



深圳市华曦达科技股份有限公司

SHEN ZHEN SDMC Technology Co., LTD

样品承认规格书

PART SHEET FOR APPROVAL

| | |
|------------------------------|---|
| 制造商名称: Manufacturer: | 深圳星河电波科技有限公司 Shenzhen yGalax Technologies Limited |
| 供应商名称 Supplier:: | 深圳市联合极光科技有限公司 Shenzhen Union-Aurora Technology Co.,LTD |
| 产品名称: Part Description: | ANT (FPC) |
| 规格型号: Model No: | ANT (FPC) , ANT00270-0A, 2.4G, 41x12.71x0.2mm, 背胶 3M-9471LSE, 普通线 232mm, φ 1.13mm, 黑线, 黑板, 一代端子, DH6G BT 天线, 随晨提供, 投影专用 |
| 制造商 P/N Manufacturer P/N: | 115.1.01.3713.000050 |
| 华曦达编码: SDMC P/N: | 360100459 |
| 日期: Issued Date: | 2024-11-28 |

供应商确认 Supplier confirmation

| 承办 Made By | 审核 Engineer | 批准 Approver |
|------------|-------------|-------------|
| 李柳燕 | 荣文攀 | 黄巨龙 |

华曦达确认 SDMC confirmation

| | | |
|---------------------------|---------------------------------------|--|
| 承认原因: 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 |

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.

地址: 深圳市南山区高新科技园科技南十二路 18 号长虹科技大厦 19 层

Address: 19/F, Changhong Science & Technology Mansion, No.18, Keji South 12th Road, High-tech Industrial Park, Nanshan District, Shenzhen, China

深圳市联合极光科技有限公司 样品承认书

SPECIFICATION FOR APPROVAL

- 物料名称

Name of material: PH1020 蓝牙天线 (PH1020 antenna)

- 供应商

Vendor Name: 深圳星河电波科技有限公司

Shenzhen yGalax Technologies Limited

- 物料描述

Material description: FPC 焊接 Cable (FPC weld Cable)

- 物料料号

Material number: 1.VR.3713.000050

- 物料丝印

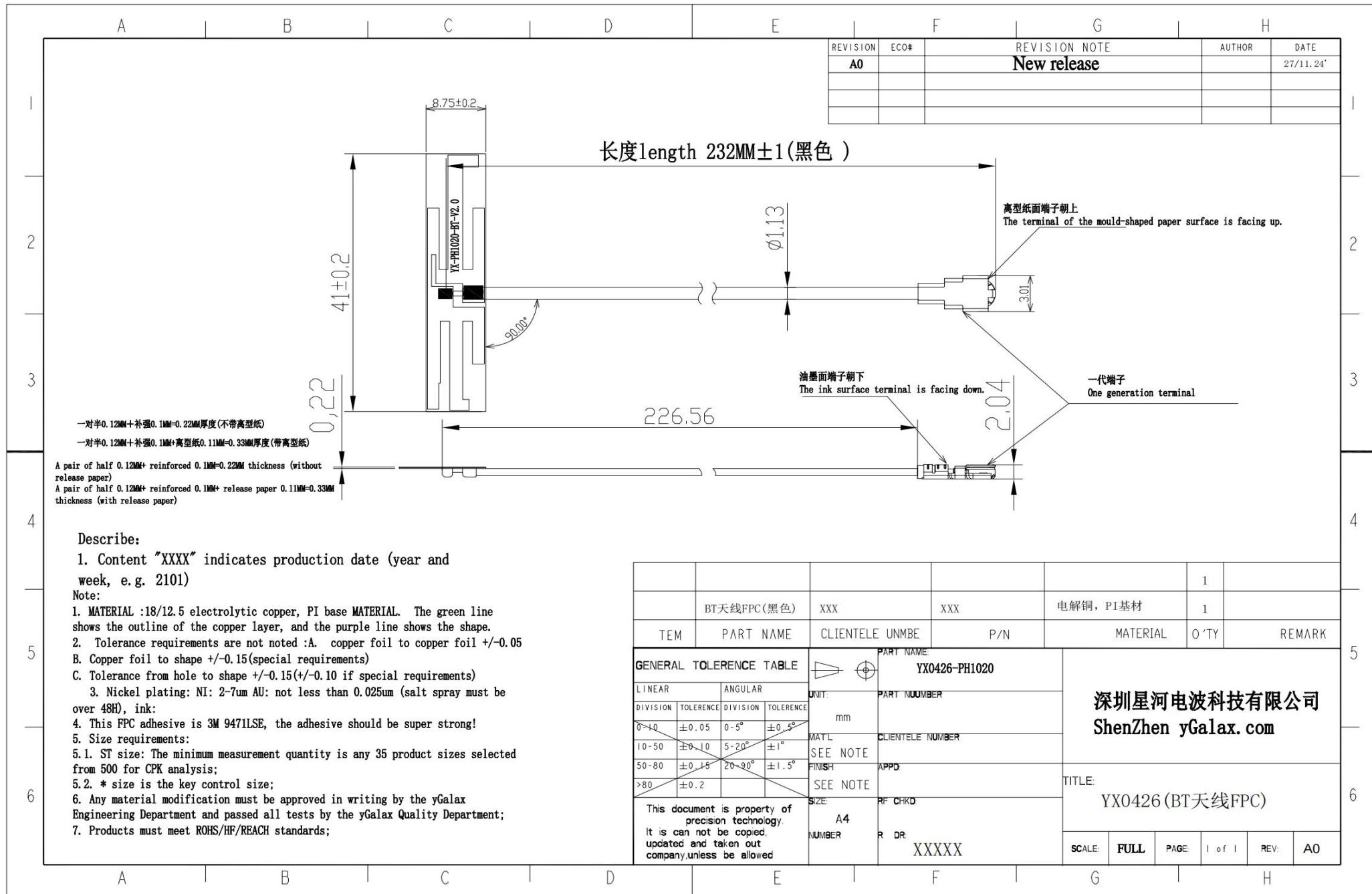
Material screen printing: YX-PH1020-BT-V2.0

