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承认书 Antenna SPEC

客户名称 Customer name: 国光电器

调试项目 Customer project: 音箱-A3130C

客户料号 Customer P/N: EAN0052902

博安通料号 B&T P/N: 74220718

规格描述 Spec.: 内置天线 -2.4G- 黑色 1.13 锡锡线 -1 代端子
-L=120mm-FPC-40.5×7.4mm

Spec.: Built-in Antenna - 2.4G - Black 1.13 Tin Wire - 1st Generation Terminal -
L=120mm - FPC - 40.5×7.4mm

出厂签章 Sealed by corporation:

编写 compilation	审核 verify	批准 approval
许张金 Xuzhangjin	柳伟 LiuWei	刘立华 Liulihua

客户承认签章 Sealed by customer:

检查 check	审核 verify	批准 approval

博安通联系方式 Contact information of B&T:

业务联系人: 龙明国 Contact person for sales: Longmingguo	手机 MB: 18576042661	邮箱 E-mail: longmg@tech-now.com
技术联系人: 柳伟 Contact person for technical: LiuWei	手机 MB: 19971185956	邮箱 E-mail: liuwei@tech-now.com
品质联系人: 谭杰鑫 Contact person for Quality: Tanjiexin	手机 MB: 18181766292	邮箱 E-mail: tanjx@tech-now.com

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3、产品图面 Product drawing

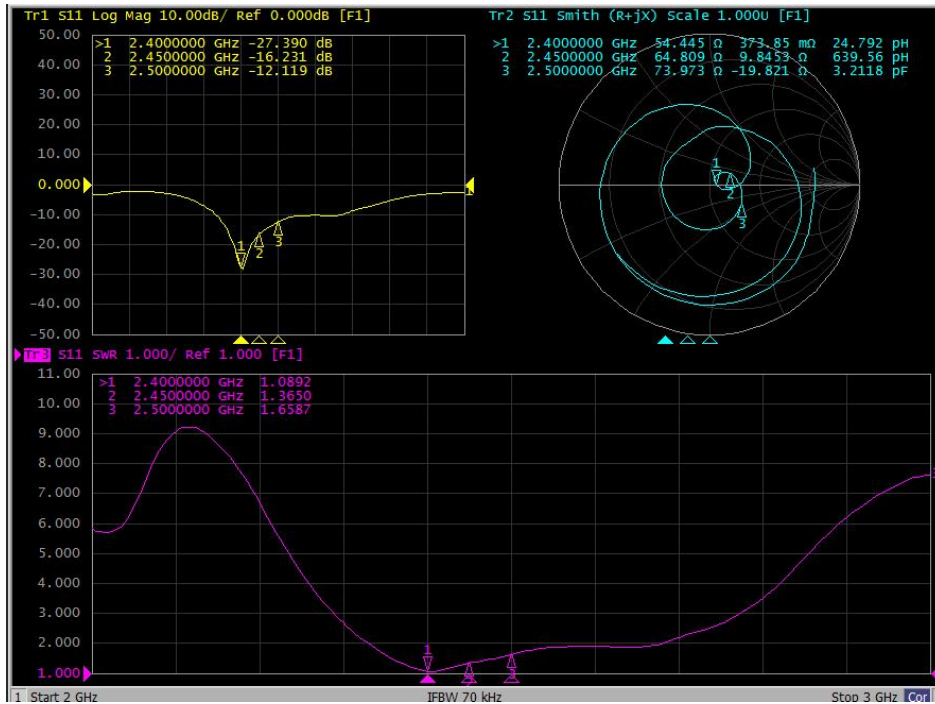
[illegible]

4、性能参数 Properties ¶meter

电气参数 Electrical parameter	
频率范围 Freq Range	2400~2500MHz
输入阻抗 Characteristic Impedance	50 Ω
驻波比 VSWR	对照工程封样
功率容量 The Max input power	<10w
极化方式 Polarization mode	线极化 Linear polarization
辐射方向 Radiation direction	全向 omnidirectional
接头型号 Joint type	端子 IPEX connector
机械参数 Mechanical parameter	
线长 Length	120 $\pm$ 3mm
端子维持力 Maintain the force	≥ 0.8 kgf
同轴电缆 Coaxial cable	黑色 1.13 锡锡线 Black 1.13 tin wire
盐雾测试 Salt spray test	机壳内 24H, 机壳 48H 24H inside the casing, 48H inside the casing
环境参数 Environment parameter	
工作温度 Operating Temp	-30 $^{\circ}$ C~65 $^{\circ}$ C

