



深圳市星源创科技有限公司
SHENZHEN Xingyuanchuang TECHNOLOGY CO., LTD

天线测试报告

Antenna Test Report

TC: 思骐创新

MN: T39B

RF: 刘磊确

MD: 黄清清

MP: 13005478517

Date: 2024. 1. 5

REV : V1. 0



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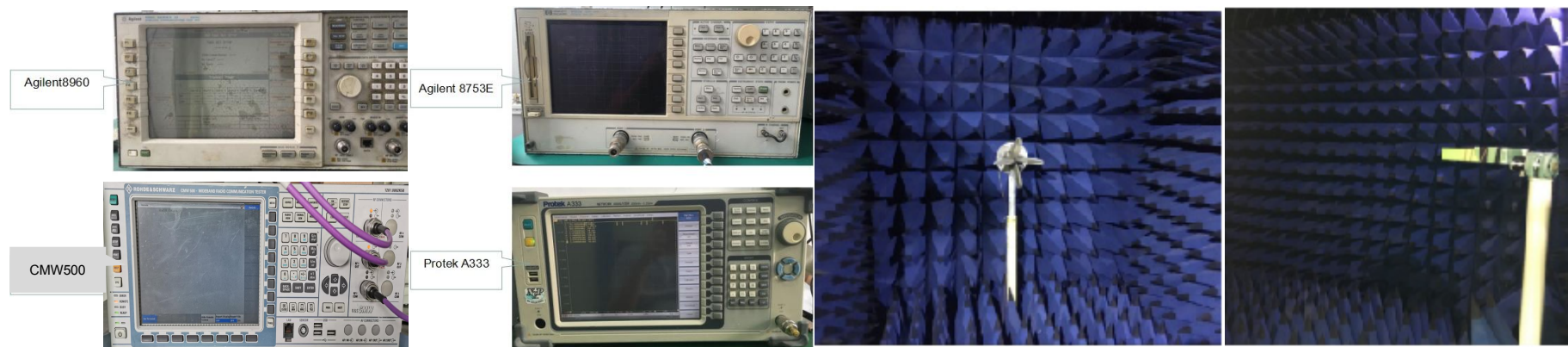
测试信息 Test information

Antenna band		Antenna state	Antenna form	Matchc hanges	Note
Main ANT	2G	850/1800/1900	FPC	PIFA	NO
	3G	W2/W4/W5			
	4G	B2/B4/B5/B12/B13/B25/B26/B41/B66/B71			
AUX ANT	BT/WIFI	2.4/5G	FPC	PIFA	NO
	GPS	1.575G	FPC	PIFA	NO
	DIV		FPC	PIFA	NO

测试环境

Test environment

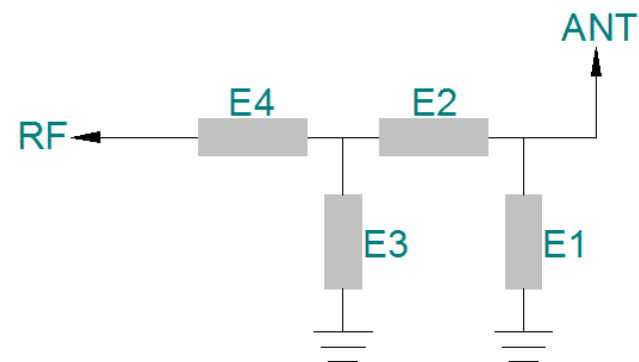
	测试项目	测试设备
S参数 (S-parameter)	1. 电压驻波比 (VSWR) 2. 回波损耗 (Rrtun Loss)	网络分析仪: Agilent8753ES
2. 有源测试 (Active)	1. 发射功率 (TRP) 2. 接收灵敏度 (TIS) 3. 屏灭/屏亮	1. 暗室: 5*3*3m (3D) Chamber 2. 综测仪: Agilent8960 CMW500
3. 无源测试 (Passive)	1. 天线增益 (Gain) 2. 天线效率 (Efficiency)	1. 暗室: 5*3*3m (3D) Chamber 2. 网络分析仪: Agilent 8753ES



天线位置
Antenna position



匹配电路
Matching circuit



	电容 (PF)	电感 (NH)
E1(0402)		
E2(0402)		
E3(0402)		
E4(0402)		



