



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: 桑格尔*

*MN: V3*

*RF: 戴进平*

*MD: 黄清清*

*MP: 19918388579*

*Date: 2022. 8. 31*

*REV :V1. 0*



ANTENNA

## 测试信息

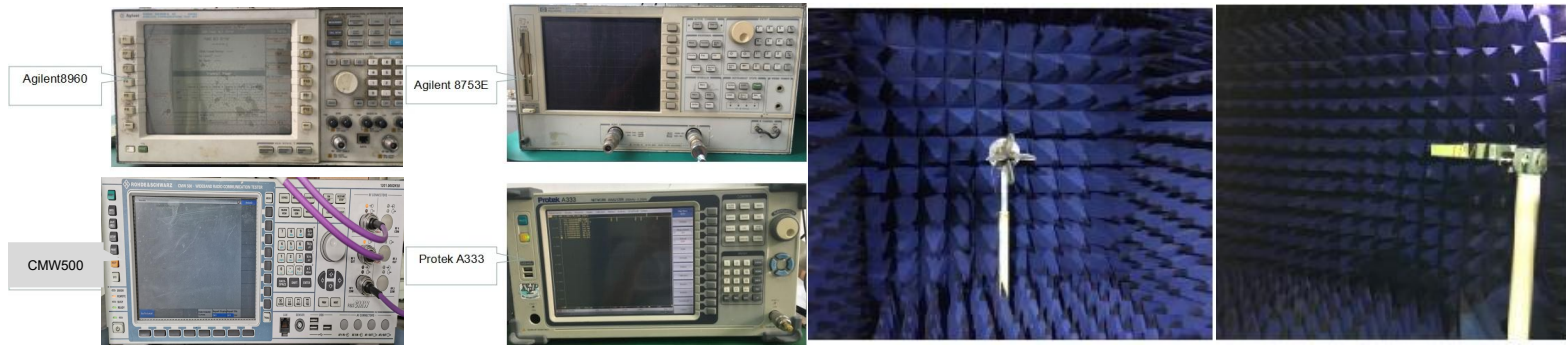
Test information

	Antenna band	Antenna state	Antenna form	Match changes	Note
Main ANT	2G	850/900/1800/1900			
	3G	W2100/W1900/W900/W850	FPC	PIFA	NO
	4G	B1/B2/B3/B4/B7/B17/B38/39/B40/B41			
AUX ANT	BT/WIFI	2.4/5G	FPC	PIFA	NO
	GPS	1.575G	FPC	PIFA	NO
	DIV		FPC	PIFA	NO

