



东莞立盛兴电子科技有限公司

# 承認書

客户名称：Makeblock Co., Ltd.

客户料号：/

物料名称 外置天线

物料型号：80000005371

物料描述：2.4G Little Pepper WIFI Antenna Straight Head

版 本：V1.0

Supplier name: Dongguan Lishengxing Electronic Technology Co., Ltd.

Supplier address: No. 135, Zhen'an East Road, Chang'an Town, Dongguan City

网 址：[Http://www.zconnlink.com](http://www.zconnlink.com) 电子邮箱：[jonathan.lee@zconnlink.com](mailto:jonathan.lee@zconnlink.com)



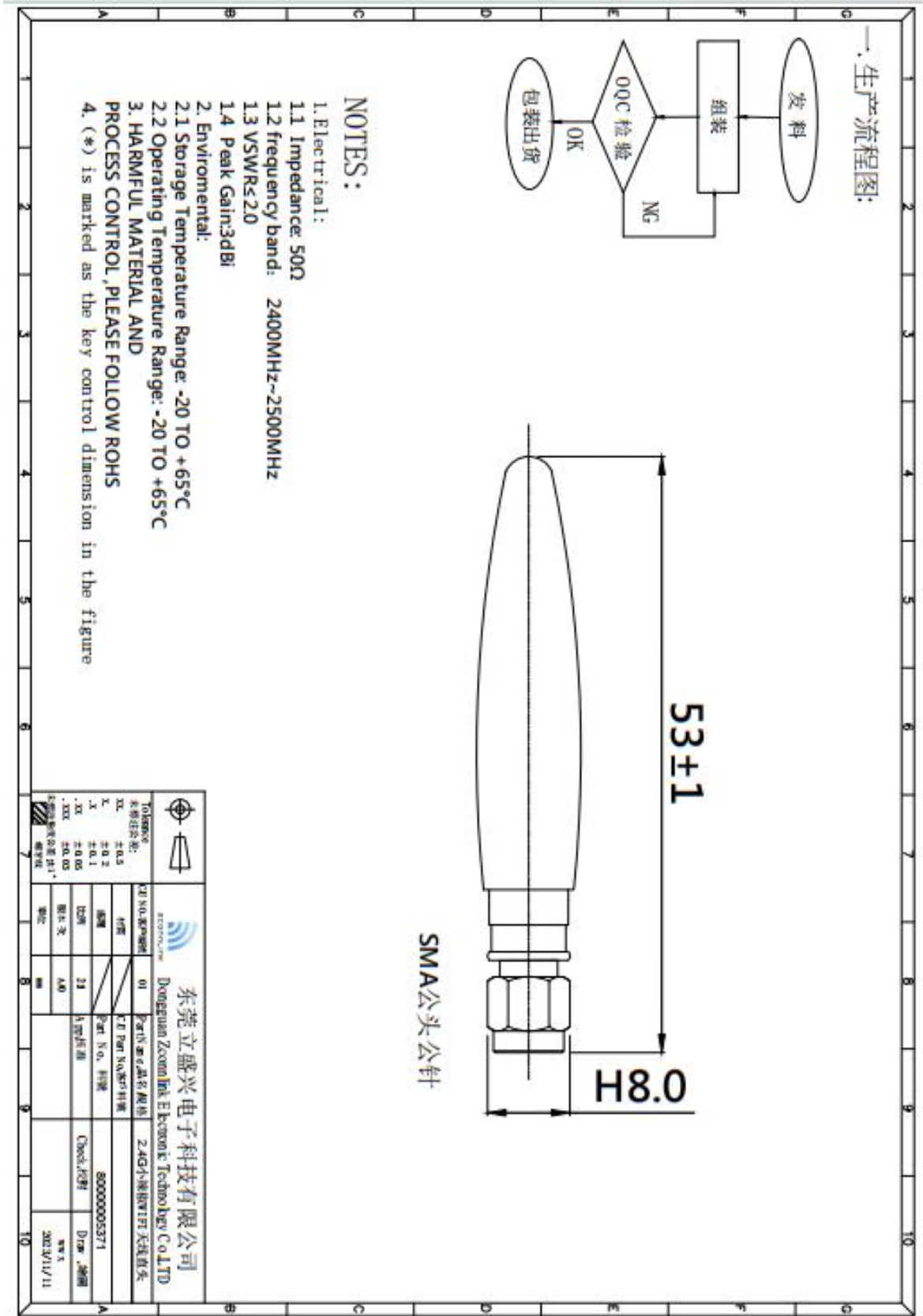




## 规格书目录

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## 一. 实物成品图/电气参数





## 二. 电气参数:

|      |             |
|------|-------------|
| 频率范围 | 2.4~2.5GHz  |
| 特性阻抗 | 50Ω         |
| 驻波比  | ≤2.0        |
| 极化   | 圆极化         |
| 增益   | 3.89dBi     |
| 保存温度 | -20°C~+65°C |
| 工作温度 | -20°C~+65°C |



### 三. 用料清单

| 序号 | 物料名称 | 物料主要材质 |
|----|------|--------|
| 1  | SMA  | CU     |
| 2  | 天线杆套 | TPE    |
| 3  | 弹簧   | CU     |
|    |      |        |
|    |      |        |
|    |      |        |
|    |      |        |

