



深圳市顺达成科技有限公司  
SHEN DA CHENG ELECTRONICS CO., LTD

承 认 书  
SPECIFICATION FOR APPROVAL

|                             |               |                         |                |
|-----------------------------|---------------|-------------------------|----------------|
| 客户名称<br>Customer Name       | 华方            |                         |                |
| 客户项目名 Customer Project Name | CWD-F7-2（摄像头） | 顺达成项目名 SDC Project Name | CWD-F7-2（摄像头）  |
| 客户编码<br>Customer P/N        |               | 顺达成料号 SDC P/N           | WF2486B-A50R-A |
| 频段<br>Band                  | 2.4G_____     |                         |                |
| 版本号<br>Version              | A0            |                         |                |
| 设计人信息/Designer Information  |               |                         |                |
| 射频工程师<br>RF Engineer        | 杨永辉           | 研发主管<br>R&D Diretor     | 符学荣            |
| 结构工程师<br>ME Engineer        | 李瑶娜           |                         |                |

| 审批/ Approval    |                   |                  |                   | 客户批准/Customer Approval |                   |
|-----------------|-------------------|------------------|-------------------|------------------------|-------------------|
|                 | 制作<br>Prepared By | 审核<br>Checked By | 批准<br>Approval By | 审核<br>Checked By       | 批准<br>Approval By |
| 签章<br>Signature | 李瑶娜               | 符学荣              | 陈华明               |                        |                   |
| 日期<br>Date      | 2022. 11. 07      | 2022. 11. 07     | 2022. 11. 07      |                        |                   |

| 修订履历/Change Log |                            |                         |                   |            |
|-----------------|----------------------------|-------------------------|-------------------|------------|
| 版本<br>Version   | 修订内容<br>Change Description | 责任人<br>Person in Charge | 核准<br>Approval By | 日期<br>Date |
|                 |                            |                         |                   |            |
|                 |                            |                         |                   |            |
|                 |                            |                         |                   |            |



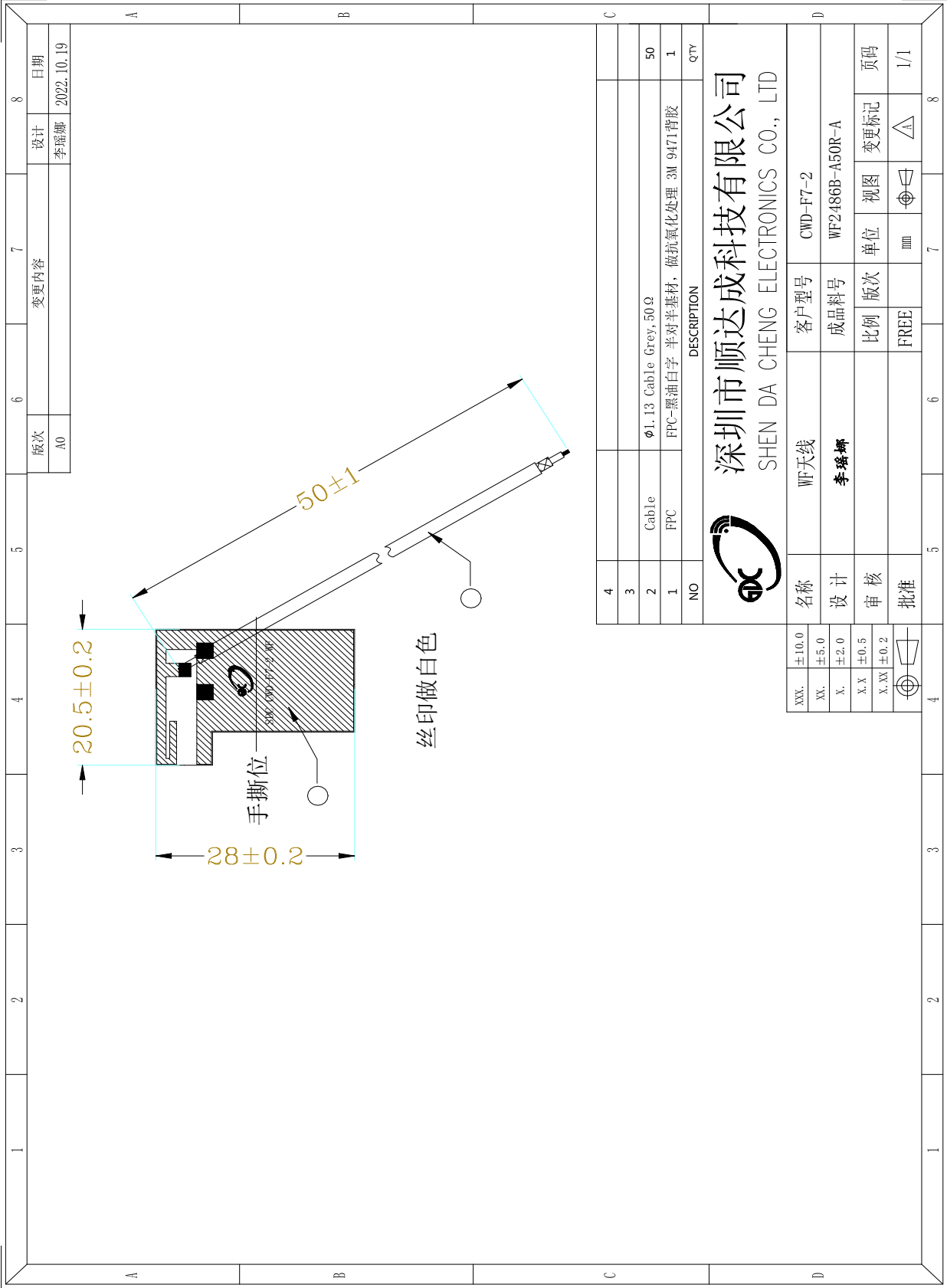
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产品图纸或实物图片  
Drawing or Product Image





