



深圳市英佳创电子科技有限公司

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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 Shenzhen Huaxida Technology Co., LTD	
CUSTOMER P/N 客户料号		
PART NAME 品 名	WIFI-2 2.4G/5G 黑色内置天线 (L=40mm) WIFI-2 2.4G/5G built-in antenna (L=40mm)	
P/ N 料 号	YJC-6N040-B76	
APPROVAL REV. 版 次	A0	
DELIVERY DATE 送样日期	2024 年 11 月 07 日 November 07, 2024	
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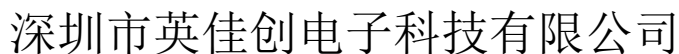
目录 (Catalogue)

1、	封面 (Cover)	1
2、	目录 (Catalogue)	2
3、	履历表 (Resume)	3
4、	产品平面图 (Product plan)	4
5、	端子平面图 (Terminal plan)	5
6、	包装方式图 (Packing pattern drawing)	6
7、	环境性能测试 (Environmental performance testing)	7
8、	天线实物图与位置图 Antenna physical diagram and location diagram	8
9、	天线性能测试图 Antenna performance test diagram	8
10、	隔离度测试图 (Isolation test chart)	9
11、	参考坐标系 (Reference Coordinate System)	10
12、	2D. 3D (WIFI-2) 测试数据 (2D. 3D (WIFI-2) test data)	11-13
13、	拉力测试报告单 (Tension test report)	14-15
14、	端子测试报告单 (Terminal test report)	16
15、	线材规格参数 (Wire specification description)	17
16、	ROHS物料控制报告 (ROHS Material control report)	18
17、	MSDS	19-23

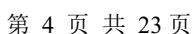


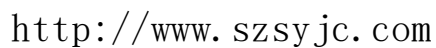
履历表(Resumer):

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 07 日 (November 07, 2024)	

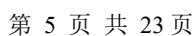


产品平面图 (Product plan):



