



Antenna Test Report

TC: 阳华

MN: IANB08P

RF: 戴进平

MD: 黄清清

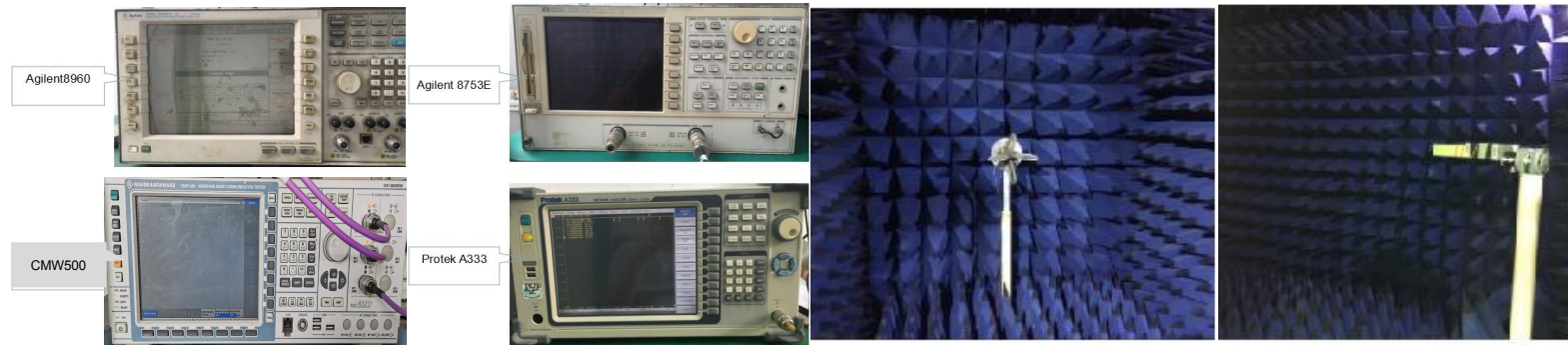
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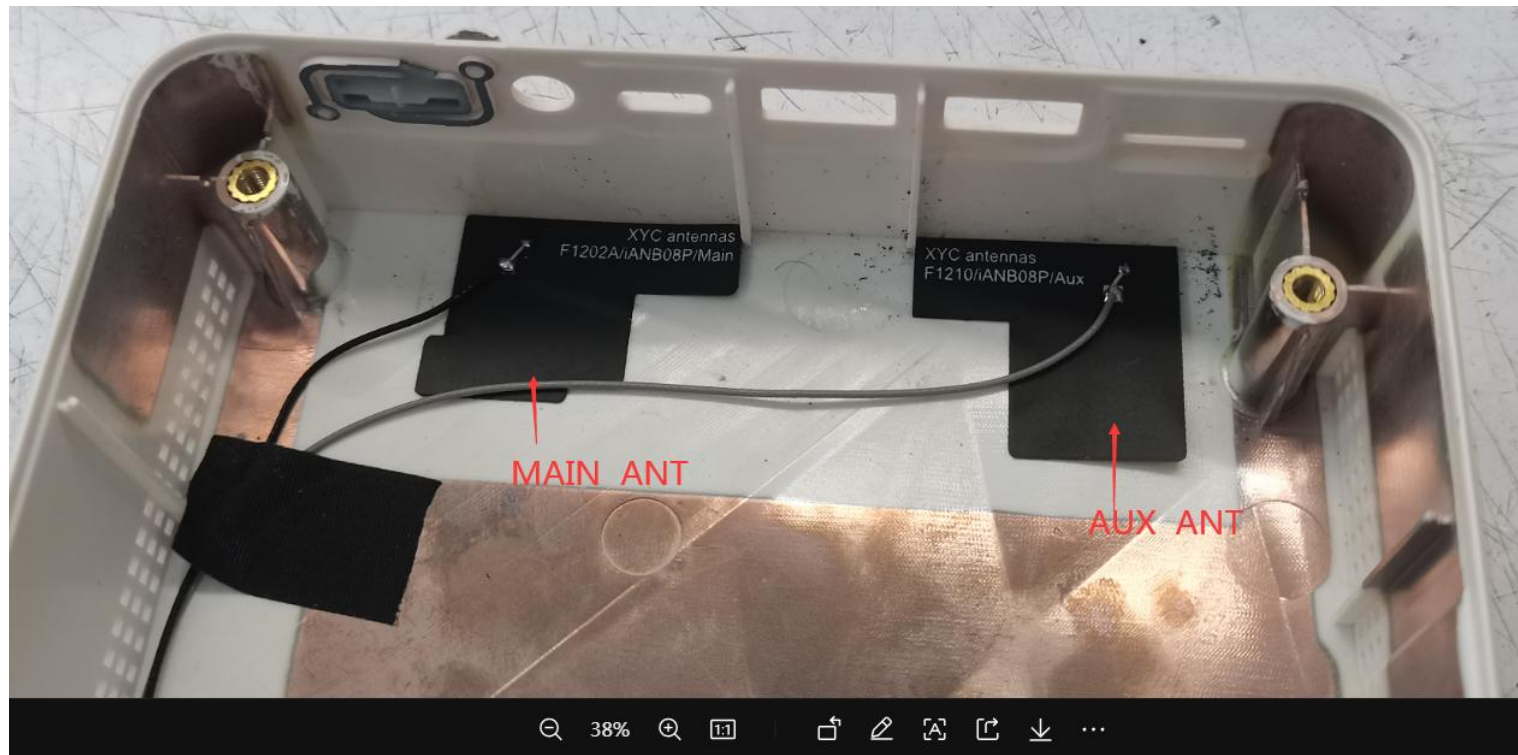
Date: 2024. 09. 20
REV :V1. 0

