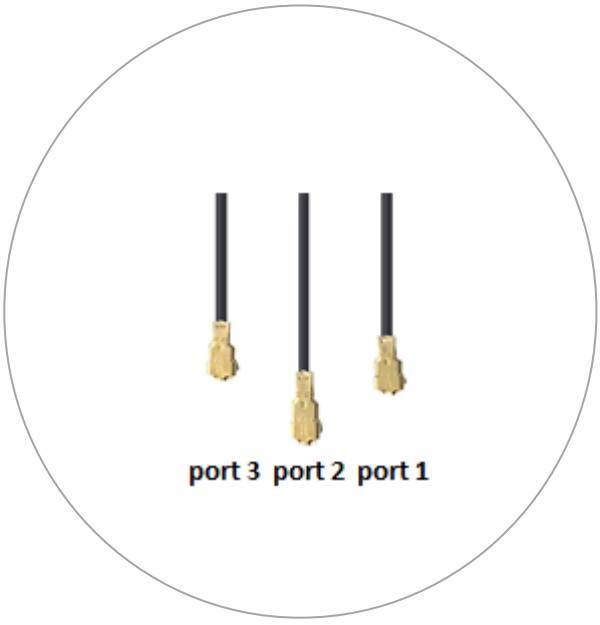
# SPECIFICATION

**Part No.** : **FXP543.A.07.A.001**

**Description** : Venti Circular 2.4/5.8GHz Flexible PCB Antenna
Internal 3 x MIMO
100mm 1.37 mini coax cable with IPEX MHFHT

**Features** : Dual Band WiFi MIMO x 3
Frequency 2.4~2.5GHz, 5.15~5.85GHz
45% efficiency and 1.5 to 5 dBi peak gain
Diameter : 37mm, Thickness : 0.15mm
Port 1, 2, 3 – 100mm Ø1.37 mini coaxial cable with IPEX MHFHT connector (U.FL comp)
3M adhesive for easy mounting
RoHS compliant

# 1. Introduction

The unique FXP543 Venti Circular antenna is the smallest 3-in-1 MIMO, internal flexible monopole type antenna for WiFi 2.4/5.8GHz in the market Featuring a thickness of only 0.15mm, the FXP543 is an ideal solution for gateways, routers, smart city applications such as WiFi hot spots, smart lighting control, video surveillance and traffic monitoring.

The FXP543 has over 45% efficiency in both the 2.4GHz and 5GHz bands. It has been designed on a flexible material with a circular form-factor and cable connection for an easy installation. Great care has been taken to have high isolation (at least 10dB) between the three elements to ensure optimal MIMO system throughput.

The antenna comes with double-sided 3M adhesive for easy and robust "peel and stick" mounting. Three cables terminate with IPEX (u.fl) connectors for easy installation.

*If needed in order to comply with peak gain restrictions with certain wireless modules, the antenna peak gain can be reduced by simply using longer cable, or when tested in the actual device environment.

Many module manufacturers specify peak gain requirements for any antennas that is to be connected to that module. Upon testing of any of our antenna 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 requirements. Taoglas can then issue a specification and/or report for this selected WiFi antennas in your device that will clearly show it complying with the peak gain requirements, so you can be assured you are meeting regulatory requirements for that module.

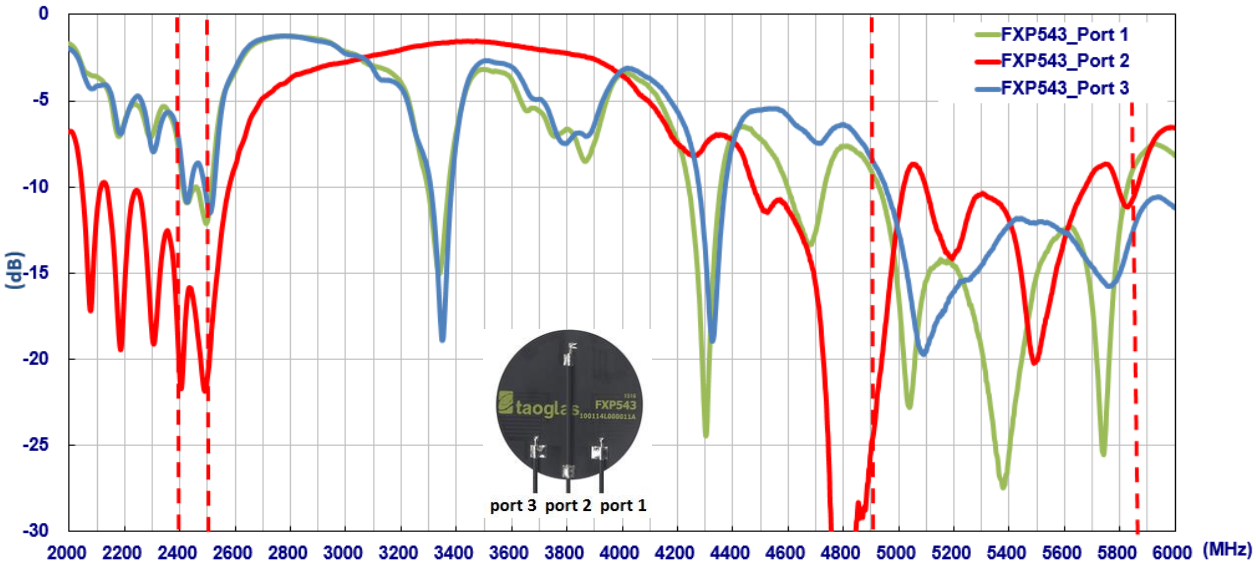
## 2. Specification

| ELECTRICAL * | | | | | | |
|---|---|---|---|---|---|---|
| | Port 1 | | Port 2 | | Port 3 | |
| Frequency(MHz) | 2400-2500 | 5150-5850 | 2400-2500 | 5150-5850 | 2400-2500 | 5150-5850 |
| Efficiency (%) | 47.02 | 44.25 | 61.30 | 47.21 | 51.13 | 45.02 |
| Peak Gain (dBi) | 2.96 | 5.16 | 2.24 | 3.40 | 1.80 | 3.76 |
| Average Gain (dBi) | -3.28 | -3.56 | -2.13 | -3.28 | -3.30 | -3.38 |
| Return Loss (dB) | < -10 | <-9 | <-10 | <-8 | < -8 | <-9 |
| Impedance | 50 ohms | | | | | |
| Polarization | Linear | | | | | |
| Radiation Property | Omni-Directional | | | | | |
| Max Input Power | 5W | | | | | |
| MECHANICAL | | | | | | |
| Dimension (mm) | Antenna Diameter=37<br>Thickness=0.24 with release liner<br>Thickness=0.15 without release liner | | | | | |
| Cable | 3 * 1.37 coaxial cable | | | | | |
| Cable Length | 100mm | | | | | |
| Connector | IPEX MHFHT | | | | | |
| Weight (g) | 2.4 | | | | | |
| ENVIRONMENTAL | | | | | | |
| Operation Temperature | -40°C to 85°C | | | | | |
| Humidity | Non-condensing 65°C 95% RH | | | | | |

