



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: 长城

MN: WM1091SK

RF: 关巍

MD: 黄清清

MP: 15112592483

Date: 2023. 10. 23.

REV :V1. 0



测试信息

Test information

WIFI ANT Test information		
Frequency	2. 4G (2402~2483) Mhz	5G (5150~5850) Mhz
Module information		
Driver version information		



ANTENNA

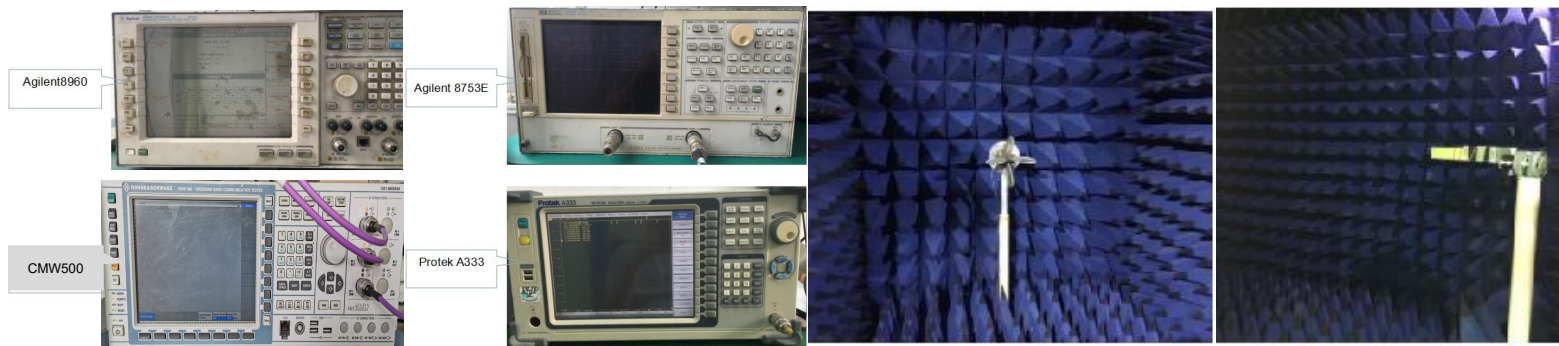
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测试环境

