TAOGLAS

Datasheet

# Apex TG.66

**Part No:**
**TG.66.A113**

**Description:**

5G/4G Wideband Terminal Mount Monopole Antenna
With Rotatable Hinge SMA(M) Connector

**Features:**

600-6000MHz Wideband 5G/4G Cellular Antenna
Fantastic Efficiency Across all Bands
Super Small Form Factor with Rotatable Hinged Design for Flexible Positioning
Monopole Antenna Design Suitable for Small Ground Plane
Omnidirectional Gain Patterns for Optimum Coverage
Connector: SMA Male Straight
Dimensions: 70.3 * Ø10 mm
RoHS and REACH Compliant

# 1. Introduction

The Taoglas TG.66 is a hinged monopole antenna designed to cover all global 5G/4G frequencies between 600MHz and 6GHz. Despite its miniature size, just 70.3 x Ø10mm, the TG.66 has omnidirectional radiation patterns and provides stable gain across the hemisphere. The TG.66 is supplied with a rotatable 90° hinged SMA connector meaning can be covertly installed on all types of gateways and routers at straight or bent angles. The TG.66 performs excellently at 5G bands with efficiencies above 45% across the entire 5G/4G spectrum when positioned on the edge of a small ground plane of just 120 x 45mm in size.

The TG.66 utilizes a sleek, robust PC enclosure, and its' small size allows is to be mounted where space is at a premium. The SMA (M) connector's hinge mechanism allows the antenna to be rotated into the preferred orientation which helps to avoid other antennas or objects. This also helps with isolation by pointing the antennas in different directions when used in MIMO systems or when other antennas are present on the same device. The TG.66 has been evolved from the highly successful TG.09 and is part of the ever-growing portfolio of 5G antennas offered by Taoglas.

Typical Applications include:

- Gateways and Routers
- IoT Sensors
- Public Safety and Security
- Point of Sales Terminals
- Smart Home Automation
- Robotics / Autonomous

The TG.66 comes with an SMA(M) connector as standard and this can be customized subject to MOQ and NRE, contact your regional Taoglas customer support team for more information.

# 2. Specifications

| Electrical | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Band** | **Frequency (MHz)** | | **Efficiency (%)** | **Average Gain (dB)** | **Peak Gain (dBi)** | **Impedance** | **Max Input Power** | **Polarization** | **Radiation Pattern** |
| **5GNR/4G** Band 71 | 617~698 | Straight | 73.5 | -1.3 | 1.9 | 50 Ω | 10W | Linear | Omni-Directional |
| | | Bent | 61.5 | -2.1 | 1.4 | | | | |
| **4G/3G** Band 12,13,14,17,28,29 | 698~824 | Straight | 79.5 | -1 | 2.6 | | | | |
| | | Bent | 79 | -1 | 2.6 | | | | |
| **4G/3G/NB-IoT/Cat M** Band 5,8,18,19,20,26,27 | 824~960 | Straight | 61.8 | -2.1 | 2.4 | | | | |
| | | Bent | 64.2 | -1.9 | 2 | | | | |
| **5GNR/4G** Band 21,32,74,75,76 | 1427~1518 | Straight | 53.8 | -2.7 | 2.8 | | | | |
| | | Bent | 49.4 | -3.1 | 2.7 | | | | |
| **4G/3G** Band 1,2,3,4,9,23,25,35,39,66 | 1710~2200 | Straight | 56.6 | -2.5 | 2.4 | | | | |
| | | Bent | 60.8 | -2.2 | 4.2 | | | | |
| **4G/3G** Band 7,30,38,40,41 | 2300~2690 | Straight | 45.1 | -3.5 | 1.3 | | | | |
| | | Bent | 49.9 | -3 | 4.4 | | | | |
| **5GNR/4G** Band 22,42,48,77,78,79 | 3300~5000 | Straight | 54.9 | -2.6 | 4.8 | | | | |
| | | Bent | 53.5 | -2.7 | 4.3 | | | | |
| **LTE5200/ Wi-Fi 5800** | 5150~5925 | Straight | 45.1 | -3.5 | 1.1 | | | | |
| | | Bent | 56.4 | -2.5 | 2.7 | | | | |

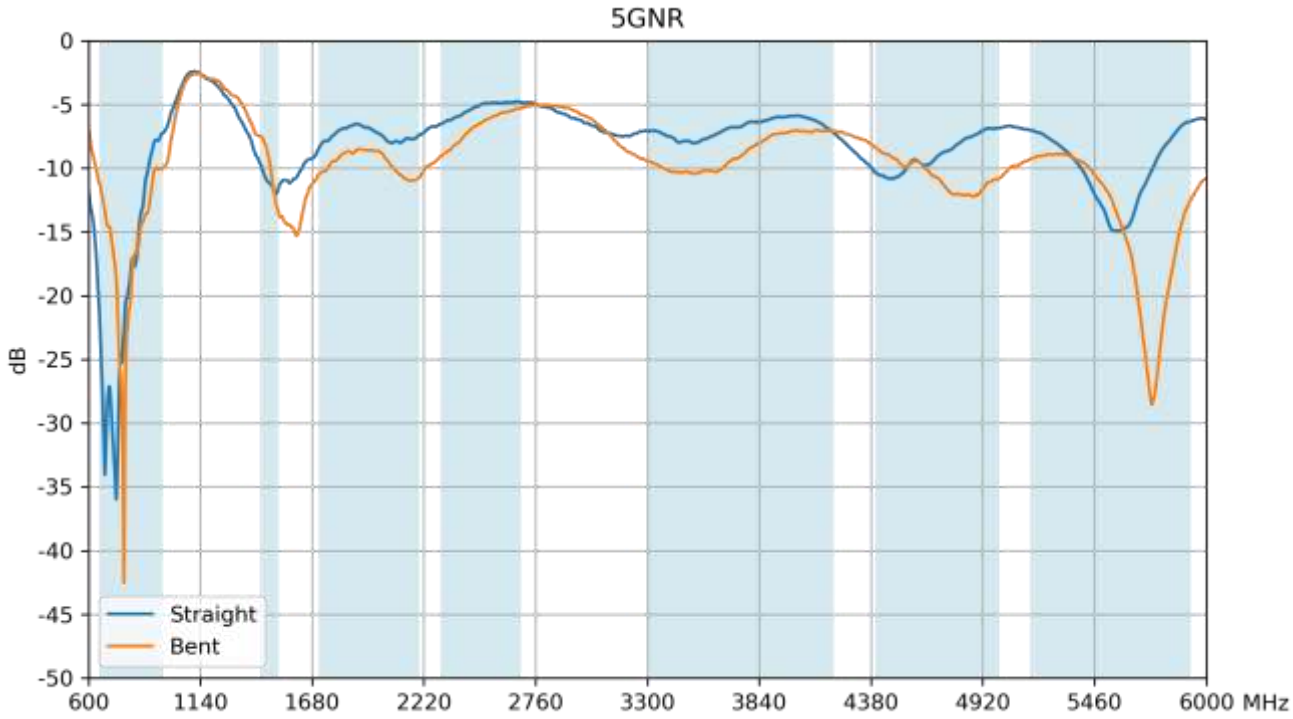
*Tested on 120 x 45mm Ground Plane

| Mechanical | |
|---|---|
| Dimensions | 71 * 10mm |
| Weight | 9g |
| Plastic Material | PC345 |
| Connector | SMA (M) Hinged |
| **Environmental** | |
| Temperature Range | -40°C to 85°C |

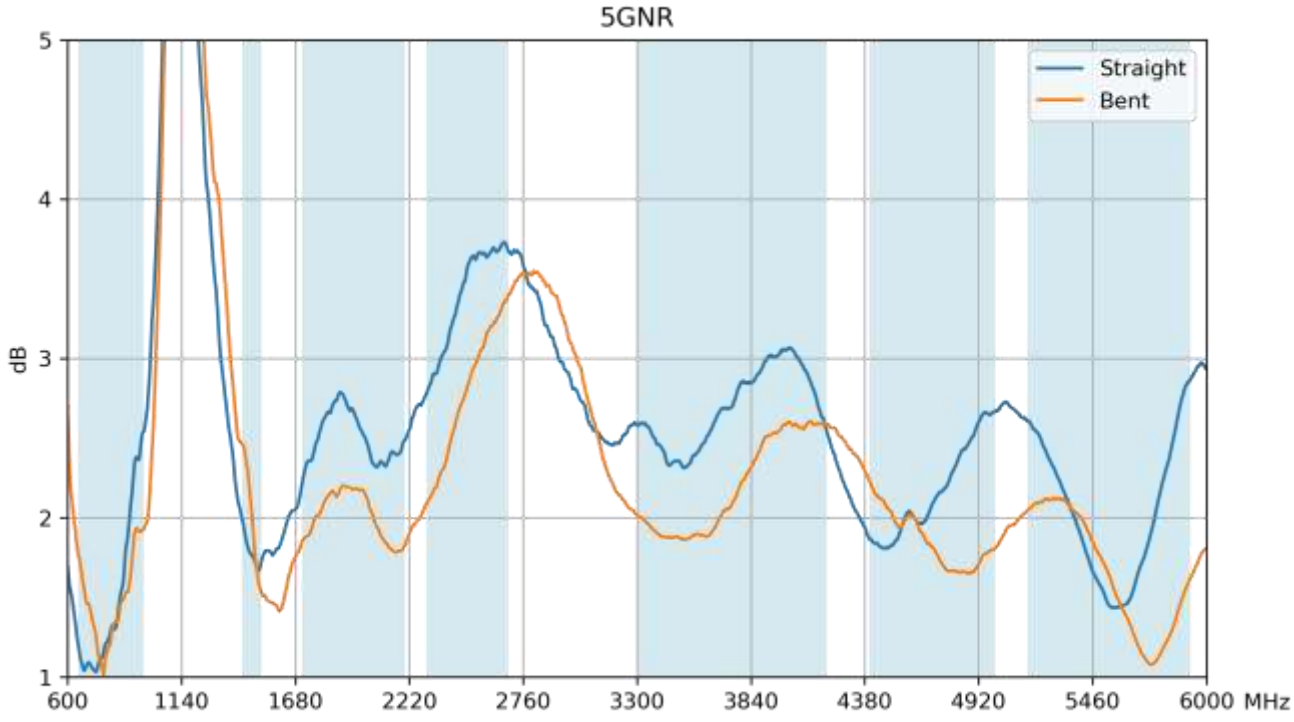
| 5G/4G Bands | | | |
|---|---|---|---|
| Band Number | 5GNR / FR1 / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / TD-SCDMA | | |
| | Uplink | Downlink | Covered |
| 1 | UL: 1920 to 1980 | DL: 2110 to 2170 | ✓ |
| 2 | UL: 1850 to 1910 | DL: 1930 to 1990 | ✓ |
| 3 | UL: 1710 to 1785 | DL: 1805 to 1880 | ✓ |
| 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 | | ✓ |

