



Sample acknowledgement
样品承认书

Project name项目名称:	P1299
Product name产品名称:	P1299_main antenna_2
Material number物料料号:	K5310000230LA
Material Description 物料描述:	FPC thickness 0.12, 33.42*46.07 Main antenna, black
Supplier Product Model 供应商产品型号:	SH24036IB75-1
TP FW mass production version TP FW量产版本	
Reminders提醒注意事项:	Each of the above information needs to be complete and accurate, and it needs to be consistent with the material information in the order BOM. 以上每项信息需要填写完整准确无误, 需要与下单BOM中的物料信息保持一致性。

Supplier signature (with company seal)
供应商签署 (加盖公司章)

☐ ROHS material ROHS物料		☐ Non-ROHS materials非ROHS物料		
Department 部门	☐ Producer制作人	☐ Engineering Department 工程部	☐ Design Department 设计部	☐ Quality department质量部
Signatory 签署者				
Signing date 签署日期				
Supplier information 供应商信息				
Supplier name供应商名称:	Sunnyway Technology Co., Ltd			
Supplier address供应商地址:	Building 4, No. 99, Lane 215, Gaoguang Road, Qingpu District, Shanghai			
Supplier to contact 供应商收件人-联系方式	maronglai-15921558333			
Recipient email address 收件人邮箱地址:	maronglai@sunnyway-iot.com			
Note注意: 1. Supplier information must be filled in correctly 供应商信息填写必须正确 2. Company seal required 必须加盖公司印章				

Customer review and signature 客户审核签署

Recognition state 承认状态	☐ Official recognition 正式承认		☐ Conditional recognition 条件承认		☐ Provisional limited recognition 临时限量承认					
	☐ Conditional recognition 条件承认 Conditions to be met需满足条件: _____									
	☐ Provisional limited recognition临时限量承认 Limited Procurement限量采购_____K									
Reviewed and signed by the Department (with the seal of recognition) 部门审核签署 (加盖承认章)										
Department 部门	☐ ID	☐ MD	☐ HW	☐ HWtest	☐ Packing	☐ NPI	☐ PM	☐ SPM	☐ PQM	☐ SQE
Signatory 签署者										
Signing date 签署日期										
Check item 检查项	Appearance / Workmanship 外观/工艺	Material / size / specification 材质/尺寸/规格		Specification/el ectrical performance 规格/电性能	Material / size / specification 材质/尺寸/规格	Process assembly/produ ction yield 工艺装配/生产 良率	Specificatio ns/customer needs 规格/客需	FW Version FW版本	Appearance / reliability 外观/可靠性	Appearance/man ufacturer yield/drawing specification 外观/厂商良率/ 图纸规范

Note注意: Before signing, the material information description, specification, drawing, dimension report, electrical performance test report, reliability test report, packaging specification and other information shall be carefully reviewed 签署前需要认真审核物料信息描述、规格书、图纸、尺寸报告、电性能测试报告、可靠性测试报告、包装规范等信息

Catalog 目录

1	Bill of material 物料清单	☒
2	RoHS restricted substances composition questionnaire Rohs限用物质成分调查表	☒
3	Engineering drawings. 工程图纸	☒
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11	Material certificate / SGS report 材质证明/SGS报告	☒
12	Packaging method 包装方式	☒



Bill of material 物料清单

■ ROHS2.0 (ROSH新指令2011/65/EU)

Item	Part material number 零件料号	Part name 零件名称	Part description 零件描述	Supplier 供应商名称	Supplier model 供应商型号	Number 数量	Yes / no ROSH materiel 是/否ROSH 物料	Remark 备注
注意事项：屏/电池/喇叭/摄像头/磁头/NFC/FPC/同轴线等BTB类型物料，必须填写连接器厂商、型号、材质等信息，并核对与搭配组装连接器型号是否匹配；								
1	K5310000230 LA	P1299_main antenna_2	FPC thickness 0.12, 33.42*46.07 Main antenna, black	SUNNYWAY	SH24036IB75-1	1	Yes	
2								
3								
4								
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7								
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13								
14								
15								

[illegible]



