

G21B Antenna SPEC

(Official Seal)

Supplier name: Sichuan B&T Technology Co., Ltd.

Material description: 2.4G / 5.8G built-in WIFI1 antenna (FPC 28.5×9.8)-
gray 1.13 low-loss line-terminal, L=230mm

Material code: _____

Acknowledge book editions : A1

(Note: This letter of recognition is used by Guangzhou Yuandong Smart Sports Technology Co., LTD.)

Supplier name		
compilation	verify	approval
Qiucuiping	Liulihua	Zhouquan

Source recognition column		
R&D	quality	Environmental friendly

Document revision resume

[illegible]

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2、QC engineering drawing

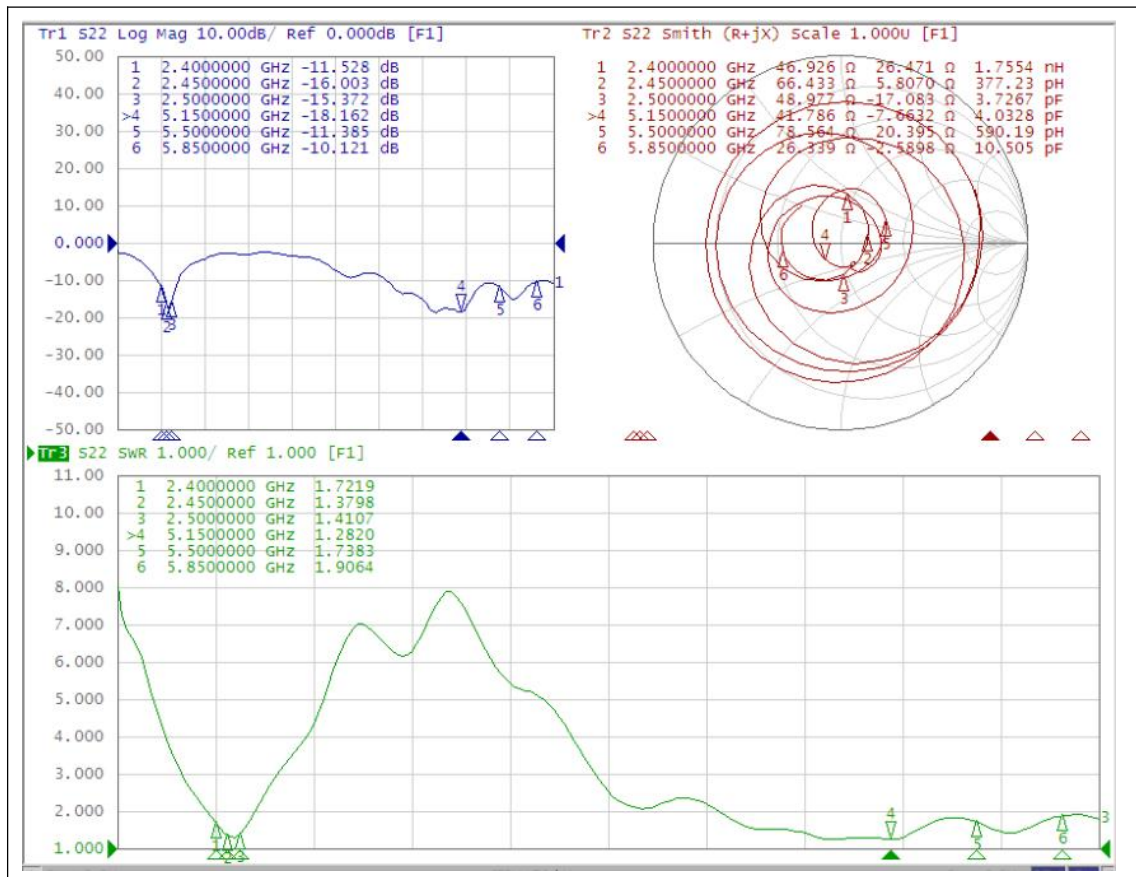
B&T 博安通				Product/ Specification	Built-in FPC universal QC engineering drawing		No.		240701			
Quality Control Flow Chart (QC Engineering Chart)							Version: A0		Page: 3 total		Compiler	Fubingfang
							Release Date		15/06/2024		Approver	
Symbolic representation: Storage process  Inspection process  Operating procedure  Up and down process connectors  End of process 												
No.	Flowchart.	Process Name	Process Explanation	Production equipment	Inspection characterisation	Inspection items	Methods of control			Inspection criteria (key components)	Exception handling	Note
							Instrument	AQL	Responsible Person			
1		Incoming material inspection	/	/	Sampling	Size/ Appearance	Calipers/ Micrometers/Visual	AQL:0.25/0.65 according to GB2828 S-4/ Grade II	IPQC	1. Wire: check the colour and shape with the sealed sample: Appearance requirements: no cuts in the braid, no burrs, tin tip, bifurcation, dip tin in place; no cuts in the insulation; no cuts in the inner conductor, no oxidation of the wire, good tin; 2. FPC board: compare the appearance, colour, line and printing with the sealed sample, no copper exposure, mutilation, folding and other defects on the surface of the board, good hand-tearing ear position, measured according to the drawings; 3. Terminal: appearance, plating is not bad, salt spray test, insertion and extraction force test, maintenance force test qualified, shrapnel without sagging or poor closure; 4. Dimensions are measured according to the requirements of engineering drawings; 5. Environmental protection sampling test without bad.	Returns, selective purchases or special offers.	Reworked products suppliers must come up with rework solutions, re-selected and re-sent to the inspection, until qualified
2		first article inspection	The manufacturing department assembles according to the normal production process, and the team leader sends 5 PCS to IPQC for inspection after self-inspection.	Stamping Machine/ Automatic Wire Cutting Machine/ Network Analyzer	Full inspection	Size/ Appearance/ Mechanical properties Electrical properties	Calipers/ visual/ Tensiometer/ Network analyser	Full inspection	IPQC	1. The parts of the product are not used incorrectly. 