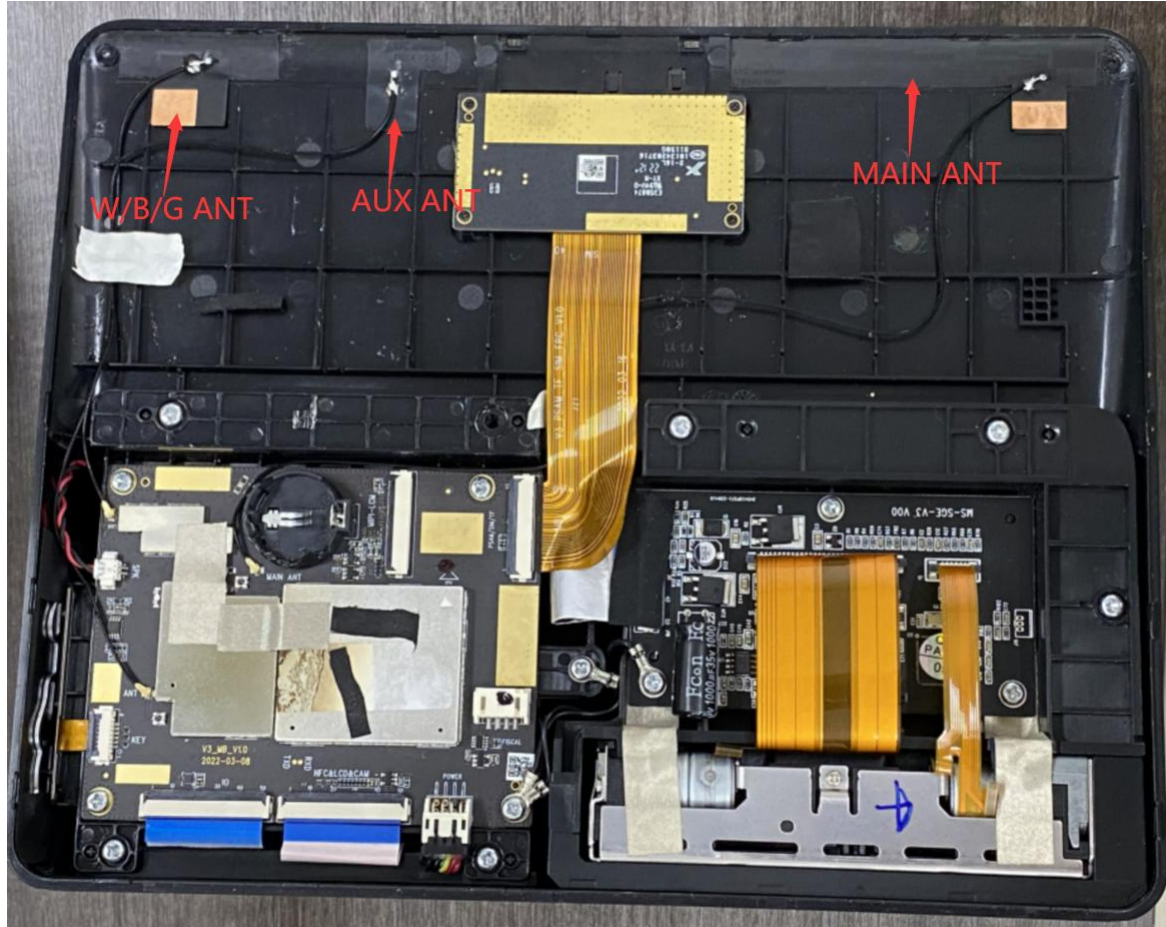
## 测试环境

### 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



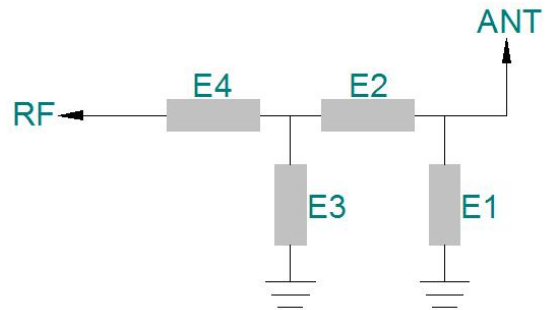


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匹配电路  
Matching circuit

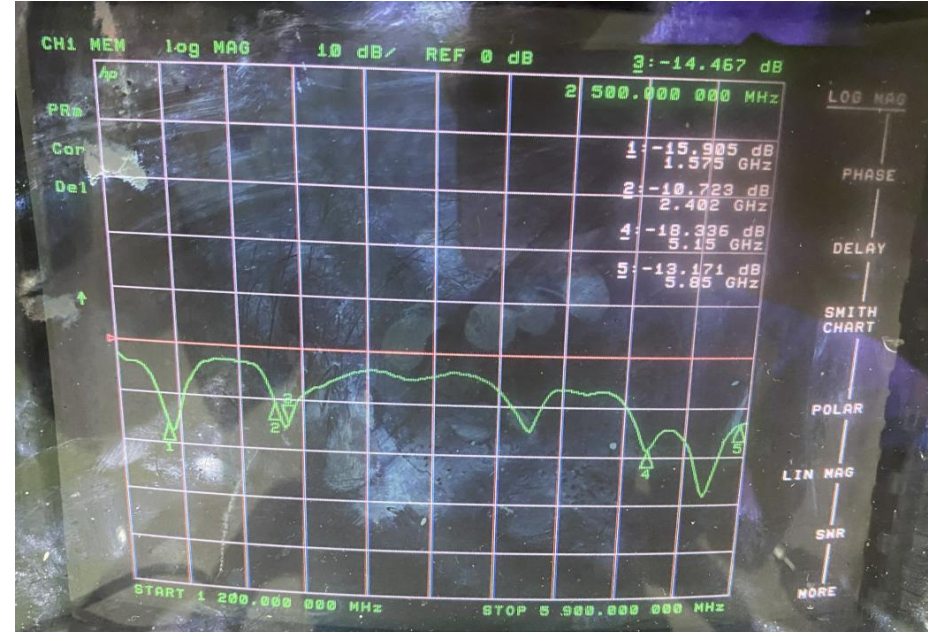
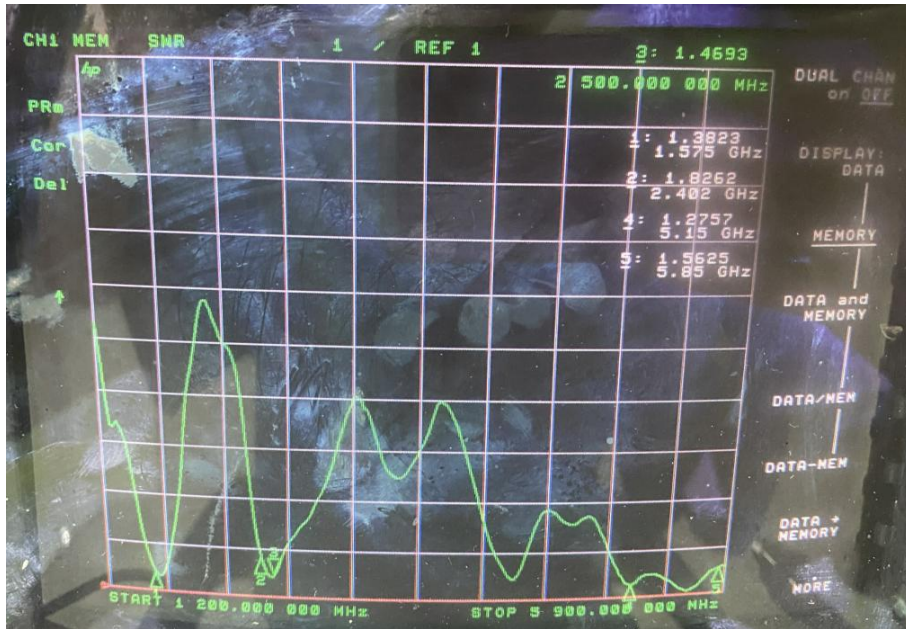


	电容 (PF)	电感 (NH)
E1(0402)		
E2(0402)		
E3(0402)		
E4(0402)		

匹配电路原理图&位号图

## 无源测试数据 Passive test data

## W/B/G ANT S11-VSWR&Return Loss



Frequency (MHZ)	1.575	2400	2500	5150	5850
VSWR	1.38	1.82	1.46	1.27	1.56
Return Loss (DB)	-15.9	-10.72	-14.46	-18.33	-13.17



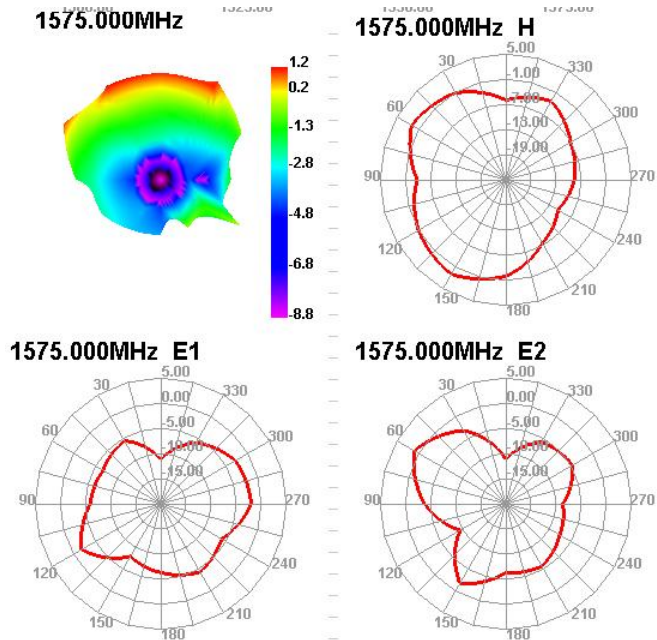
无源测试数据  
Passive test data

W/B/G ANT GAIN&Efficiency-GPS

Passive Test For GPS								
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)
1560	38.4	-4.16	0.54	-1.61	22.577	15.822	0.54	-13.04
1565	40.41	-3.94	0.72	-1.43	23.85	16.557	0.72	-12.48
1570	44.86	-3.48	1.14	-1.01	26.515	18.345	1.14	-11.9
1575	46.96	-3.28	1.24	-0.91	27.578	19.383	1.24	-11.22
1580	46.51	-3.32	1.16	-0.99	27.2	19.309	1.16	-11.18

无源测试数据  
Passive test data

W/B/G ANT Direction of figure(GPS)





无源测试数据

Passive test data

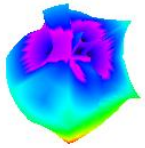
W/B/G ANT GAIN&Efficiency-WIFI2.4G/BT

Passive Test For WIFI2.4								
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)
2400	42.85	-3.68	3.73	1.58	15.262	27.588	3.73	-13.32
2410	44.59	-3.51	3.81	1.66	15.907	28.683	3.81	-13.39
2420	47.78	-3.21	4.09	1.94	17.172	30.606	4.09	-13.04
2430	46.26	-3.35	3.89	1.74	16.795	29.465	3.89	-14.54
2440	44.27	-3.54	3.55	1.4	16.292	27.977	3.55	-17.09
2450	46.8	-3.3	3.6	1.45	17.429	29.368	3.6	-18.64
2460	53.84	-2.69	4	1.85	20.371	33.466	4	-17.6
2470	53.78	-2.69	3.73	1.58	20.531	33.252	3.73	-16.01
2480	53.75	-2.7	3.55	1.4	20.53	33.222	3.55	-14.54
2490	52.27	-2.82	3.23	1.08	19.884	32.39	3.23	-13.1
2500	56.5	-2.48	3.49	1.34	21.434	35.062	3.49	-11.53

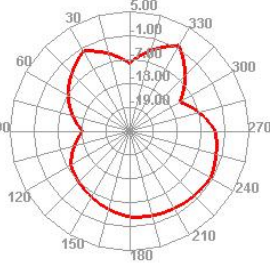
## 无源测试数据 Passive test data

W/B/G ANT Direction of figure(2.4/BT)

