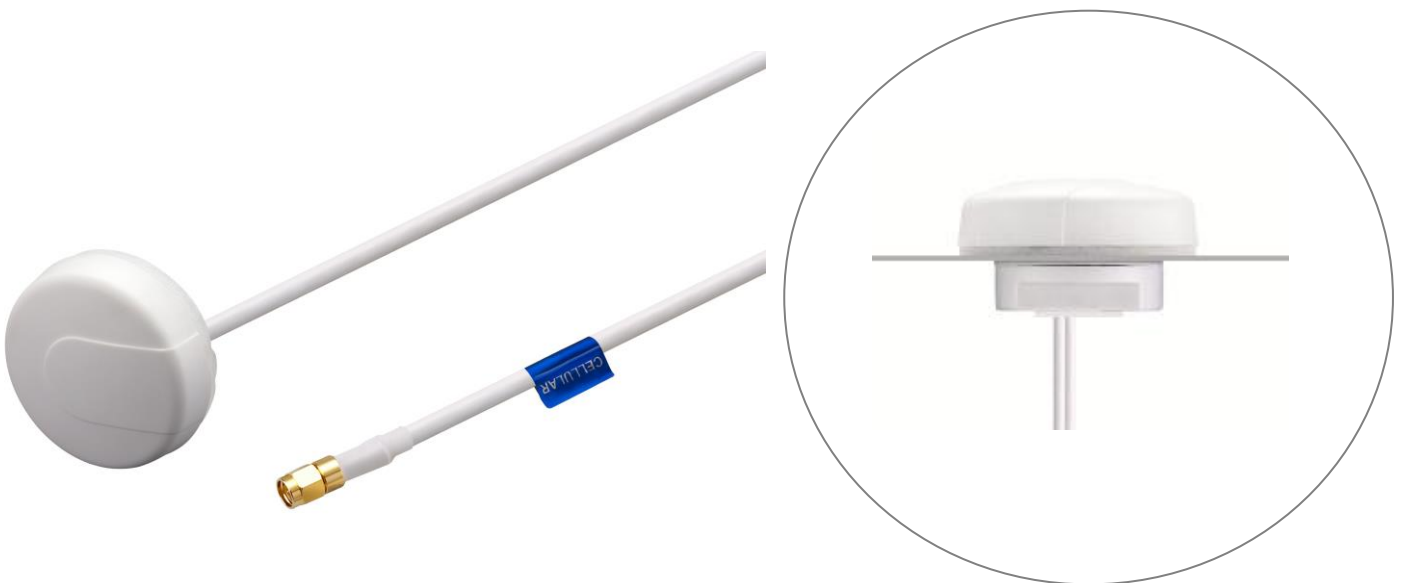


## SPECIFICATION

Part No. : **G24.A.W.305111**

Product Name : G24 Ultima Series – Super Low Profile  
Penta Band Cellular 800~960/1710~220MHz  
Antenna Screw-mount  
GSM/GPRS/CDMA/HSPA  
(Permanent mount)

Feature : Height 19.6mm(0.77")  
Diameter 55mm(2.16")  
Heavy duty screw mount  
UV and vandal resistant PC housing and thread  
IP67 compliant  
Standard is 3 meter low loss cable CFD200  
SMA(M)  
White Housing  
Cables and Connectors Customizable  
**ROHS Compliant**



## 1. Introduction

G24.W Ultima Series Cellular Antenna is an extremely low profile 2G/3G 800MHz to 2200MHz cellular antenna solution for professional telematics applications. Suitable for GSM/GPRS/CDMA applications worldwide, at only 19.6mm (0.77") in height it is the lowest profile antenna in the market, with a diameter of only 55 mm (2.16"). It works well when mounted on both metal and non-metal. In other words it does not need a metal ground-plane to attach to, to radiate, something that competitor antennas all need. Taoglas recommend a minimum cable length of 70mm when used on a ground plane to achieve an efficiency of greater than 20%.

Durable UV PC housing, thread and nut is resistant to vandalism and direct attack.

The IP67 waterproof robust plastic body makes it extremely light, economical for shipping and minimum weight impact on vehicles. This also makes it ideal for use in humid environments such as water pits or marine applications as there are no metal parts to corrode. The closed cell foam with double-sided adhesive provides a permanent waterproof seal and can adjust to different curvatures, stopping water from leaking under the antenna into the mounting hole. Lowest loss PTFE cable is used for maximum gain and reduced noise entry through the cable.

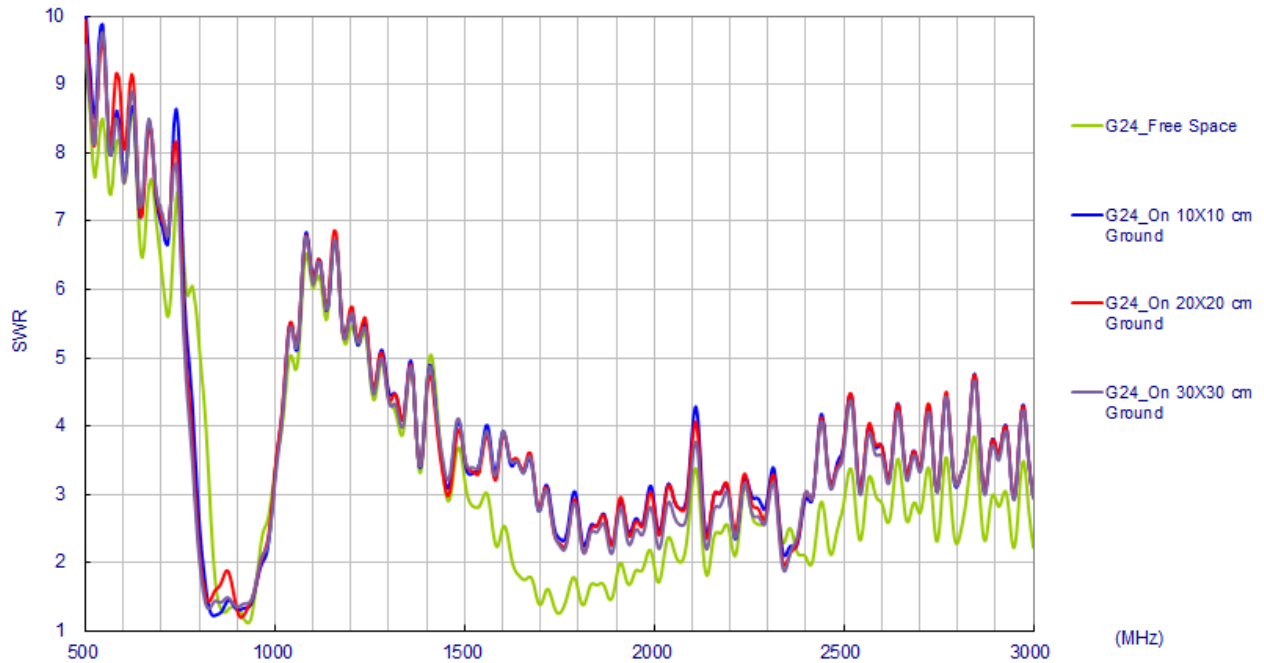
Also available in Black.

