



SHENZHEN Xingyuanchuang TECHNOLOGY CO., LTD

Tangwei Group Business Building, Tangwei Community, Fuhai Street, Bao'an District, Shenzhen, China

Antenna Test Report

TC: Lian Teng

MN: T0837L

RF: Dai JP

MD: Huang Qingqing

MP: 19918388579

Model:

MAIN ant 1:TH008M1

MAIN ant 1:TH008M2

DIV ant: TH008D

wifi BT ant: TH008WB

Date: 2023. 7. 03

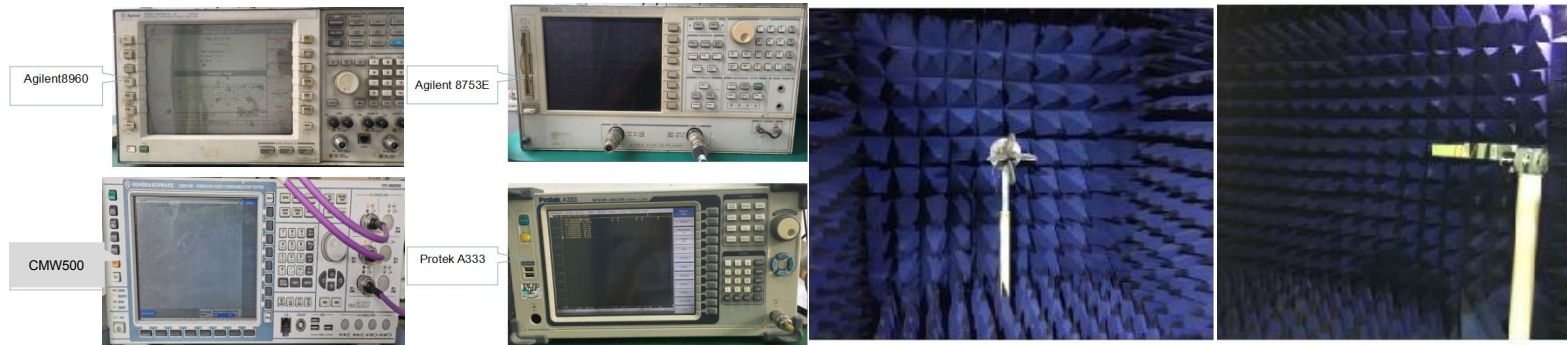
REV :V1. 0

Test information

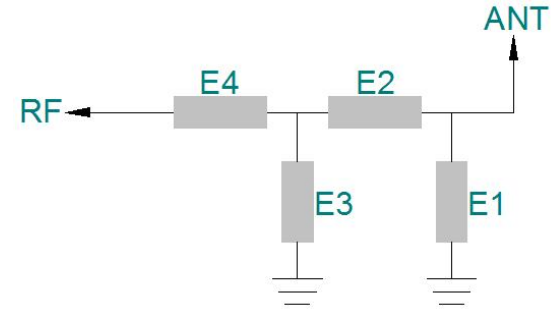
	Antenna band		Antenna state	Antenna form	Match changes	Note
Main ANT	2G	850/900/1800/1900				
	3G	W1/8	FPC	PIFA	NO	
	4G	1/3/5/8/40/41				
AUX ANT	BT/WIFI	2.4/5G	FPC	PIFA	NO	
	GPS	1.575G	FPC	PIFA	NO	
	DIV		FPC	PIFA	NO	

Test environment

	Test Item	Test Equipment
1. S-parameter	1. Voltage standing wave ratio 2. Return Loss	Network analyzer: Agilent 8753ES
2. Active Test	1. Transmitted power (TRP) 2. Receiving sensitivity (TIS) 3. screen is off or on	1. Dark room: 5*3*3m (3D) Chamber 2. synthesizer: Agilent 8960 CMW500
3. Passive Test	1. Antenna gain 2. Antenna efficiency	1. Dark room: 5*3*3m (3D) Chamber 2. Network analyzer: Agilent 8753ES



Matching circuit



Matching circuit schematic &
bit number diagram

	Capacitance (PF)	Inductance (NH)
E1(0402)		
E2(0402)		
E3(0402)		
E4(0402)		

