



# TAOGLAS®



# Datasheet

## Raptor Max

*Part No:*  
**MAX1015.A.001**

### *Description*

15-in-1 Permanent Mount Antenna with Multiband GNSS, 8 5G/4G,  
6 Wi-Fi with Staggered RG-174/TGC-1.5DS Cables

### *Features:*

- Low-profile, IP67 rated Enclosure
- 8\* 5G/4G MIMO 617~6000MHz
- 6\* WIFI MIMO 2.4/5.8/7.125GHz
- 1\* GNSS L1/L5 Dual-band Antenna
- Cables: RG-174 for GNSS, TGC-1.5DS for Cellular and Wi-Fi
- Connectors: SMA(M) / RP-SMA(M)
- Dims: 330mm x 75.5mm x 45.2mm
- RoHS & Reach Compliant

|           |                            |            |
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# 1. Introduction



The Taoglas® Raptor MAX series combination antenna is designed to enhance the connectivity options available to you for your vehicle. With up to 16-in-1 connections available, in combinations of Multiband GNSS, 5G/4G MIMO, Wi-Fi MIMO, and LMR/VHF/UHF/Tetra, this next generation, super low-profile vehicle roof mount antenna eliminates the need for multiple antennas, saving you time and money on installations.

The MAX1015 version combines multiband GNSS (L1/L5), 8 5G/4G antennas, and 6 Wi-Fi antennas. The super low profile, fully IP67 rated waterproof enclosure is manufactured from a robust, IK08 rated, UV protected ABS material, ideal for use in any environment or weather condition. Combining all the antennas for your application into one compact enclosure saves on installation space, reduces costs and allows for multi network support.

Typical application for the Raptor MAX series of products include:

- **Connected Vehicles** – Fleet Management and Asset Tracking
- **Smart Cities** – Public Safety Systems and Infrastructure
- **Industrial IoT** – Monitoring and Asset Tracking
- **Public Safety** – First Responder Vehicles
- **Military and Defense** – Command and Control Systems

The antenna comes with RG-174 and low-loss TGC-1.5DS coaxial pigtail cables as standard, terminating in SMA(M) / RP-SMA(M), with custom configurations available depending on your requirements. Cable extension kits are available and are fully customized to suit your application. Several configurations of the Raptor MAX Series will launch as standard, see below, but other configurations are available upon request, available in both black and white and with or without braided cables. Contact your local Taoglas customer service team for more information.

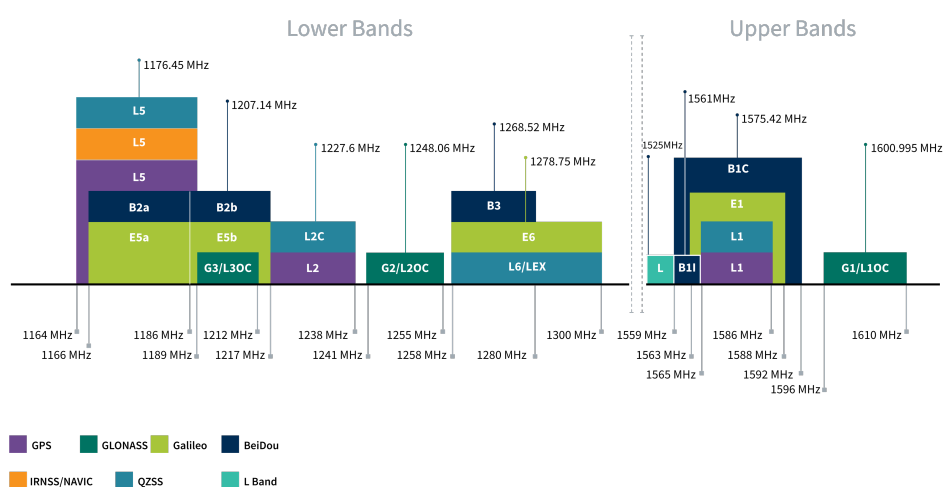
#### Raptor Max Series Configurations:

- **MAX1008**      8x 5G/4G
- **MAX1009**      1x GNSS and 8x 5G/4G
- **MAX1012**      1x GNSS, 8x 5G/4G and 3x Wi-Fi
- **MAX1013**      1x GNSS, 8x 5G/4G and 4x Wi-Fi
- **MAX1014**      1x GNSS, 8x 5G/4G and 5x Wi-Fi
- **MAX1015**      1x GNSS, 8x 5G/4G and 6x Wi-Fi
- **MAX1016**      1x GNSS, 8x 5G/4G, 6x Wi-Fi and 1x LMR Whip



## 2. Specification

| GNSS Frequency Bands |                         |                           |                    |                    |                   |
|----------------------|-------------------------|---------------------------|--------------------|--------------------|-------------------|
| GPS                  | L1<br>1575.42 MHz       | L2<br>1227.6 MHz          | L5<br>1176.45 MHz  |                    |                   |
|                      | ■                       | □                         | ■                  |                    |                   |
| GLONASS              | G1<br>1602 MHz          | G2<br>1248 MHz            | G3<br>1207 MHz     |                    |                   |
|                      | □                       | □                         | □                  |                    |                   |
| Galileo              | E1<br>1575.24 MHz       | E5a<br>1176.45 MHz        | E5b<br>1201.5 MHz  | E6<br>1278.75 MHz  |                   |
|                      | ■                       | ■                         | □                  | □                  |                   |
| BeiDou               | B1C<br>1575.42 MHz      | B1I<br>1561 MHz           | B2a<br>1176.45 MHz | B2b<br>1207.14 MHz | B3<br>1268.52 MHz |
|                      | ■                       | ■                         | ■                  | □                  | □                 |
| L-Band               | L-Band<br>1542 MHz      |                           |                    |                    |                   |
|                      | □                       |                           |                    |                    |                   |
| QZSS (Regional)      | L1<br>1575.42 MHz       | L2C<br>1227.6 MHz         | L5<br>1176.45 MHz  | L6<br>1278.75e6    |                   |
|                      | ■                       | □                         | ■                  | □                  |                   |
| IRNSS (Regional)     | L5<br>1176.45 MHz       |                           |                    |                    |                   |
|                      | ■                       |                           |                    |                    |                   |
| SBAS                 | L1/E1/B1<br>1575.42 MHz | L5/B2a/E5a<br>1176.45 MHz | G1<br>1602 MHz     | G2<br>1248 MHz     | G3<br>1207 MHz    |
|                      | ■                       | ■                         | □                  | □                  | □                 |



GNSS Bands and Constellations

| Passive GNSS Electrical              |             |       |         |
|--------------------------------------|-------------|-------|---------|
| Frequency (MHz)                      | 1176.45     | 1561  | 1575.42 |
| VSWR (max.)                          | 3:1         | 3:1   | 3:1     |
| Passive Antenna Efficiency (%)       | 37.77       | 33.44 | 40.65   |
| Passive Antenna Gain at Zenith (dBi) | 1.75        | 3.59  | 4.51    |
| Polarization                         | Linear      |       |         |
| Impedance                            | 50 $\Omega$ |       |         |

| LNA and Electrical Properties    |                                                |      |         |      |
|----------------------------------|------------------------------------------------|------|---------|------|
| Frequency (MHz)                  | 1176.45                                        | 1561 | 1575.42 | 1602 |
| Gain(dB)                         | 29.7                                           | 28.8 | 28.1    | 28.6 |
| Noise Figure (dB)                | 2.9                                            | 2.8  | 2.9     | 2.3  |
| Input Voltage (V)                | + 1.8 to 5.5                                   |      |         |      |
| Current consumption (mA)         | 5 $\pm$ 2                                      |      |         |      |
| IEC61000-4-2<br>(ESD protection) | $\pm$ 30 kV air / $\pm$ 20Kv contact discharge |      |         |      |

| 4G-5G Electrical                           |                 |              |                |                   |                 |             |              |                   |                  |
|--------------------------------------------|-----------------|--------------|----------------|-------------------|-----------------|-------------|--------------|-------------------|------------------|
| Band                                       | Frequency (MHz) | Antenna MIMO | Efficiency (%) | Average Gain (dB) | Peak Gain (dBi) | Impedance   | Polarization | Radiation Pattern | Max. input power |
| 5GNR/4G Band71                             | 617-698         | 4G-5G1       | 27.0           | -5.69             | 2.03            | 50 $\Omega$ | Linear       | Omni              | 10W              |
|                                            |                 | 4G-5G2       | 20.4           | -6.91             | -1.50           |             |              |                   |                  |
|                                            |                 | 4G-5G3       | 25.6           | -5.92             | 0.17            |             |              |                   |                  |
|                                            |                 | 4G-5G4       | 44.1           | -3.56             | 3.54            |             |              |                   |                  |
|                                            |                 | 4G-5G5       | 24.9           | -6.04             | 2.68            |             |              |                   |                  |
|                                            |                 | 4G-5G6       | 24.5           | -6.11             | -0.41           |             |              |                   |                  |
|                                            |                 | 4G-5G7       | 25.1           | -6.00             | -1.18           |             |              |                   |                  |
|                                            |                 | 4G-5G8       | 29.9           | -5.24             | 0.85            |             |              |                   |                  |
| 4G/3G Band 12,13,14,17,28,29               | 698-824         | 4G-5G1       | 34.1           | -4.67             | 2.63            |             |              |                   |                  |
|                                            |                 | 4G-5G2       | 32.0           | -4.95             | 1.92            |             |              |                   |                  |
|                                            |                 | 4G-5G3       | 35.7           | -4.48             | 2.67            |             |              |                   |                  |
|                                            |                 | 4G-5G4       | 42.9           | -3.67             | 2.75            |             |              |                   |                  |
|                                            |                 | 4G-5G5       | 32.0           | -4.95             | 1.77            |             |              |                   |                  |
|                                            |                 | 4G-5G6       | 26.4           | -5.79             | -0.11           |             |              |                   |                  |
|                                            |                 | 4G-5G7       | 32.9           | -4.83             | 1.97            |             |              |                   |                  |
|                                            |                 | 4G-5G8       | 36.4           | -4.39             | 2.24            |             |              |                   |                  |
| 4G/3G/NB-IoT/Cat M Band 5,8,18,19,20,26,27 | 824-960         | 4G-5G1       | 38.3           | -4.16             | 1.52            |             |              |                   |                  |
|                                            |                 | 4G-5G2       | 36.0           | -4.44             | 1.50            |             |              |                   |                  |
|                                            |                 | 4G-5G3       | 28.3           | -5.48             | 1.20            |             |              |                   |                  |
|                                            |                 | 4G-5G4       | 35.5           | -4.49             | 2.45            |             |              |                   |                  |
|                                            |                 | 4G-5G5       | 29.9           | -5.24             | 1.53            |             |              |                   |                  |
|                                            |                 | 4G-5G6       | 28.7           | -5.43             | -0.35           |             |              |                   |                  |
|                                            |                 | 4G-5G7       | 36.3           | -4.40             | 2.66            |             |              |                   |                  |
|                                            |                 | 4G-5G8       | 40.1           | -3.97             | 2.58            |             |              |                   |                  |
| 5GNR/4G Band 21,32,74,75,76                | 1427-1518       | 4G-5G1       | 37.4           | -4.27             | 2.73            |             |              |                   |                  |
|                                            |                 | 4G-5G2       | 41.9           | -3.78             | 3.32            |             |              |                   |                  |
|                                            |                 | 4G-5G3       | 33.1           | -4.81             | 2.78            |             |              |                   |                  |
|                                            |                 | 4G-5G4       | 32.9           | -4.82             | 2.33            |             |              |                   |                  |
|                                            |                 | 4G-5G5       | 31.2           | -5.06             | 2.10            |             |              |                   |                  |
|                                            |                 | 4G-5G6       | 31.5           | -5.01             | 1.43            |             |              |                   |                  |
|                                            |                 | 4G-5G7       | 39.7           | -4.02             | 2.25            |             |              |                   |                  |
|                                            |                 | 4G-5G8       | 25.7           | -5.91             | 0.94            |             |              |                   |                  |
| 4G/3G Band 1,2,3,4,9,23,25,35,39,66        | 1710-2200       | 4G-5G1       | 46.4           | -3.34             | 4.93            |             |              |                   |                  |
|                                            |                 | 4G-5G2       | 47.2           | -3.26             | 4.61            |             |              |                   |                  |
|                                            |                 | 4G-5G3       | 51.5           | -2.88             | 5.48            |             |              |                   |                  |
|                                            |                 | 4G-5G4       | 48.7           | -3.13             | 5.34            |             |              |                   |                  |
|                                            |                 | 4G-5G5       | 51.5           | -2.88             | 6.07            |             |              |                   |                  |
|                                            |                 | 4G-5G6       | 49.3           | -3.07             | 6.07            |             |              |                   |                  |
|                                            |                 | 4G-5G7       | 29.8           | -5.26             | 4.22            |             |              |                   |                  |
|                                            |                 | 4G-5G8       | 31.3           | -5.04             | 2.93            |             |              |                   |                  |
| 4G/3G Band 7,30,38,40,41                   | 2300-2690       | 4G-5G1       | 49.9           | -3.02             | 5.47            |             |              |                   |                  |
|                                            |                 | 4G-5G2       | 48.3           | -3.16             | 4.39            |             |              |                   |                  |
|                                            |                 | 4G-5G3       | 48.2           | -3.17             | 6.12            |             |              |                   |                  |
|                                            |                 | 4G-5G4       | 38.8           | -4.12             | 6.69            |             |              |                   |                  |
|                                            |                 | 4G-5G5       | 39.2           | -4.07             | 5.96            |             |              |                   |                  |
|                                            |                 | 4G-5G6       | 49.2           | -3.08             | 6.79            |             |              |                   |                  |
|                                            |                 | 4G-5G7       | 39.7           | -4.01             | 5.28            |             |              |                   |                  |
|                                            |                 | 4G-5G8       | 43.1           | -3.65             | 6.09            |             |              |                   |                  |
| 5GNR/4G Band 22,42,48,77,78,79             | 3300-5000       | 4G-5G1       | 51.4           | -2.89             | 6.13            |             |              |                   |                  |
|                                            |                 | 4G-5G2       | 44.9           | -3.48             | 7.46            |             |              |                   |                  |
|                                            |                 | 4G-5G3       | 47.4           | -3.24             | 5.75            |             |              |                   |                  |
|                                            |                 | 4G-5G4       | 48.2           | -3.17             | 6.88            |             |              |                   |                  |
|                                            |                 | 4G-5G5       | 42.5           | -3.72             | 5.24            |             |              |                   |                  |
|                                            |                 | 4G-5G6       | 46.2           | -3.35             | 5.90            |             |              |                   |                  |
|                                            |                 | 4G-5G7       | 43.1           | -3.65             | 5.37            |             |              |                   |                  |
|                                            |                 | 4G-5G8       | 46.1           | -3.36             | 6.02            |             |              |                   |                  |
| 4G-5G5200/Wi-Fi5800                        | 5150-5925       | 4G-5G1       | 43.2           | -3.65             | 7.96            |             |              |                   |                  |
|                                            |                 | 4G-5G2       | 42.7           | -3.69             | 7.82            |             |              |                   |                  |
|                                            |                 | 4G-5G3       | 43.4           | -3.63             | 5.67            |             |              |                   |                  |
|                                            |                 | 4G-5G4       | 46.5           | -3.33             | 5.73            |             |              |                   |                  |
|                                            |                 | 4G-5G5       | 42.7           | -3.70             | 5.26            |             |              |                   |                  |
|                                            |                 | 4G-5G6       | 43.6           | -3.61             | 5.84            |             |              |                   |                  |
|                                            |                 | 4G-5G7       | 40.1           | -3.97             | 6.03            |             |              |                   |                  |
|                                            |                 | 4G-5G8       | 44.6           | -3.50             | 6.14            |             |              |                   |                  |

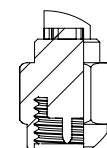
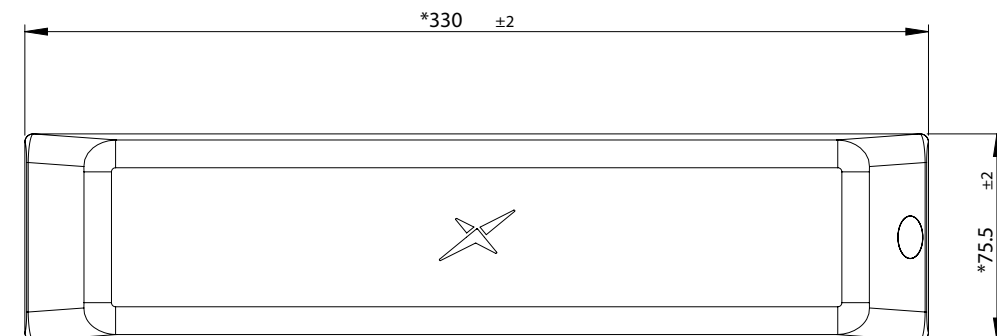
| Wi-Fi Electrical |                 |              |                |                   |                 |             |              |                   |                  |
|------------------|-----------------|--------------|----------------|-------------------|-----------------|-------------|--------------|-------------------|------------------|
| Band             | Frequency (MHz) | Antenna MIMO | Efficiency (%) | Average Gain (dB) | Peak Gain (dBi) | Impedance   | Polarization | Radiation Pattern | Max. input power |
| Wi-Fi - 2GHz     | 2400-2500       | Wi-Fi1       | 56.5           | -2.48             | 4.36            | 50 $\Omega$ | Linear       | Omni              | 10W              |
|                  |                 | Wi-Fi2       | 58.2           | -2.35             | 6.55            |             |              |                   |                  |
|                  |                 | Wi-Fi3       | 56.1           | -2.51             | 5.68            |             |              |                   |                  |
|                  |                 | Wi-Fi4       | 58.1           | -2.36             | 4.19            |             |              |                   |                  |
|                  |                 | Wi-Fi5       | 53.3           | -2.73             | 7.60            |             |              |                   |                  |
|                  |                 | Wi-Fi6       | 52.7           | -2.78             | 6.98            |             |              |                   |                  |
| Wi-Fi - 5GHz     | 5150-5850       | Wi-Fi1       | 49.3           | -3.07             | 5.71            |             |              |                   |                  |
|                  |                 | Wi-Fi2       | 49.5           | -3.05             | 7.47            |             |              |                   |                  |
|                  |                 | Wi-Fi3       | 47.8           | -3.20             | 5.63            |             |              |                   |                  |
|                  |                 | Wi-Fi4       | 45.9           | -3.38             | 6.10            |             |              |                   |                  |
|                  |                 | Wi-Fi5       | 50.5           | -2.97             | 8.04            |             |              |                   |                  |
|                  |                 | Wi-Fi6       | 44.7           | -3.50             | 8.51            |             |              |                   |                  |
| Wi-Fi - 6GHz     | 5925-7125       | Wi-Fi1       | 47.1           | -3.27             | 6.33            |             |              |                   |                  |
|                  |                 | Wi-Fi2       | 49.9           | -3.02             | 7.47            |             |              |                   |                  |
|                  |                 | Wi-Fi3       | 48.4           | -3.15             | 6.28            |             |              |                   |                  |
|                  |                 | Wi-Fi4       | 43.1           | -3.66             | 5.96            |             |              |                   |                  |
|                  |                 | Wi-Fi5       | 46.2           | -3.36             | 7.31            |             |              |                   |                  |
|                  |                 | Wi-Fi6       | 43.7           | -3.60             | 7.22            |             |              |                   |                  |

| Mechanical       |                                                    |
|------------------|----------------------------------------------------|
| Dimensions       | 330 x 75.5 x 45.2mm                                |
| Material         | PC                                                 |
| Connector        | SMA(M) and RP-SMA(M) - See Page 8 for more details |
| Cable            | RG-174 and TGC-1.5DS - See Page 8 for more details |
| IK Impact Rating | IK08 – 5 Joules / 1.7Kg dropped from 300mm         |

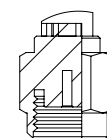
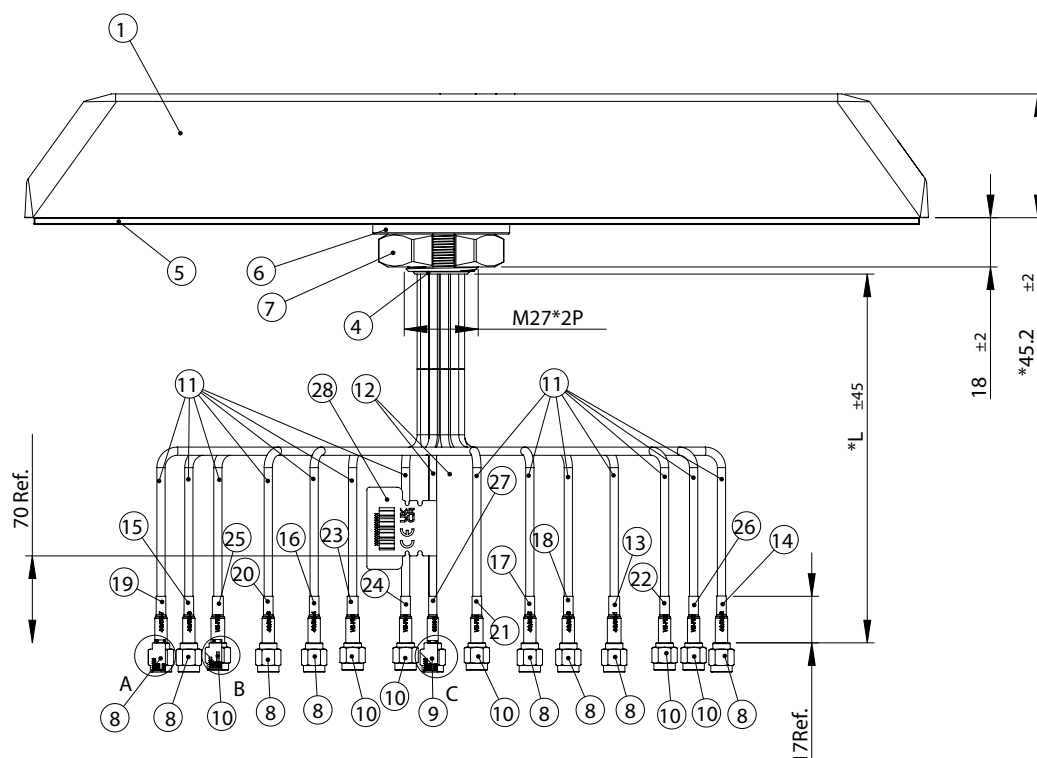
| Environmental          |                            |
|------------------------|----------------------------|
| Temperature Range      | -40 - +85°C                |
| Relative Humidity      | Non-condensing 65°C 95% RH |
| Ingress Protection     | IP67                       |
| RoHS & REACH Compliant | Yes                        |



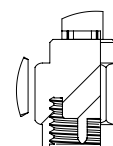
### 3. Mechanical Drawing



DETAIL A  
SCALE 1.5 : 1



DETAIL B  
SCALE 1.5 : 1



DETAIL C  
SCALE 1.5 : 1

|    | Name                             | Material              | Finish              | Qty |
|----|----------------------------------|-----------------------|---------------------|-----|
| 1  | Top housing                      | PC                    | MT9050, Black       | 1   |
| 2  | Bottom housing                   | PC+10%GF              | MT9050, Black       | 1   |
| 3  | Metal Stem                       | Zinc Alloy            | Ni Plated           | 1   |
| 4  | Grommet                          | Silicone Rubber       | Black               | 1   |
| 5  | Double Side Adhesive             | 3M 9448HK + CR4305 2t | Black               | 1   |
| 6  | washer(ID28*OD50 t4.0 )          | S35C                  | Ni-Zn Plated        | 1   |
| 7  | M27*P2.0mm steel Nut             | S35C                  | Ni-Zn Plated        | 1   |
| 8  | SMA(M)ST Plug for low loss 1.5DS | Brass                 | Au Plated           | 8   |
| 9  | SMA(M)ST Plug                    | Brass                 | Au Plated           | 1   |
| 10 | SMA(M)ST_RP low loss 1.5DS       | Brass                 | AU PLATING          | 6   |
| 11 | TGC-1.5DS Coaxial Cable          | PE                    | Black               | 14  |
| 12 | RG174 Coaxial Cable              | PE                    | Black               | 1   |
| 13 | Heat Shrink Tube(4G/5G-1)        | PE                    | Red Tube/White Text | 1   |
| 14 | Heat Shrink Tube(4G/5G-2)        | PE                    | Red Tube/White Text | 1   |

|    | Name                            | Material | Finish                  | Qty |
|----|---------------------------------|----------|-------------------------|-----|
| 15 | Heat Shrink Tube(4G/5G-3)       | PE       | Red Tube/White Text     | 1   |
| 16 | Heat Shrink Tube(4G/5G-4)       | PE       | Red Tube/White Text     | 1   |
| 17 | Heat Shrink Tube(4G/5G-5)       | PE       | Red Tube/White Text     | 1   |
| 18 | Heat Shrink Tube(4G/5G-6)       | PE       | Red Tube/White Text     | 1   |
| 19 | Heat Shrink Tube(4G/5G-7)       | PE       | Red Tube/White Text     | 1   |
| 20 | Heat Shrink Tube(4G/5G-8)       | PE       | Red Tube/White Text     | 1   |
| 21 | Heat Shrink Tube (WiFi-1)       | PE       | Yellow tube/ Black text | 1   |
| 22 | Heat Shrink Tube (WiFi-2)       | PE       | Yellow Tube/Black Text  | 1   |
| 23 | Heat Shrink Tube (Wi-Fi-3)      | PE       | Yellow Tube/Black Text  | 1   |
| 24 | Heat Shrink Tube (Wi-Fi-4)      | PE       | Yellow Tube/Black Text  | 1   |
| 25 | Heat Shrink Tube (Wi-Fi-5)      | PE       | Yellow Tube/Black Text  | 1   |
| 26 | Heat Shrink Tube (Wi-Fi-6)      | PE       | Yellow Tube/Black Text  | 1   |
| 27 | Heat Shrink Tube(GNSS)          | PE       | Blue Tube/White Text    | 1   |
| 28 | CEWEEE and UKCA mark logo Label | PEPA     | White                   | 1   |

| Cable length from base |     |
|------------------------|-----|
| Cable P/N              | L   |
| 4G-5G -1               | 300 |
| 4G-5G -2               | 275 |
| 4G-5G -3               | 275 |
| 4G-5G -4               | 250 |
| 4G-5G -5               | 200 |
| 4G-5G -6               | 200 |
| 4G-5G -7               | 225 |
| 4G-5G -8               | 225 |
| WiFi-1                 | 250 |
| WiFi-2                 | 225 |
| WiFi-3                 | 225 |
| WiFi-4                 | 200 |
| WiFi-5                 | 200 |
| WiFi-6                 | 325 |
| GNSS                   | 300 |

## 4. Packaging

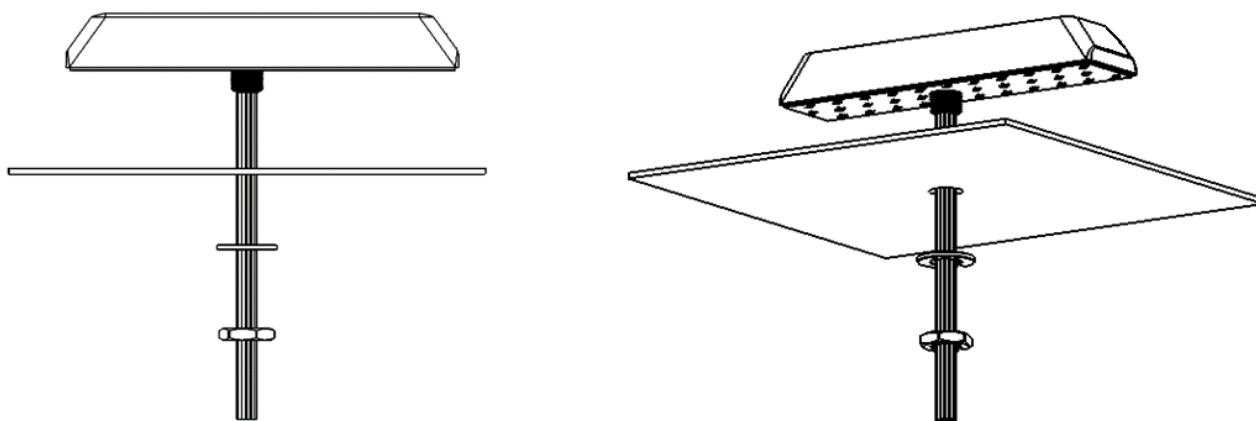
1pc Antenna per Large PE Bag  
Bag Dimensions: 470x470mm  
Weight: 0.7Kg



8pcs per Carton  
Carton Dimensions: 370x370x300mm  
Weight: 7Kg



## 5. Installation Guide



Correct installation of the Raptor Max is required to ensure that the waterproof integrity of the vehicle or enclosure is not compromised.

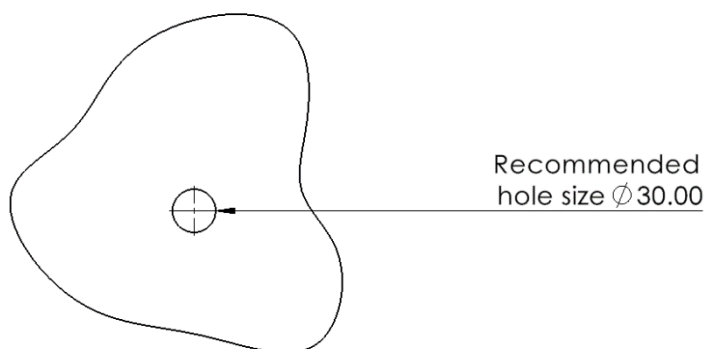
Step 1: Drill the recommended 30mm diameter hole as indicated below.

Step 2: Ensure that the surface you are mounting to is clean, dry and flat to receive the Raptor Max.

Step 3: Feed the cables through the hole and remove the 3m adhesive backing from the base.

Step 4: Position the Raptor Max into the correct orientation on the mounting surface and firmly press down to activate the 3M adhesive.

Step 5: To permanently mount the antenna, slide the washer and nut over the cable assembly and hand tighten to ensure a secure fit.

