

Shanghai Sunnyway Communication Technology Limited Company

Temporary antenna specification

Customer: Shanghai Xiangcheng		The project: T0523	
Operating frequency band: LTE Band GSM 850/900/1800/1900/WCDMA B1/2/5/8/LTE1/3/5/7/8/20/2834/38/39/40/41			
Motherboard version: T0523-W5 SUS-0004 SC			
Shangyuan material specifications			
Specifications and models		Shangyuan material number	Customer part number
MAIN antenna		SH23292IB89	
antenna		SH23292IB75-1	
DIV antenna		SH23292IB75-2	

The record of project changes			
Date of preparation/change	Changes	Change of person	version

Sunnyway counter-signature bar				
Research and development	ME:	Auditor:	QE:	Approver:
	RF:	Auditor:		
Client Counter-signature bar				
EE	PM		RF	QE

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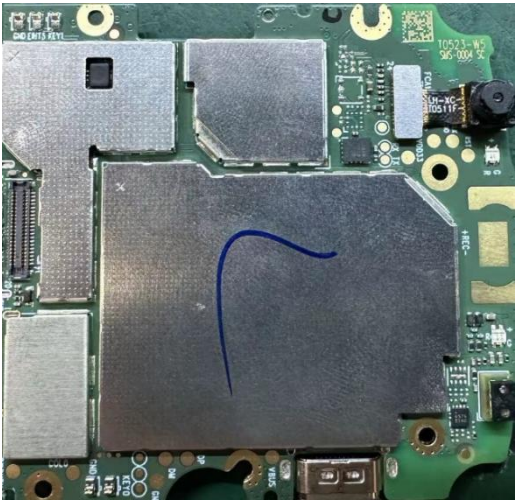
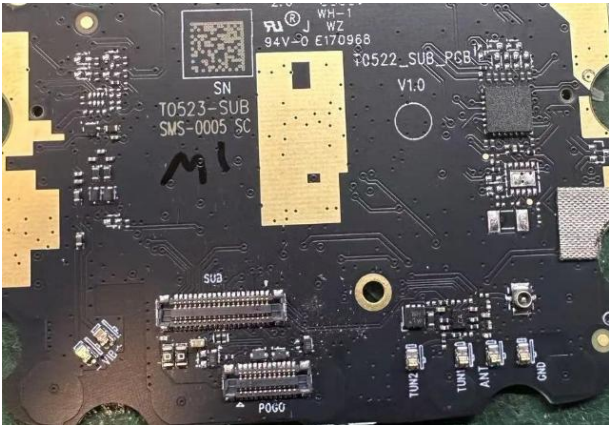
Chongqing R&D Center Address: C08-1 Building-1, No. 19 Xiantao Data Valley East Road,
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1. Project information

Machine information



Antenna information

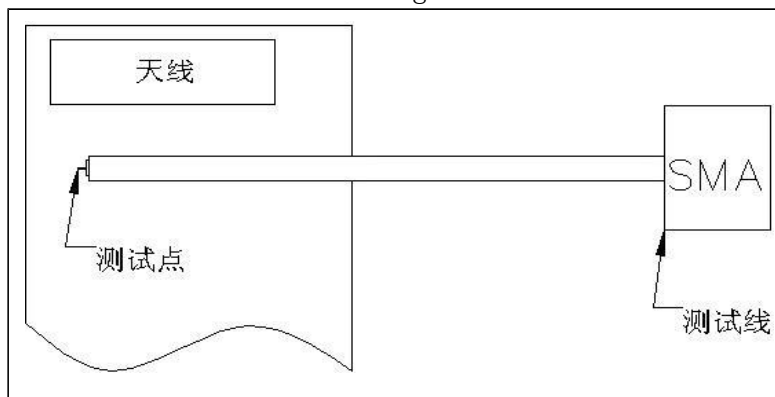
	版本
Main	V0.3
DIV	SY-T0523-DIVV0.1
GPS/2.4g wifi	SY-T0523GBW-V0.4
5G WiFi	
Mainboard	T0523-W5 SUS-0004 SC
Platelets	T0522_SUB_PCB V1.0

Note: The customer finally verified that the antenna performance prototype was retained in our company for at least one year, which is convenient for analysis and solution to abnormal situations in antenna mass production.
Ensure antenna shipment quality.