## 四. 环境与可靠性实验

| 项目     | 实验依据   | 判定标准  | 试验/测试设备 | 样品数量/不良数量(PCS) |
|--------|--|---|---------|----------------|
| 震动     | GB/T2423.48-1999<br>规定的方法测试                  | 1.结构无明显损坏<br>2.电性能达到标准  | 震动测试机   | 10/0           |
| 跌落     | GB/T2423.8-1995<br>规定的方法进行                   | 1. 跌落高度(mm) 1000<br>2. 测试表面 平滑水泥地面<br>3. 总跌落次数 (次) 80                   | 跌落测试机   | 10/0           |
| 恒定湿热试验 | GB/T 2423.3-93 第5章规定的方法进行                    | 1. 温度 (°C) 40±2<br>2. 相对湿度 (%) 90~95<br>3. 试验时间 (h) 21<br>4. 恢复时间 (h) 1 | 恒温恒湿测试仪 | 10/0           |
| 盐雾测试   | GB/T 2423.17-93<br>温度 55°C<br>湿度 ≥95%NaCl ≥5 | 1.工作 48 小时后取出晾至 2 小时后可正常工作  | 盐雾测试机   | 10/0           |
| 高温储存   | GB/T 2423.4-93<br>温度: 70°C                   | 1.24 小时恢复至常温<br>2.结构无明显损坏<br>3.电性能达到标准                                  | 恒温恒湿测试仪 | 10/0           |
| 拉力测试   | 测试端子拉力 9.8N<br>承受 1 分钟                       | 测试端子拉力 9.8N 承受 1 分钟,再确认电性是否 OK  | 拉力计     | 10/0           |



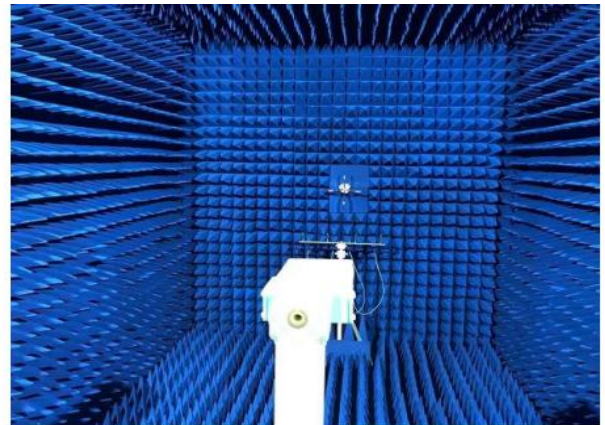
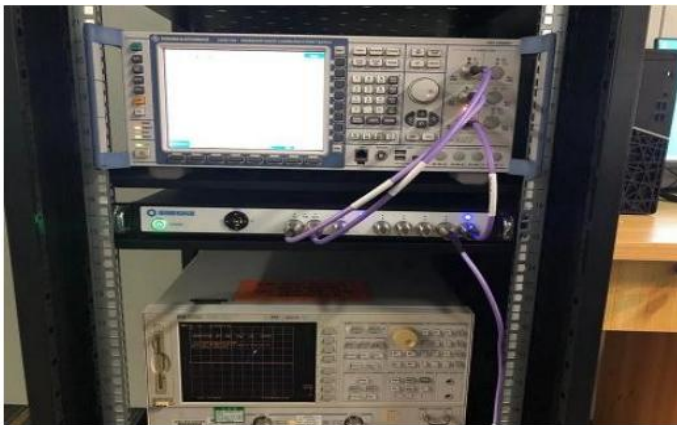


