Shanghai Sunnyway Communication Technology Limited Company

Temporary antenna specification

Customer：Xiangcheng	The project：D600
Operating frequency band： GPS L1+ WIFI 802.11 a/b/g/n	
Motherboard version：	

Shangyuan material specifications

Specifications and models	Shangyuan material number	Customer part number
3 In 1 ANT	SH23460IB75-2	

The record of project changes

Date of preparation/change	Changes	Change of person	version

Sunnyway counter-signature bar

Research and development	ME:shaobing	Auditor：	QE：	Approver：maronglai
	RF：heyukong	Auditor：		

Client Counter-signature bar

EE	PM	RF	QE

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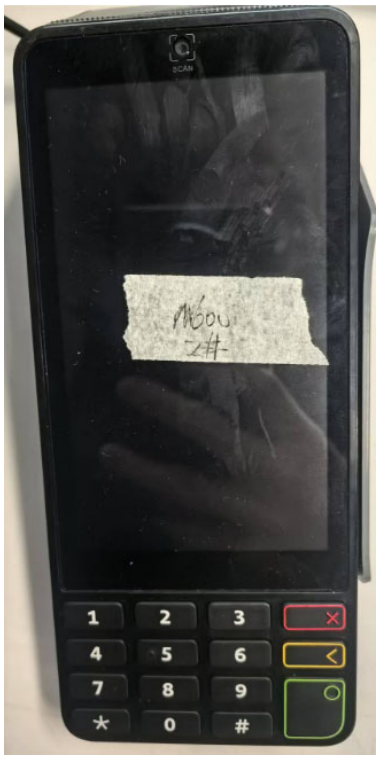
1. Project information

Machine information



Antenna information

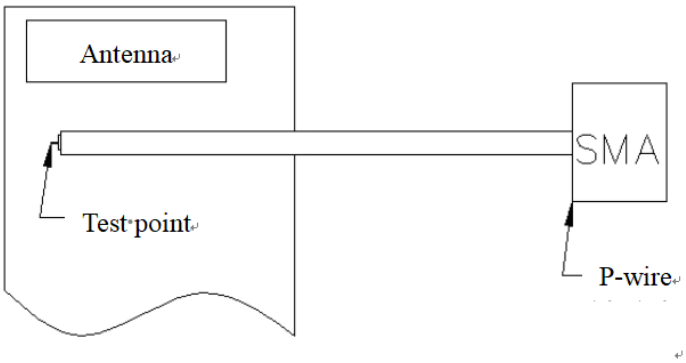
	Version
WIFI Antenna	
Antenna form	PIFA antenna

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

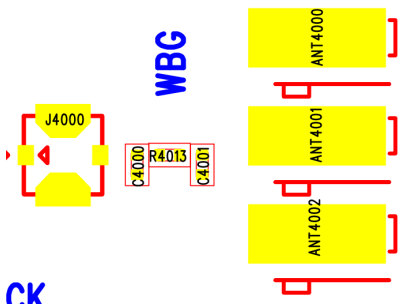
Purpose: To test the passive parameters of the antenna as accurately as possible.

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

3-in-1Antenna



3-in-1 Antenna			
E1	NA	C4001	O201
E2	0欧姆	R4013	O201
E3	NA	C4000	O201

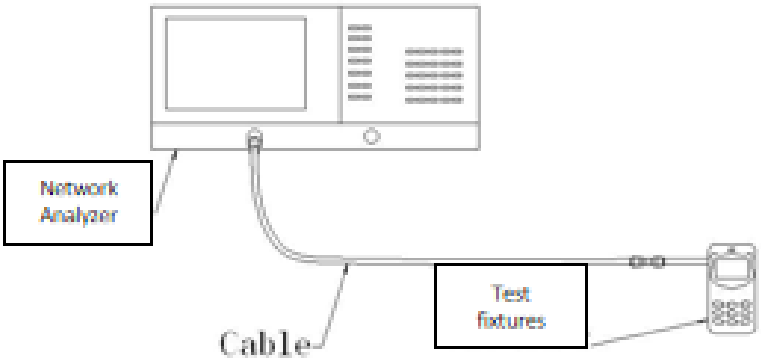
4. S11 test

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.