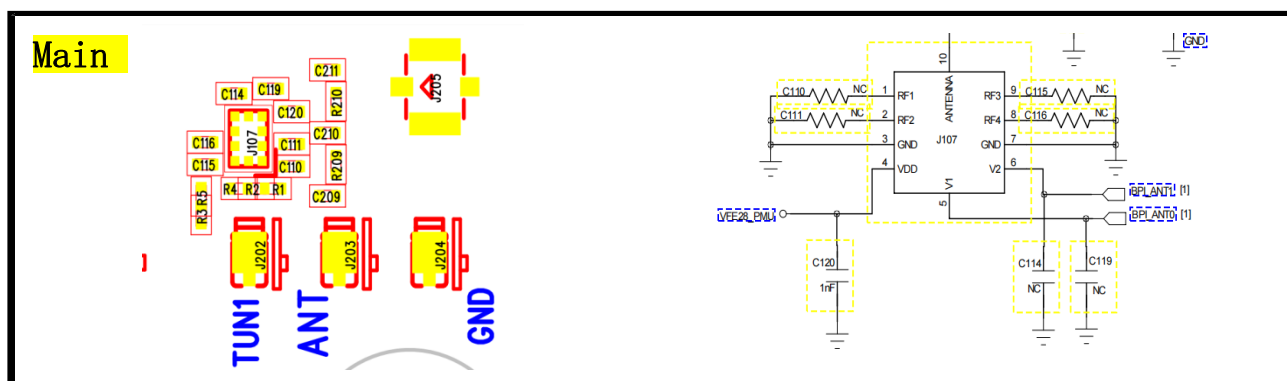
2. Test fixtures

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

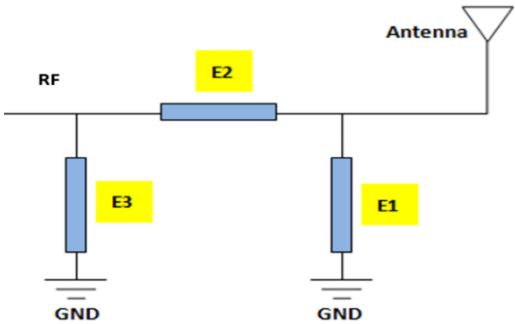
How to make: The prototyping mechanism is made of a 50 ohm coaxial cable, one end is connected to the test point at the back of the matching circuit of the prototype motherboard (the front of the RF test hole), and the other end is connected to the SMA connector. The schematic diagram is as follows:



3. Matching circuits

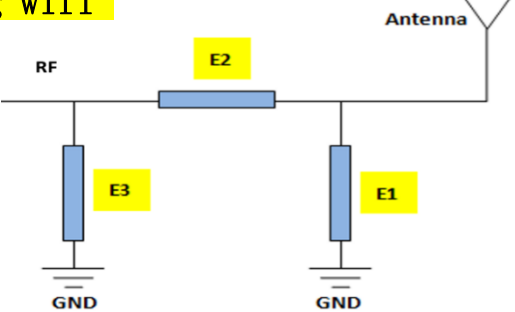


DIV



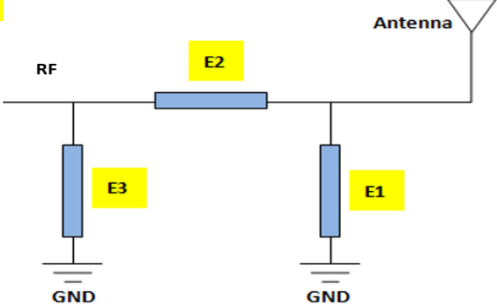
DIV	
E1	12nH
E2	0欧姆
E3	NC

GPS/2.4g wifi



GPS/2.4g wifi	
E1	12nH
E2	0欧姆
E3	NC

5G wifi



5G WiFi	
E1	NC
E2	0.5pF
E3	1.5nH

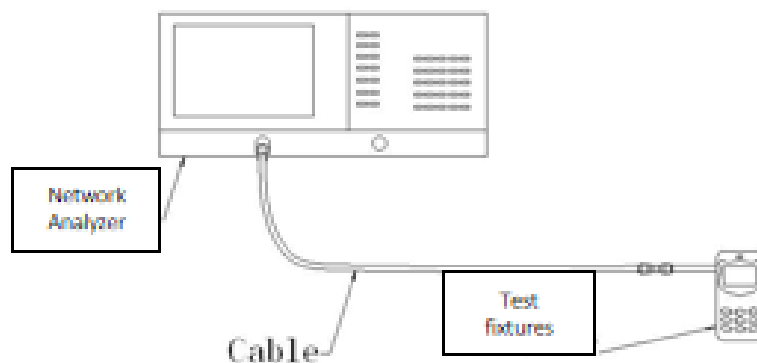
4. S11 test

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.

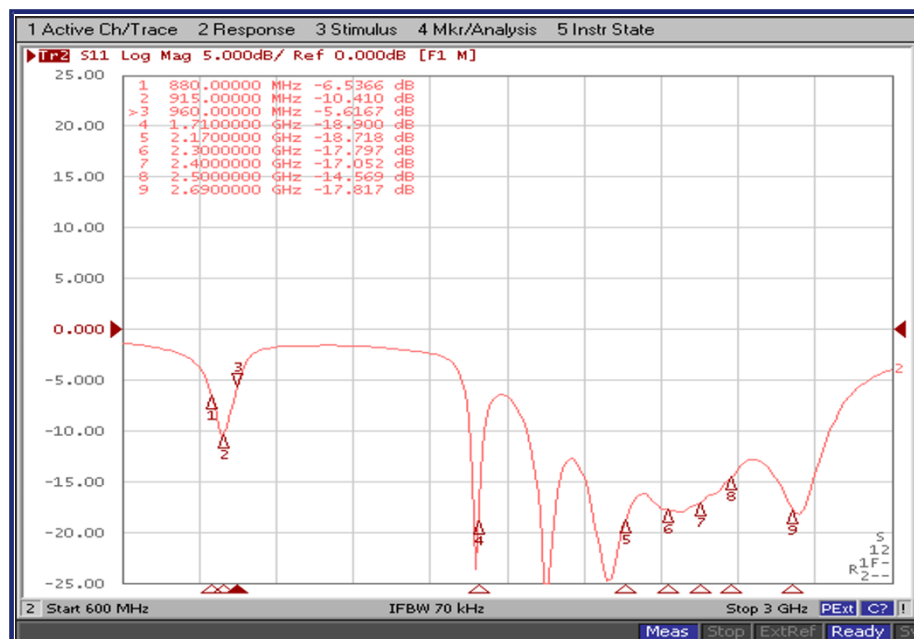
The test diagram is as follows:



Test the schematic

4.2 S11 parameter

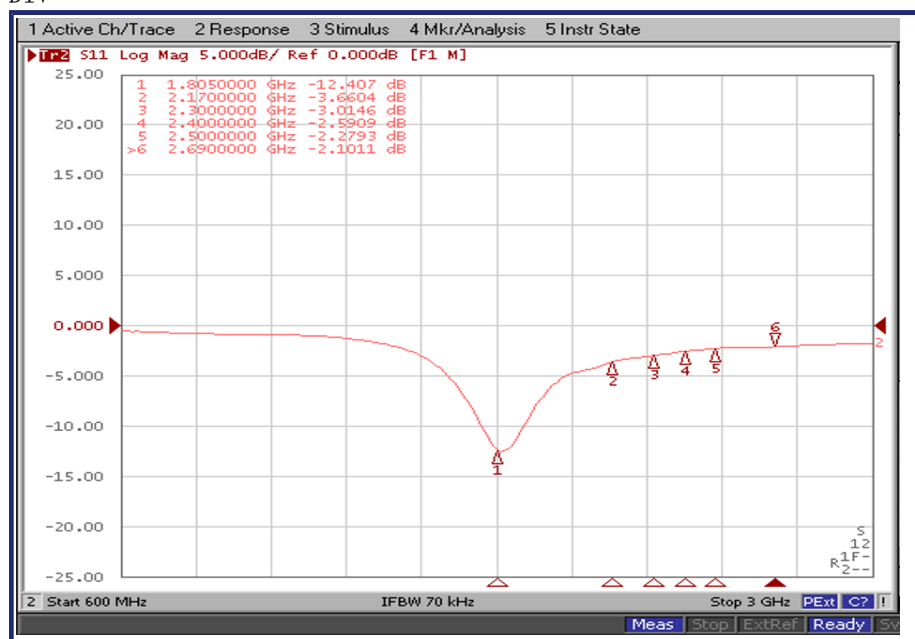
Main



frequency (MHz)	880	915	960	1710	2170	2300	2400	2500	2690
Log Mag	-6.54	-10.41	-5.62	-18.90	-18.72	-17.8	-17.05	-14.57	-17.82

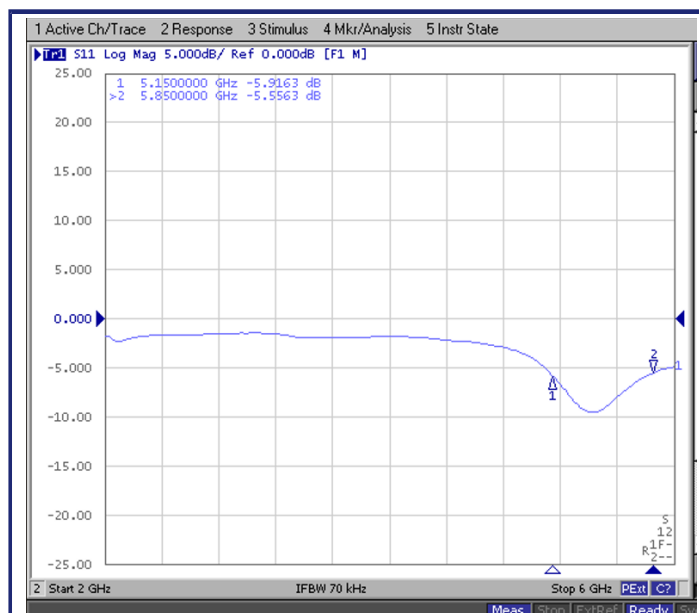
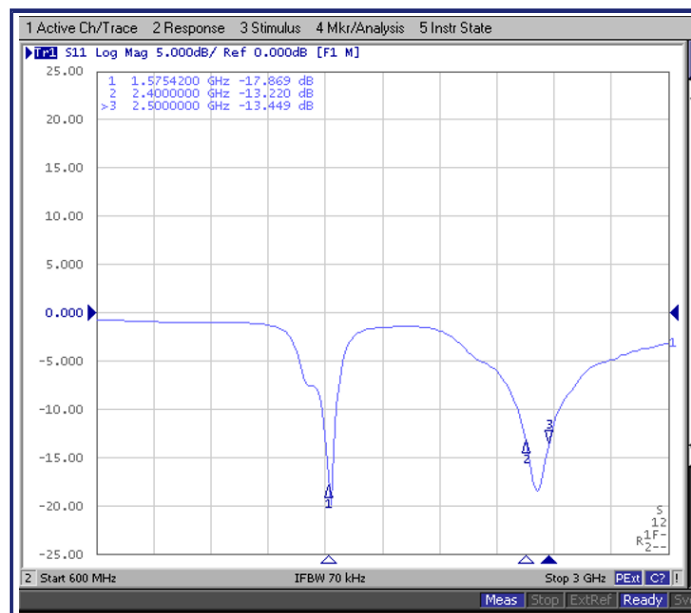
Shanghai Shangyuan Communication Technology Co., Ltd. antenna recognition

DIV



frequency (MHz)	1805	2170	2300	2400	2500	2690
Log Mag	-12.41	-3.66	-3.01	-2.59	-2.28	-2.10

GPS/2.4g wifi



frequency (MHz)	1570	2400	2500	5150	5850
Log Mag	-17.87	-13.22	-13.45	-5.92	-5.56