Reach test report

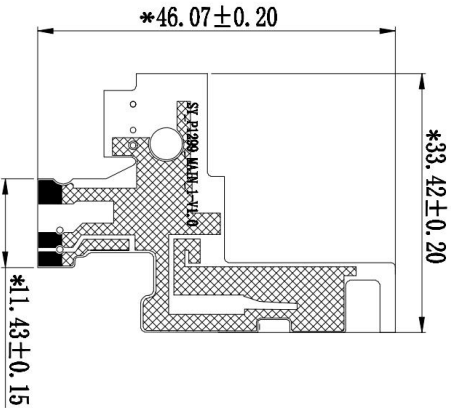
SALEABLE PART

SUB-PART	
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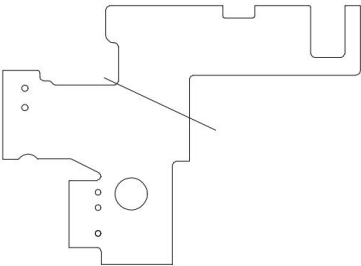
SUB-PART

[illegible]

White silk screen



0.12±0.03



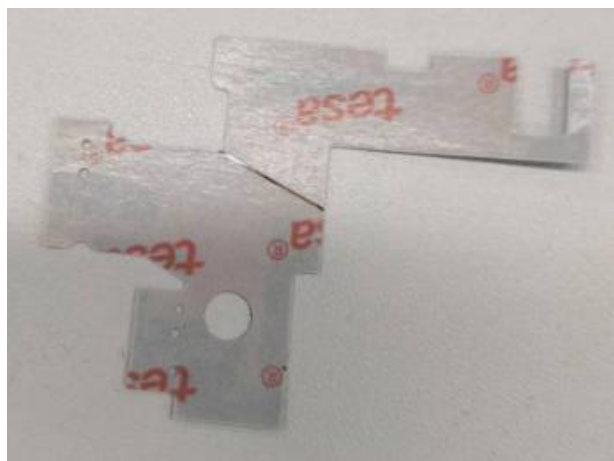
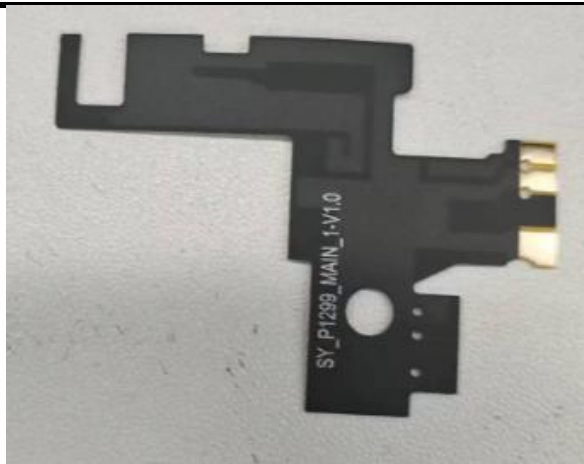
gold plating

