



G24.A.305111

## Specification

|                     |   |
|---------------------|---|
| <b>Part No.</b>     | <b>G24.A.305111</b>   |
| <b>Product Name</b> | G24 Ultima Series – Super Low Profile<br>Penta Band Cellular Antenna Screw-mount<br>GSM/GPRS/CDMA/HSPA<br>(Permanent mount)   |
| <b>Features</b>     | Height 19.6mm(0.77”) and diameter 55mm(2.16”)<br>Heavy duty screw mount<br>UV and vandal resistant PC housing and thread<br>IP67 compliant<br>Standard is 3 meter low loss cable NFC-200 SMA(M)<br>Cables and Connectors Customizable<br>ROHS Compliant |



## 1. Introduction

G24 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.

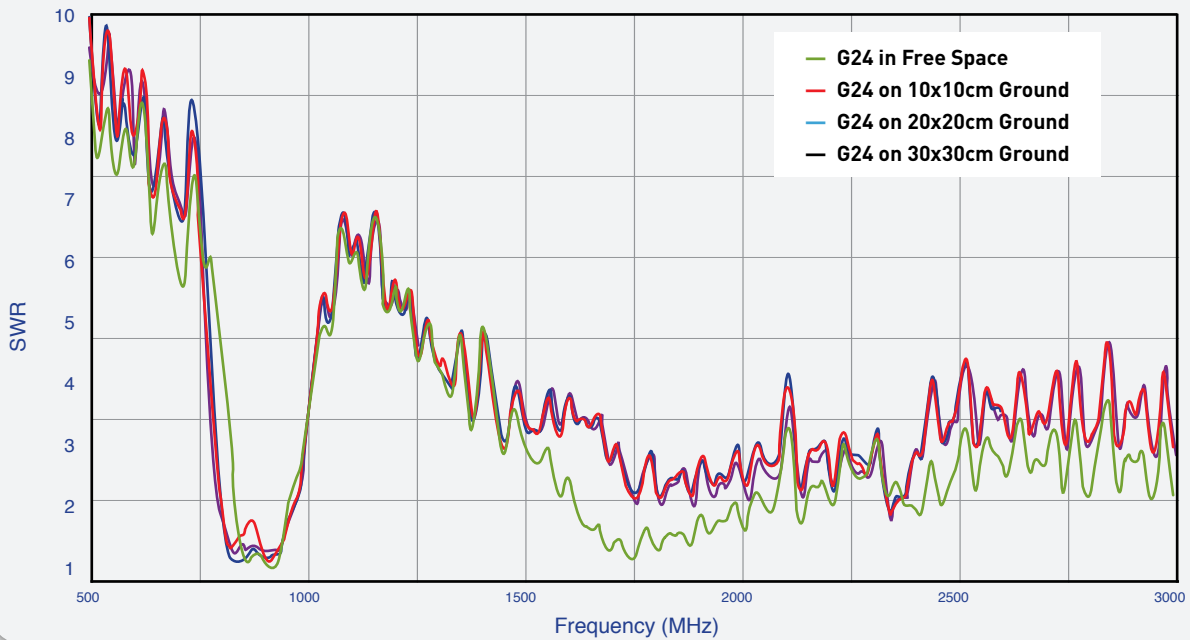
Also available in White.

## 2. Specifications

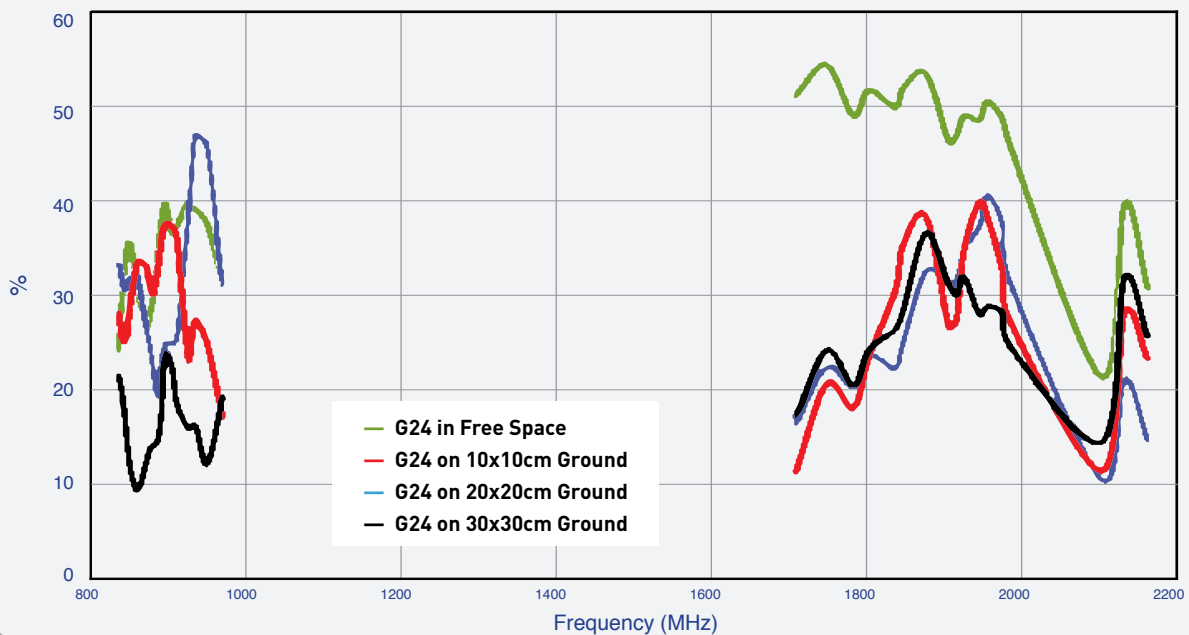
| CELLULAR                        |  |           |             |             |             |
|---------------------------------|--|-----------|-------------|-------------|-------------|
| Frequency (MHz)                 | 824 ~ 896  | 880 ~ 960 | 1710 ~ 1880 | 1850 ~ 1990 | 1710 ~ 2170 |
| Peak Gain (dBi)                 |  |           |             |             |             |
| Free space                      | 2.0  | 1.8       | 3.9         | 3.9         | 3.9         |
| 10x10cm ground plane            | -0.6   | 0.7       | -0.2        | 1.7         | 1.7         |
| 20x20cm ground plane            | 1.8  | 1.8       | 3.1         | 3.1         | 3.1         |
| 30x30cm 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        |
| 10x10cm ground plane            | -4.8   | -3.3      | -4.9        | -4.0        | -4.0        |
| 20x20cm ground plane            | -4.3   | -4.3      | -4.2        | -4.0        | -4.0        |
| 30x30cm 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        |
| 10x10cm ground plane            | 33.8   | 46.2      | 32.1        | 40.0        | 40.0        |
| 20x20cm ground plane            | 36.9   | 36.9      | 37.8        | 39.3        | 39.3        |
| 30x30cm ground plane            | 23.4   | 23.4      | 36.0        | 36.0        | 36.0        |
| Polarization                    | Linear   |           |             |             |             |
| Radiation Pattern               | Omni   |           |             |             |             |
| Impedance                       | 50Ω  |           |             |             |             |
| Max Input Power                 | 10 watts   |           |             |             |             |
| MECHANICAL                      |  |           |             |             |             |
| Dimensions                      | ø55±2mm , Height 30±2 mm, Profile 19.6mm ø2.16"; Height 1.18"; Profile 0.77" |           |             |             |             |
| Cable type                      | NFC-200  |           |             |             |             |
| Cable length                    | 3000±30mm(9' 101/8"±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