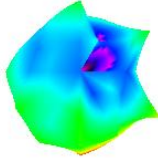
2400.000MHz



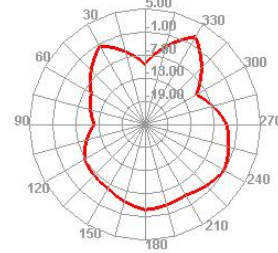
2400.000MHz H



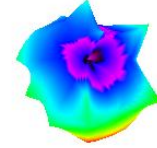
2450.000MHz



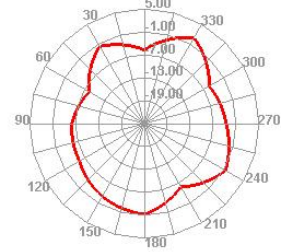
2450.000MHz H



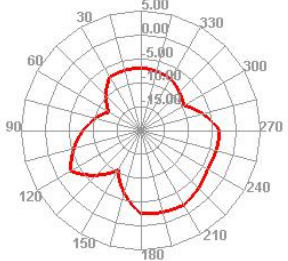
2500.000MHz



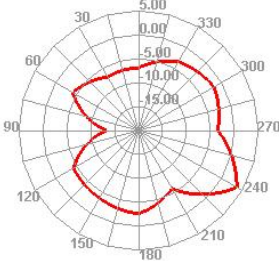
2500.000MHz H



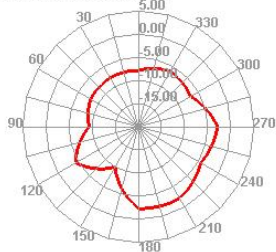
2400.000MHz E1



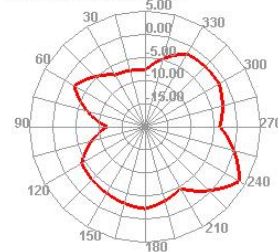
2400.000MHz E2



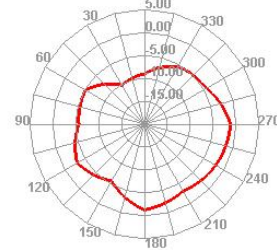
2450.000MHz E1



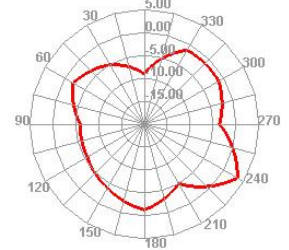
2450.000MHz E2



2500.000MHz E1



2500.000MHz E2



## 无源测试数据 Passive test data

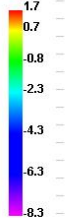
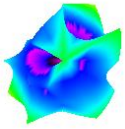
### W/B/G ANT GAIN&Efficiency-WIFI 5G

Passive Test For WIFI5G								
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHIS (%)	Max (dB)	Min (dB)
5150	33.1	-4.8	1.75	-0.4	10.98	22.124	1.75	-15.38
5170	30.16	-5.21	1.26	-0.89	10.362	19.802	1.26	-14.86
5190	34.44	-4.63	1.63	-0.52	11.967	22.471	1.63	-13.45
5210	29.84	-5.25	1.16	-0.99	9.984	19.857	1.16	-14.35
5230	35.11	-4.55	2.08	-0.07	11.559	23.548	2.08	-14.88
5250	29.38	-5.32	1.07	-1.08	10.028	19.349	1.07	-17.57
5270	35.1	-4.55	1.23	-0.92	12.525	22.57	1.23	-15.35
5290	33.74	-4.72	0.89	-1.26	12.157	21.586	0.89	-14.59
5310	34.83	-4.58	1.05	-1.1	12.442	22.388	1.05	-14.86
5330	34.72	-4.59	1.43	-0.72	12.625	22.1	1.43	-16.08
5350	37.3	-4.28	1.49	-0.66	13.979	23.323	1.49	-15.86
5370	38.33	-4.16	0.94	-1.21	14.645	23.684	0.94	-15.18
5390	35	-4.56	0.11	-2.04	13.555	21.446	0.11	-15.65
5410	43.89	-3.58	1.22	-0.93	17.383	26.505	1.22	-14.35
5430	39.46	-4.04	0.69	-1.46	16.227	23.229	0.69	-15.25
5450	42.89	-3.68	0.93	-1.22	18.311	24.579	0.93	-15.02
5470	40.28	-3.95	0.99	-1.16	17.549	22.729	0.99	-13.55
5490	45.57	-3.41	2.12	-0.03	20.199	25.37	2.12	-12.71
5510	41.09	-3.86	1.95	-0.2	18.611	22.474	1.95	-13.25
5530	46.87	-3.29	2.13	-0.02	21.809	25.057	2.13	-12.54
5550	45.08	-3.46	1.61	-0.54	21.367	23.714	1.61	-12.2
5570	46.53	-3.32	2.03	-0.12	22.381	24.148	2.03	-15.28
5590	46.98	-3.28	2.32	0.17	22.892	24.091	2.32	-19.25
5610	44.45	-3.52	1.52	-0.63	21.851	22.595	1.52	-16.75
5630	42.97	-3.67	0.61	-1.54	21.356	21.617	0.61	-13.33
5650	39.52	-4.03	0.62	-1.53	19.739	19.779	0.62	-11.82
5670	41.1	-3.86	1.01	-1.14	20.49	20.608	1.01	-11.22
5690	36.22	-4.41	0.47	-1.68	17.83	18.389	0.47	-12.81
5710	40.44	-3.93	1.01	-1.14	19.725	20.718	1.01	-11.86
5730	37.51	-4.26	0.74	-1.41	18.277	19.235	0.74	-12.37
5750	40.09	-3.97	1.02	-1.13	19.274	20.82	1.02	-13.58
5770	38.43	-4.15	0.62	-1.53	18.158	20.274	0.62	-17.1
5790	39.57	-4.03	0.38	-1.77	18.477	21.098	0.38	-18.04
5810	39.35	-4.05	0.27	-1.88	18.433	20.919	0.27	-16.12
5830	42.15	-3.75	1.02	-1.13	19.801	22.351	1.02	-15.14
5850	41.17	-3.85	0.98	-1.17	19.386	21.784	0.98	-14.14

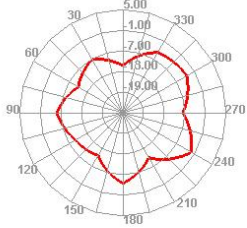
## 无源测试数据 Passive test data

## W/B/G ANT Direction of figure(5G)

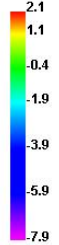
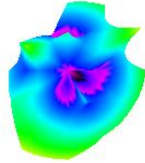
5150.000MHz



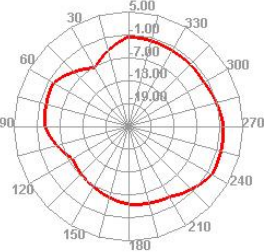
5150.000MHz H



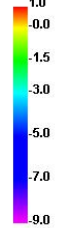
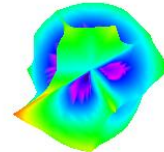
5490.000MHz



