SPECIFICATION

Part No.   :   **WCM.01.0151**

Product Name: :   2.4GHz Button Antenna

Features   :   Tiny Size – 19.8mm*14.3mm*16.4mm

2400MHz to 2500MHz Antenna

Wi-Fi® / Bluetooth®

60%+ Efficiency

RP SMA(M) Connector

IP67

Omnidirectional

ROHS Compliant

Photo:

1. Introduction

The WCM.01 2.4GHz antenna is the smallest RP-SMA(M) external antenna in the market, fitting into spaces no other traditional monopole, dipole or rubber ducky antenna can go. A unique PIFA design ensures omnidirectional gain across 2.4GHz to 2.5GHz ensuring constant reception and transmission to make it a great Wi-Fi® antenna for 2.4GHz Wi-Fi® and Bluetooth® applications.

This antenna features greater than 60% efficiency when connected directly to the ground plane of the device.

Typical Applications
- Application Points
- Routers
- IoT M2M devices
- Smart home applications

This antenna comes with a RP SMA(M) to be compatible with most Wi-Fi® applications and routers in the market. The WCM.01 antenna is also IP67 water resistant. The ideal position for the antenna to radiate is mounted clear of metal. Connector is customizable.

Contact Taoglas regional sales office for more information.

2. Specification

ELECTRICAL					
Frequency (MHz)			2400	2450	2500
Efficiency (%)					
In free space			33.30	30.36	29.65
On the 10*10cm		Ground plane(center)	63.43	71.44	66.85
		Ground plane(edge)	55.85	68.43	61.73
On the 20*20cm		Ground plane(center)	64.20	71.40	63.97
		Ground plane(edge)	62.55	81.30	69.73
On the 30*30cm		Ground plane(center)	58.31	70.49	60.87
		Ground plane(edge)	62.11	73.46	61.90
Average gain (dBi)					
In free space			-4.78	-5.18	-5.28
On the 10*10cm		Ground plane(center)	-1.98	-1.46	-1.75
		Ground plane(edge)	-2.53	-1.65	-2.10
On the 20*20cm		Ground plane(center)	-1.92	-1.46	-1.94
		Ground plane(edge)	-2.04	-0.90	-1.57
On the 30*30cm		Ground plane(center)	-2.34	-1.52	-2.16
		Ground plane(edge)	-2.07	-1.34	-2.08
Peak gain (dBi)					
In free space			0.89	0.40	0.12
On the 10*10cm		Ground plane(center)	2.02	2.45	2.37
On the 10*10cm		Ground plane(edge)	3.46	4.09	3.47
On the 20*20cm		Ground plane(center)	4.26	4.54	3.69
On the 20*20cm		Ground plane(edge)	4.02	5.40	4.65
On the 30*30cm		Ground plane(center)	3.64	4.85	4.06
On the 30*30cm		Ground plane(edge)	3.79	4.23	3.15
Radiation		Omnidirectional			
Polarization		Linear			
Impedance		50 Ω			
Input Power		10W			
MECHANICAL					
Antenna Dimension		19.8*14.3*16.4mm			
Casing		ABS			
Connector		RP-SMA(M)			

Weight	6g
Ingress Protection Rating	IP67
ENVIRONMENTAL	
Operation Temperature	-40°C ~ + 85°C
Storage Temperature	-40°C ~ + 85°C
Humidity	Non-condensing 65°C 95% RH

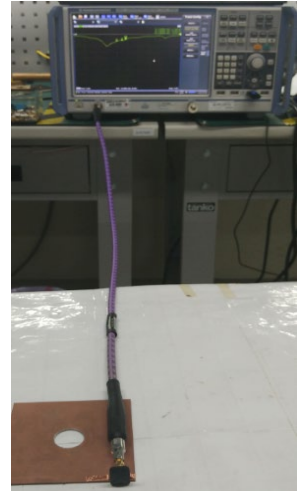# 3. Antenna Characteristics

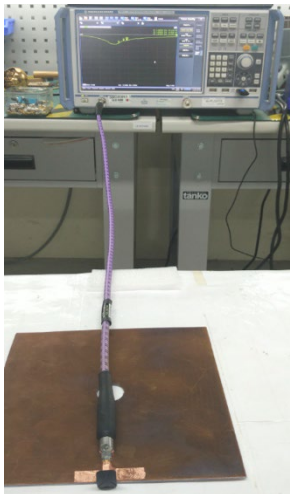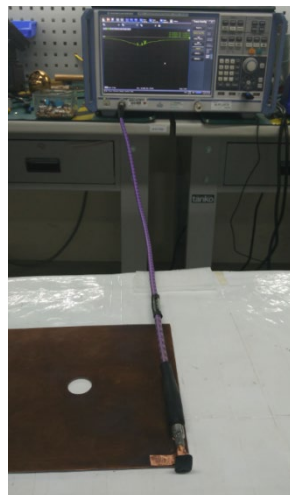## 3.1 Testing Setup
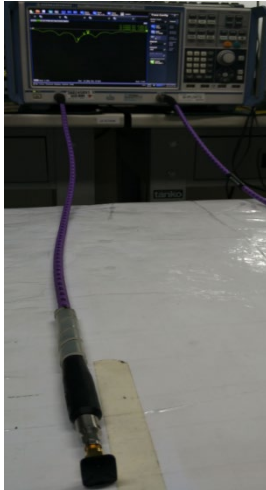
a) In free space
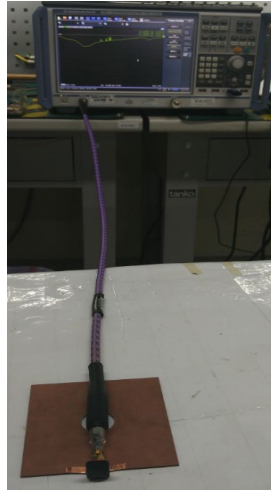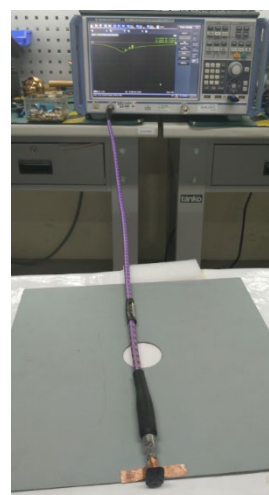

b) With 10*10cm ground plane center

c) With 10*10cm ground plane edge

d) With 20*20cm ground plane center

e) With 20*20cm ground plane edge

f) With 30*30cm ground plane center

g) With 30*30cm ground plane edge

Figure.1 Antenna Measurement Setup

3.2 Return Loss (In free space)
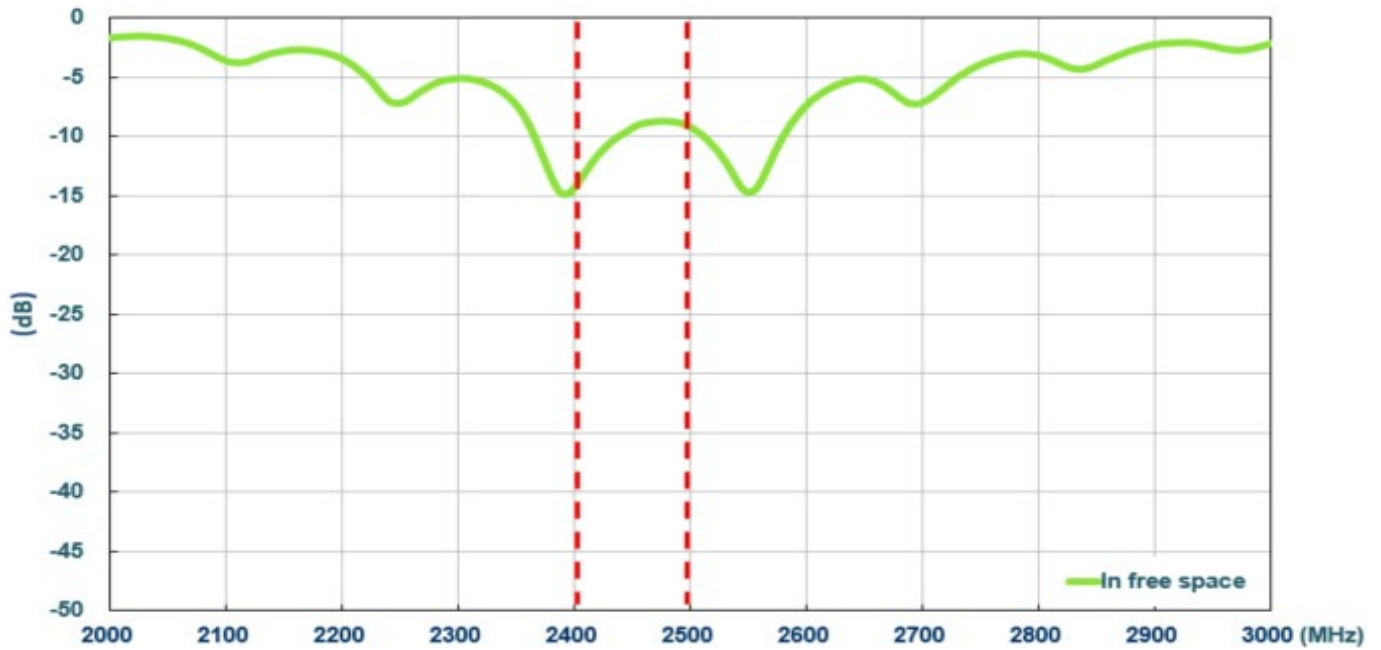
Figure 2. Return loss of WCM.01 antenna

3.3 Return Loss(On the ground plane Center)
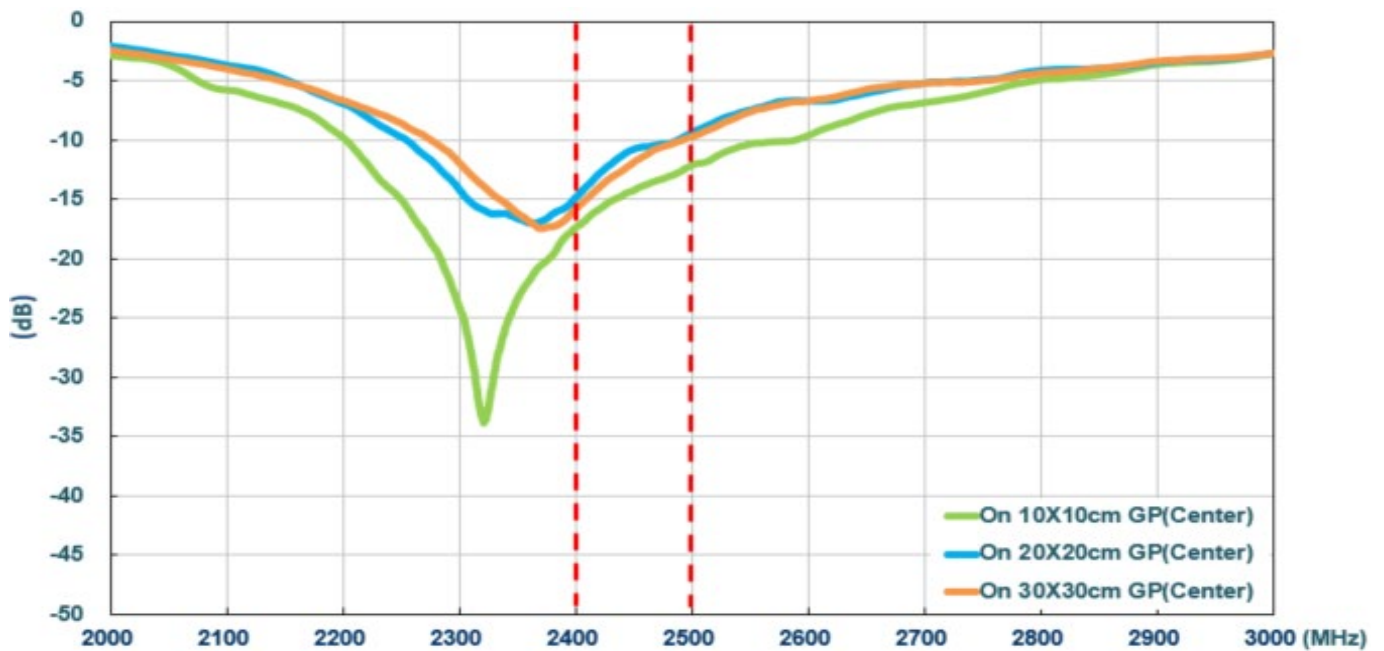
Figure 3. Return loss of WCM.01 antenna with different ground plane size