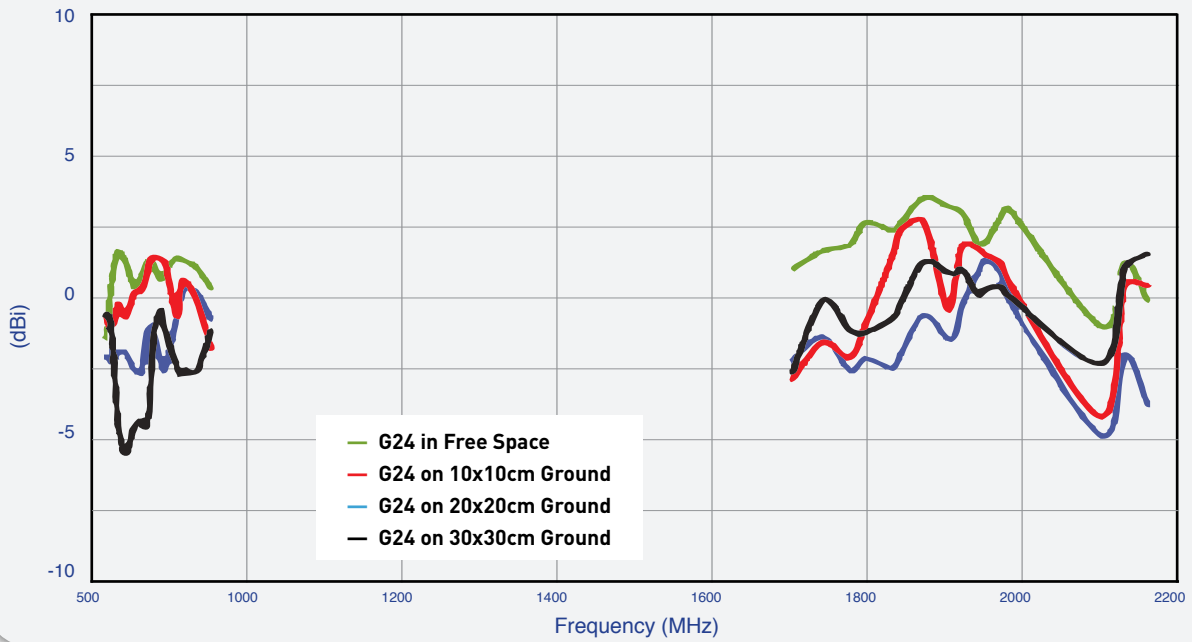
#### 3.1 Cellular antenna SWR



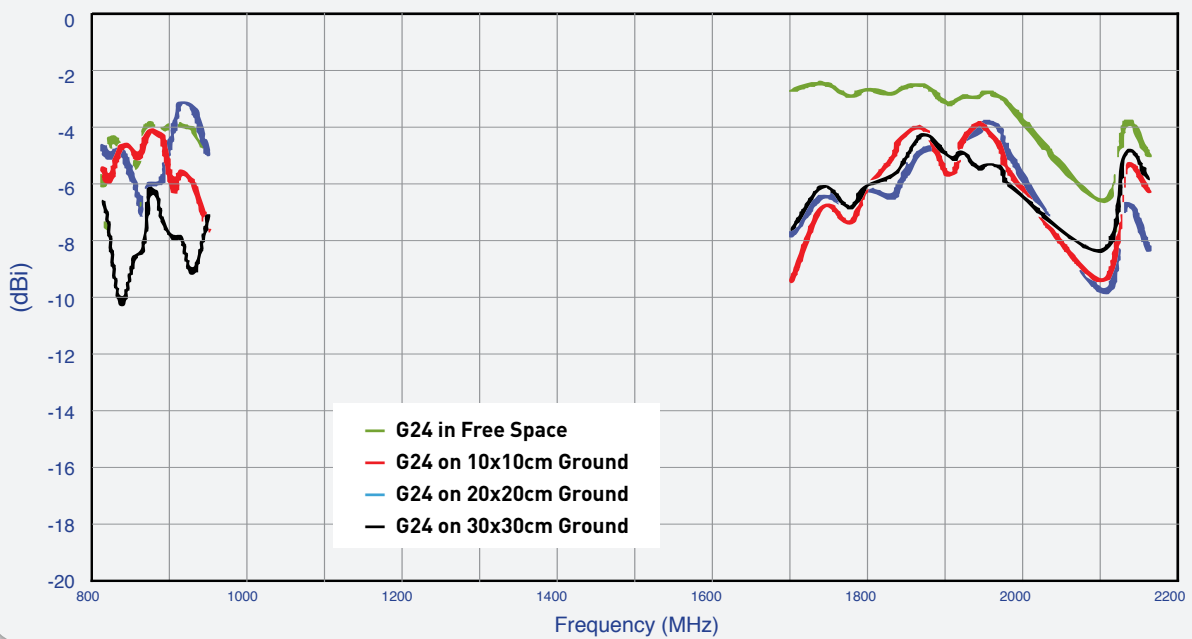
#### 3.2 Antenna Efficiency



### 3.3 Peak Gain



### 3.4 Average Gain



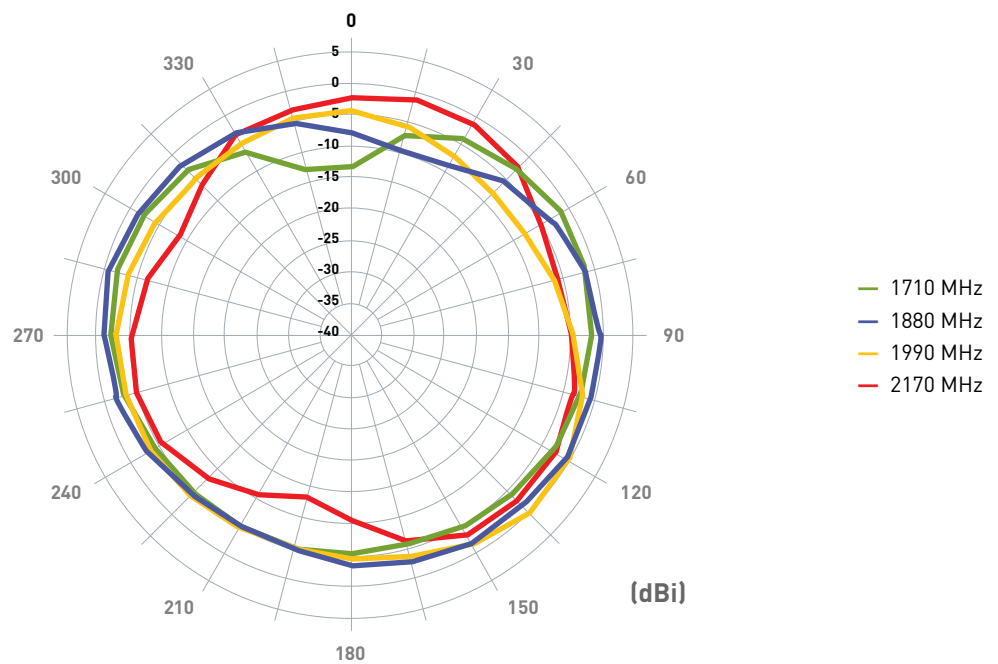
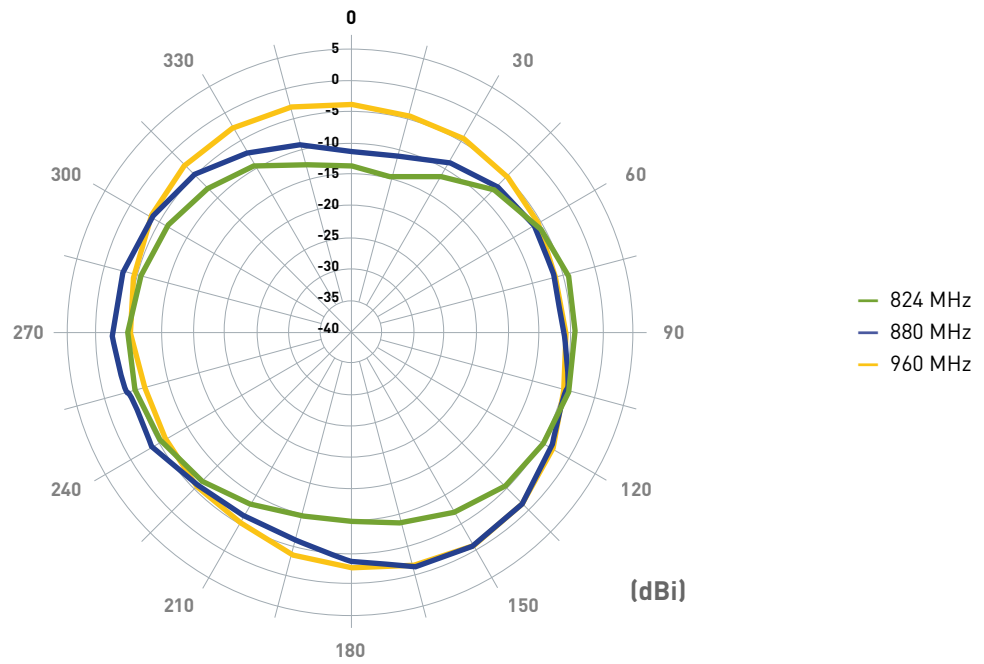
## 4. Antenna Radiation Pattern (Free Space)