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

Test environment

	Test items	Test equipment
(S-parameter)	1. (VSWR) 2. (Rrtun Loss)	Network analyzer: Agilent 8753ES
2. (Active)	1. (TRP) 2. (TIS) 3. (Screen off/on)	1. Darkroom: 5*3*3m (3D) Chamber 2. Comprehensive tester: Agilent8960 CMW500
3. (Passive)	1. (Gain) 2. (Efficiency)	1. Darkroom: 5*3*3m (3D) Chamber 2. Network analyzer: Agilent 8753ES

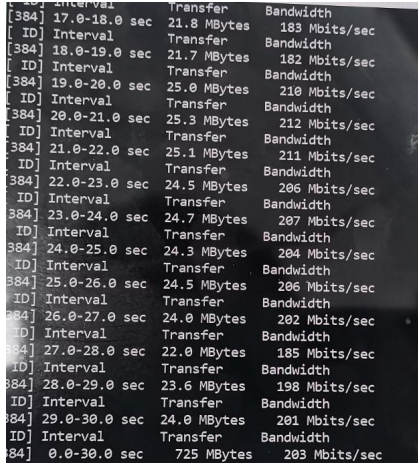
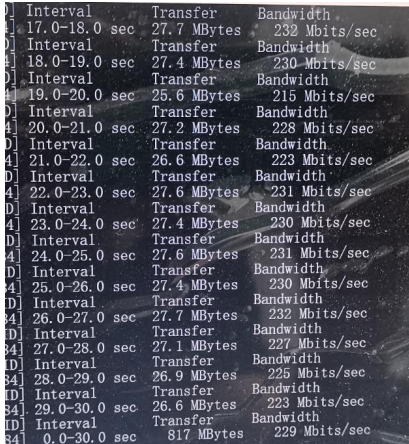




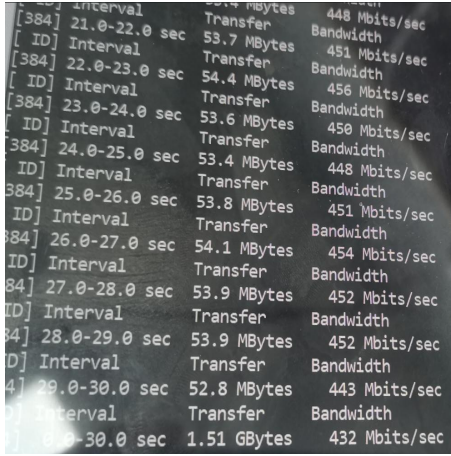
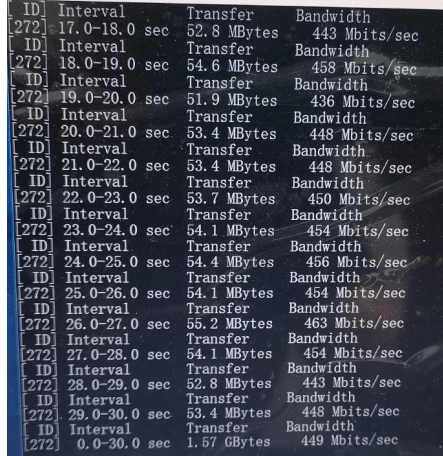
Active test data

802.11b	Frequency	TRP		TIS	
	2412	CH1 11Mbps	9.45	CH1 11Mbps	-78.23
	2437	CH6 11Mbps	10.63	CH6 11Mbps	-79.97
	2467	CH11 11Mbps	10.84	CH11 11Mbps	-80.02
802.11a		TRP		TIS	
	5180	CH36 6Mbps	11.62	CH36 54Mbps	-72.19
	5300	CH60 6Mbps	11.31	CH60 54Mbps	-72.04
	5805	CH161 6Mbps	11.07	CH161 54Mbps	-70.49

Throughput test

2.4G wifi daily throughput test-40M-CH1			
Up	203M	Downside	229M
picture		picture	
Tip			

Throughput test

5G WiFi daily throughput test-80M-CH36			
Up	432M	Downside	449M
picture		picture	
Tip			

WIFI-Throughput test

RVR Test System (2.4G-AX-20M-1-CH6)

TX		RX																																																																																					
picture		WiFi RvR 测试报表(2G_ax_20M_CH6) <table><tr><th>角度\衰减</th><th>0dB</th><th>10dB</th><th>20dB</th><th>30dB</th><th>40dB</th></tr><tr><td>0.0°</td><td>118</td><td>118</td><td>108</td><td>118</td><td>94.2</td></tr><tr><td>90.0°</td><td>119</td><td>119</td><td>118</td><td>118</td><td>107</td></tr><tr><td>180.0°</td><td>119</td><td>117</td><td>117</td><td>115</td><td>53.8</td></tr><tr><td>270.0°</td><td>117</td><td>117</td><td>117</td><td>116</td><td>81.1</td></tr><tr><td>平均</td><td>118.30</td><td>117.80</td><td>115.00</td><td>116.80</td><td>84.00</td></tr><tr><td>方差</td><td>1.00</td><td>1.00</td><td>4.70</td><td>1.50</td><td>22.80</td></tr></table>	角度\衰减	0dB	10dB	20dB	30dB	40dB	0.0°	118	118	108	118	94.2	90.0°	119	119	118	118	107	180.0°	119	117	117	115	53.8	270.0°	117	117	117	116	81.1	平均	118.30	117.80	115.00	116.80	84.00	方差	1.00	1.00	4.70	1.50	22.80	WiFi RvR 测试报表(2G_ax_20M_CH6) <table><tr><th>角度\衰减</th><th>0dB</th><th>10dB</th><th>20dB</th><th>30dB</th><th>40dB</th></tr><tr><td>0.0°</td><td>130</td><td>131</td><td>130</td><td>114</td><td>69.7</td></tr><tr><td>90.0°</td><td>130</td><td>130</td><td>131</td><td>126</td><td>80.7</td></tr><tr><td>180.0°</td><td>130</td><td>130</td><td>130</td><td>90.2</td><td>47.5</td></tr><tr><td>270.0°</td><td>129</td><td>129</td><td>130</td><td>104</td><td>61.7</td></tr><tr><td>平均</td><td>129.80</td><td>130.00</td><td>130.30</td><td>108.50</td><td>64.90</td></tr><tr><td>方差</td><td>0.50</td><td>0.80</td><td>0.50</td><td>15.20</td><td>14.00</td></tr></table>	角度\衰减	0dB	10dB	20dB	30dB	40dB	0.0°	130	131	130	114	69.7	90.0°	130	130	131	126	80.7	180.0°	130	130	130	90.2	47.5	270.0°	129	129	130	104	61.7	平均	129.80	130.00	130.30	108.50	64.90	方差	0.50	0.80	0.50	15.20	14.00
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WIFI-Throughput test

