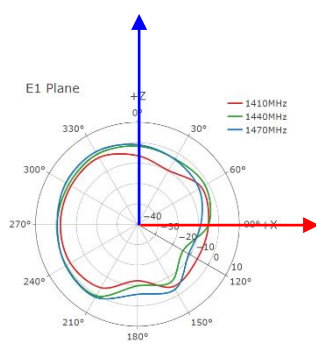
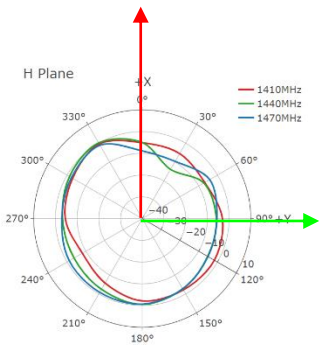
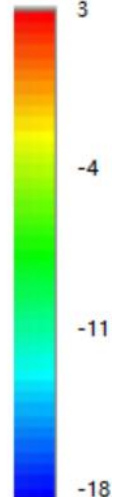
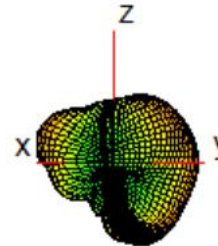


**MH2**

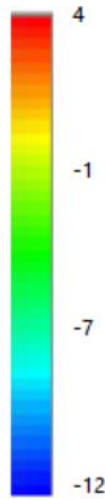
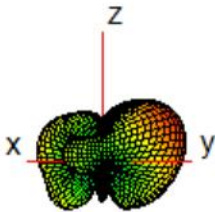
**1440 MHz**



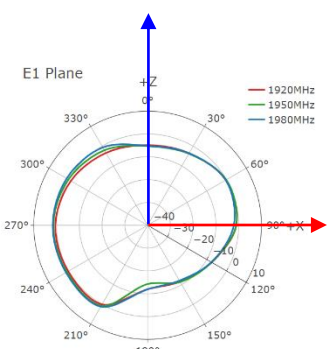
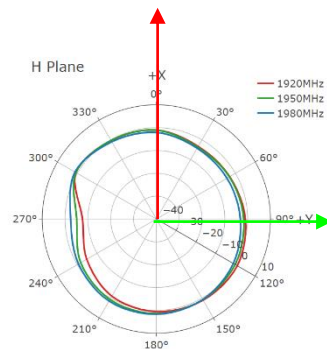
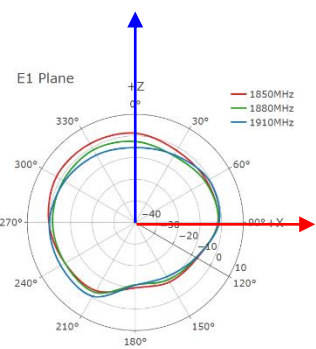
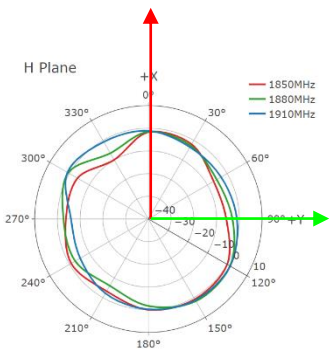
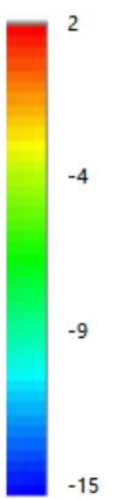
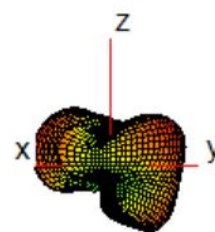
**1740 MHz**



**1880MHz**

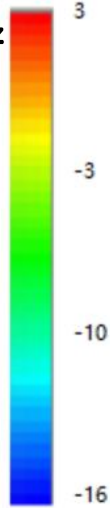
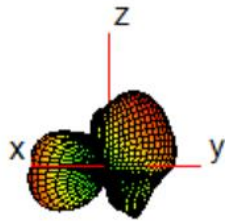


**1950MHz**

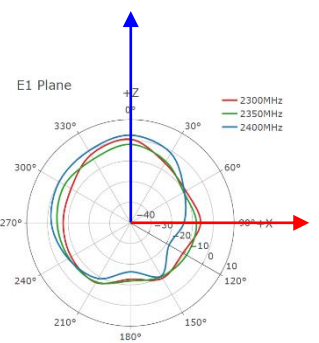
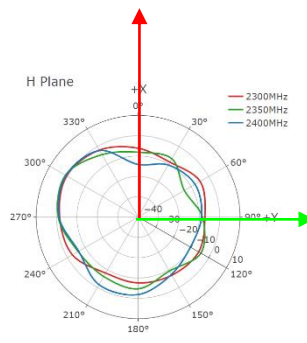
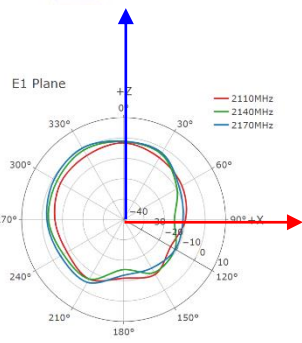
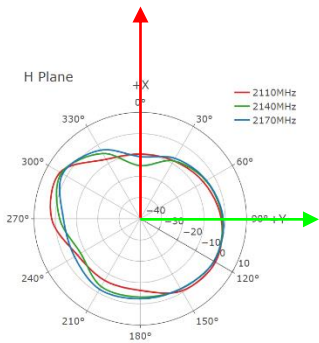
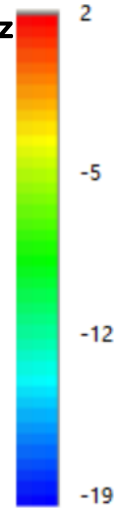
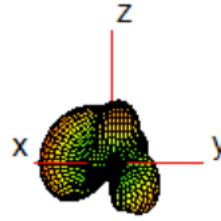


**MH2**

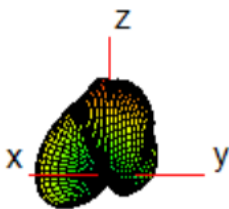
**2140 MHz**



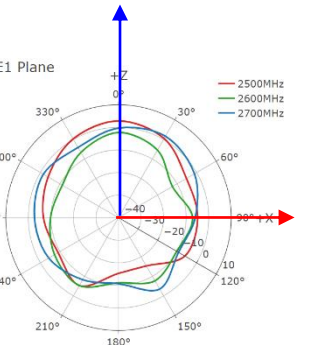
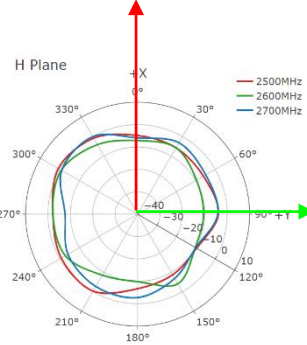
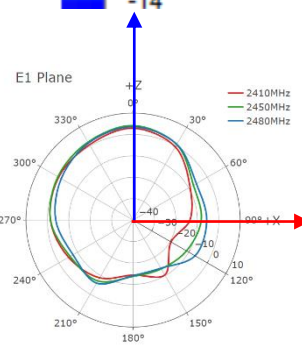
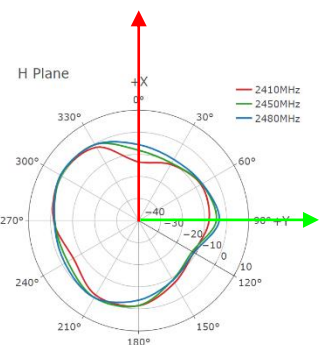
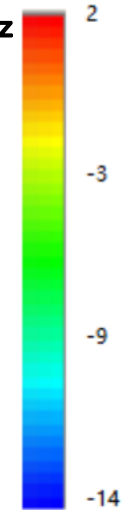
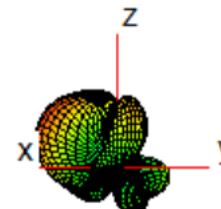
**2350 MHz**



**2450 MHz**



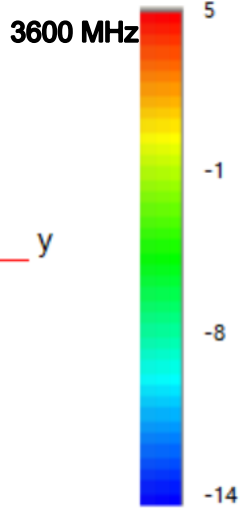
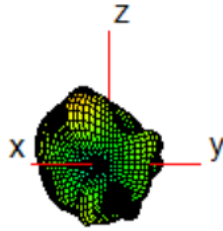
**2600 MHz**



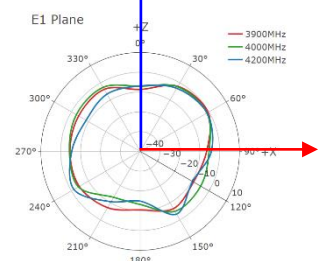
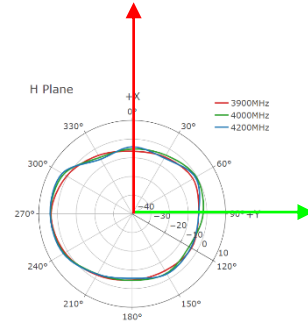
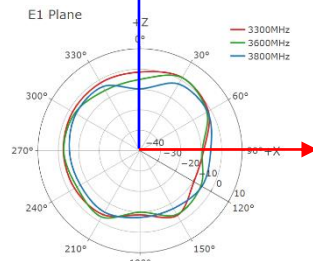
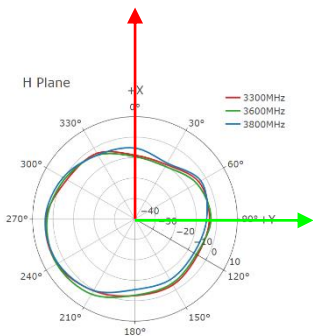
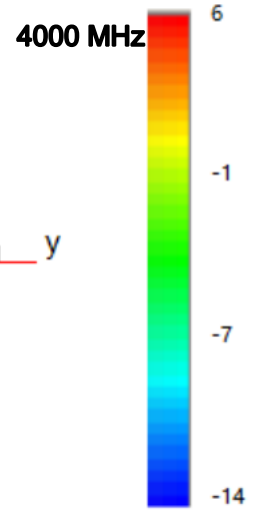
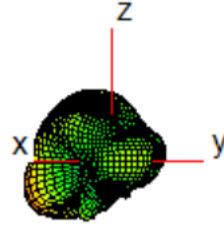


**MH2**

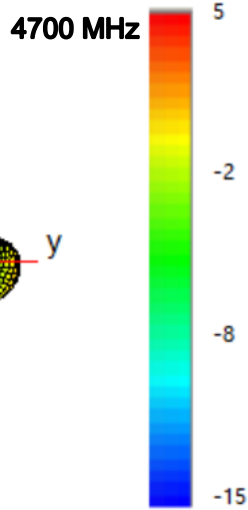
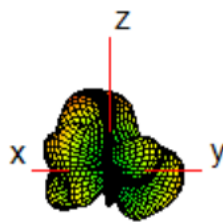
**3600 MHz**