| <u>供方确认 Supplier confirmation:</u> | | <u>客户确认 customer confirmation:</u> | |
|------------------------------------|------------------|------------------------------------|------------------|
| <u>测试 test:</u> | <u>研发 RF:</u> | <u>测试 test:</u> | <u>研发 RF:</u> |
| | | <u>采购 purchase:</u> | |
| <u>品质 quality:</u> | <u>审核 check:</u> | <u>品质 quality:</u> | <u>审核 check:</u> |

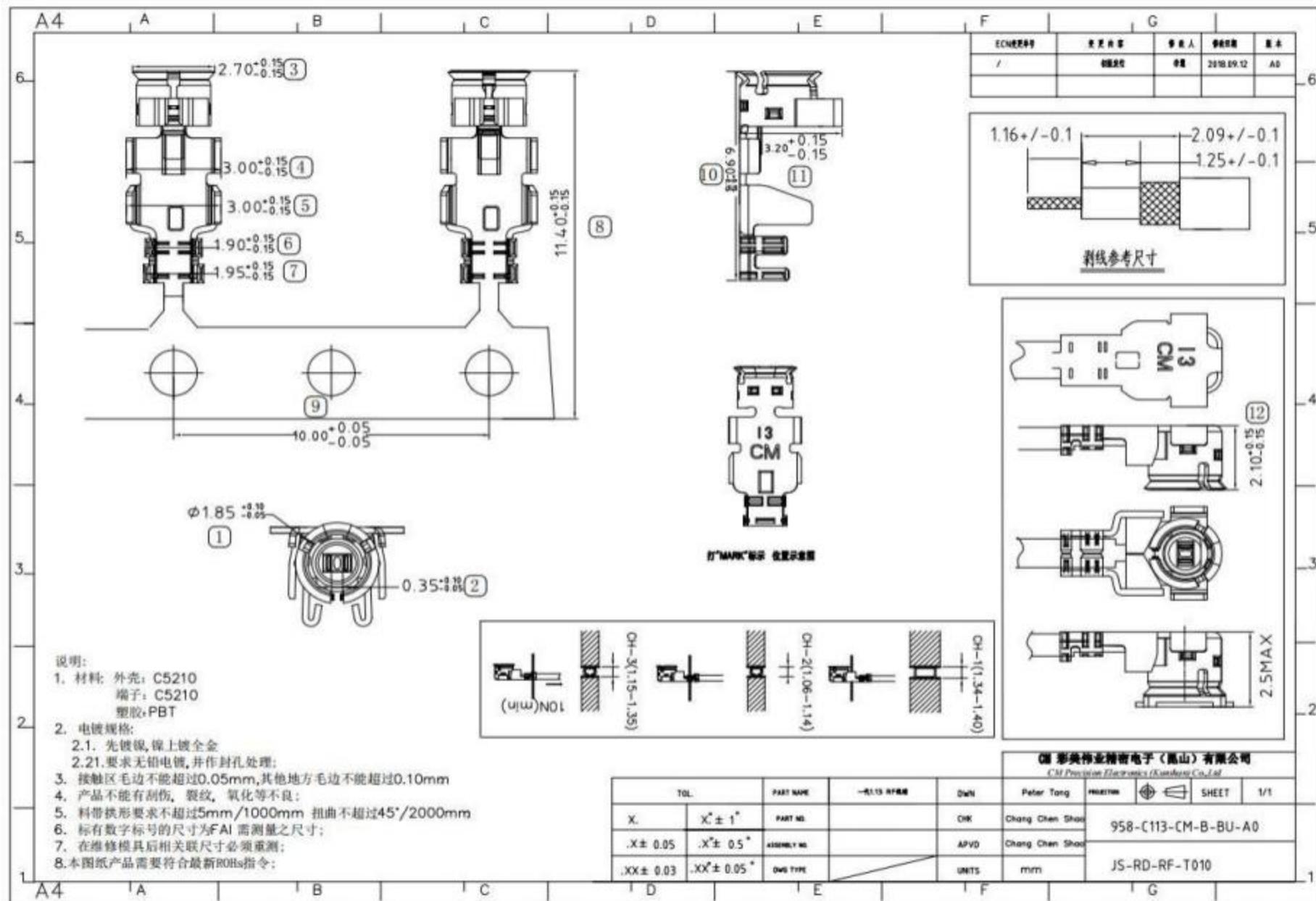
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3. ICD图纸



