



# TAOGLAS®



# Datasheet

## Discone One

**Part No:**  
**DCN.01.035111**

### **Description:**

400-6000MHz Wideband Discone Omnidirectional 5G/4G Antenna with 300mm TGC-200 & SMA(M)ST

### **Features:**

- High efficiency antenna covering 400-6000MHz
- Covers all worldwide cellular 5G/4G Cat-M/ LTE-M and NB-IoT bands
- Permanent/Wall/Pole mount antenna
- IP67 rated waterproof enclosure
- Cable: 300mm TGC-200
- Connector: SMA(M)ST
- Dimensions: 200\*200\*203mm
- RoHS & Reach Compliant



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# 1. Introduction



The Taoglas Discone One DCN.01 is a wideband, omnidirectional antenna that has been expertly engineered to cover all worldwide 5G and 4G bands, including all sub-6GHz deployments across the 400MHz to 6000MHz spectrum. It is designed primarily for use with 5G/4G modules and devices that require high efficiency – the Discone One boasts over 50% across the entire spectrum. With a high peak gain of up to 6.6dBi, it delivers best-in-class throughput on all major cellular bands worldwide.

It is innovatively designed to deliver reliability on new, dedicated mission-critical communications bands between 400-500MHz. Additionally, it covers extended 4G, band 71, and all 5G NR Sub 6GHz bands while also covering 3G/2G bands to allow for fallback when 5G/4G isn't available – keeping applications and devices connected when it's most needed.

Typical applications include:

- Mission-Critical Smart Grid Applications
- Remote Asset and Pipeline Monitoring
- Next Generation OEM Automotive Connectivity
- First Responder and Emergency Services
- Military and Defense Applications

The heavy-duty, fully IP67 rated external ABS enclosure allows this antenna to be mounted in harsh external environments where a robust, waterproof antenna is required. With high peak gains and high efficiencies over frequencies from 400-6000MHz, the Discone One is a fantastic solution for wideband cellular applications.

5G applications demand high-speed data uplink and downlink. High efficiency and high gain antennas are necessary to achieve the required signal-to-noise ratio and throughput required to solve these challenges. Low-loss TGC-200 cable is used to keep efficiency high over long cable lengths. The cable length and connector types are customizable. Contact your regional Taoglas customer support team for more information.

## 2. Specifications

| Electrical   |                 |            |                |                   |                 |           |                 |              |                   |
|--|-----------------|------------|----------------|-------------------|-----------------|-----------|-----------------|--------------|-------------------|
| Band   | Frequency (MHz) | Condition  | Efficiency (%) | Average Gain (dB) | Peak Gain (dBi) | Impedance | Max Input Power | Polarization | Radiation Pattern |
| <b>4G/3G</b><br>Band 31,87,88,126                    | 400~480         | Free Space | 65.9           | -1.8              | 1.2             | 50 Ω      | 20W             | Linear       | Omni-Directional  |
|  |                 | GND Plane  | 61.4           | -2.1              | 0.6             |           |                 |              |                   |
| <b>5G NR/4G</b><br>Band 71                           | 617~698         | Free Space | 62.9           | -2                | 1.8             |           |                 |              |                   |
|  |                 | GND Plane  | 62.1           | -2.1              | 1.6             |           |                 |              |                   |
| <b>4G/3G</b><br>Band 12,13,14,17,28,29               | 698~806         | Free Space | 59.1           | -2.3              | 0.7             |           |                 |              |                   |
|  |                 | GND Plane  | 65.1           | -1.9              | 4.7             |           |                 |              |                   |
| <b>4G/3G/NB-IoT/Cat M</b><br>Band 5,8,18,19,20,26,27 | 824~960         | Free Space | 62.2           | -2.1              | 3.4             |           |                 |              |                   |
|  |                 | GND Plane  | 67.2           | -1.7              | 4.9             |           |                 |              |                   |
| <b>5G NR/4G</b><br>Band 21,32,74,75,76               | 1427~1518       | Free Space | 72.6           | -1.4              | 3.2             |           |                 |              |                   |
|  |                 | GND Plane  | 63.7           | -2                | 5               |           |                 |              |                   |
| <b>4G/3G</b><br>Band 1,2,3,4,9,23,25,35,39,66        | 1710~2200       | Free Space | 74.3           | -1.3              | 3.9             |           |                 |              |                   |
|  |                 | GND Plane  | 75.2           | -1.2              | 6.6             |           |                 |              |                   |
| <b>4G/3G</b><br>Band 7,30,38,40,41                   | 2300~2690       | Free Space | 75.1           | -1.2              | 4.7             |           |                 |              |                   |
|  |                 | GND Plane  | 73.4           | -1.4              | 4.1             |           |                 |              |                   |
| <b>5G NR/4G</b><br>Band 22,42,48,77,78,79            | 3300~5000       | Free Space | 78.1           | -1.1              | 4.6             |           |                 |              |                   |
|  |                 | GND Plane  | 75.4           | -1.2              | 4.8             |           |                 |              |                   |
| <b>LTE5200/<br/>Wi-Fi 5800</b>                       | 5150~5925       | Free Space | 58.6           | -2.3              | 4.7             |           |                 |              |                   |
|  |                 | GND Plane  | 56.9           | -2.5              | 6.5             |           |                 |              |                   |

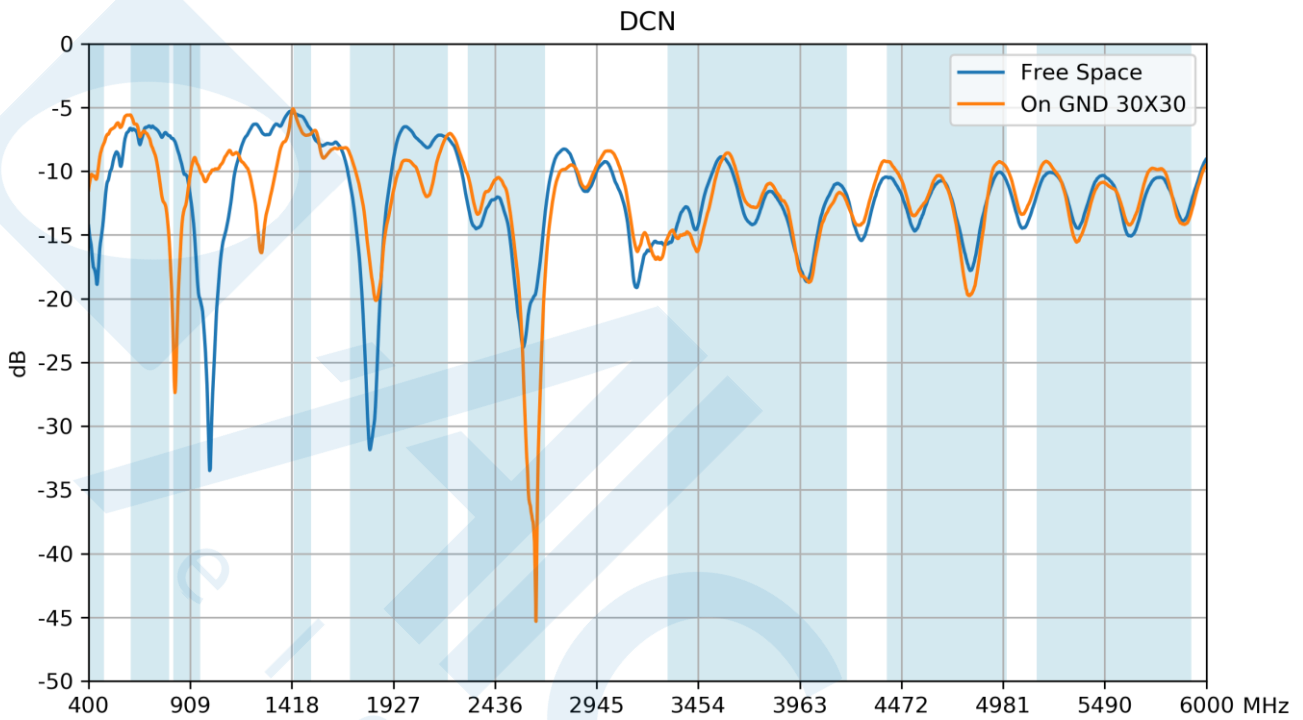
\*GND Plane size: 300x300mm

| Mechanical         |                                    |
|--------------------|------------------------------------|
| Height             | 203mm                              |
| Planar Dimension   | 200mm * 200mm                      |
| Casing             | ABS                                |
| Cable              | 300mm TGC200 – Fully Customizable  |
| Connector          | SMA(M) - Plug – Fully Customizable |
| Sealant            | Rubber Stopper                     |
| Thread Size        | M22                                |
| Bracket Dimensions | 140*190*119mm                      |
| Weight             | 550 g (Not Including Packaging)    |
| Environmental      |                                    |
| Protection         | IP67                               |
| Temperature Range  | -40°C to 85°C                      |
| Humidity           | Non-condensing 65°C 95% RH         |
| Cable Pull         | TGC200 - 9Kgf                      |

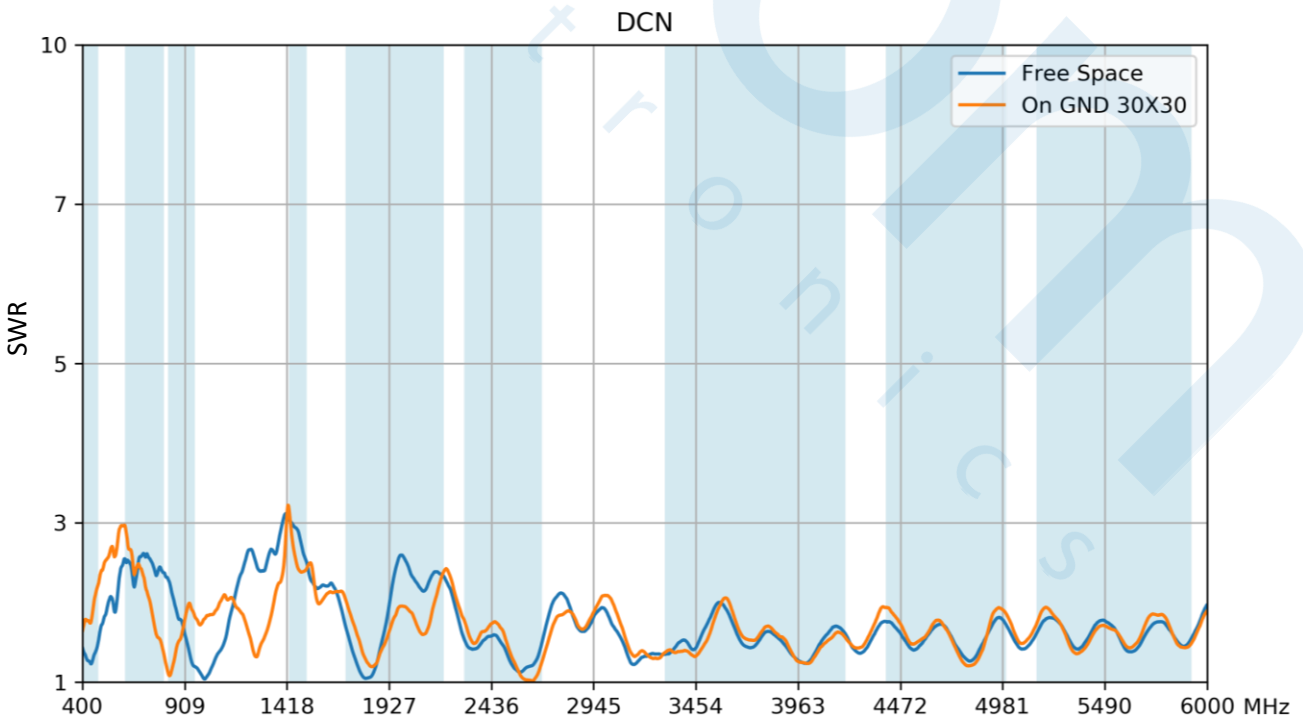
| 5G/4G Bands |   |                      |         |
|-------------|---|----------------------|---------|
| Band Number | 5GNR / FR1 / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / TD-SCDMA |                      |         |
|             | Uplink  | Downlink             | Covered |
| 1           | UL: 1920 to 1980  | DL: 2110 to 2170     | ✓       |
| 2           | UL: 1850 to 1910  | DL: 1930 to 1990     | ✓       |
| 3           | UL: 1710 to 1785  | DL: 1805 to 1880     | ✓       |
| 4           | UL: 1710 to 1755  | DL: 2110 to 2155     | ✓       |
| 5           | UL: 824 to 849  | DL: 869 to 894       | ✓       |
| 7           | UL: 2500 to 2570  | DL: 2620 to 2690     | ✓       |
| 8           | UL: 880 to 915  | DL: 925 to 960       | ✓       |
| 9           | UL: 1749.9 to 1784.9  | DL: 1844.9 to 1879.9 | ✓       |
| 11          | UL: 1427.9 to 1447.9  | DL: 1475.9 to 1495.9 | ✓       |
| 12          | UL: 699 to 716  | DL: 729 to 746       | ✓       |
| 13          | UL: 777 to 787  | DL: 746 to 756       | ✓       |
| 14          | UL: 788 to 798  | DL: 758 to 768       | ✓       |
| 17          | UL: 704 to 716  | DL: 734 to 746       | ✓       |
| 18          | UL: 815 to 830  | DL: 860 to 875       | ✓       |
| 19          | UL: 830 to 845  | DL: 875 to 890       | ✓       |
| 20          | UL: 832 to 862  | DL: 791 to 821       | ✓       |
| 21          | UL: 1447.9 to 1462.9  | DL: 1495.9 to 1510.9 | ✓       |
| 22          | UL: 3410 to 3490  | DL: 3510 to 3590     | ✓       |
| 23          | UL: 2000 to 2020  | DL: 2180 to 2200     | ✓       |
| 24          | UL: 1625.5 to 1660.5  | DL: 1525 to 1559     | ✓       |
| 25          | UL: 1850 to 1915  | DL: 1930 to 1995     | ✓       |
| 26          | UL: 814 to 849  | DL: 859 to 894       | ✓       |
| 27          | UL: 807 to 824  | DL: 852 to 869       | ✓       |
| 28          | UL: 703 to 748  | DL: 758 to 803       | ✓       |
| 29          | UL: -   | DL: 717 to 728       | ✓       |
| 30          | UL: 2305 to 2315  | DL: 2350 to 2360     | ✓       |
| 31          | UL: 452.5 to 457.5  | DL: 462.5 to 467.5   | ✓       |
| 32          | UL: -   | DL: 1452 – 1496      | ✓       |
| 35          |   | 1850 to 1910         | ✓       |
| 38          |   | 2570 to 2620         | ✓       |
| 39          |   | 1880 to 1920         | ✓       |
| 40          |   | 2300 to 2400         | ✓       |
| 41          |   | 2496 to 2690         | ✓       |
| 42          |   | 3400 to 3600         | ✓       |
| 43          |   | 3600 to 3800         | ✓       |
| 48          |   | 3550 to 3700         | ✓       |
| 66          | UL: 1710-1780   | DL: 2110-2200        | ✓       |
| 71          |   | 617 to 698           | ✓       |
| 74/75/76    |   | 1427 to 1518         | ✓       |
| 77          |   | 3300 to 4200         | ✓       |
| 78          |   | 3300 to 3800         | ✓       |
| 79          |   | 4400 to 5000         | ✓       |
| 85          |   | 698 to 746           | ✓       |
| 87/88       |   | 410 to 427           | ✓       |