## 2. Specification

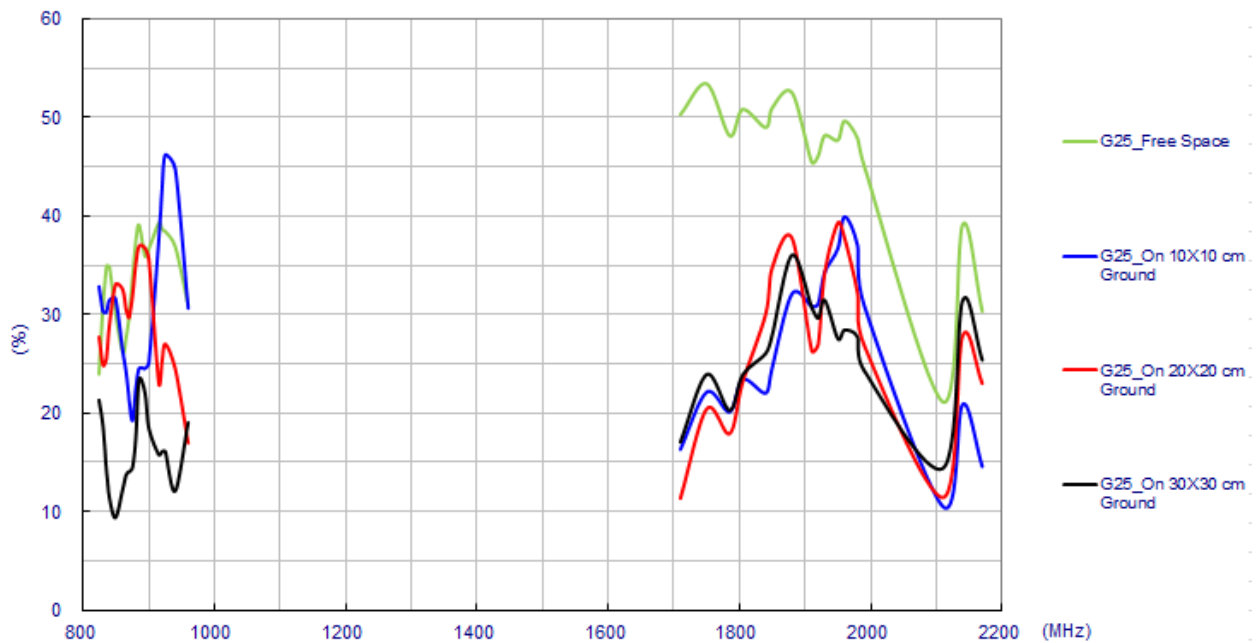
| CELLULAR                        |                                                                                 |           |             |             |             |
|---------------------------------|---------------------------------------------------------------------------------|-----------|-------------|-------------|-------------|
| Frequency (MHz)                 | 824 ~ 896                                                                       | 880 ~ 960 | 1710 ~ 1880 | 1850 ~ 1990 | 1710 ~ 2170 |
| Peak Gain (dBi)                 |                                                                                 |           |             |             |             |
| Free space                      | 2.0                                                                             | 1.8       | 3.9         | 3.9         | 3.9         |
| 10x10mm ground plane            | -0.6                                                                            | 0.7       | -0.2        | 1.7         | 1.7         |
| 20x20mm ground plane            | 1.8                                                                             | 1.8       | 3.1         | 3.1         | 3.1         |
| 30x30mm ground plane            | 0.0                                                                             | 0.0       | 1.7         | 1.7         | 2.0         |
| Average Gain (dBi)              |                                                                                 |           |             |             |             |
| Free space                      | -4.1                                                                            | -4.0      | -2.7        | -2.8        | -2.7        |
| 10x10mm ground plane            | -4.8                                                                            | -3.3      | -4.9        | -4.0        | -4.0        |
| 20x20mm ground plane            | -4.3                                                                            | -4.3      | -4.2        | -4.0        | -4.0        |
| 30x30mm ground plane            | -6.3                                                                            | -6.6      | -4.4        | -4.4        | -4.4        |
| Efficiency (%)                  |                                                                                 |           |             |             |             |
| Free space                      | 39.1                                                                            | 39.3      | 53.4        | 52.5        | 53.4        |
| 10x10mm ground plane            | 33.8                                                                            | 46.2      | 32.1        | 40.0        | 40.0        |
| 20x20mm ground plane            | 36.9                                                                            | 36.9      | 37.8        | 39.3        | 39.3        |
| 30x30mm ground plane            | 23.4                                                                            | 23.4      | 36.0        | 36.0        | 36.0        |
| Polarization                    | Linear                                                                          |           |             |             |             |
| Radiation Pattern               | Omni                                                                            |           |             |             |             |
| Input Power                     | 50Ω                                                                             |           |             |             |             |
| MECHANICAL                      |                                                                                 |           |             |             |             |
| Dimensions                      | Φ55±2mm , Height 30±2 mm, Profile 19.6mm<br>Ø2.16"; Height 1.18"; Profile 0.77" |           |             |             |             |
| Cable type                      | CFD200                                                                          |           |             |             |             |
| Cable length                    | 3000±30mm(9' 10 <sup>1</sup> / <sub>8</sub> "±1.18")                            |           |             |             |             |
| Casing                          | PC                                                                              |           |             |             |             |
| Connector                       | SMA Male                                                                        |           |             |             |             |
| ENVIRONMENTAL                   |                                                                                 |           |             |             |             |
| Temperature Range               | -40°C to 85°C                                                                   |           |             |             |             |
| Waterproof                      | IP-67                                                                           |           |             |             |             |
| Thermal Shock                   | 100 cycles -40°C to +80°C                                                       |           |             |             |             |
| Shock (drop test)               | 1m drop on concrete 6 axes                                                      |           |             |             |             |
| Humidity                        | Non-condensing 65°C 95% RH                                                      |           |             |             |             |
| Weight                          | 180g                                                                            |           |             |             |             |
| Recommended Torque for Mounting | 3.92N·m                                                                         |           |             |             |             |
| Max Torque for Mounting         | 4.9N·m                                                                          |           |             |             |             |