3.4 Return Loss (On the ground plane Edge)
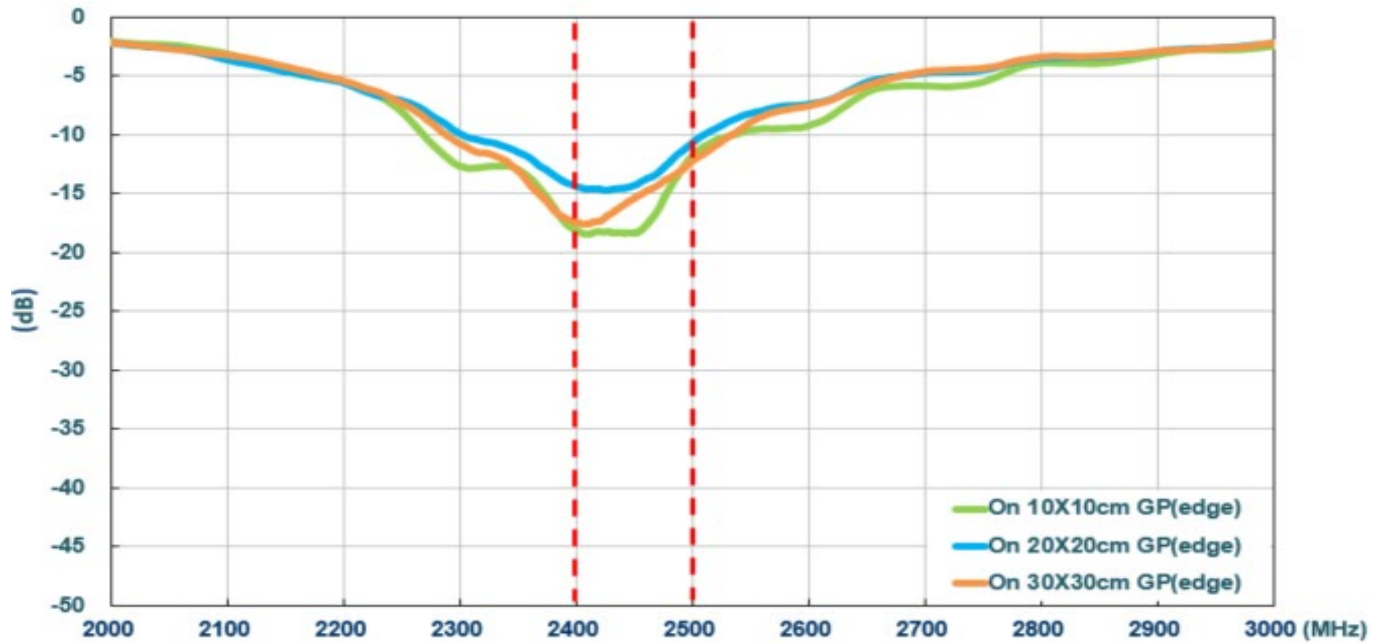
Figure 4. Return loss of WCM.01 antenna with different ground plane size

3.5 Efficiency (In free space)
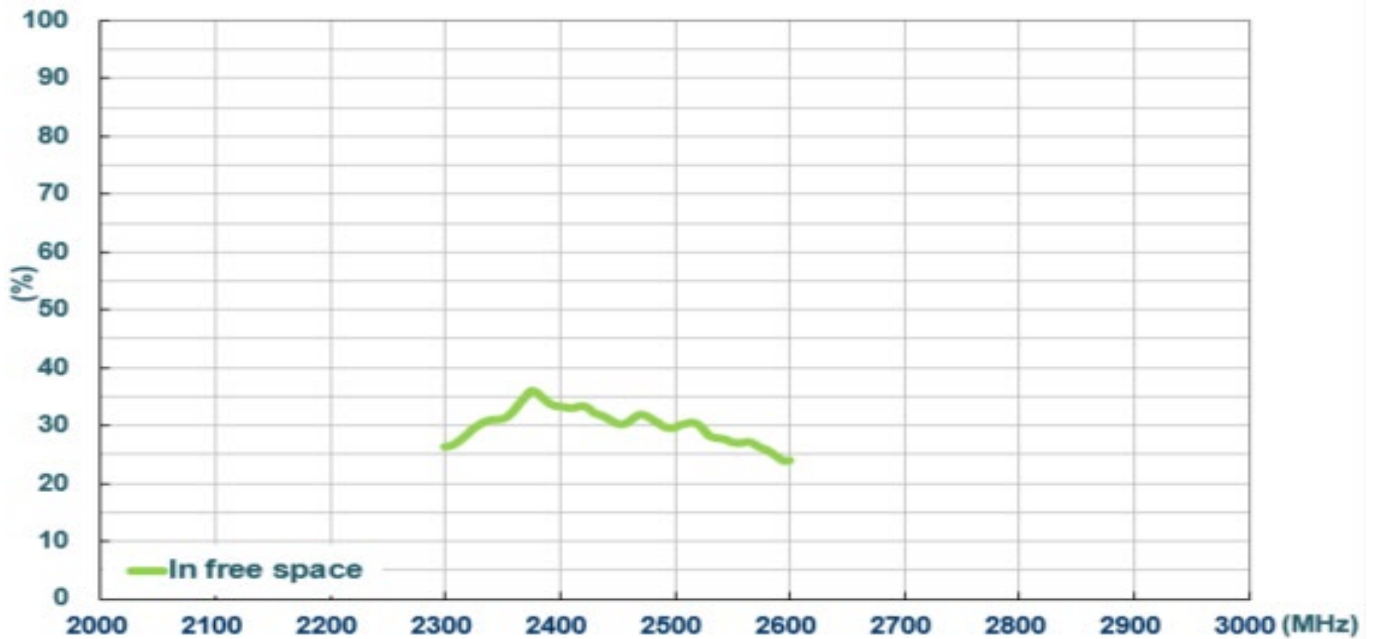
Figure 5. Efficiency of WCM.01 antenna

3.6 Efficiency (On the ground plane Center)
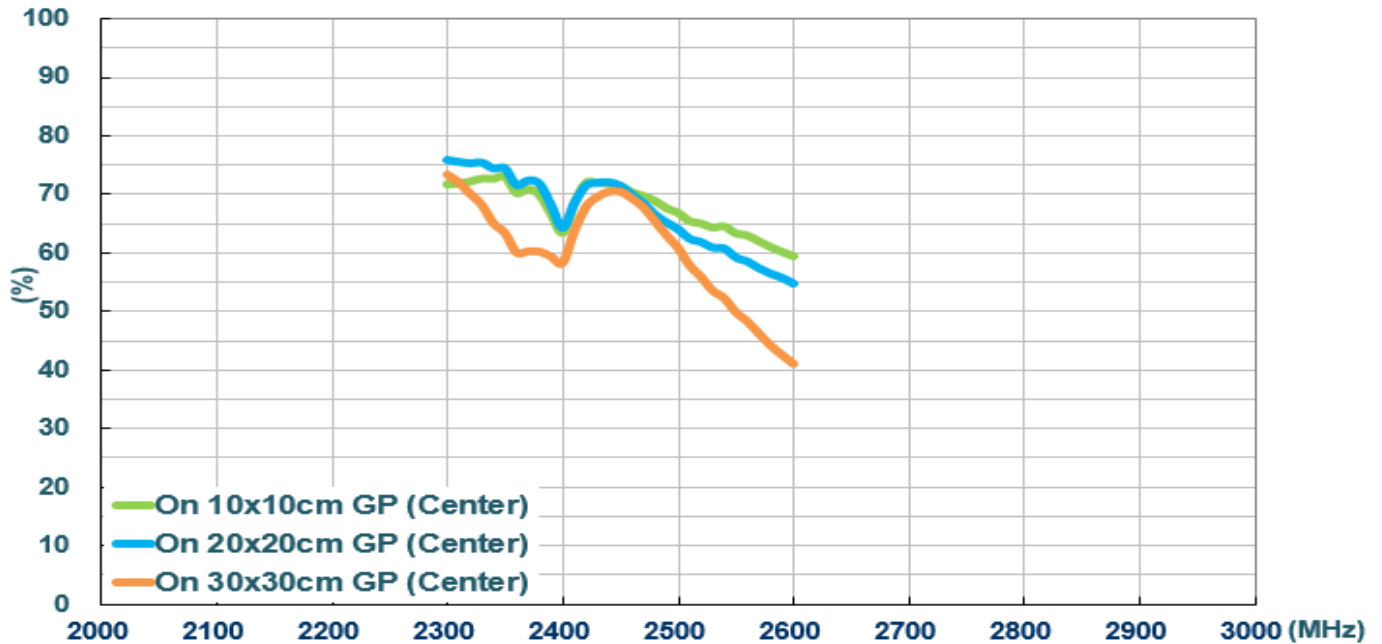
Figure 6. Return loss of WCM.01 antenna with different ground plane size

3.7 Efficiency (On the ground plane Edge)
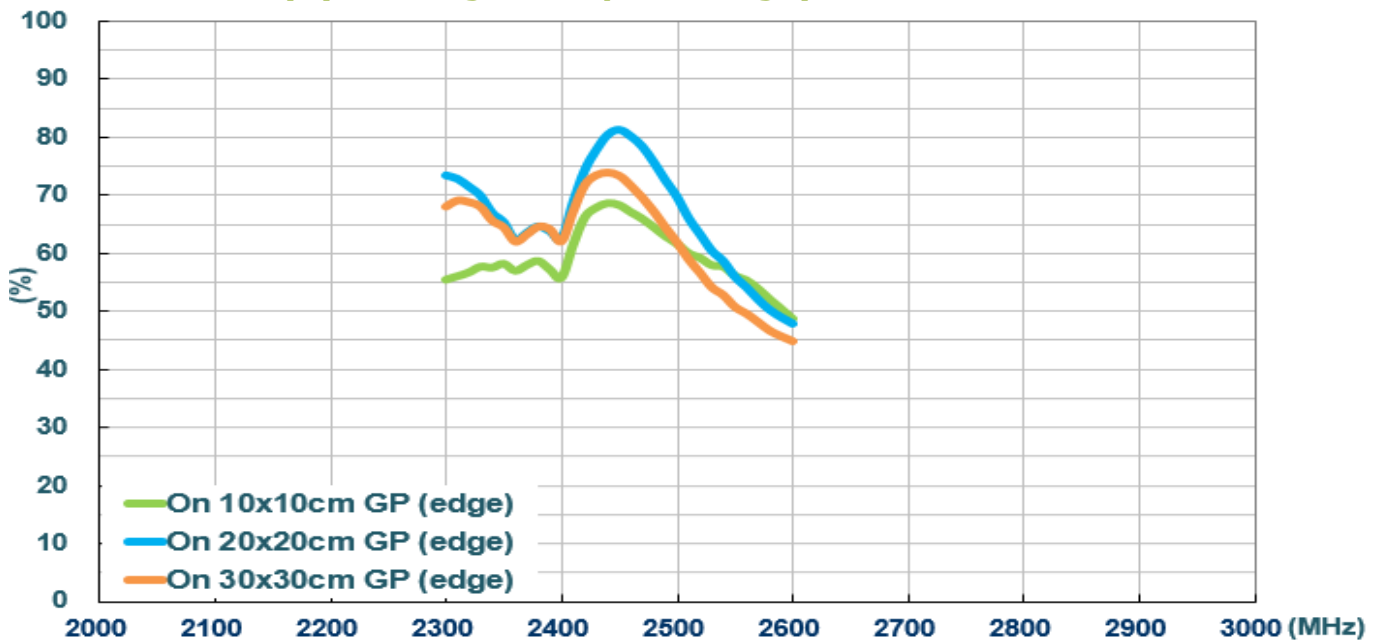
Figure 7. Return loss of WCM.01 antenna with different ground plane size