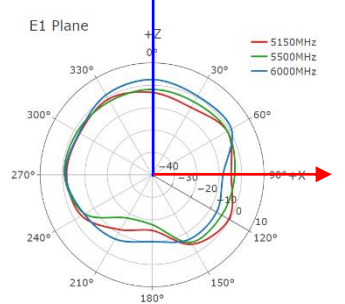
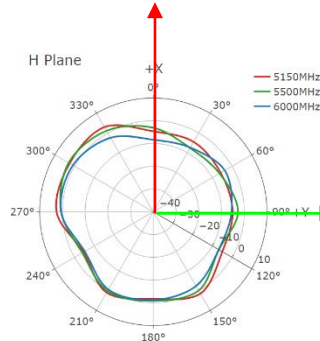
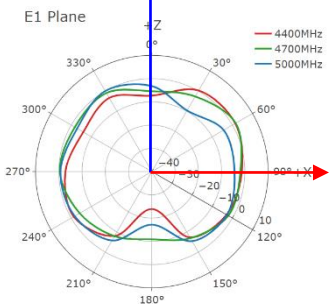
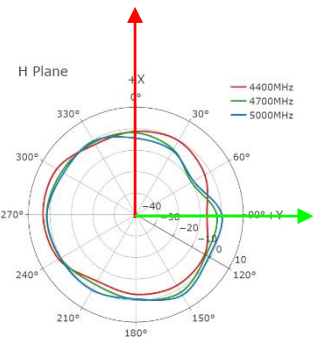
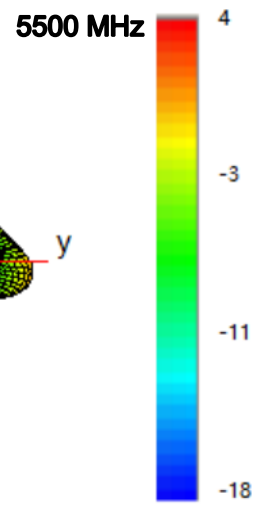
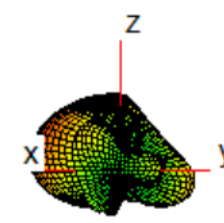
**4000 MHz**



**4700 MHz**



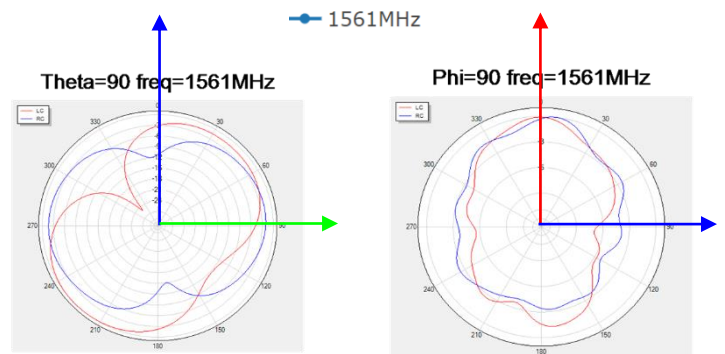
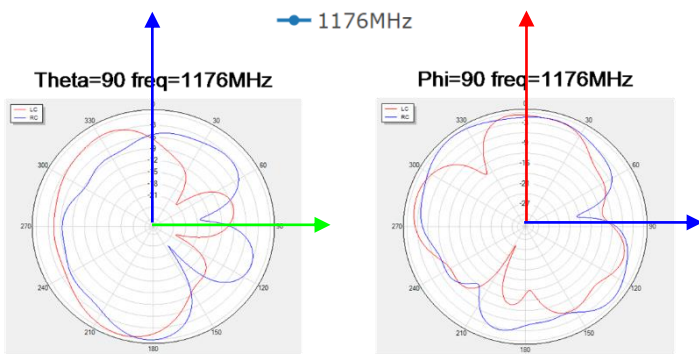
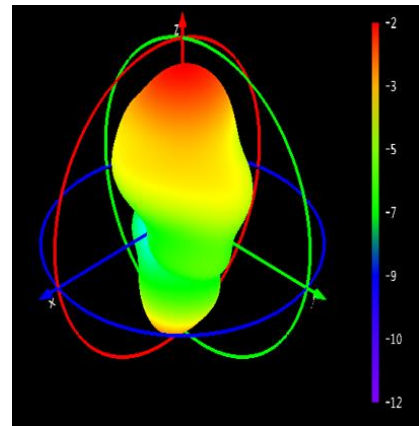
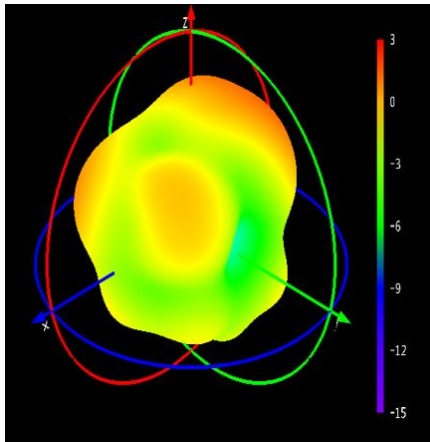
**5500 MHz**



**GNSS**

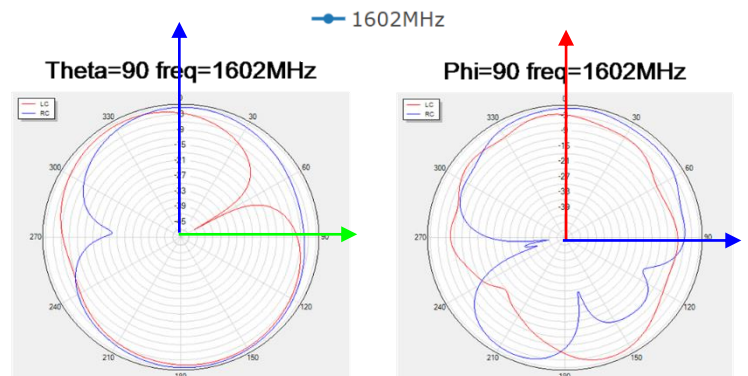
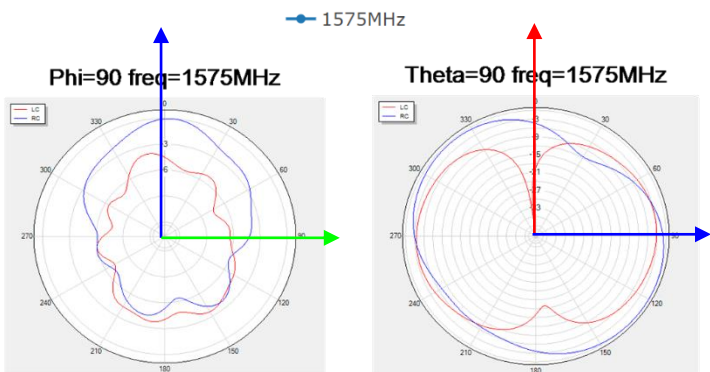
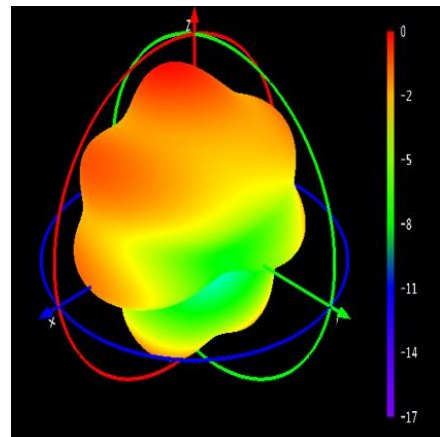
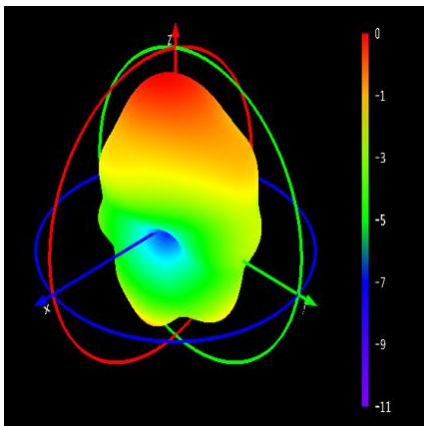
**1176 MHz**

**1561 MHz**

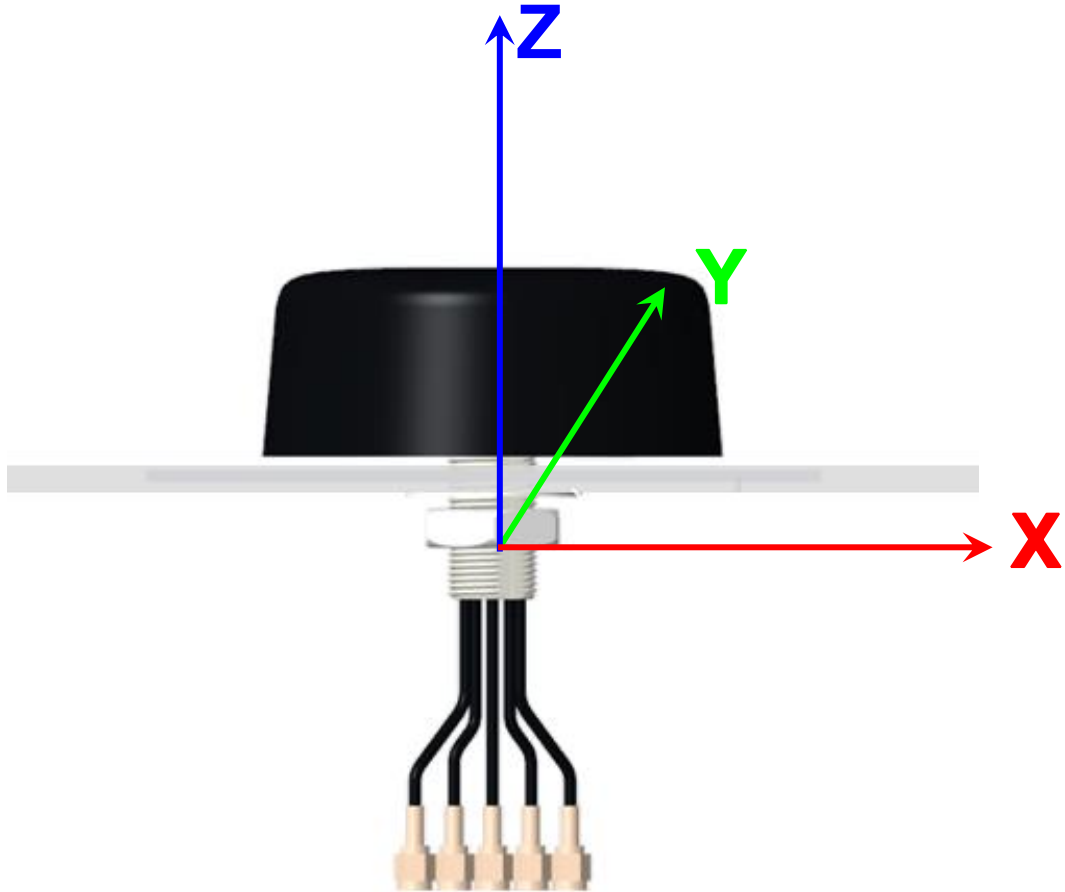


**1575 MHz**

**1602 MHz**

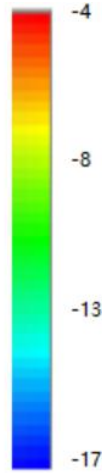
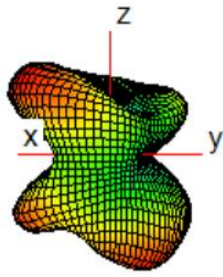