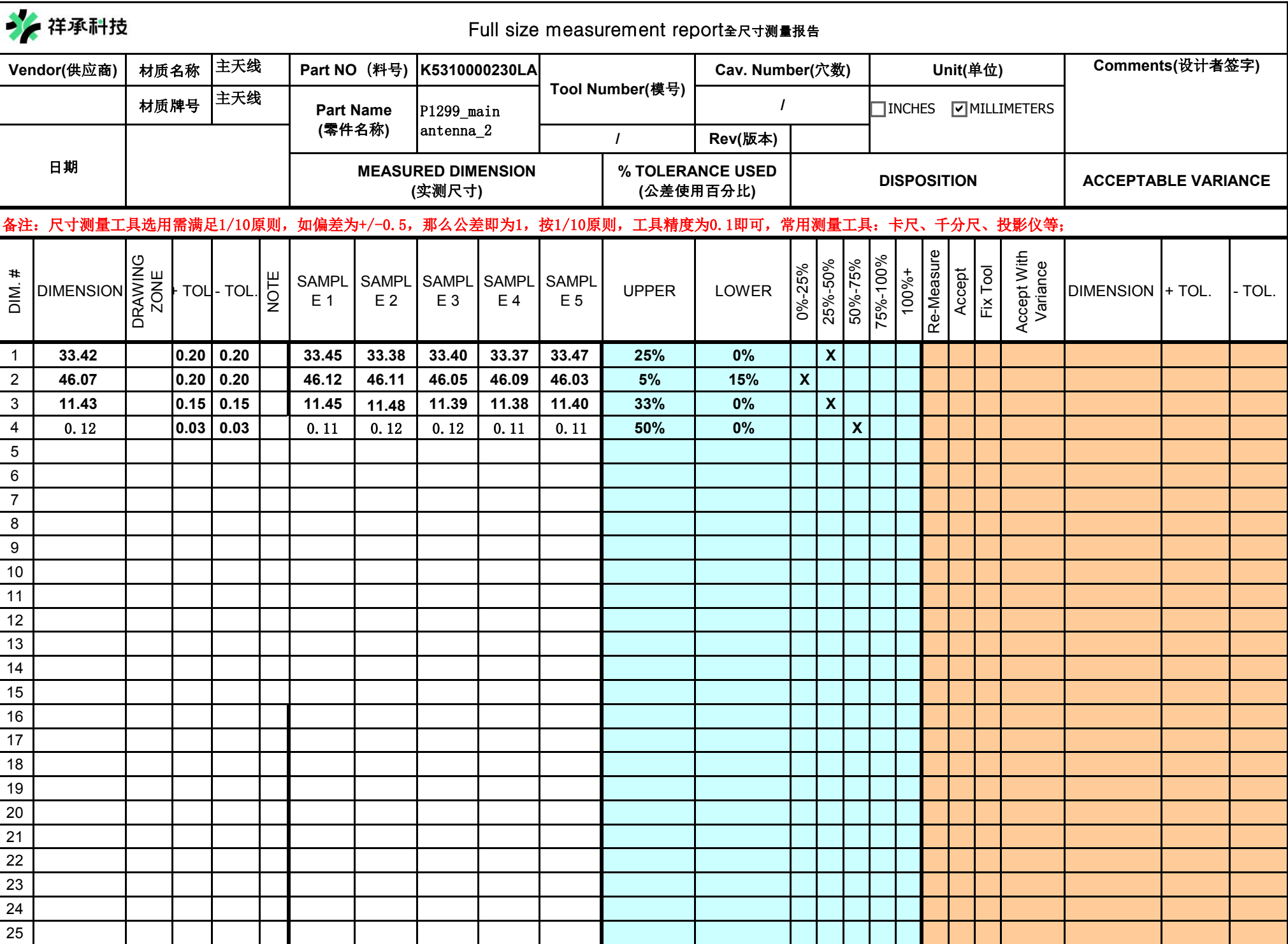


Cu

- Technical requirement
1. Shipping packaging requirements: (single PCS packaging)
 2. Copper berth surface coated with black matte ink;
 3. The ink should be uniform;
 4. The size with "*" symbol is the key size;
 5. Back glue with TESA 68905;
 6. The substrate is PI T=1/3M11;
 7. Copper foil thickness 1/3oz;
 8. The gold plating yellow thickness of the gold-plated area is 0.5u", and the salt spray has been tested for 48H;
 9. The unpoured fillet angle is 0.2, and the process edge is 0.2mm;
 10. No tolerance is indicated according to the general tolerance table;
 11. The products meet the requirements of RoHS2, REACH.

Sunnyway technology (China) Co., LTD				
	PART NAME : MAIN(71299)	DATE :	2024.7.16	
TOLERANCE X.X ±0.20 .XX ±0.10 .XXX±0.05 ANGULAR ≤±0.5°	PART NO. : SH24061B75-1	DRAWN :	YUJIANC	
	MATERIAL : FPC	CHECKED :		
	FINISHING :	APPROVED :		
UNIT : mm	COLOUR :	SCALE : 1:1	REV :	