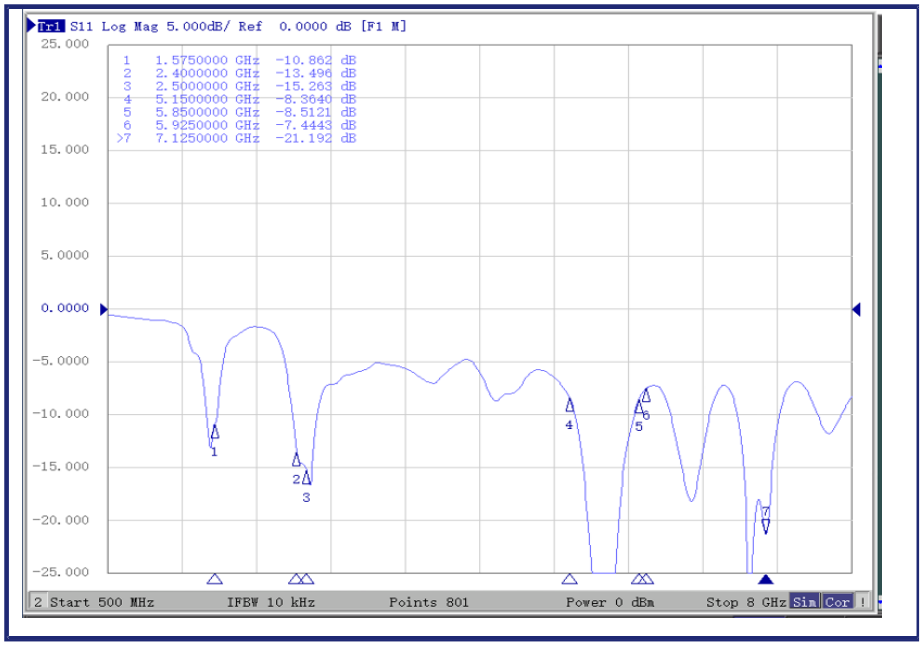
The test diagram is as follows:



Test the schematic

4.2 S11 parameter

3-in-1 Antenna



	3-IN-1
frequency（MHz）	Log Mag
1575	-10.8
2400	-13.4
2500	-15.2
5150	-8.3
5850	-8.5

5 Darkroom test data

Test system: Shielded darkroom
Test environment: temperature 22℃±3℃, 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