3.2.4.2. Test Status: On 320 × 240 mm Metal Plane

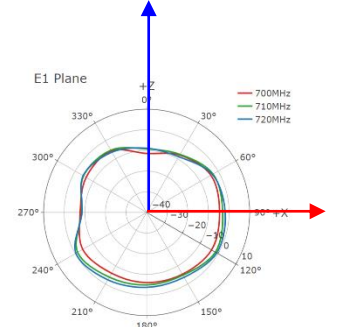
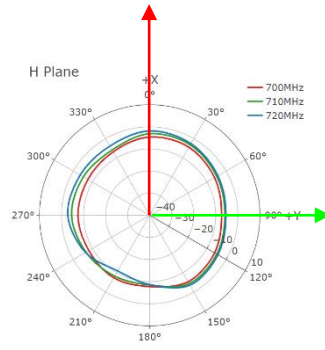
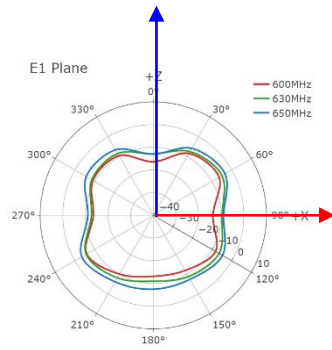
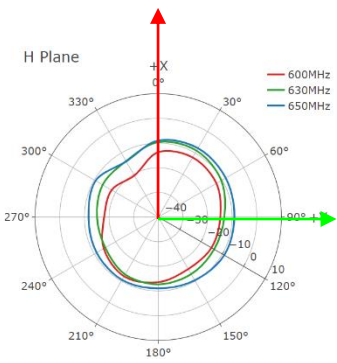
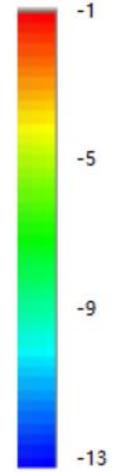
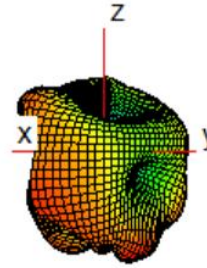


● **LMH1**

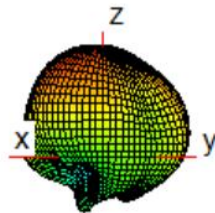
**630 MHz**



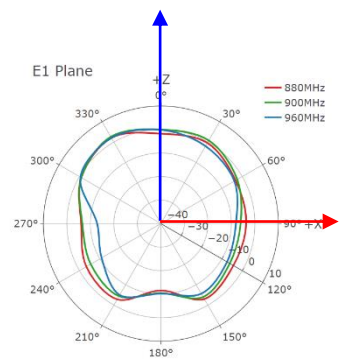
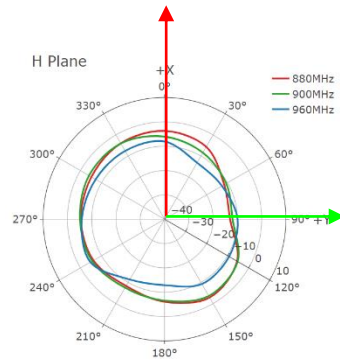
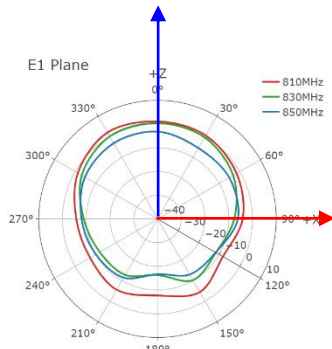
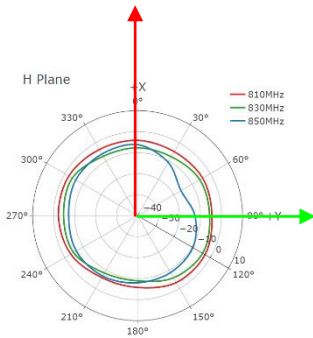
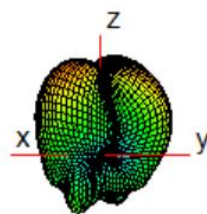
**710 MHz**



**830 MHz**

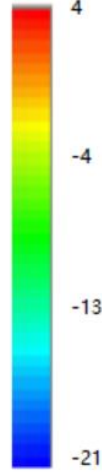
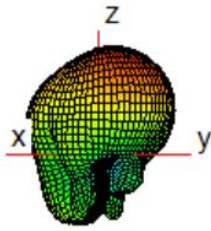


**900 MHz**

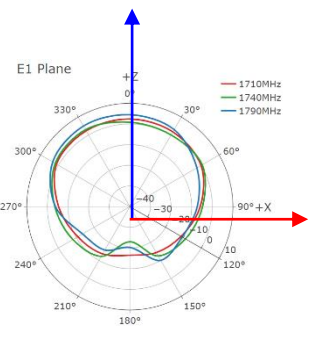
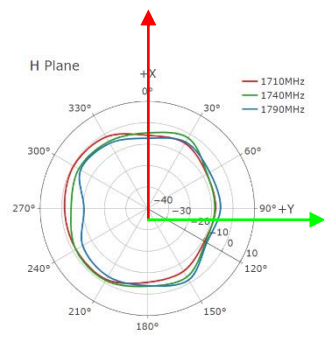
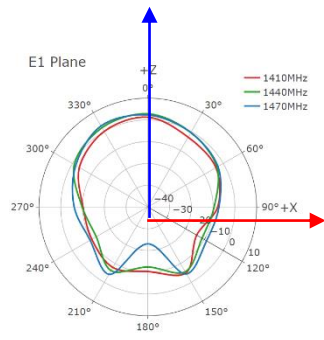
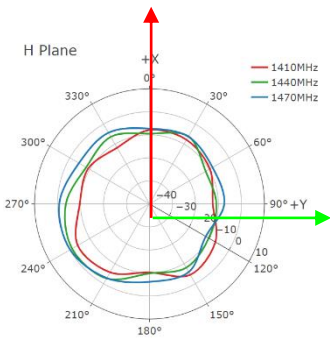
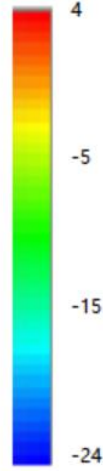
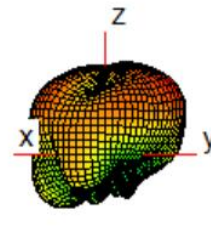


● **LMH1**

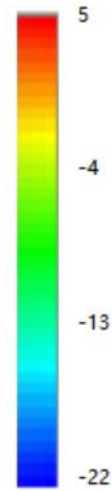
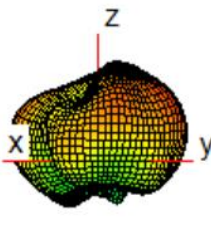
**1440 MHz**



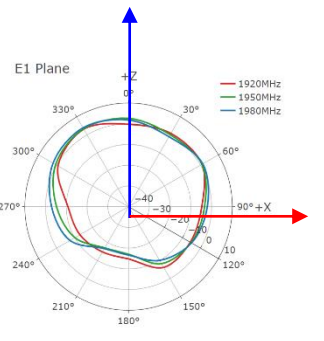
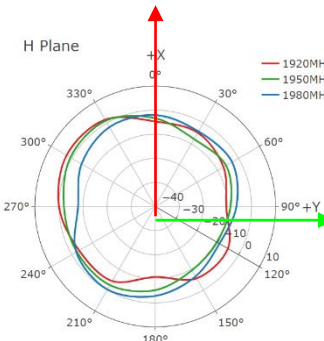
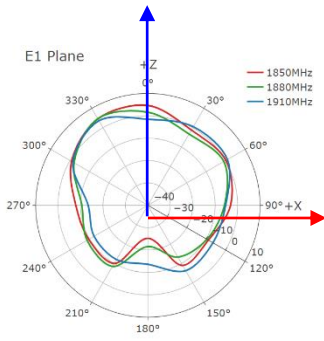
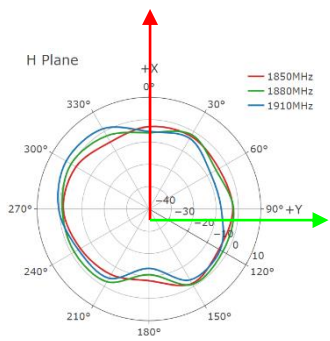
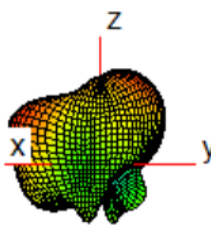
**1740 MHz**



**1880 MHz**

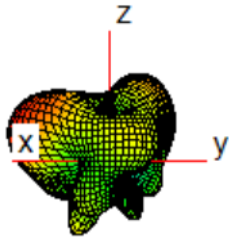


**1950 MHz**

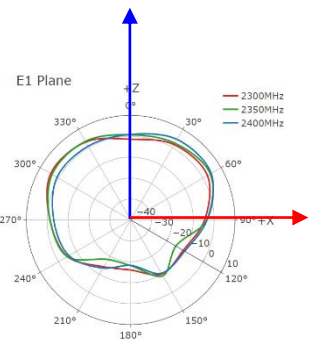
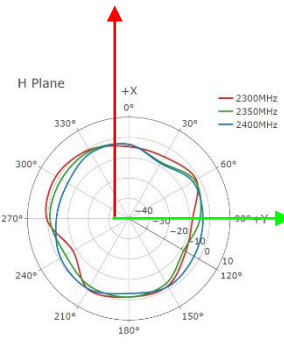
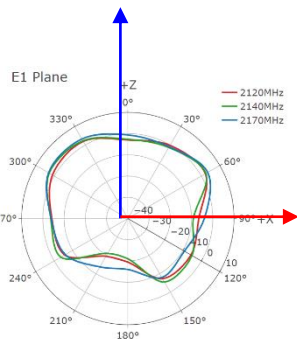
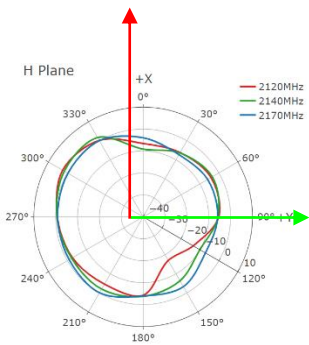
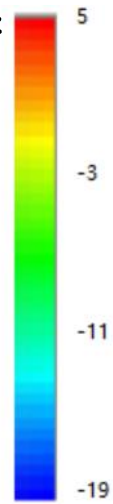
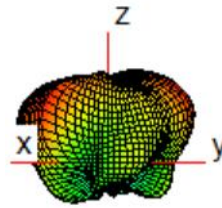


● **LMH1**

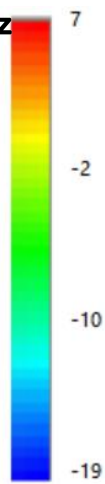
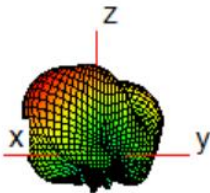
**2140MHz**