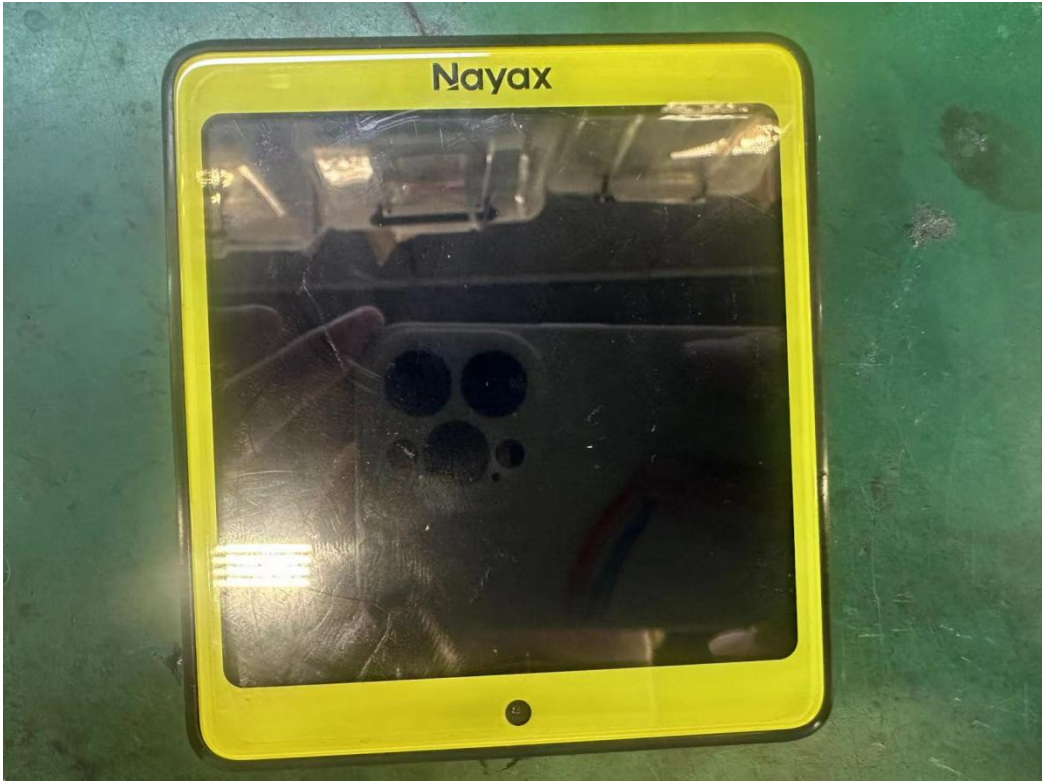
 祥承科技 CPK Report					
Part Number(料号)	K5310000230LA		Vendor(供应商)	尚远	
Description(零件名称)	P1299_main antenna_2		Inspected(确认者)	陈小平	
Tool Number(模号)	/		Inches/MM(英寸/毫米)	MM	
Cavity(穴号)	/	Material Name(材质名称)		NFC	
		Material Code(材质牌号)		NFC	
Revision(版本)			Date(日期)	24.7.24	
Dim. Designator(尺寸序号)	1	2			
Nominal(公称尺寸)	33.42	46.07			
+ Tolerance(正公差)	0.20	0.20			
- Tolerance(负公差)	-0.20	-0.20			
Upper Limit(规格上限)	33.62	46.27			
Lower Limit(规格下限)	33.22	45.87			
1	33.45	46.09			
2	33.44	46.02			
3	33.38	46.08			
4	33.39	46.09			
5	33.37	46.11			
6	33.40	46.03			
7	33.46	46.12			
8	33.47	46.11			
9	33.37	46.09			
10	33.40	46.11			
11	33.46	46.03			
12	33.47	46.12			
13	33.40	46.11			
14	33.46	46.03			
15	33.47	46.12			
16	33.37	46.11			
17	33.40	46.09			
18	33.46	46.11			
19	33.40	46.03			
20	33.46	46.12			
MAX.	33.47	46.12			
MIN.	33.37	46.02			
AVERAGE	33.42	46.09			
STDEV	0.04	0.04			
CP	1.72	1.83			
Cpk	1.69	1.69			
TOOLING(测量工具)	二次元	二次元			
Tabulation:制表: linfeng		Audit: (signature and company seal) 审核: (签字并加盖公司章)		Date日期:24.7.24	

