

SPECIFICATION FOR APPROVAL

|                    |                  |
|--------------------|------------------|
| CUSTOMER:          | 九联               |
| CUSTOMER MODEL NO: | UNG138E8         |
| XUNDA PRODUCT P/N: | XD1C-A190P3D-47P |
| PRODUCT TYPE:      | 2.4GHz           |
| REVISION           | V0.1             |
| DATE               | 2025-3-26        |

|                  |            |             |                   |            |             |
|------------------|------------|-------------|-------------------|------------|-------------|
| XUNDA TECHNOLOGY |            |             | CUSTOMER APPROVED |            |             |
| PREPARED BY      | CHECKED BY | APPROVED BY | PREPARED BY       | CHECKED BY | APPROVED BY |
| Huanghuixin      | Zhangxun   | Duanwei     |                   |            |             |

VersionInformation

| Date      | Revision | Comment          | Author      |
|-----------|----------|------------------|-------------|
| 2025-3-26 | 0.1      | Initial released | Huanghuixin |
|           |          |                  |             |
|           |          |                  |             |
|           |          |                  |             |
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## **1. Product Summary**

1.1. XD1C-A190P3D-47P is a 2.4-2.5GHz antenna designed with patented technology. It can be easily integrated into the machine. It has high efficiency and good performance, and easy to assemble for mass production.

1.2. XD1C-A190P3D-47P is an ideal solution for wireless network equipment, such as access points, routers, and gateways.

1.3. XD1C-A190P3D-47P are RoHS compliant.

## **2. Features Specification**

2.1. IEEE 802.11 b/g/n/ac/ax standards

2.2. High efficiency

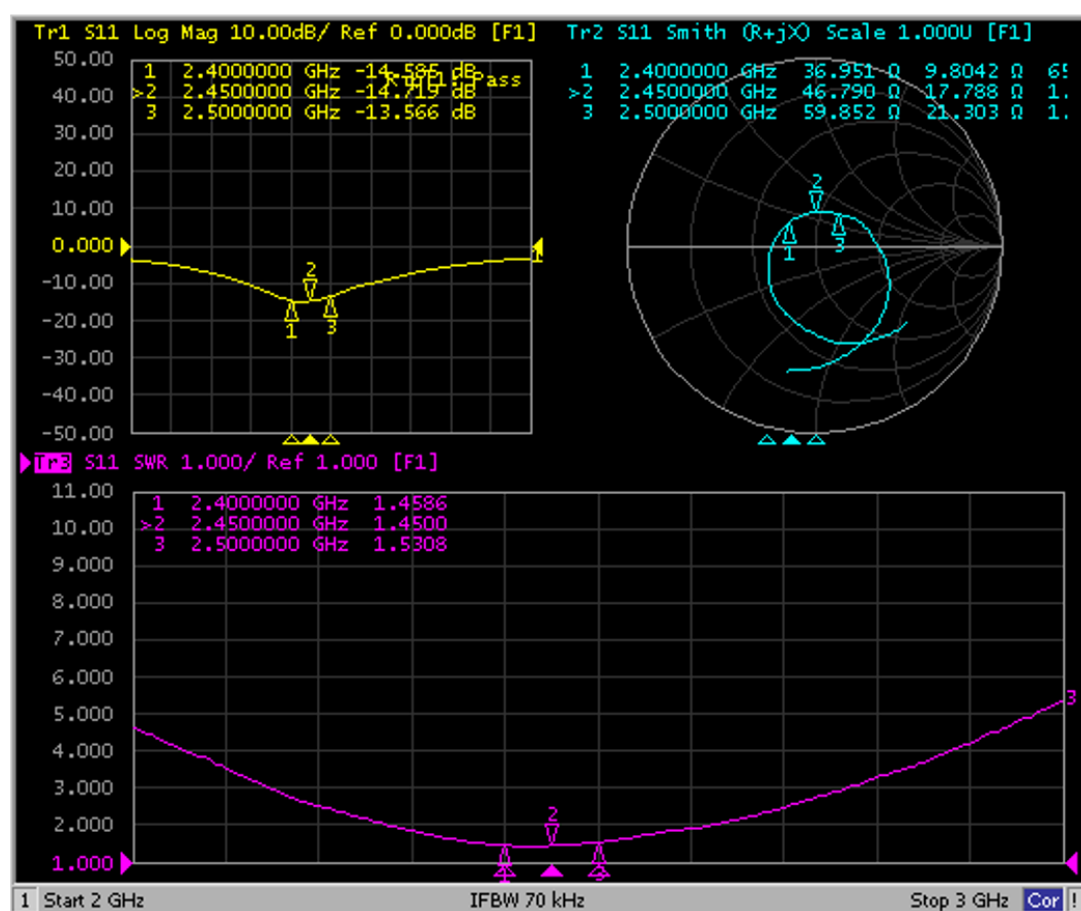
2.3. Quick integration

### 3. Overall performance

| Items                       | Specification                     |
|-----------------------------|-----------------------------------|
| Frequency Range             | 2.4~2.5GHz                        |
| Feed Impedance              | 50 $\Omega$                       |
| Gain                        | 3 $\pm$ 1 dBi                     |
| VSWR                        | $\leq$ 2.0                        |
| Return Loss                 | $\leq$ -10dB                      |
| Admitted Power              | 10W                               |
| Polarization                | Linear, Vertical                  |
| Connector Type              | I-PEX                             |
| Antenna Base                | PCB                               |
| Operating Temp              | -20 $^{\circ}$ C~+65 $^{\circ}$ C |
| Operating Relative Humidity | 5%RH ~ 95%RH                      |
| Storage Temp                | -30 $^{\circ}$ C~+75 $^{\circ}$ C |
| Storage Relative Humidity   | 5%RH ~ 95%RH                      |