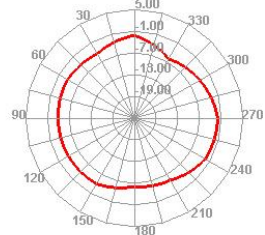
5490.000MHz H



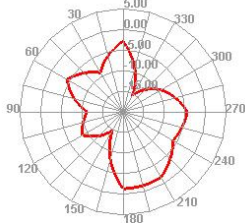
5850.000MHz



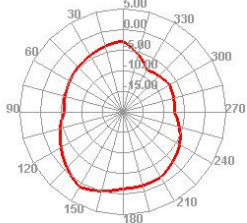
5850.000MHz H



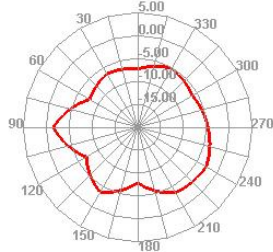
5150.000MHz E1



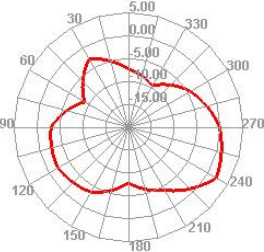
5150.000MHz E2



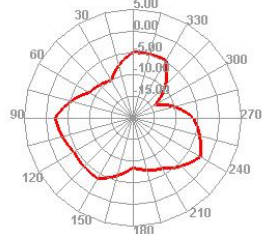
5490.000MHz E1



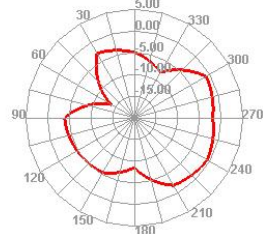
5490.000MHz E2



5850.000MHz E1

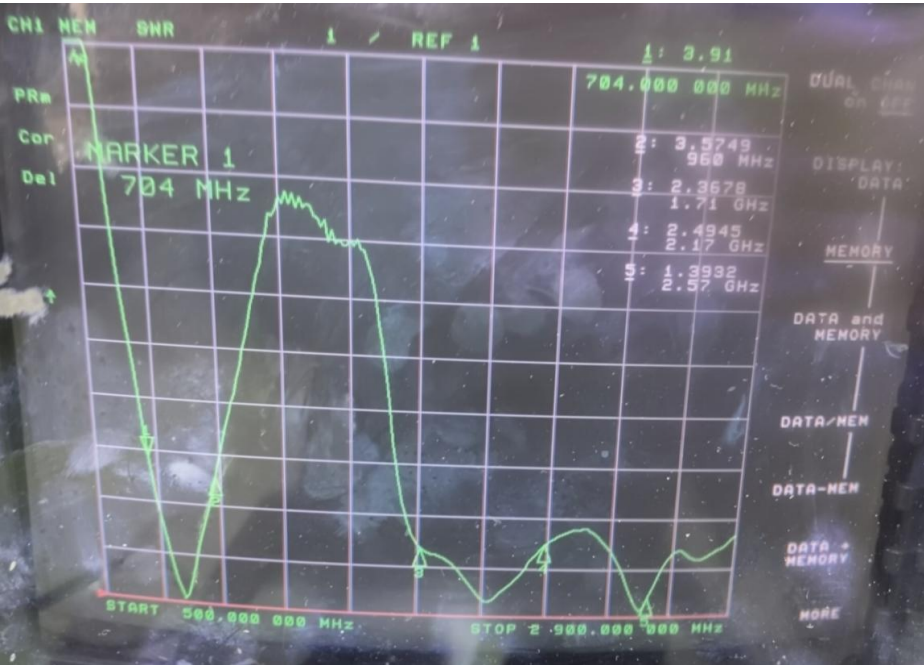


5850.000MHz E2



无源测试数据  
Passive test data

MAIN ANT S11-VSWR&Return Loss



Frequency (MHZ)	704	960	1710	2170	2570
VSWR	3.91	3.57	2.36	2.49	1.39
Return Loss (DB)	-4.54	-5.	-7.82	-7.37	-15.85

无源测试数据  
Passive test data

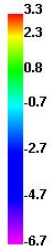
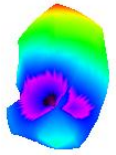
## MAIN ANT GAIN&Efficiency-(700-960)

Passive Test For 低频								
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHIS (%)	Max (dB)	Min (dB)
690	28.53	-5.45	0.59	-1.56	13.053	15.474	0.59	-12.15
700	30.64	-5.14	1.71	-0.44	14.331	16.307	1.71	-12.97
710	41.71	-3.8	3.33	1.18	20.242	21.468	3.33	-12.35
720	45.51	-3.42	3.67	1.52	22.701	22.81	3.67	-13.59
730	47.12	-3.27	3.53	1.38	23.876	23.245	3.53	-15.32
740	46.82	-3.3	3.03	0.88	23.399	23.424	3.03	-18.86
750	47.73	-3.21	2.79	0.64	23.615	24.111	2.79	-18.29
760	46.04	-3.37	2.48	0.33	22.556	23.484	2.48	-17.65
770	37.61	-4.25	1.48	-0.67	18.647	18.961	1.48	-16.84
780	35.19	-4.54	1.18	-0.97	17.734	17.452	1.18	-15.94
790	35.12	-4.54	1	-1.15	17.878	17.244	1	-16.42
800	34.73	-4.59	0.89	-1.26	17.737	16.994	0.89	-17.7
810	33.37	-4.77	0.86	-1.29	17.013	16.355	0.86	-16.13
820	34.11	-4.67	0.88	-1.27	16.779	17.328	0.88	-14.63
830	31.94	-4.96	0.39	-1.76	15.068	16.874	0.39	-14.54
840	28.09	-5.51	-0.59	-2.74	13.163	14.932	-0.59	-13.96
850	26.8	-5.72	-0.99	-3.14	12.9	13.905	-0.99	-14.67
860	24.96	-6.03	-1.39	-3.54	12.292	12.666	-1.39	-14.8
870	32.5	-4.8	0.59	-1.56	15.165	17.339	0.59	-15.27
880	30.25	-5.26	-0.2	-2.35	14.081	16.167	-0.2	-17.29
890	27.52	-5.88	-0.9	-3.05	12.907	14.616	-0.9	-23.49
900	28.07	-5.75	-0.64	-2.79	13.567	14.508	-0.64	-18.29
910	26.61	-6.12	-0.87	-3.02	13.14	13.473	-0.87	-16.36
920	24.15	-6.81	-0.88	-3.03	11.845	12.3	-0.88	-21.22
930	24.49	-6.71	-0.74	-2.89	12.075	12.414	-0.74	-23.45
940	25.42	-6.44	-0.78	-2.93	12.868	12.557	-0.78	-23.25
950	23.58	-6.99	-1	-3.15	11.909	11.667	-1	-22.72
960	21.13	-7.86	-1.48	-3.63	10.506	10.622	-1.48	-20.28

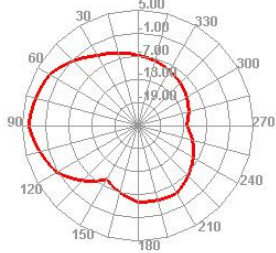
## 无源测试数据 Passive test data

### MAIN ANT Direction of figure(700-960)

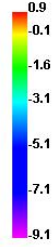
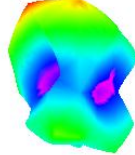
710.000MHz



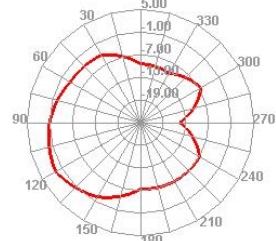
710.000MHz H



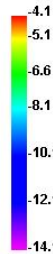
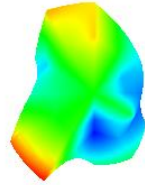
820.000MHz



