



Acknowledgment Letter

SPECIFICATION FOR APPROVAL

|                       |                        |              |            |
|-----------------------|------------------------|--------------|------------|
| Customer Name         | Yu Ke                  |              |            |
| Customer Project Name | T87N                   | Project Name | T87N       |
| Antenna type          | Four in one antenna    | SDC P/N      | WG6070B-A  |
| Band                  | WiFi2. 4G/5. 8G/BT/GPS |              |            |
| Version               | A0                     |              |            |
| Designer Information  |                        |              |            |
| RF Engineer           | Yang YongHui           | R&D Diretor  | Fu Xuerong |
| ME Engineer           | Huang ZongBao          |              |            |

| Approval  |               |              |              | ustomer Approval |             |
|-----------|---------------|--------------|--------------|------------------|-------------|
|           | Prepared By   | Checked By   | Approval By  | Checked By       | Approval By |
| Signature | Huang Zongbao | Fu Xuerong   | Xia Chenglei |                  |             |
| Date      | 2024. 11. 14  | 2024. 11. 14 | 2024. 11. 14 |                  |             |

| hange Log |                    |                  |             |      |
|-----------|--------------------|------------------|-------------|------|
| Version   | Change Description | Person in Charge | Approval By | Date |
|           |                    |                  |             |      |
|           |                    |                  |             |      |
|           |                    |                  |             |      |

