

Specification for Approval

Customer Name: Chongqing Luxiangjia Technology Co., Ltd.

Part Name : Built-in Antenna - 2.4G - Black 1.13 Tin Wire
- Gen 1 Terminal - L=45mm - FPC - 27×13.5mm

Customer PN: 0184000127

Vendor PN: 74220685

Vendor confirmation					
department	compilation	verify	approval		
autograph	XuZhangjin	ZhangGuangwei	LiuLihua		
date	2025.07.31	2025.07.31	2025.07.31		
Customer confirmation					
department					
autograph					
date					

Name of contractor: Sichuan B&T Technology Co., Ltd.

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Contents

- 一、 Revision History
- 二、 2D Drawings
- 三、 Package Drawing
- 四、 QC Flow Chart
- 五、 Reliability Report
- 六、 Electrical Performance Test Report
- 七、 RoHS Report & Material Report
- 八、 SIP
- 九、 Antenna Installation Drawing

revision History

Version	Date	Develop/revise content	Formulate	approval
A0	2025.07.31	First formulation	XuZhangjin	ZhangGuangwei/ LiuLihua
A0-0804	2025.08.04	Add Customer Part Number	XuZhangjin	ZhangGuangwei/ LiuLihua

三、Package Drawing

Product part number: 74220685

Product Specifications: Built-in Antenna - 2.4G - Black 1.13 Tin Wire - Gen 1 Terminal - L=45mm
- FPC - 27×13.5mm

一、Label requirements (refer to the finished product label requirements according to the customer's name; if there are no specific requirements, follow the standard label requirements)

内标签 长 10cm 宽 6cm 左右

需方	*****		
供方	四川博安通通信技术有限公司		
物料编码	*****		
生产单号	*****		
品名规格	*****	检验员	**
数量/单位	*****	日期	****.*.*
追溯码	*****	流水号	**

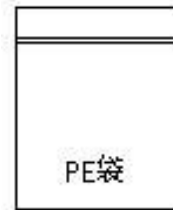
外标签 长 10cm 宽 6cm 左右

需方	*****		
供方	四川博安通通信技术有限公司		
物料编码	*****		
生产单号	*****		
品名规格	*****	检验员	**
数量/单位	*****	日期	****.*.*
追溯码	*****	流水号	**

Assignment Instructions:

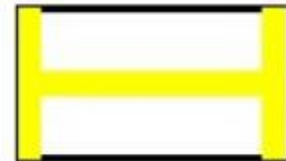
1. Inner packaging:

Product: 50 PCS/small bag
200 PCS/large bag

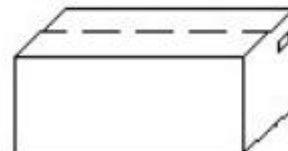


2. Outer packaging:

Determine the quantity per box
according to the actual packaging



纸箱



Precautions:

- Whether to add partitions or pearl cotton;
- Attachment of labels, such as ROHS, etc.

