



# TAOGLAS®



# Datasheet

**Part No:**  
**TGX.08.A.001**

**Description**

Wideband 600-6000MHz 5G MIMO 8-in-1 Cross Polarized Antenna  
With Multi-mount options (Adhesive, Wall and Glass)

**Features:**

- Highest efficiency for 600-6000MHz wideband applications
- Fully 5G NR Cellular Operational
- Cross Polarized Dipole Antennas
- IP67 Rated Enclosure
- Omnidirectional Gain Patterns leading to better coverage
- Multi-function bracket including Wall and Glass Mount options
- Cable: 3m TGC-200
- Connector: SMA Male Straight
- Dimensions: 338\*171\*60mm
- RoHS & Reach Compliant

|           |                                |           |
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# 1. Introduction



The Taoglas TGX.08 is an 8\*8 5G MIMO cross-polarized omnidirectional dipole antenna with a wide bandwidth covering all worldwide sub 6GHz cellular bands from 600 to 6000MHz. It uses eight dipole antennas to deliver the best possible throughput and quality improvements in transmitting and receive signal levels, leading to better coverage and performance, especially in urban environments. It is designed for multiple mounting options to allow for a variety of use cases such as adhesive, wall and glass mount.

Typical applications include:

- Fixed Wireless Access
- In Building Connectivity
- Passenger Rail and Bus

The antenna is tuned for great performance at the recently established 5G NR bands between 3300 - 4200MHz and covers Band 71 (617MHz) at the lower end of the 5G NR frequency spectrum. High Efficiency and good Gain is achievable at each band on all MIMO antennas. The cross polarized antennas' layout also enhances MIMO performance capabilities, thus improving signal quality.

This is achieved by applying polarization diversity with +/- 45-degree polarized signals received from most base station antennas and in turn, enhances throughput capacity giving the user the best possible cellular performance for their device. The TGX.08 has been designed for typical applications including gateways, routers and wireless access points that require, high efficiency and unrivalled performance, and itself is a great 8x8 MIMO solution.

The robust TGX.08 enclosure is IP67 rated and manufactured from ASA for exceptional mechanical performance. The bracket is designed to allow for multiple mounting options, including wall mounting and it is supplied with suction cups to facilitate glass mounting. All accessories for each mounting option are included with the product. The TGX.08 is an omnidirectional antenna, but the mounting bracket allows the user to position the antenna and lock it into place for optimal performance.

The 3m TGC-200 cable and SMA(M) connector are fully customizable depending on your specific requirements. Contact your regional Taoglas customer support team for more information.

## 2. Specification

| Electrical  |                 |             |                |                   |                 |             |                        |                   |                  |
|-------------|-----------------|-------------|----------------|-------------------|-----------------|-------------|------------------------|-------------------|------------------|
| Band        | Frequency (MHz) | Measurement | Efficiency (%) | Average Gain (dB) | Peak Gain (dBi) | Impedance   | Polarization           | Radiation Pattern | Max. input power |
| 5GNR B71    | 617-698         | 5GNR_1      | 38.9           | -4.10             | 2.01            | 50 $\Omega$ | Cross Polarized Linear | Omni-Directional  | 10W              |
|             |                 | 5GNR_2      | 33.0           | -4.82             | -0.40           |             |                        |                   |                  |
|             |                 | 5GNR_3      | 35.6           | -4.49             | -0.16           |             |                        |                   |                  |
|             |                 | 5GNR_4      | 37.2           | -4.29             | 1.32            |             |                        |                   |                  |
|             |                 | 5GNR_5      | 31.1           | -5.07             | 1.04            |             |                        |                   |                  |
|             |                 | 5GNR_6      | 32.3           | -4.90             | 0.47            |             |                        |                   |                  |
|             |                 | 5GNR_7      | 29.8           | -5.25             | -0.48           |             |                        |                   |                  |
|             |                 | 5GNR_8      | 30.8           | -5.11             | 0.57            |             |                        |                   |                  |
| LTE 700     | 698-806         | 5GNR_1      | 42.9           | -3.68             | 2.67            |             |                        |                   |                  |
|             |                 | 5GNR_2      | 44.6           | -3.51             | 1.46            |             |                        |                   |                  |
|             |                 | 5GNR_3      | 45.4           | -3.43             | 2.03            |             |                        |                   |                  |
|             |                 | 5GNR_4      | 45.3           | -3.44             | 1.32            |             |                        |                   |                  |
|             |                 | 5GNR_5      | 47.3           | -3.25             | 3.87            |             |                        |                   |                  |
|             |                 | 5GNR_6      | 42.4           | -3.73             | 1.54            |             |                        |                   |                  |
|             |                 | 5GNR_7      | 40.3           | -3.94             | 0.93            |             |                        |                   |                  |
|             |                 | 5GNR_8      | 45.3           | -3.44             | 4.38            |             |                        |                   |                  |
| LTE 800/900 | 824-960         | 5GNR_1      | 53.9           | -2.69             | 4.06            |             |                        |                   |                  |
|             |                 | 5GNR_2      | 54.2           | -2.66             | 2.48            |             |                        |                   |                  |
|             |                 | 5GNR_3      | 54.1           | -2.67             | 2.50            |             |                        |                   |                  |
|             |                 | 5GNR_4      | 54.7           | -2.62             | 2.38            |             |                        |                   |                  |
|             |                 | 5GNR_5      | 47.7           | -3.21             | 3.78            |             |                        |                   |                  |
|             |                 | 5GNR_6      | 39.9           | -3.99             | 2.16            |             |                        |                   |                  |
|             |                 | 5GNR_7      | 40.7           | -3.91             | 1.71            |             |                        |                   |                  |
|             |                 | 5GNR_8      | 59.4           | -2.26             | 4.72            |             |                        |                   |                  |
| 5GNR 1500   | 1427-1518       | 5GNR_1      | 35.1           | -4.54             | 3.23            |             |                        |                   |                  |
|             |                 | 5GNR_2      | 51.1           | -2.91             | 3.05            |             |                        |                   |                  |
|             |                 | 5GNR_3      | 48.6           | -3.13             | 4.10            |             |                        |                   |                  |
|             |                 | 5GNR_4      | 36.6           | -4.36             | 2.80            |             |                        |                   |                  |
|             |                 | 5GNR_5      | 30.3           | -5.19             | 1.88            |             |                        |                   |                  |
|             |                 | 5GNR_6      | 29.8           | -5.26             | 3.06            |             |                        |                   |                  |
|             |                 | 5GNR_7      | 35.9           | -4.45             | 5.24            |             |                        |                   |                  |
|             |                 | 5GNR_8      | 24.1           | -6.19             | 1.87            |             |                        |                   |                  |
| 5GNR n66    | 1710-2200       | 5GNR_1      | 42.2           | -3.75             | 3.20            |             |                        |                   |                  |
|             |                 | 5GNR_2      | 43.8           | -3.59             | 3.22            |             |                        |                   |                  |
|             |                 | 5GNR_3      | 29.3           | -5.33             | 3.05            |             |                        |                   |                  |
|             |                 | 5GNR_4      | 41.9           | -3.78             | 3.81            |             |                        |                   |                  |
|             |                 | 5GNR_5      | 31.9           | -4.97             | 3.87            |             |                        |                   |                  |
|             |                 | 5GNR_6      | 33.8           | -4.71             | 2.57            |             |                        |                   |                  |
|             |                 | 5GNR_7      | 41.6           | -3.81             | 2.87            |             |                        |                   |                  |
|             |                 | 5GNR_8      | 37.9           | -4.21             | 4.15            |             |                        |                   |                  |
| LTE 2600    | 2300-2690       | 5GNR_1      | 38.6           | -4.14             | 4.36            |             |                        |                   |                  |
|             |                 | 5GNR_2      | 39.2           | -4.06             | 3.24            |             |                        |                   |                  |
|             |                 | 5GNR_3      | 37.4           | -4.27             | 4.27            |             |                        |                   |                  |
|             |                 | 5GNR_4      | 37.9           | -4.21             | 3.29            |             |                        |                   |                  |
|             |                 | 5GNR_5      | 36.5           | -4.38             | 5.26            |             |                        |                   |                  |
|             |                 | 5GNR_6      | 36.5           | -4.38             | 3.88            |             |                        |                   |                  |
|             |                 | 5GNR_7      | 39.7           | -4.01             | 4.53            |             |                        |                   |                  |
|             |                 | 5GNR_8      | 40.9           | -3.88             | 5.41            |             |                        |                   |                  |
| 5GNR n77    | 3300-4200       | 5GNR_1      | 37.9           | -4.22             | 3.78            |             |                        |                   |                  |
|             |                 | 5GNR_2      | 33.6           | -4.73             | 3.17            |             |                        |                   |                  |
|             |                 | 5GNR_3      | 37.5           | -4.26             | 5.27            |             |                        |                   |                  |
|             |                 | 5GNR_4      | 33.2           | -4.78             | 3.32            |             |                        |                   |                  |
|             |                 | 5GNR_5      | 33.5           | -4.75             | 3.51            |             |                        |                   |                  |
|             |                 | 5GNR_6      | 29.2           | -5.35             | 2.66            |             |                        |                   |                  |
|             |                 | 5GNR_7      | 39.4           | -4.05             | 3.20            |             |                        |                   |                  |
|             |                 | 5GNR_8      | 34.2           | -4.66             | 3.59            |             |                        |                   |                  |



|          |           |        |      |       |      |  |  |  |  |
|----------|-----------|--------|------|-------|------|--|--|--|--|
| 5GNR n78 | 3300-3800 | 5GNR_1 | 37.6 | -4.25 | 3.78 |  |  |  |  |
|          |           | 5GNR_2 | 32.8 | -4.84 | 3.17 |  |  |  |  |
|          |           | 5GNR_3 | 37.1 | -4.30 | 5.27 |  |  |  |  |
|          |           | 5GNR_4 | 33.0 | -4.81 | 3.05 |  |  |  |  |
|          |           | 5GNR_5 | 33.0 | -4.82 | 3.51 |  |  |  |  |
|          |           | 5GNR_6 | 28.7 | -5.42 | 2.66 |  |  |  |  |
|          |           | 5GNR_7 | 39.6 | -4.03 | 3.20 |  |  |  |  |
|          |           | 5GNR_8 | 34.1 | -4.67 | 3.59 |  |  |  |  |
| 5GNR n79 | 4400-5000 | 5GNR_1 | 44.0 | -3.57 | 4.32 |  |  |  |  |
|          |           | 5GNR_2 | 42.9 | -3.67 | 4.72 |  |  |  |  |
|          |           | 5GNR_3 | 39.6 | -4.02 | 3.96 |  |  |  |  |
|          |           | 5GNR_4 | 36.2 | -4.41 | 3.80 |  |  |  |  |
|          |           | 5GNR_5 | 39.6 | -4.02 | 3.63 |  |  |  |  |
|          |           | 5GNR_6 | 32.7 | -4.86 | 4.03 |  |  |  |  |
|          |           | 5GNR_7 | 40.4 | -3.93 | 4.69 |  |  |  |  |
|          |           | 5GNR_8 | 38.6 | -4.13 | 4.06 |  |  |  |  |
| LTE 5200 | 5150-5925 | 5GNR_1 | 35.5 | -4.49 | 4.73 |  |  |  |  |
|          |           | 5GNR_2 | 35.6 | -4.48 | 4.34 |  |  |  |  |
|          |           | 5GNR_3 | 32.6 | -4.86 | 3.58 |  |  |  |  |
|          |           | 5GNR_4 | 32.2 | -4.92 | 4.52 |  |  |  |  |
|          |           | 5GNR_5 | 34.3 | -4.65 | 3.39 |  |  |  |  |
|          |           | 5GNR_6 | 32.5 | -4.88 | 3.95 |  |  |  |  |
|          |           | 5GNR_7 | 34.2 | -4.66 | 4.42 |  |  |  |  |
|          |           | 5GNR_8 | 35.9 | -4.45 | 3.27 |  |  |  |  |

#### Cross Polar Discrimination (dB)\_XPD\*

| Frequency |               | 617-698 | 698-806 | 824-960 | 1427-1518 | 1710-2170 | 2300-2690 | 3300-4200 | 3300-3800 | 4400-5000 | 5150-5925 |
|-----------|---------------|---------|---------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 5GNR_1    | Azimuth plane | 23.3    | 33.5    | 27.0    | 21.3      | 20.5      | 18.7      | 17.6      | 17.9      | 13.2      | 19.8      |
| 5GNR_2    |               | 26.2    | 26.6    | 29.6    | 26.8      | 19.5      | 31.1      | 19.3      | 19.2      | 23.0      | 19.3      |
| 5GNR_3    |               | 25.9    | 25.8    | 31.5    | 30.0      | 18.4      | 23.9      | 19.5      | 19.0      | 20.3      | 15.0      |
| 5GNR_4    |               | 21.8    | 22.6    | 30.1    | 21.8      | 20.0      | 26.6      | 18.2      | 18.1      | 19.5      | 15.3      |
| 5GNR_5    |               | 20.2    | 22.0    | 22.1    | 24.9      | 22.9      | 27.7      | 20.2      | 20.3      | 17.6      | 22.5      |
| 5GNR_6    |               | 32.9    | 26.8    | 24.7    | 21.3      | 29.9      | 17.5      | 19.6      | 19.8      | 26.1      | 18.5      |
| 5GNR_7    |               | 23.6    | 26.5    | 25.8    | 26.5      | 23.2      | 12.9      | 25.5      | 25.4      | 27.8      | 22.1      |
| 5GNR_8    |               | 14.6    | 22.0    | 25.8    | 20.0      | 21.5      | 29.0      | 16.5      | 16.6      | 14.3      | 16.6      |

\* XPD is the average of the maximum Cross Polar Discrimination at each frequency band.

#### Mechanical

|                   |                                 |
|-------------------|---------------------------------|
| Impedance         | 50 $\Omega$                     |
| Polarization      | Cross Polarized Linear Antennas |
| Radiation Pattern | Omni-Directional                |
| Max. input power  | 10W                             |
| Impedance         | 50 $\Omega$                     |
| Cable             | 3m TGC-200                      |
| Connector         | SMA Male Straight               |

#### Environmental

|                   |                            |
|-------------------|----------------------------|
| Waterproof Rating | IP67                       |
| Temperature Range | -40°C~ 85°C                |
| Humidity          | Non-condensing 65°C 95% RH |

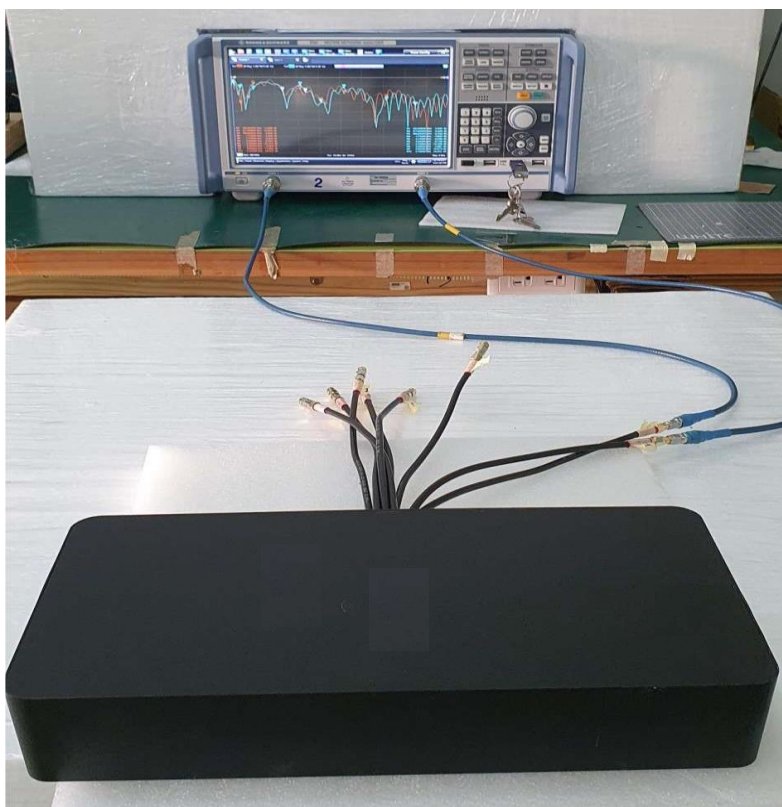
### 3. Antenna Characteristics

#### 3.1 S11 / VSWR / Return Loss

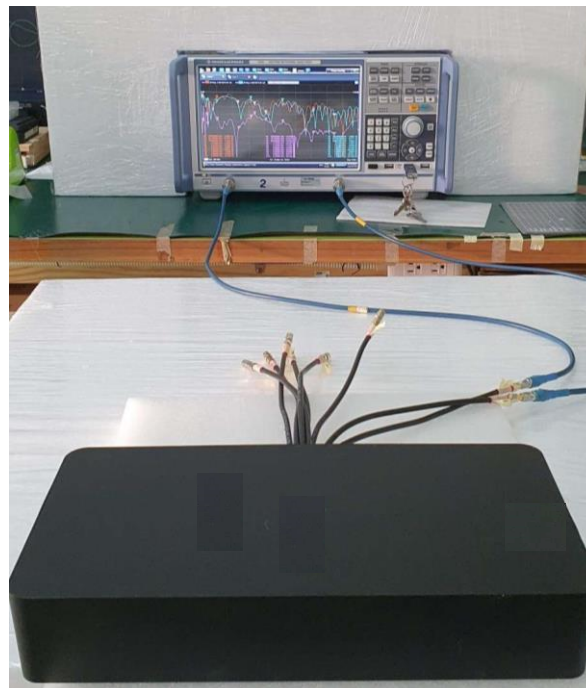
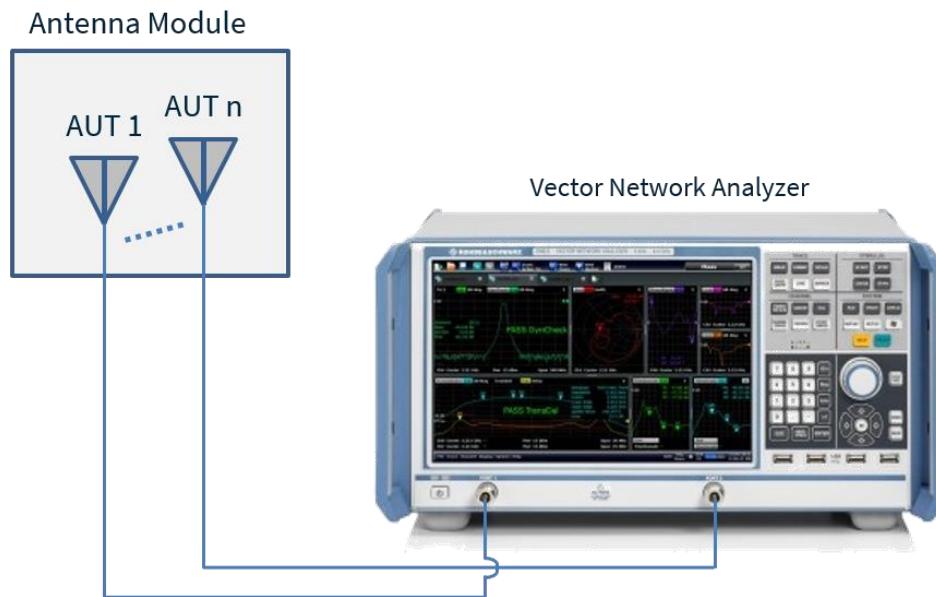
AUT



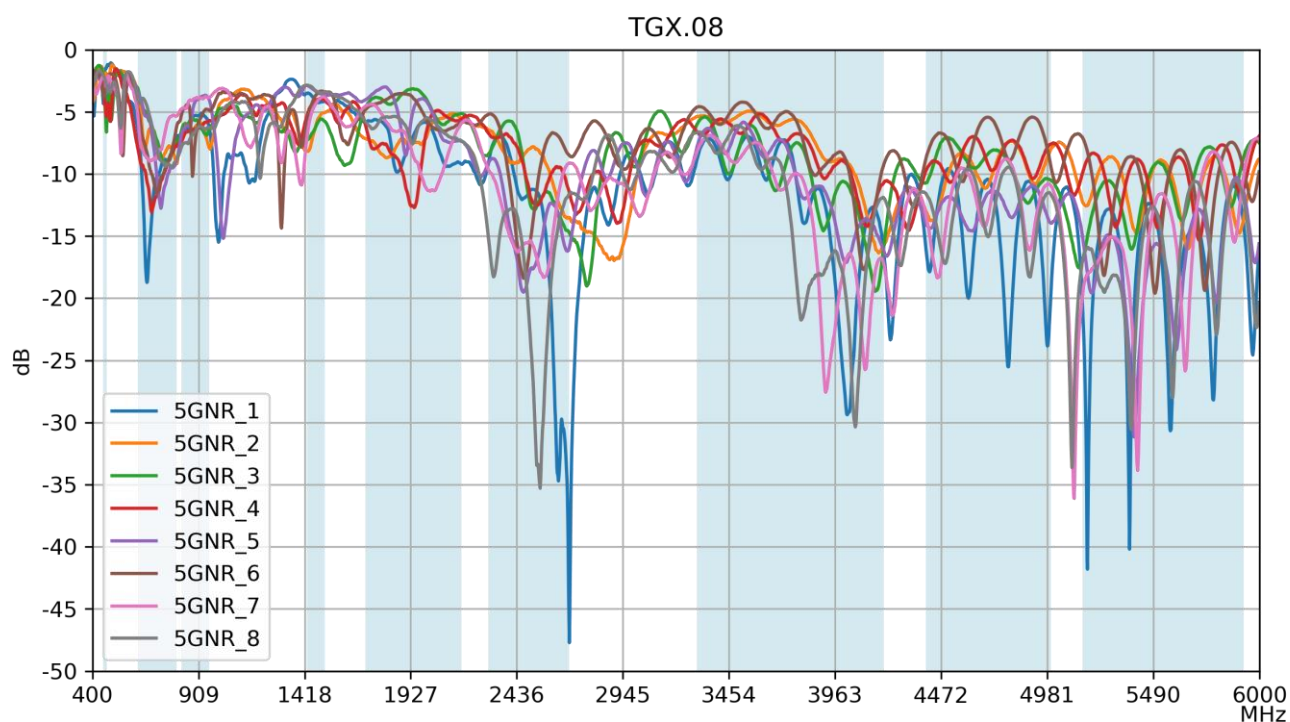
Vector Network Analyzer



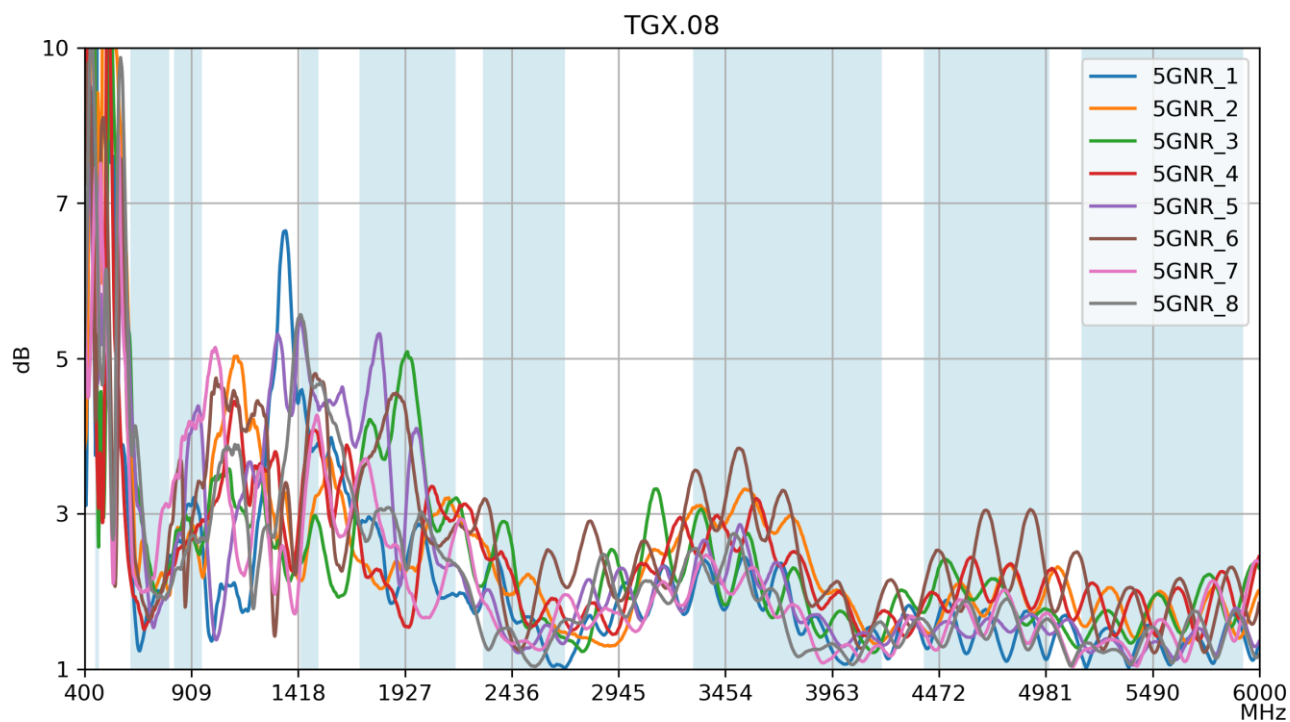
### 3.2 S12 / Isolation



### 3.3 Return Loss

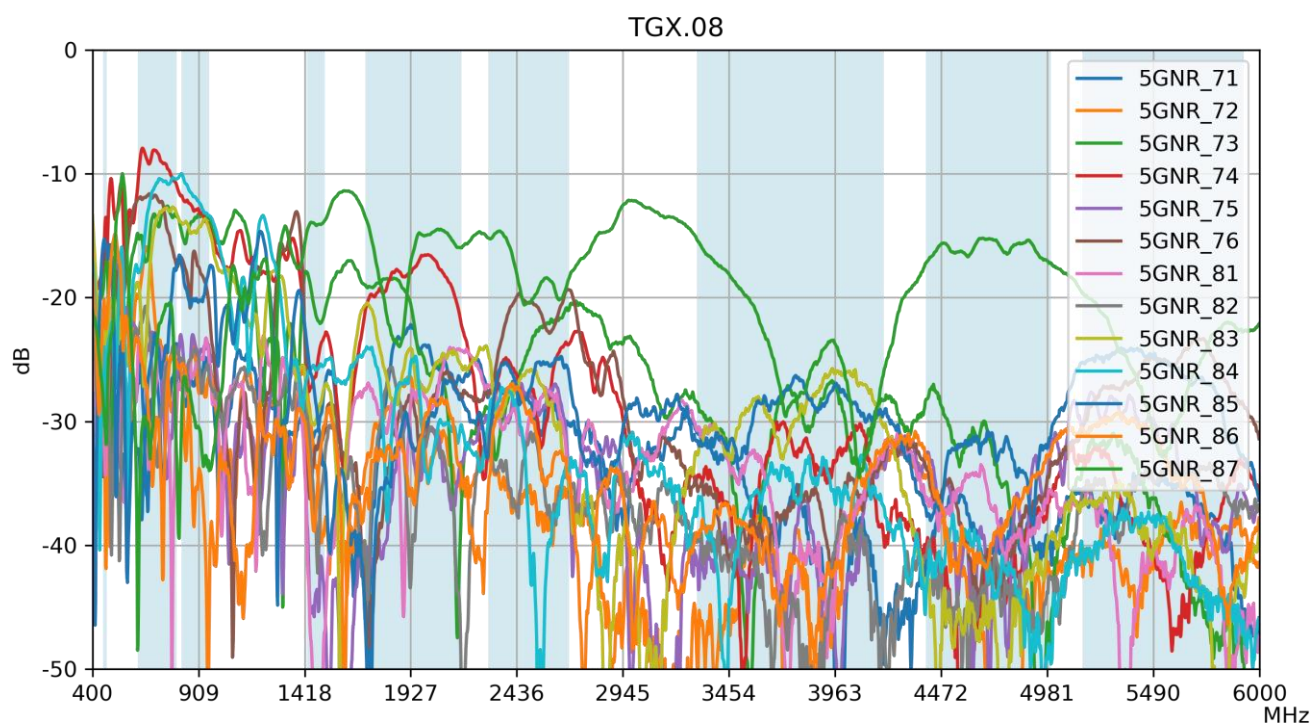
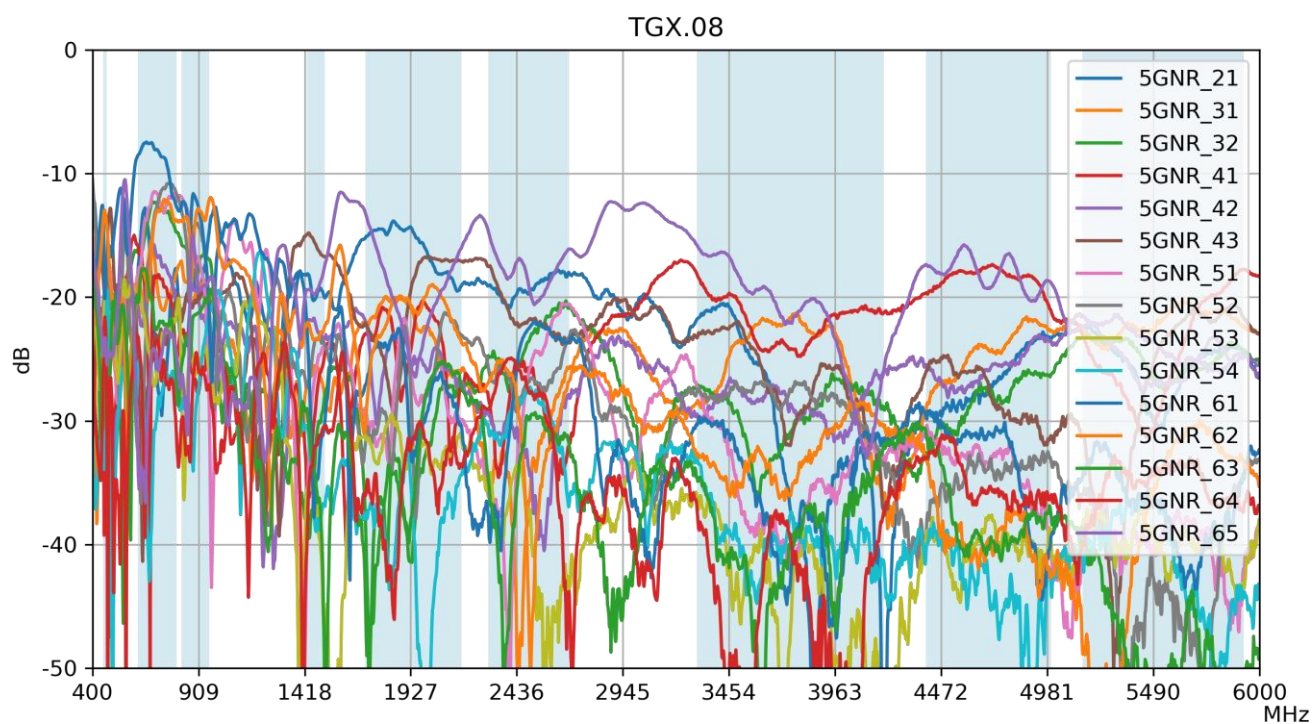


### 3.4 VSWR

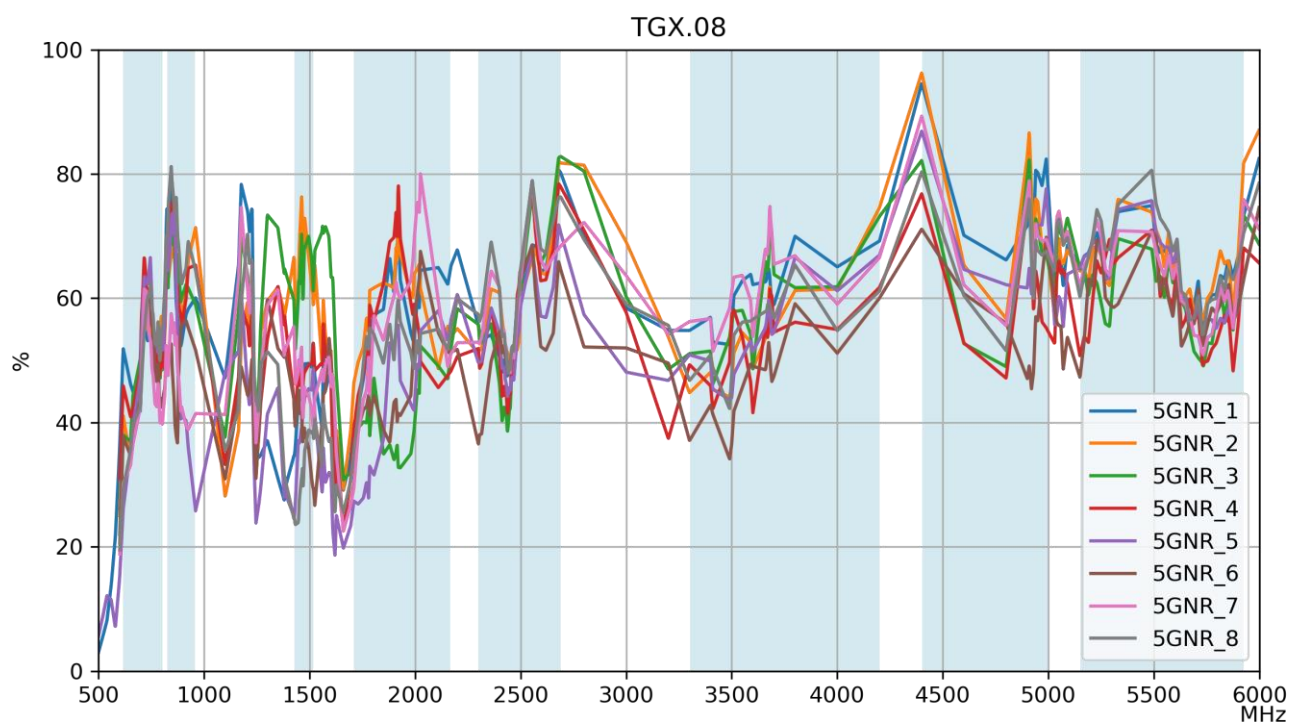




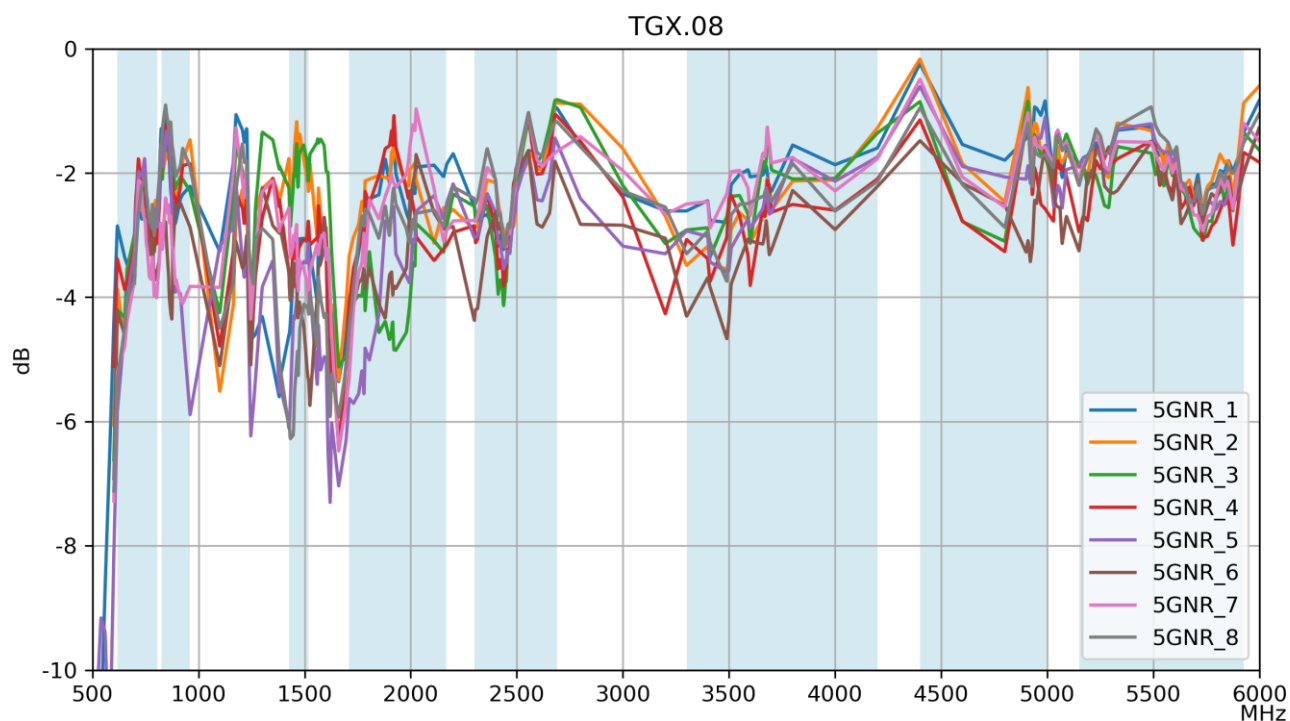
### 3.5 Isolation



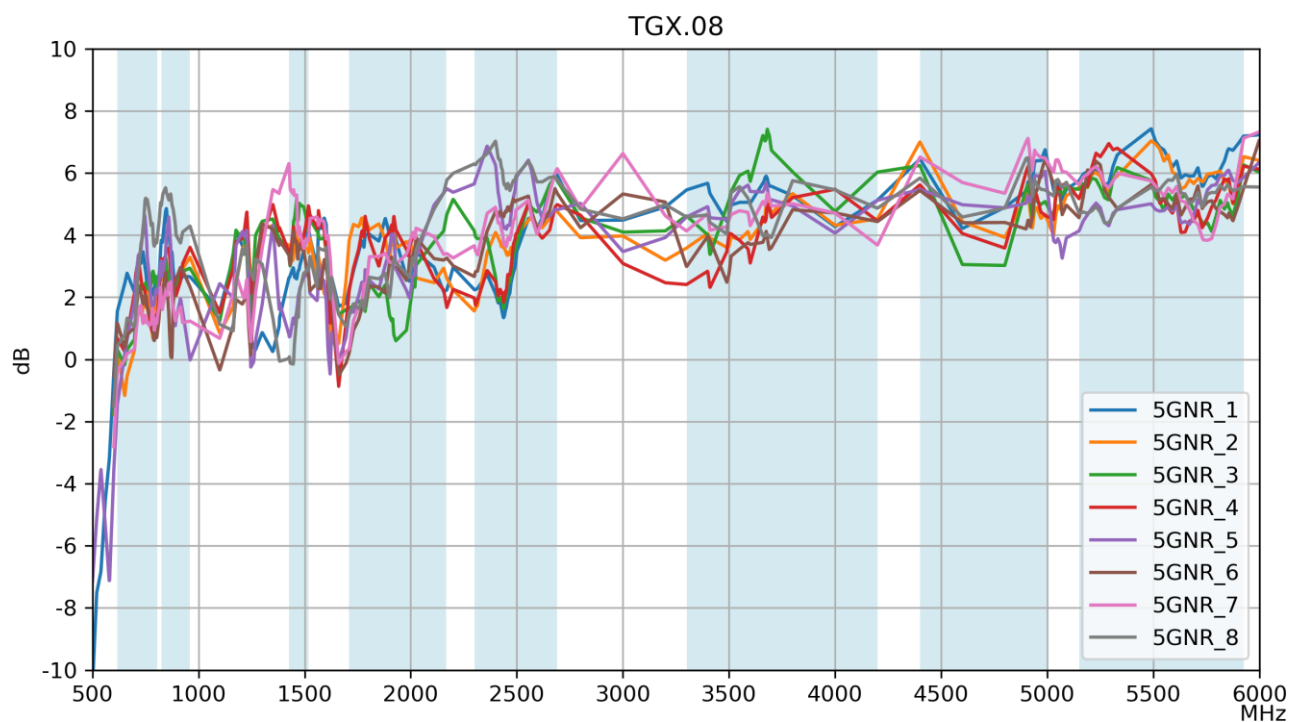
### 3.6 Efficiency



### 3.7 Average Gain



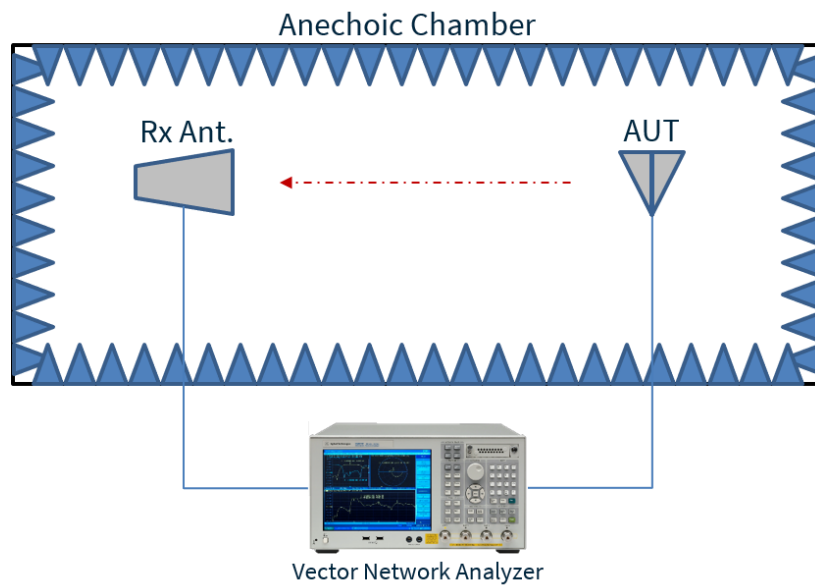
### 3.8 Peak Gain



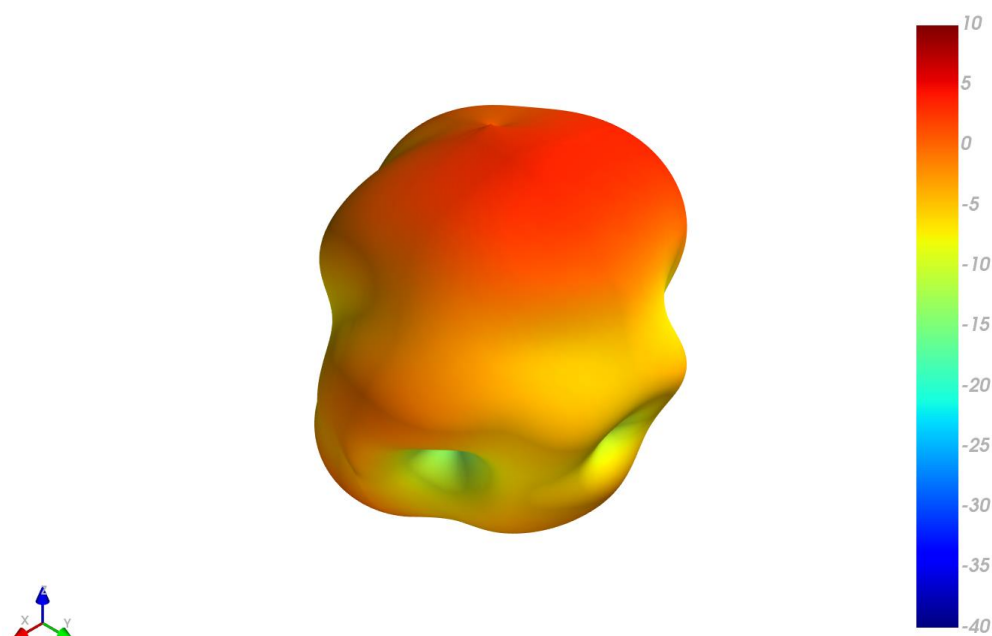


## 4. Radiation Patterns

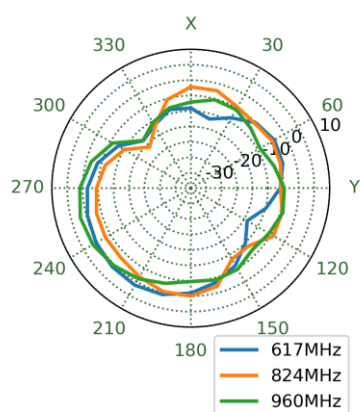
### 4.1 Test Setup



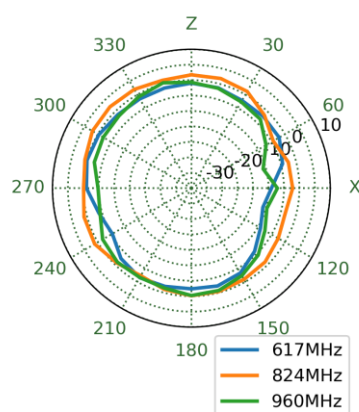
## 4.2 5GNR\_1 - 824MHz Radiation Patterns