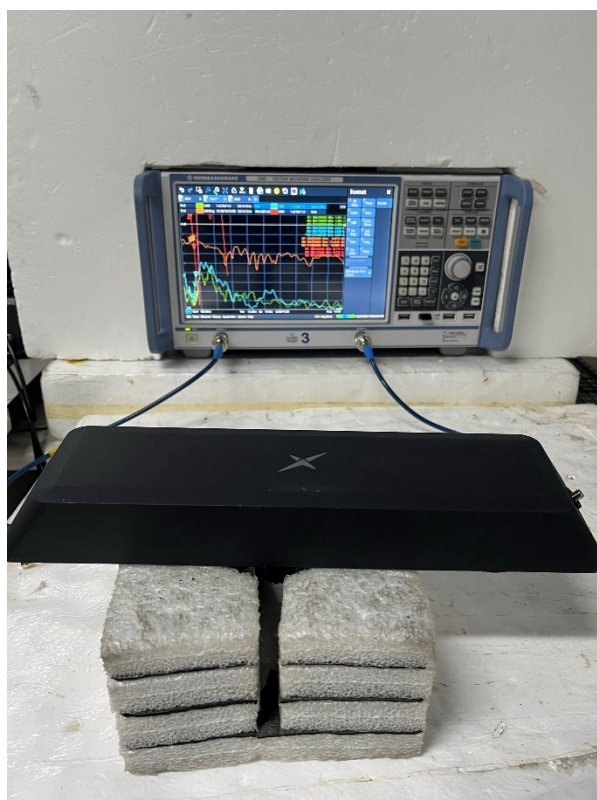


## 6. Characteristics

### 6.1 Test Setup

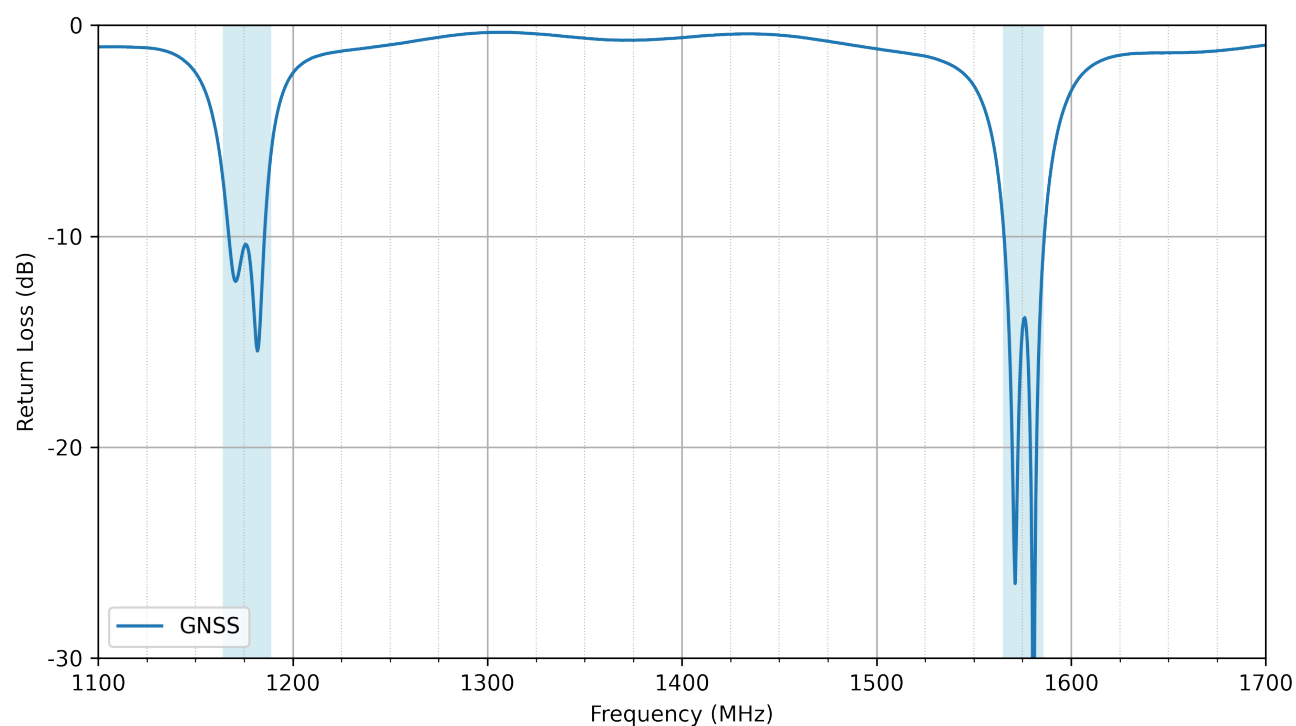
AUT

Vector Network Analyzer

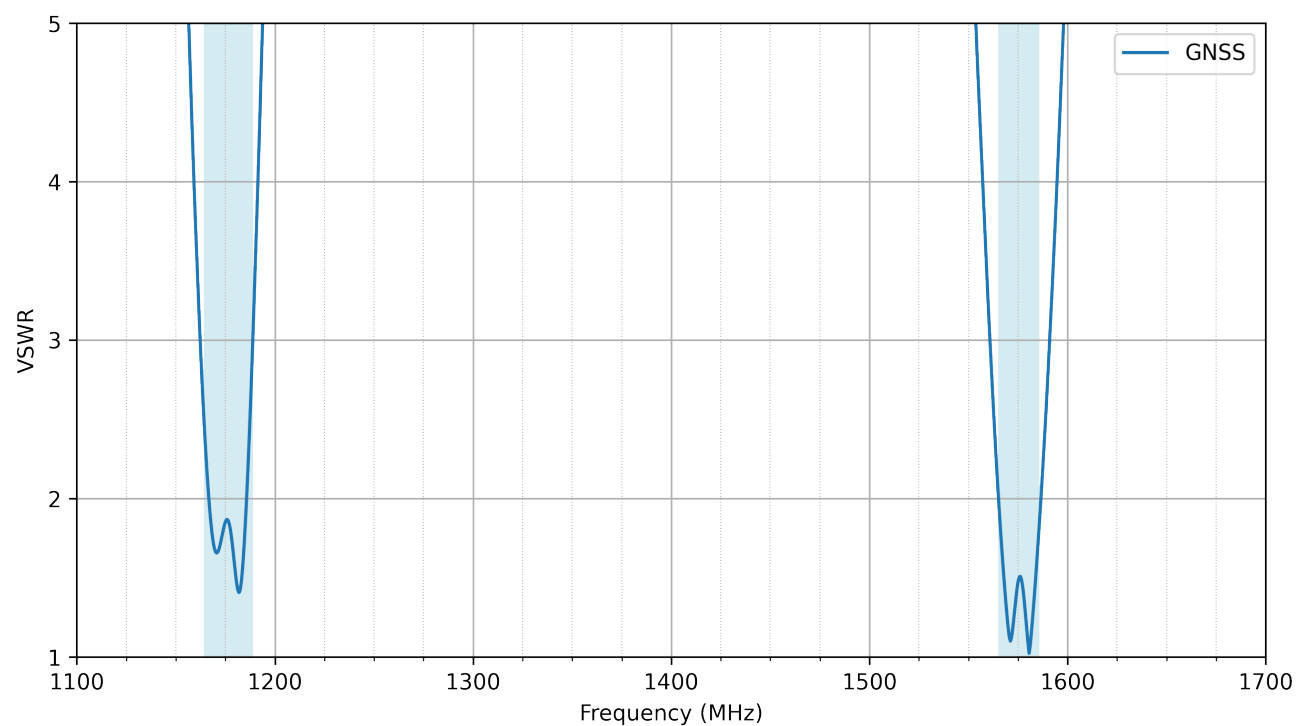


VNA Test Set-up

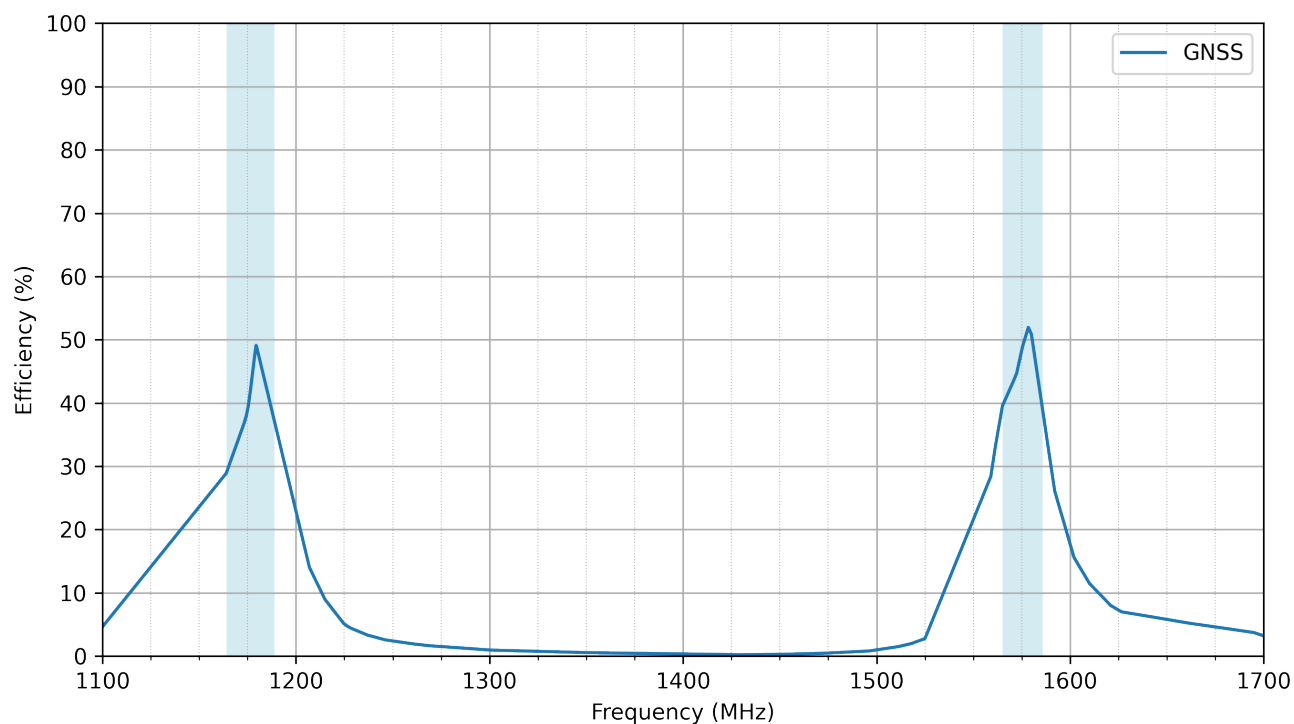
## 6.2 GNSS - Return Loss



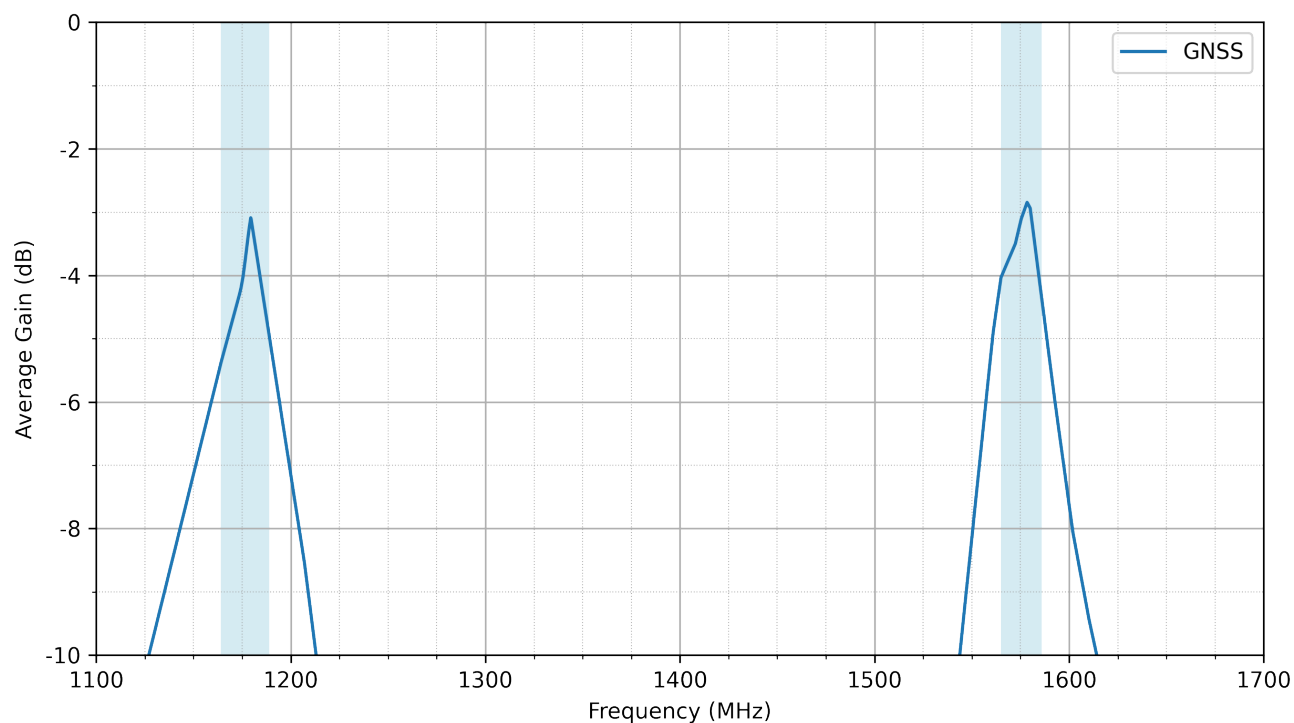
## 6.3 GNSS - VSWR



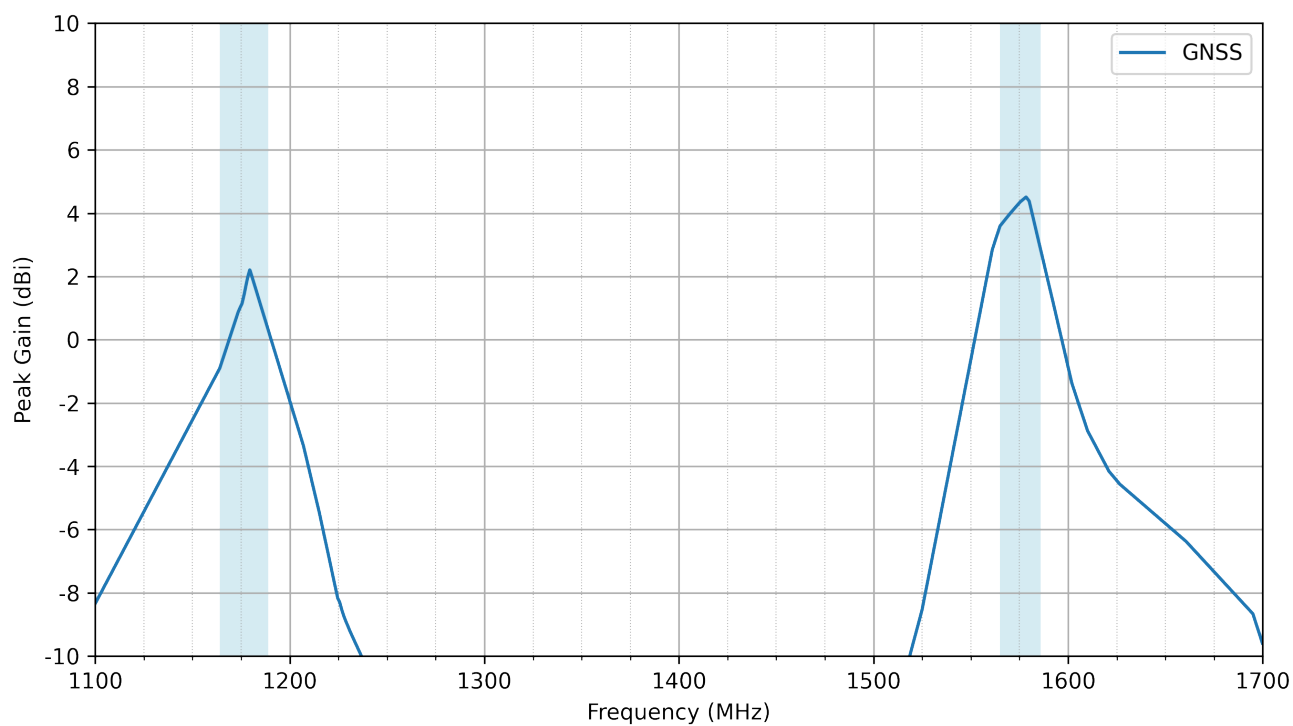
## 6.4 GNSS - Efficiency



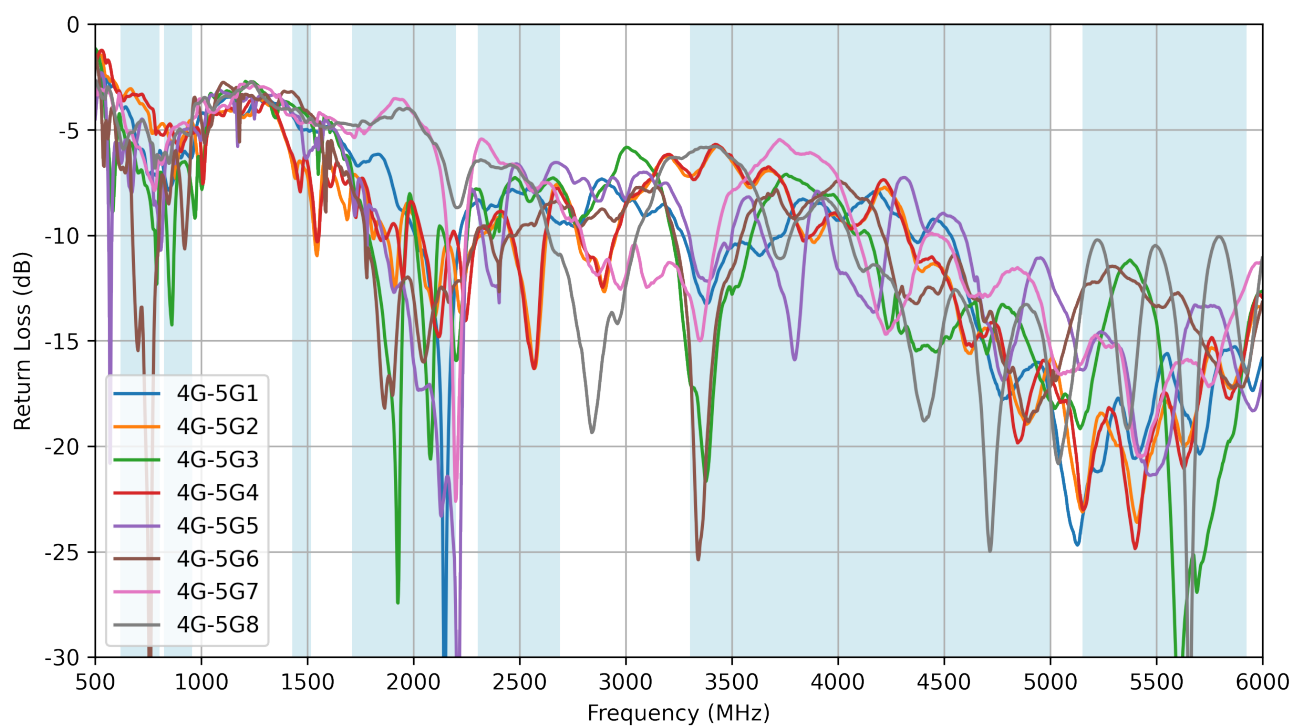
## 6.5 GNSS - Average Gain



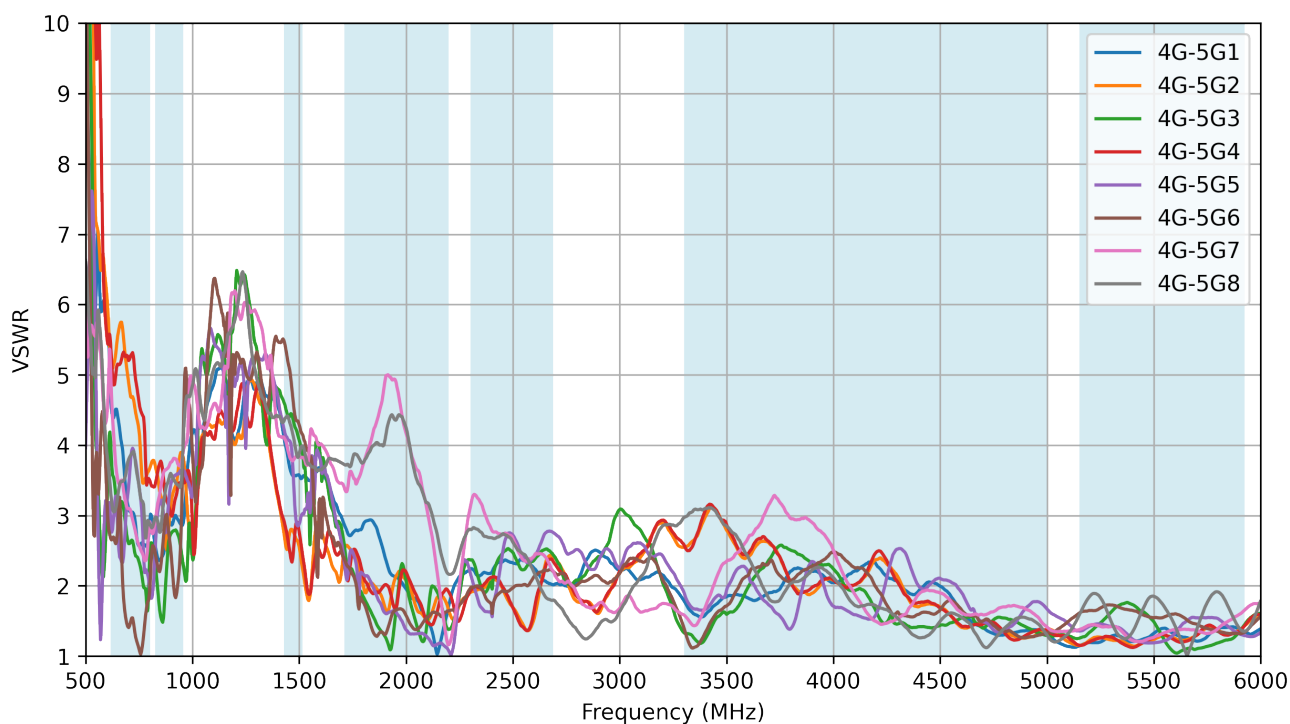
## 6.6 GNSS - Peak Gain



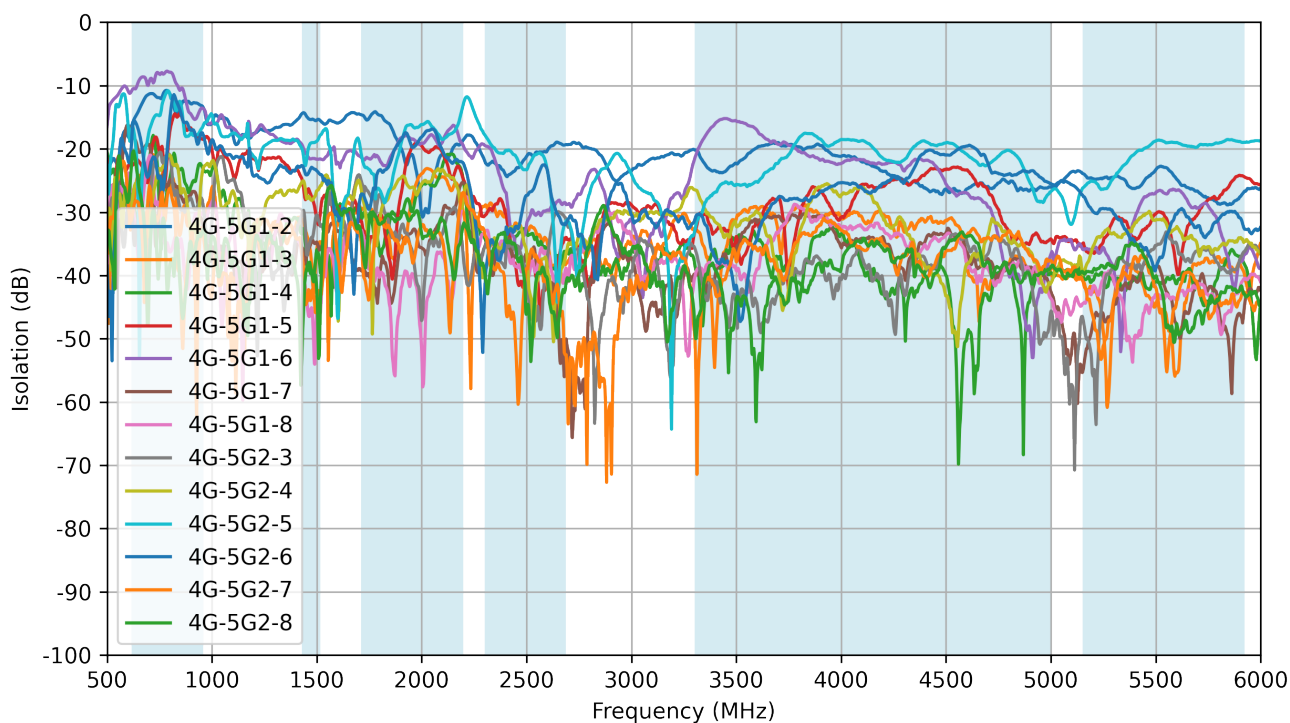
## 6.7 4G-5G - Return Loss



## 6.8 4G-5G - VSWR

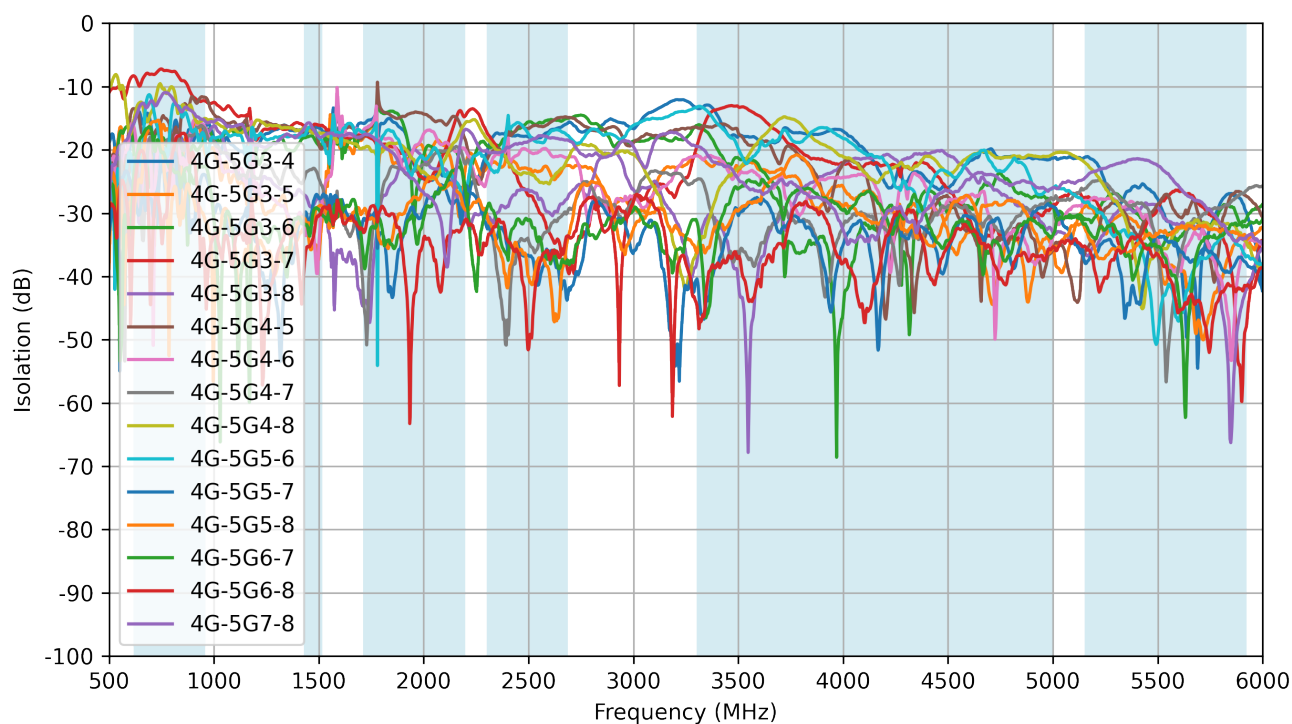


## 6.9 Isolation

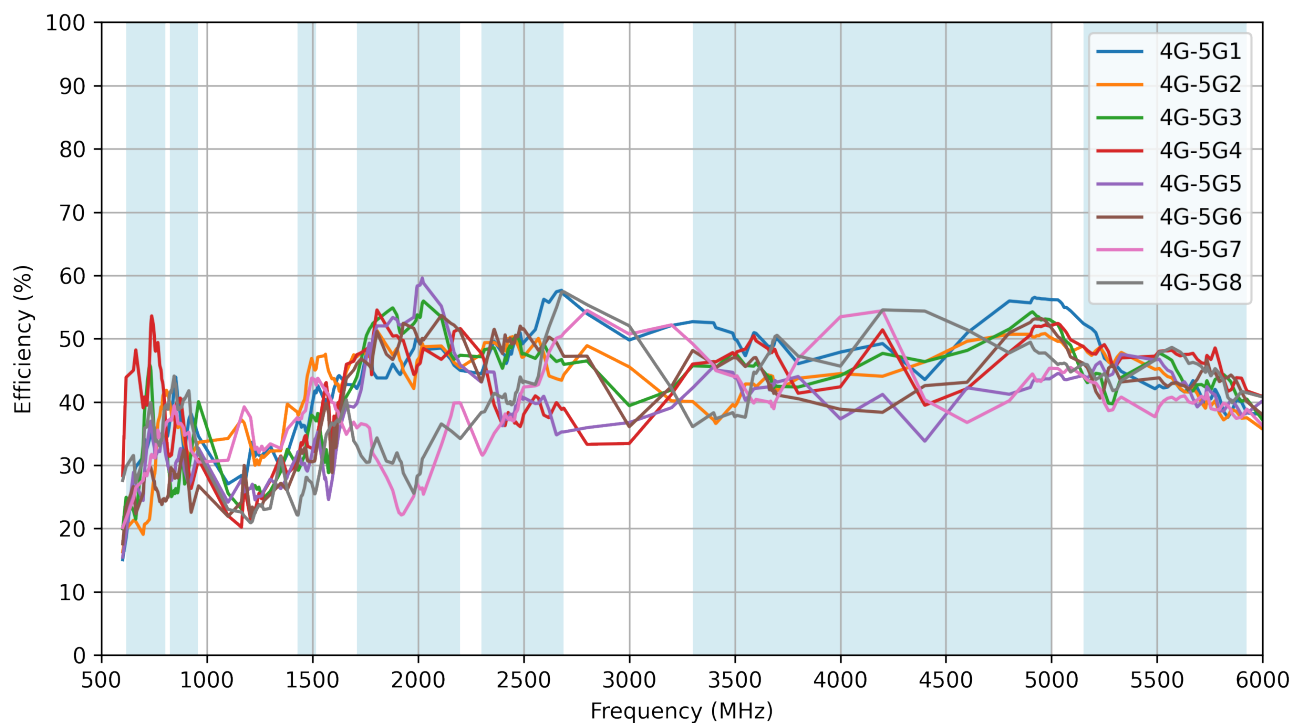




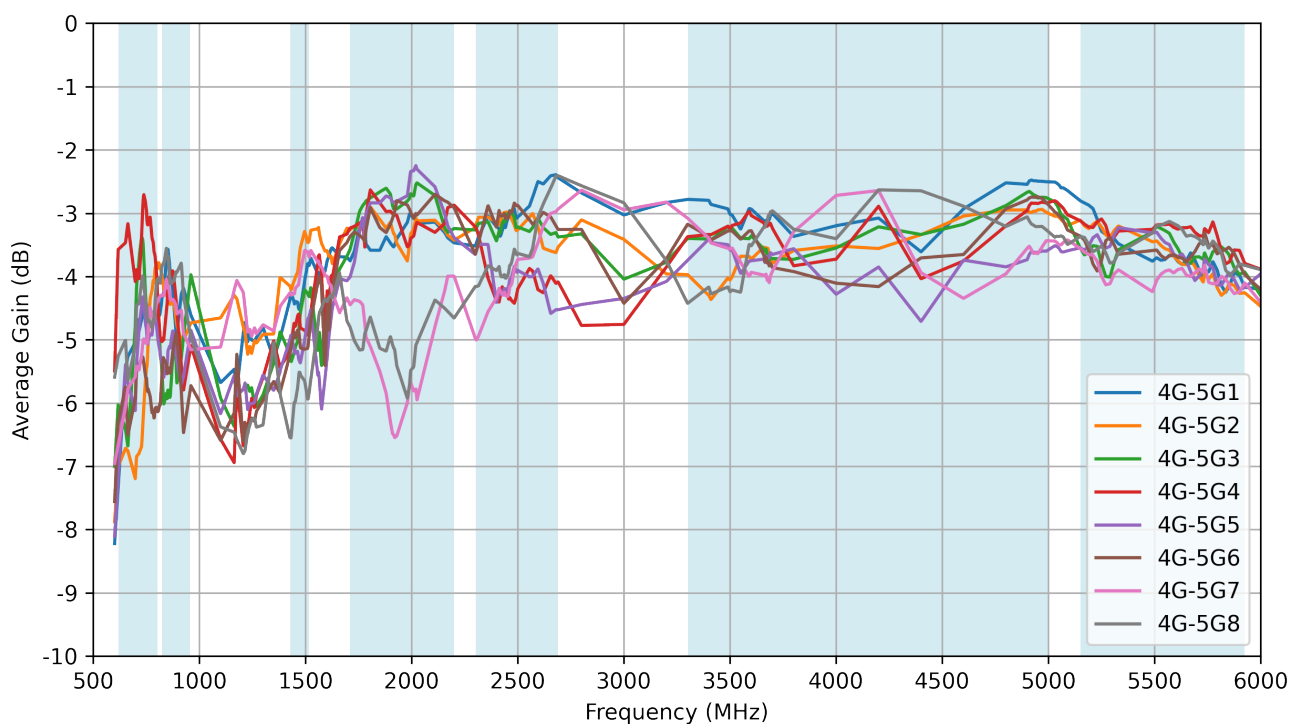
## 6.10 Isolation



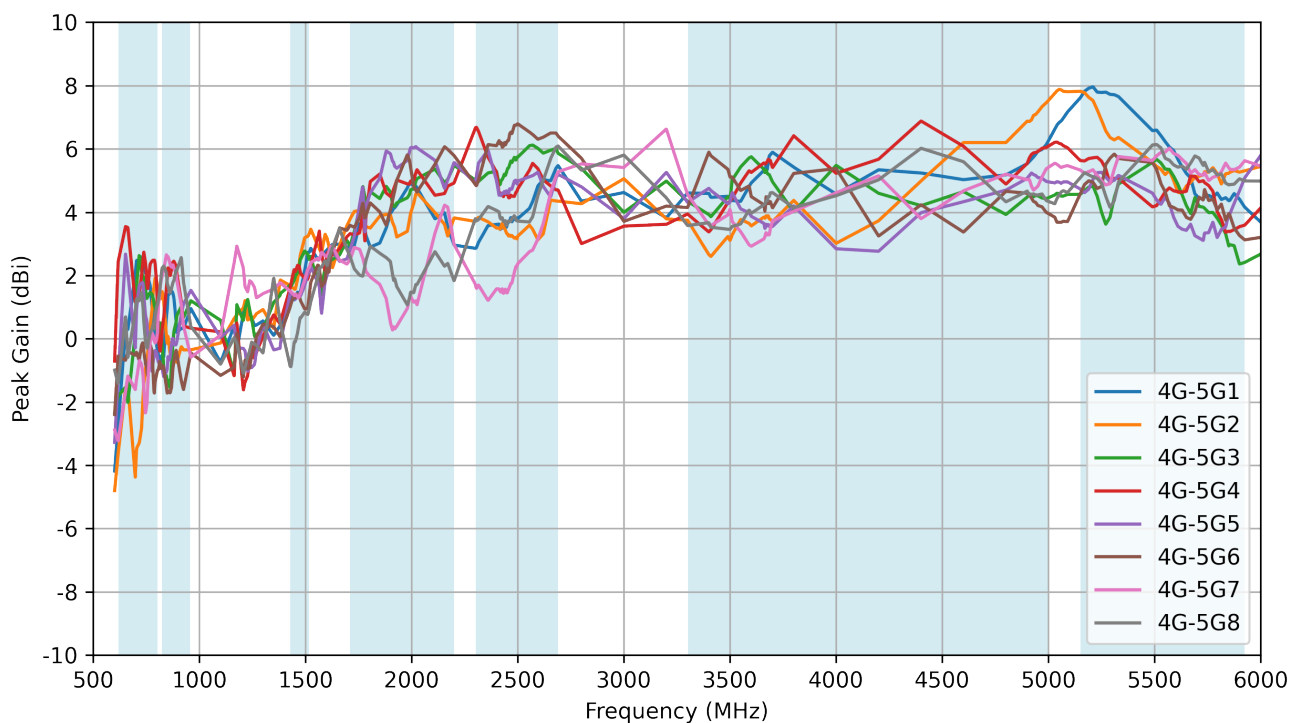
## 6.11 4G-5G - Efficiency



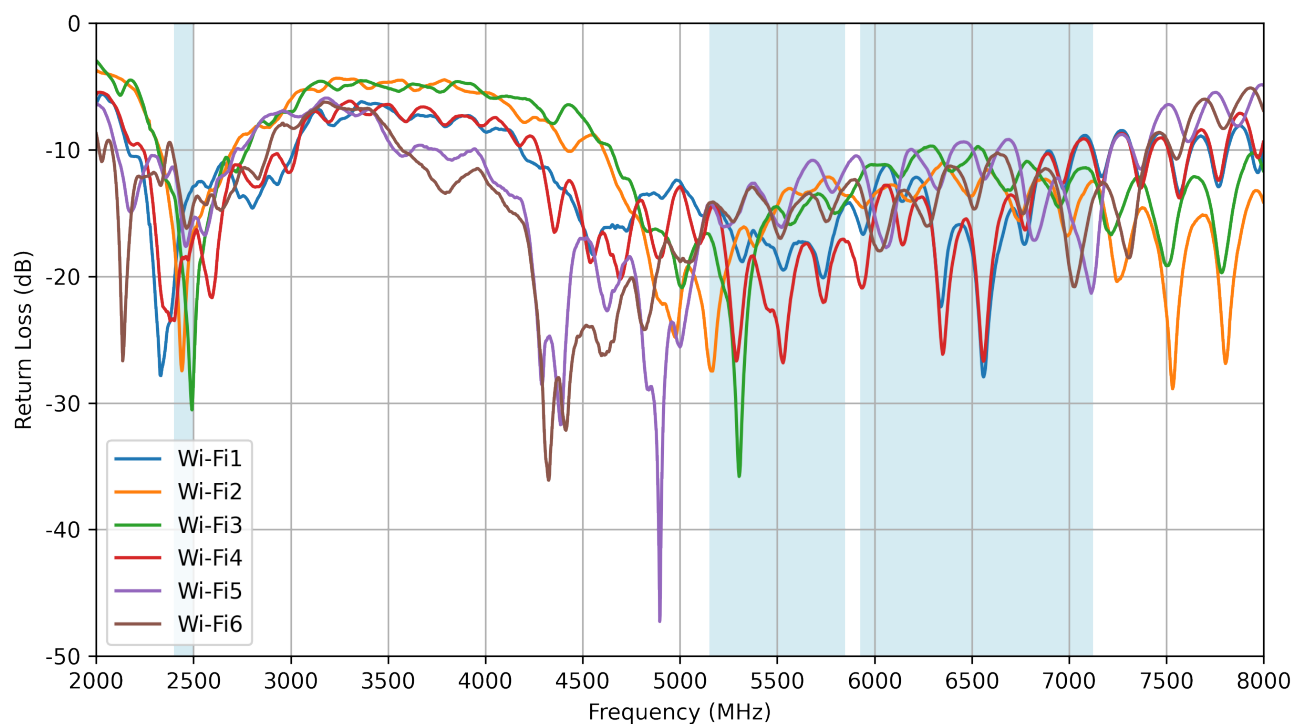
## 6.12 4G-5G - Average Gain



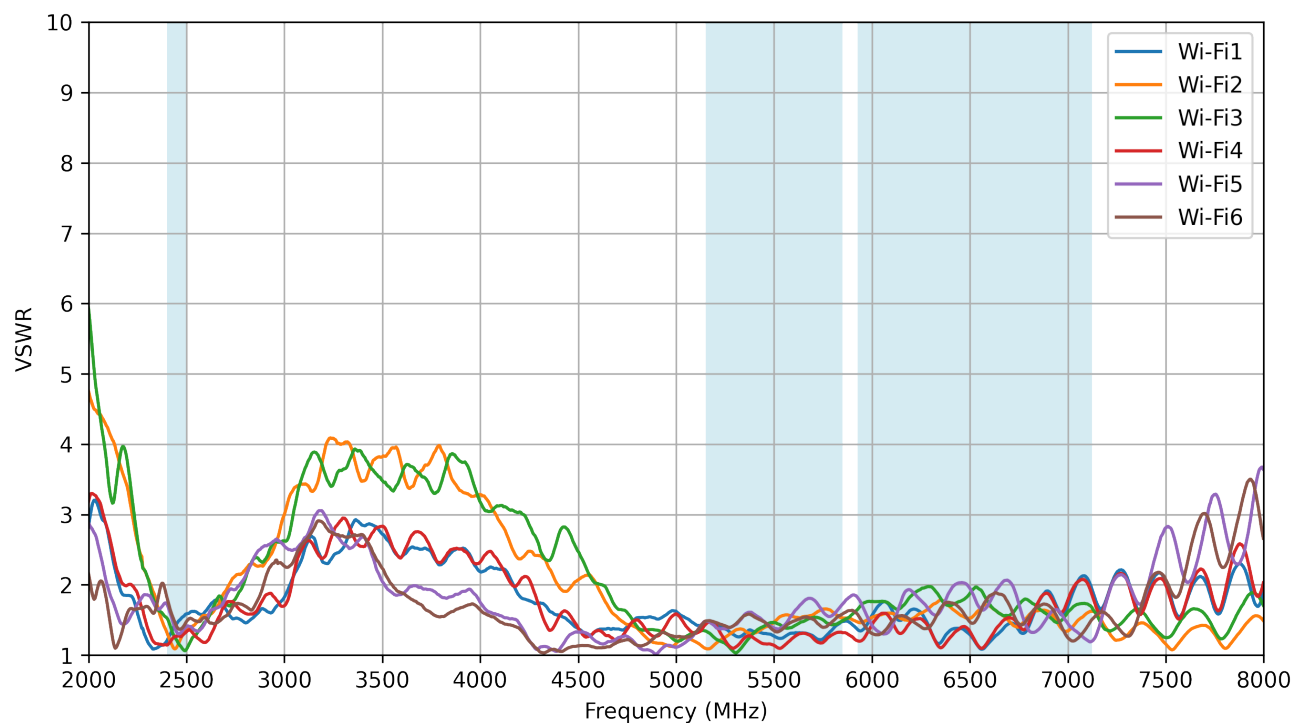
## 6.13 4G-5G - Peak Gain



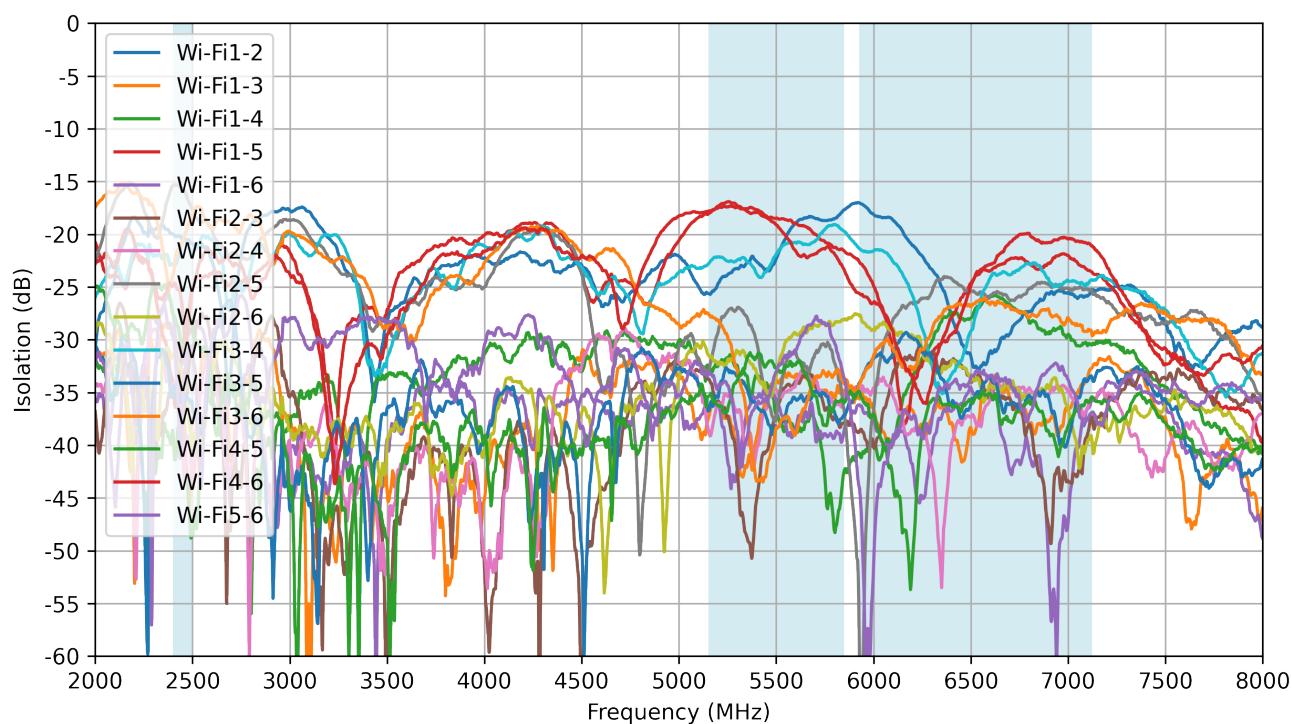
## 6.14 Wi-Fi - Return Loss



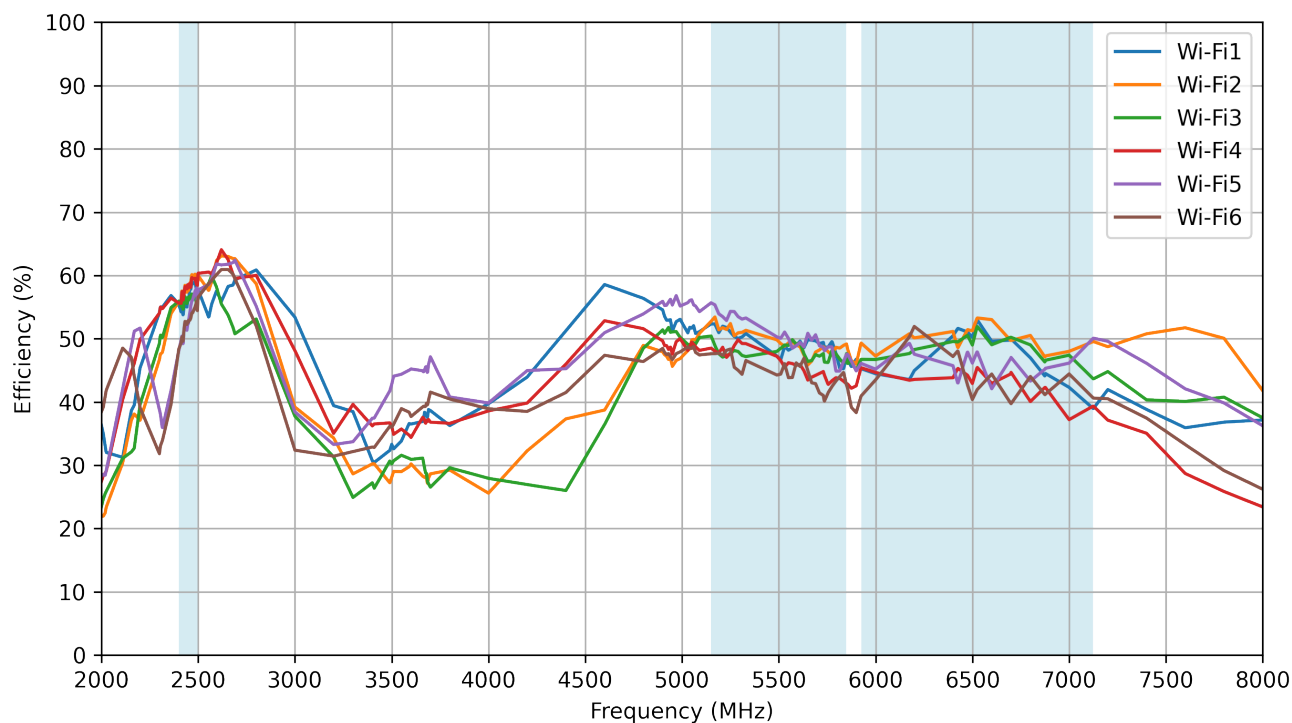
## 6.15 Wi-Fi - VSWR



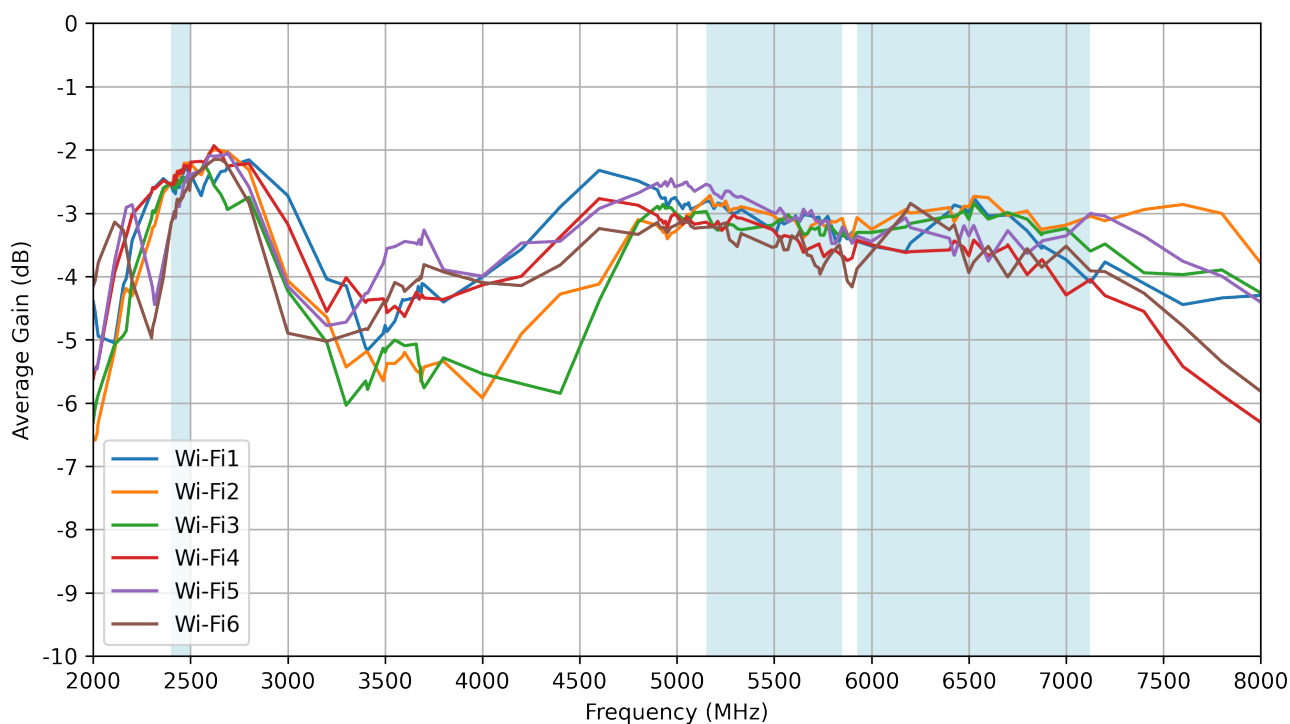
## 6.16 Wi-Fi - Isolation



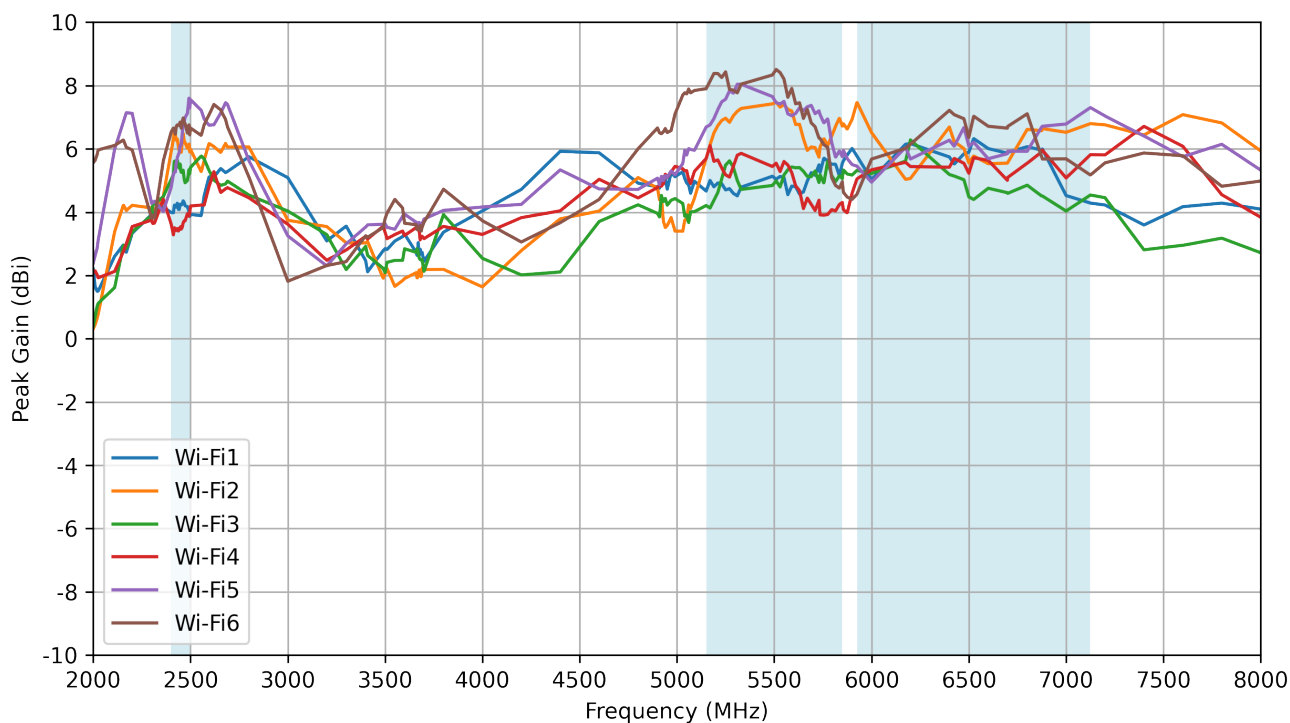
## 6.17 Wi-Fi - Efficiency



## 6.18 Wi-Fi - Average Gain

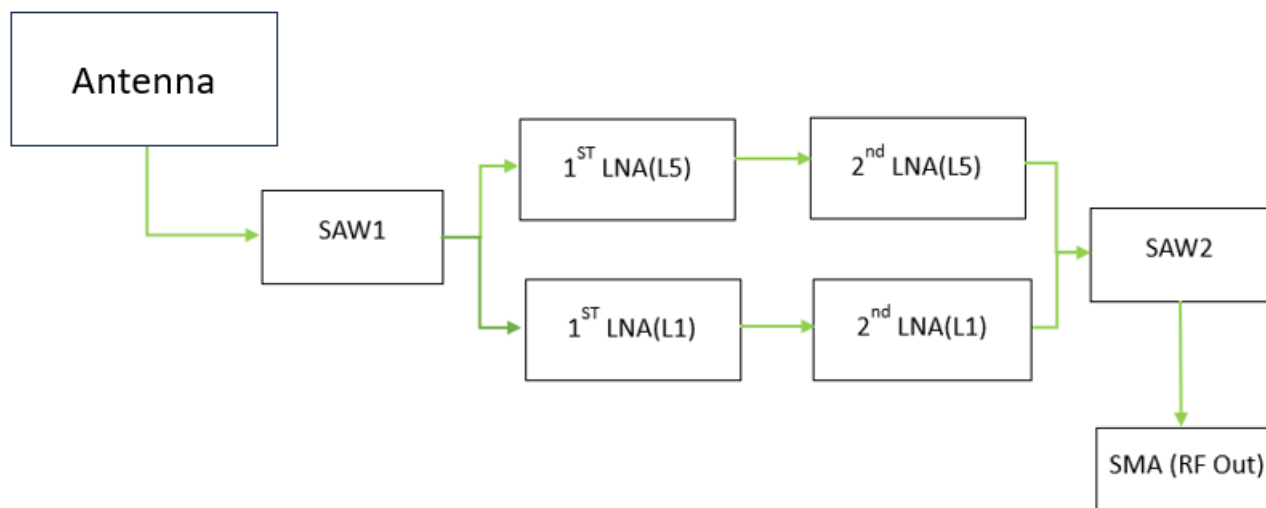


## 6.19 Wi-Fi - Peak Gain

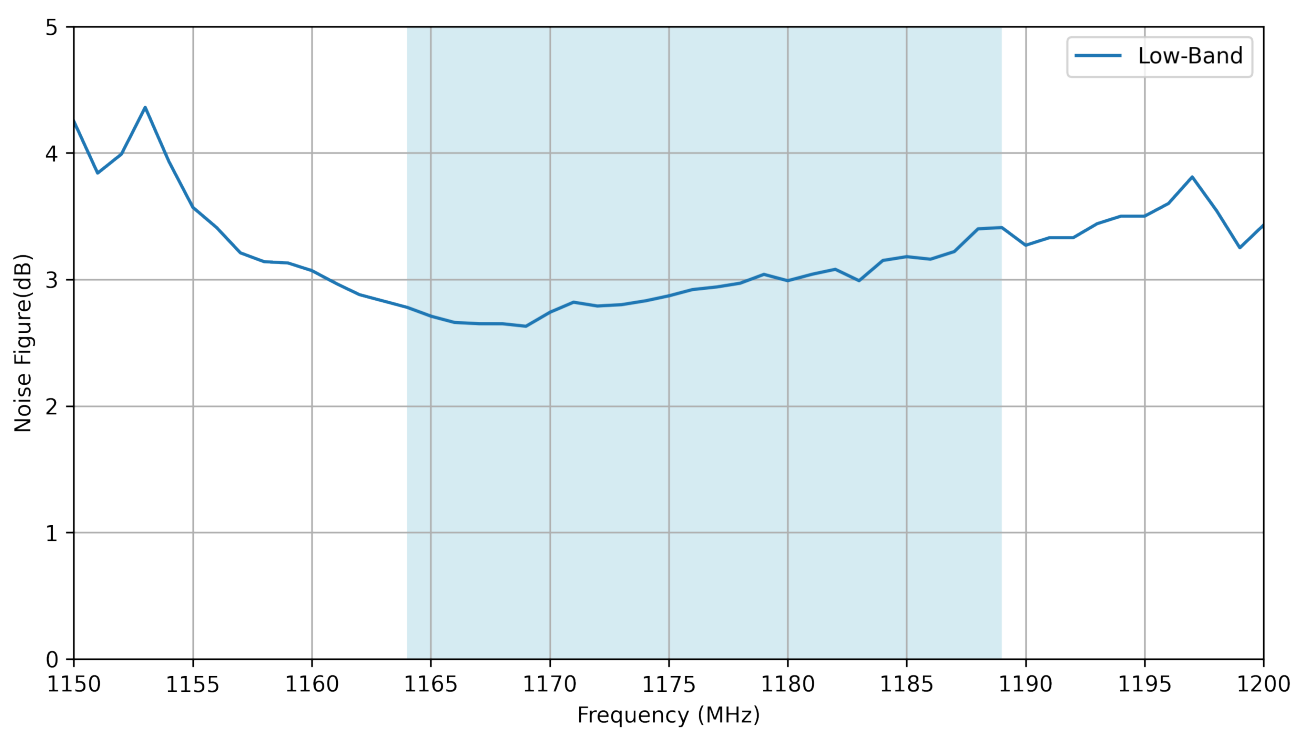


## 7. LNA Characteristics

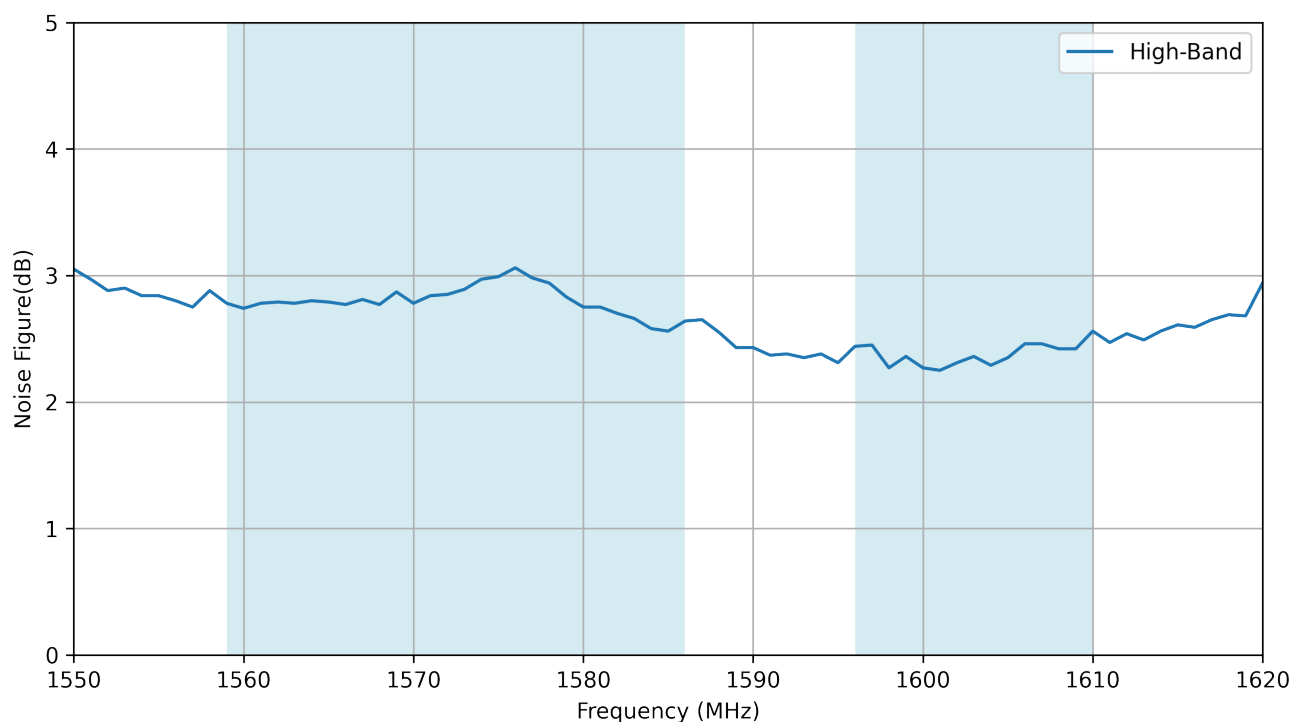
### 7.1 Block Diagram



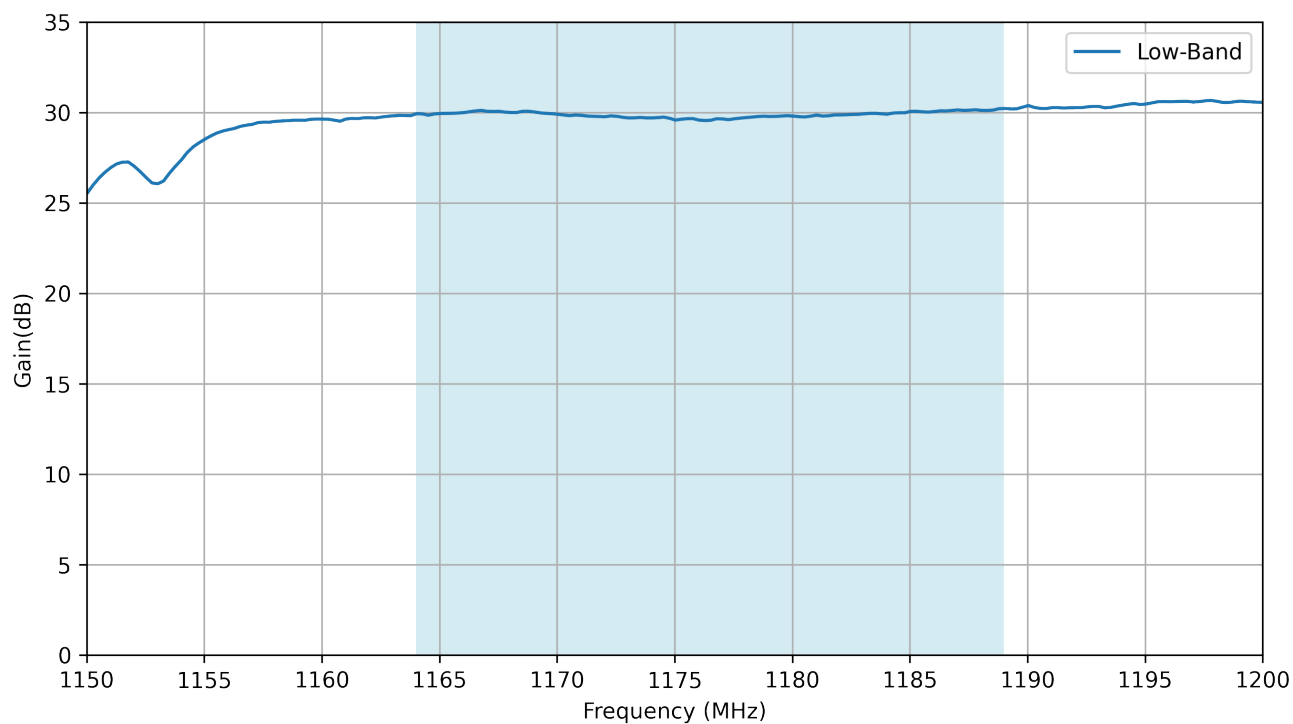
### 7.2 Noise Figure – Low-Band



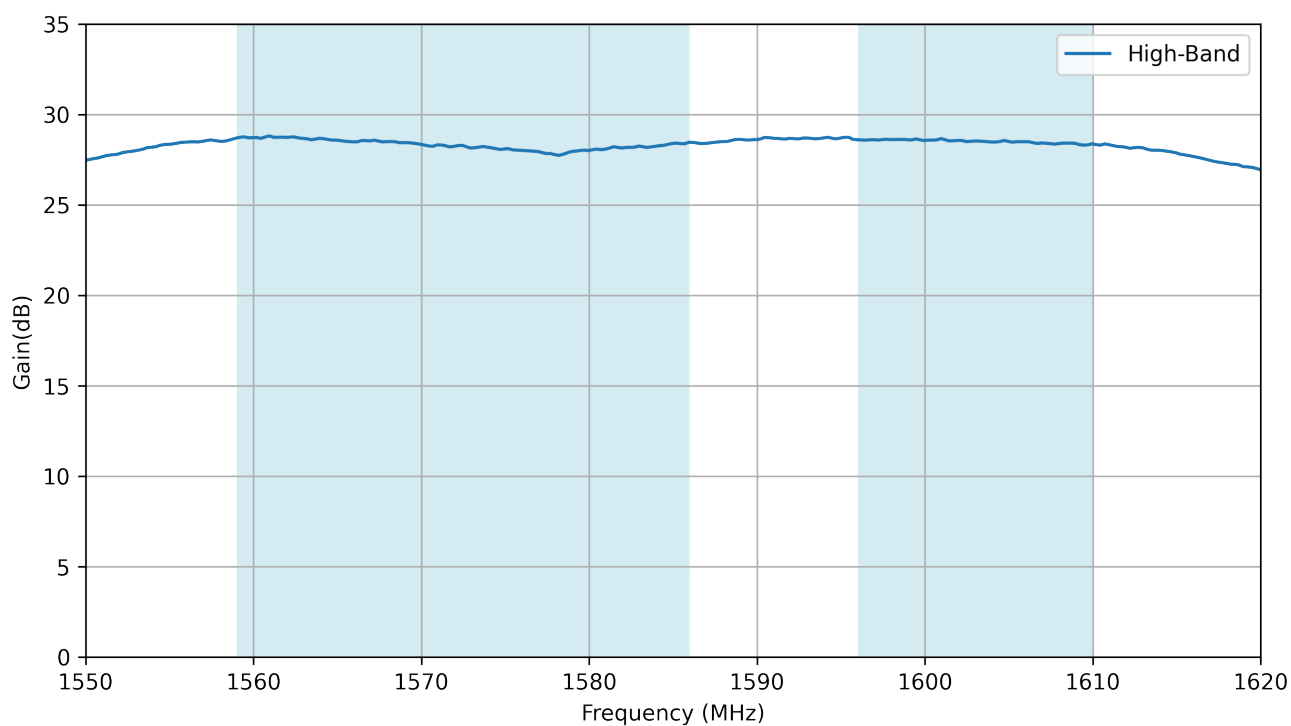
### 7.3 Noise Figure – High-Band



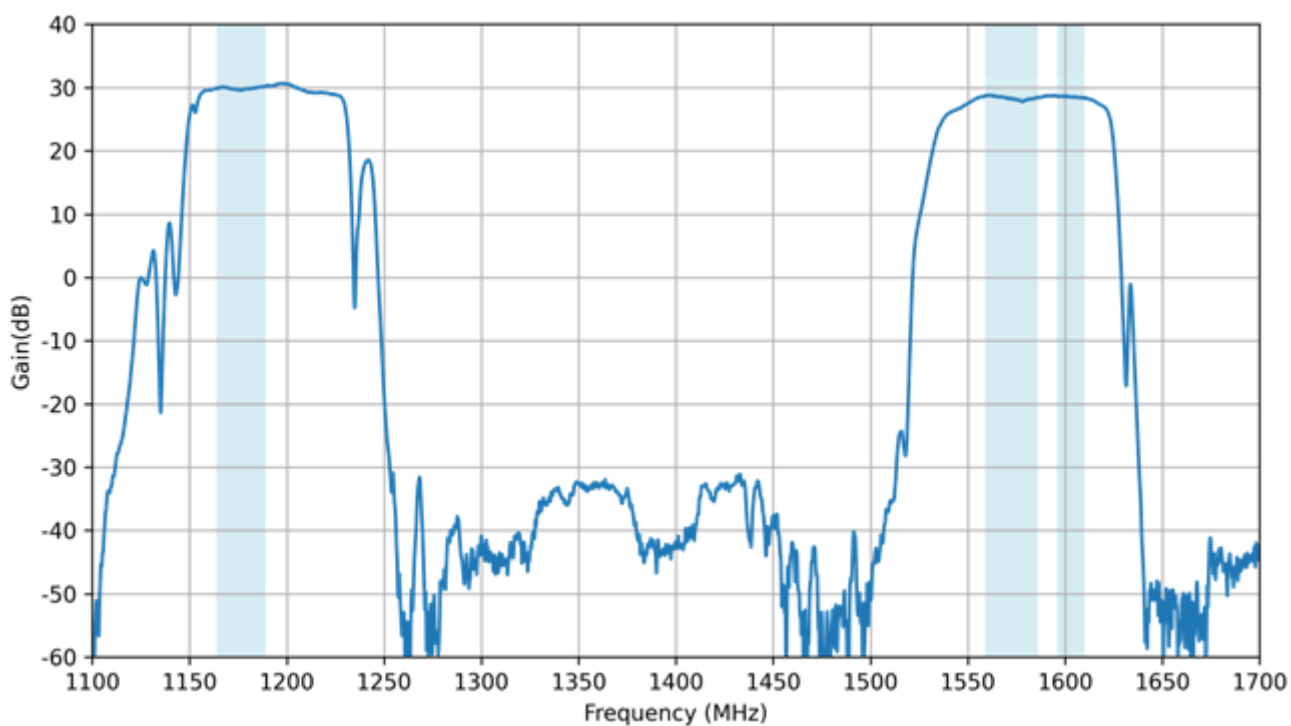
### 7.4 Gain – Low-Band



## 7.5 Gain – High-Band

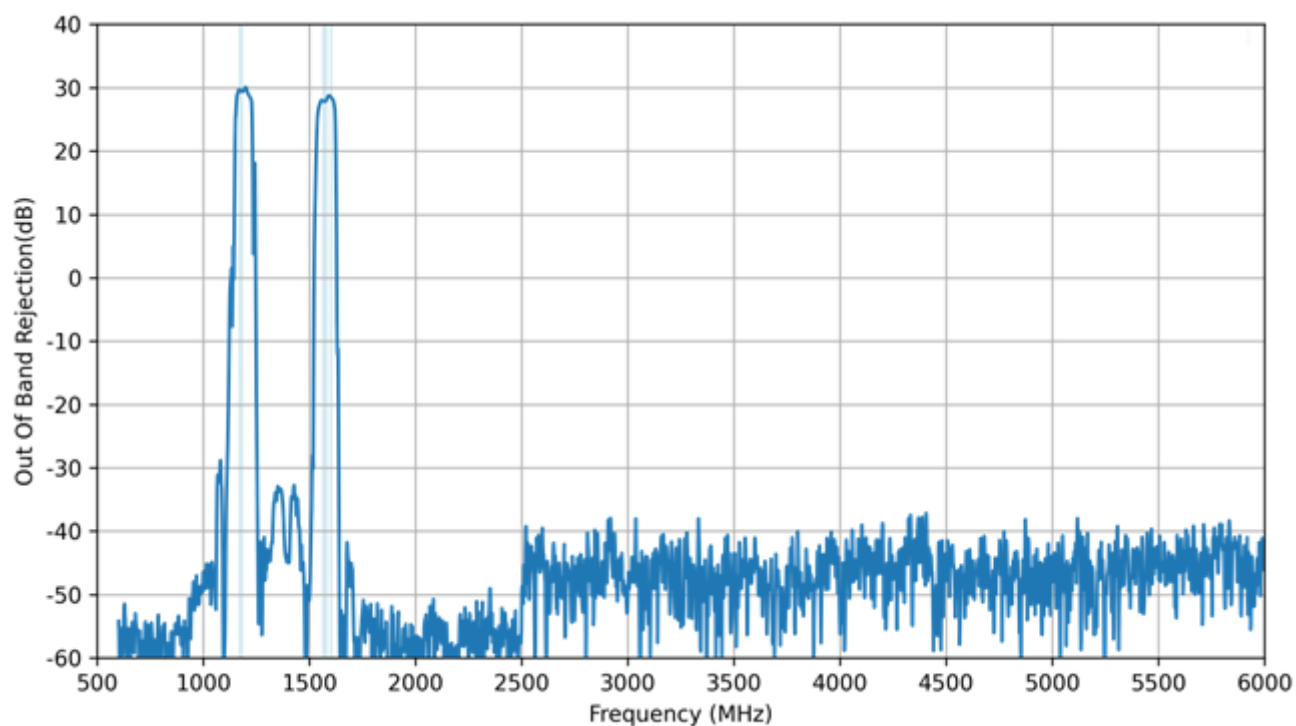


## 7.6 Gain – Wide-Band

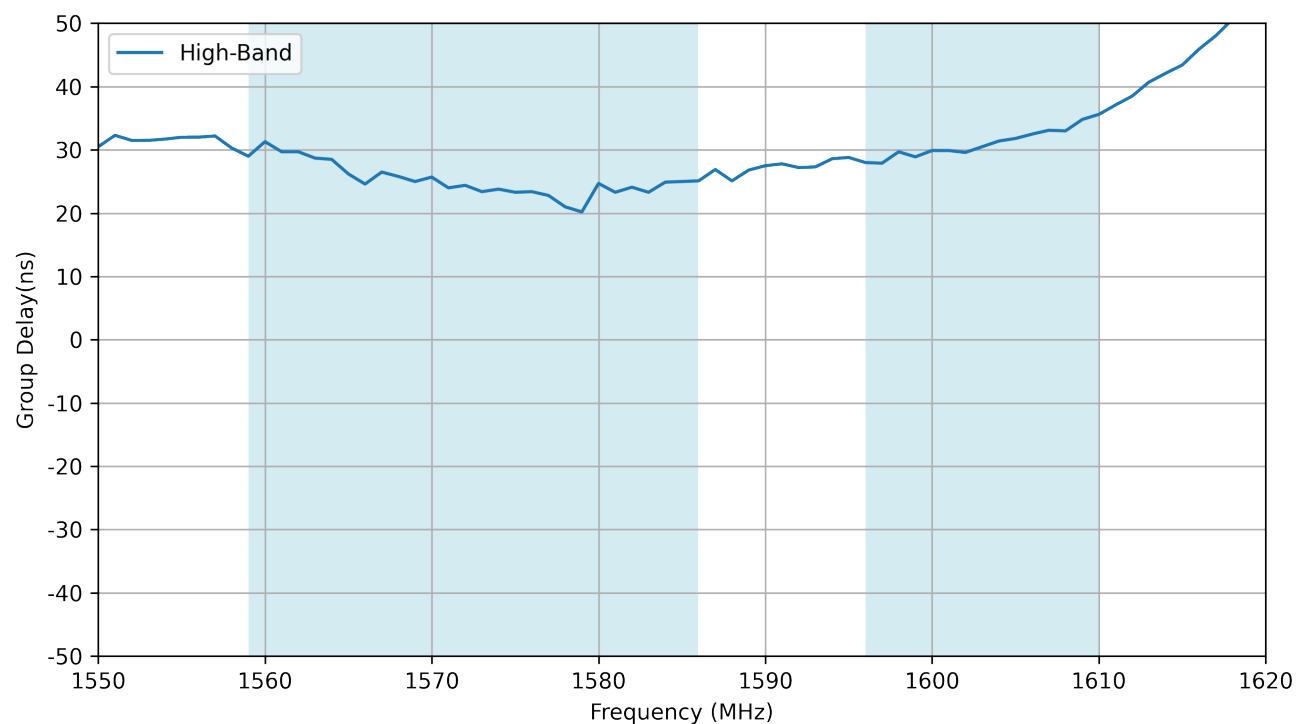




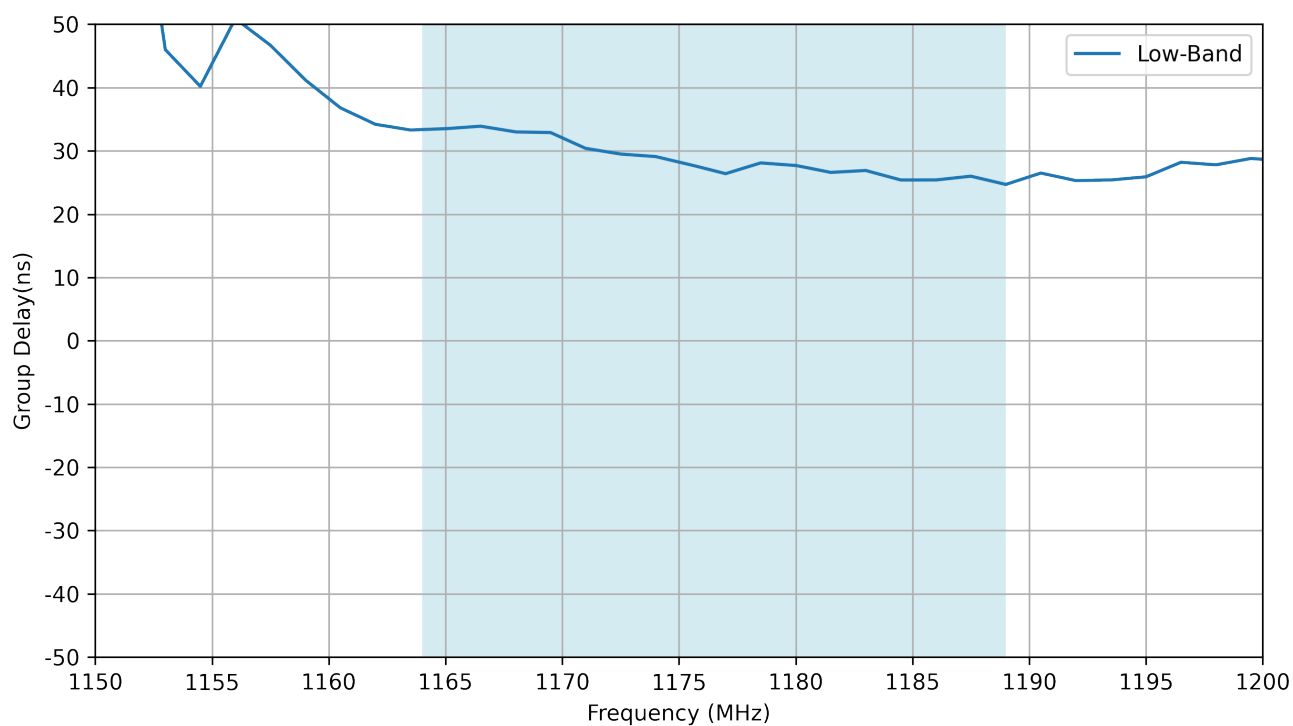
## 7.7 Out Of Band Rejection



## 7.8 Group Delay - High-Band

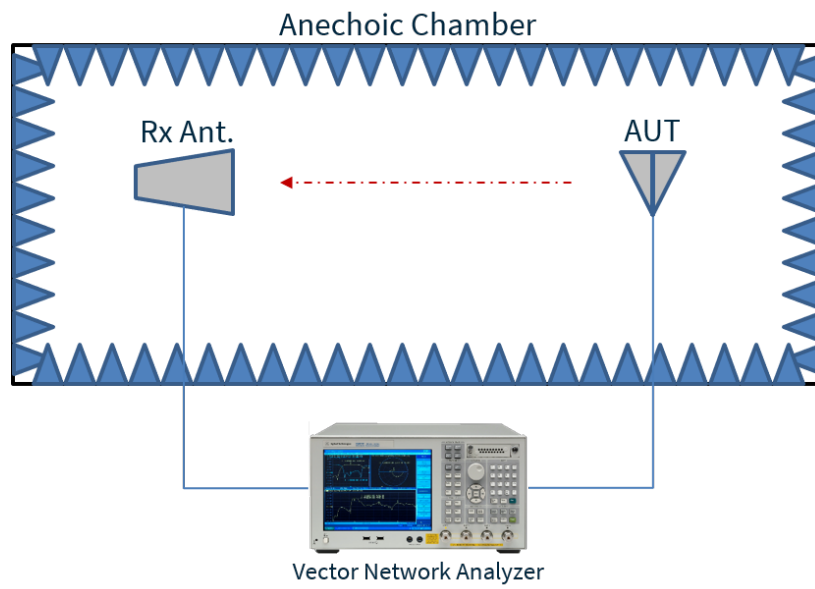


## 7.9 Group Delay - Low-Band

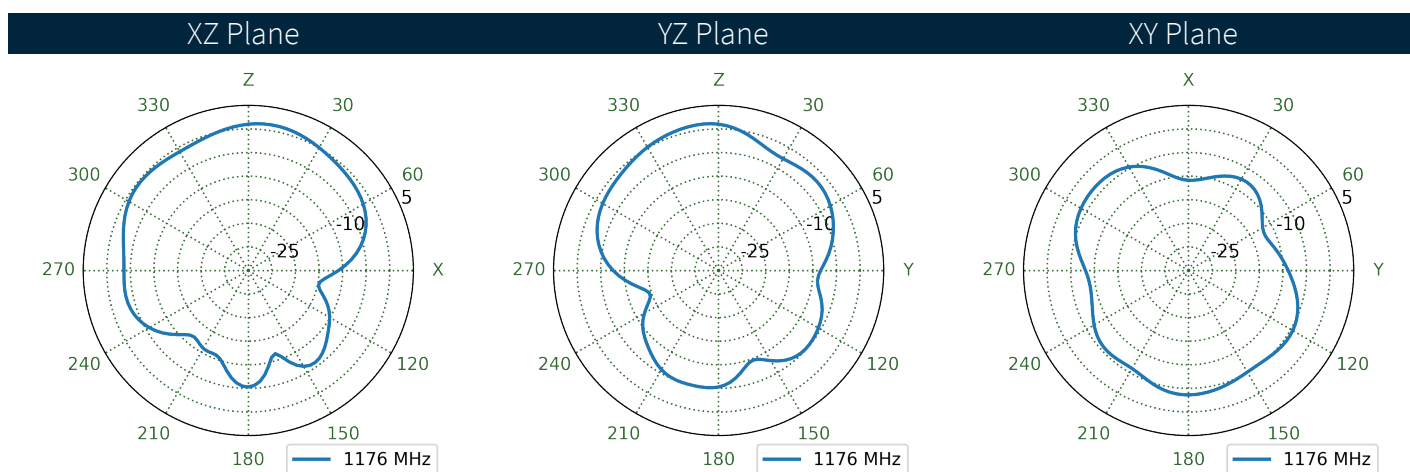
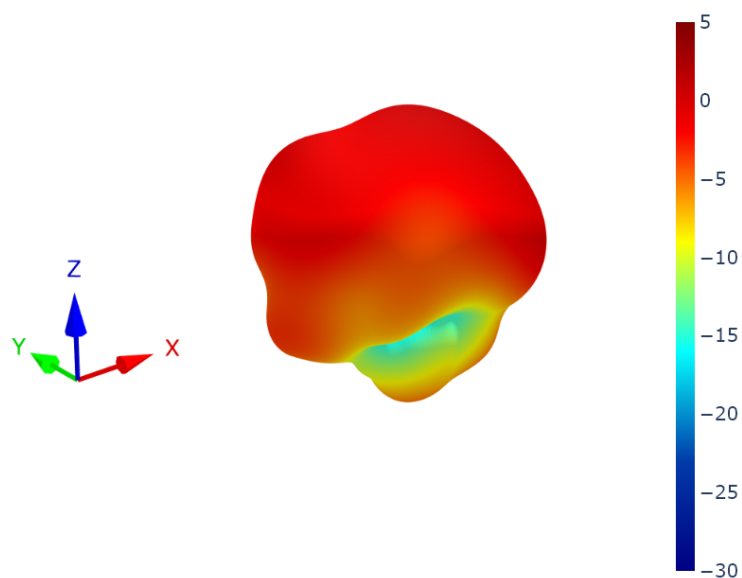


## 8. Radiation Patterns

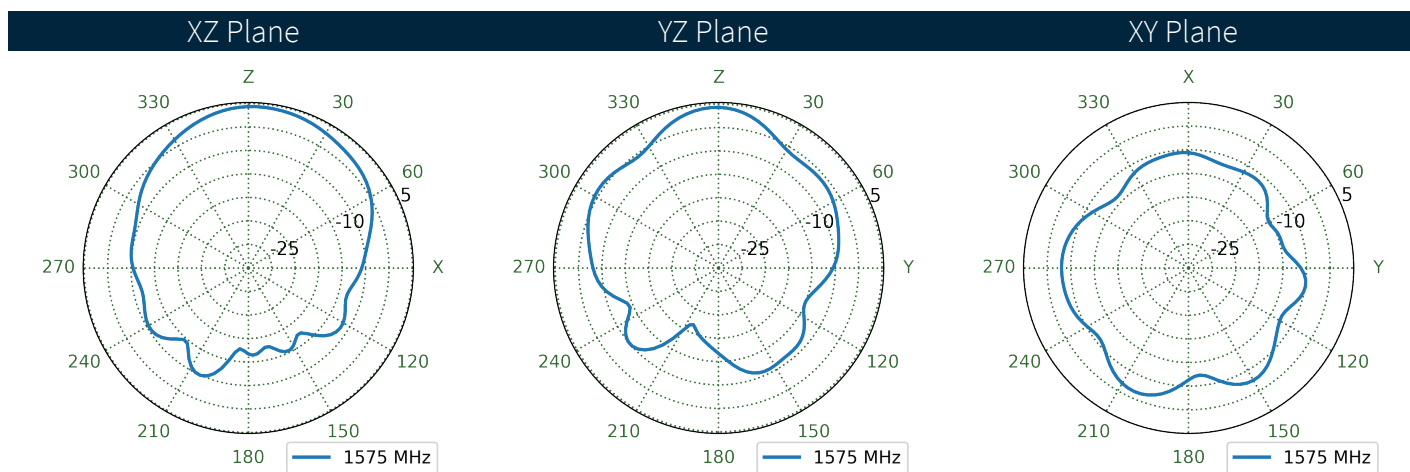
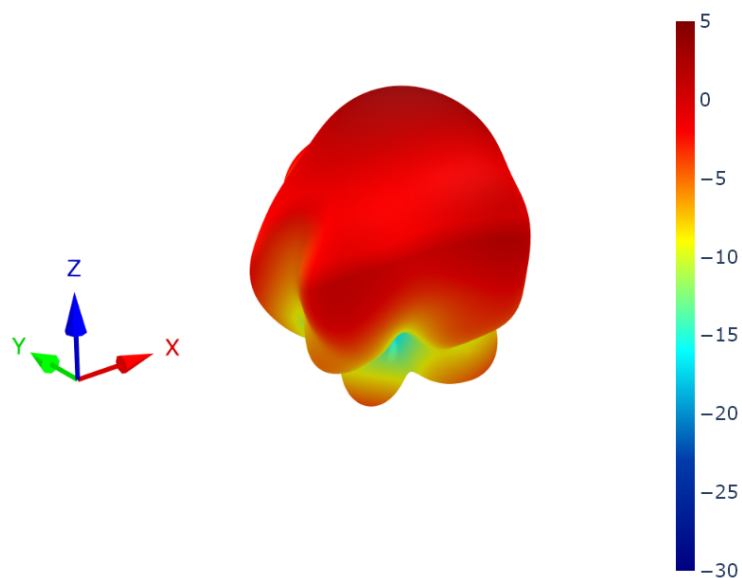
### 8.1 Test Setup