### 4.1 Antenna Setup (Free Space)

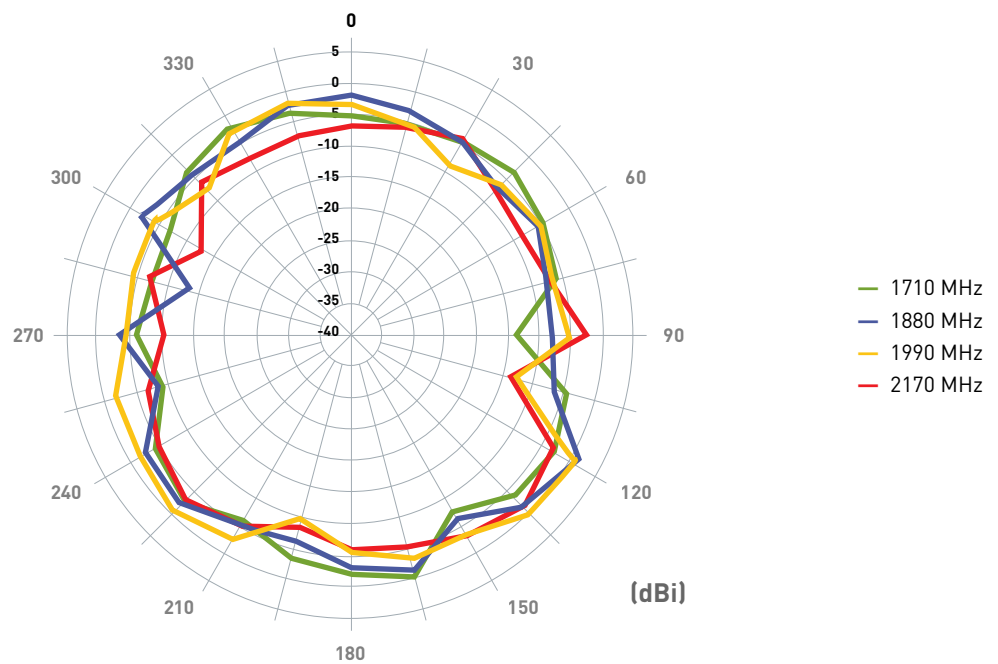
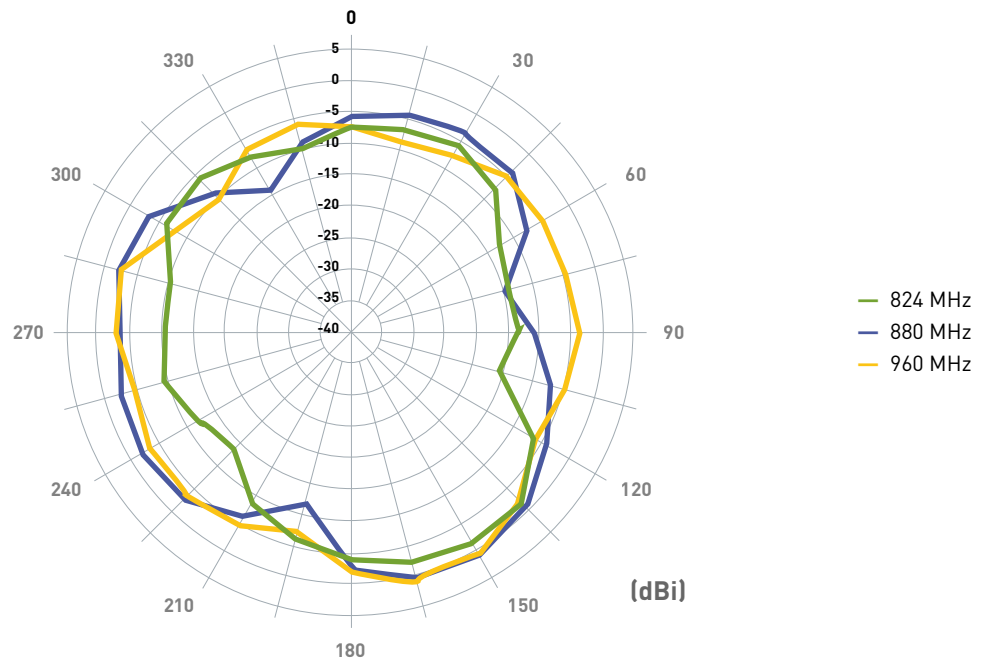


## 4.2 Radiation Pattern (Free Space)

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



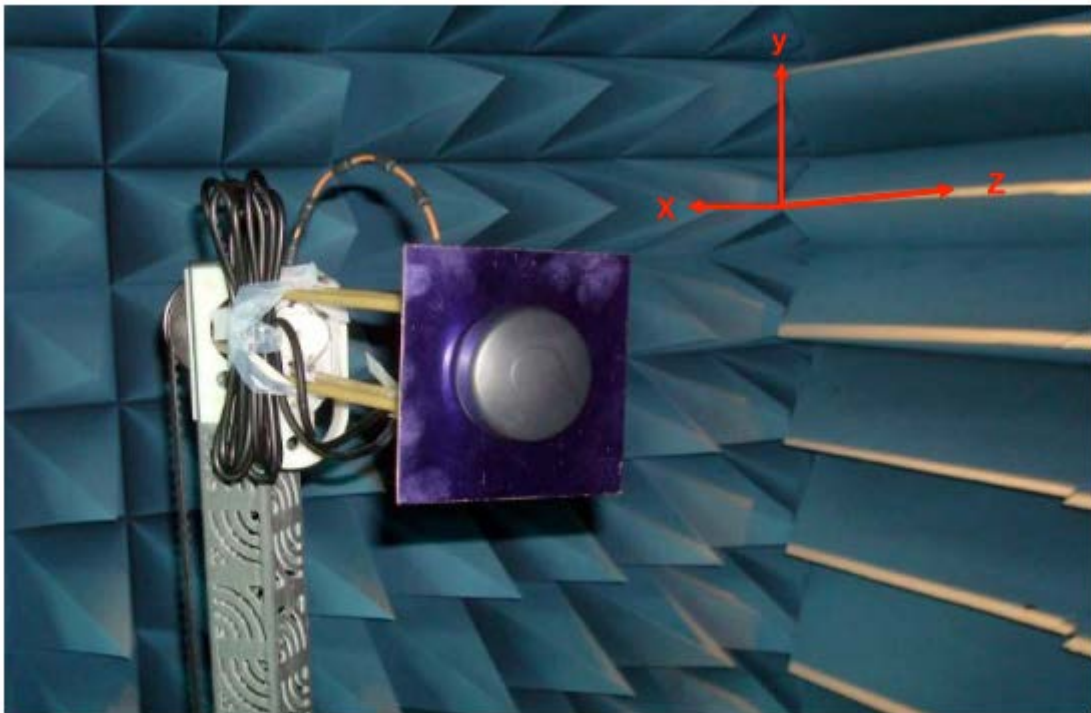
### 4.2.2 Vertical X-Z plane (dBi) (Free Space)t