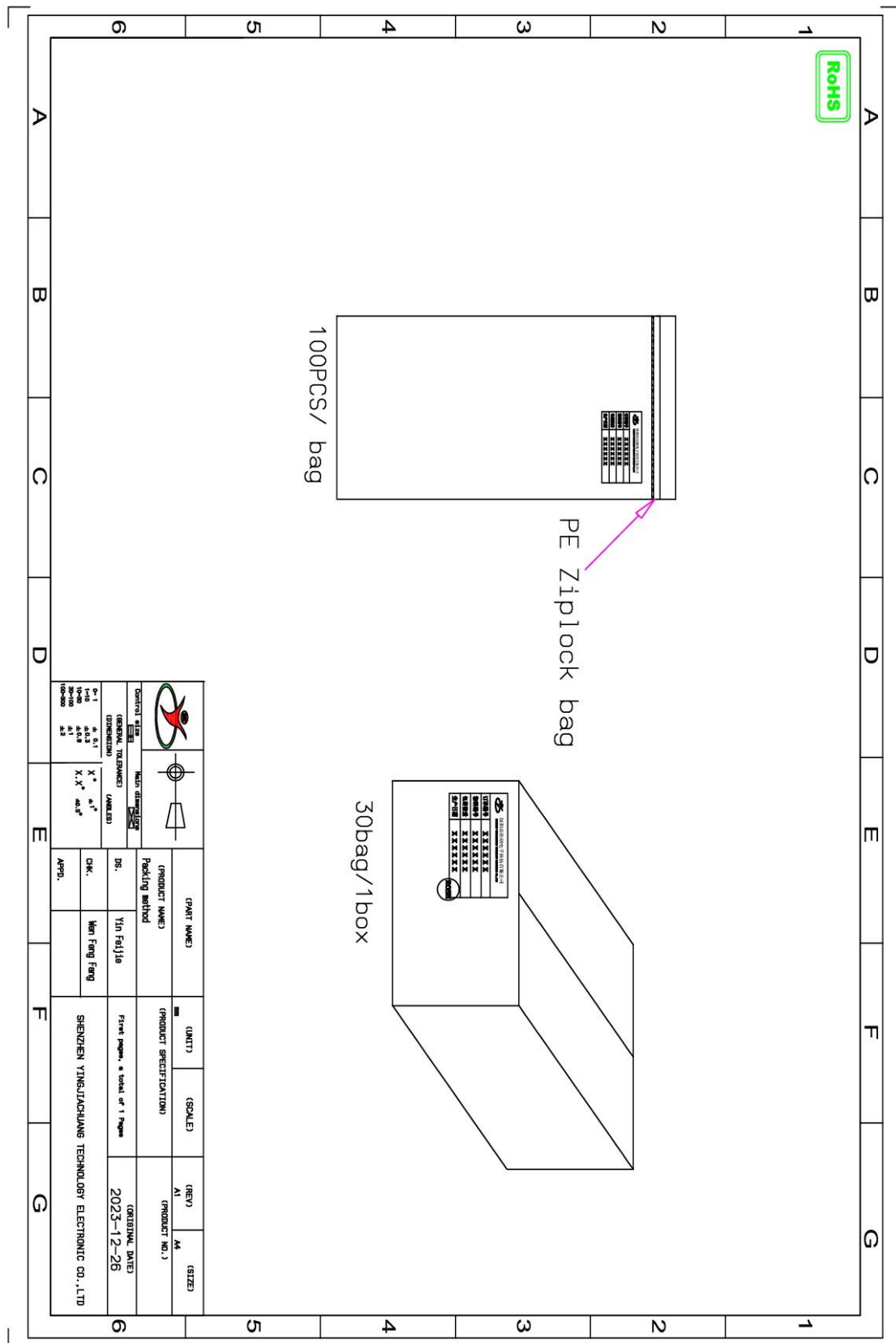


端子平面图:





包装方式图 (Packing pattern drawing) :



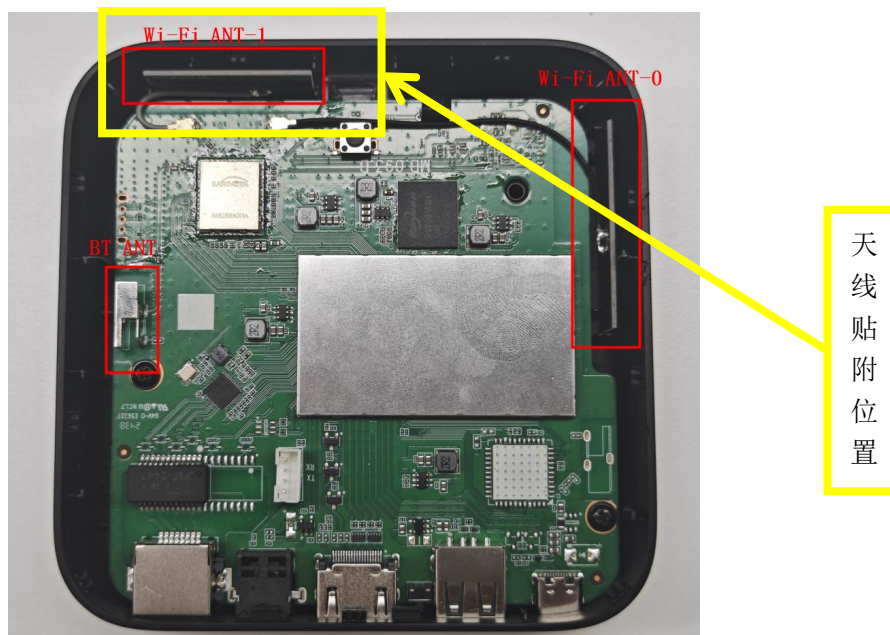


环境性能测试(Environmental performance testing):

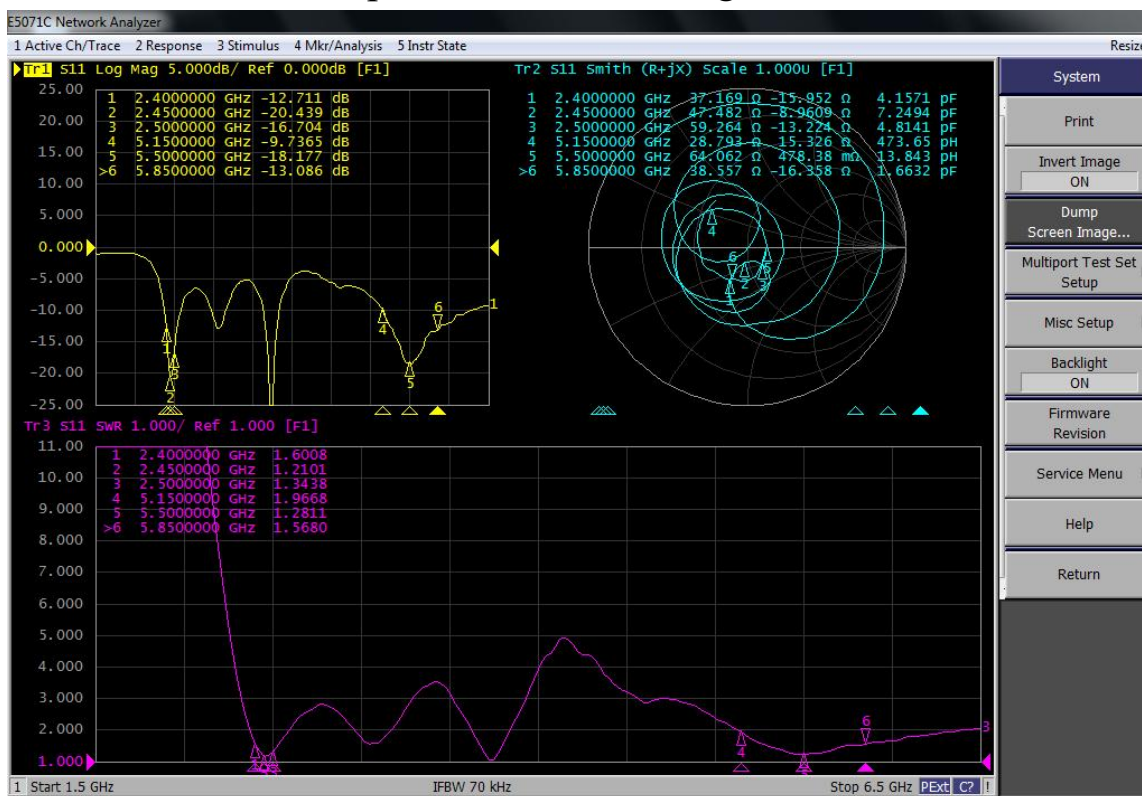
项目 (Project)	测试条件 (Test condition)	规格 (Specification)
储存环境 Storage Conditions	In the absence of specified test temperature, humidity, air pressure is as follows: 在没有指定的情况下测试温度、湿度、气压如下: 1. Temperature is $-45^{\circ}\text{C} \sim +85^{\circ}\text{C}$ 1. 温度为 $-45^{\circ}\text{C} \sim +85^{\circ}\text{C}$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