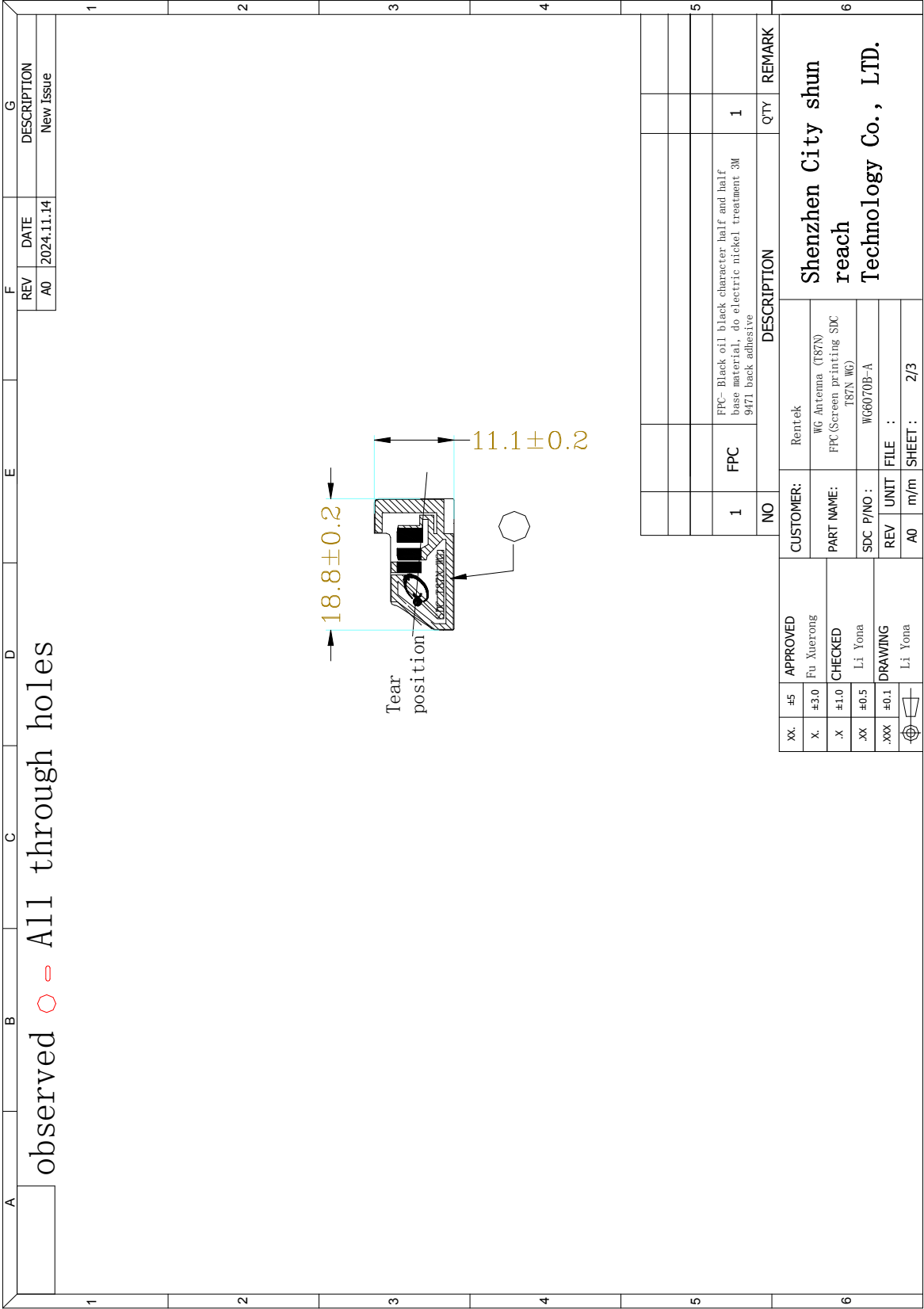


## Catalogue

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Drawing or Product Image





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Sample Dimensions Test Report

|                  |                         |             |                 |           |            |
|------------------|-------------------------|-------------|-----------------|-----------|------------|
| Test Date        | 2024. 11. 14            | Sample Qty. | 3               | Inspector | Xu Yanfang |
| Dimension No.    | Standard                | Sample 1    | Sample 2        | Sample 3  | Pass/NG    |
| ①length          | 18. 8±0. 2mm            | 18. 8       | 18. 9           | 18. 8     | Pass       |
| ②width           | 11. 1±0. 2mm            | 11. 1       | 11. 2           | 11. 1     | Pass       |
| ③thickness       | 0. 1±0. 03mm            | 0. 1        | 0. 1            | 0. 1      | Pass       |
|                  |                         |             |                 |           |            |
|                  |                         |             |                 |           |            |
|                  |                         |             |                 |           |            |
|                  |                         |             |                 |           |            |
|                  |                         |             |                 |           |            |
|                  |                         |             |                 |           |            |
| Conclusion       |                         |             |                 |           | PASS       |
| Inspector & Date | Xu Yanfang 2024. 11. 14 |             | Approval &D ate |           |            |



## RF Performance Test Report

### Antenna Test Equipment Introduction

Test of antenna input characteristics using **Agilent E5071C** and **Agilent 5062A** vector network analyzer; The radiation pattern of the antenna are tested using the guangping 3D near field Anechoic Chamber, and the instrument is used to agilent8960 E5515 and Agilent E4438C. The test coordinates of the darkroom are as follows:

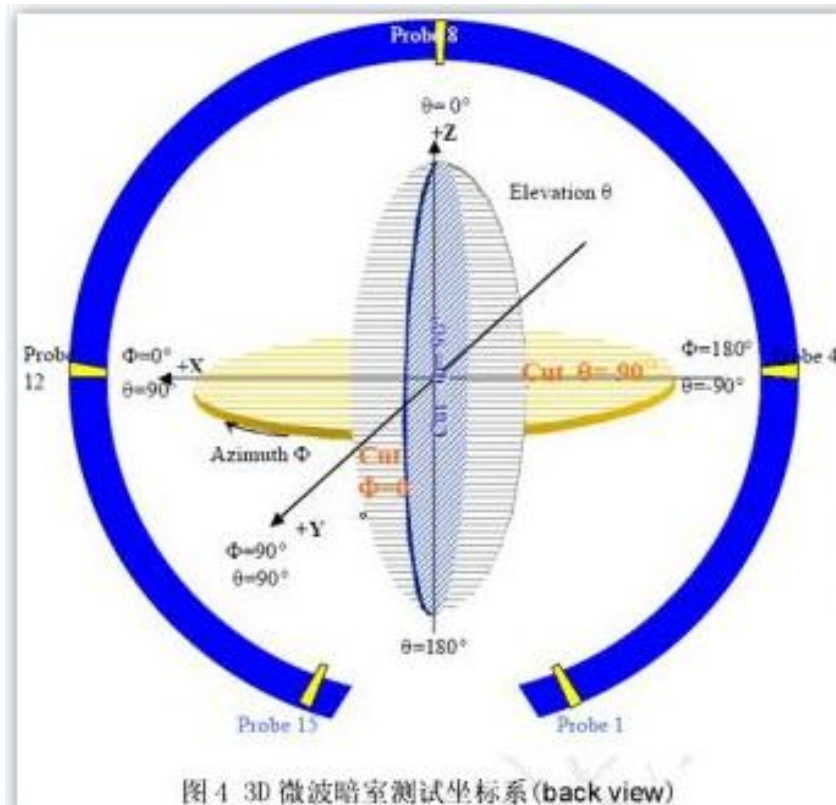


图4 3D 微波暗室测试坐标系(back view)

### 1. **S11 Parameter-VSWR**

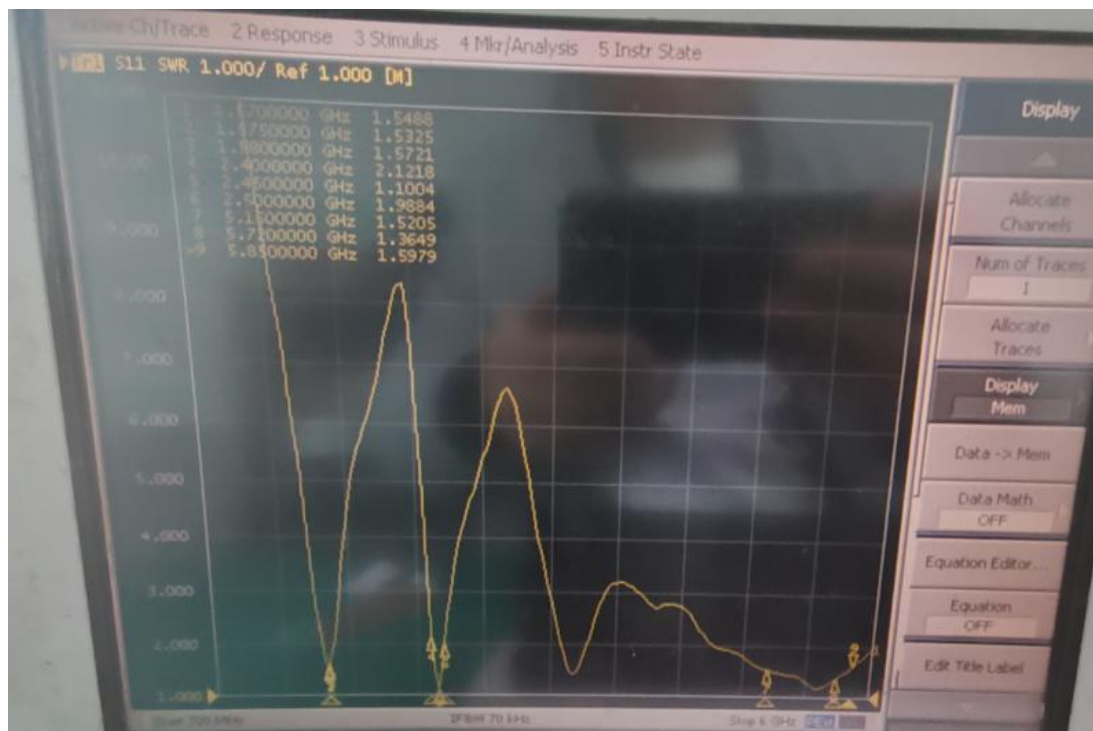
Measuring Method is a  $50\Omega$  coaxial cable is connected to the antenna. Then this cable is connected to a network analyzer to measure the S11 parameter, Keeping this fixture away from metal at least 20cm.