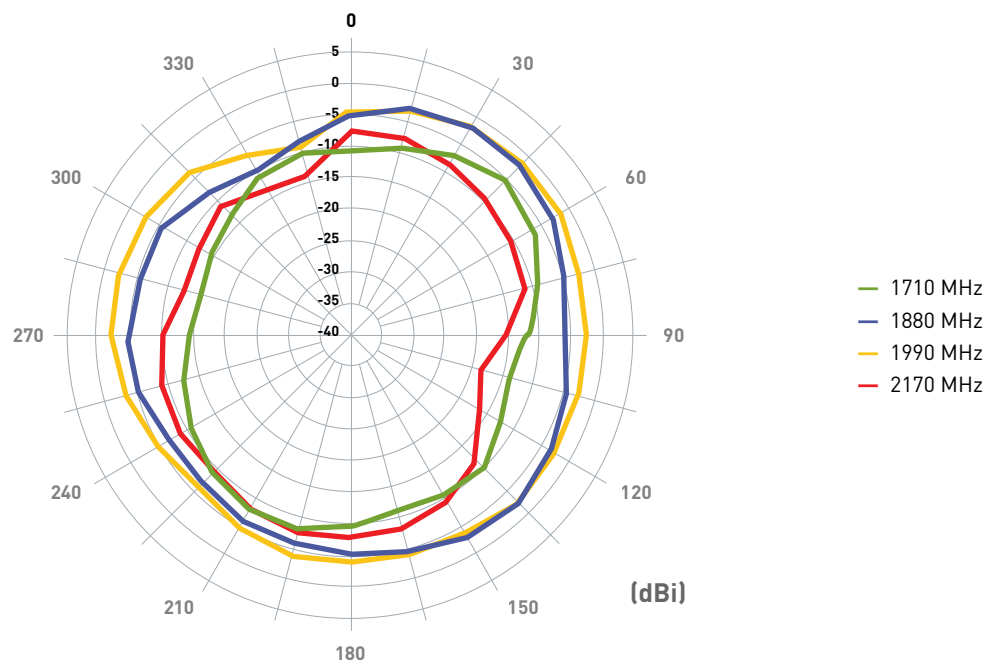
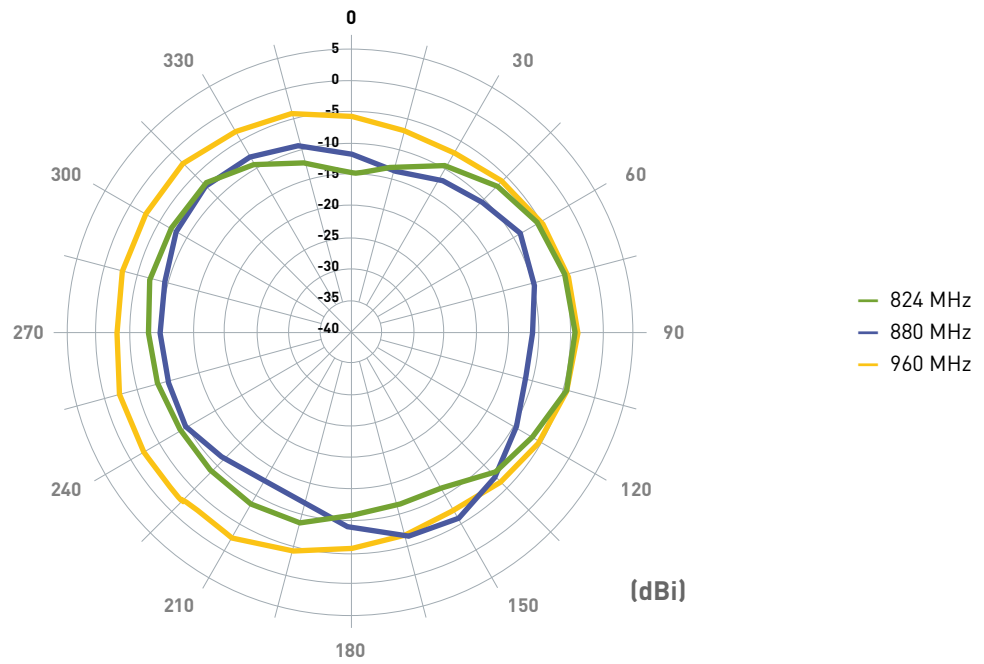
## 5. Antenna Radiation Pattern (10\*10cm)

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

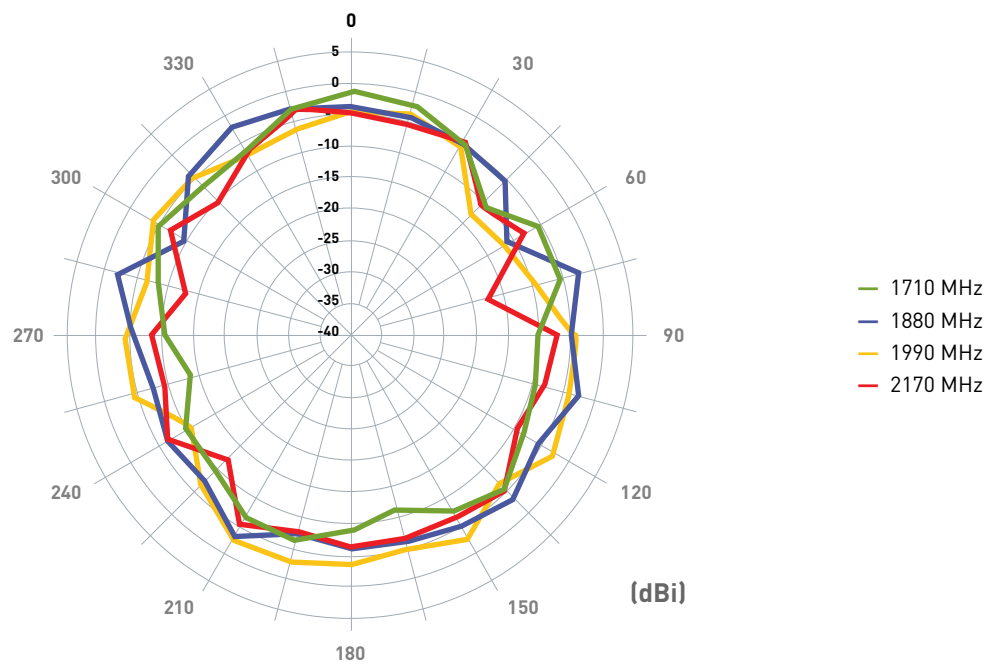
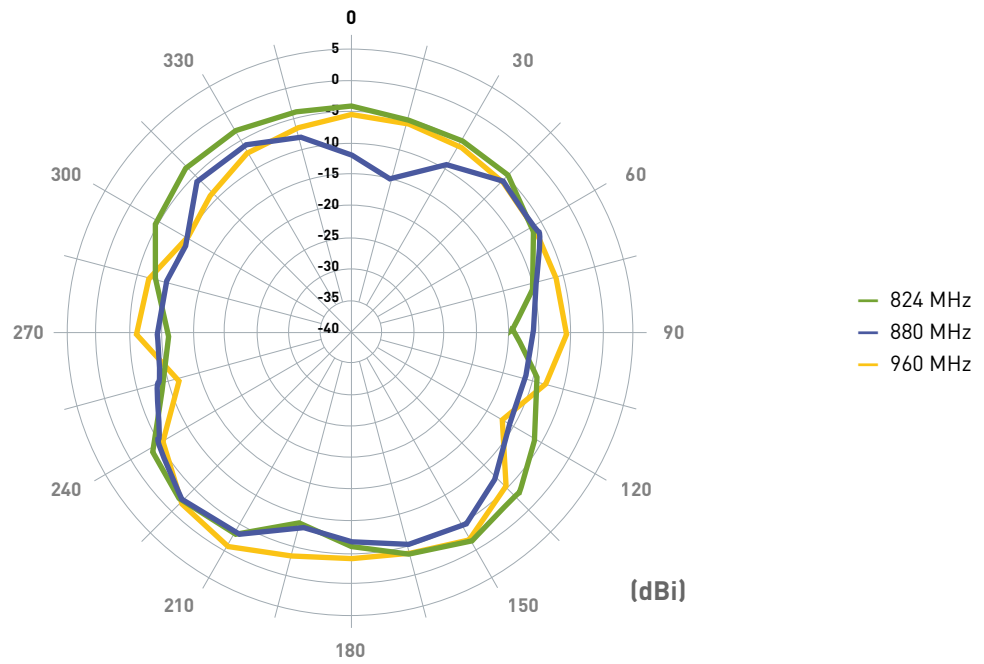