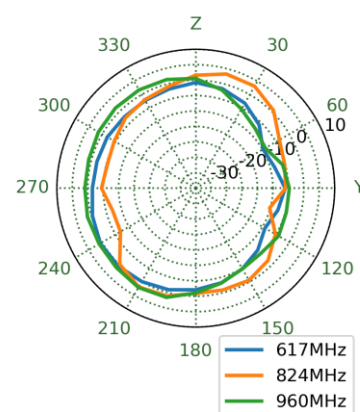
XY Plane



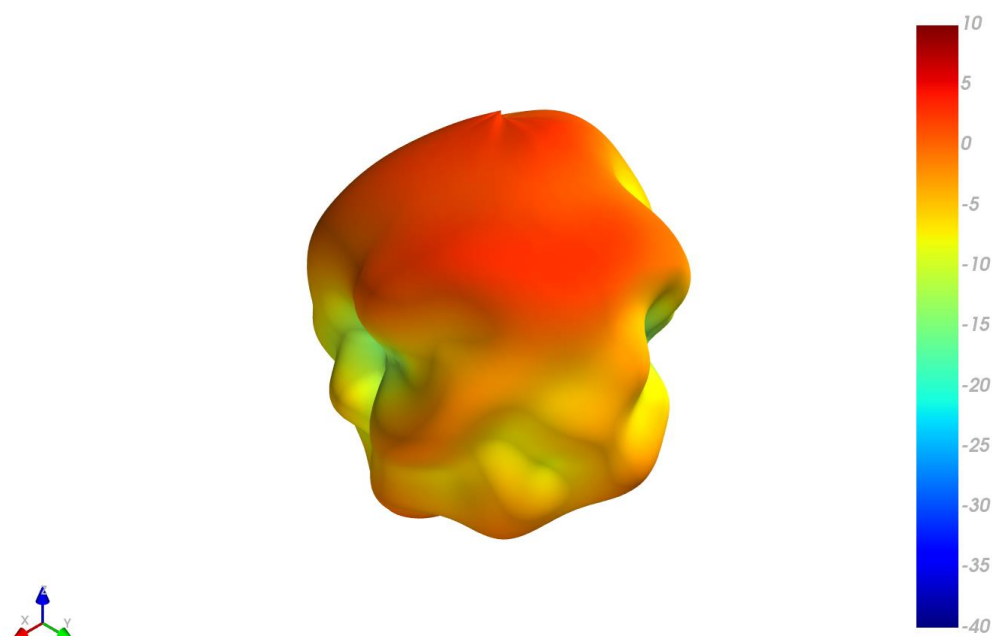
XZ Plane



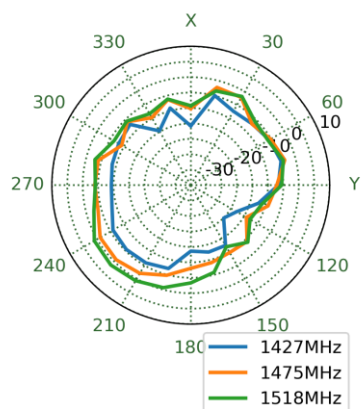
YZ Plane



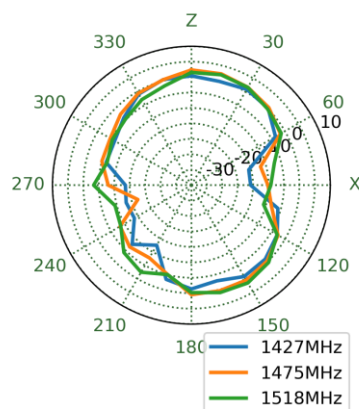
## 4.3 5GNR\_1 - 1475MHz Radiation Patterns



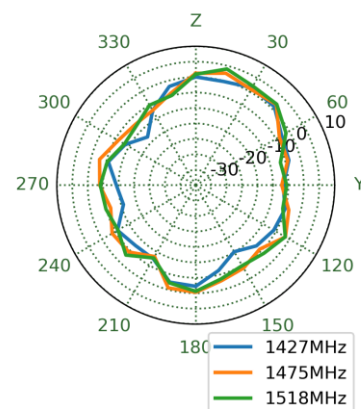
XY Plane



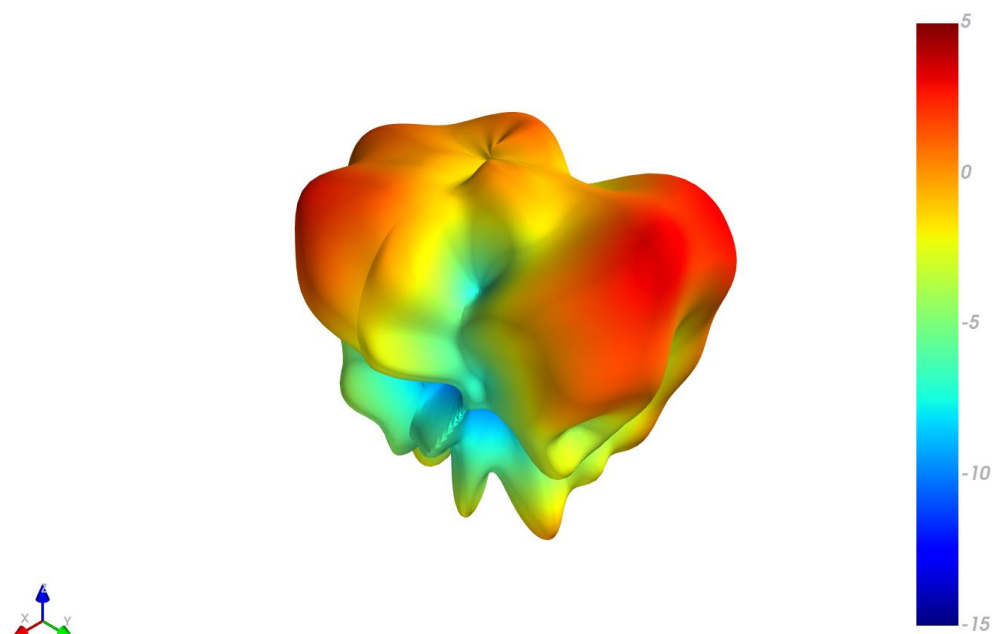
XZ Plane



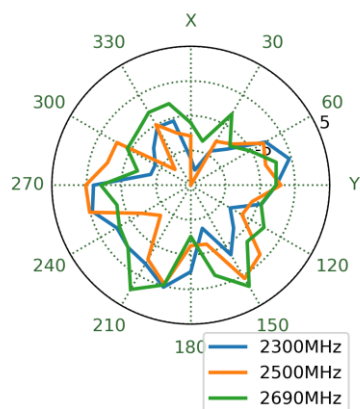
YZ Plane



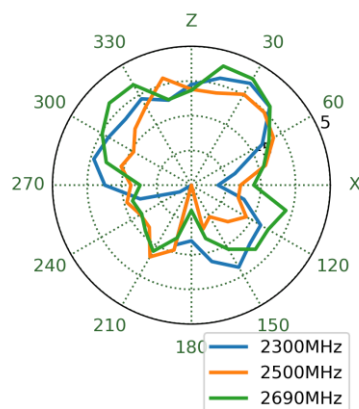
## 4.4 5GNR\_1 - 2500MHz Radiation Patterns



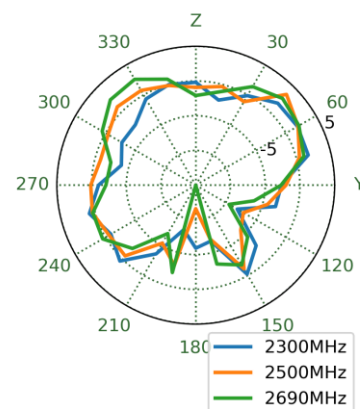
XY Plane



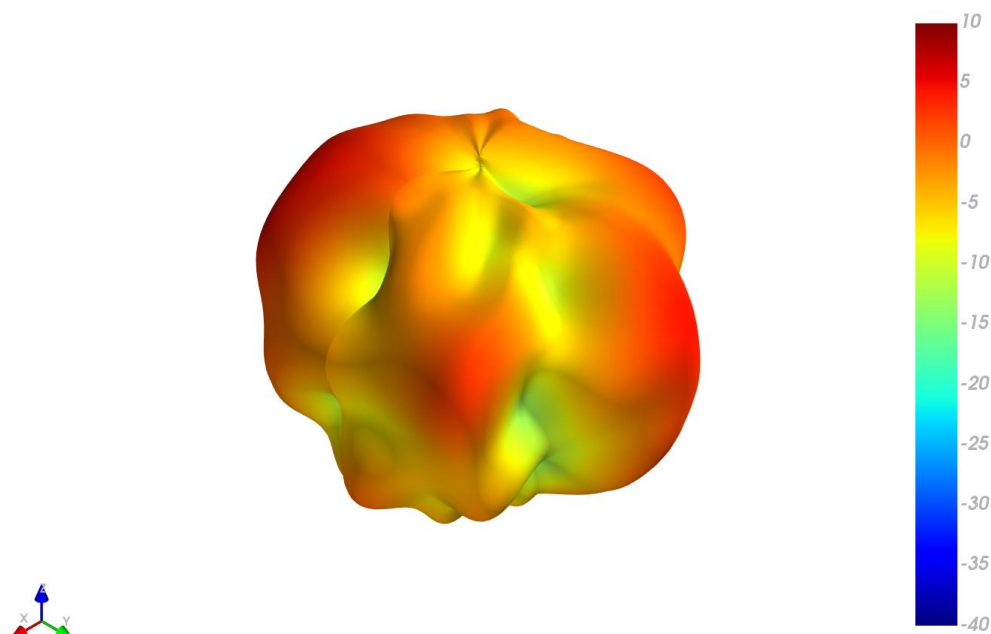
XZ Plane



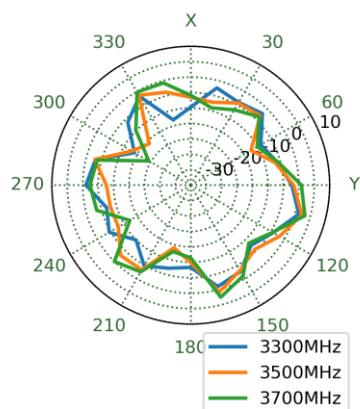
YZ Plane



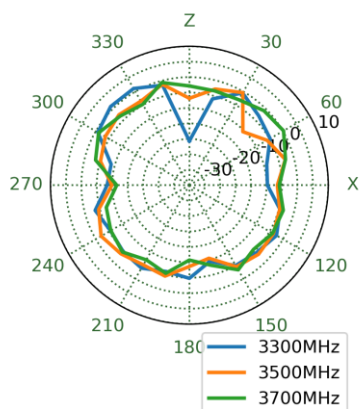
## 4.5 5GNR\_1 - 3500MHz Radiation Patterns



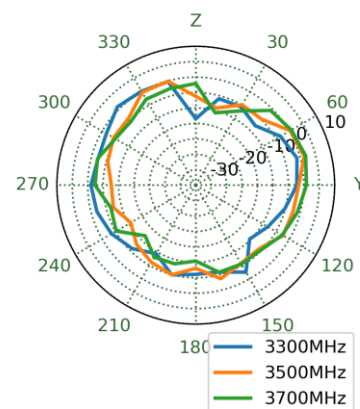
XY Plane



XZ Plane

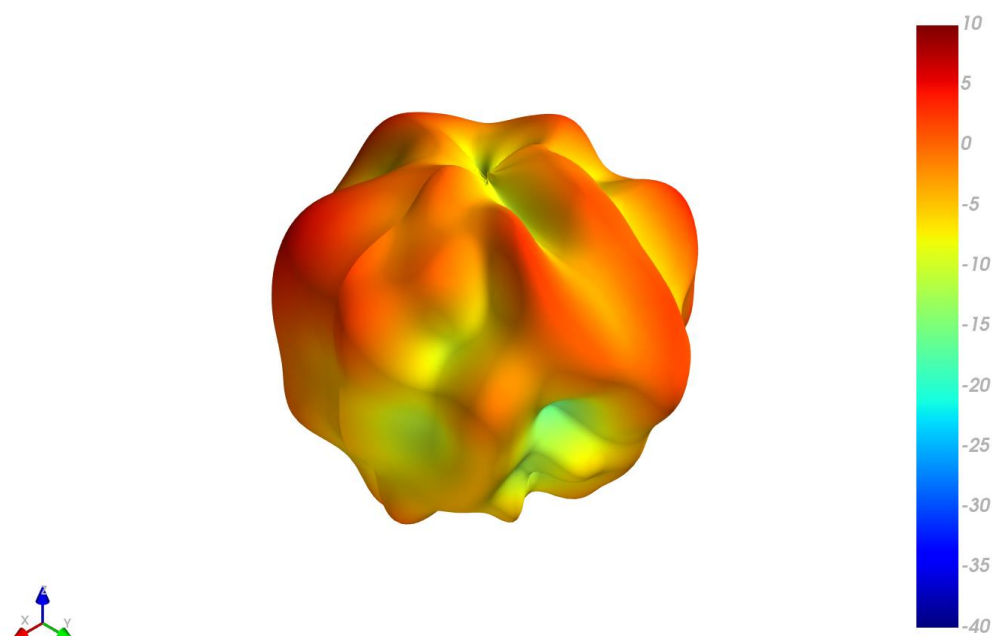


YZ Plane

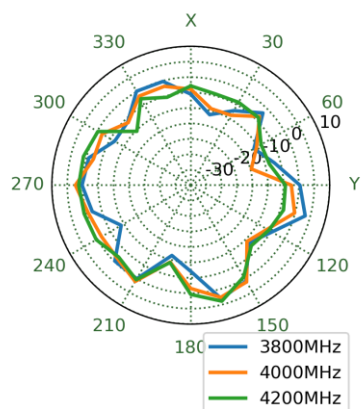




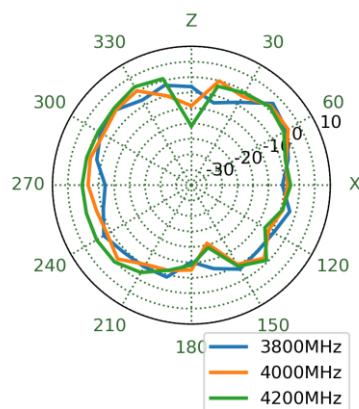
## 4.6 5GNR\_1 - 4000MHz Radiation Patterns



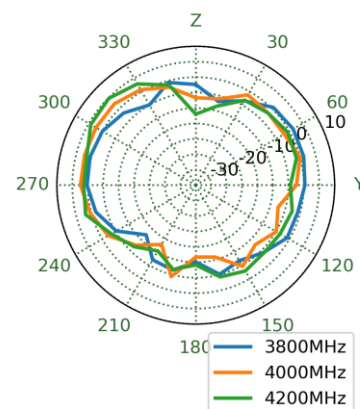
XY Plane



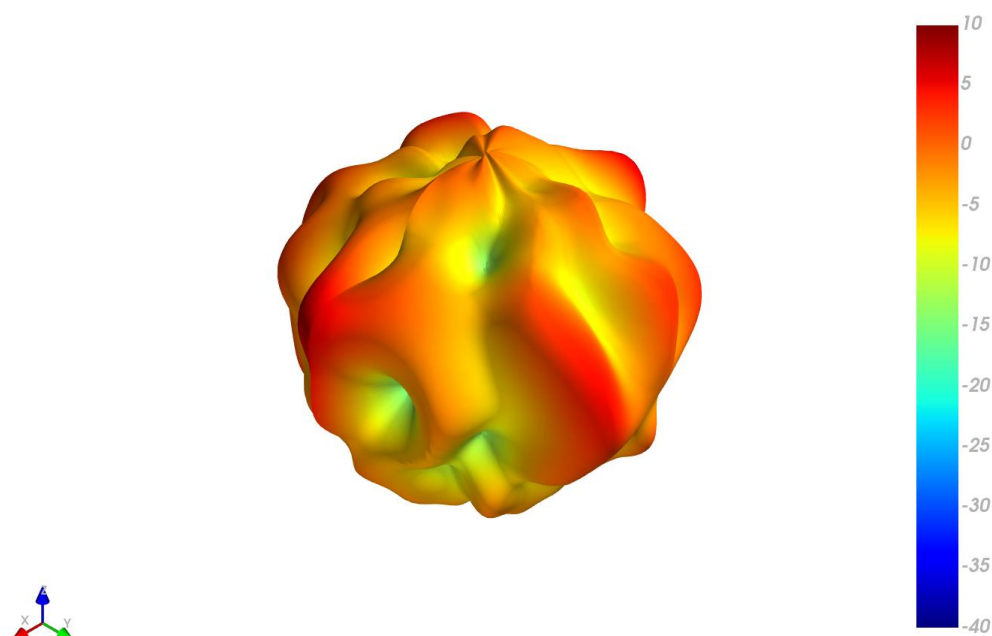
XZ Plane



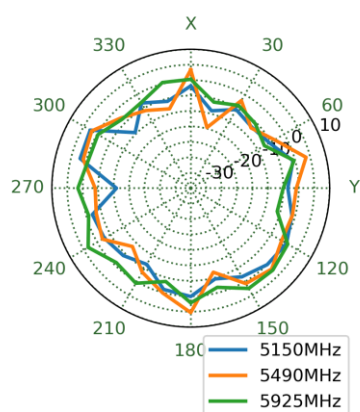
YZ Plane



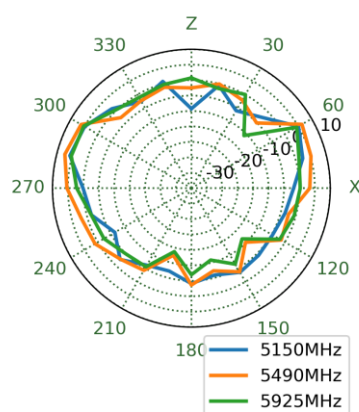
## 4.7 5G NR\_1 - 5490MHz Radiation Patterns



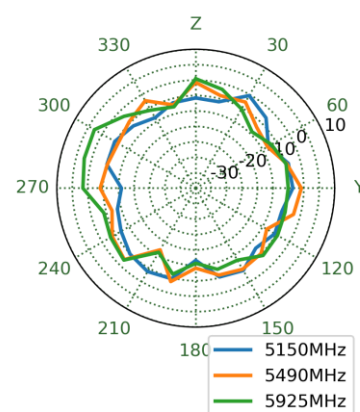
XY Plane



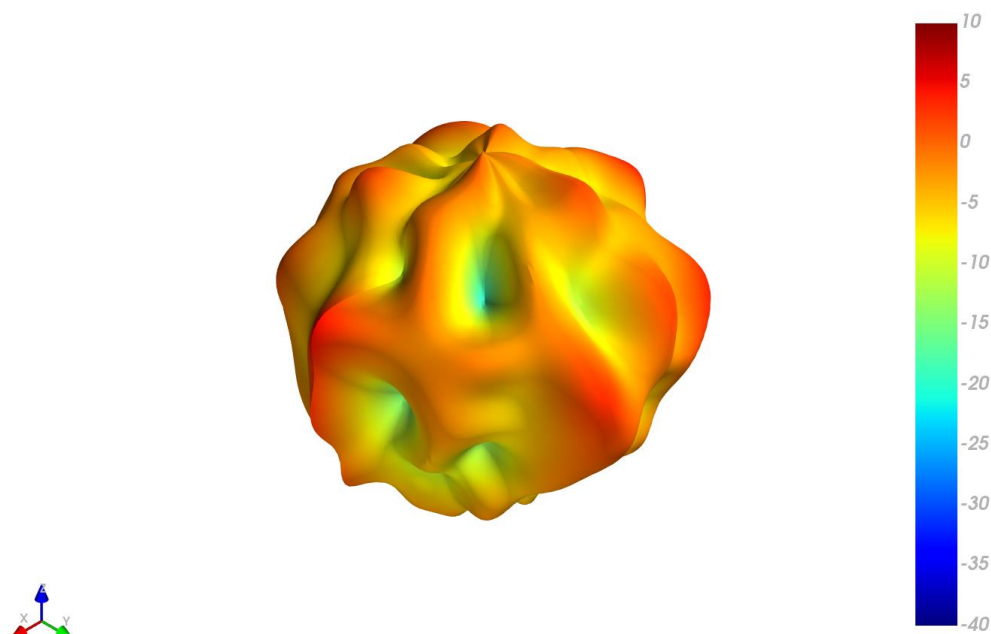
XZ Plane



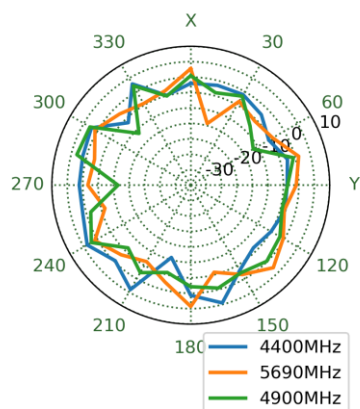
YZ Plane



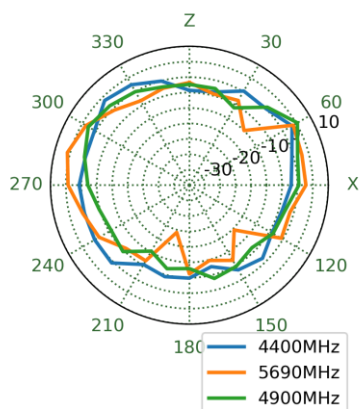
## 4.8 5GNR\_1 - 5690MHz Radiation Patterns



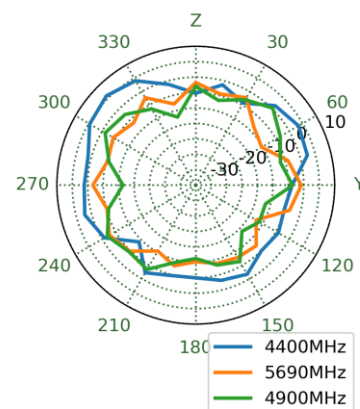
XY Plane



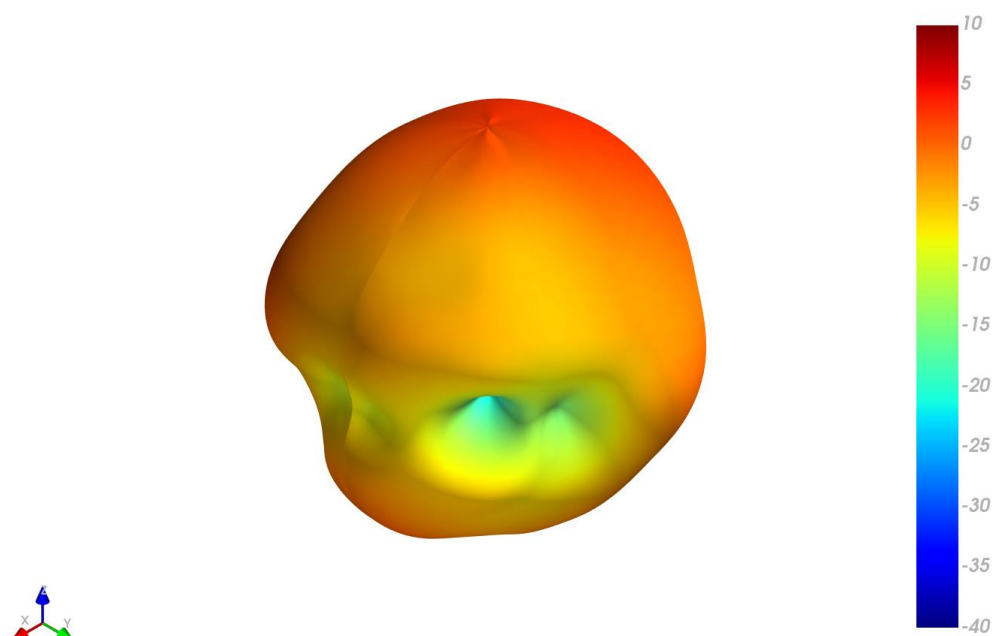
XZ Plane



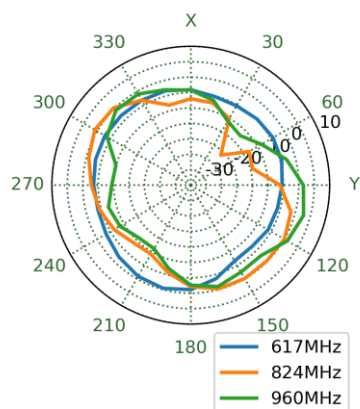
YZ Plane



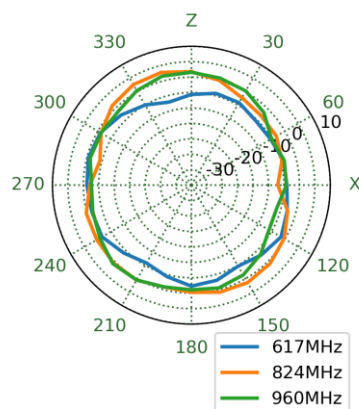
## 4.9 5G NR\_2 - 824MHz Radiation Patterns



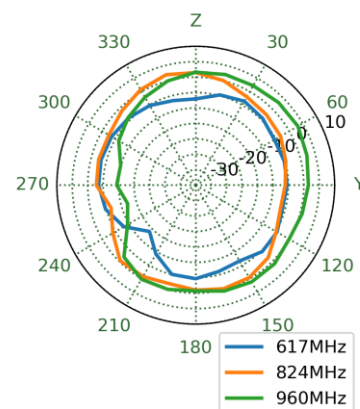
XY Plane



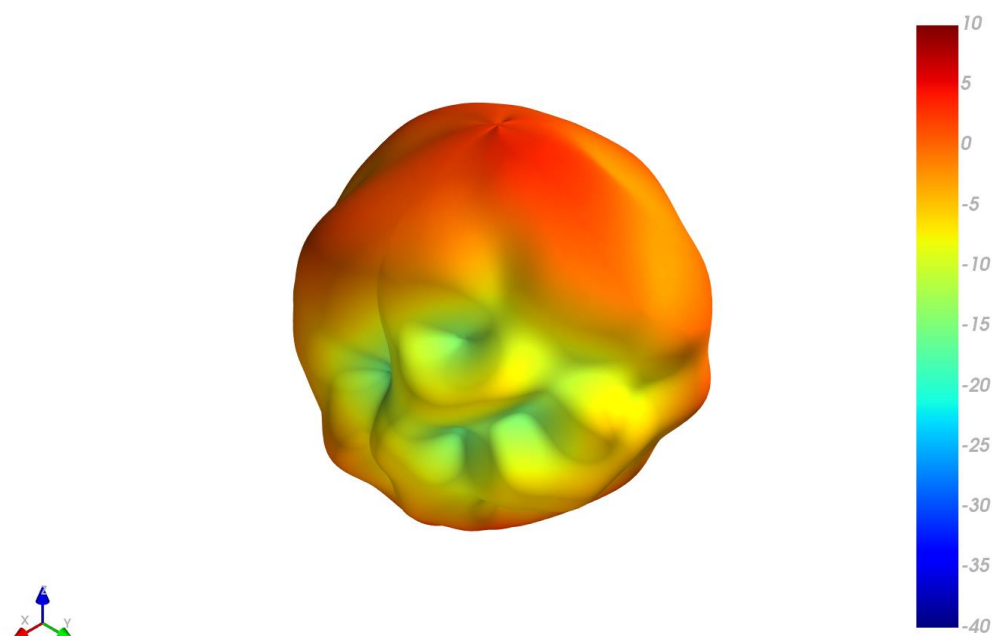
XZ Plane



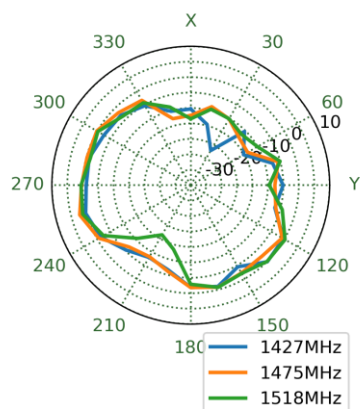
YZ Plane



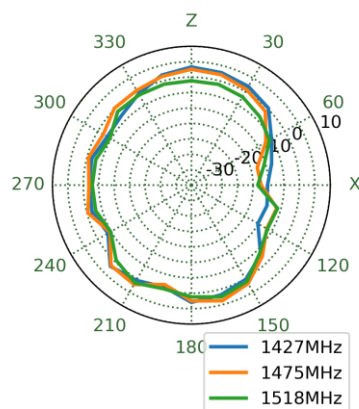
## 4.10 5GNR\_2 - 1475MHz Radiation Patterns



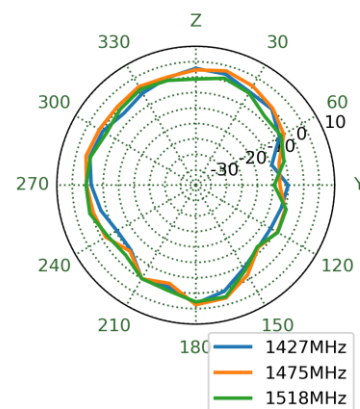
XY Plane



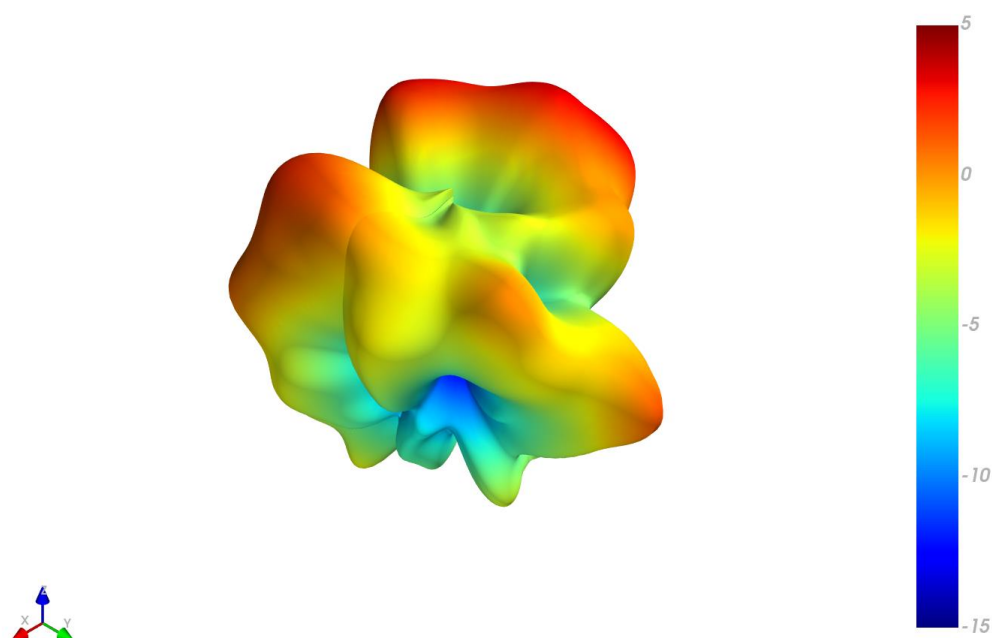
XZ Plane



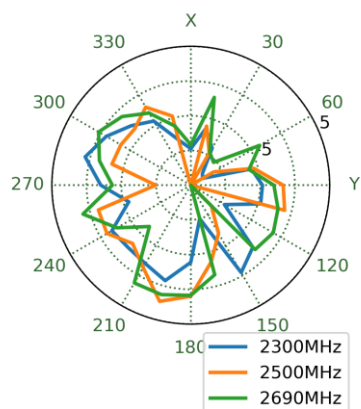
YZ Plane



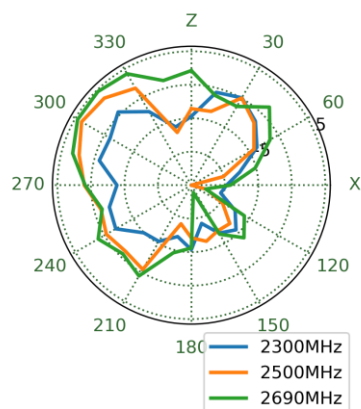
## 4.11 5GNR\_2 - 2500MHz Radiation Patterns



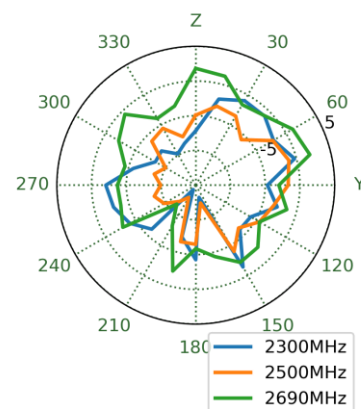
XY Plane



XZ Plane

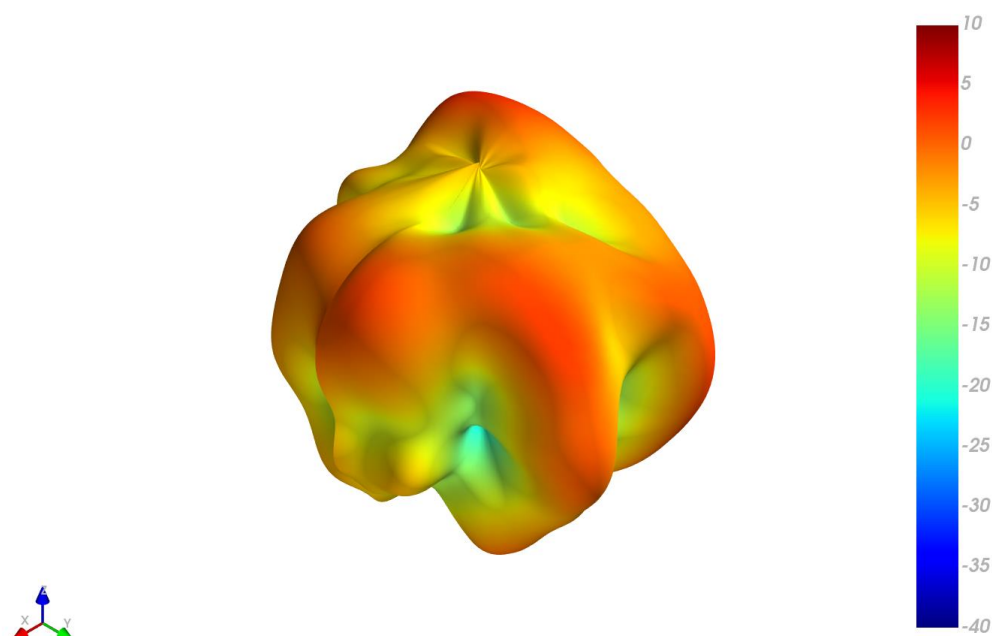


YZ Plane

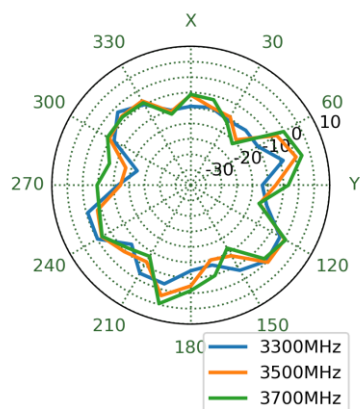




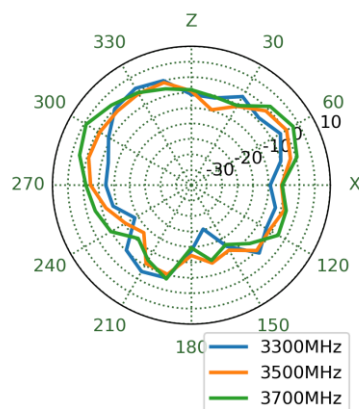
## 4.12 5G NR\_2 - 3500MHz Radiation Patterns



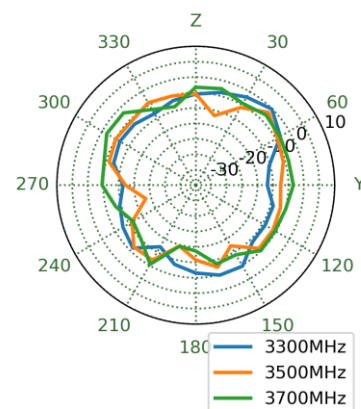
XY Plane



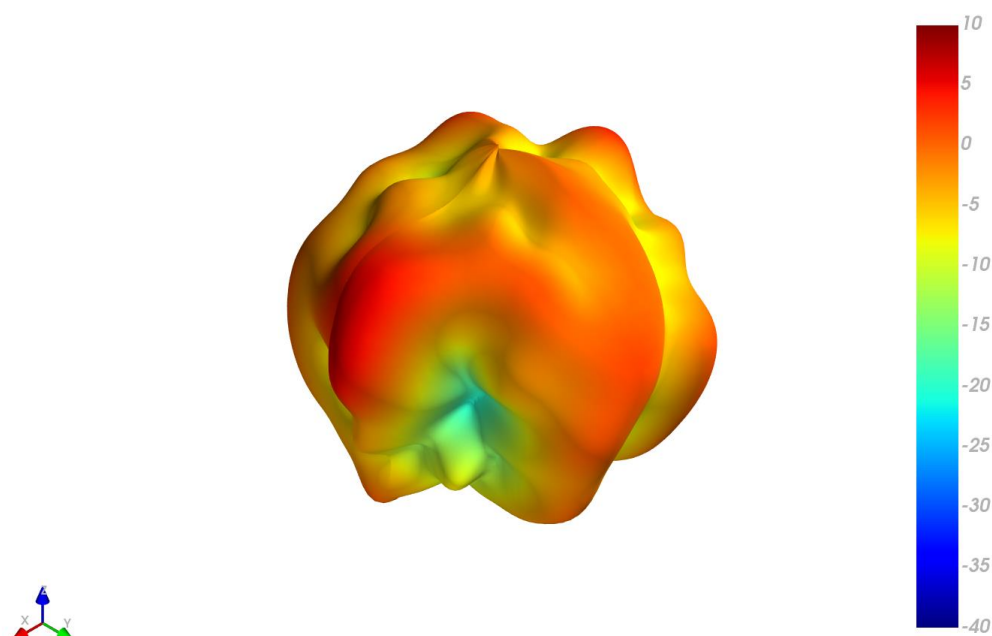
XZ Plane



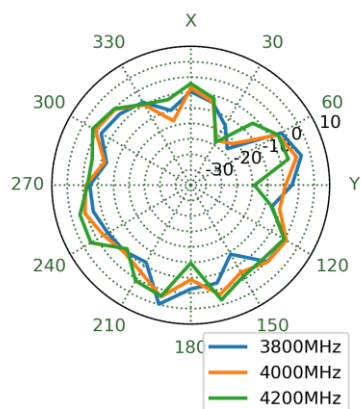
YZ Plane



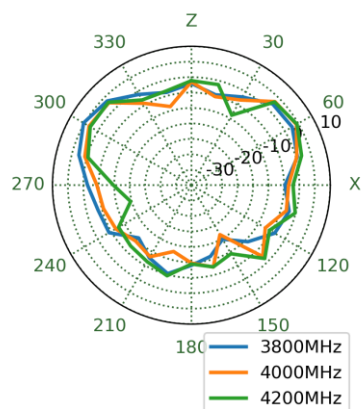
# 4.13 5GNR\_2 - 4000MHz Radiation Patterns



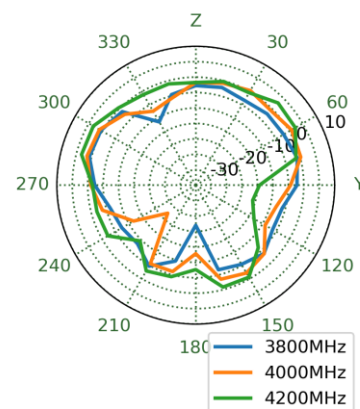
XY Plane



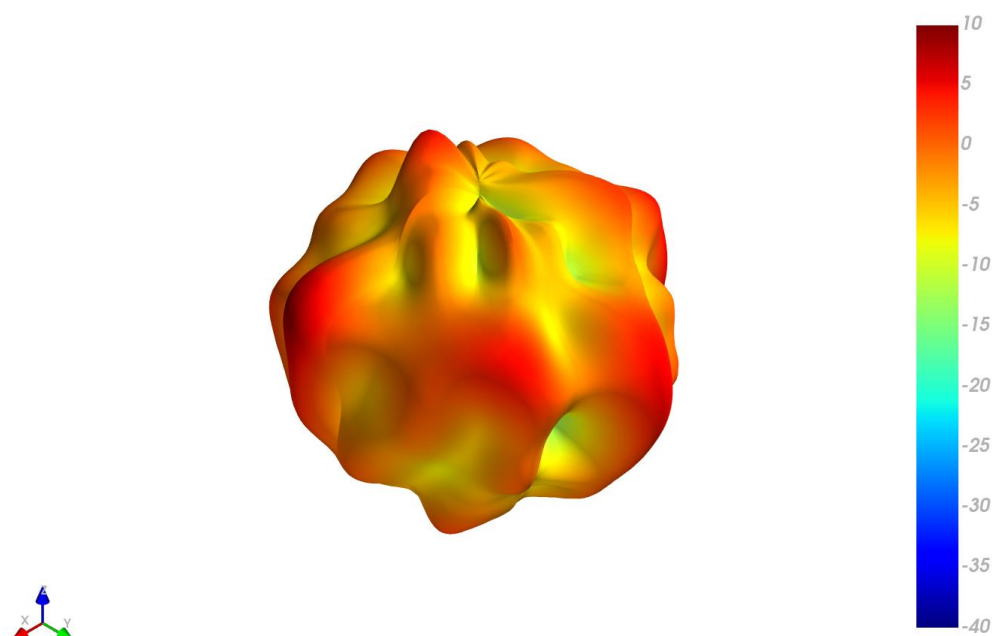
XZ Plane



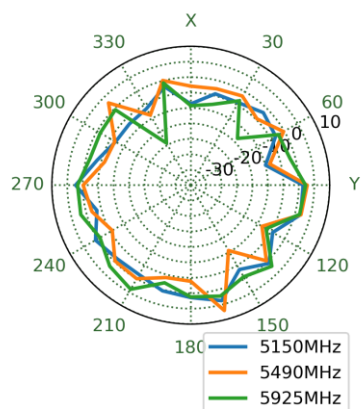
YZ Plane



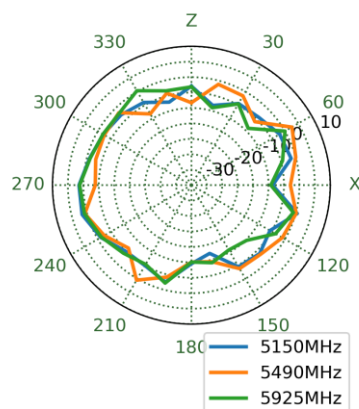
## 4.14 5GNR\_2 - 5490MHz Radiation Patterns



