



# TAOGLAS®



# Datasheet

**Part No:**

FXUB06.07.0180AQ

**Description**

Wideband Cellular 90x15mm Flex PCB Antenna (617-8000MHz) with end feed  
Black 180mm 1.37 Cable and I-PEX MHF1

**Features:**

Flex PCB Antenna  
Wide Band Cellular: 617-8000MHz  
Easy to Install Peel and Stick Mounting  
Dims: 90mm x 15mm x 0.24mm  
Cables: 175.6mm of 1.37  
Connector: IPEX MHF1  
Custom Cables and Connectors Available  
RoHS & Reach Compliant

|           |                                |           |
|-----------|--------------------------------|-----------|
| <b>1.</b> | <b>Introduction</b>            | <b>3</b>  |
| <b>2.</b> | <b>Specification</b>           | <b>4</b>  |
| <b>3.</b> | <b>Mechanical Drawing</b>      | <b>6</b>  |
| <b>4.</b> | <b>Packaging</b>               | <b>7</b>  |
| <b>5.</b> | <b>Antenna Characteristics</b> | <b>8</b>  |
| <b>6.</b> | <b>Radiation Patterns</b>      | <b>12</b> |
| <b>7.</b> | <b>Application Note</b>        | <b>40</b> |
| <hr/>     |                                |           |
|           | Changelog                      | 48        |

Taoglas makes no warranties based on the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Taoglas reserves all rights to this document and the information contained herein. Reproduction, use or disclosure to third parties without express permission is strictly prohibited.



## 1. Introduction



The Maximus Series FXUB06 is the smallest Taoglas wideband cellular flex PCB antenna by footprint size. Engineered to cover all global working frequencies in the 600-8000 MHz spectrum with efficiencies of up to 60%, it is the perfect solution when size constraints limit the use of a larger antenna. It covers all cellular 5G and 4G bands with fall back to 3G/2G, and it also operates at NB-IoT, Cat-M, Wi-Fi, ISM and Wi-Fi 6 frequencies. This wide band coverage enables designers to use only one antenna to cover all frequencies and future proofs device design for global connectivity.

Typical Applications for the FXUB06 include:

- Gateways, Routers and Private LTE Networks
- In-Building Connectivity and Security Systems
- Point of Sales Kiosks and Retail Digital Signage
- Connected Industry and Smart Metering
- Handheld Devices and Tablets
- Mobile Wireless Camera Systems

The antenna is delivered with a flexible body for ease of installation and is supplied with 1.37 micro coax cable and IPEX(TM) MHF1 connector as standard. At just  $90.4 \times 15 \times 0.24\text{mm}$ , the antenna is compact and ultra-thin. It is integrated into a device by a simple “peel and stick” process, attaching securely to non-metal surfaces via strong, 3M adhesive. It is also the ideal antenna to fit in devices that are being retrofitted with wireless functionality, as it will cover non cellular applications such as 868, 915MHz or Zigbee applications. Its inherently wide bandwidth is more resistant to detuning than traditional small but narrow-band legacy antennas. It is an ideal choice for any device maker that needs to keep manufacturing costs down over the lifetime of a product, as the same antenna can be used if the radio module is upgraded to work on a different frequency band.

Cables and Connectors are fully customisable, contact your local Taoglas Customer Services Team for more information.

## 2. Specification

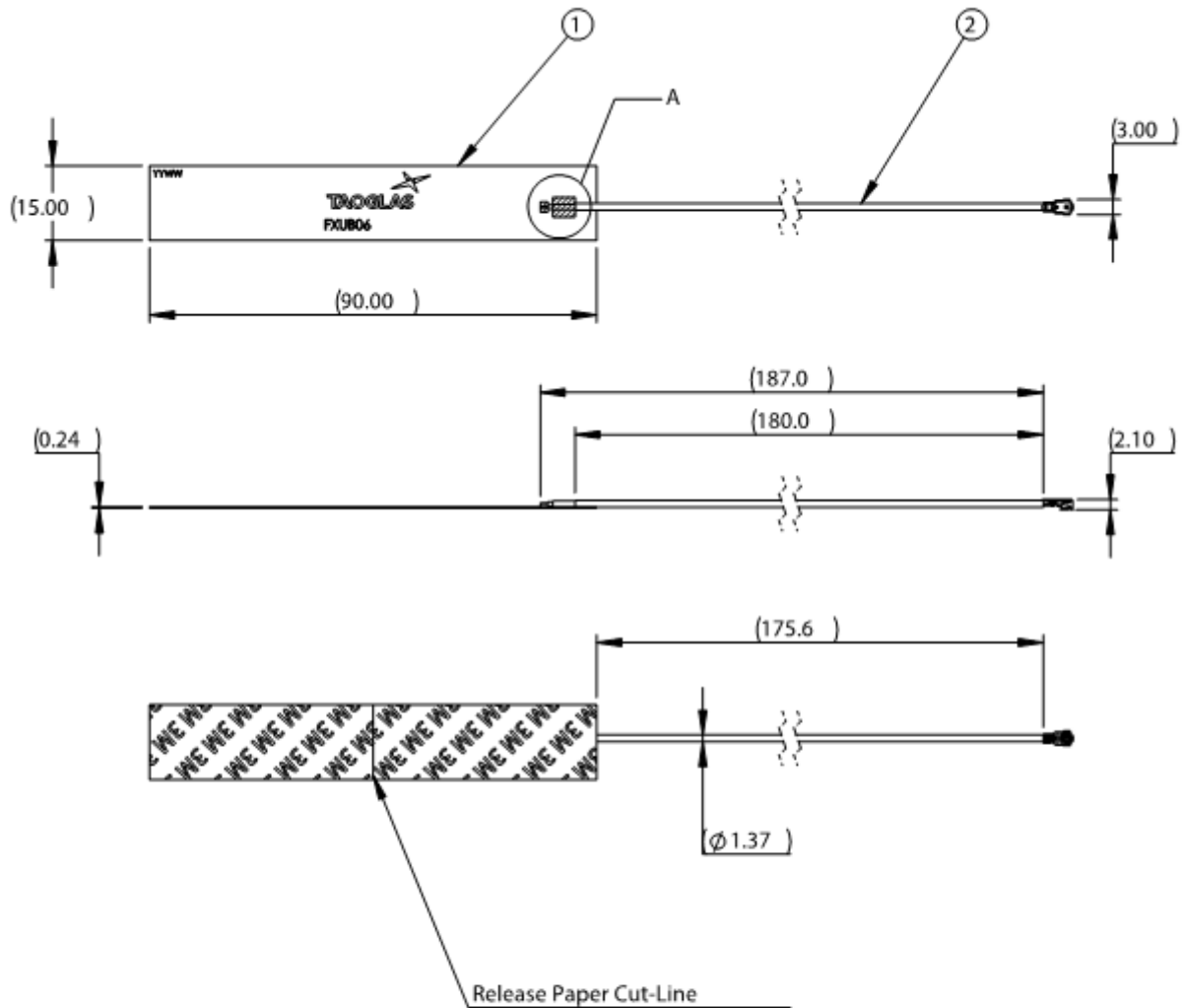
| 4G/5G Electrical                           |                 |               |                |                   |                 |           |              |                   |                  |
|--------------------------------------------|-----------------|---------------|----------------|-------------------|-----------------|-----------|--------------|-------------------|------------------|
| Band                                       | Frequency (MHz) | Cable routing | Efficiency (%) | Average Gain (dB) | Peak Gain (dBi) | Impedance | Polarization | Radiation Pattern | Max. input power |
| 5G NR/4G Band 71                           | 617-698         | Left          | 32.9           | -4.83             | 0.77            | 50 Ω      | Linear       | Omni              | 10W              |
|                                            |                 | Right         | 32.8           | -4.84             | 0.34            |           |              |                   |                  |
|                                            |                 | Straight      | 30.8           | -5.11             | 1.18            |           |              |                   |                  |
| 4G/3G Band 12,13,14,17,28,29               | 698-806         | Left          | 46.8           | -3.30             | 1.03            |           |              |                   |                  |
|                                            |                 | Right         | 45.1           | -3.46             | 1.01            |           |              |                   |                  |
|                                            |                 | Straight      | 49.7           | -3.04             | 1.53            |           |              |                   |                  |
| 4G/3G/NB-IoT/Cat M Band 5,8,18,19,20,26,27 | 824-960         | Left          | 47.7           | -3.22             | 1.47            |           |              |                   |                  |
|                                            |                 | Right         | 46.3           | -3.34             | 1.74            |           |              |                   |                  |
|                                            |                 | Straight      | 50.6           | -2.96             | 2.30            |           |              |                   |                  |
| 5G NR/4G Band 21,32,74,75,76               | 1427-1518       | Left          | 48.3           | -3.16             | 1.44            |           |              |                   |                  |
|                                            |                 | Right         | 45.6           | -3.41             | 2.03            |           |              |                   |                  |
|                                            |                 | Straight      | 48.0           | -3.19             | 1.97            |           |              |                   |                  |
| 4G/3G Band 1,2,3,4,9,23,25,35,39,66        | 1710-2200       | Left          | 67.6           | -1.70             | 3.49            |           |              |                   |                  |
|                                            |                 | Right         | 68.5           | -1.65             | 3.03            |           |              |                   |                  |
|                                            |                 | Straight      | 66.6           | -1.76             | 3.37            |           |              |                   |                  |
| 4G/3G Band 7,30,38,40,41                   | 2300-2690       | Left          | 60.6           | -2.17             | 4.44            |           |              |                   |                  |
|                                            |                 | Right         | 60.7           | -2.17             | 3.30            |           |              |                   |                  |
|                                            |                 | Straight      | 61.0           | -2.14             | 3.62            |           |              |                   |                  |
| 5G NR/4G Band 22,42,48,77,78,79            | 3300-5000       | Left          | 59.3           | -2.27             | 5.84            |           |              |                   |                  |
|                                            |                 | Right         | 57.2           | -2.43             | 5.34            |           |              |                   |                  |
|                                            |                 | Straight      | 56.8           | -2.46             | 5.18            |           |              |                   |                  |
| LTE5200/Wi-Fi5800                          | 5150-5925       | Left          | 64.8           | -1.88             | 6.16            |           |              |                   |                  |
|                                            |                 | Right         | 64.4           | -1.91             | 5.06            |           |              |                   |                  |
|                                            |                 | Straight      | 63.7           | -1.96             | 5.16            |           |              |                   |                  |
| Wi-Fi - 6GHz                               | 5925-7125       | Left          | 54.7           | -2.62             | 9.48            |           |              |                   |                  |
|                                            |                 | Right         | 54.4           | -2.65             | 6.08            |           |              |                   |                  |
|                                            |                 | Straight      | 52.8           | -2.78             | 8.13            |           |              |                   |                  |



| Mechanical |                      |
|------------|----------------------|
| Dimensions | 90mm x 15mm x 0.24mm |
| Weight     | 2g                   |
| Material   | Flexible Polymer     |
| Connector  | IPEX MHF1            |
| Cable      | 175.6mm of 1.37      |

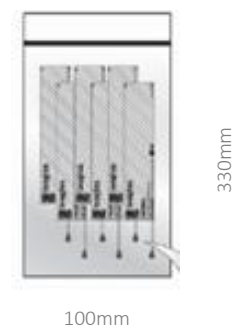
| Environmental         |               |
|-----------------------|---------------|
| Operation Temperature | -40°C to 85°C |
| Storage Temperature   | -40°C to 85°C |

### 3. Mechanical Drawing

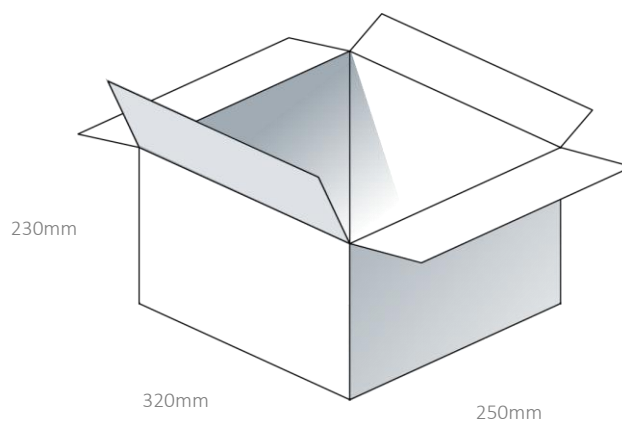


## 4. Packaging

100pcs FXUB06.07.0180AQ per PE Bag  
 Dimensions – 100 x 330mm  
 Weight – 124.4g



5000pcs FXUB06.07.0180AQ per carton  
 Dimensions – 320 x 250 x 230mm  
 Weight – 6.66Kg