2.FPC board: Compare the shape, colour, line and printing with the sealed sample, no copper exposure, mutilation, folding and other defects on the board, and the hand-tearing ear position is good. 3. Terminal: terminal and wire combination according to SOP requirements, large, medium and small claws according to the requirements of the combination of wire, terminal body without oxidation, scratches, deformation, damage and other defects, plating without blistering, peeling off defects, terminal shrapnel without closure defects. 4. No damage to the wire, colour difference, size is not bad; 5. Terminal maintenance force ≥ 1kg; 6. Size, electrical properties	Reproduce and send for testing	The first piece is confirmed to be qualified before formal production
3		Wire cutting/ Terminal taping	Cut the cables according to the drawing and connect the terminal B to the terminal.	Fully automatic wire cutting and terminal crimping machine	Sampling	Size/ Appearance	Calipers/ visual/ Tensiometer	2H/session	IPQC	1. The A end is well tinned, without tin tip, tin nodule, tin connection and other defects, the medium is not burned, and the mesh and medium are not cut. 2. The wire model meets the requirements of the drawing, and the cable has no damage, color difference, crease, burn, indentation and other defects. 3. The B end is terminalized, the terminal and the wire are combined according to the SOP requirements, the large, medium and small claws are combined with the wire according to the requirements, the terminal body has no oxidation, scratches, deformation, damage and other defects, the coating has no blistering, poor shedding, and the terminal spring has no poor closure. 4. The terminal holding force is ≥ 1kg; 5. The cable length meets the requirements of the drawing, and the stripping length of the A end meets the requirements of the	Rework/ scrap	
4		Soldering FPC boards	According to SOP, solder the core wire first and then the shield	Constant temperature soldering iron/ tin wire	Sampling	Appearance	Visual/ Tensiometer	2H/session	IPQC	1. Check whether there is false soldering, false soldering, cold soldering, tin slag, or poor solder joints; 2. Check and confirm the temperature of the soldering iron tip every 2 hours; 3. Check whether the pad retention force meets the requirements. 4. Check whether the tin wire and solder paste used meet environmental protection requirements.	Rework	The tin point cannot be too large. Pay attention to the direction of the cup mouth.
5		Cleaning/ Separation	Clean the FPC boards and separate them	Manual/ Toothbrush	Sampling	Appearance	Visual	2H/session	IPQC	1. Check the FPC surface without excessive rosin. 2. Check that there is no exposed copper on the FPC surface.	Rework	
6		Electrical Performance Testing	Tested according to the requirements of the operating instructions	Network Analyzer	Full inspection/ Sampling	Electrical properties	Network Analyzer	FQC:Full inspection // IPQC:	FQC IPQC	Work in accordance with SOP requirements, and the test graphics are consistent with the engineering samples.	Rework	