## 五. 样品检测报告

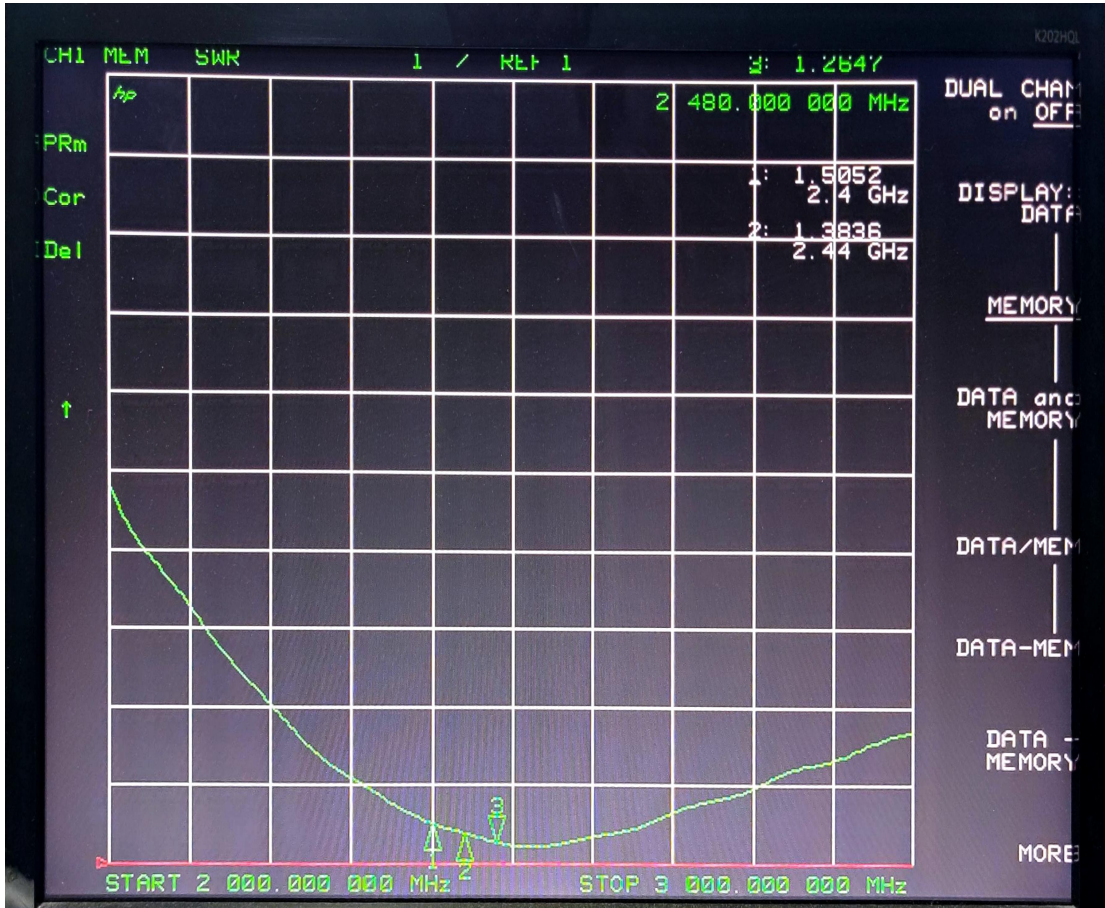
| 序号 | 测试项  | 标准值                   | N01  | N02  | N03   | N04  | N05   |
|----|------|-----------------------|------|------|-------|------|-------|
| 1  | 阻抗测试 | $50\Omega \pm 10$     | 49   | 50   | 47    | 43   | 45    |
| 2  | 尺寸 1 | $53 \pm 0.1\text{mm}$ | 53.3 | 53.2 | 53.35 | 53.3 | 53.27 |
| 3  | 尺寸 2 | 1/4-36UNS-2A          | G0   | G0   | G0    | G0   | G0    |

