

# 深圳市云希科技有限公司

ShenZhen Yunxi Technology Co.,Ltd.

3rd Floor, Building A1 Wai Yuen Industrial Park, the new park on the street, Bao'an District, Shenzhen, China

## *Antenna test Report*

Customer: 锐铭鑫

Project Name:A-W1036

RF Engineer:Wu Gong

Testing Date:2023-9-13

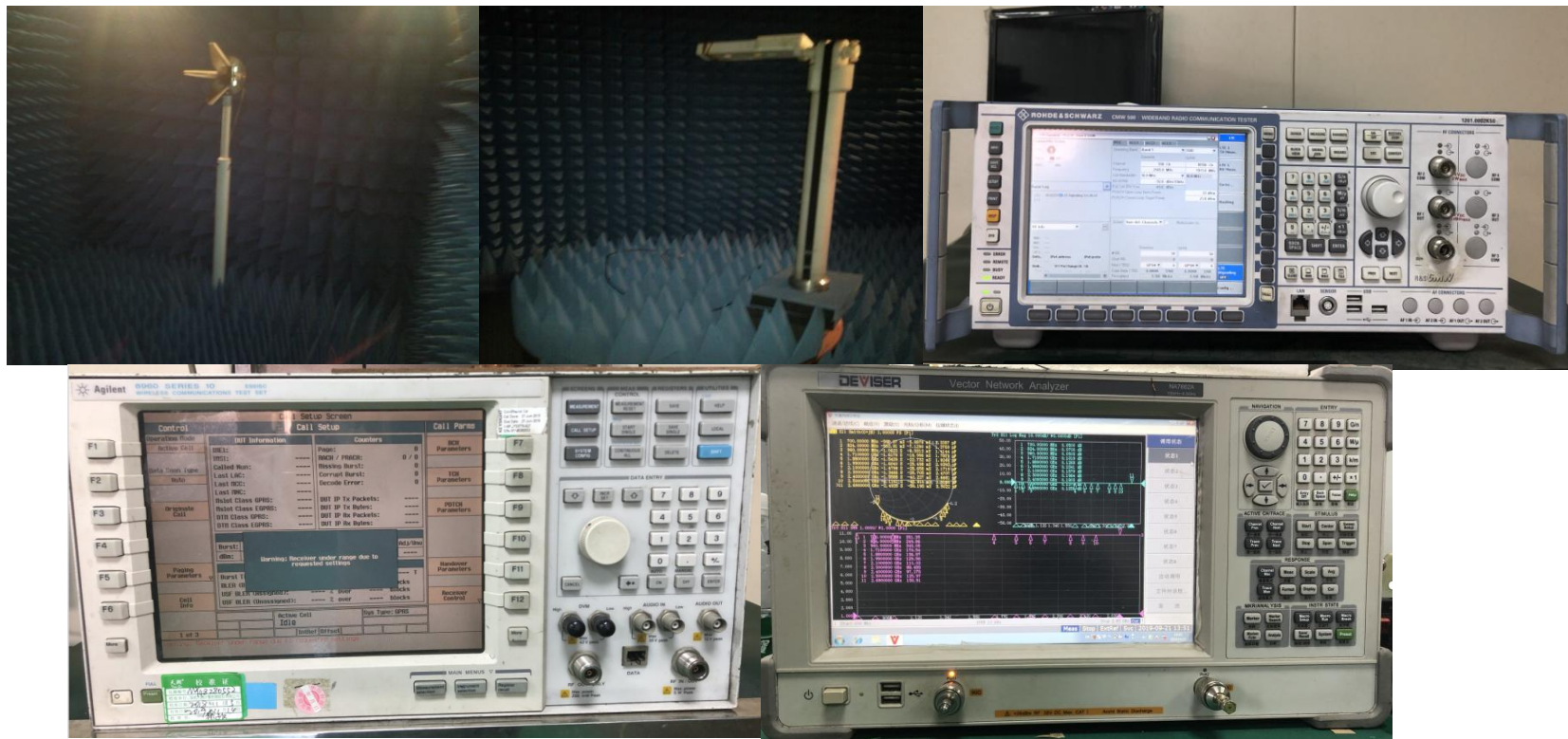
Operating band: GPS/2.4G&5.8GWIFI/BT



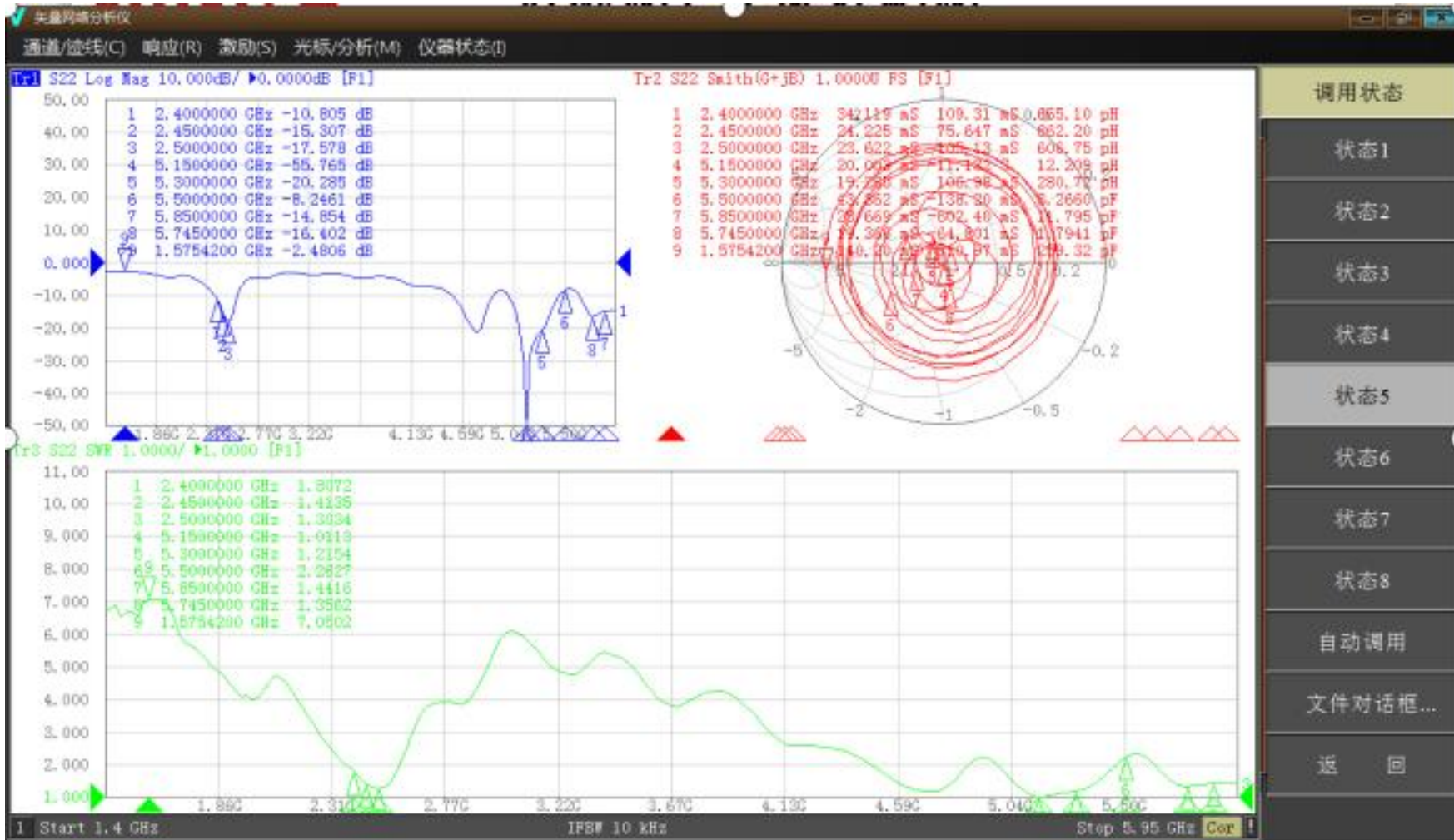
# 1.Project brief

NO.	ITEMS	DETAILS
1	工作频段 Operating band	GPS/2.4G&5.8GWIFI/BT
2	频率范围 Frequency range	(1575~1602MHz)(2400~2500MHz)(5150~5850MHz)
3	天线类型 Antenna Type	<b>PIFA</b>
4	天线材质及实现形式 Antenna material and implementation form	<b>The antenna is attached to the side shell using FPC</b>
5	天线料号 Antenna part number	<b>WIFI/GPS: T944A-1L24B-050-A</b>
6	输入阻抗 Input Impedance	<b>50 (Ω)</b>
7	增益 Gain	
	RF	吴工
	ME	邹工