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有源测试数据
OTA test data

2G												
Band	GSM850			GSM900			GSM-1800(DCS)			GSM-1900(PCS)		
Channel	128	192	251	1	62	124	512	698	885	512	660	810
TRP(dBm)	27.68	27.18	27.14				26.05	26.29	27.11	26.13	25.11	24.54
TIS(LCD OFF)												
TIS(LCD ON)			-102.93						-104.42			-105.32
3G												
Band	WCDMA-2			WCDMA-4			WCDMA-5					
Channel	9662	9800	9938	1537	1675	1738	4357	4400	4458			
TRP(dBm)	18.35	18.06	18.37	18.27	18.45	19.38	17.55	17.39	16.3			
TIS(LCD OFF)												
TIS(LCD ON)			-105.61			-102.22			-104.73			



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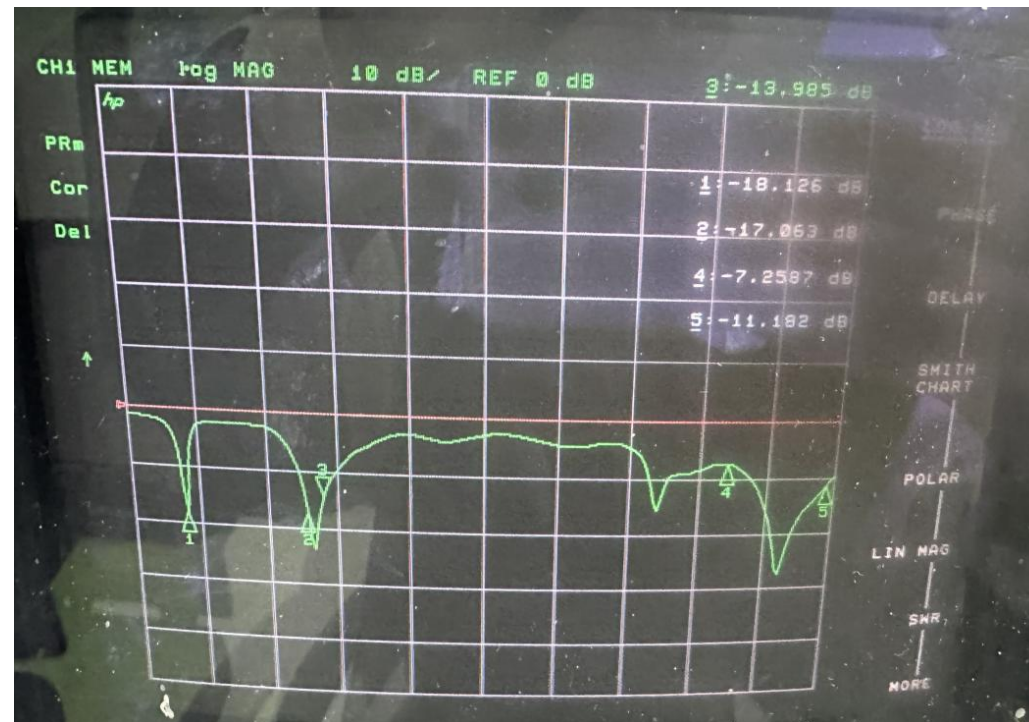
ANTENNA

有源测试数据
OTA test data

4G(FDD 10M)												
Band	FDD-Band 2			FDD-Band 4			FDD-Band 5			FDD-Band12		
Channel	18650	18900	19150	20000	20175	23050	20450	20525	20600	23060	23095	23130
TRP(dBm)	18.55	17.42	18.85	18.28	18.48	19.5	18.27	17.41	17.85	18.03	19.46	19.42
TIS(LCD OFF)												
TIS(LCD ON)			-92.48			-91.18			-91.92			-92.53
Band	FDD-Band 13			FDD-Band 25			FDD-Band 26			FDD-Band 66		
Channel		23230		8090	8365	8640	8740	8865	8990	66486	66886	67286
TRP(dBm)		18.84		18.27	18.85	17.42	18.36	18.87	17.87	19.19	19.82	19.82
TIS(LCD OFF)												
TIS(LCD ON)		-91				-91.15			-91.75			-89.87
Band	FDD-Band 71											
Channel	68636	68761	68886									
TRP(dBm)	17.48	17.64	17.34									
TIS(LCD OFF)												
TIS(LCD ON)			-89.99									
4G(TDD 20M)												
Band	FDD-Band 38			FDD-Band 39			FDD-Band 40			FDD-Band 41		
Channel	37850	38000	38150	38350	38450	38550	38750	39150	39550	39750	40620	41490
TRP(dBm)										18.08	20.27	21.51
TIS(LCD OFF)												
TIS(LCD ON)												-89.99

