

# Antenna Specification Sheet

## SPECIFICATION FOR APPROVAL

PRODUCT NAME:

2.4G W95 White External Antenna; 1.13 Black Cable (L=260 mm + Terminal)

UB                      P/N:                      UB02C260W3D5478A                      REV: B

### Version History:

| edition | Reviser    | date              | Revision History          |
|---------|------------|-------------------|---------------------------|
| V-A     | Xu Kangjun | September 6, 2024 | first draft               |
| V-B     | Xu Kangjun | January 2, 2025   | Change Plastic Card Point |
|         |            |                   |                           |
|         |            |                   |                           |
|         |            |                   |                           |
|         |            |                   |                           |

|                 |                     |                  |
|-----------------|---------------------|------------------|
|                 | <b>MANUFACTURER</b> | <b>CUSTOMER</b>  |
|                 | <b>SIGNATURE</b>    | <b>SIGNATURE</b> |
| <b>CHECKED</b>  |                     |                  |
| <b>BY:</b>      | Xu Kangjun          |                  |
| <b>APPROVED</b> |                     |                  |
| <b>BY:</b>      | Xiong Wenqiang      |                  |
| <b>DATE:</b>    | 2025/01/02          |                  |

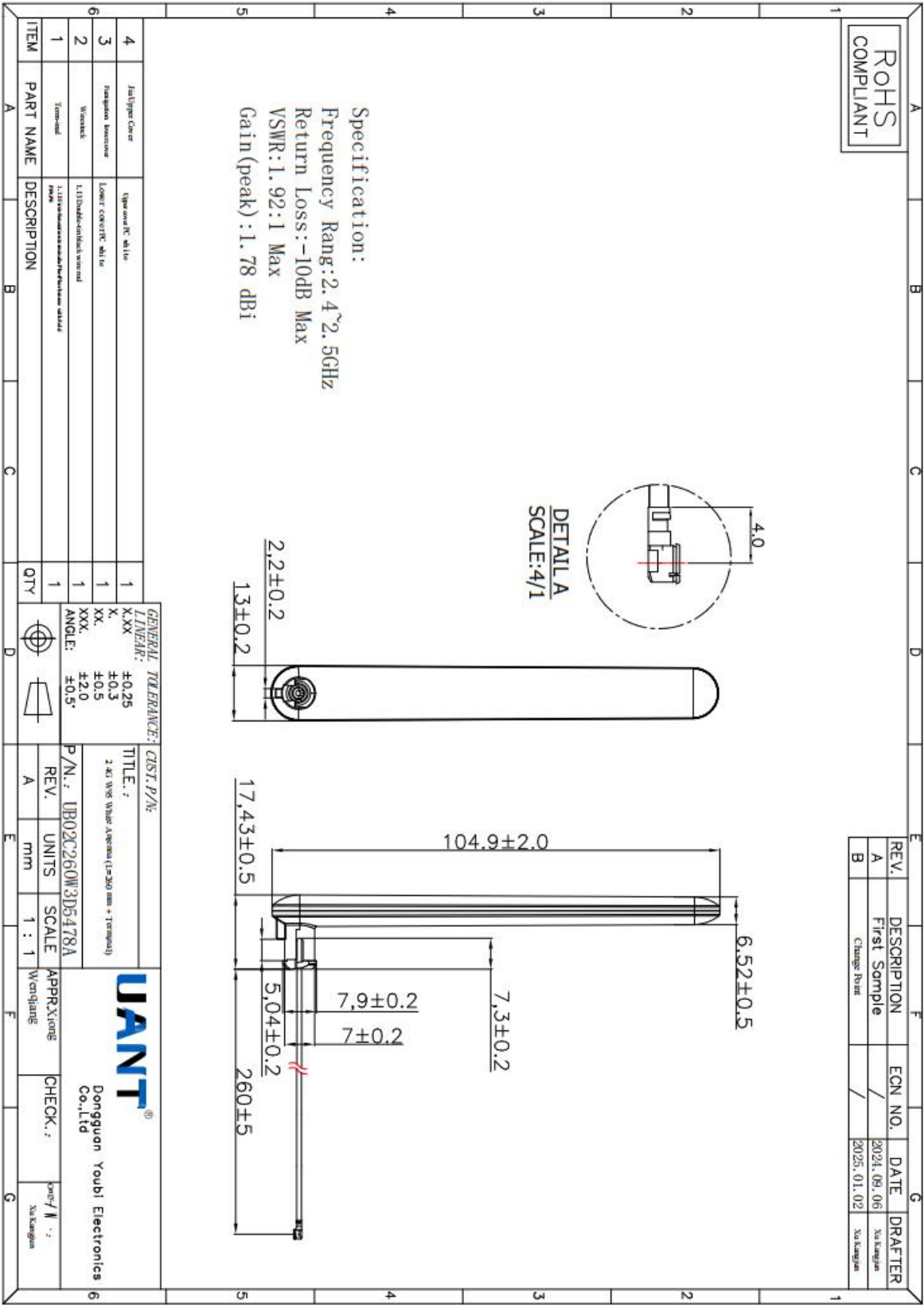
## catalogue

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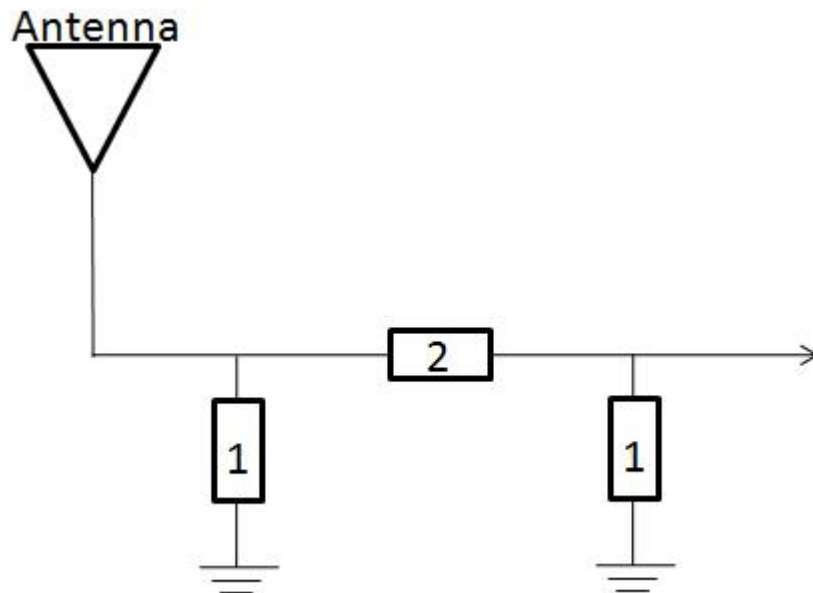
## 1 Specifications Table

| Product Main Specifications  |                                            |
|------------------------------|--------------------------------------------|
| Internal Model               |                                            |
| frequency range              | 2.4 GHz antenna (2400–2500 MHz)            |
| type                         | Symmetric dipole                           |
| technology                   | PCB                                        |
| size                         | 104.9*12.92*17.43mm                        |
| surface                      | Non-bending white rubber tape              |
| characteristic impedance     | 50Ω                                        |
| polarization                 | linear polarization                        |
| voltage standing-wave ratio  | Less than 3                                |
| axial ratio                  | uninvolved                                 |
| productiveness               | 64~66%                                     |
| gain                         | 1.78dbi                                    |
| directional diagram          | omnidirectional antenna                    |
| Active input                 | passive                                    |
| Case material                | PC                                         |
| Connection Method            | IPEX Generation 1                          |
| Feeder specification         | 1.13 Line                                  |
| Feeder loss                  | 0.5dB·m-1@1GHz, 1dB·m-1@3GHz, 3dB·m-1@6GHz |
| power capacity               | 1W                                         |
| working temperature          | -20~70℃                                    |
| Storage Temperature          | -20~70℃                                    |
| classification of waterproof | not have                                   |
| Wind Resistance Rating       | not have                                   |
| Salt spray rating            | uninvolved                                 |