### 3. Antenna Characteristics

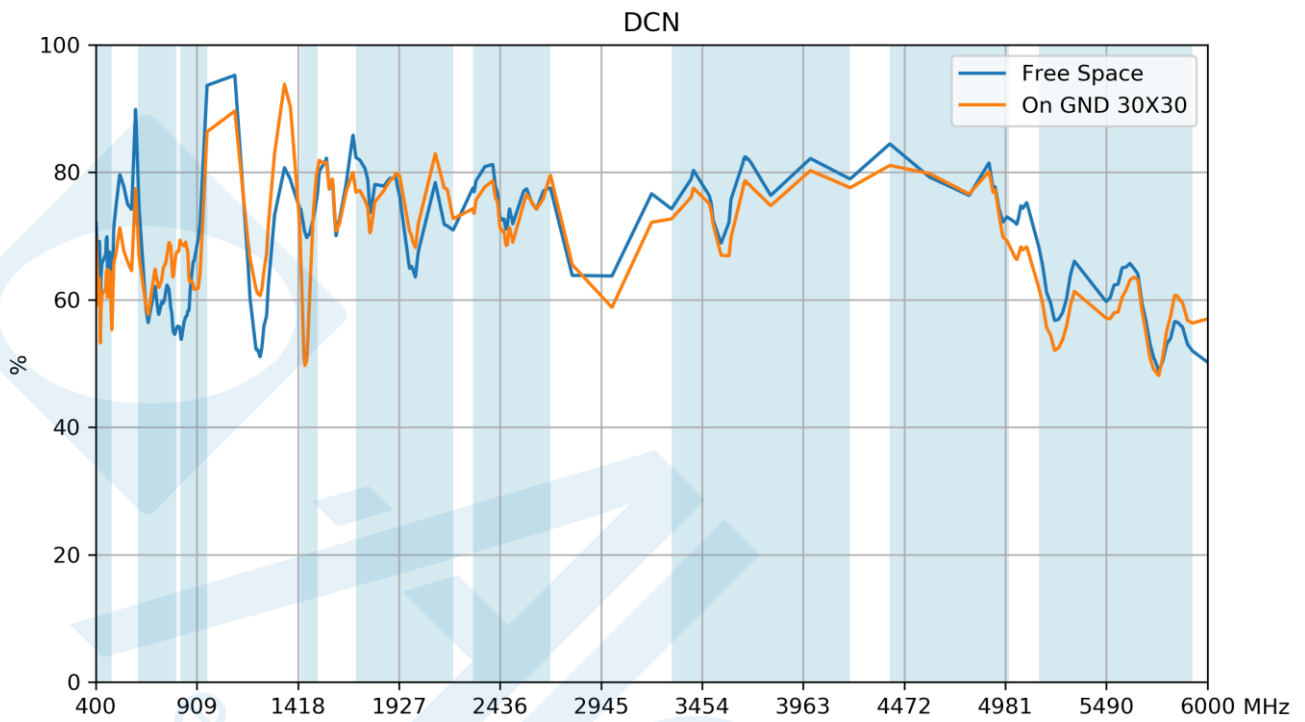
#### 3.1 Return Loss



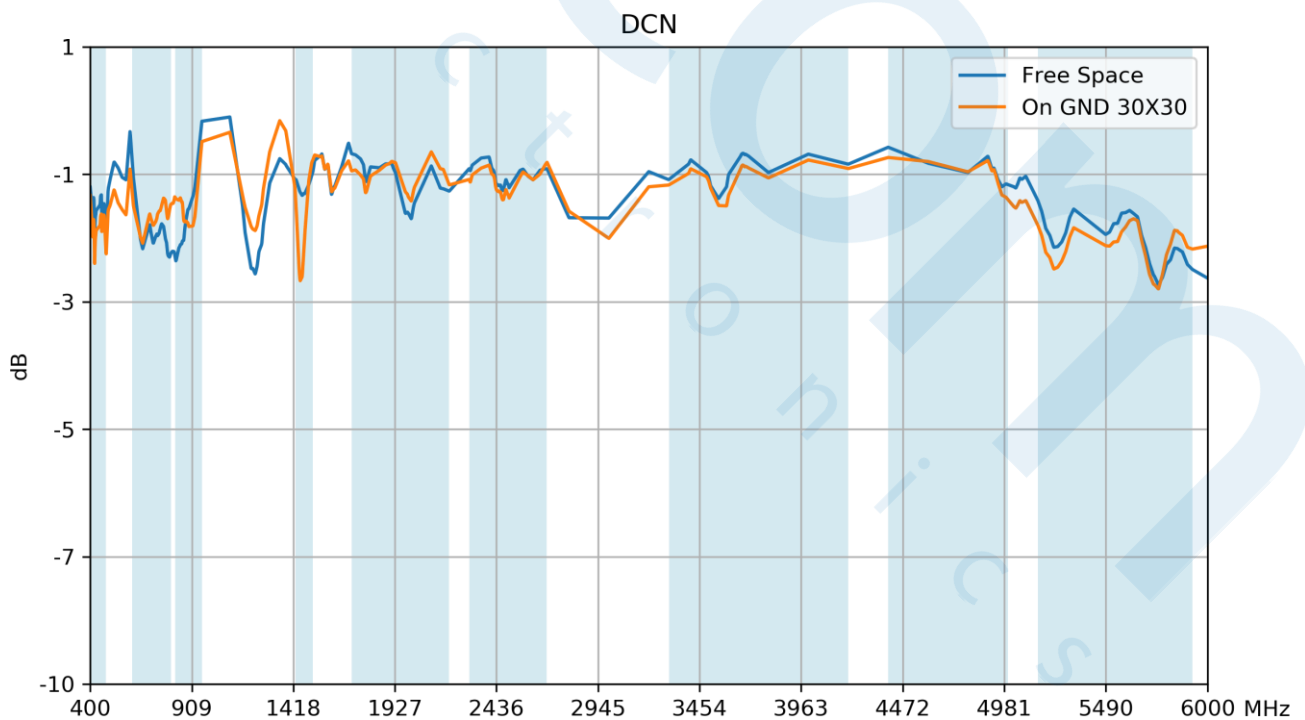
#### 3.2 VSWR



### 3.3 Efficiency

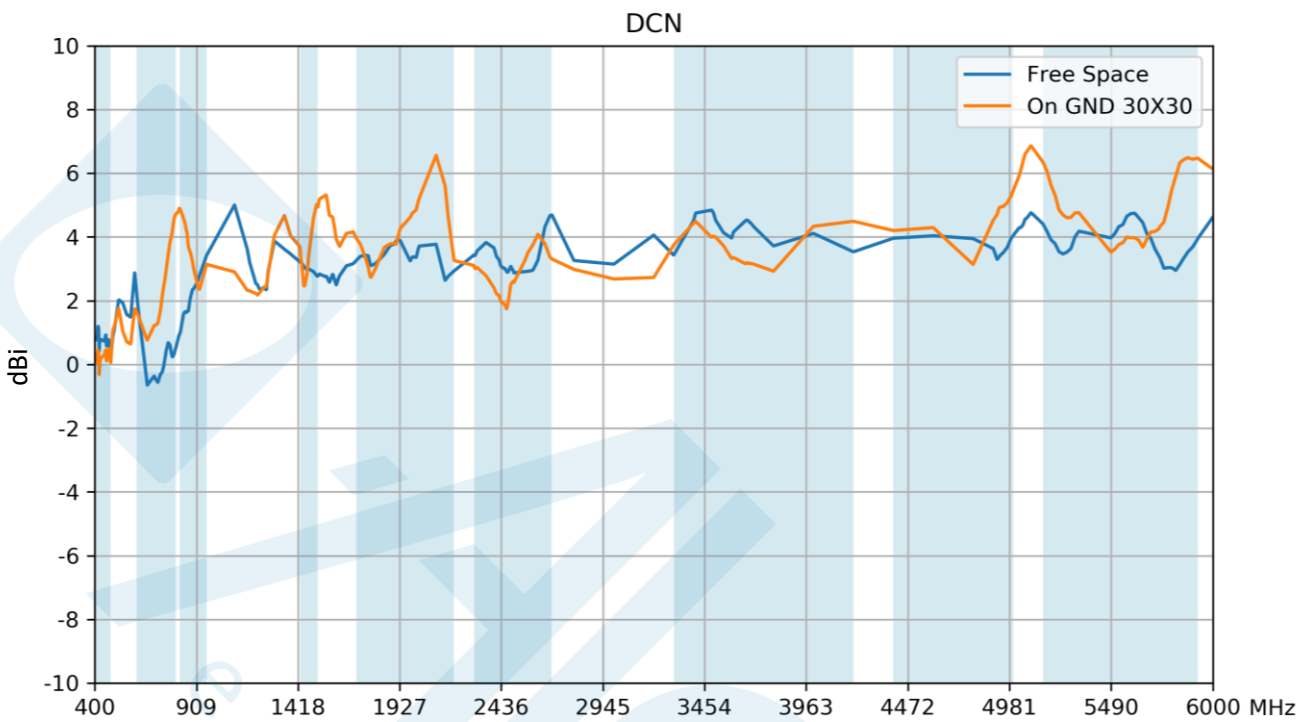


### 3.4 Average Gain





3.5 Peak Gain



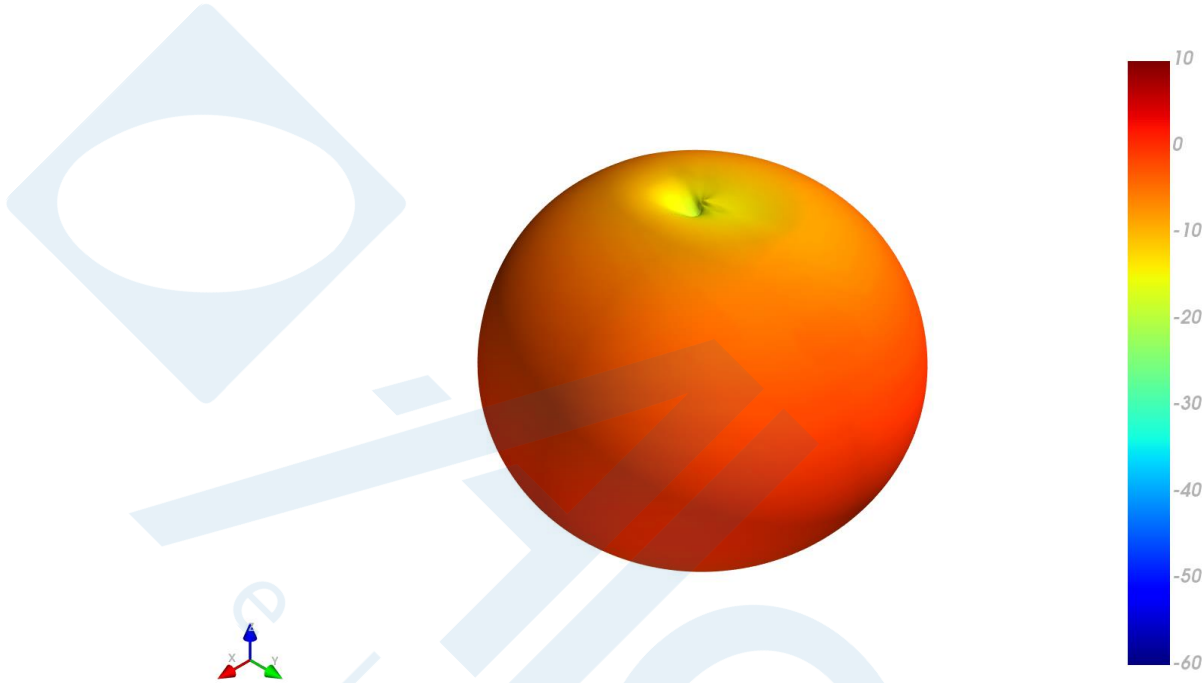
## 4. Radiation Patterns

### 4.1 Test Setup on 300x300mm Ground Plane

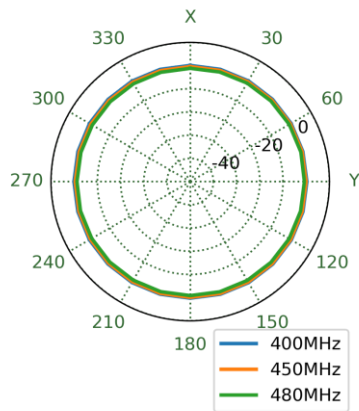


4.2 300\*300mm Ground Plane 3D and 2D Radiation Patterns

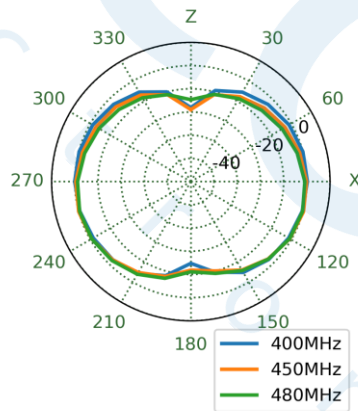
450MHz



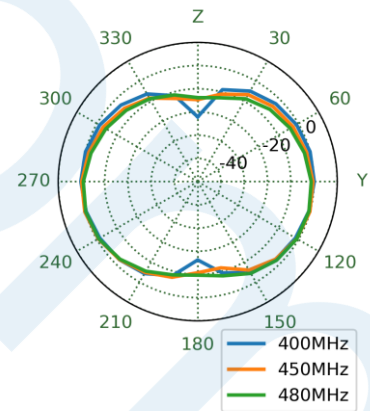
XY Plane



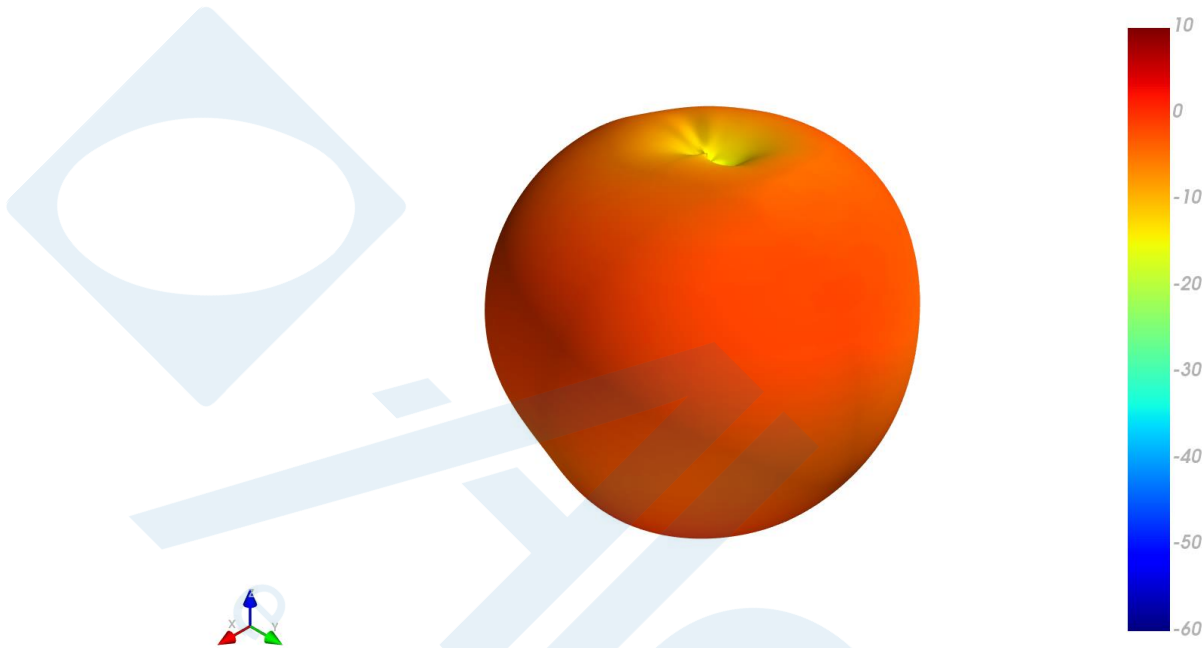