# 3. Antenna Characteristics

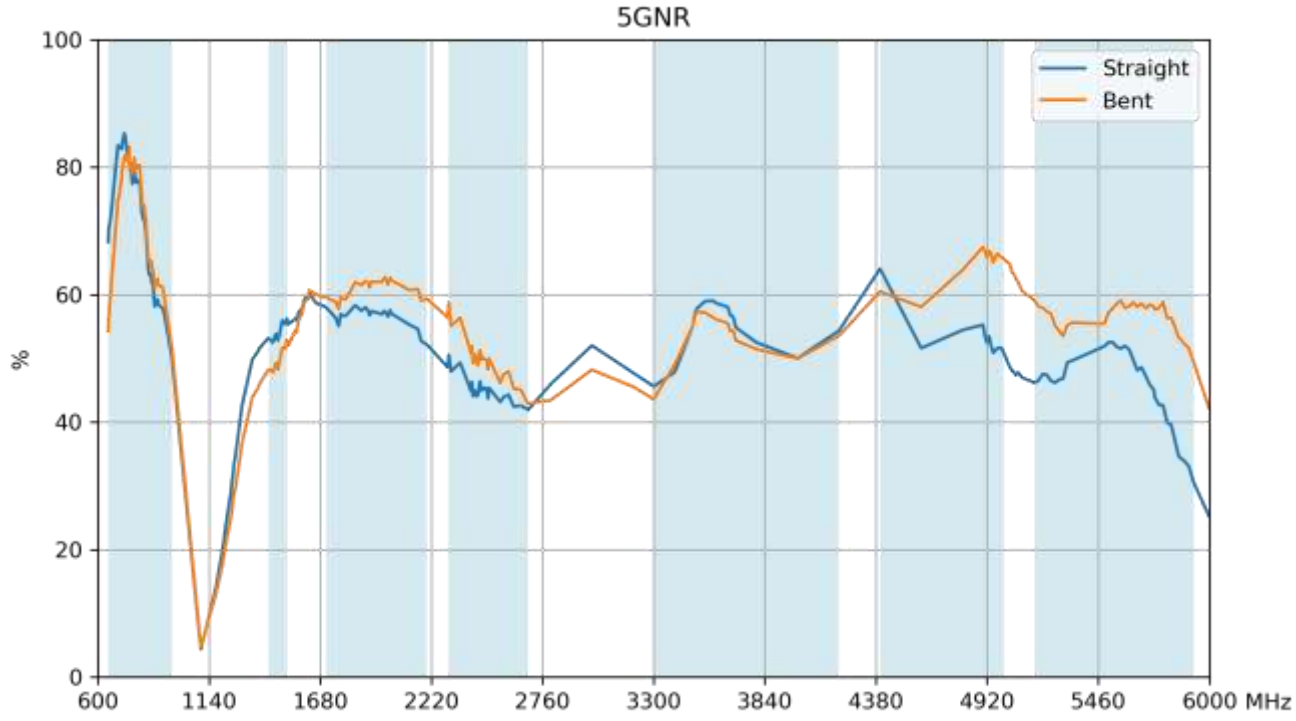
## 3.1 Return Loss



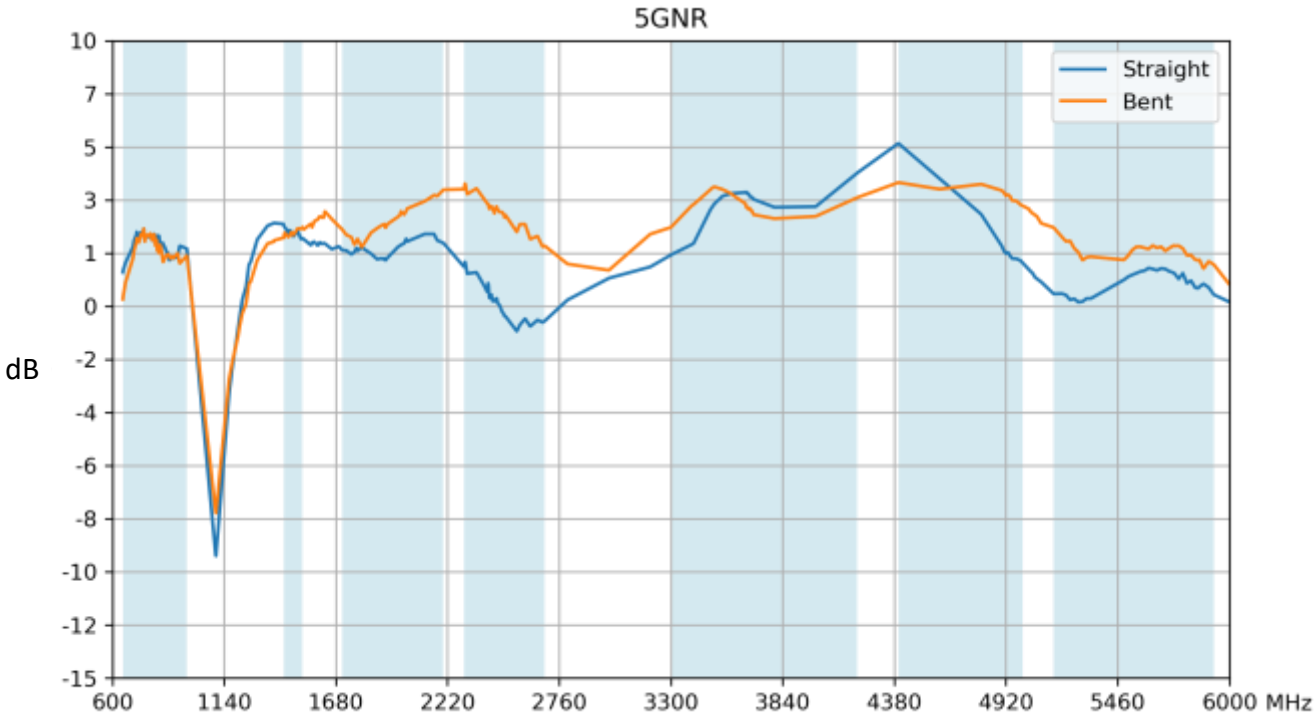

## 3.2 VSWR



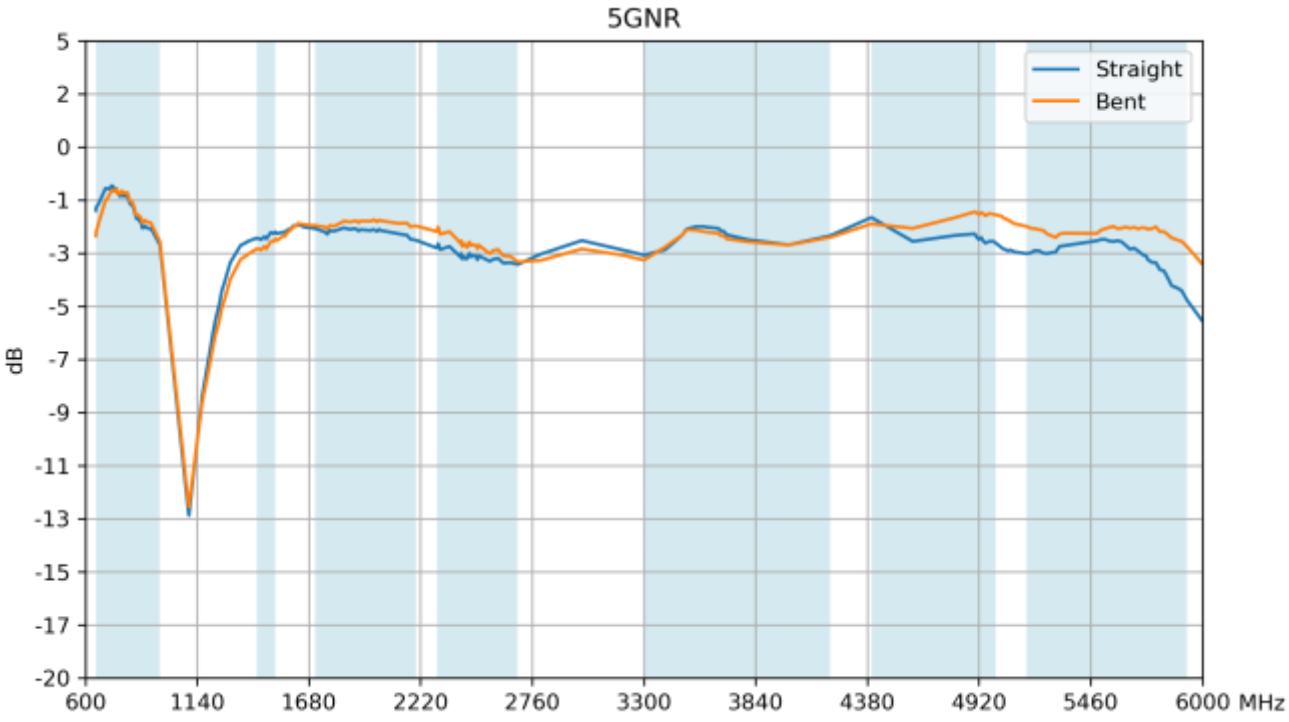
## 3.3 Efficiency




## 3.4 Peak Gain



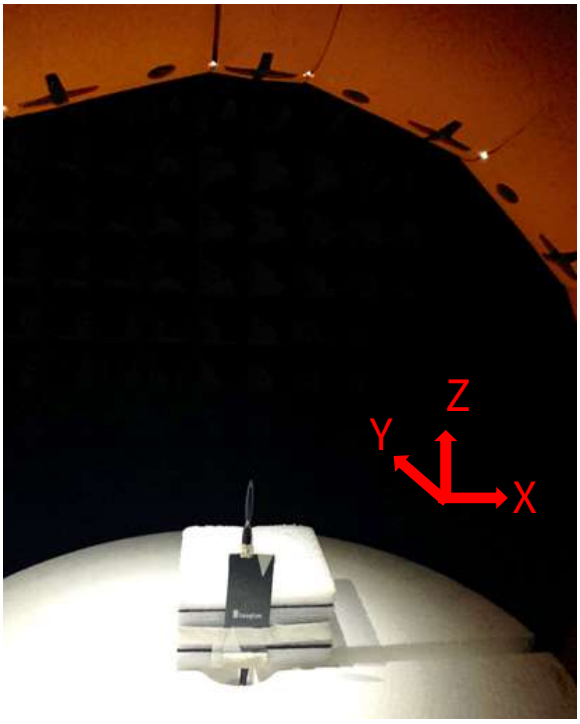
## 3.5 Average Gain



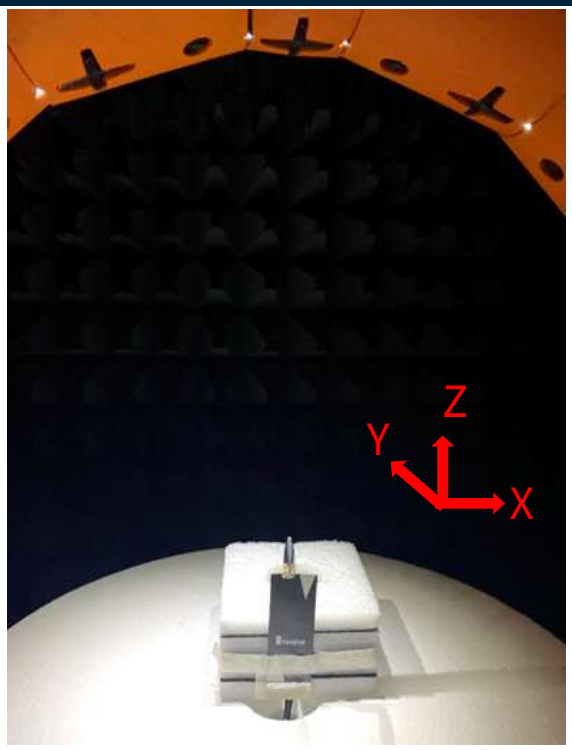
# 4. Radiation Patterns

## 4.1 Test Setup

### Straight

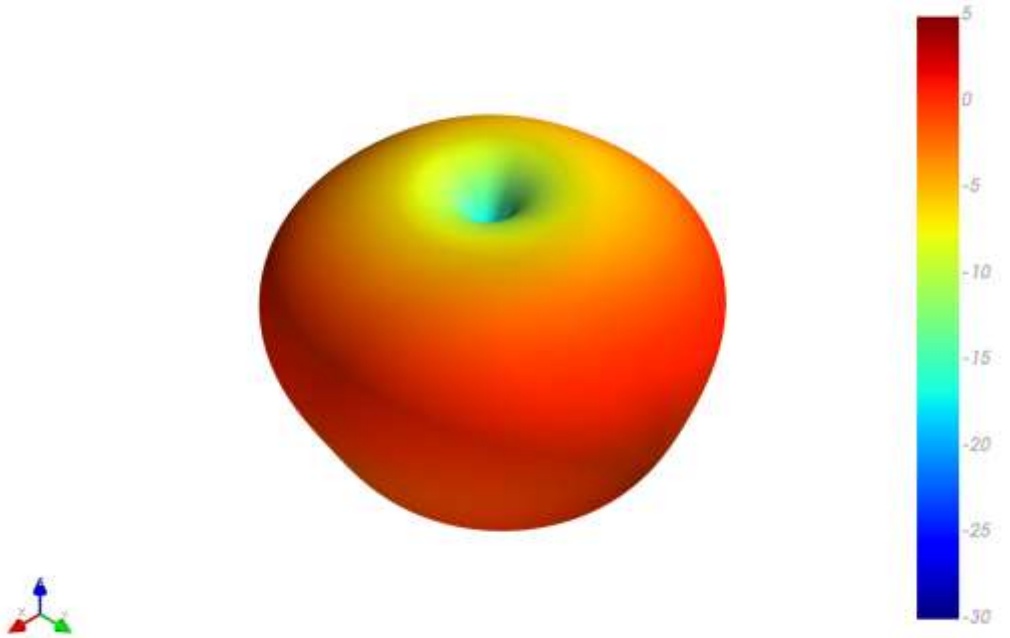


