

# Shanghai Sunnyway Communication Technology Limited Company

## Temporary antenna specification

|                                                    |  |                                   |                      |
|----------------------------------------------------|--|-----------------------------------|----------------------|
| Customer: sunml                                    |  | The project: 80 scan code printer |                      |
| Operating frequency band: 860-870MHz    900-930MHz |  |                                   |                      |
| Motherboard version:                               |  |                                   |                      |
| Shangyuan material specifications                  |  |                                   |                      |
| Specifications and models                          |  | Shangyuan material number         | Customer part number |
| MAIN                                               |  | SH24315IB77                       |                      |
|                                                    |  |                                   |                      |
|                                                    |  |                                   |                      |

|                               |         |                  |         |
|-------------------------------|---------|------------------|---------|
| The record of project changes |         |                  |         |
| Date of preparation/change    | Changes | Change of person | version |
|                               |         |                  |         |
|                               |         |                  |         |
|                               |         |                  |         |

|                                |     |          |     |           |
|--------------------------------|-----|----------|-----|-----------|
| Sunnyway counter-signature bar |     |          |     |           |
| Research and development       | ME: | Auditor: | QE: | Approver: |
|                                | RF: | Auditor: |     |           |
| Client Counter-signature bar   |     |          |     |           |
| EE                             | PM  |          | RF  | QE        |
|                                |     |          |     |           |

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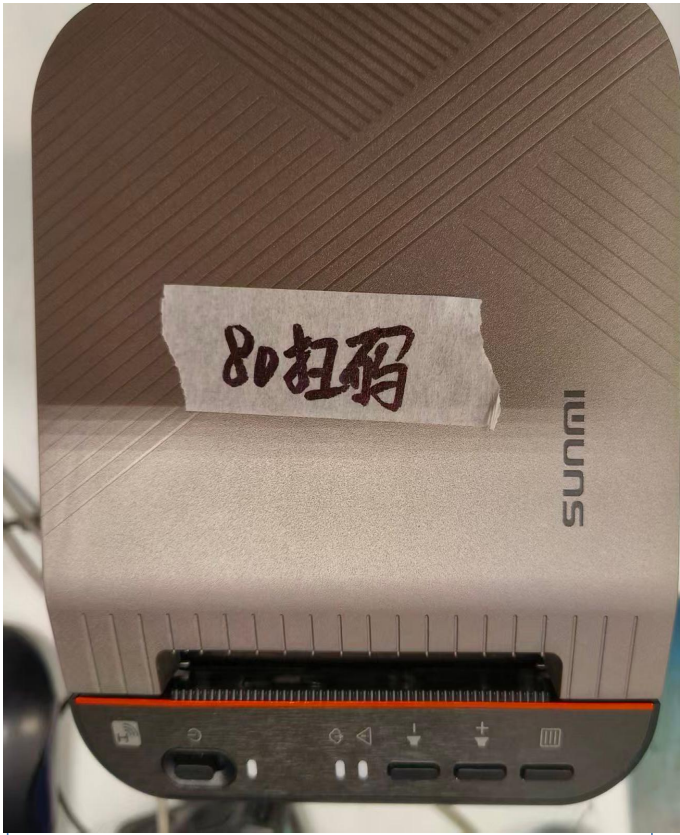
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Yubei District, Chongqing

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1. Project information

Machine information



Antenna information

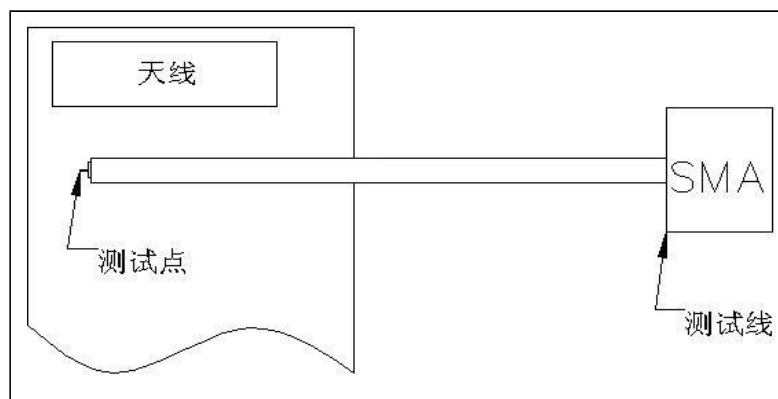
|                    |         |
|--------------------|---------|
|                    | version |
| Hyper WIFI antenna |         |
|                    |         |

