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:	深圳市英佳创电子科技有限公司 SHENZHENYINGJIACHUANGELECTRONICTECHNOLOGYCO.,LTD.
EPSON 产品名称： EPSON Parts name	SMFR5H WIFI-1 ANTENNA1 BOARD
客户型号： Customer Model:	SMFR5H
华曦达编码： SDMC P/N:	360100470
EPSON 编码： EPSON P/N:	223739800
日期： Issued Date:	2024.11.12

供应商确认 Supplier confirmation

承办 Made By	审核 Engineer	批准 Approver
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华曦达确认 SDMC confirmation

承认原因： Approval Reason:	☐新物料 New Part ☐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	

EPSON 确认 EPSON confirmation

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 indicatesthatthesubmittedsampleisapprovedandthedrawing/specification is now the controlling document.

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APPROVAL SHEET
承认书

CUSTOMER NAME 客户名称	深圳市华曦达科技股份有限公司 SHEN ZHEN SDMC Technology Co., LTD
CUSTOMER P/N 客户料号	360100470
PART NAME 品　　名	WIFI1-1 黑色内置天线（L=180mm） WIFI1-1 built-in antenna (L=180mm) (适用机型：SMFR5H)
P/ N 料　　号	YJC-6N180-W06
APPROVAL REV. 版　　次	A0
DELIVERY DATE 送样日期	2024 年 11 月 12 日 November 12, 2024
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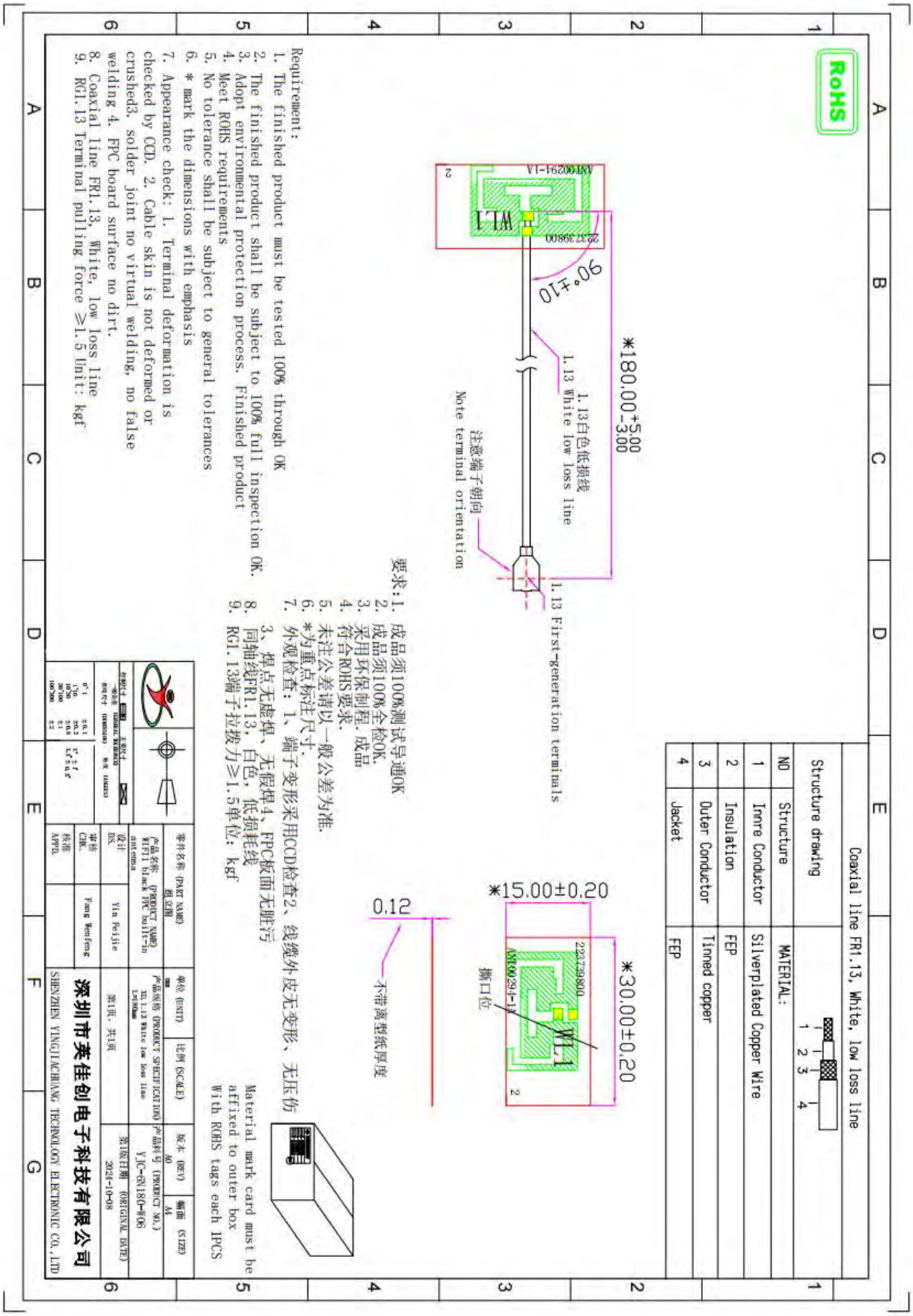
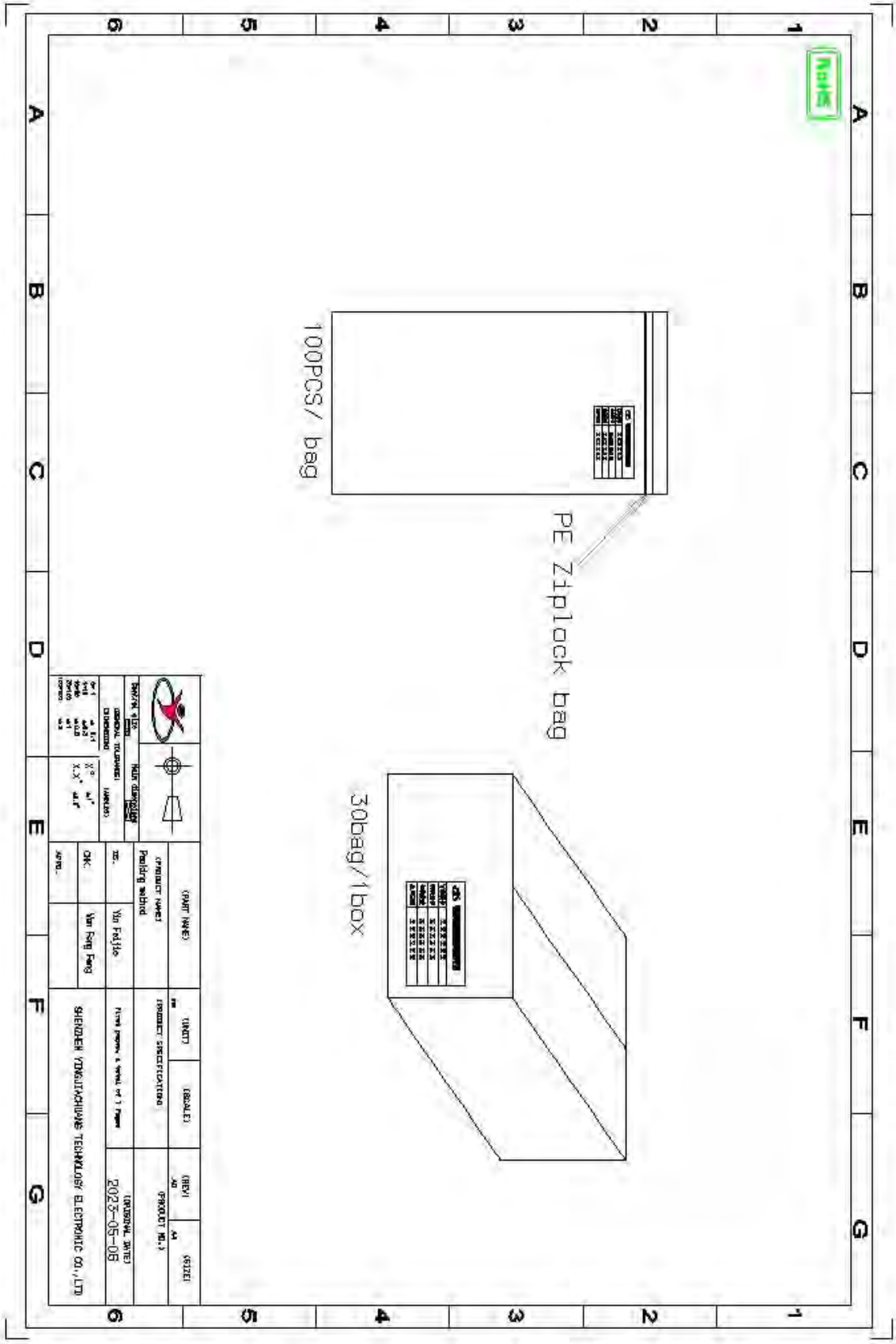
履历表(Resumer)：

版本 Version	变更内容及更改原因 Changes and reasons	发行 publish	发行 publish
A/0	初版发行（Issued）	2024 年 11 月 12 日 November 12, 2024	

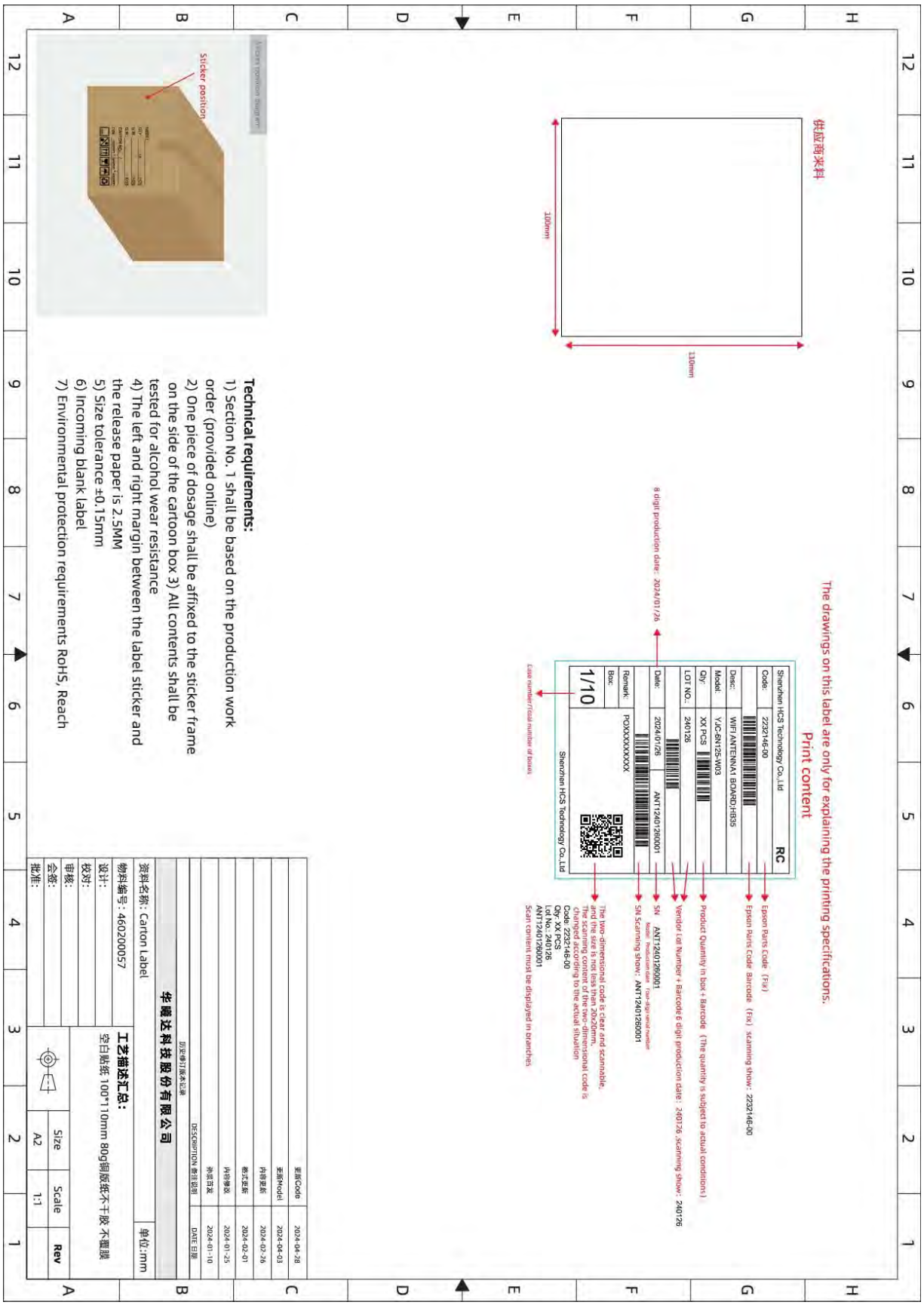
产品平面图(Product plan)：



PE 袋标签（PE bag label）：



外箱标签图纸（Outer box label drawing）：



装栈示意图（Stowing diagram）：

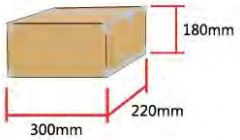
HB35(WIFIANTENNA2)
Accessories material pallets stacking diagram

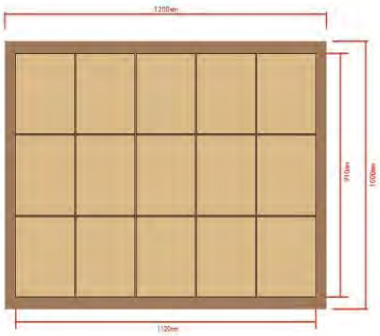
Carton size：300*220*180 mm
高:(180+公差5mm)x5层=925mm ,925+120+12=1057mm 225000PCS/Pallet
高:(180+公差5mm)x6层=1110mm ,1110+120+12=1242mm 270000PCS/Pallet

QTY/Carton: 3000 pcs
Pallet QTY/20ft: 10x2 layer=20
Pallet QTY/40ft: 21x2 layers=42
loading CD QTY/20ft: 20x225000 layer= 4500000 pcs(20尺平柜)
loading CD QTY/40ft: 42x270000 layers= 11340000 pcs(40尺高柜)

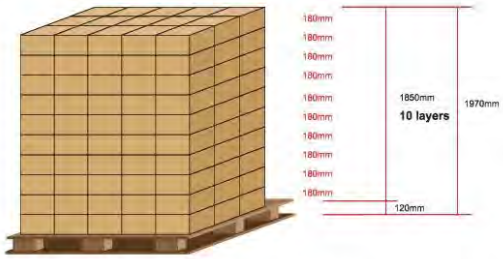
Pallet size：1200x1000x120mm 胶合栈板 料号460800028

WIFI ANTENNA 2
3000pcs/carton





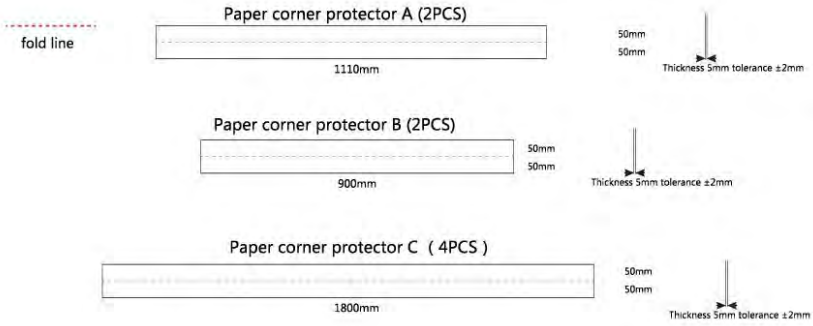
QTY/Pallet: 450000 PCS



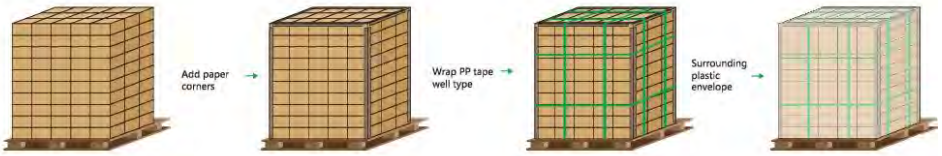
1. The products on the pallet need to be packed with packaging film after being placed
2. Place cartons on the outside: The side affixed with the shipping label and SN label of the outer carton must be exposed
3. Each of the top and bottom four sides of the pallet should be sealed with at least 3 layers of PE film, and 3 layers of enclosing film should be made for shipment.
4. Each pallet is sealed with PE film.

