# Specification

| | | |
|---|---|---|
| Part No. | : | **GW.48.A151** |
| Product Name | : | Black 2.4 / 5.8GHz Dual Band 3-3.5dBi Rubber Duck Dipole Antenna with RP-SMA(M) |
| Features | : | 2.4/5.8GHz Dual Band Operation<br>UV Resistant, Robust TPEE Housing<br>IP67 Waterproof Enclosure<br>IK05 Impact Rated Enclosure<br>3.5 dBi Peak Gain @ 2.4GHz<br>3 dBi Peak Gain @ 5.8GHz<br>Connector Mount: RP-SMA(M)<br>Dimensions: 89.5mm x 7.5mm Diameter<br>**RoHS compliant** |

# 1. Introduction

The GW.48 dual-band 2.4/5.8GHz RP-SMA(M) mount dipole antenna is designed for superior performance and reliability. With an omnidirectional radiation pattern and excellent efficiency and gain on both 2.4 GHz and 5.8 GHz bands.

At just 89.5mm in height, the GW.48 is a great smaller form factor solution for Bluetooth and Wireless LAN networks. The IP67 rated enclosure makes it suitable for both indoor and outdoor applications. The flexible IK05 rated TPEE enclosure is impact resistant and durable and has the added benefit of UV resistance, allowing it to meet the needs of demanding outdoor applications.

The GW.48 has a 3.5 dBi Peak Gain at 2.4GHz and 3 dBi Peak Gain @ 5.8GHz making it a cost-effective, high-performing choice for any outdoor application operating at 2.4 or 5.8 GHz. Many module manufacturers specify peak gain limits for any antennas that are to be connected to that module. Those peak gain limits are based on free-space conditions. In practice, the peak gain of an antenna tested in free-space can degrade by at least 1 or 2dBi when installed. So ideally you should go for a slightly higher peak gain antenna than mentioned on the module specification to compensate for this effect, giving you better performance.

Upon testing of any of our antennas with your device and a selection of appropriate layout, integration technique, or cable, Taoglas can make sure any of our antennas' peak gain will be below the peak gain limits. Taoglas can then issue a specification and/or report for the selected antenna in your device that will clearly show it complying with the peak gain limits, so you can be assured you are meeting regulatory requirements for that module.

Choosing a Taoglas antenna with a higher peak gain than what is specified by the module manufacturer and enlisting our help will ensure you are getting the best performance possible without exceeding the peak gain limits.

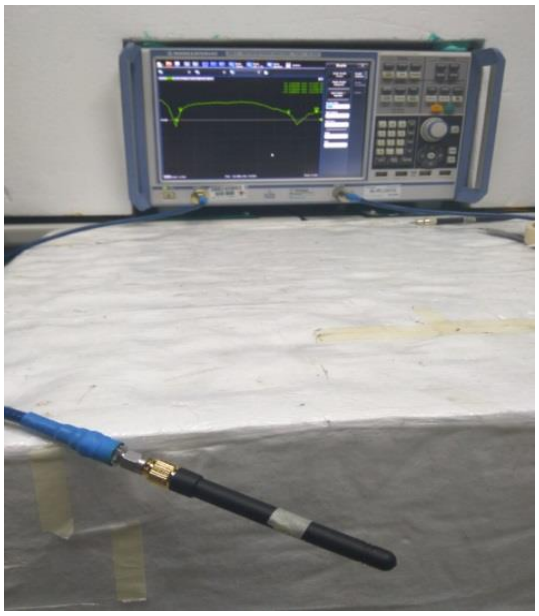
Contact your local Taoglas customer support team for further information.

# 2. Specification

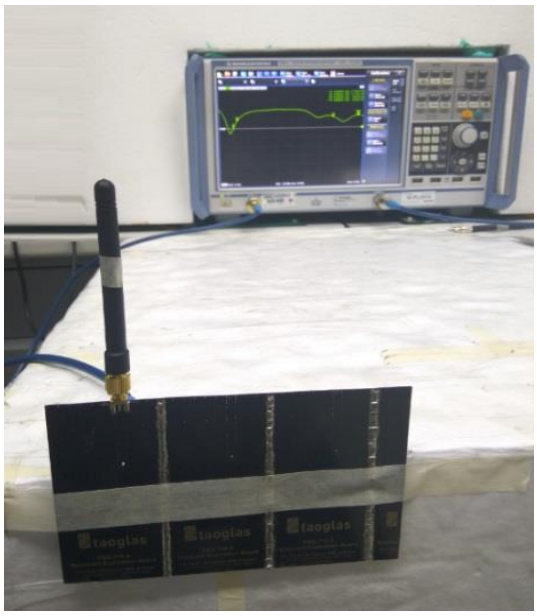
| ELECTRICAL | | | |
|---|---|---|---|
| Frequency | | 2.4 ~ 2.5GHz | 5.15 ~ 5.85GHz |
| Return Loss (dB) | | <-10 | <-7 |
| Peak Gain (dBi) | Free Space | 3.42 | 4.56 |
| | Ground Plane | 2.52 | 2.85 |
| Average Gain (dBi) | Free Space | -1.20 | -1.73 |
| | Ground Plane | -1.56 | -2.62 |
| Efficiency (%) | Free Space | 75.82 | 67.21 |
| | Ground Plane | 69.77 | 54.65 |
| Polarization | | Linear | |
| Impedance | | 50 Ω | |
| Radiation Pattern | | Omni | |
| Input Power | | 2W max. | |
| **MECHANICAL** | | | |
| Antenna Length | | 89.5 mm | |
| Antenna Diameter | | 7.5 mm | |
| Weight | | 9.5g | |
| Antenna Body Material | | TPEE | |
| Connector | | RP-SMA(M) | |
| Waterproof | | IP67 | |
| Pendulum Hammer Test [IEC62262] | | IK05 | |
| **ENVIRONMENTAL** | | | |
| Temperature Range | | -40°C to 85°C | |
| Humidity | | Non-condensing 65°C 95% RH | |

