

(台灣) 譚裕實業股份有限公司

(大陸) 東莞台霖電子通訊有限公司

品名： RF Antenna Assembly

規格： \_\_\_\_\_

料號： C059-510484-A

客戶： 訊舟科技股份有限公司

客戶料號： \_\_\_\_\_

日期： 2023/2/22

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確認				客戶確認
製作	審核	核准	業務	
白保 2/23	何國春 2/23	David 鄭香廷 2/23		

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# RF Antenna Assembly

## Specification

### 1. Electrical Properties : With housing/With Cable Loss(BT)

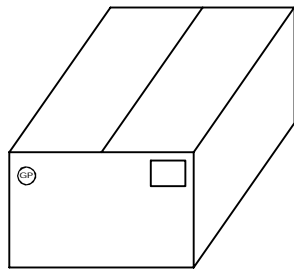
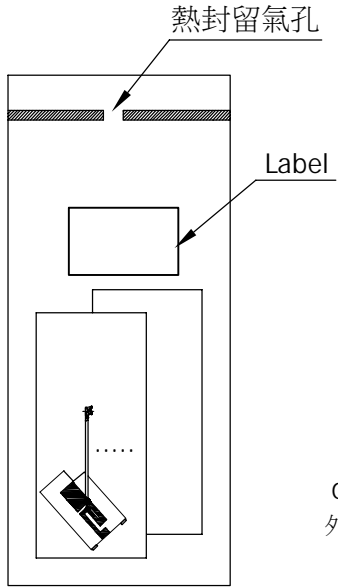