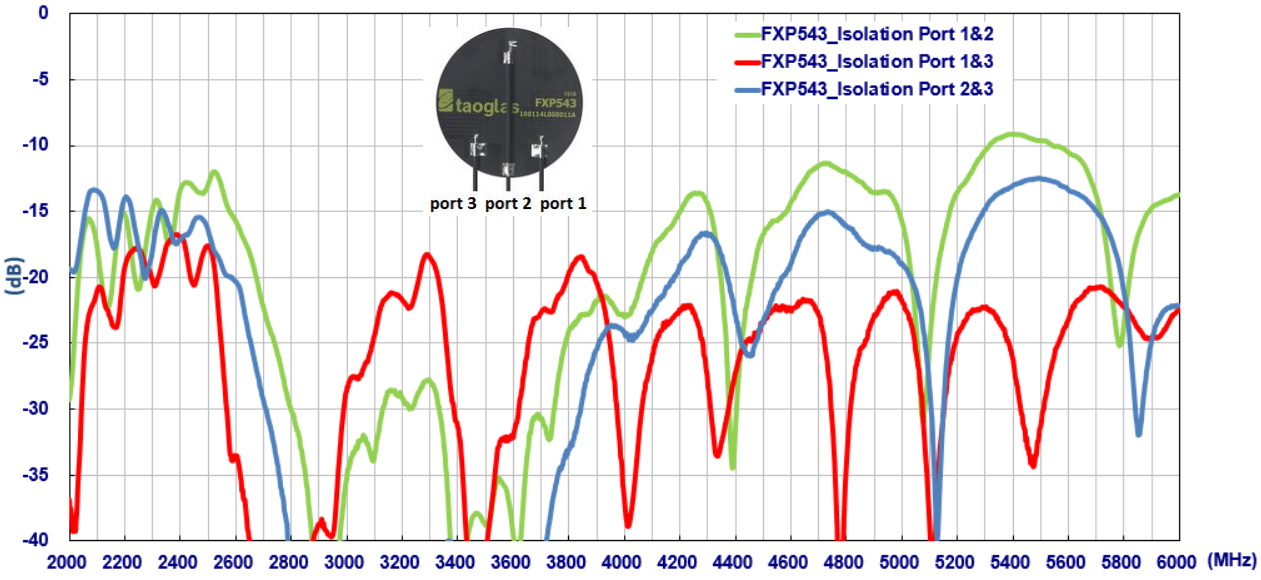
*** Electrical characteristics are measured on 2mm thick ABS board.**