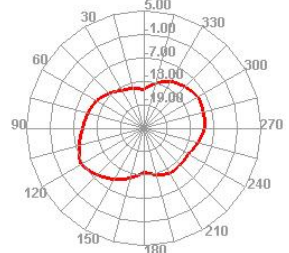
820.000MHz H



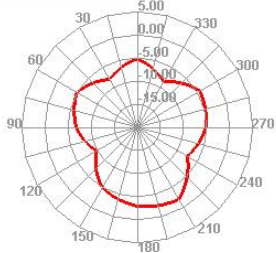
960.000MHz



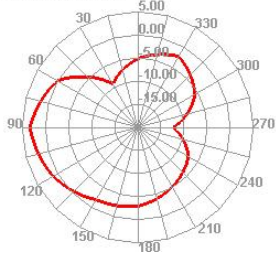
960.000MHz H



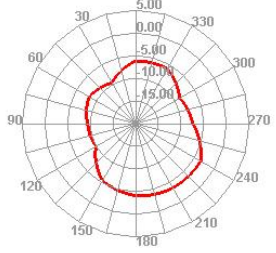
710.000MHz E1



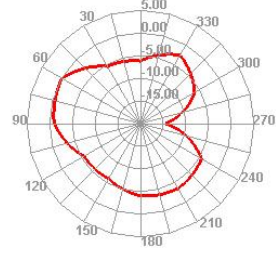
710.000MHz E2



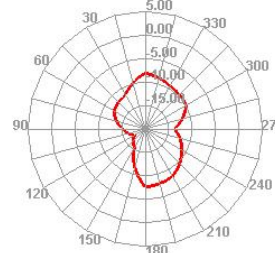
820.000MHz E1



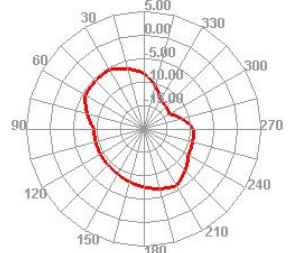
820.000MHz E2



960.000MHz E1



960.000MHz E2



## 无源测试数据 Passive test data

### MAIN ANT GAIN&Efficiency-(1700-1900)

Passive Test For D3								
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHIS (%)	Max (dB)	Min (dB)
1700	40.57	-3.92	1.13	-1.02	19.172	21.402	1.13	-11.09
1705	42.08	-3.76	1.25	-0.9	19.616	22.464	1.25	-10.43
1710	40.99	-3.87	1.07	-1.08	18.862	22.126	1.07	-10.44
1715	39.94	-3.99	0.86	-1.29	18.161	21.78	0.86	-10.51
1720	38.63	-4.13	0.59	-1.56	17.432	21.202	0.59	-10.51
1725	38.02	-4.2	0.39	-1.76	17.001	21.019	0.39	-10.2
1730	39.55	-4.03	0.46	-1.69	17.528	22.022	0.46	-9.67
1735	41.76	-3.79	0.76	-1.39	18.437	23.322	0.76	-9.12
1740	42.86	-3.68	0.86	-1.29	18.865	23.99	0.86	-8.76
1745	43.66	-3.6	0.96	-1.19	19.279	24.379	0.96	-8.75
1750	43.79	-3.59	1.03	-1.12	19.412	24.382	1.03	-8.48
1755	42.87	-3.68	0.99	-1.16	19.11	23.758	0.99	-8.38
1760	43.02	-3.66	1.07	-1.08	19.355	23.668	1.07	-8.63
1765	45.44	-3.43	1.39	-0.76	20.541	24.898	1.39	-9.02
1770	48.38	-3.15	1.65	-0.5	22.083	26.301	1.65	-9.19
1775	50.88	-2.93	1.89	-0.26	23.366	27.517	1.89	-9.1
1780	53.24	-2.74	2.08	-0.07	24.56	28.684	2.08	-9.25
1785	52.03	-2.84	2.04	-0.11	23.957	28.07	2.04	-9.75
1790	49.04	-3.09	1.88	-0.27	22.513	26.527	1.88	-10.1
1795	48.68	-3.13	2	-0.15	22.229	26.451	2	-10.54
1800	48.72	-3.12	2.12	-0.03	22.071	26.651	2.12	-10.44
1805	47.04	-3.28	2.09	-0.06	21.077	25.966	2.09	-10.44
1810	47.42	-3.24	2.21	0.06	21.105	26.311	2.21	-10.48
1815	49.12	-3.09	2.45	0.3	21.712	27.413	2.45	-10.21
1820	47.42	-3.24	2.35	0.2	20.78	26.639	2.35	-10.76
1825	44.95	-3.47	2.15	0	19.617	25.334	2.15	-11.41
1830	45.1	-3.46	2.16	0.01	19.634	25.47	2.16	-11.61
1835	45.22	-3.45	2.23	0.08	19.607	25.615	2.23	-11.69
1840	43.79	-3.59	2.03	-0.12	18.98	24.812	2.03	-11.98
1845	45.54	-3.42	2.13	-0.02	19.798	25.743	2.13	-11.98
1850	49.7	-3.04	2.53	0.38	21.582	28.122	2.53	-11.65
1855	50.15	-3	2.57	0.42	21.817	28.335	2.57	-11.76
1860	49.49	-3.06	2.48	0.33	21.628	27.858	2.48	-11.98
1865	49.47	-3.06	2.45	0.3	21.704	27.769	2.45	-12.03
1870	48.64	-3.13	2.37	0.22	21.305	27.34	2.37	-12.21
1875	49.28	-3.07	2.31	0.16	21.626	27.657	2.31	-12.18
1880	52.79	-2.77	2.51	0.36	23.167	29.62	2.51	-11.95
1885	54.49	-2.64	2.53	0.38	23.871	30.623	2.53	-11.92
1890	53.27	-2.74	2.3	0.15	23.318	29.951	2.3	-12.18
1895	53.46	-2.72	2.17	0.02	23.468	29.988	2.17	-12.14
1900	53.83	-2.69	2	-0.15	23.661	30.164	2	-12.19





## 无源测试数据 Passive test data

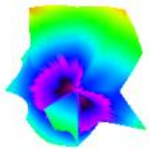
### MAIN ANT GAIN&Efficiency-(1905-2100)

1905	51.98	-2.84	1.67	-0.48	22.879	29.102	1.67	-12.38
1910	50.84	-2.94	1.38	-0.77	22.41	28.433	1.38	-12.71
1915	53.04	-2.75	1.52	-0.63	23.493	29.548	1.52	-12.65
1920	55.39	-2.57	1.71	-0.44	24.621	30.773	1.71	-12.41
1925	55.99	-2.52	1.8	-0.35	24.968	31.023	1.8	-12.43
1930	57.71	-2.39	1.89	-0.26	25.863	31.843	1.89	-12.23
1935	57.82	-2.38	1.95	-0.2	26.039	31.785	1.95	-12.16
1940	55.61	-2.55	1.87	-0.28	25.01	30.603	1.87	-12.09
1945	56.51	-2.48	1.99	-0.16	25.222	31.289	1.99	-11.8
1950	59.08	-2.29	2.28	0.13	26.004	33.081	2.28	-11.62
1955	57.75	-2.38	2.39	0.24	24.972	32.777	2.39	-12.7
1960	54.21	-2.66	2.33	0.18	23.082	31.126	2.33	-13.39
1965	54.36	-2.65	2.49	0.34	22.876	31.485	2.49	-12.83
1970	54.24	-2.66	2.65	0.5	22.78	31.457	2.65	-11.76
1975	52.2	-2.82	2.67	0.52	22.013	30.189	2.67	-11.5
1980	53.21	-2.74	2.89	0.74	22.503	30.711	2.89	-11.88
1985	56.77	-2.46	3.27	1.12	24.232	32.542	3.27	-12.14
1990	58.13	-2.36	3.44	1.29	25.041	33.092	3.44	-12.48
1995	57.67	-2.39	3.46	1.31	25.036	32.633	3.46	-12.76
2000	56.94	-2.45	3.44	1.29	24.942	32	3.44	-12.93
2005	55.61	-2.55	3.24	1.09	24.608	30.999	3.24	-13.4
2010	52.02	-2.84	2.89	0.74	23.286	28.73	2.89	-14.22
2015	50.69	-2.95	2.7	0.55	22.919	27.769	2.7	-14.88
2020	50.55	-2.96	2.55	0.4	23.08	27.465	2.55	-15.66
2025	50.19	-2.99	2.29	0.14	23.218	26.968	2.29	-16.51
2030	49.01	-3.1	2.06	-0.09	22.967	26.04	2.06	-16.76
2035	48.26	-3.16	1.85	-0.3	22.882	25.383	1.85	-16.61
2040	45.71	-3.4	1.58	-0.57	21.945	23.762	1.58	-17.08
2045	42.33	-3.73	1.32	-0.83	20.59	21.739	1.32	-17.37
2050	42.03	-3.76	1.36	-0.79	20.667	21.367	1.36	-16.57
2055	43.76	-3.59	1.64	-0.51	21.757	22.001	1.64	-15.36
2060	44.64	-3.5	1.73	-0.42	22.395	22.245	1.73	-14.52
2065	45.28	-3.44	1.75	-0.4	22.897	22.382	1.75	-14.35
2070	46.9	-3.29	1.81	-0.34	23.871	23.03	1.81	-14.09
2075	47.36	-3.25	1.78	-0.37	24.283	23.078	1.78	-14.27
2080	45.74	-3.4	1.58	-0.57	23.613	22.124	1.58	-14.69
2085	44.29	-3.54	1.33	-0.82	22.981	21.311	1.33	-15.06
2090	43.8	-3.59	1.22	-0.93	22.867	20.934	1.22	-15.2
2095	43.5	-3.61	1.12	-1.03	22.799	20.704	1.12	-14.9
2100	43.83	-3.58	1.09	-1.06	23.018	20.815	1.09	-17.28

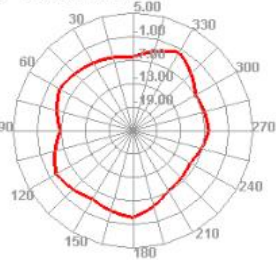
无源测试数据  
Passive test data

MAIN ANT Direction of figure(1700-2100)