# 3. Antenna Measurement Setup & Return Loss

## 3.1 Test Setup

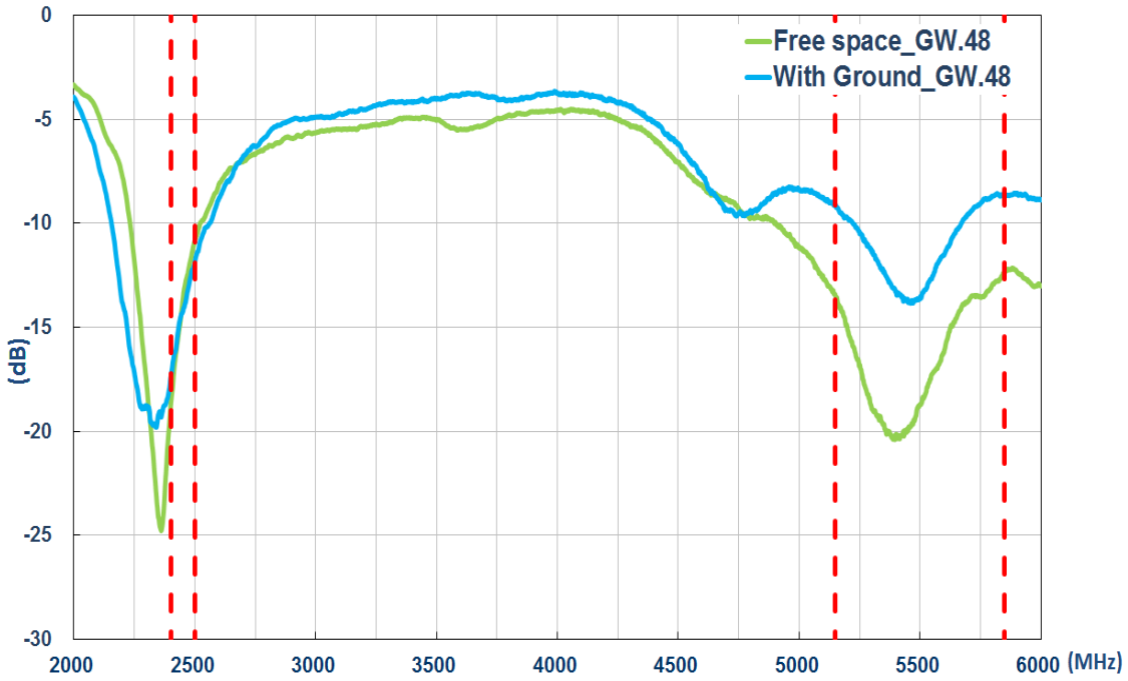


Free Space

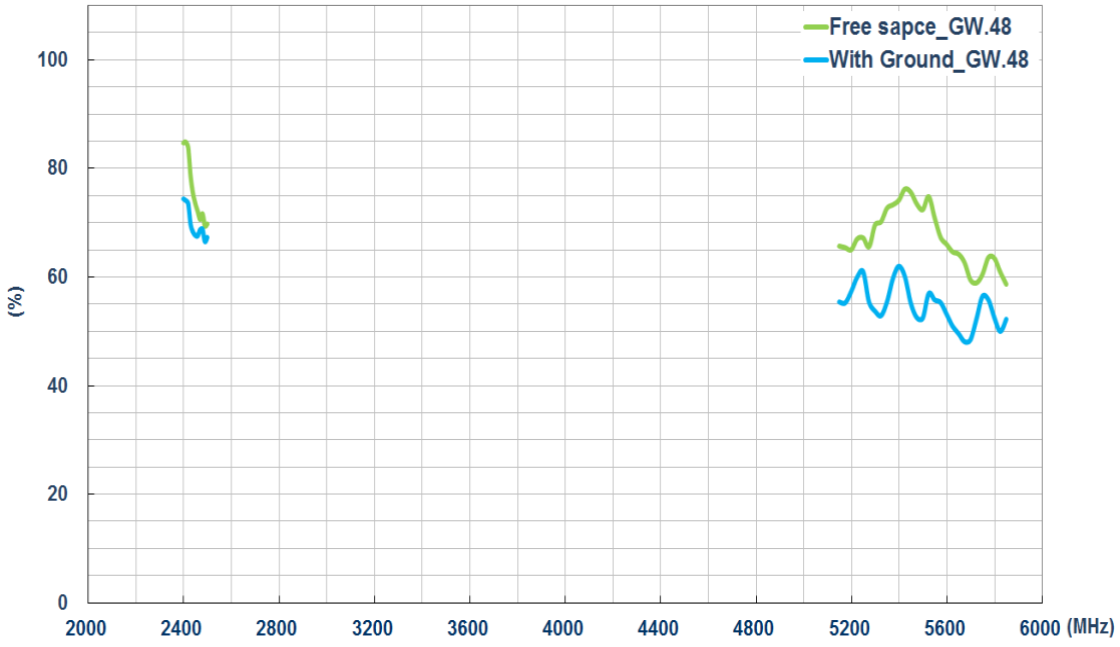


With Ground Plane

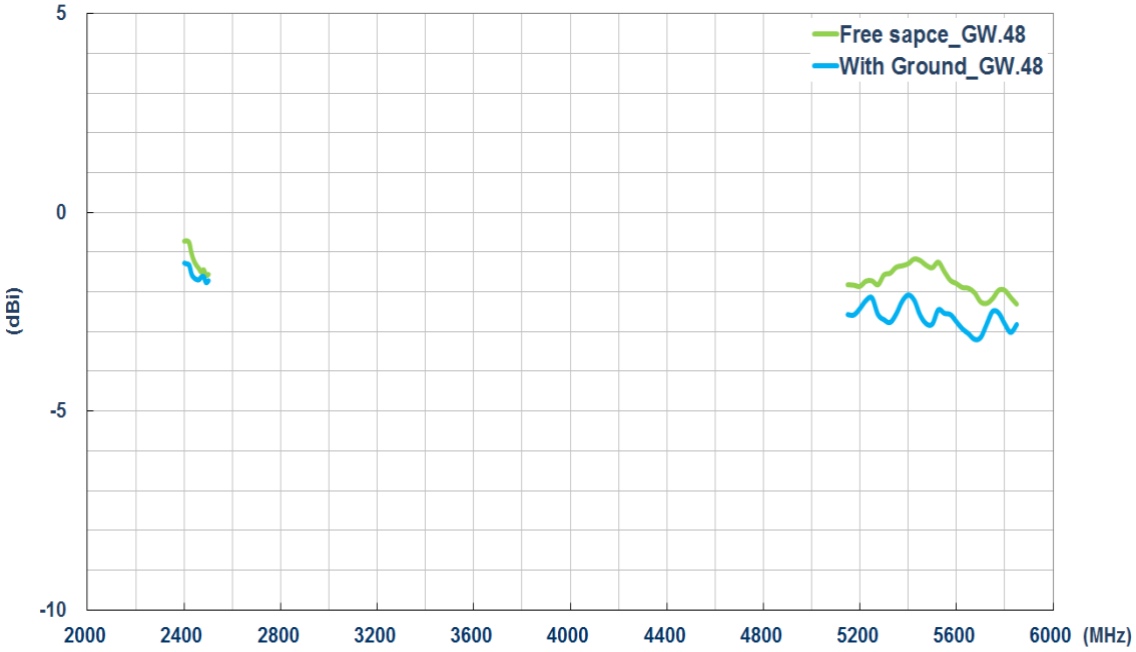
## 3.2 Return Loss



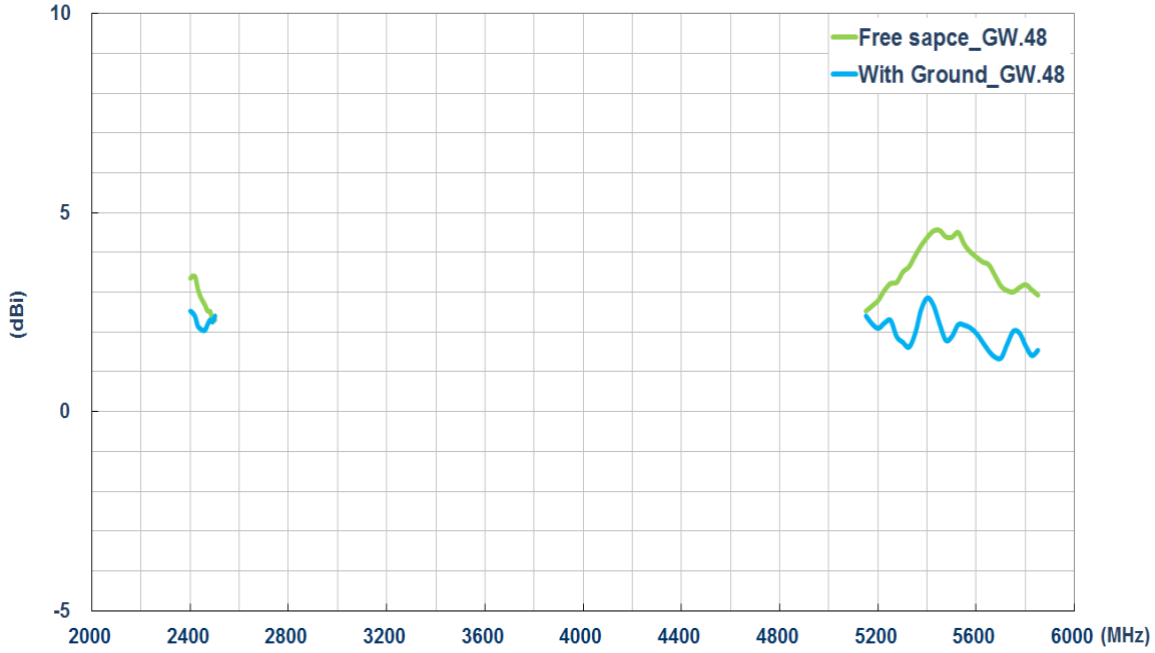

## 3.2. Efficiency



## 3.3 Average Gain



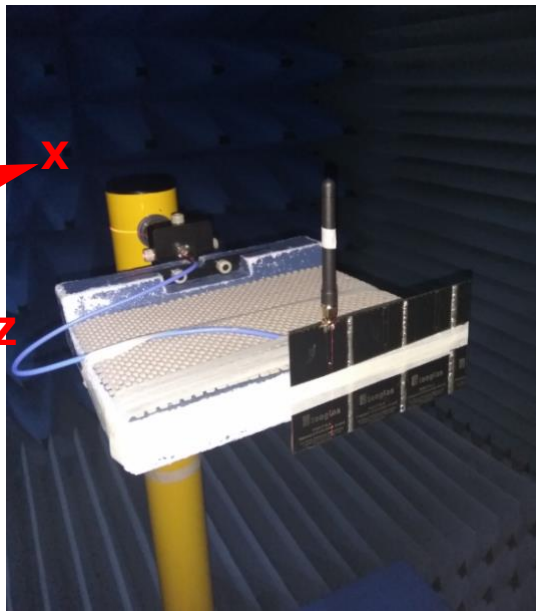

## 3.4 Peak Gain



# 4. Antenna Radiation Patterns

## 4.1 Antenna Setup (Antenna Test Setup in Anechoic Chamber)


Free Space

