

深圳市合拓科技有限公司

样品承认书

Sample Approved Sheet

|       |                                                |      |           |
|-------|------------------------------------------------|------|-----------|
| 客户名称  | 深圳市同达科技有限公司                                    |      |           |
| 客户项目名 | XZX-SBA-TDKJ-对讲机                               | 产品名称 | 2.4G 天线   |
| 客户编码  |                                                | 料号   | 007.0009  |
| 规格描述  | 2.4G 天线：HT-WIFI-XZX-SBA-TDKJ, 1.13 黑色线长 L=60mm |      |           |
| 研发审核  |                                                |      |           |
| 制订    | 审核                                             | 批准   | 承认书完成时间   |
| 李瑶娜   | 胡雪文                                            | 戴庭庭  | 2023.9.26 |

客户判定审核组

|                                                                                                                                                                                                |    |    |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|------|
| 承认                                                                                                                                                                                             | 审核 | 批准 | 承认日期 |
|                                                                                                                                                                                                |    |    |      |
| 评审项目： <input type="checkbox"/> 承认书 3 份 <input type="checkbox"/> 规格书/图纸 <input type="checkbox"/> 检测报告 <input type="checkbox"/> 样品__PCS <input type="checkbox"/> 安规 <input type="checkbox"/> HSF |    |    |      |
| 评审结果： <input type="checkbox"/> 接受 <input type="checkbox"/> 有条件接受 <input type="checkbox"/> 拒绝                                                                                                   |    |    |      |

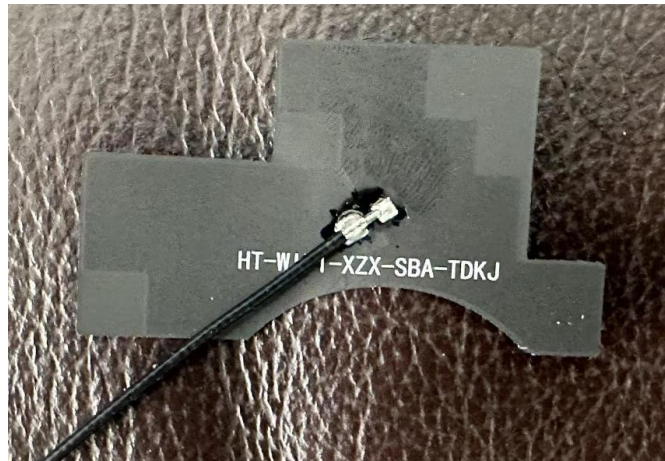
|      |      |     |    |    |
|------|------|-----|----|----|
| 修订履历 |      |     |    |    |
| 版本   | 修订内容 | 责任人 | 核准 | 日期 |
|      |      |     |    |    |
|      |      |     |    |    |
|      |      |     |    |    |

# 目录/Catalogue

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## 1. Antenna picture

The report mainly provides the test status of the electrical properties parameters of **XZX-SBA-TDKJ 对讲机**. The **XZX-SBA-TDKJ 对讲机** antenna is a **2.4~2.5GHz** Band . The antenna Picture and assembly are shown below. Antenna picture & assembly picture



## 2. 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 Satimo starlab 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:

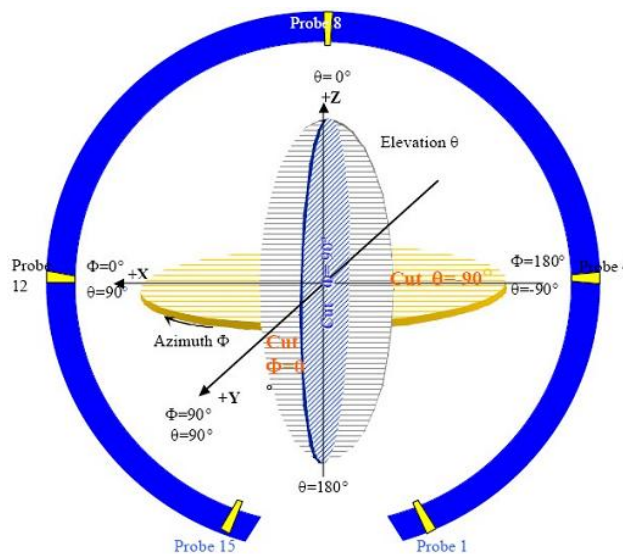


图 4 3D 微波暗室测试坐标系 (back view)

