



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: 盛安仕

MN: TU140

RF: 蔡林满

MD: 黄清清

MP: 19918388579

Date: 2024. 8. 9.

REV :V1. 0



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深圳市星源创科技有限公司

SHENZHEN Xingyuanchuang TECHNOLOGY CO., LTD

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



Intel(R) Wi-Fi 6 AX101

Driver Provider: Intel

Driver Date: 8/7/2023

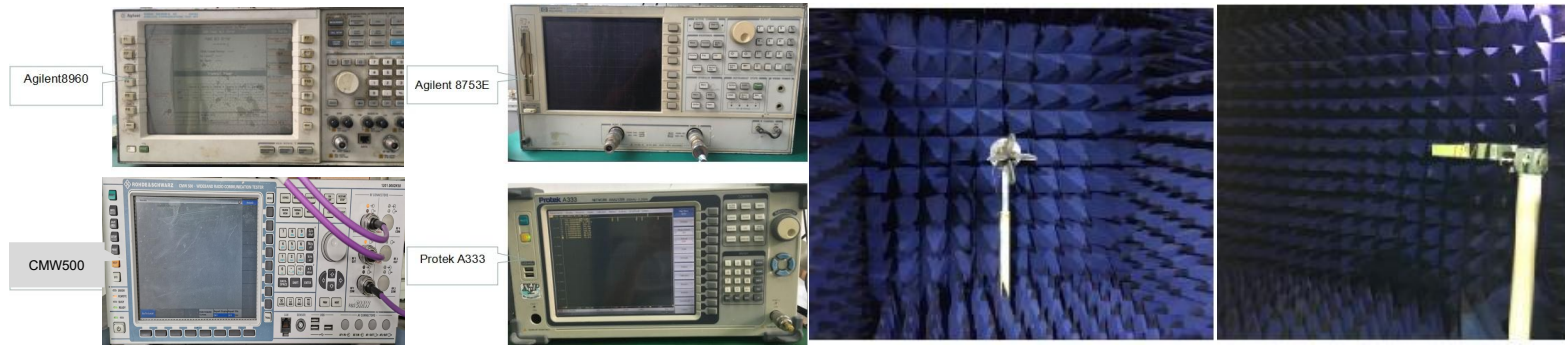
Driver Version: 22.250.1.2

Digital Signer: Microsoft Windows Hardware Compatibility
Publisher

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





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天线位置

Antenna position



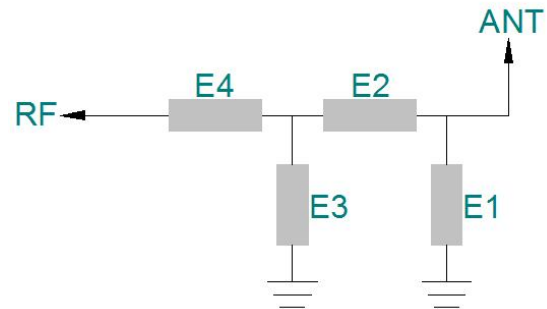


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匹配电路
Matching circuit



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

Matching circuit schematic & bit number diagram



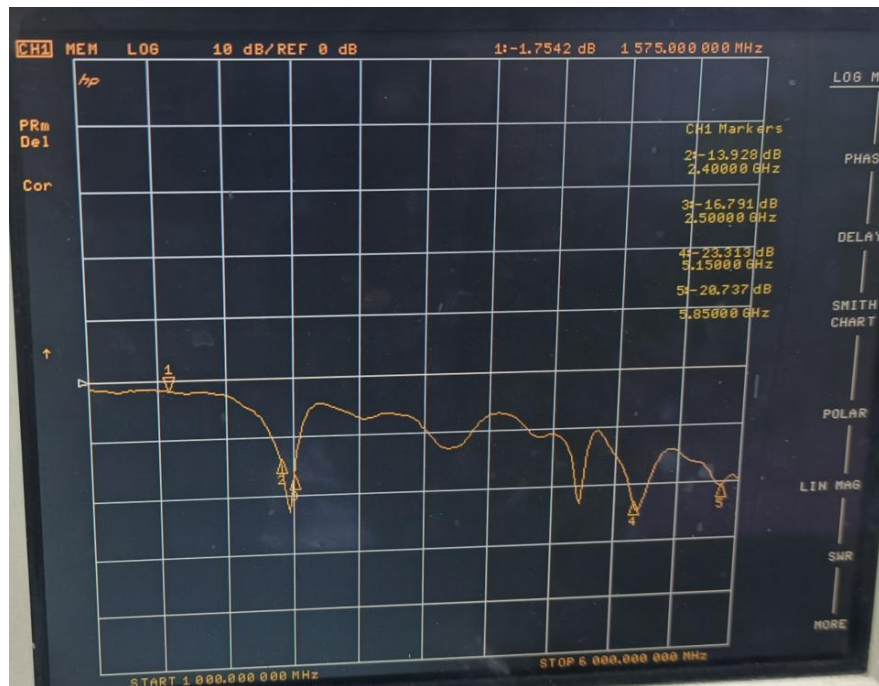
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无源测试数据
Passive test data

