

(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

譚裕實業地址： No. 326, Sec. 2, Kung Tao 5 Road, Hsin Chu City,
Taiwan, R. O. C.
電話： +886-3-5714225(REP.)
傳真： + 886-3-5713853 · + 886-3-5723600

東莞台霖地址： Hupan Industrial District, Tai Ling Shan Town, Dong
Guan City, Guangdong, China
電話： +86-769-85655858
傳真： +86-769-85655258

確認				客戶確認
製作	審核	核准	業務	
白仁傑 2/23	何國泰 2/23	鄭香廷 2/23		

Contents

<i>Item</i>	<i>Description</i>	<i>Page</i>
1.	規格表	 1
2.	成品圖	 2
3.	測試報告	 3~12

RF Antenna Assembly

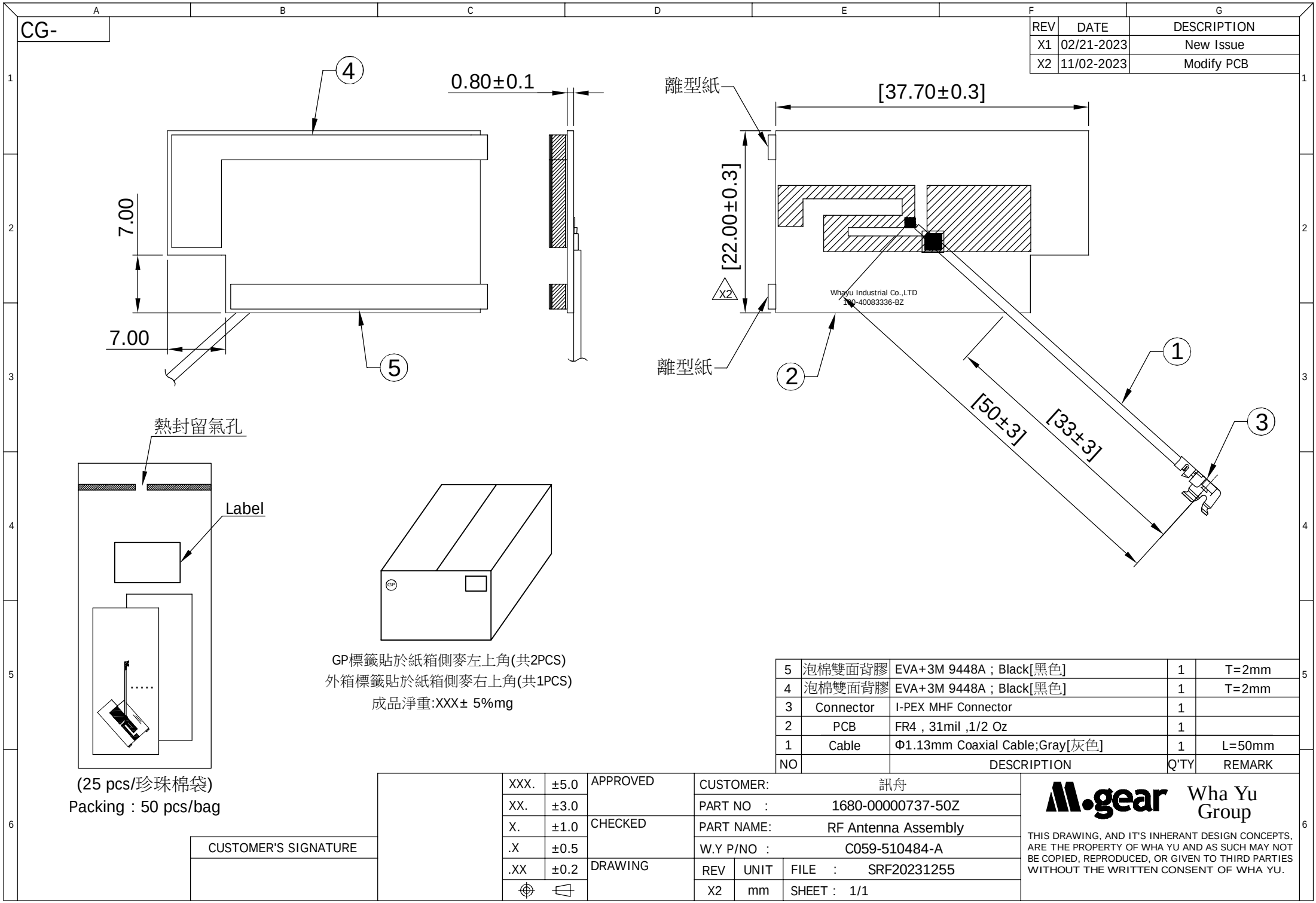
Specification

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

- 1.1 Frequency Range..... 2.4~2.5 GHz
- 1.2 Impedance 50Ω 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 <2.3 dBi
- 1.7 Cable Loss..... 0.15 dB Max.
- 1.8 Polarization..... Linear
- 1.9 Cable..... $\Phi 1.13\text{mm}$ Coaxial Cable; Gray
- 1.10 Connector..... I-PEX MHF Connector

2. Physical Properties :

- 2.1 Operating Temp. -10°C ~ +60°C
- 2.2 Storage Temp. -10°C ~ +70°C



REV	DATE	DESCRIPTION
X1	02/21-2023	New Issue
X2	11/02-2023	Modify PCB

5	泡棉雙面背膠	EVA+3M 9448A ; Black[黑色]	1	T=2mm
4	泡棉雙面背膠	EVA+3M 9448A ; Black[黑色]	1	T=2mm
3	Connector	I-PEX MHF Connector	1	