3-in-1 antenna efficiency

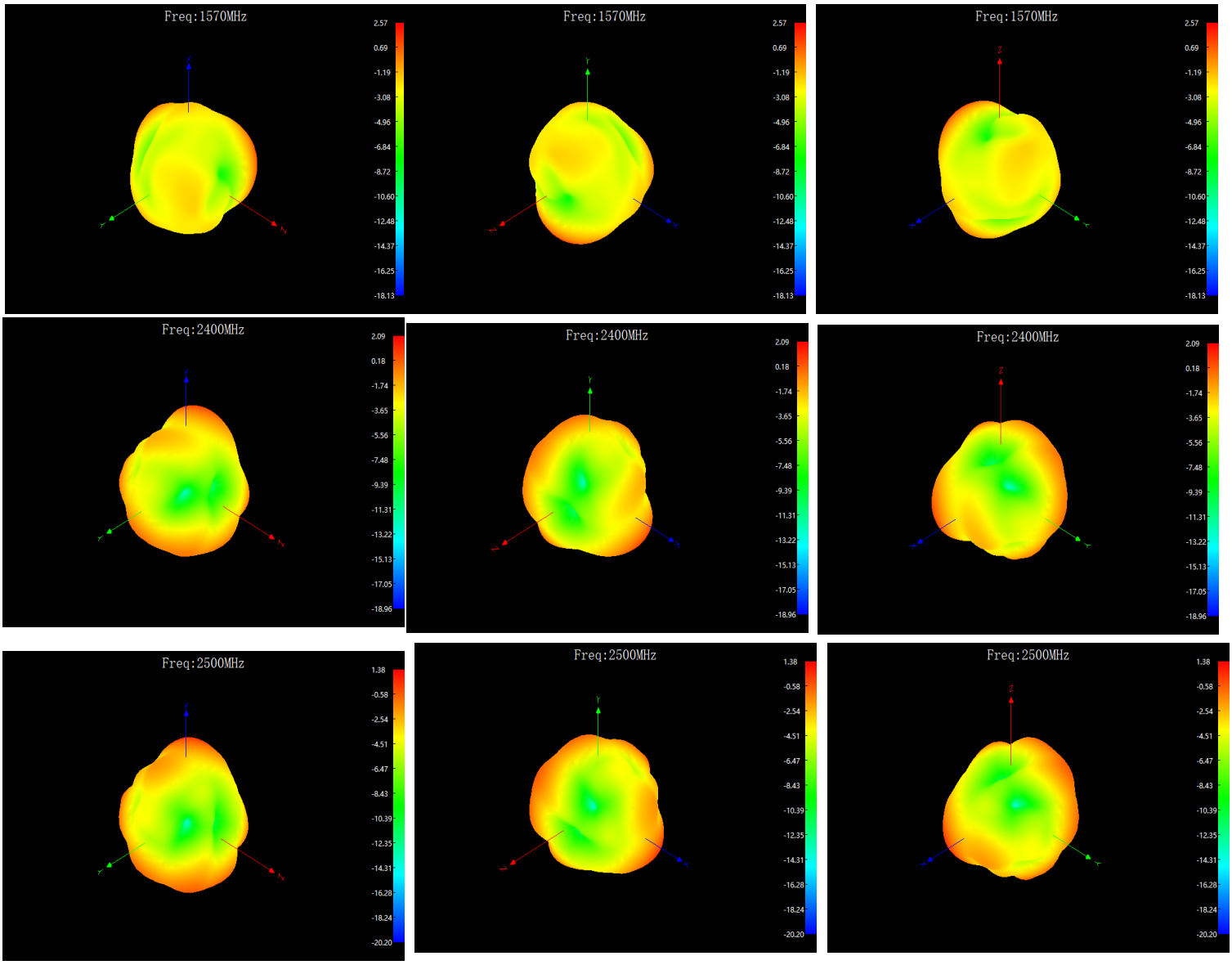
Fre/Mhz	Effi/dB	Effi/%	MaxGain /dBi	Fre/Mhz	Effi/dB	Effi/%	MaxGain /dBi
1500	-4.09	38.99	0.54	5150	-4.89	32.43	1.67
1510	-4.04	39.45	0.57	5200	-4.66	34.2	2.15
1520	-4.03	39.54	0.22	5250	-4.47	35.73	1.03
1530	-4.04	39.45	-0.19	5300	-4.51	35.4	1.12
1540	-4	39.81	0.15	5350	-4.1	38.9	0.88
1550	-3.84	41.3	0.84	5400	-3.9	40.74	0.79
1560	-3.88	40.93	0.66	5450	-3.66	43.05	0.61
1570	-3.83	41.4	0.98	5500	-3.57	43.95	0.61
1580	-3.72	42.46	-0.04	5550	-3.94	40.36	0.68
1590	-3.7	42.66	-0.92	5600	-4	39.81	1.13
1600	-3.74	42.27	-1.24	5650	-3.85	41.21	1.74
1610	-3.96	40.18	-1.62	5700	-4	39.81	1.05
1620	-4.23	37.76	-2.33	5750	-4.19	38.11	1.74
2400	-3.91	40.64	0.03	5800	-4.14	38.55	1.89
2410	-3.95	40.27	-0.19	5850	-4.36	36.64	1.04
2420	-3.91	40.64	1.18				
2430	-3.85	41.21	0.24				
2440	-3.95	40.27	-0.13				
2450	-3.85	41.21	1.2				
2460	-3.93	40.46	0.28				
2470	-3.72	42.46	0.27				
2480	-3.72	42.46	1.54				
2490	-3.75	42.17	0.68				
2500	-3.87	41.02	1.78				