XZ Plane



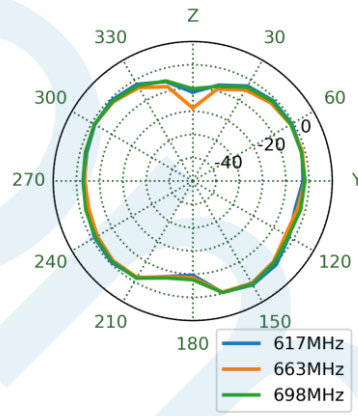
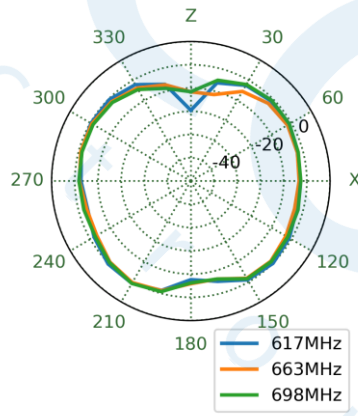
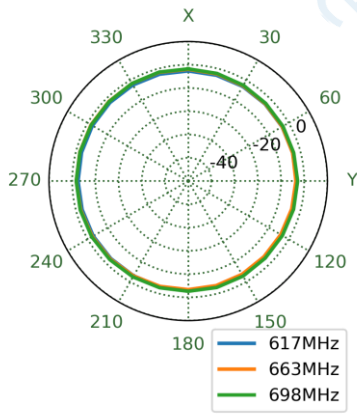
YZ Plane



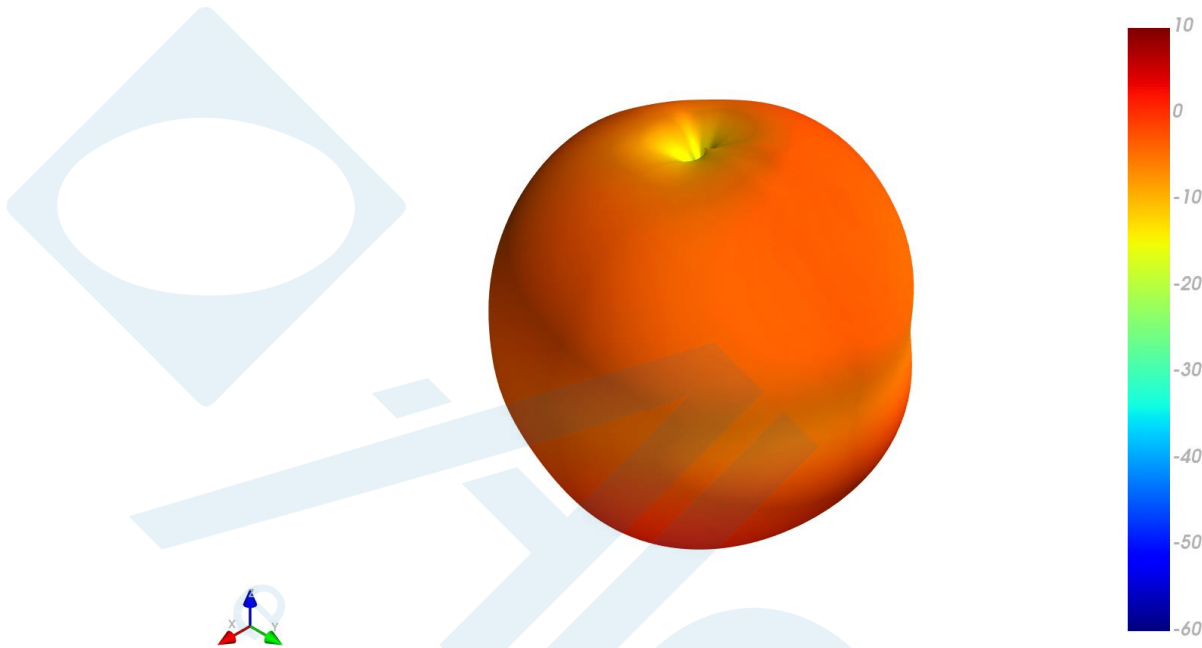
# 663MHz



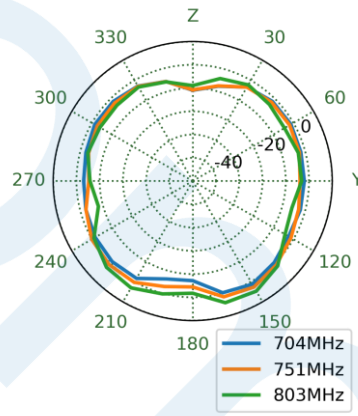
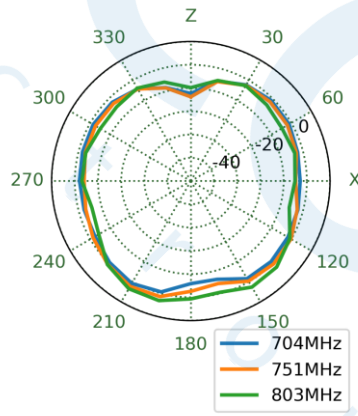
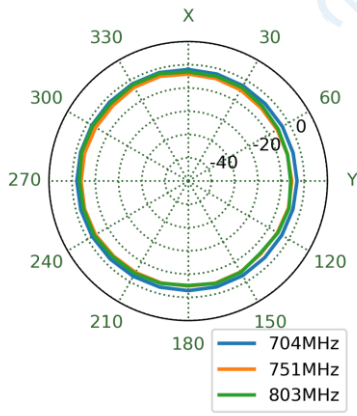
## XY Plane      XZ Plane      YZ Plane



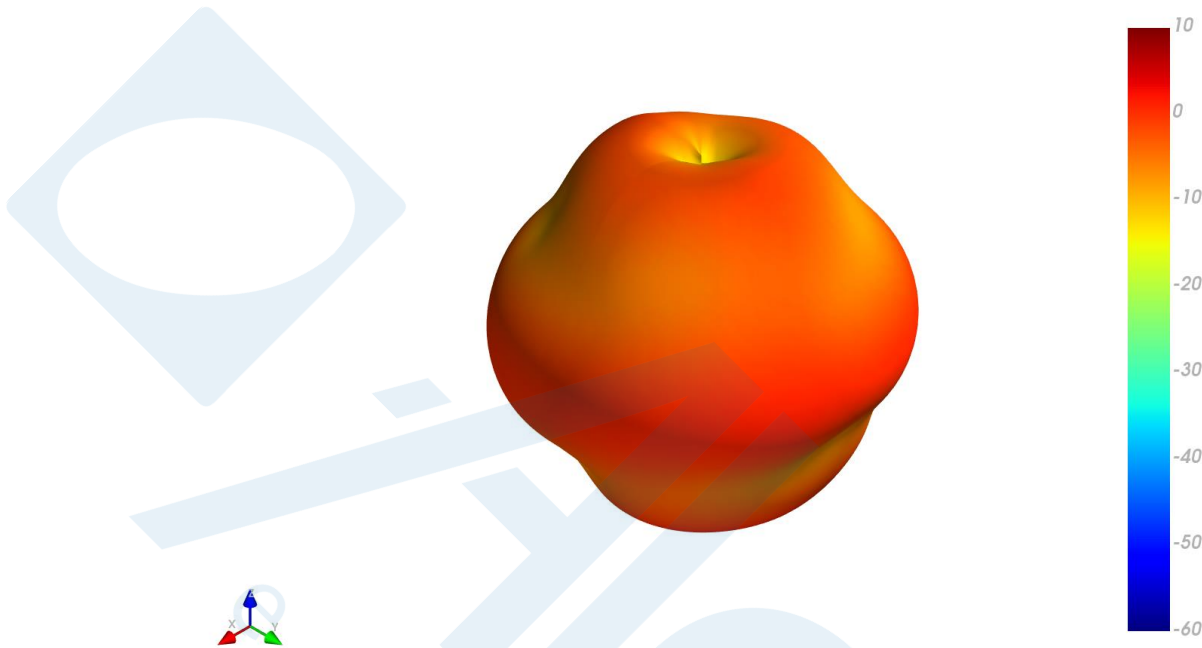
751MHz



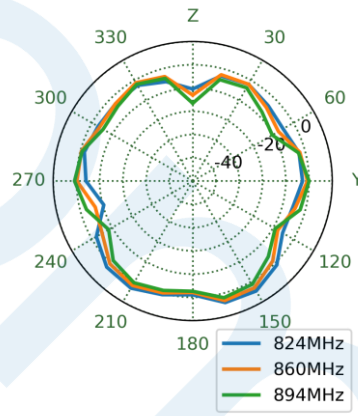
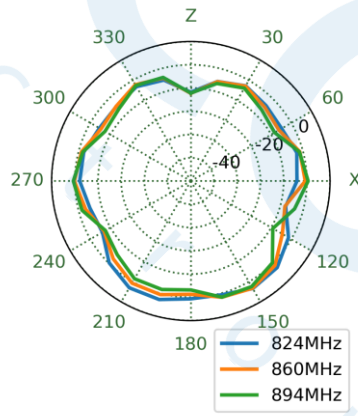
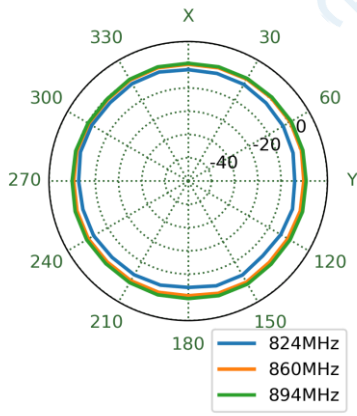
XY Plane      XZ Plane      YZ Plane



