



Shenzhen unity wireless technology co., ltd

Address: Room 1002/1012, Building 7E, Hengda Fashion Valley, Dalang, Longhua District, Shenzhen  
telephone: 0755-23285621      portraiture: 0755-23285621



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## 承认书

customer name: Shenzhen Yijing Technology Co., LTD

Customer part number: \_\_\_\_\_

Client projects: THS52

Zhongcheng material number: 01.15.0004

product description: Copper tube diameter 2.5mm, copper tube length: 26mm,  
1.13 black wire, L=240mm, first-generation terminal, copper tube  
end stripping wire 0\*33\*2, stripping 33mm, blow black heat shrink  
sleeve

date: 2025.9.15

|                         |               |            |
|-------------------------|---------------|------------|
| R&D<br>confirmati<br>on | SE: 薛明波       | signature: |
|                         | RF: 温财慧       |            |
| approval                | approval: 张志成 |            |

### Customer feedback

|            |                         |            |
|------------|-------------------------|------------|
| department | Engineering Department: | signature: |
|            | purchase department:    |            |

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## catalogue

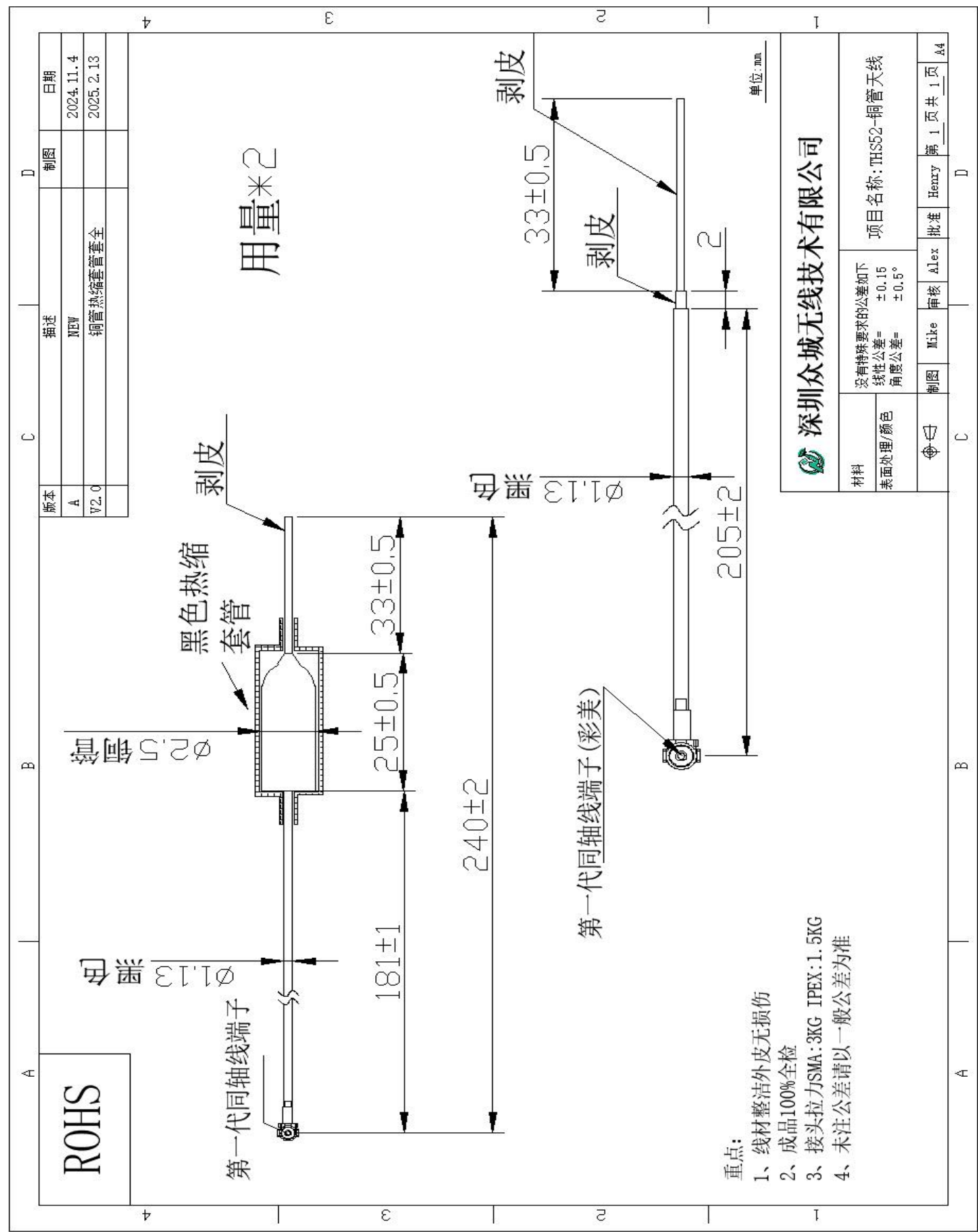
|                                     |     |
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Creation/revision/cancellation of the resume form:

| editio<br>n: | date      | date<br>Formulation/revision<br>content | formulate        | approval |
|--------------|-----------|-----------------------------------------|------------------|----------|
| V1.0         | 2024.11.4 | First formulation                       | primary offering |          |
|              |           |                                         |                  |          |
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工程图纸：

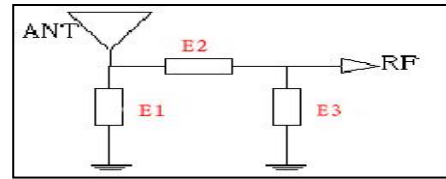


## 产品参数:

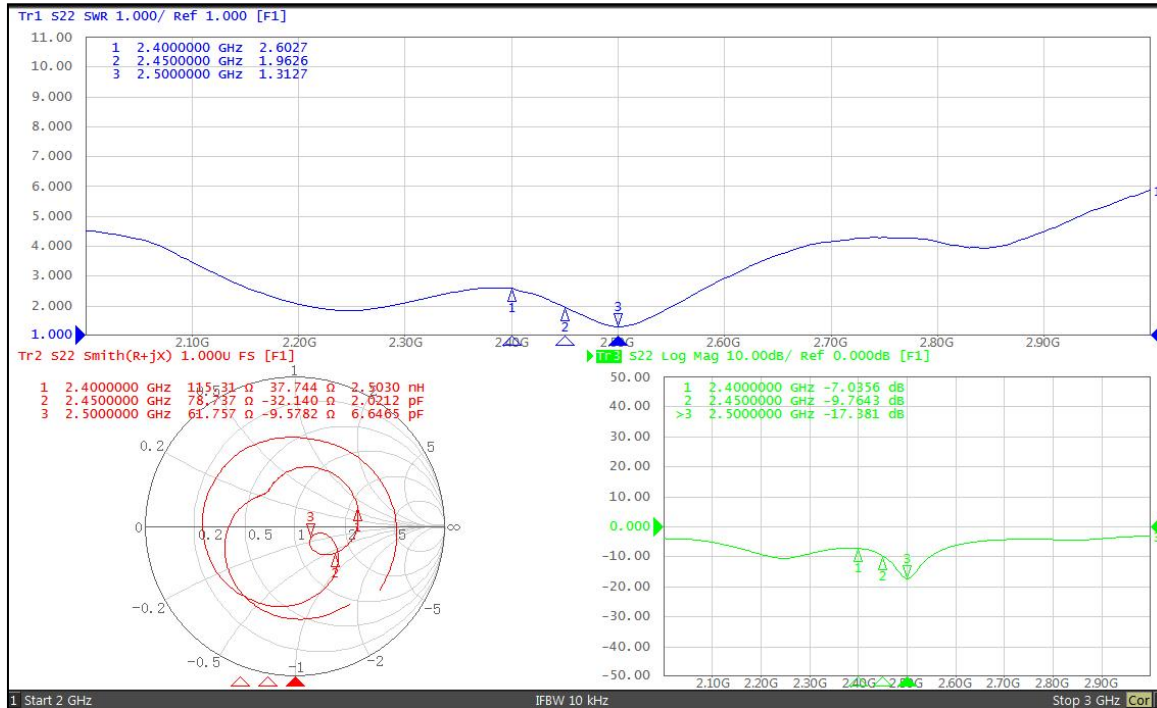
| 品名         | 铜管天线    | Model                      | Copper tube antenna                         |
|------------|---------|----------------------------|---------------------------------------------|
| 频率范围 (MHz) | /       | Frequency                  | /                                           |
| 带宽 (MHz)   | 100     | Bandwidth (MHz)            | 100                                         |
| 极化方式       | 线极化     | Polarization Type          | linear polarization,                        |
| 天线增益 (dBi) | /       | Gain (dBi)                 | /                                           |
| 电压驻波比      | 以实物样机为准 | VSWR                       | Take the physical prototype as the standard |
| 输入阻抗 (Ω)   | 50      | Input Impedance (Ω)        | 50                                          |
| 天线长度 (mm)  | 240mm   | Cable length (mm)          | 240mm                                       |
| 电缆线颜色      | 黑色      | Cable Colour               | black                                       |
| 接口形式       | 一代端子    | Connector Type             | IPEX1                                       |
| 工作温度 (°C)  | -40~+85 | Operation temperature (°C) | -40~+85                                     |
| 存储温度 (°C)  | -40~+85 | Store temperat (°C)        | -40~+85                                     |