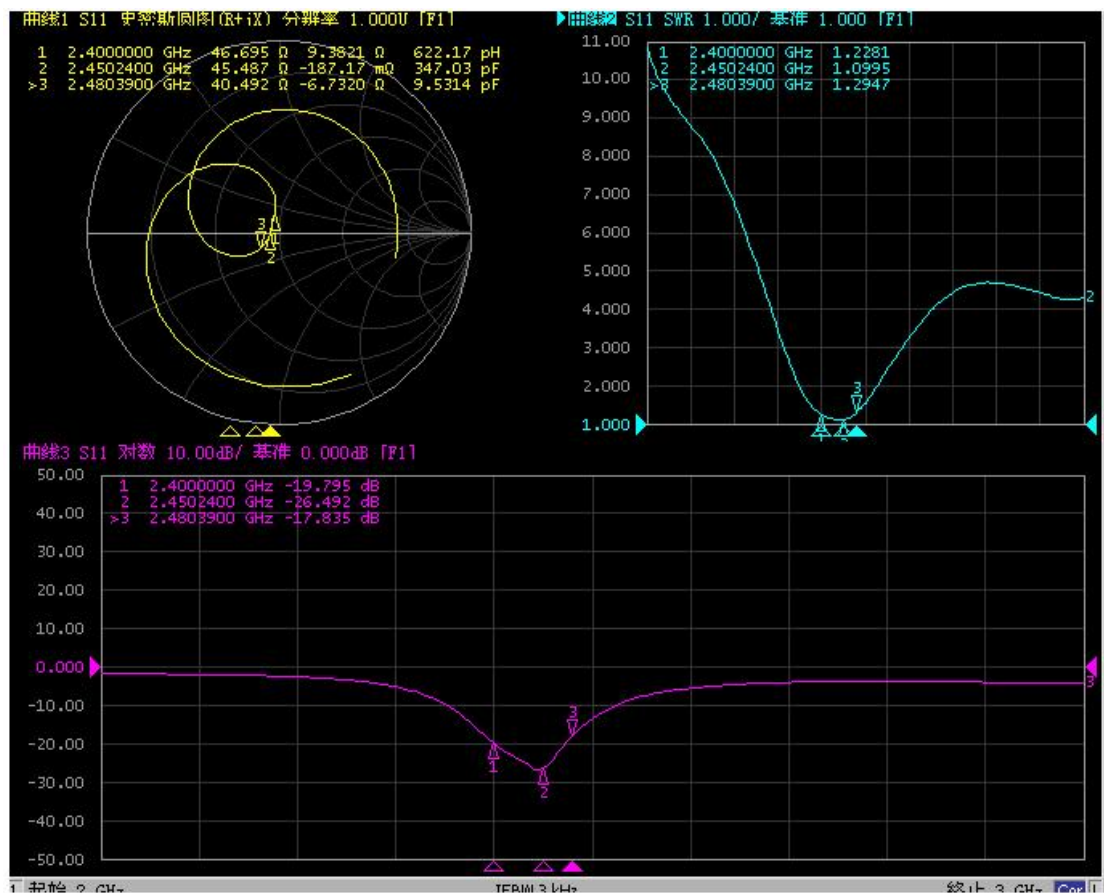
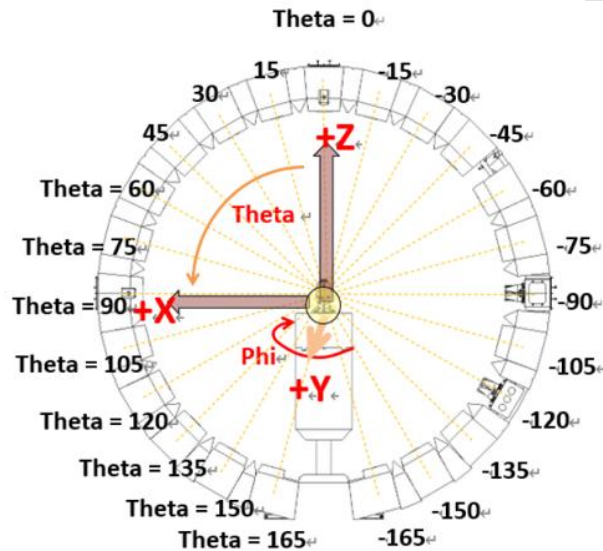
## 3. Electrical Specification

### 3-2 Passive S11 parameter

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.