## 3. Antenna Characteristics

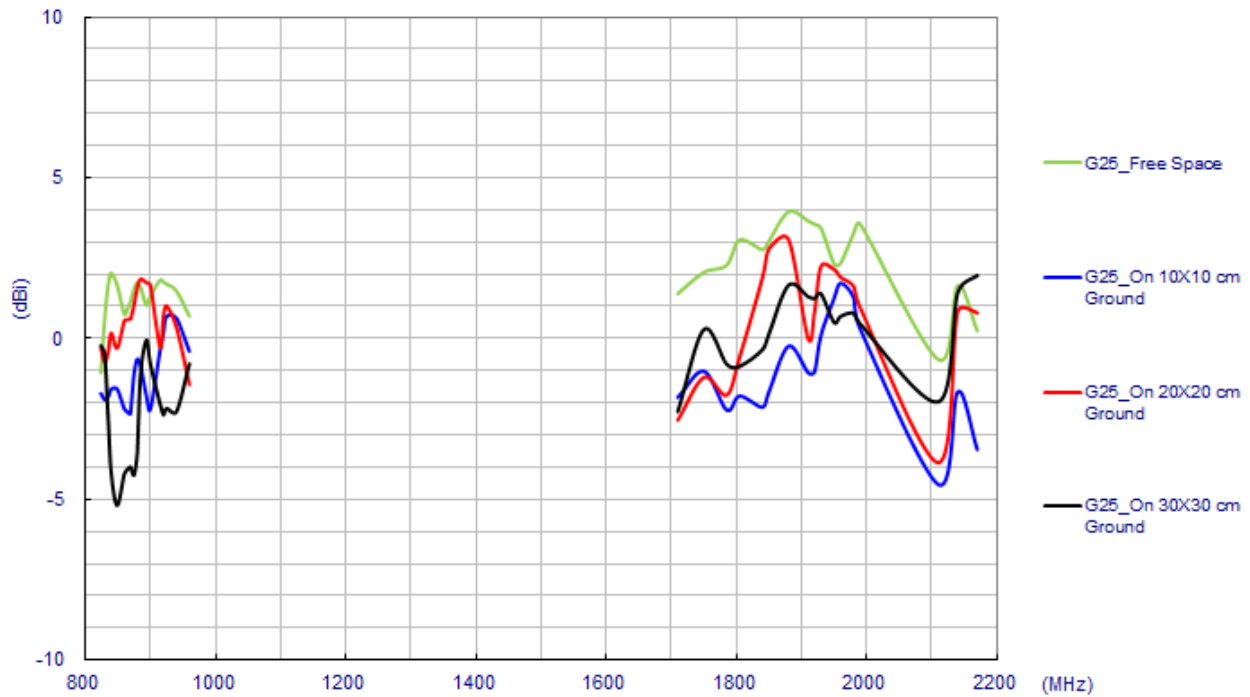
### 3.1 Cellular antenna SWR



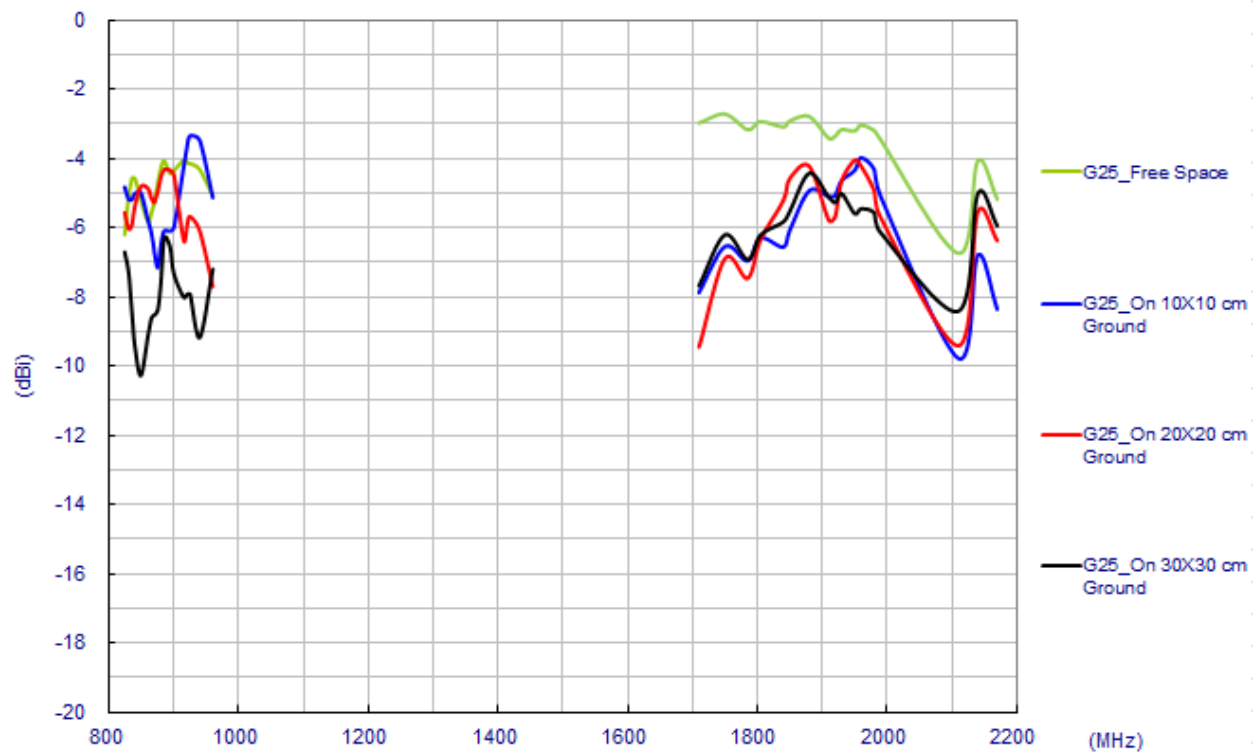
### 3.2 Antenna Efficiency



### 3.3 Peak Gain



### 3.4 Average Gain



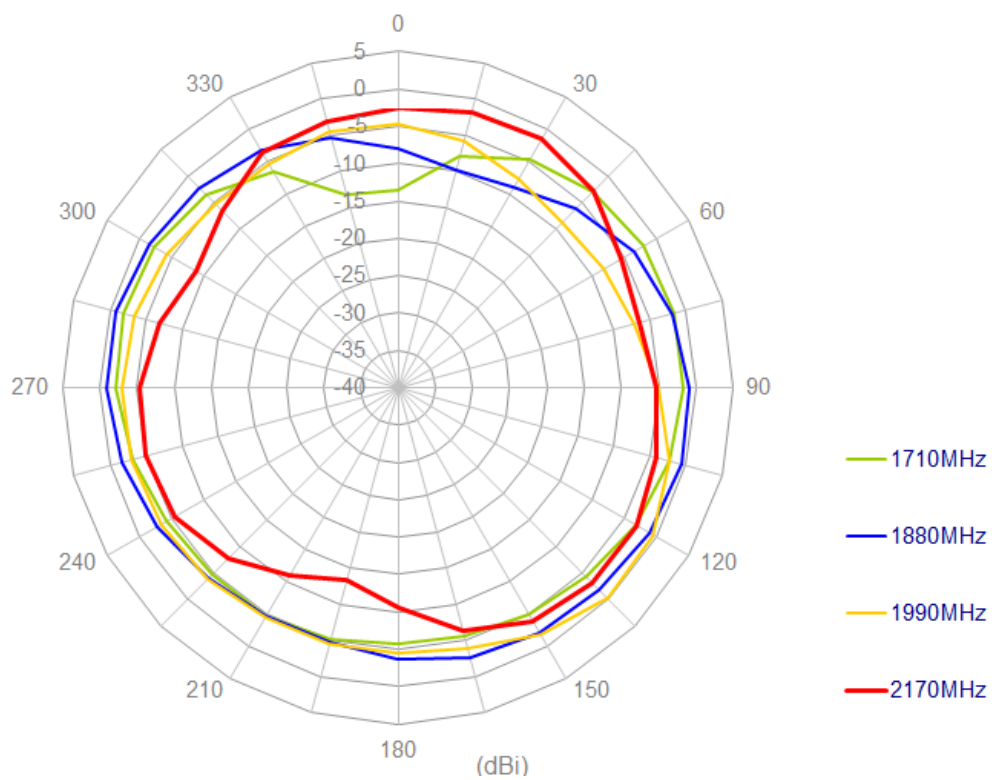
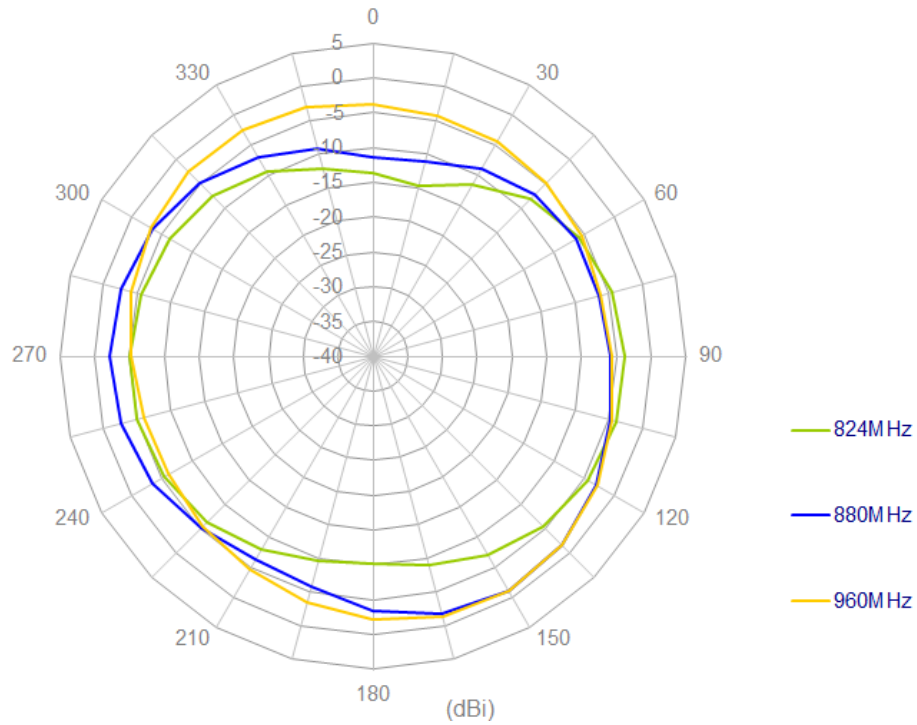
## 4 Antenna Radiation Pattern (Free Space)

### 4.1 Antenna Setup (Free Space)

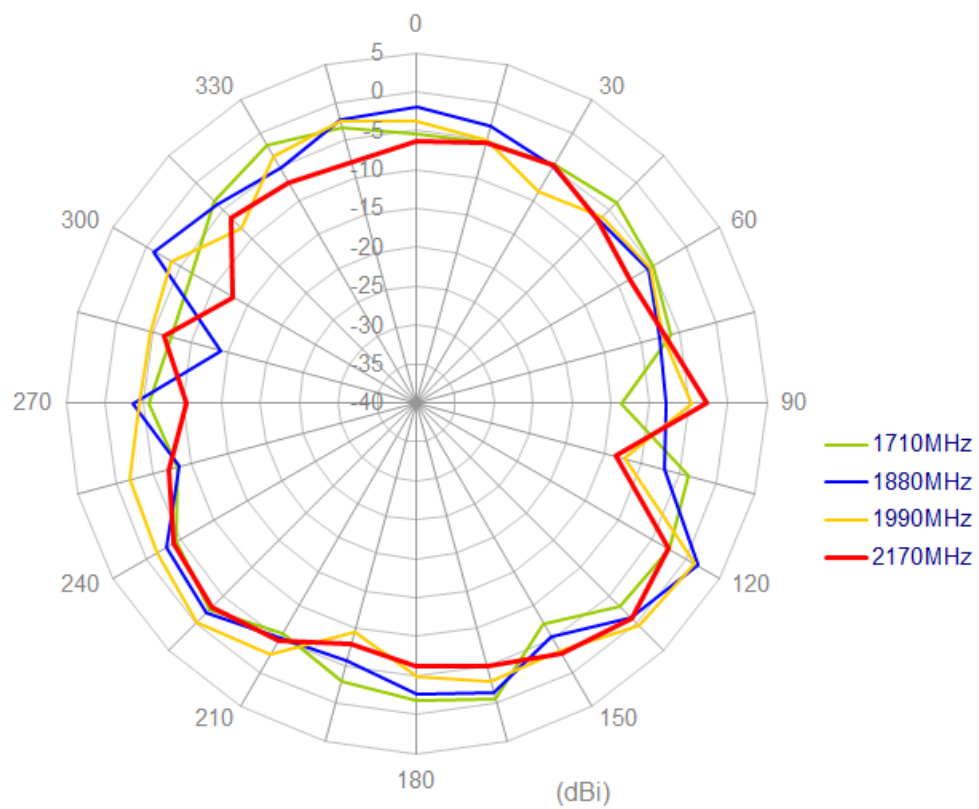
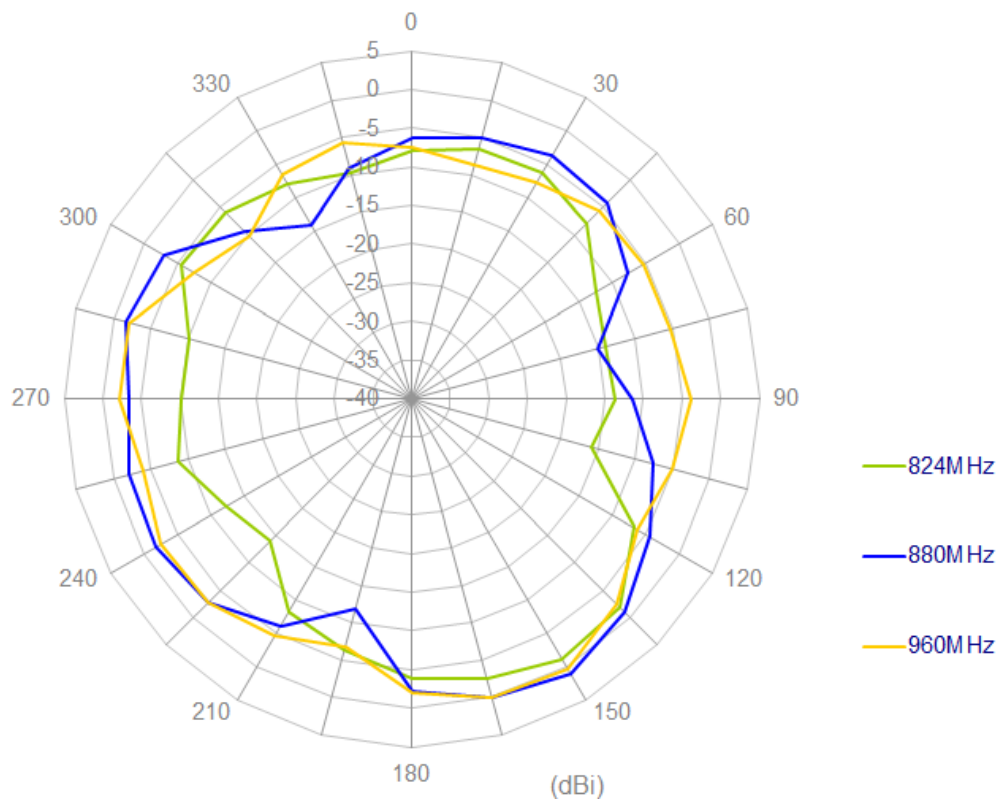


