



WHA YU INDUSTRIAL CO., LTD.(HEAD OFFICE)



DONGGUAN AEON TECH CO.,LTD.(CHINA)

## SPECIFICATION FOR APPROVAL

CUSTOMER: 振曜

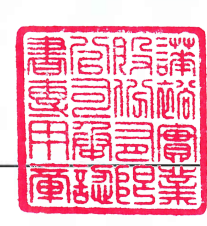
PART NAME: RF Antennna Assembly

PART NO.:

REVISION:

W. Y. P/NO.: C020-510083-A(SRF20242181)

REV.: X1

|                  | MANUFACTURER<br>SIGNATURE                                                                      | CUSTOMER<br>SIGNATURE                                                                |
|------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| APPROVED<br>BY : | <br>Stone    |  |
| DATE :           | <br>12/16/24 |                                                                                      |

### WHA YU GROUP

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# RF Antenna Cable Assembly

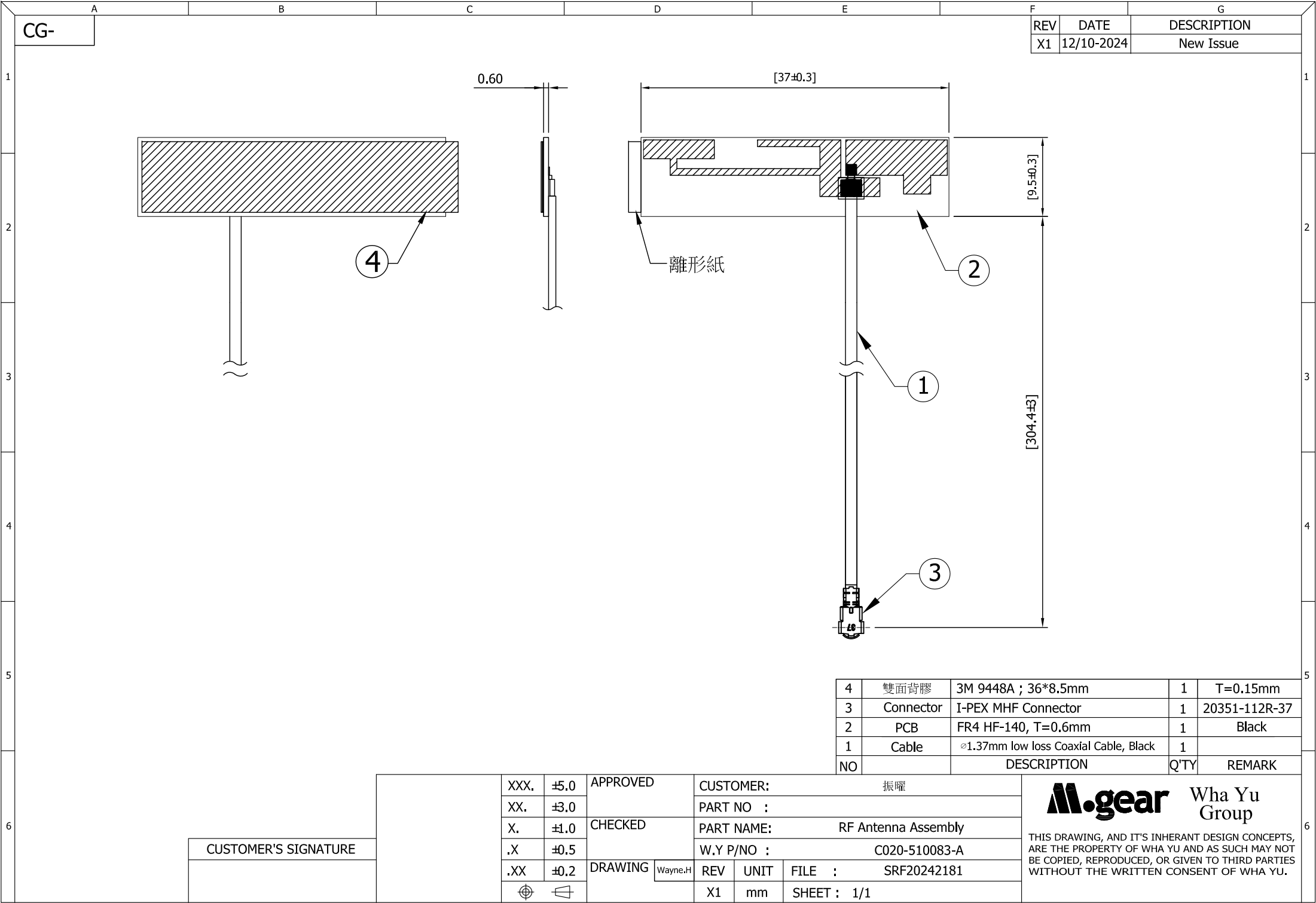
## Specification Without housing (with Cable Loss)