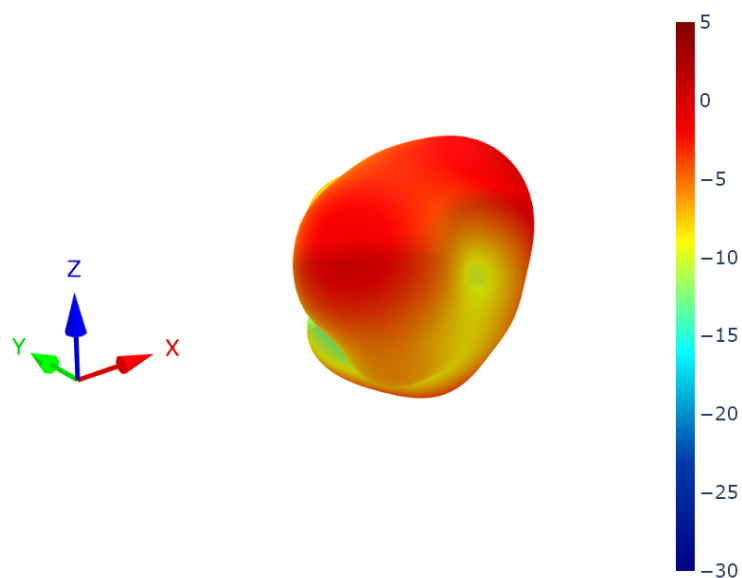
## 8.2 GNSS Patterns at 1176 MHz



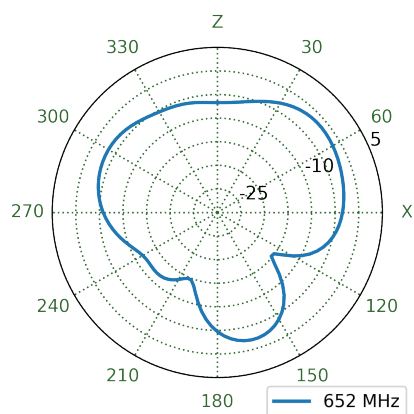
## 8.3 GNSS Patterns at 1575 MHz



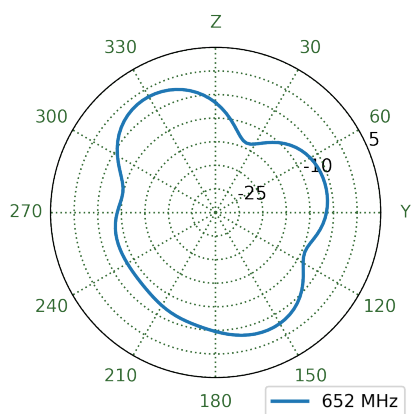
## 8.4 4G-5G 1 Patterns at 652 MHz



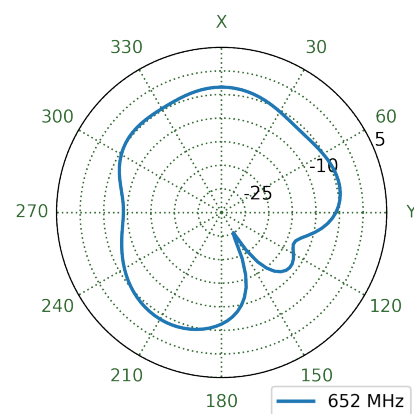
XZ Plane



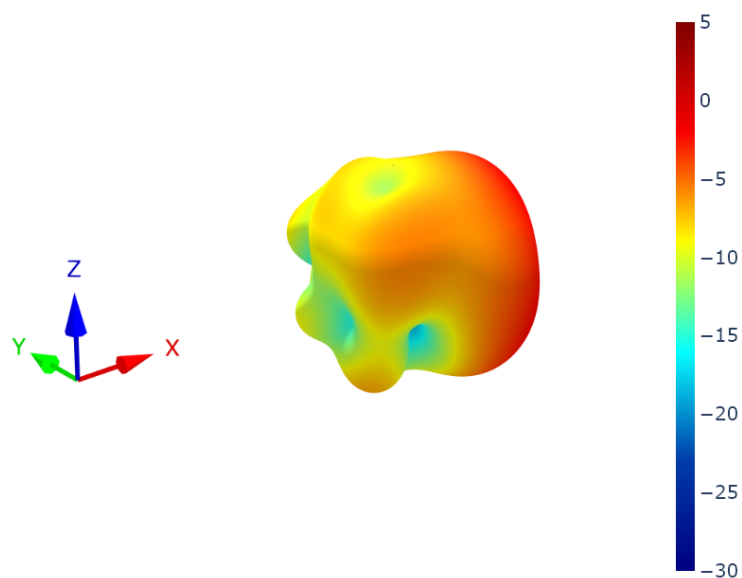
YZ Plane



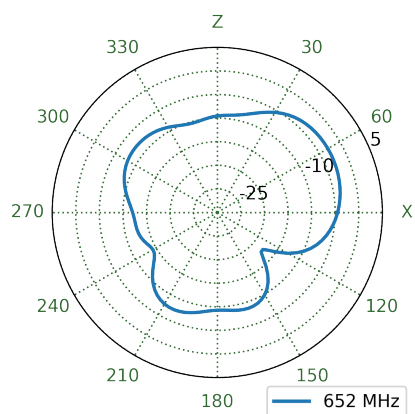
XY Plane



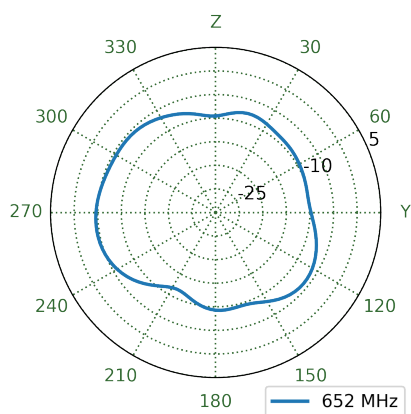
## 8.5 4G-5G 2 Patterns at 652 MHz



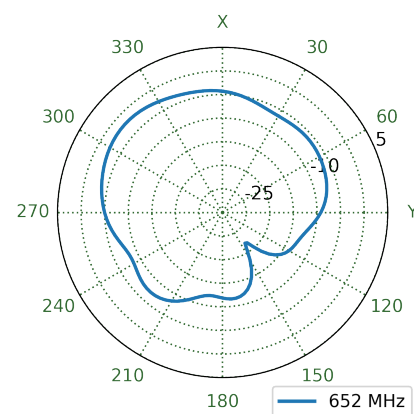
XZ Plane



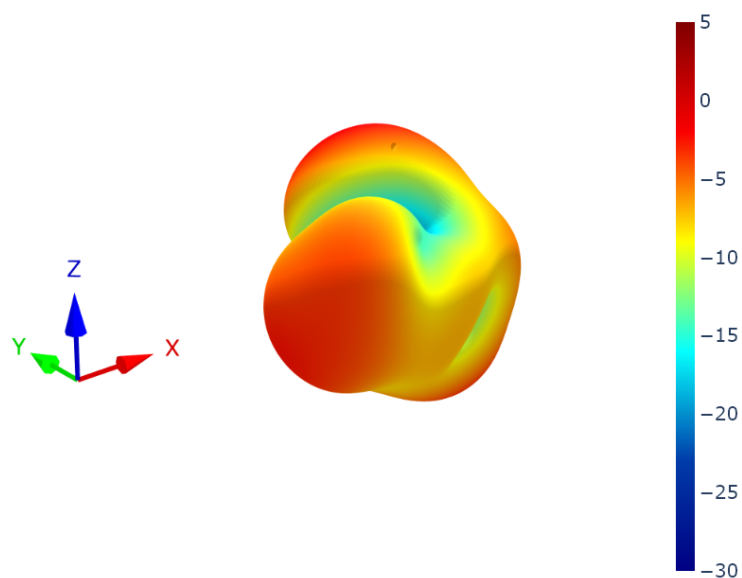
YZ Plane



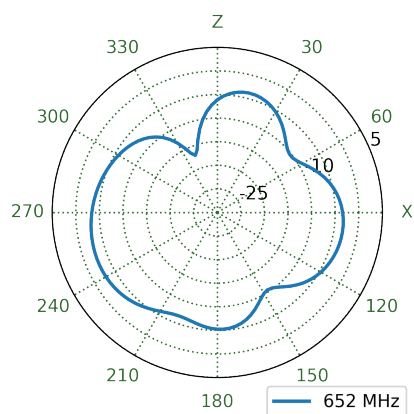
XY Plane



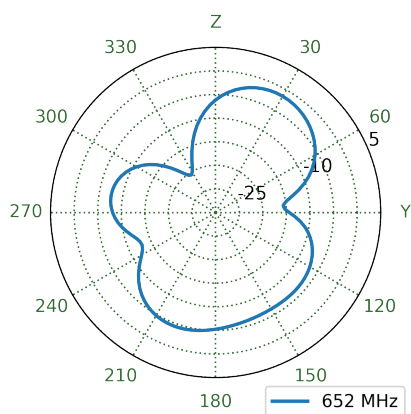
## 8.6 4G-5G 3 Patterns at 652 MHz



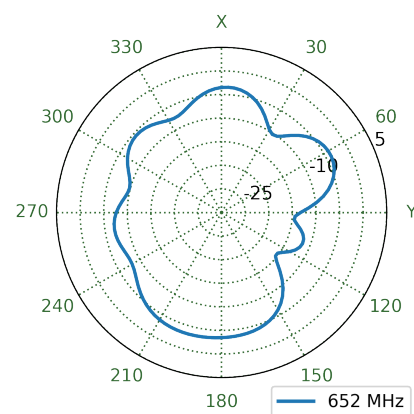
XZ Plane



YZ Plane

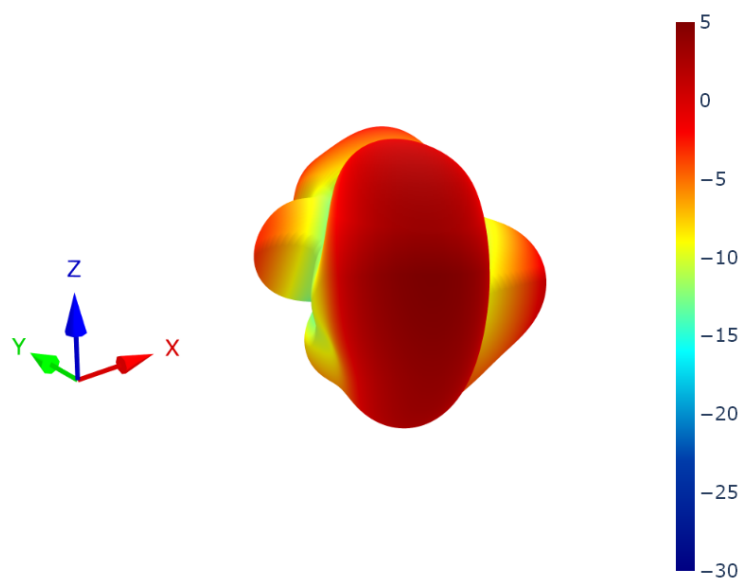


XY Plane

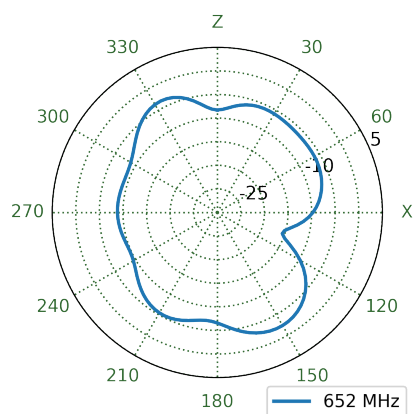




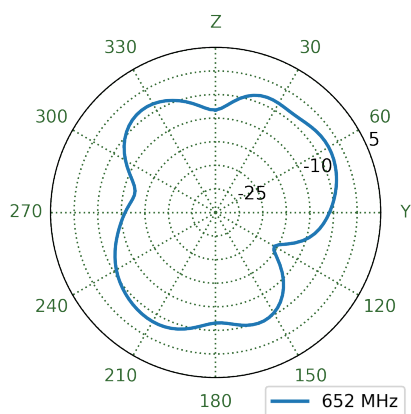
## 8.7 4G-5G 4 Patterns at 652 MHz



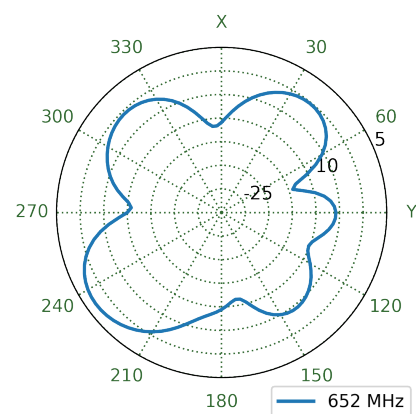
XZ Plane



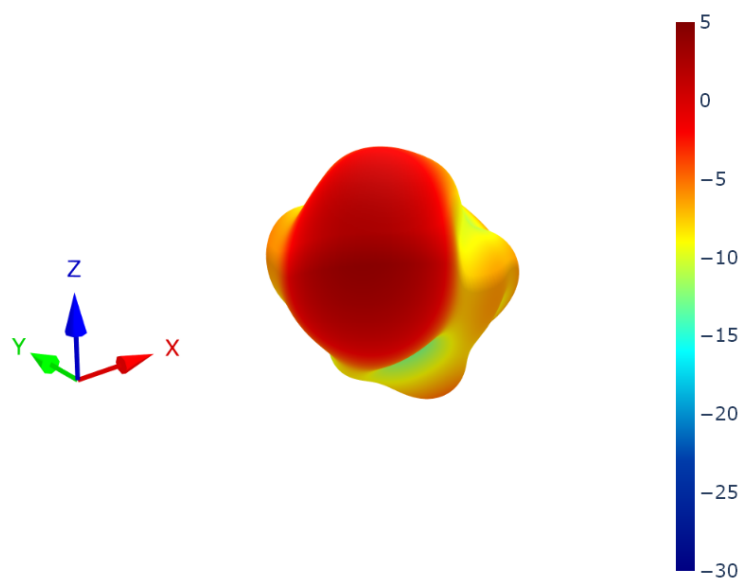
YZ Plane



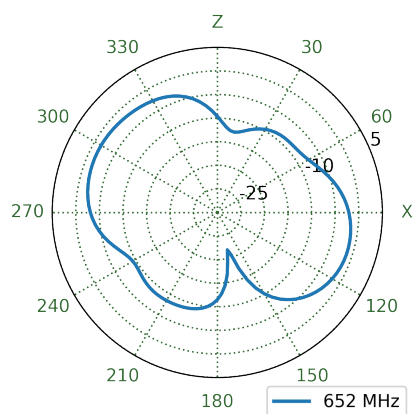
XY Plane



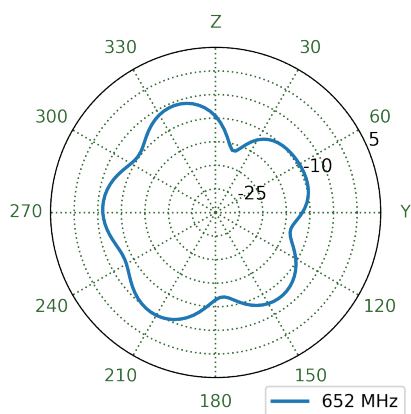
## 8.8 4G-5G 5 Patterns at 652 MHz



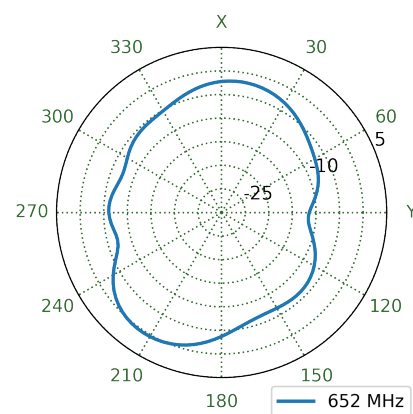
XZ Plane



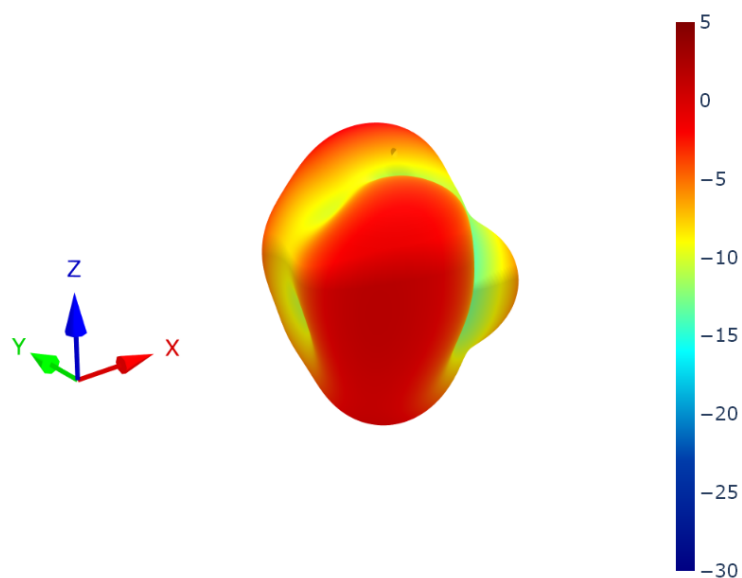
YZ Plane



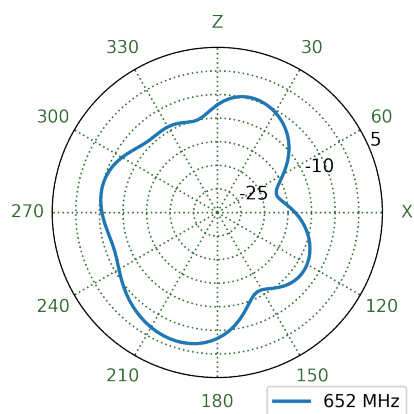
XY Plane



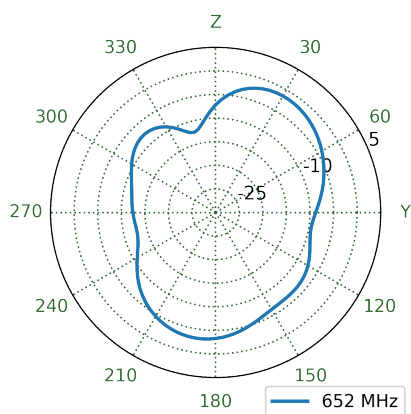
## 8.9 4G-5G 6 Patterns at 652 MHz



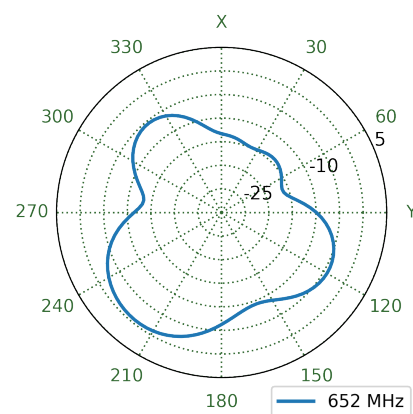
XZ Plane



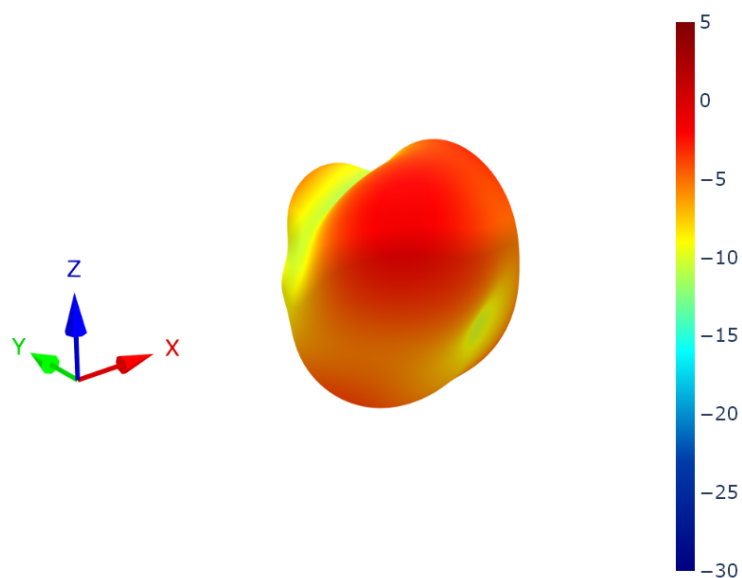
YZ Plane



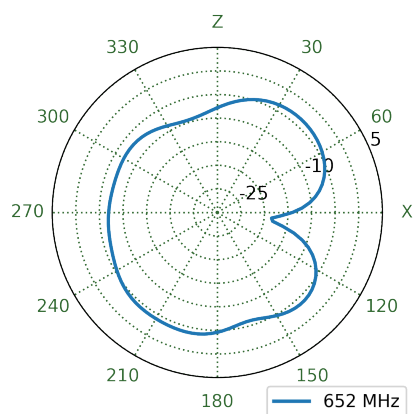
XY Plane



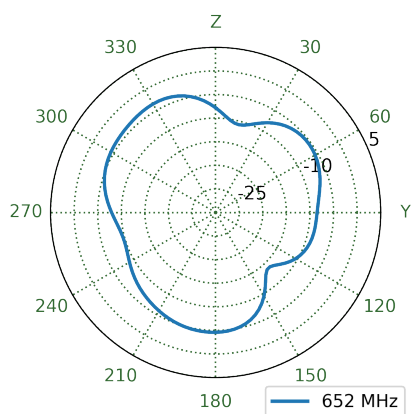
## 8.10 4G-5G 7 Patterns at 652 MHz



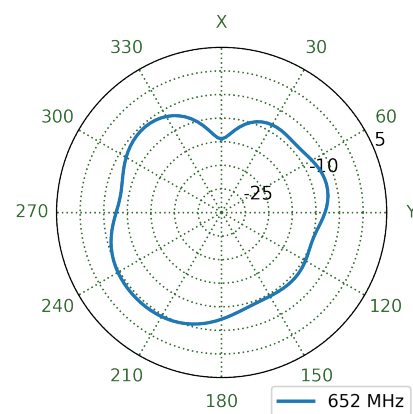
XZ Plane



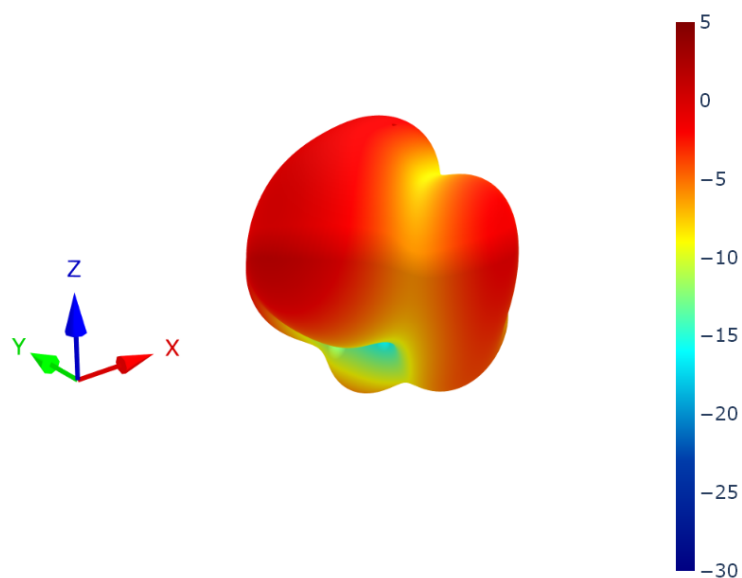
YZ Plane



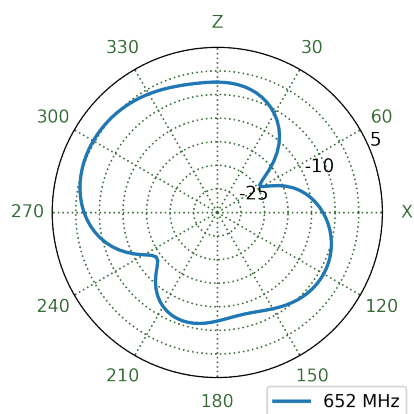
XY Plane



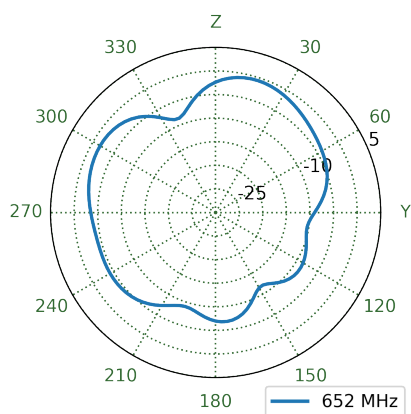
## 8.11 4G-5G 8 Patterns at 652 MHz



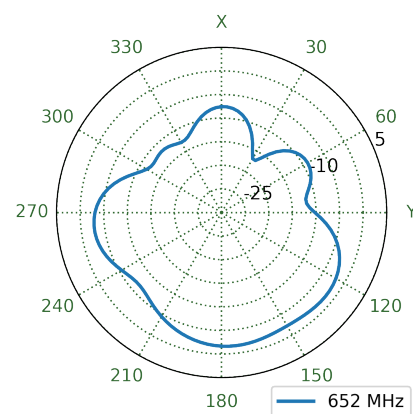
XZ Plane



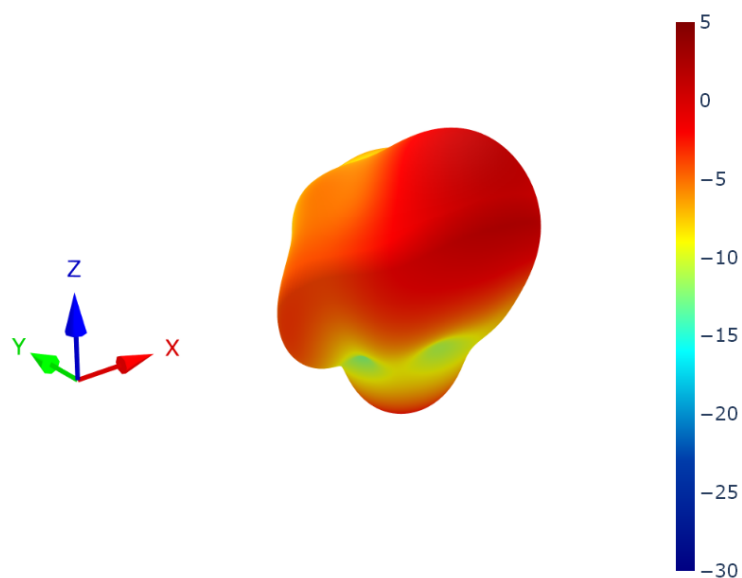
YZ Plane



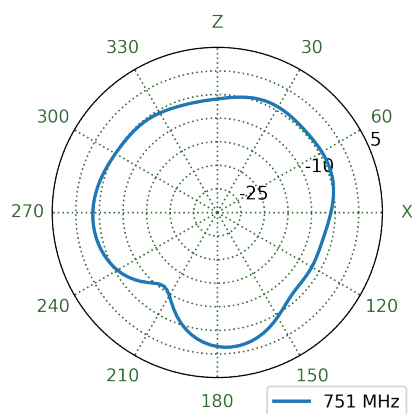
XY Plane



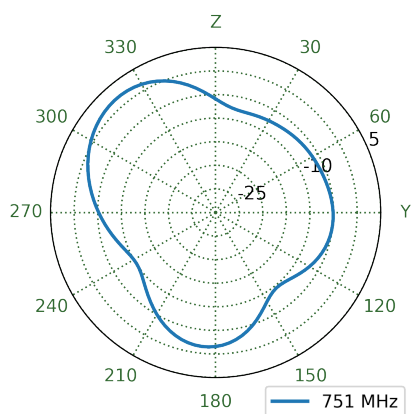
## 8.12 4G-5G 1 Patterns at 751 MHz



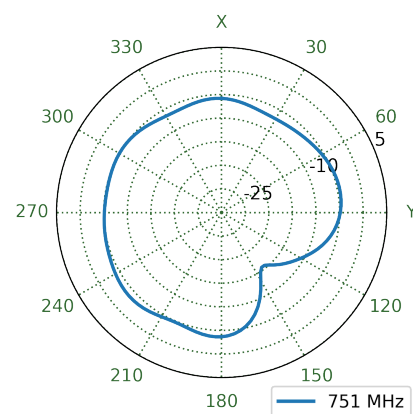
XZ Plane



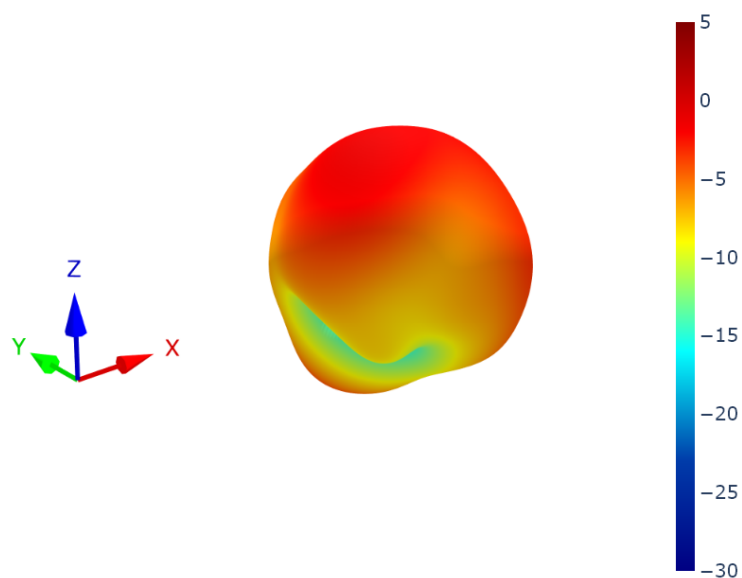
YZ Plane



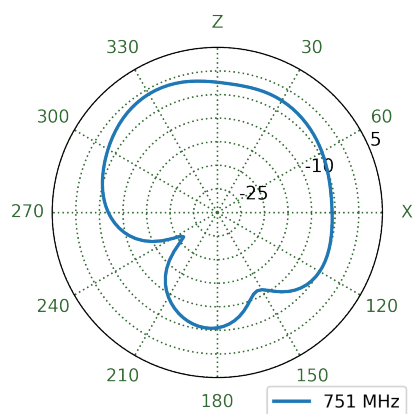
XY Plane



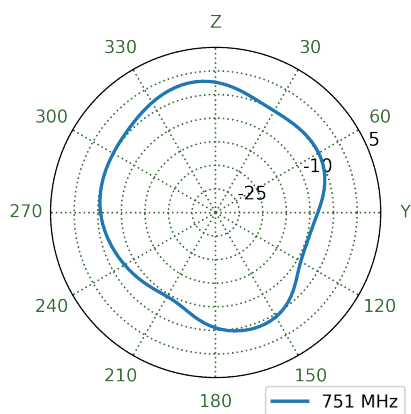
## 8.13 4G-5G 2 Patterns at 751 MHz



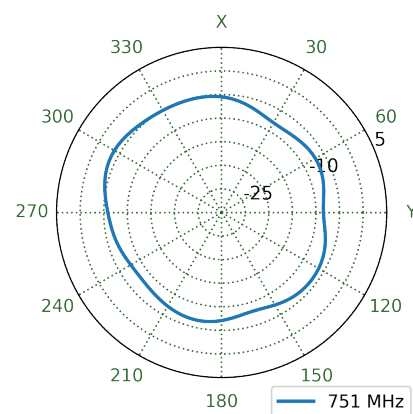
XZ Plane



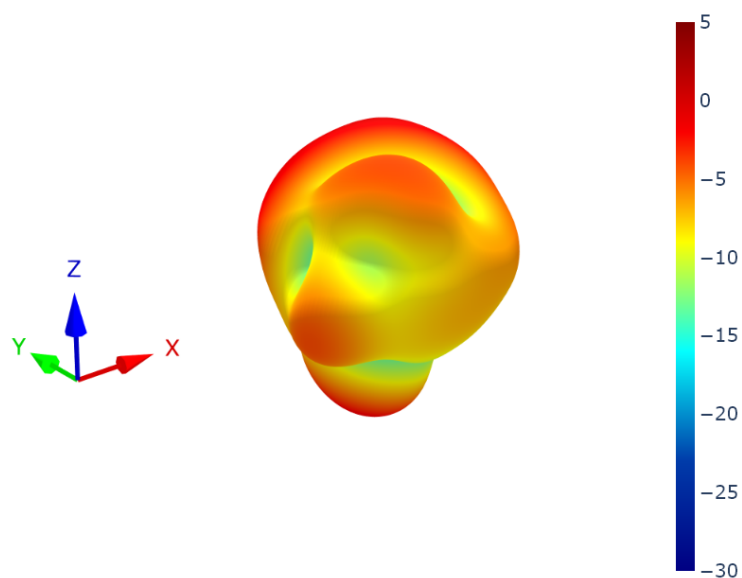
YZ Plane



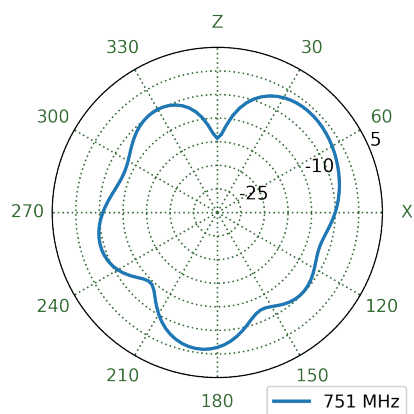
XY Plane



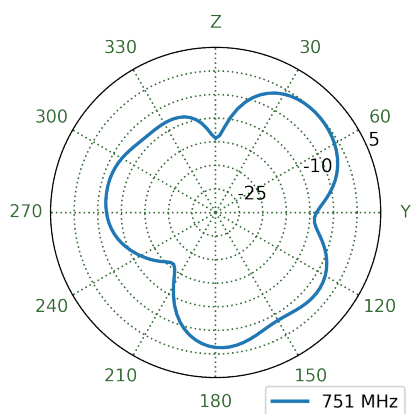
## 8.14 4G-5G 3 Patterns at 751 MHz



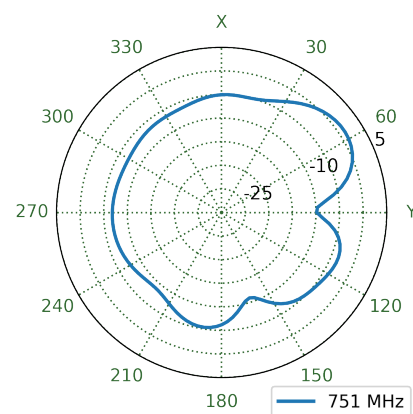
XZ Plane



YZ Plane

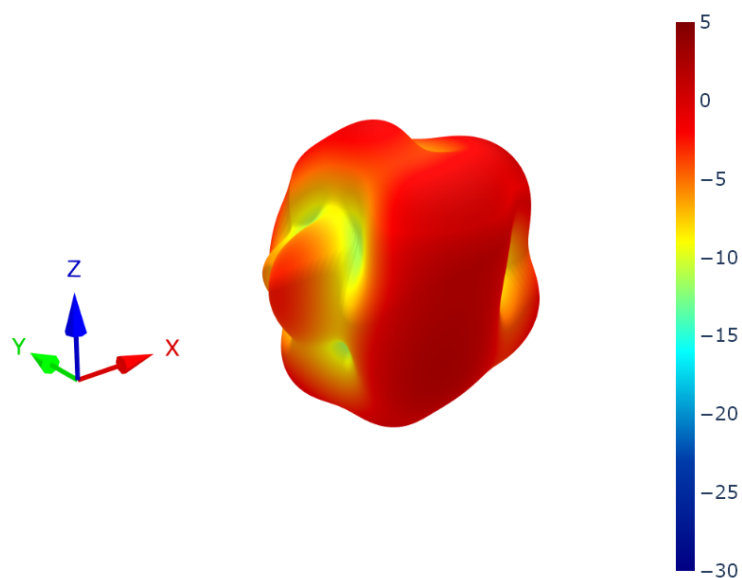


XY Plane

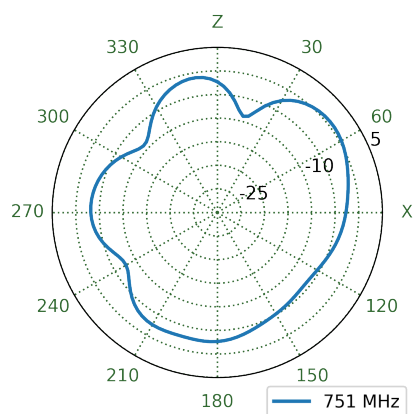




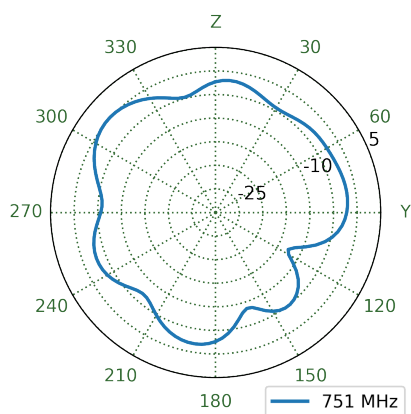
## 8.15 4G-5G 4 Patterns at 751 MHz



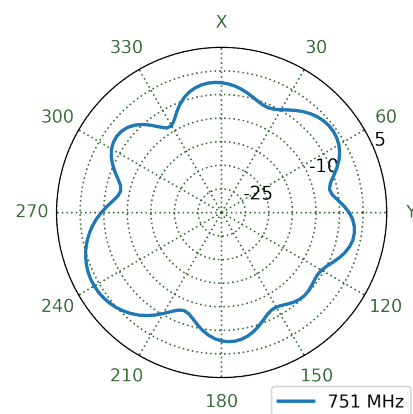
XZ Plane



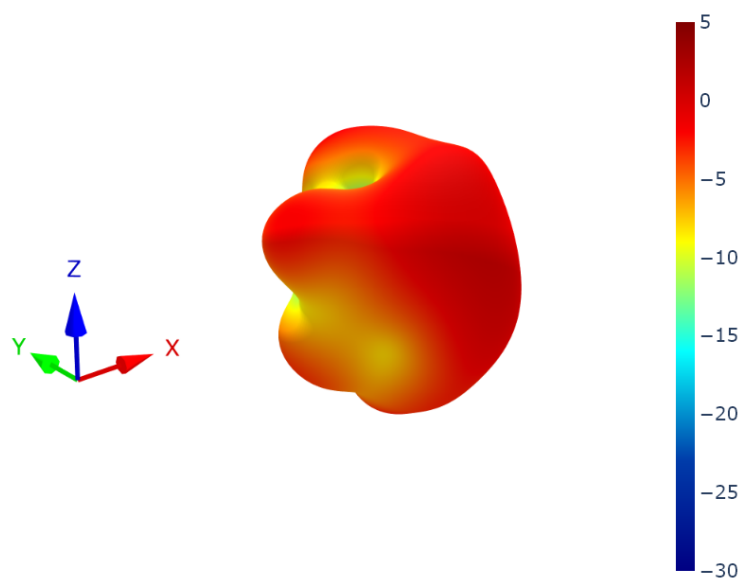
YZ Plane



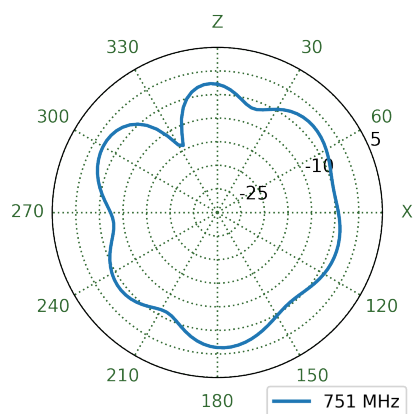
XY Plane



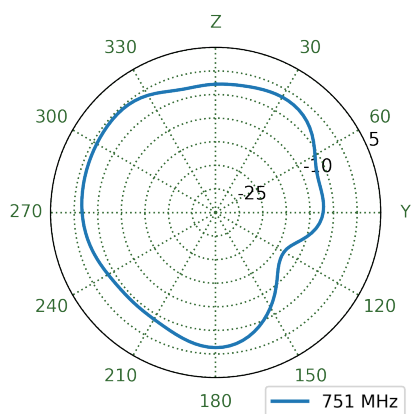
## 8.16 4G-5G 5 Patterns at 751 MHz



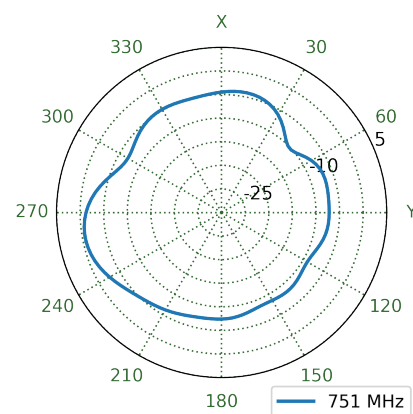
XZ Plane



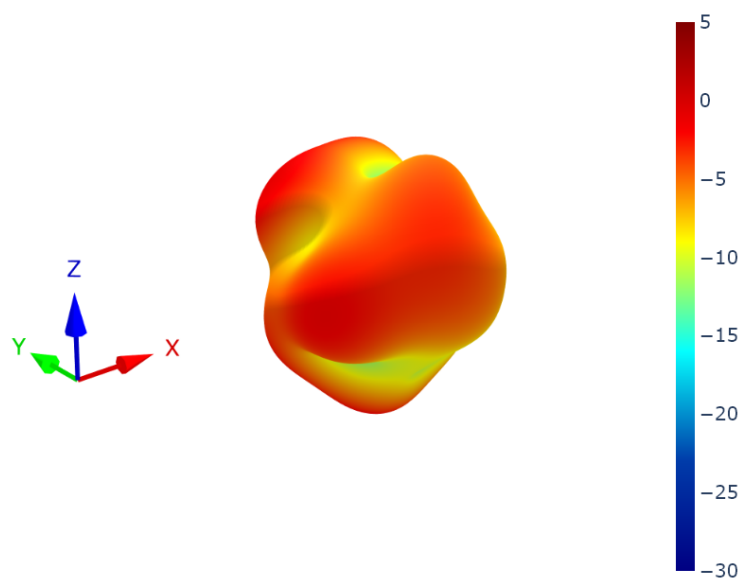
YZ Plane



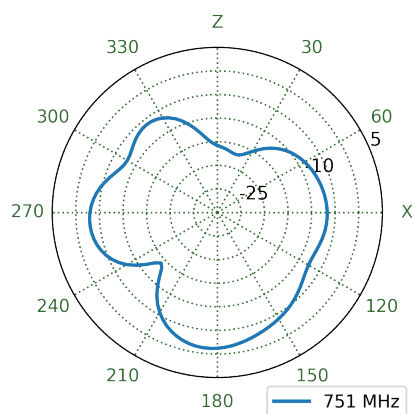
XY Plane



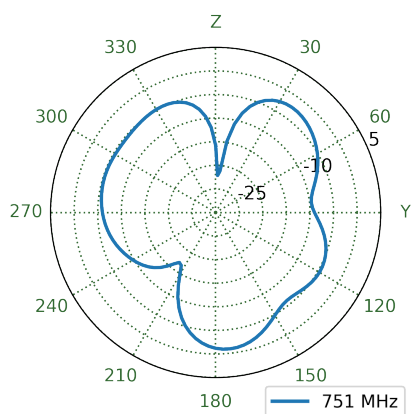
## 8.17 4G-5G 6 Patterns at 751 MHz



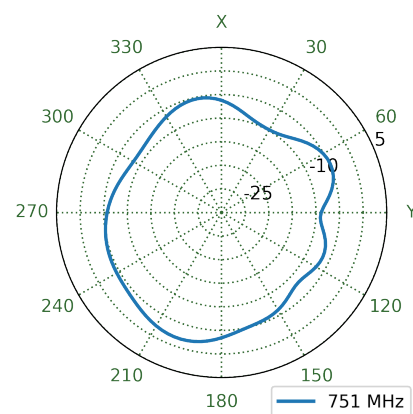
XZ Plane



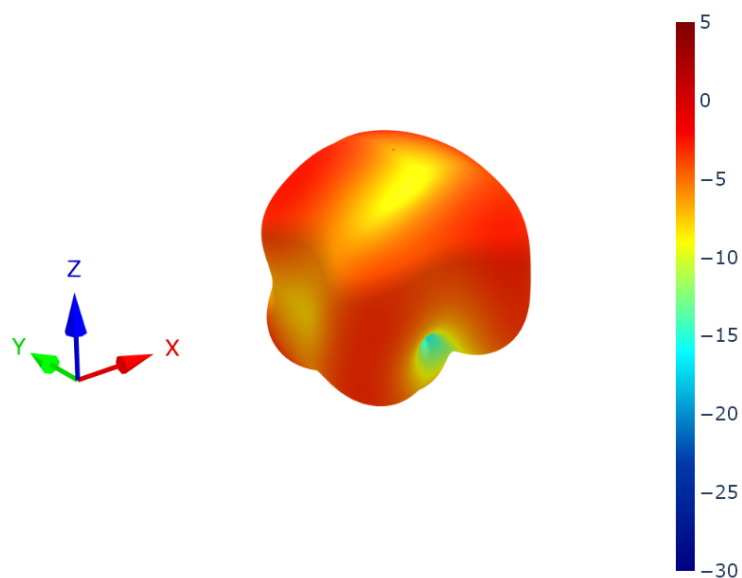
YZ Plane



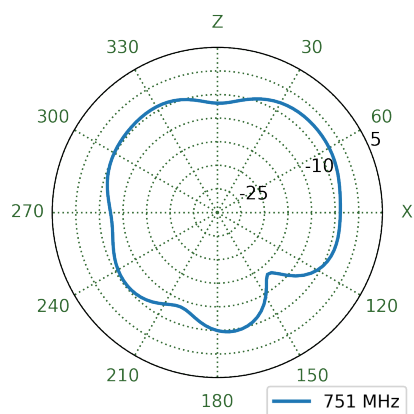
XY Plane



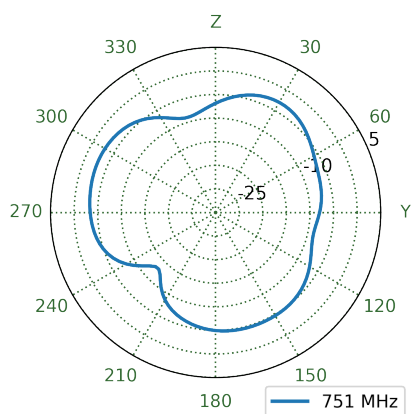
## 8.18 4G-5G 7 Patterns at 751 MHz



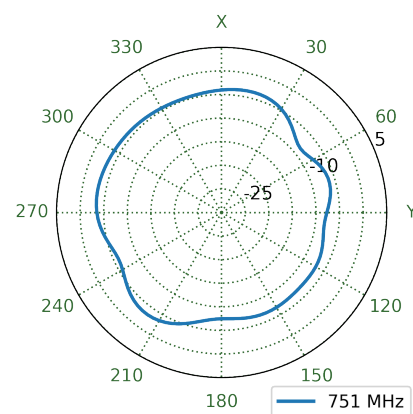
XZ Plane



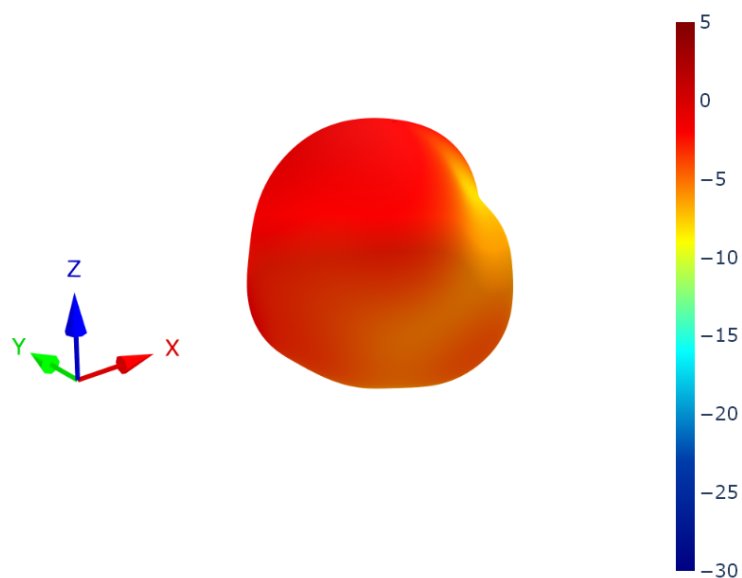
YZ Plane



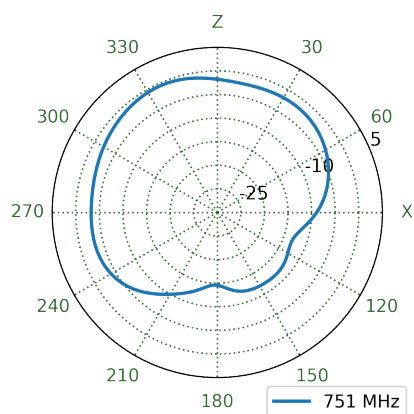
XY Plane



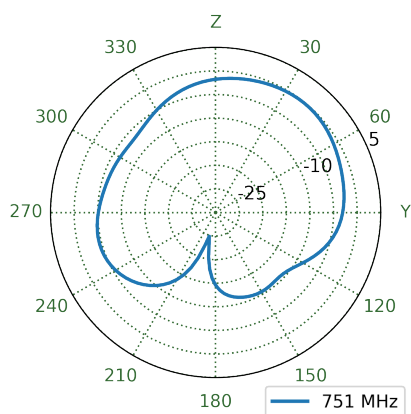
## 8.19 4G-5G 8 Patterns at 751 MHz



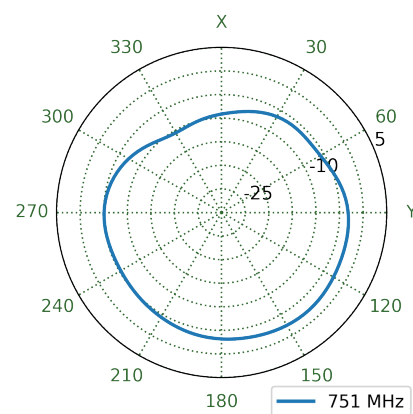
XZ Plane



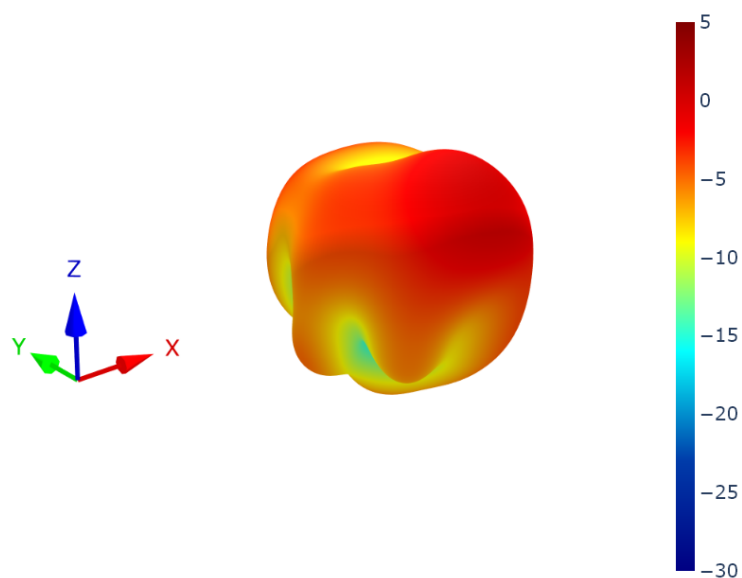
YZ Plane



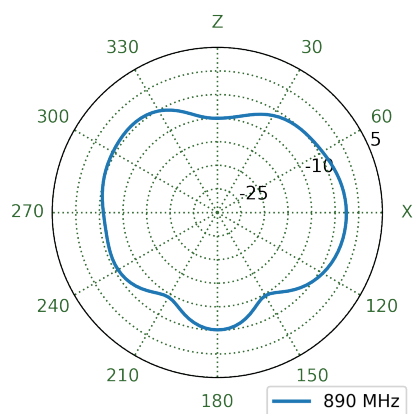
XY Plane



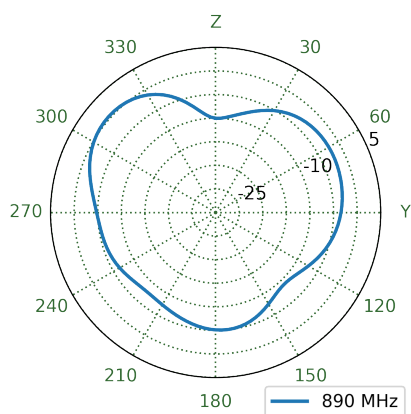
## 8.20 4G-5G 1 Patterns at 890 MHz



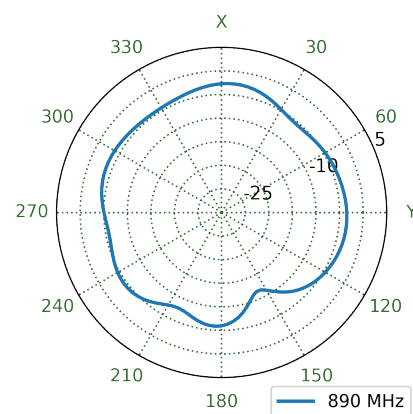
XZ Plane



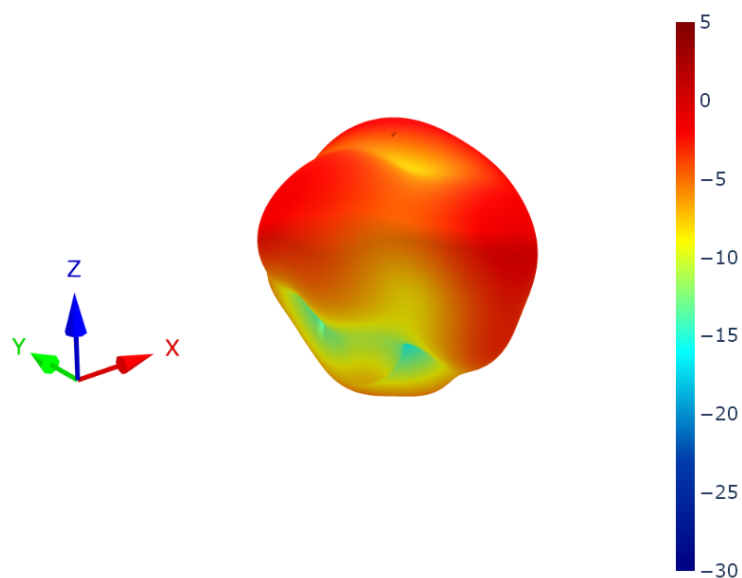
YZ Plane



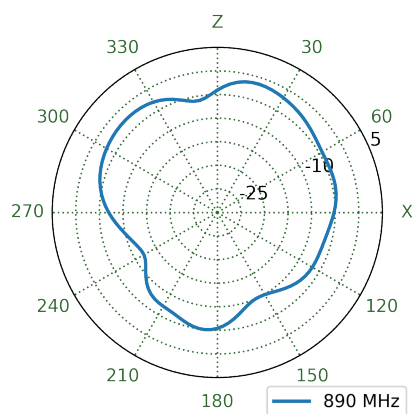
XY Plane



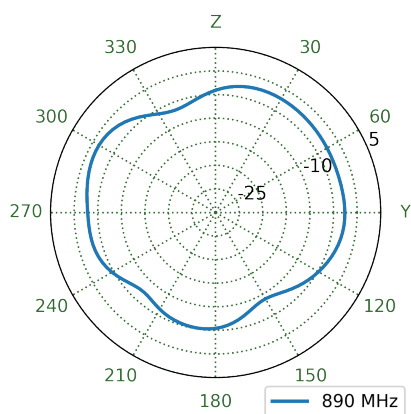
## 8.21 4G-5G 2 Patterns at 890 MHz



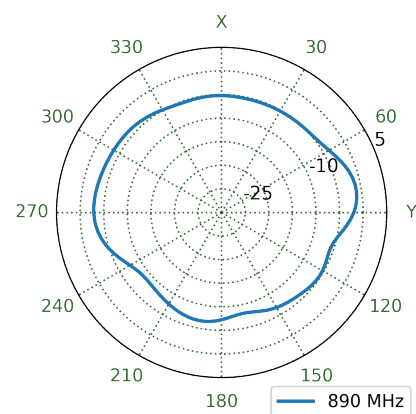
XZ Plane



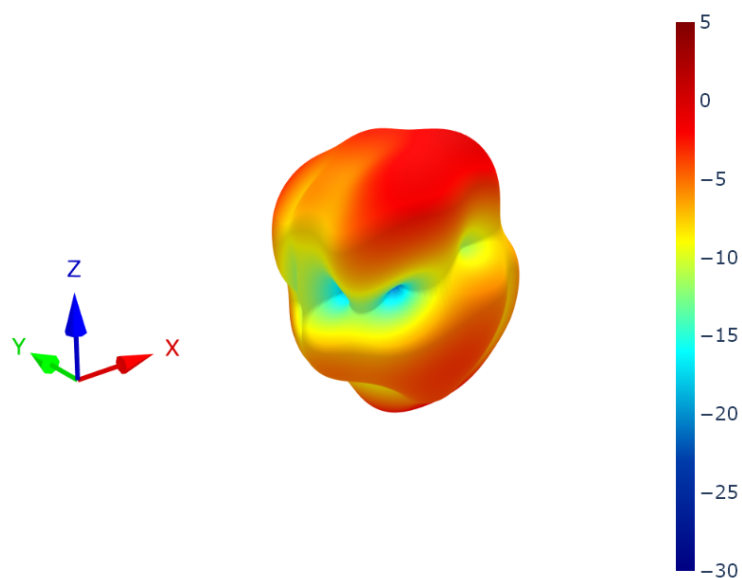
YZ Plane



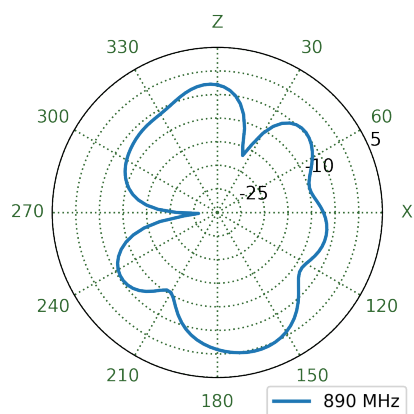
XY Plane



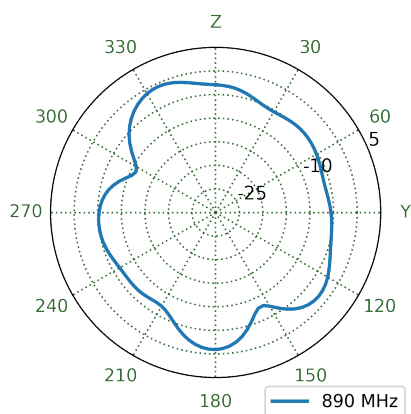
## 8.22 4G-5G 3 Patterns at 890 MHz



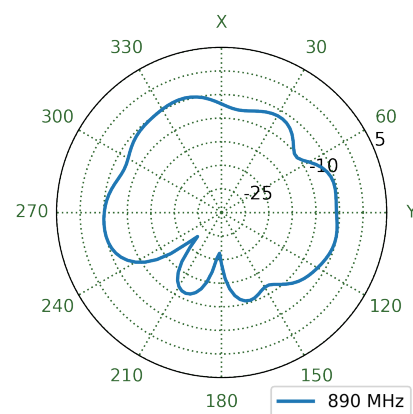
XZ Plane



YZ Plane

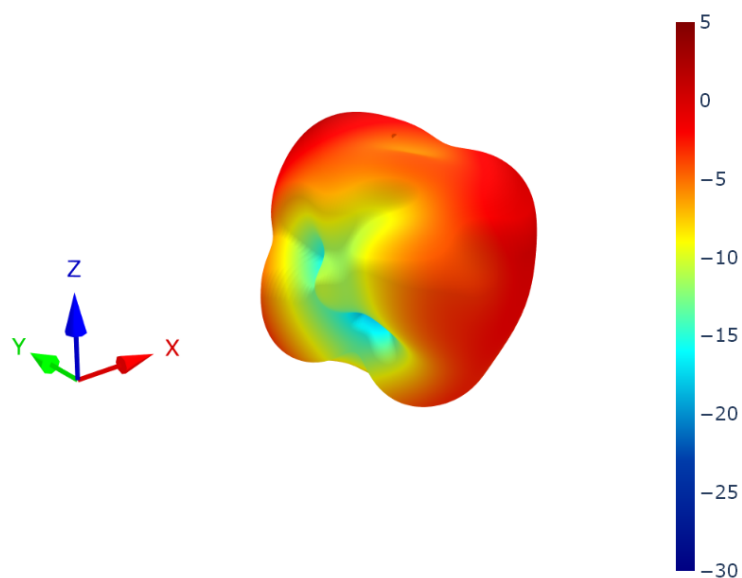


XY Plane

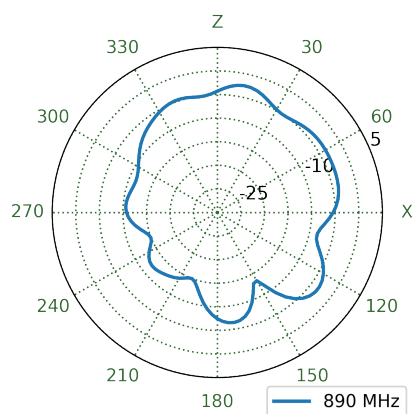




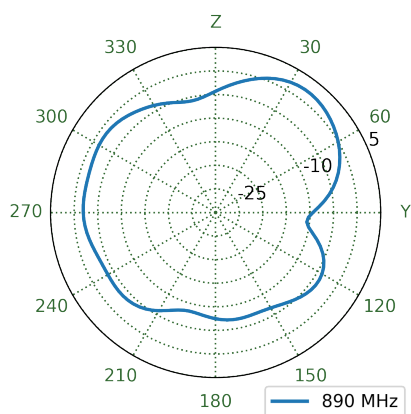
## 8.23 4G-5G 4 Patterns at 890 MHz



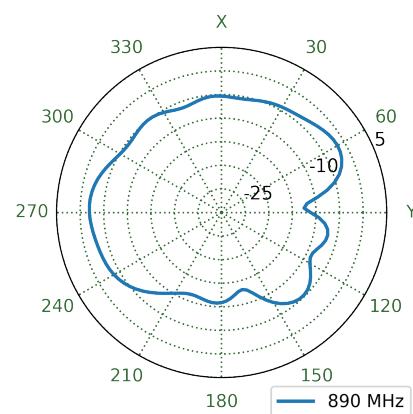
XZ Plane



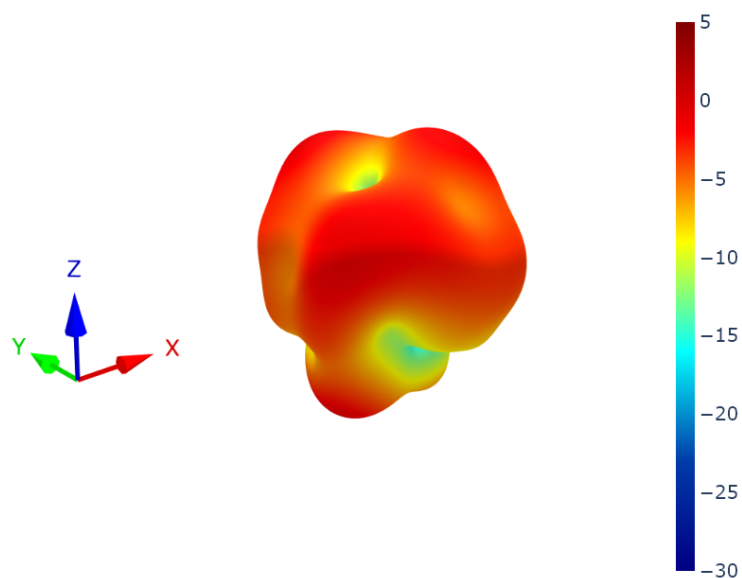
YZ Plane



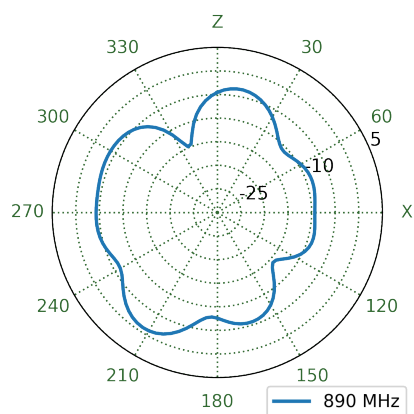