Antenna position



DIV ANT



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)	28.80	27.97	27.16	29.14	29.16	28.77	25.13	25.27	26.77	27.46	26.85	25.72
TIS(LCD OFF)			-104.81			-104.27			-106.60			
TIS(LCD ON)												
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)	18.87	18.45	18.35	18.76	18.07	18.46						
TIS(LCD OFF)						-104.53						
TIS(LCD ON)			-107.61			-100.14						
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)	18.22	17.84	17.36				17.39	17.52	18.24			
TIS(LCD OFF)												
TIS(LCD ON)			-96.26						-95.08			
Band	FDD-Band 5			FDD-Band 7			FDD-Band 8			FDD-Band 20		
Channel	20450	20525	20600	20800	21100	21400	21500	21620	21750	24200	24300	24400
TRP(dBm)	16.49	17.12	17.89				19.02	19.06	18.45			
TIS(LCD OFF)			-91.46									
TIS(LCD ON)			-86.58						-87.86			
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)							19.46	19.58	19.54		18.83	
TIS(LCD OFF)												
TIS(LCD ON)									-88.93		-88.86	

GPS star search test

The measured effect of GPS cold start is as follows:
CN value over 40 3 pieces
CN value more than 35 5 pieces
Actual location of 14+

Note;
GPS star search test. It varies by time period and region. The above data are the best data in our test (open area)



Wifi Antenna test

WIFI

Test environment: Open space

Test distance: 10m

The test results are shown on the right

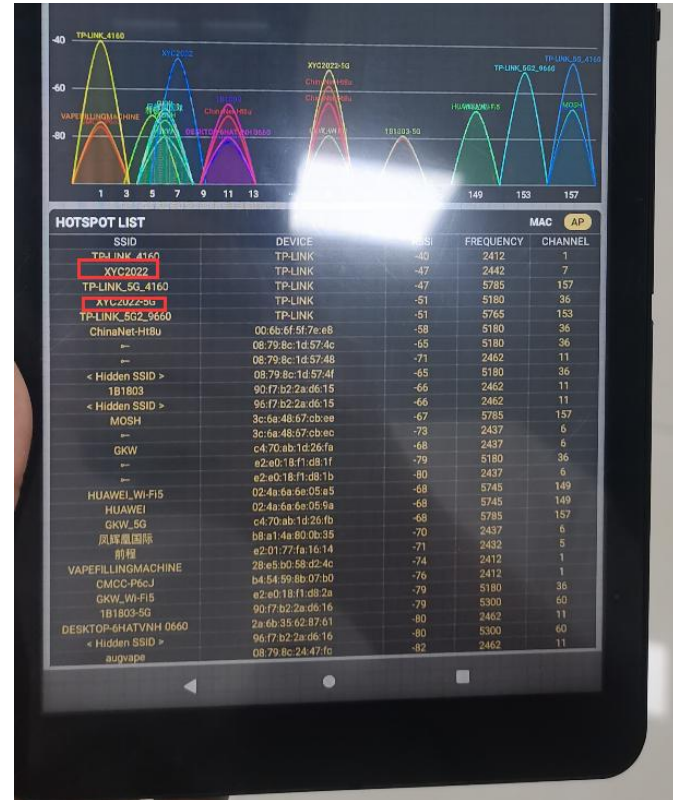
BT

Test environment: Open space (channel)

Test tool: Bluetooth speaker

Test distance: 10m

Results: Play music smoothly, no noise.



