

# SUNNYWAY TECHNOLOGY(CHINA)

## ANTENNA SPEC

|                                    |                 |                    |
|------------------------------------|-----------------|--------------------|
| Customer name: 三旗                  |                 | Entry name: SI9811 |
| Working band: GPS+WIFI (2. 4/5. 8) |                 |                    |
| Motherboard version: A9811M1A2-1   |                 |                    |
| Sunnyway Material specification    |                 |                    |
| Specification type                 | Sunnyway number | Customer number    |
| DIV/GWB FPC Antenna                | SZ242471B80     |                    |
|                                    |                 |                    |

|                            |                |                |         |
|----------------------------|----------------|----------------|---------|
| Revision history           |                |                |         |
| Date of preparation/change | Change content | Altered person | Edition |
| 2024.10.26                 | New issue      | XUWEI          | A       |
|                            |                |                |         |
|                            |                |                |         |

|                             |     |             |     |           |
|-----------------------------|-----|-------------|-----|-----------|
| Sunnyway Countersign column |     |             |     |           |
| R&D                         | ME: | To examine: | QE: | Approval: |
|                             | RF: | To examine: |     |           |

|                               |                 |                     |                  |
|-------------------------------|-----------------|---------------------|------------------|
| Customer will sign the column |                 |                     |                  |
| Electronic Engineer           | Project manager | Structural Engineer | Quality Engineer |
|                               |                 |                     |                  |

**Sunnyway Technology(CHINA)**

Add: 1F, Building 4, No.215-99, GaoGuang Road, QingPu District, Shanghai, China

Tel: +86-021-6083 5368 Fax: +86-021-6484 2328

Email: sales@sunnyway-iot.com Web: www.sunnyway-iot.com

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## 1. Project information

### 1.1 Mockup picture



## 2. Matching circuit



The red box needs to be connected in series with 0 ohms, and other positions do not require welding matching

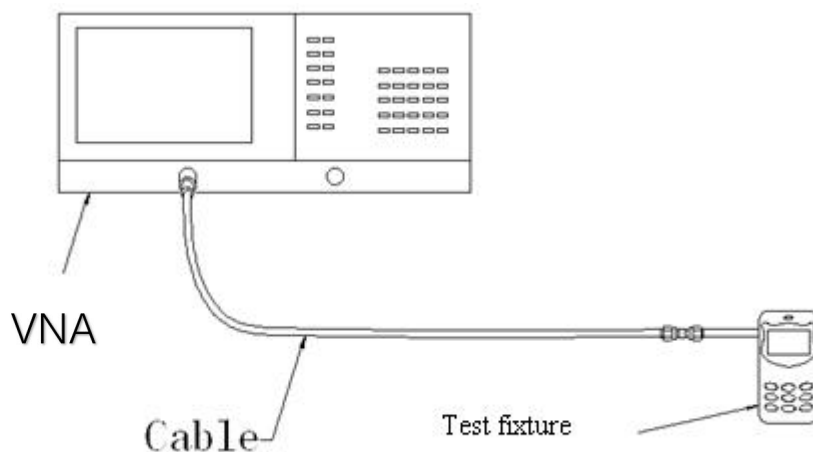
## 3. Antenna passive testing data

### 3.1 S11 Description of the test method

Test the equipment: Vector network analyzer (Agilent E5071C)

Test methodology: Use a 50 ohm CABLE cable to export from the instrument test port, use the calibration piece to calibrate and connect the SMA connector of the test fixture, and record the return loss and standing wave ratio corresponding to the relevant frequency point.

