TAOGLAS


Datasheet

**Part No:**
**PC4212.07.0065A.by**

**Description**

Low Profile Cellular PCB Antenna 700-3000MHz 42120.8mm with 65mm 1.13 and I-PEX MHF1 (CM Equivalent and AD tape)

**Features:**

Coverage: 700-3000MHz
Dims: 42.5 x 12.5 x 1.05mm
Cable: 65mm of 1.13 Coaxial Cable
Connector: CM Micro RF I (equivalent to IPEX MHF1)
RoHS & Reach Compliant

# 1. Introduction


The Taoglas PC4212 is a high-performance, low profile, PCB antenna designed to cover all working frequencies between 700-3000MHz. It is engineered to cover the 4G/3G cellular bands and the NB-IoT and Cat-M bands. With its super small footprint of just 42.5 x 12.5mm, it alleviates size constraint issues commonly seen when integrating a high-performance antenna into compact IoT devices.

The antenna is delivered on a flexible PCB with exceptional efficiencies on all bands for antenna of this size. It is ground-plane independent, with a CM connector/IPEX MHFI and 65mm of 1.13 cable as standard for easy installation. It is made of durable flexible polymer, with efficiencies of up to 75% across the relevant cellular bands. At 42.5 x 12.5 x 1.05mm, the antenna has a small footprint and is ultra-thin. It is installed in devices by a simple “peel and stick” process, attaching securely to non-metal surfaces via FT 7215L adhesive.

Typical Applications Include:

- IoT and Connected Devices
- Telematics and Fleet Management
- Remote Monitoring and Control Systems
- Drones and UAVs
- Mobile Devices and Tablets
- Smart Cities and Infrastructure

For more information on how to integrate the PC4212 into your device, contact your local Taoglas Customer Support Team.

# 2. Specification

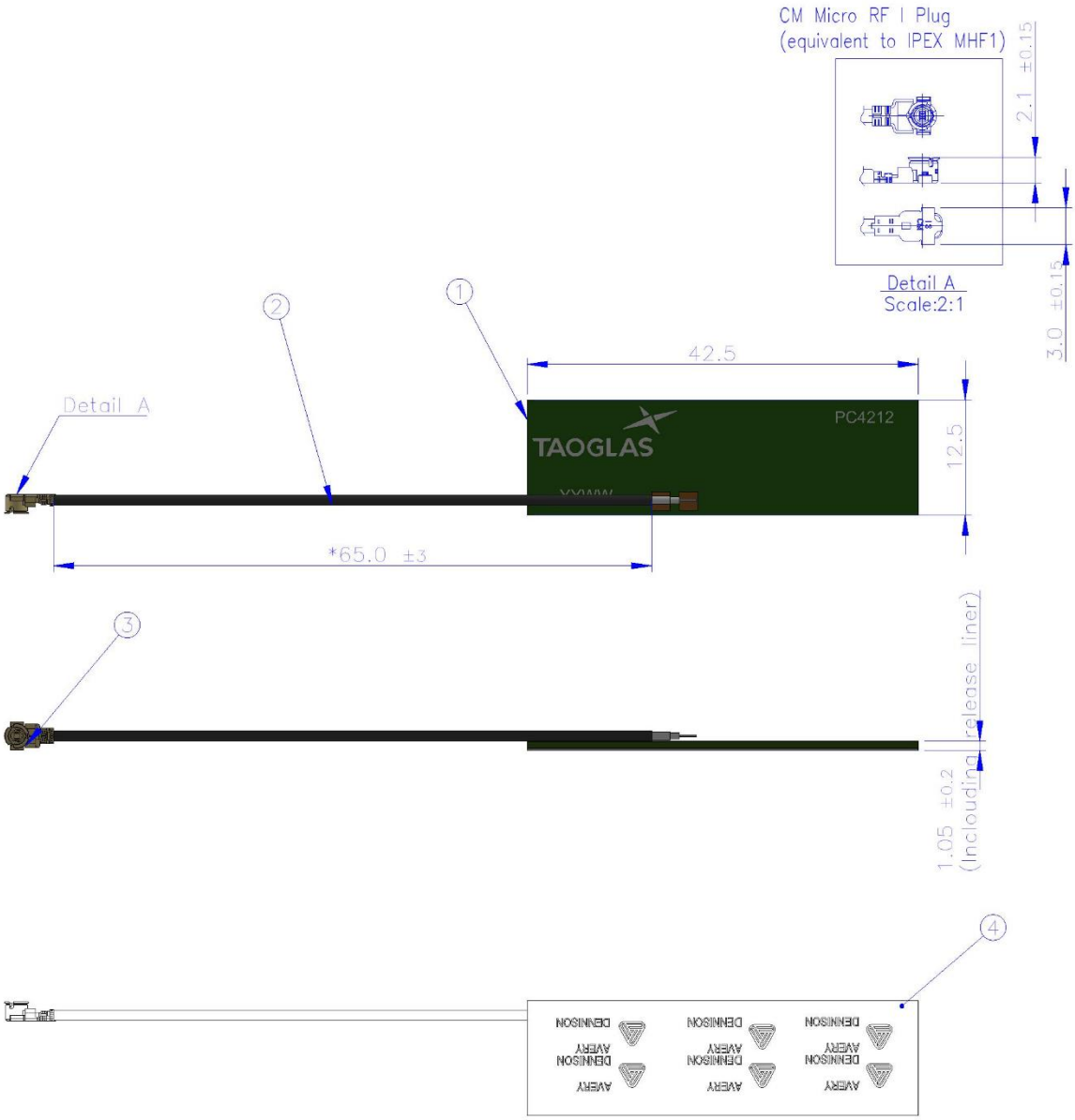
| LTE Electrical | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Band** | Frequency (MHz) | Efficiency (%) | Average Gain (dB) | Peak Gain (dBi) | Impedance | Polarization | Radiation Pattern | Max. input power |
| **4G/3G** Band 12,13,14,17,28,29 | 700-806 | 38.4 | -4.16 | 1.67 | 50 Ω | Linear | Omni | 10W |
| **4G/3G/NB-IoT/Cat M** Band 5,8,18,19,20,26,27 | 824-960 | 59.5 | -2.25 | 5.18 | | | | |
| **4G/3G** Band 1,2,3,4,9,23,25,35,39,66 | 1710-2200 | 77.6 | -1.10 | 5.01 | | | | |
| **4G/3G** Band 7,30,38,40,41 | 2300-2690 | 63.0 | -2.01 | 2.56 | | | | |

