

# 深圳市云顶通讯电子有限公司

Shenzhen Yunding Communication Electronics Co., Ltd.

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## 承認書 APPROVAL SHEET

客 户

:

品 名 规 格

2.4-5GHz-Ver1.0-1.13-L80MM-IPEX 一代

DESCRIPTION:

料 号

PART NO.:

客 户 料 号

CUS PART NO.:

日 期

2025-4-30

D A T E:

### 云顶呈样签章

| 工 程<br>ENGINEERING DEPARTMENT | 品 保<br>Q C DEPARTMENT | 业 务<br>SALES DEPARTMENT |
|-------------------------------|-----------------------|-------------------------|
|                               |                       |                         |

### 客户承认签章

| 工 程<br>ENGINEERING DEPARTMENT | 品 保<br>Q C DEPARTMENT | 采 购<br>PURCHASING DEPARTMENT |
|-------------------------------|-----------------------|------------------------------|
|                               |                       |                              |

联系电话: 0755 23073599

※ 承认书一式三份, 惠蒙贵司承认签章

※ Approval in duplicate, please signed by your company.

No. 3015, Jinchi Center, Aviation Road, Bao'an District,  
Shenzhen City

地址: 深圳市宝安区航空路锦驰中心 3015

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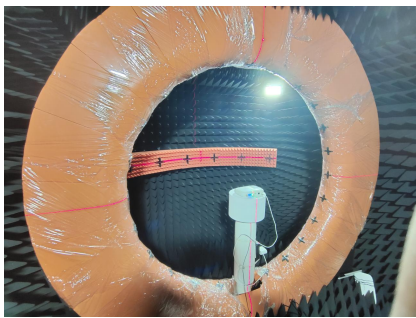
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## 1. 测试项目与设备

|                            | 测试项目                                     | 设备                                                                                                                         |
|----------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 1. S11 参数<br>(S-parameter) | 1. 回波损耗 (Return Loss)<br>2. 电压驻波比 (VSWR) | 网络分析仪: Agilent E5071B<br>HP 8753D                                                                                          |
| 2. 有源测试<br>(Active)        | 1. 发射功率 (TRP)<br>2. 接收灵敏度 (TIS)          | 1. 暗室: ETS 7x4x3 m (3D) Chamber<br>ETS 5x3x3 m (3D) Chamber<br>2. 综合测试仪: Agilent 8960 E5515B x2<br>StarPoint SP6011 Cmw500 |
| 3. 无源测试<br>(Passive)       | 1. 天线增益 (Gain) 2. 天线效率 (Efficiency)      | 1. 暗室: ETS 7x4x3 m (3D) Chamber<br>ETS 5x3x3 m (3D) Chamber<br>2. 网络分析仪: Agilent E5071B<br>HP 8753D                        |