# 3. Antenna Characteristcs

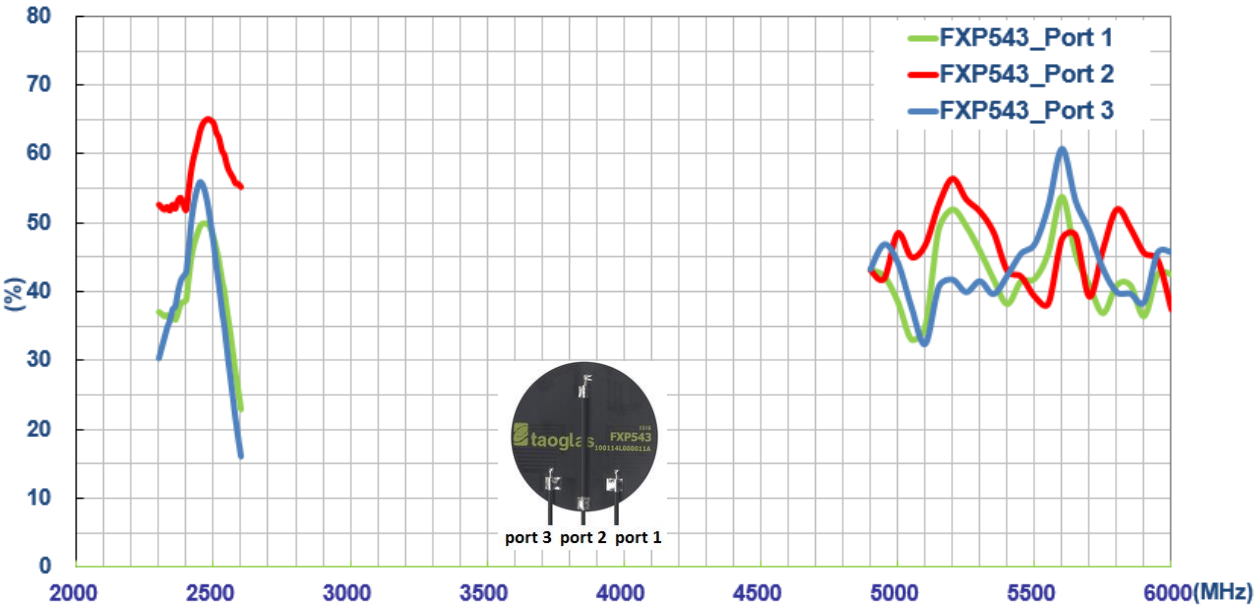
## 3.1. Return Loss



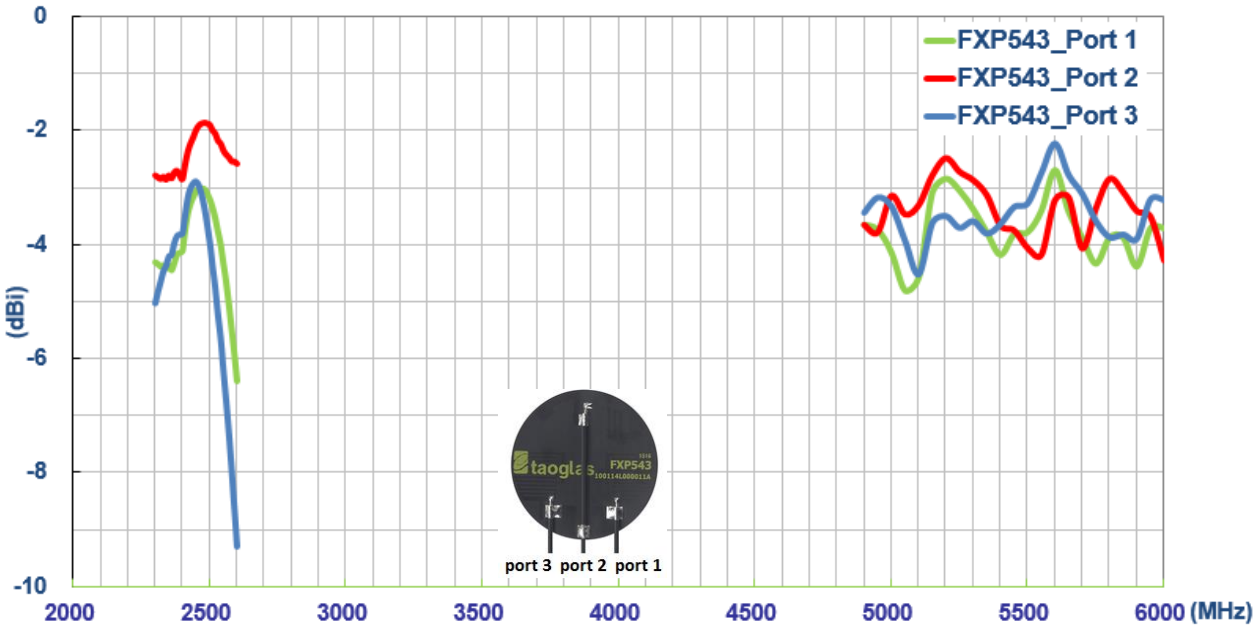

## 3.2. Isolation



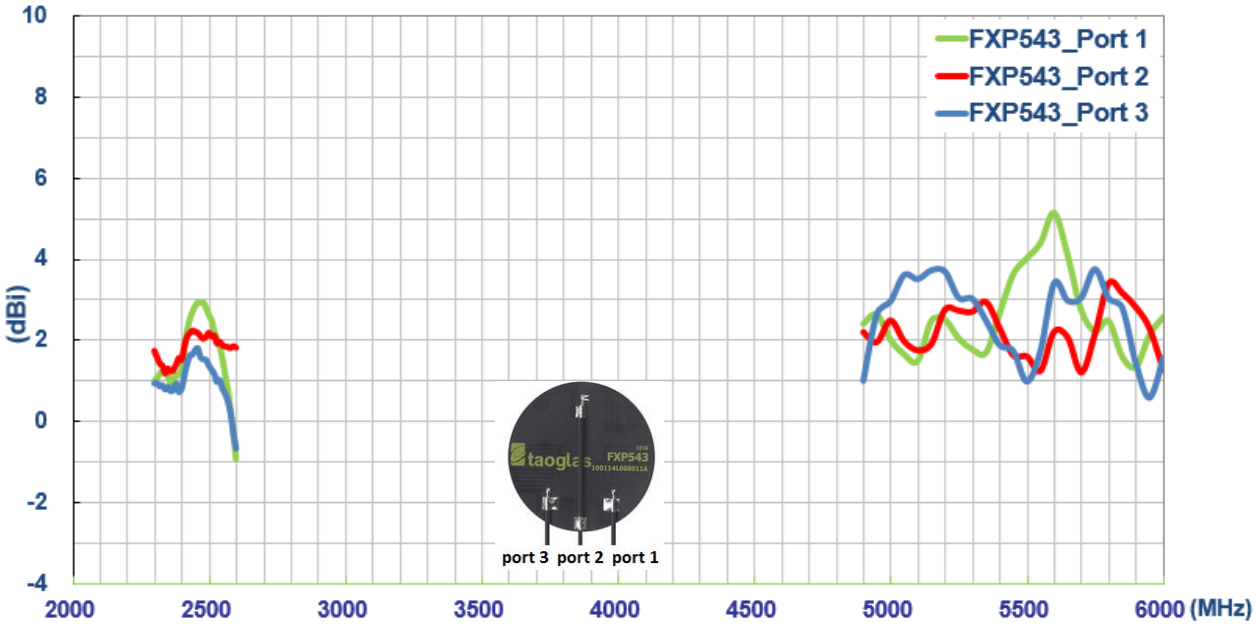
## 3.3. Efficiency




## 3.4. Average Gain



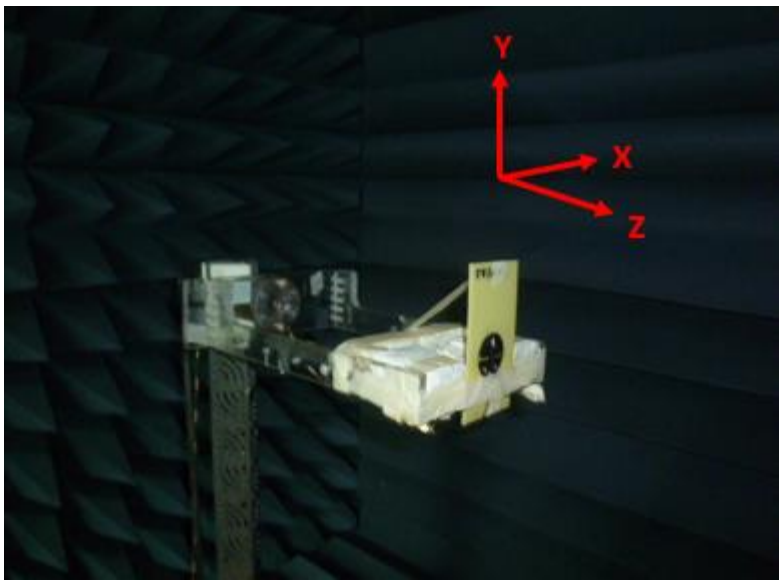
## 3.5. Peak Gain


10
8
6
4
2
0
-2
-4
(dBi)
2000
2500
3000
3500
4000
4500
5000
5500
6000 (MHz)
FXP543_Port 1
FXP543_Port 2
FXP543_Port 3
port 3 port 2 port 1

# 4. Antenna Radiation Pattern

## 4.1. Measurement Setup

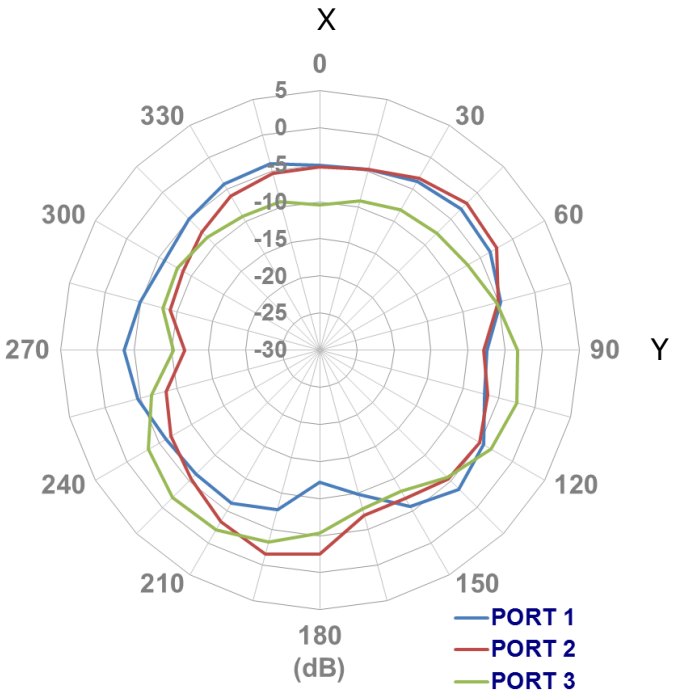
The FXP543 antenna is tested in a CTIA certified ETS-Lindgren Anechoic Chamber. The test setup is shown below.