| Mechanical | |
|---|---|
| **Dimensions** | 42.5 x 12.5 x 1.05mm |
| **Material** | FR4 |
| **Connector** | CM Micro RF I (equivalent to IPEX MHF1) |
| **Cable** | 65mm of 1.13 Coaxial |

| Environmental | |
|---|---|
| **Operation Temperature** | -40°C to 85°C |
| **Storage Temperature** | -40°C to 85°C |
| **Relative Humidity** | Non-condensing 65°C 95% RH |

| 5G/4G Bands | | | |
|---|---|---|---|
| **Band Number** | **5GNR / FR1 / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / TD-SCDMA / NTN** | | |
| | **Uplink** | **Downlink** | **Covered** |
| **B1** | 1920 to 1980 | 2110 to 2170 | ✓ |
| **B2** | 1850 to 1910 | 1930 to 1990 | ✓ |
| **B3** | 1710 to 1785 | 1805 to 1880 | ✓ |
| **B4** | 1710 to 1755 | 2110 to 2155 | ✓ |
| **B5** | 824 to 849 | 869 to 894 | ✓ |
| **B7** | 2500 to 2570 | 2620 to 2690 | ✓ |
| **B8** | 880 to 915 | 925 to 960 | ✓ |
| **B9*** | 1749.9 to 1784.9 | 1844.9 to 1879.9 | ✓ |
| **B11** | 1427.9 to 1447.9 | 1475.9 to 1495.9 | ✗ |
| **B12** | 699 to 716 | 729 to 746 | ✗ |
| **B13** | 777 to 787 | 746 to 756 | ✓ |
| **B14** | 788 to 798 | 758 to 768 | ✓ |
| **B17** | 704 to 716 | 734 to 746 | ✓ |
| **B18** | 815 to 830 | 860 to 875 | ✓ |
| **B19** | 830 to 845 | 875 to 890 | ✓ |
| **B20** | 832 to 862 | 791 to 821 | ✓ |
| **B21** | 1447.9 to 1462.9 | 1495.9 to 1510.9 | ✗ |
| **B22*** | 3410 to 3490 | 3510 to 3590 | ✗ |
| **B23 / n23** | 2000 to 2020 | 2180 to 2200 | ✓ |
| **B24 / n255** | 1626.5 to 1660.5 | 1525 to 1559 | ✓ |
| **B25** | 1850 to 1915 | 1930 to 1995 | ✓ |
| **B26** | 814 to 849 | 859 to 894 | ✓ |
| **B27*** | 807 to 824 | 852 to 869 | ✓ |
| **B28** | 703 to 748 | 758 to 803 | ✓ |
| **B29** | 717 to 728 | | ✓ |
| **B30** | 2305 to 2315 | 2350 to 2360 | ✓ |
| **B31** | 452.5 to 457.5 | 462.5 to 467.5 | ✗ |
| **B32** | 1452 to 1496 | | ✓ |
| **B34** | 2010 to 2025 | | ✓ |
| **B35** | 1850 to 1910 | | ✓ |
| **B36** | 1930 to 1990 | | ✓ |
| **B37** | 1910 to 1930 | | ✓ |
| **B38** | 2570 to 2620 | | ✓ |
| **B39** | 1880 to 1920 | | ✓ |
| **B40** | 2300 to 2400 | | ✓ |
| **B41** | 2496 to 2690 | | ✓ |
| **B42** | 3400 to 3600 | | ✗ |
| **B43** | 3600 to 3800 | | ✗ |
| **B45** | 1447 to 1467 | | ✓ |
| **B46** | 5150 to 5925 | | ✗ |
| **B47** | 5855 to 5925 | | ✗ |
| **B48** | 3550 to 3700 | | ✗ |
| **B49** | 3550 to 3700 | | ✗ |
| **B50** | 1432 to 1517 | | ✓ |
| **B51** | 1427 to 1432 | | ✗ |
| **B52** | 3300 to 3400 | | ✗ |
| **B53** | 2483.5 to 2495 | | ✓ |
| **B65** | 1920 to 2010 | 2110 to 2200 | ✓ |
| **B66** | 1710 to 1780 | 2110 to 2200 | ✓ |
| **B68** | 698 to 728 | 753 to 783 | ✗ |
| **B69** | 2570 to 2620 | | ✓ |
| **B70** | 1695 to 1710 | 1995 to 2020 | ✓ |
| **B71** | 663 to 698 | 617 to 652 | ✗ |
| **B72** | 451 to 456 | 461 to 466 | ✗ |
| **B73** | 450 to 455 | 460 to 465 | ✗ |
| **B74** | 1427 to 1470 | 1475 to 1518 | ✗ |
| **B75** | 1432 to 1517 | | ✓ |
| **B76** | 1427 to 1432 | | ✗ |
| **B77** | 3300 to 4200 | | ✗ |
| **B78** | 3300 to 3800 | | ✗ |
| **B79** | 4400 to 5000 | | ✗ |
| **B85** | 698 to 716 | 728 to 746 | ✗ |
| **B87** | 410 to 415 | 420 to 425 | ✗ |
| **B88** | 412 to 417 | 422 to 427 | ✗ |
| **n256** | 1980 to 2010 | 2170 to 2200 | ✓ |

# 3. Mechanical Drawing



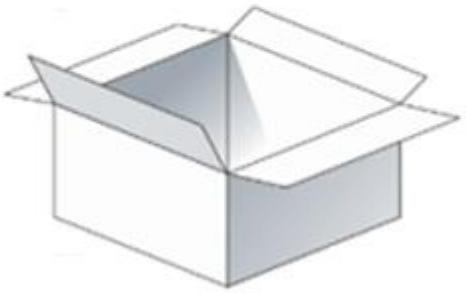

| | Name | Material | Finish | Qty |
|---|---|---|---|---|
| 1 | PCB | FR4 | Green | 1 |
| 2 | 1.13 Coaxial Cable | FEP | Black | 1 |
| 3 | CM Micro RF I (equivalent to IPEX MHF1) | Composite | Au Plated | 1 |
| 4 | Double sided adhesive | Avery Dennison FT 7215L 0.15t | White Liner(Avery Dennison logo) | 1 |