## 4. Product Characteristics

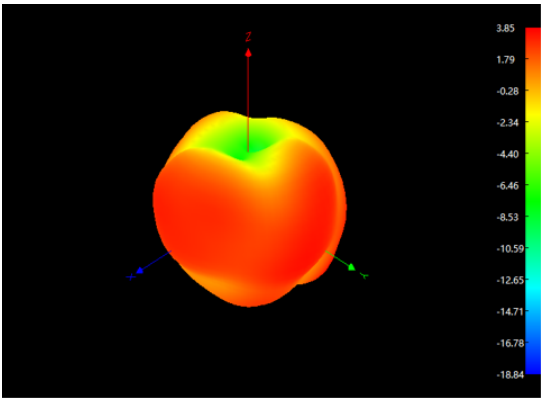
### 4.1. Return Loss



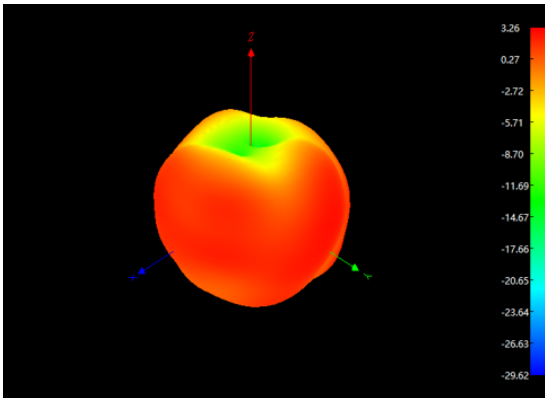
4.2. Radiation Pattern

3D&2D Radiation Pattern

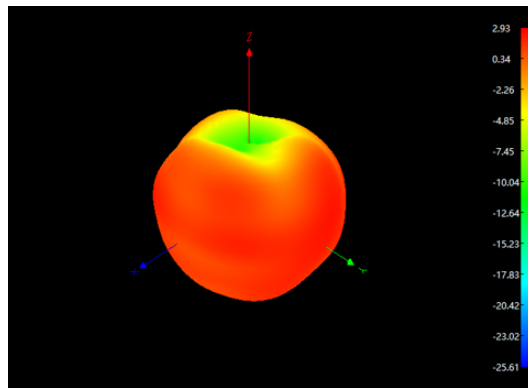
| 频点      | 增益 (dBi) | 效率     |
|---------|----------|--------|
| 2.4GHz  | 3.85     | 76.55% |
| 2.45GHz | 3.26     | 74.58% |
| 2.5GHz  | 2.93     | 73.69% |