MAIN ANT S11-VSWR&Return Loss



Frequency (MHZ)	2400	2500	5150	5850
Return Loss (DB)	-13.92	-16.79	-23.31	-20.73



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无源测试数据

Passive test data

MAIN 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	52.71	-2.78	1.32	-0.83	35.584	17.127	1.32	-17.37
2410	50.86	-2.94	1.08	-1.07	34.175	16.685	1.08	-17.01
2420	51.79	-2.86	1.18	-0.97	34.585	17.21	1.18	-15.88
2430	51.3	-2.9	1.06	-1.09	34.194	17.108	1.06	-15.06
2440	50.23	-2.99	0.92	-1.23	33.463	16.767	0.92	-14.11
2450	48.18	-3.17	0.87	-1.28	32.022	16.163	0.87	-13.28
2460	48.01	-3.19	1.05	-1.1	31.805	16.204	1.05	-13.19
2470	48.04	-3.18	1.24	-0.91	31.776	16.269	1.24	-12.45
2480	46.73	-3.3	1.19	-0.96	30.526	16.206	1.19	-12.17
2490	44.14	-3.55	0.92	-1.23	28.553	15.584	0.92	-12.33
2500	44.45	-3.52	1.04	-1.11	28.629	15.823	1.04	-12.8



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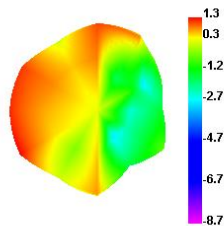
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SHENZHEN Xingyuanchuang TECHNOLOGY CO., LTD

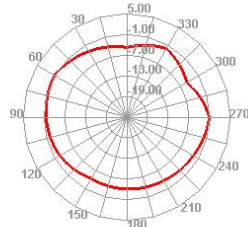
无源测试数据
Passive test data

MAIN ANT Direction of figure(2.4/BT)