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



天线性能测试图: Antenna performance test diagram



Freq/GHz	2.4	2.45	2.5	5.15	5.5	5.85
VSWR	1.6	1.2	1.3	1.9	1.2	1.5



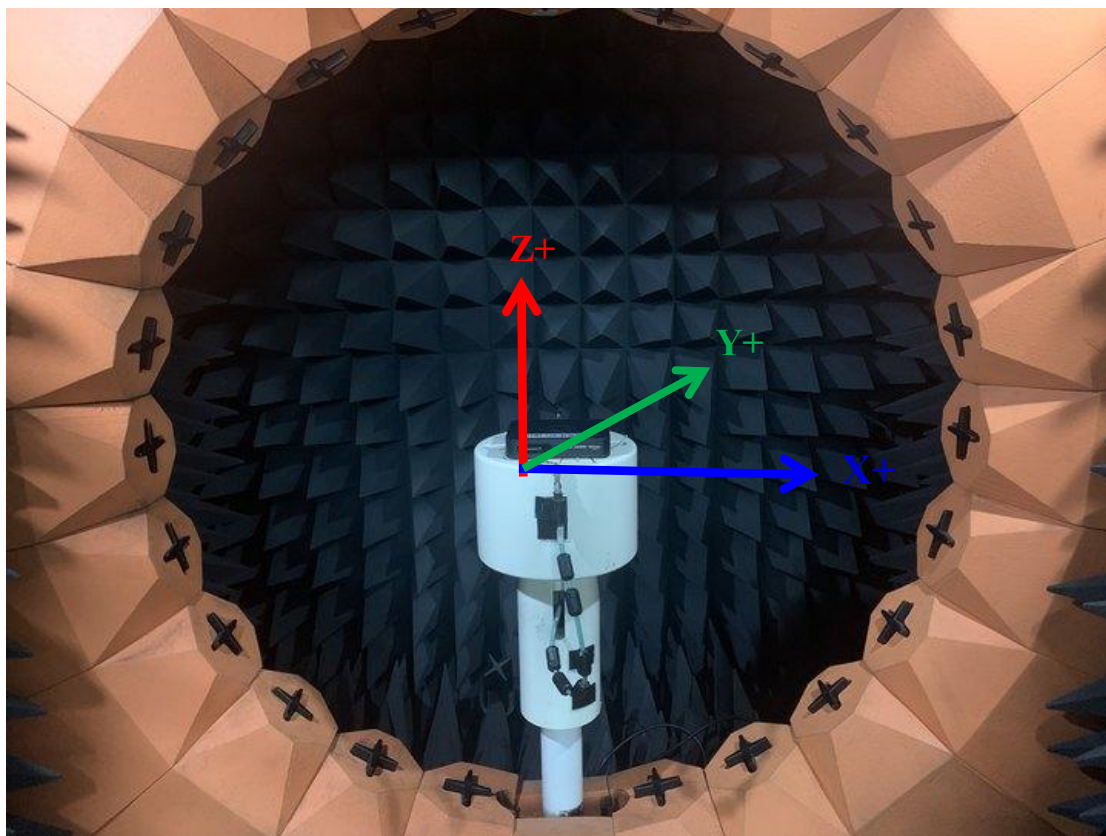
隔离度测试图 WIFI-1&WIFI-2 Isolation test diagram