Note: The customer finally verified that the antenna performance prototype was retained in our company for at least one year, which is convenient for analysis and solution to abnormal situations in antenna mass production.  
Ensure antenna shipment quality.

## 2. Test fixtures

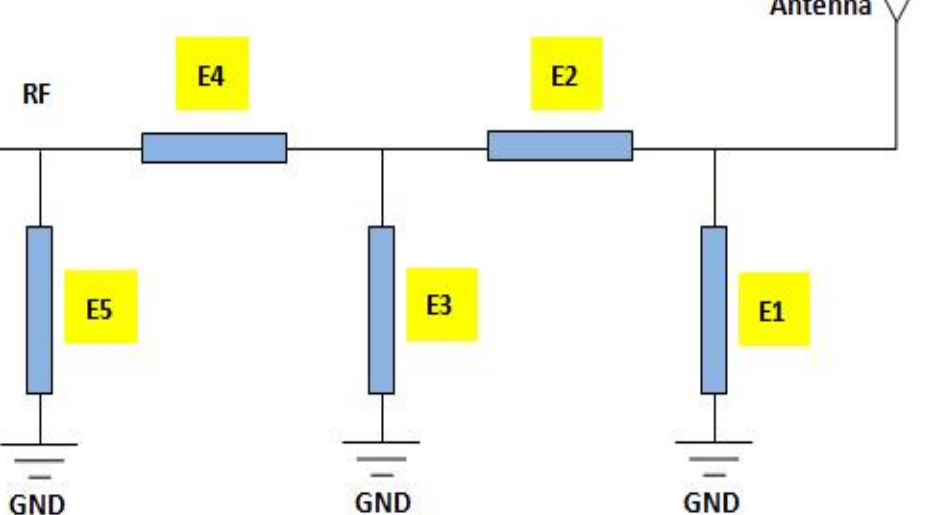
Purpose: To test the passive parameters of the antenna as accurately as possible.

How to make: The prototyping mechanism is made of a 50 ohm coaxial cable, one end is connected to the test point at the back of the matching circuit of the prototype motherboard (the front of the RF test hole), and the other end is connected to the SMA connector. The schematic diagram is as follows:



## 3. Matching circuits

Hyper WIFI Antenna



| Element | Value      | Specification |
|---------|------------|---------------|
| E1      | NC         |               |
| E2      | 0 $\Omega$ |               |
| E3      | NC         |               |
| E4      | 0 $\Omega$ |               |
| E5      | NC         |               |

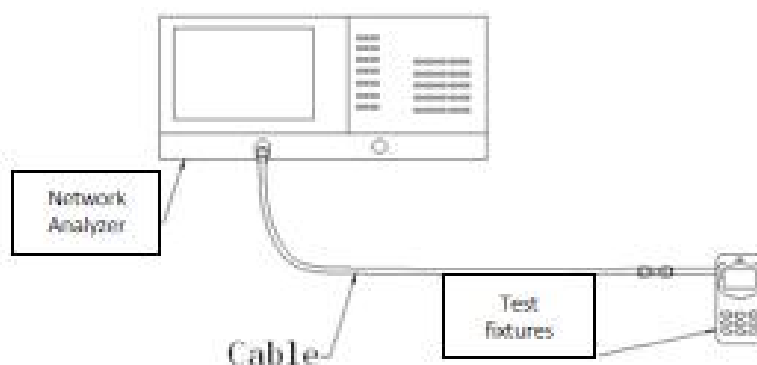
## 4. S11 test

### 4.1 S11 Test Method Description

Test Equipment: Network Analyzer (E5071C)

Test method: A 50 ohm CABLE cable is derived from the instrument test port, and the SMA connector of the prototype is connected after calibration using the calibrator to record the return loss and standing wave ratio corresponding to the relevant frequency point.