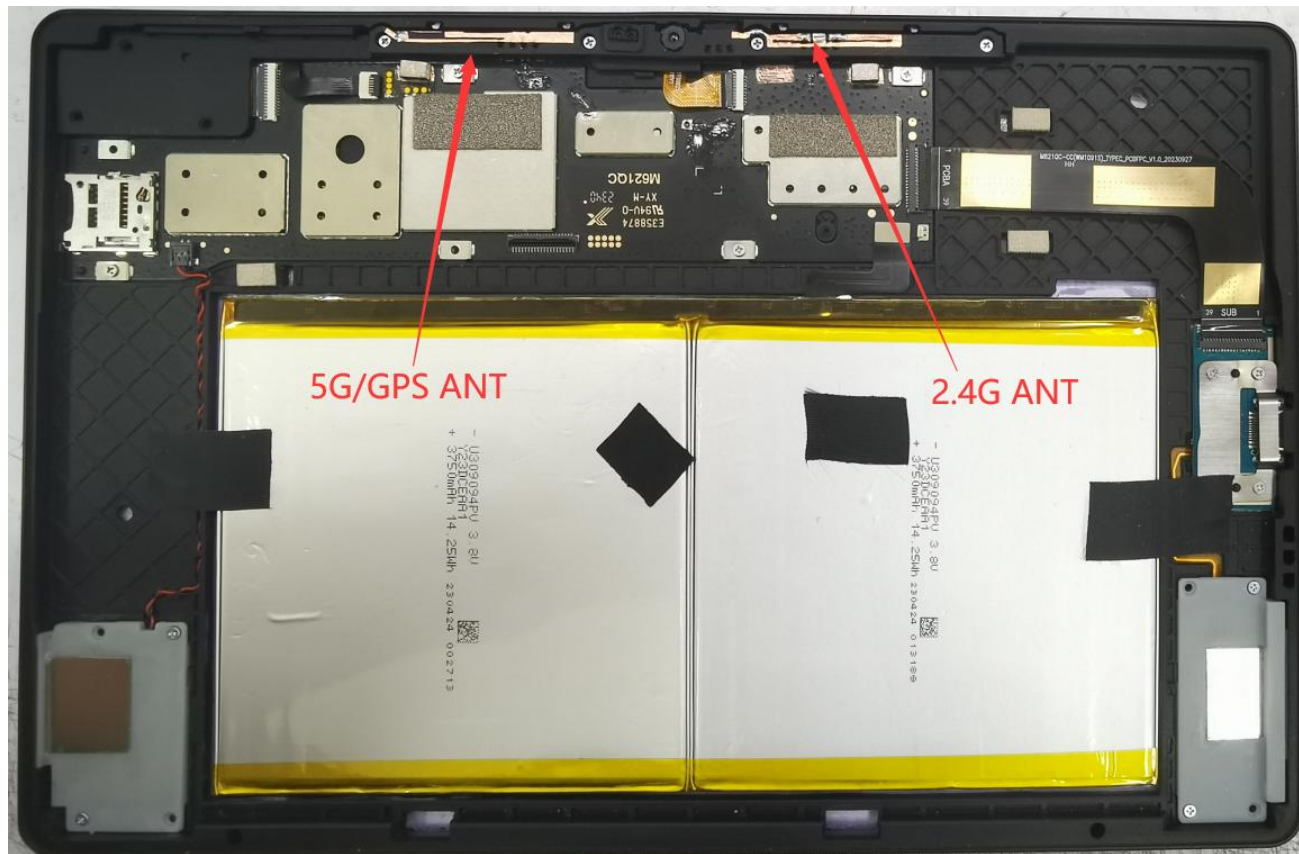
Test environment

	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



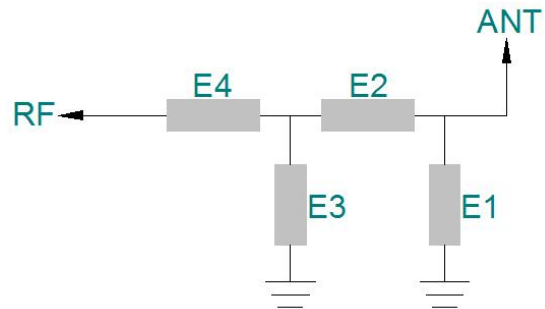


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匹配电路
Matching circuit



匹配电路原理图&位号图

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



有源测试数据 Active test data

802.11b	Frequency	TRP		TIS	
	2412	CH1 11Mbps	10.12	CH1 11Mbps	-79.15
	2437	CH6 11Mbps	11.46	CH6 11Mbps	-79.32
	2467	CH11 11Mbps	11.13	CH11 11Mbps	-79.24
802.11a		TRP		TIS	
	5180	CH36 6Mbps	8.08	CH36 54Mbps	-69.33
	5300	CH60 6Mbps	8.53	CH60 54Mbps	-69.45
	5805	CH161 6Mbps	8.55	CH161 54Mbps	-69.47



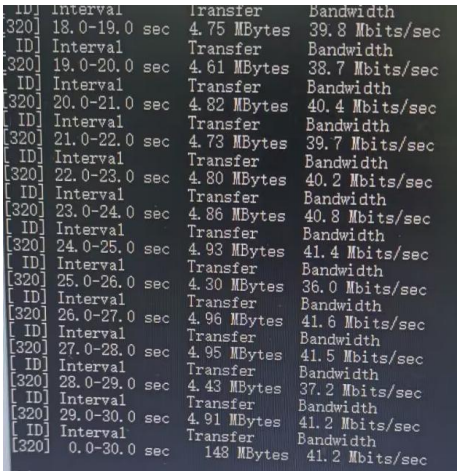
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吞吐量测试

Throughput test

2.4G wifi 吞吐量测试			
上行		下行	
图片		图片	
备注			



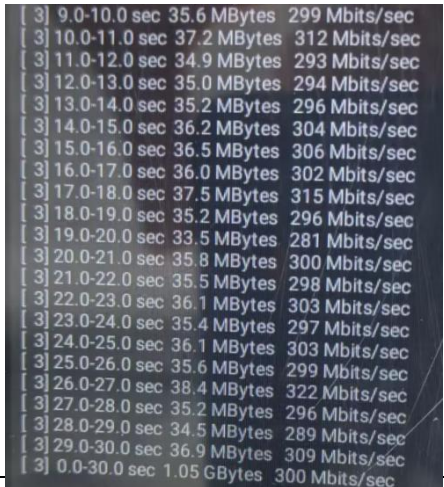
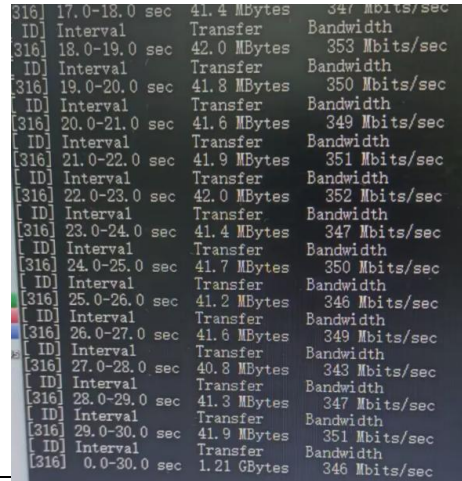
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吞吐量测试