3.8 Peak Gain (In free space)
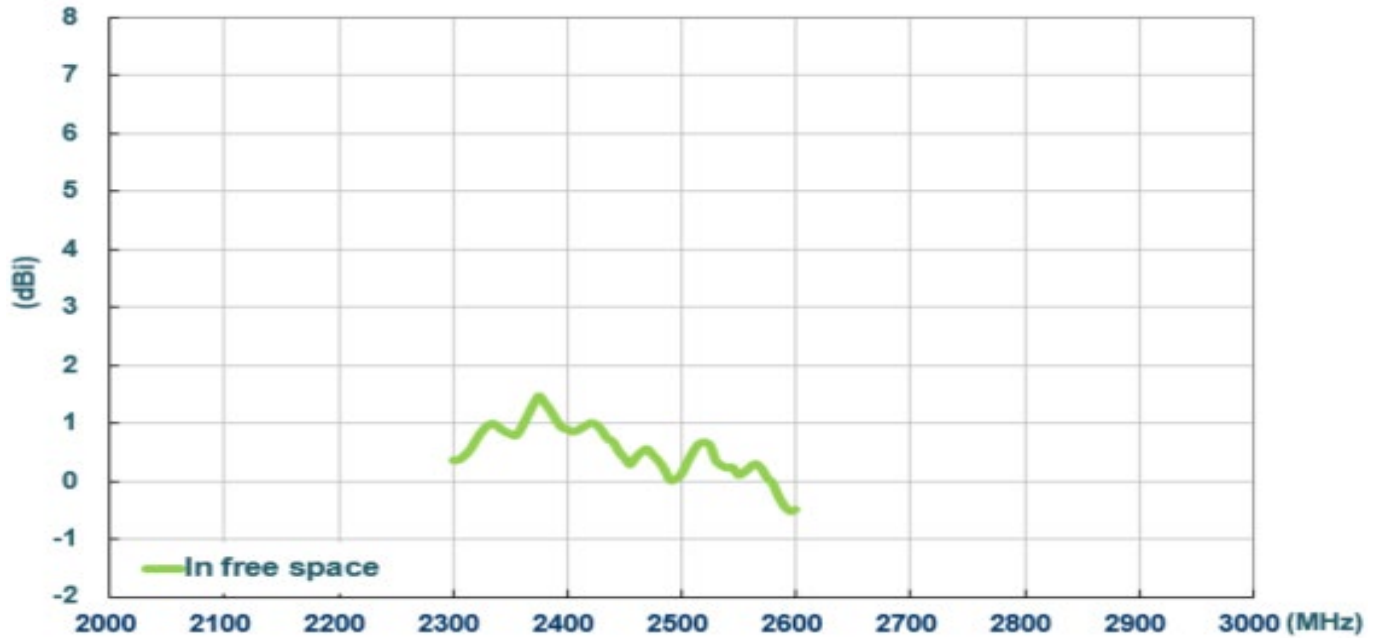
Figure 8. Peak gain of WCM.01 antenna with different ground plane size

3.9 Peak Gain (On the ground plane Center)
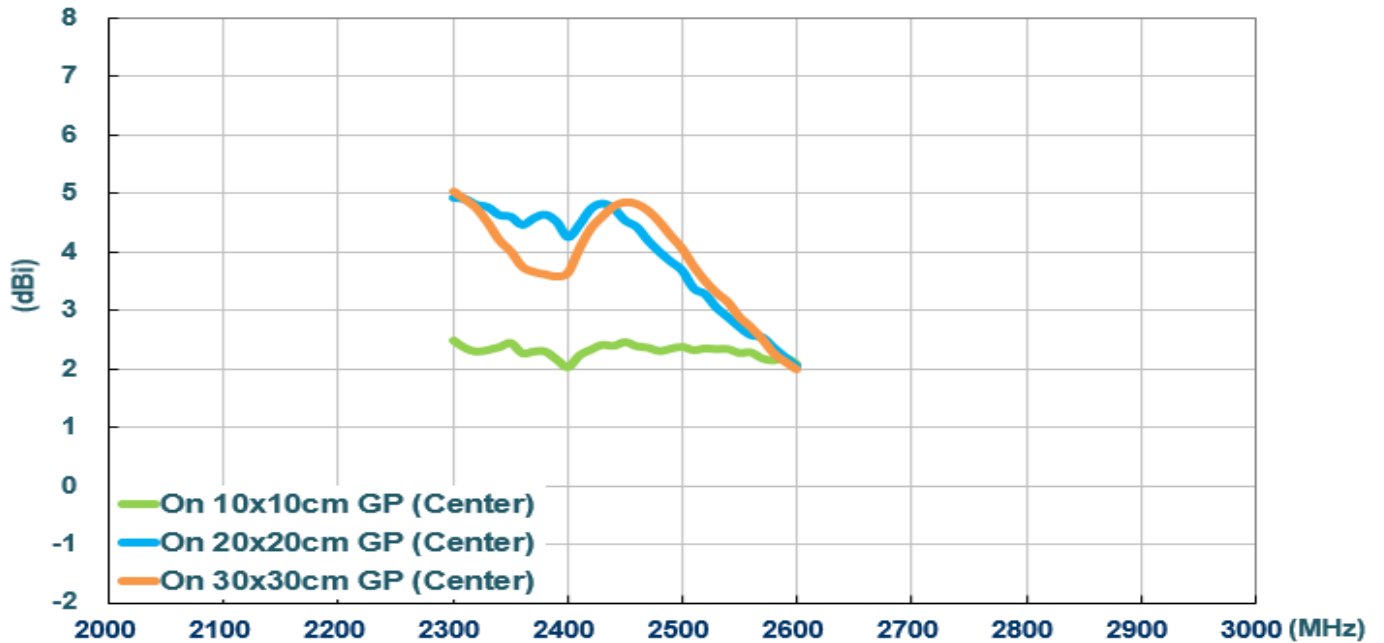
Figure 9. Peak gain of WCM.01 antenna with different ground plane size

3.10 Peak Gain (On the ground plane Edge)
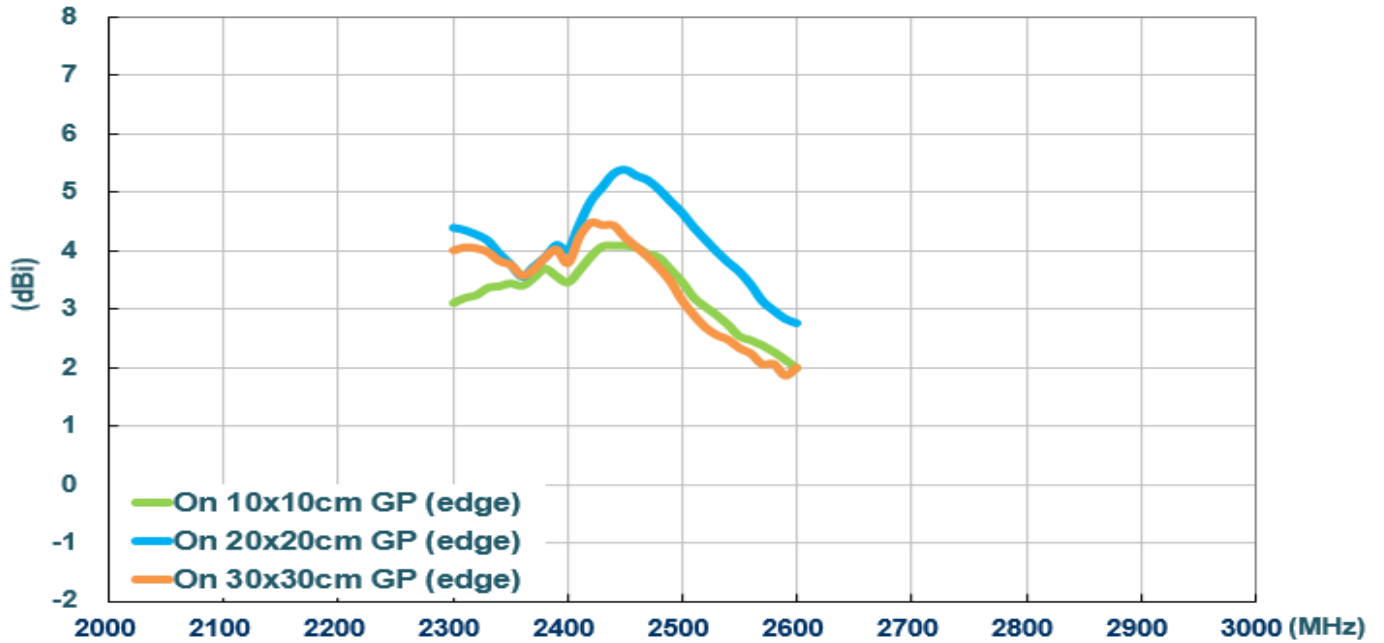
Figure 10. Peak gain of WCM.01 antenna with different ground plane size

3.11 Average Gain (In free space)
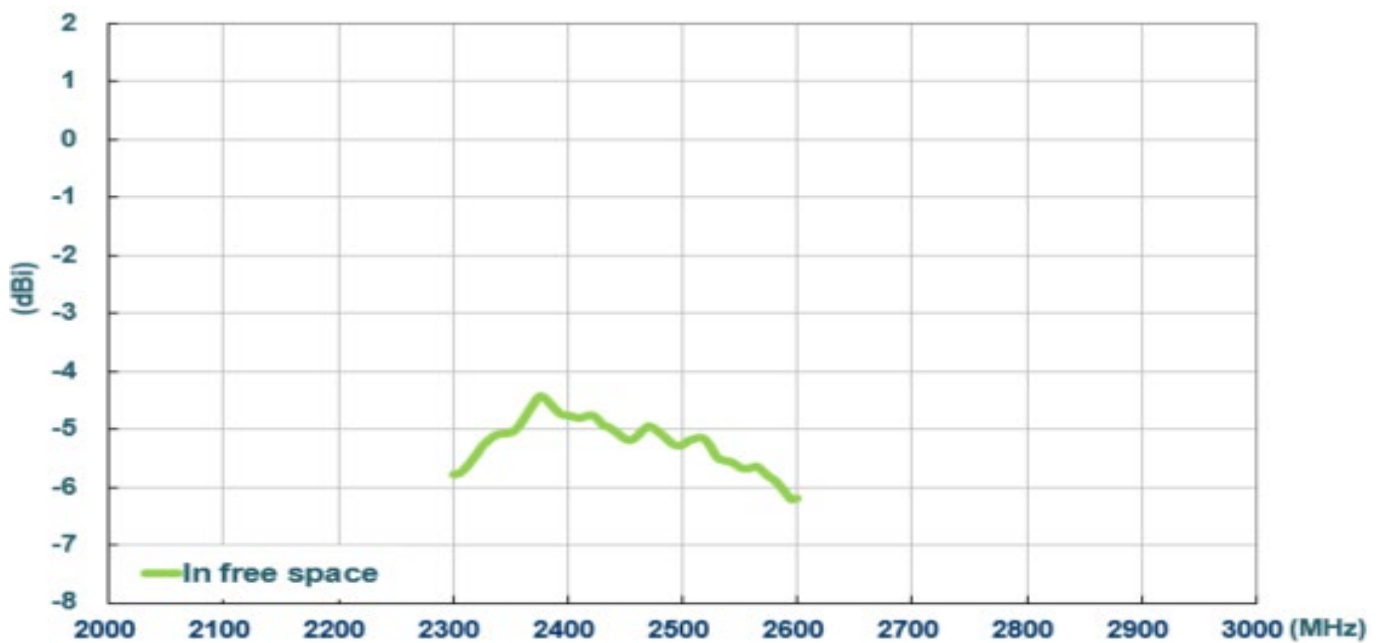
Figure 11. Average gain of WCM.01

3.12 Average Gain (On the ground plane Center)
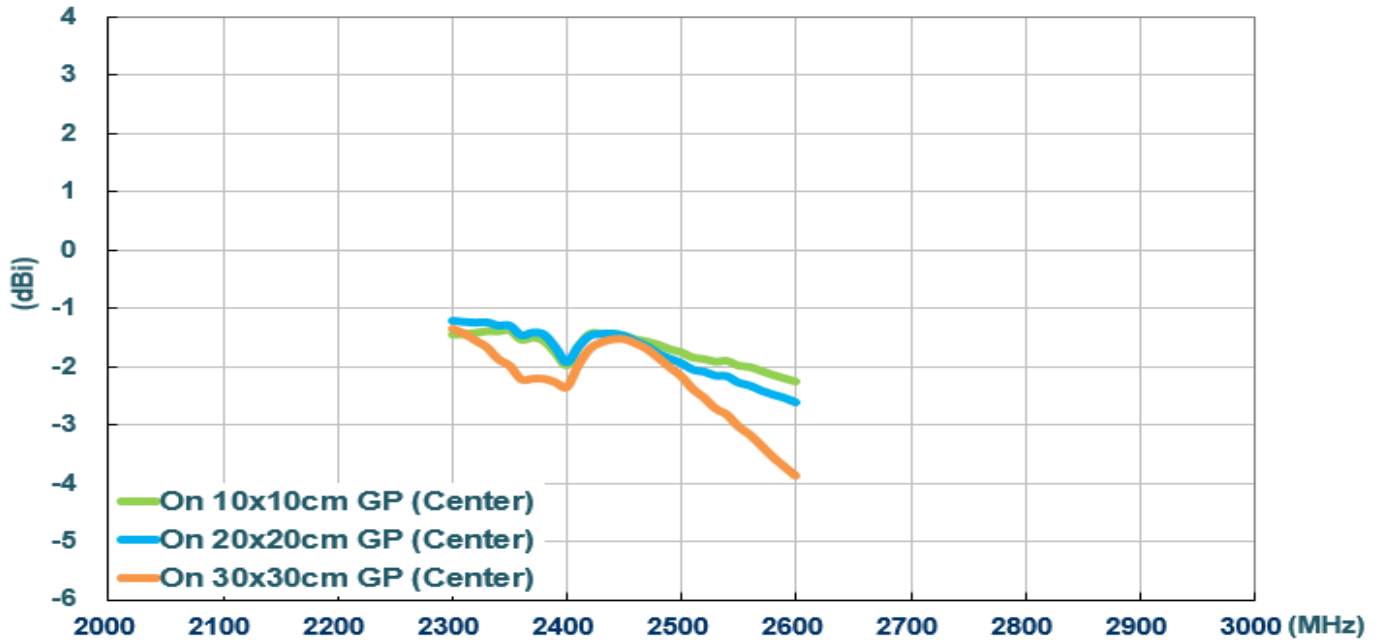
Figure 12. Average gain of WCM.01 antenna with different ground plane size

