

# 样品承认规格书

## PART SHEET FOR APPROVAL

|                               |                                                                         |
|-------------------------------|-------------------------------------------------------------------------|
| 制造商名称:<br>Manufacturer:       | 深圳市英佳创电子科技有限公司<br>SHENZHEN YINGJIACHUANG ELECTRONIC TECHNOLOGY CO.,LTD. |
| 供应商名称:<br>Supplier:           | 深圳市英佳创电子科技有限公司<br>SHENZHEN YINGJIACHUANG ELECTRONIC TECHNOLOGY CO.,LTD. |
| 产品名称:<br>Part Description:    | BT 黑色内置天线 (L=110mm)<br>BT built-in antenna (L=110mm)                    |
| 规格型号:<br>Model No:            | HB35                                                                    |
| 制造商 P/N:<br>Manufacturer P/N: | YJC-6N110-R01                                                           |
| 爱普生编码:<br>EPSON P/N:          | 223214700                                                               |
| 华曦达编码:<br>SDMC P/N:           | 360100442                                                               |
| 日期:<br>Issued Date:           | 2024.05.06                                                              |

### 供应商确认 Supplier confirmation

|            |             |             |
|------------|-------------|-------------|
| 承办 Made By | 审核 Engineer | 批准 Approver |
| 殷飞杰        | 方文锋         | 肖汉          |
|            |             |             |

### 华曦达确认 SDMC confirmation

|                           |                                                                                    |        |             |
|---------------------------|------------------------------------------------------------------------------------|--------|-------------|
| 承认原因:<br>Approval Reason: | <input type="checkbox"/> 新物料 New Part <input type="checkbox"/> 替代料 Substitute Part |        |             |
| 承办 Made By                | 审核 Engineer                                                                        |        | 批准 Approver |
|                           | 品质 Quality                                                                         | 研发 R&D | 业务 Sales    |
|                           |                                                                                    |        |             |

备注：签名表明提交样品获得承认，图纸规格已经受控。Note: Signature indicates that the submitted sample is approved and the drawing/specification is now the controlling document.



深圳市英佳创电子科技有限公司

<http://www.szsyjc.com>

# APPROVAL SHEET

## 承认书

|                                          |                                                                                      |                    |
|------------------------------------------|--------------------------------------------------------------------------------------|--------------------|
| CUSTOMER NAME<br>客户名称                    | 深圳市华曦达科技股份有限公司                                                                       |                    |
| CUSTOMER P/N<br>客户料号<br>PART NAME<br>品 名 | 2. 4G 黑色 PCB 内置天线 L=110mm<br>2.4G black PCB built-in antenna L=110mm<br>(适用机型: HB35) |                    |
| P/ N<br>料 号                              | YJC-6N110-R01                                                                        |                    |
| APPROVAL REV.<br>版 次                     | A1                                                                                   |                    |
| DELIVERY DATE<br>送样日期                    | 2024 年 05 月 06 日                                                                     |                    |
| PREPARED BY<br>承 办                       | 殷飞杰                                                                                  |                    |
| CHECKED BY<br>审 核                        | 方文锋                                                                                  |                    |
| APPROVED BY<br>核 准                       | 肖 汉                                                                                  |                    |
| Customer Approved<br>客 户 承 认             |                                                                                      |                    |
| Prepared By<br>承 办                       | Checked By<br>审 核                                                                    | Approved By<br>核 准 |
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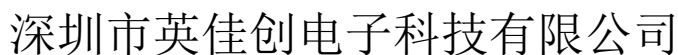
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|                                                         |       |
|                                                         |       |