5.2 Active test data

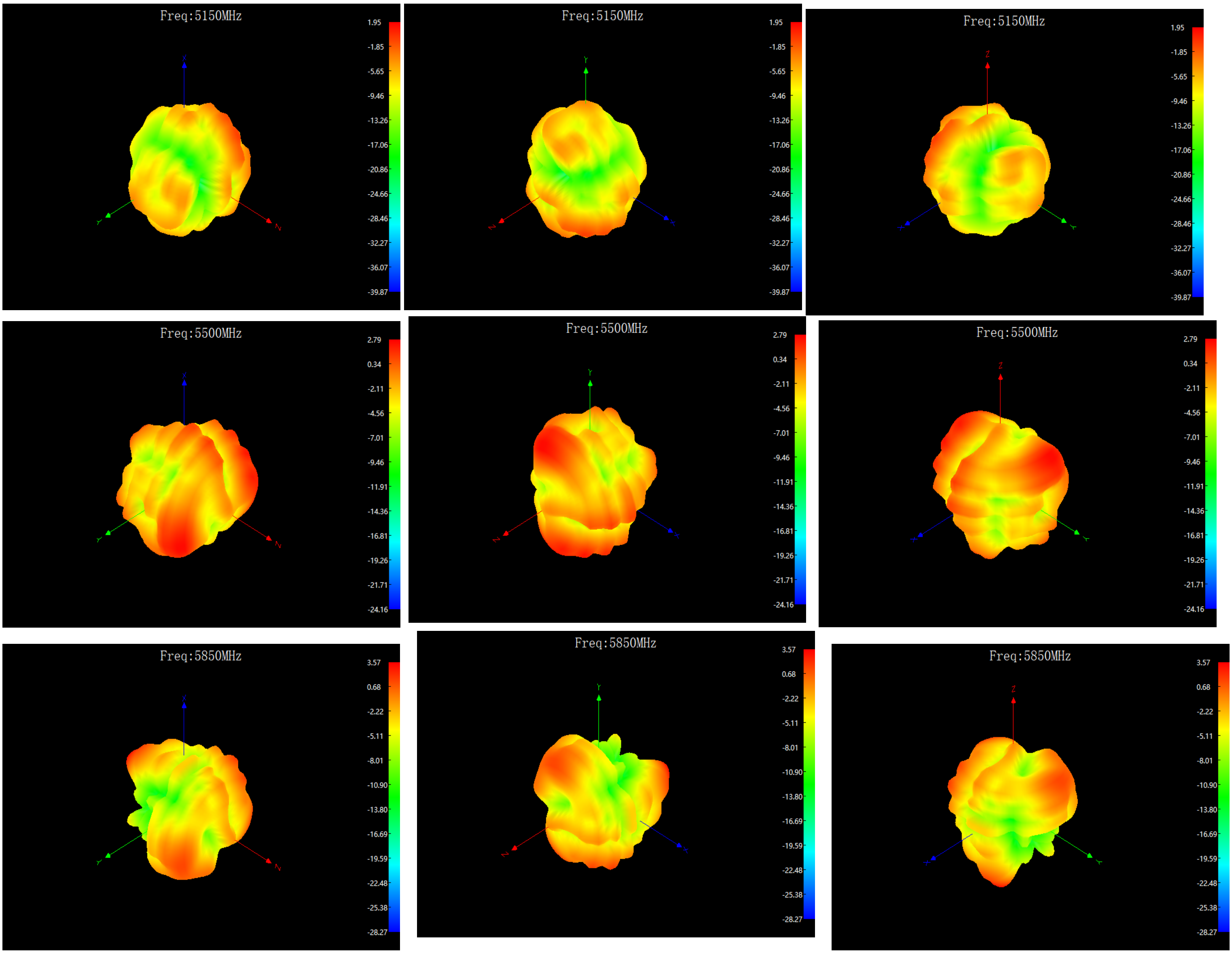
WIFI OTA test				
frequency	Channel	1#		Judging criteria
		TRP	TIS	
WIFI 11a (54M)	36	12.09		TRP:≥12dBm TIS:≤-70dBm
	149	12.14		
	165	12.41	-71.3	
WIFI 11b (11M)	1	15.02		TRP:≥14dBm TIS:≤-83dBm
	7	15		
	13	14.35	-84.47	
WIFI 11g (54M)	1	13.11		TRP:≥12dBm TIS:≤-70dBm
	7	13.23		
	13	13.05	-70.89	
WIFI 11n (65M)	1	11.87		TRP:≥10dBm TIS:≤-68dBm
	7	12.65		
	13	11.68	-68.47	