Below is a schematic picture of the test:



Test schematic diagram

### 3.2 Test the environment

Test the system: Multi-probe OTA measurement system (XH-IoT)

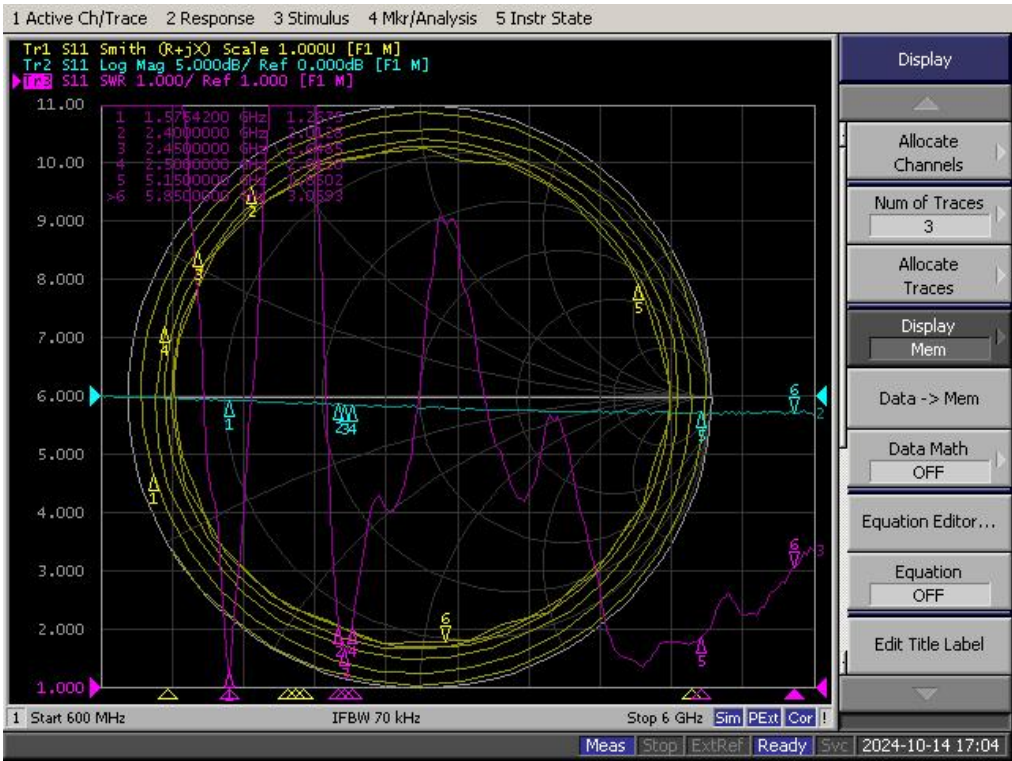
Test the environment: Temperature  $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , humidity  $50\% \pm 15\%$

Test the equipment: When testing passive data, use the network analyzer R&S ZND/ Agilent E5071C  
When testing active data, use the Agilent 8960/CMW500/SP9500E/SP8315



