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

天线测试报告

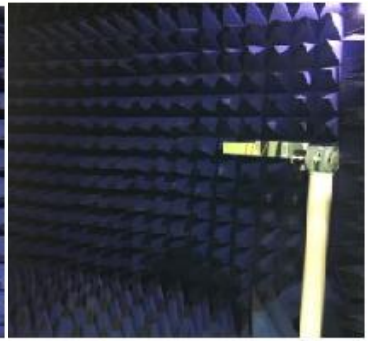
Antenna Test Report

TC：美迪飞
MN：S31
RF：关巍
MD：黄清清
MP：15112592483

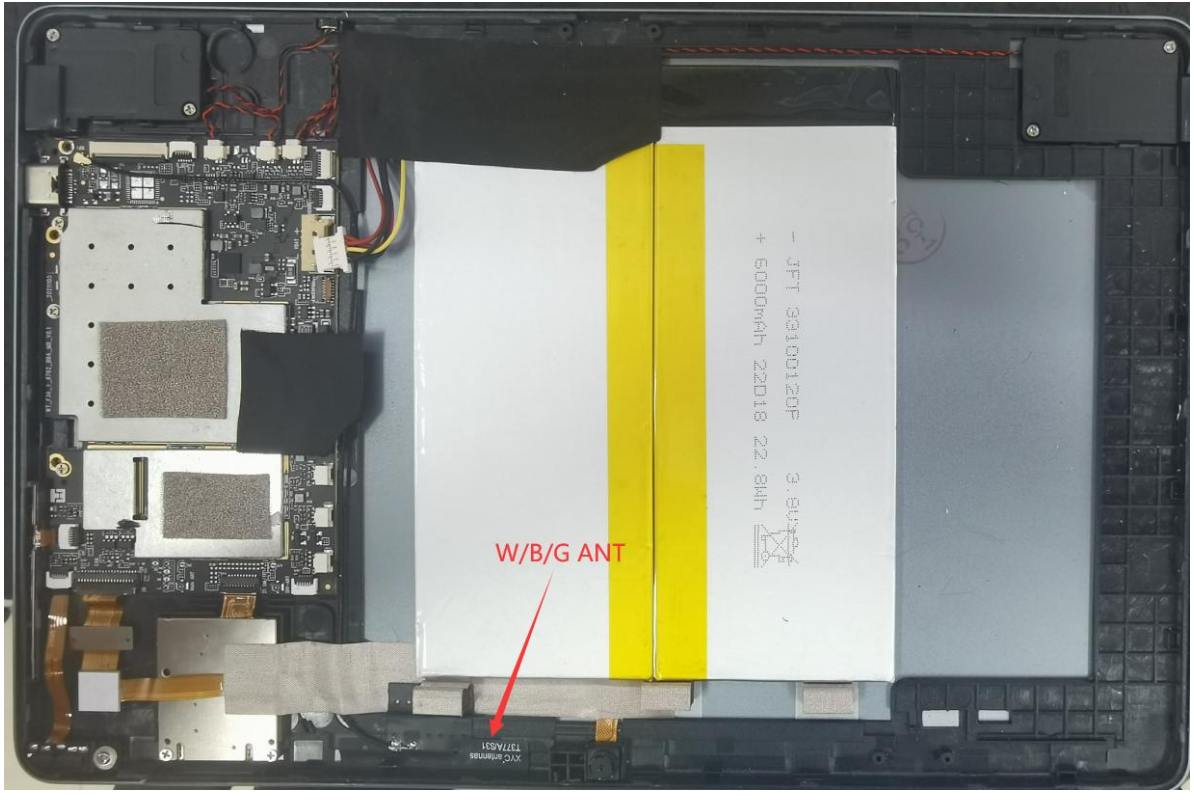
Date：2022.06.16.
REV :V1.0

测试环境
Test environment

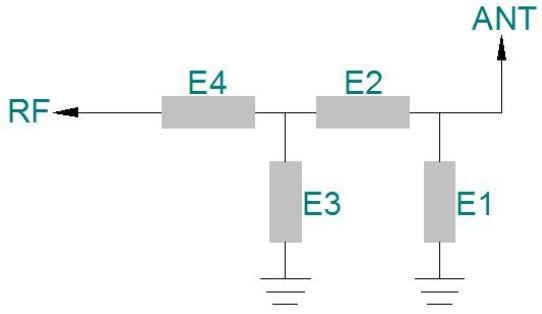
	测试项目	测试设备
S参数 （S-parameter）	1.电压驻波比(VSWR) 2.回波损耗（Rrtun Loss）	网络分析仪：Agilent8753ES
2.有源测试 (Active)	1.发射功率（TRP） 2.接收灵敏度（TIS） 3.屏灭/屏亮	1.暗室：5*3*3m（3D）Chamber 2.综测仪：Agilent8960 CMW500
3.无源测试 （Passive）	1.天线增益(Gain) 2.天线效率（Efficiency）	1.暗室：5*3*3m（3D）Chamber 2.网络分析仪：Agilent 8753ES