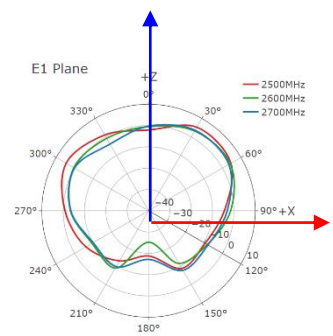
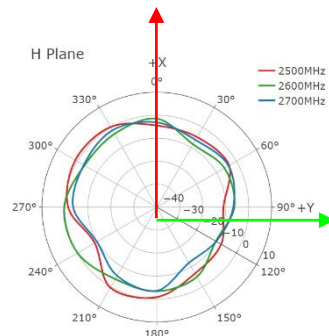
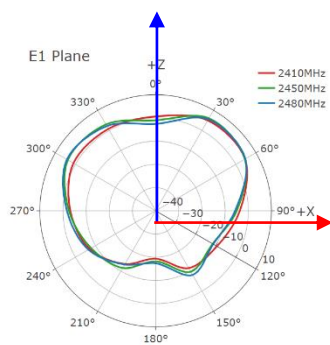
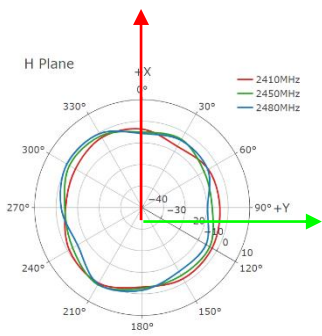
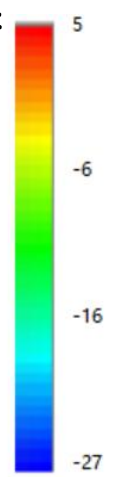
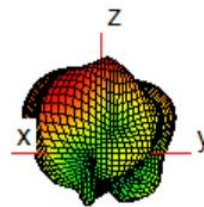
**2350 MHz**



**2450 MHz**

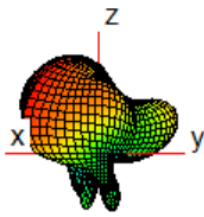


**2600 MHz**

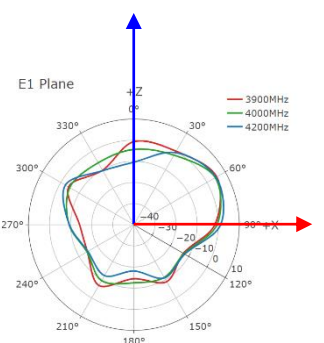
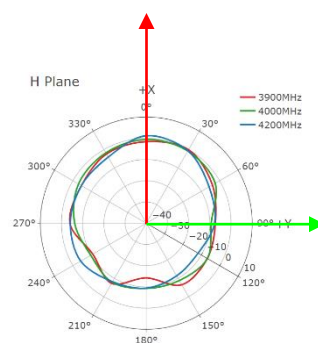
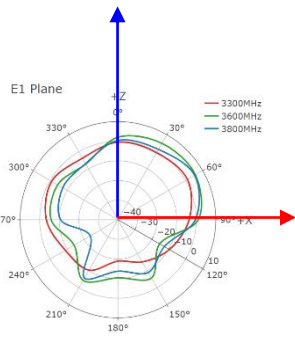
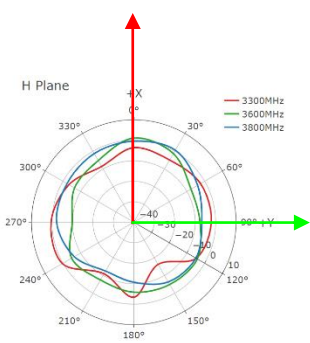
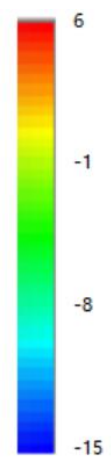
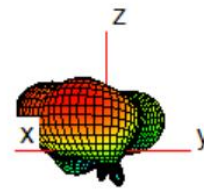


● **LMH1**

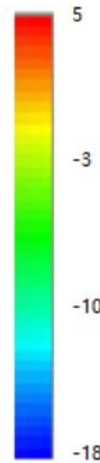
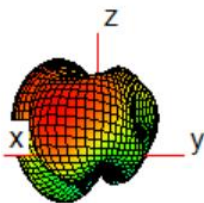
**3600 MHz**



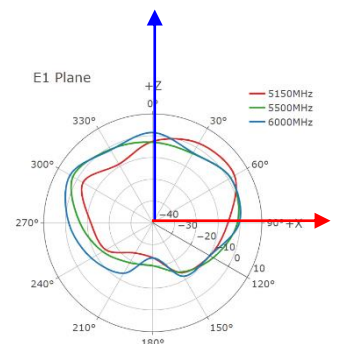
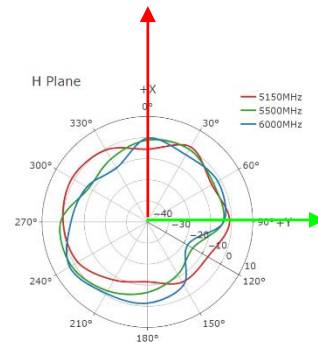
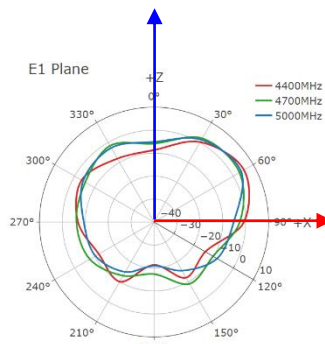
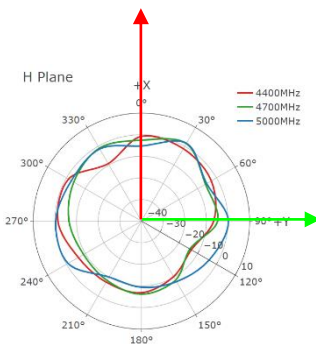
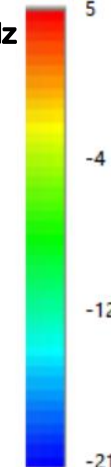
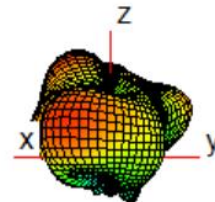
**4000 MHz**



**4700 MHz**

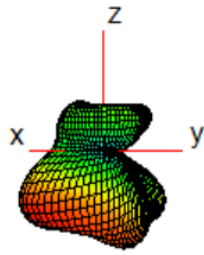


**5500 MHz**

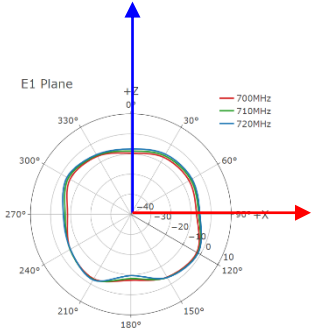
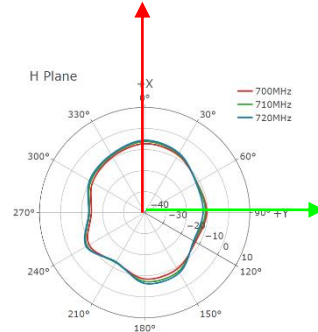
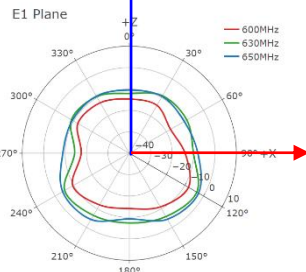
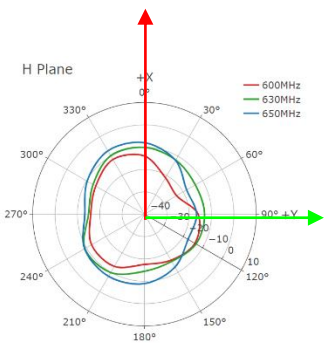
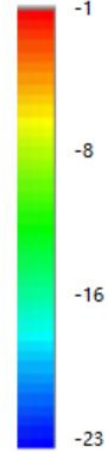
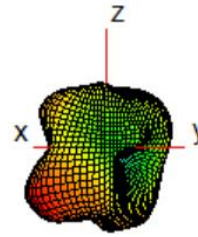


● **LMH2**

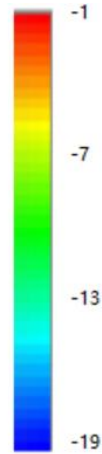
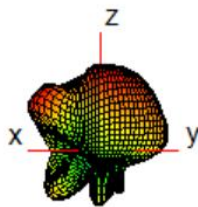
**630 MHz**



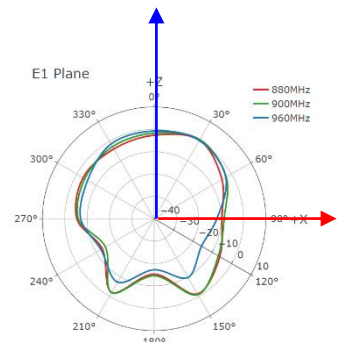
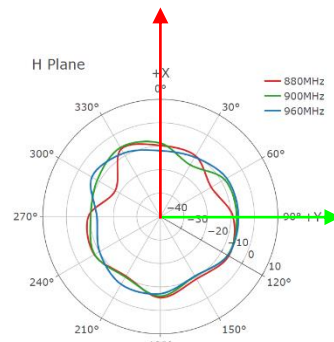
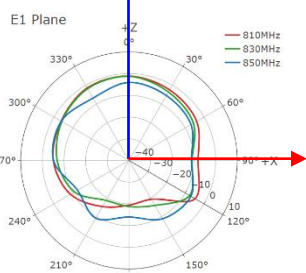
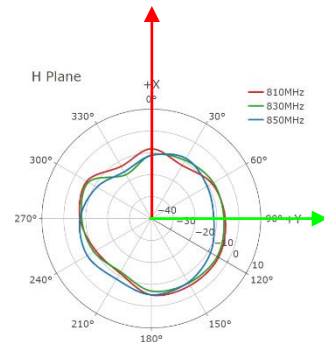
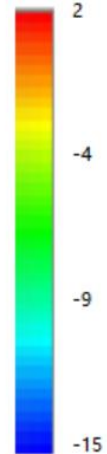
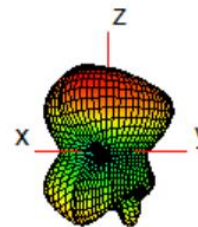
**710 MHz**



**830 MHz**



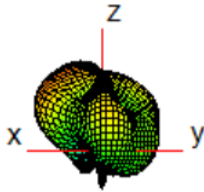
**900 MHz**



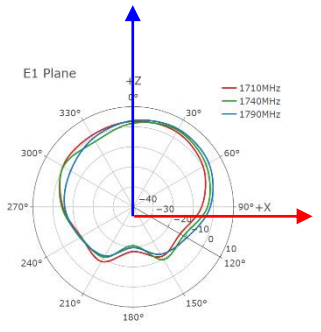
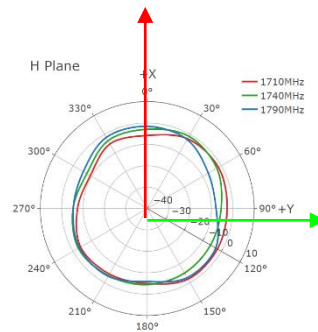
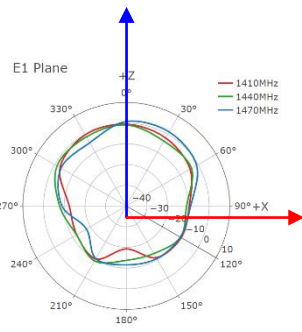
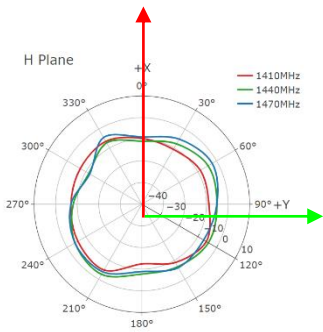
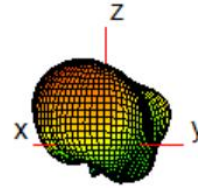


