

产品规格书  
Product Specification

客户名称 Customer Name: 宝锋

项目名称 Project Name: BK05 2.4G+5.8G 白色 L 型扁天线

规格描述 Product Spec: 2.4G+5.8G L 型扁天线, IPEX-1 端子,  
1.13 灰色线, 线长 170MM, 105MM 外壳白色

版 本 REV: V1.0

日 期 Date: 2024.05.09

|                |              |                                                                                       |
|----------------|--------------|---------------------------------------------------------------------------------------|
| 制 作<br>drawing | 审 核<br>check |  |
| 温勇鹏            | 陈德旺          | 蒋振华                                                                                   |

## 客户承认 Customer Approve

|              |                 |                 |
|--------------|-----------------|-----------------|
| 审 核<br>check | 批 准<br>approved | 承 认<br>approval |
|              |                 |                 |



工程变更记录

| 版本   | 日期         | 工程师 | 修 改 内 容 |
|------|------------|-----|---------|
| V1.0 | 2024.05.09 | 温勇鹏 | 最初版本    |
|      |            |     |         |
|      |            |     |         |
|      |            |     |         |
|      |            |     |         |

## 测试设备及原理 Testing Equipment and Principle

### 1. 测试设备:

网络分析仪 Network Analyzers :

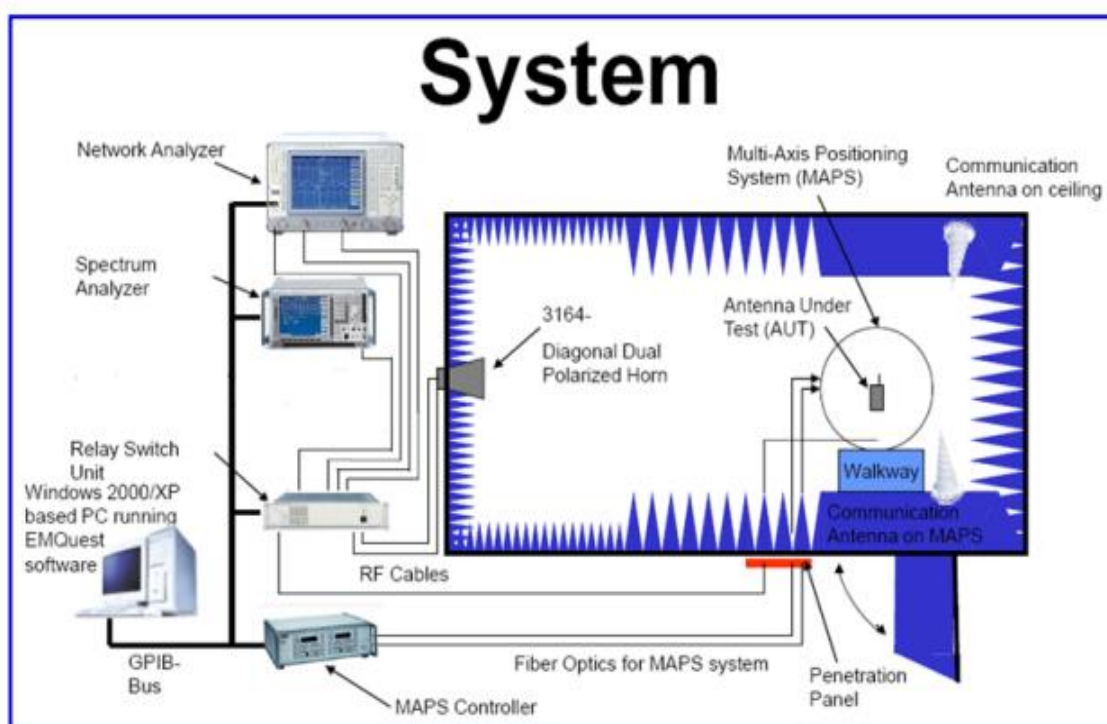
Agilent 8753D 5071B

综合测试仪 Communications Test Set:

Agilent E5515C

3D 暗室测试系统 3D Chamber Test System:

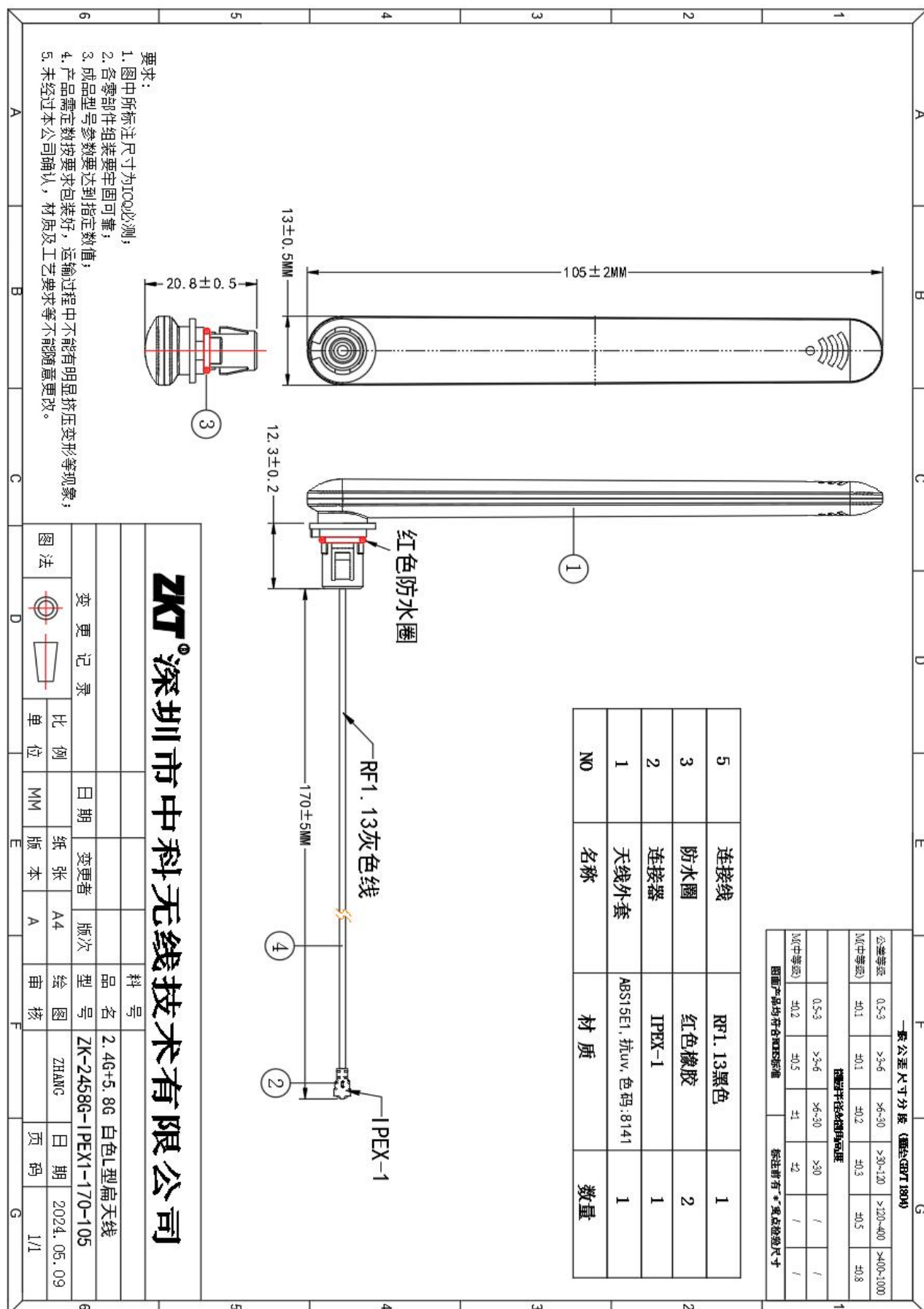
### 2. 测试原理:



## 一、电性能以及机械性能

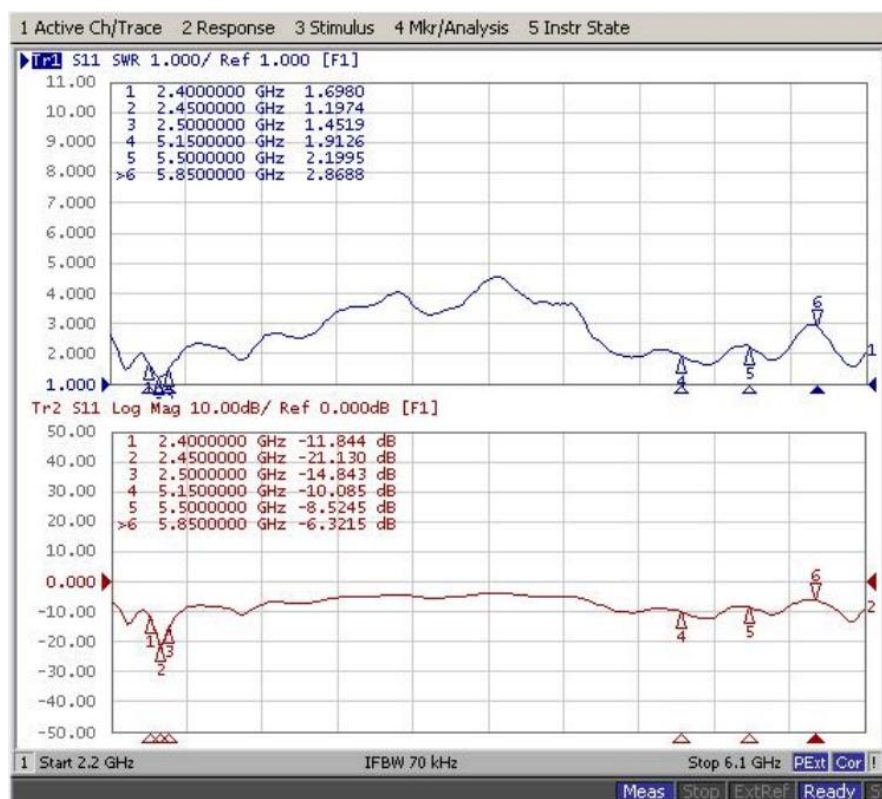
| 电性能指标 |                                                                                      | Electrical Specifications |                        |
|-------|--------------------------------------------------------------------------------------|---------------------------|------------------------|
| 频率范围  | 2400-2500/5000-5800MHz                                                               | Frequency Range           | 2400-2500/5000-5800MHz |
| 电压驻波比 | ≤3.0                                                                                 | VSWR                      | ≤3.0                   |
| 增益    | ≤1.98 DBI                                                                            | GAIN                      | ≤1.98 DBI              |
| 辐射方式  | 全向                                                                                   | Radiation                 | OMNI                   |
| 极化方式  | 垂直                                                                                   | Polarizatin               | LINEAR                 |
| 输入阻抗  | 50 Ω                                                                                 | Input Impedance           | 50 Ω                   |
| 机械指标  |                                                                                      | Mechanical Specifications |                        |
| 接口形式  | IPEX-1                                                                               | Input connector           | IPEX-1                 |
| 天线材质  | PCB                                                                                  | Antenna materia           | PCB                    |
| 工作温度  | -30℃~+80℃                                                                            | Working Temperature       | -30℃~+80℃              |
| 工作湿度  | 40~85%                                                                               | Working Humidity          | 40~85%                 |
| 实物图   |  |                           |                        |