5 Darkroom test data

Test system: Shielded darkroom

Test environment: temperature

22°C±3°C, humidity

50%±15%

Test equipment: When testing passive data, use the

Network Analyzer

Agilent E5062C When testing

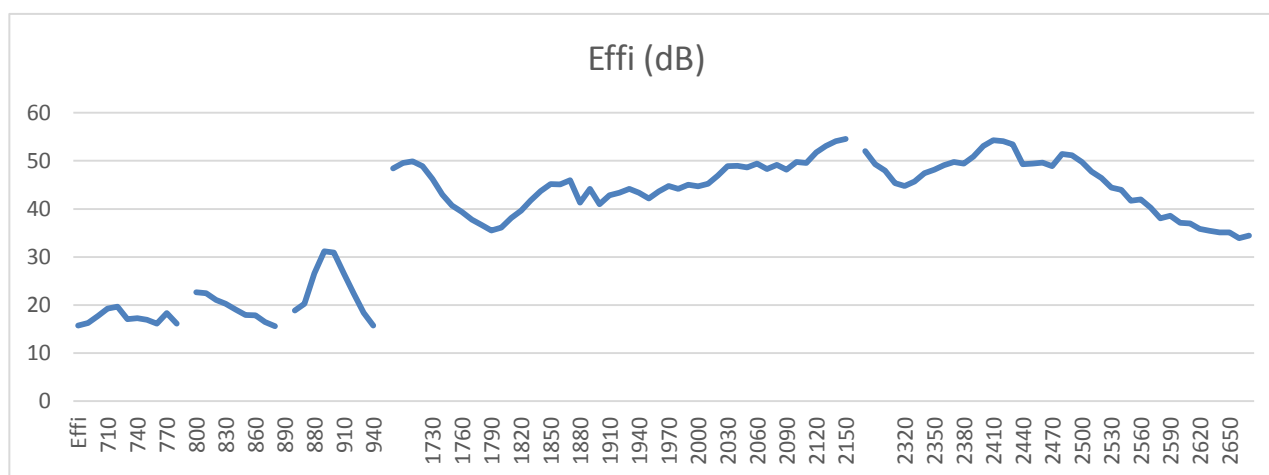
active data, the Comprehensive

Tester Agilent 8960

/CMW500/E4438C is used

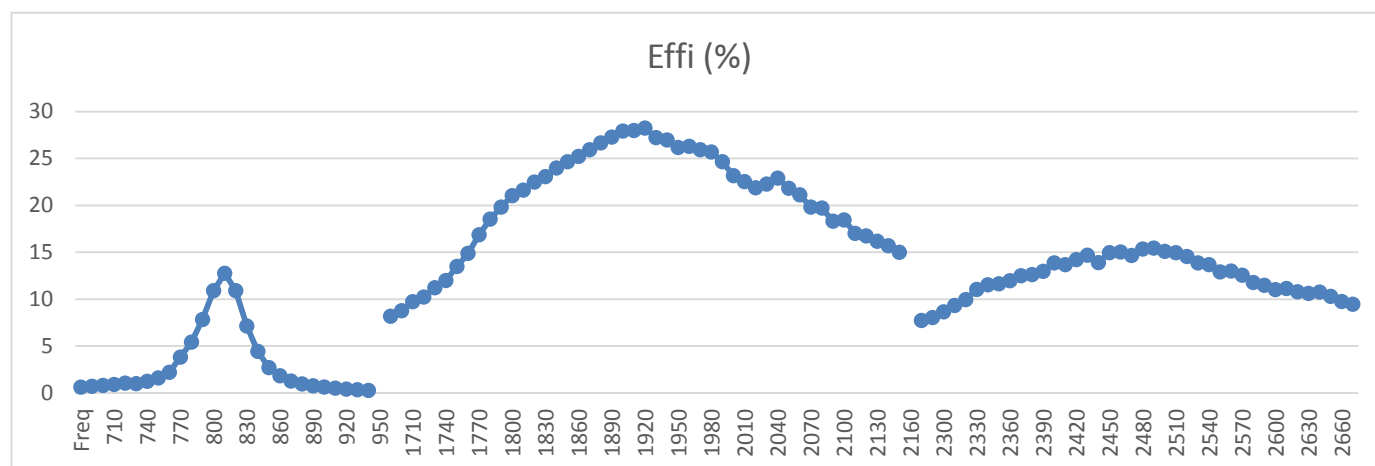
5.1 Passive test data

Main passive efficiency



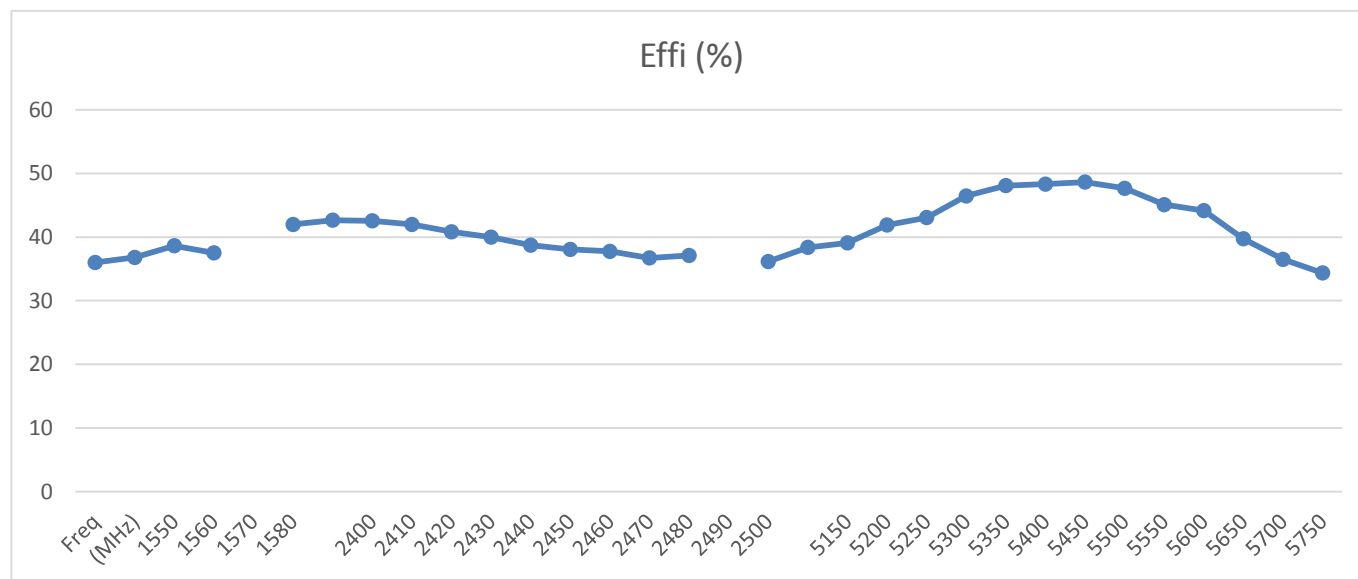
Freq.(MHz)	700--960			1710--2170			2300--2690		
	Lest value	Maximum	Average circuit	Lest value	Maximum	Average circuit	Lest value	Maximum	Average circuit
Effi(%)	15.61	31.19	19.13	35.49	54.85	45.17	33.89	54.33	45.29
Effi(dB)	-8.07	-5.06	-7.03	-5.5	-2.63	-3.45	-4.7	-2.65	-3.44

DIV passive efficiency



Freq.(MHz)	700--960			1710--2170			2300--2690		
	Lest value	Maximum	Average circuit	Lest value	Maximum	Average circuit	Lest value	Maximum	Average circuit