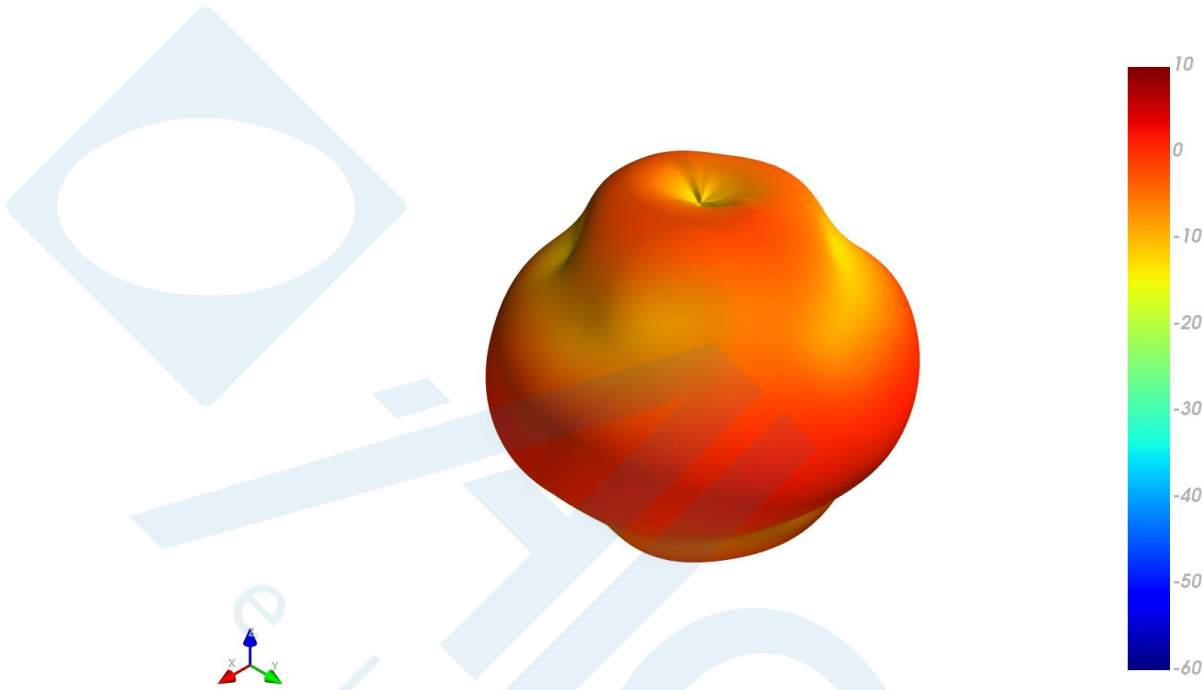
860MHz



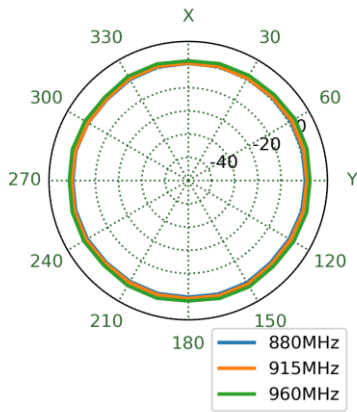
XY Plane      XZ Plane      YZ Plane



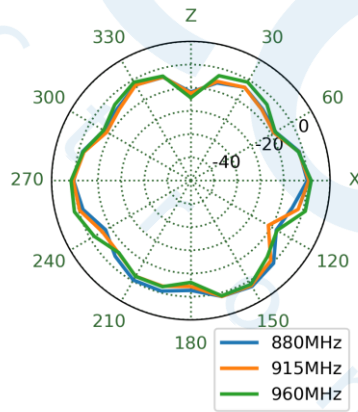
915MHz



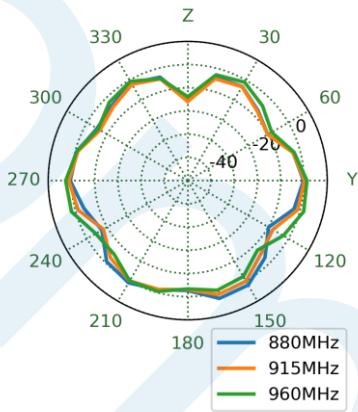
XY Plane



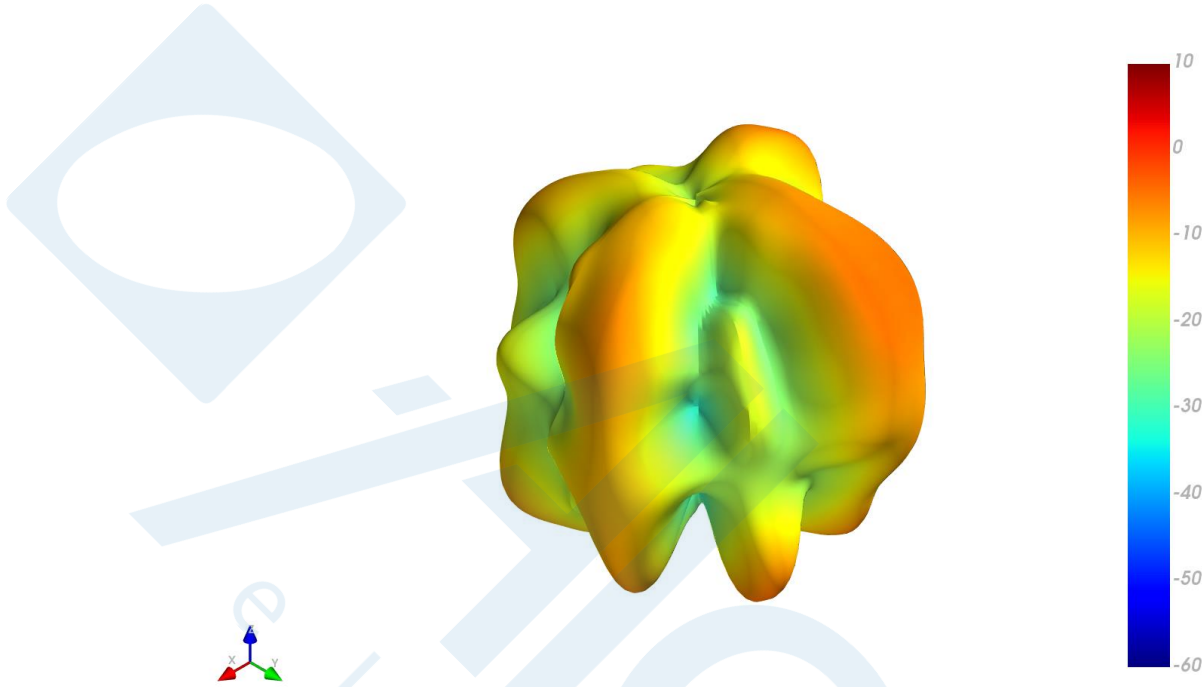
XZ Plane



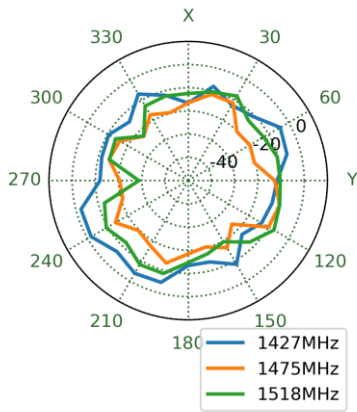
YZ Plane



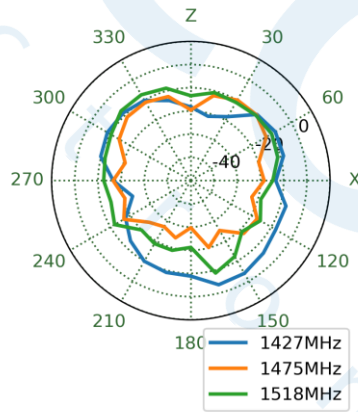
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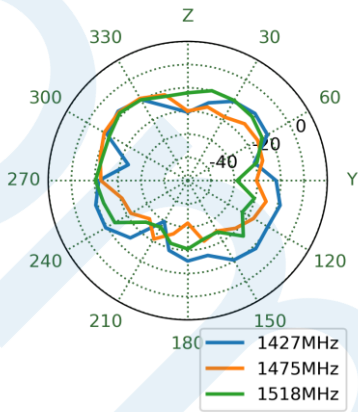
XY Plane



XZ Plane

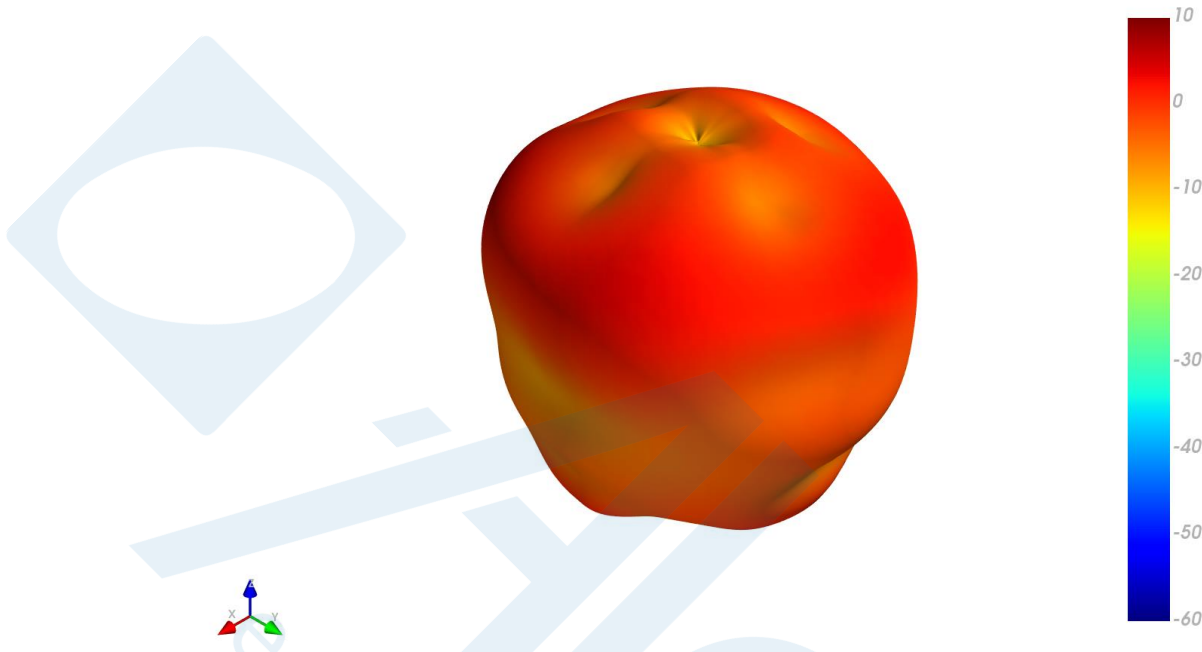


YZ Plane

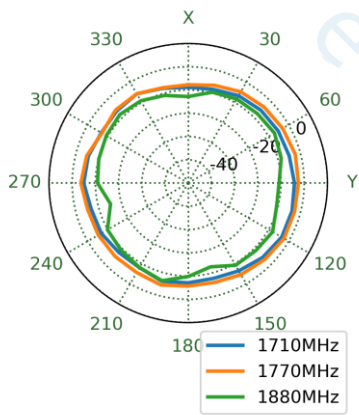




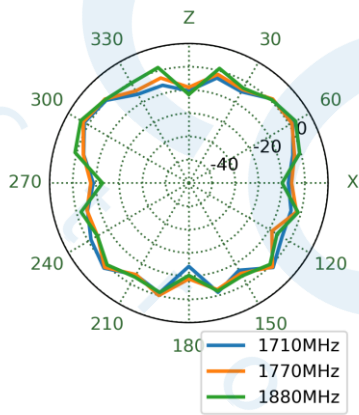
1770MHz



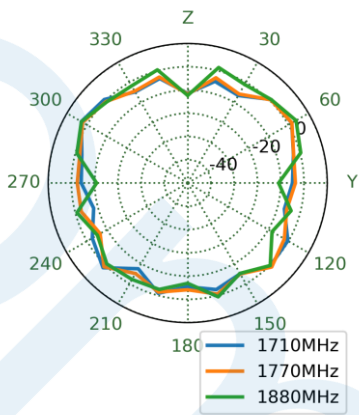
XY Plane



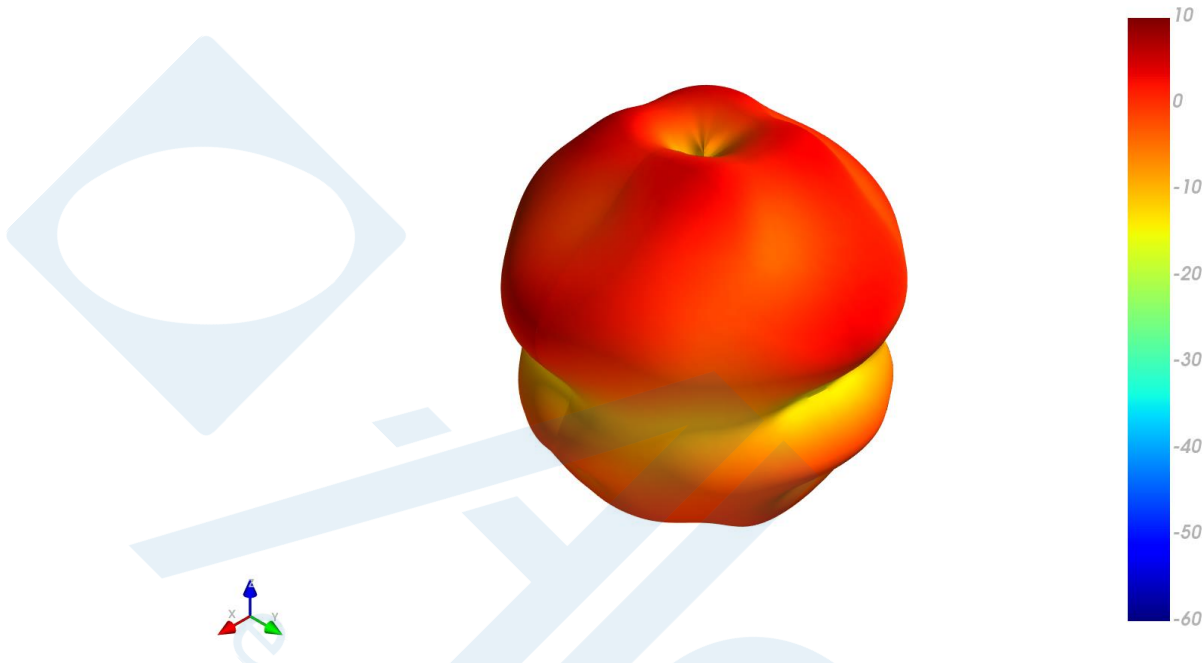
XZ Plane



YZ Plane



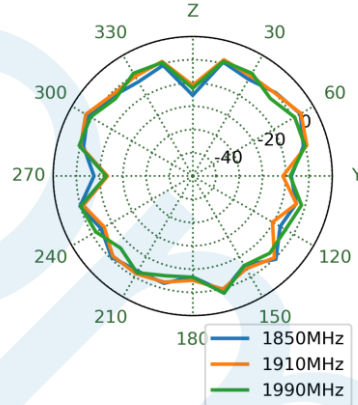
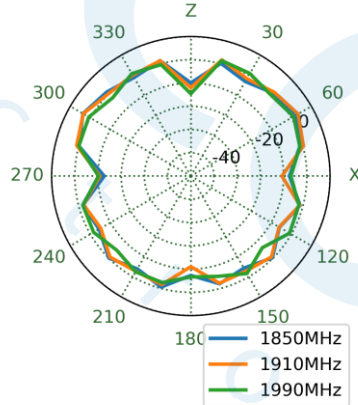
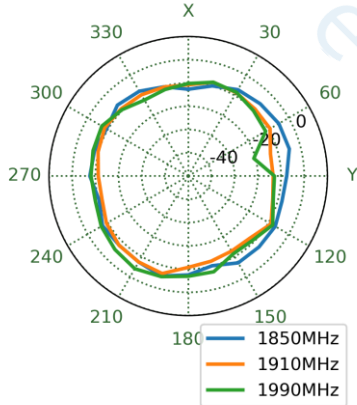
1910MHz