## 六.实验室测试环境及设备

| 测试项目<br>test item                       | 测试设备<br>testing equipment |
|---|---------------------------|
| S11、S12、VSWR、LOSS                       | 网络分析仪 8753E               |
| Efficiency、Gain 3D<br>Radiation Pattern | ETS 3D 暗室、8753E           |
| TRP、TIS                                 | ETS 3D 暗室、CMW500          |



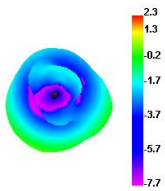
# 1.电压驻波比:



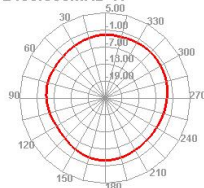
## 2.OTA 数据

| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) | Gain (dBd) | UHS (%) | DHIS (%) | Max (dB) | Min (dB) |
|------------|----------|-----------|------------|------------|---------|----------|----------|----------|
| 2400       | 46.39    | -3.34     | 2.3        | 0.15       | 20.52   | 25.874   | 2.3      | -10.95   |
| 2410       | 46.23    | -3.35     | 2.31       | 0.16       | 20.523  | 25.709   | 2.31     | -10.62   |
| 2420       | 48.01    | -3.19     | 2.64       | 0.49       | 21.253  | 26.761   | 2.64     | -10.26   |
| 2430       | 47.55    | -3.23     | 2.71       | 0.56       | 20.931  | 26.622   | 2.71     | -11.5    |
| 2440       | 50.28    | -2.99     | 2.93       | 0.94       | 22.002  | 28.283   | 3.09     | -13.62   |
| 2450       | 54.22    | -2.66     | 2.97       | 1.37       | 23.506  | 30.71    | 3.52     | -16.72   |
| 2460       | 50.03    | -3.01     | 3.19       | 1.04       | 21.545  | 28.486   | 3.19     | -23.33   |
| 2470       | 53.51    | -2.72     | 3.56       | 1.41       | 22.625  | 30.884   | 3.56     | -20.44   |
| 2480       | 52.07    | -2.83     | 3.49       | 1.34       | 21.911  | 30.155   | 3.49     | -16.59   |
| 2490       | 56.81    | -2.46     | 3.89       | 1.74       | 23.721  | 33.086   | 3.89     | -13.47   |
| 2500       | 56.47    | -2.48     | 3.80       | 1.72       | 23.718  | 32.652   | 3.80     | -14.46   |