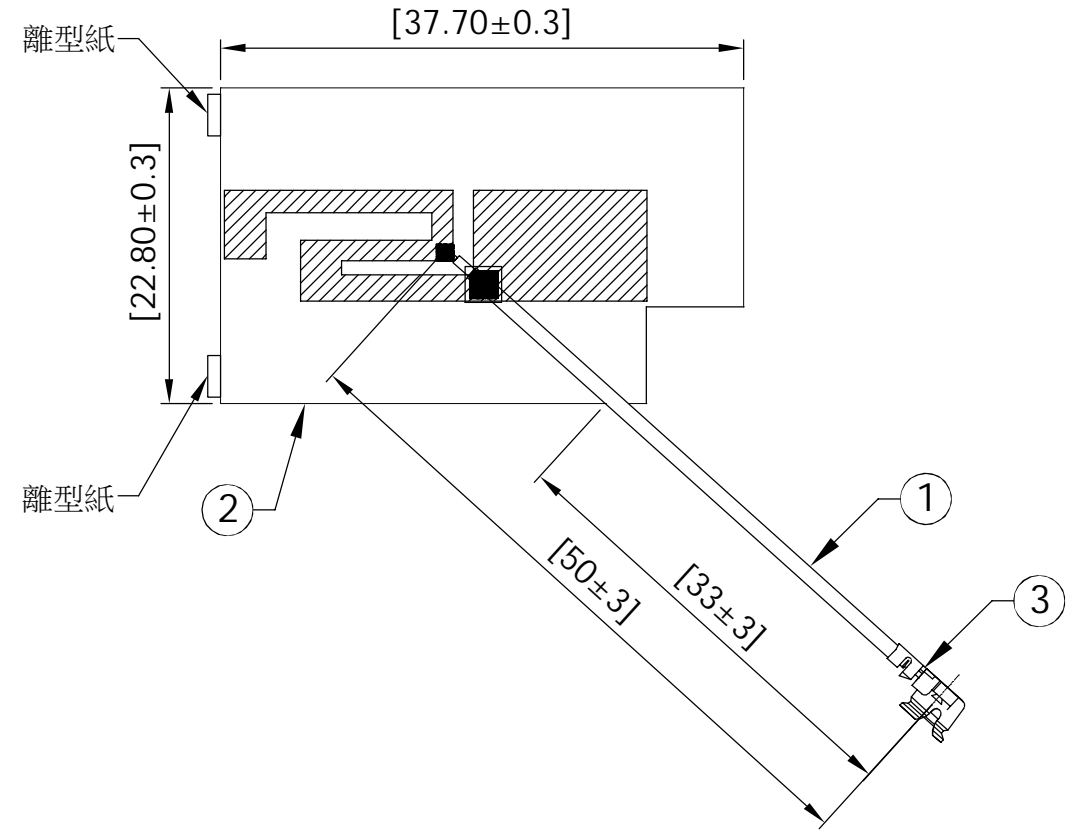
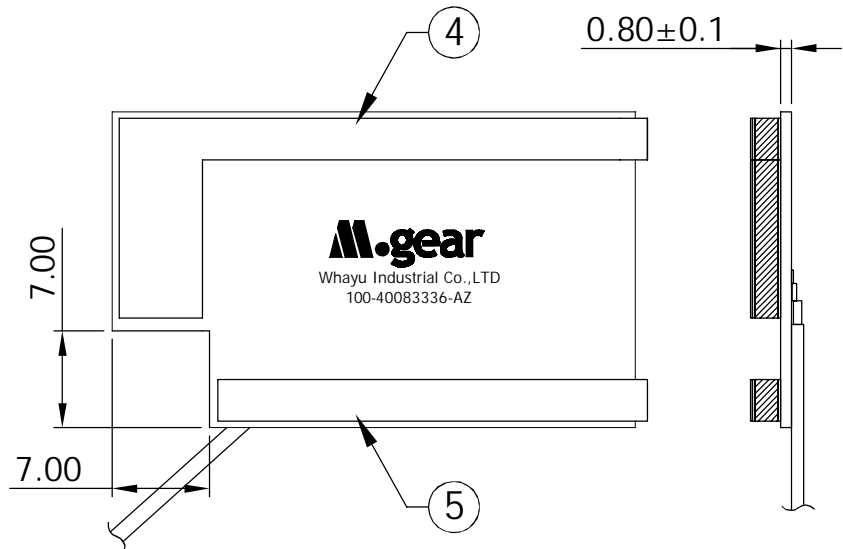
- 1.1 Frequency Range..... 2.4~2.5 GHz
- 1.2 Impedance ..... 50 $\Omega$  Nominal
- 1.3 VSWR..... 1.92 : 1 Max.
- 1.4 Return Loss..... 10 dB Min.
- 1.5 Radiation ..... Omni-directional
- 1.6 Peak Gain..... 2.4 ~ 2.5 GHz <2.5 dBi
- 1.7 Cable Loss.....0.15 dB Max.
- 1.8 Polarization.....Linear
- 1.9 Cable.....  $\Phi$ 1.13mm Coaxial Cable; Gray
- 1.10 Connector..... I-PEX MHF Connector