# 测试系统及测试设备

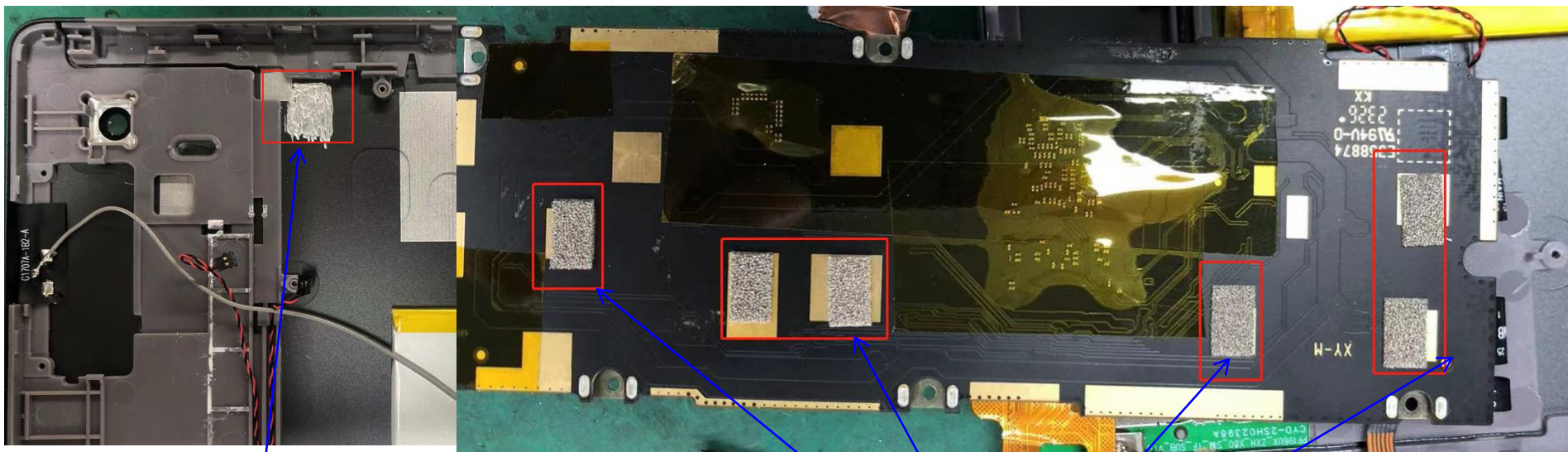


# Antenna Standing Wave Diagram





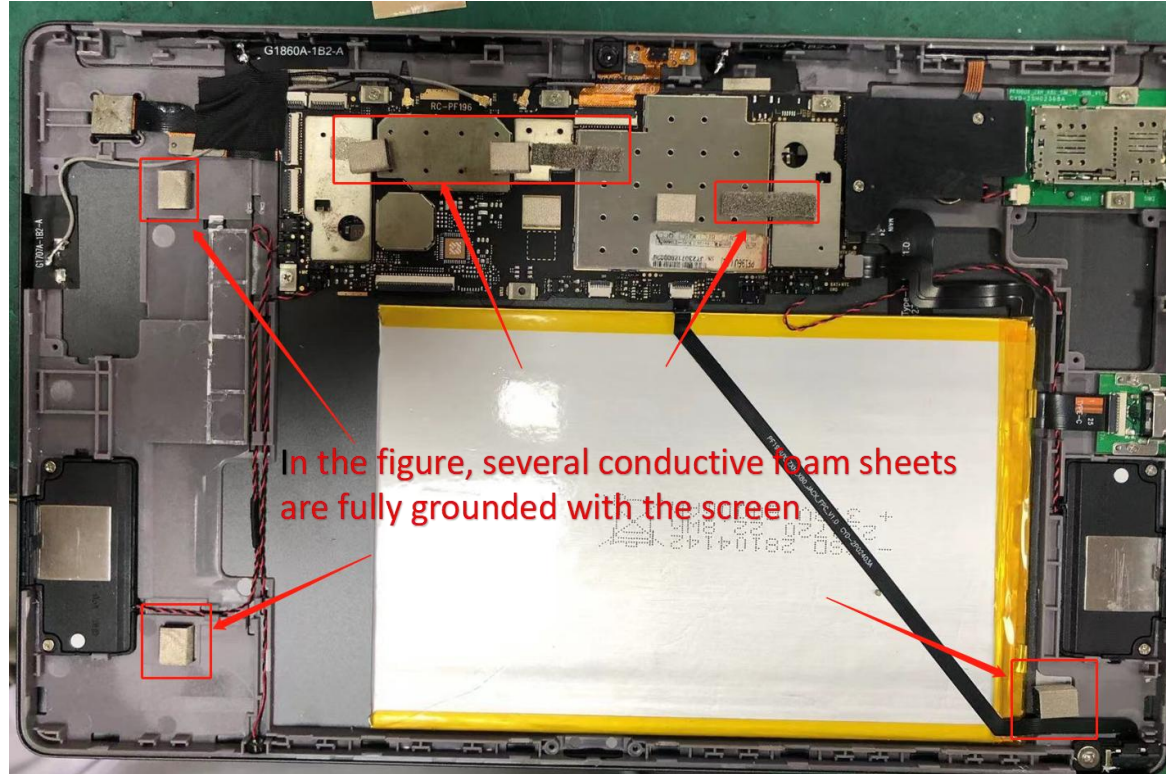
# Antenna assembly environment processing diagram