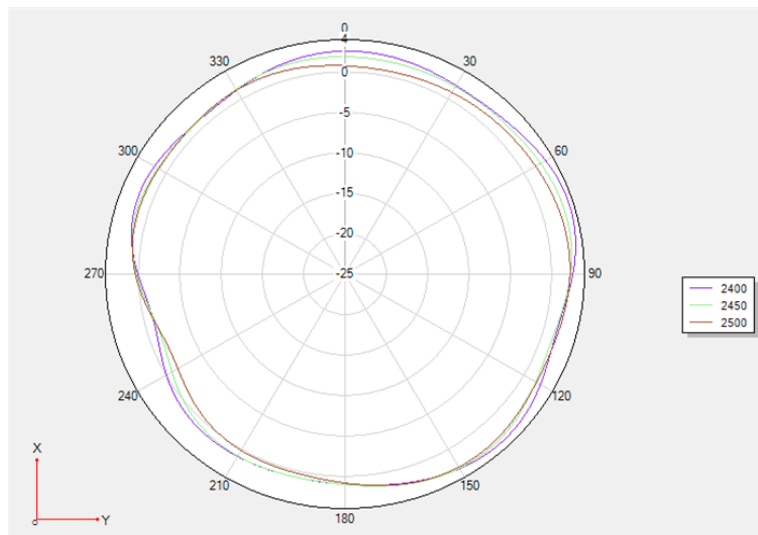
(2.4GHz WIFI) 低频点 3D 图及最大增益



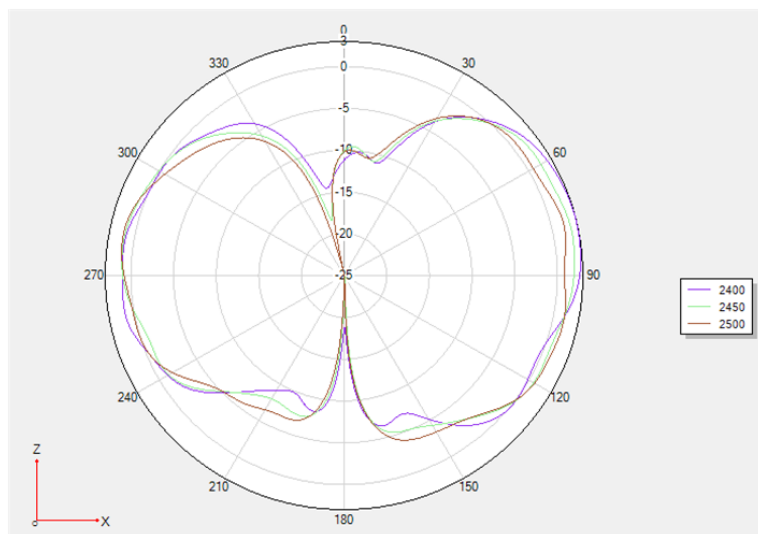
(2.45GHz WIFI) 中频点 3D 图及最大增益



(2.5GHz WIFI) 高频点 3D 图及最大增益

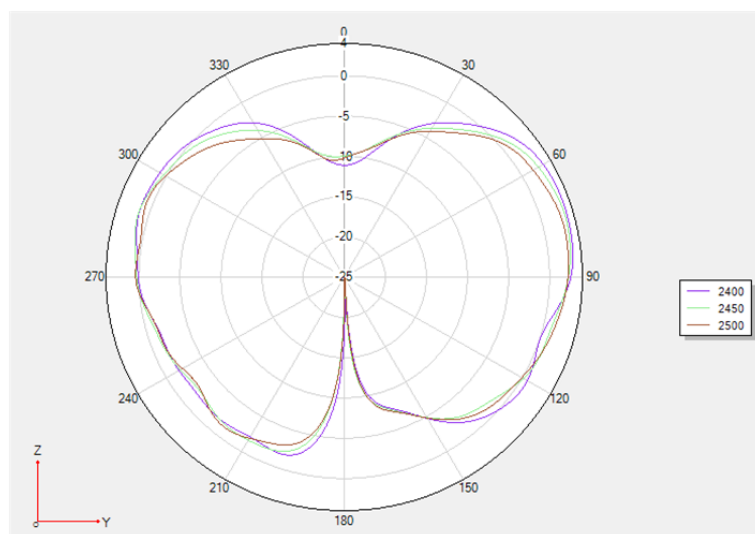


2.4-2.5GHz XOY(H Face) Gain Icon



2.4-2.5GHz XOZ(E1 Face) Gain Icon





2.4-2.5GHz YOZ(E2 Face) Gain Icon

#### 4.3. OTA test

| 2G OTA 测试 |     |            |       |       |       |
|-----------|-----|------------|-------|-------|-------|
|           |     | 11G-54M    |       |       |       |
|           |     | 测试标准       | CH1   | CH6   | CH13  |
| ANT0      | TRP | $\geq 17$  | 19.4  | 18.9  | 19.3  |
|           | TIS | $\leq -70$ | -74.5 | -74.3 | -73.8 |

## 5. Product Drawing

保存目录:

| 版本 | 变更内容 | 改前 | 改后 | 更改日期      |
|----|------|----|----|-----------|
| A  | 初版发行 |    |    | 2023-3-26 |
|    |      |    |    |           |
|    |      |    |    |           |
|    |      |    |    |           |

ROHS

Specification:  
Frequency Range: 2400~2500MHz

- 1. 包装数量: 100PCS/PE Bag;
- 2. 须贴上Ipec标签至PE袋中间位置.

- 1. 外箱须贴上Ipecs/ROHS环保标签至外箱标签上;
- 2. 外箱须贴上Ipecs外箱标签至外箱左上角.

(注: 如果标签客户有要求则按客户要求贴; 否则按迅达标签贴)。

| 版本 |  |  |  |  | 变更内容 |  |  |  |  | 改前 |  |  |  |  | 改后 |  |  |  |  | 更改日期      |  |  |  |  |
|----|--|--|--|--|------|--|--|--|--|----|--|--|--|--|----|--|--|--|--|-----------|--|--|--|--|
| A  |  |  |  |  | 初版发行 |  |  |  |  |    |  |  |  |  |    |  |  |  |  | 2023-3-26 |  |  |  |  |
|    |  |  |  |  |      |  |  |  |  |    |  |  |  |  |    |  |  |  |  |           |  |  |  |  |
|    |  |  |  |  |      |  |  |  |  |    |  |  |  |  |    |  |  |  |  |           |  |  |  |  |
|    |  |  |  |  |      |  |  |  |  |    |  |  |  |  |    |  |  |  |  |           |  |  |  |  |

| 序号 | 零件名称   | 规格 (单位=mm)            | 用量 | 材料                                       |
|----|--------|-----------------------|----|------------------------------------------|
| 01 | PCB线路板 | FR4 黑油                | 1  | FR4                                      |
| 02 | 线材     | RF137, Yellow, 末端IPEX | 1  | 低损耗, 编织屏蔽率: 90±5%<br>芯线直径: 0.306±0.005mm |
| 03 | 3M双面胶  | 端子                    | 1  | EVA                                      |
| 04 | 3M背胶   | 手撕位                   | 1  | 2.0 (双面胶厚度)                              |

| TOLERANCES - DIMENSIONS |  | OTHERWISE SPECIFIED |  | CUSTOMER  |  | SPECIFICATIONS |  |
|-------------------------|--|---------------------|--|-----------|--|----------------|--|
| X                       |  | ±0.20               |  | 成品图       |  | WELD NO.       |  |
| .XX                     |  | ±0.10               |  | UNG138E8  |  | EDITION        |  |
| ANGULAR ±0.5°           |  | ±0.05               |  | 2023-3-26 |  | SCALE          |  |
| PROJECTION              |  | UNIT                |  | SCALE     |  | SHRINKAGE      |  |
| UNIT                    |  | 300                 |  | 段伟        |  | 1:1            |  |
| UNIT                    |  | 300                 |  | 段伟        |  | 1:1            |  |

|    |           |               |
|----|-----------|---------------|
| 日期 | 2023-3-26 | 惠州市金信同芳科技有限公司 |
|----|-----------|---------------|