### 1. Electrical Properties :

- 1.1 Frequency Range.....2.4 ~ 2.5 , 5.15~5.85 GHz
- 1.2 Impedance .....50Ω Nominal
- 1.3 VSWR ..... 4.7 :1Max.
- 1.4 Return Loss..... 3.76 dB Min.
- 1.5 Radiation ..... Omni-directional
- 1.6 Peak Gain..... 2.4 ~ 2.5GHz < 1.36dBi  
5.15 ~ 5.85 GHz < 4.94dBi
- 1.7 Cable Loss..... 1.2
- 1.8 Polarization..... Linear
- 1.9 Cable..... 1.37mm Normal Coaxial Cable
- 1.10 Connector..... MHF
- 1.11 Core.....N/A

### 2. Physical Properties :

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



| REV |  | DATE       | DESCRIPTION |
|-----|--|------------|-------------|
| X1  |  | 12/10-2024 | New Issue   |

|    |             |                                       |      |               |
|----|-------------|---------------------------------------|------|---------------|
| 4  | 雙面背膠        | 3M 9448A ; 36*8.5mm                   | 1    | T=0.15mm      |
| 3  | Connector   | I-PEX MHF Connector                   | 1    | 20351-112R-37 |
| 2  | PCB         | FR4 HF-140, T=0.6mm                   | 1    | Black         |
| 1  | Cable       | ∅1.37mm low loss Coaxial Cable, Black | 1    |               |
| NO | DESCRIPTION |                                       | Q'TY | REMARK        |

|                      |      |      |          |                                |      |             |
|----------------------|------|------|----------|--------------------------------|------|-------------|
| CUSTOMER'S SIGNATURE | XXX. | ±5.0 | APPROVED | CUSTOMER: 振曜                   |      |             |
|                      | XX.  | ±3.0 |          | PART NO :                      |      |             |
|                      | X.   | ±1.0 | CHECKED  | PART NAME: RF Antenna Assembly |      |             |
|                      | .X   | ±0.5 |          | W.Y P/NO : C020-510083-A       |      |             |
|                      | .XX  | ±0.2 | DRAWING  | Wayne.H                        | REV  | UNIT        |
|                      |      |      |          |                                | X1   | mm          |
|                      |      |      |          |                                | FILE | SHEET : 1/1 |



Wha Yu Group

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# *C020-510083-A*

## *Antenna Test Report*

*Version: V 1.01*

*Released Date: 2025/02/26*

*Prepared By: Leo*

*Reviewed By: Stone*



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- Revised History
- Specification
- Antenna Placement & Solution
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- Return Loss Results
- Test Setup for Radiation Pattern Measurement
- 2D Radiation Pattern Results
- Results Summary (return loss, peak gain, efficiency )

# Revision History

| Released Date | Version | Record                 |
|---------------|---------|------------------------|
| 2025/02/26    | 1.01    | Antenna Testing Report |
|               |         |                        |
|               |         |                        |
|               |         |                        |
|               |         |                        |
|               |         |                        |
|               |         |                        |