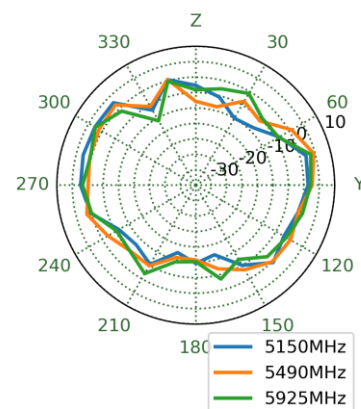
XY Plane



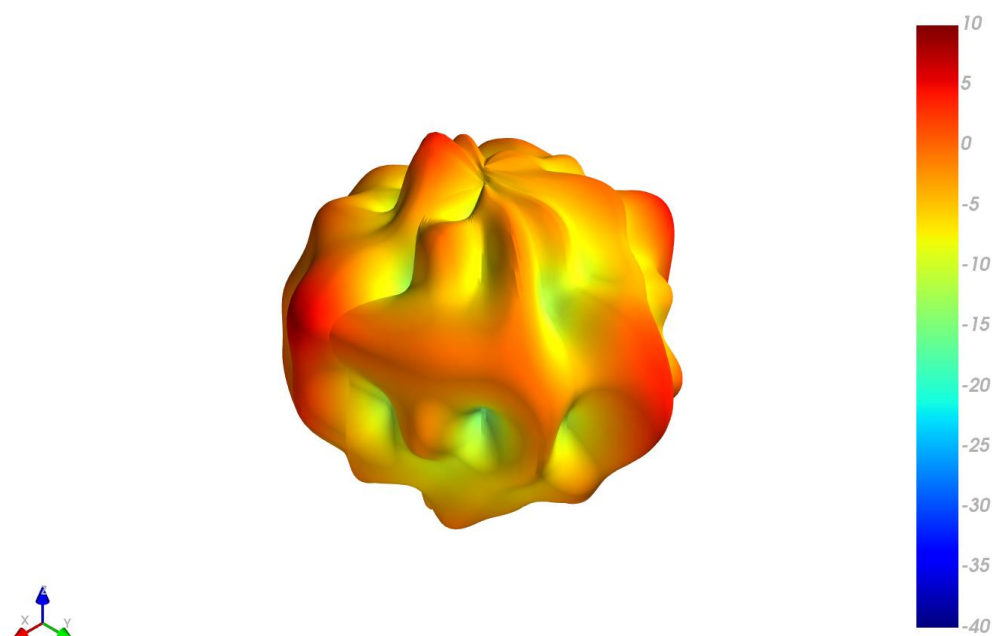
XZ Plane



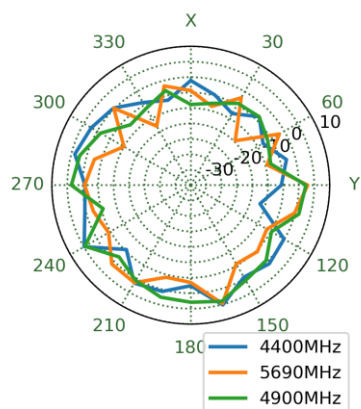
YZ Plane



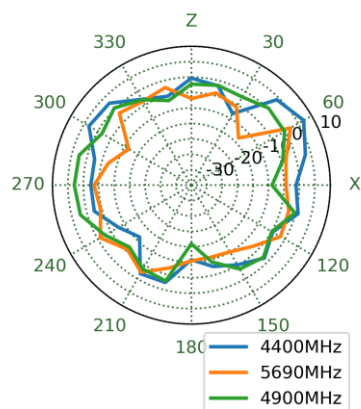
# 4.15 5GNR\_2 - 5690MHz Radiation Patterns



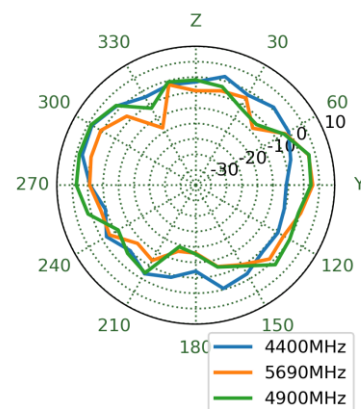
XY Plane



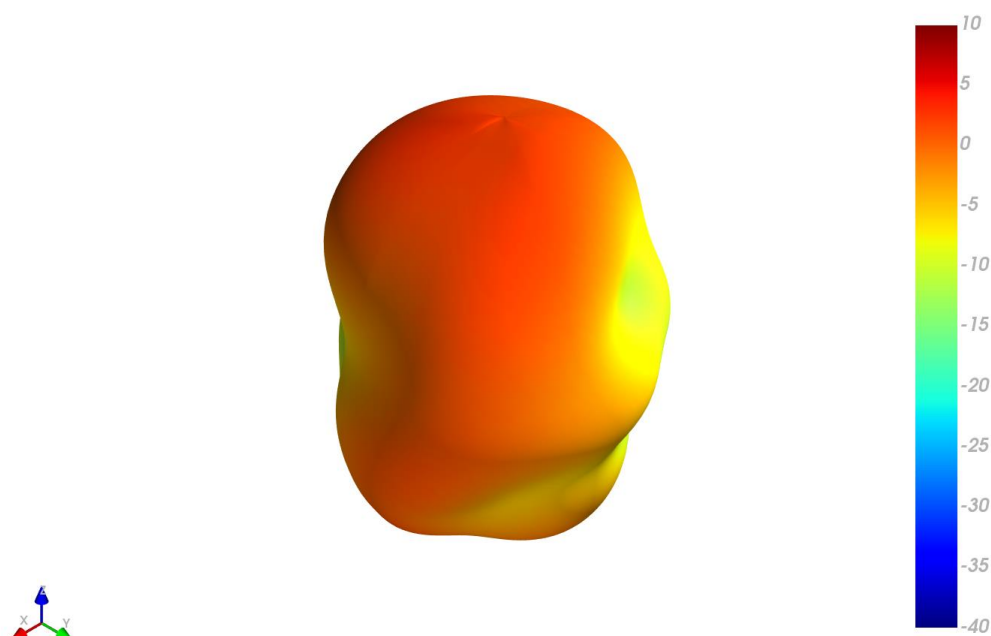
XZ Plane



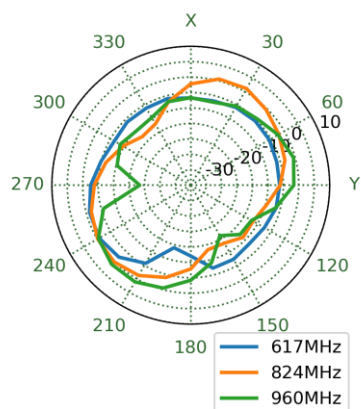
YZ Plane



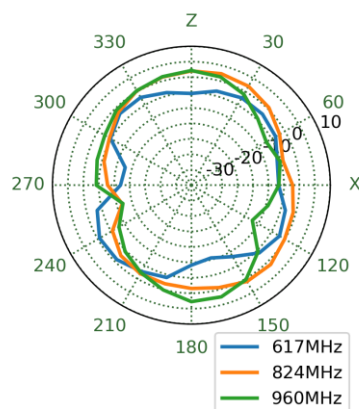
## 4.16 5GNR\_3 - 824MHz Radiation Patterns



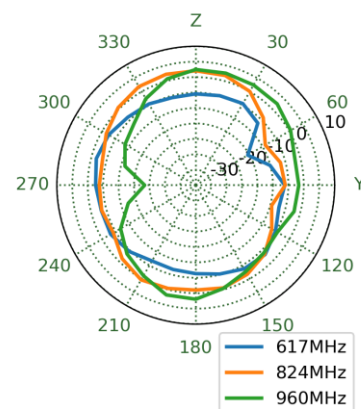
XY Plane



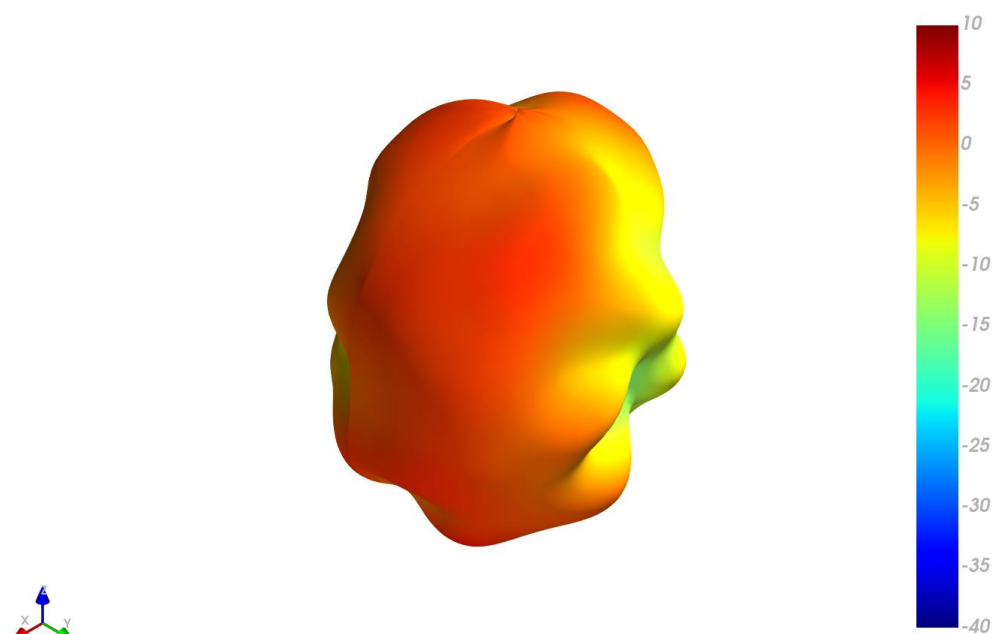
XZ Plane



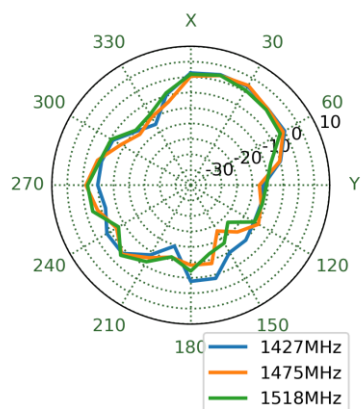
YZ Plane



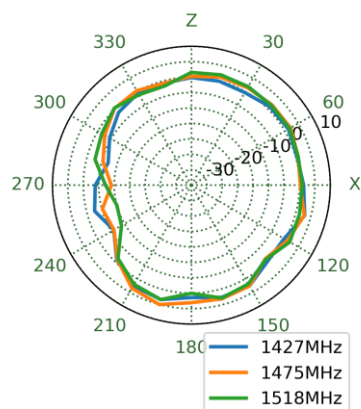
# 4.17 5GNR\_3 - 1475MHz Radiation Patterns



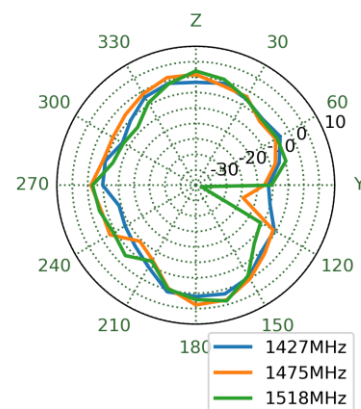
XY Plane



XZ Plane

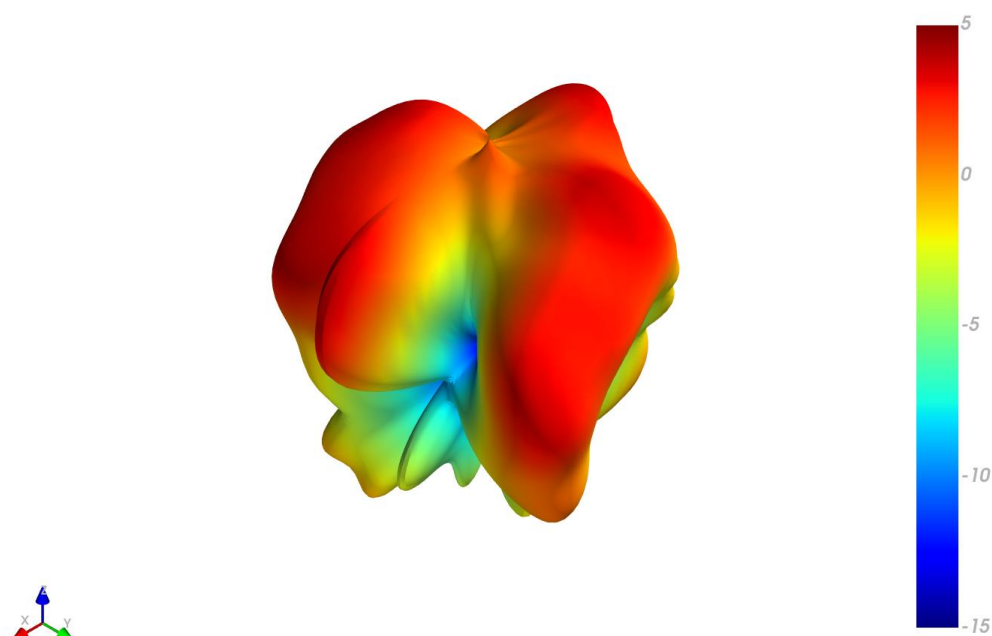


YZ Plane

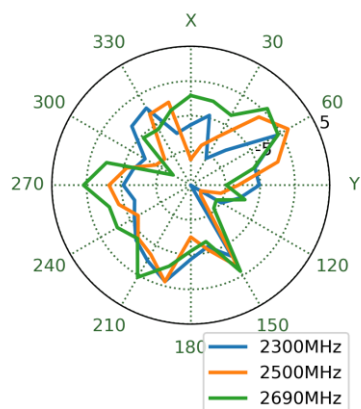




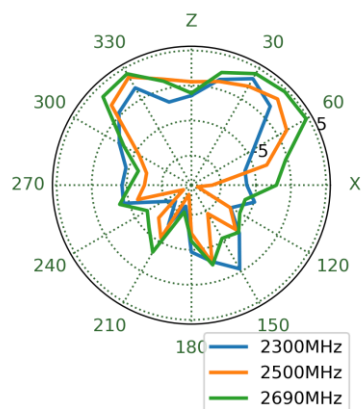
## 4.18 5GNR\_3 - 2500MHz Radiation Patterns



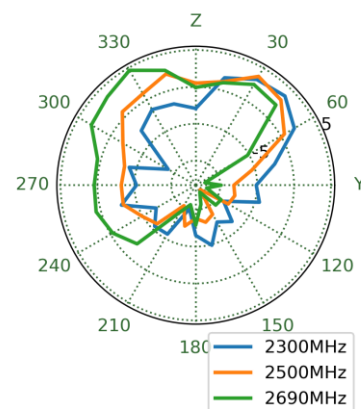
XY Plane



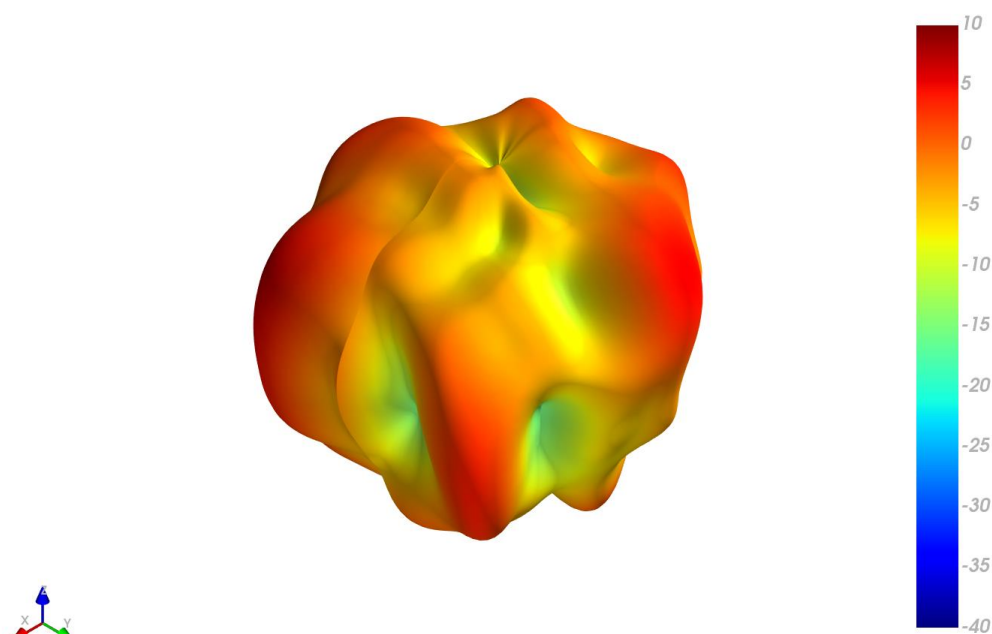
XZ Plane



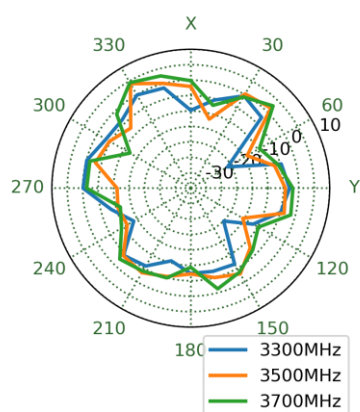
YZ Plane



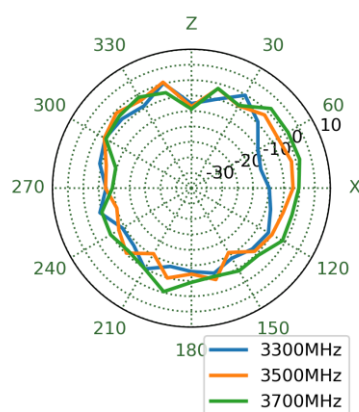
# 4.19 5GNR\_3 - 3500MHz Radiation Patterns



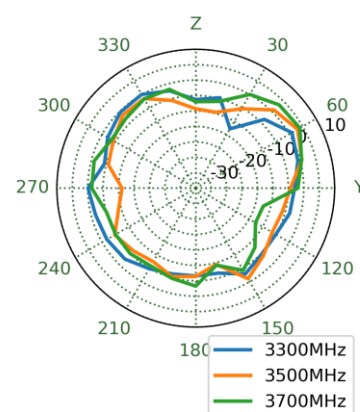
XY Plane



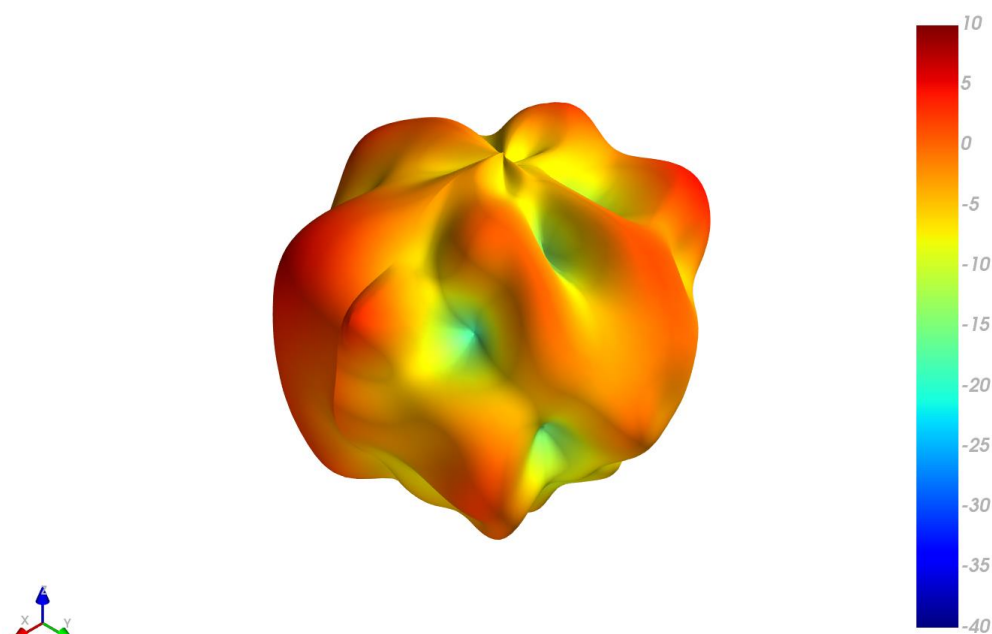
XZ Plane



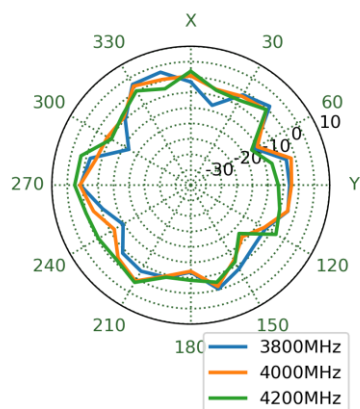
YZ Plane



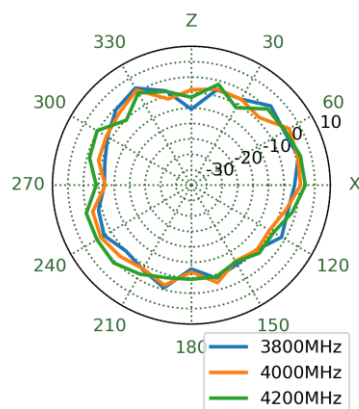
## 4.20 5GNR\_3 - 4000MHz Radiation Patterns



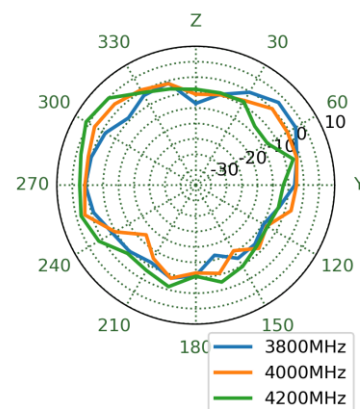
XY Plane



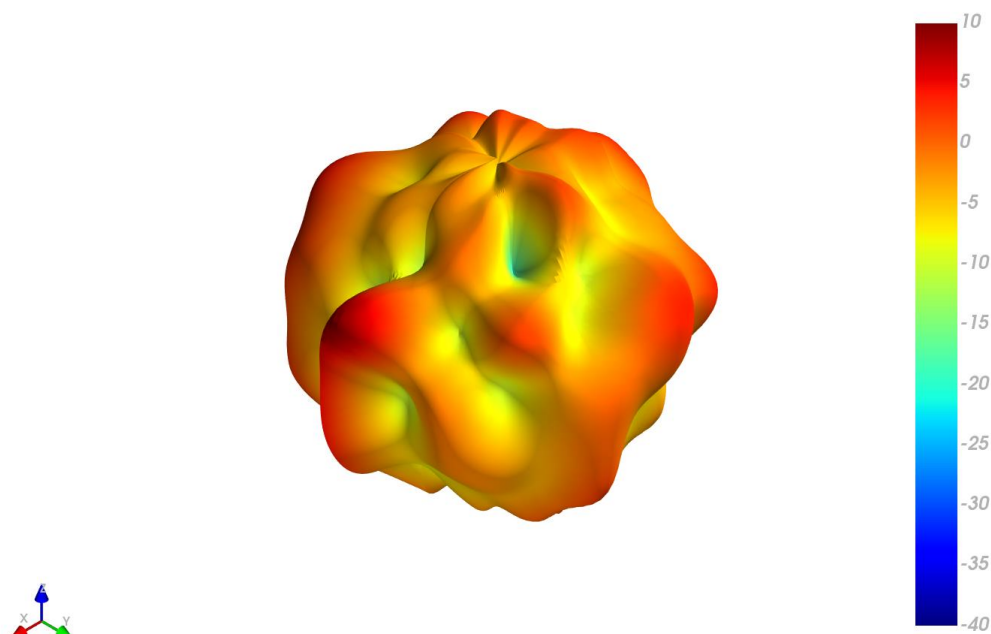
XZ Plane



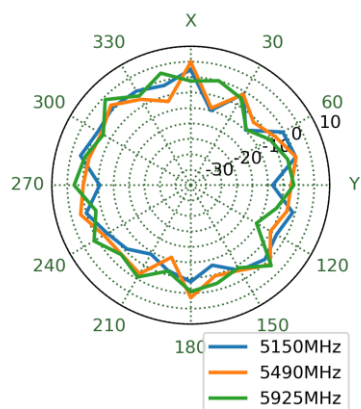
YZ Plane



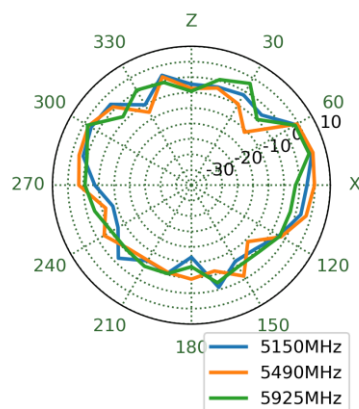
## 4.21 5GNR\_3 - 5490MHz Radiation Patterns



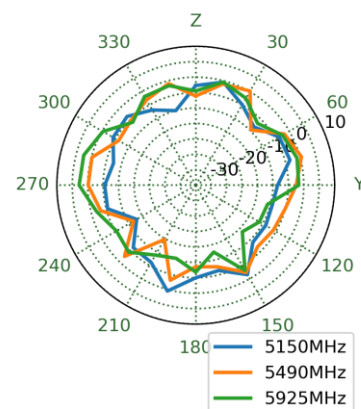
XY Plane



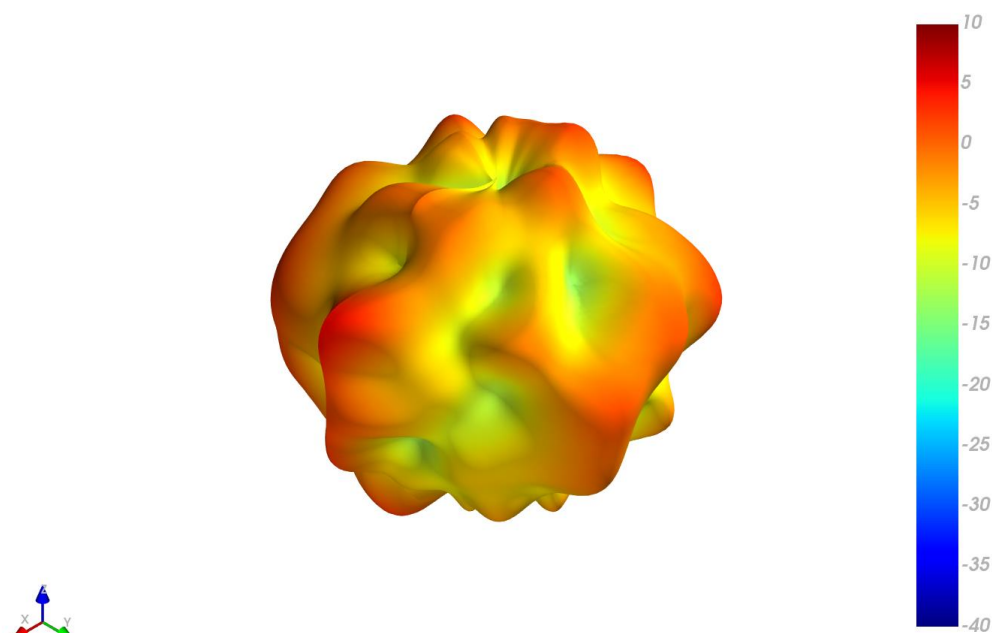
XZ Plane



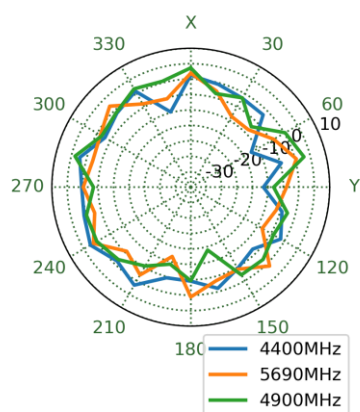
YZ Plane



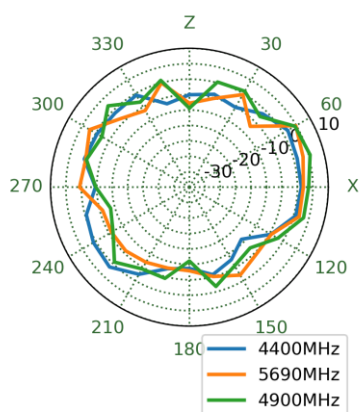
## 4.22 5GNR\_3 - 5690MHz Radiation Patterns



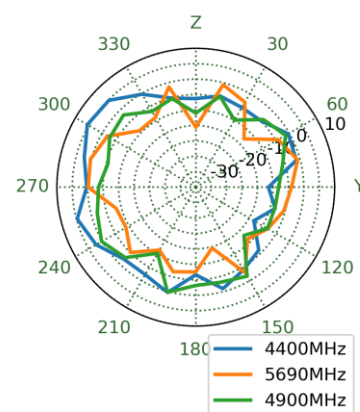
XY Plane



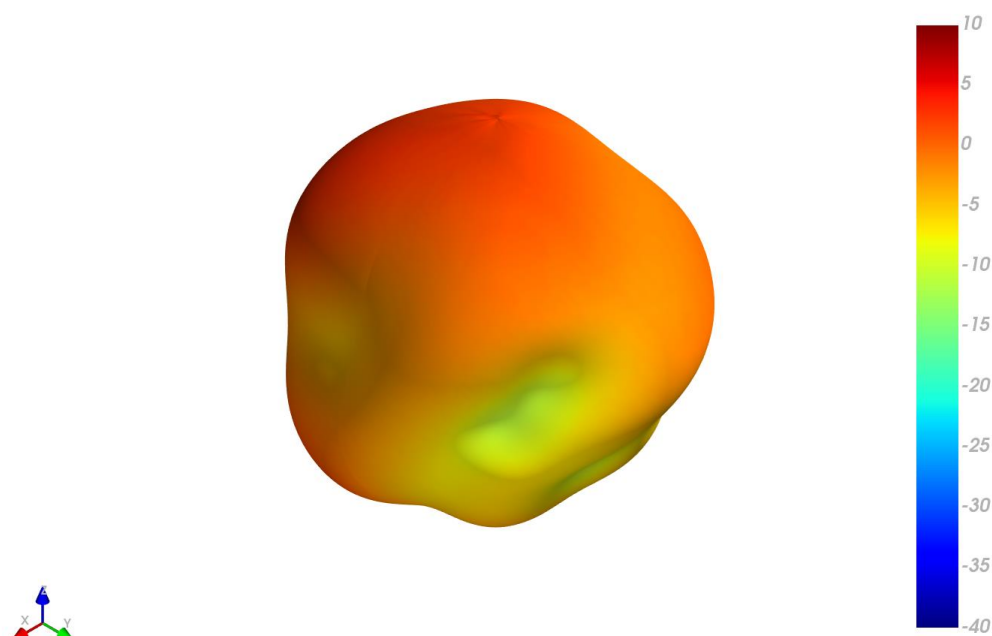
XZ Plane



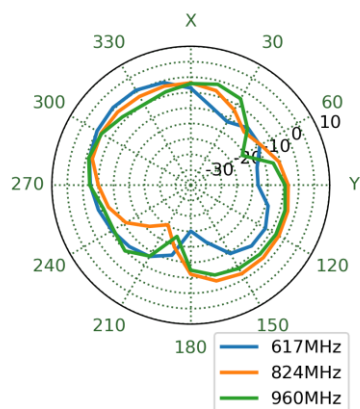
YZ Plane



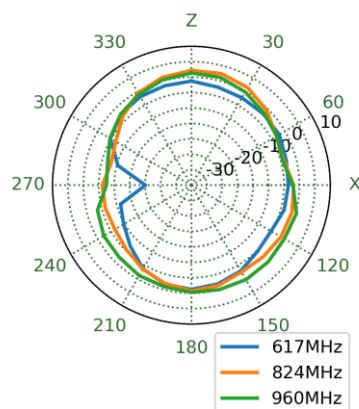
## 4.23 5GNR\_4 - 824MHz Radiation Patterns



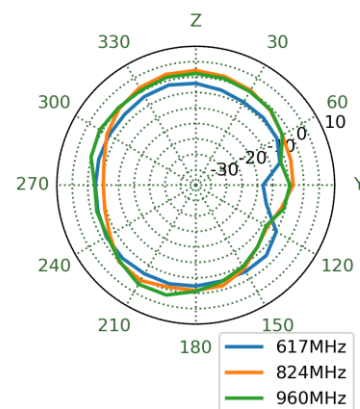
XY Plane



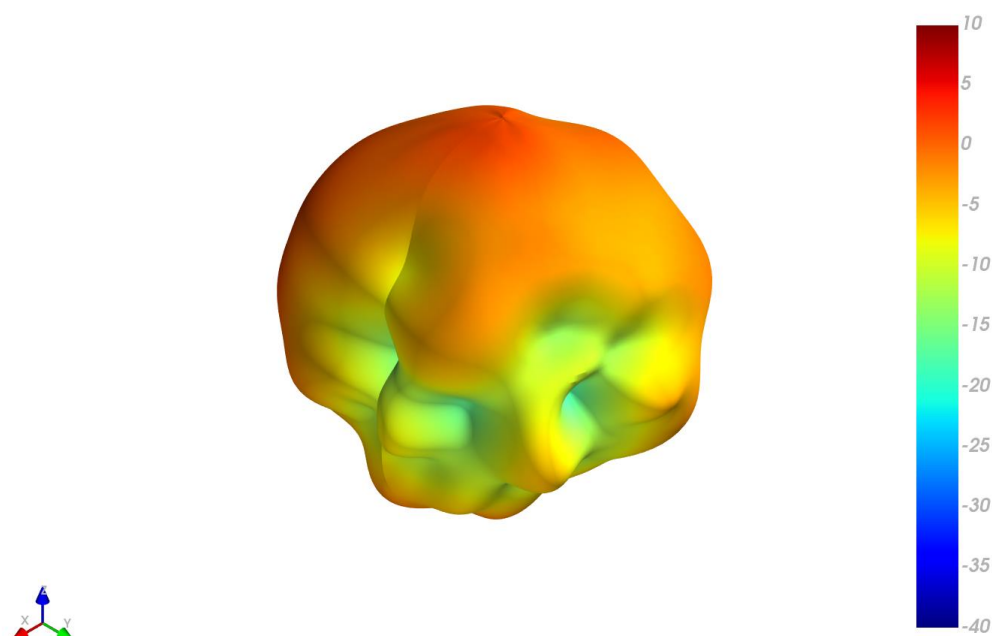
XZ Plane



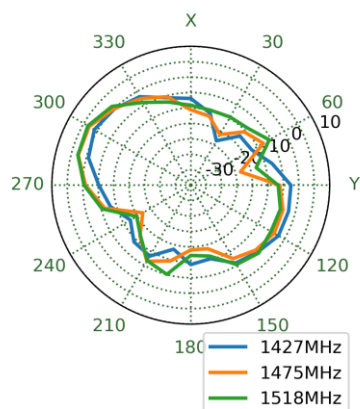
YZ Plane



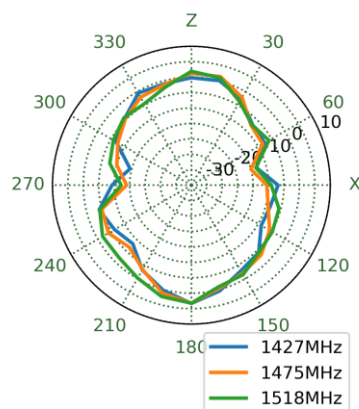
## 4.24 5GNR\_4 - 1475MHz Radiation Patterns



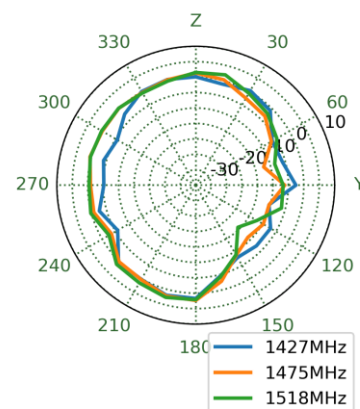
XY Plane



XZ Plane

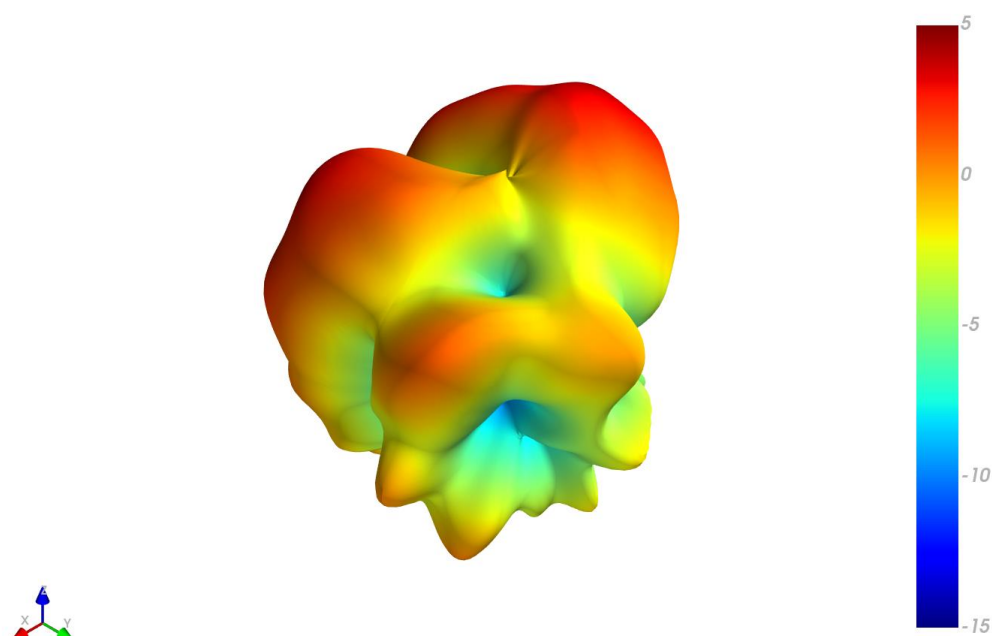


YZ Plane

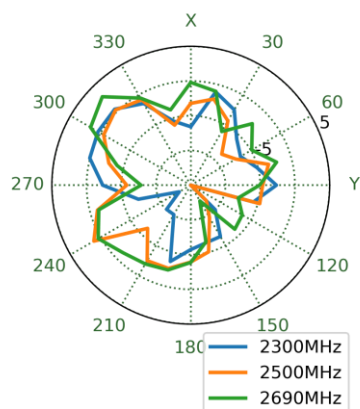




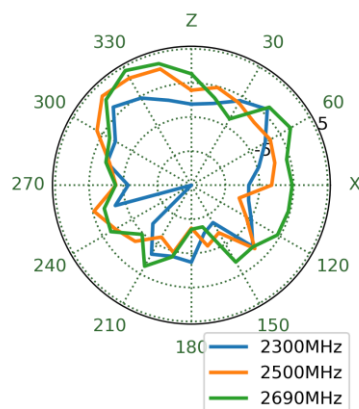
## 4.25 5GNR\_4 - 2500MHz Radiation Patterns



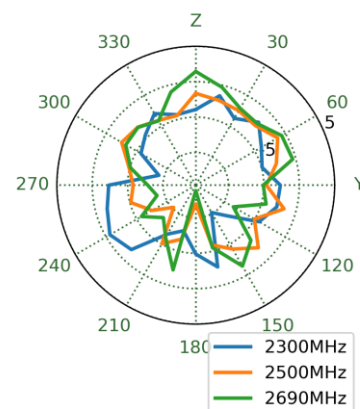
XY Plane



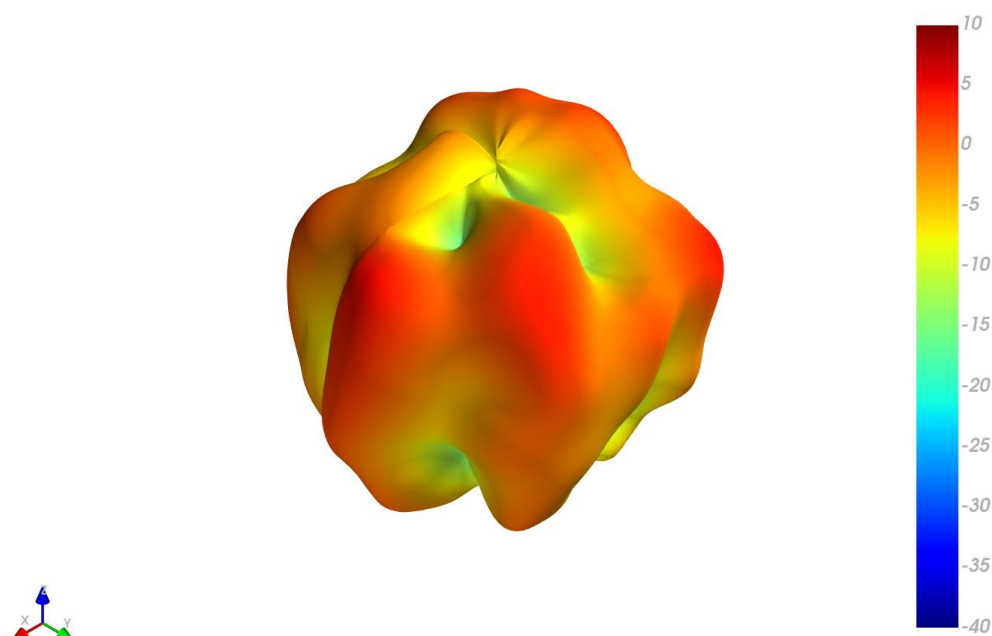
XZ Plane



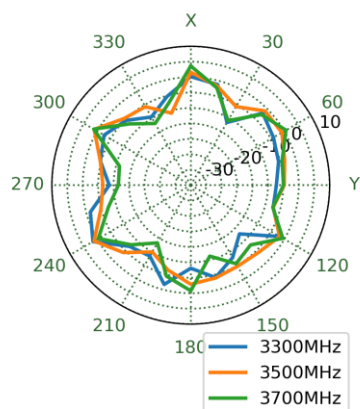
YZ Plane



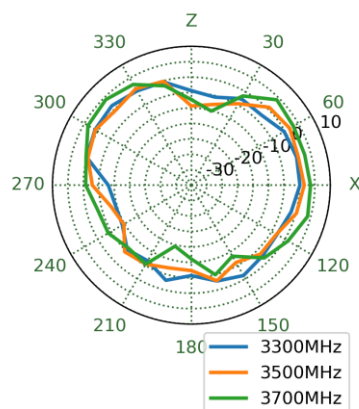
## 4.26 5GNR\_4 - 3500MHz Radiation Patterns