RVR Test System (5G-Ax-80M-1-CH36)

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picture	WiFi RvR 测试报表(5G_ax_80M_CH36) <table><tr><th>角度\衰减</th><th>0dB</th><th>10dB</th><th>20dB</th><th>30dB</th><th>40dB</th></tr><tr><td>0.0°</td><td>509</td><td>509</td><td>504</td><td>396</td><td>202</td></tr><tr><td>90.0°</td><td>508</td><td>507</td><td>505</td><td>396</td><td>265</td></tr><tr><td>180.0°</td><td>508</td><td>508</td><td>507</td><td>396</td><td>247</td></tr><tr><td>270.0°</td><td>507</td><td>506</td><td>507</td><td>384</td><td>286</td></tr><tr><td>平均</td><td>508.00</td><td>507.50</td><td>505.80</td><td>393.00</td><td>250.00</td></tr><tr><td>方差</td><td>0.80</td><td>1.30</td><td>1.50</td><td>6.00</td><td>35.70</td></tr></table>	角度\衰减	0dB	10dB	20dB	30dB	40dB	0.0°	509	509	504	396	202	90.0°	508	507	505	396	265	180.0°	508	508	507	396	247	270.0°	507	506	507	384	286	平均	508.00	507.50	505.80	393.00	250.00	方差	0.80	1.30	1.50	6.00	35.70	图片	WiFi RvR 测试报表(5G_ax_80M_CH36) <table><tr><th>角度\衰减</th><th>0dB</th><th>10dB</th><th>20dB</th><th>30dB</th><th>40dB</th></tr><tr><td>0.0°</td><td>509</td><td>508</td><td>500</td><td>364</td><td>213</td></tr><tr><td>90.0°</td><td>508</td><td>509</td><td>507</td><td>413</td><td>254</td></tr><tr><td>180.0°</td><td>507</td><td>507</td><td>506</td><td>397</td><td>244</td></tr><tr><td>270.0°</td><td>509</td><td>508</td><td>507</td><td>402</td><td>264</td></tr><tr><td>平均</td><td>508.30</td><td>508.00</td><td>505.00</td><td>394.00</td><td>243.80</td></tr><tr><td>方差</td><td>1.00</td><td>0.80</td><td>3.40</td><td>21.10</td><td>22.10</td></tr></table>	角度\衰减	0dB	10dB	20dB	30dB	40dB	0.0°	509	508	500	364	213	90.0°	508	509	507	413	254	180.0°	507	507	506	397	244	270.0°	509	508	507	402	264	平均	508.30	508.00	505.00	394.00	243.80	方差	1.00	0.80	3.40	21.10	22.10
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BT Antenna test

Test environment: open space (channel)