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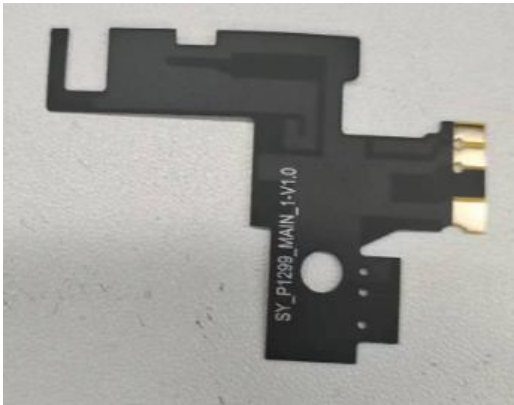
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1. Project information

Project information



Antenna information



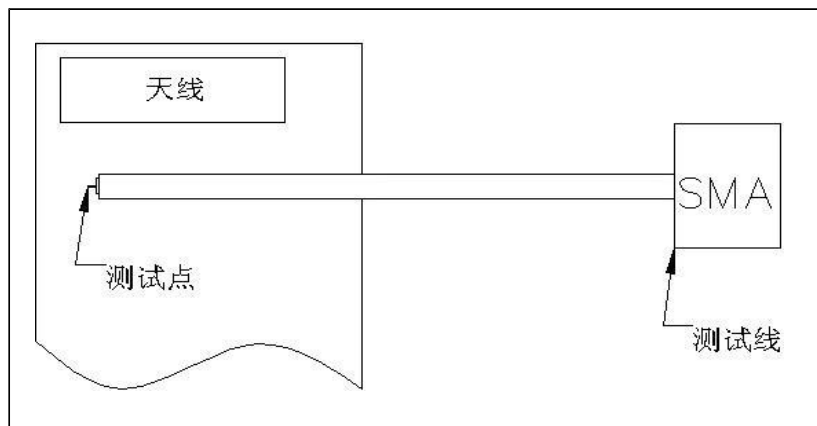
	Antenna version
Main antenna	SY_P1299_MAIN_1-V1.0
diversity	
Three in one	

Explanation: The customer’s final verified antenna performance prototype will be kept in our company for at least one year to facilitate analysis and resolution of abnormal situations in antenna mass production, ensuring the quality of antenna shipments.

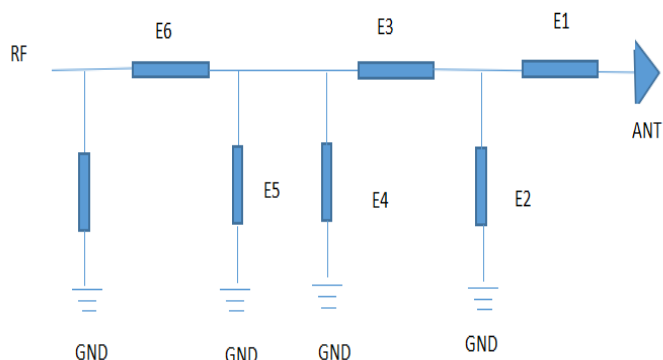
2. Testing equipment

Purpose: To test the passive parameters of the antenna as accurately as possible.

Production method: The prototype tool is made by using a 50 ohm coaxial cable, with one end connected to the testing point at the back end of the matching circuit (front end of the RF test hole) of the prototype motherboard, and the other end connected to an SMA connector. The schematic diagram is as follows:



3. Matching circuit



Element	Value	Tag number
E1	Original value, unchanged	c2442
E2	7.5 nH	L0117
E3	0Ω	C0133
E4	0.5pF	C2441
E5	N/A	L0118
E6	0Ω	C0136