# 4. Packaging

100pcs PC4212.07.0065A.by per PE Bag
Dimensions 180 x 100mm
Weight - 88g

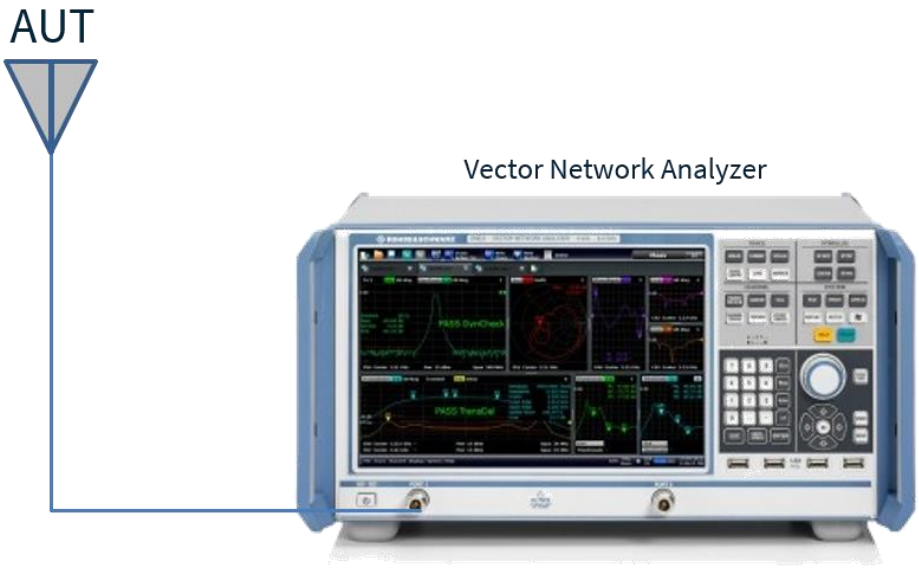
3000pcs PC4212.07.0065A.by per Large PE Bag
Dimensions 300 x 160mm
Weight - 2665g

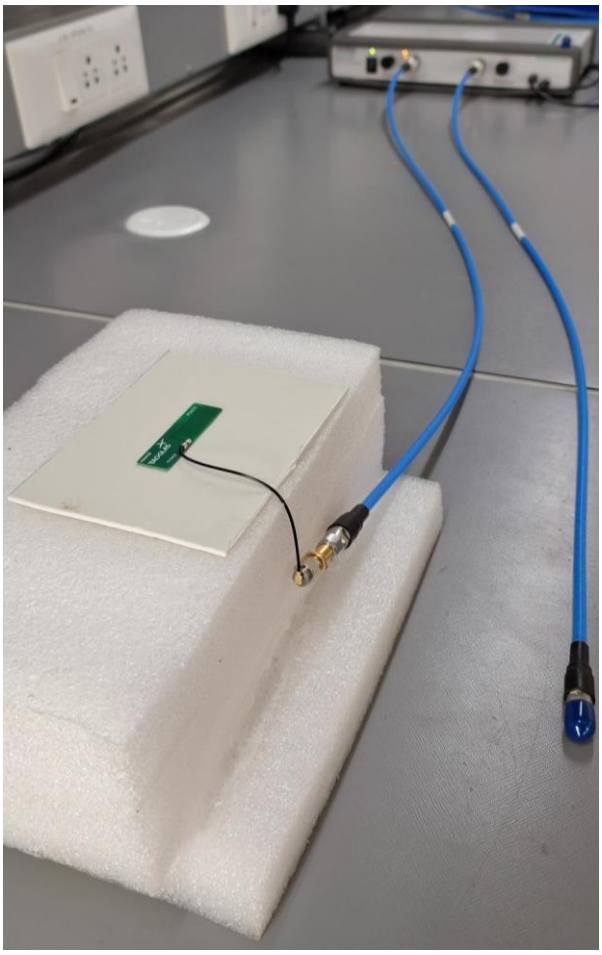
30,000pcs PC4212.07.0065A.by per carton
Dimensions 250 x 290 x 210mm
Weight -26.7Kg



