

SPECIFICATION ON

ShenZhen Takchang Technology Co., Ltd

KF24M – Antenna

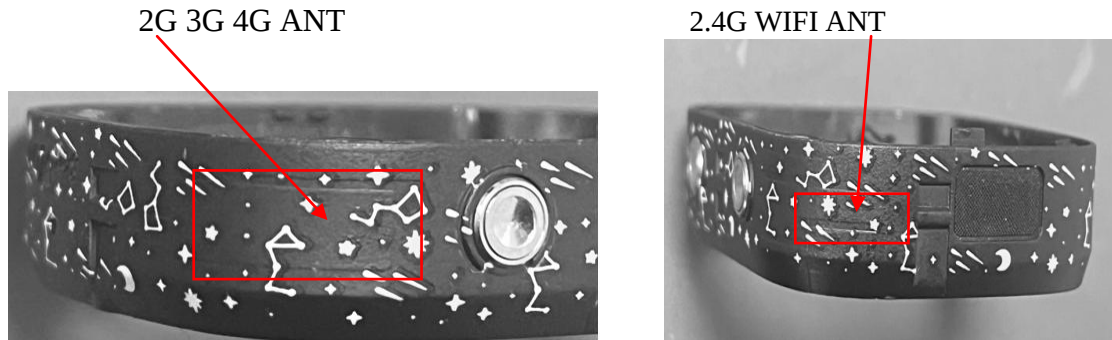
Product Specifications

Company			Frequency	698MHz-2700 MHz	
Product	KF24M-G4CMS		Version		
Model	DCA-KF24M-QK-4G		C o l o r	Black	
RF Designer			Structural Designer		
D a t e					
Signature					

1. Antenna Overview

1.1 Specifications and pictures

This acknowledgment mainly provides the test conditions of the electrical and structural performance parameters of the KF24M project antenna. The following picture is a picture of the antenna designed by our company.



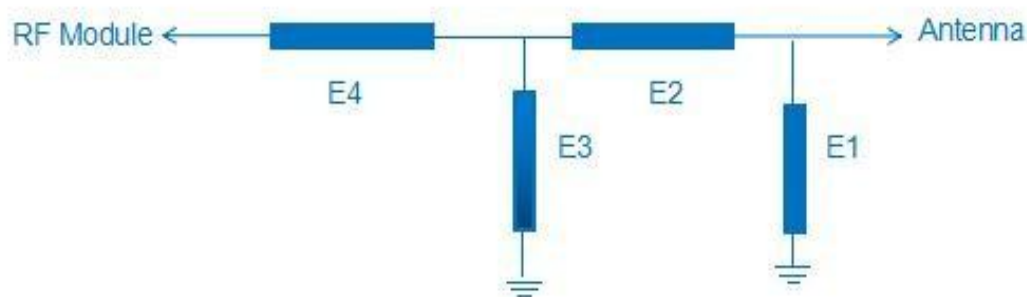
1.2 Electrical specifications

1.2.1 Electrical performance indicators

The working frequency band of the antenna in this project is 824MHz - 2700MHz. The following are the electrical performance indicators of the antenna designed and trial-produced by our company.

Operation Bands	Frequency (MHz)	VSWR
PCS1900/WCDMA/LTE B2 GSM 850/WCDMA/LTE B5 LTE 4/7/12	698 MHz-2 700 MHz	≤ 3.5