2	PCB	FR4 , 31mil ,1/2 Oz	1	
1	Cable	Φ1.13mm Coaxial Cable;Gray[灰色]	1	L=50mm
NO		DESCRIPTION	Q'TY	REMARK

CUSTOMER'S SIGNATURE	XXX.	±5.0	APPROVED	CUSTOMER: 訊舟		
	XX.	±3.0		PART NO : 1680-00000737-50Z		
	X.	±1.0		PART NAME: RF Antenna Assembly		
	.X	±0.5	DRAWING	W.Y P/NO : C059-510484-A		
	.XX	±0.2		REV	UNIT	FILE : SRF20231255
	⌀	≡		X2	mm	SHEET : 1/1



Wha Yu Group

THIS DRAWING, AND IT'S INHERANT DESIGN CONCEPTS, ARE THE PROPERTY OF WHA YU AND AS SUCH MAY NOT BE COPIED, REPRODUCED, OR GIVEN TO THIRD PARTIES WITHOUT THE WRITTEN CONSENT OF WHA YU.

NE1-23001 for 9P VPN Router

*Version: **V2.11***

*Released Date: **2023/09/15***

Prepared By: Neal

*Reviewed By: **Tim Cheng***



WHA YU INDUSTRIAL CO., LTD.
TEL : 886-3-5714225 FAX : 886-3-5713853 / 5723600¹
Website : www.whayu.com
E-mail : market@whayu.com

Contents

- Revised History
- Conclusion & Comments
- Specification
- Antenna Placement & Solution
- Test Setup for Radiation Pattern Measurement
- 2D Radiation Pattern Results
- Results Summary

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>=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.
2023/09/15	2.11	The motherboard updates of 9P

