



# TAOGLAS®



# Datasheet

## Taoglas Invisible Antenna™

**Part No:**  
TFX257.B

### Description

TFX257.B - Wi-Fi Transparent Antenna

### Features:

Wi-Fi (including Wi-Fi 6) 2.4-2.5, 4.9-5.8, 5.9-7.125GHz  
Transparent – Ultra Low Profile  
Dimensions: 32mm \* 114mm  
Connector: RP-SMA(F)  
RoHS & Reach Compliant

|           |                                |           |
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# 1. Introduction



The TFX257 is a first of its kind, invisible antenna designed to cover the entire spectrum of Wi-Fi bands. The TFX257 has been expertly engineered by Taoglas with innovation in mind, the design is based on our excellent design history in pioneering flexible PCB antenna technology. TFX257 is supplied with pre adhered adhesive for ease of installation and has an enclosed carrier terminated with a RP-SMA Female connector.

The invisible flexible antennas are an alternative to standard Flexible PCB antennas where the user may want to install an antenna in a covert area or on a surface, they may want to keep visible. The performance of the antenna is based on the environment where it is placed, care should be taken to mount at least 20mm from metal components where possible.

## Typical Applications Include:

- Automotive and Commercial Transportation
- EV Charging and Parking Bays
- Digital Signage and Display screens
- Point Of Sale Kiosks

The installation of the Taoglas Invisible Antenna™ series follows a similar installation method to flexible PCB antennas. Installing a transparent material may show obvious flaws/debris, take care to wipe the area clean before adhering the antenna. The flexible antenna can be disconnected from the body to make installation easier. Where support may be an issue, we would advise using a double-sided adhesive on the housing to ensure the housing body installation does not add any additional pull force to the antenna as this will affect the antenna's performance and the adhesive's performance. The feed is not designed to be load bearing and loads of over 0.5Kg can break or damage the feed resulting in the antenna disconnecting.

The TFX257 is connected via a RP-SMA Female connector for ease of installation. If a custom connector is required, please contact your regional Taoglas customer support team.

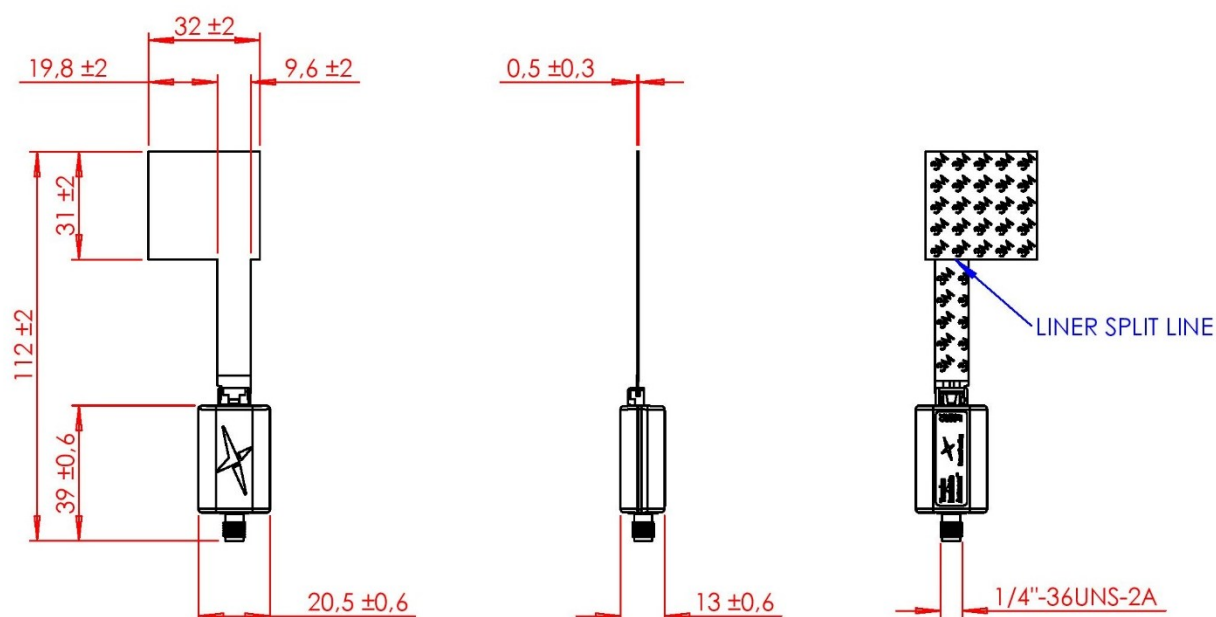
## 2. Specification

| Wi-Fi Electrical        |                 |                |                   |                 |           |              |                   |                  |
|-------------------------|-----------------|----------------|-------------------|-----------------|-----------|--------------|-------------------|------------------|
| Band                    | Frequency (MHz) | Efficiency (%) | Average Gain (dB) | Peak Gain (dBi) | Impedance | Polarization | Radiation Pattern | Max. input power |
| Wi-Fi - 2GHz            | 2400-2500       | 53.2           | -2.74             | 3.90            | 50 Ω      | Linear       | Omni              | 2W               |
| Wi-Fi - 5GHz            | 5150-5850       | 37.8           | -4.23             | 6.34            |           |              |                   |                  |
| Wi-Fi - 6GHz            | 5925-7125       | 28.4           | -5.47             | 5.65            |           |              |                   |                  |
| *Tested on 4mm Acrylic. |                 |                |                   |                 |           |              |                   |                  |

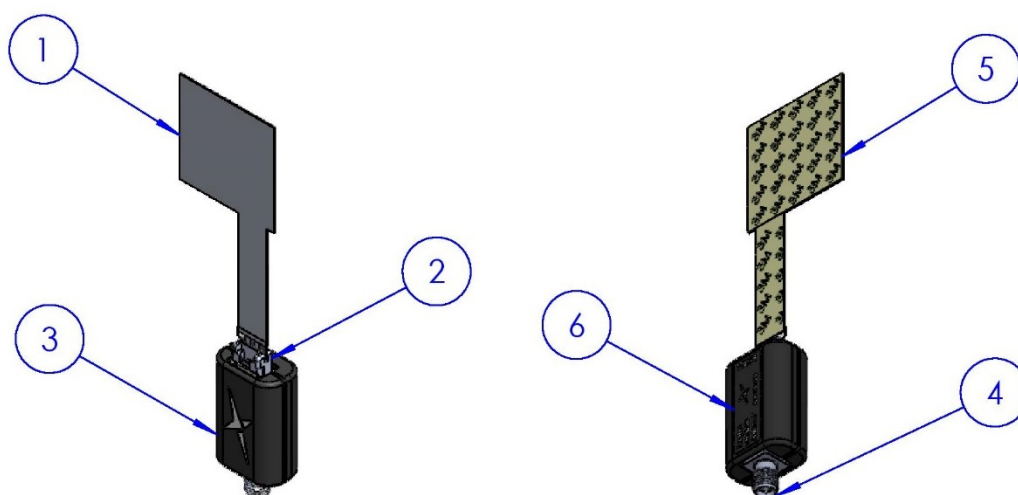
| Mechanical                       |                                         |
|----------------------------------|-----------------------------------------|
| Dimensions                       | 32 x 114mm                              |
| Weight                           | 5g                                      |
| Material (Housing)               | ABS/PC                                  |
| Material (Antenna)               | PET                                     |
| VLT (Visible Light Transmission) | 78.1% TCF (Transparent Conductive Film) |
| Connector                        | RP-SMA(F)                               |

| Environmental         |                            |
|-----------------------|----------------------------|
| Operation Temperature | -40°C to 85°C              |
| Storage Temperature   | -40°C to 85°C              |
| Relative Humidity     | Non-condensing 65°C 95% RH |