1.2.2 Matching circuit diagram

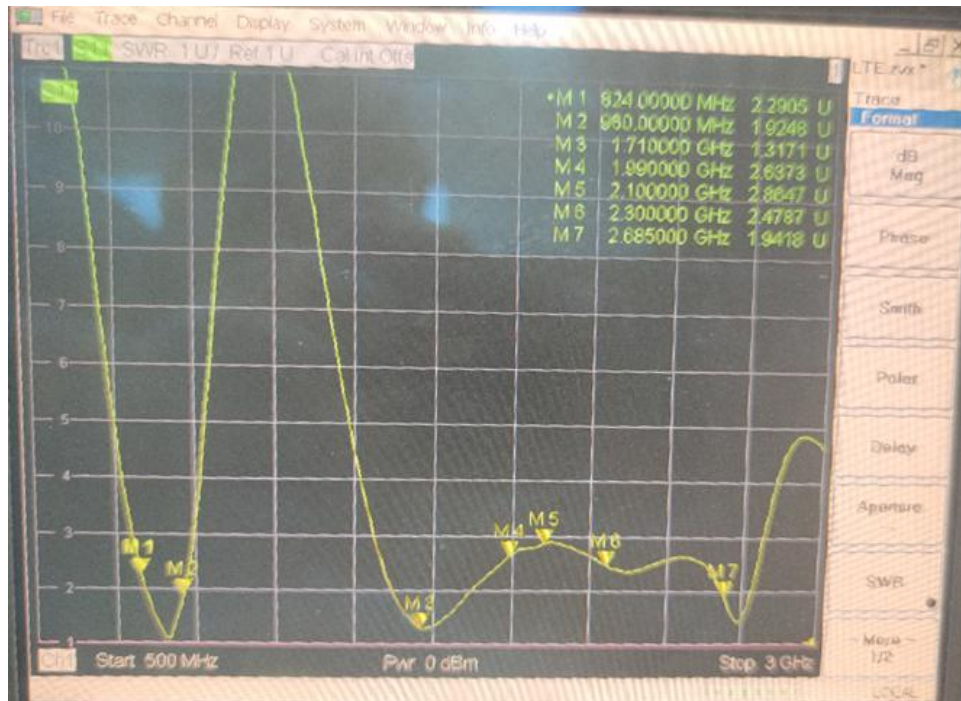


The antenna matching circuit is the original matching circuit of the mainboard and has not been changed.

1.3 Passive test

1.3.1 Antenna Standing Wave Test (VSWR)

2G&3G&4G



1.3.2 Antenna gain and efficiency

Main Antenna									
Passive Test For 700-1000									
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	Max (dB)	Min (dB)	Directivity (dBi)	AtH (dB)	V (dB)
700	12.32	-9.09	-6.22	-8.37	-6.22	-15.51	2.87	36.61	36.05
710	14.24	-8.46	-5.91	-8.06	-5.91	-14.82	2.55	36.34	35.72
720	13.88	-8.58	-6.37	-8.52	-6.37	-15.21	2.21	36.33	35.66
730	18.57	-7.31	-5.41	-7.56	-5.41	-14.54	1.91	36.49	35.83
740	21.3	-6.72	-4.71	-6.86	-4.71	-14.68	2.01	36.4	35.77
750	15.72	-8.04	-6.05	-8.2	-6.05	-16.82	1.99	36.25	35.63
760	15.01	-8.24	-6.39	-8.54	-6.39	-17.94	1.85	36.38	35.84
780	12.99	-8.86	-7.12	-9.27	-7.12	-19.36	1.75	36.47	36.06
790	13.18	-8.8	-6.28	-8.43	-6.28	-19.59	2.53	36.81	37.15
800	22.47	-6.48	-3.85	-6	-3.85	-18.4	6.48	39.72	38.65
810	19.22	-7.16	-4.32	-6.47	-4.32	-20.38	7.16	39.09	37.95
820	18.89	-7.24	-4.13	-6.28	-4.13	-21.69	7.24	38.92	37.82
830	24.29	-6.14	-2.67	-4.82	-2.67	-21.37	6.14	39.17	38.24
840	24.96	-6.03	-2.21	-4.36	-2.21	-20.99	6.03	39.02	38.29
850	26.06	-5.84	-1.78	-3.93	-1.78	-20.06	5.84	38.83	38.24
860	32.27	-4.91	-0.72	-2.87	-0.72	-18.4	4.91	39.11	38.64
870	37.51	-4.26	0.01	-2.14	0.01	-17.38	4.26	38.85	38.62
880	43.27	-3.64	0.65	-1.5	0.65	-16.88	3.64	38.95	38.95
890	44.69	-3.5	0.77	-1.38	0.77	-17.29	3.5	38.86	39.1
900	51.86	-2.85	1.32	-0.83	1.32	-17.89	2.85	38.63	39.03
910	56.46	-2.48	1.6	-0.55	1.6	-19.89	2.48	38.81	39.28
920	56.4	-2.49	1.75	-0.4	1.75	-23.22	2.49	38.54	39.19
930	55.54	-2.55	1.93	-0.22	1.93	-23.44	2.55	38.39	39.2
940	53.55	-2.71	2.02	-0.13	2.02	-19.31	2.71	38.42	39.47
950	54.68	-2.62	2.28	0.13	2.28	-21.37	2.62	38.6	39.94
960	55.78	-2.53	2.43	0.28	2.43	-21.01	2.53	38.58	40.13
970	55.85	-2.53	2.35	0.2	2.35	-18.98	2.53	38.65	40.36
980	51.33	-2.9	1.81	-0.34	1.81	-16.86	2.9	38.72	40.53
990	49.6	-3.04	1.53	-0.62	1.53	-14.88	3.04	38.71	40.53
1000	48.87	-3.11	1.34	-0.81	1.34	-13.99	3.11	38.75	40.38