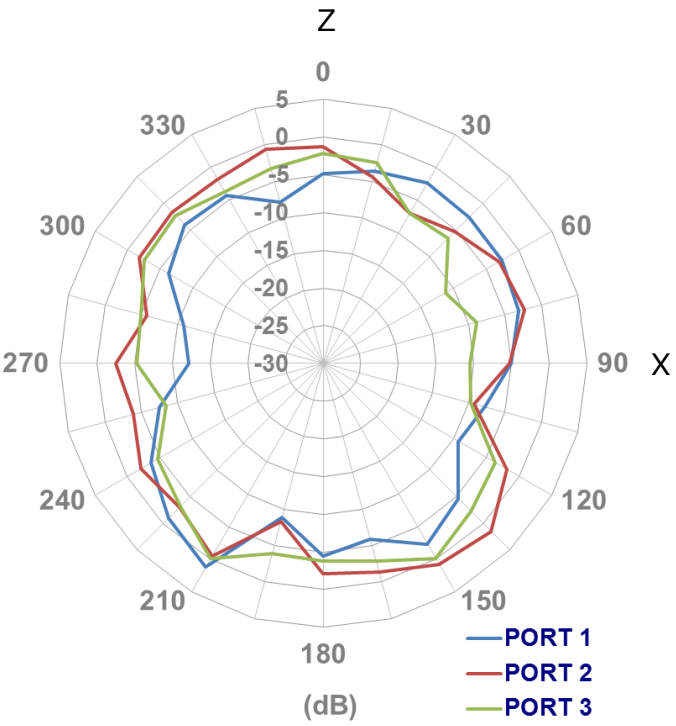
## 4.2. 2D Radiation Pattern

- **2400MHz**

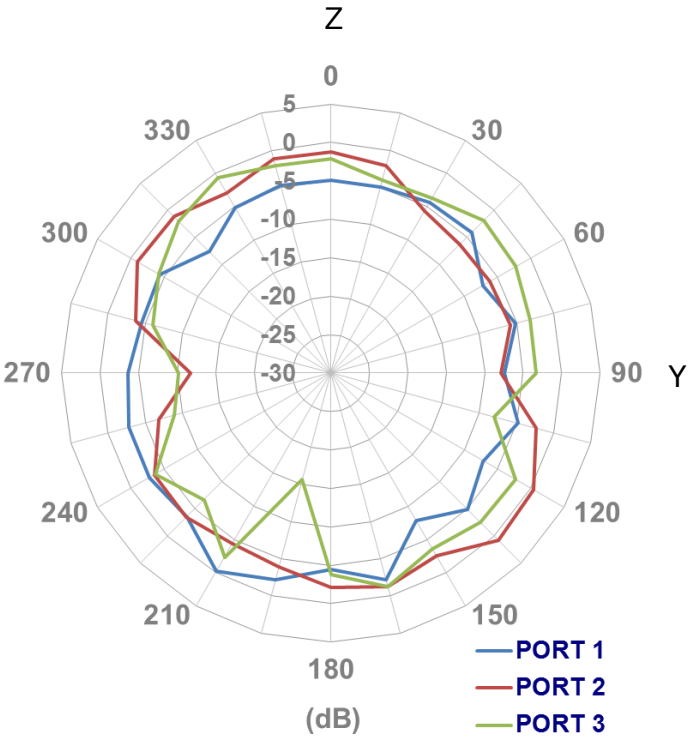
XY Plane




XZ Plane

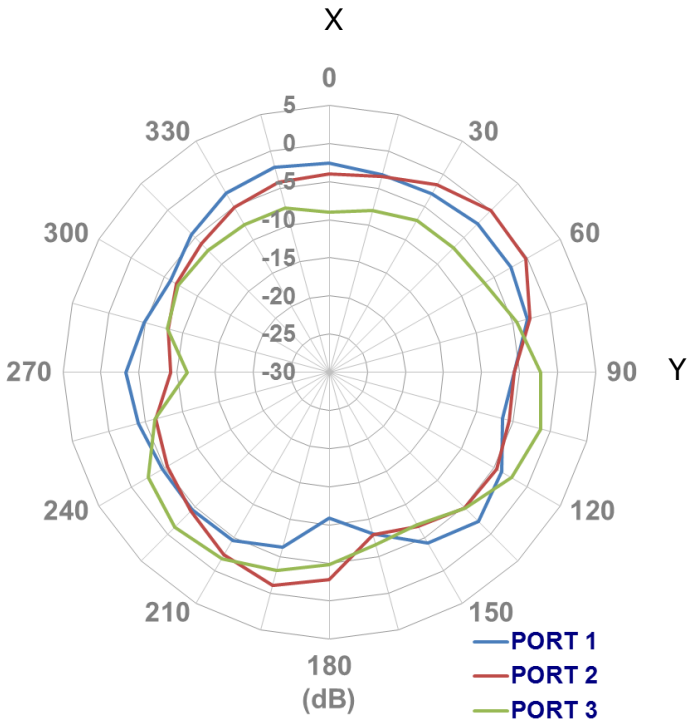


YZ Plane

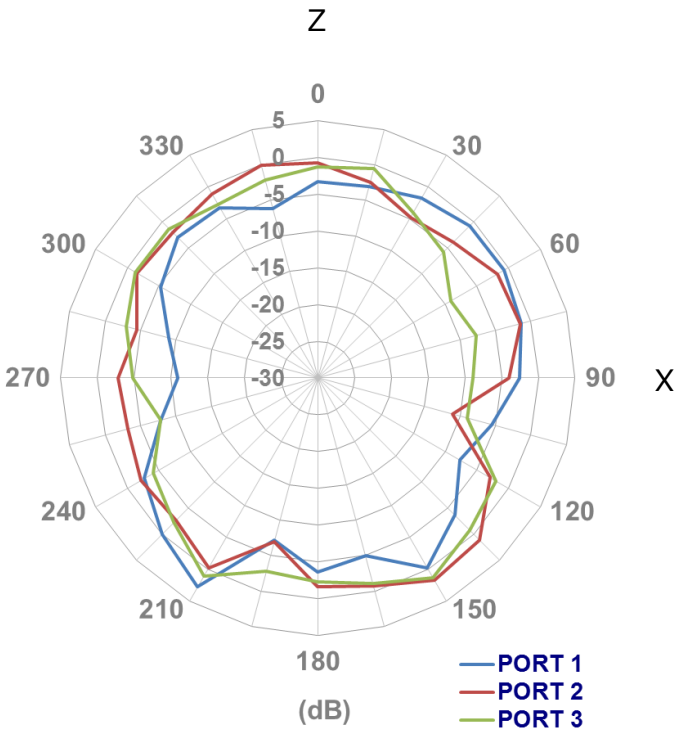



- **2450MHz**

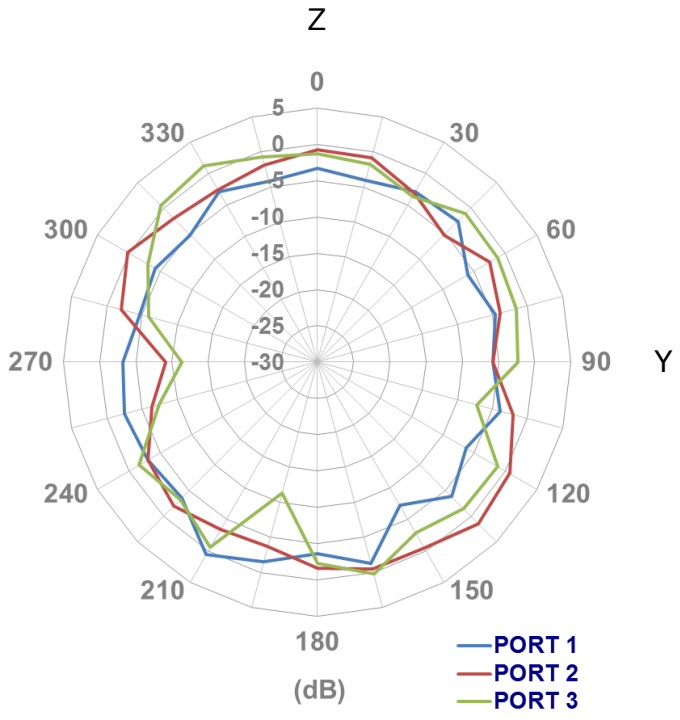
XY Plane



XZ Plane

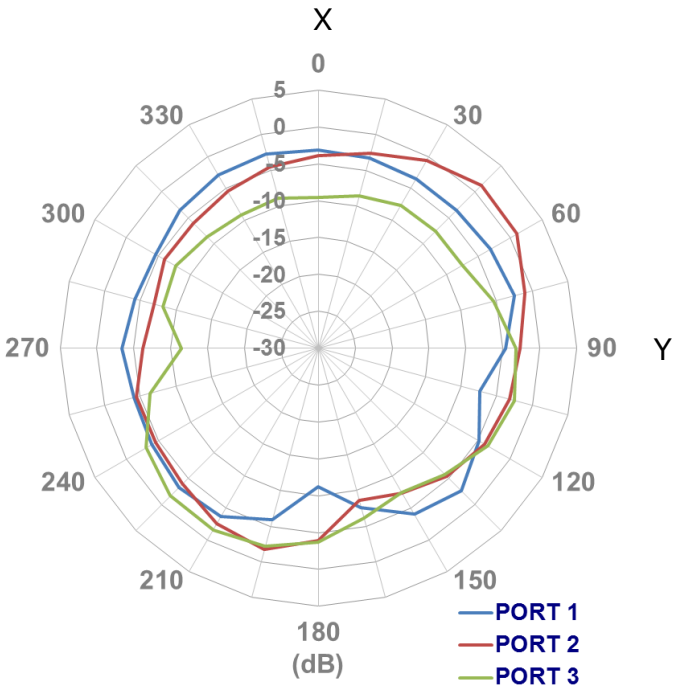