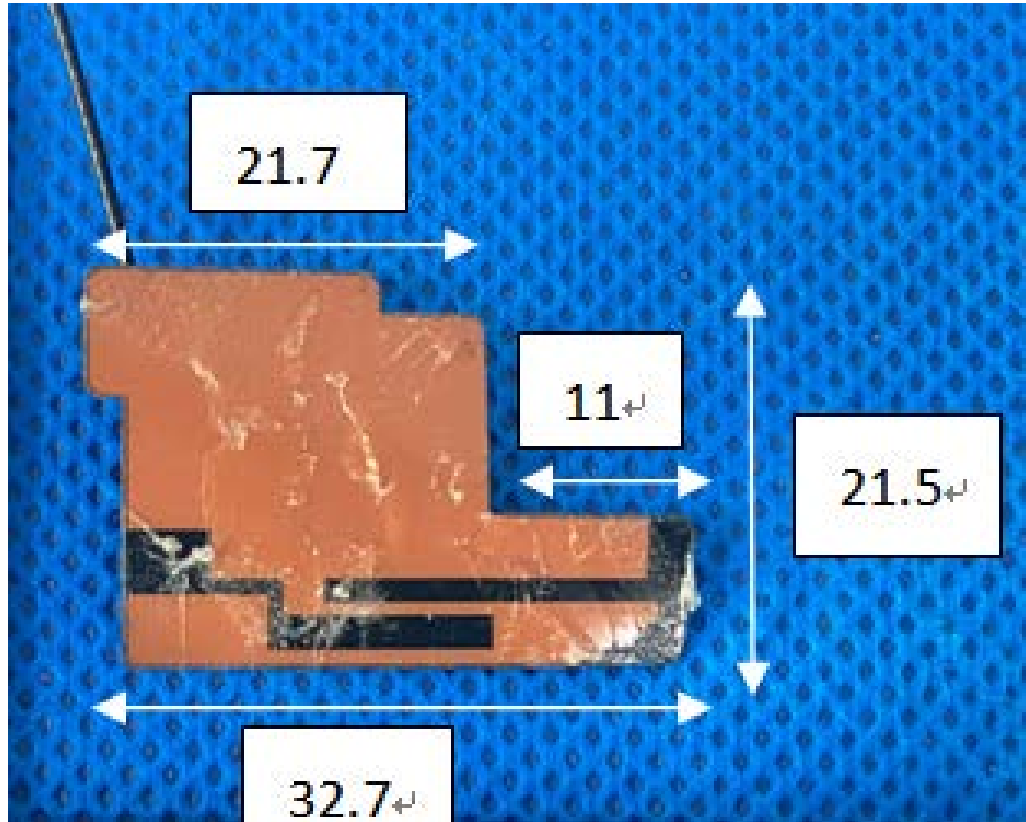
Test tool: Bluetooth speaker

Test distance: 10+m

Result: Music plays smoothly without any noise.

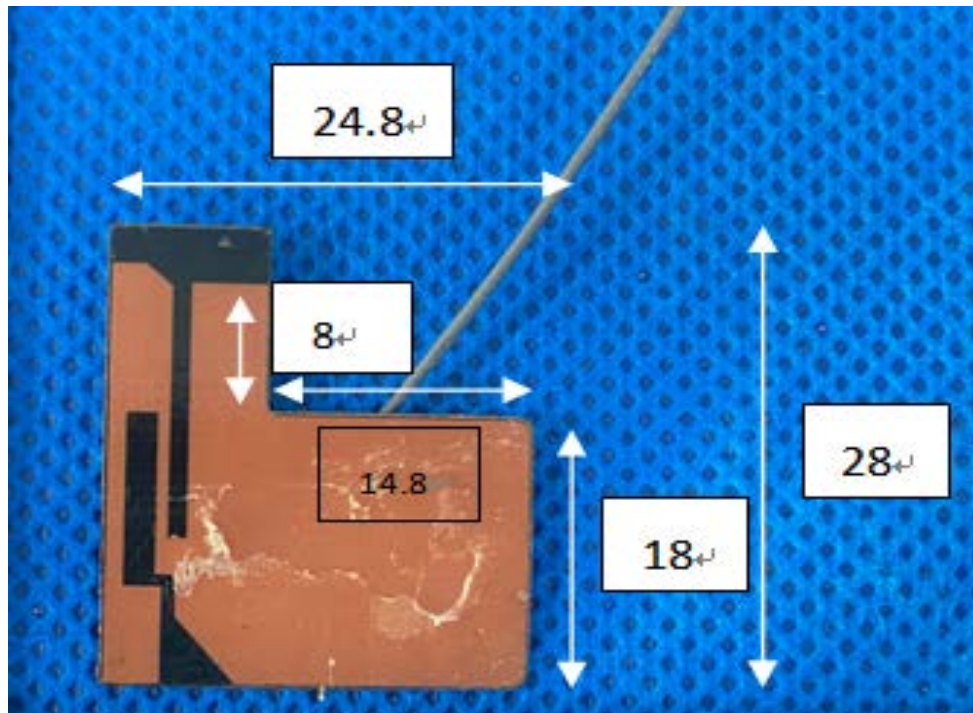
ANT Drw

MAIN ANT



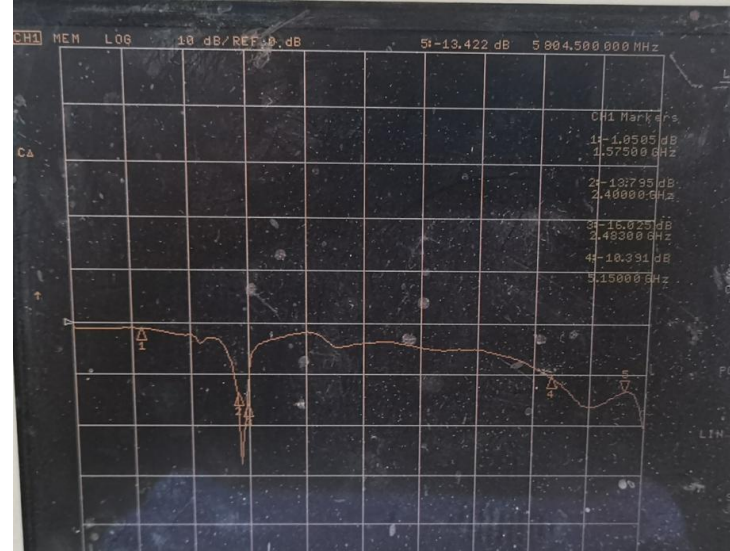
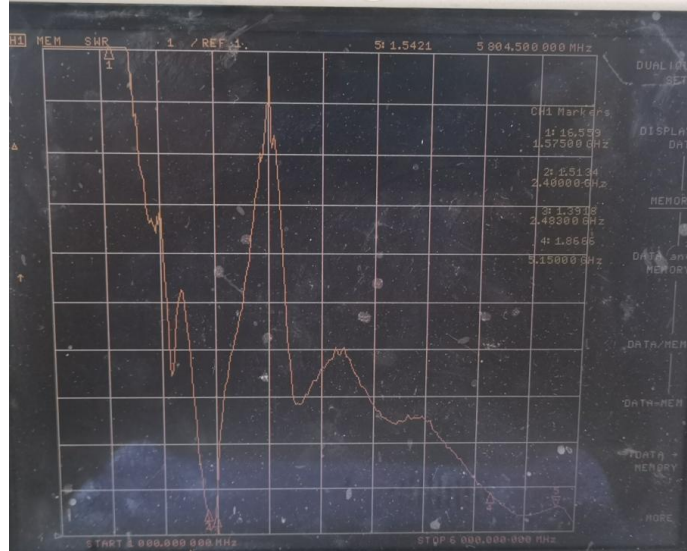
ANT Drw

