



Sample Acknowledgement



Shenzhen Sanhao Wireless Communication Co., Ltd.

client	Billion Road		
Customer Model	T1		
Material Code	YD-T1		
Three-in-one antenna coding	YD-T1-03		
Edition	T:A		
Production Date	2024.08.01		
Prepare RF	Review Structure	Review Approval/	Stamp
Zhu Kun	Guan Bingkun	Li Fulun	Zhou Wu
Customer confirmation signature:			



Table of contents

1. Basic information and pictures of the project..... 3

1.1 Basic Project Information..... 3

1.2 Prototype and Antenna Sample Diagrams..... 3

2.Electrical performance test items..... 4

2.1 Electrical performance items..... 5

2.2 Test methods and equipment..... 6

3. Whole machine environment processing and antenna matching circuit..... 7

3.1 Machine Environment Processing..... 7

3.2 Antenna Matching Circuit..... 7

4. Test Data..... 8

4.1 Active Test Data..... 8

4.2 GPS/WIFI/BT Test..... 8

4.3 Test Conclusions..... 8

5. Engineering drawings..... 9



1. Basic information and pictures of the project:

1.1 Basic information of the project

Machine type	flat
Antenna Material	FPC
Antenna frequency band	GPS/BT/WIFI
Operating frequency	1550-1600MHz, 2400-2500MHz, 5150-5850MHz

1.2 Tablet appearance and antenna sample picture

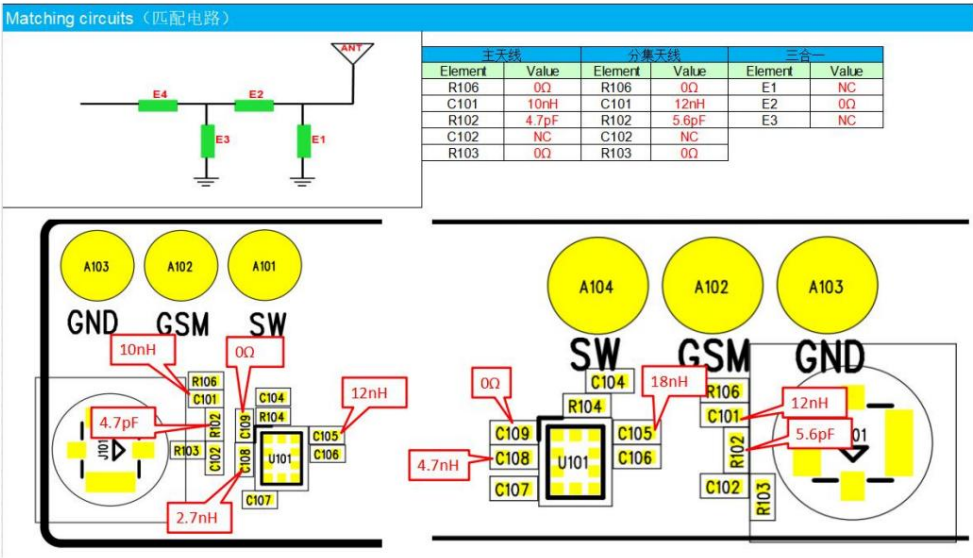


2. Electrical properties

2.1 Electrical performance items

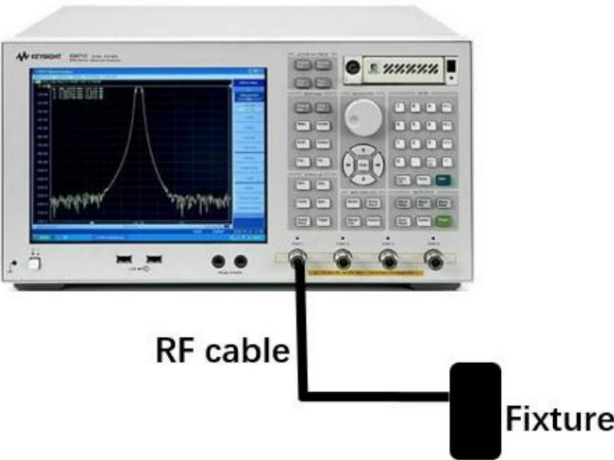
Passive Test	S11	VSWR/R.L/Simth Chart
	S21	Isolation
	S21	Effi./Gain
Active Test	TRP	Total Radiated Power
	TIS	Total Istropic Sensitivity