# 5. Antenna Characteristics

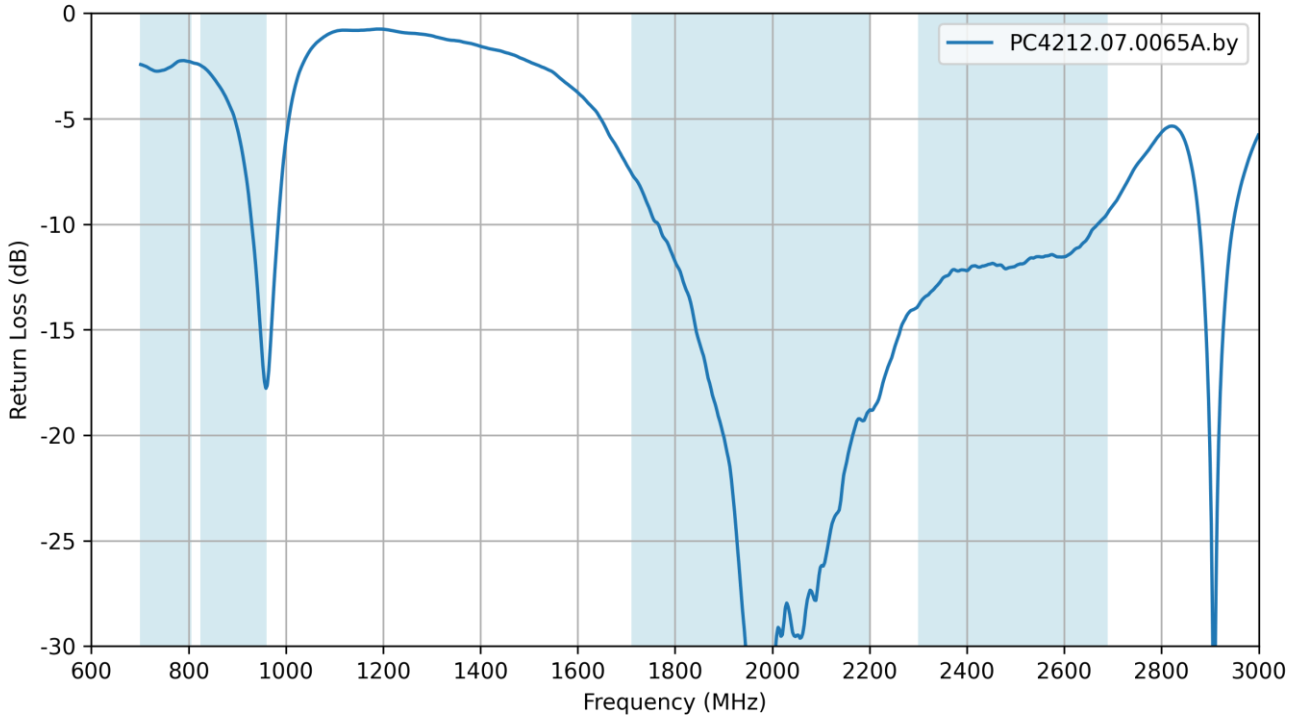
## 5.1 Test Setup



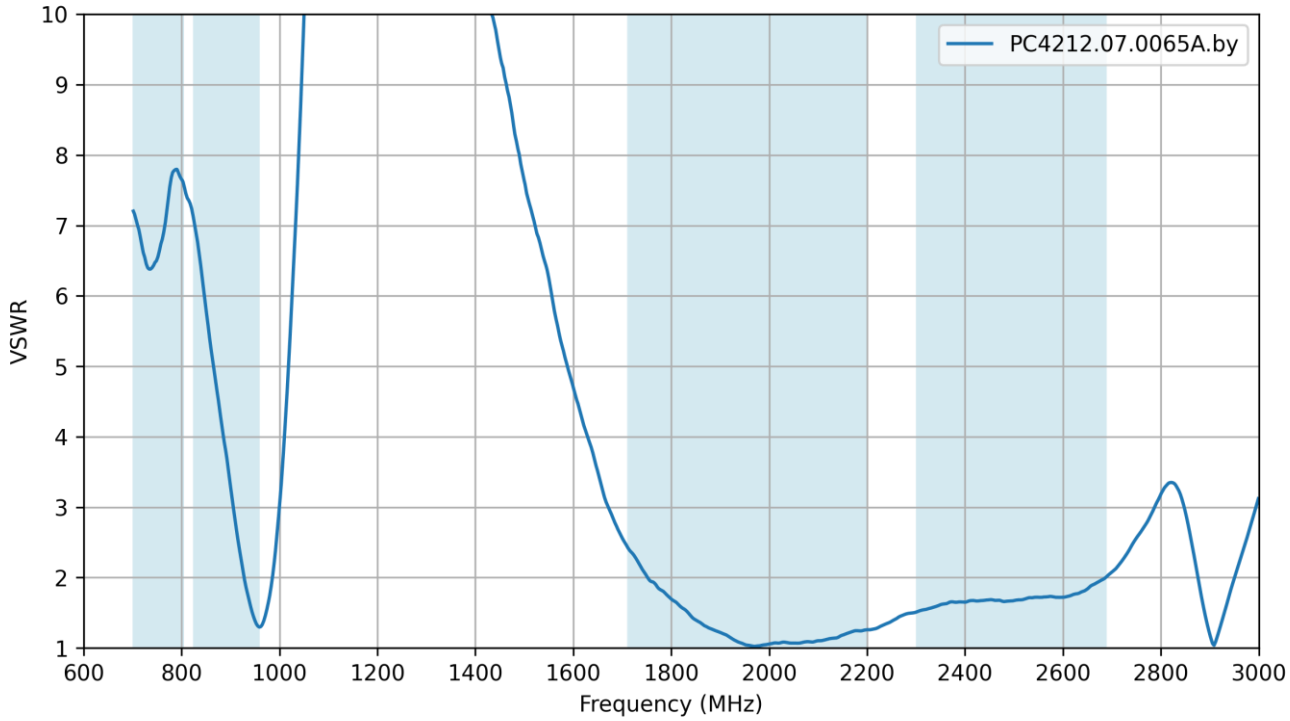



VNA Test Set-up on 2mm ABS

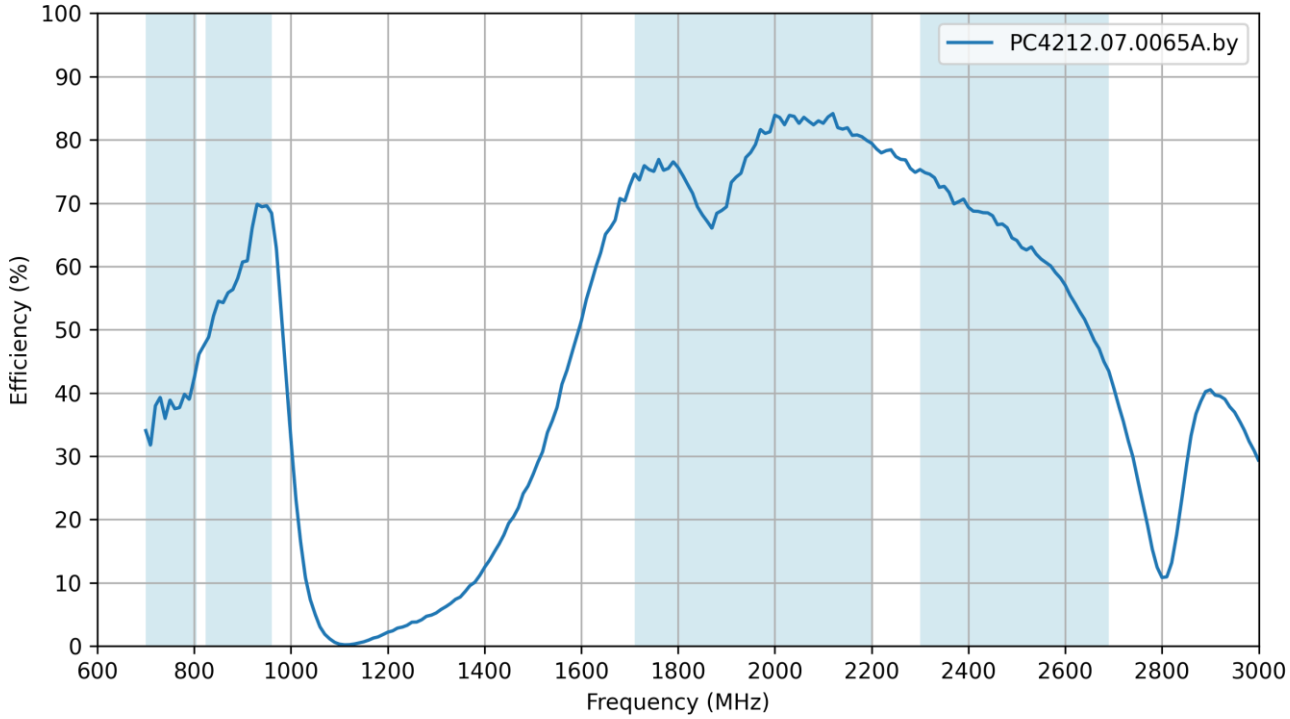