## 6. Optional Cable Data Sheet

| 产品规格 Product Type                      |                                             | RF137L-F 低损                                                                        |                 |                       |
|----------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------|-----------------|-----------------------|
| 结构图 Structure Drawing                  |                                             |  |                 |                       |
| 结构特性 Structure Characteristics         |                                             |                                                                                    |                 |                       |
| 结构 Structure                           | 项目 Item                                     | 标准值 Standard Value                                                                 |                 |                       |
| 内导体<br>Inner Conductor                 | 材质 Material                                 | 镀锡铜线 TC Wire                                                                       |                 |                       |
|                                        | 结构 Construction(mm)                         | 7/0.102                                                                            |                 |                       |
|                                        | 标称外径 Nom.Dia(mm)                            | 0.306±0.005                                                                        |                 |                       |
| 绝缘层<br>Insulation                      | 材质 Material                                 | 聚全氟乙丙烯 FEP                                                                         |                 |                       |
|                                        | 标称外径 Nom.Dia(mm)                            | 0.90±0.03                                                                          |                 |                       |
| 外导体<br>Outer Conductor                 | 材质 Material                                 | 铜塑箔 Copper plastic foil                                                            |                 |                       |
|                                        | 标称外径 Nom.Dia(mm)                            | 0.92±0.05                                                                          |                 |                       |
| 外导体<br>Outer Conductor                 | 材质 Material                                 | 镀锡铜线 TC Wire 16*5*0.05                                                             |                 |                       |
|                                        | 标称外径 Nom.Dia(mm)                            | 1.12±0.05                                                                          |                 |                       |
|                                        | 编织覆盖率 Coverage Ratio(%)                     | 90±5                                                                               |                 |                       |
| 护套<br>Jacket                           | 材质 Material                                 | 聚全氟乙丙烯 FEP                                                                         |                 |                       |
|                                        | 标称外径 Nom.Dia(mm)                            | 1.37±0.05                                                                          |                 |                       |
| 电气性能 Electrical Characteristics        |                                             |                                                                                    |                 |                       |
| 项目 Item                                | 标准值<br>Standard Value                       | 项目 Item                                                                            | 频率<br>Frequency | 标准值<br>Standard Value |
| 阻抗 Impedanc (Ω)                        | 50±2                                        | 衰减<br>Attenuation@20°C<br>(dB/m)                                                   | 1GHz            | 1.70                  |
| 电容 Capacitance(pF/m)                   | 98                                          |                                                                                    | 2GHz            | 2.25                  |
| 速率 Velocity(%)                         | 70                                          |                                                                                    | 3GHz            | 2.80                  |
| 驻波比 VSWR                               | ≤1.30@DC-8GHz                               |                                                                                    | 4GHz            | 3.20                  |
| 最大工作电压<br>Max.Operating Voltage(V)     | 1000                                        |                                                                                    | 5GHz            | 3.75                  |
| 最大工作频率<br>Max.Operating Frequency(GHz) | 6                                           |                                                                                    | 6GHz            | 4.20                  |
|                                        |                                             | 8GHz                                                                               | 4.60            |                       |
| 可靠性 Dependability                      |                                             |                                                                                    |                 |                       |
| 最小弯曲半径(单次)Min.Bending Radius/Single    | mm                                          | 5                                                                                  |                 |                       |
| 最小弯曲半径(重复) Min.Bending Radius/Repeated | mm                                          | 20                                                                                 |                 |                       |
| 工作温度范围 Operating Temperature           | ℃                                           | -55-+200                                                                           |                 |                       |
| 包装 Packing                             |                                             |                                                                                    |                 |                       |
| 包装方式 Packing Mode                      | 纸盘 Papery Reel                              |                                                                                    |                 |                       |
| 包装长度 The Length of Each Reel(m)        | 800                                         |                                                                                    |                 |                       |
| 每盘段数 The Joints of Each Reel           | ≤4                                          |                                                                                    |                 |                       |
| 最小段长 Min. Segment Length(m)            | ≥20                                         |                                                                                    |                 |                       |
| 使用提示 Trips for Use                     |                                             |                                                                                    |                 |                       |
| 存储环境 Storage Environment               | 温度：30℃以下，湿度：20-65%                          |                                                                                    |                 |                       |
| 最佳保存周期 The Best Save Cycle             | 2 个月，2 个月以上上锡效果变差，但电性能不受影响，夏季高温高湿环境开剥后需尽快流转 |                                                                                    |                 |                       |
| 加工温度 Processing Temperature            | 可短时承受 260℃的高温，300℃以上易发生分解，400℃以上发生显著的热分解    |                                                                                    |                 |                       |
| 铁氟龙收缩 Teflon Shrink                    | 材料的固有属性，绝缘 0.2mm 以下，护套 0.3mm 以下             |                                                                                    |                 |                       |
| 护套窜动 Jacket Taaverse                   | 加工长度（护套残留长度）低于 5CM 时易发生                     |                                                                                    |                 |                       |

7. IPEX Specification Sheet

|                              |                            |                           |                |             |          |
|------------------------------|----------------------------|---------------------------|----------------|-------------|----------|
| 文件名称 <b>System Name:</b>     | 产品品名 <b>Description:</b>   | 文件编号 <b>Document No.:</b> |                |             |          |
| <b>Product specification</b> | <b>1.37mm RF connector</b> | <b>R-164 版本: B0</b>       |                |             |          |
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\*\*\*\*\* 目 錄 Content \*\*\*\*\*

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| 3.              | 范围 Scope                            | 3               |
| 4.              | 产品名称及产品型号 Product Name and Parts No | 3               |
| 5.              | 要求 Requirements                     | 3               |
| 6.              | 测试和性能 Test and Performance          | 4~12            |

|             |                |                |                |                              |
|-------------|----------------|----------------|----------------|------------------------------|
|             | 核准 <b>App.</b> | 审核 <b>Chk.</b> | 制作 <b>Pre.</b> | <b>Issued By:</b><br><br>杨 琴 |
| <b>By</b>   | 陆奇卿            | 李慧             | 杨 琴            |                              |
| <b>Date</b> | 2020.03.30     | 2020.03.30     | 2020.03.30     |                              |

|                       |                     |                    |        |      |   |
|-----------------------|---------------------|--------------------|--------|------|---|
| 文件名称 System Name:     | 产品品名 Description:   | 文件编号 Document No.: |        |      |   |
| Product specification | 1.37mm RF connector | R-164 版本: B0       |        |      |   |
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\*\*\*\*\* Revised history \*\*\*\*\*

[illegible]

|                              |                            |                           |                |             |          |
|------------------------------|----------------------------|---------------------------|----------------|-------------|----------|
| 文件名称 <b>System Name:</b>     | 产品品名 <b>Description:</b>   | 文件编号 <b>Document No.:</b> |                |             |          |
| <b>Product specification</b> | <b>1.37mm RF connector</b> | <b>R-164 版本: B0</b>       |                |             |          |
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### 1. 范围 **Scope:**

本产品规范规定了同轴电缆用 1.37 连接器的测试条件和性能

This Product Specification defines the test conditions and the performances of the 1.37 Connector