2.2 Antenna Matching Circuit



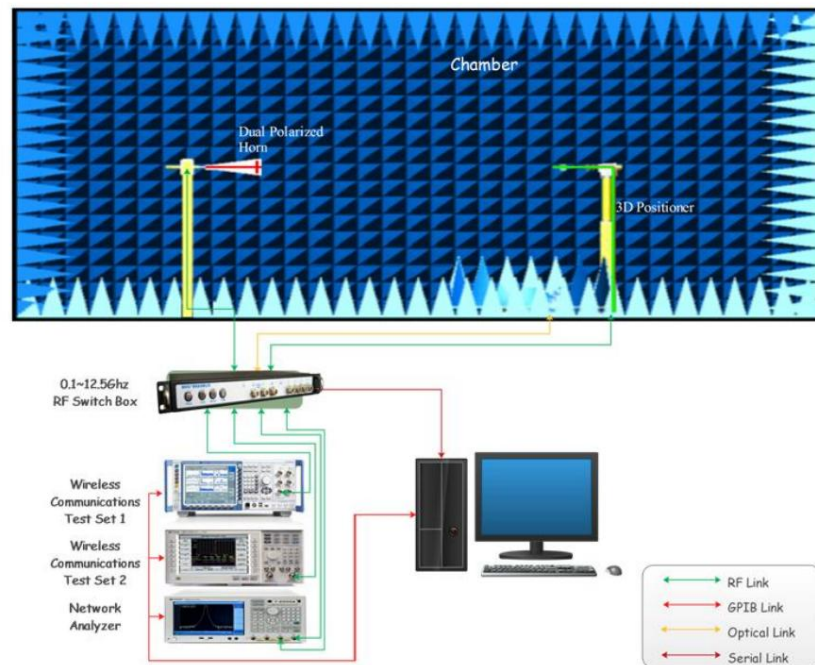
2.3 Test methods and test equipment

2.3.1 S11 test

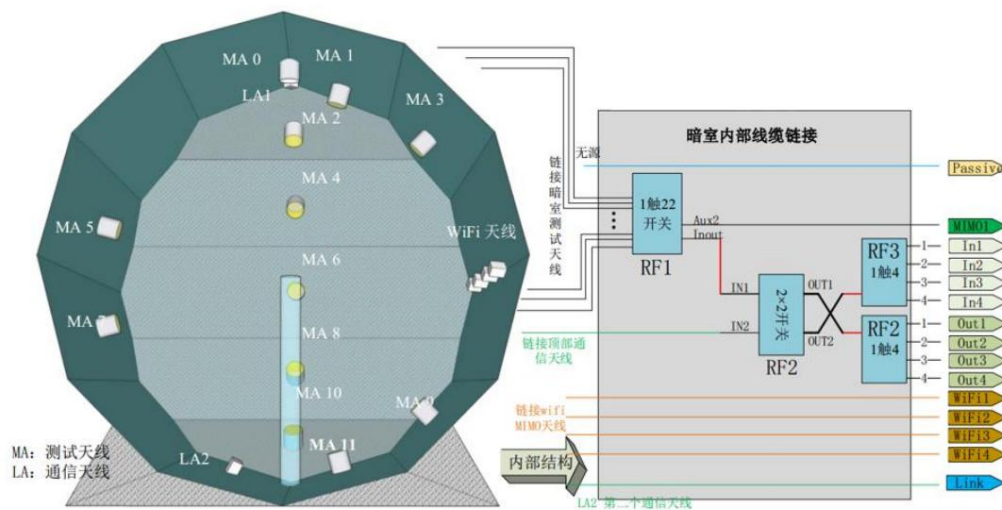




2.3.2 Gain/Efficiency (Effi./Gain) & Active (Trp/Tis)



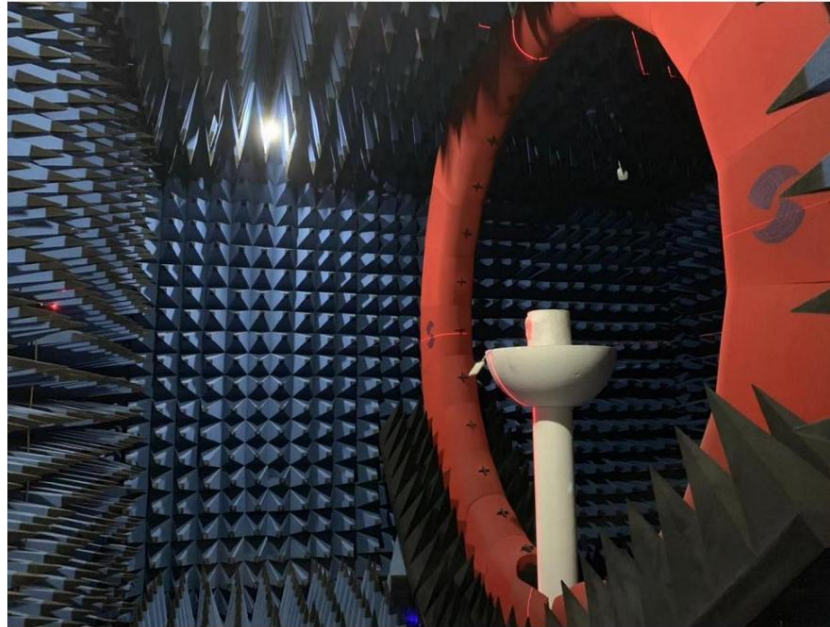