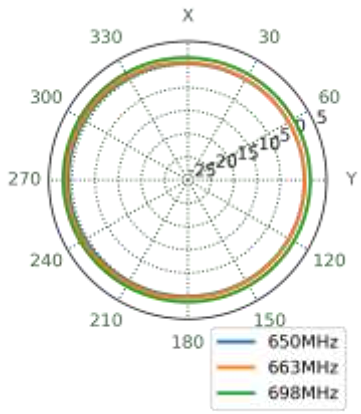
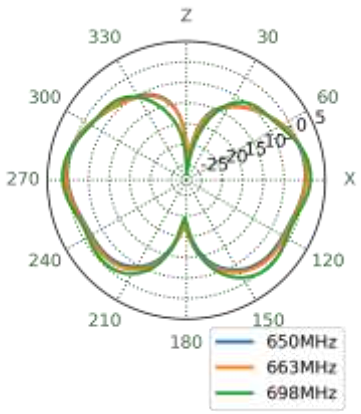
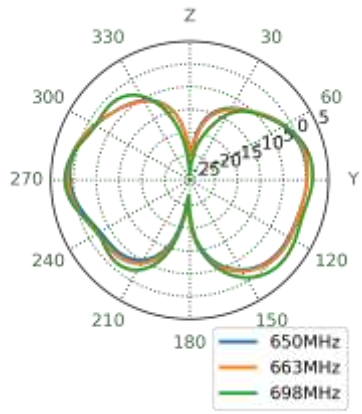

### Bent



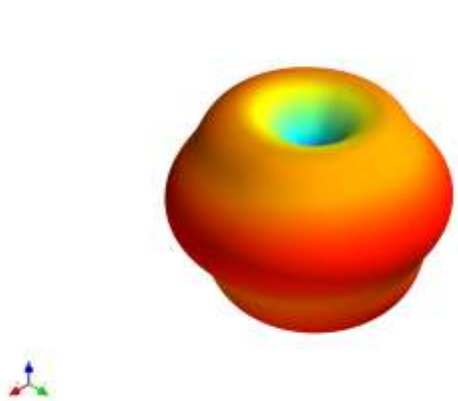
## 4.2 3D and 2D Radiation Patterns – Straight

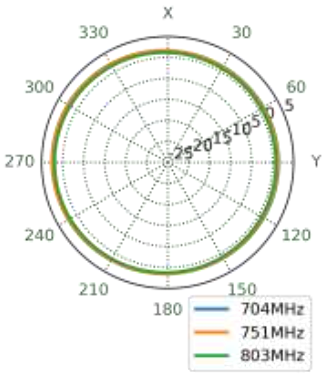
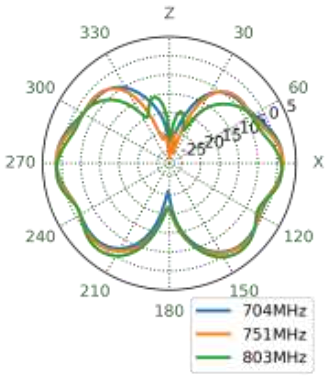
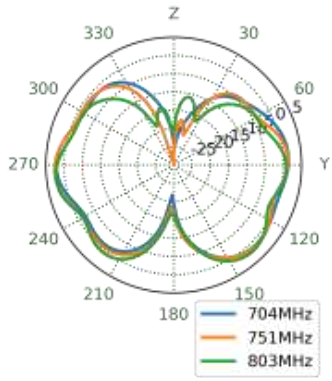
### 663MHz