### 2. 产品名称及产品型号 **Product Name and Parts No**

2.1 产品名称 **Product Name:1.37 Plug**

2.2 产品型号 **Parts No:958-C137-\*\*-W-\*u-A0**

连接器的结构、材料和表面覆盖在每张图纸上

**Construction, material and finish of the connector are covered as each drawing**

### 3. 要求 **Requirements**

|      |                                           |
|------|-------------------------------------------|
| 额定电压 | AC 60V rms                                |
| 特性阻抗 | 50Ω                                       |
| 频率范围 | DC~8GHz                                   |
| 驻波比  | 0.1~3GHz 1.3 以下，3-8GHz 1.5 以下             |
| 使用温度 | 233K~363K (-40℃~90℃)                      |
| 存储条件 | 温度：248K~333K(-25℃~+60℃)<br>湿度：85% 以下(未凝结) |

|                                  |                                                                        |
|----------------------------------|------------------------------------------------------------------------|
| Rated voltage                    | AC 60V rms                                                             |
| Nominal characteristic impedance | 50Ω                                                                    |
| Frequency                        | DC~8GHz                                                                |
| VSWR                             | 1.3Max at 0.1~3GHz，1.5Max at 3-8GHz                                    |
| Service Temperature              | 233K~363K (-40℃~90℃)                                                   |
| Storage condition                | Temperature：248K~333K(-25℃~+60℃)<br>Humidity：85% MAX.(No condensation) |

|                              |                            |                           |                |             |          |
|------------------------------|----------------------------|---------------------------|----------------|-------------|----------|
| 文件名称 <b>System Name:</b>     | 产品品名 <b>Description:</b>   | 文件编号 <b>Document No.:</b> |                |             |          |
| <b>Product specification</b> | <b>1.37mm RF connector</b> | <b>R-164 版本: B0</b>       |                |             |          |
|                              |                            | <b>Page</b>               | <b>4 OF 12</b> | <b>Rev.</b> | <b>C</b> |

#### 4.测试和性能 Test and Performance

##### 试验条件 Test Condition

除非另有说明，所有测试和测量均应按照 MIL-STD-202G 在下列条件下进行。

温度：288K~308K(15℃~35℃)

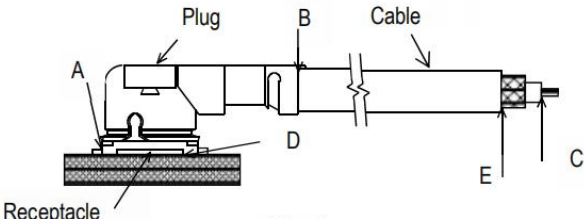
湿度：45~75%R.H.

Unless otherwise specified, all tests and measurements shall be performed under the following conditions in accordance with MIL-STD-202G.

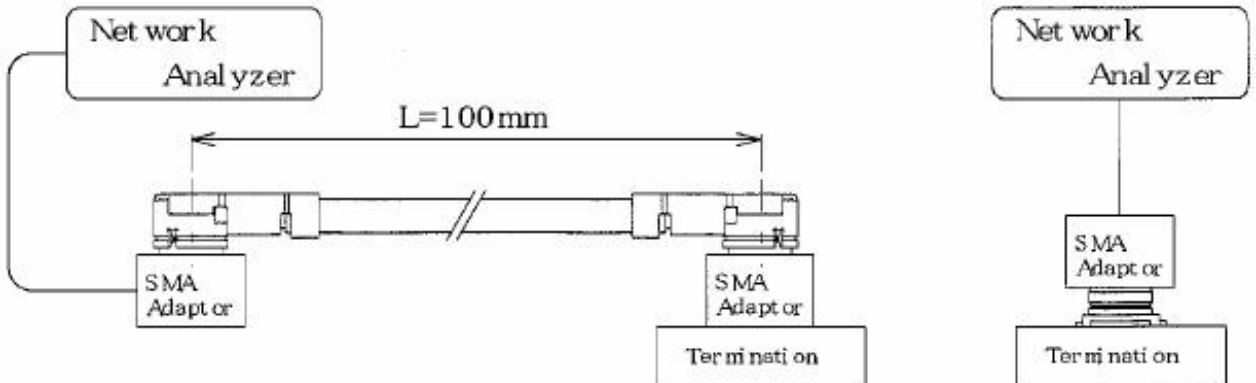
Temperature：288K~308K(15℃~35℃)

Humidity：45~75%R.H.

##### 4.1 电气的性能 Electrical Performance

| NO                                                                                                                             | 项目/Items           | 试验条件/Test Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 规格/Specifications                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                                                                                                                              | 接触阻抗               | 公母端连接器配合后使用 20mV 开路电压，以最大 10mA 电流进行测试。<br>中心导体<br>(A-E 之间的电气阻抗) - (B-E 之间的电气阻抗)<br>外部导体<br>(C-D 之间的电气阻抗) - (B-D 之间的电气阻抗)                                                                                                                                                                                                                                                                                                                                                                                            | 中心导体<br>初期:20 mΩ 以下    试验后:25 mΩ 以下<br>外部导体<br>初期:10 mΩ 以下    试验后:15 mΩ 以下                                                                                                      |
|                                                                                                                                | Contact Resistance | Solder the receptacle connector to the test board and mate the plug connector together, then measure the contact resistance as shown in Fig.1 by the four terminal method.Apply the low level condition in accordance with MIL-STD-202, Method 307.<br><br>Open circuit voltage: 20mV Max<br>Circuit current: 10mA Max. (DC or AC1kHz)<br><br>Contact resistance of inner contact<br><resistance of A-E>-<resistance of B-E><br><br>Contact resistance of ground contact<br><resistance of C-D>-<resistance of B-D> | Contact resistance of inner contact<br>Initial: 20mΩ Max<br>After testing: 25mΩ Max<br><br>Contact resistance of ground contact<br>Initial: 10mΩ Max<br>After testing: 15mΩ Max |
|  <p style="text-align: center;">Fig. 1</p> |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                 |