Note: 1. Due to the small size of some boxes, accessories such as cable, camera module, sensor module, WIFI antenna, Bluetooth antenna, etc. are packed into boxes from the bottom layer of the large box and the upper layer of the small box.
2.please refer to the document - (HB35_accessories tall pallet stacking diagram)

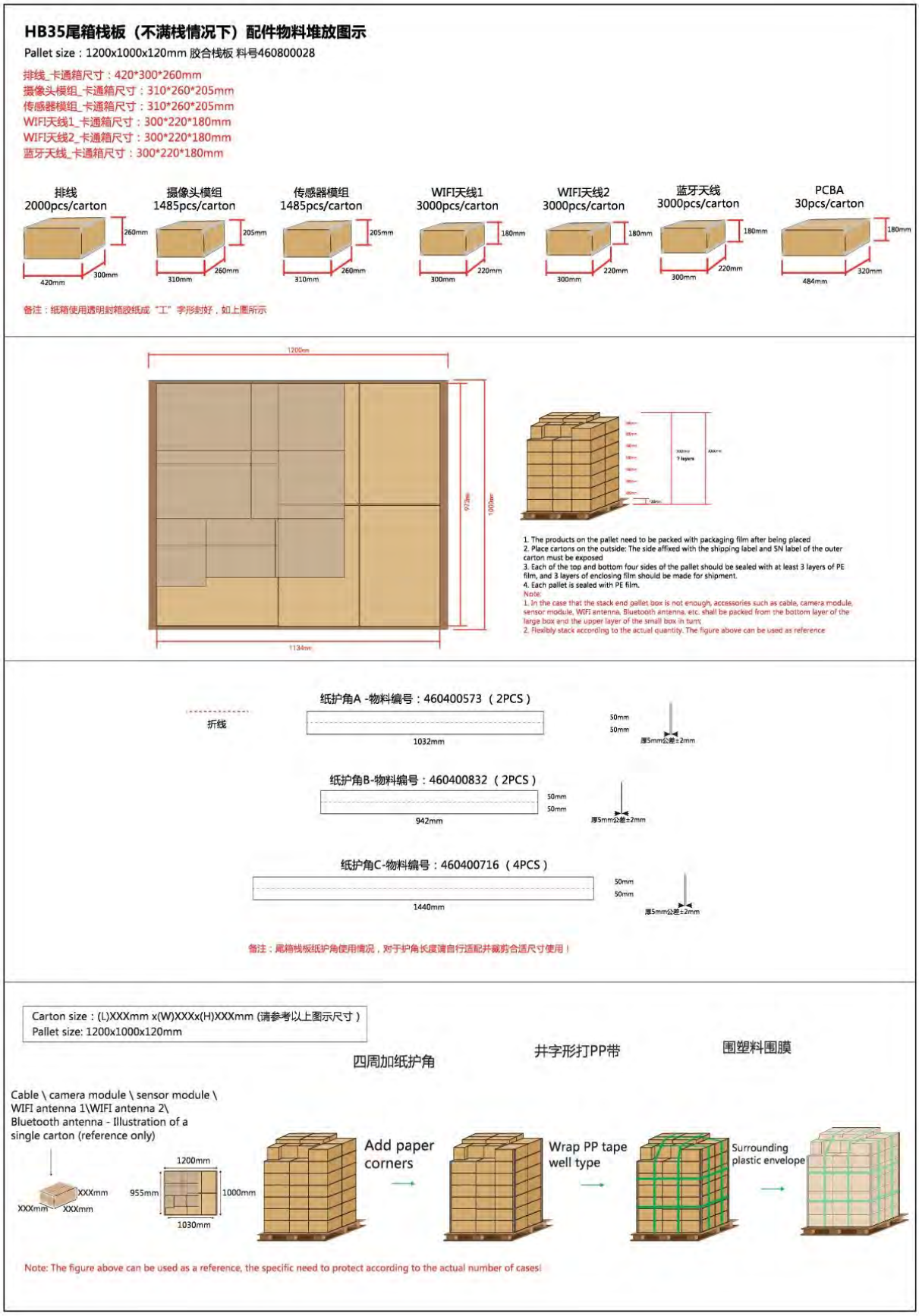
HB35(WIFI ANTENNA2)Paper corner protector



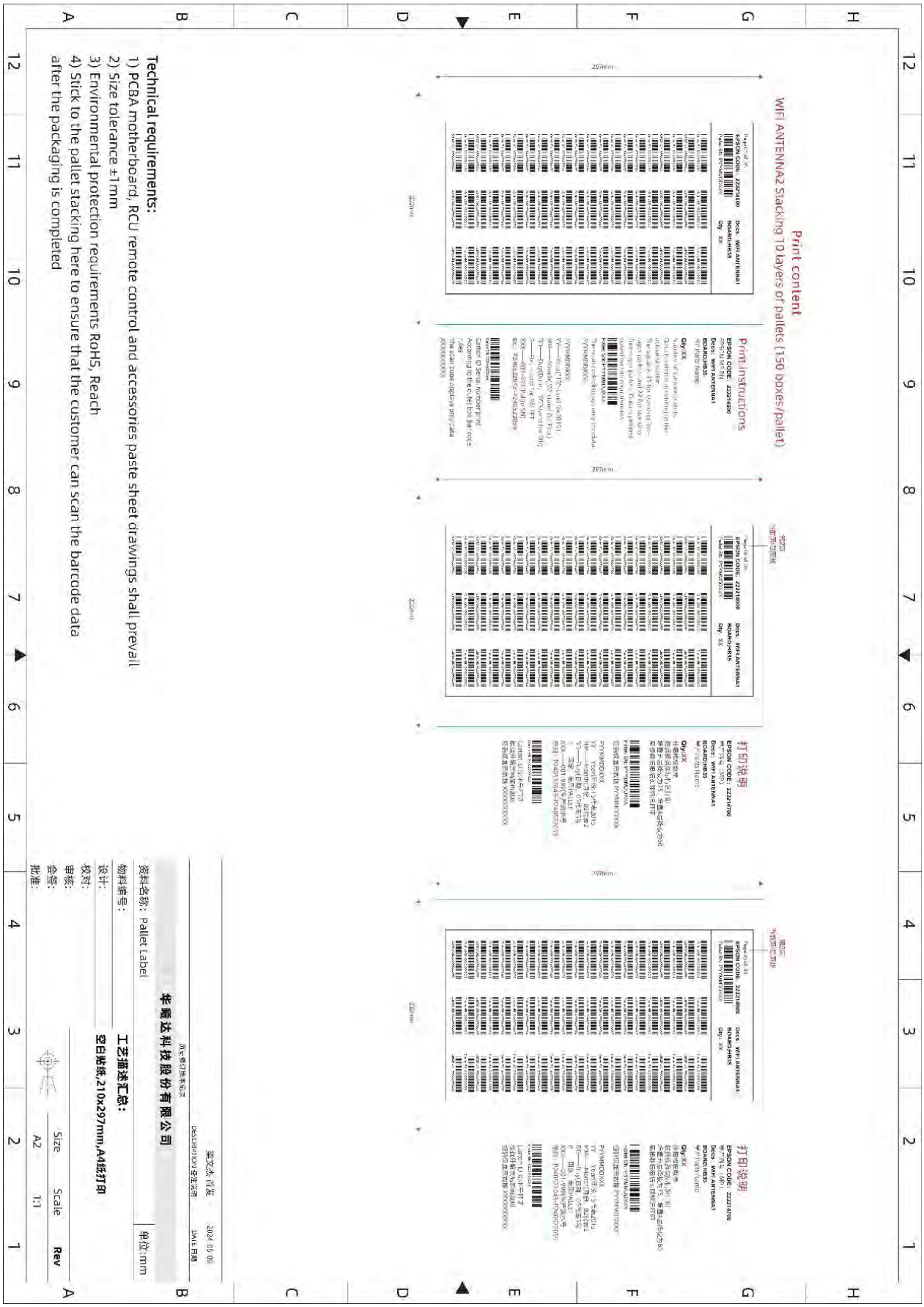
HB35(WIFI ANTENNA2)Stack diagram



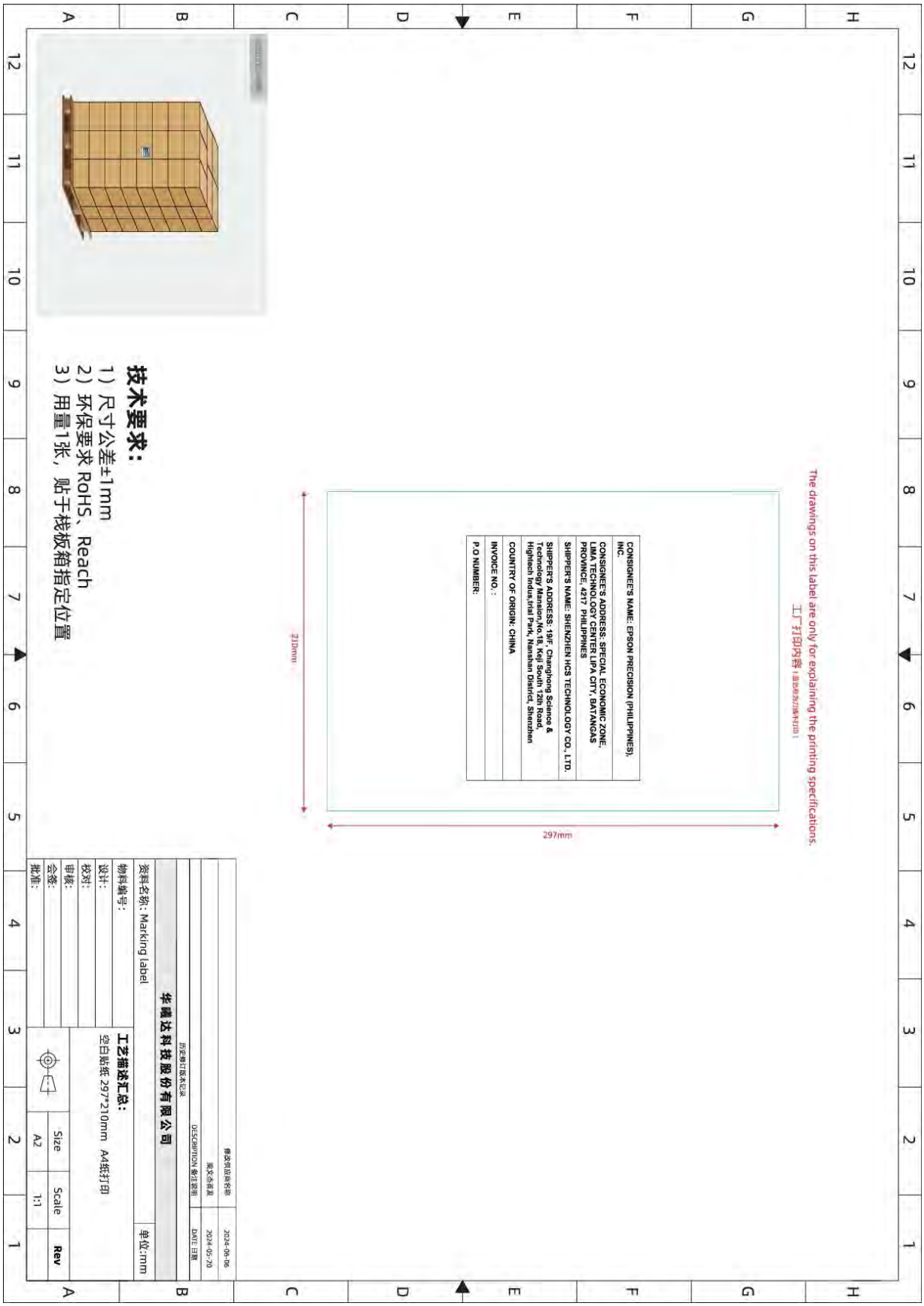
不满栈示意图（Dissatisfied stack diagram）：



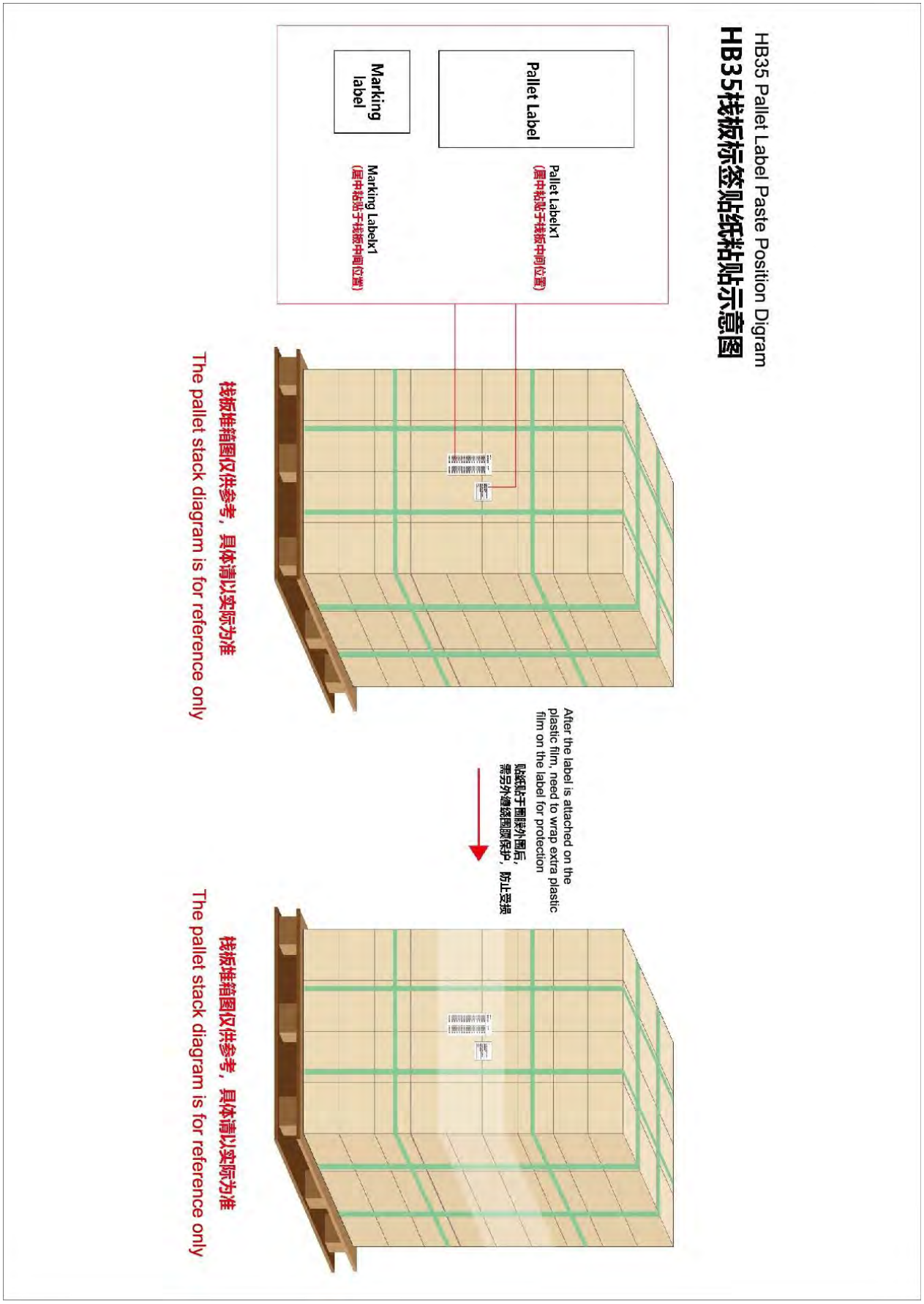
栈板标签（Pallet tag）：



唛头标签（Shipping mark label）：



标签粘贴示意图（Label attachment diagraml）：



产品规格 Product Type	RF1.13低损线 RF1.13 Low loss line
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 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 Insulation	材质 Material	聚全氟乙丙烯 FEP Polyperfluorinated ethylene-propylene FEP
	标称外径 Nom.Dia(mm)	0.735±0.02
外导体 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	镀银铜线 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 Jacket	材质 Material	聚全氟乙丙烯 FEP Polyperfluorinated ethylene-propylene FEP
	标称外径 Nom.Dia(mm)	1.15±0.05