3.3 S11 Test parameters

驻波比 VSWR



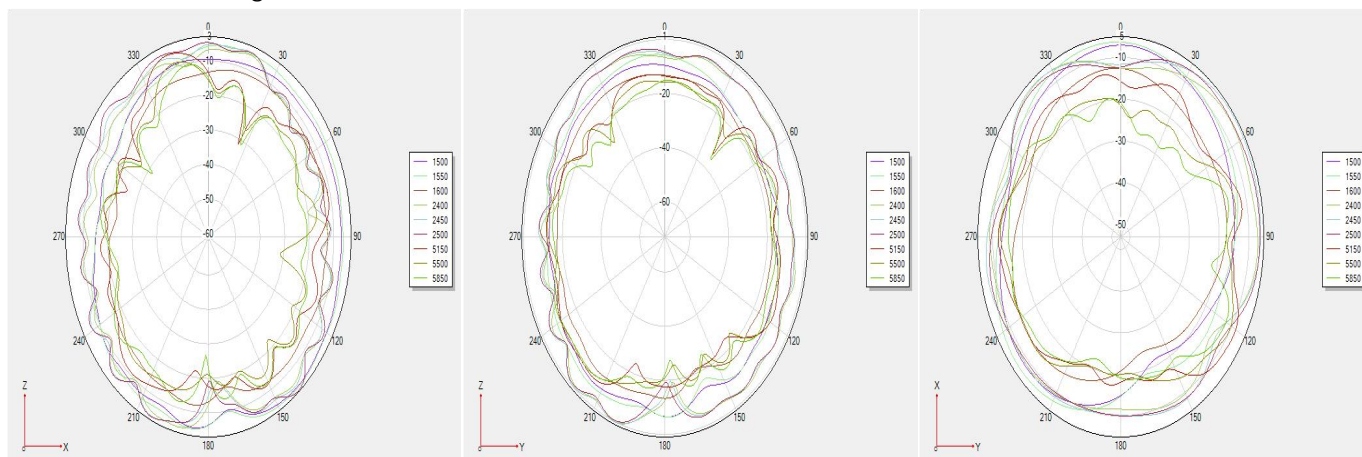
Antenna efficiency and gain

| Freq  | Effi  | Gain |
|-------|-------|------|
| (MHz) | (%)   | (dB) |
| 1500  | 37.25 | 0.82 |
| 1510  | 37.41 | 0.88 |
| 1520  | 37.06 | 0.77 |
| 1530  | 36.11 | 1.04 |
| 1540  | 36.12 | 0.78 |
| 1550  | 35.93 | 0.73 |
| 1560  | 36.06 | 0.81 |
| 1570  | 36.15 | 0.87 |
| 1580  | 37.57 | 0.74 |
| 1590  | 35.03 | 0.48 |
| 1600  | 35.03 | 0.48 |