## 5.2 Radiation Pattern (10\*10cm Ground Plane)

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

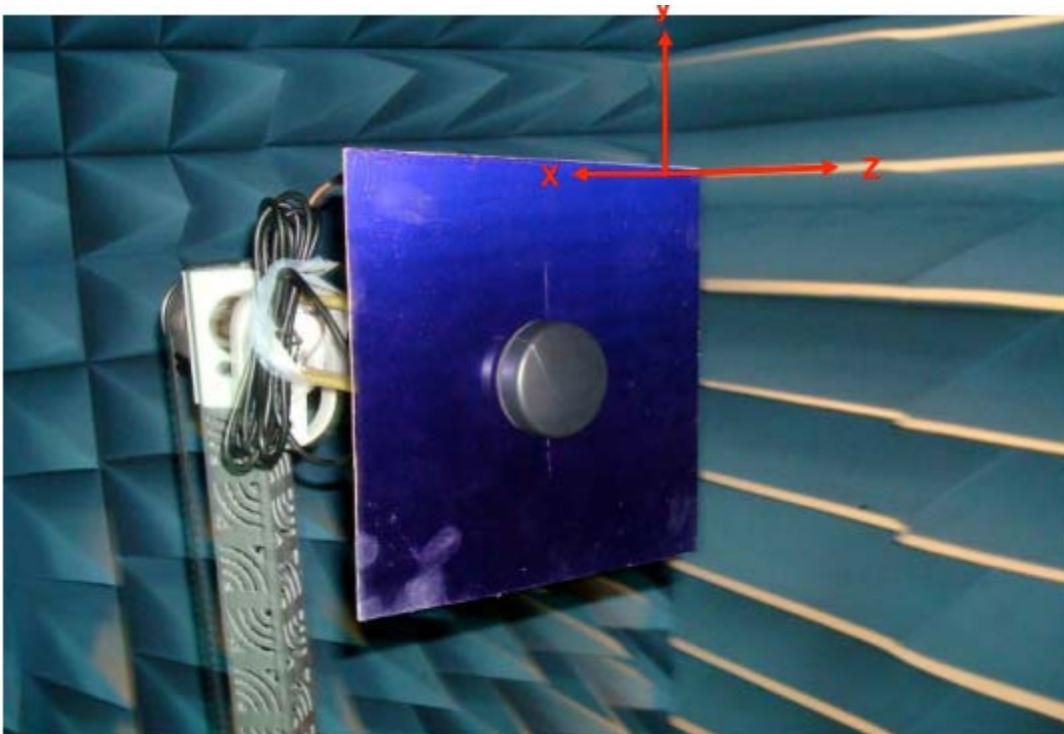


### 5.2.2 Vertical X-Z plane (dBi) (10\*10cm Ground Plane)



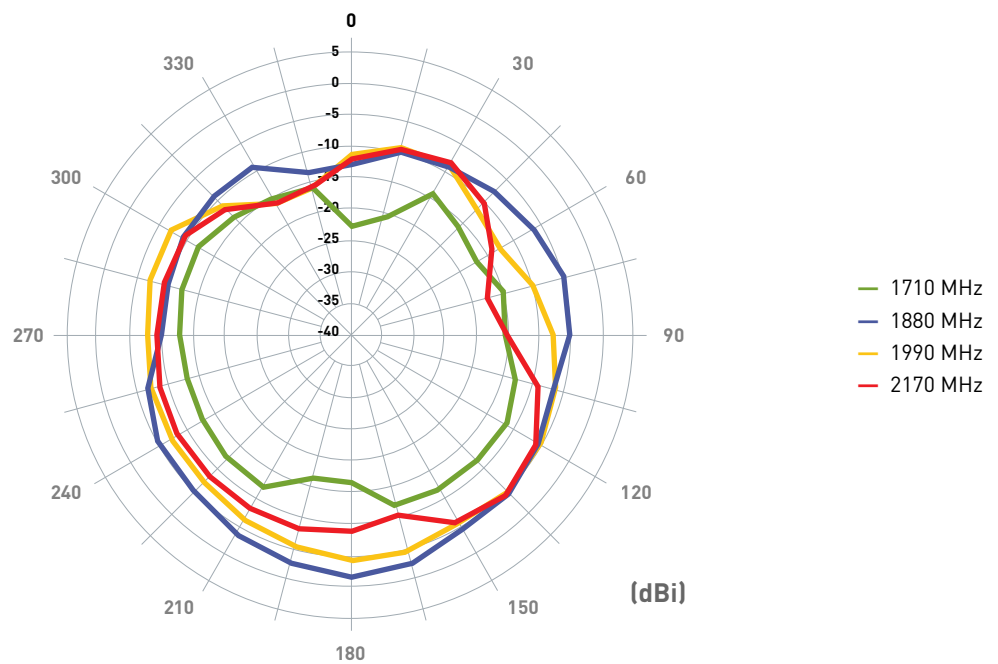
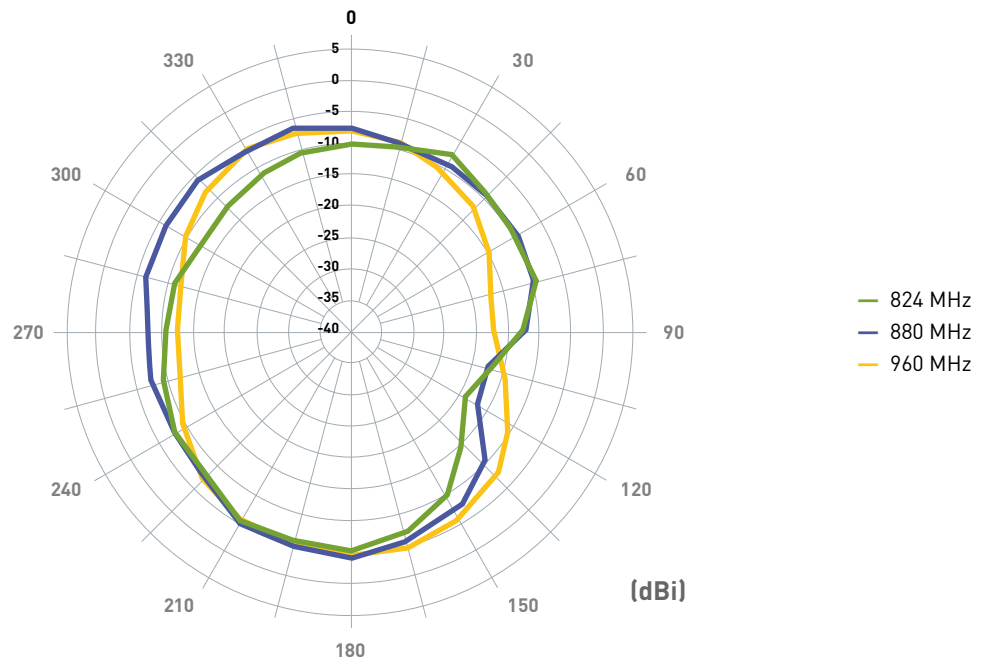
## 6. Antenna Radiation Pattern (20\*20cm Ground Plane)

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

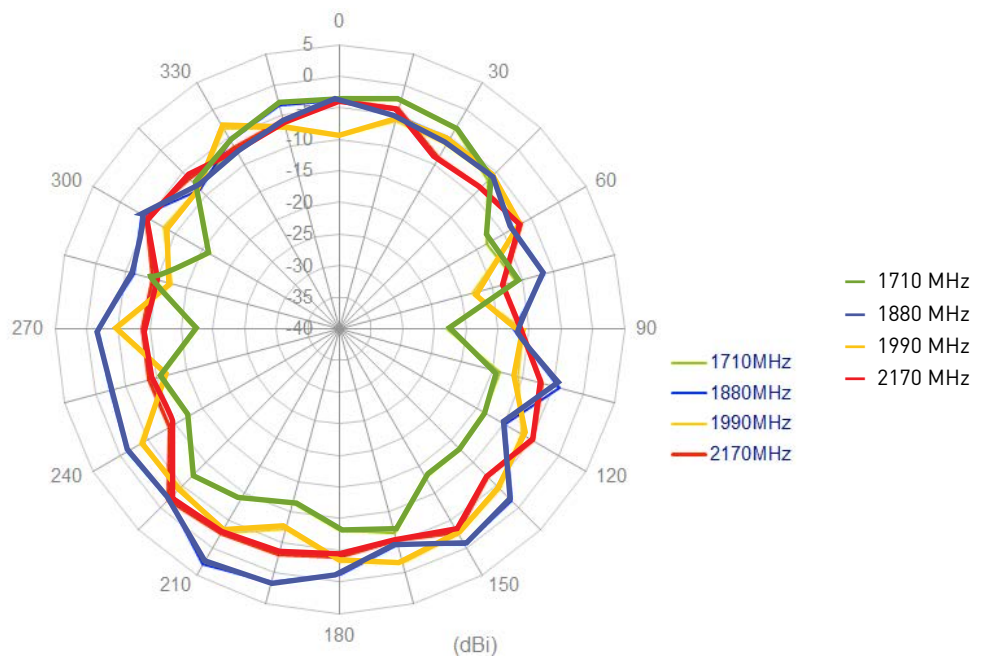
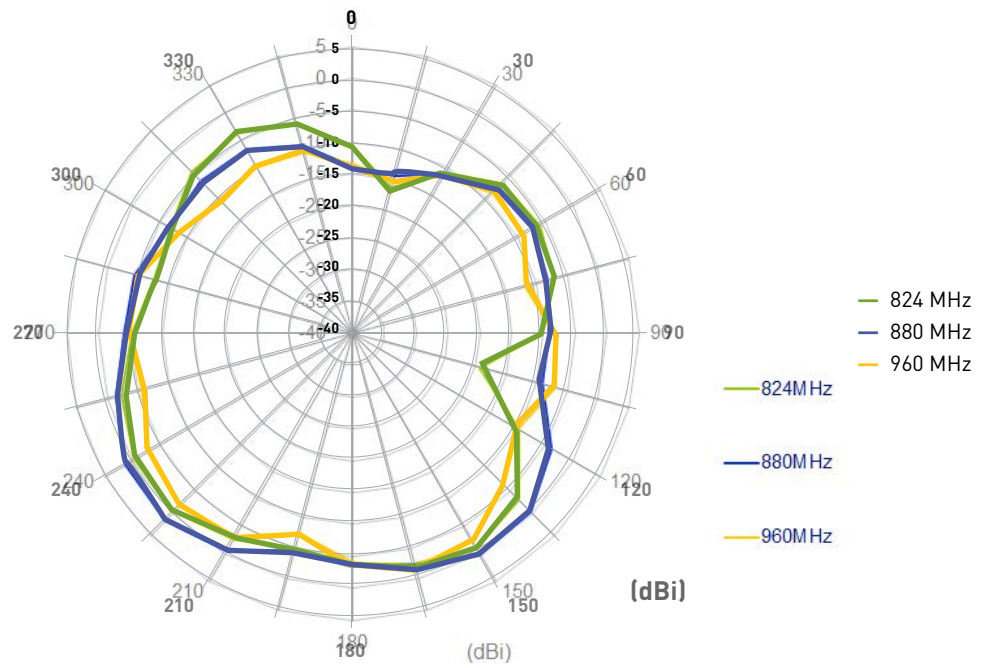