XY Plane



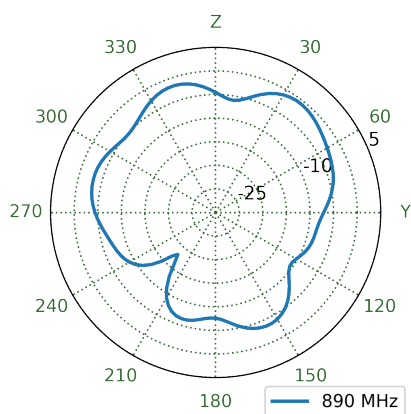
## 8.24 4G-5G 5 Patterns at 890 MHz



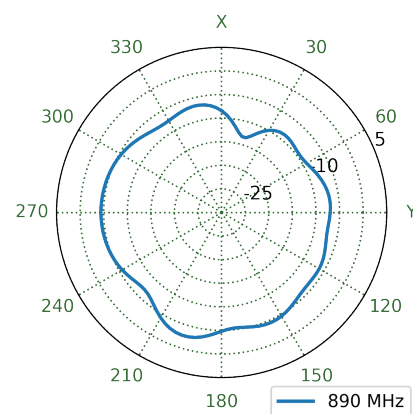
XZ Plane



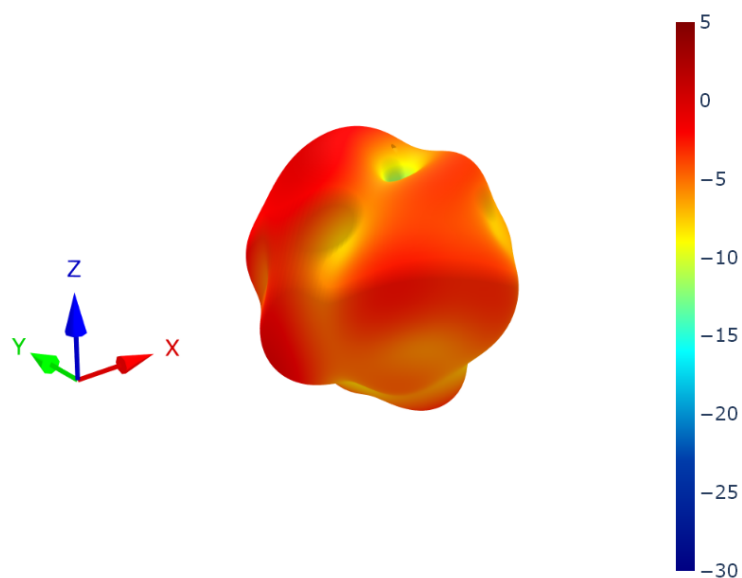
YZ Plane



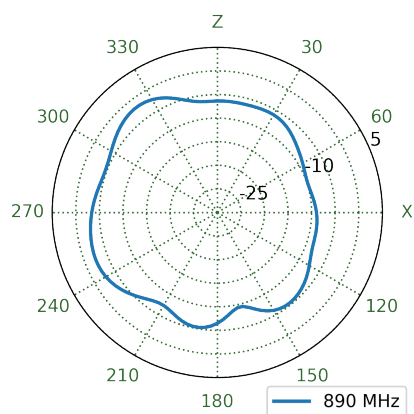
XY Plane



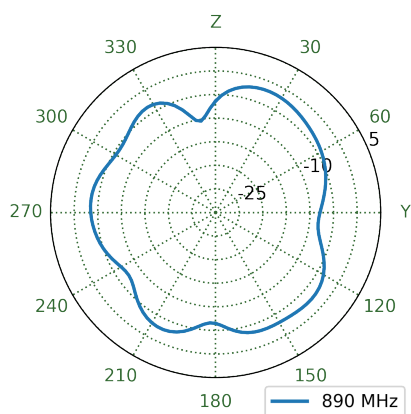
## 8.25 4G-5G 6 Patterns at 890 MHz



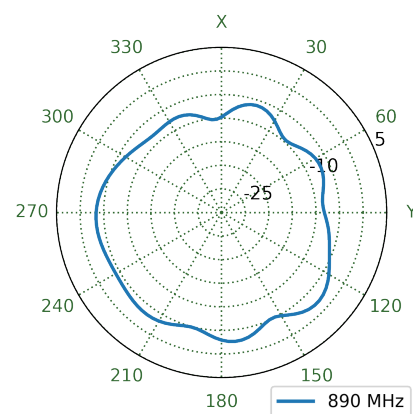
XZ Plane



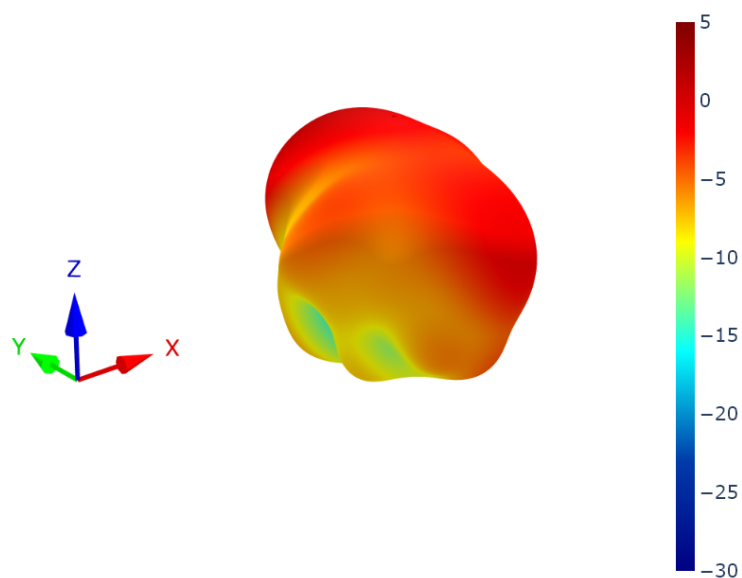
YZ Plane



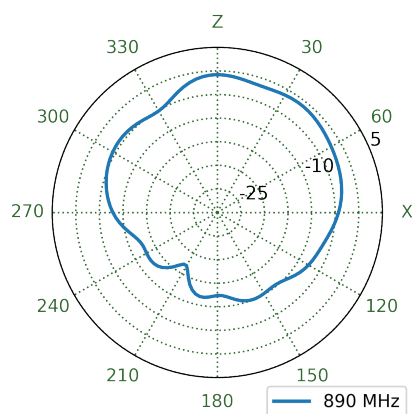
XY Plane



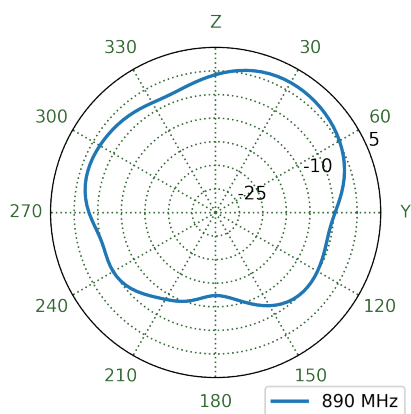
## 8.26 4G-5G 7 Patterns at 890 MHz



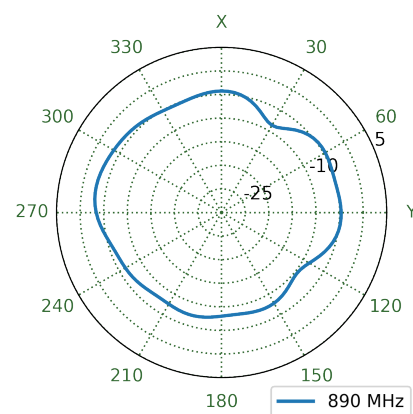
XZ Plane



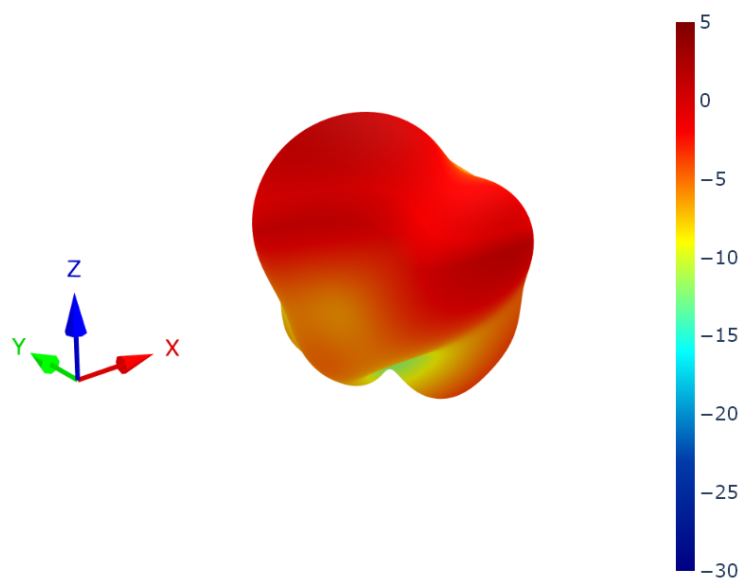
YZ Plane



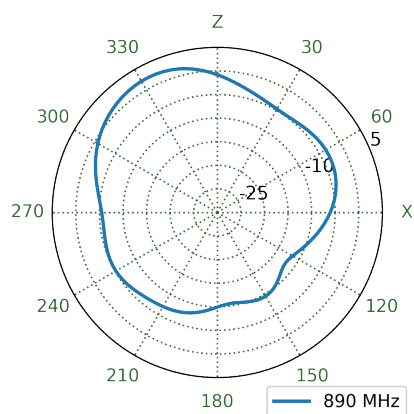
XY Plane



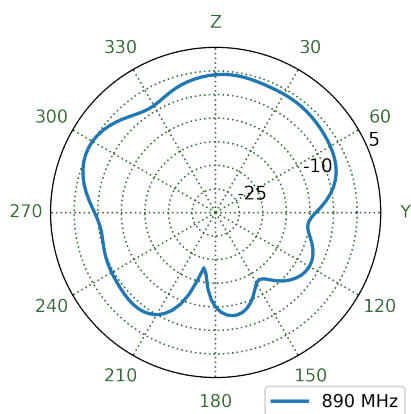
## 8.27 4G-5G 8 Patterns at 890 MHz



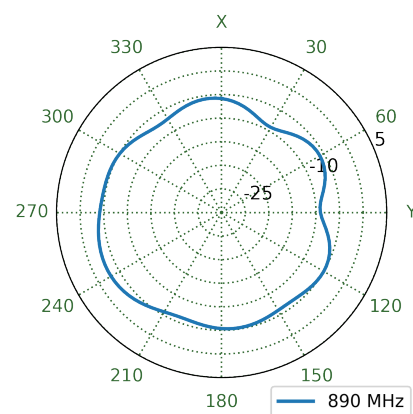
XZ Plane



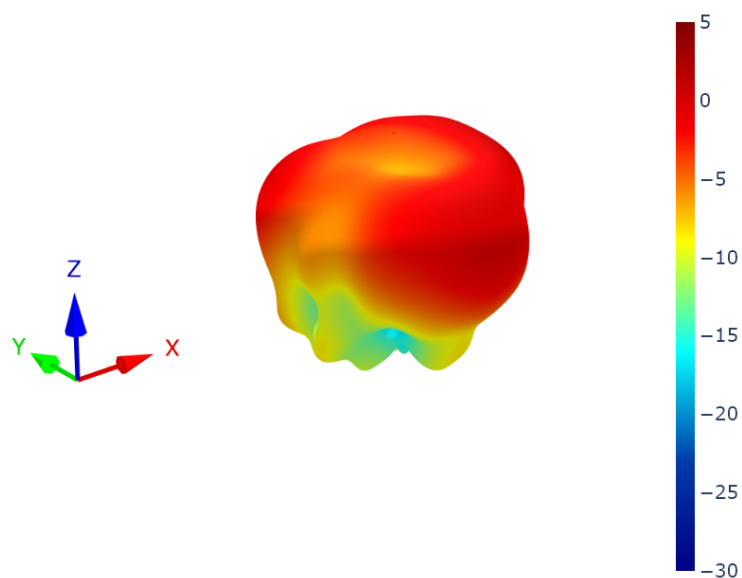
YZ Plane



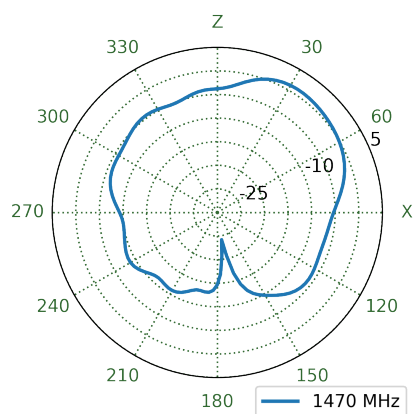
XY Plane



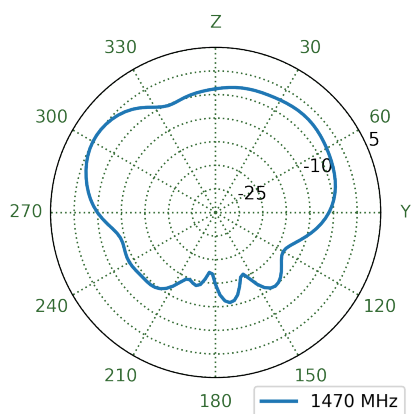
## 8.28 4G-5G 1 Patterns at 1470 MHz



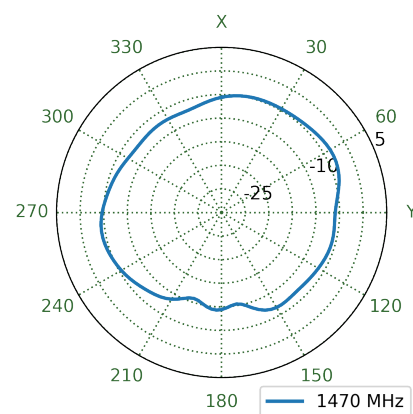
XZ Plane



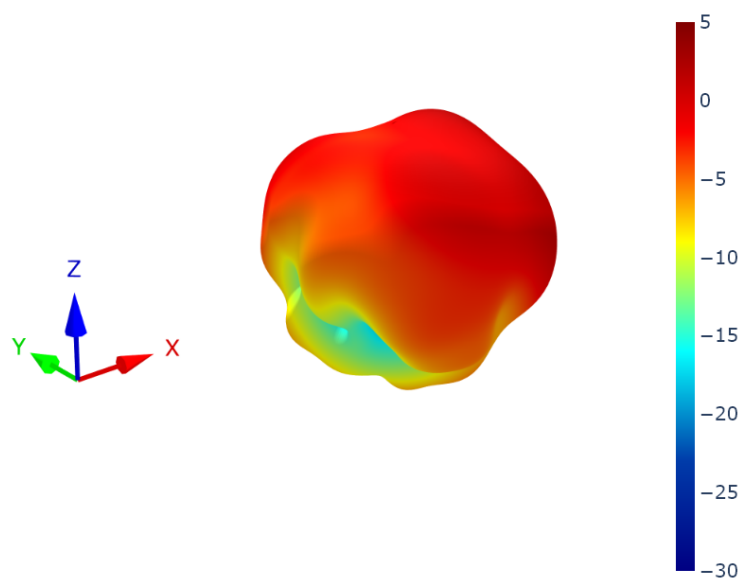
YZ Plane



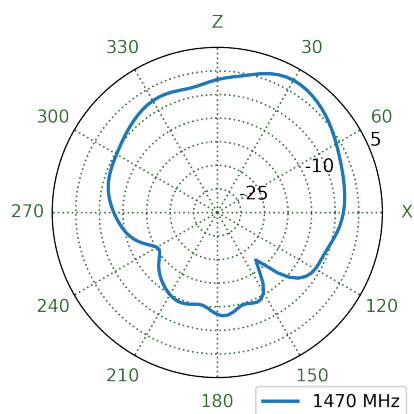
XY Plane



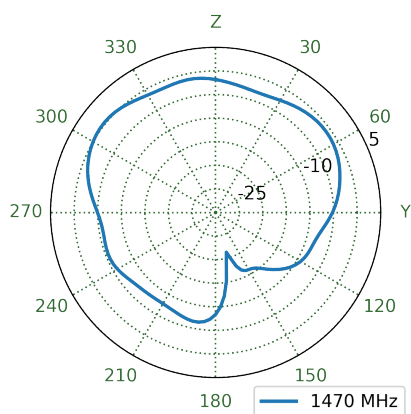
## 8.29 4G-5G 2 Patterns at 1470 MHz



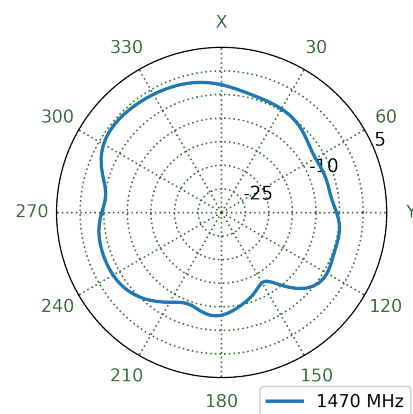
XZ Plane



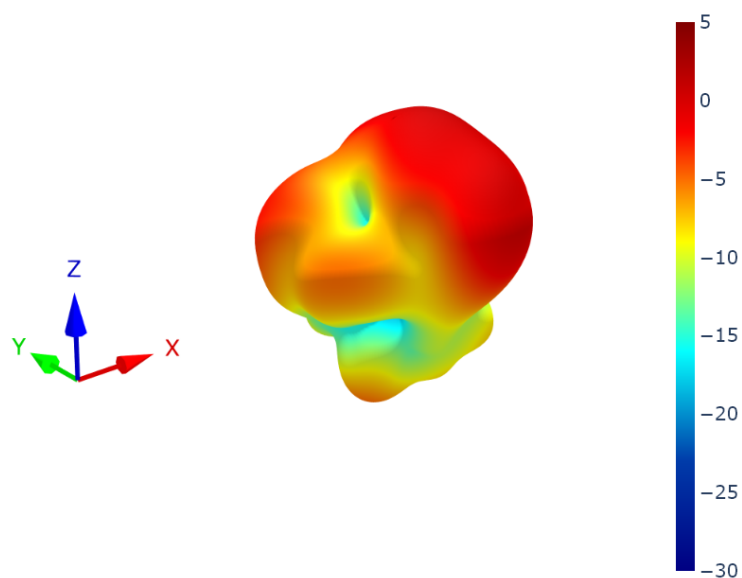
YZ Plane



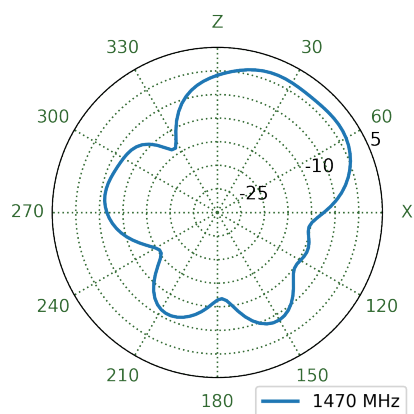
XY Plane



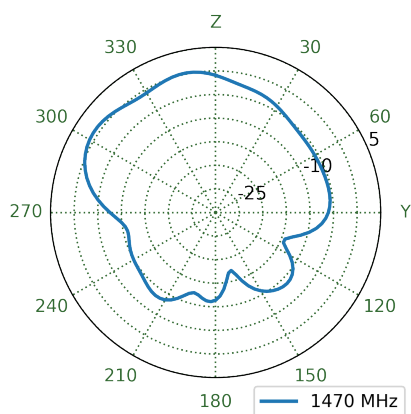
## 8.30 4G-5G 3 Patterns at 1470 MHz



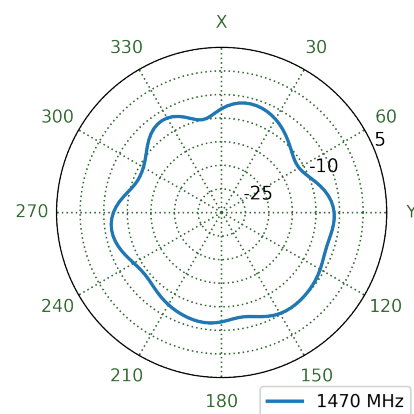
XZ Plane



YZ Plane

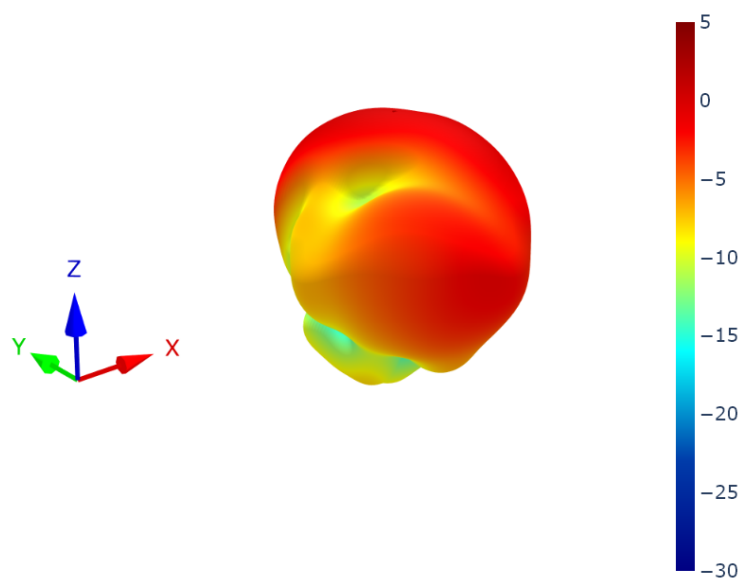


XY Plane

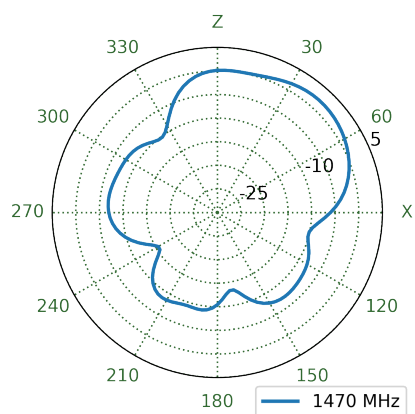




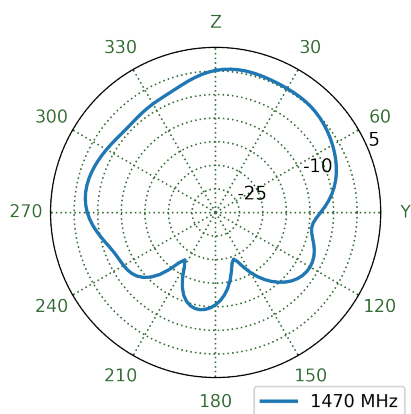
# 8.31 4G-5G 4 Patterns at 1470 MHz



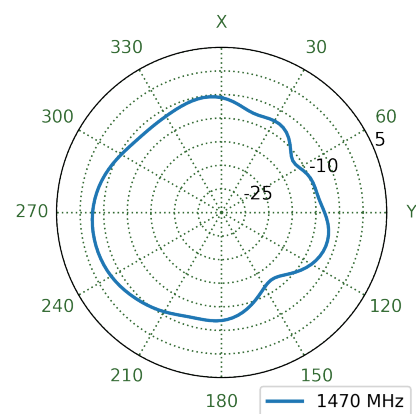
XZ Plane



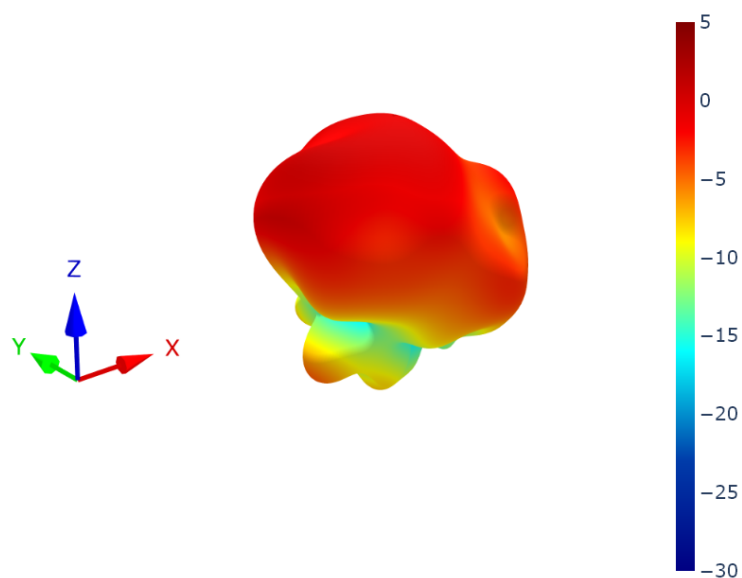
YZ Plane



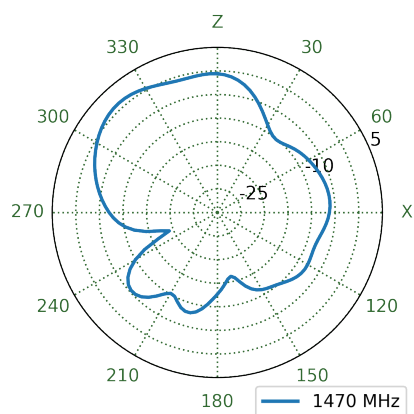
XY Plane



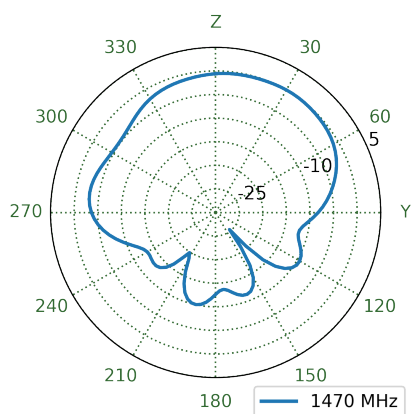
## 8.32 4G-5G 5 Patterns at 1470 MHz



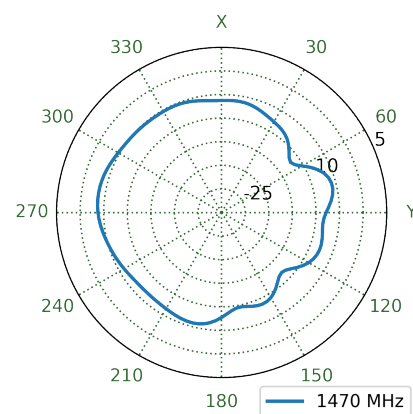
XZ Plane



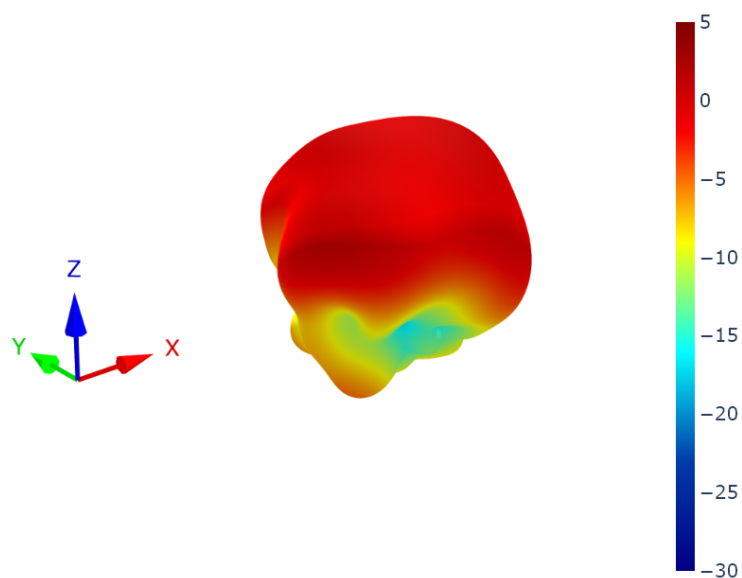
YZ Plane



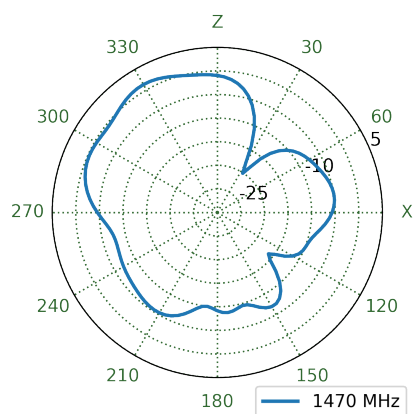
XY Plane



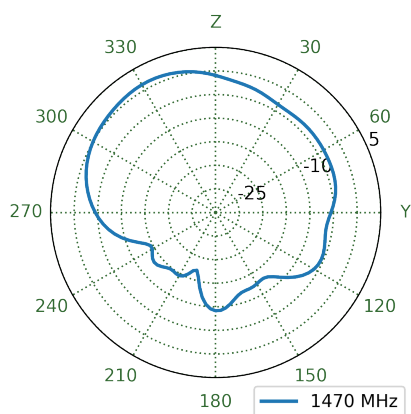
### 8.33 4G-5G 6 Patterns at 1470 MHz



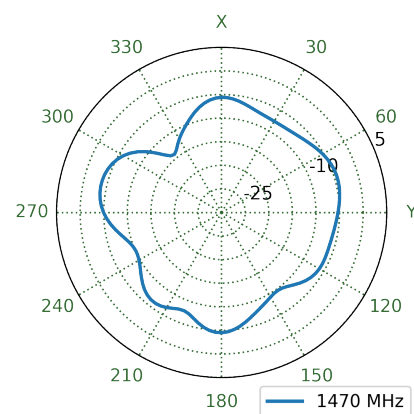
XZ Plane



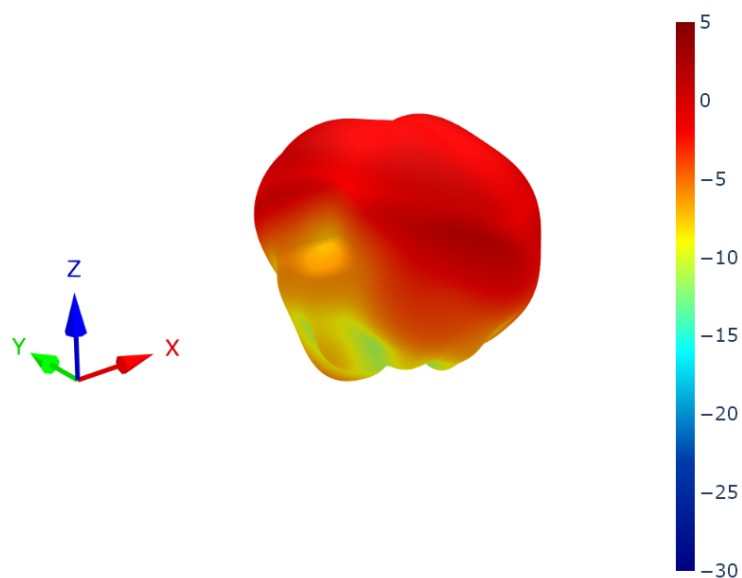
YZ Plane



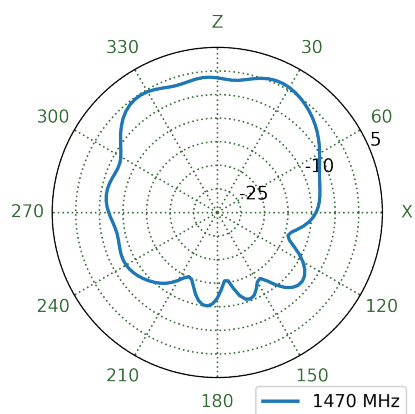
XY Plane



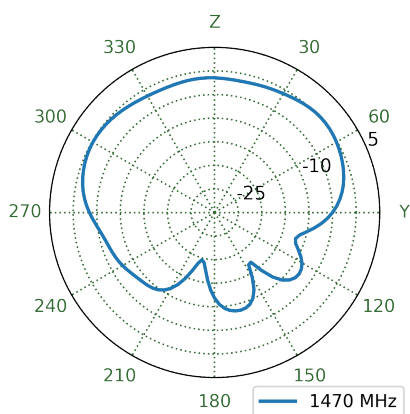
# 8.34 4G-5G 7 Patterns at 1470 MHz



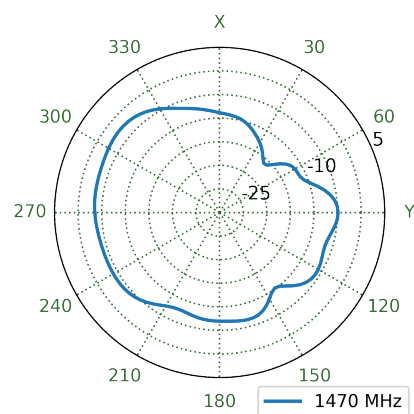
XZ Plane



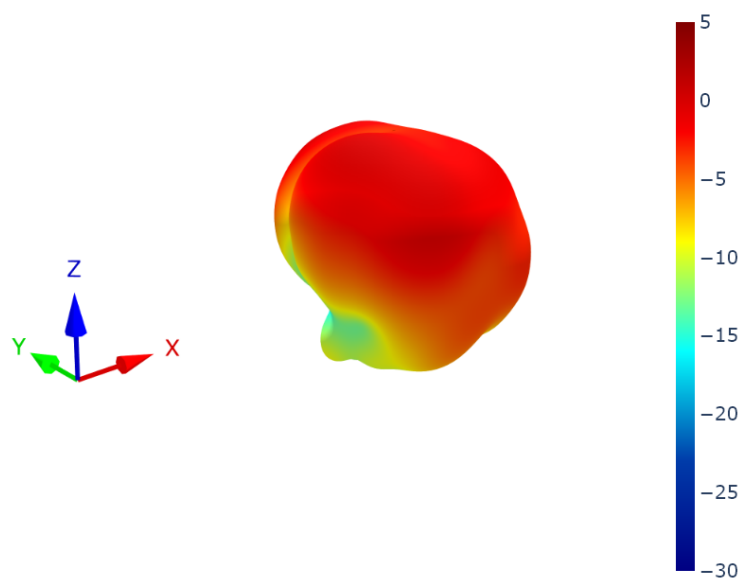
YZ Plane



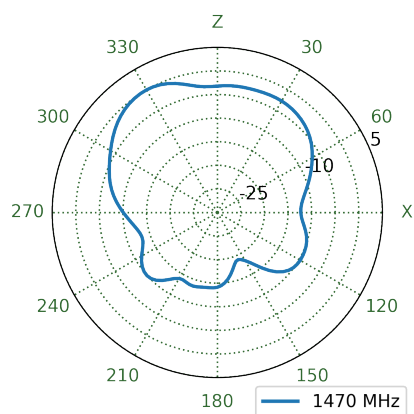
XY Plane



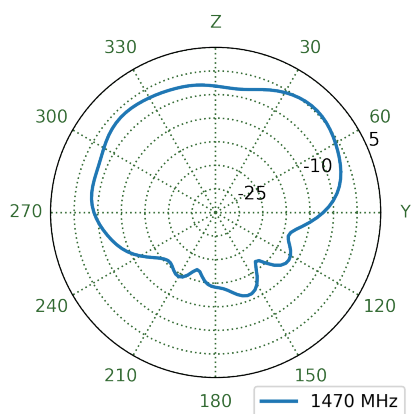
# 8.35 4G-5G 8 Patterns at 1470 MHz



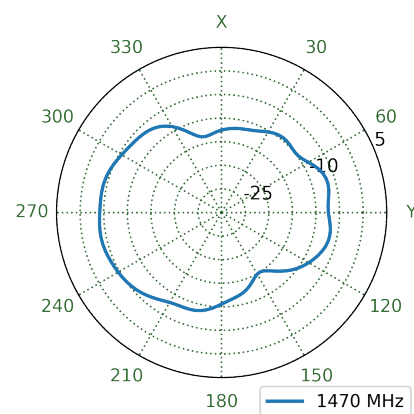
XZ Plane



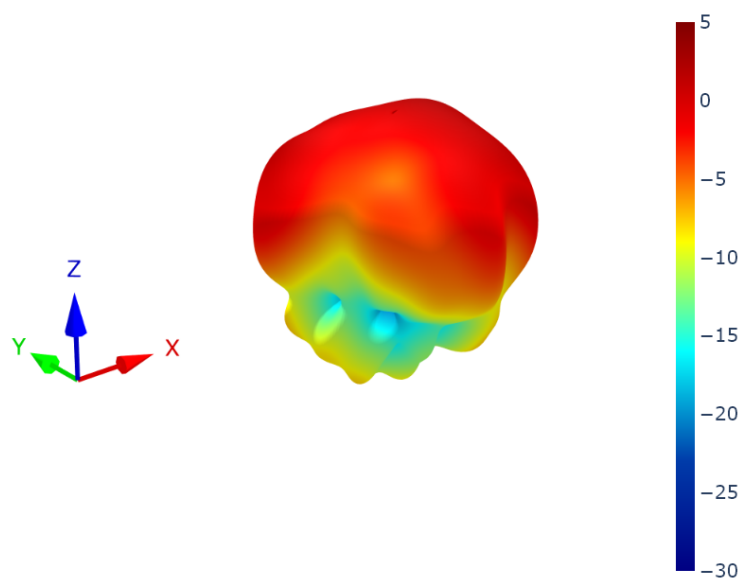
YZ Plane



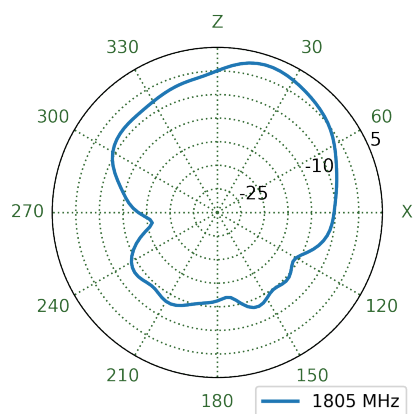
XY Plane



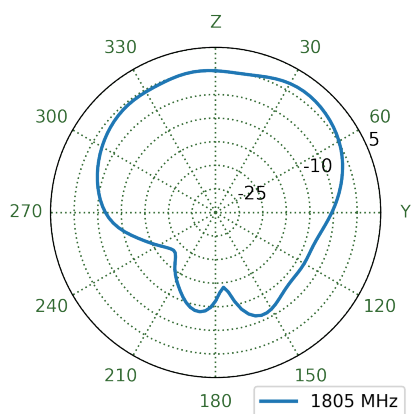
## 8.36 4G-5G 1 Patterns at 1805 MHz



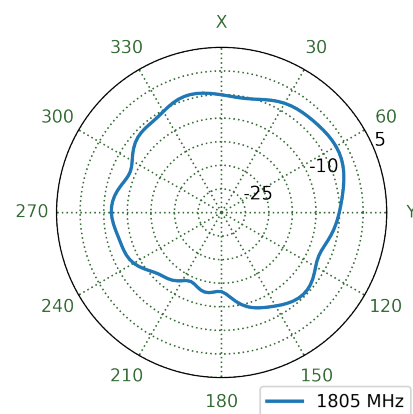
XZ Plane



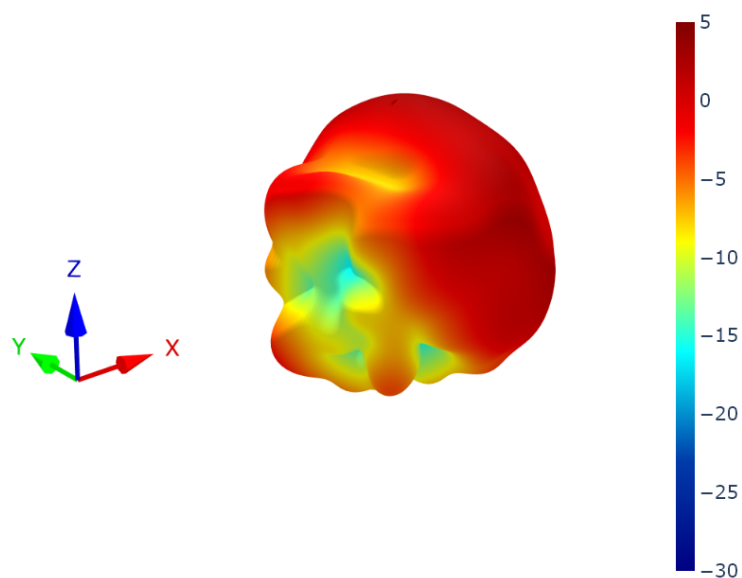
YZ Plane



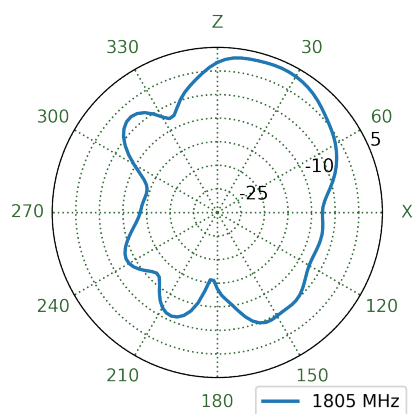
XY Plane



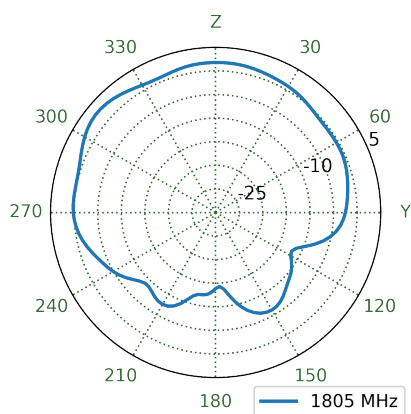
# 8.37 4G-5G 2 Patterns at 1805 MHz



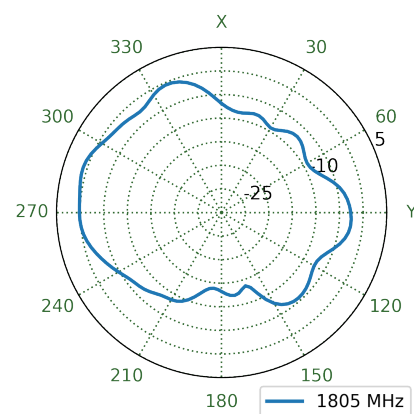
XZ Plane



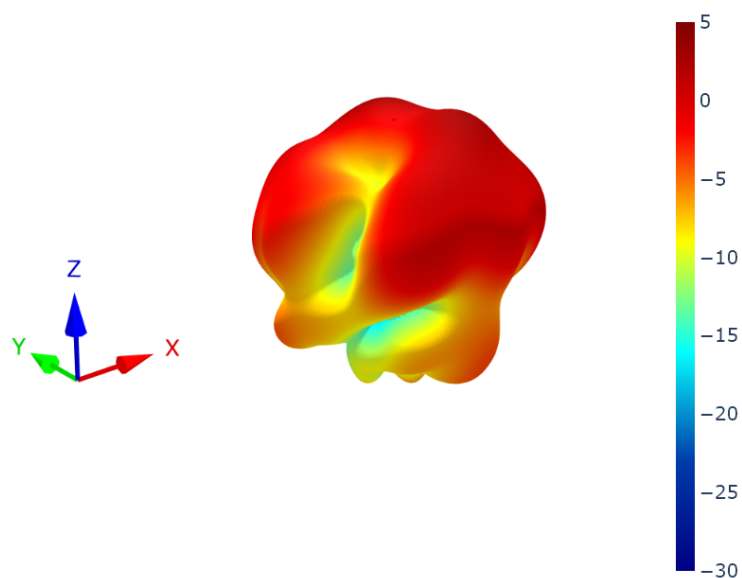
YZ Plane



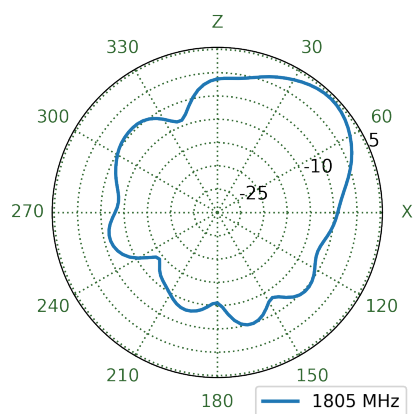
XY Plane



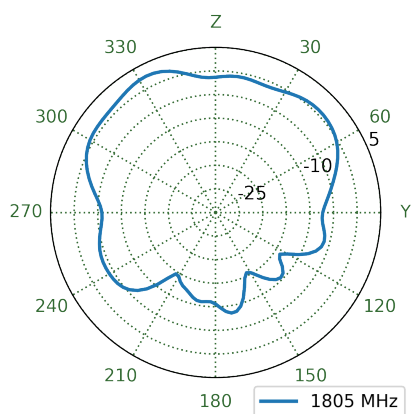
# 8.38 4G-5G 3 Patterns at 1805 MHz



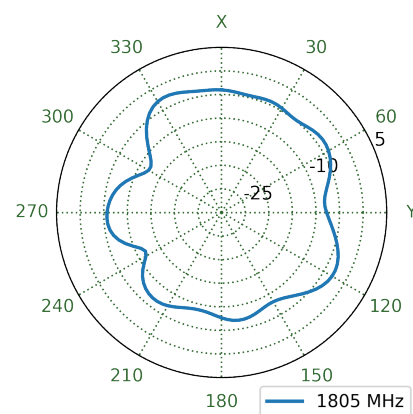
XZ Plane



YZ Plane

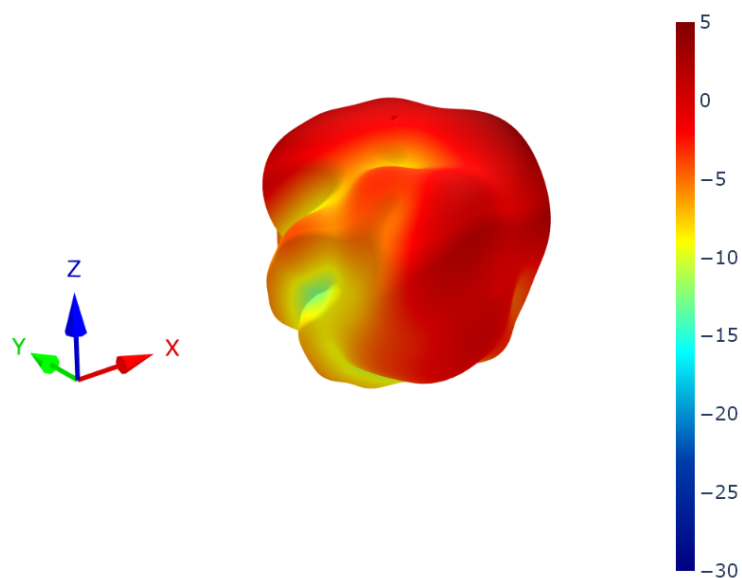


XY Plane

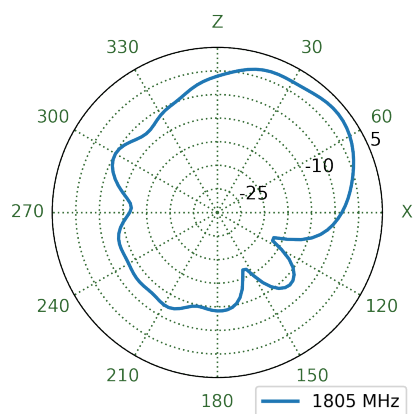




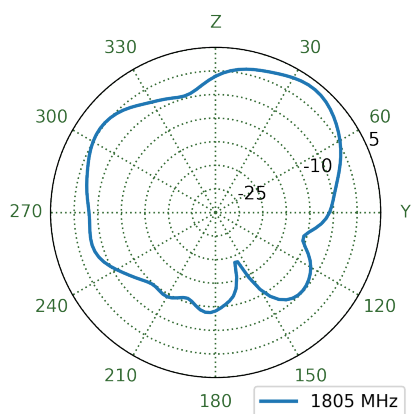
# 8.39 4G-5G 4 Patterns at 1805 MHz



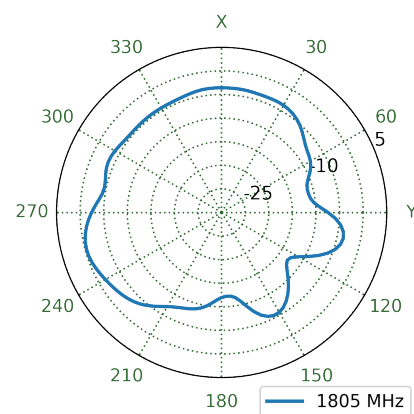
XZ Plane



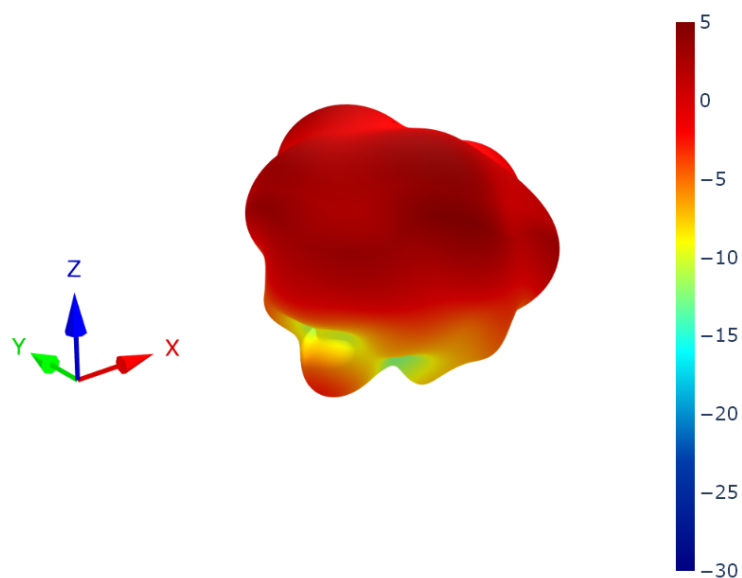
YZ Plane



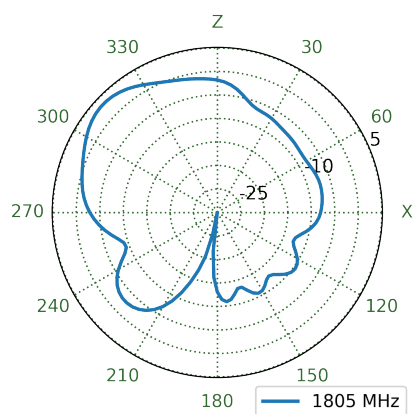
XY Plane



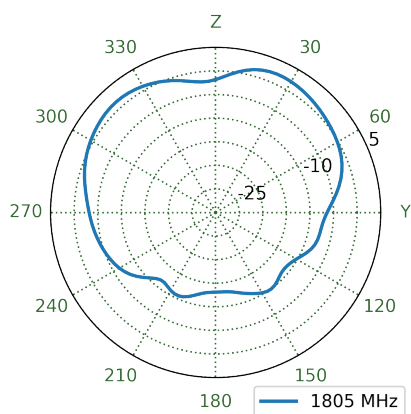
## 8.40 4G-5G 5 Patterns at 1805 MHz



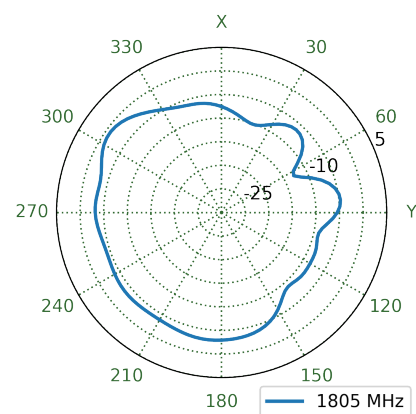
XZ Plane



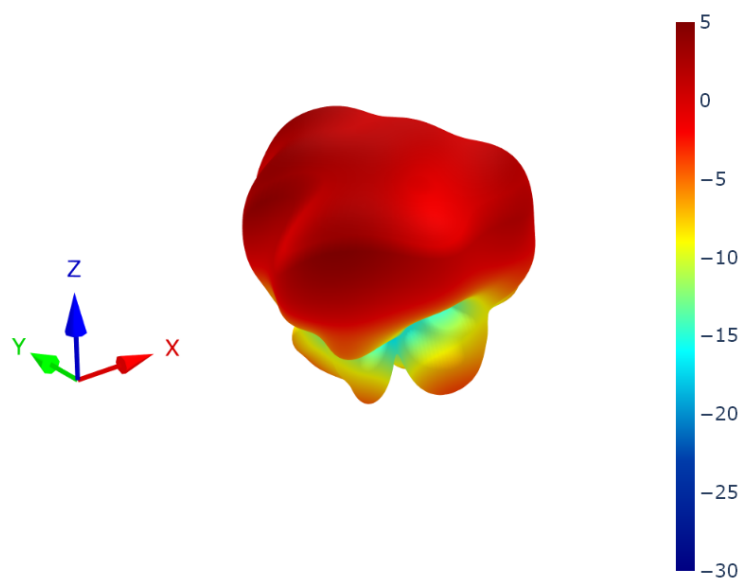
YZ Plane



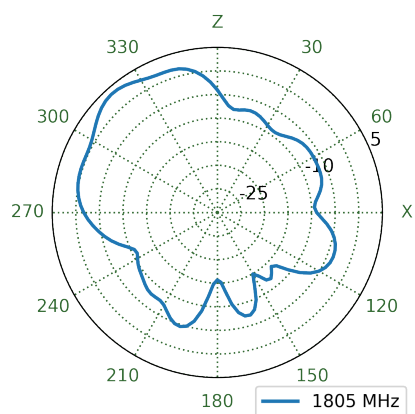
XY Plane



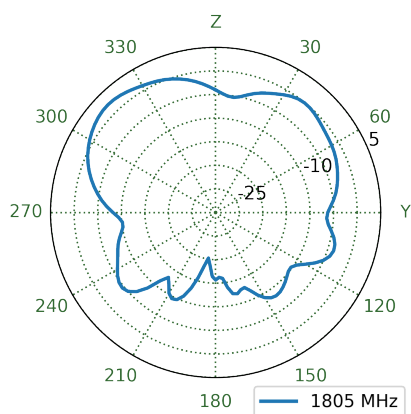
## 8.41 4G-5G 6 Patterns at 1805 MHz



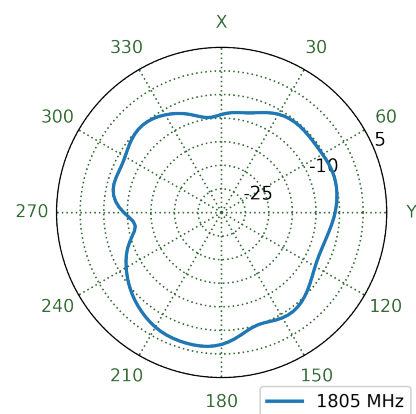
XZ Plane



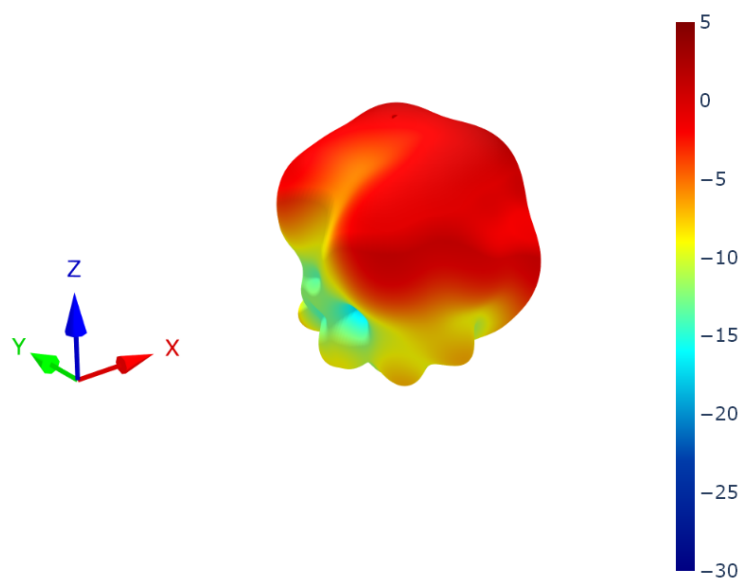
YZ Plane



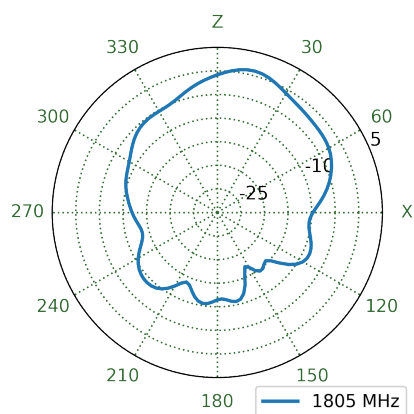
XY Plane



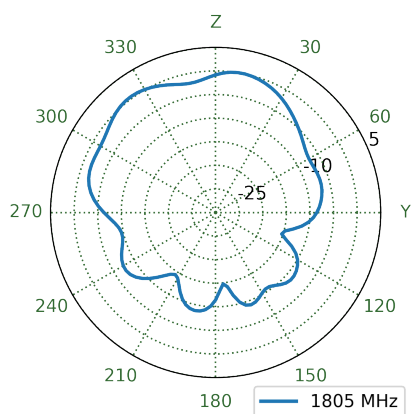
## 8.42 4G-5G 7 Patterns at 1805 MHz



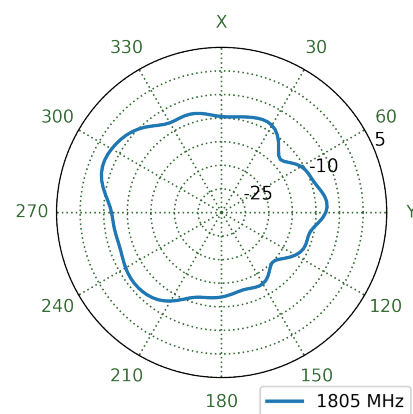
XZ Plane



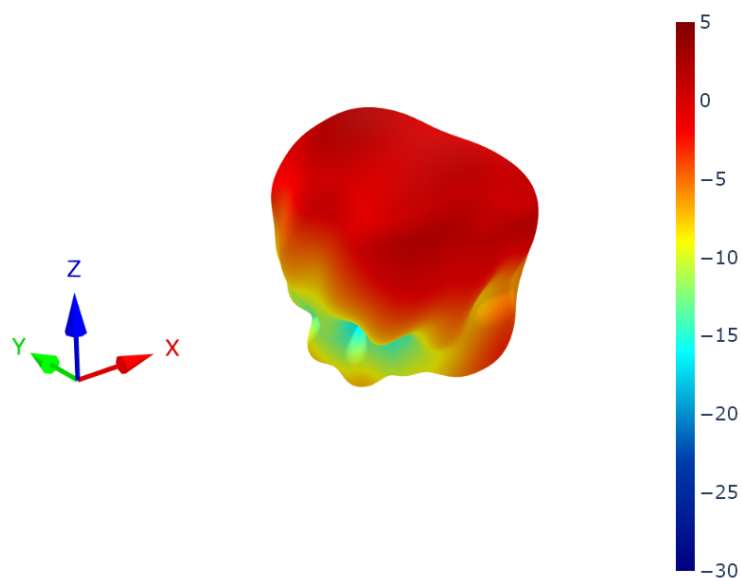
YZ Plane



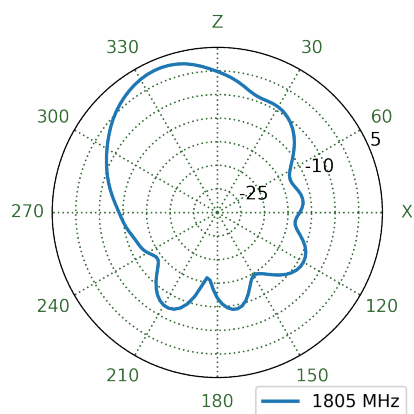
XY Plane



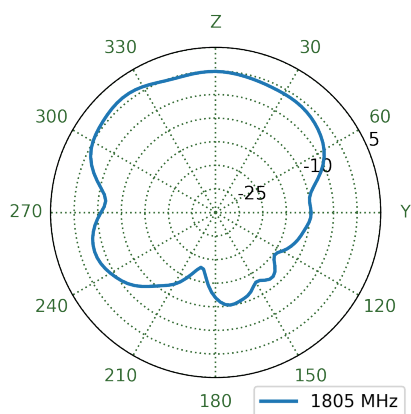
## 8.43 4G-5G 8 Patterns at 1805 MHz



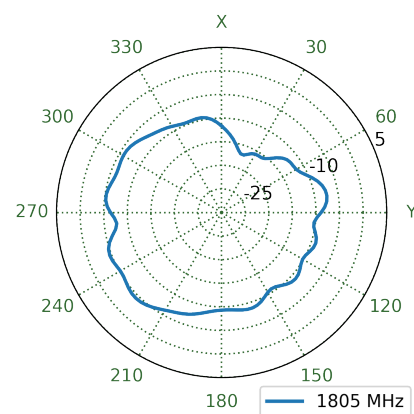
XZ Plane



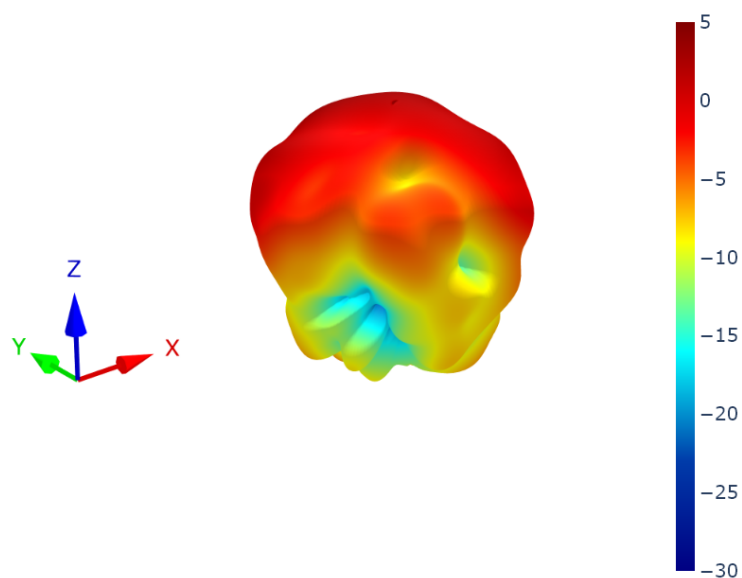
YZ Plane



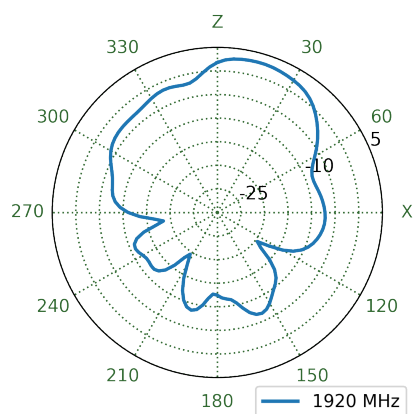
XY Plane



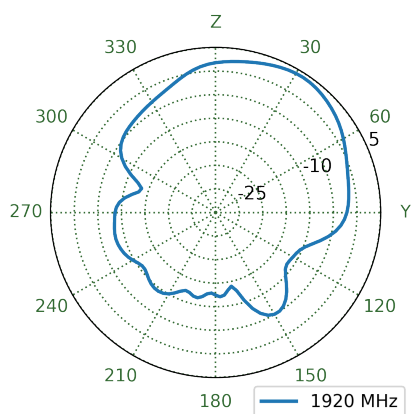
## 8.44 4G-5G 1 Patterns at 1920 MHz



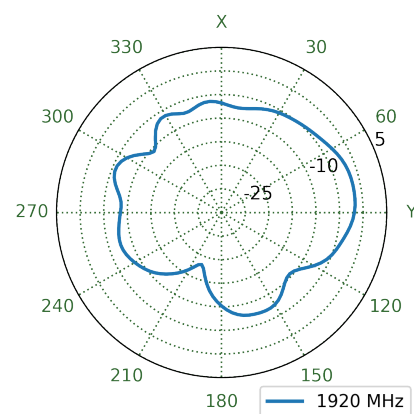