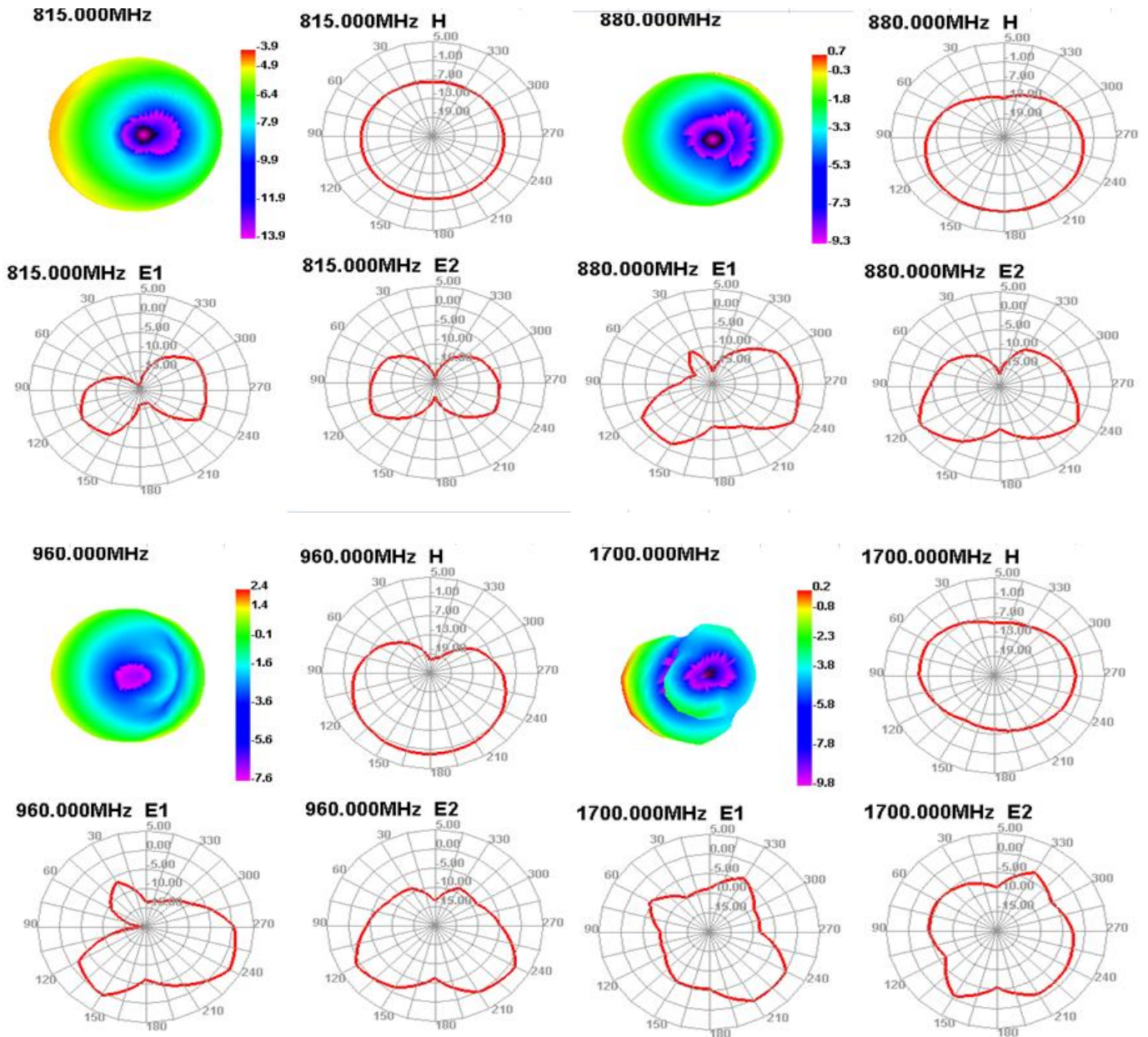
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Passive Test For 1700-2700									
Freq	Effi	Effi	Gain	Gain	Max	Min	Directivity	AttH	AttV
(MHz)	(%)	(dB)	(dBi)	(dBd)	(dB)	(dB)	(dBi)	(dB)	(dB)
1700	38.4	-4.16	0.18	-1.97	0.18	-11.94	4.16	44.49	45.4
1710	45.19	-3.45	0.92	-1.23	0.92	-11.12	3.45	44.76	45.64
1720	44.01	-3.56	0.9	-1.25	0.9	-10.69	3.56	44.58	45.38
1730	41.77	-3.79	0.79	-1.36	0.79	-10.34	3.79	44.5	45.28
1740	51.42	-2.89	1.77	-0.38	1.77	-8.77	2.89	44.96	45.72
1750	52.25	-2.82	1.93	-0.22	1.93	-8.25	2.82	44.81	45.59
1760	49.66	-3.04	1.79	-0.36	1.79	-8.78	3.04	44.76	45.56
1770	48.19	-3.17	1.76	-0.39	1.76	-9.15	3.17	44.58	45.31
1780	51.02	-2.92	2.14	-0.01	2.14	-9.05	2.92	44.69	45.37
1790	50.76	-2.94	2.2	0.05	2.2	-8.97	2.94	44.74	45.42
1800	45.22	-3.45	1.75	-0.4	1.75	-9.86	3.45	44.64	45.32
1810	48.74	-3.12	2.07	-0.08	2.07	-10.27	3.12	44.72	45.4
1820	49.95	-3.01	2.14	-0.01	2.14	-11.02	3.01	44.81	45.47
1830	45.26	-3.44	1.63	-0.52	1.63	-12.63	3.44	44.77	45.38
1840	44.39	-3.53	1.47	-0.68	1.47	-14.42	3.53	44.81	45.37
1850	46.35	-3.34	1.58	-0.57	1.58	-16.25	3.34	44.96	45.48
1860	48.78	-3.12	1.73	-0.42	1.73	-17.9	3.12	45.24	45.74
1870	46.06	-3.37	1.42	-0.73	1.42	-19.67	3.37	45.17	45.69
1880	45.99	-3.37	1.4	-0.75	1.4	-20.22	3.37	45.44	45.9
1890	48.94	-3.1	1.66	-0.49	1.66	-19.59	3.1	45.37	45.83
1900	47.56	-3.23	1.53	-0.62	1.53	-18.93	3.23	45.4	45.81
1910	46.09	-3.36	1.34	-0.81	1.34	-18.04	3.36	45.51	45.99
1920	46.57	-3.32	1.25	-0.9	1.25	-16.29	3.32	45.44	46.01
1930	45.84	-3.39	1.02	-1.13	1.02	-14.89	3.39	45.44	46.1
1940	47.68	-3.22	1	-1.15	1	-13.35	3.22	45.59	46.24
1950	45.81	-3.39	0.85	-1.3	0.85	-12.36	3.39	45.49	46.14
1960	46.93	-3.29	0.98	-1.17	0.98	-11.39	3.29	45.78	46.35
1970	44.99	-3.47	0.84	-1.31	0.84	-11.69	3.47	45.79	46.39
1980	43.98	-3.57	0.94	-1.21	0.94	-11.56	3.57	46.11	46.68
1990	45.47	-3.42	1.25	-0.9	1.25	-10.92	3.42	46.19	46.76