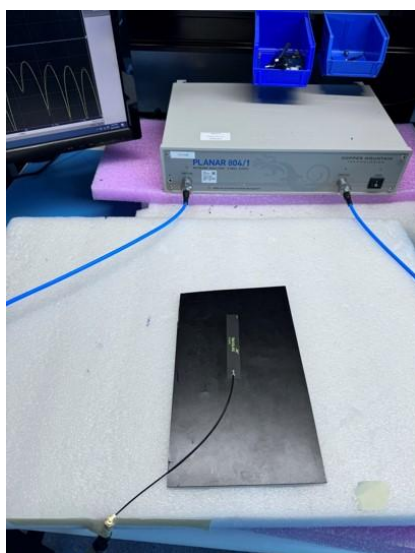
## 5. Antenna Characteristics

### 5.1 Test Setup

AUT



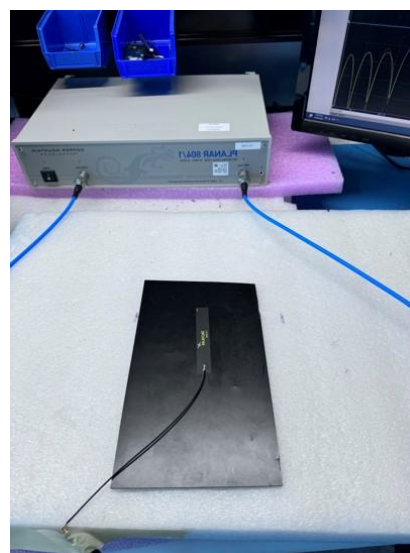
Vector Network Analyzer



Cable feed from Left

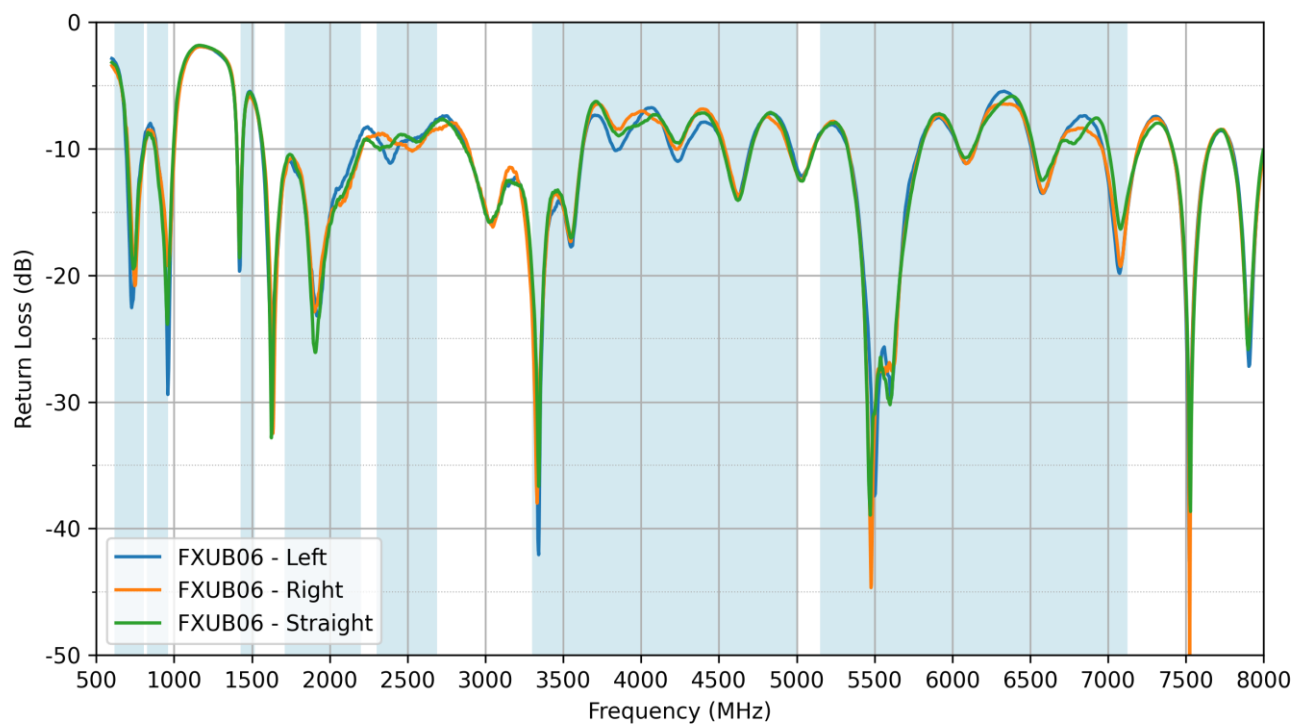


Cable feed Straight

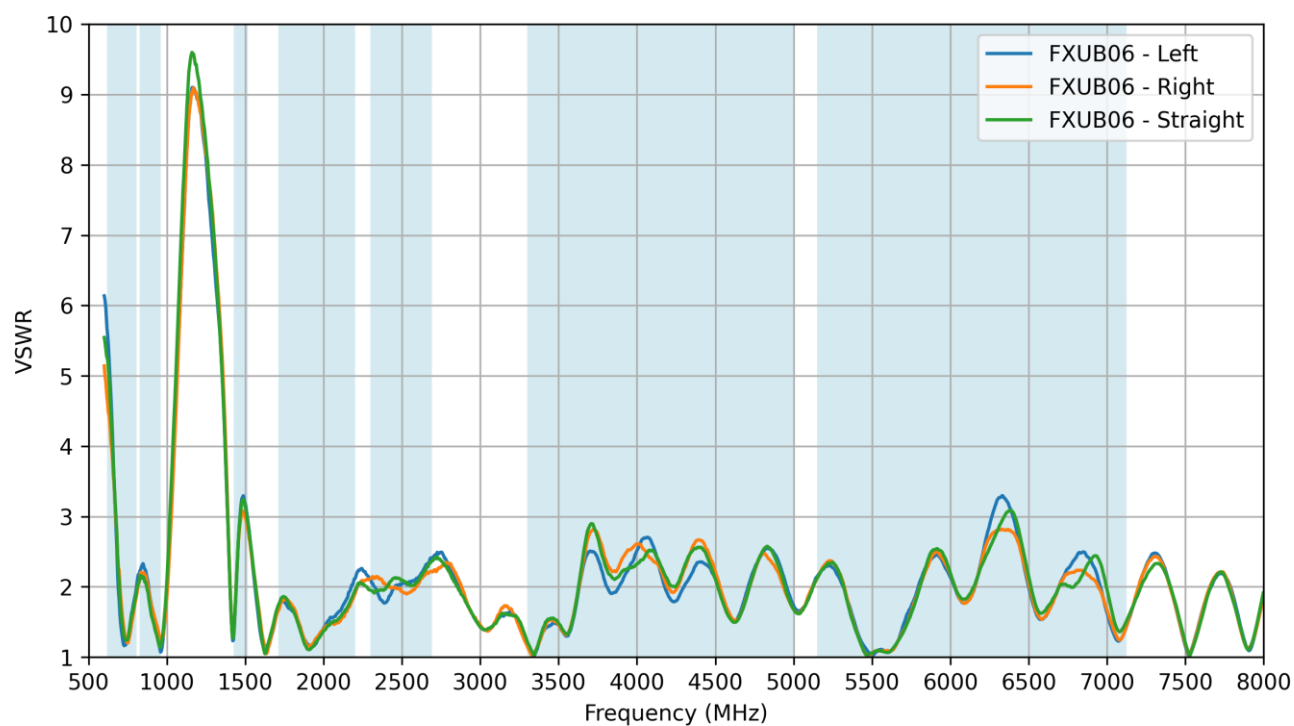


Cable feed from Right

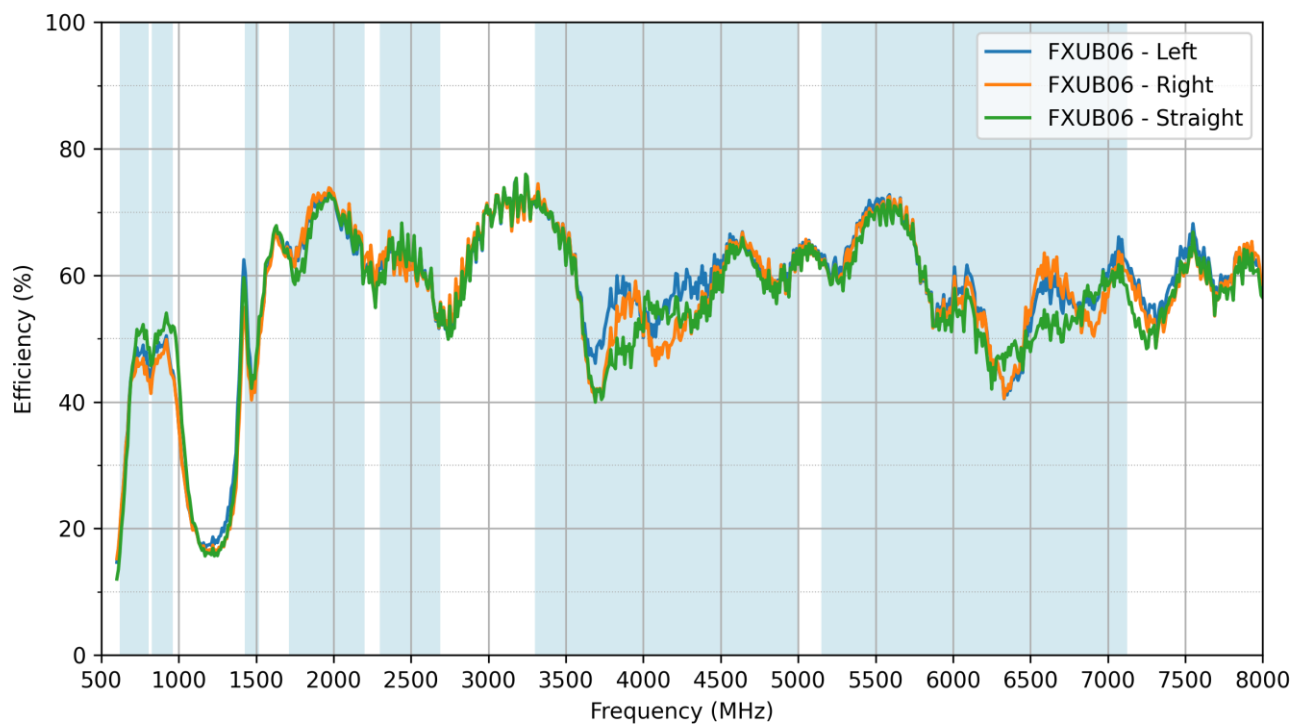
## 5.2 Return Loss



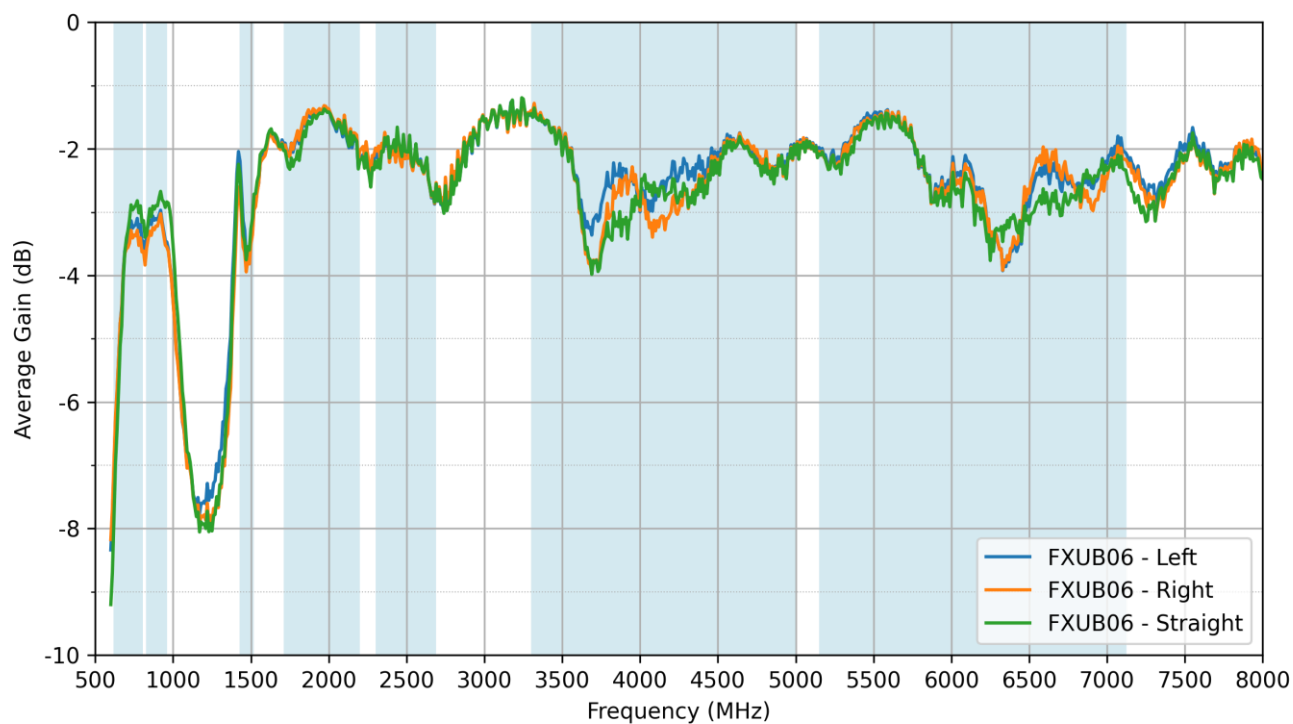
## 5.3 VSWR



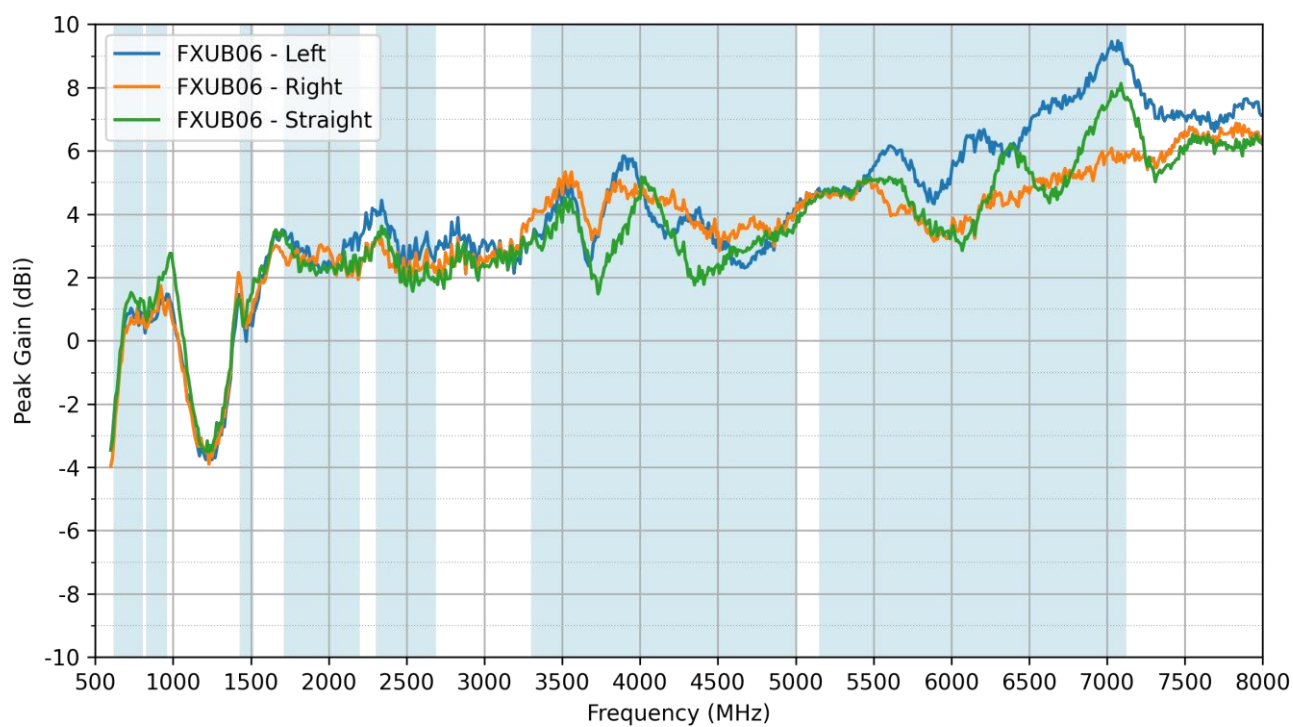
## 5.4 Efficiency



## 5.5 Average Gain



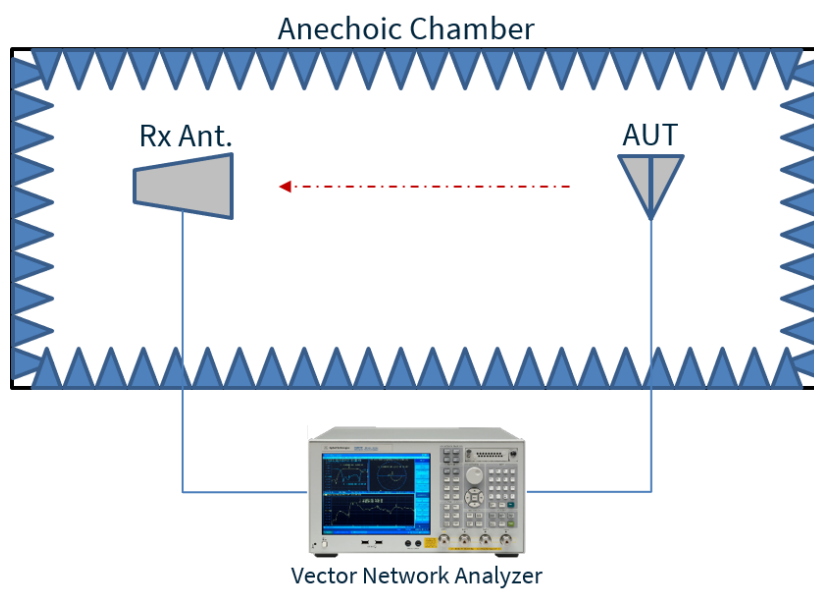
## 5.6 Peak Gain





## 6. Radiation Patterns

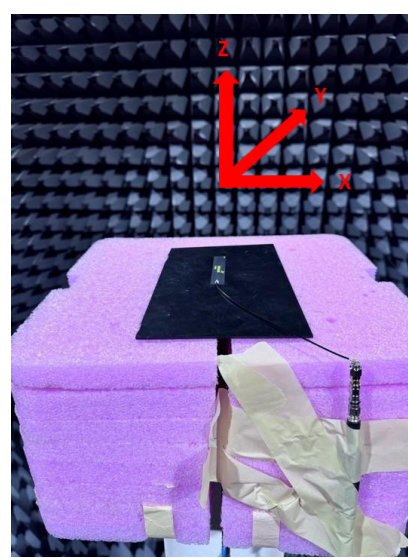
### 6.1 Test Setup



Cable feed from Left

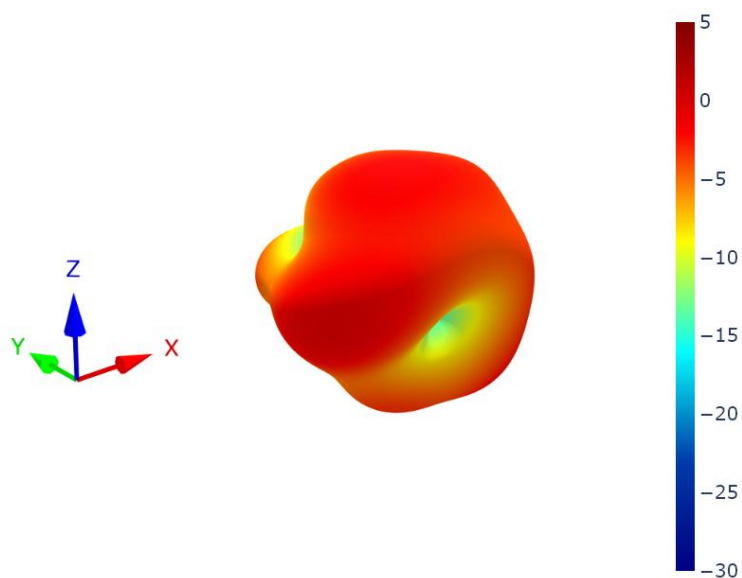


Cable feed Straight

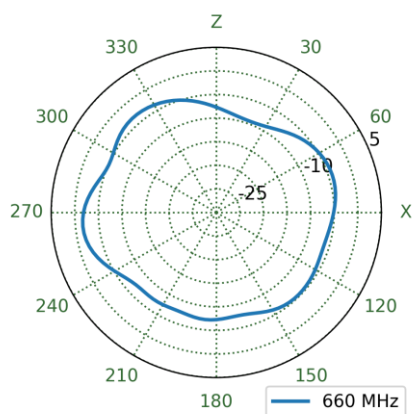


Cable feed from Right

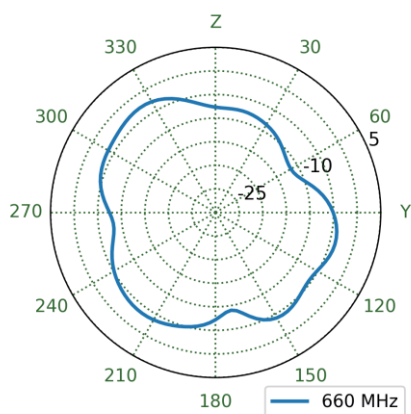
## 6.2 Cable Feed form Left Patterns at 660 MHz



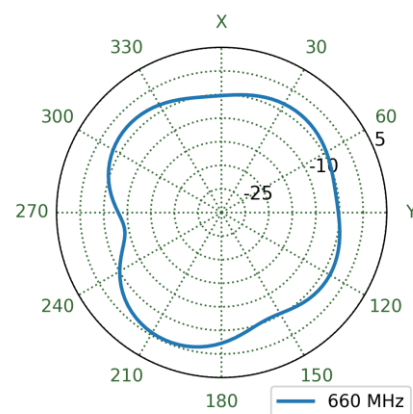
XZ Plane



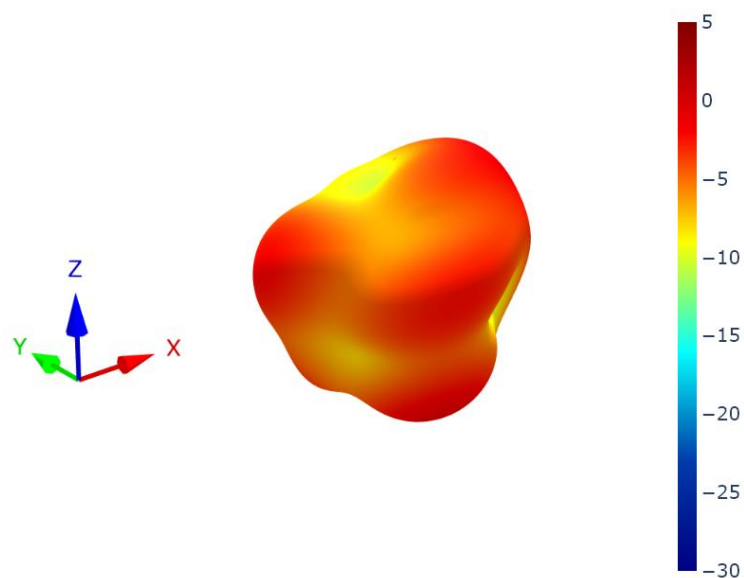
YZ Plane



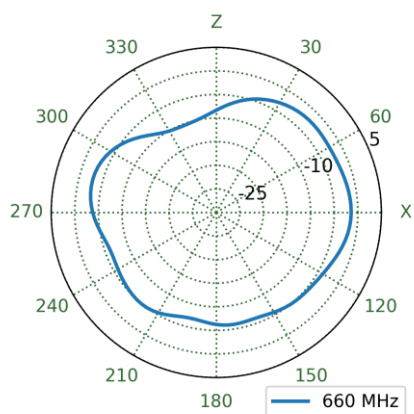
XY Plane



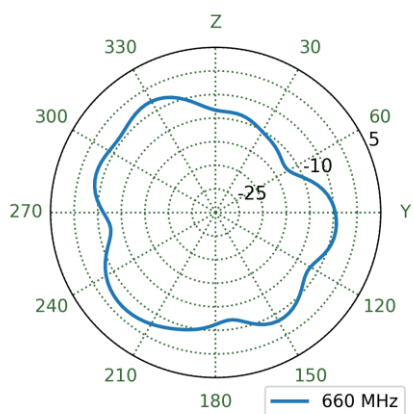
## 6.3 Cable Feed from Right Patterns at 660 MHz



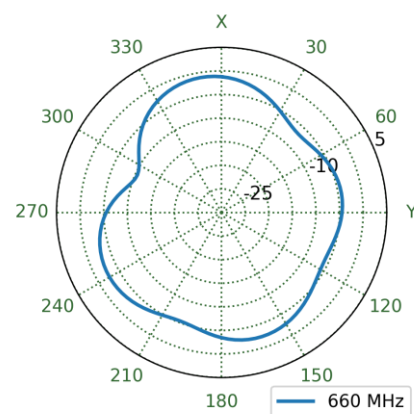
XZ Plane



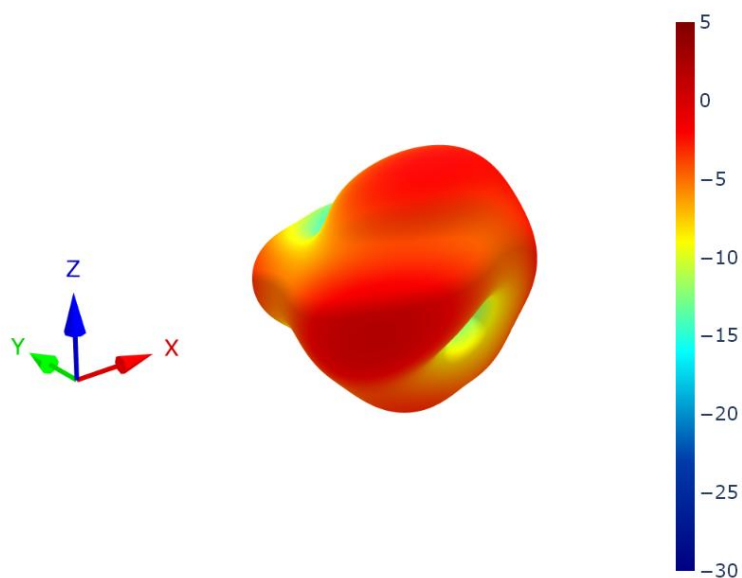
YZ Plane



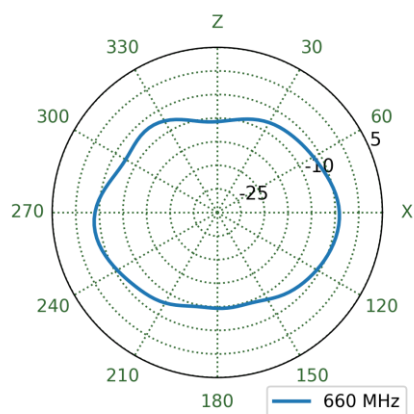
XY Plane



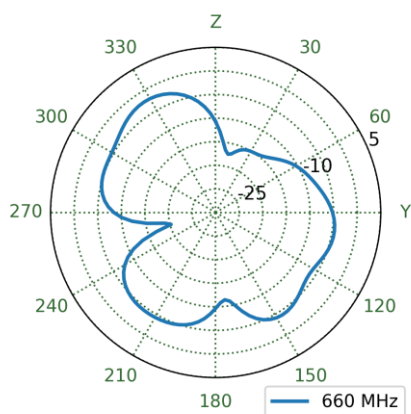
## 6.4 Cable Feed Straight Patterns at 660 MHz