YZ Plane

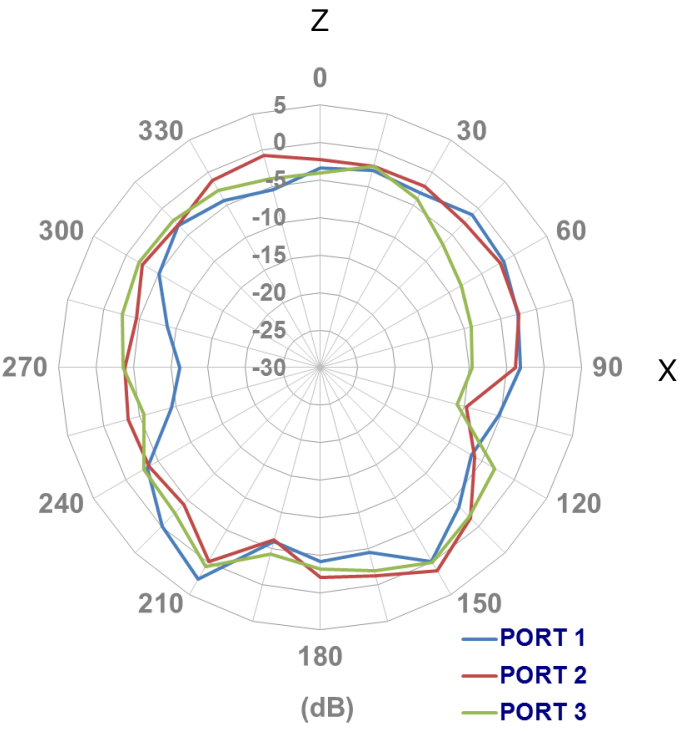


- **2500MHz**

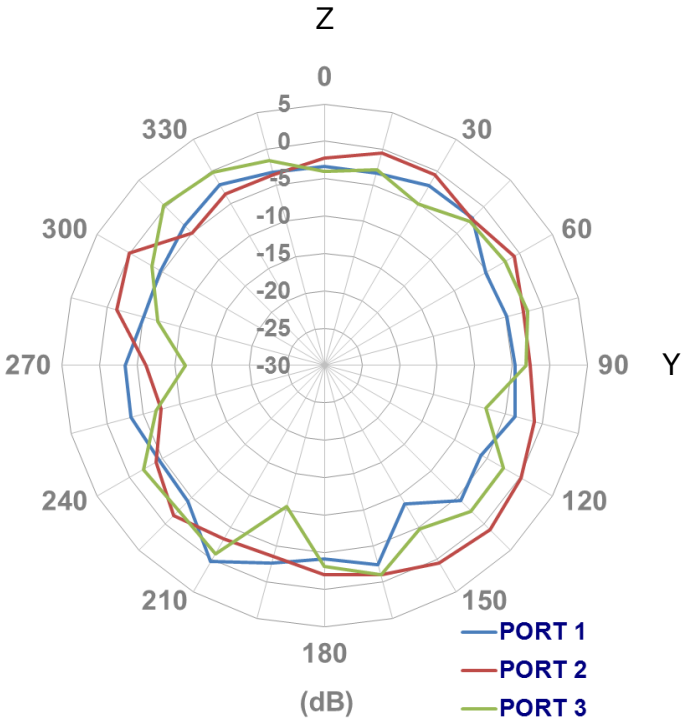
XY Plane




XZ Plane

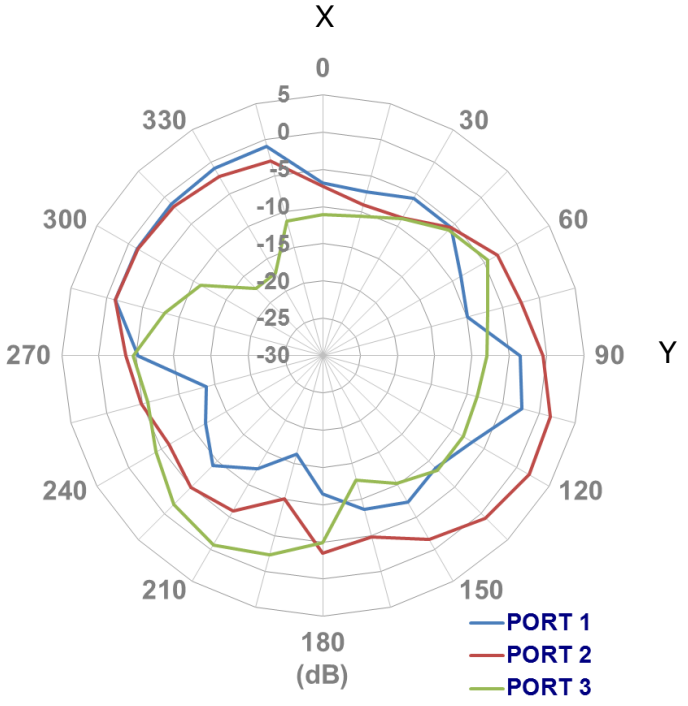


YZ Plane

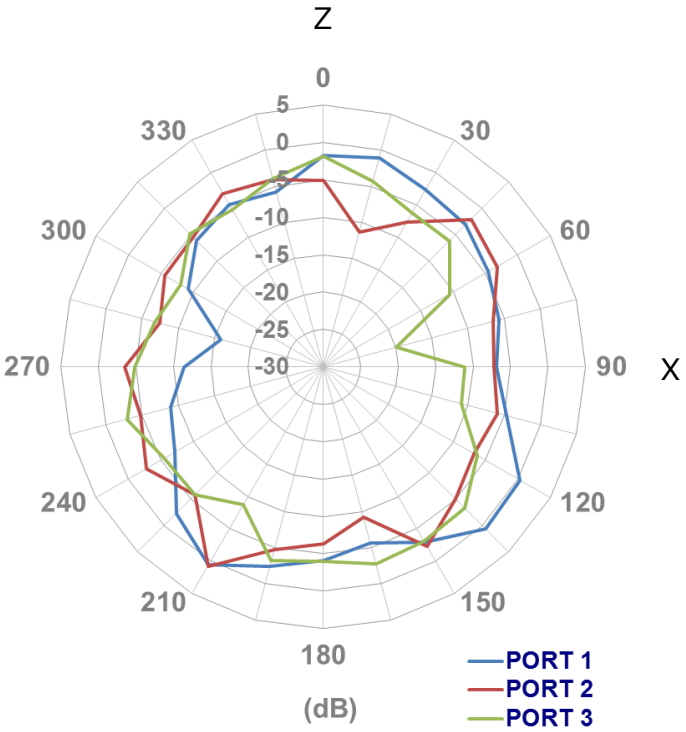



- **5150MHz**

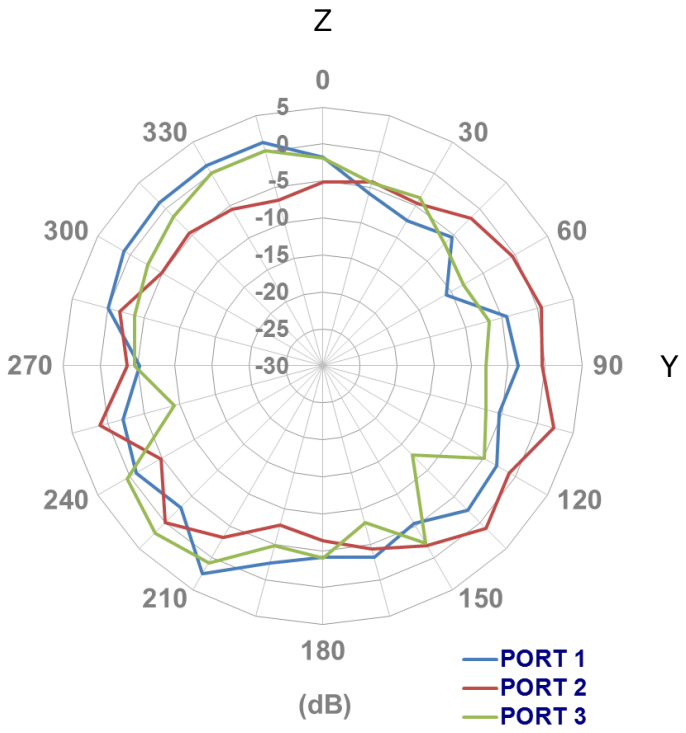
XY Plane



XZ Plane

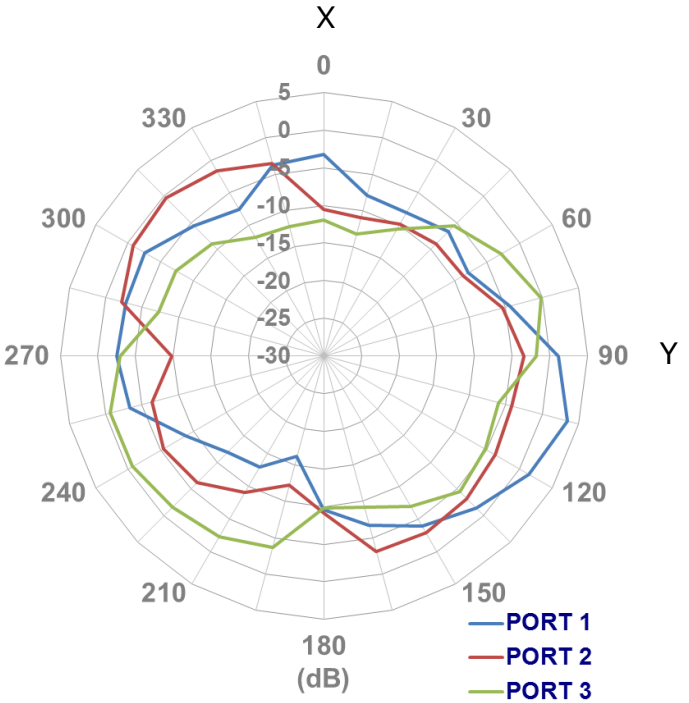