**LMH2**

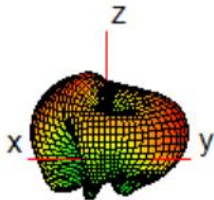
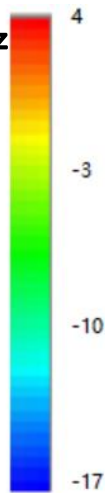
**1440 MHz**



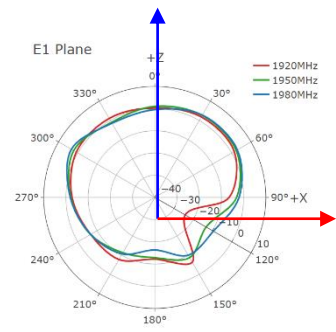
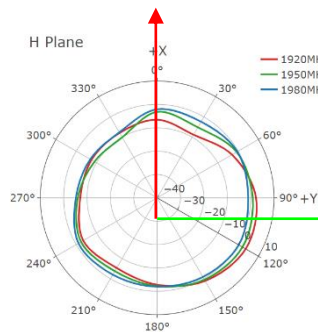
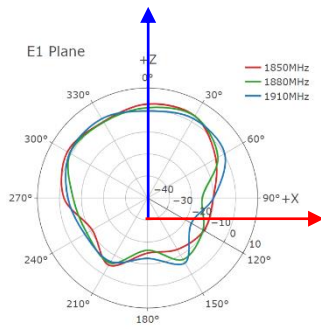
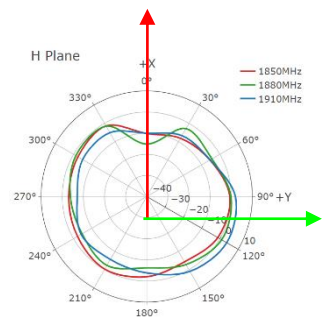
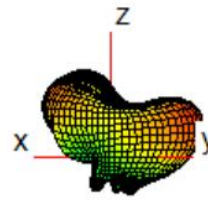
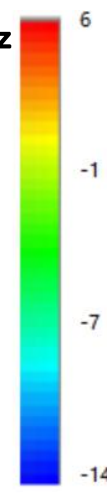
**1740 MHz**



**1880 MHz**

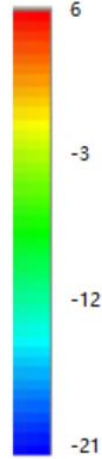
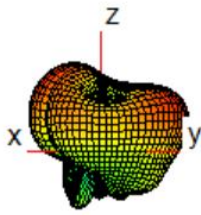


**1950 MHz**

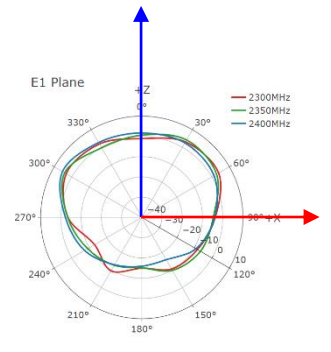
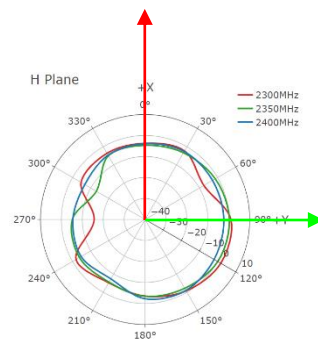
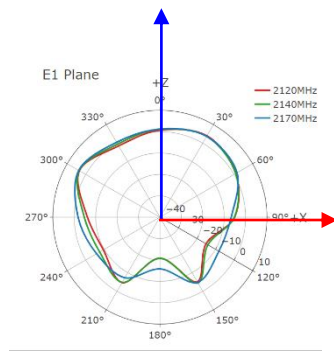
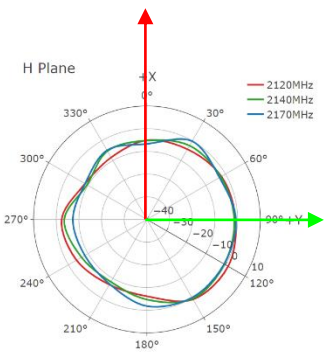
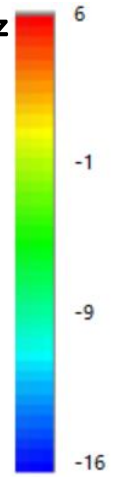
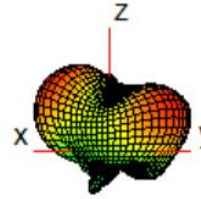


● **LMH2**

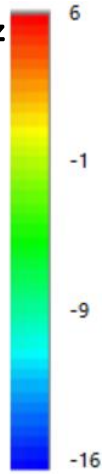
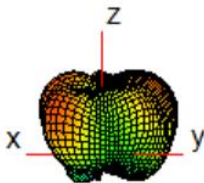
**2140 MHz**



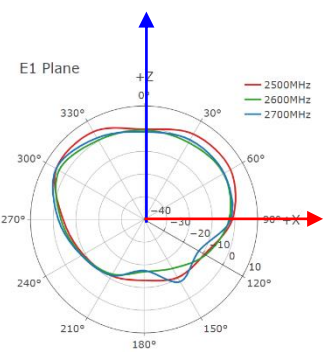
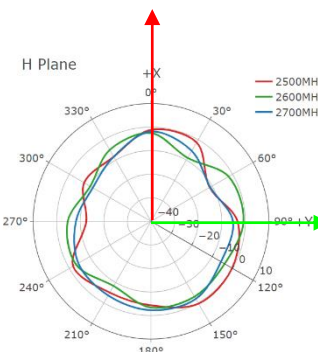
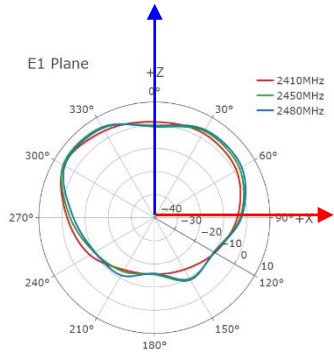
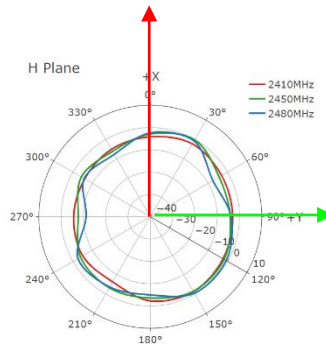
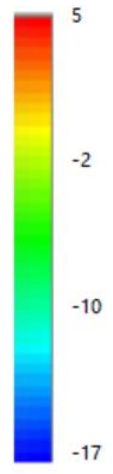
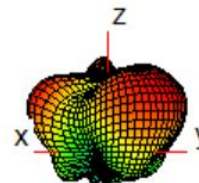
**2350 MHz**



**2460 MHz**

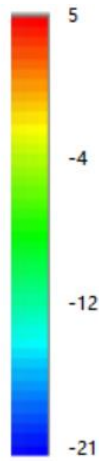
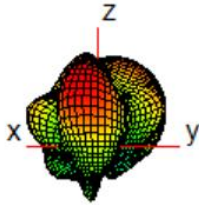


**2600 MHz**

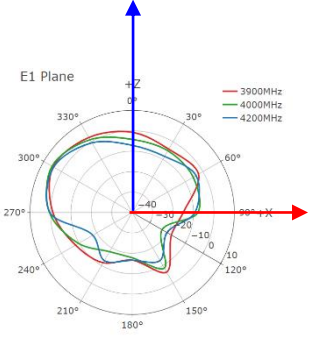
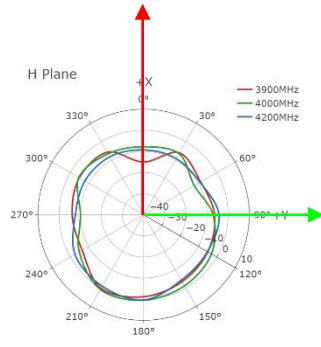
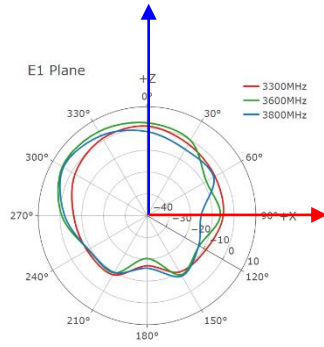
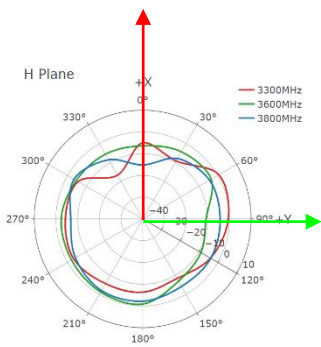
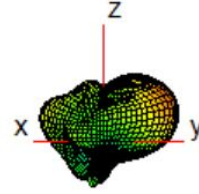


● **LMH2**

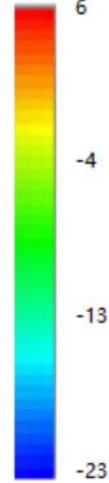
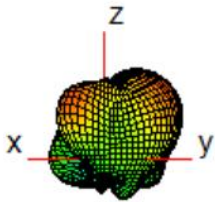
**3600 MHz**



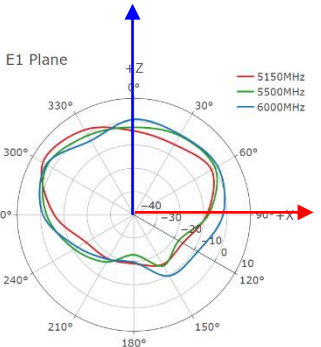
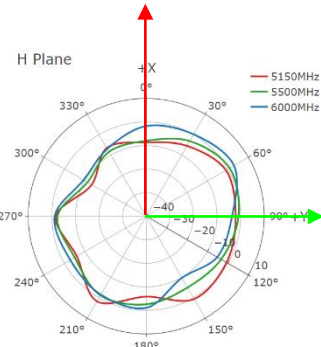
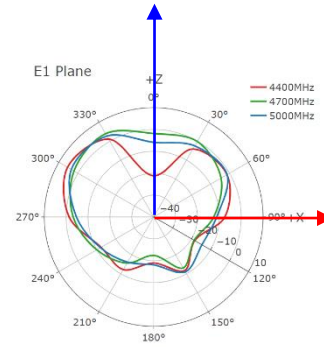
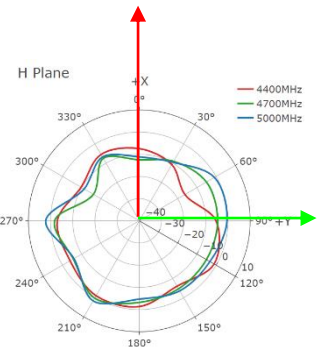
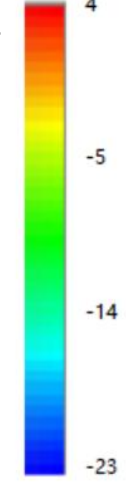
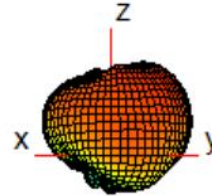
**4000 MHz**



**4700 MHz**

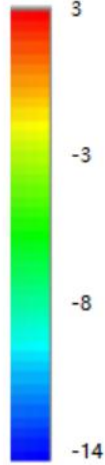
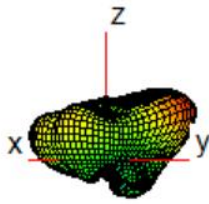