无源测试数据 Passive test data

ANT1 S11-VSWR&Return Loss



Frequency (MHZ)	1575	2400	2500	5150	5850
VSWR	1.28	1.33	1.5	2.5	1.76
Return Loss (DB)	-18.12	-17.06	-13.98	-7.25	-11.18



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无源测试数据
Passive test data

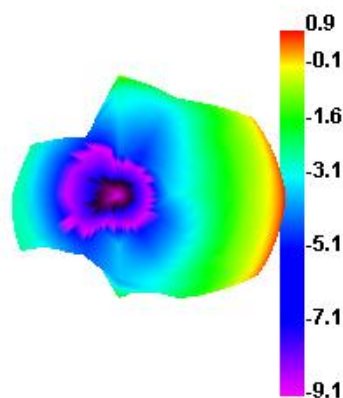
ANT1 GAIN&Efficiency-GPS

Passive Test For GPS								
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHIS (%)	Max (dB)	Min (dB)
1560	36.14	-4.42	1.04	-1.11	16.42	19.719	1.04	-14.68
1565	36.92	-4.33	1.18	-0.97	16.677	20.244	1.18	-14.76
1570	35.85	-4.46	1.23	-0.92	16.195	19.653	1.23	-14.89
1575	32.94	-4.82	0.87	-1.28	14.821	18.117	0.87	-15.99
1580	29.82	-5.26	0.36	-1.79	13.41	16.409	0.36	-16.67
1585	27.41	-5.62	-0.1	-2.25	12.448	14.966	-0.1	-17.27
1590	25.84	-5.88	-0.45	-2.6	12.007	13.832	-0.45	-18.12

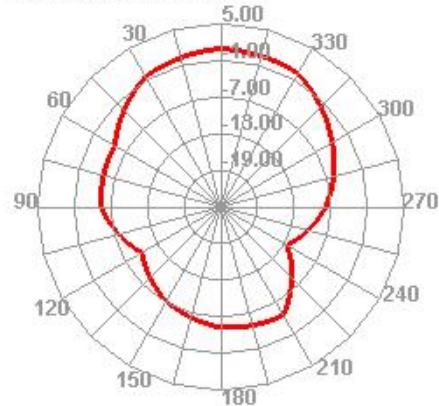
无源测试数据
Passive test data

ANT1 Direction of figure(GPS)