## 4.2 Radiation Pattern (Free Space)

### 4.2.1 X-Y plane (dBi) (Free Space)



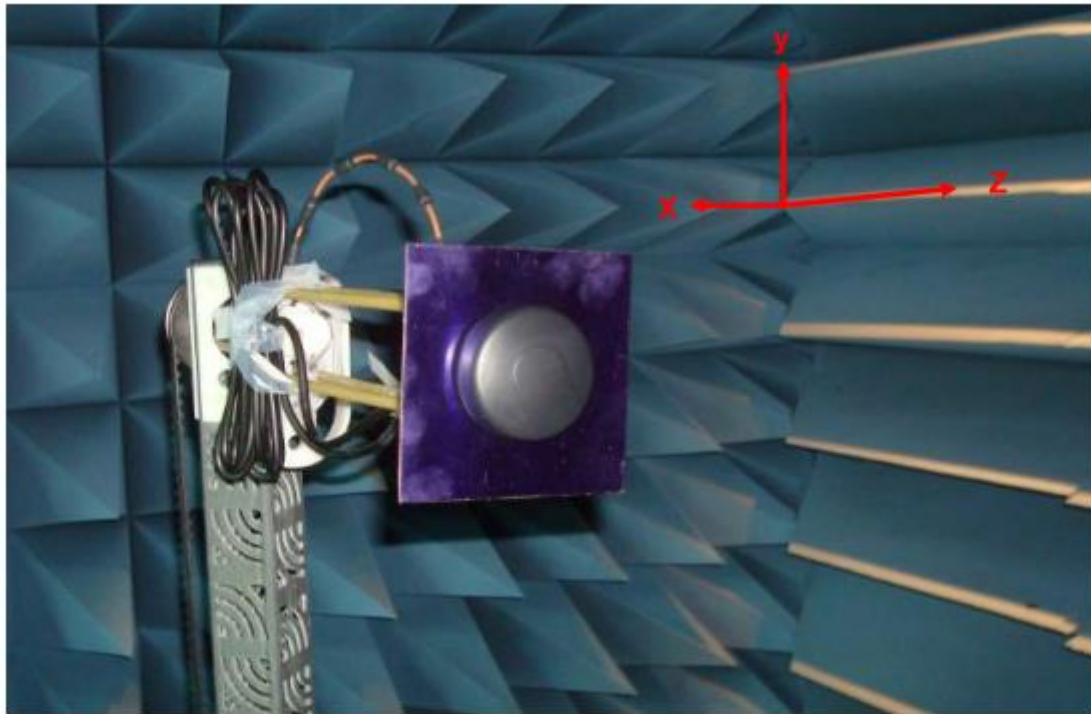
### 4.2.2 X-Z plane (dBi) (Free Space)





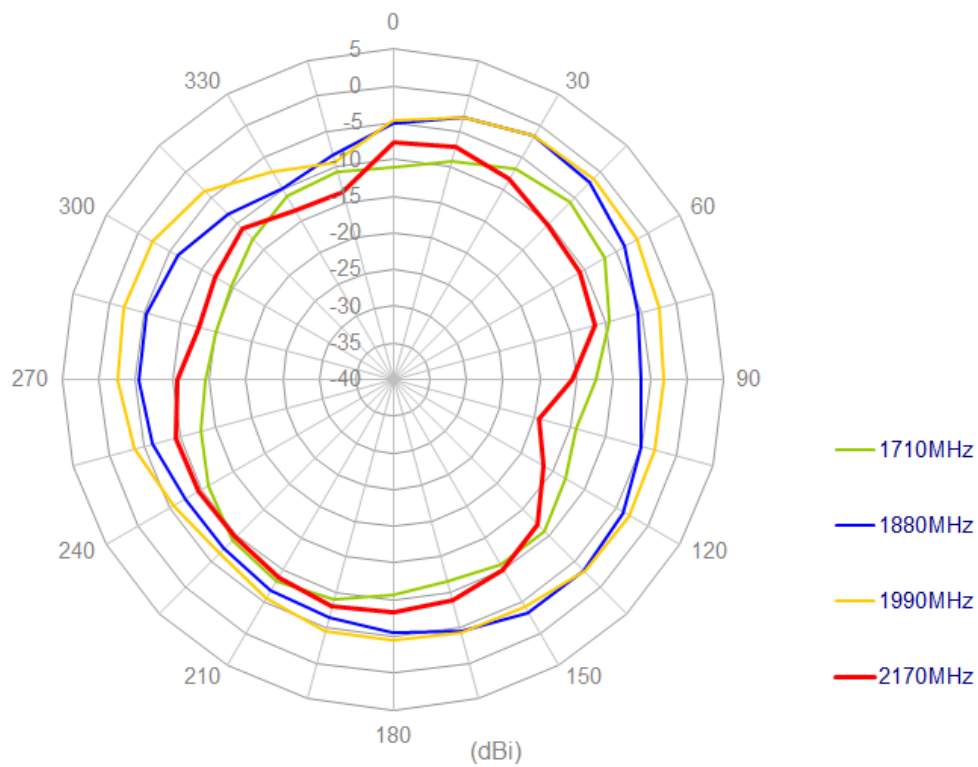
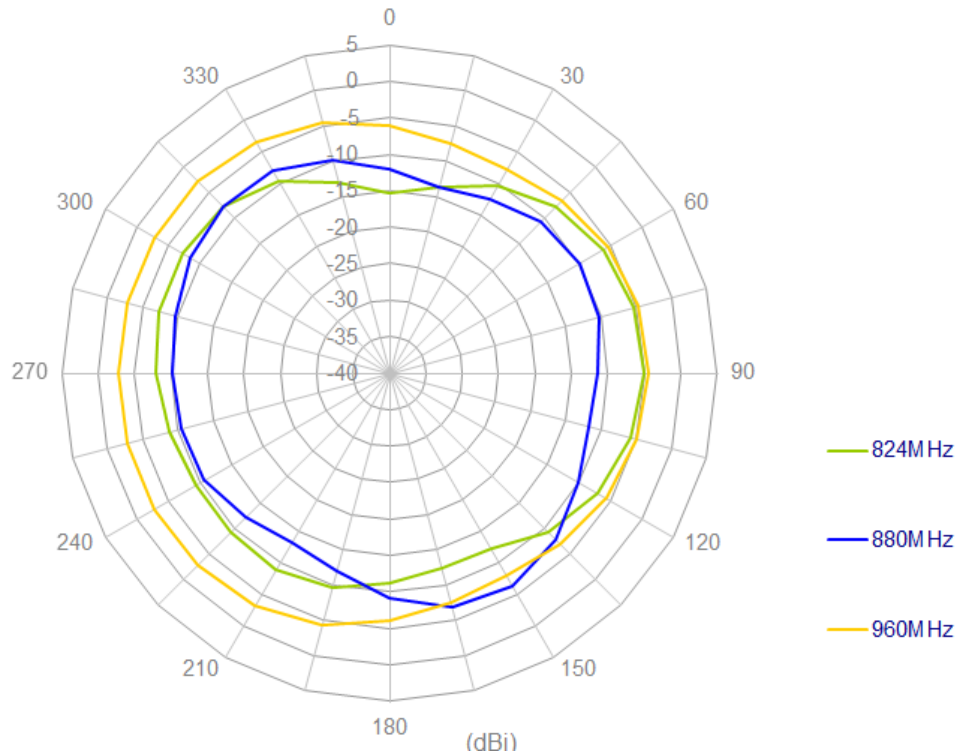
## 5 Antenna Radiation Pattern (10\*10mm)

### 5.1 Antenna Setup (10\*10mm Ground Plane)

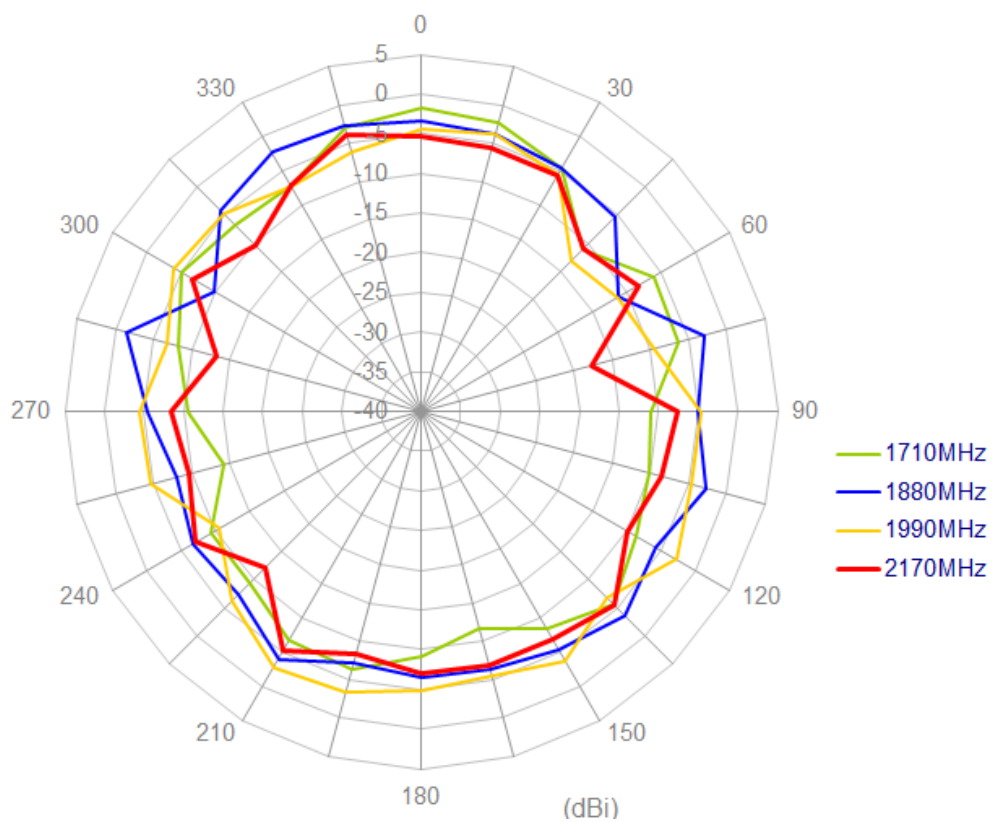
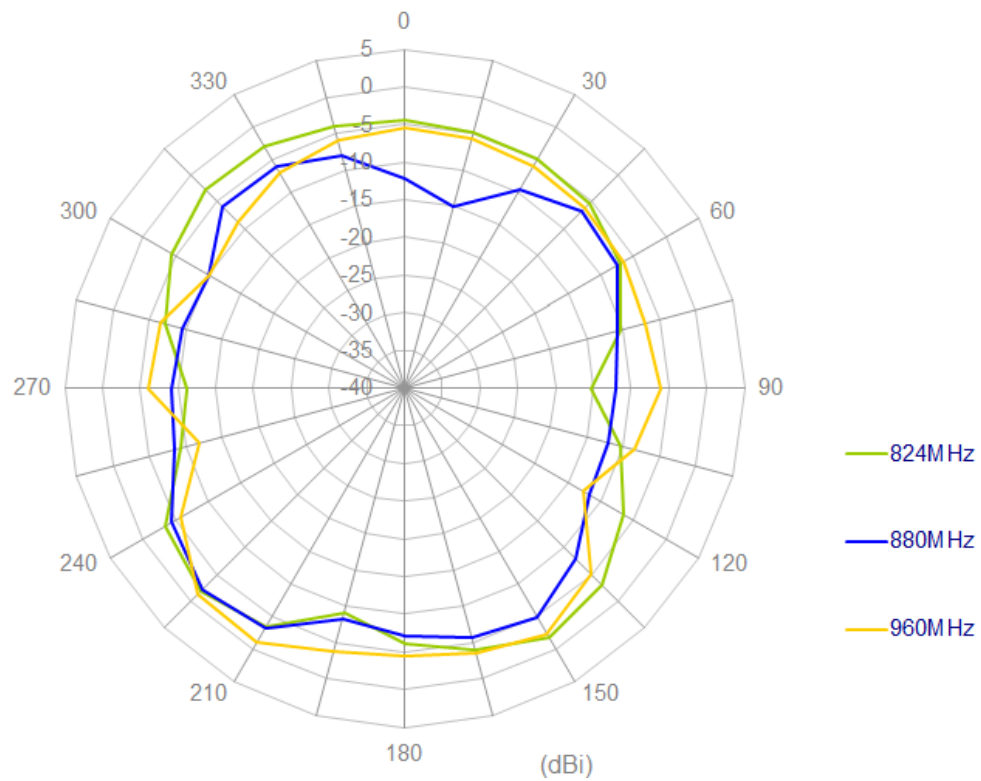