AUX ANT



Passive test data

ANT1 S11-VSWR&Return Loss



Frequency (MHZ)	2400		2483	5150	5500	5850
VSWR	1.51		1.39	1.86		1.54
Return Loss (DB)	-13.70		-16.03	-18.33		-13.42



ANTENNA

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Passive test data

ANT1 GAIN&Efficiency-WIFI2.4G/BT

Passive Test For WIFI2.4												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	OHIS (%)	OHIS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	43.52	-3.61	2.69	0.54	24.177	19.338	2.89	-20.04	6.31	30	45.78	46.01
2410	43.73	-3.59	2.79	0.64	25.121	18.614	2.79	-16.81	6.38	30	46.01	46.29
2420	45.33	-3.44	3.36	1.21	26.813	18.518	3.36	-15.22	6.8	30	45.73	46
2430	44.99	-3.47	3.09	0.94	27.357	17.631	3.09	-15.62	6.55	30	46.01	46.36
2440	45.15	-3.45	2.84	0.69	27.7	17.447	2.84	-16.36	6.3	30	46.12	46.48
2450	44.01	-3.56	2.71	0.56	27.651	16.355	2.71	-17.14	6.27	30	46.12	46.54
2460	43.35	-3.63	2.35	0.2	27.391	15.955	2.35	-17.82	5.98	60	46.14	46.52
2470	44.13	-3.55	2.48	0.31	28.273	15.858	2.48	-17.24	6.01	60	46.4	46.8
2480	43.47	-3.62	2.23	0.08	27.497	15.971	2.23	-18.5	5.85	60	46.26	46.64
2490	40.12	-3.97	1.66	-0.49	25.082	15.036	1.66	-16.08	5.62	60	46.51	46.91
2500	37.25	-4.29	1.21	-0.94	22.681	14.573	1.21	-18.52	5.5	60	46.47	46.86

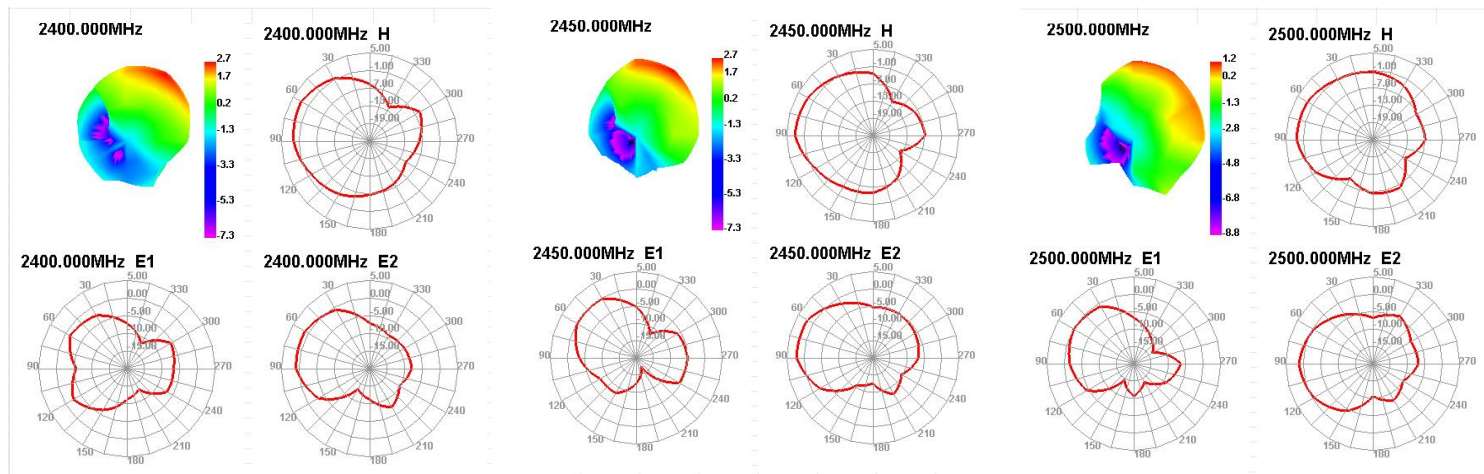


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Passive test data

ANT1 Direction of figure (2. 4/BT)