### 3. Mechanical Drawing

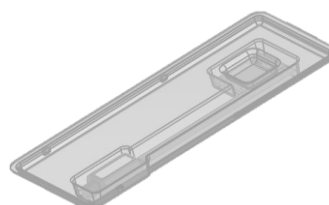


| ITEM NO. | DESCRIPTION                                                 | MATERIAL | FINISH      | QTY |
|----------|-------------------------------------------------------------|----------|-------------|-----|
| 1        | TRANSPARENT FLEX WI-FI ANTENNA COVERING 2.4 - 5 - 7.125 GHz | PET      | CLEAR       | 1   |
| 2        | FPC-to-BOARD CONNECTOR ADAPTOR 2 CONTACT                    | LCP      | BLACK       | 1   |
| 3        | ANTENNA PCB HOUSING                                         | ABS/PC   | BLACK       | 1   |
| 4        | RP-SMA(F)                                                   | BRASS    | GOLD        | 1   |
| 5        | ADHESIVE + LINER                                            | ADHESIVE | BROWN LINER | 1   |
| 6        | PATENT PENDING LABEL                                        | PET      | GLOSS       | 1   |

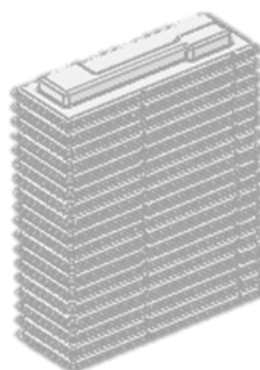


## 4. Packaging

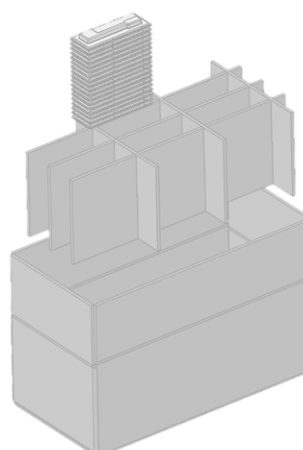
1 PCS / Blister Box  
Box: 216.6 x 84.5 x 19.3mm  
Weight: 34g



