

2.4-5.8G FPC Antenna Specification

Product Name: HW01 2.4-5.8G FPC Antenna

Ver: 2.0

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Antenna Type: FPC Antenna

1. Overview of product categories and product models

This specification summarizes the results of the electrical test of the antenna designed for the HW01 2.4-5.8G FPC Antenna Project. The design frequency band of this antenna is 2.4G-5 8G.

2. Technical indicators and experimental equipment

2.1 Technical indicators

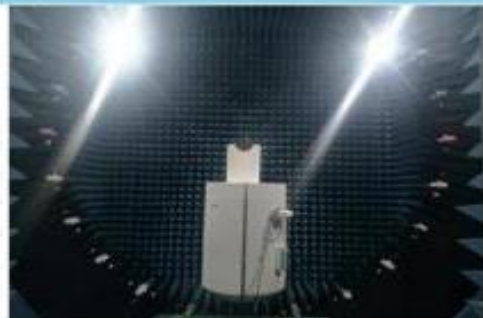
Product electrical performance index	
Operating frequency range	2400MHz - 5800MHz
Antenna gain	3dBi
Radiation efficiency	> 75 %
Impedance	50 ohm
Product Material Description	
FPC	Electrolytic copper + PI
Product Environment Description	
Working temperature	-30°C ~ +85°C
Storage temperature	-30°C ~ +85°C

2.2 Experimental Equipment Description

List	Testing project	Equipment
1. S Parameters	1. Return loss 2. VSWR at	Network analyzer: Aailent HP8753D
2. Coupling power test	1. Transmission power 2. Receiving sensitivity	Comprehensive tester: Agilent 8960 E5515C
3. Radiation pattern and gain	1. Radiation pattern 2. Antenna gain	1. Darkroom: 7x4x3 m (3D) 2. Network analyzer: Agilent 8753ES

3. Test data

3.1 Test environment



3.2 Product electrical performance test data

3.21 Test environment and equipment

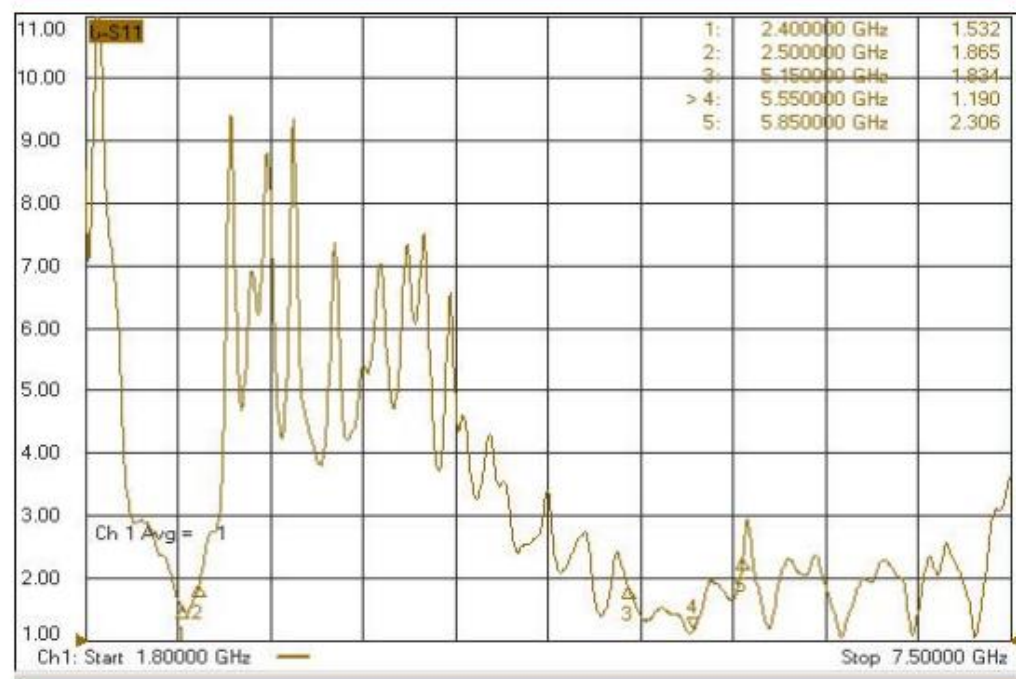
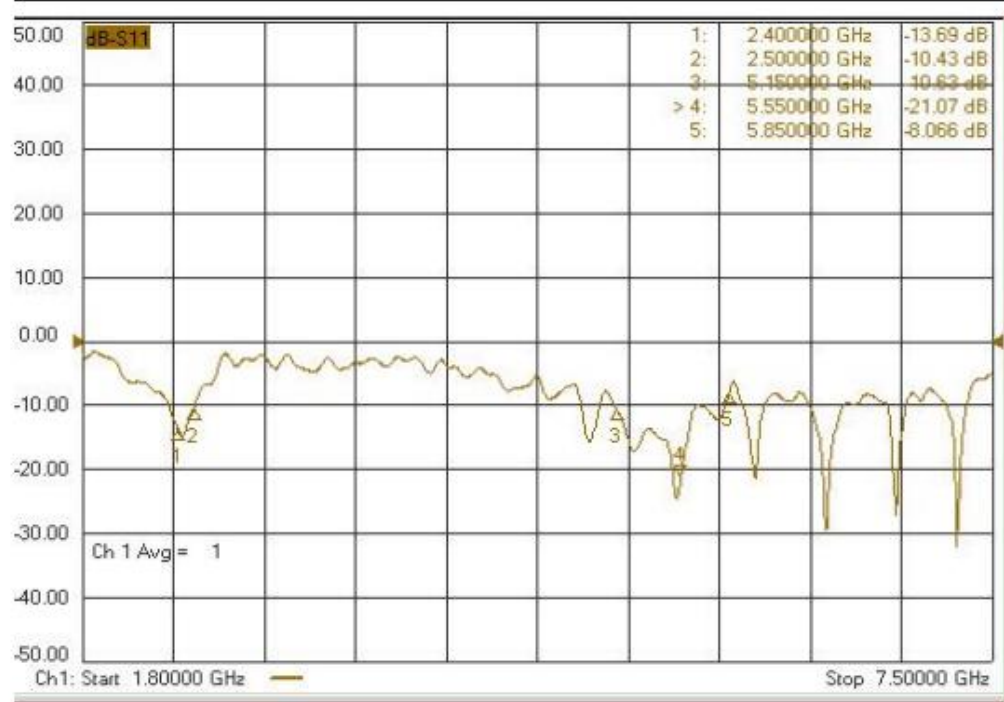
TEST TEMPERATURE	10°C~+30°C
Relative humidity	≤80%(+40°C)
Atmospheric pressure	750mmkg±30mmkg
Test Equipment	HP8753D network analyzer, ETS microwave anechoic chamber