3. 端子ICD图纸



| 产品规格书 Product Specification | | | |
|--|---|--|--|
| 型号 Type | RF-1.13(银锡) | 料号 P/N | |
| 结构图 Structure drawing | |  | |
| 结构特性 Structure characteristics | | | |
| 结构 Structure | 项目 Item | 标准值 Standard value | |
| 1. 内导体 Inner conductor | 材料 Material | 镀银铜线 Silverplated copper wire | |
| | 组成:总根数/单根外径(mm) Makeup:total / O.D. of every (绞合)标称外径(mm) (Intertwist)NOM.O.D.(mm) | 7/0.08(±0.005) | |
| | (绞合)标称外径(mm) (Intertwist)NOM.O.D.(mm) | 0.24±0.01 | |
| 2. 绝缘层 Insulation | 材料 Material | 聚全氟乙丙烯 FEP | |
| | 颜色 Color | Natural | |
| | 标称外径Dia.(approx) | 0.7±0.03 | |
| 3. 外导体 Outer conductor | 材料 Material | 镀锡铜线 Tinned copper | |
| | 形式/Type | 编织/Weaving | |
| | 组成:总根数/单根外径(mm) Makeup:total / O.D. of every wire(mm) | 16/4/0.05±0.005 | |
| | 标称外径Dia.(approx) | 0.92±0.03 | |
| | 覆盖率(%)Coverage ratio(%) | 90%±5 | |
| 4. 护套层 Jacket | 材料 Material | 聚全氟乙丙烯 FEP | |
| | 颜色 Color | 黑, 白, 灰, 或者任何需要的颜色 Black, White, blue, Gray, Red or upon request | |
| | 标称外径Dia.(approx) | 1.13±0.05 | |
| 同心度(绝缘层和内导体) Concentricity (Inner conductor and Insulation) | | ≥90% | |
| 电性能特性 Electrical characteristics | | | |
| 特征阻抗Characteristic impedance (Ω) | | 50±3.0 | |
| 电压驻波比Standing wave ratio | | ≤1.4@0~6GHz | |
| 最大工作频率Max.operating frequency(MHz) | | 6000 | |
| 耐电压 Dielectric strength between inner and outer conductor | | AC 1000V for 1min | |
| 电容Capacitance(pF/m) | | 98 | |
| 抗拉强度/Tensile strength(kgf/mm ²) | | 1.76 | |