2 Product 2D Diagram



### 3 Matching Circuits



| System matching circuit components |             |                   |
|------------------------------------|-------------|-------------------|
| position                           | description | common difference |
| 1                                  | -           | -                 |
| 2                                  | $0\Omega$   | -                 |
| 3                                  | -           | -                 |

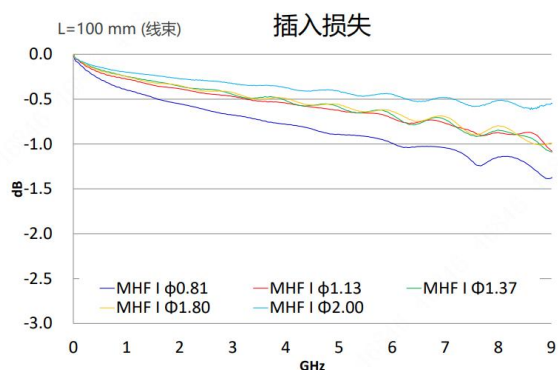
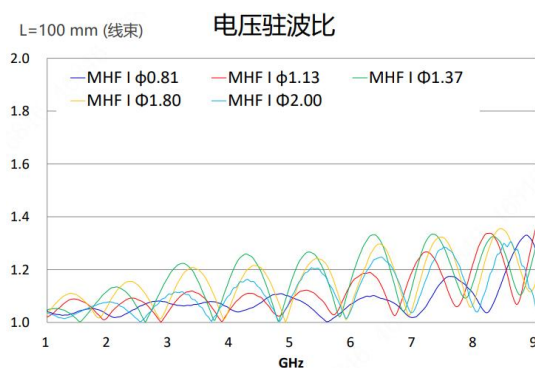
## 4 Key Material Description

### IPEX Connector

#### 4.1.1 Product Specifications

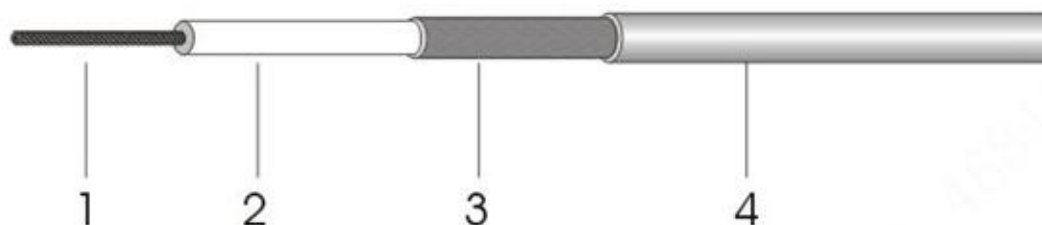
|                          |           |                              |            |
|--------------------------|-----------|------------------------------|------------|
| Mated Height (mm max.)   |           | (1) 2.5 (2) 3.0              |            |
| Rece. SMT Size (mm)      |           | 3.1 x 3.0                    |            |
| Applicable Frequency     |           | Dc ~ 9 GHz                   |            |
| Characteristic Impedance |           | 50 ohm                       |            |
| VSWR<br>(L=100 mm )      | Connector | PLUG                         | RECEPTACLE |
|                          | DC~3 GHz  | 1.3 max.                     | 1.3max.    |
|                          | 3~6 GHz   | 1.5 max.                     | 1.4max.    |
|                          | 6~9 GHz   | (1) 1.9 max.<br>(2) 1.6 max. | 1.8max.    |