VSWR

### Sample status & coordinates



### 3-3 Antenna Matching Network



#### 深圳市合拓科技有限公司

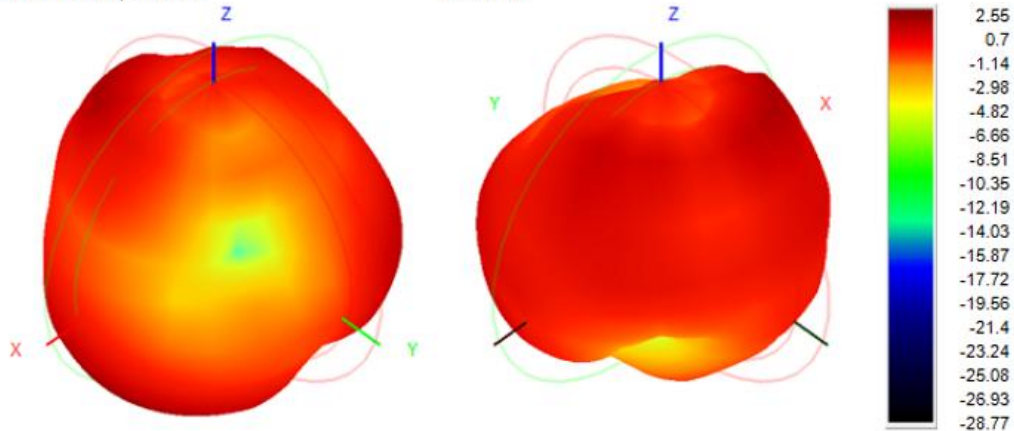
| Frequency ID               | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     |
|----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Frequency (MHz)            | 2400.0 | 2410.0 | 2420.0 | 2430.0 | 2440.0 | 2450.0 | 2460.0 | 2470.0 | 2480.0 | 2490.0 | 2500.0 |
| Efficiency (dBi)           | -2.35  | -2.26  | -2.39  | -2.33  | -2.36  | -2.54  | -2.64  | -2.74  | -2.89  | -2.89  | -3.06  |
| Gain (dBi)                 | 2.55   | 2.65   | 2.82   | 2.71   | 2.37   | 2.39   | 2.17   | 2.05   | 1.76   | 1.82   | 1.42   |
| Efficiency (%)             | 58.18  | 59.37  | 57.68  | 58.45  | 58.04  | 55.73  | 54.44  | 53.24  | 51.42  | 51.39  | 49.49  |
| Directivity (dB)           | 4.90   | 4.92   | 5.21   | 5.04   | 4.73   | 4.93   | 4.81   | 4.78   | 4.65   | 4.72   | 4.47   |
| Peak Gain Position (Theta) | 120.00 | 120.00 | 120.00 | 120.00 | 120.00 | 120.00 | 150.00 | 150.00 | 150.00 | 150.00 | 150.00 |
| Peak Gain Position (Phi)   | 345.00 | 345.00 | 345.00 | 345.00 | 345.00 | 345.00 | 30.00  | 30.00  | 30.00  | 30.00  | 30.00  |
| Efficiency ThetaPol (%)    | 24.78  | 25.29  | 24.42  | 24.65  | 24.65  | 23.86  | 23.67  | 23.69  | 23.26  | 23.73  | 23.32  |
| Efficiency PhiPol (%)      | 33.41  | 34.08  | 33.26  | 33.81  | 33.39  | 31.88  | 30.77  | 29.56  | 28.16  | 27.66  | 26.17  |
| Upper Hem. Efficiency (%)  | 25.64  | 25.86  | 25.10  | 25.45  | 25.94  | 25.28  | 25.43  | 25.43  | 25.37  | 25.38  | 24.65  |
| Lower Hem. Efficiency (%)  | 32.54  | 33.51  | 32.58  | 33.01  | 32.10  | 30.45  | 29.01  | 27.81  | 26.04  | 26.01  | 24.84  |