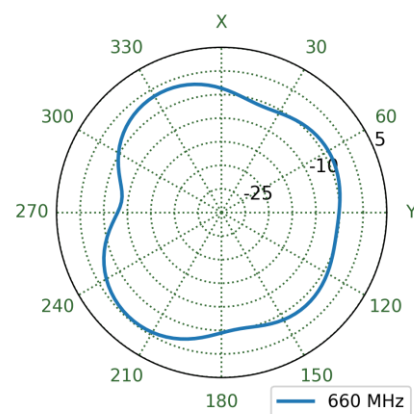
XZ Plane



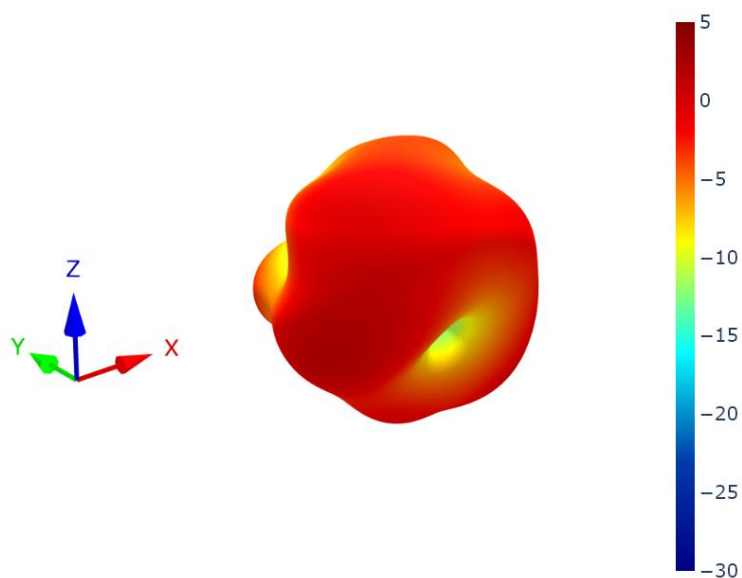
YZ Plane



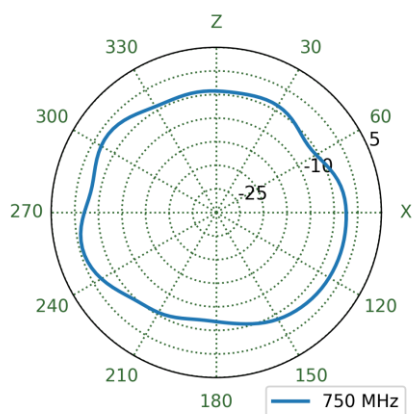
XY Plane



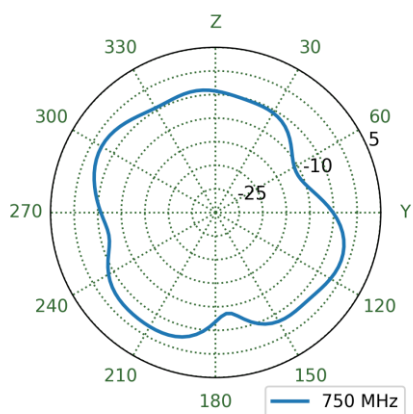
## 6.5 Cable Feed form Left Patterns at 750 MHz



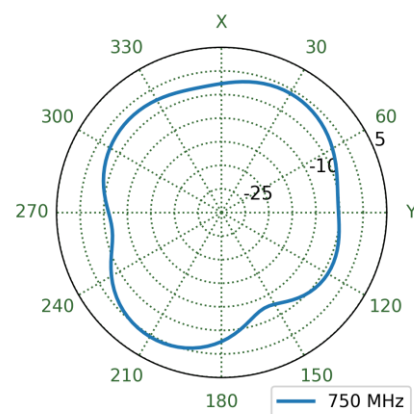
XZ Plane



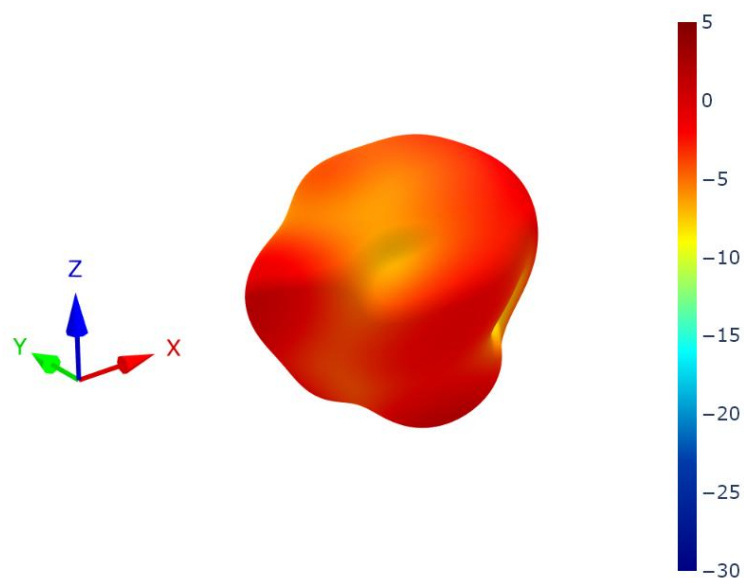
YZ Plane



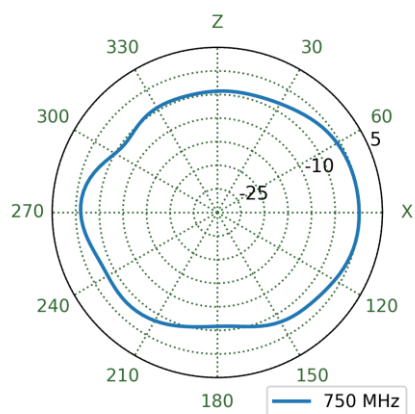
XY Plane



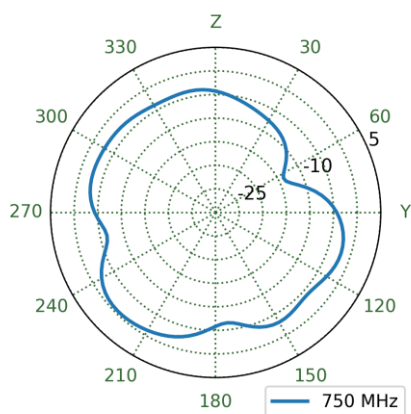
## 6.6 Cable Feed from Right Patterns at 750 MHz



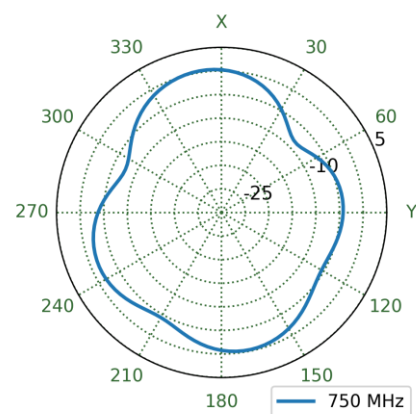
XZ Plane



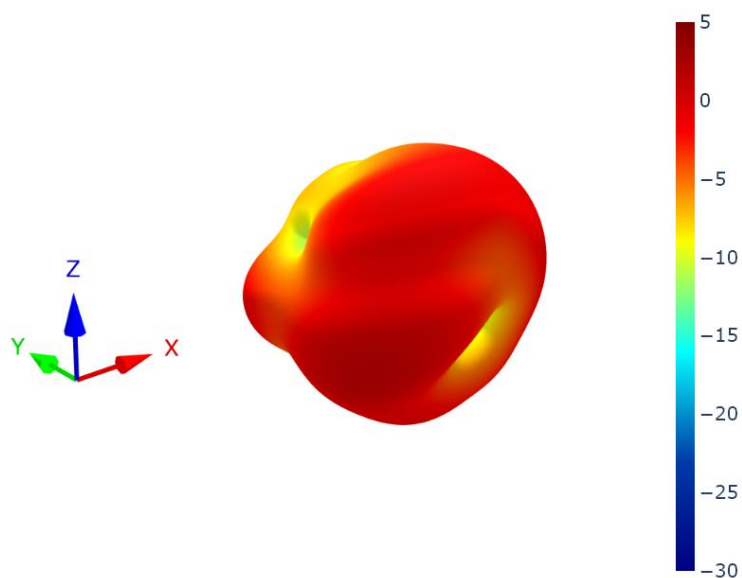
YZ Plane



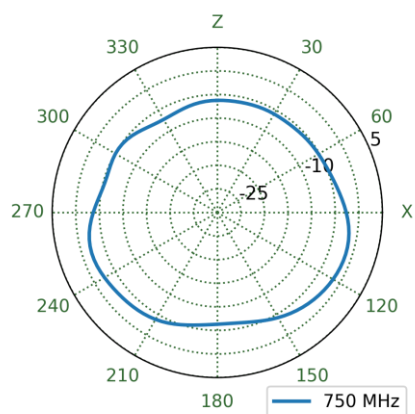
XY Plane



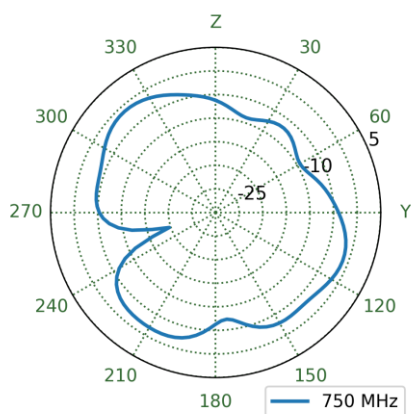
## 6.7 Cable Feed Straight Patterns at 750 MHz



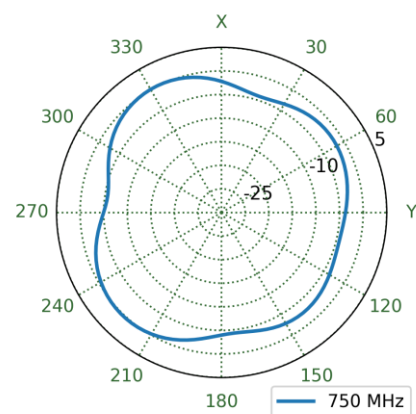
XZ Plane



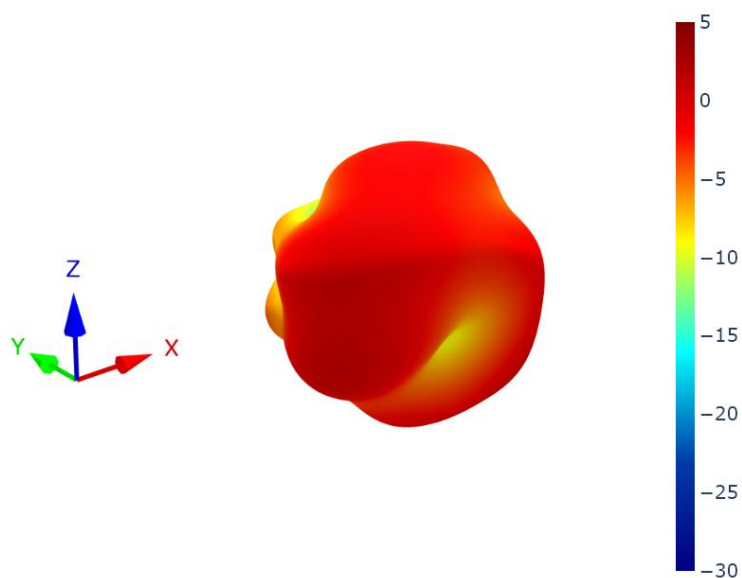
YZ Plane



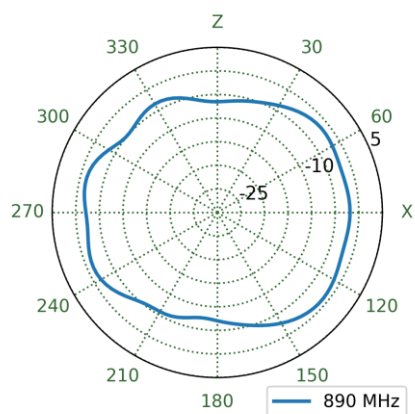
XY Plane



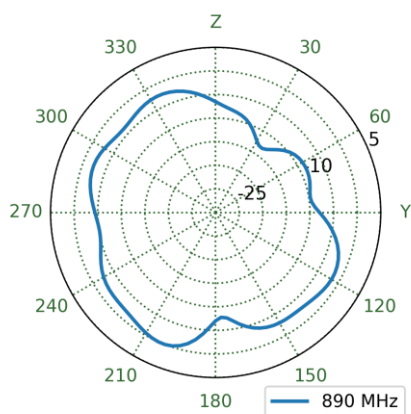
## 6.8 Cable Feed form Left Patterns at 890 MHz



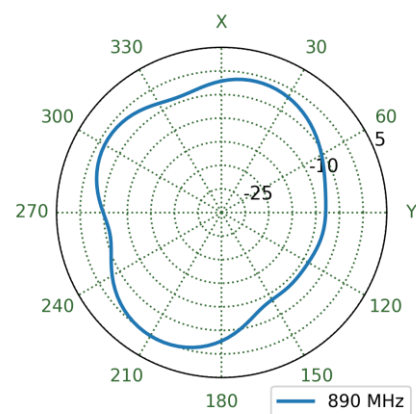
XZ Plane



YZ Plane

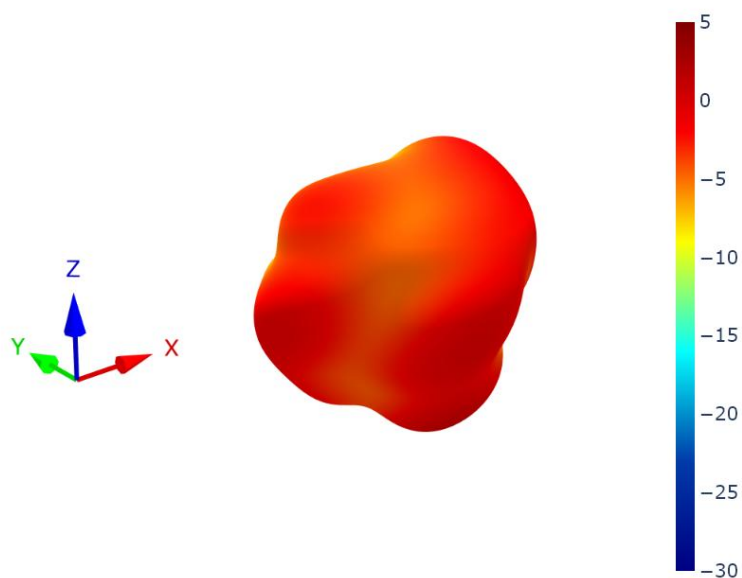


XY Plane

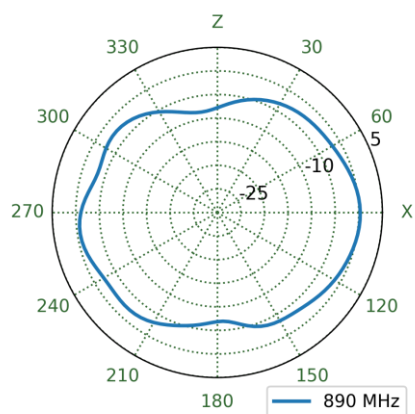




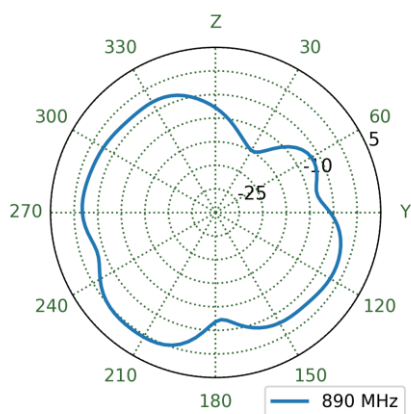
## 6.9 Cable Feed from Right Patterns at 890 MHz



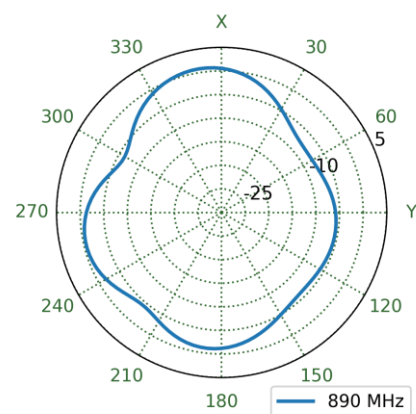
XZ Plane



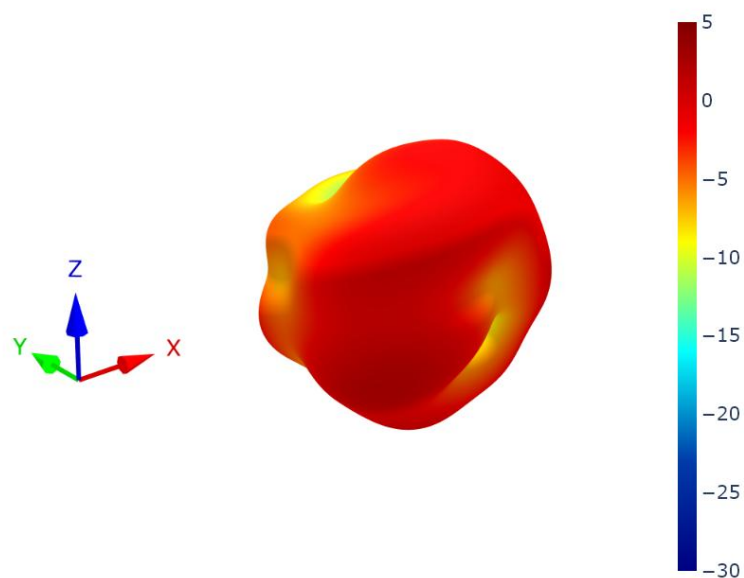
YZ Plane



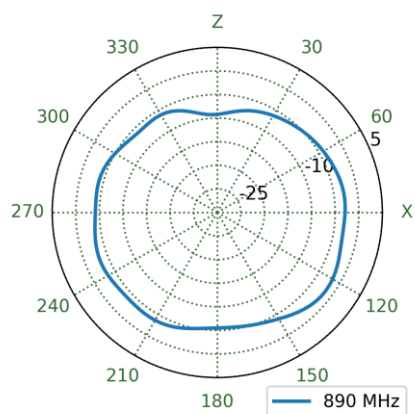
XY Plane



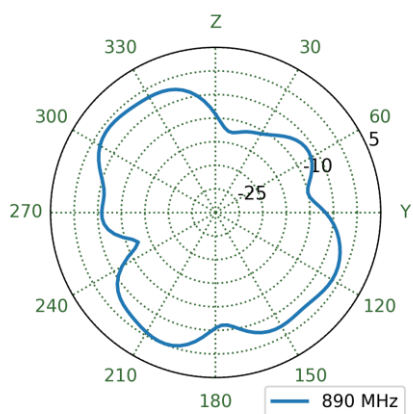
## 6.10 Cable Feed Straight Patterns at 890 MHz