Freq/GHz	2.4	2.45	2.5	5.15	5.5	5.85
S21/ dB	-25	-31	-36	-31	-39	-36



参考坐标系 Reference Coordinate System



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

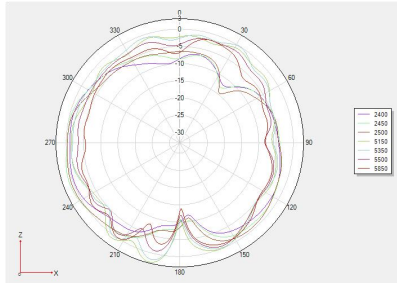


2D、3D 测试数据(WIFI-2): 2D and 3D test data (WIFI-2) :

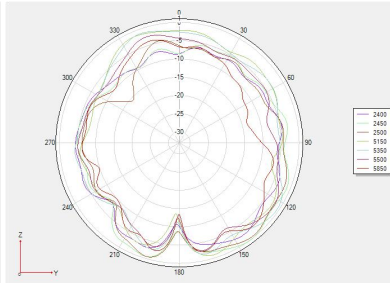
Efficiency & Gain of WIFI-2		
Frequency/Mhz	Efficiency / %	MaxGain/dBi
2400	57.28	1.11
2410	63.53	1.52
2420	63.53	1.48
2430	66.99	1.89
2440	68.71	2.07
2450	69.82	2.2
2460	69.18	2.26
2470	69.66	2.25
2480	68.71	2.3
2490	65.46	2.27
2500	64.71	2.37
5150	58.75	3.74
5200	61.66	3.67
5250	61.24	3.7
5300	61.94	3.34
5350	62.81	3.04
5400	60.81	2.51
5450	68.08	1.33
5500	65.01	0.95
5550	66.99	0.74
5600	66.83	0.82
5650	69.02	1.19
5700	66.53	0.95
5750	67.3	1.43
5800	63.24	0.8
5850	65.77	0.87



