

深圳市艾特诺通讯设备有限公司  
SHENZHEN ATN COMMUNICATION TECHNOLOGY CO., LTD.

承 认 书  
SPECIFICATION FOR APPROVL

客 户：  
CUSTOMER: \_\_\_\_\_

客 户 项 目：  
CUSTOMER PRJ: TW2306-L

客 户 料 号：  
CUSTOMER P/N: LPDTW2306-H001

本 厂 料 号：  
OUR MODEL P/N: 58008-0-1-A0

规 格：  
SPECIFICATIONS: 2.4G 蓝牙天线

样 品 数：  
Q' TY: 1 PCS

日 期：  
DATE: 2024.08.05

| 深圳市艾特诺通讯设备有限公司<br>A T N |               |                | 客 户<br>CUSTOMER |                   |                |
|-------------------------|---------------|----------------|-----------------|-------------------|----------------|
| 制作<br>make              | 审核<br>examine | 核准<br>Approver | 结构<br>Structure | 电子<br>Electronics | 核准<br>Approver |
|                         |               |                |                 |                   |                |

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### 发行/变更记录

| 日期         | 变更原因 | 内容      | 版本 | 备注 |
|------------|------|---------|----|----|
| 2024-04-15 | 初版发行 | 初版发行    | A0 |    |
| 2024-06-03 | 天线调整 | 更改图纸、性能 | A1 |    |
|            |      |         |    |    |



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## 1、测试设备 Test Equipment&Conditions

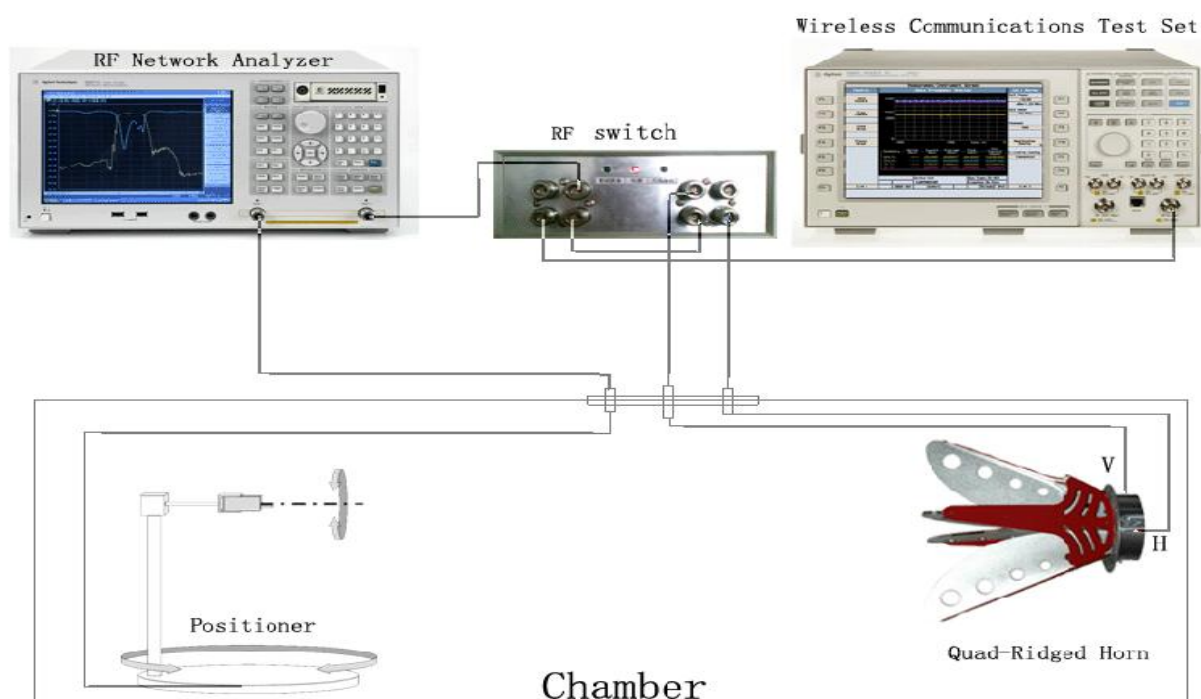
### 1.1 网络分析仪 (Network Analyzers)