ANT Direction of figure 790-2690MHz

Passive test data

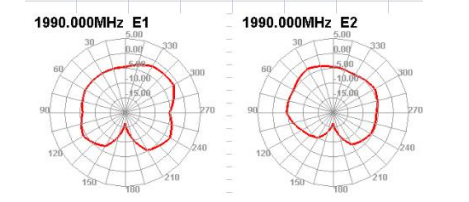
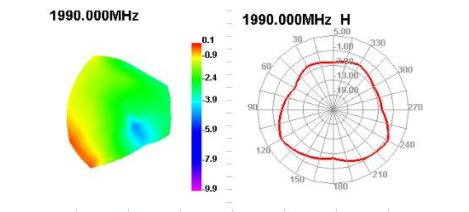
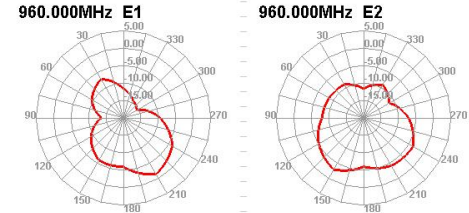
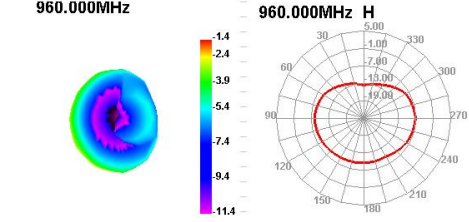
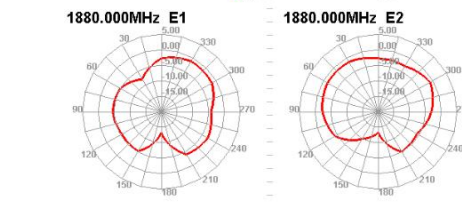
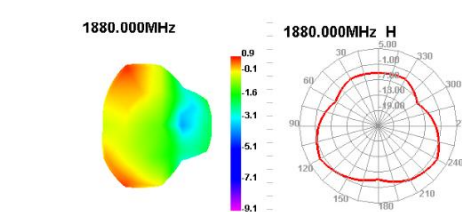
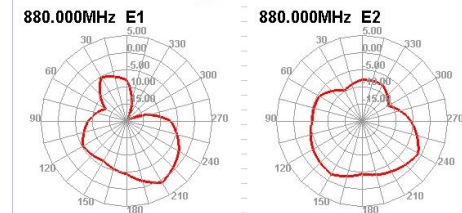
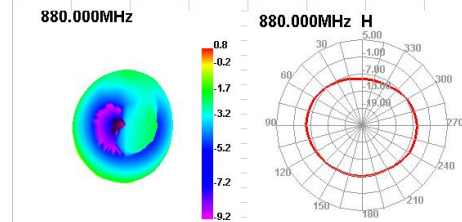
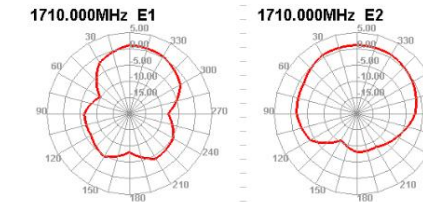
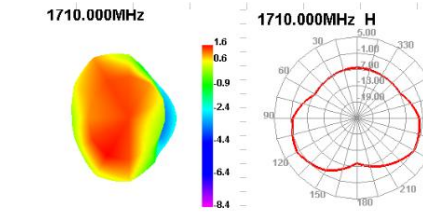
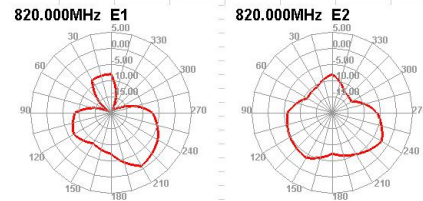
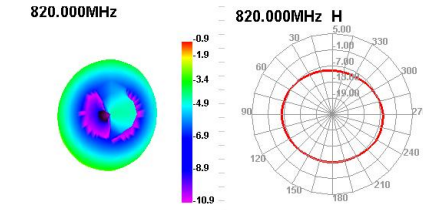
Passive Test For 低频						
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)
790	15.01	-8.24	-3.13	-5.28	3.471	11.538
800	19.5	-7.1	-1.51	-3.66	4.09	15.412
810	20.33	-6.92	-1.19	-3.34	4.195	16.131
820	21.6	-6.66	-0.93	-3.08	4.384	17.213
830	24.6	-6.09	-0.5	-2.65	4.957	19.641
840	26.74	-5.73	-0.31	-2.46	5.41	21.332
850	30.57	-5.15	0.22	-1.93	6.336	24.236
860	32.41	-4.89	0.58	-1.57	6.885	25.522
870	30.61	-5.14	0.61	-1.54	6.615	24
880	29.66	-5.28	0.76	-1.39	6.583	23.078
890	30.95	-5.09	1.25	-0.9	7.162	23.792
900	31.26	-5.05	1.37	-0.78	7.592	23.669
910	30.61	-5.14	1.21	-0.94	7.452	23.159
920	30.03	-5.22	0.93	-1.22	7.177	22.858
930	27.04	-5.68	0.23	-1.92	6.508	20.536
940	23.37	-6.31	-0.53	-2.68	5.704	17.667
950	20.87	-6.8	-1.08	-3.23	5.12	15.751
960	19.62	-7.07	-1.36	-3.51	4.865	14.755