Specification

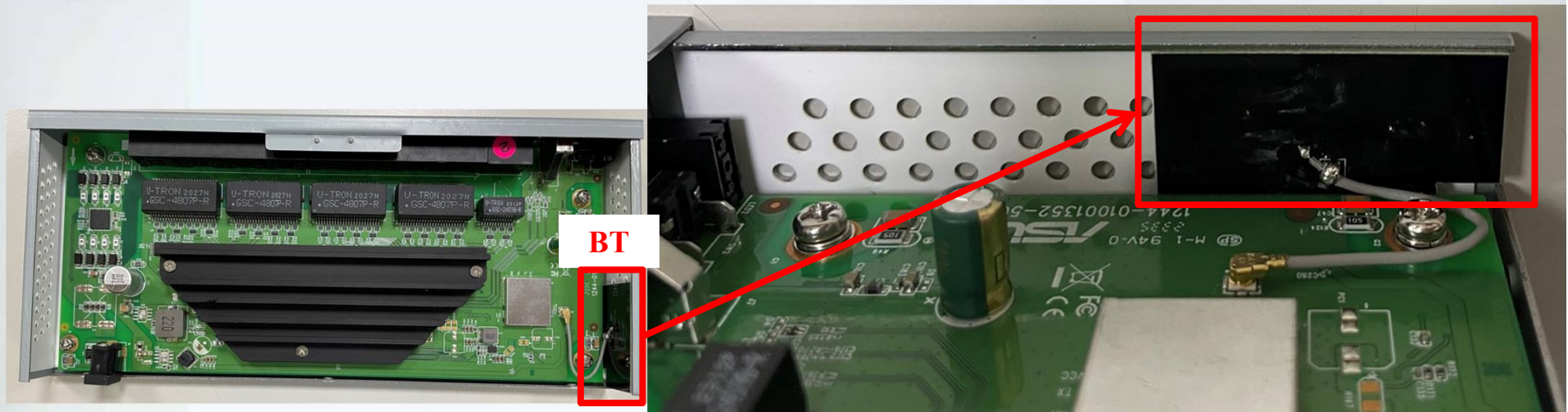
Requirements of Antenna Design

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	< 3 dBi	
Radiation pattern	Scale: +10 ~ -40dBi, Angle step size: 5 degree	