## 二、天线结构尺寸图



## 三、 无源测试数据

### 驻波图



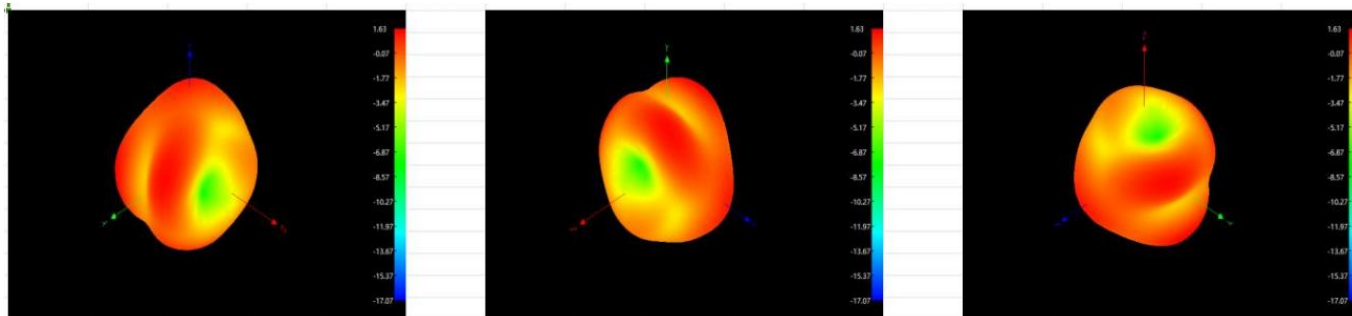
### 效率增益

效率

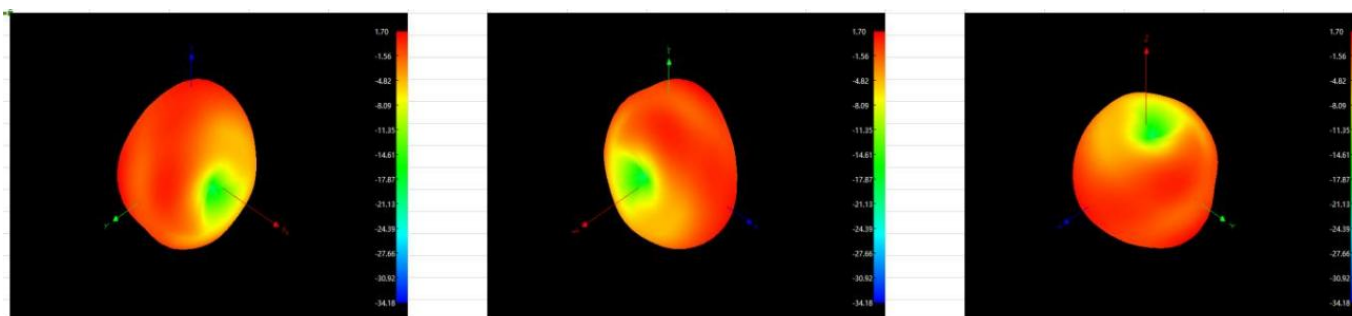
增益

| Frequency | Efficiency | Efficiency | Frequency | MaxGain/d | AvgGain/d |
|-----------|------------|------------|-----------|-----------|-----------|
| 2400      | -2.23      | 59.84      | 2400      | 1.63      | -2.23     |
| 2410      | -2.24      | 59.7       | 2410      | 1.36      | -2.24     |
| 2420      | -1.86      | 65.16      | 2420      | 1.9       | -1.86     |
| 2430      | -1.82      | 65.77      | 2430      | 1.57      | -1.82     |
| 2440      | -1.6       | 69.18      | 2440      | 1.78      | -1.6      |
| 2450      | -1.54      | 70.15      | 2450      | 1.7       | -1.54     |
| 2460      | -1.55      | 69.98      | 2460      | 1.97      | -1.55     |
| 2470      | -1.45      | 71.61      | 2470      | 1.96      | -1.45     |
| 2480      | -1.67      | 68.08      | 2480      | 1.79      | -1.67     |
| 2490      | -1.54      | 70.15      | 2490      | 1.82      | -1.54     |
| 2500      | -1.86      | 65.16      | 2500      | 1.67      | -1.86     |
| 5150      | -3.51      | 44.57      | 5150      | 1.98      | -3.51     |
| 5200      | -3.24      | 47.42      | 5200      | 1.89      | -3.24     |
| 5250      | -3.33      | 46.45      | 5250      | 1.76      | -3.33     |
| 5300      | -3.49      | 44.77      | 5300      | 1.4       | -3.49     |
| 5350      | -3.34      | 46.34      | 5350      | 1.53      | -3.34     |
| 5400      | -3.32      | 46.56      | 5400      | 1.33      | -3.32     |
| 5450      | -3.66      | 43.05      | 5450      | 0.88      | -3.66     |
| 5500      | -3.79      | 41.78      | 5500      | 0.92      | -3.79     |
| 5550      | -3.47      | 44.98      | 5550      | 1.49      | -3.47     |
| 5600      | -3.41      | 45.6       | 5600      | 1.72      | -3.41     |
| 5650      | -3.68      | 42.85      | 5650      | 1.36      | -3.68     |
| 5700      | -3.87      | 41.02      | 5700      | 1.38      | -3.87     |
| 5750      | -4.09      | 38.99      | 5750      | 1.39      | -4.09     |
| 5800      | -4.15      | 38.46      | 5800      | 1.26      | -4.15     |
| 5850      | -4.25      | 37.58      | 5850      | 1.13      | -4.25     |