四、QC Flow Chart

B&T博安通				Product/Specification		Built in board+terminal		Number		/			
Quality Control Process Diagram (QC Engineering Diagram)						version: A0		4 pages in total		preparation		Ian Jixin	
						Release Date		2024.05.26		review		Zeng Kang	
Symbol representation:  Storage process,  Inspection process,  Operation process,  Up and Down process,  Connection symbol,  End process													
Pre fac e num	flowchart	Process name	Process Description	production equipment	inspection feature	inspection project	method of control			Inspection standards (emphasis)		exception handling	Remarks
							tool	AQL	responsibl e party				
1		Incoming inspection	/	/	spot check	Size and appearance	Calipers/micrometers /visual inspection	AQL: 0.25 /0.65按 GB2828 S-4/ II 级执行	IPQC	1. Wire: Check the color and appearance with the sealed sample; appearance requirements: weaving without cutting, burrs, tin tips, forks, and tin immersion in place; insulation without cutting; inner conductor without cutting; wire without oxidation defects, and good tin coating;	Return, selection or special purchase	The supplier of reworked products must come up with a rework plan, reselect and send it for inspection until it is qualified	
2		The first piece	The manufacturing department assembles according to the normal production process, and the team leader self inspects and sends 5 PCS to IPQC for	Stamping machine	full inspection	Size appearance Mechanical and electrical properties	Calipers/Visual inspection /	full inspection	IPQC	2. Board: Compared with the sealed sample, the appearance, color, wiring, and printing are clear. The release paper and backing adhesive are well bonded without any defects such as bubbles or peeling. The dimensions are measured according to the engineering drawings;	Reproduce and send for inspection	Production can only commence after the first article is confirmed to be qualified	
3		Inspection	Strip the wire from end A.	Automatic cutting machine	spot check	Size	Tensile tester/conductivity testing fixture "	2H/time	IPQC	3. Terminal connector: There are no scratches, oxidation, discoloration, coating peeling or other defects on the appearance, and no deformation, damage or other defects; No deformation or cracks; Poor height of the central needle; Salt spray test OK;	rework	Rework tin dipping	
4		Wire stripping A end (★ key process)	Wire stripping+terminal crimping	heat gun	spot check	Appearance "	Calipers/Visual inspection /	2H/time	IPQC	4. Measure the dimensions according to the requirements of the engineering drawings;	rework	Defective product adjustment machine	
5		Stripping the B-end of the wire+crimping (★ key)	Operate according to the homework manual	Continuity testing fixture "	spot check	Size	Tensile tester/conductivity testing fixture "	2H/time	IPQC	5. The environmental sampling test showed no defects. "	rework	The solder dot cannot be too large to cause a short one	
6		Welding board	Operate according to the homework manual	Fully automatic wire stripping machine	spot check	appearance	Calipers/Visual inspection /	2H/time	IPQC	1. Each component of the product is useless and incorrect. 2. Board: Compared with the sealed sample, the appearance, color, wiring, and printing are clear. The release paper and backing adhesive are well bonded without any defects such as bubbles or peeling. The dimensions are measured according to the engineering drawings; 3. Terminal: There are no scratches.	rework		
7		splitting board	Test according to the requirements of the	Fully automatic terminal	Full inspection	Conductivity performance	Tension meter/ "	FQCfull inspection IPQC2H /time	FQC IPQC	1. The wire is not damaged or has poor color difference.	rework		
8		Testing (★ Key Process)	Conduct visual inspection as required	temperature-control led soldering iron	full inspection	Mechanical performance "	visual inspection	FQCfull inspection IPQC2H /time	FQC IPQC	2. The dimensions shall be inspected according to the engineering drawings and engineering sample requirements. "	rework	Defective products detected, repaired or scrapped, and sent for inspection again after repair	
9		Inspect the appearance	Pack the finished products that have passed the appearance inspection according to the packaging requirements of the SOP operation manual and acceptance letter	manual	full inspection	appearance	visual inspection	2H/time	packer IPQC	1. The packaging materials are useless and incorrect; 2. No shortage, mixing, or incorrect labeling; 3. Whether the packaging method is consistent with the packaging method of the engineering acceptance certificate; 4. Barcode and QR code scanning information should be consistent with the requirements of the label specification document; 5. Check if the weighing records of the production line are filled in truthfully.	Repackaging or replenishing quantity	Rework packaging	
10		packaging	Inspect the finished product according to the QC operation manual	Network Analyzer	spot check	appearance	Network Analyzer	AQL: 0.25 /0.65按 GB2828 S-4/ II 级执行	OQC	If the appearance, conductivity test, and reliability test meet the requirements of the engineering acceptance letter, engineering sealing sample, and quality inspection, they will be qualified for storage; 2. Whether the packaging quantity is packed according to the requirements, and pay attention to whether there are short packages, mixed packages, labeling errors, etc. during sampling inspection; 3. Attach shipment inspection report, etc	rework	Rework products must come up with a rework plan, and then be sent for inspection until they are qualified	
11		Warehouse inspection	Inspect finished products according to the Finished Product Inspection Control Procedure	/	full inspection	Electric al performance	visual inspection	OQCspot check	OQC	If the appearance, conductivity test, and reliability test meet the requirements of the engineering acceptance letter, engineering sealing sample, and quality inspection, they will be qualified for storage; 2. Whether the packaging quantity is packed according to the requirements, and pay attention to whether there are short packages, mixed packages, labeling errors, etc. during sampling inspection; 3. Attach shipment inspection report, etc	rework	Rework products must come up with a rework plan, and then be sent for inspection until they are qualified	
Form number: B&T-OR-QA-138 Version: A0 Retention period: 5 years Form effective date: June 9, 2024													