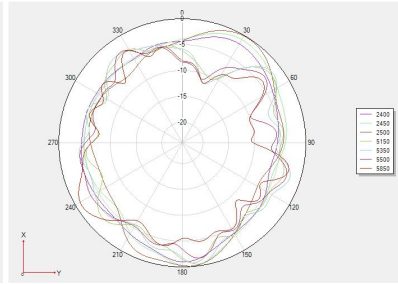
Phi =0 freq=2400MHz



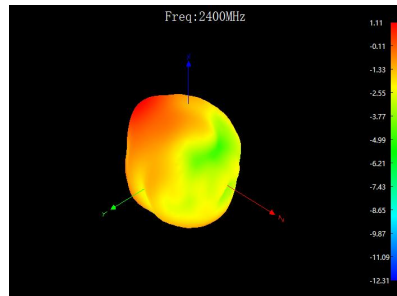
Phi =90 freq=2400MHz



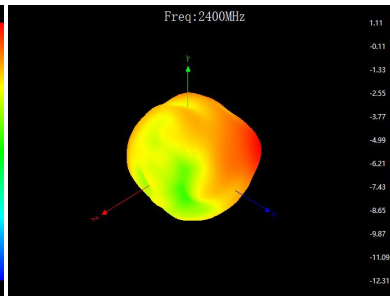
Theta =90 freq=2400MHz



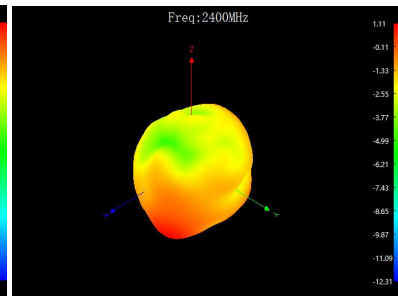
ZXY face @2400MHz



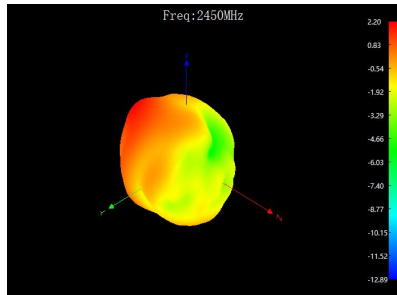
XYZ face @2400MHz



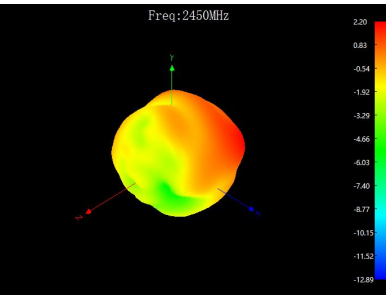
YZX face @2400MHz



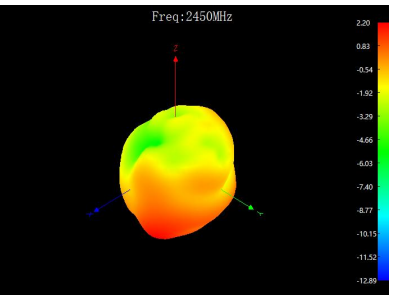
ZXY face @2450MHz



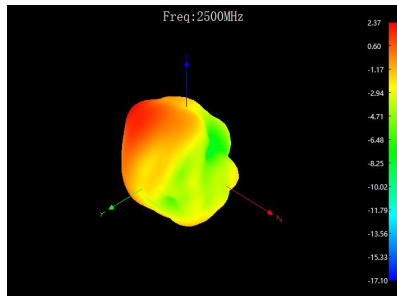
XYZ face @2450MHz



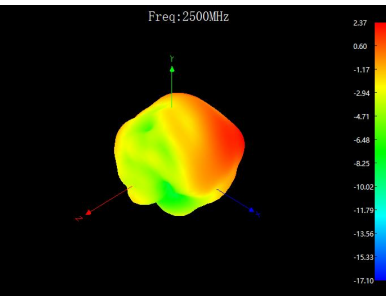
YZX face @2450MHz



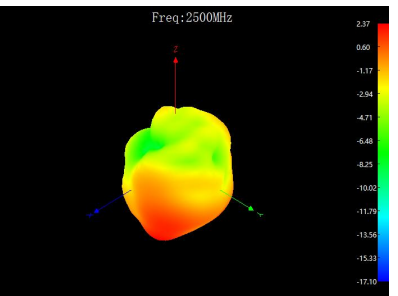
ZXY face @2500MHz



XYZ face @2500MHz

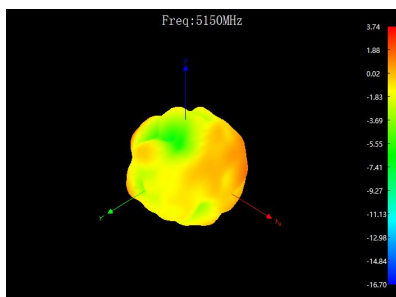


YZX face @2500MHz

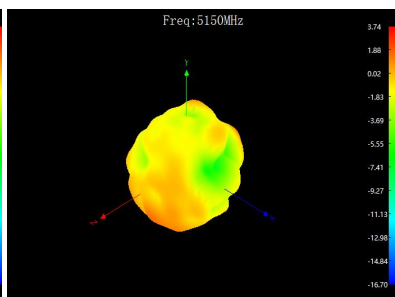




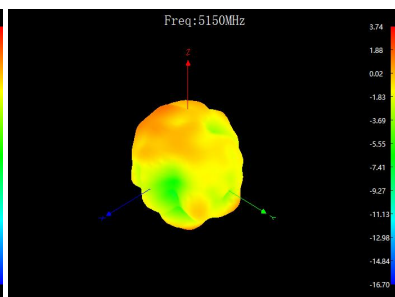
ZXY face @5150MHz



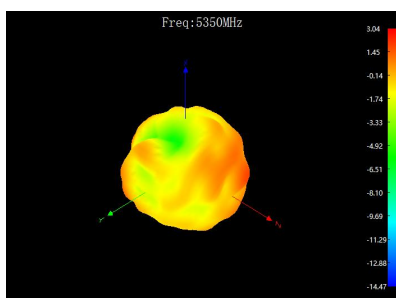
XYZ face @5150MHz



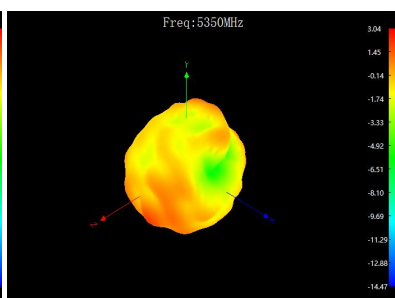
YZX face @5150MHz



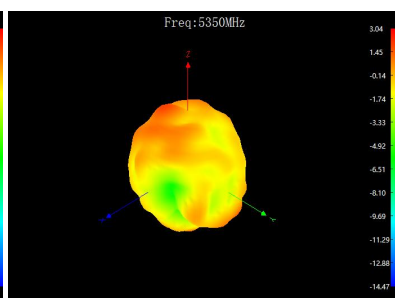
ZXY face @5350MHz



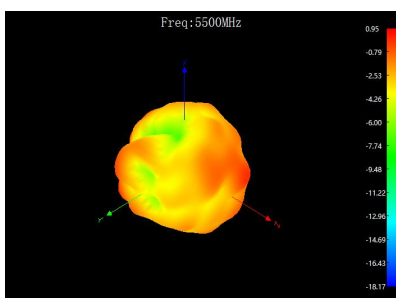
XYZ face @5350MHz



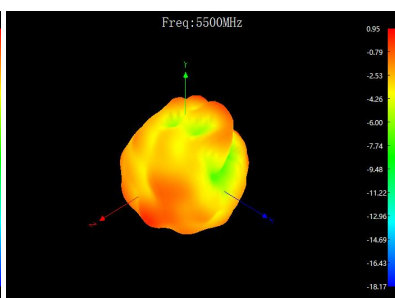
YZX face @5350MHz



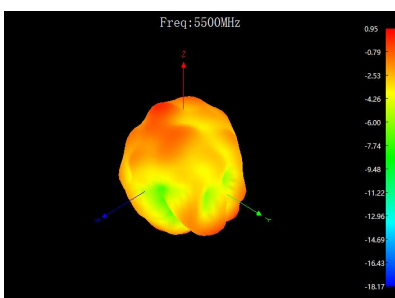
ZXY face @5550MHz



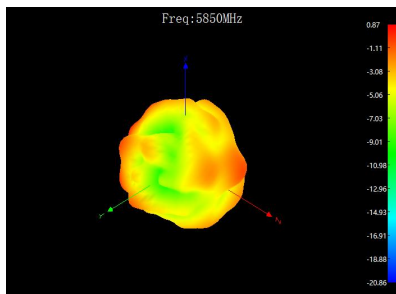
XYZ face @5550MHz



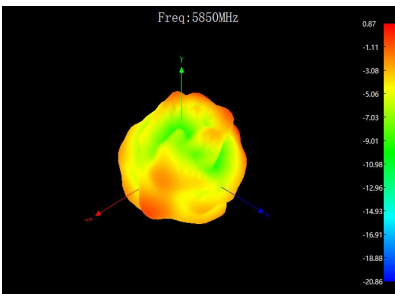