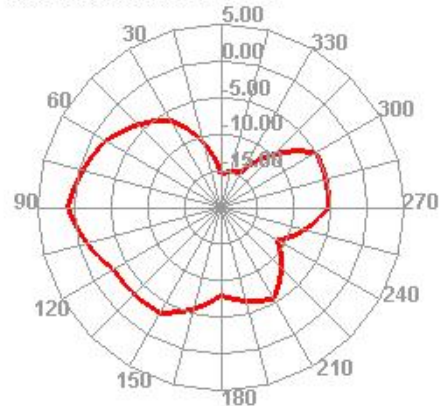
1575.000MHz



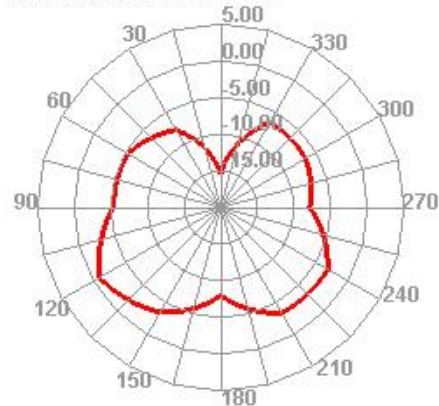
1575.000MHz H



1575.000MHz E1



1575.000MHz E2



无源测试数据 Passive test data

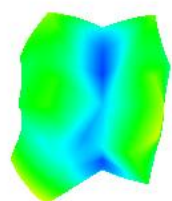
ANT1 GAIN&Efficiency-WIFI2.4G/BT

Passive Test For WIFI2.4								
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)
2400	47.06	-3.27	1.69	-0.46	23.323	23.739	1.69	-13.94
2410	46.4	-3.33	1.76	-0.39	22.862	23.541	1.76	-13.76
2420	48.01	-3.19	2.06	-0.09	23.47	24.542	2.06	-13.24
2430	48.54	-3.14	2.12	-0.03	23.596	24.948	2.12	-13.2
2440	49.55	-3.05	2.01	-0.14	24.064	25.483	2.01	-12.64
2450	48.93	-3.1	1.78	-0.37	23.717	25.217	1.78	-12.05
2460	48.92	-3.11	1.64	-0.51	23.853	25.067	1.64	-11.69
2470	49.73	-3.03	1.73	-0.42	24.317	25.409	1.73	-12.11
2480	50.78	-2.94	1.75	-0.4	24.984	25.793	1.75	-12.03
2490	51.15	-2.91	1.74	-0.41	25.466	25.688	1.74	-12.45
2500	51.11	-2.92	1.54	-0.61	25.677	25.429	1.54	-12.95

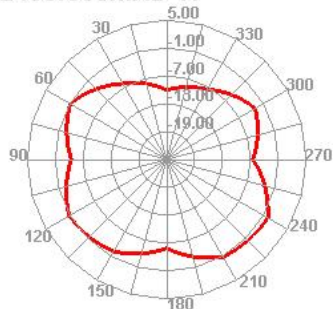
无源测试数据 Passive test data

ANT1 Direction of figure(2.4/BT)