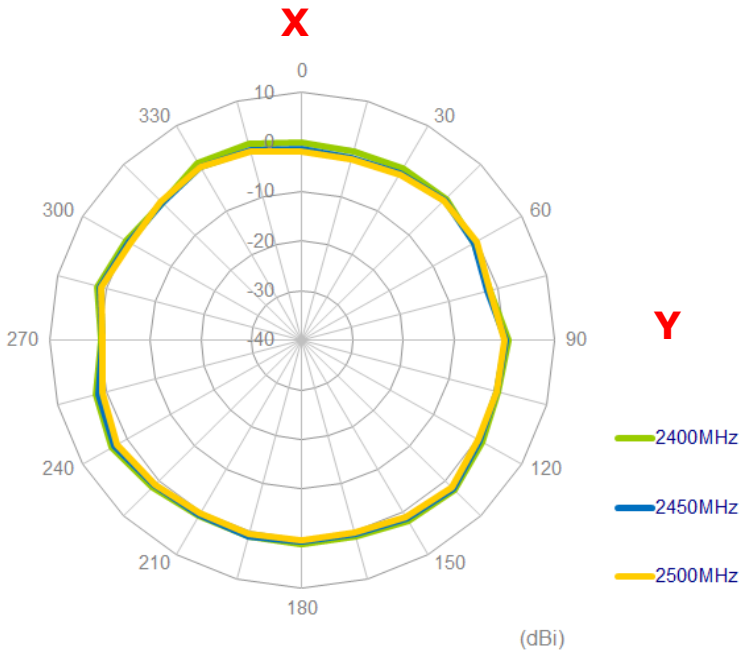


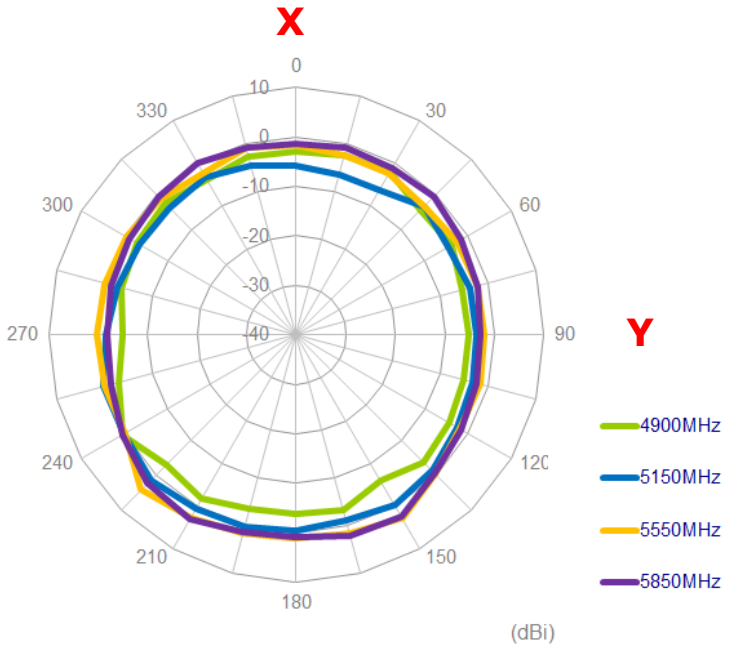
With Ground

## 4.2 2D Radiation Patterns

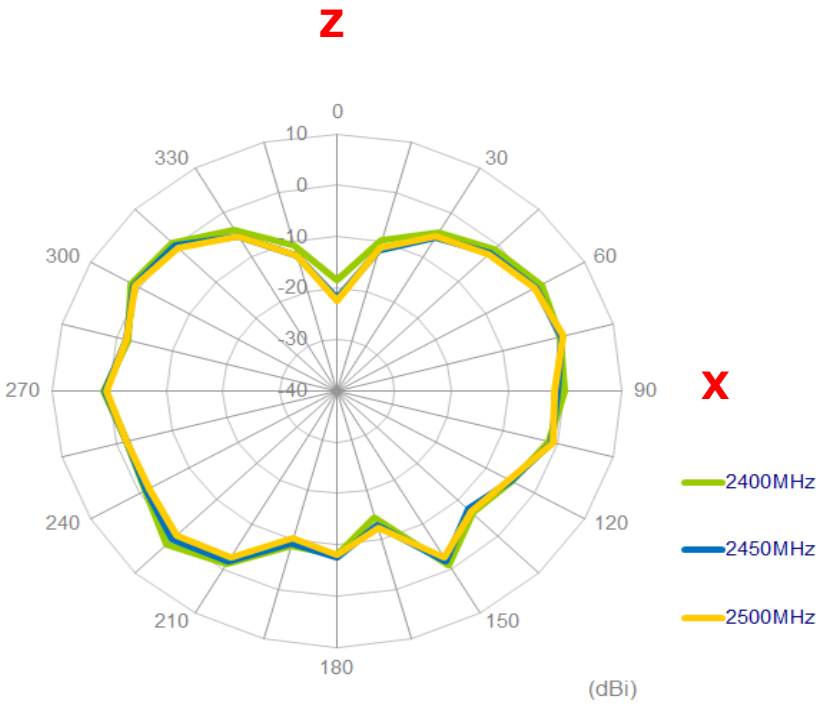
### 4.2.1 Wi-Fi Dual Band - Free Space

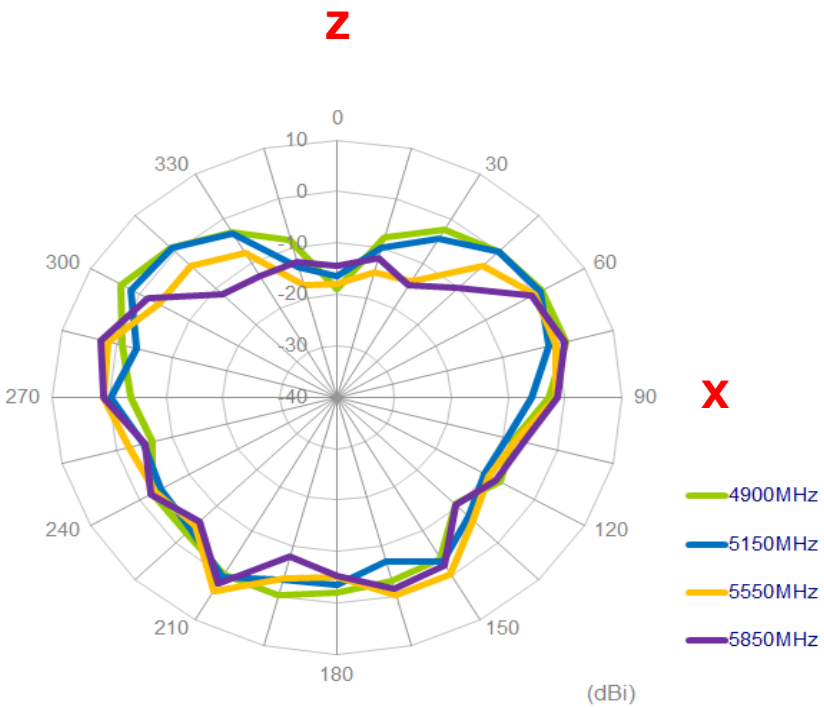
**XY Plane**



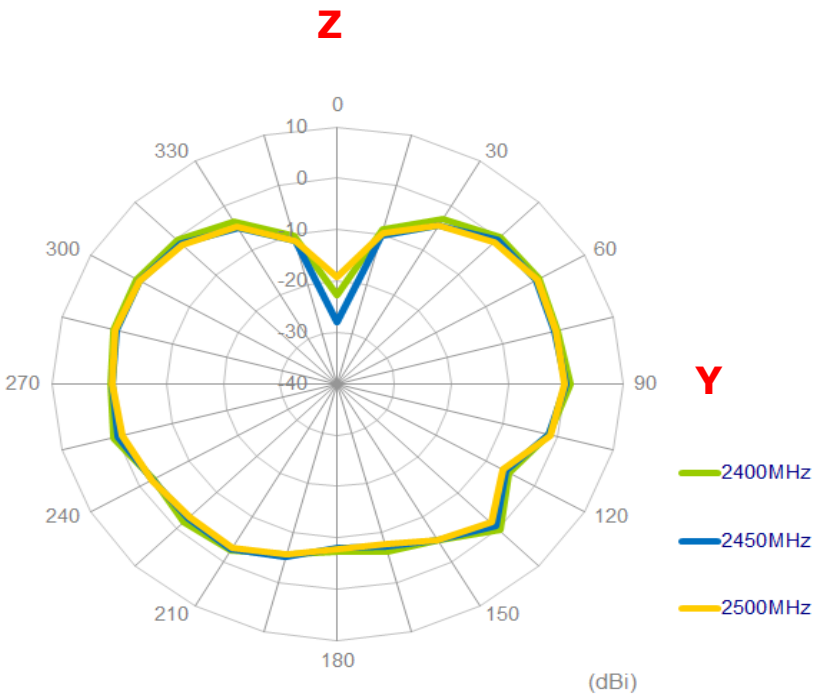



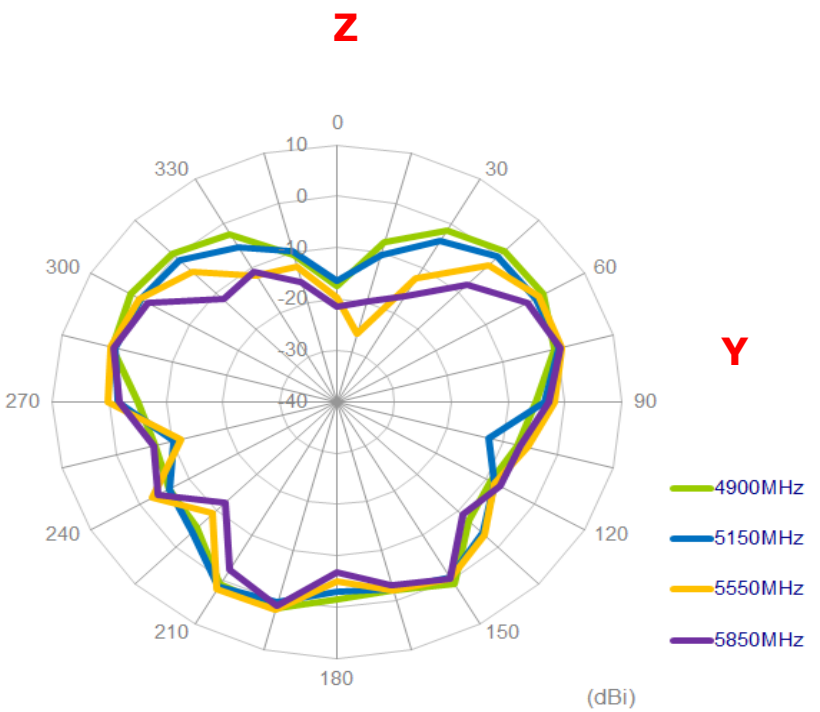
## XZ Plane


Z
0
30
60
90
120
150
180
210
240
270
300
330
10
0
-10
-20
-30
-40
X
2400MHz
2450MHz
2500MHz
(dBi)


Z
0
30