7		Check the appearance	Carry out appearance inspection as required.	/	Full inspection	Appearance	Visual	FQC:Full inspection // IPQC: 2H/session	FQC IPQC	1. All parts of the product are used correctly. 2. FPC board: Compared with the sealed sample, the appearance, color, circuit, and printing are not exposed copper, incomplete, folded, etc. on the board surface, and the hand-torn ear position is good. 3. Terminals: The terminals and wires are combined according to SOP requirements, and the large, medium and small claws are combined with the wires as required. The terminal body has no oxidation, scratches, deformation, damage, etc., the plating has no blistering, poor shedding, and the terminal spring clip has no poor closure. 4. The wire is not damaged, the color difference is bad, and the size is not bad.	Rework	Defective products detected will be returned for repair or scrapped. After repair, the electrical performance must be tested before being sent for a second inspection.
8		Package	Finished products that pass the appearance inspection shall be packaged according to the packaging requirements of the SOP operating instructions and approval letter.	Electronic scale sealing machine/ Packaging machine	Full inspection	Quantity/ Label	Acknowledgement	2H/session	Packer/ IPQC	1. No mistakes in packaging materials: 2. No short-packaging, mixing, or labeling errors: 3. Whether the packaging method is consistent with the packaging method in the approval letter: 4. The label format, content, barcode, and QR code scanning information are consistent with the requirements of the label specification document. 5. Check whether the production line weighing records are filled out truthfully.	Repackaging or replenishing quantity.	Rework packaging
9		Inspection upon receipt	Inspection of finished products in accordance with OQC Work Instructions	Forklift	Sampling	Appearance/ Dimensions/ Performance/ Labelling/ Quantity	Visual/ Caliper/ Acknowledgement/ Drawings/ Network analyzer	AGL:0.25/0.65 according to GB3828 S-4/ Grade II	OQC	1. Appearance, size, electrical performance test and reliability test must meet the requirements of the letter of approval, engineering seal and quality inspection before they can be put into storage: 2. Check whether the packaging quantity is in accordance with the requirements. During random inspection, pay attention to whether there is short packaging, mixed packaging, marking, labeling errors, etc.	Rework	Reworked products must have a rework solutions and be sent for inspection again after rework until they pass the test.
10		Pre-shipment inspection.	Inspect finished products according to the Finished Product Inspection Control Procedure	/	Full inspection	Label/ Packaging	Visual	OQC Sampling	OQC	1. Appearance, size, electrical performance test and reliability test must meet the requirements of the letter of approval, engineering sealing and quality inspection before they can be put into storage: 2. Check whether the packaging quantity is in accordance with the requirements. During random inspection, pay attention to whether there is short packaging, mixed packaging, marking or labeling errors, etc.: 3. Attach the shipment inspection report, etc.	Rework	Reworked products must have a rework solutions and be sent for inspection again after rework until they pass the test.

Form Number: B&T-QR-QA-138 Version: A0 Retention Period: 5 Years Form Effective Date: January 25, 2016

3、Supplier test report

S11



Standing wave ratio data

Freq/GHz	2.4	2.45	2.5	5.15	5.85
VSWR	1.7	1.3	1.4	1.2	1.9

Antenna darkroom test data

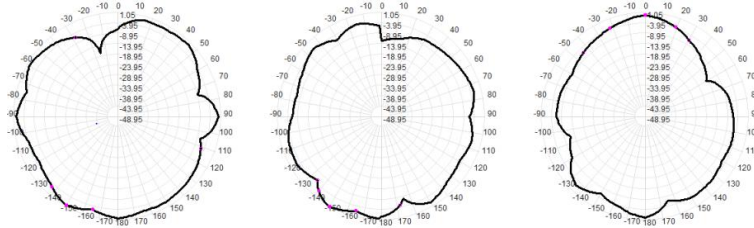
Freq/MHz	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Gain/dBi	3.06	3.07	3.62	3.29	3.38	3.52	3.57	3.78	3.99	3.46	3.43
efficiency/%	47.04	47.28	48.16	48.31	48.82	49.18	49.58	50.33	50.30	50.07	50.61

Freq/MHz	5150	5200	5250	5300	5350	5400	5450	5500	5550	5600	5650	5700	5750	5800	5850
Gain/dBi	3.40	2.95	3.85	3.68	3.26	3.08	3.18	3.53	2.94	3.54	2.88	2.31	3.10	3.87	3.62
efficiency/%	56.21	52.00	58.01	56.49	53.84	56.89	60.99	58.48	57.44	59.15	59.02	56.09	56.16	61.77	59.04