3.13 Average Gain (On the ground plane Edge)
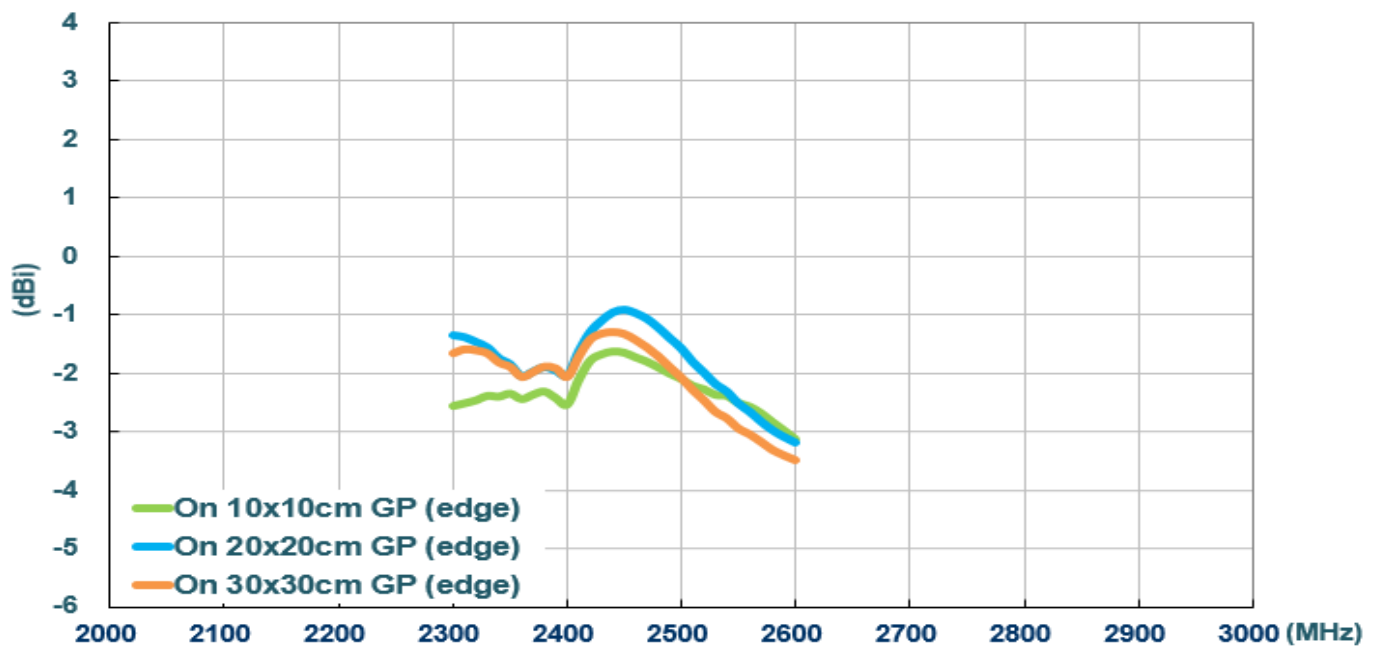
Figure 13. Average gain of WCM.01 antenna with different ground plane size

4. Antenna Radiation Patterns

The antenna radiation patterns were measured in CTIA certified ETS Anechoic Chamber. The measurement setup as below,

In Free Space
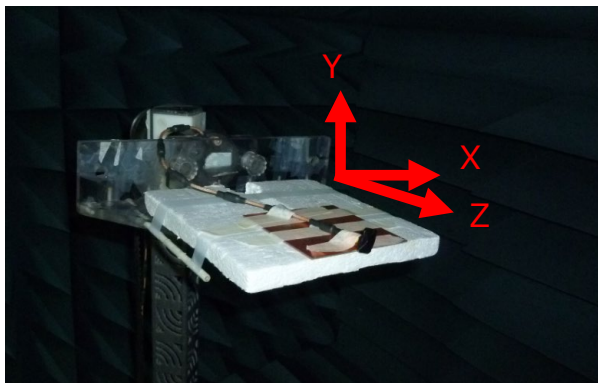
On 10*10cm ground plane (Center)
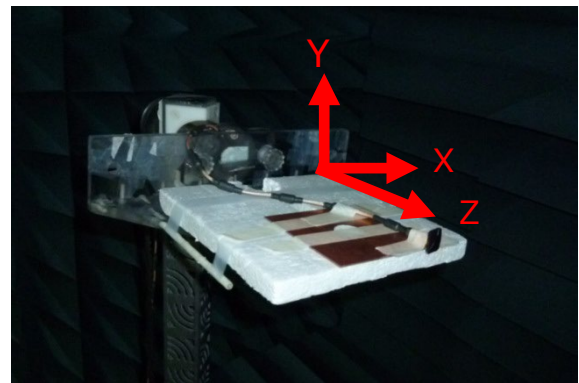
On 10*10cm ground plane (Edge)
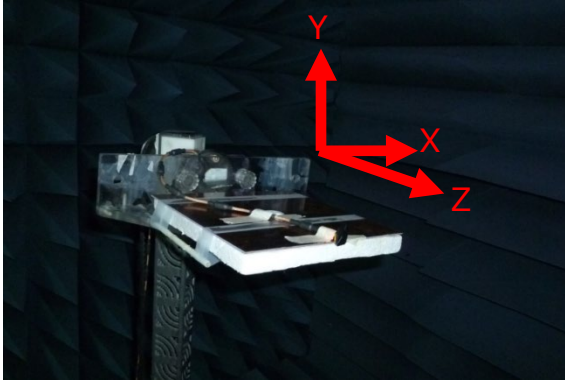
On 20*20cm ground plane (Center)
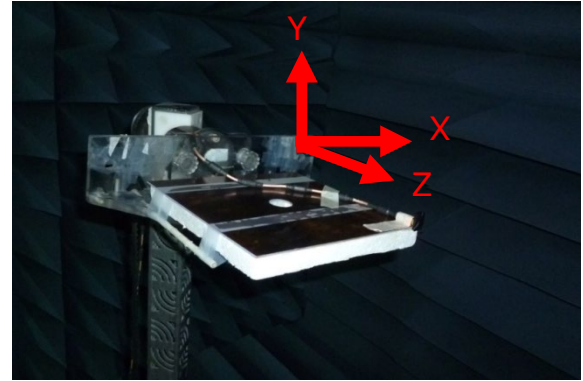
On 20*20cm ground plane (Edge)
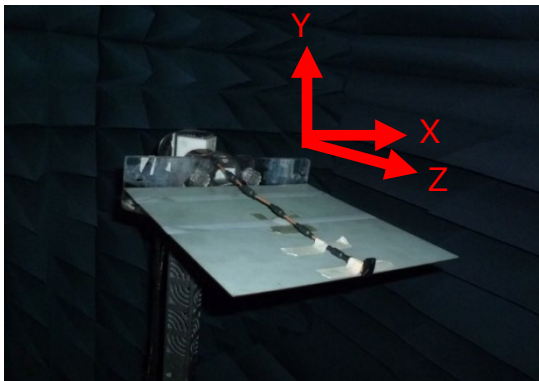
On 30*30cm ground plane (Center)
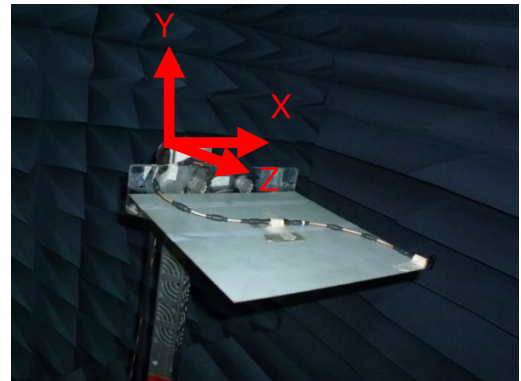
On 30*30cm ground plane (Edge)

Figure.14. Testing Setup in ETS Anechoic Chamber

4.1 2D Radiation Pattern (In free space)
XY Plane
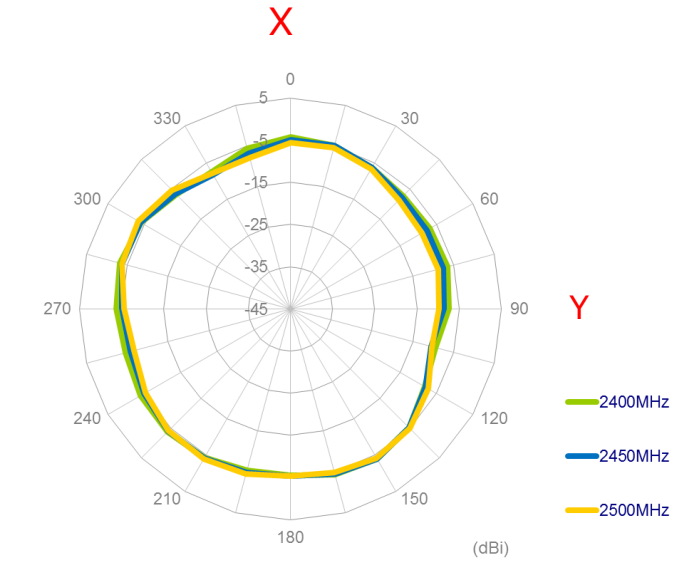
XZ Plane
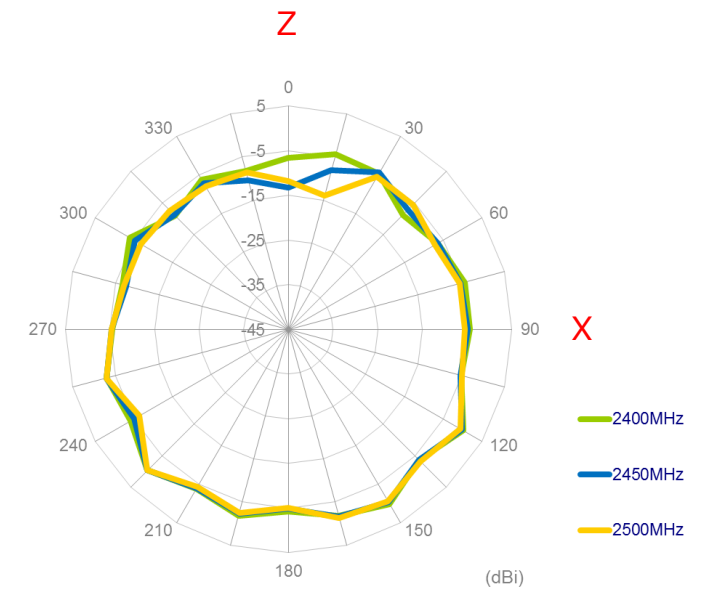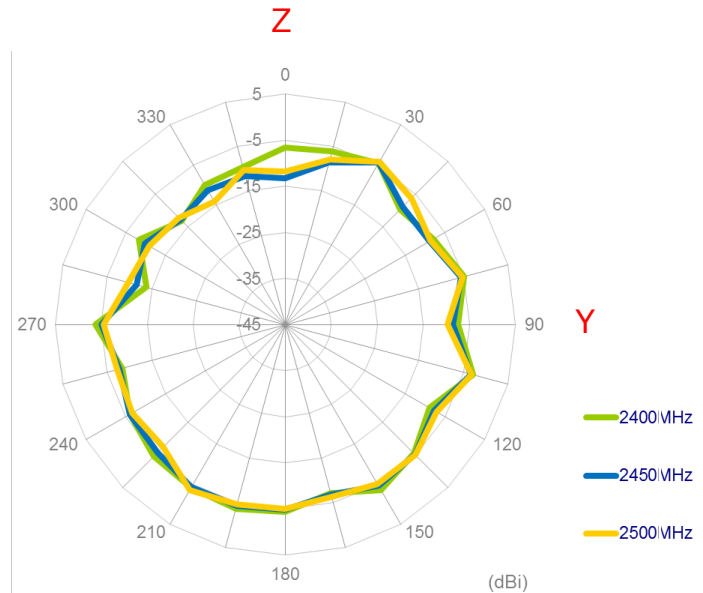
YZ Plane