Throughput test

5G wifi 天吐量测试					
上行				下行	
图片			图片		
备注					



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BT天线实测

BT

Antenna test

测试环境：走廊通道

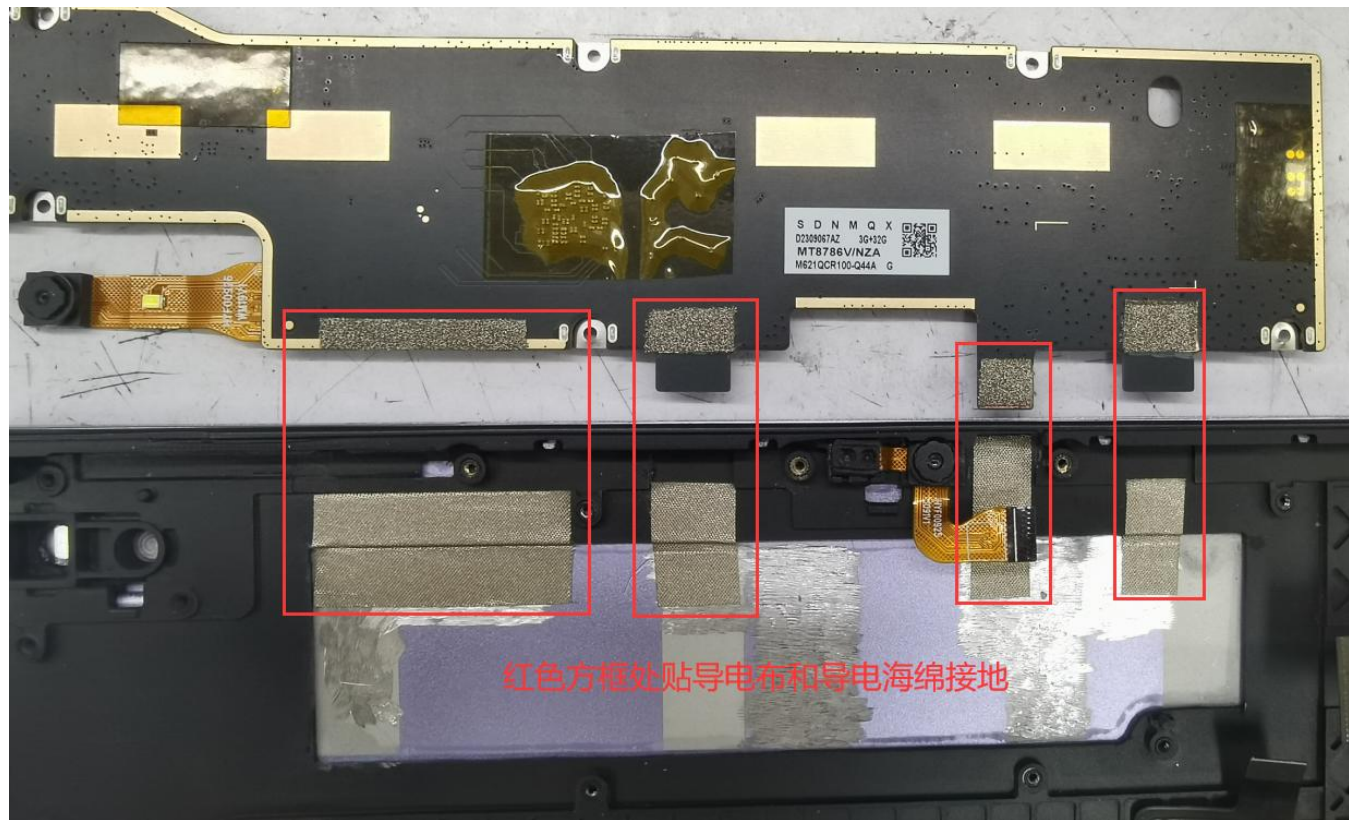
测试工具：蓝牙音箱

测试距离：10M（播放音乐流畅无卡顿）



环境处理