6、电气性能测试报告 Electrical test report (整机测试 Whole machine testing)

天线 S11 参数图 Antenna S11 parameter diagram



驻波比数据 Standing wave ratio data

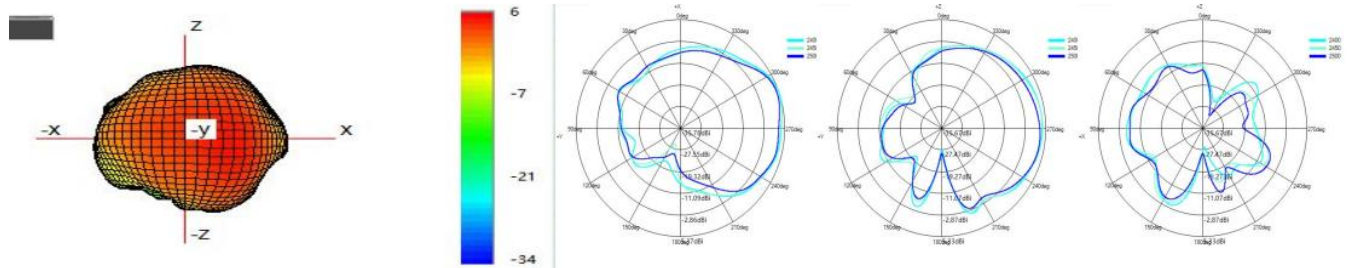
Freq/MHz	2400MHz	2450MHz	2500MHz
VSWR	1.08	1.36	1.65

天线暗室测试数据 Antenna darkroom test data

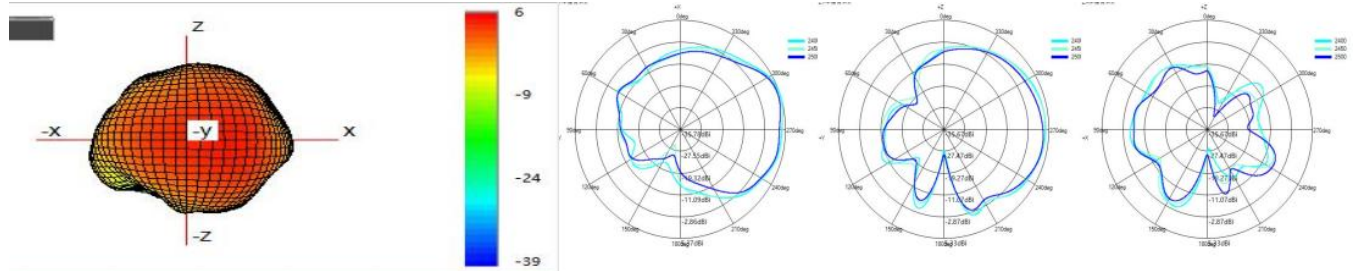
Freq(MHz)	Gain(dBi)	Efficiency(%)
2400	5.37	54.10
2410	5.30	54.83
2420	5.20	55.01
2430	5.11	55.24
2440	5.06	55.59
2450	5.02	54.64
2460	4.91	54.08
2470	4.84	53.40
2480	4.78	52.42
2490	4.65	51.92
2500	4.46	51.58

➤ 天线方向图 (Antenna radiation pattern)