Expose metal here to ground the antenna

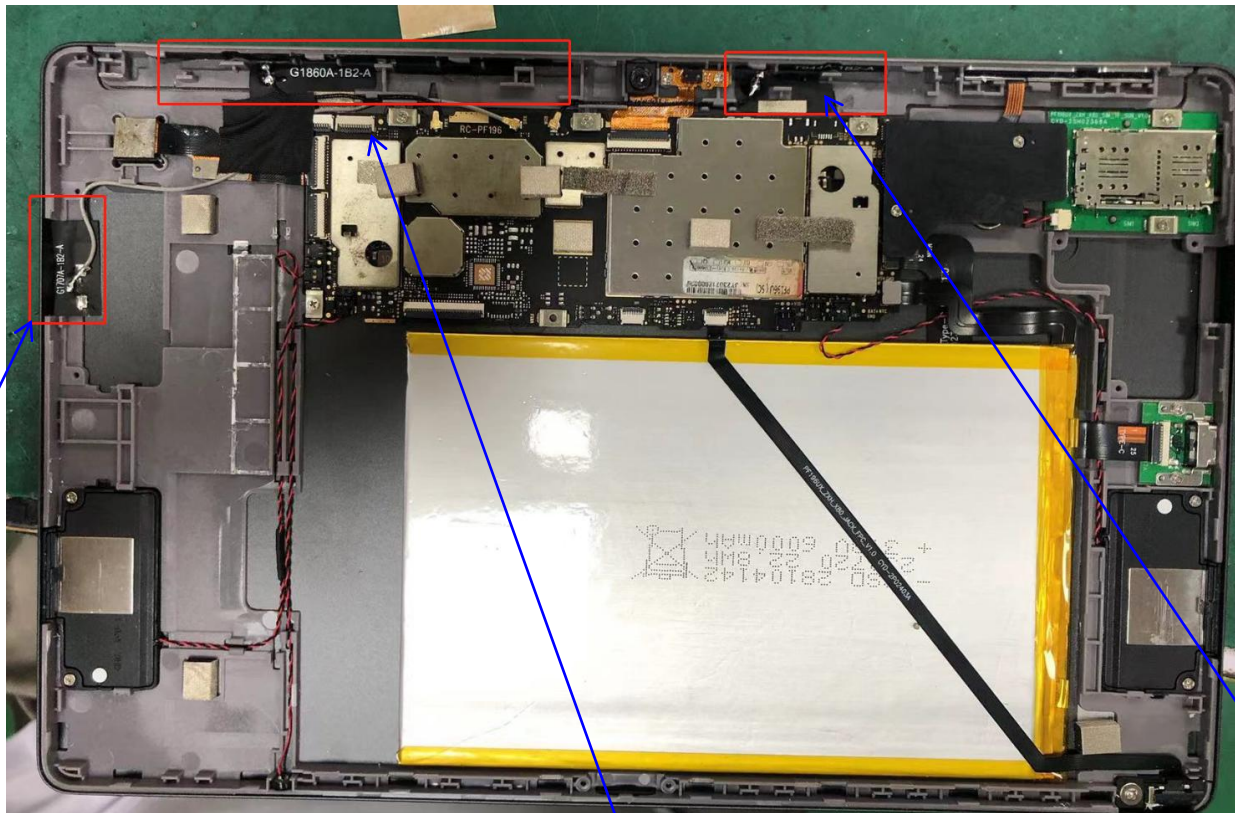
As shown in the figure: The motherboard  
shielding cover here should be fully grounded  
with conductive cotton and the screen