电气性能 Electrical Characteristics

项目 Item	标准值 Standard Value	项目 Item	频率 Frequency	标准值 Standard Value
阻抗 Impedanc (Ω)	50±2	衰减 Attenuation@20℃ (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 Max.Operating Voltage(V)	1000		5GHz	4.05
最大工作频率 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% Temperature: below 30℃, humidity: 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 After 2 months, the tinning effect becomes worse after 2 months, but the electrical properties are not affected, and it is necessary to transfer as soon as possible after opening and stripping in high temperature and humidity environment in summer
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 It can withstand high temperature of 260℃ for a short time, decomposition is easy to occur above 300℃, and significant thermal decomposition occurs above 400℃
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 Inherent properties of the material, insulation below 0.2mm, sheath below 0.3mm

环境性能测试(Environmental performance testing)：

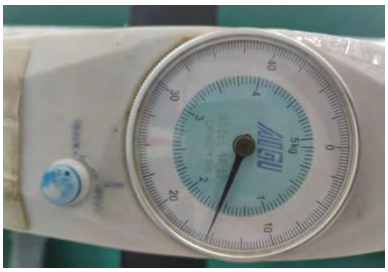
测试项目 Test item	测试方法Test method	判定标准criterion
低温储存试验 Low temperature storage test	温度：（-40±2）℃、储存时间：48h,试验后室温放置2h后检查Temperature: (-40±2) ℃, storage time: 48h, after the test at room temperature for 2h and then check	1、天线性能指标合格，外观合格；1, antenna performance indicators qualified, qualified appearance;
高温储存试验 High temperature storage test	温度：（70±2）℃、储存时间：48h，试验后室温放置2h后检查 Temperature: (70±2) ℃, storage time: 48h, after the test at room temperature for 2h and then check	1、天线性能指标合格，外观合格；1, antenna performance indicators qualified, qualified appearance;
交变湿热试验 Alternating humid heat test	温度25℃湿度93%±3%/温度55℃湿度93%±3%,各2h为1个循环，共6个循环24h（ GB2423.4-2008Temperature 25 ℃ humidity 93%±3%/ Temperature 55℃ humidity 93%±3%, each 2h for 1 cycle, a total of 6 cycles of 24h (GB2423.4-2008)	1、天线性能指标合格，外观合格；1, antenna performance indicators qualified, qualified appearance;
线缆拉力测试Cable tension test	夹具固定天线根部，拉力计一端拉住线缆，拉力值控制在10±1N，停留5SThe fixture fixes the root of the antenna and pulls the cable at one end of the tension meter. The tension value is controlled at 10±1N and stays for 5S	1、内部固定PCB不能松动。1, the internal fixed PCB can not be loosened. 2、线缆不能断裂。2. Do not break the cable.
ROHS测试ROHS test	采用ROHS测试仪测试ROHS tester was used for testing	按《有害物质管理规定》或ROHS2.0标准执行；In accordance with the Regulations on the Management of Hazardous Substances or ROHS2.0 standards;
盐雾试验Salt spray test	将被测产品置于35℃±2℃，相对湿度≥85 %，PH值6.5-7.2，盐水浓度50g/L±5g/L；Place the product under test at 35℃±2℃, relative humidity ≥ 85%, PH value 6.5-7.2, brine concentration 50g/L±5g/L; 试验时间：24h Test time: 24h	1、取出试样用流动冷水轻轻洗涤，以除去试样表面盐类物质，用吹风机冷风档吹干后检查，观察镀层表面蓝色或绿色斑点数量； 2、斑点直径1-3mm按N=3,斑点直径3-5mm按N=10计算，缺陷等级计算公式X=N÷S(镀层面积cm²) 3、缺陷等级X＞0.25为不合格；1. Take out the sample and wash it gently with running cold water to remove the salt substances on the surface of the sample, dry it with a hair dryer and check it to observe the number of blue or green spots on the surface of the coating; 2, spot diameter 1-3mm according to N=3, spot diameter 3-5mm according to N=10 calculation, defect grade calculation formula X=N÷S(coating area cm²) 3, defect level X > 0.25 is unqualified;
单体跌落实验 Monomer drop test	试验方法：1M高空按照互相垂直的轴方向自由跌落各10次，共20次Test method: 1M height in accordance with the vertical axis of the free fall 10 times each, a total of 20 times 2.跌落高度：1米；	试验后，天线应满足如下要求，即为合格：电气机械性能正常，部件不允许破裂，线芯不允许断裂，性能指标合格。After the test, the antenna should meet the following requirements, that is, qualified: the electrical and mechanical properties are normal, the components are not allowed to break, the core is not allowed to break, and the performance indicators are qualified.
带包装跌落实验Drop test with packaging	1.测试面：一共跌落6次（1个循环），6个面（上、下、左、右、后、前）；Test surface: 6 drops (1 cycle), 6 faces (up,down, left, right, back, front) 2.跌落高度：0.8米；2. Drop height: 0.8m;2. Drop height: 0.8m; 2. Drop height: 0.8m;	试验后，天线应满足如下要求，即为合格：电气机械性能正常，部件不允许破裂，线芯不允许断裂，性能指标合格。After the test, the antenna should meet the following requirements, that is, qualified: the electrical and mechanical properties are normal, the components are not allowed to break, the core is not allowed to break, and the performance indicators are qualified.
振动实验Vibration experiment	1、试验速度：推荐250RPM；1, test speed: recommended 250RPM; 2、试验时间：推荐95分钟；2, test time: recommended 95 minutes;	试验后，天线应满足如下要求，即为合格：天线性能正常，内外包装无破损，天线外观无划痕（45cm视距正常灯光不可见），各项功能正常After the test, the antenna should meet the following requirements, that is, it is qualified: the antenna performance is normal, the internal and external packaging is not damaged, the antenna appearance is not scratched (45cm visual range normal light is not visible), and the functions are normal

测试报告单 Tension test report

报告编号：NY2024111201

客户代码 Customer code	1028	客户料号 Customer material number		客户描述 Customer description	WIFI-1 内置天线（L=180mm） WIFI-1 built-in antenna (L=180mm)
试验数量 Number of tests	5pcs	我司料号 Ourcompany's material number	YJC-6N180-W06	我司描述 Company description	1.13 线端拉力 1.13 Wire end tension
试验目的 purpose of the test	测试线缆与端子之间拉力Tensile strength test between cable and terminal 检验标准；YJC-WI-038端子铆压标准Inspection standards; YJC-WI-038 terminal riveting standard				

序号 Serial number	**试验项目** Test item	**要求** requirement	**测试数据记录** Test data recording	**试验设备** Test equipment	**结果判定** Result decision
1	线端拉力测试 Wire end tension test	F≥1.5kgf	1.55kgf	NK-50	合格 qualified
2	线端拉力测试 Wire end tension test	F≥1.5kgf	1.60kgf	NK-50	合格 qualified
3	线端拉力测试 Wire end tension test	F≥1.5kgf	1.60kgf	NK-50	合格 qualified
4	线端拉力测试 Wire end tension test	F≥1.5kgf	1.75kgf	NK-50	合格 qualified
5	线端拉力测试 Wire end tension test	F≥1.5kgf	1.87kgf	NK-50	合格 qualified



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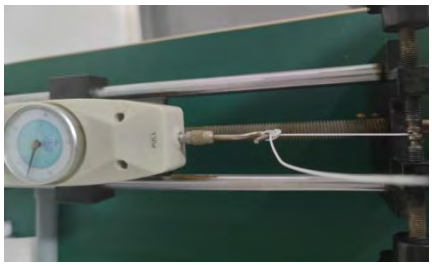

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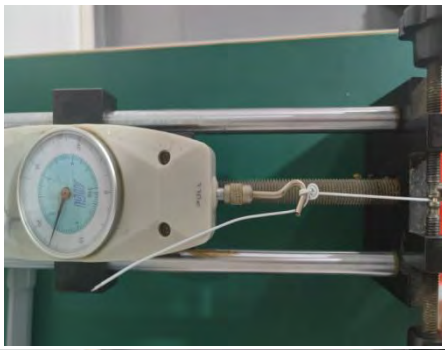

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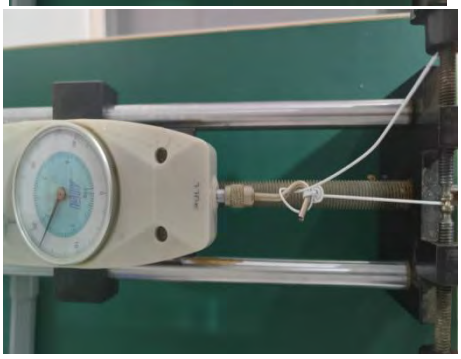

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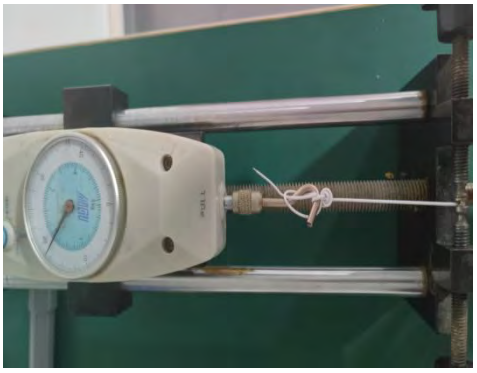

测试/日期 Test/date	陈黎明 20241112 Chen Liming 20241112	审核/日期:李湘东 Reviewed/Dated: Xiangdong 20241112	结论 conclusion	合格 qualified

深 圳 市 英 佳 创 电 子 科 技 有 限 公 司

Shenzhen Yingjiachuang Electronic Technology.,Ltd

端子测试报告单 Terminal test report

报告编号：NY2024111201

客户代码 Customer code	1028	客户料号 Customer material number		客户描述 Customer description	WIFI-1 内置天线（L=180mm） WIFI-1 built-in antenna (L=180mm)
试验数量 Number of tests	5pcs	我司料号 Our company's material number	YJC-6N180-W06	我司描述 Company description	**1.13 一代线端** 1.13 generation wire end
测试目的 purpose of the test	测试端子成型尺寸及镀层厚度Testing terminal forming size and plating thickness 检验标准；YJC-WI-038 端子铆压标准 Inspection standards; YJC-WI-038 terminal riveting standard				

序号 Serial number	**试验项目** Test item	**要求** requirement	**测试数据记录** Test data recording					**试验设备** Test equipmen	**结果判定** Result decision
			1#	**2#**	**3#**	**4#**	**5#**		
1	成 型 尺 寸 Molding size	大脚：1.30-1.50 Bigfoot: 1.30-1.50	1.45	1.46	1.43	1.48	1.41	Tension meter	合格 qualified
2	成 型 尺 寸 Molding size	编织：1.00-1.25 Weaving:1.00-1.25	1.13	1.18	1.15	1.17	1.13	Tension meter	合格 qualified
3	成型尺寸 Molding size	线皮：1.20-1.35 Thread cover: 1.20-1.35	1.25	1.24	1.26	1.27	1.28	Tension meter	合格 qualified
4	线端拉力 Wire end tension	≥1.5kgf	1.55	1.60	1.60	1.75	1.87	Tension meter	合格 qualified
5	膜厚测试 Film thickness test	≥0.5U "	0.57	0.61	0.60	0.64	0.63	Film thickness meter	合格 qualified
Test/date	Liming Chen 20241112		Review/Date: Li Xiangdong 20241112					conclusio	合格 qualified

英佳创

跌落试验报告
Drop test report

NO: QC-062/20240822

客户代码Customer code: 1028
客户料号Customer part number/YJC part number :
①360100468&YJC-6N180-R02
②360100469&YJC-6N180-B39
③360100470&YJC-6N180-W06
规格型号Specifications and models: 内置天线Built-in antenna

产品阶段	PVT1
试验开始时间Start time: 20240822 PM14:00	结束时间End time: 20240822 PM15:00
试验设备名称Device name : //	试验设备型号Device model: //

项目 Item	试验方法Method	判定依据 Basis for Determination	记录时间Record time	
			试验时间 Test time	仪器状态/结论 Instrument status/conclusion
跌落试验 Drop test	试验方法Method: 1.测试面：一共跌落6次（1个循环），6个面（上、下、左、右、后、前）； Test surface: 6 drops (1 cycle), 6 faces (up, down, left, right, back, front) 2.带包装重量小于4.5kg，跌落高度：0.8米； Weight with packaging 4.5kg, drop height: 0.8m; 3.试验结束后检查天线外观和性能。 Check the antenna appearance and performance after the test.	试验后，天线应满足如下要求，即为合格：天线性能正常，天线外观无划痕（45cm视距正常灯光不可见），各项功能正常。 After the test, the antenna should meet the following requirements, that is, qualified: the antenna performance is normal, the antenna appearance is not scratched (the normal light is not visible at a sight distance of 45cm), and the functions are normal.	开始Start PM14:00	正常OK
			结束End PM15:00	正常OK
试验附图 Drawings of the test				

试验附图 Drawings of the test	楞跌落Flute falls 角跌落Horn drops 80cm
结论 Conclusion	PVT1试验：合格PASS

NO：QR/QC-062 A0

测试： 杨英涛YANGYINGTAO 审核：李湘东LIXIANGDONG 日期Date： 20240822

英佳创

模拟运输振动试验报告
Simulated transport vibration test report

NO：QC-061/20240822

客户代码Customer code：1028
客户料号Customer part number/YJC part number：
①360100468&YJC-6N180-R02
②360100469&YJC-6N180-B39
③360100470&YJC-6N180-W06
规格型号Specifications and models：内置天线Built-in antenna

产品阶段	PVT1

试验开始时间Start time： 20240822 AM17:00 结束时间 End time： 20240822 PM18:35

设备名称Device name ：模拟运输振动台 Simulate a transport shaker
设备型号Device model：HST-MN-11:35