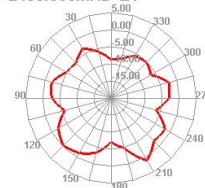
2400.000MHz



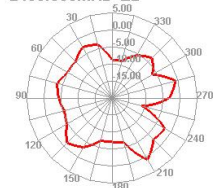
2400.000MHz H



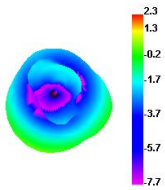
2400.000MHz E1



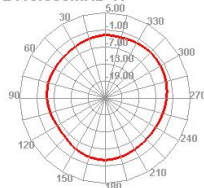
2400.000MHz E2



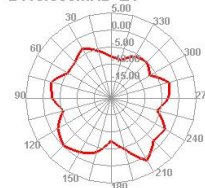
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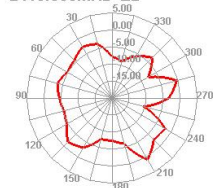
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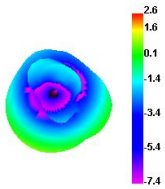
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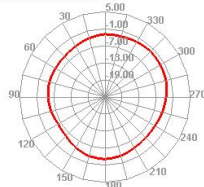
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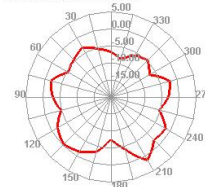
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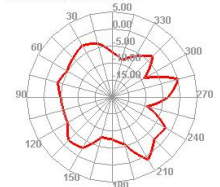
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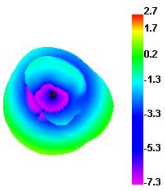
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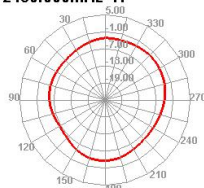
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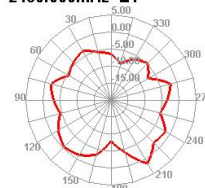
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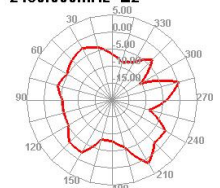
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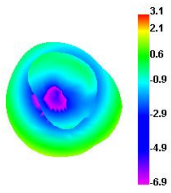
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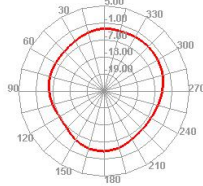
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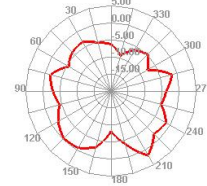
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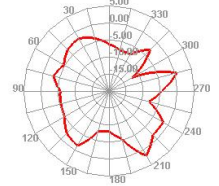
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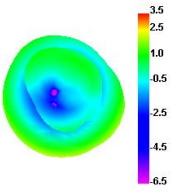
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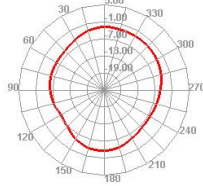
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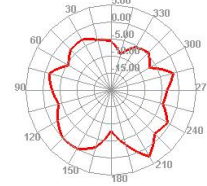
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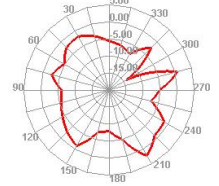
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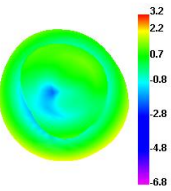
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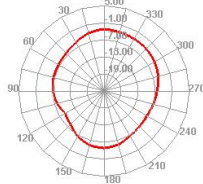
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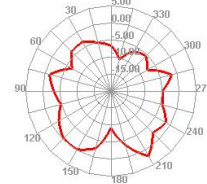
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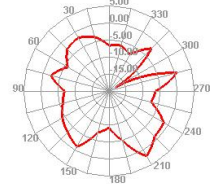
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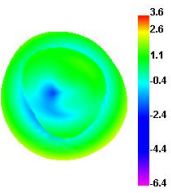
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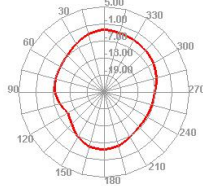
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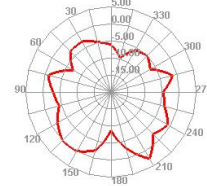
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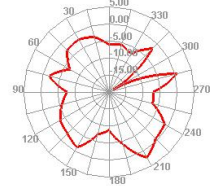
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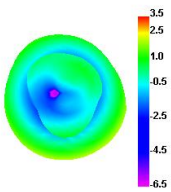
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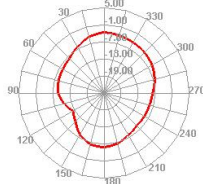
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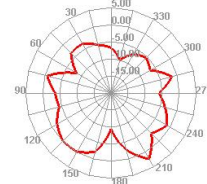
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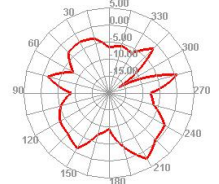
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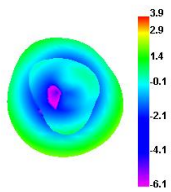
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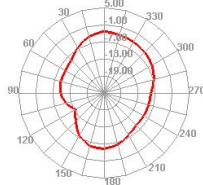
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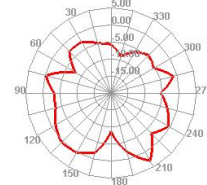
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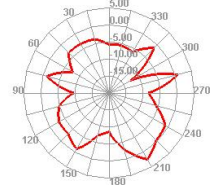
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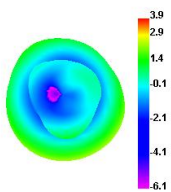
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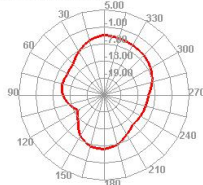
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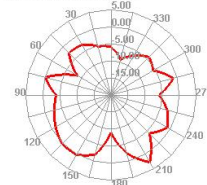
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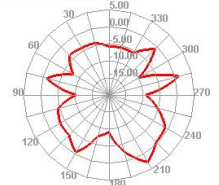
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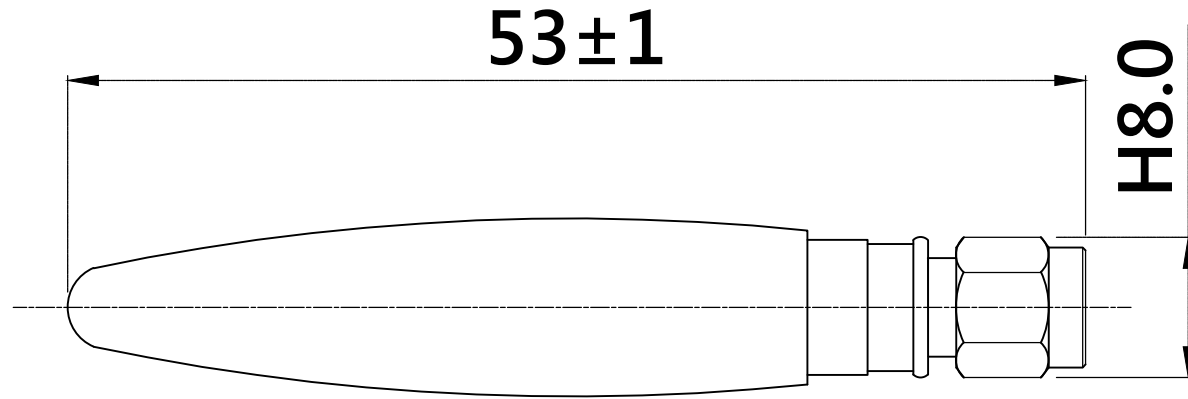
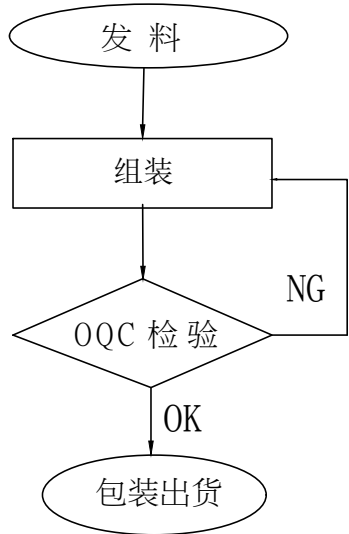
2500.000MHz E1