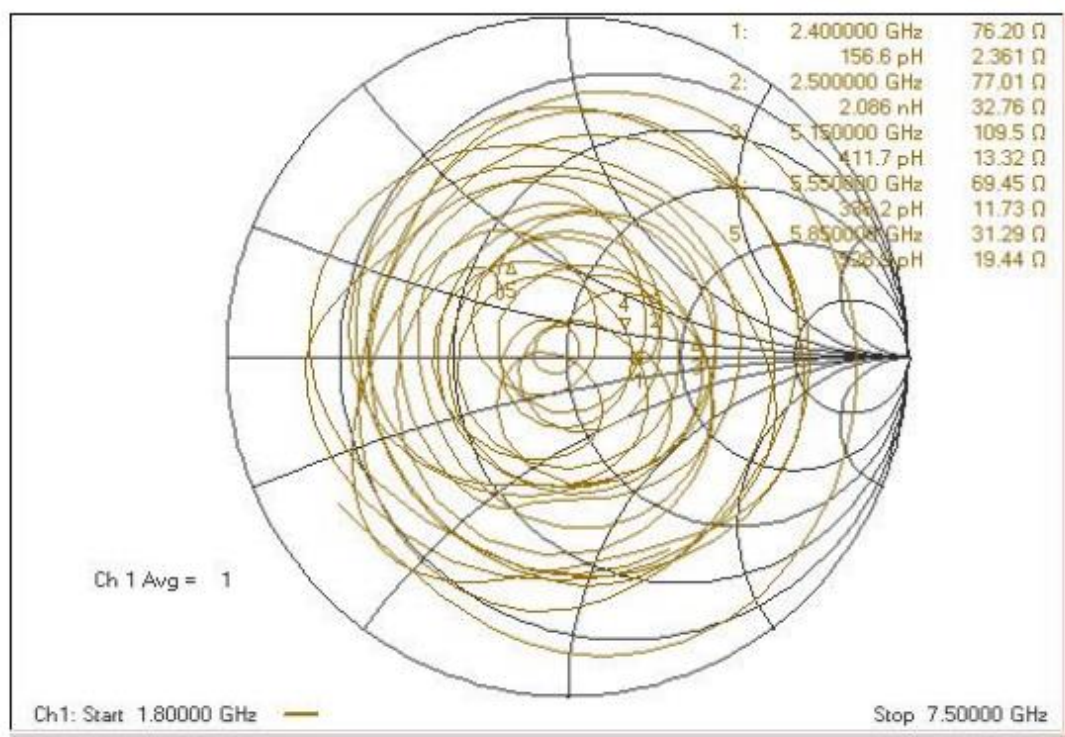
3.22 Product performance test data

S11 Data Sheet

Marker	2400MHz	2500MH	5150MHz	5550MHz	5850MHz
Return	-13.6	-10.4	-10.6	-21.0	-8.0
VSWR	1.5	1.8	1.8	1.1	2.3