天线位置
Antenna position



匹配电路
Matching circuit

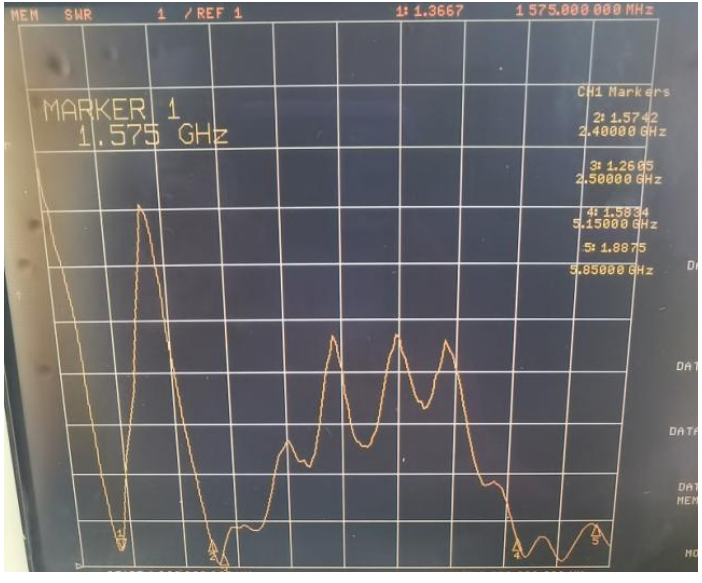


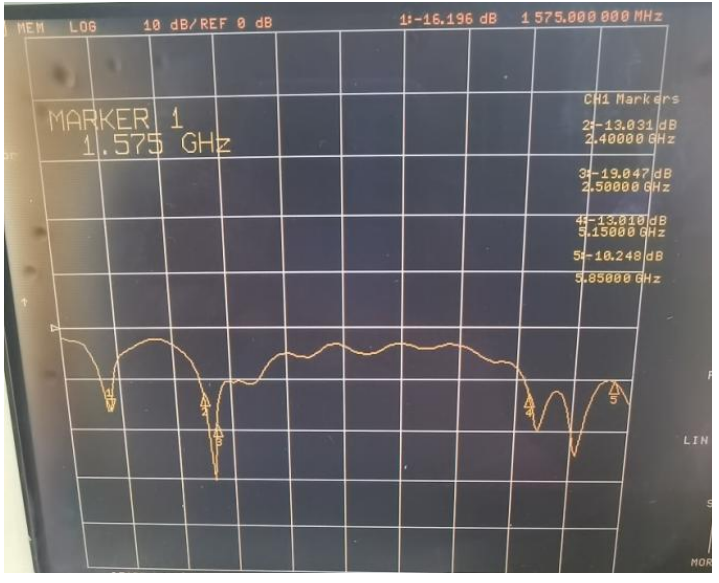
	电容（PF）	电感（NH）
E1(0402)		
E2(0402)		
E3(0402)		
E4(0402)		

匹配电路原理图&位号图

无源测试数据
Passive test data

ANT S11-VSWR&Return Loss





Frequency(MHZ)	1575	2400	2500	5150	5850
VSWR	1.36	1.57	1.26	1.58	1.88
Return Loss(DB)	-16.19	-13.03	-19.04	-13.01	-10.24