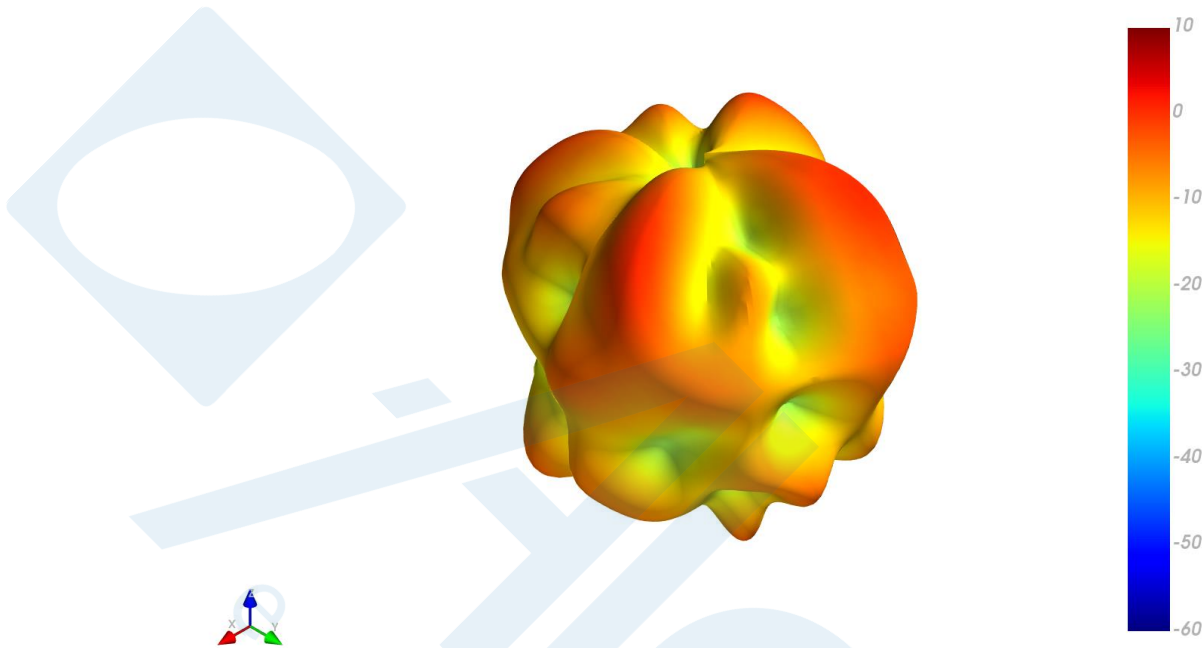
XY Plane

XZ Plane

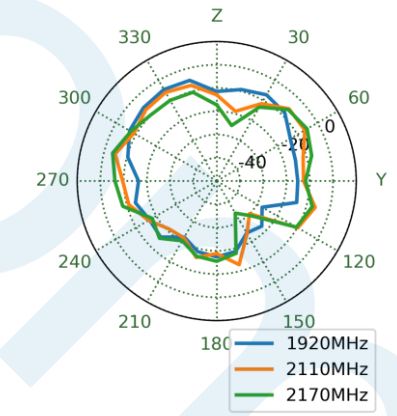
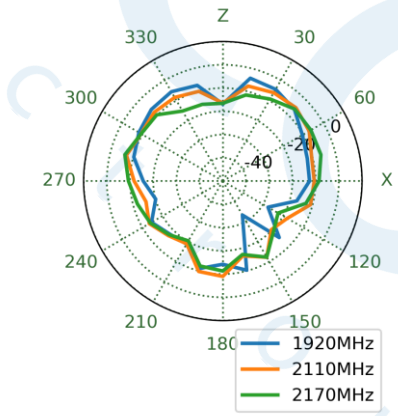
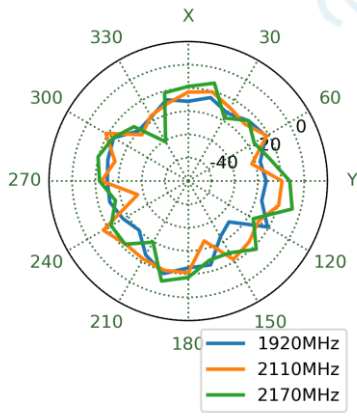
YZ Plane



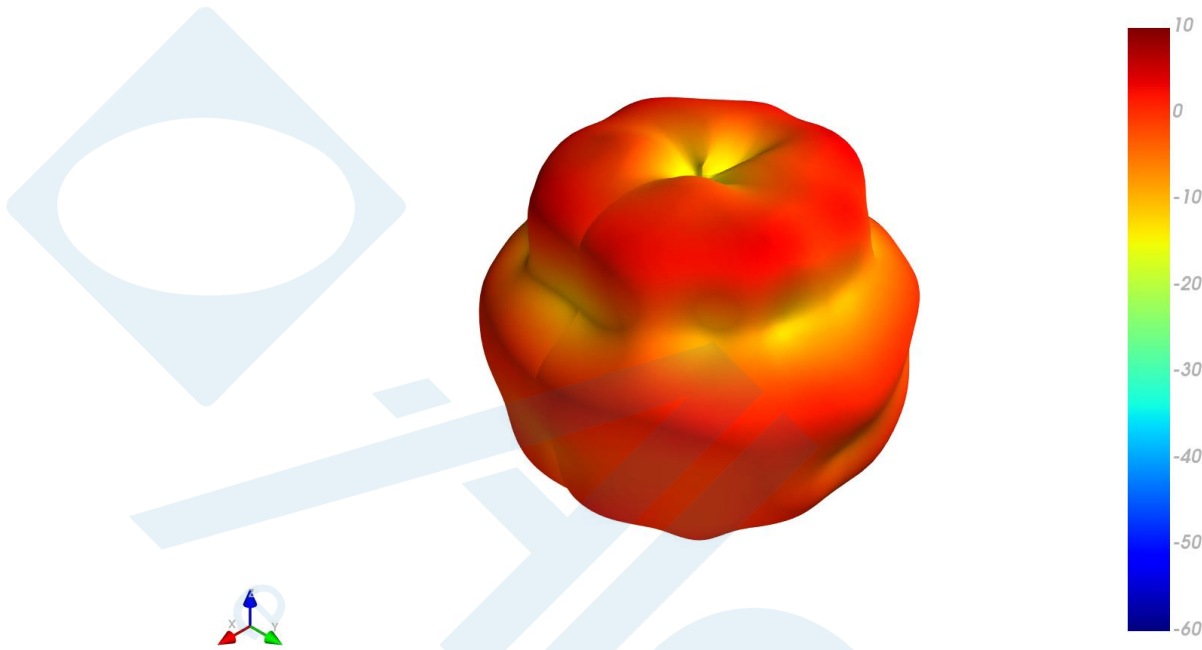
# 2110MHz



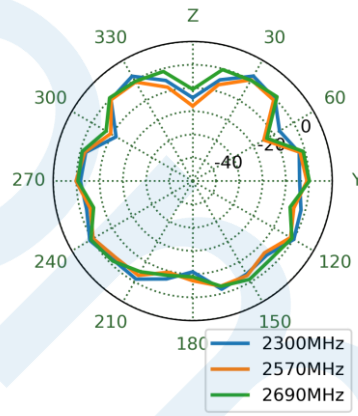
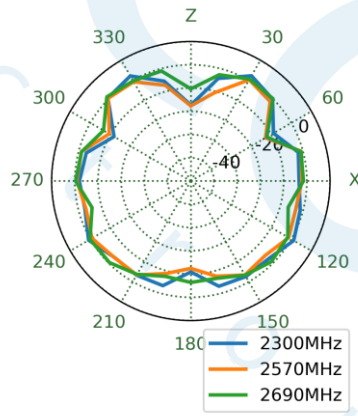
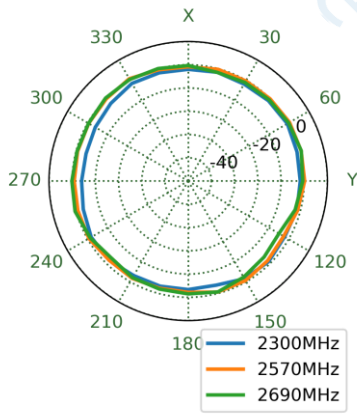
## XY Plane      XZ Plane      YZ Plane



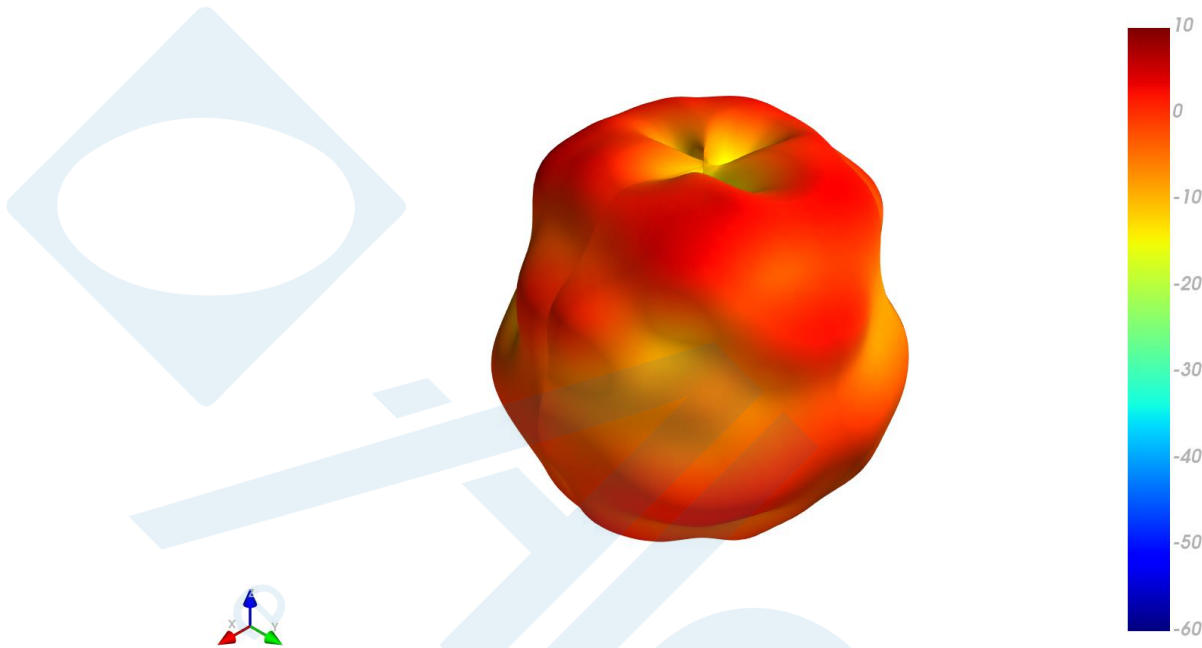
2570MHz



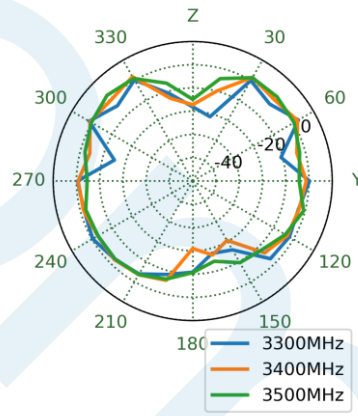
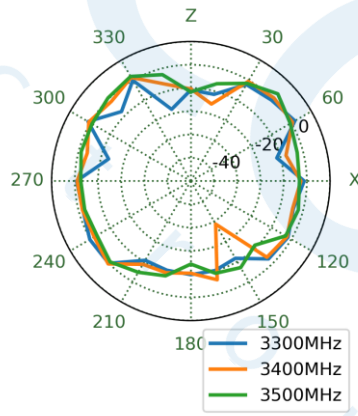
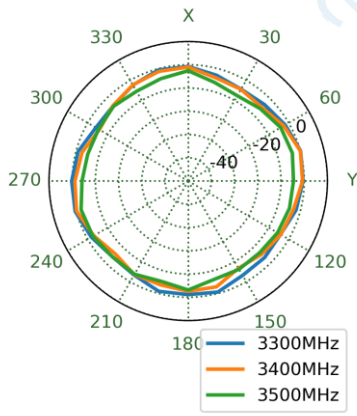
XY Plane      XZ Plane      YZ Plane