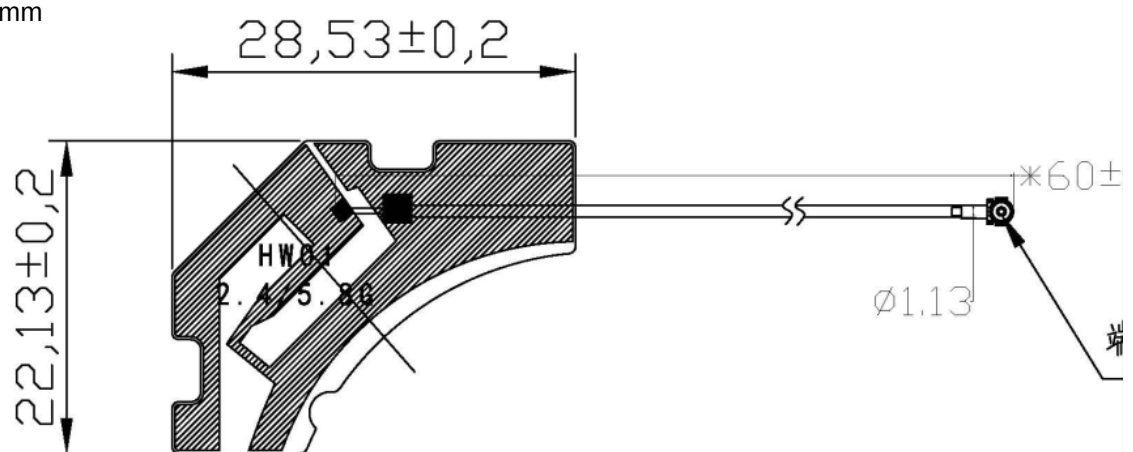
Test curve





5. Product drawings

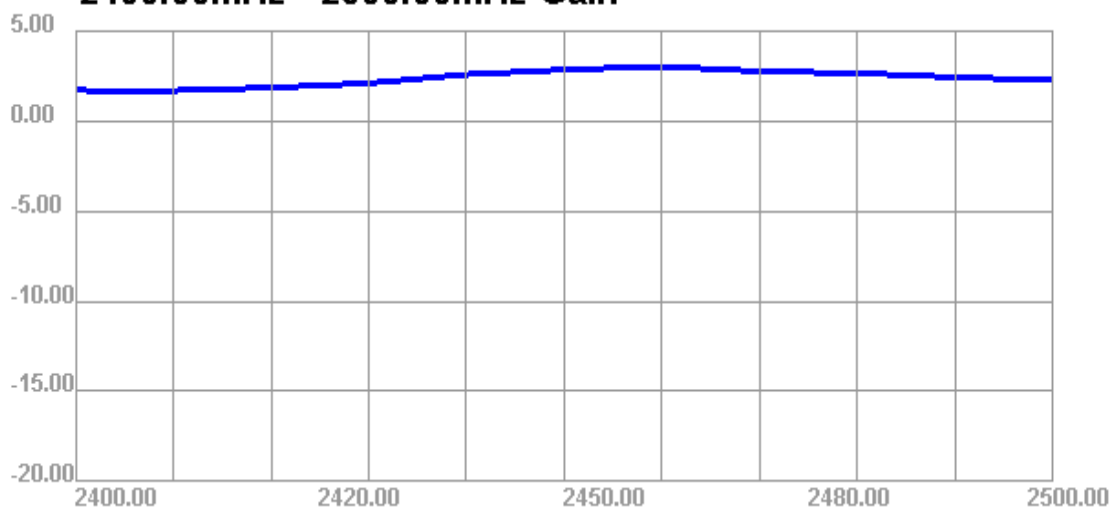
Unit: mm



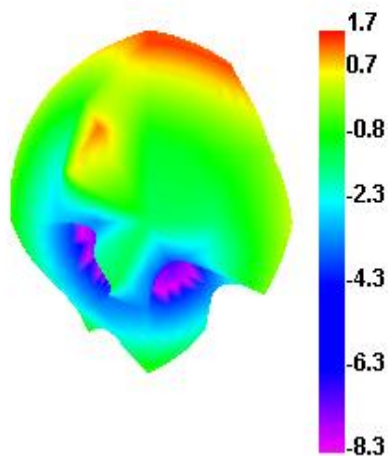
Appendix A FPC ANT-2.4G

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	66.19	-1.79	1.7	-0.45	34.294	31.895	1.7	-10.04	3.49	60	49.31	49.51
2410	65.97	-1.81	1.69	-0.46	34.154	31.815	1.69	-9.77	3.5	60	49.3	49.47
2420	67.43	-1.71	1.85	-0.3	35.103	32.327	1.85	-9.59	3.56	60	49.21	49.44
2430	68.29	-1.66	2.1	-0.05	35.969	32.316	2.1	-9.44	3.76	90	49.29	49.51
2440	73.41	-1.34	2.58	0.43	39.043	34.367	2.58	-9.06	3.92	90	49.81	49.97
2450	75.92	-1.2	2.85	0.7	40.74	35.181	2.85	-8.62	4.04	30	50.25	50.31
2460	78.91	-1.03	3.00	0.88	42.407	36.5	3.03	-7.99	4.06	30	50.42	50.54
2470	76.44	-1.17	2.76	0.61	41.034	35.406	2.76	-7.85	3.92	30	50.66	50.7
2480	77.16	-1.13	2.65	0.5	41.24	35.923	2.65	-7.84	3.78	30	50.72	50.69
2490	77.12	-1.13	2.43	0.28	41.105	36.019	2.43	-7.71	3.56	30	50.77	50.66
2500	75.75	-1.21	2.26	0.11	40.363	35.388	2.26	-7.59	3.47	30	50.69	50.54