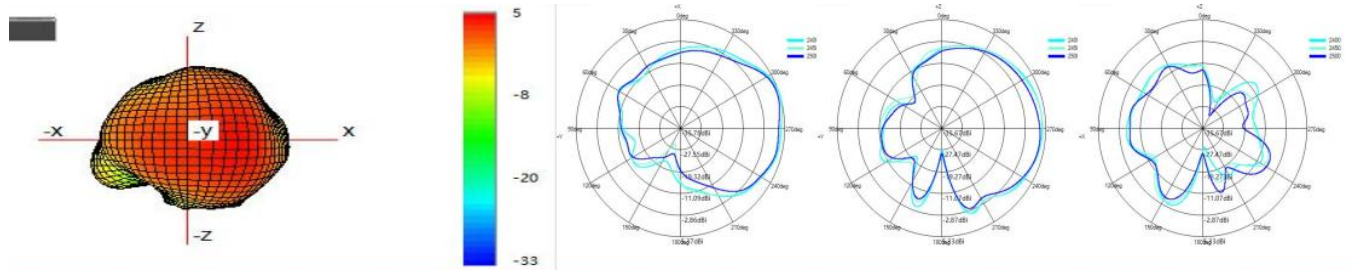
2400M 3D-E1-E2-H



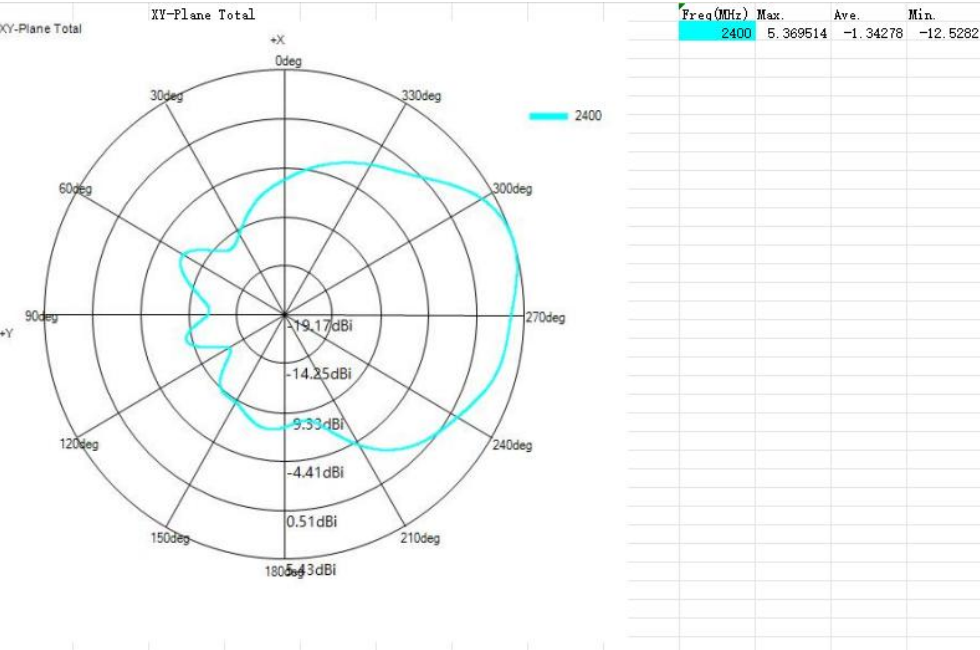
2450M 3D-E1-E2-H



2500M 3D-E1-E2-H



➤ 最大增益对应频点 2D 图（2400MHZ）



➤ 有源 OTA 数据

DUT	Equipment	Brust type	Packet Type	Test Item	Channel	Frequency (MHz)	EVT3 传导 (dBm)	EVT3 Result (dBm)
A3130C	CMW500	Basic Rate	DH1	发射功率	0	2402	9.29	6.57
					39	2441	9.1	6.71
					78	2480	9.29	6.08
				接收灵敏度	0	2402	-93.5	-90.46
					39	2441	-93.5	-90.22
					78	2480	-93	-89.71

6、材料成分及有害物质表 List of Material Composition and Hazardous Substances

项次 Item	规格 Specification	材质 Texture of material	RoHS 检验结果 (PPM) ROHS Test Results (PPM)						ICP 检测编号 ICP test number	检测时间 Test time
			Cd	Pb	Hg	Cr+6	PBB	PBDE		
1	线 wire	FEP	ND	ND	ND	ND	ND	ND	NGBPC24007471211	2024/12/23
		镀锡铜线 Tinned wire	ND	ND	ND	ND	ND	ND	A2250416468101001	2025/6/20
2	端子 Terminal	PBT	ND	ND	ND	ND	ND	ND	A2250134628103008E	2025/3/12
		磷青铜 Phosphor Bronze	ND	4	ND	ND	ND	ND	CANEC24029407215	2025/1/8
3	FPC	PI	ND	ND	ND	ND	ND	ND	SHAEC24028809005	2024/12/20
		背胶 Tape	ND	ND	ND	ND	ND	ND	SZXEC25003068038	2025/8/28
4	海绵 Sponge	PU 泡棉 PU Sponge	ND	ND	ND	ND	ND	ND	A2250010678101001	2025/1/9
		背胶 Tape	ND	ND	ND	ND	ND	ND	CANEC25016804237	2025/7/22