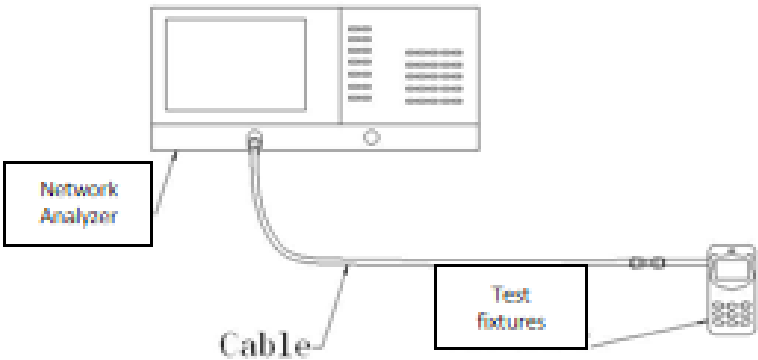
	Value	Tag number	frequency (MHz)
Enter the switch	Original value, unchanged	C1001	
RF1	68nH	C2427	B7/B38/B40/B41
RF2	6.8 nH	C2428	GSM850TRP/W5/B5/B20
RF3	15PF	C2429	GSM900TIS
RF4	0Ω	C2430	GSM900TRP/850TIS/1800/1900/W1/W8/B1/B3/B8

4. S11 test

5. 4. 1 S11 Test Method Description

6. Test Equipment: Network Analyzer (E5071C)
7. Test method: A 50 ohm CABLE cable is derived from the instrument test port, and the SMA connector of the prototype is connected after calibration using the calibrator to record the return loss and standing wave ratio corresponding to the relevant frequency point.

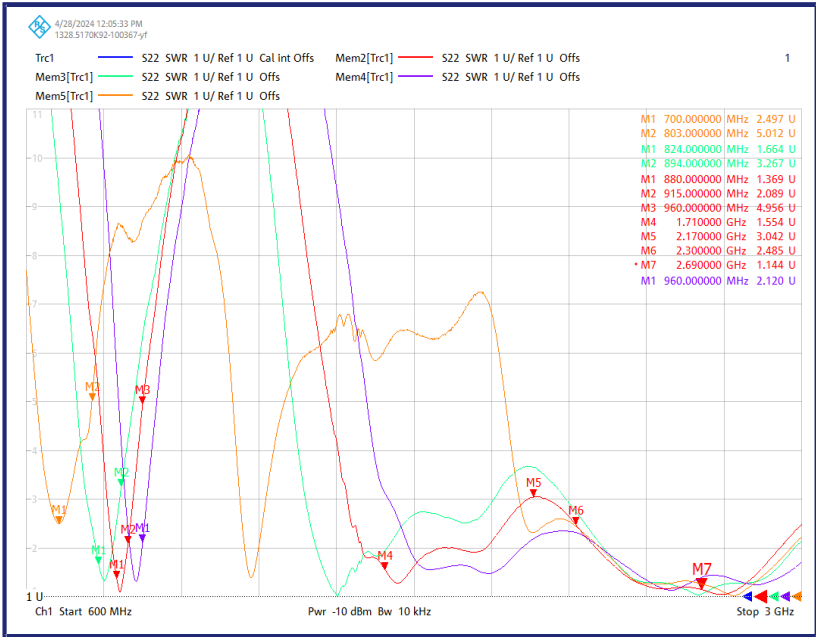
The test diagram is as follows:



Test the schematic

4.2 S11 parameter

Main antenna



主天线					
RF4 frequency (MHz)	Standing Poppy	RF2 frequency (MHz)	Standing Poppy	RF1 frequency (MHz)	Standing Poppy
880	1.4	824	1.6	2300	2.5
915	2.1	894	3.3	2690	1.2
1710	1.6				
2170	3.1				

5.Dark room test data

Test system: Shielded darkroom

Test environment: temperature $22\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$, humidity $50\% \pm 15\%$

Testing equipment: When testing passive data, use the Agilent E5062C network analyzer
When testing active data, use the Agilent 8960/CMW500/E4438C comprehensive testing instrument