2000	45.52	-3.42	1.34	-0.81	1.34	-11.38	3.42	46.41	46.96
2010	45.02	-3.47	1.33	-0.82	1.33	-12.4	3.47	46.28	46.87
2020	43.09	-3.66	1.18	-0.97	1.18	-13.67	3.66	46.38	46.99
2030	44.79	-3.49	1.32	-0.83	1.32	-13.94	3.49	46.51	47.13
2040	44.76	-3.49	1.29	-0.86	1.29	-13.81	3.49	46.46	47.1
2050	45.85	-3.39	1.29	-0.86	1.29	-12.61	3.39	46.67	47.29
2060	47.35	-3.25	1.33	-0.82	1.33	-11.59	3.25	46.7	47.34
2070	47.17	-3.26	1.25	-0.9	1.25	-11.81	3.26	46.74	47.39
2080	46.67	-3.31	1.14	-1.01	1.14	-11.49	3.31	46.87	47.49
2090	46.03	-3.37	1	-1.15	1	-10.75	3.37	47.02	47.61
2100	50.7	-2.95	1.68	-0.47	1.68	-10.26	2.95	47.38	47.92
2110	43	-3.67	1.2	-0.95	1.2	-11.47	3.67	46.64	47.16
2120	41.38	-3.83	1.19	-0.96	1.19	-12.26	3.83	46.74	47.19
2130	42.21	-3.75	1.25	-0.9	1.25	-13.2	3.75	46.56	47.05
2140	40.61	-3.91	0.99	-1.16	0.99	-13.57	3.91	46.57	47.04
2150	38.54	-4.14	0.69	-1.46	0.69	-13.96	4.14	46.63	47.1
2160	37.6	-4.25	0.56	-1.59	0.56	-14.04	4.25	46.68	47.12
2170	35.47	-4.5	0.34	-1.81	0.34	-14.29	4.5	46.76	47.16
2180	36.54	-4.37	0.46	-1.69	0.46	-14.46	4.37	46.96	47.31
2190	36.1	-4.43	0.34	-1.81	0.34	-15.1	4.43	47.2	47.54
2200	36.44	-4.38	0.36	-1.79	0.36	-16.03	4.38	47.72	47.97
2210	36.36	-4.39	0.24	-1.91	0.24	-17.11	4.39	47.52	47.8
2220	35.85	-4.45	0.09	-2.06	0.09	-18.22	4.45	47.58	47.83
2230	36.97	-4.32	0.08	-2.07	0.08	-18.4	4.32	47.85	48.11
2240	34.78	-4.59	-0.2	-2.35	-0.2	-17.34	4.59	47.8	48.04
2250	33.84	-4.71	-0.44	-2.59	-0.44	-15.3	4.71	47.72	47.95
2260	33.19	-4.79	-0.7	-2.85	-0.7	-13.48	4.79	47.78	48.02
2270	32.65	-4.86	-0.51	-2.66	-0.51	-13.14	4.86	47.94	48.21
2280	31.76	-4.98	-0.37	-2.52	-0.37	-13.77	4.98	47.93	48.25
2290	32	-4.95	-0.14	-2.29	-0.14	-14.49	4.95	47.91	48.23
2300	31.97	-4.95	-0.01	-2.16	-0.01	-15.48	4.95	48.11	48.37
2310	33.72	-4.72	0.29	-1.86	0.29	-16.27	4.72	48.3	48.56
2320	35.12	-4.54	0.48	-1.67	0.48	-16.91	4.54	48.34	48.54