## 样品尺寸测量报告

### Sample Dimensions Test Report

|                            |                  |                     |                          |                  |         |
|----------------------------|------------------|---------------------|--------------------------|------------------|---------|
| 测试日期<br>Test Date          | 2022. 11. 07     | 样品数量<br>Sample Qty. | 3                        | 测试人<br>Inspector | 许燕芳     |
| 尺寸编号<br>Dimension No.      | 标准<br>Standard   | 样品 1<br>Sample 1    | 样品 2<br>Sample 2         | 样品 3<br>Sample 3 | Pass/NG |
| ①长度                        | 20.5±0.2mm       | 20.5                | 20.6                     | 20.5             | Pass    |
| ②宽度                        | 28±0.2mm         | 28                  | 28.1                     | 28               | Pass    |
| ③厚度                        | 0.1±0.05mm       | 0.1                 | 0.1                      | 0.1              | Pass    |
| ④线长                        | 50±1mm           | 50                  | 51                       | 50               | Pass    |
| ⑤                          |                  |                     |                          |                  |         |
| ⑥                          |                  |                     |                          |                  |         |
| ⑦                          |                  |                     |                          |                  |         |
|                            |                  |                     |                          |                  |         |
|                            |                  |                     |                          |                  |         |
| 最终结论<br>Conclusion         |                  |                     |                          |                  | PASS    |
| 测试人&日期<br>Inspector & Date | 许燕芳 2022. 11. 07 |                     | 批准&日期<br>Approval & Date |                  |         |



## 射频性能测量报告

### RF Performance Test Report

#### 天线测试设备简介

##### Antenna Test Equipment Introduction

测试天线输入特性使用 **Agilent E5071C** and **Agilent 5062A** 矢量网络分析仪；辐射特性利用广屏三维近场暗室进行测试，并分别使用 8960 E5515 和 Agilent E4438C 进行了分析。暗房的测试坐标如下：

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:

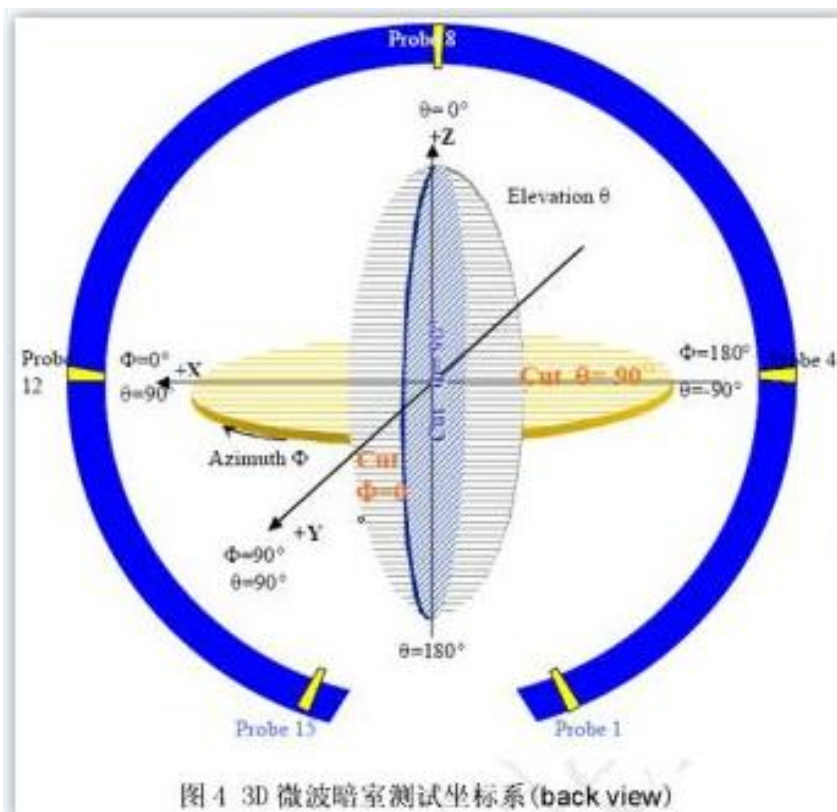


图4 3D 微波暗室测试坐标系(back view)

#### 1. S11 参数测量/**S11 Parameter-VSWR**

使用一根 50  $\Omega$  同轴电缆连接到天线，然后该电缆连接到网络分析仪测量 S11 参数，被测量产品远离金属至少 20 厘米。

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.

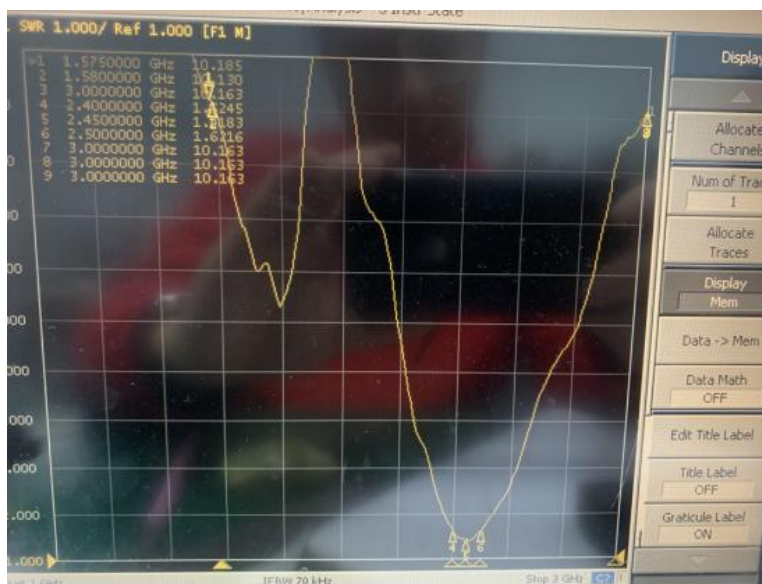
#### **S11 Parameter-VSWR**



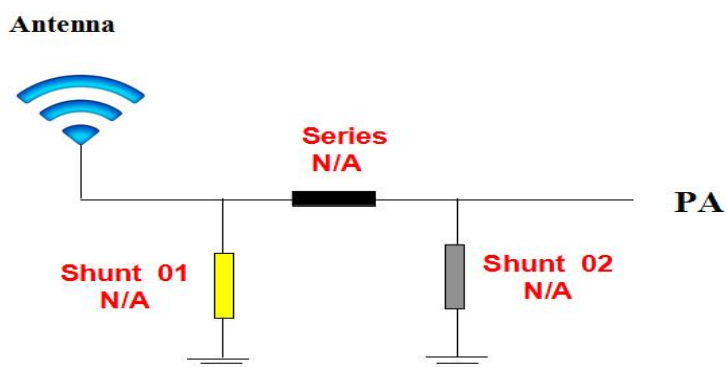
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| 频率 (MHZ) | 2400 | 2450 | 2500 |
|----------|------|------|------|
| 驻波比      | 1.62 | 1.41 | 1.62 |