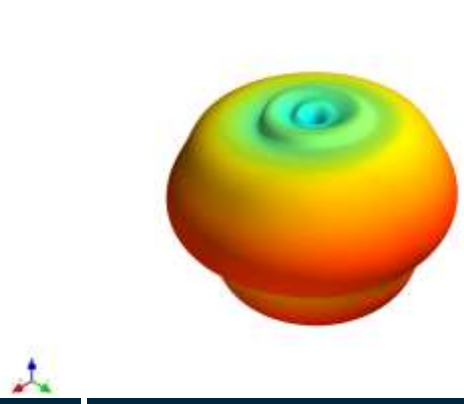

| XY Plane | XZ Plane | YZ Plane |
|---|---|---|
|  |  |  |

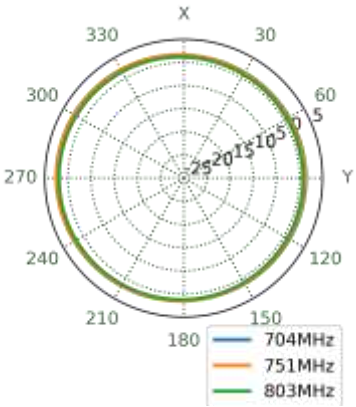
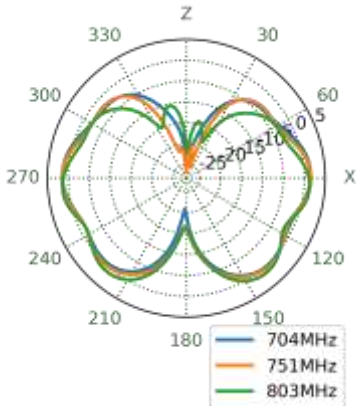
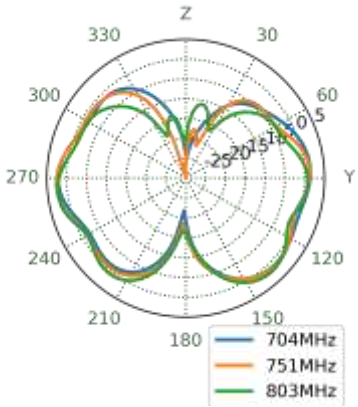
## 751MHz



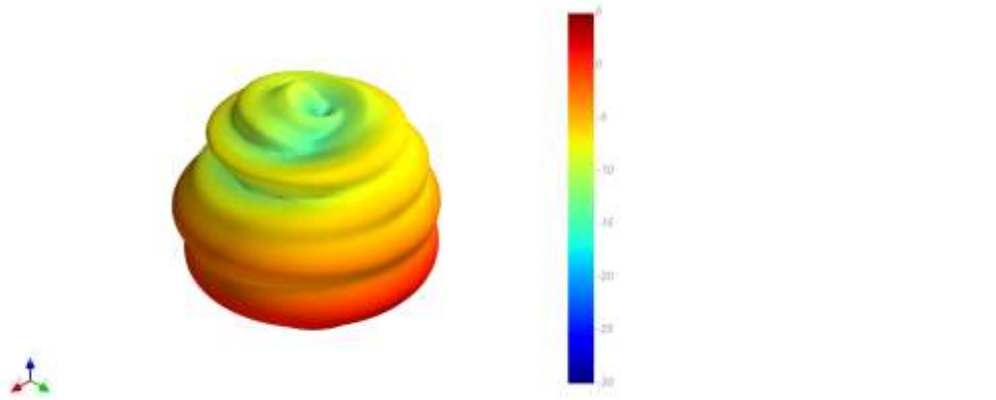
| XY Plane | XZ Plane | YZ Plane |
|---|---|---|
|  |  |  |

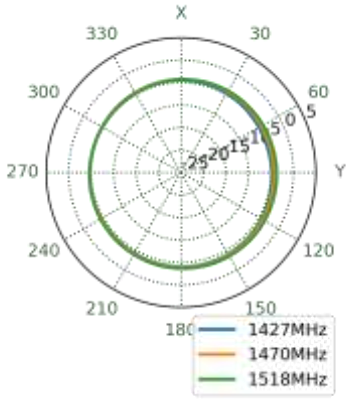
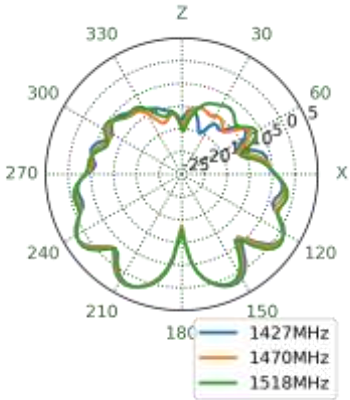
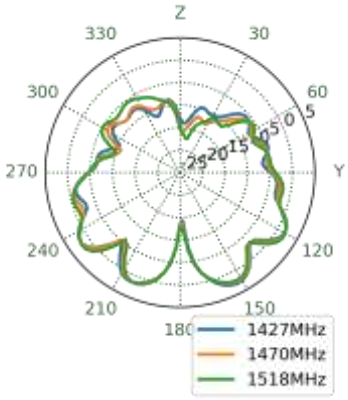
## 894MHz



| XY Plane | XZ Plane | YZ Plane |
|---|---|---|
|  |  |  |

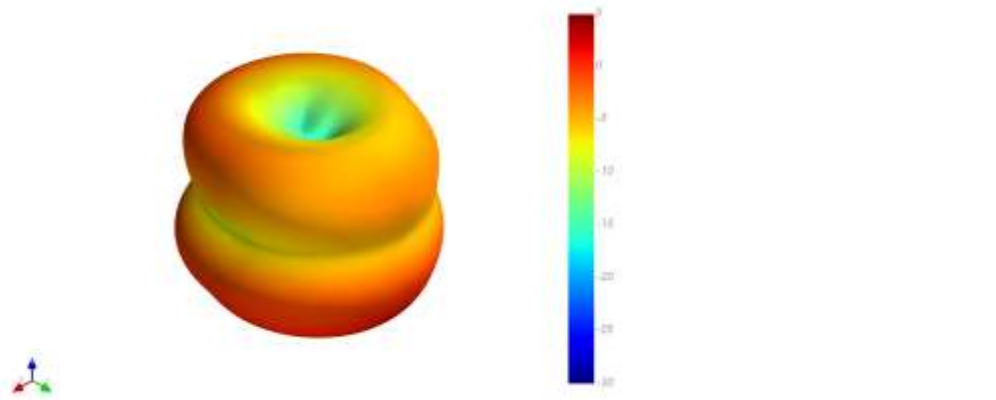
## 1470MHz

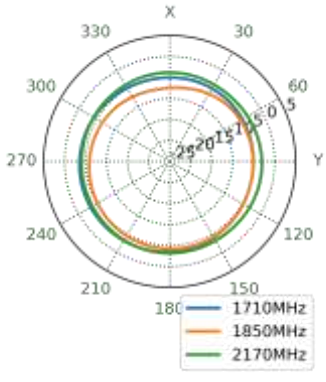
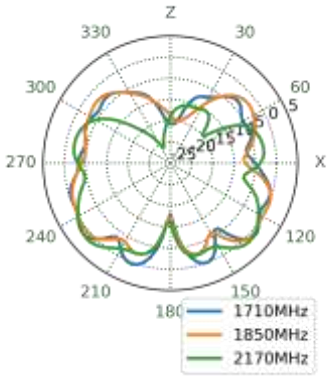
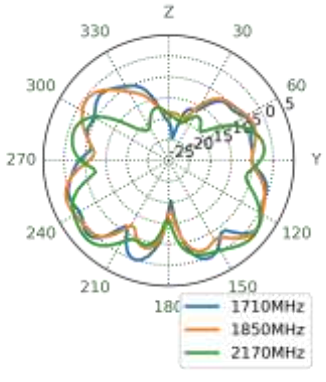