产品包装规范

PACKING CRITERION

产品料号 P/N: 74220718			
产品规格: 内置天线-2.4G-黑色 1.13 锡锡线-1 代端子-L=120mm-FPC-40.5×7.4mm Spec: Built-in Antenna - 2.4G - Black 1.13 Tin Wire - 1st Generation Terminal - L=120mm - FPC - 40.5×7.4mm			
一、标签要求（根据客户名称参考对应的成品标签制作要求，无要求即按普通标签要求） contents of label(according to the customer's name, refer to the corresponding finished product label production requirements. If there is no requirement, it will follow the ordinary label requirements.)			
内外标签 长 10cm 宽 6cm 左右 The inner and outer labels are about 10cm long and 6cm wide			
需方 buyer	*****		
供方 vender	四川博安通通信技术有限公司 Sichuan B&T Technology Co., Ltd.		
物料编码 Purchase No	*****		
生产单号 Material No.	*****		
品名规格 Name specification	*****	检验员 QC	**
数量/单位 Q'ty/Unit	*****	日期 Manufacture date	****.***
追溯码 Trace code	*****	流水号 Serial number	**

二、装箱要求 Packing requirement

作业说明 Operating description:

1. 内包装 inner packing:

产品 50 PCS/小袋/small bag

200 PCS/大袋 big bag

2. 外包装 outer packing:

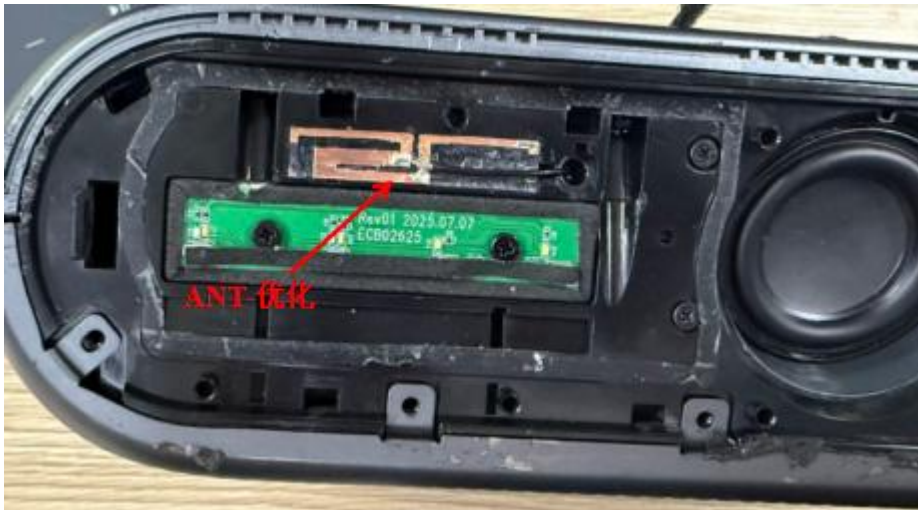
根据实际包装定数量 Quantity according to actual packing/箱 carton

注意事项 Notice:

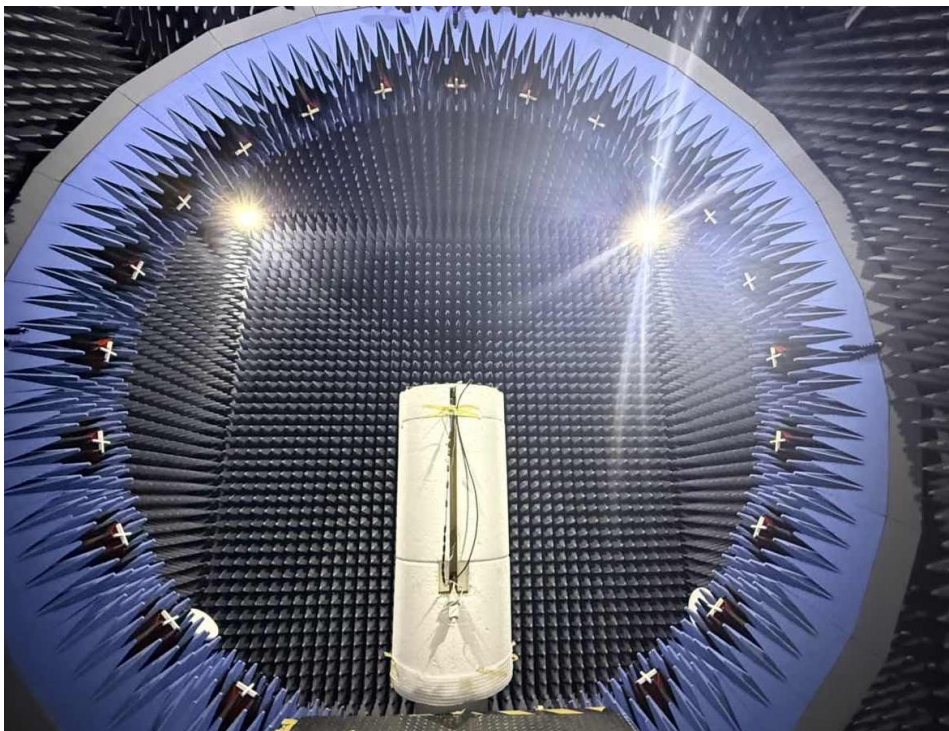
1. 是否要增设隔板、珍珠棉 Whether to add partitions, pearl cotton;

2. 标签的贴附，如 ROHS 等 Labeling, such as ROHS;

8、天线整机安装示意图 Antenna installation position Diagram



9、天线测试暗室摆放位置 Location of antenna test darkroom



10、可靠性测试要求 Reliability test requirements

序号 Serial Number	可靠性试验名称 Reliability Test Name	试验条件 Experimental conditions	判定标准 Judgment criteria
1	恒温恒湿试验 Constant temperature and humidity test	高温:70℃, 湿度:80%RH 24H; 低温 -40℃ 24H;共持续 48H; High temperature: 70 ℃, humidity: 80% RH for 24 hours; Low temperature -40 ℃ for 24 hours; continuous for 48 hours in total;	试验前后外观要求: 金属表面 镀层应无剥落, 裂痕起皱, 分 离等。非金属部分不应变色, 发生开裂, 变形, 脱胶等不良; 电气性能测试符合标准要求; Appearance requirements before and after the experiment: The metal surface coating should be free of peeling, cracks, wrinkles, separation, etc. Non metallic parts should not discolor, crack, deform, or peel off; The electrical performance test meets the standard requirements;
2	高低温冷热冲击试验 High and low temperature thermal shock test	70℃持续 2H、-40℃持续 2H, 6 次循环, 共 24 小时; 70 ℃ for 2 hours, -40 ℃ for 2 hours, 6 cycles, for a total of 24 hours;	试验前后外观要求: 金属表面 镀层应无剥落, 裂痕起皱, 分 离等。非金属部分不应变色, 发生开裂, 变形, 脱胶等不良; 电气性能测试符合标准要求; Appearance requirements before and after the experiment: The metal surface coating should be free of peeling, cracks, wrinkles, separation, etc. Non metallic parts should not discolor, crack, deform, or peel off; The electrical performance test meets the standard requirements;