Shanghai Shangyuan Communication Technology Co., Ltd. antenna recognition

5.1 Passive test data

5.1.1 Passive efficiency of main antenna

Frequency/MHz	Efficiency/dB	Efficiency/%	MaxGain/dBi	Frequency/MHz	Efficiency/dB	Efficiency/%	MaxGain/dBi	Frequency/MHz	Efficiency/dB	Efficiency/%	MaxGain/dBi	Frequency/MHz	Efficiency/dB	Efficiency/%	MaxGain/dBi	Frequency/MHz	Efficiency/dB	Efficiency/%	MaxGain/dBi
700	-7.29	18.65	-2.09	1710	-5.36	29.1	-2.09	1980	-4.51	35.42	0.4	2250	-4.98	31.79	-1.41	2520	-4.12	38.73	0.86
710	-7.21	19	-1.87	1720	-5.30	29.54	-2.35	1990	-4.43	36.04	0.44	2260	-4.81	33.05	-0.93	2530	-4.03	39.58	1.34
720	-7.46	17.94	-3.23	1730	-5.06	31.17	-1.87	2000	-4.39	36.36	0.65	2270	-4.97	31.85	-1.27	2540	-4.06	39.24	1.71
730	-7.64	17.22	-3.95	1740	-4.93	32.13	-1.8	2010	-4.64	34.36	0.21	2280	-5.17	30.38	-2.18	2550	-4.21	37.89	1.01
740	-7.72	16.89	-3.78	1750	-4.95	31.99	-2.02	2020	-4.59	34.73	0.3	2290	-5.00	31.65	-1.56	2560	-4.08	39.07	1.87
750	-7.93	16.12	-3.11	1760	-4.94	32.06	-1.99	2030	-4.60	34.66	0.62	2300	-4.80	33.12	-1.18	2570	-4.04	39.41	1.82
760	-7.85	16.4	-2.76	1770	-4.94	32.06	-1.75	2040	-4.54	35.19	0.75	2310	-5.05	31.24	-2.49	2580	-3.83	41.36	1.94
770	-7.65	17.19	-2.78	1780	-4.98	31.79	-1.61	2050	-4.50	35.5	1.34	2320	-5.21	30.12	-2.35	2590	-3.81	41.63	2.56
780	-7.78	16.68	-2.5	1790	-5.04	31.31	-1.65	2060	-4.36	36.67	1.68	2330	-5.12	30.77	-1.65	2600	-3.77	41.99	2.08
790	-7.43	18.07	-3.27	1800	-4.96	31.92	-1.62	2070	-4.18	38.22	1.54	2340	-4.92	32.2	-2	2610	-3.74	42.27	1.71
800	-7.55	17.59	-5.36	1810	-4.91	32.27	-2.07	2080	-4.08	39.07	1.28	2350	-4.98	31.79	-1.97	2620	-3.70	42.64	2.16
810	-7.57	17.49	-5.27	1820	-4.91	32.27	-1.79	2090	-4.22	37.81	1.12	2360	-5.02	31.51	-1.2	2630	-3.71	42.55	2.27
820	-4.76	33.4	-1.19	1830	-5.01	31.58	-1.38	2100	-4.20	38.06	1.66	2370	-4.91	32.27	-1.43	2640	-3.71	42.55	2.16
830	-4.62	34.55	-1.35	1840	-5.04	31.31	-1.05	2110	-4.32	36.99	1.33	2380	-4.87	32.62	-1.67	2650	-3.64	43.3	2.11
840	-4.54	35.17	-1.22	1850	-5.05	31.24	-0.81	2120	-4.43	36.04	1.33	2390	-5.09	30.97	-0.17	2660	-3.66	43.02	2.28
850	-4.57	34.9	-1.07	1860	-5.10	30.91	-0.07	2130	-4.63	34.43	0.98	2400	-5.34	29.23	-0.83	2670	-3.52	44.46	2.59
860	-5.19	30.28	-1.41	1870	-5.12	30.77	0.2	2140	-4.65	34.28	-0.42	2410	-5.03	31.44	-1.35	2680	-3.64	43.3	2.2
870	-5.95	25.42	-1.92	1880	-5.04	31.31	0.26	2150	-4.61	34.58	0.17	2420	-4.73	33.62	0.24	2690	-3.56	44.07	2.52
880	-4.59	34.73	0.08	1890	-5.02	31.51	-0.05	2160	-4.87	32.55	0	2430	-4.76	33.41	-0.26				
890	-4.51	35.36	1.12	1900	-5.03	31.44	-0.25	2170	-5.11	30.84	-0.99	2440	-4.68	34.06	-0.15				
900	-4.59	34.73	0.79	1910	-4.95	31.99	-0.4	2180	-4.97	31.85	-0.18	2450	-4.45	35.88	1.01				
910	-4.85	32.73	0.29	1920	-4.76	33.41	0.34	2190	-4.90	32.34	-0.39	2460	-4.62	34.51	0.12				
920	-4.96	31.89	0.23	1930	-4.71	33.84	0.81	2200	-4.92	32.2	-0.83	2470	-4.58	34.81	-0.09				
930	-5.18	30.36	0.63	1940	-4.68	34.06	1.1	2210	-4.78	33.26	-0.54	2480	-4.56	34.96	1.18				
940	-5.16	30.48	0.36	1950	-4.58	34.81	0.92	2220	-4.62	34.51	-0.77	2490	-4.42	36.12	0.47				
950	-5.82	26.18	-0.16	1960	-4.52	35.34	0.65	2230	-4.68	34.06	-0.96	2500	-4.21	37.97	1.58				
960	-6.52	22.28	-1.1	1970	-4.53	35.27	0.42	2240	-4.87	32.55	-0.82	2510	-4.21	37.89	1.43				