Effi(%)	0.27	12.76	3.07	8.18	28.25	20.54	7.73	15.45	12.29
Effi(dB)	-25.67	-8.94	-15.12	-10.87	-5.49	-6.87	-11.11	-8.11	-9.11

GPS/2.4g wifi/5G wifi passive efficiency



Freq.(MHz)	1550-1580			2400-2500			5150-5850		
	Lest value	Maximum	Average circuit	Lest value	Maximum	Average circuit	Lest value	Maximum	Average circuit
Effi(%)	36.01	38.64	37.24	36.73	42.66	39.85	34.37	48.32	42.51
Effi(dB)	-4.44	-4.13	-4.29	-4.35	-3.7	-4	-4.64	-3.16	-3.74

5.2 Active test data

Main antenna active testdate (Free space, screen off)

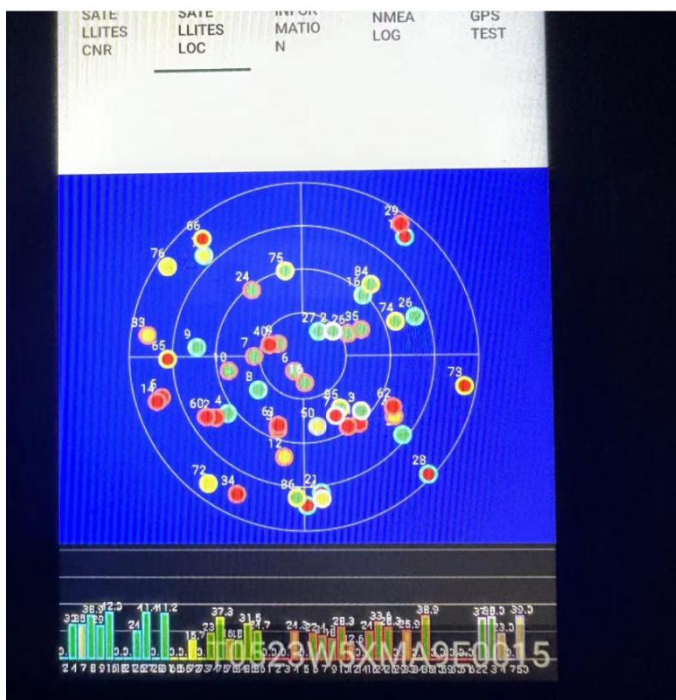
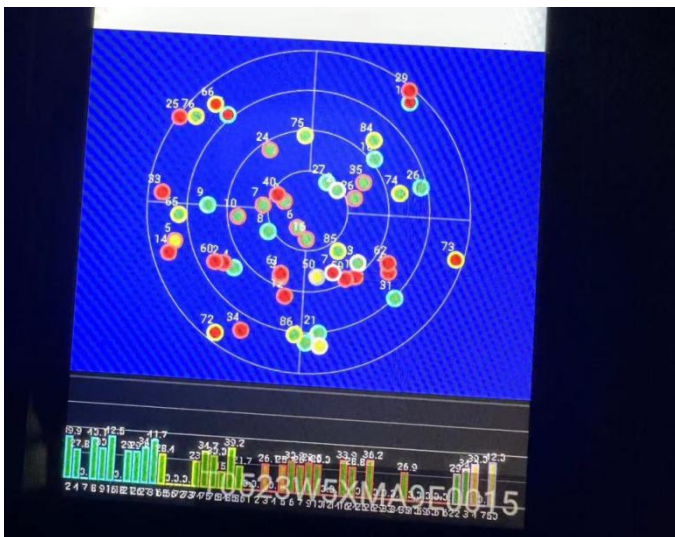
	Band	channel	TRP	TIS
GSM	GSM_850	L	26.41	
		M	26.89	
		H	26.57	-100.95
	GSM_900	L	26.26	
		M	26.45	
		H	26.19	-101.5
	DCS_1800	L	25.23	
		M	25.47	
		H	25.06	-104.56
WCDMA	W_1	L	20.1	
		M	19.87	
		H	19.37	-105.32
	W_5	L	16.62	
		M	16.87	
		H	16.81	-103.26
	W_8	L	16.7	
		M	16.81	
		H	16.48	-103.21