# Antenna assembly environment processing diagram





# Antenna assembly environment processing diagram



As shown in the figure: 4G diversity antenna assembly position

As shown in the figure: 4G antenna assembly position

As shown in the figure: WiFi/BT/GPS antenna assembly position





# 3D.TRP & TIS in free-space

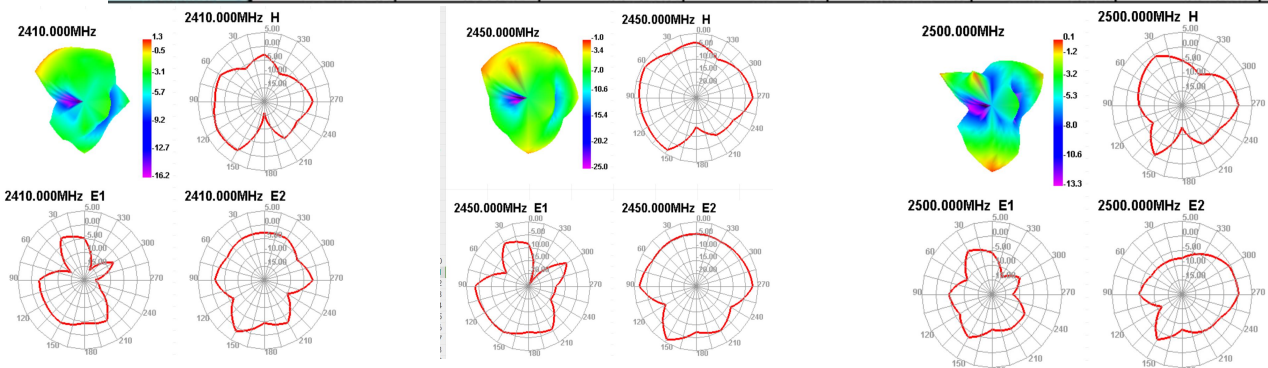
Application Information				Application Information			
O4Version		5.230.336		O4Version		5.230.336	
TotalTime		12m 22s 31ms		TotalTime		21m 12s 130ms	
AdditionalInfor		802.11b : 11Mbps		AdditionalInfor		802.11a : 54Mbps	
Test	Wifi 2G TRP			Test	Wifi 5G TRP		
Result	1	7	13	Result	36	64	149
Frequency (MHz)	2412	2442	2472	Frequency (MHz)	5180	5320	5745
TRP (dBm)	11.39	12.13	11.91	TRP (dBm)	9.97	9.77	10.86
NHPRP (dBm)	10.53	11.24	10.97	NHPRP (dBm)	8.11	7.9	8.79
MAX (dBm)	16.77	17.85	17.29	MAX (dBm)	15.22	15.65	16.2
EIRP_peak	16.77	17.85	17.29	EIRP_peak	15.22	15.65	16.2
Min (dBm)	3.52	3.29	2.97	Min (dBm)	-5.41	-43.17	-4.5
Attenuation Horiz	20.68	20.8	21.12	Attenuation Horiz	30.11	29.33	30.42
Attenuation Vertic	21.16	21.06	21.2	Attenuation Vertic	29.54	28.25	30.38
Test	ifi 2G TIS			Test	ifi 5G TIS		
Result	13			Result	149		
Frequency (MHz)	2472			Frequency (MHz)	5745		
TIS (dBm)	-78.91			TIS (dBm)	-71.72		
NHPIS (dBm)	-74.17			NHPIS (dBm)	-70.65		
RSSIAve	11.75			RSSIAve	10		
MaxPosRSSI	14.9			MaxPosRSSI	16.2		
MaxPosSens	-81.86			MaxPosSens	-77.93		
MAX (dBm)	17.13			MAX (dBm)	16.25		
EIS_peak	17.13			EIS_peak	16.25		
Min (dBm)	2.82			Min (dBm)	-4.42		
Attenuation Horiz	20.96			Attenuation Horiz	30.68		
Attenuation Vertic	21.05			Attenuation Vertic	30.42		