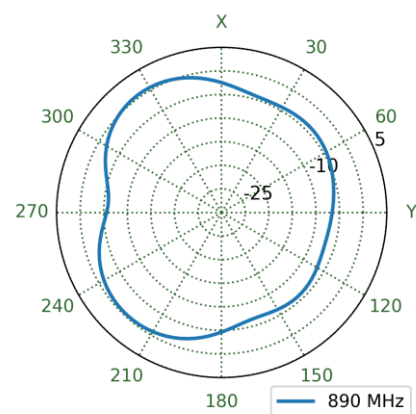
XZ Plane



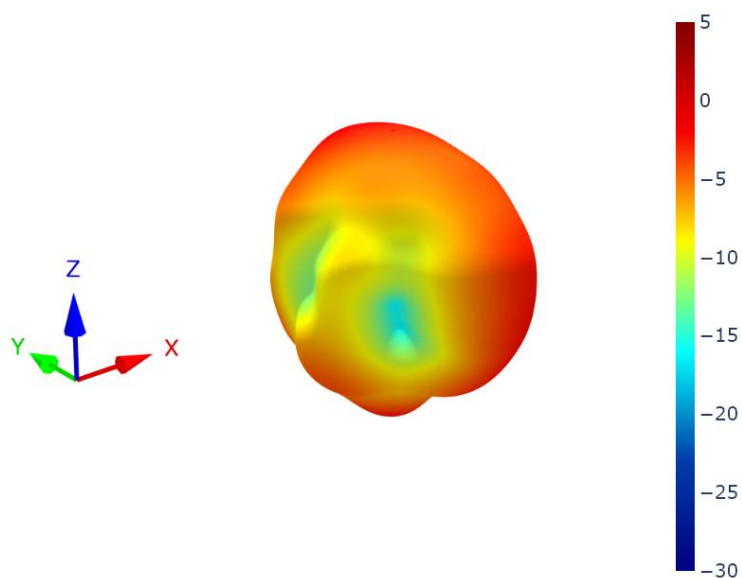
YZ Plane



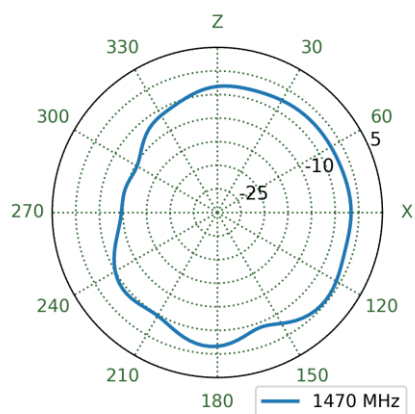
XY Plane



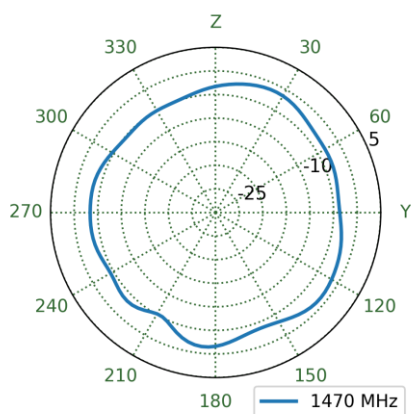
## 6.11 Cable Feed form Left Patterns at 1470 MHz



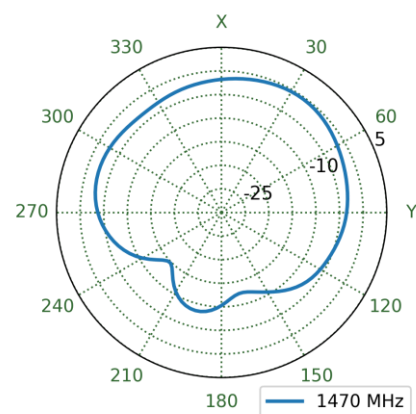
XZ Plane



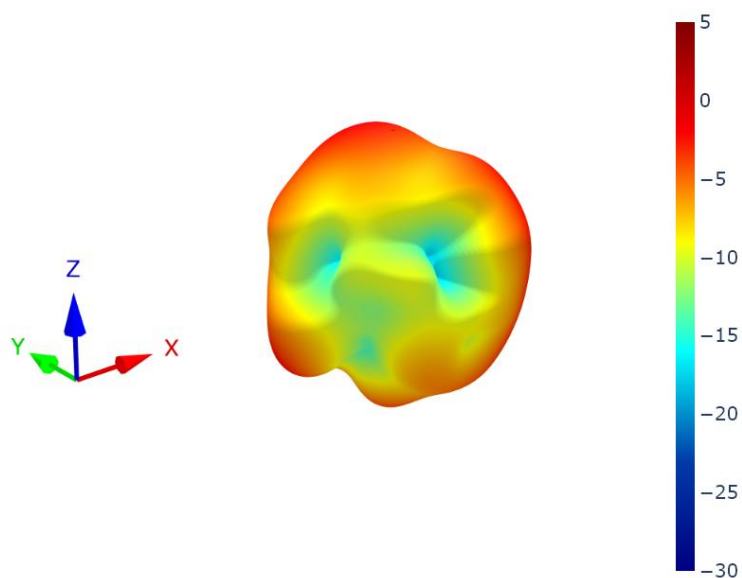
YZ Plane



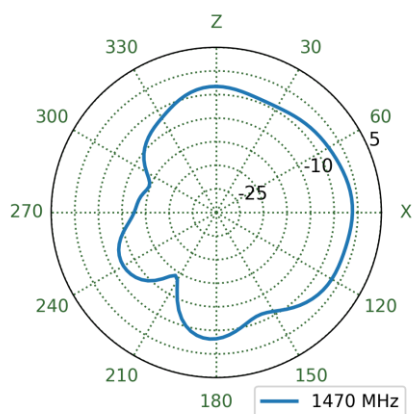
XY Plane



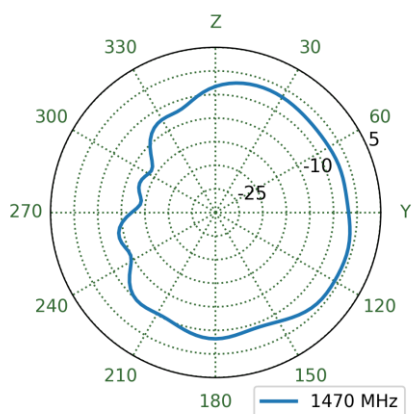
## 6.12 Cable Feed from Right Patterns at 1470 MHz



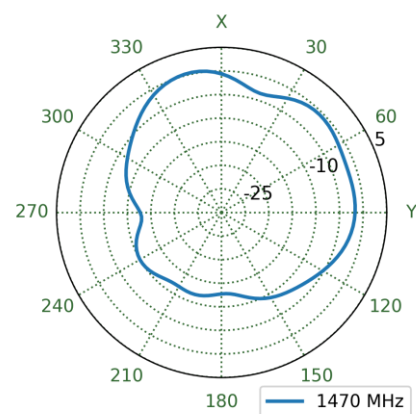
XZ Plane



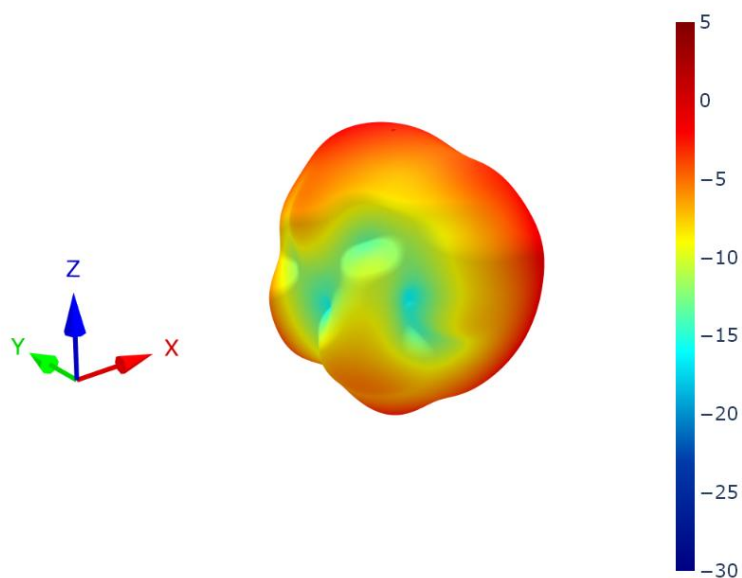
YZ Plane



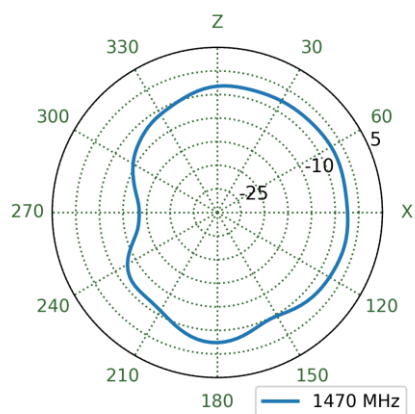
XY Plane



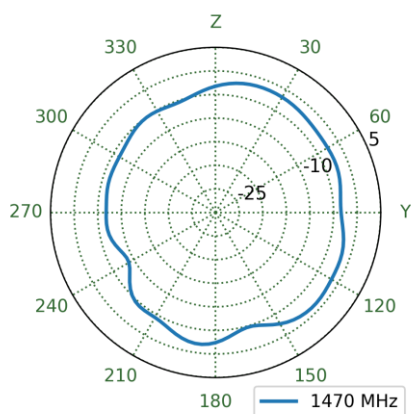
## 6.13 Cable Feed Straight Patterns at 1470 MHz



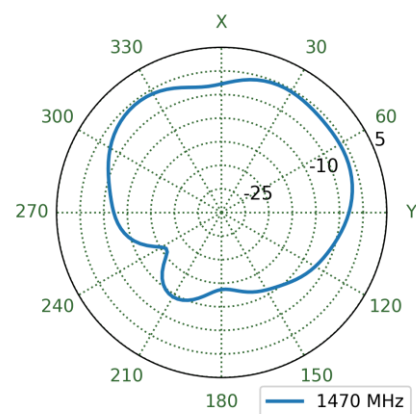
XZ Plane



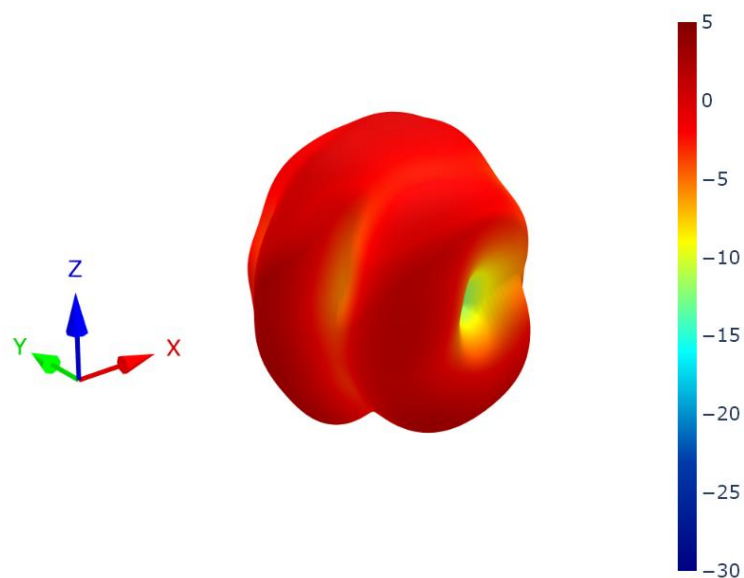
YZ Plane



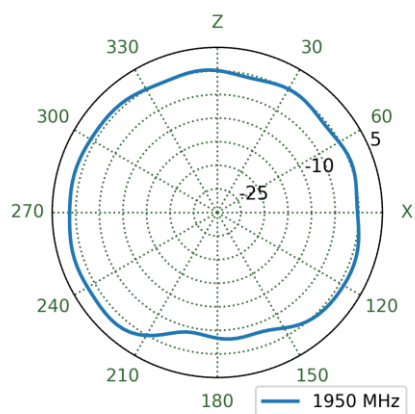
XY Plane



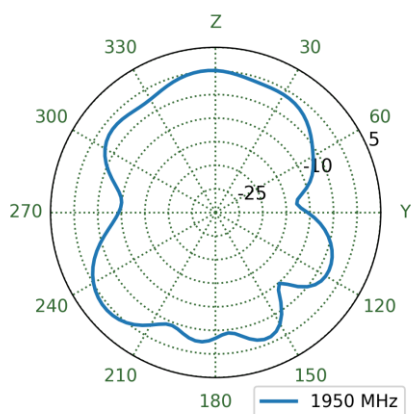
## 6.14 Cable Feed form Left Patterns at 1950 MHz



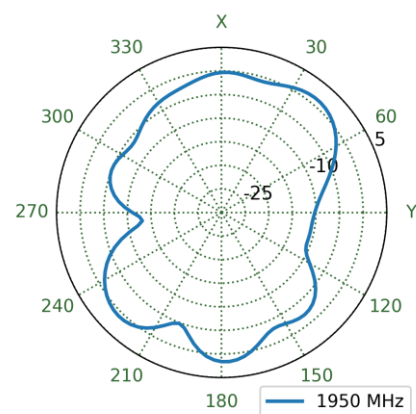
XZ Plane



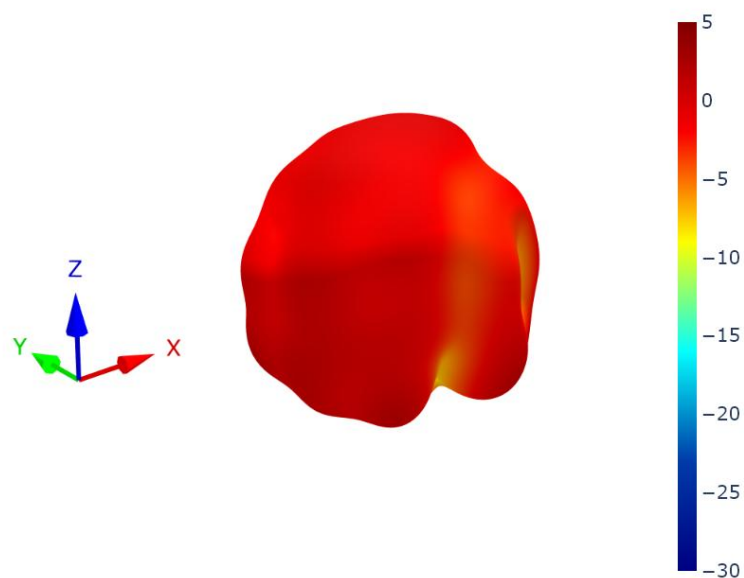
YZ Plane



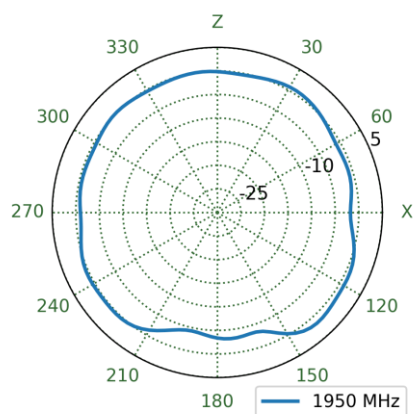
XY Plane



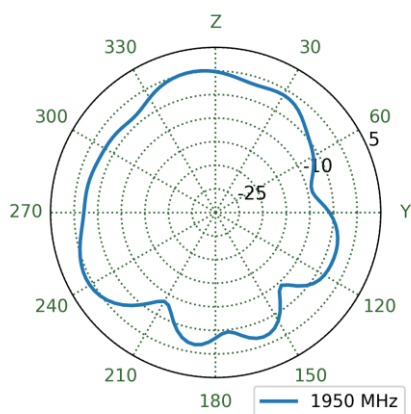
## 6.15 Cable Feed from Right Patterns at 1950 MHz



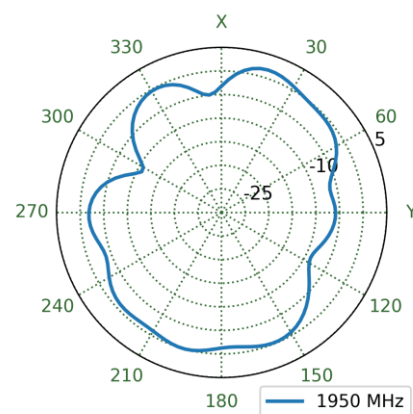
XZ Plane



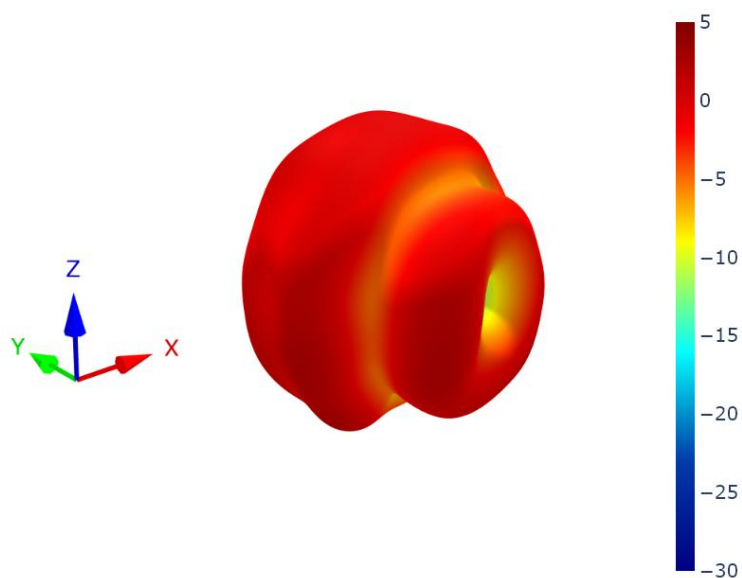
YZ Plane



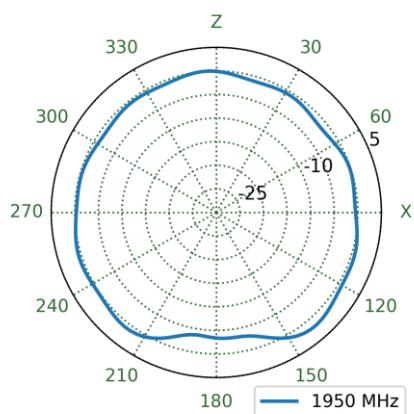
XY Plane



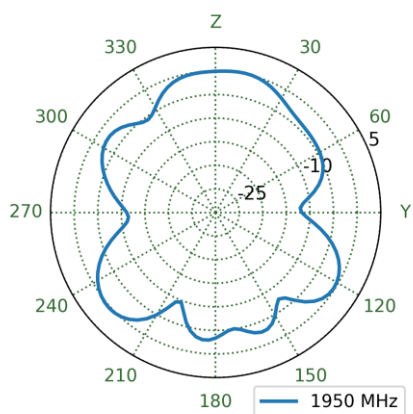
## 6.16 Cable Feed Straight Patterns at 1950 MHz



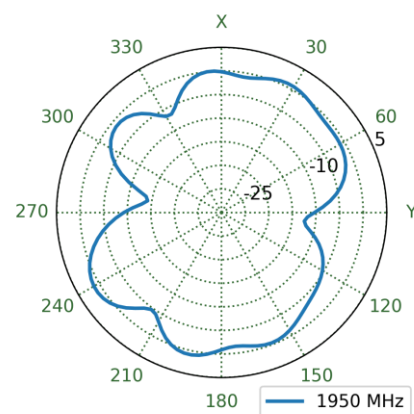
XZ Plane



YZ Plane

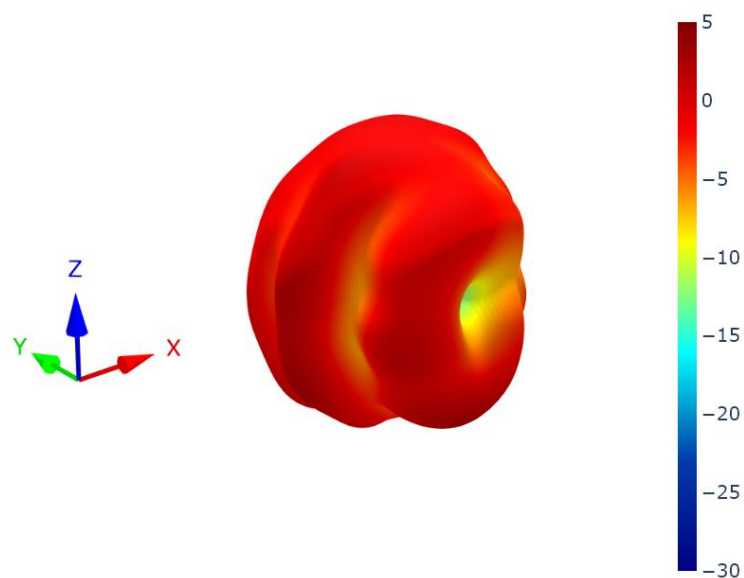


XY Plane

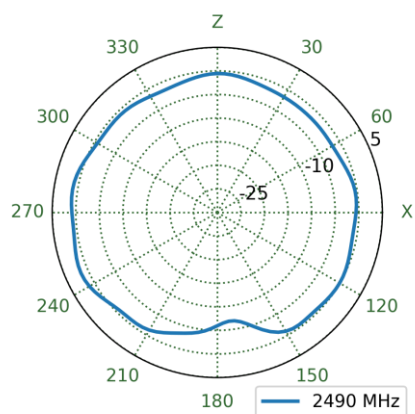




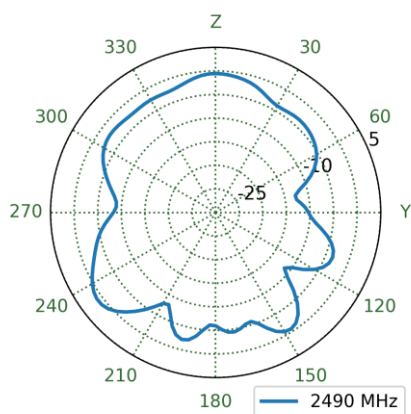
## 6.17 Cable Feed form Left Patterns at 2490 MHz