### 2. Physical Properties :

- 2.1 Operating Temp. .... -10 $^{\circ}$ C ~ +60 $^{\circ}$ C
- 2.2 Storage Temp. .... -10 $^{\circ}$ C ~ +70 $^{\circ}$ C

CG-

REV	DATE	DESCRIPTION
X1	02/21-2023	New Issue



GP標籤貼於紙箱側麥左上角(共2PCS)  
 外箱標籤貼於紙箱側麥右上角(共1PCS)  
 成品淨重:XXX± 5%mg

(25 pcs/珍珠棉袋)  
 Packing : 50 pcs/bag

NO	DESCRIPTION	Q'TY	REMARK
5	泡棉雙面背膠 EVA+3M 9448A ; Black	1	T=2mm
4	泡棉雙面背膠 EVA+3M 9448A ; Black	1	T=2mm
3	Connector I-Pex MHF Connector	1	
2	PCB FR4 , 31mil ,1/2 Oz	1	
1	Cable Ø1.13mm Coaxial Cable;Gray灰色	1	L=50mm

CUSTOMER'S SINGATURE	XXX.	±5.0	APPROVED	CUSTOMER: 訊舟		
	XX.	±3.0		PART NO :		
	X.	±1.0	CHECKED	PART NAME: RF Antenna Assembly		
	.X	±0.5		W.Y P/NO : C059-510484-A		
	.XX	±0.2	DRAWING 程淑娟	REV	UNIT	FILE : SRF2023229
				X1	mm	SHEET : 1/1

**M.gear** Wha Yu Group  
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# ***NE1-23001 for 5P and 9P VPN Router***

*Version: **V2.10***

*Released Date: **2023/02/20***

*Prepared By: **David***

*Reviewed By: **Tim Cheng***

# Contents

- Revised History
- Conclusion & Comments
- Specification
- Antenna Placement & Solution
- Test Setup for S-parameter Measurement
- Return Loss Results
- Isolation Results
- Test Setup for Radiation Pattern Measurement
- 2D Radiation Pattern Results

# Revision History

Released Date	Version	Record
2022/09/05	1.00	Antennas first testing report.
2022/10/05	1.01	Antennas first testing report.
2022/10/18	1.02	優化效率 $\geq$ 50%
2023/01/12	2.03	The antenna is designed in housing of 9P.
2023/01/18	2.04	The antenna is designed in housing of 5P.
2023/02/03	2.05	The antenna is designed in housing of 9P.
2023/02/03	2.06	The antenna is designed in housing of 5P.
2023/02/07	2.07	Increases the antenna size of the PCB in housing of 9P.
2023/02/07	2.08	Increases the antenna size of the PCB in housing of 5P.
2023/02/20	2.09	Increases the antenna size of the PCB in housing of 9P.
2023/02/20	2.10	Increases the antenna size of the PCB in housing of 5P.

# Specification

## Requirements of Antenna Design

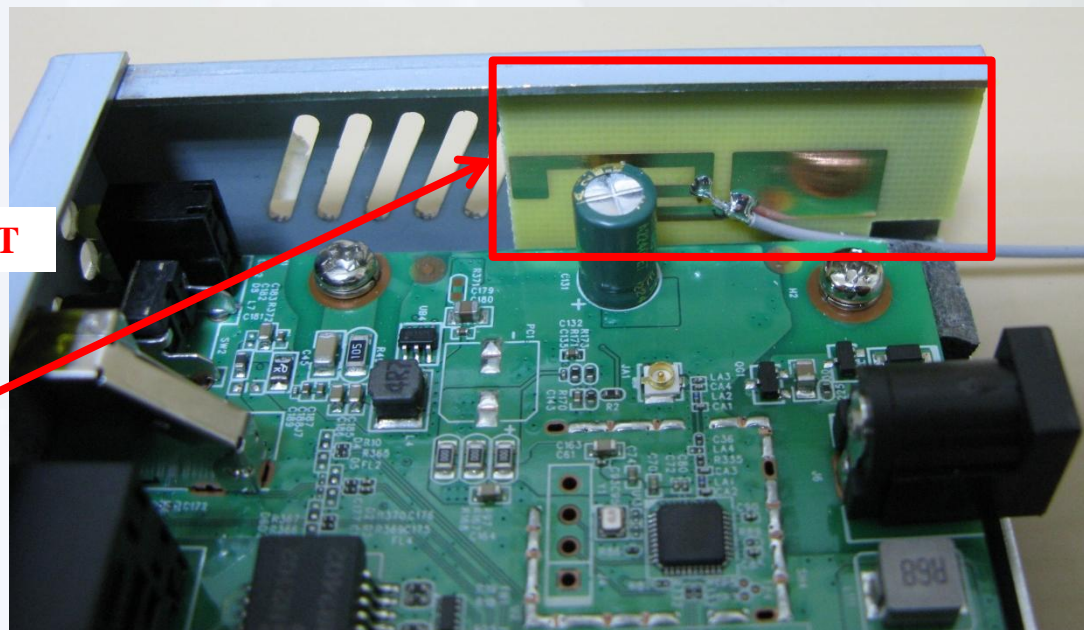
RF Function	Number of ANT	Frequency Band	Remark
BT	1	2400-2500 MHz	