## 6.2 Radiation Pattern (20\*20cm Ground Plane)

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



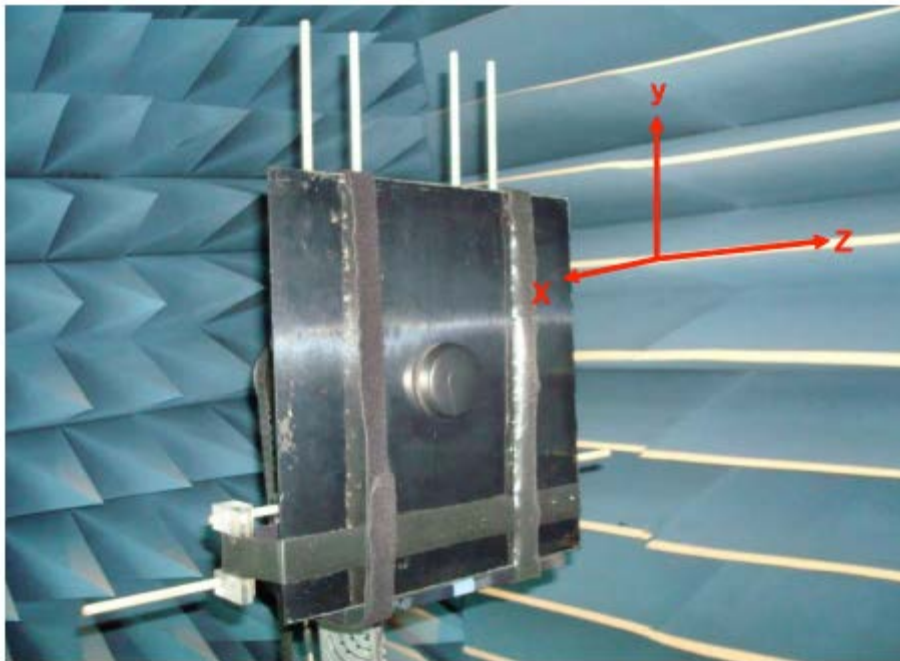
### 6.2.2 Vertical X-Z plane (dBi) (20\*20cm Ground Plane)





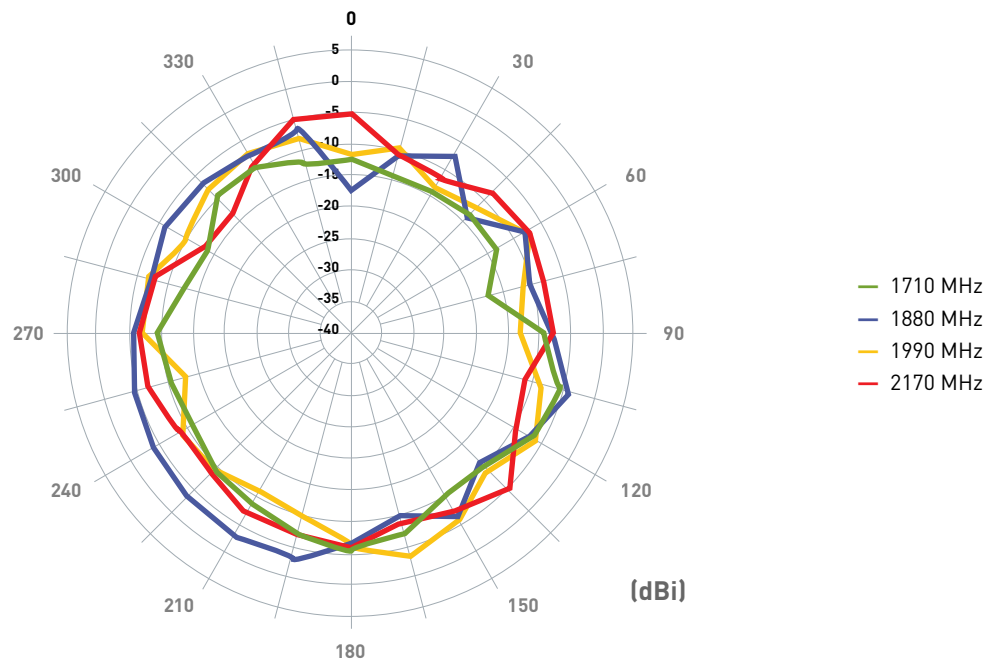
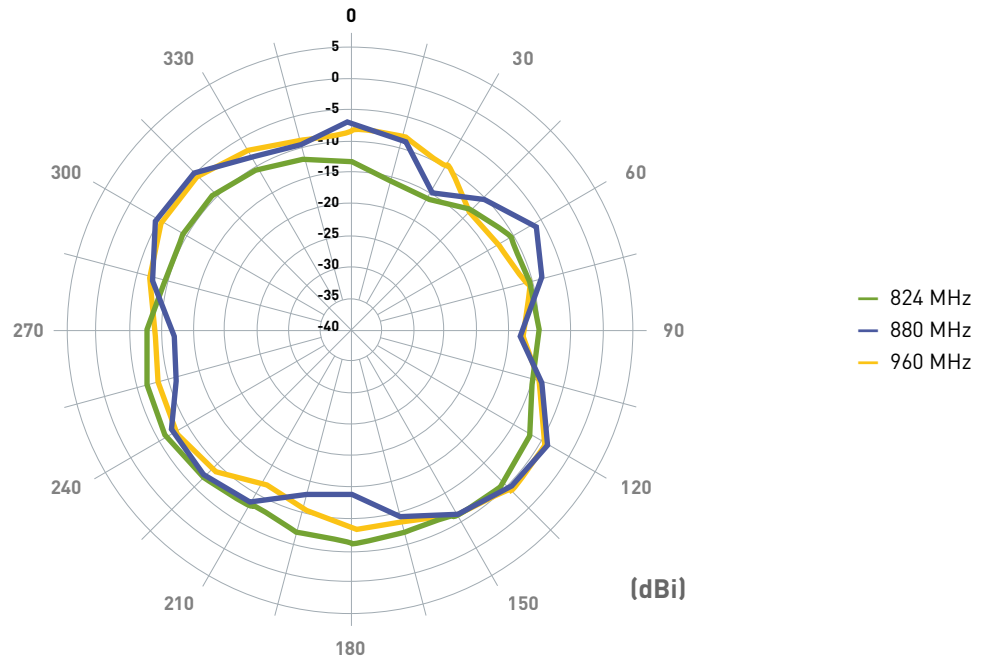
## 7. Antenna Radiation Pattern (30\*30cm Ground Plane)