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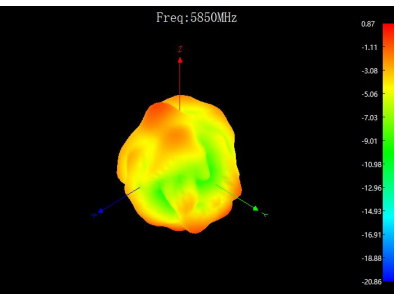
ZXY face @5850MHz



XYZ face @5850MHz



YZX face @5850MHz





测试报告单 Tension test report

报告编号: NY20241107

客户代码 Customer code	1028	客户料号 Customer material number		客户描述 Customer description	2. 4G/5G 内置天线 (L=40mm) 2. 4G/5G built-in antenna (L=40mm)
试验数量 Number of tests	5pcs	我司料号 Our company's material number	YJC-6N040-B76	我司描述 Company description	1.13 线端拉力 1.13 Wire end tension
检验标准 Inspection standard	线端测试参照行业标准 Line end test with reference to industry standards				
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	$F \geq 1.5\text{kgf}$	1.66kgf	NK-50	合格 qualified
2	线端拉力测试 Wire end tension test	$F \geq 1.5\text{kgf}$	1.68kgf	NK-50	合格 qualified
3	线端拉力测试 Wire end tension test	$F \geq 1.5\text{kgf}$	1.70kgf	NK-50	合格 qualified
4	线端拉力测试 Wire end tension test	$F \geq 1.5\text{kgf}$	1.63kgf	NK-50	合格 qualified
5	线端拉力测试 Wire end tension test	$F \geq 1.5\text{kgf}$	1.65kgf	NK-50	合格 qualified



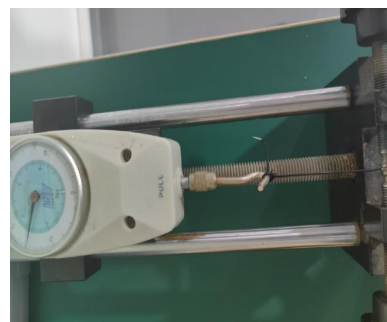
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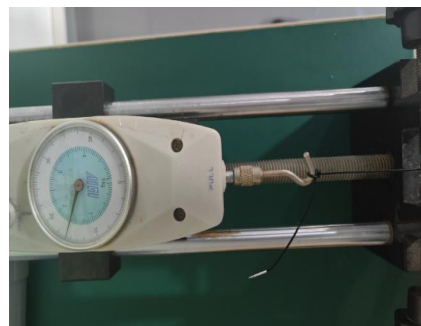
2



3



4



5



测试/日期 Test/date	陈黎明 20241107 Chen Liming 20241107	审核/日期:李湘东 Reviewed/Dated: Xiangdong 20241107	结论 conclusion	合格 qualified
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深圳市英佳创电子科技有限公司