18 PCS / Column



216 PCS / Carton  
1 SET / Partition board  
Carton: 740 x 370 x 300mm  
Carton Label  
Weight: 9.42Kg



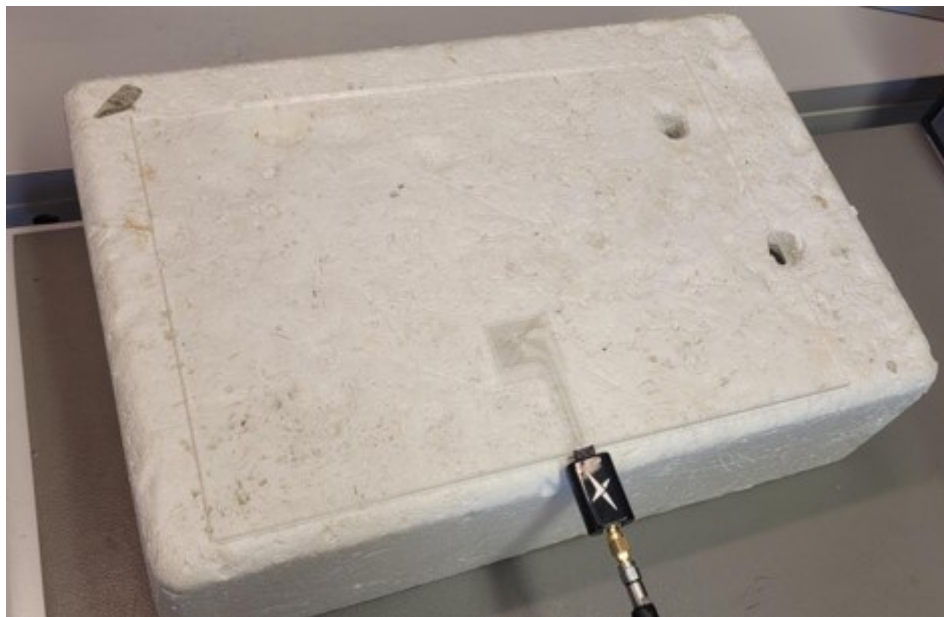
## 5. Antenna Characteristics

### 5.1 Test Setup

AUT

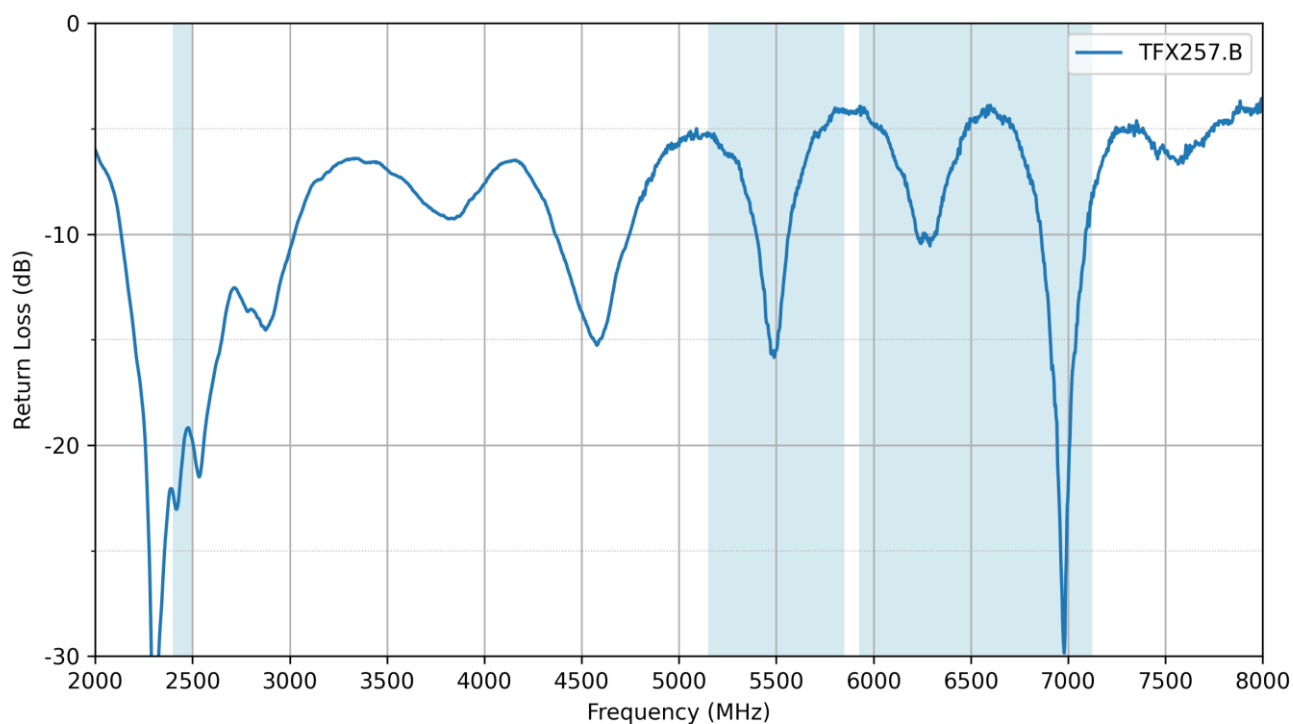