| XY Plane | XZ Plane | YZ Plane |
|---|---|---|
|  |  |  |

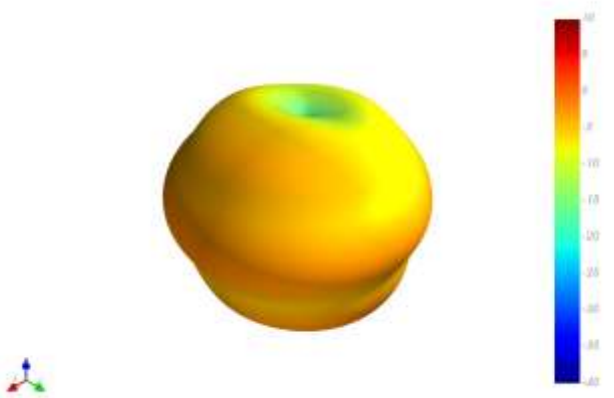


## 1850MHz

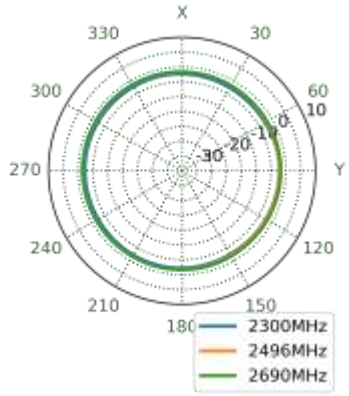


| XY Plane | XZ Plane | YZ Plane |
|---|---|---|
|  |  |  |

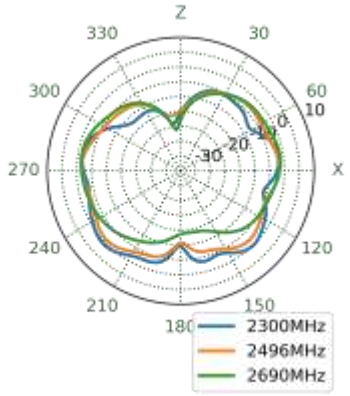
## 2496MHz



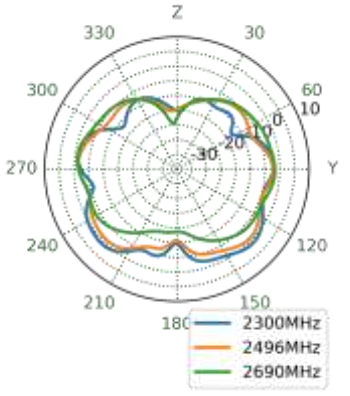
### XY Plane



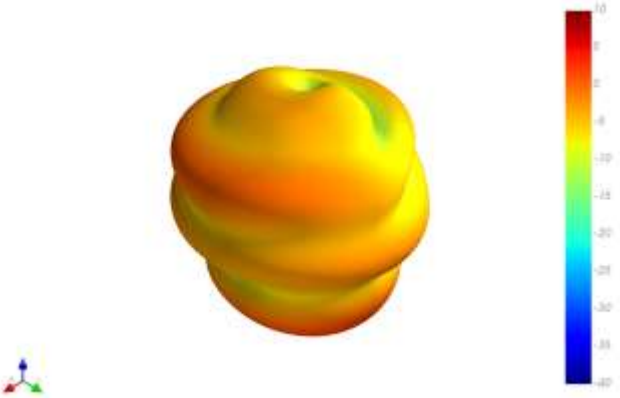

### XZ Plane



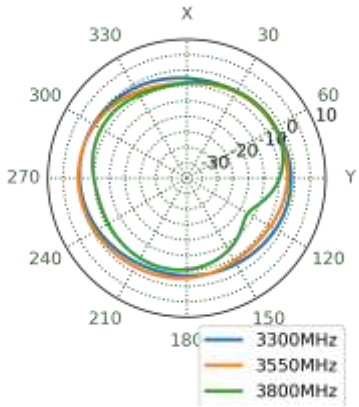

### YZ Plane



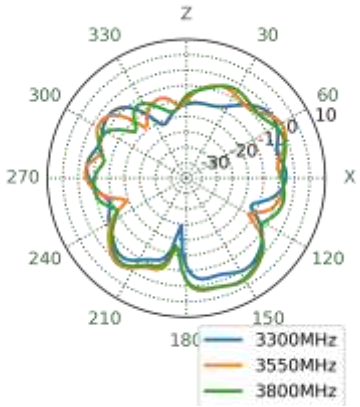

## 3550MHz



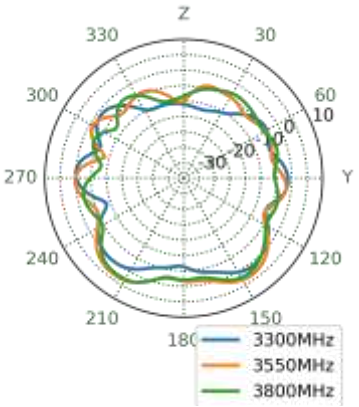
### XY Plane



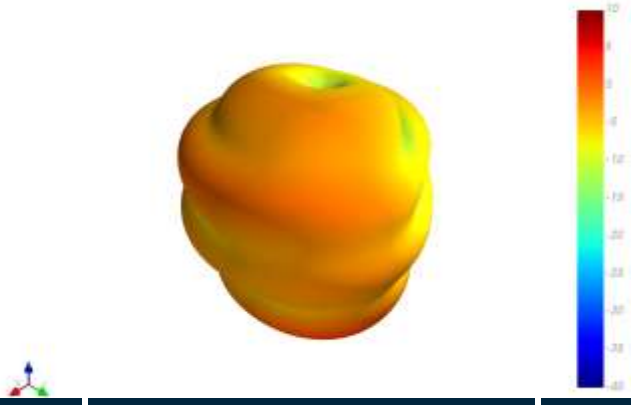

### XZ Plane



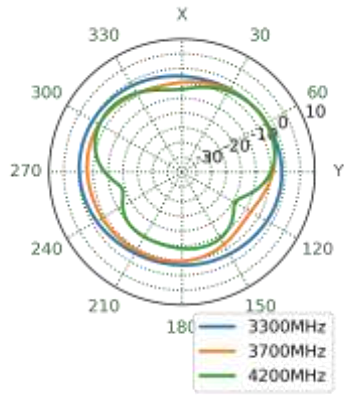

### YZ Plane



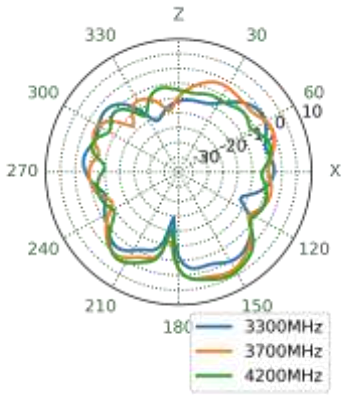
## 3700MHz



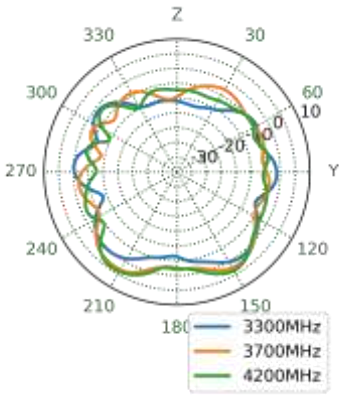
### XY Plane



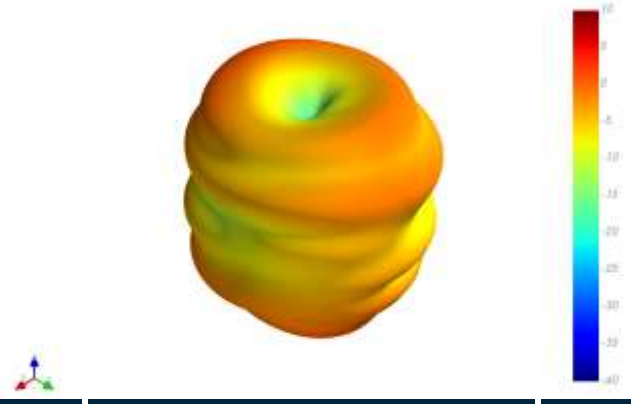