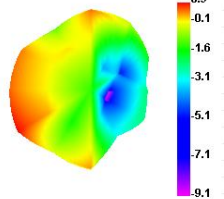
2400.000MHz



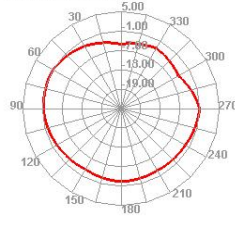
2400.000MHz H



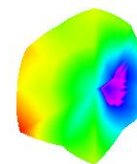
2450.000MHz



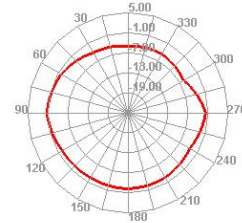
2450.000MHz H



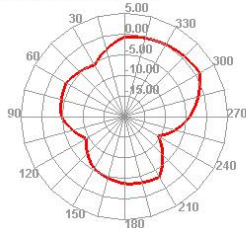
2500.000MHz



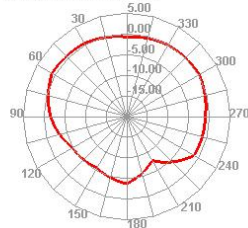
2500.000MHz H



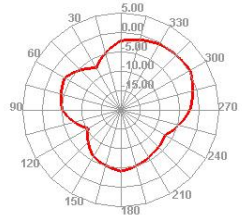
2400.000MHz E1



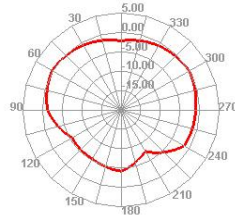
2400.000MHz E2



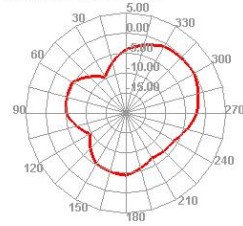
2450.000MHz E1



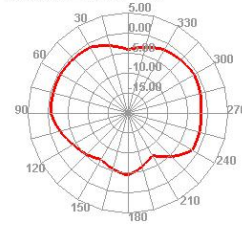
2450.000MHz E2



2500.000MHz E1



2500.000MHz E2





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无源测试数据
Passive test data

MAIN ANT GAIN&Efficiency-WIFI 5G

Passive Test For WIFI5G								
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)
5150	27.46	-5.61	0.55	-1.6	13.501	13.959	0.55	-16.22
5170	25.6	-5.92	0.57	-1.58	12.441	13.16	0.57	-15.1
5190	28.77	-5.41	1.24	-0.91	13.849	14.921	1.24	-16.38
5210	28.38	-5.47	0.86	-1.29	13.64	14.742	0.86	-18.16
5230	31.88	-4.96	0.98	-1.17	15.263	16.621	0.98	-16.96
5250	31.55	-5.01	0.74	-1.41	14.884	16.661	0.74	-19.18
5270	36.72	-4.35	1.21	-0.94	17.067	19.65	1.21	-21.34
5290	35.93	-4.45	1.04	-1.11	16.574	19.355	1.04	-19.24
5310	35.5	-4.5	0.77	-1.38	16.475	19.028	0.77	-16.29
5330	37.5	-4.26	0.67	-1.48	17.504	19.997	0.67	-15.76
5350	39.4	-4.05	0.65	-1.5	18.509	20.887	0.65	-14.63
5370	40.02	-3.98	0.68	-1.47	18.844	21.177	0.68	-15.24
5390	36.19	-4.41	0.67	-1.48	17.053	19.136	0.67	-19.04
5410	44.23	-3.54	1.9	-0.25	20.866	23.369	1.9	-17.56
5430	39.1	-4.08	1.33	-0.82	18.599	20.499	1.33	-17.19
5450	43.51	-3.61	1.49	-0.66	20.754	22.761	1.49	-15.52
5470	41.09	-3.86	1.32	-0.83	19.368	21.719	1.32	-15.41
5490	41.11	-3.86	1.72	-0.43	19.27	21.839	1.72	-15.42
5510	41.62	-3.81	1.72	-0.43	19.561	22.06	1.72	-16.19
5530	40.63	-3.91	1.55	-0.6	19.017	21.612	1.55	-17.92
5550	43.41	-3.62	2.27	0.12	19.903	23.504	2.27	-18.36
5570	38.53	-4.14	2	-0.15	17.353	21.178	2	-17.98
5590	40.09	-3.97	2.06	-0.09	17.835	22.252	2.06	-17.07
5610	36.37	-4.39	1.54	-0.61	16.191	20.18	1.54	-18.04
5630	39.69	-4.01	1.95	-0.2	17.419	22.267	1.95	-17.32
5650	38.27	-4.17	1.85	-0.3	16.524	21.747	1.85	-17.16
5670	38.26	-4.17	1.67	-0.48	16.455	21.804	1.67	-17.06
5690	39.85	-4	1.46	-0.69	17.349	22.498	1.46	-17.51
5710	37.49	-4.26	1.16	-0.99	16.467	21.02	1.16	-18.7
5730	44.65	-3.5	2.03	-0.12	19.466	25.181	2.03	-17.96
5750	38.54	-4.14	1.2	-0.95	16.963	21.573	1.2	-18.94
5770	43.3	-3.63	1.45	-0.7	19.557	23.746	1.45	-16.79
5790	39.51	-4.03	1.21	-0.94	18.299	21.206	1.21	-17.05
5810	43.43	-3.62	1.56	-0.59	20.293	23.134	1.56	-17.1
5830	42.45	-3.72	1.41	-0.74	20.093	22.36	1.41	-15.99
5850	47.37	-3.24	2	-0.15	22.594	24.779	2	-14.04



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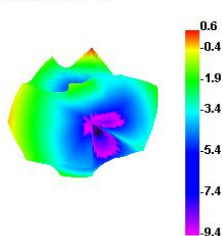
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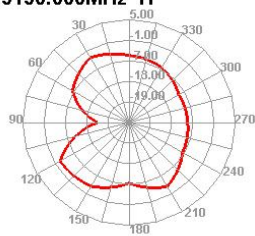
无源测试数据
Passive test data

MAIN ANT Direction of figure(5G)