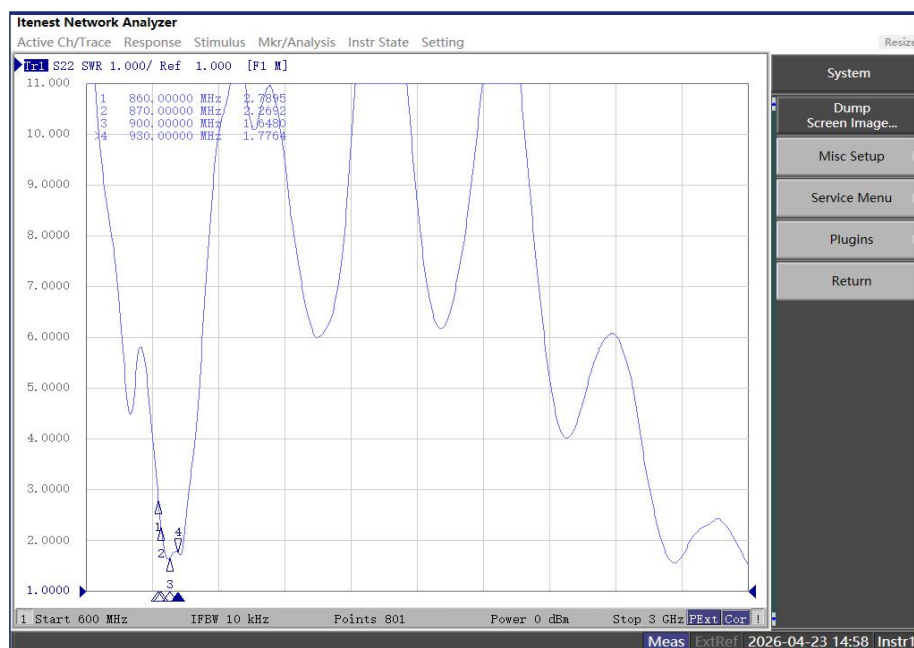
The test diagram is as follows:



Test the schematic

### 4.2 S11 parameter

Hyper WIFI antenna S11



|                 | Hyper WIFI antenna |
|-----------------|--------------------|
| frequency (MHz) | SWR                |
| 860             | 2.7                |
| 870             | 2.2                |
| 900             | 1.6                |
| 930             | 1.7                |

## 5 Darkroom test data

Test system: Shielded darkroom

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

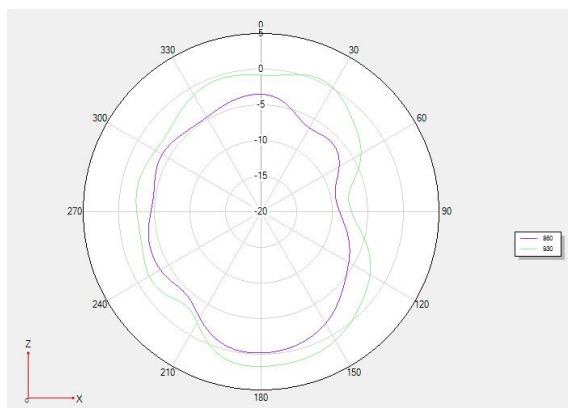
Test equipment: When testing passive data, use the  
Network Analyzer Agilent E5062C When testing  
active data, the Comprehensive Tester Agilent 8960  
/CMW500/E4438C is used