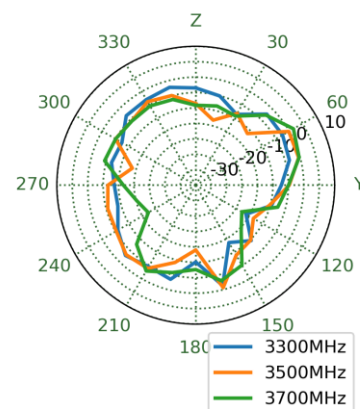
XY Plane



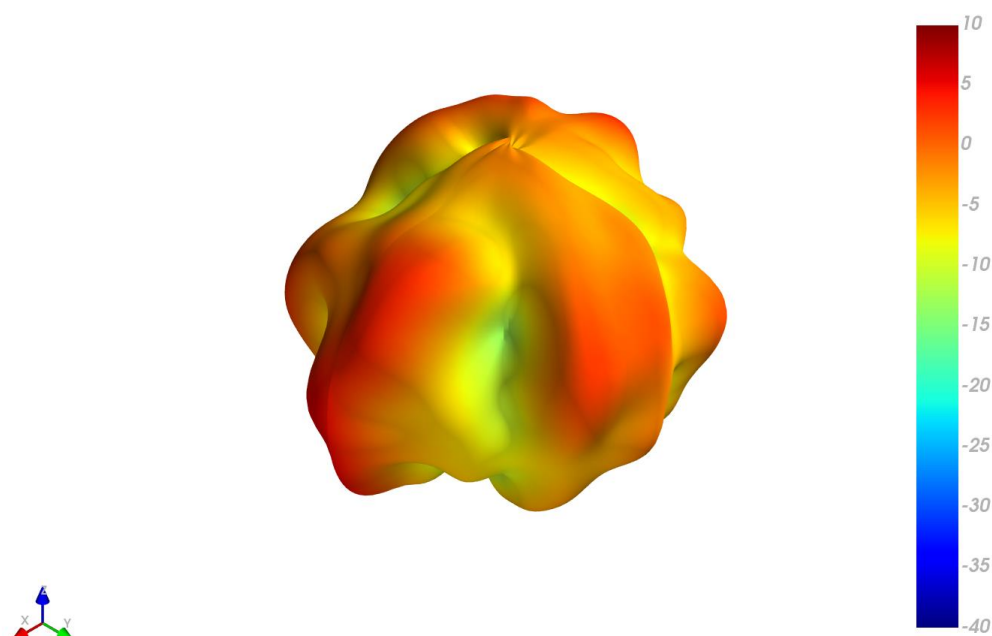
XZ Plane



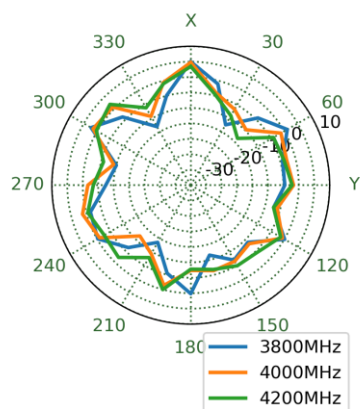
YZ Plane



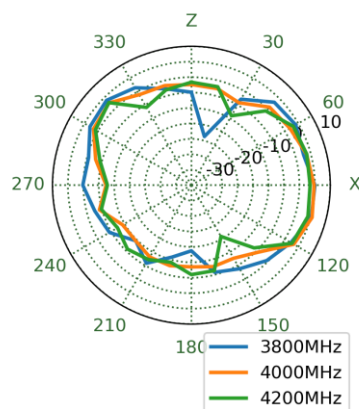
## 4.27 5GNR\_4 - 4000MHz Radiation Patterns



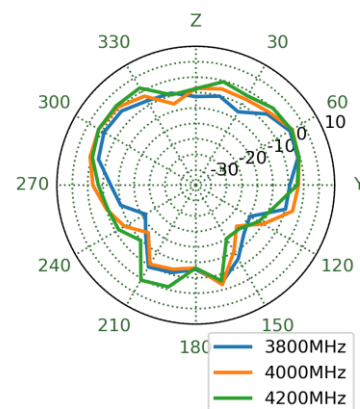
XY Plane



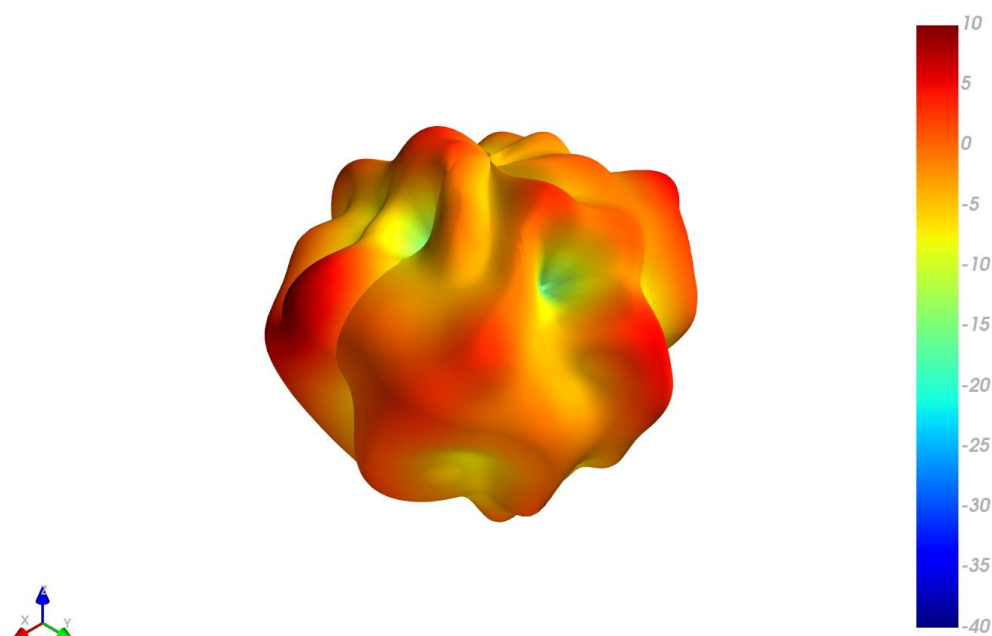
XZ Plane



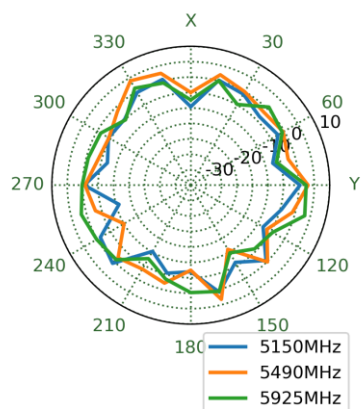
YZ Plane



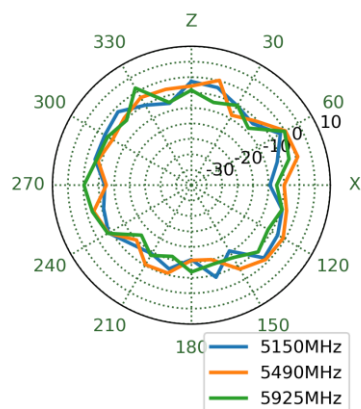
## 4.28 5GNR\_4 - 5490MHz Radiation Patterns



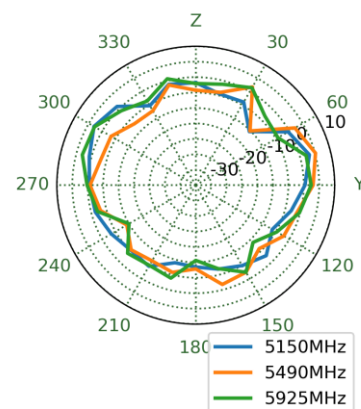
XY Plane



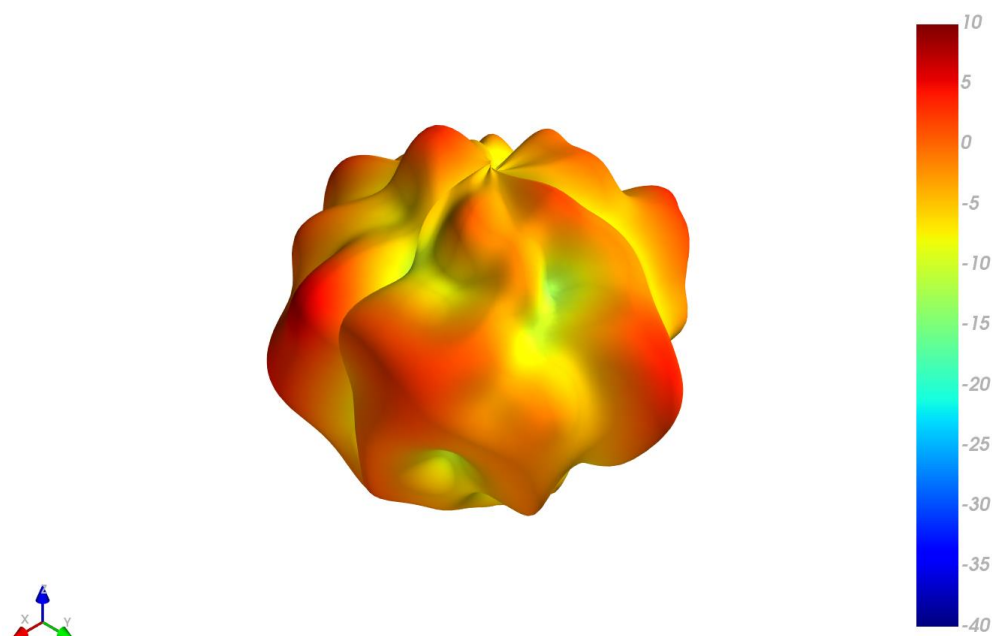
XZ Plane



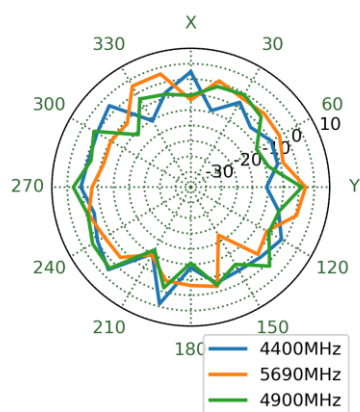
YZ Plane



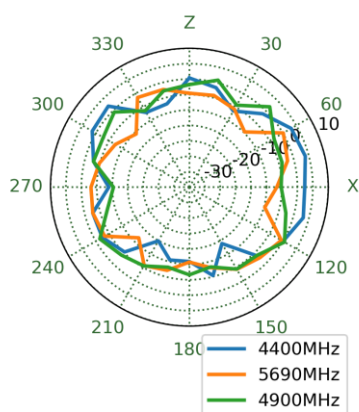
## 4.29 5GNR\_4 - 5690MHz Radiation Patterns



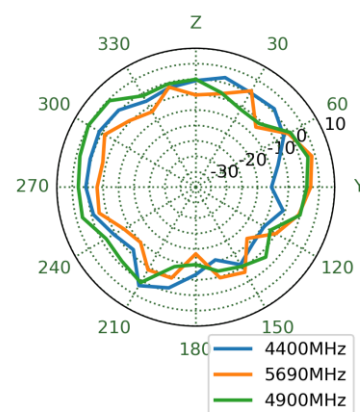
XY Plane



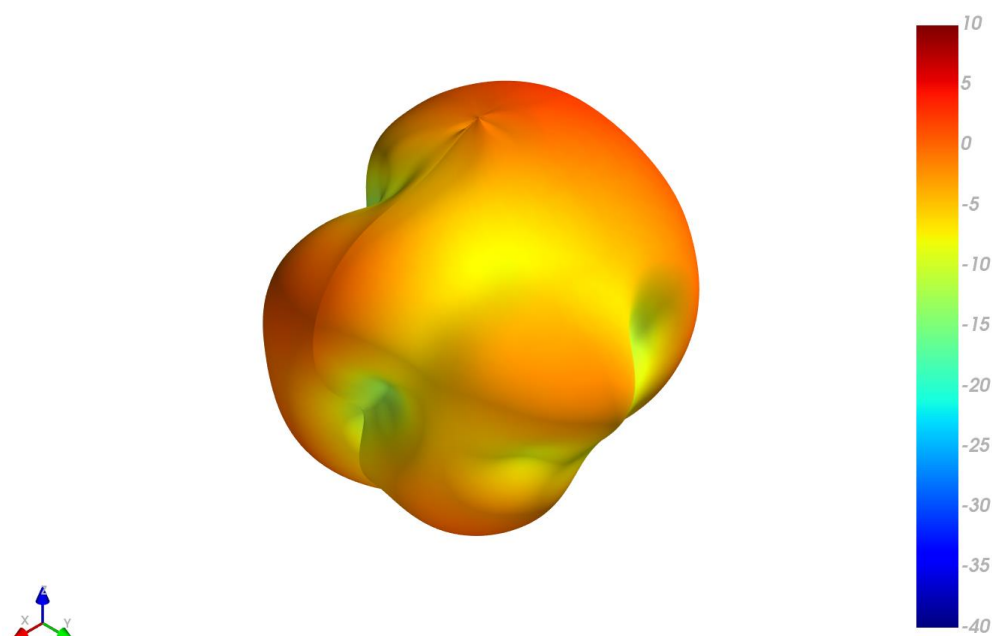
XZ Plane



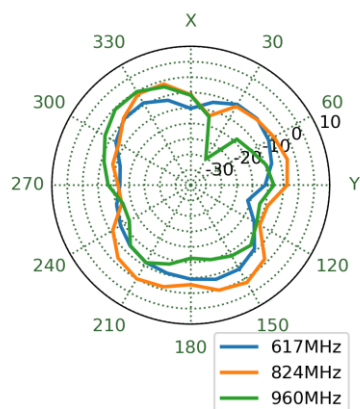
YZ Plane



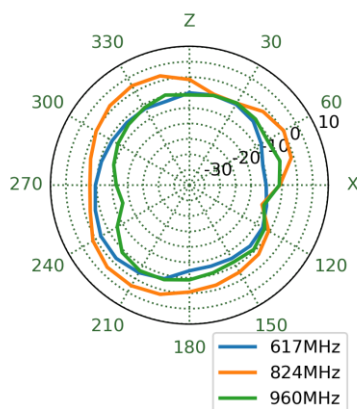
## 4.30 5GNR\_5 - 824MHz Radiation Patterns



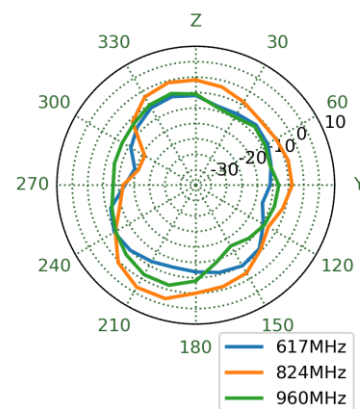
XY Plane



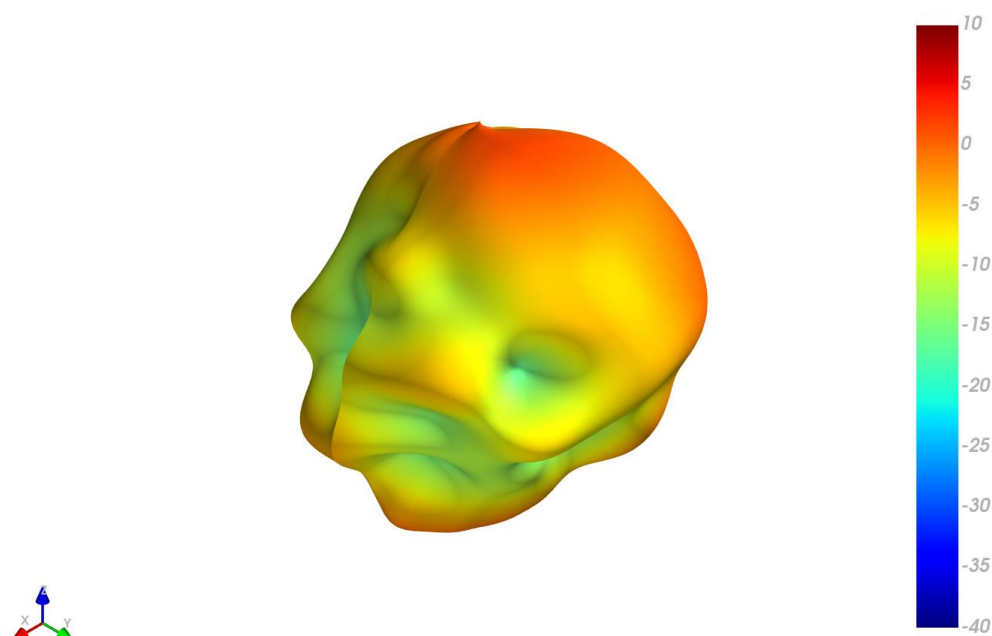
XZ Plane



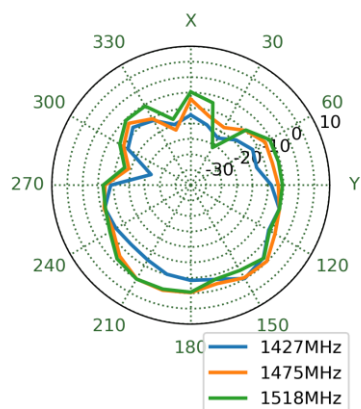
YZ Plane



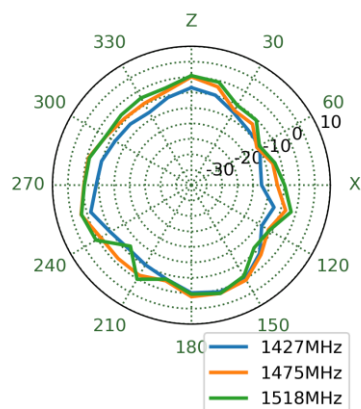
# 4.31 5GNR\_5 - 1475MHz Radiation Patterns



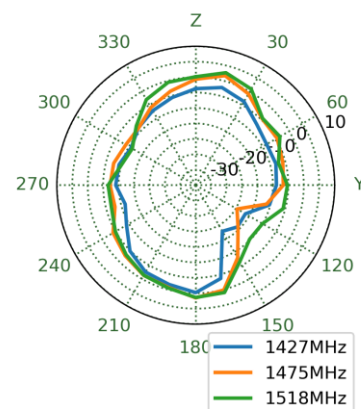
XY Plane



XZ Plane

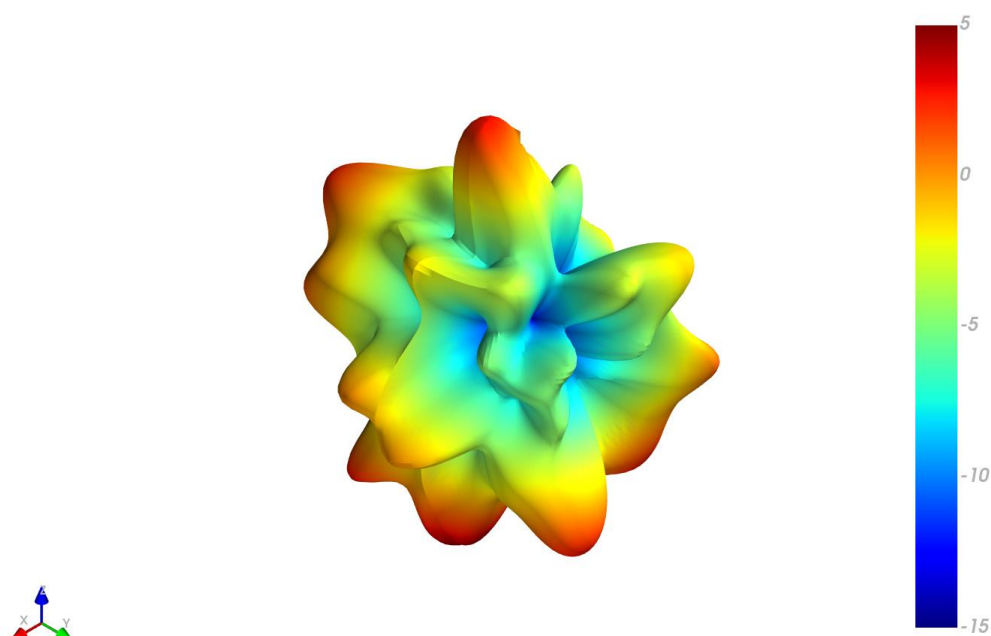


YZ Plane

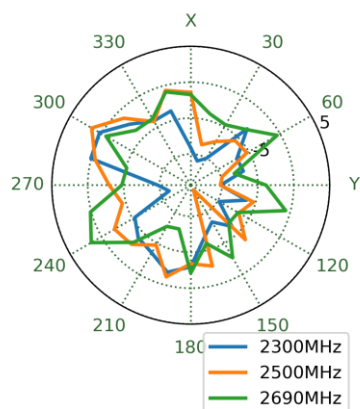




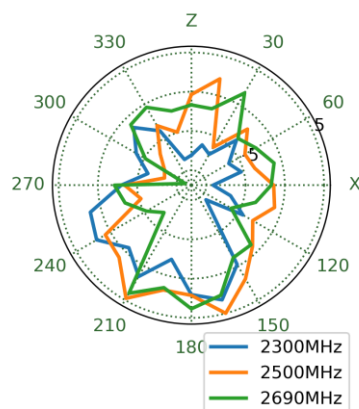
## 4.32 5GNR\_5 - 2500MHz Radiation Patterns



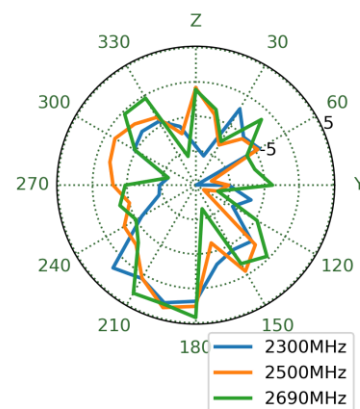
XY Plane



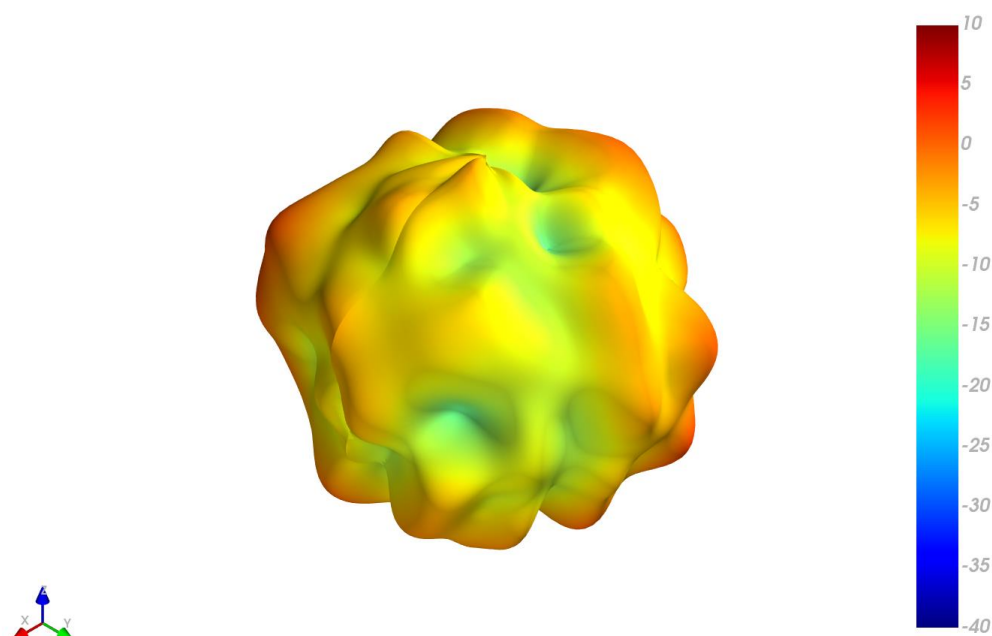
XZ Plane



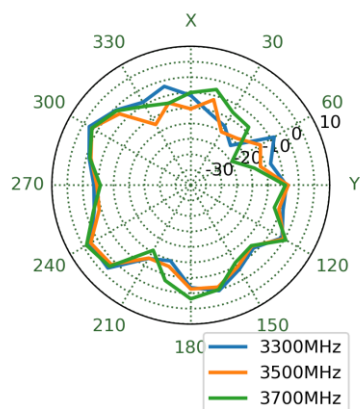
YZ Plane



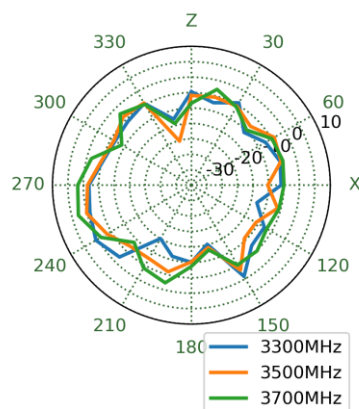
## 4.33 5GNR\_5 - 3500MHz Radiation Patterns



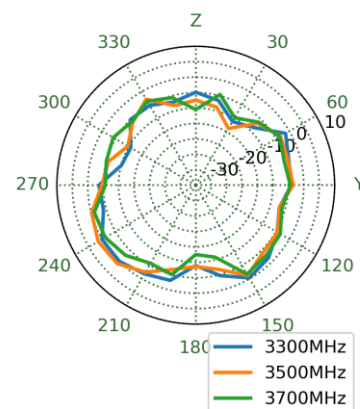
XY Plane



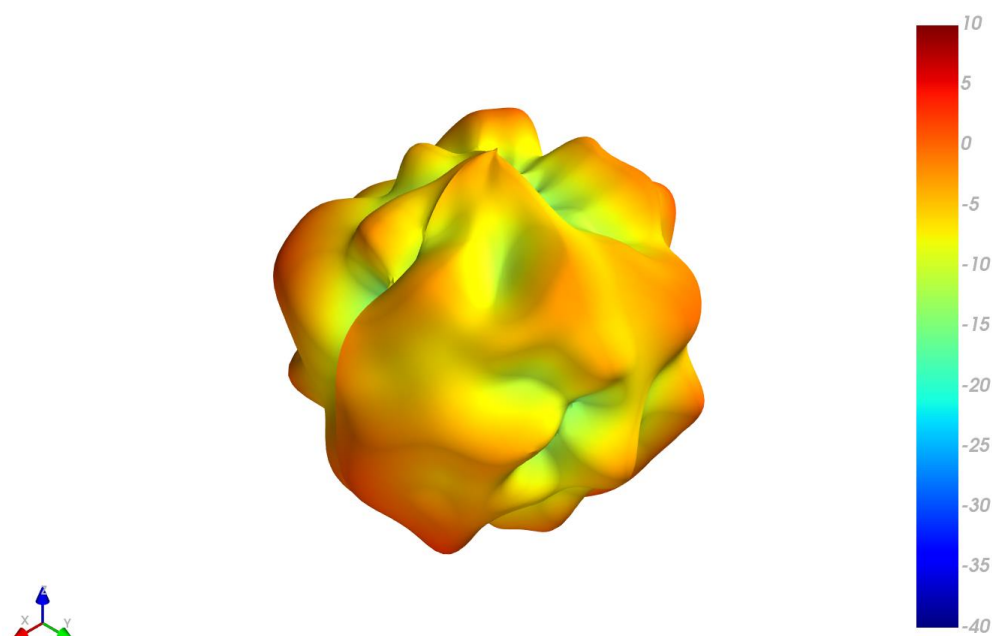
XZ Plane



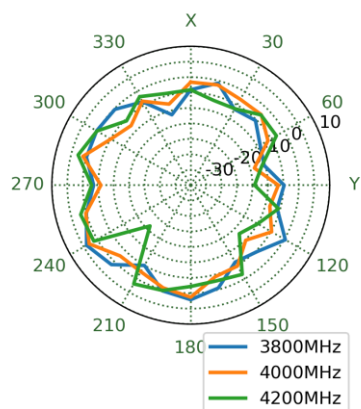
YZ Plane



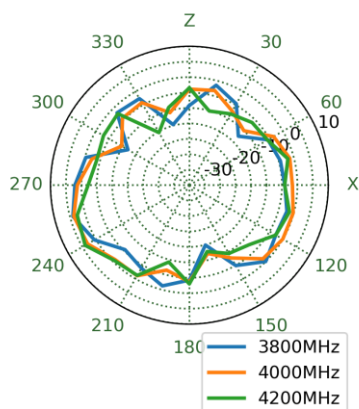
# 4.34 5GNR\_5 - 4000MHz Radiation Patterns



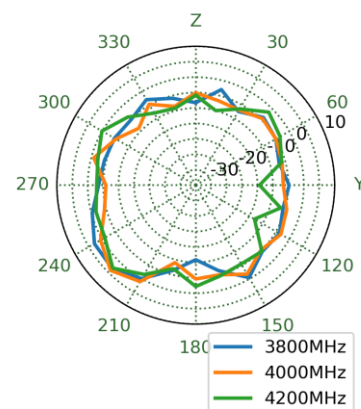
XY Plane



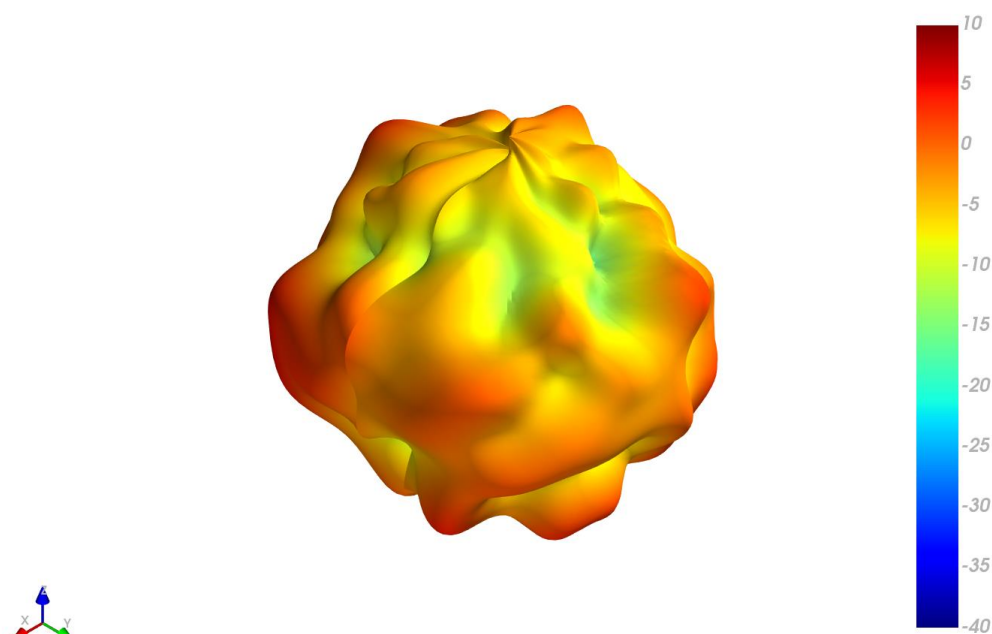
XZ Plane



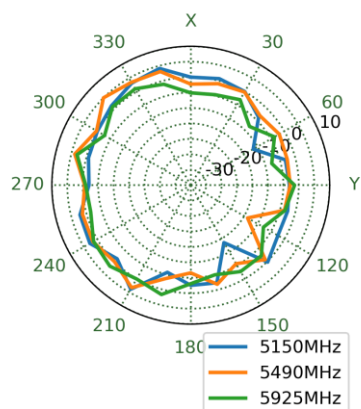
YZ Plane



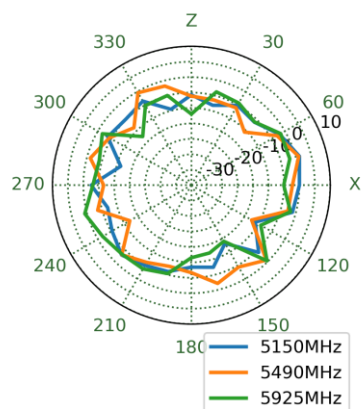
# 4.35 5GNR\_5 - 5490MHz Radiation Patterns



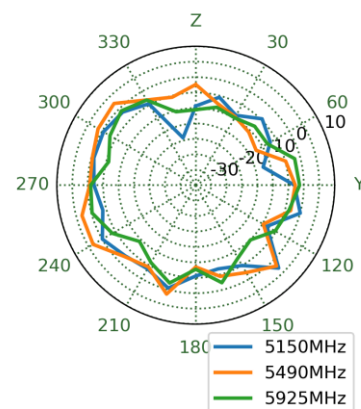
XY Plane



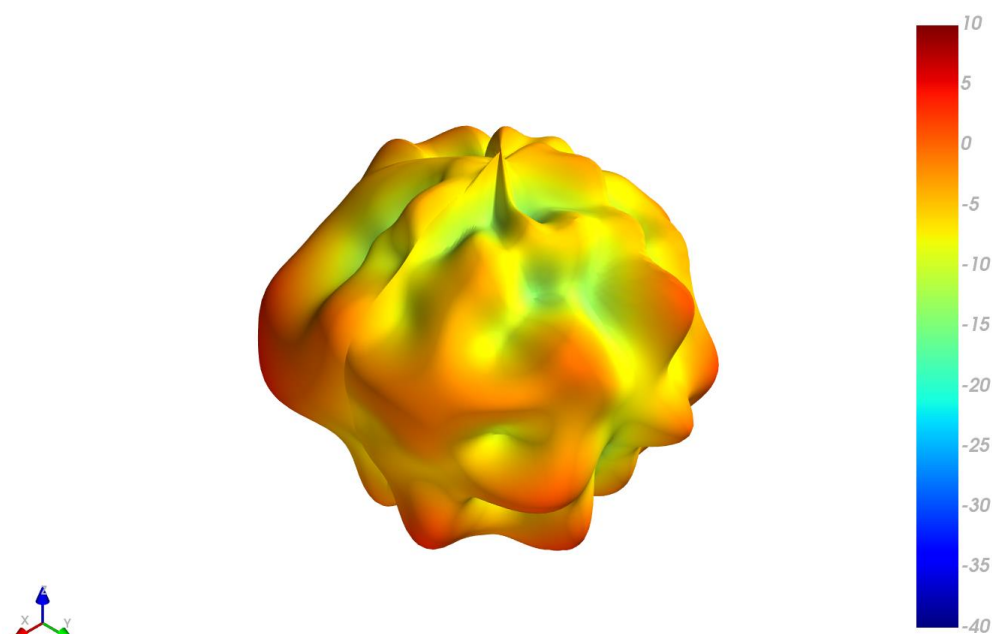
XZ Plane



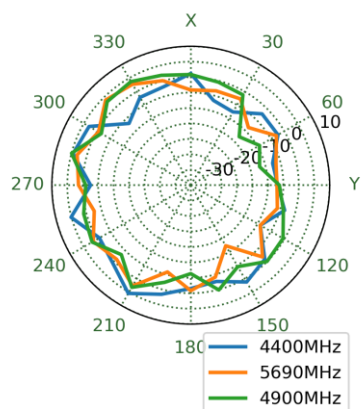
YZ Plane



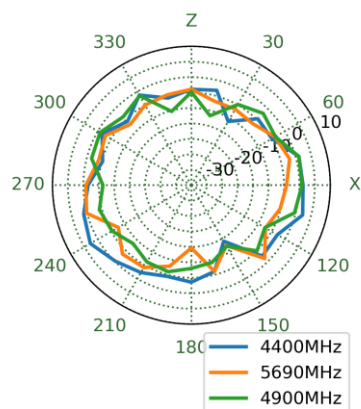
# 4.36 5GNR\_5 - 5690MHz Radiation Patterns



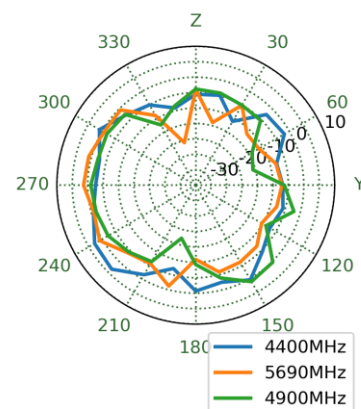
XY Plane



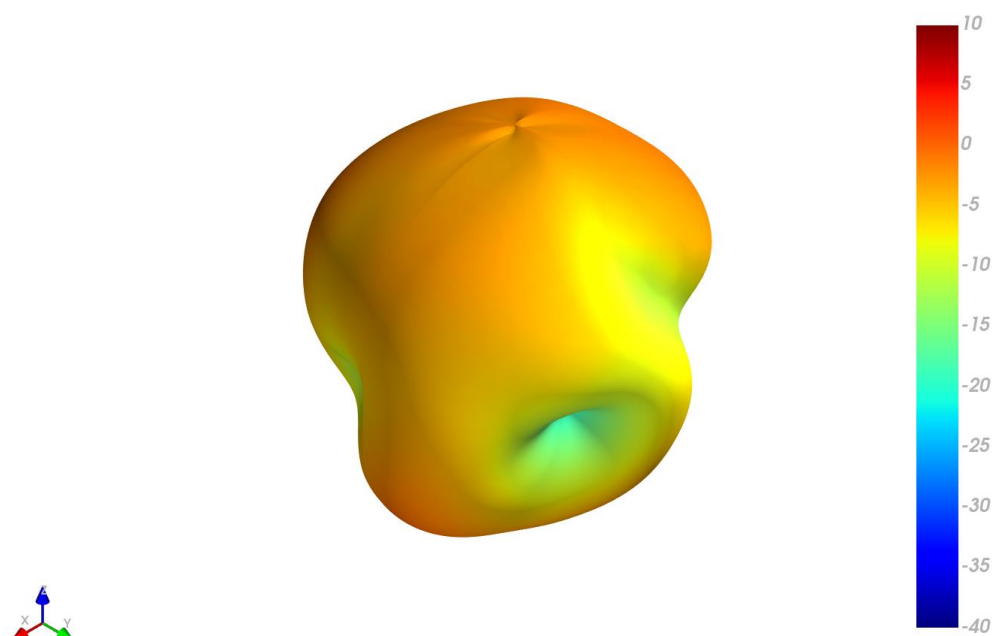
XZ Plane



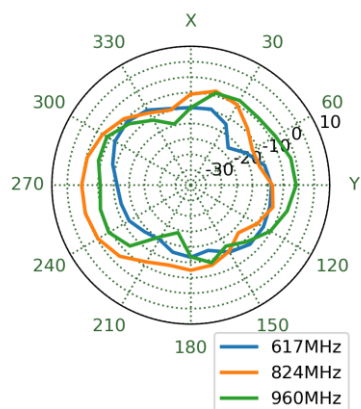
YZ Plane



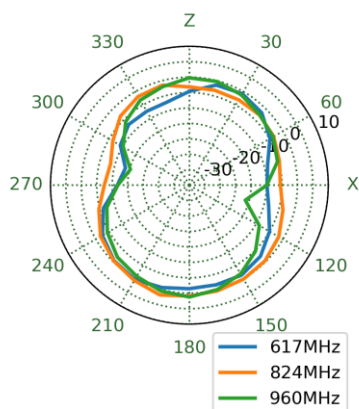
# 4.37 5GNR\_6 - 824MHz Radiation Patterns



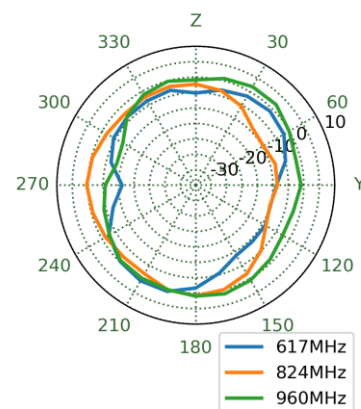
XY Plane



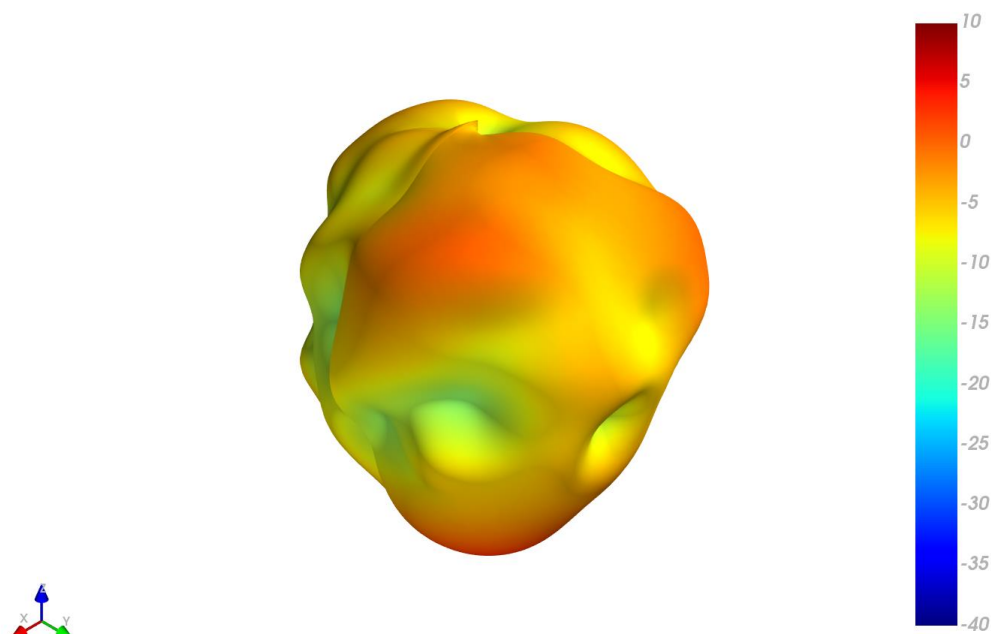
XZ Plane



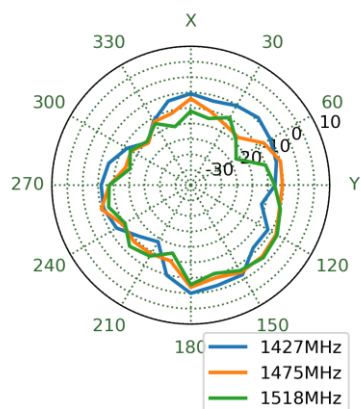
YZ Plane



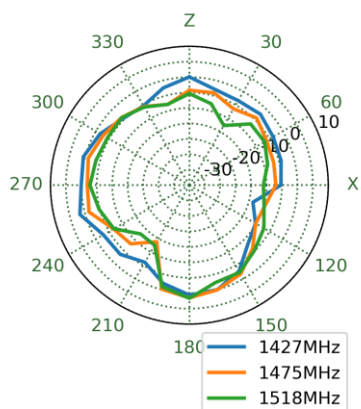
# 4.38 5GNR\_6 - 1475MHz Radiation Patterns