2300	35.5	-4.5	-0.66	-2.81	19.724	15.777
2310	37.86	-4.22	-0.42	-2.57	21.06	16.8
2320	44.82	-3.48	0.39	-1.76	24.88	20.044
2330	46.37	-3.34	0.46	-1.69	25.828	20.539
2340	41.45	-3.82	-0.11	-2.26	23.386	18.058
2350	42.94	-3.67	0.06	-2.09	24.395	18.542
2360	44.41	-3.53	0.31	-1.84	25.381	19.03
2370	41.98	-3.77	0.21	-1.94	23.957	18.022
2380	43.48	-3.62	0.27	-1.88	24.99	18.485
2390	44.1	-3.56	0.01	-2.14	25.808	18.495
2400	44.14	-3.55	-0.36	-2.51	25.969	18.171
2410	40.81	-3.89	-0.43	-2.58	24.133	16.676
2420	42.44	-3.72	-0.12	-2.27	25.28	17.164
2430	41.57	-3.81	-0.08	-2.23	25.221	16.347
2440	38.76	-4.12	-0.27	-2.42	23.973	14.784
2450	37.89	-4.22	-0.25	-2.4	23.756	14.132
2460	39.75	-4.01	0.11	-2.04	25.032	14.715
2470	39.75	-4.01	0.29	-1.86	25.135	14.811
2480	40.13	-3.96	0.47	-1.68	25.572	14.562
2490	40.37	-3.94	0.54	-1.61	25.733	14.633
2500	42.25	-3.74	0.75	-1.4	27.102	15.145
2510	40.6	-3.91	0.57	-1.58	26.135	14.463
2520	38.43	-4.15	0.35	-1.8	25.076	13.353
2530	39.89	-3.99	0.59	-1.56	26.378	13.516
2540	38.62	-4.13	0.5	-1.65	25.752	12.867
2550	37.89	-4.21	0.42	-1.73	25.465	12.427
2560	40.45	-3.93	0.7	-1.45	27.331	13.12
2570	39.6	-4.02	0.51	-1.64	26.889	12.711
2580	37.54	-4.26	0.2	-1.95	25.523	12.014
2590	37.63	-4.25	0.23	-1.92	25.566	12.059
2600	40.07	-3.97	0.6	-1.55	27.297	12.771
2610	38.55	-4.14	0.49	-1.66	26.449	12.097
2620	36.37	-4.39	0.42	-1.73	25.171	11.2
2630	35.83	-4.46	0.45	-1.7	24.908	10.924
2640	37.29	-4.28	0.78	-1.37	26.068	11.223
2650	37.82	-4.22	1.01	-1.14	26.627	11.194
2660	37.35	-4.28	1.14	-1.01	26.51	10.844
2670	32.94	-4.82	0.7	-1.45	23.414	9.529
2680	33.55	-4.74	0.8	-1.35	23.817	9.737
2690	34.22	-4.66	0.85	-1.3	24.178	10.038
2700	30.8	-5.11	0.4	-1.75	21.801	8.998
2710	27.87	-5.55	-0.07	-2.22	19.825	8.048
2720	27.43	-5.62	-0.05	-2.2	19.575	7.851
2730	28.65	-5.43	0.21	-1.94	20.445	8.209
2740	26.14	-5.83	-0.04	-2.19	18.639	7.501
2750	23.64	-6.26	-0.43	-2.58	16.845	6.793

Passive Test For 高频						
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)
1710	47.79	-3.21	1.56	-0.59	31.797	15.989
1720	46.85	-3.29	1.48	-0.67	30.596	16.257
1730	49.66	-3.04	1.63	-0.52	31.985	17.673
1740	51.89	-2.85	1.73	-0.42	33.006	18.888
1750	54.22	-2.66	1.9	-0.25	34.327	19.891
1760	54.97	-2.6	1.85	-0.3	34.608	20.364
1770	59.45	-2.26	2.08	-0.07	37.096	22.359
1780	61.11	-2.14	1.99	-0.16	37.774	23.341
1790	58.36	-2.34	1.51	-0.64	35.69	22.674
1800	57.43	-2.41	1.34	-0.81	34.772	22.654
1810	57.48	-2.4	1.3	-0.85	34.278	23.205
1820	56.24	-2.5	1.27	-0.88	33.09	23.147
1830	56.26	-2.5	1.35	-0.8	32.867	23.389
1840	56.51	-2.48	1.34	-0.81	32.878	23.63
1850	55.25	-2.58	1.17	-0.98	32.175	23.105
1860	56.37	-2.49	1.07	-1.08	32.602	23.768
1870	55.9	-2.53	1.15	-1	32.203	23.702
1880	49.43	-3.06	0.9	-1.25	28.503	20.923
1890	44.47	-3.52	0.55	-1.6	25.579	18.891
1900	41.54	-3.81	0.38	-1.77	23.844	17.7
1910	46.82	-3.3	0.65	-1.5	26.613	20.207
1920	42.27	-3.74	0.12	-2.03	23.845	18.426
1930	40.5	-3.93	-0.24	-2.39	22.801	17.695
1940	40.88	-3.89	-0.33	-2.48	23.187	17.692
1950	37.17	-4.3	-0.39	-2.54	21.125	16.048
1960	39.67	-4.02	-0.11	-2.26	22.472	17.201
1970	39.59	-4.02	-0.1	-2.25	22.104	17.485
1980	41.1	-3.86	0.13	-2.02	22.767	18.334
1990	40.46	-3.93	0.07	-2.08	22.228	18.229
2000	42.62	-3.7	0.26	-1.89	23.495	19.129
2010	46.31	-3.34	0.38	-1.77	25.495	20.818
2020	39.08	-4.08	-0.51	-2.66	21.619	17.46
2030	37.06	-4.31	-0.87	-3.02	20.534	16.528
2040	42.23	-3.74	-0.32	-2.47	23.487	18.745
2050	40.85	-3.89	-0.48	-2.63	22.567	18.285
2060	40	-3.98	-0.89	-2.84	21.772	18.229
2070	38.32	-4.17	-0.87	-3.02	20.43	17.885
2080	45.37	-3.43	0.26	-1.89	24.058	21.313
2090	47.36	-3.25	0.65	-1.5	25.03	22.329
2100	43.23	-3.64	0.25	-1.9	23.03	20.2
2110	45.17	-3.45	0.43	-1.72	24.128	21.04
2120	44.37	-3.53	0.5	-1.65	24.019	20.351
2130	38.03	-4.2	-0.15	-2.3	20.702	17.329
2140	39.76	-4	-0.09	-2.24	21.737	18.028
2150	38.37	-4.16	-0.26	-2.41	20.773	17.601
2160	42.9	-3.68	0.4	-1.75	23.059	19.836
2170	43.83	-3.58	0.74	-1.41	23.306	20.519