## Requirements of Measurement

Test Item	Specification	Remark
Return loss	> 10 dB	
Efficiency	> 30%	
Peak gain	< 3dBi	
Radiation pattern	Scale: +10 ~ -40dBi, Angle step size: 5 degree	



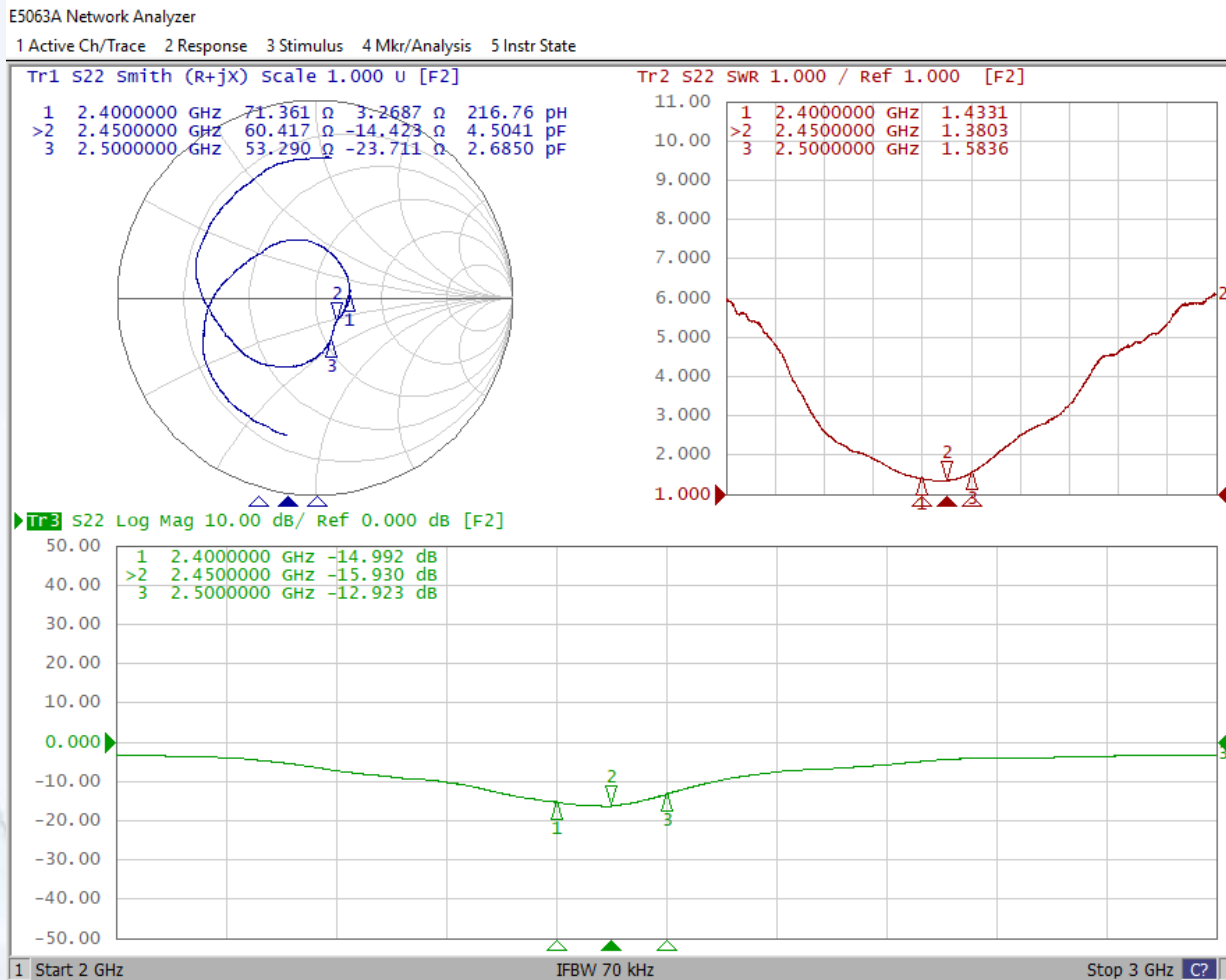
# Antenna Placement & Solution



Antenna	ANT Type	Size (L * W * H)	Cable Length (mm)	Cable Type
BT	PCB ANT	37.7mm*22.8mm*0.8mm	50mm	Φ=1.13 cable and 2mm EVA