## 1. Antenna matching (original motherboard matching)

| E1 | E2 | E3 |
|----|----|----|
|    |    |    |



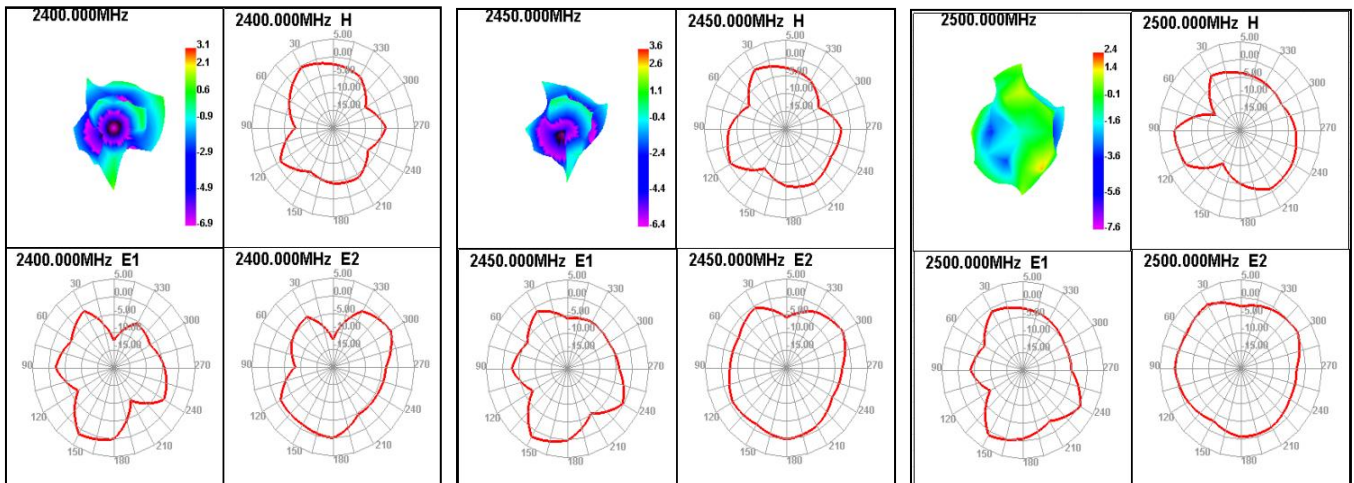
## 2. Antenna passive standing wave diagram (S11) :



## 3. OTA Unpowered test data:

| Freq (MHz) | Effi (%) | Gain (dBi) |
|------------|----------|------------|
| 2400       | 46.69    | 3.08       |
| 2410       | 50.07    | 3.48       |
| 2420       | 50.07    | 3.53       |
| 2430       | 51.44    | 3.57       |
| 2440       | 53.61    | 3.64       |
| 2450       | 55.25    | 3.56       |
| 2460       | 57.15    | 3.43       |
| 2470       | 59.15    | 3.19       |
| 2480       | 59.01    | 2.91       |
| 2490       | 63.51    | 2.81       |
| 2500       | 61.98    | 2.39       |

## antenna pattern:



## 4. Antenna installation location:



## ROHS 限用物质成分调查表

### 所供产品信息

| customer name | Material name/model | project name | manufacturer                                     |
|---------------|---------------------|--------------|--------------------------------------------------|
| The ultimate  | 01.15.0004          | THS52        | Shenzhen Zhongcheng Wireless Technology Co., LTD |