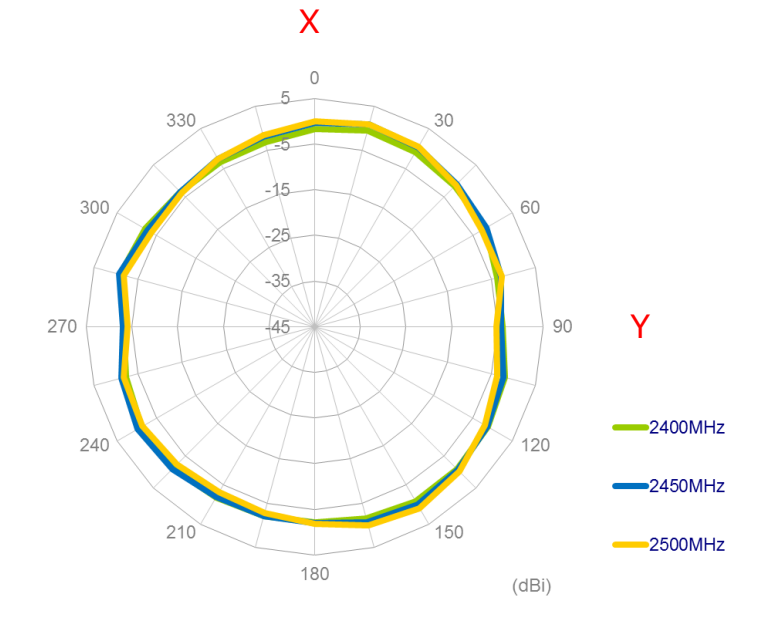## 4.2 3D Radiation Pattern (In free space)
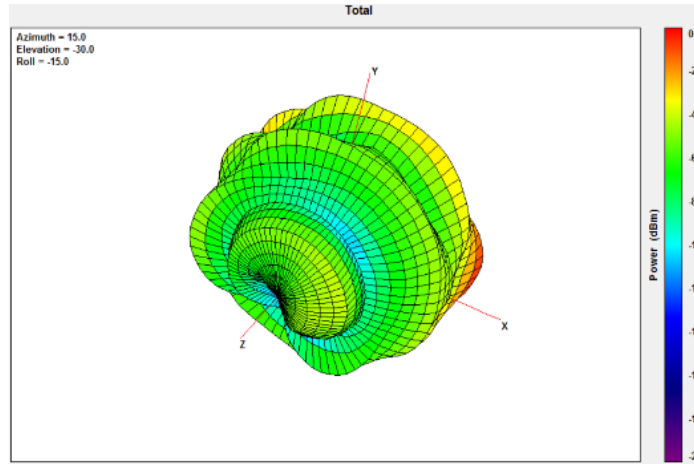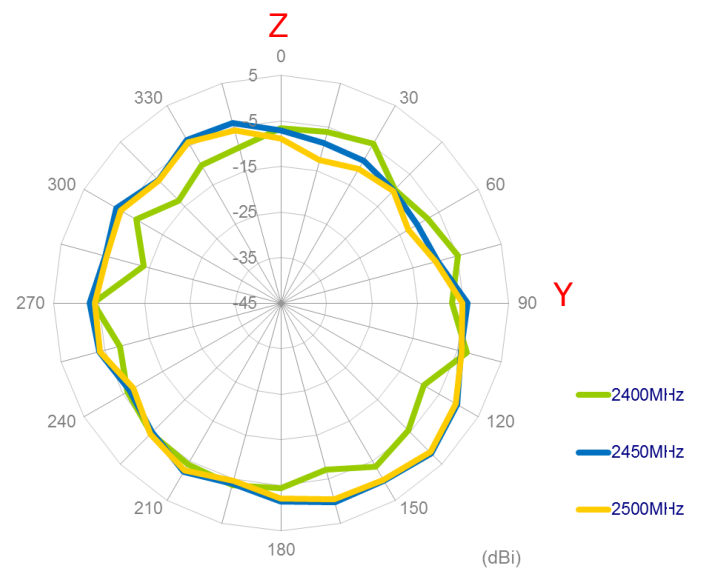

2400MHz
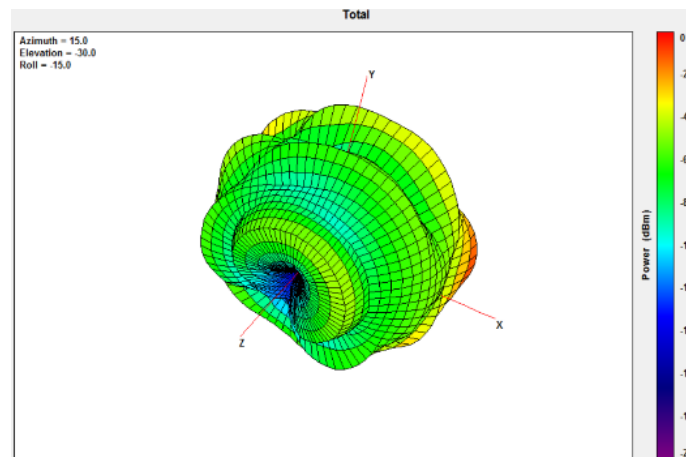
2450MHz
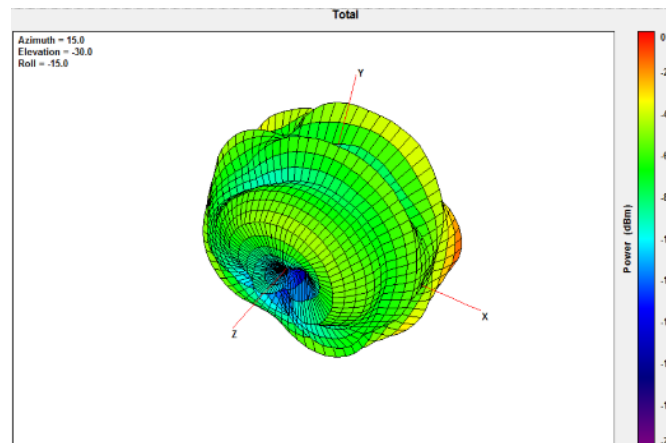
2500MHz

4.3 2D Radiation Pattern (On the 10*10cm ground plane Center)
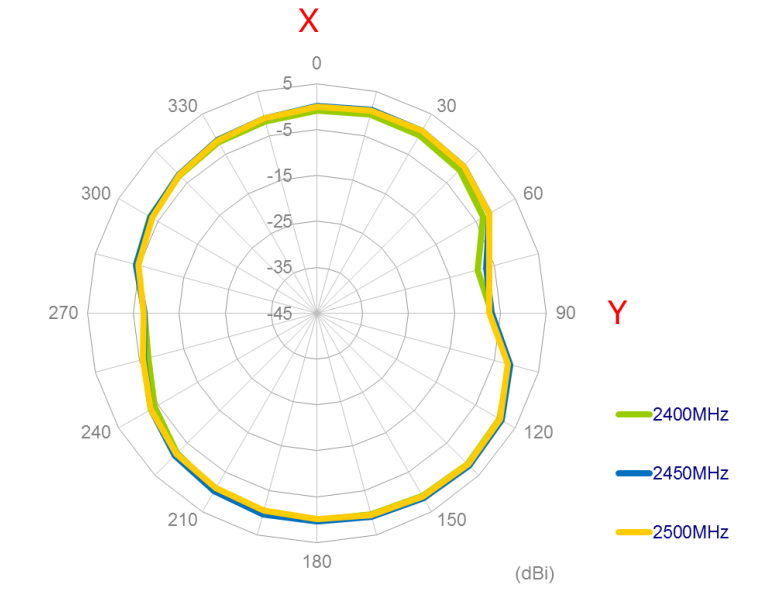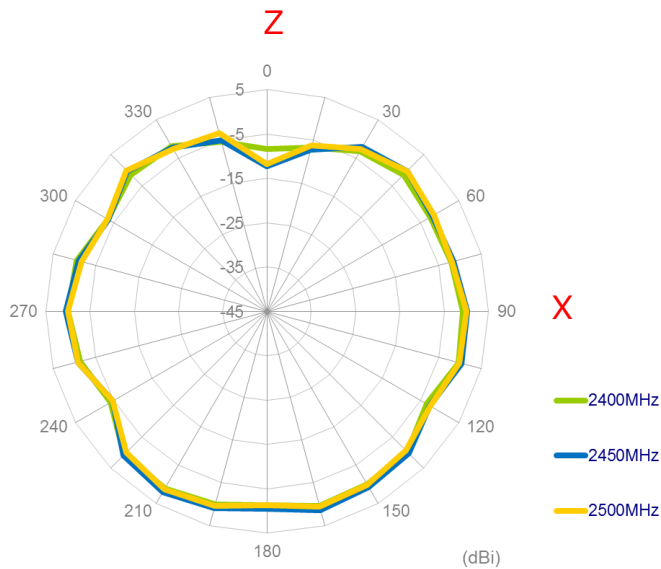
XY Plane
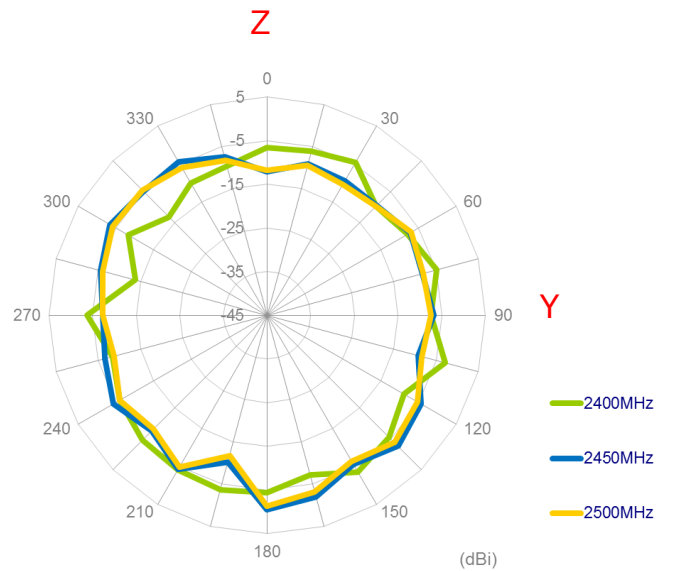
XZ Plane