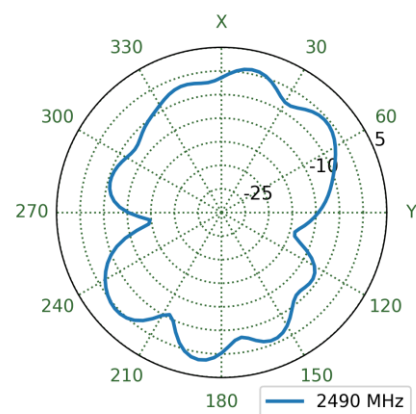
XZ Plane



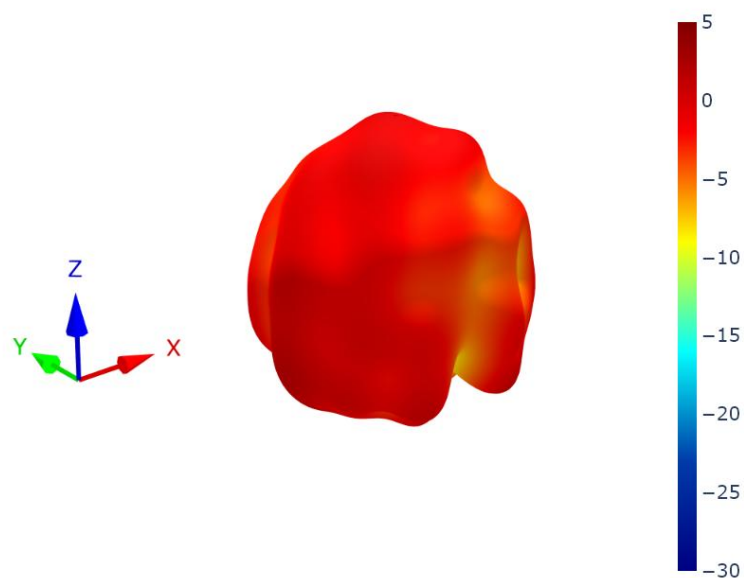
YZ Plane



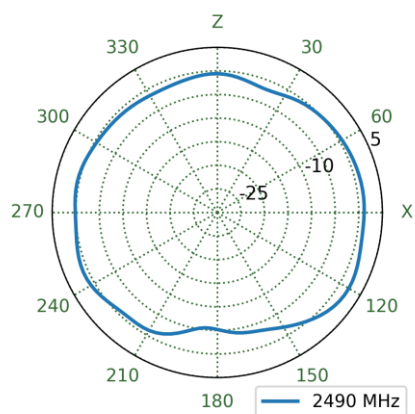
XY Plane



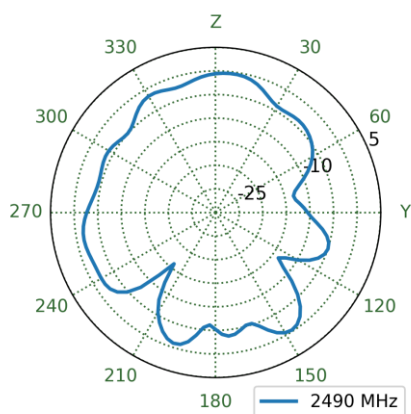
## 6.18 Cable Feed from Right Patterns at 2490 MHz



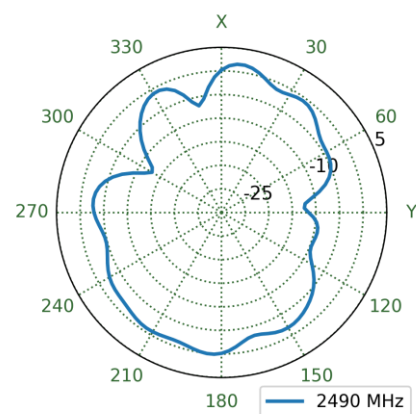
XZ Plane



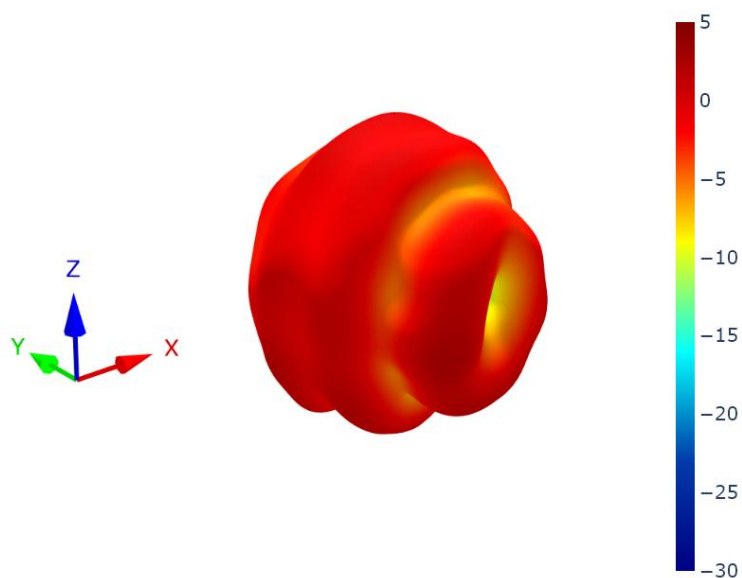
YZ Plane



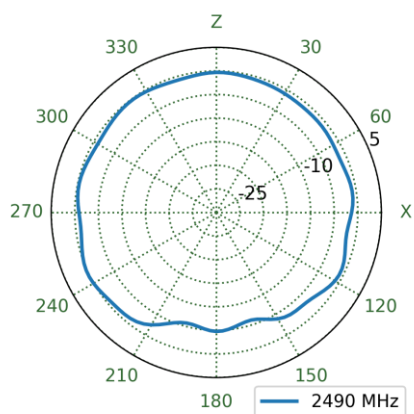
XY Plane



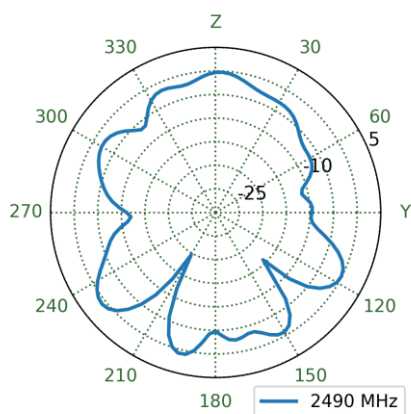
## 6.19 Cable Feed Straight Patterns at 2490 MHz



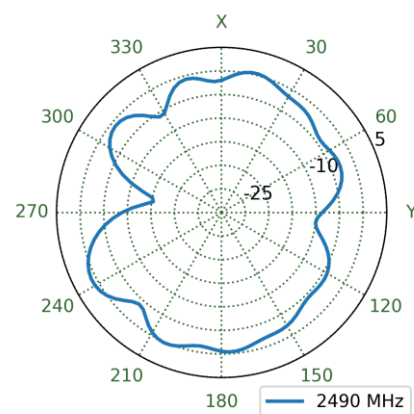
XZ Plane



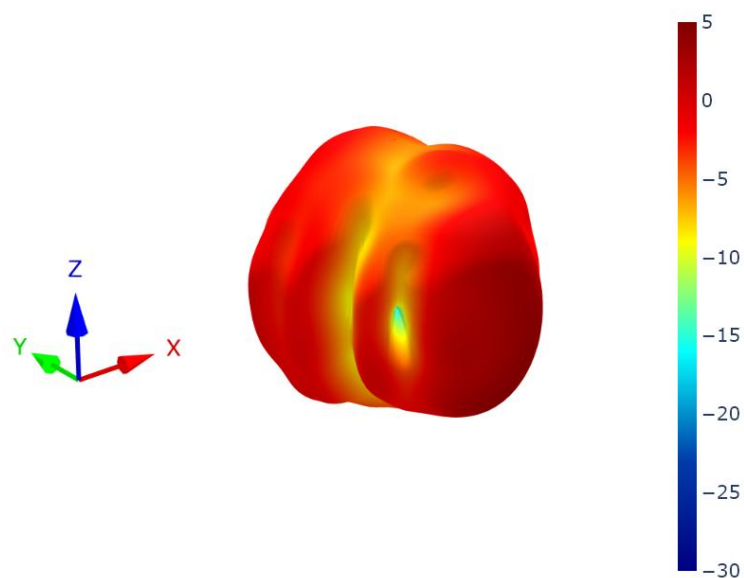
YZ Plane



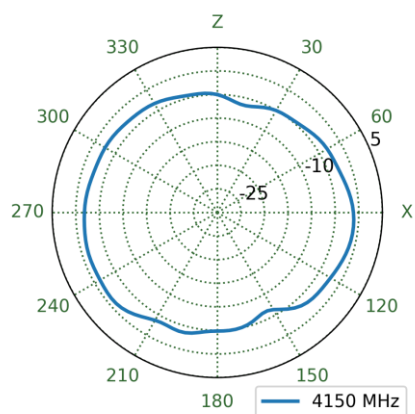
XY Plane



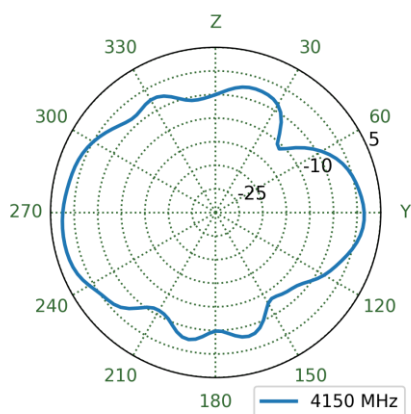
## 6.20 Cable Feed form Left Patterns at 4150 MHz



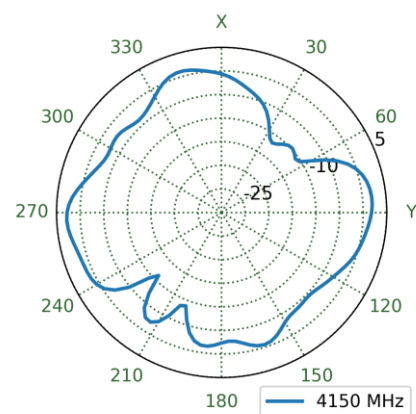
XZ Plane



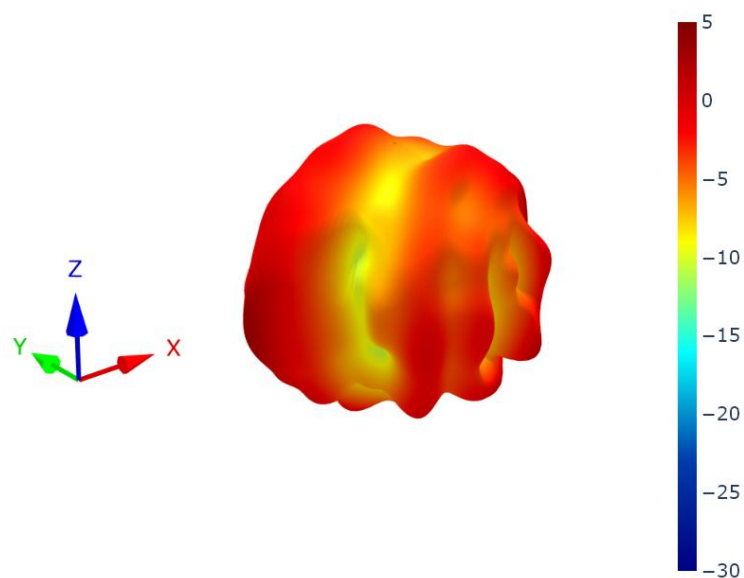
YZ Plane



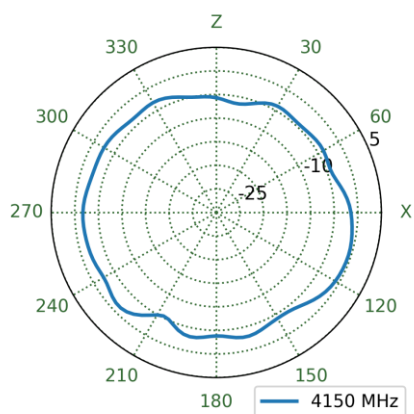
XY Plane



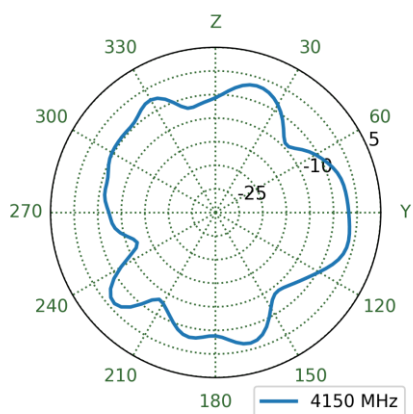
## 6.21 Cable Feed from Right Patterns at 4150 MHz



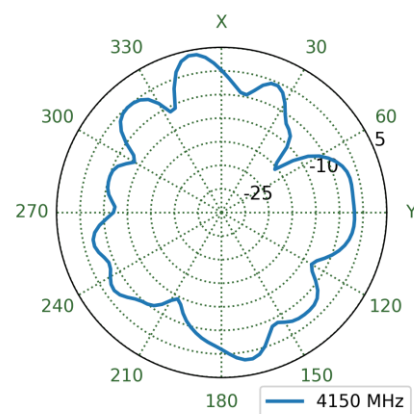
XZ Plane



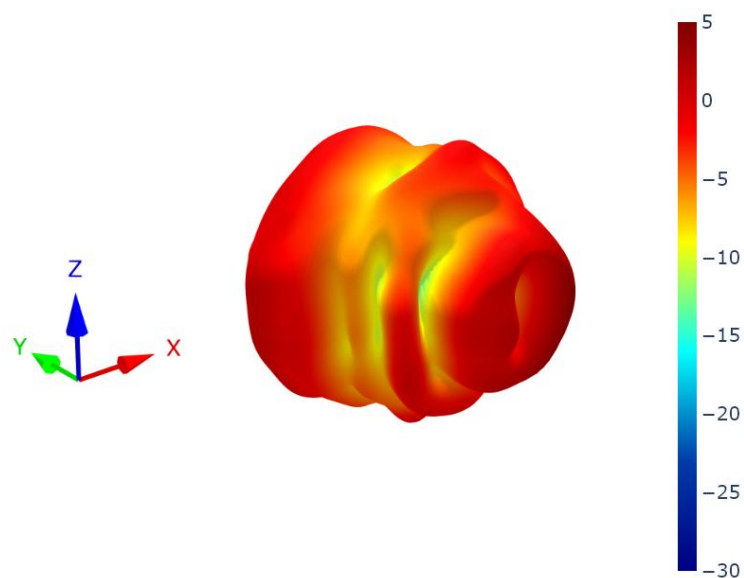
YZ Plane



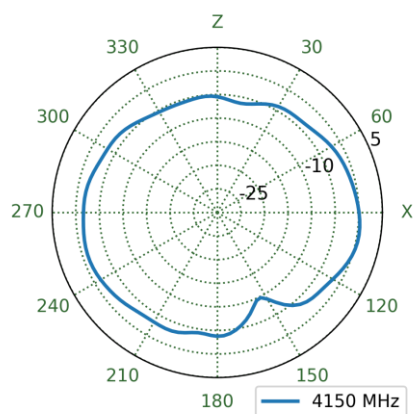
XY Plane



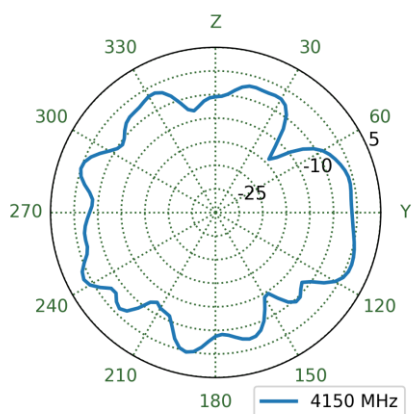
## 6.22 Cable Feed Straight Patterns at 4150 MHz



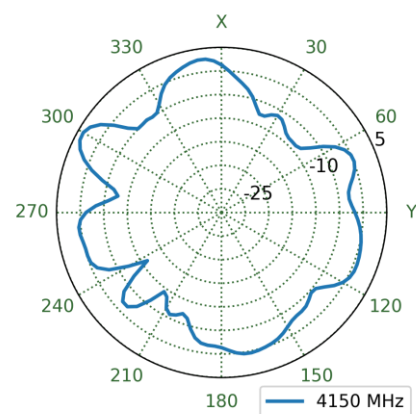
XZ Plane



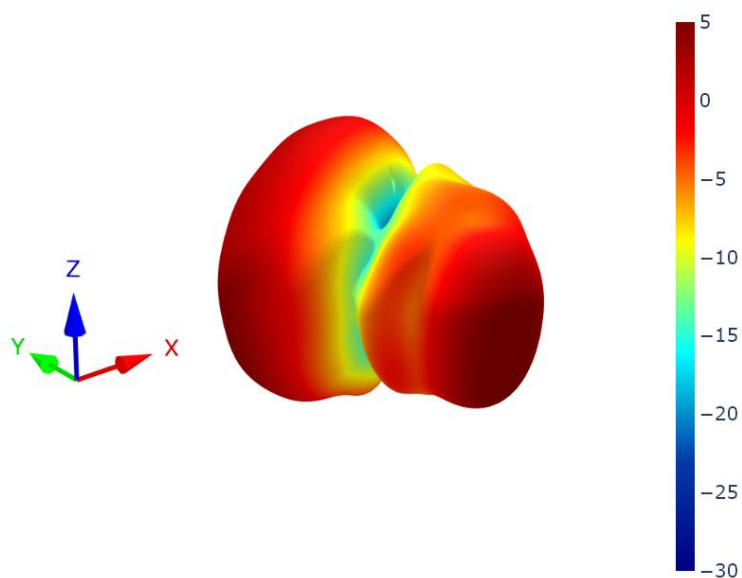
YZ Plane



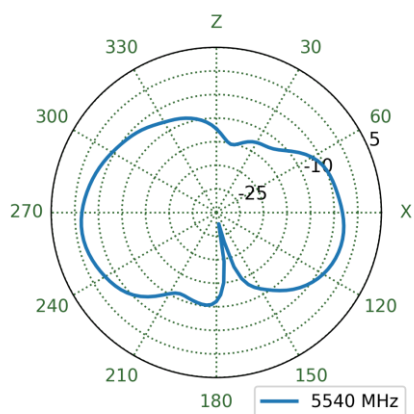
XY Plane



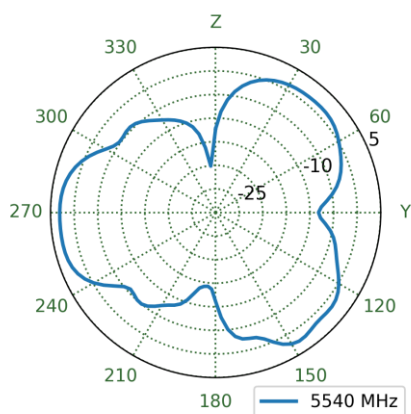
## 6.23 Cable Feed form Left Patterns at 5540 MHz