项目 Item	试验方法Method	判定依据 Basis for Determination	记录时间Record time	
			试验时间 Test time	仪器状态/结论 Instrument status/conclusion
振动试验 Vibration test	方法Method: 1.将已包装的完成品放置于振动试验台上; The packaged finished product is placed on a vibration test bench; 2.试验速度：推荐150RPM; Test speed: 150RPM recommended 3.试验时间：推荐95分钟; Test time: 95 minutes is recommended; 3.试验结束后检查天线外观和性能。 Check the antenna appearance and performance after the test.	试验后，天线应满足如下要求，即为合格：天线性能正常，内外包装无破损，天线外观无划痕（45cm视距正常灯光不可见），各项功能正常 After the test, the antenna should meet the following requirements, that is, qualified: the antenna performance is normal, the inner and outer packaging is not damaged, the antenna appearance is not scratched (the normal light is not visible at a sight distance of 45cm), and the functions are normal.	开始Start PM17:00	正常OK
			结束End PM18:35	正常OK
试验附图 Drawings of the test				

试验附图 Drawings of the test	
结论 Conclusion	PVT1试验：合格PASS

NO：QR/QC-061 A0

测试：杨英涛YANGYINGTAO　　审核：李湘东LIXIAN(　　日期Date：　20240822

BOM 物料清单 BOM Bill of materials

产品编码:YJC-6N180-W06&360100470 品名:WIFI XD-1,1.13 白色低损线 L=180mm

Product Code :YJC-6N180-W06&360100470 Product Name :WIFI XD-1,1.13 White low loss line L=180mm

序号 Serial number	编码 encoding	品名 The name of a product or commodity	规格 specification	单位 unit	数量 quantity
1	YJC-90N2201	黑色 FPC 板 Black FPC board	尺寸：30*15*0.12mm 360100470 Size: 30*15*0.12mm 360100470	PCS	1
2	YJC-90CW1-010	1.13 白色低损线 1.13 White low loss line	白色线材 White wire	M	0.180
3	YJC-900F00	小纸箱 Mini carton box	材质 K=K ：300*220*180MM（有丝印）Material K=K: 300*220*180MM (with screen printing)	PCS	0.000333
4	YJC-900F15*22	大胶袋 Big plastic bag	（封口）15*22CM(Seal) 15*22CM	PCS	0.01
5	YJC-90D01-015	一代 IPEXGeneration IPEX	1.13 线一代端子镀金 1.13 Wire first-generation terminals Gold-plated	PCS	1

编制：殷飞杰 2024-11-12 Organization: Yin Feijie 2024-11-12　　审核：杨运刚 Review: Yang Yungang　　批准：肖汉 Approved: Xiao Han

英佳创	OQC 检验标准 OQC Inspection Standard	文件编号 Document number	YJC-WI-Q01
		生效日期 Effective Date	2024-03-14/Mar 14, 2024
		版本/次 Version/time	A3

1.0 目的

明确 OQC 工作内容、方式和作业程序，提高 OQC 工作效率。

1.0 Purpose

Clarify the content, mode and operating procedures of OQC work to improve the efficiency of OQC.

2.0 适用范围

适用于公司产品出货检验作业.

2.0 Scope of Application

It is suitable for the company's product shipment inspection operations.

3.0 职责**:**

3.0 Responsibilities:

3.1.OQC 严格按程序规定进行成品检验.

3.1. OQC conducts finished product inspection in strict accordance with the procedures.

3.2 品质部主管要求 OQC 按规定的程序作业,负责指导 OQC 检验工作,及时处理 OQC 所反映的品质问题,并协调同相关部门的工作接口.

3.2 The supervisor of the quality department requires OQC to operate according to the prescribed procedures, is responsible for guiding the OQC inspection work, dealing with the quality problems reflected by the OQC in a timely manner, and coordinating the work interface with relevant departments.

3.3 生产拉线依据 OQC 提出的问题要点积极配合改善问题.

3.3 The production line actively cooperates with the improvement of the problem according to the key points raised by OQC.

4.0 作业程序

4.0 Operating Procedures

4.1 检验前的准备工作

4.1 Preparation before inspection

4.1.1 OQC 检验前,要求组装部将所有成品整齐摆放于“待检区”内。

英佳创	OQC 检验标准 OQC Inspection Standard	文件编号 Document number	YJC-WI-Q01
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4.1.1 Before OQC inspection, the assembly department is required to neatly place all finished products in the "waiting area".

4.1.2 OQC 对摆放于“待检区”的成品进行检验。

4.1.2 OQC shall inspect the finished products placed in the "waiting area".

4.1.3 资料及仪器准备：检验前须查询客户特殊要求及订单信息、了解订单排期、查找样品及产品规格书（图纸）、提前校准仪器；

4.1.3 Preparation of materials and instruments: Before the inspection, it is necessary to inquire about the special requirements and order information of customers, understand the order schedule, find samples and product specifications (drawings), and calibrate the instrument in advance;

4.2 检验

4.2 Inspection

4.2.1 OQC 依据客户《订单》、《品质部检验标准》等检验资料，首先核对产品货号、装箱数量和唛头、贴纸等，若发现实际做货与资料有差异时，即通知组装拉长、主管，并要求及时更正。

4.2.1 OQC will first check the product number, packing quantity, shipping marks, stickers, etc. according to the customer's "Order" and "Quality Department Inspection Standards".At the same time, the assembly elongation, the supervisor will be notified, and the correction will be required in time.

4.2.2 OQC 依照成品检验标准、样板及其它相关资料，对产品的外观、尺寸、性能、ROHS 及卤素、匹配验证、标识标签、配件类别、包装数量、包装方式等进行全面检验，具体检验要求执行企业标准：Q/YJC-2022-01，Q/YJC-2022-02，Q/YJC-2022-03。

4.2.2 OQC shall verify the appearance, size, performance, ROHS and halogen, matching verification, identification label, accessory category and packaging number of the product in accordance with the finished product inspection standards, samples and other relevant information Quantity, packaging methods, etc. are comprehensively inspected, and the specific inspection requirements are implemented according to enterprise standards: Q/YJC-2022-01, Q/YJC-2022-02, Q/YJC-2022-03.

4.2.3 OQC 根据 GB2828-2012 Ⅱ级标准抽样，成品质量允收水准 AQL: CR=0，MAJ=0.4，MIN=0.65(CR：致命缺陷，MAJ：严重缺陷，MIN：轻微缺陷)；

4.2.3 OQC according to GB2828-2012 level II standard sampling, finished product quality allowable level AQL: CR=0, MAJ=0.4, MIN=0.65 (CR: fatal defect, MAJ: serious defect, MIN: slight defect);

制定：陈黎明 Chen Liming	审核：李湘东 Li Xiangdong	批 准：杨运刚 YangYungang	日期：2024-3-14 / Mar 14, 2024

英佳创	OQC 检验标准 OQC Inspection Standard	文件编号 Document number	YJC-WI-Q01
		生效日期 Effective Date	2024-03-14/Mar 14, 2024
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4.2.3.1 合格

OQC 对检验合格的成品在纸箱侧唛加盖“QA PASS”印章，然后通知车间办理入库，并将检验结果记录于《出货检验报告》中。

4.2.3.1 Qualified

OQC stamps the "QA PASS" seal on the side mark of the carton for the finished products that pass the inspection, and then notifies the workshop to handle the warehousing, and records the inspection results in the "Shipment Inspection Report".

4.2.3.2 不合格

判定結果為不合格，OQC 把不良樣辦及《OQC 检验报告》交品质主管/经理裁决，必要时需经上级主管、总经理或客户批准，并跟進結果；对判定为不合格的成品在箱盖旁贴上“不合格品”标签，，放置在不合格区退货给产线进行返工处理，检验 NG 批次填写“纠正预防措施实施单”，经主管/经理确认，连同不良品一起退货给产线，产线填写原因分析和纠正改善措施，返工完成后，将产品和“纠正预防措施实施单”一起提交 OQC 复检，OQC 跟踪其纠正改善措施效果并填写复检状况，OQC 跟进验证效果，再进行抽检直至合格为止。

4.2.3.2 Non-conformity

If the result is judged to be unqualified, OQC will submit the defective sample and the "OQC Inspection Report" to the quality supervisor/manager for adjudication, and if necessary, it shall be approved by the superior supervisor, general manager or customer, and follow up the result; The finished products judged to be unqualified are labeled with "nonconforming products" next to the box cover, placed in the unqualified area and returned to the production line for rework, and the NG batch is inspected to fill in the "corrective and preventive measures implementation form", which is confirmed by the supervisor / manager, and returned to the production line together with the defective products, and the production line fills in the cause analysis and corrective improvement measures, and after the rework is completed, the product and the "corrective and preventive measures implementation sheet" are submitted to OQC for re-inspection, OQC tracks the effect of its corrective and improved measures and fills in the re-inspection status, and OQC follows up and verifies the effect. Then conduct random inspection until it is qualified.

4.2.3.3 特采

判定結果為特采，则在外包装贴“合格品”及蓋“QA PASS”章，并在检验汇总记录中标记“特采”，然后通知车间入仓；

4.2.3.3 Special Picking

If the result is determined to be special, the "qualified product" and "QA PASS" chapter will be pasted on the outsourced packaging, and the "special collection" will be marked in the inspection summary record, and then the workshop will be notified to enter the warehouse;

4.3 加严抽检

1.外观 QC 检验原始记录缺陷不良项在 OQC 检验时必须重点跟进外观缺陷是否有漏检流入合格品；

2.OQC 判定批次不合格时，对同客户或同类型产品采取加严抽检方式检验，加严后质量允收水准 AQL: CR=0，MAJ=0.25，MIN=0.4(CR：致命缺陷，MAJ：严重缺陷，MIN：轻微缺陷)，连续 3 批次抽检合格即转为正常检验。

4.3 Stricter sampling

1. Appearance QC inspection, original record defects, defects, and defective items must be focused on following up during OQC inspection, whether there are any missed defects and inflow into qualified products;

2. When OQC determines that the batch is unqualified, the same customer or the same type of product will be inspected by stricter sampling, and the quality tolerance level AQL: CR=0, MAJ=0.25, MIN=0.4 (CR: fatal defect, MAJ: serious defect, MIN: slight defect), and the sampling inspection of 3 consecutive batches will be converted to normal inspection.

4.4 库存返检：成品入库后，没及时出货，检验有效期半年（6 个月），出货时要求 OQC 复检一次，按 4.2 条款执行；

4.4 inventory return inspection: after the finished product is put into storage, it is not shipped in time, the inspection is valid for half a year (6 months), and OQC is required to re-inspect it once when shipping, according to the implementation of clause 4.2;

4.5 资料存档

在检验过程当中所采用的一切报告、报表及单据由 OQC 进行编号存档，作为质量记录以供查阅。

4.5 Data Archiving

All reports, statements and documents used in the inspection process are numbered and archived by OQC as quality records for reference.

5.0 附表

5.0 Schedules

5.1《OQC 检验报告》—原始记录白联存档

5.1 《OQC inspection report》--The original records are archived in white copy

英佳创	OQC 检验标准 OQC Inspection Standard	文件编号 Document number	YJC-WI-Q01
		生效日期 Effective Date	2024-03-14/Mar 14, 2024
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5.2《ROHS 记录》—保存电子档

5.2 《ROHS RECORDS》--Save the electronic file

修改版次 Revised edition		
版序 Preface	日期 Date	变更内容 Change the project
A0	2021/5/20	新版发行 New edition is released
A2	2023/7/28	增加加严抽检 Increase and tighten random inspections
A3	2024/3/14	增加英文 Add English

英佳创

OQC 检验报告 OQC Inspection Report

检验状态 Inspection Status: ☐ 入库检验 Incoming inspection ☑ 出货检验 Outgoing inspection

报告编号 NO：QC-039/2024082203

客户名称 Customer name	1028	生产批号 production batch number	PO20240898	品名 product name	内置天线	箱数 number of boxes	1
料号 part number	360100470&YJC-6N180-W06	检验日期 inspection date	2024-8-22	规格 specification	白色线 L=180MM	出货日期 shipping date	2024-8-22
订单编号 order number		数量 quantity	280PCS	料号 P/N	YJC-6N180-W06	出货单号 shipment number	CH202408018
抽样标准 sampling standard		严重缺陷（CR=0） serious defect		允收数（AC） Acceptance Number	0	拒收数（RE） Rejection Number	1
GB/T 2828.1-2012 正常抽样 II 级 Normal Sampling Level II		主要缺陷（MAJ=0.4） major defect		允收数（AC） Acceptance Number	0	拒收数（RE） Rejection Number	1
抽样数 sampling quantity	32PCS	次要缺陷（MIN=0.65） minor defect		允收数（AC） Acceptance Number	0	拒收数（RE） Rejection Number	1

检验项目 Item	检验标准 Inspection standard	样本① Sample 1	样本② Sample 2	样本③ Sample 3	样本④ Sample 4	样本⑤ Sample 5	结果 Result
尺寸① Size 1	180.00(+5.00/-3.00) mm	181.00	181.00	182.00	181.00	181.00	PASS
尺寸② Size 2	30.00 ±0.20mm	30.00	30.05	30.03	30.00	29.96	PASS
尺寸③ Size 3	15.00 ±0.20mm	14.95	15.05	15.07	15.03	14.98	PASS
电测 Electrical test	SWR≤2.0	1.45	1.58	1.49	1.65	1.58	PASS
RoHS	按 RoHS 规定 According to RoHS regulations	符合 RoHS 要求，报告编号 NO:202408-3998					PASS
外观检验 Exterior inspection	压伤 (pressure damage), 水纹 (watermark), 异色 (discoloration), 破损 (damage), 刮伤 (scratch), 毛边 (burrs), 缩水 (shrinkage), 锈蚀 (rust), 级差 (level difference), 虚假焊 (false welding).						PASS
包装检验 packaging inspection	包装破损脏污、包装数量不一致及标签错误 Packaging damage, dirt, inconsistent packaging quantities, and labeling errors						PASS
结果判定 Result determination: ☑ 合格 PASS ☐ 拒收 REJECT ☐ 特采 Special procurement ☐ 其它 Other							
备注 note							

审核 Audit：LXD 检验员 Inspector：WX 管理编号 NO：QR-QC-039A/1

Visual Inspection(SOP)

1.采用CCD检查IPEX端子有无弹片闭合、破损、变形、氧化等不良;
1. Use CCD to inspect the IPEX terminals for any defects such as shrapnel closure, damage, deformation, oxidation, etc;

2.CCD检测设备
2. CCD detection equipment

3.检查焊盘锡点饱满、无虚焊、无锡尖、无偏位;
3. Check that the solder joints on the solder pads are full, free of solder joints, Wuxi tips, and free of misalignment

4.线缆外皮不允许破损、拉伤、裂痕;
4. The outer skin of the cable should not be damaged, pulled, or cracked;

5.检验完毕放置在绿色周转盘，带包装;
5. After inspection, place it on the green weekly turntable with packaging;

英佳创	制程作业指导书 Manufacturing work instructions	
受控 controlled	工段编号 Section number	03
工程名称 project name	外观检验 Visual Inspection	
产品名称 product name	内置天线-EPSON Built in antenna - EPSON	
产品料号 Product part number	YJC-6N180-R02 YJC-6N180-W06 YJC-6N180-B39	
文件编号 Document No	Y-WI-DG004/NZ03	
使用工具、治具 Using tools and fixtures		
使用原物料 Using raw materials		