履历表(Resumer):

| 版本<br>Version | 变更内容及更改原因<br>Changes and reasons             | 发行<br>publish                          | 发行<br>publish |
|---------------|----------------------------------------------|----------------------------------------|---------------|
| A/0           | 初版发行 (Issued)                                | 2024 年 01 月 05 日<br>(January 05, 2024) |               |
| A/1           | 更新PCB板丝印 (Update the PCB<br>screen printing) | 2024 年 05 月 06 日<br>(May 06, 2024)     |               |
|               |                                              |                                        |               |
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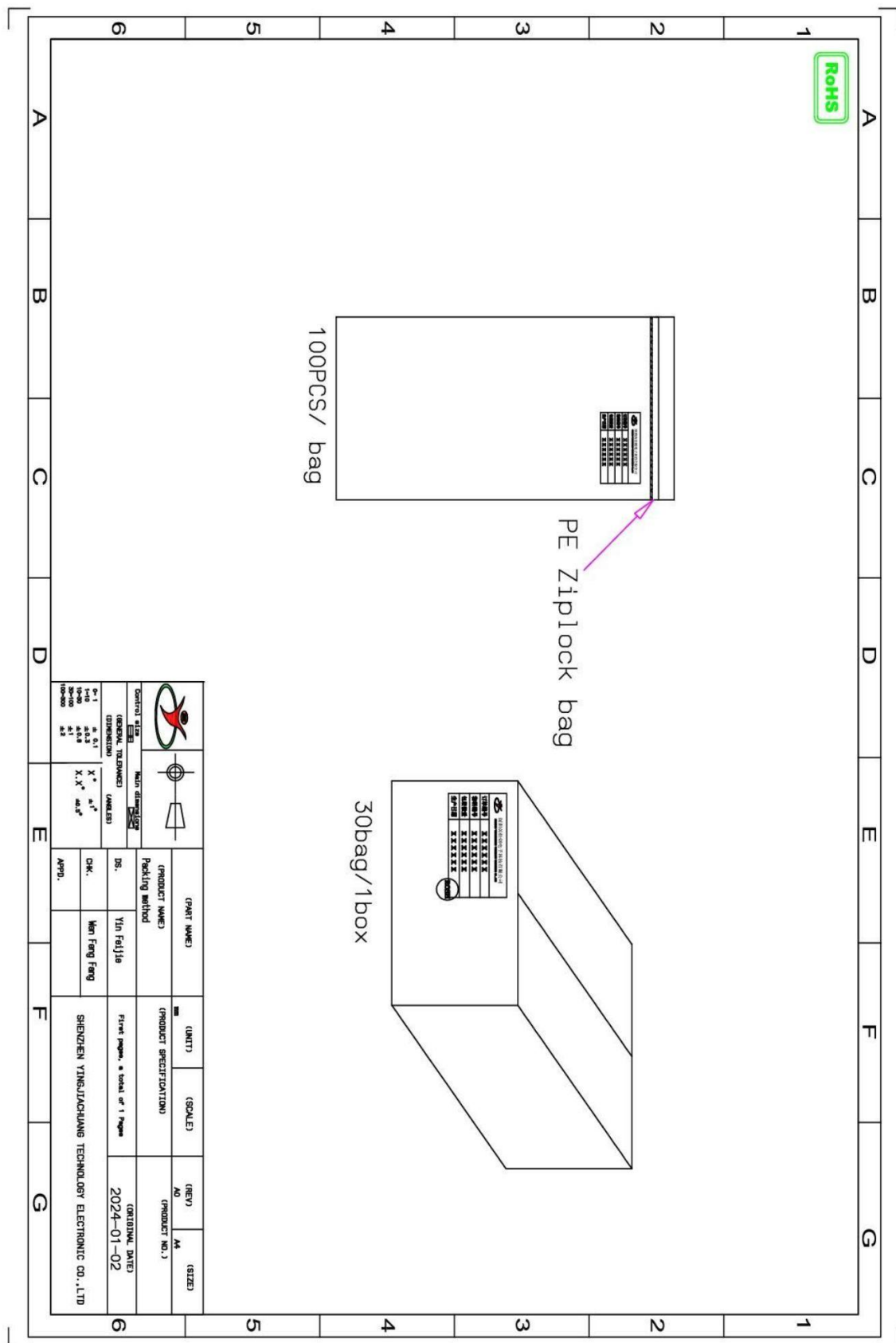


产品平面图 (Product plan):