Vector Network Analyzer

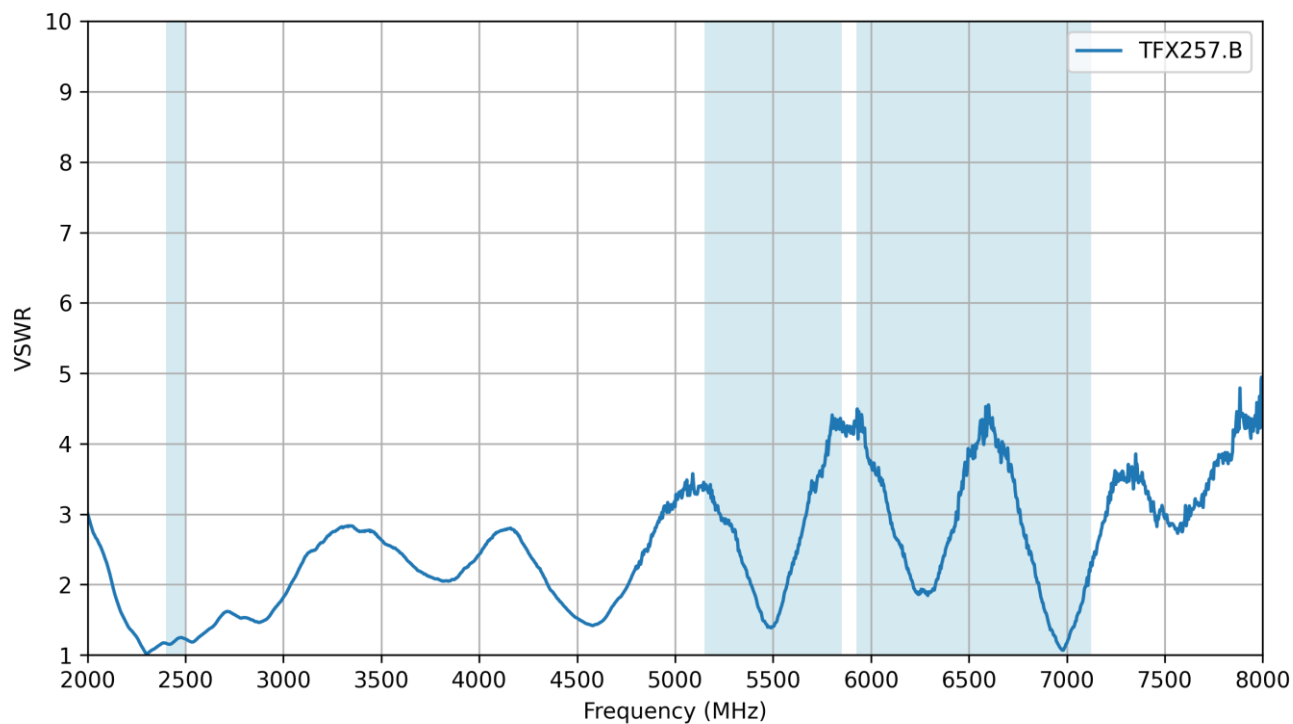


VNA Test Set-up on 4mm Acrylic

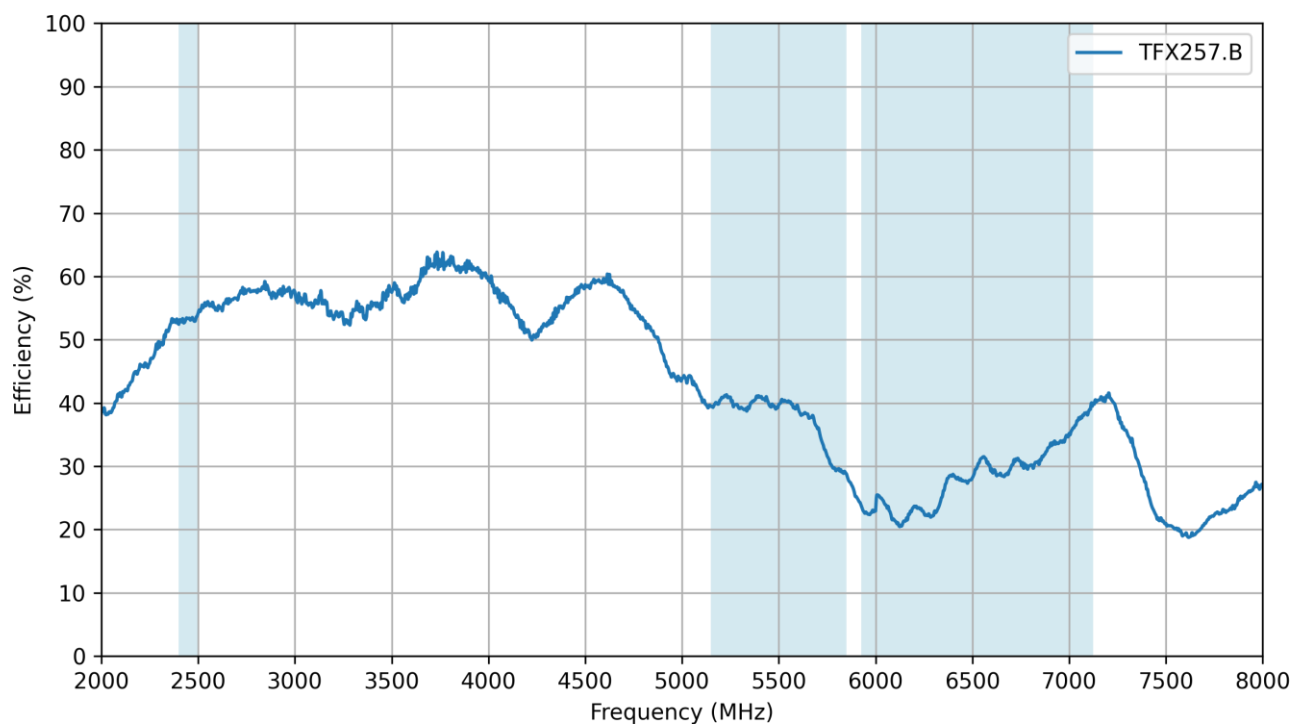
## 5.2 Return Loss



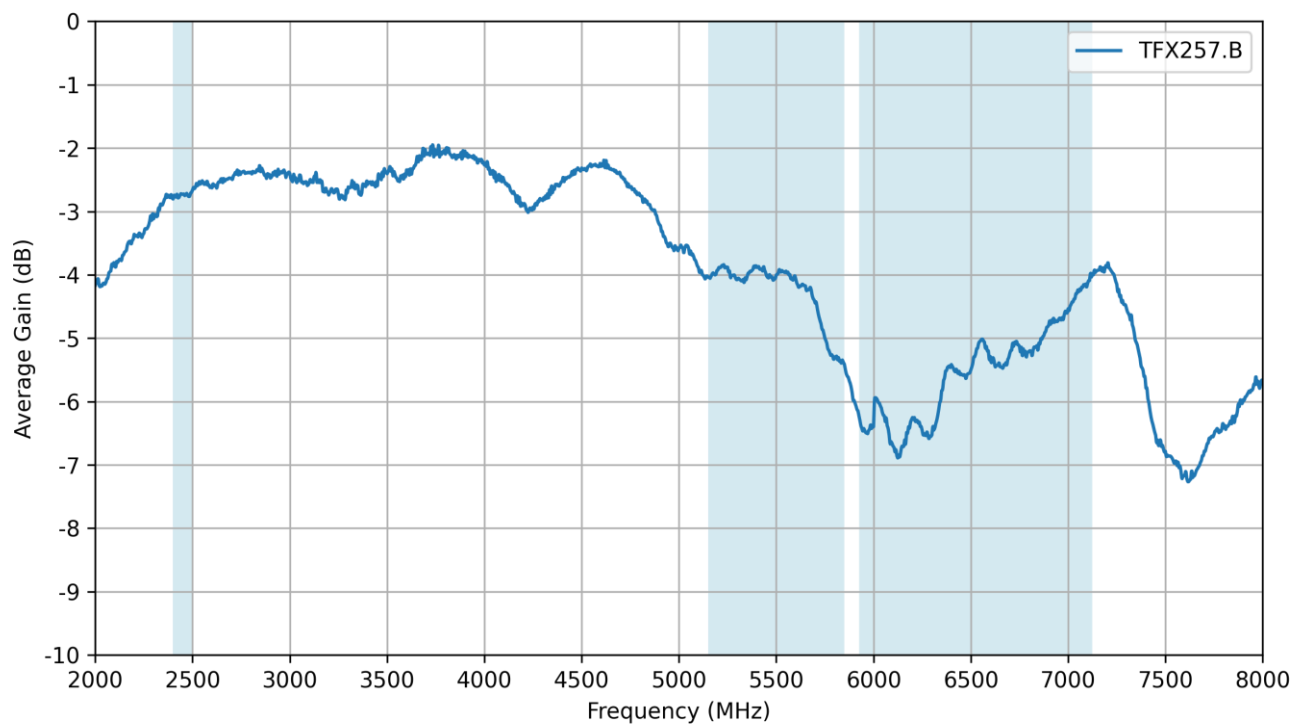
## 5.3 VSWR



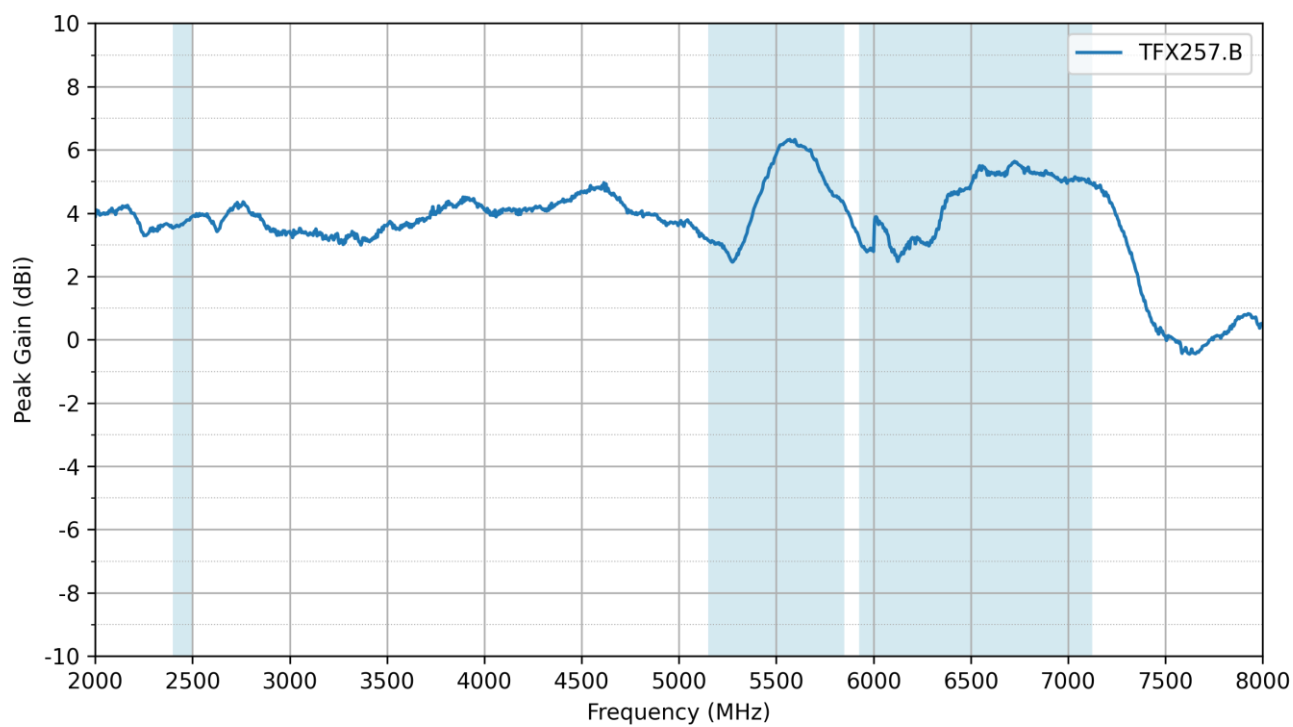