# Specification

## Requirements of Antenna Design

| RF Function | Number of ANT | Frequency Band           | Remark |
|-------------|---------------|--------------------------|--------|
| DB          | ANT           | 2400~2450 /5150~5850 MHz |        |
|             |               |                          |        |

## Requirements of Measurement

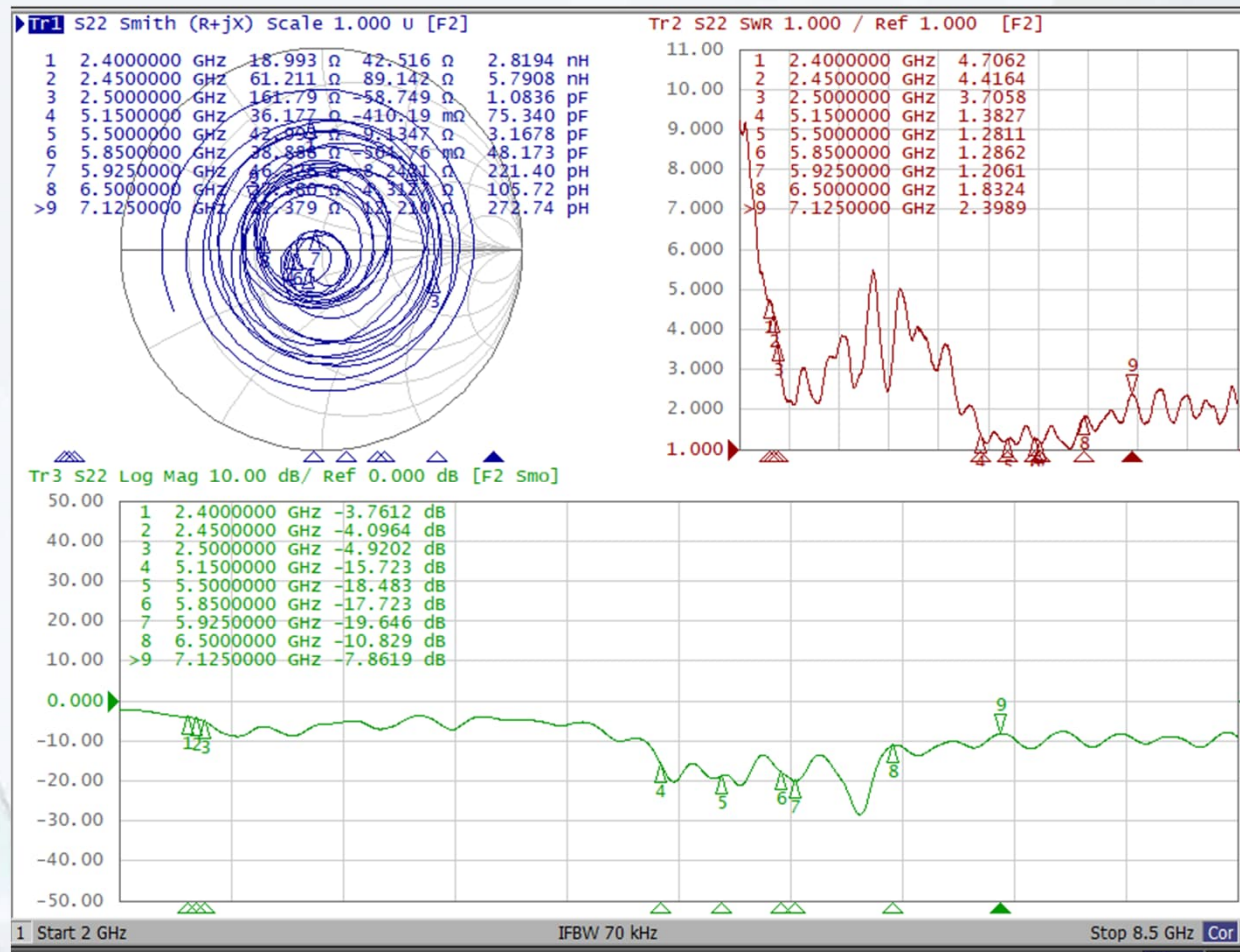
| Test Item         | Specification                                  | Remark |
|-------------------|------------------------------------------------|--------|
| Return Loss       | N/A                                            |        |
| Peak Gain         | N/A                                            |        |
| Efficiency        | N/A                                            |        |
| Radiation pattern | Scale: +10 ~ -40dBi, Angle step size: 5 degree |        |