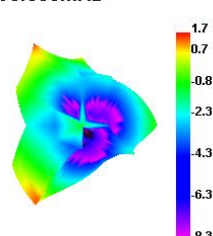
5150.000MHz



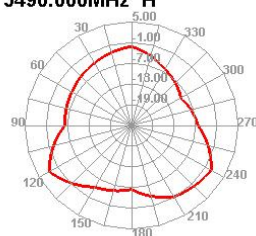
5150.000MHz H



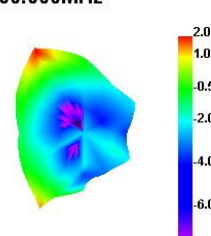
5490.000MHz



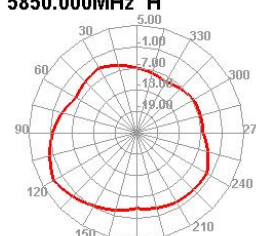
5490.000MHz H



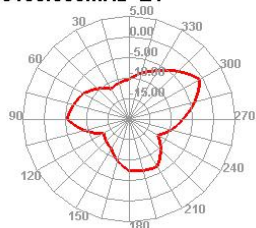
5850.000MHz



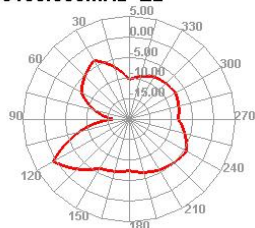
5850.000MHz H



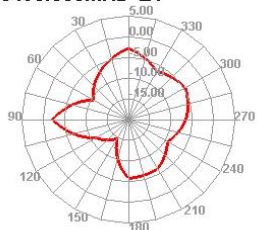
5150.000MHz E1



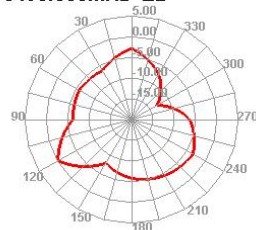
5150.000MHz E2



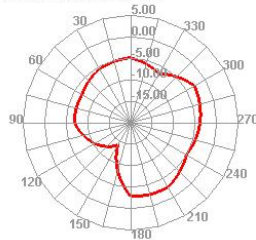
5490.000MHz E1



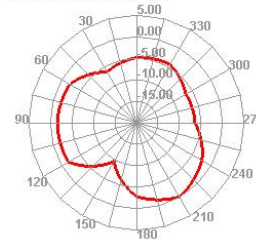
5490.000MHz E2



5850.000MHz E1



5850.000MHz E2





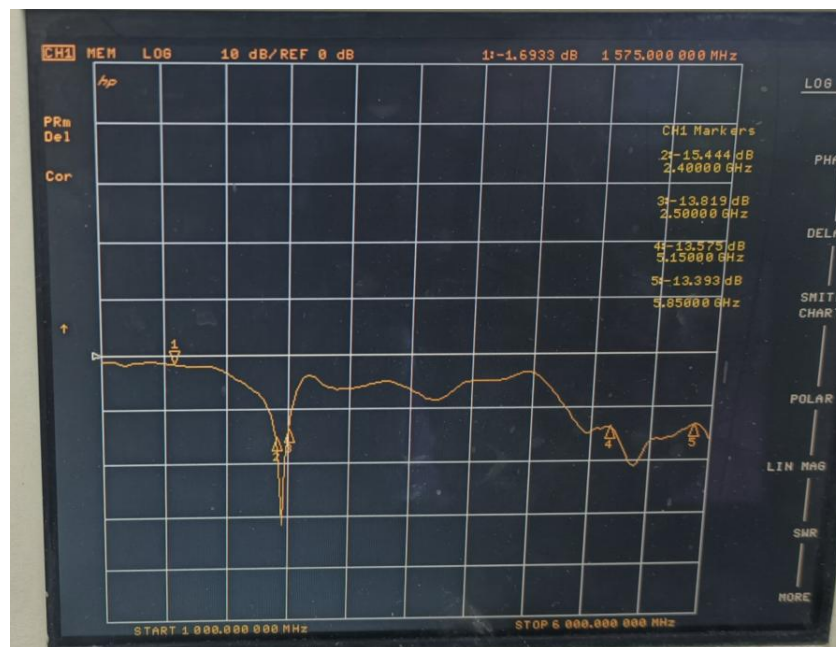
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无源测试数据
Passive test data

AUX ANT S11-VSWR&Return Loss



Frequency (MHZ)	2400	2500	5150	5850
Return Loss (DB)	-15.44	-13.81	-13.57	-13.39



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无源测试数据

Passive test data

AUX 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	54.11	-2.67	3.25	1.1	35.724	18.384	3.25	-14.26
2410	53.43	-2.72	3.14	0.99	35.112	18.322	3.14	-13.55
2420	52.83	-2.77	2.85	0.7	33.943	18.89	2.85	-13.44
2430	51.63	-2.87	2.48	0.33	32.861	18.773	2.48	-13.78
2440	52.36	-2.81	2.85	0.7	33.366	18.99	2.85	-14.31
2450	52.16	-2.83	3.11	0.96	33.475	18.682	3.11	-14.73
2460	51.12	-2.91	2.68	0.53	32.639	18.48	2.68	-14.69
2470	50.05	-3.01	2.51	0.36	31.788	18.258	2.51	-14.33
2480	50.78	-2.94	2.9	0.75	32.476	18.304	2.9	-14.22
2490	51	-2.92	3.37	1.22	32.863	18.134	3.37	-14.39
2500	49.87	-3.02	3	0.85	31.372	18.501	3	-13.9