## 5.4 Efficiency



## 5.5 Average Gain

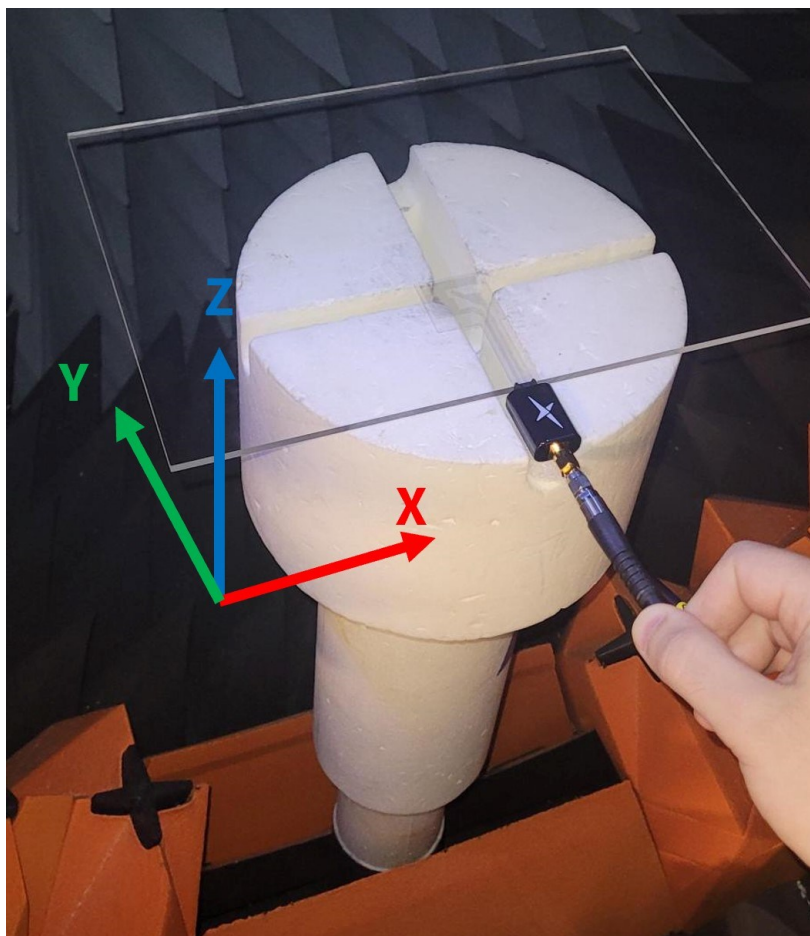
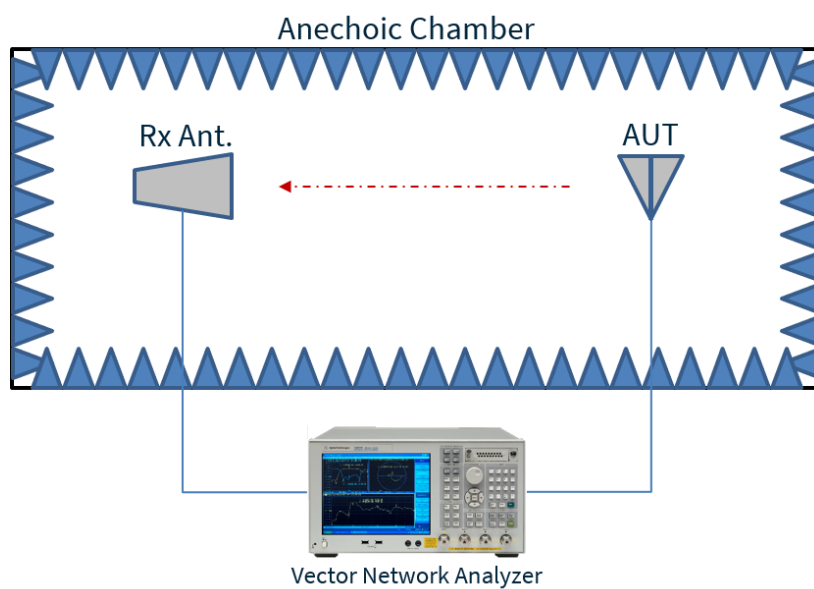


## 5.6 Peak Gain



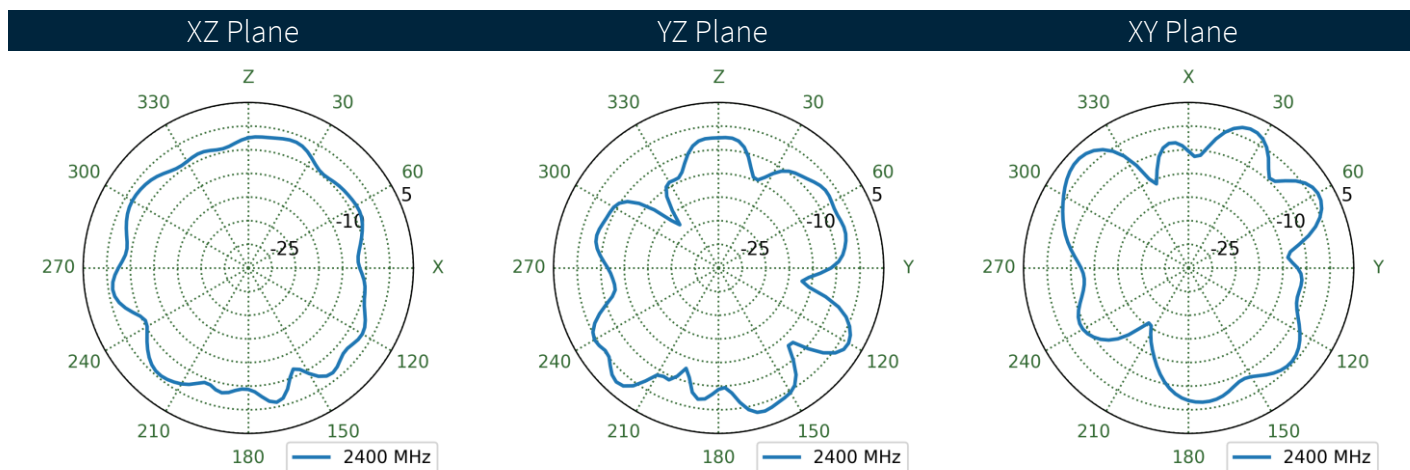
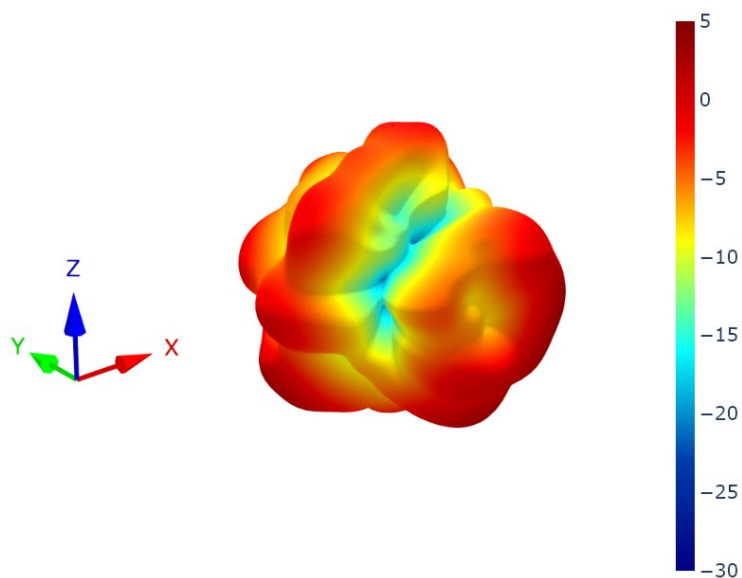
## 6. Radiation Patterns