Environmental treatment





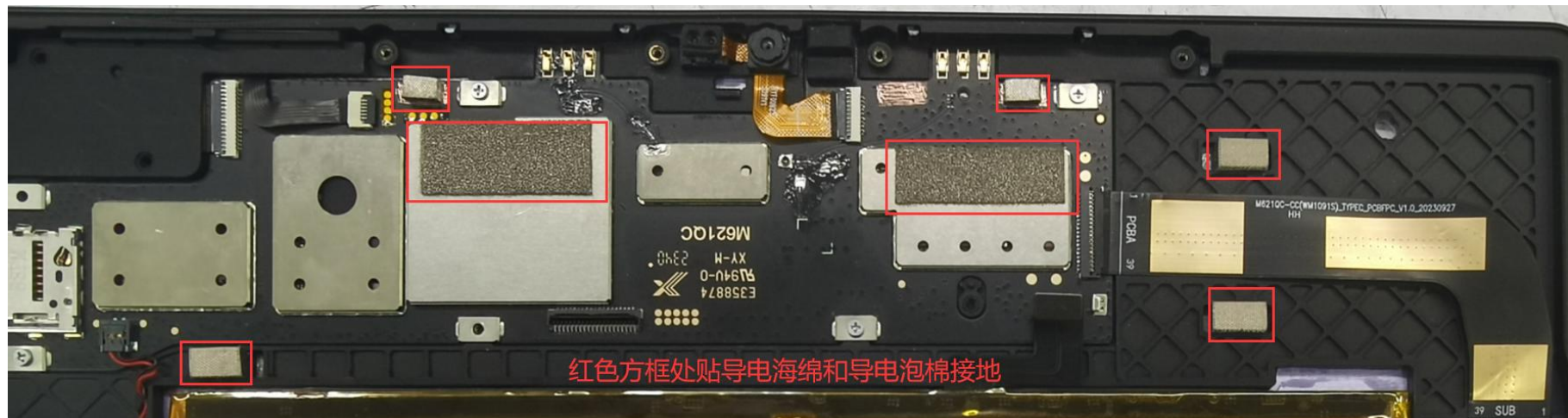
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环境处理

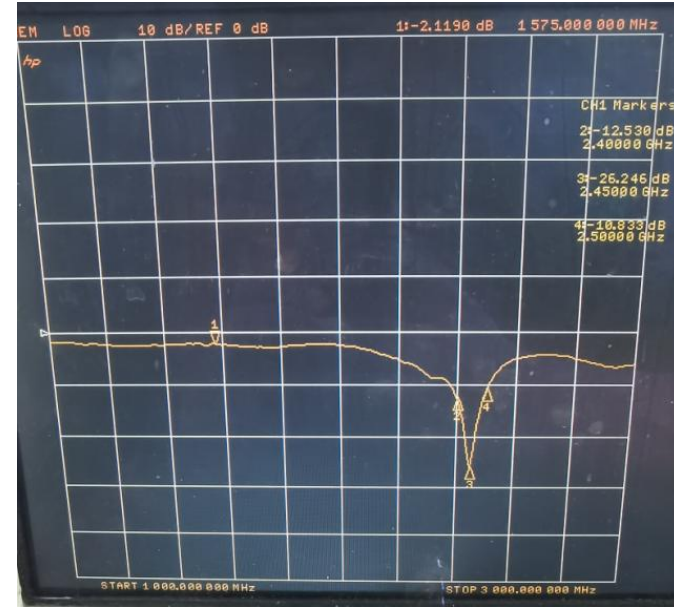
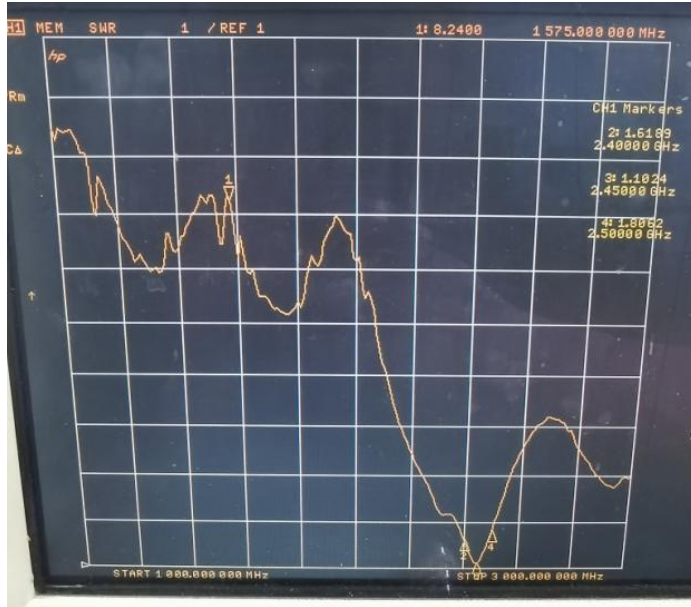
Environmental treatment