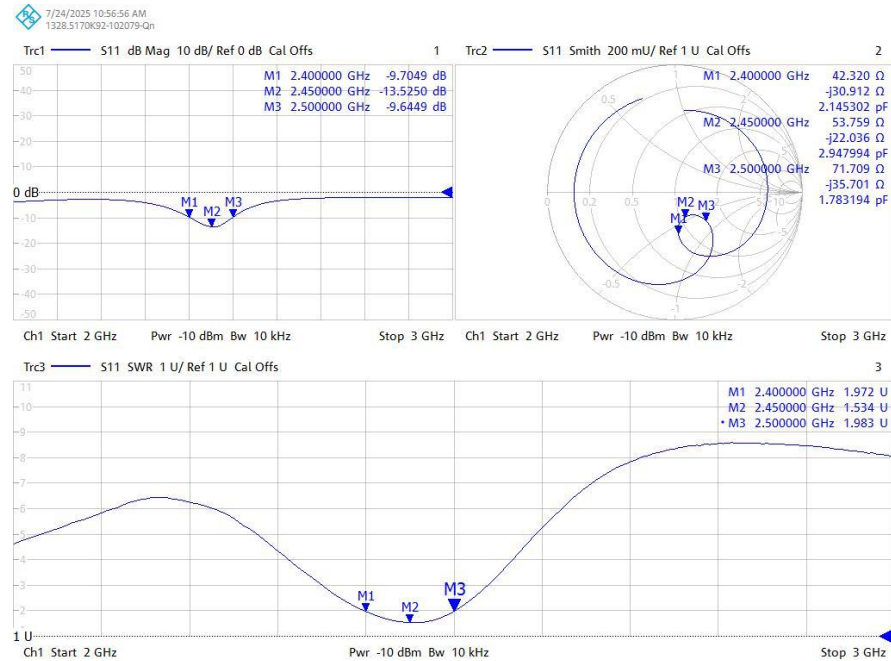
Form number: B&T-QR-QA-138 Version: A0 Retention period: 5 years Form effective date: June 9, 2025

五、Reliability Report

Serial Number	Reliability Test Name	Experimental conditions	Judgment criteria
1	Constant temperature and humidity test	High temperature: 70 °C, humidity: 80% RH for 24 hours; Low temperature -40 °C for 24 hours; continuous for 48 hours in total;	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	High and low temperature thermal shock test	70 °C for 2 hours, -40 °C for 2 hours, 6 cycles, for a total of 24 hours;	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	Salt spray test	Prepare a (5 ± 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 ± 1 °C, the spray pressure is kept at 1.00 ± 0.1kgf/cm ² , and the spray volume is 1.0~2.0ml;/80cm ² /h; The experiment lasted for 24 hours;	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	Terminal holding force test	Normal temperature and humidity; Test maintenance force requirement: ≥ 0.8 kgf;	The terminals and cables are not loose or detached; The electrical performance test after testing meets the standard requirements;
5	Terminal insertion and extraction force test	Normal temperature and humidity; The terminal and seat are connected normally, with an insertion/extraction force of ≥ 1.0kgf;	; The insertion/extraction force of the terminal meets the requirements, and the terminal has no defects such as detachment or damage;

八、Electrical performance test report (Complete machine)