### 6.1 Test Setup

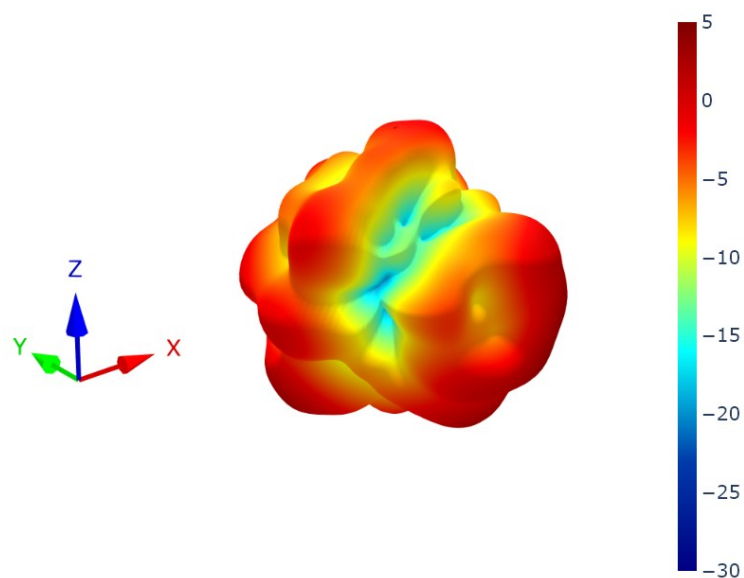


Chamber Test Set-up on 4mm Acrylic

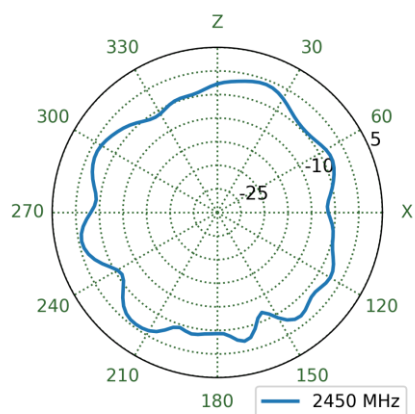
## 6.2 Patterns at 2400 MHz



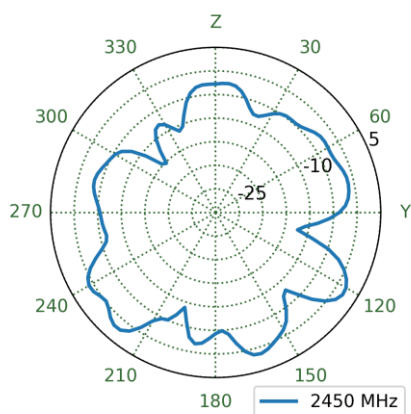
## 6.3 Patterns at 2450 MHz



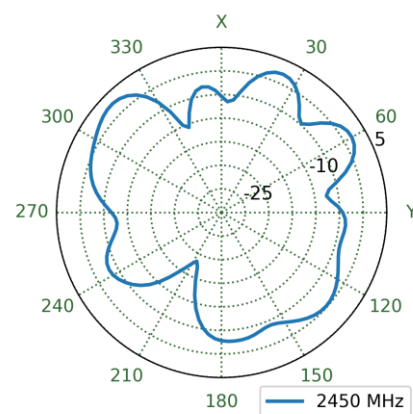
XZ Plane



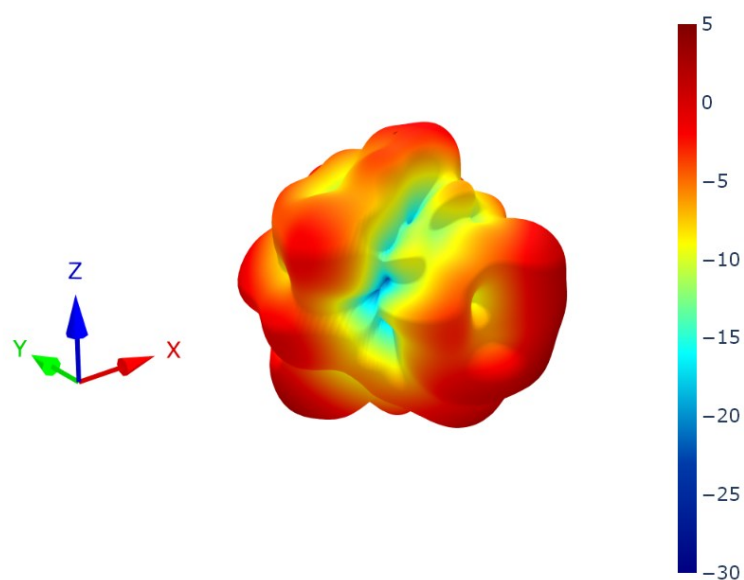
YZ Plane



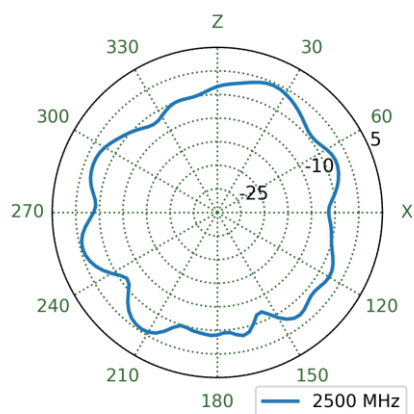
XY Plane



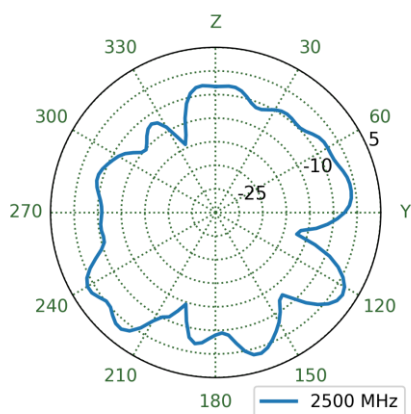
## 6.4 Patterns at 2500 MHz



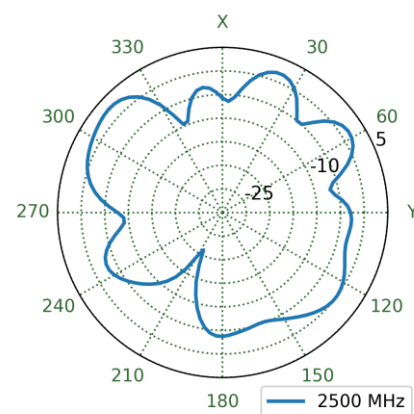
XZ Plane



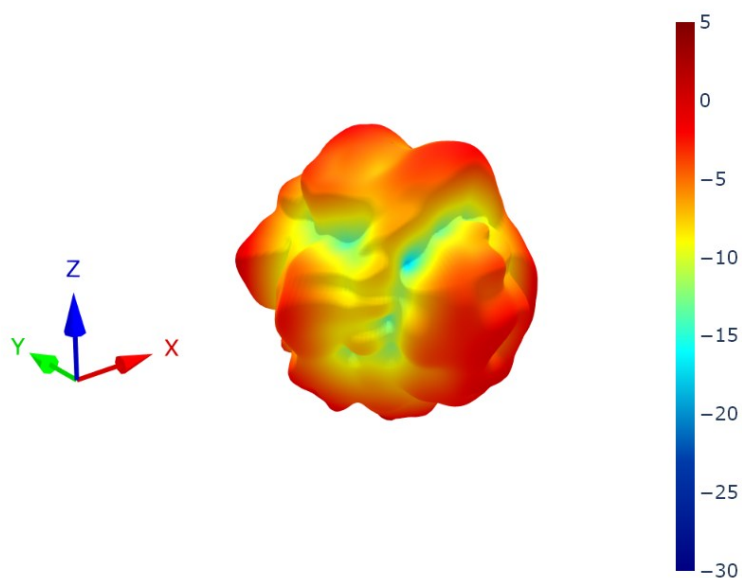
YZ Plane



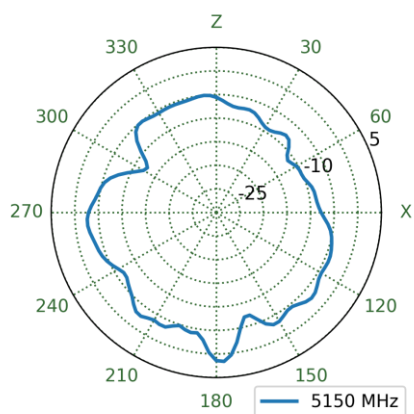
XY Plane



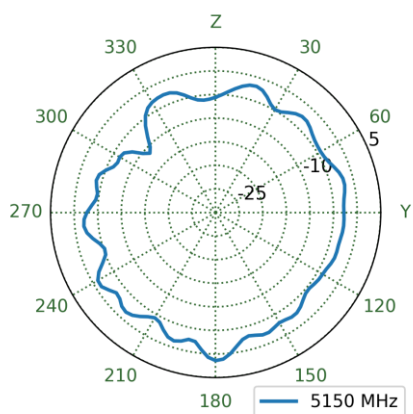