60
90
120
150
180
210
240
270
300
330
10
0
-10
-20
-30
-40
X
4900MHz
5150MHz
5550MHz
5850MHz
(dBi)

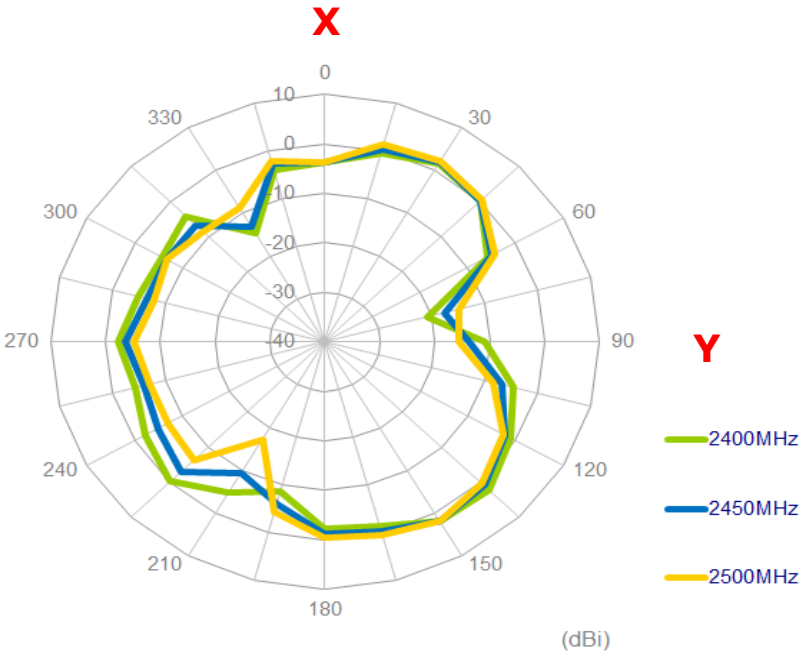
## YZ Plane

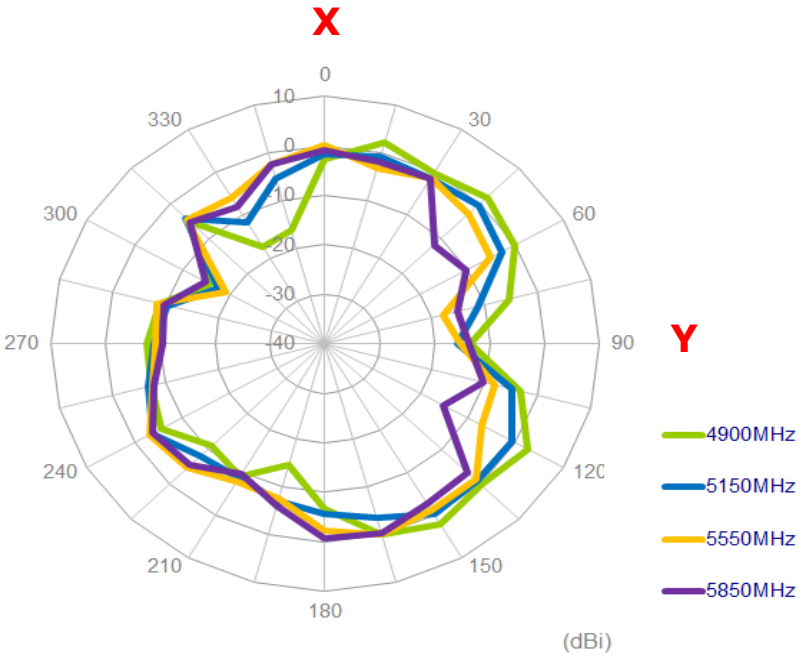

Z
0
10
0
-10
-20
-30
-40
30
60
90
120
150
180
210
240
270
300
330
Y
2400MHz
2450MHz
2500MHz
(dBi)


Z
0
10
0
-10
-20
-30
-40
30
60
90
120
150
180
210
240
270
300
330
Y
4900MHz
5150MHz
5550MHz
5850MHz
(dBi)

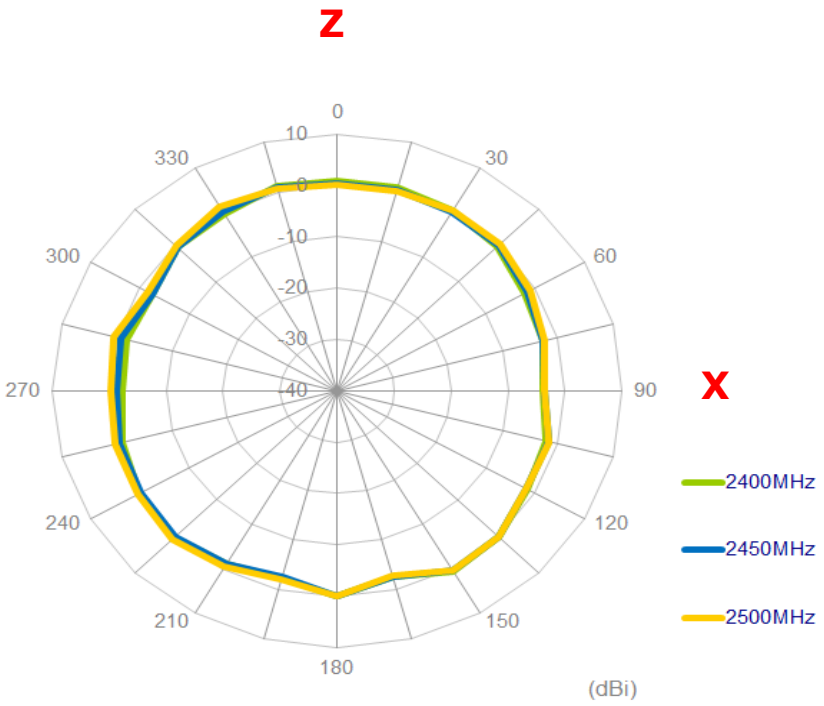
### 4.2.2 Wi-Fi Dual Band (With Ground)