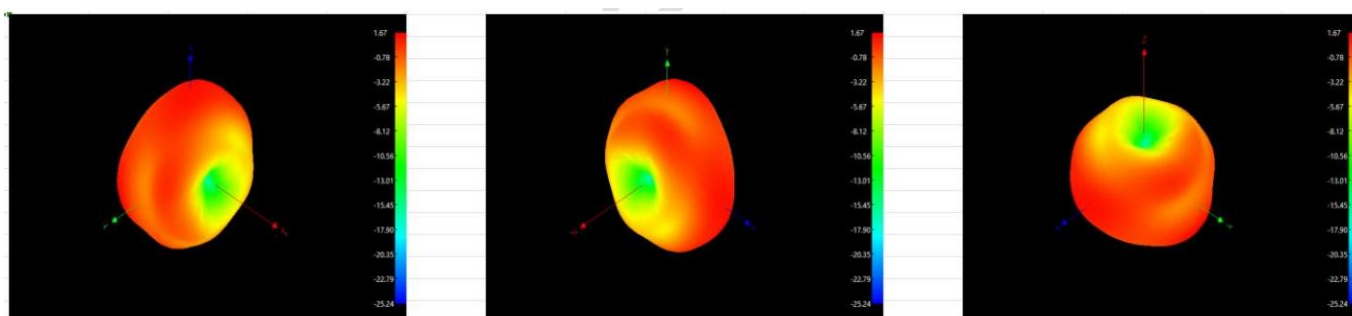
## 方向图



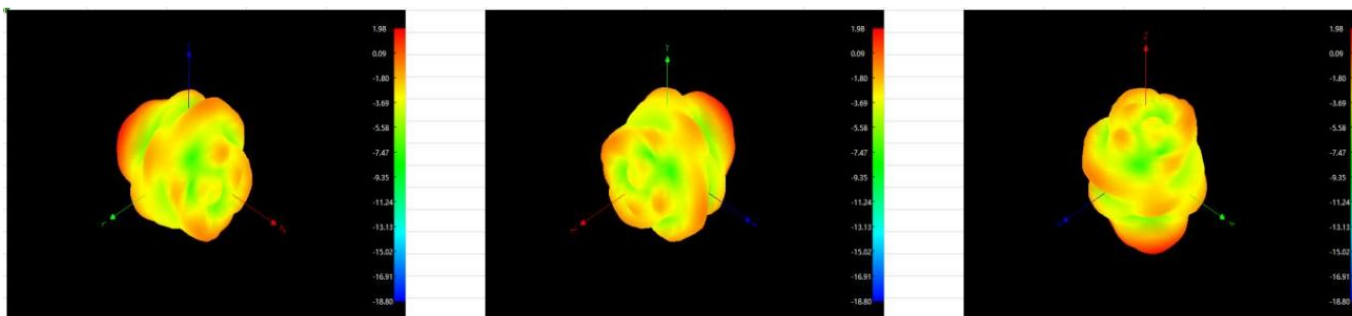
2400MHZ



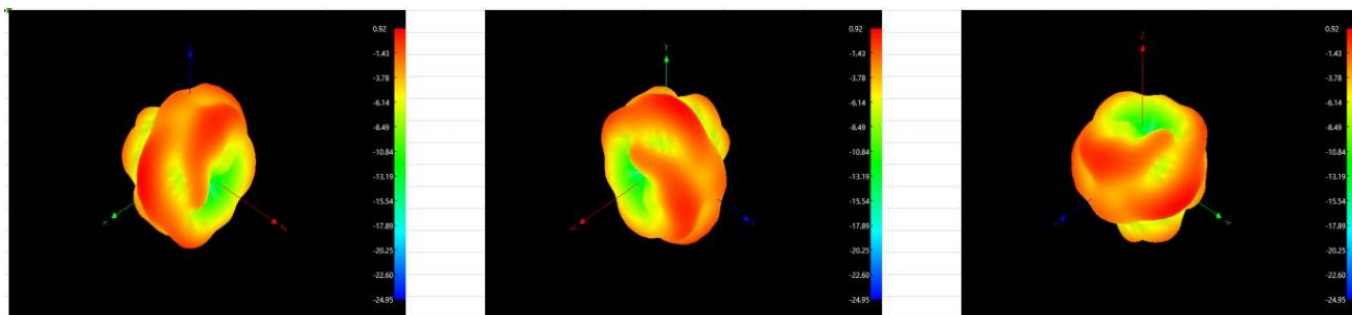
2450MHZ



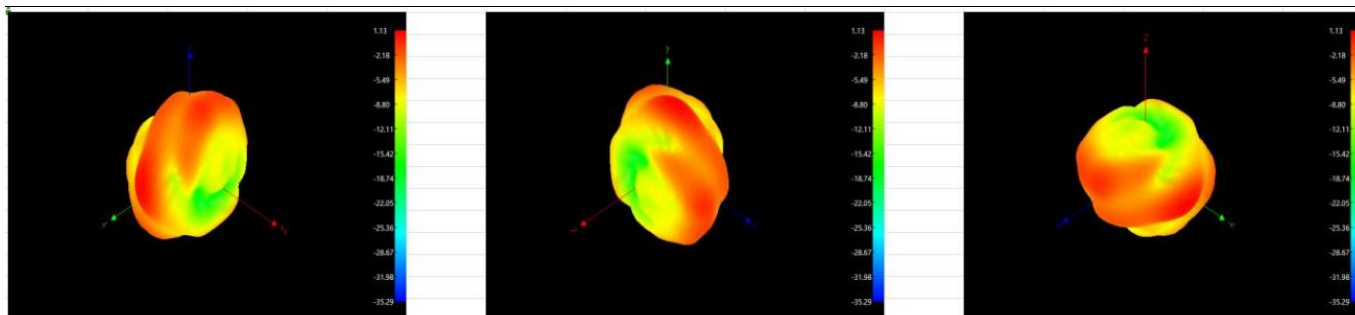
2500MHZ



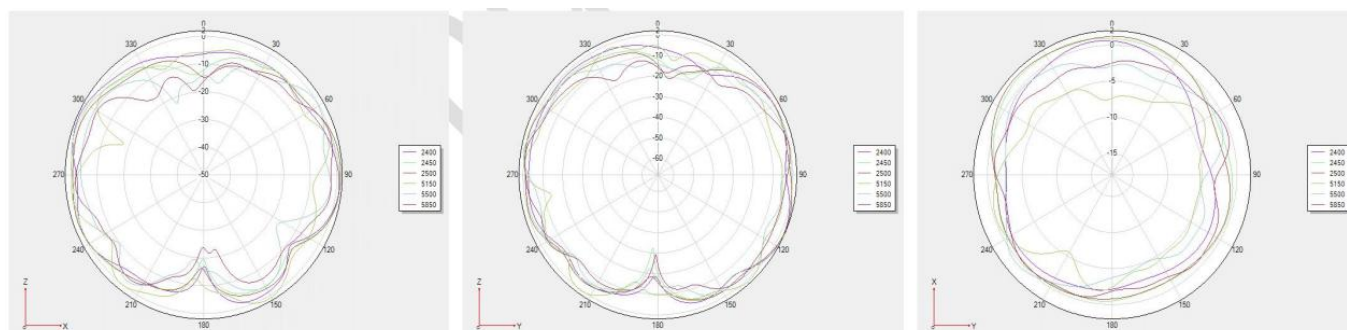
5150MHZ



5500MHZ



5850MHZ



Z-X

Z-Y

X-Y

## 有源测试数据

| Active Test_WIFI_B |           |     |             |     |              |
|--------------------|-----------|-----|-------------|-----|--------------|
| Channel            | Frequency | MAX | TRP (11bPS) | MIN | TIS (11MbPS) |
| 1                  | 2412      |     | 20.0        |     | -85.6        |
| 6                  | 2437      |     | 20.0        |     | -87.3        |
| 11                 | 2462      |     | 20.2        |     | -88.6        |
| Active Test_WIFI_A |           |     |             |     |              |
| Channel            | Frequency | MAX | TRP (54bPS) | MIN | TIS (54MbPS) |
| 36                 | 5180      |     | 19.1        |     | -75.5        |
| 149                | 5745      |     | 18.1        |     | -75.2        |
| 165                | 5825      |     | 18.9        |     | -75.7        |