无源测试数据 Passive test data

ANT1 S11-VSWR&Return Loss



Frequency (MHZ)	2400	2500
VSWR	1.61	1.80
Return Loss (DB)	-12.53	-10.83



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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)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	20.86	-6.81	-2.12	-4.27	11.691	9.167	-2.12	-14.91	4.69	0	45.78	46.01
2410	20.87	-6.8	-2.27	-4.42	11.718	9.156	-2.27	-14.66	4.54	0	46.01	46.29
2420	22.08	-6.56	-1.79	-3.94	12.357	9.719	-1.79	-14.06	4.77	0	45.73	46
2430	22.26	-6.52	-1.63	-3.78	12.462	9.798	-1.63	-13.9	4.9	0	46.01	46.36
2440	23.1	-6.36	-1.38	-3.53	12.901	10.197	-1.38	-14.08	4.99	0	46.12	46.48
2450	23.3	-6.33	-1.1	-3.25	12.985	10.317	-1.1	-14.3	5.22	0	46.12	46.54
2460	21.44	-6.69	-1.61	-3.76	12.003	9.441	-1.61	-14.73	5.08	30	46.14	46.52
2470	21.74	-6.63	-1.49	-3.64	12.3	9.44	-1.49	-15.2	5.14	30	46.4	46.8
2480	22	-6.58	-1.55	-3.7	12.533	9.467	-1.55	-15.63	5.02	30	46.26	46.64
2490	20.92	-6.79	-1.72	-3.87	11.924	8.996	-1.72	-16.95	5.08	30	46.51	46.91
2500	17.37	-7.6	-2.5	-4.65	10.02	7.355	-2.5	-17.65	5.1	30	46.47	46.86



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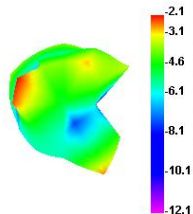
深圳市星源创科技有限公司

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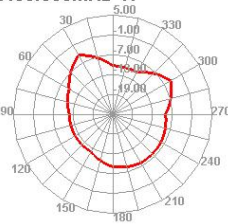
无源测试数据
Passive test data

ANT1 Direction of figure(2.4/BT)