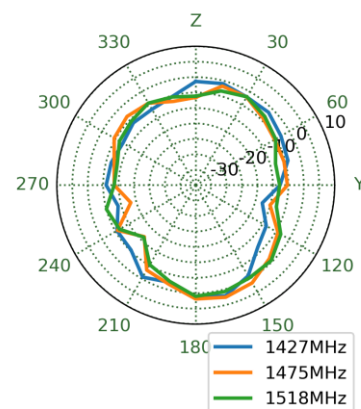
XY Plane



XZ Plane

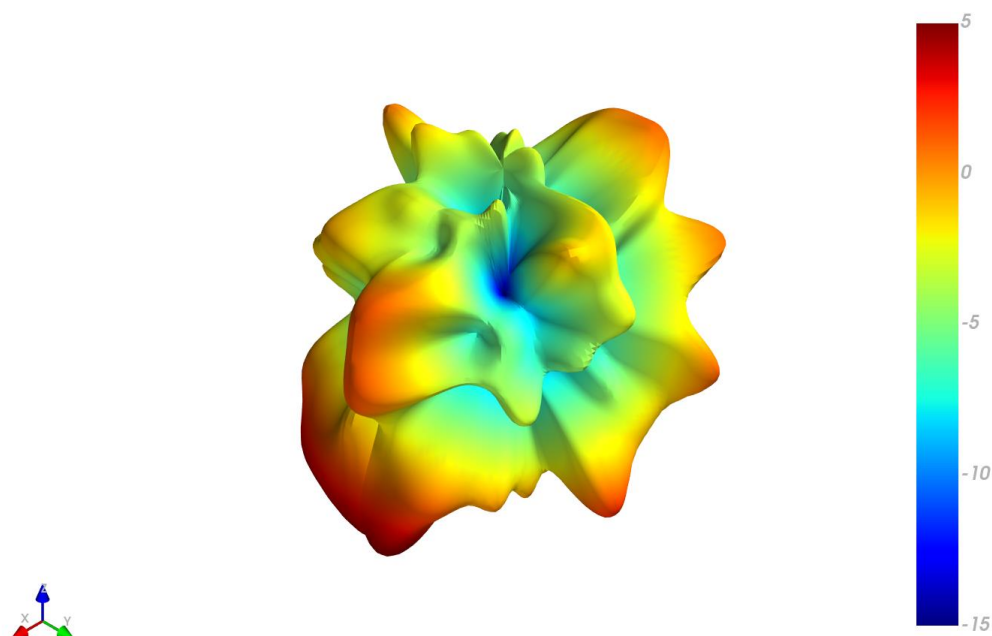


YZ Plane

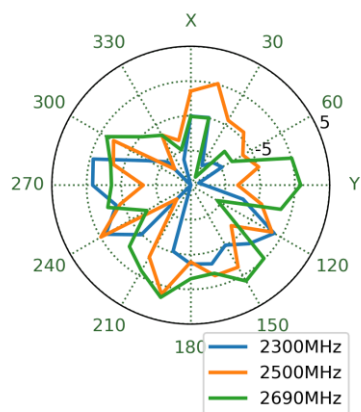




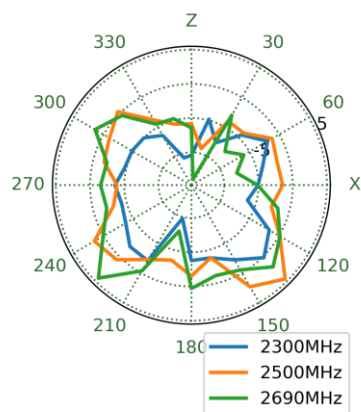
# 4.39 5GNR\_6 - 2500MHz Radiation Patterns



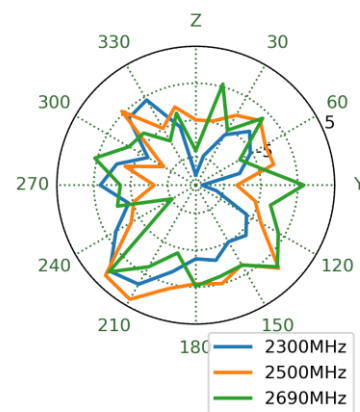
XY Plane



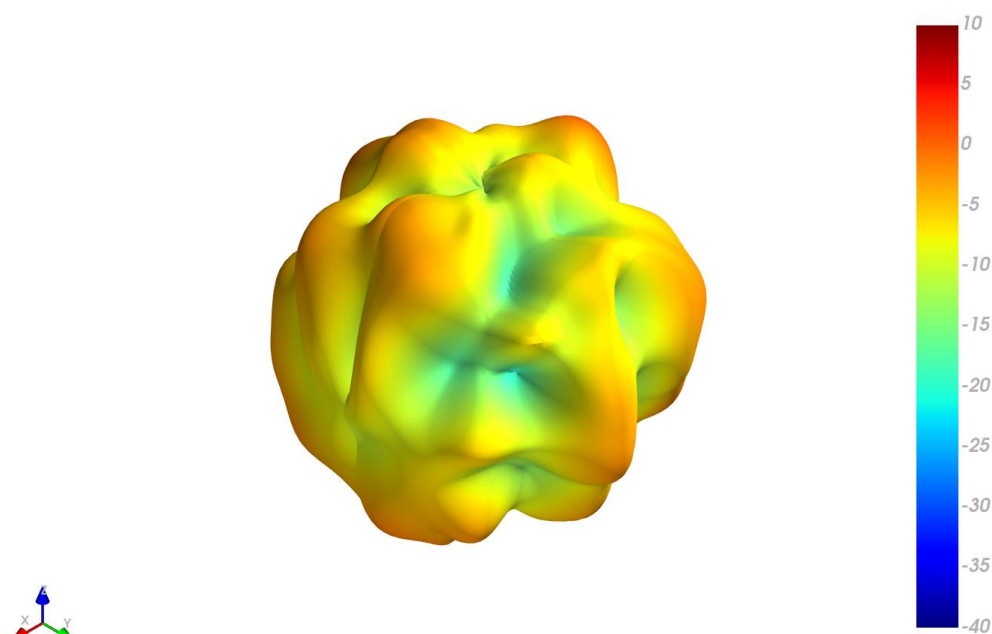
XZ Plane



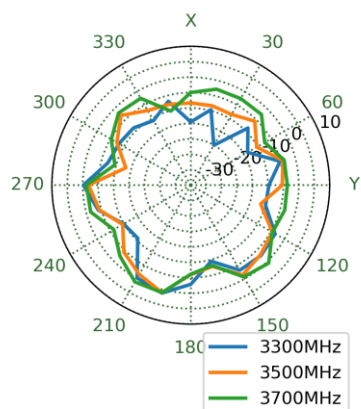
YZ Plane



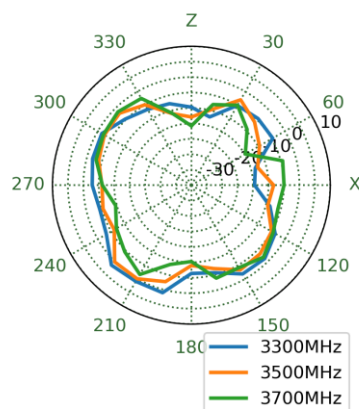
# 4.40 5GNR\_6 - 3500MHz Radiation Patterns



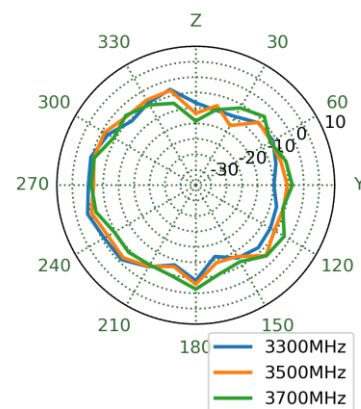
XY Plane



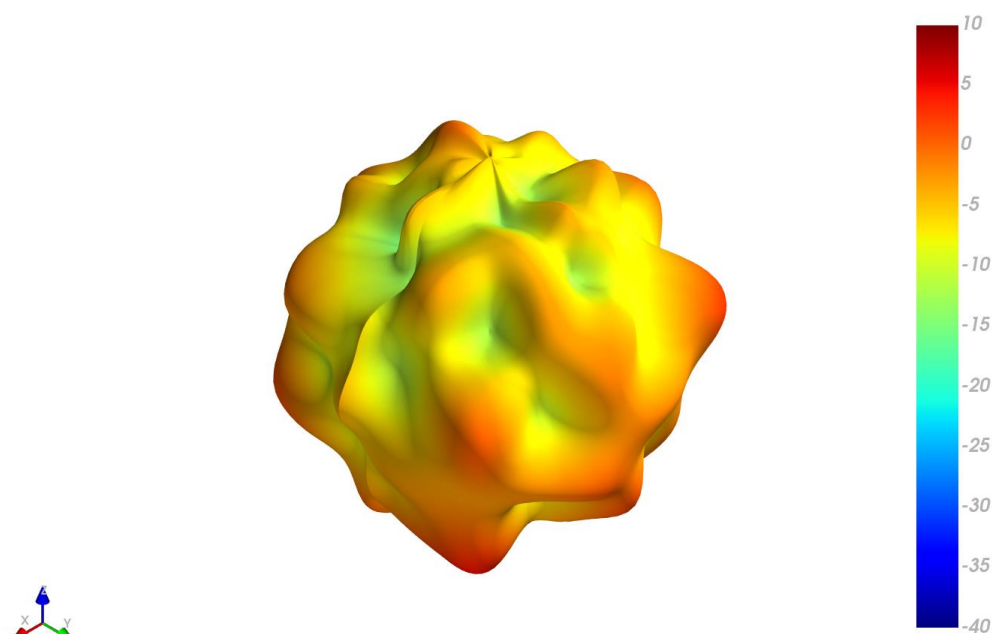
XZ Plane



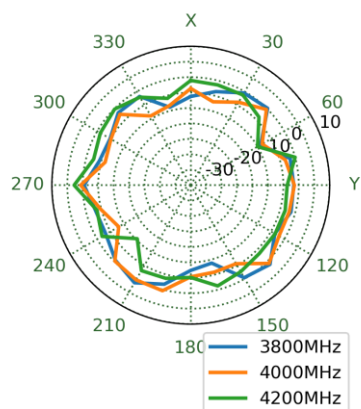
YZ Plane



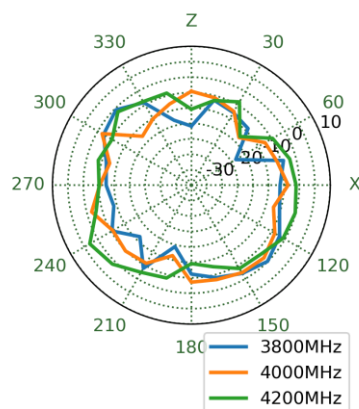
# 4.41 5GNR\_6 - 4000MHz Radiation Patterns



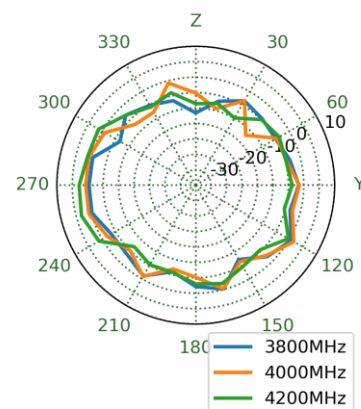
XY Plane



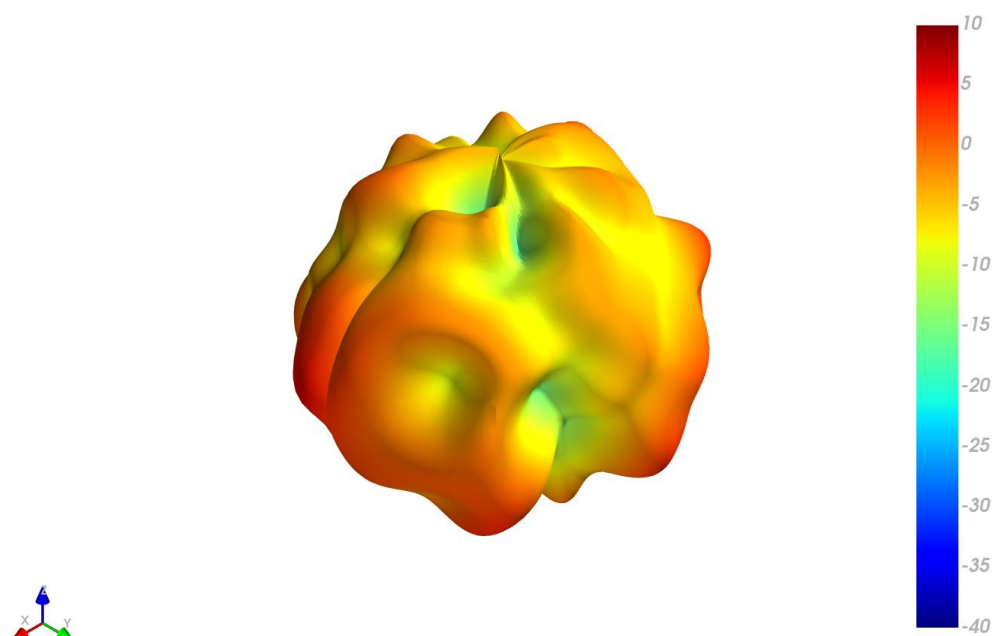
XZ Plane



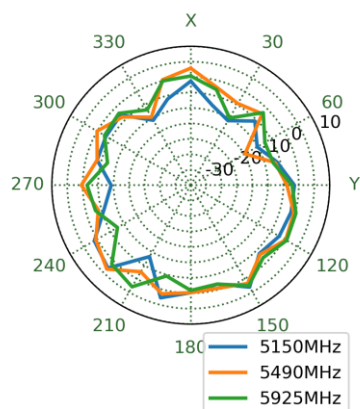
YZ Plane



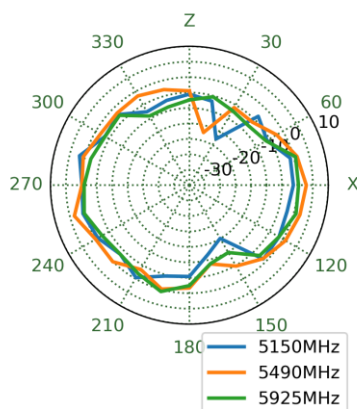
## 4.42 5GNR\_6 - 5490MHz Radiation Patterns



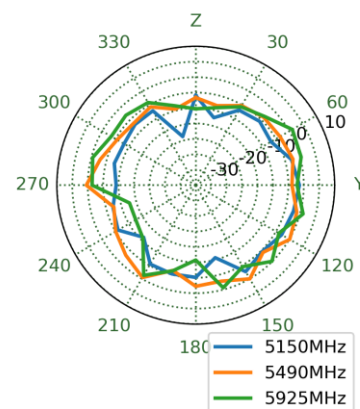
XY Plane



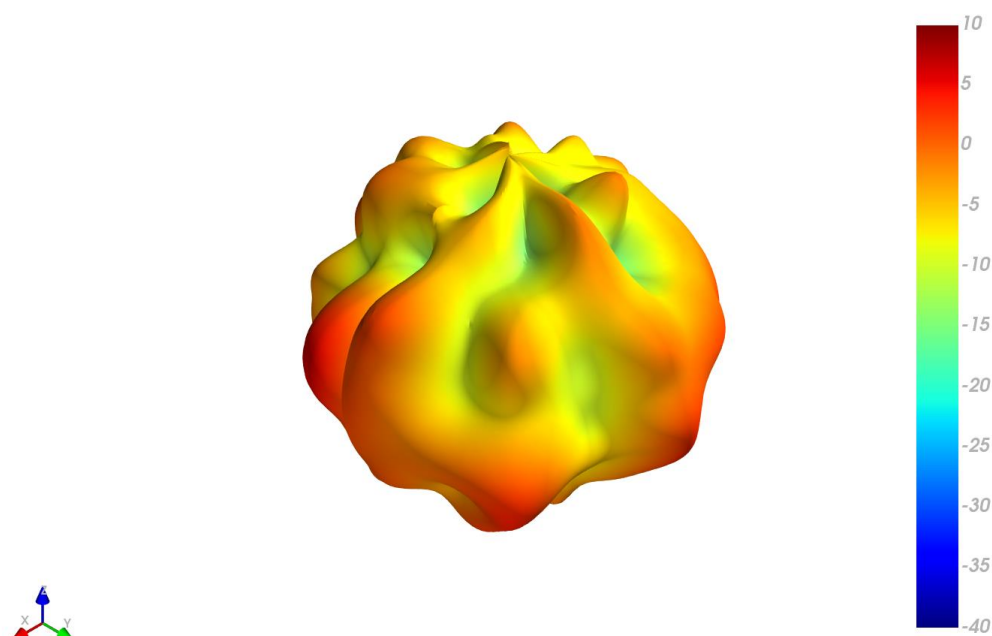
XZ Plane



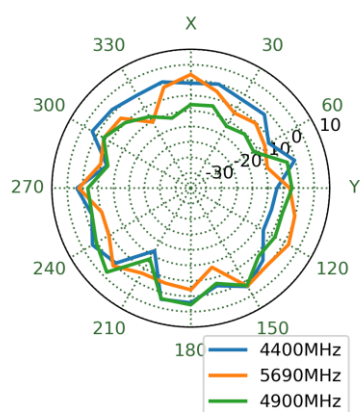
YZ Plane



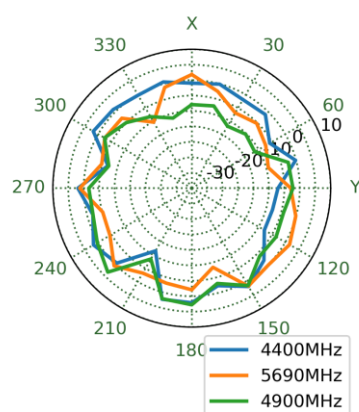
## 4.43 5GNR\_6 - 5690MHz Radiation Patterns



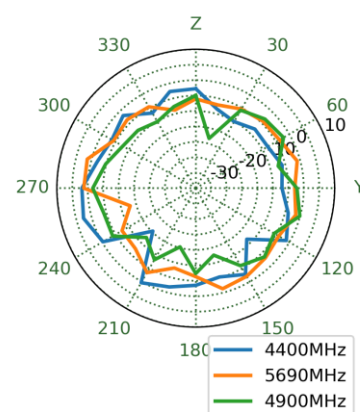
XY Plane



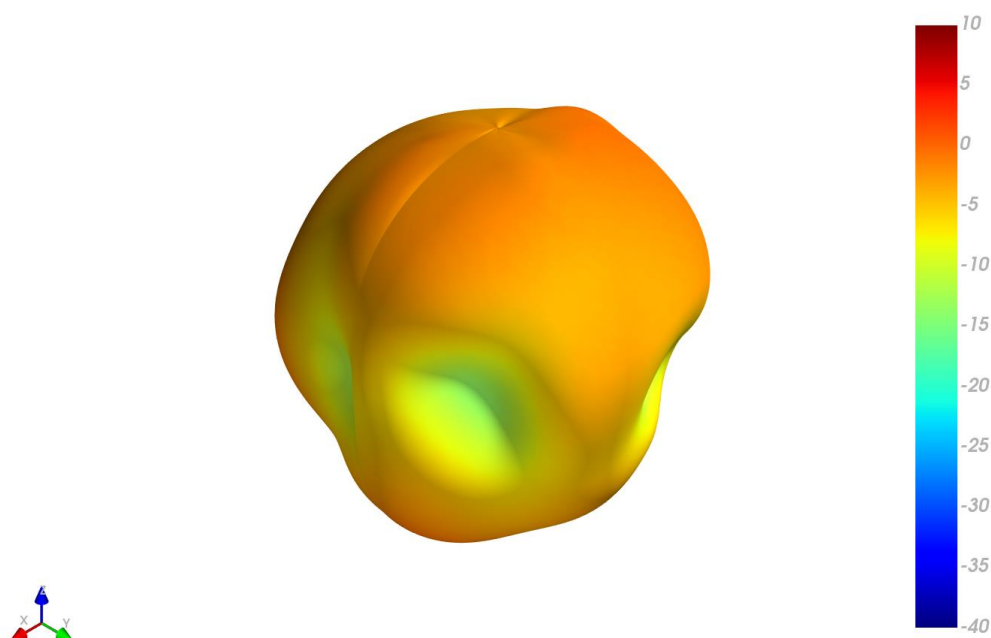
XZ Plane



YZ Plane



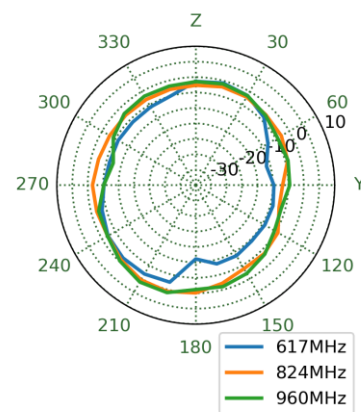
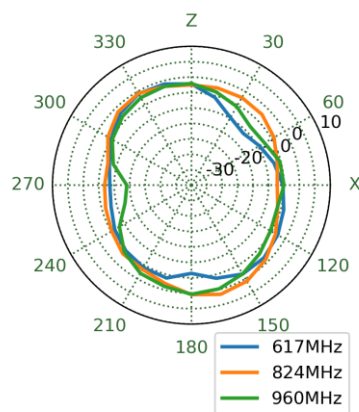
## 4.44 5GNR\_7 - 824MHz Radiation Patterns



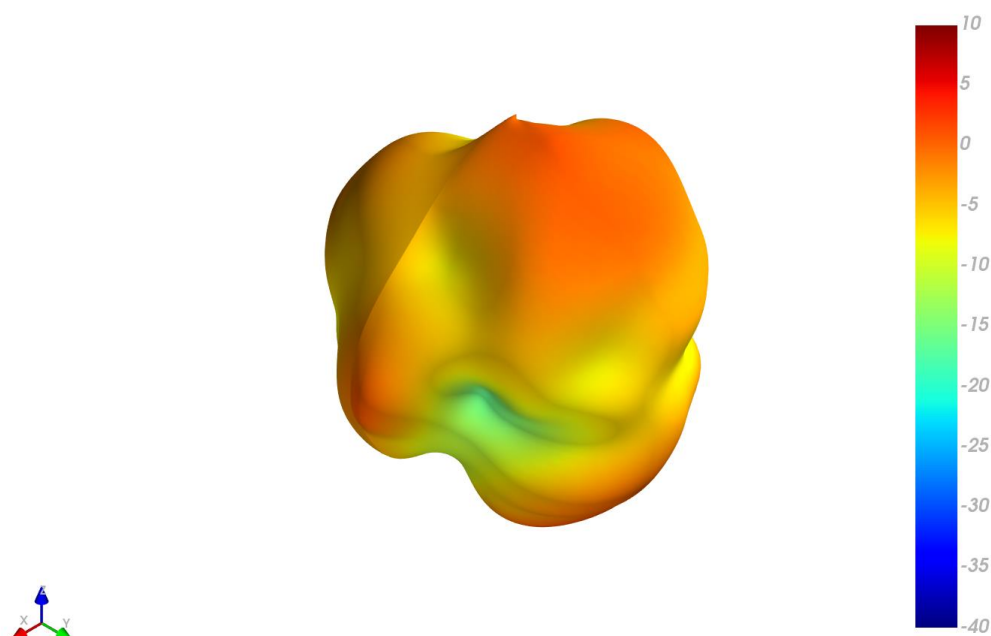
XY Plane

XZ Plane

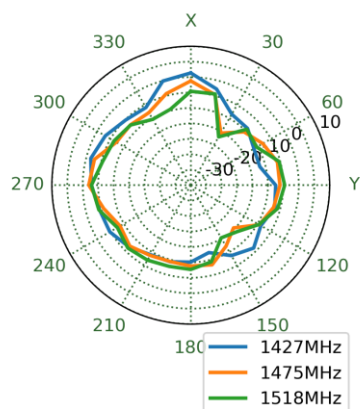
YZ Plane



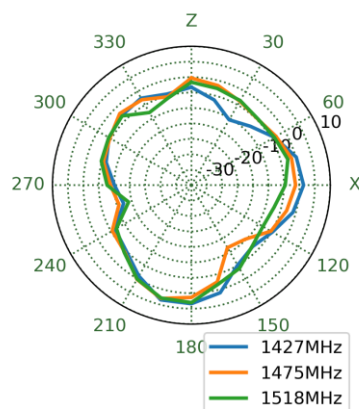
## 4.45 5GNR\_7 - 1475MHz Radiation Patterns



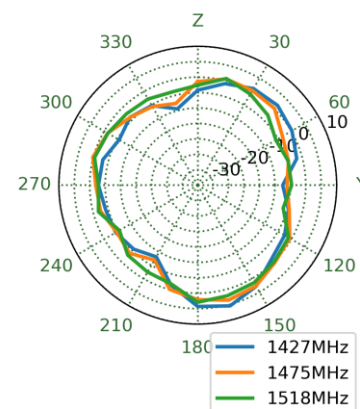
XY Plane



XZ Plane

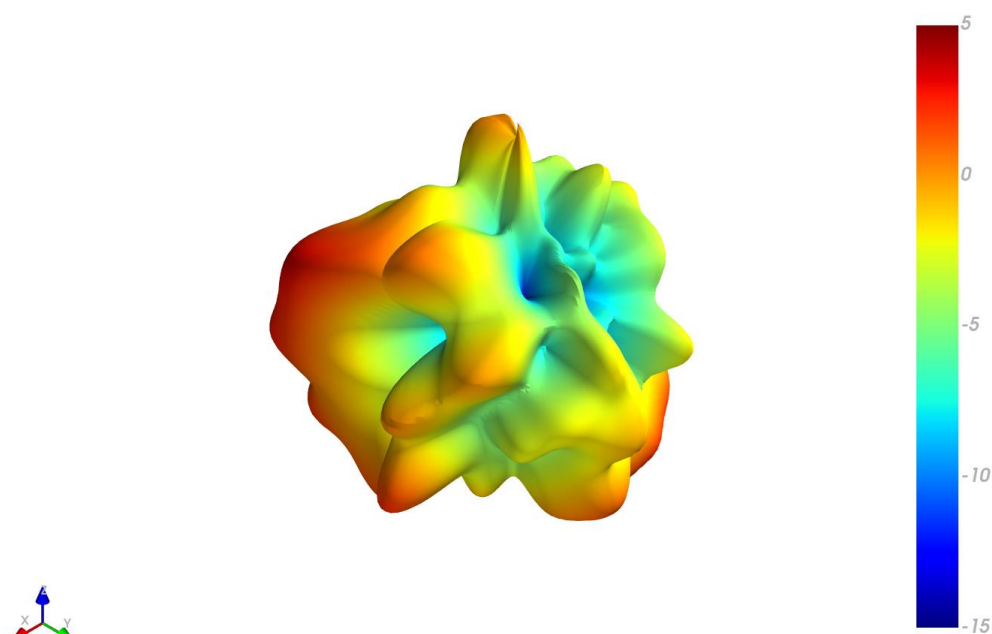


YZ Plane

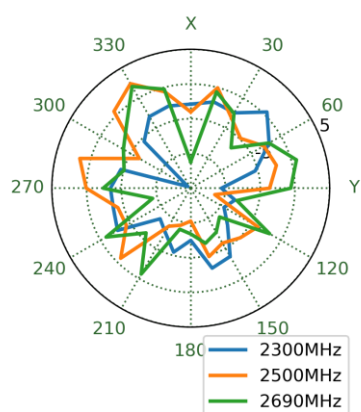




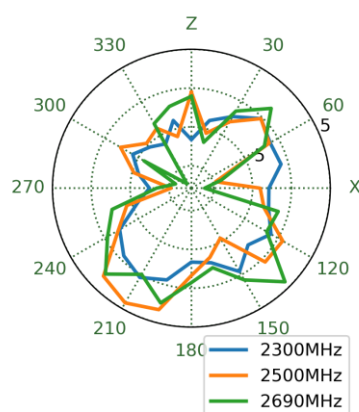
# 4.46 5GNR\_7 - 2500MHz Radiation Patterns



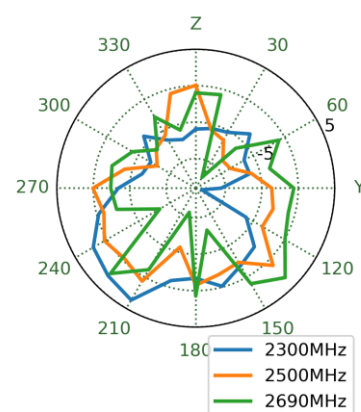
XY Plane



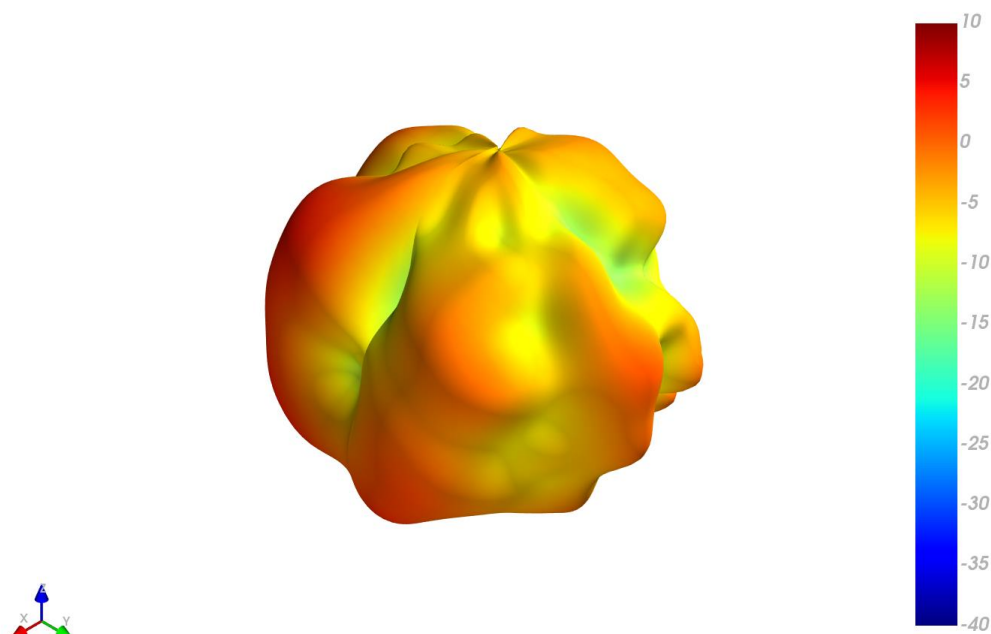
XZ Plane



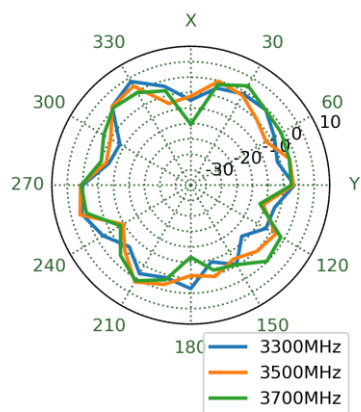
YZ Plane



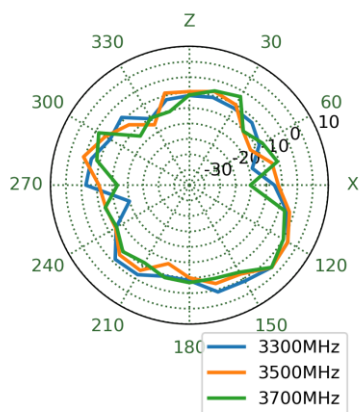
## 4.47 5GNR\_7 - 3500MHz Radiation Patterns



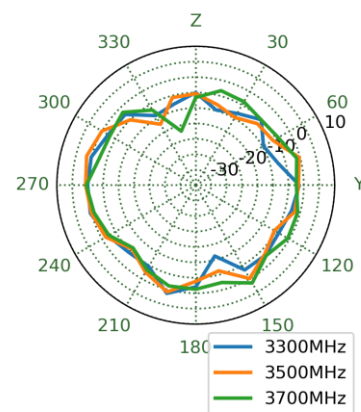
XY Plane



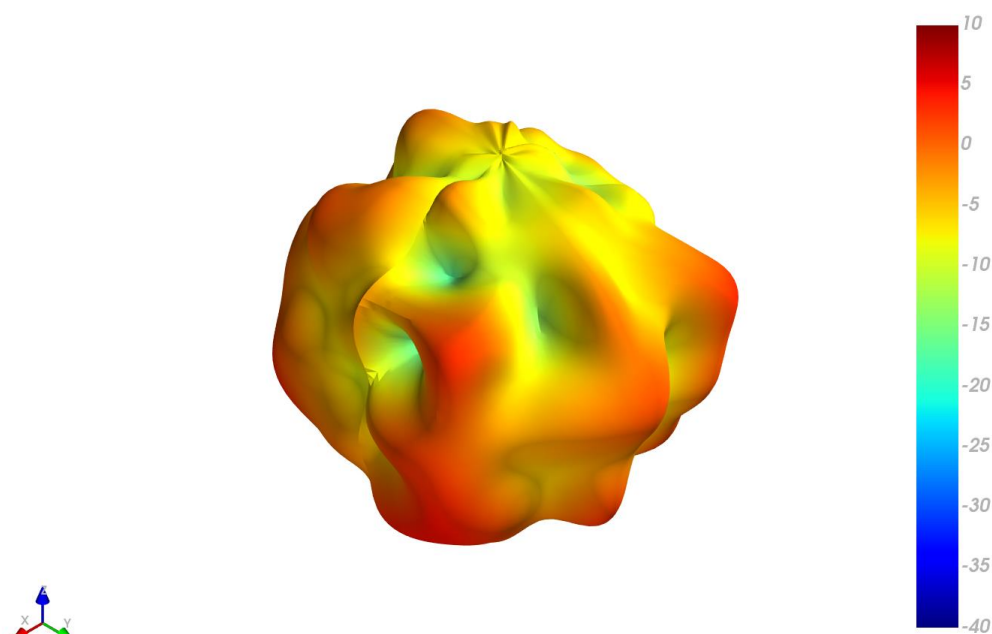
XZ Plane



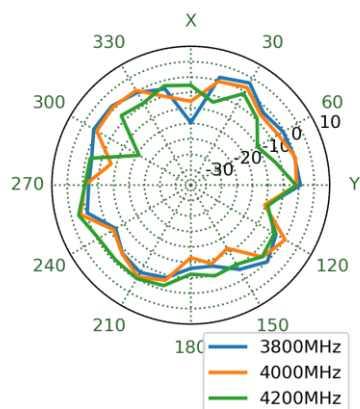
YZ Plane



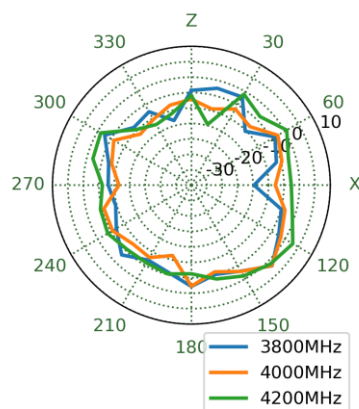
# 4.48 5GNR\_7 - 4000MHz Radiation Patterns



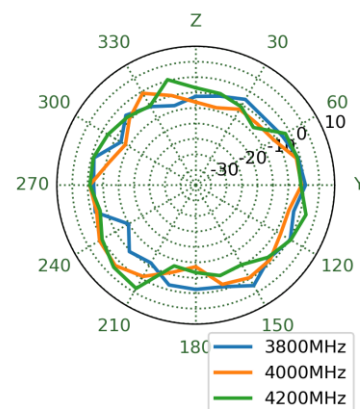
XY Plane



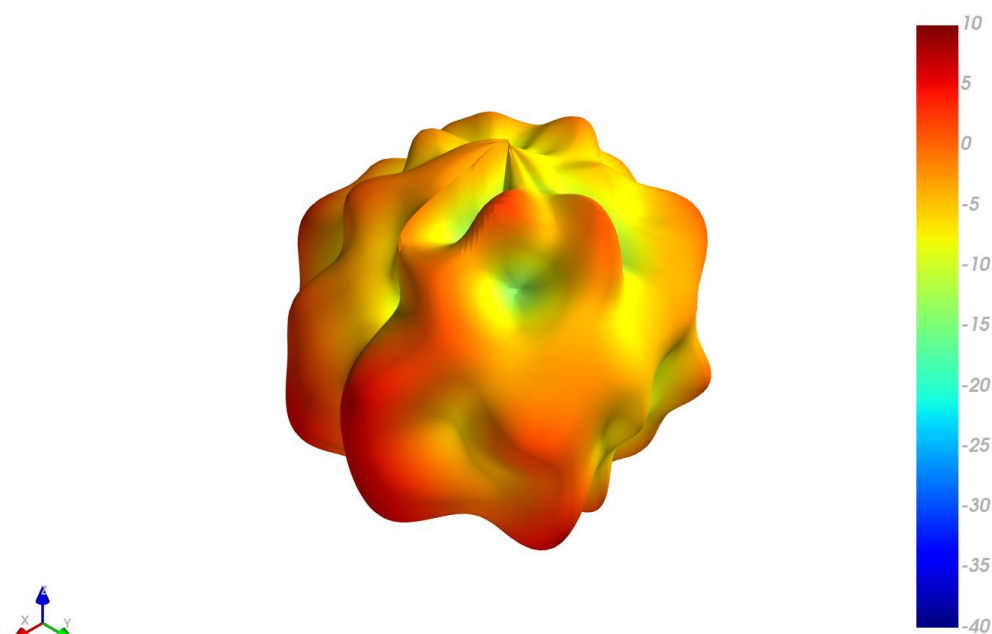
XZ Plane



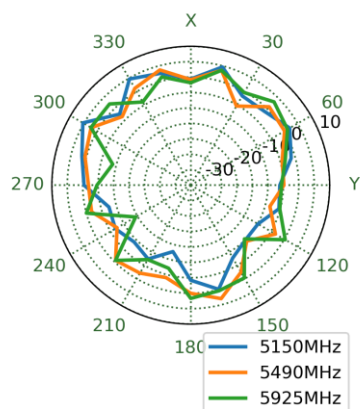
YZ Plane



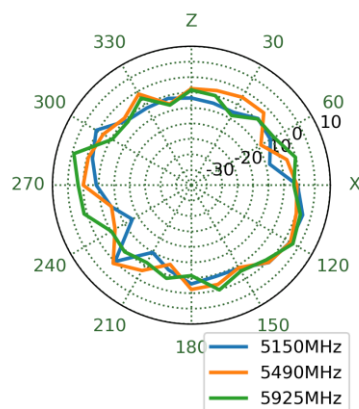
# 4.49 5GNR\_7 - 5490MHz Radiation Patterns



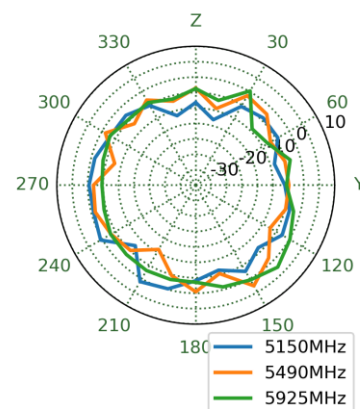
XY Plane



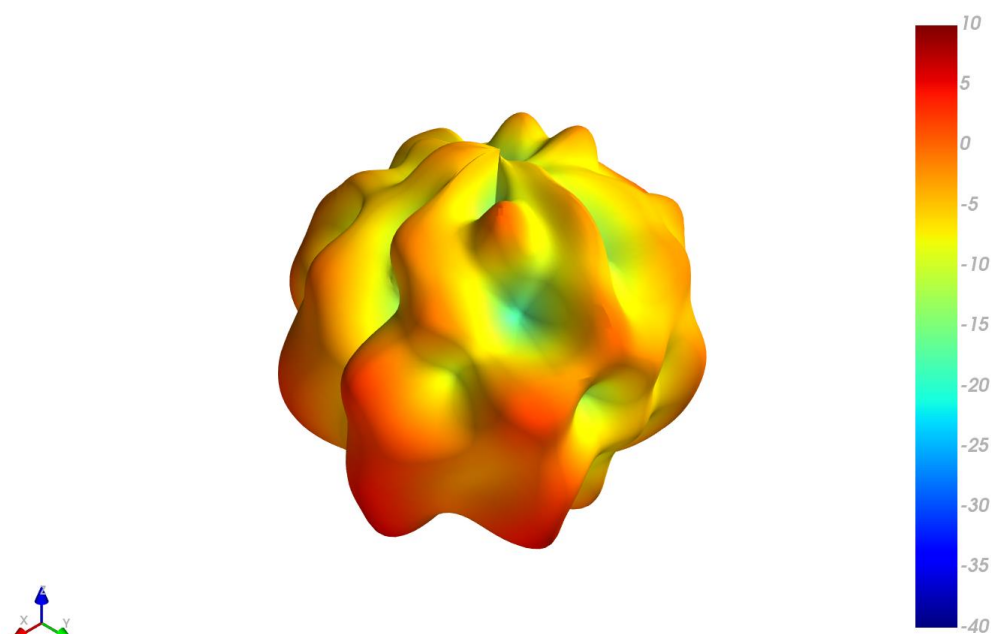
XZ Plane



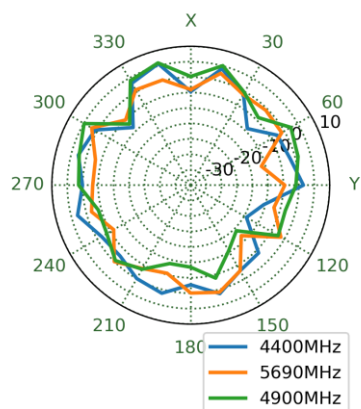
YZ Plane



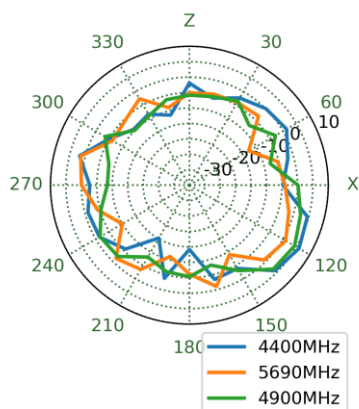
## 4.50 5GNR\_7 - 5690MHz Radiation Patterns