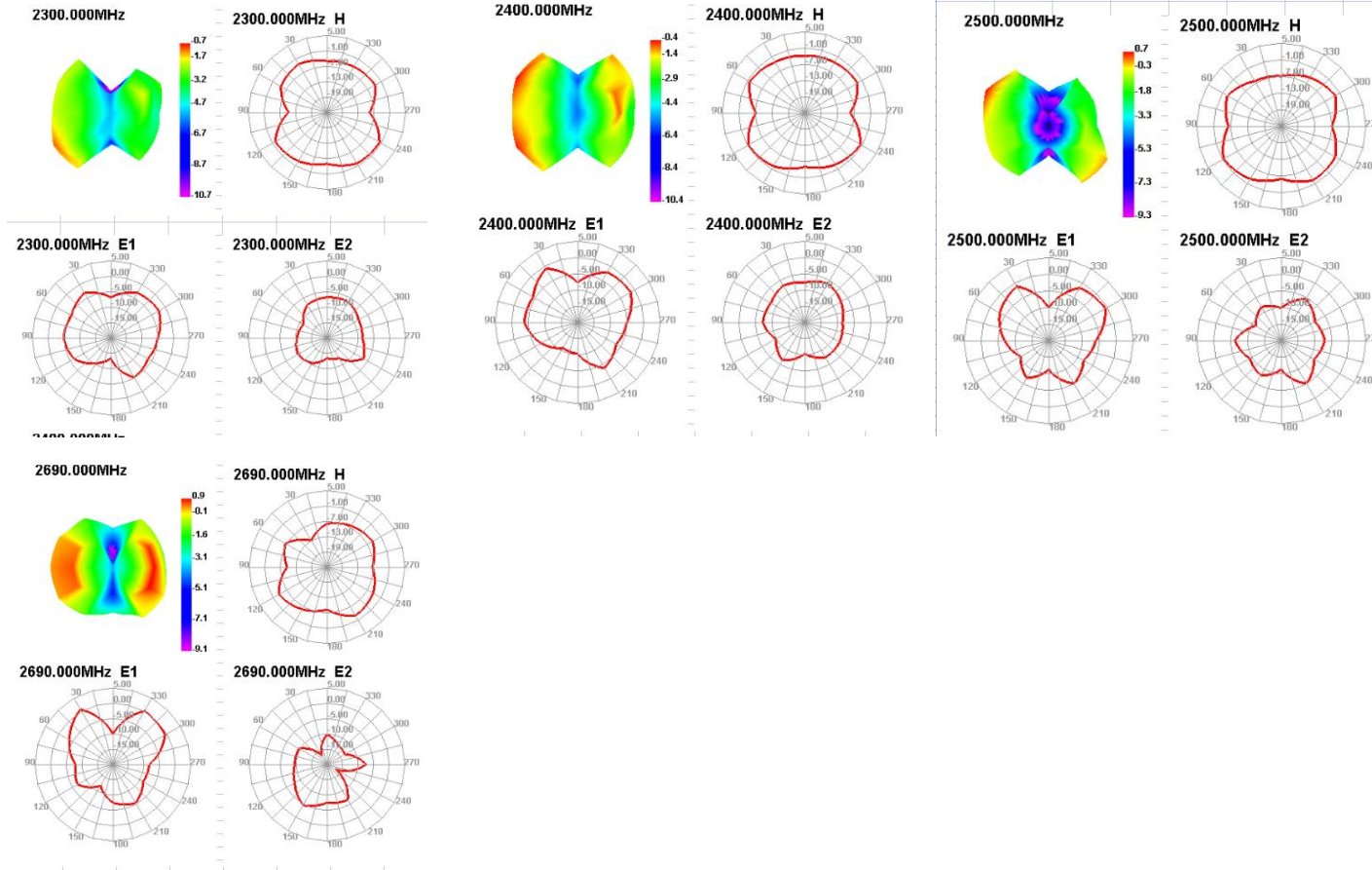
Passive test data

ANT Direction of figure 690-2690MHz



Passive test data

ANT Direction of figure 690-2690MHz



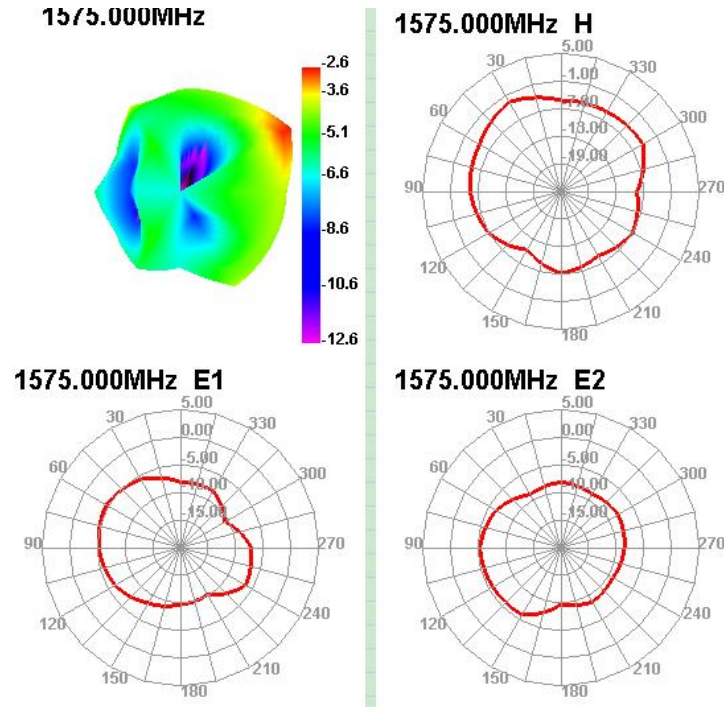
Passive test data

ANTI GAIN&Efficiency-GPS

1570	24.58	-6.09	-2.59	-4.74	10.92	13.663	-2.59	-16.86	3.51	90	41.5	41.03
1575	24.18	-6.17	-2.61	-4.76	10.74	13.44	-2.61	-17.19	3.55	90	41.68	41.23
1580	24.91	-6.04	-2.44	-4.59	11.084	13.829	-2.44	-18.49	3.59	90	41.78	41.35

Passive test data

ANT1 Direction of figure (GPS)