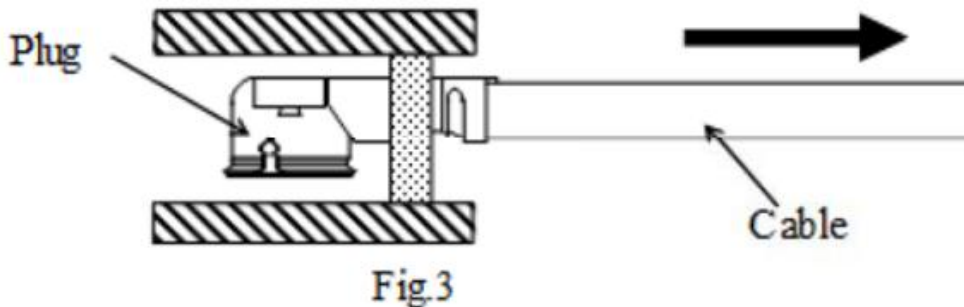
|                              |                            |                           |                |             |          |
|------------------------------|----------------------------|---------------------------|----------------|-------------|----------|
| 文件名称 <b>System Name:</b>     | 产品品名 <b>Description:</b>   | 文件编号 <b>Document No.:</b> |                |             |          |
| <b>Product specification</b> | <b>1.37mm RF connector</b> | <b>R-164 版本: B0</b>       |                |             |          |
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| NO                                                                                   | 项目/Items              | 试验条件/Test Conditions                                                                                                                                                             | 规格/Specifications                                                      |
|--------------------------------------------------------------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| 2                                                                                    | 绝缘阻抗                  | 公母端连接器配合后，测试中心导体与外部导体之间的绝缘阻抗。使用 DC100V，保持 1 分钟，参考测试标准：MIL-STD-202 方法 302.                                                                                                        | 初期:500 mΩ 以上<br>试验后:100 mΩ 以上                                          |
|                                                                                      | Insulation Resistance | Mate the plug and receptacle connector together, then apply DC100V between the Inner contact and the ground contact In accordance with MIL-STD-202,Method 302.                   | Initial: 500mΩ Min<br>After testing: 100mΩ Min                         |
| 3                                                                                    | 耐电压                   | 公母端连接器配合后，使用 AC 200V 对中心导体与外部导体进行耐压测试 1 分钟。参考测试标准：MIL-STD-202 Method 301                                                                                                         | 无沿面放电、空中放电、绝缘破坏等异常                                                     |
|                                                                                      | Dielectric Strength   | Mate the receptacle and plug connector together, then apply AC 200 Vrms between the inner contact and the ground contact for a minute in accordance with MIL-STD-202,Method 301. | No creeping discharge, flashover, nor insulator Breakdown shall occur. |
| 4                                                                                    | 驻波比                   | 如图 2 所示，通以网络分析仪测试驻波比。                                                                                                                                                            | Plug                                                                   |
|                                                                                      | VSWR                  | Measure the VSWR as shown in Fig.2 by the network analyzer.                                                                                                                      | 0.1~3GHZ 1.3Max<br>3~8GHZ 1.5Max                                       |
|  |                       |                                                                                                                                                                                  |                                                                        |

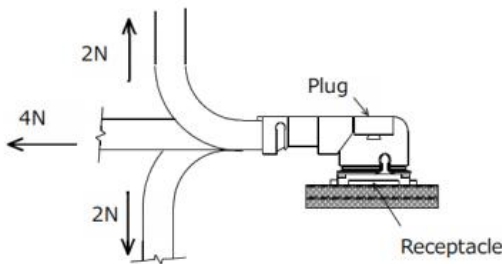


|                              |                            |                           |                |             |          |
|------------------------------|----------------------------|---------------------------|----------------|-------------|----------|
| 文件名称 <b>System Name:</b>     | 产品品名 <b>Description:</b>   | 文件编号 <b>Document No.:</b> |                |             |          |
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#### 4.2 机械的性能 Mechanical Performance

| NO | 项目/Items                                                                                                                                                                                                                                                                                                                                                                                                    | 试验条件/Test Conditions                                                                                                                              | 规格/Specifications                                                                                                                                           |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | 拔去力                                                                                                                                                                                                                                                                                                                                                                                                         | 拆下插座连接器(焊接在测试板上)，用插拔力试验机以每分钟 25mm±3mm 的速度插拔母端连接器                                                                                                  | 综合拔去力<br>初次: 7N MIN<br>30 次后: 3N MIN<br>中心导体<br>初次: 0.15N min<br>30 次后: 0.10N min                                                                           |
|    | Unmating force                                                                                                                                                                                                                                                                                                                                                                                              | Unmate the receptacle connector (soldered to the test board) and plug at a speed 25±3mm/minutes along the mating by the push-on/pull-off machine. | Total unmating force<br>Initial: 7N min<br>.After 30 cycles: 3N min<br>Unmating force of inner contact<br>Initial: 0.15N min<br>.After 30 cycles: 0.10N min |
|    | 引张强度                                                                                                                                                                                                                                                                                                                                                                                                        | 用材料试验机以每分钟 25mm±3mm 的速度拉线材部分，测定引张强度。如图 3 所示                                                                                                       | 25N 以上                                                                                                                                                      |
| 2  | Crimp strength                                                                                                                                                                                                                                                                                                                                                                                              | Pull the cable as shown in Fig.3 at a speed 25±3mm/minutes by tensile strength machine.                                                           | 25N Min                                                                                                                                                     |
|    |  <p>The diagram shows a cross-sectional view of a plug and cable assembly. The plug is on the left, connected to a cable on the right. A tensile strength machine is pulling the cable to the right, as indicated by a large black arrow. The machine's grip is shown on the cable. The diagram is labeled 'Fig 3'.</p> |                                                                                                                                                   |                                                                                                                                                             |

|                              |                            |                           |               |             |          |
|------------------------------|----------------------------|---------------------------|---------------|-------------|----------|
| 文件名称 <b>System Name:</b>     | 产品品名 <b>Description:</b>   | 文件编号 <b>Document No.:</b> |               |             |          |
| <b>Product specification</b> | <b>1.37mm RF connector</b> | <b>R-164 版本: B0</b>       |               |             |          |
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| NO                                                                                                                             | 项目/Items                                   | 试验条件/Test Conditions                                                                                                                                                 | 规格/Specifications                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3                                                                                                                              | 耐久力                                        | 母端连接器焊在板上，用插拔力实验机以每分钟 25mm±3mm 的速度插拔 30 次。                                                                                                                           | 中心导体<br>初期:20 mΩ 以下    试验后:25 mΩ 以下<br>外部导体<br>初期:10 mΩ 以下    试验后:15 mΩ 以下                                                                                                                                                              |
|                                                                                                                                | Durability<br>(Repeated Mating/ Unmating)  | Mate and umate the receptacle connector (soldered to the test board ) and plug 30 cycles at a speed 25±3mm/minutes along the mating by the push-on/pull-off machine. | Contact resistance of inner contact<br>Initial: 20mΩ Max<br>After testing: 25mΩ Max<br>Contact resistance of ground contact<br>Initial: 10mΩ Max<br>After testing: 15mΩ Max                                                             |
| 4                                                                                                                              | 将线材施加于力后的产品接触阻抗                            | 如图 4 制定方向施力，测试期间工作电流 100mA DC，检查瞬间电流中断。                                                                                                                              | 外观无异常，瞬断小于 1μs<br>接触阻抗满足要求                                                                                                                                                                                                              |
|                                                                                                                                | Contact resistance with force on the cable | Apply force on the cable as shown in Fig.4.<br>During the testing, run 100mA DC to check electrical discontinuity.                                                   | Appearance<br>Looseness between the parts, chipping, breakage or other abnormality shall not occur.<br>Electrical discontinuity<br>No electrical discontinuity grater than 1 μs shall occur.<br>Contact impedance meets the requirement |
|  <p style="text-align: center;">Fig. 4</p> |                                            |                                                                                                                                                                      |                                                                                                                                                                                                                                         |