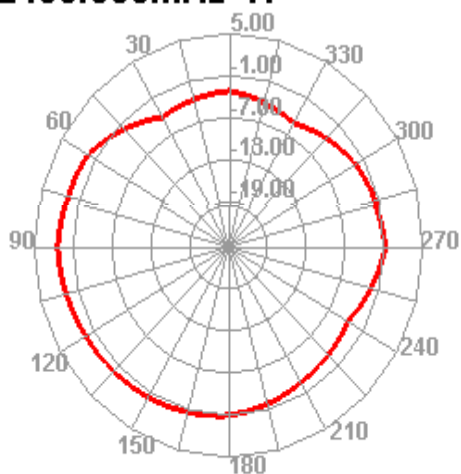
2400.00MHz - 2500.00MHz Gain



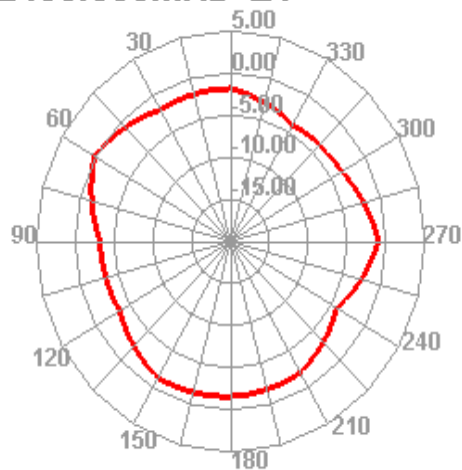
2400.000MHz



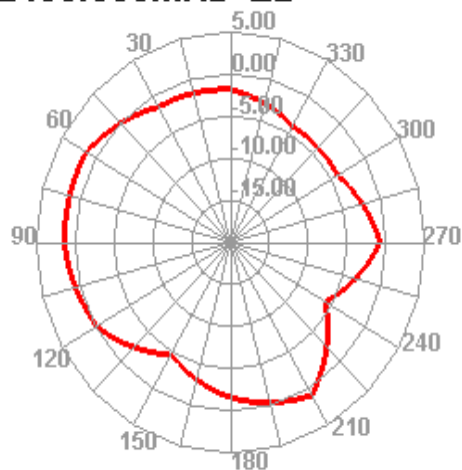
2400.000MHz H



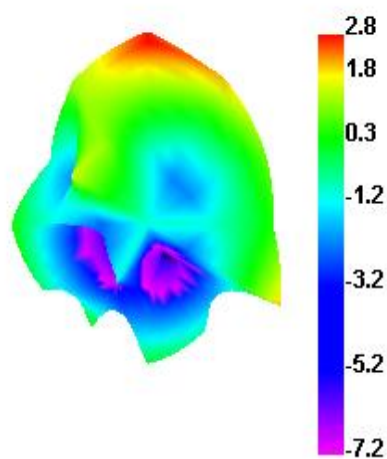
2400.000MHz E1



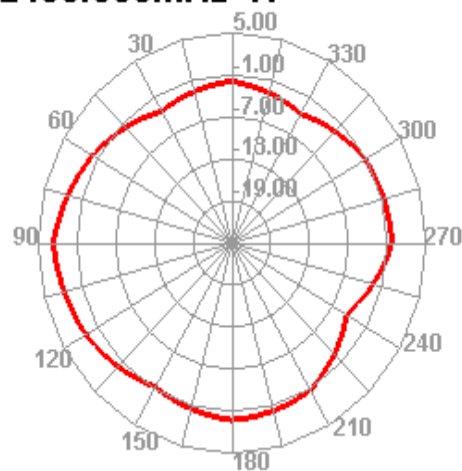
2400.000MHz E2



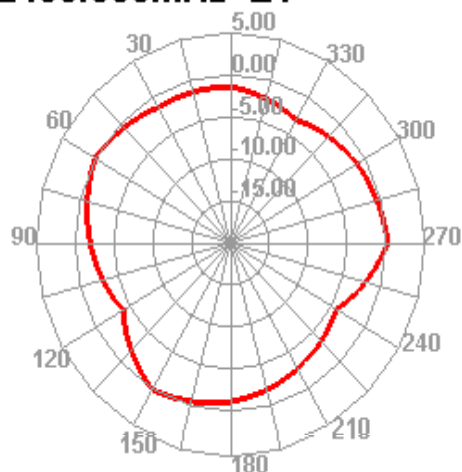
2450.000MHz



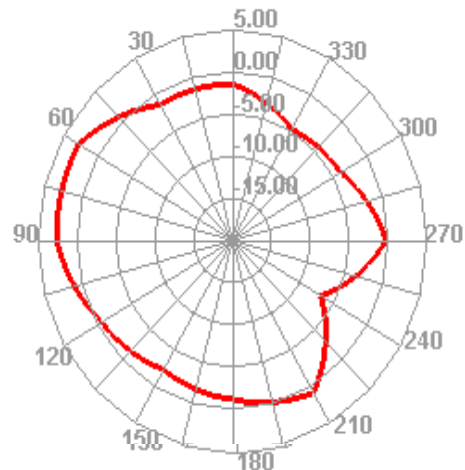
2450.000MHz H



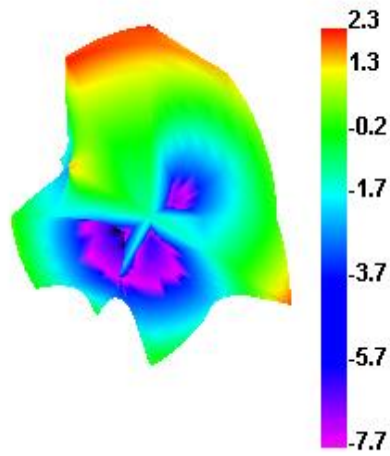
2450.000MHz E1



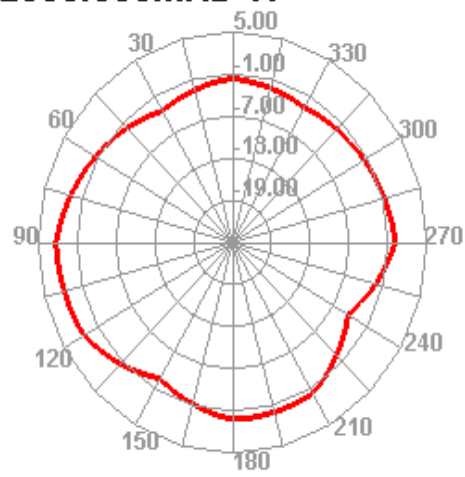
2450.000MHz E2



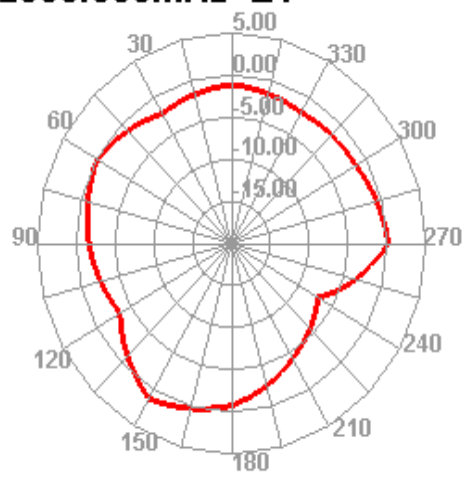
2500.000MHz



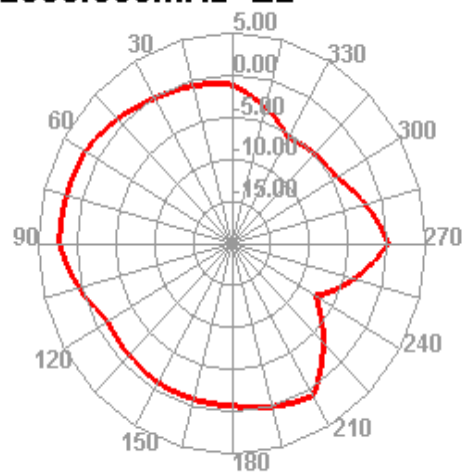
2500.000MHz H



2500.000MHz E1



2500.000MHz E2

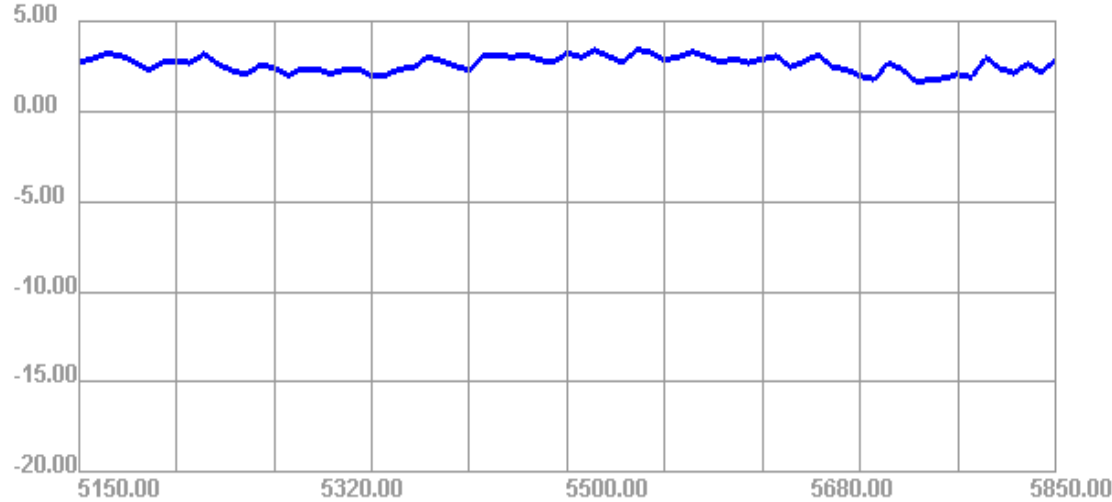


Appendix B FPC ANT-5G

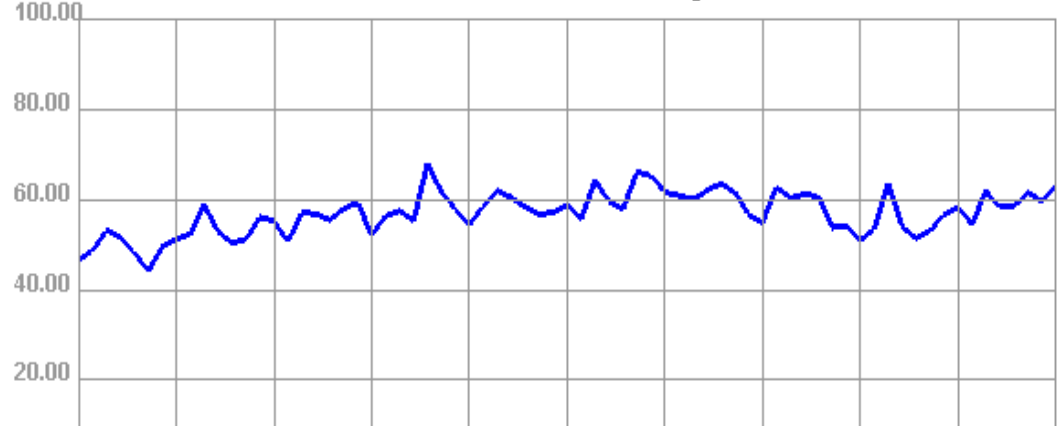
Passive Test For WIFI5.8												
Freq	Effi	Effi	Gain	Gain	UHS	DHS	Max	Min	Directivity	Beamwidth	AttH	AttV
(MHz)	(%)	(dB)	(dBi)	(dBd)	(%)	(%)	(dB)	(dB)	(dBi)	(3dB)	(dB)	(dB)
5150	46.68	-3.31	2.66	0.51	24.165	22.52	2.66	-16.92	5.97	60	61.61	62.28
5160	48.63	-3.13	2.92	0.77	25.09	23.54	2.92	-17.64	6.05	60	60.95	61.29
5170	53.21	-2.74	2.9	1.05	27.132	26.076	3.2	-16.84	5.94	60	61.25	61.54
5180	51.63	-2.87	2.78	0.93	26.505	25.129	3.08	-17.5	5.95	60	60.64	60.99
5190	48.3	-3.16	2.73	0.58	24.611	23.685	2.73	-19.26	5.89	60	60.27	60.69
5200	44.11	-3.55	2.27	0.12	22.454	21.658	2.27	-18.25	5.82	60	60.18	60.46
5210	49.62	-3.04	2.71	0.56	25.279	24.336	2.71	-18.47	5.75	60	60.41	60.84
5220	51.23	-2.9	2.77	0.62	25.937	25.297	2.77	-19.15	5.68	60	60.97	61.46