包装方式图 (Packing pattern drawing) :





| 产品规格 Product Type                      |                                             | RF1. 13 低损线                                                                        |                 |                       |
|----------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------|-----------------|-----------------------|
| 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                                 | 镀银铜线 Silverplated Copper Wire                                                      |                 |                       |
|                                        | 结构 Construction(mm)                         | 7/0.083                                                                            |                 |                       |
|                                        | 标称外径 Nom.Dia(mm)                            | 0.249±0.02                                                                         |                 |                       |
| 绝缘层<br>Insulation                      | 材质 Material                                 | 聚全氟乙丙烯 FEP                                                                         |                 |                       |
|                                        | 标称外径 Nom.Dia(mm)                            | 0.735±0.02                                                                         |                 |                       |
| 外导体<br>Outer Conductor                 | 材质 Material                                 | 铜塑箔 Cu-Plastic Composite Tape                                                      |                 |                       |
|                                        | 标称外径 Nom.Dia(mm)                            | 0.759±0.02                                                                         |                 |                       |
|                                        | 材质 Material                                 | 镀锡铜线 TC Wire                                                                       | 16*4/0.05       |                       |
|                                        | 标称外径 Nom.Dia(mm)                            | 0.96±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)                            | 1.15±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℃<br>(dB/m)                                                    | 1GHz            | 1.88                  |
| 电容 Capacitance(pF/m)                   | 98                                          |                                                                                    | 2GHz            | 2.55                  |
| 速率 Velocity(%)                         | 70                                          |                                                                                    | 3GHz            | 3.05                  |
| 驻波比 VSWR                               | ≤1.30@DC-6GHz                               |                                                                                    | 4GHz            | 3.52                  |
| 最大工作电压<br>Max.Operating Voltage(V)     | 1000                                        |                                                                                    | 5GHz            | 4.05                  |
| 最大工作频率<br>Max.Operating Frequency(GHz) | 8                                           |                                                                                    | 6GHz            | 4.40                  |
| 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                                                                                 | 10              |                       |
| 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)        | 1000                                        |                                                                                    |                 |                       |
| 每盘段数 The Joints of Each Reel           | ≤5                                          |                                                                                    |                 |                       |
| 最小段长 Min. Segment Length(m)            | ≥10                                         |                                                                                    |                 |                       |
| 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                     |                                                                                    |                 |                       |