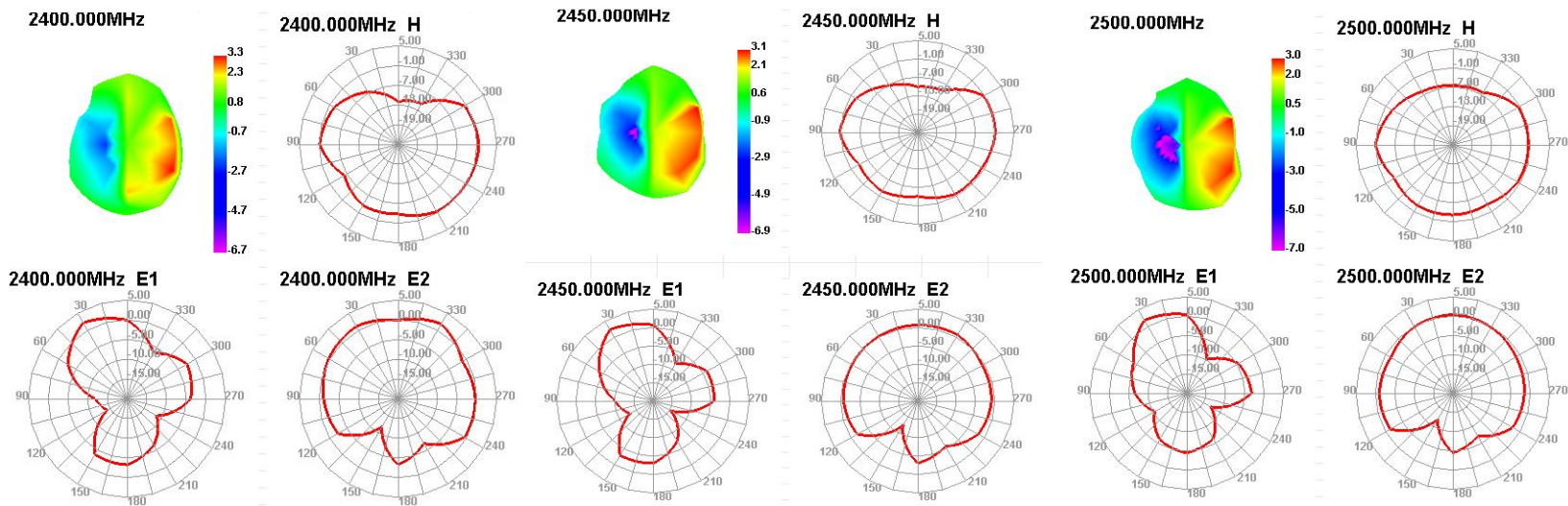
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无源测试数据
Passive test data

AUX ANT Direction of figure(2.4/BT)