## 2. 天线匹配网络/Antenna Matching Network



## 3. Gain & Efficiency



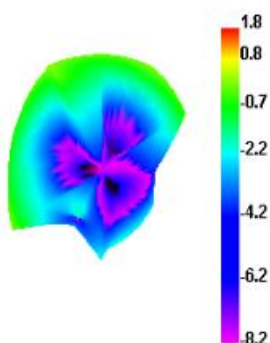
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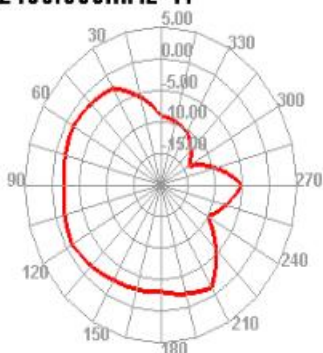
Passive Test For 2.4

| Freq<br>(MHz) | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd) | UHS<br>(%) | DHIS<br>(%) | Max<br>(dB) | Min<br>(dB) | irectivity<br>(dBi) | Beamwidth<br>(3dB) | AttH<br>(dB) | AttV<br>(dB) |
|---------------|-------------|--------------|---------------|---------------|------------|-------------|-------------|-------------|---------------------|--------------------|--------------|--------------|
| 2400          | 39.11       | -4.08        | 1.83          | -0.32         | 11.77      | 27.342      | 1.83        | -17.21      | 5.91                | 30                 | 49.45        | 49.61        |
| 2410          | 40.78       | -3.9         | 1.83          | -0.32         | 12.292     | 28.487      | 1.83        | -18.19      | 5.73                | 30                 | 50.27        | 50.45        |
| 2420          | 44.06       | -3.56        | 2.02          | -0.13         | 13.453     | 30.608      | 2.02        | -17.66      | 5.58                | 30                 | 50.1         | 50.21        |
| 2430          | 49.72       | -3.03        | 2.67          | 0.52          | 15.255     | 34.465      | 2.67        | -18.69      | 5.7                 | 30                 | 49.75        | 49.88        |
| 2440          | 51.46       | -2.89        | 2.94          | 0.79          | 15.731     | 35.725      | 2.94        | -18.91      | 5.82                | 30                 | 49.7         | 49.78        |
| 2450          | 54.74       | -2.62        | 3.39          | 1.24          | 16.594     | 38.15       | 3.39        | -17.04      | 6                   | 120                | 50.22        | 50.24        |
| 2460          | 50.47       | -2.97        | 3.21          | 1.06          | 15.234     | 35.235      | 3.21        | -15.36      | 6.18                | 120                | 50.13        | 50.14        |
| 2470          | 51.77       | -2.86        | 3.4           | 1.25          | 15.338     | 36.436      | 3.4         | -14.57      | 6.26                | 150                | 50.67        | 50.61        |
| 2480          | 47.98       | -3.19        | 3.11          | 0.96          | 13.895     | 34.087      | 3.11        | -15.93      | 6.3                 | 150                | 49.89        | 49.83        |
| 2490          | 48.02       | -3.19        | 2.92          | 0.77          | 13.507     | 34.51       | 2.92        | -17.87      | 6.11                | 150                | 50           | 49.85        |
| 2500          | 46.32       | -3.34        | 2.44          | 0.29          | 12.595     | 33.721      | 2.44        | -20.38      | 5.79                | 150                | 49.61        | 49.52        |