#### 4.1.2 Electrical Performance



## 1.13 mm coaxial cable

### 4.2.1 Structure



### 4.2.2 Structural Parameters

| project               | material                          | diameter (mm) |
|-----------------------|-----------------------------------|---------------|
| 1. Inner conductor    | Tin-plated copper wire            | 7X0.08        |
| 2. Insulator          | Polytetrafluoroethylene (FEP)     | 0.68          |
| 3. External conductor | Tin-plated copper wire<br>weaving | Nom0.88       |
| 4. Protective Sheath  | Polytetrafluoroethylene (FEP)     | 1.13          |

### 4.2.3 Electrical Performance Parameters

|                                  |      |
|----------------------------------|------|
| electric capacity(pF/m)          | 95.6 |
| impedance(ohm)                   | 50   |
| transmission speed(%)            | 90   |
| Operating frequency (GHz)        | 6.0  |
| Maximum operating voltage (Vrms) | 1000 |

### 4.2.4 Mechanical and Environmental Performance

|                                  |             |
|----------------------------------|-------------|
| Operating temperature range (°C) | -55 to +200 |
| Minimum bending radius (mm)      | 4           |
| ROHSEnvironmental protection     | accord with |

### 4.2.5 damping

| frequency(GHz) | damping (dB/m) |
|----------------|----------------|
| 1.0            | 2.3            |
| 2.0            | 3.1            |
| 3.0            | 3.9            |
| 4.0            | 4.6            |
| 5.0            | 5.1            |
| 6.0            | 5.8            |

## 5 Performance Testing Report

### 5.1 Testing Procedure

| name                         | parameter                   | method                                                            | Standard Number        |
|------------------------------|-----------------------------|-------------------------------------------------------------------|------------------------|
| Mobile communication antenna | voltage standing-wave ratio | General Technical Specification for Mobile Communication Antennas | GB/T 9410-2008         |
|                              | antenna gain                |                                                                   |                        |
|                              | directional diagram         |                                                                   |                        |
| antenna performance          | radiation gain              | IEEE Antenna Standard Test Procedure                              | ANSI/IEEE Std 149-1979 |

### 5.2 Equipment List

| device name                | manufacturer  | model  | serial number  | Calibration Date | effective data |
|----------------------------|---------------|--------|----------------|------------------|----------------|
| Network Analyzer           | Agilent       | E5071C | MY46315996     | 2024.08.20       | 2025.08.19     |
| Radio Communication Tester | ROHDE&SCHWARZ | CMW500 | 0002K50-100844 | 2024.08.20       | 2025.08.19     |
|                            |               |        |                |                  |                |
|                            |               |        |                |                  |                |

**24** 天线  
同时测试

满足远场测试距离要求  
提高测量精度

可以方便的放置待测物  
可直接放置头手

多模式触发同步触发器

Probe Array Driver

无次数限制的射频开关阵列  
只需定期校准即可

Electrical Trigger

E-delay Switch

Phase Shifter

Control HUB

多仪器切换开关阵列  
稳定和可追溯的测量结果

Communication UL/DL Switch

Control PC

Azimuth Driver

多模式测量天线  
可切换不同极化特性以及不同相位特性。

Test Capability:

Passive

- Gain
- Efficiency
- Directivity
- Hemispherical
- Beam Width

TRP/TIS

- GSM
- CDMA
- WCDMA
- TD-SCDMA
- LTE-TDD/FDD
- WiFi (802.11abgnac)