## 5.2 Radiation Pattern (10\*10mm Ground Plane)

### 5.2.1 X-Y plane (dBi) (10\*10mm Ground Plane)

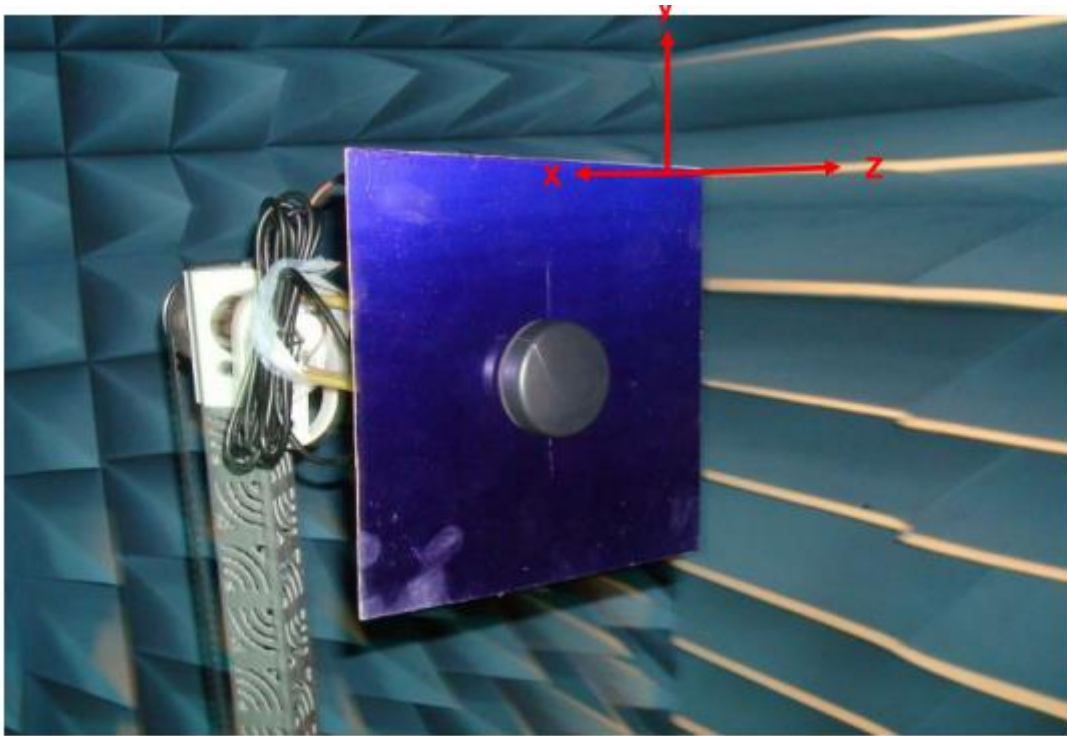


### 5.2.2 X-Z plane (dBi) (10\*10mm Ground Plane)



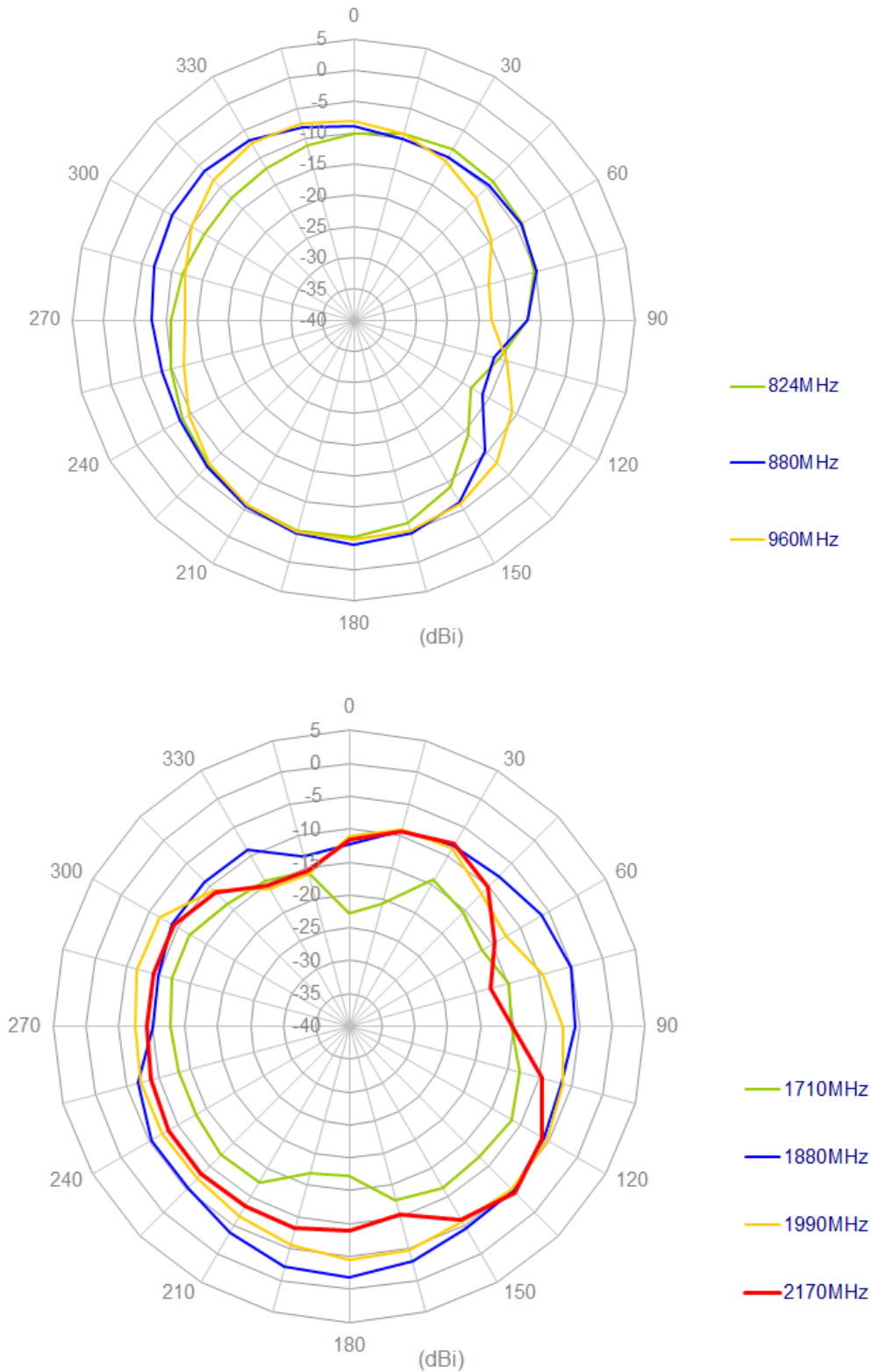
## 6 Antenna Radiation Pattern (20\*20mm Ground Plane)