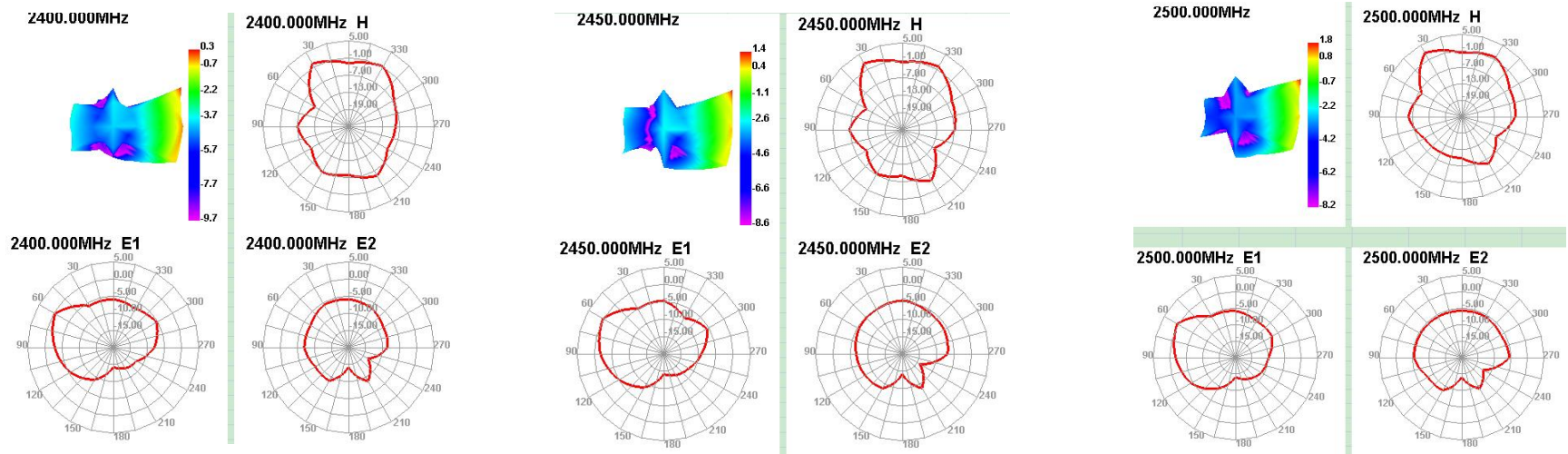
Passive test data

ANT1 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	24.44	-6.12	0.3	-1.85	14.262	10.176	0.3	-14.34	6.42	30	45.78	46.01
2410	24.89	-6.04	0.44	-1.71	14.686	10.202	0.44	-14.75	6.48	30	46.01	46.29
2420	25.66	-5.91	0.65	-1.5	15.278	10.384	0.65	-14.76	6.56	30	45.73	46.0
2430	25.08	-6.01	0.64	-1.51	14.926	10.149	0.64	-15.32	6.65	30	46.01	46.36
2440	26.1	-5.83	0.9	-1.25	15.237	10.86	0.9	-14.97	6.73	30	46.12	46.48
2450	28.43	-5.46	1.42	-0.73	16.36	12.071	1.42	-14.3	6.88	30	46.12	46.54
2460	28.76	-5.41	1.55	-0.6	16.397	12.359	1.55	-14.23	6.96	30	46.14	46.52
2470	27.54	-5.6	1.49	-0.66	15.652	11.889	1.49	-14.23	7.09	30	46.4	46.8
2480	29.45	-5.31	1.8	-0.35	16.601	12.85	1.8	-13.68	7.11	30	46.26	46.64
2490	32.01	-4.95	2.16	0.01	17.887	14.121	2.16	-13.54	7.1	30	46.51	46.91
2500	29.12	-5.36	1.8	-0.35	16.327	12.793	1.8	-14.12	7.16	30	46.47	46.86

Passive test data

ANT1 Direction of figure (2.4/BT)