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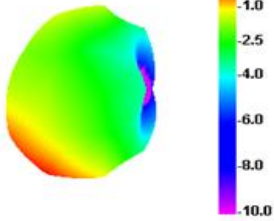
2330	39.05	-4.08	0.89	-1.26	0.89	-17.57	4.08	48.66	48.76
2340	40.1	-3.97	0.92	-1.23	0.92	-18.22	3.97	48.57	48.65
2350	39.22	-4.06	0.82	-1.33	0.82	-18.09	4.06	48.78	48.78
2360	39.81	-4	0.9	-1.25	0.9	-16.95	4	48.71	48.7
2370	38.99	-4.09	0.73	-1.42	0.73	-13.98	4.09	48.56	48.56
2380	37.31	-4.28	0.36	-1.79	0.36	-13.67	4.28	48.79	48.76
2390	38.05	-4.2	0.28	-1.87	0.28	-15.01	4.2	48.78	48.7
2400	38.87	-4.1	0.39	-1.76	0.39	-14.32	4.1	48.84	48.73
2410	38.82	-4.11	0.31	-1.84	0.31	-13.33	4.11	49.01	48.86
2420	37.79	-4.23	0.12	-2.03	0.12	-12.86	4.23	48.92	48.77
2430	36.76	-4.35	-0.04	-2.19	-0.04	-13.31	4.35	49.04	48.83
2440	40.53	-3.92	0.33	-1.82	0.33	-13.07	3.92	49.35	49.08
2450	41.14	-3.86	0.34	-1.81	0.34	-13.34	3.86	49.31	49.03
2460	39.41	-4.04	0.04	-2.11	0.04	-13.87	4.04	49.5	49.17
2470	40.4	-3.94	0.05	-2.1	0.05	-14.09	3.94	49.35	49.03
2480	39.93	-3.99	-0.12	-2.27	-0.12	-14.38	3.99	49.38	49.1
2490	42.34	-3.73	0.05	-2.1	0.05	-14.12	3.73	49.44	49.14
2500	40.23	-3.95	-0.32	-2.47	-0.32	-13.93	3.95	49.72	49.44
2510	42.06	-3.76	-0.17	-2.32	-0.17	-13.23	3.76	49.15	48.92
2520	41.96	-3.77	-0.23	-2.38	-0.23	-12.68	3.77	49.5	49.22
2530	39.56	-4.03	-0.47	-2.62	-0.47	-12.54	4.03	49.13	48.88
2540	41.11	-3.86	-0.29	-2.44	-0.29	-12.14	3.86	49.22	48.9
2550	43.21	-3.64	-0.07	-2.22	-0.07	-11.87	3.64	49.28	48.97
2560	43.16	-3.65	-0.1	-2.25	-0.1	-11.98	3.65	49.29	48.95
2570	42.5	-3.72	-0.2	-2.35	-0.2	-12.22	3.72	49.47	49.17
2580	44.29	-3.54	-0.09	-2.24	-0.09	-12.13	3.54	49.22	48.92
2590	45.97	-3.38	0.02	-2.13	0.02	-11.99	3.38	49.47	49.11
2600	47.44	-3.24	0.06	-2.09	0.06	-11.74	3.24	49.3	49.03
2610	45.06	-3.46	-0.22	-2.37	-0.22	-11.73	3.46	49.47	49.17
2620	49.02	-3.1	0.08	-2.07	0.08	-11.21	3.1	49.35	49.1
2630	46.45	-3.33	-0.17	-2.32	-0.17	-11.64	3.33	49.16	48.91
2640	47.86	-3.2	-0.1	-2.25	-0.1	-11.87	3.2	49.78	49.51
2650	46.5	-3.33	-0.32	-2.47	-0.32	-12.29	3.33	49.65	49.37
2660	53.88	-2.69	0.18	-1.97	0.18	-11.93	2.69	49.85	49.54
2670	55.44	-2.56	0.27	-1.88	0.27	-12.06	2.56	49.94	49.61
2680	50.35	-2.98	0.08	-2.07	0.08	-12.83	2.98	50.24	49.88
2690	53.73	-2.7	0.56	-1.59	0.56	-12.6	2.7	49.81	49.49
2700	52.1	-2.83	0.64	-1.51	0.64	-12.54	2.83	50.03	49.69