YZ Plane

4.4 3D Radiation Pattern (On the 10*10cm ground plane Center)
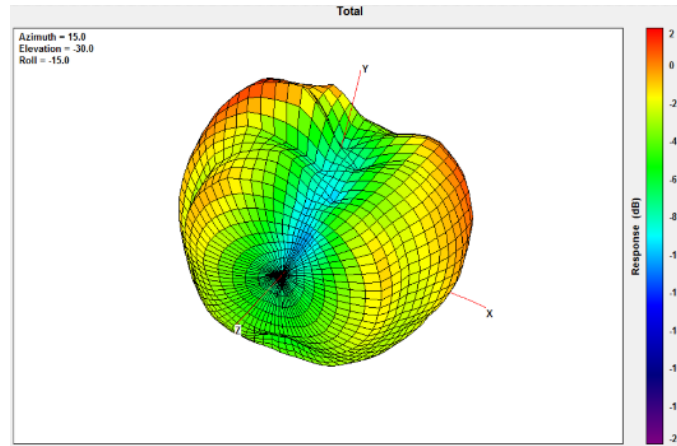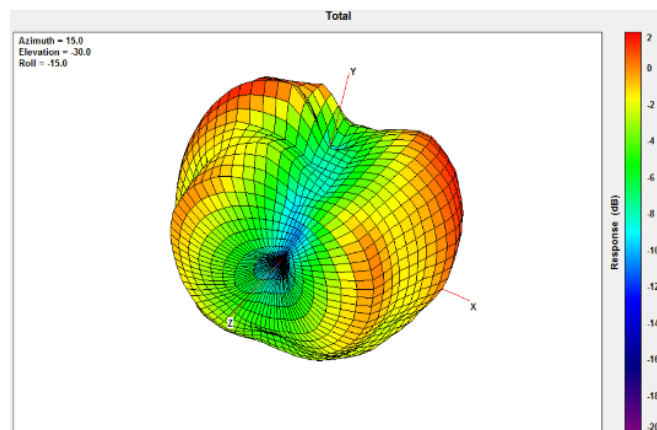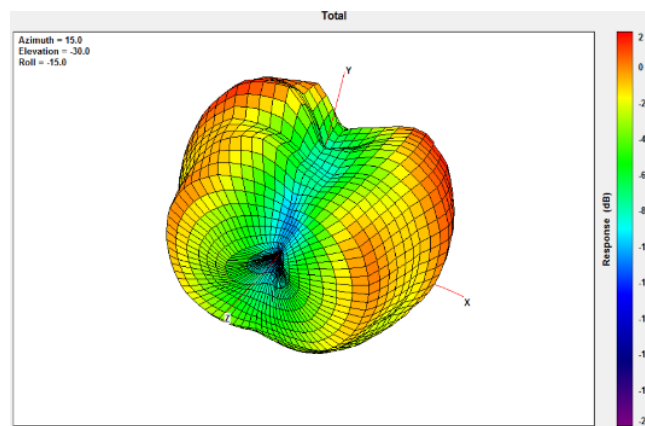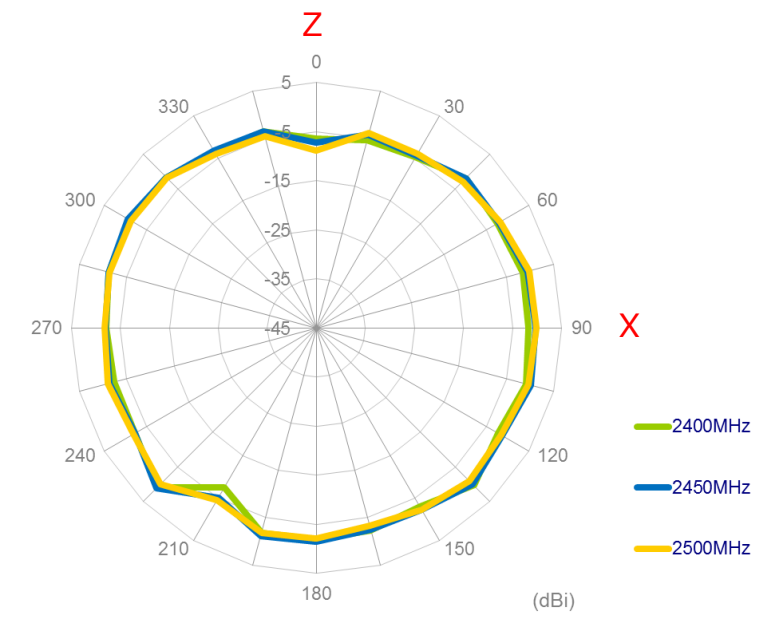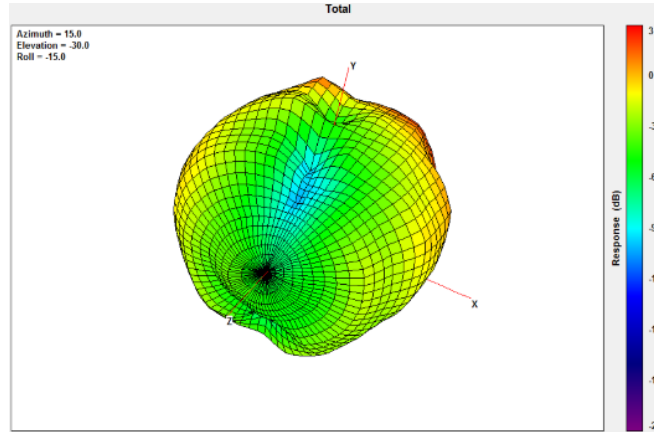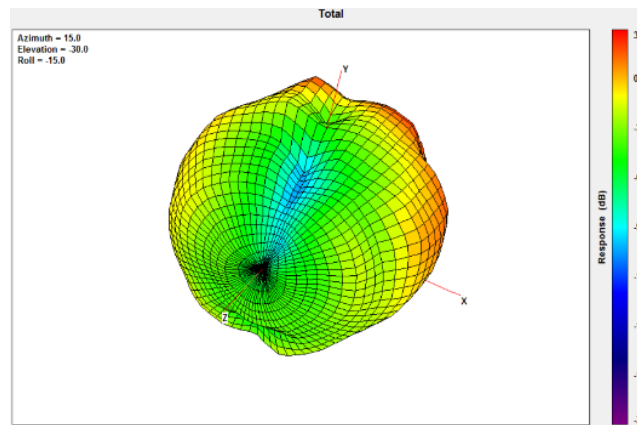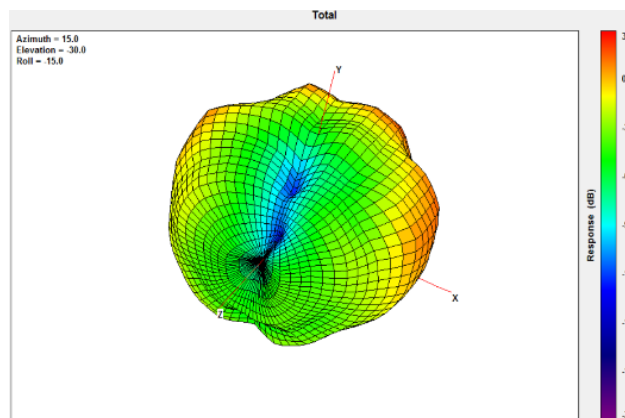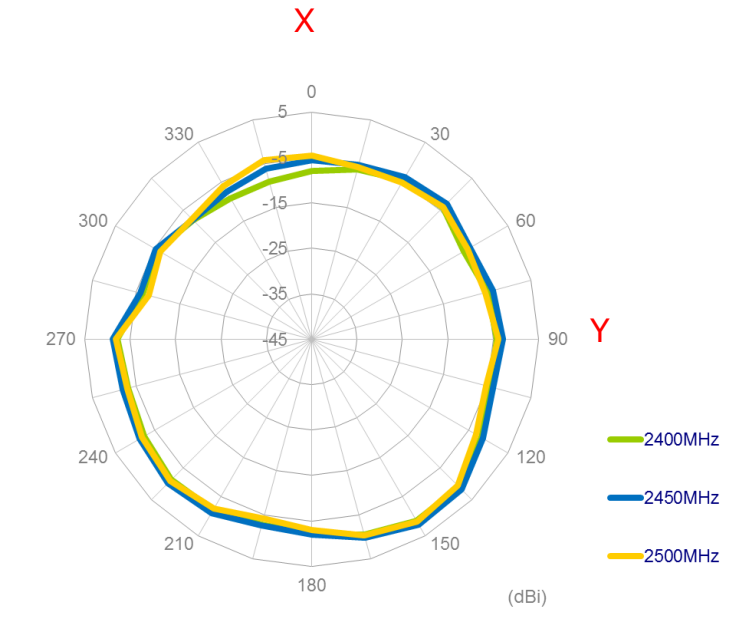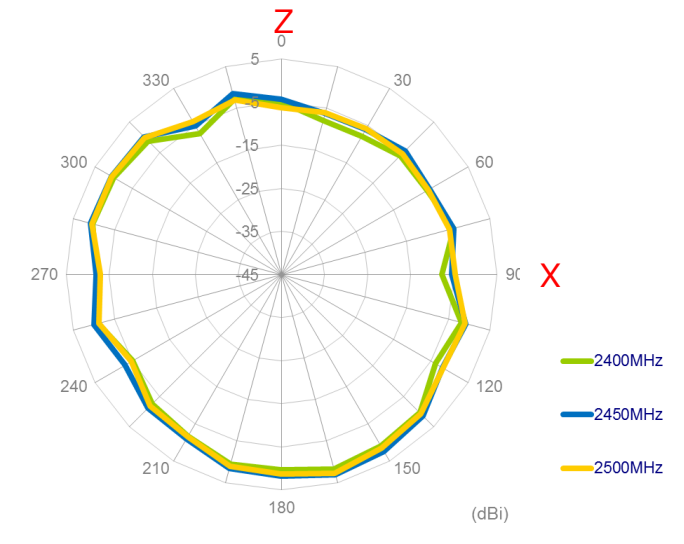

2400MHz

2450MHz

2500MHz

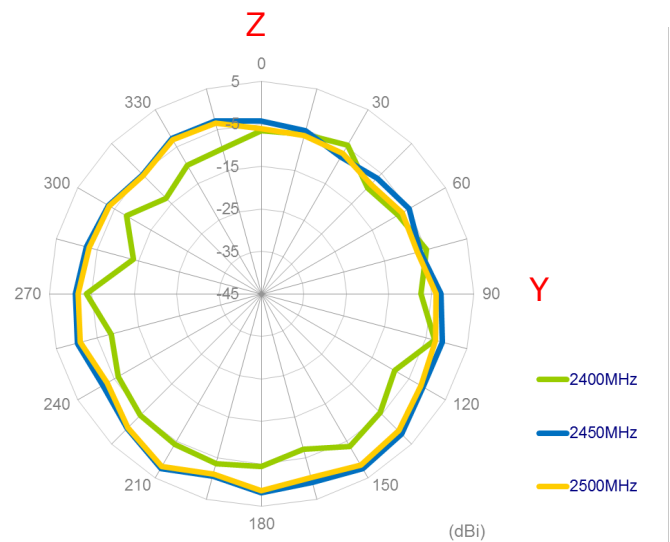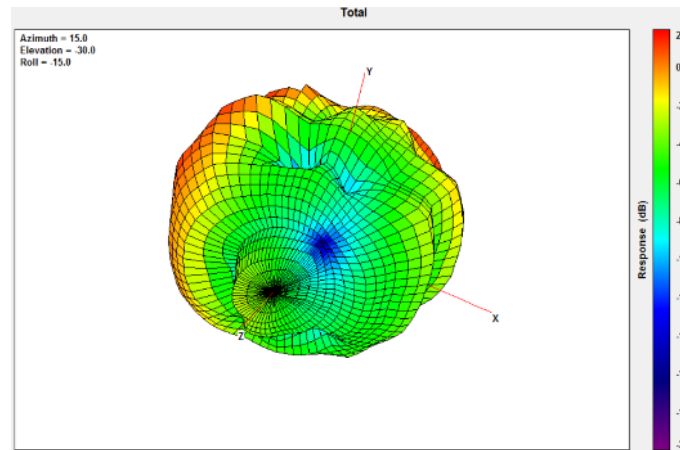## 4.5 2D Radiation Pattern (On the 10*10cm ground plane Edge)
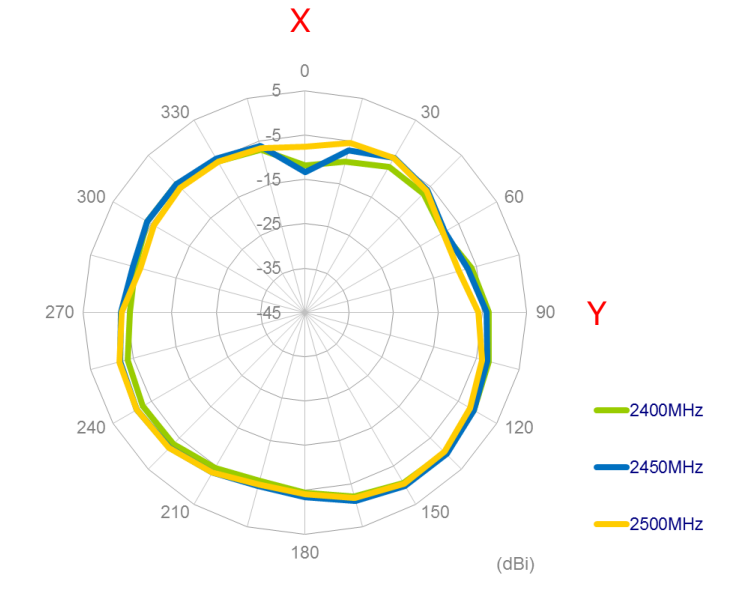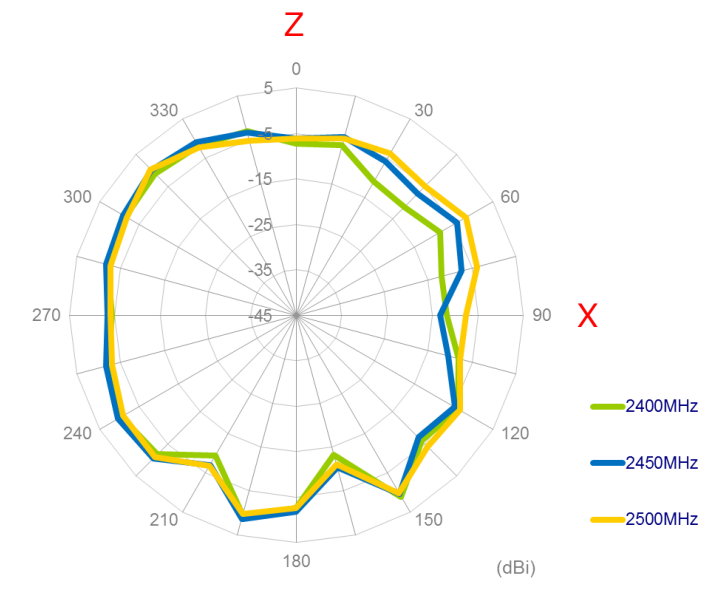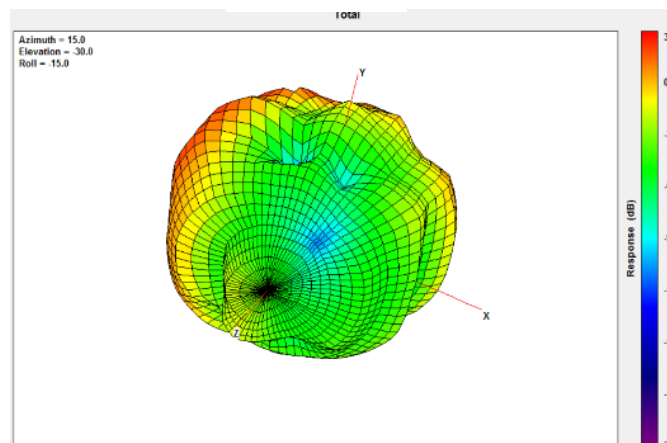
XY Plane
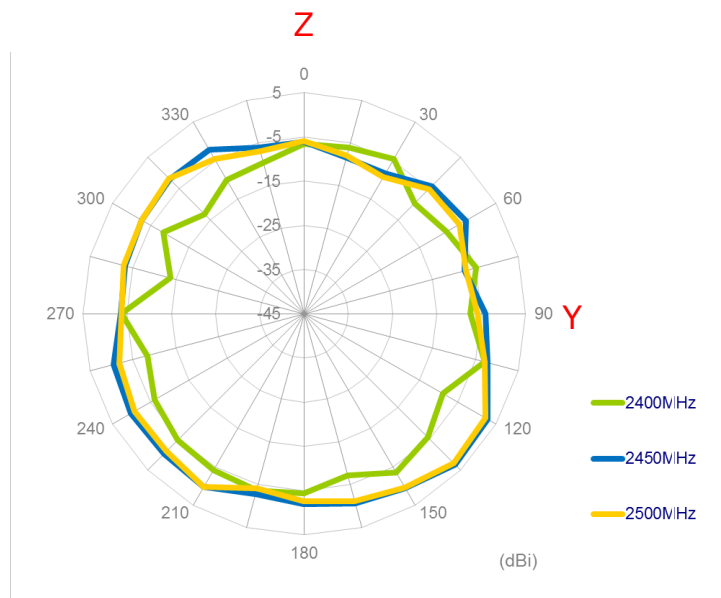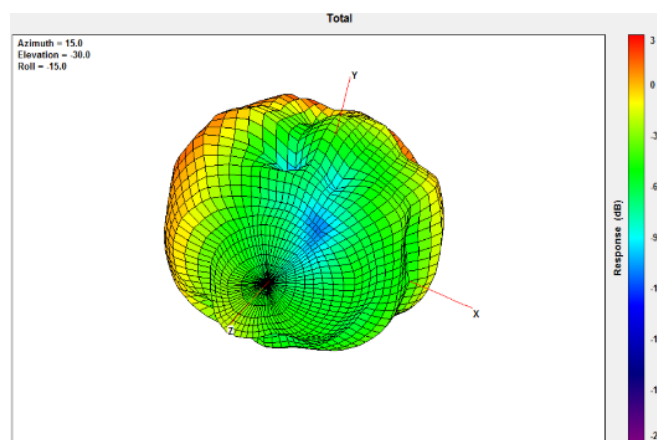