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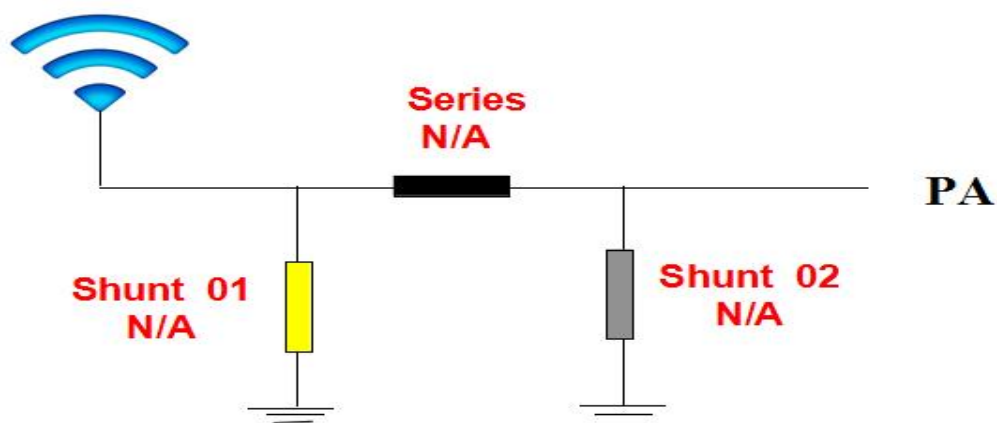
### S11 Parameter-VSWR

| Frequency(MHz) | 1570 | 1575 | 1580 | 2400 | 2450 | 2500 | 5150 | 5720 | 5850 |
|----------------|------|------|------|------|------|------|------|------|------|
| VSWR           | 1.54 | 1.53 | 1.57 | 2.12 | 1.10 | 1.98 | 1.52 | 1.36 | 1.59 |



### 2. Antenna Matching Network

**Antenna**





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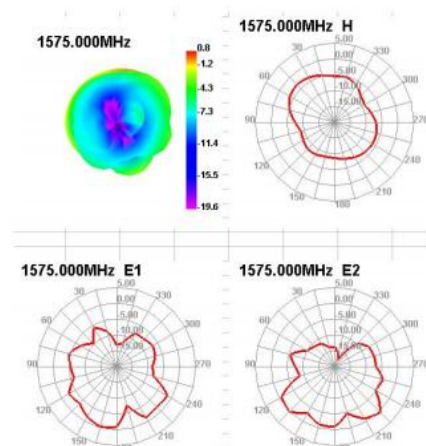
### 3. Electrical parameter:

| Electrical parameter |                                                                                                                                                                |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (Frequency range)    | 1575-5850Mhz                                                                                                                                                   |
| Polarization mode    | Horizontal and vertical polarization                                                                                                                           |
| Measurement program  | Wide screen                                                                                                                                                    |
| Test equipment       | Agilent(5071B ) /Agilent ( 8960 )<br>/ROHDE&SCHWARZ(CMW500)                                                                                                    |
| Test Settings        | Insert the testing white card, fix the entire machine on the testing turntable, open the testing software, and select the corresponding testing frequency band |
| Testing location     | OTA microwave anechoic chamber                                                                                                                                 |
| Antenna manufacturer | Shenzhen Shundacheng Technology Co., Ltd                                                                                                                       |
| Debugging mode       | PIFA                                                                                                                                                           |
| Antenna material     | FPC+coaxial line                                                                                                                                               |

### 4. Gain & Efficiency

| Passive Test For GPS-RB |          |           |            |            |         |          |          |          |             |             |
|-------------------------|----------|-----------|------------|------------|---------|----------|----------|----------|-------------|-------------|
| Freq (MHz)              | Effi (%) | Effi (dB) | Gain (dBi) | Gain (dBd) | UHS (%) | DHIS (%) | Max (dB) | Min (dB) | Attenut Hor | Attenut Ver |
| 1500                    | 32.5     | -3.14     | 2.8        | 0.65       | 16.66   | 31.838   | 0.8      | -20.4    | 43.83       | 44.08       |
| 1525                    | 32.86    | -3.2      | 0.59       | 0.44       | 15.309  | 32.552   | 0.59     | -21.47   | 43.89       | 43.93       |
| 1550                    | 43.28    | -3.64     | 1.82       | -0.33      | 12.607  | 30.669   | 1.82     | -15.36   | 44.11       | 44.11       |
| 1575                    | 38.85    | -4.58     | 0.81       | -1.34      | 9.312   | 25.539   | 0.81     | -19.56   | 44.82       | 44.78       |
| 1600                    | 34.74    | -4.59     | 0.67       | -1.48      | 10.102  | 24.642   | 0.67     | -20.95   | 46.1        | 45.91       |