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



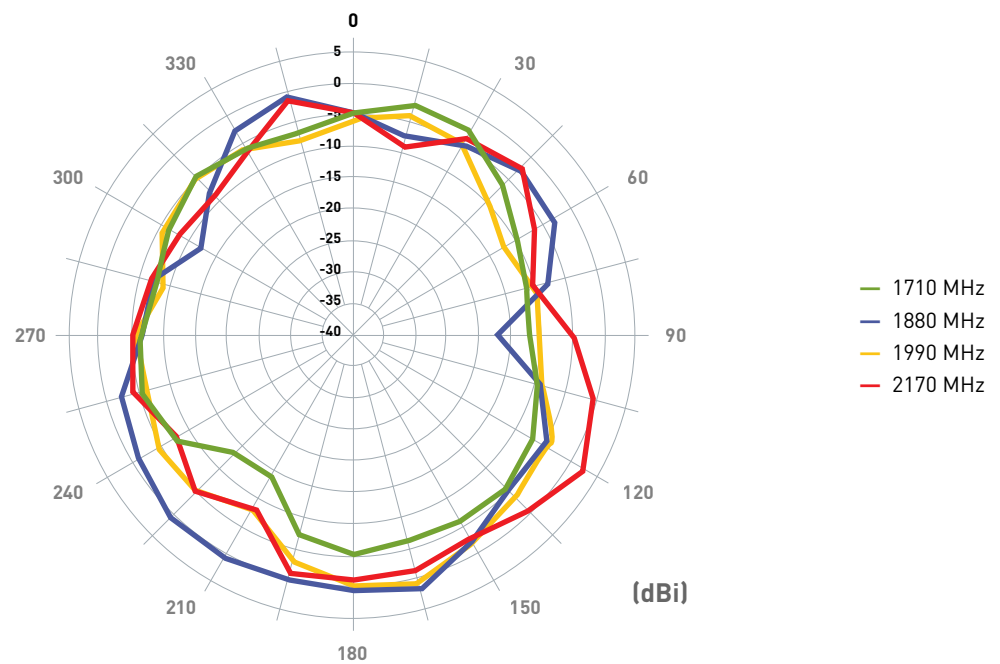
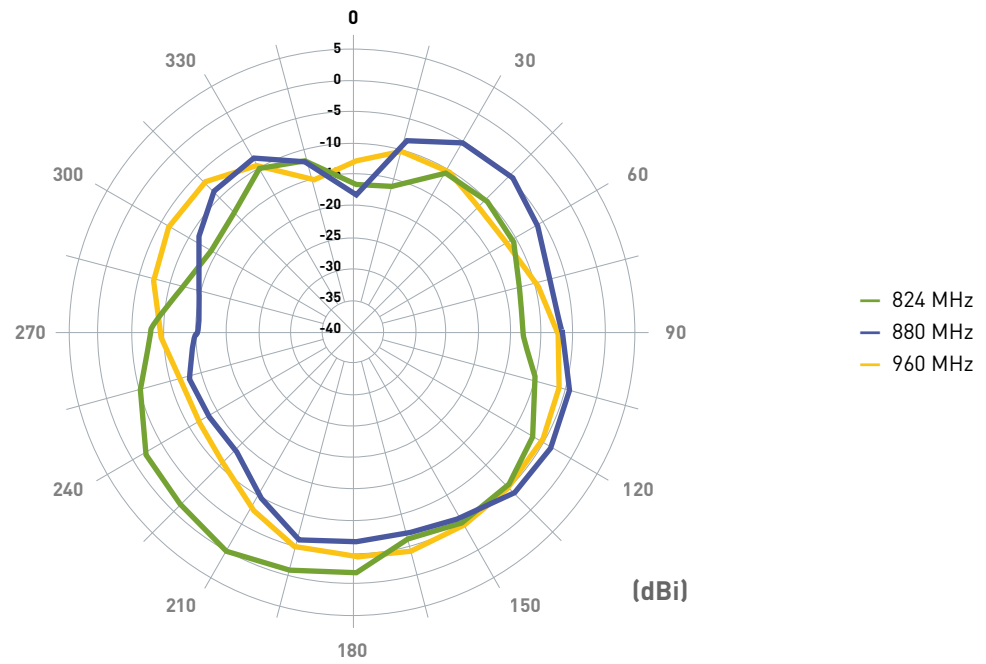
## 7.2 Radiation Pattern (20\*20cm Ground Plane)

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

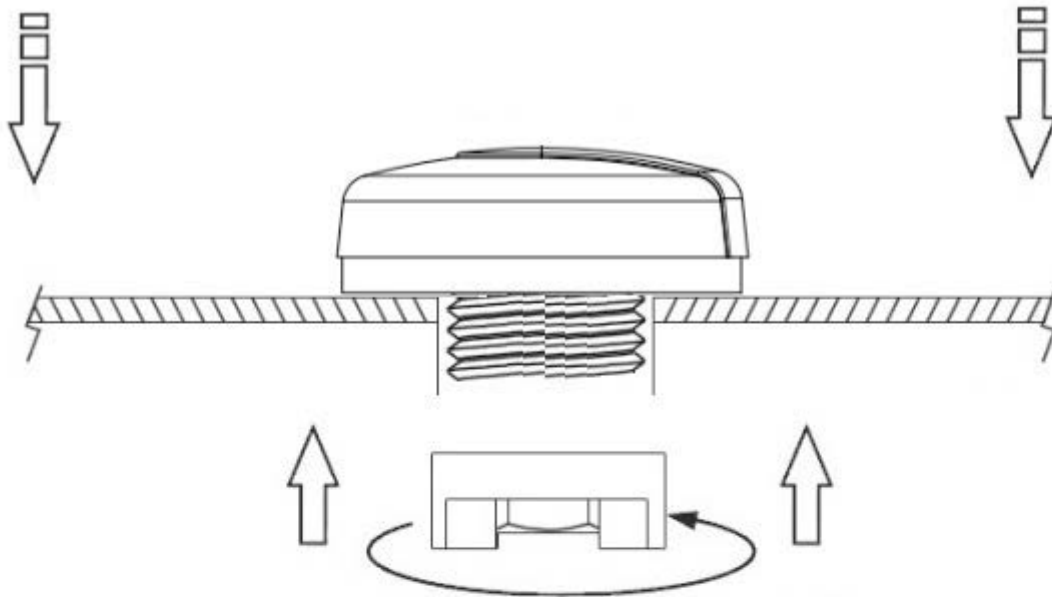




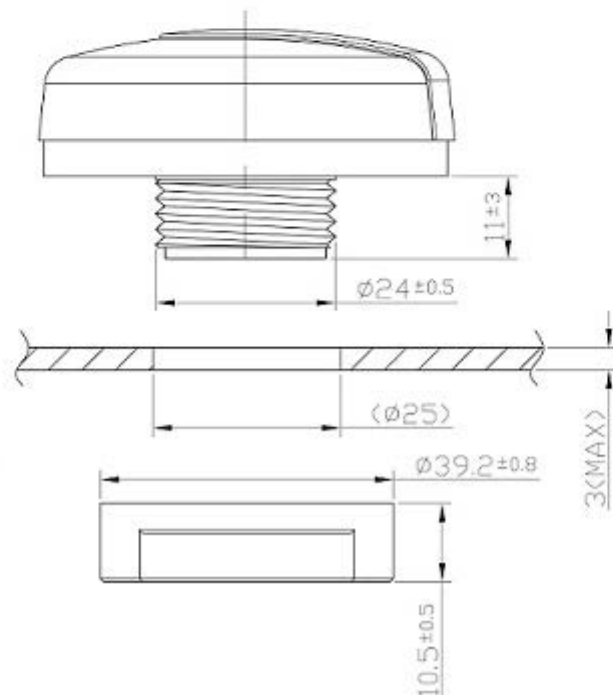
### 7.2.2 Vertical X-Z plane (dBi) (20\*20cm Ground Plane)



## 8. Installation

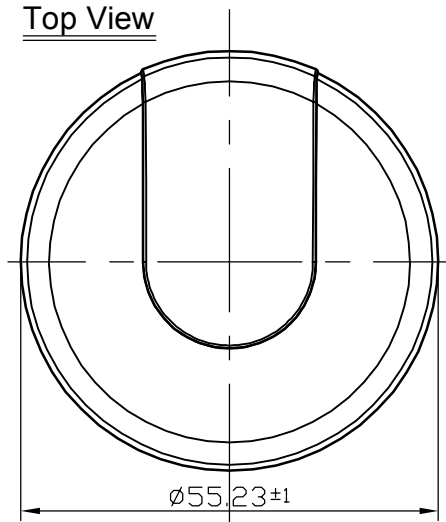


Recommended torque for Mounting is 3.92N·m  
 Maximum torque for Mounting is 4.9N·m