变更版序 Change version sequence	变更日期 Change date	变更内容 Change content
V0	20220310	新版发行 New Release
V1	20230209	调整焊接温度 Adjusting welding temperature
V2	20240419	增加EPSON订单：不良品做报废处置，增加CCD检查端子外观 Increase EPSON orders: scrap defective products and add CCD inspection of terminal appearance

规格及操作要点: Specifications and operating points:	品质检查要点: Key points of quality inspection:	品质履历: Quality record:
1.检查IPEX端子有无弹片闭合，氧化，结构 1. Check for shrapnel closure, oxidation, and structure of IPEX terminals	1.检查焊接方向，并与首件图纸核对 1. Check the welding direction and verify it with the first piece drawing	
2.检查焊盘锡点饱满无虚焊，锡尖,偏位 2. Check that the solder joints on the solder pads are full and free of solder joints, solder tips, and misalignment	2.EPSON订单：不良品做报废处置 2. EPSON order: Scrap and dispose of defective products	
3.检查产品正反面无脏污，锡渣等 3. Check that the front and back of the product are free of dirt, tin residue, etc	3.EPSON订单：端子外观采用CCD检查; 3. EPSON order: CCD inspection is used for the appearance of the terminals;	

杨正刚　　审 核　　刘志　　制 定:　　陈黎明2024-4-19

英佳创

Shenzhen Yingjiachuang Electronic Technology Co., Ltd

Built-in antenna QC drawing

Product Stage	☐Trial production ☑Production ☐Other	Document number	YJC-QC092	Edition	A2
Product name	Built-in antenna	Date of production	2023-3-15		

NO	Flow Chart				Job description	Department	Related documents	Manage projects		▼↓	Management methods			countermeasures	Position	Qualification Requirements
	ON	Parts	Ancillary	Main				Item	Output records		Inspection tools	Number of samples	Sampling frequency			
Materials Purchase/Inspection/Storage and Release	1	▽↓			Material purchases	Procurement	External supplier and service control procedures	Product name, quantity, packaging, condition	Purchase Plans/Purchase Order		Visual	Full	Per batch	Reject	Procurement	1、College degree or above; 2、Aged 18-40, familiar with ERP software and computer operating software; 3、Familiar with procurement process and price management process;
	2	☐↓			Material purchases	PMC	Warehousing management regulations	Product name, quantity, packaging, condition	Delivery note		Visual	Full	Per batch	Reject	Warehouse keeper	1、High school diploma or above; 2、Aged 18-40, visual acuity required 0.7-1.0; 3、Job certification and basic skills training qualified; 4、Strong sense of responsibility and ability to work under pressure;
	3	↓↓			Incoming inspection	Quality Department	Measurements/specifications/work instructions and drawings/samples	ROHS/Halogen-free/Salt Spray Experiment/Size/Performance	IQC incoming inspection report		ROHS tester, salt spray testing machine, vernier caliper, net division	5pcs/AQL	Sampling frequency	Returns, selection, processing	IQC	1、High school diploma or higher education; 2、Aged 18-40, with visual acuity of 1.0 or above; 3、Job certification and qualified in basic skills training; 4、Strong sense of responsibility and ability to work under pressure.
	4	▽↓			Put into storage	Warehouse	Warehousing management regulations	Product name, quantity, packaging,	Inbound lists, books, material		Electronic scales	Full	Per batch	Reject	Warehouse keeper	1、High school diploma or above; 2、Aged 18-40, visual acuity required 0.7-1.0; 3、Job certification and basic skills training qualified; 4、Strong sense of responsibility and ability to work under pressure;
	5	▽↓			Material storage	Warehouse	Warehousing management regulations	Temperature, humidity	Temperature and humidity checklist	▼	Thermohygrometer	Every day	Every day	Reporting	Warehouse Keeper	
	6	☐↓			Picking	Production Department	Production and service control procedures, picking lists, BOM	Product name, quantity	Picking lists		Visual	Full	Per batch	Reject	Material clerk	
	7	☐↓			Confirmation of on-line materials	Production Department	Production and service control procedures	Name, quantity, status, identification	Picking lists、BOM	▼	Visual	Full	Per batch	Replacement/Complement	Material clerk/production	
	8	▽↓			Tin wire material confirmation	Production Department	Tin wire inspection method	Appearance, logo, environmentally friendly tin wire	Φ0.5-1.2mm		Visual	per lap	Per batch	Reject	Production Team Leader/Supervisor	

Illustrate: =Operation/machining ≤=Quantity confirmation ▽=Wait ↓=Inspection ▼=Critical processes ☐=Special customer requirements

All production raw materials, auxiliary materials, and tools must meet ROHS requirements.

Preparation: Feng Yingmei 2024-4-30 Review: Yang Yungang Approval: Xiao Han

Shenzhen Yingjiachuang Electronic Technology Co., Ltd

英佳创

Built-in antenna QC drawing

Product Stage	☐Trial production ☑Production ☐Other	Document number	YJC-QC092	Edition	A2
Product name	Built-in antenna	Date of production	2023-3-15		

NO	Flow Chart: ON	Flow Chart: Parts	Flow Chart: Ancillary	Flow Chart: Main	Job description	Department	Related documents	Manage projects: Item	Manage projects: Output records	▼↓	Management methods: Inspection tools	Management methods: Number of samples	Management methods: Sampling frequency	countermeasures	Position	Qualification Requirements
Materials Purch	9			↓	First article confirmation before production	Quality Department	Drawing/BOM/SOP/SIP/YJC02-2022	1、Appearance, structure, function; 2、Generation terminals F≥1.5kgf; 3、VSWR meet the customer sample standards;	First article inspection report		Visual/Tool	5pcs	Per batch	If there is a batch problem, stop pulling and	IPQC	1、High school diploma or higher education; 2、Aged 18-40, with visual acuity of 1.0 or above; 3、Job certification and qualified in basic skills training; 4、Strong sense of responsibility and ability to work under pressure.
	10			↓	Welded parts	Production Department	SOP	Temperature monitoring	Temperature check record form	▼	Point thermometer	1 time per shift	1 time per shift	Process adjustments	IPQC	
	11			↓	Inspection	Quality Department	Drawing/BOM/SOP/SIP/YJC02-2022	1、Appearance, structure, function; 2、Generation terminals F≥1.5kgf; 3、VSWR meet the customer sample standards;	Inspection records		Visual/Tool	Random	Random	Rework/Repair	IPQC	
	12			↓	Full inspection of process appearance/function	Production Department / Quality Department	Drawing/BOM/SOP/SIP/YJC02-2022	1. Appearance, structure and function; 2. Standing wave test;	QC original records		Visual/net points	FULL	FULL	Repair/scrapping	QC	1、Junior high school education or above; 2、Aged between 18 and 40, with vision acuity of 1.0 or above; 3、Possess the job qualification certificate and pass the basic skills training; 4、Strong sense of responsibility.
	13			↓	Reliability test	Quality Department	Drawing/BOM/SOP/SIP/YJC02-2022	Salt spray test, tensile test, etc	Type test report		Visual/Tool	New	New	Rework/Scrap	QE	1、College degree or above; 2、Aged between 18 and 40, proficient in computer software operation; 3、Familiar with incoming materials, process, shipment, and reliability testing methods; 4、Familiar with the use of network analyzer, conductivity meter, two-dimensional, salt spray, high and low temperature chamber, air tightness tester, RoHS tester, and melting point tester; 5、Possess a spirit of teamwork.

ase/Inspection/Storage and Release	14			↓	packaging	Production Department	Drawing/BOM/SOP/SIP /YJC02-2022	Appearance, process, structure, function, packaging	Production Day Report	▼	Visual/Tool	FULL	FULL	Repair/scrapping	Operator	1、Junior high school education or above; 2、Aged between 18 and 40, with vision acuity of 1.0 or above; 3、Possess the job qualification certificate and pass the basic skills training; 4、Strong sense of responsibility.
	15			↓	Pre-shipment inspection	Quality Department	Drawing/BOM/SOP/SIP /YJC02-2022	Appearance, process, structure, function, packaging	OQC Qualified inspection		Visual/Tool	AQL	Per batch	Rework	OQC	1、High school diploma or higher education; 2、Aged 18-40, with visual acuity of 1.0 or above; 3、Job certification and qualified in basic skills training; 4、Strong sense of responsibility and ability to work under pressure.
	16		□↓		Finished products are put into storage	Production Department	Warehousing management regulations	Product name, quantity, identification status	Inbound list		Visual	Random	Random	Rework	Warehouse keeper	1、High school diploma or above; 2、Aged 18-40, visual acuity required 0.7-1.0; 3、Job certification and basic skills training qualified; 4、Strong sense of responsibility and ability to work under pressure;
	17		▽↓		Finished product storage	warehouse	Warehousing management regulations	Temperature and humidity monitoring	Temperature and humidity inspection records		Thermohygrometer	Every day	Every day	Report	Warehouse keeper	
	18		↓		Outbound shipments	warehouse	Warehousing management regulations	Product name, quantity, identification status	According to customer requirements		Visual	Random	Random	Rework	Warehouse keeper	
	19				delivery	Sales Department	Product delivery control procedures	Shipping status	Shipping status		Visual	Random	Random	Rework	Karma Assistance	1、College degree or above; 2、Aged between 18 and 40, familiar with ERP software and computer operation software; 3、Familiar with business processes and price management processes; 4、Possess good communication skills and teamwork abilities.

Illustrate: =Operation/machining ≤=Quantity confirmation ▽=Wait ↓=Inspection ▼=Critical processes ♪=Special customer requirements
All production raw materials, auxiliary materials, and tools must meet ROHS requirements.

Preparation: Feng Yingmei 2024-4-30 Review: Yang Yungang Approval: Xiao Han

ROHS 物料控制报告(ROHS Material control report)

兹证明向貴司交货的零組件、辅助材料所使用的原材料、以及生产工程中的添加剂等均符合 RoHS 限制使用有害物质指令的环保要求（RoHS 指令 2011/65/EC)
This is to certify that the components delivered to your company, the raw materials used for auxiliary materials, and the additives used in the production project all meet the environmental requirements of the RoHS directive on limiting the use of hazardous substances . （RoHS 指令 2011/65/EC)

关于零组件、辅助材料所使用的原材料、包装材料以及和产过程中使用的添加剂等的构成成份报告如下：
The report on the composition of raw materials, packaging materials, and additives used in the manufacturing process for component auxiliary materials is as follows

组成物料名称 Component /Part Name	组成材料 Material Composition	ICP 报告编号 ICP report #	测试机构 Test Org.	测试时间 Test Date	有害物质含量(ppm)						是否合格? PASS?
					Cd	Pb	Hg	Cr^{6+}	PBB	PBDE	PASS
线材(wire rod)	同轴线缆 coaxial cable	CANEC24002746206	SGS	24/02/23	ND	ND	ND	ND	ND	ND	PASS
锡条(tin rod)	环保锡丝 Green solder wire	SHAEC24006459102	SGS	24/04/10	ND	78	ND	ND	ND	ND	PASS
端子（terminal）	磷青铜 Phosphor bronze	CANEC24000977302	SGS	24/01/22	ND	6	ND	ND	ND	ND	PASS
	金镀层 Gold coating	A2240410234101001E	CTI	24/07/16	ND	ND	ND	ND	ND	ND	PASS
	胶芯 Rubber core	A2240126395101003E	CTI	24/03/16	ND	ND	ND	ND	ND	ND	PASS
FPC	油墨 Printing	ETR24902229M01	SGS	24/09/23	ND	ND	ND	ND	ND	ND	PASS
	3M9471LE	SHAEC23021627701	SGS	23/12/27	ND	ND	ND	ND	ND	ND	PASS
	铜箔 Copper foil	A2240082746101006E	CTI	24/03/01	ND	ND	ND	ND	ND	ND	PASS

MSDS：

惠州市富邦电子科技有限公司

MATERIAL SAFETY DATA SHEET

物质安全资料表

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION 产品和公司资料

PRODUCT NAME: Halogen-free flame-resistant type polyimide film based flexible copper clad laminates
（FB）
产品名称：无卤阻燃型聚酰亚胺薄膜挠性覆铜板（FB 系列）
PRODUCT USE: Flexible printed circuit Boards.
用途：用于挠性印制电路板。
NAME OF COMPANY AND ADDRESS: fubang electronic technology co., LTD
No. 8, Joint District 37, Shuikou Town, Huicheng District, Huizhou City,
公司名称及地址：惠州市富邦电子科技有限公司;
中国 广东省惠州市惠城区水口办事处联合 37 区 8 号厂房
FOR MORE INFORMATION CALL: IN CASE OF EMERGENCY CALL:
紧急联络电话：(Monday-Friday, 8:00am-5:00pm) (24 Hours/Day, 7 Days/Week)
(0752)2398520

2. HAZARDS IDENTIFICATION 危害性资料

EMERGENCY OVERVIEW:
紧急情况概述：
A nonflammable, sheet material. Dust, when machined or punched may cause skin or eye irritation. Fumes, if
decomposed may irritate eyes, nose, and throat.
是一种难燃的层压板。当使用或打孔时可能产生粉末，可能使皮肤或眼睛感到刺激。当分解时产生的气体
会刺激眼睛、鼻和咽喉。
POTENTIAL HEALTH HAZARDS:
潜在的危害健康的危险品：
SKIN: Dust may cause moderate skin irritation.
皮肤：粉末可能导致中等程度皮肤过敏。
EYES: Dust may cause moderate eye irritation. Fumes may irritate eyes.
眼睛：粉末可能导致中等程度眼睛过敏。
INHALATION: T race of chemical solvents may be vapourized and diffused to air in the processes of
varnish preparation and coating production.
吸入物： 在涂覆生产过程时，会有很少量化学溶剂挥发出来。
INGESTION: Not determined.
摄食：没有参考值。

3. COMPOSITION/INFORMATION ON INGREDIENTS 组成成份资料

INGREDIENT NAME CAS # WEIGHT %
成分名称 化学文摘号 重量比
Polyimide film (25038-81-7) 2-38
聚酰亚胺薄膜
Copper foil (7440-50-8) 51-94
铜箔
Halogen-free adhesive of epoxy resin Trade secret 4-16
无卤环氧胶粘剂

组份	含量	CAS NO
环氧树脂	1.81-6.45	25036-25-3
阻燃剂	0.76-3.36	225789-38-8
橡胶	1.23-4.9	9003-18-3
固化剂	0.2-1.29	80-08-0

4. FIRST AID MEASURES 首要援助措施

SKIN: Wash in flowing water or shower. Remove contaminated clothing.
皮肤：脱下已污染衣服，用流动水冲洗。
EYE: Irrigate with flowing water for 15 minutes. If irritation persists, consult a physician.
眼睛：用流动水冲洗 15 分钟，如过敏现象持续发生，请求助于医生。
INHALATION: If overcome by dust or smoke, move to fresh air. If not breathing, give mouth-to-mouth
resuscitation. Call physician.
吸入：如粉末烟尘太多请转移到有新鲜空气的地方，如没有呼吸，请进行人工呼吸。并致电医生。
INGESTION: If large amounts are ingested, consult physician.
摄食：如吸入大量，请致电医生。
ADVICE TO PHYSICIAN: Treatsymptomatically
建议医生：处理出现的症状。

5. FIRE FIGHTING MEASURES 火灾测试

FLAMMABLE PROPERTIES: N/A
易燃烧性：不适用
FLASH POINT: N/A
闪点：不适用
FLASH POINT METHOD: N/A
闪点方式：不适用
AUTOIGNITION TEMPERATURE: Not determined
自燃点温度：无规定
UPPER FLAME LIMIT (Volume % in air): N/A
燃烧上限：不适用
LOWER FLAME LIMIT (Volume % in air): N/A
燃烧下限：不适用
FLAME PROPAGATION RATE (Solids): UL94 V-0
燃烧等级：UL94 V-0
OSHA FLAMMABILITY CLASS: N/A
OSHA 燃烧级别：不适用
EXTINGUISHING MEDIA: Water, CO 2 and dry chemical

灭火介质：水、CO 2 及干化学品
SPECIAL FIREFIGHTING PRECAUTIONS/INSTRUCTIONS:
特别火灾指导：
Firemen should wear proper protective equipment and positive pressure self-contained breathing apparatus.
消防员须身穿保护装置及正压呼吸设施。

6. ACCIDENTAL RELEASE MEASURES 意外事故的应变措施

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protection equipment)
： 如有泄漏或其他释放：（通常身穿所推荐的保护设施）
Not applicable, material is an article.
不适用于固体材料。
Spills and releases may have to be reported to local authorities.
有关泄漏应报告当地政府。

7. HANDLING AND STORAGE 仓贮指南

NORMAL HANDLING: (Always wear recommended personal protective equipment.)
规范指南：（建议穿戴个人防护设施）
The primary exposure route is inhalation of dust when machine/punched
or from fumes or vapors when heated.
主要是预防暴露部位吸入当机器打孔时或冒烟、气化液体受热时所产生的粉尘。
STORAGE RECOMMENDATIONS: N/A
贮存建议：不适用。

8. EXPOSURE CONTROLS/PERSONAL PROTECTION 泄漏控制/ 个人保护

ENGINEERING CONTROLS: Use local exhaust ventilation to control dust.