Single probe measurement system



Multi-probe measurement system



2.3.3 Test darkroom images



Internal diagram of multi-probe microwave darkroom system

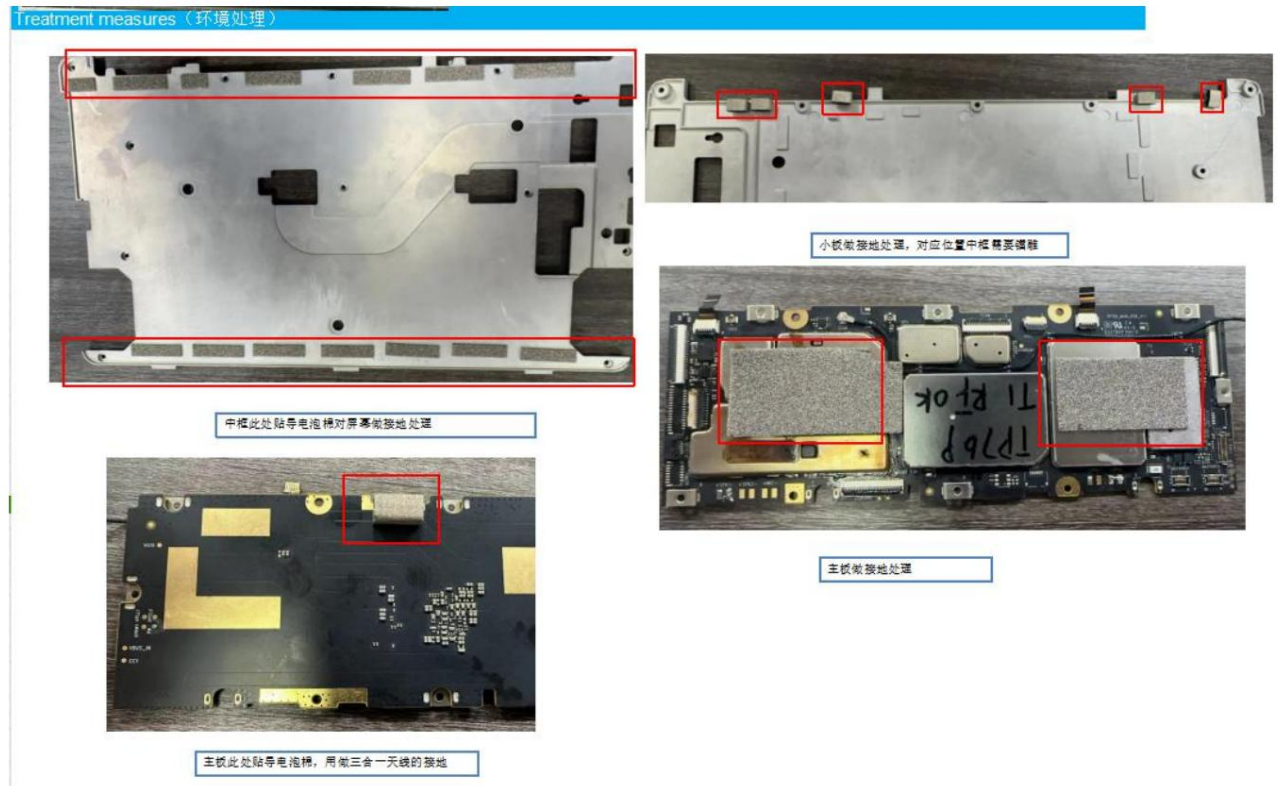


External view of microwave darkroom (darkroom + cabinet equipment)