# Antenna Placement & Solution



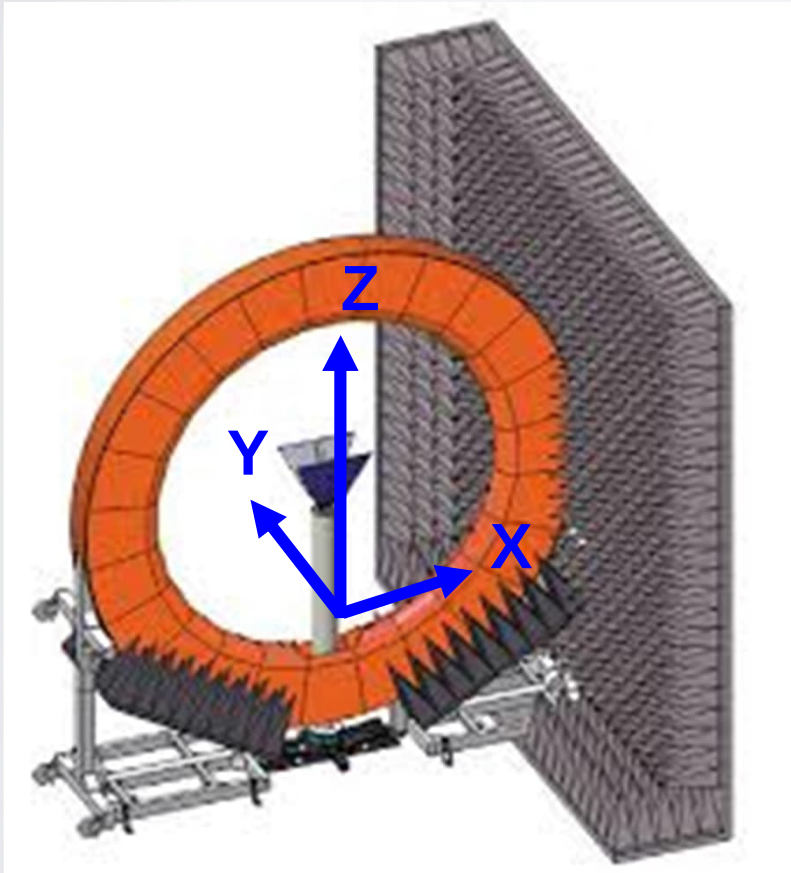
# Return Loss Results

Antenna (Criterion:>10 dB)