工程 控制：使用当地除尘通风设施。
PERSONAL PROTECTIVE EQUIPMENT:
个人保护措施：
SKIN PROTECTION: For brief contact to dust, no precautions other than clean body-covering clothing
should needed. Use gloves and aprons when prolonged or frequently repeated contact occurs.
皮肤保护：对于短暂性的接触粉尘，需要时清洗身体或衣服，无预防措施。对于长期性的接触，要配带手
套和围裙
EYE PROTECTION: Use appropriate eye protection when machining material.
眼睛保护：当加工材料时使用眼睛保护装置。
RESPIRATORY PROTECTION: When respiratory protection is required for certain operations, use a
NIOSH-approved dust respirator.
呼吸保护：当进行产生大量粉尘的操作时使用规范的粉尘防毒面罩。
ADDITIONAL RECOMMENDATIONS: N/A
其它建议：不适用

9. PHYSICAL AND CHEMICAL PROPERTIES 物理化学性能

APPEARANCE: Yellow to amber sheets
外观：黄色
PHYSICAL STATE: Solid
物理形态：固体
ODOR: None, unless heated
气味：无味，除非加热
SPECIFIC GRAVITY: (Water = 1.0) 4.5 +/- 1.5
： 比重：（水=1.0）4.5+/-1.5
SOLUBILITY IN WATER: (Weight %) Negligible in water
： 水溶性：（重量%）在水中可忽略

10. STABILITY AND REACTIVITY 稳定性及反应性

NORMALLY STABLE: (conditions to avoid) Stable
通常稳定：稳定INCOMPATIBILITIES:
Not determined 不兼容性：不确定
HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO 2 , Oxides of nitrogen if heated in excess of 300
deg. C. Laser drilling or cutting may result in copper metal
fume.
危险的腐化产品：CO, CO 2 , NO X （当加热超过 300℃），激光打孔或切割时会产生铜金属烟尘。
HAZARDOUS POLYMERIZATION? None
危险聚合物：无

11. TOXICOLOGICAL INFORMATION 毒物学的资料

IMMEDIATE (ACUTE) EFFECTS: Dust may cause moderate eye, skin and respiratory irritation
.
敏感反应：灰尘将导致眼、皮肤中度过敏。

12. ECOLOGICAL INFORMATION 生态学资料

Not Biodegradable
非生物降解。

13. DISPOSAL CONSIDERATIONS 处置问题

Is the unused product a hazardous waste substances list of country hazardous waste if discarded?
No
列入国家危险废物名录的危险废物不能够再利用时是否被丢弃？ 不
OTHER DISPOSAL CONSIDERATIONS: Disposal must be made in accordance with all applicable Local
regulations. Copper should be recycled.
其它处置问题：处置必须遵循当地的法律法规。铜箔是可以再利用的。

Suggestion method after products will be discarded:
1. Separate reuse method: crush products into powder then separate the valued copper, recycling left plastic
powder as a filler.
2. Incineration method: incinerate the unused products, this method may produce some organic compound
gas.
3. Bury into deep earth.
产品报废之后有以下几种处置方法：
1. 分离法，将产品粉碎，将铜箔回收利用，剩余物可作填充料；
2. 焚烧法，焚烧过程中可能产生有机化合物气体；
3. 填埋法。

14. TRANSPORT INFORMATION 运输资料

For additional information on shipping regulations affecting this material, contact the information number found on
the first page.
附带资料是当运输规则影响到物料时，请和第一页所提供的联系方式联系。

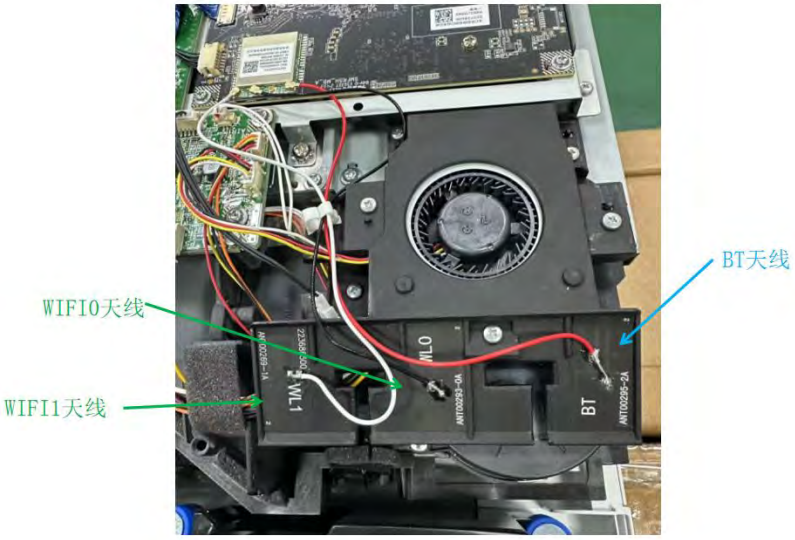
15. REGULATORY INFORMATION 法规资料

HAZARDOUS WASTE SUBSTANCES LIST OF COUNTRY: 国家危险废物名录
The resin system components listed in the hazardous waste substances list of country（ HW13）.
环氧化合物类被列入国家危险废物名录当中（HW13）。
ADDITIONAL REGULATORY INFORMATION:
附加法规资料:
fubang electronic technology co., LTD does not use polybromide-biphenyls or polybromide-biphenyloxides as a
fire retardant in any of our epoxy resin systems.
富邦电子科技有限公司没有采用多溴联苯或多溴联苯醚作为阻燃剂在产品的环氧树脂体系当中。

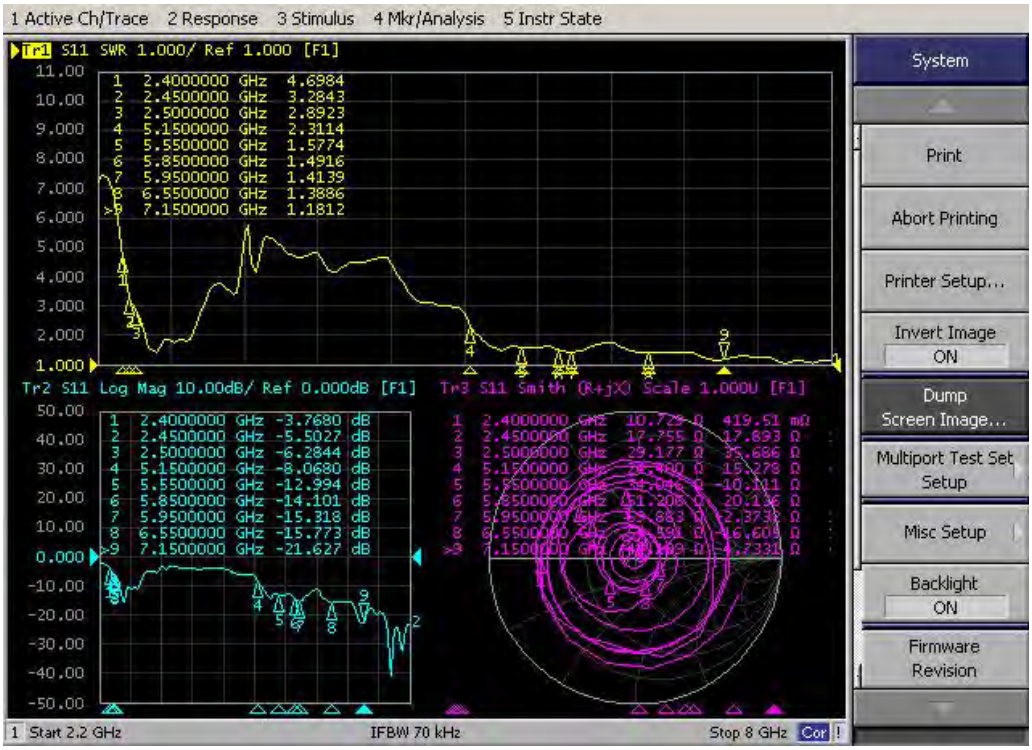
16. OTHER INFORMATION 其它资料

CURRENT ISSUE DATE:08/04/2022
现在版本日期：08/04/2022
CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING：
1. Due to the increase in product specifications, modify the weight ratio of the ingredients.
2. The permutation order of second and third has been replaced by each other.
变更 MSDS 基于以下原因：
1. 因产品规格增加，修改成分重量比范围。
2. 调换第 2 项和 3 项的排列顺序。

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

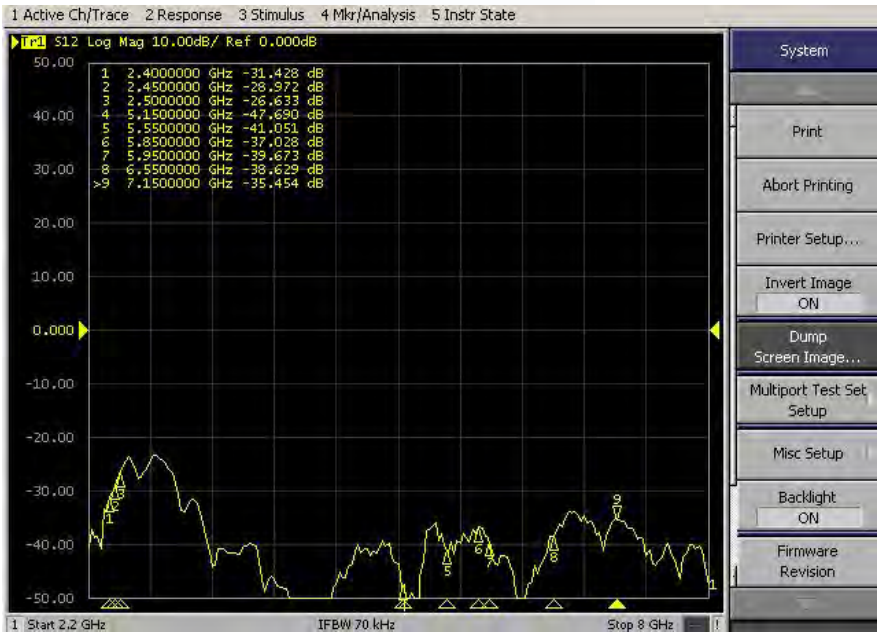


天线性能测试图:Antenna performance test diagram



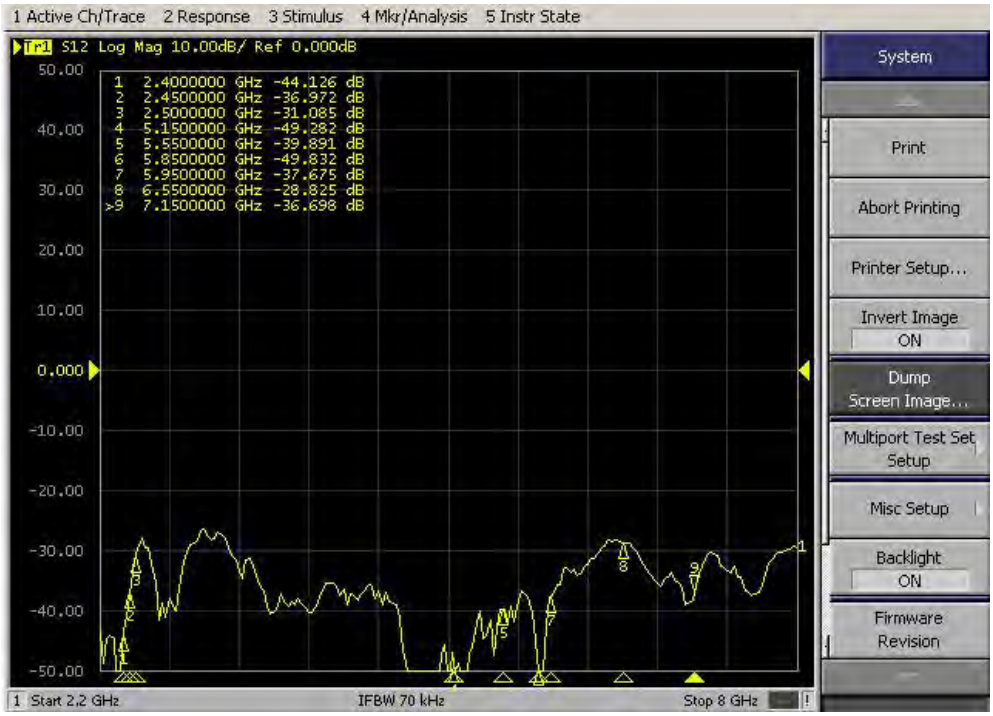
Freq/GHz	2.4	2.45	2.5	5.15	5.5	5.85	5.95	6.55	7.15
VSWR	4.6	3.2	2.8	2.3	1.5	1.4	1.4	1.3	1.1

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	5.95	6.55	7.15
S21/ dB	-31	-28	-26	-47	-41	-37	-39	-38	-35

隔离度测试图 Wi-Fi Ant-0 & Wi-Fi Ant-1 (Isolation test chart)

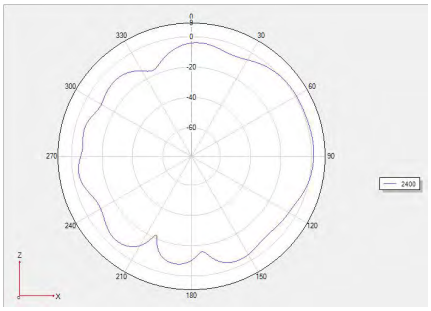


Freq/GHz	2.4	2.45	2.5	5.15	5.5	5.85	5.95	6.55	7.15
S21/ dB	-44	-36	-31	-49	-39	-49	-37	-28	-36