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| NO | 项目/Items                           | 试验条件/Test Conditions                                                                                                                                                                                                                                                                                                                                                         | 规格/Specifications                                                                                                                                                                                                                       |
|----|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5  | 振动                                 | 公母端连接器配合固定在震动台上, 15 分钟内振动频率为 10-100-10Hz, 半振幅, 加速度峰值 1.5 振 mm 或 59m / s2(6g)方向, 三个相互垂直的方向进行震动, 各方向振动 5 次 (共 75 分钟), 测试过程中加 DC 100mA 直流电。                                                                                                                                                                                                                                     | 外观无异常, 瞬断小于 1μs<br>接触阻抗满足要求                                                                                                                                                                                                             |
|    | Vibration Sinusoidal Low Frequency | Apply the following vibration to the mating connector.During the testing, run 100mA DC to check electrical discontinuity.<br>Frequency<br>10Hz→100Hz→10Hz/approx 15 minutes.<br>Half amplitude, Peak value of acceleration 1.5mm or 59m/s2 (6G)<br>Directions, cycle<br>3 mutually perpendicular direction<br>5 cycles (approx 75min) about each direction                   | Appearance<br>Looseness between the parts, chipping, breakage or other abnormality shall not occur.<br>Electrical discontinuity<br>No electrical discontinuity grater than 1 μs shall occur.<br>Contact impedance meets the requirement |
| 6  | 冲击                                 | 公母端连接器配合固定在冲击实验机上, 以 735m/s2 (75g) 的加速、半正弦冲击波的波形和 11ms 的冲击时间进行测试。周期 6 相互垂直的方向 3 周期。测试过程中加载 100mA 直流电。参考测试标准: MIL-STD-202 Method 213 条件 B                                                                                                                                                                                                                                     | 外观无异常, 瞬断小于 1μs<br>接触阻抗满足要求                                                                                                                                                                                                             |
|    | shock                              | Apply the following vibration to the mating connector in accordance with MIL-STD-202,Method 213, Condition B.<br>During the testing, run 100mA DC to check electrical discontinuity<br>Peak value of acceleration: 735m/s2 (75G)<br>Duration:11msec<br>Wave Form:half sinusoidal<br>Directions, cycle<br>6 mutually perpendicular direction<br>3 cycles about each direction | Appearance<br>Looseness between the parts, chipping, breakage or other abnormality shall not occur.<br>Electrical discontinuity<br>No electrical discontinuity grater than 1 μs shall occur.<br>Contact impedance meets the requirement |

|                              |                            |                           |                |             |          |
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#### 4.3 环境的性能 Environmental Performance

| NO | 项目/Items                | 试验条件/Test Conditions                                                                                                                                                                                                                | 规格/Specifications                                                                                                                                                                                         |
|----|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | 热冲击                     | 公母端配合后, 将样品放入试验箱内, 测试 5 循环。<br><br>一个循环条件如下:<br><br>-40℃/30 分钟→(5-35)℃/5 分钟以下→90℃/30 分钟→(5-35)℃/5 分钟以下, 转换时间不超过 30 秒                                                                                                                | 外观无异常<br><br>接触阻抗满足要求<br><br>绝缘阻抗满足要求                                                                                                                                                                     |
|    | Thermal shock           | Apply the following environment to the mating connector.<br><br>Temperature,duration<br><br>233K(-40℃)/30 minutes→278~308K(5~35℃) /5 minutes Max.→363K(90℃) /30 minutes→278~308K(5~35℃) /5 minutes Max<br><br>No.of cycles:5 cycles | Appearance<br><br>Looseness between the parts, chipping, breakage or other abnormality shall not occur.<br><br>Contact impedance meets the requirement<br><br>Insulation resistance meets the requirement |
| 2  | 恒温恒湿                    | 公母端配合后, 将样品放入试验箱内<br><br>温度: 40±2℃<br><br>相对湿度: 90-95%<br><br>时间: 48 小时;<br><br>测试标准: MIL-STD-202, 方法 103,条件 B                                                                                                                      | 外观无异常<br><br>接触阻抗满足要求<br><br>绝缘阻抗满足要求                                                                                                                                                                     |
|    | Humidity (Steady State) | Apply the following environment to the mating connector in accordance with MIL-STD-202, Method 103,Condition B.<br><br>Temperature:33±2K(40±2℃)<br><br>Humidity :90~95%RH<br><br>Duration :96 hours                                 | Appearance<br><br>Looseness between the parts, chipping, breakage or other abnormality shall not occur.<br><br>Contact impedance meets the requirement<br><br>Insulation resistance meets the requirement |