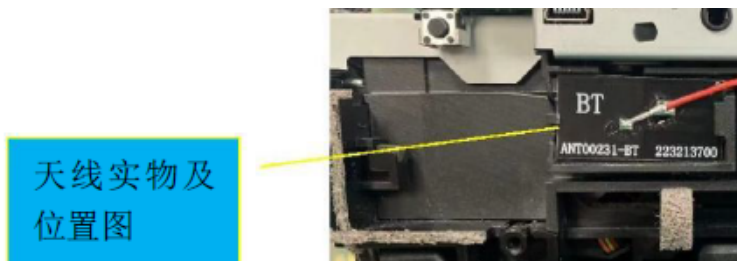


环境性能测试(Environmental performance testing)：

| 项目 (Project)                                               | 测试条件 (Test condition)                                                                                                                                                                                                                                                                                                                                        | 规格 (Specification)                                                                                                                    |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| 储存环境<br>Storage<br>Conditions                              | In the absence of specified test temperature, humidity, air pressure is as follows:<br>在没有指定的情况下测试温度、湿度、气压如下:<br>1. Temperature is $-45^{\circ}\text{C} \sim +85^{\circ}\text{C}$<br>1. 温度为 $-45^{\circ}\text{C} \sim +85^{\circ}\text{C}$<br>2. Relative humidity of 20~80%<br>2. 相对湿度为20~80%<br>3. Air pressure is 86 kpa to 106 kpa<br>3. 气压为86kpa-106kpa | Electrical and mechanical properties is normal<br>电气机械性能正常                                                                            |
| 高低温试验<br>high and low<br>temperature test                  | Between $85^{\circ}\text{C}$ and $-45^{\circ}\text{C}$ for 5 loops, then 1-2 h under normal conditions, check the appearance quality.<br>在 $85^{\circ}\text{C}$ 与 $-45^{\circ}\text{C}$ 之间进行5次循环，然后在正常条件下1-2H，检查外观质量。                                                                                                                                        | Size should meet the requirements and should satisfy the content with the electrical and mechanical properties<br>尺寸应满足规定并应满足于机械、电气性能 |
| 耐恒定<br>湿热试验<br>Constant damp and<br>hot resistance<br>test | 80 + / - 3% relative humidity, temperature test: $40^{\circ}\text{C}$ . Lasts 2 h after, try to take out the determination of electrical properties, within 5 min after try 1-2 h under article normal thing, check the appearance quality<br>相对湿度 $80 \pm 3\%$ ，试验温度： $40^{\circ}\text{C}$ 。持续2H作用后，试品取出后5min之内测定电气性能，试品在正常条件下1-2H，检查外观质量                   | Size should meet the requirements and should satisfy the content with the electrical and mechanical properties<br>尺寸应满足规定并应满足于机械、电气性能 |
| 振动试验<br>vibration test                                     | 10-55 hz, vibration frequency range of displacement amplitude: 0.35 MM, acceleration amplitude: 50.0 M/S, sweep cycles: 30 times<br>振频范围10-55HZ，位移幅值：0.35MM，<br>加速度幅值：50.0M/S，扫频循环次数：30次                                                                                                                                                                     | Electrical and mechanical properties is normal<br>电气机械性能正常                                                                            |
| 跌落试验<br>fall down test                                     | 1 m high altitude in accordance with the perpendicular axis free drop 3 times<br>1M高空按照互相垂直的轴方向自由跌落3次                                                                                                                                                                                                                                                        | Electrical and mechanical properties is normal<br>电气机械性能正常                                                                            |



## 天线实物图与位置图: Antenna physical diagram and location diagram



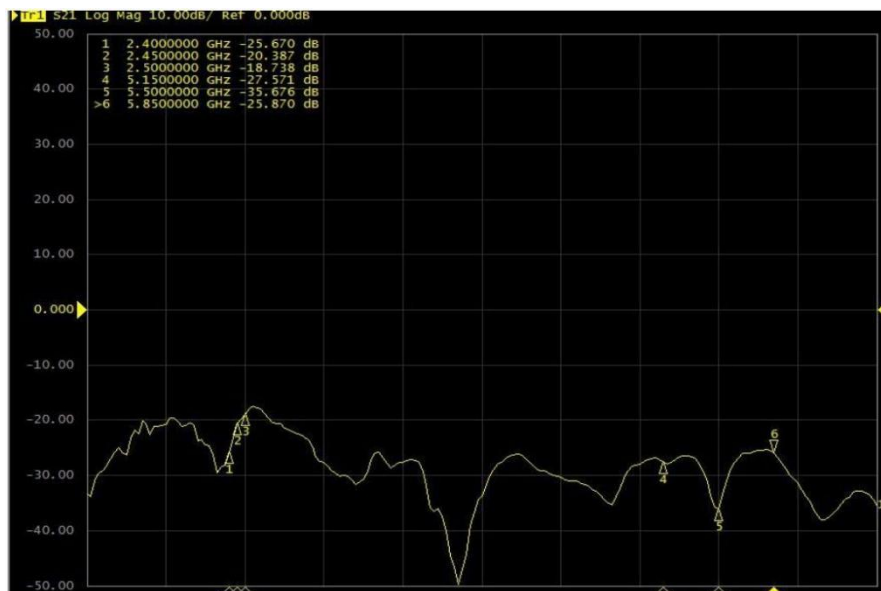
## 天线性能测试图: Antenna performance test diagram



|          |     |      |     |
|----------|-----|------|-----|
| Freq/GHz | 2.4 | 2.45 | 2.5 |
| VSWR     | 1.4 | 1.2  | 1.2 |