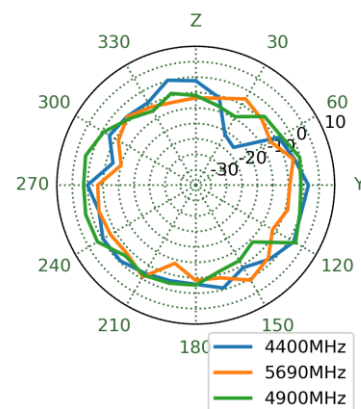
XY Plane



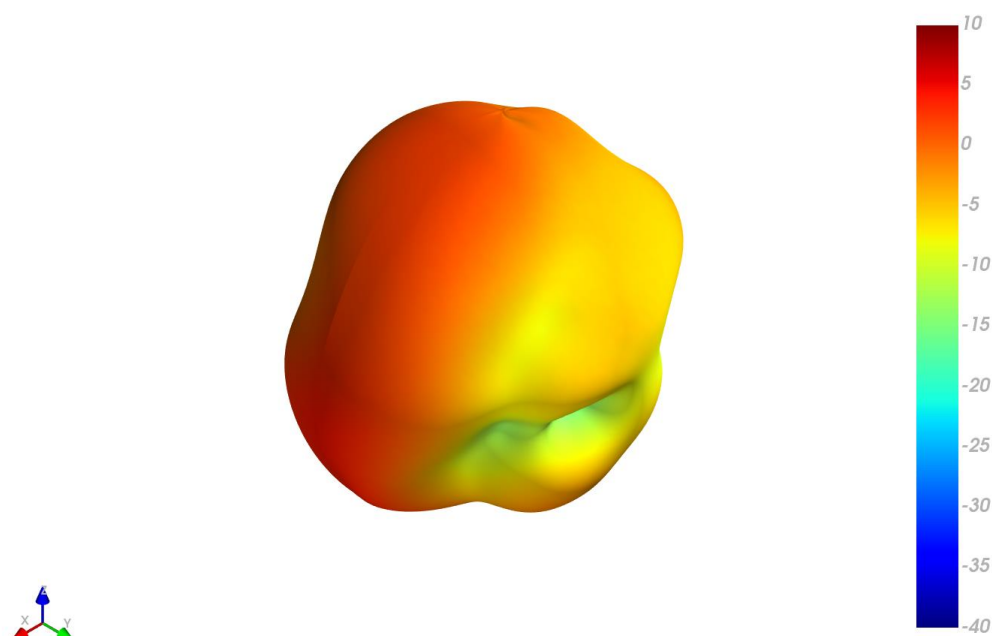
XZ Plane



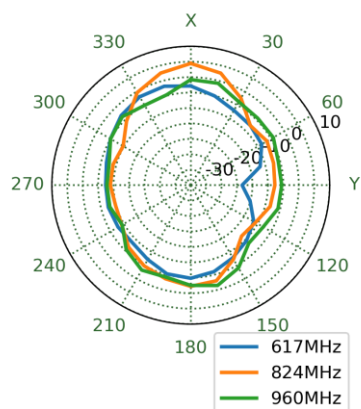
YZ Plane



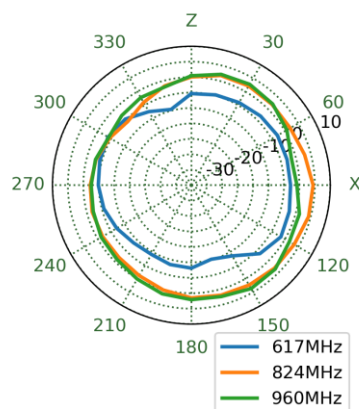
# 4.51 5GNR\_8 - 824MHz Radiation Patterns



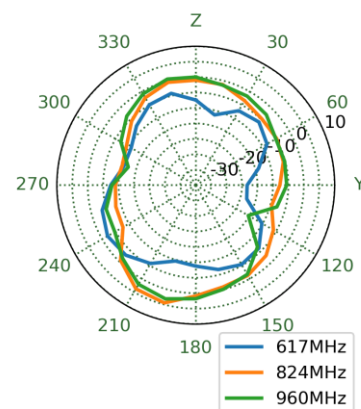
XY Plane



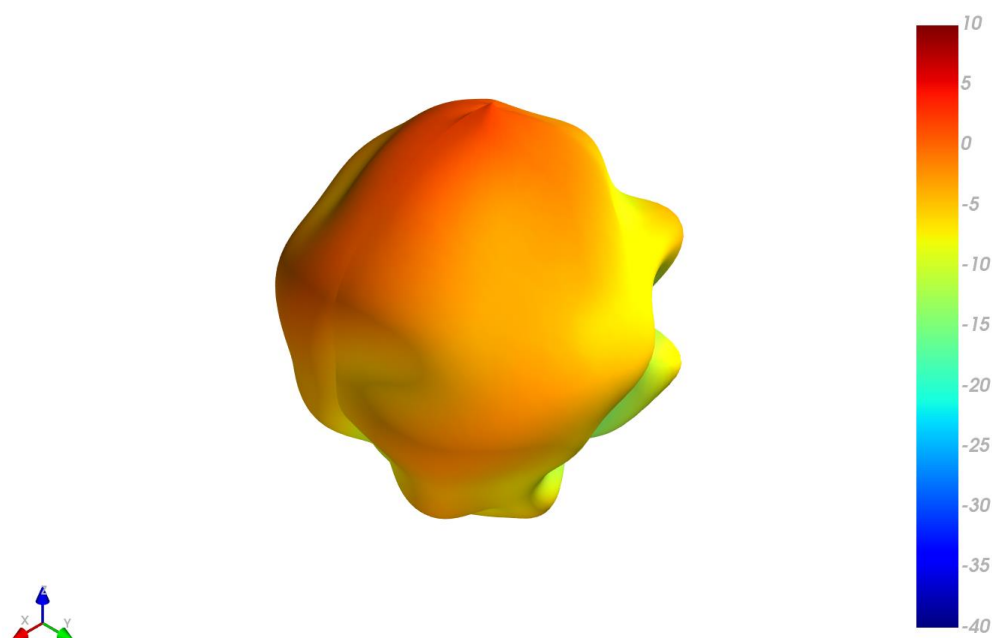
XZ Plane



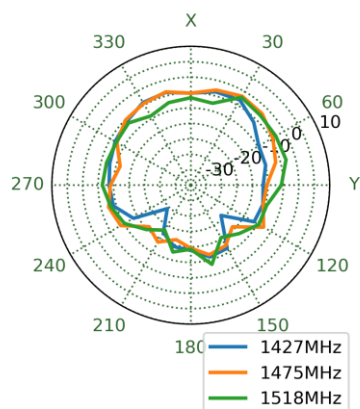
YZ Plane



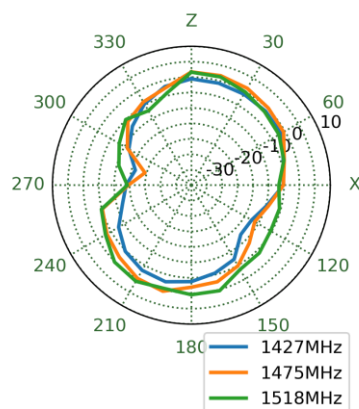
## 4.52 5GNR\_8 - 1475MHz Radiation Patterns



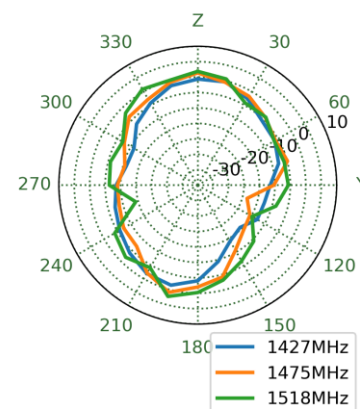
XY Plane



XZ Plane

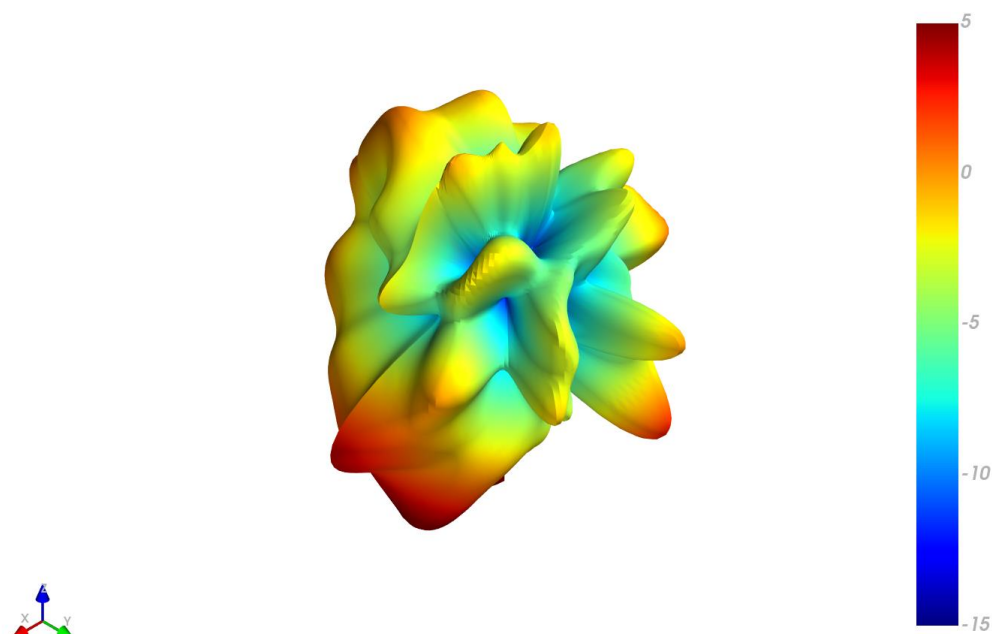


YZ Plane

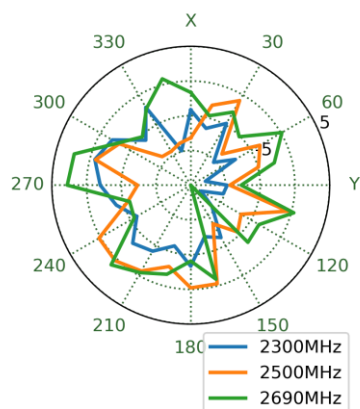




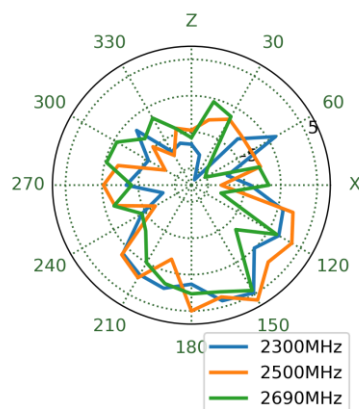
# 4.53 5GNR\_8 - 2500MHz Radiation Patterns



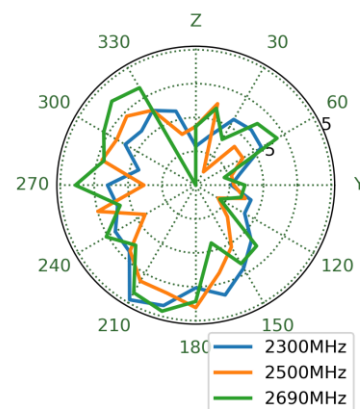
XY Plane



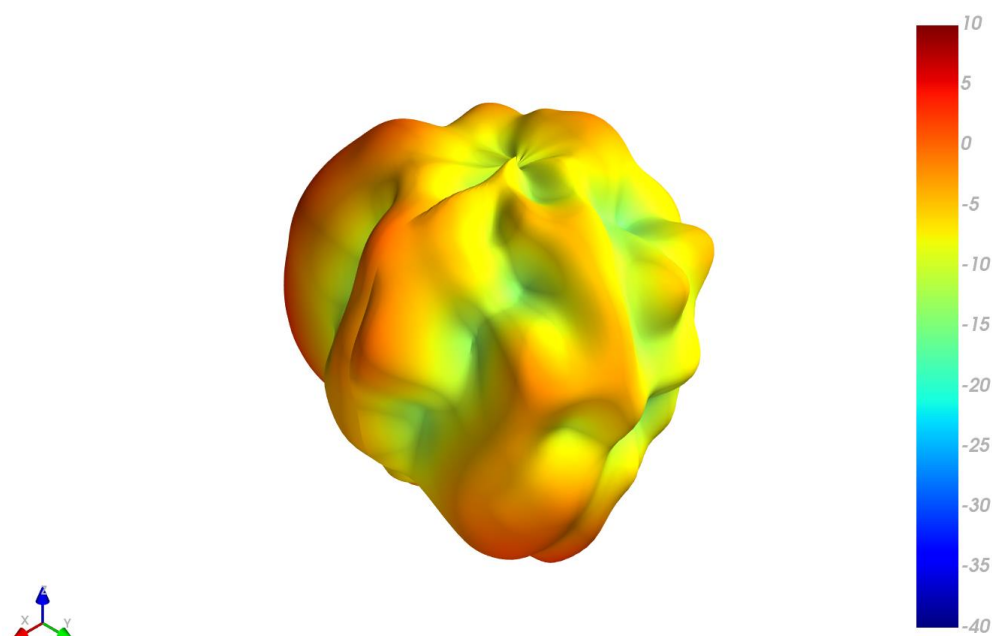
XZ Plane



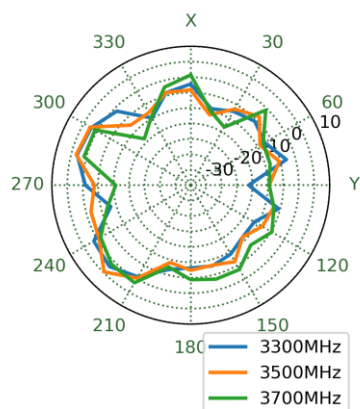
YZ Plane



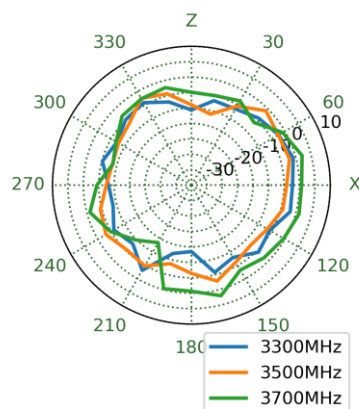
## 4.54 5GNR\_8 - 3500MHz Radiation Patterns



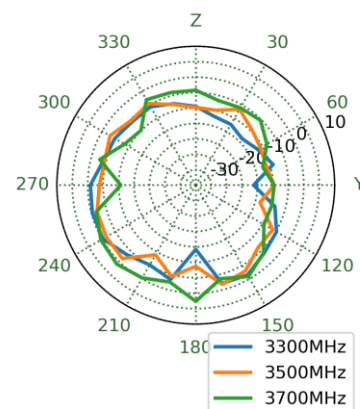
XY Plane



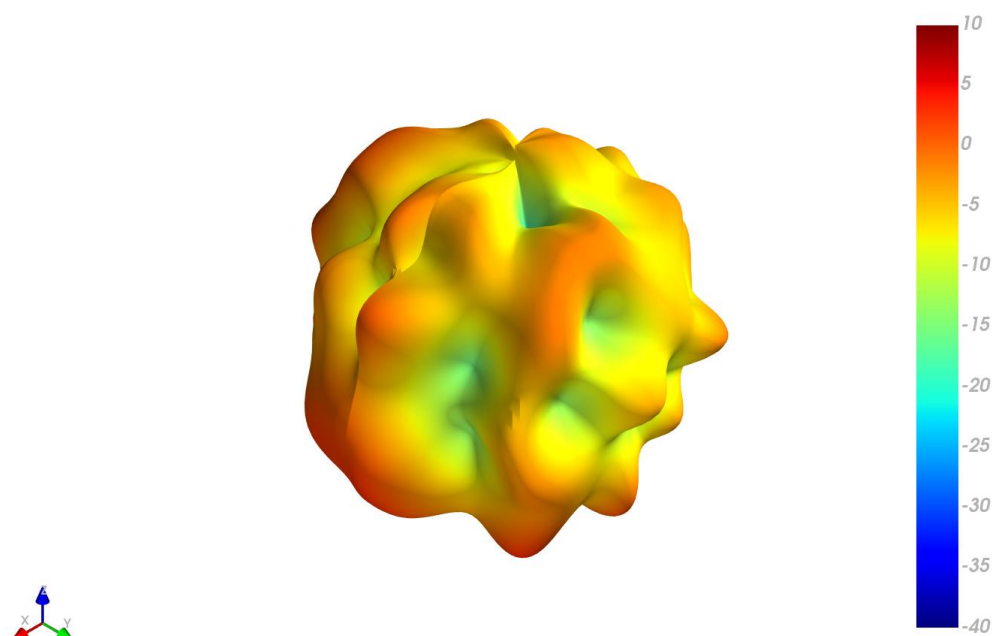
XZ Plane



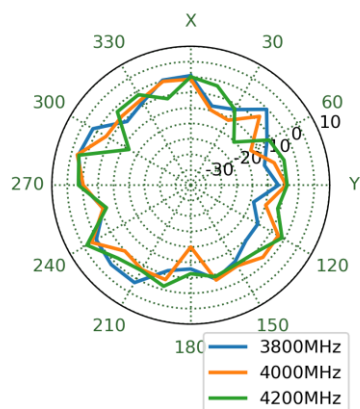
YZ Plane



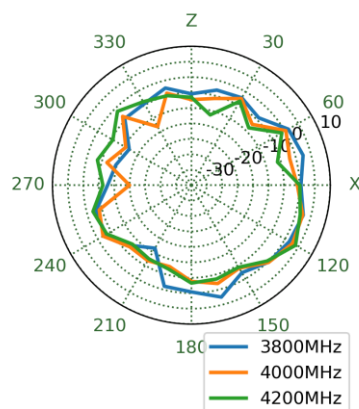
## 4.55 5GNR\_8 - 4000MHz Radiation Patterns



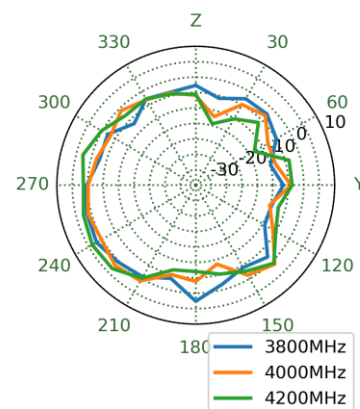
XY Plane



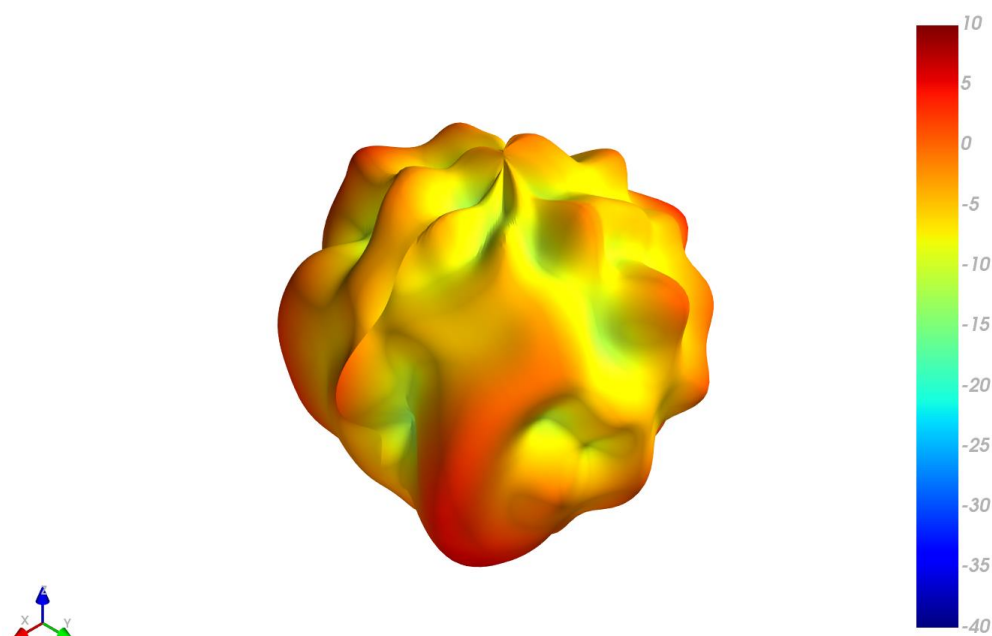
XZ Plane



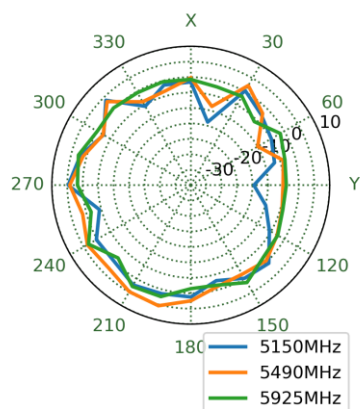
YZ Plane



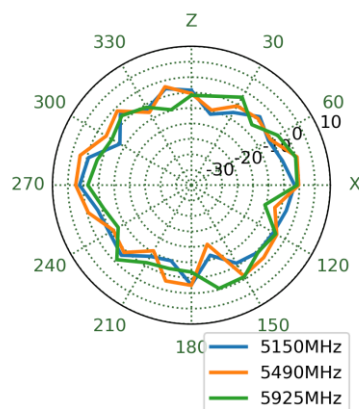
## 4.56 5GNR\_8 - 5490MHz Radiation Patterns



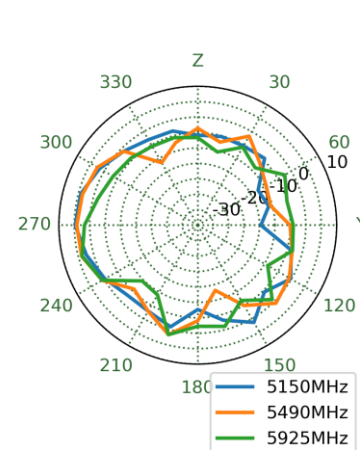
XY Plane



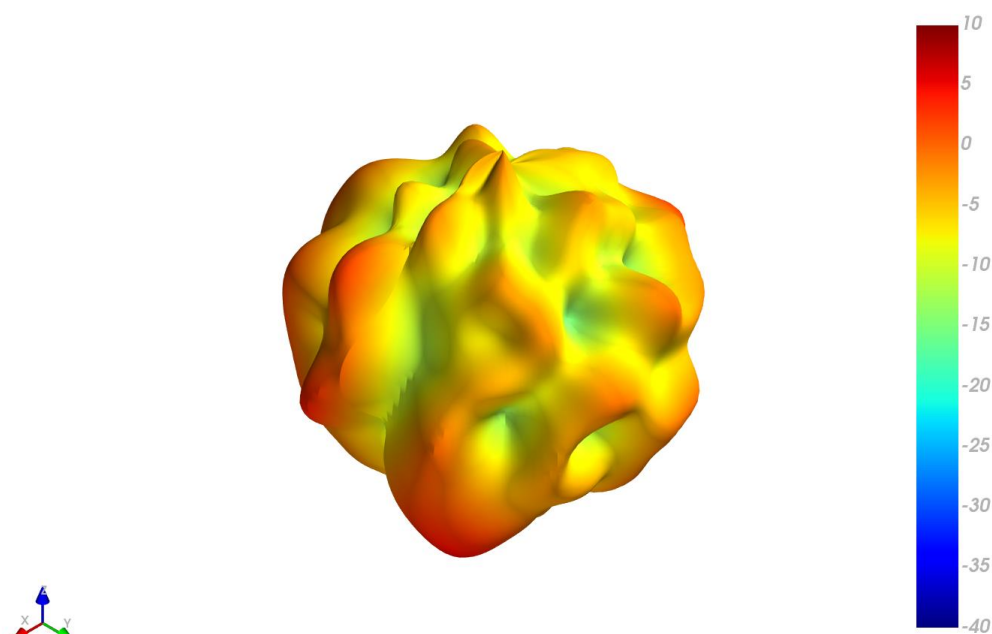
XZ Plane



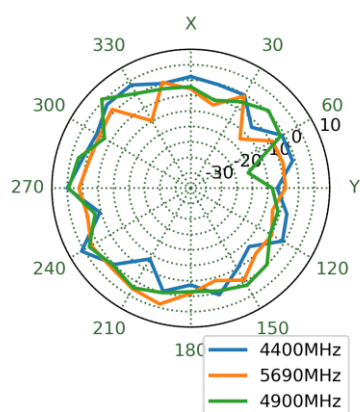
YZ Plane



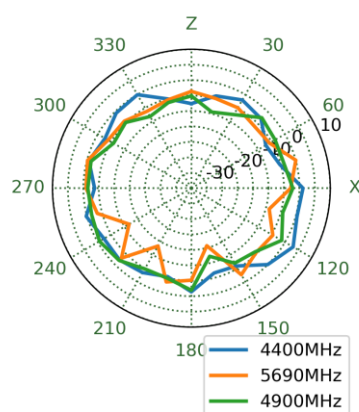
# 4.57 5GNR\_8 - 5690MHz Radiation Patterns



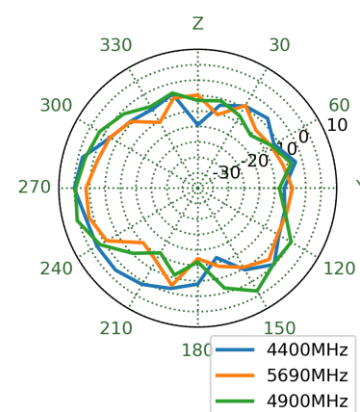
XY Plane



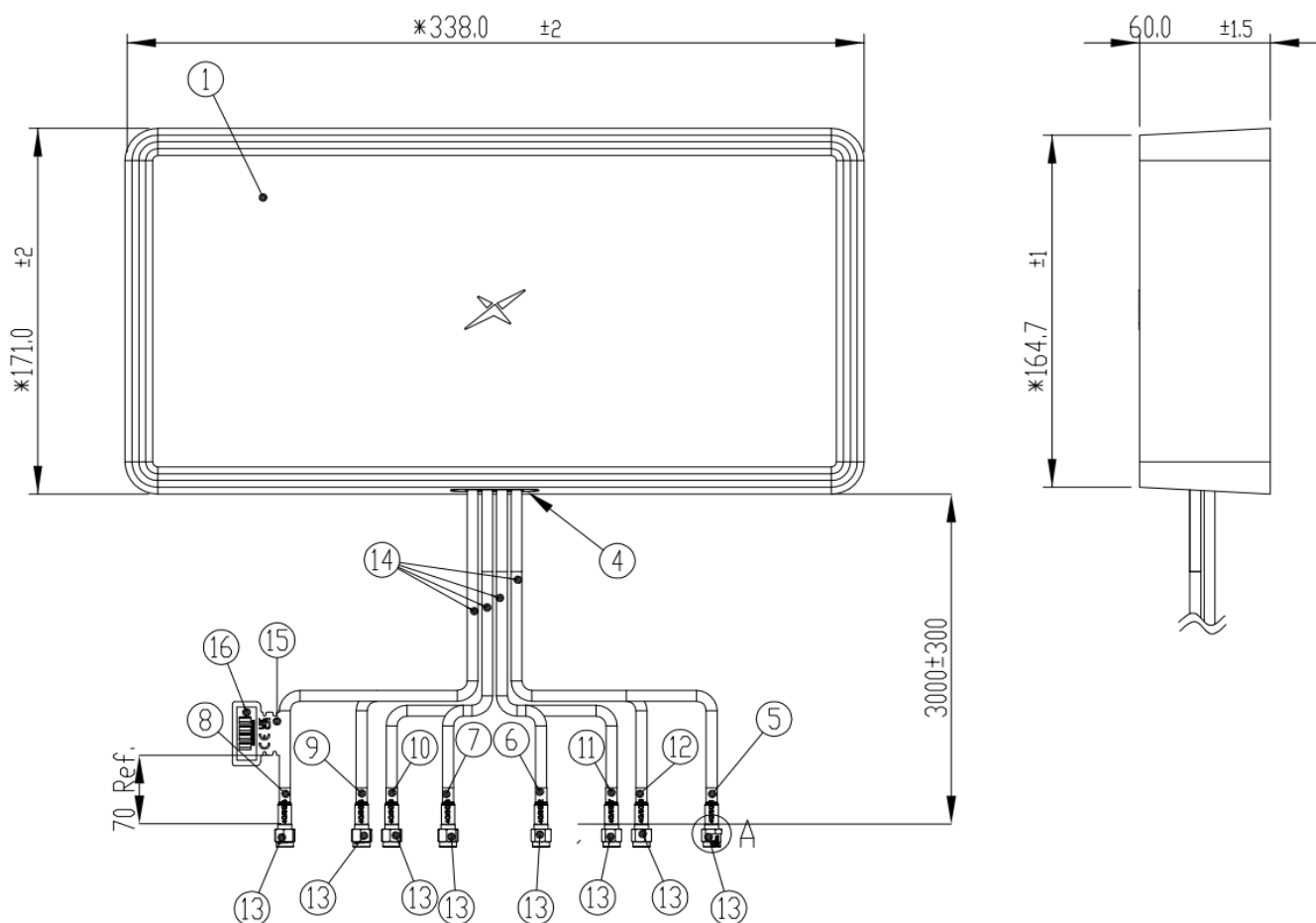
XZ Plane



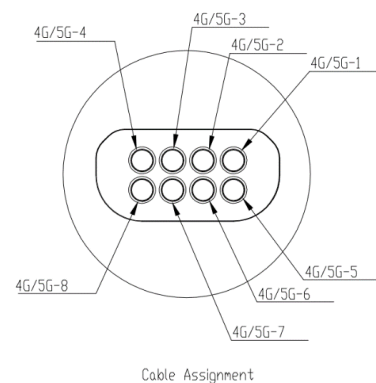
YZ Plane



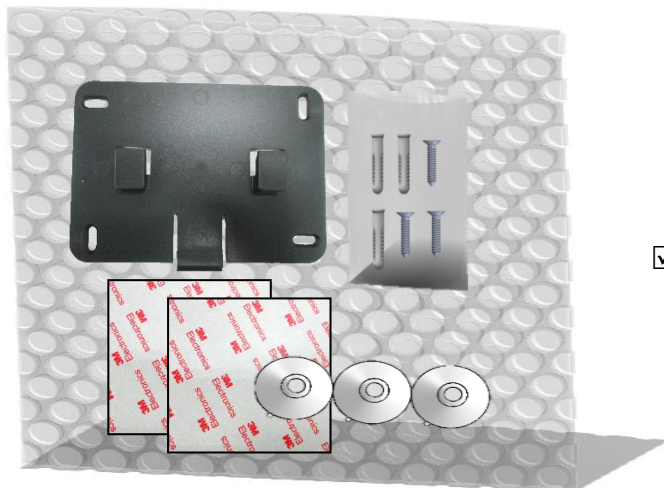
## 5. Mechanical Drawing



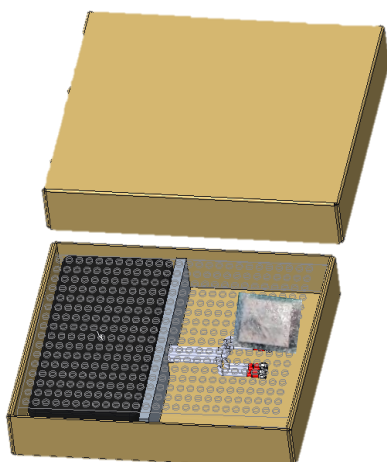
|    | Name                                   | Material                       | Finish              | Q'ty |
|----|----------------------------------------|--------------------------------|---------------------|------|
| 1  | TGX.08 Top Housing Black               | ASA                            | MT9050              | 1    |
| 2  | TGX.08 Bottom Housing Black            | ASA                            | MT9050              | 1    |
| 3  | Bracket                                | ASA                            | MT9050              | 1    |
| 4  | Grommet                                | Silicone Rubber, Hs=60A +/- 5A | Black               | 1    |
| 5  | Heat Shrink Tube(4G/5G-1)              | PE                             | Red Tube/White Text | 1    |
| 6  | Heat Shrink Tube(4G/5G-2)              | PE                             | Red Tube/White Text | 1    |
| 7  | Heat Shrink Tube(4G/5G-3)              | PE                             | Red Tube/White Text | 1    |
| 8  | Heat Shrink Tube(4G/5G-4)              | PE                             | Red Tube/White Text | 1    |
| 9  | Heat Shrink Tube(4G/5G-5)              | PE                             | Red Tube/White Text | 1    |
| 10 | Heat Shrink Tube(4G/5G-6)              | PE                             | Red Tube/White Text | 1    |
| 11 | Heat Shrink Tube(4G/5G-7)              | PE                             | Red Tube/White Text | 1    |
| 12 | Heat Shrink Tube(4G/5G-8)              | PE                             | Red Tube/White Text | 1    |
| 13 | SMA/MOST                               | Brass                          | Au Plated           | 8    |
| 14 | TGC200 Coaxial Cable                   | PE                             | Black               | 8    |
| 15 | CE, WEEE and UKCA mark logo Label      | PEPA                           | White/377C          | 1    |
| 16 | Date code label                        | PET                            | White               | 1    |
| 17 | Suction Cup                            | PVC                            | Transparent         | 3    |
| 18 | Double Adhesive Foam(100x100x3.54t)    | CR4305+3M9448HK 3.5t           | Black               | 1    |
| 19 | Wall Mount Stud 6*24L                  | Nylon                          | White               | 4    |
| 20 | Tapping Screw M3.5*25 countersunk flat | SUS304                         | N/A                 | 4    |



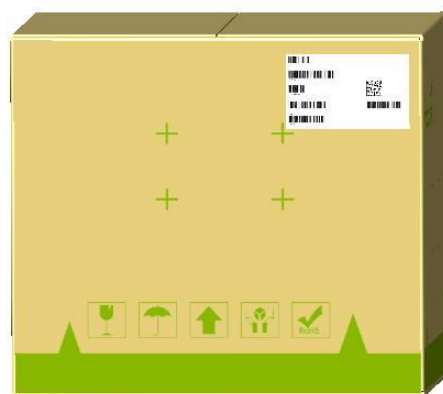
## 6. Packaging



- ☒ Small Bubble bag



- ☒ 1 PCS / Box
- ☒ Bubble bag
- ☒ Box(mm): 446x380x75



- ☒ 4 PCS / Carton
- ☒ 1 PCS / Clapboard
- ☒ Carton(mm): 446x380x300
- ☒ Carton Label



## 7. Application Note

The TGX.08 antenna performance with different cable lengths.

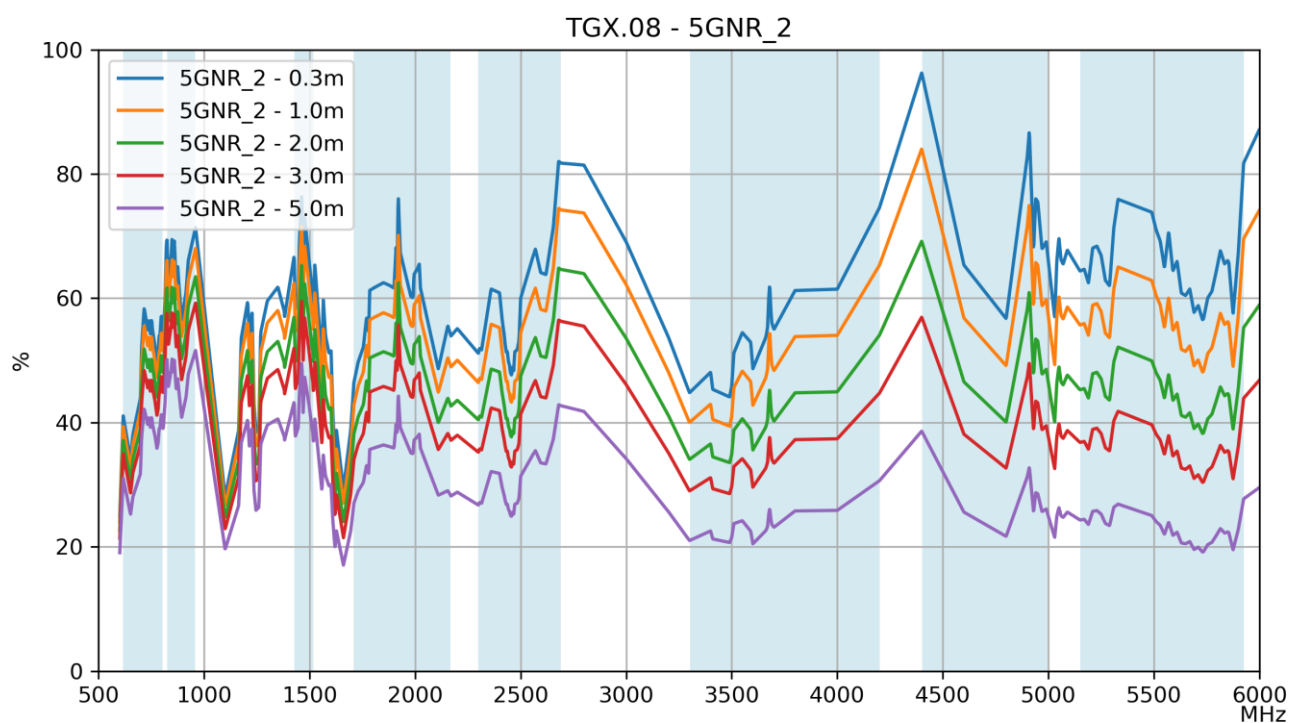
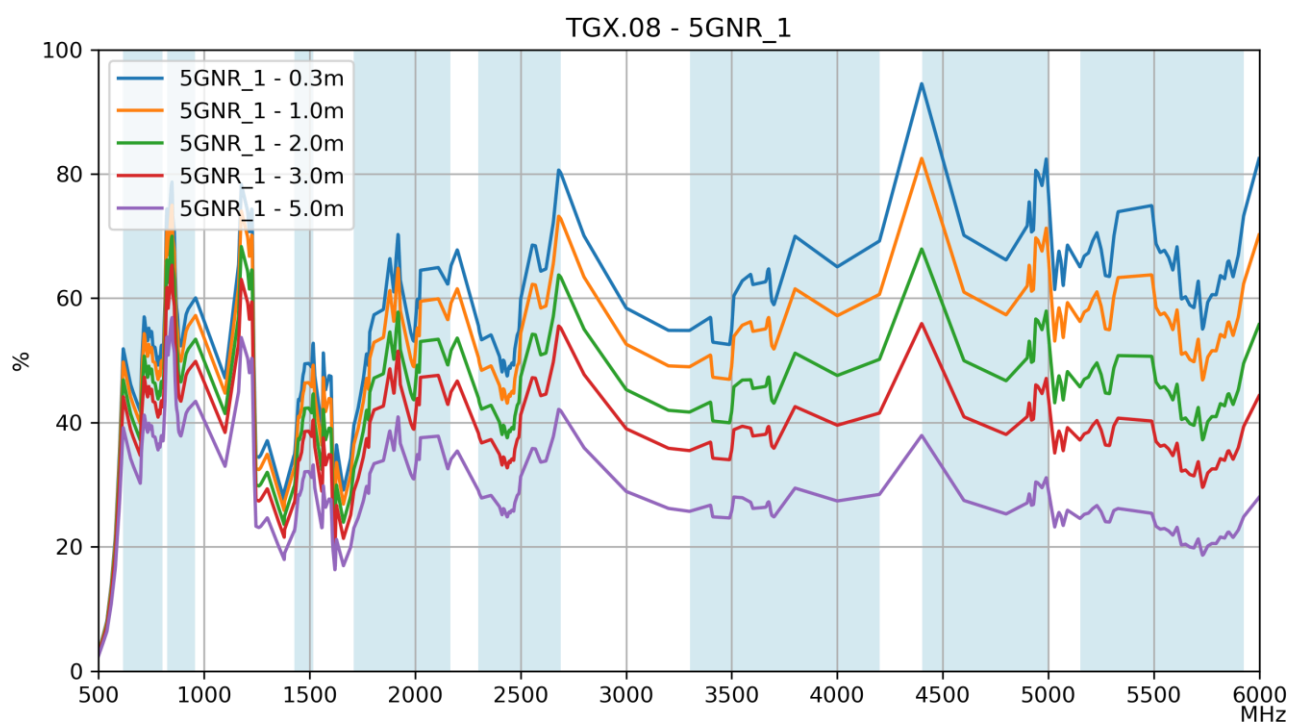
| Electrical      |      |           |         |             |            |           |           |           |           |           |           |
|-----------------|------|-----------|---------|-------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Frequency (MHz) |      | 5G NR B71 | LTE 700 | LTE 800/900 | 5G NR 1500 | 5G NR n66 | LTE 2600  | 5G NR n77 | 5G NR n78 | 5G NR n79 | LTE 5200  |
|                 |      | 617-698   | 698-806 | 824-960     | 1427-1518  | 1710-2170 | 2300-2690 | 3300-4200 | 3300-3800 | 4400-5000 | 5150-5925 |
| Efficiency (%)  |      |           |         |             |            |           |           |           |           |           |           |
| 5G NR_1         | 0.3m | 46.2      | 51.7    | 64.9        | 45.2       | 57.9      | 56.0      | 61.2      | 60.5      | 76.5      | 65.0      |
|                 | 1.0m | 44.2      | 49.3    | 61.9        | 42.3       | 53.3      | 50.9      | 54.0      | 53.5      | 66.3      | 55.6      |
|                 | 2.0m | 41.4      | 46.0    | 57.7        | 38.6       | 47.4      | 44.3      | 45.2      | 44.8      | 54.0      | 44.4      |
|                 | 3.0m | 38.9      | 42.9    | 53.9        | 35.1       | 42.2      | 38.6      | 37.9      | 37.6      | 44.0      | 35.5      |
|                 | 5.0m | 34.2      | 37.4    | 46.9        | 29.1       | 33.4      | 29.3      | 26.6      | 26.4      | 29.2      | 22.7      |
| 5G NR_2         | 0.3m | 39.2      | 53.7    | 65.3        | 65.7       | 60.0      | 57.0      | 54.4      | 52.8      | 74.7      | 65.2      |
|                 | 1.0m | 37.5      | 51.2    | 62.2        | 61.6       | 55.3      | 51.7      | 48.0      | 46.7      | 64.7      | 55.7      |
|                 | 2.0m | 35.2      | 47.7    | 58.0        | 56.1       | 49.2      | 45.0      | 40.2      | 39.1      | 52.7      | 44.6      |
|                 | 3.0m | 33.0      | 44.6    | 54.2        | 51.1       | 43.8      | 39.2      | 33.6      | 32.8      | 42.9      | 35.6      |
|                 | 5.0m | 29.0      | 38.8    | 47.2        | 42.4       | 34.7      | 29.8      | 23.6      | 23.0      | 28.5      | 22.8      |
| 5G NR_3         | 0.3m | 42.3      | 54.7    | 65.2        | 62.6       | 40.2      | 54.3      | 60.6      | 59.9      | 68.9      | 59.7      |
|                 | 1.0m | 40.5      | 52.1    | 62.1        | 58.6       | 37.0      | 49.3      | 53.5      | 52.9      | 59.7      | 51.1      |
|                 | 2.0m | 37.9      | 48.7    | 57.9        | 53.4       | 32.9      | 42.9      | 44.8      | 44.3      | 48.6      | 40.8      |
|                 | 3.0m | 35.6      | 45.4    | 54.1        | 48.6       | 29.3      | 37.4      | 37.5      | 37.1      | 39.6      | 32.6      |
|                 | 5.0m | 31.2      | 39.6    | 47.1        | 40.4       | 23.2      | 28.4      | 26.3      | 26.1      | 26.3      | 20.9      |
| 5G NR_4         | 0.3m | 44.3      | 54.6    | 65.9        | 47.1       | 57.4      | 55.1      | 53.6      | 53.1      | 62.9      | 58.9      |
|                 | 1.0m | 42.3      | 52.0    | 62.8        | 44.1       | 52.9      | 50.0      | 47.4      | 47.0      | 54.5      | 50.4      |
|                 | 2.0m | 39.7      | 48.6    | 58.6        | 40.2       | 47.0      | 43.5      | 39.7      | 39.4      | 44.4      | 40.3      |
|                 | 3.0m | 37.2      | 45.3    | 54.7        | 36.6       | 41.9      | 37.9      | 33.2      | 33.0      | 36.2      | 32.2      |
|                 | 5.0m | 32.7      | 39.5    | 47.7        | 30.4       | 33.1      | 28.8      | 23.3      | 23.2      | 24.0      | 20.6      |
| 5G NR_5         | 0.3m | 37.1      | 57.0    | 57.5        | 39.0       | 43.8      | 53.0      | 54.2      | 53.1      | 68.8      | 62.7      |
|                 | 1.0m | 35.4      | 54.3    | 54.8        | 36.5       | 40.3      | 48.1      | 47.8      | 46.9      | 59.6      | 53.6      |
|                 | 2.0m | 33.2      | 50.7    | 51.1        | 33.3       | 35.8      | 41.9      | 40.1      | 39.3      | 48.6      | 42.9      |
|                 | 3.0m | 31.1      | 47.3    | 47.7        | 30.3       | 31.9      | 36.5      | 33.5      | 33.0      | 39.6      | 34.3      |
|                 | 5.0m | 27.3      | 41.2    | 41.6        | 25.1       | 25.2      | 27.7      | 23.5      | 23.2      | 26.3      | 21.9      |
| 5G NR_6         | 0.3m | 38.5      | 51.1    | 48.1        | 38.3       | 46.4      | 53.0      | 47.2      | 46.3      | 56.8      | 59.5      |
|                 | 1.0m | 36.8      | 48.7    | 45.8        | 35.9       | 42.8      | 48.1      | 41.7      | 40.9      | 49.2      | 50.9      |
|                 | 2.0m | 34.5      | 45.4    | 42.8        | 32.7       | 38.0      | 41.9      | 34.9      | 34.2      | 40.1      | 40.7      |
|                 | 3.0m | 32.3      | 42.4    | 39.9        | 29.8       | 33.8      | 36.5      | 29.2      | 28.7      | 32.7      | 32.5      |
|                 | 5.0m | 28.4      | 36.9    | 34.8        | 24.7       | 26.8      | 27.7      | 20.4      | 20.2      | 21.7      | 20.8      |
| 5G NR_7         | 0.3m | 35.5      | 48.6    | 49.0        | 46.1       | 57.0      | 57.7      | 63.6      | 63.7      | 70.3      | 62.5      |