## 6.5 Patterns at 5150 MHz



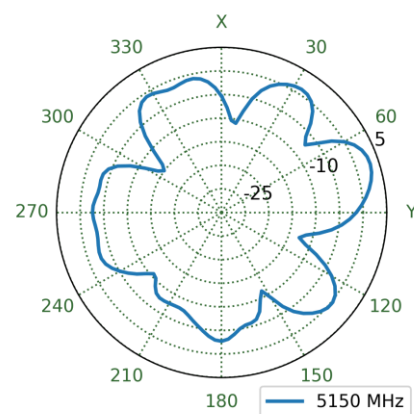
XZ Plane



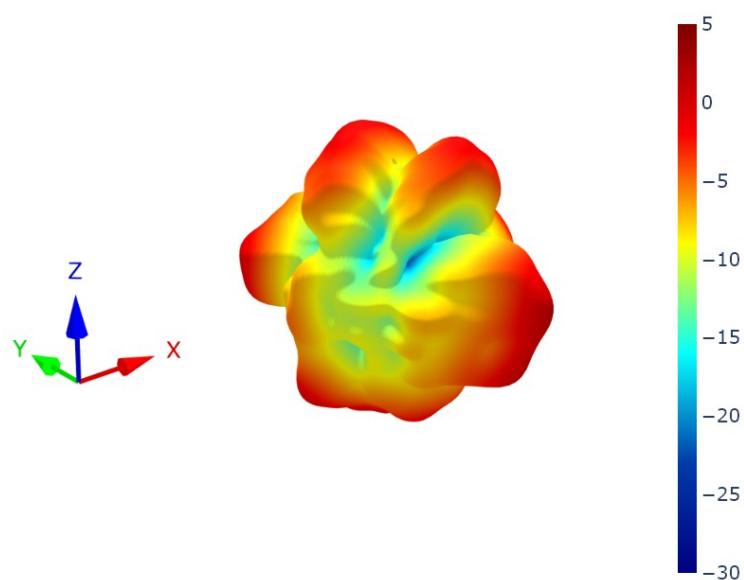
YZ Plane



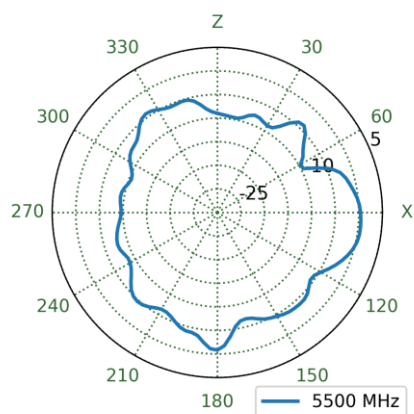
XY Plane



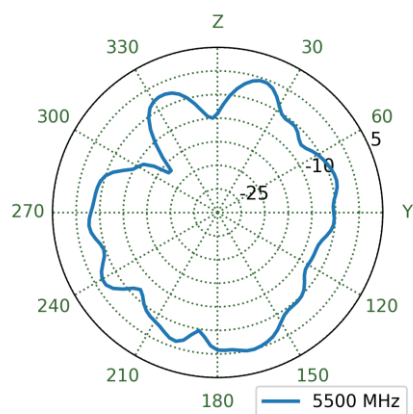
## 6.6 Patterns at 5500 MHz



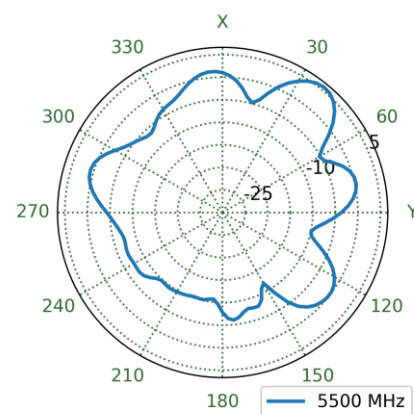
XZ Plane



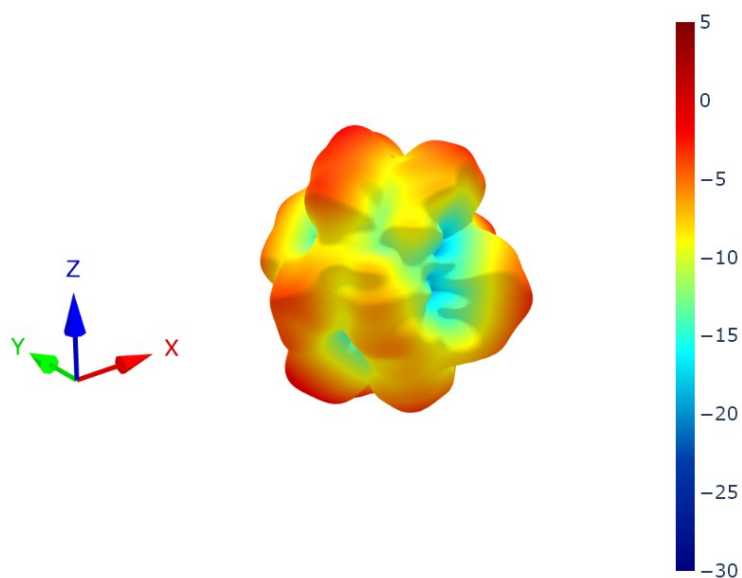
YZ Plane



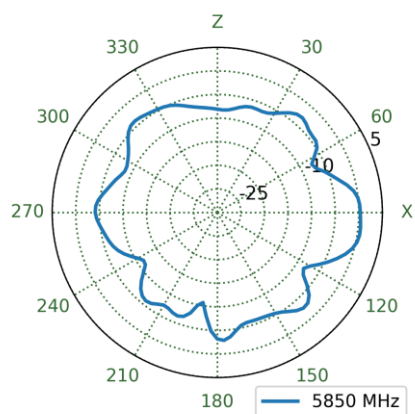
XY Plane



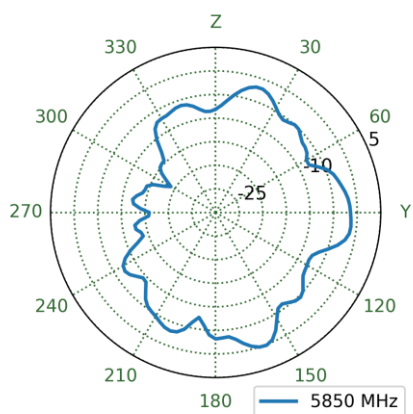
## 6.7 Patterns at 5850 MHz



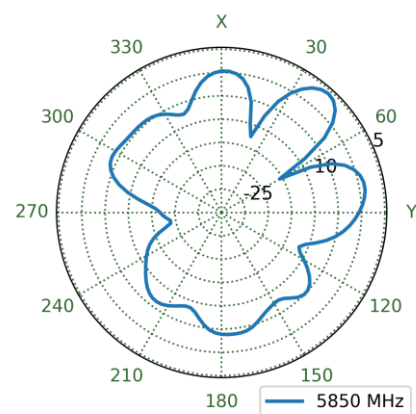
XZ Plane



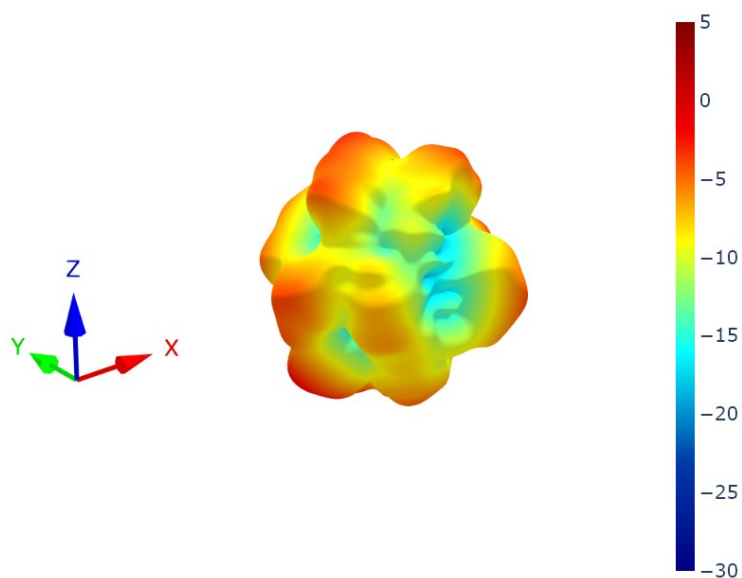
YZ Plane



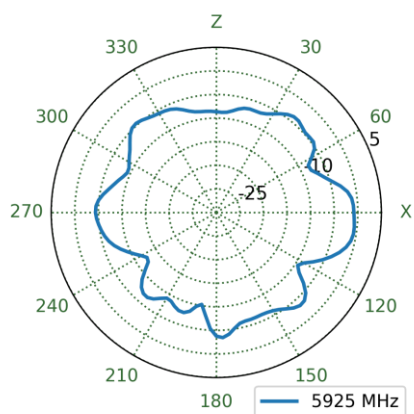
XY Plane



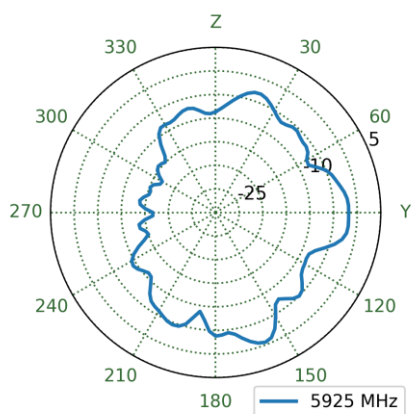