1500.00MHz - 1600.00MHz Gain

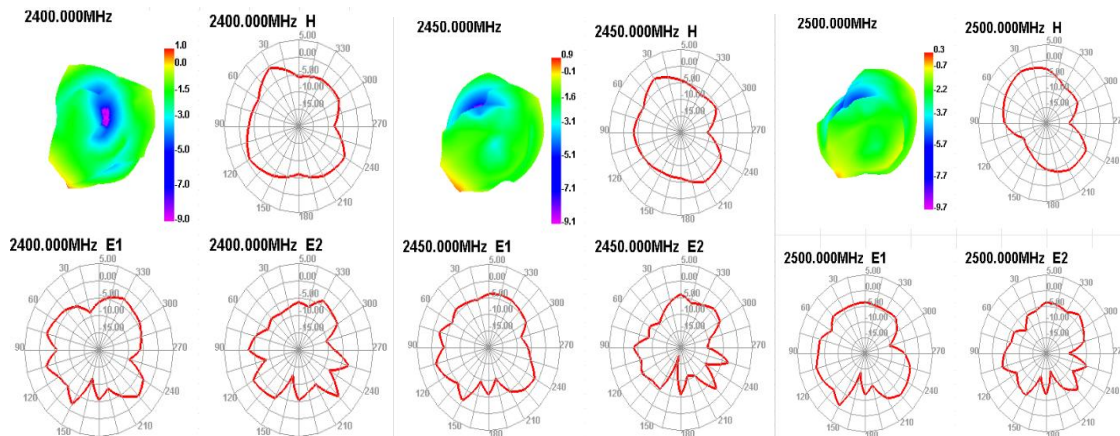




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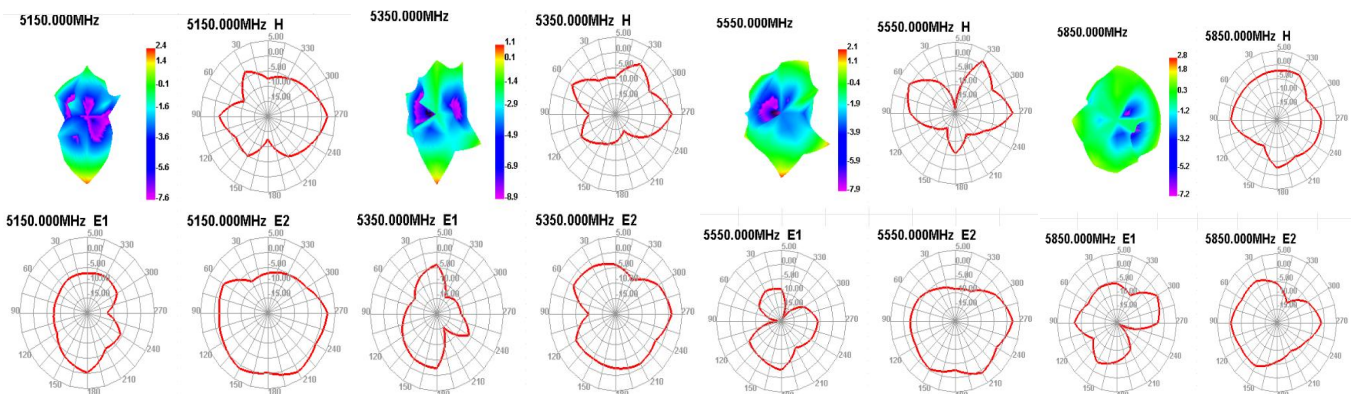
Passive Test For 2.4G