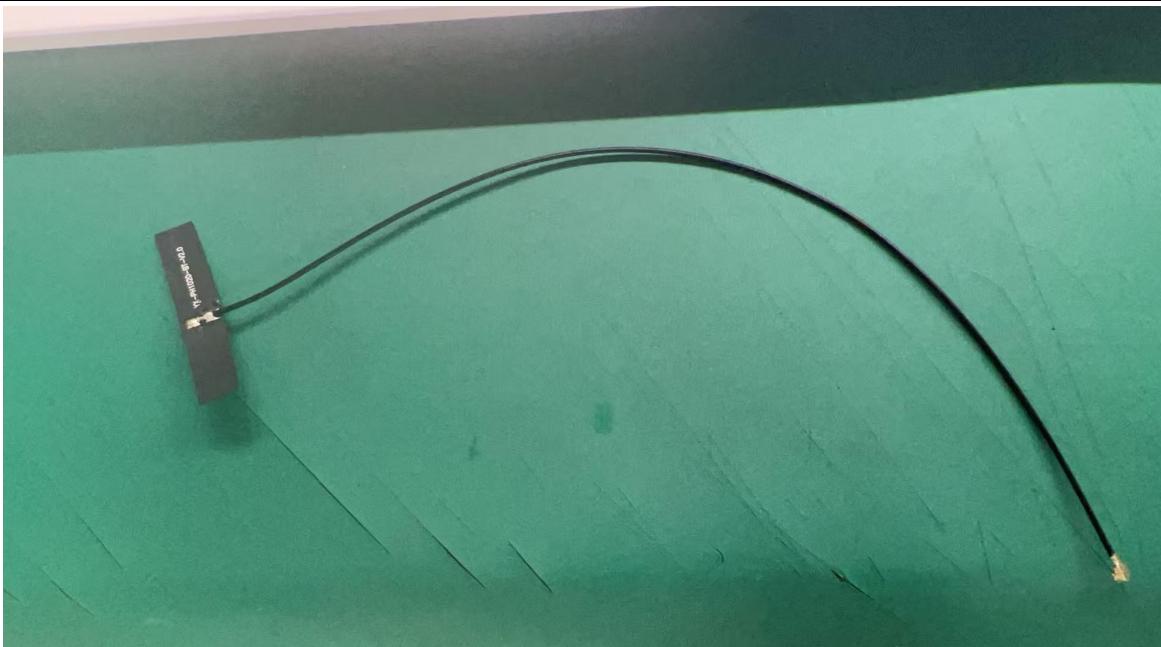
| 频率 Frequency | 标准值 Standard value(dB/1m) |
|---|--|
| 1GHz | ≤2.1 |
| 2GHz | ≤3.0 |
| 3GHz | ≤3.7 |
| 4GHz | ≤4.35 |
| 5GHz | ≤5.0 |
| 6GHz | ≤5.5 |
| 可靠性 Dependability | |
| 项目 Item | 标准值 Standard value |
| 最小折弯半径 Min.bending radius static (mm) | 4 |
| 工作温度范围 Operating temperature (°C) | -55~+200 |
| 存储环境 Storage environment | 温度:30°C以下;湿度:20%~65% |
| 最佳保存周期 The best save cycle | 2个月, 2个月以上锡效果变差,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 | 250°C~260°C的情况下, 可短时间承受; 300°C以上会出现热分解现象 |
| 铁氟龙收缩 Teflon Shrink | 绝缘层:≤0.2mm; 护套层:≤0.3mm |
| 包装 Packing | |
| 标准单位包装长度为1000米/盘,每盘最多允许4个接头,接头最短长度10米,在搬运过程中不能损坏包装。 | |
| Standard unit for the 1000m/reel length of packaging, each set up to allow 5 joints, the joint shortest length of 10m, The finished cable shall be packed not be damaged during transportation. | |
| 其他 Other | |
| 特殊加工工艺, 请与供方协商后使用。 | |
| Special processing technology, please use after consultation with the supplier. | |

天线性能参数及注意事项 (Antenna performance and precautions)