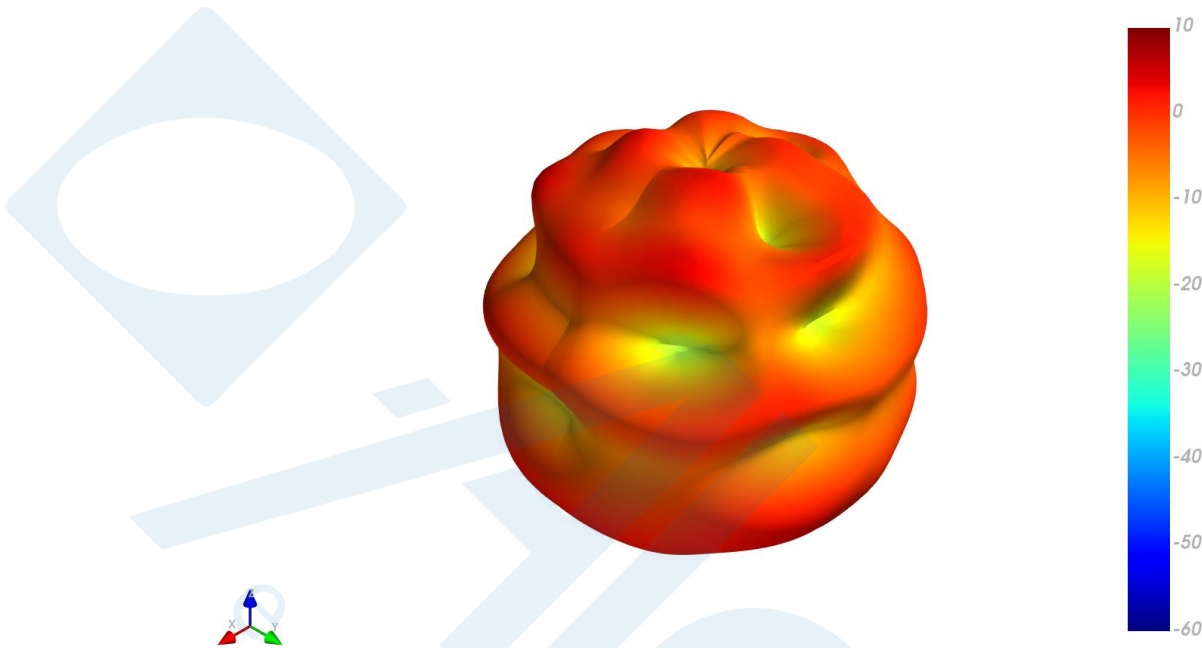
3400MHz



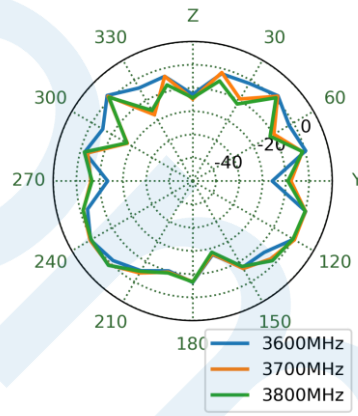
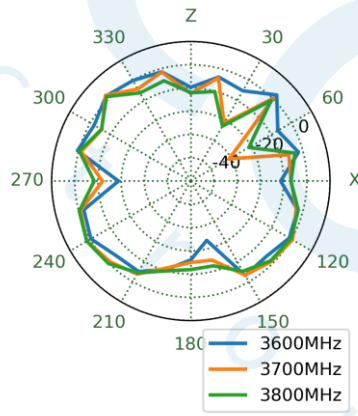
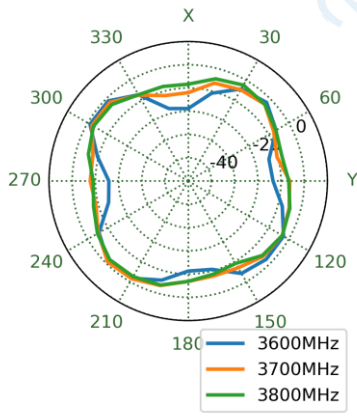
XY Plane      XZ Plane      YZ Plane



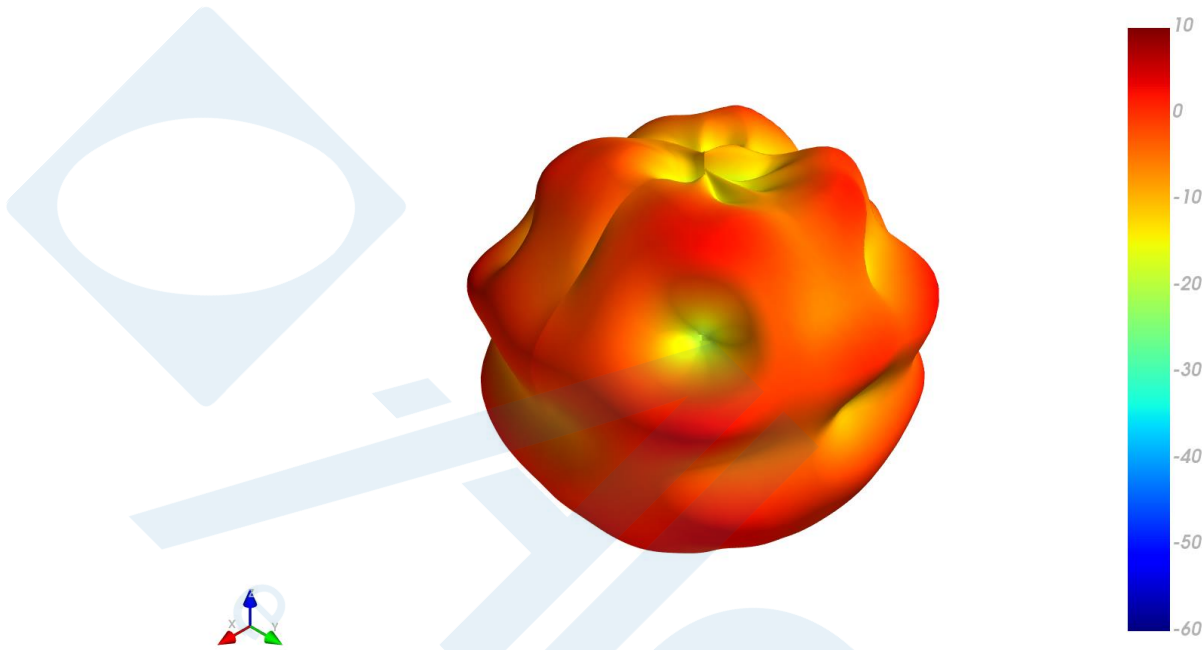
3700MHz



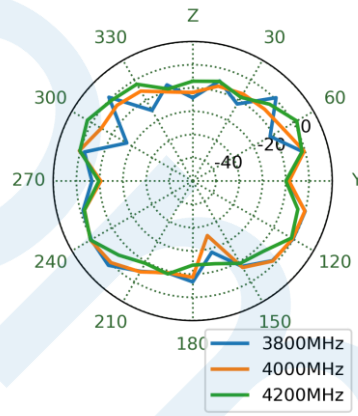
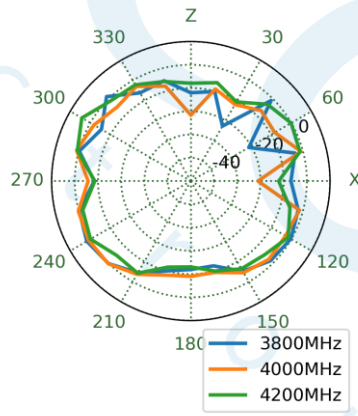
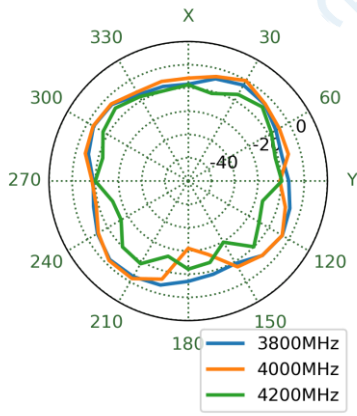
XY Plane      XZ Plane      YZ Plane



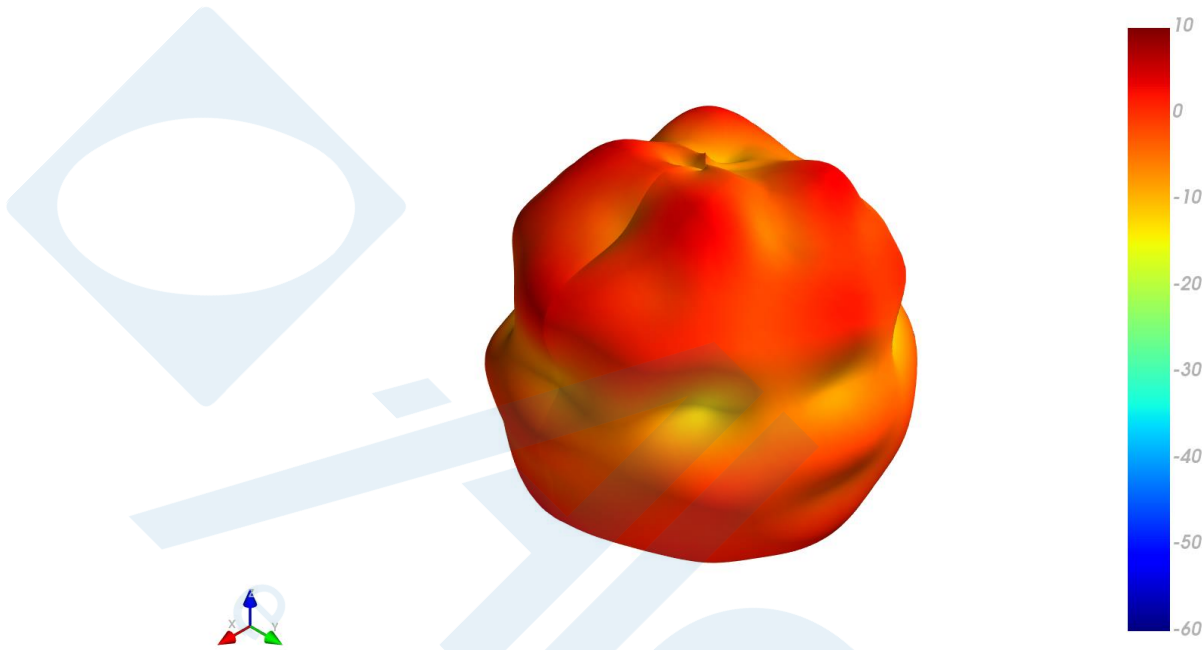
4000MHz



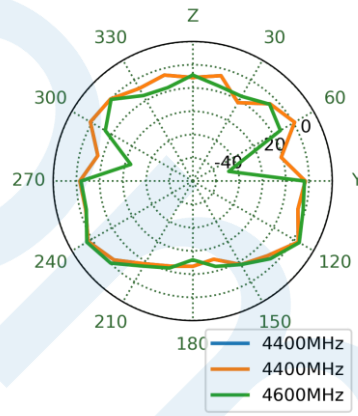
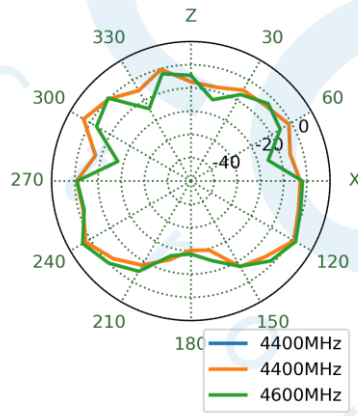
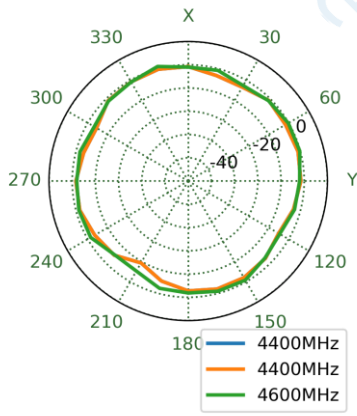
XY Plane      XZ Plane      YZ Plane



# 4400MHz

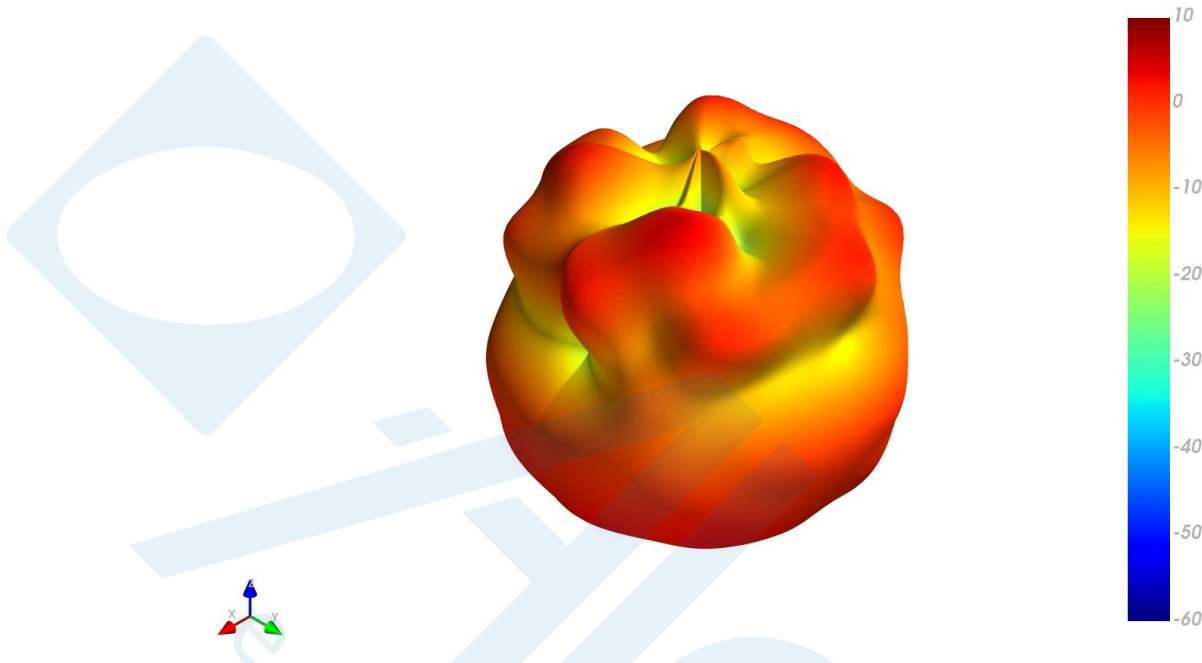


XY Plane
XZ Plane
YZ Plane





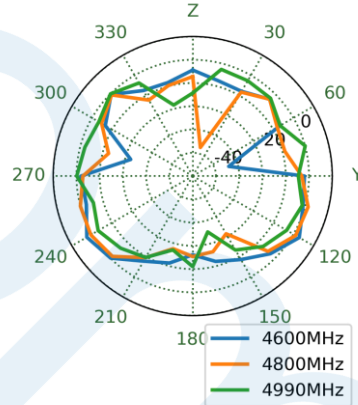
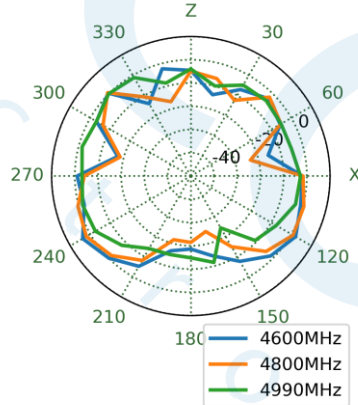
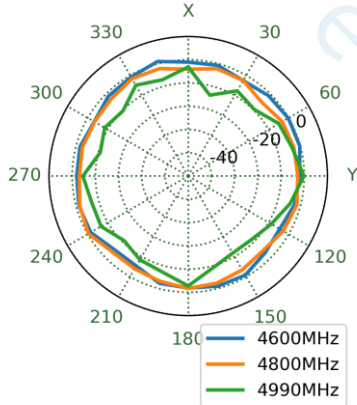
4800MHz