XZ Plane



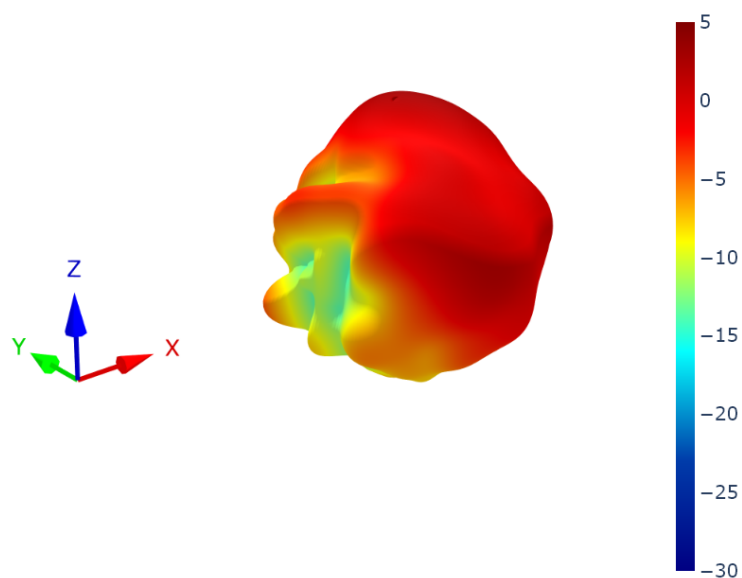
YZ Plane



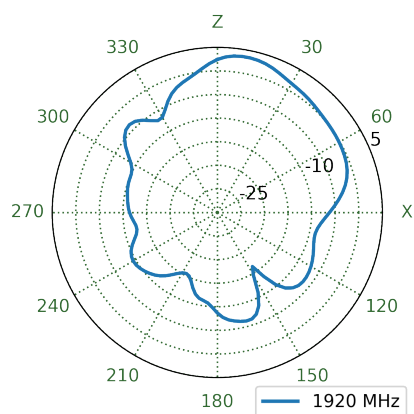
XY Plane



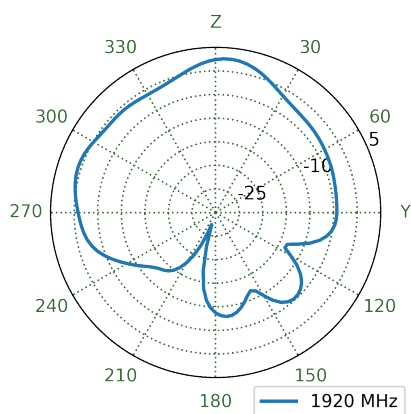
## 8.45 4G-5G 2 Patterns at 1920 MHz



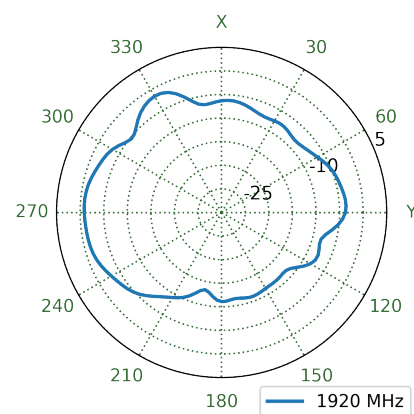
XZ Plane



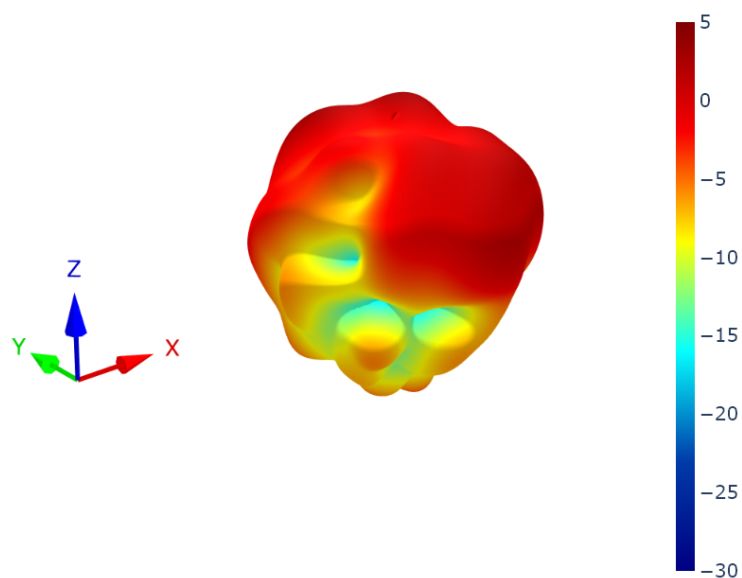
YZ Plane



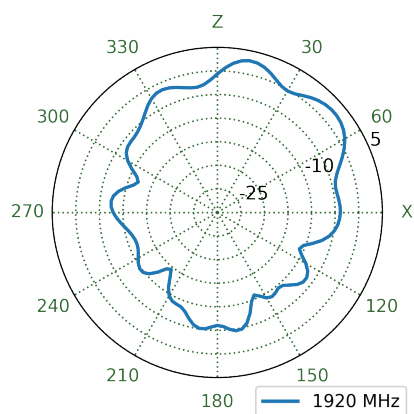
XY Plane



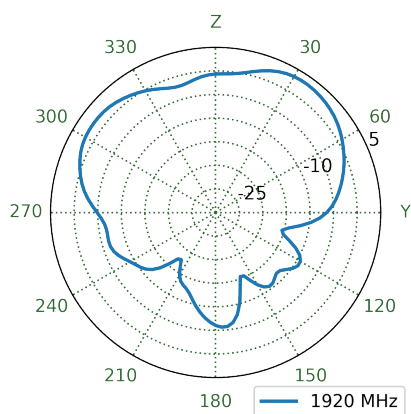
## 8.46 4G-5G 3 Patterns at 1920 MHz



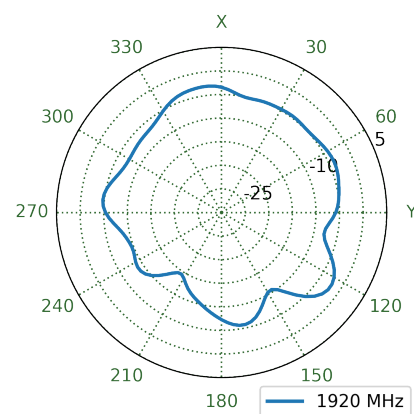
XZ Plane



YZ Plane

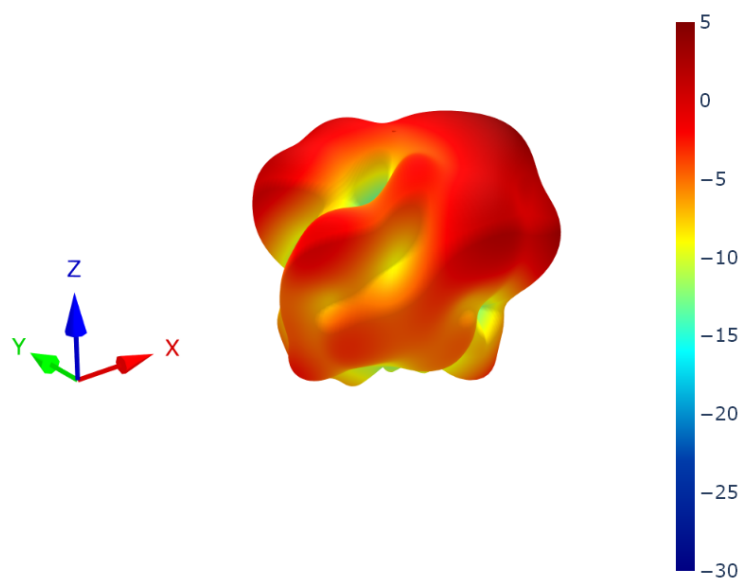


XY Plane

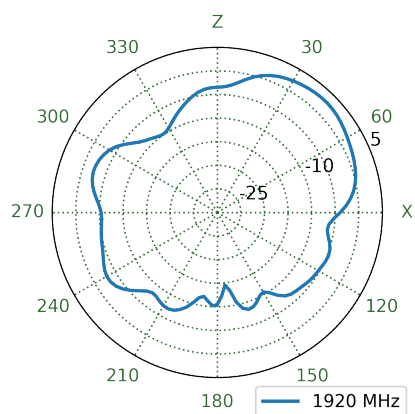




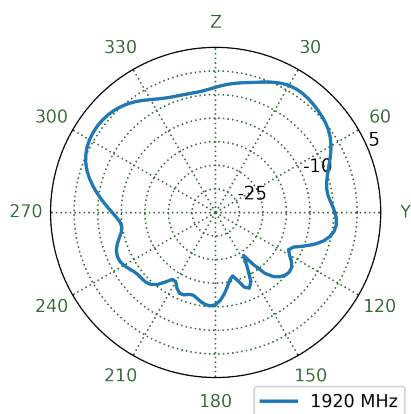
## 8.47 4G-5G 4 Patterns at 1920 MHz



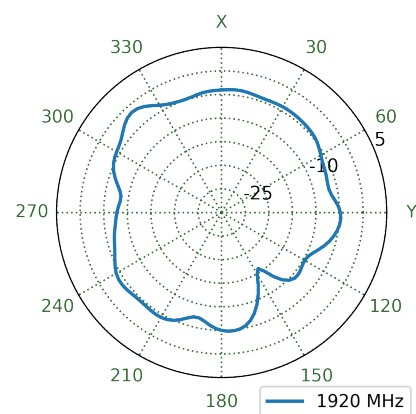
XZ Plane



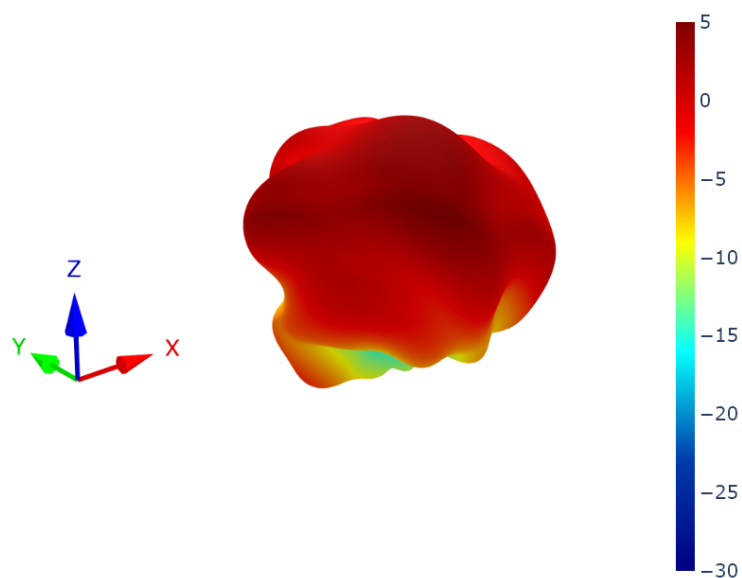
YZ Plane



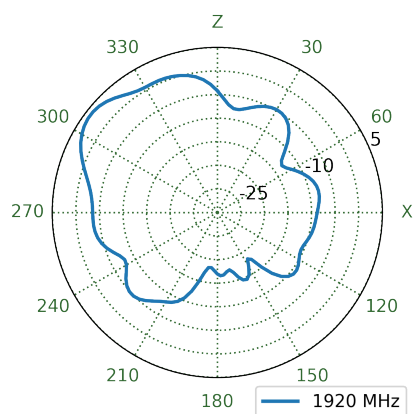
XY Plane



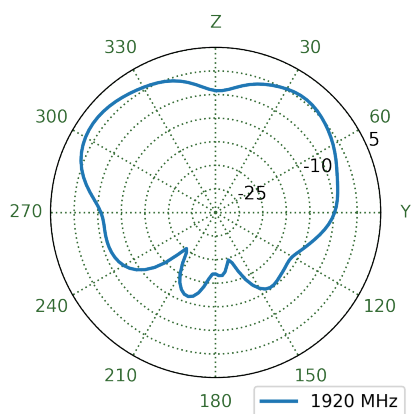
## 8.48 4G-5G 5 Patterns at 1920 MHz



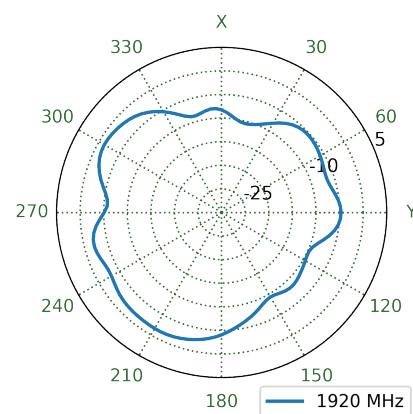
XZ Plane



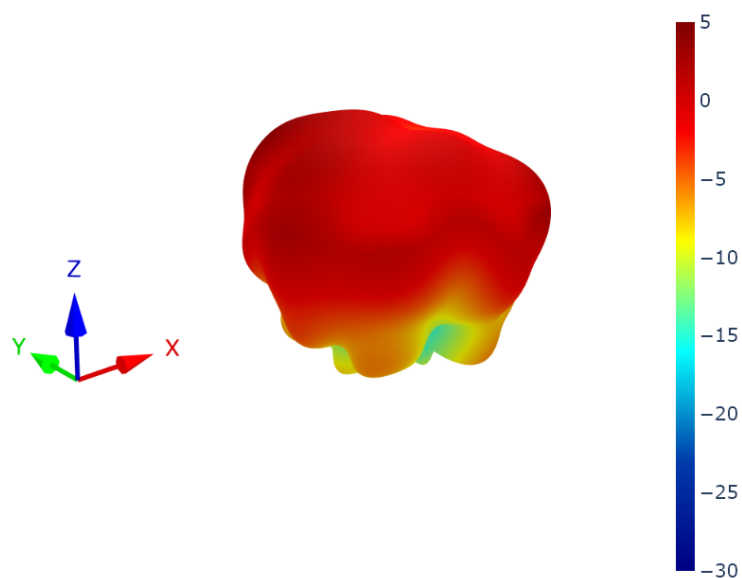
YZ Plane



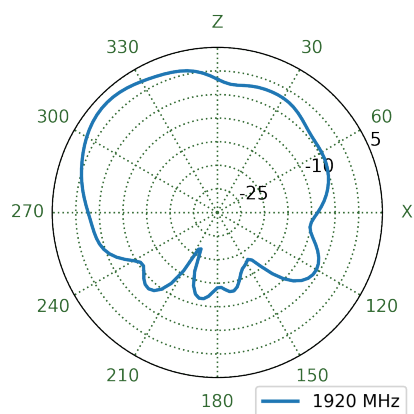
XY Plane



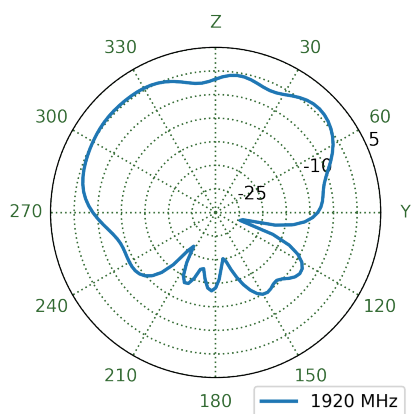
## 8.49 4G-5G 6 Patterns at 1920 MHz



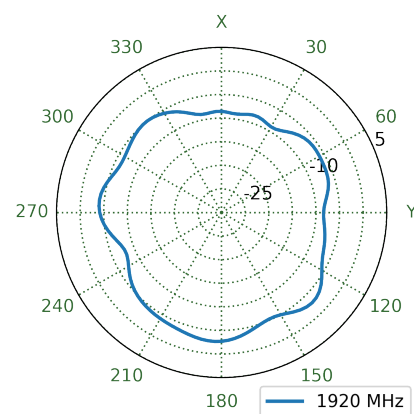
XZ Plane



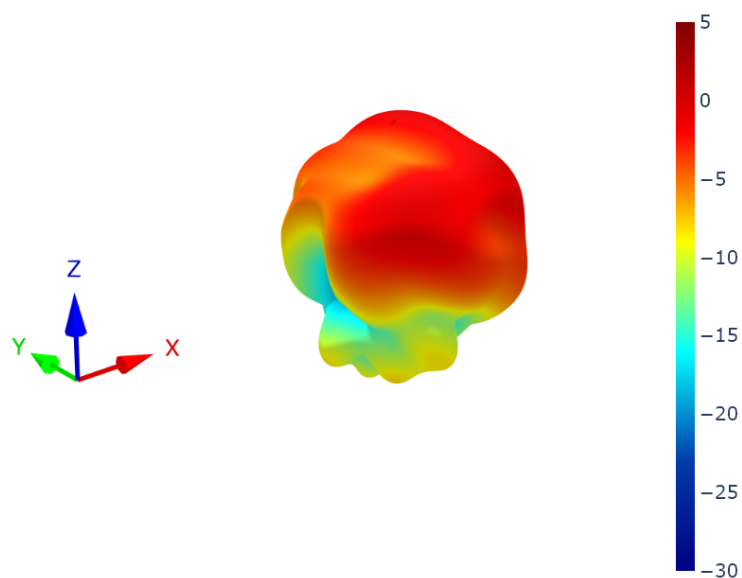
YZ Plane



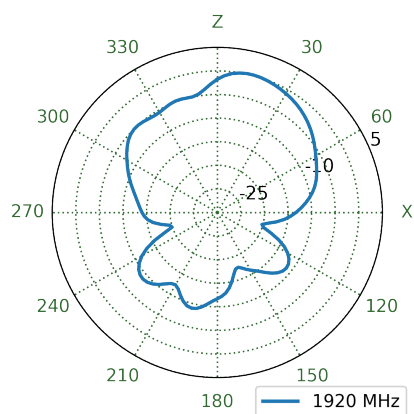
XY Plane



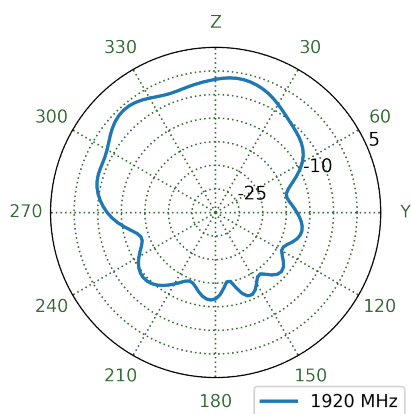
## 8.50 4G-5G 7 Patterns at 1920 MHz



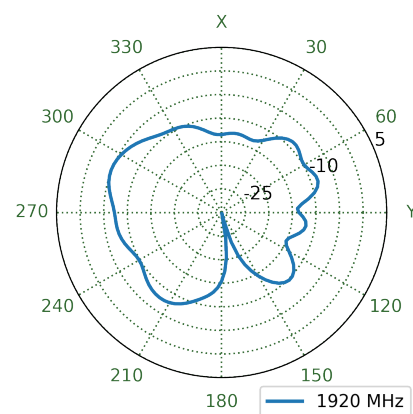
XZ Plane



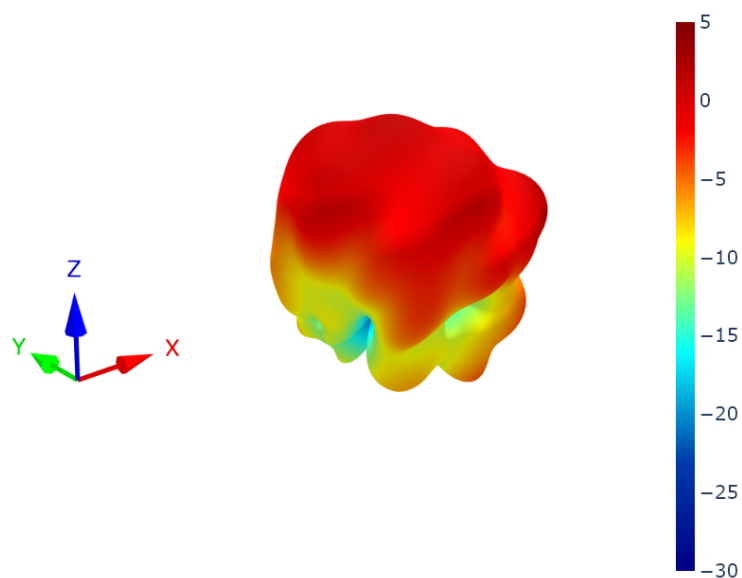
YZ Plane



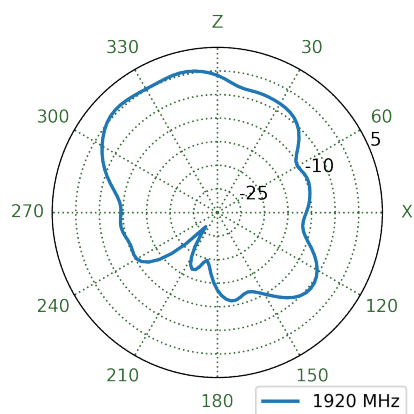
XY Plane



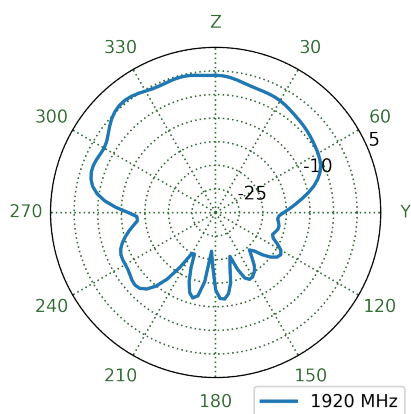
## 8.51 4G-5G 8 Patterns at 1920 MHz



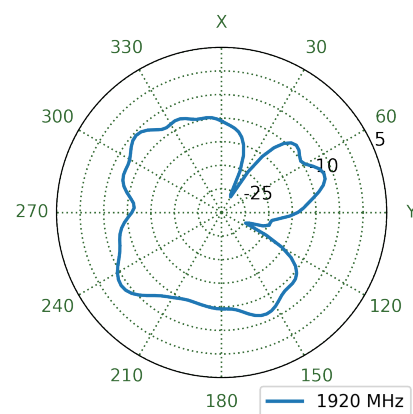
XZ Plane



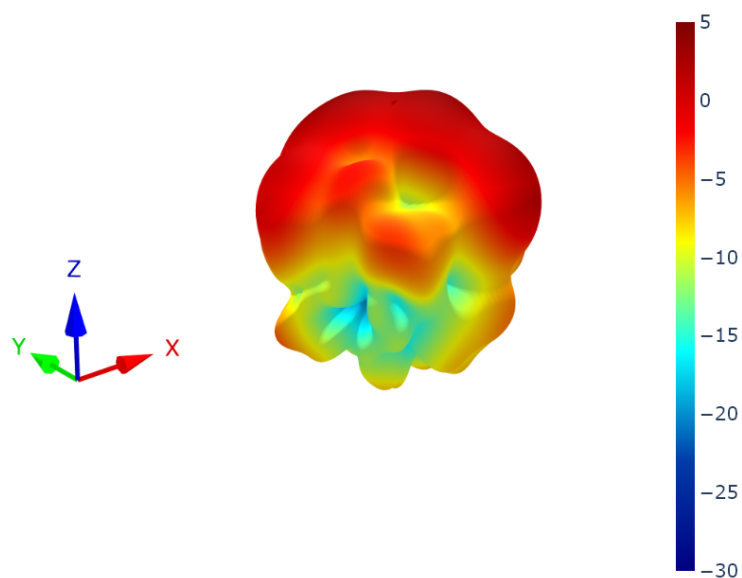
YZ Plane



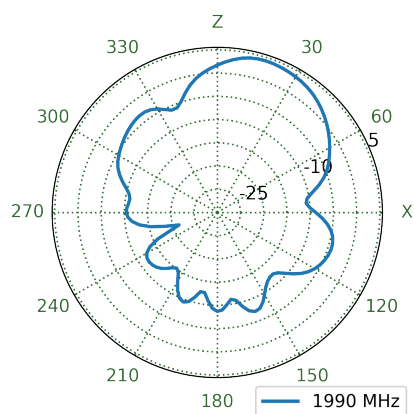
XY Plane



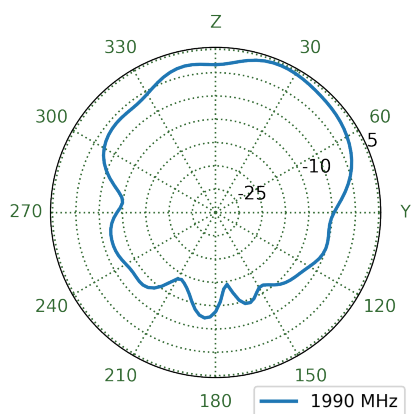
## 8.52 4G-5G 1 Patterns at 1990 MHz



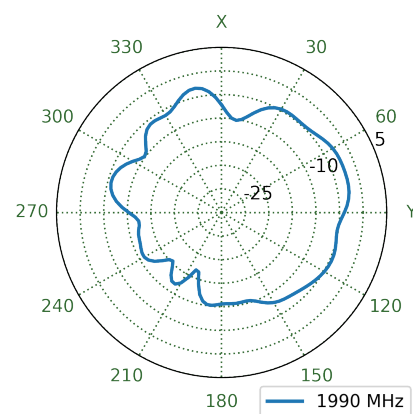
XZ Plane



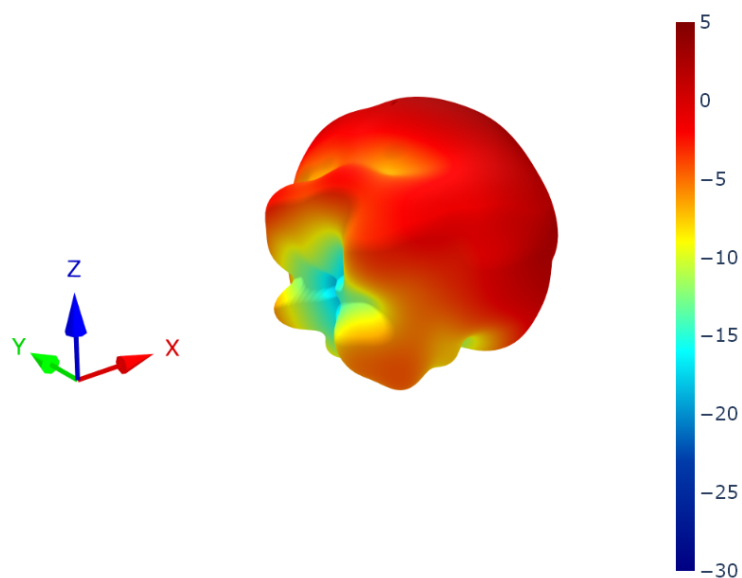
YZ Plane



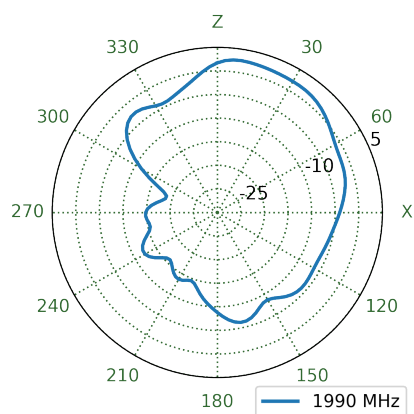
XY Plane



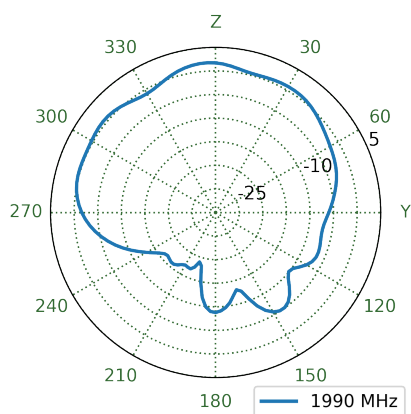
# 8.53 4G-5G 2 Patterns at 1990 MHz



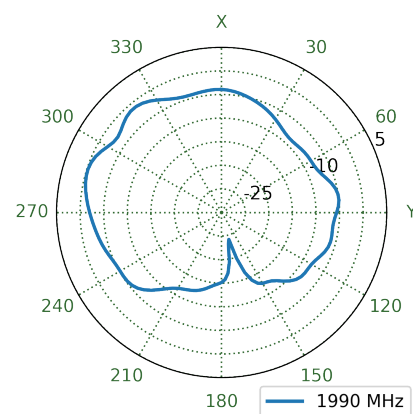
XZ Plane



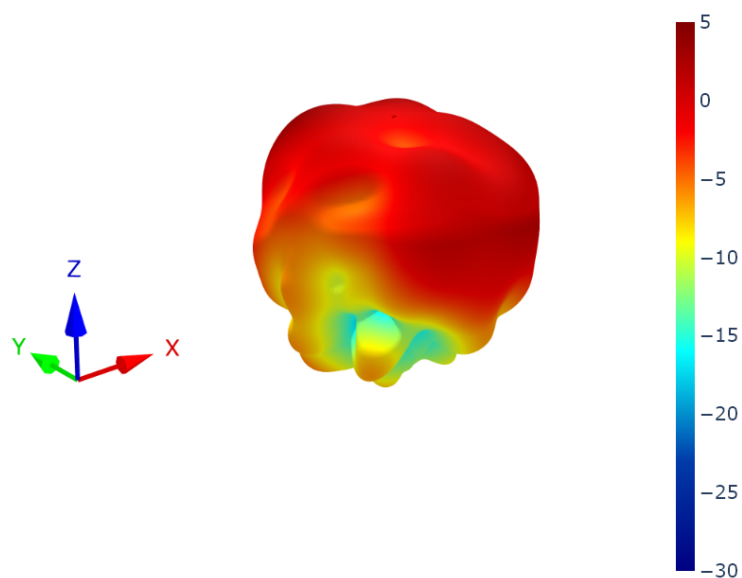
YZ Plane



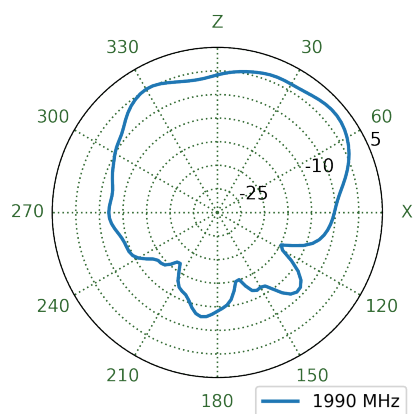
XY Plane



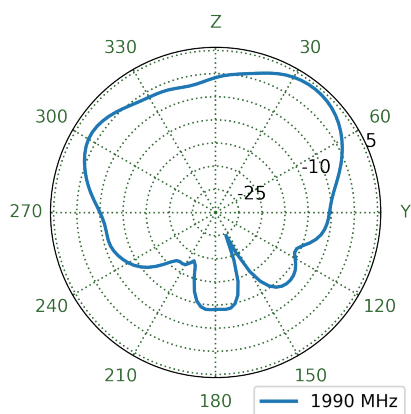
## 8.54 4G-5G 3 Patterns at 1990 MHz



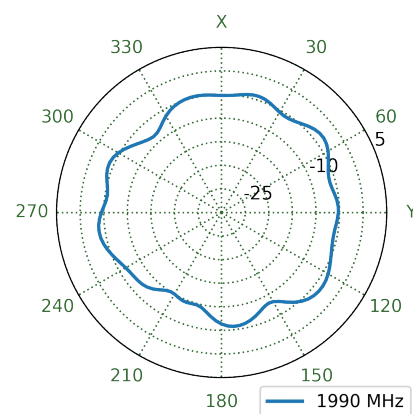
XZ Plane



YZ Plane

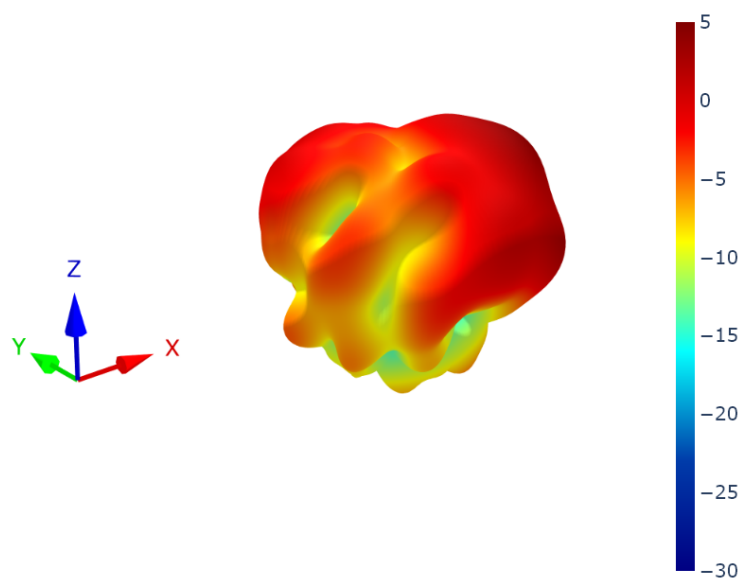


XY Plane

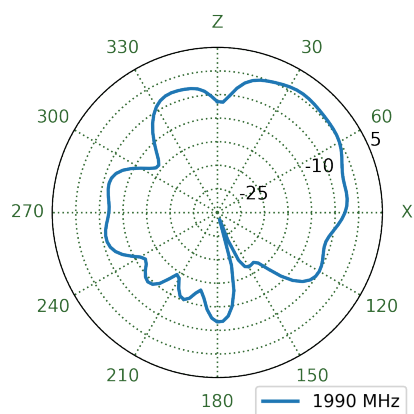




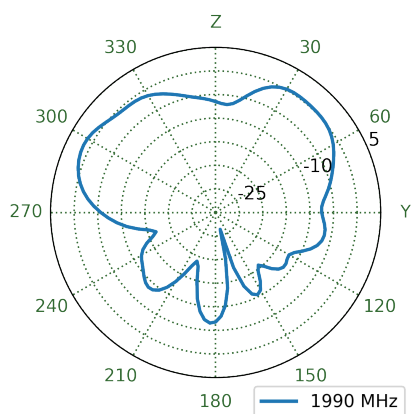
## 8.55 4G-5G 4 Patterns at 1990 MHz



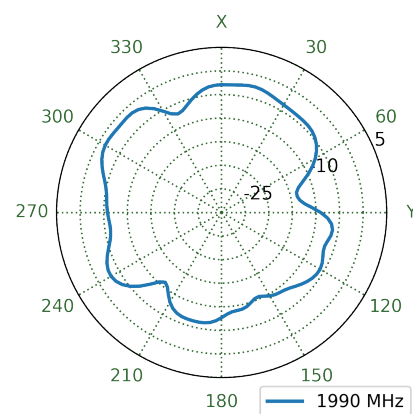
XZ Plane



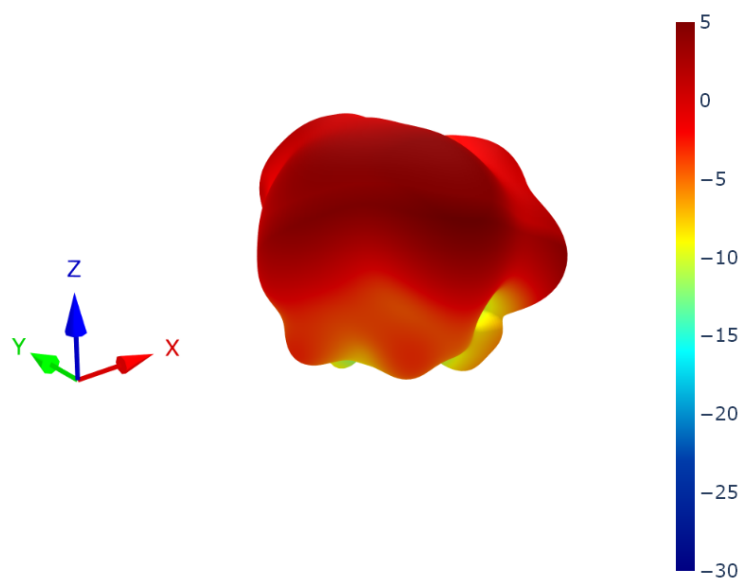
YZ Plane



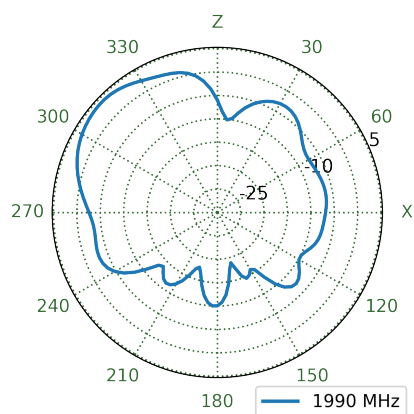
XY Plane



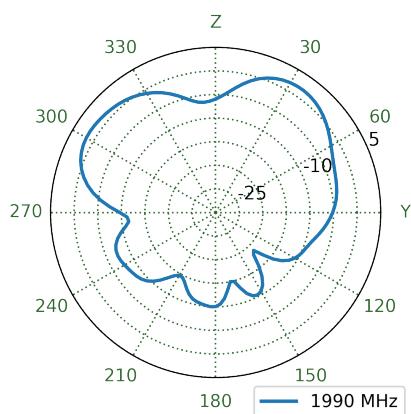
## 8.56 4G-5G 5 Patterns at 1990 MHz



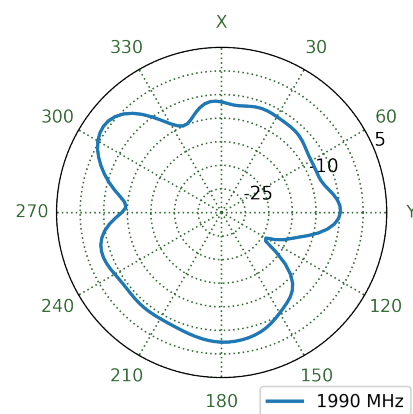
XZ Plane



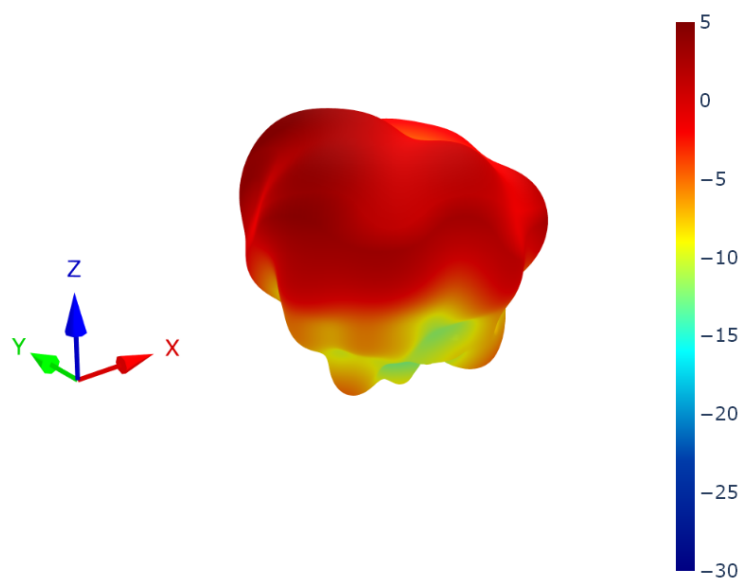
YZ Plane



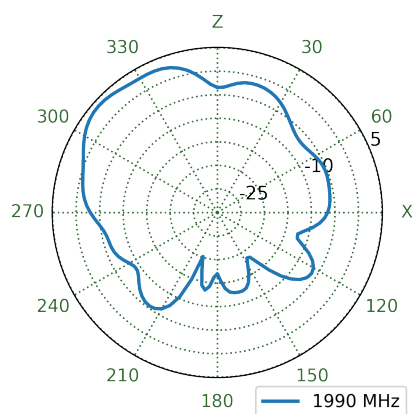
XY Plane



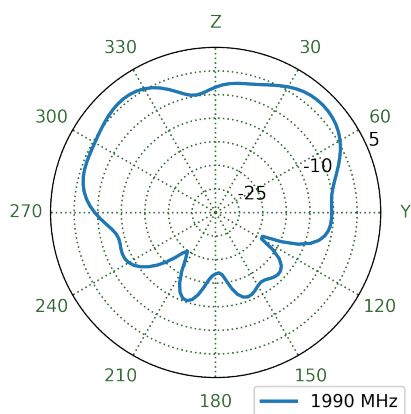
# 8.57 4G-5G 6 Patterns at 1990 MHz



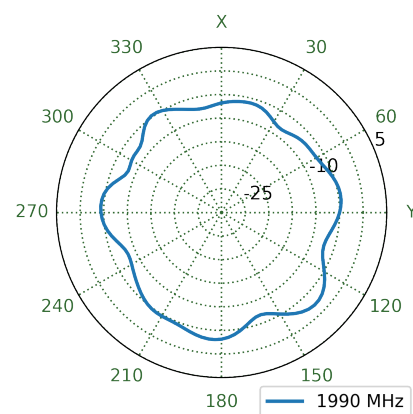
XZ Plane



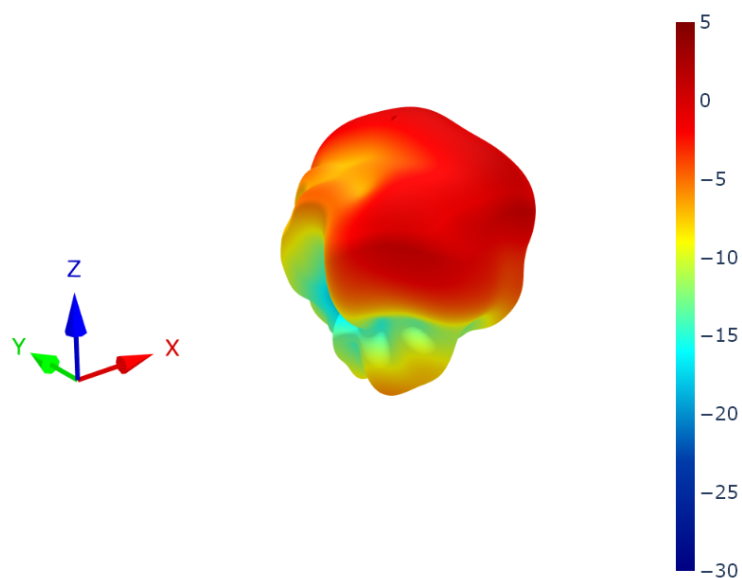
YZ Plane



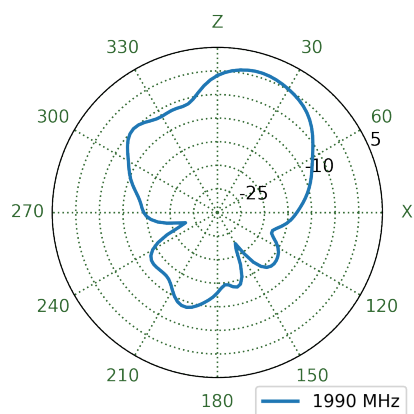
XY Plane



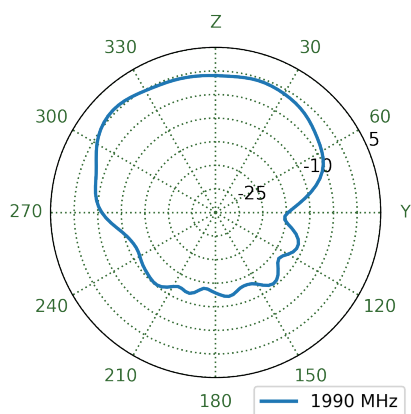
## 8.58 4G-5G 7 Patterns at 1990 MHz



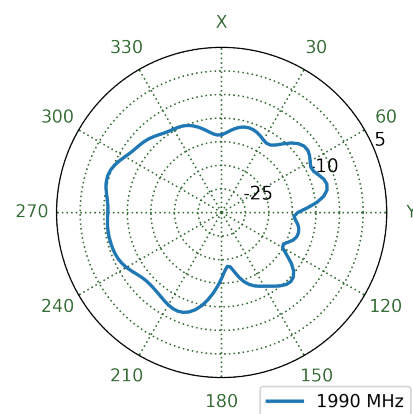
XZ Plane



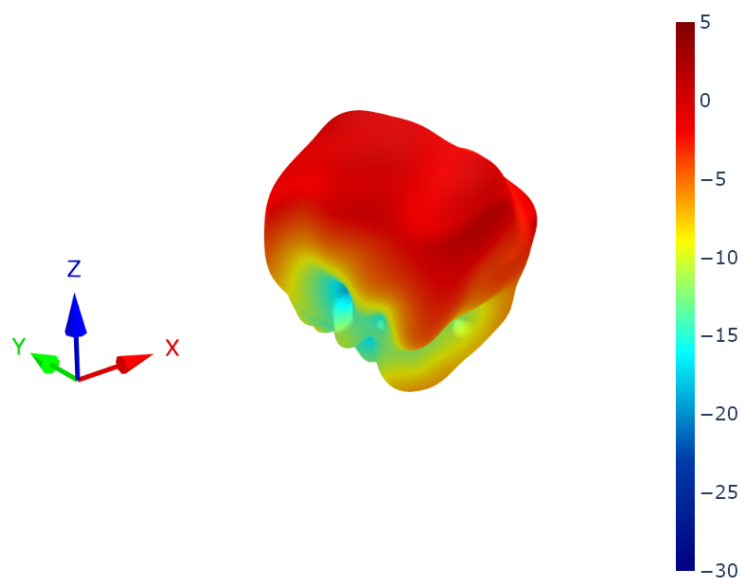
YZ Plane



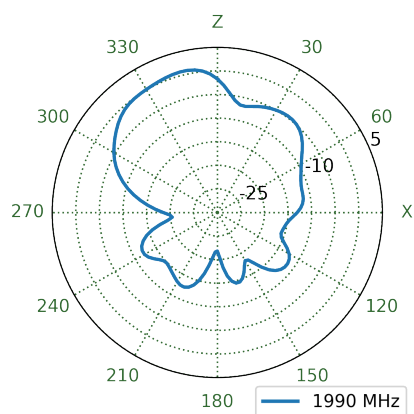
XY Plane



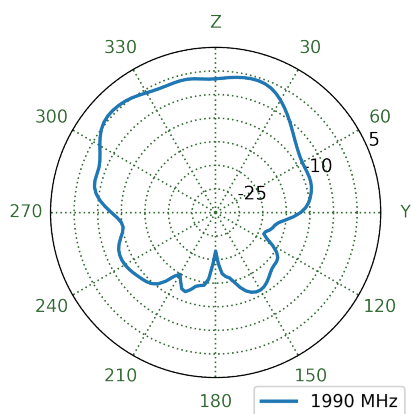
## 8.59 4G-5G 8 Patterns at 1990 MHz



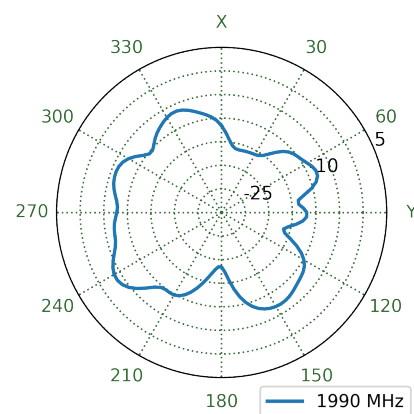
XZ Plane



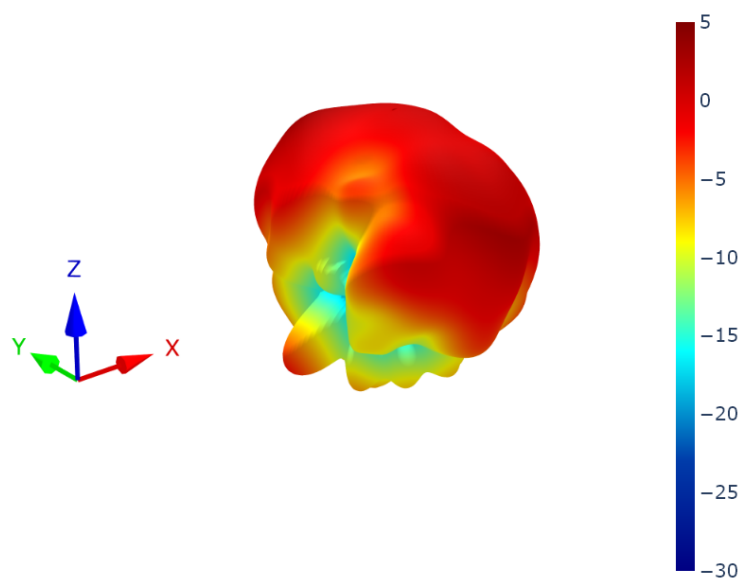
YZ Plane



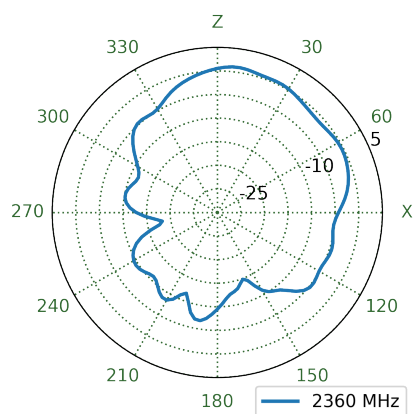
XY Plane



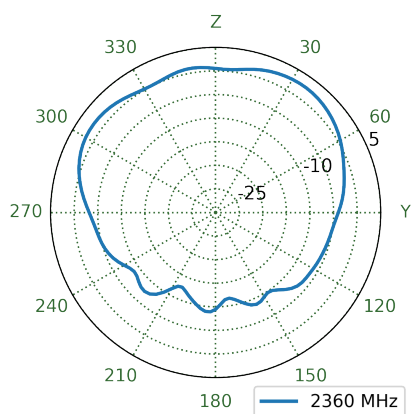
## 8.60 4G-5G 1 Patterns at 2360 MHz



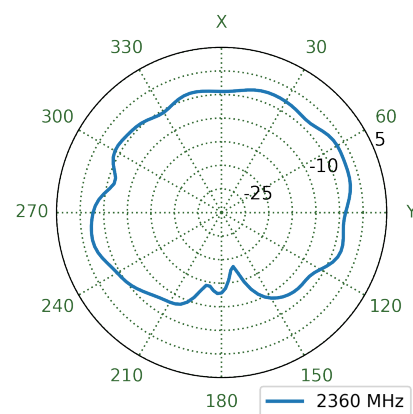
XZ Plane



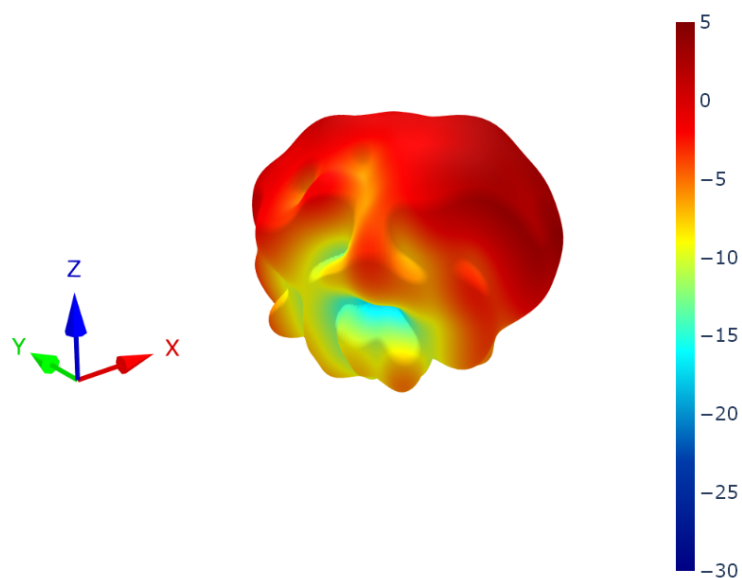
YZ Plane



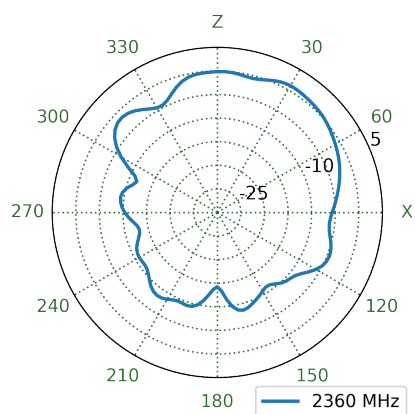
XY Plane



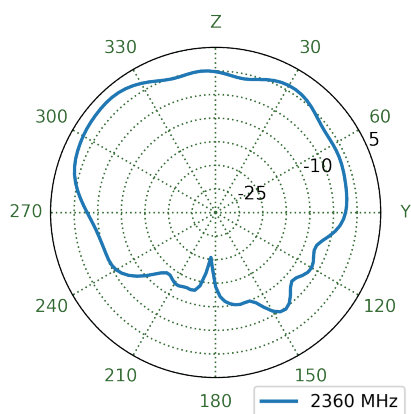
## 8.61 4G-5G 2 Patterns at 2360 MHz



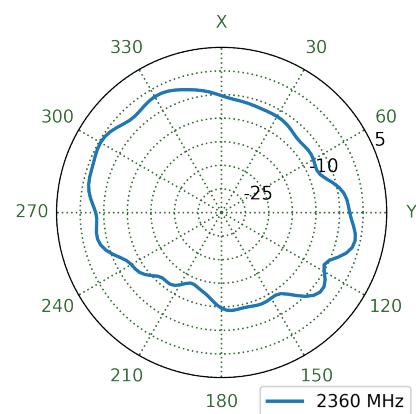
XZ Plane



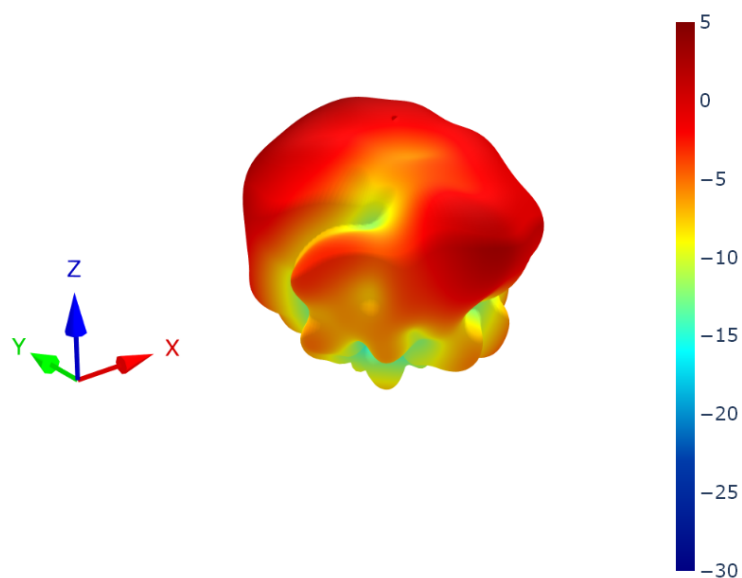
YZ Plane



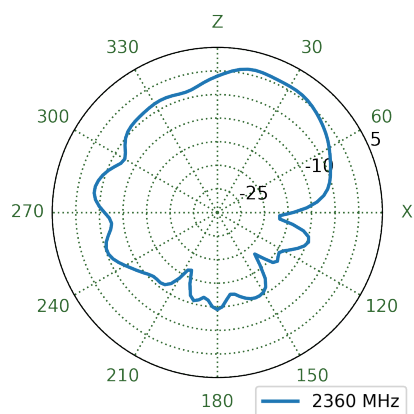
XY Plane



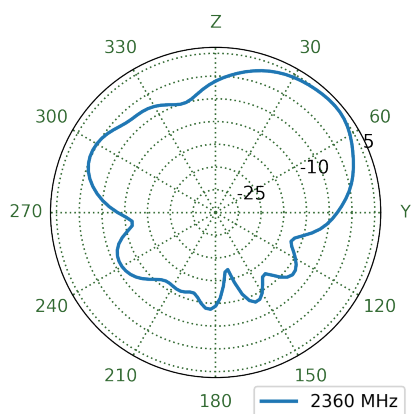
## 8.62 4G-5G 3 Patterns at 2360 MHz



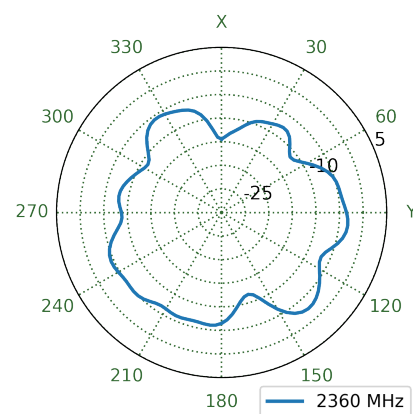
XZ Plane



YZ Plane

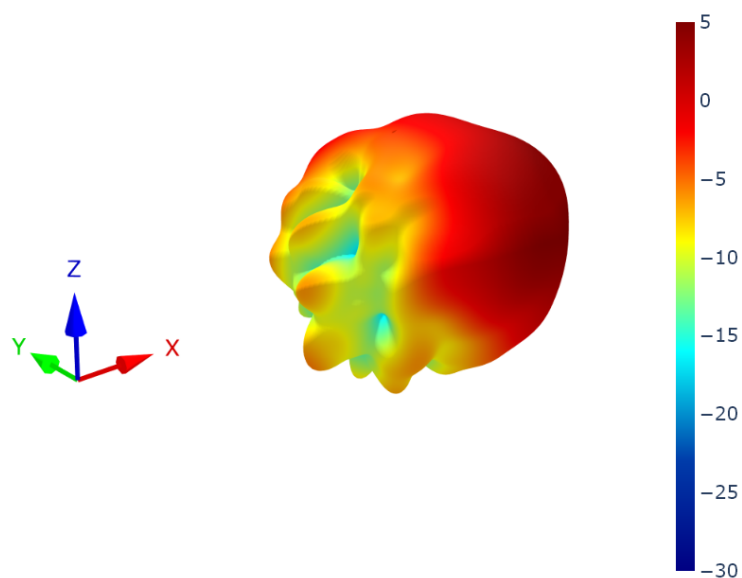


XY Plane

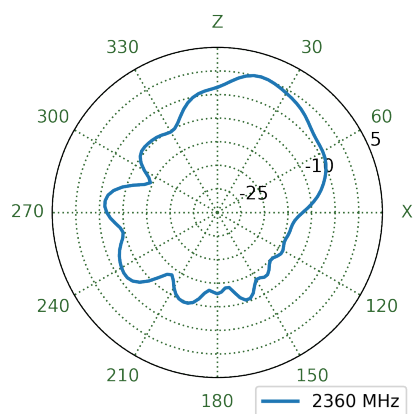




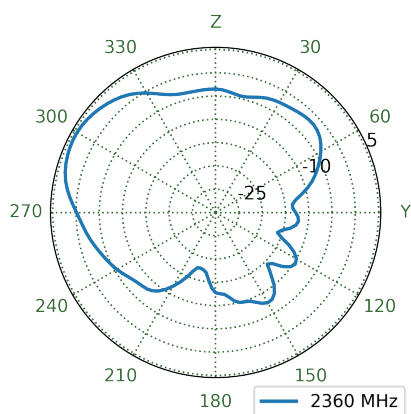
# 8.63 4G-5G 4 Patterns at 2360 MHz



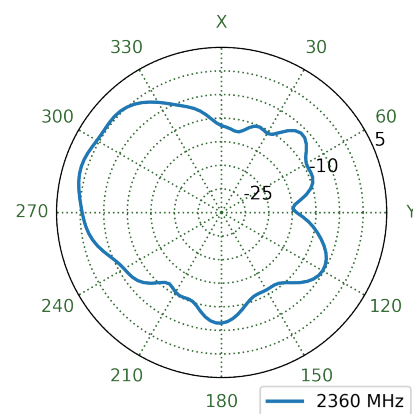
XZ Plane



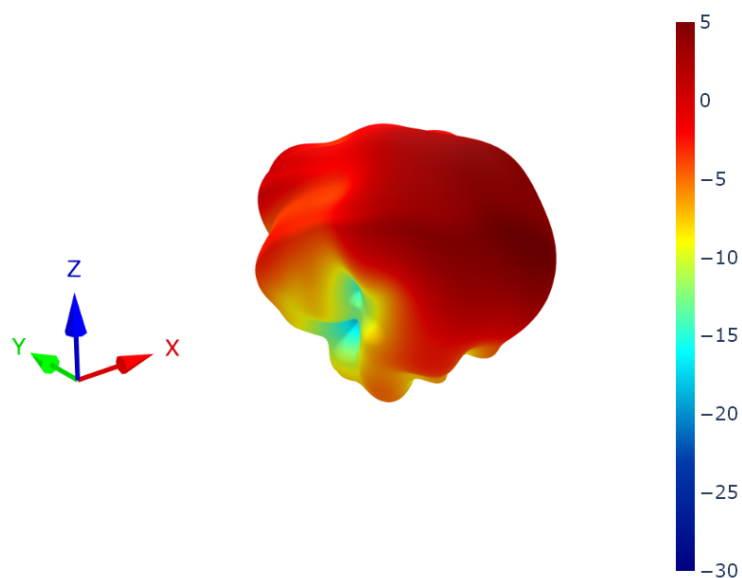
YZ Plane



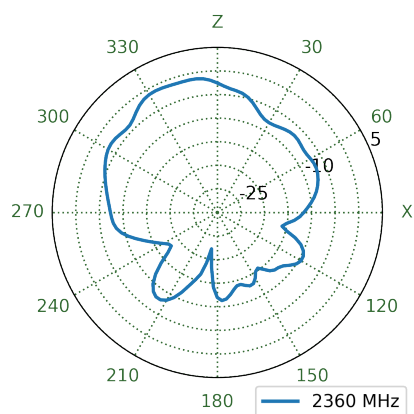
XY Plane



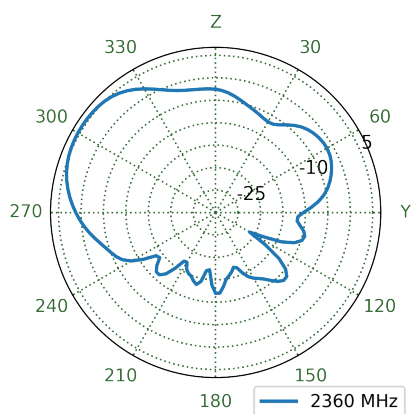
## 8.64 4G-5G 5 Patterns at 2360 MHz



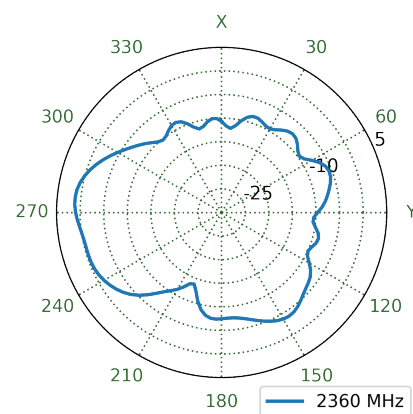
XZ Plane



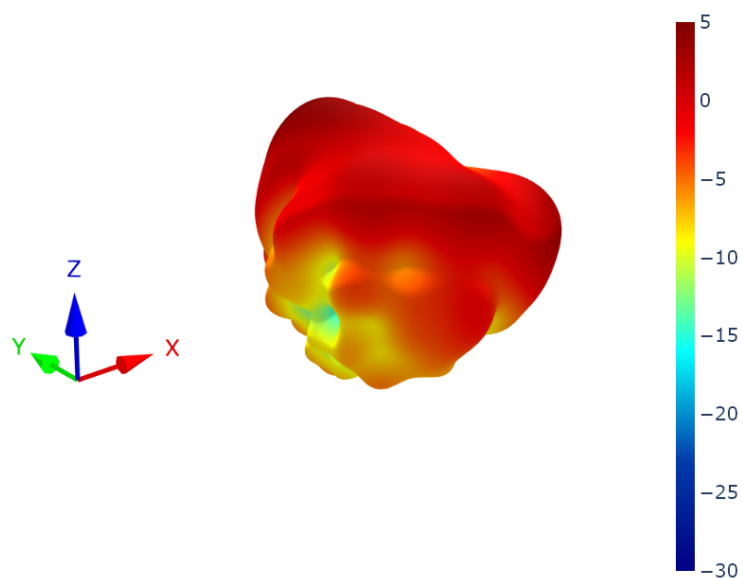
YZ Plane



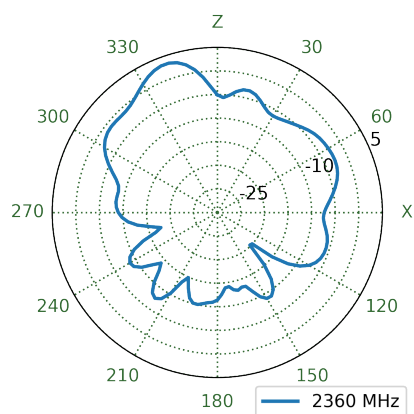
XY Plane