| Freq<br>(MHz) | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd) | UHS<br>(%) | DHS<br>(%) | Max<br>(dB) | Min<br>(dB) | irectivity<br>(dBi) | Beamwidth<br>(3dB) | AttH<br>(dB) | AttV<br>(dB) |
|---------------|-------------|--------------|---------------|---------------|------------|------------|-------------|-------------|---------------------|--------------------|--------------|--------------|
| 2400          | 43.54       | -3.61        | 1.03          | -1.12         | 20.581     | 22.962     | 1.03        | -15.9       | 4.64                | 15                 | 48.93        | 49.09        |
| 2425          | 45.48       | -2.97        | 1.96          | -0.19         | 23.926     | 26.555     | 1.96        | -16.48      | 4.93                | 15                 | 49.09        | 49.22        |
| 2450          | 36.53       | -4.37        | 0.87          | -1.28         | 17.136     | 19.397     | 0.87        | -19.74      | 5.24                | 15                 | 49.25        | 49.27        |
| 2475          | 35.97       | -4.44        | 0.52          | -1.63         | 17.205     | 18.763     | 0.52        | -23.22      | 4.96                | 75                 | 49.98        | 49.91        |
| 2500          | 36.94       | -4.32        | 0.32          | -1.83         | 17.676     | 19.267     | 0.32        | -18.36      | 4.64                | 75                 | 49.71        | 49.62        |



Passive Test For 5.8G

| Freq<br>(MHz) | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd) | UHS<br>(%) | DHS<br>(%) | Max<br>(dB) | Min<br>(dB) | irectivity<br>(dBi) | Beamwidth<br>(3dB) | AttH<br>(dB) | AttV<br>(dB) |
|---------------|-------------|--------------|---------------|---------------|------------|------------|-------------|-------------|---------------------|--------------------|--------------|--------------|
| 5150          | 42.13       | -3.75        | 2.36          | 0.21          | 16.688     | 25.441     | 2.36        | -12.69      | 6.11                | 0                  | 58.6         | 58.01        |
| 5250          | 36.5        | -4.38        | 1.37          | -0.78         | 16.245     | 20.256     | 1.37        | -11.52      | 5.75                | 30                 | 58.53        | 57.74        |
| 5350          | 33.61       | -4.73        | 1.07          | -1.08         | 14.487     | 19.127     | 1.07        | -15.18      | 5.81                | 60                 | 57.99        | 57.08        |
| 5450          | 38.75       | -4.12        | 2.03          | -0.12         | 14.442     | 24.308     | 2.03        | -15.14      | 6.15                | 0                  | 59.19        | 57.9         |
| 5550          | 43.16       | -3.65        | 2.14          | -0.01         | 15.599     | 27.564     | 2.14        | -19.43      | 5.79                | 60                 | 60.21        | 58.81        |
| 5650          | 45.41       | -3.43        | 2.1           | -0.05         | 16.711     | 28.699     | 2.1         | -20.47      | 5.53                | 0                  | 60.31        | 59.42        |
| 5750          | 46.58       | -3.32        | 2.17          | 0.02          | 17.996     | 28.581     | 2.17        | -18         | 5.49                | 30                 | 60.88        | 60.28        |
| 5850          | 44.83       | -3.48        | 2.78          | 0.63          | 18.496     | 26.336     | 2.78        | -23.77      | 6.27                | 30                 | 61.09        | 60.41        |





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### 5. OTA data

|         |                     |        |        |
|---------|---------------------|--------|--------|
| 2.4G    | 802.11b, (2.4G) 11M |        |        |
| Channel | CH1                 | CH6    | CH11   |
| TRP     | 13.11               | 13.57  | 13.02  |
| TIS     | -80.92              | -81.04 | -81.39 |
| 5.8G    | 802.11a, (5.8G) 54M |        |        |
| Channel | CH36                | CH60   | CH161  |
| TRP     | 11.28               | 10.42  | 10.17  |
| TIS     | -70.24              | -69.86 | -68.78 |