## 6.8 Patterns at 5925 MHz



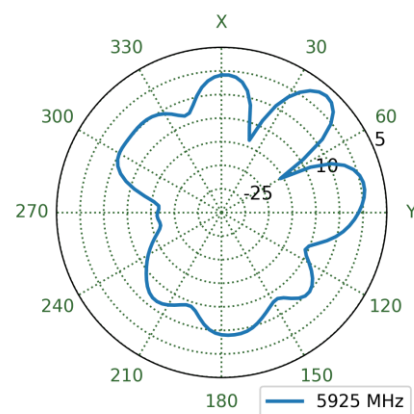
XZ Plane



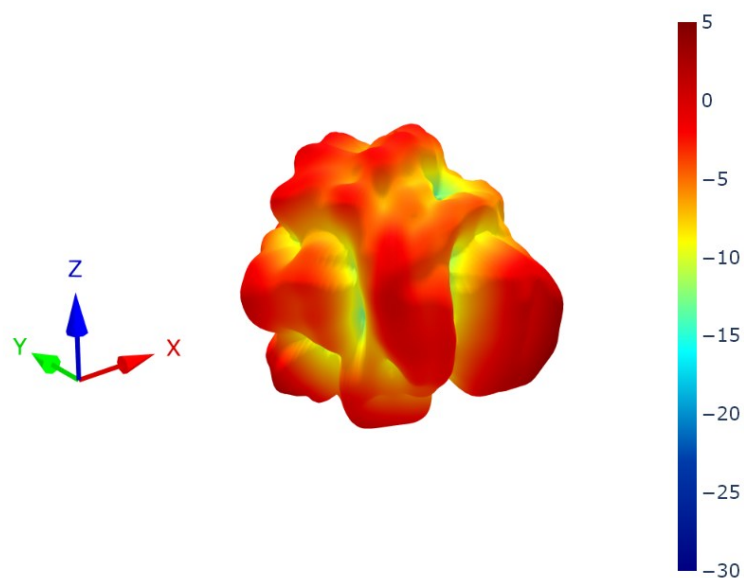
YZ Plane



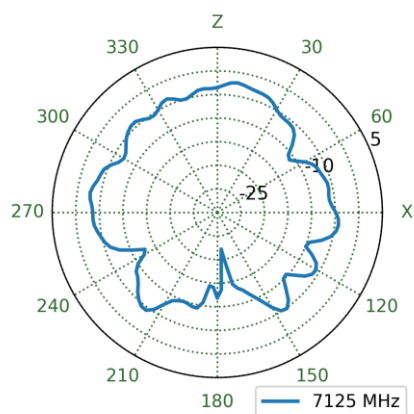
XY Plane



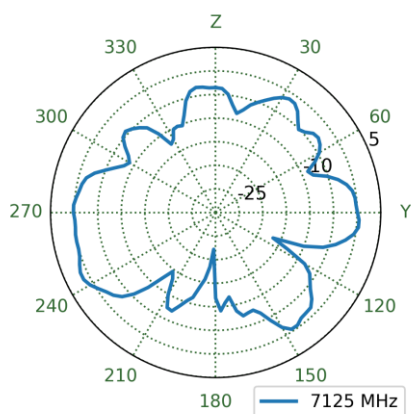
## 6.9 Patterns at 7125 MHz



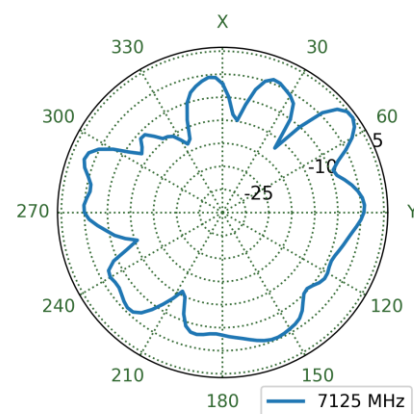
XZ Plane



YZ Plane



XY Plane



Changelog for the datasheet

SPE-22-8-228 – TFX257.B

Revision: A (Original First Release)

|         |                 |
|---------|-----------------|
| Date:   | 2024-09-17      |
| Notes:  | Initial Release |
| Author: | Gary West       |

Previous Revisions

|  |  |
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