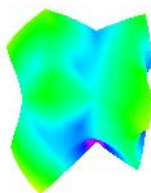
2400.000MHz



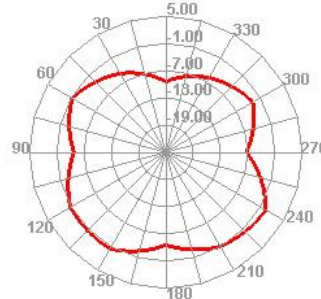
2400.000MHz H



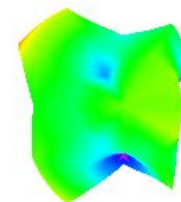
2450.000MHz



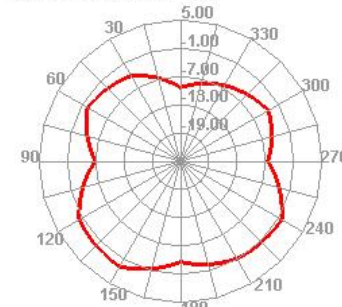
2450.000MHz H



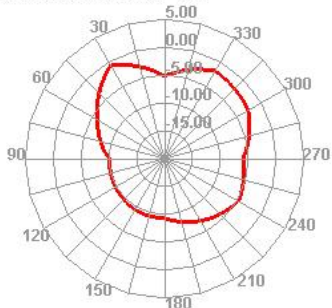
2500.000MHz



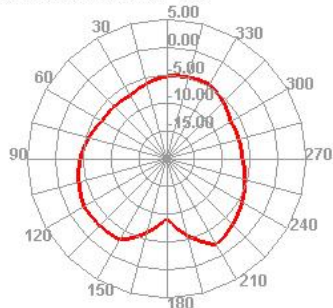
2500.000MHz H



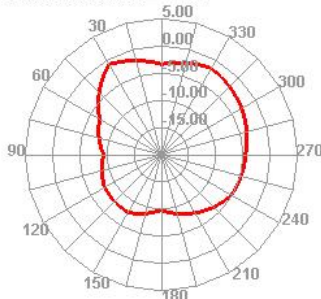
2400.000MHz E1



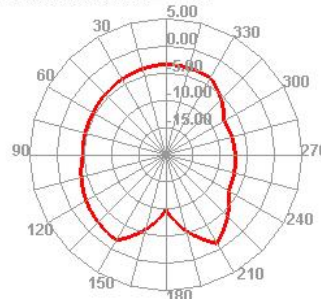
2400.000MHz E2



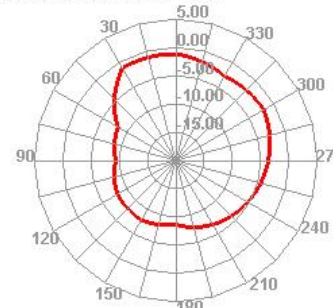
2450.000MHz E1



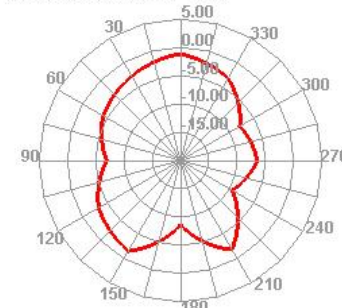
2450.000MHz E2



2500.000MHz E1



2500.000MHz E2



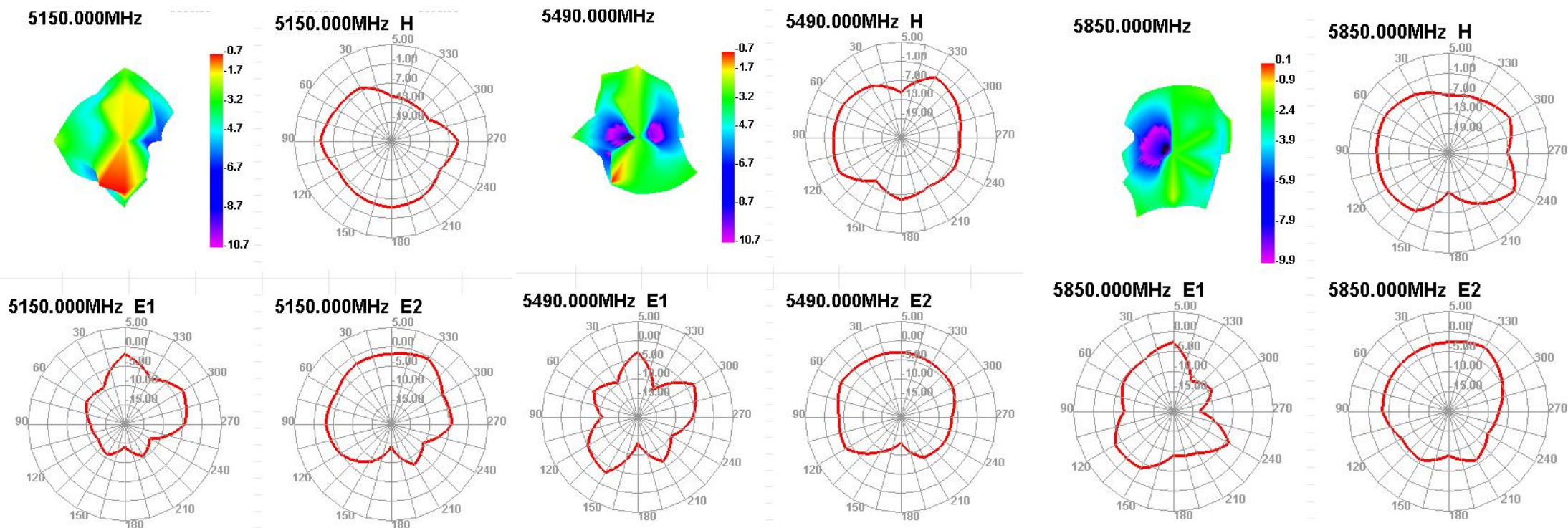
无源测试数据 Passive test data

ANT1 GAIN&Efficiency-WIFI 5G

Passive Test For WIFI5G								
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)
5150	22.51	-6.48	-0.67	-2.82	14.178	8.333	-0.67	-15.53
5170	17.58	-7.55	-1.54	-3.69	11.018	6.557	-1.54	-17.92
5190	22.76	-6.43	-0.27	-2.42	14.145	8.619	-0.27	-18.41
5210	19.65	-7.07	-0.7	-2.85	12.175	7.475	-0.7	-19.99
5230	21.8	-6.62	0	-2.15	13.489	8.313	0	-18.46
5250	22.43	-6.49	0.39	-1.76	13.7	8.725	0.39	-18.13
5270	23.83	-6.23	0.62	-1.53	14.383	9.444	0.62	-19.23
5290	25.96	-5.86	0.75	-1.4	15.577	10.387	0.75	-19.4
5310	20.91	-6.8	-0.31	-2.46	12.446	8.46	-0.31	-18.4
5330	23.72	-6.25	0.31	-1.84	13.953	9.765	0.31	-16.79
5350	22.13	-6.55	-0.22	-2.37	12.762	9.364	-0.22	-17.18
5370	25.05	-6.01	0.02	-2.13	14.339	10.711	0.02	-18.22
5390	20.53	-6.88	-1.1	-3.25	11.699	8.831	-1.1	-19
5410	28.06	-5.52	0.26	-1.89	15.667	12.397	0.26	-16.19