Agilent Technologies E5071B

### 1.2 综合测试仪 (Communications Test Set)

CMW500

### 1.3 3D 暗室测试系统 (3D Chamber Test System)



## 2、产品规格 Product Specification

### 2.1、Material&Mechanical Characteristics

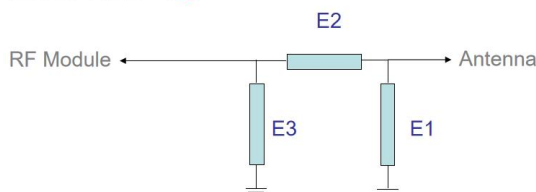
|              |            |
|--------------|------------|
| 材质 Material  | FPC        |
| 尺寸 Dimension | 13.9*7.8mm |

### 2.2、储存条件 Storage conditions

|                          |        |
|--------------------------|--------|
| 储存温度 Storage Temperature | 22℃±5℃ |
| 相对湿度 relative humidity   | 35-65% |
| 储存期限 Storage life        | 360 天  |

## 3、匹配电路 Matching circuit

匹配电路 (L)

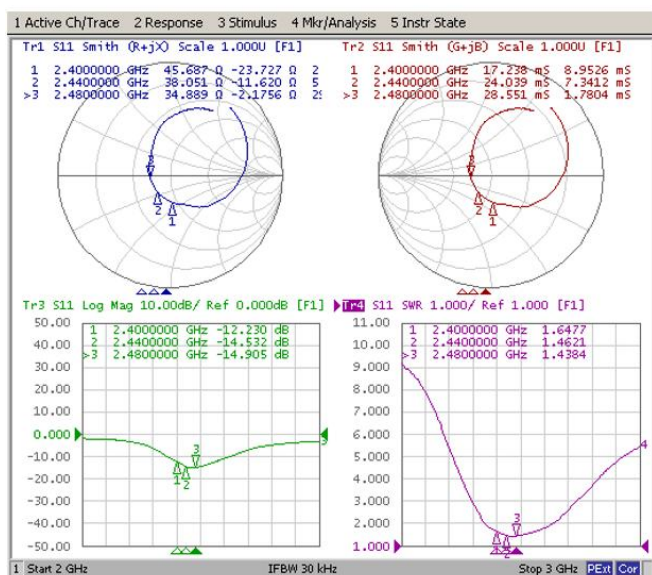


| Element  | Value |
|----------|-------|
| E1(0201) | NC    |
| E2(0201) | 0Ω    |
| E3(0201) | NC    |

## 4 、测试数据报告 Test Data Report

### 4.1 S11 Parameter

S11 Parameter(L)

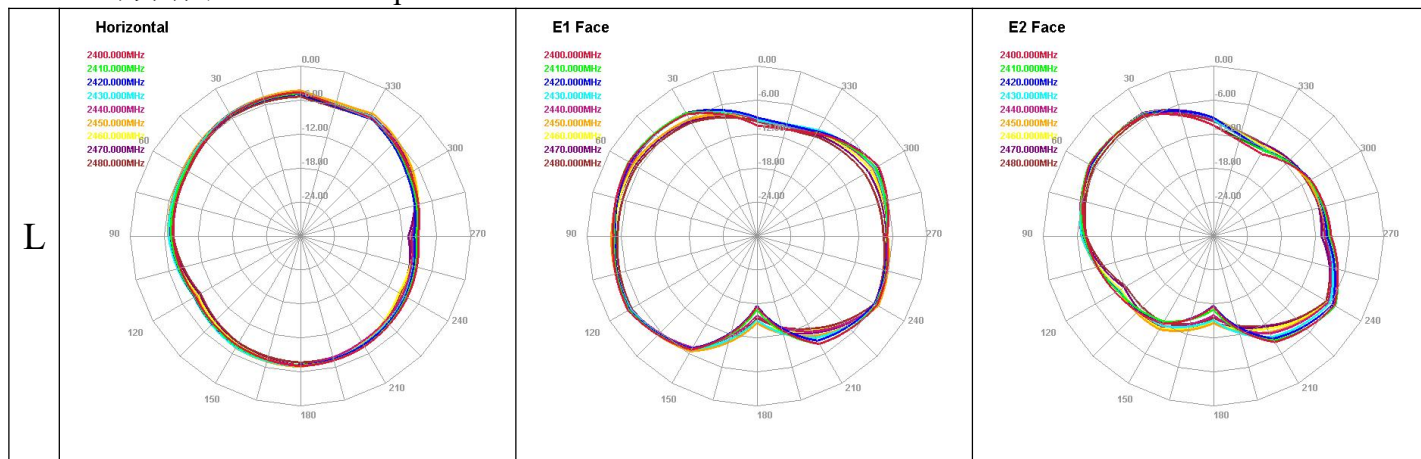


### 4.2 增益和效率 Gain & Efficiency

Gain & Efficiency(L)