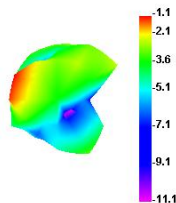
2400.000MHz



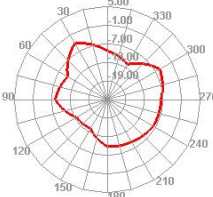
2400.000MHz H



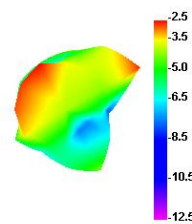
2450.000MHz



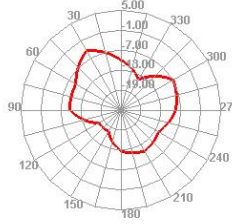
2450.000MHz H



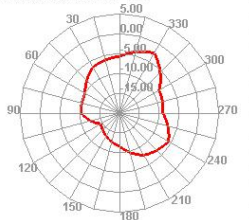
2500.000MHz



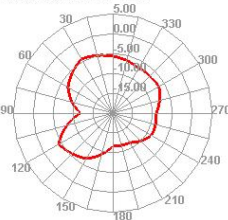
2500.000MHz H



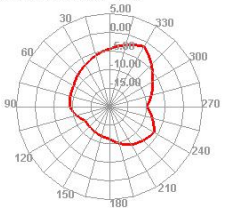
2400.000MHz E1



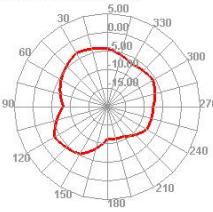
2400.000MHz E2



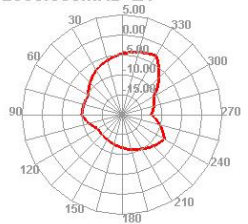
2450.000MHz E1



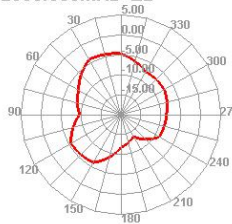
2450.000MHz E2



2500.000MHz E1



2500.000MHz E2

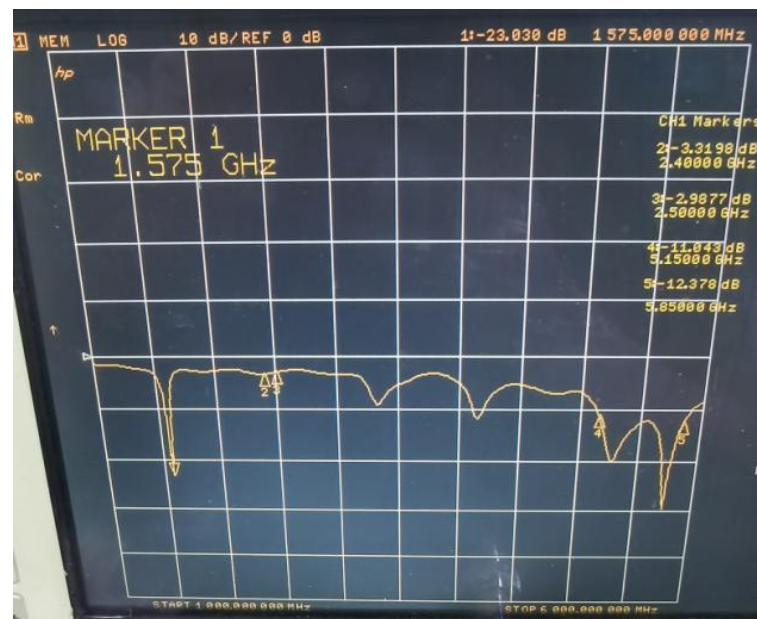
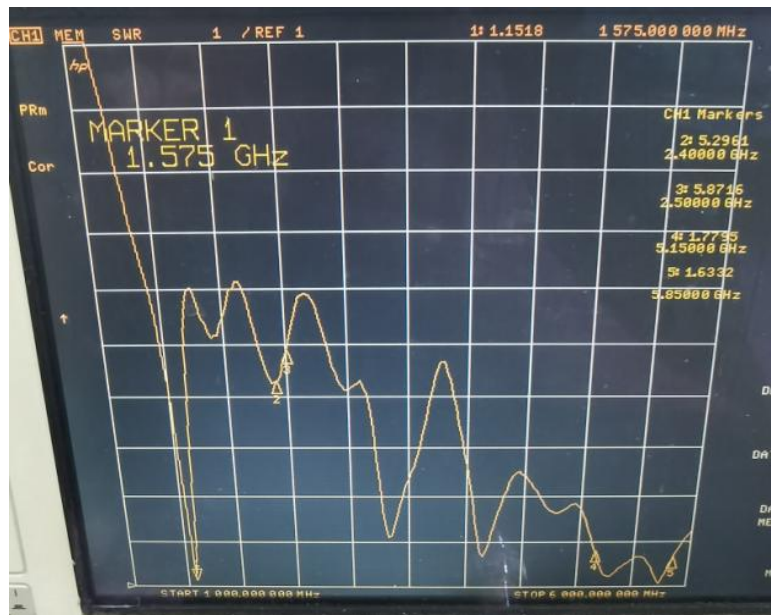




无源测试数据

Passive test data

ANT2 S11-VSWR&Return Loss



Frequency (MHZ)	1575	5150	5850
VSWR	1.15	1.77	1.63
Return Loss (DB)	-23.03	-11.04	-12.37



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无源测试数据

Passive test data

ANT GAIN&Efficiency-GPS 1.575G

Passive Test For GPS

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
1570	11.42	-9.42	-5.36	-7.51	4.726	6.697	-5.36	-16.22	4.06	30	41.5	41.03
1575	12.91	-8.89	-4.83	-6.98	5.413	7.5	-4.83	-15.15	4.06	30	41.68	41.23
1580	15.31	-8.15	-4.03	-6.18	6.455	8.855	-4.03	-14.86	4.12	30	41.78	41.35