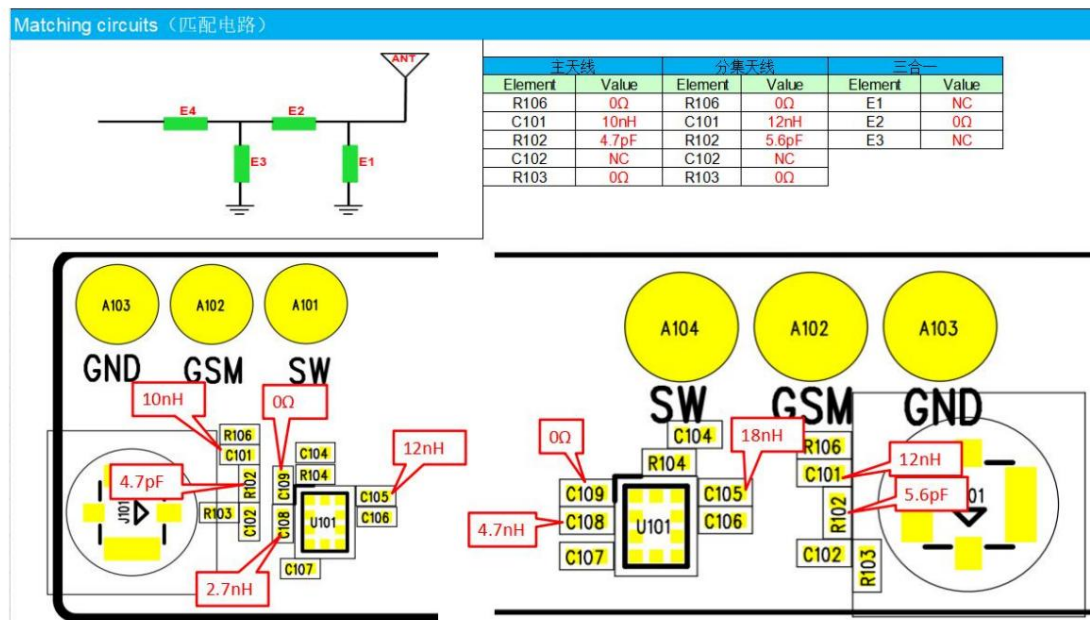


3. Whole machine environment processing and antenna matching circuit

3.1 Machine environment processing



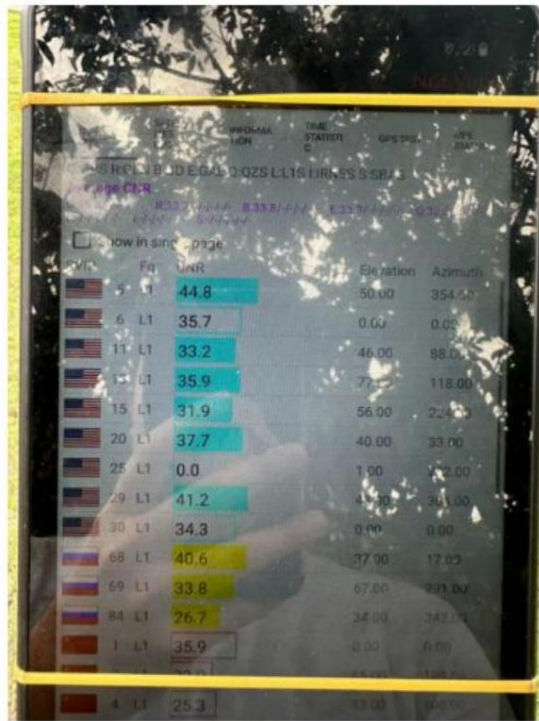
3.2 Antenna Matching Circuit





4. Test Data

4.1 GPS/WIFI/BT test



	CH	TRP	TIS
WIFI-B	1	12.35	-80.37
	7	12.34	-80.34
	13	12.45	-80.36
WIFI-A	36	11.02	-70.24
	149	11.23	-70.34
	165	11.31	-70.28
BT	0	8.35	-87.36
	39	8.45	-87.24
	78	8.92	-87.33