<http://www.szsyjc.com>

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: NY20241107

客户代码 Customer code	1028	客户料号 Customer material number		客户描述 Customer description					2. 4G/5G 内置天线 (L=40mm) 2. 4G/5G built-in antenna (L=40mm)			
试验数量 Number of tests	5pcs	我司料号 Our company's material number	YJC-6N040-B76	我司描述 Company description					1.13 一代线端 1.13 generation wire end			
检验标准 Inspection standard	端子测试参照行业标准 The terminals are tested according to industry standards											
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		1.46	1.43	1.46	1.41	1.42	Tension meter	合格 qualified		
2	成型尺寸 Molding size	编织: 1.00-1.25 Weaving:1.00-1.25		1.10	1.12	1.12	1.15	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		1.27	1.26	1.29	1.27	1.25	Tension meter	合格 qualified		
4	线端拉力 Wire end tension	≥1.5kgf		1.66	1.68	1.70	1.63	1.65	Tension meter	合格 qualified		
5	膜厚测试 Film thickness test	≥0.5U "		0.63	0.65	0.60	0.64	0.63	Film thickness meter	合格 qualified		
Test/date	Liming Chen 20241107					Review/Date: Li Xiangdong 20241107					conclusio	合格 qualified



产品规格 Product Type		RF1.13 低损线		
结构图 Structure Drawing				
结构特性 Structure Characteristics				
结构 Structure	项目 Item	标准值 Standard Value		
内导体 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		
	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	镀锡铜线 TC Wire	16*4/0.05	
	标称外径 Nom.Dia(mm)	0.96±0.05		
	编织覆盖率 Coverage Ratio(%)	90±5		
护套 Jacket	材质 Material	聚全氟乙丙烯 FEP		
	标称外径 Nom.Dia(mm)	1.15±0.05		
电气性能 Electrical Characteristics				
项目 Item	标准值 Standard Value	项目 Item	频率 Frequency	标准值 Standard Value
阻抗 Impedanc (Ω)	50±2	衰减 Attenuation@20°C (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%			
最佳保存周期 The Best Save Cycle	2 个月，2 个月以上上锡效果变差，但电性能不受影响，夏季高温高湿环境开剥后需尽快流转			
加工温度 Processing Temperature	可短时承受 260℃的高温，300℃以上易发生分解，400℃以上发生显著的热分解			
铁氟龙收缩 Teflon Shrink	材料的固有属性，绝缘 0.2mm 以下，护套 0.3mm 以下			
护套窜动 Jacket Taaverse	加工长度（护套残留长度）低于 5CM 时易发生			



深圳市英佳创电子科技有限公司

<http://www.szsyjc.com>

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

兹证明向贵司交货的零组件、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
PCB	PCB	TAOEC24001815302	SGS	24/04/07	ND	15	ND	ND	ND	ND	PASS
线材(wire rod)	铁氟龙同轴 线缆 Teflon 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)	铜 cuprum	CANEC24000977302	SGS	24/01/22	ND	6	ND	ND	ND	ND	PASS
	金镀层 gold plate	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
EVA	EVA	CANEC24000276902	SGS	24/01/12	ND	ND	ND	ND	ND	ND	PASS



MSDS:

物质安全资料表

MATERIAL SAFETY DATA SHEET

1、产品及公司名称		PRODUCT AND COMPANY IDENTIFICATION	
产品名称: Product Name:		FR-4.0 覆铜箔层压板、半固化片 FR-4.0 Copper Clad Laminate、Prepreg	
产品用途: Product Use:		线路板、多层线路板 Substrate for printed circuitry, Multilayer Boards	
公司名称及地址: Name of company and Address:		金安国纪科技（杭州）有限公司 浙江杭州临安大康路 188 号 GOLDENMAX INTERNATIONAL TECHNOLOGY (HZ) LTD. NO. 188 DA KANG ROAD, LIN' AN, HANG ZHOU, ZHE JIANG P.R. CHINA	
如需更多信息，请致电。 For more information call: In case of emergency call:		0571-58688788	
2、产品的成分/		COMPOSITION/INFORMATION ON INGREDIENTS	
原料名称: INGREDIENT NAME	原料 WEIGHT%	重量% WEIGHT%	CAS 代码 CAS#
玻璃纤维 Fibrous Glass		30-60	65997-17-3
铜箔 Copper		8-40	7440-50-8
溴化环氧树脂 Brominated Epoxy Resin		20-40	68928-70-1
3、危害性		HAZARDS INDENTIFICATION	
潜在的危害健康的危险品: POTENTIAL HEALTH HAZARDS			
皮肤: Skin :		粉末将导致中等程度皮肤过敏。 Dust may cause moderate skin allergy	
眼睛: Eyes:		粉末将导致中等程度眼睛过敏。 Dust may cause moderate skin allergy. Fomes may irritate eyes.	
吸入物: Inhalation:		当生产时，玻璃纤维粉末会从玻璃基板中分散出。 Fibrous glass dust may be released from the fiber-glass cloth Substrate when Machined.	
4、首要援助措施		FIRST AID MEASURES	