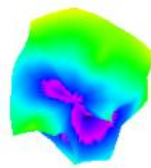
1710.000MHz



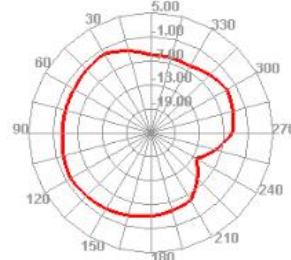
1710.000MHz H



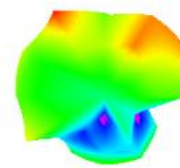
1900.000MHz



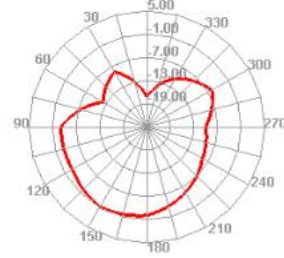
1900.000MHz H



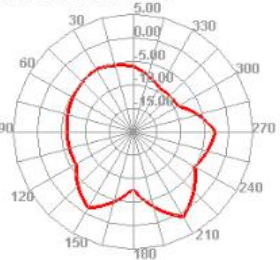
2100.000MHz



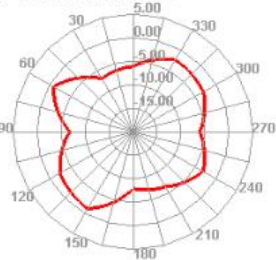
2100.000MHz H



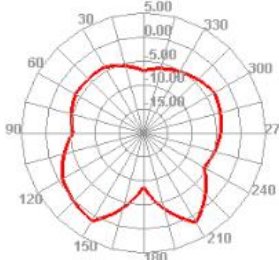
1710.000MHz E1



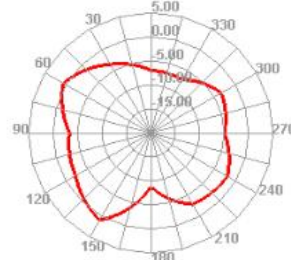
1710.000MHz E2



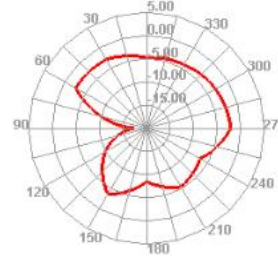
1900.000MHz E1



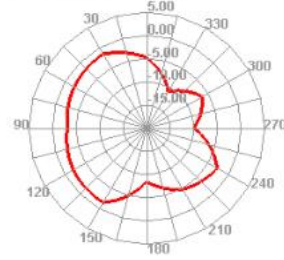
1900.000MHz E2



2100.000MHz E1



2100.000MHz E2



无源测试数据

Passive test data

## MAIN ANT GAIN&Efficiency-(2300-2500)

Passive Test For D4								
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHIS (%)	Max (dB)	Min (dB)
2300	34.44	-4.63	-0.29	-2.44	17.059	17.378	-0.29	-15.27
2305	38.01	-4.2	0.48	-1.67	18.918	19.093	0.48	-14.61
2310	40.88	-3.88	1.15	-1	20.408	20.472	1.15	-13.93
2315	43.33	-3.63	1.7	-0.45	21.706	21.626	1.7	-14.61
2320	43.51	-3.61	1.97	-0.18	21.842	21.666	1.97	-16.09
2325	41.04	-3.87	1.91	-0.24	20.686	20.358	1.91	-17.65
2330	38.86	-4.11	1.8	-0.35	19.663	19.192	1.8	-19.03
2335	37.49	-4.26	1.71	-0.44	19.065	18.428	1.71	-19.92
2340	37.02	-4.32	1.69	-0.46	18.921	18.098	1.69	-19.82
2345	39.42	-4.04	2	-0.15	20.217	19.202	2	-18.62
2350	43.08	-3.66	2.42	0.27	22.213	20.865	2.42	-16.87
2355	42.86	-3.68	2.41	0.26	22.227	20.632	2.41	-15.8
2360	40.59	-3.92	2.19	0.04	21.141	19.448	2.19	-14.88
2365	39.76	-4.01	2.11	-0.04	20.771	18.991	2.11	-13.92
2370	39.56	-4.03	2.1	-0.05	20.73	18.827	2.1	-13.99
2375	39.88	-3.99	2.18	0.03	20.896	18.982	2.18	-14.51
2380	40.16	-3.96	2.28	0.13	20.989	19.173	2.28	-14.66
2385	40.41	-3.93	2.37	0.22	21.09	19.325	2.37	-14.79
2390	41.24	-3.85	2.5	0.35	21.449	19.791	2.5	-15.09
2395	42.01	-3.77	2.63	0.48	21.738	20.271	2.63	-15.07
2400	40.92	-3.88	2.56	0.41	21.073	19.845	2.56	-15.22
2405	40.32	-3.95	2.48	0.33	20.675	19.641	2.48	-15.22
2410	42.56	-3.71	2.71	0.56	21.727	20.837	2.71	-15.04
2415	45.33	-3.44	2.94	0.79	23.041	22.291	2.94	-14.69
2420	45.32	-3.44	2.86	0.71	22.989	22.327	2.86	-14.49
2425	44.39	-3.53	2.64	0.49	22.497	21.895	2.64	-14.71
2430	43.11	-3.65	2.38	0.23	21.829	21.282	2.38	-14.92
2435	41.73	-3.8	2.08	-0.07	21.112	20.614	2.08	-15.36
2440	40.73	-3.9	1.94	-0.21	20.668	20.064	1.94	-15.74
2445	41.33	-3.84	2.19	0.04	21.063	20.272	2.19	-16.3
2450	43.3	-3.64	2.6	0.45	22.155	21.141	2.6	-16.4
2455	46.23	-3.35	3.12	0.97	23.82	22.406	3.12	-16.63
2460	49.47	-3.06	3.62	1.47	25.639	23.835	3.62	-16.65
2465	50.28	-2.99	3.84	1.69	26.173	24.107	3.84	-16.62
2470	49.3	-3.07	3.87	1.72	25.675	23.63	3.87	-16.37
2475	50.86	-2.94	4.04	1.89	26.361	24.498	4.04	-16.29
2480	50.93	-2.93	4.02	1.87	26.265	24.667	4.02	-16.04
2485	50.58	-2.96	3.93	1.78	25.975	24.608	3.93	-15.69
2490	52.98	-2.76	4.04	1.89	26.993	25.986	4.04	-15.69
2495	56.12	-2.51	4.18	2.03	28.43	27.691	4.18	-15.17
2500	56.82	-2.46	4.14	1.99	28.727	28.092	4.14	-15.08