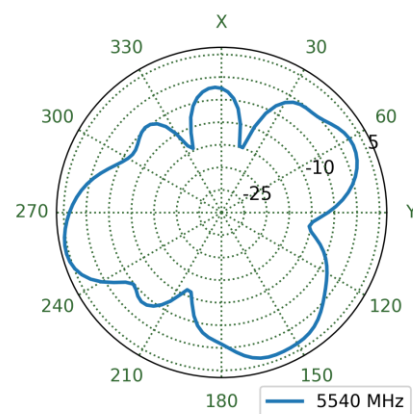
XZ Plane



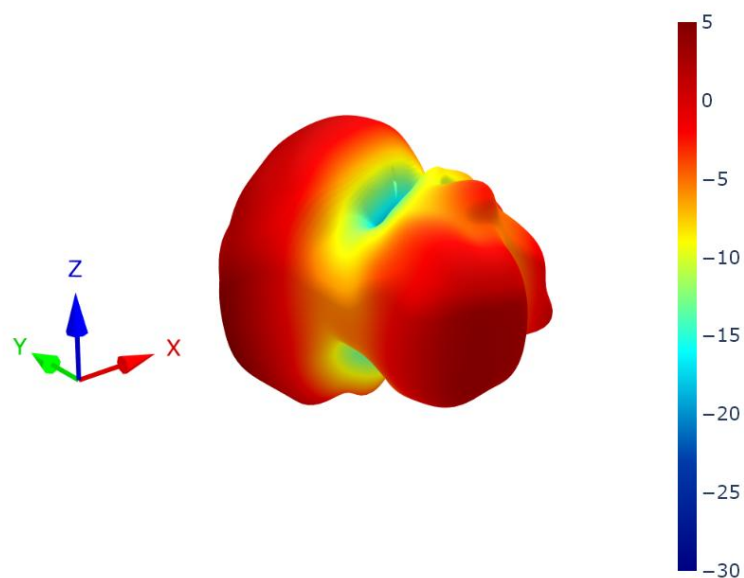
YZ Plane



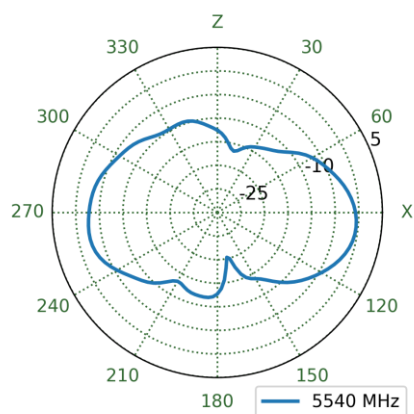
XY Plane



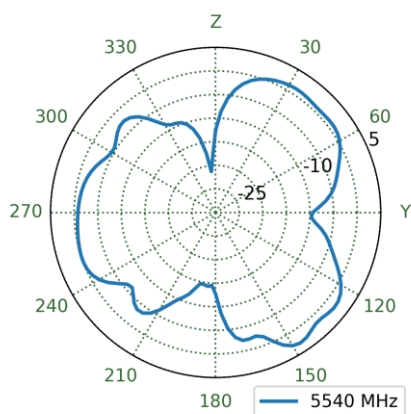
## 6.24 Cable Feed from Right Patterns at 5540 MHz



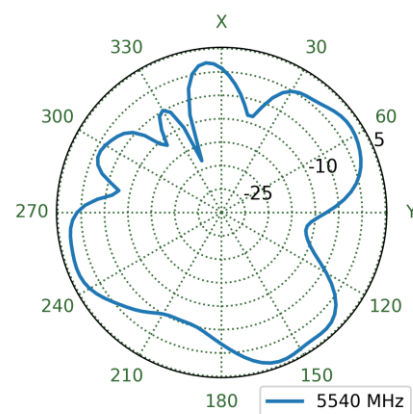
XZ Plane



YZ Plane

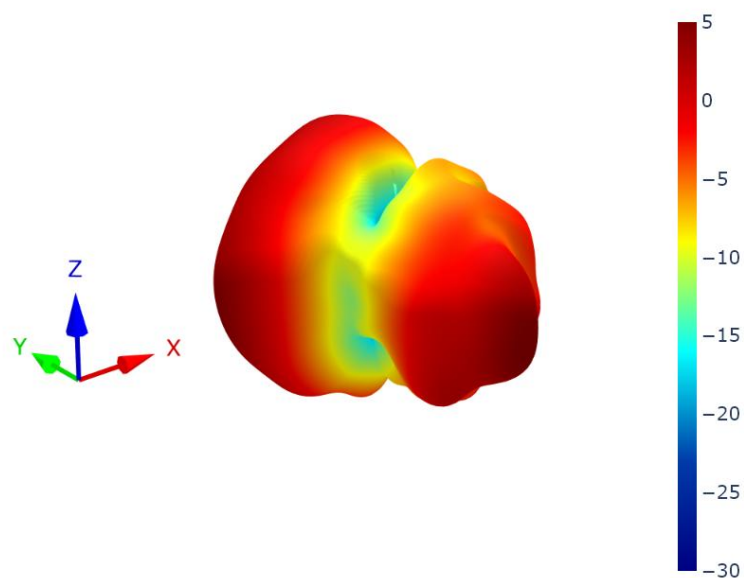


XY Plane

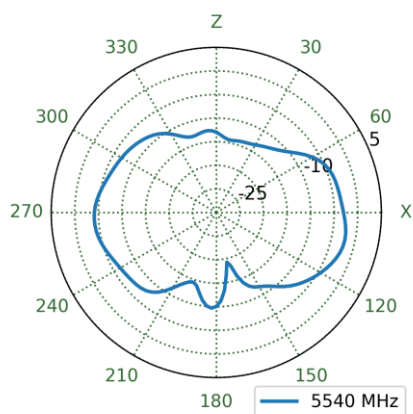




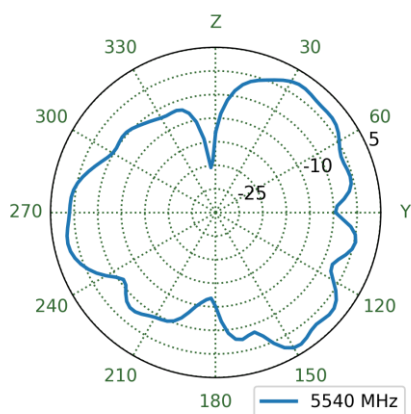
## 6.25 Cable Feed Straight Patterns at 5540 MHz



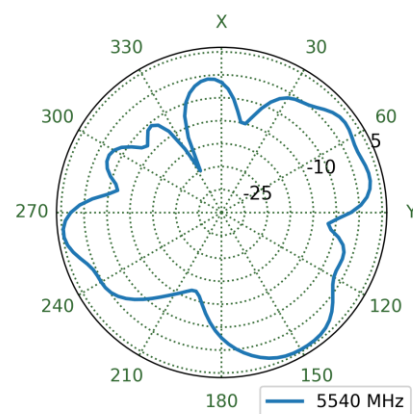
XZ Plane



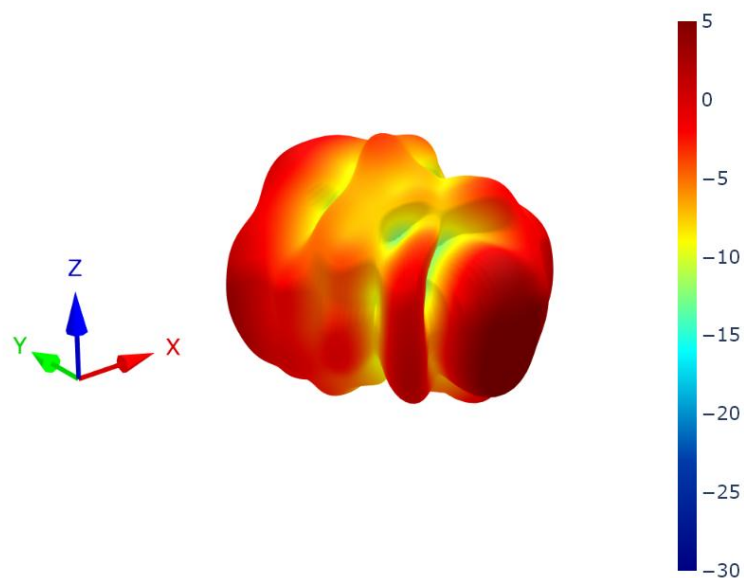
YZ Plane



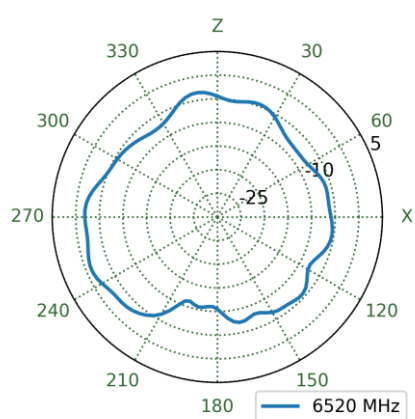
XY Plane



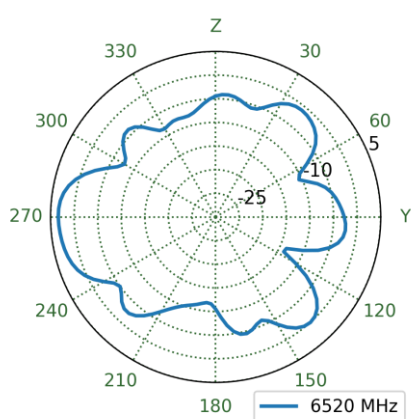
## 6.26 Cable Feed Left Patterns at 6520 MHz



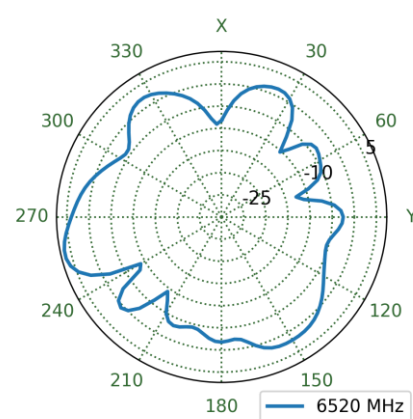
XZ Plane



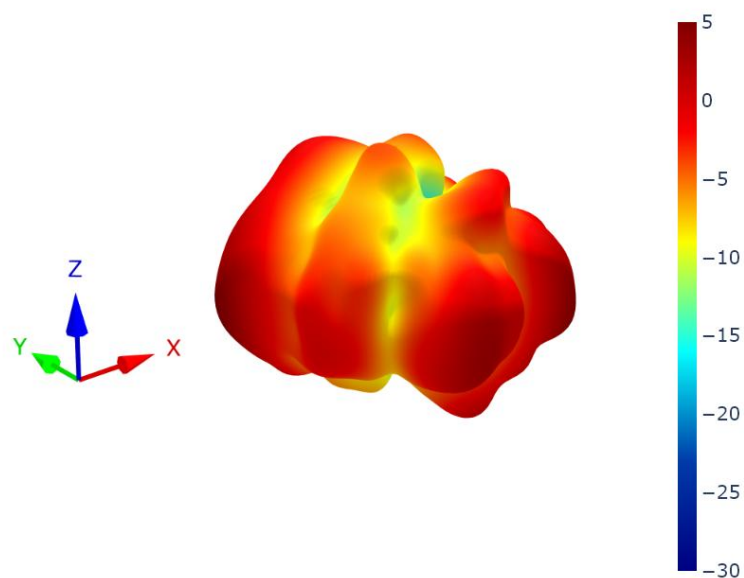
YZ Plane



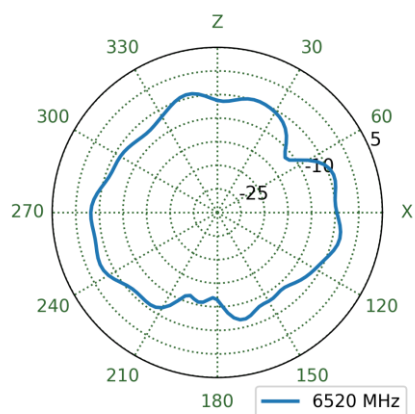
XY Plane



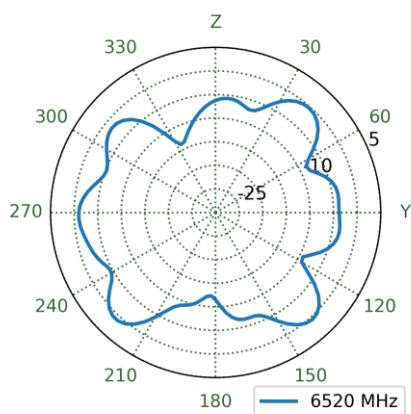
## 6.27 Cable Feed Right Patterns at 6520 MHz



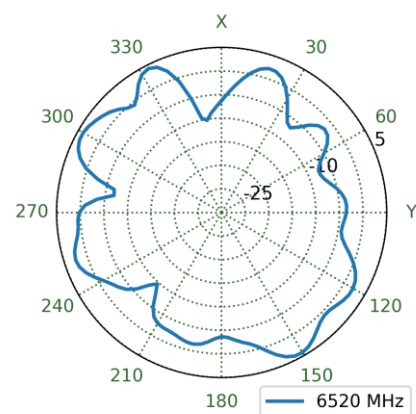
XZ Plane



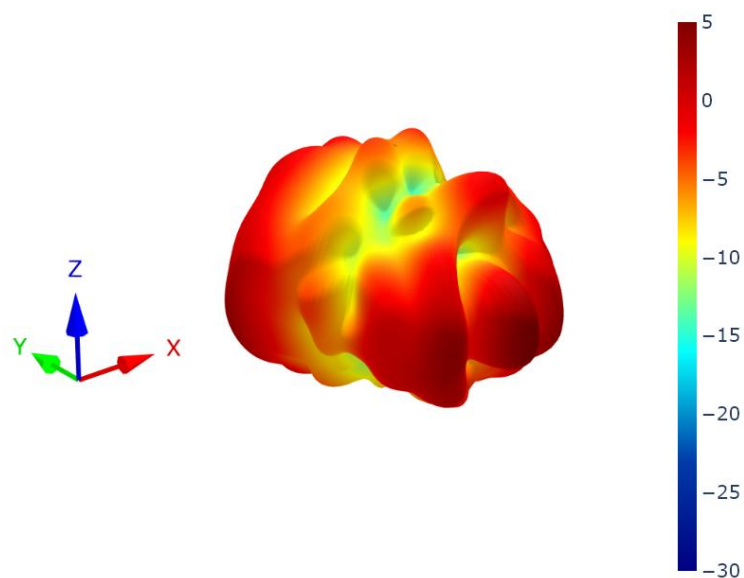
YZ Plane



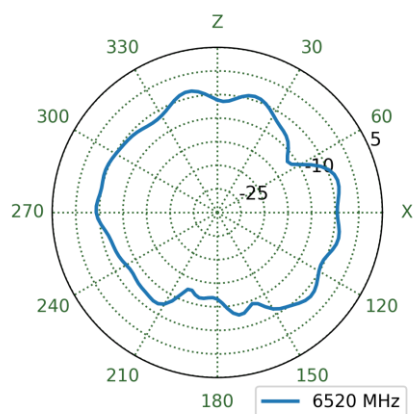
XY Plane



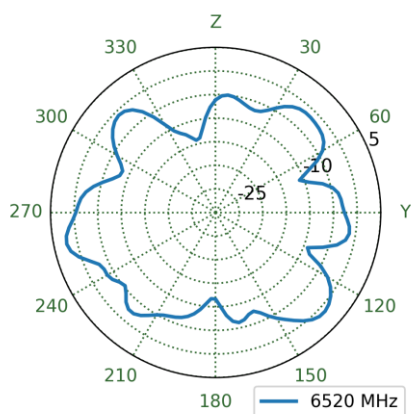
## 6.28 Cable Feed Straight Patterns at 6520 MHz



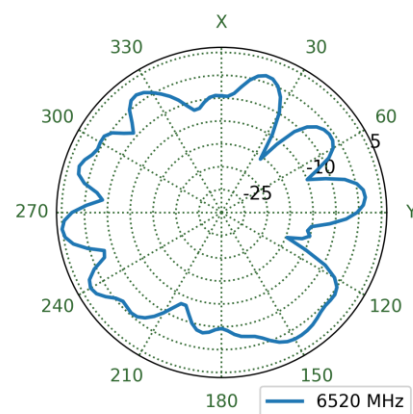
XZ Plane



YZ Plane



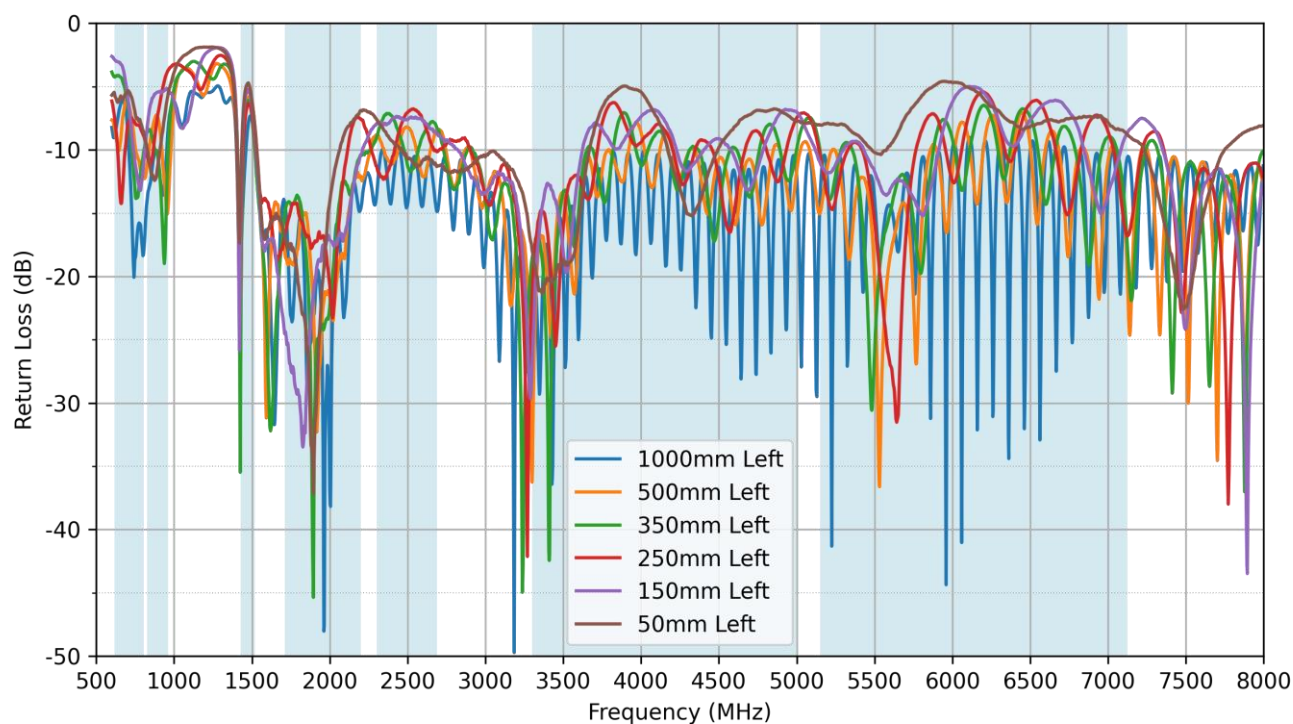
XY Plane



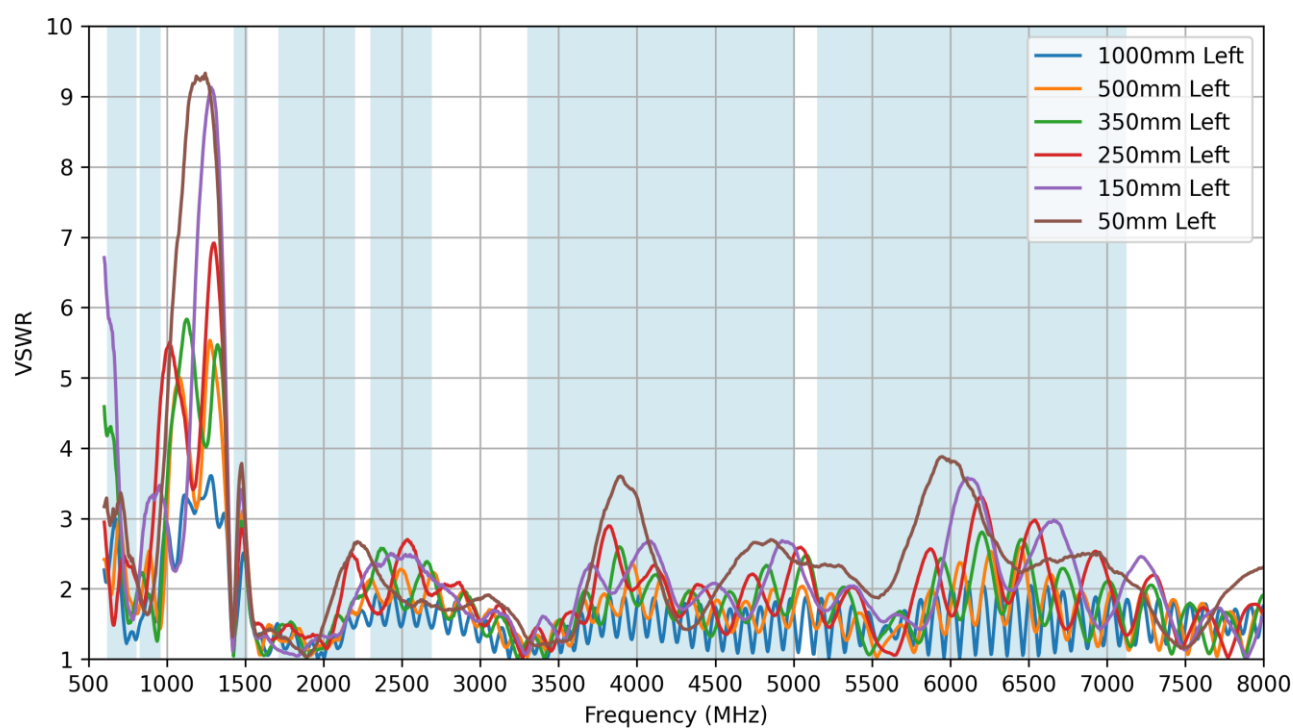
## 7. Application Note

This application note shows how changing the cable length affects the antenna performance.