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无源测试数据

Passive test data

AUX ANT GAIN&Efficiency-WIFI 5G

Passive Test For WIFI5G								
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)
5150	26.31	-5.8	-0.34	-2.49	9.955	16.352	-0.34	-16.8
5170	28.86	-5.4	0.32	-1.83	11.357	17.498	0.32	-16.31
5190	28.05	-5.52	-0.33	-2.48	11.29	16.756	-0.33	-16.26
5210	32.52	-4.88	0.08	-2.07	13.722	18.795	0.08	-15.86
5230	30.27	-5.19	-0.55	-2.7	12.803	17.469	-0.55	-16.47
5250	32.7	-4.85	-0.32	-2.47	14.102	18.603	-0.32	-17.12
5270	33.88	-4.7	-0.15	-2.3	14.436	19.441	-0.15	-20.3
5290	33.8	-4.71	-0.43	-2.58	14.329	19.473	-0.43	-23.42
5310	31.57	-5.01	-0.85	-3	13.277	18.29	-0.85	-24.82
5330	31.06	-5.08	-0.81	-2.96	13.05	18.007	-0.81	-22.7
5350	33.06	-4.81	-0.47	-2.62	13.947	19.117	-0.47	-24.88
5370	31.72	-4.99	-0.64	-2.79	13.266	18.455	-0.64	-23.57
5390	28.09	-5.51	-1.11	-3.26	11.791	16.303	-1.11	-24.34
5410	32.56	-4.87	-0.12	-2.27	14.247	18.316	-0.12	-22.1
5430	29.81	-5.26	-0.24	-2.39	13.36	16.449	-0.24	-19.33
5450	33.69	-4.72	0.22	-1.93	15.18	18.512	0.22	-15.86
5470	31.71	-4.99	-0.46	-2.61	14.343	17.37	-0.46	-15.55
5490	33.66	-4.73	-0.25	-2.4	15.319	18.336	-0.25	-15.11
5510	34.3	-4.65	-0.01	-2.16	15.661	18.643	-0.01	-15.62
5530	36.9	-4.33	0.08	-2.07	17.09	19.81	0.08	-14.39
5550	39.18	-4.07	0.16	-1.99	18.475	20.703	0.16	-13.72
5570	38.96	-4.09	0.39	-1.76	18.645	20.314	0.39	-15.41
5590	41.56	-3.81	0.72	-1.43	19.886	21.673	0.72	-16.8
5610	38.02	-4.2	0.59	-1.56	18.365	19.654	0.59	-19.58
5630	40.66	-3.91	0.81	-1.34	19.819	20.837	0.81	-15.92
5650	36.37	-4.39	0.29	-1.86	17.466	18.9	0.29	-15.12
5670	37.84	-4.22	0.4	-1.75	18.065	19.776	0.4	-15.75
5690	34.22	-4.66	0.24	-1.91	16.112	18.105	0.24	-18.04
5710	33.2	-4.79	-0.06	-2.21	15.566	17.63	-0.06	-16.87
5730	36.48	-4.38	0.47	-1.68	16.98	19.5	0.47	-15.49
5750	31.76	-4.98	-0.37	-2.52	14.789	16.975	-0.37	-20.01
5770	35.68	-4.48	0.17	-1.98	16.724	18.958	0.17	-15.23
5790	32.5	-4.88	-0.29	-2.44	15.41	17.094	-0.29	-14.67
5810	36.48	-4.38	0.13	-2.02	17.448	19.033	0.13	-13.77
5830	35.52	-4.5	0.5	-1.65	17.066	18.455	0.5	-14.13
5850	39.83	-4	1.23	-0.92	19.19	20.642	1.23	-14.09



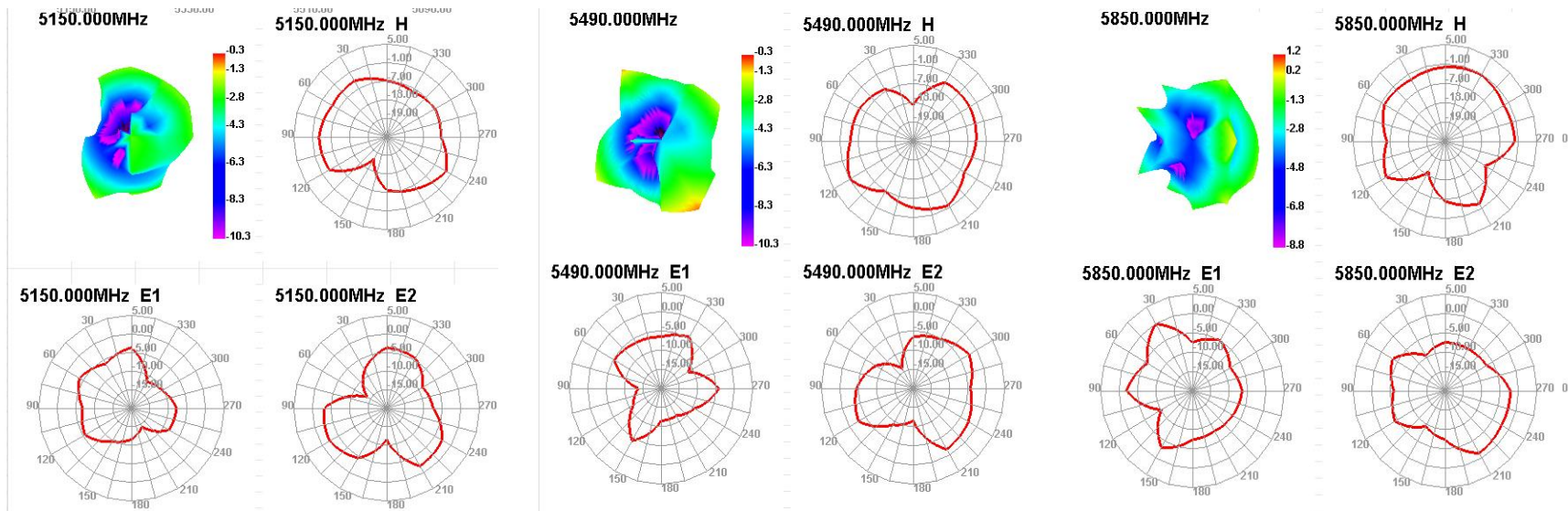
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无源测试数据
Passive test data