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)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5150	39.84	-4	2.17	0.02	19.7	20.14	2.17	-15.69	6.16	0	49.82	49.4
5170	39.89	-3.99	2.3	0.15	19.527	20.365	2.3	-17.65	6.29	30	50.13	49.77
5190	44.26	-3.54	2.69	0.54	21.551	22.709	2.69	-19.25	6.23	30	50.42	49.95
5210	46.41	-3.33	3.07	0.92	22.277	24.133	3.07	-20.79	6.41	0	50.88	50.49
5230	48.47	-3.15	3.42	1.27	22.844	25.625	3.42	-21.76	6.56	0	50.42	50.08
5250	52.37	-2.81	3.97	1.82	23.974	28.399	3.97	-21.59	6.78	60	51.02	50.72
5270	57.09	-2.43	4.27	2.12	25.859	31.231	4.27	-19.39	6.7	60	50.85	50.6
5290	58.41	-2.33	4.25	2.1	26.547	31.866	4.25	-18.76	6.59	60	51.34	51.12
5310	55.64	-2.55	4.13	1.98	24.833	30.805	4.13	-18.32	6.68	60	50.44	50.36
5330	58.75	-2.31	4.4	2.25	25.477	33.272	4.4	-18.92	6.71	210	51.08	51.01
5350	61.56	-2.11	4.59	2.44	26.171	35.391	4.59	-18.32	6.69	150	51.02	51.01
5370	60.43	-2.19	4.36	2.21	25.75	34.678	4.36	-18.8	6.55	150	50.91	50.95
5390	54.71	-2.62	3.94	1.79	23.254	31.459	3.94	-16.54	6.56	90	50.46	50.43
5410	65.8	-1.82	4.75	2.6	27.297	38.501	4.75	-16.45	6.57	90	51.18	51.09
5430	59.03	-2.29	4.2	2.05	23.752	35.28	4.2	-18.12	6.49	60	50.69	50.7
5450	63.35	-1.98	4.28	2.13	25.347	38.003	4.28	-17.81	6.26	30	50.71	50.85
5470	59.66	-2.24	3.88	1.73	23.808	35.857	3.88	-19.96	6.12	30	50.93	50.83
5490	60.49	-2.18	3.88	1.73	23.48	37.007	3.88	-23.12	6.06	30	50.92	50.79
5510	64.22	-1.92	4.06	1.91	24.075	40.142	4.06	-25.81	5.99	30	51.18	51.16
5530	63.45	-1.98	4	1.85	23.105	40.345	4	-23.49	5.97	30	51.44	51.3
5550	68.59	-1.64	4.57	2.42	24.462	44.123	4.57	-21.5	6.21	30	51.89	51.76
5570	59.25	-2.27	4.23	2.08	20.679	38.569	4.23	-18.34	6.5	30	51.42	51.33
5590	65.38	-1.85	5.09	2.94	21.92	43.464	5.09	-16.96	6.94	30	51.71	51.76
5610	56.81	-2.46	4.84	2.69	18.506	38.308	4.84	-20.9	7.3	30	51.17	51.22
5630	63.51	-1.97	5.43	3.28	20.45	43.063	5.43	-15.87	7.4	30	51.78	51.77
5650	55.9	-2.53	4.92	2.77	17.922	37.973	4.92	-17.48	7.45	30	51.47	51.55
5670	57.5	-2.4	5.2	3.05	18.511	38.994	5.2	-20.21	7.6	30	52.12	52.28
5690	55.88	-2.53	5.32	3.17	17.804	38.072	5.32	-23.74	7.84	30	52.12	52.25
5710	49.96	-3.01	4.85	2.7	15.652	34.307	4.85	-23.78	7.86	0	51.95	52.05
5730	59.09	-2.29	5.42	3.27	18.453	40.633	5.42	-16.24	7.71	0	51.59	51.69
5750	48.85	-3.11	4.62	2.47	15.071	33.776	4.62	-19.19	7.73	0	51.12	51.15
5770	55.88	-2.53	5.31	3.16	17.118	38.763	5.31	-18.77	7.84	0	51.02	51.06
5790	48.64	-3.13	4.8	2.65	14.658	33.984	4.8	-19.34	7.93	0	51.08	51.16
5810	52.78	-2.78	5.01	2.86	15.488	37.294	5.01	-20.07	7.79	0	51.36	51.43
5830	49.48	-3.06	4.62	2.47	14.071	35.409	4.62	-23.28	7.68	0	51.65	51.66
5850	55.06	-2.59	5.16	3.01	15.298	39.764	5.16	-23.58	7.75	30	51.88	52.05