2500.000MHz E2



一. 生产流程图:



SMA公头公针

NOTES:

1. Electrical:
  - 1.1 Impedance: 50Ω
  - 1.2 frequency band: 2400MHz~2500MHz
  - 1.3 VSWR≤2.0
  - 1.4 Peak Gain:3dBi
2. Enviromental:
  - 2.1 Storage Temperature Range: -20 TO +65°C
  - 2.2 Operating Temperature Range: -20 TO +65°C
3. HARMFUL MATERIAL AND PROCESS CONTROL ,PLEASE FOLLOW ROHS
4. (\*) is marked as the key control dimension in the figure

|                  |  |     |                 |                 |
|------------------|--|-----|-----------------|-----------------|
|                  | <b>东莞立盛兴电子科技有限公司</b><br>Dongguan Zconnlink Electronic Technology Co.,LTD |     |                 |                 |
|                  | CU NO.客户编号   | 01  | Part Name.品名/规格 | 2.4G小辣椒WIFI天线直头 |
| Tolerance 未标注公差: | 材質   |     | CU Part No.客户料號 |                 |
| XX. ±0.5         | 處理   |     | Part No. 料號     | 80000005371     |
| X. ±0.2          | 比例   | 2:1 | App核准           | Check 校對        |
| .X ±0.1          | 版本次  | A.0 |                 | D raw .繪圖       |
| .XX ±0.05        | 單位   | mm  |                 | WWX             |
| .XXX ±0.03       |  |     |                 | 2023/11/11      |
| 未标注角度公差:±1°      |  |     |                 |                 |
| 螺牙纹              |  |     |                 |                 |