AUX ANT Direction of figure(5G)





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有源测试数据
Active test data

802.11b	Frequency	TRP		TIS	
	2412	CH1 11Mbps	12.45	CH1 11Mbps	-76.32
	2437	CH6 11Mbps	12.05	CH6 11Mbps	-74.69
	2467	CH11 11Mbps	11.24	CH11 11Mbps	-72.57
802.11a		TRP		TIS	
	5180	CH36 6Mbps	9.18	CH36 54Mbps	-66.84
	5300	CH60 6Mbps	10.06	CH60 54Mbps	-66.52
	5805	CH161 6Mbps	11.55	CH161 54Mbps	-69.52



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吞吐量测试

Throughput test

2.4G wifi The vomiting test			
up	103M	Go down	150M
	<pre> [ID] Interval Transfer Bandwidth [392] 17.0-18.0 sec 12.5 MBytes 105 Mbits/sec [ID] Interval Transfer Bandwidth [392] 18.0-19.0 sec 12.9 MBytes 108 Mbits/sec [ID] Interval Transfer Bandwidth [392] 19.0-20.0 sec 9.42 MBytes 79.0 Mbits/sec [ID] Interval Transfer Bandwidth [392] 20.0-21.0 sec 10.4 MBytes 87.0 Mbits/sec [ID] Interval Transfer Bandwidth [392] 21.0-22.0 sec 11.8 MBytes 99.4 Mbits/sec [ID] Interval Transfer Bandwidth [392] 22.0-23.0 sec 9.85 MBytes 82.6 Mbits/sec [ID] Interval Transfer Bandwidth [392] 23.0-24.0 sec 14.5 MBytes 121 Mbits/sec [ID] Interval Transfer Bandwidth [392] 24.0-25.0 sec 14.6 MBytes 123 Mbits/sec [ID] Interval Transfer Bandwidth [392] 25.0-26.0 sec 14.9 MBytes 125 Mbits/sec [ID] Interval Transfer Bandwidth [392] 26.0-27.0 sec 12.6 MBytes 106 Mbits/sec [ID] Interval Transfer Bandwidth [392] 27.0-28.0 sec 11.5 MBytes 96.1 Mbits/sec [ID] Interval Transfer Bandwidth [392] 28.0-29.0 sec 12.5 MBytes 105 Mbits/sec [ID] Interval Transfer Bandwidth [392] 29.0-30.0 sec 12.6 MBytes 106 Mbits/sec [ID] Interval Transfer Bandwidth [392] 0.0-30.0 sec 368 MBytes 103 Mbits/sec </pre>		<pre> [ID] Interval Transfer Bandwidth [356] 17.0-18.0 sec 17.6 MBytes 148 Mbits/sec [ID] Interval Transfer Bandwidth [356] 18.0-19.0 sec 19.1 MBytes 161 Mbits/sec [ID] Interval Transfer Bandwidth [356] 19.0-20.0 sec 18.9 MBytes 158 Mbits/sec [ID] Interval Transfer Bandwidth [356] 20.0-21.0 sec 19.9 MBytes 167 Mbits/sec [ID] Interval Transfer Bandwidth [356] 21.0-22.0 sec 17.6 MBytes 147 Mbits/sec [ID] Interval Transfer Bandwidth [356] 22.0-23.0 sec 16.6 MBytes 139 Mbits/sec [ID] Interval Transfer Bandwidth [356] 23.0-24.0 sec 17.0 MBytes 142 Mbits/sec [ID] Interval Transfer Bandwidth [356] 24.0-25.0 sec 18.4 MBytes 154 Mbits/sec [ID] Interval Transfer Bandwidth [356] 25.0-26.0 sec 16.4 MBytes 138 Mbits/sec [ID] Interval Transfer Bandwidth [356] 26.0-27.0 sec 17.3 MBytes 145 Mbits/sec [ID] Interval Transfer Bandwidth [356] 27.0-28.0 sec 18.8 MBytes 158 Mbits/sec [ID] Interval Transfer Bandwidth [356] 28.0-29.0 sec 19.3 MBytes 162 Mbits/sec [ID] Interval Transfer Bandwidth [356] 29.0-30.0 sec 18.6 MBytes 156 Mbits/sec [ID] Interval Transfer Bandwidth [356] 0.0-30.0 sec 536 MBytes 150 Mbits/sec </pre>