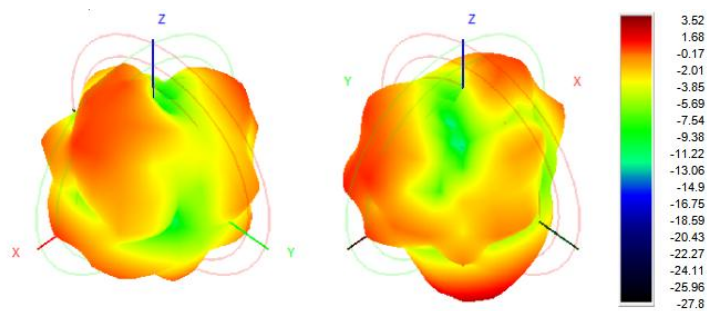
Antenna direction diagram

2D directional diagram E1-E2-H

2450M

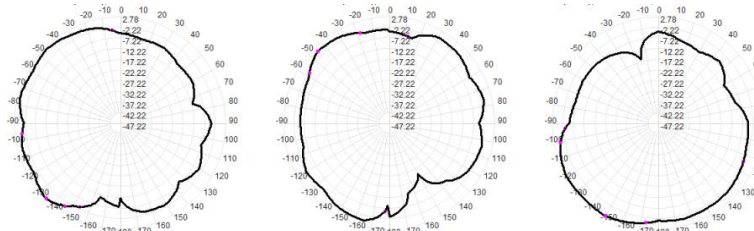


3D

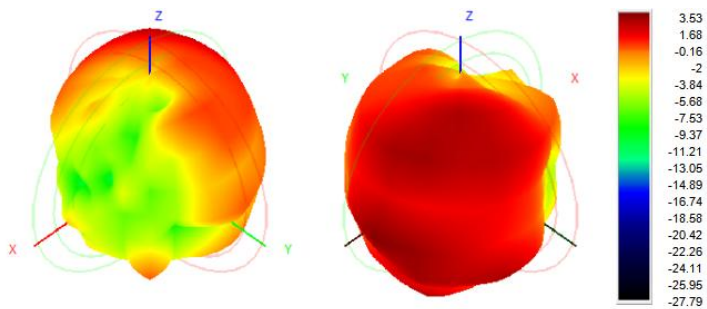


5500M

2D



3D



Customer item: /

Specification and model: 2.4G / 5.8G built-in WIFI1 antenna (FPC 28.5×9.8)- gray 1.13
low-loss line-terminal, L=230mm.

Boantong material number: /

Dimensional measurement

Standard value	Test value 1	Test value 2	Test value 3	Test value 4	Test value 5	Test value 6	Test value 7	Test value 8
28.50+/-0.30mm	28.50	28.50	28.50	28.50	28.51	28.50	28.50	28.51
9.80+/-0.30mm	9.81	9.80	9.81	9.80	9.81	9.80	9.81	9.80
230+/-3mm	230	230	229	230	230	229	230	230

Appearance evaluation

Appearance project	Evaluation content	Evaluation results
FPC	Neat, smooth, and undamaged appearance; There is no obvious scratch on the surface and copper is exposed.	OK
cable	No obvious damage	OK
weld	No virtual welding, short circuit, smooth and full solder joints.	OK
IPX	No deformation and normal riveting.	OK

Trial production data statistics

Trial production quantity	Appearance qualified quantity	Performance qualified quantity	Performance qualified quantity	Trial production result
30	30	30	30	OK
remarks:/				

4、Reliability test report

No.	Reliability test name	Test conditions	Judgment criteria
1	Constant temperature and humidity test	High temperature: 70°C, Humidity: 80%RH 24H; low temperature: -40°C 24H; total duration: 48H;	Appearance requirements before and after the test: The metal surface coating should be free of peeling, cracks, wrinkles, separation, etc. The non-metallic parts should not change color, crack, deform, degumming or other defects. Electrical performance testing meets standard requirements;
2	High and low temperature thermal shock test	70°C for 2H, -40°C for 2H, 6 cycles, 24 hours in total;	Appearance requirements before and after the test: The metal surface coating should be free of peeling, cracks, wrinkles, separation, etc. The non-metallic parts should not change color, crack, deform, degumming or other defects. Electrical performance testing meets standard requirements.
3	Salt spray test	24H; Prepare a concentration (5±1)% NACL solution to ensure that the pH value of the salt solution is neutral (6.5~7.2); The temperature of the pressure barrel is 47±1°C, the spray pressure is maintained at 1.00±0.1kgf/cm ² , and the spray volume is 1.0~2.0ml/80cm ² /h; Test time: 24H;	There should be no oxidation or rust on the exposed areas of the product surface; Oxidation/rust area after salt spray test in other areas < 1.0%