XZ Plane

YZ Plane

4.6 3D Radiation Pattern (On the 10*10cm ground plane Edge)
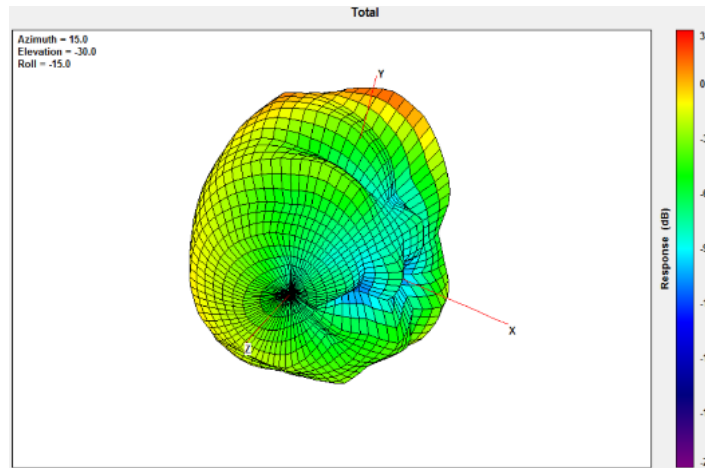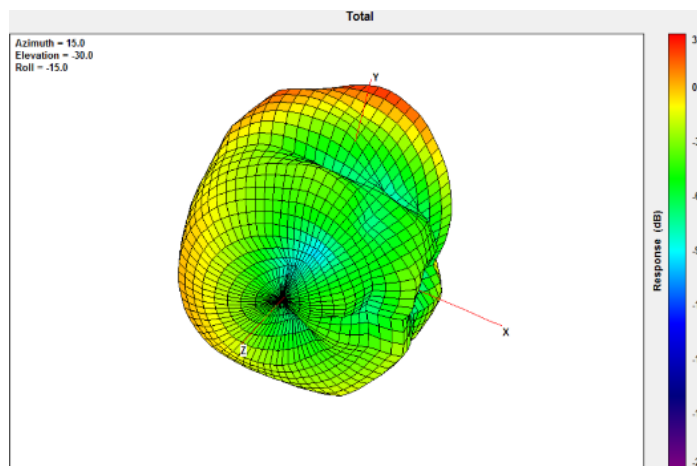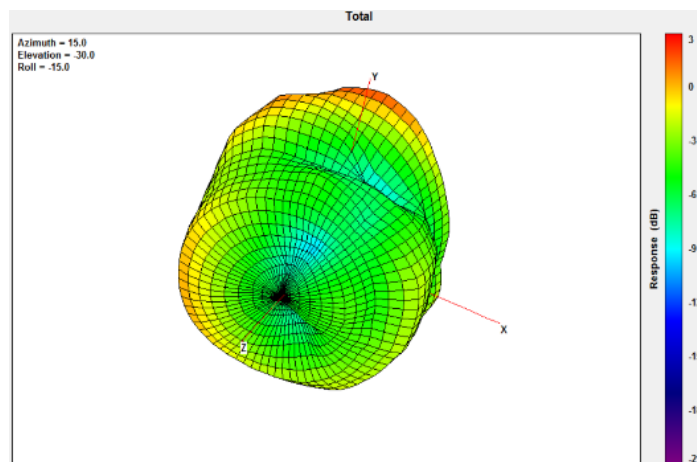
2400MHz

2450MHz

2500MHz

4.7 2D Radiation Pattern (On the 20*20cm ground plane Center)

XY Plane

XZ Plane

YZ Plane

4.8 3D Radiation Pattern (On the 20*20cm ground plane Center)

2400MHz

2450MHz

2500MHz

4.9 2D Radiation Pattern (On the 20*20cm ground plane Edge)

XY Plane

XZ Plane

YZ Plane

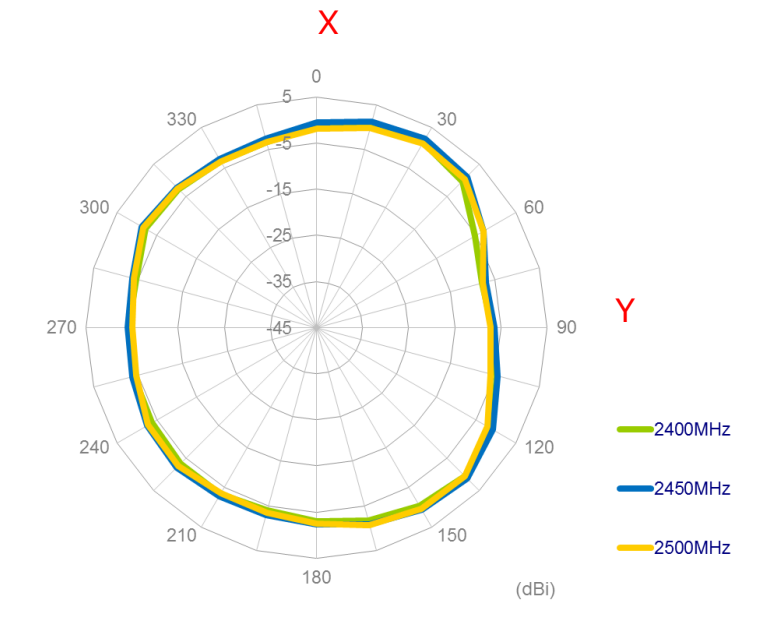## 4.10 3D Radiation Pattern (On the 20*20cm ground plane Edge)
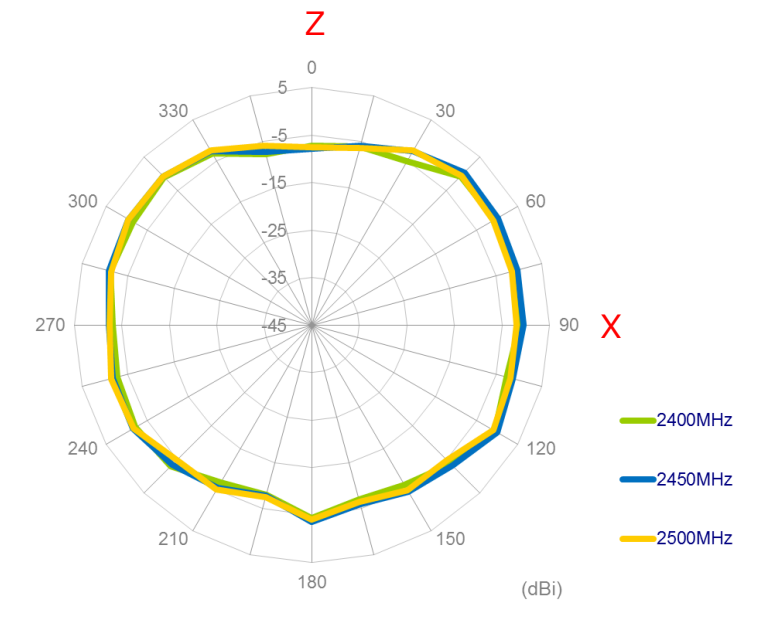

2400MHz

2450MHz

2500MHz

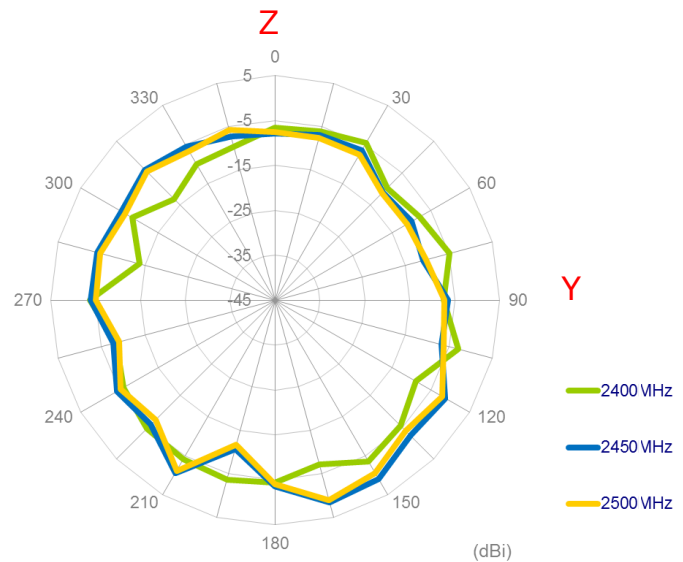## 4.11 2D Radiation Pattern (On the 30*30cm ground plane Center)
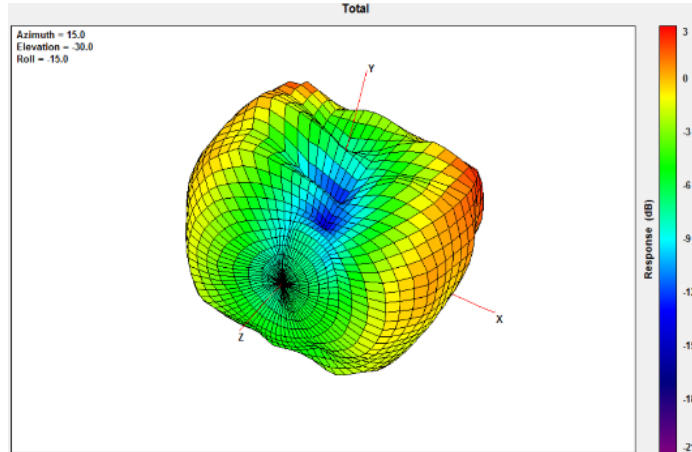
XY Plane
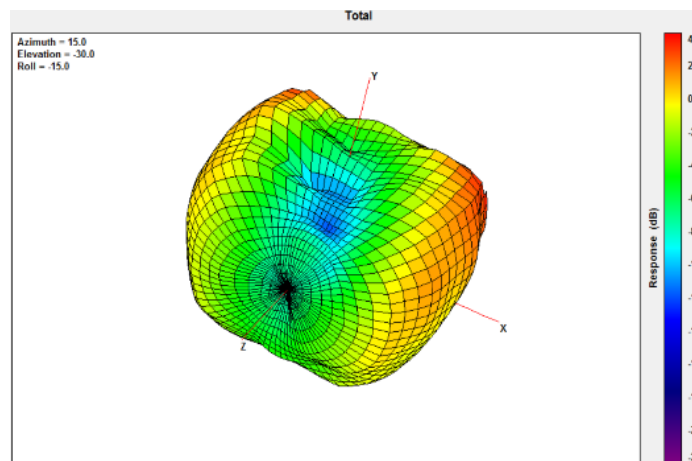
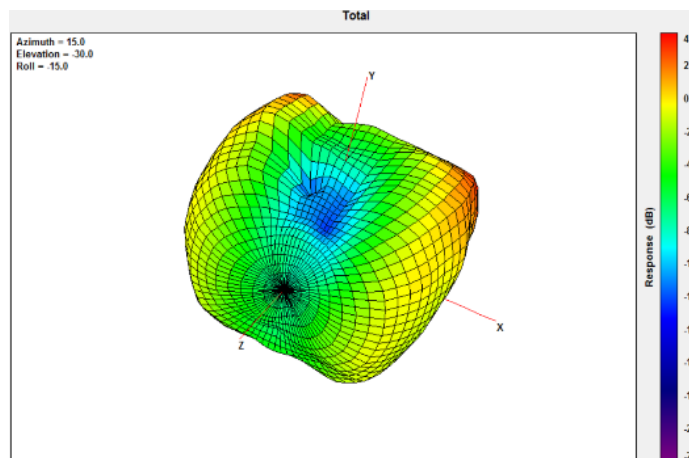