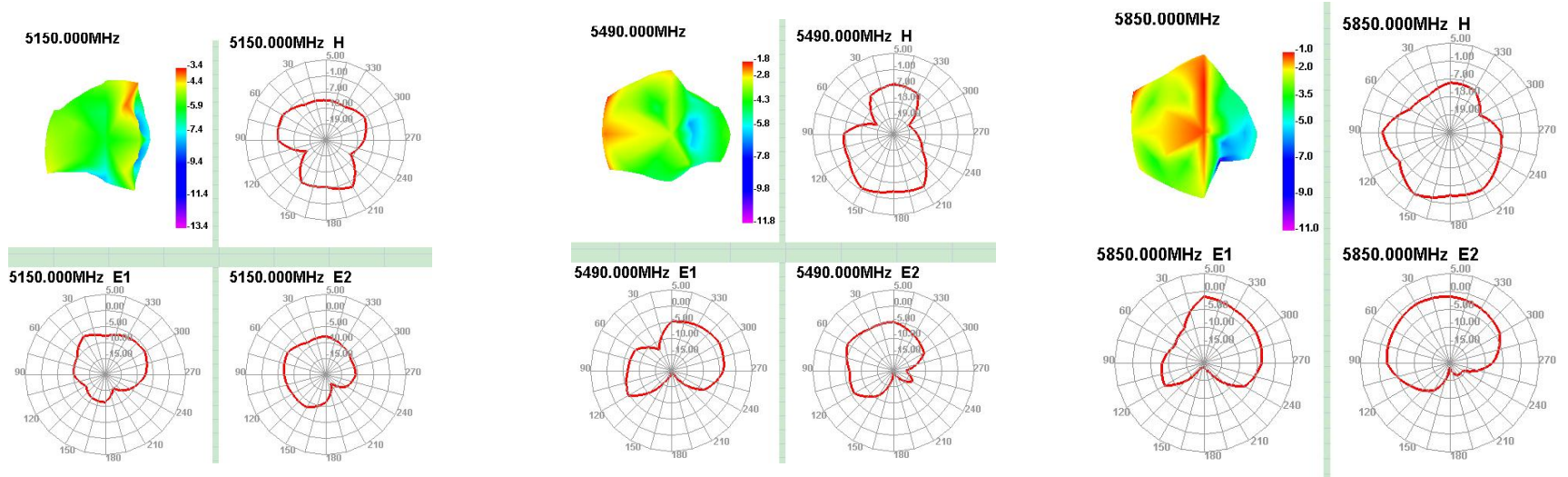
Passive test data

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	15.04	-8.23	-3.38	-5.53	8.949	6.091	-3.38	-20.62	4.84	120	49.82	49.4
5170	13.29	-8.76	-4.03	-6.18	7.793	5.498	-4.03	-22.49	4.73	120	50.13	49.77
5190	15.52	-8.09	-3.65	-5.8	9.014	6.504	-3.65	-22.05	4.44	60	50.42	49.95
5210	15.16	-8.19	-3.7	-5.85	8.55	6.614	-3.7	-21.88	4.49	60	50.88	50.49
5230	15.61	-8.06	-3.24	-5.39	8.538	7.077	-3.24	-20	4.82	60	50.42	50.08
5250	17.45	-7.58	-2.78	-4.93	9.466	7.98	-2.78	-21.1	4.8	60	51.02	50.72
5270	17.86	-7.48	-2.28	-4.43	9.684	8.178	-2.28	-20.69	5.2	60	50.85	50.6
5290	19.38	-7.13	-2.12	-4.27	10.42	8.96	-2.12	-21.16	5	60	51.34	51.12
5310	16.33	-7.87	-2.71	-4.86	8.73	7.603	-2.71	-21.11	5.16	60	50.44	50.36
5330	17.89	-7.47	-1.95	-4.1	9.59	8.301	-1.95	-20.34	5.52	90	51.08	51.01
5350	16.96	-7.71	-2.06	-4.21	9.143	7.814	-2.06	-21.12	5.65	90	51.02	51.01
5370	18.14	-7.41	-2.04	-4.19	9.794	8.35	-2.04	-20.56	5.37	90	50.91	50.95
5390	14.58	-8.36	-3.32	-5.47	7.912	6.663	-3.32	-24.06	5.04	90	50.46	50.43
5410	19.63	-7.07	-1.88	-4.03	10.75	8.876	-1.88	-22.71	5.19	90	51.18	51.09
5430	14.95	-8.25	-2.94	-5.09	8.259	6.688	-2.94	-22.81	5.32	90	50.69	50.7
5450	18.8	-7.26	-2.17	-4.32	10.481	8.314	-2.17	-24.31	5.09	90	50.71	50.85
5470	16.19	-7.91	-2.57	-4.72	9.086	7.099	-2.57	-26.5	5.34	90	50.93	50.83
5490	18.86	-7.24	-1.78	-3.93	10.699	8.163	-1.78	-25.89	5.46	90	50.92	50.79