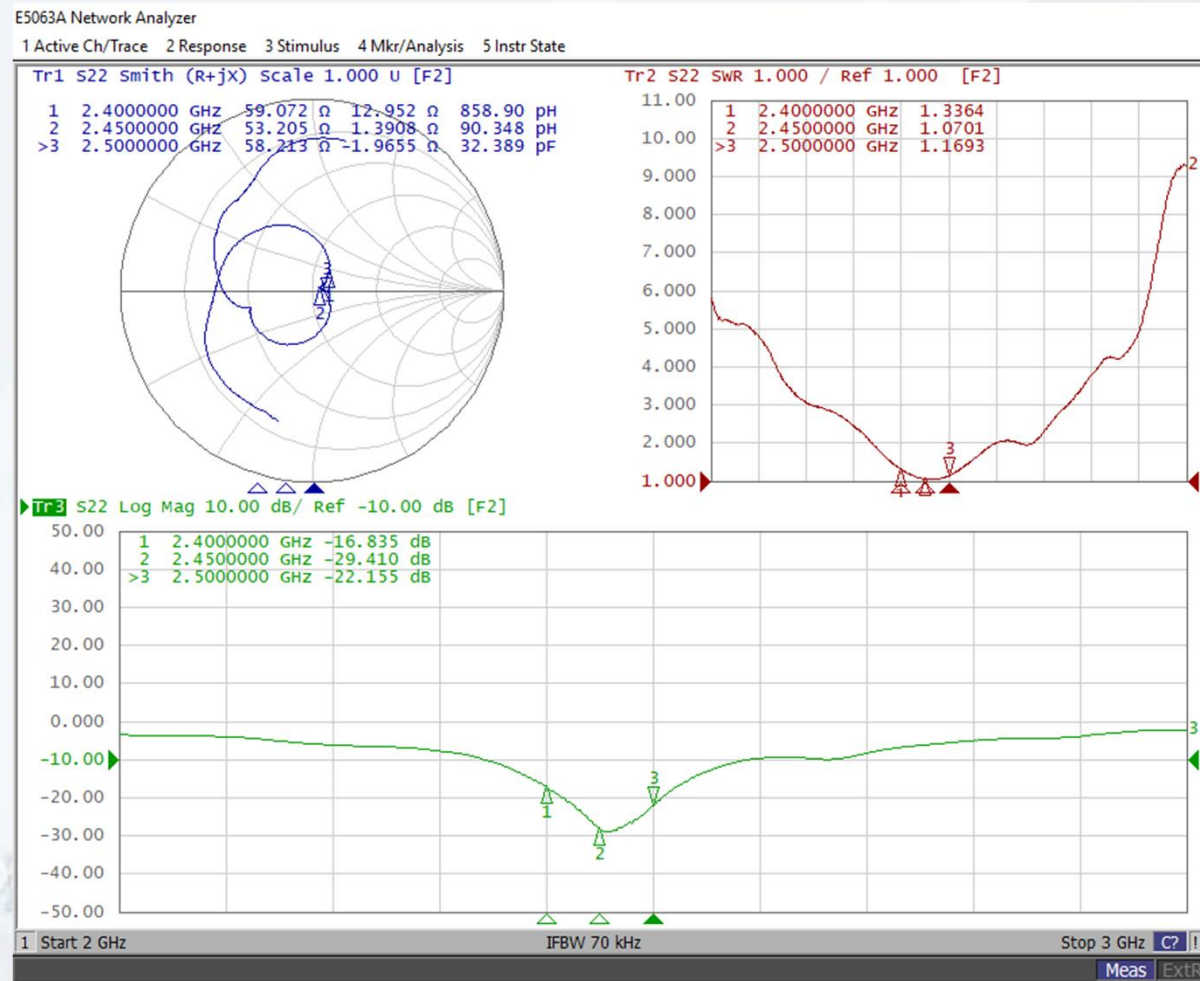
Antenna Placement & Solution



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