### 6. GPS measurement map





## Shenzhen Shundacheng Technology Co., Ltd

### Reliability Test Report

|                                      |                                                                                                                                                                           |                                       |                 |           |            |         |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------|-----------|------------|---------|
| Test Date                            | 2024. 11. 14                                                                                                                                                              | Sample Qty.                           | 3               | Inspector | Xu Yanfang |         |
| Test Item                            | Requirement                                                                                                                                                               | testing equipment                     | Sample 1        | Sample 2  | Sample 3   | PASS/NG |
| high temperature storage             | Expose to +85 °C for 24 hours, recover for 2 hours, and conduct testing                                                                                                   | Constant temperature and humidity box | OK              | OK        | OK         | Pass    |
| low temperature storage              | Expose to -40 °C for 24 hours, recover for 2 hours, and perform testing                                                                                                   | Constant temperature and humidity box | OK              | OK        | OK         | Pass    |
| High temperature operation           | Powered on for 24 hours at +60 °C                                                                                                                                         | Constant temperature and humidity box | OK              | OK        | OK         | Pass    |
| Low temperature operation            | Powered on for 24 hours at -20 °C                                                                                                                                         | Constant temperature and humidity box | OK              | OK        | OK         | Pass    |
| Salt spray test                      | (5 ± 0. 5)%sodium chloride、pH Value is 6. 5~7. 2, Temperature of experimental chamber (35 ± 2) °C<br><input type="checkbox"/> 24H <input checked="" type="checkbox"/> 48H | Salt spray testing machine            | OK              | OK        | OK         | Pass    |
| Connector riveting and pulling force | 1. 13Wire diameter ≥ 10N<br>0. 81Wire diameter ≥ 8N<br>RG174 ≥ 60N<br>RG178 ≥ 50N                                                                                         | Push-pull force gauge                 | ≥ 10N           | ≥ 10N     | ≥ 10N      | Pass    |
| Conclusion                           |                                                                                                                                                                           |                                       |                 |           |            | Pass    |
| Inspector & Date                     | Xu Yanfang 2024. 11. 14                                                                                                                                                   |                                       | Approval & Date |           |            |         |

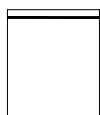


## Packing rules

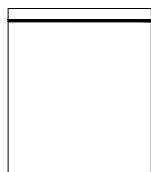
Project name: T87N

Product name: T87N

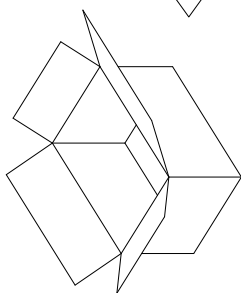
FPC antenna (one)



(two) Each PE bag contains 100pcs of products (subject to actual packaging)



(three) Then put the small antenna bag neatly into (Figure 3) and fill 10 small bags (the actual packaging shall prevail).



(four) The packaged antenna can be put into a carton, which can hold 5 large bags, each box can hold 5000PCS (Figure 4). (Subject to actual packaging)



|                           |  |
|---------------------------|--|
| supplier                  |  |
| purchase order number     |  |
| material code             |  |
| specifications and models |  |
| quantity                  |  |
| date                      |  |

(five) After the packaging is completed, the shipping label should be affixed (Figure 5).