### XZ Plane



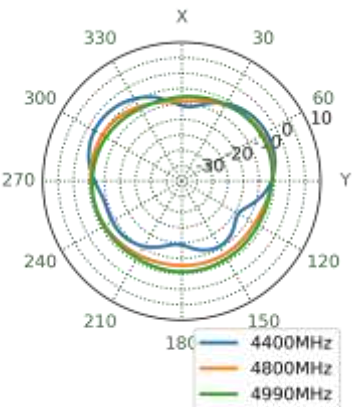

### YZ Plane



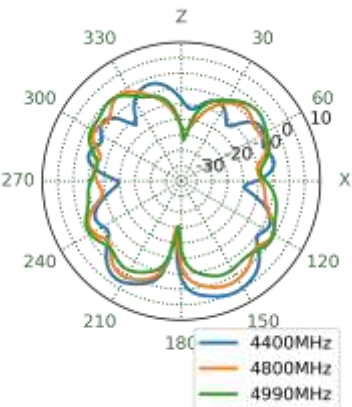

## 4800MHz



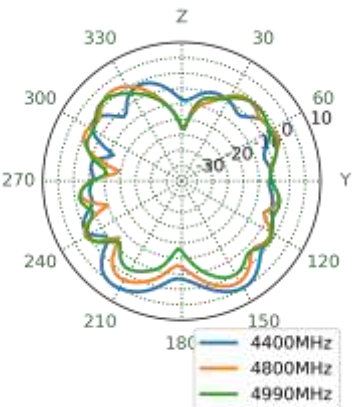
### XY Plane




### XZ Plane

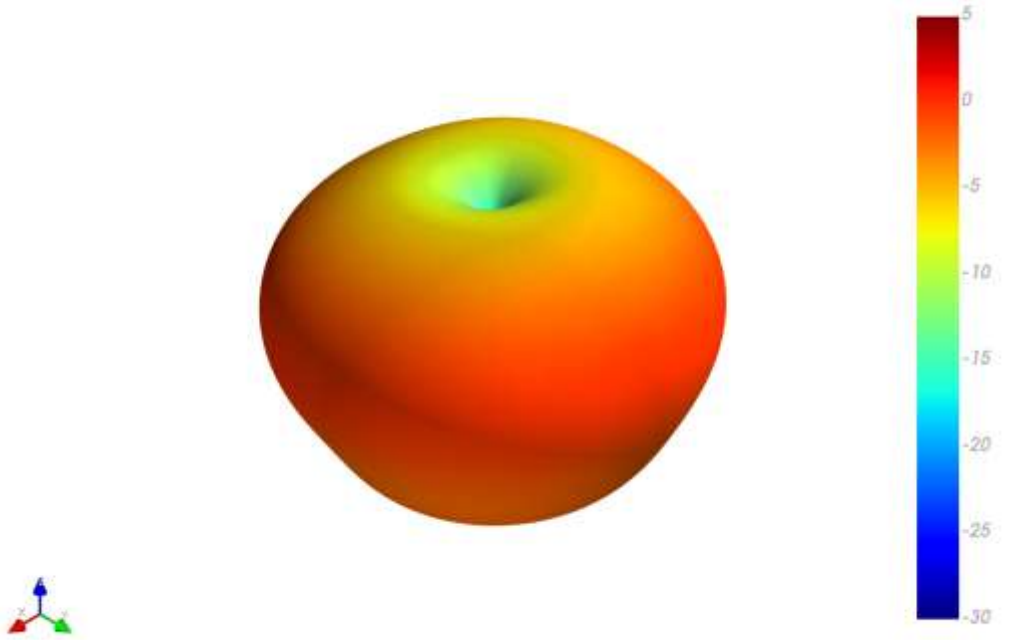


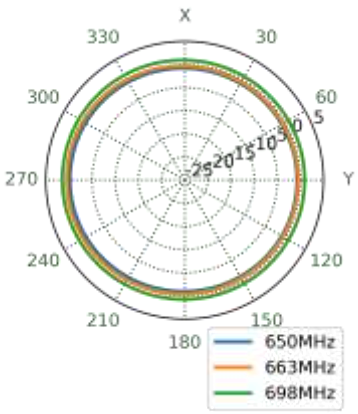
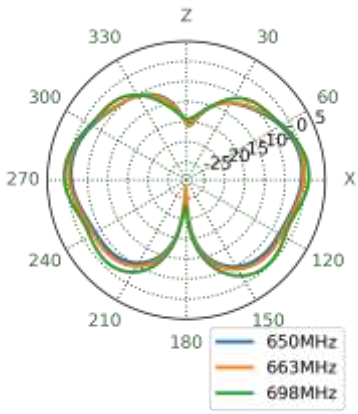
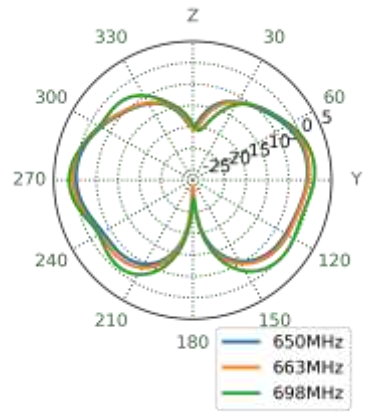

### YZ Plane



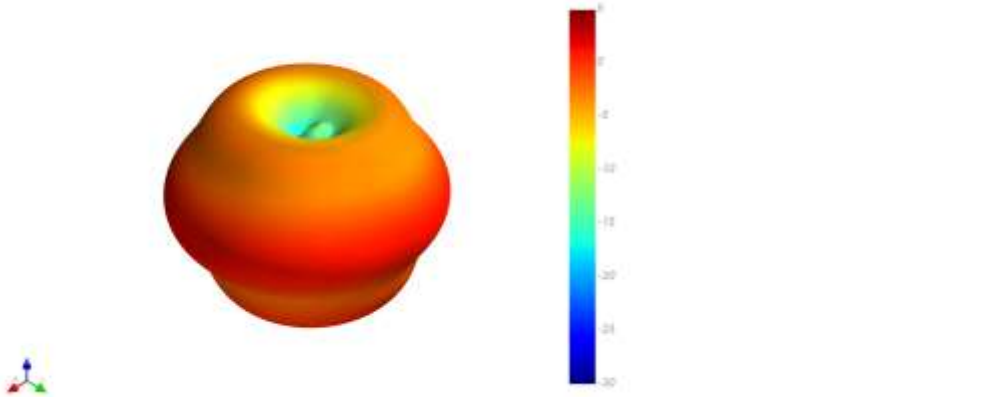
## 4.3 3D and 2D Radiation Patterns – Straight

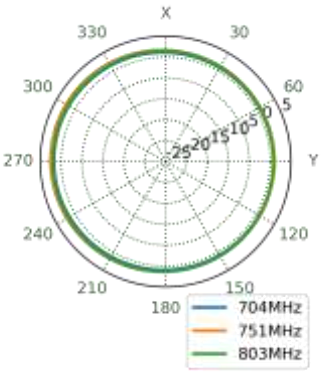
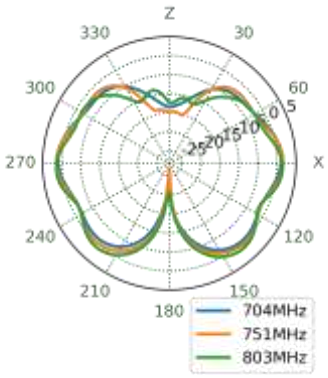
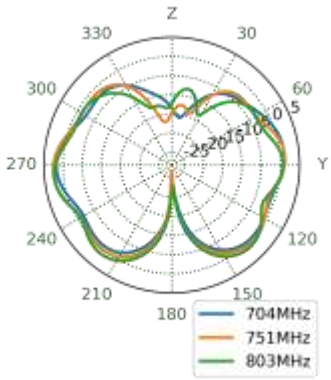
### 663MHz




| XY Plane | XZ Plane | YZ Plane |
|---|---|---|
|  |  |  |

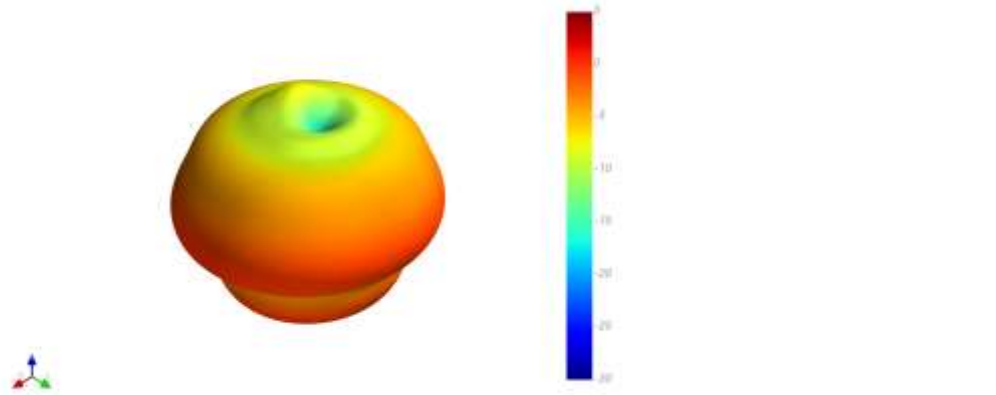
## 751MHz

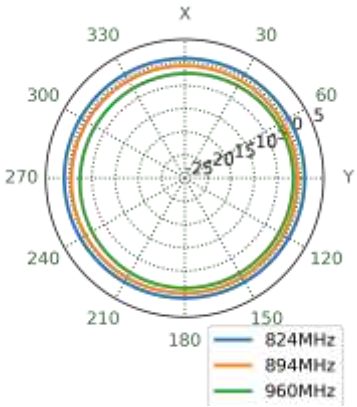
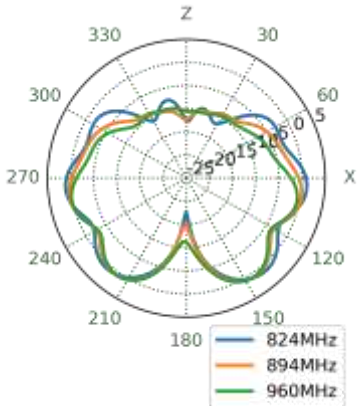
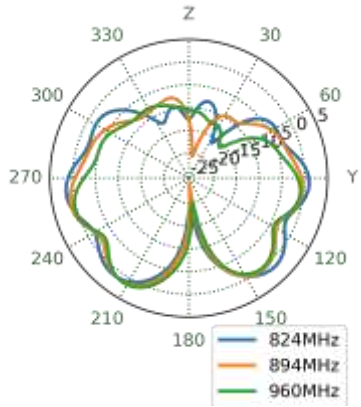