5230	52.3	-2.81	2.68	0.53	26.521	25.783	2.68	-18.46	5.5	60	61.22	61.57
5240	58.88	-2.3	2.78	1.03	30.026	28.85	3.18	-17.86	5.48	60	61.25	61.8
5250	52.85	-2.77	2.61	0.46	26.872	25.977	2.61	-18.76	5.38	60	60.11	60.58
5260	50.44	-2.97	2.26	0.11	25.164	25.275	2.26	-21.02	5.23	60	59.95	60.38
5270	51.23	-2.91	2.05	-0.1	25.942	25.285	2.05	-22.49	4.96	60	59.72	60.27
5280	56.14	-2.51	2.53	0.38	28.329	27.808	2.53	-19.21	5.04	60	60.26	60.8
5290	55.18	-2.58	2.44	0.29	27.697	27.485	2.44	-20.27	5.02	60	61.17	61.71
5300	50.71	-2.95	1.97	-0.18	25.231	25.481	1.97	-19.19	4.92	60	60.47	61.03
5310	57.17	-2.43	2.35	0.2	28.355	28.814	2.35	-18.4	4.78	60	60.84	61.39
5320	56.79	-2.46	2.36	0.21	28.039	28.755	2.36	-16.95	4.82	60	60.09	60.69
5330	55.47	-2.56	2.09	-0.06	27.298	28.167	2.09	-20.68	4.65	60	59.88	60.38
5340	58.01	-2.37	2.3	0.15	28.419	29.587	2.3	-18.54	4.66	60	60.42	60.98
5350	59.32	-2.27	2.36	0.21	28.963	30.357	2.36	-20.26	4.63	60	60.71	61.23
5360	52.11	-2.83	1.95	-0.2	25.402	26.71	1.95	-19.91	4.78	60	61.23	61.7
5370	56.41	-2.49	1.98	-0.17	27.139	29.271	1.98	-16.26	4.47	60	60.88	61.42
5380	57.5	-2.4	2.35	0.2	27.778	29.722	2.35	-15.41	4.76	60	60.97	61.35
5390	55.29	-2.57	2.39	0.24	26.77	28.519	2.39	-17.46	4.96	60	60.4	60.69
5400	68.1	-1.67	2.73	0.88	32.884	35.211	3.03	-20	4.7	60	60.93	61.3
5410	61.61	-2.1	2.78	0.63	29.693	31.916	2.78	-19.06	4.88	60	61.02	61.19
5420	57.84	-2.38	2.49	0.34	27.556	30.288	2.49	-18.51	4.86	60	60.96	61.16
5430	54.45	-2.64	2.27	0.12	25.716	28.737	2.27	-15.23	4.91	60	61.55	61.71