YZ Plane

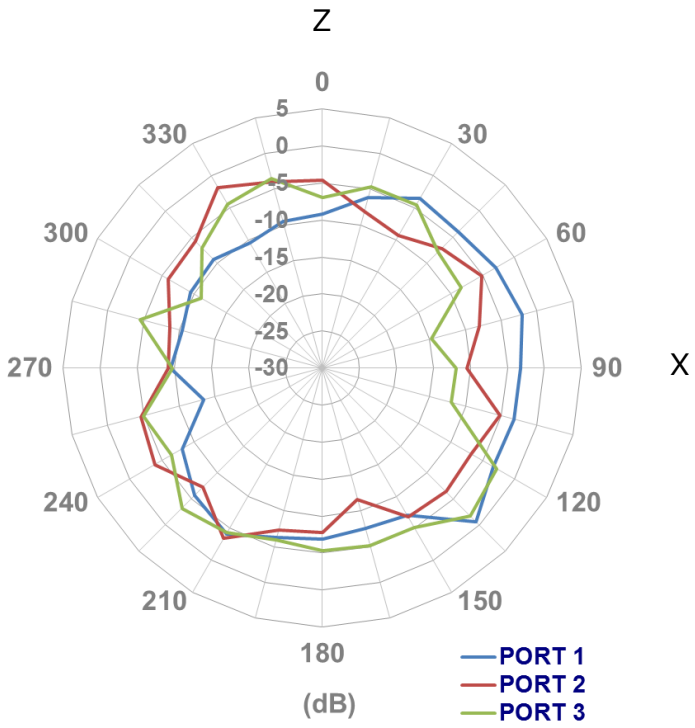


- **5500MHz**

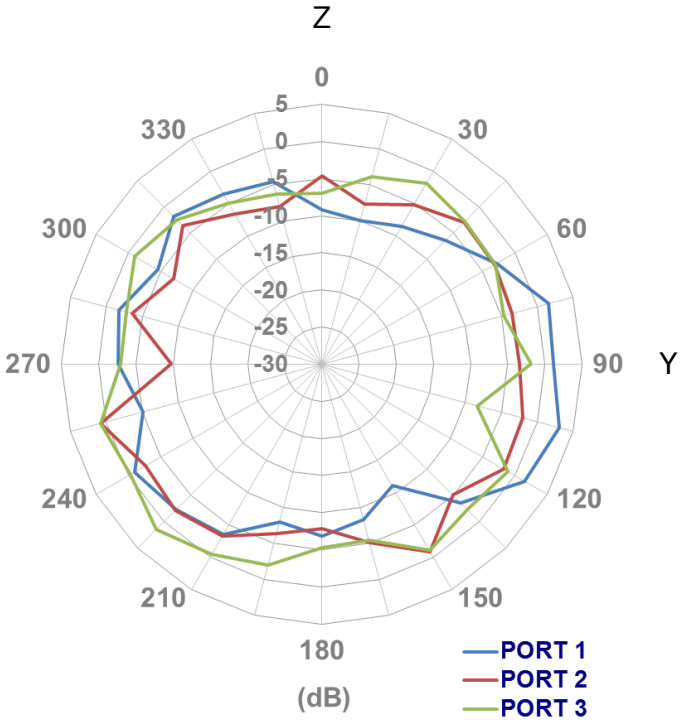
XY Plane




XZ Plane

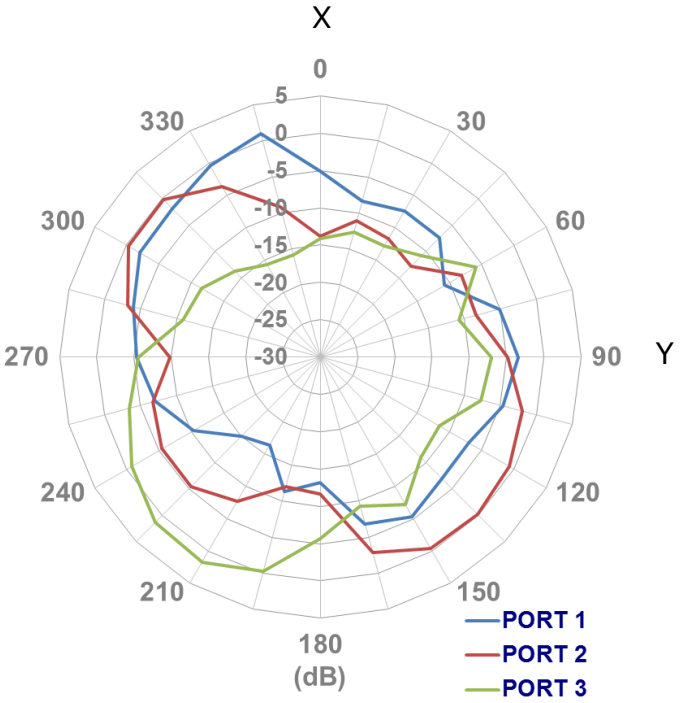


YZ Plane

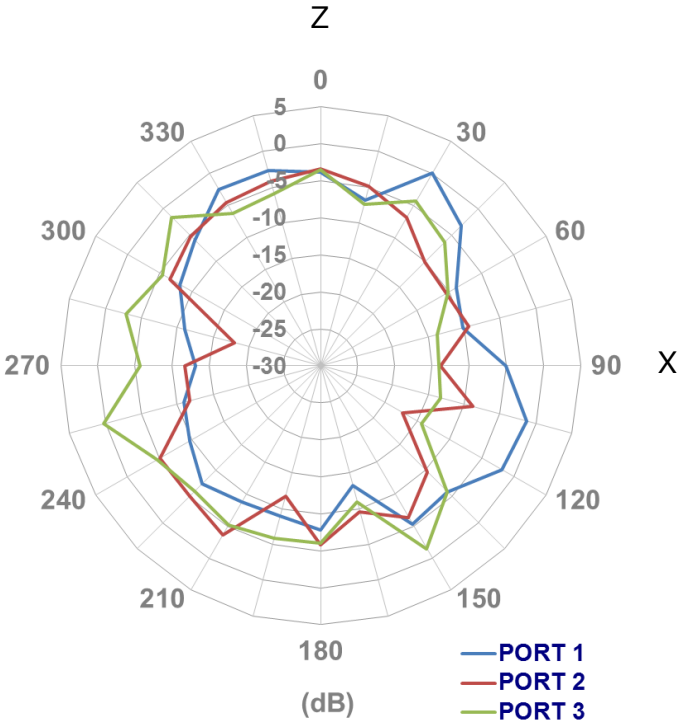



- **5850MHz**

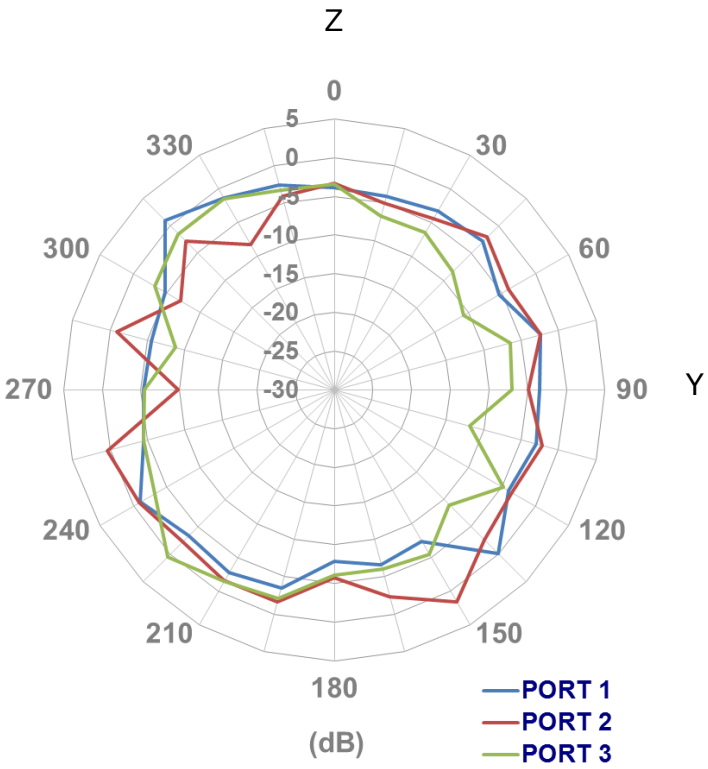
XY Plane



XZ Plane

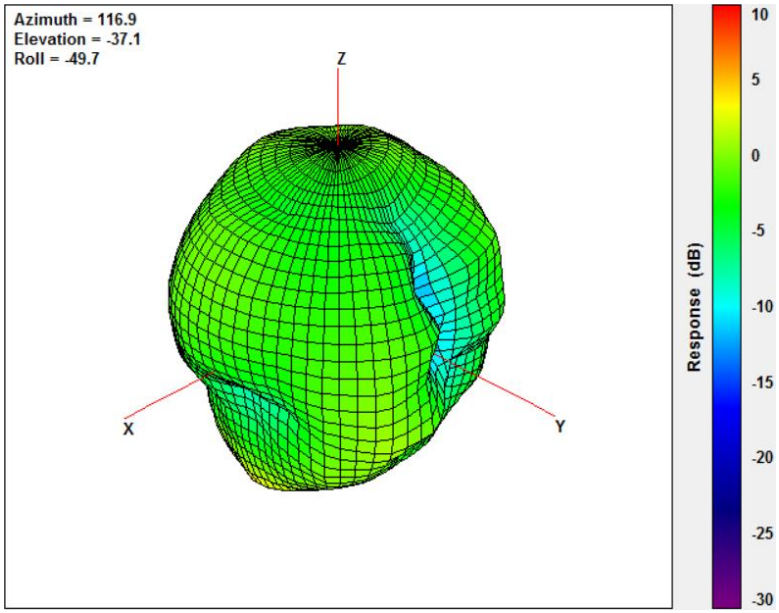