**5500 MHz**

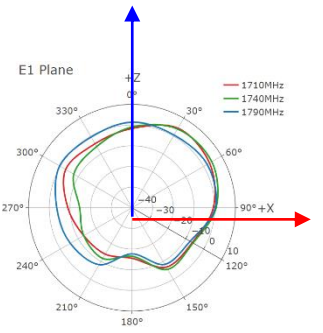
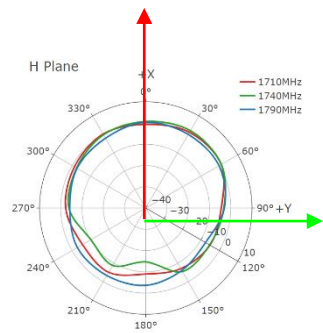
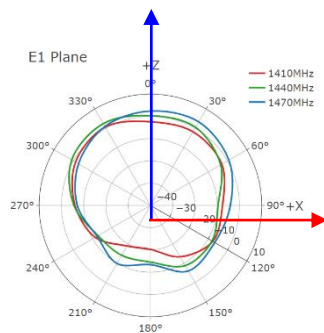
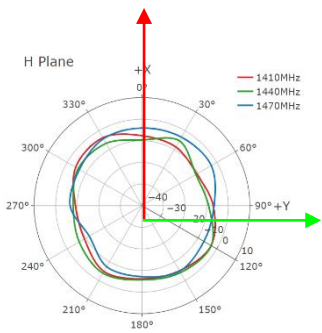
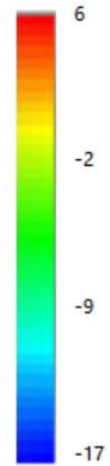
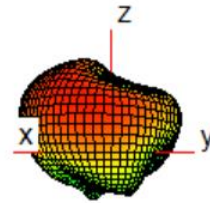


● **MH1**

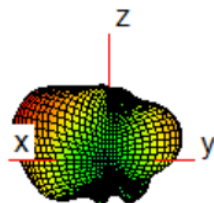
**1440 MHz**



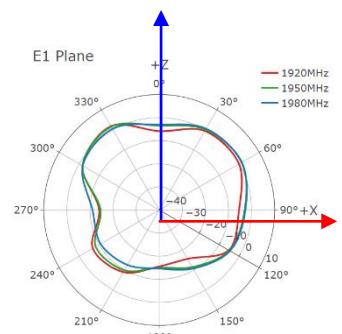
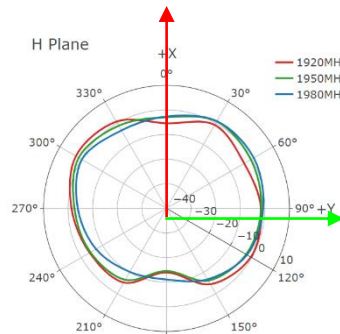
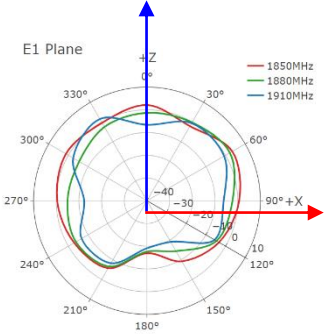
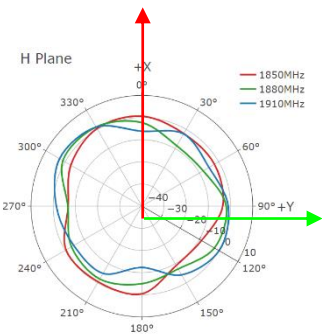
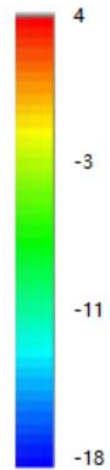
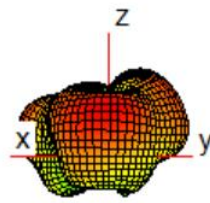
**1740 MHz**



**1880 MHz**

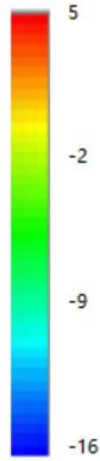
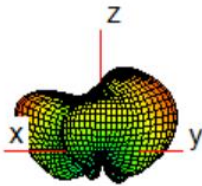


**1950 MHz**

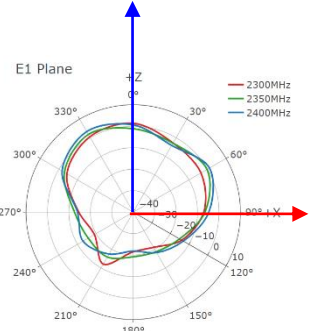
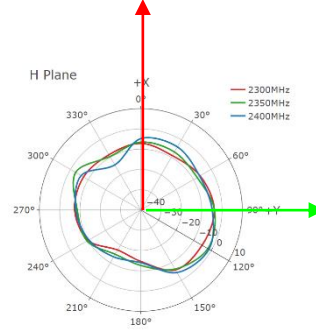
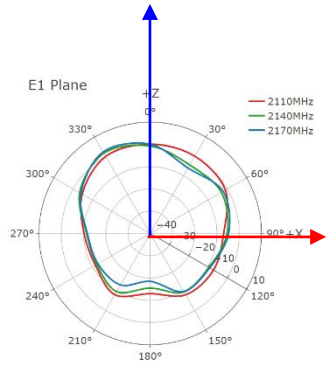
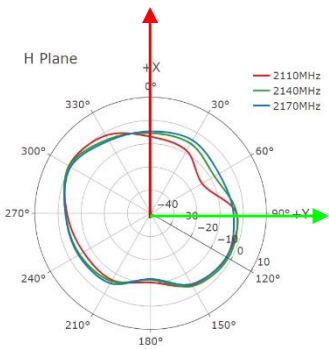
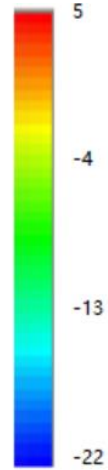
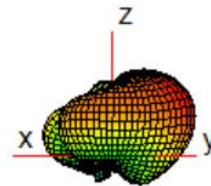


**MH1**

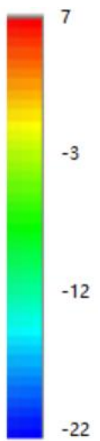
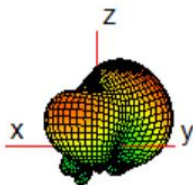
**2140 MHz**



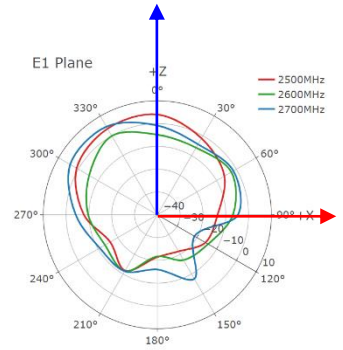
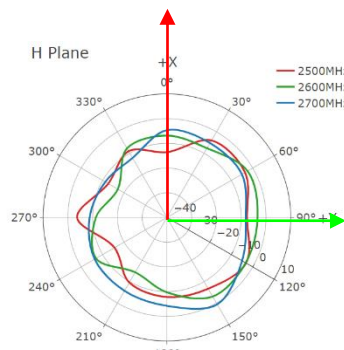
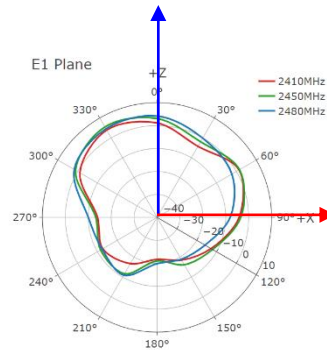
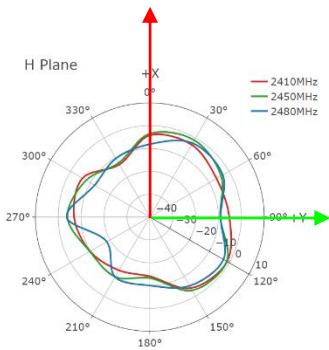
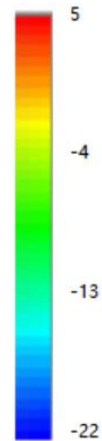
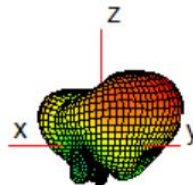
**2350 MHz**



**2450 MHz**

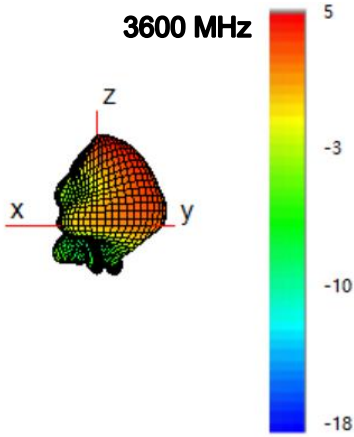


**2600 MHz**

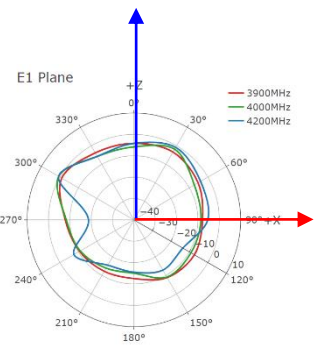
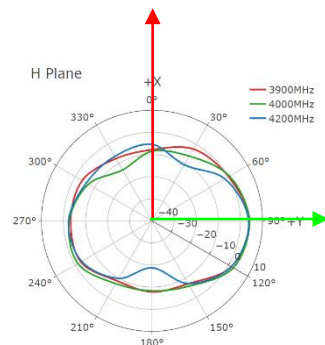
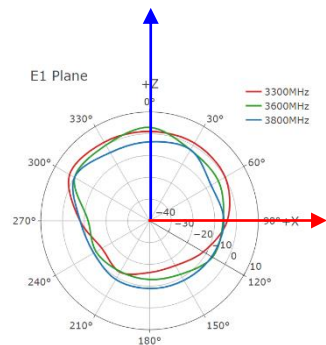
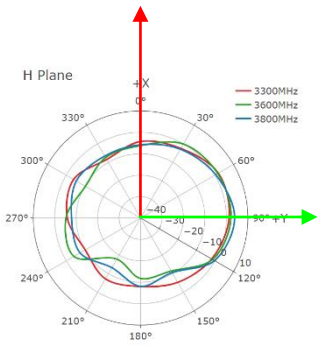
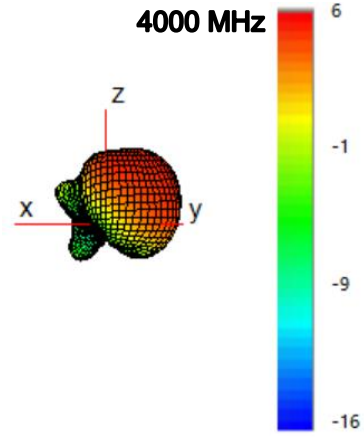