皮肤: Skin:	脱下已污染衣服, 用流动水冲洗。 Wash in flowing water or shower, Remove contaminated clothing
眼睛: Eyes:	用流动水冲洗 15 分钟, 如过敏现象持续发生, 请求助医生。 Irrigate with flowing water fix 15 minutes If irritation persists Consult a Physician.
吸入: Inhalation:	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。 If overcome by dust or smoke, move to fresh air If not Breathing, give mouth-To-mouth resuscitation, call physician.
摄食: Ingestion :	如吸入大量, 致电医生 If Large amount ingested, Consult physician.
5、 火灾测试: FIRE FIGHTING MEASURES	
易燃烧性: Flammable Properties:	不适用 N/A
闪点: Flash Point	不适用 N/A
闪点方式: Flash Point Method:	不适用 N/A
自燃点温度: Autoignition Temperature:	无规定 N/A
燃烧上限: Upper Flame Limit:	不适用 N/A
燃烧下限: Lower Flame Limit:	不适用 N/A
燃烧等级: Flame Propagation Rate:	94V-0
OSHA 燃烧级别: OSHA burn Glass	不适用 N/A
灭火介质: put out a fire Media	水、CO ₂ 、及化学品 Water, CO ₂ , and dry chemical
不正常火灾及爆炸危险: Unusual fire and blast	当发生热分解时可能会释放出有毒的液态溴化物 May give off toxic hydrogen bromide when hot decomposed
特别火灾指导: Special firefighting precautions/Instruction	消防员须穿保护装置及正压呼吸设施。 Firemen should wear proper protective equipment and positive pressure self-contained breathing

6、 意外事故的应变措施

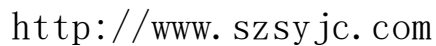
ACCIDENTAL RELEASE MEASURES



如有泄漏或其它释放: Lucase of spill or Other release	(通常需穿所荐的保护设施) 有泄漏应报告当地政府。 (always wear recommended personal protection equipment) Spills and releases may have to be reported to local government			
7、处置及储存: HANDLING AND STORAGE				
正常处置: Normal handling	通常使用所建议的个人保护装置 Always wear recommended personal protective equipment			
存储建议: Storage recommendations	不适用 N/A			
8、泄漏控制/个人防护 EXPOSUER CONTROLS/PERSONAL PROTECTION				
工程控制: Engineering controls:	使用防尘通风设施。 Use local exhaust ventilation to control dust			
个人防护措施: Personal protective equipment				
皮肤保护: Skin protection	对于短暂的接触粉末, 需要清洗身体或衣服, 无预防措施, 当接触时间延长或者接触重复发生时可戴手套或围裙。 For brief contact to dust, no prevention other than clean Body-covering clothing should be needed.			
眼睛保护: Eye protection	当使用有关的材料时使用眼睛保护装置。 Use appropriate eye protection when machining material			
呼吸保护: Respiratory protection	大气中的玻璃纤维、铜箔粉尘颗粒必须低于暴露标准。 当进行某种操作时使用规范的粉尘防毒面罩。 Atmospheric levels of Fibrous glass and copper Dust should Be maintained below exposure guidelines. When respirator Protection is required for certain operations. Use a NIOSH-approved dust respirator.			
其它建议: Additional recommendations	不适用 N/A			
暴露标准: EXPOSURE GUIDELINES				
成分名称: Ingredient name:	CAS.NO.	ACCOITLV	OSHAPEL	其它极限 Other Limit
环氧树脂粉尘: Epoxy dust:	35948-25-5	10mg/m ³	15mg/m ³	N/A
玻璃纤维粉尘: Fibrous glass dust:	65997-17-3	10mg/m ³	15mg/m ³	N/A
铜箔粉尘 (Copper dust)	35948-25-5	1mg/m ³	1 mg/m ³	N/A
9、物理及化学性能 PHYSICAL AND CHEMICAL PROPERTIES				



外观:	不适用
Appearance	N/A
物理性:	固体
Physical	Solid
分子重量:	不适用
Molecular weight	N/A
化学配方:	不适用
Chemical formal	N/A
气味:	无味, 除非加热
Odor	None, unless heated
比重:	(水=1.0) -1.6±0.40
Specific gravity	(Water=1.0) - 1.6±0.40
水溶性:	(重量%) 在水中可忽略
Solubility in water	(weight%) ignore in water
PH 值:	不适用
PH :	N/A
沸点:	不适用
Boiling point:	N/A
熔点:	不适用
Melting point	N/A
气压:	不适用
Vapor pressure	N/A
气密度:	不适用
Vapor density:	N/A
气化率:	不适用
Evaporation rate :	N/A
%挥发性:	不适用
%Volatiles:	N/A
闪点:	不适用
Flash point :	N/A
10、稳定性及反应性能 STABILITY AND REACTIVITY	
通常稳定?	稳定
Normality stable?	Stable
不兼容性:	不稳定
Incompatibilities:	Not determined
危险的腐化产品:	CO CO ₂ HBD NOX (当加热超过 300℃)
Hazardous decomposition Products	CO CO ₂ HBD NOX(If heated in excess of 300 deg C)
危险聚合物?	无
Hazardous polymerization	None



第 23 页 共 23 页