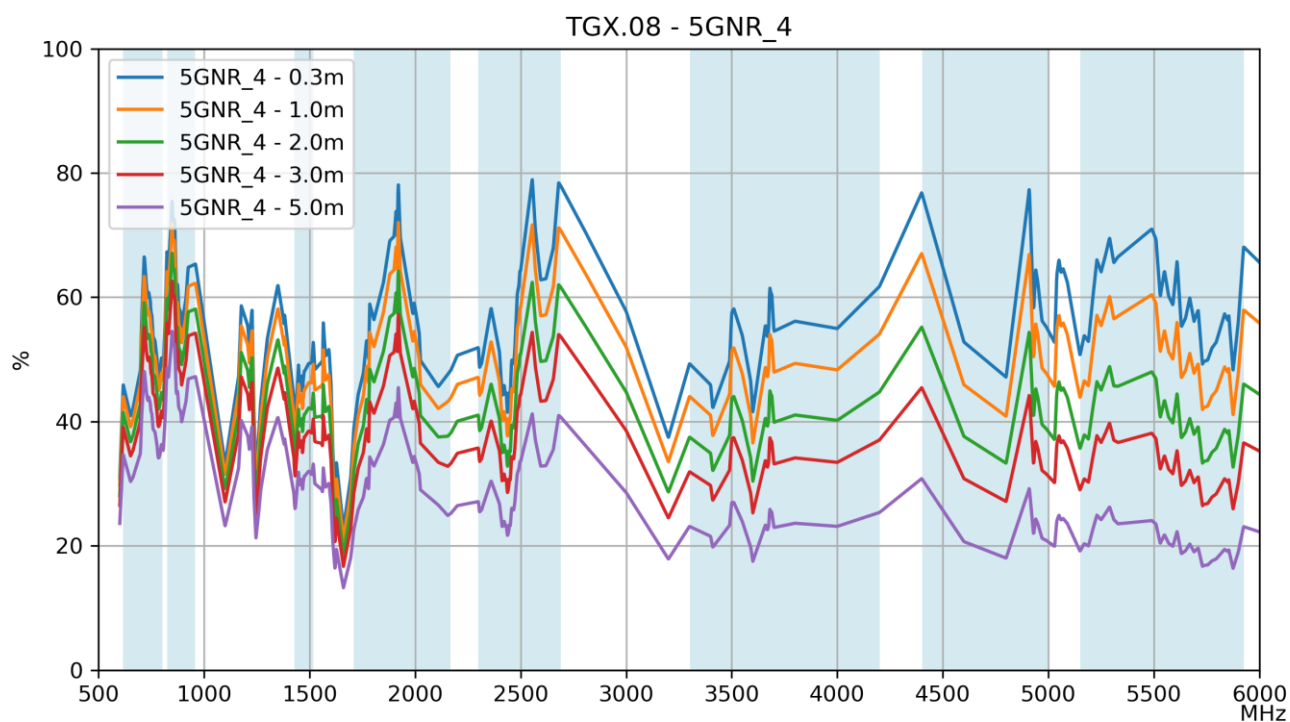
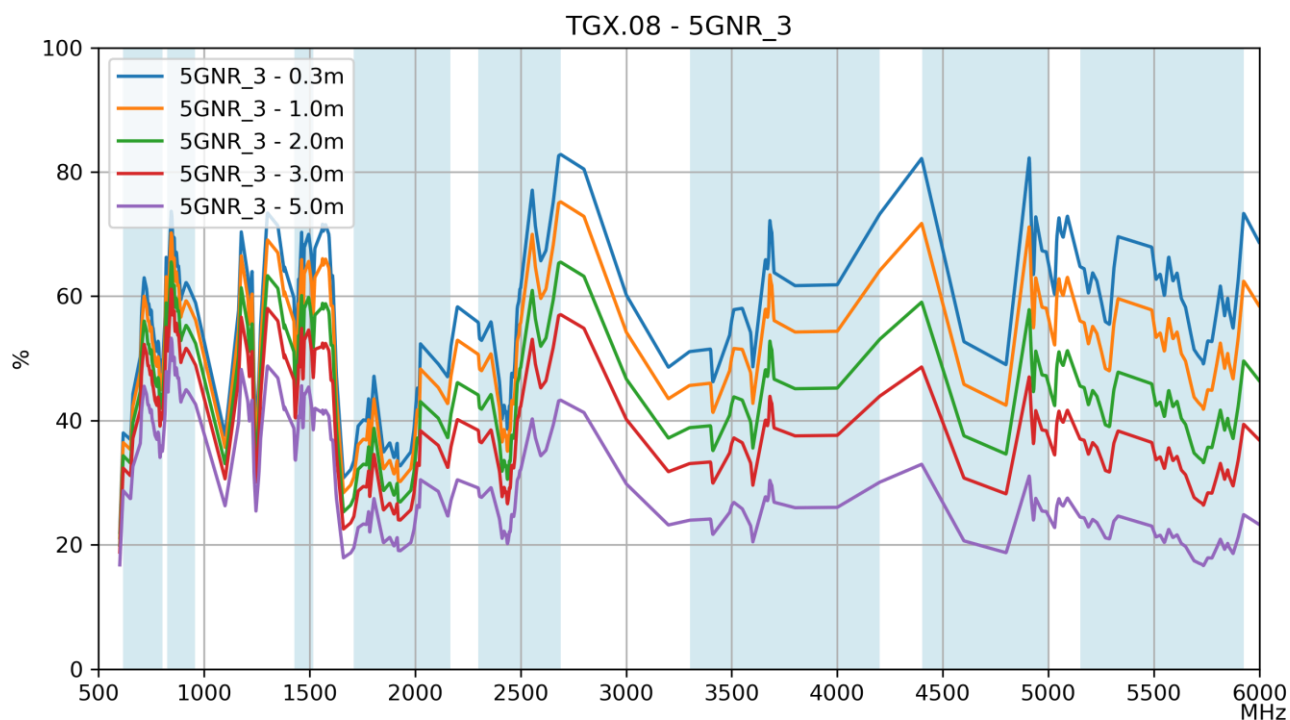
|                   |      |       |       |       |       |       |       |       |       |       |       |
|-------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                   | 1.0m | 34.0  | 46.3  | 46.7  | 43.2  | 52.6  | 52.4  | 56.2  | 56.3  | 60.9  | 53.4  |
|                   | 2.0m | 31.8  | 43.2  | 43.6  | 39.4  | 46.8  | 45.6  | 47.0  | 47.2  | 49.6  | 42.7  |
|                   | 3.0m | 29.8  | 40.3  | 40.7  | 35.9  | 41.6  | 39.7  | 39.4  | 39.6  | 40.4  | 34.2  |
|                   | 5.0m | 26.2  | 35.1  | 35.4  | 29.8  | 32.9  | 30.1  | 27.6  | 27.8  | 26.8  | 21.9  |
| 5G NR_8           | 0.3m | 36.7  | 54.6  | 71.6  | 31.0  | 52.0  | 59.4  | 55.3  | 55.0  | 67.2  | 65.7  |
|                   | 1.0m | 35.1  | 52.1  | 68.2  | 29.0  | 47.9  | 53.9  | 48.8  | 48.6  | 58.2  | 56.1  |
|                   | 2.0m | 32.9  | 48.6  | 63.7  | 26.4  | 42.6  | 47.0  | 40.9  | 40.7  | 47.4  | 44.9  |
|                   | 3.0m | 30.8  | 45.3  | 59.4  | 24.1  | 37.9  | 40.9  | 34.2  | 34.1  | 38.6  | 35.9  |
|                   | 5.0m | 27.1  | 39.5  | 51.7  | 20.0  | 30.0  | 31.0  | 24.0  | 24.0  | 25.6  | 23.0  |
| Average Gain (dB) |      |       |       |       |       |       |       |       |       |       |       |
| 5G NR_1           | 0.3m | -3.35 | -2.87 | -1.88 | -3.45 | -2.38 | -2.52 | -2.13 | -2.18 | -1.16 | -1.87 |
|                   | 1.0m | -3.55 | -3.08 | -2.09 | -3.73 | -2.73 | -2.94 | -2.67 | -2.72 | -1.79 | -2.55 |
|                   | 2.0m | -3.82 | -3.38 | -2.39 | -4.14 | -3.24 | -3.54 | -3.44 | -3.48 | -2.68 | -3.52 |
|                   | 3.0m | -4.10 | -3.68 | -2.69 | -4.54 | -3.75 | -4.14 | -4.22 | -4.25 | -3.57 | -4.49 |
|                   | 5.0m | -4.66 | -4.28 | -3.29 | -5.35 | -4.77 | -5.34 | -5.75 | -5.78 | -5.35 | -6.44 |
| 5G NR_2           | 0.3m | -4.06 | -2.70 | -1.85 | -1.82 | -2.22 | -2.44 | -2.65 | -2.77 | -1.27 | -1.86 |
|                   | 1.0m | -4.26 | -2.91 | -2.06 | -2.11 | -2.57 | -2.86 | -3.19 | -3.31 | -1.89 | -2.54 |
|                   | 2.0m | -4.54 | -3.21 | -2.36 | -2.51 | -3.08 | -3.46 | -3.96 | -4.07 | -2.78 | -3.51 |
|                   | 3.0m | -4.82 | -3.51 | -2.66 | -2.91 | -3.59 | -4.06 | -4.73 | -4.84 | -3.67 | -4.48 |
|                   | 5.0m | -5.38 | -4.11 | -3.26 | -3.72 | -4.60 | -5.26 | -6.28 | -6.37 | -5.45 | -6.42 |
| 5G NR_3           | 0.3m | -3.73 | -2.62 | -1.86 | -2.04 | -3.96 | -2.65 | -2.17 | -2.23 | -1.61 | -2.24 |
|                   | 1.0m | -3.93 | -2.83 | -2.07 | -2.32 | -4.31 | -3.07 | -2.72 | -2.77 | -2.24 | -2.92 |
|                   | 2.0m | -4.21 | -3.13 | -2.37 | -2.73 | -4.82 | -3.67 | -3.49 | -3.53 | -3.13 | -3.89 |
|                   | 3.0m | -4.49 | -3.43 | -2.67 | -3.13 | -5.33 | -4.27 | -4.26 | -4.30 | -4.02 | -4.86 |
|                   | 5.0m | -5.05 | -4.03 | -3.27 | -3.94 | -6.35 | -5.47 | -5.80 | -5.83 | -5.80 | -6.80 |
| 5G NR_4           | 0.3m | -3.54 | -2.63 | -1.81 | -3.27 | -2.41 | -2.59 | -2.70 | -2.75 | -2.01 | -2.30 |
|                   | 1.0m | -3.74 | -2.84 | -2.02 | -3.55 | -2.77 | -3.01 | -3.24 | -3.28 | -2.63 | -2.98 |
|                   | 2.0m | -4.02 | -3.14 | -2.32 | -3.96 | -3.27 | -3.61 | -4.01 | -4.05 | -3.52 | -3.95 |
|                   | 3.0m | -4.29 | -3.44 | -2.62 | -4.36 | -3.78 | -4.21 | -4.78 | -4.81 | -4.41 | -4.92 |
|                   | 5.0m | -4.85 | -4.04 | -3.22 | -5.17 | -4.80 | -5.41 | -6.32 | -6.34 | -6.20 | -6.86 |
| 5G NR_5           | 0.3m | -4.31 | -2.44 | -2.40 | -4.09 | -3.59 | -2.76 | -2.66 | -2.75 | -1.62 | -2.03 |
|                   | 1.0m | -4.51 | -2.65 | -2.61 | -4.37 | -3.95 | -3.18 | -3.20 | -3.29 | -2.25 | -2.71 |
|                   | 2.0m | -4.79 | -2.95 | -2.91 | -4.78 | -4.46 | -3.78 | -3.97 | -4.05 | -3.14 | -3.68 |
|                   | 3.0m | -5.07 | -3.25 | -3.21 | -5.19 | -4.97 | -4.38 | -4.75 | -4.82 | -4.02 | -4.65 |
|                   | 5.0m | -5.64 | -3.85 | -3.81 | -6.00 | -5.99 | -5.58 | -6.29 | -6.35 | -5.80 | -6.59 |
| 5G NR_6           | 0.3m | -4.15 | -2.92 | -3.18 | -4.17 | -3.33 | -2.76 | -3.26 | -3.35 | -2.46 | -2.25 |
|                   | 1.0m | -4.34 | -3.13 | -3.39 | -4.45 | -3.69 | -3.18 | -3.80 | -3.89 | -3.08 | -2.93 |
|                   | 2.0m | -4.62 | -3.43 | -3.69 | -4.85 | -4.20 | -3.78 | -4.58 | -4.65 | -3.97 | -3.91 |
|                   | 3.0m | -4.90 | -3.73 | -3.99 | -5.26 | -4.71 | -4.38 | -5.35 | -5.42 | -4.86 | -4.88 |
|                   | 5.0m | -5.46 | -4.33 | -4.59 | -6.07 | -5.72 | -5.58 | -6.89 | -6.96 | -6.64 | -6.82 |

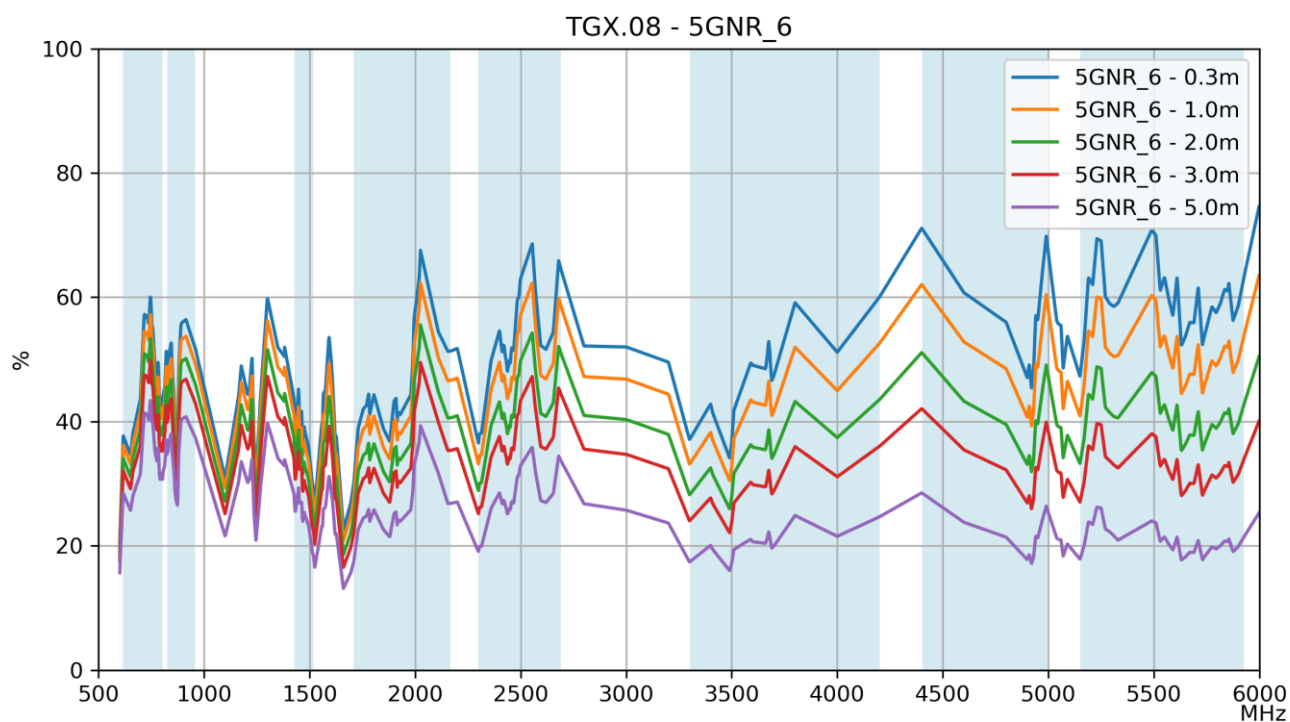
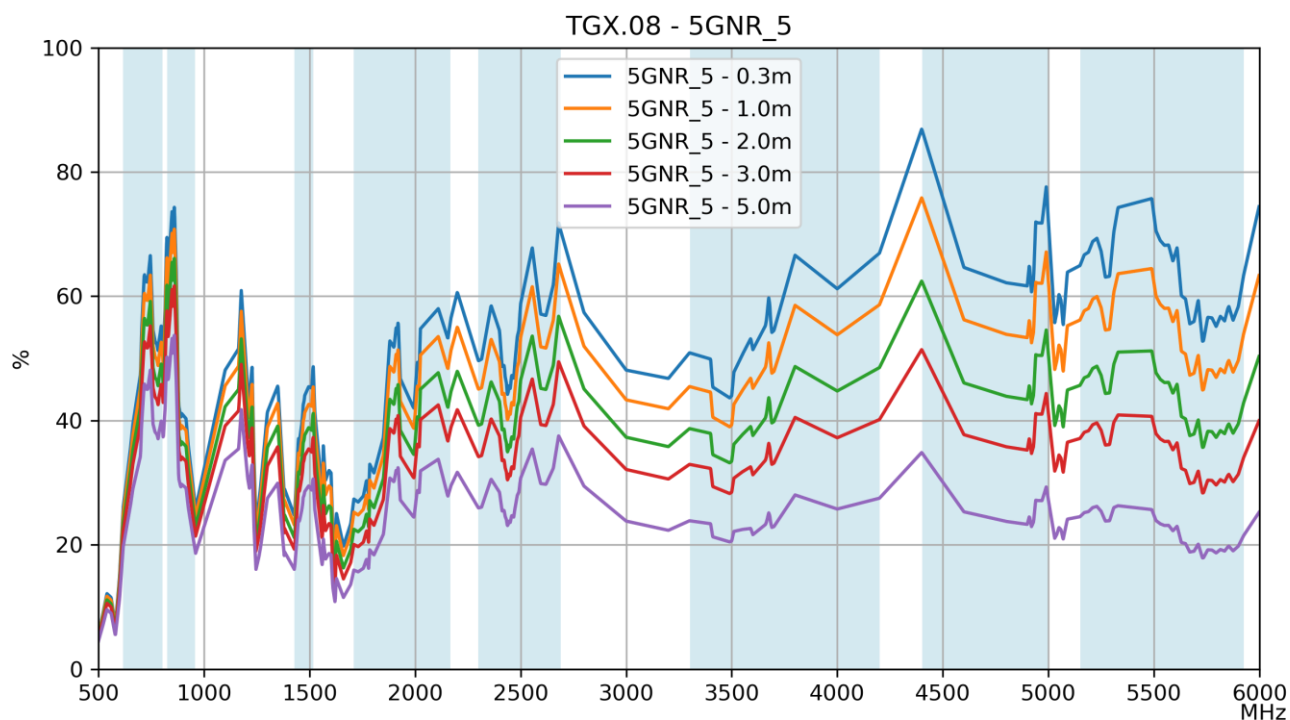
|                 |      |       |       |       |       |       |       |       |       |       |       |
|-----------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 5G NR_7         | 0.3m | -4.49 | -3.13 | -3.10 | -3.36 | -2.44 | -2.39 | -1.96 | -1.96 | -1.53 | -2.04 |
|                 | 1.0m | -4.69 | -3.34 | -3.31 | -3.64 | -2.79 | -2.81 | -2.50 | -2.49 | -2.15 | -2.72 |
|                 | 2.0m | -4.97 | -3.64 | -3.61 | -4.05 | -3.30 | -3.41 | -3.27 | -3.26 | -3.04 | -3.69 |
|                 | 3.0m | -5.25 | -3.94 | -3.91 | -4.45 | -3.81 | -4.01 | -4.05 | -4.03 | -3.93 | -4.66 |
|                 | 5.0m | -5.82 | -4.54 | -4.51 | -5.26 | -4.82 | -5.21 | -5.58 | -5.56 | -5.71 | -6.60 |
| 5G NR_8         | 0.3m | -4.35 | -2.63 | -1.45 | -5.09 | -2.84 | -2.26 | -2.57 | -2.59 | -1.73 | -1.83 |
|                 | 1.0m | -4.55 | -2.84 | -1.66 | -5.38 | -3.20 | -2.68 | -3.11 | -3.13 | -2.35 | -2.51 |
|                 | 2.0m | -4.83 | -3.14 | -1.96 | -5.78 | -3.70 | -3.28 | -3.88 | -3.90 | -3.24 | -3.48 |
|                 | 3.0m | -5.11 | -3.44 | -2.26 | -6.19 | -4.21 | -3.88 | -4.66 | -4.67 | -4.13 | -4.45 |
|                 | 5.0m | -5.67 | -4.04 | -2.86 | -7.00 | -5.23 | -5.08 | -6.20 | -6.20 | -5.91 | -6.39 |
| Peak Gain (dBi) |      |       |       |       |       |       |       |       |       |       |       |
| 5G NR_1         | 0.3m | 2.78  | 3.48  | 4.87  | 4.39  | 4.55  | 5.98  | 5.90  | 5.90  | 6.75  | 7.43  |
|                 | 1.0m | 2.58  | 3.27  | 4.66  | 4.09  | 4.20  | 5.56  | 5.34  | 5.34  | 6.12  | 6.73  |
|                 | 2.0m | 2.30  | 2.97  | 4.36  | 3.66  | 3.70  | 4.96  | 4.54  | 4.54  | 5.22  | 5.73  |
|                 | 3.0m | 2.01  | 2.67  | 4.06  | 3.23  | 3.20  | 4.36  | 3.78  | 3.78  | 4.32  | 4.73  |
|                 | 5.0m | 1.45  | 2.07  | 3.46  | 2.38  | 2.20  | 3.16  | 2.38  | 2.38  | 2.52  | 2.73  |
| 5G NR_2         | 0.3m | 0.30  | 2.27  | 3.29  | 4.13  | 4.57  | 4.86  | 5.33  | 5.33  | 7.00  | 7.04  |
|                 | 1.0m | 0.12  | 2.06  | 3.08  | 3.85  | 4.22  | 4.44  | 4.77  | 4.77  | 6.41  | 6.34  |
|                 | 2.0m | -0.14 | 1.76  | 2.78  | 3.45  | 3.72  | 3.84  | 3.97  | 3.97  | 5.57  | 5.34  |
|                 | 3.0m | -0.40 | 1.46  | 2.48  | 3.05  | 3.22  | 3.24  | 3.17  | 3.17  | 4.72  | 4.34  |
|                 | 5.0m | -0.91 | 0.86  | 1.88  | 2.25  | 2.22  | 2.04  | 1.57  | 1.57  | 3.03  | 2.34  |
| 5G NR_3         | 0.3m | 0.65  | 2.84  | 3.31  | 5.18  | 4.67  | 5.89  | 7.43  | 7.43  | 6.24  | 6.26  |
|                 | 1.0m | 0.44  | 2.63  | 3.10  | 4.90  | 4.25  | 5.47  | 6.87  | 6.87  | 5.65  | 5.56  |
|                 | 2.0m | 0.14  | 2.33  | 2.80  | 4.50  | 3.65  | 4.87  | 6.07  | 6.07  | 4.80  | 4.56  |
|                 | 3.0m | -0.16 | 2.03  | 2.50  | 4.10  | 3.05  | 4.27  | 5.27  | 5.27  | 3.96  | 3.58  |
|                 | 5.0m | -0.76 | 1.43  | 1.90  | 3.30  | 1.85  | 3.07  | 3.67  | 3.67  | 2.27  | 1.66  |
| 5G NR_4         | 0.3m | 2.13  | 3.19  | 3.61  | 4.97  | 4.64  | 5.02  | 5.48  | 5.21  | 6.23  | 6.95  |
|                 | 1.0m | 1.92  | 2.98  | 3.40  | 4.67  | 4.29  | 4.60  | 4.92  | 4.65  | 5.60  | 6.32  |
|                 | 2.0m | 1.62  | 2.68  | 3.10  | 4.24  | 3.79  | 4.00  | 4.12  | 3.85  | 4.70  | 5.42  |
|                 | 3.0m | 1.32  | 2.38  | 2.80  | 3.81  | 3.29  | 3.40  | 3.32  | 3.05  | 3.80  | 4.52  |
|                 | 5.0m | 0.72  | 1.78  | 2.20  | 2.95  | 2.29  | 2.20  | 1.72  | 1.45  | 2.00  | 2.72  |
| 5G NR_5         | 0.3m | 1.85  | 4.68  | 4.59  | 3.04  | 5.49  | 6.88  | 5.67  | 5.67  | 6.06  | 6.09  |
|                 | 1.0m | 1.64  | 4.47  | 4.38  | 2.74  | 5.07  | 6.46  | 5.11  | 5.11  | 5.43  | 5.39  |
|                 | 2.0m | 1.34  | 4.17  | 4.08  | 2.31  | 4.47  | 5.86  | 4.31  | 4.31  | 4.53  | 4.39  |
|                 | 3.0m | 1.04  | 3.87  | 3.78  | 1.88  | 3.87  | 5.26  | 3.51  | 3.51  | 3.63  | 3.39  |
|                 | 5.0m | 0.44  | 3.27  | 3.18  | 1.03  | 2.67  | 4.06  | 1.92  | 1.92  | 1.83  | 1.39  |
| 5G NR_6         | 0.3m | 1.17  | 2.35  | 2.97  | 4.14  | 3.92  | 5.50  | 4.82  | 4.82  | 6.46  | 6.38  |
|                 | 1.0m | 0.99  | 2.14  | 2.76  | 3.86  | 3.57  | 5.08  | 4.26  | 4.26  | 5.83  | 5.75  |
|                 | 2.0m | 0.73  | 1.84  | 2.46  | 3.46  | 3.07  | 4.48  | 3.46  | 3.46  | 4.93  | 4.85  |
|                 | 3.0m | 0.47  | 1.54  | 2.16  | 3.06  | 2.57  | 3.88  | 2.66  | 2.66  | 4.03  | 3.95  |

|         |      |       |      |      |      |      |      |      |      |      |      |
|---------|------|-------|------|------|------|------|------|------|------|------|------|
|         | 5.0m | -0.05 | 0.94 | 1.56 | 2.26 | 1.57 | 2.68 | 1.06 | 1.06 | 2.23 | 2.15 |
| 5G NR_7 | 0.3m | 0.33  | 1.74 | 2.52 | 6.32 | 4.22 | 6.15 | 5.36 | 5.36 | 7.12 | 7.12 |
|         | 1.0m | 0.12  | 1.53 | 2.31 | 6.04 | 3.87 | 5.73 | 4.80 | 4.80 | 6.49 | 6.42 |
|         | 2.0m | -0.18 | 1.23 | 2.01 | 5.64 | 3.37 | 5.13 | 4.00 | 4.00 | 5.59 | 5.42 |
|         | 3.0m | -0.48 | 0.93 | 1.71 | 5.24 | 2.87 | 4.53 | 3.20 | 3.20 | 4.69 | 4.42 |
|         | 5.0m | -1.08 | 0.33 | 1.11 | 4.44 | 1.87 | 3.33 | 1.60 | 1.60 | 2.89 | 2.42 |
| 5G NR_8 | 0.3m | 1.33  | 5.19 | 5.53 | 3.02 | 5.77 | 7.03 | 5.75 | 5.75 | 6.49 | 5.97 |
|         | 1.0m | 1.13  | 4.98 | 5.32 | 2.72 | 5.35 | 6.61 | 5.19 | 5.19 | 5.86 | 5.27 |
|         | 2.0m | 0.85  | 4.68 | 5.02 | 2.29 | 4.75 | 6.01 | 4.39 | 4.39 | 4.96 | 4.27 |
|         | 3.0m | 0.57  | 4.38 | 4.72 | 1.87 | 4.15 | 5.41 | 3.59 | 3.59 | 4.06 | 3.27 |
|         | 5.0m | 0.00  | 3.78 | 4.12 | 1.01 | 2.95 | 4.21 | 2.04 | 2.04 | 2.26 | 1.27 |

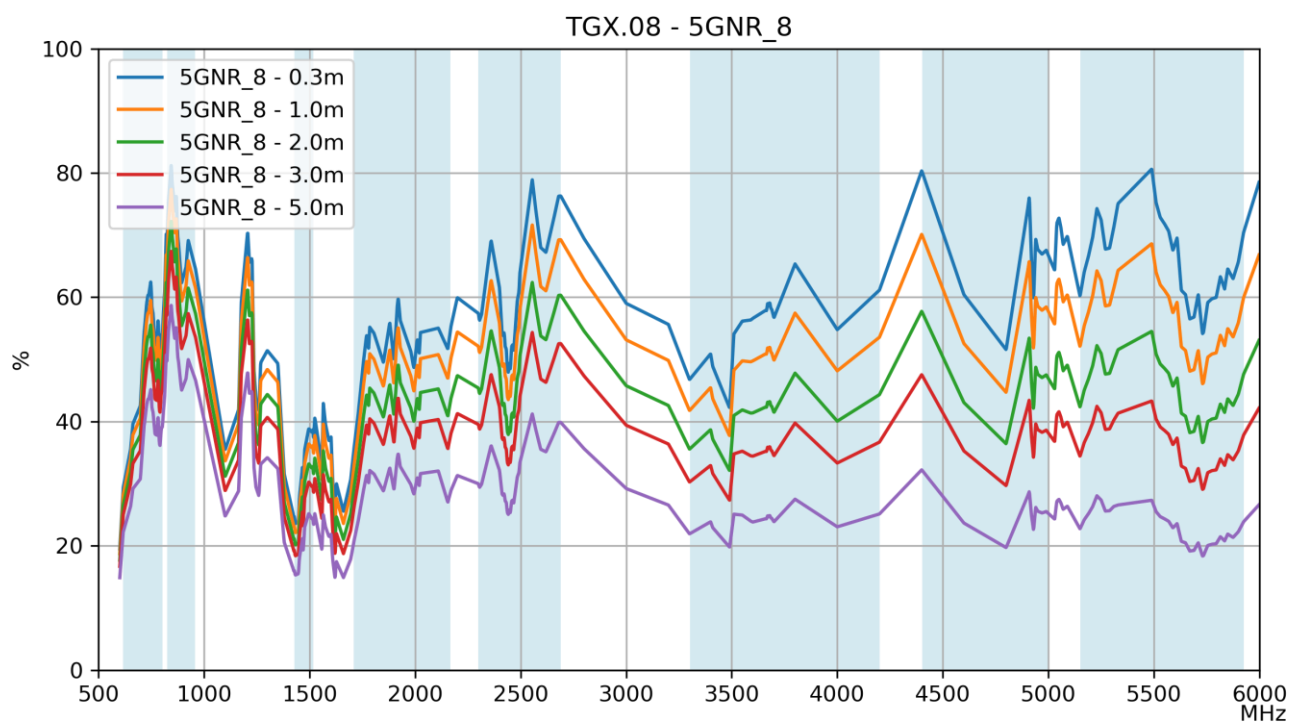
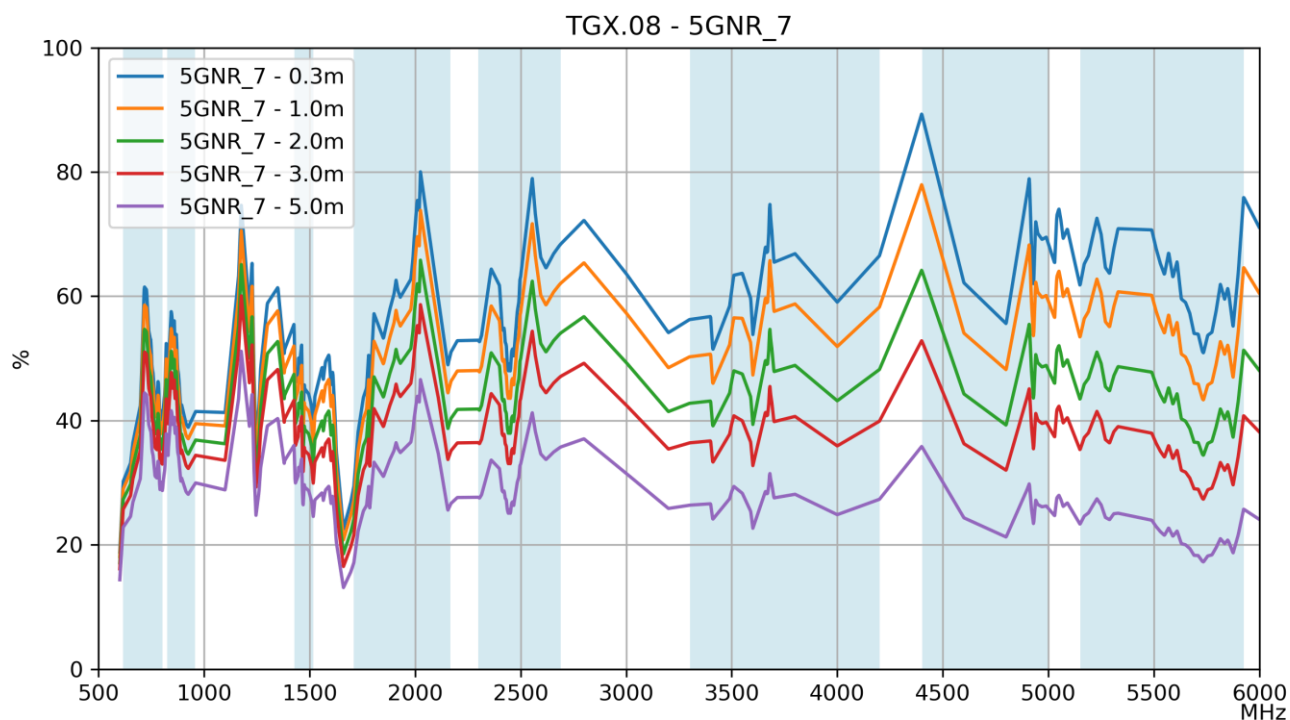
## 7.1 Efficiency



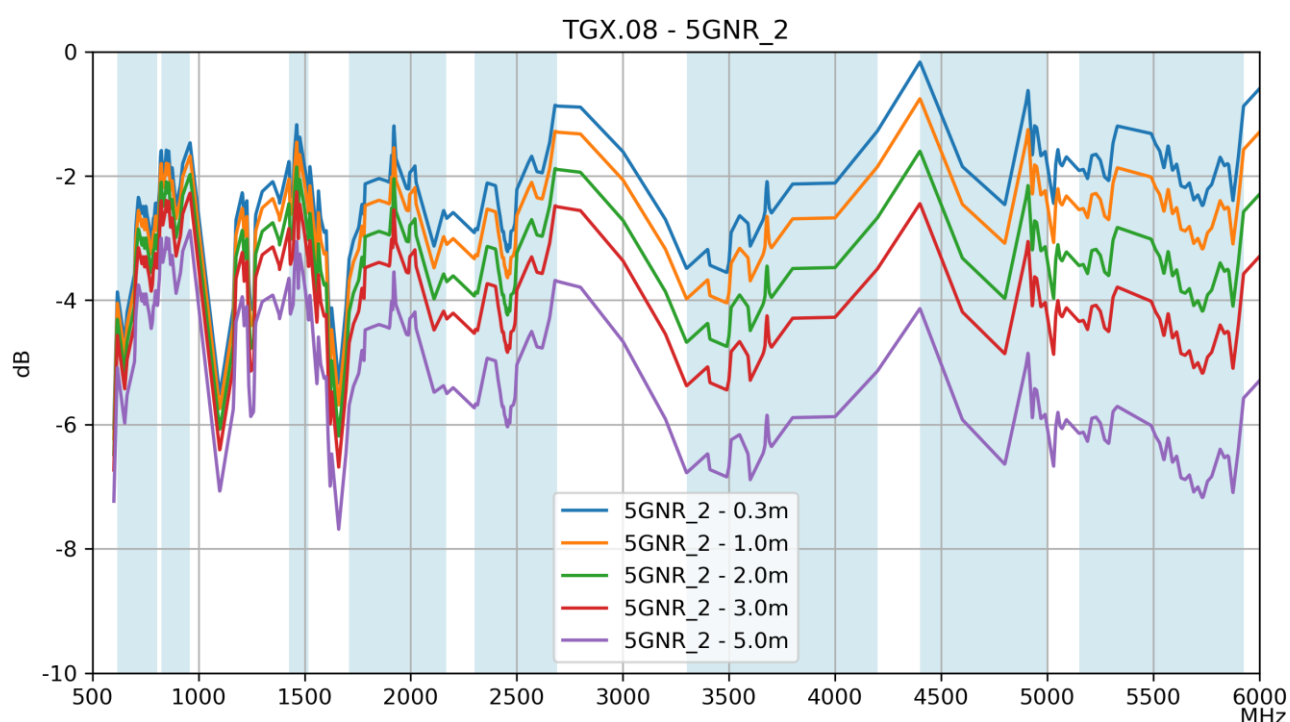
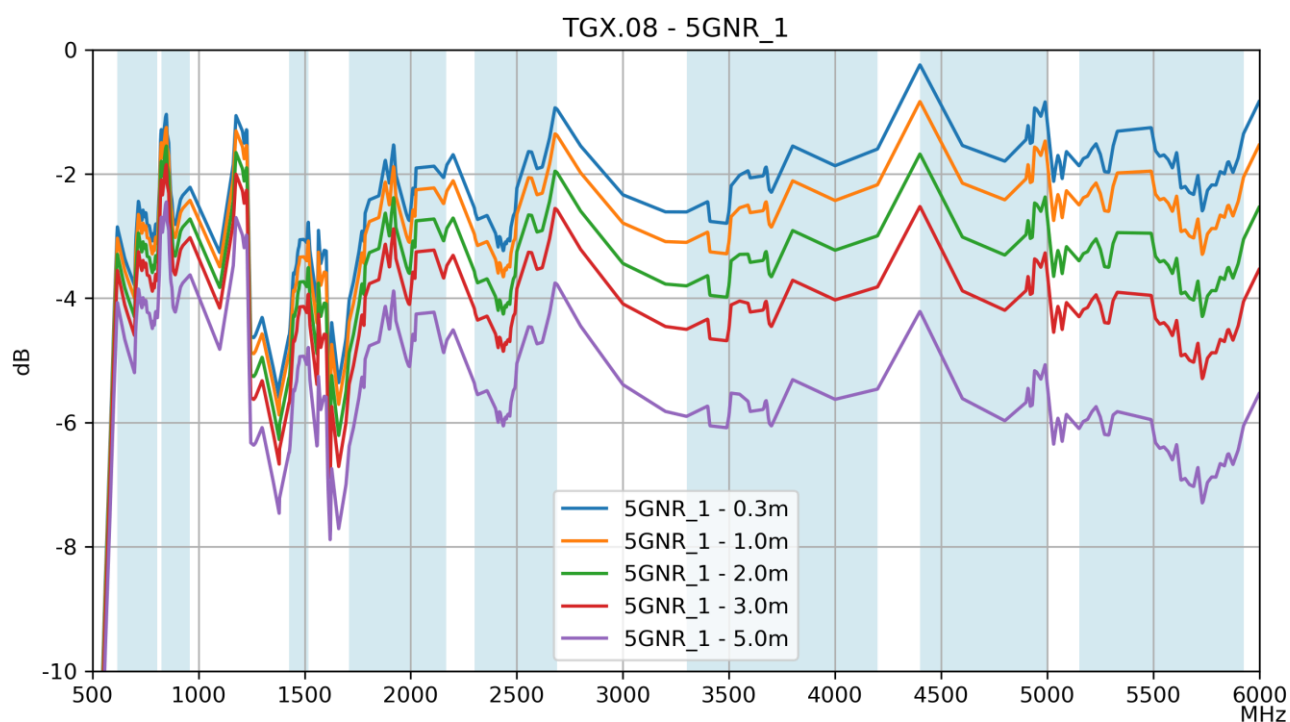