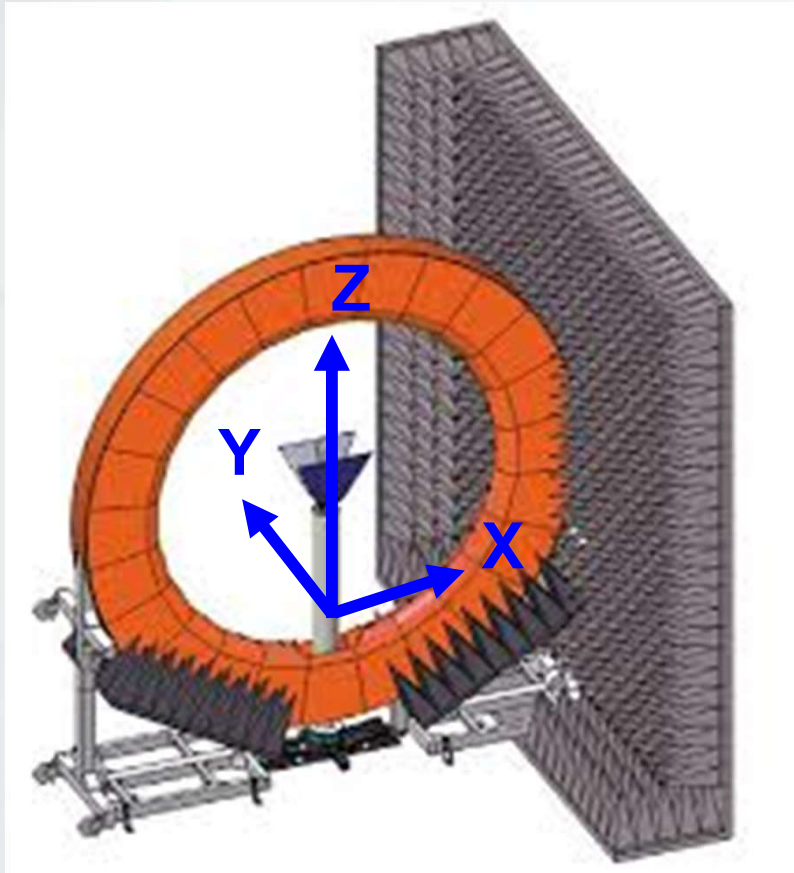
Return Loss Results

BT



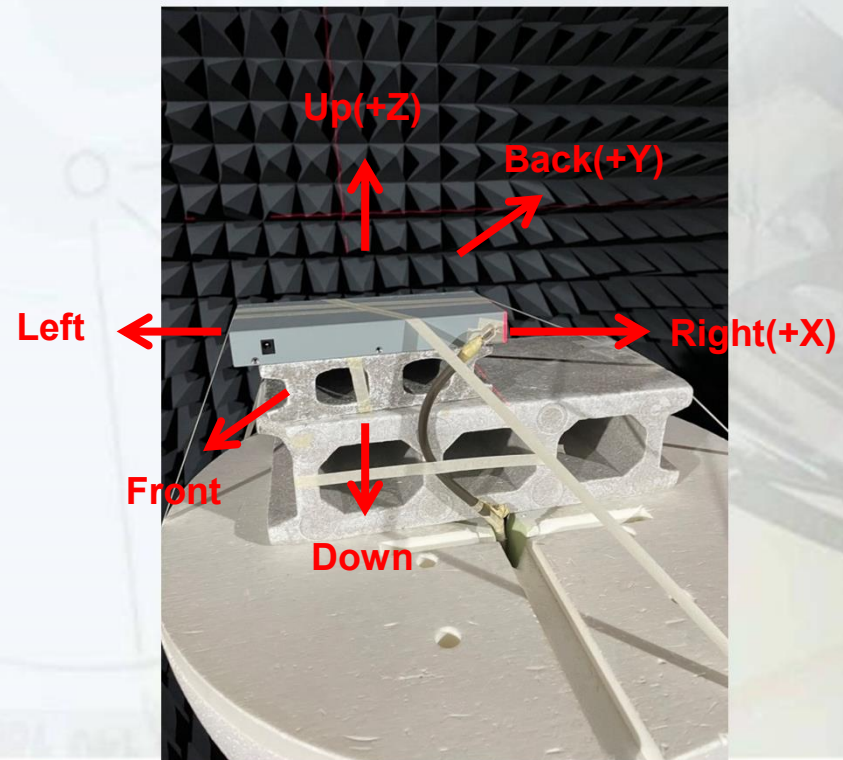
Test Setup for Radiation Pattern Measurement