YZ Plane

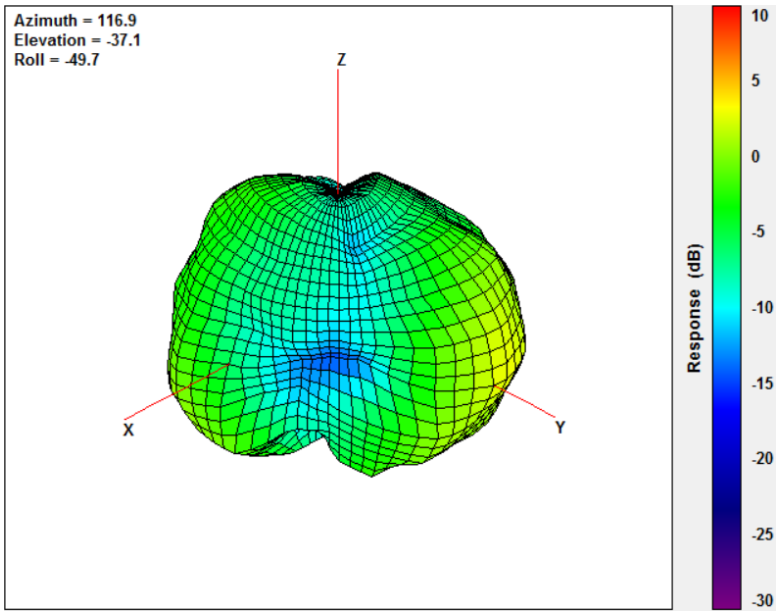


## 4.3. 3D Radiation Pattern

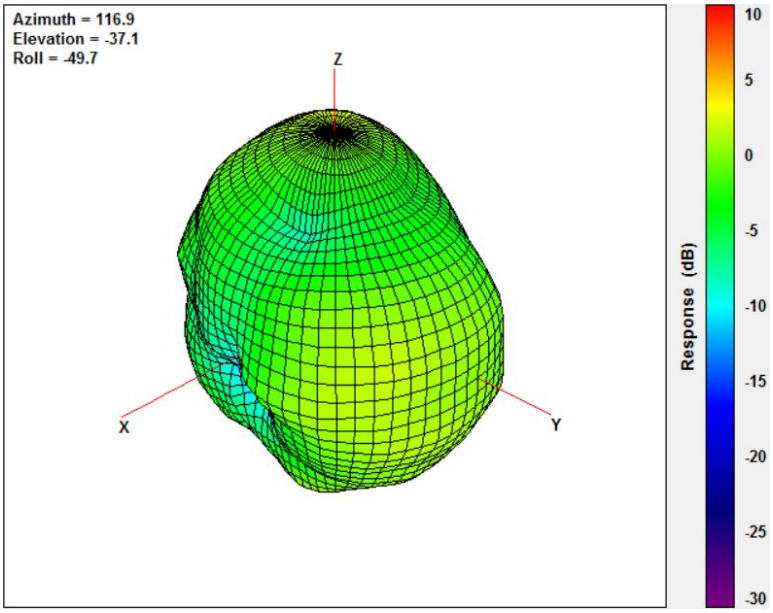
Port 1 @2450MHz



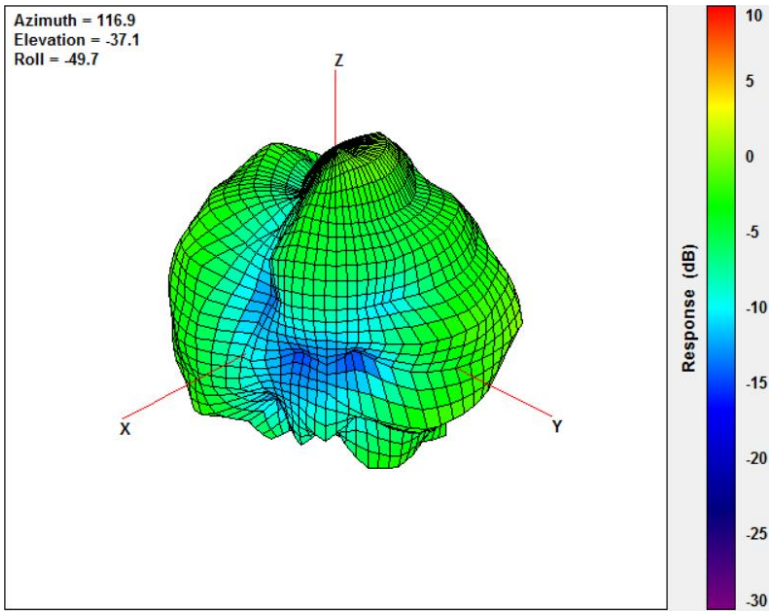

Port 1 @5550MHz



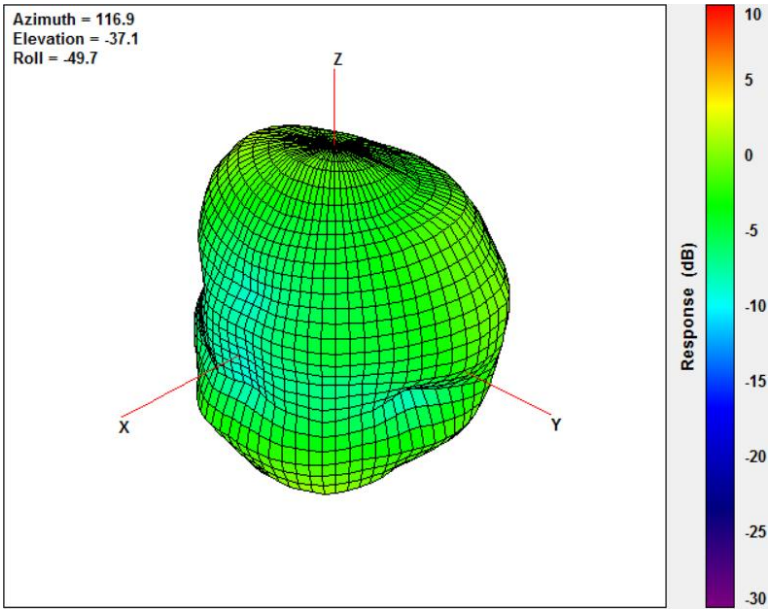
Port 2 @2450MHz



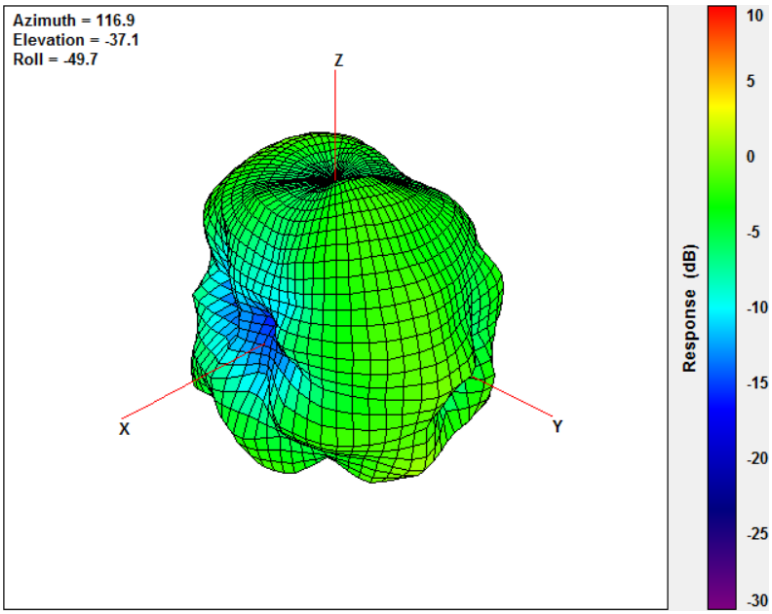

Port 2 @5550MHz