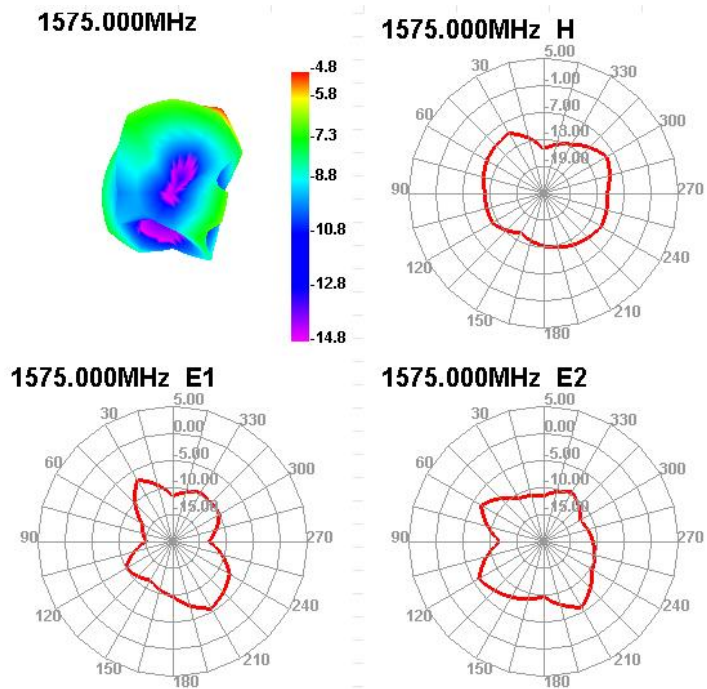
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无源测试数据
Passive test data

ANT Direction of figure(1.575G)





无源测试数据

Passive test data

ANT2 GAIN&Efficiency-WIFI5.8G

Passive Test For WIFII5G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5150	11.31	-9.47	-4.11	-6.26	5.376	5.931	-4.11	-27.45	5.35	30	49.82	49.4
5170	12.04	-9.19	-4.16	-6.31	5.674	6.368	-4.16	-26.08	5.03	30	50.13	49.77
5190	13.38	-8.74	-3.72	-5.87	6.306	7.072	-3.72	-33.43	5.02	30	50.42	49.95
5210	14.25	-8.46	-3.3	-5.45	6.687	7.564	-3.3	-25.15	5.16	30	50.88	50.49
5230	15.9	-7.98	-2.98	-5.13	7.4	8.505	-2.98	-22.11	5.01	30	50.42	50.08
5250	16.99	-7.7	-2.93	-5.08	7.883	9.102	-2.93	-21.96	4.77	30	51.02	50.72
5270	19.73	-7.05	-2.21	-4.36	9.22	10.51	-2.21	-24.51	4.84	30	50.85	50.6
5290	19.77	-7.04	-2.18	-4.33	9.293	10.477	-2.18	-35.73	4.86	30	51.34	51.12
5310	19.19	-7.17	-2.59	-4.74	9.06	10.127	-2.59	-22.78	4.58	30	50.44	50.36
5330	19.79	-7.03	-2.92	-5.07	9.343	10.451	-2.92	-20.18	4.12	30	51.08	51.01
5350	20.46	-6.89	-2.83	-4.98	9.693	10.765	-2.83	-21.38	4.06	30	51.02	51.01
5370	20.31	-6.92	-2.46	-4.61	9.621	10.688	-2.46	-22.98	4.47	30	50.91	50.95
5390	17.87	-7.48	-2.71	-4.86	8.389	9.479	-2.71	-19.21	4.77	30	50.46	50.43
5410	21.78	-6.62	-1.7	-3.85	10.186	11.59	-1.7	-18.43	4.92	30	51.18	51.09
5430	18.18	-7.4	-2.35	-4.5	8.428	9.752	-2.35	-19.55	5.05	180	50.69	50.7
5450	21.07	-6.76	-1.49	-3.64	9.794	11.276	-1.49	-19.65	5.27	180	50.71	50.85
5470	18.95	-7.22	-1.38	-3.53	8.932	10.014	-1.38	-19.49	5.84	180	50.93	50.83
5490	20.31	-6.92	-0.88	-3.03	9.608	10.706	-0.88	-18.9	6.04	180	50.92	50.79
5510	19.46	-7.11	-1.36	-3.51	9.219	10.237	-1.36	-22	5.75	60	51.18	51.16
5530	20.95	-6.79	-1.66	-3.81	9.909	11.039	-1.66	-21.27	5.13	60	51.44	51.3
5550	21.37	-6.7	-1.63	-3.78	10.092	11.28	-1.63	-20.97	5.07	60	51.89	51.76
5570	21.56	-6.66	-1.93	-4.08	10.114	11.447	-1.93	-20.21	4.74	60	51.42	51.33
5590	22.52	-6.47	-2.09	-4.24	10.483	12.04	-2.09	-21.45	4.38	0	51.71	51.76
5610	21.88	-6.6	-2.18	-4.33	10.316	11.565	-2.18	-24.14	4.42	0	51.17	51.22
5630	21.69	-6.64	-2.15	-4.3	10.399	11.289	-2.15	-23.14	4.48	0	51.78	51.77
5650	20.15	-6.96	-2.51	-4.66	9.857	10.29	-2.51	-29.06	4.45	0	51.47	51.55
5670	19.91	-7.01	-2.11	-4.26	9.873	10.032	-2.11	-25.95	4.9	0	52.12	52.28
5690	18.89	-7.24	-2.11	-4.26	9.515	9.372	-2.11	-23.58	5.13	0	52.12	52.25
5710	17.49	-7.57	-2.33	-4.48	8.894	8.592	-2.33	-25.71	5.24	0	51.95	52.05
5730	17.22	-7.64	-1.91	-4.06	8.826	8.396	-1.91	-28.81	5.73	0	51.59	51.69
5750	14.19	-8.48	-2.27	-4.42	7.33	6.864	-2.27	-26.07	6.21	0	51.12	51.15
5770	14.19	-8.48	-2.15	-4.3	7.538	6.65	-2.15	-24.2	6.33	0	51.02	51.06
5790	12.55	-9.01	-2.52	-4.67	6.873	5.682	-2.52	-22.2	6.49	0	51.08	51.16
5810	12.54	-9.02	-2.4	-4.55	7.132	5.409	-2.4	-21.4	6.61	30	51.36	51.43
5830	11.98	-9.21	-2.78	-4.93	7.069	4.914	-2.78	-21.31	6.43	60	51.65	51.66
5850	12.19	-9.14	-3.08	-5.23	7.489	4.699	-3.08	-23.15	6.06	30	51.88	52.05