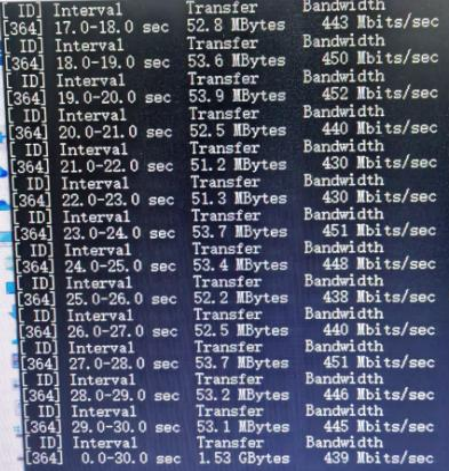
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深圳市星源创科技有限公司

SHENZHEN Xingyuanchuang TECHNOLOGY CO.,LTD

吞吐量测试

Throughput test

5G wifi The vomiting test			
up	248M	Go down	439M
	 <pre> [ID] Interval Transfer Bandwidth [384] 17.0-18.0 sec 30.0 MBytes 252 Mbits/sec [ID] Interval Transfer Bandwidth [384] 18.0-19.0 sec 31.3 MBytes 263 Mbits/sec [ID] Interval Transfer Bandwidth [384] 19.0-20.0 sec 37.5 MBytes 314 Mbits/sec [ID] Interval Transfer Bandwidth [384] 20.0-21.0 sec 28.7 MBytes 241 Mbits/sec [ID] Interval Transfer Bandwidth [384] 21.0-22.0 sec 23.1 MBytes 193 Mbits/sec [ID] Interval Transfer Bandwidth [384] 22.0-23.0 sec 32.2 MBytes 270 Mbits/sec [ID] Interval Transfer Bandwidth [384] 23.0-24.0 sec 32.8 MBytes 275 Mbits/sec [ID] Interval Transfer Bandwidth [384] 24.0-25.0 sec 35.2 MBytes 295 Mbits/sec [ID] Interval Transfer Bandwidth [384] 25.0-26.0 sec 31.4 MBytes 264 Mbits/sec [ID] Interval Transfer Bandwidth [384] 26.0-27.0 sec 31.0 MBytes 260 Mbits/sec [ID] Interval Transfer Bandwidth [384] 27.0-28.0 sec 26.2 MBytes 219 Mbits/sec [ID] Interval Transfer Bandwidth [384] 28.0-29.0 sec 27.8 MBytes 233 Mbits/sec [ID] Interval Transfer Bandwidth [384] 29.0-30.0 sec 29.8 MBytes 250 Mbits/sec [ID] Interval Transfer Bandwidth [384] 30.0-31.0 sec 88.7 MBytes 887 Mbits/sec </pre>		 <pre> [ID] Interval Transfer Bandwidth [364] 17.0-18.0 sec 52.8 MBytes 443 Mbits/sec [ID] Interval Transfer Bandwidth [364] 18.0-19.0 sec 53.6 MBytes 450 Mbits/sec [ID] Interval Transfer Bandwidth [364] 19.0-20.0 sec 53.9 MBytes 452 Mbits/sec [ID] Interval Transfer Bandwidth [364] 20.0-21.0 sec 52.5 MBytes 440 Mbits/sec [ID] Interval Transfer Bandwidth [364] 21.0-22.0 sec 51.2 MBytes 430 Mbits/sec [ID] Interval Transfer Bandwidth [364] 22.0-23.0 sec 51.3 MBytes 430 Mbits/sec [ID] Interval Transfer Bandwidth [364] 23.0-24.0 sec 53.7 MBytes 451 Mbits/sec [ID] Interval Transfer Bandwidth [364] 24.0-25.0 sec 53.4 MBytes 448 Mbits/sec [ID] Interval Transfer Bandwidth [364] 25.0-26.0 sec 52.2 MBytes 438 Mbits/sec [ID] Interval Transfer Bandwidth [364] 26.0-27.0 sec 52.5 MBytes 440 Mbits/sec [ID] Interval Transfer Bandwidth [364] 27.0-28.0 sec 53.7 MBytes 451 Mbits/sec [ID] Interval Transfer Bandwidth [364] 28.0-29.0 sec 53.2 MBytes 446 Mbits/sec [ID] Interval Transfer Bandwidth [364] 29.0-30.0 sec 53.1 MBytes 445 Mbits/sec [ID] Interval Transfer Bandwidth [364] 30.0-31.0 sec 1.53 GBytes 439 Mbits/sec </pre>

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