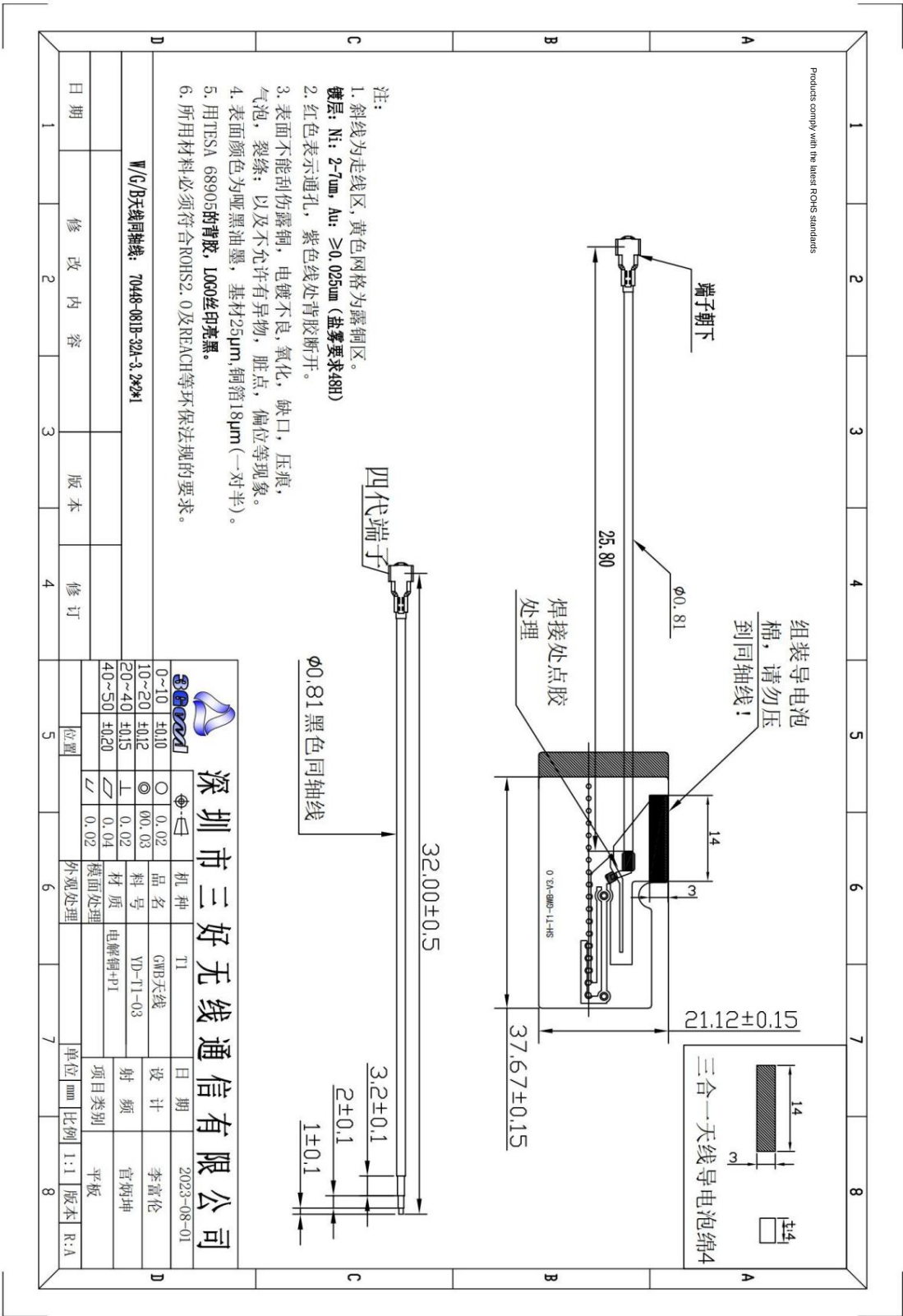
4.2 Test Conclusion

The indicators meet the requirements of GPS/WIFI/BT and the actual test performance is OK. Note: This antenna is only suitable for debugging prototypes. Any changes in the motherboard version or RF materials, or changes in mobile phone accessories (such as microphones, screens, speakers, motors, etc.) must be tested and verified by our company before use.