Chamber Information



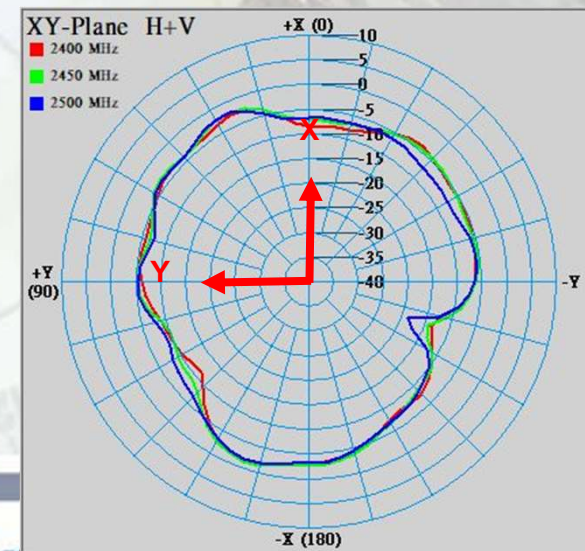
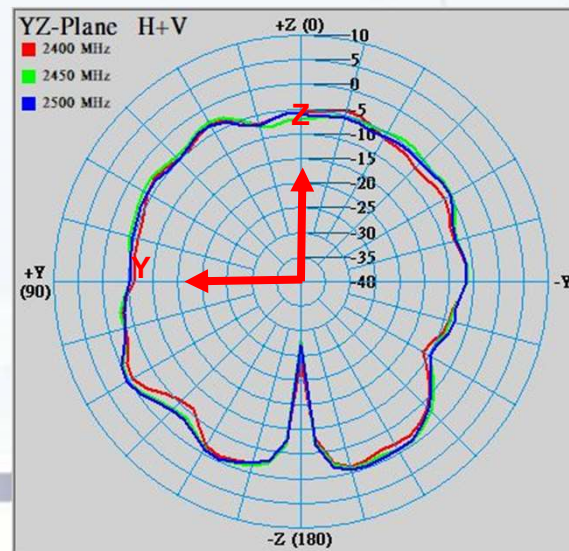
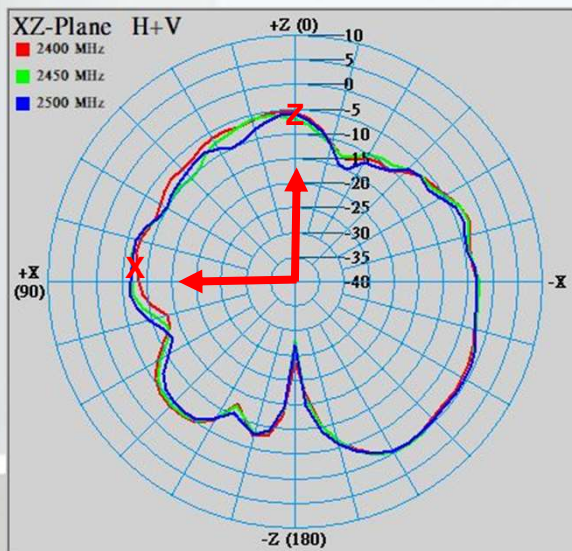
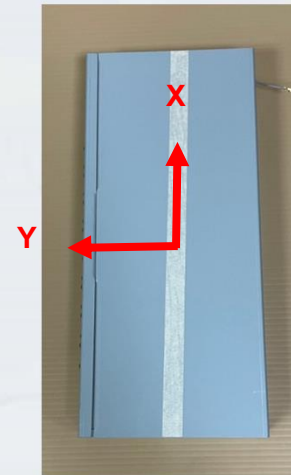
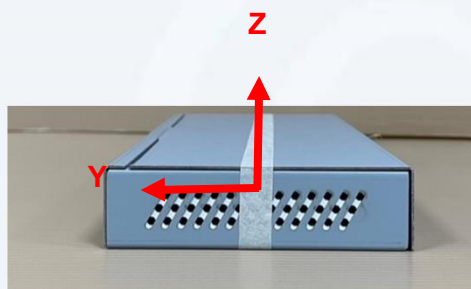
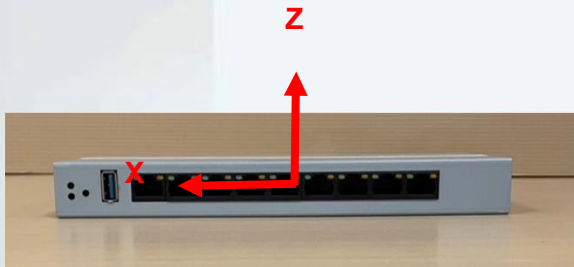
- **SATIMO SG-24L Multi-Probe Antenna Measurement System**

- Angle between probes: 15°
- 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

3D Total Peak gain & Efficiency –BT

	BT	
Frequency (MHz)	Peak Gain (dBi)	Efficiency (%)
2400	2.9	43.8
2450	2.5	44.5
2500	1.6	42.9

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)
2400	0.3	-0.6	-1.3
2450	0.4	0.4	-1.2
2500	0.0	0.7	-1.7