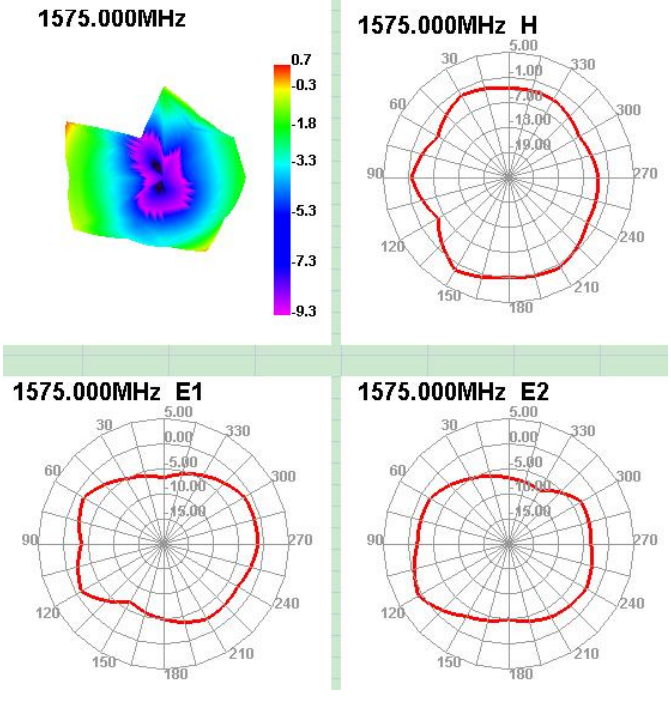
无源测试数据
Passive test data

ANT GAIN&Efficiency-GPS 1.575G

1570	47.24	-3.26	0.29	-1.86	20.83	26.406	0.29	-9.57	3.55	90	41.29	40.82
1575	51.35	-2.89	0.71	-1.44	22.746	28.603	0.71	-9.71	3.61	60	41.49	41.04
1580	53.88	-2.69	0.91	-1.24	23.927	29.954	0.91	-9.9	3.59	60	41.61	41.18

无源测试数据
Passive test data

ANT Direction of figure(1.575G)



无源测试数据

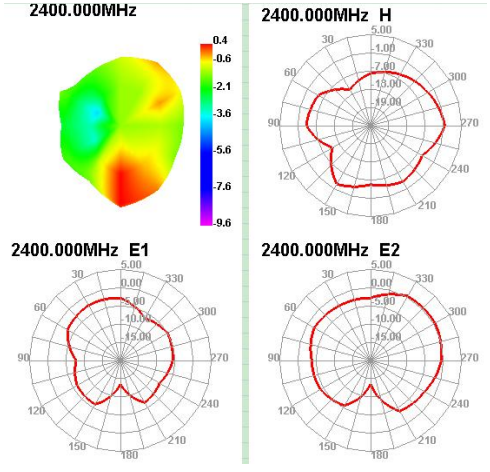
Passive test data

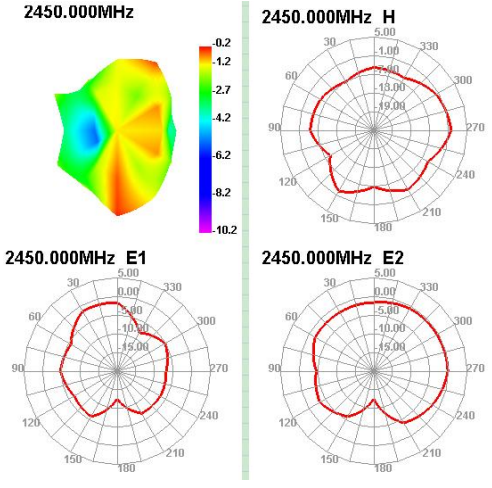
ANT GAIN&Efficiency-WIFI2.4G/BT

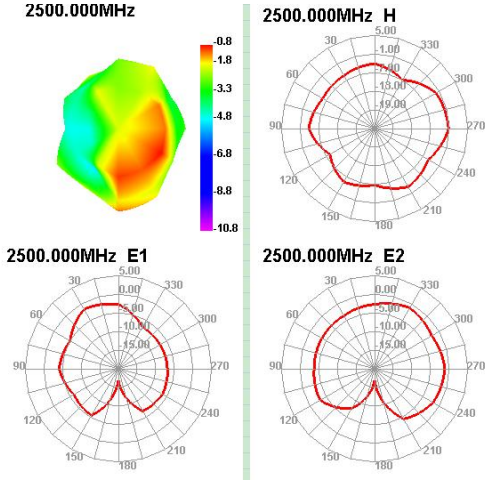
Passive Test For WIFI2.4												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHIS (%)	DHIS (%)	Max (dB)	Min (dB)	irectivit (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	42.45	-3.72	0.41	-1.74	25.058	17.397	0.41	-19.49	4.13	60	45.79	46.02
2410	41.54	-3.82	0.5	-1.65	24.267	17.276	0.2	-19.8	4.01	60	46	46.28
2420	40.06	-3.97	-0.1	-2.25	23.091	16.966	-0.1	-18.81	3.87	60	45.66	45.93
2430	41.26	-3.84	-0.12	-2.27	23.331	17.931	-0.12	-17.58	3.72	60	45.82	46.17
2440	43.31	-3.63	-0.14	-2.29	23.932	19.375	-0.14	-16.75	3.5	30	45.92	46.28
2450	43.6	-3.61	-0.17	-2.32	23.519	20.08	-0.17	-15.73	3.43	30	45.95	46.38
2460	42.72	-3.69	-0.39	-2.54	22.584	20.138	-0.39	-15.42	3.3	30	45.93	46.31
2470	43.63	-3.6	-0.31	-2.46	22.725	20.91	-0.31	-14.58	3.29	30	46.24	46.64
2480	43.55	-3.61	-0.23	-2.38	22.379	21.171	-0.23	-15.45	3.38	30	46.17	46.56
2490	42.6	-3.71	-0.33	-2.48	21.676	20.927	-0.33	-16.35	3.38	30	46.38	46.78
2500	38.72	-4.12	-0.83	-2.98	19.553	19.164	-0.83	-16.85	3.29	30	46.26	46.65