5.2 Active Test Data

5.2.1 Active test data of main antenna (free space, screen off)

US version

US	Target conduction value	TRP			TIS
B1	22.5	18.56	18.68	18.89	-93.05
B2		18.45	18.53	18.92	-93.14
B3		18.21	18.32	18.61	-93.45
B4		18.31	18.41	18.56	-93.42
B5		17.09	17.25	17.11	-91.21
B7		18.44	18.6	18.66	-93.77
B12	23	16.08	16.45	16.55	-90.34
B17		16.05	16.41	16.12	-90.15
B28		16.12	16.12	16.01	-91.12
B38	22.5	18.27	18.32	18.77	-92.81
B41		18.23	18.32	18.05	-92.19
W1	22.5	18.92	18.75	18.79	-106.38
W2		18.02	18.12	18.15	-106.12
W4		18.06	18.23	18.05	-106.05
W5		17.45	17.61	17.04	-104.35
W8		17.07	17.42	17.12	-104.14
850	32	26.57	27.24	26.69	-102.58
900		26.43	26.56	26.03	-102.31
1800	30	25.12	25.32	25.05	-104.14
1900		25.10	25.35	25.24	-104.15

EU version

EU	Target conduction value	Target conduction value			TIS
B1	22.5	19.32	19.41	19.21	-93.41
B3		19.17	19.42	19.52	-93.51
B5		17.25	17.95	17.68	-92.15
B7		19.35	19.35	19.68	-93.25
B8		17.16	17.54	17.39	-90.61
B20		17.12	17.08	17.05	-90.36
B38		19.62	19.85	19.74	-92.85
B40		18.16	18.15	18.3	-92.13
B41		18.24	18.51	18.31	-92.41
W1	22.5	19.65	19.85	19.54	-106.62
W8		17.42	18.05	17.45	-104.48
850	32	26.74	27.02	26.56	-102.61
900		26.54	26.98	26.62	-102.88
1800	30	25.15	25.21	25.23	-104.71
1900		25.19	25.32	25.26	-104.44

5.2.2 Three in one active test data (free space, 100% screen measurement)

US	TRP			TIS
WiFiB	13.25	13.42	13.12	-83.25
WIFIG	11.62	12.01	11.24	-71.07
WIFIN	10.62	11.32	10.12	-69.61
WIFIA	10.21	10.32	10.25	-72.65
GPS	-145.65			

EU	TRP			TIS
WiFiB	13.32	13.47	13.21	-83.32
WIFIG	11.54	12.02	11.24	-71.21
WIFIN	10.63	11.41	10.23	-69.71
WIFIA	10.33	10.41	10.28	-72.77
GPS	-145.59			

6. Mass production antenna specifications

When producing antennas, the standing wave ratio is used as the production testing standard.

Based on the differences in the project itself, the following standards are given:

frequency (MHz)	Mass production standards
Main antenna 700-960; 1710--2690	VSWR (Mass production performance) <VSWR(Admitting Performance)+1
Diversity antenna 820-960; 1710--2690	VSWR (Mass production performance) <VSWR(Admitting Performance)+1
Three in one antenna 1575.42; 2400--2500&5150-5850	VSWR (Mass production performance) <VSWR(Admitting Performance)+1