Antenna S11 Parameter Chart



Standing wave ratio data

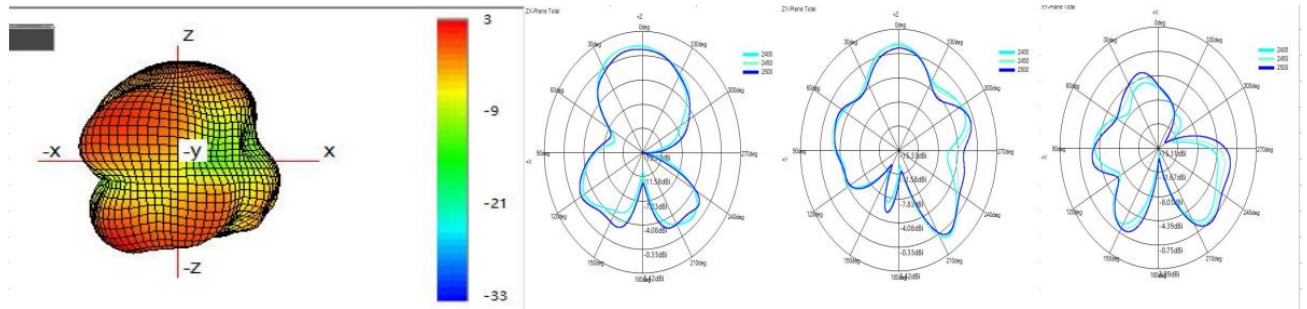
Freq/MHz	2400	2450	2500
VSWR	1.97	1.53	1.98

Anechoic chamber test data

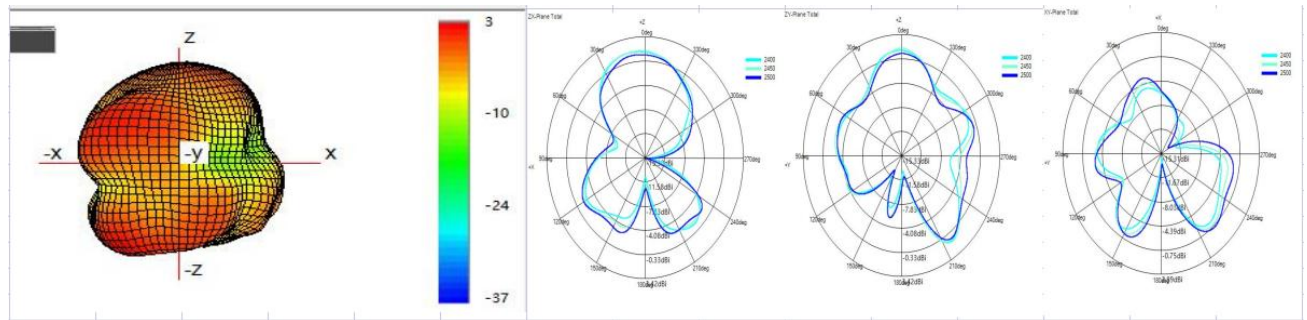
Frequency (MHz)	WiFi 天线	
	Gain (dBi)	Efficiency (%)
2400	2.49	45.32
2410	2.52	45.82
2420	2.54	45.85
2430	2.56	46.53
2440	2.63	47.68
2450	2.85	49.01
2460	2.95	49.11
2470	3.02	49.18
2480	3.03	49.73
2490	2.94	48.89
2500	2.88	47.75