### Product composition information

| ord<br>er<br>num<br>ber | Part name     | Third party inspection report |                  | 限用物质含量 PPM |           |           |         |          |           | 备注 |
|-------------------------|---------------|-------------------------------|------------------|------------|-----------|-----------|---------|----------|-----------|----|
|                         |               | date                          | number           | 铅<br>(Pb)  | 镉<br>(Cd) | 汞<br>(Hg) | 六价<br>铬 | 多溴联<br>苯 | 多溴二苯<br>醚 |    |
| 1                       | copper tubing | 2022/5/6                      | RP22-010226-SZ   | ○          | ○         | ○         | ○       | ○        | ○         |    |
| 2                       | wire stock    | 2023/2/14                     | CANEC23000117904 | ○          | ○         | ○         | ○       | ○        | ○         |    |
| 3                       | IPEX          | 2025/4/25                     | 27322E20188R1M   | ○          | ○         | ○         | ○       | ○        | ○         |    |

#### Note:

1. 请以○、×表示六项限用物质含量合规与否；合规者以○表示；不合规以×表示。

## testing facility

- Measuring instrument: microwave anechoic chamber, network analyzer, standard antenna.
- Micro-wave anechoic chamber description:  
This is the microwave anechoic chamber set up in Shenzhen by our company. This microwave anechoic chamber belongs to a far-field measurement system. The size of the anechoic chamber is 7.0m x4.0m x3.0m, and the quiet zone size is 15cm x15cm x15cm.

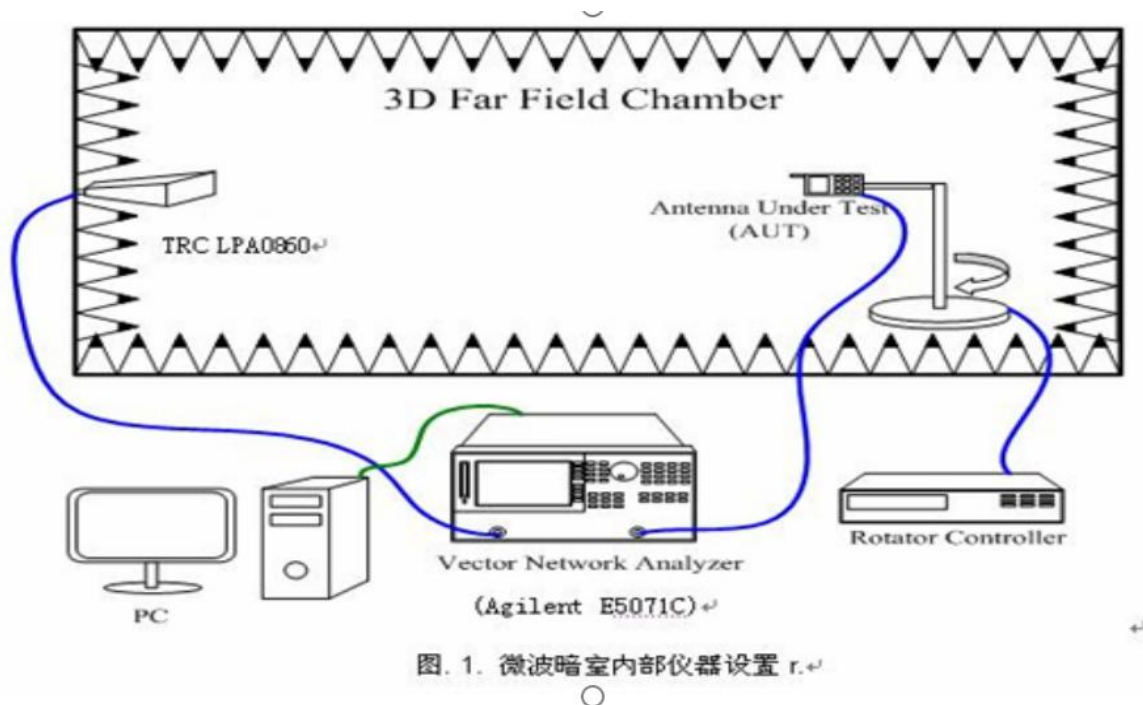


图. 1. Configuration diagram for instruments in the microwave anechoic chamber and network analyzer connection: The transmitting antenna (TRC LPA0860 800MHz-6GHz model used in this chamber) is positioned 1.35 meters from the test antenna (AUT), which is mounted on a rotating platform. By adjusting the rotation angle of the platform, both preliminary and precise measurements can be performed on the test antenna.