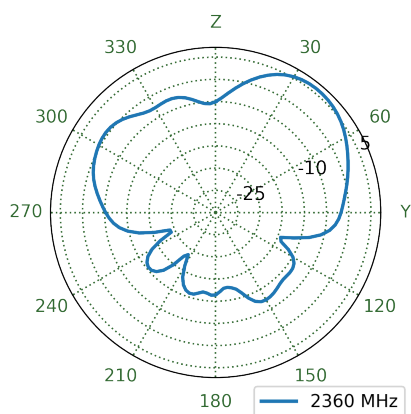
## 8.65 4G-5G 6 Patterns at 2360 MHz



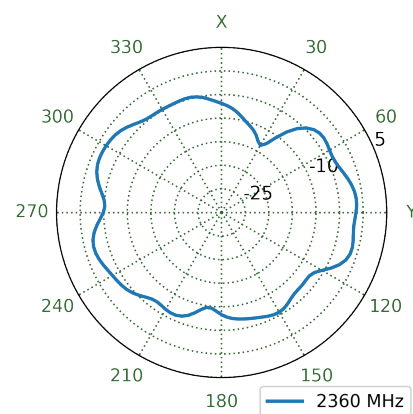
XZ Plane



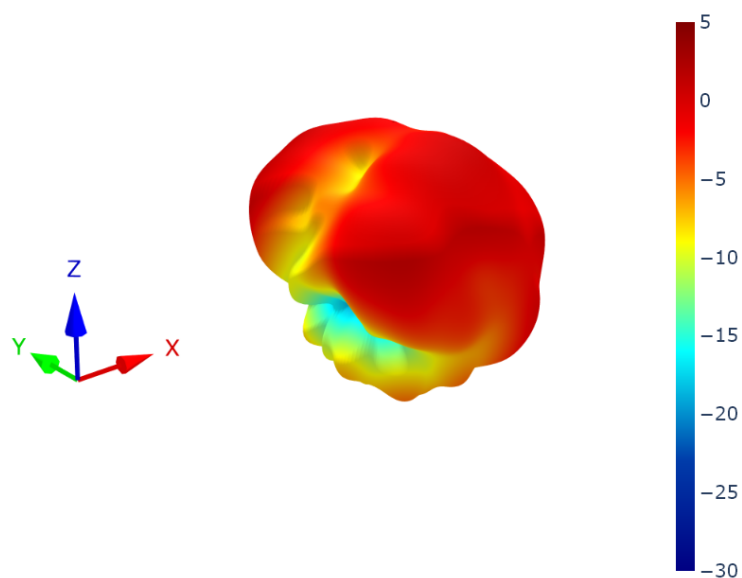
YZ Plane



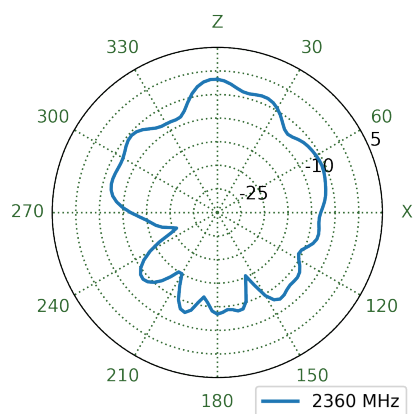
XY Plane



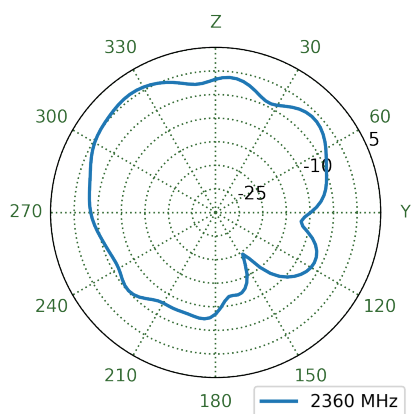
## 8.66 4G-5G 7 Patterns at 2360 MHz



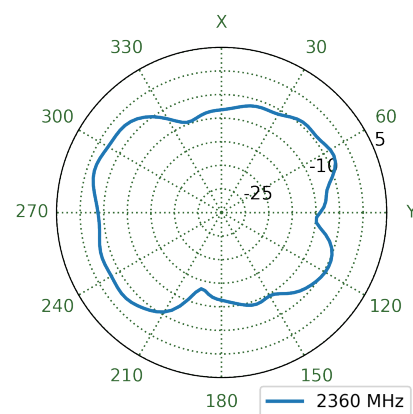
XZ Plane



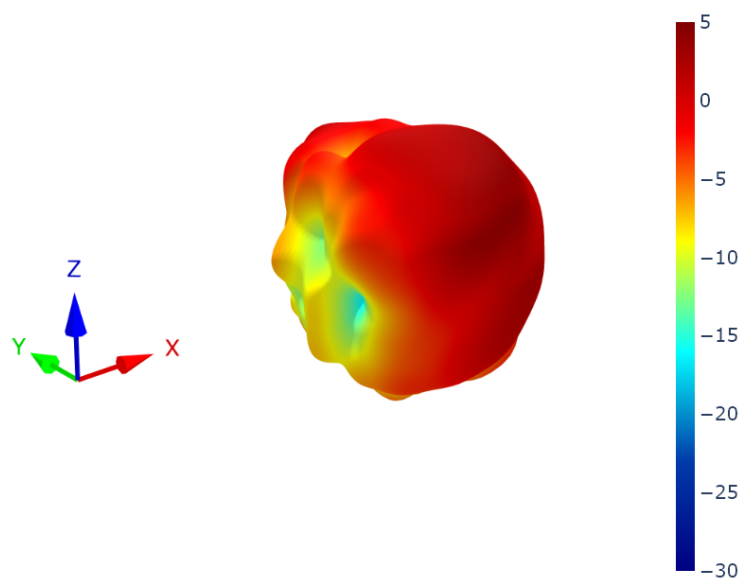
YZ Plane



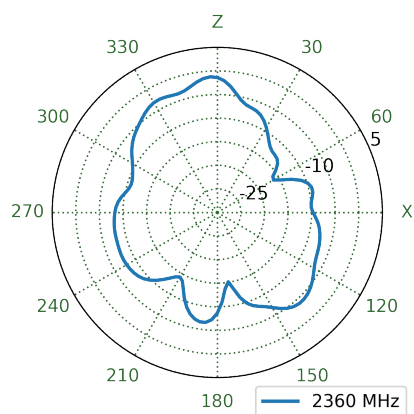
XY Plane



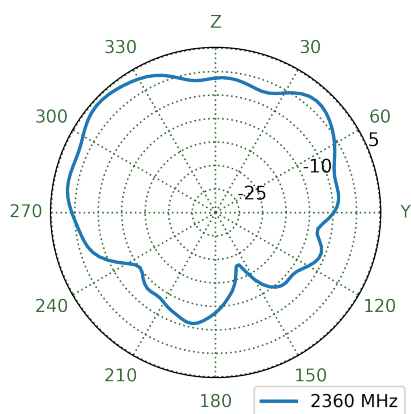
## 8.67 4G-5G 8 Patterns at 2360 MHz



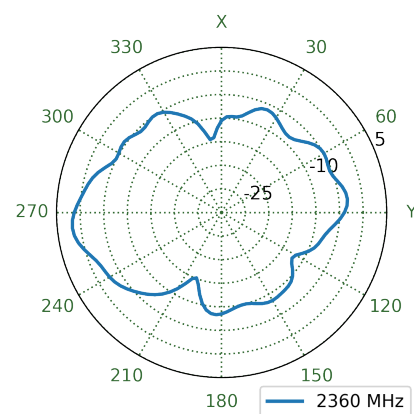
XZ Plane



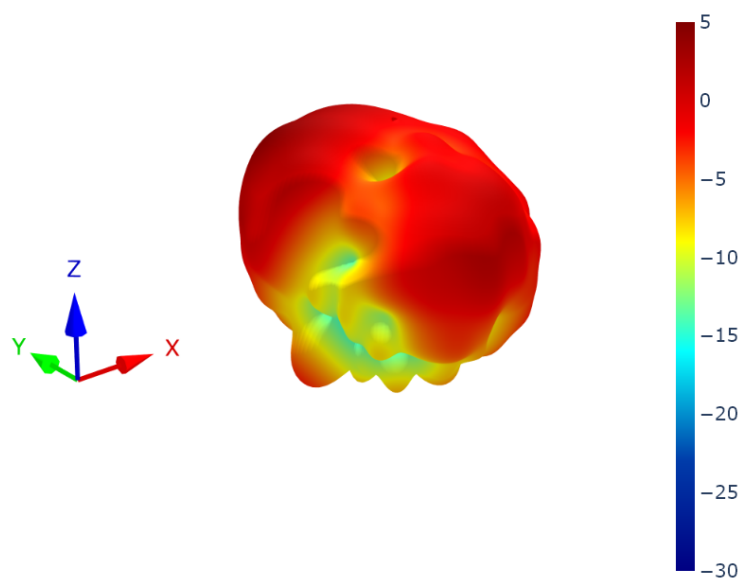
YZ Plane



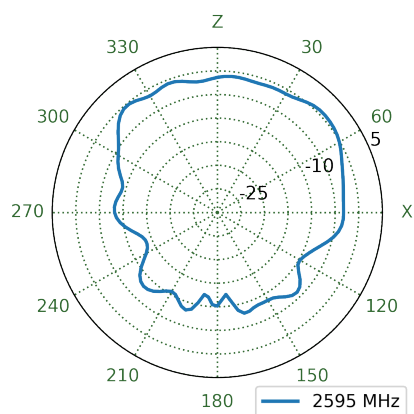
XY Plane



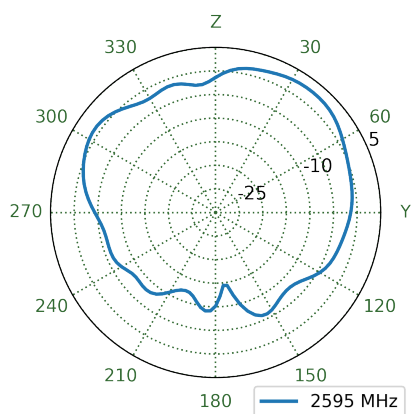
## 8.68 4G-5G 1 Patterns at 2595 MHz



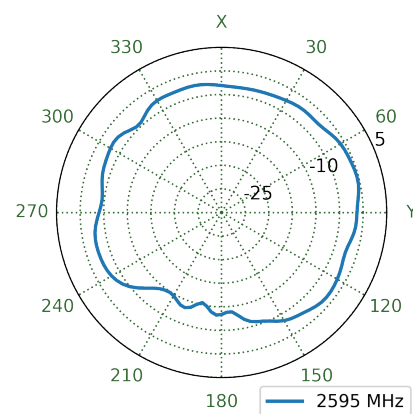
XZ Plane



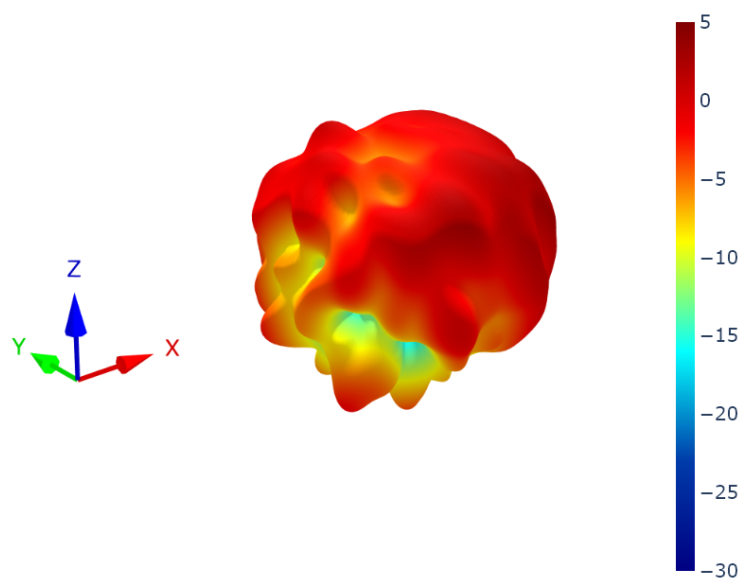
YZ Plane



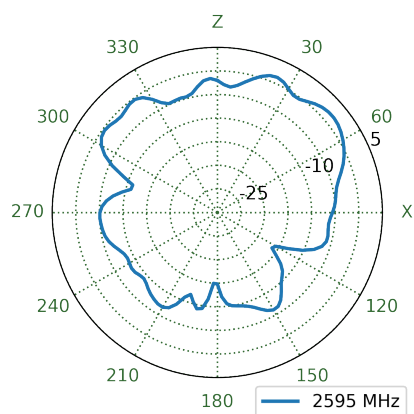
XY Plane



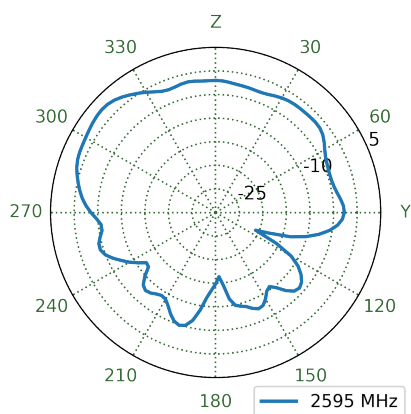
## 8.69 4G-5G 2 Patterns at 2595 MHz



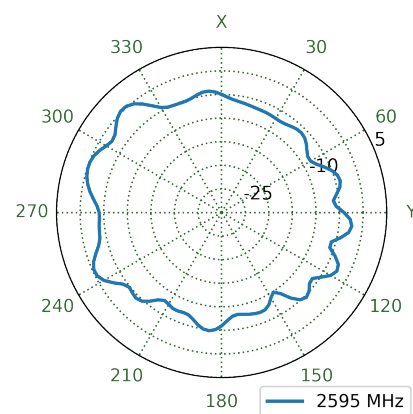
XZ Plane



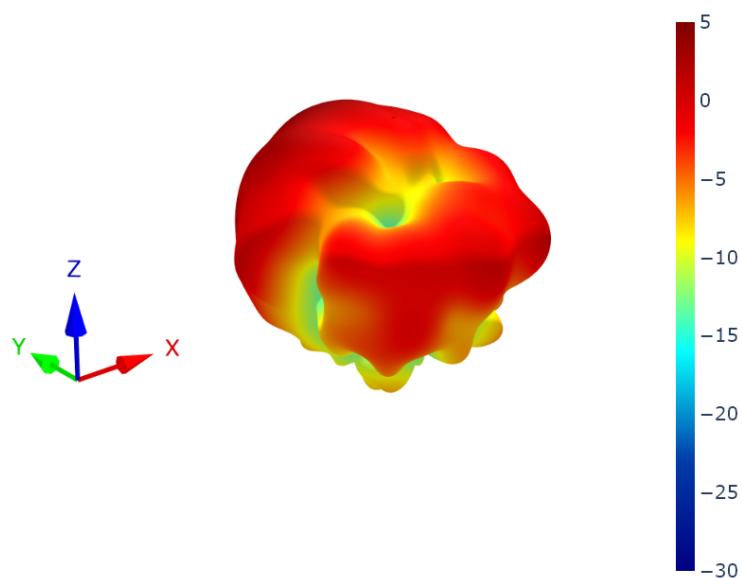
YZ Plane



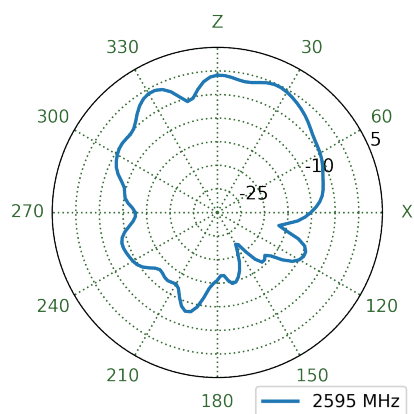
XY Plane



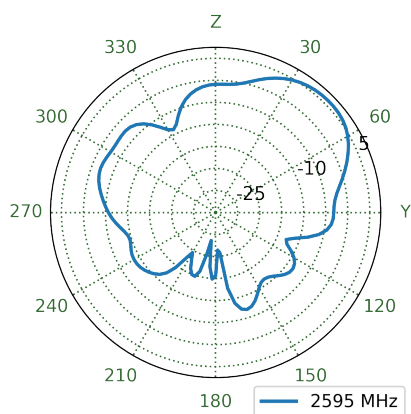
## 8.70 4G-5G 3 Patterns at 2595 MHz



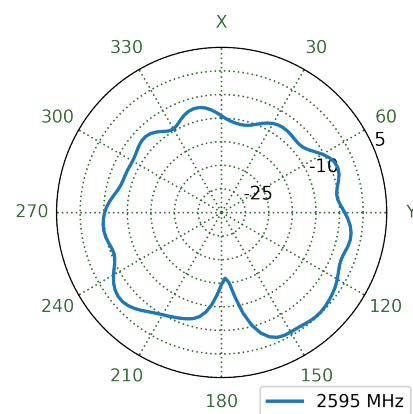
XZ Plane



YZ Plane

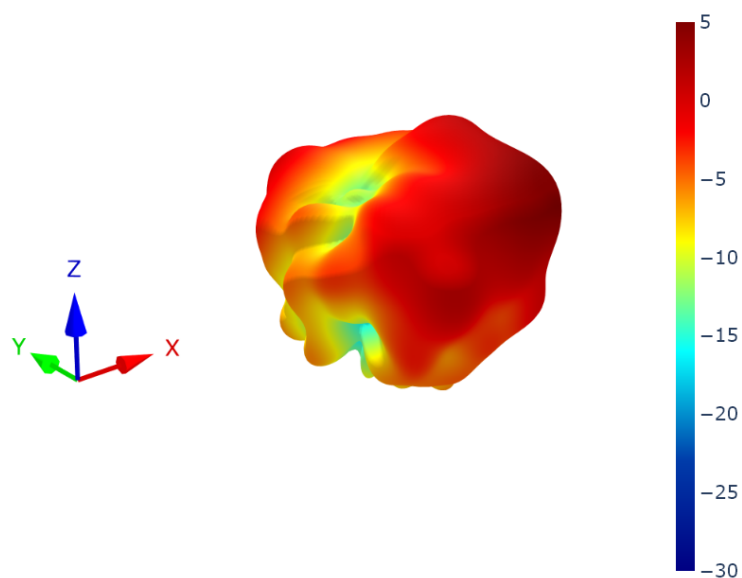


XY Plane

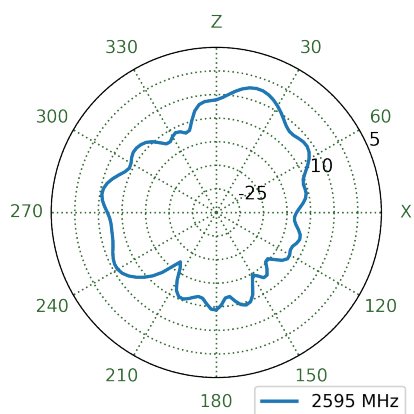




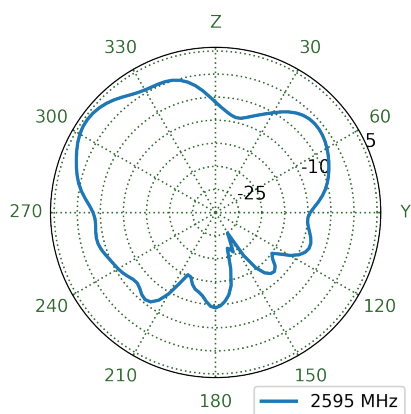
# 8.71 4G-5G 4 Patterns at 2595 MHz



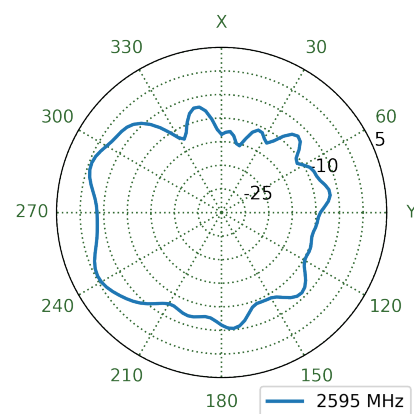
XZ Plane



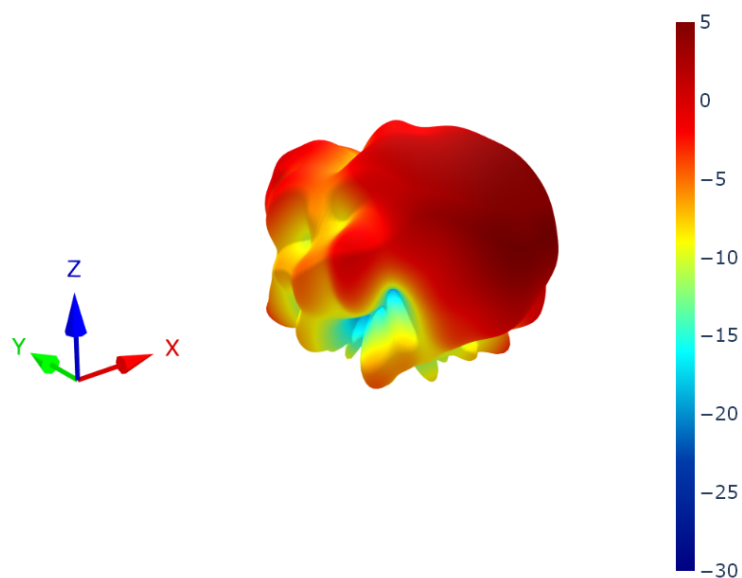
YZ Plane



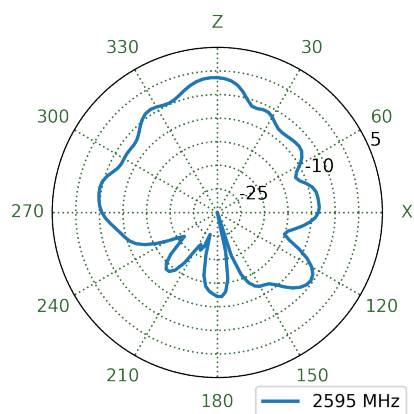
XY Plane



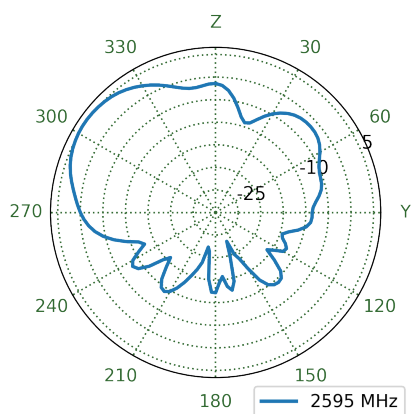
## 8.72 4G-5G 5 Patterns at 2595 MHz



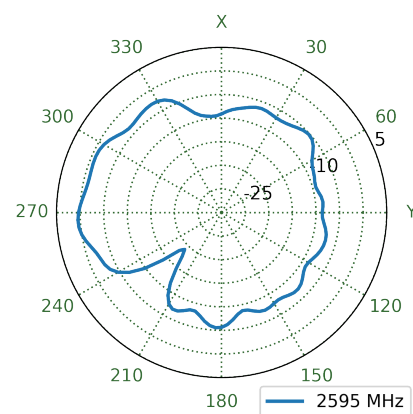
XZ Plane



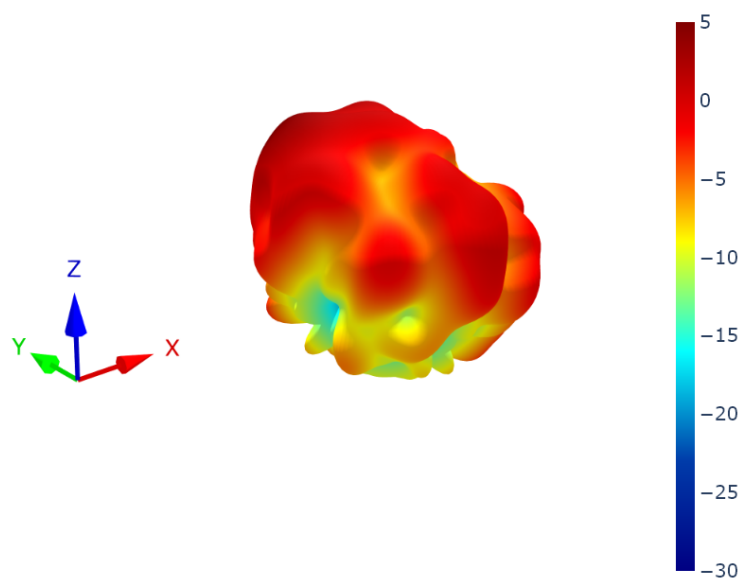
YZ Plane



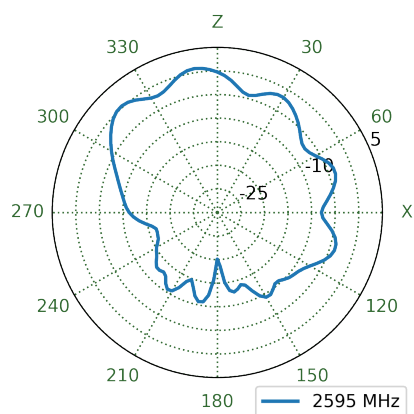
XY Plane



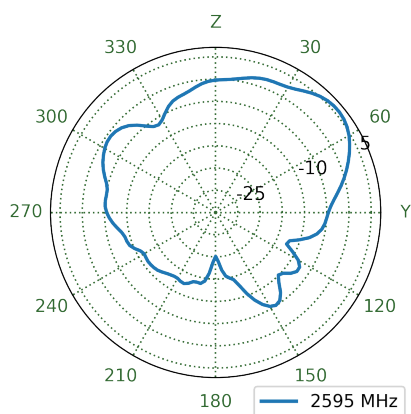
## 8.73 4G-5G 6 Patterns at 2595 MHz



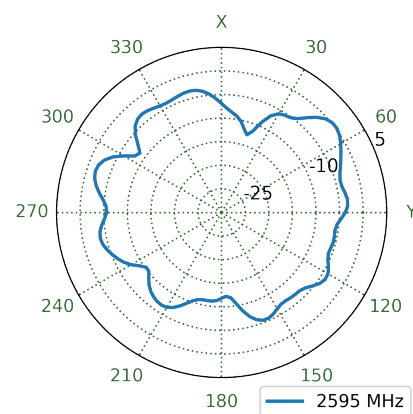
XZ Plane



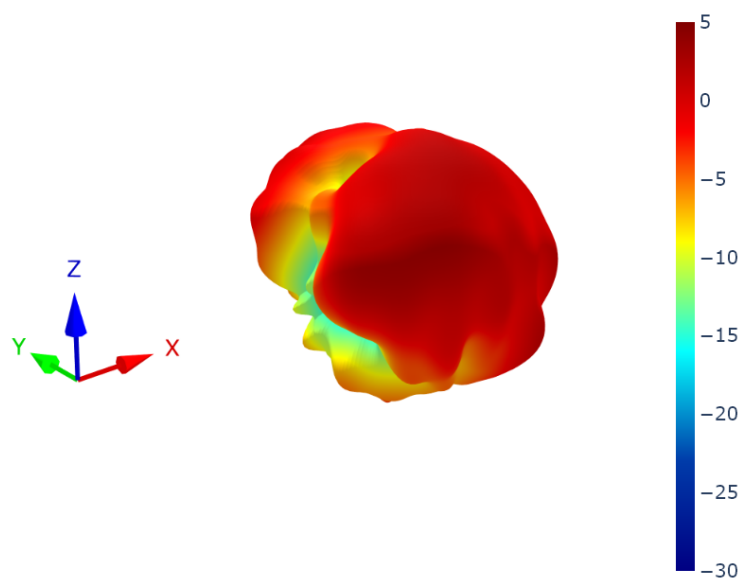
YZ Plane



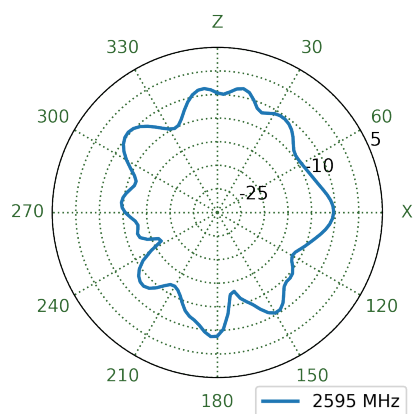
XY Plane



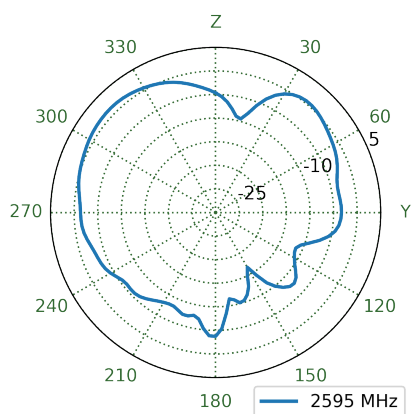
# 8.74 4G-5G 7 Patterns at 2595 MHz



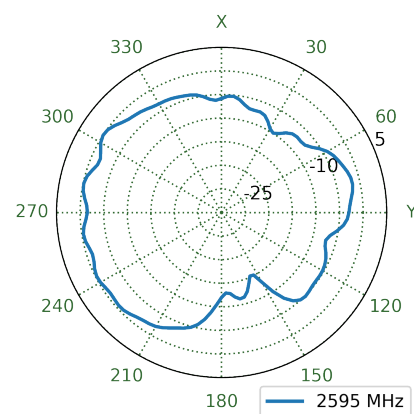
XZ Plane



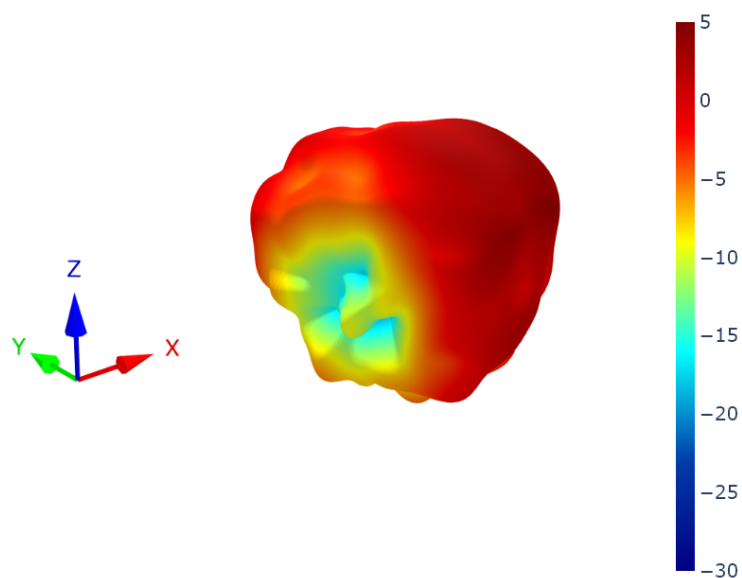
YZ Plane



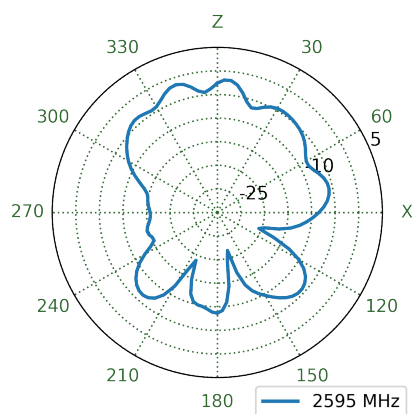
XY Plane



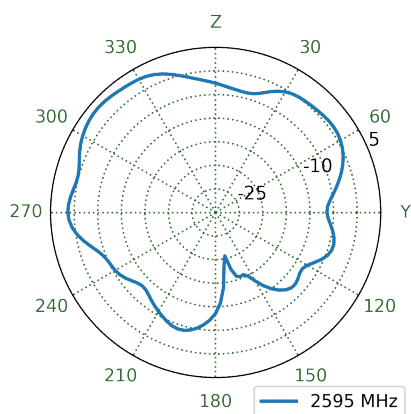
## 8.75 4G-5G 8 Patterns at 2595 MHz



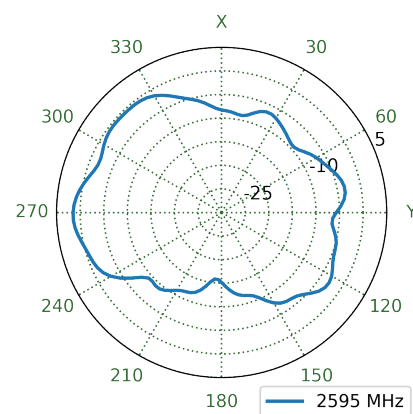
XZ Plane



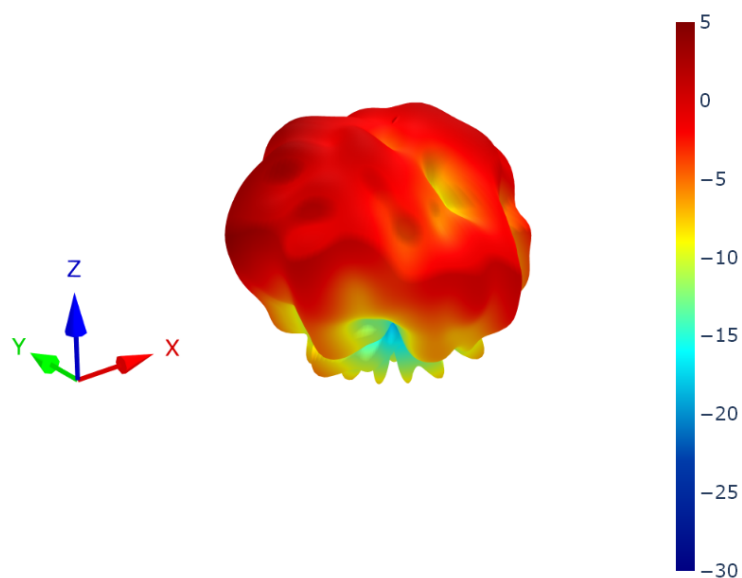
YZ Plane



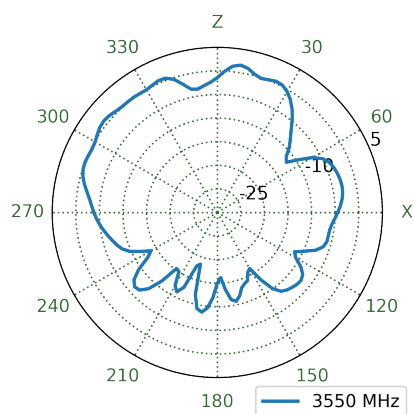
XY Plane



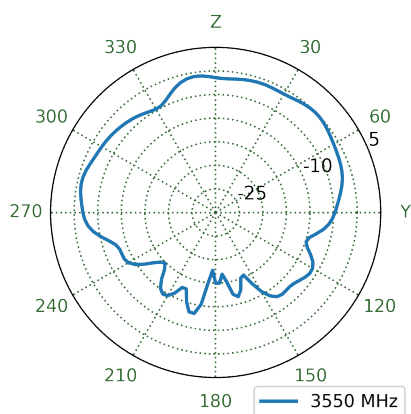
## 8.76 4G-5G 1 Patterns at 3550 MHz



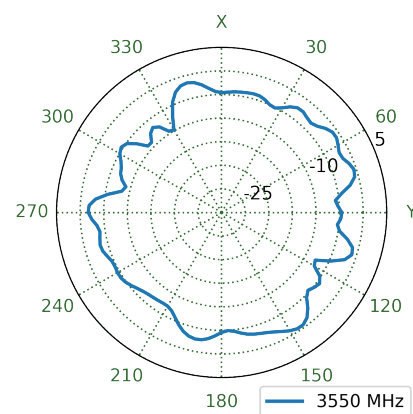
XZ Plane



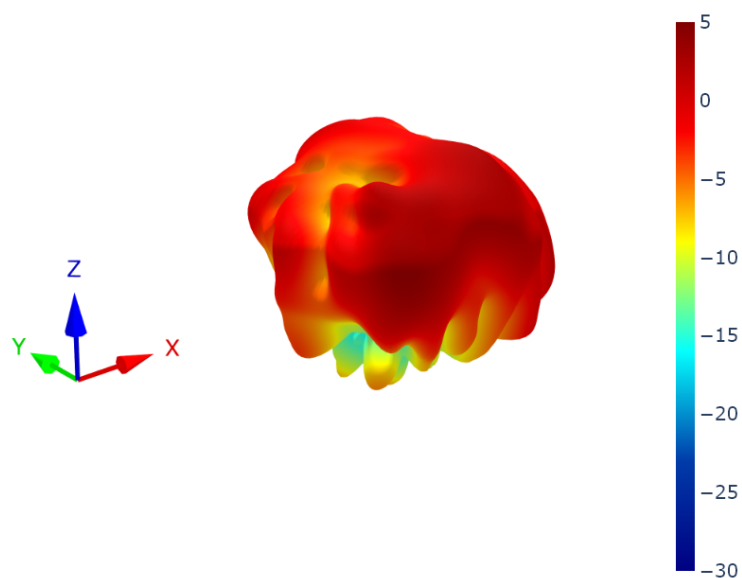
YZ Plane



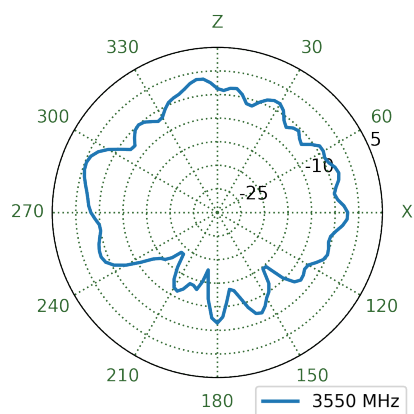
XY Plane



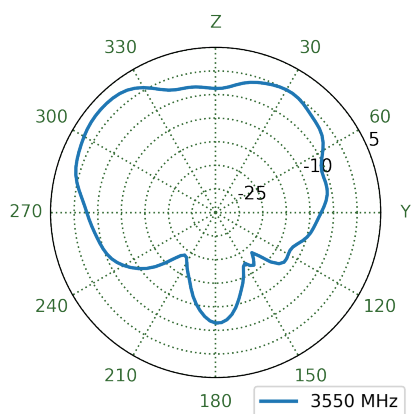
## 8.77 4G-5G 2 Patterns at 3550 MHz



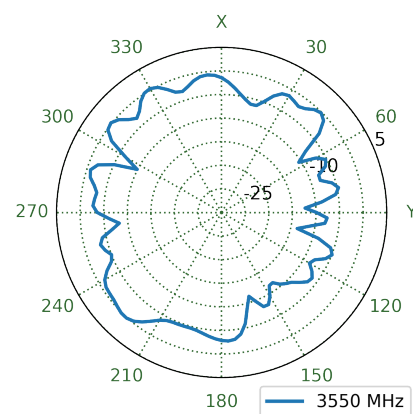
XZ Plane



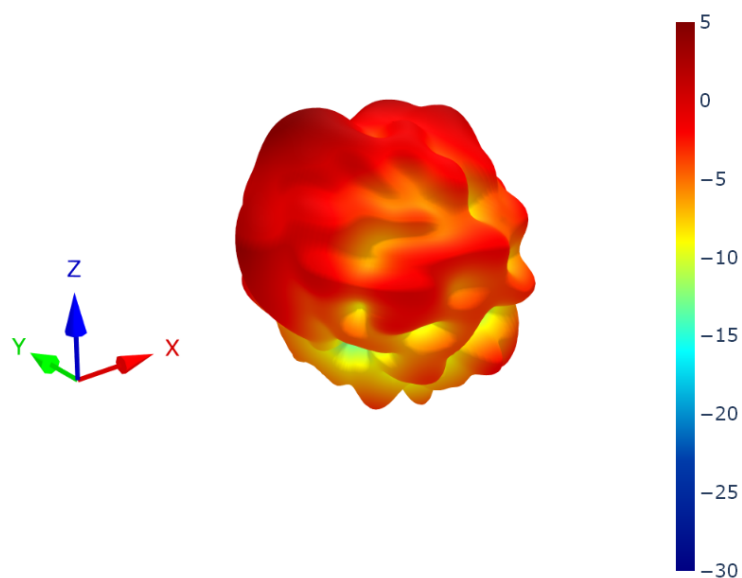
YZ Plane



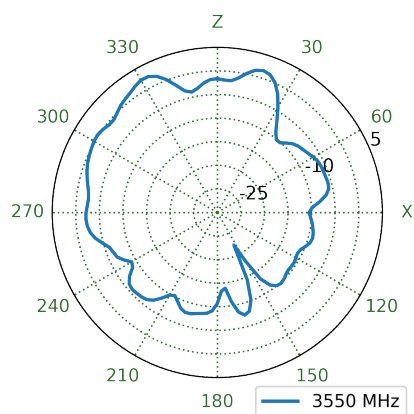
XY Plane



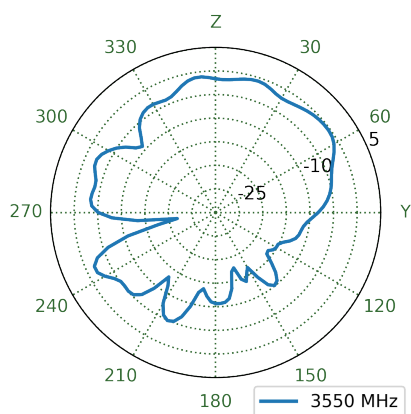
## 8.78 4G-5G 3 Patterns at 3550 MHz



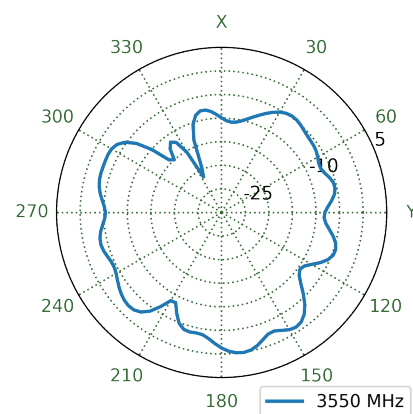
XZ Plane



YZ Plane

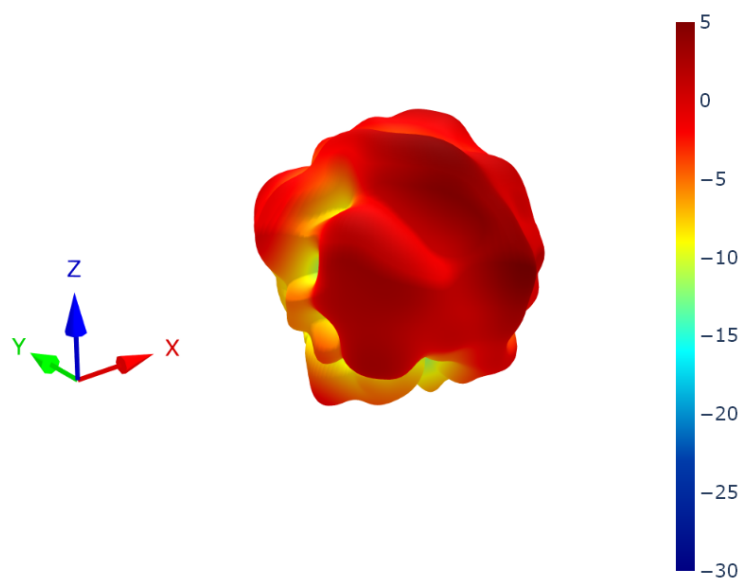


XY Plane

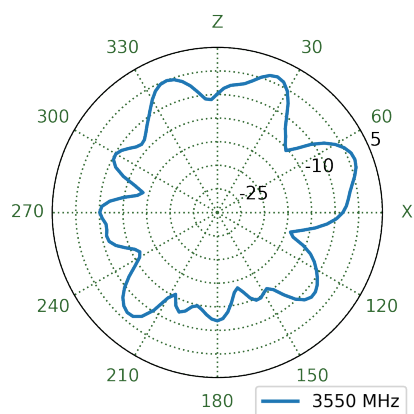




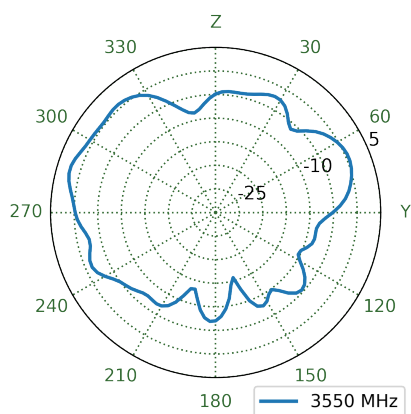
## 8.79 4G-5G 4 Patterns at 3550 MHz



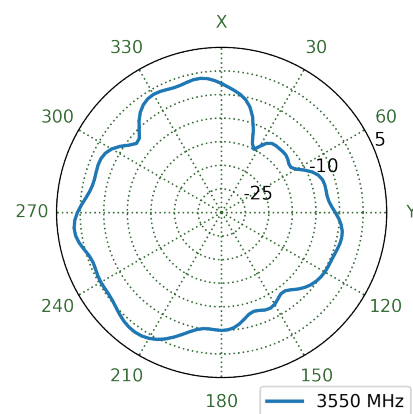
XZ Plane



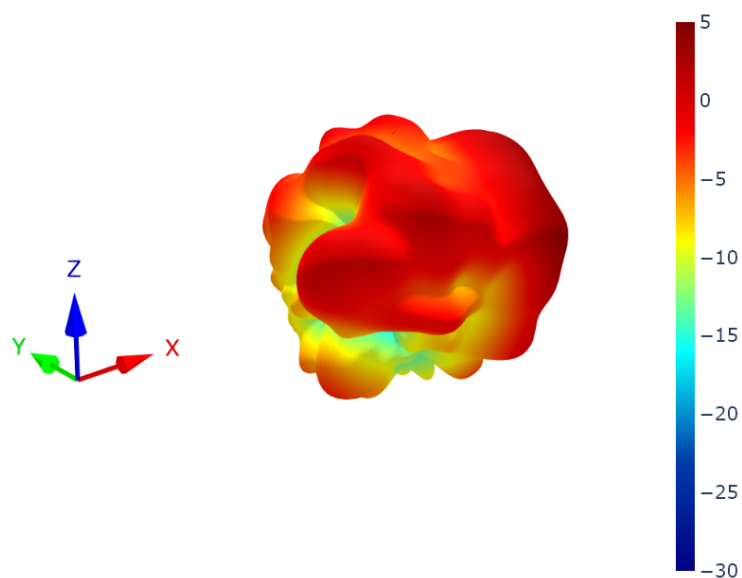
YZ Plane



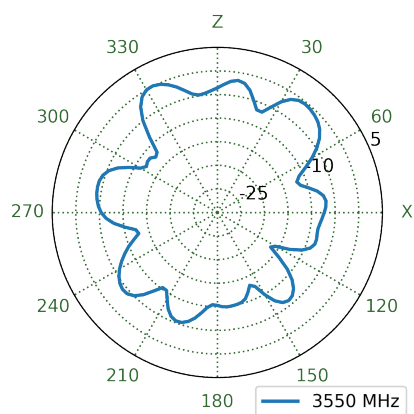
XY Plane



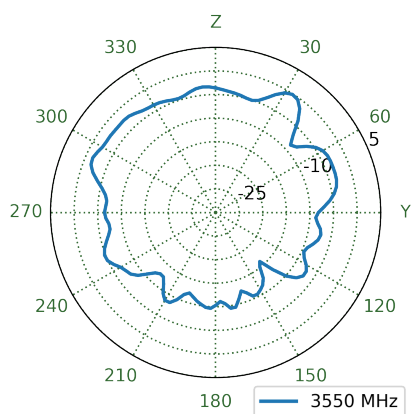
## 8.80 4G-5G 5 Patterns at 3550 MHz



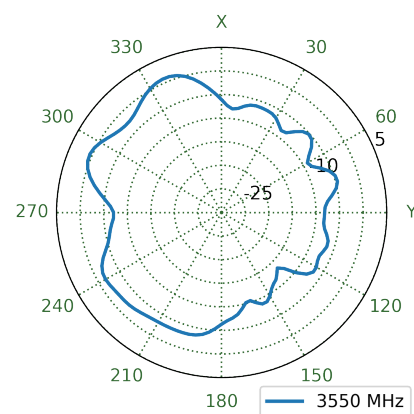
XZ Plane



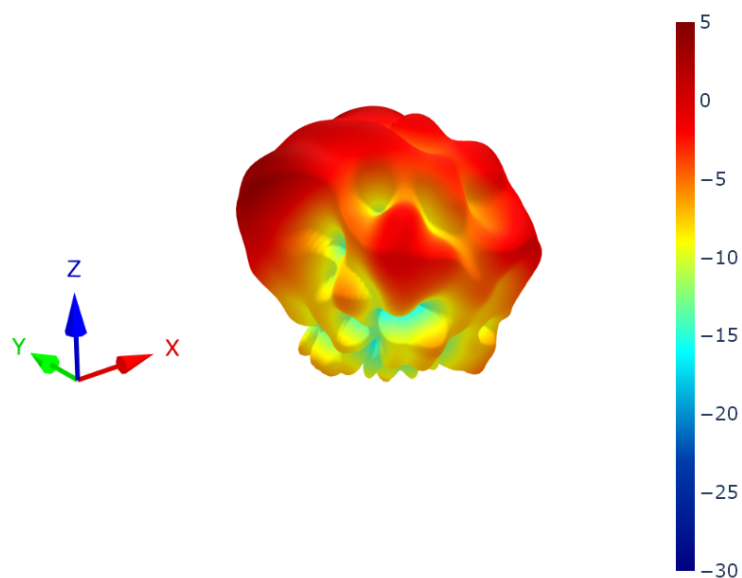
YZ Plane



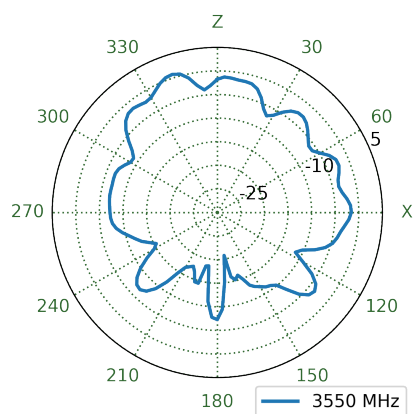
XY Plane



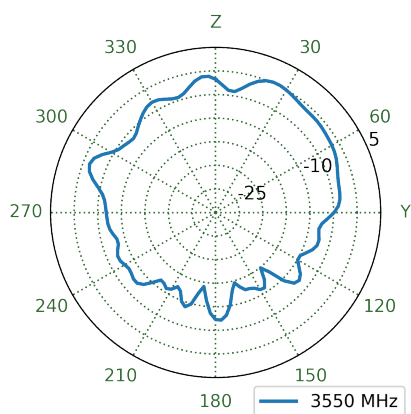
# 8.81 4G-5G 6 Patterns at 3550 MHz



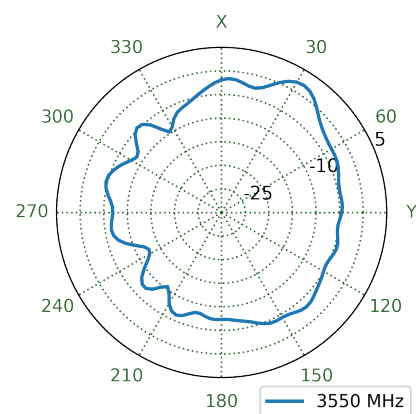
XZ Plane



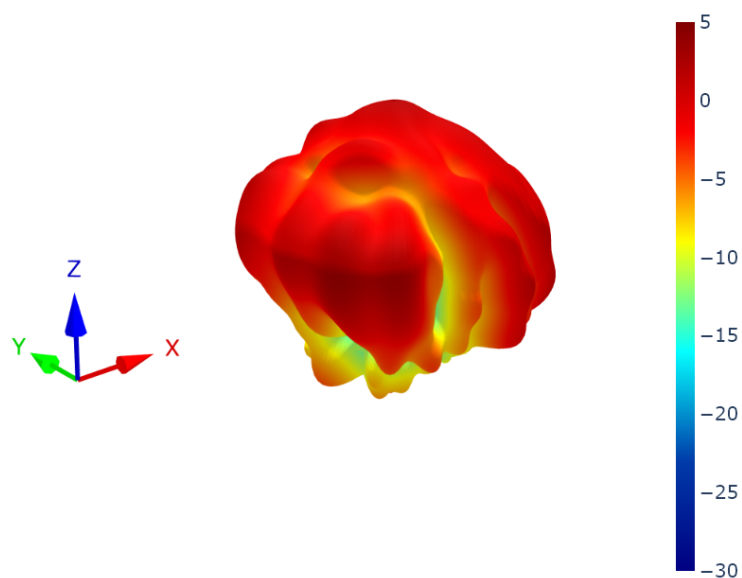
YZ Plane



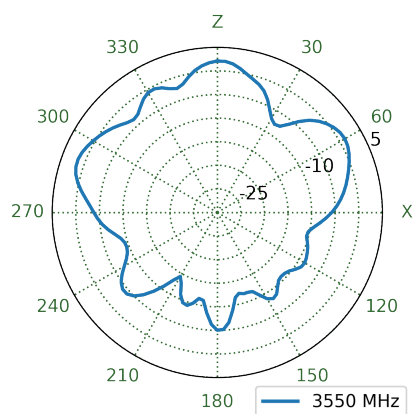
XY Plane



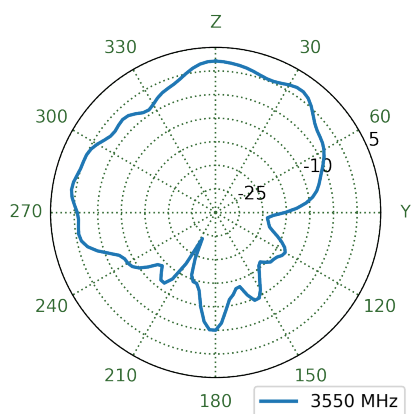
## 8.82 4G-5G 7 Patterns at 3550 MHz



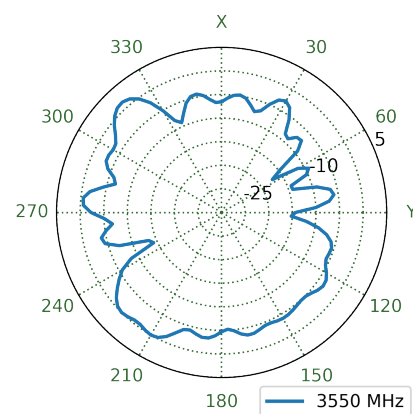
XZ Plane



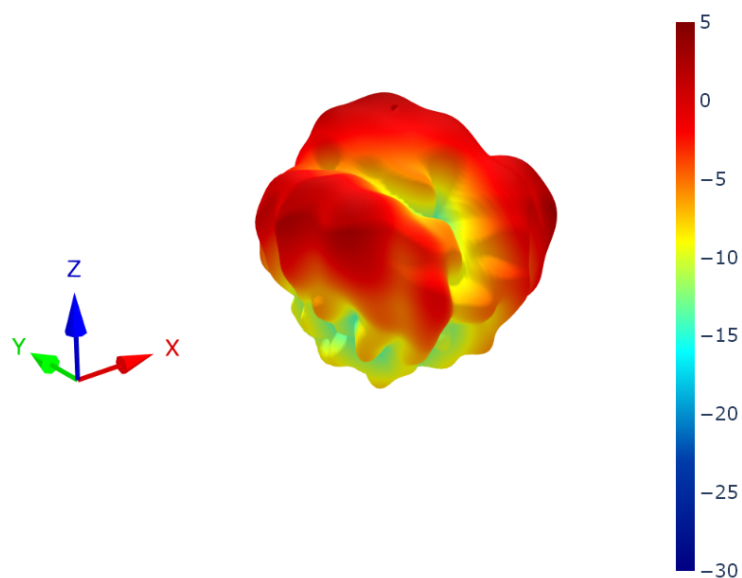
YZ Plane



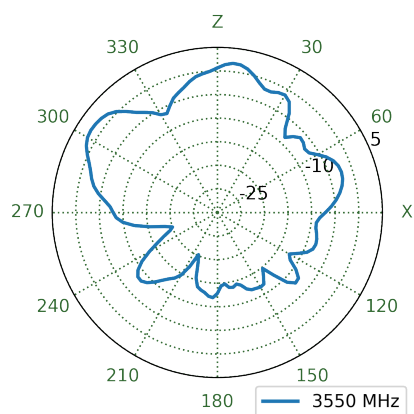
XY Plane



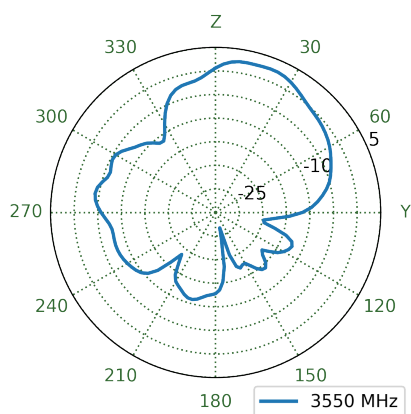
## 8.83 4G-5G 8 Patterns at 3550 MHz



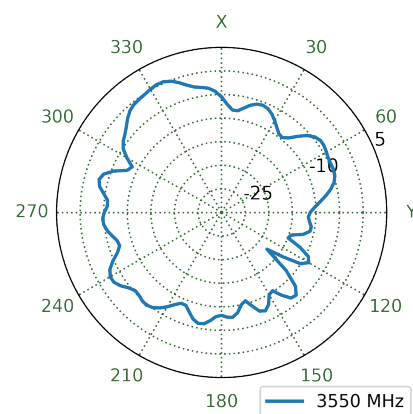
XZ Plane



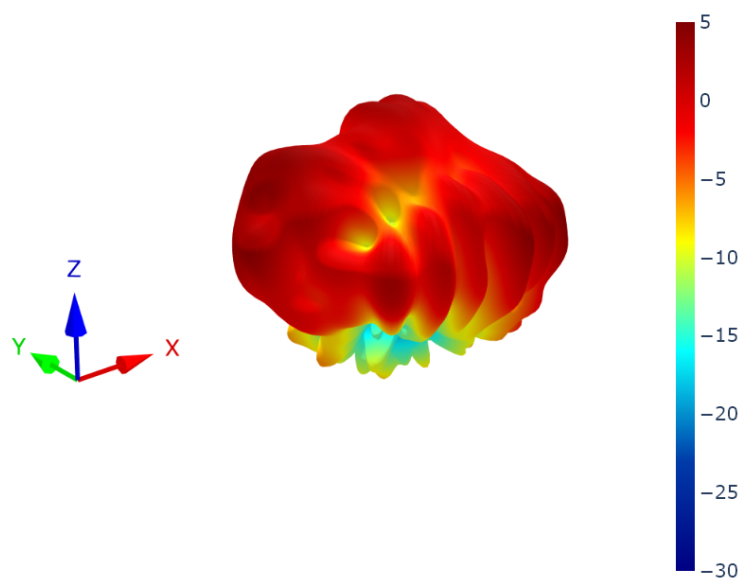
YZ Plane



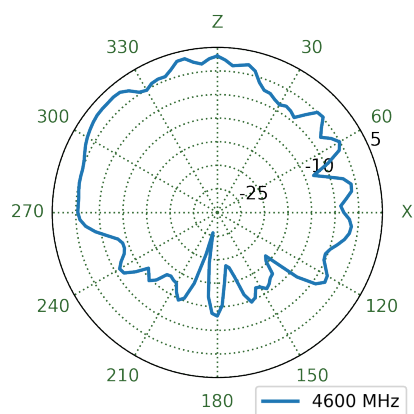
XY Plane



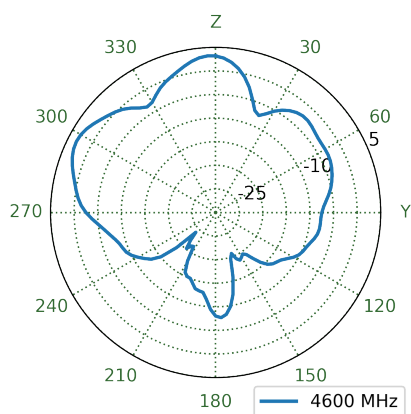
## 8.84 4G-5G 1 Patterns at 4600 MHz



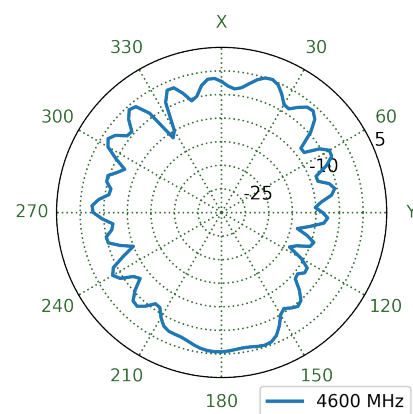
XZ Plane



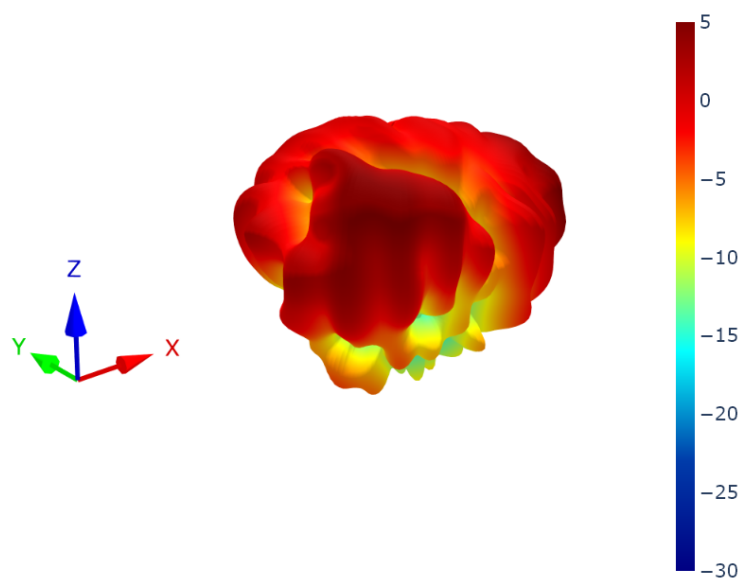
YZ Plane



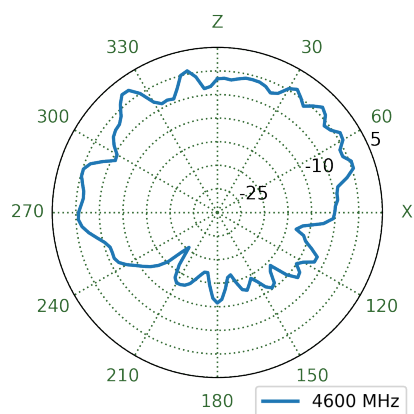
XY Plane



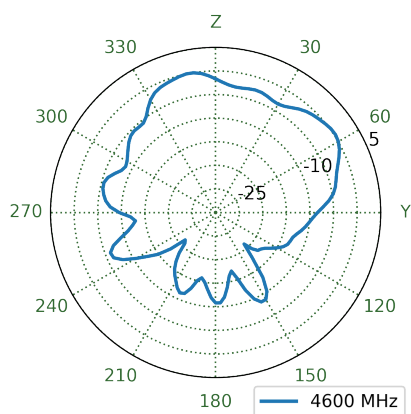
## 8.85 4G-5G 2 Patterns at 4600 MHz



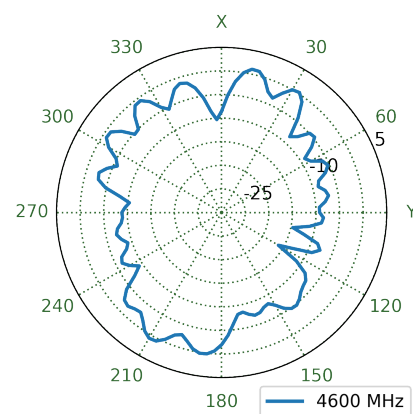