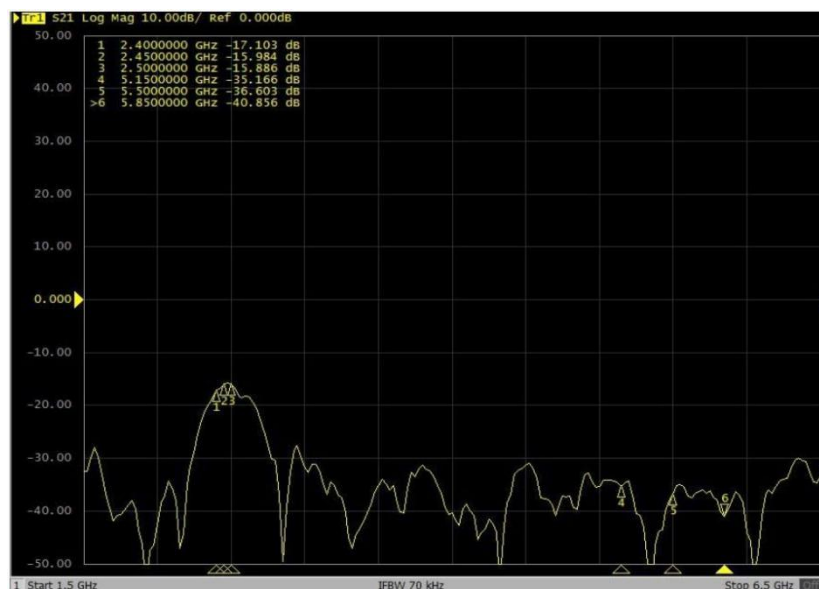


隔离度测试图 Wi-Fi Ant-0 & BT (Isolation test chart)



|          |     |      |     |      |     |      |
|----------|-----|------|-----|------|-----|------|
| Freq/GHz | 2.4 | 2.45 | 2.5 | 5.15 | 5.5 | 5.85 |
| S21/ dB  | -25 | -20  | -18 | -27  | -35 | -25  |

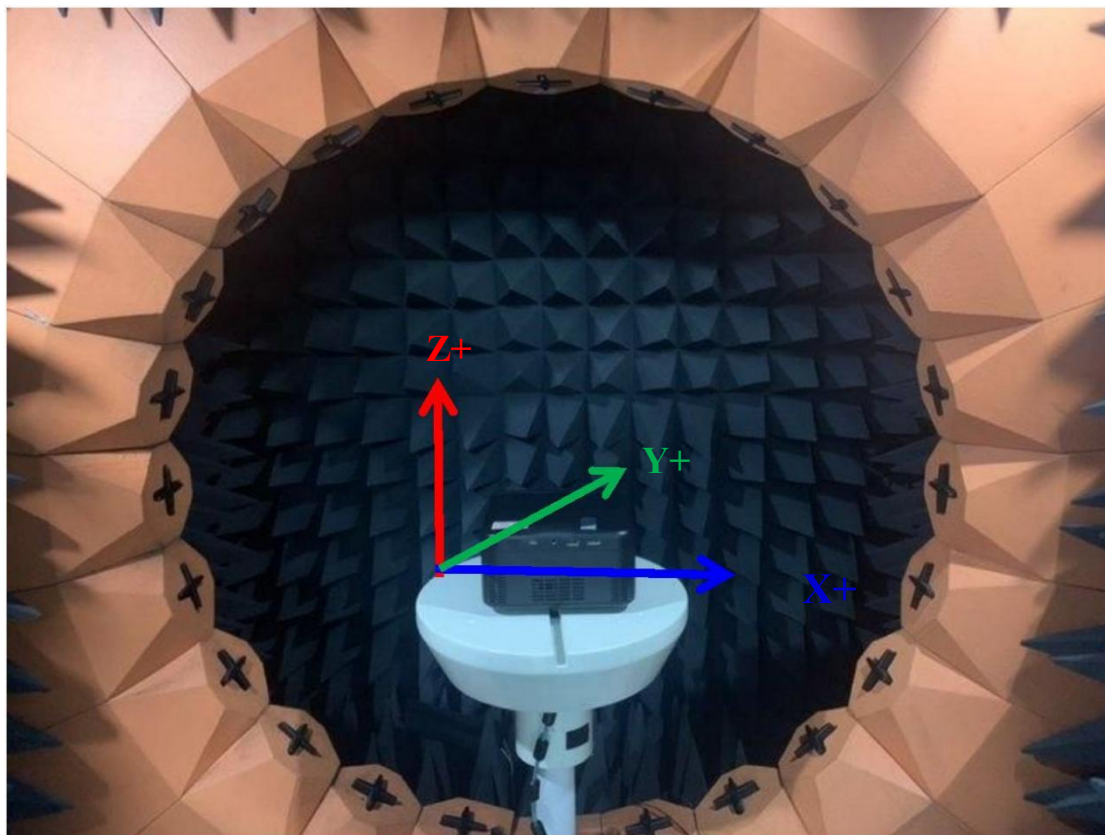
隔离度测试图 Wi-Fi Ant-1 & BT (Isolation test chart)



|          |     |      |     |      |     |      |
|----------|-----|------|-----|------|-----|------|
| Freq/GHz | 2.4 | 2.45 | 2.5 | 5.15 | 5.5 | 5.85 |
| S21/ dB  | -17 | -15  | -15 | -35  | -36 | -40  |