项目整机图 The whole machine diagram of the project

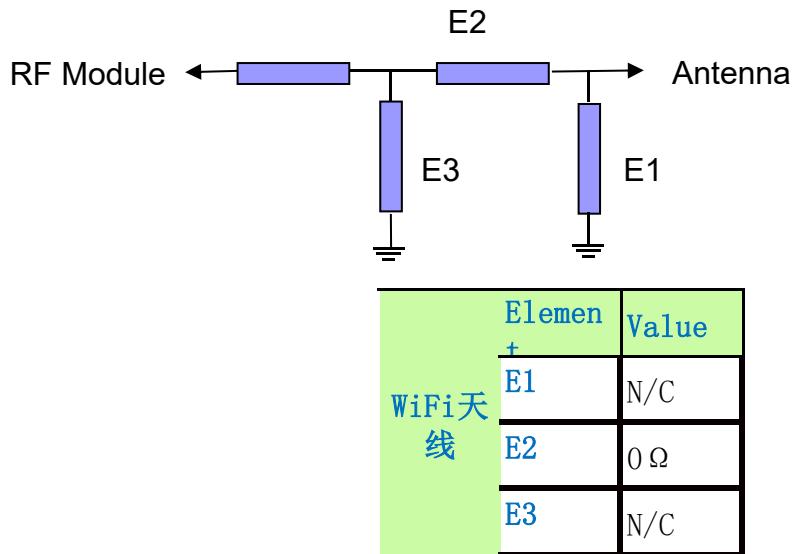


天线实物图 Physical diagram of the antenna



BT天线 重量: 1g

匹配电路 Main switch logic and matching circuit



注：所有天线匹配电路无更改。原始匹配。

WiFi有源测试数据 Tiri active test data

| FS | Channel | TRP | TIS | FS | Channel | TRP | TIS |
|-----------|---------|-----|-----|----------|---------|-----|-----|
| 2.4WIFI-B | 1 | | | 5GWIFI-A | 36 | | |
| | 6 | | | | 149 | | |
| | 11 | | | | 165 | | |