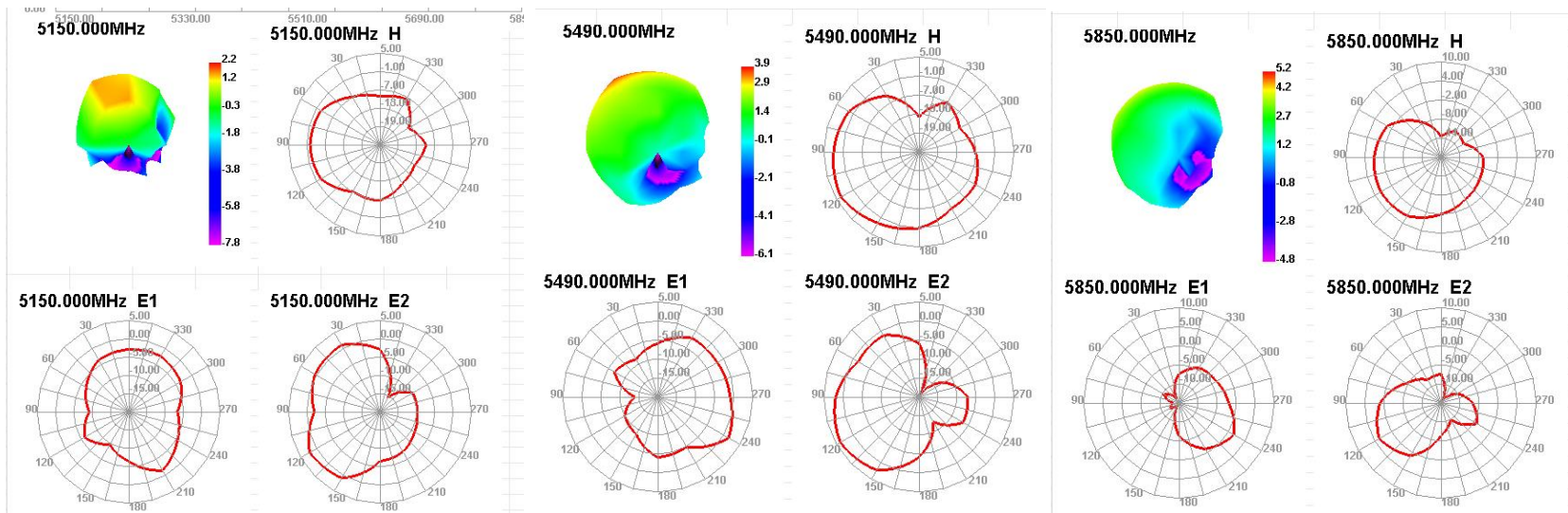


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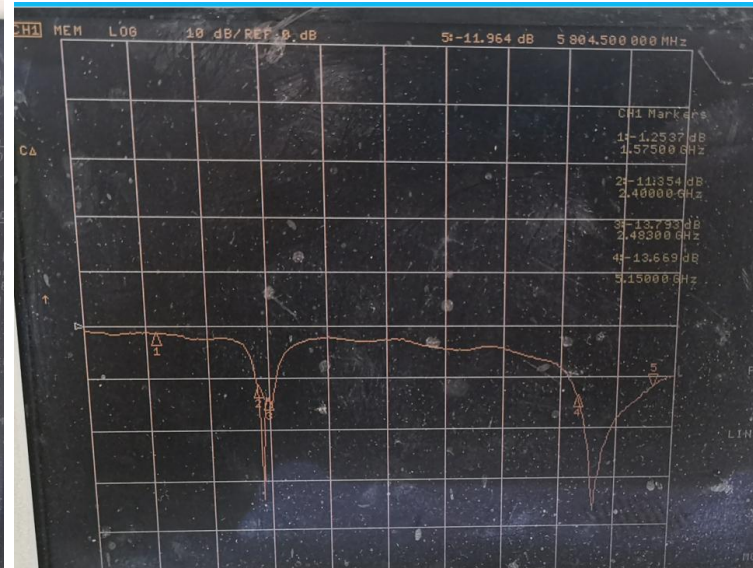
Passive test data

ANT1 Direction of figure(5G)



Passive test data

ANT1 S11-VSWR&Return Loss



Frequency (MHZ)	2400		2483	5150	5500	5850
VSWR	1.74		1.51	1.52		1.67
Return Loss (DB)	-11.35		-13.79	-13.66		-11.96



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Passive test data

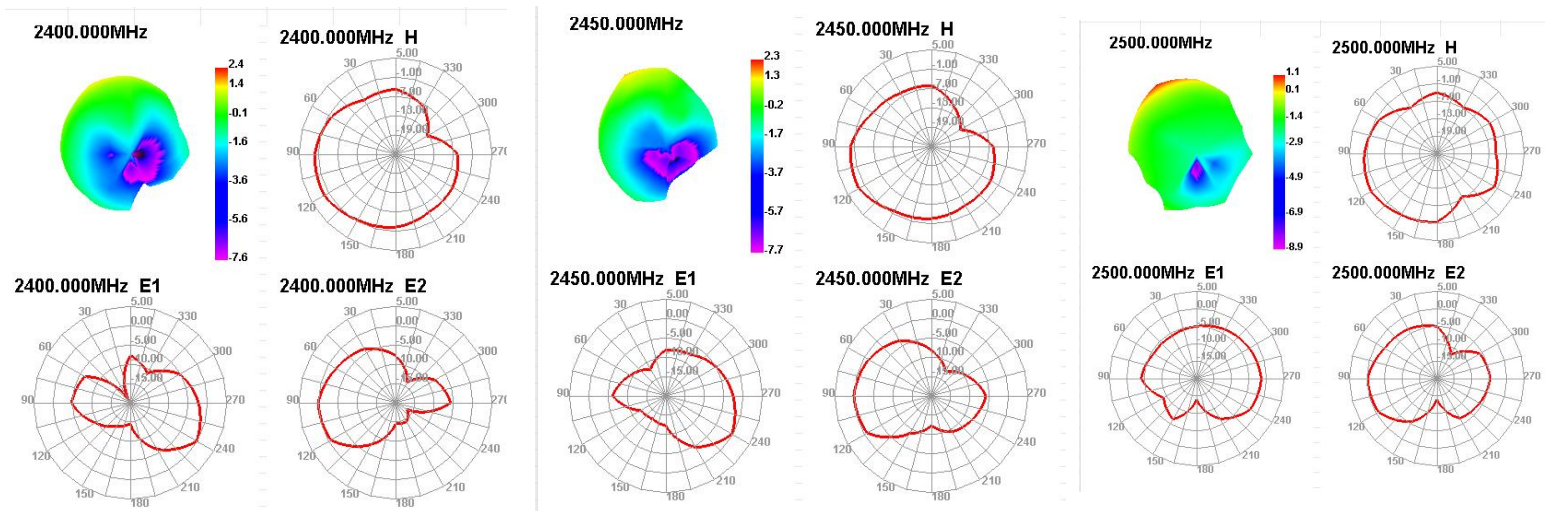
ANT2 GAIN&Efficiency-WIFI2.4G/BT

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	35.87	-4.45	2.41	0.26	13.817	22.049	2.41	-19.84	6.86	30	45.78	46.01
2410	39.19	-4.07	2.91	0.76	14.76	24.426	2.91	-23.61	6.93	30	46.01	46.29
2420	39.68	-4.01	2.91	0.76	15.072	24.608	2.91	-21.72	6.92	30	45.73	46
2430	39.48	-4.04	3.01	0.86	15.275	24.2	3.01	-17.35	7.04	30	46.01	46.36
2440	40.02	-3.98	2.9	0.75	15.946	24.071	2.9	-18.1	6.88	30	46.12	46.48
2450	36.86	-4.33	2.3	0.15	15.413	21.447	2.3	-18.19	6.63	30	46.12	46.54
2460	35.5	-4.5	1.8	-0.35	15.78	19.724	1.8	-15.38	6.29	30	46.14	46.52
2470	35.73	-4.47	0.77	-1.38	17.045	18.686	0.77	-14.97	5.24	60	46.4	46.8
2480	35.99	-4.44	0.32	-1.83	18.03	17.958	0.32	-17.33	4.76	90	46.26	46.64
2490	36.96	-4.32	0.28	-1.87	18.874	18.082	0.28	-18.45	4.6	90	46.51	46.91
2500	41.13	-3.86	1.06	-1.09	21.068	20.064	1.06	-16.56	4.92	90	46.47	46.86