Shanghai Shangyuan Communication Technology Co., Ltd. antenna recognition

3-in-1 antenna 3D diagram

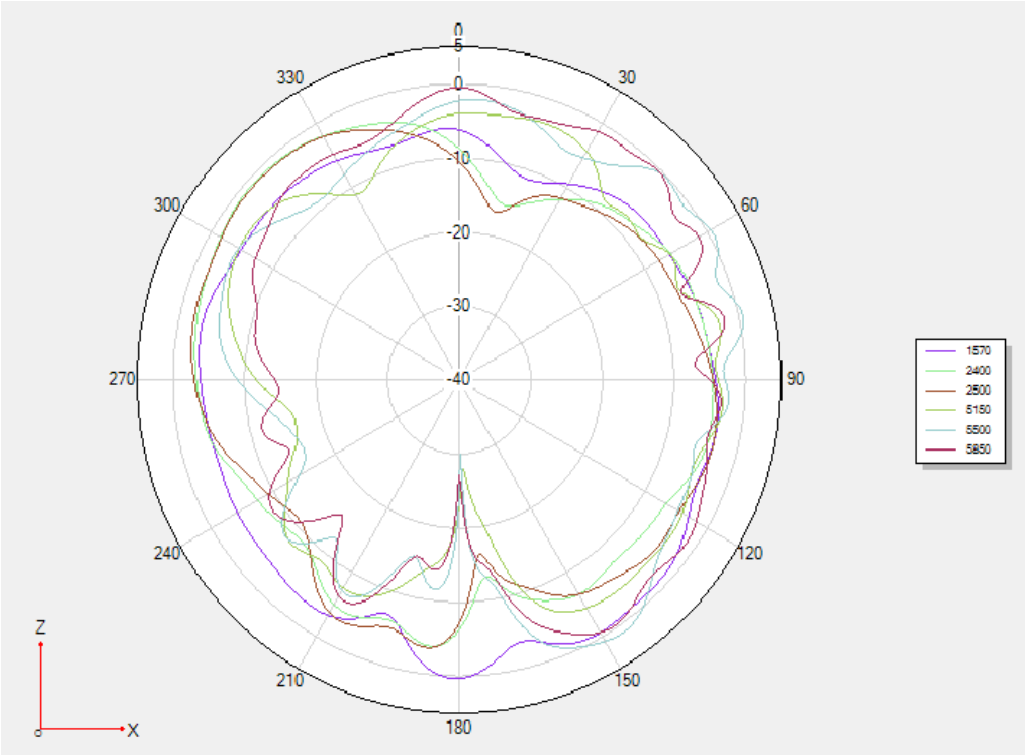


3-in-1 antenna 3D diagram

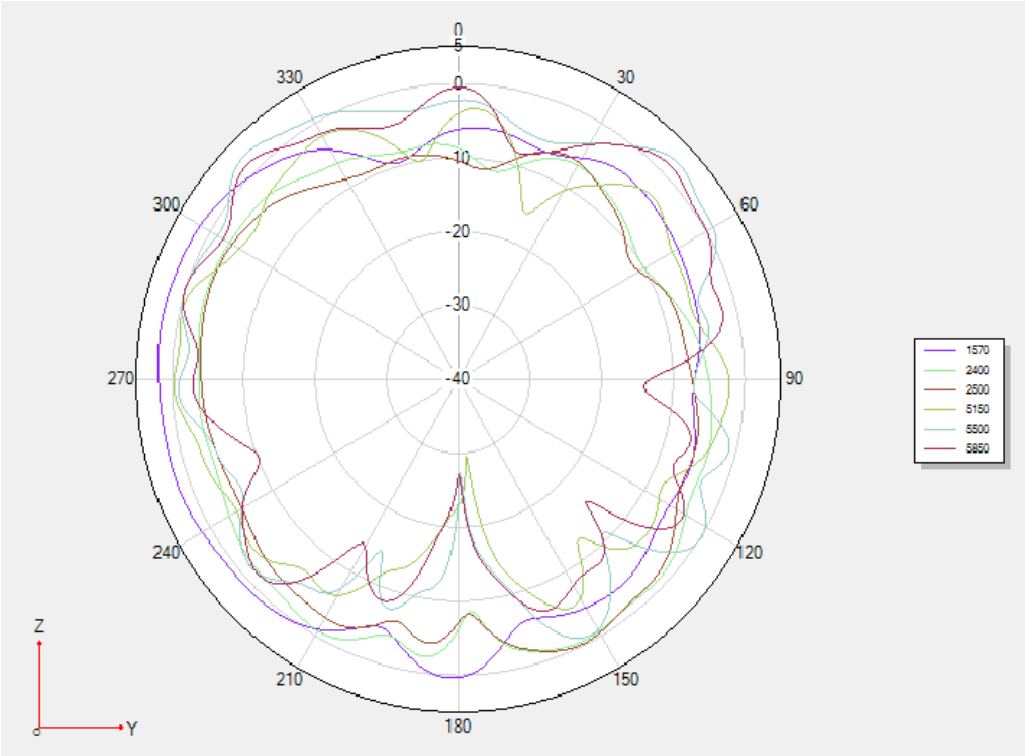


3-in-1 antenna 2D diagram

Phi 0 2D

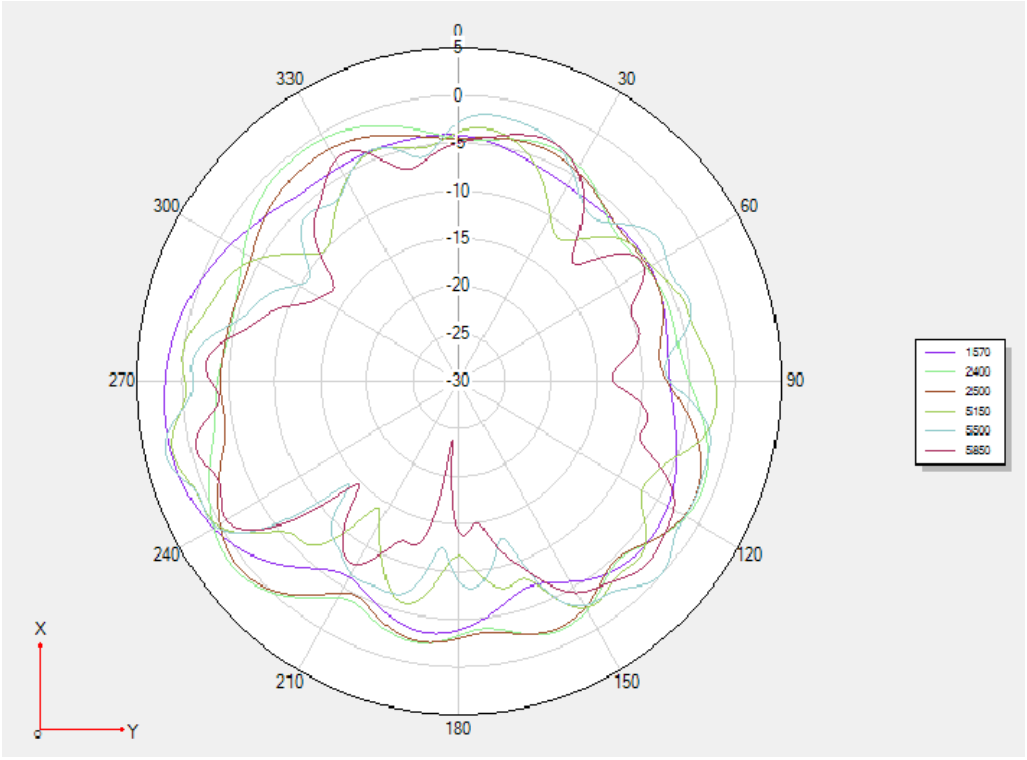


Phi 90 2D

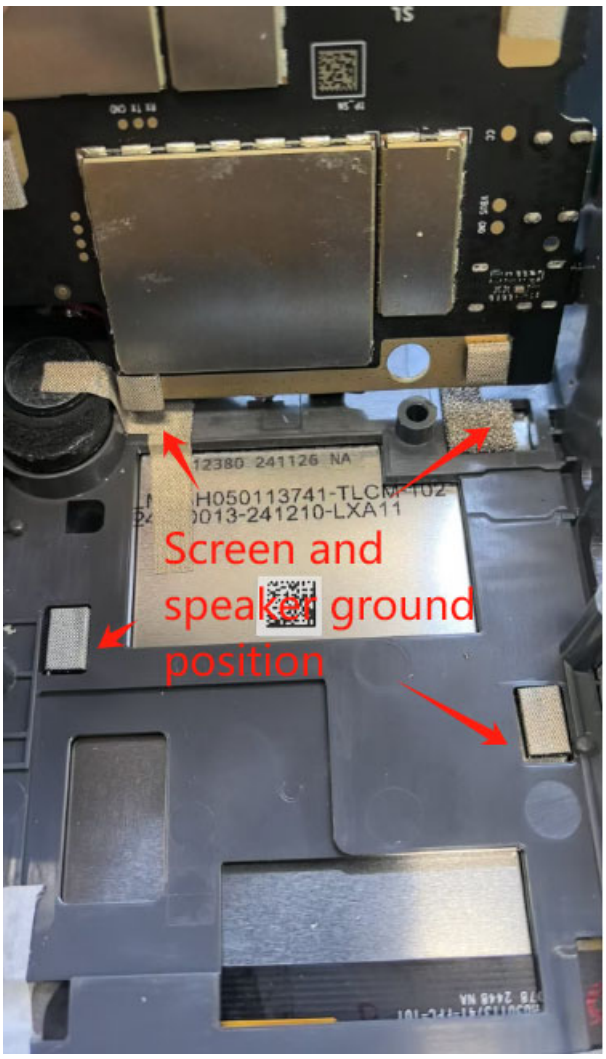


3-in-1 antenna 2D diagram