XZ Plane

YZ Plane

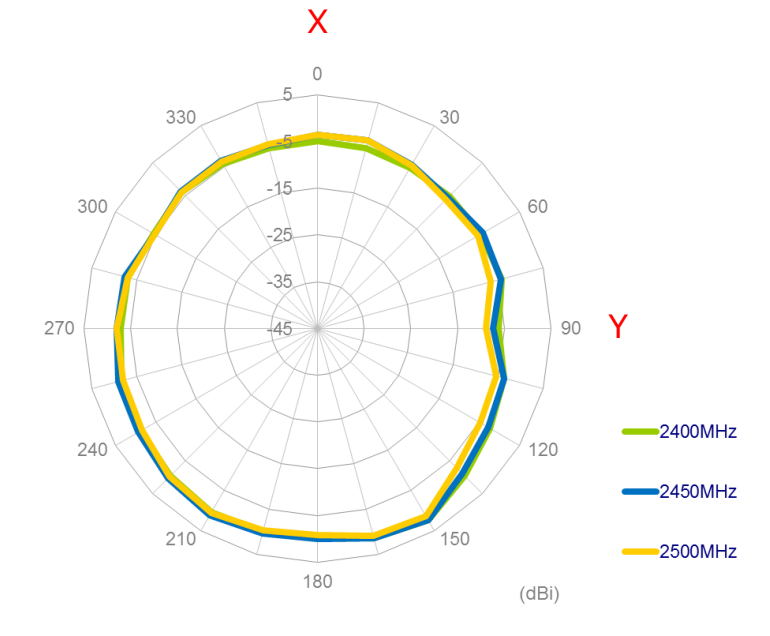## 4.12 3D Radiation Pattern (On the 30*30cm ground plane Center)

2400MHz

2450MHz

2500MHz

4.13 2D Radiation Pattern (On the 30*30cm ground plane Edge)

XY Plane

XZ Plane

YZ Plane

4.14 3D Radiation Pattern (On the 30*30cm ground plane Edge)
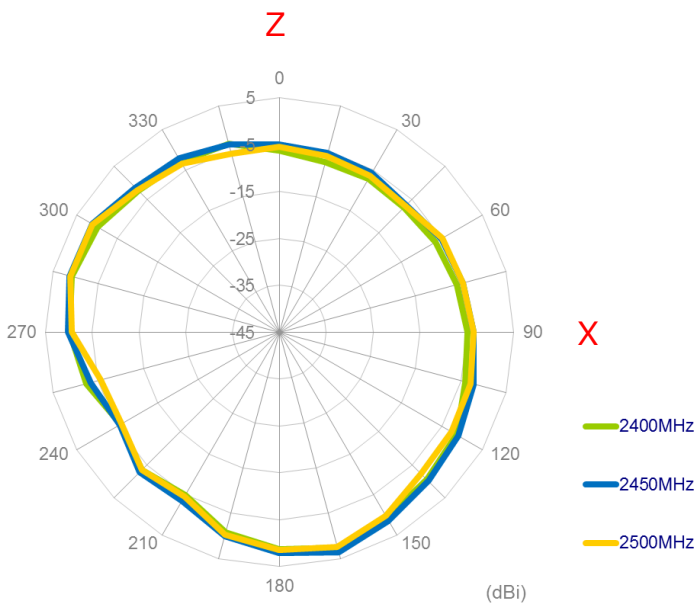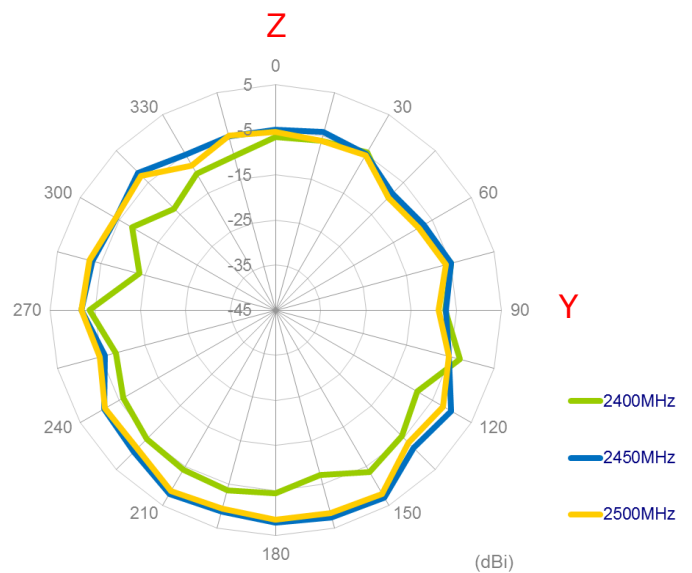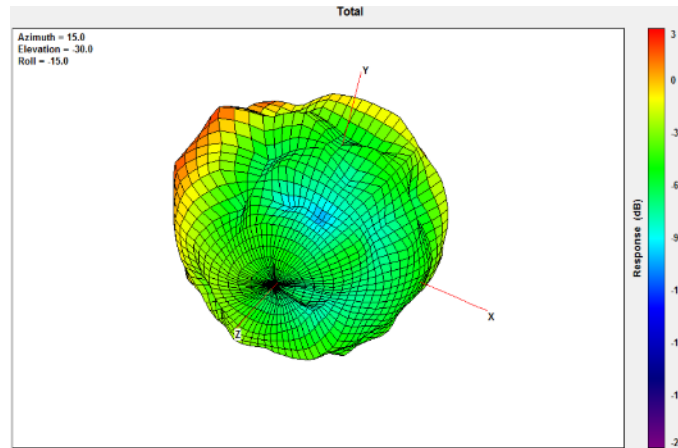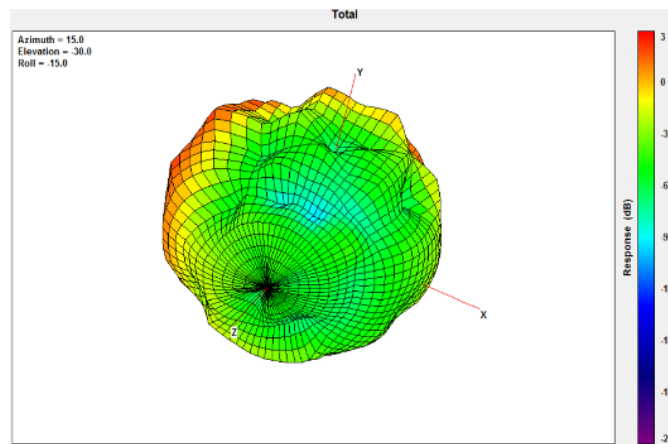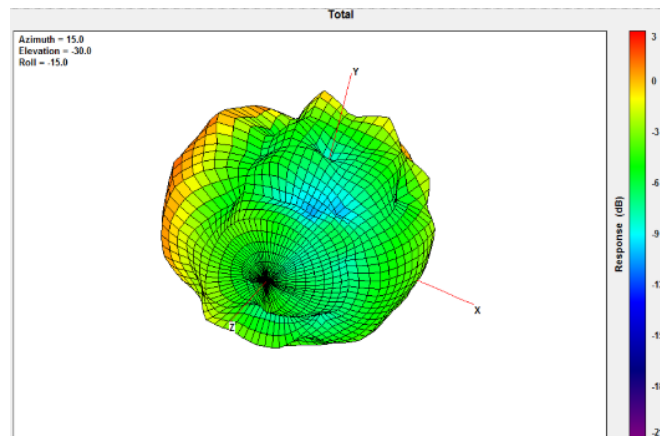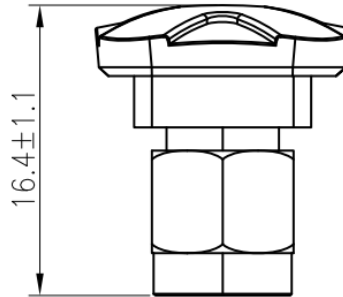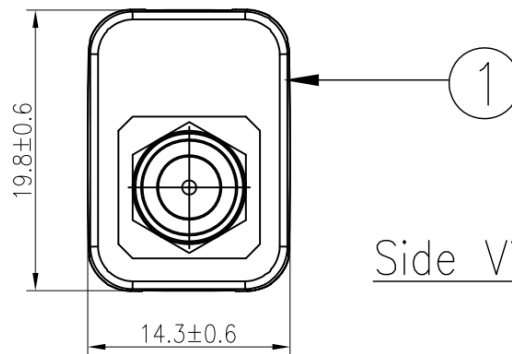

2400MHz

2450MHz

2500MHz

5. Drawing(Unit: mm)

3D View

16.4±1.1

Top View
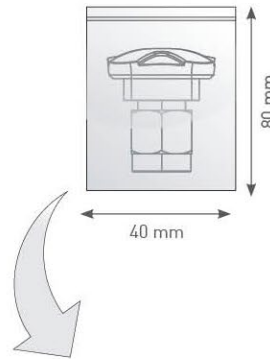
19.8±0.6

14.3±0.6

①

Side View

1/4"36UNS-2B

②

8.4±0.3
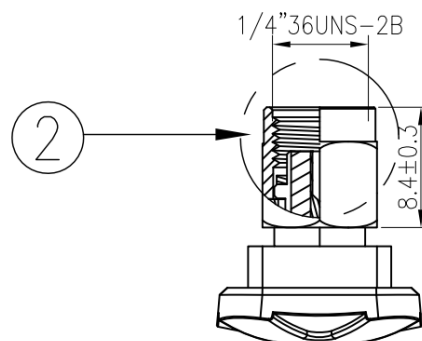
Bottom View

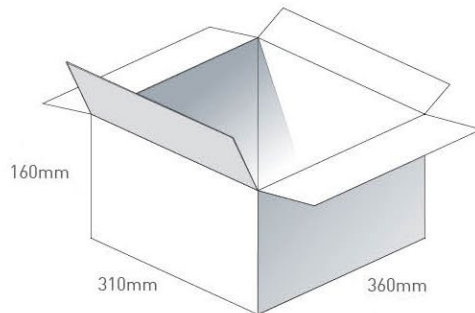|	Name	Material	Finish	QTY
1	External housing	ABS	Black	1
2	RP-SMA(M)	Brass	Gold	1

6. Packaging

1 pcs WCM.01.0151 per PE Bag
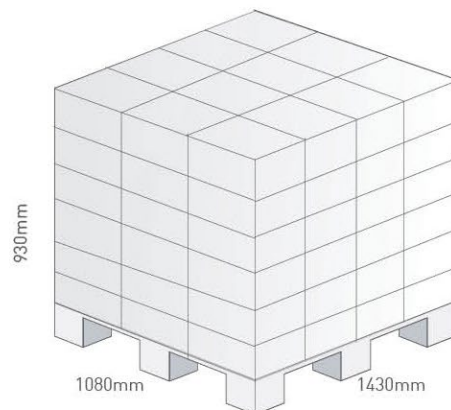PE Bag Dimensions - 80*40mm
Weight - .007g

100 PE Bags per Large PE Bag
100 pcs WCM.01.0151 per Large PE Bag
Large Polybag Dimensions - 240*170mm
Weight - 0.7kg
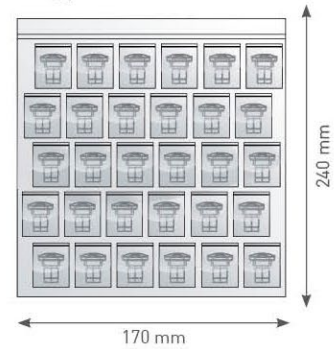
15 Large PE bags per carton
1500 pcs WCM.01.0151 per carton
Carton Dimensions - 360*310*160mm
Weight - 11kg

Pallet Dimensions 1080mm*930m*1430mm
72 Cartons per Pallet
12 Cartons per layer
6 Layers

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