Antenna radiation pattern

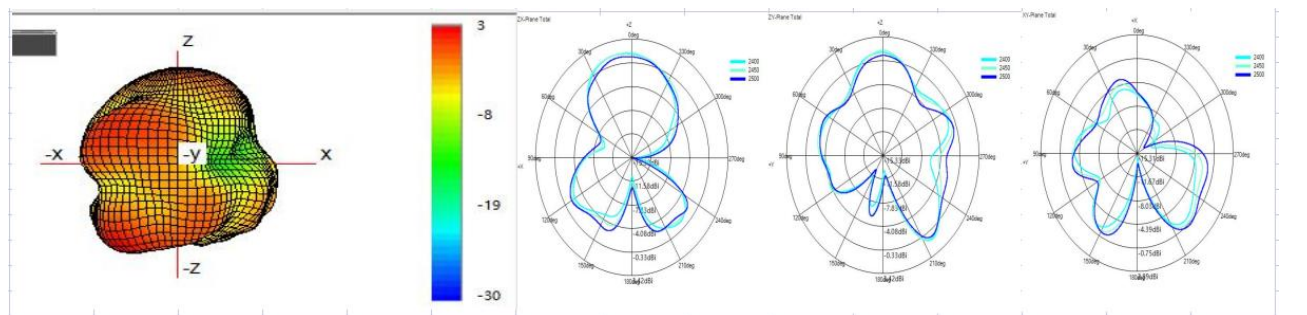
2400MHz 3D-E1-E2-H



2450MHz 3D-E1-E2-H



2500MHz 3D-E1-E2-H



七、RoHS Report & Material Report

Item	Specification	Texture of material	ROHS Test Results (PPM)						ICP test number	Test time
			Cd	Pb	Hg	Cr+6	PBB	PBDE		
1	wire	FEP	ND	ND	ND	ND	ND	ND	NGBPC24007471211	2024/12/23
		Tinned wire	ND	ND	ND	ND	ND	ND	A2250416468101001	2025/6/20
2	Terminator	PBT	ND	ND	ND	ND	ND	ND	A2250134628103007E	2025/3/12
		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
		Tape	ND	ND	ND	ND	ND	ND	SHAEC24027480901	2024/12/6
4	UV glue	5212	ND	ND	ND	ND	ND	ND	S250722028001-1	2025/7/25

八、SIP

Product Name		Product Specification	Customer
Built-in Antenna		Built-in Board + Terminal	/
Item No.	Item	Specification	Test Conditions
1	VSWR	According to drawing	Using Network Analyzer set per approval document. During antenna testing, no large metal parts or other media that interfere with the antenna are allowed within a 30cm radius around the antenna.
2	Dimensional Inspection	According to approval document and sample	Refer to the product drawing. Use calipers to measure, record, and judge the key control dimensions marked with an * on the drawing.
3	Appearance Inspection	1. Whether the board adhesive backing is 脱落 (falling off), 贴歪 (misaligned), 贴错位置 (wrong position), whether the release paper adheres well to the adhesive backing, no obvious damage or wrinkles on the FPC. 2. Solder joints are full, bright, without 连焊 (solder bridges), 虚焊 (cold solder), 假焊 (false soldering), excessive solder, insufficient solder, etc. 3. No bubbling/peeling on the plating layer on the back of the terminal, no obvious scratches/scratches, deformation, cracking, or damage to the terminal plating; claws are not lifted or broken. 4. Cable appearance must not have deep indentations, damage, scratches, burns, discoloration, bubbling, or large pieces of solder slag.	Visual inspection, comparison with samples or process documents. The product must meet the standard.

4	Terminal Retention Force Test	$\geq 0.8 \text{ Kgf}$	Test using a retention force tester. After testing, there must be no structural abnormalities, connectivity issues, or parameter failures.
5	Solder Joint Retention Force Test	Vertical Direction: Secure the cable in the test fixture and tighten. Use tweezers to grip the PCB/FPC board and pull upward along the direction of the cable. Pull to 0.3 kgf or more and hold for 5 seconds; FPC solder joint retention force $\geq 0.3 \text{ kgf}$. Horizontal Direction: Secure the cable in the test fixture and tighten. Pull upward at a 90° angle to the solder joint and cable, hold for 5 seconds; FPC solder joint retention force $\geq 0.3 \text{ kgf}$.	After testing, the solder joints must not 脱落 (fall off), and the cable must not be damaged; performance must be qualified.

九、Antenna Installation Diagram