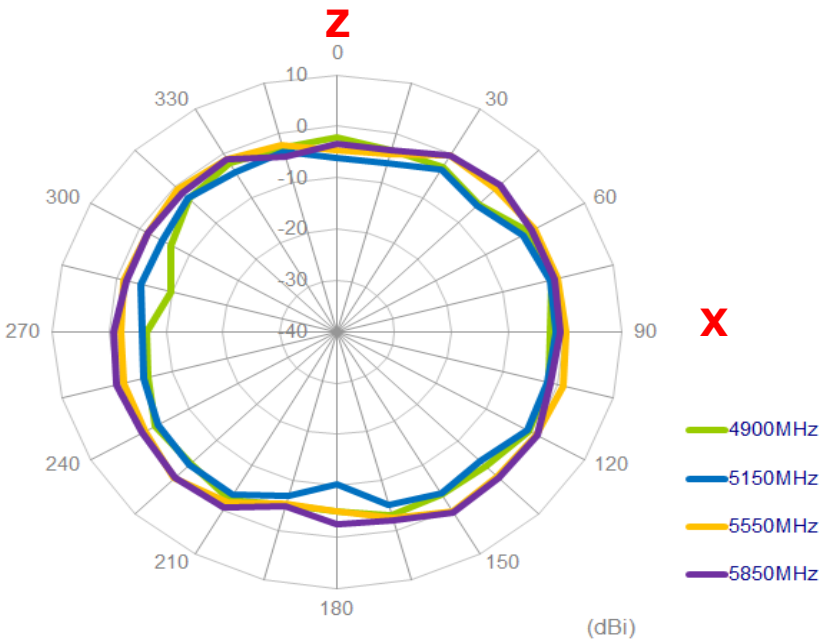
## XY Plane



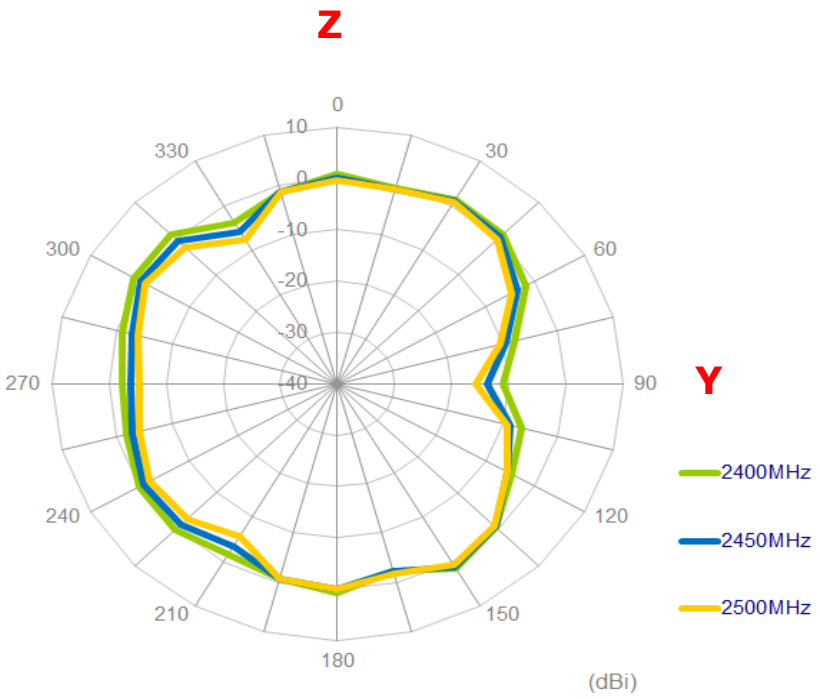



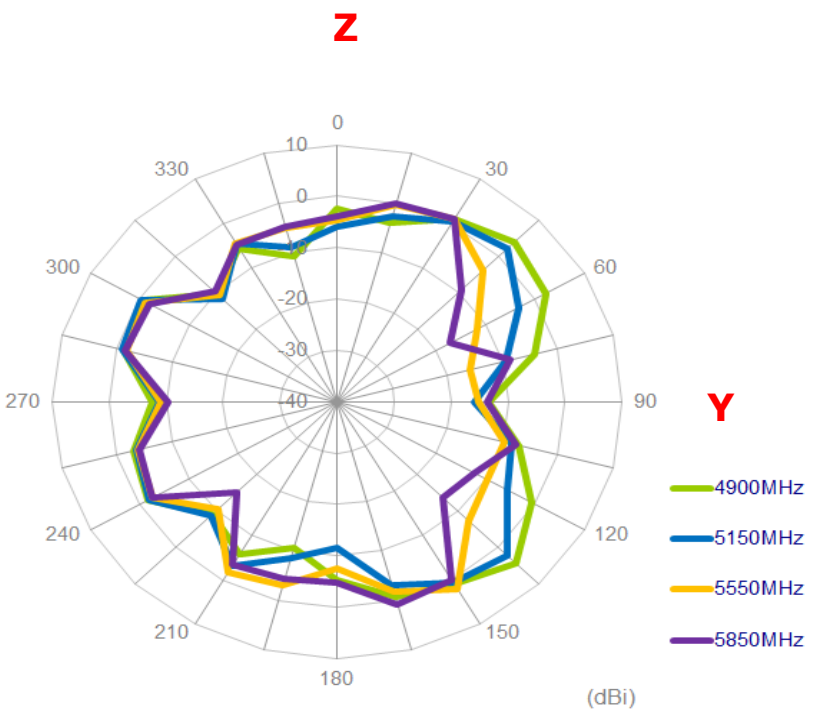
## XZ Plane


Z
0
10
30
330
0
60
-10
300
-20
-30
270
-40
90
X
240
120
210
150
180
(dBi)
2400MHz
2450MHz
2500MHz

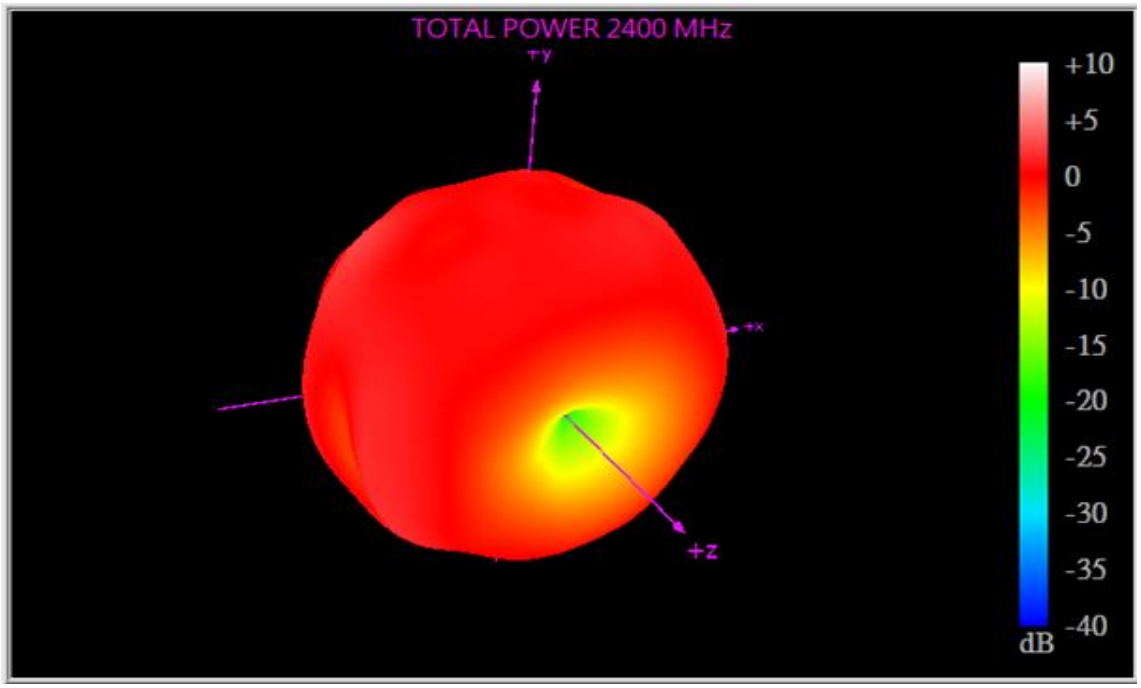

Z
0
10
30
330
0
60
-10
300
-20
-30
270
-40
90
X
240
120
210
150
180
(dBi)
4900MHz
5150MHz
5550MHz
5850MHz