| Freq<br>(MHz) | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) |
|---------------|-------------|--------------|---------------|
| 2400          | 21.75       | -6.63        | -3.38         |
| 2410          | 21.71       | -6.63        | -3.39         |
| 2420          | 20.78       | -6.82        | -3.76         |
| 2430          | 20.57       | -6.87        | -3.76         |
| 2440          | 19.75       | -7.04        | -3.75         |
| 2450          | 20.19       | -6.95        | -3.89         |
| 2460          | 19.26       | -7.15        | -3.85         |
| 2470          | 18.91       | -7.23        | -3.54         |
| 2480          | 17.16       | -7.65        | -3.9          |

#### 4.3 方向图 Radiation pattern



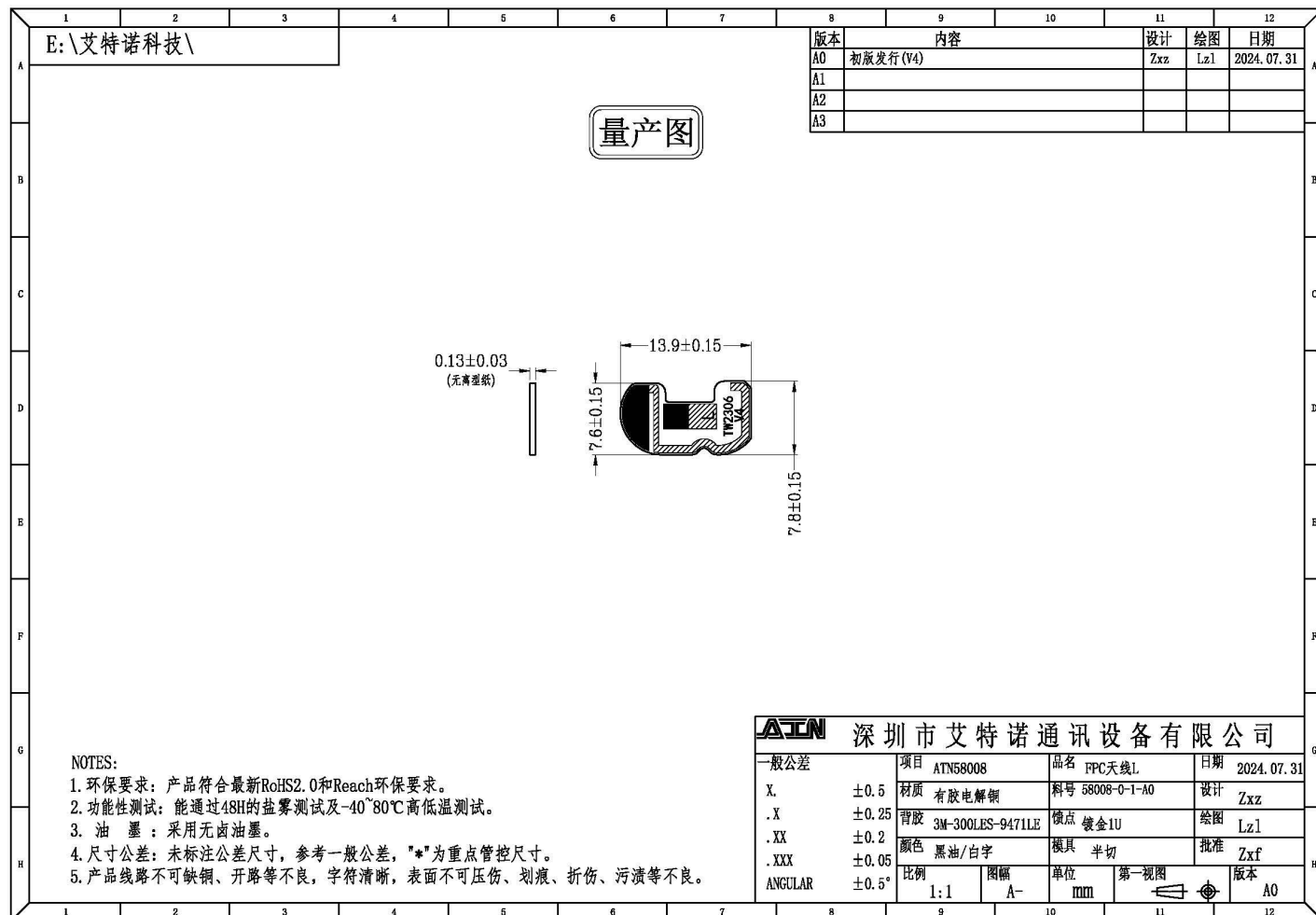
#### 4.4 OTA 测试数据 OTA Test Data

| band             | channel | TRP (dBm) | TIS (dBm) |
|------------------|---------|-----------|-----------|
| Bluetooth BR (L) | 0       | 5.8       | -89.6     |
|                  | 39      | 5.6       | -88.7     |
|                  | 78      | 5.9       | -89.1     |

### 5、装配要求 Assembly requirements

1 无特殊要求

### 6、工程图纸 Product Drawing





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## 7、样品尺寸检测报告 Size test report

### 尺寸检验报告 Dimension test report

|                                       |   |           |                                                                                                                                                          |      |       |                     |       |              |
|---------------------------------------|---|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|---------------------|-------|--------------|
| 项目 project: TW2306 (耳机)               |   |           | 品名 Product Name: FPC 天线                                                                                                                                  |      |       |                     |       |              |
| 类别 category: FPC                      |   |           | 数量 Quantity: 5 个                                                                                                                                         |      |       | 日期 Date: 2024.06.03 |       |              |
| 检验依据标准: Inspection basis and standard |   |           | <input checked="" type="checkbox"/> 工程图纸 Engineering drawings<br><input type="checkbox"/> 标准样板 Standard template <input type="checkbox"/> 其它 Other _____ |      |       |                     |       |              |
| 测量设备 measuring equipment              |   |           | 卡尺 Vernier caliper                                                                                                                                       |      |       |                     |       |              |
| 检验项目 Inspection items                 |   |           | 样品测验值 test value                                                                                                                                         |      |       |                     |       | 判定 determine |
|                                       |   |           | 1                                                                                                                                                        | 2    | 3     | 4                   | 5     |              |
| 尺寸检验<br>Dimensional inspection        | L | 0.13±0.03 | 0.12                                                                                                                                                     | 0.12 | 0.12  | 0.12                | 0.12  | OK           |
|                                       | L | 13.9±0.15 | 13.98                                                                                                                                                    | 14.0 | 13.96 | 13.94               | 13.98 | OK           |
|                                       | L | 7.8±0.15  | 7.88                                                                                                                                                     | 7.86 | 7.84  | 7.86                | 7.90  | OK           |
|                                       |   | /         |                                                                                                                                                          |      |       |                     |       |              |
|                                       |   |           |                                                                                                                                                          |      |       |                     |       |              |
|                                       |   |           |                                                                                                                                                          |      |       |                     |       |              |
|                                       |   |           |                                                                                                                                                          |      |       |                     |       |              |
|                                       |   |           |                                                                                                                                                          |      |       |                     |       |              |
|                                       |   |           |                                                                                                                                                          |      |       |                     |       |              |
|                                       |   |           |                                                                                                                                                          |      |       |                     |       |              |
|                                       |   |           |                                                                                                                                                          |      |       |                     |       |              |



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## 8、盐雾测试报告 Salt spray test report