无源测试数据
Passive test data

ANT Direction of figure(2.4/BT)







无源测试数据

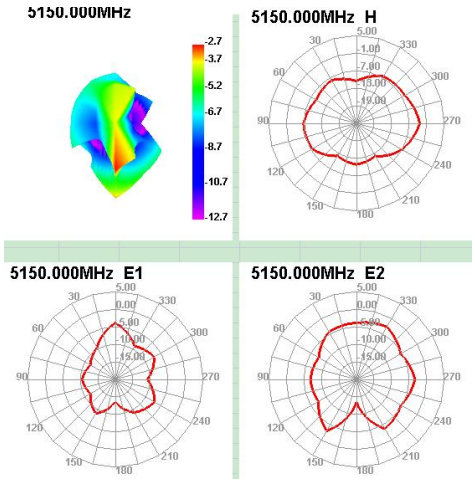
Passive test data

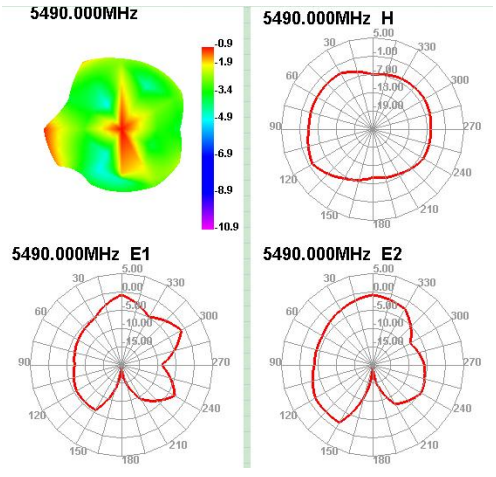
ANT GAIN&Efficiency-WIFI 5G

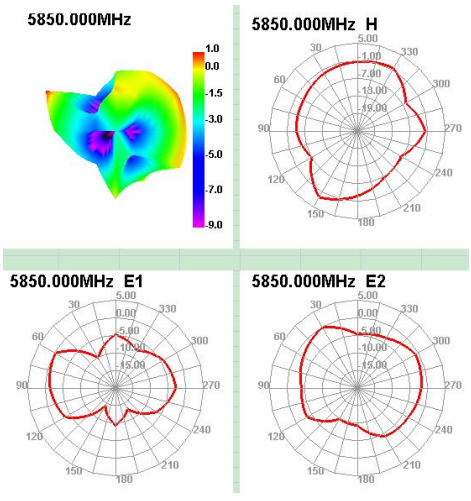
Passive Test For WIFI5G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHIS (%)	DHIS (%)	Max (dB)	Min (dB)	irectivit (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5150	17.66	-7.53	-2.72	-4.87	8.88	8.783	-2.72	-14.28	4.81	0	50.12	49.7
5170	20.08	-6.97	-2.56	-4.71	10.126	9.957	-2.56	-13.62	4.41	0	50.36	50
5190	21.37	-6.7	-2.65	-4.8	10.794	10.577	-2.65	-14.85	4.05	0	50.7	50.23
5210	23.26	-6.33	0.5	-1.65	11.748	11.517	-2.35	-14.15	3.98	0	50.57	50.18
5230	25.08	-6.01	-1.73	-3.88	12.676	12.405	-1.73	-14.46	4.28	30	50.51	50.17
5250	25.02	-6.02	-1.52	-3.67	12.802	12.215	-1.52	-17.24	4.5	30	50.39	50.09
5270	27.56	-5.6	-1.35	-3.5	14.132	13.424	-1.35	-19.47	4.24	30	50.63	50.38
5290	29.5	-5.3	-0.75	-2.9	14.969	14.53	-0.75	-24.87	4.55	30	50.7	50.48
5310	29.53	-5.3	-0.35	-2.5	15.01	14.517	-0.35	-26.43	4.95	30	50.43	50.35
5330	29.35	-5.32	-0.35	-2.5	15.001	14.354	-0.35	-18.13	4.98	30	50.85	50.78
5350	31.31	-5.04	-0.09	-2.24	15.881	15.432	-0.09	-15.05	4.95	30	50.95	50.94
5370	30.08	-5.22	-0.39	-2.54	14.907	15.176	-0.39	-13.55	4.83	30	50.78	50.82
5390	28.46	-5.46	-0.59	-2.74	14.009	14.449	-0.59	-13.49	4.87	30	50.6	50.57
5410	32.36	-4.9	-0.38	-2.53	16	16.359	-0.38	-14.23	4.52	0	51.24	51.15
5430	28.48	-5.45	-1.31	-3.46	14.186	14.291	-1.31	-16.51	4.15	0	50.81	50.82
5450	31.16	-5.06	-0.95	-3.1	15.521	15.636	-0.95	-15.89	4.12	0	50.78	50.92
5470	28.41	-5.47	-1.31	-3.46	14.172	14.237	-1.31	-17.23	4.16	0	51.02	50.92
5490	31.31	-5.04	-0.87	-3.02	15.674	15.638	-0.87	-20.98	4.17	0	51.11	50.98