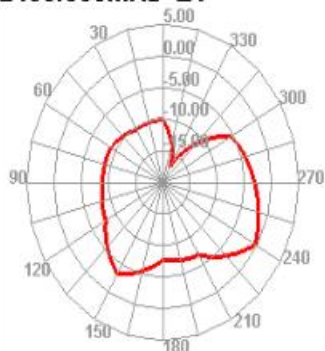
2400.000MHz



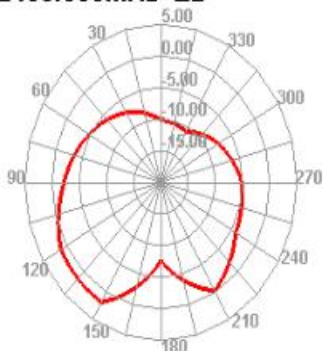
2400.000MHz H



2400.000MHz E1



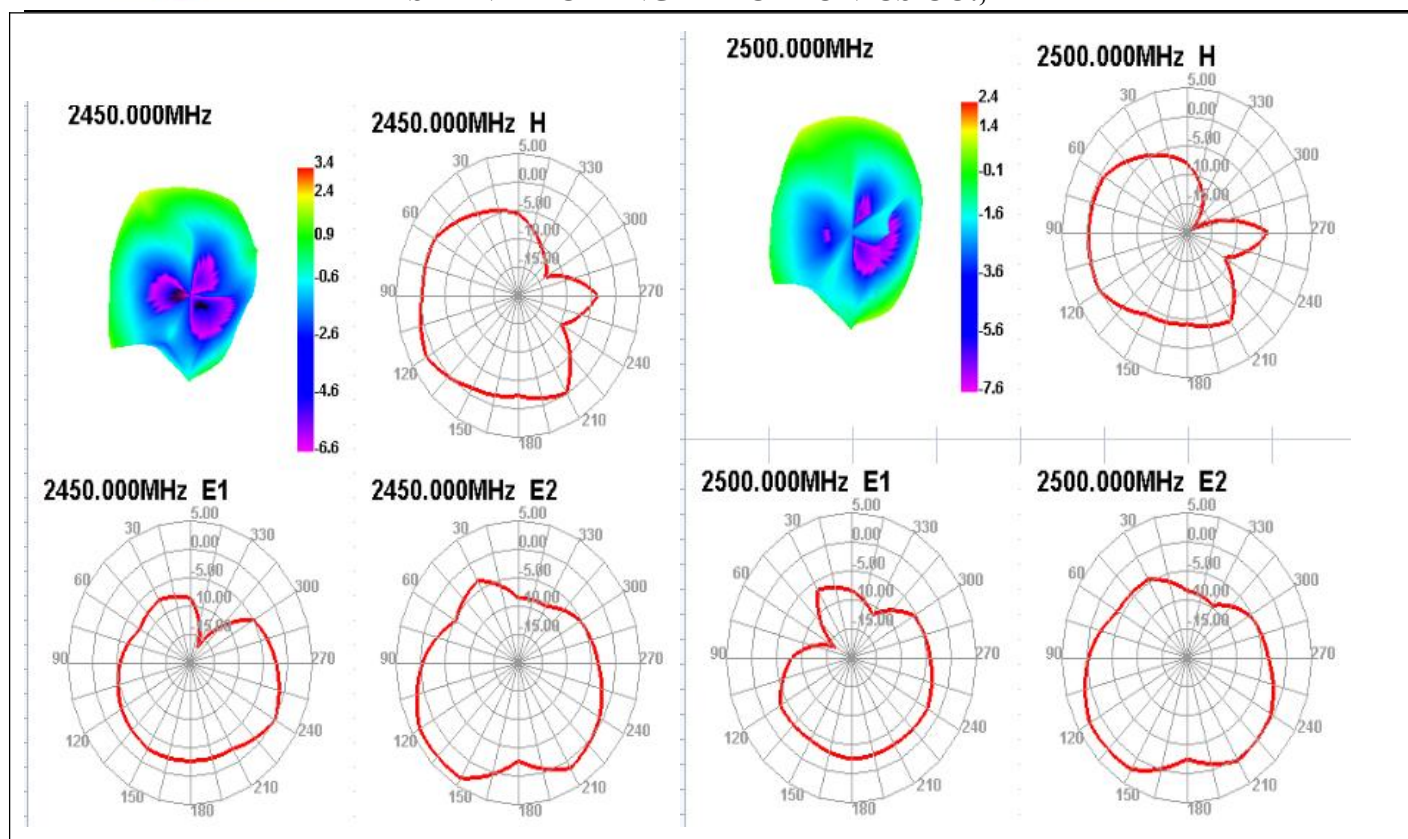
2400.000MHz E2





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## SHEN DA CHENG ELECTRONICS CO., LTD