| Efficiency (dBi) | 58.18 | 59.37 | 57.68 | 58.45 | 58.04 | 55.73 | 54.44 | 53.24 | 51.42 | 51.39 | 49.49 |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Gain (dBi)       | 2.55  | 2.65  | 2.82  | 2.71  | 2.37  | 2.39  | 2.17  | 2.05  | 1.76  | 1.82  | 1.42  |

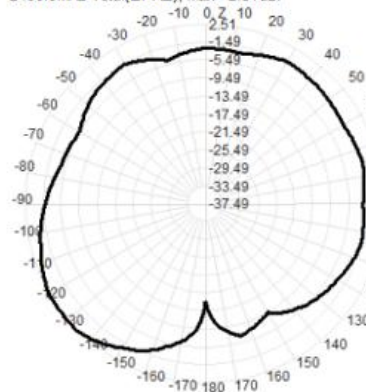
#### 2D&3D — 2.4G- ANT

2400.0MHz H+V, Eff: 58.2%

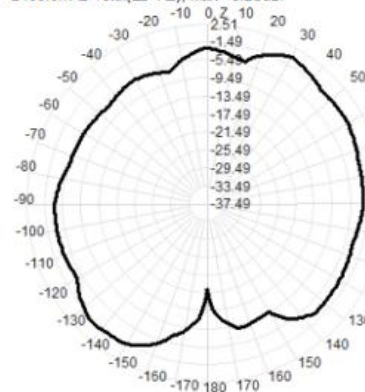
Back View



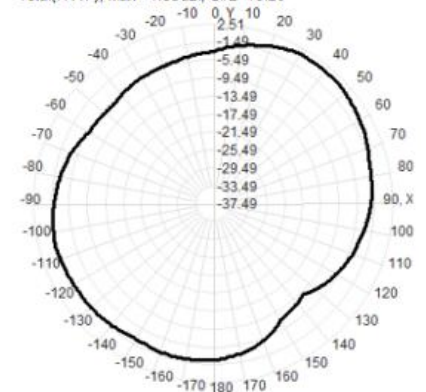
2400.0MHz Total(E1-XZ), Max= 2.51dBi



2400.0MHz Total(E2-YZ), Max= 0.23dBi



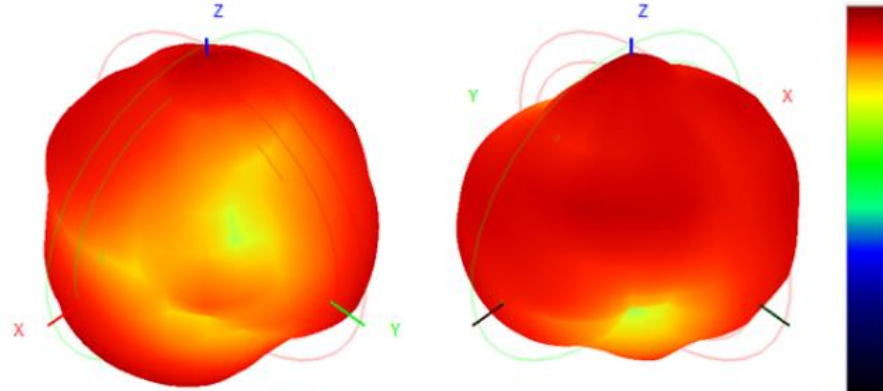
Total(H-XY), Max= 1.05dBi, CirD=10.28



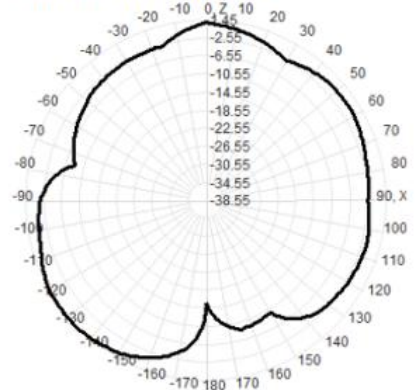
## 2D&3D — 2.4G- ANT

2450.0MHz H+V, Eff: 55.7%

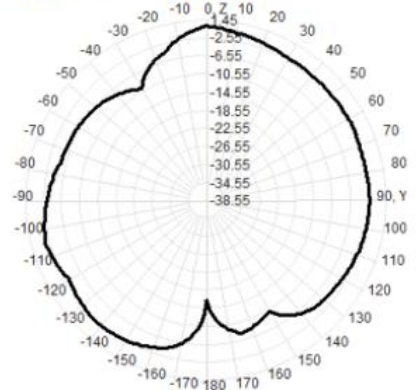
Back View



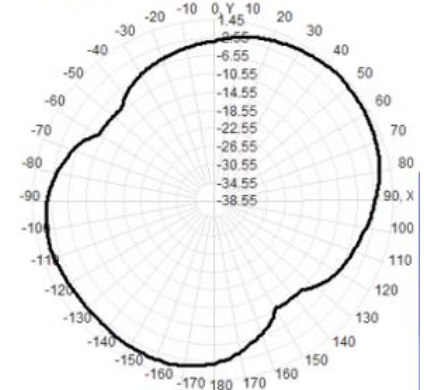
2450.0MHz Total(E1-XZ), Max= 1.45dBi



2450.0MHz Total(E2-YZ), Max= 0.06dBi



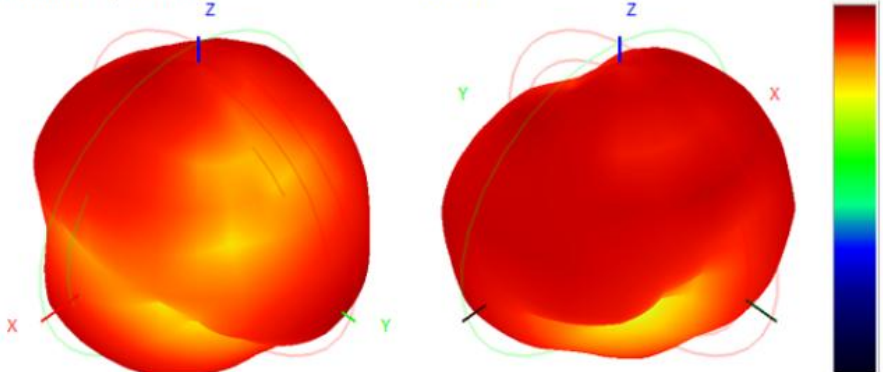
Total(H-XY), Max= 0.64dBi, CirD=11.71



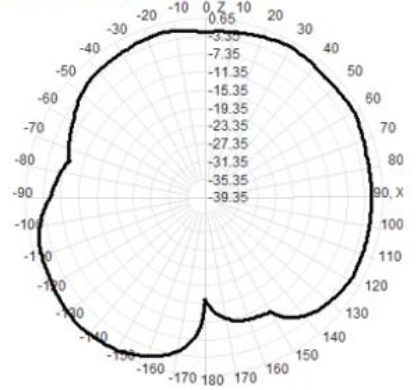
## 2D&3D — 2.4G- ANT

2500.0MHz H+V, Eff: 49.5%

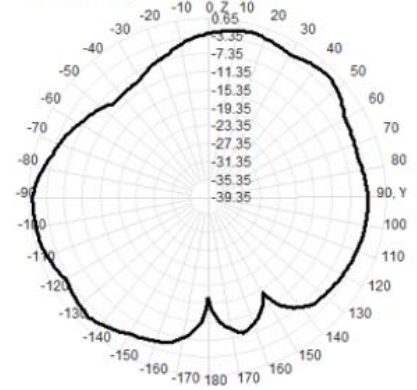
Back View



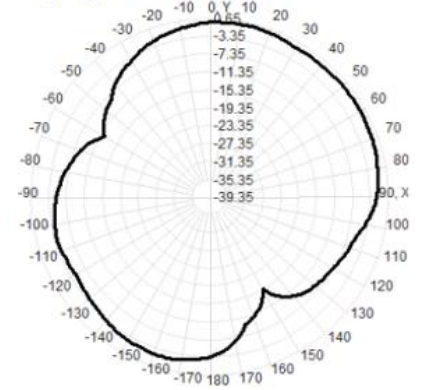
2500.0MHz Total(E1-XZ), Max= 0.65dBi



2500.0MHz Total(E2-YZ), Max= -0.24dBi



Total(H-XY), Max= -0.09dBi, CirD=15.77



[illegible]

## 样品尺寸测量报告

## Sample Dimensions Test Report

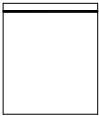
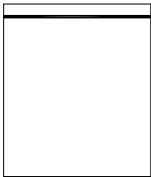
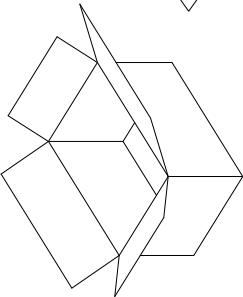
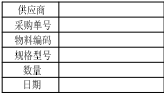
|                            |                 |                     |                          |                  |         |
|----------------------------|-----------------|---------------------|--------------------------|------------------|---------|
| 测试日期<br>Test Date          | 2023. 9. 26     | 样品数量<br>Sample Qty. | 3                        | 测试人<br>Inspector | 李瑶娜     |