## 5.2 Return Loss



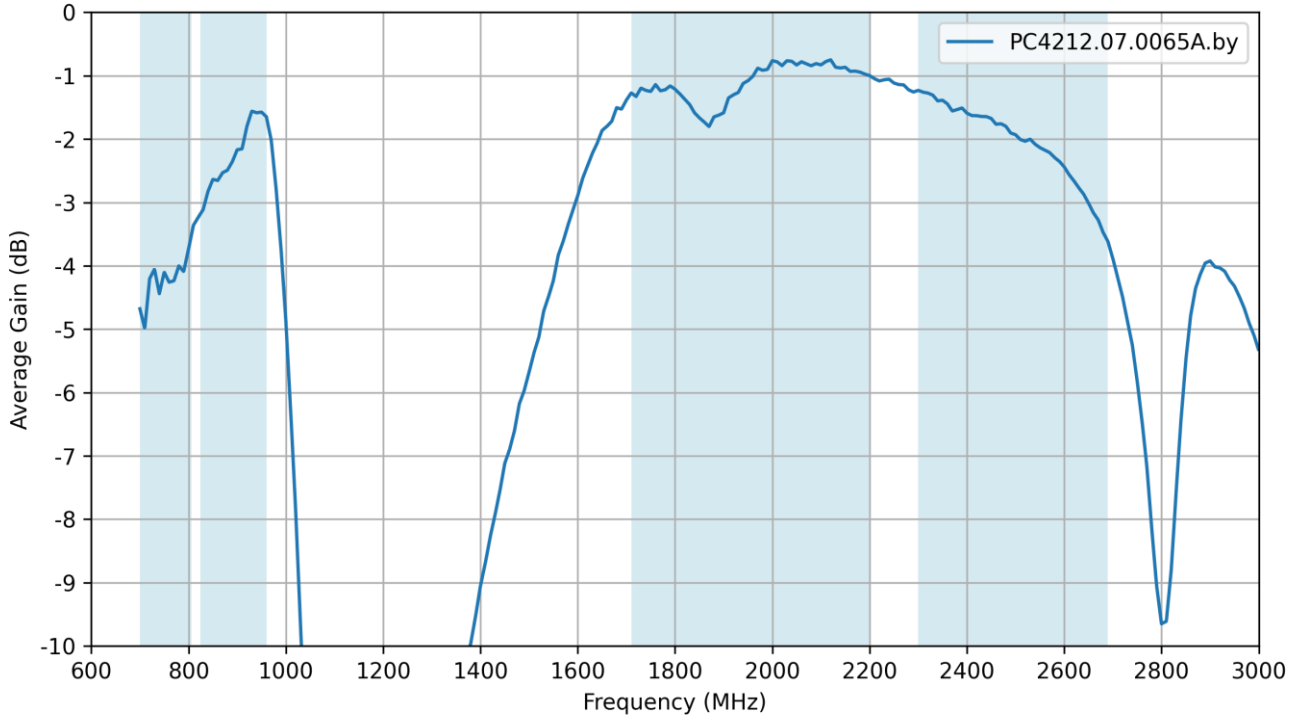

## 5.3 VSWR



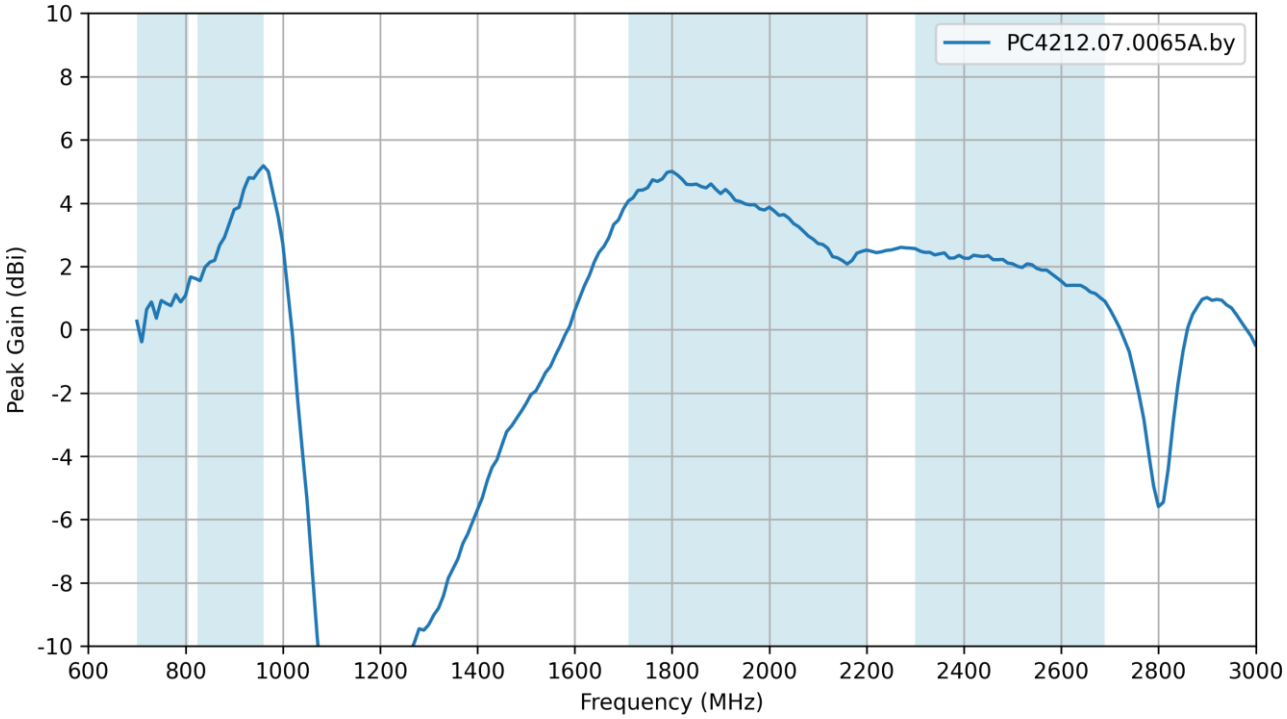
## 5.4 Efficiency




## 5.5 Average Gain

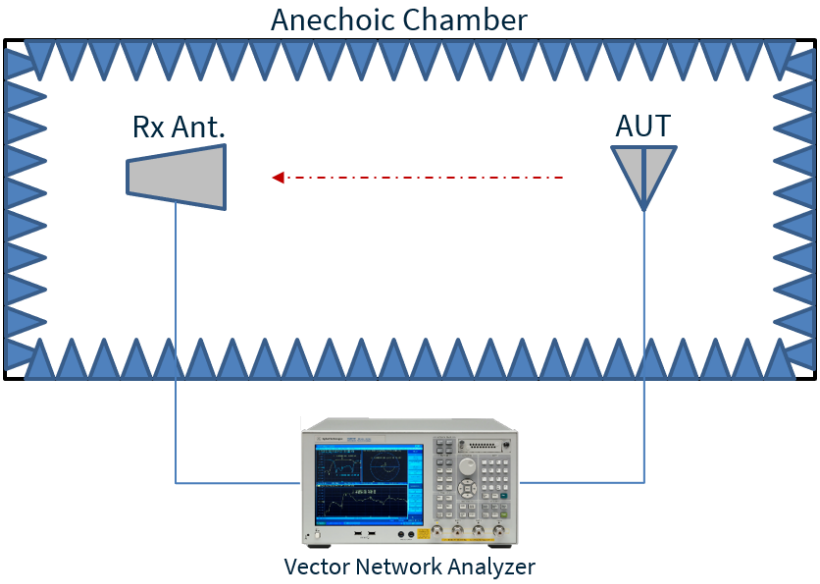