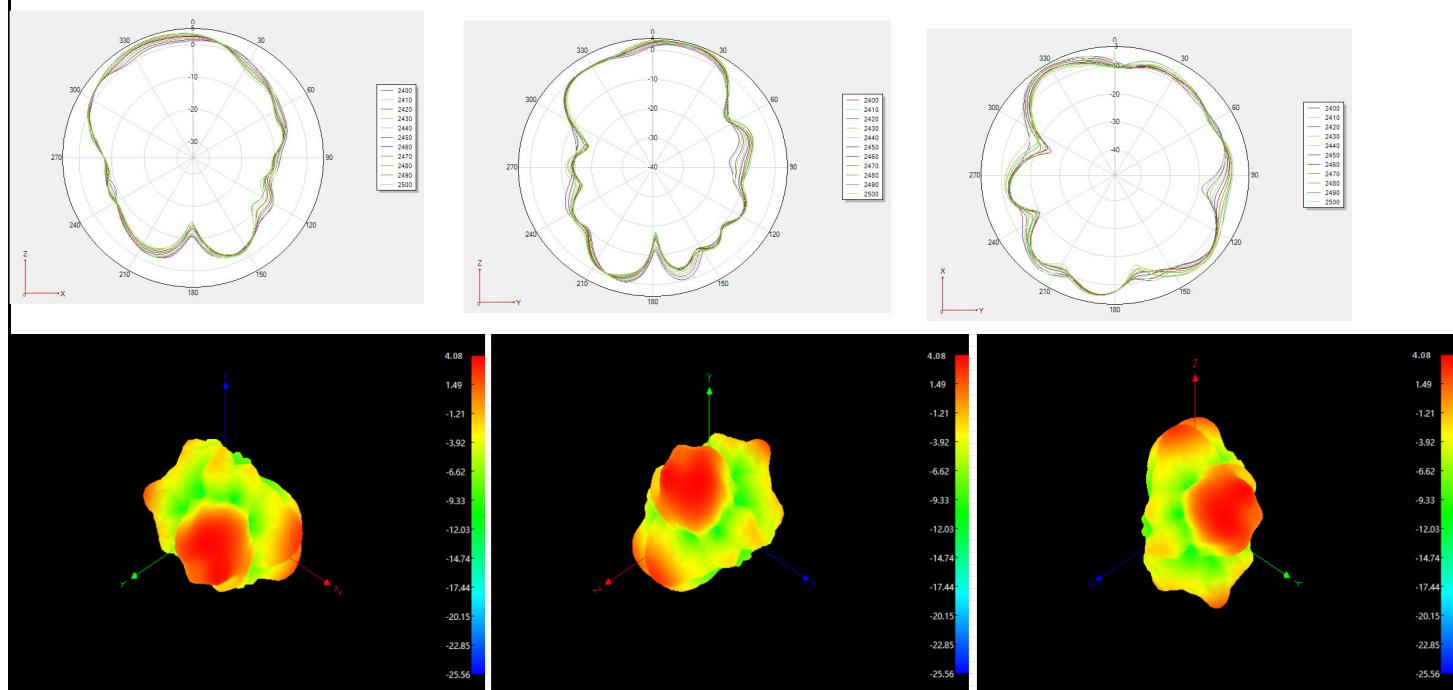
BT-S11参数 parameters



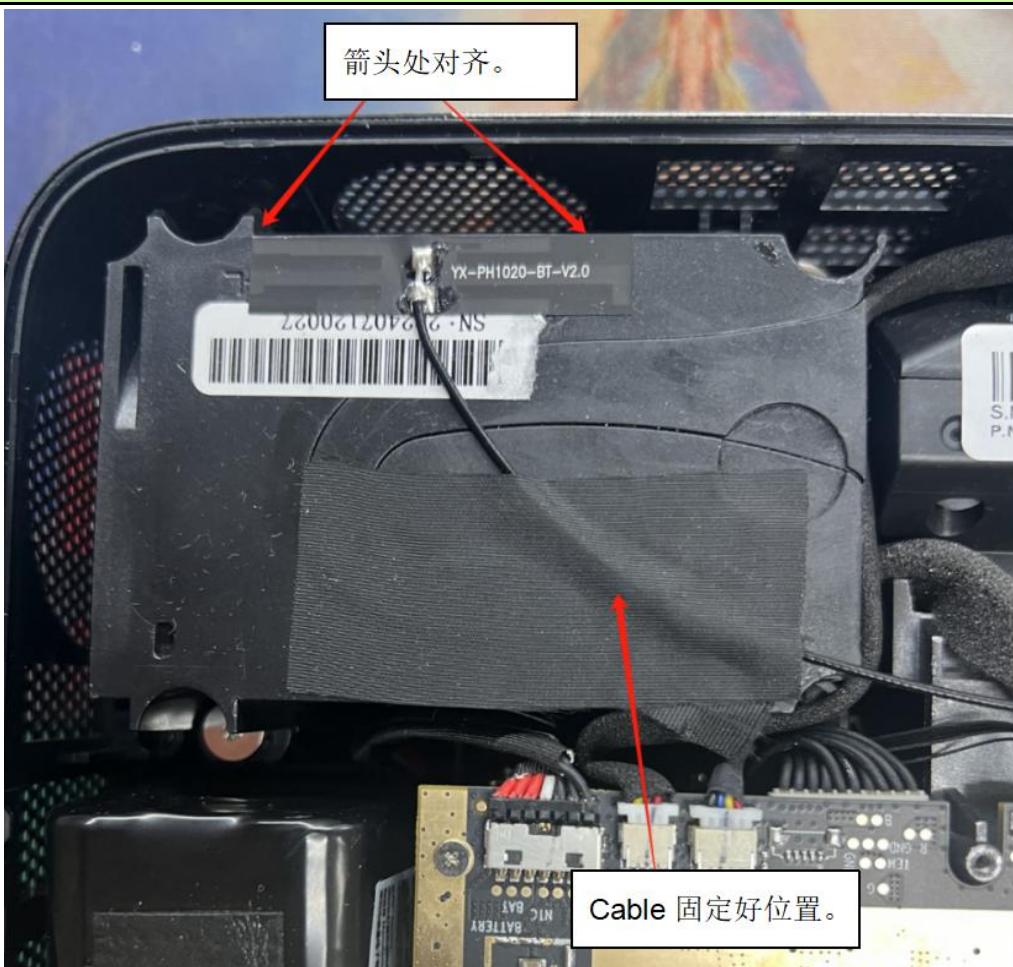
BT-效率/增益efficiency/gain

| Efficiency & Gain of BT Ant | | |
|-----------------------------|------------|----------------|
| Frequency (MHz) | Gain (dBi) | Efficiency (%) |
| 2400 | 2.82 | 44.36 |
| 2410 | 2.96 | 44.46 |
| 2420 | 2.93 | 45.5 |
| 2430 | 3.14 | 45.71 |
| 2440 | 3.19 | 44.57 |
| 2450 | 3.4 | 46.03 |
| 2460 | 3.46 | 44.46 |
| 2470 | 3.65 | 45.71 |
| 2480 | 3.94 | 45.71 |
| 2490 | 4.08 | 46.67 |
| 2500 | 3.96 | 44.67 |