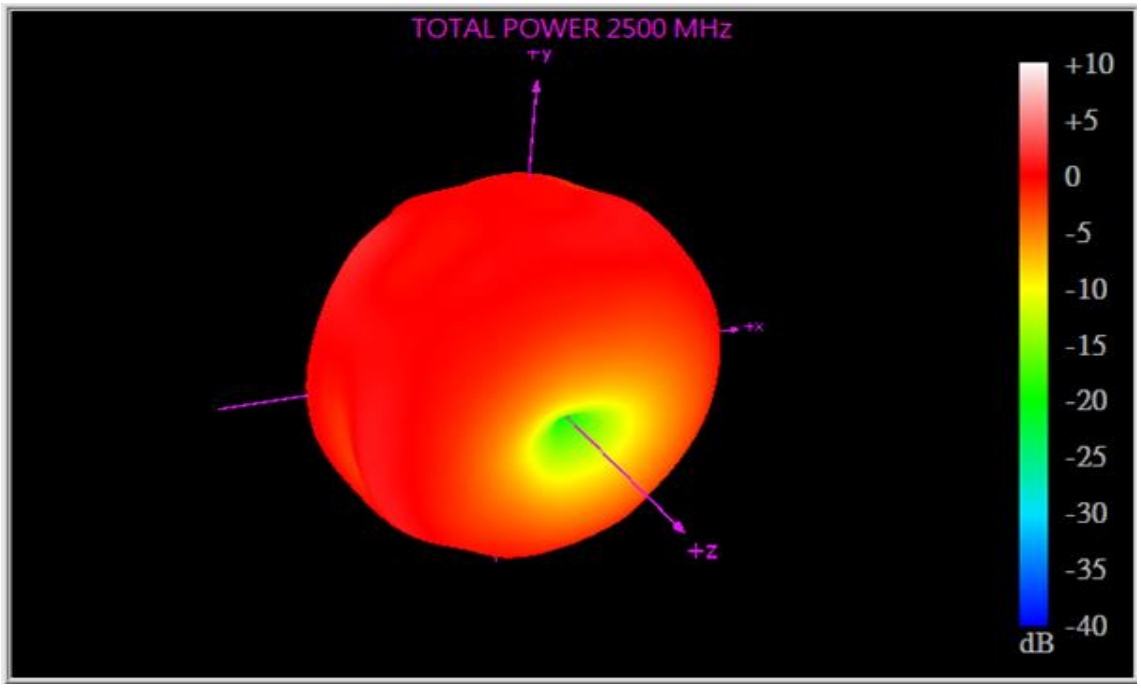
## YZ Plane

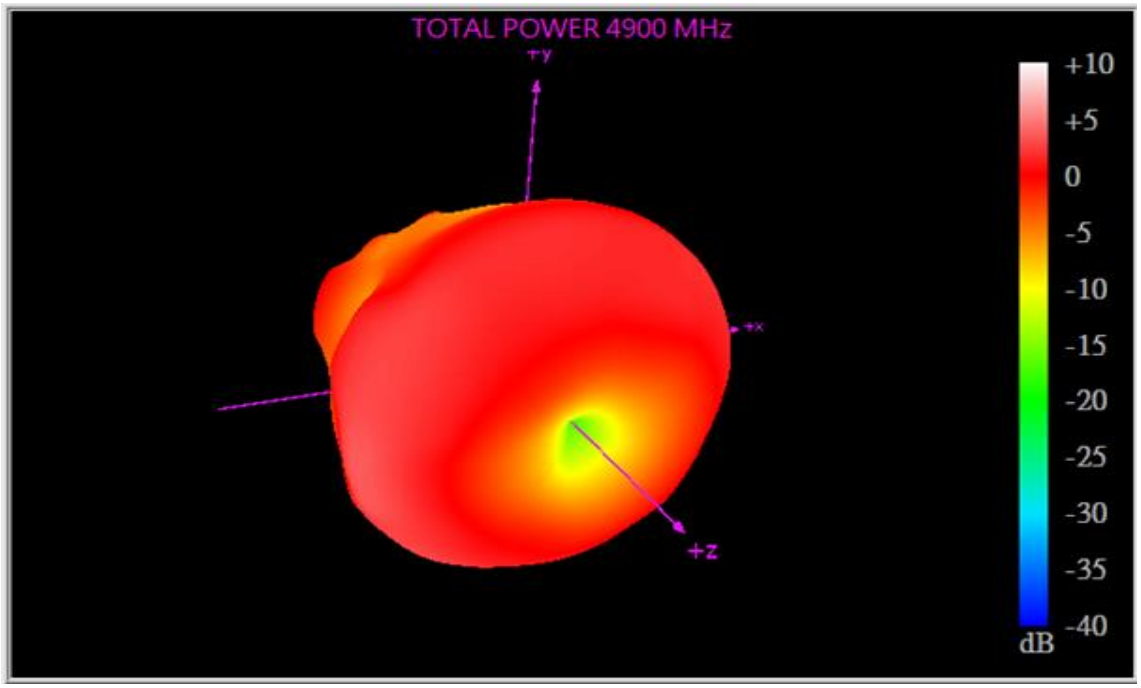

Z
0
10
30
330
0
-10
60
300
-20
-30
270
-40
90
Y
240
120
210
150
180
(dBi)
2400MHz
2450MHz
2500MHz

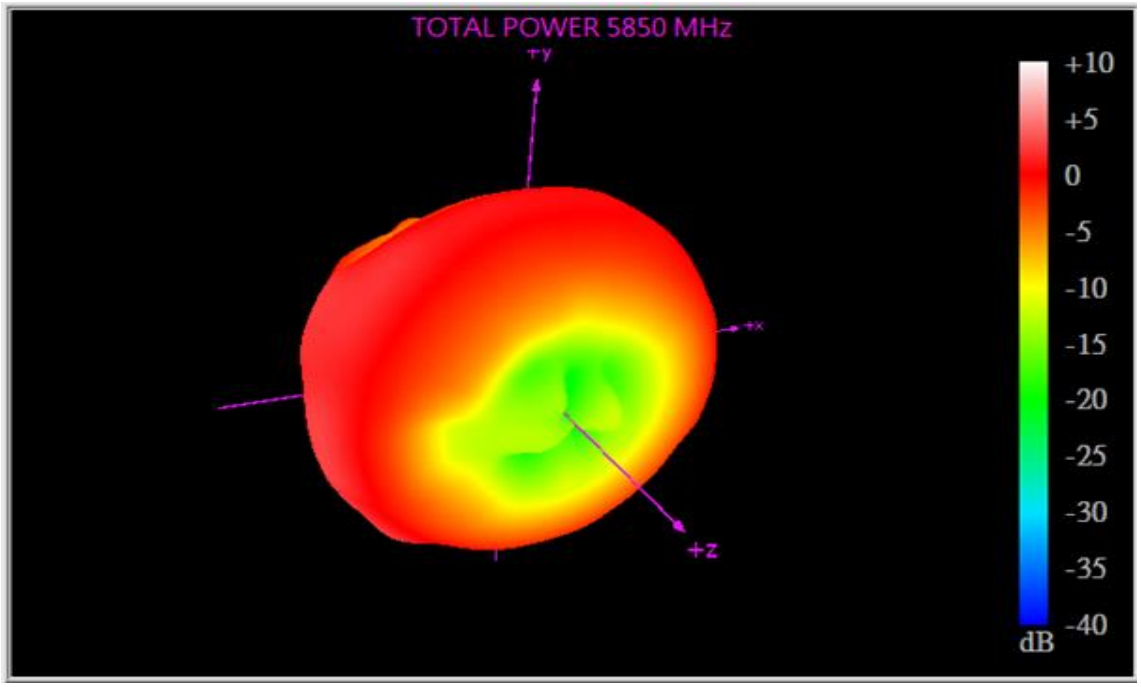

Z
0
10
30
330
0
60
300
-20
-30
270
-40
90
Y
240
120
210
150
180
(dBi)
4900MHz
5150MHz
5550MHz
5850MHz