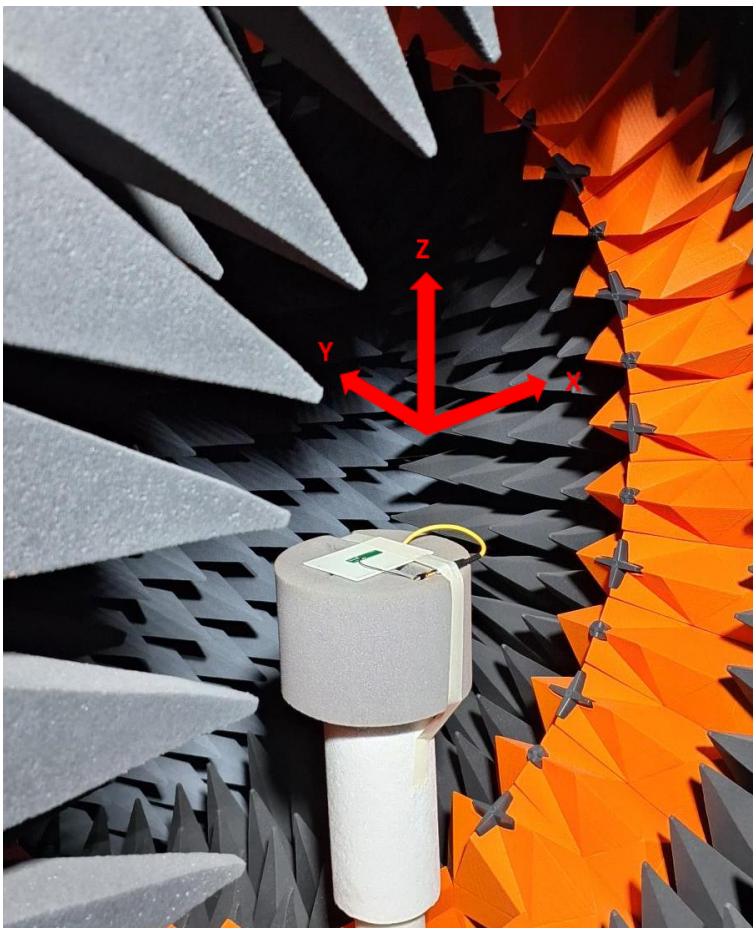
## 5.6 Peak Gain


PC4212.07.0065A.by
Peak Gain (dBi)
Frequency (MHz)
10
8
6
4
2
0
-2
-4
-6
-8
-10
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000