5430	22.61	-6.46	-0.73	-2.88	12.277	10.331	-0.73	-15.34
5450	28.19	-5.5	-0.23	-2.38	15.142	13.052	-0.23	-14.45
5470	26.33	-5.8	-1.02	-3.17	13.996	12.336	-1.02	-14.24
5490	29.37	-5.32	-0.71	-2.86	15.312	14.059	-0.71	-13.31
5510	32.45	-4.89	-0.35	-2.5	16.539	15.91	-0.35	-12.88
5530	34.33	-4.64	0.04	-2.11	17.309	17.02	0.04	-13.33
5550	38.28	-4.17	0.55	-1.6	19.478	18.801	0.55	-14.05
5570	36.44	-4.38	0.19	-1.96	18.481	17.955	0.19	-15.48
5590	39.33	-4.05	0.57	-1.58	19.716	19.616	0.57	-15.53
5610	37.87	-4.22	0.46	-1.69	18.864	19.002	0.46	-15.72
5630	36.04	-4.43	0.13	-2.02	18.023	18.02	0.13	-15.79
5650	39.78	-4	0.2	-1.95	20.033	19.751	0.2	-14.79
5670	33.08	-4.8	-0.82	-2.97	16.519	16.565	-0.82	-15.13
5690	39.21	-4.07	-0.15	-2.3	19.304	19.91	-0.15	-13.47
5710	30.32	-5.18	-1.5	-3.65	14.829	15.489	-1.5	-13.63
5730	35.97	-4.44	-0.61	-2.76	17.594	18.378	-0.61	-13.67
5750	30	-5.23	-1.1	-3.25	14.602	15.401	-1.1	-15.82
5770	32.74	-4.85	-0.37	-2.52	15.607	17.134	-0.37	-14.81
5790	29.34	-5.33	-0.68	-2.83	13.78	15.562	-0.68	-14.47
5810	30.98	-5.09	-0.36	-2.51	14.55	16.43	-0.36	-14.17
5830	30.3	-5.18	-0.41	-2.56	14.356	15.948	-0.41	-14.19
5850	33.11	-4.8	0.12	-2.03	15.659	17.447	0.12	-13.53

无源测试数据
Passive test data

ANT1 Direction of figure(5G)



GPS搜星测试 GPS star search test

GPS冷启动实测效果以下:

The measured results of GPS cold start are as follows:

CN值40以上3颗

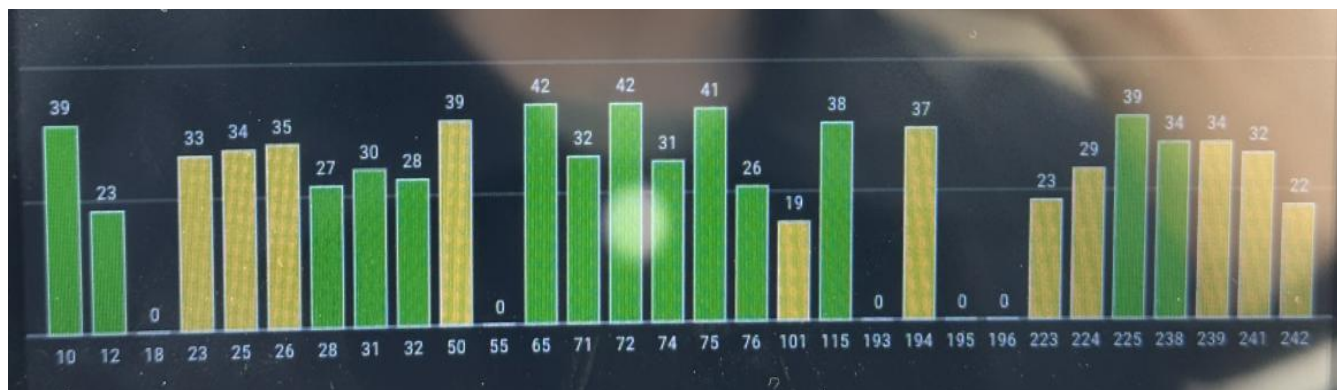
CN值35以上6颗

实际定位10+颗

CN value 40 or above 3 pieces

CN value 35 or above 6 pieces

Actual positioning of 10+ pieces



备注;