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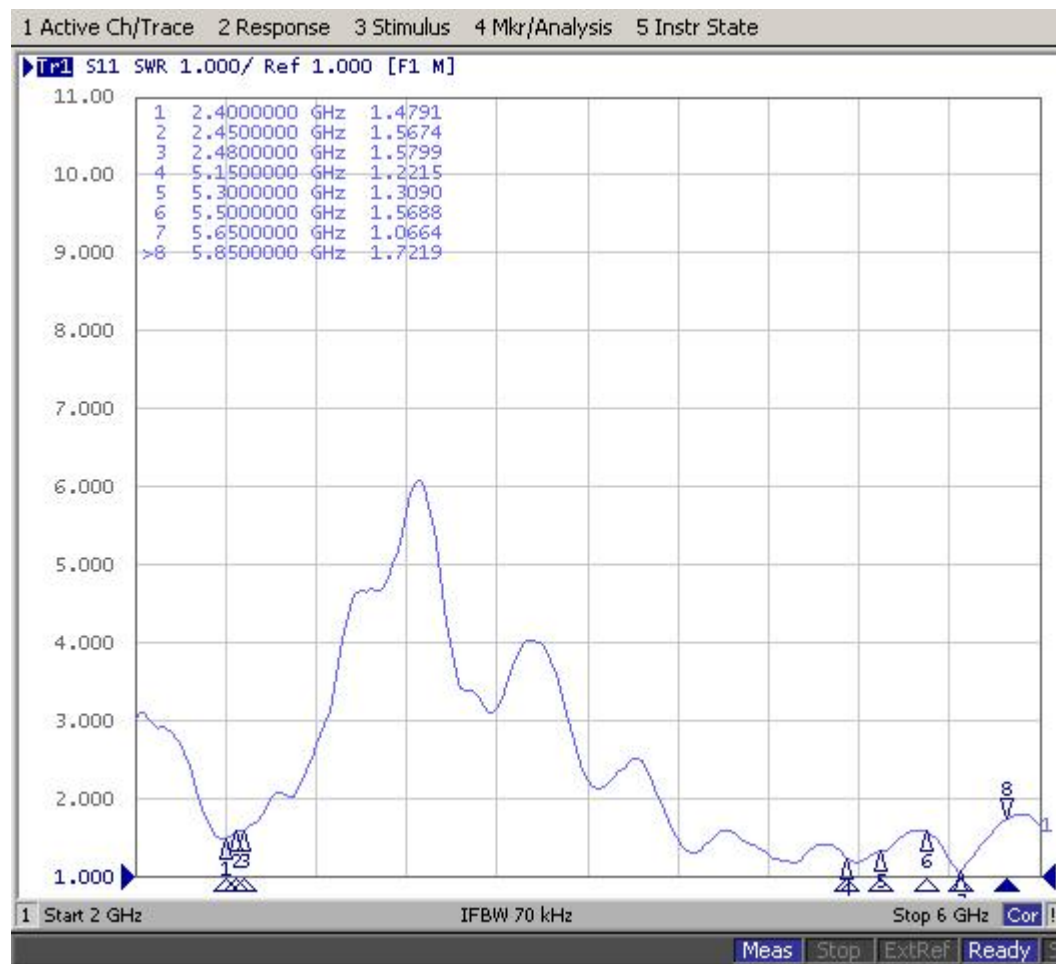
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## 2. 天线性能

### SWR



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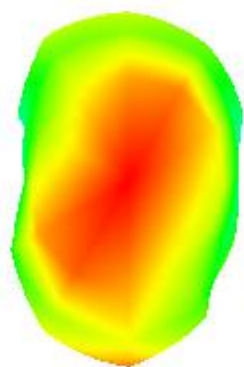
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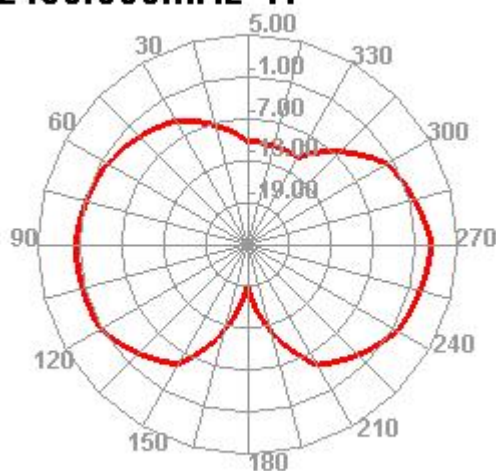
## 3. 天线效率与增益

| Passive Test For WIFI2.4 |             |               |
|--------------------------|-------------|---------------|
| Freq<br>(MHz)            | Effi<br>(%) | Gain<br>(dBi) |
| 2400                     | 52.79       | 0.91          |
| 2410                     | 53.94       | 0.96          |
| 2420                     | 52.11       | 0.9           |
| 2430                     | 53.01       | 0.99          |
| 2440                     | 57.67       | 1.43          |
| 2450                     | 63.29       | 1.92          |
| 2460                     | 62.3        | 1.88          |
| 2470                     | 65.18       | 2             |
| 2480                     | 68.5        | 2.1           |
| 2490                     | 73.41       | 2.55          |
| 2500                     | 71.9        | 2.51          |