# Antenna efficiency and gain

Passive Test For GPS										
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Attenut Hor	Attenut Ver
1560	39.84	-3.64	0.58	-2.07	12.365	18.242	0.58	-10.92	42.59	42.12
1565	42.07	-2.25	1.92	-2.13	11.965	17.864	1.92	-11.04	42.68	42.22
1570	40.28	-3.63	1.09	-1.46	13.742	20.696	1.09	-10.16	42.77	42.32
1575	40.7	-3.57	0.83	-2.38	11.052	16.705	0.83	-11.23	42.81	42.4
1580	41.57	-2.93	1.36	-1.69	12.986	19.865	1.36	-10.47	42.86	42.49

Passive Test For WIFI2.4										
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Attenut Hor	Attenut Ver
2400	44.21	-3.54	0.25	-1.9	16.605	27.604	0.25	-10.35	48.04	48.09
2410	39.03	-4.09	-0.44	-2.59	15.195	23.837	-0.44	-11.02	47.59	47.64
2420	39.89	-3.99	-0.53	-2.68	16.292	23.602	-0.53	-11.48	47.92	48.01
2430	36.47	-4.38	-1.13	-3.28	15.596	20.871	-1.13	-12.63	47.46	47.57
2440	37.27	-4.29	-1.17	-3.32	16.512	20.759	-1.17	-13	47.72	47.88
2450	38.96	-4.09	-1.03	-3.18	17.723	21.235	-1.03	-13.36	47.65	47.81
2460	39.43	-4.04	-0.93	-3.08	18.274	21.154	-0.93	-13.6	47.84	47.97
2470	39.91	-3.99	-0.89	-3.04	18.795	21.114	-0.89	-13.29	47.92	48.04
2480	41.41	-3.83	-0.75	-2.9	19.716	21.691	-0.75	-13.09	47.86	47.88
2490	44.99	-3.47	-0.5	-2.65	21.689	23.3	-0.5	-12.64	48.2	48.18
2500	44.23	-3.54	-0.58	-2.73	21.449	22.785	-0.58	-12.85	48.05	47.98