The antenna under test is mounted on a rotating platform to collect 360-degree field strength data across its two planes (ZY and ZX). The antenna is then reconfigured as a standard dipole antenna (specifically the TRC AD series dipole antenna operating in the 800MHz-2500MHz frequency range used in this anechoic chamber) to measure its 360-degree field strength data. These measurements serve as the reference for calculating conversion gain values. Through Equation 1, the antenna's gain value and radiation pattern can be determined

$$G_{AUT} = G_{stand} + P_{AUT} - P_{stand}$$

$G_{AUT}$ : Gain of AUT

$G_{stand}$ : Gain of Standard Gain Antenna

$P_{AUT}$ : Measured Power of AUT

$P_{stand}$ : Measured Power of Standard Gain Antenna

## Environmental and Reliability Testing

| project | Reference standards, and experimental conditions                                                                                                                                                                                                                                      | Judgment basis                                                                                                                                                                                               | Sample quantity / bad quantity (PCS) | Test / test the equipment    |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------|
| collide | GB/T 2423.6-1995<br>Acceleration: 200m / s <sup>2</sup><br>Collision pulse duration: 6ms<br>Number of collisions per minute: 40~80 times<br>Total collisions: 400<br>vertical direction, front and back<br>Left and right horizontal direction each 300 times, a total of 1000 times. | It should meet the requirements of electrical characteristics, and the mechanical properties are normal, but the appearance of touch marks, whitening and bending in the allowable range.                    | 5/0                                  | Collision experiment machine |
| vibrate | GB/T2423.10-1995 Test the<br>FcFrequency: 10~30;<br>30~50Hz;<br>Resonance point<br>amplitude: 0.35mm<br>Amplitude: 0.75mm<br>Duration: X, Y & Z, 0.5 hours per direction.<br>Cycle: 1min;<br>Test for 1 hour after completing the experiment.                                         | And firmware without loose, parts without rupture or fatigue;<br>No original fall off, no solder point fracture;<br>The electrical performance index meets the requirements of the technical specifications; | 5/0                                  | Vibration test machine       |

|                                         |                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                          |      |                                                             |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------|
| retent<br>ivity                         | Verification conditions:<br>both ends of the joint and<br>wire are fixed on the<br>drawing machine fixture,<br>and the pulling force<br>returns to zero<br>Verification method:<br>manually pull to the<br>product IPEX connector<br>and wire fall off | >10N                                                                                                                                                                                                                                                                                                                                     | 5/0  | Pull<br>force<br>test<br>machine                            |
| declin<br>e                             | GB/T2423.8-95<br>From 100cm height to the<br>floor 10<br>times. GB/T2423.8-95                                                                                                                                                                          | 1. No significant<br>abnormality in appearance<br>2. After the test, the<br>electrical performance<br>shall meet the<br>requirements of the<br>electrical<br>characteristics, and the<br>mechanical performance<br>shall be normal, but the<br>external collision marks,<br>whitening and bending<br>shall be in the allowable<br>range. | 5/0  | Drop<br>test<br>machine                                     |
| high-t<br>empera<br>ture<br>storag<br>e | GB/T 2423.2-2001<br>trial B<br>Ambient conditions: + 85<br>± 3°C for 96H<br>The experiment was<br>completed 24 hours after<br>room temperature.                                                                                                        | The surface coating shall<br>have no peeling, crack,<br>wrinkle and separation;<br>the non-metallic<br>structures have no<br>permanent deformation,<br>cracking, bonding; the<br>mobile components are not<br>stuck or detached; the<br>electrical performance<br>indexes meet the<br>requirements of technical<br>specifications        | 10/0 | Tempera<br>ture<br>and<br>humidit<br>y cycle<br>test<br>box |