| XY Plane | XZ Plane | YZ Plane |
|---|---|---|
|  |  |  |

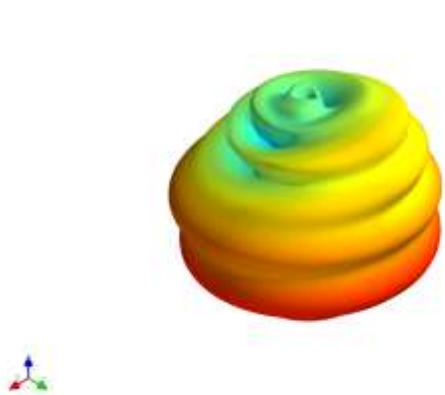


## 894MHz

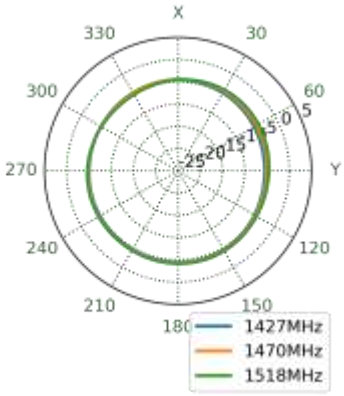


| XY Plane | XZ Plane | YZ Plane |
|---|---|---|
|  |  |  |

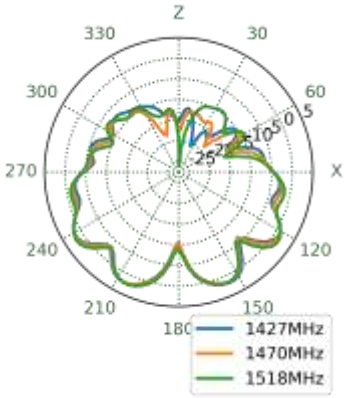
## 1470MHz



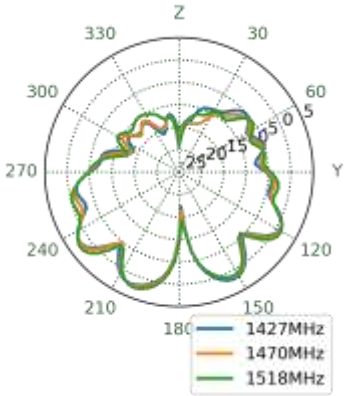
### XY Plane



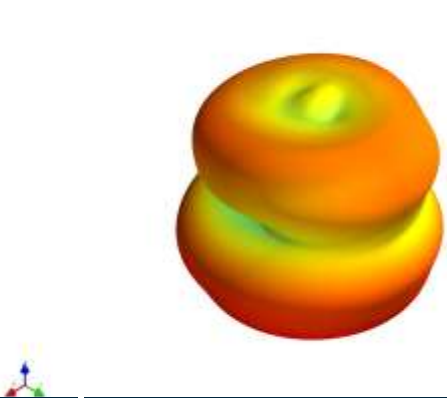

### XZ Plane



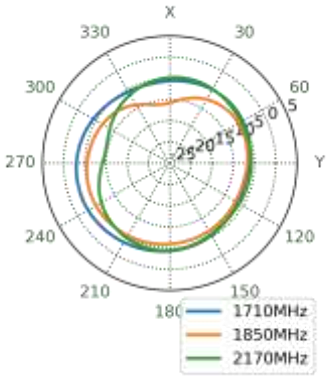

### YZ Plane



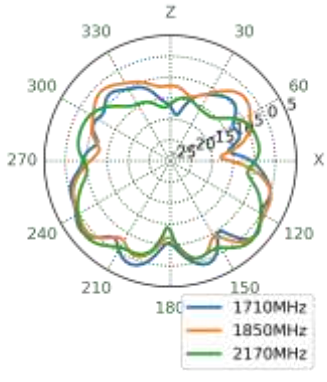

## 1850MHz



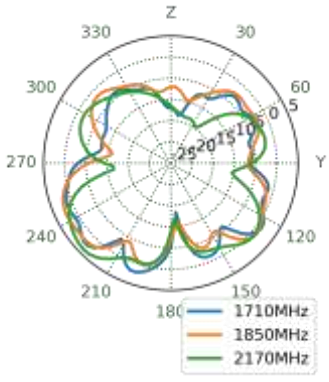
### XY Plane



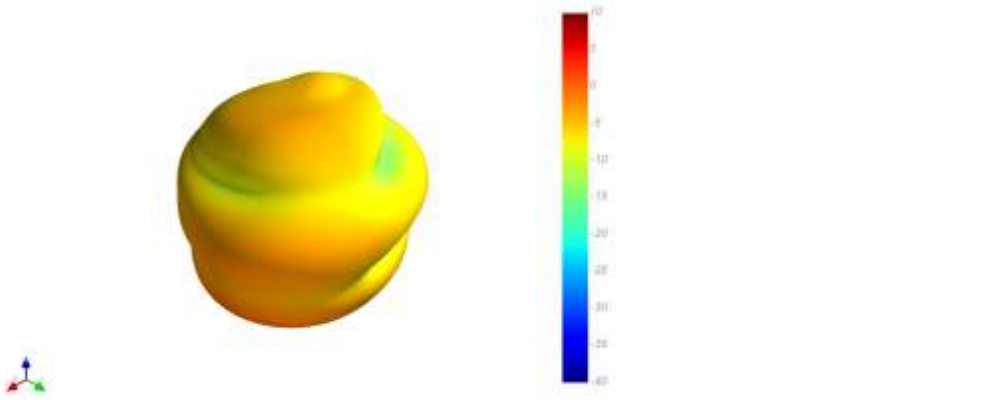

### XZ Plane

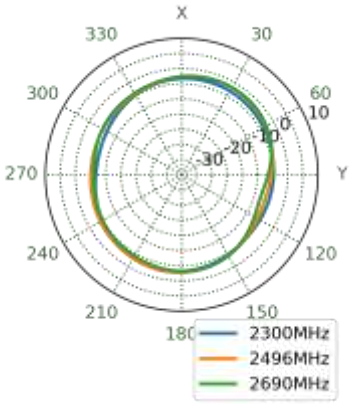
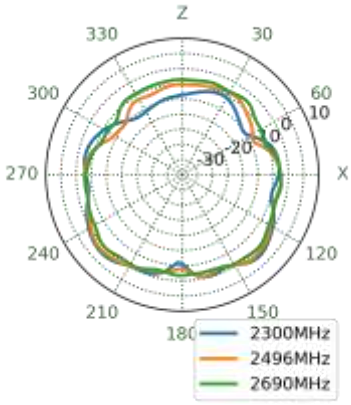
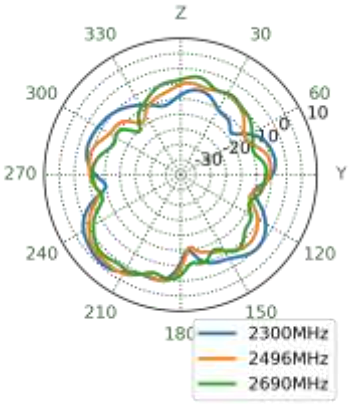



### YZ Plane



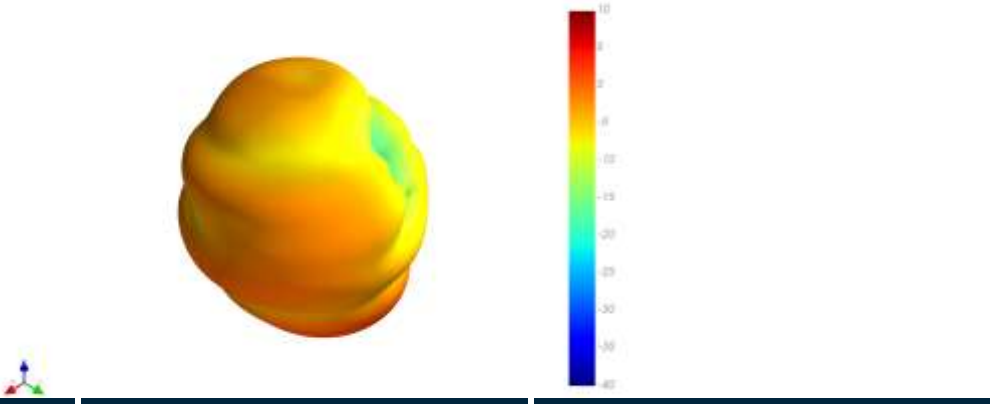
## 2496MHz

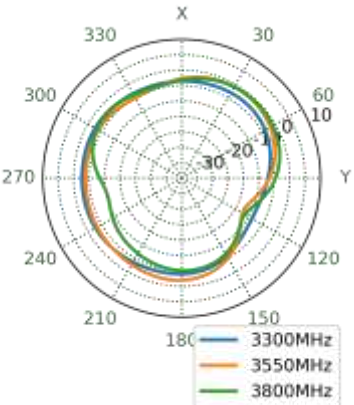
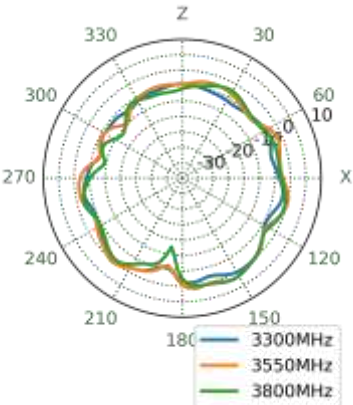
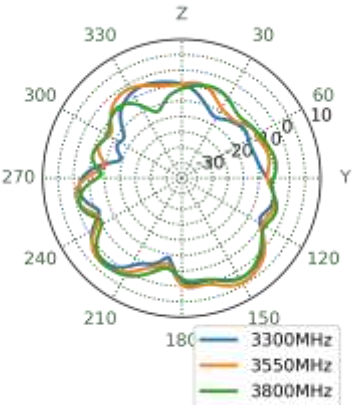