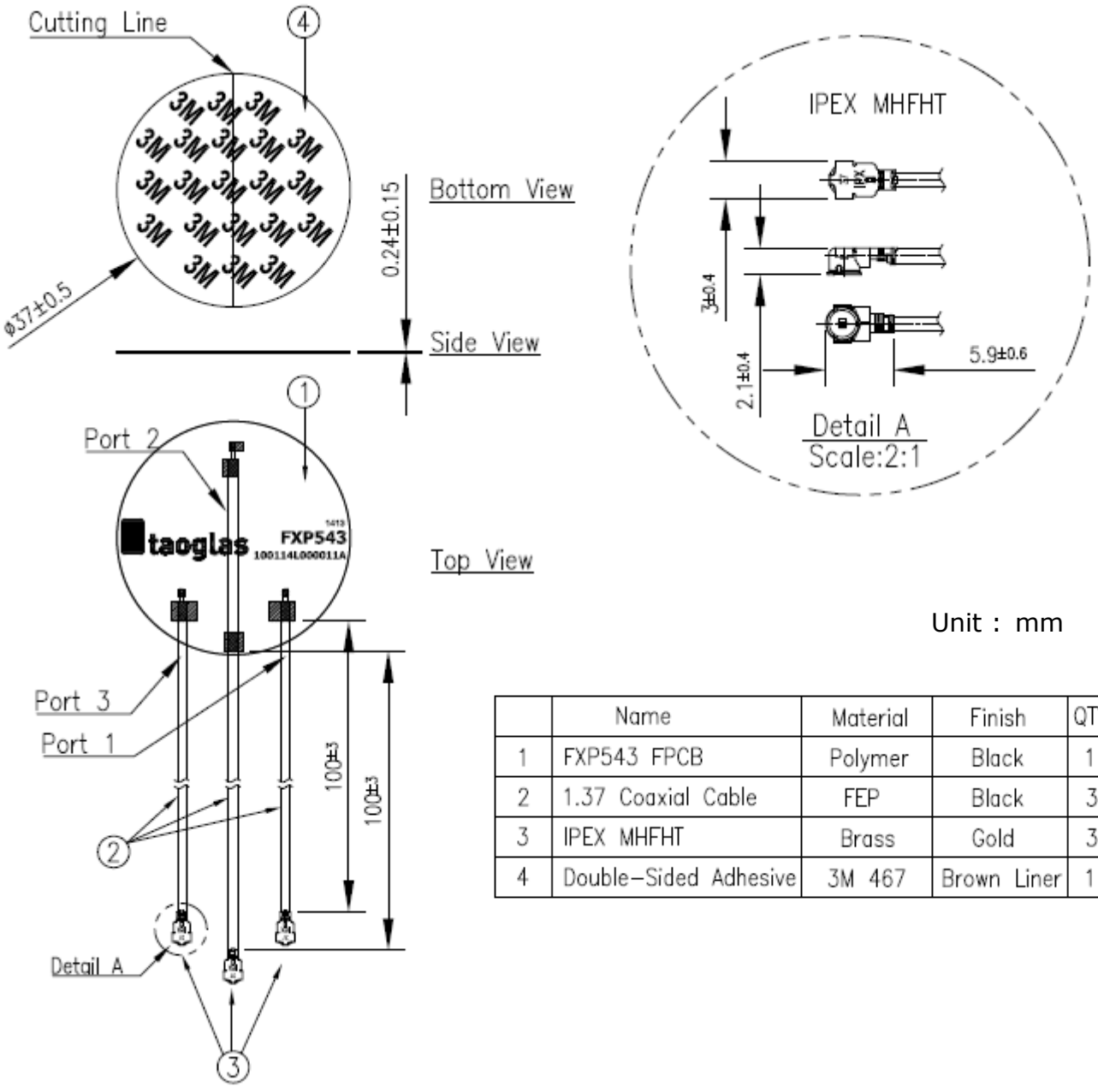
Port 3 @2450MHz




Port 3 @5550MHz



# 5. Mechanical Drawing




Unit : mm

| | Name | Material | Finish | QTY |
|---|---|---|---|---|
| 1 | FXP543 FPCB | Polymer | Black | 1 |
| 2 | 1.37 Coaxial Cable | FEP | Black | 3 |
| 3 | IPEX MHFHT | Brass | Gold | 3 |
| 4 | Double-Sided Adhesive | 3M 467 | Brown Liner | 1 |