3	盐雾试验 Salt spray test	配制浓度 $(5 \pm 1)\%$ NaCl 溶液，确保盐溶液的 pH 值为中性 $(6.5 \sim 7.2)$；压力桶温度 $47 \pm 1^\circ\text{C}$，喷雾压力保持在 $1.00 \pm 0.1\text{kgf/cm}^2$，喷雾量 $1.0 \sim 2.0\text{ml}/80\text{cm}^2/\text{h}$；试验时间 24H； Prepare a $(5 \pm 1)\%$ NaCl solution to ensure that the pH value of the salt solution is neutral $(6.5-7.2)$; The pressure barrel temperature is $47 \pm 1^\circ\text{C}$, the spray pressure is kept at $1.00 \pm 0.1\text{kgf/cm}^2$, and the spray volume is $1.0 \sim 2.0\text{ml}/80\text{cm}^2/\text{h}$; The experiment lasted for 24 hours;	产品表面外露区域不可有氧化、锈蚀现象；其它区域盐雾试验后的氧化/生锈面积 $< 1.0\%$ The exposed area of the product surface must not have oxidation or rust; Oxidation/rusting area after salt spray test in other areas $< 1.0\%$
4	端子维持力试验 Terminal holding force test	常温常湿；试验维持力要求： $\geq 0.8\text{kgf}$； Normal temperature and humidity; Test maintenance force requirement: $\geq 0.8\text{kgf}$;	端子与线缆无脱落、松动等；测试后电气性能测试符合标准要求； The terminals and cables are not loose or detached; The electrical performance test after testing meets the standard requirements;
5	端子插拔力试验 Terminal insertion and extraction force test	常温常湿；端子与座子正常连接，插入力 $0.8 \sim 3\text{kgf}$；拔出力 $\geq 0.8\text{kgf}$； Normal temperature and humidity; The terminal and seat are connected normally, with an insertion force of $0.8 \sim 3\text{kgf}$/extraction force of $\geq 0.8\text{kgf}$;	端子插入力/拔出力符合要求，且端子无脱落、损伤等不良； The insertion/extraction force of the terminal meets the requirements, and the terminal has no defects such as detachment or damage;

盐雾试验测试报告
Salt spray test report

客户/供应商 Customer/Supplier	国光	订单号 Order No.	
物料编码 Material Code	Y2506301328	产品名称 Product Name	内置天线-2.4G-黑色1.13锡锡线-1代端子-L=120mm-FPC-40.5×7.4mmmm
试验数量 Test Quantity	5pcs	试验日期 Test Date	2025.11.1-2025.11.2
评级标准 Standard	GB/T2423.2-2001	试验设备名称 Equipment	盐雾试验机 Salt spray testing machine
试验类型 Test Type	☐ 物料 (material) ☐ 成品 (finished product) ☒ 样品 (Sample)		
判定标准 Criteria	产品表面外露区域不可有氧化、锈蚀现象；其它区域盐雾试验后的氧化/生锈面积<1.0% The exposed area of the product surface must not have oxidation or rust; Oxidation/rusting area after salt spray test in other areas<1.0%		

试验条件:

1. 配制浓度 (5±1) %，雾化后的收集液，不得重复使用。将雾化前的盐溶液置于 35±2℃环境，确保盐溶液的 pH 值为中性 (6.5~7.2)；

压力桶温度 47±1℃，喷雾压力保持在 1.00±0.01kgf/cm²，喷雾量 1.0~2.0ml;/80cm²/h；

试验室温度 35±1℃，湿度须保持在>85%RH；

2. 在工作空间内任一位置，用面积为 80cm² 的漏斗收集连续雾化24H的盐雾沉降量，平均每小时收集到 1.0~2.0mL 的溶液。测试时间48H

Experimental conditions:

1. The collected liquid after atomization with a concentration of (5 ± 1)% should not be reused. Place the salt solution before atomization in an environment of 35 ± 2 °C, ensuring that the pH value of the salt solution is neutral (6.5-7.2)；

The pressure barrel temperature is 47 ± 1 °C, the spray pressure is kept at 1.00 ± 0.01kgf/cm², and the spray volume is 1.0~2.0ml;/80cm²/h；

The laboratory temperature is 35 ± 1 °C, and the humidity must be maintained at>85% RH；

2. Collect the salt spray deposition of continuous atomization for 24 hours at any position in the workspace using a funnel with an area of 80cm², and collect an average of 1.0-2.0mL of solution per hour. Testing time: 48 hours

附图

检验记录
Inspection Records

样品编号 sample number	1 #	2 #	3 #	4 #	5 #
试验前外观 Appearance	合格 qualified	合格 qualified	合格 qualified	合格 qualified	合格 qualified
试验后外观 Appearance	合格 qualified	合格 qualified	合格 qualified	合格 qualified	合格 qualified
试验前性能测试 Performance	合格 qualified	合格 qualified	合格 qualified	合格 qualified	合格 qualified
试验后性能测试 Performance	合格 qualified	合格 qualified	合格 qualified	合格 qualified	合格 qualified
实验结果判定 Experimental	☒ 合格 (qualified) ☐ 不合格 (unqualified)				
测试 test	蒋红英 Jiang Hongying	审核 to examine	谭杰鑫 Tan Jiexin	核准 approval	曾康 Zeng Kang