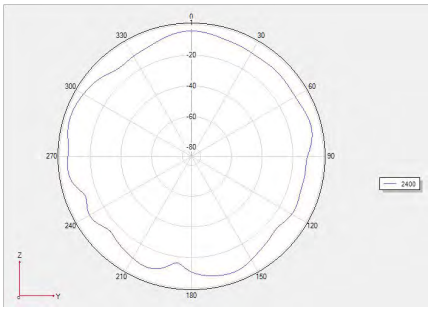
2D、3D 测试数据(2.4G/5G)：2D and 3D test data (2.4G/5G) :

Frequency	Efficiency (%)	Gain.(dBi)
2400MHz	34.14	1.53
2410MHz	35.23	1.66
2420MHz	38.23	1.46
2430MHz	39.38	1.57
2440MHz	37.44	2.23
2450MHz	35.28	2.19
2460MHz	39.72	1.65
2470MHz	39.15	2.22
2480MHz	38.12	1.62
2490MHz	41.18	1.56
2500MHz	43.34	1.96
5150MHz	45.81	4.02
5250MHz	49.89	3.06
5350MHz	48.31	4.27
5450MHz	56.36	4.28
5550MHz	59.98	3.7
5650MHz	56.36	3.88
5750MHz	51.29	4.13
5850MHz	45.92	3.4
5950MHz	47.32	3.58
6050MHz	51.17	4.23
6150MHz	62.66	4.46
6250MHz	59.02	4.54
6350MHz	59.16	3.49
6450MHz	54.7	3.73
6550MHz	52.97	3.79
6650MHz	58.61	3.69
6750MHz	60.79	4.44
6850MHz	57.45	3.89
6950MHz	59.82	4.35
7050MHz	54.58	4.13
7150MHz	63.97	4.11