5. Engineering drawings

5.1 Three-in-one antenna





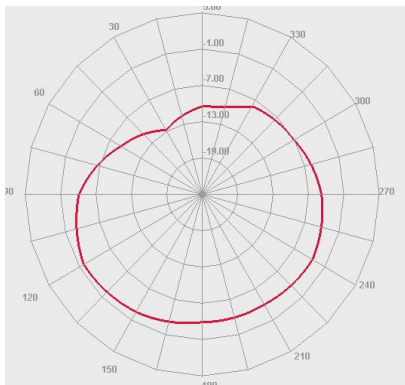
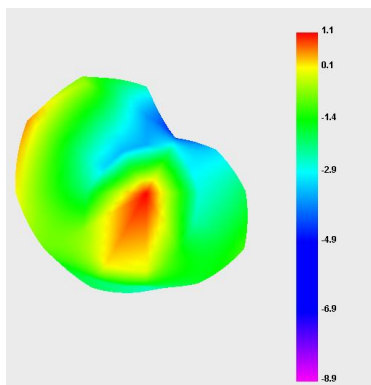
T1 调试报告

Test data (测试数据)

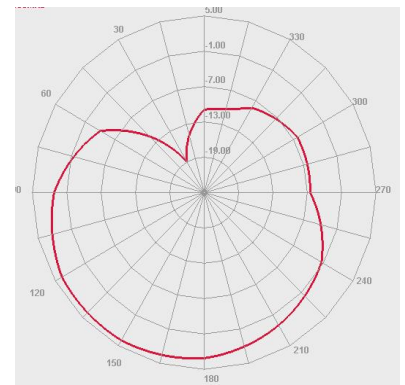
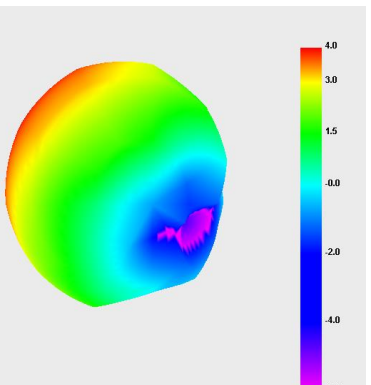
GPS/WIFI Field test (GPS/WIFI场测)