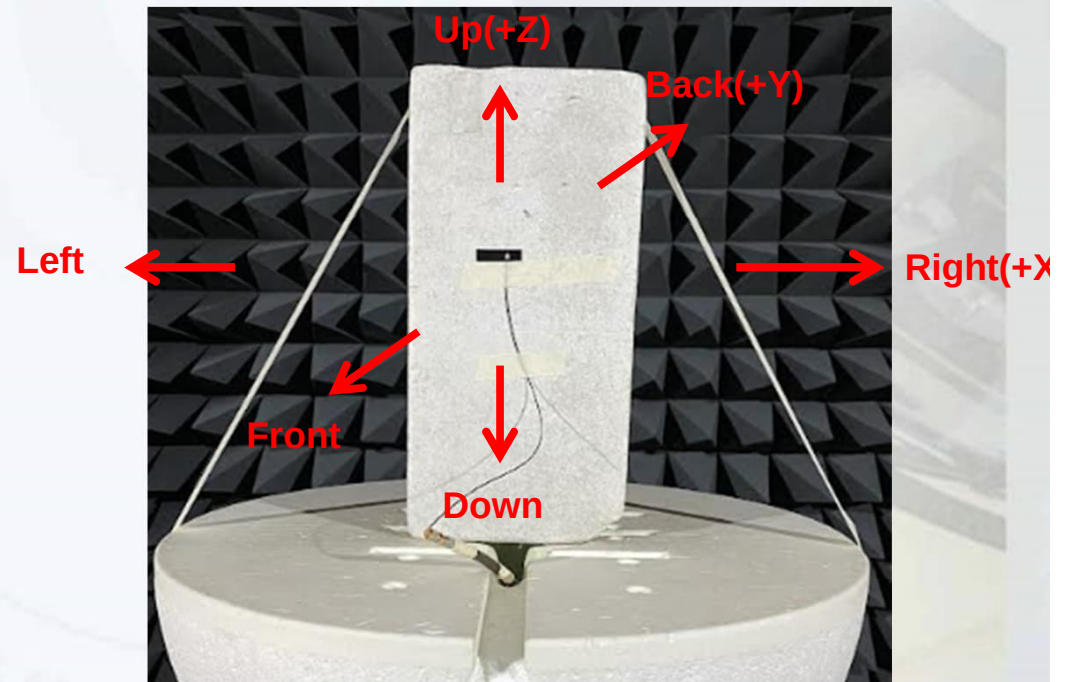
# Test Setup for Radiation Pattern Measurement