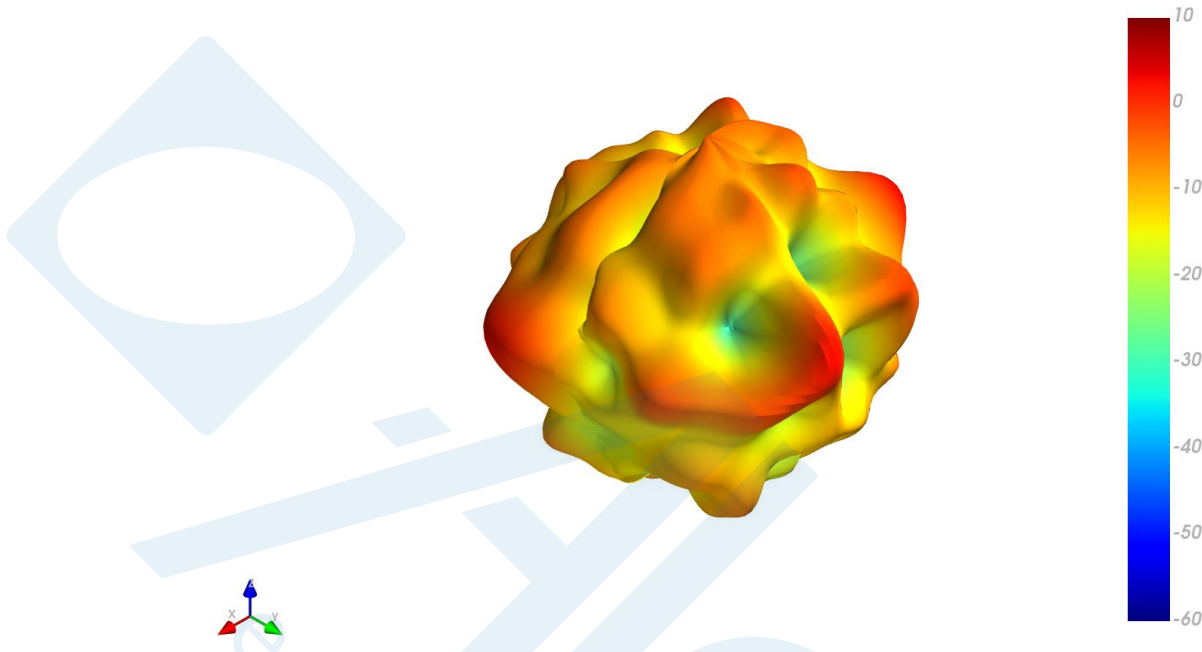
XY Plane

XZ Plane

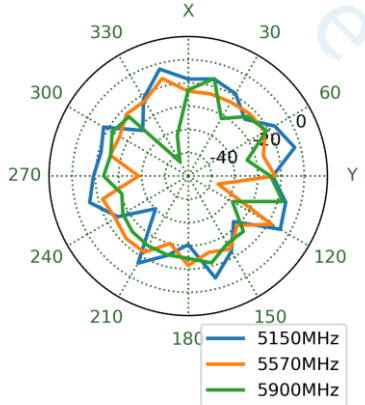
YZ Plane



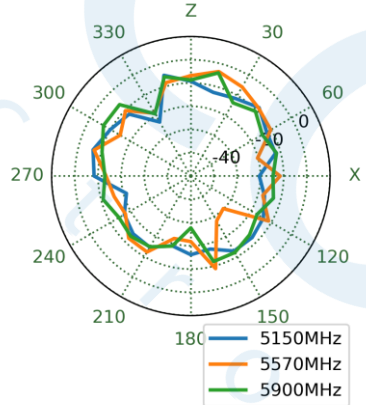
5570MHz



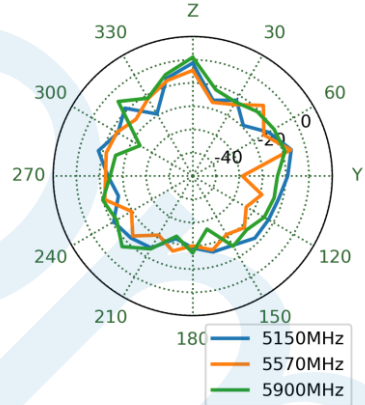
XY Plane



XZ Plane

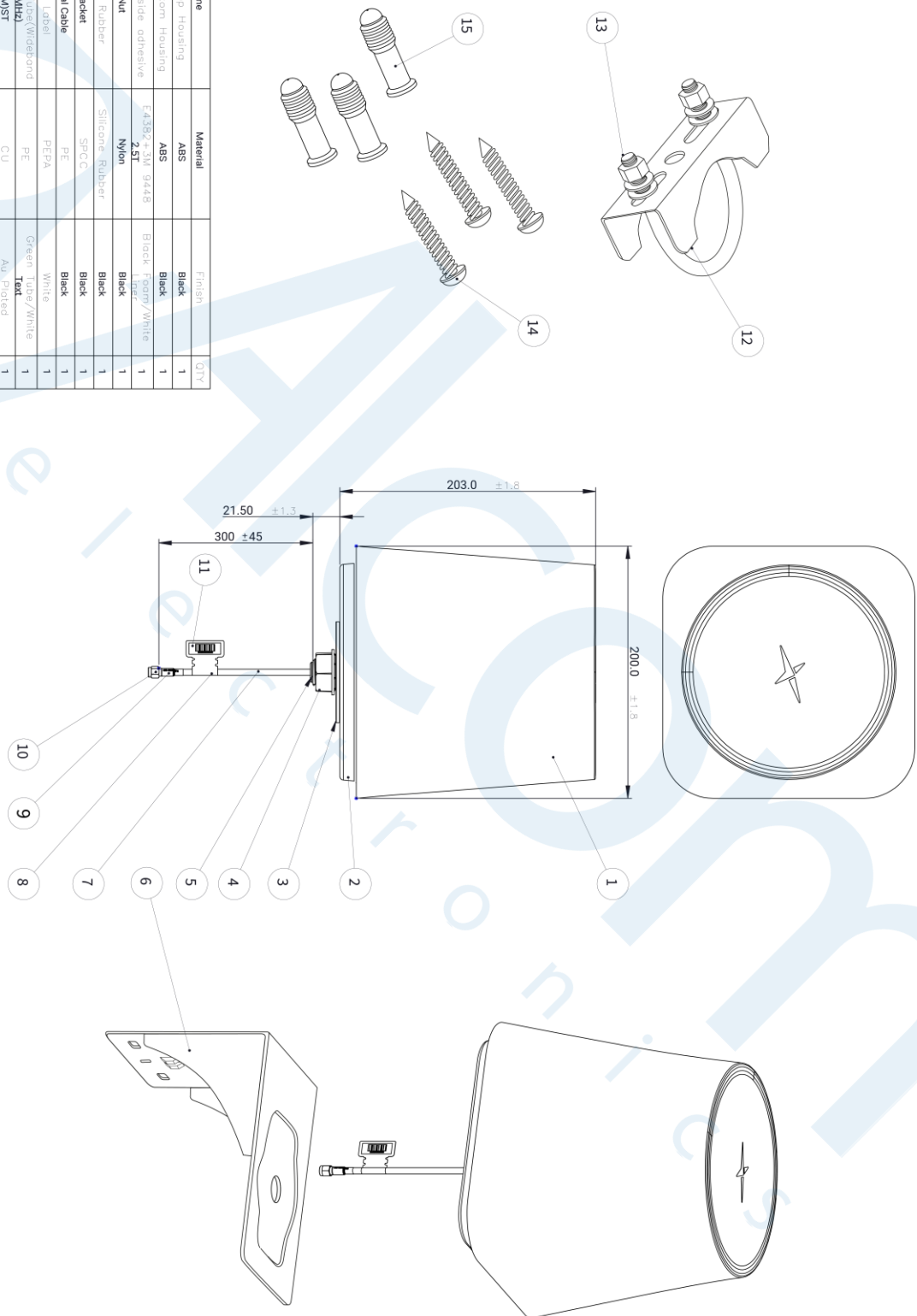


YZ Plane



# 5. Mechanical Drawing (Units: mm)

|    | Name                       | Material                 | Finish             | QTY |
|----|----------------------------|--------------------------|--------------------|-----|
| 1  | DCN,LOT Top Housing        | ABS                      | Black              | 1   |
| 2  | DCN,LOT Bottom Housing     | ABS                      | Black              | 1   |
| 3  | DCN Double side adhesive   | 1.4382±.3M 9448<br>2.51L | Black / Foam/White | 1   |
| 4  | M22 Nut                    | Nylon                    | Black              | 1   |
| 5  | DCN,LOT Rubber             | Silicone / Rubber        | Black              | 1   |
| 6  | DCN,OT Bracket             | SPCC                     | Black              | 1   |
| 7  | TGC200 Coaxial Cable       | PE                       | Black              | 1   |
| 8  | Empty Label                | PEPA                     | White              | 1   |
| 9  | Heat Shrink Label/Wideband | PE                       | Green / Tube/White | 1   |
| 10 | 400-500MHz SMA(M)ST        | CU                       | Alu. Plated        | 1   |
| 11 | Barcode Label              | PET                      | White              | 1   |
| 12 | M8 U-bolt Accessories      | STELL                    | CLEAR              | 2   |
| 13 | Pole mount clip            | SUS 204                  | CLEAR              | 2   |
| 14 | Screw PH4x29L              | Steel                    | Ni Plated          | 3   |
| 15 | Wall Mount Stud 6x24L      | Nylon                    | White              | 3   |



## 6. Installation Guidelines

# Installation Instructions

## DCN.01

Wideband, Omnidirectional Discone antenna



### Installation Requirements

Antenna Components:

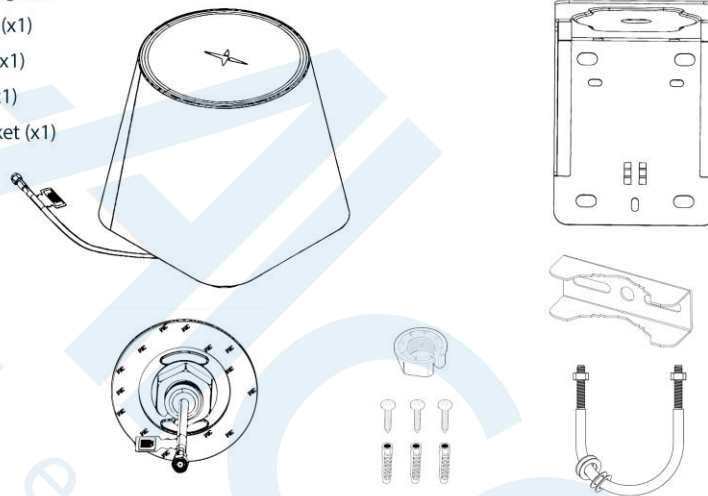
Antenna Housing (x1)

Tightening Nut (x1)

Adhesive Base (x1)

Coaxial Cable (x1)

Mounting Bracket (x1)



Pole Mount:

13mm [1/2"] Socket Wrench

M8 U Bolt (x2)

M8 Flat Washer (x 4)

M8 Spring Washer (x4)

M8 Hex Nut (x4)

Pole Mount Clip (x2)

Mounting Bracket (x1)

- Pole Diameter Range:  
34.5mm [1.3"] - 65.5mm [2.5"]

Wall Mount:

#1 Phillips Screwdriver (Not Included)

Drill (Not Included)

Tapping Screw 4 x 25mm [5/32 x 1"]

Screw (x 3), 6 x 24mm [1/4 x 15/16"]

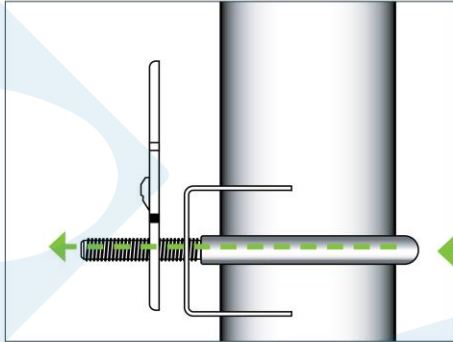
Wall Mount Stud (x3)

Mounting Bracket (x1)

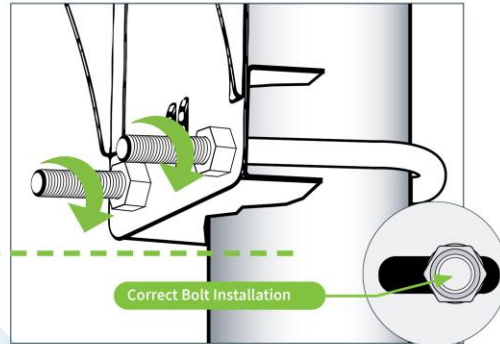
## Hardware Installation

The DCN.01 antenna can be installed via 2 different methods: pole mount and wall mount. Please refer to the appropriate section below for your installation requirements.