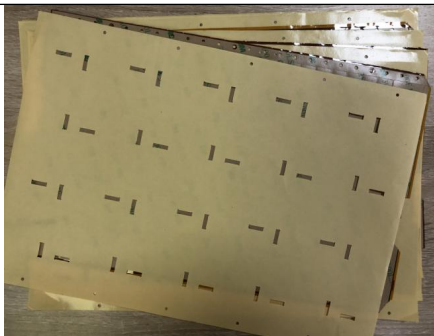
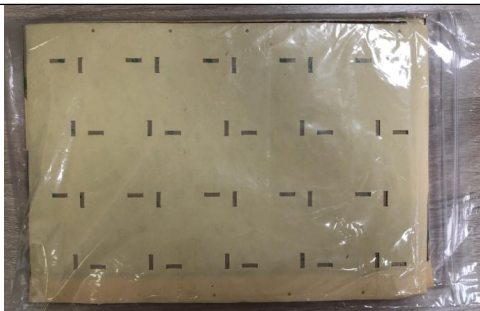
|                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                  |                                |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------|-----|
| 项目 project                                                                                                                                                                                                                                                                                                                                                                                                             | TW2306 (耳机)                                                                                      | 类别 category                    | FPC |
| 试验情况 Test information                                                                                                                                                                                                                                                                                                                                                                                                  | 试验数量 Number of tests: 5 PCS                                                                      |                                |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                        | 基材 base material: 电解铜                                                                            | 镀层 Gold plating: 镀金 1U"        |     |
| 试验条件 Test conditions                                                                                                                                                                                                                                                                                                                                                                                                   | 盐溶液: 5%                                                                                          | PH:7.0                         |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                        | 箱内温度 Box temperature: 35℃                                                                        | 相对湿度 relative humidity: 5%     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                        | 喷雾方式:   ■ 连续                      □ 间歇                                                           | 压缩空气压力: 1kg/cm²                |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                        | 盐雾沉降率:                                                                                           | 雾液收集 Mist collection: PH7.0nac |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                        | 试验周期: __1__个循环                                                                                   | 喷雾时间 Spray time:   48 h        |     |
| 试验结果 test result                                                                                                                                                                                                                                                                                                                                                                                                       | 试验后的外观: 外观完整无损, 无明显变化。<br>Appearance after test: the appearance is intact without obvious change |                                |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                        | 镀层: 无剥落、无锈蚀<br>Coating: no peeling and corrosion                                                 |                                |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                        | 表面喷涂、丝印: 无脱落、无气泡。<br>Surface spraying and silk screen printing: no falling off and bubble        |                                |     |
| 试验判定 Test judgment                                                                                                                                                                                                                                                                                                                                                                                                     | OK                                                                                               |                                |     |
| 说明:<br>1、盐雾试验作业标准依照中华人民共和国国家标准 GB/T2423.17-2008 执行<br>1. The operation standard of salt spray test shall be in accordance with the national standard of the people's Republic of China GB / t2423 17-2008 implementation<br>2、试件结果判定标准依照中华人民共和国国家标准 GB/T6461-02 执行<br>2. The judgment standard of test piece results shall be in accordance with the national standard of the people's Republic of China GB / t6461-02 |                                                                                                  |                                |     |

## 9、包装信息 Manner of packing

### 深圳市艾特诺通讯设备有限公司

SHENZHEN ATN COMMUNICATION EQUIPMENT CO.LTD

### 产品包装 Product packaging

|                                                                                     |                                                                                    |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 版本 edition: : V1.0                                                                  | 页码 Page: 1/1                                                                       |
| 1. 离型纸隔层摆放保护天线<br>Barrier paper protection products                                 | 2. 密封袋封装效果<br>Sealing bag packaging effect                                         |
|   |  |
| 3. 纸箱封箱效果（贴出货标签和 ROHS 标签） Carton sealing effect                                     |                                                                                    |
|  |                                                                                    |

## 10、环保资料 Environmental information

| 材料    | 项目    | 检测机构 | 报告编号               | 报告日期       |
|-------|-------|------|--------------------|------------|
| 铜箔    | RoHS  | SGS  | SHAEC24000428806   | 2024/1/12  |
|       | HF    | SGS  | SHAEC24000428806   | 2024/1/12  |
|       | REACH | SGS  | SHAEC24000428808   | 2024/1/12  |
| 油墨    | RoHS  | SGS  | ETR23701480        | 2023/7/13  |
|       | HF    | SGS  | ETR23701481        | 2023/7/13  |
|       | REACH | SGS  | ETR23202417        | 2024/1/17  |
| 3M 背胶 | RoHS  | SGS  | SHAEC23021627701   | 2023/12/27 |
|       | HF    | SGS  | SHAEC23021627703   | 2023/12/27 |
|       | REACH | SGS  | CANEC24006898001   | 2024/4/16  |
| 镀金    | RoHS  | CTI  | A2240158803101001E | 2024/3/30  |
|       | HF    | CTI  | A2240158803101002E | 2024/3/30  |
|       | REACH | CTI  | A2240158803102001E | 2024/4/7   |