### 6.1 Antenna Setup (20\*20mm Ground Plane)

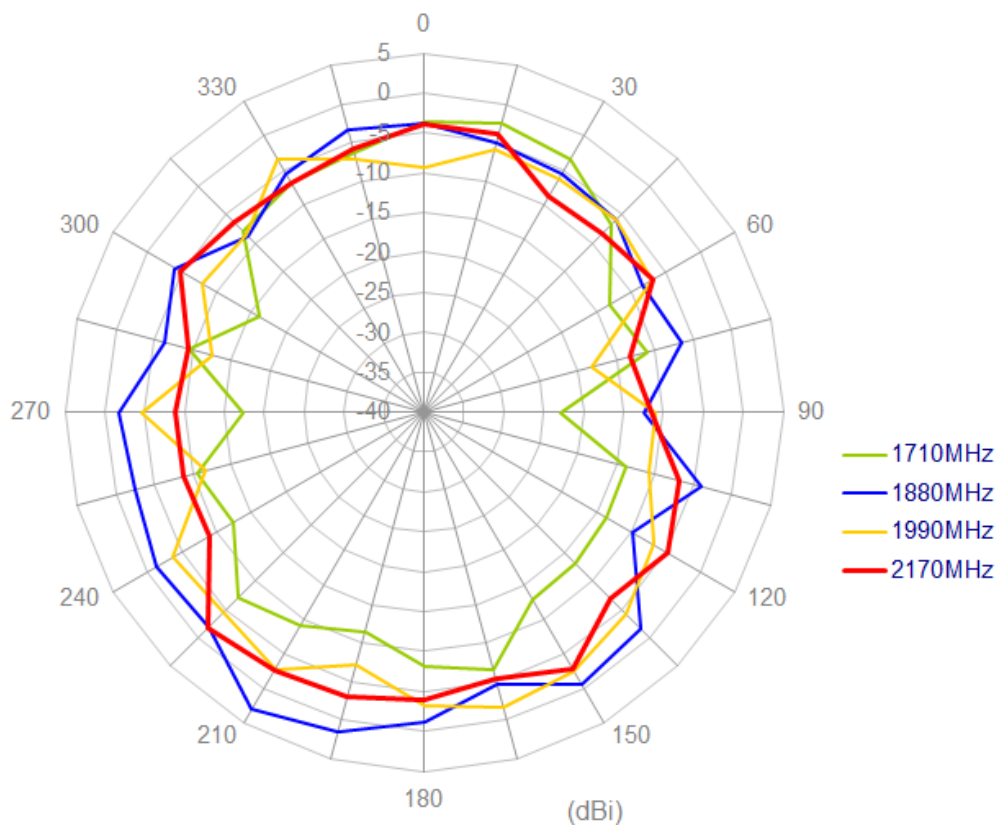
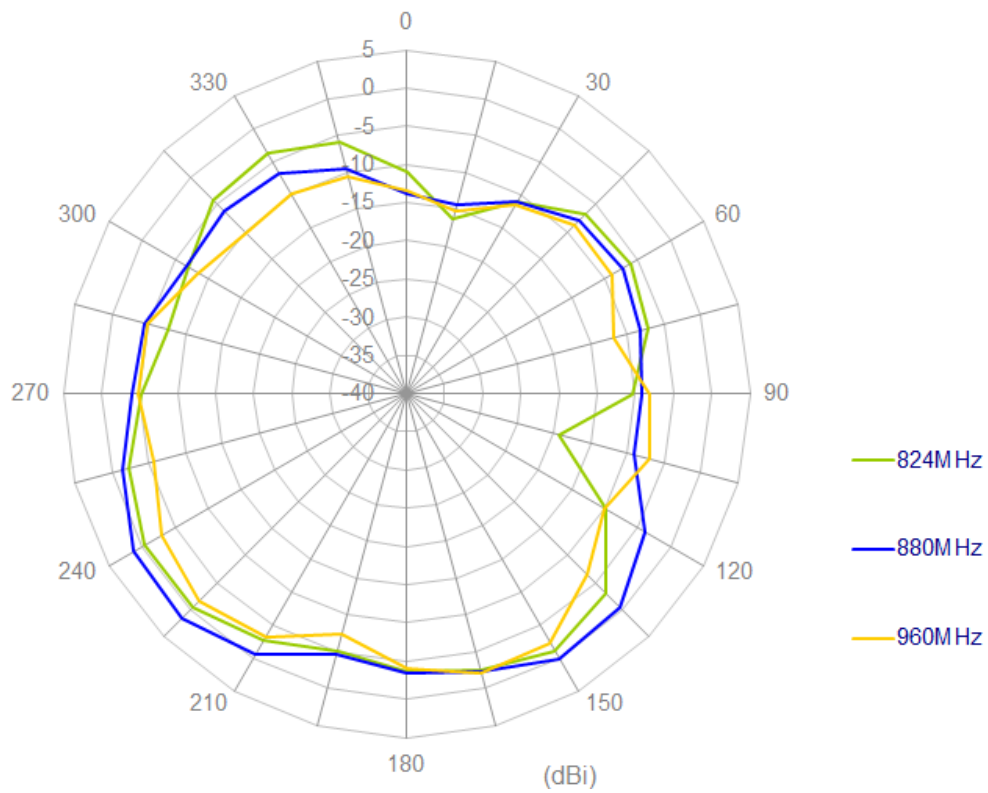


## 6.2 Radiation Pattern (20\*20mm Ground Plane)

### 6.2.1 X-Y plane (dBi) (20\*20mm Ground Plane)



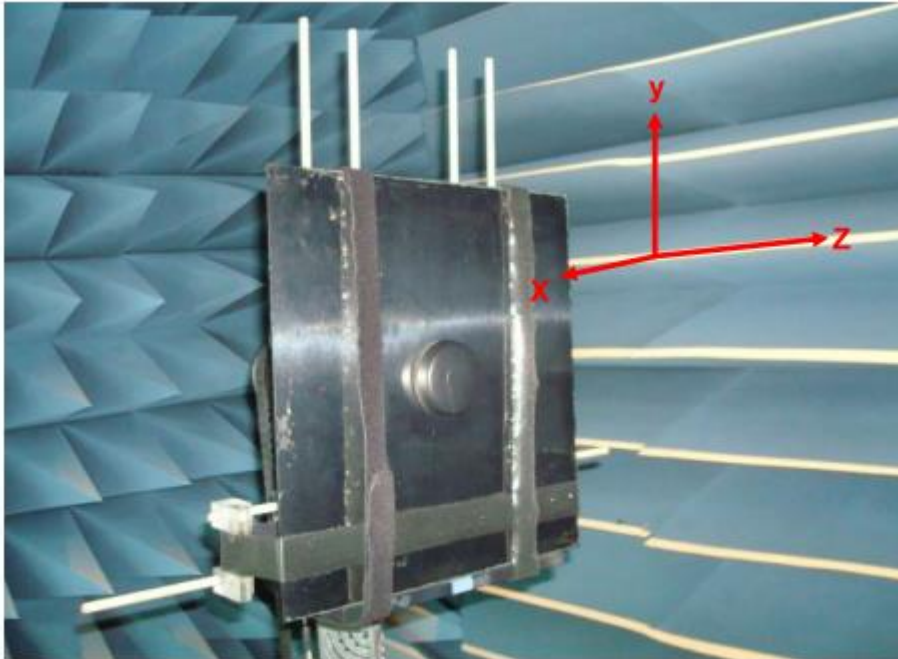
## 6.2.2 X-Z plane (dBi) (20\*20mm Ground Plane)





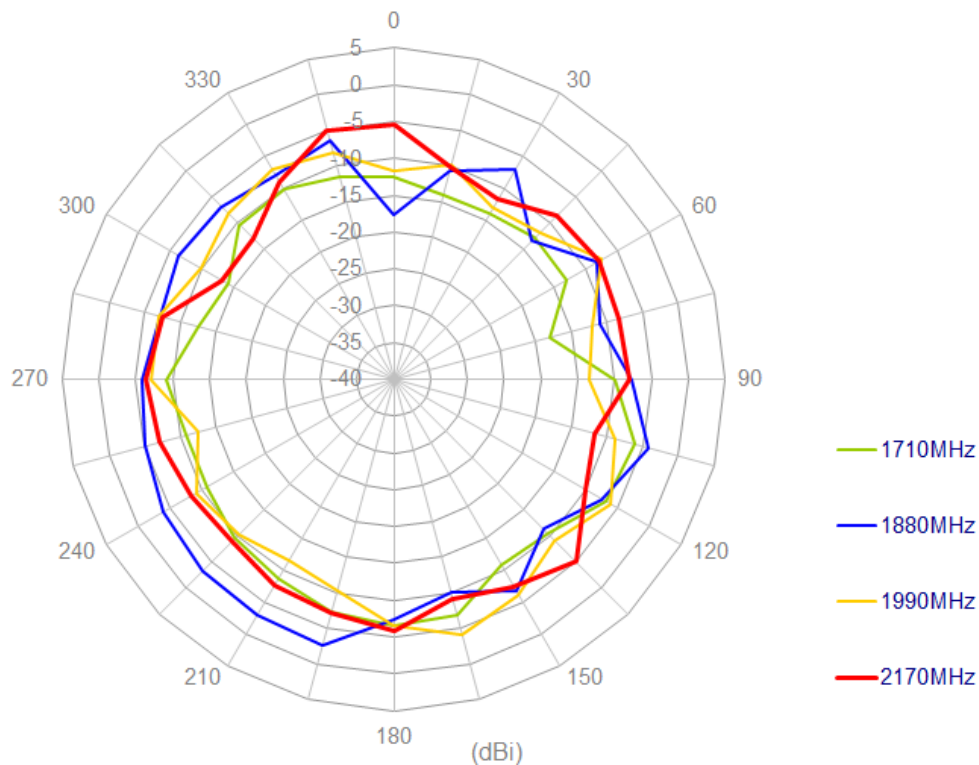
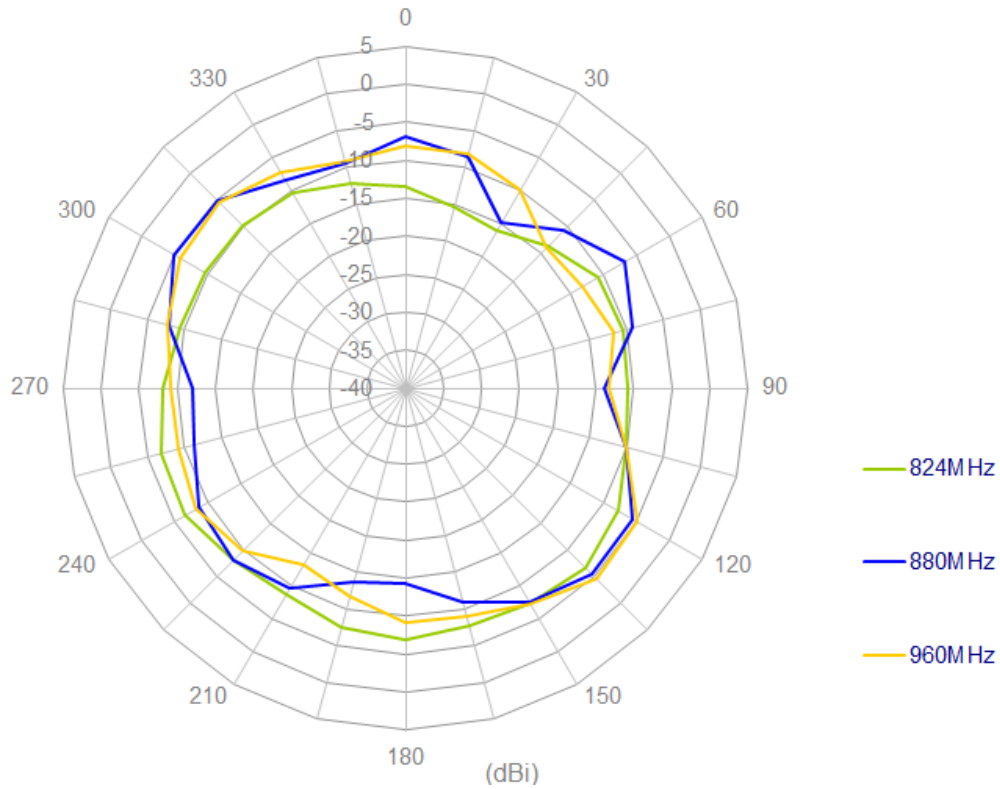
## 7 Antenna Radiation Pattern (30\*30mm Ground Plane)