## 四、 可靠性试验报告

| 测试项目 |                                       | 测试方法                                                                                                                                                     | 要求                                                                                                      | 结果   |
|------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------|
| C1   | V.S.W.R. 电性驻波比                        | 设计网路分析仪参数进行测试                                                                                                                                            | 符合待测物规范                                                                                                 | pass |
| M1   | 天线增益                                  | 设计天线暗室参数进行测试                                                                                                                                             | 符合待测物规范                                                                                                 | pass |
| M2   | Vibration 震动                          | GB / T2423.48-2008<br>Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80to 20 Hz3 directions; 2 hours for each direction<br>振幅 1.5mm; 频率 20~80~20Hz; 3 个方向各 2H | 1. No Visual Damage<br>2. Frequency Tol. ≤5%<br>无明显外观不良; 频率偏移 ≤5%                                       | pass |
| M6   | Random Drop 跌落                        | GB / T2423.8-1995 Single: Height: 1.0 Meter;<br>3 directions; 1 time for each direction 单支<br>天线, 高 1m; 3 个方向各 1 次                                       | 1. No parts separated, fracture<br>2. Frequency Tol. ≤5%<br>产品无脱落、断裂; 频率偏移 ≤5%                          | pass |
| E3   | Dimension 尺寸                          | Inspection of dimension, color, material,<br>package, surface process. 检查尺寸, 颜色, 材<br>料, 包装, 表面处理                                                        | Directive DUT specification<br>符合待测物规范                                                                  | pass |
| E4   | Temperature and Humidity Chamber 恒温恒湿 | GB / T 2423.3-2006 Temp: 80° C / 12 H; -40°<br>C / 12H RH: ≥ 90%; Time: 24H 温度 80° C 测<br>试 12H 转 -40° C 测试 12H; 湿度 ≥ 90%; 时间 24H                        | After 2 Hours Recovery<br>1. No Visual Damage<br>2. Frequency Tol. ≤5%<br>恢复 2H 后, 无明显外观不良; 频率偏移<br>≤5% | pass |
| E5   | Thermal Shock 冷热冲击                    | GB / T 2423.22 - 2008 - 40° C (30 minutes) to<br>+ 80° C (30 minutes); Cycles: 24<br>- 40° C 测试 30 分 转 80° C 测试 30 分为一个周期;<br>共 24 周期                    | After 2 Hours Recovery<br>1. No Visual Damage<br>2. Frequency Tol. ≤5%<br>恢复 2H 后, 无明显外观不良; 频率偏移<br>≤5% | pass |
| R1   | Aging test 老化                         | GB / T 2423.2 - 2008 Temp: 80° C; Time: 24 hours<br>温度 80° C, 测试 24H                                                                                     | After 2 Hours Recovery<br>1. No Visual Damage<br>2. Frequency Tol. ≤5%<br>無明顯外觀不良; 频率偏移 ≤5%             | pass |
| M1   | RoHS                                  | With Reference to IEC 62321:2008 with flow<br>chart<br><br>参考 IEC 62321 测试流程                                                                             | Directive RoHS 2015/863/EU<br>符合 RoHS 2015/863/EU 标准                                                    | pass |

## 五、产品包装规范

产品名称/规格

## 一、标签要求

| ***** |       |
|-------|-------|
| 采购单号  | ***** |
| 物料编码  | ***** |
| 品名规格  | ***** |
| 数量/单位 | ***** |
| 备注    | ***** |

| ***** |       |
|-------|-------|
| 采购单号  | ***** |
| 物料编码  | ***** |
| 品名规格  | ***** |
| 数量/单位 | ***** |
| 备注    | ***** |

## 二、装箱要求

作业说明:

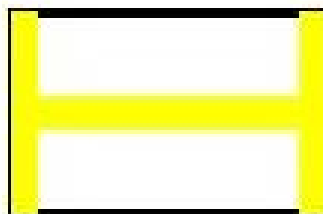
## 1. 内包装:

产品 100\_PCS 一小袋

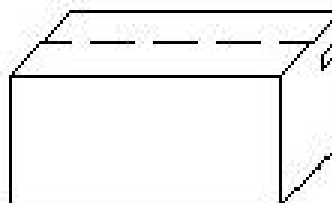


## 2. 外包装:

根据实际数量定数量/箱



纸箱



注意事项:

1. 是否要增设隔板、珍珠棉;
2. 标签的贴附, 如 ROHS 等;