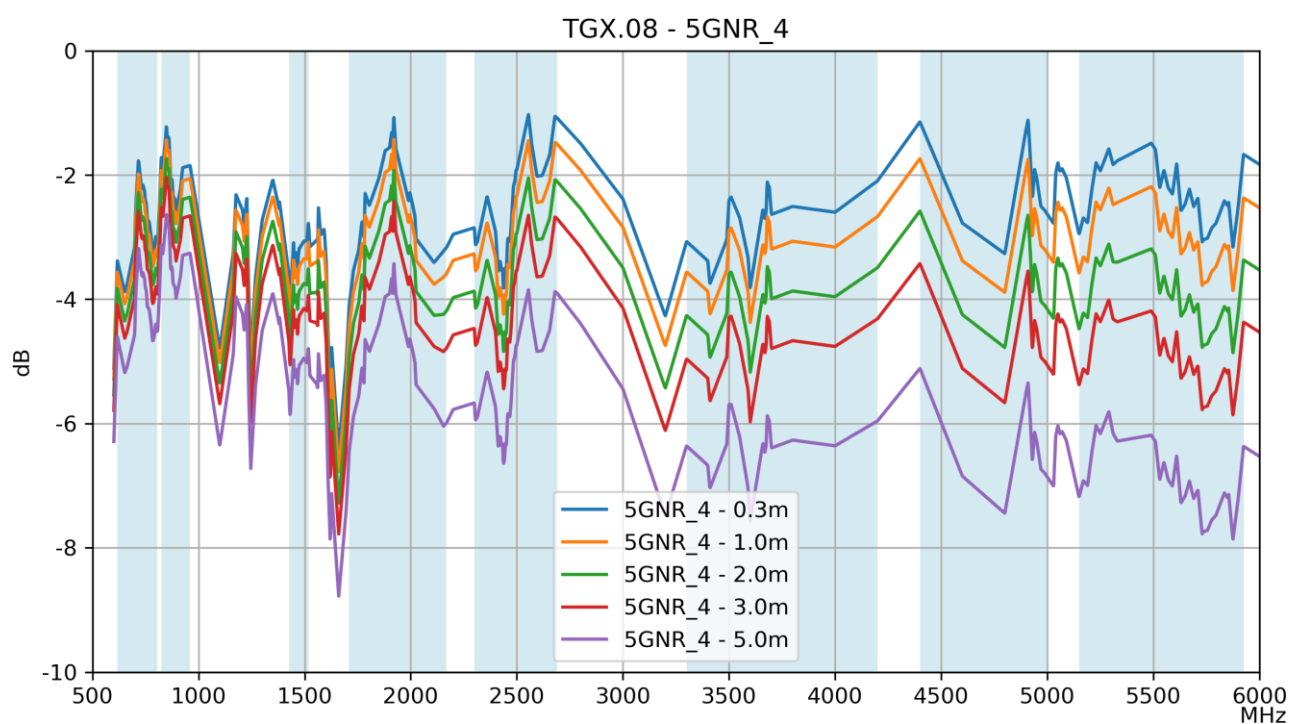
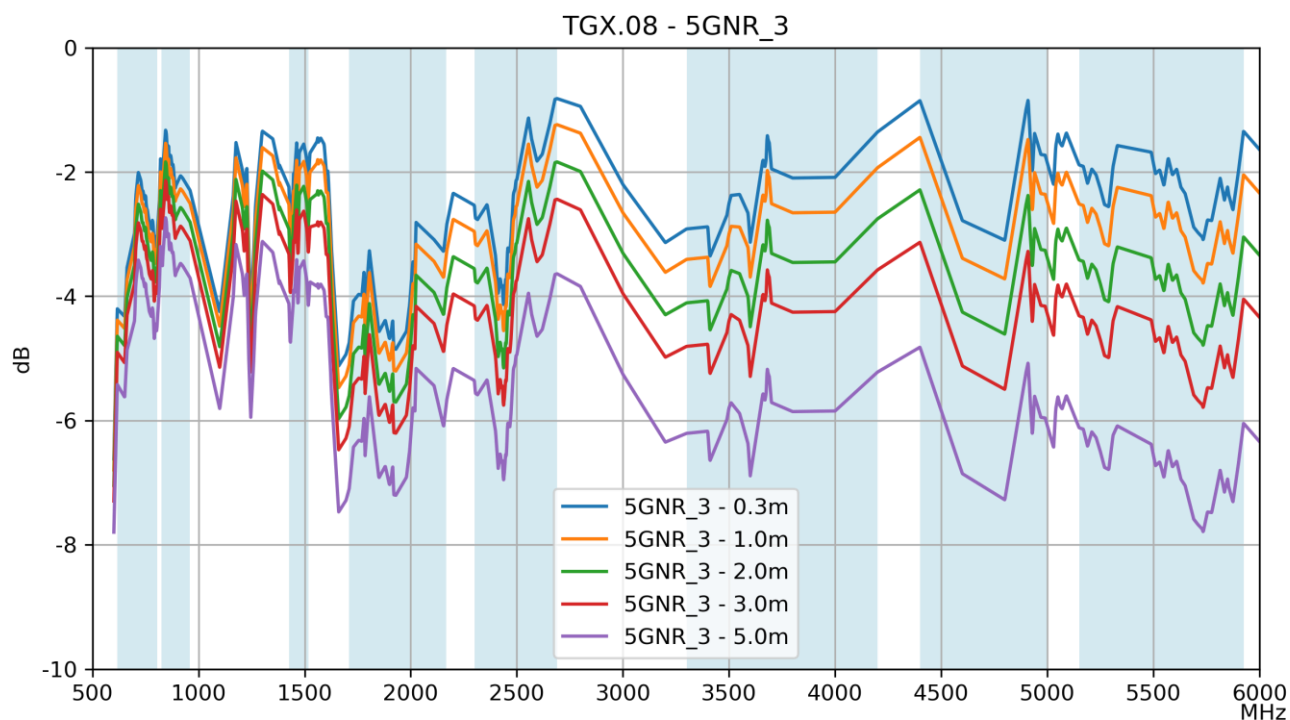


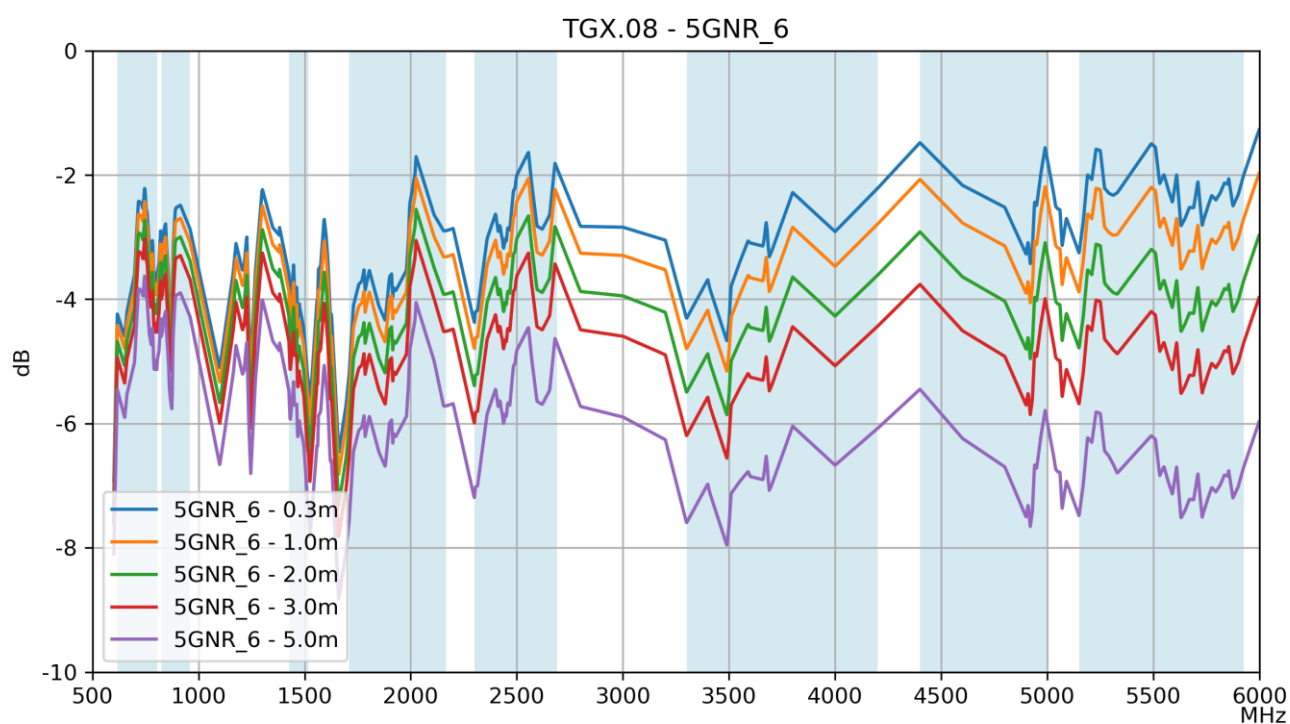
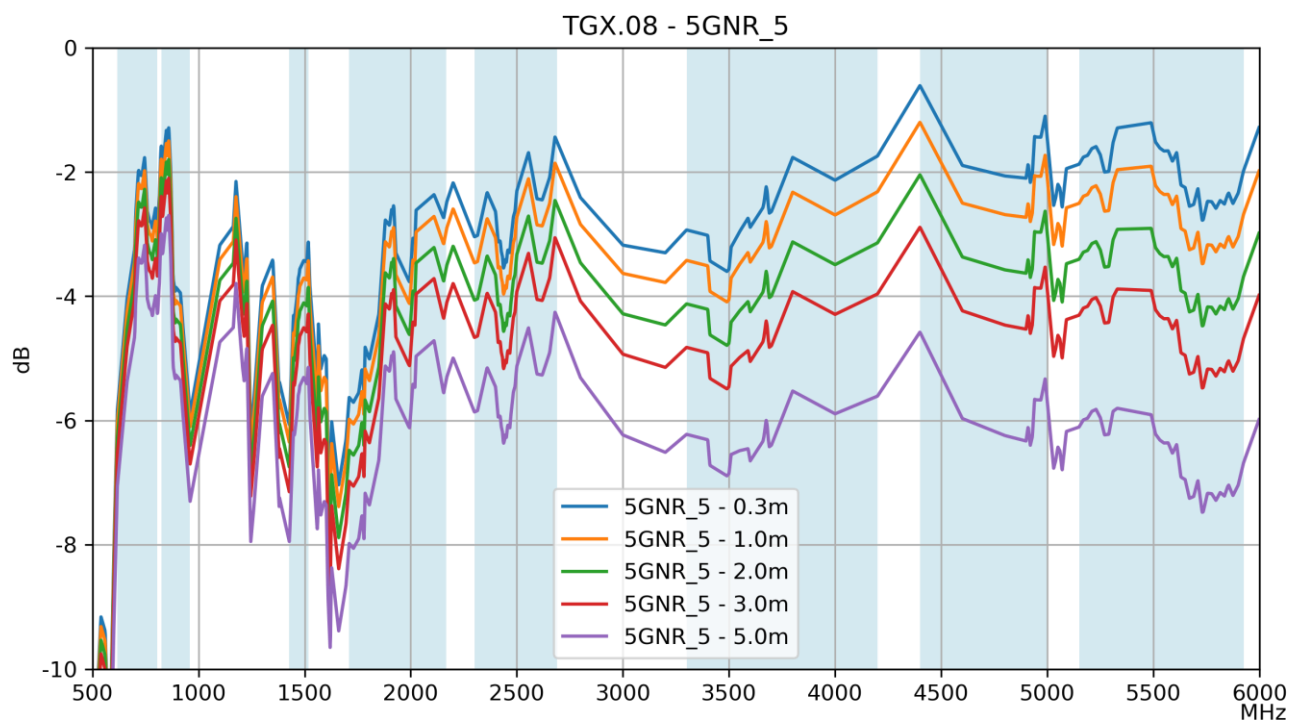


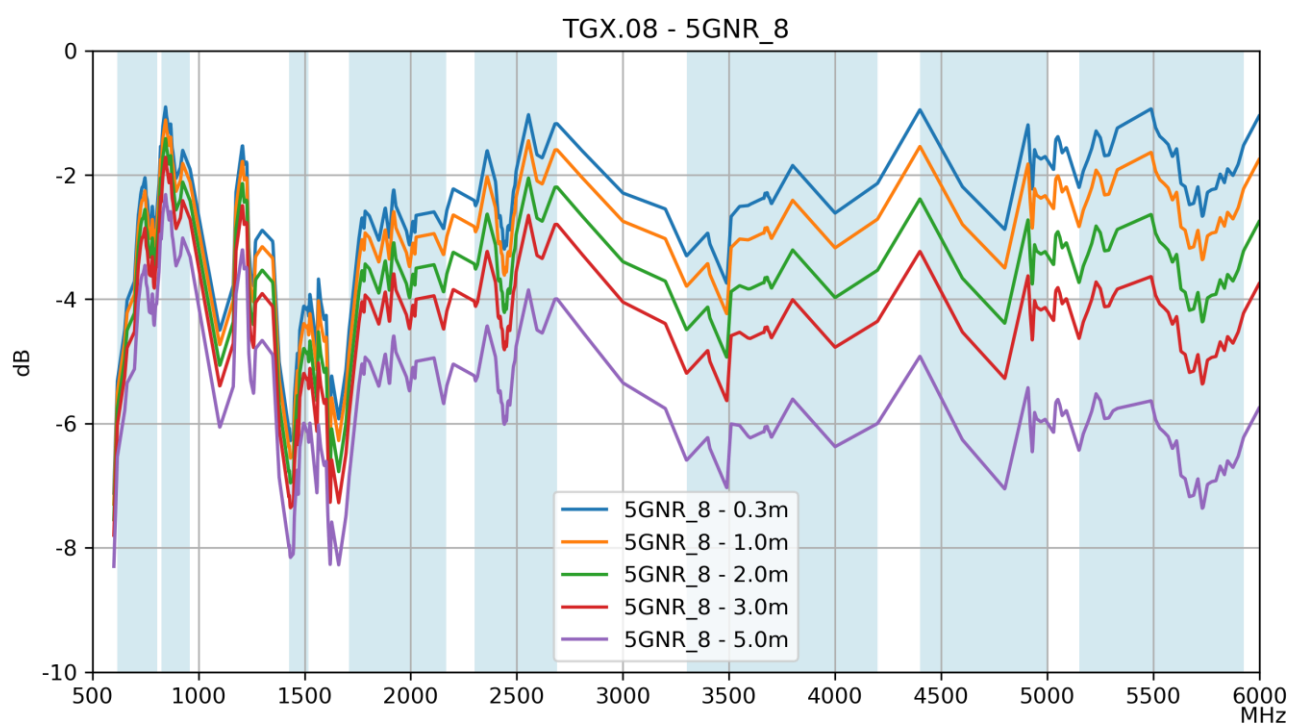
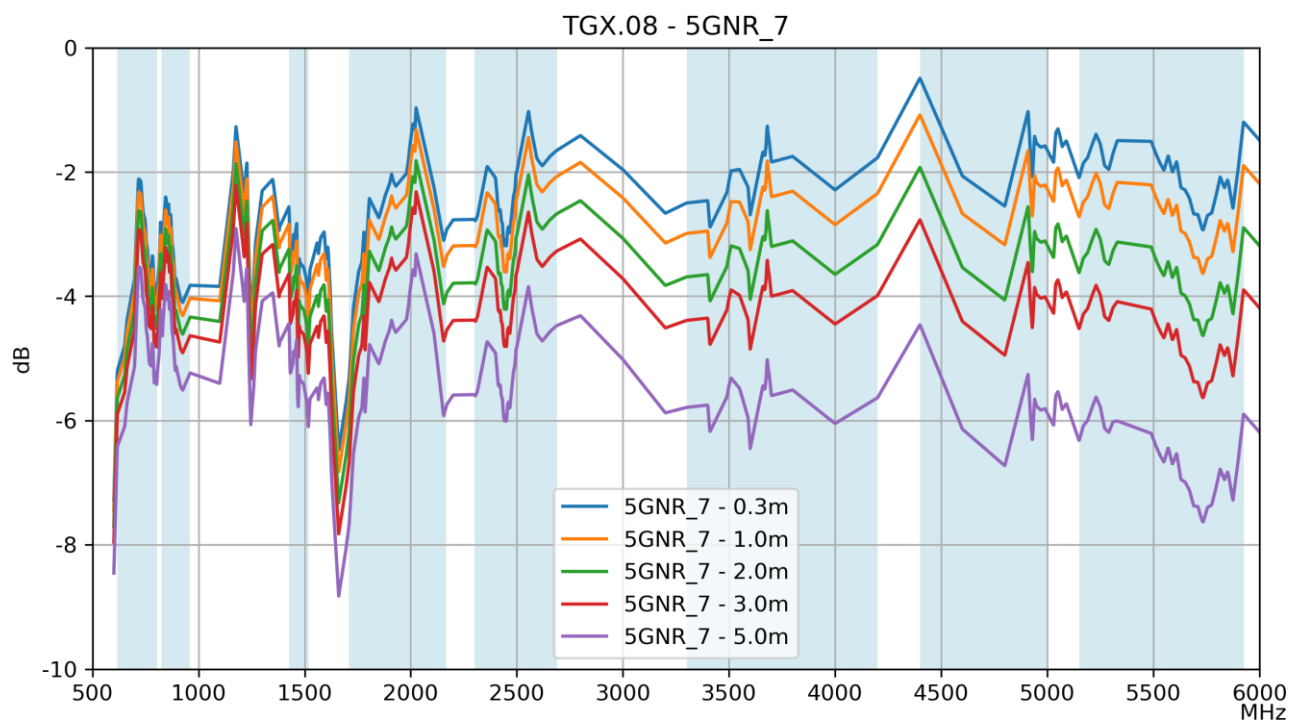


## 7.2 Average Gain

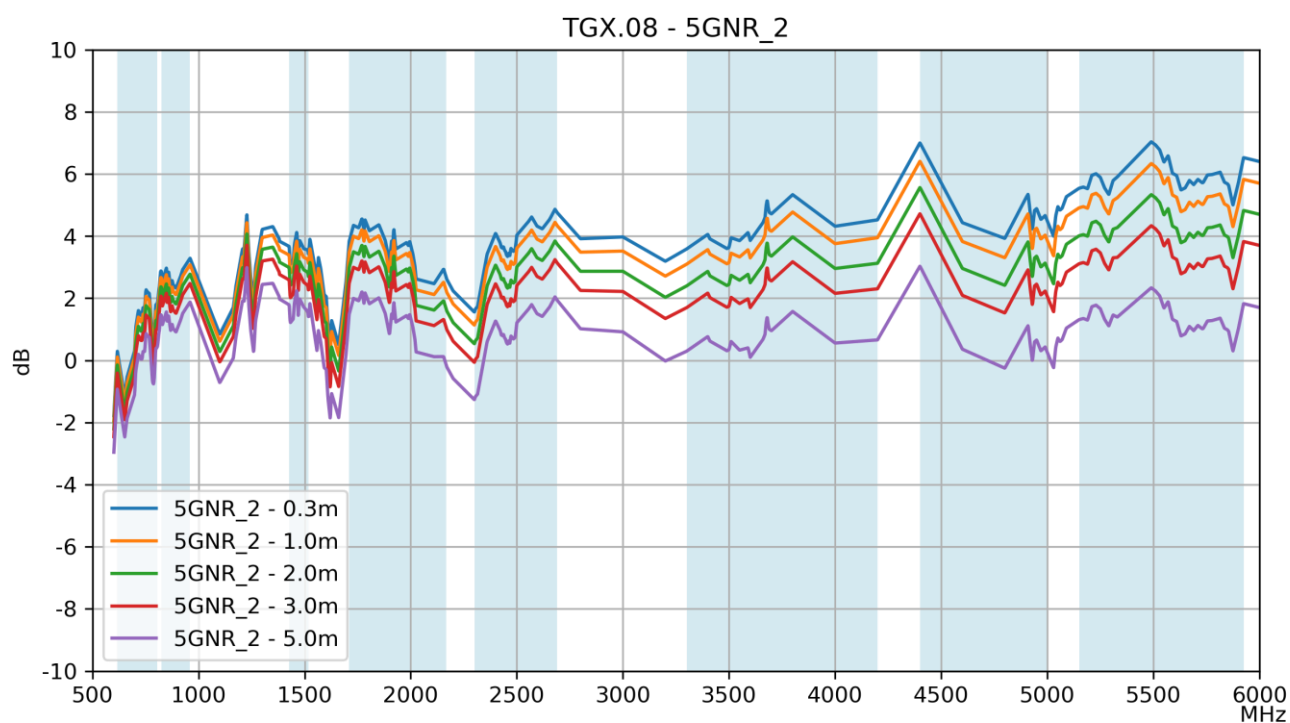
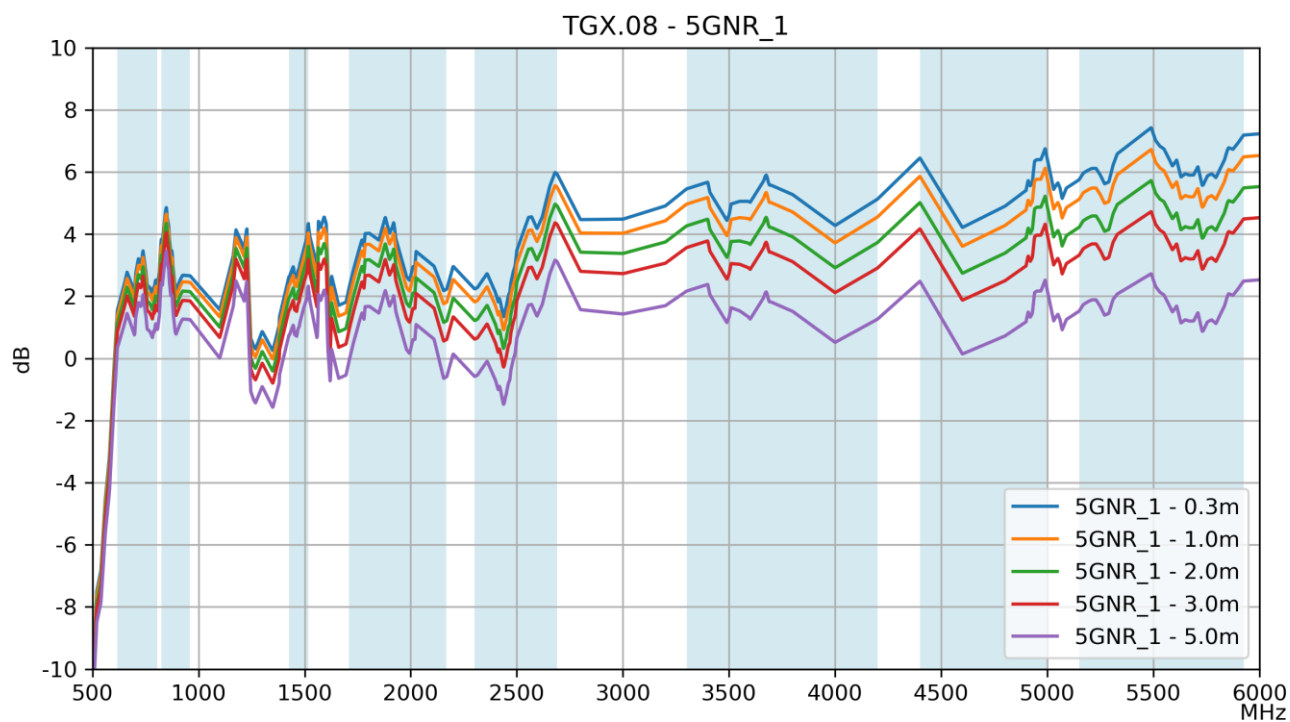




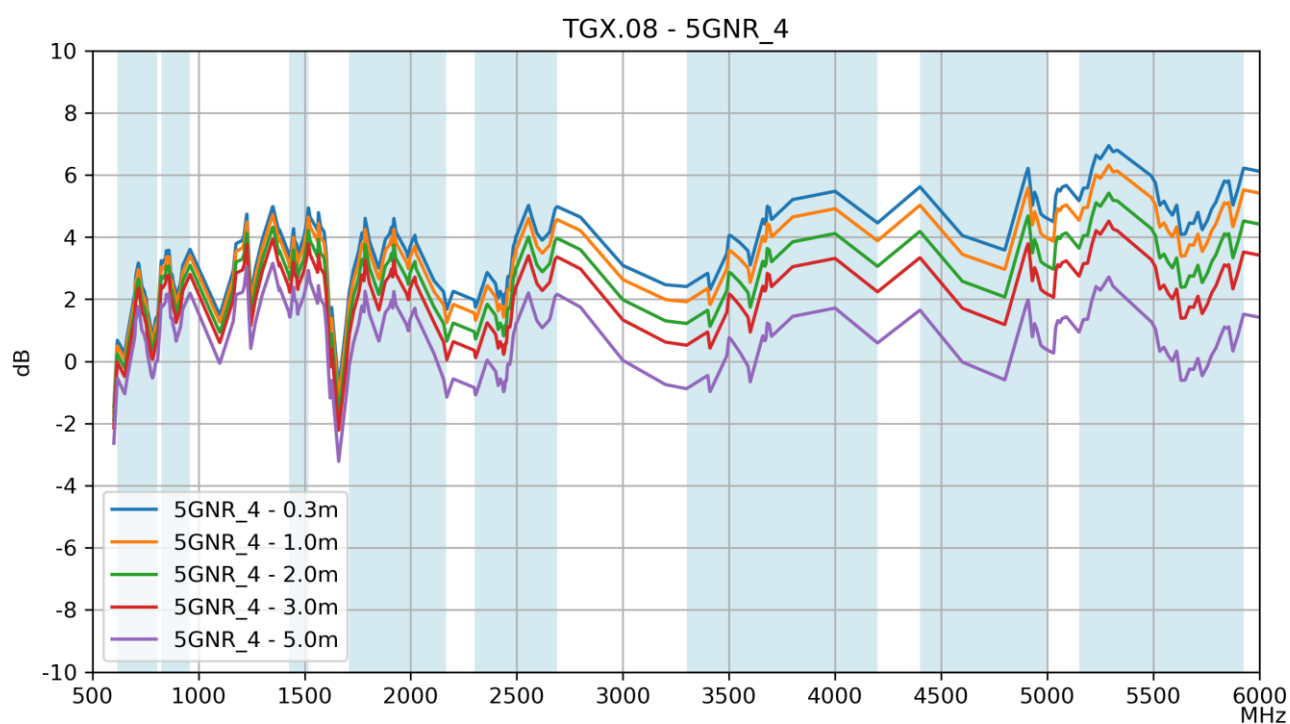
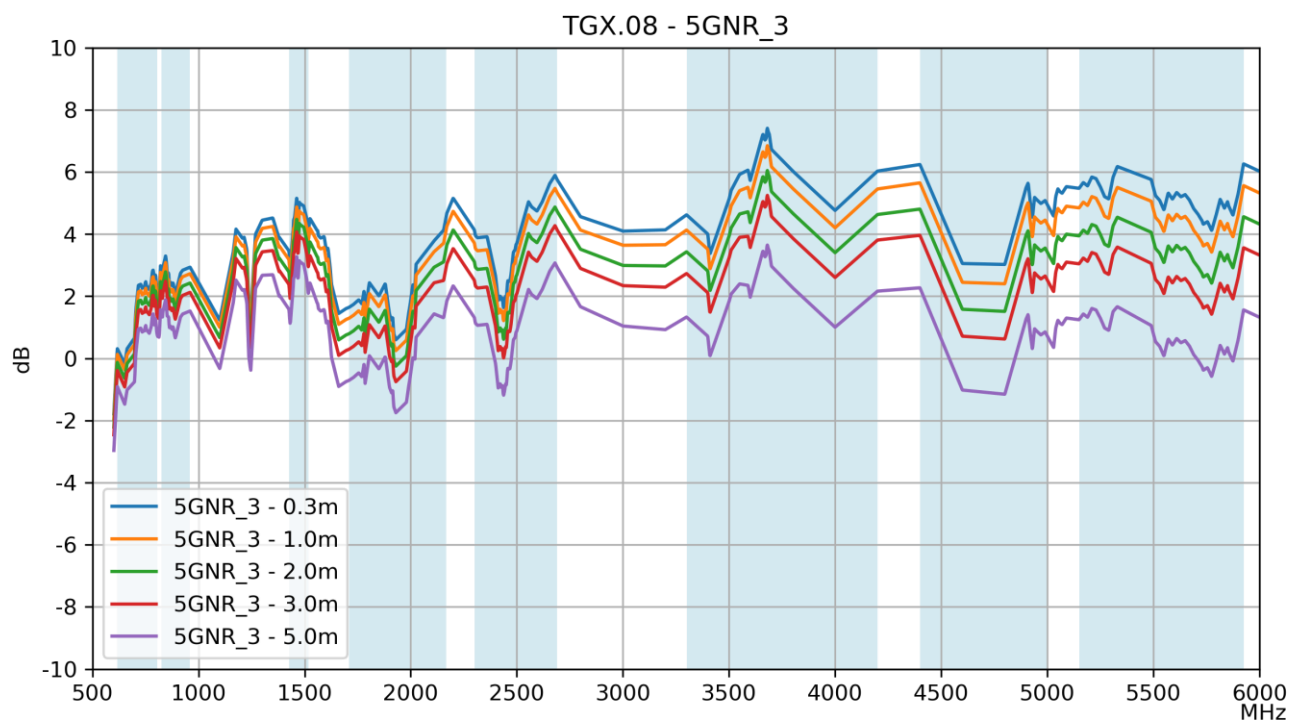




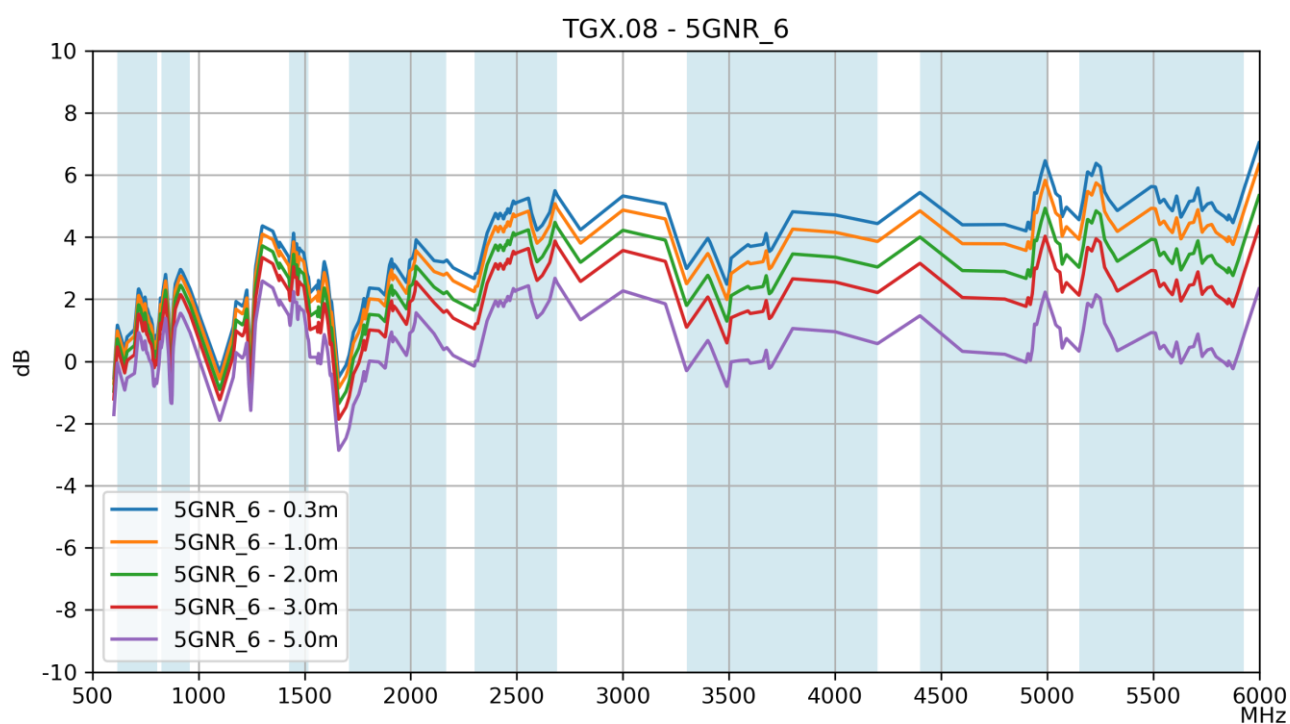
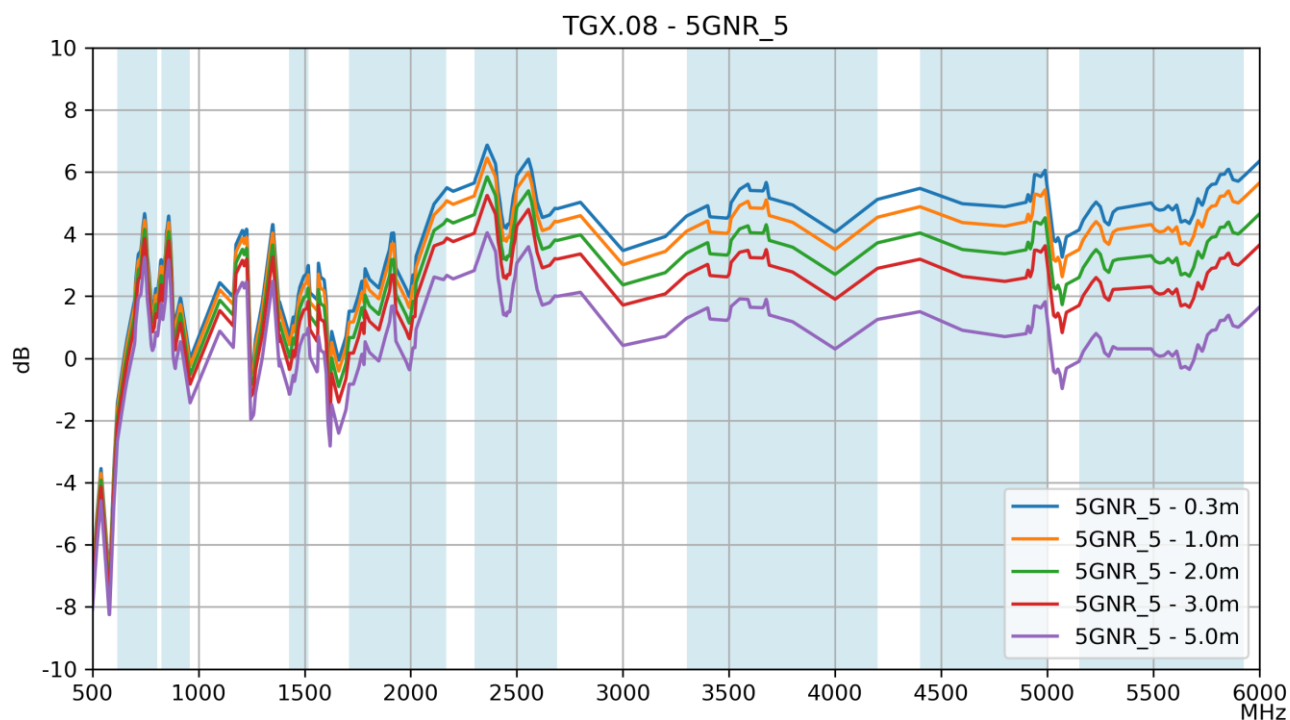
### 7.3 Peak Gain

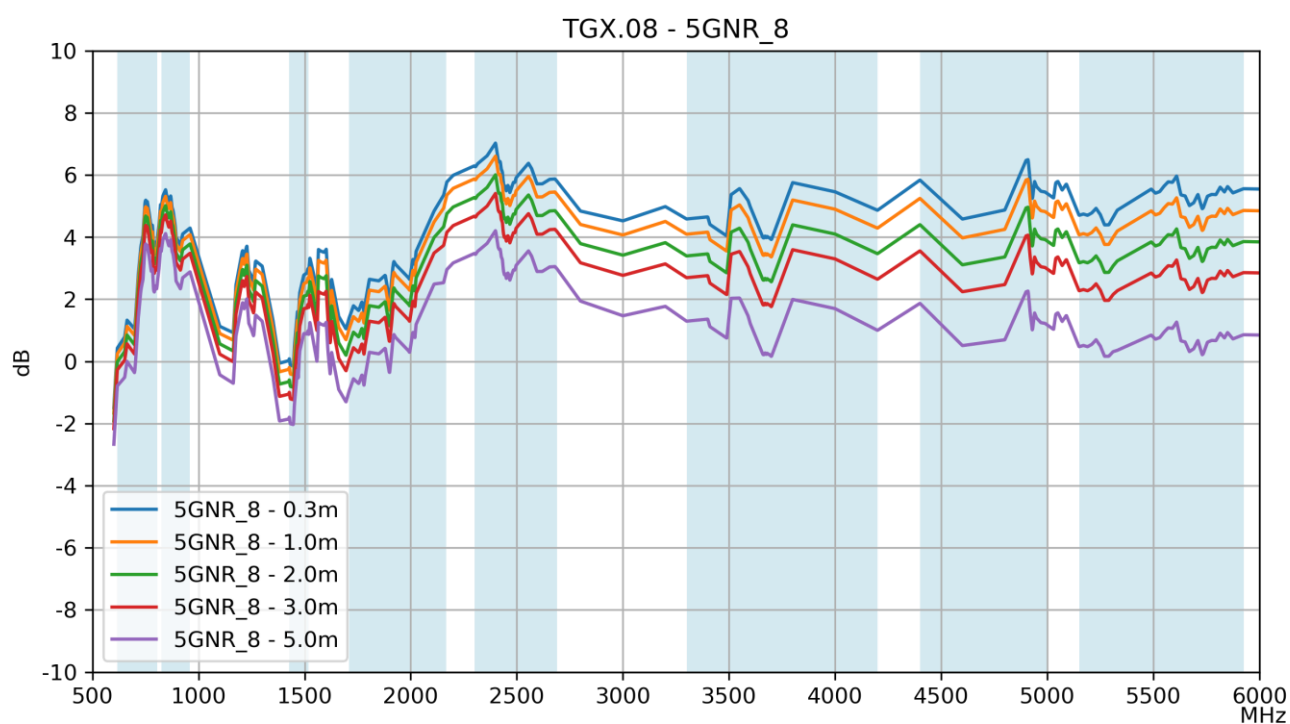
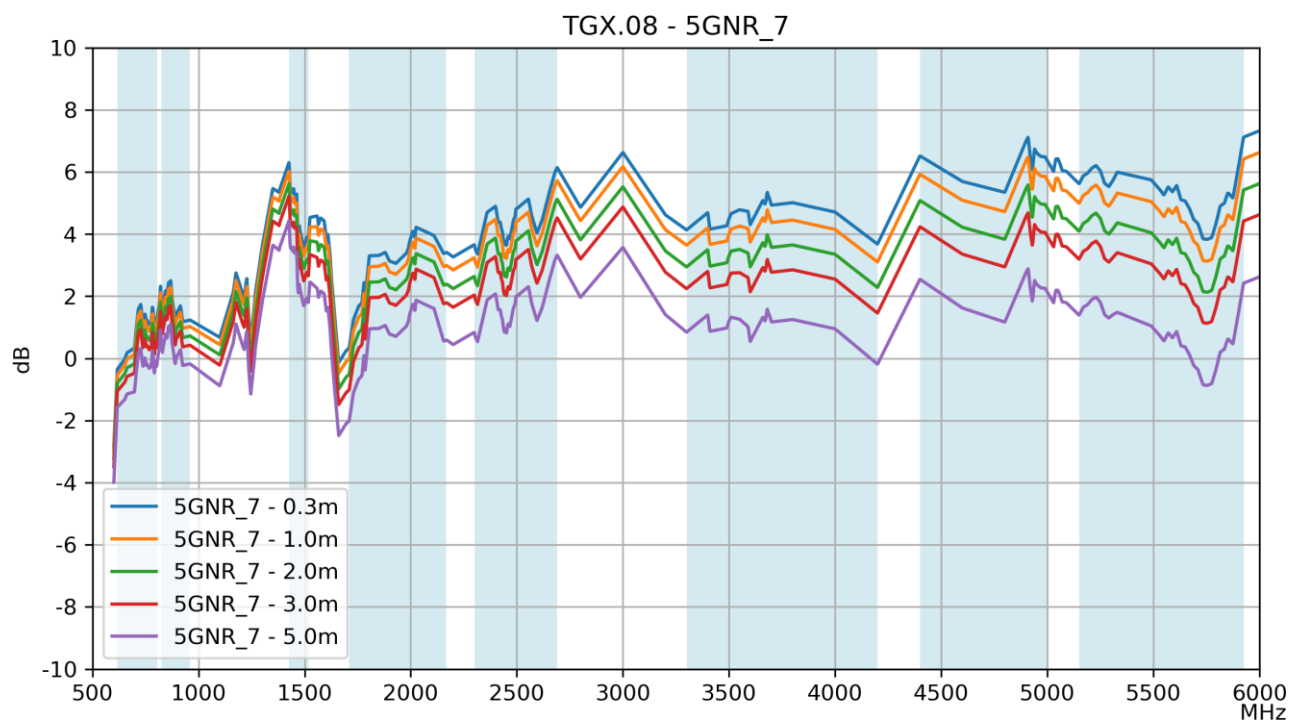












## Changelog for the datasheet

**SPE-23-8-185 – TGX.08.A.001**

| Revision: A (Current Version) |                           |
|-------------------------------|---------------------------|
| Date:                         | 2024-03-05                |
| Notes:                        | IP Rating updated to IP67 |
|                               |                           |
| Author:                       | Cesar Sousa               |

## Previous Revisions

| Revision: A (Original First Release) |               |
|--------------------------------------|---------------|
| Date:                                | 2023-06-20    |
| Notes:                               | New Datasheet |
| Author:                              | Gary West     |



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