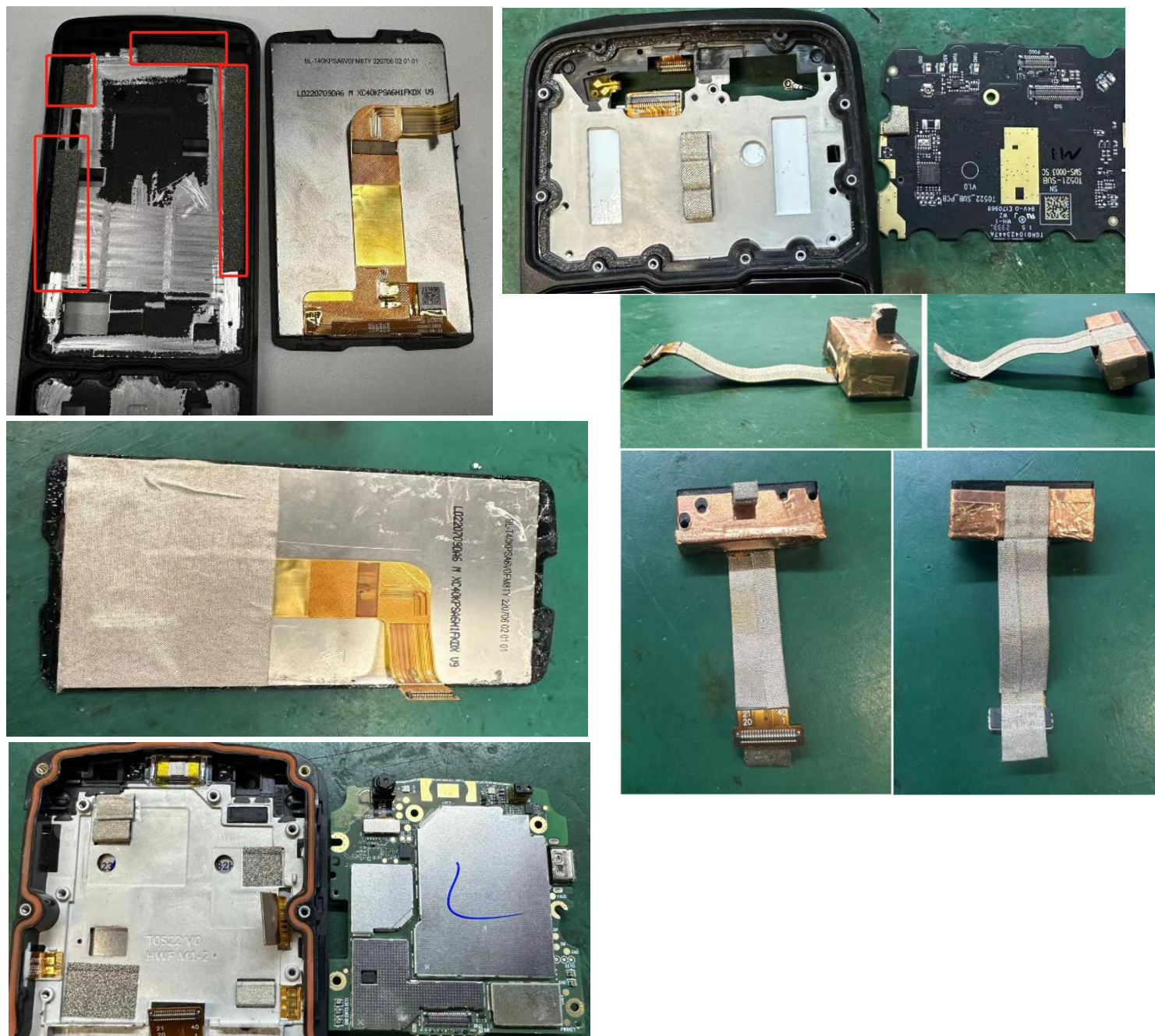
	Band	channel	TRP	TIS
LTE_FDD	FDD_B1	L	19.04	
		M	19.4	
		H	19.75	-95.87
	FDD_B3	L	18.33	
		M	18.71	
		H	18.25	-95.56
	FDD_B5	L	16.48	
		M	16.77	
		H	16.84	-90.06
	FDD_B7	L	20.11	
		M	20.39	
		H	20.21	-94.76
	FDD_B8	L	16.29	
		M	16.76	
		H	16.73	-90.16
	FDD_B20	L	16.34	
		M	16.84	
		H	16.41	-90.54
LTE_TDD	TDD_B34	L	18.46	
		M	18.68	
		H	18.65	-91.25
	TDD_B38	L	20.61	
		M	20.93	
		H	20.14	-92.15
	TDD_B39	L	19.83	
		M	19.89	
		H	19.42	-91.82
	TDD_B40	L	20.29	
		M	20.16	
		H	20.41	-91.47
	TDD_B41	L	19.31	
		M	19.65	
		H	19.96	-90.9