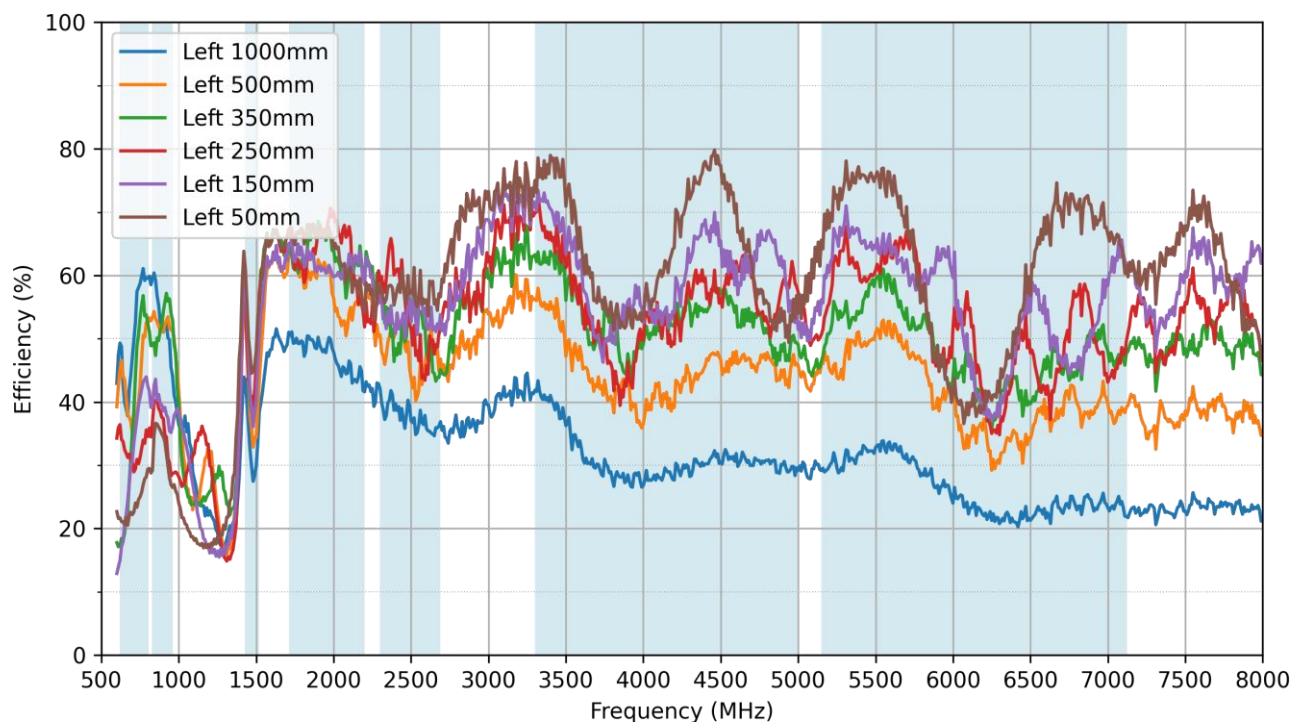
### 7.1 Return Loss – Feed From Left



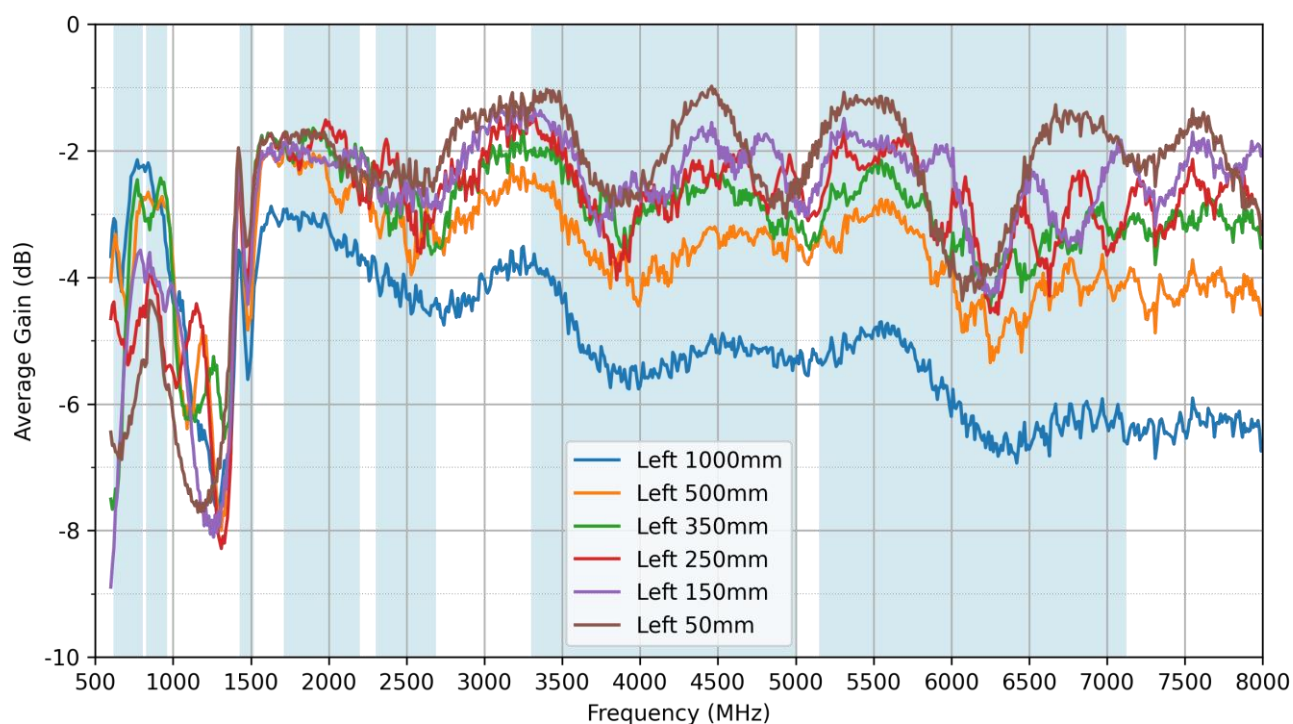
### 7.2 VSWR – Feed From Left



### 7.3 Efficiency – Feed From Left

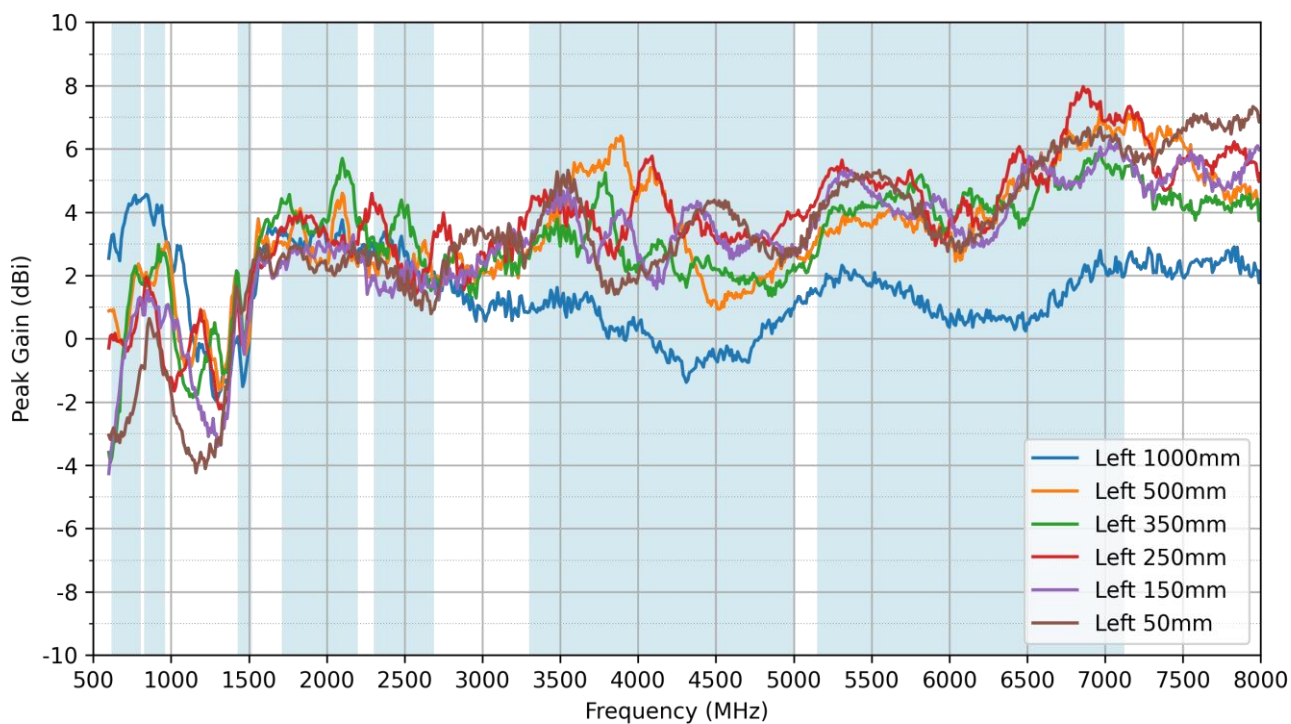


### 7.4 Average Gain – Feed From Left

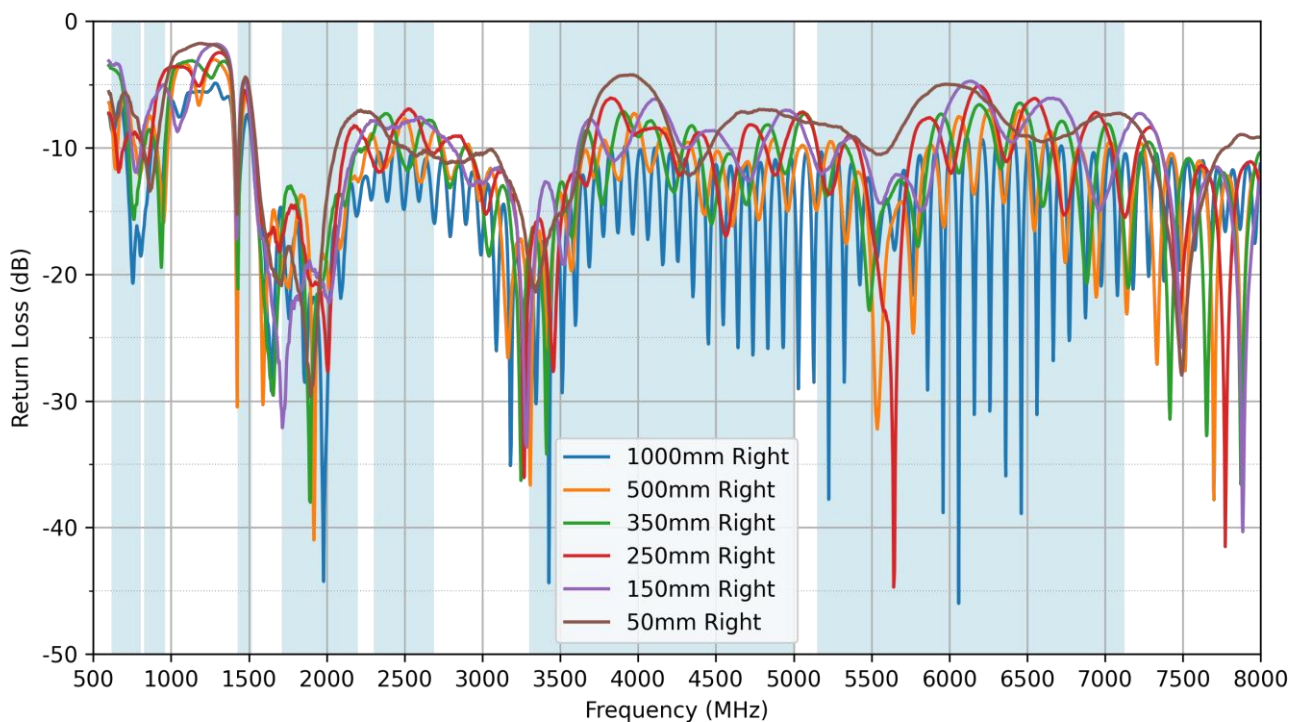




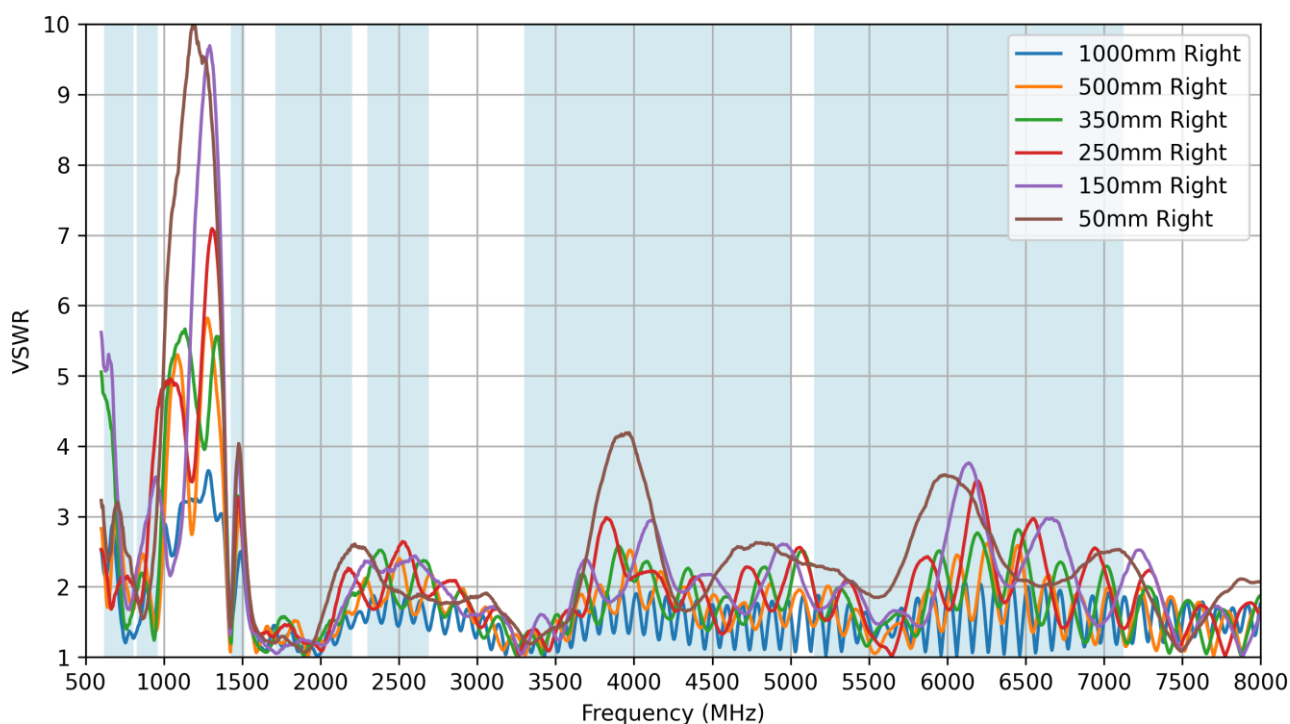
## 7.5 Peak Gain – Feed From Left



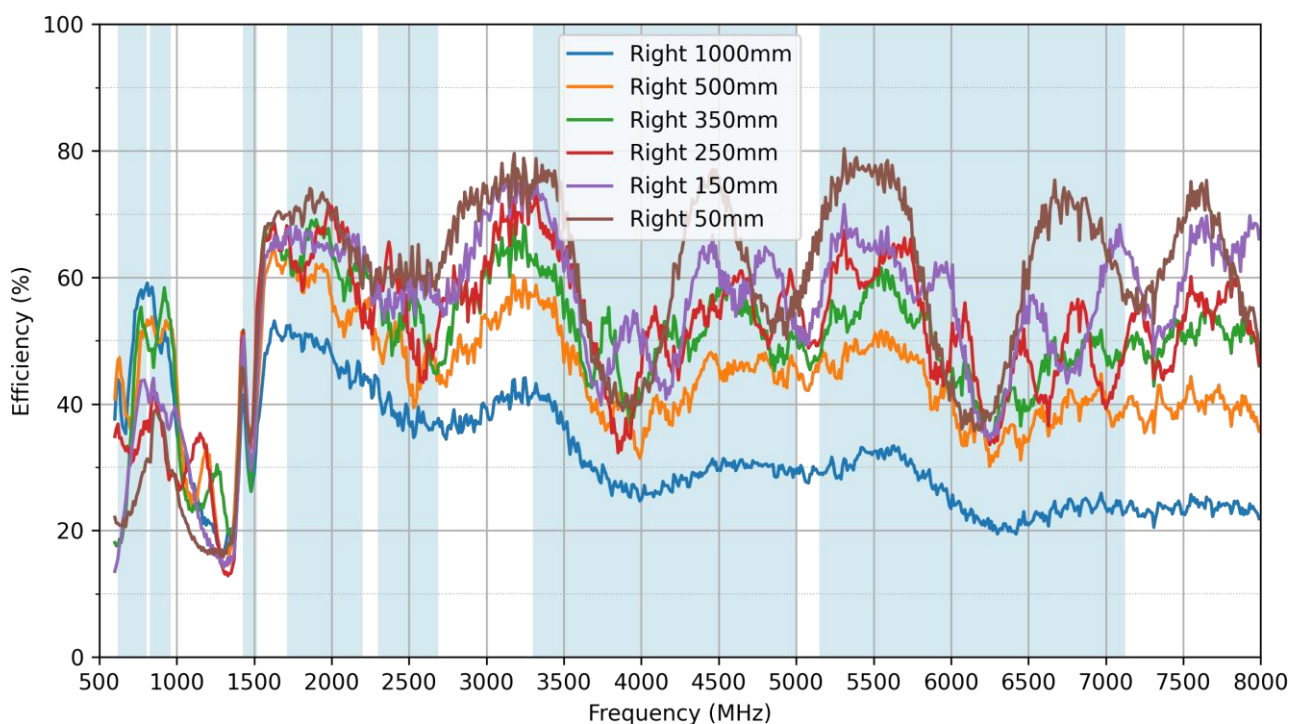
## 7.6 Return Loss – Feed From Right



## 7.7 VSWR – Feed From Right

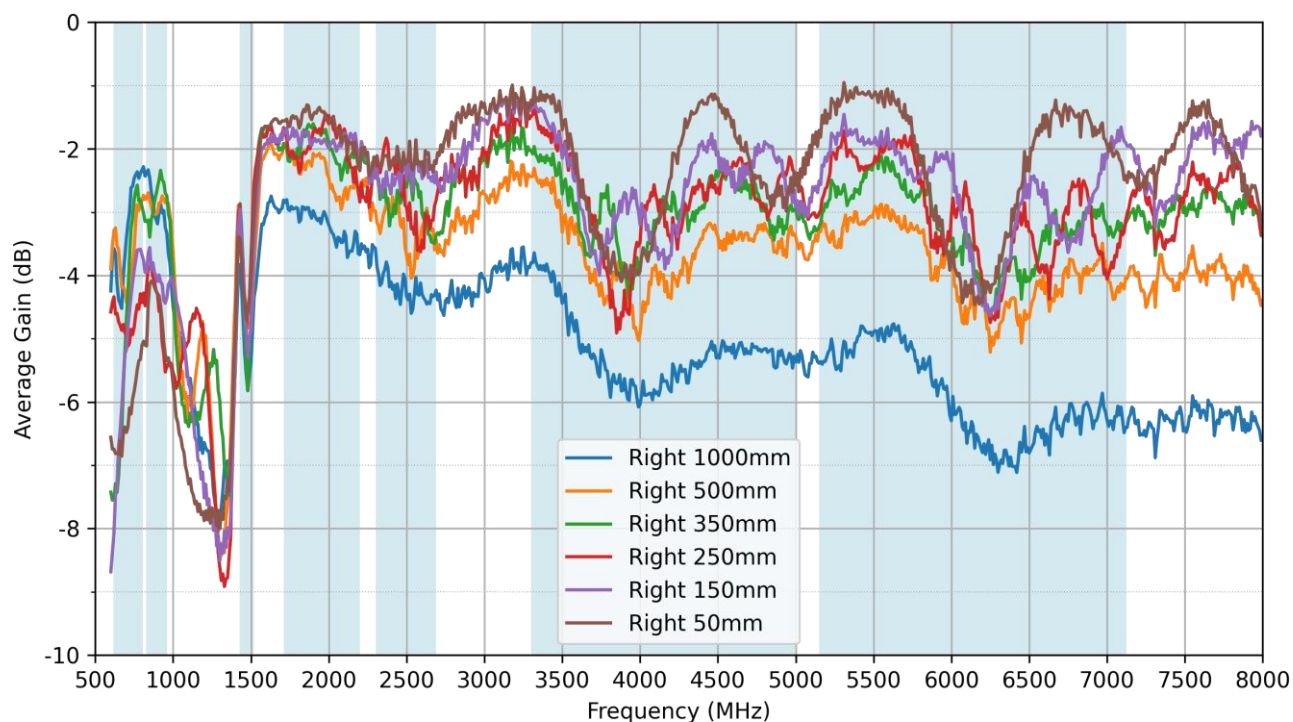


## 7.8 Efficiency – Feed From Right

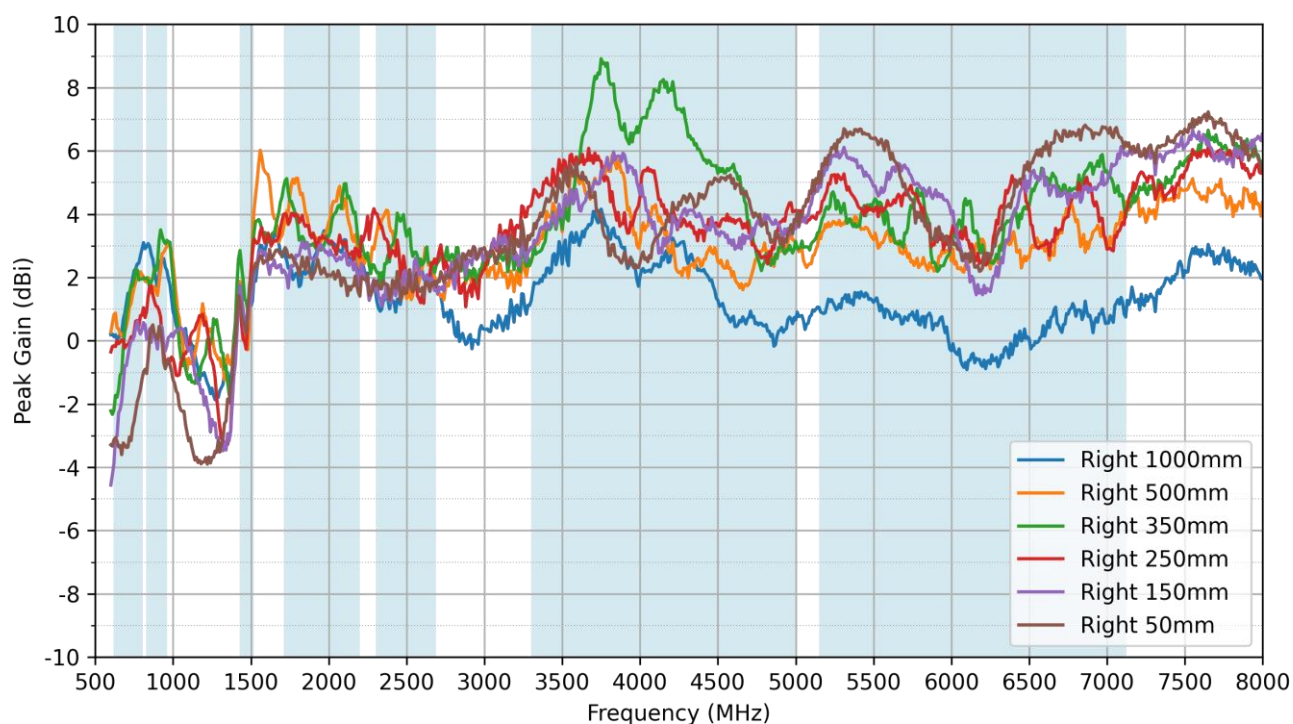




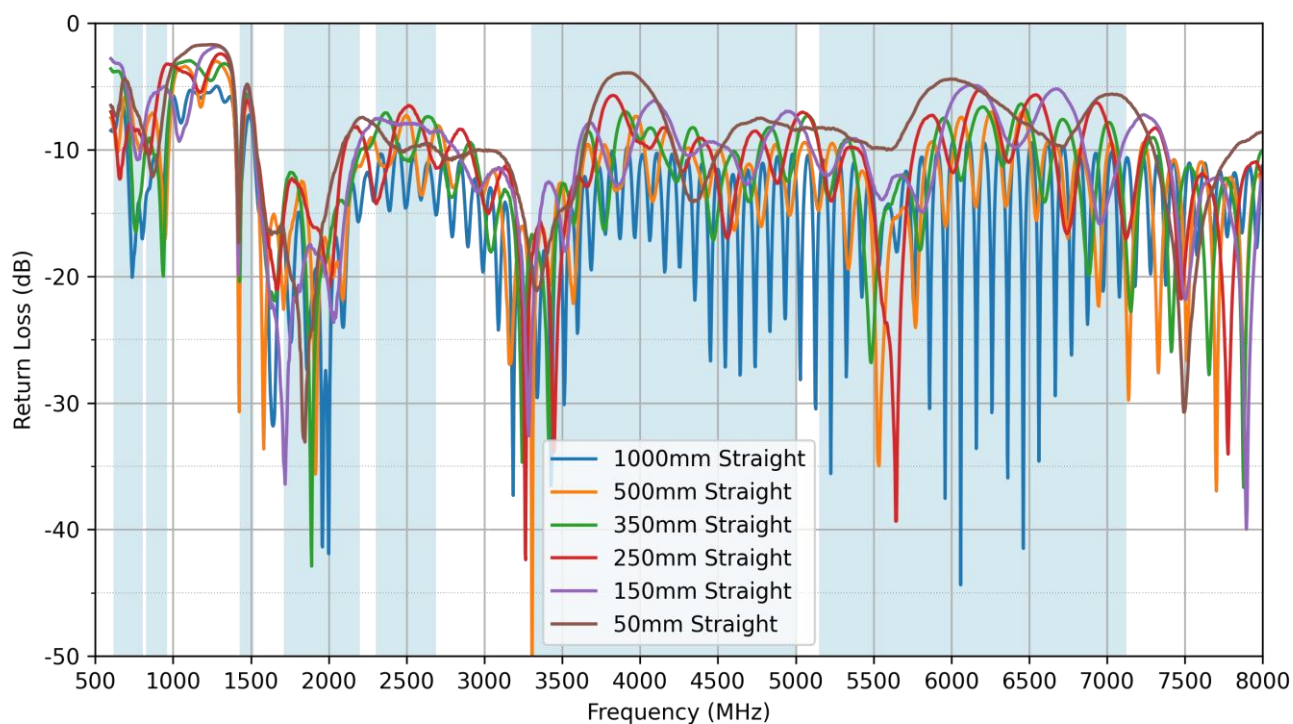
## 7.9 Average Gain – Feed From Right



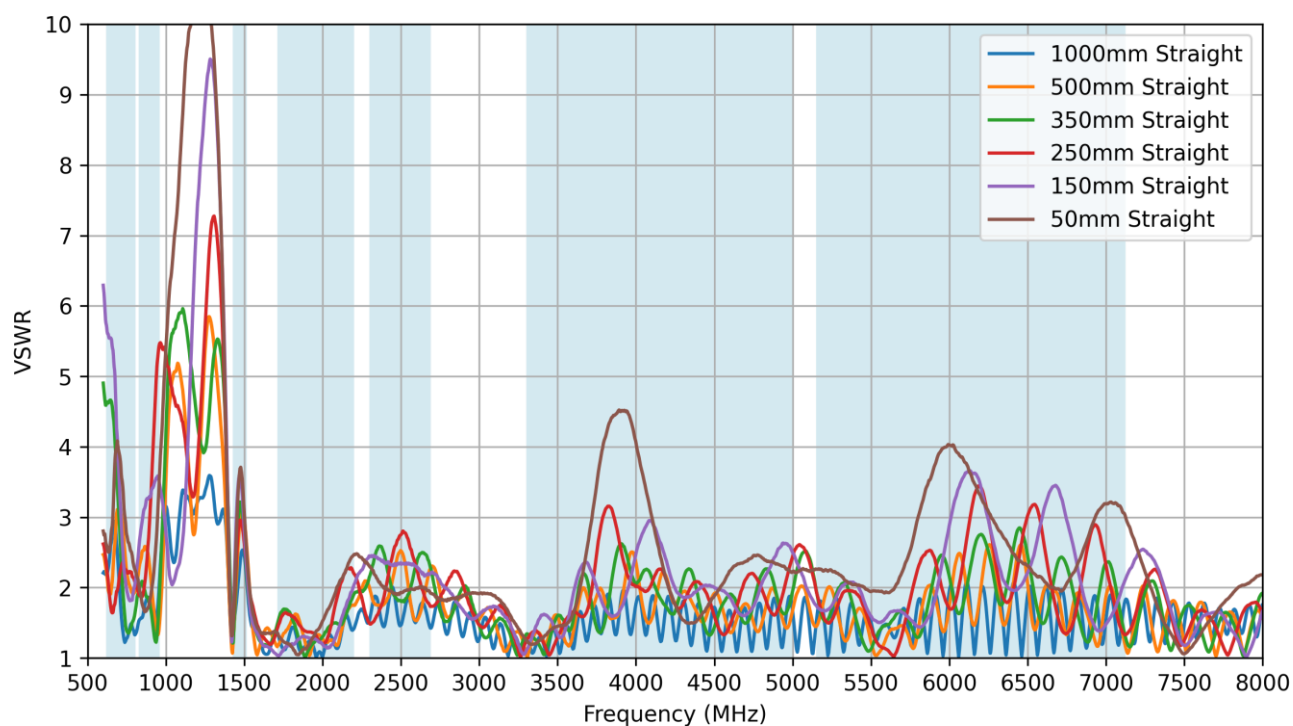