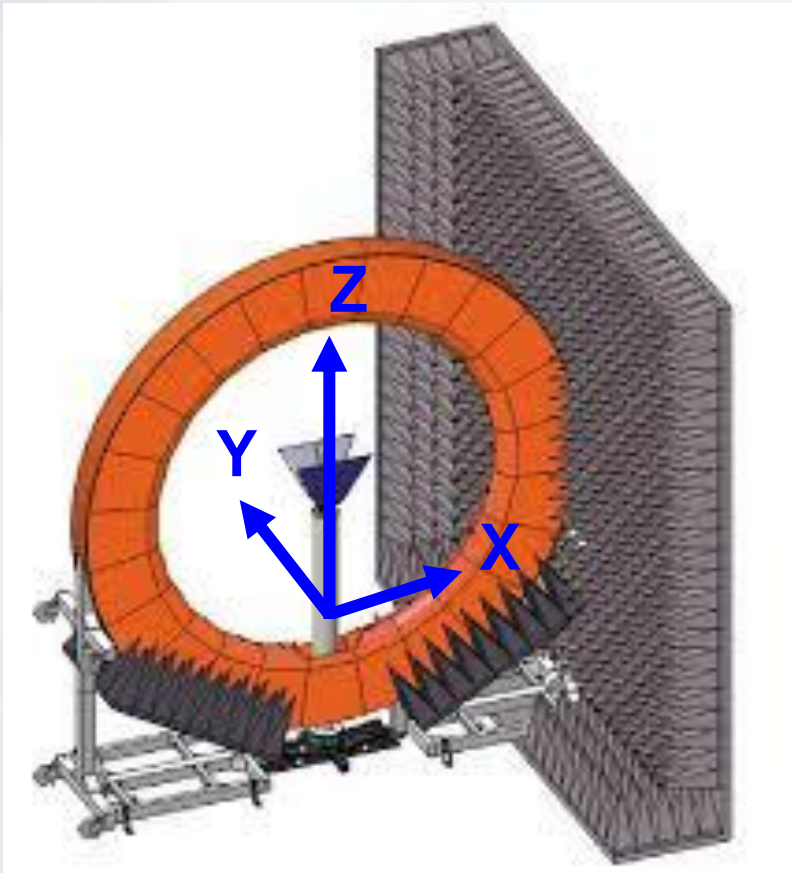
# Return Loss Results

BT

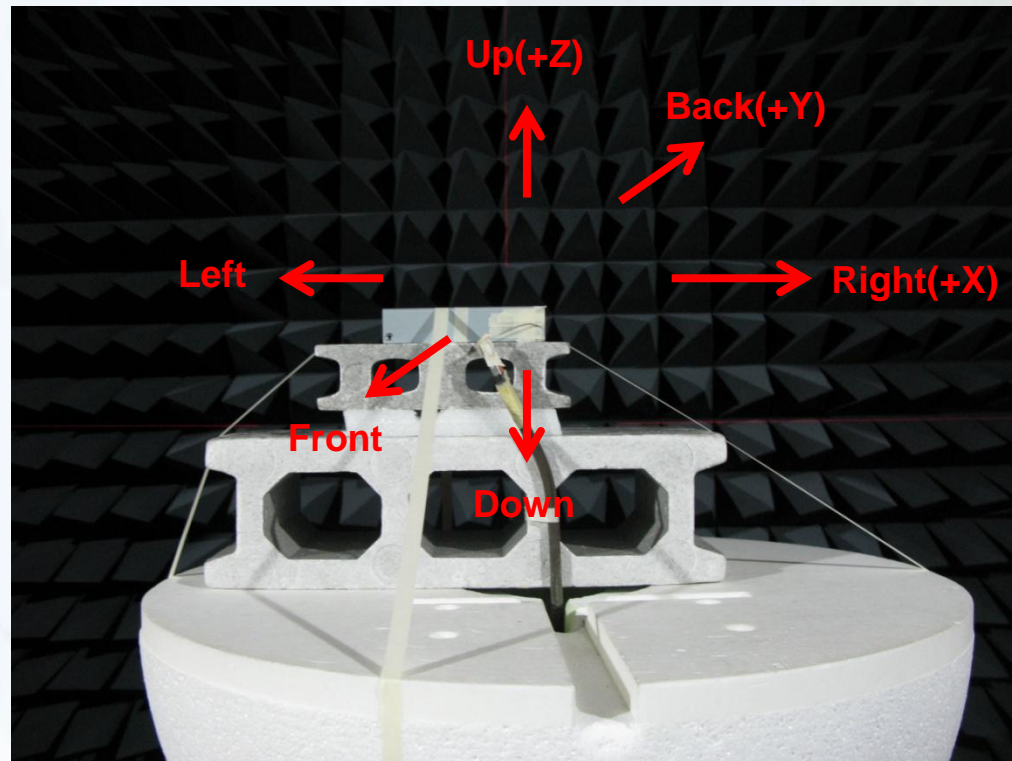


# Test Setup for Radiation Pattern Measurement

## Chamber Information



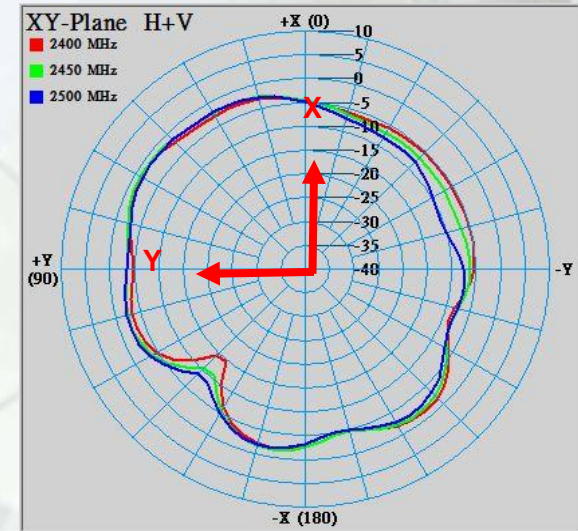
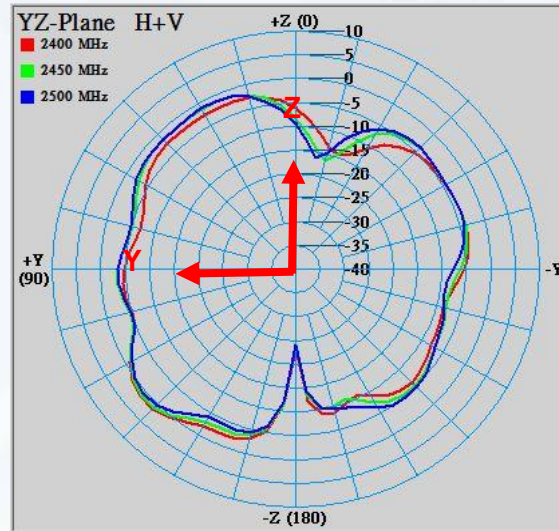
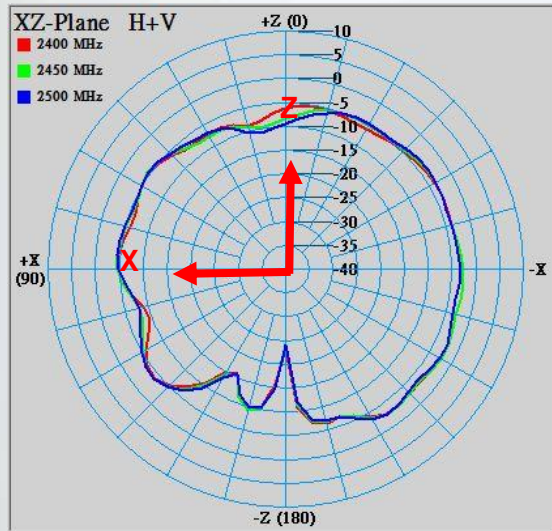
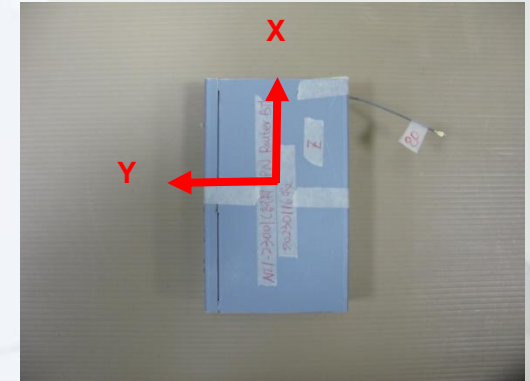