5.2 Active test data

Triple three in one triad ternion active test data (Free space, screen off)

	Band	channel	TRP	TIS
WIFI	WiFi A	36	11.77	
		64	10.7	
		165	11.21	-70.48
	WiFi B	1	15.23	
		7	16.1	
		13	15.66	-83.47
	WiFi G	1	14.89	
		7	15.83	
		13	15.48	-75.12
	WiFi N	1	13.38	
		7	15.7	
		13	14.2	-70.31



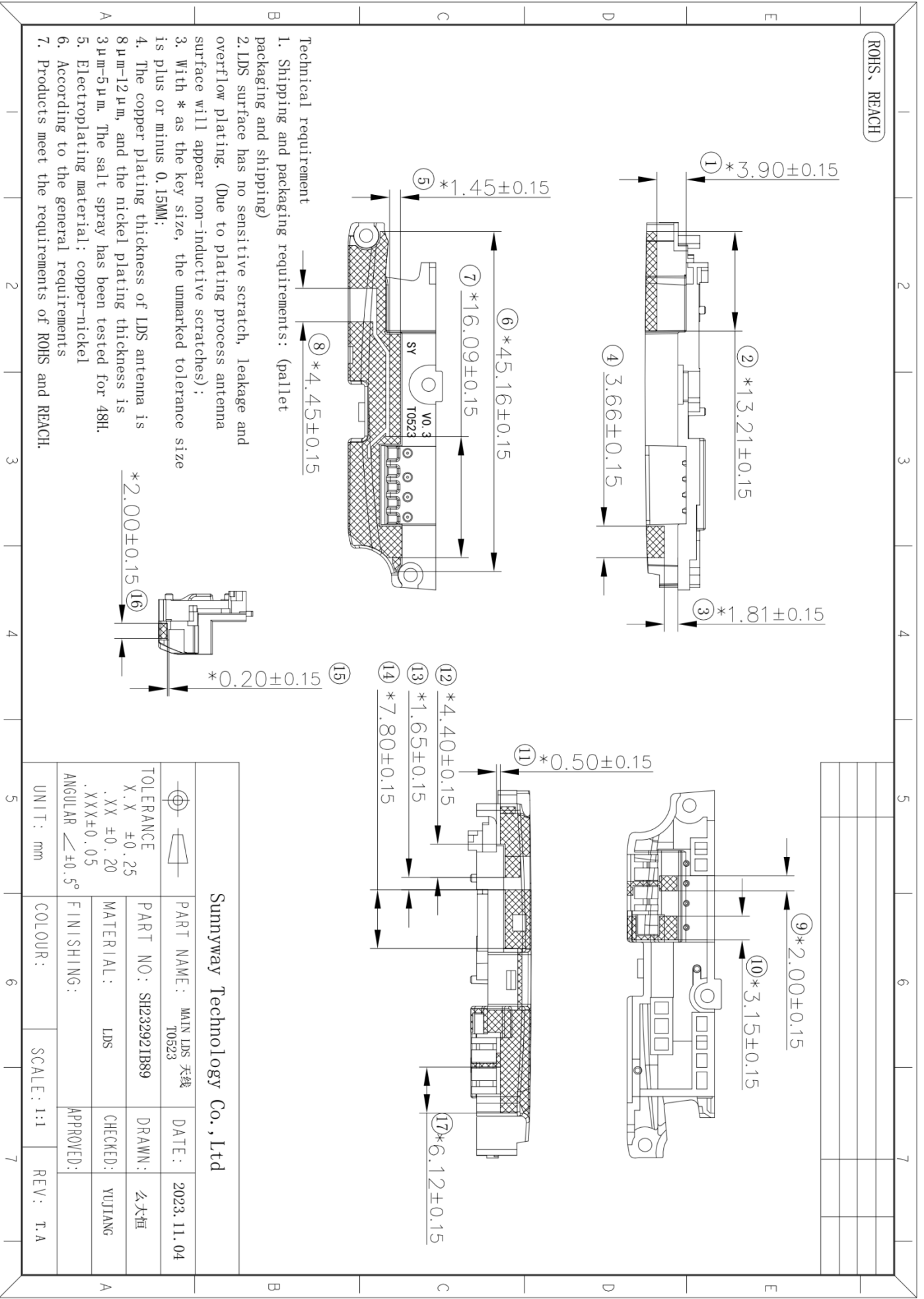


7. Mass production antenna indicators

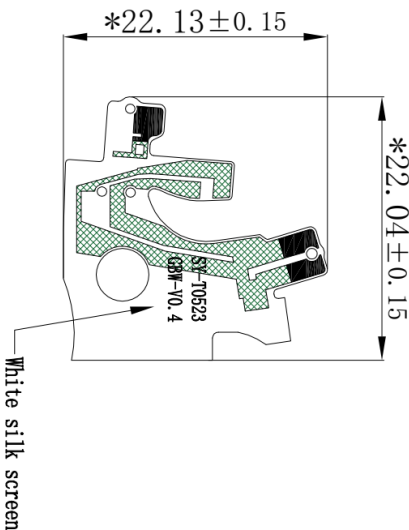
When the antenna is mass-produced, the standing wave ratio is used as the mass production test standard. According to the differences in the project itself, the following criteria are given:

frequency (MHz)	量产标准
700--960; 1710--2690 1575; 5150--5850	VSWR (Mass production performance) <VSWR(Acknowledge performance)+1