### 4.2.3 3D Radiation Pattern - Free space

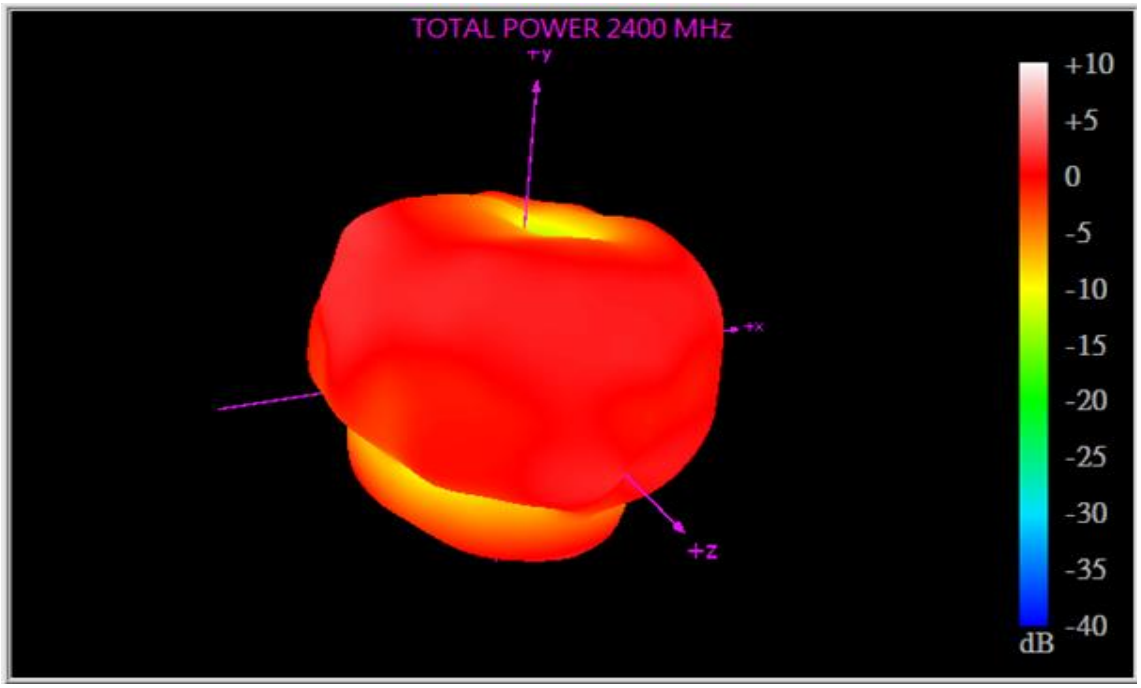


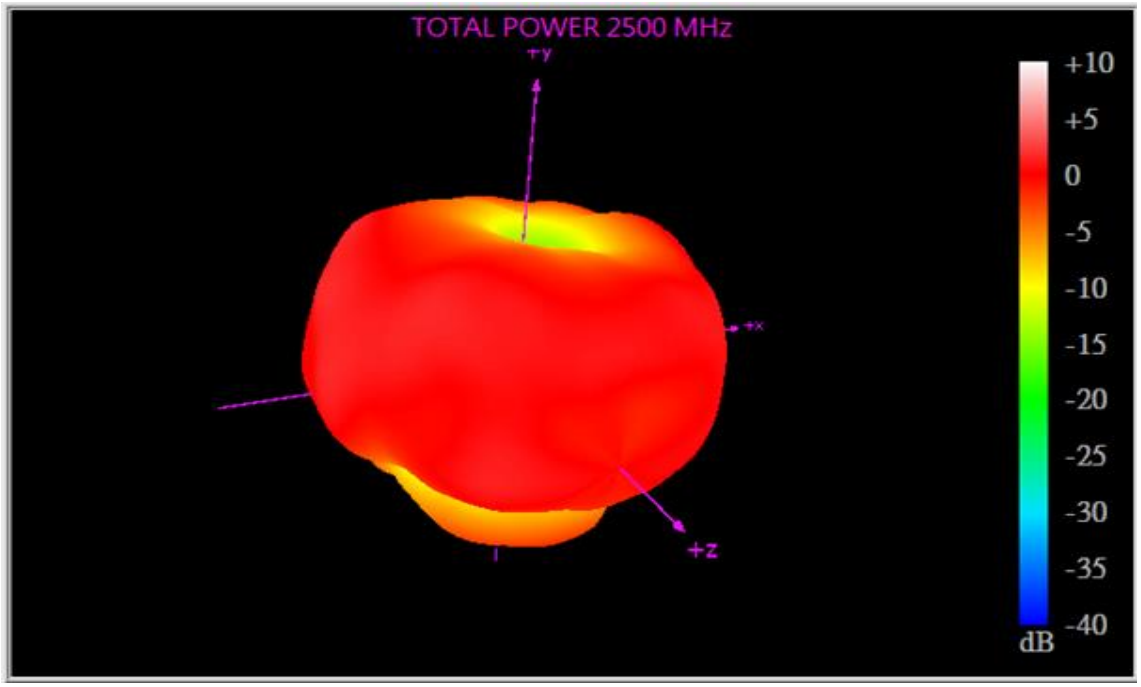



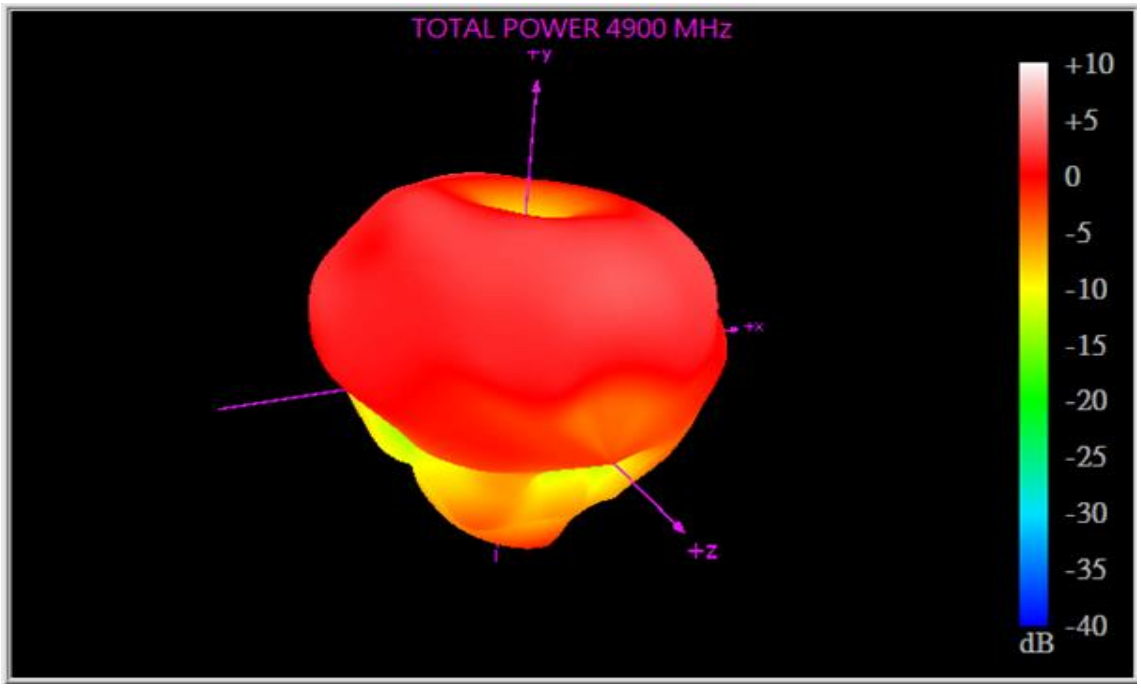

TOTAL POWER 4900 MHz
+y
+x
+z
+10
+5
0
-5
-10
-15
-20
-25
-30
-35
-40
dB

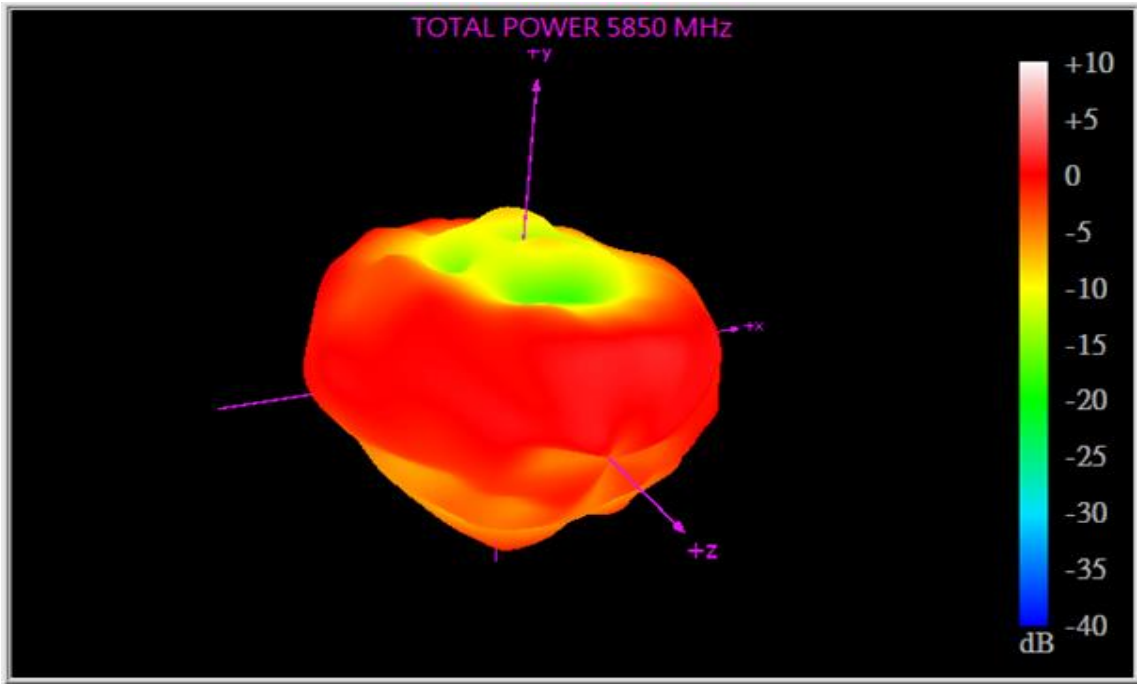

TOTAL POWER 5850 MHz
+y
+x
+z
+10
+5
0
-5
-10
-15
-20
-25
-30
-35
-40
dB

### 4.2.4 3D Radiation Pattern – with Ground

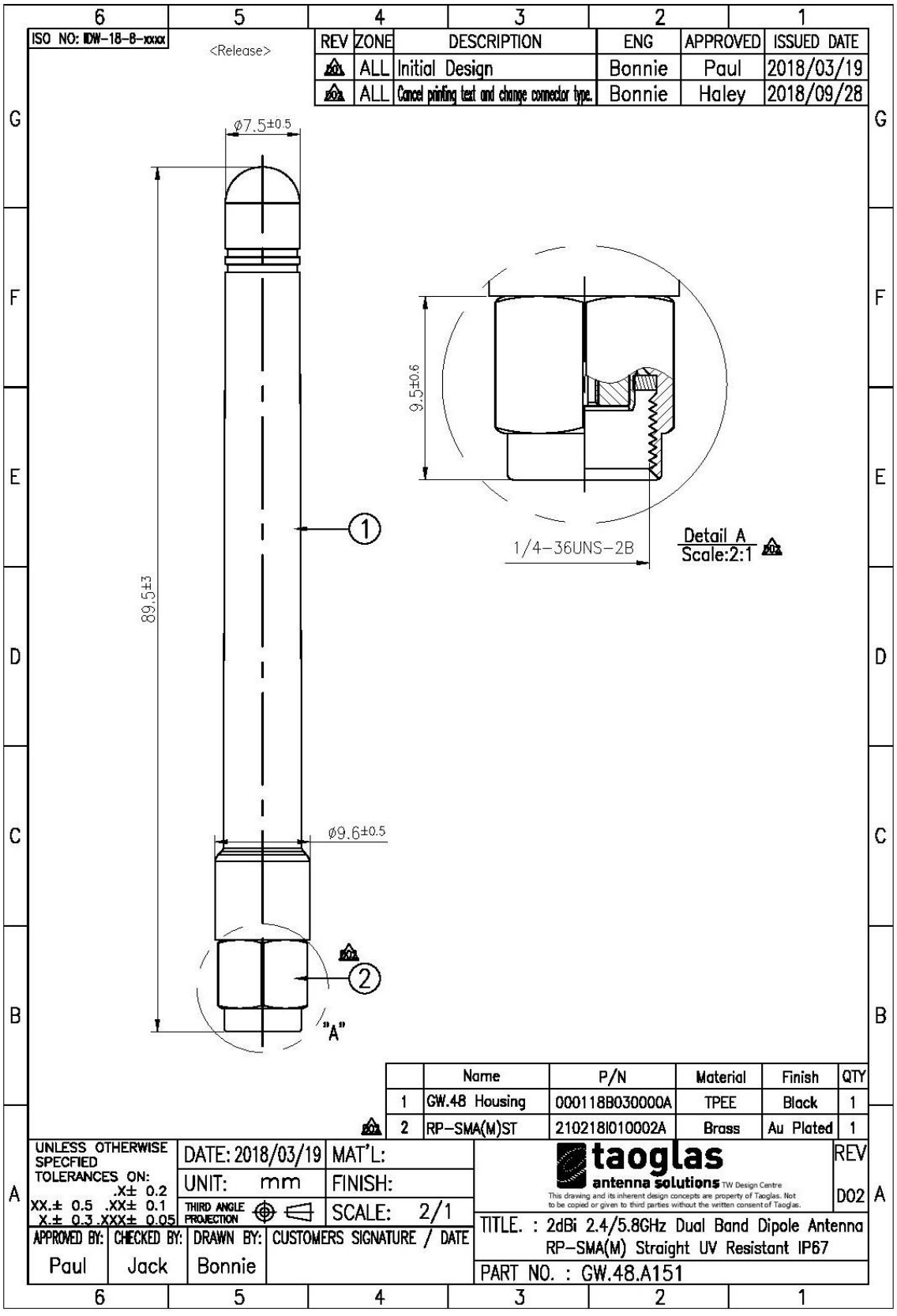



TOTAL POWER 4900 MHz
+y
+x
+z
+10
+5
0