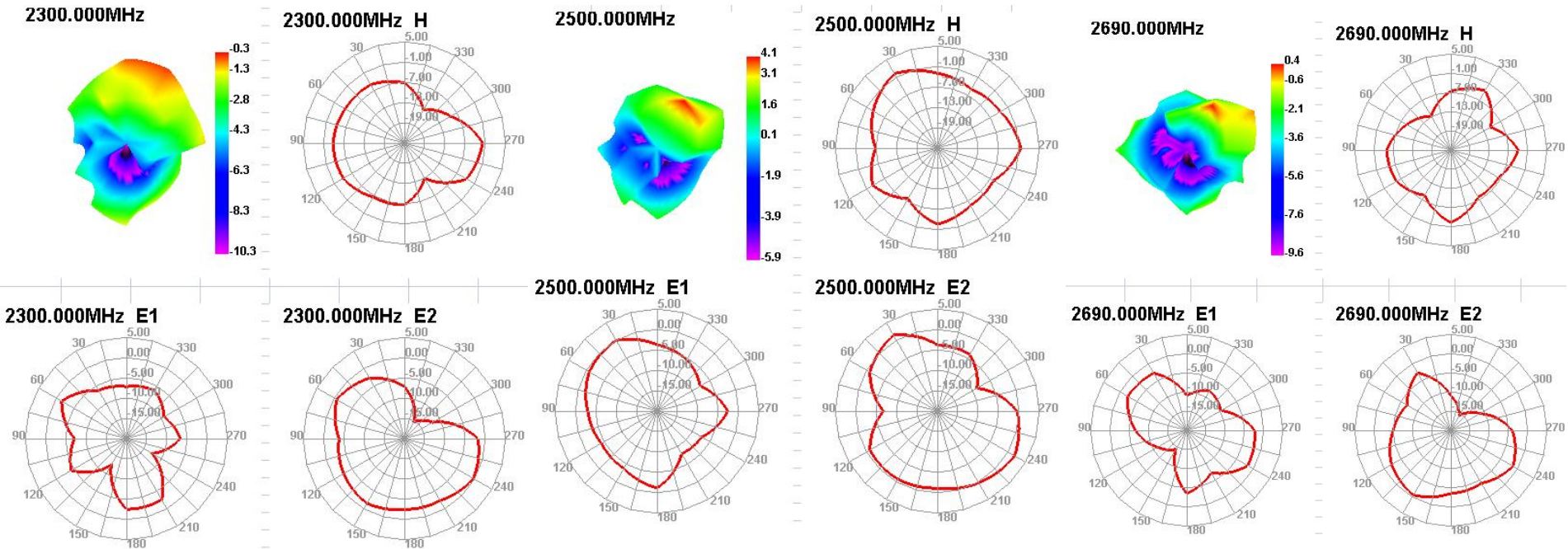
## 无源测试数据 Passive test data

### MAIN ANT GAIN&Efficiency-(2505-2690)

2505	55.4	-2.57	3.99	1.84	28.018	27.379	3.99	-15.24
2510	53.96	-2.68	3.82	1.67	27.321	26.64	3.82	-15.64
2515	52.13	-2.83	3.6	1.45	26.368	25.763	3.6	-16.14
2520	49.69	-3.04	3.35	1.2	25.149	24.546	3.35	-16.7
2525	49.16	-3.08	3.32	1.17	24.844	24.318	3.32	-17.33
2530	49.37	-3.07	3.37	1.22	24.854	24.514	3.37	-17.97
2535	48.91	-3.11	3.38	1.23	24.541	24.371	3.38	-18.19
2540	47.9	-3.2	3.35	1.2	23.958	23.943	3.35	-18.94
2545	48.22	-3.17	3.44	1.29	24.022	24.197	3.44	-19.21
2550	47.43	-3.24	3.37	1.22	23.546	23.881	3.37	-19.33
2555	45.18	-3.45	3.17	1.02	22.399	22.785	3.17	-19.6
2560	43.77	-3.59	3.1	0.95	21.65	22.12	3.1	-19.27
2565	44.26	-3.54	3.21	1.06	21.838	22.425	3.21	-18.9
2570	45.23	-3.45	3.28	1.13	22.208	23.024	3.28	-18.25
2575	45.05	-3.46	3.22	1.07	22.012	23.04	3.22	-17.8
2580	45.16	-3.45	3.17	1.02	21.983	23.181	3.17	-17.09
2585	45.35	-3.43	3.12	0.97	21.979	23.373	3.12	-16.48
2590	44.39	-3.53	2.93	0.78	21.367	23.019	2.93	-16.03
2595	43.12	-3.65	2.75	0.6	20.657	22.466	2.75	-15.46
2600	41.04	-3.87	2.54	0.39	19.56	21.485	2.54	-15.14
2605	39.13	-4.08	2.32	0.17	18.55	20.577	2.32	-14.88
2610	38.55	-4.14	2.25	0.1	18.174	20.373	2.25	-14.45
2615	37.62	-4.25	2.15	0	17.641	19.975	2.15	-14.29
2620	35.42	-4.51	1.93	-0.22	16.513	18.906	1.93	-14.25
2625	34.28	-4.65	1.83	-0.32	15.909	18.376	1.83	-14.63
2630	35.06	-4.55	1.88	-0.27	16.127	18.929	1.88	-14.72
2635	37.26	-4.29	2.15	0	17.034	20.23	2.15	-14.37
2640	37.77	-4.23	2.17	0.02	17.187	20.58	2.17	-14.5
2645	36.47	-4.38	2.01	-0.14	16.538	19.936	2.01	-14.81
2650	35.48	-4.5	1.86	-0.29	16.044	19.439	1.86	-15.13
2655	34.31	-4.65	1.71	-0.44	15.525	18.787	1.71	-15.22
2660	32.7	-4.85	1.49	-0.66	14.833	17.87	1.49	-15.55
2665	32.28	-4.91	1.4	-0.75	14.646	17.638	1.4	-15.63
2670	33.17	-4.79	1.4	-0.75	15.055	18.111	1.4	-15.5
2675	34.42	-4.63	1.48	-0.67	15.589	18.83	1.48	-15.17
2680	35.18	-4.54	1.4	-0.75	15.831	19.346	1.4	-14.96
2685	34.11	-4.67	1.05	-1.1	15.249	18.859	1.05	-14.85
2690	31.61	-5	0.45	-1.7	13.982	17.626	0.45	-15.58

## 无源测试数据 Passive test data

### MAIN ANT Direction of figure(2300-2690)





## 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)	29.91	28.34	27.74	27.26	27.24	26.87	27.47	28.12	27.04	27.04	27.54	27.5
TIS(LCD OFF)						-101.27						
TIS(LCD ON)			-100.65			-98.87			-105.79			-105.02
3G												
Band	WCDMA-1			WCDMA-8			WCDMA-2			WCDMA-5		
Channel	10562	10700	10838	2937	3013	3088	9662	9800	9938	4357	4400	4458
TRP(dBm)	19.36	19.65	19.52	17.08	17.02	17.08	19.21	19.15	19.12	18.19	18.12	17.56
TIS(LCD OFF)						-101.09						
TIS(LCD ON)			-104.42			-99.49			-105.76			-101.96
4G(FDD 10M)												
Band	FDD-Band 1			FDD-Band 2			FDD-Band 3			FDD-Band 4		
Channel	18050	18300	18550	18650	18900	19150	19250	19575	19900	20000	20175	23050
TRP(dBm)	19.76	19.81	19.7	19.16	19.58	19.38	19.63	19.99	19.69	19.36	18.12	18.97
TIS(LCD OFF)												
TIS(LCD ON)			-93.25			-92.69			93.36			-92.96
Band	FDD-Band 5			FDD-Band 7			FDD-Band 8			FDD-Band17		
Channel	20450	20525	20600	20800	21100	21400	21500	21620	21750	23780	23790	23800
TRP(dBm)				16.48	15.73	15.35				15.11	15.92	16.61
TIS(LCD OFF)												-88.33
TIS(LCD ON)						-91.31						-85.61
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)	14.08	14.24	15.9	19.25	19.25	19.14	17.16	17.06	17.04		15.82	
TIS(LCD OFF)												
TIS(LCD ON)			-90.49			-91.47			-87.64		-89.67	