5510	30.28	-5.19	-1.28	-3.43	15.337	14.945	-1.28	-21.52	3.91	0	51.07	51.05
5530	32.12	-4.93	-1.28	-3.43	16.331	15.784	-1.28	-18.52	3.65	60	51.51	51.37
5550	32.17	-4.93	-1.42	-3.57	16.463	15.707	-1.42	-17.86	3.5	60	51.7	51.57
5570	32.94	-4.82	-1.37	-3.52	16.999	15.942	-1.37	-18.53	3.45	60	51.5	51.41
5590	31.99	-4.95	-1.54	-3.69	16.717	15.271	-1.54	-15.4	3.41	60	51.59	51.64
5610	33.61	-4.74	-1.15	-3.3	18.146	15.461	-1.15	-15.69	3.59	120	51.19	51.24
5630	30.52	-5.15	-1.07	-3.22	17.009	13.516	-1.07	-16.5	4.08	0	51.19	51.18
5650	36.33	-4.4	0.06	-2.09	20.617	15.711	0.06	-16.73	4.46	0	51.27	51.35
5670	35.21	-4.53	0.05	-2.1	20.107	15.105	0.05	-19.99	4.58	0	51.87	52.03
5690	37.17	-4.3	0.28	-1.87	21.566	15.606	0.28	-21.01	4.58	0	51.65	51.78
5710	37.11	-4.31	0.46	-1.69	21.984	15.124	0.46	-19.13	4.77	0	51.72	51.82
5730	40.46	-3.93	0.49	-1.66	24.17	16.292	0.99	-18.71	4.92	0	51.44	51.54
5750	41.11	-3.86	0.5	-1.65	24.508	16.598	1	-18.73	4.87	0	51.34	51.37
5770	41.48	-3.82	0.16	-1.99	24.752	16.73	1.16	-17.4	4.98	0	51.02	51.06
5790	39.29	-4.06	0.01	-2.14	23.475	15.813	1.01	-16.25	5.06	60	51.25	51.33
5810	41.22	-3.85	0.22	-1.93	24.652	16.566	1.22	-14.92	5.07	30	51.4	51.47
5830	39.89	-3.99	0.01	-2.14	23.648	16.246	1.01	-14.55	5	30	51.9	51.91
5850	40.42	-3.93	0.04	-2.11	23.824	16.594	1.04	-15.11	4.97	30	51.77	51.94

无源测试数据
Passive test data

ANT Direction of figure(5G)







有源测试数据
Active test data

802.11b	Frequency	TRP		TIS	
	2412	CH1 11Mbps	12.52	CH1 11Mbps	-80.07
	2437	CH6 11Mbps	12.53	CH6 11Mbps	-80.23
	2467	CH11 11Mbps	12.17	CH11 11Mbps	-80.62
802.11a		TRP		TIS	
	5180	CH36 6Mbps	6.5	CH36 54Mbps	-66.3
	5300	CH60 6Mbps	6.8	CH60 54Mbps	-66.5
	5805	CH161 6Mbps	7.5	CH161 54Mbps	-68.06