# Antenna efficiency and gain

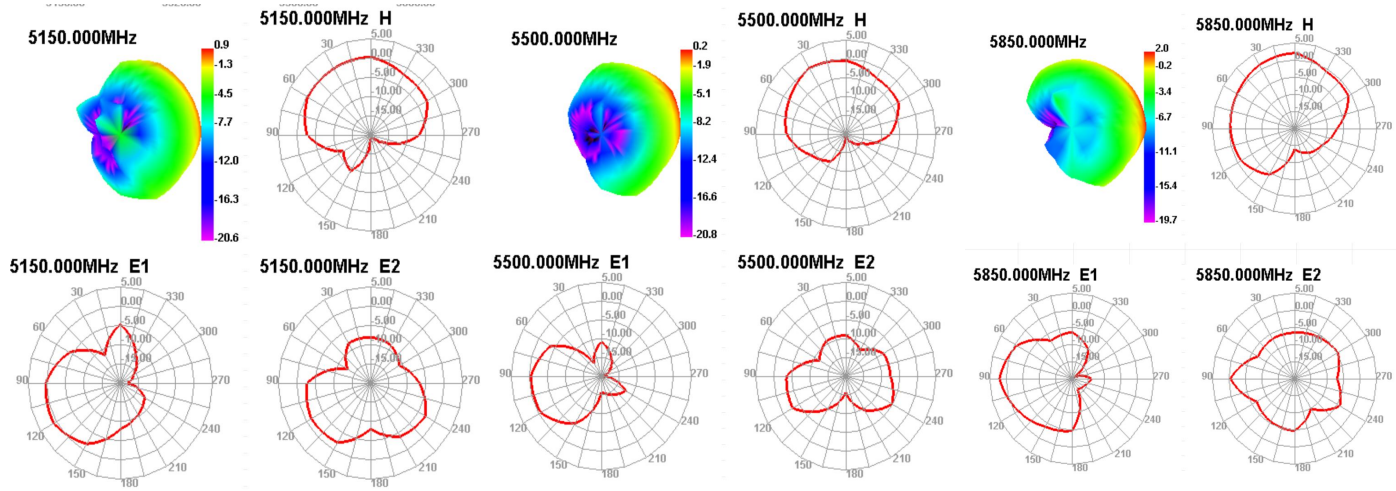
Passive Test For WIFI5.8										
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Attenut Hor	Attenut Ver
5150	46.72	-3.31	2.34	0.19	25.885	20.831	2.34	-20.22	59.31	58.15
5160	37.31	-4.28	1.42	-0.73	20.392	16.917	1.42	-21.55	58.69	57.42
5170	36.89	-4.33	1.47	-0.68	20.078	16.815	1.47	-18.58	58.45	57.09
5180	49.18	-3.08	2.8	0.65	26.597	22.582	2.8	-24.45	59.47	58.5
5190	43.85	-3.58	2.26	0.11	23.684	20.171	2.26	-20.27	58.89	57.75
5200	49.88	-3.02	2.96	0.81	26.597	23.28	2.96	-19.6	59.54	58.32
5210	36.41	-4.39	1.58	-0.57	19.349	17.063	1.58	-22	58.14	57.06
5220	43.36	-3.63	2.26	0.11	22.704	20.659	2.26	-21.85	58.87	57.65
5230	37.14	-4.3	1.45	-0.7	19.278	17.866	1.45	-21.3	58.73	57.41
5240	50.78	-2.94	2.92	0.77	26.207	24.568	2.92	-22.92	59.74	58.38
5250	35.65	-4.48	1.42	-0.73	18.394	17.255	1.42	-24	58.75	57.3
5260	34.95	-4.57	1.5	-0.65	18.067	16.881	1.5	-25.7	58.54	57.08
5270	36.26	-4.41	1.5	-0.65	18.378	17.883	1.5	-24.77	58.93	57.48
5280	37.35	-4.28	1.86	-0.29	19.228	18.122	1.86	-25.49	58.41	57.26
5290	37.89	-4.21	1.92	-0.23	19.36	18.53	1.92	-23.53	58.97	57.69
5300	37.23	-5.65	0.46	-1.69	13.98	13.253	0.46	-26.34	58.29	56.79
5310	41.59	-3.81	2.5	0.35	21.588	20.004	2.5	-24.12	59.56	58.25
5320	33.5	-4.75	1.88	-0.27	17.435	16.064	1.88	-24.86	58.39	57.07
5330	32.92	-4.83	2.09	-0.06	17.241	15.677	2.09	-22.06	58.49	57.28
5340	33.27	-4.78	2.31	0.16	17.649	15.621	2.31	-24.08	58.93	57.66
5350	38.64	-4.13	2.91	0.76	20.452	18.184	2.91	-23.18	59.98	58.48
5360	36.22	-4.41	2.93	0.78	19.355	16.868	2.93	-23.15	59.25	57.93
5370	32.09	-4.94	2.62	0.47	17.472	14.619	2.62	-24.22	59.13	58.04
5380	38.96	-4.09	3.47	1.32	21.269	17.69	3.47	-28.76	59.19	57.98
5390	38.08	-4.19	3.7	1.55	21.092	16.993	3.7	-25.03	59.4	58.17
5400	40.24	-3.95	3.95	1.8	22.617	17.626	3.95	-21.91	59.93	58.53
5410	40.98	-3.87	4.16	2.01	23.103	17.879	4.16	-21.3	59.61	58.29
5420	48.32	-3.16	4.88	2.73	27.214	21.103	4.88	-25.41	59.95	58.67
5430	39.15	-4.07	4.13	1.98	22.476	16.676	4.13	-21.59	59.35	58.03
5440	43.67	-3.6	4.49	2.34	25.218	18.453	4.49	-24	60.27	58.74
5450	36.75	-4.35	3.63	1.48	21.338	15.413	3.63	-22.68	59.5	58.14
5460	41.61	-3.81	4.15	2	24.499	17.108	4.15	-23.44	60.05	58.73
5470	36.37	-4.39	3.45	1.3	21.603	14.767	3.45	-20.18	59.9	58.41
5480	44.8	-3.49	4.32	2.17	26.922	17.879	4.32	-18.15	60.8	59.32