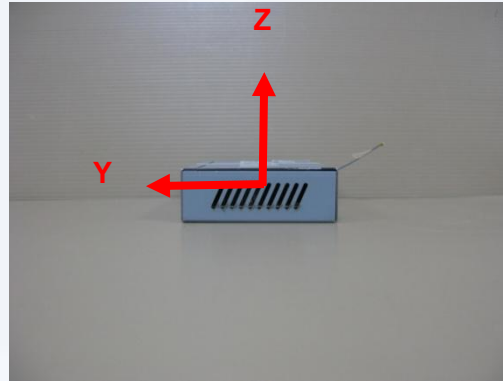
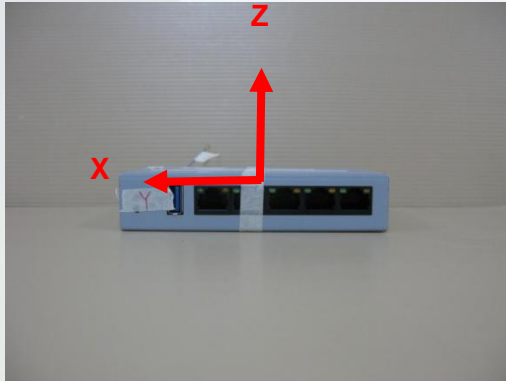
- SATIMO SG-24L Multi-Probe Antenna Measurement System
  - Angle between probes:  $15^\circ$
  - Frequency range: 400 MHz – 8.5 GHz
  - Chamber Room Size: 5m L x 5m W x 5m H





# 2D Radiation Pattern Results

BT



# Results Summary

## Peak gain & Efficiency –BT

	BT	
Frequency (MHz)	Peak Gain (dBi)	Efficiency (%)
2400	2.1	40.2
2450	2.5	41.9
2500	2.4	40.4

# Results Summary

## 2D Peak gain-BT

BT	XZ-Plane	YZ-Plane	XY-Plane
Frequency (MHz)	2D Peak Gain (dBi)	2D Peak Gain (dBi)	2D Peak Gain (dBi)
<b>2400</b>	<b>-2.2</b>	<b>1.6</b>	<b>-1.2</b>
<b>2450</b>	<b>-2.2</b>	<b>1.3</b>	<b>-1.0</b>
<b>2500</b>	<b>-2.4</b>	<b>0.7</b>	<b>-1.4</b>