|                              |                            |                           |                 |             |          |
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| NO | 项目/Items         | 试验条件/Test Conditions                                                                                                                                                                                                                              | 规格/Specifications                                                                                                                              |
|----|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 3  | 盐水喷雾             | 公母端配合后, 将样品放入试验箱内<br>温度: $35 \pm 2^{\circ}\text{C}$<br>盐水浓度: $5 \pm 1\%$<br>时间: 48 小时<br>测试标准: MIL-STD-202, 方法 101, 条件 B                                                                                                                          | 外观无明显腐蚀                                                                                                                                        |
|    | Salt Water Spray | Apply the following environment to the mating connector in accordance with MIL-STD-202, Method 101, Condition B.<br>Temperature: $308 \pm 2\text{K}(35 \pm 2^{\circ}\text{C})$<br>Salt water density by weight: $5 \pm 1\%$<br>Duration: 48 hours | Appearance<br>No abnormality adversely affecting the performance shall occur.                                                                  |
| 4  | 高温               | 公母端配合后, 将样品放入试验箱内<br>温度: $90 \pm 2^{\circ}\text{C}$<br>时间: 96 小时                                                                                                                                                                                  | 外观无异常<br>接触阻抗满足要求                                                                                                                              |
|    | High Temperature | Apply the following environment to the mating connector<br>Temperature: $363 \pm 2\text{K}(90 \pm 2^{\circ}\text{C})$<br>Duration: 96 hours                                                                                                       | Appearance<br>Looseness between the parts, chipping, breakage or other abnormality shall not occur.<br>Contact impedance meets the requirement |

#### 4.4 焊接的性能 Soldering

| NO | 项目/Items       | 试验条件/Test Conditions                                                                                                                                  | 规格/Specifications                                        |
|----|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| 1  | 可焊性            | 将端子沉入 $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 的焊液中 $5 \pm 0.5$ 秒.<br>测试标准: MIL-STD-202, 方法 208                                                    | 焊锡表面浸渍超过 95%                                             |
|    | Solder ability | Immerse the solder pin of the connector in the solder bath at $518 \pm 5(245 \pm 5^{\circ}\text{C})$ for $5 \pm 0.5$ sec.<br>MIL-STD-202, Method 208. | More than 95% of the dipped surface shall be evenly wet. |

|                              |                            |                           |                |             |          |
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| NO                                                                                                                                                                                  | 项目/Items                  | 试验条件/Test Conditions                                                              | 规格/Specifications                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| 2                                                                                                                                                                                   | 耐焊接热                      | 将连接器焊接在 PCB 板上, 如图 5 所示加热 2 次循环                                                   | 外观无明显变形                                                                       |
|                                                                                                                                                                                     | Soldering heat resistance | Put on the receptacle connector to PCB, apply the heat 2 cycles as shown in Fig.5 | Appearance<br>No abnormality adversely affecting the performance shall occur. |
| <p>Temperature</p> <p>Time</p> <p>Fig.5</p> <p>Gradient 勾配 1~4 K/sec.</p> <p>433~473K (160~200°C) 1~2 minutes</p> <p>533K (260°C) 10±0.5 sec.</p> <p>Gradient 勾配 -3 ~ -6 K/sec.</p> |                           |                                                                                   |                                                                               |

|                              |                            |                           |                 |             |          |
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| 4.测试顺序和数量 <b>Test Sequence and Sample Quantity</b> |                                                               |                 |   |    |    |        |        |        |        |        |        |    |        |   |   |
|----------------------------------------------------|---------------------------------------------------------------|-----------------|---|----|----|--------|--------|--------|--------|--------|--------|----|--------|---|---|
| Test Item<br>测试项目                                  |                                                               | Test Group 测试群组 |   |    |    |        |        |        |        |        |        |    |        |   |   |
|                                                    |                                                               | A               | B | C  | D  | E      | F      | G      | H      | J      | K      | L  | M      | N | P |
| (1)                                                | Contact resistance<br>接触阻抗                                    |                 |   |    |    | 1<br>3 | 1<br>3 | 1<br>3 | 1<br>3 | 1<br>4 | 1<br>4 |    | 1<br>3 |   |   |
| (2)                                                | Insulation resistance<br>绝缘阻抗                                 |                 |   |    |    |        |        |        |        | 2<br>5 | 2<br>5 |    |        |   |   |
| (3)                                                | Dielectric strength<br>耐电压                                    | 1               |   |    |    |        |        |        |        |        |        |    |        |   |   |
| (4)                                                | VSWR<br>驻波比                                                   |                 | 1 |    |    |        |        |        |        |        |        |    |        |   |   |
| (5)                                                | Un-mating force<br>拔去力                                        |                 |   | 1  |    |        |        |        |        |        |        |    |        |   |   |
| (6)                                                | Crimp strength<br>引张强度                                        |                 |   |    | 1  |        |        |        |        |        |        |    |        |   |   |
| (7)                                                | Durability<br>耐久力                                             |                 |   |    |    | 2      |        |        |        |        |        |    |        |   |   |
| (8)                                                | Contact resistance with force on the cable<br>将线材施加于力后的产品接触阻抗 |                 |   |    |    |        | 2      |        |        |        |        |    |        |   |   |
| (9)                                                | Vibration<br>振动                                               |                 |   |    |    |        |        | 2      |        |        |        |    |        |   |   |
| (10)                                               | Shock<br>冲击                                                   |                 |   |    |    |        |        |        | 2      |        |        |    |        |   |   |
| (11)                                               | Thermal shock<br>热冲击                                          |                 |   |    |    |        |        |        |        | 3      |        |    |        |   |   |
| (12)                                               | Humidity (Steady State)<br>恒温恒湿                               |                 |   |    |    |        |        |        |        |        | 3      |    |        |   |   |
| (13)                                               | Salt waterspray<br>盐水喷雾                                       |                 |   |    |    |        |        |        |        |        |        | 1  |        |   |   |
| (14)                                               | High temperature<br>高温                                        |                 |   |    |    |        |        |        |        |        |        |    | 2      |   |   |
| (15)                                               | Solder ability<br>可焊性                                         |                 |   |    |    |        |        |        |        |        |        |    |        | 1 |   |
| (16)                                               | Soldering heat resistance<br>耐焊接热                             |                 |   |    |    |        |        |        |        |        |        |    |        |   | 1 |
| Sample pcs<br>样品数量                                 |                                                               | 10              | 5 | 10 | 10 | 10     | 10     | 10     | 10     | 10     | 10     | 10 | 10     | - | - |