|                                |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                               |      |                                         |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------|
| Low temperature storage        | The gb / t 2423.1-2001 test a ambient conditions: $-40 \pm 3^{\circ}\text{C}$ for 96h was tested 24 hours after the experiment was at room temperature.                                                                                                                                  | The surface coating shall have no peeling, crack, wrinkle and separation; the non-metallic structures have no permanent deformation, cracking, bonding; the mobile components are not stuck or detached; the electrical performance indexes meet the requirements of technical specifications | 10/0 | Temperature and humidity cycle test box |
| High and low temperature cycle | gb/t2423.22-2002 Test n: Place the antenna in $t_1 = -40^{\circ}\text{C}$ incubator for 30 minutes, then raise the temperature for 60 minutes to $t_2 = 80^{\circ}\text{C}$ , then keep the temperature for 30 minutes, relative humidity at 50% rh, and the cycle is repeated 20 times. | The surface coating shall have no peeling, crack, wrinkle and separation; the non-metallic structures have no permanent deformation, cracking, bonding; the mobile components are not stuck or detached; the electrical performance indexes meet the requirements of technical specifications | 10/0 | Temperature and humidity cycle test box |
| humid heat test;               | Test gb / t 2423.3-1993 ca: ambient conditions: $40 \pm 2^{\circ}\text{C}$ , relative humidity 80 ~90% for 96 hours. The experiment was completed 24 hours after room temperature.                                                                                                       | 2. After the test, the electrical performance meets the specification requirements, and the electrical performance meets the specification range.                                                                                                                                             | 10/0 | Temperature and humidity cycle test box |
| salt spray test                | The gb / t 2423.18-2000 test kb places the test in a salt spray chamber with saline injection concentration $(5 \pm 1)\%$ , $35^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , sedimentation rate (1-2) ml / 50mm <sup>2</sup> * h, 48 hours, check the appearance.                            | No rust phenomenon, mechanical performance and electrical performance to meet the range of specification.                                                                                                                                                                                     | 5/0  | Saline spray machine                    |

## Packaging specifications

Product material number: 01.15.0004

size of product, specifications of the products: Copper tube diameter 2.5mm, copper tube length: 26mm, 1.13 black wire, L=240mm, first-generation terminal, copper tube end stripping wire 0\*33\*2, stripping 33mm, blow black heat shrink sleeve

1. Labeling requirements (according to the customer name reference corresponding finished product label production requirements, no requirements, according to the ordinary label requirements)

2. The inner label is about 8cm long and 5.5cm wide

|                                                                                                                              |  |                   |  |
|------------------------------------------------------------------------------------------------------------------------------|--|-------------------|--|
|  <b>众城无线</b><br>UNITY WIRELESS 深圳众城无线技术有限公司 |  |                   |  |
| SHENZHEN UNITY WIRELESS TECHNOLOGY., LTD                                                                                     |  |                   |  |
| 客户                                                                                                                           |  | 规格型号              |  |
| 订单号                                                                                                                          |  | 送货数量              |  |
| 客户料号                                                                                                                         |  | 众城无线料号            |  |
| 日期                                                                                                                           |  | 生产批次              |  |
| TEL:0755-23285621                                                                                                            |  | FAX:0755-23285621 |  |

The outer label is about 8cm long and 5.5cm wide

|                                                                                                                              |  |                   |  |
|------------------------------------------------------------------------------------------------------------------------------|--|-------------------|--|
|  <b>众城无线</b><br>UNITY WIRELESS 深圳众城无线技术有限公司 |  |                   |  |
| SHENZHEN UNITY WIRELESS TECHNOLOGY., LTD                                                                                     |  |                   |  |
| 客户                                                                                                                           |  | 规格型号              |  |
| 订单号                                                                                                                          |  | 送货数量              |  |
| 客户料号                                                                                                                         |  | 众城无线料号            |  |
| 日期                                                                                                                           |  | 生产批次              |  |
| TEL:0755-23285621                                                                                                            |  | FAX:0755-23285621 |  |

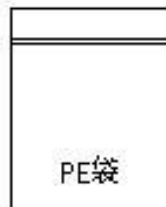
## 二、The packing requirements

job description:

1. inner packing:

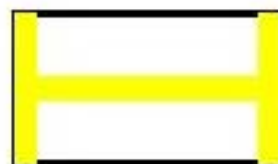
Product according to actual packaging quantity pcs / pouch,

Quantity of pcs / large bag according to the actual package



2. Packaging:

Quantity / box according to the actual packing



纸箱

matters need attention:

- Whether to add a partition board, pearl cotton;
- Label, such as rohs, etc.;