5440	58.69	-2.31	2.78	0.93	28.386	30.305	3.08	-16.32	5.39	60	61.99	61.75
5450	62.05	-2.07	2.72	0.97	29.787	32.264	3.12	-18.34	5.19	30	62.2	62.15
5460	60.45	-2.19	2.81	0.86	28.59	31.855	3.01	-14.63	5.19	60	61.97	61.69
5470	58.35	-2.34	2.81	0.96	28.229	30.116	3.11	-14.56	5.45	60	61.94	61.64
5480	56.73	-2.46	2.85	0.7	27.399	29.328	2.85	-16.41	5.31	60	61.78	61.34
5490	57.21	-2.43	2.7	0.55	27.329	29.883	2.7	-15.41	5.13	60	61.96	61.39
5500	58.83	-2.3	2.9	1.05	28.557	30.276	3.2	-16.64	5.5	60	62.87	62.13
5510	55.62	-2.55	3	0.85	27.021	28.603	3	-15.01	5.54	30	63.28	62.46
5520	64.33	-1.92	2.89	1.24	30.758	33.571	3.39	-14.91	5.31	30	63.89	63.03
5530	59.53	-2.25	2.91	0.86	28.633	30.897	3.01	-15.23	5.26	30	63.52	62.57
5540	57.97	-2.37	2.71	0.56	27.741	30.226	2.71	-16.26	5.08	30	63.63	62.47
5550	66.11	-1.8	2.71	1.26	32.09	34.022	3.41	-21.49	5.21	30	63.76	62.77
5560	65.29	-1.85	2.76	1.11	31.61	33.681	3.26	-17.67	5.11	30	63.78	62.73
5570	61.63	-2.1	2.85	0.7	29.588	32.041	2.85	-16.7	4.95	30	64.31	63.18
5580	60.88	-2.15	2.91	0.86	28.907	31.977	3.01	-15.48	5.16	30	64.1	63.25
5590	60.02	-2.22	2.88	1.13	28.62	31.396	3.28	-15.58	5.5	30	64.56	63.53
5600	61.91	-2.08	2.91	0.85	30.253	31.659	3	-23.05	5.08	30	64.23	63.42
5610	63.59	-1.97	2.74	0.59	30.625	32.966	2.74	-19.08	4.71	30	63.88	63.07
5620	61.65	-2.1	2.9	0.75	29.697	31.949	2.9	-19.14	5	30	63.66	62.89
5630	56.57	-2.47	2.68	0.53	27.293	29.28	2.68	-17.14	5.15	30	63.56	62.84
5640	54.98	-2.6	2.89	0.74	26.442	28.538	2.89	-16.44	5.49	30	63.96	63.37