### 7.1 Antenna Setup (30\*30mm Ground Plane)



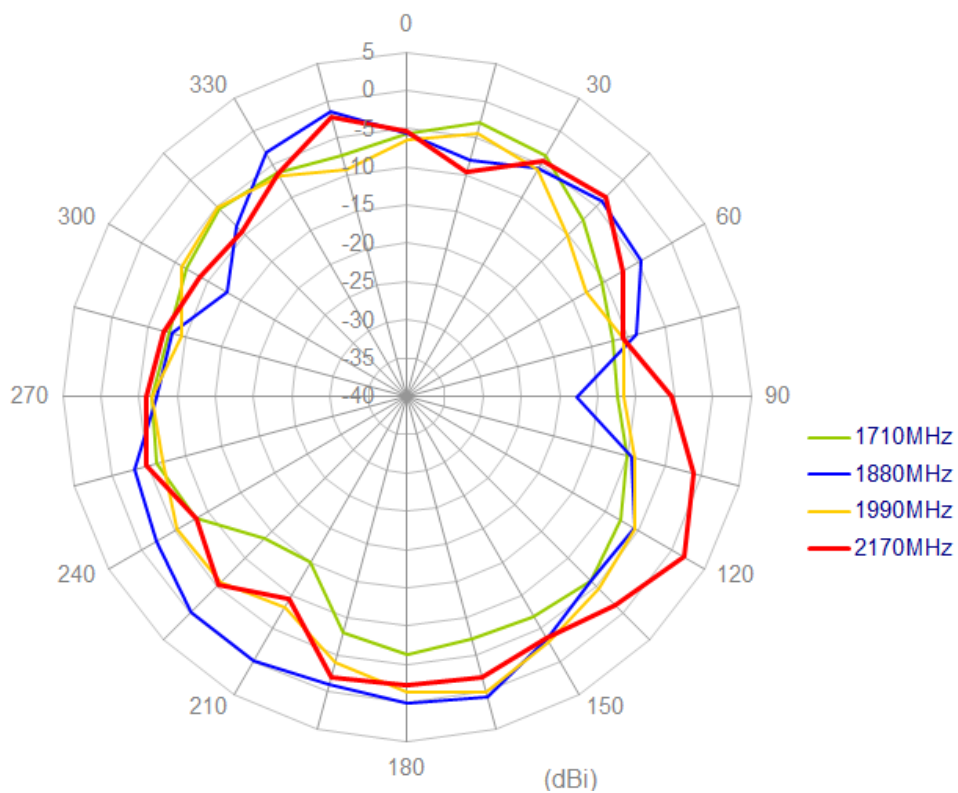
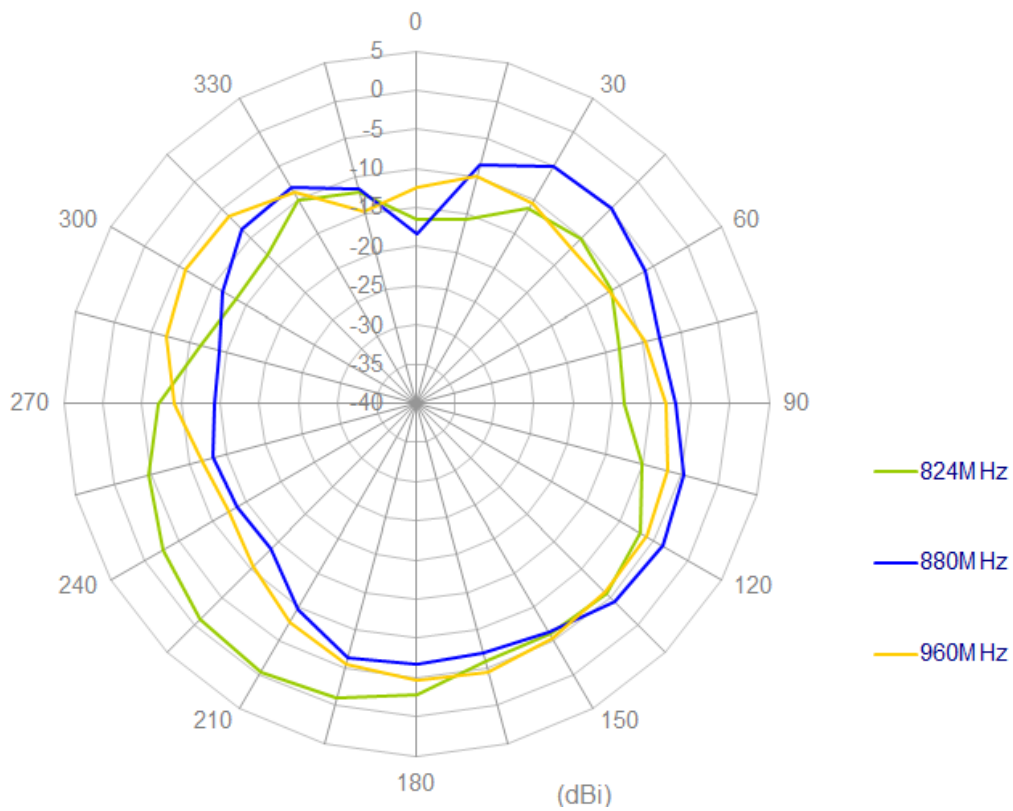
## 7.2 Radiation Pattern (20\*20mm Ground Plane)

### 7.2.1 X-Y plane (dBi) (20\*20mm Ground Plane)

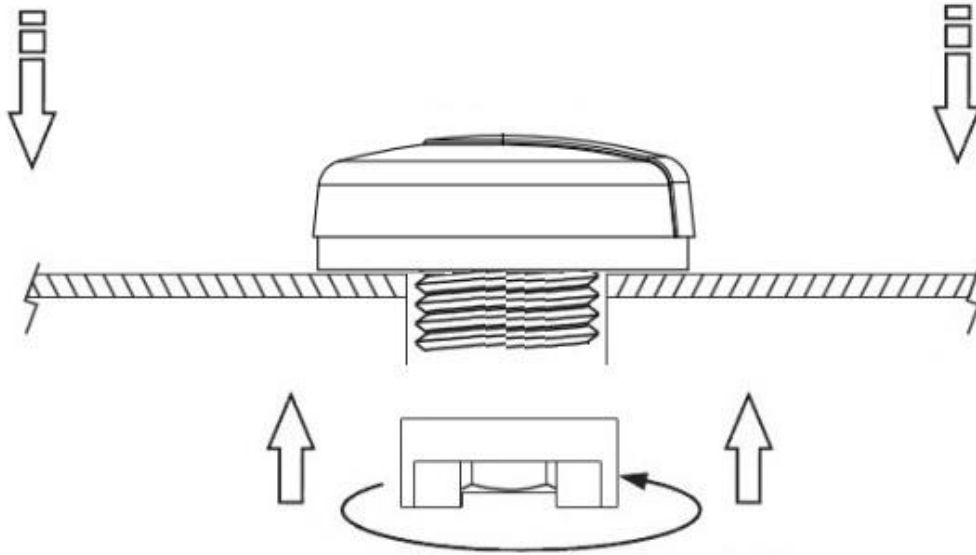




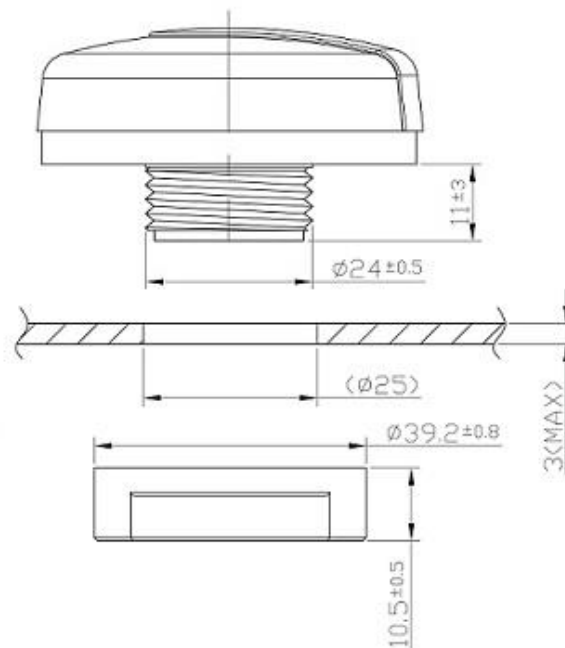
### 7.2.2 X-Z plane (dBi) (20\*20mm Ground Plane)