1.3.3 Antenna Radiation Pattern

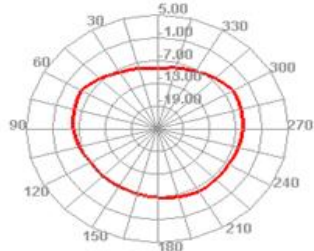


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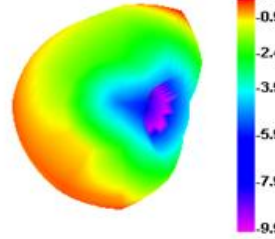
2300.000MHz



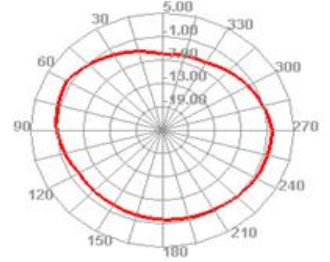
2300.000MHz H



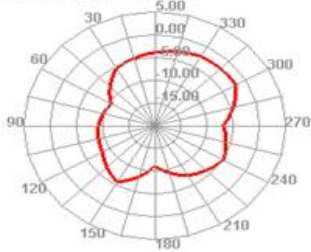
2680.000MHz



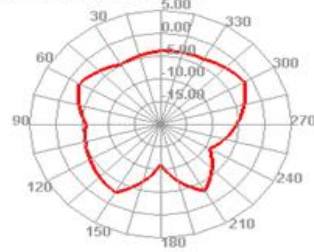
2680.000MHz H



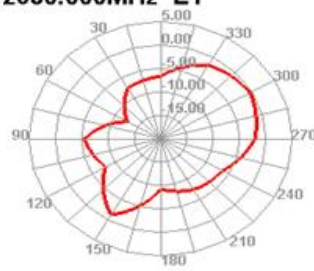
2300.000MHz E1



2300.000MHz E2



2680.000MHz E1



2680.000MHz E2