XZ Plane



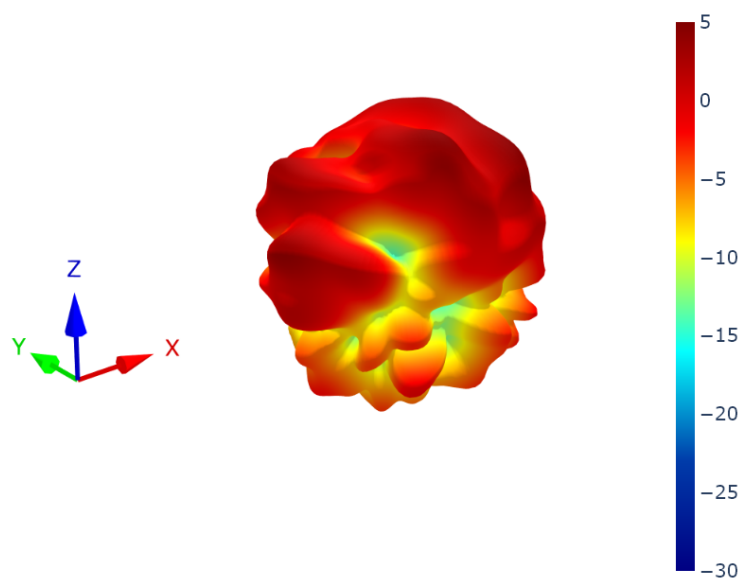
YZ Plane



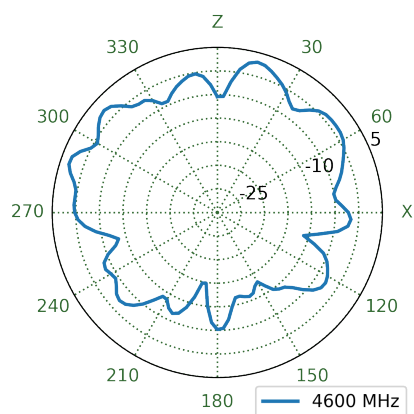
XY Plane



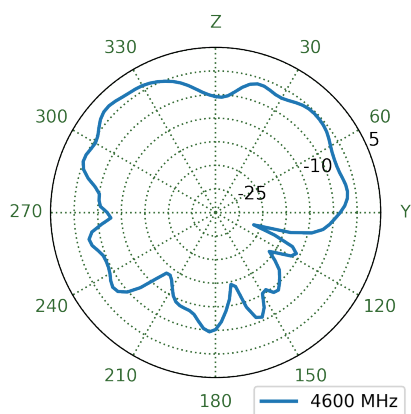
## 8.86 4G-5G 3 Patterns at 4600 MHz



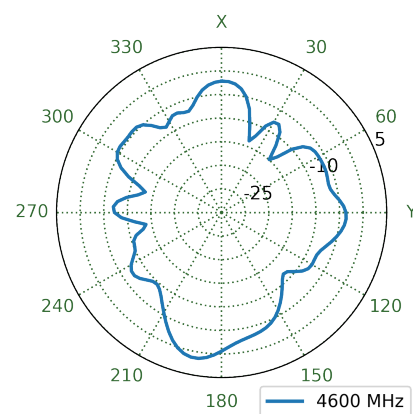
XZ Plane



YZ Plane

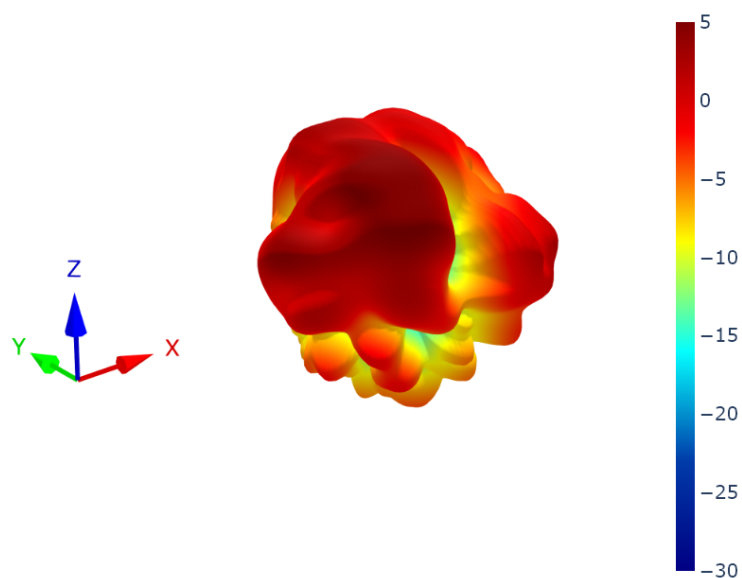


XY Plane

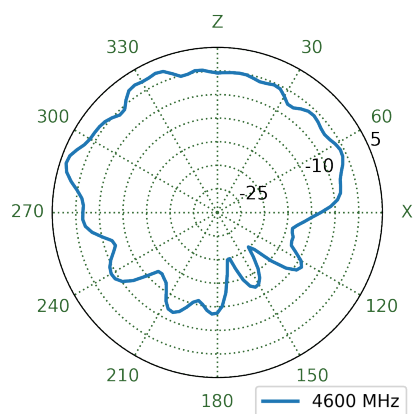




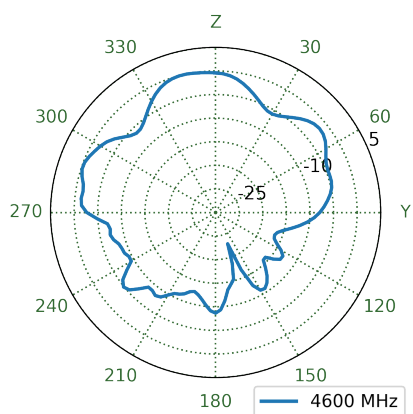
# 8.87 4G-5G 4 Patterns at 4600 MHz



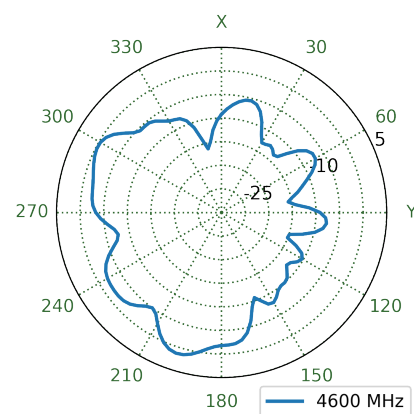
XZ Plane



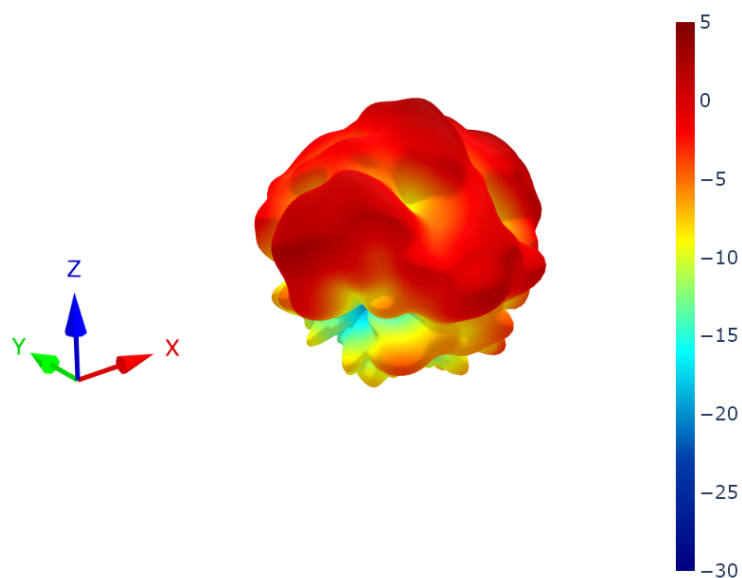
YZ Plane



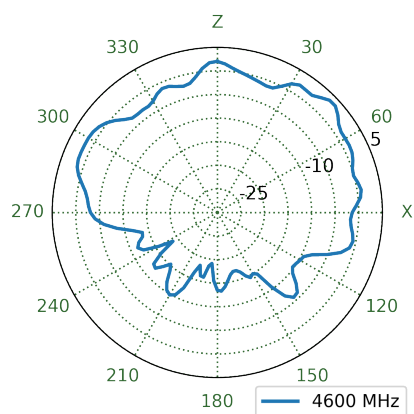
XY Plane



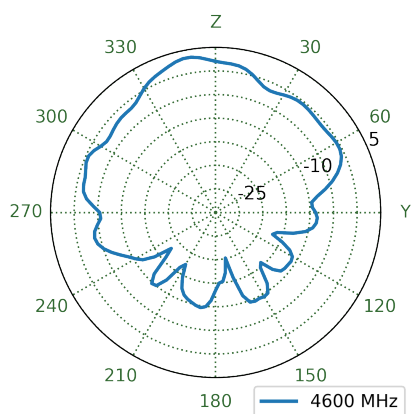
## 8.88 4G-5G 5 Patterns at 4600 MHz



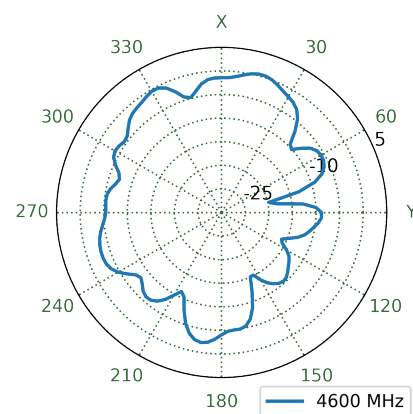
XZ Plane



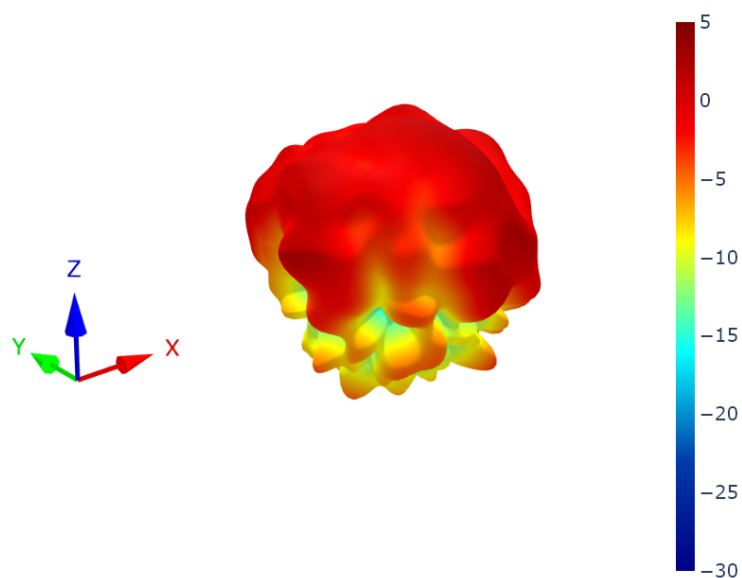
YZ Plane



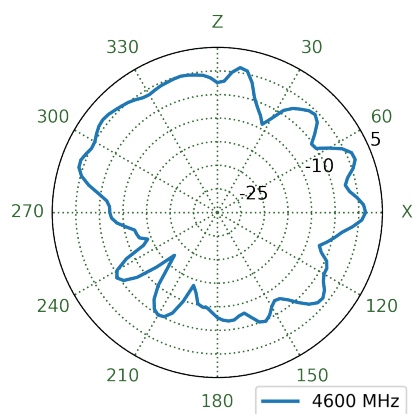
XY Plane



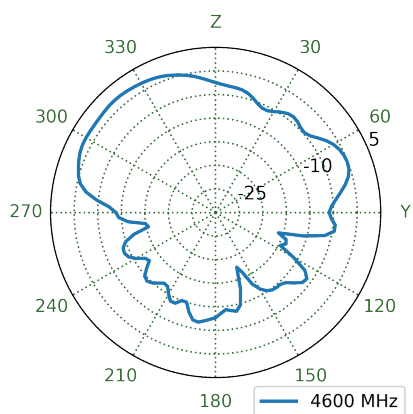
# 8.89 4G-5G 6 Patterns at 4600 MHz



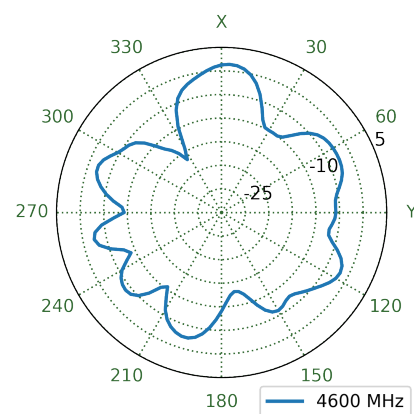
XZ Plane



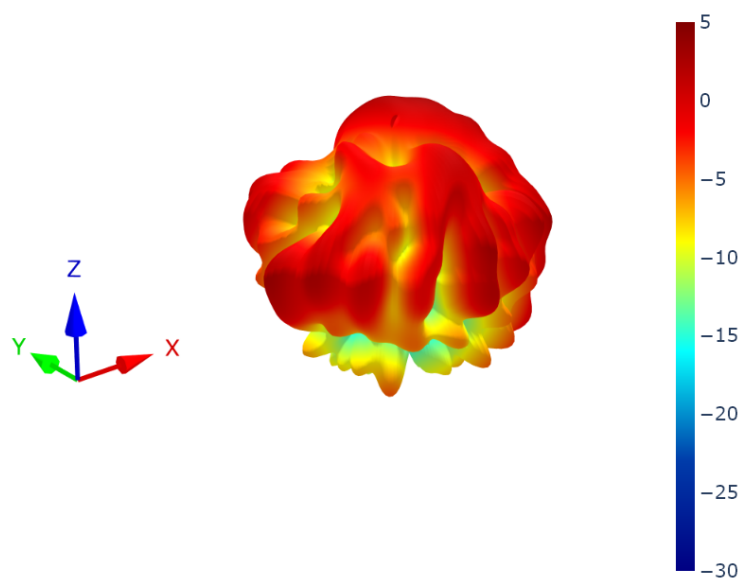
YZ Plane



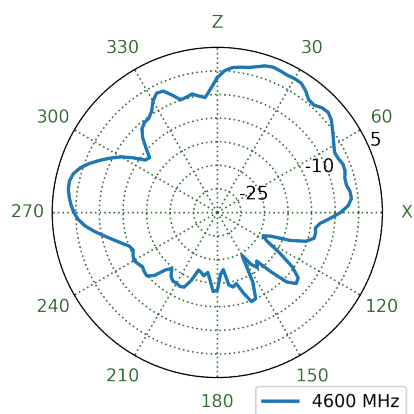
XY Plane



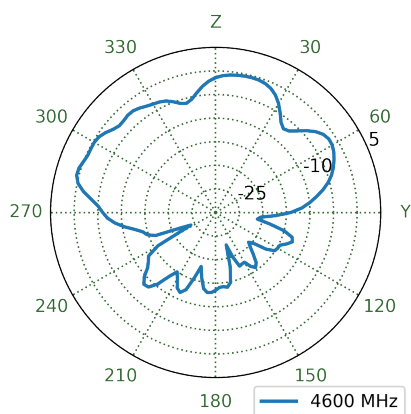
## 8.90 4G-5G 7 Patterns at 4600 MHz



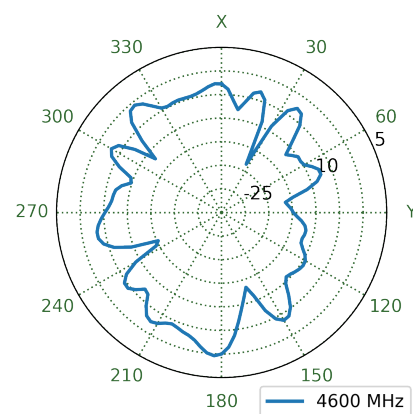
XZ Plane



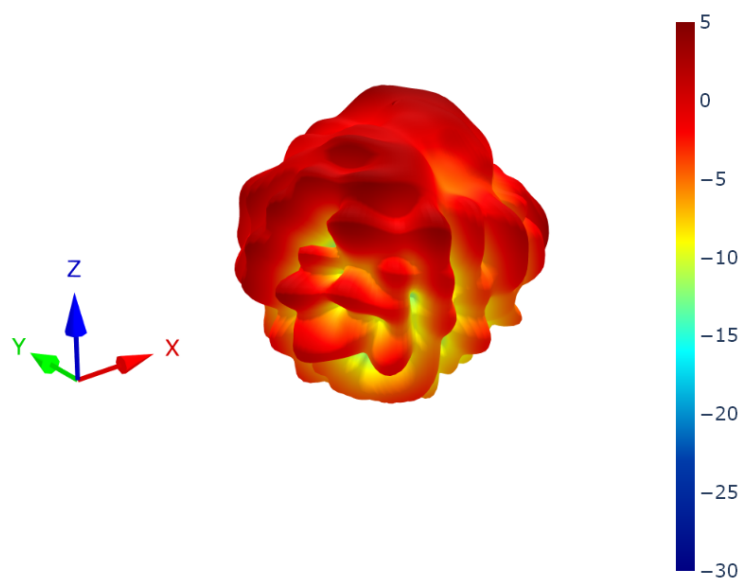
YZ Plane



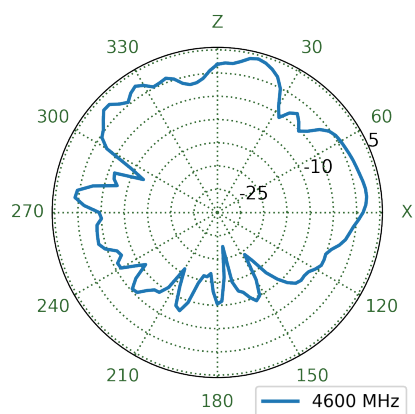
XY Plane



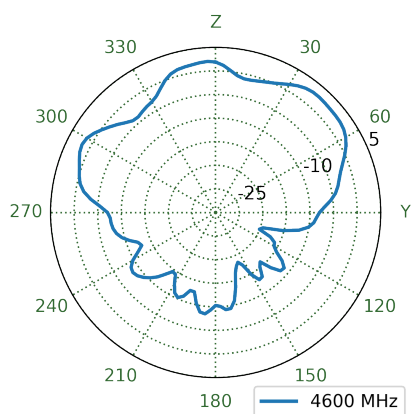
## 8.91 4G-5G 8 Patterns at 4600 MHz



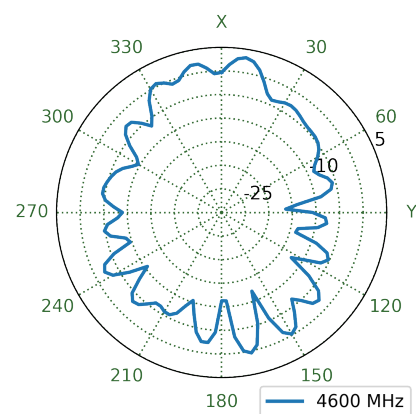
XZ Plane



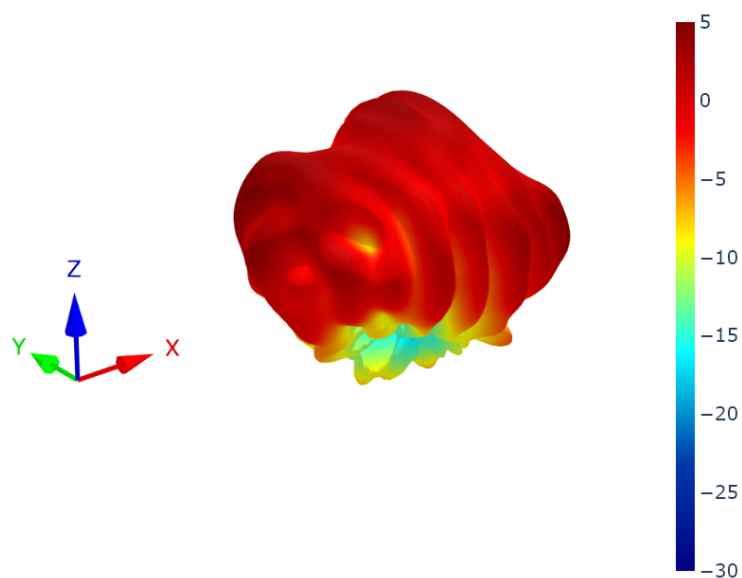
YZ Plane



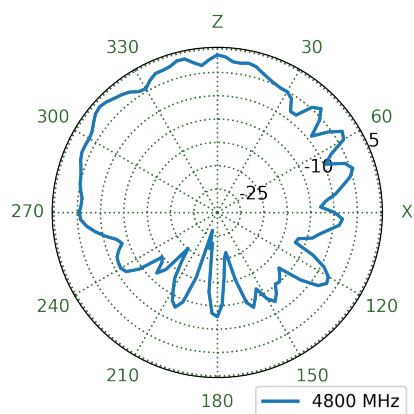
XY Plane



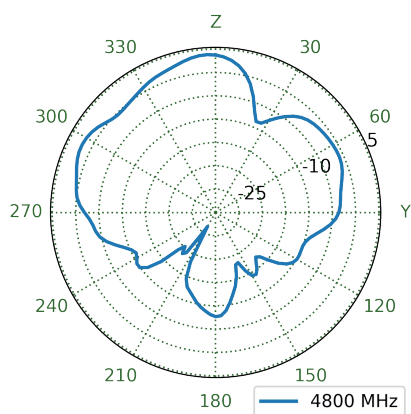
## 8.92 4G-5G 1 Patterns at 4800 MHz



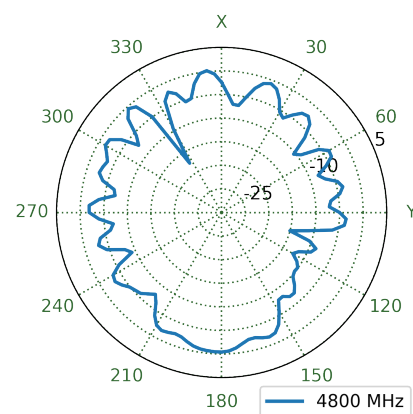
XZ Plane



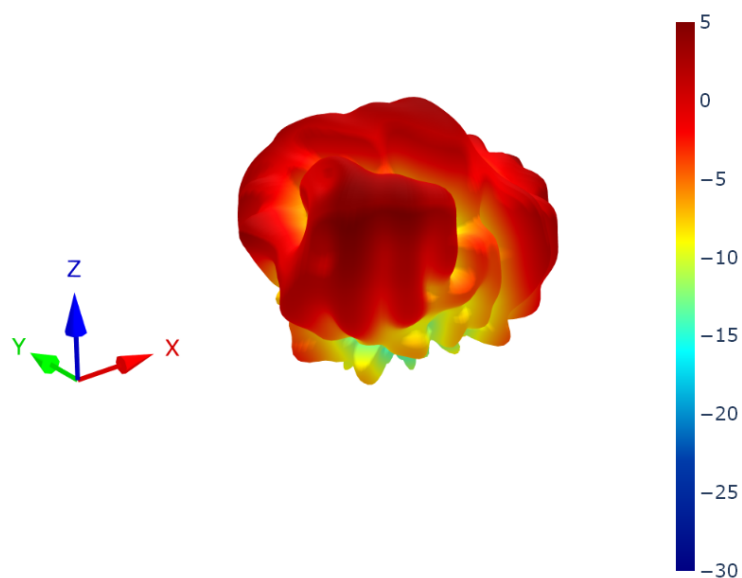
YZ Plane



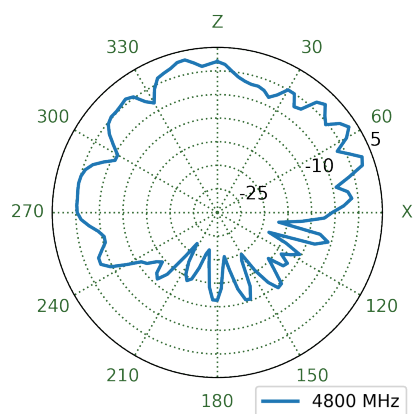
XY Plane



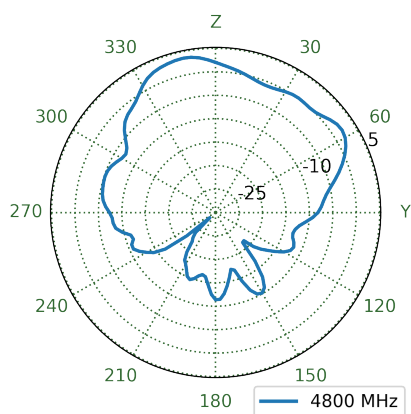
## 8.93 4G-5G 2 Patterns at 4800 MHz



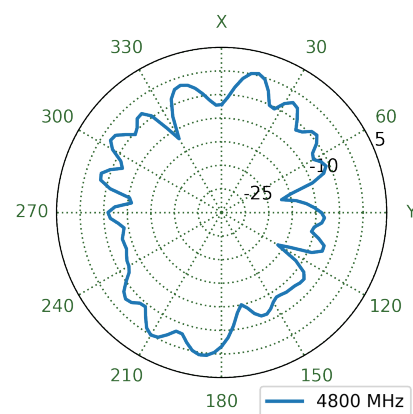
XZ Plane



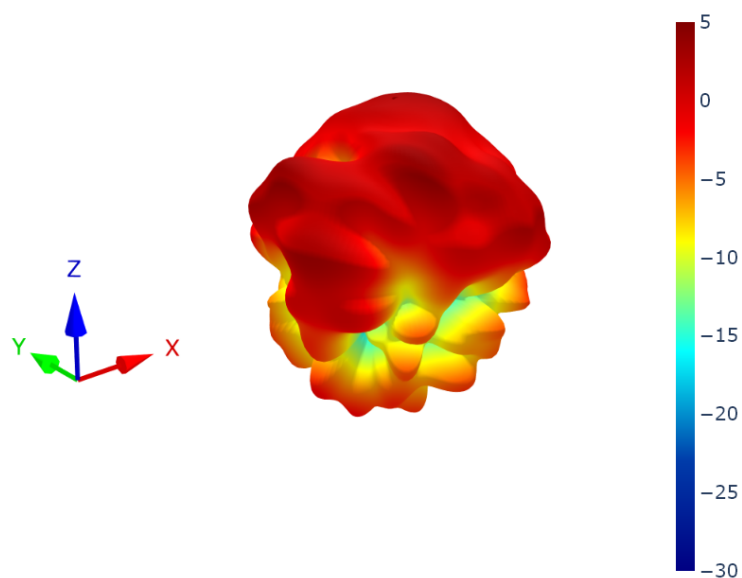
YZ Plane



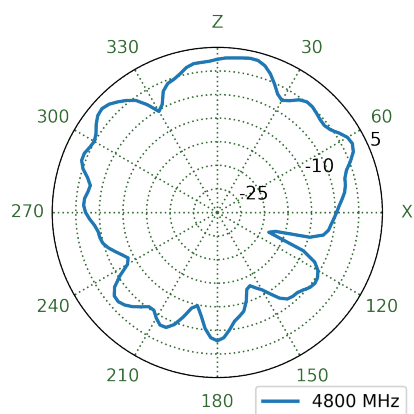
XY Plane



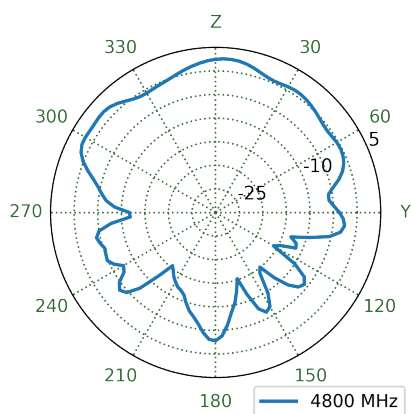
# 8.94 4G-5G 3 Patterns at 4800 MHz



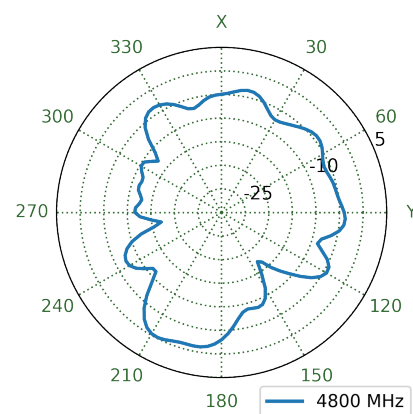
XZ Plane



YZ Plane

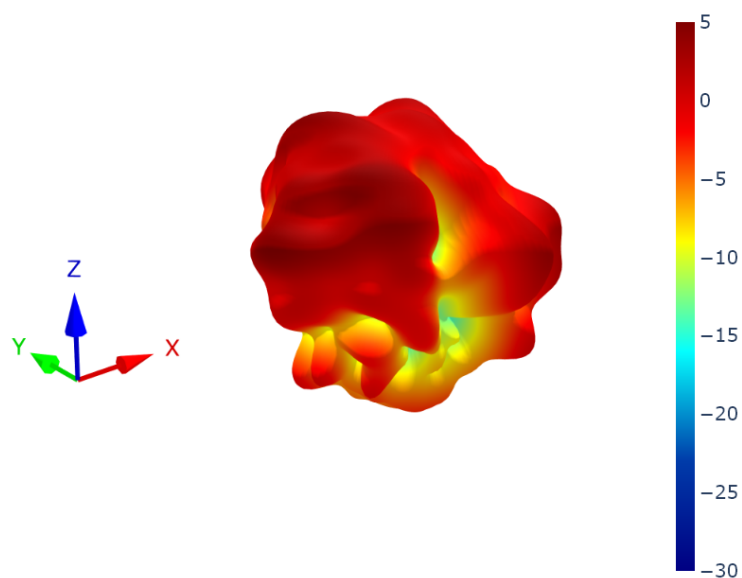


XY Plane

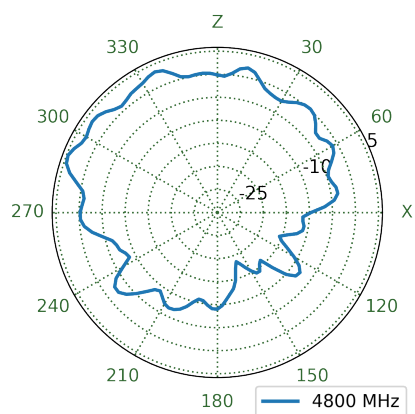




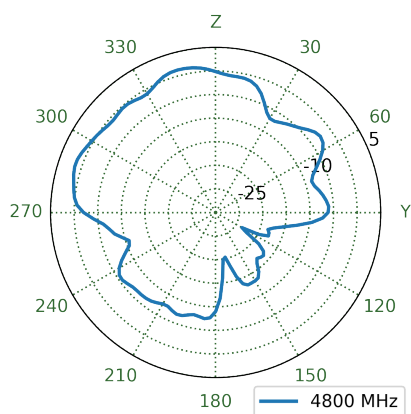
## 8.95 4G-5G 4 Patterns at 4800 MHz



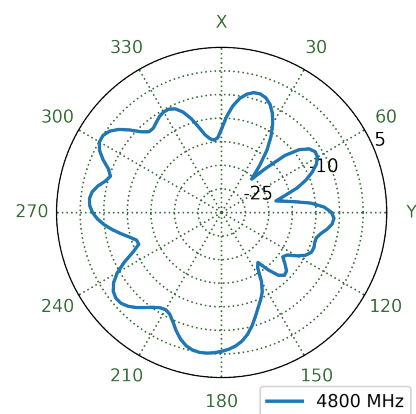
XZ Plane



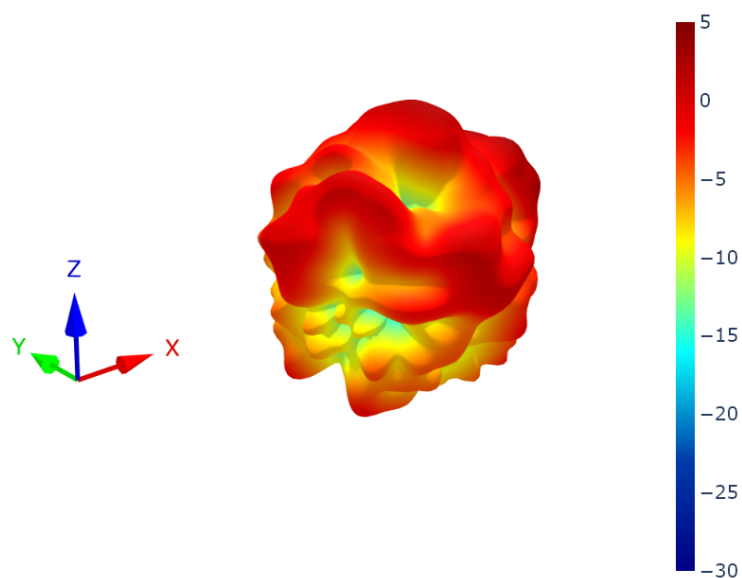
YZ Plane



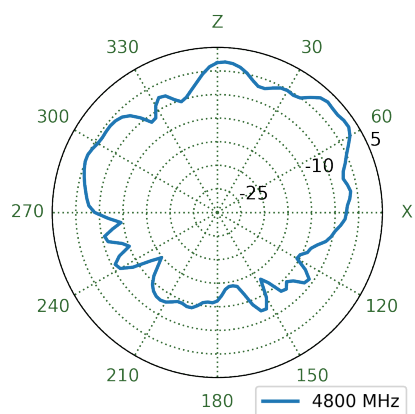
XY Plane



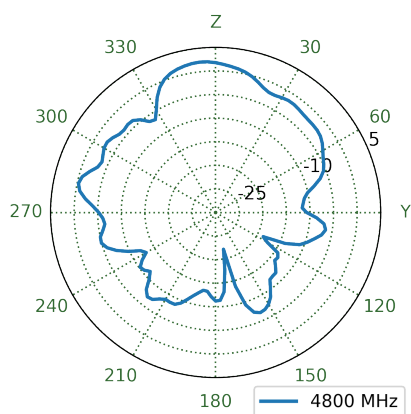
## 8.96 4G-5G 5 Patterns at 4800 MHz



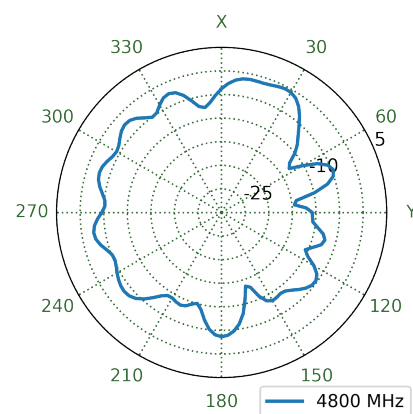
XZ Plane



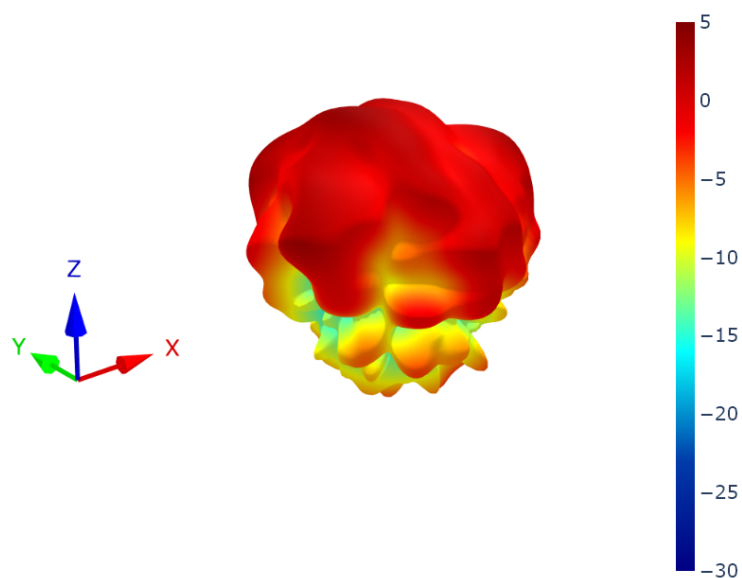
YZ Plane



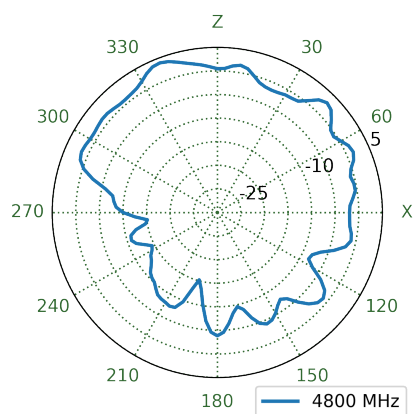
XY Plane



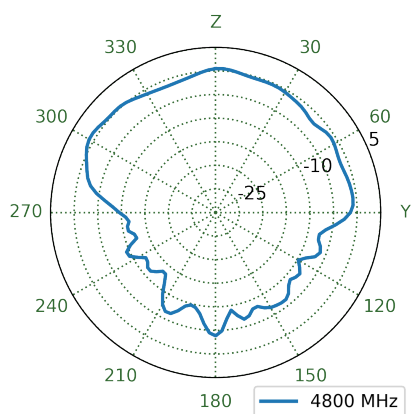
# 8.97 4G-5G 6 Patterns at 4800 MHz



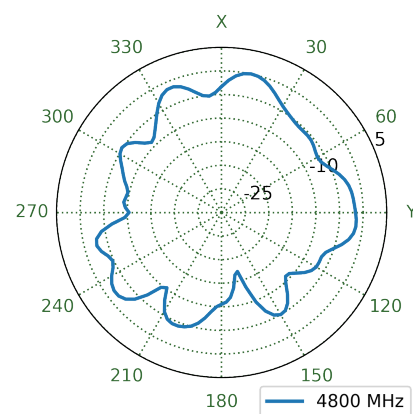
XZ Plane



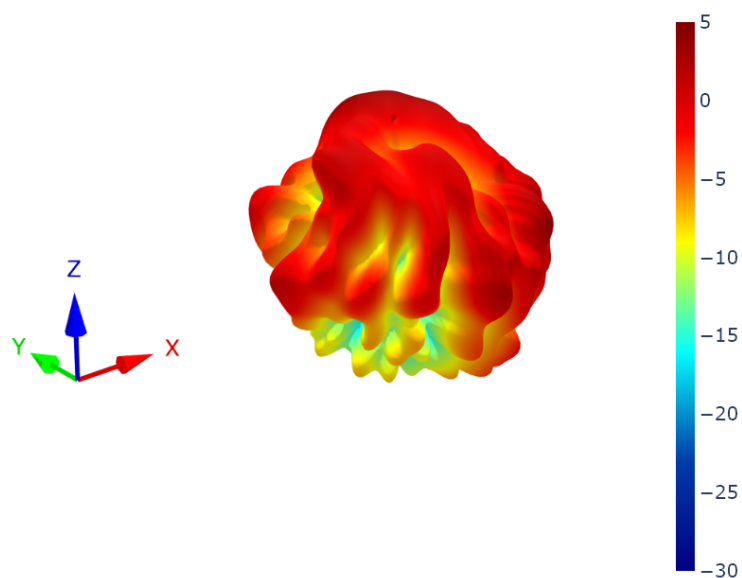
YZ Plane



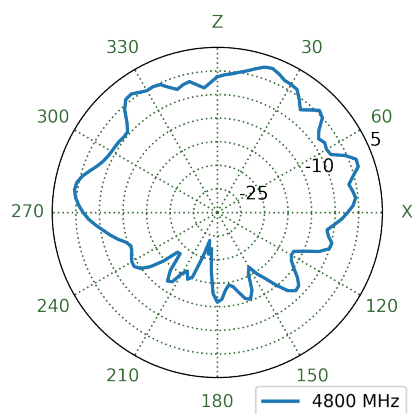
XY Plane



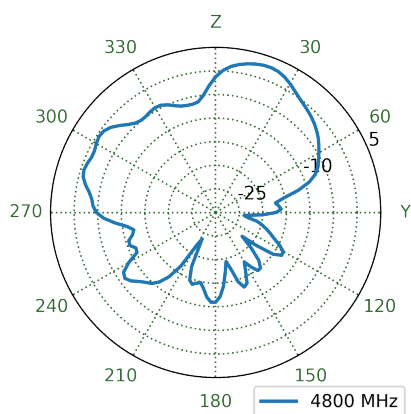
## 8.98 4G-5G 7 Patterns at 4800 MHz



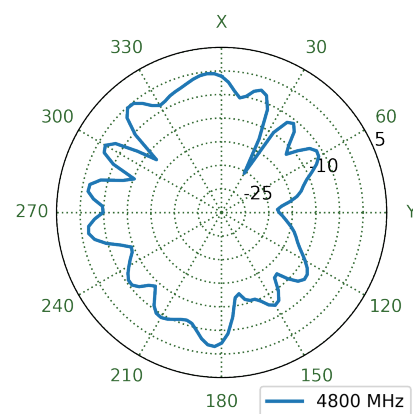
XZ Plane



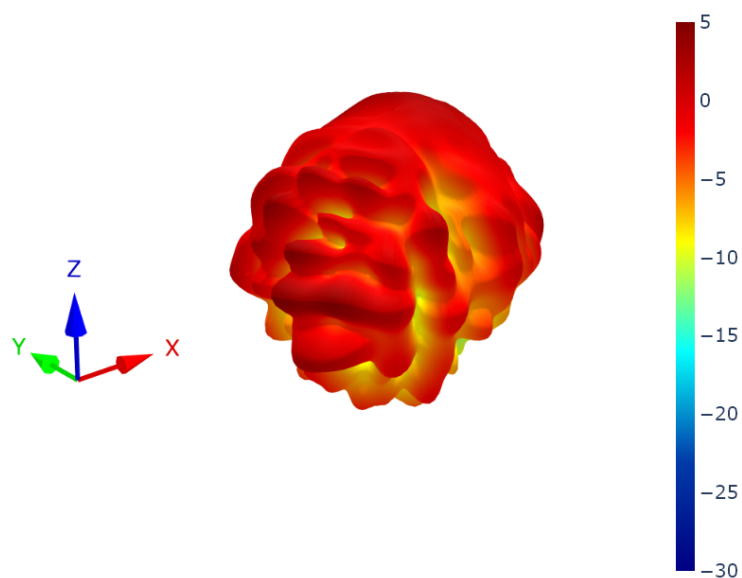
YZ Plane



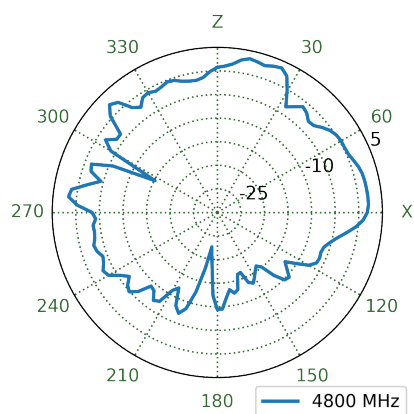
XY Plane



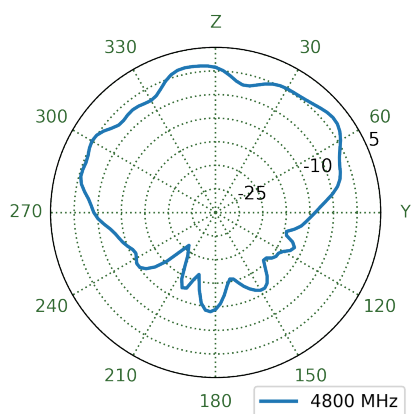
## 8.99 4G-5G 8 Patterns at 4800 MHz



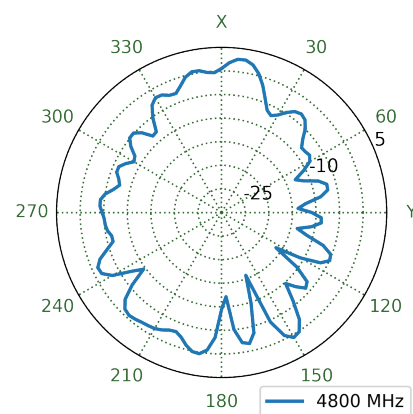
XZ Plane



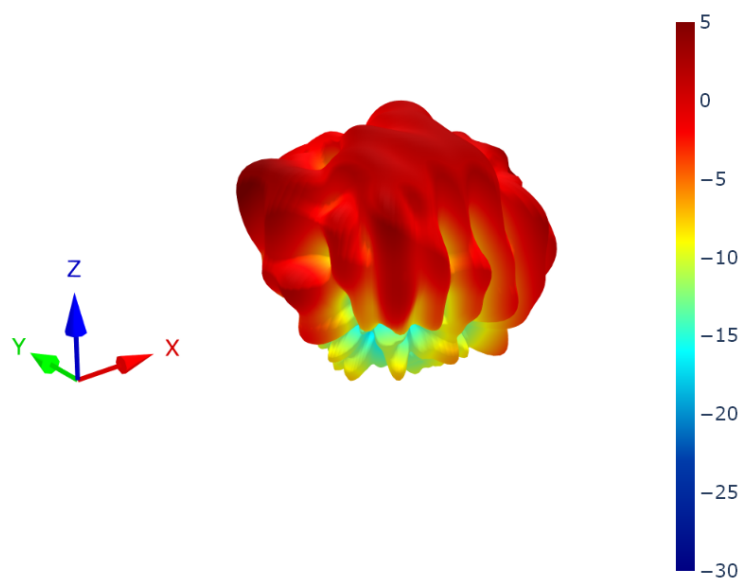
YZ Plane



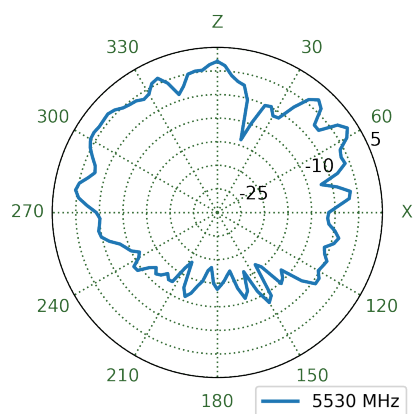
XY Plane



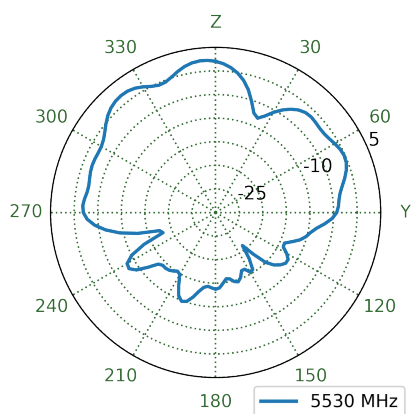
# 8.100 4G-5G 1 Patterns at 5530 MHz



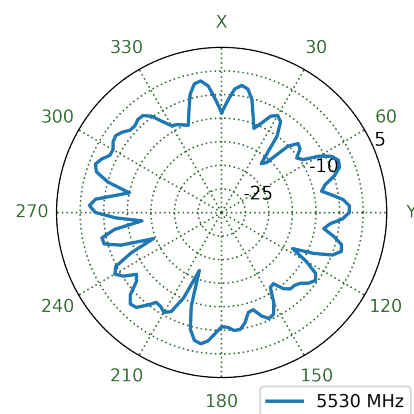
XZ Plane



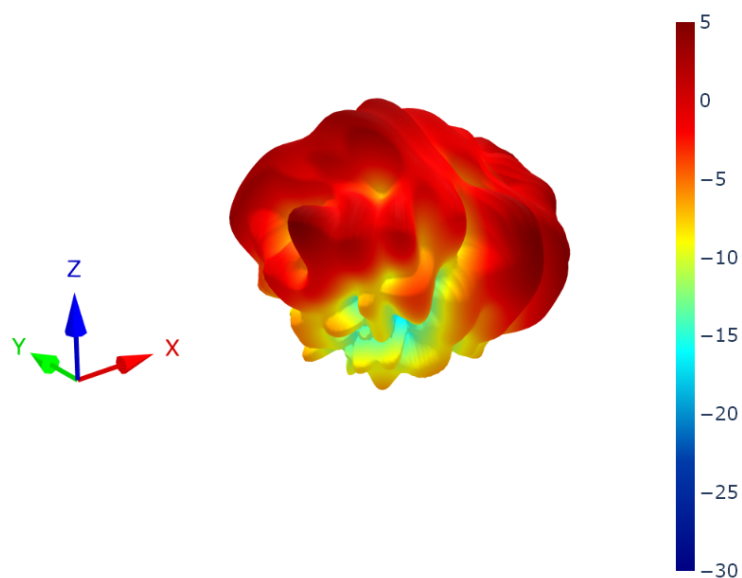
YZ Plane



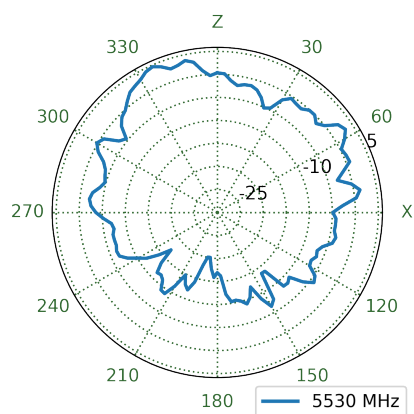
XY Plane



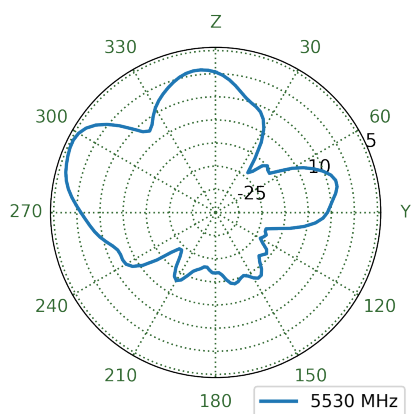
# 8.101 4G-5G 2 Patterns at 5530 MHz



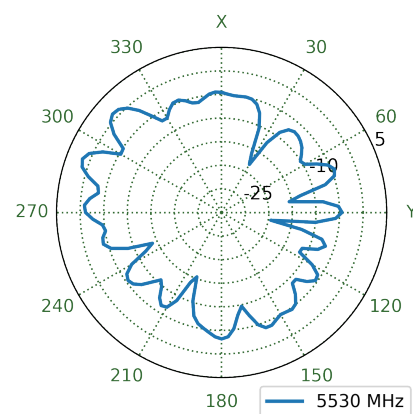
XZ Plane



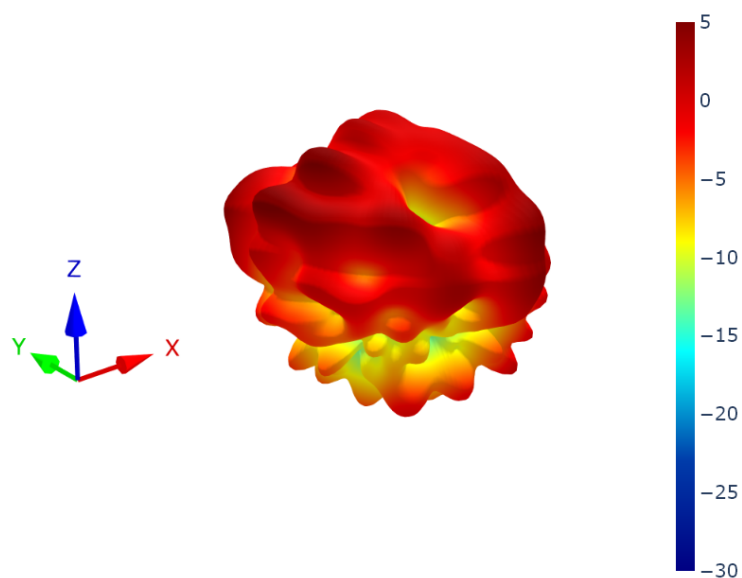
YZ Plane



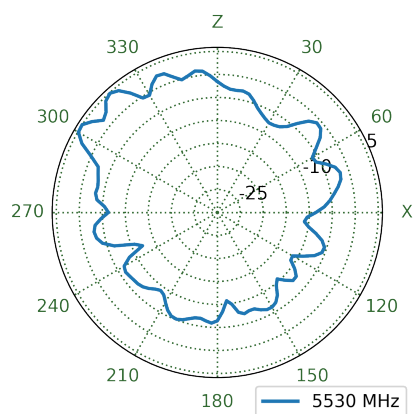
XY Plane



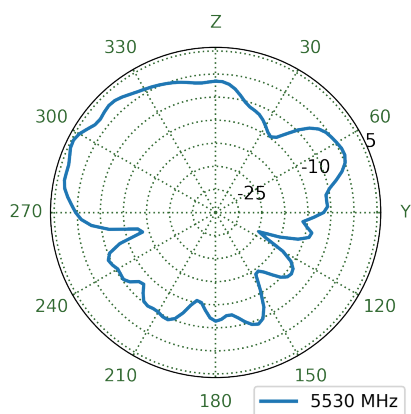
# 8.102 4G-5G 3 Patterns at 5530 MHz



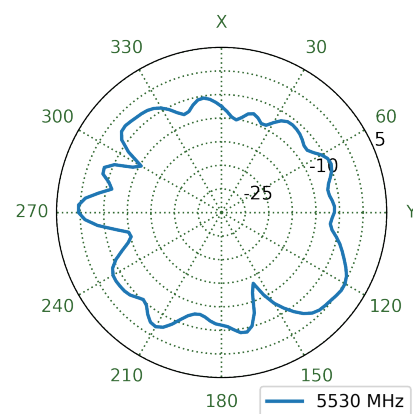
XZ Plane



YZ Plane

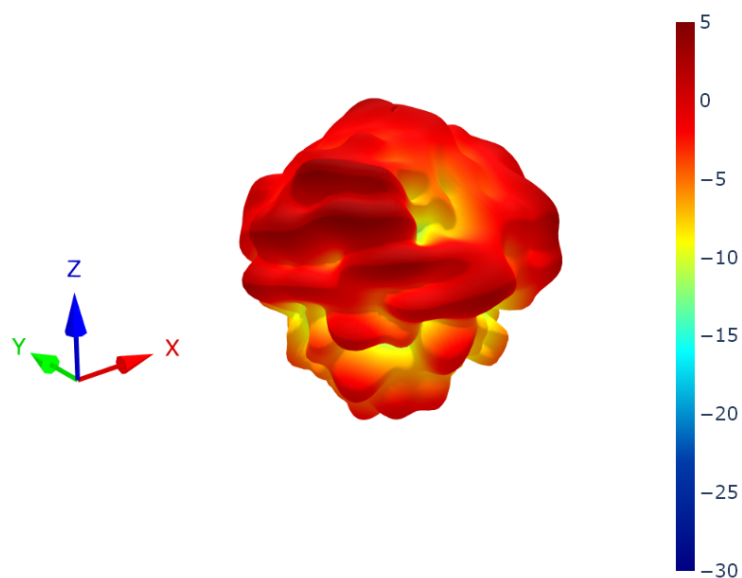


XY Plane

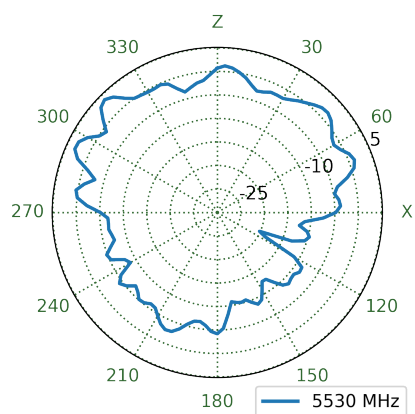




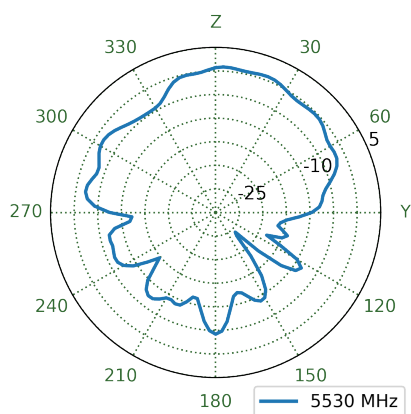
# 8.103 4G-5G 4 Patterns at 5530 MHz



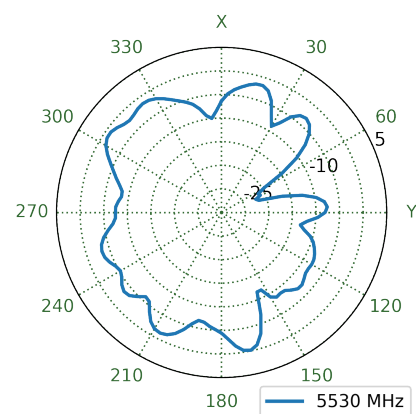
XZ Plane



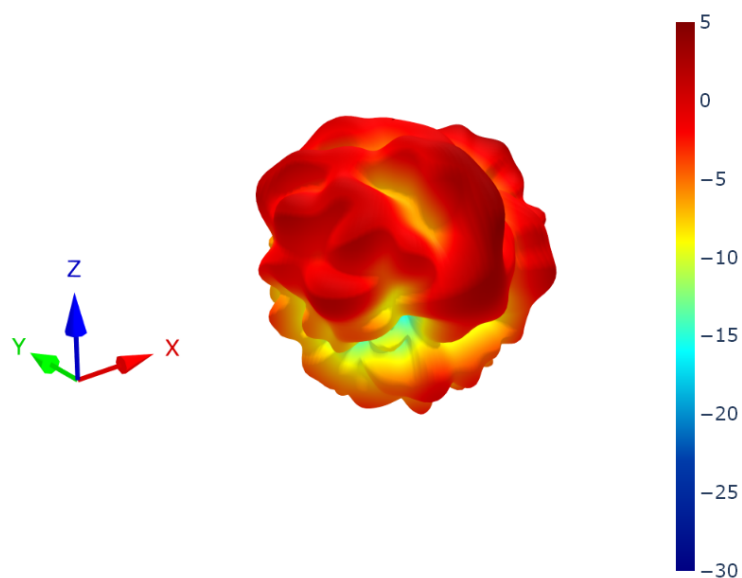
YZ Plane



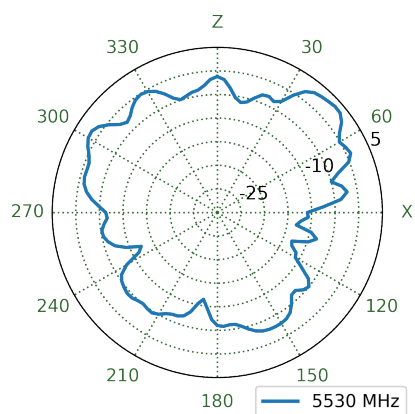
XY Plane



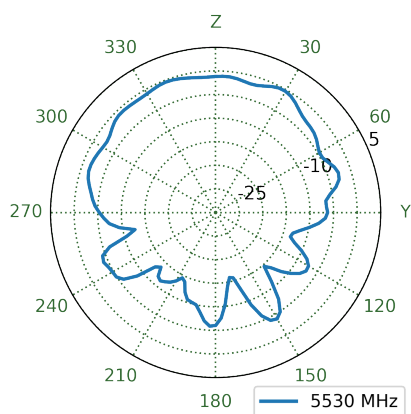
# 8.104 4G-5G 5 Patterns at 5530 MHz



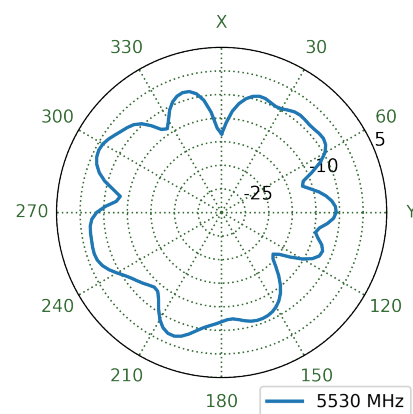
XZ Plane



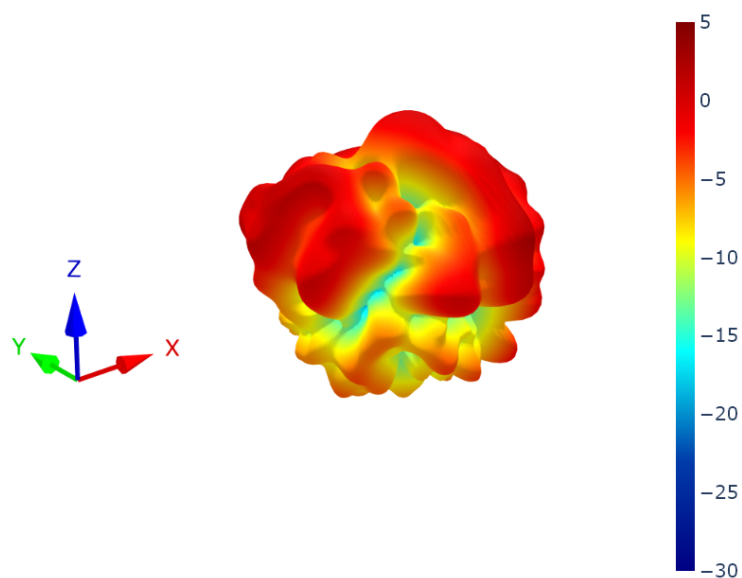
YZ Plane



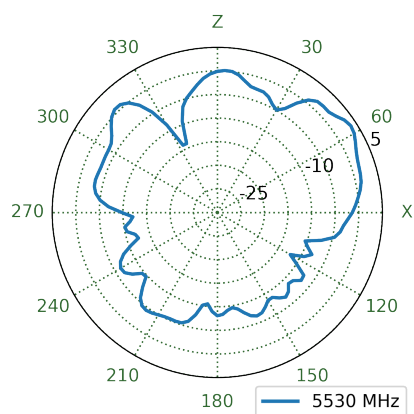
XY Plane



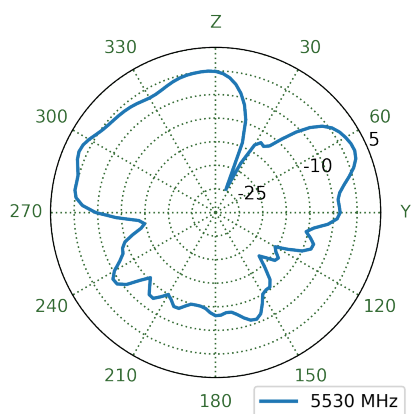
# 8.105 4G-5G 6 Patterns at 5530 MHz



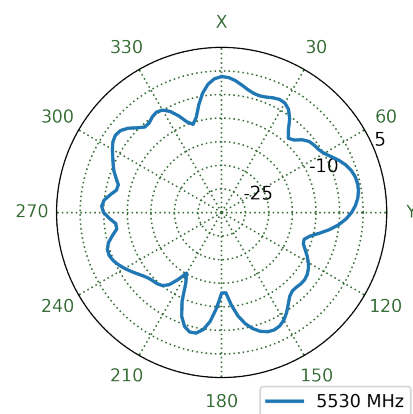
XZ Plane



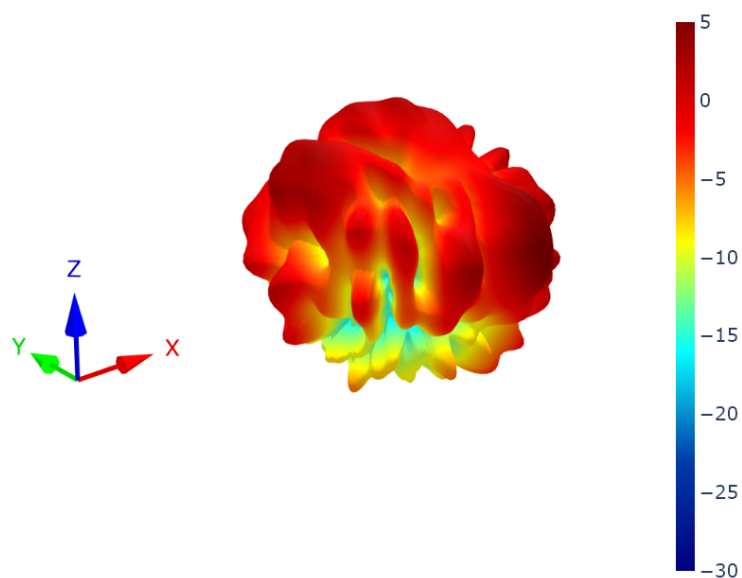
YZ Plane



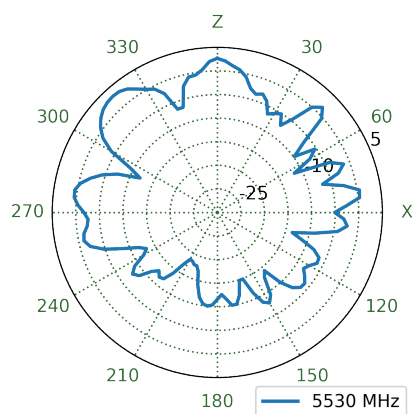
XY Plane