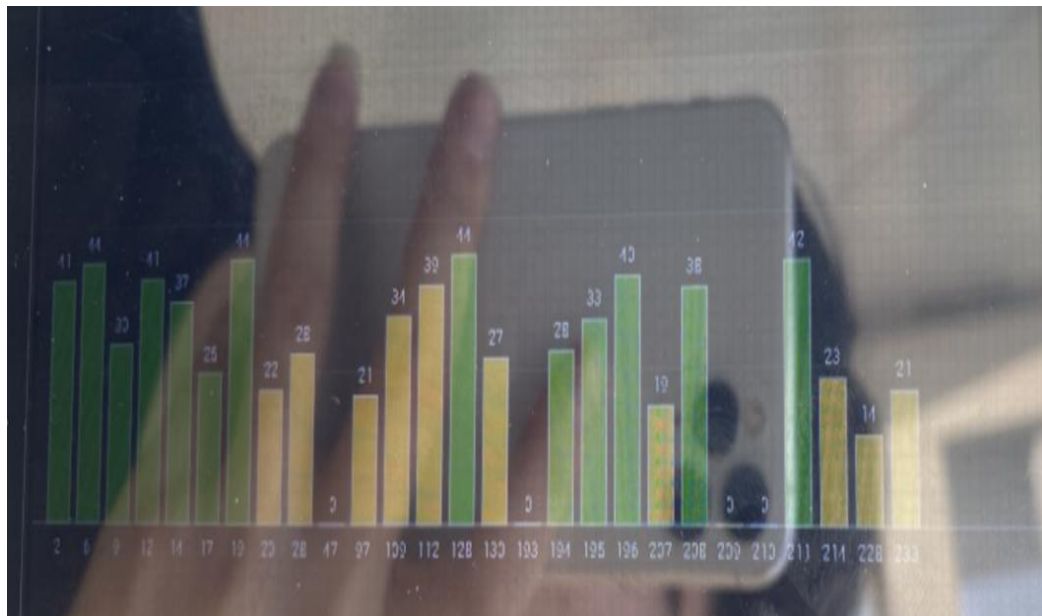
## 有源测试数据 Active test data

802.11b	Frequency	TRP		TIS	
	2412	CH1 11Mbps	13.59	CH1 11Mbps	-81.36
2437	CH6 11Mbps	14.69	CH6 11Mbps	-80.58	
2467	CH11 11Mbps	13.24	CH11 11Mbps	-80.47	
802.11a		TRP		TIS	
	5180	CH36 6Mbps	12.32	CH36 54Mbps	-72.69
	5300	CH60 6Mbps	11.28	CH60 54Mbps	-72.58
	5805	CH161 6Mbps	12.43	CH161 54Mbps	-73.65

## GPS搜星测试 GPS star search test

GPS冷启动实测效果以下：  
CN值40以上7颗  
CN值35以上9颗  
实际定位13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





## Wifi/BT天线实测

### Wifi Antenna test

### WIFI

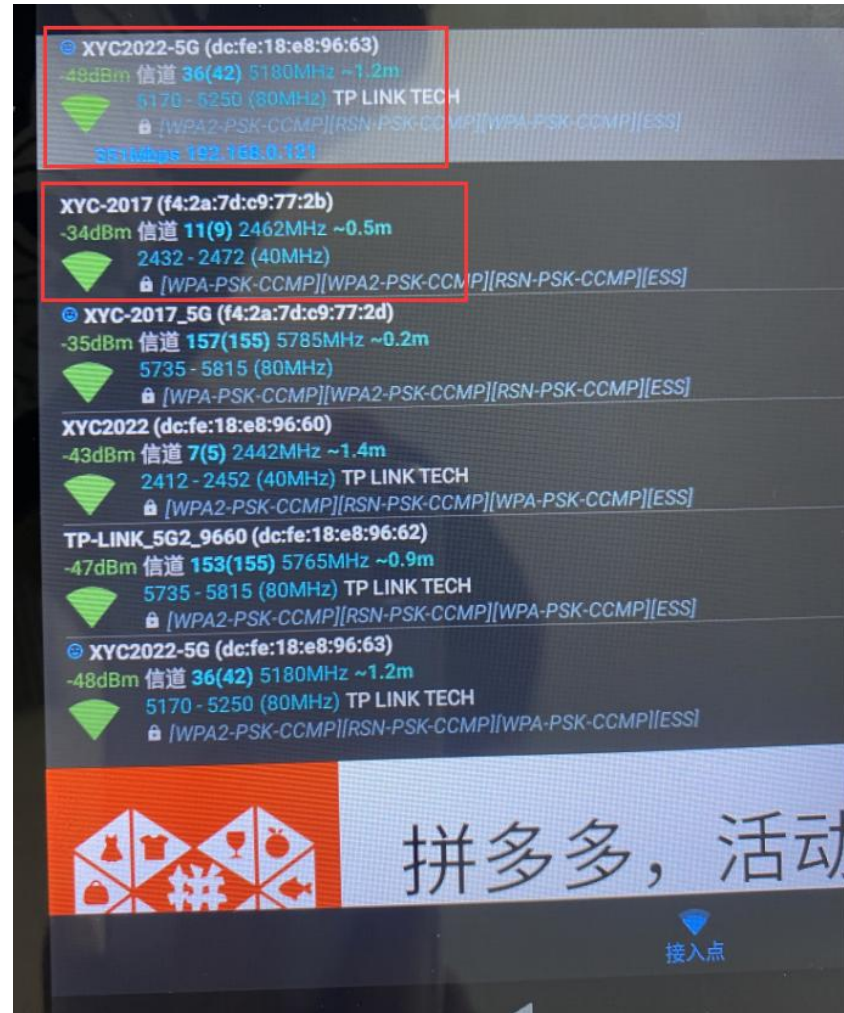
测试环境：开放空间

测试工具：Wifi Analytical Assistant

测试距离：10m

信号强度：2.4G :-34dBm 5G:-48dBm

测试结果如右图



## 附加说明

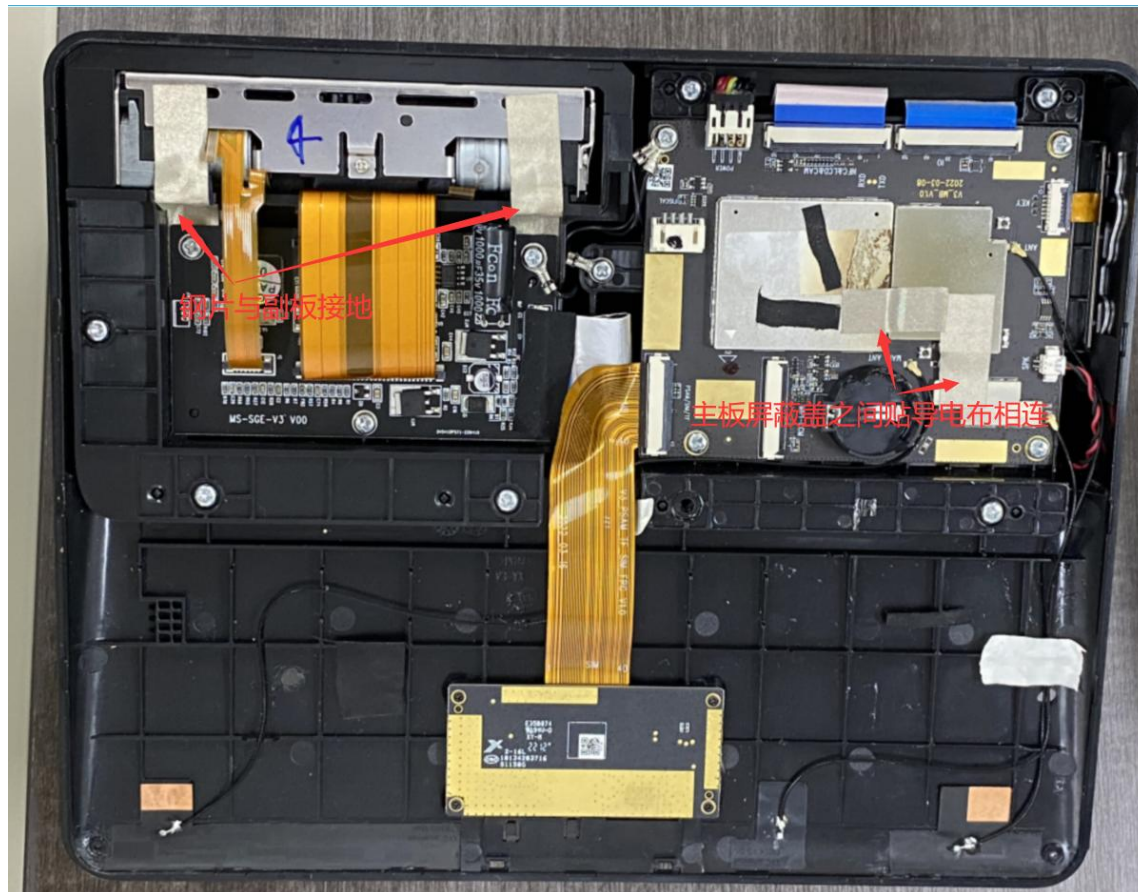
Additional instructions





## 环境处理

Environmental treatment



合作 共赢