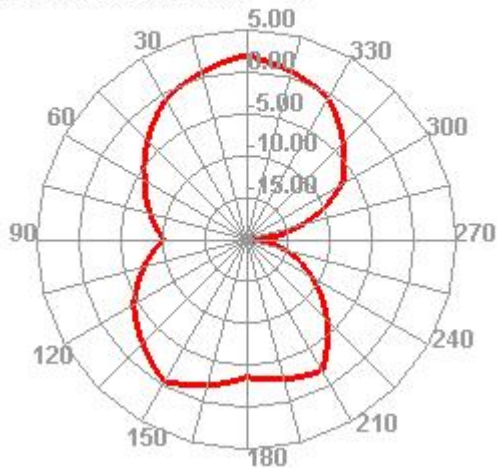
2450.000MHz



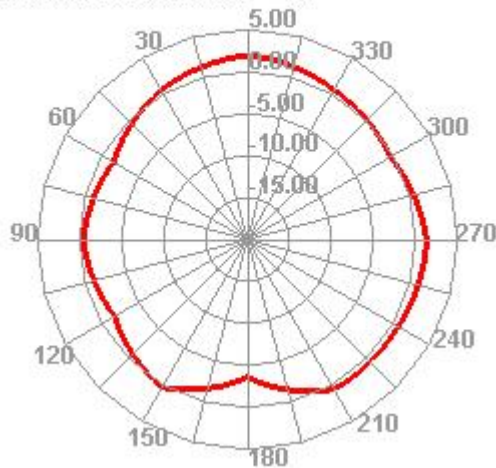
2450.000MHz H



2450.000MHz E1



2450.000MHz E2



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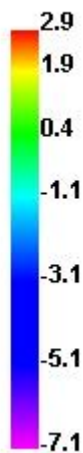
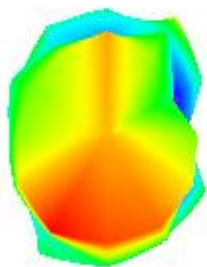
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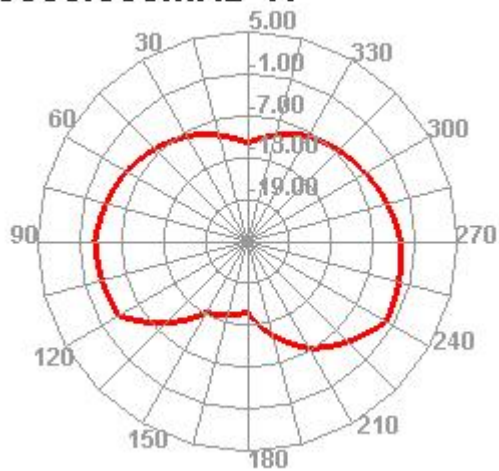
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| Passive Test For WIFI5.8 |             |               |
|--------------------------|-------------|---------------|
| Freq<br>(MHz)            | Effi<br>(%) | Gain<br>(dBi) |
| 5150                     | 55.49       | 2.56          |
| 5200                     | 52.58       | 2.08          |
| 5250                     | 50.52       | 1.53          |
| 5300                     | 53.88       | 2.34          |
| 5350                     | 59.16       | 3.2           |
| 5400                     | 65.7        | 3.46          |
| 5450                     | 57.36       | 2.96          |
| 5500                     | 55.25       | 2.87          |
| 5550                     | 51.22       | 2.4           |
| 5600                     | 44.64       | 1.57          |
| 5650                     | 44.98       | 1.34          |
| 5700                     | 49.18       | 2.02          |
| 5750                     | 60.24       | 3.43          |
| 5800                     | 61.27       | 3.38          |
| 5850                     | 53.19       | 2.78          |