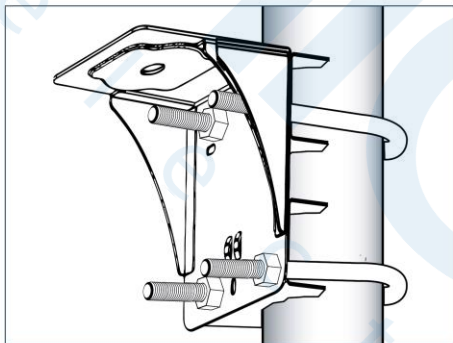
### Pole Mount



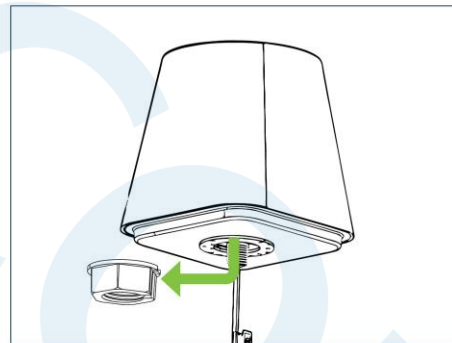
1. Determine the desired antenna location on the pole. Align a mount clip with the two large, bottom screw holes on the bracket. Pressing against the pole at the desired height, insert the U Bolt from the back of the pole, through the mount clip and into the mounting bracket.



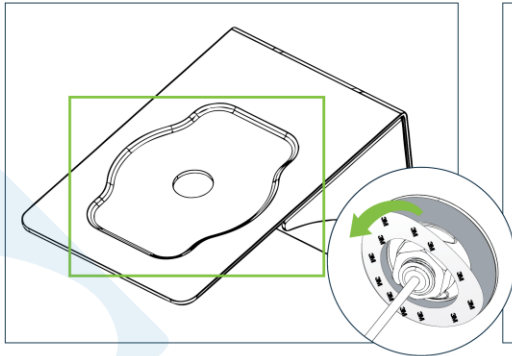
2. Insert the flat washer onto each U Bolt side. Insert a spring washer over the flat one. Insert a hex nut onto each U Bolt end and lightly screw the nut in place by hand. Use a socket wrench to tighten both nuts so the bracket is secured in place.



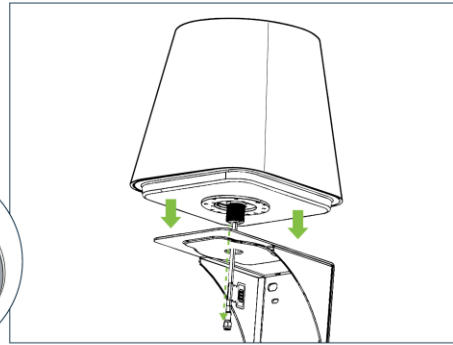
3. Repeat steps 1 and 2 with the top mount clip and U Bolt. Ensure all nuts are properly tightened and the mounting bracket is firmly in place on the pole.



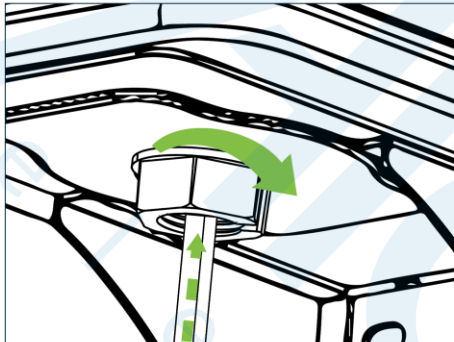
4. Unscrew the tightening nut from the antenna body and slide the coaxial cable through the split in the Nut.



5. Clean the top surface of the mounting bracket and ensure it is completely dry before installing the antenna. Remove the protective liner from the base adhesive of the antenna. Note: Once exposed, avoid contact with the adhesive.

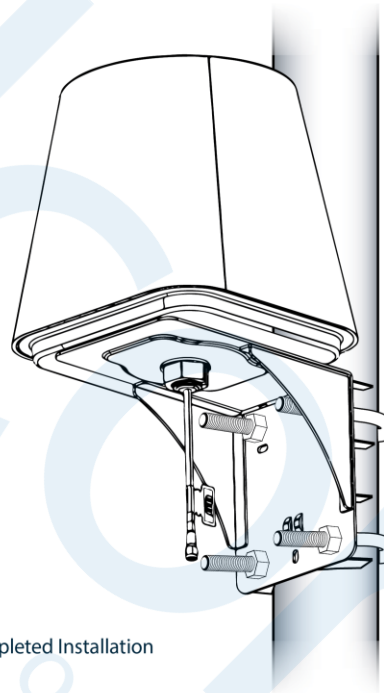


6. Route the coaxial cable through the top opening on the mounting bracket. Align the antenna and press down to secure the adhesive base in place. Note: Avoid sharp bends when routing coaxial cable.



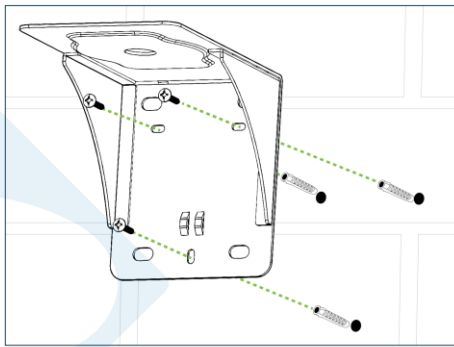
7. Insert the tightening nut and tighten to secure the antenna in place.

Note: Max. Torque for the tightening nut is 10N.m

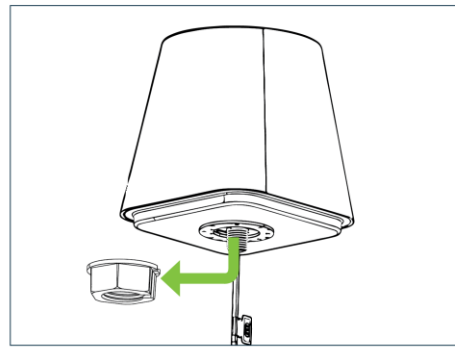


8. Completed Installation

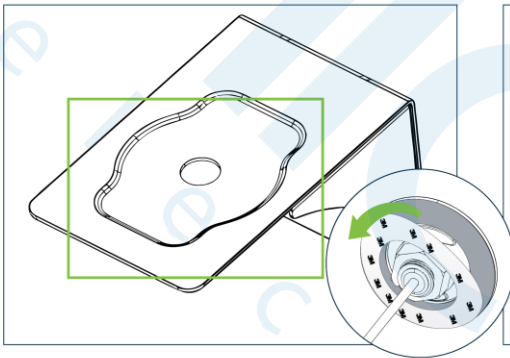
## Wall Mount



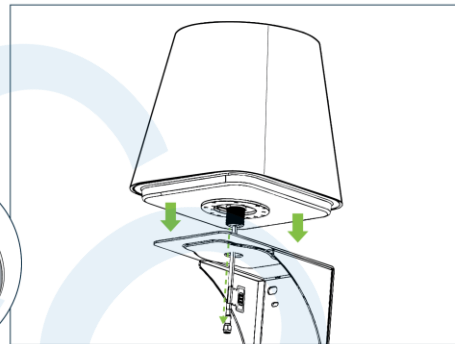
1. Using the mounting bracket as guide, mark the position of the wall screws to the desired location of the bracket (use the three smaller openings on the bracket). Drill holes for the wall mount studs (6mm [1/4"] diameter, min. 25mm [1"] depth) and secure the studs in place. Insert screws through the bracket hole and into the wall studs. Drive the screws in and tighten to secure the mounting bracket in place.



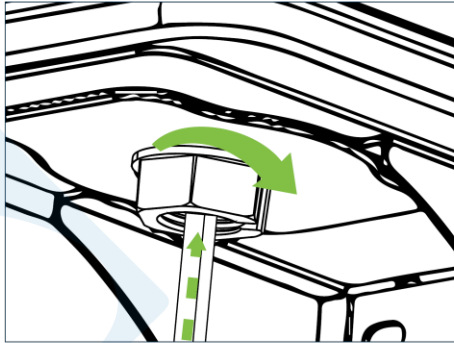
2. Unscrew the tightening nut from the antenna body and slide the coaxial cable through the split in the Nut.



3. Clean the top surface of the mounting bracket and ensure it is completely dry before installing the antenna. Remove the protective liner from the base adhesive of the antenna. Note: Once exposed, avoid contact with the adhesive.

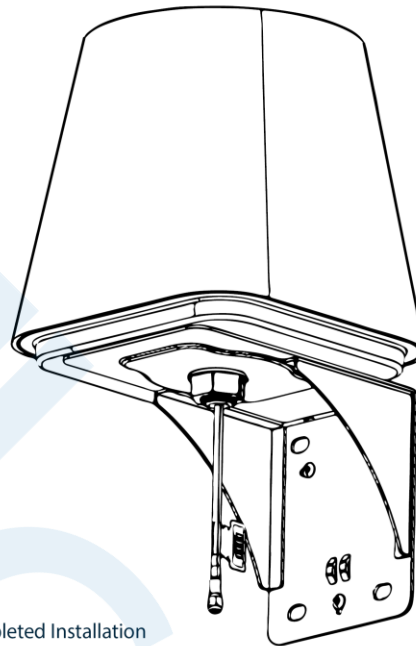


4. Route the coaxial cable through the top opening on the mounting bracket. Align the antenna and press down to secure the adhesive base in place. Note: Avoid sharp bends when routing coaxial cable.



5. Insert the tightening nut and tighten to secure the antenna in place.

Note: Max. Torque for the tightening nut is 10N.m



6. Completed Installation

## Notices



### Caution

To comply with FCC RF Exposure requirements in section 1.1310 of the FCC Rules, antennas used with this device must be installed to provide a separation distance of at least 20 cm from all persons to satisfy RF exposure compliance.



### Warning

Do not Operate the transmitter when someone is within 20 cm of the antenna.  
Do not operate the equipment in an explosive atmosphere.



### European Waste Electronic Equipment Directive 2002/96/EC

Please ensure that your old Waste Electricals and Electronics are recycled do not throw them away into standard waste.

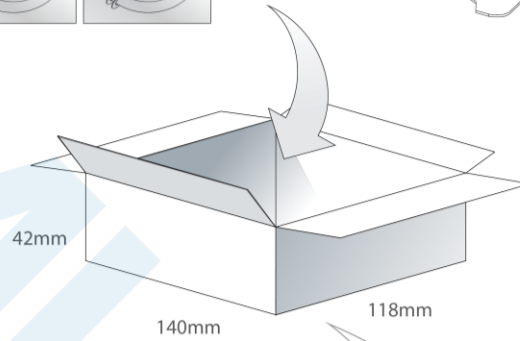
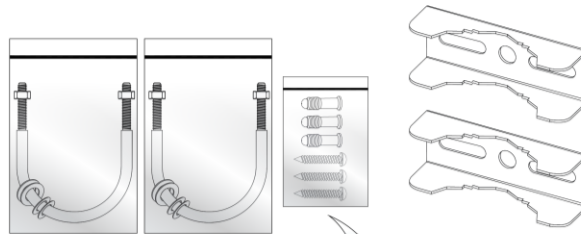
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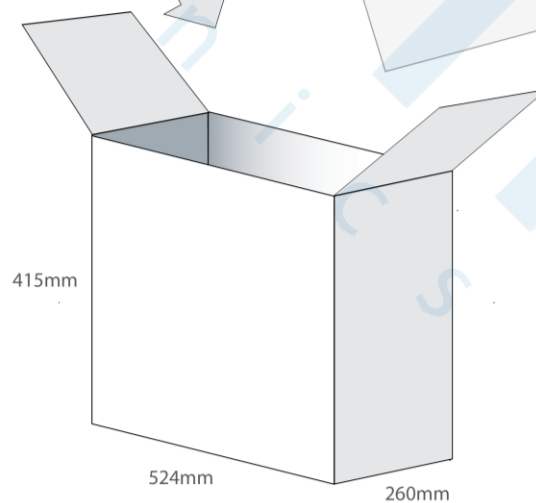
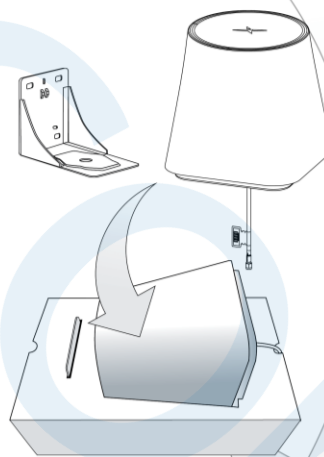


## 7. Packaging

1 pc DCN.01.035111 Pole Mount Kit  
 1 SET / Kit box  
 Box Dimensions - 140 x 118 x 42mm  
 Weight - 387g



1 pc DCN.01.035111  
 1 pc Bracket Assembly for Wind loading  
 1 pc Partition  
 Weight - 1.78Kg



2 pcs per Carton  
 Carton Dimensions - 524 x 415 x 260mm  
 Weight - 5.86Kg

Changelog for the datasheet

SPE-21-8-005 – DCN.01.A.305111

**Revision: A (Original First Release)**

|         |             |
|---------|-------------|
| Date:   | 2021-05-11  |
| Notes:  |             |
| Author: | Jack Conroy |

**Previous Revisions**

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