# 6. Radiation Patterns

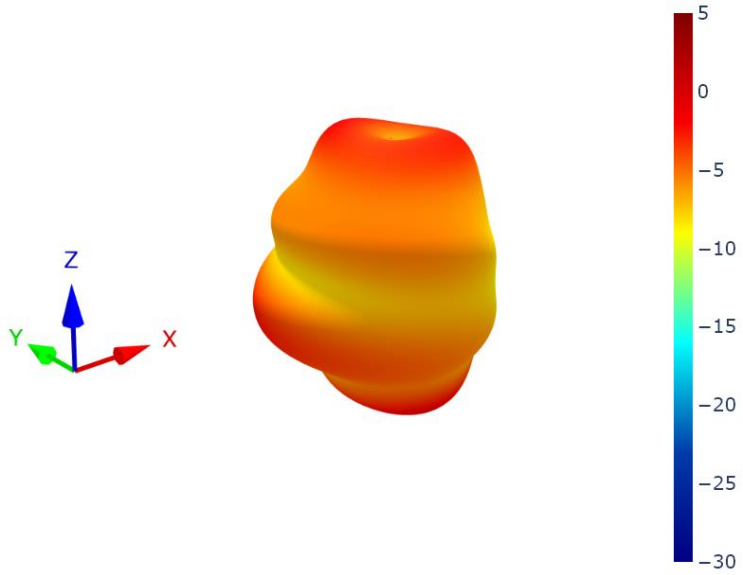
## 6.1 Test Setup



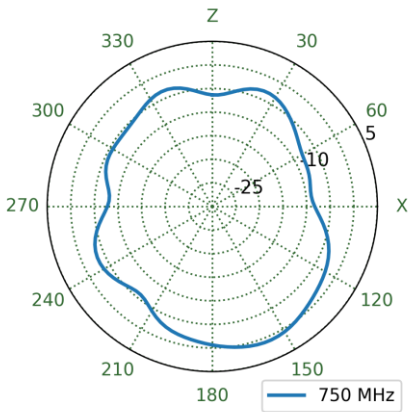



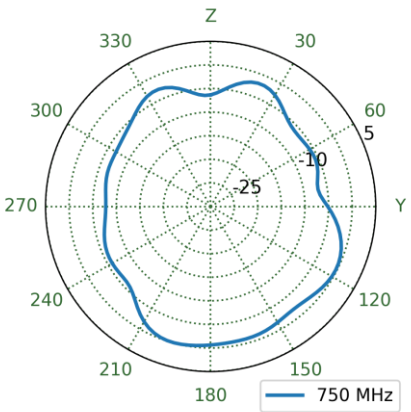

Chamber Test Set-up on 2mm ABS

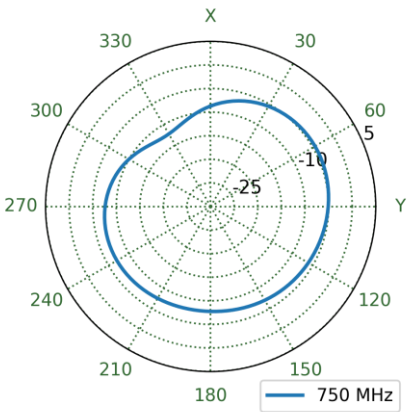
## 6.2 Patterns at 750 MHz



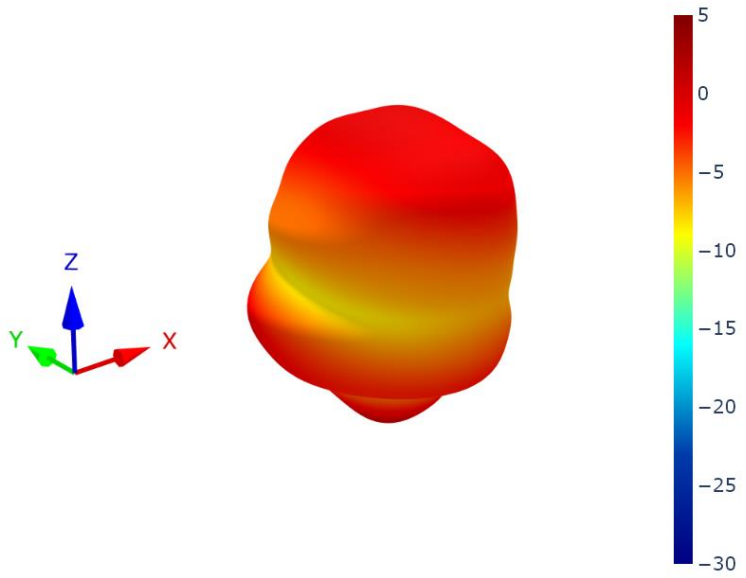

| XZ Plane | YZ Plane | XY Plane |
|---|---|---|

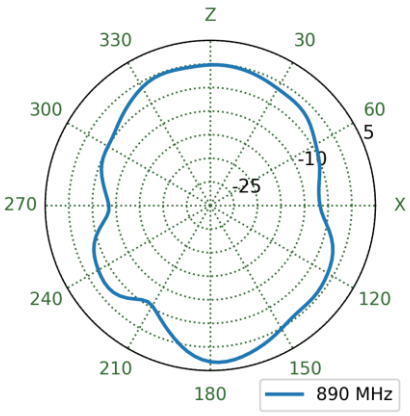
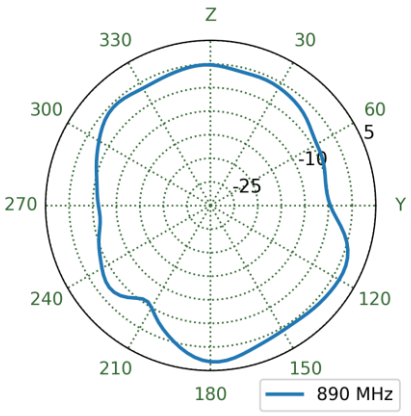
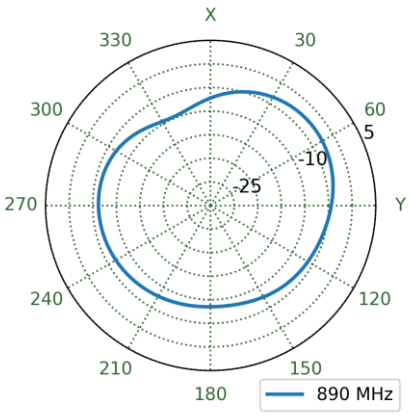