WIFI天线实测
WIFI Antenna test

测试环境：办公区域
测试工具：WIFI分析助手
测试距离：10m
测试结果如右图

BT天线实测　　BT
Antenna test

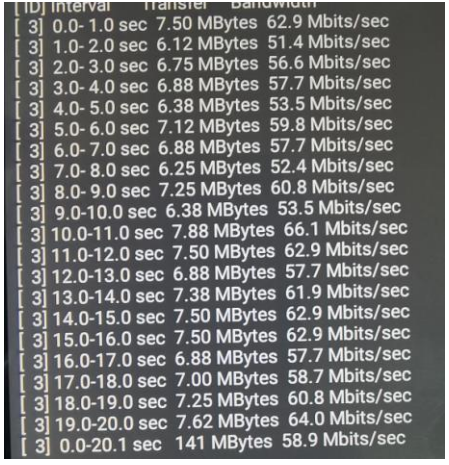
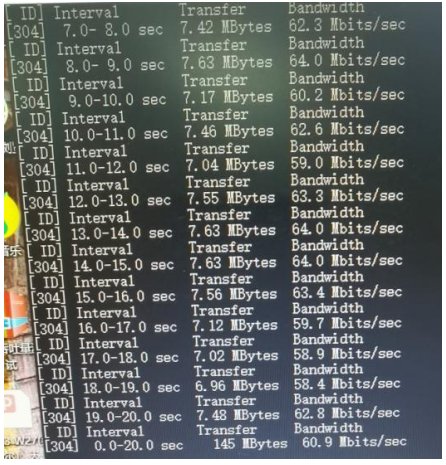
测试环境：走廊通道
测试工具：蓝牙音箱
测试距离：20M（播放音乐流畅无卡顿）

GPS搜星测试
GPS star search test

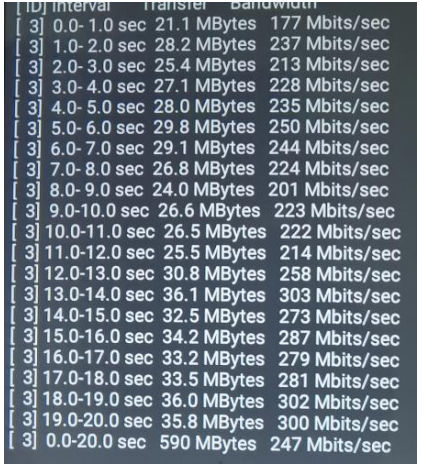
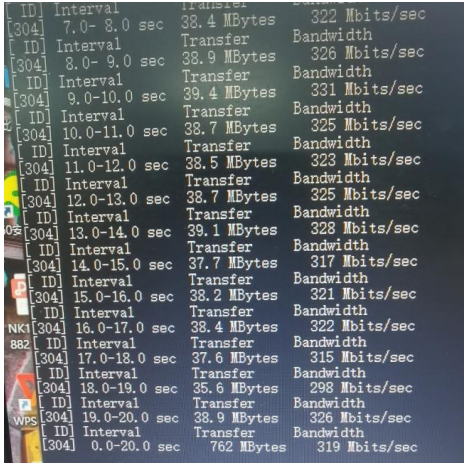
GPS冷启动实测效果以下：
CN值40以上3+颗
CN值35以上4+颗
实际定位30颗