| 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                        | 45. 4±0. 2mm    | 45. 4               | 45. 5                    | 45. 4            | Pass    |
| ②宽度                        | 26. 05±0. 2mm   | 26. 05              | 26. 09                   | 26. 08           | Pass    |
| ③厚度                        | 0. 1±0. 05mm    | 0. 1                | 0. 1                     | 0. 1             | Pass    |
| ④线长                        | 60±1mm          | 60. 4               | 60. 7                    | 60               | Pass    |
| ⑤                          |                 |                     |                          |                  |         |
| ⑥                          |                 |                     |                          |                  |         |
| ⑦                          |                 |                     |                          |                  |         |
|                            |                 |                     |                          |                  |         |
|                            |                 |                     |                          |                  |         |
|                            |                 |                     |                          |                  |         |
| 最终结论<br>Conclusion         |                 |                     |                          |                  | PASS    |
| 测试人&日期<br>Inspector & Date | 李瑶娜/2023. 9. 26 |                     | 批准&日期<br>Approval & Date |                  |         |

## 可靠性测试报告

## Reliability Test Report

|                                   |                                                                                                                       |                           |                            |                  |                  |               |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------|----------------------------|------------------|------------------|---------------|
| 测试日期<br>Test Date                 | 2022. 9. 25                                                                                                           | 样品数量<br>Sample Qty.       | 3                          | 测试人<br>Inspector | 李瑶娜              |               |
| 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+80℃条件下暴露 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 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、pH 值为 6. 5~7. 2, 试验箱温度 (35±2)℃<br><input type="checkbox"/> 24H <input checked="" type="checkbox"/> 48H | 盐雾试验机                     | OK                         | OK               | OK               | Pass          |
| 连接器铆压<br>拉拔力                      | 1. 13 线径 ≥10N<br>0. 81 线径 ≥8N<br>RG174 ≥60N<br>RG178 ≥50N                                                             | 推拉力计                      | /                          | /                | /                | Pass          |
| 最终结论<br>Conclusion                |                                                                                                                       |                           |                            |                  |                  | Pass          |
| 测试人&<br>日期<br>Inspector &<br>Date | 李瑶娜 2023. 9. 26                                                                                                       |                           | 批准&日期<br>Approval &<br>ate |                  |                  |               |

包 装 规 范

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 客户：同达科技                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 成品名称：FPC天线 |
| <div><div>FPC成品天线（一）</div><div></div><div>（二） 每PE袋装100pcs产品（以实际包装为准）</div><div></div><div>（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）</div><div></div><div>（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）</div><div></div><div>（五） 包装完成后需贴上出货标签（图五）。</div></div> |            |