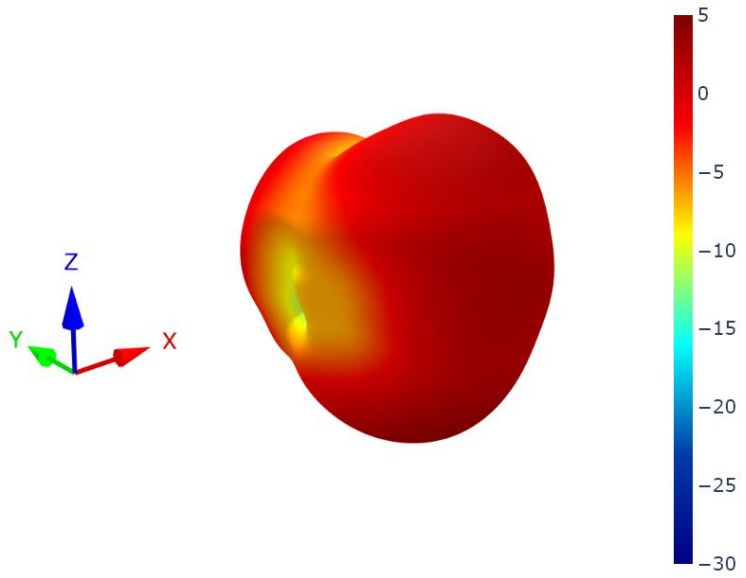



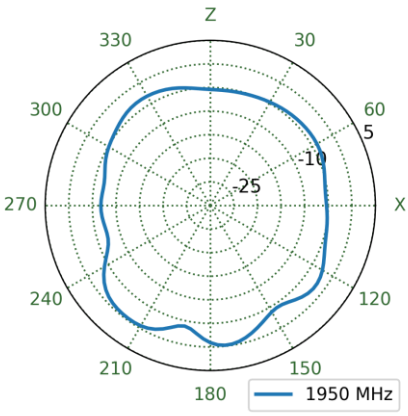
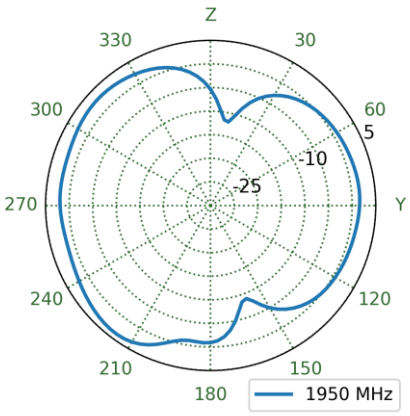
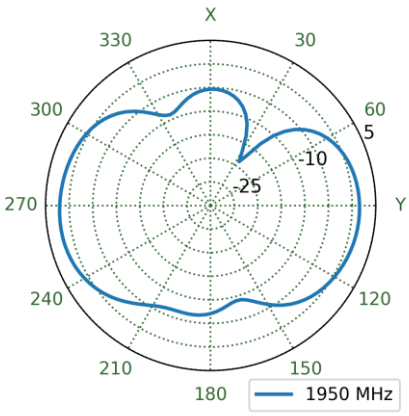
## 6.3 Patterns at 890 MHz



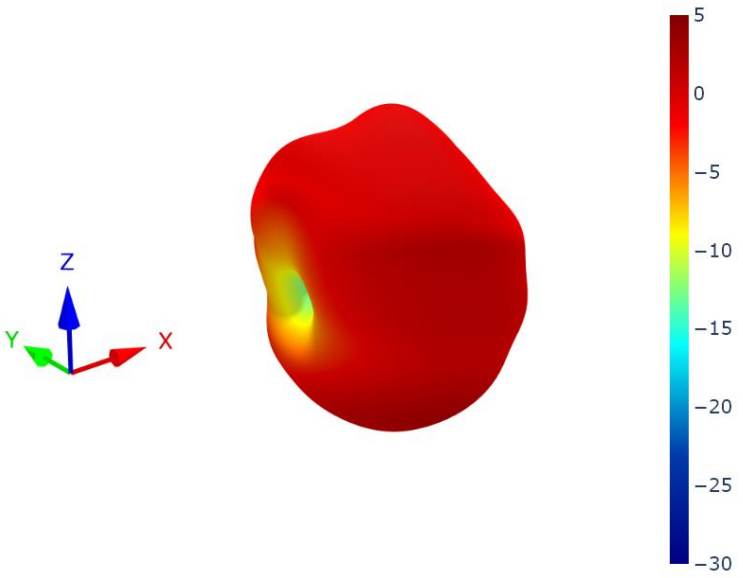

| XZ Plane | YZ Plane | XY Plane |
|---|---|---|
|  |  |  |

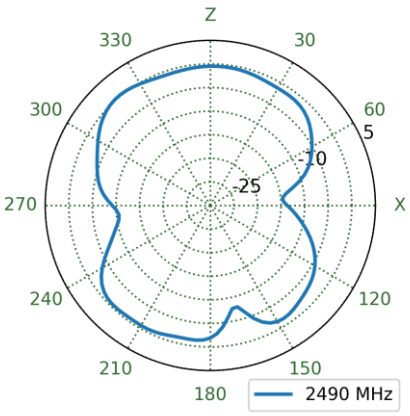
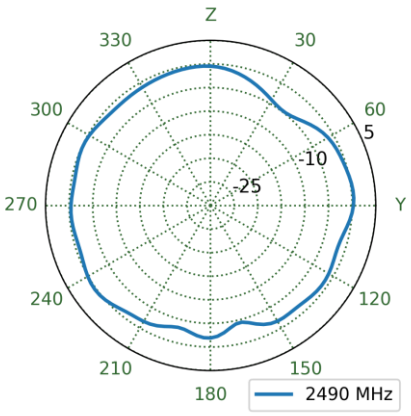
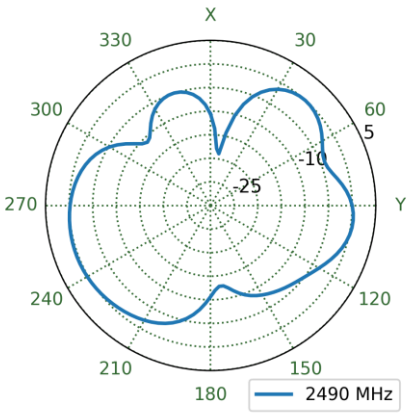
## 6.4 Patterns at 1950 MHz




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

## 6.5 Patterns at 2490 MHz




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

## Changelog for the datasheet

**SPE-25-8-033 – PC4212.07.0065A.by**

| **Revision: A (Initial Release)** | |
|---|---|
| Date: | 2025-01-28 |
| Notes: | Initial Datasheet Release |
| Author: | Gary West |

**Previous Revisions**

TAOGLAS®

www.taoglas.com