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

吞吐量测试
Throughput test

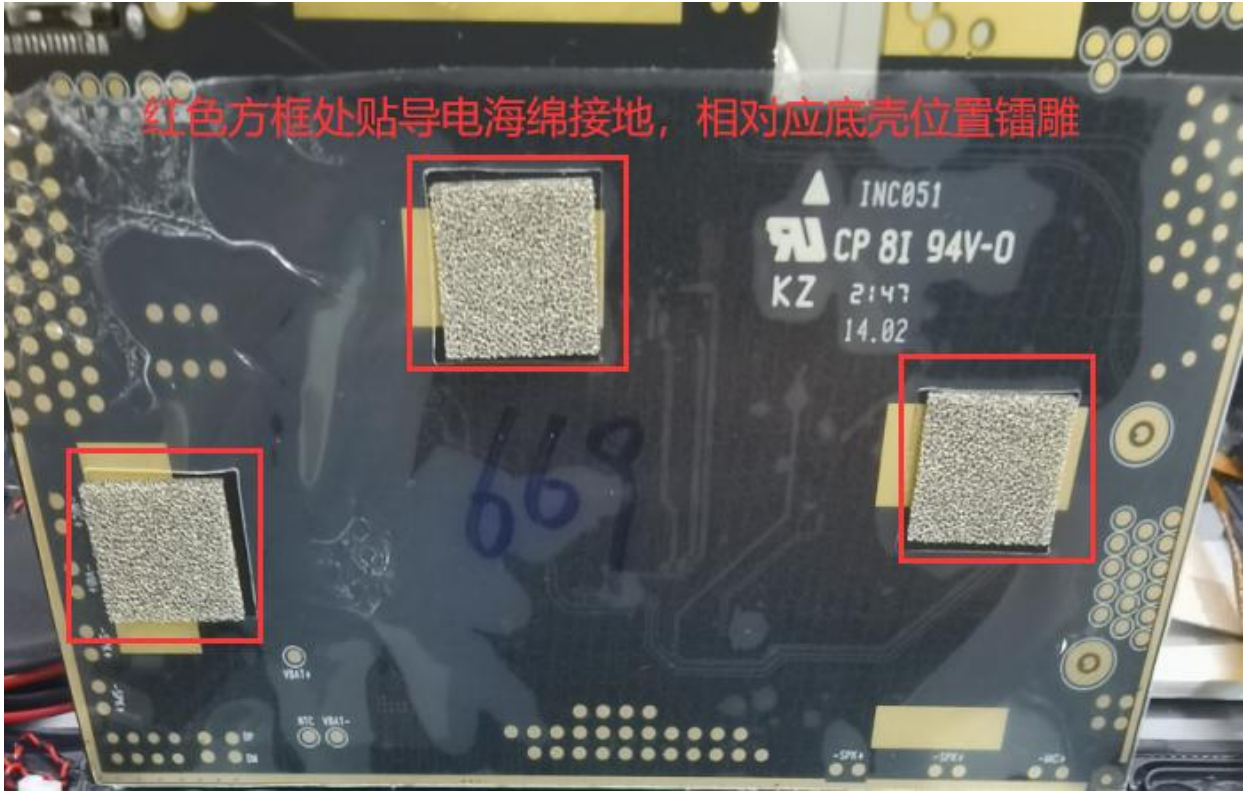
2.4G wifi 天吐量测试			
上行		下行	
图片		图片	
备注			

吞吐量测试
Throughput test

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