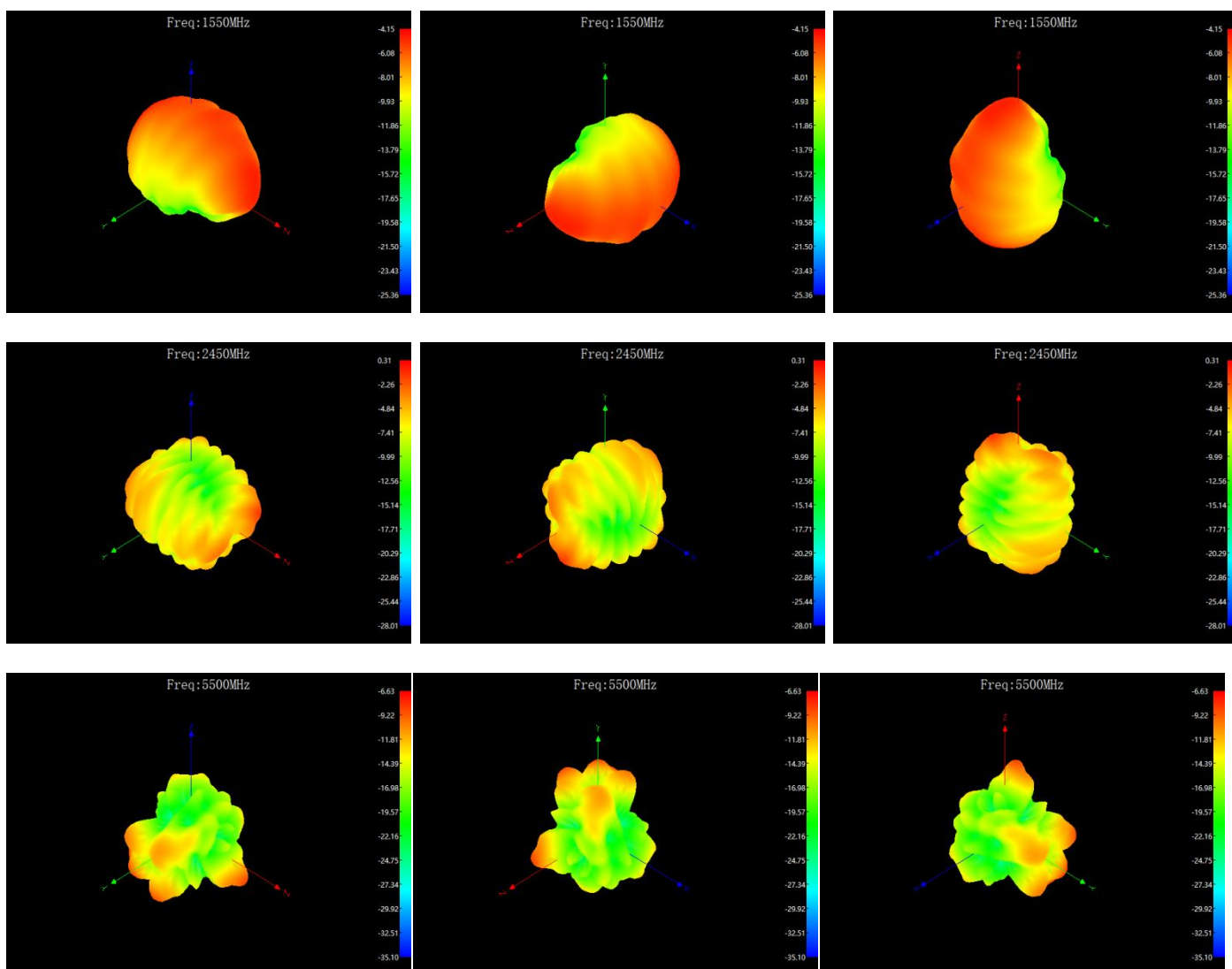
| Freq  | Effi  | Gain |
|-------|-------|------|
| (MHz) | (%)   | (dB) |
| 2400  | 37.47 | 0.73 |
| 2410  | 37.63 | 0.79 |
| 2420  | 37.28 | 0.68 |
| 2430  | 36.33 | 0.95 |
| 2440  | 36.34 | 0.69 |
| 2450  | 36.15 | 0.64 |
| 2460  | 36.28 | 0.72 |
| 2470  | 36.37 | 0.78 |
| 2480  | 37.79 | 0.65 |
| 2490  | 35.25 | 0.39 |
| 2500  | 35.25 | 0.39 |

| Freq  | Effi  | Gain  |
|-------|-------|-------|
| (MHz) | (%)   | (dB)  |
| 5100  | 26.97 | -0.58 |
| 5150  | 26.73 | -0.53 |
| 5200  | 27.37 | -0.41 |
| 5250  | 28.17 | -0.05 |
| 5300  | 28.47 | 0.31  |
| 5350  | 29.06 | 0.29  |
| 5400  | 28.29 | -0.13 |
| 5450  | 27.46 | 0.18  |
| 5500  | 28.34 | -0.03 |
| 5550  | 27.18 | 0.15  |
| 5600  | 29.25 | -0.21 |
| 5650  | 30.41 | 0.21  |
| 5700  | 30.59 | -0.91 |
| 5750  | 29.28 | -0.43 |
| 5800  | 28.64 | -0.71 |
| 5850  | 27.97 | -0.58 |

## Passive direction diagram



## Radiation Apple Figure



## 4. Environmental treatment methods

No design

## 5. Standard for mass production antennas

When the antenna is mass-produced, the VSWR is used as the mass production test standard.

According to the differences in the project itself, the following criteria are given:

| Freq. (MHz)         | Mass production standards                                                          |
|---------------------|------------------------------------------------------------------------------------|
| 1575.42             | $VSWR(\text{Production performance}) < VSWR(\text{Confirmed performance}) \pm 0.5$ |
| 2400~2500/5100~5850 | $VSWR(\text{Production performance}) < VSWR(\text{Confirmed performance}) \pm 0.5$ |

## 6. Engineering drawings