● **MH1**

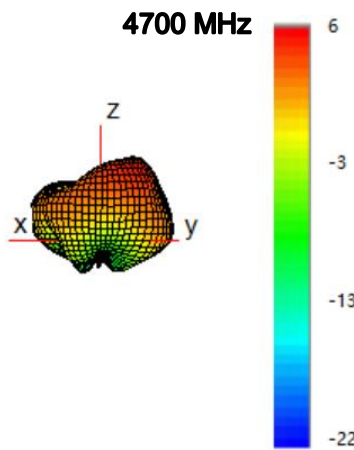
**3600 MHz**



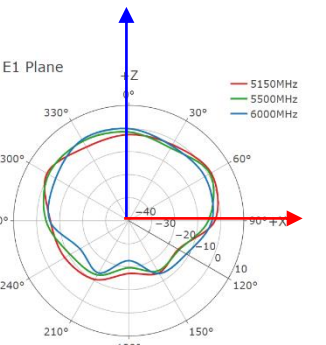
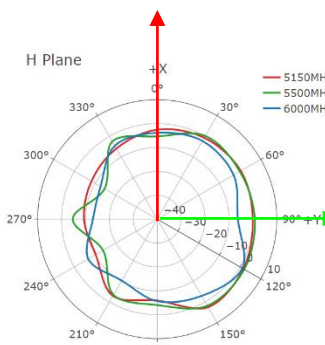
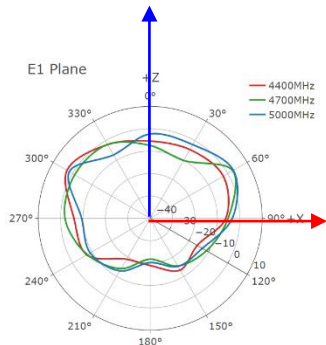
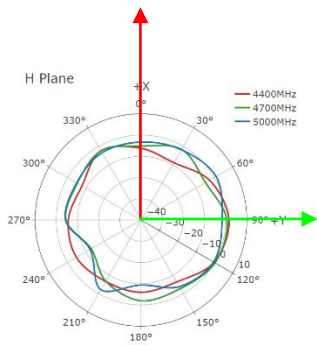
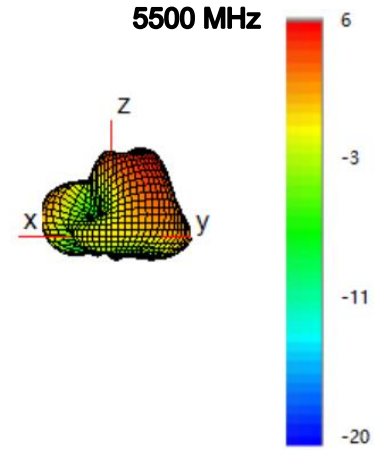
**4000 MHz**



**4700 MHz**

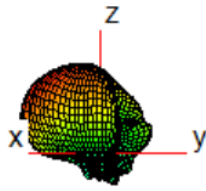


**5500 MHz**

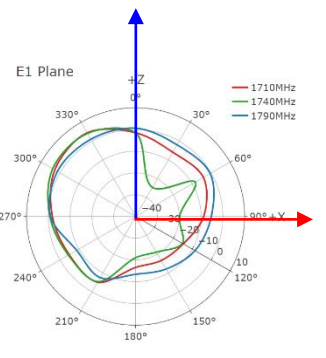
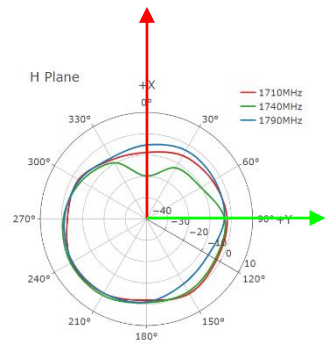
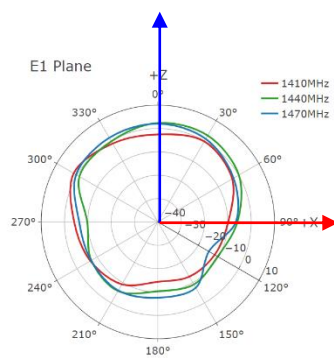
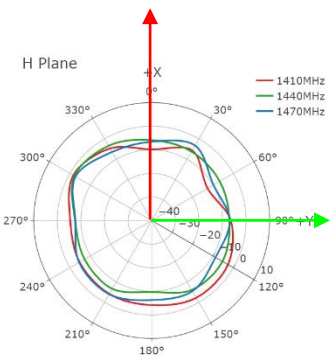
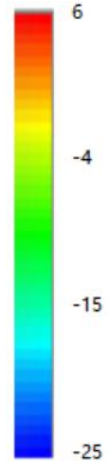
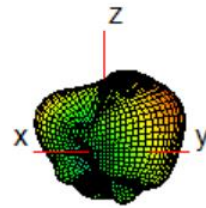


**MH2**

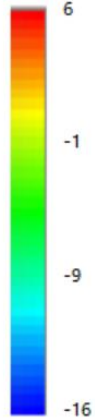
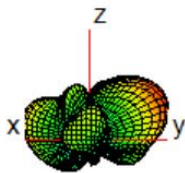
**1440 MHz**



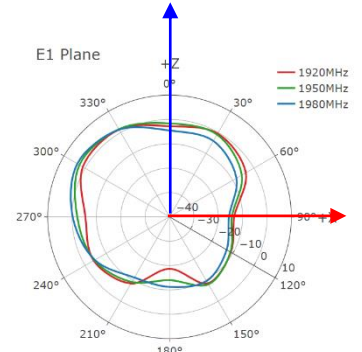
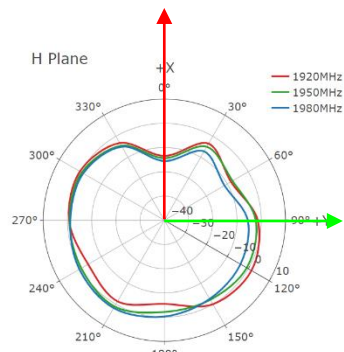
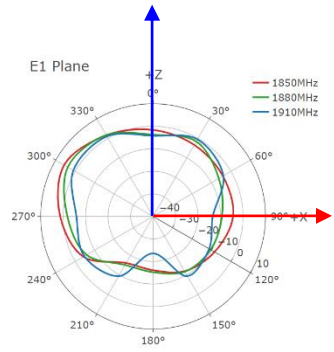
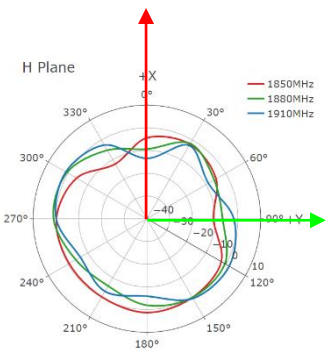
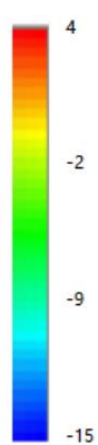
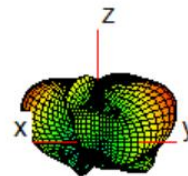
**1740 MHz**



**1880 MHz**

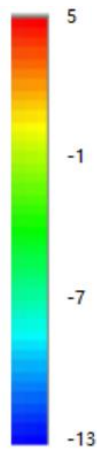
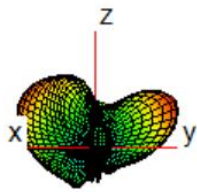


**1950 MHz**

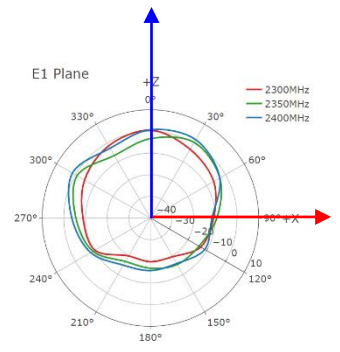
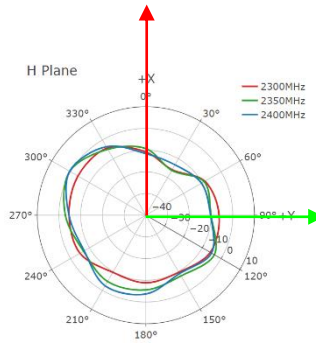
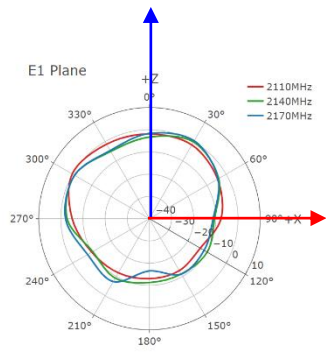
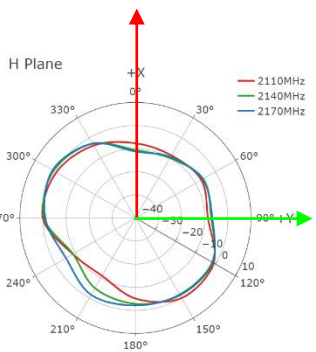
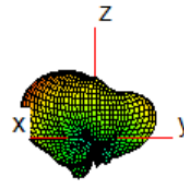


● **MH2**

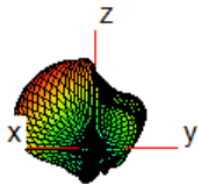
**2140 MHz**



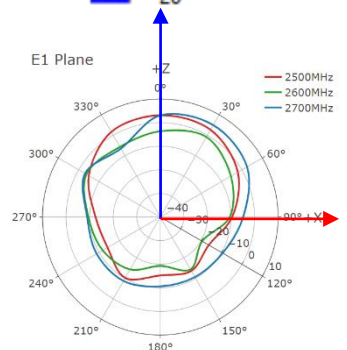
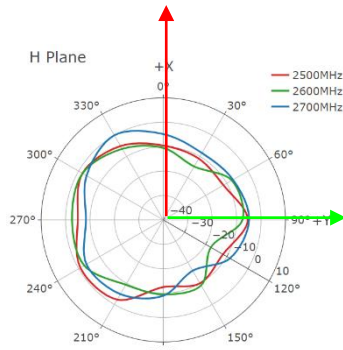
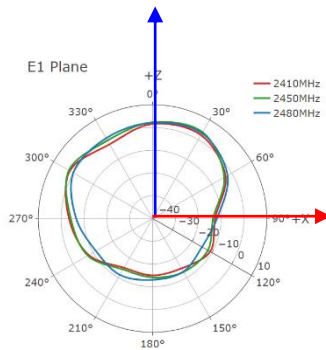
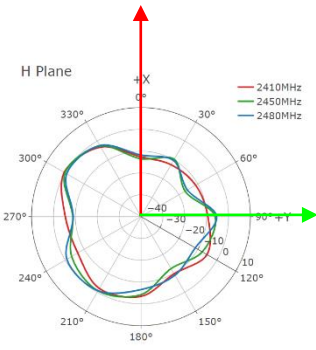
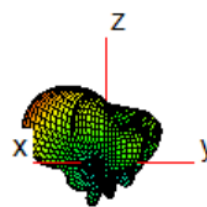
**2350 MHz**