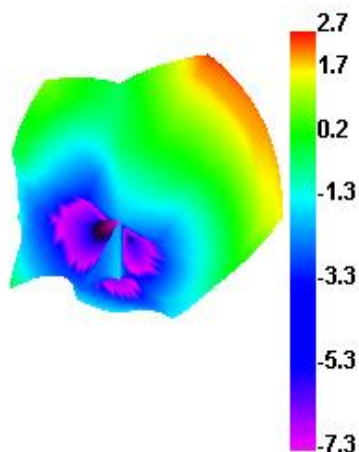
5650	62.77	-2.02	2.90	0.9	30.415	32.356	3.05	-21.56	5.08	30	64.28	63.67
5660	60.33	-2.19	2.44	0.29	29.351	30.983	2.44	-17.31	4.63	30	63.94	63.43
5670	61.21	-2.13	2.77	0.62	29.845	31.366	2.77	-15.69	4.9	30	63.36	62.77
5680	60.69	-2.17	2.94	0.99	29.612	31.079	3.14	-17.09	5.31	30	63.17	62.57
5690	53.8	-2.69	2.45	0.3	26.21	27.586	2.45	-14.41	5.14	30	63.05	62.4
5700	54.17	-2.66	2.31	0.16	26.243	27.926	2.31	-15.7	4.97	30	63.28	62.67
5710	51.04	-2.92	1.94	-0.21	25.171	25.864	1.94	-14.53	4.86	30	63.92	63.31
5720	53.44	-2.72	1.77	-0.38	26.571	26.869	1.77	-14.44	4.49	30	64.15	63.37
5730	63.63	-1.96	2.67	0.52	31.351	32.276	2.67	-15.06	4.63	30	64.5	63.84
5740	54.01	-2.68	2.32	0.17	26.63	27.382	2.32	-17.28	4.99	90	63.92	63.25
5750	51.38	-2.89	1.64	-0.51	25.475	25.9	1.64	-14.74	4.53	90	63.76	62.98
5760	53.08	-2.75	1.74	-0.41	26.153	26.922	1.74	-16.19	4.49	60	63.59	62.91
5770	56.64	-2.47	1.83	-0.32	28.231	28.404	1.83	-12.87	4.3	60	63.88	63.1
5780	58.25	-2.35	2.05	-0.1	29.057	29.197	2.05	-12.91	4.4	90	64.59	63.71
5790	54.53	-2.63	1.89	-0.26	27.118	27.414	1.89	-15.21	4.52	90	64.43	63.79
5800	61.88	-2.08	2.99	0.84	31.03	30.851	2.99	-14.97	5.08	60	64.86	64.02
5810	58.4	-2.34	2.37	0.22	29.126	29.27	2.37	-12.82	4.71	60	64.79	64.01
5820	58.47	-2.33	2.12	-0.03	29.166	29.306	2.12	-14.03	4.45	60	64.35	63.62
5830	61.62	-2.1	2.62	0.47	30.69	30.931	2.62	-13.48	4.72	60	64.3	63.53
5840	59.59	-2.25	2.15	0	29.71	29.884	2.15	-13.42	4.39	60	64.5	64.43
5850	62.89	-2.01	2.89	0.74	31.214	31.68	2.89	-15.47	4.9	60	65.54	63.96