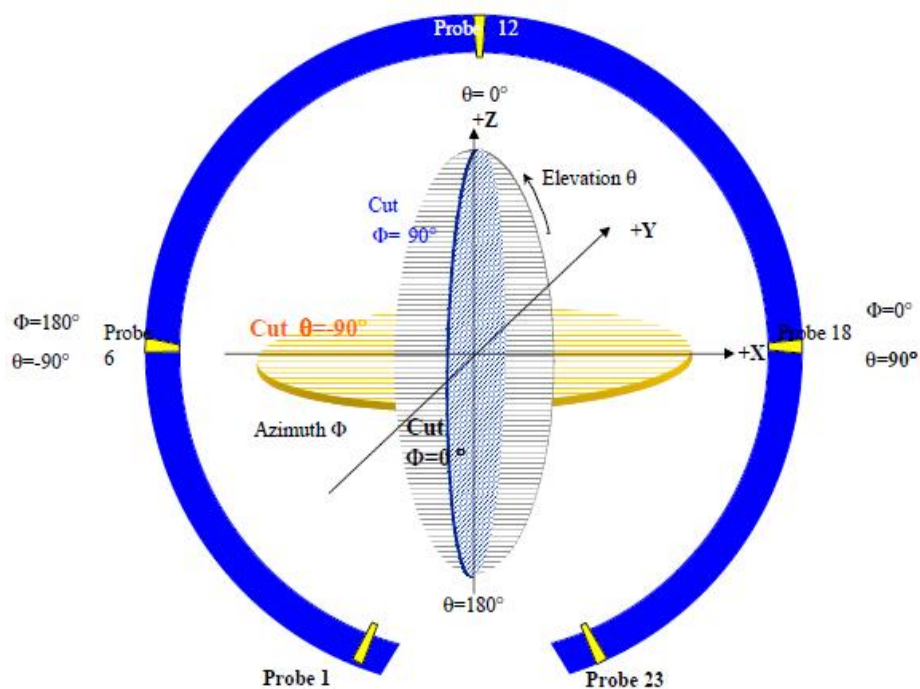
CMW500(LTE)

5071(Passive)

支持多个仪器扩展使用

## 5.4 Passive Testing

### 5.4.1 Equipment Layout Diagram



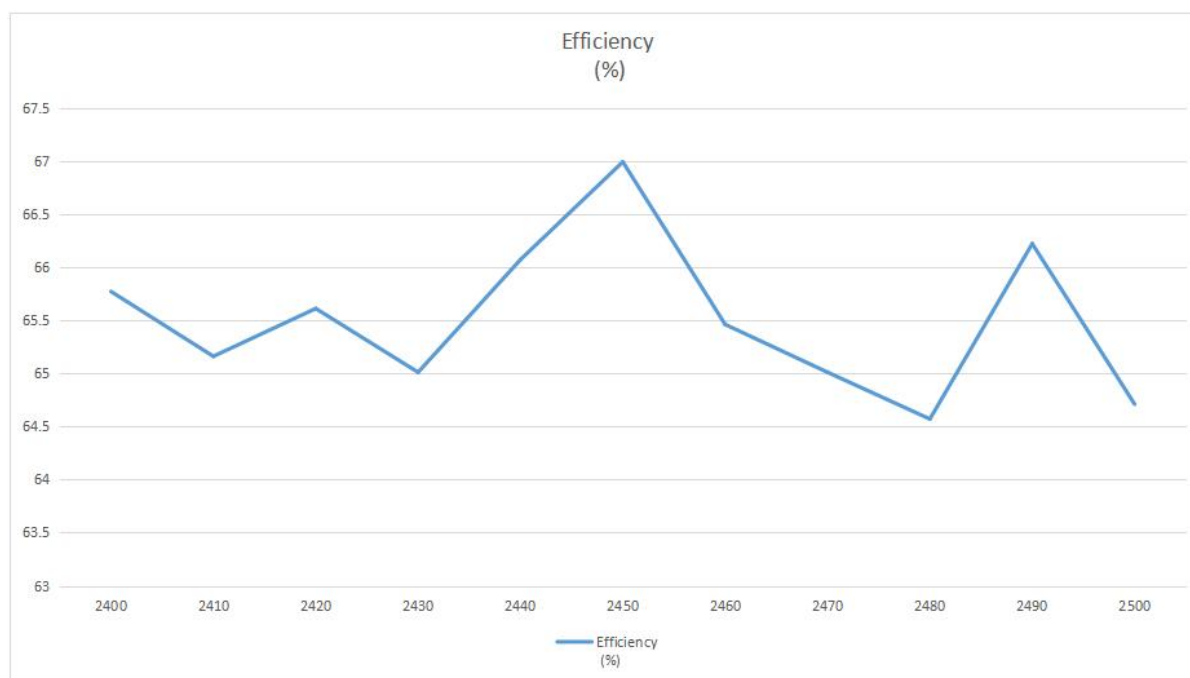
## 5.4.2 Return Loss & Standing Wave Ratio