-5
-10
-15
-20
-25
-30
-35
-40
dB

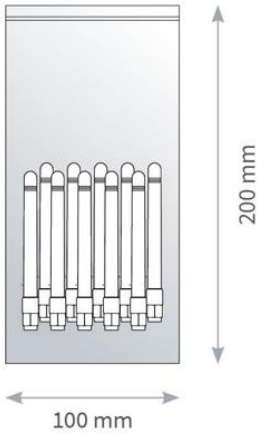

TOTAL POWER 5850 MHz
+y
+x
+z
+10
+5
0
-5
-10
-15
-20
-25
-30
-35
-40
dB

# 5. Mechanical Drawing (Unit: mm)

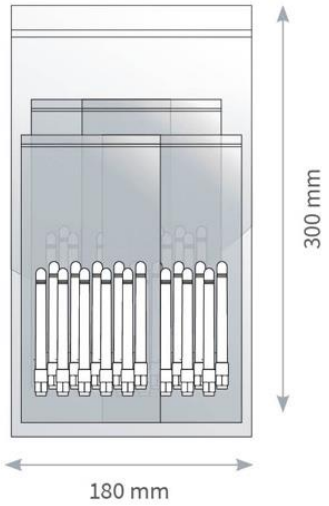


# 6. Packaging

10 pcs GW.48 per PE Bag
Bag Dimensions - 100 x 200 mm
Weight - 86g




10 Small PE Bag per Large Bag
100 pcs GW.48 per PE Large Bag
Bag Dimensions - 300 x 180mm
Weight - 865g




1000 pcs GW.48 per carton
Carton - 360 x 310 x 160mm
Weight - 9.6Kg