GPS搜星测试。会因时间段及地域而存在差异. 以上数据为我司测试（空旷地带）最佳数据

Remark;

GPS star search test. There will be differences due to time periods and regions. The above data are the best data from our test (open area)

Wifi/BT天线实测

Wifi Antenna test

WIFI

测试环境：开放空间

测试工具：Wifi Analytical Assistant

测试距离：10m

信号强度：2.4G :-42dBm 5G:-54dBm

测试结果如右图

Test environment: open space

Test tool: Wifi Analytical Assistant

Test distance: 10m

Signal strength: 2.4G:-42dBm

5G:-54dBm The test results are as shown on the right

BT

测试环境：开放空间(通道)

测试工具：蓝牙音响

测试距离：15m

结果：播放音乐流畅，无杂音。

BT

Test environment: open space (channel)

Test tool: Bluetooth speaker

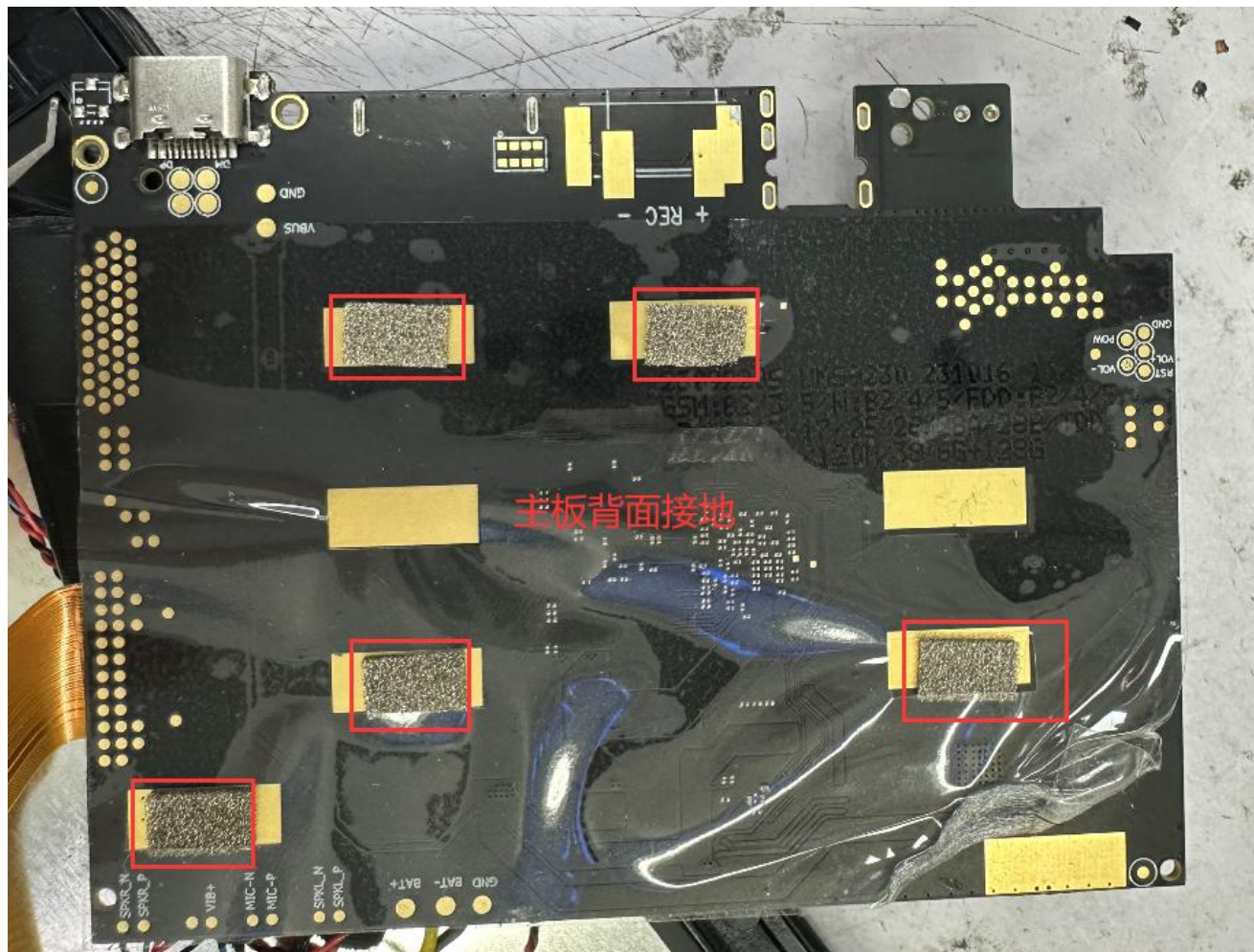
Test distance: 15m

Result: The music is played smoothly and without any noise.