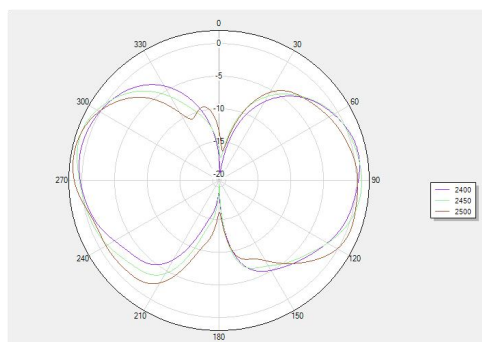
|                 |        |        |        |
|-----------------|--------|--------|--------|
| frequency(MHz)  | 2400   | 2450   | 2500   |
| return loss(dB) | -24.30 | -27.34 | -21.14 |
| VSWR            | 1.12   | 1.08   | 1.19   |

### 5.4.3 Whole-Unit Passive Test Data

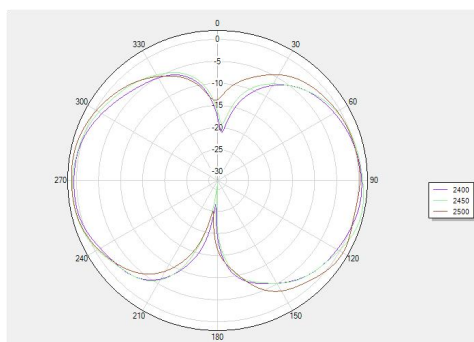
| Frequency / MHz | Efficiency / dB | Efficiency / % | Gain/ dBi |
|-----------------|-----------------|----------------|-----------|
| 2400            | -1.82           | 65.77          | 1.1       |
| 2410            | -1.86           | 65.16          | 0.98      |
| 2420            | -1.83           | 65.61          | 1.39      |
| 2430            | -1.87           | 65.01          | 1.39      |
| 2440            | -1.8            | 66.07          | 1.69      |
| 2450            | -1.74           | 66.99          | 1.78      |
| 2460            | -1.84           | 65.46          | 1.8       |
| 2470            | -1.87           | 65.01          | 1.68      |
| 2480            | -1.9            | 64.57          | 1.46      |
| 2490            | -1.79           | 66.22          | 1.76      |
| 2500            | -1.89           | 64.71          | 1.63      |