5150.00MHz - 5850.00MHz Gain

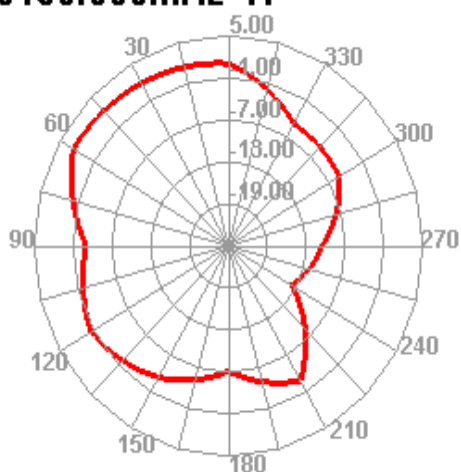


5150.00MHz - 5850.00MHz Efficiency

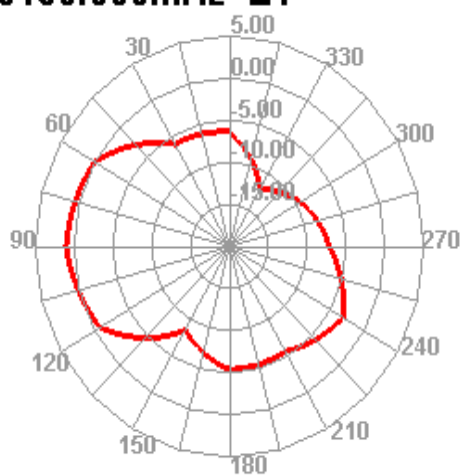




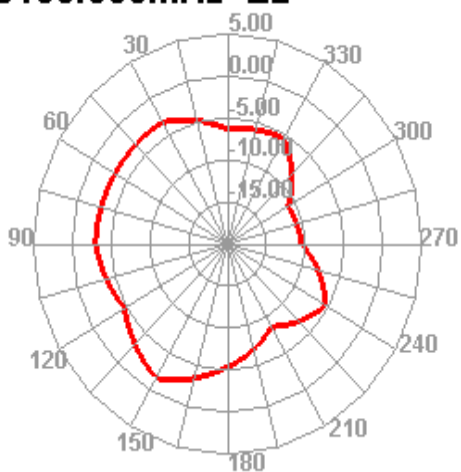
5150.000MHz H



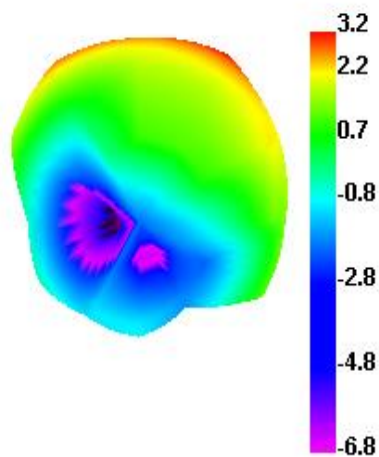
5150.000MHz E1



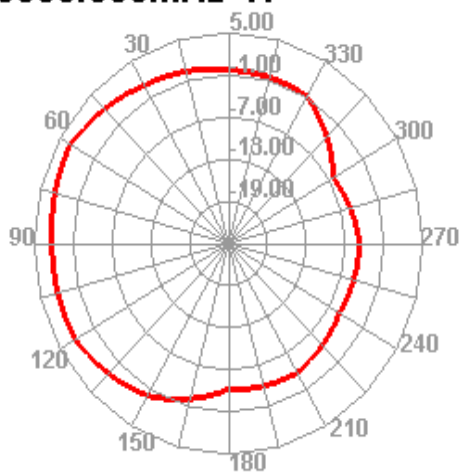
5150.000MHz E2



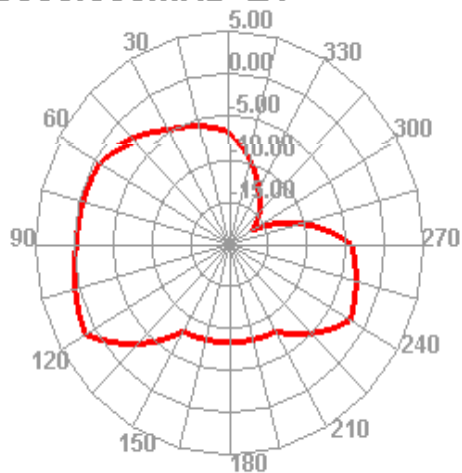
5500.000MHz



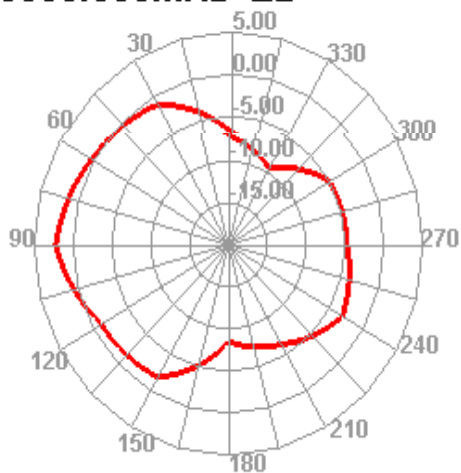
5500.000MHz H



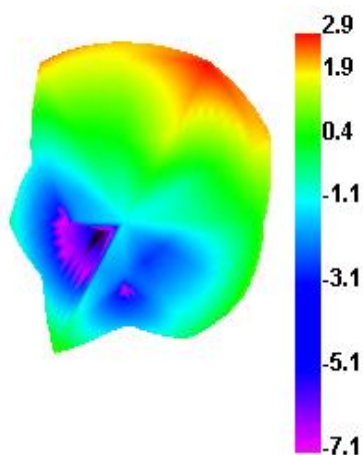
5500.000MHz E1



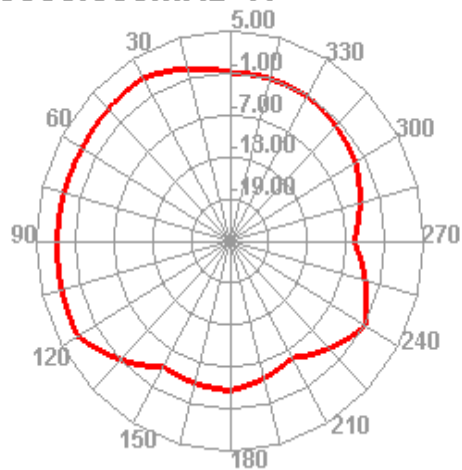
5500.000MHz E2



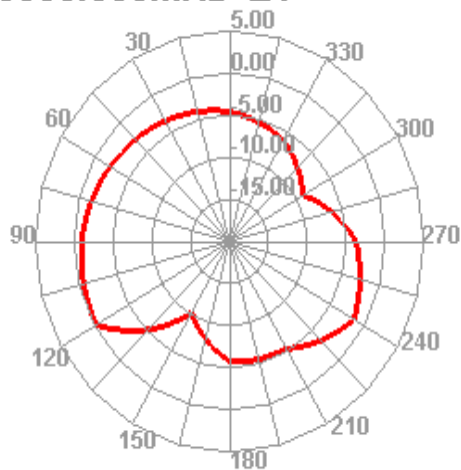
5850.000MHz



5850.000MHz H



5850.000MHz E1



5850.000MHz E2