BT-方向图 BT-Direction Map



天线贴装区域Antenna mounting area



RoHS限用物质成份调查表

| 所供产品信息 | | | | | | | | | | | |
|---|-------------------------|----------|---------------|-------------------------|--------------------|--|------|------|---------------------|----------------------|--------|
| 客户名称 customer name | 物料名称/型号 Metarial NO# | | | 项目名称 Project name | | 制造商 manufacturer | | | | 绿色物料标识 green mark | |
| 深圳市联合极光科技有限公司 LianheJiguang | YX-PH1020-BT-V2.0 | | | PH1020 | | 深圳星河电波科技有限公司 Shenzhen yGalax Technologies Limited | | | | / | |
| 产品构成信息 | | | | | | | | | | | |
| Product composition information | | | | | | | | | | | |
| item | part name | part NO# | VOLUME UP | Third party test report | | Limit substance content PPM | | | | | remark |
| | | | | DATE | number | (Pb) | (Cd) | (Hg) | (Cr ⁶⁺) | (PBB) | |
| 1 | 3M adhesive | / | honjingxinban | 2021/1/13 | SHAEC2100467601 | ○ | ○ | ○ | ○ | ○ | |
| 2 | COPPER CLAD LAMINATE | / | caigelundi | 2021/3/3 | SHAEC2103249001 | ○ | ○ | ○ | ○ | ○ | |
| 3 | ink | / | kaiyao | 2021/8/17 | ERT2102095 | ○ | ○ | ○ | ○ | ○ | |
| 4 | electroplatin | / | jiahongtai | 2021-5-13 | A2210168276101001E | ○ | ○ | ○ | ○ | ○ | |
| | g | | | | | | | | | | |
| | | | | | | | | | | | |
| 2、PPM限量值：镉<100PPM；铅/汞/六价铬/PBB/PBDE<1000PPM。 3、其中针对包装材料中铅、六价铬、汞和镉的总量不超过100ppm。 4、此表请供应商完整填写后盖章；此处供应商指直接交易方。（ 提供盖章的纸件或扫描PDF文件 ） | | | | | | | | | | | |

填写人：张海峰

填写人公司/部门：品质部

盐雾测试报告

Salt spray test report

日期: 20240618
date: 20240618

| | | | | | | |
|---|--|----------------------------------|---------------------------------|--|--|--|
| 产品名称 product name | YX-PH1020-BT-V2.0 | 客户名称 customer name | 深圳市联合极光科技有限公司 Lianhe jiguang | | | |
| 供应商 supplier | 深圳星河电子科技有限公司 Shenzhen yGalax Technologies Limited | 国家测试标准 National test standard | GB/T 2423.2-2008 | | | |
| 样品情况 Sample situation | <p>数量: 5件 QTY: 5PCS</p> <p>材料: 单面半胶态电解铜 MATERIAL: One - sided half - half colloidal electrolytic copper</p> | | | | | |
| 测试时间 TEST DATE | <p>从20240525 9: 00至20240527 9: 00 共计48小时 FROM 20240525 9:00 TO 20240527 9: 00 TOTAL 48 H</p> | | | | | |
| 测试类型 TEST TYPE | <input checked="" type="checkbox"/> NSS | <input type="checkbox"/> ASS | <input type="checkbox"/> CASS | | | |
| 试验条件 test condition | <p>生理盐水溶液: 5% saline solution: 5% PH:7.0</p> <p>箱内温度: 35°C the temperature inside the box: 35°C 相对湿度: 85% relative humidity: 85%</p> <p>Spray way: <input checked="" type="checkbox"/> continue <input type="checkbox"/> gap 压缩空气压力: 1kg/cm² compressed air pressure: 1kg/cm²</p> <p>盐雾沉降速率: 1-2ml/80cm²/h Salt spray sedimentation rate: 1-2ml/80cm²/h Fog fluid collection: 1.4ml/80cm²/h</p> <p>测试周期: 一个循环 test cycle: A loop 喷雾时间: 48小时 Spray time: 48 h</p> | | | | | |
| 试验结果 test result | <p>试验后外观: 外观完好, 无明显变化。 Appearance after test: The appearance is intact without significant change.</p> <p>涂层: 无剥落, 无腐蚀 Coating: no peeling, no corrosion</p> <p>表面喷涂, 丝网印刷: 无脱落, 无气泡 Surface spraying, screen printing: no shedding, no bubbles</p> | | | | | |
| NOTE: | | | | | | |
| 1. 盐雾试验操作标准符合中华人民共和国国家标准GB/T2423. 17-2008 1. salt spray test operating standards in accordance with the People's Republic of China national standard GB/T2423. 17-2008 | | | | | | |
| 2. 试验结果按中华人民共和国国家标准GB/T6461-02标准确定 3. The test results shall be determined according to the national standard GB/T6461-02 of the People's Republic of China | | | | | | |
| test date: | check: | | | | | |