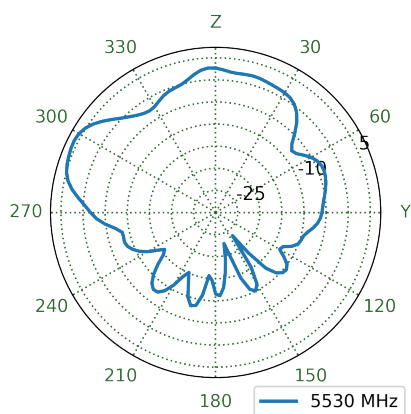
# 8.106 4G-5G 7 Patterns at 5530 MHz



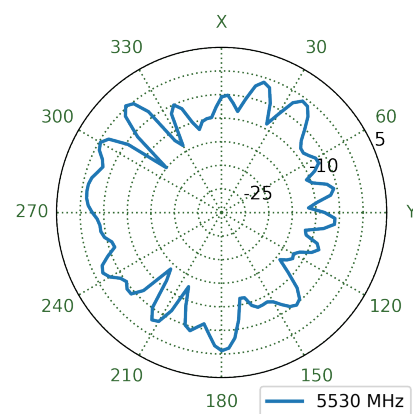
XZ Plane



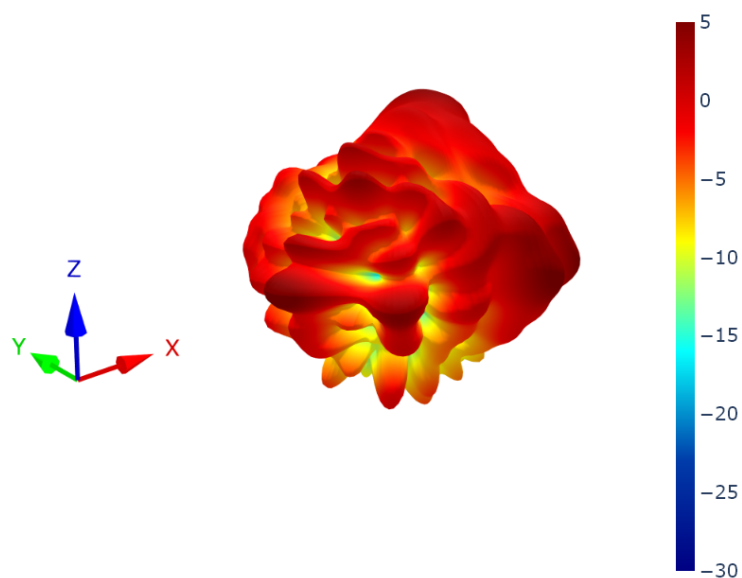
YZ Plane



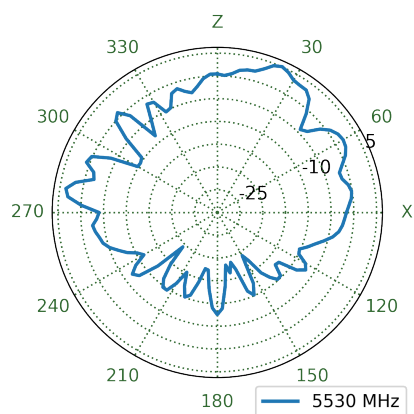
XY Plane



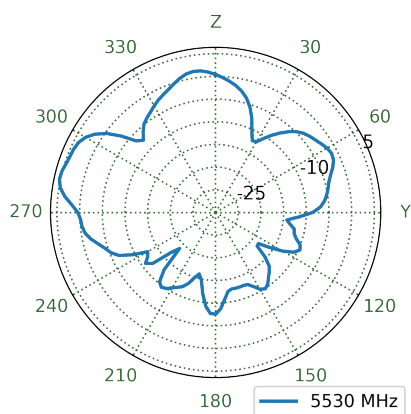
# 8.107 4G-5G 8 Patterns at 5530 MHz



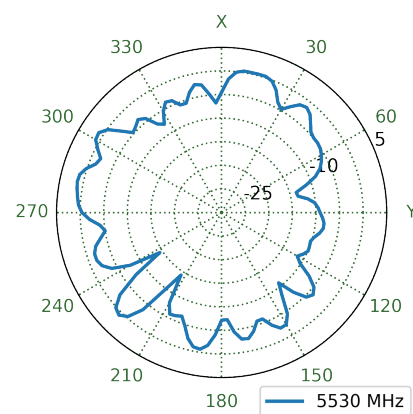
XZ Plane



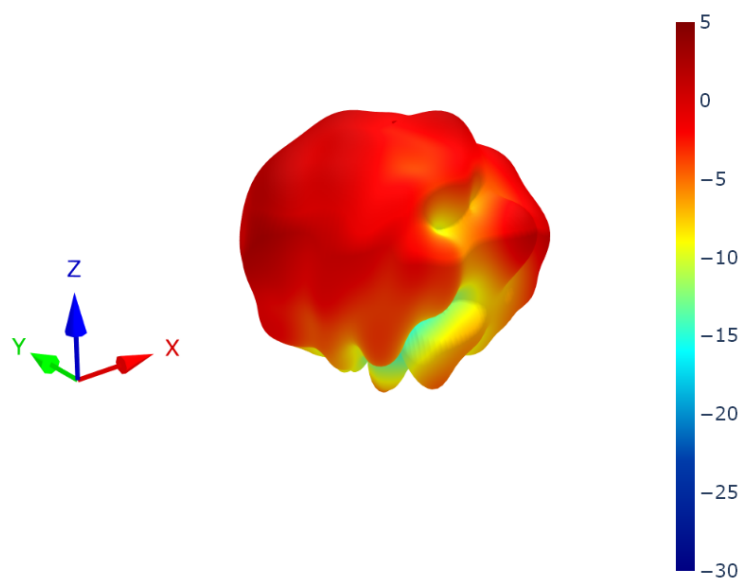
YZ Plane



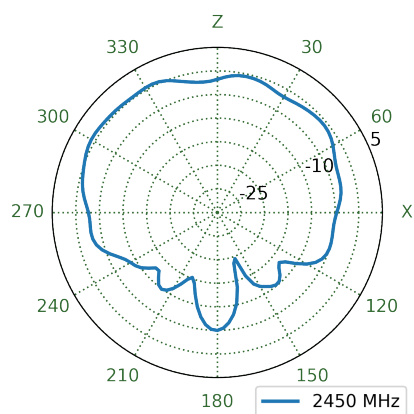
XY Plane



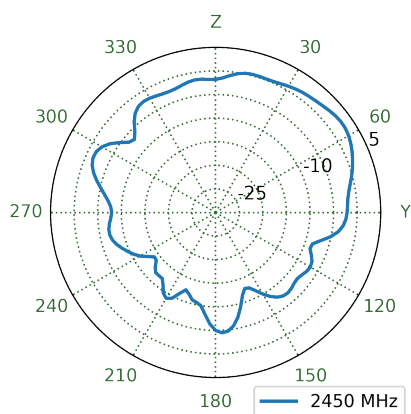
## 8.108 Wi-Fi1 Patterns at 2450 MHz



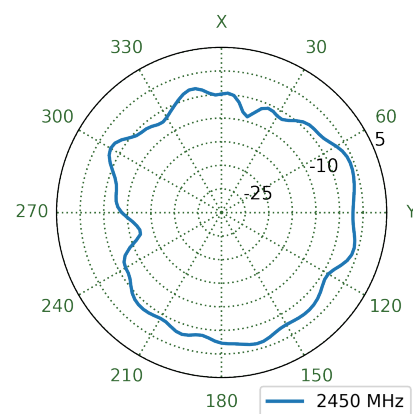
XZ Plane



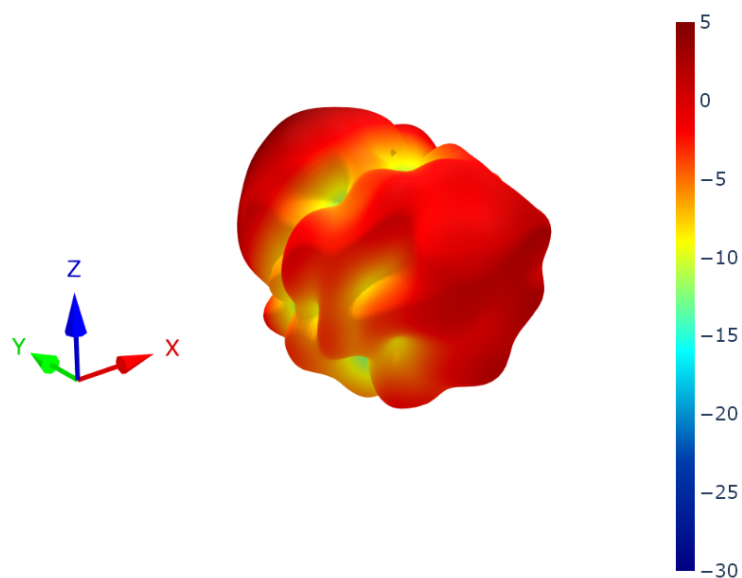
YZ Plane



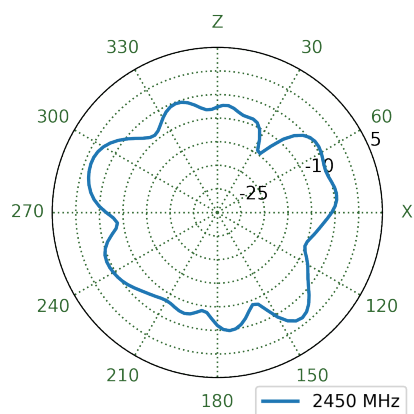
XY Plane



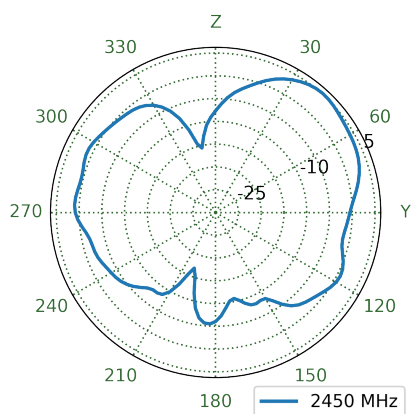
# 8.109 Wi-Fi2 Patterns at 2450 MHz



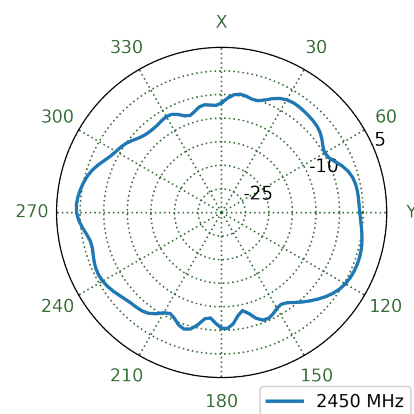
XZ Plane



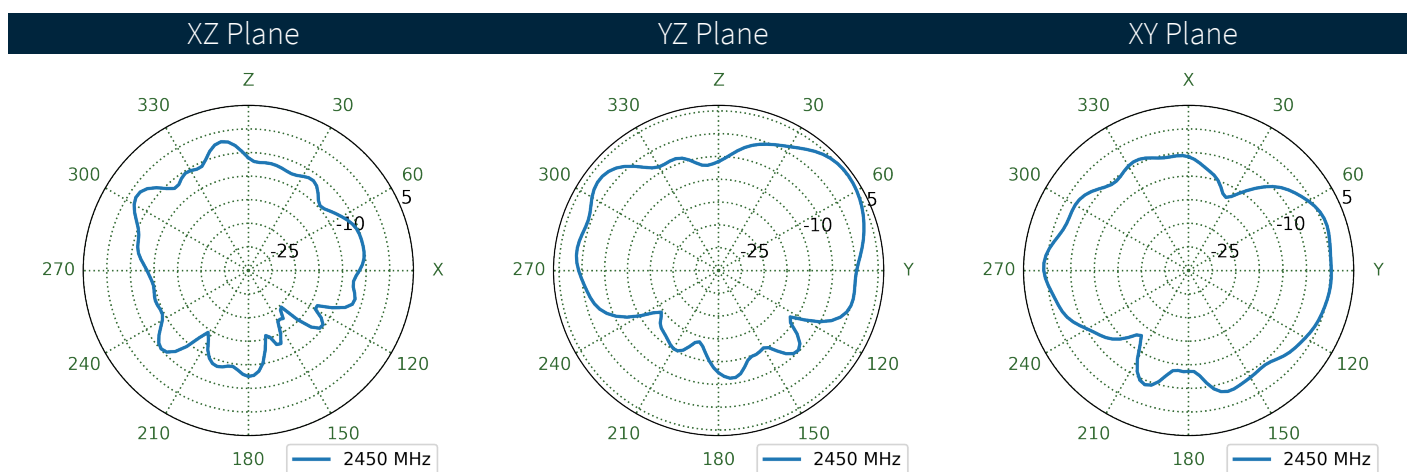
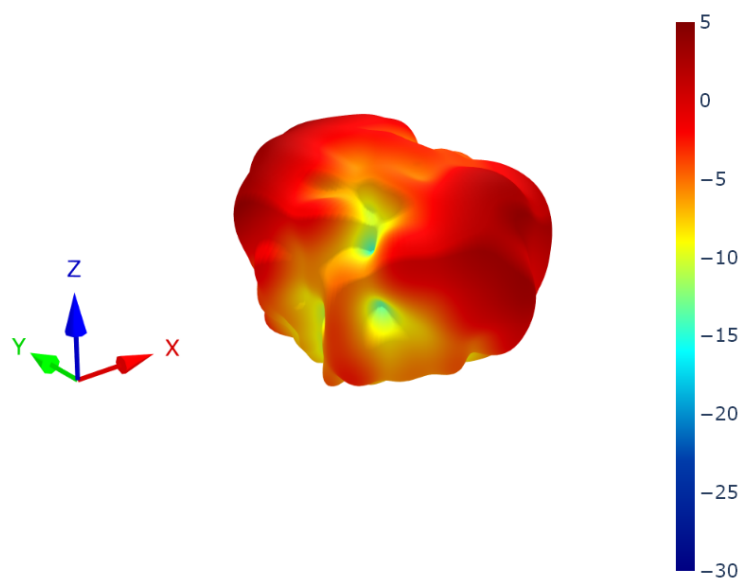
YZ Plane



XY Plane

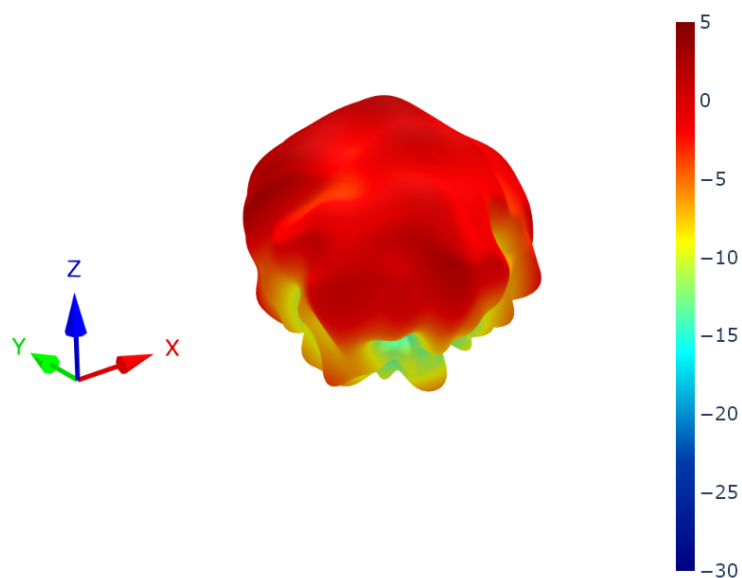


## 8.110 Wi-Fi3 Patterns at 2450 MHz

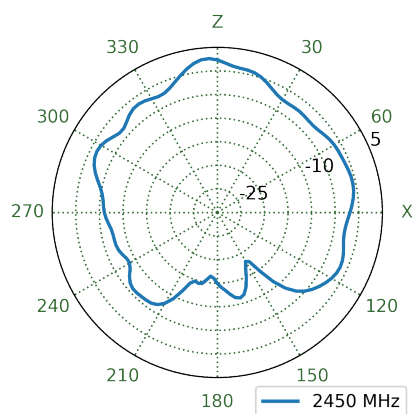




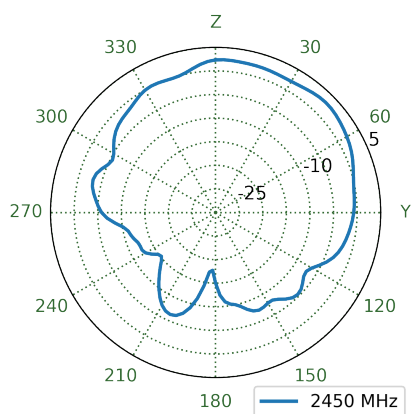
# 8.111 Wi-Fi Patterns at 2450 MHz



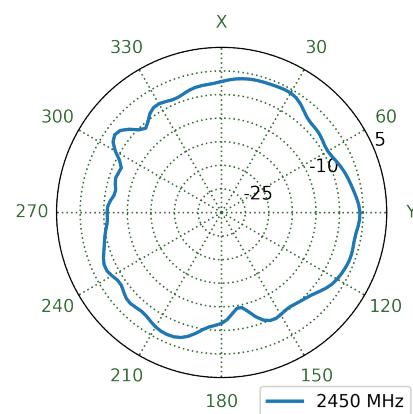
XZ Plane



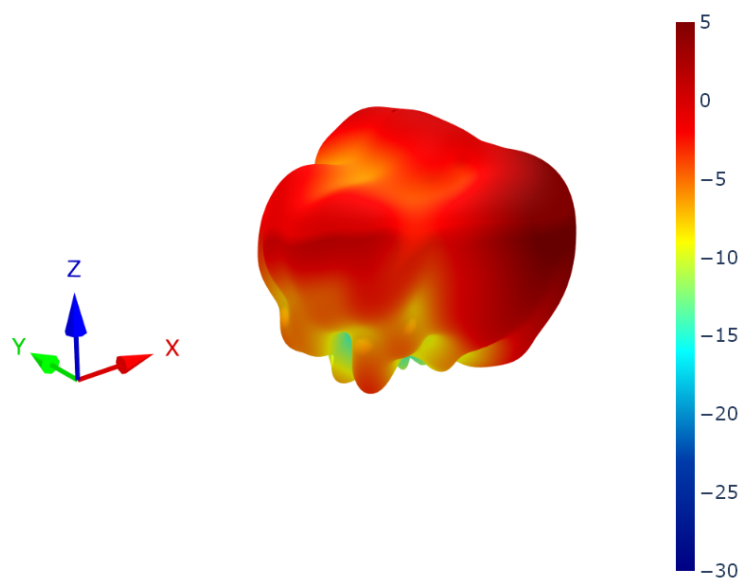
YZ Plane



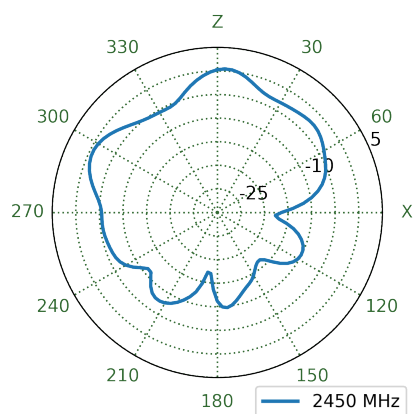
XY Plane



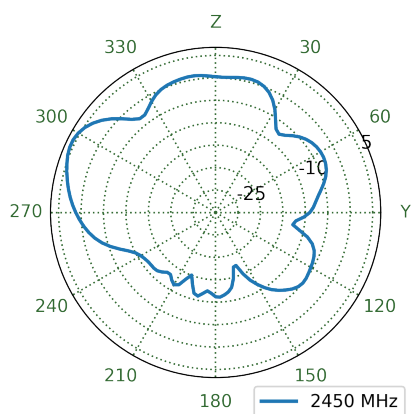
## 8.112 Wi-Fi5 Patterns at 2450 MHz



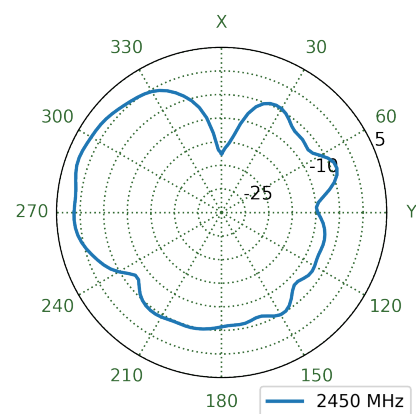
XZ Plane



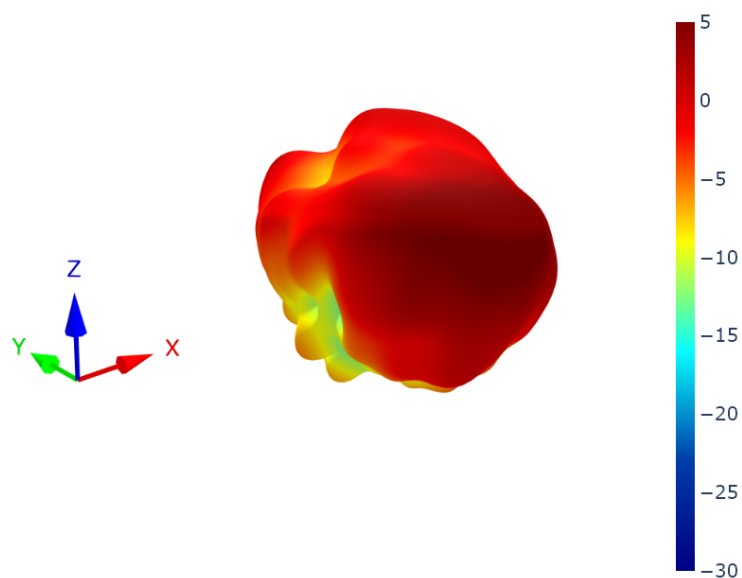
YZ Plane



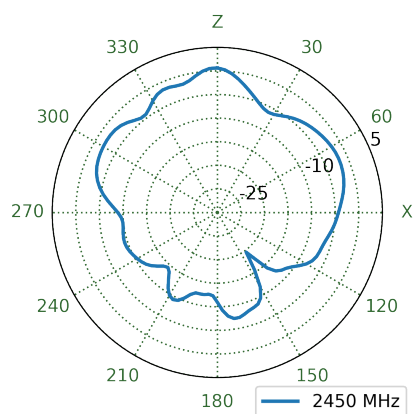
XY Plane



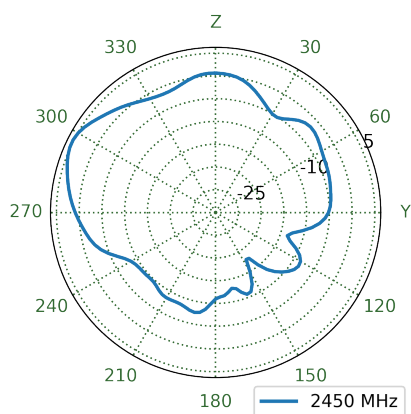
# 8.113 Wi-Fi6 Patterns at 2450 MHz



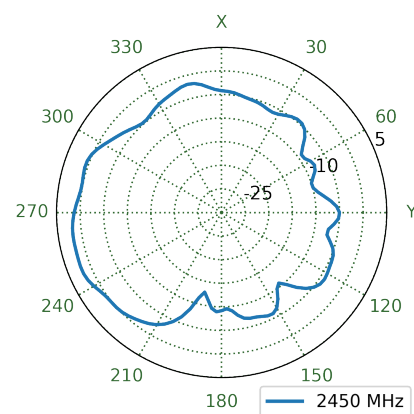
XZ Plane



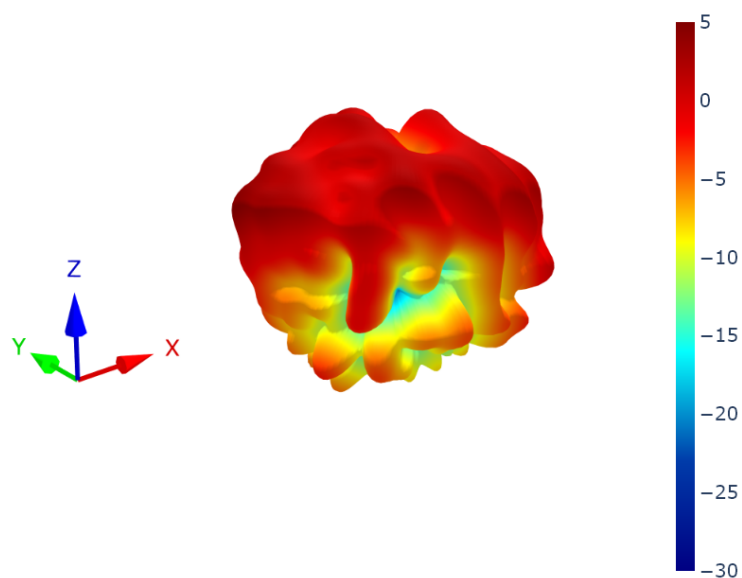
YZ Plane



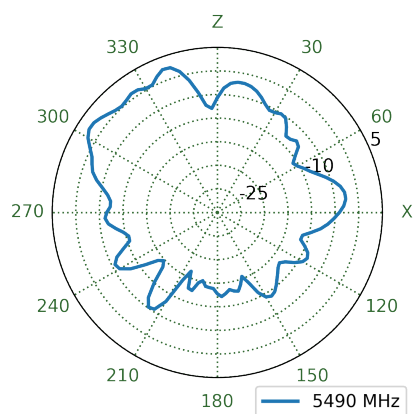
XY Plane



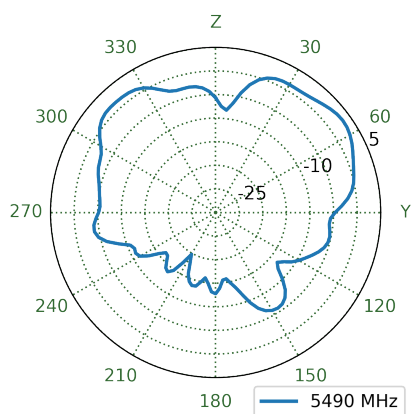
# 8.114 Wi-Fi1 Patterns at 5490 MHz



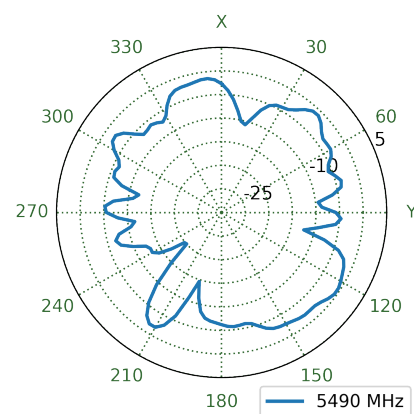
XZ Plane



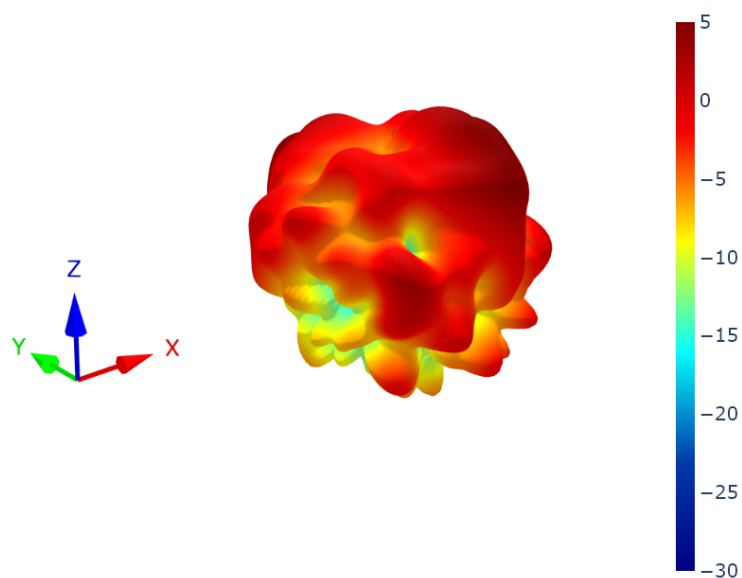
YZ Plane



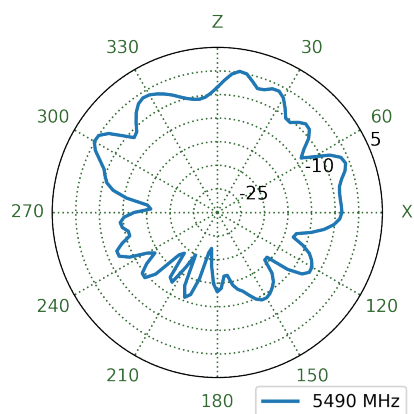
XY Plane



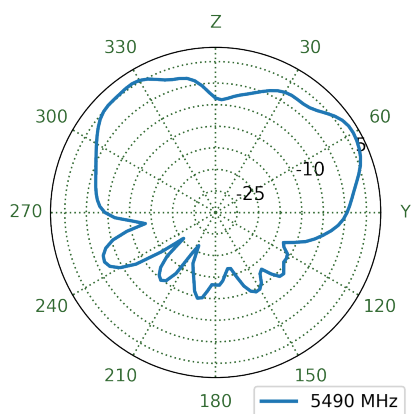
## 8.115 Wi-Fi2 Patterns at 5490 MHz



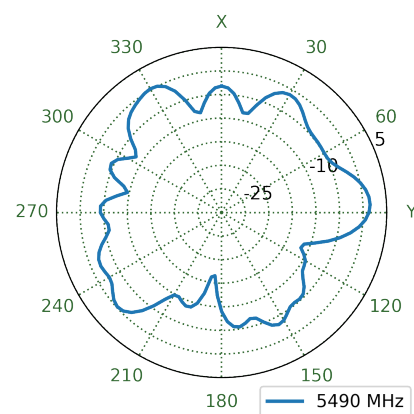
XZ Plane



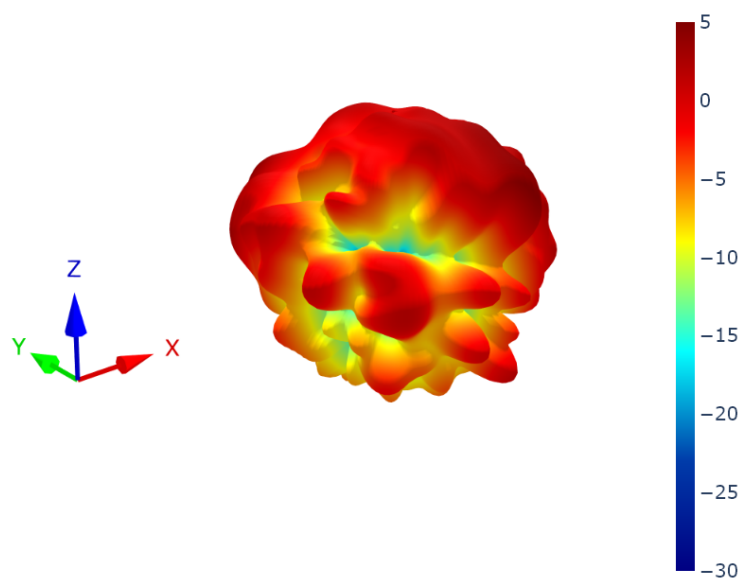
YZ Plane



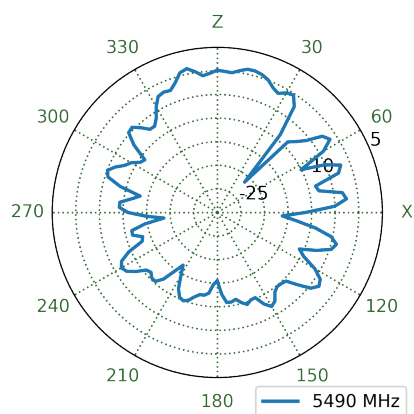
XY Plane



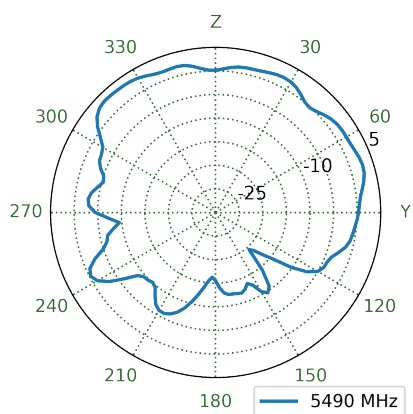
# 8.116 Wi-Fi3 Patterns at 5490 MHz



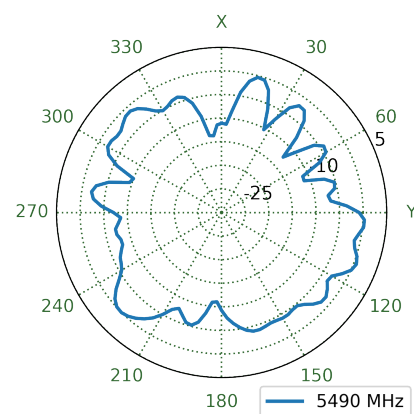
XZ Plane



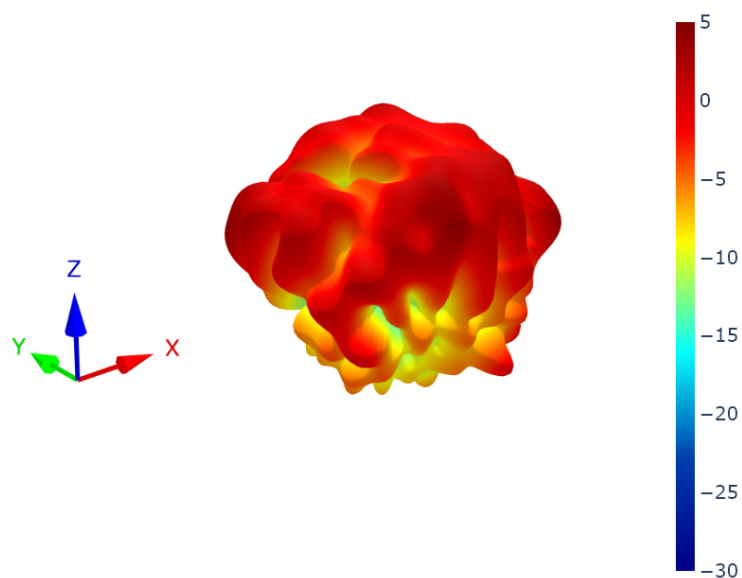
YZ Plane



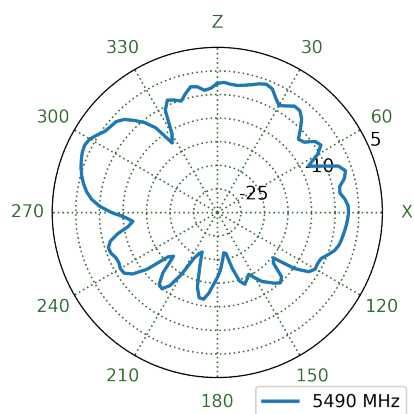
XY Plane



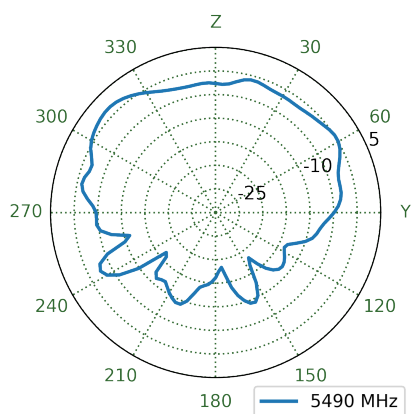
# 8.117 Wi-Fi 4 Patterns at 5490 MHz



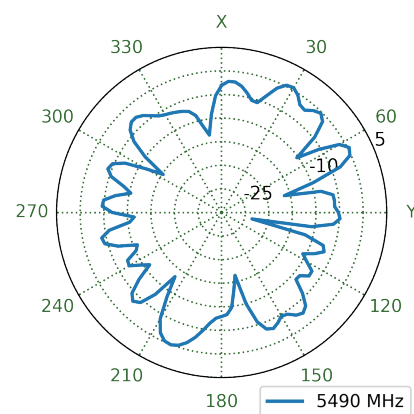
XZ Plane



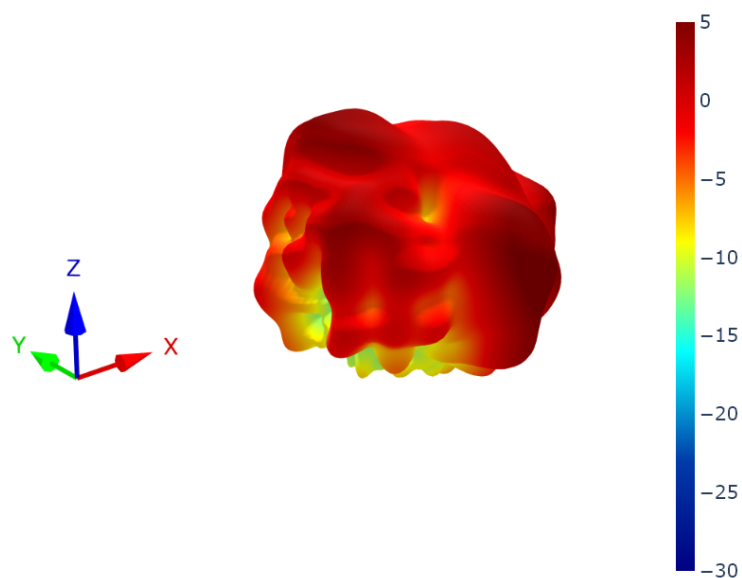
YZ Plane



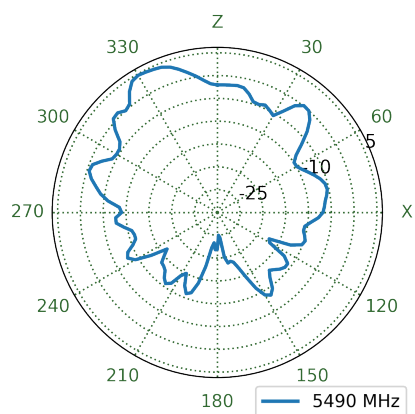
XY Plane



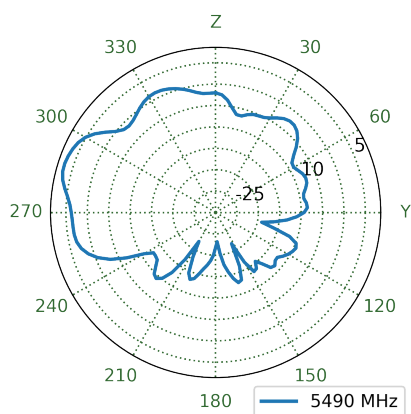
## 8.118 Wi-Fi5 Patterns at 5490 MHz



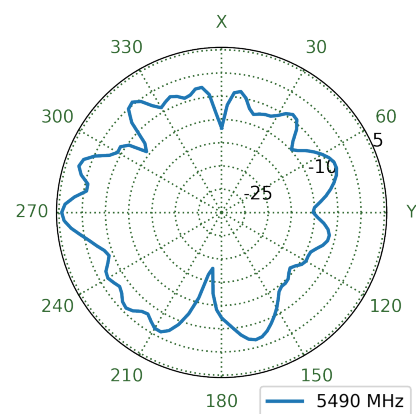
XZ Plane



YZ Plane

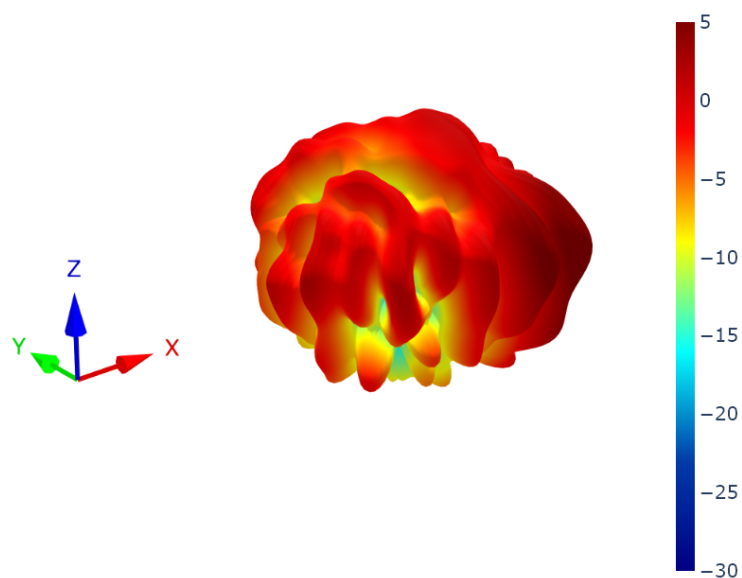


XY Plane

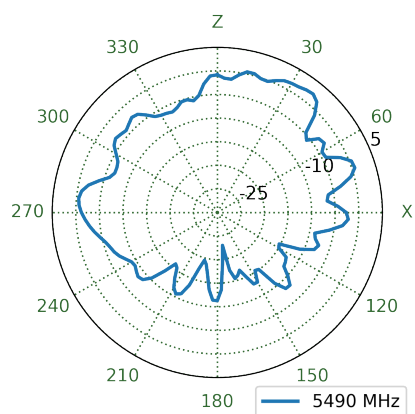




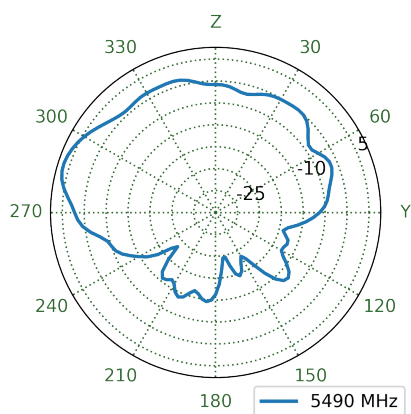
# 8.119 Wi-Fi6 Patterns at 5490 MHz



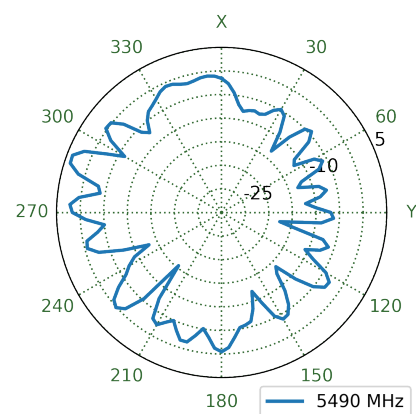
XZ Plane



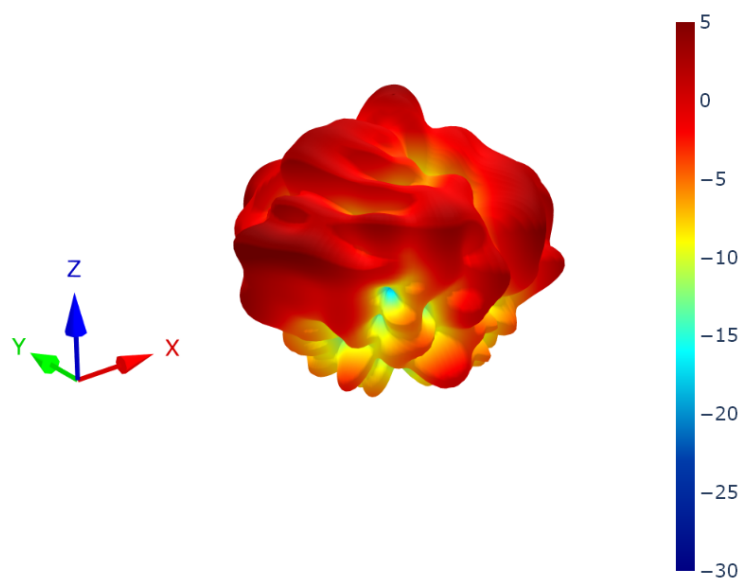
YZ Plane



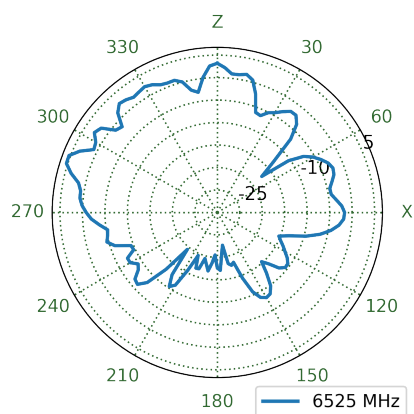
XY Plane



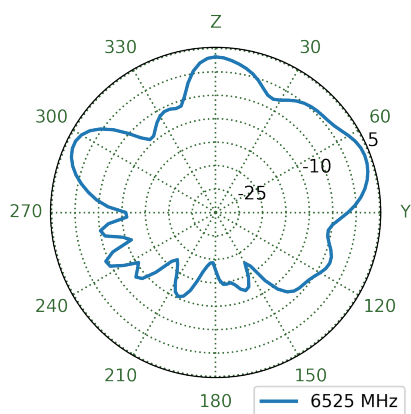
## 8.120 Wi-Fi1 Patterns at 6525 MHz



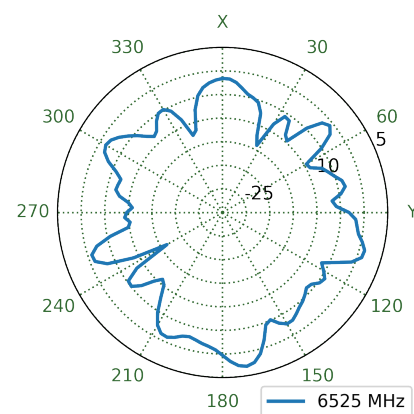
XZ Plane



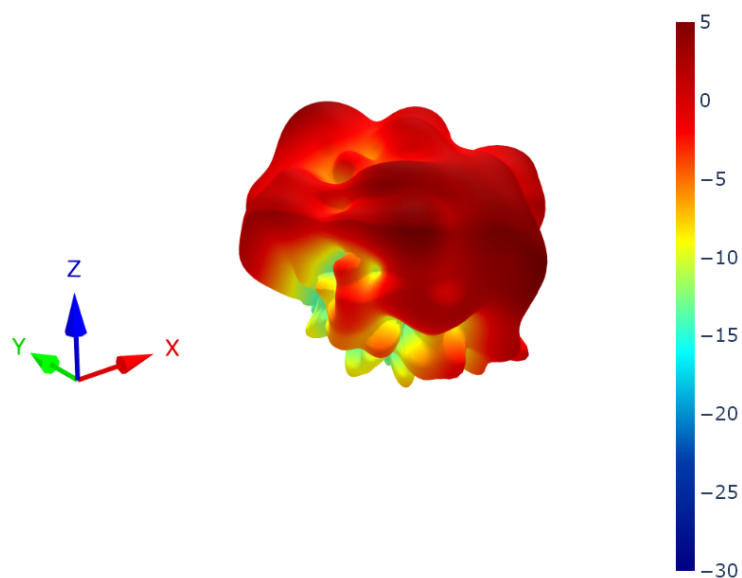
YZ Plane



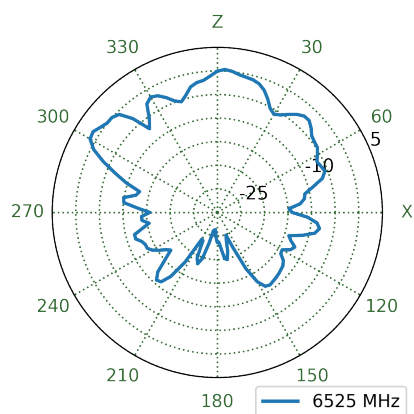
XY Plane



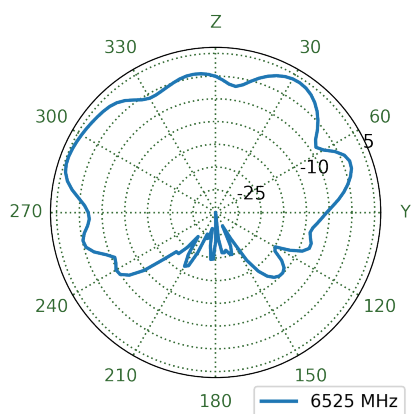
# 8.121 Wi-Fi2 Patterns at 6525 MHz



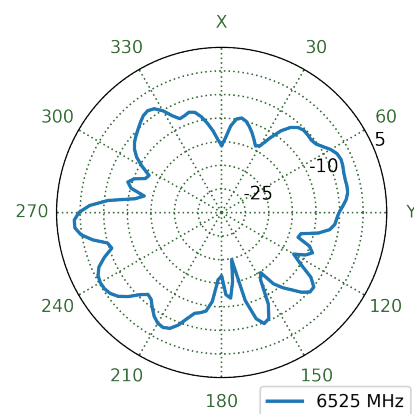
XZ Plane



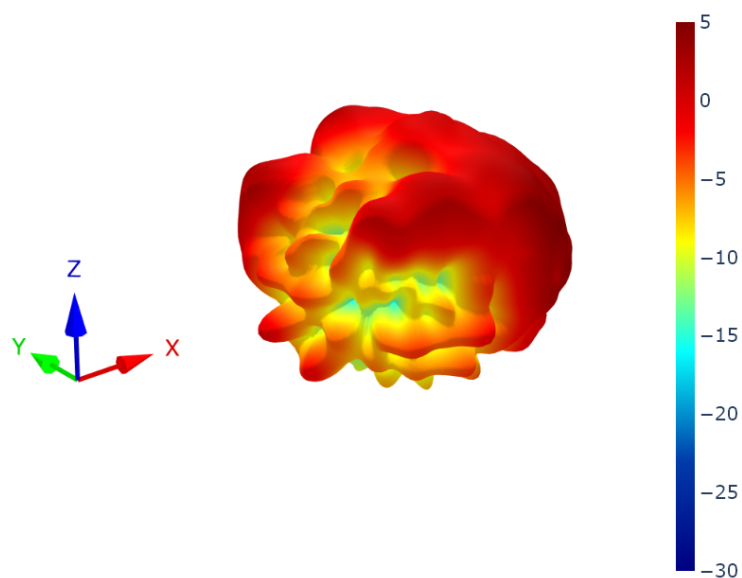
YZ Plane



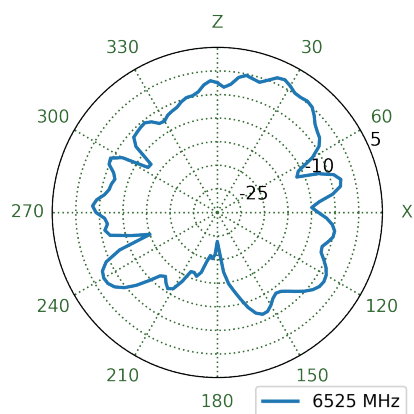
XY Plane



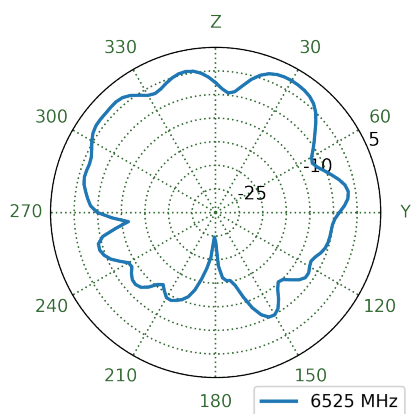
## 8.122 Wi-Fi3 Patterns at 6525 MHz



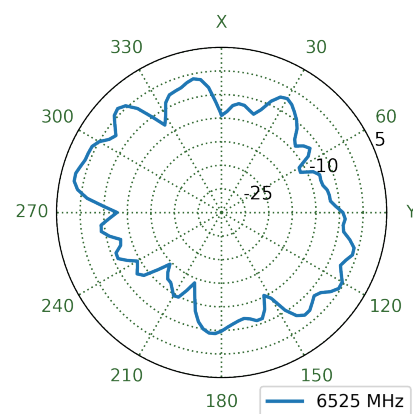
XZ Plane



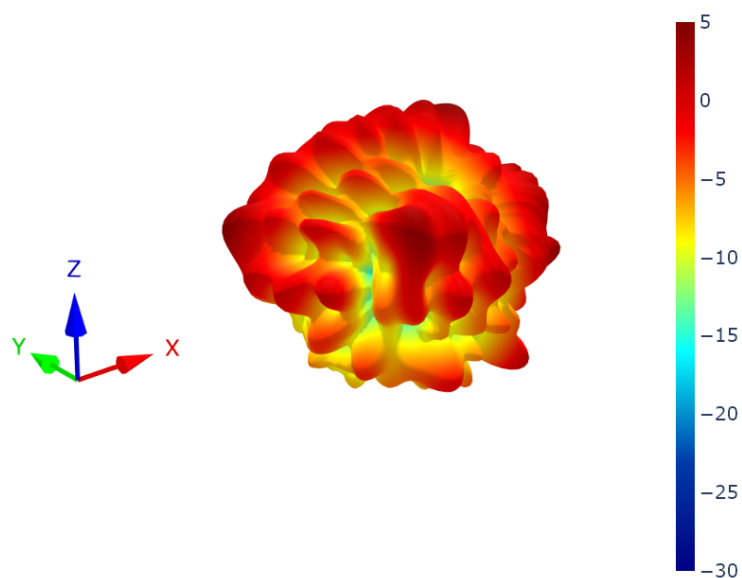
YZ Plane



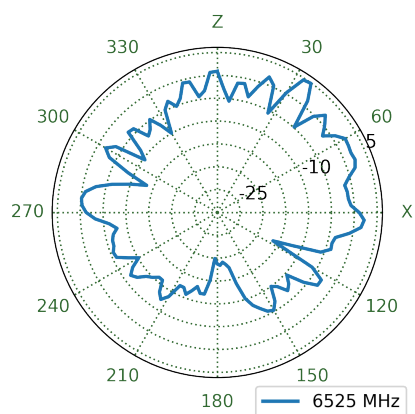
XY Plane



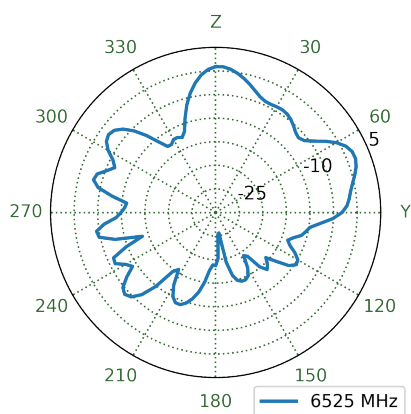
## 8.123 Wi-Fi Patterns at 6525 MHz



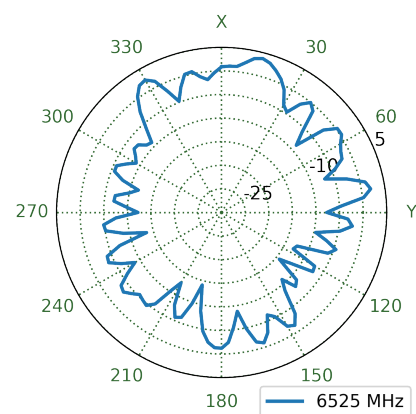
XZ Plane



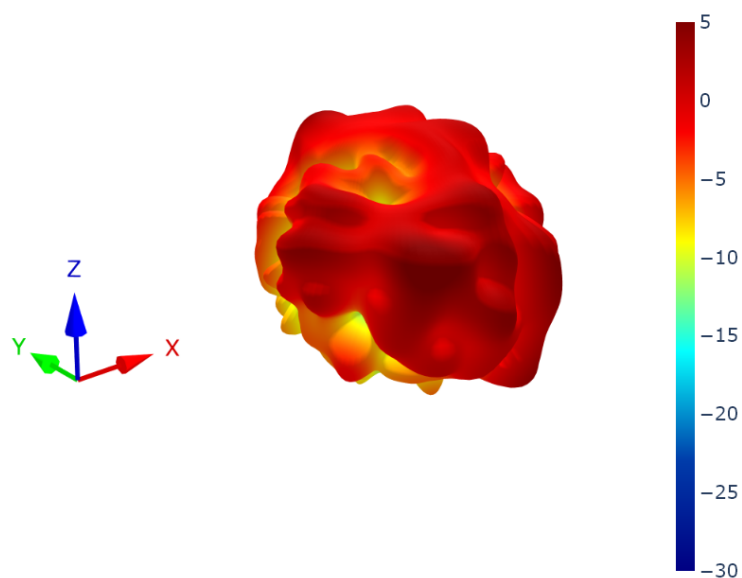
YZ Plane



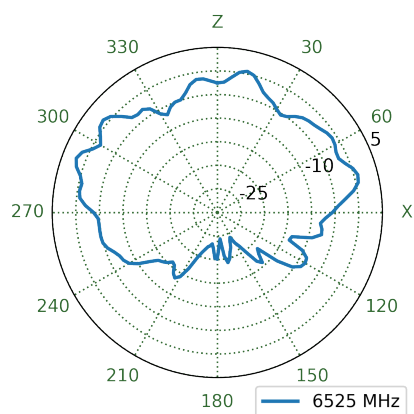
XY Plane



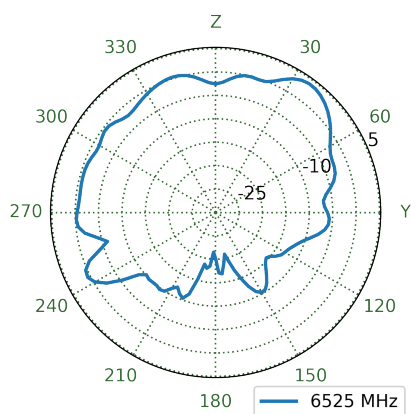
# 8.124 Wi-Fi5 Patterns at 6525 MHz



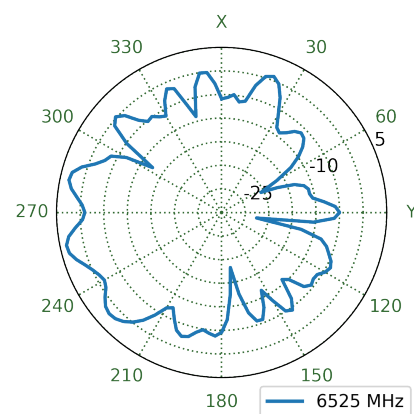
XZ Plane



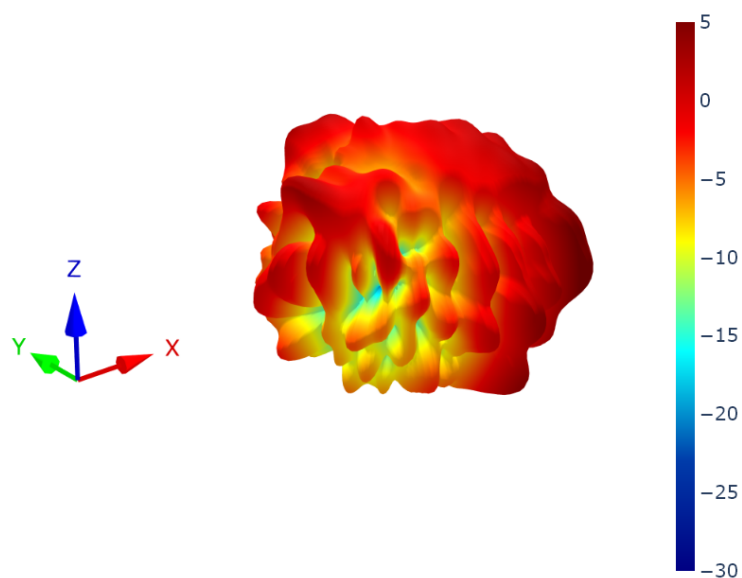
YZ Plane



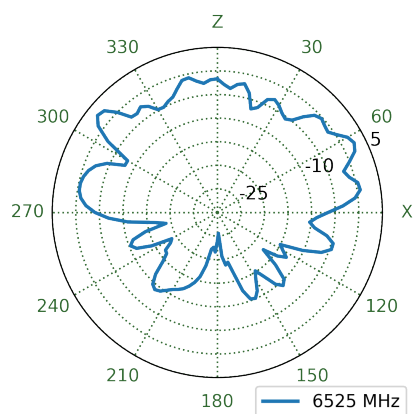
XY Plane



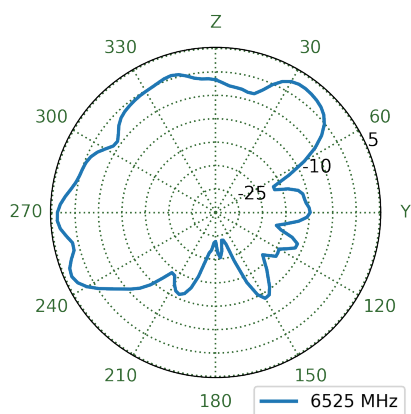
## 8.125 Wi-Fi6 Patterns at 6525 MHz



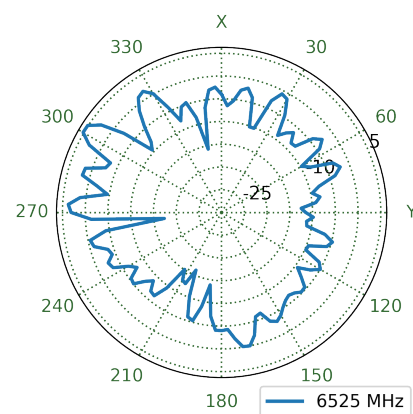
XZ Plane



YZ Plane



XY Plane



Changelog for the datasheet

SPE-24-8-311 - MAX1015.A.001

Revision: A (Original First Release)

|         |                 |
|---------|-----------------|
| Date:   | 2024-12-17      |
| Notes:  | Initial Release |
| Author: | Gary West       |

Previous Revisions

|  |  |
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