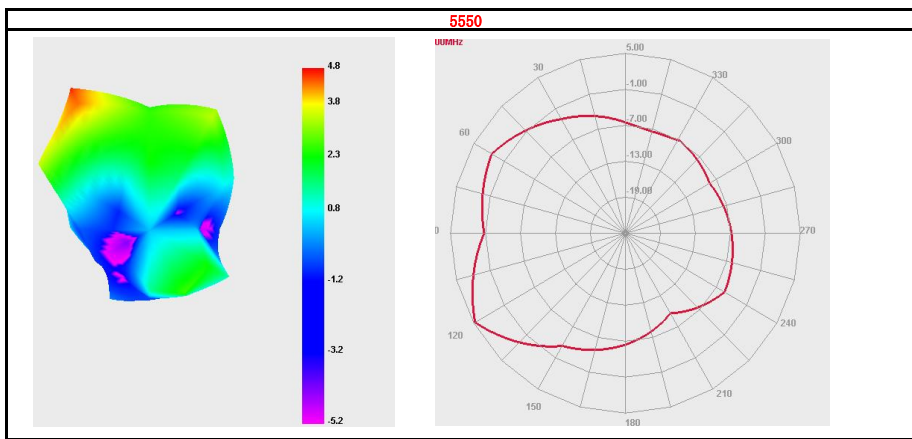
三合一天线											
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1550	41.96	-3.77	0.2	5150	42.44	-3.72	1.93	5500	45.35	-3.43	3.86
1555	41.2	-3.85	0.2	5160	41.62	-3.81	1.8	5510	45.36	-3.43	3.83
1560	42.62	-3.7	0.44	5170	41.12	-3.86	1.73	5520	46.4	-3.33	3.83
1565	42.44	-3.72	0.44	5180	40.56	-3.92	1.66	5530	49.94	-3.02	4.16
1570	41.59	-3.81	0.43	5190	41.27	-3.84	1.86	5540	51.71	-2.86	4.19
1575	41.39	-3.83	0.68	5200	40.99	-3.87	1.74	5550	49.84	-3.02	4.02
1580	40.88	-3.89	0.89	5210	42.66	-3.7	1.97	5560	48.58	-3.14	3.71
1585	40.5	-3.93	1.02	5220	42.43	-3.72	1.98	5570	49.4	-3.06	3.81
1590	38.22	-4.18	0.85	5230	43.86	-3.58	2.18	5580	50.98	-2.93	3.94
1595	40.31	-3.95	1.08	5240	42.03	-3.76	2.09	5600	52.5	-2.8	3.87
1600	38.73	-4.12	1.03	5250	42.4	-3.73	2.19	5610	50.36	-2.98	3.75
2400	52.68	-2.78	3.33	5260	43.19	-3.65	2.47	5620	50.29	-2.98	3.98
2410	41.92	-3.78	2.02	5270	43.06	-3.66	2.48	5630	50.03	-3.01	4.06
2420	42.99	-3.67	2.32	5280	43.69	-3.6	2.69	5640	49.67	-3.04	4.3
2430	43.77	-3.59	2.54	5290	45.84	-3.39	2.96	5650	49.48	-3.06	4.44
2440	45.34	-3.44	2.8	5300	43.08	-3.66	2.93	5660	51.89	-2.85	4.66
2450	47.91	-3.2	3.06	5310	42.8	-3.69	2.98	5670	50.18	-3	4.76
2460	49.79	-3.03	3.24	5320	45.54	-3.42	3.5	5680	51.05	-2.92	4.66
2470	51.02	-2.92	3.38	5330	43.69	-3.6	3.31	5690	50.08	-3	4.62
2480	52.39	-2.81	3.28	5340	45.69	-3.4	3.66	5700	50.96	-2.93	4.73
2490	52.44	-2.8	3.39	5350	47.52	-3.23	3.94	5710	50.56	-2.96	4.59
2500	53.64	-2.7	3.43	5360	45.61	-3.41	3.89	5720	49.28	-3.07	4.47
				5370	44.9	-3.48	3.93	5730	50.11	-3	4.5
				5380	45.89	-3.38	4.03	5740	52.23	-2.82	4.57
				5390	43.61	-3.6	3.89	5750	54.73	-2.62	4.84
				5400	50.6	-2.96	4.52	5760	51.41	-2.89	4.51
				5410	49.32	-3.07	4.49	5770	52.88	-2.77	4.79
				5420	49.78	-3.03	4.53	5780	49.56	-3.05	4.59
				5430	49.23	-3.08	4.44	5790	49.72	-3.03	4.52
				5440	48.86	-3.11	4.45	5800	48.03	-3.19	4.36
				5450	49.13	-3.09	4.46	5810	48.86	-3.11	4.51
				5460	49.2	-3.08	4.35	5820	51.29	-2.9	4.79
				5470	48.43	-3.15	4.24	5830	50.44	-2.97	4.8
				5480	45.77	-3.39	3.94	5840	49.11	-3.09	4.81
				5490	46.45	-3.33	4.04	5850	51.76	-2.86	4.99

1575

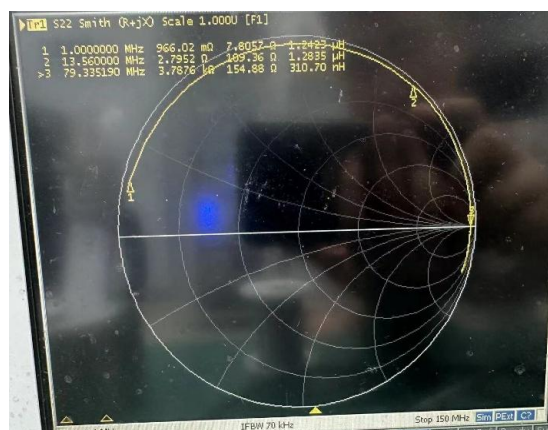
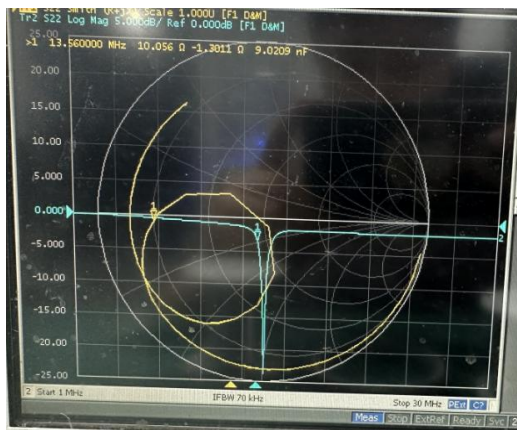


2450





NFC test (NFC测试数据)



The end