4	Connector retention test	Normal temperature and humidity; Test maintenance requirements: ≥ 1.0 kgf;	There are no loose or loose terminals or cables. After the test, the electrical performance test meets the standard requirements.
5	Connector insertion and extraction force test	Normal temperature and humidity; The terminal and the seat are connected normally, and the insertion force/pull-out force is ≥ 1.0 kgf;	The terminal insertion force/extraction force meets the requirements, and the terminals have no defects such as falling off or damage.

5、Packaging & mode of transportation

P/N: AG-041533-2153

Spec.: 2.4G / 5.8G built-in WIFI1 antenna (FPC 28.5×9.8)- gray 1.13 low-loss line-terminal, L=230mm

一、 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.)

Label for PE bag/ carton, L:10cm;W:6cm

buyer	*****		
vender	ZHONGSHAN B&T TECHNOLOGY Co., Ltd Sichuan B&T Technology Co., Ltd.		
Purchase No	*****		
Material No.	*****		
Part name	*****	QC	**
Q'ty/Unit	*****	Manufacture date	*****
Trace code	*****	Running water number	*****

Label for PE bag/ carton, L:10cm;W:6cm

buyer	*****		
vender	ZHONGSHAN B&T TECHNOLOGY Co., Ltd Sichuan B&T Technology Co., Ltd.		
Purchase No	*****		
Material No.	*****		
Part name	*****	QC	**
Q'ty/Unit	*****	Manufacture date	*****
Trace code	*****	Running water number	*****

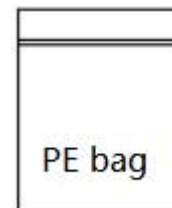
二、 Packing requirement

Operating description:

1. inner packing:

50 PCS/ bag,

200 PCS/big bag.

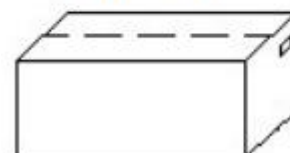


2. outer packing:

Quantity according to actual packing PCS/carton



Carton



Notice:

6、(Certification of Restricted Substance)

We hereby certify that all the Material fully conform to the requirements of the ShiRui ' s Declaration of Conformity that had been signed, and the maximum concentration value of restricted substance in Materials comply with the latest 《Regulations on the management of hazardous substances.》

Raw Material Test List																	
(Customer P/N):				(Part Name)										(Vendor) Sichuan B&T Technology Co., Ltd.		(Vendor P/N):	
No	Raw Material Name	Raw Material Model	Raw Material Supplier	Banned Substance Content/ppm (禁止物质含量/ppm)										Test Lab	Test Report Number	Test Date	Attachment of tripartite test report
				Pb	Cd	Hg	Cr+6	PBBs	PBDEs	(DEHP)	(DBP)	(BBP)	(DIBP)				
1	wire	FEP	YH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	SGS	NGBPC24007471211	2024/12/23	
		SILVER-COATED COPPER WIRE	YH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	SGS	CANEC25000298401	2025/1/10	
		Tinned wire	YH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	CTI	A2250416468101001	2025/6/20	
2	Terminal	Phosphor Bronze	CM	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	SGS	CANEC24029407215	2025/1/8	
		PBT	CM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	CTI	A2250134628103008E	2025/3/12	
3	FFC	PI	BYK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	SGS	SHAEC24028809005	2024/12/20	
		Tape	BYK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	SGS	SZKEC25003068038	2025/8/28	

1. If the homogeneous material is nonmetallic, three questions need to be answered: ① Does it contain halogen ?☐ YES ☒ NO? ② Does it contain red phosphorus ?☐ YES ☒ No? ③ Does it contain antimony trioxide ?☐ YES ☒ No?

2. If the above materials or materials belong to paint, ink, adhesive or cleaning agent, please fill in the VOC test report number in the corresponding remarks column, and attach this report to the raw material test