### 可靠性测试报告

#### Reliability Test Report

|                            |                                                                                                                             |                           |                          |                  |                  |               |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------|------------------|------------------|---------------|
| 测试日期<br>Test Date          | 2022. 11. 07                                                                                                                | 样品数量<br>Sample Qty.       | 3                        | 测试人<br>Inspector | 许燕芳              |               |
| 测试项目<br>Test Item          | 要求<br>Requirement                                                                                                           | 试验设备<br>testing equipment | 样品 1<br>Sample 1         | 样品 2<br>Sample 2 | 样品 3<br>Sample 3 | 判定<br>PASS/NG |
| 高温存储                       | 在+85℃条件下暴露<br>24H, 恢复 2H 后进行测试                                                                                              | 恒温恒湿箱                     | OK                       | OK               | OK               | Pass          |
| 低温存储                       | 在-40℃条件下暴露<br>24H, 恢复 2H 后进行测试                                                                                              | 恒温恒湿箱                     | OK                       | OK               | OK               | Pass          |
| 高温工作                       | 在+60℃条件下通电工作 24H                                                                                                            | 恒温恒湿箱                     | OK                       | OK               | OK               | Pass          |
| 低温工作                       | 在-20℃条件下通电工作 24H                                                                                                            | 恒温恒湿箱                     | OK                       | OK               | OK               | Pass          |
| 盐雾试验                       | (5 ± 0. 5)%氯化钠、<br>pH 值为 6. 5~7. 2, 实验箱温度 (35±2) °C<br><input type="checkbox"/> 24H <input checked="" type="checkbox"/> 48H | 盐雾试验机                     | OK                       | OK               | OK               | Pass          |
| 连接器铆压拉拔力                   | 1. 13 线径 ≥10N<br>0. 81 线径 ≥8N<br>RG174 ≥60N<br>RG178 ≥50N                                                                   | 推拉力计                      | ≥10N                     | ≥10N             | ≥10N             | Pass          |
| 最终结论<br>Conclusion         |                                                                                                                             |                           |                          |                  |                  | Pass          |
| 测试人&日期<br>Inspector & Date | 许燕芳 2022. 11. 07                                                                                                            |                           | 批准&日期<br>Approval & Date |                  |                  |               |

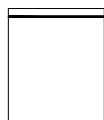


## 包 装 规 范

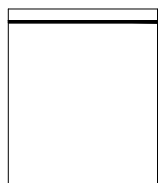
项目名：CWD-F7-2

成品名称：WF天线

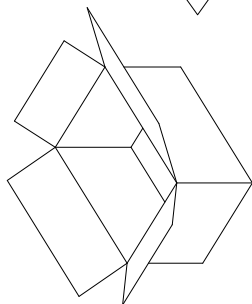
FPC成品天线 (一)



(二) 每PE袋装100pcs产品 (以实际包装为准)



(三) 再将装好的天线小包装袋整齐放入  
(图三) 装10小袋 (以实际包装为准)



(四) 包装好的天线放入纸箱, 可装5大袋,  
每箱可装5000PCS (图四)。(以实际  
包装为准)



|      |  |
|------|--|
| 供应商  |  |
| 采购单号 |  |
| 物料编码 |  |
| 规格型号 |  |
| 数量   |  |
| 日期   |  |

(五) 包装完成后需贴上出货标签 (图五) .



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安装事宜或其它

Install Wizard or Other

安装过程:

取 1PCS 产品, 用手撕下 FPC 背面的离型纸, 然后将 FPC 定位孔位置与外壳定位孔位置 (定位筋位或定位线) 对齐, 平整的贴附与外壳上, 具体位置如下图所示:

安装过程注意事项:

- ☐ 粘贴天线后保证 FPC 完整贴附于外壳;
- ☐ 定位孔与外壳定位柱位置对齐;
- ☐ FPC 边缘与外壳边缘对齐;
- ☐ 带端子天线在将端子扣合到主板 PCBA 端时请首先对齐端子, 然后垂直扣合;
- ☐ 拆卸天线端子时需使用工具 (如专用撬棍) 垂直翘起端子, 不可直接拽线拆卸。



深圳市顺达成科技有限公司  
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产品 ROHS 证书

*Certificate*

Certificate Number: UNIB22051904HC-01



Product: Fpc antenna  
Applicant: ShenZhen ShunDaCheng Technology Co., Ltd.  
4th Floor, Building B5, Xinfu Industrial Zone, Fuyong Chongqing Road,  
Baoan District, Shenzhen  
Manufacturer: ShenZhen ShunDaCheng Technology Co., Ltd.  
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: UNIB22051904HR-01.

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

**RoHS**

May 27, 2022  
Issue Date



**CE**

Shenzhen United Testing Technology Co., Ltd.

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Certificate of Compliance