## Chamber Information



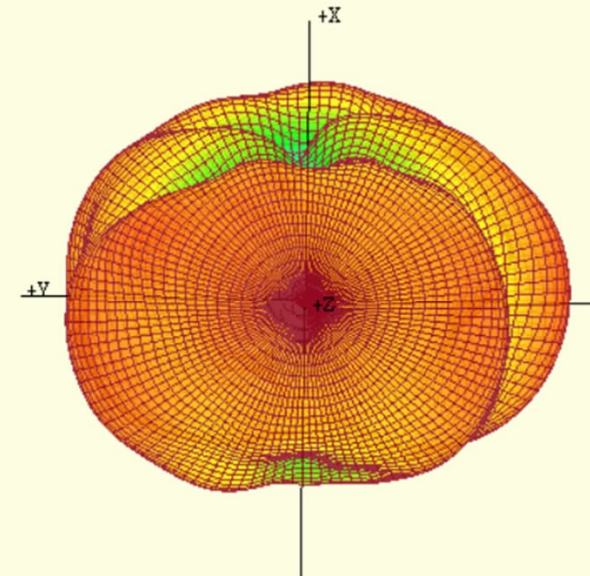
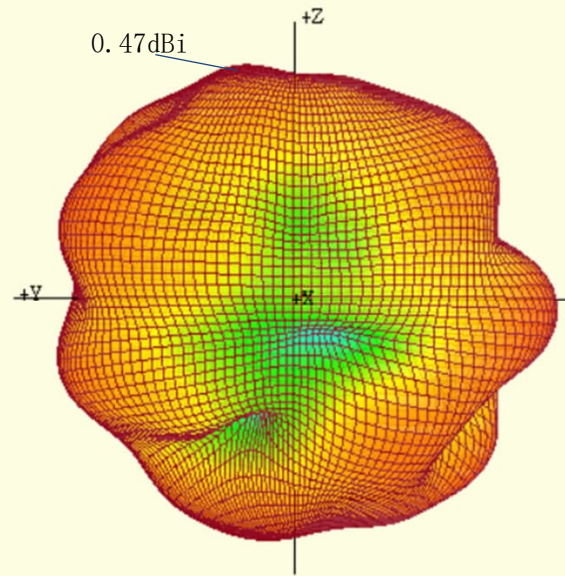
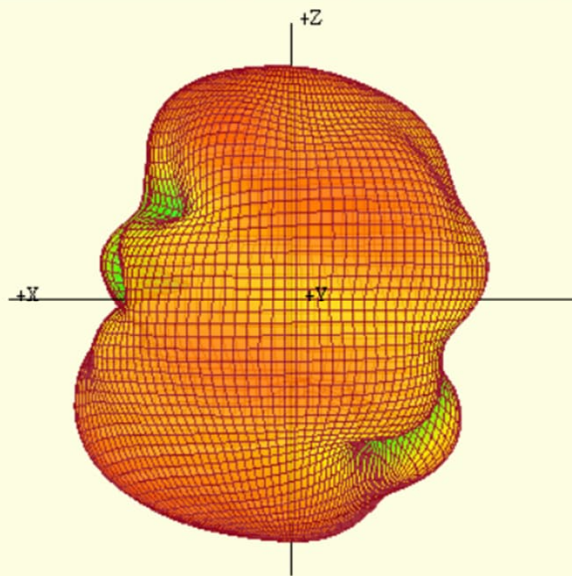
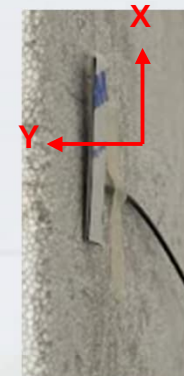
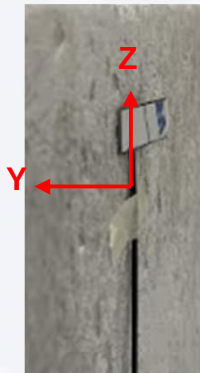
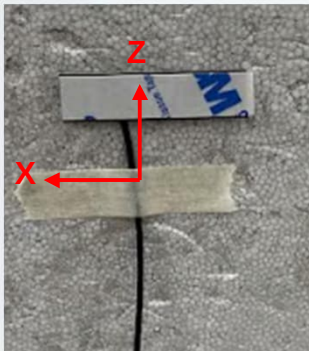
- **SATIMO SG-24L Multi-Probe Antenna Measurement System**

- Angle between probes: 15°
- Frequency range: 400 MHz – 8.5 GHz
- Chamber Room Size: 5m L x 5m W x 5m H