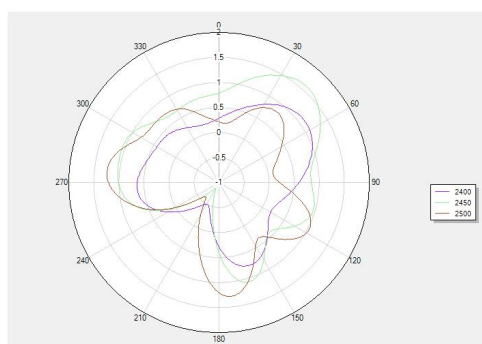
## 5.4.4 2D Radiation Pattern



E1

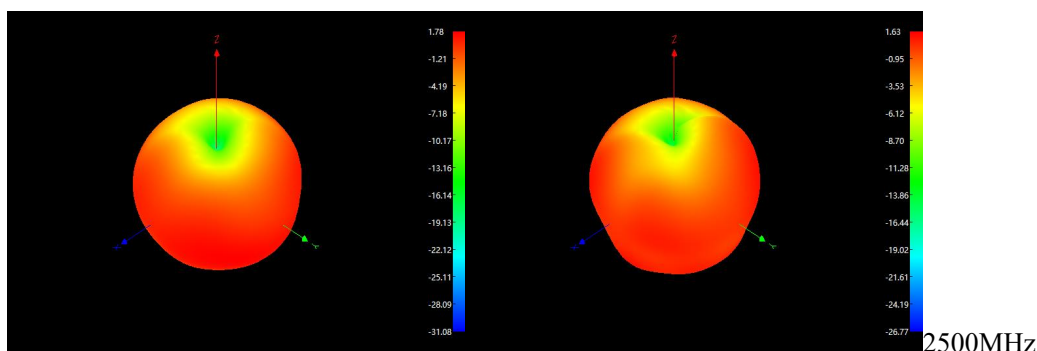
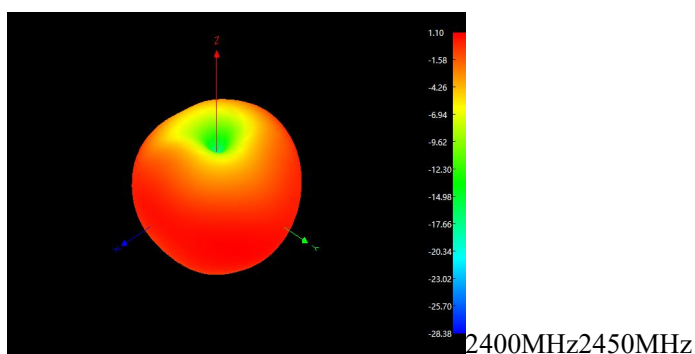


E2



H

## 5.4.5 3D Radiation Pattern



## 6 Reliability Testing Report

| test item                  | test condition                                                                                                                                                                                                                                  | requirement                                                                                                                                                                                                                    | Number of trials | judge     |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------|
| 1.High-Temperature Test    | Place in an environment of 60°C ± 2°C for 4 hours.                                                                                                                                                                                              | After being stored at room temperature for 2 hours, all dimensions comply with standard requirements; the appearance shows no abnormal phenomena such as deformation, warping, or delamination, and the performance is normal. | 5pcs             | Qualified |
| 2. Low-temperature test    | Store at -20°C ± 2°C for 4 hours.                                                                                                                                                                                                               | After being stored at room temperature for 2 hours, all dimensions comply with standard requirements; the appearance shows no abnormal phenomena such as deformation, warping, or delamination, and the performance is normal. | 5pcs             | Qualified |
| 3.Temperature Cycling Test | Place in an environment of 60 °C ± 2 °C for 30 minutes; remove and allow to stand at room temperature for 5 minutes; then place in an environment of -20 °C ± 2 °C for 30 minutes; remove and allow to stand at room temperature for 5 minutes. | After completing these five cycles, all dimensions comply with the normal specifications; the appearance shows no abnormal phenomena such as deformation, warping, or delamination, and the performance is normal.             | 5pcs             | Qualified |
| 4. Heat resistance         | Place the product in an environment with a temperature of 40°C ± 2°C and a humidity of 93 ± 2% RH for XXH.                                                                                                                                      | After being stored at room temperature for 4 hours, all dimensions comply with standard requirements; the appearance shows no abnormal phenomena such as deformation, warping, or delamination, and the performance is normal. | 5pcs             | Qualified |
| 5. Salt spray test         | 10–55°C; Salt dissolution rate: 500 ml/h; Saline solution concentration: 5 ± 1%; Test duration: 48 h                                                                                                                                            | Surface free from oxidation or rusting                                                                                                                                                                                         | 5pcs             | Qualified |
| Final Conclusion           | <div> <input checked="" type="checkbox"/>合格           <input type="checkbox"/>不合格         </div> <div> <input checked="" type="checkbox"/>合格           <input type="checkbox"/>不合格         </div>                                               |                                                                                                                                                                                                                                |                  |           |

## 7 Packaging Method