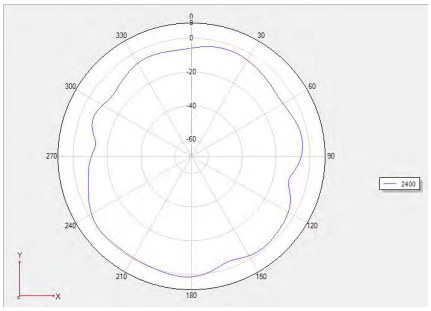
Phi =0 freq=2400MHz



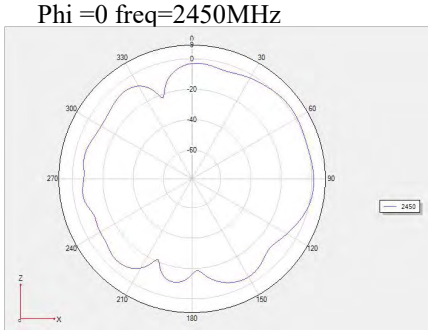
Phi =90 freq=2400MHz



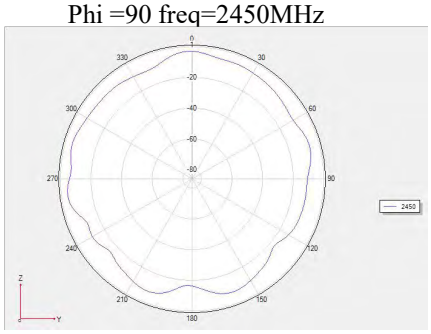
Theta =90 freq=2400MHz



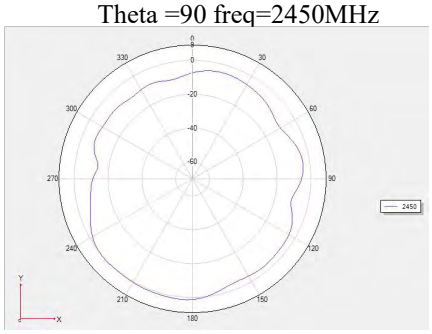
Phi =0 freq=2450MHz



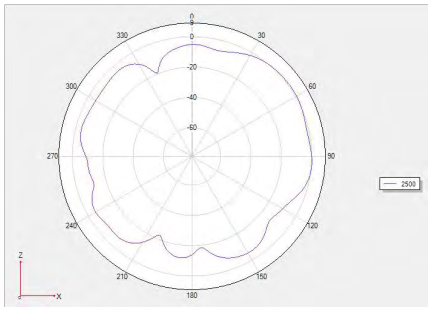
Phi =90 freq=2450MHz



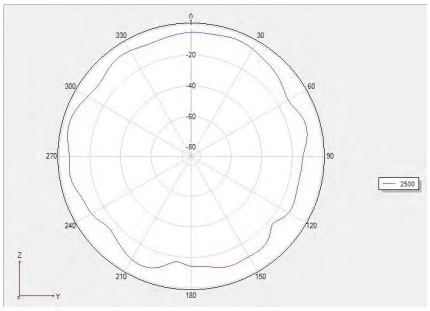
Theta =90 freq=2450MHz



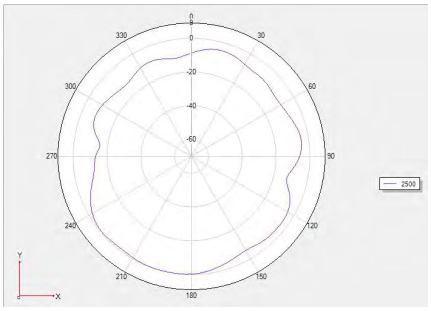
Phi =0 freq=2500MHz



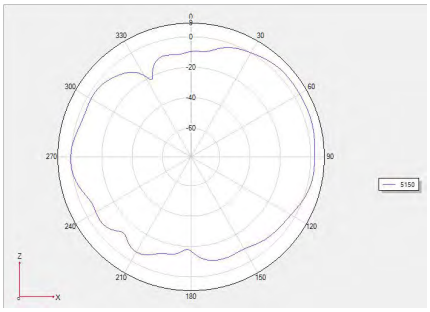
Phi =90 freq=2500MHz



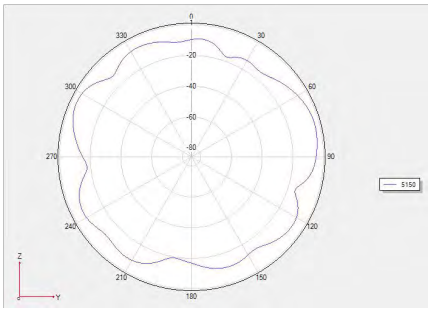
Theta =90 freq=2500MHz



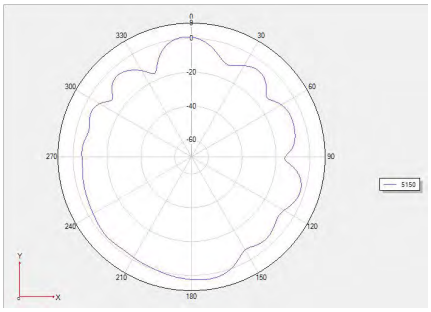
Phi =0 freq=5150MHz



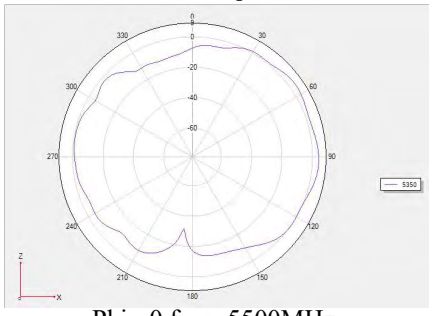
Phi =90 freq=5150MHz



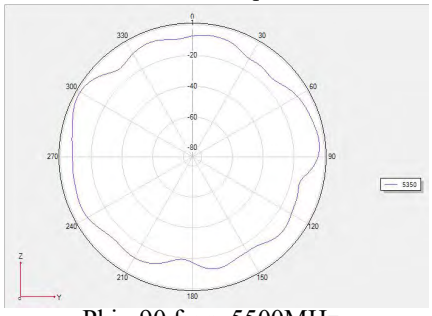
Theta =90 freq=5150MHz



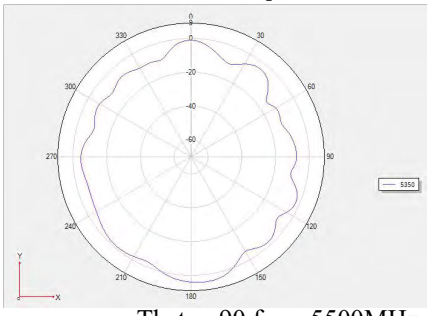
Phi =0 freq=5350MHz



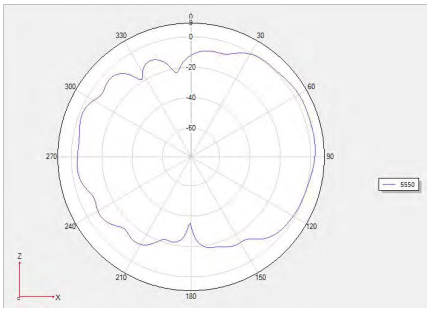
Phi =90 freq=5350MHz



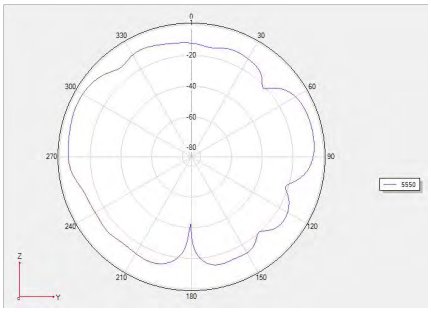
Theta =90 freq=5350MHz



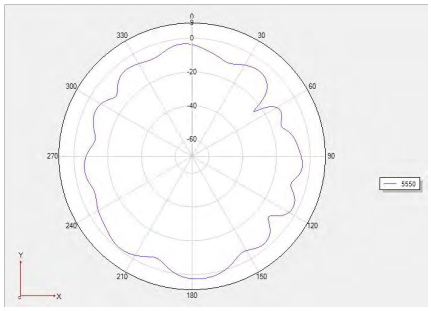
Phi =0 freq=5500MHz



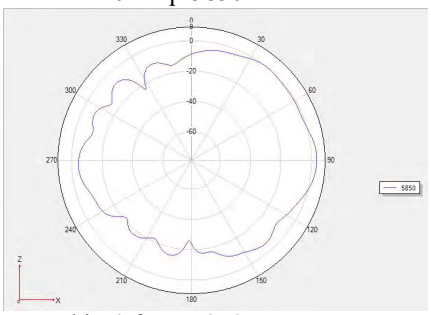
Phi =90 freq=5500MHz



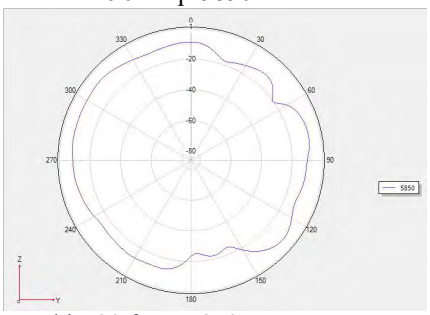
Theta =90 freq=5500MHz



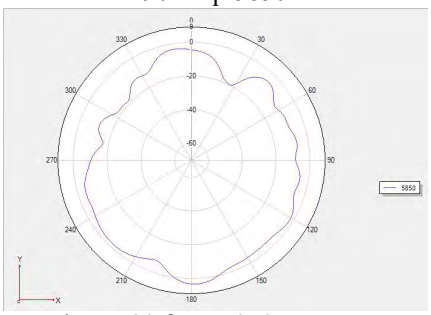
Phi =0 freq=5850MHz



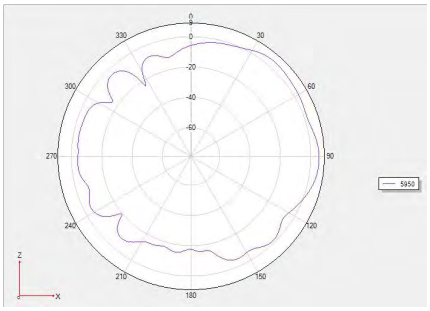
Phi =90 freq=5850MHz



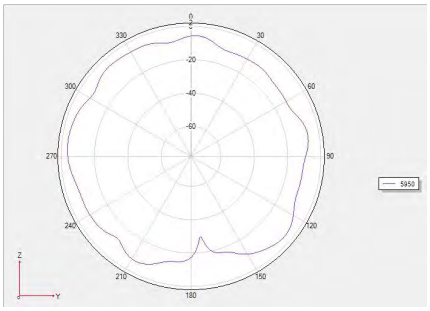
Theta =90 freq=5850MHz



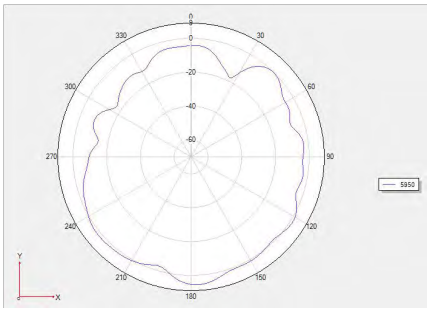
Phi =0 freq=5950MHz



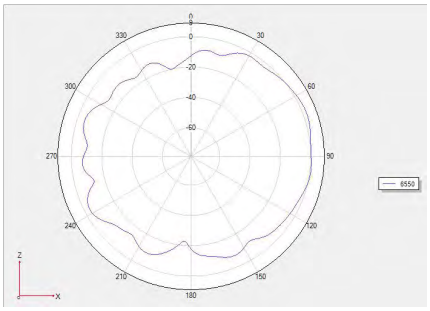
Phi =90 freq=5950MHz



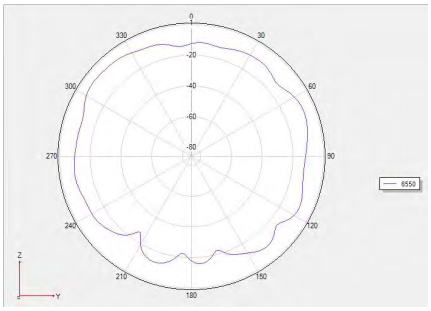
Theta =90 freq=5950MHz



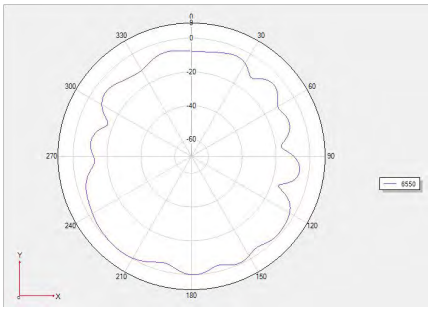
Phi =0 freq=6550MHz



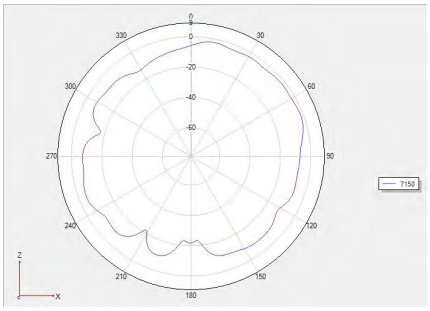
Phi =90 freq=6550MHz



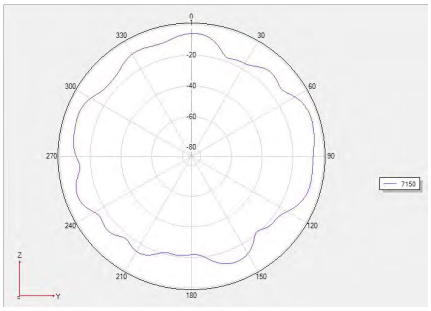
Theta =90 freq=6550MHz



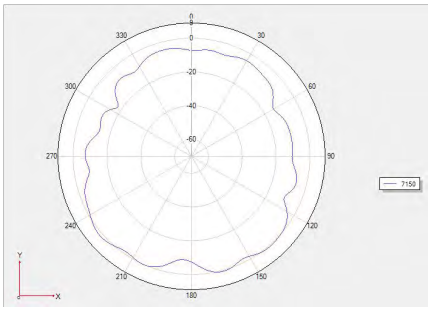
Phi =0 freq=7150MHz



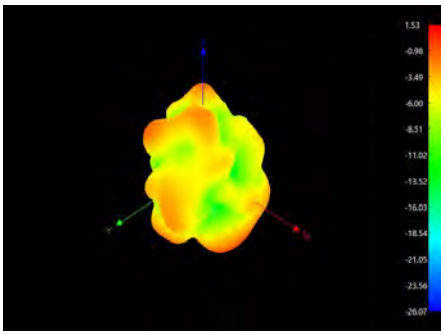
Phi =90 freq=7150MHz

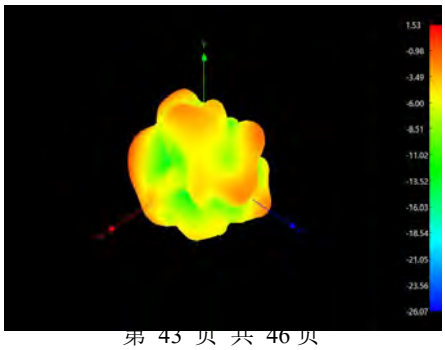


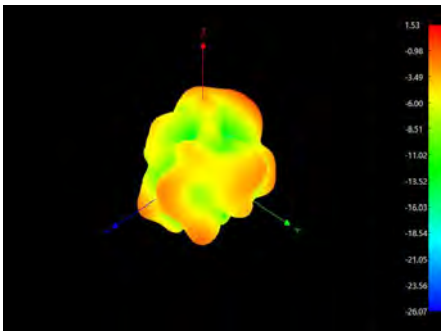
Theta =90 freq=7150MHz



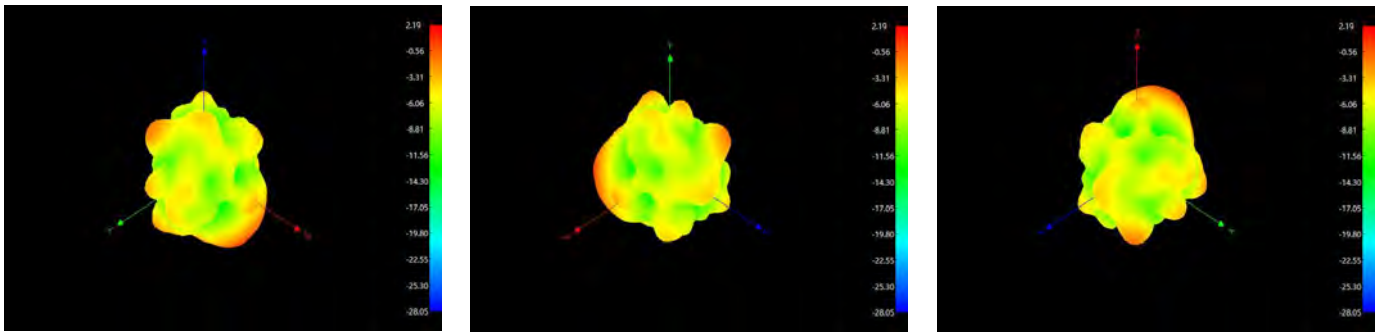
3D 2400：



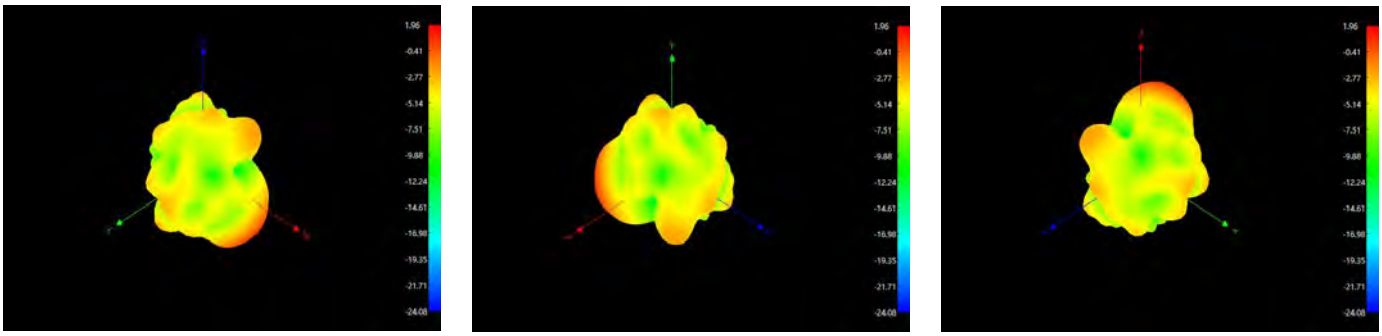




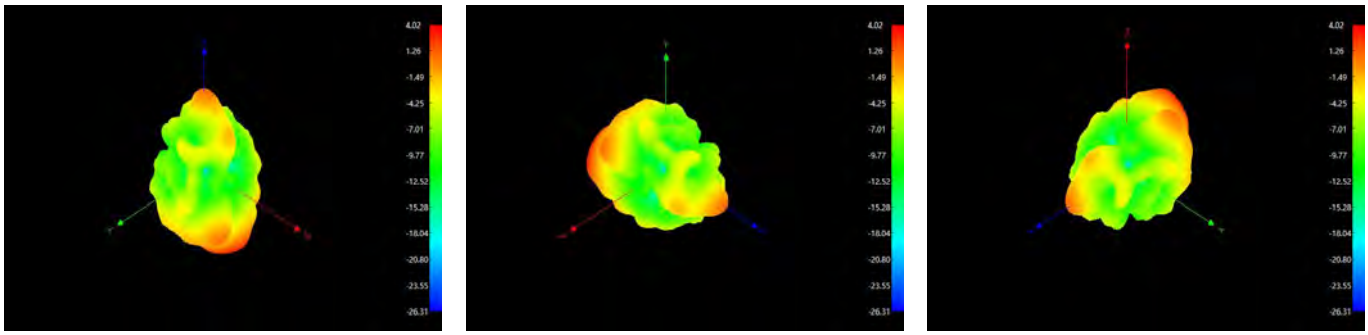
3D 2450：



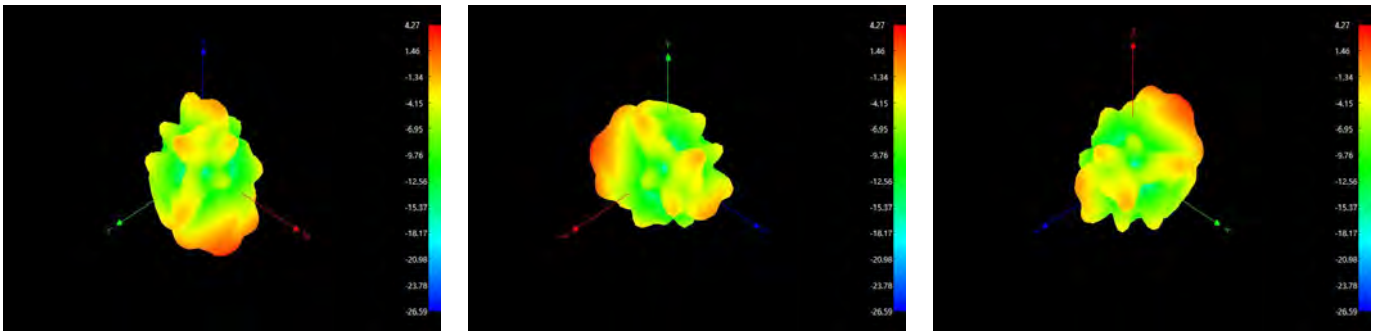
3D 2500：



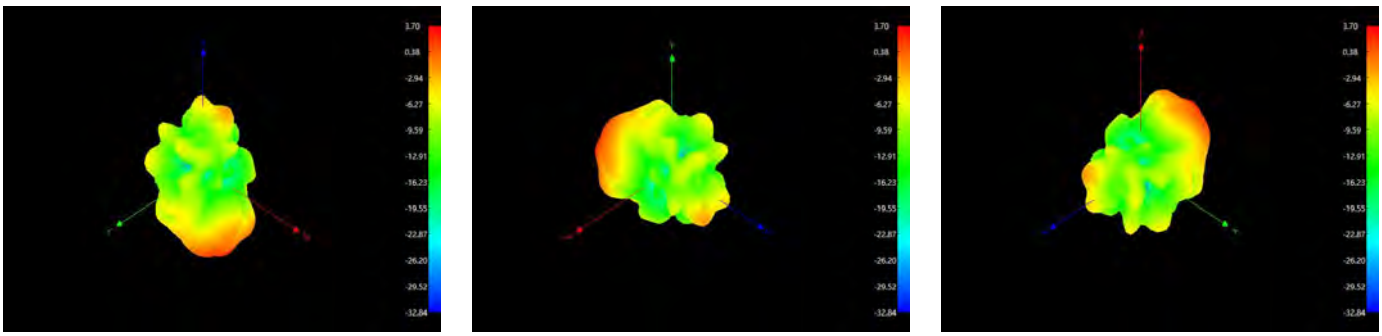
3D 5150：



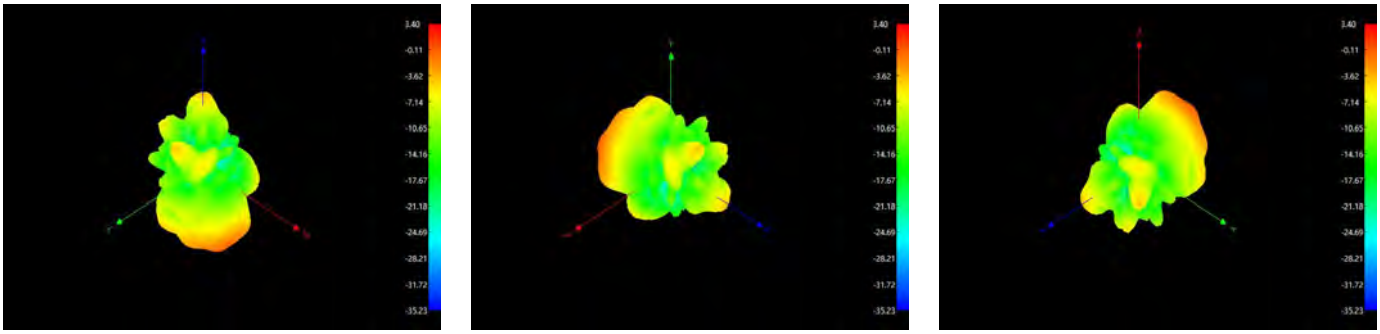
3D 5350：



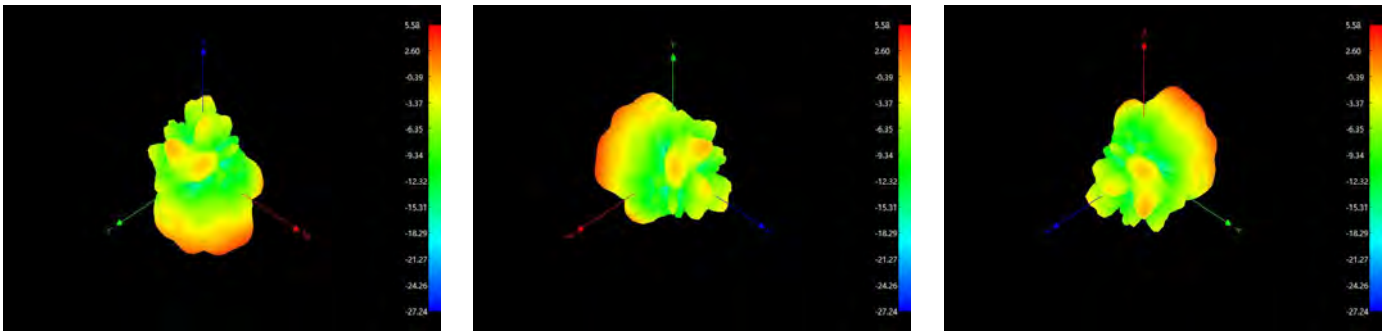
3D 5500：



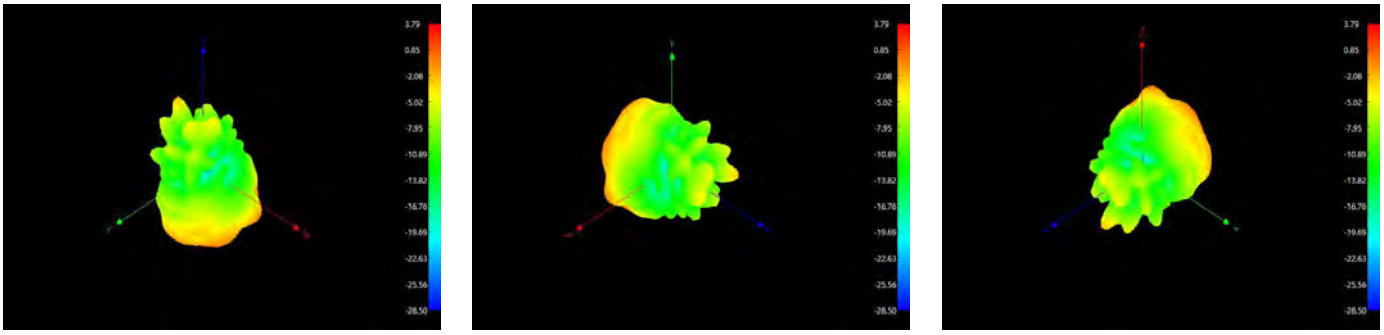
3D 5850:



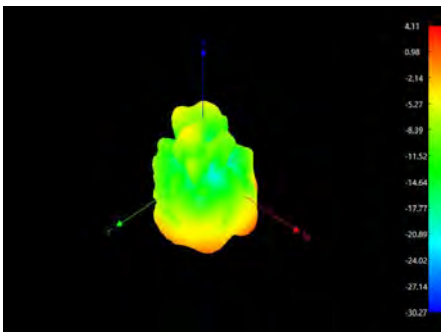
3D 5950:

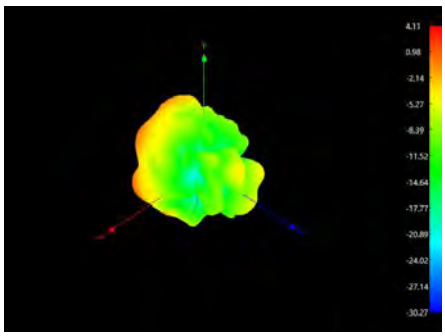


3D 6550:



3D 7150:


4.11
0.98
-2.14
-5.27
-8.39
-11.52
-14.64
-17.77
-20.89
-24.02
-27.14
-30.27


4.11
0.98
-2.14
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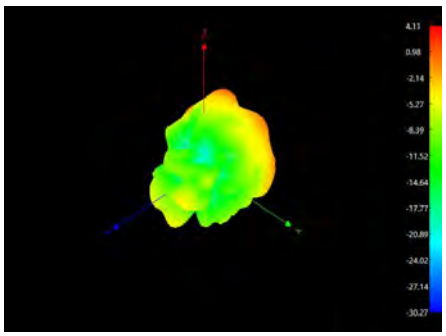
-30.27


4.11
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-30.27