5510	18.26	-7.39	-2.12	-4.27	10.535	7.722	-2.12	-23.53	5.27	90	51.18	51.16
5530	20.22	-6.94	-1.83	-3.98	11.938	8.286	-1.83	-24.28	5.11	90	51.44	51.3
5550	20.64	-6.85	-1.62	-3.77	12.171	8.465	-1.62	-24.93	5.23	90	51.89	51.76
5570	21.24	-6.73	-1.5	-3.65	12.546	8.693	-1.5	-22.96	5.23	90	51.42	51.33
5590	23.43	-6.3	-0.96	-3.11	14.087	9.339	-0.96	-22.77	5.34	90	51.71	51.76
5610	22.68	-6.44	-0.86	-3.01	13.868	8.816	-0.86	-23.02	5.58	90	51.17	51.22
5630	25.26	-5.98	-0.31	-2.46	15.538	9.717	-0.31	-21.81	5.67	90	51.78	51.77
5650	21.83	-6.61	-1.09	-3.24	13.482	8.348	-1.09	-22.58	5.52	90	51.47	51.55
5670	26.58	-5.75	-0.24	-2.39	16.613	9.965	-0.24	-20.75	5.52	90	52.12	52.28
5690	23.3	-6.33	-0.7	-2.85	14.787	8.511	-0.7	-21.15	5.63	90	52.12	52.25
5710	27.02	-5.68	-0.1	-2.25	17.169	9.85	-0.1	-20.38	5.58	90	51.95	52.05
5730	24.81	-6.05	-0.39	-2.54	15.765	9.046	-0.39	-23.87	5.66	90	51.59	51.69
5750	25.31	-5.97	-0.21	-2.36	16.17	9.135	-0.21	-25.2	5.76	90	51.12	51.15
5770	24.3	-6.14	-0.52	-2.67	15.72	8.583	-0.52	-22.29	5.62	90	51.02	51.06
5790	23.77	-6.24	-0.67	-2.82	15.468	8.3	-0.67	-21.99	5.57	90	51.08	51.16
5810	23.03	-6.38	-0.82	-2.97	14.942	8.087	-0.82	-26.4	5.56	90	51.36	51.43
5830	23.66	-6.26	-0.75	-2.9	15.381	8.284	-0.75	-28.13	5.51	90	51.65	51.66
5850	22.69	-6.44	-1.04	-3.19	14.787	7.904	-1.04	-22.01	5.4	90	51.88	52.05

Passive test data

ANT1 Direction of figure (5G)



Win-win cooperation