## 参考坐标系 Reference Coordinate System



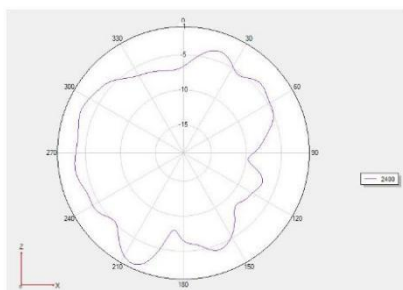
|      | XY    | XZ    | YZ    |
|------|-------|-------|-------|
| 0°   | Right | Up    | Up    |
| 90°  | Front | Right | Front |
| 180° | Left  | Down  | Down  |
| 270° | Back  | Left  | Back  |



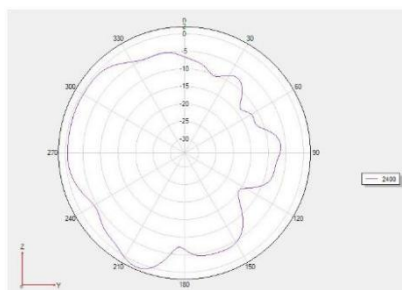
2D、3D 测试数据(2.4G): 2D and 3D test data (2.4G) :

| Frequency | Efficiency (%) | Gain. (dBi) |
|-----------|----------------|-------------|
| 2400MHz   | 45.88          | 1.63        |
| 2410MHz   | 46.2           | 2.10        |
| 2420MHz   | 46.83          | 2.14        |
| 2430MHz   | 48.98          | 2.33        |
| 2440MHz   | 47.83          | 2.56        |
| 2450MHz   | 49.75          | 2.54        |
| 2460MHz   | 48.72          | 2.89        |
| 2470MHz   | 48.72          | 2.90        |
| 2480MHz   | 48.98          | 3.32        |
| 2490MHz   | 48.72          | 3.46        |
| 2500MHz   | 46.95          | 2.96        |

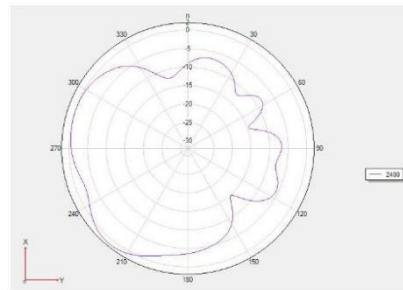
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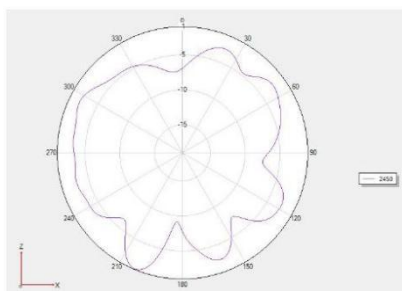
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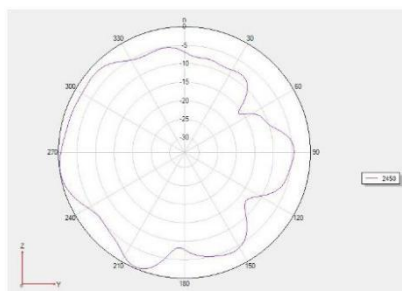
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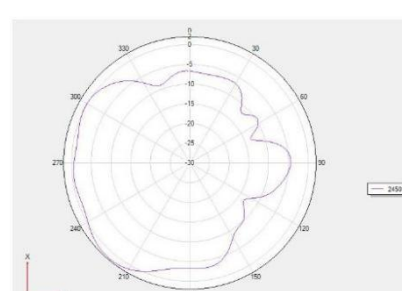
Phi =0 freq=2450MHz