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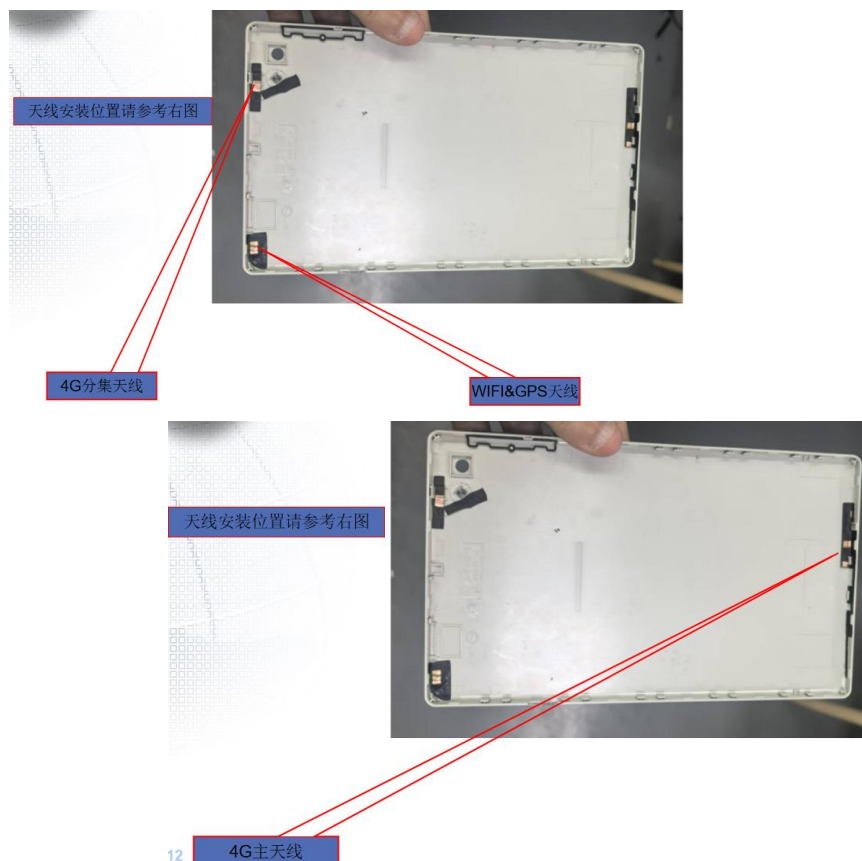
Install Wizard or Other  
setup script:

Take 1 PCS of product, tear off the release paper on the back of the FPC by hand, and then align the FPC positioning hole position with the shell positioning hole position (positioning rib position or positioning line), and attach it flat to the shell, as shown in the following figure:

Installation process precautions:

- ☐ Ensure that the FPC is fully attached to the housing after pasting the antenna;
- ☐ Align the positioning hole with the position of the casing positioning column;
- ☐ Align FPC edge with shell edge;
- ☐ When attaching the terminal to the PCBA end of the motherboard, please first align the terminals and then snap them vertically;
- ☐ When disassembling antenna terminals, it is necessary to use a tool (such as a special pry bar) to vertically lift the terminals and not directly pull the wires for disassembly

Test equipment(The following equipment is calibrated every six months, in March/September of each year)





# Certificate

Certificate Number: UNIB23083106HC-01



Product: 5G/4G/WIFI/GPS/BT antenna  
Applicant: ShenZhen ShunDaCheng Technology Co., Ltd.  
4th Floor, Building B5, Xinfu Industrial Zone, Fuyong Chongqing Road,  
Baoan District, Shenzhen  
Manufacturer: N/A  
Model No.: N/A  
Trade Name: N/A  
Test Methods: IEC 62321-2:2021, IEC 62321-3-1:2013, IEC 62321-4:2013 +A1:2017,  
IEC 62321-5:2013, IEC 62321-6:2015, IEC 62321-7-1:2015  
IEC 62321-7-2:2017, IEC 62321-8:2017

The laboratory tested the product provided by the applicant according to the above test methods. According to the test results, the product conforms to RoHS Directive [(2011/65/EU and Amendment (EU) 2015/863)] issued by the European Commission. It is possible to use CE marking to demonstrate the compliance with RoHS Directive.

The certificate applies to the tested sample above mentioned only and shall not imply an assessment of the whole production. It is only valid in connection with the test report number: UNIB23083106HR-01.

**Note:** According to the requirements of the applicant for testing, details are shown in the test report.

## RoHS

Sep. 06, 2023  
Issue Date

Hoffer Lau



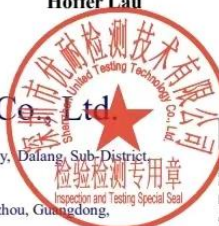
Shenzhen United Testing Technology Co., Ltd.

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Longhua District, Shenzhen, Guangdong, China/518109  
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Certificate of Compliance