## 7.10 Peak Gain – Feed From Right



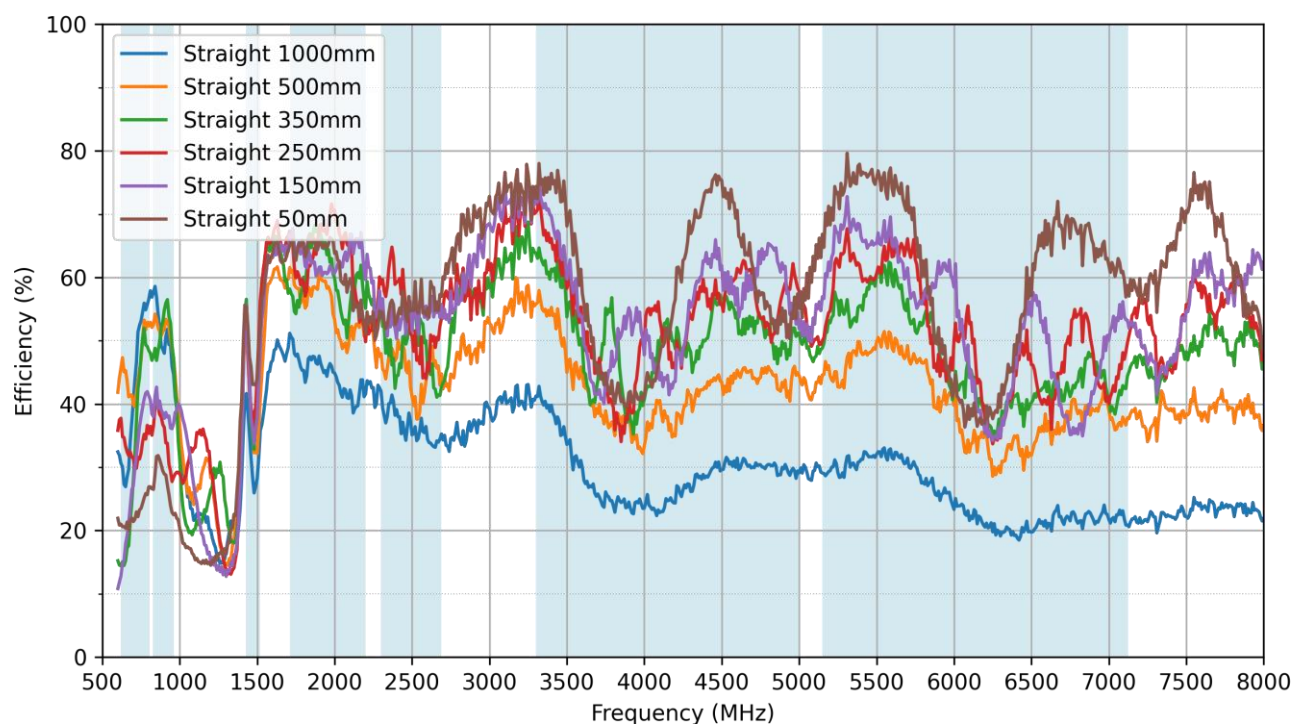
## 7.11 Return Loss – Feed Cable Straight



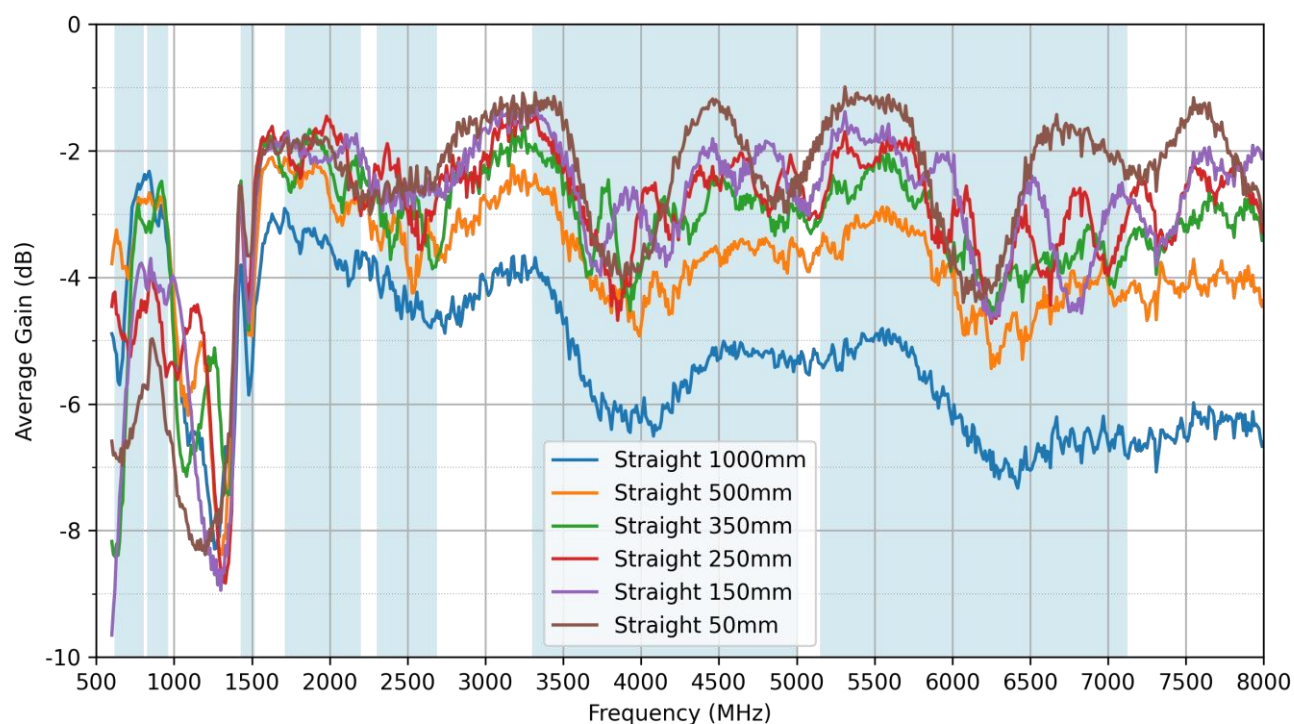
## 7.12 VSWR – Feed Cable Straight



### 7.13 Efficiency – Feed Cable Straight

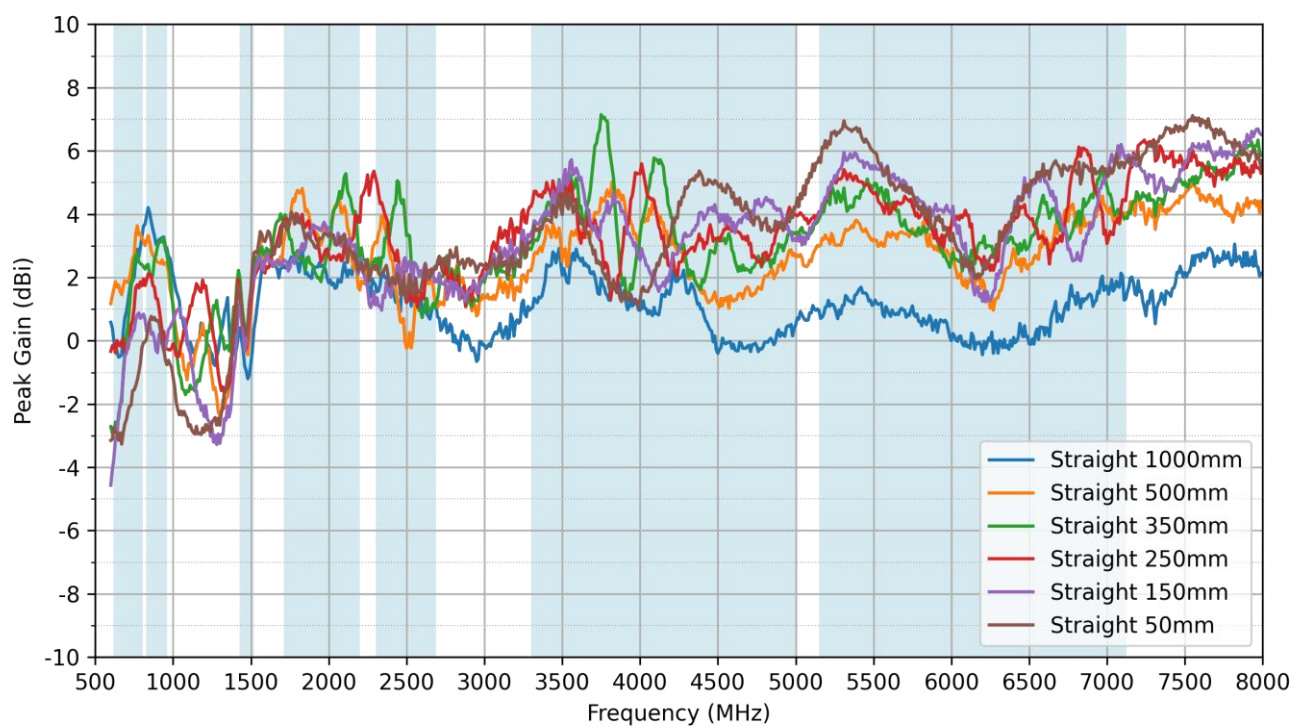


### 7.14 Average Gain – Feed Cable Straight





## 7.15 Peak Gain – Feed Cable Straight



Changelog for the datasheet

SPE-24-8-294 – FXUB06.07.0180AQ

Revision: A (Original First Release)

|         |                 |
|---------|-----------------|
| Date:   | 2024-12-04      |
| Notes:  | Initial Release |
| Author: | Gary West       |

Previous Revisions

|  |  |
|--|--|
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |



[www.taoglas.com](http://www.taoglas.com)