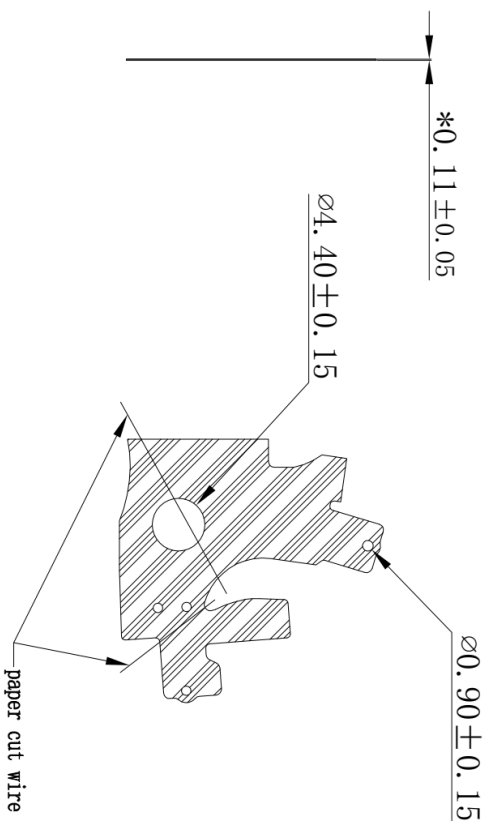
8 Drawing



TOP

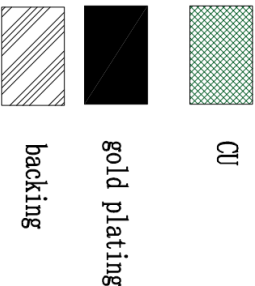


BOT



Technical requirement

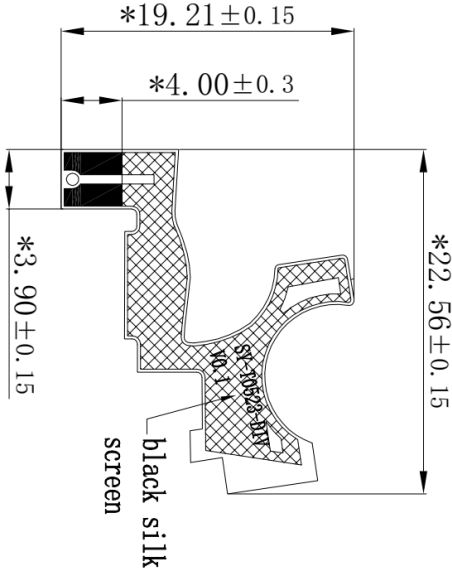
1. Shipping packaging requirements: (single pcs packaging)
2. Copper berth surface is painted with black matte;
3. The ink should be uniform;
4. The size with “*” symbol is the key size;
5. Back glue with 3M94711se;
6. The base material uses PI T=12.5um;
7. Copper foil thickness 0.5oz;
8. The unpoured fillet Angle is 0.2, and the process edge is 0.2mm;
9. No tolerance is specified according to the general tolerance table;
10. The products meet the requirements of RoHS2.0 standard REACH standard.



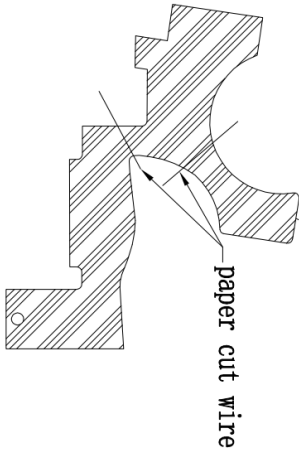
Sunnyway Technology Co., Ltd

	PART NAME: T0623 antenna (FPC)		DATE:	2023. 12. 26
	PART NO: SH232921B75-1		DRAWN:	么大恒
TOLERANCE X.X ±0.25 .XX ±0.25 .XXX ±0.05 ANGULAR $\angle \pm 0.5^\circ$	RF: 刘斌	Tel:	18670612261	
	PM: 马荣来	Tel:	15921558333	
	MATERIAL:	CHECKED:	于姜	
UNIT:mm	FINISHING:	APPROVED:		

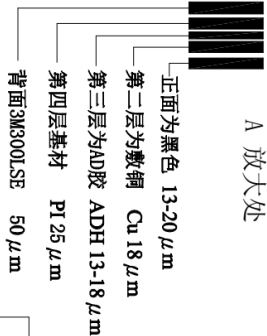
TOP



BOT

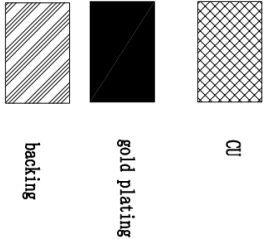


A 放大处



Technical requirement

1. Shipping packaging requirements: (single pcs packaging)
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9. No tolerance is specified according to the general tolerance table;
10. The products meet the requirements of RoHS2.0 standard REACH standard.



Sunnyway Technology Co., Ltd

	PART NAME: T0523		DATE: 2023.08.28	
	PART NO: SH232921B75-2		DRAWN: 么大恒	
	RF: 雷强		Tel: 17792486468	
	PM: 马荣来		Tel: 15921558333	
TOLERANCE X.X ± 0.25 .XX ± 0.20 .XXX ± 0.05 ANGULAR $\leq \pm 0.5^\circ$		MATERIAL:	CHECKED:	于姜
FINISHING:		APPROVED: RA		
UNIT:mm	COLOUR: Black	SCALE:1:1	REV:TEST:A	