| XY Plane | XZ Plane | YZ Plane |
|---|---|---|
|  |  |  |

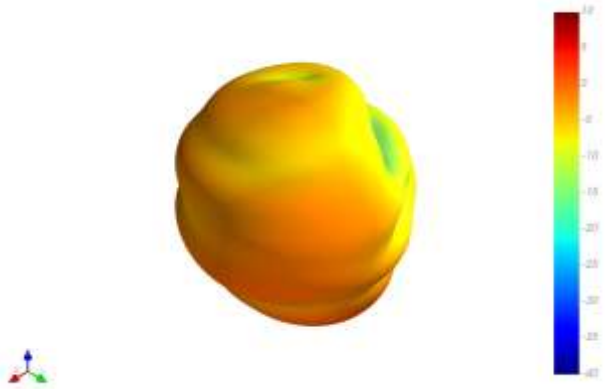


## 3550MHz

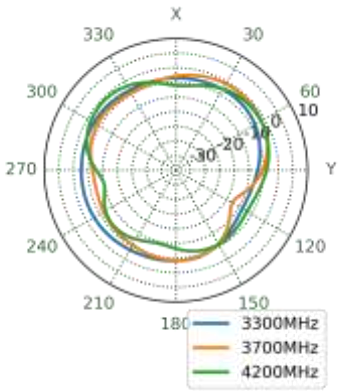


| XY Plane | XZ Plane | YZ Plane |
|---|---|---|
|  |  |  |

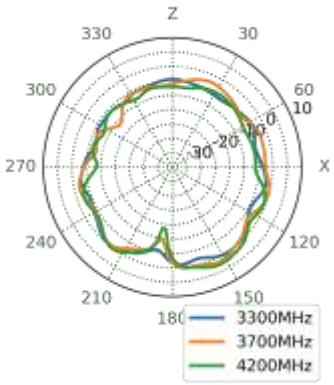
## 3700MHz



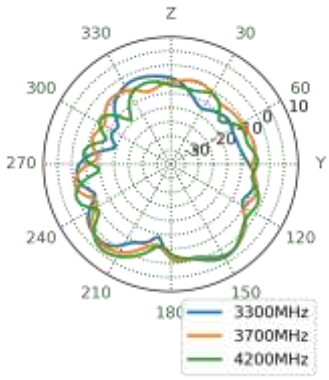
### XY Plane



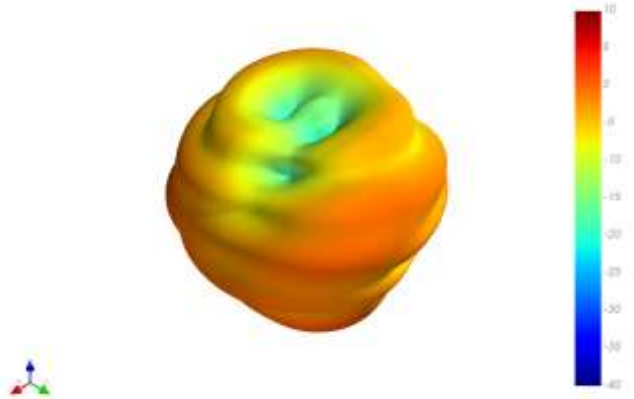

### XZ Plane



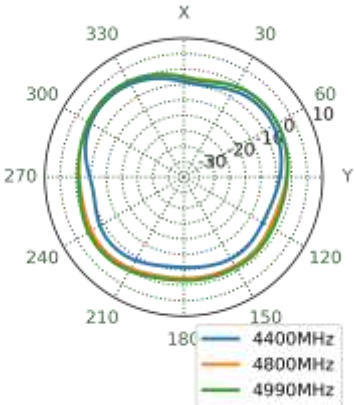

### YZ Plane



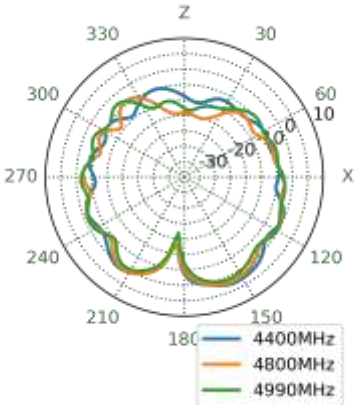

## 4800MHz



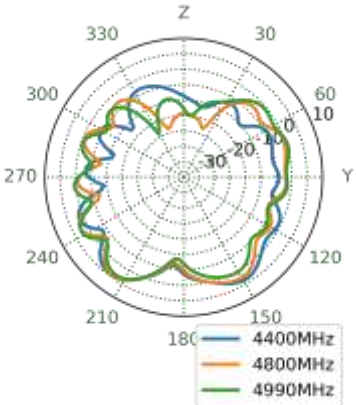
### XY Plane




### XZ Plane



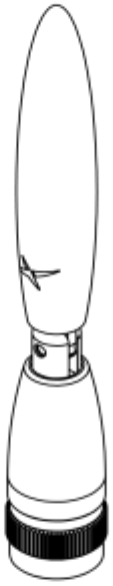

### YZ Plane

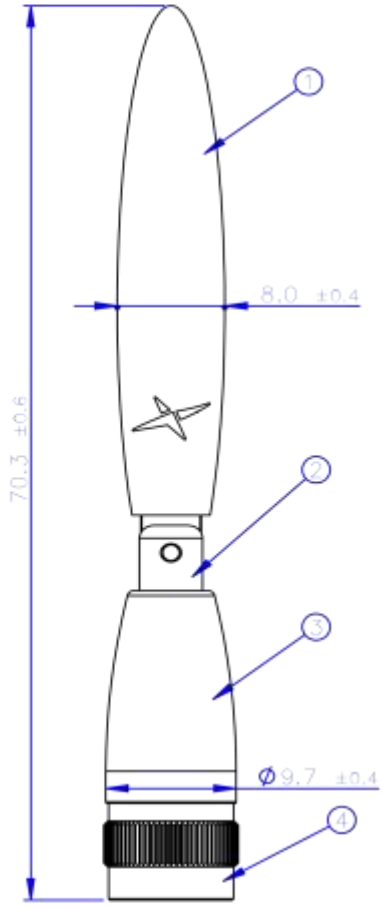


# 5. Mechanical Drawing (Units: mm)

ISO NO.: IDW-21-8-0316
STATE: Release
NOTES: 1.All material must be RoHS compliant.
2.*** Critical Dimensions.

| REV | ZONE | DESCRIPTION | ENG | APPROVED | DATE |
|---|---|---|---|---|---|
| D01 | All | Initial design | Aron Yan | Aaron | 2021/3/5 |






| | Name | Material | Finish | QTY |
|---|---|---|---|---|
| 1 | TG.66 Top Housing | PC:ABS(PC+ABS) | Black | 1 |
| 2 | TG.66 Hinge | NA | NA | 1 |
| 3 | TG.66 Bottom Housing | PC:ABS(PC+ABS) | Black | 1 |
| 4 | TG.66 Copper joint housing | Brass | Ni Plated | 1 |

APPROVED BY: Aaron
CHECK BY: Aaron
DRAWN BY: Aron Yan
DATE: 2021/3/5
UNLESS OTHERWISE SPECIFIED TOLERANCES ON: X ±0.5, X.X ±0.3, X.XX ±0.2, X.XXX ±0.1, X.XXXX ±0.05
THIRD ANGLE PROJECTION

TAOGLAS. TW Design Centre

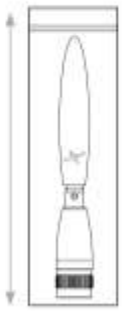

TITLE: Wideband 600~6000MHz 5G/4G Connector Mount Monopole Antenna - Hinged SMA Male
PART NO.: TG.66.A113
UNIT: mm | SCALE: 2:1 | PAGES: 1/1 | REV: D01

# 6. Packaging

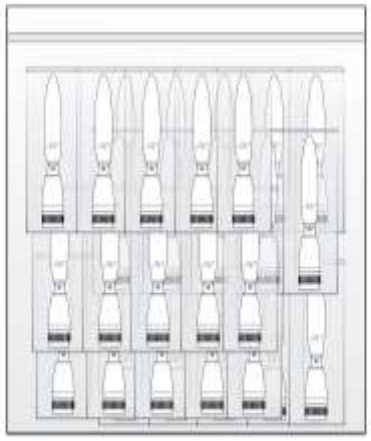
## TG.66.A113

Packaging Specifications

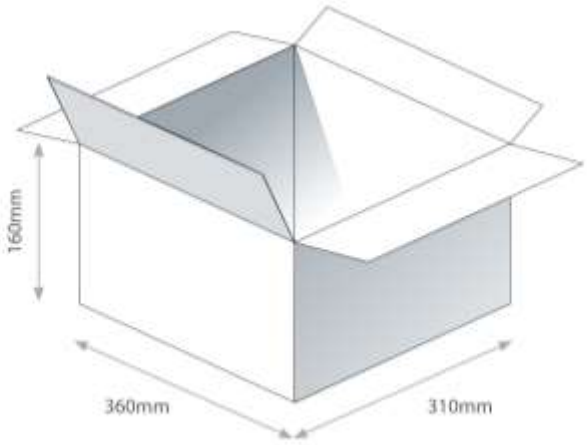
1 pcs TG.66
per PE Bag
Weight - 9g



100 pcs TG.66
per Large PE Bag
Weight - 900g



1500 pcs TG.66
per Carton
Dimensions - 360 x 310 x 160mm
Weight - 13.5Kg



Changelog for the datasheet

**SPE-21-8-047 – TG.66.A113**

| **Revision: A (Original First Release)** | |
|---|---|
| Date: | 2021-07-07 |
| Notes: | |
| Author: | Jack Conroy |

**Previous Revisions**

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