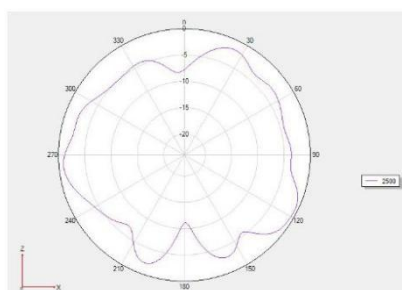
Phi =90 freq=2450MHz



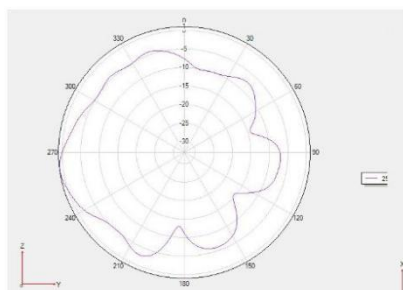
Theta =90 freq=2450MHz



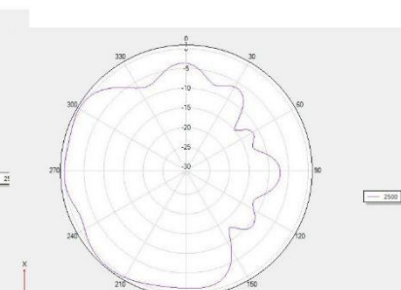
Phi =0 freq=2500MHz



Phi =90 freq=2500MHz

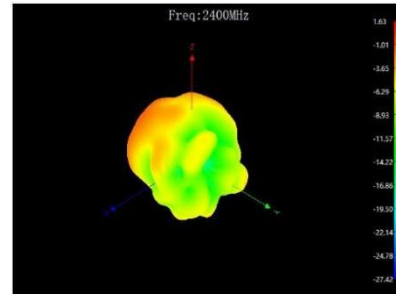
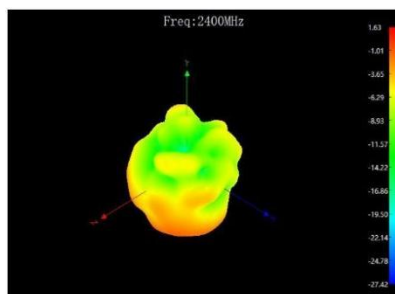
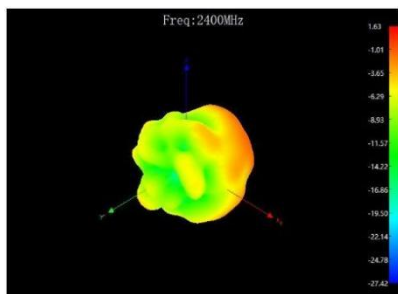


Theta =90 freq=2500MHz

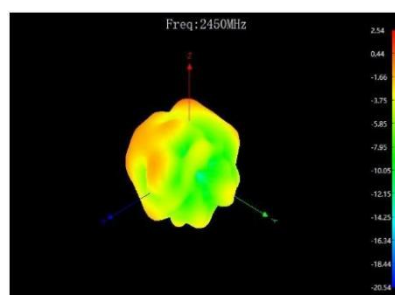
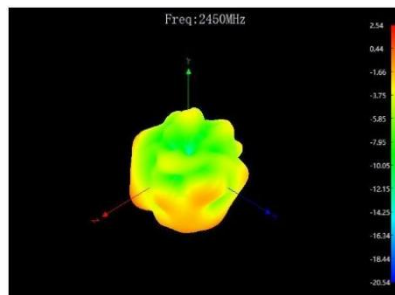
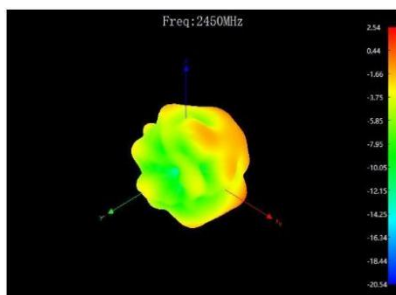




### 3D 2400:



### 3D 2450:



### 3D 2500