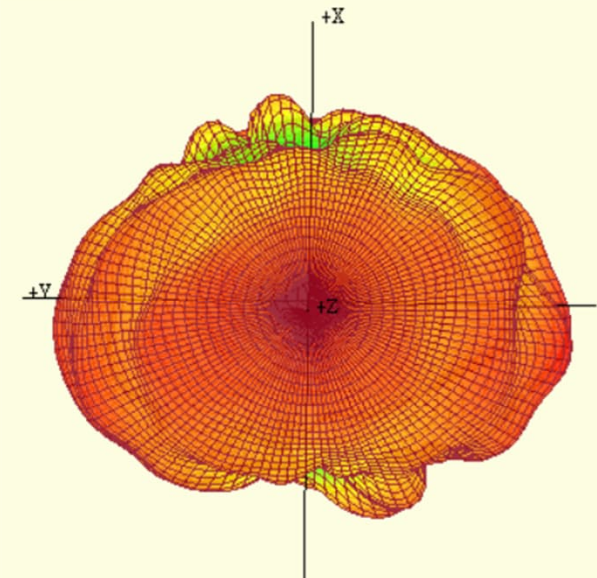
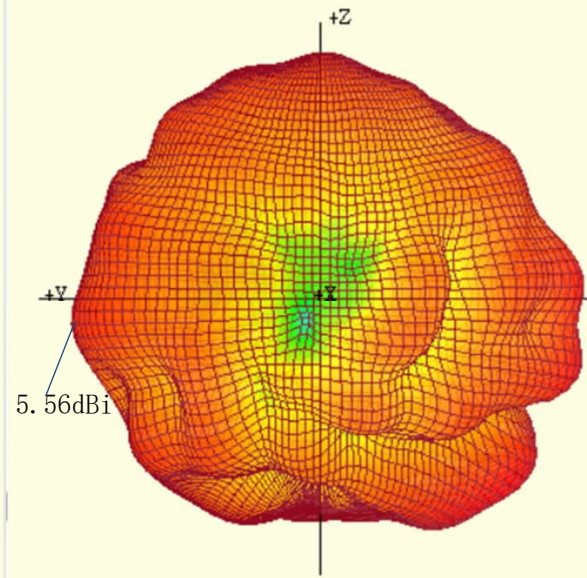
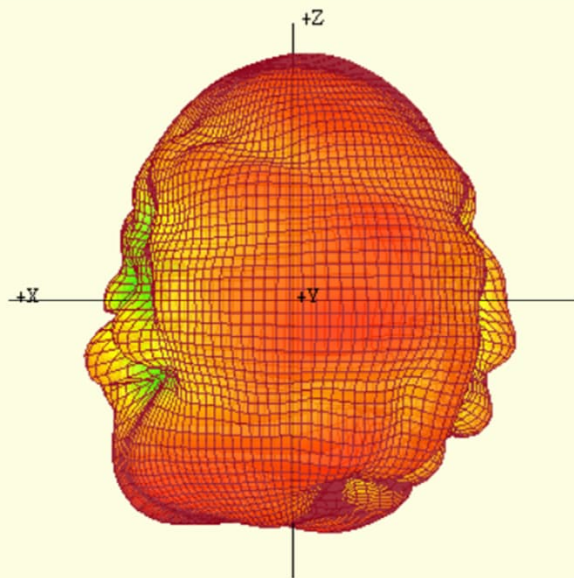
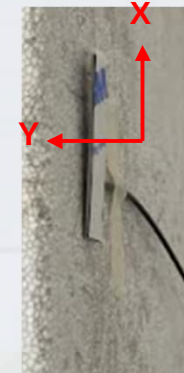
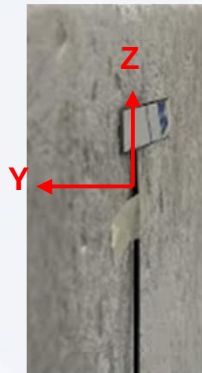
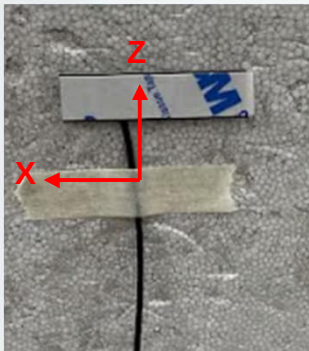
# 3D Radiation Pattern Results

2450MHz



# 3D Radiation Pattern Results

5725MHz



# Results Summary

## Return Loss (Criterion: 10dB)

| Frequency (MHz) | Antenna |
|-----------------|---------|
| 2400            | 3       |
| 2450            | 4       |
| 2500            | 4       |
| 5150            | 15      |
| 5500            | 18      |
| 5850            | 17      |

# Results Summary

## Peak gain & Efficiency

| Frequency (MHz) | Efficiency (%) | 3D Peak Gain (dBi) |
|-----------------|----------------|--------------------|
| 2400            | 36             | -0.56              |
| 2450            | 33             | 0.47               |
| 2500            | 38             | 1.36               |
| 5150            | 71             | 3.69               |
| 5250            | 68             | 4.36               |
| 5350            | 70             | 4.89               |
| 5475            | 70             | 4.47               |
| 5600            | 66             | 4.78               |
| 5725            | 60             | 4.94               |
| 5750            | 61             | 5.56               |
| 5825            | 61             | 4.76               |
| 5850            | 64             | 4.81               |