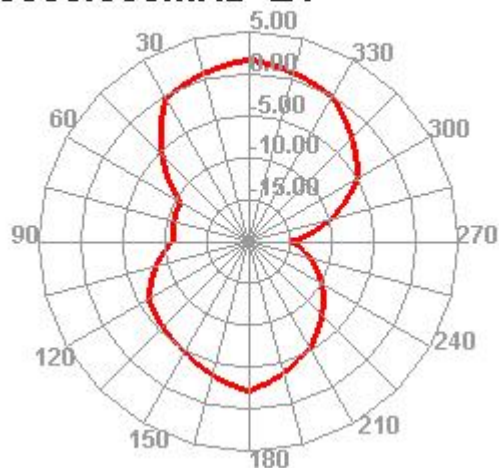
5500.000MHz



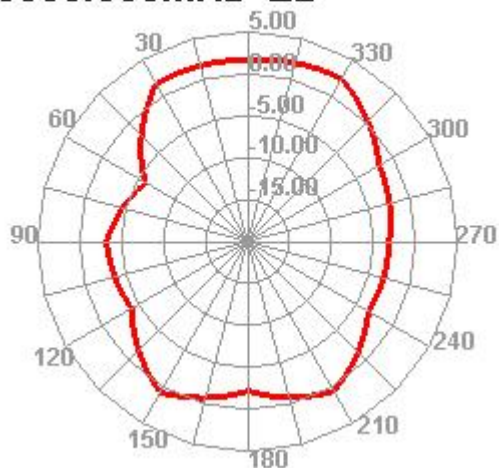
5500.000MHz H



5500.000MHz E1



5500.000MHz E2



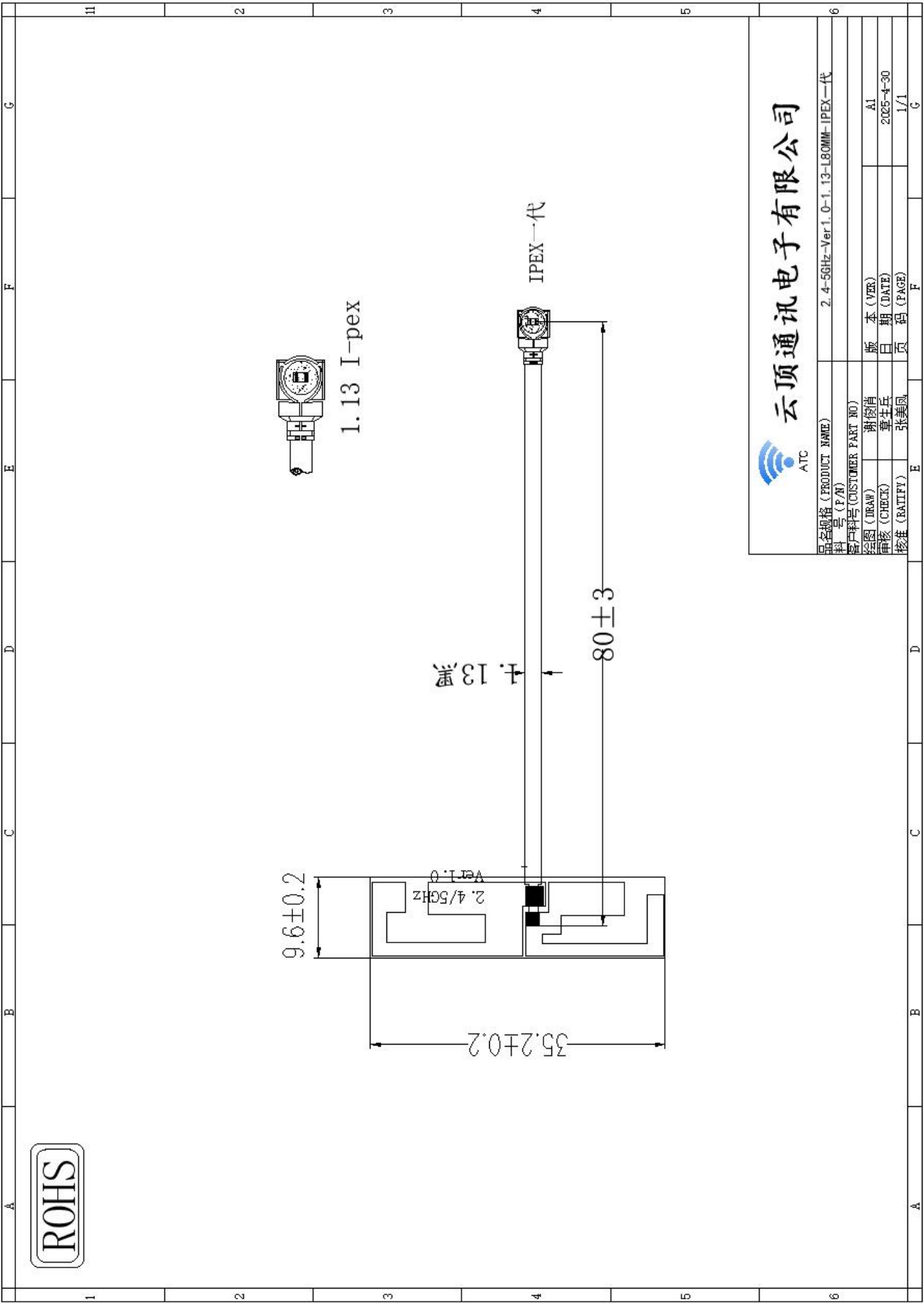
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## 4. 天线结构图:



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## 电器技术参数

| 电 性 能 指 标 |                        | Electrical Specifications |                        |
|-----------|------------------------|---------------------------|------------------------|
| 频率范围      | 2400~2500/5150~5850MHz | Frequency Range           | 2400~2500/5150~5850MHz |
| 电压驻波比     | ≤2.0                   | VSWR                      | ≤2.0                   |
| 输入阻抗      | 50 Ω                   | Input Impedance           | 50 Ω                   |
| 增益        | 3.46 DBI               | Gain                      | 3.46 DBI               |
| 机 械 指 标   |                        | Mechanical Specifications |                        |
| 天线颜色      | 黑色                     | Antenna Color             | Black                  |
| 接口形式      | IPEX 一代                | Input connector           | IPEX 1                 |
| 天线线长      | 80mm                   | Cable length              | 80mm                   |
| 工作温度      | -40℃~+85℃              | Working Temperature       | -40℃~+85℃              |
| 工作湿度      | 20~80%                 | Working Humidity          | 20~80%                 |



这是深圳研发这边做试产样品的时候没做好，做批量大货是东莞工厂统一做，不会出现这种问题。

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## 环境性能测试（Environment performance test）：

| 项目          | 测试条件                                                                               | 测试结果                        |
|-------------|------------------------------------------------------------------------------------|-----------------------------|
| 储存环境        | 在没有指定的情况下测试温度、湿度、气压如下：<br>1. 温度为-30℃~+80℃<br>2. 相对湿度为45%-85%<br>3. 气压为86kpa-106kpa | 电气机械性能正常                    |
| 高低温试验       | 在70℃与-40℃之间进行5次循环，然后在正常条件下<br>1-2H，检查外观质量。                                         | 尺寸应满足规定并应<br>满足<br>于机械、电气性能 |
| 耐恒定湿热<br>试验 | 相对湿度95±3%，试验温度：40℃.持续2H作用后，<br>试品取出后5min之内测定电气性能，试品在正常条<br>件下1-2H，检查外观质量           | 尺寸应满足规定并应<br>满足<br>于机械、电气性能 |
| 振动试验        | 振频范围10-55HZ，位移幅值：0.35MM，加速度幅值：<br>50.0M/S，扫频循环次数：30次                               | 电气机械性能正常                    |
| 跌落试验        | 1M高空按照互相垂直的轴方向自由跌落3次                                                               | 电气机械性能正常                    |

| Project                                | Test condition                                                                                                                                                                            | Test results                                                             |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Storage environment                    | Test temperature, humidity, pressure without stated condition as follwings:1.Temperature: -30℃ ~ +80℃ ;2.Relative humidity: 45%-85%;3,Pressure: 86kpa-106kpa                              | Electrical and mechanical performance normal                             |
| High and low temperature test          | Having 5 times cycle between -40℃ to 70℃,Then in common condition 1-2 hours test exterior quality.                                                                                        | Measurement satisfied with electrical and mechanical performance normal. |
| Resistance constant hot and humid test | Relative humidity:95±3%,Test temperature: 40℃,last 2 hours ,put it after 5 min test the electrical function .Test products during common condition 1-2 hours ,Then test exterior quality. | Measurement satisfied with electrical and mechanical performance normal. |
| Vibration test                         | Vibrate Frequency:10-55HZ;<br>Distance :0.35mm;Acceleration :50.0m/s;Sweep frequency cycle:30 times                                                                                       | Electrical and mechanical performance normal                             |
| Fall test                              | From 1m height fall down 3 times freely (vertical direction)                                                                                                                              | Electrical and mechanical performance normal                             |