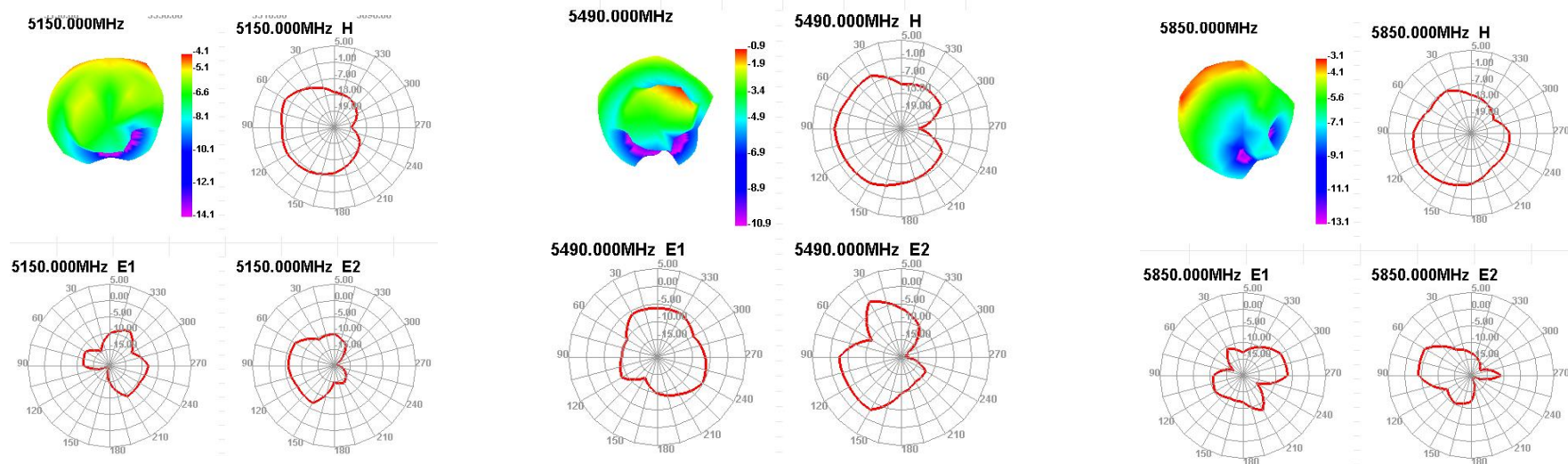
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无源测试数据
Passive test data

ANT2 Direction of figure(5. 8G)





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附加说明

Additional instructions

01

报告中天线匹配电路是否改动，天线有关的环境处理是否增加，将直接影响天线性能，请仔细确认查看。

02

贵司如有最新试产或更新产品（如软件，**ESD**，物料等）请尽快提供我司进行验证，以确认天线性能是否有变化影响。

03

倘若贵司需要送第三方检测机构复测或客户测试，请务必先与我司进行天线相关测试确认，因主板•装配的一致性，以及天线组装的差异等因素，均可能导致天线参数的偏差。

合作共赢