高/低温测试记录

High and low temperature test records

| | | | |
|----------------------|-------------------|--------------------------|---------------------------------|
| 产品名称 product name | YX-PH1020-BT-V2.0 | 客户名称 customer name | 深圳市联合极光科技有限公司 Lianhe jiguang |
| 测试数量 test QTY | 6 pcs | 时间 TEST DATE | 2024/6/18 |
| 循环次数 cycle-index | 1 | 测试时间 test time | 48H |

测试条件

test condition

高温: + 65°C 湿度: 90 % RH
high temperature: + 65°C humidity: 90 % RH

低温度: - 1 °C

low temperature: - 1 °C

试验: 高温: 48 H 低温: 1 H

test: high-temp: 48 H low-temp: 1 H

| 试验项目 test project | Uncycled test | | cycled test | |
|-------------------------|----------------|-----------------------|----------------|-----------------------|
| | After the high | After low temperature | After the high | After low temperature |
| 1 | OK | / | | |
| 2 | OK | / | | |
| 3 | OK | / | | |
| 4 | OK | / | | |
| 5 | OK | / | | |
| 6 | OK | / | | |

试验后缺陷 Post test defect:

原因分析 reason analysis:

改进措施 improvement measure:

实验结果 test result: PASS

Packing 包装

| | | | |
|----------------------|---------------------|------------------------|---|
| 料号 Material code: | 1. VR. 3713. 000050 | 产品名称Product name: : | FPC天线FPC Antenna |
| 产品规格Spec: | PPC 焊接 Cable | 包装材料Package: | 密封袋、纸箱Bag/Carton |
| 包装数量Qty/bag: | 100PCS/bag | 包装方式Package method: | 100 PCS/bag , 10 small bag/big bag, 5 bags/carton |
| 装箱数量QTY/Carton: | | | |

图1: 单件包装



图2: 装箱包装方式

100 PCS/bag , 10 small bag/big bag, 5 bags/carton

图3: 包装箱视图 (正面、侧面、顶部)



图4: 外箱



备注: FPC产品以单体制作, 每箱20000PCS包装。FPC products produced with monomer, 5000 PCS per box packagin

拟制Edited by:

审核Approved by:

东莞市江联科技有限公司

实验室测试报告（拉力实验） Laboratory Test Report (Bending Test Report)

| 样品来源: Sending Sample : 工程送检 | 试验日期 Date: 2024.9.30 | 参照标准 Refer Standard: 申请单 | | | | | | | | | | | | | | |
|---|---|---|-----|-----|-----|-----|-----|-----|--|-----|----|----|----|----|----|--|
| 品名规格 Style & Size: 四代半端子1.13线线长232MM | 颜色 Color: 黑色 | 环境温度及相对湿度 Indoor Tem. & Humidity: 25.5°C 56% | | | | | | | | | | | | | | |
| 测试标准及方法 | <p>测试方法:</p> <ol style="list-style-type: none">1. 拉力测计: 拉力计2. 从成品样品线上5PCS的试样。试样不经过处理直接做实验。3. 根据要求把试样夹于测试架上,将拉力计指针归零。 <p>判定标准:</p> <ol style="list-style-type: none">1. 13线材拉力标准大于15N 将端子与同轴线拉脱离, 拉力计指针指向标准要求力度为合格 | | | | | | | | | | | | | | | |
| 图示 |  | | | | | | | | | | | | | | | |
| 测试记录 | <table><thead><tr><th>序号</th><th>样线1</th><th>样线2</th><th>样线3</th><th>样线4</th><th>样线5</th><th></th></tr></thead><tbody><tr><td>拉力值</td><td>22</td><td>21</td><td>20</td><td>23</td><td>20</td><td></td></tr></tbody></table> | | 序号 | 样线1 | 样线2 | 样线3 | 样线4 | 样线5 | | 拉力值 | 22 | 21 | 20 | 23 | 20 | |
| 序号 | 样线1 | 样线2 | 样线3 | 样线4 | 样线5 | | | | | | | | | | | |
| 拉力值 | 22 | 21 | 20 | 23 | 20 | | | | | | | | | | | |
| 备注 | 以上测试数据仅供参考。 | | | | | | | | | | | | | | | |

核准: 马剑

实验员: 钦云