# Antenna efficiency and gain

5490	40.38	-3.94	3.65	1.5	24.399	15.985	3.65	-19.28	60.34	58.87
5500	42.49	-3.72	3.84	1.69	25.777	16.714	3.84	-20.17	60.21	58.94
5510	41.1	-3.86	3.69	1.54	25.217	15.887	3.69	-19.41	60.58	59.09
5520	41.88	-3.78	3.87	1.72	25.729	16.15	3.87	-20.64	60.6	58.99
5530	46.45	-3.33	4.34	2.19	28.646	17.801	4.34	-19.56	61.11	59.56
5540	38.75	-4.12	3.64	1.49	24.031	14.719	3.64	-20.26	60.82	59.37
5550	42.96	-3.67	4.02	1.87	26.691	16.266	4.02	-21.08	61.46	59.44
5560	41.17	-3.85	3.92	1.77	25.79	15.382	3.92	-20.55	61.08	59.37
5570	39.08	-4.08	3.71	1.56	24.479	14.603	3.71	-21.61	61.13	59.47
5580	41.5	-3.82	3.97	1.82	26.032	15.464	3.97	-18.74	61.44	59.56
5590	45.73	-3.4	4.57	2.42	28.757	16.969	4.57	-19.21	62.12	60.35
5600	41.25	-3.85	3.99	1.84	25.877	15.373	3.99	-18.69	61.91	59.98
5610	38.58	-4.14	3.73	1.58	24.314	14.261	3.73	-17.22	61.83	60.13
5620	42.84	-3.68	4.19	2.04	26.993	15.845	4.19	-19.05	61.68	60.27
5630	48.47	-3.15	4.87	2.72	30.636	17.833	4.87	-18.02	62.22	60.83
5640	47.01	-3.28	4.52	2.37	29.742	17.272	4.52	-17.44	62.21	60.86
5650	41.9	-3.78	4.02	1.87	26.765	15.134	4.02	-19.9	61.98	60.21
5660	41.55	-3.81	4.04	1.89	26.473	15.082	4.04	-20.09	61.86	60.27
5670	42.17	-3.75	4.25	2.1	27.003	15.163	4.25	-19.63	61.92	60.47
5680	44.49	-3.52	4.56	2.41	28.729	15.762	4.56	-21.46	62.24	60.58
5690	42.19	-3.75	4.25	2.1	27.137	15.049	4.25	-21.16	61.78	60.19
5700	47.21	-3.26	4.82	2.67	30.862	16.35	4.82	-23.71	62.03	60.67
5710	39.04	-4.08	3.91	1.76	25.478	13.565	3.91	-21.48	61.55	59.8
5720	47.98	-3.19	4.94	2.79	31.229	16.75	4.94	-24.8	61.69	60.28
5730	42.52	-3.71	4.28	2.13	27.694	14.826	4.28	-26.38	61.65	59.95
5740	44.76	-3.49	4.54	2.39	29.295	15.463	4.54	-25.04	61.63	60.26
5750	42.22	-3.74	4.18	2.03	27.483	14.742	4.18	-28.05	61.76	60.48
5760	41.85	-3.78	4.09	1.94	27.477	14.372	4.09	-24.5	61.45	59.98
5770	43.41	-3.62	4.25	2.1	28.343	15.068	4.25	-28.86	61.7	59.92
5780	39.45	-4.04	3.8	1.65	25.751	13.701	3.8	-25.67	61.39	59.91
5790	43.17	-3.65	4.09	1.94	28.126	15.042	4.09	-26.94	61.78	60.14
5800	42.92	-3.67	4.01	1.86	27.884	15.039	4.01	-25.26	61.58	60.04
5810	38.89	-4.1	3.43	1.28	24.982	13.911	3.43	-26.55	61.83	60.01
5820	42.55	-3.71	3.91	1.76	27.382	15.166	3.91	-26.53	61.95	60.43
5830	44.72	-3.5	4.13	1.98	28.712	16.006	4.13	-21.53	62.32	60.73
5840	44.32	-3.53	4	1.85	28.295	16.029	4	-20.61	62.15	60.4
5850	39.99	-3.98	3.63	1.48	25.68	14.306	3.63	-20.92	62.21	60.78

# Antenna efficiency and gain



Note: If there are any unclear or questionable locations regarding this project, please contact me promptly