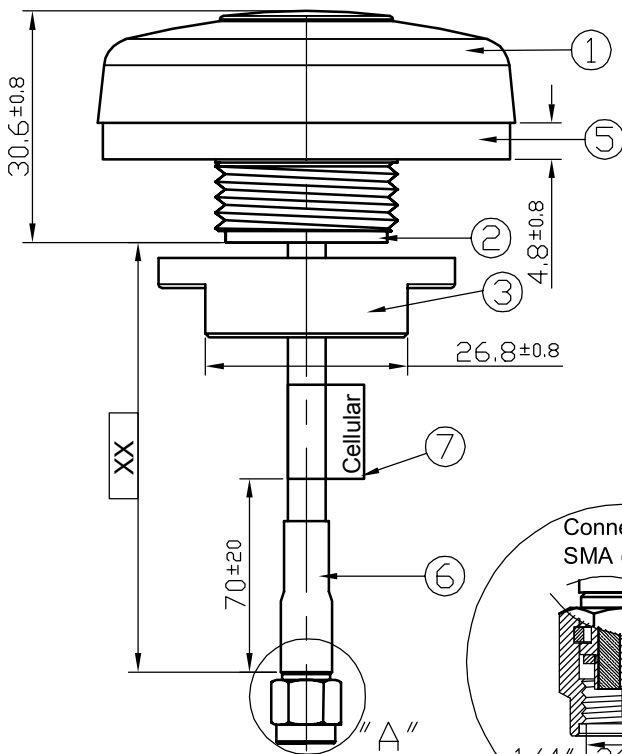
## 9. Drawing

Top View

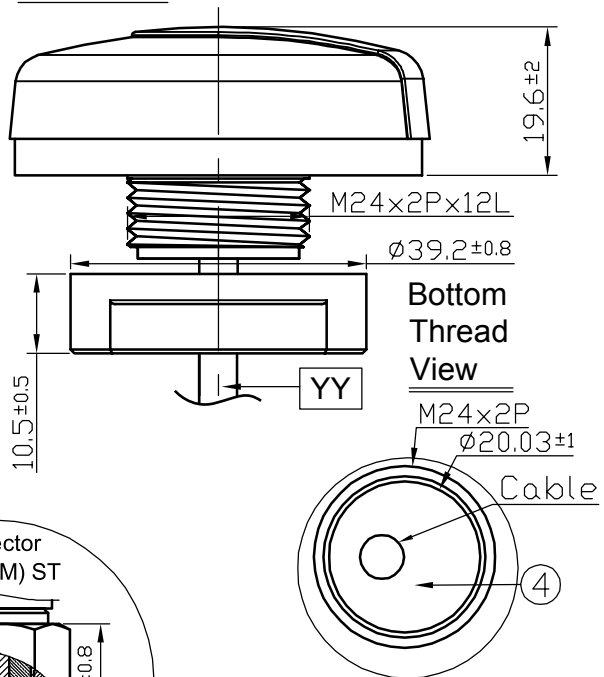


| Name | Material               | Finish          | Qty   |   |
|------|------------------------|-----------------|-------|---|
| 1    | G24 Housing Top        | PC              | Black | 1 |
| 2    | G24 Housing Bottom     | PC              | Black | 1 |
| 3    | G24 M24 Nut            | ABS             | Black | 1 |
| 4    | G24 Silicon Rubber     | Silicon Rubber  | Black | 1 |
| 5    | G24 Foam               | CR4305 + 3M9445 | Black | 1 |
| 6    | Heat Shrink Tube       | PE              | Black | 1 |
| 7    | Cellular Label (48*30) | Coated Paper    | Blue  | 1 |
| Name | Spec                   | Finish          | Qty   |   |
| XX   | Cable Length           | 3000 ± 30mm     | 1     |   |
| YY   | Cable Type             | NFC 200         | Black | 1 |
| ZZ   | Connector Type         | SMA (M)         | Gold  | 1 |

Front View



Side View



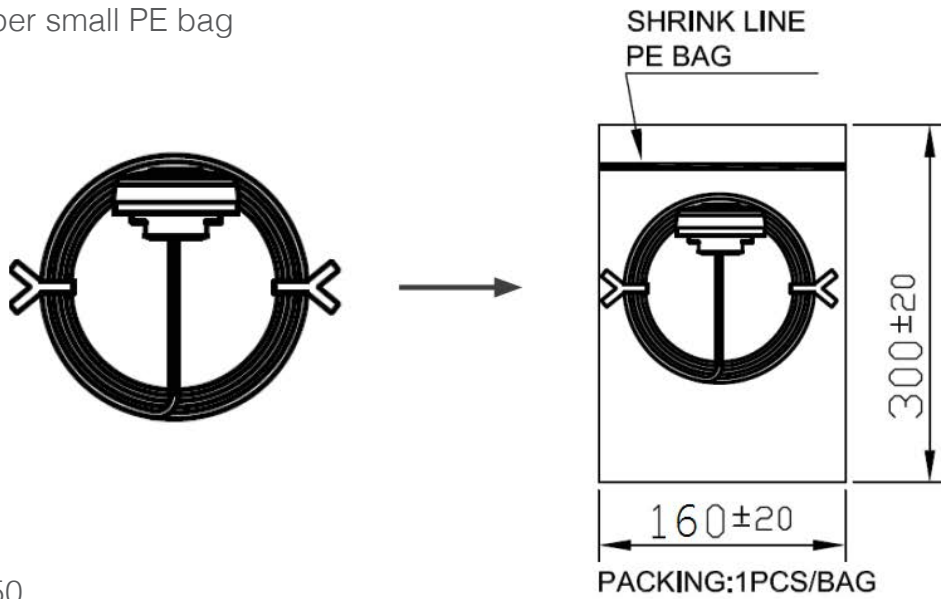
Bottom Thread View

M24x2P  
 $\varnothing 20.03 \pm 1$   
 Cable

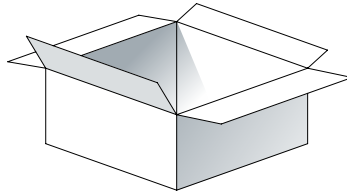
Connector  
 SMA (M) ST  
 $8.4 \pm 0.8$   
 $1/4'' - 36UNS - 2B$   
 DETAIL "A"  
 SCALE: 2/1

## 10. Packaging

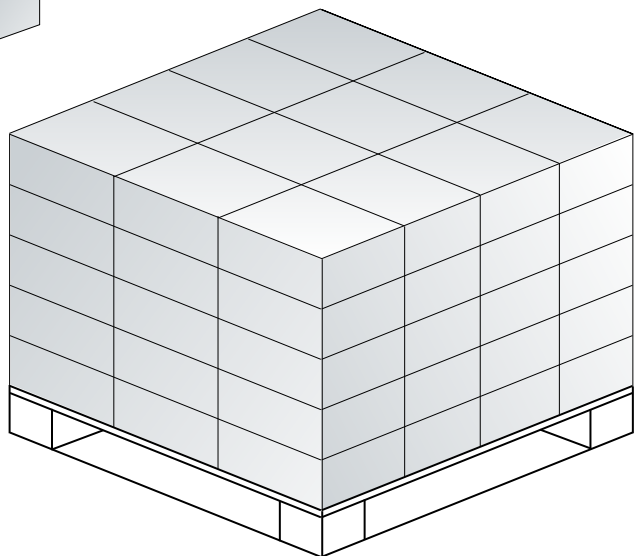
1 piece G24 per small PE bag  
Weight 180g



Carton Qty - 50  
Carton - 310\*255\*295mm  
Weight - 2.6Kg

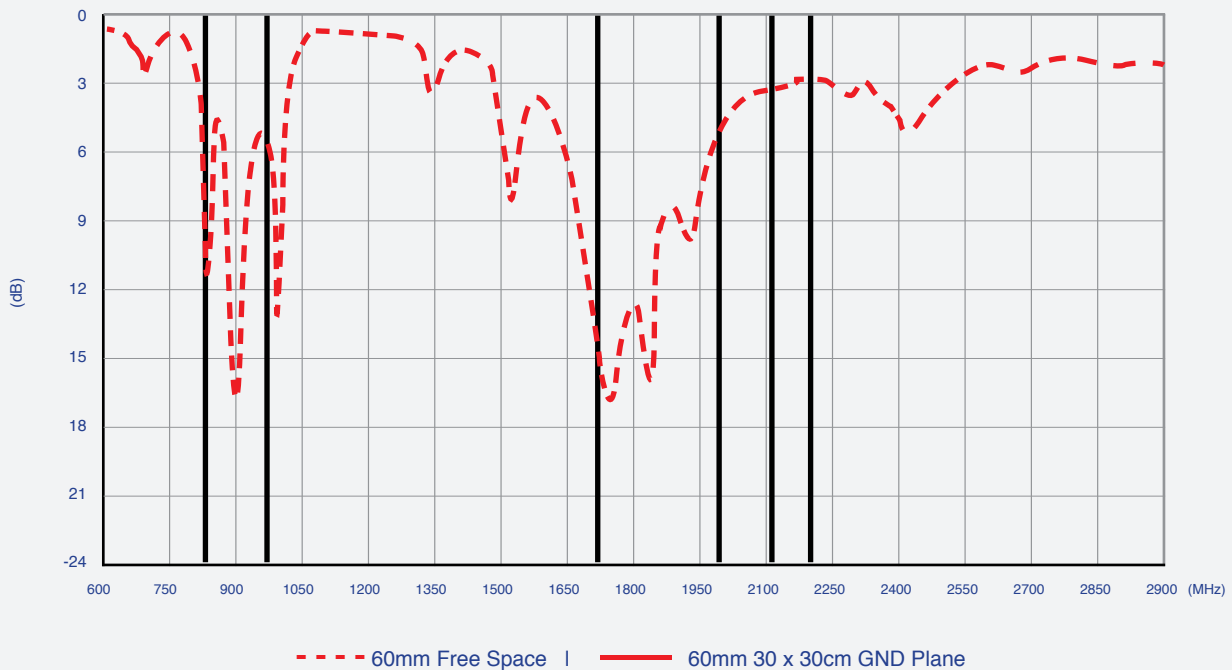


Pallet Dimensions 1100\*1100mm  
60 Cartons per Pallet  
3000 Pieces



## 11. Application Note

60mm S11 Cable Measurements



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.

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