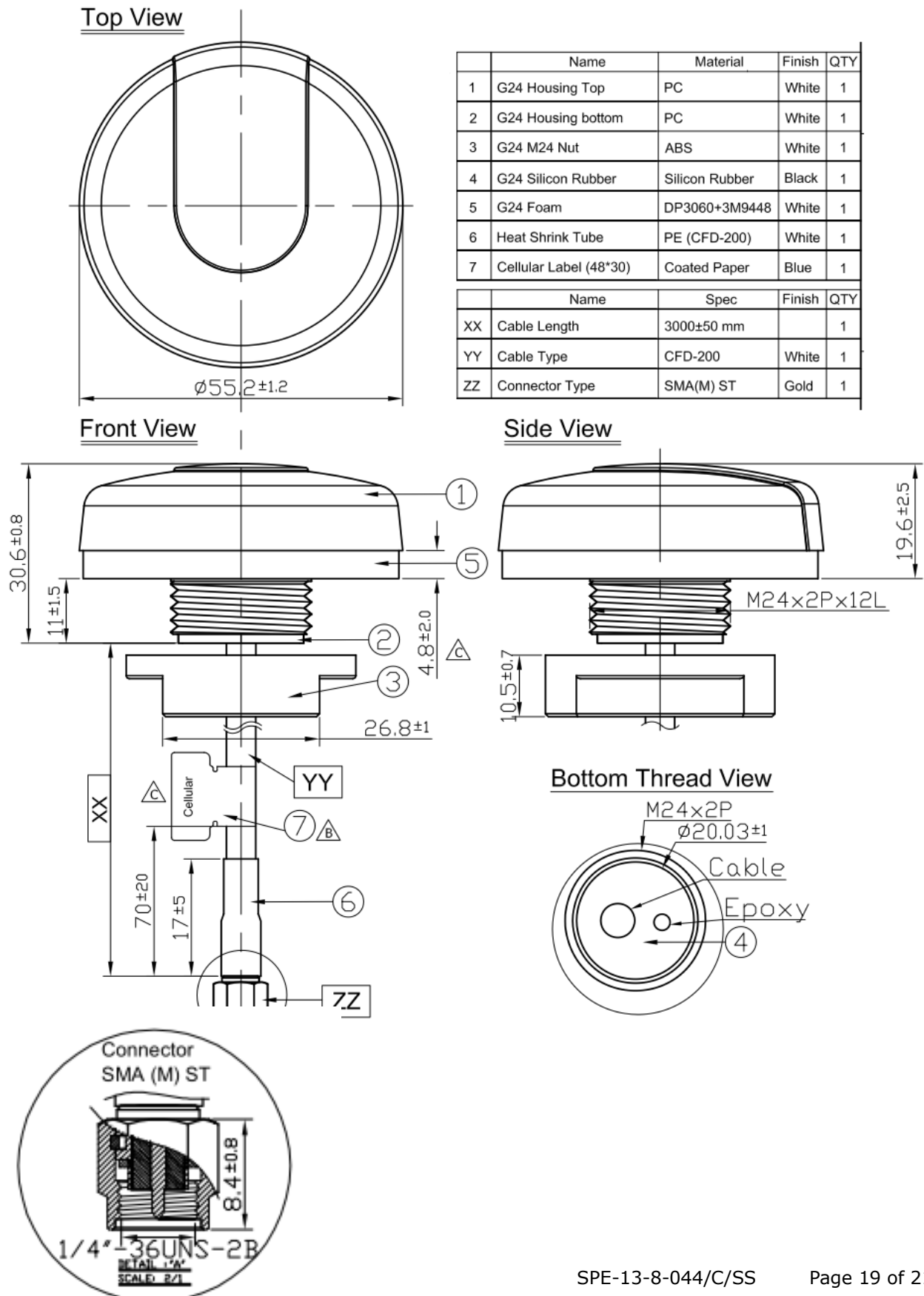
## 8 Installation



Recommended torque for Mounting is 3.92N·m  
Maximum torque for Mounting is 4.9N·m

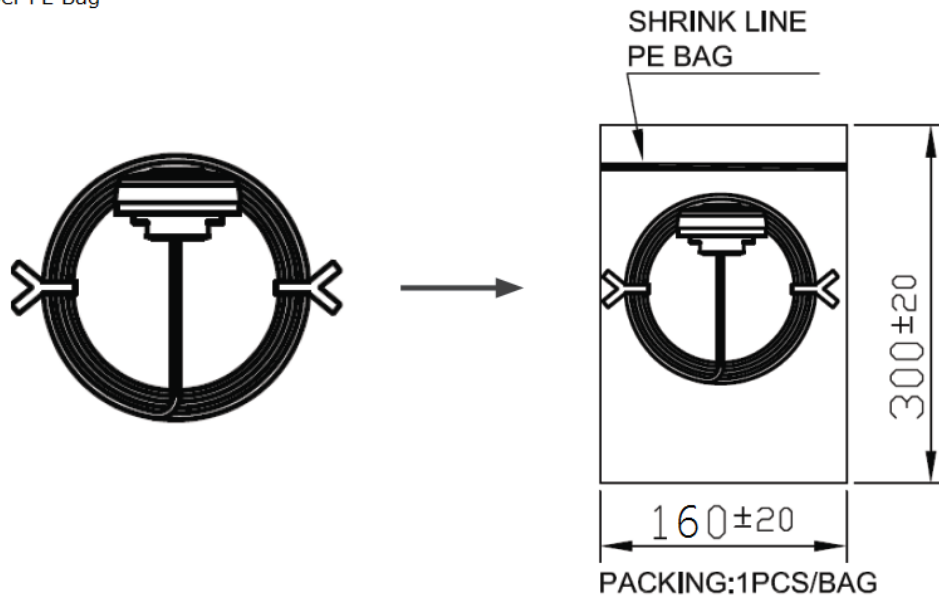


## 9 Drawing

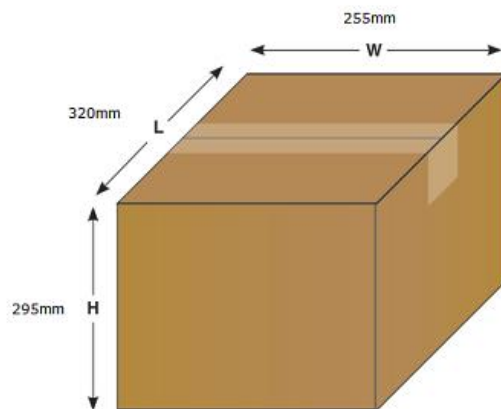


## 10. Packaging

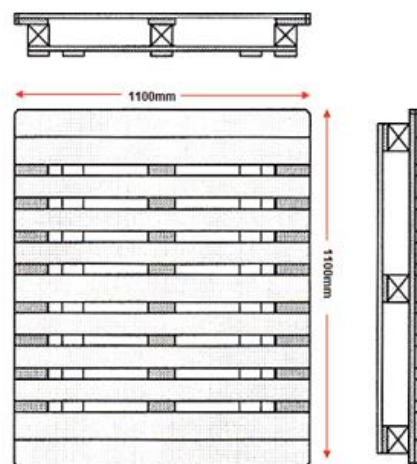
1 piece G24 per PE Bag  
Weight 180g



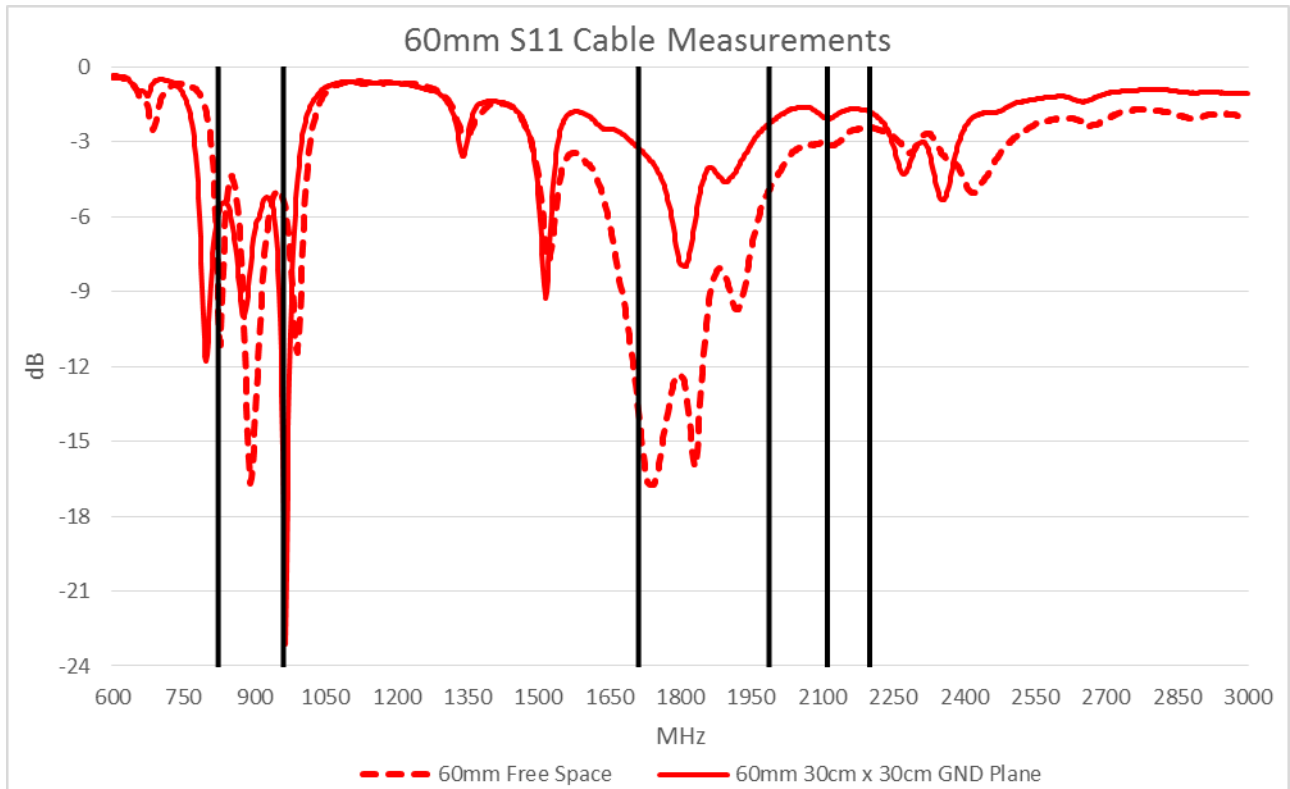
50 pieces per carton  
Weight 10kg



60 Cartons per Pallet  
Pallet Dims 110cm\*110cm  
3000 pcs per pallet



## 10 Application Note



Taoglas recommend a minimum cable length of 60mm for this antenna when used on a ground plane to achieve an efficiency of greater than 20%.

The poor return loss (see graph above) when used on a ground plane is a function of such a small antenna. The complete system will still operate, though there may be some extra energy used in the system to compensate for the power losses.