Passive test data

ANT2 Direction of figure(2. 4/BT)





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深圳市星源创科技有限公司

SHENZHEN Xingyuanchuang TECHNOLOGY CO., LTD

无源测试数据

Passive test data

ANT2 GAIN&Efficiency-WIFI 5G

Passive Test For WIFI5G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dEd)	UHS (%)	DHIS (%)	Max (dB)	Min (dB)	irectivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5150	37.25	-4.29	2.91	0.76	18.135	19.117	2.91	-24.75	7.2	90	49.82	49.4
5170	40.74	-3.9	3.37	1.22	19.571	21.168	3.37	-22.05	7.27	90	50.13	49.77
5190	40.02	-3.98	3.36	1.21	19.347	20.675	3.36	-20.97	7.34	90	50.42	49.95
5210	49.05	-3.09	4.24	2.09	23.959	25.091	4.24	-22.53	7.33	90	50.88	50.49
5230	43.37	-3.63	3.7	1.55	21.207	22.164	3.7	-28.8	7.33	90	50.42	50.08
5250	54.99	-2.6	4.61	2.46	26.706	28.285	4.61	-23.36	7.2	90	51.02	50.72
5270	50.01	-3.01	4.35	2.2	24.406	25.604	4.35	-25.63	7.36	90	50.85	50.6
5290	60.06	-2.21	5.15	3	29.581	30.481	5.15	-24.59	7.36	90	51.34	51.12
5310	52.05	-2.84	4.52	2.37	25.754	26.299	4.52	-23.87	7.35	90	50.44	50.36
5330	56.52	-2.48	4.86	2.71	27.822	28.694	4.86	-27.95	7.34	90	51.08	51.01
5350	55.41	-2.56	4.79	2.64	27.197	28.21	4.79	-25.33	7.36	90	51.02	51.01
5370	55.88	-2.53	4.96	2.81	27.438	28.445	4.96	-20.3	7.49	60	50.91	50.95
5390	49.72	-3.03	4.39	2.24	24.455	25.27	4.39	-20.13	7.42	60	50.46	50.43
5410	60.95	-2.15	5.21	3.06	30.173	30.774	5.21	-18.13	7.36	60	51.18	51.09
5430	52.34	-2.81	4.53	2.38	25.961	26.379	4.53	-19.09	7.34	60	50.69	50.7
5450	56.72	-2.46	4.83	2.68	28.137	28.585	4.83	-18.93	7.29	90	50.71	50.85
5470	53.43	-2.72	4.62	2.47	26.56	26.866	4.62	-19.69	7.34	90	50.93	50.83
5490	54.25	-2.66	4.57	2.42	27.189	27.064	4.57	-19.55	7.23	90	50.92	50.79
5510	58.15	-2.35	4.88	2.73	29.512	28.636	4.88	-18.61	7.23	90	51.18	51.16
5530	58.53	-2.33	4.95	2.8	29.783	28.748	4.95	-19.41	7.27	30	51.44	51.3
5550	64.31	-1.92	5.25	3.1	33.068	31.243	5.25	-19.39	7.17	30	51.89	51.76
5570	56.43	-2.49	4.7	2.55	29.312	27.115	4.7	-21.34	7.19	30	51.42	51.33
5590	62.54	-2.04	5.14	2.99	32.899	29.643	5.14	-19.25	7.17	30	51.71	51.76
5610	55.18	-2.58	4.69	2.54	29.2	25.982	4.69	-17.95	7.27	30	51.17	51.22
5630	62.27	-2.06	5.25	3.1	32.874	29.4	5.25	-16.97	7.31	30	51.78	51.77
5650	55.17	-2.58	4.58	2.43	29.19	25.977	4.58	-17.88	7.16	30	51.47	51.55
5670	56.45	-2.48	4.54	2.39	29.875	26.578	4.54	-18.24	7.02	30	52.12	52.28
5690	54.04	-2.67	4.26	2.11	28.517	25.525	4.26	-16.78	6.93	30	52.12	52.25
5710	49.48	-3.06	3.66	1.51	25.845	23.631	3.66	-16.97	6.71	120	51.95	52.05
5730	57.25	-2.42	4.07	1.92	29.7	27.551	4.07	-15.33	6.49	120	51.59	51.69
5750	47.57	-3.23	2.94	0.79	24.692	22.874	2.94	-15.47	6.17	120	51.12	51.15
5770	52.45	-2.8	3.21	1.06	27.29	25.161	3.21	-16.35	6.01	120	51.02	51.06
5790	45.94	-3.38	2.54	0.39	23.669	22.267	2.54	-14.89	5.92	120	51.08	51.16
5810	48.95	-3.1	2.7	0.55	25.284	23.669	2.7	-15.74	5.8	150	51.36	51.43
5830	45.72	-3.4	2.28	0.13	23.972	21.751	2.28	-14.85	5.68	150	51.65	51.66
5850	48.64	-3.13	2.53	0.38	25.799	22.843	2.53	-17.06	5.66	60	51.88	52.05



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Passive test data

ANT2 Direction of figure(5G)