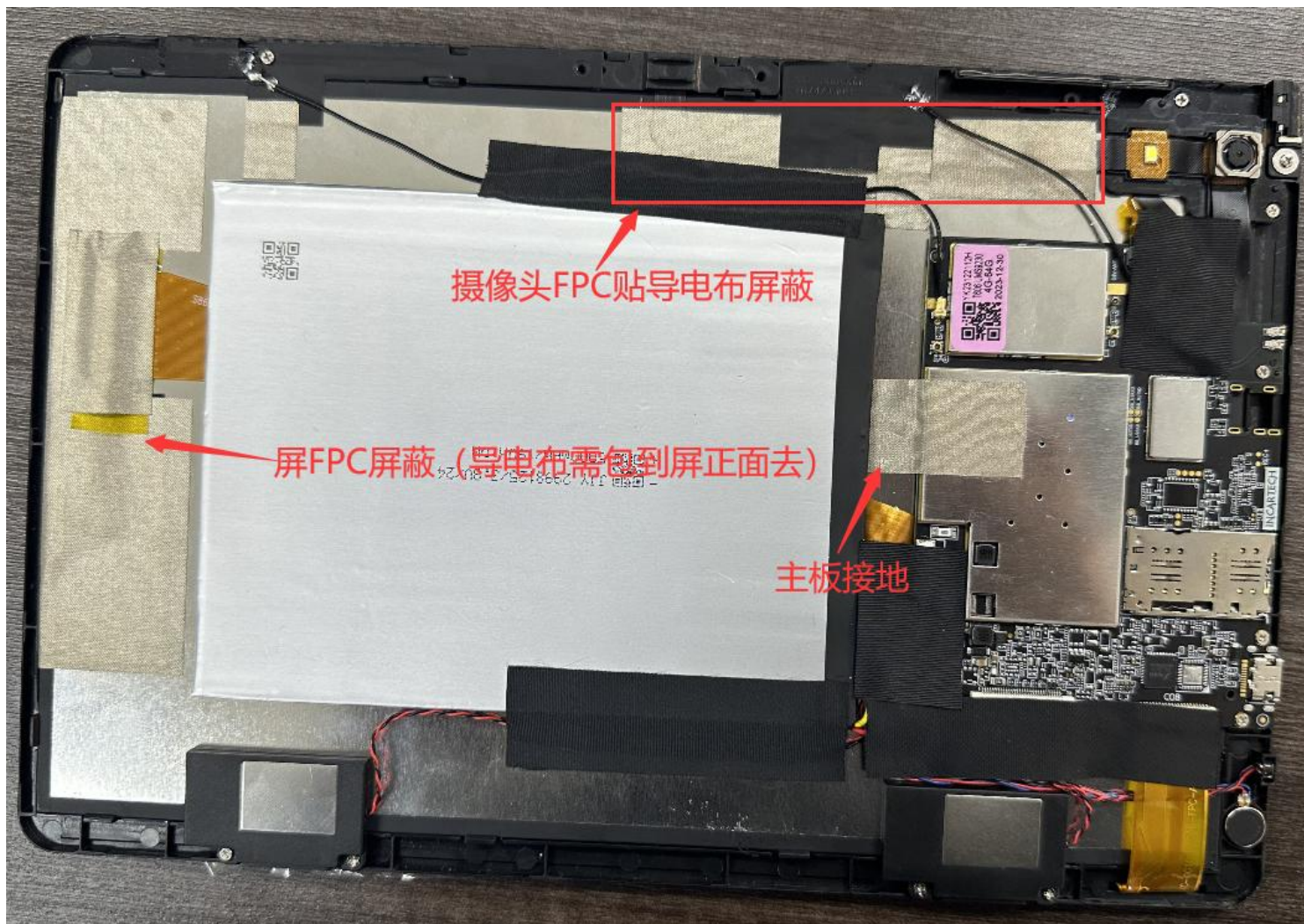
环境处理

Environmental treatment



环境处理

Environmental treatment



W/G/B antennas