**2450 MHz**



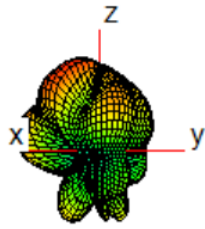
**2600 MHz**



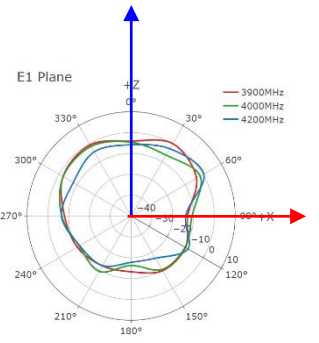
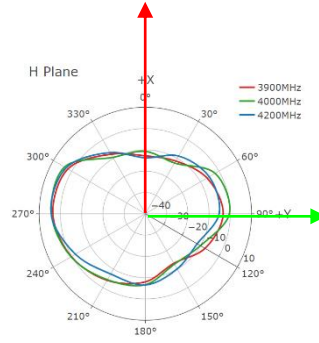
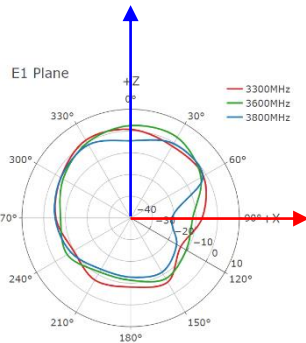
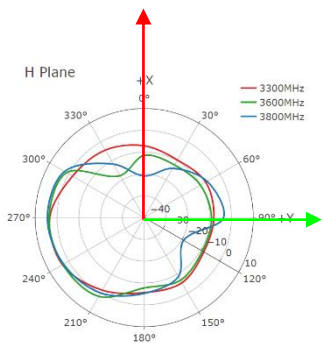
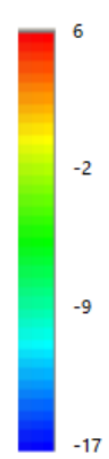
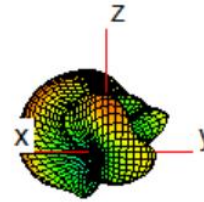


**MH2**

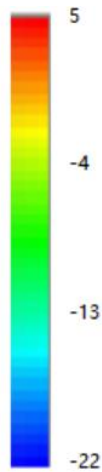
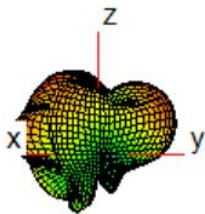
**3600 MHz**



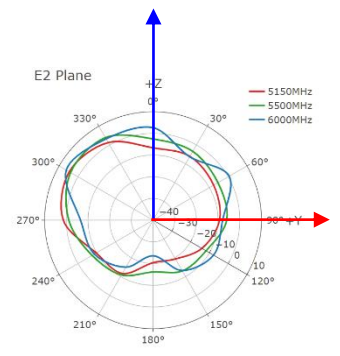
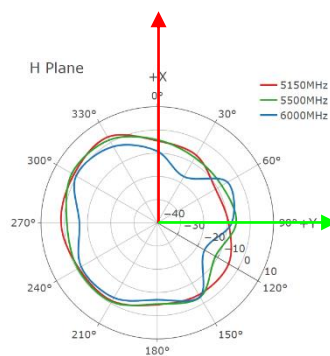
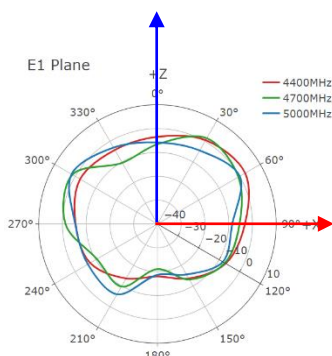
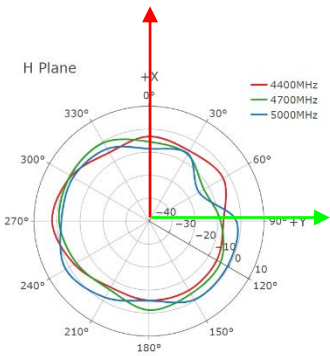
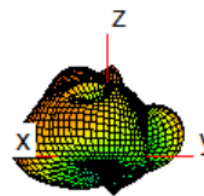
**4000 MHz**



**4700 MHz**



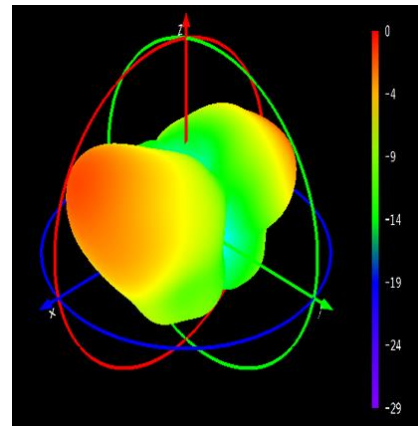
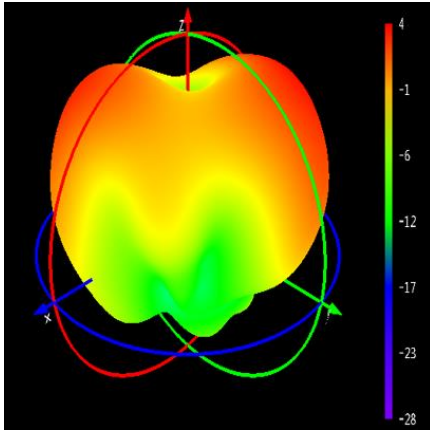
**5500 MHz**



● **GNSS**

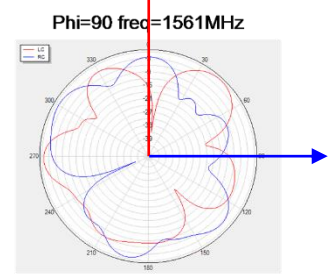
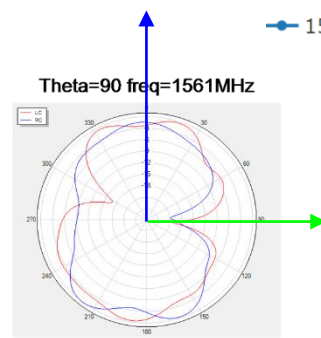
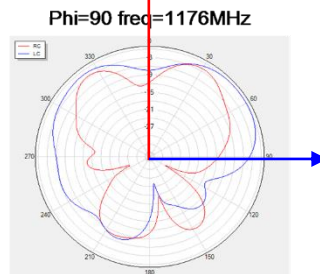
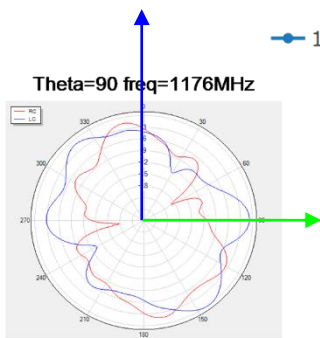
**1176 MHz**

**1561 MHz**



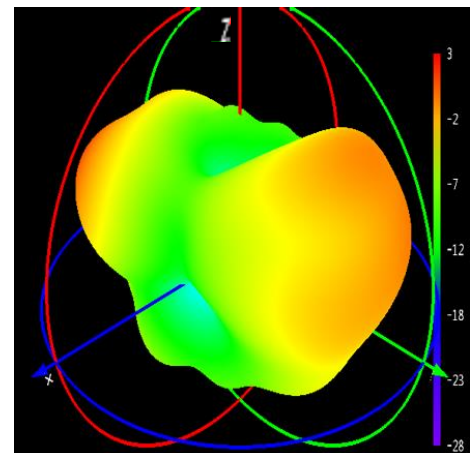
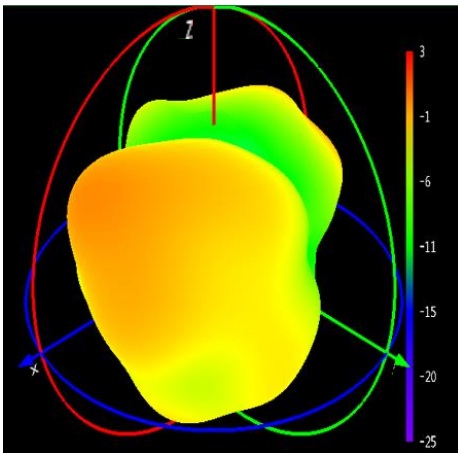
— 1176MHz

— 1561MHz



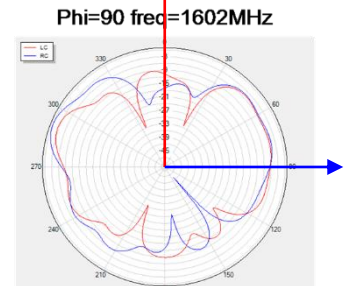
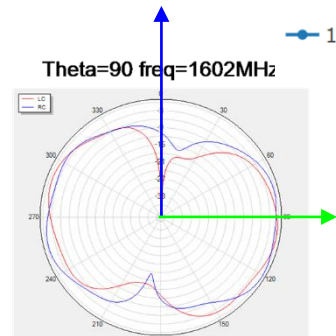
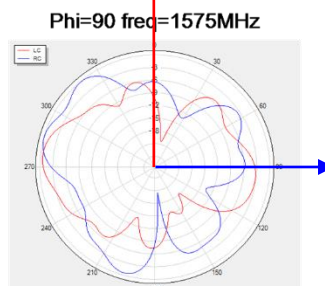
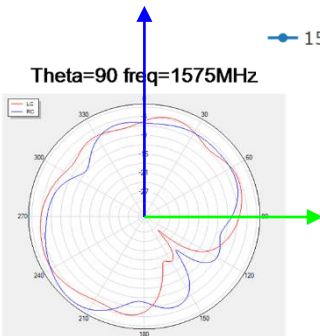
**1575 MHz**

**1602 MHz**

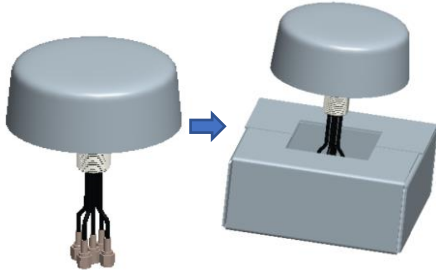
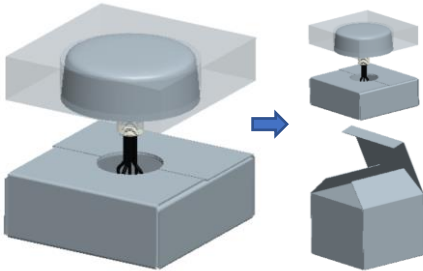
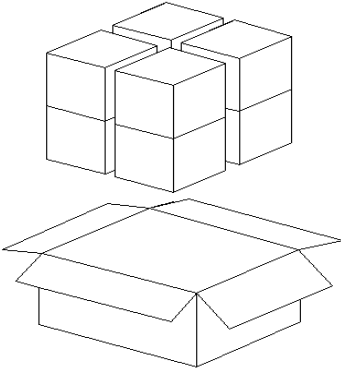


— 1575MHz

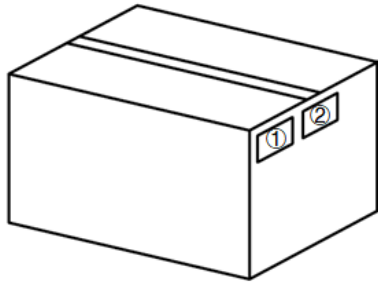
— 1602MHz



# 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;<br/>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,<br/>stacked 2 layers, a total of 8 inner boxes<br/>(8pcs Antenna / Per Carton Box)</p> <p><u>Carton Size: L*W*H= 310*310*370mm</u></p> |

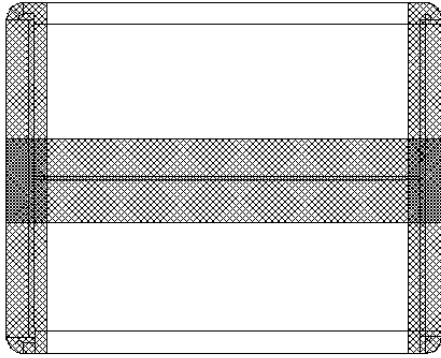
4



**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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## 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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