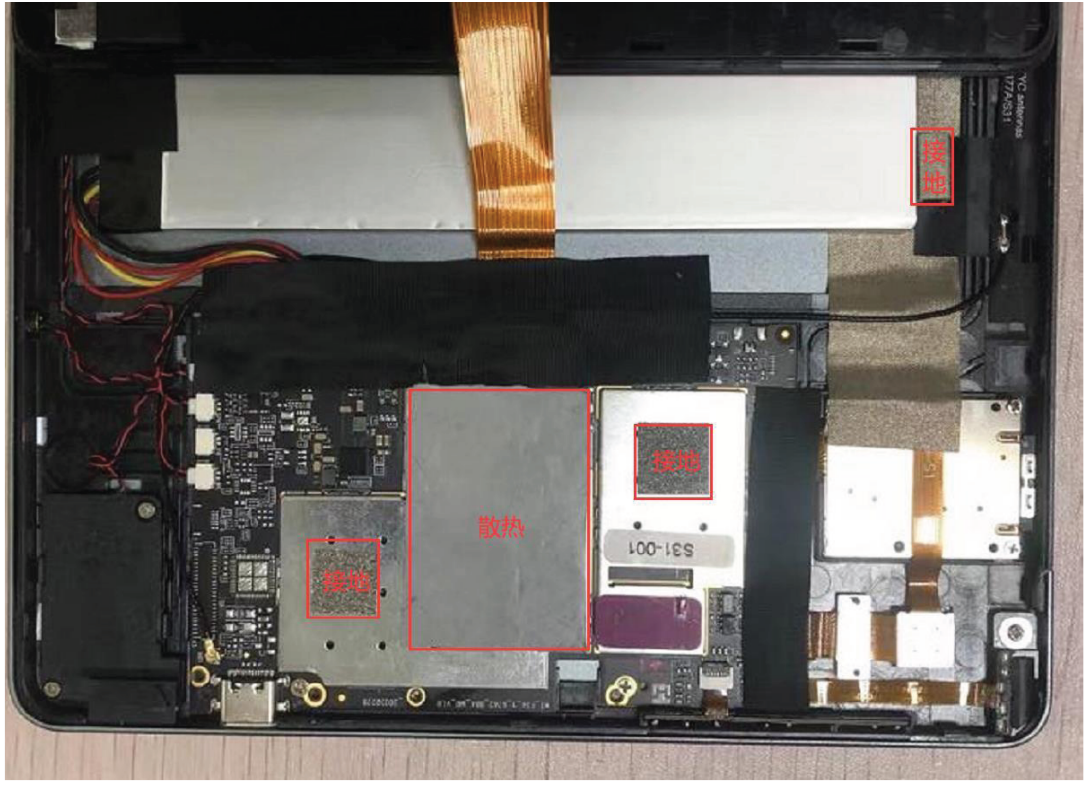
环境处理

Environmental treatment



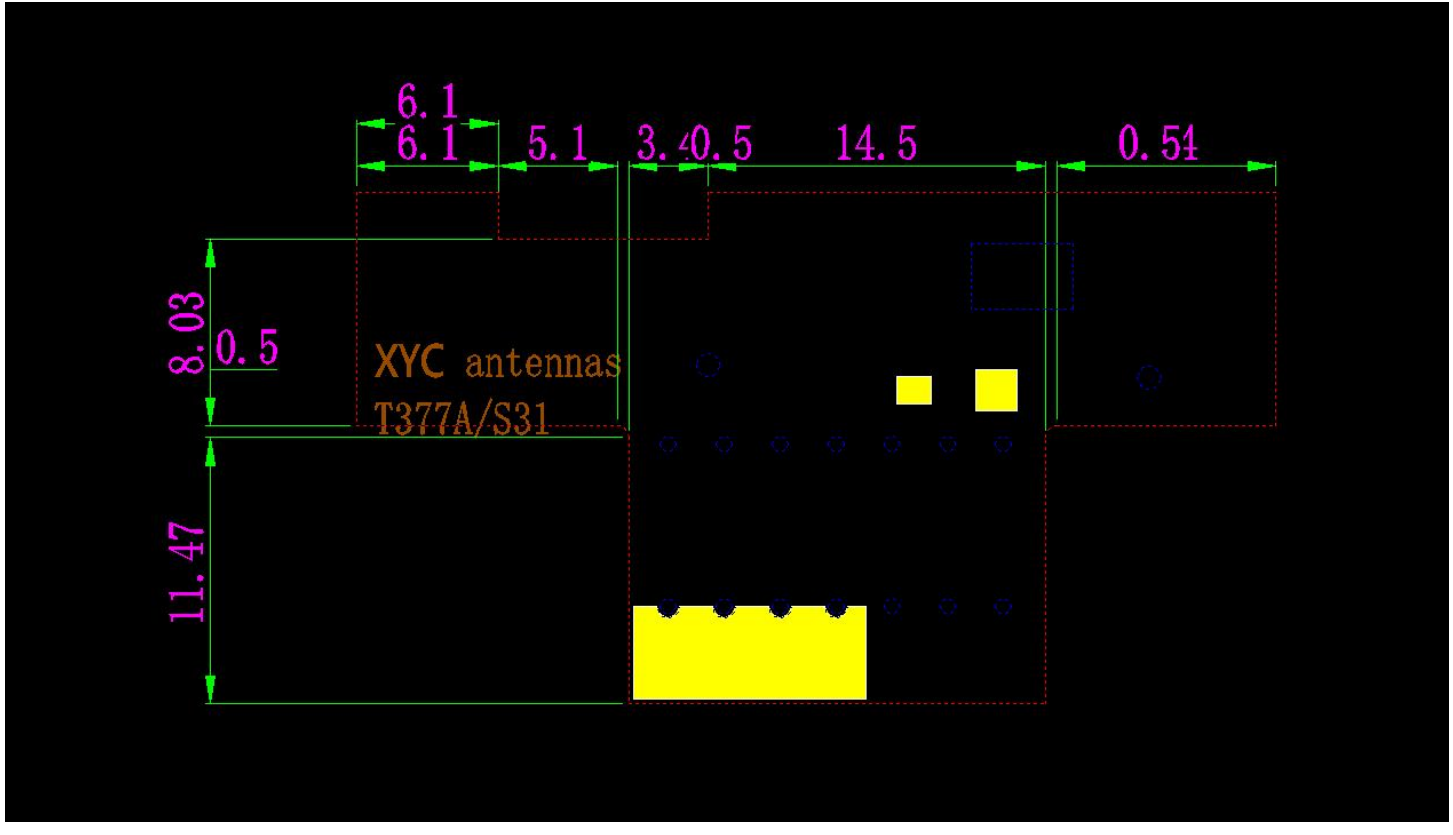
环境处理

Environmental treatment



结构

WIFI+BT+FM（三合一外形图）



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