Theta 90 2D



6. Prototype grounding treatment

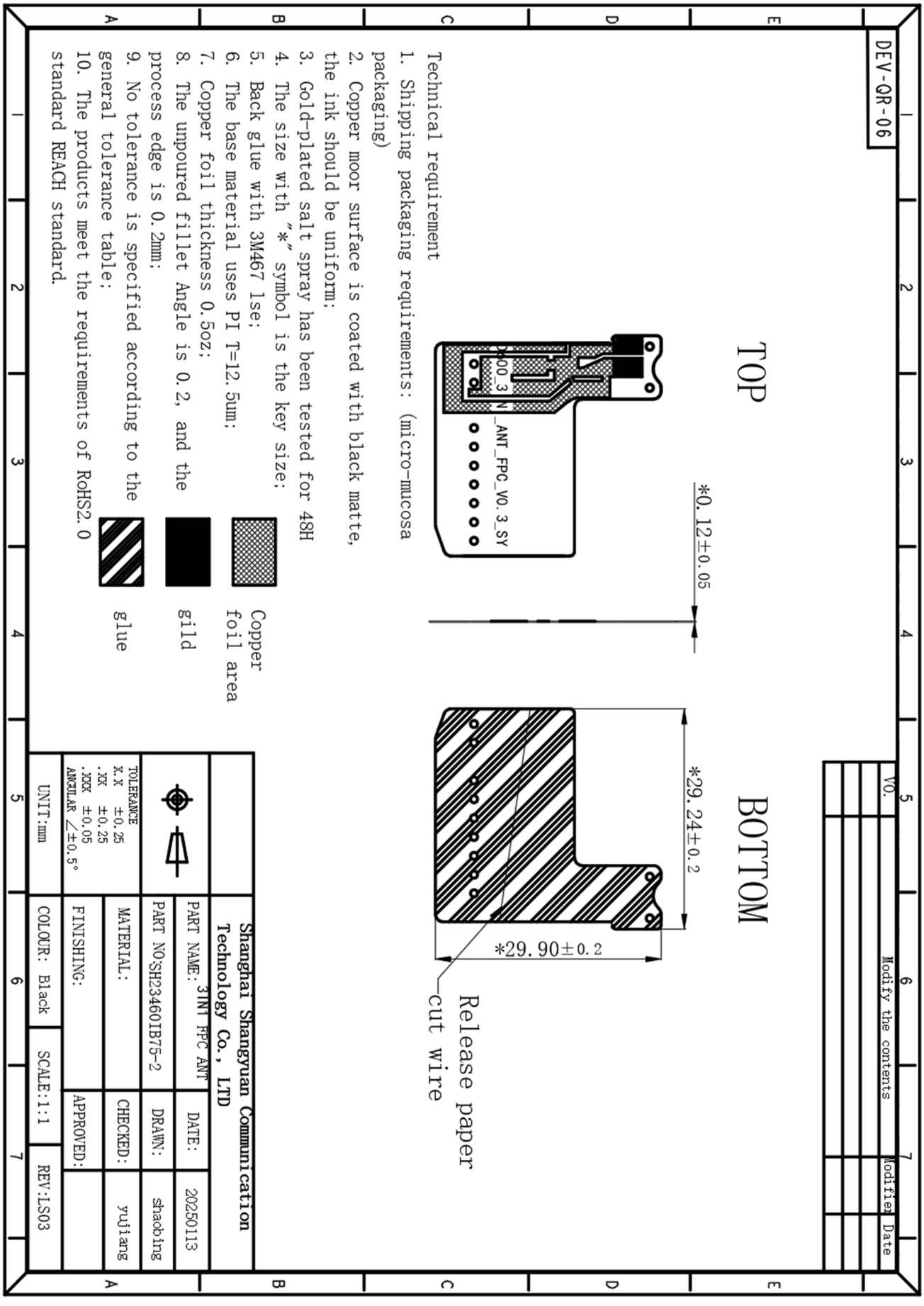


7. Mass production antenna indicators

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)	Mass production standards
1550-1620MHz: 2400-2500MHz; 5150--5850MHz	VSWR (Mass production performance) <VSWR(Acknowledge performance)+1

8 Drawings


DEV-QR-06
TOP
BOTTOM
*0.12±0.05
*29.24±0.2
*29.90±0.2
Release paper
cut wire
Technical requirement
1. Shipping packaging requirements: (micro-mucosa packaging)
2. Copper moor surface is coated with black matte, the ink should be uniform;
3. Gold-plated salt spray has been tested for 48H
4. The size with "*" symbol is the key size;
5. Back glue with 3M467 lse;
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.
Copper foil area
gild
glue
V0.
Modify the contents
Modified
Date
Shanghai Shangyuan Communication Technology Co., LTD
PART NAME: 3IN1 FPC ANT
PART NO:SH23460IB75-2
MATERIAL:
FINISHING:
DATE: 20250113
DRAWN: shaobing
CHECKED: yujiang
APPROVED:
TOLERANCE
X.X ±0.25
.XX ±0.25
.XXX ±0.05
ANGULAR ∠±0.5°
UNIT:mm
COLOUR: Black
SCALE:1:1
REV:LS03