### 5.1 Passive test data

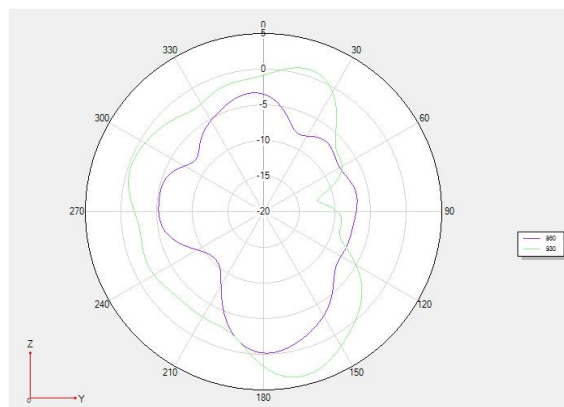
Hyper WIFI antenna efficiency

| frequency(MHz) | Gain(dB) | Efficiency(dB) | Efficiency(%) |
|----------------|----------|----------------|---------------|
| 860            | -0.14    | -5.36          | 29.12         |
| 870            | 0.3      | -5.03          | 31.41         |
| 880            | 0.18     | -4.21          | 37.93         |
| 890            | 0.76     | -3.55          | 44.16         |
| 900            | 0.95     | -3.28          | 46.99         |
| 910            | 1.52     | -3.45          | 45.19         |
| 920            | 2.28     | -3.67          | 42.95         |
| 930            | 3.74     | -3.86          | 41.11         |

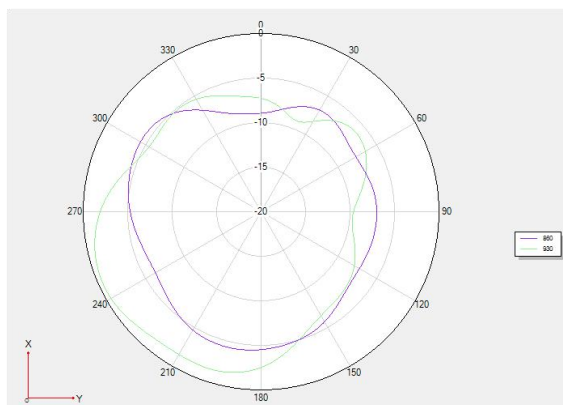
## 2D



$\text{PHI}=0$

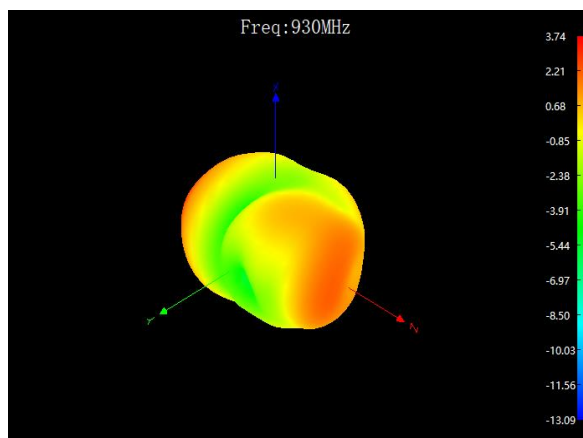
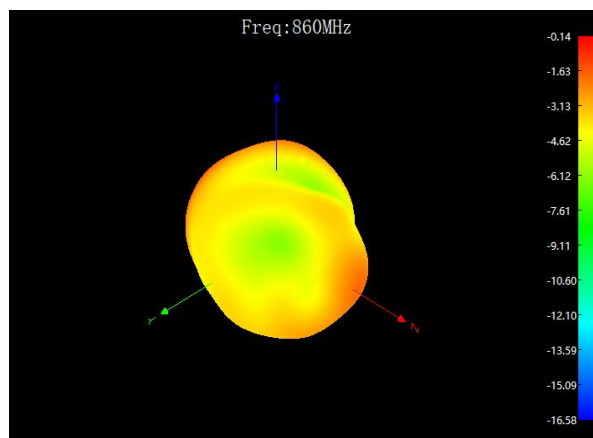


$\text{PHI}=90$



$\text{Theta}=90$

## 3D



## 6.Environmental treatment

No change in environment handling

## 7. Mass production antenna indicators

When the antenna is mass-produced, the standing wave ratio is used as the mass production test standard. According to the differences in the project itself, the following criteria are given:

| frequency (MHz) | Mass production standards                                              |
|-----------------|------------------------------------------------------------------------|
| 860MHz-930MHz   | VSWR (Mass production performance)<br><VSWR(Acknowledge performance)+1 |

## 8 Drawings

